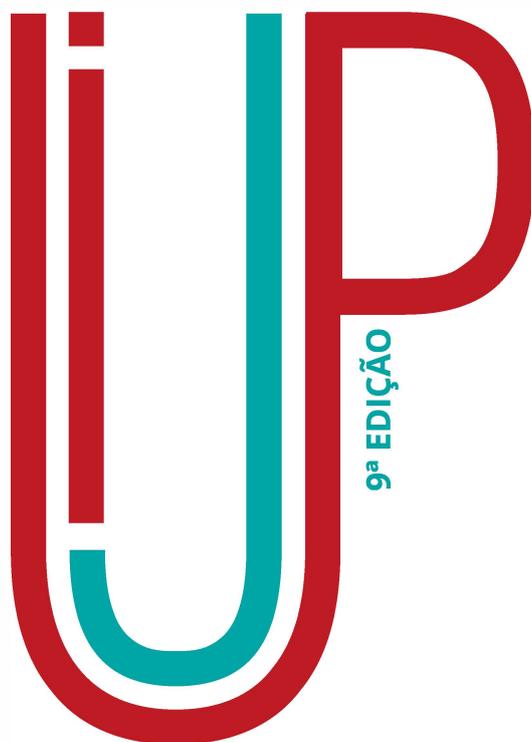


BOOK OF ABSTRACTS

9TH MEETING OF YOUNG RESEARCHERS
OF UNIVERSITY OF PORTO



U. PORTO



ENCONTRO INVESTIGAÇÃO JOVEM
DA UNIVERSIDADE DO PORTO

17.18.19 FEVEREIRO

CREDITS

LIVRO DE RESUMOS IJUP'16

9º ENCONTRO DE INVESTIGAÇÃO JOVEM DA U.PORTO

Universidade do Porto

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Rita Faria

Rita Gaio

Rute Pedro



PROGRAM

WEDNESDAY, 17 th		THURSDAY, 18 th	FRIDAY, 19 th
08:30	09:00	REGISTRATION	REGISTRATION
09:00	10:00	REGISTRATION	PARALLEL ORAL SESSIONS VIII A1- Biomedicine V A2- Architecture & Arts II A3- Economics & Management I A4- Psychology & Education Sciences I
10:00	10:30	Exhibition Opening "os papéis" A4- Sport Sciences I	
10:30	11:30	Welcome Breakfast & POSTER VIEWING	POSTER VIEWING & Coffee Break
11:30	13:00	PARALLEL ORAL SESSIONS I A1- Biomedicine I A2- Architecture & Arts I A3- Biological Sciences I A4- Chemistry I A5- Engineering I	PARALLEL ORAL SESSIONS IX A1- Biological Sciences IV A2- Geography & Sociology A3- Economics & Management II A4- Psychology & Education Sciences II A5- Architecture & Arts III
13:00	14:30	Lunch Break	Lunch Break
14:30	16:00	PARALLEL ORAL SESSIONS II A1- Biomedicine II A3- AgroFood I A4- Chemistry II A5- Engineering II	PARALLEL ORAL SESSIONS VI A1- Biological Sciences II A2- History & Cultural Studies A3- Environment III A4- Public Health & Epidemiology I
16:00	17:00	POSTER VIEWING & Coffee Break	POSTER VIEWING & Coffee Break
17:00	18:30	PARALLEL ORAL SESSIONS III A1- Law & Criminological Sciences A2- Communication Sciences A3- AgroFood II A4- Chemistry III A5- Engineering III	PARALLEL ORAL SESSIONS VII A1- Biological Sciences III A2- Philosophy & Political Sciences A3- Astronomy, Maths & Physics A4- Public Health & Epidemiology II A5- Engineering IV

FOREWORD

Nos últimos trinta anos a Universidade do Porto teve uma notável progressão na investigação científica, área da sua missão em que goza hoje, em resultado dessa trajetória de crescimento, de amplo reconhecimento internacional. Esta progressão é visível no facto um pouco mais de 1/5 dos artigos científicos portugueses publicados nacional e internacionalmente terem origem na Universidade do Porto. Trata-se de um valor que comprova o nosso empenho estratégico na investigação como fator qualificador e distintivo da Universidade e que dá substância á afirmação de ser a Universidade do Porto uma instituição especialmente vocacionada para a investigação, uma instituição em que a investigação transmite uma dinâmica transversal a todas as atividades académicas, nomeadamente ao ensino e à formação, que em larga medida se apoiam no conhecimento interno desenvolvido.

É neste contexto que se insere o IJUP, iniciativa que desempenha um papel fundamental na promoção e valorização da investigação jovem realizada no nosso *campus*. De facto, o IJUP constitui um importante incentivo à atividade científica dos nossos estudantes, com todas as consequências positivas para a sua formação académica, para a sua preparação para uma potencial carreira científica, para melhor estarem capacitados para enfrentar um mercado de trabalho cada vez mais ajustado à economia do conhecimento. Tudo isto porque o IJUP proporciona aos estudantes uma primeira experiência de comunicação, divulgação e debate científico num ambiente similar ao de um congresso internacional - promove a apresentação pública de premissas e resultados científicos, e simultaneamente a partilha de conhecimento, a troca de experiências e o cruzamento de competências entre investigadores jovens.

É, pois, com renovada motivação e interesse que organizamos esta 9.^a edição do IJUP, um evento que tem conhecido uma crescente adesão dos estudantes e que goza do apoio da comunidade académica, em particular dos docentes e investigadores. Deve sublinhar-se ainda que o IJUP é, em boa medida, realizado com recurso ao voluntariado, sem grandes meios e com custos reduzidos. Essencialmente, um trabalho de uma equipa muito dedicada, superiormente dirigida pela Vice-Reitora para a Investigação, Professor Maria João Ramos. É também de enaltecer a colaboração que temos tido com empresas e instituições no âmbito do IJUP, destacando-se em particular o apoio do Santander Universidades.

Resta-me saudar os estudantes que participam nesta edição do IJUP, agradecer os seus contributos e desejar que o evento seja, uma vez mais, um grande sucesso.

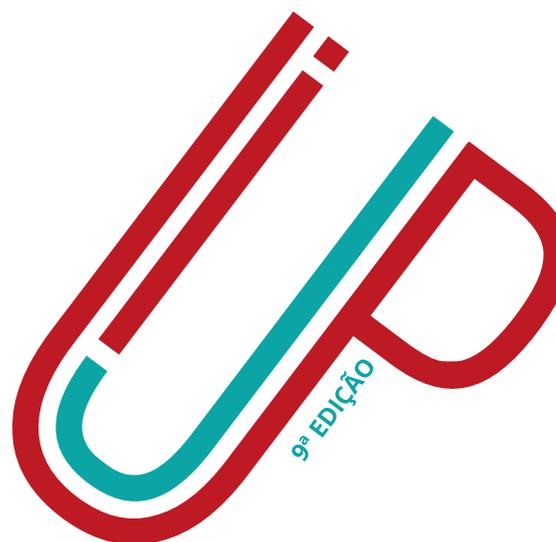
Sebastião Feyo de Azevedo

Reitor da Universidade do Porto

U. PORTO

**ENCONTRO
INVESTIGAÇÃO
JOVEM**

ORAL SESSIONS



- **11338 | "And grandchildren? Do they spoil grandparents?": The perception of grandparents and parents about the impact of grandchildren in the quality of life of grandparents**

Gonçalves, Stefani, FPCEUP, Portugal

Nascimento, Inês, FPCEUP, Portugal

Grandparents are playing a fundamental role on the intensive and occasional care of their grandchildren in all Europe (Glaser, Price, Montserrat, Gessa & Tinker, 2013). In this sense, it can be said that nowadays grandparents face the demand of taking care of their previous generation and next one (Glaser et al., 2013) and, more than ever, experience a role potentially important in the lives of their grandchildren (Dunifon, 2013) - which progresses exponentially.

In this sense, this study aims at exploring the perceptions of grandparents and parents of children between 3 and 10 years old about the meaning and influence of grandchildren in the lifestyle and quality of life of their grandparents. The sample of participants was composed of 20 adults, 11 grandparents (three grandfathers and eight grandmothers), and nine parents (three fathers and six mothers). In order to accomplish the study aims, individual semi-structured interviews were performed.

Results allow the conclusion that grandchildren add value to the meaning of life of grandparents both in the present as in the future, promoting the accomplishment of the psychosocial tasks of generativity and integrity. On the other hand, they show that grandchildren have an important influence in the way relationships network between grandparents, parents and grandchildren is organized. Finally, results show the presence of specific changes in each dimension of quality of life, according to the definition of Cummins (1996).

- **10980 | A computational study of chemisorption of hydrogen gas on carbon nanotubes**

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Magalhães, A.L., UCIBIO/REQUIMTE/Department of Chemistry and Biochemistry, Faculty of Sciences, University of Porto, Portugal., Portugal

Carbon nanotubes (CNTs) have versatile structure and unique properties[1]. Able to capture gas by chemical adsorption, such materials change their aromatic ring sp^2 hybridized atomic orbital to sp^3 and, when doped, they increase significantly the speed and capacity of gas chemisorption.

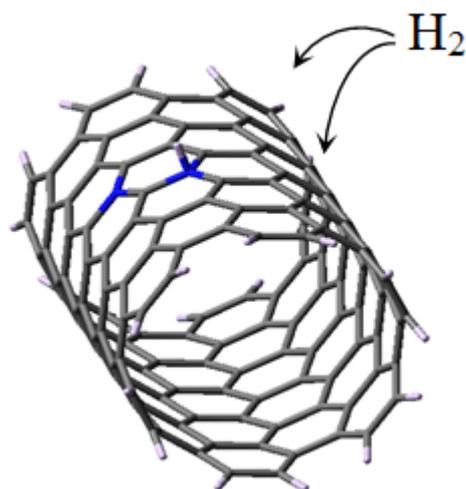
A computational study of hydrogen chemisorption in armchair (6,6) CNT is being done. A model is used in which hydrogen molecules are chemically bound at various sites of of finite length pristine and B/N doped CNTs. The calculations are performed at quantum DFT level with the hybrid M06-2X functional and 6-31G(d,p) basis set using the Gaussian 09 program [2].

Results obtained so far with the pristine CNT model show a local pyramidalization of carbon atoms. In general, the chemical adsorption has shown to be exothermic but the thermodynamic stabilization depends on the adsorption site. In addition, as referred above, preliminary results suggest that doping of CNT favors the energetics of adsorption, with B substitution being more favorable than N substitution.

References:

[1] Kaczmarek, Anna et al. Effect of Tube Length on the Chemisorptions of One and Two Hydrogen Atoms on the Sidewalls of (3,3) and (4,4) SWCNTs: A Theoretical Study. International Journal of Quantum Chemistry. 2007, Vol. 107, pp. 2211–2219.

[2] Frisch, M. J. et al. Gaussian 09, revision A.1; Gaussian, Inc.: Wallingford, CT, 2009.



SWNT (6.6) doped with two atoms of N to adsorb an H [2]

- **11256 | A hands-on approach on botnets for a learning purpose**

Dias, João P., Faculdade de Engenharia, Portugal

Pinto, José P., Faculdade de Engenharia, Portugal

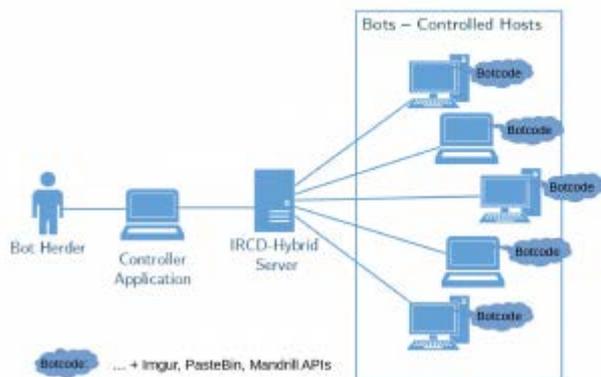
Martins, Eduardo, Faculdade de Engenharia, Portugal

Sá, João, Faculdade de Engenharia, Portugal

A Botnet is, by definition, a collection of computers that varies from tens to millions. It runs special software that effectively allows the machines to be remotely controlled.

In the most common situation, computers are recruited for a Botnet by an attacker that is able to exploit vulnerabilities, either of the system software or of human users (by social engineering), to infect the computers with the special crafted software that allows the remote control of the individual machines (now, 'bots'). Types of malicious usage of these Botnets are: spam (delivery of unsolicited email), manipulation of online polls/contests, denial of service attacks.

But there are also cases where 'botnet software' is installed on purpose and authorized by the computers' owners, to be used for beneficial purposes. Such is the case of the SETI@home initiative. There is a need for an easy way to learn about Botnets: what they are, how they work, how they can be given good use. For that, we have developed an educational software project that on one hand, consists of a wiki with information on botnets, its anatomy, architecture and impact on the Internet. On the other hand, consists of an open-source botnet software kit with built-in functionalities useful to anyone with some computer technical knowledge, to experiment and find out how botnets work and can be changed and adapted to a variety of useful applications, such as introducing and exemplifying security and distributed systems' concepts.



Project's Architecture Overview

- **11205 | A synergistic combination of magnetic and lipid nanoparticles for cancer treatment**

Horta, M, UCIBIO/REQUIMTE, Departamento de Química Aplicada, Faculdade de Farmácia, Universidade do Porto, Portugal

Nunes, C, UCIBIO/REQUIMTE, Departamento de Química Aplicada, Faculdade de Farmácia, Universidade do Porto, Portugal

Reis, S, UCIBIO/REQUIMTE, Departamento de Química Aplicada, Faculdade de Farmácia, Universidade do Porto, Portugal

This work followed a three-pronged approach. First and foremost, a PTX-loaded NLC formulation was optimized through an iterative process. The final iteration yielded a 118nm spherical nanoparticle suspension with a ζ -potential of -29mV, PDI of 0.113 and encapsulation efficiency higher than 99%, which was then used as a stepping stone for the third section of this work. Secondly, a fast, reliable and reproducible synthesis methodology for SPIONs was designed, developed, optimized and characterized. The developed process was based in a microwave-assisted method and resulted in crystalline iron oxide nanoparticles with a null coercivity, in a range of diameters (5-15 nm) with a few multi-domain outliers. The possible existence of a thin maghemite coating was not ruled out, as there was evidence of strong interparticle dipolar interactions. In the last section, a PTX-SPION-loaded NLC formulation was optimized through a Box-Behnken experimental design and characterized. The chosen formulation was synthesized with a ratio of solid to liquid lipid of 7, 10mg of paclitaxel and a 15 minutes sonication time. It resulted in a 95nm NLC with 0.165 of PDI, PTX encapsulation efficiency of 81% and a -29mV ζ -potential. SQUID and XRD measurements confirmed the SPIONs' presence inside the NLCs. The formulation showed a slow and uncharacteristic release profile, withholding three quarters of the encapsulated PTX for more than 68 hours, with a higher release in a simulated neoplastic environment.

- **11173 | ABLATIVE COMPOSITES FOR ATMOSPHERIC RE-ENTRY VEHICLES**

Rodrigues, Daniel E.S. , Faculty of Engineering of the University of Porto, Department of Mechanical Engineering, Portugal, Portugal

Torres Marques, António, Faculty of Engineering of the University of Porto, Department of Mechanical Engineering, Portugal, Portugal

Martins, Marta, Institute of Science and Innovation in Mechanical and Industrial Engineering (INEGI), Portugal, Portugal

Nuno, Rocha, Institute of Science and Innovation in Mechanical and Industrial Engineering (INEGI), Portugal, Portugal

Belinha, Jorge, Faculty of Engineering of the University of Porto, Department of Mechanical Engineering, Portugal, Portugal

Araújo, Aurélio, Instituto Superior Técnico, University of Lisbon, Department of Mechanical Engineering, Portugal, Portugal

One of the biggest challenges of space transportation is bringing back a spacecraft to Earth or achieving safe entry and landing on other planets. During the atmospheric entry phase of the flight the vehicle is subjected to severe heating caused by extremely high gas temperatures. Ablative materials are thermal protection systems (TPS) for atmospheric re-entry vehicles that manage the heat flux that reaches the surface of the spacecraft through material consumption. This is a solution that ensures the integrity of the structure during de re-entry. Various ablative materials have been studied in the field of composites to create a range of systems able to cover the thermal and mechanical demands of all interplanetary missions. From this broad concept of ablative composites, a state of art was studied. The ablation process and the mechanisms of energy dissipation were described. Ideal ablative requirements were listed, different existing materials, their applications as well as their manufacturing processes have been investigated. In a second phase, emphasis was given to the importance of implementing characterization techniques in order to describe the behaviour of these materials. In a final stage of the project, some thermal and mechanical characterization tests were performed at Institute of Science and Innovation in Mechanical and Industrial Engineering (INEGI) using the P50, an ablative cork-based material manufactured and provided by Amorim Cork Composites.

- **10945 | Acidity Reduction in Chicken Fat by Enzymatic Esterification**

Mata, Teresa, FEUP, Portugal

Trovisco, Isabel, FEUP, Portugal

Pinto, Ana, FEUP, Portugal

Matos, Elisabete, Soja de Portugal SGPS, Portugal

Martins, Antonio, FEUP, Portugal

Caetano, Nídia, FEUP, Portugal

This work aimed to study the reduction of acidity in chicken fat through enzymatic esterification with ethanol to convert free fatty acids (FFA) to ethyl-esters. Chicken fat samples were collected in a Portuguese company and characterized for their acid value (3.3-6.3 mg KOH/g fat), iodine value (73-109 g iodine/100gfat), kinematic viscosity (36.67-39.87 mm²/s at 40 °C), density (0.918-0.924 g/cm³ at 15 °C) and moisture content (0.2-0.4 wt%). For the esterification four enzymes were tested as catalyst (Novozym 435, Lipozyme RM IM, Lipozyme CALB L, Palatase 20000 L) and selected the one with the largest acid value reduction (Novozym[®] 435 from Novozymes, a CALB lipase immobilized on a hydrophobic carrier or acrylic resin). Different operating conditions were studied: reaction temperature (35, 45 and 55 °C) and time (from 0 to 5 h), enzyme/fat ratio (0.0012 and 0.0024 wt/wt) and ethanol/FFA ratio (1.0, 1.1, 1.5, 1.6 and 3.1 wt/wt). Results showed that at the best operating conditions (2 h of reaction time, 55 °C of temperature, enzyme/fat mass ratio of 0.0024 and ethanol/FFA mass ratio of 1.6) a 57 % reduction of FFA is achieved in just one reaction step. The reaction can be further optimized or a second esterification can be performed for further reducing the FFAs. Also, a method for continuously removing the water formed during the reaction can be used.

- **11330 | Agent Strategies in Smart Energy Markets - PowerTAC 2016**

Silva, João Pedro P. , LIACC / DEI, Faculdade de Engenharia, Universidade do Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal,, Portugal

Rúbio, Thiago R.P.M., LIACC / DEI, Faculdade de Engenharia, Universidade do Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal,, Portugal

Cardoso, Henrique L., LIACC / DEI, Faculdade de Engenharia, Universidade do Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal,, Portugal

Unable to respond to the requirements imposed by Smart Grids [1], current energy models can not answer the emerging questions, such as how to predict demand or to better adjust supply-demand? As direct result, there is the need for new market approaches. This work considers the creation of efficient market tariffs by software agents, an important problem to tackle [2]. Figure 1 shows tariff features, such as dynamic prices, fees, and periodic payments that can create attractive conditions to customers. We follow the approach of [3], using an agent-based approach to create specialist software agents to monitor different information and compose, together, better tariffs. Since actual Smart Grid frameworks are still under development, applying new tariffs in real markets is impossible. Thus, the performance of our system is verified in the PowerTAC [2] simulation framework, and the results will be validated in the PowerTAC annual world competition.

References:

[1] Ramchurn, Sarvapali D., et al. "Putting the 'smarts' into the smart grid: a grand challenge for artificial intelligence." *Communications of the ACM* 55.4 (2012).

[2] Ketter, Wolfgang, et al. "Power TAC: A competitive economic simulation of the smart grid." *Energy Economics* 39 (2013).

[3] Rúbio, Thiago R.P.M., et al. "TugaTAC Broker: A Fuzzy Logic Adaptive Reasoning Agent for Energy Trading." *AT*. 2015.

[4] Matetic, Sinisa, et al. "The CrocodileAgent 2012: Negotiating Agreements in Smart Grid Tariff Market." *AT*. 2012

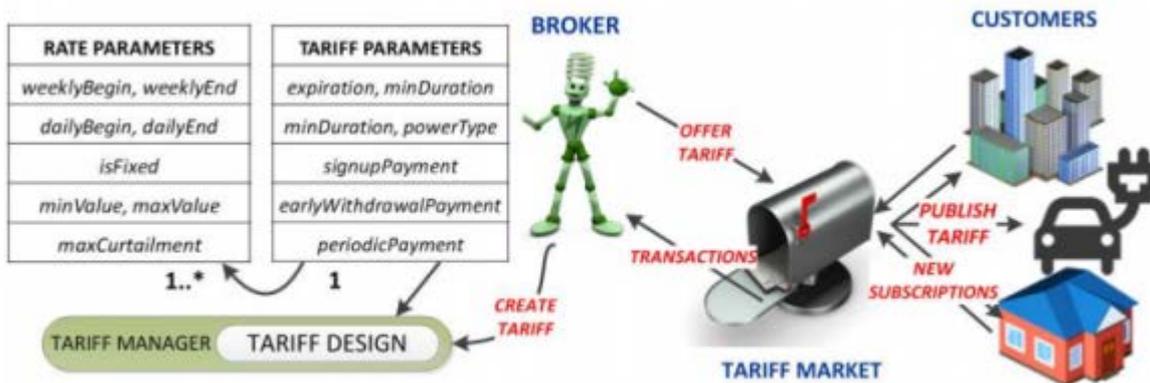


Fig. 1. Tariff features and the Smart Grid market [4]

- **11200 | Allophones contrasts in oral stops in Portuguese of northern Mozambique: for a speech therapy in adults with delayed phonological development**

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The class of stops is particularly subject to substantial variation in several dialects of Portuguese, ranging from fricativized, unvoiced and unvoiced fricativized allophones in European Portuguese [1] to affricates in Brazilian Portuguese [2]. It is also one of the most studied speech sound classes, either in the perspective of “normal” acquisition [3, 4] or in clinical approaches dealing with disordered patterns of phonological development [5, 6]. Such variation affecting the physical form of speech sounds, motivated by factors like social, dialectal or individual causes, is referred to, in linguistic terminology, as allophony/allophones. [2, 7]. The main purpose of this study is to contribute for a characterization of the allophonic contrasts of oral stops caused by the loss of [+voiced] in a variety of Portuguese spoken in Northern Mozambique by speakers who have Portuguese as their L2 and Emakhuwa (P31)/L1, in order to make it possible to design some reeducational measures which may lead to the non-crystallisation of this kind of productions, as it is done with children with disordered speech [5, 6].

Our research, empirically grounded, analyses 1.080 speech samples of noun forms collected with a MARANTZ Solid State Recorder PMD661MKII recorder and produced by 15 speakers of Mozambican Portuguese from the city of Nampula. Attention will be paid to the phonological contrasts based on laryngeal features only, since this is particularly subject to Phonological Impairments.

- **10811 | Amylin's role in nociception: a study in amylin KO mice**

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Neto, Fani L., Instituto de Investigação e Inovação em Saúde, IBMC-Instituto de Biologia Molecular e Celular, Departamento de Biologia Experimental, Faculdade de Medicina, Universidade do Porto, Portugal
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Amylin is a member of the calcitonin gene related peptide family produced by pancreatic β -cells but also by sensory neurons. Amylin binding sites were found in brain areas involved in nociception and a study showed that amylin's genetic ablation produced mice more tolerant to chemical noxious stimulation. The present study aimed at clarifying the role of amylin in the nociceptive system by comparing responses of amylin knockout (KO) mice with their wild-type littermates subjected to acute pain and 3 models of ongoing pain: visceral, chronic inflammatory and neuropathic.

Amylin KO mice were generally more sensitive to acute mechanical stimuli, tolerated better noxious cold, but no changes in noxious heat sensitivity were noticed. Both in neuropathic and chronic inflammatory pain models, KO mice were less sensitive to the different applied stimuli and accordingly, spinal c-Fos-expression, an immediate early gene expressed in nociceptive-neurons, was lower in KO mice. On the other hand, in the visceral pain model, KO animals showed more signs of pain since they had in total more writhes after intraperitoneal acetic acid injection and had more c-Fos-positive neurons. KO animals had less large-sized sensory neurons, presumably $A\beta$, and tended to have more small-nociceptors.

Overall, amylin's role in nociception seems to vary depending on the model of pain and the lack of amylin seems to involve alterations in the nociceptive system in specific neuronal populations.

- **11336 | An overview of occupational diseases: recognition and certification of work-related diseases**

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Cunha, Líliliana , Centro de Psicologia da Universidade do Porto, Portugal

Occupational diseases cause huge suffering in the world of work. Yet, occupational or work-related diseases remain largely invisible in comparison to work accidents (OIT, 2013). Therefore, it's urgent to pay attention to the recognition and certification processes of occupational diseases and simultaneously, analyse the scene of other countries in this regard.

This on-going study uses a qualitative methodology relying on the analysis of occupational disease certification processes of workers from several activity sectors, between 16 and 65 years old, supplemented by interviews with 6 workers involved in this process. The results reveal several gaps on the certification process: lack of clear criteria of evaluation ; heterogeneity in the composition of the medical boards of assessment and in their experience in this field; flaws in the communication of results; underreporting of some complaints. Plus, even when the disease was recognized, there was no involvement of employers regarding the organization of work, and workers report difficulties in obtaining prescription treatments by their doctors and refund of their medical expenses. These results were also discussed with a private non-profit organization that cares for worker's rights in this matter.

This analysis will support the proposal of an instrument that that could evidence the history of the occupational disease, allowing a more scrutinized approach of certification, which will increase the power of action of work.

- **11307 | Analysis of waste production in the exploration of highway concessions**

Duarte, André M. S., Faculdade de Ciências, Portugal

Dias, António J. G., Faculdade de Ciências, Portugal

Trabulo, Luís, Ascendi, Portugal

Peixoto, Mafalda, Ascendi, Portugal

Waste management is a current and transversal challenge to all elements of society, with a necessity for action and awareness of this issue in favor of sustainable development. It is a key step to acquire knowledge and detailed information of waste production and its management. Emerges, therefore, the importance of bridging the lack of information and knowledge, of the waste from the transport infrastructure, mainly in view of its continued expansion.

This study analyzes the concessions network of Ascendi to a characterization of waste production in the exploration regime of road networks. On average, the concessions network annually produces more than 680 tons of waste, of which about 90% are municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions. The production of waste presents a correlation function of the length of the route, where there is an exponential growth. The concessions network produces, on average, about 8 tons of waste for every 10 km route, per year, and if it is applicable to the entire national road network, waste production can amount to higher values than 11thousand tons a year.

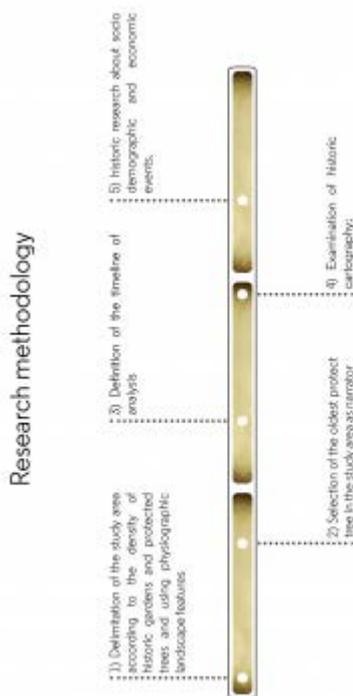
- **11313 | Ancient trees: storytellers of a metamorphosing landscape**

Diogo Filipe Pascoal Lourenço, Faculdade de Ciências da Universidade do Porto, Portugal

Cláudia Fernandes, Faculdade de Ciências da Universidade do Porto, Portugal

Isabel Lufinha, Câmara Municipal do Porto, Portugal

The city of Porto, has an important collection of old trees of monumental sizes and wide range of species, some of them legally protected. This paper analyzes the urban metamorphosis of a part of the city from the unusual perspective of one ancient and protected tree. The research methodology, attached as a picture, shows the steps work. The chosen narrator was a majestic *Liriodendron tulipifera*, located at the center of the study area and referenced has being approximately 250 years. In the 18th and 19th centuries, landscape changes can be related to the rapid population increase, mainly driven by the economic growth supported on the port wine trade. The conversion of agriculture fields into residential areas and the evolution of the urban matrix are presented and discussed, as well as the emergence of the first public green spaces, and the implementation of the road network. In this period, the detected changes had a positive impact on the urban forest since much of the current patches were planted at this time. In the 20th century, especially in the second half, the property speculation and the transports revolution were the main transmutation causes, out by estimating the loss of many trees, especially those located in private spaces. Today the landscape of the study area is consolidated and stabilized. If there is a “moral of the story” is that ancient trees are truly faithful spectators of history and can act as barometers of landscape fluxes.



research methodology

- 10951 | Anti-inflammatory activity of aqueous extracts of sea anemones in macrophages**
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 Andrade, P B, REQUIMTE/LAQV, Laboratório de Farmacognosia, Departamento de Química, Faculdade de Farmácia, Universidade do Porto, Portugal
 Valentão, P, REQUIMTE/LAQV, Laboratório de Farmacognosia, Departamento de Química, Faculdade de Farmácia, Universidade do Porto, Portugal
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 Pereira, D M, REQUIMTE/LAQV, Laboratório de Farmacognosia, Departamento de Química, Faculdade de Farmácia, Universidade do Porto, Portugal

The importance of marine organisms as a source of new bioactive agents has been growing recently. With increasing exploration of new marine habitats, several marine invertebrates have started to attract the attention of researchers, namely sea anemones from the phylum Cnidaria. Some studies have reported new compounds present in this phylum with beneficial effects, namely with anti-inflammatory activity. In this work we studied the chemical profile of two species of sea anemones: *Actinia equina* and *Anemonia sulcata* by HPLC-DAD and its anti-inflammatory activity was evaluated on a murine macrophage cell line, RAW 264.7. In both cases, the methylpyridinium alkaloid homarine was the major compound in aqueous extracts, whereas its isomer trigonelline could not be detected. The cytotoxicity of the extracts was studied in order to work in a non-toxic range to the cells for subsequent assays. The anti-inflammatory activity was studied using cells challenged with lipopolysaccharide (LPS), by the presence of nitric oxide (NO). The results revealed that the aqueous extract of *A. sulcata* are more effective in reducing LPS-induced levels of NO when compared to the aqueous extract of *A. equina* (Fig. 1). The inhibitory activity upon phospholipase A2 (PLA₂), a key enzyme in the inflammatory cascade, was also determined. Some compounds identified in the extracts were tested in order to link the activity found in the extracts to their chemical composition.

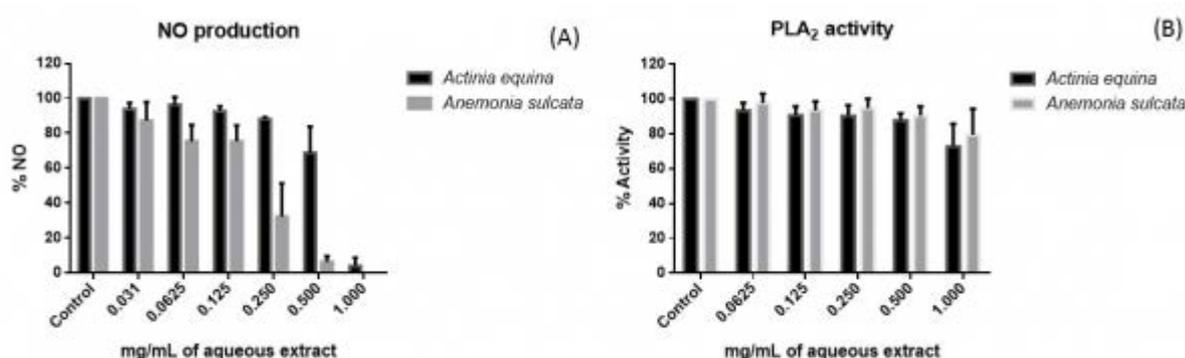


Figure 1 - (A) NO levels in LPS-elicited macrophages after treatment with aqueous extracts of sea anemones. (B) The percentage of PLA₂ activity in aqueous extracts of sea anemones. Results represented as the mean \pm standard deviation of three independent experiments.

- **11216 | Antioxidant characterization of an Ayurvedic supplement: Triphala and its constituents**

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Triphala is the name of a mixture composed by three fruits of major importance in Ayurveda phytotherapy: the Amalaki (*Embellica officinalis*), the Bibhitaki (*Terminalia belerica*) and the Haritaki (*Terminalia chebula*). They are part of the Indian traditional medicine. This ancient mixture is commonly consumed to prevent and treat a variety of diseases.

The main aim of the present study was to unveil the levels of bioactive phytochemicals and evaluate the antioxidant activity of the commercial Triphala and each of their constituents. The most common mixture of the three fruits was also tested. About 0.3 g of each commercial lyophilized fruit and also two mixtures (one commercial and 1:1:1 proportion of each fruit) were extracted with a 80% MeOH solution in an ultrasound bath. Total phenols (Folin-Cicalteau method) and flavonoids content were determined by spectrophotometric methods. Their antioxidant activity was determined by the FRAP method and by their ability to reduce DPPH radicals. All methods were miniaturized and performed directly in a 96-well microplate.

The highest antioxidant activity and bioactive compounds content was found in commercial Triphala, when compared with the values found in single fruit extracts. These preliminary results show the high synergistic potential of the Triphala mixture, with promising application in public health as source of antioxidant compounds.

- **11339 | Application of the Food Choice Questionnaire in Cape Verde**

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The Food Choice Questionnaire (FCQ) assesses the importance that subjects attribute to nine factors related to food choices: health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity and ethical concern. This study sought to assess the applicability of the FCQ in Cape Verde. The FCQ, and a food frequency questionnaire, were administered to 503 people from the island of Santiago, aged 18 years upwards. Confirmatory Factor Analysis (CFA) was used with IBM SPSS Amos v.23 to test fit of the data to the original structure. Cluster Analysis was used to segregate groups with different food choice criteria, and groups were compared regarding their dietary patterns. CFA and Exploratory Factor Analyses (EFA) revealed a suboptimal fit for the FCQ-model, with small to considerable divergences from the original configuration. EFA also revealed 9 factors: wellbeing, nutritional and dietary aspects, sensory aspects, mood, convenience, natural content, price, familiarity and ethical concern. The cluster analysis originated 3 groups: “Healthy”, “Hedonists” and “Engaged”. For the FCQ, the result of the test-retest, in the range of 3 to 4 weeks was satisfactory. The results obtained are coherent, reinforcing cross-culturality of the FCQ.

- **10851 | Are there political cleavages in foreign policy? The Portuguese case**

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Portuguese foreign policy (FP) is often cited as an example of stability and constancy, where few internal elements that alter or affect this external guidance seem to exist. This appearance of continuity and even immutability restricts the relevance of its study, and seems to indicate that decisions and changes derive exclusively from an objective process of formulation and decision-making, and also limiting (or ignoring) the role of political actors and decisionmakers, groups with uncommon positions, etc..Consequently, FP is seen as predictable, 'credible', depoliticized, and of national consensus.

Thus, in our masters' dissertation, and among other issues, we tried to assess which elements led to continuity or changes in that orientation, namely their domestic or international factors. Specifically, having as case study the analysis of government programs from 1999 to the present, we sought to identify significant divisions on FP between the parties who were in government during that time. The results suggest decision-making processes that are more complex and subject to different options than provided by realism, and also the existence of significant cleavages between different societal groups. There are noteworthy changes over time regarding the interests, motivations, goals and values behind a certain foreign orientation. In sum, there are not only ideological differences but different political groups design different policy options while in office.

- **11123 | ArgMine: Argumentation Mining from Text**

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Argumentation mining is a new research area that moves between natural language processing, argumentation theory and information retrieval.

The aim of argumentation mining is the automatic detection and identification of the argumentative structure contained within a piece of natural language text. An argument is an ancient and well studied rhetorical structure.

In order to automatically detect and identify arguments in text, machine learning algorithms (supervised and semi-supervised) will be used.

By automatically extracting arguments from text, we are able to tell not just what views are being expressed, but also what are the reasons to believe those particular views. Therefore, argumentation mining has the potential to improve some research topics such as opinion mining, recommender systems and multi-agent systems.

Receiving as input free text, the solution should be able to identify and classify the argumentative components presented in the text. This involves selecting fragments of text that will form the elementary units of the argument and classify each elementary unit into premise or conclusion.

The target corpus used to train the classifiers are news written in Portuguese language. This research area has none or little work in the Portuguese language. Therefore, this project is a pioneer in this field.

- **11086 | Aromatic alcohol and polyalcohol dehydrogenases in *Patella vulgata* (Mollusca: Gastropoda)**

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Alcohol dehydrogenases are well known enzymes, studied in many types of organisms (Riveros-Rosas et al., 2003; Höög and Ostberg, 2011). However, little is known about these enzymes in molluscs, the second largest multicellular animal phylum. Our previous work with several gastropod species allowed the detection of aromatic alcohol dehydrogenases (using cinnamyl alcohol as substrate) and polyalcohol dehydrogenases (using mannitol and sorbitol as substrate) in digestive gland homogenates. On the other hand, the activity for low molecular weight alcohols such as ethanol and methanol was insignificant in these animals. To develop this line of research we are working in the purification of these enzymes extracted from the digestive gland of the limpet *Patella vulgata*, an abundant species in the Portuguese intertidal zone. The digestive gland is the major organ of the digestive apparatus in molluscs, being the ideal target for these studies. This organ is responsible for the secretion of digestive enzymes, intracellular digestion of food particles, nutrient storage and detoxification (Nelson and Morton, 1979; Morton, 1983). Using the cytosolic fraction, these enzymes were analysed by native polyacrylamide gel electrophoresis. Fractions enriched in the enzymes of interest were obtained by chromatography. Our ultimate goal is the amino acid sequencing of these proteins and their gene identification.

- **11316 | Assessment and monitoring of school lunch plate waste at public primary schools from the municipality of Barcelos**

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Food waste is the amount of food that remains properly for consumption but it is eliminated by human action or omission. Due to the enormous amount of food involved it is a subject of great interest in the last years. The relevance of evaluating food waste includes its effects on the environment, society and economy but particularly on its nutritional consequences. This study aimed to assess the extent of food waste in the school lunch provided for nursery children and 1st grade students in the Municipality of Barcelos, in Portugal.

Four schools totaling 293 students were involved in this research. It was divided into three phases, the first and the third were developed to quantify the food waste in schools, using the selective aggregate weighing. In the second phase it was carried out an intervention to raise awareness of educators, students and canteen staff about food waste.

It was found that from the total amount of food produced in schools in this municipality, 22,7% was wasted, 11,5 % in the first stage and 11,2% in the second one. When analyzing the values of food produced, consumed and wasted, before and after the awareness strategy, it was denoted that in the first stage production, consumption and waste were higher by 0,28%, 0,17% and 0,11%, respectively. These results show a decrease in the waste volume which may indicate that the awareness strategy about food waste may be used as an effective strategy to reduce food waste in schools.

- **10957 | Assessment of Desserts Submitted to Cook-freeze Process**

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Food consumption out of home is increasingly in order to quickly achieve economic, safe and healthy meals, requiring the redesign of the logistics involved in food production system. To answer this new market requirement, several processes arose that simplify the organization of food and nutrition units, allowing a time difference between the preparation and the moment of food consumption. Cook-freeze system is one process that consists on the rapid decrease of the temperature to the freezing point ($\leq -18^{\circ}\text{C}$), in which binomial time/temperature has to be selected and optimized for each type of food. This study focuses on the assessment of desserts submitted to cook-freeze method. In this study the time and temperature of cooling was monitored for each dessert, wherein all trials reached the criterion that was previously defined. The perception of sensorial differences was also assessed through a triangular test for the difference. Perceptible differences was observed between conventional samples and CF in all trials, most of the tasters preferred the desserts submitted to CF. Through this study we conclude that the cook-freeze process is a viable method to be implemented to a dessert's system production and thus an option to be considered for food service systems.

- **11115 | Baobab fruit: Assessment of seed kernel lipid fraction**

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Fruit seeds are important sources of oils for nutritional, pharmaceutical and industrial purposes, despite their differences in fatty acids composition. To study the viability of baobab seed kernel valorization as a new alternative edible oil source, it is essential to characterize its lipid fraction.

Oil was obtained by Soxhlet extraction with petroleum ether (2.5 h). Fatty acid methyl esters (FAME) were then analyzed by GC, in a Shimadzu GC-2010 gas chromatograph with a flame ionization detector (Shimadzu, Columbia), according to Pimentel et al. (2014). Vitamin E profile (α , β , γ and δ -tocopherols and α , β , γ and δ -tocotrienols) was determined by NP-HPLC/DAD/FLD, in an HPLC integrated system (Jasco, Japan), as described by Rodrigues et al. (2015).

The results showed that baobab seed kernel presents a healthy fatty acids profile, essentially rich in oleic (C18:1n9) and linoleic acids (C18:2n6). Regarding vitamin E profile, the major lipid-soluble antioxidant in the cell antioxidant defense system, γ -tocopherol was the prevailing vitamer. These preliminary results anticipate baobab fruit as an interesting source of oil. More studies are being conducted in order to contribute to a better knowledge of this fruit intending its valorisation, given the socio-cultural importance that it has in Africa.

- **11275 | Basal Cell Carcinoma of the Skin: Epidemiology, Pathology and Genetic Syndromes. Review of the literature.**

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Basal cell carcinoma (BCC) of the skin is the most common malignancy worldwide with increasing incidence, but difficult to assess due to the current under registration practice. BCC has a low mortality with high cure rates after appropriate treatment, but it is a cause of great morbidity for patients and an increasingly important economic burden to health services. There are several risk factors associated with increased risk of BCC, and partly explain its incidence. Low-penetrance susceptibility alleles and genetic alterations in signalling pathways, namely SHH pathway, also contribute to BCC carcinogenesis. BCC associates with several genetic syndromes, of which Basal Cell Nevus Syndrome is the most common. Discrete morphologic variants influence the diagnostic procedures of patients with BCC.

- **11035 | Becoming: Metamorphosis in the Hannibal Lecter Trilogy**

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The goal of this dissertation is to explore the concept of metamorphosis as a tool towards the sublimation of character and identity. Through acts of fundamental transgression and violence, characters in stories progress from conventionality into a state of otherness that challenges a rigid understanding of identity and self-development. By exploring theories of philosophy and literature that cavort with the most forbidding and dark aspects of human nature and the nature of the real, I aim to create a discourse that is fearless and open to the complexity which such subjects often anticipate; to see what there is to be seen, and to welcome the connections and implications that follow.

My research centres on Thomas Harris's The Hannibal Lecter Trilogy, specifically around the character of Hannibal Lecter, a character that is both very rich in its complexity and often misunderstood because of his monstrosity. To help me perform this analysis, I go through three different approaches which I find essential. The first one is the Gothic literary genre based on Matthew Lewis's The Monk; the second is Ovid's exploration of identity and transformation in Metamorphoses; lastly, Nietzsche's theory of the overhuman and the will to power as it is discussed in Thus Spoke Zarathustra.

The interrelation of the different fields that I bring together in my research creates a new discourse on metamorphosis and identity by viewing texts and characters - indeed life itself - as infinitely complex.

- **11098 | Beneficial effects of nano-silicon on the tolerance of barley exposed to high levels of NiO nanoparticles and acetaminophen**

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The contamination of soil with organic and inorganic pollutants has been increasing, affecting normal plant metabolism. Thus, new strategies to increase plant tolerance to soil degradation need to be developed. In this study, the role of nano-silicon (Si-NP) on the tolerance of barley to Ni nanoparticles (NiO-NP; 120 mg kg⁻¹) and acetaminophen (AC; 400 mg kg⁻¹) was studied. After 14-days of growth in OECD soil, plant material was collected and used for biometric and biochemical parameters. The exposure of barley to NiO-NP resulted in a decrease of both fresh and dry weights, compared to the control, followed by an increase of lipid peroxidation (LP) and proline levels in leaves. However, in response to simultaneous Si-NP application, the phytotoxic effects of NiO-NP were partially recovered, since a significant reduction in both LP and H₂O₂ content was found. Regarding AC, the treatment induced a strong negative effect on biometric parameters and an increase of H₂O₂ levels in roots. Although LP did not change, a rise in proline levels was found, suggesting a possible response against oxidative stress. The simultaneous application of AC and Si-NP led to a marked decline of LP in roots, yet H₂O₂ remained higher than in control plants. Overall, the obtained results suggest that Si-NP can mitigate the phytotoxic effects of NiO-NP and AC on barley, possibly by limiting the induction of oxidative stress and/or activating an efficient response of the antioxidant system.

- **10977 | Benzoquinones from *Cyperus* spp. as proteasome inhibitors: activity and structure-activity relationship**

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The 26S proteasome is located in the cytoplasm and nucleus of eukaryotic cells and is composed of two subunits, a regulatory subunit (the 19S subunit) and a catalytic subunit (the 20S subunit). This enzyme complex is the largest non-lysosomal pathway proteasome related to degradation in eukaryotic cells that is involved in the degradation of oxidized species, misfolded proteins and incorrect folding and presentation of antigens being responsible for regulating the levels of proteins and transcription factors. The complex set of subunits thus regulates diverse cellular processes such as apoptosis, signal transduction, cell cycle regulation, cell differentiation, and inflammation mitosis. The family of *Cyperaceae* is well distributed throughout the hemisphere, with at least fifteen species of the genus *Cyperus* being described in Portugal. In what regards their chemical composition, their diversity in quinones is to be highlighted. According to their structure, quinones may be sorted as benzoquinones, anthraquinones and naphthoquinones.

In this work we evaluate the proteasome inhibitory activity of some benzoquinones and their derivatives isolated from *Cyperus* species, in particular Cyperaquinone, Dihidrocyperaquinone, Tetrahidrocyperaquinone and Scabequinone. The structure-activity relationship will also be presented and discussed.

- **10966 | Biodiversity and Chemodiversity of Extreme Polar Bacteria**

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Microorganisms represent an extremely rich reservoir of potentially valuable natural small molecules on the planet, such as polyketides and nonribosomal peptides.

Here, we present a project that aims to study the diversity of Bacteria from the Dry Valleys - the largest ice free zone in continental Antarctica and one of the coldest and driest terrestrial environmental on Earth, with the objective of searching for new secondary metabolites produced by Antarctica's cyanobacteria or actinobacteria isolates. So far, two cyanobacterial endolithic strains have been successfully isolated, from a sandstone sample. Additional samples collected from a soil transect are in isolation process. Data obtained from the morphological and molecular characterization indicate that two of the strains exhibits high similarity with *Leptolyngbya antarctica*, possess genes involved in the PKS biosynthetic machinery, and thus has the genetic potential to produce bioactive compounds of polyketide nature. In order to isolate secondary metabolites produced by one of these strains (and from others that may eventually be isolated), large-scale cultivation followed by organic extraction of the biomass has been executed. Bioassays (Antimicrobial, Enzymatic and Cytotoxic) were performed and the promising results obtained allowed us to conduct the isolation process. Thus, future work to isolate the compounds responsible by the bioactivities will include "flash chromatography", HPLC and LC-MS analysis.

- **11208 | Biophysical study of the effect of modified cell-penetrating peptides on lipid membranes**

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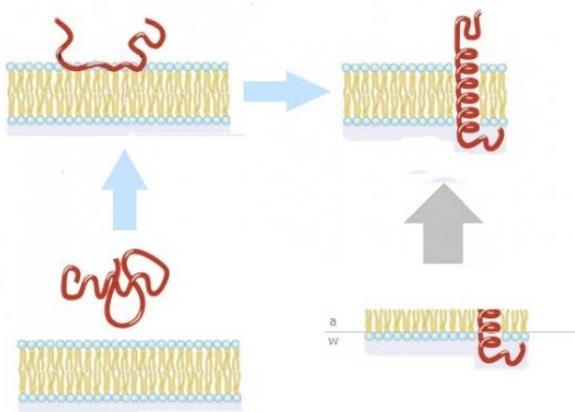
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Recent innovative therapeutic strategies involve the use of new drug delivery systems that may reach target cells and properly release their bioactive cargo, which may be genes, proteins, other drugs or diagnose agents such as imaging molecular probes. In order to make gene therapy clinically feasible as well as to improve peptide and protein delivery, a specific kind of small, positively-charged peptides called cell-penetrating peptides (CPP) look promising for advanced delivery, as they induce cell uptake by translocating in the membrane, changing their conformation through a direct peptide-membrane interaction of electrostatic nature. Consequently, membrane lipids play a key role in this interaction and therefore in their mechanism of action.

We have analysed the interaction of acylated S413-PV analogs with lipid membrane 2D models at the air/water interface through Langmuir monolayers in order to gain insight on the effect of the acyl chain added to the peptide, which provides it with a chemical structure similar to that of the hydrophobic moiety of most membrane lipids. Obtained results confirmed that different chain lengths lead to different degrees of interaction.



Mechanism of insertion of a S413-PV CPP into the cell membrane.

- **11012 | Bioremediation of pharmaceuticals by autochthonous microorganisms in aquatic environment**

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Pharmaceuticals are recognized as emerging contaminants, since they can reach the aquatic environment as a consequence of their inefficient removal by wastewater treatment plants (WWTP). The present work aimed to develop bioremediation techniques that can stimulate the intrinsic capacity of autochthonous microbial communities to degrade pharmaceuticals in an urban estuary and associated WWTP. As representatives of extensively used pharmaceuticals, an antidepressant drug, paroxetine, and a lipid regulator, bezafibrate, were chosen.

Enrichment experiments, consisting of mixed cultures of autochthonous microorganisms, were carried out in batch mode, under different conditions (agitation vs. static), by exposing the cultures to the different pharmaceuticals (1mg/L) in co-metabolism with acetate (500mg/L). The biodegradation potential was monitored at the end of each feeding cycle (14 days) by pharmaceuticals analysis by HPLC. Microbial biomass growth was followed by measuring the optical density of the cultures.

Results showed differences in terms of removal efficiency between the two pharmaceuticals. In addition, the agitation conditions affected the removal efficiency of the pharmaceuticals and the microbial growth. Complementary analysis will allow to optimise the conditions for removal of the studied pharmaceuticals, contributing to the development of new strategies for the control and reduction of estuarine pollution.

- **10819 | Bluetooth Based Warning System for Ambient Assisted Living**

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The elderly are the fastest growing age group, especially in developed countries. These people tend to live alone, which leads to Emergency Medical Services (EMS) taking longer to be notified than would be preferred and even longer for them to act. It would be preferable for these emergencies to be prevented rather than treated. Wireless Sensor Networks have been in the research interests of the academic community for a few years now, and the Internet of Things is growing faster than ever. One can take advantage of these new developments and apply them to Ambient Assisted Living in order to allow the elderly to live in their preferred environment for longer. This has several positive effects: it increases elderly people's quality of life, their independence, and puts less strain on emergency services. In this work we present a system based on a relatively new wireless technology: Bluetooth Low Energy. This technology offers us smaller bandwidth performance when compared to its older counterpart (classic Bluetooth) but with greatly increased battery life. Our system functions in a peer-to-peer architecture while providing a framework for being expanded into more scalable options. A small Microcontroller with BLE capabilities running a custom interpreter allows the user (a tech-savvy elder or his/her caregiver) to set rules that, using sensors and estimating distance to a connected device, can contextually act in order to prevent emergency situations.

- **11319 | Calibration framework for low-cost environmental micro-sensors**

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The Urbansense platform is an urban-scale infrastructure for monitoring the air quality and weather conditions that is currently being deployed in the city of Porto.

The platform consists of several sensing units, deployed all over the city, that send the collected data to a cloud infrastructure, either via a static wireless infrastructure, or via a mobile vehicular network that relays the sensed data to the cloud infrastructure. The environmental data is then made available for the city and its citizens.

Each sensing unit is composed by low-cost air quality, noise and weather sensors. However, such type of sensors were designed for high concentrations. The majority of these low-cost sensors are delivered un-calibrated or with a calibration that is inappropriate for low concentrations. Moreover, sensor readings are subject to drift due to atmospheric conditions and ageing effects. Thus, the platform needs not only an initial calibration, but also periodic update of calibration models.

The goal of this work is to develop a software framework for supporting calibration solutions, thus enriching the quality of measurements. The models for sensor calibrations will be developed using machine learning techniques. The software framework will enable periodic sensor calibration of all sensors of the platform without requiring that they are unmounted, resorting to special mobile calibration nodes. The calibration models and raw data are kept on the cloud and can be periodically updated.

- **10981 | Carbon Footprint of the Insulation Cork Board**

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Cork is a natural, versatile and sustainable raw material extracted from the oak bark with interesting thermal and sonorous insulation properties, aside from impermeability, slow burning and durability. The Insulation Cork Board (ICB), commonly known as black cork agglomerate, is produced from the expanded cork in the form of insulation plates with different thicknesses. This work aims to calculate the carbon footprint of ICB produced by the Portuguese company SOFALCA, following the life cycle assessment (LCA) methodology. Therefore, all process steps from “cradle-to-gate” were taken into account, from cork extraction to transportation and ICB production. The data needed for the analysis and quantification of the net greenhouse gas emissions was gathered from the company’s environmental product declaration (EPD) (http://sofalca.pt/en/pdf/EPD_Sofalca_EN.pdf) and complemented with data available in the LCA SimaPro 7.3 software, concerning the transportation of cork, and in the Intergovernmental Panel on Climate Change (IPCC) database, concerning the company internal transportation. Results of the ICB carbon footprint can be used for comparison or benchmarking purposes with other insulation materials available in the market (e.g. Expanded Polystyrene (EPS), Extruded Polystyrene (XPS), Polyurethane (PUR), Stone Wool (SW), or Light Expanded Clay Aggregates (LECA)) and for the identification of possible improvements in the ICB life cycle steps.

- **11147 | Castanea sativa bur extract as active ingredient in topical formulations**

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Chestnut production generates other products without economic value, namely bur and shell, but with interesting chemical composition. The aim of this work was the formulation and comparison of 8 topical gels with different percentages of bur hydro-alcoholic extract as active ingredient (from 5% to 100%) in order to select the best one for cosmetic purposes. First of all, the in vitro cytotoxicity of the extract was evaluated with a MTT assay, at different concentrations, in keratinocytes. After that, different technological parameters were used to characterize the formulations (organoleptic characteristics, color, pH, or rheological behavior) and the antioxidant content were evaluated by total phenolics and flavonoids content (TPC and TFC, respectively), DPPH (radical 1, 1-diphenyl-2-picrylhydrazyl) and FRAP (Ferric Reducing Antioxidant Power) assays.

Results showed that cell viability depends on the extract concentration: as concentration increases cell viability decreases. The technological profile of all formulations was similar. However, particular attention should be given to pH. The highest antioxidant activity was obtained for the gel with 100% of extract. Considering all results, the 50% extract gel was selected as the best one. Results suggested that bur hydro-alcoholic extracts could be used as new active ingredients in cosmetic formulations.

- **10936 | Characterization and concentration of Ti-spheres in fly ash cork powder**

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To decrease the generating of waste by industries, the EU's Framework Directive (2008), encourage the reuse of waste materials by classifying them as by-products. Vassilev et al. (2013), consider that improving the knowledge on composition and properties and apply it for sustainable utilization and environmental safe disposal are two fundamental aspects related to the use of biomass ash.

Cyclone fly ash samples from Quercus suber cork powder combustion (1000°C) were collected at RELVAS II enterprise.

Eight samples (100g each) were manually splitted: one sample was kept dried and another was mixed with 600 ml of water; five samples were submitted to float/sink in a 600ml water and Calgon (13g) solution for 1 and 24h, and after to 1 or 60min ultrasounds; one sample was previously submitted to 1min ultrasounds followed by 24h in the sink-float solution. Then wet and dry granulometric separation tests were carried with 100, 200, 325 and 550 mesh sieves

Bulk, and sieving sub-samples were the analyzed by SEM/EDS at CEMUP using FEI Quanta 400 FEG ESEM / EDAX Genesis X4M instrument.

The results showed high variation between the dry and wet sieving tests. However, it was found that the dry sieving may yield up to 60% of <25 μm fraction. In this fraction, the SEM/EDS analysis revealed high quantities of Ti-spheres, which were concentrated in different proportions according to the sink/float and ultrasounds treatments. Ti-spheres are more concentrated in the fly ash <25 μm fraction.

- **11172 | Characterization of the Glutamine Synthetase (GS) gene family in *Solanum lycopersicum* (cv. Micro-Tom)**

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Solanum lycopersicum (L.), also known as tomato plant, is a member of the SOLANACEÆ family. Tomato culture is made mainly as a protected culture whereby the environmental conditions could be adjusted to improve its productivity. Glutamine synthetase (GS) is a key enzyme in the improvement of plant yield and N-use efficiency and the study of more suitable growth conditions to improve its activity is of pivotal importance.

This work aimed to identify the *S. lycopersicum* GS gene family and to characterize the expression of the different GS genes in diverse physiological and environmental conditions. A search on genome databases showed the existence of 5 GS genes in *S. lycopersicum*, 4 encoding cytosolic isoforms (collectively termed GS1) and one encoding a chloroplastic isoform (GS2). The expression of the different GS genes was performed in the several organs of Micro-Tom cultivar plants, during early seedling establishment and in plants growing in different ammonium nutritional conditions, by RT-PCR using primers designed specifically for each of the genes.

GS expression patterns reveal a differential expression of the 5 genes in *S. lycopersicum*, disclosing divergent roles of the different GS isoforms in plant metabolism. This work will contribute to a better understanding of nitrogen metabolism and its regulation in *S. lycopersicum* and will open new ways to conveniently explore the involvement of GS in nitrogen use efficiency and plant productivity in this important crop plant.

- **11282 | Childhood overweight and obesity: Influence of cooking skills in familiar context**

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Aim: Evaluate the relation among diet quality and cooking practice and skills of parents or caregivers, with children/adolescents nutritional status.

Methods: A total of 153 parents or caregivers and their respective children were attended in paediatric consultation and data were collected through a structured questionnaire directly applied to the participants. The diet quality of parents or caregivers was assessed through the degree of adherence to the Mediterranean dietary pattern (PREDIMED scale) and the cooking skills through the Hartmann et.al. adapted scale.

Results: It was found that 93.5% of parents or caregivers were children's parents (father/mother), 87.6% were female and 31.5% had overweight and 15.4% obesity. It was observed that 53.6% of children were male, had about 10 years and 6 months (± 4 years and 6 months), 25.5% had overweight and 17.0% obesity. Only 13.7% of parents or caregivers had a great adherence to the Mediterranean dietary pattern and the average of cooking skills was 4.95 (± 1.00) points. The BMI and gender of parents and caregivers were found to have a significant effect on prevalence of overweight and obesity in children.

Conclusions: There wasn't a significant relation between diet quality and cooking skills of parents or caregivers, with the nutritional status of their children. However gender and BMI of parents or caregivers were identified as one of the main factors that influence the risk of developing overweight and obesity in children.

- **10952 | Clustering of shrimp and prawn species by DNA barcoding and HRM analysis**

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Shrimps and prawns are potential targets for adulteration due to their phenotypic similarities, which stress the need for the development of efficient analytical methods for their differentiation. The aim of the present study was to evaluate the use of a DNA barcode of cytochrome oxidase I (COI) gene for the discrimination of five genetically related shrimp and prawn species by real-time polymerase chain reaction (PCR) coupled to high resolution melting (HRM) analysis. In silico barcoding analysis was performed for the design of universal primers targeting a COI region of the selected species, namely *Penaeus monodon*, *Penaeus indicus*, *Metapenaeus affinis*, *Litopenaeus vannamei* and *Penaeus kerathurus*. DNA was extracted from the muscle tissue using NucleoSpin Food kit. Specificity and sensitivity of the designed primers were assessed by qualitative PCR.

By conventional melting analysis, COI amplicons presented two groups of melt peaks: one at 73.6°C (*L. vannamei*) and the second in the range of 75-76°C (*P. monodon*, *P. indicus*, *M. affinis* and *P. kerathurus*). The application of HRM analysis allowed the discrimination of all five species that were included in five distinct clusters with a level of confidence above 99%. These findings suggest that COI gene is an effective gene marker for shrimp and prawn species authentication. To our knowledge, it was shown for the first time that HRM analysis allowed the rapid discrimination of shrimp and prawn species.

- **11120 | Coatings based on antimicrobial peptides for prevention of bone implant associated infections**

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Implant-associated infections are still a major problem in the medical field. Antimicrobial peptides (AMPs) immobilization on biomaterial coatings appears as a promising strategy to prevent implant bacterial colonization. AMPs are a class of broad-spectrum antibiotics, with low tendency to induce resistance, high selectivity towards microorganisms and fast killing even at low concentrations, making them excellent alternatives to conventional antibiotics.

We propose the development of an antimicrobial coating, based on the covalent immobilization of the peptide MSI-78 (4-20) onto a chitosan thin film [1].

MSI-78 (4-20) is a cost effective short AMP, a 17-mer peptide, derived from the well-known MSI-78 (22-mer) and demonstrated to be as effective and less toxic than the parent AMP.

MSI-78 (4-20) was covalently immobilized on the chitosan film using a PEG heterobifunctional crosslinker. Surfaces were characterized using ellipsometry, contact angle measurements, fourier transform infrared reflection absorption spectroscopy (FT-IRRAS) and x-ray photoelectron spectroscopy (XPS).

In this work we successfully immobilized MSI-78(4-20) through a PEG spacer in ultrathin films of chitosan.

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- **11149 | Cocaine and heroin act antagonistically to promote cytotoxic mixture effects in rat primary hepatocytes**

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Similarly to other illegal drugs of abuse, cocaine is also frequently misused together with other drugs. Heroin is one of the most prominent examples of these combinations and the association of these two drugs is commonly referred to as speedball. The liver is known to be one of the main targets for the toxicity of cocaine and heroin in humans.

Our work aimed to study the hepatotoxic mixture effects of cocaine and heroin.

Primary cultured hepatocytes isolated from Wistar rats by collagenase perfusion were exposed to cocaine and heroin, individually or in combination. The mixture ratio (HER2:CO1) was selected on basis of the blood concentrations achieved in intoxicated abusers. After 24 hours, the cytotoxicity was recorded by the MTT viability assay. Mixture expectations were calculated using the concentration addition (CA) and independent action (IA) models, based on the detailed cytotoxic information of the individual drugs.

Heroin revealed to be approximately four times more toxic than cocaine (EC50 1.07 mM and 0.26 mM, respectively). The mixture toxicity predicted by CA and IA was coincident (EC50 0.37 mM) and higher than the effects experimentally attained (EC50 0.52 mM).

It is conceivable that metabolic interactions between both drugs (not contemplated by CA and IA models) are at a play, resulting in antagonisms. Understanding the impact of this interaction might provide valuable information to dissect the causes behind reported sudden and random lethal intoxications.

- **10882 | Computational studies addressed to the catalytic mechanism of Histidine Decarboxylase**

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Mammalian histidine decarboxylase (mHDC) is an enzyme that requires pyridoxal-5'-phosphate (PLP) as a cofactor [1-2] and catalyses the L-histidine decarboxylation from which results histamine. Histamine plays a key role in several biological events such as immune response, gastric system modulation and as a neurotransmitter in the nervous system. Several inhibitors for histamine action have been studied in order to treat some diseases such as atopic dermatitis, allergies, and cancer.

mHDC has been studied for a long time, but only in 2012 Komori's [3] group was able to determine the X-ray structure of the enzyme and revealed the active site environment. Till date, only hypothesis about the catalytic mechanism of mHDC were available and based on homology models.

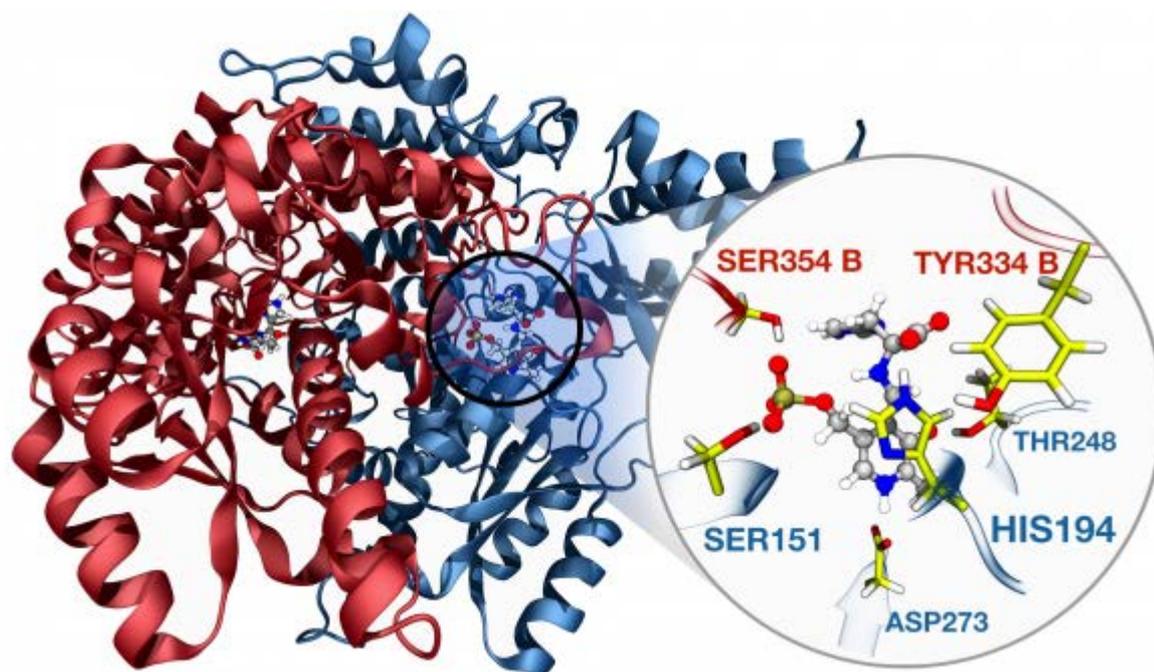
In this work, we studied the catalytic mechanism of mHDC by computational approaches using the recent X-ray structure of mHDC (PDB: 4E1O [3]) and a QM/MM methodology.

The results have shown that mHDC catalyses the reaction in a two-step type of mechanism. The 1st step involves a decarboxylation that is followed by the formation of a stable carbanion. In the 2nd step, the carbanion is protonated by a base from which results histamine.

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Structure of the Human L-Histidine Decarboxylase dimer

- **10853 | Conceptions of Education established the Programme for the Portugal - Angola cooperation**

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ABSTRACT

The study object that crosses this text are the concepts of education that are set out in the indicative program of Portugal-Angola cooperation. It is intended to realize that instrument from the joints like the sense of education is built. The work made use of theoretical and methodological references inspired by the need to mobilize content of various courses of the course and the principle of interdisciplinarity. As the methodological references, agree to say that the work was oriented on the basis of discourse analysis, variant theory of political discourse, which identified the presence of a discourse that combines education policy design with intention to justice, gender notion, the notion of ethnicity, the notion of universal, and affordable design, with claim to inclusion and reduction of poverty, equitable distribution of economic returns, providing education and training as a legitimate structure for this purpose.

Keywords: Development cooperation; Cooperation in education; Political discourse; Emancipation of-domination; Sociology of Termination; Sociology and capital Persistence.

- **11033 | Concrete Architecture - Notes on a present approach**

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This investigation is the result of an experience conducted at EPF Lausanne. It looks at the methodology implemented by the design course *Concrete Architecture*, which derives from convictions that the architecture tutors - Lorenzo Giuliani and Christian Höninger - have filtered in a dialectical discourse.

The present paper pretends to discuss the experimental approach adopted by this design course and proposes a discussion around the main design themes, seen as concepts to guide an architectural project. It also addresses the topic of teaching through design, and starts with the conviction that architecture conflates the theoretical and the practical sphere.

Bearing in mind a selection of the tutors' works - where these themes are expressed-, and the fundamental writings that characterize their practice, this research aims to inquire the validity of some positions and attitudes as means to architectural conception. The main focus is related with spatial concepts and the interdependence between design and construction associated to specific material - concrete.

Based on the notion of *espace texture e* - introduced by the architect and historian Jacques Lucan -, this study wants to verify its relevance to the definition of architecture's present state and its contribution to the conception of a multifaceted discourse.

- **10734 | Continuum**

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This project consists of two aspects, one theoretical regarding the construction of a work report, and one practical stage regarding the design decisions and intervention strategy. Its area of intervention is in Massarelos and Lordelo do Ouro, in the city of Oporto, with great importance given to this area's relationship between the city and the River Douro. The Continuum took place in the academic year 2014/2015, in the area of Project V of the Integrated Masters in Architecture, under the guidance of Rui Mealha.

From the beginning of the project the connection of the lower level (Marginal) with a higher level of the city (Campo Alegre) was a premise taken into consideration in the definition of the urban strategy of the referred to area. This aspect was never neglected throughout the work, perhaps being the subject with most emphasis in the presentation of a final project proposal.

One of our goals was to link the higher level to the lower level through four main areas of intervention, the so-called operating units. The operating units would then be defined and analyzed individually, without neglecting the unity and relationship which it would be necessary to establish between the Parque da Fluvial, the Bairro do Aleixo, the University Campus and the Vale de Massarelos. The existence of this relationship between the Marginal and Campo Alegre would also ensure the relationship between the "inside" of the city and the River Douro.



Final Project Proposal

- **11185 | Contributions to the debate about tourism in training policies in the EU and in Portugal**

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Starting with the review of the structuring documents for tourism activities, both in national and EU levels and since that these are activities with implications in many other areas, it's sought to identify the regulatory nature documents that cover the tourism industry. We've tried to discuss the impact of these guiding documents of EU and national policies on tourism and in particular in education and vocational training in tourism. Doing an analysis in perspective, also sought to discuss the paths to follow in the future in regard to education and training in tourism.

In the first chapter is drawn a brief chronological evolution of education policies in tourism in Portugal, seeking to find a common thread of these policies, but also turning points that mark new approaches to this question.

The second chapter is devoted to the detailed analysis of communications on tourism of the European Commission establishing the guidelines of Community policy, with direct implications on Portugal.

In the third chapter it's discussed the evolution of the EU support frameworks in different programming periods, analyzing its application in Portugal and the impact of these structural and cohesion funds on the activities of tourism.

In the fourth and final chapter, discusses the EU strategy Europe 2020, alluding to the implications it will have on tourism, in particular through the application of the partnership agreement Portugal 2020.

- **11242 | Cosmos as a Fragment: A study of the Urban Development and Private Investment in Rua Miguel Bombarda and the Porto downtown area**

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Today, the city of Porto has become a landmark in terms of tourism. Public policy and private interest have turned their eyes towards the potential of urban heritage, directing their efforts into turning Porto into a 'liquid city' and a 'creative hub'. In this work we have attempted to uncover the undertones implied in these concepts, analysing key documents guiding public and private initiative, attempting to understand the major interests and influences underlying this sort of development in the downtown area. Focusing on this framework, and taking into consideration the case of Rua Miguel Bombarda – known national and internationally as the 'Gallery Street', and part of the 'Art District' – we likewise sought to evaluate the impact of the evolution, dissemination and urban representations of the social actors of the street in terms of business, living conditions and city culture. Stemming from a 10 month direct observation work, semi-directive interviews to key actors of the street, and documental analysis, this work attempts to provide a critique of the creative industries approach, highlighting the positive and negative aspects of its application as well as its ideological framework. Moreover, besides approaching with a critical lens much of what has been said about this, we hope to provide the tools for public policy to develop a more socially cohesive analysis of the social-relational space, towards an inclusive city.

- **11150 | Creative Incubators: the case of the Creative Industries Centre of the Science and Technology Park of University of Porto.**

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It is widely acknowledged that the cultural and creative industries (CCIs) play an important role in contemporary economies. This applies to Portugal, in line with the European Union and the economic development issues under globalisation.

Creative industries business incubators are a crucial issue within CCIs and have been supported predominantly by public funds, with the aim of promoting the emergence and sustainability of new business ideas, innovators and entrepreneurs. Their premise is to help nurture and grow businesses in early stages of development by providing a set of recourses and services. Another goal, not of minor importance, is the exploitation of the potential synergies towards the institutions that deliver them and invest in them.

The Science and Technology Park of University of Porto (UPTEC) is one of the major experiences in Portugal. The project has great expectations, particularly with regard to its Creative Industries Centre (PINC). UPTEC main goal concerns the dynamics of knowledge transfer between the academia and the market by promoting the creation of technology and creative based companies and also attracting innovation centres for their environment.

Our research proposes an in-depth description and a thorough analysis of the PINC, aiming to contribute to the systematization of the knowledge produced in this area, so that it can be applied to other similar cases; and to enlighten more solid analysis and aggregations.

- **10845 | Creativity as Rhizome**

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The study discusses the notion of creativity from the perspective of rhizome, here understood from the Gilles Deleuze's perspective. This conception of the French philosopher seems appropriate to the understanding of creativity in that it adds value to the mainstream setting , as a combination of pre-existing factors of reality . The article proposes that the notion of rhizome as a metaphor for connectivity, non- hierarchy and unpredictability is relevant for the analysis of the thought, multiplicity and uncertainty, attributes for the genesis of creative thinking.

- **11162 | Critical velocity assessment during a swimming training macrocycle**

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Critical velocity assessment during a swimming training macrocycle

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Abstract

Planning and periodization in swimming are essential tasks to reach the athletic shape peak at important competitions. In addition, to better understand the effects of the training process on swimmers performance it is crucial to evaluate and control it. From the several swimming performance determinants, physiological parameters are some of the most relevant. Therefore, we aimed to assess the critical velocity (as one of the best indicators of swimmers anaerobic threshold pace) along a training macrocycle to observe the behaviour of the swimmers aerobic capacity. The critical velocity of 10 competitive swimmers (14.7±1.6 y. old) was obtained from the slope of the regression line between the tests distance (200 and 800 m front crawl) and corresponding times during the first macrocycle of the season. Values of critical velocity were 1.14±0.08, 1.21±0.07 and 1.26±0.08 m/s in the general, specific and competitive periods, showing an evolution of 0.06±0.08 e 0.05±0.07 m/s between each moment. Moreover, critical velocity presented a very high relation with long distance competitive events ($r=0.90$, $p<0.05$). These data evidenced that the implemented training methodology allowed a relevant evolution of the swimmers' aerobic capacity, which is well related with augmented values of their anaerobic threshold indexes and increase in performance in long distance events.

Key words: Swimming, physiology, testing, critical velocity

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- **10860 | Crowdsourcing applied to Journalism: the case of P3**

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The Internet has become a means of communication with amazing advantages for journalism. Several media professionals have come to take advantage of a medium in which several individuals, with Internet access, manifest themselves, sharing a variety of contents. One such strategy is known as crowdsourcing, a form of a public contest which invites the audience to participate more actively and directly in the information process. The journalist's role is still important, since this professional is considered by the public as a keeper of information, confirming or denying certain information. In this report we aim to assess, within a given period of time, various contents published in P3 (a project associated with newspaper Público), observing the origins of the news contents published on P3 – Público, trying to figure out in which sections and sub-sections crowdsourcing content prevails and also analyzing what kind of contents P3 – Público managed to publish with the help of the cooperation from its audience.

Key-Words: Online Journalism, P3 – Público, Crowdsourcing.

- **10924 | Curcumin derivatives as potential P-glycoprotein inhibitors: synthesis and stability studies**

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Cancer multidrug resistance (MDR) is one of the causes for chemotherapy failure and it can be associated with the overexpression of P-glycoprotein (P-gp) 1. The development of P-gp inhibitors was hypothesized to circumvent this problem². Curcumin, a secondary metabolite isolated from *Curcuma longa* L., has shown antitumor activity and MDR modulatory properties. However, curcumin is chemically unstable, has poor bioavailability and extensive metabolism³. The aim of this work was to synthesize derivatives more stable than curcumin with dual activity, antitumor and P-gp inhibitor. Stability and photostability studies were conducted by comparing curcumin with two synthesized building blocks. Different assays were performed in order to evaluate the compounds stability in several pH environments, namely, biological medium buffer, temperatures and storage times. This work shows the importance of synthesizing new curcumin derivatives, in order to counteract the instability and possibly improve the curcumin dual activity.

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- **10881 | Current knowledge and distribution of mammalian carnivores in Portugal: a review of non-systematic data and publication metrics**

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Knowledge regarding species status and distribution at a regional scale is crucial for an effective management and conservation of biodiversity. Portugal, located in the Mediterranean biodiversity hotspot, still lacks a detailed assessment of the distribution patterns of its carnivores, and the little information available is scattered and often biased. This study aims to review the scientific knowledge regarding terrestrial carnivores in Portugal and assess the current and past distribution patterns for each species. We conducted a comprehensive review of 755 scientific studies and analyzed several bibliographic metrics, such as date of publication and research topic, and compiled 20319 presence records of all species occurring in Portugal. Carnivore research in Portugal began in the 18th Century and has mainly focused on the topics of 'General Ecology' and 'Conservation'. There are 15 extant species, nine of which (56%) occur across the country (>85% of country's area), six show a more limited distribution range (<40%), and one is presently extinct (brown bear, *Ursus arctos*). Since the 20th Century, the distribution ranges of eight species have remained stable, two have contracted, two expanded, two showed an unclear trend and one remained extinct. We also document for the first time the presence of a new invasive carnivore in Portugal, the raccoon (*Procyon lotor*).

- **11303 | CURRENT PROBLEMS IN HISTORIC GARDENS. THE CASE STUDY OF SERRALVES ROSE GARDEN**

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Exhibiting a complex and unique layout, Serralves Park is organized in several areas with distinct features. One of the most delicate and in need of most care is the Rose Garden. In this garden two major problems arise: the depletion of the original rose collection throughout the years; and a severe attack of boxwood blight (*Cylindrocladium buxicola*) in the hedges of *Buxus sempervirens*, which ended up compromising the geometric expression of the garden.

The main purpose of this research was to search for appropriate rose cultivars and maintenance solutions that would allow us to restore and preserve the Rose Garden's original character.

The study started with an exhaustive field survey in the garden to identify and map all its current roses and produce updated plans. A thorough historic research about Serralves Park, rose gardens and roses, focused until the 1930's (when the park was constructed), was carried on using catalogs, books, journals and Serralves archives. Research about boxwood blight unveiled some possible treatments; however, the substitution of *Buxus sempervirens* for a different species was also evaluated. This information was then gathered and used to produce a detailed recovery program. Some existing principles of formal rose gardens were identified in Serralves Rose Garden during this investigation, at the same time that it became clear which aspects should be modified or recuperated in order to ascertain the recovery of its identity.

- **10809 | Current situation of Architecture in Portugal**

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With this investigation we want extrapolate the causes for the current situation in which the architecture and all stakeholders are living nowadays in Portugal. The crisis in Portugal caused many architects to have less work. Today we live not only an economic crisis but also other problems, aggravated by the crisis and affecting Portuguese architecture.

This investigation will try understand what these problems are and how we can overcome them, will be the main purpose of this investigation. During the investigation, it will be necessary study the profession evolution in Portugal, in order to understand the citizen as client so that we can identify the barriers between clients and architects.

Means of an inquiry understand what these barriers can unable in a greater acceptance of architecture. Understand in Portugal there are architecture without architects, citizens without any academic resources. Investigate if the citizens see architects as someone who will solve their problems.

It is necessary to face reality and work for the future. Our investigation uncovered gaps in the profession and in professionals who can devalue the career and statute of architects. With the data collected during the investigation, we propose a reflection on the future business model, based on different working alternatives to the young Portuguese architects.

- **11151 | Cytotoxicity elicited by six novel psychoactive substances in primary cultured hepatocytes**

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The abuse of novel psychoactive substances (NPS) has risen in the recent years, much due to their previous legal status. With new bans on misused amphetamine derivatives, other cathinone and benzofuran analogues are being synthesized and sold in their place. These synthetic chemicals are not tested for safe human consumption.

Given the importance of the liver in the metabolism of toxicants, this project aimed to investigate the hepatotoxicity of six emerging phenethylamines: butylone, buphedrone, 3,4-dimethylmethcathinone (3,4-DMMC), 4-fluoromethcathinone (4-FMC), 6-(2-aminopropyl)benzofuran (6-APB) and 5-(2-aminopropyl)benzofuran (5-APB).

Primary cultured rat hepatocytes were exposed to the drugs at a large range of concentrations. After 24 h, cell viability was determined through the MTT reduction assay. All drugs induced a concentration-dependent effect that was highly reproducible in all experiments. 3,4-DMMC and 4-FMC proved to be the most and the least hepatotoxic drugs (EC50 0.16 mM and 2.21 mM, respectively). At the highest concentrations tested, all drugs displayed the formation of dark-brown insoluble pigments, an occurrence previously reported for 3,4-methylenedioxymethamphetamine (MDMA) analogues that is compatible with metabolism involving irreversible oxidation.

Our results shed some light on the hepatotoxic effects of NPS, about which little is known. This evaluation is essential for an assessment of the health risks associated with their consumption.

- **10855 | Dark energy and equivalence principle constraints from astrophysical tests of the stability of the fine-structure constant**

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Testing the stability of fundamental couplings, such as the fine-structure constant α , are progressively becoming a more powerful probe of new physics. Here we discuss how these measurements, combined with local atomic clock tests and Hubble parameter data and Type Ia supernova, constrain the simplest class of dynamical dark energy models where the same degree of freedom is assumed to provide both the dark energy and (through a dimensionless coupling, ζ , to the electromagnetic sector) the α variation. Specifically, current data tightly constrains a combination of ζ and the present dark energy equation of state w_0 . Moreover, in these models the new degree of freedom inevitably couples to nucleons (through the α -dependence of their masses) and leads to violations of the Weak Equivalence Principle. We obtain indirect bounds on the Eötvös parameter η that are typically stronger than the current direct ones. We discuss the model-dependence of our results and briefly comment on how the forthcoming generation of high-resolution ultra-stable spectrographs will enable significantly tighter constraints.

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- **11037 | Deciphering the innate immune response of neonates to the pathogen *Escherichia coli***

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Escherichia coli is one of the major pathogens responsible for neonatal sepsis. How the neonatal immune system responds to this bacterium is not yet clear. Hence, in the present study, we characterized the innate immune response of neonatal mice after *E. coli* infection. To mimic the route of infection in humans, newborn BALB/c mice were orally infected and then sacrificed at specific time points. The bacterial colonization were evaluated in blood, spleen, liver, lungs and brain and the levels of cytokines and chemokines, and well as immune cell recruitment, were analyzed in liver and lungs. The results showed that the organs colonization occurred as soon as 30 minutes post infection. However, the recruitment of immune cells to infected organs, the production of pro-inflammatory cytokine or chemokines were only observed at later time, 6 hours post infection. This delay in the development of the innate immune response was not due to the presence of IL-10, since alterations in the production of this immunosuppressive cytokine were not detected at early times after infection. Overall, *E. coli* is able to rapidly colonize the neonatal mice but the host does not promptly develop an immune response. Therefore, understanding the reason for the delay in immune response activation is crucial to find and develop novel therapeutic targets.

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- **11065 | Deconstructing a journey full of boundaries: History of Man in Cormac McCarthy's Blood Meridian and The Crossing**

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Is history simply what we read in books and what we take for granted? Literature has been through many changes, but if there is one thing that we can't deny, is its power to preserve culture and critical judgment--all in all, our heritage. Literature is, therefore, the memory of Man. Whether people hate or love Cormac McCarthy's novels, they are unmistakably bold and unique, having countless cultural and historical roots, and approaching timeless and controversial issues. I argue that Blood Meridian and The Crossing, his most complex and insightful works up to date, are neither empty of meaning nor negative novels. The purpose of this thesis is to gather information by examining the character's journeys, their interaction with the Other (such as people, animals and landscape) and the narrator's role, which, conjoined, will lead to a fruitful overview of mankind's history.

- **11167 | Design of a Pseudo-Differential DCO for All-Digital PLLs**

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A "phase-locked loop" (PLL) is virtually found in every electronic device in which the synthesis of a periodic reference is required - for instance a system clock signal. Lately, the scientific interest for "all-digital" PLL (AD-PLL) architectures has been growing due to the benefits over its analog counterpart, specifically due to lower power consumption, less area, lower phase noise, better testability and stability.

The digitally-controlled oscillator (DCO) is the circuit that usually dominates the overall performance of the AD-PLL. The DCO is extremely susceptible to process, supply voltage and temperature (PVT) conditions. However, even though as a closed-loop system the PLL can correct some of the DCO imperfections, process deviations can prevent the PLL from locking because of the DCO inability to oscillate at a required frequency.

This work presents a new DCO implementation technique with the purpose of achieving an extended and linear frequency range of operation and a high level of PVT immunity when compared to other approaches. A pseudo-differential DCO and respective digital control and buffer have been designed in a CMOS-RF 130 nm process and validated at the process corners. The DCO operating frequency goes from 3.9 to 5 GHz for extreme PVT. Both the power consumption and phase noise are kept relatively constant in the frequency range - the power dissipation is approximately 18 mW, and the phase noise is -86 and -109 dBc/Hz at 1 MHz and 10 MHz, respectively.

- **10920 | Determination of formaldehyde in cork based products by gas-diffusion microextraction and high-performance liquid chromatography with UV detection**

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Emission of volatile organic compounds, such as formaldehyde and acetaldehyde, from wood based products and other natural materials, can adversely alter the indoor air quality and possibly affect human health. The presence of these compounds may be associated with the use of formaldehyde based resins.

Gas-diffusion microextraction (GDME) is an analytical technique that allows the extraction of volatile compounds in a simple, fast and low-cost procedure.

In this work cork, agglomerates were analyzed and it was possible to identify formaldehyde and other aldehydes. The results showed significant differences for the analyzed samples, and a possible correlation between the results and cork agglomerates industrial production could be made. Specifically, obtained formaldehyde concentrations were lower than 10.0 mg/kg in all the analyzed products, which is in accordance with European specifications. Furthermore, the formaldehyde content determined with the GDME approach was compared using the EN 717-3 standard methodology. Similar results were obtained with the two methods for samples without varnishes or finishing.

Acknowledgements

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- **10964 | Determination of the inhibitory activity of MAO-A by medicinal plants extracts using a potentiometric sensor**

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Depression represents a major public health concern and the deficiency of monoamine levels has been proposed as the cause of depressive disorders. Since monoamine oxidase A (MAO-A) is an enzyme that metabolizes monoamines, its inhibition has been studied for depression treatment.

This work consists in developing a simple and easy method that allows to assess the ability of plant extracts to inhibit MAO-A. The spectrophotometric peroxidase-linked assay for MAO-A inhibition is also used as a screening test but has some disadvantages since it can give false positives due to possible interactions of plant extracts with the peroxidase, the chromogenic solution and with hydrogen peroxide.

Therefore, an ion selective electrode is being developed as an alternative. Several membranes based on cyclodextrine were tested in order to evaluate their selectivity to tyramine, a monoamine derived from tyrosine. The one having a better commitment between activity and stability has the following composition: α -cyclodextrine (1.0%), potassium tetrakis [3,5-bis(trifluoro-methyl)phenyl]borate (0.3%), dibutylphthalate phthalsauere - dibutylether (68.5%) and carboxylated polyvinylchloride (30.2%). A linear range was found for tyramine concentrations between 1.78×10^{-5} mol.L⁻¹ and 4.17×10^{-3} mol.L⁻¹, with a slope of 38.1 mV.L.mol⁻¹ and $r^2 = 0.9991$ (Fig.1).

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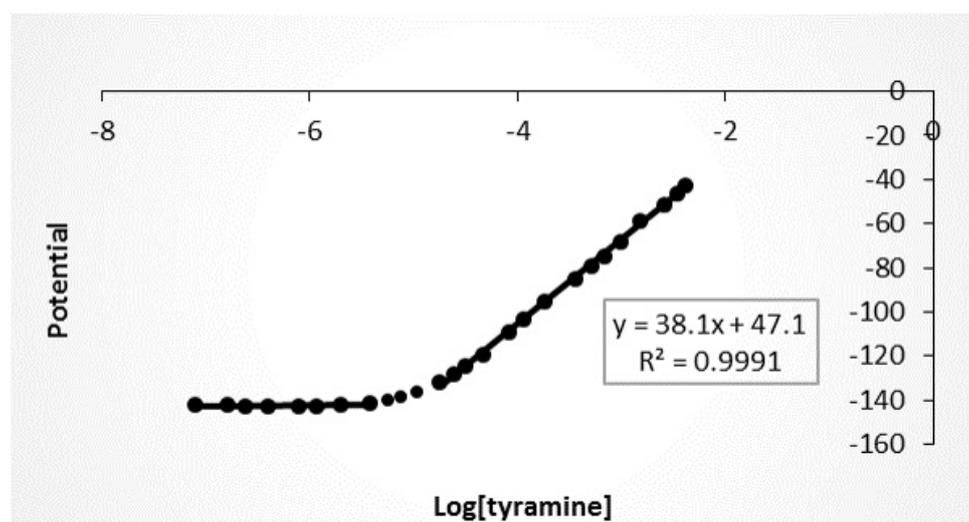


Fig.1 Membrane calibration graphic.

- **11085 | Determination of the lipophilicity of chiral derivatives of xanthenes: comparison of methods**

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Herein, we describe the lipophilicity of a series of chiral derivatives of xanthenes (CDX), previously synthesized in our group [1], using three different methods: vortex-assisted liquid-liquid microextraction coupled with liquid chromatography (VALLME-HPLC), RP-HPLC and RP-HPTLC. In addition to the experimental methods, four computational programs (ChemBioDraw Ultra 14.0®, ACD/ChemSket®, MilogP or CLogP) were also used for log P prediction.

Considering VALLME method, linear correlations were obtained ($R^2 > 0.99$ in all cases), for all the methanolic stock solutions and, in most cases, low variation coefficient values were observed.

Considering RP-HPLC method, linear correlations were found between log k values and the volume fraction of methanol in the mobile phase (R^2 normally higher than 0.99) for each CDX in both hydrophobic silica-based stationary phases (C18 and C8).

Lower correlations were found in RP-HPTLC method between the parameter RM and the proportion of methanol in the mobile phase (R^2 higher than 0.9).

Those methods were crucial for the determination of log P values, showing their importance in the evaluation of physicochemical parameters that can be useful for pharmacokinetics prevision.

This research was partially supported by the Strategic Funding UID/Multi/04423/2013 through national funds provided by FCT and ERDF, in the framework of the programme PT2020.

[1] Fernandes, C. et al. (2014), Bioorganic Medicinal Chemistry, 22, 1049-1062.

- **10914 | Development and application of an Attenuated Total Reflectance FTIR spectroscopy for screening of 'legal high' packages containing synthetic cathinones**

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Abuse of new psychoactive substances (NPS) is a reality that has increased exponentially, particularly among teenagers and young adults. The majority of NPS contain cathinones and are easily purchased online and formerly at "smartshops" or "headshops" – specialized stores - labeled as "bath salts", "plant fertilizers" and "incense". In sequence of its ban, and accurate methodologies are required for its rapid identification under field conditions. The aim of this study is therefore to investigate whether ATR-FTIR spectroscopy is an accurate and valid technique for the classification of these drugs, when combined with appropriate multivariate statistical methods. Gas chromatography-mass spectrometry (GC-MS) analysis was performed in order to identify and quantify the constituents and to assign classes of drugs. The study allowed the identification of fourteen different compounds and permitted to find different material in samples, which are labelled with the same name. Subsequently, drugs were analyzed by ATR-FTIR spectroscopy. Data were collected and analyzed using explorative multivariate tools such as principal component analysis (PCA) and hierarchical cluster analysis (HCA) and a classification tool: partial least squares-discriminant analysis (PLS-DA). PCA and HCA showed clusters between drugs with similar composition. The PLS-DA classification model, constructed from ATR-FTIR data, detected different compositions with 100% sensitivity and specificity.

- **11263 | Development and characterization of bilayer tablets with carbamazepine**

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The aim of this study was to develop and characterize bilayer tablets with carbamazepine as an immediate/sustained delivery system using three matrices, namely Kollidon® SR (inert), Protanal® CR 8223 (hydrophilic) and Lubritab® (lipidic).

In a first stage, the flow properties were evaluated. Afterwards, three types of bilayer tablets were prepared as follows: the first layer with a weight of 160 mg (100 mg carbamazepine + 60 mg Ac-Di-Sol® (superdisintegrant)), responsible for the immediate drug release, was obtained by compaction; the second layer, with a weight of 160 mg (100 mg carbamazepine + matrix excipient), responsible for sustained drug delivery, was then added to the first layer and tablets were obtained by compaction of the two layers. Weight uniformity, thickness, friability, hardness and tensile strength were evaluated in the manufactured tablets. The in vitro drug release studies were performed during 8 hours and the calculation of similarity factor (f_2) was also carried out.

Bilayer tablets with suitable physical properties were produced. However, the friability value was greater than 1.0%. The tablets allowed a quick release of the drug contained in the immediate release layer and a slow release of the same drug contained in the sustained release layer. Dissolution tests showed at 480 minutes a mean carbamazepine release from 62.7 to 91.4%. The tablets obtained from inert and lipidic matrices presented similar dissolution profiles ($f_2 > 50$).

- **11110 | Development and characterization of lipid nanoparticles containing paclitaxel for glioma treatment**

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Glioma is a brain tumor that presents a very low survival rate. Treatment presents a major problem, which is the limited capacity of drug to reach the central nervous system, due to the presence of the blood brain barrier. Paclitaxel (PTX) is an anticancer drug that presents low permeability and low solubility (Class IV of Biopharmaceutical Classification System). Solid lipid nanoparticles (SLN) and nanostructured lipid carriers (NLC) are potential alternatives for drug administration since they have a high therapeutic effect and few side effects. Therefore, the aim of this project was to develop and characterize PTX lipid nanoparticles for glioma treatment. The preparation of SLN and NLC was optimized in order to choose a method of preparation and the best pharmaceutical formulation. In addition, PTX loaded-SLN and NLC were analyzed based on the particle size, morphology, zeta potential (ZP), encapsulation efficiency (EE) and internal structure. The stability of formulations throughout time, was also studied. A PTX quantification method was partially validated by HPLC and showed goodlinearity, specificity and repeatability. The incorporation of PTX in SLN and NLC did not change its average size (± 200 nm), as well as the ZP and morphology. The SLN and NLC showed no differences in the EE (about 50%). The NLC have proven to be more stable than the SLN in incorporating PTX for at least 30 days.

- **10989 | Development and evaluation of a new chiral stationary phase for liquid chromatography**

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Over several years, xanthone derivatives have been the focus of many studies essentially due to their biological and pharmacological activities. Recently, we have shown that chiral derivatives of xanthenes (CDX) have come to arouse great interest considering both the enantioselectivity studies associated with biological activity [1] as well as chiral chromatography [2]. In fact, we proved that CDX are structures with great interest as chiral selectors for chromatography.

Herein a suitable CDX was selected and covalently bound to a chromatographic support to obtain a new chiral stationary phase (CSP). This CSP was planned based on the crucial role of π - π interactions for chiral recognition. Moreover, it was also inspired on the commercial ULMO CSP, which demonstrated a broad-spectrum ability for enantioseparation.

The performance of this CSP was evaluated by LC using diverse chiral compounds, including a library of CDX. The new CSP revealed promising results, high stability and reproducibility.

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[1] Fernandes, C. et al. (2014), *Bioorg. Med. Chem.*, 22, 1049-1062.

[2] Pinto, M. et al. (2011), Portuguese Patent nº 104679, in "Boletim da Propriedade Industrial Nº 15/2011.

- **10999 | Development of a Cardiopulmonary Resuscitation Personal Trainer**

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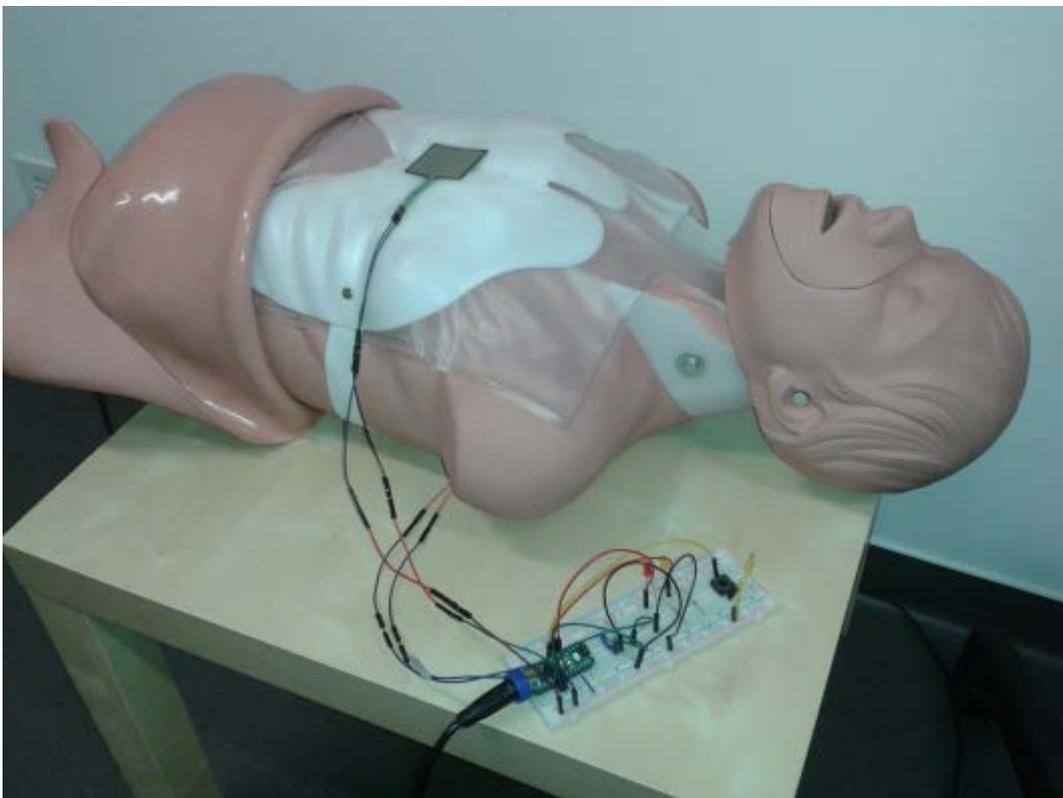
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Cardiopulmonary Resuscitation (CPR) regular training is fundamental for healthcare professionals and other rescuers to acquire, improve and maintain their skills. However, mistakes in CPR procedures during training are often very hard to detect, which hampers the rescuers' ability to improve their skills at resuscitation.

This project aims to design and build a low-cost CPR Personal Trainer that would serve as a user-friendly, unbiased, quantitative evaluation method that provides feedback to the rescuer regarding several measures of compressions' efficiency. It includes the development of a hardware and software prototype, coupled to a standard CPR training manikin.

The hardware consists on off-the-shelf piezoresistive sensors and accelerometer/gyroscope data connected to an open-source electronic platform. The pre-processed signal passes through additional processing by the developed software, extracting relevant data from the performed chest compressions and scoring them on four different factors associated with compression quality: hand position, compression rate, compression depth, and chest decompression. The software is connected to a user-friendly online Graphical User Interface, which presents the score of each training session and the evolution of performance of the trainee.

The prototype is at a late stage of development and will be evaluated by comparing it with the standard method of CPR training and therefore assessing its efficacy and effectiveness.



CPR Trainer prototype

- **10955 | Development of a polymerase chain reaction assay for the specific detection of *Citrus aurantium* in plant food supplements**

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Plant food supplements (PFS) for weight-loss are very popular, being among the most-well consumed. The aim of this study was to detect *Citrus aurantium* in PFS, using polymerase chain reaction (PCR)-based methods. For this purpose, teas labelled as containing *C. aurantium* were commercially acquired. Voucher leaves of *C. aurantium* and other *Citrus* spp. (*C. sinensis*, *C. limon*, *C. medica*) were gently provided by Germplasm Banks. Primers were specifically designed in three different genomic sequences, namely RGAs4-6-like gene that encodes a resistance-like protein and two anonymous marker genes of *C. aurantium* retrieved from NCBI database. DNA was extracted using the commercial Nucleospin Plant II kit. Yield, purity and integrity of extracts were evaluated by UV/Vis spectrophotometry and agarose gel electrophoresis.

PCR assays targeting each gene were optimised using teas and voucher leaves. In silico analyses were performed for each set of primers, evidencing their specificity for *C. aurantium*. However, in vitro results revealed that amplification was more effective for *C. limon* than for *C. aurantium*. After careful data evaluation, it was possible to conclude that the nomenclature among *Citrus* spp. is not clear, which might explain some misclassification of the NCBI databases entries regarding bitter orange. Other genes encoding different resistance proteins were used for the design of primers and PCR assays are being developed to test their specificity concerning *C. aurantium*.

- **11198 | Development of paraben-free hydrogel based on *Coleostephus myconis* (L.) Rchb.f. plant extracts for topical application**

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Development of paraben-free hydrogel based on *Coleostephus myconis* (L.) Rchb.f. plant extracts for topical application

Coleostephus myconis (L.) Rchb.f. is a rich source of phenolic acids which are possibly associated with its high antioxidant activity. In the present study, hydroethanolic extracts from two different botanical parts of *C. myconis* (senescent flowers; green parts) were incorporated into hydrosoluble gels. Bearing in mind the EC50 values from previous antioxidant activity evaluation assays, gels were prepared using a concentration of 0.25 mg/mL (senescent flowers) and 0.50 mg/mL (green parts). Since the inclusion of parabens is nowadays poorly accepted by the consumers, imidazolidinyl urea was included as the antimicrobial component. Gels had a non-greasy texture and good dermic absorption dynamics. Regarding pH evaluation, there were no significant alterations during the 180 days of observation (5.5 and 6.5). The antioxidant activity of the prepared hydrogels was assessed and compared with a blank formulation and also with the results obtained for the extracts alone. The antioxidant activity measured in each hydrosoluble gel was very similar to the value obtained for the isolated extract, in what regards TBARS and β -carotene bleaching inhibition, DPPH and reducing power, thereby indicating the suitability of the *C. myconis* extract to prepare this type of dermocosmetic products.

- **10960 | Development of proliposomes as a vehicle for the incorporation of new molecules with antitumor activity**

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Xanthone derivatives, frequently isolated from natural sources, present a wide range of pharmacological activities. Thus, these structures have attracted great interest and a variety of synthetic xanthone derivatives have emerged [1]. Xanthone derivatives frequently present poor aqueous solubility and nanosystems might present an attractive strategy to overcome it [2].

Liposomes represent a versatile system for drug delivery, in the nanometer and micrometer scale, which have shown to be adequate in cancer chemotherapy [3]. However, they have limited half-life. In this context, proliposomes, dry phospholipid powders, emerge as an alternative system [4].

The aim of this study was to develop proliposomes able to encapsulate a promising antitumor xanthone derivative, LEM2, and to be converted into liposomes.

In this communication, the synthesis of LEM2 will be described. It will also be presented the characterization of the proliposomes produced by different methods, as well as their conversion into liposomal dispersions and characterization of the obtained liposomes. Additionally, the stability of proliposomes 30 days after their production will also be shown.

Acknowledgments: UID/Multi/04423/2013, FCT, ERDF, PT2020.

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- **10971 | Dimensions of the Journey in "The Catcher in the Rye" by J. D. Salinger**

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The rebelliousness and irreverence of the young is a universal and timeless concept. "The Catcher in the Rye", J. D. Salinger's emblematic work, presents us with one of those young people, in the quest for their own identity and ideal of innocence. The analysis of the dimensions of this journey was the aim of my study.

A brief review of the author's life and work, examining some autobiographical issues, was relevant to understand the influence of Salinger's past in his work.

The importance of the connection between literature and culture is undeniable, reason why, the literary context, as well as the historical-cultural, were explored by studying the role of the journey in American literature and by the analysis of the post World War II.

Holden Caulfield, the protagonist, has emerged as a symbol for young people facing pressure to grow and to live in harmony with the established sociocultural norm. Consumed by feelings of inadequacy, Holden turns his disappointment in a rebellion against the hypocrisy and an attack on the conformist society. Thus, the journey of the protagonist goes through the fight against the phoniness of the society and the utopia of an escape to the west, which brings us to the founding myths of America.

The study of mental and physical journeys that comprise the protagonist path, proved to be essential to the understanding of Holden: the rebellion he feels, the dream he idealizes and the change he accepts.

- **10917 | Direct HPLC enantioresolution and evaluation of the enantiomeric ratio of synthetic cathinones on “Legal Highs”**

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The most common constituents of “legal highs” are derivatives of cathinone [1]. Considering that cathinone and all derivatives are chiral, their biological and toxicological activities could differ between enantiomers. Thus, the development of enantioresolution methods is crucial to study these molecules [2]. The aim of this work was to develop a direct HPLC method to separate the enantiomers of synthetic cathinones present in “legal highs” and to determine their enantiomeric ratio.

In this study, we describe the enantioresolution of eight synthetic cathinones by HPLC using the Chiralpak® AS-H column and n-hexane:2-propanol:TEA (97:3:0.1) as mobile phase. It was found that all cathinones were enantioresolved with very high enantioselectivity and resolution with α and RS ranging from 1.24 to 3.62 and from 1.24 to 10.52, respectively.

The results concerning the enantiomeric ratio showed that they are present mostly in a proportion of 50:50.

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- **11335 | Distribution of AIDS reporting delays of the portuguese surveillance data**

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Reliable information on HIV/AIDS epidemic status is vital to assess the general health care needs, long-term health-policy planning, general disease-prevention education programmes, ... Along with difficulties collecting information related to the infection characteristics and epidemiology (first stage with silent symptoms, hard-to-reach transmission group,...), the surveillance system suffers from under-reporting and reporting delay problems, inherent to the activities of health care systems. Accurate estimations of the epidemic trends are, therefore, a challenging task. In Portugal, HIV/AIDS is an importante public health problem with more than 25 years of information at a national level, suffering from these identified problems. In this work we study the distribution of AIDS reporting delays of the portuguese surveillance data through an approach that combines longitudinal K-means with longitudinal regression. We compare longitudinal models with different probability distribution assumptions: normal, poisson and negative binomial. We conclude that a 2-cluster structure is most appropriate to accommodate the heterogeneity in reporting delay on HIV/AIDS data and that the corresponding estimated delay curves are almost stationary over time.

- **11192 | Do firms' international activities influence the impact of debt on their performance?**

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Under the pressures of the recent global financial crisis, firms' capital decisions are questioned, and knowing how can debt help or harm growth and performance seems more relevant than ever. This paper examines the impact of leverage on firms' performance under the moderating factor of internationalization. Supported on the main capital structure theories, such as the agency theory, the trade-off theory and the pecking order theory, that explain how companies decide on financing and how those decisions affect their results, we divide our sample of Portuguese firms into four groups: the purely domestic companies, the importing, the exporting, and finally those that are engaged in foreign direct investment (FDI), so that at the end of our study we can answer the question: "Do firms' type of international activities influence the impact of debt on their performance?".

- **11026 | Does the proprioceptive sensitivity of female gymnasts change according to their discipline?**

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We investigated the effect of gymnastic disciplines in the upper limb proprioceptive sensitivity. Ten female gymnasts (5 from acrobatic and 5 from artistic gymnastics), aged 11-16 y.old, 8 right- and 2 left-handers, were tested. A Manual Preference Questionnaire (Van Strien, 2003) was applied and the Discrimination Weights Test, Model 16015 (Lafayette Instruments, 2004) evaluated their proprioceptive sensibility. Mann-Whitney and Wilcoxon tests were used. Artistic gymnasts presented higher proprioceptive sensitivity values than the acrobatic gymnasts (74.52 ± 9.79 vs 62.46 ± 7.37 ; $p < 0.05$). Artistic gymnasts also presented better results than acrobatic gymnasts for the percentage of correct answers in 3rd and 2nd set of 11 different stimulus weight concerning the preferred and non-preferred hands (74.52 ± 16.28 and 81.80 ± 9.10 vs 52.72 ± 7.57 and 65.44 ± 11.82 , respectively). Similar values were obtained when comparing proprioceptive sensitivity considering the preferred and non-preferred hands (73.31 ± 11.23 and 75.73 ± 11.58 vs 61.19 ± 5.81 and 63.61 ± 10.05). From these findings it is possible to say that artistic gymnasts have better proprioceptive sensibility than acrobatic gymnasts.

Keywords: Proprioceptive sensibility, Discrimination Weights Test, preferred and non-preferred hand, acrobatic gymnastic, artistic gymnastic.

Discrimination Weights Test (2004). Lafayette Instruments.

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- **11190 | Dual role of ATP on neuromuscular transmission in Experimental Autoimmune Myasthenia Gravis (EAMG)**

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Lack of presynaptic adenosine A2A receptors (A2AR)-mediated facilitatory tonus contributes to neuromuscular deficits in Myasthenia Gravis (Oliveira et al., 2015, *Mediat. Inflamm*, **2015**, 460610). At the neuromuscular junction, released adenosine triphosphate (ATP) may act as a neuromodulator, either directly by activating ATP P2 receptors (P2R) or indirectly via the activation of A2AR after being metabolized into adenosine (ADO). Interestingly, exogenous ATP (1 μ M, 15' incubation) recovered the A2AR facilitation on evoked tritiated acetylcholine ([³H]ACh) release in EAMG animals, but this was prevented in the presence of ADO deaminase (ADA, 0.5 U/mL), the enzyme that inactivates ADO. In the presence of ADA, ATP (1 μ M) facilitation of [³H]ACh release in naïve and CFA rats was converted into an inhibitory effect. Thus, ATP facilitation of [³H]ACh release requires its hydrolysis into ADO, while the nucleotide decreases transmitter release via P2R activation. ATP inhibition was mimicked by its stable analog, $\beta\gamma$ -imidoATP (100 μ M), in naïve, CFA and EAMG animals. Decreasing the time for ATP (1 μ M) conversion into ADO to 3' incubation also put into evidence the inhibitory effect of the nucleotide in the three groups of animals. Results indicate that blockade of the inhibitory P2R, leaving unrestrained the A2AR-mediated facilitation, may be a valuable strategy for the treatment of EAMG. *Work supported by FCT (PTDC/SAU-FCF/108462/2008 and PEst-OE/SAU/UI0215/2014)*

- **10807 | Echoes of the Great Wars in Women's Voices: Virginia Woolf and Sylvia Plath**

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Despite the horror of World War I and World War II literary representations of the war have been prolific and resulted in some of the greatest literature produced during the twentieth century. Certain records of the exploration of war trauma in the individual and society are first handed accomplished, whereas other testimonies are indirectly achieved. Moreover, in the eminence of war there is a shift in the role associated to women who take a stand to make their inner voices audible.

This presentation will focus on the way we perceive war. Thus, we will emphasise the post I World War tensions in Woolf's "Mrs Dalloway" through the characters of Clarissa and Septimus in the dialectic of indirect and direct confrontation with war, and also Plath's poetry and narrative in "The Bell Jar" that legitimates readings of indirect trauma generated by the II World War and the Holocaust but also a direct awareness of the Cold War.

The comparative analysis of both writers allows us to recognise two different ways of approaching trauma through the unexpected voices of women two major wars apart. Furthermore, we will examine the social paradigm that links the two authors, both affected by mental disease and suicidal impulses. Additionally, by illustrating this consciousness through Woolf and Plath, we discover that a new feminist voice arises to explore war anxieties and a sense of disquiet that still lingers in our contemporary society.

- **10828 | Edaphic Diversity on the banks of Via de Cintura Interna (VCI): Urban/Rural relationship**

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Roads are artefacts of great importance in urban context, known to have several impacts on the nearby ecosystems causing significant changes in biotic/abiotic parameters. Arthropods comprise one of the most diverse and important groups of soil fauna, and they have been described as good candidates to study environmental alterations in urban areas. Soil arthropods are important biological models due to their high diversity, rapid generation time and ease of sampling. This study aimed to characterize the edaphic community along an urban highway in a major European city (Via de Cintura Interna, Porto, Portugal). Our goal was to establish relationships between edaphic community's structure and soil properties, and to investigate if there is an urban/rural pollution gradient. Edaphic organisms and soil samples were collected in 20 sampling sites in autumn 2015, alongside with a characterization of plant communities. Edaphic fauna was collected using pitfall traps. Soil physical and chemical parameters (pH, organic matter, electrical conductivity, water holding capacity) were determined in laboratory and edaphic organisms were screened for posterior identification. Preliminary results regarding soil parameters showed a high content of organic matter and an acidic pH, as expected for urban soils. Edaphic community is dominated by insects (mostly Collembola) and arachnids, which seems to be consistent with the composition of edaphic communities in other urban areas.

- **10832 | Edaphic diversity on the central road tab (Circunvalação): Coast/Urban Relationship**

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The biodiversity of edaphic arthropods is an indicator of soil quality. These organisms have a high diversity of sizes and growth rates, occupying several different niches, which makes them good environmental indicators. The diversity and abundance of terrestrial arthropods are parameters that can serve as a basis to develop biodiversity conservation strategies of nature reserves. When these type of studies are conducted in urban areas, it is necessary to consider the fragmentation of habitats, resulting from human activities and lead to the extinction or deep change in the distribution of a large number of species. The scope of this study is to realize the diversity of soil fauna and soil characteristics in a section of the central road tab (Circunvalação in Porto, Portugal). In addition, we intend to evaluate the occurrence of an ecological passageway and coastal-urban gradient in the edaphic community. The edaphic samples were collected in Spring and Autumn of 2015 using "pitfalls traps". Soil samples were also collected for a several physical and chemical determinations. The results are consistent with those expected for urban soil samples. Concerning the edaphic diversity is visible an increase in diversity as we move into the urban area. Near the coast there is a much smaller range. With the entry in the urban area comes the large number of individuals belonging to several orders. It is a significant visible reduction in edaphic fauna sampling done in the Autumn.

- **11254 | EDUARDO SOUTO DE MOURA AND EDUARDO DE ALMEIDA: A RESEARCH ABOUT THE IMPORTANCE OF THE FREE HAND DRAWING IN THE PROJECTIVE PROCESS**

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Currently, the technological breakthrough brought new computational tools and, consequently, changes in respect of design methods. The role of free hand drawing is contested, however, the drawing shows symbiotic characteristics with the human thought, cognition and development of perception. The objective of this work is to discuss the importance of free hand drawing in the current architectural projective process through comparative analysis between the drawings of the architect Eduardo Souto de Moura (School of Porto) and the architect Eduardo de Almeida (Paulista School). Souto de Moura's and Almeida's projective processes were analyzed, under the hypothesis the maintenance of free hand drawing as an imperative tool in the projective process. His sketches were compared with photos of their works, with technical drawings or texts, elements that offered basis of comparison between the building and the moment of your conception, represented by sketches. Important features of the buildings that were already present at the moment of its creation were highlighted by graphic comments on the sketches, annotations were made with the use of tablets in different layers, without interfering in the authorship of the original design. The hypothesis about the importance of free hand drawing even in a thoroughly virtual reality was corroborated: this research verify that the sketches of Souto de Moura and Almeida already had the first thoughts that occurred in the final structure.

- **11255 | Effect of lubricants on compaction and drug release properties from uncoated tablets**

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The purpose of this study was to investigate the influence of two lubricants, stearic acid (hydrophobic) and sodium stearyl fumarate (hydrophilic), on compaction behaviour and drug release characteristics from tablets. Lubricants were used in three concentrations (1%, 2% and 3%, w/w) and acetylsalicylic acid (ASA) was used as a model of a poorly soluble drug.

Seven formulations of tablets were produced by direct compression. The energies and forces during compaction were measured and the compression curves were registered. The plasticity index (PI) and the lubrication efficiency (R) were calculated. Afterwards, weight uniformity, thickness, hardness, tensile strength and friability were evaluated in the obtained tablets. The dissolution studies were performed according to the Portuguese Pharmacopoeia 9. In addition, the disintegration times were determined.

Tablets with suitable physical properties were produced. However, all tablets showed a friability value $> 1.0\%$. All the analyzed formulas presented a value of $R > 0.8$ and the PI values ranged between 61.3 and 79.9%. It was observed that increasing the amount of lubricant decreased the PI. After 60 minutes, a mean ASA release from 42.2 to 113.5% was noticed. As the amount of lubricant increased, the dissolution rate decreased and the disintegration times increased. Sodium stearyl fumarate showed better R value than stearic acid, but stearic acid presented lesser negative effect on dissolution and disintegration.

- **11125 | Effects of 2,4-dichlorophenoxyacetic acid-mediated stress on tomato plants**

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Teixeira, Jorge, Faculdade de Ciências da Universidade do Porto, Portugal

Auxin-like 2,4-dichlorophenoxyacetic acid (2,4-D) is one of the most used compounds in agriculture to control weeds. However, 2,4-D can drift from the point of application onto non-target crops, leading to economic losses. Although the lethal dose-dependent effects of 2,4-D on dicotyledonous species are well known, the effects resulting from exposure to sublethal doses are less documented. In this experiment, four-weeks-old *Solanum lycopersicum* L. plants were exposed to 2.26, 4.52 and 9.04 mM of 2,4-D for 48 hours, followed by the evaluation of fresh weight and some biochemical parameters. The herbicide considerably decreased root fresh weight, but the same was not observed in leaves. For all concentrations, there was an overproduction of H₂O₂ and O₂⁻ in leaves, accompanied by an increase of lipid peroxidation in plants treated with the two 2,4-D highest concentrations, possibly by the increase of reactive oxygen species generated, indicating the occurrence of oxidative stress. Because an increased activity of glutathione-S-transferase (GST) was recorded with all tested concentrations, specially with the lowest, this enzyme may have an important role in the plant defence against 2,4-D. Following these results, *S. lycopersicum*'s specific members of the plant-specific Phy class GSTs will be study in order to better understand its response to 2,4-D toxicity.

- **11277 | Effects of an intervention program in physical fitness and regular physical activity parameters in overweight and obese male children.**

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Mota, Jorge A. P. S., Faculdade de Desporto, Portugal

Overweight and obesity prevalences have been rising over the last decades. Changes in the populations lifestyles have been pointed out as a main contributors to this issue. It has been found that younger populations are also at risk. We acknowledge the need to employ interventions to prevent or hold this epidemic, especially in children and youngsters. The aim of this study was to assess the effect of an intervention program in physical fitness and regular physical activity (PA) parameters in overweight and obese children. 30 male children with ages ranging from 6 to 11 years old ($8,6 \pm 1,05$), divided in experimental group (GE) and control group (GC). Both groups were evaluated at baseline and after 12 weeks. During that period GE performed 3 weekly exercise sessions each lasting 1 hour. Weight, height e waist circumference were evaluated. Body composition was assessed through bioimpedance. Fjørtoft et al. (2011) test battery was employed to assess physical fitness. Regular PA was monitored using accelerometry. GE has shown a significant decrease in weight, BMI and percent body fat compared to GC. No difference was found in the mean change of physical fitness levels between groups. Only GE improved the medicine ball throwing test significantly. Compared to GC, GE has significantly increased the time spent in moderate to vigorous physical activity. The intervention has revealed some positive effects in several parameters.

- **11317 | Effects of Deficit Irrigation Strategies on the Yield and Quality of Touriga Franca Grape Variety in Douro**

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The Douro region is located in a climate zone where rainfall is irregular throughout the year and temperatures are very high in the summer. Under these weather conditions the decreased availability of water in the soil affects the grapes quality produced in the region. Therefore the vineyard irrigation systems are ever more a common practice in order to mitigate the water deficit and to enhance the production and fruit quality. Our study aims to better know the impact of an experimental irrigation system installed on a vineyard. The grape variety chosen was Touriga Franca, as it is the most widely grown in Douro. The study design comprises four types of irrigation, three with different quantity of water and one without irrigation acting as control. The irrigated modalities (R25, R50 and R75) were different according to the % of water mechanically replaced bearing in mind the water lost by evapotranspiration. The results were more significant in terms of canopy's constitution and production than actually in terms of grapes' quality. We found variations in the leaf area, in the average weight of the bunch and in the berry, directly related to the quantity of water provided by each irrigation modality. The oenological parameters presented only a significant variation in the probable alcohol content. We find that the irrigation modality which showed gains in production and quality was R25 where the results obtained were satisfactory without requiring large amounts of irrigation water.

- **10808 | Emergency Architecture**

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In the past few years there has been an increase in the amount of natural disasters which lead to massive destruction scenarios and to the eviction of people. Parallel to this is the sudden urban growth around the world, especially in places with poor living conditions.

Destruction is one of the main consequences of natural catastrophes, namely the collapse of infrastructures due to the force of nature. Should the possibility of these events be thought of previously, and the conclusion would certainly be that some constructions lack safety conditions. Moreover, there is a generalized lack of territorial planning.

Additionally, we have been witnessing migration phenomena that lead to a population growth in urban centers, which are greatly attractive to populations. These are the same urban centers that are frequently overpopulated and lacking response. Consequently, the pressure in finding more room to accommodate more people often leads to the construction of precarious accommodation which are extremely vulnerable in the event of a natural disaster.

I am interested in studying this subject because I have a genuine concern with these events, places, and populations, and I urge to understand what the architect's role in these situations is. It is not only important but also urgent to create and develop basic conditions in order to improve the way these populations live, as well as the housing spaces they live in.

- **11122 | Emotional contagion and empathy predict the ability to infer the authenticity of emotional vocalizations**

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Laughter is a powerful social emotional expression. We produce laughter in a wide range of intensities and with different functions: it might reflect a spontaneous emotional response, as a genuine signal of affiliation and experience of positive emotions; and it may also reflect a deliberate act (social laughter), produced to avoid possible social conflicts or to communicate an intention. The capacity to detect laughter authenticity plays an important role in social interactions, and there are wide differences among individuals regarding this ability. Here we investigated if individual differences in predisposition to emotional contagion and empathy predict the ability to infer laughter authenticity (N = 100). Participants with higher predisposition to contagion of negative emotions and higher empathic concern were found to perform better performance on laughter authenticity detection. These findings are consistent with the notion that sensorimotor simulation mechanisms play an important role during vocal emotional processing in social interactions.

- **10928 | Environmental Impact Assessment at the Sea as a State Duty: a Glimpse on the Portuguese Case**

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The lack of supervision that the impacts of human activities are having on marine life are the cause of the great wave of extinctions in the oceans. To bridge this gap, the EIA, as a legal technique that intends to integrate environmental considerations into decision-making on their approval and socio-economic development, appears to be a matrix part of a fundamental environmental management infrastructure.

EIA is an environmental cornerstone within international and EU law. On the level of international law, must be held forecasts by international binding conventions that regulate this assessment, such as the UNCLOS, the Convention ESPOO and the CBD. Also, one must bear in mind the recognition by the ICJ and the ITLOS as a general obligation of customary international law. In turn, EU legislation has a proper codification to EIA, enshrined in Directive 2011/92/EU. Nevertheless, the importance granted by the experts of the recent process of developing an international legally binding instrument on conservation and sustainable use of biodiversity on ABNJ, who consider the EIA a structuring element of any agreement that might be implemented.

Our conclusion reflects that Portugal may be part of a group of States that, in some aspects, apparently consider the EIA as superfluous, particularly in respect to the marine environment. Thus, the highlighting of this idea, some solutions to the paradigm and make the policy-makers think are what we intend by presenting this study.

- **10944 | Enzymatic Esterification of Fish Oil for Acidity Reduction**

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This work aimed to study the reduction of acidity in fish oil through enzymatic esterification with ethanol to convert free fatty acids (FFA) to ethyl-esters. Fish oil samples were collected in a Portuguese company, containing different mixtures of sardine, tuna, mackerel, salmon, cod, redfish, and conger oils. They were characterized for their acid value (10-14 mg KOH/g oil), iodine value (109-219 g iodine/100g oil), kinematic viscosity (32.54-34.78 mm²/s at 40 °C), density (0.932-0.937 g/cm³ at 15 °C) and moisture content (0.5-1.8 wt%). For the esterification four enzymes were tested as catalyst (Novozym 435, Lipozyme RM IM, Lipozyme CALB L, Palatase 20000 L) and the one with the largest acid value reduction was selected (Lipozyme[®] CALB from Novozymes, a non-specific lipase originating from *Candida antarctica* B). Different operating conditions were studied: reaction temperature (35, 45 and 55 °C) and time (from 0 to 180 min), enzyme/oil ratio (0.00225 and 0.0045 wt/wt) and ethanol/FFA ratio (3.235, 4.879, 4.907 and 6.566 wt/wt). Results showed that at the best operating conditions (150 min of reaction time, 45 °C of temperature, enzyme/oil mass ratio of 0.0045 and ethanol/FFA mass ratio of 4.879) it is achieved more than 70 % of FFA reduction in just one reaction step. This result can be further improved in a second esterification or by placing a method for continuously removing the water formed during the reaction.

- **10972 | Equity Market Integration in the Euro Area: A New Approach**

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We propose a new approach to analyze financial market integration. We analyze the geographic investment style of equity mutual funds that invested mainly in the euro area. Specifically, we use style analysis model to measure the exposure of funds to euro and non-euro stock market benchmarks over time. Our findings are consistent with previous studies that report increasing financial integration in the euro area after the euro introduction. Yet we show a reversion in this process just before the financial crisis. For funds based inside the euro area we document an increase of their exposure to the euro area stock market benchmark; a preference for stocks whose domicile is closer to the domicile of the fund; and a strengthening of the “euro bias” phenomenon. For funds based outside the euro area, we find that the decrease preference for euro area stock market benchmark brought by the financial crisis is not reverted thereafter, indicating a lower financial integration level outside the euro area.

- **10818 | Eroticism and courtly love in the Hispanic poem Razón de Amor versus the Hispano-Islamic love lyric in the Middle Ages. Cultural influences?**

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The Castilian poem *Razón de amor con los denuestos del agua e el vino* is a cultural melting pot. It was written in the first half of the 13th century in straight connection with the Second Generation of the Galician-Portuguese Troubadours. However, in this presentation we want to establish some thematic, ideological and symbolic connections between the Castilian poem, and the Hispano-Islamic love lyric, cultivated since the 9th century. Is it possible to find similarities between the north Christian feudal love tradition and the southern Islamic one? And what do these proximities mean? In both traditions we see a tension between controlled love, which fights against the sexual relation (udri love and fin'amors), and erotic love. However, in the Hispano-Islamic poetry it is frequent the love encounter that finishes with an erotic consummation, usually during the night. The same happens in *Razón de amor*, where the sexual act between two characters is confronted with the fin'amors ideal. The major symbolic elements which remit to the sexual encounter are the water and the garden, which provides the perfect locus amoenus environment that boosts the erotic stamina. On the other hand, the wine exposes differences among the two traditions here analyzed. In the Islamic poetry, the wine and the garden are both stimulant to the sexual encounter, while in *Razón de amor*, the wine is connected with the "conservative love" represent by the dona, and bonded with the fin'amors ideal.

- **11171 | Evaluation of antimicrobial and antioxidant capacity of infusions of cauliflower (*Brassica oleracea* var. *Botrytis*) by-products obtained by High Hydrostatic Pressure**

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The management of organic residues that result from processing fruits and vegetables by food and beverage industries is a big issue, with serious social, environmental and economic consequences that concerns populations at a global level. At the same time, bacterial food epidemics still take a strong presence in modern society. Therefore, the development of new technologies to extract bioactive compounds becomes crucial to create more effective food preservatives. The aim of this work is to present an evaluation of the antioxidant and antimicrobial power by bioactive molecules extracted from cauliflower (*Brassica oleracea* var. *Botrytis*) by-products infusion, prepared through high hydrostatic processing at 200, 300, 400 and 500 MPa, for 5 minutes. The pathogenic growth/inactivation curves show a positive correlation between the pressure applied and the bactericidal power of the tested samples. Treatments at 400 and 500 MPa reveal higher polyphenolic content than at 200 and 300 MPa, with a similar effect of damage and death on *S. Typhimurium* bacteria, at 10 °C and 37 °C. However, no differences were found on the antioxidant capacity of the different samples prepared by the same method. Thereby, infusions of cauliflower by-products obtained through High Hydrostatic Pressure can be used as a supplementary technique to control food pathogenic growth during the production and/or storage of food and beverage items.

- **11155 | Evaluation of consumption behaviour of infusions: an exploratory study based on an observational video study**

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The sensory attributes of herbal infusions are strongly influenced by several factors, including those related to the way of preparing the infusion itself. The aim of this research is to better understand consumer behaviour regarding preparation of infusions. For this purpose, three approaches were considered: i) a market study; ii) an observational video study, capturing the moment of preparation of infusions; and iii) an on-line questionnaire regarding consumption practices. For the first study, direct observation was used to record marketing information through different markets. For the observational video study it was considered the qualitative paradigm, using image content analysis, with QSR NVivo. For the on-line questionnaire descriptive statistics and Correspondence Analysis were applied. Recommendations displayed in the majority of 327 infusion packages felt short of optimum conditions of preparation, mostly the time of infusion. The observational video study showed that the optimal preparation instructions were not being applied by our 12 consumers, particularly the time of infusion which was less than one minute in 9 consumers, comparing to the optimal time of 5 to 10 minutes. The on-line questionnaire concluded that among a sample of 190 respondents, those who reported a more frequent consumption of infusions (19%) were those who least associate the consumption of infusions with their type or composition and gave greater importance to the emotional dimension.

- **11066 | Evaluation of guidelines implementation for school buffets of the Direção-Geral da Educação at secondary schools from the city of Porto**

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Introduction: Food choices of young people are influenced by the school environment in which they are included. In 2012, the Direção-Geral da Educação has published the Guidelines for School Buffets (GSB).

Objectives: To diagnose the state of the food supply in buffets and vending machines (VM) in secondary public schools from the city of Porto.

Methods: In this observational study, all secondary schools were included (n = 26). A checklist based on the GSB was developed and applied, through visiting schools, including information about food supply in the buffet (food to promote (FTP), food to limit (FTL) and not allowed food (NAF)), hours of service, disposition of foodstuffs, advertising to NAF, profit margins, food safety and hygiene criteria (FSHC) and VM. The FTP/FTL ratio was determined.

Results: We obtained a response rate of 65.4% (n = 17). The FTP/FTL ratio is 0.96 ± 0.35 . Regarding to FTP, all schools have available dairy products, bread and water. Concerning to NAF, 62.5% of buffets has cookies high in fat/sugar and 56.3% has pastries. Only 18.8% of buffets opens 20 minutes before classes. Most of them do not fulfill the criterion of the first view for FTP nor the profit margin for FTL (15-20%). It was obtained an Acceptable rating ($58.2\% \pm 12.3\%$) in FSHC, and «manipulation» was the worst scoring area.

Conclusion: None school complies with the recommended FTP/FTL ratio (3/1). Almost all buffets and VM provide not allowed foods.

Buffets, school, food safety and hygiene



APraça_RTPI_12out2015

- **11054 | Evaluation of school lunch acceptability on primary school children: influence of satisfaction, menu and food preferences**

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Introduction: Considering the benefits associated to the school lunch, it becomes essential to evaluate the influence of possible factors that determines its acceptability, in order to reach the nutritional objectives.

Aim: To evaluate the school lunch acceptability in a sample of children attending primary schools of the Municipality.

Population and methods: 33 schools were randomly selected and 2 students attending each school year were included per school. Soup and main dish plate waste was evaluated, using the weighing method. Satisfaction was evaluated using an indirectly applied questionnaire, which also enabled the identification of food preferences, considering a list that contains the most common foods served at Municipality´s schools.

Results: The study involved 253 children, aged 6 to 11 years old. Mean plate waste for soup and main dish was 20.0 % and 28.6 %, respectively, being more than 80.0% of the children satisfied with both preparations. High satisfaction with soup and main dish was associated with less plate waste ($p < 0.05$). Soup waste was higher when vegetables were not mashed ($p = 0.025$) and main dish waste was higher when cooked vegetables were served ($p = 0.021$). Whenever children reported not liking food items served on that daily school lunch, high plate waste was observed ($p < 0.05$).

Conclusion: School lunch acceptability on primary school children was low, which was proved by high plate waste values. However, levels of satisfaction were high.

- **10919 | Evaluation of water quality and analysis of the surrounding landscape of Barrinha de Esmoriz**

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Humans gradually gained dominance over the environment by exploiting resources and space for agriculture and urbanization. These anthropogenic activities influence directly the landscapes and aquatic ecosystems. In this context, Barrinha de Esmoriz (Ovar, Portugal) is a coastal lagoon that has been progressively degraded over the past decades, due to industrial, agricultural and other anthropogenic activities, promoting a decline in water and sediment quality. Barrinha de Esmoriz (BE) is integrated in SIC (*Sítio de Importância Comunitária*) in *Rede Natura 2000* and IBA (*Important Bird Area*), accentuating its importance regarding species richness and diversity. Bearing this in mind, a series of chemical, biological (benthic invertebrate and vegetation composition) and hydromorphological parameters were characterized with the aim of assessing the ecological status (sensu Water Framework Directive) of the aquatic system of BE. Preliminary data on physical and chemical parameters and benthic invertebrates confirm the human-induced degradation and poor water quality of BE. In parallel, this study intends to provide an analysis of the surrounding landscape and ecosystem services as an additional monitoring tool for the area. This integrated approach will allow proposing science-based methodologies in order to requalify, restore, preserve and enhance the Barrinha de Esmoriz ecosystem and its surroundings.

- **11087 | Exercise training induces distinct biventricular adaptations**

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Introduction

Exercise training imposes a distinct hemodynamic load on the right and left ventricle (RV, LV). In opposition to the LV, RV response to exercise is a largely unexplored field.

Aim

This work aims to compare echocardiographic and morphologic biventricular response, following an endurance chronic exercise plan.

Methods

Adult Wistar rats were divided in sedentary (SED, n=6) and exercised (EX, n=6) groups. During 10 weeks, EX rats were subjected to treadmill exercise (30 m/min, 1h/day). Afterwards, we performed echocardiographic measurements, sacrificed the animals and collected the ventricles for histologic evaluation.

Results

As shown in table 1, exercise training induced cardiomyocyte hypertrophy on both ventricles, mainly on the LV. RV hypertrophy was accompanied by increased fibrosis relative to the LV. There was an increase in left ventricular cardiac output and an improvement in diastolic function on both ventricles. Regarding systolic function, both ventricles showed alterations in isovolumetric contraction (more pronounced in RV) and ejection times, determining an increase in Tei index. These alterations were accompanied by increased QRS duration and Q-S' interval.

Conclusion

Our results suggest that exercise training induces distinct biventricular adaptations, with a more fibrotic response from RV. This phenotype may be conditioning a delay in the cardiac electric conduction, thus affecting echocardiographic systolic indices, particularly in the RV.

- **10963 | Exercise Training Reverses Adipose Tissue Dysfunction in a Rat Metabolic Risk Model.**

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Introduction. Dysfunctional adipose tissue creates a low-grade inflammatory state, increasing susceptibility to disease. Given exercise training’s anti-inflammatory properties, we assessed the impact of exercise training on adipose tissue remodelling in obese rats.

Methods. Male ZSF1 rats (age=15 weeks) were divided in 3 groups, as presented in Table 1. At the end of the protocol, all animals were sacrificed for plasma and adipose tissue collection for biochemical analysis.

Results. No differences were detected for body weight or gastrocnemius mass between obese+sed and obese+ex groups ($P<0.05$). Exercise corrected adipose tissue endocrine dysfunction as it normalized adiponectin, leptin and ghrelin protein expression ($P<0.05$), which were altered in the obese+sed group ($P<0.05$). Also, the miokine irisin was down-regulated in obese+sed ($P<0.05$) and normalized in obese+ex ($P<0.05$). Exercise induced a phenotypical change in adipose tissue, from the fat-storing WAT to the fat-burning BAT, as indicated by increased expression of UCP-1 and PGC1 alpha in obese+ex ($P<0.05$).

Conclusion. Exercise training rescued adipose tissue dysfunction and promoted its browning. Our data suggest that the benefits of exercise training go beyond body weight reduction, as the described qualitative changes were independent of body weight loss.

Table 1 - Experimental groups and respective exercise programme.

Group	Exercise Programme
Lean (control) n=6	Control (4 weeks confined to the cage’s area)
Obese sedentary (obese+sed) n=6	Control (4 weeks confined to the cage’s area)
Obese exercised (obese+ex) n=6	4 week treadmill exercise training. 60min/day, 5 days/week, 15min/min

Table 1 - Experimental groups and respective exercise programme.

- **10817 | Expectations and Academic Success**

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Abstract

Expectations and Academic Success

The present report is a result of an internship year, on which we are presenting, on the one hand, a theoretical reflection about the importance of student's expectations of History A and Geography A and their contribute to academic success, and, on the other hand, a description of some experiences in classroom settings that led to learning episodes.

José Morgado (2007, p. 38) refers that school faces new challenges every day, "being fundamental that teachers aim to build positive representations about all students, as well as it becomes necessary the development of positive expectation about students and their abilities", further more these expectations can, by Estanqueiro (2012), condition in a significate way students learning. The methodology applied was Case Study, through the application of an Inquiry to Highschool students of the Escola João Gonçalves Zarco. Results show evidence of a fundamental aspect of the development of positive expectations and their relationship with parental schooling, referring in this way to new investigation hypotheses. We hope with this work lead to a reflection that results in the question: "What can we do to be a better teacher?"

Key-words: expectations; Self-efficacy; Self; aspirations; School Success

- **11102 | Exploiting allergen encoding genes (Ana o 1, Ana o 2 and Ana o 3) as potential DNA markers for cashew detection**

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Cashew is a well-known allergenic food that is responsible for triggering mild to potential fatal adverse immunological reactions in sensitised/allergic individuals. In this work, we propose the use of polymerase chain reaction (PCR)-based methods as effective tools to trace cashew allergens in foods. For this purpose, model mixtures of pasta containing known amounts of cashew (50-0.0001%, n=13) were prepared. For PCR assays, primers were specifically designed on three different cashew allergen encoding genes (Ana o 1, Ana o 2 and Ana o 3) using the available nucleotide sequences in GenBank database. In silico and experimental analysis were carried out to test the specificity of the primers. DNA extraction was performed using the commercial NucleoSpin Food kit. Yield, purity and integrity of the extracts were evaluated by UV/Vis spectrophotometry and agarose gel electrophoresis.

The PCR methods targeting Ana o 2 and Ana o 3 genes were successfully developed, enabling an absolute sensitivity of 1 pg of cashew DNA and a relative limit of detection (LOD) of 0.01%. Primers targeting Ana o 1 evidenced some problems of cross-reactivity with wheat material, which disabled their use for PCR development. Preliminary results seem to indicate that Ana o 2 and Ana o 3 genes could function as potential DNA markers for cashew. Real-time PCR systems are intended to be developed for the latter two targets aiming at increasing the relative sensitivity of cashew detection.

- **11068 | Exploring the potential of macroalgae attached Planctomycetes using genomic approaches**

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Planctomycetes are a remarkable group of bacteria with unusual, striking cellular and morphological features acknowledged for their meaningful relevance in the fields of cell biology, evolution and ecology.

Using up-to-date in silico tools used in genome sequencing analysis, raw sequences from 3 strains of planctomycetes isolated from algal surfaces, *Rubripirellula obstinata* strain LF1, *Roseimaritima ulvae* strain UC8 and a yet to characterise strain FC18, were obtained from Illumina MiSeq paired-end technology. After, these sequences were assembled with SPAdes software, annotated in RAST and in Prokka pipeline. Comprehensive analysis and differential genomic comparisons against *Rhodospirellula baltica* SH1T, *Blastopirellula marina* DSM 3645 and *Planctomyces limnophilus* DSM 3776 were done after annotation. Several features of the genomes were analysed, showing to be in the average of the other Planctomycetales genomes. Genome mining with antiSMASH showed candidate genes for the production of secondary metabolites from strains LF1, UC8 and FC18 mostly connected with polyketide synthases I & III (PKS) and nonribosomal peptide synthetases (NRPS). Also candidate genes for linaridin and terpene production were found. Furthermore, in the genome comparisons performed, strains LF1, UC8 and FC18 showed to possess unique proteins related with metal binding systems, phosphate metabolism, chemotaxis and stress response connected with the microenvironment they were isolated from.

- **11327 | Exploring the synthesis of bacteriochlorins by 1,3-dipolar cycloaddition reactions**

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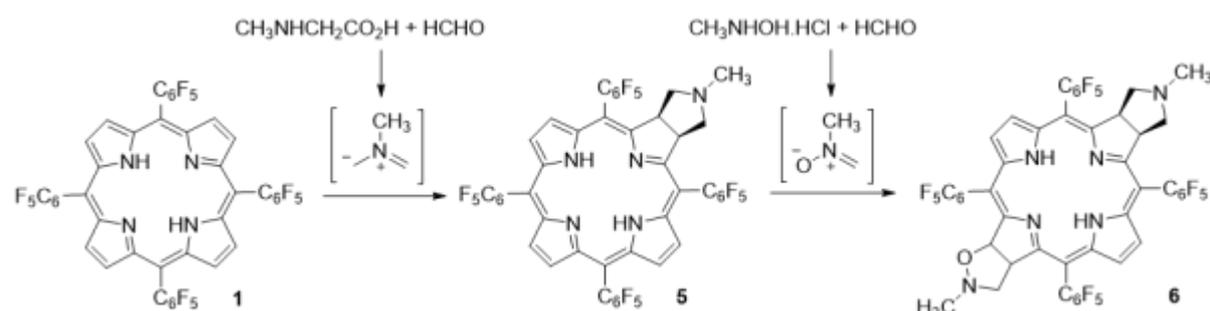
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Chlorins (2,3-dihydroporphyrins) and bacteriochlorins (2,3,12,13-tetrahydroporphyrins) have been obtained through 1,3-dipolar cycloaddition (1,3-DC) reactions. These derivatives have been identified as valuable photodynamic therapy and diagnosis agents, since they have a strong absorbance into visible region near and above 650 nm, a region with a deep penetration of the light into tissue. Bacteriochlorins with significant absorptions at >700 nm, play a key role in such processes, and have shown to be very effective in the treatment of cancer cells.

Previous work has shown that the 1,3-DC reaction of porphyrin **1** with N-methylnitrone afforded mainly the corresponding chlorin and a small amount of bacteriochlorins. In order to improve the yield of bacteriochlorins, we decided to explore the bis-addition reaction involving the synthesis of mixed cycloadducts **5** and **6** (Scheme 1). The results of the HPLC, LC-MS and NMR studies will be presented and discussed.

This work was supported by Fundação para a Ciência e a Tecnologia (FCT, Portugal), European Union, QREN, FEDER and COMPETE, projects M-ERA-NET/0005/2014, NORTE-07-0162-FEDER-000048, NORTE-07-0124-FEDER-000066/67, FCT UID/QUI/00062/2013 (QOPNA), UID/QUI/50006/2013 (LAQV/REQUIMTE) and UID/Multi/04378/2013 (UCIBIO/REQUIMTE). A.L. also thanks FCT her grant (SFRH/BPD/85793/2012).



Synthesis of cycloadducts **5** and **6**.

- **11056 | Expressions of tense in match reports: a translation model in context**

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This is an interdisciplinary study connecting three areas: linguistics, translation and journalism. All areas have one aspect in common: the need for a correct understanding and use of both language and context.

For that purpose a corpus of 39 match reports from several sources was created for Portuguese and English. While analysing the main differences between match reports and hard news, I realised the expression of time had major importance, since match reports are presented in chronological order. Contrarily, hard news are presented by order of importance.

Four linguistic dimensions were considered while analysing the corpora: on a micro-linguistic level, Tense and Aspect; on a macro-linguistic level, sequences and rhetorical relations. Corpora analysis had three phases: the first was a quantitative, global study of the whole corpora; the second and third phases only studied a fraction of the corpora and reflected on the macro-structure of the text (text sequences) and the micro-structure (sequences of tenses), respectively.

Once concluded, the analysis provided enough information regarding the type of text, its structure and how Tense/Aspect contribute for its interpretation. Naturally, there are differences between languages. Such differences are presented in a bidirectional translation model, where three translation techniques (adapted from Gambier,2003) were used: direct translation, reorganisation (of the sentence(s)), substitution (of the tense).

- **11132 | Field Theory Simulations of Biased Domain Wall Networks**

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It is well known that in the absence of a decaying mechanism standard domain walls would dominate the energy density of the universe (A. Vilenkin and E. P. S. Shellard, 1994). We have numerically studied the evolution of several types of biased domain wall networks, namely scenarios involving biased initial conditions and introducing an asymmetry between the two minima of the potential. Using the PRS algorithm (W. H. Press, B. S. Ryden, D. N. Spergel, 1989) we carried out large numerical simulations and have confirmed that for both scenarios scaling eventually breaks down and the networks decay.

Previously in J. R. C. C. C. Correia, I. S. C. R. Leite, C. J. A. P. Martins (2014), we tested an analytic fitting formula provided by M. Hindmarsh (1996), and found that it provided a good fit in the case of a biased potential, but not in the case of biased initial conditions. We describe additional studies leading to the identification of the physical reason for this difference between the two scenarios. We also report on the suitability of the velocity-dependent one-scale model for standard domain walls (A. M. M. Leite, C. J. A. P. Martins, E. P. S. Shellard, 2013) for modeling the evolution of anisotropic walls.

This work was done in the context of the project PTDC/FIS/111725/2009 from FCT, Portugal. C.J.M. is supported by an FCT Research Professorship, contract reference IF/00064/2012, funded by FCT/MCTES (Portugal) and POPH/FSE (EC).

- **10852 | Fine-structure constant constraints on dark energy - Extending the parameter space**

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Astrophysical tests of the stability of fundamental couplings, such as the fine-structure constant α , are a powerful probe of new physics. Recently these measurements were used to constrain the simplest class of dynamical dark energy models where the same degree of freedom is assumed to provide both the dark energy and the α variation. One caveat of these analyses was that it was based on fiducial models where the dark energy equation of state was described by a single parameter (effectively its present day value, w_0). Here we relax this assumption and study broader dark energy model classes, including the Chevallier-Polarski-Linder and early dark energy parametrizations. Even in these extended cases we find that the current data constrains the coupling ζ at the 10^{-6} level and w_0 to a few percent (marginalizing over other parameters), thus confirming the robustness of earlier analyses. On the other hand, the additional parameters are typically not well constrained. We also highlight the implications of our results for constraints on violations of the weak equivalence principle and improvements to be expected from forthcoming measurements with high-resolution ultrastable spectrographs.

- **11119 | First approach for the analysis of siloxanes in seaweed using QuEChERS**

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Due to potential of bioaccumulation and biomagnification in trophic chains with possible toxicological harms, the occurrence of siloxanes in the environment is rising concerns. They are massively used in numerous industrial and consumer applications, whereby its ubiquity is considered a major concern. Several studies have shown the presence of cyclic and linear volatile methyl siloxanes (VMSs) in air, water, soil and living organisms. In this study, a new methodology based on QuEChERS (Quick, Easy, Cheap, Effective, Rugged and Safe) extraction followed by gas chromatography-mass spectrometry (GC/MS) analysis was used to assess the presence of 4 cyclic and 4 linear VMSs in seaweed from the Portuguese coast. Coastal areas are potential hotspots for the presence of VMSs and seaweed can provide important information on their levels and temporal trends. In this method, 2.5 g of sample was blended with dichloromethane:hexane (1:1) and sonicated. Then, two QuEChERS were employed. The first contained MgSO₄ and NaCH₃COO and was used to promote phase separation and the second, containing MgSO₄, PSA bonded silica and C18, to remove undesired compounds (dispersive solid-phase clean-up). The validation parameters were good with linearity from 1 to 1000 µg/L, average recoveries up to 80% and relative standard deviations below 20%. Two naturally contaminated samples from different species were also analysed and revealed the existence of the four cyclic siloxanes.

- **10868 | Flavonoid derivatives with caspase modulatory activity**

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Flavonoids are natural compounds with a broad range of biological properties, namely the ability to induce apoptosis by affecting the expression or activity of a wide variety of molecules involved in apoptosis pathways.¹ As a result of the search for new antitumor agents by our research group, two flavonoids have been identified as procaspase-7 activators.² Inspired by the potential of these flavonoids we have synthesized several analogues using natural flavonoids, as the starting material. The synthetic approach was based on the reaction with alkyl halides in alkaline medium under microwave irradiation. The structure elucidation was established on the basis of NMR techniques. Some of the synthesized compounds were evaluated for their ability to modulate procaspases-3 and -7 activity using yeast cell based assays. Molecular docking studies with procaspases-3, -6 and -7 were also performed.

Acknowledgments: This research was partially supported by the Strategic Funding UID/Multi/04423/2013 (CIIMAR) and UID/Multi/04378/2013 (UCIBIO/REQUIMTE) through national funds provided by FCT – Foundation for Science and Technology and European Regional Development Fund (ERDF), in the framework of the programme PT2020 and the projects PTDC/DTP-FTO/1981/2014 and, PTDC/MAR-BIO/4694/2014 and REQUIMTE-Pest-C/EQB/LA0006/2013.

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- **11177 | Flocking Behavior and Strategic Alliances: a Multi-Agent Approach.**

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The evolution of markets provides a change in the way of acting of the organizations to improve their competitive performance and stay on the market, adopting a strategy to establish agreements with other organizations, as well known strategic alliances.

We explore the flocking behavior, a paradigm with the biology as a source of inspiration which allow us to analyze the collective intelligence behavior that emerges from a group (flocking). Inspired by the Cucker and Smale algorithm (C-S) [1], we propose a flocking algorithm applied to strategic alliances. For this new approach, metrics were constructed for the position, velocity and influence, where the latter uses cooperative games [2]. Adapted mechanisms and methods currently explored in reinforcement learning.

Five parameter configurations were analyzed. For each of those configurations the average number of iterations, the permanence rate of organizations in the alliance and the average growth of the organizations were computed. The behavior of the organizations reveal a tendency for convergence and the permanence rate for the simulated alliances is close to the obtained for real data.

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- **11212 | Functionalized gold nanoparticles as anticancer drug delivery systems**

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Recently, gold nanoparticles have been studied for different biomedical applications and, also, as promising delivery systems for cancer treatment and diagnosis.

In this work, gold nanoparticles are synthesized and conjugated with an anticancer chemotherapy drug and a tyrosine kinase inhibitor. This chemotherapy drug is classified as an anthracycline antibiotic that interferes with the growth and migration of cancer cells in the body. It has been used to treat different types of cancer that affect the lungs, pancreas, bladder and breast. The tyrosine-kinase inhibitor is a potential inhibitor of the epidermal growth factor receptor (EGFR) family that is responsible for the activation of many proteins through signal transduction pathways, resulting in inhibition of cellular proliferation and death.

The strategy of the project is based on the conjugation of both drugs with pegylated gold nanoparticles to reach a synergetic response

The preliminary results show that both anticancer drugs were successfully conjugated with the gold nanoparticles and a controlled release in cancer cell lines was observed.

- **11279 | Geostatistics applied to dam foundation permeability data**

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Geostatistics is used in interpolation and simulation of data with spatial/temporal variability, in the framework of the theory of regionalized variables. These variables are assumed to combine a structural component with random spatially correlated and uncorrelated components.

This work describes the application of Geostatistics to permeability data, collected within boreholes at a dam foundation. The main objective of this preliminary study is to characterize the spatial variability of the foundation permeability, in order to assess the need and type of foundation treatment procedures. A secondary objective is the comparison of different interpolation methods, namely inverse square distance and geostatistical ordinary kriging.

This study comprises an initial statistical data characterization followed by a non-geostatistical spatial data description; study of spatial continuity to characterize the data spatial structure and finally data interpolation using ordinary kriging.

Obtained 2D and 3D maps/models – based on interpolated grids created with non-geostatistical and geostatistical ordinary kriging algorithms - are compared based on cross-validation and error study (residuals maps).

Some limitations of the analysis related with the variogram modeling uncertainty are addressed as well as some future possible developments.

Finally, the obtained results are compared with the geological model.

- **11003 | Gettier's JTB not-a-Problem**

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It is demonstrated that the arguments presented in Gettier's paper (Gettier, 1963) carry incoherencies, both in Case I and Case II. This due to the fact that certain propositions are used to transmit different information at different times, which leads the author to accept that he has made legal deductions where in fact he hasn't. Different cases where such a mistake can be made are presented and it is shown that if a similar use of a proposition is to be made, many problems, inexistent in coherent speech, in communication will arise.

Gettier, E. L. (Jun, 1963). Is Justified True Belief Knowledge? *Analysis*, 23(6), 121-123.

- **11161 | Gomes de Lisboa and the discussion of method in the Renaissance - notes on philosophy's historicity**

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Gomes de Lisboa (GL) was an author that kept teaching Duns Scotus' doctrines in the context of the new philosophical movements in the Renaissance, such as platonism and humanism. Master of philosophy and theology at the University of Pavia between 1482 and 1511, he discussed important philosophical problems and met some of the most influential figures of his period, such as Ludovico Sforza or da Vinci. With this presentation, I intend to consider transformations on scientific method in the Renaissance by making an analysis of his *Questio perutilis de cuiuscumque scientie subiecto, principaliter tamen naturalis philosophie*. This text was written against Nicoletto Vernia, one of the authors of his time that deeply questioned scientific method. In this *quaestio*, GL holds that only one criterion is required to define the subject matter of a science - virtual inclusion (*continentia virtualis*). He also theorizes on the genesis of knowledge by showing a doctrine on evidence, where sensation has a scanty role, and presents a way to convert a 'quia' demonstration (demonstration by effects) in a 'propter quid' demonstration (demonstration by the cause). This discussions paved the way to the Galilean revolution.

Departing from this considerations, I intend to discuss philosophy's historicity by stating that it is not possible to understand philosophy but from the starting point of its history and that, simultaneously, philosophy is not a mere opinion repository.

- **11220 | Group work or teamwork? Distinguishing variables according to students' conceptions about teamwork.**

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Theoretical based on the concept teacher researcher, this investigation is empirically supported on the fact that individuals' conceptions about teamwork might interfere on the team performance. As such we decided, after using as teaching method Team-Based Learning, to indirectly explore in a section of the final questionnaire the students' conceptions about group and teamwork, in order to identify the variables that according to them distinguish both. The analysis revealed that most of the inquired students believe there aren't any differences between the two. In the students' answers who believe there are differences, we inferred variables that fall within the scope of interpersonal relationships and cooperation. Most of these students think that they worked as a team during the didactic unit where TBL was applied. A small percentage presumes that sometimes they worked as a group, and sometimes as a team. Despite the study limitations, from which we choose to highlight the small sample size, we are able to establish a connection between the variables found in the students' speech and the theoretical distinction between group and teamwork. However, we must stress that the speech content associated with these variables show the existence of misconceptions about group and teamwork.

Keywords: teacher researcher, teamwork, conceptions, Geography, History, Team-Based Learning

Acknowledgements: Professor Doutor Paulo Jorge Santos for reviewing the questionnaire and suggestions.

- **10990 | Harmonious Space as an Architectural Intend**

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The aim of this paper is to understand the crucial role that Le Corbusier's metric system – "Modulor" – still plays in the contemporary architectural scene. The main goal is to comprehend how "Modulor" was used and how it still influences the architectural intend in the design process i.e. the way architects interpret the relation between space, form and its appropriation.

This metric system, explored by Le Corbusier at the end of first half of the twentieth century, intended to seek, through Mathematics, a logic/compositional sequence based on Human dimensions and proportions. The combination of both Nature and Geometry will provide the architect with a working instrument, a litmus test, which according to Le Corbusier would determine whether the architectural composition was in the right harmonious path, towards Beauty. Beauty, only achieved when all the different design elements are part of a single composition, harmonic and balanced. This unity interprets space as a unique structure, textured in its design themes and narratives, which can't be divided at the risk of losing its coherence. Hence, the notions of form and space appear as a system, integral and unbroken. This way of thinking, underlining the importance of compositional themes in an architectural object, changed completely the understanding of the design process.

The present essay, part of an ongoing investigation at FAUP, intends to express the harmonic principles emphasized in the "Modulor".

- **11017 | Hereditary Diffuse Gastric Cancer – beyond CDH1 coding mutations**

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Hereditary Diffuse Gastric Cancer (HDGC) is a rare, highly penetrant disease, with a mortality rate of >90%. Heritable mutations within coding regions of E-cadherin encoding gene, CDH1, in ~45% of probands diagnosed with HDGC were established as its major genetic factor. It is imperative to disclose novel causes for HDGC in order to decrease the high mortality rate observed in the remaining ~50% of cases. Knowing that, despite being carriers of CDH1 coding mutations, 90% of patients with HDGC present aberrant or non-existent expression of E-cadherin and 70% display massive CDH1 germline monoallelic downregulation/allelic imbalance at the RNA level indistinguishable from those found for CDH1 mutation carriers, led to the hypothesis that the mutations in the non-coding sequence might compromise the expression of E-cadherin. To address this, the complete CDH1 locus of 90 CDH1-alteration negative HDGC probands was screened. 110 heterozygous germline CDH1 non-annotated and non-coding variants (NCVs) were filtered-out and subjected to a prioritization strategy combining wet lab and in silico analysis. These analysis allowed the identification of 65 NCVs regarded as the putative cause of HDGC for 31/90 probands. In addition, the functionality of such NCVs will be analyzed using cell culture and the model organism zebrafish for a better physiological frame. From a clinical standpoint, if our hypothesis is correct, we expect to improve the management for 50% of HDGC families.

- **10942 | Home range influence in Podarcis bocagei escape behaviour.**

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Lizards use flight as main anti-predator behaviour, frequently escaping to a refuge. This response is well studied in terms of morphology, physiology and reproductive biology, though the spatial context is frequently ignored. The home range influence or the spatial factors of refuge selection are not completely understood. We aim to determine the influence of Podarcis bocagei's home range on its escape behaviour, namely, whether lizards abandon their home-range when escaping. This study was conducted inside a 400m² mesocosmos using three male acclimatized adult individuals. We generated a Digital Elevation Model using a Real-Time Kinematic GPS, with a centimetre-level accuracy due to real time corrections. We obtained a refuge map with a supervised classification of an orthorectified aerial photo generated with 1156 photos using Agisoft Photoscan software. We approached each lizard with a constant pace and manually marked three georeferenced points in the orthophoto (predator location, starting and final escape locations). We recorded home range locations of each lizard directly on the orthophoto by walking randomly in the mesocosmos. We estimated home-ranges using a 95% Minimum Convex Polygon. Many disturbed lizards fled outside the home-range, although keeping short distance (about 50 cm; Fig1). Lizards may temporally flee outside home range limits, but keeping a short distance allowing them to easily return, and hence, ensuring the mid-term persistence of their home ranges.

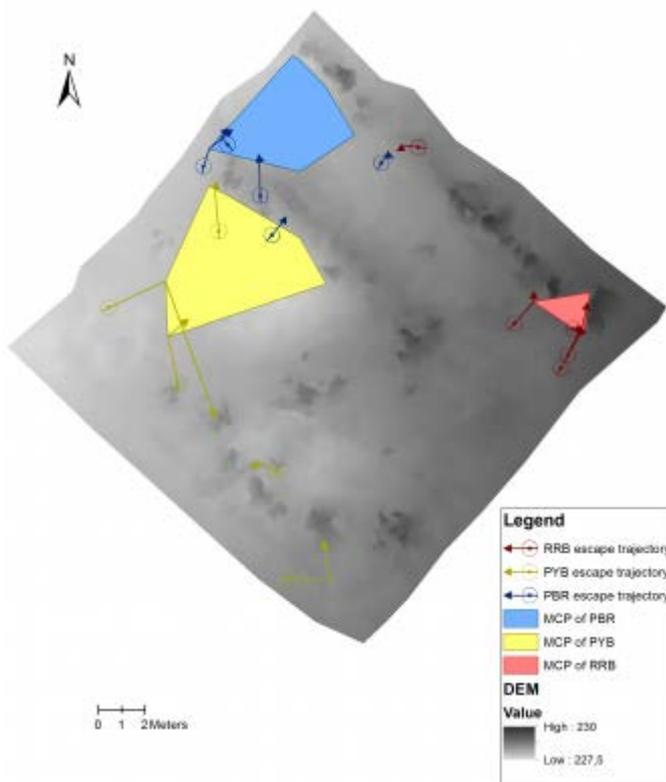


Fig. 1 Home range map and escape trajectories of each lizard. The circle represents the position of the predator and the arrow the direction and position of final location.

- **10979 | How nitrogen is recycled in cryptoendolithic communities of Antarctic deserts?**

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The McMurdo Dry Valleys (MDV), in Antarctica, have low biodiversity being characterized by extreme and unfavorable conditions for life. However, in the middle of these frozen deserts emerges a true “oasis”: the cryptoendolithic communities that proliferate inside rocky substrates. In order to characterize this communities of MDV with particular emphasis on those involved in the nitrogen biogeochemical cycle, we followed four sequential approaches: (1) enrichment of cultures from cryptoendolithic samples, to cultivate unique ecotypes; (2) diversity characterization by using molecular fingerprinting and next generation sequencing (NGS) techniques; (3) identification of dinitrogen (N₂) fixers and nitrifying prokaryotes and (4) isolation of diazotrophs and nitrifiers by conventional culturing techniques. Our results revealed that the cryptoendolithic community is dominated by Cyanobacteria (44%) and Actinobacteria (30%), suggesting a structural role of those groups in the community and a close syntrophy relationship between the two groups. We also identified a genus related to Archaea ammonia oxidizers (*Candidatus Nitrososphaera*), a genus associated with nitrite-oxidizing bacteria (*Nitrobacter*), and several diazotrophic non-heterocystous cyanobacteria (*Chroococcidiopsis*, *Cyanothece*, *Leptolyngbya*, *Oscillatoria*) which provide important insights for further understanding of nitrogen recycling in the cryptoendolithic communities of MDV.



Cryptoendolithic communities from McMurdo Dry Valleys, Antarctica.

- **11013 | Impact of microplastics in phytoremediation of metals by estuarine plants**

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Microplastics (MP) (plastic debris < 5 mm) are emergent contaminants that are widely spread in natural systems, although their real impact in the environment remains understudied, mainly interferences in major ecological processes.

The aim of this work was to investigate possible interferences of MP in phytoremediation of sediments contaminated with trace metals through salt marsh plants. Concretely, to: (1) assess the impact of MP presence in the levels of metal uptake by salt marsh plants; (2) assess the levels of MP that can be retained by estuarine sediments.

To achieve the proposed objectives, an experimental assay with elutriates (estuarine water shaken with sediment accordingly to EPA protocol) was carried out. Salt marsh plants (*Phragmites australis*) collected from Lima estuarine area (NW Portugal) were exposed to elutriate solution doped with copper (Cu) or with Cu plus MP of polyethylene in the presence or in the absence of sediments. After seven days, Cu content on sediments and plants tissues were measured following previously optimized methodologies.

Preliminary results indicate that in MP presence, the levels of metal adsorbed/absorbed in plant roots tended to increase, but only in the absence of sediments. When sediments were present the concentration of Cu retained by plants and sediments remained unchanged, indicating that apparently MP did not affect *P. australis* potential for phytoremediation.

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- **11334 | In vitro anticancer activity of marine algae compounds in colorectal cancer cell lines. How to evaluate?**

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The marine environment provides an extensive source of bioactive natural compounds. The exploitation of marine algae has been allowing the isolation of numerous novel compounds demonstrated to possess interesting biological activities, such as antibacterial or cytotoxic and anticancer activity. Colorectal cancer is one of the most commonly diagnosed cancers worldwide and patients in advanced stages require chemotherapy with drugs such as fluorouracil. However, most of the anticancer drugs currently used give rise to undesirable side effects. Therefore, new anticancer drugs with more efficiency and ability to mitigate side effects are in need. In fact, compounds that reactivate cell death and/or decrease proliferative ability in cancer cells show a potential anticancer activity. To evaluate the potential beneficial effects of algae compounds in the treatment of human colorectal cancer, in vitro studies are essential to assess effects on cell viability and to elucidate about the possible molecular mechanism involved. Moreover, besides two dimensional cell culture remain the most widely used in vitro model, the three dimensional cell culture, seems to be a more realistic model for testing and discovering new drugs to treat cancer. We are exploring the latter concept in a project that involves the following sequence of steps: 1) cytotoxic effects in cancer cells; 2) cytotoxic effects in normal cell lines; 3) evaluation of molecular mechanisms and 4) anticancer effects in 3D cell culture.

- **10998 | Industry's territories: dynamics and local policies**

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At a time when both reindustrialization and the allure of Smart Specialisation from European speeches are talked so much, it falls upon the Geography to reflect the role of the territory's in industrial dynamics, as a way to understand the relationship and the existing restrictions, how this link has evolved over time and develop a possible understanding of the current challenges to economic activities. Territory and industry maintain an active or passive relationship? What are the factors that make the territory an economic actor presently?

Studies on the location of economic activities are still quite present, both in scientific research as in supporting business and policy makers, with a view to the development of strategies or public policies directed to the favouring of territorial contexts for innovation on the level of planning and regional planning, and also the streamlining of business processes.

It is in this logic that this work is developed: we start from the analysis of large industrial location factors present in economic theory and conjugate them with the assumptions of Smart Specialisation within the Europe 2020 strategy, focusing our analysis on the economic activity in the municipality of Maia.

- **10986 | Influence of Human Blood Plasma in Bacteria and Platelet Adhesion to Biomaterials**

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The use of polyurethane (PU) intravascular catheters is a very frequent medical procedure. Yet, complications associated with their long-term use persist, mostly in the form of infections or thrombus. Bacterial adhesion along with platelet adhesion and activation are the main causes of those problems. Hence, it is important to understand how these processes are influenced and how can they be diminished.

In this study, the influence of human blood plasma and respective proteins, albumin and fibrinogen, on platelet and bacterial adhesion to a medical grade PU was evaluated. Glass and tissue culture polystyrene were used as controls. PU thin films (13 mm diameter) were prepared by casting (Pellethane 2363-80 AE at 12.5% w/w in tetrahydrofuran). Surfaces were characterized by contact angle measurements, x-ray photoelectron spectroscopy and infrared spectroscopy. Quantification of platelet adhesion and degree of activation was accomplished using scanning electron microscopy and fluorescence microscopy. The same techniques were used to follow bacterial adhesion, namely *Staphylococcus aureus* and *Staphylococcus epidermidis*, the main responsible for catheter-related infections.

Data recovered showed bacteria and platelet adhesion/activation to decrease in the presence of plasma proteins. The effect of the incorporation of antimicrobial compounds into PU was also evaluated. Here the goal was to improve the antimicrobial performance of PU without compromise its hemocompatibility.

- **10918 | Interaction of xanthone with double stranded DNA in water/ethanol solutions**

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Several drug design studies have been carried out on xanthone and its derivatives, to evaluate their bioactive properties. Recent works have confirmed that one of the main bioactive properties displayed by these compounds is their anti-tumoral activity. Double stranded DNA is widely known to be a potential target for anti-carcinogenic drugs. Therefore, there is a relevant importance in studying the interaction of xanthone compounds with double stranded DNA.

In this communication, we present the study of the interaction of xanthone with double stranded DNA, in water/ethanol solutions, using UV-vis spectroscopy and viscosity measurements. Absorption spectra and UV melting curves were recorded for solutions with constant DNA concentration and different concentrations of xanthone. DNA denaturation temperature in each solution was obtained from the curves of fraction of melted base pairs as a function of temperature. The hyperchromicity of the samples at 260 nm was calculated at the denaturation temperature and at a higher temperature, at which it is assumed that the strands of DNA have been totally separated.

A noteworthy interaction of xanthone with DNA, changing the structure and stability of the double helix, is sustained by the results obtained by both techniques, suggesting the binding of xanthone to DNA mainly by intercalation. These results are expected to provide a deeper insight into the DNA-binding properties of xanthenes.

- **10992 | Internationalization on the Higher Education: Perceptions of students about the welcoming to the foreign student.**

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This research aimed to understand how perceptions of students, in academic mobility at Faculty of Psychology and Sciences of Education, from University of Porto, comes qualifying internationalization on the higher education process. There are associated to this experience, the concepts of multiculturalism and quality of education. It was used semi structured interview, whose were selected five students of female gender and four of male gender and it sought to know the documents that institutionalize the reception of foreign student at University of Porto. It appears that, challenged by geographical and intellectual shift, brazilian students are feeling well welcoming by institucional enviroment, although they are finding difficults if permeates time management, language, adaptation to the didatic methodologies, some routines of study and another aspects associated with local reforms, product of the Bolonha Process (1999). Although it is climbing spaces, internationalization in higher education still have many challenges in the sense of extension and exchange of opportunities. About the new acess to the formation, the internationalization is an experience that is distant an effective "education for all", who is perceived by respondents after critical reflexion.

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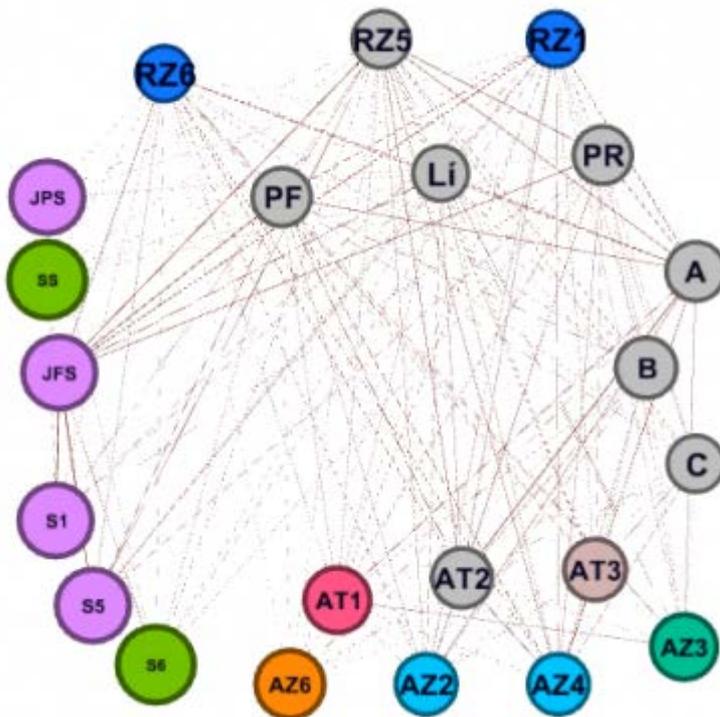
- **11219 | Investigating game actions in elite-level women's volleyball through Social Network Analysis**

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In a systematic approach to mapping the game of Volleyball, Social Network Analysis emerges as a tool for objectifying relationships (edges) between game actions (nodes). Volleyball is composed of six subsystems or Game Complexes (K). Our study focused on the interaction between some variables of Complex 0 (K0: Serve Zone and Type) and Complex I (KI) or side-out (Reception Zone, Setting Zone, and Attack Zone and Tempo). The fifteen matches played during the Group 1 Finals of the World Grand Prix'2015 were analysed (7,176 ball possessions). Eigenvector centrality was calculated, measuring the importance of an action in the global network. Data showed that serves from zones 1 or 5, executed in jump (float or power; eigenvector of 0.97 in both cases) were very common. The most solicited reception zones were 1 and 6 (0.85), while the libero was the most activated player in reception (0.85). Setting zone C was prevalent (0.93), as well as Attack Tempo 2 (0.87) and Zones 2 and 4 (0.85). In sum, it was observed that Standing Serve has a reduced role in high-level women's volleyball. Although the libero is the expert reception player, most of serves were directed to her responsibility zone, deserving future exploration. We further underline the importance of working attack construction under conditions of C ball (i.e., setting performed in difficult situations).



Interactions between Complexes 0 and I (Eigenvector Centrality)

- **11117 | Ionic Liquids at the interface: think nanoscale!**

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Ionic liquids (IL) have caught the scientific's community attention due to their physical chemical properties and nowadays these materials cover a wide range of applications in many fields from electrochemistry, as solvents, nanomaterials, as dispersing agents, renewable energies in dye sensitized solar cells, among others.

Structurally, it has been proven that they form nanoaggregates constituted by anions and cations giving rise to a network of highly polar areas ruled by coulombic forces and nonpolar ones corresponding to regions of alkyl chains dominated by Van der Waals interactions. Adding this peculiar arrangement to the growing interest on interfaces, our work has been focused on the production of thin films of IL's by physical vapour deposition in several chemically different substrates and its morphological characterization and elemental analysis by scanning electron microscopy (SEM) and X-ray photoelectron spectroscopy (XPS).

Two families of IL's, $[C_nClIm][NTf_2]$ and $[C_nC1Pyrr][NTf_2]$ were deposited under vacuum on three substrates: graphene, ITO and glass. The nanostructures produced were constituted of droplets whose shape varied depending on its family (Figure 1.). It has been shown that parameters such as the type of substrate, the time of deposition and the mass flow rate had influence on the morphology of the thin films.

In the future computer simulations and atomic force microscopy (AFM) are expected to be introduced into this research.

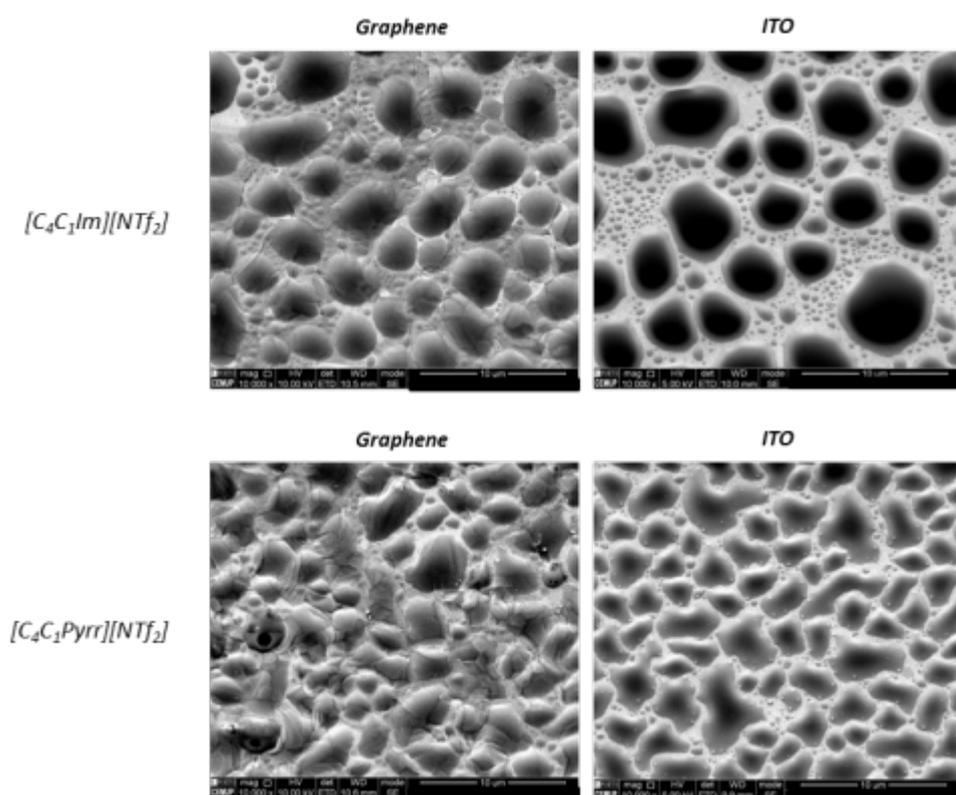


Figure 1. SEM images of the thin films of ionic liquids $[C_4C_1Im][NTf_2]$ and $[C_4C_1Pyrr][NTf_2]$ in Graphene and ITO. Time of deposition: 20 minutes

- **11210 | Is marine salt consumed in Portugal an actual source of iodine?**

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Iodine is a nutrient and an element of the thyroid hormones regulating human growth and development. When iodine intake is low it leads to iodine deficiency disorders, and severe metabolic dysfunctions may arise. Universal salt iodization is a safe, cost-effective, and sustainable strategy to ensure sufficient intake of iodine by all individuals.

The aim of this work was to assess the iodine levels of salt used for cooking available in Portugal, in order to provide much needed data on its potential as a source for such nutrient, and its contribution to tackle the iodine deficiency in the country. About 20 samples of salt available in the market were purchased (origin: Portugal, Spain and Himalaya). Iodine concentrations (KI and KIO_3) were assessed by titration using a recommended method. Most of the samples (Portugal and Spain) were of marine origin.

Although iodine was always present (in both forms), the levels were well below the UNICEF recommended threshold of 15 ppm of I_2 . In Portugal, salt iodization is not mandatory, and therefore most of the non-iodized marine salt available is not a natural source of iodine for humans.

- **10974 | Isolation of bioactive compounds from Morocco marine cyanobacterial mats**

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Cyanobacteria produce a large number of secondary metabolites with diverse structures and potent bioactivities. To uncover new chemical diversity from this phylum, we have undertaken a sampling campaign along the Atlantic coast of Morocco. Biological material was collected from three marine benthic cyanobacteria mats dominated by *Lyngbya* spp., one from a rocky beach (Qualidia) and two from small saltern ponds located just behind the primary dune (Mrizika).

Crude organic extracts were obtained for the three mats, which were then fractionated by Vacuum Liquid Chromatography (VLC). The resulting fractions were submitted to a panel of bioassays, namely antimicrobial assays against Gram-negative bacteria, Gram-positive bacteria, and the yeast *Candida albicans*; enzymatic inhibition assays (using the 20S proteasome and HDAC as targets); as well as in vitro cytotoxicity assays with human cell lines.

Some fractions showed exceptional antimicrobial activity against *B. subtilis* and *S.aureus*, as well as evident cancer cell cytotoxicity activities, indicating the presence of promising compounds. These fractions are currently undergoing bioassay-guided isolation, with the goal of purifying and identifying the structures of these cyanobacterial secondary metabolites. The whole isolation process is being monitored by ¹H NMR analysis to verify the purification state and chemical nature of the compounds.

- **10953 | LEADER'S CREATIVITY AND INNOVATION: STATE OF THE ART**

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Creative and innovative organizations need creative leaders (Mumford, Scott, Gaddis, & Strange, 2002). However, while several studies have investigated the direct and indirect links between leadership factors and employee creativity (Mathisen, Einarsen, & Mykletun, 2012), few studies have examined the leader's creativity and its importance for promoting employee creativity. Furthermore, the literature is not clear about different aspects such as the definition of creativity and the distinction between creativity and innovation. Thus, two different points should be analyzed: how does the scientific community think and study creativity and innovation?; and how is the creative and innovation processes in the leader?

Although there's no universal definition of creativity, two aspects seem to be unanimous in the literature: creativity is about the creation of an original and useful product (Mayer, 1990). In an organizational perspective, it's important to study creativity and innovation together. However, the distinction between both it's not clear. Nevertheless, based on the models of creative or innovation processes, it's possible to consider that the innovation process comprises four sequential moments: problem identification; idea generation; promotion of selected idea; and idea implementation. It is important to understand what is known regarding this subject, since its importance to the success of organizations and the well-being of its members.

- **11252 | Leisure and Sports practise offered by non-public institutions in the city of Viseu**

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According to the European Chart of sport, sporting activities provide the enhancement of physical, psychic and social relations increase. In addition, the same document emphasizes the importance of such activities highlighting the indispensability of promoting them by governments in order to enhance human development. The main goal of this study was to describe the sport and leisure practical activity provided by non-public institutions of Viseu city. A total of 21 institutions that provide 12 sport and leisure modalities were studied. Through the analysis performed it was found that the activities of the academy are those that are currently most widely practiced as sport and / or recreational activities in this county. The percentage of practice in the city of Viseu is much lower not only compared to the national scene, but also with the Centre region. Unlike the data for Portugal and the Central region (which have levels of sports substantially higher for males), in the county of Viseu does not exist a large discrepancy when comparing the levels of practice according to gender.

- **10915 | Lifelong moderate exercise training induces different biventricular adaptations in Sprague-Dawley rats**

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Introduction: Sedentary aging is strongly associated with an increased risk of developing cardiovascular diseases. Physical exercise (PE) appears to be capable to modulate this progression. The aim of our work was to evaluate the impact of PE in the biventricular functional, structural and molecular adaptations, in an animal model of aging. Methods: Twenty Sprague-Dawley females with an average of 5 weeks were randomly separated in 2 groups: EX, subjected to 54 weeks of training, 5days/week, 1h/day, 20m/min; and SED, subjected to 54 weeks of sedentary. All the animals were subjected to functional evaluation and euthanized for samples collection. Results: In the right ventricle (RV) EX group presented a decrease in mass and hypertrophy of the myocytes ($p < 0.01$ vs SED) as well as interstitial fibrosis ($p < 0.01$ vs SED). These alterations were followed by a decrease in the medium layer of pulmonary arteries ($p < 0.05$ vs. SED). In the left ventricle (LV) EX group presented an increase in myocytes hypertrophy ($p < 0.001$ vs SED) and decreased interstitial fibrosis ($p < 0.05$ vs. SED). Moreover, EX group presented systolic and diastolic improvements in both ventricles represented in Table 1. Biochemically, the RV presented an increase in the protein expression of PGC1 α /citrate sintase (CS), Tfam/CS, SIRT3/CS and MnSOD/CS ratios ($p < 0.05$ vs SED). Conclusion: Our study suggests that both ventricles suffer distinct functional and molecular changes in response to active aging.

Tabela 1. Hemodynamic evaluation

Table 1. Hemodynamic evaluation

Experimental group	Heart rate (bpm)	Pmax (mmHg)	Pmin (mmHg)	ESP (mmHg)	EDP (mmHg)	dP/dtmax (mmHg/s)	dP/dtmin (mmHg/s)	T (ms)
SED RV	299.00 \pm 13.42	32.48 \pm 3.79	0.22 \pm 0.04	31.61 \pm 4.56	5.18 \pm 0.73	1999.00 \pm 118.70	-1654.00 \pm 391.30	11.62 \pm 4.66
EX RV	286.60 \pm 22.04	26.93 \pm 1.43***	0.25 \pm 0.14	25.75 \pm 2.11**	4.13 \pm 1.56	1928.00 \pm 224.00	-1211.00 \pm 265.80*	11.53 \pm 3.10
SED LV	313.10 \pm 28.42	146.50 \pm 16.92	1.83 \pm 1.72	143.00 \pm 15.87	8.74 \pm 4.36	9658.00 \pm 1706.00	-10550.00 \pm 1950.00	11.59 \pm 1.39
EX LV	292.20 \pm 17.83*	160.40 \pm 12.48*	1.76 \pm 1.59	157.90 \pm 12.06*	5.80 \pm 1.97*	9768.00 \pm 764.80	-11070.00 \pm 376.70	11.55 \pm 0.95

Pmax, maximum systolic pressure; Pmin, minimum systolic pressure; ESP, end-systolic pressure; EDP, end-diastolic pressure; dP/dtmax, peak rate of pressure rise; dP/dtmin, peak rate of pressure fall ; T, tau time constant. Values are given as mean \pm standard deviation for all variables. * $p < 0.05$ vs. Sed; ** $p < 0.01$ vs. Sed; *** $p < 0.001$ vs. Sed

- **11193 | Linking Human Resources Management Practices and Entrepreneurial Venture Companies: Review of the Literature**

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The present paper is a product of the ongoing dissertation project within the Master in Human Resources Management program of the Faculty of Economics of the University of Porto entitled “Human Resources Management Practices in the Context of Entrepreneurial Venture Companies”.

The beginning years of the 21st century offered a societal background for the rise of multiple and complex non-standard work formats, that have acquired increasing attention within scientific research.

It is the case of entrepreneurial-based venture companies, which have been frequently addressed within management and economics investigation, but human resources management (HRM) as generally ignored the possible intersections between its conceptual schemes and this type of work configuration, being rare the inquiry efforts that link these two themes.

In this context, the present paper aimed to review the literature crossing HRM and entrepreneurial ventures. Specifically, diagnosing which HRM practices are usually employed by these companies and understanding the types of procedures normally adopted to implement those practices.

The analysis of these research materials made possible to underline: (1) the importance of informal HRM practices in the day-to-day life of these companies and (2) the role of the life-cycle moment of the enterprise as a contingency variable to analyse how is the bundle of HRM practices implemented.

- **11104 | Modulation of colorectal cancer stem cell pool by oncogenic alterations**

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Colorectal cancer (CRC) is one of the most common cancers worldwide and mutations regarding K-Ras, B-Raf and PIK3CA oncogenes are usually present in more than a half of the cases. Given the importance of cancer stem cells (CSCs) for tumorigenesis, disease recurrence, metastasis and therapy resistance, in this work we aimed at investigate the role of these oncogenic alterations in the induction CSC properties.

Our work shows that inhibition of mutant K-Ras in HCT116 CRC cells decreases the number of CD44 positive cells, and induces a shift of the remaining positive pool towards a CD44 low population. CD133 and CD166 CSC markers were also evaluated, although no significant changes were observed. K-Ras inhibition also downregulates the levels of ITG α 6, another CSC marker, and its co-receptor ITG β 4, as well as c-Met, a receptor previously shown to mediate CSC induction by myofibroblasts. Inhibition of mutant PIK3CA or BRAF did not trigger a decrease in CD44, CD133 and CD166, or in α 6 and β 4 integrins and c-Met as marked as upon K-Ras inhibition.

In conclusion, our data shows that mutant K-Ras, but not PIK3CA or BRAF, effectively modulates the expression of several CSC markers. Additionally, the capacity to downregulate c-Met suggests that K-Ras may be a key player in the sensitization of CRC cells to microenvironment stimuli.

- **10836 | Musical Events as a way of Social Representantion in the eighteenth century**

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This paper focuses in studying musical shows in Portugal during the eighteenth century, using news from the newspaper Gazeta de Lisboa. In light of what is known about the Baroque and its music, it is important to stress its role in the sociability of the elites, especially because they used music as a way to stand out from their peers. After collecting the data, we can attest that, in the first half of the century, the newspaper Gazeta de Lisboa did contain more references about musical shows. These shows were manly religious and sponsored by religious institutions and the Crown. In the second half of the century, there are fewer references to musical shows than in the reign of D. João V, and they are mainly public and religious. Futhermore, it is also possible to assert that the newspaper Gazeta de Lisboa was a mean of affirmation by an elitist society which showed its modernity through music.

Key-Words: Eighteenth Century; Music; Baroque; Gazeta de Lisboa

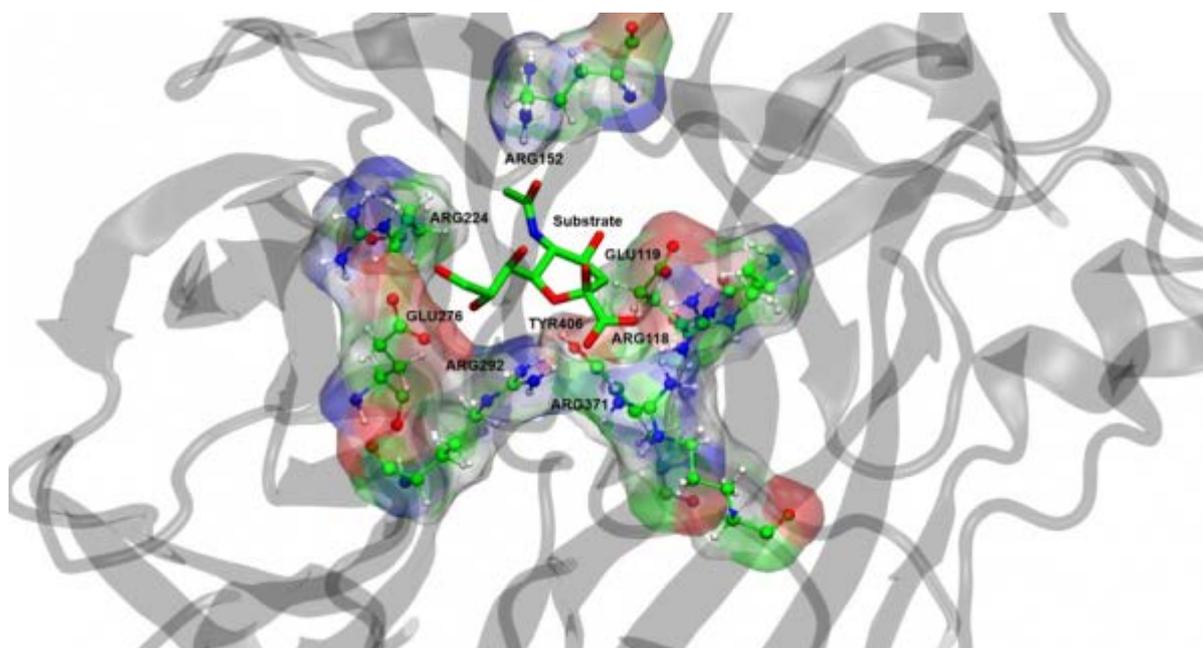
- **10934 | Neuraminidase: a quest for new inhibitors**

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Neuraminidase (NA) is a surface protein that plays a crucial role in influenza virus (IV) replication and dissemination. NA active site is highly conserved among all IV strains, making it an excellent target for antiviral drugs design. Several compounds, with different chemical scaffolds and functional groups have demonstrated potential inhibitory activity against NA. However, the chemical features that turn these molecules into good NA inhibitors are still poorly understood. In this study, we explore by computational means the structural features of several NA compounds whose inhibitory activity is experimentally known. A total of 238 compounds were collected and divided into 6 classes, attending to the characteristics of their main chemical scaffold. All of these molecules were then subjected to a flexible ligand docking using Autodock [1] and to QSAR analysis. The results have shown that the compounds having a 6-membered central ring in their main scaffold are the best inhibitors. This happens because they become better accommodate in the NA active site and establish more interactions with the active site. It was also observed that the inhibitory activity of the compounds increases substantially when they contain small polar substituents on the central ring, like polyols, or large apolar substituents such as phenyl groups. The obtained knowledge can now be used in drug design campaigns to optimize existing NA inhibitors and propose new ones

REF:

[1] DOI: 10.1002/qua.2273



Three dimensional representation of neuraminidase complexed with its natural substrate, sialic acid.

- **11030 | New challenges for EU Competition Law: “umbrella effect” and civil liability**

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Is settled the understanding that the practitioners of anti-competitive practices must account for its effects. But what is the **reach** of this responsibility?

The case **Kone AG and Others v ÖBB-Infrastruktur AG** (C-557/12 - CJEU) was the *leading case* in Europe to address the question of liability of the members of a cartel on damages to indirect purchasers. Such purchasers bought the product from out of cartel companies, but with an artificially high price, caused by the cartel activity (situation called by economists as “**umbrella pricing**” or “**umbrella effect**”).

CJEU decided to blame the cartel for the “umbrella effect”, which caused a huge expansion on the civil liability field of action.

In 2014, as was predicted, the **Directive 2014/104/EU**, tried on “rules governing actions for damages under national law for infringements of the competition law Provisions of the Member States and of the European Union”, aiming on harmonizing legislation and also expanding the liability rules.

All this created a **genuine new competition liability system** in Europe, with different solutions on old issues of civil liability, requiring an update for the lawyers, national courts, governments, competition authorities and, specially, the European business players.

Therefore, the research deals with the **scope** and the **consequences** of these new developments in European competition law and its effects on business practice and domestic law

- **10939 | New triazole and non-triazole linked coumarin glucosides: synthesis, structure elucidation and biological activity**

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A huge amount of bioactive compounds contains in their molecular architectures 1,2,3-triazole as an important moiety mainly due to metabolic stability and convenient synthesis.¹ Taking this in consideration the aim of this work was to synthesize new potential anticoagulant coumarin derivatives containing 1,2,3- triazole as linker.

The synthesis of triazole-linked glucoside coumarins at positions 6 or 7 was planned in order to infer, in the future, the influence of the triazole position on the bioactivity. For structure-activity relationship purposes, we also planned direct glycosylation at positions 6 or 7.

Overall, thirteen new coumarin derivatives were obtained, i.e., two propynyl, three acetyl glucosides, three glucosides, and five sulfated derivatives, and the structure elucidation was established by IR and NMR for the first time. The anticoagulant activity of 6-(1-(1-(2,3,4,6-tetrasulfate- β -D-glucopyranosyl)-1H-1,2,3-triazole-4-yl)methoxy) coumarin was measured by the classical clotting times - activated partial thromboplastin time (APTT), prothrombin time (PT), and thrombin time (TT). This compound was found to prolong the APTT in a dose-dependent manner.

In the future, the anticoagulant activity will be tested for the other four sulfated compounds and structure-activity evaluated.

- **11142 | Numerical simulations of flexible thermoelectrics**

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Energy is one of the main requests of our society nowadays since our modern world depends largely on energy to live. The necessity for the improvement of energy generation boosts the search of alternative energy generation with special attention on its harvesting. Thermoelectrics appear as one of the best candidates since around 60% of the wasted energy is in the form of heat. Thermoelectric generators are small, portable, possess no moving parts and require almost no maintenance. These qualities make them an improved way of generating energy. However, their efficiency is still low for large scale applications. Thus, the study and improvement of their efficiency is of utmost importance. In this presentation, thermoelectric generators and devices are explained. Simulations performed using the COMSOL Multiphysics software regarding the efficiency of thermoelectric devices are presented and its results are discussed, emphasising how to optimize and improve devices' operation. Finally, developed flexible thermoelectric devices and their COMSOL's simulation will be presented and explained. A comparison with their simulation will also be commented.

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- **11014 | On Rhetorical and Temporal Relations in a Short Story**

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This work is on the semantics of the rhetorical and temporal relations founded in fragments of a short story.

The analysis of our corpus led us to hold that throughout the text there is a considerable recurrence of the rhetorical relation of Narration. We also verified parity between the rhetorical relations of Narration, Elaboration and Background throughout the text. Moreover, we propose a new type of the rhetorical relation of Elaboration, considering two subtypes: Elaboration S that is the prototypical one that characterizes situations and gives detailed information about a specific situation, and Elaboration E that is the new one and characterizes people or objects and gives to us additional information about a certain object or person.

Tense and aspect are essential factors that contribute for textual cohesion as so the rhetorical relations. We have seen in this work that the Pretérito Imperfeito do Indicativo combined with states or events describes entities and gives a background for the story. Contrariwise the Pretérito Perfeito do Indicativo combined with events typically, promotes the advance of the narrative. We also verified that these two verbal tenses lead to different rhetorical relations: on one hand, the Pretérito Perfeito do Indicativo combined with events, typically points to the rhetorical relation of Narration. On the other hand, the Pretérito Imperfeito do Indicativo combined with states and events points to the rhetorical relation of Background.

- **10985 | Online research principles for serendipity: the creative process as a case study**

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The Internet is by far the major available source of information and when most people need to look up something they often use online search engines. These are gradually evolving towards the personalization of results, aiming to reply more accurately to the needs of their users and intending to make them more satisfied by guessing what they supposedly want to find.

This represents a major technological breakthrough, but some authors have concerns about the possibility of it to reduce the space for unpredictable and surprising results, and consequently for serendipity to occur.

Serendipity refers to an accidental fortunate discovery. The possibility for this to happen is of major importance in cases where individuals don't really know what to look for, or simply need some kind of stimulus or novelty to boost their ideas or inspirations. This creates the need to understand how we could find ways to potentiate serendipity in online research processes.

We are studying this by applying and analyzing creative methodologies, which aim to introduce randomness in the creative process and break through the creative blocks. We will observe the research strategies of students from a communication design class and if personalization has impact in their creative process, to then develop activities based on various creative methods. With the evaluation of those, we expect to identify the principles inherent in each one and extrapolate them for digital online context.

- **11103 | Optimization studies on formulation of bilayer tablets with carbamazepine**

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The aim of this work was the optimization on formulation of three types of bilayer tablets (biphasic quick/slow delivery systems) with carbamazepine in order to improve their physical characteristics and dissolution rate. The sustained release layer was composed by the drug and one of three matrices, such as Kollidon® SR (inert), Protanal® CR 8223 (hydrophilic) and Lubritab® (lipidic). The rapid release layer was kept constant and contained the drug and Ac-Di-Sol® (superdisintegrant). Initially, the flow properties were determined. Afterwards, three types of bilayer tablets were prepared, as follows: the rapid release layer was obtained by compaction; the sustained release layer was then added to the compacted first layer and tablets were obtained by compaction of the two layers. Weight uniformity, thickness, friability, hardness and tensile strength were evaluated in the manufactured tablets. The "in vitro" drug release studies were performed during 8 hours and the dissolution profiles of tablets were compared using the similarity factor (f₂). Additionally, the differential scanning calorimetry (DSC) analysis was performed.

Bilayer matrix tablets with suitable physical properties were produced and allowed a quick release of the carbamazepine contained in the immediate release layer and a slow release of the same drug contained in the sustained release layer. The DSC thermograms revealed that there is no incompatibility between the drug and the excipients.

- **11067 | Overexpression of P2X7 and A2A receptors in the hippocampus of patients with mesial temporal lobe epilepsy (MTLE)**

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Nearly 30% of epileptic patients exhibit drug-refractory MTLE. This calls for new pharmacological targets to control epilepsy. Recent evidences suggest that excessive ATP and adenosine release during seizures may exert a pro-epileptic role via P2X7R and A2AR activation, respectively. This study aims at evaluating the expression and cellular localization of P2X7R and A2AR in the hippocampus of cadaveric controls and MTLE patients by Western blot and immunofluorescence confocal microscopy. Data show that P2X7R and A2AR are overexpressed in the hippocampus of MTLE patients. While the P2X7R is located predominantly in nerve terminals, the A2AR is expressed mainly in astrocytes. Full-length “functional” P2X7R (~85 kDa) protein levels are increased in total lysates and nerve terminals of the hippocampus of MTLE patients, but the same was not verified for the most abundant, although “non-functional”, truncated P2X7R transmembrane domain 1 (~67 kDa). Total cell lysates of MTLE hippocampus are highly enriched in the A2AR protein (~46 kDa). Co-localization of A2AR and ecto-5'-nucleotidase/CD73 indicates that adenosine originated from released ATP activates preferentially A2AR in the human hippocampus. Thus, we may speculate that blocking overexpressed neuronal P2X7 and astrocytic A2A “danger receptors” in the human hippocampus may constitute a promising therapeutic approach for drug-refractory MTLE.

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- **10937 | Parameterization of force field constants for Molybdenum containing enzymes**

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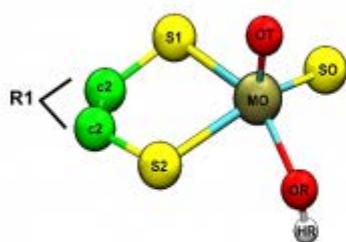
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A set of geometric parameters for the AMBER force field was determined for molybdenum metallo-proteins from the xanthine oxidase (XO) family (1). Members of this family possess a Mo ion coordinated by one pyranopterin monophosphate. The coordination sphere of the Mo ion is usually completed with oxygen (oxo or hydroxo), sulfur or selenium ligands in a distorted square pyramidal geometry. In this study, three models from three different single-cluster molybdenum proteins were optimized and parameterized using a bonded model approach. To this end, potential energy surface scans were conducted around the PES minima and bonds and angles constants were determined. The determined parameters were tested and validated with molecular dynamics simulations and statistical analysis. To further test the parameterized models vibrational frequency calculations were conducted and the results obtained either from quantum mechanics and molecular mechanics were compared.

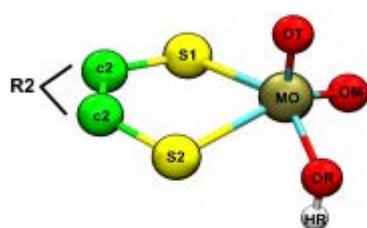
The parameters presented in this work provide a valuable resource for the molecular simulation community, as they extend the range of metal ions that can be studied using classical approaches, while also providing a starting point for subsequent parametrization of similar metal centers.

1. Nuno, M.F.S. A. Cerqueira, Pablo J. Gonzalez, Pedro. A. Fernandes, José J.G. Moura and Maria João Ramos, Accounts of Chemical Research, 2015, 48 (11), pp 2875–2884

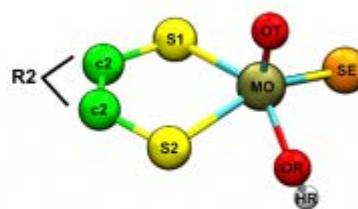
Xanthine oxidase family molybdenum centers



Human Aldehyde Oxidase



Aldehyde Oxidoreductase
(*Desulfovibrio gigas*)



Nicotinate Dehydrogenase
(*Eubacterium barkeri*)

R1 = Pyranopterin monophosphate
R2 = Pyranopterin cytosine dinucleotide

3D representation of mollybdenum centers from xanthine oxidase family enzymes

- **11329 | Parent-child relationship and parenting when mother had breast cancer: A systematic review**

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The diagnosis of Breast Cancer (BC) causes a crisis in patients and in their family system, leading to changes in its operating mode. Being a mother is one of the most important roles in women's identity, therefore life with BC for women with children can cause new demands. In the last two decades, science started focusing on the impact of having BC has on parenting and on the mother-child relationship. Therefore, this systematic review analyzes the parent-child relationship and parenting in families where mothers had/have BC. For this, the study followed the guideline of PRISMA. Ten different databases were searched in December 2014, and data were independently extracted and assessed by three researchers. After analyzing the 128 abstracts of the articles, we obtained 27 articles about the mother-child relationship and parenting in families where mother has BC. We found four main themes about this issue: priorities and concerns of patients; decision-making process about sharing the diagnosis to children; mother-child relationship and parenting; and reactions of the children to the mother's diagnosis. We noticed that in literature five dimensions have not been analyzed, for example: the search for the moment that the family achieves post-crisis period and she can decentralize the BC. In addition, there are only a few studies about parental rules, and how the child are facilitators of this BC experience.

- **11244 | Participatory-Journalism: The Citizen's impact on journalism**

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What is Journalism? What is a journalist? Who is a journalist? Who does Journalism? These were the first questions that were made in the appearance of Journalism for many, many years ago, and now, even the most skilled in the area, refers to doubt.

The emergence of the Internet, in the 60's of last century, has come to remove the pillars on which rested Journalism and collapsed all our certainties. But why there is a revolution in journalism?

All this is due to the fact that the citizen is increasingly interested in participating in professional activity that is journalism and discover the truth, without it being contaminated. The journalism is in crisis and there is a revolution inside.

With the interest of the citizen journalism, there is the emergence of new forms that characterize traditional journalism that was formerly known. Emerge two new types of journalism, focusing on the individual, but are very different.

Emerge the two models of journalism: citizen journalism and journalism-participatory.

Our argument is to defend journalism-participatory, since I believe that to be the closest to what is the pinnacle of journalism, and contributing to a rigorous and impartial journalism.

Therefore, we will defend the existence of active citizen participation in journalism, designating it as journalism-participatory, and we will refute the fact that citizens intervene does not imply that they are journalists, citizen journalism.

- **11188 | Performance Improvement of a Synchronous Buck Converter using Extended Kalman Filtering**

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Witold Gora, Infineon Technologies, Poland

Switching-mode power supplies (SMPS) are widely used in power management systems due to the high efficiency they can achieve. Current-mode control offers easy compensation loop implementation and fast response to load changes. However, a current sensor is required, at the inductor or the input. This sensing scheme increases the overall bill of materials of the system, the converter footprint, and makes the system more sensitive to several noise sources.

The present work describes the implementation of an extended Kalman filter (EKF) to improve the performance of a synchronous buck converter. The proposed EKF is based on a mathematical model of the buck converter, taking into consideration several parasitics, such as the inductor and capacitor equivalent series resistors. The goal is to take the advantages of using an observer type filter as the EKF in order to reduce the impact of noise sources, for instance thermal noise or any other type of Gaussian distributed noise. In the proposed EKF approach, the inductor current is estimated with no additional hardware and used as a parameter for the predictive control. The EKF algorithm has been implemented on an Infineon XMC microcontroller controlling a synchronous buck converter. Experimental results demonstrate an accurate estimation of the inductor current and reveal fast step responses.

- **11331 | Philosophy and Film: theses on philosophical production through the movies**

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In the recent decades there have been arising various discussions around the question about the possibility of the existence of Philosophy production through Film. Although there were various assumptions that this possibility is real by various philosophers and artists, in reality this is a more intricate question than it initially appears.

Firstly we should take into account that Film is an Art form, and the movies are works of the so-called mass art. Secondly, we should clear what we mean by “Philosophy production”.

So, in this presentation I will, in the first part, expose Arthur Danto’s idea about the philosophical production through artistic “medium” to understand how this idea were initiated with the revolutions the art world suffered.

In a second part I will expose the main theses that both support and deny the possibility of philosophical production through film, such as the discussions between their authors with the Analytical Philosophy background. Examples of this are philosophers such as Thomas Wartenberg, Noël Carroll, Stephen Mulhall and Paisley Livingston.

Finally I will explore, through the analysis of the various theses, what are the ideas the authors have about what Philosophy production is, taking into account the fact that these ideas that are on the *background* provoke the shocks between the diverse theses.

- **10885 | PI3K/Akt and autophagy pathways as possible targets in breast cancer endocrine resistance to exemestane**

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Aromatase inhibitors (AIs) are one of the therapeutic approaches for estrogen-receptor positive (ER+) breast cancer, being Exemestane (Exe) the third-generation steroidal AI. The occurrence of AIs-acquired resistance, justifies the search for new strategies to surpass it. Our group showed that Exe, induces apoptosis and autophagy in sensitive breast cancer cells (MCF-7aro), being autophagy a pro-survival process. PI3K/Akt has been described as a major pathway in endocrine resistance. Therefore, we used a long-term estrogen deprived ER+ breast cancer cell line (LTEDaro) that mimics the late stage of AIs-acquired resistance to evaluate autophagy and PI3K/Akt inhibition. The effects on Exe-treated LTEDaro/MCF-7aro cells exposed to PI3K inhibitors (Wortmannin (WT), Ly294002 (LY)) and to the autophagic inhibitor, Spautin-1 (SP) were studied by MTT and LDH assays. By inhibiting Akt phosphorylation (Western-blot), LY appears to resensitize LTEDaro cells to Exe, while it has no effect in the Exe-treated MCF-7aro cells. WT does not affect Exe-treated MCF-7aro cells, while SP induces a decrease in cell viability. Thus, by modulating PI3K/Akt pathway and autophagy it may be possible to resensitize acquired-resistant breast cancer cells to Exe therapy. This work provides new insights on the mechanisms involved in AIs-acquired resistance in breast cancer.

Acknowledgments: FCT for Amaral C. grant (SFRH/BPD/98304/2013); S. Chen (Beckman Research Institute, USA) for MCF-7aro/LTEDaro cells.

- **11080 | Place, Program, Form**

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Place, Programme and Form

An architectural journey

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The present paper is regarded as part of a personal journey through Harry Guggler studio's architectural working methodology, highlighting the thematic variety and methodological intakes used in his design process.

A critical study is enlightened by ETH-Zurich's pedagogies, between the years 1950 and 1980, and is proposed/focused on the practice and methodology of Harry Guggler's studio. We intend to emphasize the outline of a strategy of an architectural proposal, highlighting the outline of a strategy that identifies the existence of another approach to the formulation of an architectural object.

The work aims to study the teaching models taught in the school (ETH-Z) and its relationship with the author, Harry Guggler, in which two projects carried out in the studio, Montana-areal and Kurvatur, will be used as case studies.

This investigation purposes to highlight the educational journey of an architect as a key element in the process of building his own projectual narrative, lead by a personal vision and understanding of contemporary architecture.

The present paper is part of a Master Thesis investigation, conducted during the academic year of 2014/2015 and presented in September 2015 at Faculty of Architecture made under Professor Helder Casal Ribeiro's guidance.

- **10858 | Playing with hydrophilic and hydrophobic balance of bioactive sulfated compounds**

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The search for new alternative oral anticoagulants with fewer secondary effects is still an unmet clinical need. In our research group, a new class of heparin-like polysulfated oligophenols was discovered.^{1,2} However, these compounds showed poor antithrombotic efficacy by in vivo oral administration in mice, predicted to be due to poor absorption in the gastrointestinal tract.^{2,3}

The aim of this work was to improve the oral bioavailability of these compounds. Two strategies were considered: i) obtaining conjugates with bile acids and ii) introducing a triazole ring.

Naringin-deoxycholic acid conjugate was obtained through a crosslinking reaction using TBTU as coupling reagent. Triazole linked xanthone glycoside was obtained through a copper(I)-catalyzed alkyne-azide cycloaddition following by O- and N-deacetylation. Sulfation was successfully achieved with triethylamine-sulfur trioxide adduct under microwave irradiation.

All the sulfated derivatives prolonged the clotting times and the most active compound was the persulfated naringin-deoxycholic acid conjugate, exhibiting a double concentration value on the APTT in the micromolar range.

Acknowledgements: ERDF, COMPETE, and FCT under the projects PTDC/MAR-BIO/4694/2014, PTDC/AAG-TEC/0739/2014, and PEst-C/MAR/LA0015/2013.

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2. Correia-da-Silva, M., et al. *J. Med. Chem.* 2011, 54, 5373-84.

3. Correia-da-Silva, M., et al. *J. Med. Chem.* 2011, 54, 95-106

- **11057 | POLO/PLK1-mediated inhibition of PP1 defines a molecular switch to control the Spindle Assembly Checkpoint**

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Faithfull genome partitioning during cell division relies on the Spindle Assembly Checkpoint (SAC), a conserved signalling pathway that delays anaphase onset until all chromosomes are correctly attached to the mitotic spindle. MPS1 kinase is a well-established upstream regulator of pre-mitotic and mitotic anaphase inhibitors but the mechanisms controlling its activity remain unknown. In this study we show that MPS1 inactivation and consequently SAC silencing relies on dephosphorylation of MPS1 T-loop by protein phosphatase 1 (PP1). Furthermore, we demonstrate that Polo in its active conformation allosterically inhibits PP1 activity allowing MPS1 auto-activation, which is then further potentiated by Polo phosphorylation of MPS1 N-terminus. Because activation of Polo is also antagonized by PP1, this two-pronged regulation of MPS1 by Polo defines a molecular switch that ensures robust MPS1 activation upon mitotic commitment and a swift inactivation following chromosome biorientation. Thus, our findings uncover a new mechanism by which cells establish SAC strength and responsiveness, traits required to prevent unequal segregation of chromosomes and genetic imbalance.

- **11229 | Potential use of meat and bone meal in diets for gilthead seabream (*Sparus aurata*) juveniles**

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Current fishmeal (FM) prices and increasing demand emphasize the need to find more cost-effective and sustainable ingredients to be included in aquafeeds. Meat and bone meal (MBM) is a desirable product for carnivorous fish due to its nutritional quality and steady availability. This study aimed to evaluate FM replacement with MBM on growth, digestibility, and feed efficiency utilization of gilthead seabream, a species of great economic importance in Mediterranean aquaculture. Triplicate groups of juvenile gilthead seabream (25 ± 0.72 g) were fed for 83 days with 3 experimental diets (45% CP; 20% CL): a control diet, and MBM50 and MBM75 where FM was replaced at 50% and 75%, respectively. At the end of the trial, a 50% substitution did not affect growth and feed utilization efficiency. Whole-body lipid and energy content were significantly lower for fish fed diet MBM75. Protein and EAA retention were unaffected by the experimental diets while energy retention was significantly reduced at the highest substitution level. ADC of crude protein was unaffected by the experimental diets while ADC of energy was significantly higher for diet MBM50. ADCs of EAA were similar or higher for diet MBM50, compared to the control, but lower for MBM75 when compared to MBM50. Overall results indicate that half of FM could be replaced by MBM in diets for gilthead seabream juveniles, without compromising growth and feed utilization with good results in nutrient and EAA digestibility and retention.

- **11073 | Prediction of female body measurements through linear robust regression methods**

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Online shopping has been growing exponentially, and nowadays, it has become one of the most popular ways of selling products. As a consequence, companies have now a special interest in making this experience as pleasant and reliable as they possibly can. This work was proposed by Adidas and aims at achieving a full-body 3D avatar of Adidas online users. This will help clients to choose sizes and try clothes in their homes. We are looking for the most accurate prediction of what Adidas think are the most important body measurements in the fitting of female's clothes (arm length, leg length, upper body length, hip circumference, waist circumference and chest circumference). The predictions should arise from simple client characteristics such as age, height, weight, bra size, foot size, fitness, race and number of children, collected online through a short questionnaire.

The considered sample consisted of body scan measurements of 1187 American women. We have used linear regression and some of its variants, like LTS regression, and some complementary statistical tests, which turned linear models more reliable and robust. Modifications of the usual linear regression model were needed as the dataset was filled with outliers, and the LTS regression is one of the best robust regression methods. Specific sub-samples considered by Adidas as target clients were modeled independently. Our methods have substantially reduced the mean and standard deviation of the prediction error.

- **10834 | Predictors of physical inactivity in elderly across Europe based on SHARE database**

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Regular physical activity is one of the key components of a healthy life-style contributing to better physical and cognitive functioning in older ages and to extend life expectancy. Given the benefits of physical activity, the purpose of this study is to evaluate the prevalence and the predictors of physical inactivity across Europe. We used data from all participants with more than 54 years in wave 4 of SHARE (Survey of Health, Ageing, and Retirement in Europe) database, a cross national European survey. Physical inactivity was defined as never or almost never engaging in moderate or vigorous physical activity. Psychosocial and sociodemographic variables were evaluated as potential predictors.

From the total of 58 489 individuals that have participated in wave 4 SHARE survey, we select individuals that had more than 54 years old and answered all of the questions included in this work. Therefore, this work included 19298 individuals with a mean age of 67.8 ± 8.9 years; 59,2% female. In the 16 evaluated countries, the rate of individuals with more than 54 years without any vigorous or moderate physical activity was 12.5%, being Sweden the country with the lowest rate and Portugal the highest.

Increasing age, depression, high number of meal a day, physical limitations, poor sense of meaning in life, social support, satisfaction with life and losses in memory are independent and significant variables associated with physical inactivity across Europe.

- **10946 | Prenylated chalcones with enhanced cytotoxicity against tumor cells through disruption of the p53-MDM2 interaction**

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p53 inactivation by MDM2 is a common event in cancer, and the inhibition of the p53-MDM2 interaction represents an efficient therapeutic strategy against wild type (wt) p53-expressing tumors. Chalcones have been reported to inhibit this interaction, although with modest activity. Recently, the O-prenyl derivative (2) of 2'-hydroxy-3,4,4',5,6'-pentamethoxychalcone (1) exhibited a marked increase of growth inhibitory effect against wt p53-expressing tumor cells¹. The molecular mechanism underlying the improved cytotoxic activity of chalcone 2 was explored. We showed that chalcone 2 inhibited the p53-MDM2 interaction in yeast, with enhanced activity than the compound 1. These results were supported using human colon adenocarcinoma HCT116 cells with or without p53. Chalcone 2 had a potent in vitro p53-dependent growth inhibitory activity, via disruption of the p53-MDM2 interaction, showing that prenylation is a determinant factor for the enhancement of chalcones tumor cytotoxicity by improving their ability to disrupt the p53-MDM2 interaction.

This work was supported by the Strategic Funding UID/Multi/04378/2013 (UCIBIO-REQUIMTE), UID/Multi/04423/2013 (CIIMAR), PTDC/DTP-FTO/1981/2014 and PTDC/MAR-BIO/4694/2014 through national funds provided by FCT, and ERDF, in the framework of the program PT2020. FCT fellowships: H Ramos (PD/BI/113925/2015), S Gomes (SFRH/BD/96189/2013), J Soares (SFRH/BD/78971/2011) and L Raimundo (PD/BI/113926/2015).

¹Leão, M et al. (2014). Life Sci.142:60-65

- **11128 | PRODUCTION OF SOLID LIPID NANOPARTICLES AND NANOSTRUCTURED LIPID CARRIERS CONTAINING THE ANTITUMORAL DRUG SAQUINAVIR**

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Glioblastoma is the most common and malignant form of primary brain tumors, with relatively short survival rate (9-12 months) [1]. The blood-brain barrier (BBB) is a limiting barrier to the passage of a large number of drugs [2]. There have been several attempts to overcome the BBB and lipid nanoparticles (LN) emerges as a leading solution for drug delivery. In this work we developed, characterized and optimized solid lipid nanoparticles (SLN) and nanostructured lipid carriers (NLC) containing a lipophilic and poorly water soluble HIV protease inhibitor drug, also used as a potent antitumoral agent , the saquinavir (SQV) [3]. The LN were produced by hot high-pressure homogenization and ultrasonication techniques with different lipid (5 and 10%), surfactant (1, 2 and 3%) and SQV (0.05 and 0.1%) concentrations and physically characterized in order to assess which ones were the most efficient and that best meet the desired requirements. The formulations with 5% lipid, 2% polysorbate and 0.05% SQV, produced by ultrasonication, were the most promising. The final mean diameter and zeta potential of the tested nanoparticles were ~ 200 nm and ~ -24 mV, respectively. Encapsulation efficiency was greater than 90% for the two types of nanoparticles. NLC showed lower cytotoxicity compared with SLN.

[1] Woodworth, G.F., et al., Front Oncol, 2014. 4: p. 126.

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- **11160 | PROGREDIOR: The Porto Crystal Palace and the 1865 International Exhibition**

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Ever since 1857, national exhibitions on agriculture and industry were held in *Campo da Torre da Marca*. Their success justified the appearance of the *Sociedade do Palácio Agrícola, Industrial e Artístico*. This society had as a main goal the construction of a building capable of receiving this exhibitions and that would end up materializing as the *Palácio de Cristal Portuense*.

This building, ideologically motivated by its Londoner namesake built ten years prior, would mark the introduction of the iron architecture in Porto. The material would see greater recognition during this period, due to the appearance of the international fairs that gave various countries the opportunity of showing their greatest progresses, especially in the industrial field. However, a more attentive eye leads to an important question: Is the London Crystal Palace truly its architectural model? It shouldn't go unnoticed that this building was much more in line with the classicism than the industrial, due to the use of granite and the design of the shapes.

This space, delicately framed by its gardens, would open in 1865 also as an international fair, shortly after the London (1851) and Paris (1855) ones, in an attitude of boldness, projected on the facade of the building itself, where «PROGREDIOR» could be read. As such, we aim to comprehend Porto's pioneering in the international panorama by hosting an event of such great magnitude and how would Portugal represent itself.

- **11201 | Proposal for a BSC and its econometric validation - a case in the insurance sector**

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This work proposes a Balanced Scorecard to Real Vida, based on the mission, vision and value proposition of the company, using a new methodology in selecting some indicators based on econometric methods, deployed to validate the cause-effect relationships between those indicators, based on actual figures from the last 5 years of the organization.

The indicators selected by econometric validation brought added strength to the cause-effect relationships depicted in the strategic map, therefore benefiting the communication purpose of the Balanced Scorecard. This methodology also brought the possibility to better understand the effects of the strategy, by quantitatively identifying the extent of the effect that the leading indicator has upon the influenced indicator, both in the same period and in subsequent ones (i.e., lagged effects). The use of econometric methods to validate the cause-effect relationships of the Balanced Scorecard indicators, was proved to be useful for the following reasons:(i)it added robustness to the selected indicators, hence improving the communication of the strategy;(ii)it allowed a better knowledge of the actual effects that some indicators have in the indicators that they are intended to influence;(iii)it has shown the time lag of some effects (this was the case of the "marketing costs" indicator);(iv)it made possible to analyse, in a balanced way, the negative and positive effects that an indicator has in the different indicators connected to him

- **11118 | Protecting against malaria pre-erythrocytic phase**

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Malaria is a mosquito borne infectious disease caused by species of the protozoan parasite Plasmodium and it is today still a great burden for endemic countries. There is no approved human vaccine, and the most advanced candidate confers only partial protection against clinical disease. We found a formulation that includes the full-length circumsporozoite protein (CSP) and protects rodents against a stringent infection with *P. yoelii*. We have characterized the humoral response induced by this new vaccination protocol using three different strains of mice, namely, Balb/c, NMRI and C57BL/6. All strains of mice developed antibodies against CSP and CSP-specific antibodies were detectable in the sera of all animals at the end of 24 weeks. The immunization induced a shift towards IgG1 production, suggesting that protection comes chiefly from the blocking of parasite migration. The results show this vaccination protocol is effective in eliciting antibody production against CSP and that such production lasts as long as six months. Following up on this work, we are trying to find new vaccine targets that could improve this new formulation. We are employing a strategy in which we construct a phage display library of Fab fragments that are generated in immunity against *P. berghei*. We have now completed the immunization protocol and have already commissioned the creation of the libraries. This new strategy, will allow us to identify novel B cell antigens that are protective targets.

- **10956 | Quality and democratisation the meaning of the official discourse of Porto University**

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In recent years, higher education institutions went through curricular and pedagogical changes that they have in their genesis, among other reasons, political commitments of expansion of this level of education, relating, on the one hand, with new forms of access and, on the other, with new requirements resulting from a "knowledge society" increasingly competitive. Associated with this, and as is remembered for Leite and Fernandes (2014), the European countries have been assuming quality assurance systems which include an internal evaluation and an external evaluation of programs and institutions. I.e., the discourse of quality and of evaluation as a means of monitoring of this quality started to occupy the agendas of the educational policies (Leite, 2012). This text had as objective to identify the senses of quality and democratisation expressed in official documents of the University of Porto. Were analyzed thirteen documents, which were selected by if you consider that they give account of educational commitments of this University. The data show the concept of quality is transversal in all documents, revealing that fact that there is an intention of up to ensure a quality training. As regards the concept of democratisation, the analysis showed a lower reference in documents organizers of action of UP.

- **11000 | Red raspberry phenols inhibit angiogenesis. Eat to starve cancer and avoid slow damage accumulation diseases?**

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Human microvascular endothelial cells (HMVECs) were used to determine the effect of red raspberry phenols on cellular viability (MTS assay), proliferation (BrdU incorporation), migration (injury assay) and capillary-like structures (CLS) formation (Matrigel assay). Western blot analysis of protein expression in cell lysates was performed in order to determine the subcellular underpinnings related to the previous results observed.

Red raspberry phenols reduced cellular viability ($GI_{50} = 87,64 \pm 6,59 \mu\text{g GAE/mL}$) and proliferation in a dose-dependent manner. We also registered by injury assay a significant abrogation of human endothelial cells ability to migrate to injured areas, even at low concentrations. The total CLS number decreased in a dose dependent-manner towards higher extract concentrations. Likewise, the number of branching points per unit of area was also significantly diminished at all concentrations and varies in a dose dependent-manner. Western blot analysis revealed a dose-dependent decrease in Phospho-VEGFR2 expression. We also demonstrated for the first time that red raspberry phenols induced the rearrangement of filamentous actin cytoskeleton.

Our results strongly suggest that phenolic compounds present in red raspberry extract inhibit angiogenesis, in part due to abrogation of VEGF signalling. Elucidating these mechanisms is crucial for the development of preventive/therapeutic strategies targeting pathological situations where angiogenesis is exacerbated.

- **11299 | Reflective learners: an educational goal**

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To reflect on what we do, on the strategies we use, evaluating our performances and attitudes, these are all daily life activities that can't be left outside the classroom and this happens because self-evaluation is a way of learning and improving. That being said, facing self-evaluation not as the end of a process but as a way to improve it is the main purpose of this work (that comes as the result of theoretical research and practical application in the subjects of Portuguese and Spanish during the course of a one year internship) which also seeks to demonstrate the possibility to create, in a classroom environment, moments dedicated to reflection and self-evaluation. Inserted in a specific legal frame, and based on the pedagogical paradigms already in existence, the aim was to propose a set of activities that would increase an acceptance of self-evaluation as a process that regulates learning and also a reflexive stand on the students' part that would improve the process of learning to think and, also, learning to learn.

Never seeking to obtain certainties, some activities are proposed that had positive outcomes in the context they were applied in. Yet, those activities illustrate a small track in a long path still ahead.

- **11074 | Removal of micropollutants in drinking water using lab-scale UV and ozonation processes**

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Aquatic contamination by organic micropollutants continuously introduced in the environment at residual concentrations (ng L⁻¹ to µg L⁻¹) became a worldwide issue of concern. These compounds are not completely removed during wastewater treatment, reaching other aquatic compartments, which might be sources for drinking water (DW) production. Considering that the occurrence of micropollutants in DW is an important issue for human health safety, it is crucial to investigate efficient treatments to avoid the presence of such compounds in DW.

In the present work, a multi-class green analytical SPE-UHPLC-MS/MS method was applied to assess the occurrence of 23 micropollutants in DW samples from different sources (tap, fountain and wells) and locations of northern Portugal. The target micropollutants included some priority substances (PSs) of the European Directive 2013/39/EU (pesticides and one industrial compound) and 4 pharmaceuticals set up in the Watch List of EU Commission Decision 2015/495. A widespread occurrence of micropollutants was verified in the samples at low levels (ng L⁻¹). Lab-scale UV and ozonation experiments were performed to assess the removal of the target micropollutants, spiked in DW samples. Tramadol, venlafaxine, atorvastatin and azithromycin were completely removed by both processes. Clopidogrel, carbamazepine and isoproterenol were completely removed using ozonation, whereas the metabolite norfluoxetine was totally eliminated by UV.

- **11344 | Security Issues in Electronic Health Records**

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As the use of Internet Technology grows up, health sector is also becoming important sector to use Information Technology. For the easy access of information, it is stored in electronic form. Therefore, information will be more secure and easy to use. The health related information, which is stored in electronic form, is called Electronic Health Record, EHR. Now a day, security is major problem in electronic health record. Therefore, in this project, I am trying to sketch out security related issues in EHR. Secure access of data from related entity is major security issue; right people should access right data in right time. There are different types of users to access data from electronic health record therefore role-based access should design. Access control and access capability on data is important aspect of security. Different types of users can be Patients, Doctors, Hospital, Lab, Radiologist, Pharmacy, Insurance, Hospital etc. Now a day, security and privacy is becoming an important issue in Electronic Health System.

- **11342 | Selective waste collection in an urban environment: efficiency of door to door collection systems in commerce**

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The population growth, associated with the improvement of life conditions and increasing economic power, originates a bigger production of waste, in quantity and diversity. The search for a solution that responds to the social and legal obligations, while promoting a sustainable development, is one of the main concerns of the waste management authorities.

The present work analyzes a solution for the collection of waste in commercial establishments, while promoting recycling. A door to door selective collection system was implemented in Porto, by the municipal authorities, having as the main focus the commerce. This work evaluates the efficiency of this kind of system, by analyzing the evolution of the quantities collected in Porto until May 2015, as well as comparing this results with the ones achieved in other cities in the same Waste Management System (LIPOR).

The door to door collection system in Porto showed a growing trend, although it's representation in the total of the waste collected selectively in the city was still not sufficient. In 2014 the system was expanded, resulting in larger quantities of waste collected and in bigger growing trends in the beginning of 2015 than ever before. This kind of project has the support of the users and may be the first step to implementing a Pay-As-You-Throw system, since it allows for the separation of the domestic fraction from the non-domestic.

Keywords: Selective waste collection; Door to door; Porto; LIPOR; Quantities; Goals

- **11055 | SenseCup for hand rehabilitation**

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This preliminary investigation aims to create a software app (ASMe) to run in a pc and to interact through USB with a Sensitive Cup (SenseCup) that has been under development at LIM, a Mechanical Engineering Lab at the Faculty of Engineering, University of Porto. SenseCup is an instrumented device that aims to help people who suffer of issues on hand grip control due to cerebrovascular accident, casualty or musclebound weakness.

ASMe app results from one short project in Mechatronic Systems course within the Integrated Master in Mech. Eng. It involved a first in-field contact with the clinical environment, where engineering meets with physiotherapy needs, to identify possible best therapy processes.

The software and the device are both in-progress works and aim, in the first stage, to give the physiotherapist and the patient a tool to study the level of hand grip muscle control illness and progress, creating a challenging exercise to the patient for the task of holding a cup. ASMe offers a virtual representation of the cup with a range from flexible to stiff behaviour, based on the force on handling the cup and the holding time, and returning a score. Challenges are distributed in ten levels where time and holding force are combined to define the levels difficulty and respective scores.

ASMe together with the SenseCup can achieve better accurate information for the physiotherapist to rely on patient progress motivating the patient to keep going the therapy.

- **10909 | Serra da Estrela: Characterization of Natural Lakes**

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Serra da Estrela is the highest mountain in Continental Portugal, with 1993 m of altitude, and has distinctive geological, climatic and geomorphological characteristics which play an important role on local surface and groundwater resources. This granite mountain has valleys and depressions with several lakes and natural ponds, especially above 1400 m of altitude, considered alpine lakes. The scientific interest in Serra da Estrela mountain stems from the fact that freshwater ecosystems occurred in this area have a glacial origin and are also the only lakes located above timberline in Portugal. Therefore, this project intended to study and characterize the diversity of biological communities, zoo and phytoplankton, in 5 natural lakes on Serra da Estrela. This information is essential to evaluate the ecological state of target lakes and to supplement the lack of data for this area. Additionally, water physical and chemical characterization was conducted monthly from June to November. Preliminary results regarding chlorophyll a showed a good or superior ecological water quality in all sampling sites. Physical and chemical parameters, namely pH and dissolved oxygen showed a similar pattern over the months. Temperature showed a seasonality pattern in all lakes. Phytoplankton community recorded some differences between lakes and variations according to sampling periods. However, the groups of Chrysophyceae, Cyanobacteria and Cryptophyceae appear to be the best represented.

- **11093 | Sex steroid influence on endocannabinoid system expression in the rat uterus**

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Anandamide (AEA), the major endocannabinoid, is known to be involved in the modulation of several neuroendocrine functions, including the hypothalamic-pituitary-gonadal axis. Given the ability of AEA, under the control of sex hormones, to suppress the release of LH in ovariectomized (OVX) rats, it appears that changes in estradiol (E2) levels can influence cannabinoid signal in a region specific way. The aim of this study is to elucidate whether the E2 administration to OVX rats can induce changes in the expression of cannabinoid receptors and AEA-metabolic enzymes in the uterus by using western blot and immunohistochemistry techniques and Masson trichrome staining. Present data show that E2 administration to OVX rats significantly increases CB1 receptor expression while not affecting the expression of CB2 and AEA-metabolic enzymes in the rat uterus. The histological analysis also illustrates that the two receptors, as well as the NAPE and FAAH, are located mainly in the epithelial cells of both gland and lumen and no difference is observed in the muscle-collagen proportion. In summary, these data collectively indicates that the expression of the CB1 receptor in the rat uterus is regulated by estradiol. Based in these preliminary results, as well as the existing data, sex hormones, such as E2, may have a direct regulatory role in the modulation of endocannabinoid system in female reproductive tissues.

- **11249 | Simple reaction speed in female athletes in football and athletics.**

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Foot dexterity is essential for the proper development of specific basic standard sports like football and athletics, and for the efficient performance of the lower limbs. All this is developed not only with practice, but also through early childhood, when the child develops motor patterns and begins to develop different motor skills (1,2). The purpose of this study was to evaluate the simple foot reaction time-preferred (PF) and non-preferred foot (NPF)- in 8 female athletes of football and athletics between 17 and 19 years old. It was applied the “Nelson Foot reaction Test”. The average of practice was slightly higher in track and field athletes in relation to football. The results showed statistically significant differences between both groups with respect to the PF and NPF reaction time. Football players presented better performances according to athletics (PF: 216.38 ± 19.709 vs 238.75 ± 19.709 ; $p < 0.05$ and NPF: 213.25 ± 16.624 vs 244.25 ± 22.5199 ; $p < 0.05$). Differences between PF and NPF in each sport were not statistically significant.

Keywords: Simple reaction time; female athletes; athletics; football.

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- **10830 | Simulation of an uncompensated acute hemorrhage using the Beneken model of the cardiovascular system**

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Hemorrhagic shock refers to the situation in which a great volume of blood is lost. This triggers a series of medical and surgical complications which can not be easily studied on human beings. By a MATLAB implementation of the Beneken model of the human cardiovascular system, we were able to simulate an acute hemorrhage and evaluate its effects on the cardiac output, systolic blood pressure and diastolic blood pressure. The baseline systemic arterial pressure waveform and vital signs meet target data. Model simplifications make the results reflect an uncompensated situation. Our hypothesis that all the three output variables would decrease with the loss of an increasing amount of blood was confirmed. Despite the limitations and the predictable deviation from reality, the implementation of this model may lay the groundwork for a full-featured human blood loss simulator.

• **11341 | SLC19A1 G80A as predictor of gastric cancer development**

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Reduced folate carrier 1 (RFC1), also called solute carrier 19A1 (SLC19A1), is a cell surface transmembrane protein involved in primarily reduced folates bidirectional transport. Literature has been suggested, that low folate intake is associated with an increased risk of gastric cancer (GC). In this study, we aimed to evaluate the association between SLC19A1/RFC-1 G80A polymorphism and the susceptibility of GC development. A hospital-based case-control study was developed with 81 patients with both gastric lesion (n=26) and carcinoma (n=51) (mean age 56.0±12.1), and 55 healthy individuals (mean age 53.2±8.86), all from the North region of Portugal. The SLC19A1 rs1051266 was evaluated using a PCR-RFLP protocol as previously described. The genotype distribution of patients with gastric lesions was 50.0% for AA, 34.6 for AG and 15.4% for GG; while for patients with GC was 38.2%, 49.1% and 12.7%, respectively. In the control group the genotype distribution was 25.5% for AA, 52.7 for AG and 21.8% for GG. The risk analysis revealed that that AA genotype is associated with a almost 3-fold increased risk for the development of pre-neoplastic lesions (OR=2.93; 95%IC 1.10-7.80; p=0.027) and a over 2-fold increase increased risk for GC (OR=2.12; 95%IC 1.00-4.49; p=0.035). Our study suggests that the AA genotype of SLC19A1 80G>A polymorphism is associated with the development of pre-neoplastic lesions and gastric cancer.

Table RFC1

cancer01 * RFC1_Gearrier_Vs_AA						Normal_vsALGA * RFC1_Gearrier_Vs_AA					
Crosstab						Crosstab					
		RFC1_Gearrier_Vs_AA		Total				RFC1_Gearrier_Vs_AA		Total	
		A						A			
cancer01	Normal	Count	41	14	55	Normal_vsALGA	Normal	Count	41	14	55
	% within cancer01	74,5%	25,5%	100,0%	% within Normal_vsALGA		74,5%	25,5%	100,0%		
Cancer	Count	47	34	81	ALGA	Count	13	13	26		
	% within cancer01	58,0%	42,0%	100,0%		% within Normal_vsALGA	50,0%	50,0%	100,0%		
Total		Count	88	48	136	Total		Count	54	27	81
		% within cancer01	64,7%	35,3%	100,0%			% within Normal_vsALGA	66,7%	33,3%	100,0%
Chi-Square Tests						Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)		Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3,915 ^a	1	,048			Pearson Chi-Square	4,786 ^a	1	,029		
Continuity Correction ^b	3,225	1	,073			Continuity Correction ^b	3,746	1	,053		
Likelihood Ratio	4,001	1	,045			Likelihood Ratio	4,672	1	,031	,043	,027
Fisher's Exact Test				,067	,035	Fisher's Exact Test					
Linear-by-Linear Association	3,886	1	,049			Linear-by-Linear Association	4,727	1	,030		
N of Valid Cases	136					N of Valid Cases	81				
a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 19,41.						a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 8,67.					
b. Computed only for a 2x2 table						b. Computed only for a 2x2 table					
Risk Estimate						Risk Estimate					
	Value	95% Confidence Interval					Value	95% Confidence Interval			
Odds Ratio for cancer01 (Normal / Cancer)	2,119	Lower	1,001	Upper	4,486	Odds Ratio for Normal_vsALGA (Normal / ALGA)	2,929	Lower	1,100	Upper	7,798
For cohort RFC1_Gearrier_Vs_AA = 00	1,285	Lower	1,009	Upper	1,635	For cohort RFC1_Gearrier_Vs_AA = 00	1,491	Lower	985	Upper	2,256
For cohort RFC1_Gearrier_Vs_AA = 100	,606	Lower	,361	Upper	1,020	For cohort RFC1_Gearrier_Vs_AA = 100	,509	Lower	,281	Upper	,922
N of Valid Cases	136					N of Valid Cases	81				

- **11114 | Spaces, Violence and Utopia in Chuck Palahniuk's Fight Club**

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In the year that Fight Club 2 (the sequel to Fight Club, the novel that established the name of Chuck Palahniuk as a writer) started being published 2015, it is certainly relevant to discuss the implications of Palahniuk's first novel.

Starting with a spatial reading of the work – which takes into account the heterotopic spaces, the space of the body and the mental space –, I set myself to demonstrate the neutralization processes that permeate Fight Club, which result in the denunciation of the inefficiency of violence to problem solving and of the dangers of utopia when violence is put at its service.

- **11075 | SPECIES DYNAMIC MODELLING IN BIOLOGICAL INVASIONS – A REVIEW**

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Invasive species are increasing in number, extent, and impact worldwide, being the management of invasions regarded as a massive socio-ecological challenge. The integration of empiric, mechanistic and correlative models is a rather promising research field in this scope. Moreover, the inclusion of dynamic processes in those modelling frameworks (i.e. dynamic models) adds up an explicit temporal dimension to the understanding, prediction and forecast of invasion processes. In fact, the application of dynamic modelling techniques in invasion studies holds high potential for multi-scale optimization of management actions; however that potential hasn't yet been fully explored.

Based on a literature review, our goal is to examine the extent to which dynamic modelling has been used to address biological invasions worldwide. Additionally, we aim to understand how dynamic modelling has been used in management strategies targeting invasions. We present past and current trends in the invasion literature regarding the application of species dynamic modelling, highlighting the most prominent management techniques, spatio-temporal resolutions, and taxonomic groups.

To do so, we prefer an oral communication in order to achieve a greater interaction with the audience, thus improving the speaker skills regarding science communication.

- **11238 | Static and dynamic balance in skaters and surfers**

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Since Surfing and Skateboarding are both expanding extreme sports that require great balance in the execution of its maneuvers, it was decided to investigate and compare balance in surfers and skateboarders. To achieve this, several tests were used: single leg and double leg stance, single leg star and double leg static/dynamic test with BOSU ball. The materials used were: a platform named BERTEC FP6090-15-TM-2000, motion sensors and a BOSU ball. The sample for this investigation consists of 7 individuals in 3 groups: 3 surfers, 3 skateboarders and 1 surfer/skateboarder. The subjects were all male with ages between 18 and 23 years old. The data obtained was analyzed using Qualisys, Excel and SPSS. The statistical procedures used were descriptive and inferential statistic and Pearson's coefficient ($p \leq 0,05$). After all the proceedings and examination, the study allowed the detailed observation of every individual's balance and their body movements. All led to the conclusion that there were no significant differences in balance between skateboarders and surfers, although the latter group performed slightly better.

Keywords: Skate, Surf, Static and dynamic balance

- **11250 | Static Balance in Soccer Players and Hockey players**

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Balance is a motor capacity that, according to Martin (2006) and Miller (2005), allow us to stay in stable position in space, in other words, in a good position for a normal motor operation.

The objective of this study was compare hockey players and soccer players in a leg static balance capacity and verify if the years of practice and the age of the athletes influence the same capacity in preferred foot and not preferred foot. This study has great relevance as it can explain the workout done in relative instability platforms (football) and may indicate that the training done in more stable surfaces (hockey) brings more and better benefits for this capability so important in all team sports and individual.

In this investigation participated 20 male athletes, of two sports, aged between 18 and 31 years (mean 23.05 ± 3.967), being 10 athletes are football players and 10 hockey players. In football there were 5 athletes who used the right foot as the preferred foot and 5 athletes who used his left foot as preferred foot. In hockey, there were 9 athletes who used the right foot as the preferred foot and only one that used the left foot. The soccer players had an average of 15.6 years (± 3.85) and the hockey players 16.5 years (± 4.75).

It was found that the soccer players are more balanced in terms of single leg static balance. We also conclude that the years of practice have a negative influence on the development of the single leg static balance. The values show us that the athletes who have less practice time are more balanced in the single leg static balance. Finally, it is concluded that age does not have any influence on single leg static balance.

Keywords: SINGLE LEG STATIC BALANCE, SOCCER ATHELETES, HOCKEY ATHELETES.

- **10962 | Studies on the biodegradation of two widely used veterinary antibiotics**

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Fluoroquinolones (FQ) and cephalosporins (CP) are two important classes of antibiotics used in veterinary practice. FQ are fluorinated derivatives of quinolones, while CP are semi-synthetic β -lactam antibiotics. Both are effective against a wide range of pathogenic bacteria and have been found in several environmental compartments, essentially as a result of animal manure contamination and due to the inefficient treatment of wastewaters contaminated with these antibiotics.

This work aimed to study the biodegradability of two representative antibiotics of both these groups – enrofloxacin (ENR) and ceftiofur (CEF). The study was carried out in batch mode in aerobic conditions, using as microbial inoculum samples of rhizosediment from microcosms of constructed wetlands previously designed for the treatment of livestock wastewaters contaminated with these compounds. Acetate (400 mgL⁻¹) was also fed to these cultures as a cometabolite. Biodegradation of the target antibiotics was investigated at 1, 2 and 3 mgL⁻¹ and was followed by HPLC. Additionally, fluoride ion release was used as a defluorination indicator when applicable.

Results showed a decrease on ENR biodegradation efficiencies with an increase of its concentration and with the concomitant presence of CEF in the culture medium. Also, prior to its defluorination, ENR was converted to the metabolites ciprofloxacin and norfloxacin. Removal efficiencies of 100% were always verified for CEF in all experimental conditions.

- **10958 | Study of Arthrospira Microalgae for Biorefinery Purposes**

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The commercial production of microalgae of the genus *Arthrospira* started in the 1960s, but currently, continues to be exploited mainly as dietary supplement and ingredient in natural foods. Its production in Portugal is not yet commercially exploited, as it still needs some R&D to make it a reality. Hence, this work studied the two most common species used for human consumption, *Arthrospira maxima* and *Arthrospira platensis*, aiming to evaluate their growth and adaptation to salinity. Thus, both microalgae have been cultivated at the laboratory, for comparing their growth rate in similar cultivation conditions, and the resulting biomass was characterized in terms of key constituents (lipids, carbohydrates, protein and phycocyanin) aiming at their use for biorefinery purposes. Moreover, it was studied the adaptation of *Arthrospira platensis* to salinity, by adding progressively different amounts of NaCl (1, 5, 10,15, 25, 30 and 35g/L). The salinity conditions were created in mixotrophic conditions (by adding 1.0 g/L of glucose to the cultivation medium) in comparison to their standard autotrophic conditions in the Zarrouk's medium without salinity. Results show that *Arthrospira* can tolerate salinity conditions, but it was verified an elongation of the cells shape during the acclimation period, instead of their traditional spiral shape. Also, the mixotrophic conditions favored the growth and biomass productivity with an increase in the lipid accumulation.

- **11283 | Study of the cytotoxicity of resveratrol and its derivatives for topical application**

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Correia-da-Silva, M, Faculdade de Farmácia, Portugal
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The assessment of the toxicological profile of the raw materials of cosmetics and pharmaceutical formulations is a regulatory requirement. Considering the specific case of topical administration, the preliminary toxicological evaluation of new ingredients can be conducted in skin cell lines, in particular keratinocytes and fibroblasts. The objective of this work was to study the cytotoxicity of ingredients with potential interest for skin application. The tested compounds were resveratrol (RSV), resveratrol glucoside (RSV-Gli), and an in-house synthesized ingredient, resveratrol glucoside sulfate (RGS). The study also included lipid nanoparticles containing RSV. In an initial step solid lipid nanoparticles (SLN) and nanostructured lipid carriers (NLC) were prepared using a homogenization/sonication technique. The nanoparticles were characterized in terms of size using a laser diffraction technique. Cytotoxicity assays were conducted with an immortalized cell line of human keratinocytes (HaCaT). The selected tests used were MTT reduction assay, AlamarBlue® reduction assay, neutral red uptake assay, and trypan blue exclusion assay. The results showed that RSV and its derivatives may be considered non toxic for concentrations up to 100 μ M for RSV, 500 μ M for RSV-Gli, and 1000 μ M for RGS. The lipid nanoparticles prepared and tested in this work should be further optimized in order to be considered as promising topical ingredients.

- **11286 | Study of the influence of disintegrants on drug release characteristics from uncoated tablets**

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The objective of this study was to investigate the effect of the content values of three superdisintegrants on drug release characteristics (dissolution and disintegration) from tablets.

Thirteen formulations were developed using acetylsalicylic acid (ASA), a poorly soluble drug, with 1, 2, 3 and 5% (w/w) of each one of the studied superdisintegrants, namely Vivasol® (croscarmellose sodium), Explotab® (sodium starch glycolate) and Kollidon® CL (crospovidone). Tablets were prepared by direct compression with an instrumented alternative machine. Afterwards, weight uniformity, hardness, thickness, tensile strength and friability of the tablets were evaluated. The disintegration times were measured using a tablet disintegration tester in 750 mL purified water at $37\pm 2^\circ\text{C}$. Moreover, the in vitro drug release studies were performed according to the Portuguese Pharmacopoeia 9. The collection times were 5, 10, 15, 30, 45 and 60 minutes, and the volume of the collected samples was 10.0 mL (without volume replacement). The samples were filtered and the ASA concentration was determined with an UV-VIS spectrophotometer.

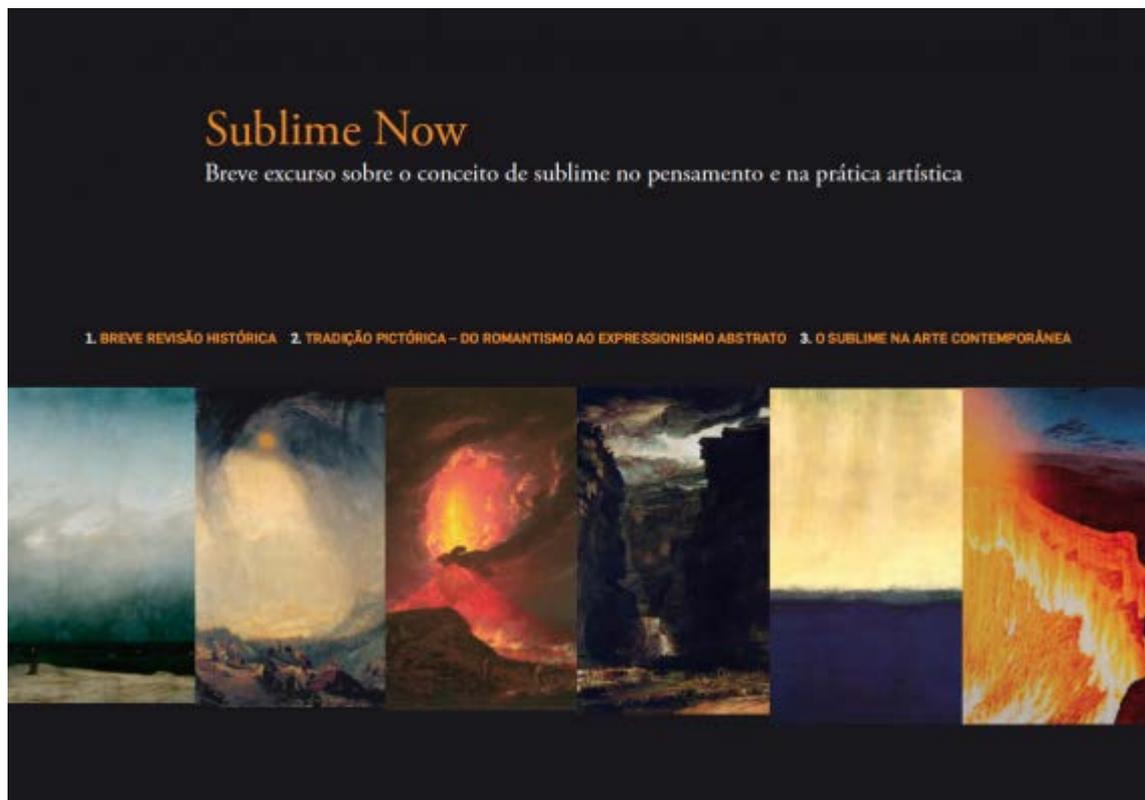
The obtained tablets showed similar and appropriated physical properties. However, all tablets showed a friability value $> 1.0\%$. Regarding to the disintegration times, it didn't take more than 60 seconds for studied superdisintegrants. With dissolution studies, it was possible to conclude that Vivasol® 5% (w/w) presented the best results, followed by Kollidon® CL 5% (w/w).

- **11337 | Sublime Now - Brief excursus on the concept of the sublime in thought and artistic practice**

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Often evading easy definition, the sublime is a complex concept, debated for centuries and pursued by artists throughout the times. In recent years, references to it have been used in the artistic discourse so exhaustively, that it is in danger of losing any coherent meaning. We live in a vertiginous time. Constantly we are faced with the realities of a complexity that our mind does not seem prepared to understand. For example, the astronomers now assume that the visible universe contains more than 100 billion galaxies and each galaxy consists of billions of stars. How the contemporary art creation can translate our reaction to such intimations of infinity? On one hand, this article intends to look back at the sublime in the history of thought and philosophy and, on the other, to inquire how it has been explored in artistic production and what role it plays in contemporary painting. While making a brief evaluation of the past, it also seeks to understand the ramifications of the sublime in the present, and how it continues to be reinterpreted today. In 1948, Barnett Newman said: "The sublime is now. " More than half a century elapsed, the statement seems to remain valid.

"The sublime is not so much what we're going back to as where we're coming from."
Jean-Luc Nancy



Sublime Now

- **10950 | Sustainability Evaluation of two Portuguese Wines**

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This work aims to perform a sustainability assessment of two contrasting Portuguese wines, focusing on their economic and environmental dimension, produced by a Portuguese wine company. The evaluation is based on gate-to-gate approach including the life cycle stages of wine production or vinification, bottling and packaging, but also considering the transportation of grapes from the vineyard to the wine company. Data needed for the analysis and calculation of the sustainability indicators was gathered mostly at the wine company and complemented with data from life cycle assessment (LCA) databases available in the SimaPro 7.3 software. The sustainability evaluation is based on indicators calculation, selected according to their relevance to the wine sustainability evaluation and stakeholders. The indicators selected include: energy intensity, carbon footprint, water footprint, material intensity, volume of wastewater, mass of solid waste and EBITDA. In particular, carbon footprint is a commonly used indicator that has become consensual for eco-labelling of food products. All indicators were calculated relatively to a functional unit (0.750 L of wine), which represents the capacity of most of the wine bottles available in the market. Results allows to compare or benchmark the performance of different wines, to recognize hotspots in the production process and identify the process steps where improvements can make a significant impact on the wine sustainability performance.

- **10896 | Synthesis and Biological Evaluation of Xanthone and Flavone Derivatives as Potential Dual Agents to combat Alzheimer's Disease**

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Alzheimer's Disease (AD) is a neurodegenerative multifactorial disorder that is associated with elderly. The current therapy that is used to treat AD is based mainly on the administration of acetylcholinesterase (AChE) inhibitors [1,2]. Drugs with dual mode of action for AD, namely AChE inhibitors with antioxidant activity are considered promising therapy for treating AD [1,2]. The present study aims obtaining xanthenes and flavones with antioxidant and AChE inhibitory activity. In this work, a hydroxylated xanthone (ICX1), its methylated (ICX2) and Mannich base (ICX2a) analogues as well as a Mannich base derivative of baicalein (ICB1) were synthesized. Moreover, antioxidant and AChE inhibitory activities of these derivatives were assessed by different methods. Molecular docking studies of the most active compound (ICB1) with AChE were also performed. In the current work, Mannich base analogues ICX2a and ICB1 emerged as potential dual agents for treating AD.

Acknowledgements: This research was partially supported by the Strategic Funding UID/Multi/04423/2013 through national funds provided by FCT – Foundation for Science and Technology and European Regional Development Fund (ERDF), in the framework of the programme PT2020.

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- **10905 | Synthesis and enantiomeric purity evaluation of new chiral derivatives of xanthenes for enantioselectivity studies in antitumor activity**

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For the last years, searching of new chiral derivatives of xanthenes (CDX) with potential pharmacological properties has remained in the area of interest of our group [1,2]. Recently, we have described the ability of CDX to inhibit the growth of different human tumor cell lines [1]. In fact, some of them exhibited interesting dose-dependent growth inhibitory effects being dependent on the stereochemistry.

Based on this work, in this presentation we describe the synthesis of new promising bioactive analogues, in enantiomerically pure form, with good yields, short reaction times and no racemization. The enantiomeric purity for all synthesized CDX was measured by direct HPLC, achieving e.e. values higher than 99%. The optimization of the synthetic pathways to obtain the xanthonic derivative used as chemical building block was also described.

The evaluation of growth inhibitory effect on the different tumor cell lines of the synthesized CDXs is in progress to complete the study of the influence of the stereochemistry on this activity.

This research was partially supported by the Strategic Funding UID/Multi/04423/2013 through national funds provided by FCT and ERDF, in the framework of the programme PT2020, UID/QUI/00062/2013 and the Portuguese NMR Network.

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- **11206 | Tactical performance indicators of elite and national level volleyball teams: the use of entropy measures for assessing performance regularity and unpredictability**

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The purpose of this study was to analyse and compare the unpredictability and regularity of tactical performance in side-out of volleyball teams from two different competitive levels as well as to examine how this type of performance might be influenced by type of set. Eight matches from the 2012 Olympics women's volleyball (i.e. elite level – EL) and eight matches from the Portuguese national women's league (i.e. national level – NL) in the 2014-2015 season were analysed. A total 1496 rallies were examined and the following variables analysed: setting zone, attack zone, attack tempo, block opposition and type of set. Performance unpredictability and regularity were assessed by measuring entropy (Shannon, 1948).

In general, results indicated differences between EL and NL teams in all variables, particularly when considering the type of set. The results of entropy analysis revealed that compared with NL, EL was more regular in setting zone and block opposition and more unpredictable in attack zone and attack tempo. At decisional set, EL kept the quality in setting zone and diversifies more the offensive phase combining different attack zones and tempos. The process-oriented methodology used in this study offered an innovative perspective for performance analysis in volleyball by focusing on important systems characteristics like regularity and unpredictability of tactical actions in sports teams.

Keywords: performance analysis; tactical indicators; entropy; volleyball

- **10900 | Targeting p53-MDM2 interaction with LEM2-aminated derivatives for cancer therapy**

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The growth inhibitory activity of tumor suppressor p53 is regulated by interaction with two negative modulators, MDM2 and MDMX, which are overexpressed in about half of all human tumors. Inhibition of p53-MDM2/X interaction may offer an alternative approach for cancer therapy. The discovery of natural xanthenes, gambogic acid and α -mangostin, and the pyranoxanthone LEM1 was a source of inspiration for the identification of new p53-MDM2 inhibitors with a xanthone scaffold [1] (Fig.1). Based on the substitution pattern of xanthone LEM2, recently discovered as potent antitumor agent, and on amine moiety of known p53-MDM2 inhibitors, new potential p53-MDM2 disruptors with drug-like properties were obtained. By a reductive amination procedure, a library of eleven LEM2-aminated derivatives was successfully synthesized. Docking studies were performed to predict the binding affinity of the derivatives towards MDM2. Using yeast-based assays, their inhibitory activity on p53-MDM2 interaction was investigated and the results will be presented. These studies will provide the most favorable structure features for the construction of novel p53 activators with anticancer activity.

Acknowledgments: Strategic Funding UID/Multi/04423/2013, UID/Multi/04378/2013 and FCT project PTDC/DTP-FTO/1981/2014(ERDF, PT2020)

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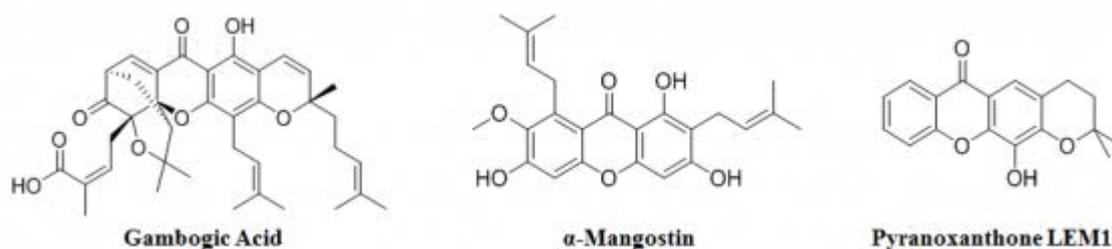


Figure 1. Inhibitors of p53-MDM2 interaction with a xanthone scaffold.

- **11272 | Testing a participatory approach in the requalification of Santa Luzia neighborhood, Porto, Portugal.**

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Fernandes, Cláudia, FCUP, Portugal

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In the city of Porto, neighborhoods requalification projects fail quite often. In this research, participatory design methods were applied to test if the resident's involvement on earliest project steps can improve its success.

The neighborhood of Santa Luzia, was chosen as case study. It was built in 1994 and has 75 multistory buildings distributed over 5 ha. It is an affordable housing complex, managed by the City Council and essentially inhabited by middle-aged, retired people. Over time, residents appropriated the outdoor space, planting and constructing small garden structures without any order or coherence but, on the other hand, they also carry out a large part of the needed maintenance tasks, caring the space as their own. Nowadays, a wide range of constrains can be pointed contributing to a prevalent disordered use.

A methodological multistep process was applied beginning with a meeting to announce the research project. A detailed survey of the existing condition was undertaken. Almost 900 questionnaires were sent by mail to evaluate resident's behaviors on the outdoor spaces, green spaces satisfaction level, needs and expectations. Results of the field survey and of the questionnaires were then incorporated into three different requalification proposals, each of them consisting of a master plan and scenario images were shown as a strategy to avoid illiteracy in plans interpretation. Proposals were then rated by residents being chosen the most voted one.

- **11032 | Tetracycline resistance in Enterobacteriaceae isolates from intestinal colonization of cattle from the South of Portugal**

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Antibiotic resistant commensal bacteria in livestock, namely the intestinal colonizers, may function as reservoirs of resistance relevant in terms of animal and human health and as environmental resistant threats. Tetracycline (TT) is a widely used antibiotic in bovine cattle.

Twenty faecal bovine samples were collected from one facility in the South of Portugal. Samples were pre-incubated in TSB and TSB plus cefotaxime. After overnight incubation at 37°C, selection was done in MacConkey agar with antibiotics: beta-lactams, ciprofloxacin and TT. Susceptibility testing was done according to the CLSI guidelines. Presumptive identification was achieved by Chromagar Orientation.

Eighteen of the 20 samples showed TT resistant isolates. Forty six gram negative lactose fermenters were selected and presumptively identified as *E. coli* (44 isolates) and 2 isolates as KESC (*Klebsiella*, *Enterobacter*, *Serratia* and *Citrobacter* species). TT resistance was found in 91,3% of the selected isolates. Of those, 52,38% showed resistance to sulfamethoxazole + trimethoprim, suggesting that TT can lead to co-selection of resistance to other antibiotics. Twelve of the selected isolates showed extended-spectrum beta-lactamase (ESBL) production.

Results show a high prevalence (90%) of TT resistance in faecal flora isolates of bovines of this facility, which is corroborated by other studies. ESBL production among the selected TT resistant isolates is a relevant public health threat.

- **11140 | The (Re)Signification of a Portuguese Identity**

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The Portuguese community in Pernambuco experienced a new phase of its history since the creation of the Portuguese Reading Room (GPLPE - Gabinete Português de Leitura de Pernambuco) on November 03, 1850. The GPLPE was the first association that formalized the ties of belonging of the Portuguese community. From GPLPE other Portuguese institutions were formed. It was around this Room that for the first time discussions emerged about the identity of the Portuguese immigrant. This dissertation aims to understand how the discourses on the identity of the Portuguese immigrant in Pernambuco was (re)constructed and which were the paths taken by this community to (re)signify the image of colonizer-explorer to immigrant-constructor of the new Brazilian nation.

KEYWORDS: portuguese immigrant, identities, portuguese reading room.

- **10866 | The 3D stress analysis of trabecular patches using meshless methods**

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Presently, the most commonly used discrete approximation technique for stress analysis in biomechanics is the finite element method (FEM). This work proposes an alternative technique – the meshless methods [1]. Thus, in this work, meshless methods are used to analyse 3D numerical models of trabecular cubic patches, which were obtained from the DICOM image files of a high resolution micro-Ct of a cuneiform bone.

Meshless methods allow to discretize the problem domain using only an unstructured nodal distribution, which represents an advantage when compared with the FEM. Thus, with meshless methods, the discretization of the physical domain (the nodal cloud) can be directly obtained from the DICOM image files and the material properties can be directly allocated to the nodes using the colour-scale of the imaging technique.

Here, 3D models of trabecular cubic patches were analysed considering the FEM and meshless methods. The bone tissue mechanical properties were obtained from the literature [1] and the elasto-static analysis was preformed considering the classical 3D deformation theory. The results obtained with the distinct numerical methods show that meshless methods are a robust and valid alternative to the FEM in biomechanics.

Keywords. Meshless methods, trabecular bone, biomechanics.

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- **10923 | The actions of Portuguese municipalities to combat invasive alien species**

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The development of human societies suppressed natural biogeographic barriers, allowing the introduction of species in areas where they did not exist before. Some of these species can become invasive alien species (IAS), as they are able to establish and expand populations, causing negative effects to the receptor ecosystems and their biodiversity. Besides, these species are also harmful to the economy, health and well-being of the societies. Therefore, it is essential to manage this threat in order to minimize its impacts. In order to assess the contribution of Portuguese municipalities to combat this threat, a questionnaire was prepared and distributed. This survey aimed to obtain information about the measures carried out by these entities in terms of 5 main areas: (1) identification and monitorization, (2) control, (3) eradication, (4) prevention of new introductions and (5) environmental education. Until now, 171 questionnaires were completed, which represents a response rate of about 56%. Although data analysis is still ongoing, the 108 responses analyzed so far show already some trends: most counties (69%) have in place at least one preventive measure and many (38%) also invest in the control of IAS, whereas only a low percentage made efforts in the remaining areas. This project also aims to contribute to this ongoing battle by rising awareness about this problem and by producing materials to support local authorities in the adoption of more efficient management options.

- **10984 | The Architecture and the Public Space of Tourism and Leisure**

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With the growing tourism industry the world economy has changed the course its investment trends, transferring it from the industrial city to the cultural city. This change caused the derivation of political concerns, which are now increasingly focusing on the urban and architectural progress in order to create attractions and tourism improvement. The cities were redefined and public spaces began to welcome new cultural events. They are now seen as products of consumption and the need of media coverage and consequent urban competitiveness break forth, looking to burst the promotion of tourism. The architectural elements that contributed to these new tourism strategies and dynamics were the cultural facilities - museums and art centers particularly. By evolving from their classic configuration of instruction to the contemporary configuration of persuasion, they see their development concentrated in their visual and symbolic performances. Their new role will be to attract visitors by stimulating the consumption through the seduction by the image. The consumable city and consumable museum are the new assumptions of architectural interventions, and the marketing promotion is now one of the architect's new roles. The city of Paris dominated by the tourism industry is revealed as the obvious model of this new touristic era, with the Louvre Museum and the Georges Pompidou National Art and Cultural Centre the best examples of productions within these new modalities.

- **10812 | The Arroyo Rezola Family. A Remarkable Contribute to the XIX Century Oporto Musical Environment.**

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The cultural development of Oporto in the eighteenth hundreds is due to João de Almada e Melo and, after his passing, to his son, Francisco de Almada e Mendonça. The architectonic initiatives adopted by the first transmuted the urban aspect of the city which, from that moment on, had a new kind of infrastructure added to its landscape: the theater. Subsequently, a new edifice to cater exclusively to theatrical performances would be designed: the Real Teatro São João, inaugurated in 1798.

During the XIX century, other theaters emerged in the city´s landscape, like the Teatro Baquet or the Teatro Sá da Bandeira, to name a few. This environment caught the attention of musicians and artists in the blink of an eye; artists and musicians, domestic and foreign alike, flocked to the city seeking patronage – some of them taking permanent residence in Oporto. This was the case of the Arroio – Rezola family.

João Marcelo Arroio, his children and grandchildren always stood out not only for their exceptional musical aptitude but also for being paragons of human qualities and civic engagement alike. The present work aims at compiling and enframing the history of this very family, from their arrival in Portugal, in 1820, until the first decades of the XX century.

Key words: AArroyo, Rezola, Música, Teatro, Porto.

- **11136 | The Comparative Advantages in the Services Sector of the BRIC**

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It is widely accepted that international trade of goods and services plays an important role in the growth and development of the economies, particularly the emergent and developing ones. However, to make this growth sustainable in the long run, it is important to understand where the advantages of producing certain commodities are. Despite the significantly interest in merchandise trade on the literature, service sector presented more resilience to the financial turmoil and higher growth rates in a post-crisis time. Therefore, the present work aims to reveal the comparative advantages on the services sector of the BRIC, as large emergent economies representative of the developing world. By analyzing the service trade data ranging from 2000 to 2014 for each of these economies, I intend to clarify which are the main advantages in the services of the selected countries, highlighting their importance on a global scale.

- **10814 | The complex relationship between Afonso III of Portugal and D. Paio Peres Correia: An interpretation throughout the Royal Chanceries (1248-1279)**

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Early on, the Portuguese kings revealed themselves preoccupied agents, and widely influential of the military Orders' actions. In the pursuit of power, throughout the entire Portuguese medieval times there are many examples of strategies in order to master these military-religious structures, or at least constant attempts in instrumentalizing them. Assuming that the royal policy is embedded, in the documentation produced under the jurisdiction of each king, it is possible to understand, the monarch's relationship with his subjects. This situation also applies to military orders, as the Order of Santiago. Therefore, in this investigation we intend to find in the Chancery, signs of possible alliances, or even altercations, between the king and the Order. Based on the analysis of texts that somehow relate to members of the Order, we will try to understand in what way did Afonso III related to D. Paio Peres Correia, his contemporary and Master of Santiago's Order. Therefore, in order to explain the complex bond between the two individuals of the XIII century, we will try to comprehend the connection between the two key institutions of the Iberian medieval History. Summarizing, the main objective of this research is to understand the strategies of the Crown to dominate Santiago's Order, through a scrupulous analysis of the Royal Chanceries, and with this to be able to describe the overall view of the connection between the King of Portugal and the Master of the of the Order.

- **11045 | The domestic violence in the Agreste of Paraíba - Brazil according to theories of criminology**

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One of the biggest problems faced today by several States is the issue of criminality. Some states have lower indices while others have high burglary rates, homicides and domestic violence. Brazil, for example, is one of the South American States with high crime rates. Domestic violence, for example, in its various forms (physical, psychological or sexual) it is an offense with high rates in Brazil. The focus of this paper is to present the characteristics of this crime in that country, particularly in the arid zone of Paraíba (Agreste da Paraíba), northeastern Brazil, such as the causes, the victim's age, social conditions and who is the aggressor, based on the studies in that region by the project entitled "Monitoring of violence in the Agreste da Paraíba". In an attempt to understand the causes, we will use of some theories of Criminology, as feminist approaches that draw attention to the existence of violence in the home environment, especially against women. This approach draws attention to the fact that the danger is not only on the street but also inside homes, since there is a high volume of private violence and that is not reported by the victim, often because of fear or even shame. Law 11.340 / 2006, better known as Maria da Penha Law which regulates the crimes of domestic violence in the Brazilian state will also be used for the study in question, since it is one of the mechanisms used to restrain the practice of this crime.

- **11058 | The effect of grade point average and of extracurricular activities on the perceived employability of business job applicants**

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The number of business Higher Education students is increasing and, thus, their academic performance (i.e., Grade Point Average), is not enough to be distinctive when they enter the labour market (Brown and Hesketh, 2004). Therefore, they are engaging in extracurricular activities (ECAs) to develop employability skills valued by employers (Brown and Hesketh, 2004) and using impression management tactics to convey a positive image about themselves (Levashina and Campion, 2007). Yet, literature remains inconclusive about the combined effect of academic performance and extracurricular activities. This study fulfils that gap by examining how academic performance and the participation in extracurricular activities affect the perceived employability and impression management of job candidates. Data was collected following a quasi-experimental design, target to Portuguese working adults (N=349). Overall, findings show that a high level of GPA increases the perceived employability of business job applicants and that, although the participation in ECAs is beneficial in terms of personal organization and time management skills and learning skills, it does not overcome a low GPA, not increasing applicants' suitability to an entry business position. Yet, findings suggest that when job applicants get a high level of GPA and combine it with the participation in ECAs, they are perceived as more employable. No significant results were found concerning impression management.

- **11038 | The effect of synthetic cannabinoids in human endometrial stromal cells**

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The production of synthetic cannabinoids started as a possibility of new drugs with reduced secondary effects. However, its ambiguous legal status and high affinity for cannabinoid receptors caught the attention of recreational drug users to newly synthesized cannabinoids, and are presently widely abused without a proper evaluation of respective health risks. Besides the known psychotropic effects, peripheral organs may also be affected by cannabinoids, namely the endometrium. Here, the endogenous cannabinoid signaling requires a tight control, suggesting that synthetic cannabinoids may negatively affect pregnancy. The aim of this study was to elucidate if the synthetic cannabinoids THJ-2201, JWH-122 and AB-FUBINACA may affect human endometrial stromal cell proliferation, using a telomerase-immortalized cell line (St-T1b) and primary cultures (HdF). Cells were treated for 24 and 48h and viability accessed by MTT and Sulforhodamine B assays, cell morphology was analyzed by Giemsa staining; BrdU assay was also performed. Contrary to THJ-2201, JWH-122 and AB-FUBINACA (25 and 50 μM) caused an increase in mitochondrial activity as assessed by MTT, while Sulforhodamine B and BrdU assays were not affected by any of the compounds tested. Since MTT assay is based in mitochondrial activity, while Sulforhodamine B quantifies cellular protein content, these results, combined with BrdU assay, suggest that synthetic cannabinoids may affect mitochondrial activity of human endometrial cells.

- **11082 | THE EXERCISE OF LEADERSHIP IN THE FEMININE: THE STATE OF THE ART**

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The presence of women in today's workforce, particularly in leadership positions, renders essential to deepen our knowledge regarding women's' role in organizations. This paper focuses on the exercise of women in positions of leadership, reflecting and discussing about different approaches found in the literature, identifying the main conceptual and methodological options underlying these studies, as well as limitations and dimensions that must be considered so as to deepen our knowledge regarding this subject.

Literature on female leadership accompanies the growth in the number of women in leadership positions, with a myriad of studies that seek to reflect on the flagrant inequalities of gender. However, literature is still scarce in terms of the experience of female leadership and the challenges inherent to the path for and practice of female leaders. In order to understand the way this subject has been addressed, we will explore two major metaphors regarding female leadership in organizations: the labyrinth metaphor and the dyad agents of change /cogs in the machine. We will also focus on the most used methods in the study of this matter.

Future studies should consider specific organizational processes to understand how these are experienced by women. They also ought to be more comprehensive, adopting mixed method designs, which may represent an optimal compromise, allowing, not only, the systematization of results, but also, the comprehension of female leaders' reality.

- **11051 | The Hallows of Life: Magic, Religion and Science in the Harry Potter Series**

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This dissertation concerns J.K. Rowling's popular saga, Harry Potter. Even though it does not belong in the literary canon (yet), this is one of the most beloved and popular sagas of all times, which has already proved to be quite influential amongst young readers. My purpose with this dissertation is to analyze the saga through the relationship that I will be establishing between magic, religion and science.

With this dissertation I wish to underline the holistic character of the cosmovision that J.K. Rowling proposes to her young readers, thus making it clear that the three different afore mentioned spheres shouldn't be analyzed individually, but rather through the relationship that is established between them. Moreover, it will be suggested that magic is the way wizards in Harry's world do science.

I shall finally propound that "The Deathly Hallows" whose name is the same as the last volume of the saga can in fact be seen as "Hallows of Life", thus underlining the urgent need for a good understanding of the saga, peopled by characters and life situations clearly reminiscent of legends, myths and traditions.

In this way it will be demonstrated how Harry Potter makes it possible for magic, religion and science to coexist harmoniously in the 20th century and that these three topics are three different ways to study our world.

- **10870 | The impact of chronic elevated water nitrate concentrations on health status of zebrafish**

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Zebrafish, *Danio rerio* (Hamilton, 1822), has an enormous importance in various fields of science and biomedicine. However, its rearing conditions are not properly standardized and are based on observations and on conditions used in other aquaculture species, such as the concentration of nitrate, considered by many as nontoxic. Yet, in Recirculating Aquaculture Systems (RAS) nitrate can reach high values and become problematic.

In this study, juvenile zebrafish were exposed to nitrate concentrations of 100, 200 and 400 mg/L NO₃⁻ -N for 28 days. Fish were also exposed to 1.7 g/L NaCl in order to equalise the ionic concentration of the higher NaNO₃ concentration. In order to evaluate if the accumulated ammonia in experimental system (static) influence fish performance, juveniles were also placed in a water recirculation system. Fish were euthanized, weighed, fixed and processed for histological analysis using conventional techniques. Histopathological effects were measured using a semi-quantitative system.

The results obtained clearly indicate that chronic exposure of juveniles of *D. rerio* to nitrate concentrations higher than 200 mg/L NO₃⁻ -N caused deleterious effects in growth performance and health status. In addition, the histological changes observed in gills, skin, kidney and intestine were mainly caused by nitrate concentration but in liver were caused mainly by ionic concentration.

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- **11235 | The incorporated mental in Merleau-Ponty**

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This work leans reflections from the phenomenology work of Maurice Merleau-Ponty perception that is above all a phenomenology of the body. One of its efforts is to break with the Cartesian dichotomy body and mind. The body is not simply object nor reduced to consciousness, but it's how we express ourselves in the world, and we can inhabit it. The world calls us and we are tensioned to explore it, we must engage in a situation thus created our body schema. I will try to explain here the ambiguity that lives embodied the conscience when it tells of the marriage between physiological and psychological facts facts in a red body Merleau-Ponty dialog with the Cartesian philosophy. I try to explain how the phenomenology of Merleau-Ponty discusses this issue and how enters using the example of phantom limb, to demonstrate how engagement influences in dealing with the world. Thus, while Merleau-Ponty wants to break the Cartesian dualism and founding his phenomenology in the body, deals with a kind of consciousness that is embodied power and condition of access to the world. The body anchored in mundane situations who say their phenomenal field. Notions such as motor intentionality, location and engagement will be addressed as exposing the ambiguity of the body schema relates to the significance given to the perception that the world is intertwined.

- **10959 | The influence of resources' availability on cats (Felis catus) behaviour**

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de Sousa, Liliana, Instituto de Ciências Biomédicas Abel Salazar, Portugal

Cats (*Felis catus*) have a great adaptability to different environmental conditions changing their behaviour according to environmental conditions (Recio and Seddon, 2013). In urban areas, cats can live in high density populations (Sims, et al., 2008; Aguilar & Farnworth, 2013), as there are trash points with food scraps, which also attracts rodents and provide the ecological context for the development of cats' feeding groups (Crowell-Davis, 2007). They can also count on food provided by "cats' lovers" (Bonanni et al., 2007).

The aim of this study was to understand how resources availability can influence cats' behaviour. Four groups of cats were studied, in three different urban zones (two groups downtown, one near the beach and one near an industrial zone). All groups were fed by "cats' lovers" at three different times of day. Cats' behaviours were capture by video recording at those different moments [10:50, 12:50 and 17:20] for all groups during one year in order to be registered, categorized and described in an ethogram. Frequency and duration of cats' ethogram behaviours were analysed with the Observer software. Results for the behaviours of the four cats' populations during the three different moments of the day were compared with ANOVA. A Pearson correlation test was also calculated in order to relate behaviours and periods of the day. Results showed that cats can adapt their circadian routine according to food availability.

- **11060 | The Intent between Team and Method**

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In 2014 I had the opportunity to participate in the International Design Competition for the Queen Elizabeth Olympic Park in London through a one-year internship (2014/15) at Harry Guggen's Studio; an office founded by Harry Guggen in 2010 after a 20-year partnership at Herzog & de Meuron.

The present paper aims to analyse and critically reflect upon the architectural design process regarding the *Queen Elizabeth Olympic Park: Culture and Education Quarter Design Competition* comprised by the team – David Chipperfield Architects, Arup, Harry Guggen Studio, Robbrecht en Daem, Vogt Landscape, PUBLICA and alinea. The research purpose is to explore the diverse themes of the project and to investigate its various stages, in an attempt to theoretically reflect and critically analyse it as a process.

The main objective is to deconstruct the complex web of relationships between the design method and the actual architectural results.

The context, notion of place, programmatic premises and preliminary architectural design objectives and themes are key notions to understand the architectural intent that will guide the different offices in designing individually specific parts of the proposal, contributing to a cohesive overall design scheme.

Underpinning a thoughtful working method, the teamwork process, punctuated by several design roles and phases will stress the importance of teamwork in an artistic process concurrent to the understanding of contemporary architecture.

- **11189 | The motivation of University students for sports: a study at the University of Porto**

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Despite the importance that sport has achieved in society, and the benefits that sport brings to the population (physically, socially and mentally), we are faced with an increasingly sedentary world, particularly in adolescents and young adults where the dropout rate is very high. Thus, we tried to study the sports habits of university students of 1st year relating them to gender and motivation.

They were surveyed by online questionnaire, 311 students of both genders (61% fem.), aged between 17 and 42 (average = 18.42). The results pointed out that: a) 44% did not play sport, especially female students; b) only 35% played sports more than twice a week with higher values in male students; c) the students were more intrinsically motivated and less motivated than their colleagues who had, in turn, higher values on the external and internalized motivation.

Thus, it is then important to continuously know the habits of the students at this new stage of their life, and it is also important that the University of Porto develops projects that motivate their students to play sports, especially female students.

Keywords: university students, sports habits, motivation.

- **10859 | The Portuguese Journalism in Luxembourg: the profile, the production routines and professional perception of Radio Latina's journalist.**

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Investigate and realize who is the portuguese journalist that lives and works in Luxembourg and its production routines in their daily work is the guideline of this investigation. In this work, we study the specific case of journalist working in Radio Latina, one media organization founded in Luxembourg Grand Duchy in 1992, sending contents, mostly in portuguese. The main priority of the Radio Latina journalist is to inform the resident portuguese people in Luxembourg, giving voice to a growing population group in the country. Therefore, several questions arise: Who is the portuguese journalist in Luxembourg? What are your production routines? What is your professional perception these days? Against the backdrop of the portuguese emigration in Luxembourg, this research covers three areas: the ethnographic research, the study of professional perception and the study of production routines of journalist of Radio Latina. From the methods and data collection techniques, it is possible to conclude that the portuguese journalism in Luxembourg is a public service that aims to integrate the portuguese community in luxembourgouise society. Regarding the journalist of Radio Latina, this is a professional who aims a duty to inform the portuguese-speaking community through a specific productive routine based on the communication organ of the programming grid where he works and a diverse linguistic field.

- **10996 | The potential of zooplankton as a biological element to evaluate water quality of reservoirs**

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The increasing anthropogenic pressure on aquatic resources led to the creation of tools to evaluate water quality and the ecosystems stability, such as the Water Framework Directive (WFD). WFD proposes the use of physical, chemical, hydromorphological and biological elements to assess water quality. Nevertheless, WFD does not include zooplankton as one of the biological elements for the analysis of water bodies. Zooplankton is a biological element present in all aquatic ecosystems, plays a key role in trophic webs, and has shown high sensitivity to changes in the environment. Therefore, the main aim of this study is to use the diversity of zooplankton communities as a tool to evaluate the water quality according to WFD approach. To attain this objective, four reservoirs from Cávado River's hydrographic basin were sampled every month during nine months. The physical and chemical parameters evaluated were those proposed by WFD. Zooplankton samples were analysed concerning their diversity and abundance. The physical and chemical data obtained allowed to classify all the reservoirs within the Good Ecological Potential. However, their comparison to the dynamics observed in the zooplankton communities allowed to conclude that this biological element is more sensitive to small alterations in the ecosystem. Therefore, considering only the physical and chemical parameters proposed by WFD, seems to be insufficient to understand all the alterations that occur in the aquatic ecosystem.

- **11228 | The rationality of oil price changes in response to the Chinese Economy**

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In the very dynamic energy markets, oil is one of the most important fossil fuels. The oil market has recently grown by the resources of shale oil, increasing demand, and making the United States less dependent on imported oil. This and the continuous growth of China, has made the Chinese economy the world wide biggest importer of oil. Its demand and changes in its economic performance are therefore closely observed by market participants. The complexity of the Chinese energy demand and the Chinese economy is expected to be time consuming to understand and hence the market price might not be reflecting the fundamental theory of supply and demand. The study combines therefore economic theory of national demand with the dynamics and specialties of the oil market to test for applications from the field of behavioral finance.

- **11036 | The Reentry of Cases at the Portuguese Child Protection Services**

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Being the reentry of cases at the Child Protection Services an indicator of the work done by this services, the analysis of those reentries at the Portuguese services is useful to improve their actions. Therefore, this study tries to understand the characteristics of the reopen cases and what distinguish these children, their families and context from cases that did not reopen. This was possible through a quantitative analysis of reopened cases (with a sample of 25 cases) at CPCJ Porto Ocidental on 2013 and by the matching of this reentry cases with not-reopened cases (n=25) that had similar characteristics with the reopened group. The documental files of the sample cases were analyzed to answer the main questions. The IBM SPSS Statistics software was the one used to reached the results.

It was possible to understand, after the statistical analysis, that young children are those whose case reopens more often, being the average time between the first entry and the reentry of 2 years. Domestic violence appears as the more frequent problematic in these cases, and the children come from both-parent families with other children. These are often low-income families with both parents having low level of academic achievement. There were, also, associations between the reentry and some variables, such as the case management (the reason to close the case) and the family environment (broken family and no history of violence in the family).

- **10883 | The Rui Serpa Pinto Archive – a scientist of the University of Porto – An Insurance against forgetting**

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The organization of the Personal Rui Serpa Pinto Archive was the final product of a scientific and curricular internship developed at the Natural History Museum of the Faculty of Science, University of Porto during the Master's Degree in History and Heritage - Branch Historical Archives at the Faculty of Arts, University of Porto.

Rui Serpa Pinto (1907-1933) in his short lifetime was a Mathematician, Civil Engineer, Geologist, Archaeologist, Naturalist, Professor of the Faculty of Sciences, which maintain a fluent correspondence with other personalities from several countries who appreciated his work mainly in archaeology and geology.

Through the analysis of the letters and other papers kept at the archives of the Museum of Natural History, we organized the information produced by him in a systemic methodology according to the paradigm of science of information. Regarding this organic model we intend to overcome the traditional approach based in a biographic and archivist history of scientist following a systemic organization of information through the reconstruction of an organic and functional framework which includes the individual in his family background and in different age phases and functions of his life.

Finally, we believe that the organization of personal scientists archives is the best way to understand the international connections between nature and science, between scientists and other academic institutions, natural museums and communities.

- **11009 | The structural numerical analysis of windshields due to bird strike**

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Windshield must be design to resist bird strike, a common event in aviation which represent risk to human safety. Numerical methods, such as the finite element method (FEM), can help to reduce the structural design cost and the time spent in the structural project.

Nowadays, the FEM is the most commonly used numerical tool for structural analysis. However, other emergent techniques, such as meshless methods [1], permit to discretize the problem domain using only an unstructured nodal cloud. The literature shows that, when compared with the FEM, meshless methods are capable to produce much more accurate and smoother variable fields [1]. This work performs a 3D elasto-static analysis using a truly interpolating mesless method: the Natural Neighbour Radial Point Interpolation Method (NNRPIM) [1].

In this work, the bird strike impact is simulated by an instantaneous force, respecting the direction and magnitude suggested in the literature. Regarding the 3D model of the windshield, a commercial windshield was reproduced considering its distinct glass layers. The analysis was preformed considering the classical 3D deformation theory. The results show that meshless methods are capable to produce accurate and smooth displacement and stress fields.

Keywords. Meshless methods, airplane windshield, 3D analysis.

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- **10815 | The Whereabouts of Theatre Criticism**

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Theatre criticism as a journalistic practice and as a cultural phenomenon is currently undergoing through significant changes. In Portugal, we see less and less theatre reviews published in newspapers and magazines and theatre critics are becoming an “endangered species”. Just in 2014, there were only five Portuguese publications that regularly published theatre reviews. We also know that with the advent of digital media, more and more people started to write about theatre in digital platforms and we can find online thousands of theatre reviews. Can we consider these reviews legit in what concerns content, form and style? Can these reviews be considered as valid journalistic works? This raises other issues like what defines a good theatre review? Is there a set of characteristics that defines a good theatre review? Who can be considered to be a theatre critic? Our two year research was aimed to address the need of studying and understanding theatre criticism in Portugal, analyzing its development and how its practices have been evolving, both historically and conceptually so that, ultimately, we could predict how its practices are going to unfold in the future. In this paper, our goal is to provide a general overview about the research undertaken with particular focus on one of its achievements, the conception and design of a practical guide for theatre criticism, an assembled and organized matrix that serves as a set of guidelines for theatre criticism practices.

- **11061 | The Works of Manoel de Oliveira as a Reflex of Porto's Society - The Space in the Film «Aniki-Bóbó»**

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This paper is based on the works of Manoel de Oliveira, more specifically in the 1942 film "Aniki-Bóbó" that, being based on the short story "Meninos Milionários" by João Rodrigues de Freitas, portrays Porto's society through a child's point of view.

Throughout this investigation, I resorted to several books about the analysed film, its author, as well as to scientific articles about the landscape as a social reflex.

Analysing the movie at a social-geographical level, I aimed to understand how much the cinema and the places portrayed by it reflect the society. I also made some field work, as a way to assess the societal disparities that separate the present time from that era.

After intensive research and weighing, I could verify that the places are the representation of the power and that, since the 40's, these have transformed at the same level of the social plan.

In conclusion, the film "Aniki-Bóbó" is a reflex of Porto's society of the 1940's, showing us the places that represent that time's spirit e that nowadays are completely altered, just like the society.

- **11046 | Towards an authentic architecture - Auguste Perret**

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A research on modern architecture has to comprise its events within the frame of its close antecedents. Thus, it should look back to the past, under a specific perspective, to complete the present knowledge and better interpret it. Having this premise under consideration, the present paper proposes a study that reflects on the notion of authenticity underlined in Auguste Perret's architectural discourse.

The quest for authenticity is visible through the way Auguste Perret tries to consolidate a language of his own, which reflects both the subjects intrinsic to the discipline of architecture and the social circumstances in which it arises. The idea of modernity relights the debate about the importance of tradition and vanguard in architecture. If, on one hand, the modern movement comes doubtless linked to the notion of conquest and rupture, on another hand it's also true that innovation is always the result of a given allusion to the past. It's within this equilibrium that Auguste Perret's work will be interpreted.

The paper aims to understand his pursuit for an authentic architecture, found in the delicate harmony between innovation and tradition, always aiming to create a vocabulary and a living experience in tune with the present but embedded in a more universal meaning, rooted in tradition. For Auguste Perret the aim is to redefine the meaning of tradition by understanding his time: a modern idiom that outcomes in distinct forms while sharing its origins.

- **11166 | Toxicity of tomato plant glycoalkaloids in neuroblastoma cells - a mechanistic perspective**

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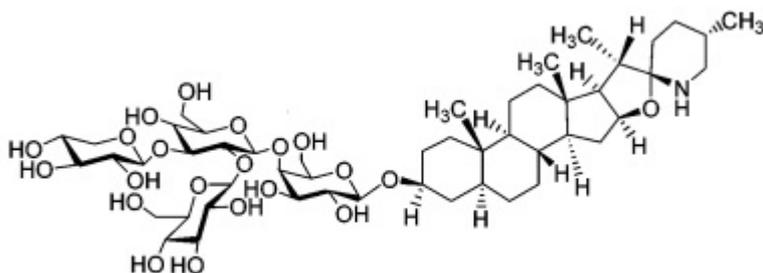
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Glycoalkaloids are steroidal saponins generally occurring in the Solanaceae family, among which we can find tomatine, mainly occurring in *Lycopersicon esculentum* Mill. There are a number of bioactivities associated to tomatine, from anticancer to anti-inflammatory or antibacterial.

We determined that tomatine is cytotoxic to neuronal cells in concentrations in the range of 1 μM . Its aglycon, tomatidine, is less cytotoxic, being safe to the cells up to 6.25 μM . This work aims to clarify the cellular mechanisms underlying the effects of both compounds on the cells, namely determining the effect of the compounds at the level of the endoplasmic reticulum (ER), mitochondrion and calcium homeostasis. To fulfill these propositions, the increase of calcium ions in the cytosol by action of the referred compounds, as well as ER stress status was evaluated. Their effect on caspase-3 and -9 activities were monitored, as well as cellular morphology.



Chemical structure of tomatine.

- **11076 | Traditional sculpture of Timor in the collection of the Faculty of Arts, University of Porto**

Restivo, Maria Manuela, FLUP, Portugal

On the island of Timor, as well as in some neighboring islands, there are several wooden sculptures linked to traditional social practices, especially the worship of ancestors. Between 2000 and 2002 the Faculty of Arts acquired some sculptures of Timor, which recently became the subject of a deeper research. This communication aims to present part of this research, focusing on one kind of sculpture: the ai-tos. How they are made, who produces them, what is their social function and how it is related to Timorese cosmology are the questions that will be approached in this presentation.

- **11154 | Training effect in Swimmers Anaerobic Potential**

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It is well accepted that swimmers are unable to sustain the maximal intensity when swimming 50 m all-out. During this effort, a decay of the swimming velocity and also changes in technical pattern are observed and possibly related to the activation of the glycolysis. This allows to define a fatigue threshold with sensibility to the training is unknown. The purpose of the study was to determine the possibility of use of the fatigue as a control training method and also evaluate its changes after a training period. Subjects were thirteen swimmers that swam 50 m all-out using front crawl technique connected to an electromechanical speedometer to obtain the instantaneous velocity curve $[v(t)]$, over which the fatigue threshold was determined. The post effort maximal lactate concentration was also measured. After the fatigue thresholds were individually determined the swimmers performed an all-out swim with the duration of the fatigue threshold predetermined. After that swim, blood lactate was measured again. No changes were observed on the fatigue threshold between pre and post tests. Although, a probable improvement in the anaerobic potential of the swimmers occurred, as suggested by the increasing, from pre to the post tests, of the mean and minimum velocity, keeping stabilized the fatigue index. The evaluation method seems to be a valuable tool for training control purposes, easy to apply, with lower cost and, by that, accessible to the coaches.

- **11323 | Transmission of hepatitis E virus by blood transfusion: what is the risk in Portugal?**

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Hepatitis E virus (HEV) is considered a growing Public Health threat in industrialized countries. The high rate of autochthonous and asymptomatic HEV infections has led to the concern about transfusion-transmitted HEV infections. Only a few confirmed and published cases of acute HEV infections have been identified in blood donors. However, silent HEV infections in asymptomatic viraemic blood donors have been frequently reported. To our knowledge there have been no reports about the risk of blood donations in Portugal, so we aimed to evaluate silent HEV infection in Portuguese blood donors. A total of 1300 plasma samples from SSMT CHUC were tested for anti-HEV IgM by enzyme immunoassay (Mikrogen, Germany). All samples with positive or equivocal results were retested by immunodot assay (Mikrogen, Germany). The anti-HEV IgM positive plasma samples were also tested for alanine amino-transferase (ALT) levels. From the total of 1300 plasma samples, 10 (0.77%) tested positive for anti-HEV IgM by enzyme immunoassay. When retested by immunodot assay, the 10 samples were also positive for anti-HEV IgM, with high reactivity to the HEV antigen O2C. All except one of the anti-HEV IgM positive blood donors presented normal ALT levels (<37 IU/L). The present study reported 10 anti-HEV IgM positive blood donors, suggestive of a recent hepatitis E virus infection. The presence of HEV RNA is being evaluated, in order to confirm if the blood donors were still viraemic at the time of donation.

- **11181 | Urocortin-2 Improves Right Ventricular Function in Pulmonary Arterial Hypertension**

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Urocortin(UCN)-2 has shown promising therapeutic effects in humans and animal models with heart failure(HF). This study analyzed the effects of UCN-2 treatment in an animal model of right ventricle(RV) HF, secondary to pulmonary arterial hypertension(PAH).

Male Wistar rats received monocrotaline(MCT)/vehicle. Moreover, we used a rat model of RV hypertrophy without PAH (pulmonary artery banding-PAB). The study resulted in 7 groups. After 2 weeks, rats received UCN-2/vehicle. Functional studies and samples collection were performed 4 weeks after MCT injection/PAB operation.

Hemodynamic studies revealed that MCT group developed PAH, and UCN-2 therapy resulted in attenuation of functional changes. Also, the survival rate and exercise tolerance for UCN-2 treated rats was higher than for MCT rats. In the morphohistological analysis, UCN-2 attenuated RV remodeling. Molecular studies showed that MCT group presented increased UCN-2 and decreased CRHR2 expression in the RV, which was reversed by UCN-2 treatment. The increased expression of pathology markers in MCT animals were attenuated by UCN-2. Moreover, UCN-2 therapy also reverted RV morphohistological changes in animals submitted to PAB.

UCN-2 therapy reduced the severity of PAH and RV hypertrophy, and the cardiac-specific effects of UCN-2 could explain the therapeutic actions. These findings suggest that the UCN-2/CRHR2 pathway has a relevant role in the PAH, with a potential therapeutic target.

- **10907 | Use of Advanced Oxidation Processes to Degrade the Cytostatic 5-Fluorouracil in Water Matrices**

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Cytostatics are a major class of chemotherapy drugs. 5-Fluorouracil (5-Fu), one of the most widely used cytostatic, has recently received considerable attention due to the growth of the number of cancer cases, its high prescription and its high toxicity and persistence in the environment. Studies have already pointed out the inefficacy of some wastewater treatment plants in the removal of this cytostatic from water.

The aim of this work was to study the degradation of 5-Fu in water by advanced oxidation processes; particularly, the use of Fenton's process is investigated for the first time.

Under optimal conditions ($[5\text{-Fu}] = 0.38 \text{ mM}$, $[\text{Fe}^{2+}] = 0.5 \text{ mM}$; $[\text{H}_2\text{O}_2] = 240 \text{ mM}$; $\text{pH} = 3$ and $T = 30 \text{ }^\circ\text{C}$), 5-Fu was completely removed after 2 h by Fenton's oxidation and about 50% of mineralization (total organic carbon removal) was reached after 8 h of reaction. 5-Fu degradation experiments in water by photo-assisted techniques (direct photolysis, photodegradation with H_2O_2 and photo-Fenton) were also conducted, being found that the most efficient one was the photo-Fenton process: 67% mineralization was obtained after 2 h of reaction, using an iron concentration equal to the legal limit required for direct discharge according to Portuguese legislation ($[5\text{-Fu}] = 0.38 \text{ mM}$; $[\text{Fe}^{2+}] = 0.04 \text{ mM}$; $[\text{H}_2\text{O}_2] = 17 \text{ mM}$; $\text{pH} = 3$ and $T = 30 \text{ }^\circ\text{C}$). Moreover, the toxicity assays showed a decrease on the toxicity against *V. fischeri* for the samples collected after 8 h of treatment by photo-assisted techniques.

- **11223 | Vagally mediated exposure to chronic GLP-1 may influence leptin production without changing pancreatic morphology**

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The gut/brain axis depends on vagal integrity which may be impaired in type 2 diabetes patients. GLP-1 is a gut hormone, currently used in T2DM treatment known to improve metabolic profile. The aim of the study was to assess the role of the vagus nerve on pancreas morphology and systemic endocrine profile upon chronic GLP-1 exposure.

Male Wistar rats (n=30) were subjected to truncal subdiaphragmatic vagotomy (VGX n=7) or simulated surgery (SHAM n=5). Part of VGX and SHAM animals received exogenous GLP-1 (3.5 pM/min/Kg) through intraperitoneal osmotic pump (SHAM GLP-1 n=5, VGX GLP-1 n=5). Some SHAM rats were pair fed (PF) with VGX (n=6). At day 28 fasting glucose, total and active GLP-1, insulin and leptin levels were measured by ELISA. Pancreatic morphology was analyzed by routine histology, immunohistochemistry for insulin, glucagon and ki-67 and immunofluorescence for glucagon and ki-67 co-staining. Morphometric analysis was done in Image J.

VGX had lower food intake and body weight gain when compared to SHAM. GLP-1 exposure did not alter food intake or body composition. VGX GLP-1 had significantly lower leptin levels than VGX rats. Langerhans islets size and percentage of stained area were similar in all groups and revealed no abnormalities in pancreatic tissue.

Chronic GLP-1 exposure did not induce morphological changes in pancreatic tissue. The vagus nerve seems to mediate leptin regulation and systemic response to GLP-1. Our results support that GLP-1 based therapies are safe.

- **11047 | Valorisation of agro-industrial by-products for human nutrition:the case of pistachio flour**

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Pistachio tree (*Pistacia vera* L.) has been cultivated in Mediterranean countries (1) Their seeds are mostly used for edible oil production and in food industry (2). Pistachio oil production has been increasing with the consequent production of pistachio flour (PF) as by-product. The nutritional characterization of this residue is an essential step to evaluate its potential for innovative food products.

Pistachio seeds, under evaluation, were submitted to different drying temperatures (50°C, 100°C and 150°C) at different time periods (30, 60 and 120 minutes) and afterwards oil extracted. Nutritional composition (fat, protein, ash, carbohydrates, and moisture) of PF was evaluated according to AOAC procedures (3). Fatty acid (FA) profile was determined by GC-FID (4).

PF has an interesting protein content (from 38% to 43%). The lowest fat content was obtained at 50°C/60´ (24%) and the highest at 150°C/120´ (38%). The product obtained at the best yield extraction (50°C/60´) still retains a considerable amount of fat. Regarding the FA profile, small variations were observed with the drying process in the different time periods. Oleic acid is the major FA followed by linoleic and palmitic acids.

Nowadays, one of the top research areas in food science is the exploitation of natural ingredients from agro-industrial by-products for human nutrition. PF has a great potential to be used in human nutrition due to its high protein and fat contents as well as the FA profile.

- **10913 | Variation of Magnetic properties on granites with different degrees of hydrothermal alterations**

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The aim of this study is the evaluation of the presence of hydrothermal alterations in paramagnetic Variscan ilmenite-type granites hosting quartz veins using as tools the magnetic susceptibility (MS) and the anisotropy of magnetic susceptibility (AMS). Godinhaços area (country Vila Verde) is situated in Galiza Trás-os-Montes zone and its geology is characterized by the presence of Variscan granitic rocks occurring in four different massifs, S. Mamede, Vila Verde, Braga and Ponte da Barca. For the AMS study, oriented cores were collected, with a portable machine, in the granitic massifs. The AMS was measured with an AGICO KLY-4S apparatus, providing parameters such as shape parameter (T), anisotropy parameter (P) and magnetic fabric. The MS was measured in situ, using a portable susceptibility meter KT10 Terra Plus, allowing the evaluating of the magnetic susceptibility of the granites. The MS values defined a NE-SW zonation, related with different degrees of muscovitization (fig. 1.), sub parallel to an important quartz vein. AMS fabric allowed inferring a sill-unrooted geometry for S. Mamede and Vila Verde granites. The magnetic fabric in the Vila Verde granite and preferred orientation of K-feldspar megacrystals pointed out an emplacement controlled by the Malpica-Lamego shear zone. Contrarily in S. Mamede massif it suggests that it was installed along N-S fractures. This study showed that the MS is a good indicator of changes in the hydrothermal alteration in granites.

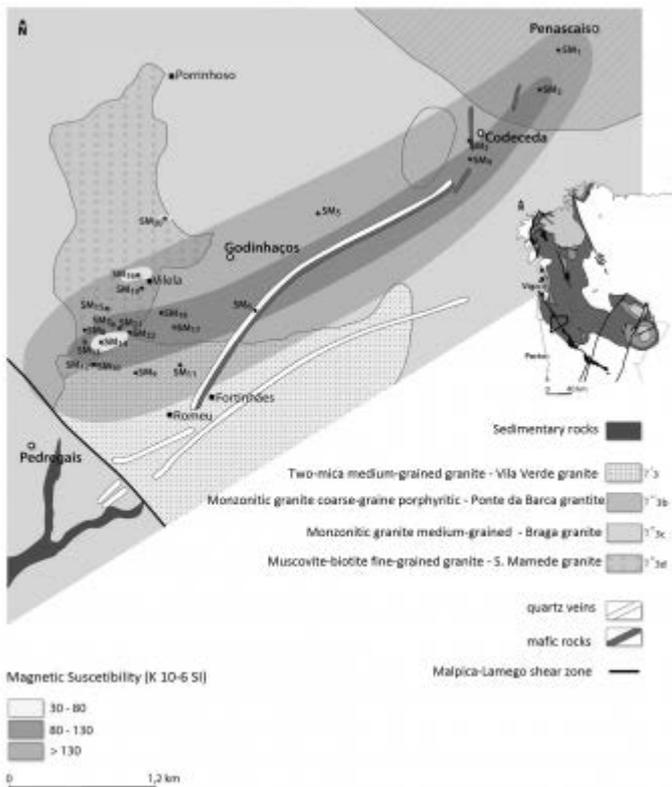


Figure 1. Magnetic susceptibility zonation in Godinhaços area.

- **11133 | Velocity-dependent One-Scale model for Biased Domain Walls**

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Topological defect networks are an expected consequence of phase transitions in the early Universe (T. W. B. Kibble, 1976). It is of paramount importance to study these, as they are expected to yield vast amounts of gravitational energy and thus play a role in the formation of large-scale structures. A specific type of defect named domain wall, has a nefarious characteristic: given enough time, it reaches a linear attractor solution and its energy density dominates the energy density of the Universe (Ya. B. Zeldovich et al, 1974). Since domain walls arise from the breakage of discrete symmetries, it is necessary to circumvent this behavior.

We will discuss the theoretical underpinnings of the effects of biased conditions on network evolution, and how this might solve the conundrum mentioned above. We start by briefly summarizing the solutions proposed by M. Hindmarsh (1996) and D. Coulson et al (1996) and tested in J. R. C. C. C. Correia, I. S. C. R. Leite, C. J. A. P. Martins (2014), as well as introducing a version of the Velocity-dependent One-Scale (VOS) model for domain walls (A. M. M. Leite, C. J. A. P. Martins, E. P. S. Shellard, 2013). We then present more recent work aiming to quantify how the VOS model might fare in the anisotropic regime, and in particular what effects anisotropic imprints have on scaling. A subsequent related presentation will describe field theory simulations of domain wall networks carried out to test this behavior

- **11292 | Verbs of motion and prepositions: how to overcome Portuguese students learning difficulties in their mother tongue and in Spanish**

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The study that we undertook was motivated by the realization that Portuguese students do not understand fully the semantic value of motion verbs and their prepositions in their mother tongue and have difficulties selecting the prepositions followed by verbs of motion in the Spanish language. Therefore, the main objective of our research was to develop and apply strategies that would help students to be aware of the semantic properties of the prepositions associated with verbs of motion. We argue that grammar laboratories based on learning by discovery [1] are an effective methodology to achieve this aim.

The study follows the research-action principles and was developed during the teaching practice, integrated in the Master's degree of Portuguese and Foreign Languages Teaching.

This investigation allowed us to conclude that the mobilization of tacit knowledge of the students and a very guided approach through grammar laboratories, led to a successful assimilation of the contents. Through a process of discovery, learning becomes more meaningful and motivating and grammatical laboratories constitute a privileged instrument for grammatical content work.

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[1] Duarte, I. (1992). Oficina gramatical: contextos de uso obrigatório do conjuntivo. In M. R. Delgado-Martins, D. R. Pereira, A. I. Mata, M. A. Costa, L. Prista & I. Duarte (eds.), *Para a Didáctica do Português: Seis estudos de linguística*. Lisboa: Edições Colibri, 165-177.

- **10864 | Where do Universities stand within the value chain of Smart Specialisation?**

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Smart Specialisation (SS) is a key piece of the European growth strategy and a major instrument of regional policy that implies a new mind-set, based on setting strategic priorities and using smart policies to maximize the knowledge-based development potential of regions. It builds upon the set-up and implementation of national & regional research and innovation strategies (RIS3). As this new approach calls for a new and more leading involvement of different actors in a collective '*entrepreneurial discovery process*', universities are expected to have an even more pivotal role to play within the regional innovation systems and thus in the design and implementation of regional smart specialisation strategies. This work focuses on the positioning and role of universities within the value chain of smart specialisation. The core empirical work is based on the analysis of the research and innovation strategies of 11 regions from 7 countries with different innovation performance levels and specialisation patterns: two "leaders" (Berlin, Sachsen), two "followers" (Brandenburg, Wales), five "moderate" (Norte, Cataluña, Azores, Valle D'Aosta, Slaskie) and two "modest" (Illes Balears, Vest). Research results revealed that universities are taking an active role within their regional strategies, being mostly engaged in research-related activities, and that university engagement intensity varies according to the innovation performance and patterns of specialisation.

- **11092 | Word order in Portuguese Sign Language: a short comparative study with Portuguese and other sign languages**

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The aims of this study are to understand which is the basic word order pattern of LGP (Língua Gestual Portuguesa / Portuguese Sign Language) and to identify the conditions that justify the production of sentences with different word order patterns.

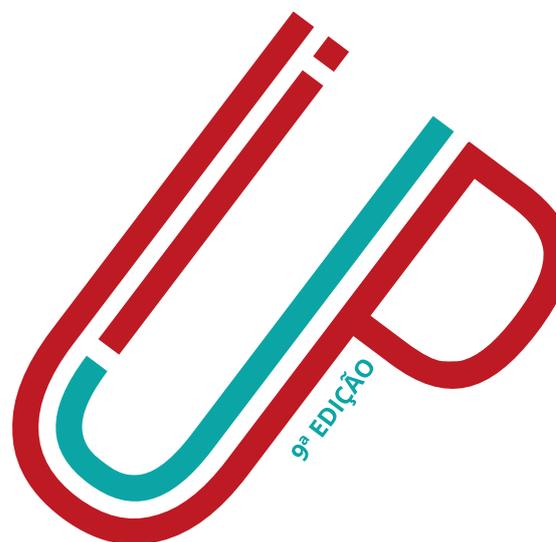
A corpus was formed by encouraging the production of simple affirmative declarative sentences in LGP, using stimuli-images on a group of LGP signers from North Portugal - 6 Deaf and 2 hearing LGP interpreters, in order to compare the results. Stimuli-sentences in Portuguese were also used, in order to evaluate if the Portuguese syntactic structure interferes with the syntactic structure of LGP. The results show that LGP has its own syntactic structure and its basic word order pattern is SVO, although, in certain non-reversible situations, more flexibility is evident and other word order patterns are frequent. We have also observed that sentences with other word order patterns are followed by nonmanual markings, which have their own rules, and that, when these rules are not abided to, it can be very difficult to understand the produced sentences.

A syntactic analysis reveals that we can apply to LGP some syntactic principles that are common both to spoken languages and other sign languages. A syntactic structure is proposed for sentences with SVO and SOV orders, based on the idea that there are some functional categories in the sentence and that the movement or the lack of V movement can justify some different word order patterns.

U. PORTO

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POSTER SESSIONS



- **11333 | "União Estável" and "União de Facto": the comparative aspects**

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In front of the new scenarios of interpersonal interactions, moulded and based on flexibility and plurality, the Family and Children Law and are called to complete a new circumstances with outlines still shortly defined, which are manifested with a Trend For a privatization, de-institutionalization and contracting of Family Relations.

Considering how many differences there are between the Legal systems of Brazil and Portugal does it relevant to comparative study of Law analyzing how divergence of the rules of interpersonal relations, specifically in the "União Estável" , found in Brazil or the "União de Facto" how is denominated in Portugal.

Before the goal be achieved, could be necessary An approach to the main legal and legal aspects of this institute, pointing out how laws and doctrines relating At issue, as well as its evolution scope of those countries. A bibliographic research with emphasis in compared aspects.

- **10993 | A direct correlation between the antioxidant efficiencies of hydroxytyrosol and its alkyl esters and their concentrations in the interfacial region of olive oil emulsions**

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Antioxidant (AO) efficiency in emulsions depends on their concentration in the interfacial region, where oxidation is believed to be initiated. In this work, a kinetic method[1] was employed to estimate the distributions of a series of hydroxytyrosol (HT) esters (C1-C16 acids) of increasing lipophilicity between the oil, interfacial and water regions of stripped olive oil emulsions. Results show that at constant emulsifier volume fraction FI, the concentration of HT and its esters in the interfacial region do not correlate with their hydrophobicity but increases progressively with increasing chain length up to C8, beyond which it decreases. A similar trend was observed when measuring their efficiency in inhibiting the oxidation of the same olive oil emulsions. These results support the idea that the efficiency of an AO correlates with its fraction at the interfacial region and provides a molecular interpretation of the nonlinear tendency in the AO efficiency with increasing AO hydrophobicity (the so called “cutoff effect”). An increase in the surfactant concentration (e.g., FI) promotes incorporation of AOs into the interfacial region. The results are relevant for interpreting the effect of lipophilization of AO on their activity and are crucial to the design of new AOs.

- **11138 | A liquid chromatography-mass tandem method for quantification of tetrabromobisphenol A in breastmilk**

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Tetrabromobisphenol A (TBBPA) is a substance belonging to the class of Brominated Flame Retardants used worldwide as additive in epoxy plastics and electronic boards. It has been shown that TBBPA is persistent and bioaccumulative, so it may be found in environment due to leaching from industrial products in which it was used. Consequently, TBBPA can reach the food chain.

Although the World Health Organization (WHO) and the European Scientific Committee on Health and Environmental Risks (SCHER) concluded that TBBPA did not present risks to human health, many scientific studies have demonstrated a potential hazard from these compound.

The aim of our study were to assess the presence of TBBPA in breastmilk, by means of an innovative analytical solution based in liquid chromatography-mass tandem (LC-MS/MS) specifically developed for this purpose.

Sample preparation comprised liquid-liquid partitioning with acetonitrile in presence of anhydrous MgSO₄ and NaCl (QuEChERS) after a previous pre-treatment with hexane. Good performance characteristics were achieved during validation of the method with recoveries ranged from 69 to 91%, and high precision, with relative standard deviations generally below 20% being obtained. The linearity of the method ranged from 1 to 100 µg/L with a coefficient of correlation higher than 0.99. TBBPA was detected in three out of 21 samples analyzed, a result that fully justified the need to further adopt preventive measures.

- **11264 | AGP26, AGP25 & AGP27: a threesome of Arabinogalactan Proteins involved in plant reproduction**

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Arabinogalactan Proteins (AGPs) are hydroxyproline-rich proteins containing a high proportion of sugars, widely distributed in the plant kingdom and ubiquitously present in land plants. AGPs have long been suggested to play important roles in sexual plant reproduction. Studies have shown that AGPs can be used as molecular markers for reproductive development, showing their presence in female tissues¹.

Here we show preliminary results regarding the study of a particular subgroup of AGPs: AGP25, AGP26 and AGP27. These 3 AGPs have a high level of similarity between their amino acidic sequences, and may play redundant roles in Arabidopsis reproduction. AGP25 and AGP27 mutants were already described. *agp25* has a small seed set and has an abnormal terminal flower development while *agp27* has no visible phenotype. An *agp25agp27* double mutant was obtained, which is still under analysis. T-DNA insertion mutants for AGP26 are now being studied. These mutants phenotype will be further assessed regarding pollen tube growth, seed set and fertilization.

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- **11197 | Amaranth Malting And Formulation Of A Food Product With Amaranth Malt**

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Amaranth is a pseudocereal considered to be of high nutritional value and adequate level of micronutrients, cultivated nowadays in Central America and other regions. The process addressed in this work is the malting, which consists of 3 steps: steeping, germination and kilning. The malting process confers better flavour and aroma to products.

This work primarily seeks to optimize the amaranth malting process.

In this study only one variety of amaranth was used, the samples were steeped at 30 °C for 48 hours (h), germination occurred during 48 h at 23 °C and kilning was performed at 42 °C during 48 h. The moisture content (MC) was experimentally measured and an empirical model was fitted. Biscuits and snacks formulations containing malted or unmalted amaranth seeds or flours were developed and analyzed through a volunteer panel of 30 tasters. During steeping phase (6 h) the MC of amaranth increased 66.2%.

An ideal germination duration was determined, providing a 26% seed germination rate. During kilning it was observed that it would be possible to increase the temperature above 42 °C after 3.80 h without occurring protein denaturation.

In this work it was possible to establish time parameters to amaranth malting process. Also, it was possible to communicate mineral content claims for magnesium, phosphorus and iron for a 20 g snack containing 90% of amaranth. The incorporation of malted amaranth in food formulations can be justified by sensorial and nutritional reasons.

- **10975 | Amoxicillin-loaded lipid nanoparticles against Helicobacter pylori infections**

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Helicobacter pylori are the main cause of peptic ulcer and gastric cancer, being considered as a human carcinogenic by the World Health Organization [1]. However, their eradication rates are distant from the desirable due to several reasons, such as the low permeability and the degradation under acidic conditions of some antibiotics [1]. Lipid nanoparticles are useful as antibiotics delivery systems, since they improve drugs pharmacokinetic properties by protecting them against in vivo degradation and improving their absorption through gastric mucosa. The current work aims to use lipid nanoparticles to load amoxicillin, which is classified as a low permeability drug.

Nanoparticles with different lipid compositions were evaluated through physicochemical characterization (particle diameter, zeta potential and encapsulation efficiency). For further evaluation of the most promising method of synthesis (modified free organic-solvent emulsification/sonication vs double emulsion method), cetyl palmitate was the lipid chosen taking into account the suitable melting point for oral administration, the lower polydispersity and the lower zeta potential, which represents a higher stability.

[1] D. Lopes et al., Journal of controlled release, 189 (2014) 169-186.

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- **11315 | Analysis of time in autobiographical memory: Remembering public and personal events**

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How people estimate when something happened and the accuracy of their estimates are crucial to the human condition. Temporal reference allows orientation in the past and the present, as well as the definition of who we are.

In order to understand the processes involved when a person dates an event, two studies were developed. In study 1, a total of 295 participants, younger and older adults, were presented with public events widely publicized by Portuguese media over forty years. Participants were asked to indicate if they knew the event, to make an estimate of when that happened, and to report two strategies that helped them in completing the task. Results showed that participants have a good knowledge of the events selected. However, this was not reflected in dating the task, where accuracy was minimal.

Given that personal events are the predominant strategy to date public events, a second study with 12 younger adults was designed, aiming to explore how participants date personnel events, recorded in their diaries, for a period of 3 months. In this task the dating of events took place in two distinct moments: First 1 month after the end of the records, and second five-months later. Overall, participants showed a decrease in dating accuracy according to the elapsed time.

These results support the idea that accuracy in remembering dates is not a common reality, and its reconstruction is a fallible process that is influenced by the passage of time.

- **11332 | Antidepressants Use and Breast Cancer Development - a meta-analysis**

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Background: Studies in rats demonstrated a possible association between antidepressant (AD) use and breast cancer development. Moreover, even though studies in humans are trifling, the studies results examining the relationship between AD use and breast cancer risk have produced conflicting results.

Objectives: The main goal of the present study was to analyze associations between use of ADs and risk of breast cancer development.

Methods: By searching MEDLINE, EMBASE and Cochrane trials registers we collected published documents between December 2014 and January 2015 on ADs and breast cancer association. Bibliographies of selected articles were examined for further references. Odds ratio (OR) and the 95% confidence interval (CI) were calculated.

Results: Fourteen eligible studies were included into the analysis which indicated that there was no statistical significance between AD use and breast cancer (OR 1,02; 95%CI [0,93; 1,12]). Statistical significance was not found either in subgroup analysis concerning pharmacological class (TCA, SSRIs, MAOIs, Atypical) or duration of exposure.

Discussion and Conclusion: Despite inconclusive evidence on the association between ADs use and breast cancer risk, there is a continuous rise in the proportion of women using ADs at the same time that the incidence of breast cancer is increasing. As breast cancer is the most common cancer, further research is needed to clarify that important association.

- **11025 | Antioxidant Distributions of Chlorogenic Acid and Its Alkyl Esters in oil-in-water emulsions.**

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We have evaluated the effect of emulsifier concentration on the distribution of chlorogenic acid (CGA) and its derivatives (C12-CGA and C16-CGA) in food emulsions composed of stripped olive oil, acidic water and Tween 20. Experiments in binary stripped olive-oil-water mixtures, showed that CGA is oil-insoluble and its derivatives are both water-insoluble. Addition of Tween 20 to prepare kinetically stable emulsions creates an interfacial region and the distribution of antioxidants can be described by two partition constants, one between the water and interfacial region, PWI and the other between the oil and interfacial region, POI but for very hydrophobic or very hydrophilic can be simplified. POI and PWI can be determined in the emulsion itself by employing a kinetic method based on the reaction between the hydrophobic 4-hexadecylarene diazonium ions (16-ArN_2^+) and the antioxidant. At emulsifier volume fractions of $\Phi=0,005$, about 75% of CGA is located at the aqueous region and about 25% is located at the interfacial region. For the same emulsifier volume fraction, C12-CGA is predominantly located at the interfacial region (67%) but about 33% is located at the oil region. C16-CGA distributes almost equally between the oil region (~47%) and the interfacial region (~53%). The results obtained explain how the polarity of the antioxidants may affect their distribution in emulsified systems and, therefore, their effectiveness in inhibiting lipid oxidation.

- **11024 | Antioxidant Distributions of Gallic Acid and Its Alkyl Esters in fish oil-in-water emulsions.**

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In this work, we determined the effect of emulsifier concentration on the distribution of gallic acid (GA), butyl gallate (BG) and lauryl gallate (LG) in food-grade emulsions composed of fish oil, acidic water and Tween 80. Auxiliary experiments in binary fish oil-water mixtures in the absence of emulsifier showed that GA, BG and LG are both oil and water soluble. In a emulsions, the distribution of GA can be defined by two partition constants, that between the aqueous and the interfacial regions, P_{W^I} , and that between the oil and interfacial regions, P_{O^I} , which was determined in the intact emulsions by using the pseudophase kinetic model. This method exploits the reaction between the hydrophobic 4-hexadecylbenzenediazonium ions, 16-ArN_2^+ , and GA. Results show that GA distributes between two regions. At emulsifier volume fractions of $\phi=0,005$, GA is located about 51% in the aqueous region and ~49% is in the interfacial region. For the same emulsifier volume fractions, BG is predominantly located (~74%) in the interfacial region, about 15% is located in the oil region and about 10% is located in the aqueous region. LG distributes between two regions. About 46% is located at the oil region and 54% at the interfacial region. The percentage of GA at the interfacial region at $\phi=0,042$ is ~89%, BG is about 96% and LG is ~87%. The results obtained are basic to understand how the polarity of the antioxidants may affect their distribution in emulsified systems.

- **10873 | Application of microwave-assisted extraction coupled to HPLC for the analysis of norfloxacin, ciprofloxacin and enrofloxacin in bird flour**

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In this work a microwave-assisted extraction (MAE) method followed by HPLC analysis is proposed for the simultaneous determination of the antibiotics norfloxacin, ciprofloxacin and enrofloxacin in bird flour.

For methodology optimization, bird flour was spiked with each antibiotic. MAE was tested (n=5) at 30°C, 40°C, and 50°C, for 15 minutes. Extracts were evaporated and resuspended in aqueous solution. Then, solid phase extraction (SPE) was carried out. Antibiotics were analysed in gradient mode, in a HPLC with DAD detector. Matrix calibration (0.1-1 mg L⁻¹) was chosen, after comparison with aqueous standard curve.

HPLC conditions used enabled the separation of the selected antibiotics in a single run, being appropriate for their quantification in bird flour samples.

Results showed that 100% of the spiked antibiotics were recovered after microwave extraction for the three tested temperatures, being 40°C the best benefit-cost ratio temperature. No significant losses of these antibiotics during the evaporation with nitrogen or during SPE cleaning were observed.

To improve antibiotics determination, alternative columns will be tested and SPE process will be optimized. The overall method should be capable of exhibiting high sensitivity and accuracy, minimal sample matrix effects and interferences, high sample throughput, and low cost per sample.

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- **11314 | Assessing the Specificity of Memory in Non-Clinical Samples with the AMT**

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From the study of Williams and Broadbent (1986) arised the Autobiographical Memory Test (AMT), aiming to assess the specificity of memory by inducing participants into remembering a single specific memory with emotional words. There are some studies suggesting that the standard version of the AMT may not be suitable for non-clinical samples. The purpose of this investigation was to evaluate the usefulness of an adapted version of the AMT to assess the specificity of memory in non-clinical samples and its usefulness as a future screening tool in primary prevention for people at risk of depression. To do so, an adaptation of the AMT test was given to 66 participants, organized in three random Groups and subjected to different instructions: Standard Group, Minimal Instructions Groups and Control Group.

The results obtained indicated that the Minimal Instructions Group showed a significant statistical difference with a smaller number of specific memories when compared with participants who receive the Standard Instructions of the AMT. However, concerning categorical memories, remembering differed based on the valence of the displayed word.

In conclusion, this study showed that the Portuguese version of the Autobiographical Memory Test is a valid instrument to detect the reduced specificity of memory in non-clinical samples, when using a minimal instruction procedure.

- **11231 | Automated evaluation of the effect of ionic liquids on glucose oxidase catalysis**

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Ionic liquids (ILs) have been applied as solvents in bioassays with results in terms of sensitivity and selectivity. However, depending on its structure and properties, they tend also to inhibit enzymes instead of activating them. This double behavior demands specific studies to evaluate the effect of these solvents on enzyme activity.

Copper-catalyzed CL determinations were already reported in the presence of the IL 1-ethyl-3-methylimidazolium ethylsulfate through the interaction of the copper catalyst with the imidazolium ring. Additionally, some ILs have shown inhibitory effects towards glucose oxidase activity.

Though, it was intended to evaluate the influence of several ILs on the overall reaction of the conversion of glucose by the system glucose oxidase/luminol/copper-catalyzed chemiluminescence (CL). For that an automatic system based on sequential injection (SIA) has been developed and six ILs of the imidazolium group were tested. Three ILs with pyrrolidinium and pyridinium cations were also assessed with comparative purposes.

The results evidenced that the ILs of the imidazolium group enhanced the sensitivity of the CL reaction, with the exception of those with the anion tetrafluoroborate and 1-butyl-3-methylimidazolium acetate. The ILs with pyridinium and pyrrolidinium cations decreased CL signal markedly, both in a concentration dependent mode.

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- **11116 | Automatic solid phase extraction coupled to fluorimetric detection for the determination of fluoroquinolones in water matrices**

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Antibiotics constitute a large group of pharmaceuticals and the occurrence of these compounds in the environment is an emerging problem due to the possible adverse effects on animal and human health and the negative impact on ecosystems, with potential dissemination of antibiotic resistance. Fluoroquinolones constitute one of the antibiotic groups most frequently detected in aqueous matrices.

Having this in mind, a flow based strategy comprising automatic solid phase extraction (SPE) coupled to fluorimetric detection was developed for application as a screening method for the rapid determination of fluoroquinolones in waters. SPE procedure was implemented using a molecular recognition strategy. Hence, a flow-through column, containing a molecularly imprinted polymer (MIP) as sorbent, was incorporated to a multisyringe flow injection system, where all the steps from sample loading to analyte elution were controlled by computer programming. Different SPE parameters were studied, including sample volume, sample flow rate, washing volume for matrix removal, eluent volume and eluent flow rate. Method validation with environmental aqueous matrices spiked with fluoroquinolones at different concentration levels is currently under development.

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- **11063 | Bioactivity potential and phylogenetic characterization of bacteria isolated from intertidal macroalgae from Foz do Douro**

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Due to the increasing resistance of bacteria to the existing antibiotic compounds there is a crescent need to find new metabolites active against pathogenic strains. Biofilms on algal surfaces offer a unique and rich microenvironment for marine bacterial growth where competition for nutrients and protected environment is mediated by secondary metabolites. This study aimed to investigate the effect of isolated bacteria (n=15) associated with *Ulva* sp, *Sargassum muticum* and *Porphyra dioica* against target microorganisms-- *Bacillus cereus*, *Bacillus subtilis* and *Candida albicans* through antimicrobial assays. Moreover, the molecular screening of potentially bioactive gene clusters (NRPS and PKS) and the phylogenetic analysis of the marine bacteria based on 16S rRNA gene sequence were performed. The isolated bacteria were identified as belonging to Gammaproteobacteria (67%) and Alphaproteobacteria (33%). The diffusion agar assay revealed that 40% of the bacteria showed bioactivity against *C. albicans*. In the liquid screening against *C. albicans* and *B.subtilis* also high levels of activity were obtained against *C. albicans*. PKS-I gene was potentially present in nine isolates, whereas NRPS was only in one. Isolate UAP19c (affiliated to *Vibrio* sp.) stands out from the remaining due to the presence of bioactivity genes and antimicrobial activity. In conclusion, the results evidenced the potential of macroalgae associated bacteria as antimicrobial producers against human pathogens.

- **11194 | Biological activity Of Olive Oil Polyphenols**

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The biological properties of virgin olive oil (VOO) phenolic compounds in vivo will depend on the extent to which they are absorbed and metabolized. Bioavailability studies have demonstrated that hydroxytyrosol (HyTy) and its secoiridoid derivatives are absorbed. It was verified the main metabolic pathways for HyTy are the O-methylation and O-sulfonation, leading to the formation of homovanillyl alcohol (HVA) and sulfates [1]. Secoiridoids are partially hydrolyzed with the production of hydroxytyrosol [2]. Therefore, the health benefits of VOO polyphenols may be attributed not only to parental compounds but also to phase I and II.

With the purpose to clarify the protective properties of phenols in human cells and identify molecular mechanisms responsible for anti-atherosclerotic effects, red blood cells (RBC) were chosen as a model for the study [3]. The capacity to protect RBC from AAPH-induced oxidative injury was studied for several metabolites, namely, HVA 4'-O-sulfate, HyTy 3' and 4'-O-sulfates and HyTy 1-O-sulfate metabolites. Only HyTy 1-O-sulfate showed to significantly protect RBCs from oxidative haemolysis and to prevent morphological RBC changes.

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- **11153 | Biological control of two spotted mite *Tetranychus urticae* L. in a greenhouse rose production**

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Roses production is important in Europe and two spotted mite (TSM) *Tetranychus urticae* (Acari: Tetranychidae) is a major pest [1]. Most productions exhibited long term problem with TSM. An assay was carried in a greenhouse in NW Portugal, variety White Naomy with a severe presence of TSM. Two methods were compared: bio pesticide abamectine (Saptec, Boreal) (SBP) and biological control with natural enemies *N. californicus* and *P. persimilis* (BCA). Observations of eggs and mobile forms were carried weekly using a 3-level risk assessment method. Quality of flowers was evaluated at harvest: stem height, flower bud width and number of saleable flowers. Significant differences were obtained in mobile forms in maintenance layer ($P=0.0064$, BCA = $46.0\pm 25.3\%$; SBP = $89.3\pm 6.7\%$) and production layer ($P<0.0001$, BCA = 4.7 ± 4.5 ; SBP = 59.3 ± 15.5) and in eggs ($P=0.0238$, BCA = $0,4\pm 0.5$; SBP = 1.8 ± 0.4) and ($P<0.0001$, BCA = 4.7 ± 4.5 ; SBP = 59.3 ± 15.5). The BCA produces 1220 stems, SBP 620 and flowers in BCA were, on average, 4cm longer. The use of a biological control agent was the best way of handle the pest. A user-friendly pest risk assessment and a decision threshold level were defined for TSM in greenhouse rose's production.

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- **11217 | Biomembrane models evaluation in drug discovery**

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Lipophilicity plays a crucial role in the action of pharmaceuticals, affecting dramatically both pharmacokinetics and pharmacodynamics. In drug discovery, lipophilicity is a key determination and usually is expressed by the partition coefficient of a substance between a hydrophobic (octanol) and a hydrophilic (water) phase. Recently, phospholipidic biomembranes models such as liposomes and micelles have emerged as more accurate alternatives, since they take into account not only the hydrophobic but also the electrostatic interactions [1, 2].

In this work, a set of compounds was selected which includes substances preconized by OECD lipophilicity guidelines and also relevant marketed drugs. The partition coefficient of these substances was measured using micelles and liposomes as models. The obtained results will lead to a data set that will be use to assess the overall performance of these biomimetic models and to compare with new hit/lead compounds in drug discovery.

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- **10926 | Breast cancer growth-inhibitory efficacy of new steroidal compounds as aromatase inhibitors**

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Estrogen-receptor positive [ER+] breast cancer requires estrogens for its development. One of the therapeutic strategies is the use of aromatase inhibitors (AIs) that inhibit the enzyme aromatase, blocking estrogens synthesis. However, the AIs used in clinic cause serious side effects as bone loss and acquired resistance. As the search for novel potent compounds is currently demanded, this work focused on the biological evaluation of 4 new steroidal compounds (57, 58, 59 and 60) as potential AIs, synthesized from structural modifications on the aromatase substrate, androstenedione. Previous studies confirm that these steroids are potent AIs in placental microsomes. By the use of MTT and LDH assays it was concluded that all the compounds are able to decrease the viability of an ER+ human breast cancer cell line that overexpresses aromatase (MCF-7aro) in a dose- and time-dependent manner. Except for steroid 57 whose action is aromatase-dependent, the other AIs reduced cell viability in an aromatase-independent manner. Giemsa and Hoescht staining evidenced fragmentation and chromatin condensation, typical features of apoptosis. Comparing all steroids, the 57 was the most potent and promising AI. This work provides information about the most favorable structural modifications in steroid scaffold in order to find new potent AIs with lower side effects.

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- **11175 | Breeding *Galleria mellonella* L., for human food: comparison of different diets and determination of larvae nutritional composition**

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Entomophagy is not common in western societies. However, due to recent advances, it is timely to establish sustainable production techniques and to get data about the nutritional value of edible insects. The objective of this research was to implement a breeding technique where different diets were compared and larvae main nutritional components were quantified. The great wax moth, *Galleria mellonella* L. (Lepidoptera: Pyralidae) was reared at 27-30 °C, 60-65% relative humidity and constant darkness. Larvae were kept in glass Petri-dish and, when transformed in pupae, placed in plastic cages for adult emerge and oviposition. To compare diets a trial with eight different diets was set-up and larvae were feed with one diet since egg hatching; all larvae were weighted before pupation and life cycle duration was registered. The diet with commercial dog-food (diet 6) provided the best results: larvae weight was 0.15 g in average, relative metabolic rate was 3.49 and digestibility 78%. Life cycle ranged from 41 days for diet 8 (a mixture of flour and honeycomb) to 52 days for diet 1 (beeswax and pollen). For diet 6, the cost of food needed to produce larvae was 12 €/kg. Larvae analyses reveal a fat content of 16% to 24% and a protein content of 14% to 17%. The breeding technique developed in this assay revealed adequate, the comparison of larvae diets gave relevant results that should be scaled-up. The nutritional content (fat and protein) in larvae was less than expected.

- **11081 | CDX2 and SOX2 are predictive markers of patient prognosis in colon cancer**

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SOX2 and CDX2 are key transcription factors in the gastrointestinal tract presenting mutually exclusive expression patterns in normal tissues. SOX2 has an active role in the regulation of differentiation in oesophageal and gastric mucosa, while CDX2 is essential in intestinal differentiation. Experiments in animal models have shown that when SOX2 expression decreases there is an increase of CDX2 and vice versa.

The objective of the study is to explore the impact of CDX2/SOX2 expression profile in the colorectal context, both at the cellular level and as prognosis predictors, as well dissect the putative regulation of SOX2 by CDX2-induced miRNAs.

We used human colonic carcinoma cell line LS174T "wild-type" and two CDX2 knock-out sublines. Our results show that CDX2 knock-out increases cell migration and induces altered cell morphology, as well as confers chemotherapy resistance to 5-FU given an increased resistance to cell death. We further show that the chemoresistance of the KO clones is conferred, at least to some extent, by the increased levels of SOX2 in these cell lines. The analysis of a colon cancer patient cohort (n=903) shows that SOX2 and CDX2 are inversely correlated in vivo. As future studies we sought to identify microRNAs involved in the inhibition of SOX2 and regulated by CDX2.

Besides unravelling a novel regulatory mechanism for SOX2, this will provide further insight into understanding normal and aberrant differentiation events in the gastrointestinal tract.

- **10927 | Chalcones as versatile intermediates for the synthesis of potential bioactive agents**

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Chalcones are flavonoid precursors with a wide range of biological activities namely antioxidant, anticancer, antimicrobial, antiprotozoal, antiulcer, antihistaminic, anti-inflammatory and antifouling activities [1,2]. In addition, the presence of a α,β -unsaturated ketone moiety makes these compounds as valuable synthons for the synthesis of bioactive five and six membered ring systems like isoxazole, pyrroles, indanones, pyridines and flavones [2]. Considering these, several chalcone derivatives obtained by molecular modification of the α,β -unsaturated ketone moiety have been prepared by conventional and microwave assisted organic synthesis. The newly synthesized compounds were characterized by NMR techniques (^1H NMR, ^{13}C NMR, HSQC and HMBC).

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- **11143 | Characterization of pairs of drug sensitive and drug resistant leukemia cell lines**

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Leukemia is a devastating disease which treatment includes bone marrow transplantation, radio or chemotherapy. However, the development of resistance is a clinical problem. Drug resistance may be due to tumor cell-related factors: increased expression of drug efflux pumps, mutations in drug target genes, activation of alternative pathways and/or deregulation of cell death pathways. It is important to determine the causes of drug resistance to a certain drug in order to improve cancer therapy.

This study aimed to characterize two pairs of isogenic cell lines (drug sensitive and drug resistant) from chronic and acute myeloid leukemia, to understand the mechanisms of drug resistance developed by the resistant cells. The cell lines used were the KBM5 (CML) and HL60 (AML) -drug sensitive- and the equivalent drug resistant cell lines, KBM5-STI and HL60-734VR.

The characterization of these lines was assessed using two approaches: dose-response curves of the cell lines to Imatinib or doxorubicin were obtained using trypan blue or resazurin assays; expression of some proteins known to be responsible for drug resistance was evaluated by Western blot.

We confirmed that KBM5-STI and HL60-734VR are resistant to Imatinib or doxorubicin, respectively, when compared to parental cell lines. Additionally, none of the resistant cell lines presented increased expression of the drug efflux pump P-gp.

Current work is exploring other possible mechanisms of drug resistance in these cell lines.

- **11130 | Characterization of the saproxylic beetles community in different floristic habitats of Bussaco National Forest, central Portugal**

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The saproxylic beetles are vital to any forest ecosystem. The fact that they occupy specific ecological niches allows us to use them as bio-indicators of forest quality. The plants' health, forest management and nutrient recycle are only three of the parameters that can be analysed from the study of the saproxylic populations.

The Bussaco National Forest, (BNF, 105ha) has a wide floristic richness that integrates native climax vegetation portions and planted areas, constituting one of the most notable dendrological collections in Europe.

The purpose of this work is to characterize and compare the community of saproxylic beetles in 5 different floristic habitats of the BNF, through biological indices that will help drawing good practices in forest management, promoting health and biodiversity in the habitats.

Since July of 2015, several methodologies were tested in the field and, complemented with bibliographic research, allowing us to register 74 saproxylic beetle species. The most numerous families were Cerambycidae (29), Buprestidae (10), Cetoniidae (9), Elateridae (8), Latridiidae (6) and Lucanidae (3).

Although it's not possible to provide statistically robust conclusions, the high species richness values of Bussaco indicate the importance of this type of studies for the knowledge of the biodiversity, strengthening the relevance of entomology in management of natural forest ecosystems.

- **11298 | Classic economic dispatch: a general case and the influences of a wind farm**

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Associated with the production of electricity are the appropriate costs. These may be investment costs, fuel, operation and maintenance. However, from the perspective of a Electric Power System operation, the most significant costs are the production costs associated with the fuel used in energy production.

The economic dispatch strategy defines the operation of the power system at the lowest cost by ensuring the limits of operation of production and electrical power transmission equipment.

That is, the economic dispatch determines how much power each generator should produce into service in order to reach the minimum overall cost of system production. This ensures that the load is satisfied, while the energy supplied respects the quality conditions (ensuring reasonable levels of reliability).

In practical terms the economic dispatch is reflected into the optimization of a cost function, taking into account the satisfaction of the energy balance equation (the total power generated in each moment has to equal consumption plus network losses) and the respect for the technical limits of each generator (maximum and minimum power that each generator can run).

This work involves checking the economic dispatch which will assess the marginal cost of the system and further losses in the network. It will also be calculated the penalizing factor for each generator. Subsequently, a comparison is made of the costs and losses in both scenarios, with wind and with no wind.

- **11287 | Combining shRNA and AAV therapy approaches to target human basal-like breast cancer**

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Basal-like breast cancer (BLBC) is an aggressive group of tumors associated to poor patient prognosis. Currently, there is no effective treatment for BLBC once they rapidly acquire resistance to standard therapies; as so, novel approaches to treat this disease are urgently needed.

In this study, we tested the anti-tumorigenic effect of adeno-associated virus (AAV)-based vectors that were produced to selectively infect BLBC cells. This approach enables the delivery of validated short hairpin RNAs (shRNAs) that inhibit the expression of previously identified BLBC survival genes and develop a gene therapy-based treatment for this specific BC subtype.

AAV2 vectors with shRNAs for the selected genes – PLK1 and PSMA2, were tested in vivo, by using mouse orthotopic transplantation models. For that, 2×10^6 MDA-MB-468 BLBC cells were injected into the mammary fat pad of nude mice and, after one month, intratumoral injections of AAVs were performed twice a week, for 3-4 weeks.

AAVs with shCtr, shPLK1 and shPSMA2 were injected in different concentrations of viral particles (2×10^{10} , 2×10^9 , 2×10^8 VG/mouse). The results showed that shPSMA2 was the best candidate gene, showing a better effect in controlling tumor growth. This effect was more significant at the concentration of 2×10^9 VG/mouse.

In conclusion, although still preliminary, the results obtained open a possibility to direct a gene-based therapy to BLBC, by specifically silencing PSMA2 gene expression.

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- **11199 | Comparative study of photogrammetric solutions for RPAS: commercial vs. Open Source**

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The market for Remotely Piloted Aircraft Systems (RPAS) has grown exponentially in recent years and it is now possible, at low cost, to develop a custom platform for image acquisition for various purposes. However, the commercial solutions to process the data acquired are usually very expensive because they are very specific and often aimed at professional applications.

In this poster, we present a comparative study of photogrammetric software, between the two dominant business solutions and an Open Source solution, in order to evaluate their behavior.

Thus, we compared the performance of Agisoft PhotoScan, Pix4Dmapper from Pix4D, and the Open Source solution MicMac, developed by the French National Institute of Geography and Forest Information (IGN).

Different parameters were assessed, including the execution time of a complete workflow, the final product quality (orthomosaic and digital surface model) and generated data volume.

The positional and geometrical accuracy were analyzed with quantified deviations from ground control points acquired using a GNSS RTK receiver.

- **10806 | Comparison between two salts as viable substitutes to an organic additive for *Daphnia magna* cultures**

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Daphnia magna is a standard organism recommended by international organs and environmental institutes for ecotoxicity assays due to its representativeness as a key aquatic species and its sensitivity to toxic substances. To avoid poor culture performance, synthetic media are usually supplemented with artificial additives, such as organic extracts. While these additives are responsible for supplying vital oligoelements, they promote some fouling in the medium. Therefore, the purpose of this study was to assess whether inorganic salts can provide essential elements to the organism without significant drawbacks. This was performed by comparing two oligoelement-rich salts: untreated sea salt and a commercial salt. First, the acute effects of these compounds were evaluated, by carrying out acute toxicity assays to determine the EC50 for both salts. Then, chronic toxicity was evaluated, by assessing the performance of organisms at several salt concentrations with and without organic extract addition. Both assays were performed according to standard international guidelines [2-3]. Results of the acute tests revealed comparable EC50 values for commercial and sea salt (7.122 g/L, or 9.024 mS/cm and 6.125g/L or 8.081 mS/cm, respectively). Preliminary results from chronic assays suggest that the commercial salt may present a viable alternative to the organic extract, provided its concentration is fine tuned to avoid reproductive underperformance of *D. magna*.

- **11163 | Comparison of different methods for semen collection (Single swab, Two simultaneous swabs or Double swabbing technique) in order to conclude which results in the best DNA profiles**

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DNA analysis has become important in resolving criminal cases involving sexual assaults (SA), since the aggressor can leave his traces (e.g. saliva or semen) on the victim. Among the most relevant evidence in this type of forensic cases is the vaginal and anal swabs taken from the victim as well as the analysis of the victim's underwear.

Many methods have addressed the forensic problem of samples with low-template DNA to increase the number of detected alleles, however these methods can result in artifacts that complicate data interpretation. It has been suggested that perhaps the most reliable way to obtain the best DNA profiles is to improve collection techniques in order to obtain a greater amount of DNA for analysis.

The collection of biological evidence in cases of SA is usually done using swabs since it is a less invasive and faster method that results in less suffering and discomfort for the victim. There are several techniques used to collect the swab sample and it is usually left to the specialist which one to use: the single swab technique, the use of two simultaneous swabs and the double swab technique.

This research aims to study the three methods mentioned above, in order to see which is more effective in the collection of semen, maximizing the efficiency of the analysis, allowing the possible creation of a standardized protocol for swab collection that can help avoid cases of secondary victimization.

- **11094 | COMPLEX ROLES OF MUSCARINIC RECEPTOR SUBTYPES IN THE BLADDER OF URETHANE-ANAESTHETIZED MALE WISTAR RATS**

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Antimuscarinic drugs are frequently used to treat overactive bladder syndromes. The role of muscarinic (M1-M5) receptor subtypes in the control of micturition is a matter of debate. Intravesical administration of the muscarinic agonist, oxotremorine (Oxo), increased the voiding frequency (VF) induced by bladder distension in urethane-anaesthetized male Wistar rats. The excitatory effect of Oxo was counteracted by the M2 antagonist, methoctramine. On its own, methoctramine concentration-dependently decreased the VF to a maximum of 60% of control levels; a similar effect was observed with the M1 antagonist, pirenzepine, although the maximal inhibitory effect was smaller (40%). The selective M3 receptor antagonist, J104129, increased (by 30%) the VF when administered into the bladder, but its effect was by far more relevant in decreasing the contractile activity of the detrusor when used IV (continuous perfusion). The M4 antagonist, tropicamide, was virtually devoid of effect. In contrast to the excitatory effect of intravesical Oxo (3 μ M), this compound decreased electrically-evoked [³H]ACh release from detrusor strips in vitro through the activation of methoctramine (100 nM)- and J104129 (10 nM)-sensitive receptors. Data demonstrate that muscarinic receptor subtypes M1, M2 and M3 may exert opposite actions in different layers of the bladder wall, namely urothelium, suburothelial nerves and detrusor, thus contributing to increase the complexity of antimuscarinic drug actions.

- **11306 | Compliance Verification of Tea and Herbal Infusions Labeling Legislation**

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Tea and herbal infusions are the second most popular beverages in the world after water. While tea is made from the processed leaf of *Camellia sinensis*, commonly known as “tea bush”, herbal infusions result from the brewing of fruits, roots, flowers or herbs, which may or may not contain “tea plant” leaves.

Recently, there was an update on food labelling rules. In this context, and due to the vast variety of tea and infusion products available in the market, it seems important to evaluate if the labels of such products display information in compliance with the regulation.

For this study, 40 samples of tea and herbal infusions from different brands were acquired in local supermarkets (Porto). An inclusion criterion was to select products containing individual doses, either in classical or pyramid-shaped bags. Subsequently, an evaluation on the type and quality of the label's information was performed, taking into account the mandatory food information, according to legislation.

Results were very similar between products of the same brand. However, there were some nonconformities as a result of a missing list/ quantity of ingredients, for example.

In general, it seems like this type of product complies with the labeling legislation, although some nonconformities have been found that must be corrected.

- **10841 | *Daphnia magna* ecotoxicological effects after exposure to ciprofloxacin: oxidative stress and genotoxicity**

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Antibacterial products are used in intensive farming and livestock production, contaminating the aquatic environment directly by dissolving the compounds into water in aquaculture, through waste treatment plants or through runoff from manure-treated farmlands. An additional source of antibiotics in the wild comes from human therapeutic use. Fluoroquinolones (FQs) have recently gained interest in the veterinary field, but are also very important in human medicine, especially for the treatment of urinary infections. As a consequence, FQs (namely, ciprofloxacin) have been repeatedly detected in surface waters. According to this context, this study aimed to assess ecotoxicological (genotoxic and oxidative stress) effects in the freshwater crustacean *Daphnia magna* after exposure to ciprofloxacin. *D. magna* chronic assay was conducted to evaluate the effects in terms of the organisms' performance (in terms of fecundity, age of first reproduction, growth, and per capita rate of increase). At the end of the assay a biochemical (catalase activity and lipid peroxidation content) and genotoxic (comet assay) effects were assessed. The preliminary results obtained showed that *D. magna* responds to relevant ecological concentrations of ciprofloxacin, evidencing the importance of assessing effects of FQs antibiotics in realistic levels.

- **11213 | Designing the total synthesis of two marine xanthenes: yicathins B and C**

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Marine natural products are an important source of new "hits" and "leads" in drug discovery [1]. Recently, three new xanthone derivatives were isolated from the fungus *Aspergillus wentii*, obtained from the inner tissue of the marine red alga *Gymnogongrus flabelliformis*: yicathin A, yicathin B and yicathin C [2]. Yicathins B and C have shown a promising antibacterial activity against *Escherichia coli* and *Staphylococcus aureus* and antifungal activity against *Colletotrichum lagenarium*. However, the challenging access to the marine environment and the low quantities obtained from extraction hamper the direct use of these yicathins in drug design or as drug candidates. In this work, we propose the total synthesis of yicathins B and C. Their retrosynthetic plan makes use of convergent reactions and green methods in a limited number of steps to allow the synthesis of the natural yicathins and the synthesis of new analogues as well.

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- **11285 | Development and characterization of Lubritab® matrix tablets for sustained release of thiamine hydrochloride**

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The aim of this study was to develop and characterize matrix tablets containing hydrogenated vegetable oil (Lubritab®), used as a lipid matrix, and thiamine hydrochloride (vitamin B1), used as a soluble model drug.

The first formulation developed was composed of thiamine hydrochloride (2.5%, w/w), Lubritab® (30%, w/w), Tablettose® 80 (66.5%, w/w; agglomerated alpha-lactose monohydrate) and stearic acid (1%, w/w). The second formulation was composed of the same constituents, except for the stearic acid that was replaced by PRUV® (1.5%, w/w; sodium stearyl fumarate). In the last formulation developed the only difference lies on the percentage used of PRUV® (3%, w/w).

Tablets, with a target weight of 400 mg (\pm 20 mg), were prepared by direct compression using an alternative compression machine. Weight variation, hardness and friability of tablets were carried out in agreement with Portuguese Pharmacopoeia 9. Additionally, the “in vitro” drug release studies were performed and samples were filtered and assayed at 273 nm (isosbestic point of vitamin B1).

The obtained results for uniformity of weight were in accordance with the pharmacopoeia specifications and the tablets presented an average hardness acceptable. However, the friability value obtained exceeds 1.0%. Regarding to the dissolution assays, the tablets showed a sustained thiamine hydrochloride release (74% after 90 minutes).

- **11139 | Development of hydrophilic matrix tablets with Protanal® CR 8223 by direct compression**

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The aim of this study was to develop a formula with Protanal® CR 8223 (sodium alginate) in order to achieve an extended release of the thiamine hydrochloride (vitamin B1). The weight of the tablets was 400 mg and its composition was the following: 10 mg of vitamin B1 (soluble drug), 266 mg of Tablettose® 70 (lactose monohydrate; soluble diluent), 120 mg of Protanal® CR 8223 (hydrophilic matrix excipient) and 4 mg of stearic acid (anti-adherent lubricant).

Tablets with a target weight of 400 mg (± 20 mg) were produced by direct compression using an alternative compression machine (Korsch 9048-71). Afterwards, technological assays were performed in order to verify the physical properties of tablets and dissolution rate. In this way, the uniformity of weight (mean \pm standard deviation (SD), n = 20), hardness (mean \pm SD, n = 10) and friability (n = 17, 25 rpm/4 minutes) were evaluated. The in vitro dissolution study (mean \pm SD, n = 2) was performed using a dissolution apparatus (Sotax, model AT7) according to the paddle method at 100 rpm. The dissolution liquid was purified water (500 mL; $37.0^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$), and samples of 10.0 mL were withdrawn at predetermined time intervals (15, 30, 45, 60 and 90 minutes), without volume reposition. The released drug concentration was determined by UV-VIS spectrophotometry ($\lambda_{\text{max}} = 273$ nm; $y = 23.6x - 0.0294$; $R^2 = 0.9996$).

The produced tablets presented suitable physical properties and an extended release profile of vitamin B1 (67% after 90 minutes).

- **11031 | Diflunisal stabilizes TTR and ameliorates AD pathology in an AD/TTR mouse model**

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Alzheimer's disease (AD) is the most common type of dementia. One of AD hallmarks -the senile plaques- are mainly constituted of A β peptide. Transthyretin (TTR) has been described to exert a neuroprotective effect in AD by interacting with A β , being this activity dependent on its stability. Thus, compounds that stabilize TTR tetrameric fold increase TTR/A β binding. The majority of the compounds identified as TTR stabilizers compete with thyroxine (T4), the natural TTR stabilizer. A derivate of Diflunisal (Dif) -Iododiflunisal- was described as a potent TTR tetrameric stabilizer and able to attenuate AD pathological features. However, the effect of TTR stabilization by Dif in AD features was never assessed. Our objectives were to assess the effects of Dif : 1) in vitro, in TTR tetrameric stability and 2) in vivo, using an AD/TTR mouse model. For that we performed a ¹²⁵I-T4 competition binding assay and a TTR stability. The results show that Dif competed with T4 and reduced the amount of TTR in its monomeric form, therefore indicating Dif is able to bind and to stabilize TTR. Then, the in vivo effects of the administration of Dif to an AD/TTR transgenic mice were evaluated by measuring A β plaque burden by immunohistochemistry and A β 42 brain levels by ELISA. The administration of Dif resulted in a diminishment of A β plaque burden and A β 42 brain levels. Altogether, our results suggest that the neuroprotective effect of Dif can be related to increasing TTR tetrameric stability.

- **11111 | Dissecting the molecular basis for the arrest of Plasmodium sporozoites in the liver sinusoids**

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Nowadays, malaria is the parasitic infectious disease with the heaviest burden in the world. It's caused by protozoans of the genus *Plasmodium* and it's transmitted to the mammalian host by the bite of an infected anopheline female mosquito. The symptoms of this disease appear when merozoites, the red blood infective forms, multiply inside host cells and egress from them. But before that, sporozoites, which are the infectious parasite form inoculated in the skin of the mammalian host, must travel to the liver in order to differentiate and replicate inside hepatocytes. Therefore, their arrest in the hepatic sinusoids is a convenient time point to block the development of parasites. Our group identified several surface parasite proteins as possible participants in this process. Among them, the micronemal thrombospondin-related adhesive protein (TRAP) seems to have a major role in it, since TRAP knockout sporozoites display an impaired capacity to target the liver. To further explore the role of TRAP or TRAP associated gliding motility in this process, genetically modified parasites are being engineered in order to express TRAP without a cytoplasmic tail and therefore immotile. Mutant's phenotype will be analyzed using molecular, biochemical and imaging techniques. We expect these mutant lines will clarify some of the molecular mechanisms underlying the arrest of sporozoites in the mammalian host liver and thus, find new strategies to prevent malaria.

- **10912 | Distribution profile of cardiac receptors of the renin-angiotensin system (RAS) in an experimental model of hypertension induced by maternal food restriction**

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We aimed at investigating whether the distribution profile of RAS cardiac receptors are changed in an experimental model of hypertension induced by maternal under nutrition (MUN).

Control (SD) and MUN rats (21 days) were sacrificed under anesthesia and the hearts were excised and processed for immunohistochemistry. 5 μ m sections were incubated with primary antibody to the receptor under investigation (AT1, AT2, Mas and MrgD) and detection was performed using a biotinylated secondary antibody followed by amplification with the ABC complex using DAB as the chromogen. Immunostained sections were analysed under a microscope connected to a camera and a computer to record Digital images.

Immunoreactivity was observed for all receptors studied in the heart of SD rats. However, AT2 and MrgD immunoreactivities were sparser than that elicited by AT1 or Mas staining. In the MUN rat hearts, immunoreactivity for the AT2 and MrgD receptors were considerably lower than that observed in the hearts of SD rats, while immunoreactivity for the AT1 and Mas receptors was similar to that observed in the hearts of SD rats.

While we wait for the results of the quantitative study, these qualitative data suggest that maternal food restriction alters the distribution of cardiac AT2 and MrgD receptors, which might be relevant for the pathophysiology of hypertension that is observed in this animals.

Acknowledgments: Work supported by FEDER funds through COMPETE and FCT through project Pest-C/EQB/LA0006/2013.

- **11267 | DOMESTIC COOKING SKILLS AND EATING OUT OF HOME: BRAZIL AND PORTUGAL**

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Over the last years, we have accompanied a decline on the transmission of cooking skills, leading to great losses in the culinary family tradition. Facing a population with fewer cooking skills, we notice an increase in habits such as eating out and a higher consumption of ready meals and ultra-processed foods.

Objective: Evaluate culinary skills and the frequency of food consumption away from home by Portuguese and Brazilian students attending a degree in nutritional sciences.

Methodology: Application of a (online) self-administered questionnaire to students from FCNAUP and UERJ (Portuguese and Brazilian version) from December 20th to February 8th 2015.

Results: The sample included 173 students, from which 105 were Portuguese and 68 from Brazil, female in their majority (n= 159). Students from both institutions considered to know how to cook and believed this skill is important as a means for achieving a healthy diet. The results showed that Portuguese students cook more frequently and consume less ready meals. Furthermore, students from the higher academic years reported to have better cooking knowledge, to cook more often and to consume less ready meals. On the other hand, Brazilian students reported to eat away from home more frequently, every meal of the day except dinner.

Conclusion: Nutritional Sciences should work with the Gastronomic Sciences and develop a practical and direct approach on this matter in order to transmit the knowledge to the general population.

- **11144 | Drawing, Romance and Identity**

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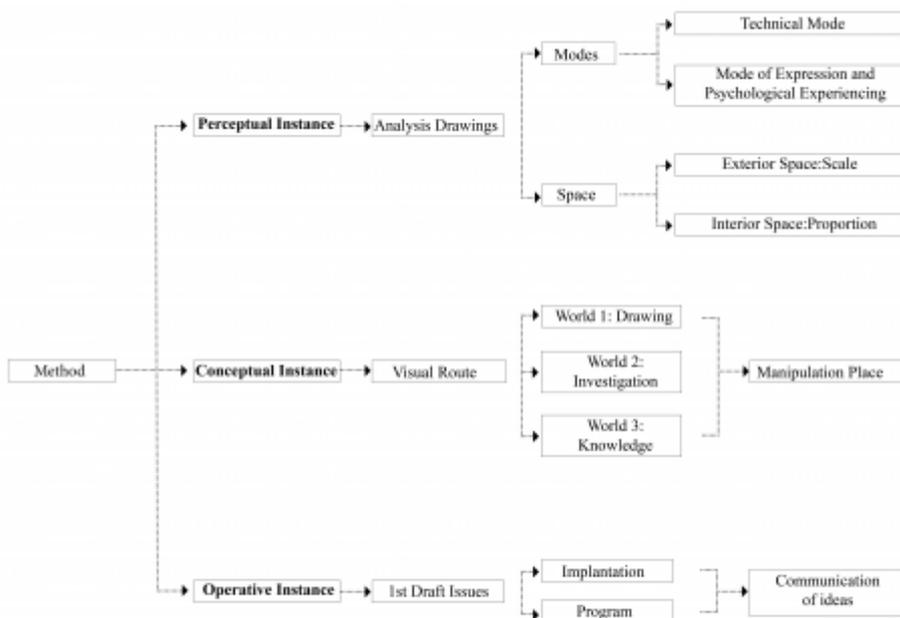
This communication presents two Master thesis that defends the valorization of drawing as an intrinsic process for Architecture, something that has been defended by several authors, although never tested in practice.

In the first thesis, “Desenhar Um Romance: Projecto do Centro de Enoturismo para a Quinta da Aveleda, Penafiel”, all the drawings produced during the project were analysed and then organized in three instances: conceptual instance, where the registers of interpretation of the land were analysed; conceptual instance, which analysis was bounded in the first solutions of the project; operative instance, where the different power of communication of the drawings by hand and by computer were verified. In both instances drawing proved to be essential as tool and as method.

The second thesis, “O Desenho de Uma Identidade: Camilo Rebelo”, is an investigation that tests the possibility to find the main lines of his identity from his personal drawings. It suggests that the drawing is a powerful mean of gauging the essential traces of an author, not only in the creative process but also about his personality, once it makes the link between the unconscious and the paper.

If drawing is done at the speed of thought and it's the project of the person, so it's possible to conclude that it exists an intrinsic relation between the author, the drawing and Architecture, something that can be proved in the presented thesis.

Research Method



- **11096 | Effect of dietary pattern, exercise and atorvastatin treatment on iNOS and Endothelin-1 expression on aged rat's cavernous tissue**

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Aging is a risk factor for cardiovascular disease (CVD) that early initiates as Endothelial dysfunction (ED). ED is characterized by incremented production of pro-inflammatory factors, such as Endothelin1 (Et1), coupled with decreased Nitric oxide (NO) bioavailability. In pro-inflammatory conditions most of NO is synthesized by inducible NO synthase (iNOS), aggravating ED. Lifestyle also affects CVD risk. Whilst energy restriction (ER), exercise or statins treatment may prevent ED, high fat (HF) intake could favor its progression.

To clarify the effect of HF intake, ER, exercise and atorvastatin on ED, iNOS and Et1 levels were assessed in aged rat's cavernous tissue (fit model to study vascular function).

12 months aged rats were divided in Control (C), HF and ER groups. HF rats underwent ER (HF+ER), ER plus statin (HF+ER+S) or ER plus statin and exercise (HF+ER+S+Ex). Alike, ER rats undertook either atorvastatin (ER+S), exercise (ER+Ex) or both (ER+S+Ex).

Immunofluorescence revealed iNOS and Et1 expression in smooth muscle cells and endothelium, respectively, in all studied groups.

Relative to C group, Western blot showed iNOS to be higher in all HF rats except in HF+ER+Ex group. Also, in ER+Ex, levels were lower, highlighting the exercise effect. Regarding Et1, exercise seemed to increase its levels: higher levels of Et1 were found in ER+Ex and ER+Ex+S when compared to C group. Further ongoing studies aim to clarify the role of HF, ER, Ex and statin on ED progression in aging.

- **11145 | Effect of dietary seaweed supplementation on growth performance of European Seabass (*Dicentrarchus labrax*) subjected to rearing salinity oscillations.**

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The oscillations of rearing conditions in semi-intensive aquaculture systems may inhibit growth performance of fish. Seaweeds have shown to have antioxidant and immune properties and, thus, supplemented at adequate level in the diets, may improve growth performance of farmed fish. Fish suffer changes/activation of ion transport mechanisms induced by the different environmental salinities, which may cause increase in oxygen consumption. As a consequence, energy budget is channelled for covering osmoregulation energy expenditure, instead for growth. In fact, salinity seems to modify multiple aspects related to growth, including, standard metabolic rate, feed intake and feed conversion efficiency. The aim of the current study was to evaluate the effect of dietary seaweed supplementation on growth performance in the European seabass (*Dicentrarchus labrax*) subjected to salinity oscillations. The feeding trial was carried out for 9 weeks on 18 fiberglass tanks of 90L, in a recirculation seawater system set at 19°C. Salinity changed randomly every 7 days, varying from 12 to 33 ppm. Seabass fingerlings (10.5 ± 0.22 g) were fed twice a day either with a dietary seaweed supplemented diet or a non-supplemented diet (control). Growth performance was evaluated every week. Under the experimental conditions, dietary seaweed supplementation did not improve feed conversion ratio (1.64 ± 0.14 g) and growth rate (0.80 ± 0.07 % body weight/day) of seabass subjected to salinity oscillations.

- **11326 | Effect of gender, age and time of practice in visual memory and balance of artistic gymnastics practitioners**

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In artistic gymnastics, balance and visual memory are very important for a good performance. It is known that boys and girls have differences in motor skills, with girls having better results in balance and flexibility and boys in strength, which become larger after puberty. Know the influence that the artistic gymnastics training has on these capabilities are fundamental for the organization of training for children. Therefore, the aim of this study was to compare the differences in the performance of visual memory, static and dynamic balance between gymnastics children practitioners, comparing gender, age and time of practice. Eighteen children aged 7 to 13 years were selected for the study and divided in groups by age (7 to 9 years and 10 to 13 years), gender and time of practice (0 to 5 years and 5,1 to 8,5 years), being tested in the following tests: Menvis-A (visual memory), Bass Stepping-Stone (dynamic balance) and Balance Error Scoring System - BESS (static balance). The Mann-Whitney test was used to compare groups ($p \leq 0.05$). The girls were better than boys in both static balance tests (1st BESS: $p=0.031$, 2nd BESS: $p=0.019$) when ages were not separated. The older were better in Menvis-A test than the younger group ($p=0.006$). The results showed that the girls have a tendency to be better in balance tasks and age influence more than time of practice in visual memory performance.

Key-words: dynamic balance; static balance; visual memory; artistic gymnastics; children

- **11079 | Effect of olive pomace extract in the oxidative stability and fatty acid profile of extra virgin olive oils – a preliminary study over time**

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Olive oil industry generates large amounts of by-products, as olive pomace (OP), with high environmental impact. However, these by-products have a great potential as a source of bioactive compounds, providing an opportunity for R&D of products with high nutritional value (Rodrigues, Pimentel et al. 2015).

This preliminary study aimed to evaluate the effect of the addition of an OP extract to extra virgin olive oil samples (EVOO) in different proportions (0, 0.5, 1, and 2%), over time (84 days). Simultaneously, freezing (-20 °C) was used as a preservation method. Two raw EVOO samples (without extract) were used as control. One was kept at room temperature and the other frozen. Oxidative stability (OS) was evaluated by the Rancimat method. Fatty acid (FA) profile was determined by GC-FID.

Data showed that at 0 days, as well as 84 days of freezing, samples presented a slight OS increase, comparing with raw EVOO. After 84 days of freezing, samples with OP extract maintained (sample1%) or presented a slight increase on OS. Only in raw EVOO samples was verified an OS decrease. Moreover, this sample, kept at room temperature, showed a significant OS reduction (from 9.4 to 7.4h).

Relatively to FA profile, in all samples, oleic acid (C18:1) was the most abundant, followed by C16:0, and C18:2. Polyunsaturated FA content increased in all samples along with the decreasing of C18:1.

Overall, the addition of OP extract and freezing showed a positive influence on EVOO oxidative stability.

- **10967 | Effect of soil type on the mechanical damage of geosynthetics under repeated loading**

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Geosynthetics are polymeric materials used in the construction of many infrastructures. The process of installation on site may damage the geosynthetics, causing unwanted changes on their properties. The damage that occurs during the installation process (mechanical damage) is mainly caused by handling the materials and by the placement and compaction of backfills over them. Many factors may influence the degree of damage, such as: the characteristics of the geosynthetics, the grain size distribution of the soils, the compaction energy and the use, or not, or proper installation procedures.

This work evaluates the effect of mechanical damage on the short-term behaviour of some geosynthetics: four geotextiles and a geogrid. The geosynthetics were damaged in laboratory using a standardised procedure (EN ISO 10722). The mechanical damage tests were carried out with corundum (standard aggregate) and with several natural soils (modified tests) like silty sand, sand, gravel or tout-venant. The damage occurred in the geosynthetics (caused by the mechanical damage tests) was evaluated by tensile and static puncture tests. Results showed relevant reductions in the mechanical properties of the geosynthetics after the mechanical damage tests. The decreases induced by corundum were higher than those caused by the other soils.

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- **11269 | Effect of unethical leaders responsiveness on emotional state and protesting behaviour**

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How protest behavior is influenced by the type of unethical leadership? In one study (N=120), participants played “The Dictator” game, in which they were presented with a leader that unfairly distributed money (more for him/herself than for the other players) throughout 10 trials. In one condition (Responsive Leader condition), the leader moved from extremely unfair to slightly unfair in his(her) distribution, whereas in the other condition (Nonresponsive Leader condition) the leader was always extremely unfair in his(her) distribution. Moreover, we also manipulated the protest behavior of a bogus confederate, who protested against the leader in every trial (Protest Behavior condition) or not (Apathetic Behavior condition). At the end of the trials, we asked participants to evaluate the leader and to report their emotions. During the experience, we measured skin electrical conductance and heart rate and participants protest comments regarding the leader’s choice. Participants reported stronger negative emotions and more protest comments in both Protest conditions as compared to both Apathetic conditions. As expected, results show that participants evaluated the leader most positively and showed the highest physiological indexes in the Responsive Leader/Protest Behavior condition as compared to the remaining conditions. This study contributes to better understand collective action, reaction to unethical leaders and the mediation role of emotions on protest behavior.

- **11020 | Effects of synthetic cannabinoids AB-Fubinaca, JWH-122 and UR-144 on cytotrophoblast cell viability**

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In the last years, several synthetic cannabinoids have been synthesized. Though developed for medical purposes, frequently these new psychoactive substances are used as recreational drugs and little is known about its adverse effects. A possible negative action may be adverse developmental effects, since it is known that the Cannabis main cannabinoid, delta9-tetrahydrocannabinol (THC), inhibits placental trophoblast cell turnover. Our aim was to evaluate the impact of three synthetic cannabinoids (AB-Fubinaca, JWH-122 and UR-144) on BeWo cells viability, a choriocarcinoma cell line used as a cytotrophoblast cell model. The MTT assay relies on the mitochondrial metabolism for the conversion of the yellow dye MTT on a purple dye formazan. At 24h of treatment, while UR-144 and JWH-122 induced an increase in mitochondrial metabolic activity, in the case of AB-Fubinaca this was only observed at higher concentrations (20-50 μ M). However, after 48h, preliminary MTT results indicate a decrease in cell viability/mitochondrial activity, sustained by H \ddot{o} chst staining which showed chromatin condensation and fragmentation for the cannabinoid UR-144. The three cannabinoids presented different behaviors depending on time of exposure and concentrations. Further studies are necessary to determine if synthetic cannabinoids may affect mitochondrial activity and impair the cellular turnover of placental cytotrophoblast cells.

Acknowledgments: FCT for B. Fonseca post-doc grant SFRH/BPD/72958/2010

- **11021 | Energetic study of a lignocellulosic biomass component: vanillyl alcohol**

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Nowadays, the lignocellulosic biomass constitutes an important feedstock for bio-refinery due to its widespread availability and renewability. Instead of being used as fuel in the industry, the practical application of this material has increased exponentially as a source of high added value aromatic building block. However, the large poly(phenol) matrix of the lignocellulosic materials is not yet completely elucidated, hindering an efficient and economical development for their conversion. An useful strategy adopted to overcome some technological limitations is the characterization of the molecular units isolated from the depolymerization of lignin, as the vanillyl alcohol, classified as a guaiacyl unit (fig. 1) and so one key-intermediate on the synthesis of bio-based polymers.

Following our previous energetic studies involving biomass derivatives [1,2], this study aims to enlarge the thermodynamic characterization of the vanillyl alcohol, measuring its massic energy of combustion, by static bomb combustion calorimetry. This property jointly with other complementary thermophysical properties provide relevant data for the industrial conversion of lignin derivatives in the biorefinery.

[1] J Chem Eng Data, 2013, 58, 1813

[2] APCCChE 2015/Chemeca2015, 27 Sept – 01 Oct 2015, Melbourne, Victoria (Paper nº. 3126261)

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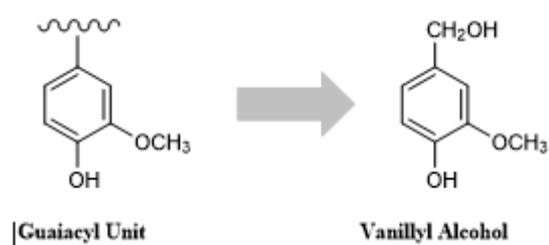


Figure 1. Structural formula of vanillyl alcohol â “ a guaiacyl unit

- **11301 | Enhancement of solubility and bioavailability of caffeic acid phenethyl ester using cyclodextrin inclusion complexes**

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Caffeic acid phenethyl ester (CAPE) is one of the main active components of propolis (a honey bee hive extract). CAPE is known to be a potent anti-inflammatory and antioxidant agent [1]. In addition, CAPE possess neuroprotective, hepatoprotective and cardioprotective activities [1]. Although preclinical studies have shown that CAPE possesses a wide range of biological activities, CAPE per se has never been used clinically, due to its poor bioavailability/water-solubility.

Cyclodextrins (CDs) are cyclic oligosaccharides that have been recognized as pharmaceutical adjuvants for the past 20 years. CDs can interact with appropriately sized drug molecules to yield an inclusion complex. These complexes can offer a variety of advantages over the net drug, namely by enhancing its aqueous solubility and bioavailability.

The purpose of this project was to explore the use of CDs to form inclusion complexes with CAPE to overcome its solubility and bioavailability drawbacks. The formation of the inclusion complex was studied by phase solubility studies, FTIR, DSC and NMR spectroscopy. The results obtained will be presented in this communication.

References:

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- **11180 | Evaluation of peripheral atherosclerotic disease in a sample of HIV patients at the Ribeirão Preto Medical School University Hospital/ Brazil**

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Highly active antiretroviral therapy (HAART) aims to slow the progression of immunodeficiency and recover immunity by increasing the survival of HIV patients. However, this can cause adverse effects such as lipodystrophy syndrome which promotes redistribution of body fat, dyslipidemia, insulin resistance / glucose intolerance and high blood pressure. Those factors are related to increased cardiovascular disease risk.

In order to assess the frequency of peripheral atherosclerotic disease (PAD) by Ankle Brachial Index (ABI), we evaluated 160 HIV patients on HAART, of both genders, aged 18 to 60 years.

For the examination of ABI we measured systolic blood pressure in upper and lower limbs with the aid of a cuff and a portable Doppler apparatus 8 MHz. To calculate the right and left ABI we made the division between the highest value of systolic pressure of lower and upper limb.

The ABI averaged on the right side was 1.09 ± 0.18 (1.06 ± 0.18 for females and 1.11 ± 0.18 for males). While on the left side was 1.12 ± 0.18 (1.10 ± 0.18 for females and $1.14 \pm$ for males). From this, 30.8% of females and 26.1% of males have peripheral atherosclerotic disease.

Thus, our data are in agreement with previous studies, since the studied patients have a higher prevalence of PAD due of metabolic changes in HIV lipodystrophy syndrome.

- **10897 | Exploitation of the brown macroalgae *Bifurcaria bifurcata* R. Ross**

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Macroalgae, commonly known as seaweeds, constitute an abundant and heterogeneous group of marine photosynthetic organisms widely used in food, textile and cosmetics industries. These marine organisms are known to be rich sources of bioactive compounds, from both primary and secondary metabolism. Therefore, in this work, the chemical composition of a brown macroalgae (*Bifurcaria bifurcata* R. Ross) ethanol extract, as well as its antioxidant and antimicrobial activities, were explored.

Some carotenoids were identified by HPLC-DAD, fucoxanthin, chlorophyll *a*, pheophytin *a* and β -carotene being highlighted. GC-FID analysis allowed the determination of several fatty acids, mainly unsaturated ones.

The extract revealed a concentration-dependent antioxidant capacity against 1,1-diphenyl-2-picrylhydrazyl (DPPH•) and nitric oxide (\bullet NO) radicals (Fig. 1). In addition, no antibacterial activity towards a selected Gram negative species (*Escherichia coli*) was observed.

This macroalgae could be helpful for the prevention and treatment of diseases in which homeostasis is impaired by oxidative features.

This work was developed within the optional curricular unit “Bioactivity of Natural Matrices” of the 5th year of the Master Degree in Pharmaceutical Sciences of the Faculty of Pharmacy, University of Porto, under the responsibility of Paula Andrade (Head), Patrícia Valentão and David Pereira.

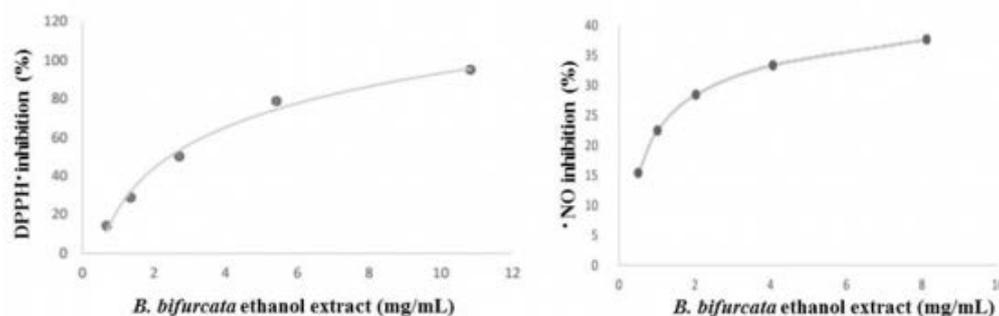


Fig. 1. Scavenging activity of *B. bifurcata* ethanol extract against DPPH and nitric oxide radicals. Results correspond to mean \pm standard error of three assays, performed in triplicate.

- **11221 | Fairs Contemporary Art International in Brazil**

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Currently, Brazil is an important artistic and cultural pole in Latin America and in the world. The Brazilian art market is experiencing a gradual expansion, contributing to the economic growth of the country, besides promoting the inclusion and participation of Brazil in the international art circuit. This growth and the country's inclusion in the international scenario can be observed, for example, by the growing expansion of the number of art galleries in the Brazilian capital and the number of biennials in the country. In this context, in order to fulfill the demand in the market of Brazilian art, two international art fairs were created in the last decade: the SP-Arte e ArtRio. ArtRio, International Fair of Contemporary Art of Rio de Janeiro, whose first edition took place in 2011, is headquartered in the city of Rio de Janeiro. This fair recommends especially the Brazilian identity, fostering the integration and participation of artists and Brazilian pieces of work on the international scenario. Now, SP-Arte, the international fair of contemporary art of São Paulo, had its first edition in 2005, in the city of São Paulo. This has a more international characteristic and it is more consolidated since the city of São Paulo has the largest economy in Latin America, establishing itself as the most important artistic and cultural pole. Two different fairs with two distinct purposes, but both reveal the Brazilian art market as one of the most promising markets for art.

- **11159 | Fertility in *Vitis vinifera* L.: techniques of determination and climatic influence**

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The Portuguese wine production is characterized by strong yield fluctuations, causing strong implications for the economic performance of this sector. The inter-annual yield variation is about 32.5%, and the number of bunches per vine explains 60 to 70% of this. These maximum number of clusters (potential yield) are determined in the first year of the reproductive cycle of the grapevine, which runs over two consecutive years. Based on this knowledge, several experimental procedures were performed in order to evaluate the grapevine's fertility at individual grower scale. First, grapevine bud dissections were made, so it was possible to count the number of inflorescence primordia, and so, assess potential bud fertility. This technique wasn't successful, because, even using high definition observation equipment, it was highly fallible in correctly identifying those primordia. This technique excluded, the technique which achieved better results was growth of dormant grapevine's canes, in a growth chamber. Their development was monitored and final fertility recorded. The evaluation of bud fertility was made on the same field where we took canes' samples from. Through adequate statistical analyses, this study allowed us to demonstrate there were no significant differences between growth chamber fertility and field fertility. This procedure was therefore validated as a technique for early fertility assessment, 10 months before harvest start.

- **10867 | First records of limnoterrestrial tardigrades from Cambodia and Laos (Southeast Asia)**

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The limnoterrestrial tardigrade fauna in Cambodia and Laos is completely unknown. Here we present the first two species recorded for these countries. Tardigrades and their eggs were extracted from mosses and liverworts collected in Angkor Park, Cambodia, and Villa Santi and Luang Prabang, Laos. The examination under light microscopy (PhC and DIC), complemented with morphometric and imaging analysis, allowed the identification of two species. Both species are Eutardigrades, Macrobiotidae, characterized by having a compact epicuticular layer; diploclaws on each leg symmetrically arranged with the two branches fused, and buccal tube with ventral lamina. Specimens from Cambodia have characteristics of the genus *Minibiotus*: claws of the *hufelandi* type (Y-shaped); mouth opening with peribuccal papillae; buccal tube with a posterior bend, and stylet supports inserted in the buccal tube in an anterior position. The eggs have nail-like processes surrounded by a membrane. Specimens from Laos, belong to the genus *Paramacrobiotus*. They also have claws of the *hufelandi* type; cuticle without pores; mouth opening with ten peribuccal lamellae; buccal armature with ridges. The pharyngeal bulb has macroplacoids and a distant microplacoid. The eggs have conical processes and areolated egg-shell. The identification process to the species level is still undergoing, considering some peculiarities exhibited by the eggs of both species, it is possible that they belong to new undescribed species.

- **11322 | First trimester risk prediction models for Preeclampsia**

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Preeclampsia is a distinctive multi-system disorder of human pregnancy that is characterized by the new onset of hypertension and proteinuria after 20 weeks of pregnancy. Considered as one of the main cause of maternal-fetal morbidity and mortality, it is one of the most important factors responsible for premature birth.

The prediction of this clinical condition could offer an opportunity for intervention during early pregnancy in order to avoid undesirable obstetric and neonatal outcomes.

There is a variety of proposed biomarkers for measurement in early pregnancy that could predict the development of preeclampsia.

Multiple studies have shown the key role of the placenta in the pathogenesis of preeclampsia. Antiangiogenic factor soluble FMS-like tyrosine kinase 1 (sFlt-1), VEGF vascular endothelial growth factor (VEGF) and placental growth factor (PLGF) are involved with reduced angiogenic stimulation of endothelium and consequent endotheliosis. Hence, these angiogenic growth factors are good candidates for inclusion in clinical prediction models for preeclampsia.

Combining clinical, ultrasonographic and laboratorial data in an early risk prediction model for preeclampsia would raise the effectiveness of the maternal history and physical-based screening that is offered today. However, it is important to assess its cost-effectiveness as well as its usefulness in predicting preeclampsia.

- **10857 | Fox Hunting and Population monitoring**

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The Red Fox (*Vulpes vulpes*) has a wide distribution in Portugal, is an abundant species in many areas so is considered not threatened. Due to its abundance hunting is allowed (October to February), so it is fundamental to monitor fox populations to assure that population levels are not affected. Our aims are therefore to obtain information on fox hunting (effort and hunting bag), on fox presence along the territory and to evaluate the actual species status.

Hunters and hunting clubs organizing fox battues are contacted to gather data on hunting effort, hunting areas and habitat characteristics. Fox distribution and habitat use are analyzed. Fox carcasses obtained are studied (sex, size, weight) and age and reproductive parameters (fecundity, pregnancies, embryo age) are estimated. Biometric characteristics are tested for sexual dimorphism and geographical differences.

The hunting zones annual plans planned 1183 battues (2015/1016 season). So far only 3% took place, but most battues are planned for January and February. As hunting effort is still small our results are preliminary, any conclusion about the hunting effort and the relationships with habitat types being premature. The same can be said about the biometric and biological parameters (age pyramid, fecundity and birthrate).

The data on the Red Fox populations are of undeniable value, but other sources of biological information should be integrated to provide further insights into Red Fox population management.

- **10869 | Fox smile – What do teeth show?**

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Tooth size and shape, as also skull characteristics, are traits that allow to decide if differences between individuals reflect intra/interspecific variability. Great diversity on tooth shape and size was reported for the Red Fox (*Vulpes vulpes*) in its distribution area, but no data from the Iberian region was considered. Our work targets its attention on the Iberian subspecies (*V. v. silacea*) tooth, aiming to evaluate if their characteristics (dimensions and form) follow the described for this species, to explore any sex/age variations, and to investigate if the data supports the Bergman's rule.

Tooth measurements were taken from 82 foxes (30 vixens and 52 males; 2011/12 hunting season) and tooth polymorphism was investigated, in both cases following Szuma's methodologies. Sex, age and geographical distribution related differences were tested with ANOVA or t-Student's tests.

At this preliminary stage of work, no significant conclusions can be withdrawn, but from the findings of the Red Fox tooth analysis, elsewhere, it suggests that we might also expect to find tooth sexual dimorphism, at least for some tooth, in the Iberian subspecies. We also expect to get further insights on the influence of age or geographical distribution on dental traits of the Red Fox.

Providing dental data for the species, and also for the Iberian subspecies, emphasizes the importance of our study. Further tooth analysis is however necessary to understand the role of geo-climatic factor

- **11127 | Fungal diversity on grapes**

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Wine is a drink with a large social and economic importance also being known for its beneficial effects on human health. As a microbial product, the quantity and quality of microorganisms present on the surface of grapes play an important role in winemaking. The study of the microorganism population on grapes and wine has been developed. However, grape fungal communities remain poorly known. In this study the grape fungal community of two grapevine varieties from Portuguese regions, Douro and Alentejo, was assessed. Several culture methodologies were implemented and the different filamentous fungi and yeasts were quantified and isolated. Macroscopic and microscopic morphological identification, biochemical tests and molecular identification are being carried out for each type of fungus and yeast isolated.

It was verified the absence of both filamentous fungi and yeasts in the grape pulp. Furthermore, there is no growth of yeasts of the genus *Saccharomyces*. However, different types of yeasts were detected and their identity is being studied. Considering filamentous fungi, species of the genus *Cladosporium* and other related black fungi were predominant. The other genera equally represented were *Penicillium* and *Aspergillus*, among many other genera which are being identified. Fungal communities in Alentejo and Douro are being studied by molecular methods and the comparison of the fungal diversity will be performed after complete fungi identification.

- **10910 | *Gibbula* sp.: a mollusk as source of bioactive compounds**

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Numerous novel compounds have been isolated from marine organisms and many of them have been reported to have biological activities, some of which are of interest from the point of view of potential drug development. Nevertheless, some marine organisms are still underexploited. In order to improve the knowledge on the chemical composition and biological effects of marine organisms, *Gibbula* sp., a mollusk found in Portuguese coast, was studied.

The carotenoids and fatty acids profiles of the ethanol extract of *Gibbula* sp. were established by HPLC-DAD and GC-FID, respectively. Eight carotenoids and several fatty acids (Fig. 1) were found in this matrix.

Regarding its biological potential, the extract revealed low capacity to inhibit both 1,1-diphenyl-2-picrylhydrazyl (DPPH•) and nitric oxide (•NO) radicals, and no antibacterial activity against *Escherichia coli* was observed. More studies, with different extracts of *Gibbula* sp., should be done to search for different compounds and activities.

This work was developed within the optional curricular unit “**Bioactivity of Natural Matrices**” of the **5th year of the Master Degree in Pharmaceutical Sciences of the Faculty of Pharmacy**, University of Porto, under the responsibility of Paula Andrade (Head), Patrícia Valentão and David Pereira.

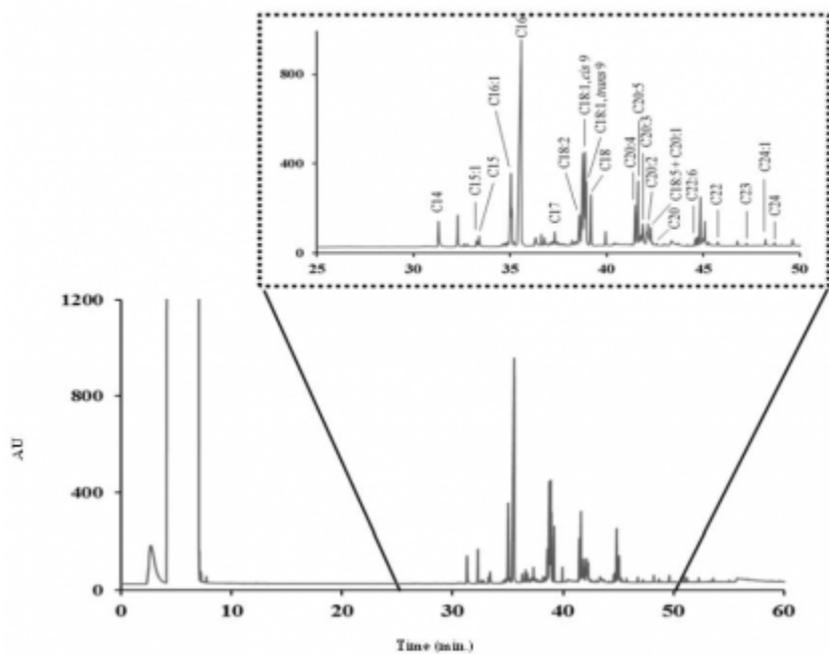


Fig. 1. GC-FID analysis of fatty acids in the ethanol extract of *Gibbula* sp.: (C14) myristic; (C15:1) cis-10-pentadecenoic; (C15) pentadecanoic; (C16:1) cis-9-palmitoleic; (C16) palmitic; (C17) heptadecanoic; (C18:2 cis 9,12) linoleic; (C18:1 cis 9) oleic; (C18:1 trans 9) trans-9-octadecenoic; (C18) stearic; (C20:4) arachidonic; (C20:5) eicosapentaenoic; (C20:3) cis-8,11,14-eicosatrienoic; (C20:2) cis-11,14-eicosadienoic; (C18:3 cis 9,12,15 + C20:1) α -linolenic + heneicosanoic; (C20) arachidic;

- **10850 | Heart, Head and Stomach by Camilo Castelo Branco, framed by the rhetorical perspective and the physiology of the taste.**

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This work aims to study the romance Heart, Head and Stomach by Camilo Castelo Branco, framed by the rhetorical perspective and the physiology of the taste. In what form did Camilo Castelo Branco intend to associate an intrigue structured by the sense of the flavor to a rhetorical reflection about the literary taste? And how can we read this romance as a persuasive strategy? Our work is divided into three main sections, according to the manuscript: Heart, Head and Stomach. We have analyzed each section following a line of reading established by the game between the symbolical and the literal sense: the Heart, as the central nucleus of the rhetoric of feeling; the Head, as the nucleus of the rhetoric of reason; the Stomach, as the nucleus of a physiology of taste, that helps us to understand the reason as a feeling and the feeling as a reason. Despite the abbreviated form, we believe we achieved to prove that Camilo did write this romance as a deep reflection about the Portuguese novel and the Portuguese Romanticism during the 19th century, especially before Coimbra's quarrel (Questão Coimbrã). The biographical phases of the main character of this novel, Silvestre da Silva, shape the three phases of a dialectical argumentation, essential to understand and deconstruct Novel and Romanticism, according Camilo Castelo Branco.

- **10879 | Identification of chemical compounds responsible for malodors in the animal by-products processing industry**

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The gaseous emissions from animal by-products processing industries are an environmental concern mainly due to the malodors that can be felt by the surrounding populations. They result from a variety of chemical compounds formed during the chemical and microbiological decomposition of the residues. The control of these odors and of their release to the environment is a priority for these industries, and the chemical characterization of the gaseous emissions is very important to select the most adequate processes to control them.

This work intends to address the lack of expeditious methods for the analysis of chemical compounds responsible for malodors generated by the processing of animal by-products. The work is focused on a simple, fast and low cost procedure based on gas-diffusion microextraction (GDME). GDME was applied to the extraction of some chemical compounds formed by lipid degradation (aldehydes and ketones) from animal by-products samples and from samples collected during the processing of these products. The identification of the extracted compounds was performed by HPLC-UV-MS/MS analysis. The main compounds identified in the studied samples were 3-hydroxybutanone, acetaldehyde, acetone and propanal.

Acknowledgements

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- **10976 | Improvement of *Synechocystis* sp. PCC 6803 halotolerance for biotechnological purposes**

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Cyanobacteria are freshwater moderately halotolerant photoautotrophic prokaryotes with simple nutritional requirements that can be used in many biotechnological applications as cell factories to produce compounds with industrial interest, such as sugars, biofuels (alcohols, alkanes and hydrogen) and other commodity chemicals, making these microorganisms ideal candidates for synthetic biology approaches. Synthetic biology is the design and construction of new biological parts, devices and systems, as well as the redesign of existing biological systems for useful purposes (<http://syntheticbiology.org>). Amongst cyanobacteria, *Synechocystis* sp. PCC 6803 is the best-characterized strain and has a relatively small genome completely sequenced and annotated.

In order to grow cyanobacteria, it is necessary to use large amounts of freshwater and to avoid contamination/predation by other microorganisms, which compromise largely the yield of a given compound.

The usage of seawater instead of freshwater could turn the production in outdoors bioreactors more viable and economic.

This project focuses on the improvement of the halotolerance of *Synechocystis* sp. PCC 6803 for its use in outdoors bioreactors. For that, synthetic devices containing genes related to the biosynthesis of compatible osmolytes, will be constructed and introduced in *Synechocystis* sp. PCC 6803 and the mutants generated will be characterized.

- **11311 | In vitro haemocompatibility evaluation of hydroxyapatite-based compounds from natural origin**

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Currently, biomaterials are ubiquitously used for many biomedical applications, due to its clear importance in the treatment of certain pathologies and/or changes associated with the natural aging of biological systems, which has allowed a reduction in the risk of morbidity and/or mortality. Furthermore, recent investigations are being directed to the identification of potential biomedical materials with biomimetic features, which are able to mimic the biological phenomena where naturally occurring materials stand out in both in vitro and in vivo biocompatibility and haemocompatibility evaluations. This work assessed the haemocompatibility behavior of hydroxyapatite (HAp) obtained from a marine source (Atlantic cod fish bones) which was used in both powder and pellet form, and at different temperatures of calcination (900 °C, 1000 °C, 1100 °C and 1200 °C).

Our results showed that HAp in powder form was overall more haemocompatible than HAp in pellet form. Moreover, calcinated HAp at 1100 °C seems to be more haemocompatible than calcinated at other tested temperatures.

Keywords: Biomaterials, Hydroxyapatite, Haemocompatibility

- **10899 | In vitro studies to assess the biological potential of *Porphyra umbilicalis* Kützing**

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Oceans represent the Earth's most valuable natural resource, providing food mainly as fish and shellfish. Nevertheless, due to its phenomenal biodiversity, the marine world is a rich natural resource for many biologically active compounds. In fact, marine organisms are exposed to extreme conditions, which lead them to produce a wide variety of active substances that cannot be found elsewhere. In this study, the metabolome and biological potential of *Porphyra umbilicalis* Kützing ethanol extract was assessed.

HPLC-DAD analysis showed that *P. umbilicalis* ethanol extract contains carotenoids like lutein, α - and β -carotene, as well as chlorophyll *a*. GC-FID analysis allowed detecting several fatty acids (Fig. 1).

Reduced activity was observed against 1,1-diphenyl-2-picrylhydrazyl (DPPH•) and nitric oxide (\bullet NO) radicals. Furthermore, it was also noticed that the ethanol extract possesses antibacterial activity against *Escherichia coli*, with a minimum inhibitory concentration (MIC) of 80.75 mg/mL. Other extracts could be prepared in order to find more interesting effects.

This work was developed within the optional curricular unit “Bioactivity of Natural Matrices” of the 5th year of the Master Degree in Pharmaceutical Sciences of the Faculty of Pharmacy, University of Porto, under the responsibility of Paula Andrade (Head), Patrícia Valentão and David Pereira.

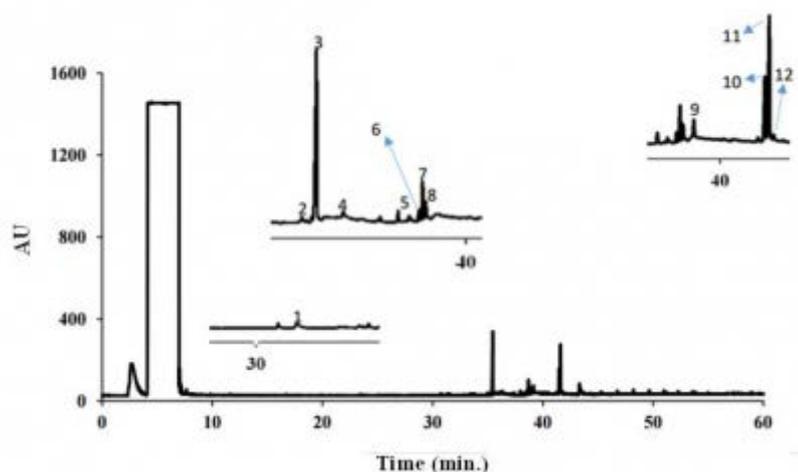


Fig. 1. GC-FID analysis of the ethanol extract of *P. umbilicalis*. Compounds: (1) myristic acid; (2) palmitoleic acid; (3) palmitic acid; (4) heptadecanoic acid; (5) γ -linolenic acid; (6) linoleic acid; (7) oleic acid; (8) elaidic acid; (9) stearic acid; (10) arachidonic acid; (11) eicosapentaenoic acid; (12) di-homo- γ -linoleic acid.

- **11170 | Influence of immersion and drying cycles of aqueous salt solutions in multilayered elements**

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Due to the use of porous materials in construction, the combined effect of rising damp with soluble salts is one major problem in the industry. Rising damp alone can cause aesthetic problems, but when allied with soluble salts it can degrade the health conditions inside the buildings and in extreme situations may endanger the structural performance of the building. This phenomenon is caused by the migration of the salt ions dissolved in water into the porous network of the construction materials in the building (walls). After the water evaporates, the salt ions remain in the porous network, creating great pressure in the pores and fracturing the materials after several cycles of crystallization/dissolution.

This study aims to register the results of this cycles in the materials, and includes the capillarity absorption and drying tests. The red brick samples used were previously submitted to capillarity absorption tests with two different saturated solutions (sodium sulphate and potassium chloride). These samples also include the added variable of three different interfaces in their middle: air space, perfect contact and hydraulic continuity (using a mortar layer), all common interfaces in construction. Both the monolithic sample and the pure water were used as reference, fulfilling a total of twelve different combinations tests.

The samples were already dried from the previous capillarity absorption test.



Samples before and after immersion

- **10997 | Intestinal colonization with antibiotic resistant coliforms in university students of Porto**

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Pinto, Marisa A., Faculdade de Farmácia, Portugal

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One of the most relevant global mechanisms of bacterial resistance is the production of Extended-spectrum β -lactamases (ESBL).

The aim of our work was the detection of ESBL producing *Enterobacteriaceae* in the intestinal flora of healthy university students.

Faecal samples of 21 students (16 from FFUP and 5 ICBAS) were collected. One gram of each sample was suspended in 10mL of saline and in 40mL of Tryptic Soy Broth (TSB) and incubated overnight at 37°C. Isolates were selected by spreading 100 μ l of saline suspension on MacConkey agar with cefotaxime, ceftazidime or meropenem (2 mg/L), and spreading 200 μ l of TSB suspension in same culture medium. To characterize the phenotype, we made successive dilutions of saline suspension and spread 100 μ l on MacConkey and Chromagar orientation. Two *Escherichia coli* colonies were randomly selected from Chromagar orientation and tested for antimicrobial susceptibility by agar diffusion method according to the CLSI. ESBL producers were confirmed by the CLSI guidelines.

In a total of 69 isolates, we detected 1 ESBL and 10 AmpC producers, and no carbapenem resistance was detected. The proportion of colonization with ESBL producing *Escherichia coli*, in our sample was 4,7% (\pm 9,1%).

These results show that healthy young adults might be colonized with commensals showing clinically relevant resistance mechanisms, as ESBL.

- **10856 | Is Red Fox , *Vulpes vulpes*, skull shape influenced by sex, age or geography?**

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Geometric morphometrics is a recent approach for the analysis of organisms or structures in order to quantify their shape. It has been used to study the skull of many animals, including several species of Carnivores. The aim of our work is to apply this methodology to the Red Fox and in particular to the Iberian subspecies, *Vulpes vulpes silacea*, in order to evaluate if factors such as sex and age have any role determining skull shape variations and if the results of the skull analysis support the Bergman's rule.

Our sample includes 70 foxes obtained during the 2014/15 hunting season in Portugal. Each fox was sexed, age was estimated by canine tooth analysis, and the skull was cleaned. The set of defined skull landmarks were analysed using the multivariate statistics included in the MorfoJ software package, in order to compare the shape of Red Fox skulls according to age, sex, and geographical origin.

Our analysis is still in a preliminary stage so it is premature to withdraw any noteworthy conclusions. As in other carnivore species, the Red Fox skull size shows sexual dimorphism but the same has not been demonstrated for skull shape. The ongoing work will allow us to test if skull shape is influenced by other factors such as age or geographic origin.

The integration of skull geometrical morphometrics analysis with other study tools such as DNA analysis or aspects such as teeth morphology might provide further insights into Red Fox ecological and biological traits.

- **11023 | ISOMERIZATION EFFECT ON THE THERMOPHYSICAL PROPERTIES OF PYRIDINIUM BASED IONIC LIQUIDS**

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Rodrigues, Ana S. M. C. , FCUP, Portugal

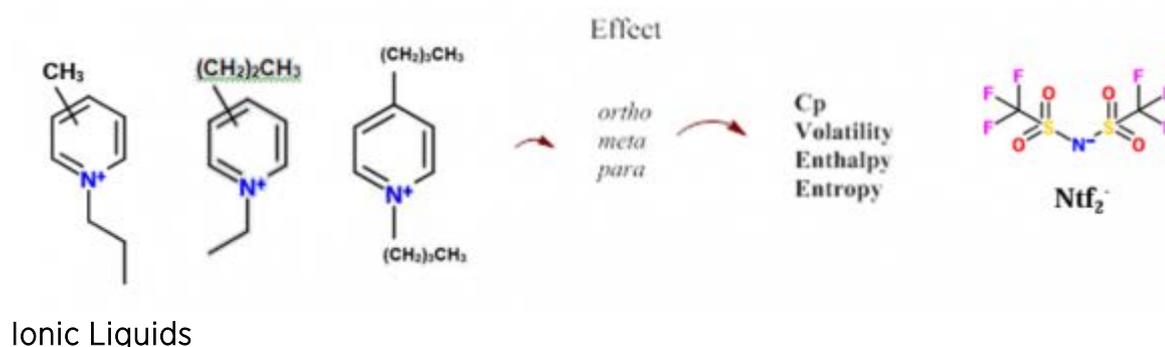
Santos, Luís M. N. B. F. , FCUP, Portugal

In the search for “tailored” fluids, several studies have been focused on the effect of cation nature, alkyl side chain length and anion nature of the ionic liquids (ILs). However, the effect of structural isomerism has received scarce attention.

The polar/non-polar characteristics of ionic liquid as well as their ions shape can be used for the tuning and fine tuning of their properties, functionality, and applications.

In this work, we explored the effect of the positional isomerization ortho, meta and para of the methyl and ethyl group on the volatility and heat capacities of the pyridinium based ILs. For this purpose, heat capacities at $T=298.15$ K were measured using a high precision drop heat capacity calorimeter[1] and the vapour pressures for each pure ILs were measured at different temperatures using Knudsen effusion apparatus integrated with a quartz crystal microbalance[2]. The ionic liquids structural features in the pyridinium cation of NTf₂-based ILs will be used for the molecular interpretation of the experimental results.

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- **10943 | Laparoscopy in major surgery with minimal access during pregnancy. A survey among experienced European obstetricians and gynecologists**

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Laparoscopy is widely performed in major surgery, using an endoscope and instruments introduced in the abdomen, but the presence of a large uterus may make it difficult during pregnancy. The aim of our study was to assess the practices of European gynecologists and obstetricians about laparoscopic surgery during pregnancy. A survey was sent to European authors of papers on gynecological laparoscopy published over the last 5 years. Fifty two out of 255 possible participants answered to the questionnaire (20%). Most respondents were a mean age of 45 years old, male (78%) and specialists (92%). The majority (> 50%) considered laparoscopy the first choice for surgery of the most usual benign abdominal pathologies and Trendelenburg the best position for patient in first and second trimesters of pregnancy, but not in the third; moreover, they elected the umbilicus as the best place for the initial introduction of the instruments in the first trimester, whereas a supra-umbilical approach was considered the best in second and third trimesters. Use of capnography, perioperative antibiotics and thromboprophylaxis was not reported by a minority (2-32%). In our study laparoscopic surgery was common among the participants. Their practices are, in general, in line with international guidelines, but some differences should be carefully considered, namely in relation with decisions on indications of laparoscopy in the third trimester of pregnancy, patient positioning and use of capnography.

- **10933 | Lipophilic-Derived Peptidomimetics of Neuropeptide GPE with 2-azanorbornane system as Proline Scaffold**

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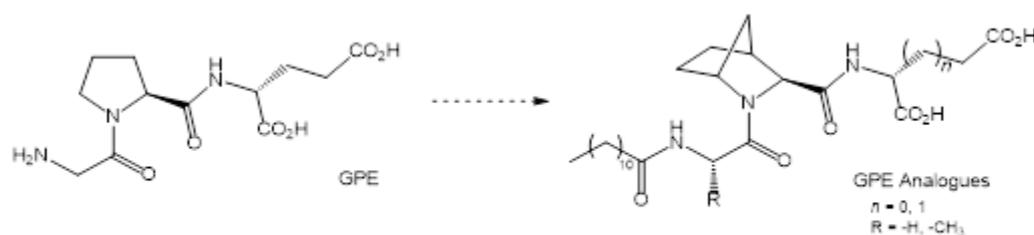
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The tripeptide GPE (glycyl-L-prolyl-L-glutamate, Figure 1)¹ has biological and neuroprotective activity. It was reported that GPE has considerable neuroprotective efficacy in multiple biological models. In vitro, GPE has been shown to protect hippocampal neurons from glutamate-mediated excitotoxicity² and revealed to protect cerebellar and striate cells from excitotoxicity and oxidative stress. These effects have been shown efficacy in animal models of Parkinson's³ and β -amyloid-induced depletion of somatostatin with respect to Alzheimer's disease.⁴

In this work, we synthesized lipophilic tripeptides as potential bioactive analogues of GPE. To do so we replaced the proline residue for 2-azanorbornane moiety and in order to increase lipophilicity we added fat chain 12C by condensation of lauroyl chloride with bicyclic prolinemimetic. The N- and C-termini amino acid residues were also substituted by structural related ones following a diversity-oriented synthesis and thus exploring the chemistry of these peptidomimetics (Figure 1).

The final compounds will be evaluated to assess their potential neuroprotective activity by an independent group to study the degree of neuroprotection of these compounds using neuronal cultures exposed to excitotoxicity conditions mediated by glutamate and oxidative stress induced by hydrogen peroxide.



Chemical structure of GPE and the lipophilic-derived peptidomimetics containing 2-azanorbornane as proline scaffold.

- **10908 | Medicinal species in the modulation of the inflammatory process**

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Grosso, C., REQUIMTE/LAQV, Laboratory of Pharmacognosy, Department of Chemistry, Faculty of Pharmacy, University of Porto, Portugal., Portugal

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Barbosa, M. , REQUIMTE/LAQV, Laboratory of Pharmacognosy, Department of Chemistry, Faculty of Pharmacy, University of Porto, Portugal., Portugal

Valentão, P., REQUIMTE/LAQV, Laboratory of Pharmacognosy, Department of Chemistry, Faculty of Pharmacy, University of Porto, Portugal., Portugal

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Inflammatory disorders are among the most prevalent pathological conditions worldwide, frequently resulting in some degree of disability or loss of life quality. Over the past few years, attention has been directed to phytochemicals modulating inflammatory responses. Among natural products of interest for the development of modern therapeutic drugs, phenolic compounds, namely flavonoids, can be highlighted, due to their several biological properties. In this study we proceeded to the characterization of the phenolic profile of aqueous extracts obtained from two medicinal species, *Annona muricata* L. and *Hyssopus officinalis* L., by HPLC-DAD (Fig. 1).

The capacity of both extracts and of some of the phenolic compounds found in them, to decrease nitric oxide (NO) levels in RAW 264.7 cells was also assessed. Both extracts reduced cells' viability for the highest tested concentration (2.5 mg/mL). A tendency to lower NO levels, in a dose-dependent way, was also observed. Flavonoids were more active than chlorogenic acid. Thus, the capacity of both extracts to decrease NO levels may be essentially correlated with the presence of quercetin, apigenin or luteolin derivatives.

Acknowledgements: FEDER funds through COMPETE and FCT, Fundação para a Ciência e Tecnologia, through project UID/QUI/50006/2013. A. P. Oliveira (SFRH/BPD/96819/2013) and M. Barbosa (SFRH/BD/95861/2013) are indebted to FCT for the grant, and C. Grosso (IF/01332/2014) for the FCT Investigator.

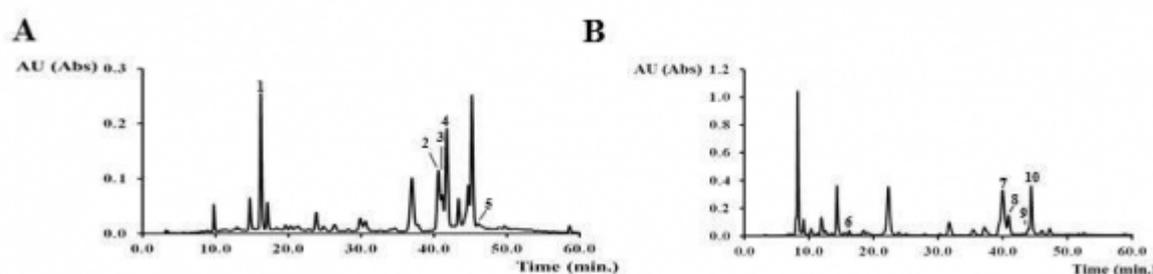


Fig. 1. HPLC-DAD (350 nm) chromatogram of the aqueous extracts from (A) *A. muricata* leaves and (B) *H. officinalis* aerial parts. Compounds: (1) 5-O-caffeoylquinic acid, (2) quercetin-3-O-galactoside, (3) quercetin-3-O-glucoside, (4) quercetin-3-O-rutinoside, (5) kaempferol-3-O-rutinoside, (6) caffeic acid, (7) luteolin-7-O-glucoside, (8) rosmarinic acid, (9) apigenin-7-O-glucoside and (10) apigenin-7-O-rutinoside.

- **11349 | Men Who Have Sex with Men in European Union - A Systematic Review and Meta-analysis**

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Introduction: Infection with HIV among men who have sex with men (MSM) has continued to increase. According to the HIV/AIDS Surveillance in Europe (2014) from World Health Organization, sex between men remains the predominant mode of HIV transmission in the EU/EEA, accounting for 42% of all HIV cases diagnosed in 2014. Several behavioral factors are well documented as a potential risk for HIV Infection, such as unprotected receptive anal intercourse, high frequency of male partners, high number of lifetime male partners and injection drug use.

Objectives: To review the evidence for the trends in the HIV epidemic among male who have sex with other male in European Union.

Methods: By searching MEDLINE, EMBASE, Google Scholar, and Cochrane registers we collected published documents between 2005 and 2015 for comparative studies with quantitative outcomes associated with HIV risk or HIV infection among MSM. We conducted a systematic review and meta-analysis of observational studies to summarize the point prevalence of HIV in MSM.

Data were aggregated across studies for every outcome of interest to estimate overall effect sizes, which were converted into summary ORs.

Results and Discussion: Knowledge about sexual orientation and HIV is skewed towards infection-related HIV.

Conclusion: The review and meta-analysis identifies the lacunae in existing literature and provides future directions for research in the MSM community in European Union.

- **10895 | Metabolic profile and bioactivity of *Aplysia depilans* Gmelin**

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Oceans are a source of structurally unique natural products that are mainly accumulated in living organisms. Several of these compounds possess pharmacological activities and are helpful for the discovery of new bioactive molecules. *Aplysia depilans* Gmelin is a mollusc usually found in the Mediterranean Sea and in the Atlantic Ocean. This work intended to explore the metabolic profile and the antioxidant and antimicrobial activities of the ethanol extract of *A. depilans* and to establish possible relationships.

HPLC-DAD analysis revealed the presence of 8 carotenoids (Fig.1) and GC-FID analysis allowed the identification of 19 fatty acids.

The antioxidant capacity against both 1,1-diphenyl-2-picrylhydrazyl radical (DPPH[•]) and a reactive nitrogen species (nitric oxide), as well as the antimicrobial activity against two strains of *Escherichia coli*, were also evaluated. The extract revealed some effect against DPPH[•] and nitric oxide. In addition, at the tested concentrations, no antimicrobial activity against the Gram- bacteria was noticed.

This research suggests that *A. depilans* may be a good source of nutraceuticals providing beneficial health effects.

This work was developed within the optional curricular unit “**Bioactivity of Natural Matrices**” of the **5th year of the Master Degree in Pharmaceutical Sciences of the Faculty of Pharmacy**, University of Porto, under the responsibility of Paula Andrade (Head), Patrícia Valentão and David Pereira.

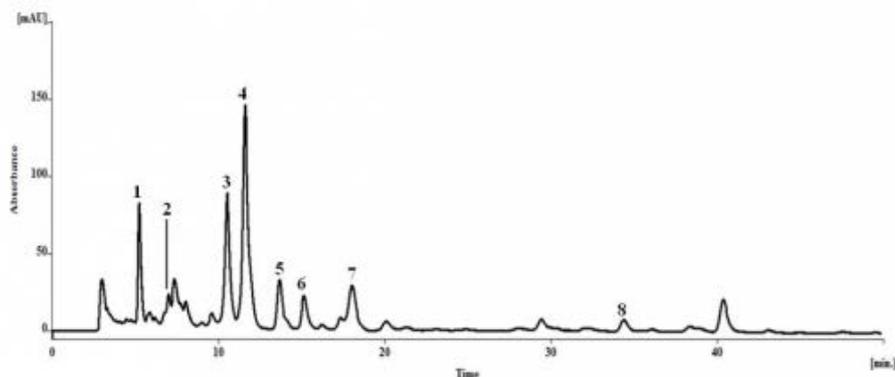


Fig. 1. HPLC-DAD chromatogram of the ethanol extract of *A. depilans* (450 nm). (1) fucoxanthin; (2) neoxanthin (3), chlorophyll b; (4) lutein; (5) zeaxanthin; (6) chlorophyll a; (7) unidentified chlorophyll and (8) beta-carotene.

- **11304 | Monitoring, geo-referencing and managing urban pests**

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This report focuses on the problems of urban pests (seagulls, doves and Vespa velutina) in Porto and on the need to develop proactive, preventive and planned responses to the events that might interfere with public health and animal's welfare.

This work was developed with the purpose of preparing environmental risk mapping, in digital format, in order to be a useful tool in management and population control plans in Porto.

The first phase of the work began by examining the intervention requests made by the inhabitants of Porto. Were considered as intervention requests, all orders placed by the inhabitants, to collect animals, alive, injured or dead, among others, in order to prevent situations that may disturb the environment, as well as the welfare of people and animals-, are examples of these situations, animals who become aggressive, make loud noises, who foul the buildings and public roads and, consequently, end up spoiling the city structures.

The second phase consisted in drawing maps using GIS platforms, specifically the ARCGIS 10 software, with the data conceded by Câmara Municipal do Porto, concerning to the animals under study. It was later performed a temporal and spatial analysis of the information collected, in order to develop a management plan to act on these animal populations in Porto.

Keywords: Porto, Urban Pests, Environmental Risk, Intervention Orders, GIS, SWOT analysis

- **11207 | Motives for playing handball: comparison between individuals with and without motor disabilities**

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The current study aimed to assess the motives for playing handball in two distinct groups: people with and without motor disabilities. Twenty handball players, 7 with and 13 without motor disabilities, aged 18-60 y.old, filled out the 'Questionário de Motivação para as Actividades Desportivas' (Serpa & Frias (1990), which is the translated and adapted version of the Participation Motivation Questionnaire (PMQ; Gill et al., 1983). Descriptive and inferential statistics showed that, overall, the most relevant motives for playing handball were physical shape (4.5 ± 0.5) and competition (4.4 ± 0.6), while the less valued were status (3.0 ± 0.8) and specific affiliation (3.1 ± 0.6). Comparison between players with and without motor disabilities revealed no significant differences. However, athletes from both groups ranked physical shape (4.6 ± 0.4 and 4.4 ± 0.5) and competition (4.5 ± 0.5 and 4.3 ± 0.7) as the most important motives, and status (3.0 ± 1.1 and 3.0 ± 0.7) as the less relevant. These results suggest that conventional persons and individuals with motor disabilities possessed identical motives to practice handball.

Keywords: Psychology, motivation, handball, motor disabilities.

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Serpa, S., Frias, J. (1990). Monografia apresentada a FMH-UTL

- **11346 | MTHFR polymorphisms and Breast cancer risk, is there an association? – a meta-analysis**

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Introduction: Breast cancer incidence has been increasing by more than one million new cases every year and is a primary cause of cancer death among women worldwide. Methylenetetrahydrofolate reductase (MTHFR) plays an important role in folate metabolism and as a regulator of DNA methylation, synthesis, and repair. MTHFR gene is polymorphic at nucleotides 677 (CT) and 1298 (AC), resulting in allozymes with decreased activity. Several studies have pointed to association between the MTHFR C677T polymorphism and breast cancer risk.

Objectives: The present study aims to contribute to the elucidation of the impact of any C677T breast cancer association through a meta-analysis study of published case control studies.

Methods: Pubmed, Google Scholar, Elsevier and Cochrane trials databases were searched for case control studies of associations between MTHFR C677T polymorphism and breast cancer risk. Odds ratios (ORs) with 95% confidence intervals (CIs) were estimated to assess the association.

Results and Discussion: MTHFR C677T polymorphisms may modify the association between intracellular folate levels and breast cancer risk. Homozygous women for the MTHFR 677T polymorphism may have a significantly increase of breast cancer risk.

Conclusion: These results suggest an association between MTHFR C677T polymorphism and risk of breast cancer development.

- **11044 | Mucins MUC16 and MUC1 are major carriers of SLea and SLex in borderline and malignant serous ovarian tumours**

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Mucins are heavily glycosylated proteins overexpressed and associated with truncated or sialylated glycans upon malignant transformation. We previously identified a panel of four glyco-mucin profiles (MUC16/Tn, MUC16/STn, MUC1/Tn and MUC1/STn) with 100% specificity and 100% Positive Predictive Value for detection of borderline/malignant serous tumours of the ovary, using Proximity Ligation Assay (PLA).

Aims: In the present work, using the same method, we studied other mucin glycosylation profiles that might add relevant information for diagnostic purposes.

Methods: We used PLA probes to MUC16, MUC1, SLea and SLex to study a series of 39 ovarian serous tumors (14 adenocarcinomas, 10 borderline ovarian tumors (BOTs) and 15 cystadenomas).

Results: Our results demonstrated that, in adenocarcinomas and BOTs, the major carriers of SLea and SLex are MUC16 and/or MUC1 (100% and 92% for SLea, and 64% and 70% for SLex, respectively). In cystadenomas, SLea and SLex are mainly carried by unidentified proteins (85% and 78%, respectively).

Conclusions: Our study identified, for the first time, the major protein carriers of SLea and SLex in ovarian adenocarcinomas and BOTs, MUC1 and MUC16, and also that distinct unidentified carriers are involved in cystadenomas. These results emphasise the relevance of multiple biomarker recognition provided by multiplex assays, such as PLA, to enhance sensitivity and specificity of serum and tissue assays.

- **11100 | Mycotoxins in breadcrumbs**

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There are more than 300 mycotoxins that can potentially contaminate food and feed and cause adverse health effects in humans and animals. Trichothecenes are one of the major classes of mycotoxins found in cereal and cereal products. This mycotoxin family can be divided into four subgroups (types A-D), according to their chemical structure. The major group - type A trichothecenes - includes 4,15-diacetoxyscirpenol (DAS), T2 toxin (T2) and HT2 toxin (HT2), generally more toxic than type B trichothecenes, such as nivalenol (NIV), deoxynivalenol (DON), fusarenon X, 3-acetyldeoxynivalenol (3-AcDON) and 3-acetyldeoxynivalenol (15-AcDON). Currently, the EU established legal limits only for type B trichothecenes in cereals; however, discussions are ongoing for T2 and HT2.

The aim of the present study was to verify the possible presence of type A and type B trichothecenes in breadcrumbs. A multi-mycotoxin method based on the QuEChERS extraction and concentration and gas chromatography-mass spectrometry was used for quantification of 12 compounds in 11 commercial breadcrumbs samples. DON and T2-triol toxin were found in 3 samples, but all in concentrations below the established maximum limit of residue, 500 µg/kg and 25µg/kg, respectively. Despite the low contamination observed in this small survey of breadcrumbs commercialized in Portugal, monitoring the presence of mycotoxins in cereal products is important to ensure food safety.

- **11070 | Nanostructured Lipid Carriers containing Camptothecin**

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Camptothecin is an antineoplastic drug with an action in a large number of tumors. However, its instability, toxicity and insolubility in most of biocompatible solvents are some limitations to its use. If these obstacles are solved, camptothecin can be a very promising drug in the fight against cancer.

One of the methods in study is the creation of a drug delivery system in a nanosize range, which will allow the increase of the solubility and the bioavailability, prolonged pharmacological effects and reduce side effects. Nanostructured Lipid Carriers emerge as an alternative for Solid Lipid Nanoparticles (SLN). The main difference is the addition of a lipid in the liquid state. For most of the drugs, their solubility is higher in a liquid lipid than in a solid lipid. Therefore, the drug is dissolved in the melted lipids and homogenized, to form O/W nanoemulsion.

In this project we developed and optimized NLC loaded with camptothecin by two different methods: High Pressure Homogenization and Ultrasound. The size (DLS and LD), zeta potential (DLS), thermodynamic behavior (DSC), encapsulation efficiency (HPLC) and hemolysis (Synergy HT Multi-Mode Microplate Reader) were tested. The results of the two techniques were generally similar in terms of size, zeta potential and thermodynamic behavior. The NLC developed by High Pressure Homogenization method obtained a hemolysis percentage of $30.9 \pm 11.6\%$ and an encapsulation efficiency of $27.5 \pm 10.9\%$.

- **10982 | Nanostructured lipid carriers loaded with rifapentine: a drug delivery system for pulmonary tuberculosis**

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Magalhães, Joana, REQUIMTE, Portugal

Vieira, Alexandre, REQUIMTE, Brazil

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Pulmonary tuberculosis (TB) is one of the most prevalent and mortal infectious diseases. The current treatment is associated with noncompliance to therapy and appearance of adverse-effects. Compared with the first-line anti-TB drug rifampicin, rifapentine (RPT) has a longer half-life, and a lower minimal inhibitory concentration against *Mycobacterium tuberculosis*. Moreover, preclinical studies demonstrated a reduction in treatment duration upon RPT oral administration.

Despite these advantages, the extensive first pass metabolism and variable bioavailability upon oral administration restrict the use of RPT. In this context, the aim of this study was to assess the potential of nanostructured lipid carriers (NLCs) as drug delivery systems of RPT. For this purpose, different lipids were tested and different amounts of RPT were used to select the drug content that yielded the maximum drug entrapped with high encapsulation efficiency (EE). The particles were characterized in terms of size distribution, zeta potential and encapsulation efficiency. Results showed particles with size and morphology suitable to reach the pulmonary alveoli and high EE.

In the future, this RPT delivery system may be exploited for pulmonary administration, featuring both passive and active targeting strategies.

- **10891 | New insights on *Asterias rubens* Linnaeus**

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Marine environment includes a large amount of species, still underexplored if compared with terrestrial ones. Marine organisms have shown to be an excellent source of bioactive compounds to be applied in several areas. In the last decades, the scientific and technologic advance managed an exponential increase of the identification rate of sea species, which led to the discovery of several new compounds. The purpose of this study was to establish some relationship between the metabolic composition of an ethanol extract from *Asterias rubens* Linnaeus and its antioxidant and antimicrobial potential.

A. rubens extract was analysed by HPLC-DAD, several xanthophylls being identified (Fig. 1). Fatty acids were also determined by GC-FID, eicosatrienoic, docosahexaenoic, palmitic and eicosapentaenoic acids being found in higher concentrations.

The antioxidant activity of the extract was also evaluated, using DPPH• and •NO scavenging microassays, a reduced capacity being observed. In addition, the ethanol extract revealed no antibacterial activity towards *Escherichia coli*.

The results point to the interest of exploring this echinoderm for pharmaceutical applications.

This work was developed within the optional curricular unit “**Bioactivity of Natural Matrices**” of the **5th year of the Master Degree in Pharmaceutical Sciences of the Faculty of Pharmacy**, University of Porto, under the responsibility of Paula Andrade (Head), Patrícia Valentão and David Pereira.

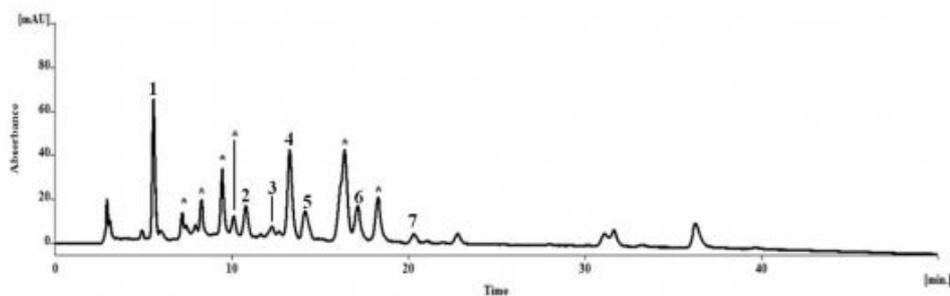


Fig. 1. HPLC-DAD chromatogram of the ethanol extract of *A. rubens* (450 nm). Peaks: (1) fucoxanthin; (2) astaxanthin (3), lutein; (4, 5, 6 and 7) xanthophyll with astaxanthin-like absorption spectrum and (*) unidentified xanthophyll.

- **10876 | New insights to counteract bacterial resistance**

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Fluoroquinolones (FQs) are synthetic drugs belonging to a group of antibacterial agents, used in the treatment of various bacterial infections. Their mechanism of action relies on the inhibition of the enzymes responsible for the replication of DNA. The main problem of overuse and misuse of FQs is increasing bacterial resistance, which compromises the effectiveness of these drugs, requiring the design of new and changed medications. Hence, the concept of FQs-metal complexes has gained interest as a strategy to increase the biological activity of FQs, reducing side effects and neutralizing bacterial resistance.[1]It was suggested that the reactions of metal ions with FQs were essential for the activity of these antimicrobial agents, and the metal ions may bridge the binding of the quinolone to DNA gyrase or of bacterial DNA directly. FQs can bind several metal ions, including Mg^{2+} , Cu^{2+} , Ni^{2+} and $Fe^{2+/3+}$, which may result in changes in their activity.[2]In this work, we studied the Moxifloxacin- Fe^{3+} complex, in the presence and absence of the ligand 1,10-Phen, determining the stability constants of these complexes, using UV-Vis spectroscopy.

[1]Feio,M.J.; Sousa,I.; Ferreira,M.; Cunha-Silva,L.; Saraiva,R.G.; Queirós,C.; Alexandre,J.G.; Claro,V.; Mendes,A.; Ortiz,R.; Lopes,S.; Amaral,A.L.; Lino,J.; Fernandes,P.; Silva,A.J.; Moutinho,L.; Castro,B.; Pereira,E.; Perelló,L.; Gameiro,P. 2014,J.Inorg.Biochem. 138,129-143.

[2]Serafin,A.; Stanczak,A. 2009,Russian J.Coord.Chem. 32,81-95.

- **11152 | NUTRITIONAL ASSESSMENT OF SELECTED VARIETIES OF BEANS**

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Legumes are the main protein source for humans, especially in tropical and subtropical regions. Poor populations depend on these foods for their protein intake as these are cheaper than animal protein. Some of these grains are consumed mature, dried or still immature, after baking.

The aim of this study was to assess the nutritional value of selected species of immature grains of beans (*Phaseolus lunatus*, *Cajanus cajan*, *Vigna unguiculata* and *Vicia faba*) obtained in street markets of Salvador, Bahia.

Moisture content was instrumentally determined (SMO 01, Scaltec Instruments, Germany). Ash content was determined by incinerating the sample in a muffle furnace at 550 °C (AOAC 920.153); protein was quantified by Kjeldahl method (AOAC 928.08); and total fat according to Soxhlet procedure (AOAC 991.36). Total carbohydrates were determined by difference.

Moisture content ranged from 65 to 70%. The values determined for protein were 8.0-9.7%, lipids 0.9-1.75%, ashes 0.7-1.4% and carbohydrates 19-23%. Overall, all species presented an interesting nutritional profile, although some variations were observed between varieties.

These results contribute to up199900382knowledge about the nutritional composition of these legumes, which grow in arid regions. Given their nutritional and socioeconomic importance, it is expected that this study also contributes to incentivize legumes' family farming practices, while reinforcing social, economic and environmental sustainability policies.

- **11215 | Nutritional composition of seven varieties of baby kiwi fruit**

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The demand for new fruit species with high levels of bioactive compounds has led to introduce in our diets edible fruits of wild or ornamental plants. One of these fruits is the Baby kiwi, also known as hardy kiwi or mini kiwi, frequently recognized as a healthy fruit. These fruits can belong to *Actinidia arguta* or *A. purpurea* species, being available different varieties and hybrids of these species. Native from Eastern Asia, the fruits are characterized by high frost resistance. They are small, resembling the common kiwi fruit, with a smooth green peel and totally edible. In recent years, baby kiwifruit production has been increasing in New Zealand, USA, Japan, Chile and some European countries.

The objective of this work was to evaluate the nutritional composition of seven different varieties of baby kiwi (Ananasnaya, Geneva, Issai, Jumbo, Ken Reed, Maki and Weiki) grown in Portugal. About 70 g of each variety was ground in a knife blender and used for the determination of their water, protein, fat, ashes and total dietary fiber (TDF) content accordingly to the AOAC INTERNATIONAL methods (2012)

Although in the same range, there are differences among the varieties in study. The highest differences were found in their water content (75% in Ken Reed and 84% in Ananasnaya), and in their TDF content (2% in Issai and to 5% in Ken Reed). Further analyses are ongoing to characterize the content of other bioactive compounds.

- **11071 | Nutritional value and fatty acid profile of Cucurbita ficifolia Bouché seeds**

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Cucurbita ficifolia Bouché (Cucurbitaceae), known in Portugal as 'Abóbora-chila' or 'Abóbora-gila', is a cultivated plant whose fruit pulp is used in the production of traditional sweets and confectionery[1]. During the industrial process, about 65% of the product is rejected (seeds and shell). When sustainability is a growing concern for world organizations, recovering this waste as a by-product with added value is a priority.

The aim of this work was to evaluate the nutritional profile of fresh seeds, predicting their future applications, according to economic sustainability concerns.

Nutritional parameters (ash, fat, protein and moisture) were determined according to AOAC methods [2]. Total carbohydrates were calculated by difference. The fatty acid profile was also evaluated by GC/FID.

This by-product is a good source of fat (29%), protein (27%) and carbohydrates (39%). The lipid evaluation showed that the major fatty acids of *C. ficifolia* seeds are oleic acid (C18:1n9c), linoleic acid (C18:2n6c), palmitic acid (C16:0) and stearic acid (C18:0).

The results reveal that, it could be an interesting matrix for further studies as an alternative for different food applications, or even as an ingredient for food supplements.

[1] Propriedades da Abóbora Chila, www.nutricaoglobal.pt, consultado a 25.10.2015

[2] AOAC International (2012). Official methods of analysis of AOAC International. 19th edition. Association of Analytical Communities, Gaithersburg, MD, USA.

- **10874 | Optimization of extraction methods for the analysis of antibiotics of the enrofloxacin family in feather flour**

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In this work we aimed at optimizing a microwave-assisted extraction (MAE) method for the simultaneous determination of the antibiotics norfloxacin, ciprofloxacin and enrofloxacin, in flours made from feathers, by HPLC. For that, feather flour was spiked with each antibiotic. MAE was tested (n=5) at 30°C, 40°C, and 50°C, for 15 minutes. Extracts were evaporated and resuspended in aqueous solution. Solid phase extraction (SPE) was then carried out. Analyses were performed, in gradient mode, using a HPLC with a DAD detector. Used HPLC conditions enabled the separation and quantification of the selected antibiotics in a single run, being appropriate in a feather flour matrix. Matrix calibration (0.1-1 mg L⁻¹) was chosen, after comparison with aqueous standard curve.

The microwave temperature of 30°C was the only appropriate to extract the three antibiotics, with overall percentages of recovery of 100%. No significant losses of these antibiotics during the evaporation with nitrogen or during SPE cleaning were observed.

Different conditions will be used (solvents and time) on the MAE and SPE are going to be improved. The overall method should be capable of exhibiting high sensitivity and accuracy, minimal sample matrix effects and interferences, high sample throughput, and low cost per sample.

Acknowledgments

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- **11270 | Optimization of the enantiomeric separation of tramadol and its metabolites**

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Enantiomers have the same chemical and physical properties but behave differently with biological systems. Despite the same thermodynamic properties, enantiomers of a chiral drug can display different pharmacodynamics and/or pharmacokinetics as well as toxicity. So, to understand these behaviours and effects, the development of analytical methods that allow the enantiomeric separation is very important [1].

Tramadol is an analgesic drug, used as racemate in the treatment of pain. It is rapidly metabolized in the liver, resulting in the formation of its primary metabolites, N-desmethyltramadol and O-desmethyltramadol [2].

In this work the optimization of a chromatographic method for enantiomeric separation of tramadol and its metabolites is described. Chiral stationary phases based on antibiotics and polysaccharides were used in multimodal elution. Enantioseparation was achieved with normal and reversed mode of elution.

Acknowledgments: Strategic Funding UID/Multi/04423/2013 and PTDC/MAR-BIO/4694/2014 through FCT and ERDF, in the framework of programme PT2020, and PHARMADRUGS-CESPU-2014

[1] Ribeiro, A. R et al. (2014), Journal of Chromatography B, 968, 8-21.

[2] Ardakani, Y. H. et al. (2007), Biopharmaceutics & Drug Disposition, 28, 9, 527-534.

- **10894 | Optimization of the extraction of bioactive compounds from the peels of *Hylocereus* fruits**

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Owing to the attractive sensory properties and a growing recognition of the nutritional and therapeutic properties of exotic fruits, their consumption has significantly increased. Consequently, the mass of by-products, such as peels and seeds, obtained from exotic fruits processing is enormous. Since many of these by-products provide evidenced benefits for human health, interesting bioactive compounds can be extracted from these raw materials.

A Box-Behnken design was used to optimize the microwave-assisted extraction of bioactive compounds from the peel of yellow pitaya (*Hylocereus megalanthus* (K. Schumann ex Vaupel) Ralf Bauer), from Colombia, and white-fleshed red pitaya (*Hylocereus undatus* (Haw.) Britton & Rose), from Vietnam. The solvent used was water and three parameters were combined at three different levels: solid:solvent ratio (1:50-1:150 g/mL), temperature (25-75 °C) and time (5-65 min). Extraction yields obtained for the 15 extracts ranged from 5 to 21 % (Fig. 1). The HPLC-DAD-ESI/MSⁿ analysis revealed, for the first time, the presence of 39 compounds in both species: 18 cinnamoyl derivatives, 17 derivatives of kaempferol, quercetin and isorhamnetin and 4 betacyanins.

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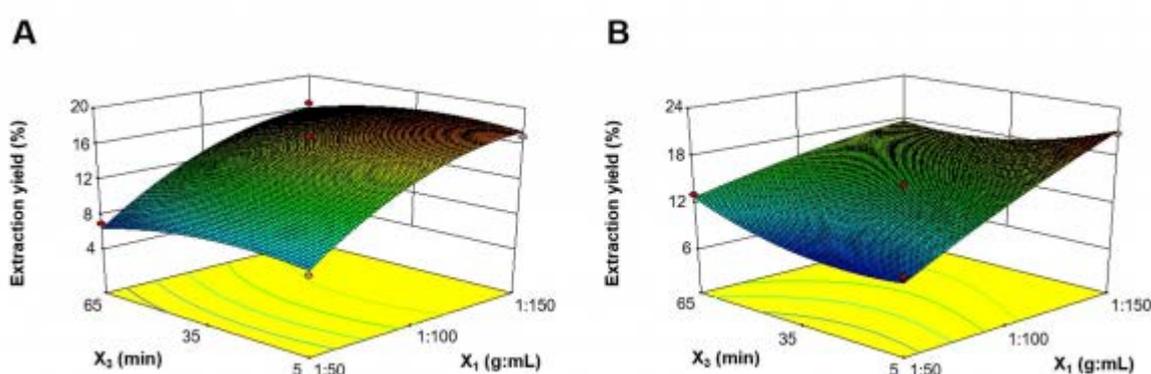


Fig. 1 - Three-dimensional (3D) response surface plots for time (X₃) x solid:solvent ratio (X₁). (A) *H. undatus*; (B) *H. megalanthus*.

- **11126 | Oxygen radical absorbance capacity microplate-based method for antioxidant capacity estimation using pyranine as target molecule**

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The oxygen radical absorbance capacity (ORAC) assay is among the most commonly used methods to estimate peroxy radical scavenging capacity. Recently, pyranine (PYR; 8-hydroxypyrene-1,3,6-trisulfonate) has been employed as an alternative to the classic target molecule, fluorescein. Due to its low reactivity against peroxy radicals, pyranine allows the assessment of the stoichiometric of from the lag phase produced before the decay of absorbance (540 nm).

Hence, a high-throughput microplate-based ORAC method employing pyranine as target molecule/probe is proposed. ORAC values for Trolox (model antioxidant compound) were assessed using 25 and 50 μM of PYR and [AAPH] ranging from 25 to 100 mM. Plots of lag phase time (min) as a function of [Trolox] (mg/L) were established. The highest sensitivity ($2.14 \pm 0.02 \text{ min}/\mu\text{M}$) was achieved with 25 mM AAPH, for both PYR solutions tested (pseudo-zero order conditions for pyranine). Detection limit was 0.52 mg/L (Trolox equivalents) and RSD values were $< 5.4\%$. On going work aims the application of selected experimental conditions to the analysis of model antioxidants present in food and biological matrices with different reactivity towards peroxy radicals.

Acknowledgements

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- **10810 | Peri-implant Diseases**

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Peri-implant diseases are characterized by inflammatory lesions that may affect the peri-implant mucosa (mucositis) or may result in supporting bone loss (peri-implantitis), which may later lead to the loss of the implant. Peri-implant mucositis occurs in approximately 64,5% of patients who placed implants, while peri-implantitis occurs in about 22% of patients. Some identified risk factors are poor oral hygiene, periodontal disease history, diabetes mellitus and smoking habits. The diagnosis of peri-implant diseases requires the application of survey techniques to identify the absence or presence of bleeding, pain, suppuration and inflammation. Radiographs must also be used to detect loss of supporting bone. Mechanical nonsurgical treatment is sufficient to treat mucositis. In what concerns to peri-implantitis, debridement and local and systemic antibiotic therapy is the preferred treatment. Establishing a good oral hygiene is the key to prevent peri-implant diseases.

Given the widespread use of implants and the growing importance of these diseases, this review's objectives are to clarify the etiology of peri-implant diseases, explain the risk factors and diagnosis and understand the role of prevention in the development of peri-implant diseases.

- **11343 | Petrography of Skarns in northern Portugal**

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The present work came from a study developed during the internship of the first degree in Geology from Faculdade de Ciências of Porto University.

The main objective was the petrography of "skarns", with the intension of identifying its mineralogy and fabric.

The skarns are calcsilicate rocks that have great metallogenic importance mostly due to W, because they have mineralizations of scheelite and wolframite that are rich in WO₃.

Two samples of "skarn" were studied, respectively from Riba d'Alva and Tabuaço, with the goal of making their petrographic comparison. This study was performed using petrographic microscope and the electron microscope scanning. Both samples are from the CXG formation of Douro Group. The mineralogical composition identified in the "skarn" of Riba d'Alva comprises: calcite, muscovite, chlorite, dolomite, paragonite, quartz, epidote, pyrite and scheelite. In the sample of Tabuaço the mineralogical composition is essentially fluorite and vesuvianite associated with a mass of aluminosilicates, which is difficult to identify, although it also identified epidote, fluorvesuvianite, titanite, cassiterite and albite.

The samples studied have a noticeable difference in color and mineralogy, particularly by the presence of sulphides and a darker coloration in the sample of Riba d'Alva. Both samples show scheelite, epidote and fluorite, the former two are more abundant in Riba d'Alva, while the fluorite is more abundant in Tabuaço.

- **11324 | Pharmaceutical development of an ibuprofen hydrogel**

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The aim of this work was the formulation of an ibuprofen hydrogel (5%). Several hydrogels were prepared with different polymers: Aristoflex® 1%, Hispagel® (20% and 30%) and HPMC (3% and 1.8%). The hydrogels were characterized regarding mechanical and sensory features, and results were compared with the Ozonol® gel. Flow measurements were performed in a viscometer, at 20°C (shear rate range 1-500 1/s). The textural analysis was performed using a texturometer fitted with a TTC spreadability rig (velocity 3mm/s; penetration distance 23mm). Sensory descriptive analysis was carried out according to ASTM E1490-11 guideline. Nine sensory attributes from the categories pick-up, during application and after application were assessed on a linear scale. Affective analysis was also performed by the evaluation of appearance, texture and skin feel on a hedonic scale. Hispagel® hydrogel didn't present gel-like properties and wasn't included in the following steps of the study. All the hydrogels exhibited a shear thinning behaviour. HPMC 3% hydrogel showed higher firmness, adhesiveness, cohesiveness and lower spreadability than the other hydrogels. Regarding sensory analysis, commercial gel was the preferred formulation. The least preferred formulation was HPMC 3% hydrogel which could be related with its mechanical features. Aristoflex® 1% and HPMC 1.8% ibuprofen hydrogels were successfully prepared and were more similar to the commercial gel with respect to mechanical and sensory features.

- **10961 | Physical inactivity in Portuguese people with more than 54 years old: prevalence and predictors**

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Habits of physical activity have a correlation with better physical and cognitive function in older people, contributing to a healthier life-style and an increasing in life span. Our work aims to evaluate the predictors of physical inactivity, as well as its prevalence, in Portuguese people with more than 54 years old.

We use data from the Portuguese participants in Wave 4 of SHARE (Survey of Health, Ageing, and Retirement in Europe) database. Physical inactivity was defined as never or almost never engaging in moderate or vigorous physical activity. The variables that were evaluated as potential predictors includes clinical, psychosocial and sociodemographic variables.

From a total of 2080 Portuguese individuals that have participated in wave 4 SHARE survey 1647 have more than 54 years. From those 1.6% (n=26) did not answered to physical inactivity associated questions. The final sample included 1621 Portuguese individuals with a mean age (\pm SD) of 67.0 ± 8.29 years, being 46.0% of them males. The rate of individuals with more than 54 years without any vigorous or moderate physical activity was 27.3%. The variables independently associated with physical inactivity in Portugal were ageing, physical limitations (mobility, arms function and fine motor limitations, and difficulties in walking 100 meters), and social support (received and given help to others).

Interventions to improve physical exercise must consider the physical limitations and social support as main targets.

- **11320 | Production of Solid Lipid Nanoparticles and Nanostructured Lipid Carriers containing Flavonoid-like NMT-H087**

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NMT-H087 is a novel flavonoid-like drug, being developed to target parasitic diseases, such as trypanosomiasis and leishmaniasis. These diseases are particularly concerning in Africa, Asia and South America, where it affects millions of people and has high rates of mortality and morbidity. These pathologies have re-emerged over the last decades and drug-resistant parasites presents an additional problem today.

In this project we are developing and optimizing SLNs and NLCs incorporating H87. H87 is a lipophilic and poorly water soluble Flavonoid-like drug, with antiparasitic activity with IC50 and selectivity index. . Due to the problem of stability and solubility we have decided to nanencapsulated this compound using a brain delivery system. The nanoparticles are being produced by High-Pressure Homogenization with lipid cetyl palmitate/mygliol (5%), surfactant Tween 80 (2%) and drug H87 (1%) . The size, stability, encapsulation efficiency, thermodynamic behavior and Zeta potencial of SLN and NLC are being tested. The mean particle size obtained, is 0.233 μm and 0.235 μm for respectively NLC and SLN, NLC presents, so far, the higher zeta potencial value (-28.9 mV), encapsulation efficiency is being directly calculated using a calibration curve $y = 1339x - 2,0802$ ($R^2 = 0,9993$).

The research leading to these results has received funding from the European Community's Seventh Framework Programme under grant agreemenNo. 603240 (Project NMTrypl) and COST Action CM1307

- **11137 | Promising selective activators of protein kinase C isoforms emerged from abietane diterpenic compounds**

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With a central role in tumor development, the protein kinase C (PKC) isoforms have been considered promising anticancer drug targets [1]. In this work, using a previously developed yeast-based screening assay [1], abietane derivatives, isolated from a Lamiaceae family plant, was tested for their ability to activate PKC isoforms from classical (cPKC; alpha and beta); novel (nPKC; delta and epsilon); and atypical (aPKC; zeta) subfamilies. The obtained results revealed an activator of cPKCs and nPKCs (C2), an activator of cPKCs and PKCzeta (C1), and a selective activator of PKCdelta (C3). The selectivity and direct binding of C3 to PKCdelta was confirmed using an in vitro PKC assay. In human colon carcinoma cell lines (HCT116), C3 exhibited a potent growth inhibitory effect, associated with apoptosis induction. Promising pharmacological applications, particularly in cancer, may be envisaged for abietane derivative compounds, such as C3, as selective activator of the pro-apoptotic PKCdelta. [1]Silva et al. *Curr Pharm Des* 2012; 18(17):2492-2500. This work was funded by FEDER funds through the Operational Programme for Competitiveness Factors–COMPETE, national funds provided by FCT and ERDF, under the Strategic Funding UID/Multi/04378/2013 (UCIBIO/REQUIMTE), PTDC/DTP-FTO/1981/2014, PTDC/QUI-QUI/111664/2009 in the framework of the programme PT2020. C.Bessa (SFRH/BD/87109/2012), J.Soares (SFRH/BD/78971/2011) and L.Raimundo (PD/BI/113926/2015) FCT fellowships.

- **10970 | Quality control of a geotextile in a railway project**

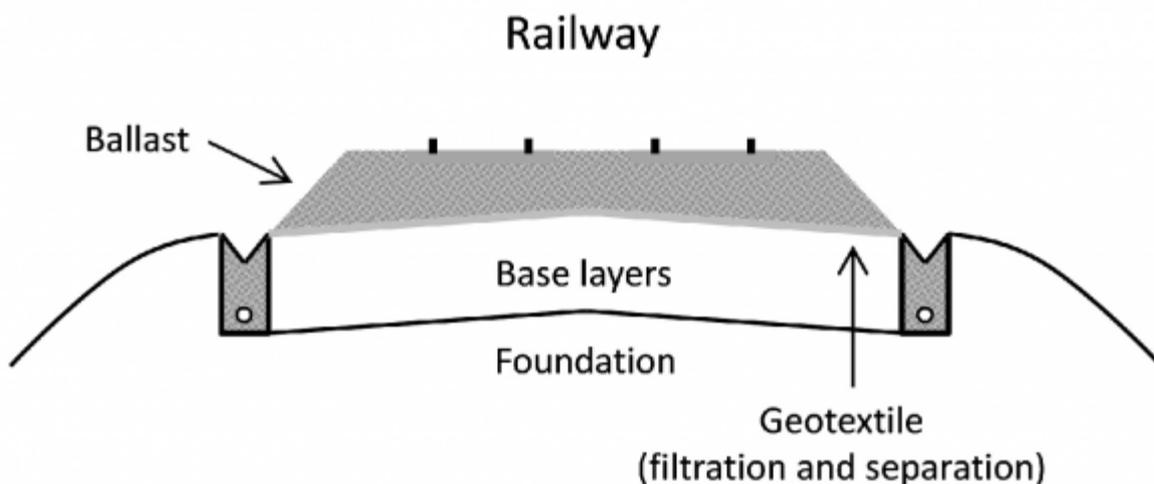
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Geosynthetics are polymeric materials applied in many civil engineering infrastructures due to technical, economic and environmental advantages. There are several types of geosynthetics, being the most common the geotextiles, geomembranes, geogrids and geocomposites. These materials are often used instead of more traditional ones in a wide range of applications due to their ability to perform several functions: filtration, drainage, separation, protection, reinforcement, erosion control or fluid barrier.

This work describes the quality control needed for the selection of geosynthetics for applying in railways. Its main goal was to evaluate the use of a geotextile to perform filtration and separation functions. For that purpose, laboratorial tests were carried out to assess if the proposed geotextile fulfilled the construction project requirements. These tests included the determination of many physical, mechanical and hydraulic properties of the geotextile. The resistance against abrasion (a degradation mechanism often occurring in railways) was also evaluated.

The properties determined in laboratory complied, in their majority, with those required by the construction project. However, elongation at maximum load was slightly higher than allowed. Based on this, our recommendation would be to reject the geotextile.

J.R. Carneiro would like to thank Fundação para a Ciência e a Tecnologia for the research grant SFRH/BPD/88730/2012 (grant supported by POCH/POPH/FSE funding).



Schematic representation of the railway.

- **10829 | Quality control of geosynthetics in road works**

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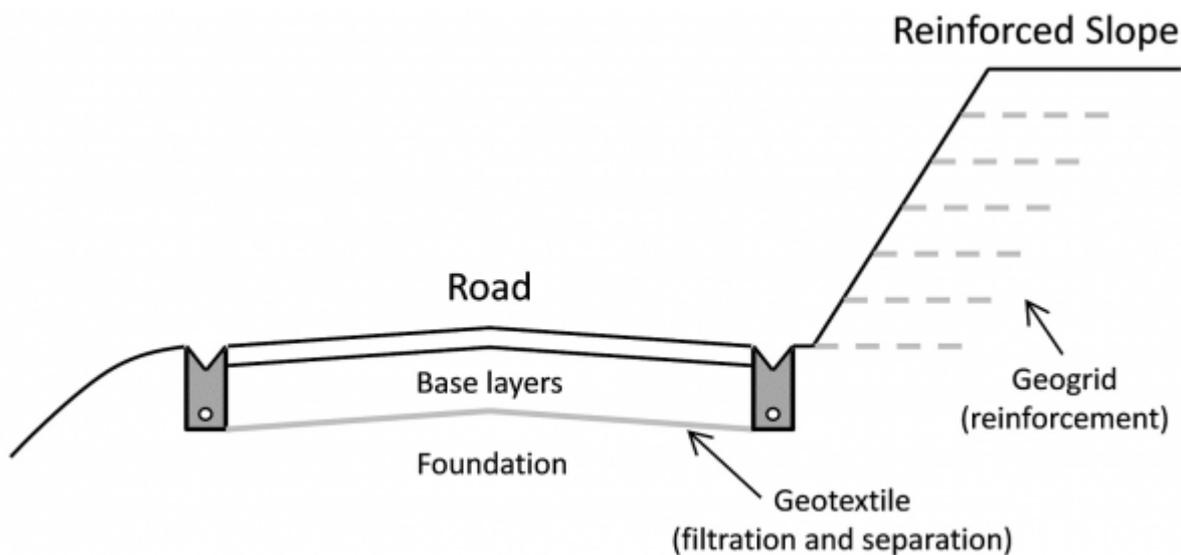
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Geosynthetics are polymeric materials used in contact with soils, rocks and/or other geotechnical materials in civil engineering applications. These materials can be divided in geotextiles, geomembranes and related-products (like geogrids, geonets or geocomposites) and can perform many different functions, such as: drainage, filtration, protection, reinforcement, separation, erosion control or fluid barrier. Due to their versatility, the geosynthetics can have numerous applications in civil engineering works, like roads, railways, reservoirs or waste landfills.

In this work, we describe the quality control process for the selection of two geosynthetics (a geotextile and a geogrid) for application in a road. The geotextile will be applied between the base layers and foundation of the road (functions of filtration and separation) and the geogrid will be used to reinforce the slope. The main goal of the work was to evaluate if the proposed geosynthetics fulfilled the minimum requirements needed for being used in the construction of the road. For that purpose, laboratorial tests were carried out in order to determine some relevant properties of the materials. The properties of the geotextile and geogrid were in accordance with those required by the construction project and, based on that, both materials were approved.

J.R. Carneiro would like to thank Fundação para a Ciência e a Tecnologia for his research grant: SFRH/BPD/88730/2012 (grant supported by POCH/POPH/FSE funding).



Schematic representation of the road.

- **11184 | Quinoa Malting and Formulation of a Food Product with Quinoa Malt**

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Interest on pseudocereals has increased due to its high nutritional value (good quality protein and dietary fiber content) and gluten absence. Quinoa, particularly, has an excellent nutritional quality and amino acids balance and richness in unsaturated fatty acids. During malting grains are steeped, germinated and kilned. Well-conducted malting process can significantly increase nutrient bioavailability of grains.

The main objectives of this work were to optimize quinoa malting process and to produce and incorporate quinoa malt in food products.

Quinoa samples were steeped for 48h at 30°C. During 48h, steeped seeds were germinated and visually inspected, and germinated seeds were counted. Seeds were kilned on a food dehydrator for 48h at 42°C until moisture content (MC) < 5%. Malted and unmalted quinoa were incorporated in two energy bar formulations, each providing 95kcal. Its nutritional profile was estimated using food composition databases. A sensorial preference test was performed. Friedman test was applied to determine the significance between the preference scores of the bars. Differences were considered statistically significant when $p < 0,05$.

During 6h of steeping MC increased 89.6%. The optimal germination time defined was 24h (76% seeds germinated). After 8h kilning it was determined to be possible to increase temperature. There were no statistically significant differences between the preference of the tested bar formulations. It can be given nutritional claims to a 21g bar.

- **11146 | Reactivation of mutant p53 by tryptophanol-derived oxazoloisindolinone derivatives**

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The p53 tumor suppressor regulates crucial genes involved in several cellular processes, including DNA repair, apoptosis and cell cycle. p53 mutations, which lead to nonfunctional proteins, are frequent events in human cancer. Accordingly, reactivation of mutant p53 (mutp53) is a promising anticancer strategy. In a previous work, the tryptophanol-derived oxazoloisindolinone SLMP53-1 was identified as a wild-type and mutp53 reactivator, using a yeast-based screening assay, with potent in vivo antitumor activity [1]. Subsequently, two derivatives of SLMP53-1, with in vitro tumor growth inhibitory activity, were also identified in yeast-based screening as new reactivators of mutp53. The reestablishment of the DNA- binding ability to mutp53 by these derivatives was further confirmed by TransAM assay.

[1] Soares, J. et al (2015). DOI: 10.18632/oncotarget.6775

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- **11004 | Reactivity of rat colon: influence of gender**

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Aim: To characterize the reactivity of the rat colon to acetylcholine (ACh), angiotensin II (Ang II) and potassium (KCl) and to evaluate if it depends on gender.

Methods: Male and female Wistar rats with 10-12 weeks were sacrificed by decapitation and strips of distal colon were mounted in organ baths, oriented along the longitudinal (LM) or the circular (CM) muscles. Isometric responses to ACh, Ang II and KCl were obtained. Statistical analysis was done by Student's t test.

Results: The contraction of the CM was higher than that of the LM for KCl (males: 2 times higher, females: 3 times higher; $p < 0.05$ for both) and ACh (males: 3 times higher, females: 4 times higher; $p < 0.05$ for both), although the difference didn't reach statistical significance for Ang II (males: 2 times higher, females: 3 times higher; $p > 0.05$ for both). For the LM, the response to KCl, ACh and Ang II was similar between males and females while for the CM, reactivity to KCl was higher in females than in males (1,4 times higher, $p < 0.05$), although the reactivity to ACh or Ang II was similar between genders.

Conclusions: The CM of the rat distal colon contracts more than the LM. The contraction of the LM seems to be independent from gender, but females show higher contraction capacity of the CM, although not for ACh or Ang II.

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- **11260 | Relationship between the nutrition status, level of depression and food satisfaction of home care users**

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The aim of this study was to evaluate the nutritional status of home care users (SAD) of a servisse from a northern area, as well as their satisfaction with the food service provided, taking into account social and level of depression conditions.

We conducted an observational descriptive study of cross-sectional design. The sample was composed of 54 users SAD, constituting 51% of the population who enjoys the service, to which was applied: 1) the Mini Nutritional Assessement (MNA); 2) structured questionnaire of indirect application, with single or multiple answer questions, to collect socio-demographic information and assessment of satisfaction with the food service; 3) Geriatric Depression Scale Short Form (GDS-15).

Data analysis revealed a percentage of malnourished users of 31.5% and a statistically significant association between nutritional status and level of depression. Most respondents expressed satisfaction with the meals served by the institution. Malnourished users had a lower level of satisfaction although this difference was not statistically significant.

The present research results highlight the urgent need to assess and monitor the nutritional status along with the level of depression, in order to define effective and practical intervention strategies to improve the quality of life in this population.

- **10969 | Resistance of a PP/PET geocomposite against acids and alkalis**

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Geosynthetics are construction materials applied in many civil engineering infrastructures. In their applications, the geosynthetics may be exposed to many degradation agents, like liquids (acids, alkalis, seawater or leachates), high temperatures, oxygen or atmospheric agents. The geosynthetics must often perform their functions for a long period of time (up to 100 years) and therefore they must be resistant against degradation.

This work evaluates the resistance of a geosynthetic (a geocomposite formed by a nonwoven polypropylene (PP) geotextile reinforced with polyethylene terephthalate (PET) filaments) against acids and alkalis. For that purpose, the geocomposite was immersed in sulphuric acid and sodium hydroxide solutions with different concentrations, at different temperatures and during different periods of time. The degradation occurred in the geocomposite was assessed by comparing its tensile behaviour before and after the immersion tests.

The immersions in sodium hydroxide caused relevant reductions in the tensile strength of the geocomposite due to the hydrolysis of the PET filaments. The rate of hydrolysis depended on temperature and on the concentration of sodium hydroxide. By contrast, the immersions in sulphuric acid did not led to important changes in the tensile behaviour of the geocomposite.

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- **10968 | Resistance of geosynthetics against mechanical damage under repeated loading and abrasion**

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Geosynthetics are polymeric materials applied in many civil engineering structures, like waste landfills, roads, railways or reservoirs. In their applications, the geosynthetics can be in contact with some agents capable of having a negative impact on their short and long-term behaviour. The most common types of degradation of these materials include: installation damage, abrasion, creep, action of liquids, oxidation and weathering. Since the expected lifetime for geosynthetics is often high (in some cases, over 25 years), they must have a good resistance against degradation.

This work evaluates the resistance of some geosynthetics (three geotextiles and a geogrid) against mechanical damage under repeated loading (laboratorial simulation of installation damage) and abrasion. For that purpose, initially, the geosynthetics were exposed separately to each degradation mechanism. Then, the geosynthetics were exposed successively to both degradation mechanisms (in order to evaluate the occurrence of synergic effects between them). The damage occurred in the geosynthetics (in the degradation tests) was evaluated by tensile, static puncture and, when applicable, by water permittivity tests. Both degradation mechanisms caused relevant changes in the properties of the geosynthetics; synergisms between them were also found.

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- **11165 | Review: Methods of collection and analysis of DNA in semen stains on textiles**

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One of the most prevalent crimes in our society are sexual assaults (SA). If the perpetrator is male, semen detection can be extremely important because it is an excellent source of DNA which allows us to analyse the DNA profile and help in the identification. In these crimes the analysis of textiles in laboratory is very common. Semen can drain from the victim's vagina to her clothing or bed linen or can be retained in some cloth that the criminal or the victim used to clean up after the act.

Laboratories have been facing problems in textiles analysis due to the dyes used in their composition or due to the high spacing of the fibres, which leads to minor biological material retention for examination. Denim, in particular, is a twill fabric in which the blue hue is determined by the level of indigo dye present, a known PCR inhibitor. The most common methods of collection biological traces in textiles are by cutting the textile and analyse directly, using a swab in the area of interest or using an adhesive tape, pressing repeatedly onto the surface. Therefore, it is important to standardize the methods of analysis in different types of cloths, in order to ensure greater efficiency in the collection and analysis of biological evidence in SA.

- **11321 | Revisiting the guppy sex differentiation – A first step in producing sterile specimens**

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Larvivorous fish have been widely used as a biological control of mosquito populations. For this aim, an optimal agent should be self-replicating, have a preference for the target population and be adaptable. The ovoviviparous guppy (*Poecilia reticulata*) meets such criteria. Yet, the reasons that make it a good agent are those that potentiate it as an invasive species threatening biodiversity. To avoid this caveat, the introduction of sterile specimens could be an option. As to feeding habits, male guppy eat more per peck and females eat for a longer period of time. In view of this, producing all-female progeny could be the best approach to ensure not only that introduced fish would not be invasive but also that vector control would be maximized. With all this in mind, our study aims to create sterile guppies. The baseline method is one tested in oviparous fish species. The rationale is to disrupt the neuro-endocrine pathways key to sex differentiation, viz. by interfering with GABAergic signalling at critical times. Also, regardless of making sterile fish, we aim phenotypical feminization. Therefore, treatments with feminizing hormones will be assayed too, viz. using 17 α -ethinylestradiol. Because there are knowledge gaps on the guppy sex differentiation - with only one detailed article dating from 1936 - we started by studying early gonadal development and will present histological data at IJUP.

Acknowledgments: C Lopes, F Malhão, PE Carvalho & TV Madureira.

- **11016 | Rifampicin Electrochemical Oxidation at the Surface of Screen-Printed Electrodes**

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Tuberculosis (TB) is a multisystemic disease caused by *Mycobacterium tuberculosis*, being one of the oldest infectious diseases affecting the humankind and the second leading cause of death from infectious disease worldwide. First-line anti-TB drugs include isoniazid, rifampicin (RIF), pyrazinamide, ethambutol and rifabutin, which are used in a multi-drug combination strategy, being their administration associated with several side effects. In this context, the levels assay of anti-TB drugs is essential for effective therapeutic dosages, being highly desirable to develop a simple, sensitive, robust and cost-effective method for the sensitive analytical detection of these compounds.

In this work, the electrochemical behaviour of RIF on screen-printed electrodes (SPEs) is explored at the surface of different working electrodes. The drug undergoes on a complex redox process that was studied by cyclic voltammetry and square wave voltammetry techniques. Initial results suggest that despite their disposability, SPEs exhibited high stability, reproducibility and repeatability, allowing the detection of RIF with low limits of detection within a large linear dynamic range, offering a promising alternative for the analysis of these drugs in micro-volumes of complex samples in portable sensors for decentralized analyses purposes.

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- **11135 | Rigor mortis evolution in mice under constant temperature/humidity environment conditions**

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In rodent animal house facilities knowing how to estimate time of death (TOD) is of the utmost importance. Interestingly, is difficult to find correct information regarding rigor mortis onset, development and resolution in mice. Considering these difficulties we decided to determine rigor mortis evolution in *Mus musculus* under stable environmental conditions. All animals were housed and maintained in accordance with Portuguese DL nº 113/2013. Cardio-respiratory arrest (CRA) was induced by a single intraperitoneal administration of pentobarbital sodium (300 mg/Kg). All animals were kept under stable temperature (20.62 ± 0.52 °C, n=6) and relative humidity ($44.17 \pm 1.57\%$, n=6) conditions. Preliminary results indicate that in these environmental conditions rigor mortis began just 10 minutes after CRA, blocking temporomandibular joint (TMJ) movement. During the next 100 minutes muscle rigidity spread to the neck, forelimbs, hind limbs and finally reached the tail. Rigor mortis was fully developed 4 hours after CRA. Muscle stiffness was maintained for approximately 24 hours, but TMJ took more than 28 hours until complete resolution. These preliminary results suggest that finding a mouse with rigor mortis may indicate that the TOD (under typical animal house facility environmental conditions) occurred 4-24 hours ago. Further data will help us to obtain reference values for rigor mortis evolution in mice and to achieve more accurate information regarding the TOD.

- **11288 | Role of mTOR pathway in differentiated thyroid cancer**

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mTOR, a serine/threonine kinase, can be regulated by several stimuli leading to activation of PI3K/Akt, but also AMPK and MAPK signaling pathways. Its activation yields two distinct complexes: mTORC1 and mTORC2. C1 participates in ribosomal biogenesis via activation of S6, and mRNA translation; C2 participates in cytoskeleton organization via activation of PKC α , and cell migration and survival via activation of Akt ser473.

Previous studies showed mTOR pathway activation in several tumors, and its association with distant metastases and overall poor prognosis. In TC, overactivation of the pathway is observed in tumors, but the consequences of such activation in tumor behavior and patient prognosis remain unknown.

The aim of this work was to evaluate the activation of mTOR pathway in PTC and investigate possible associations with clinico-pathological, molecular features and prognosis. We analyzed the expression of two activated proteins in the pathway: pmTOR ser2448 and pS6 ser235/236 in TC.

Results showed pmTOR expression was associated with presence of extrathyroid extension, distant metastases and persistence of disease. In turn, pS6 expression was associated with better prognostic features. No correlation was found between both markers.

The results suggest that pmTOR is a promising indicator for aggressiveness in TC, whereas data on pS6 was inconsistent. Taking into account the distinct behavior of both markers, the preferential formation of mTORC2 in TC is discussed.

- **10846 | Scale-up synthesis of promising antifouling compounds**

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In our group three sulfated compounds (XGS, RS, and AGS) were synthesized [1-3] and promising results were obtained concerning the antifouling activity (unpublished results). Long standing desirable properties of bioactive compounds that affect their ultimate choice as promising antifouling agents include water solubility, low bioaccumulation, biodegradability and low ecotoxicity. To estimate these parameters, first steps on the scale-up synthesis of these three hits were performed. Different conditions were applied to Koenigs and Knorr glycosylation and sulfation. Concerning the synthesis of XGS, glycosylation with acetobromo- α -D-glucose and silver carbonate at room temperature in acetonitrile was more feasible for scaling-up and with a shorter reaction time than the previous applied phase-transfer catalyzed glycosylation. Also the synthesis of the sulfated derivative AGS was improved with the use of microwave irradiation which allowed achieving low reaction times and high yields. The structure elucidation of the synthesized compounds was established by IR and NMR and was accordingly to the previous described [1-3].

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- **11232 | Sensory Evaluation of Pharmaceutical Formulations**

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An important factor in pharmaceutical development is the taste, however it is often overlooked.

The taste is defined by combination of sensory perception between gustatory and olfactory system. Gustatory and olfactory system are chemical senses that detect the sensations by interaction of molecules with their receptor and propagate up to the cerebral cortex.

The importance of taste lies in the fact that it allows an individual to select specific substances according to their needs and taste preferences.

As such, palatable formulations are preferred because repulsive flavors may lead to rejection of therapy, especially in the pediatric population.

Many of the currently available drugs have an unpleasant taste, predominantly bitter.

These features can be eliminated or minimized by various technologies classified in physical, chemical, and physiological/psychological methods, by minimizing the contact of the unpleasant taste of the active ingredient with taste buds, and/or adding corrective agents.

Current methods used to evaluate the bitterness of active substances comprise mainly evaluations by sensory panel. However, other techniques have been described as the animal model, BATA, the spectrophotometry and the electronic tongue.

However, all currently available techniques have limitations. So the sensory analysis with EEG can be an alternative in these studies.

- **11043 | Serine derived surfactants-Lipoic acid conjugates: New synthetic methodologies and physicochemical properties**

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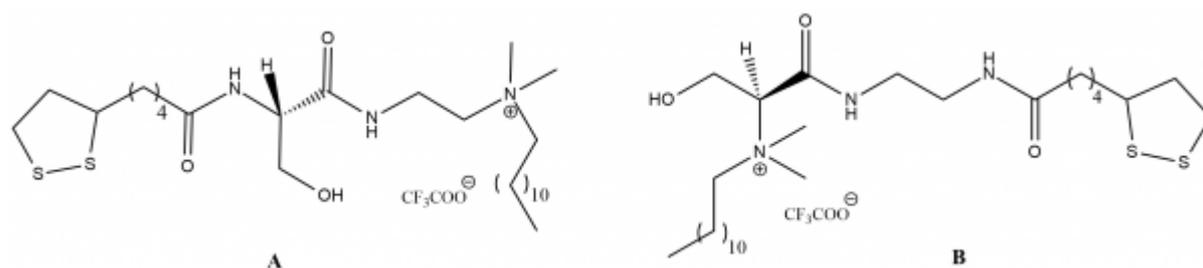
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Amino acid derived surfactants present enhanced biological and physicochemical properties when compared to conventional surfactants, and therefore show promise for drug or DNA delivery in biological systems. More recently, efforts have been made to functionalize such compounds with molecules possessing antioxidant, anticarcinogenic or targeting properties, in order to improve their biocompatibility as well as increase their biological activity.

In this context, our research group has developed a methodology for the obtention of conjugates of serine derived surfactants with lipoic acid. However, the method suffers from low yields, mainly in the last reaction step, compromising thus the whole process.

Therefore, in the present work we describe the establishment of a new synthetic methodology for the two serine-lipoic acid derived surfactants A and B (Figure 1), which differ in the position in which the lipoic acid moiety was introduced. Subsequently, the influence of the relative position of the different groups on the physicochemical profile of these novel surfactants will be evaluated. So far, one of the target compounds has been synthesized, with improved efficiency compared to the method previously used.



A- N-[2-((2S)-2-(5-(1,2-dithiolan-3-yl)pentanamido)propanamido)-3-hydroxyethyl]-N-dodecyl-N,N-dimethylammonium trifluoroacetate; B- N-((1S)-1-[2-(5-(1,2-dithiolan-3-yl)pentanamido)ethylcarbamoyl]-2-hydroxyethyl)-N-dodecyl-N,N-dimethylammonium trifluoroacetate

- **11124 | Serotonergic Fibers Sprouting and Epileptogenesis**

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Epilepsy, Medial Septum, SERT, Hippocampus

Temporal lobe epilepsy is a common seizure disorder associated with hippocampal sclerosis - loss

The medial septum (MS) is a prosencephalic structure known to project to hippocampal interneurons. It receives serotonergic afferents from the reticular formation (RF). The goal of this study is to elucidate whether this RF-MS serotonergic collaterals are increased in epileptic rats.

Status epilepticus (SE) was induced in one group of rats using kainic acid, whereas another group served as control. Three months later, all rats from SE group showed spontaneous recurrent seizures.

In the MS, the density of SERT varicosities was similar in control and epileptic rats, as well as their cross-sectional area. However, in both groups, two varicosity populations could be distinguished - large and small.

In the epileptic group, there was an increase in the density of large SERT varicosities in the MS that could be explained by median raphe nuclei fibers sprouting.

- **10991 | Sleeping Beauties in International Economics and International Business**

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The phenomenon of a 'Sleeping Beauty' or 'Delayed Recognition' consists in a paper that is 'asleep' for a certain amount of time and, suddenly, gains a lot of attention, being 'awakened by its prince'. Although the papers about SBs are not very extensive, they have analysed the phenomenon through different perspectives: conceptual, empirical analysis and modelling. Based on the fact that no study on SBs exists in the fields of International Economics (IE) and International Business (IB), and given that such existence would allow a discussion about these fields' characteristics and citation flows, the present study provides an investigation on the SBs in such stimulating areas of research.

The specificity of IE and IB fields required some methodological adaptations to existing methods of finding into the SB. Resorting to citation and co-citation analyses applied to a sample of 19419 papers, 12 SBs were found. This represents 0.06% of the sample which reinforces the common argument that SBs is an indeed rare phenomenon. SBs and their princes involved a total of 19 different journals, the majority of which stands in the top 30 most influential journals in their corresponding scientific area and 10 distinct sub-topics within IE and IB. Differently from what has been stressed in the literature about SBs, the majority of SBs in IE and IB presented more than one 'awakening time' and were composed by 'clusters' of princes instead of a single prince.

- **10904 | Social networks of Individuals in Poverty Situation - Case Study in Matosinhos**

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Poverty is the most studied phenomena and analysed in the literature in the field of sociology, economics, geography among others sciences. One who is "poor" or "excluded" is seen as someone who lacks something, almost always something material or linked to the lack of income. This being true, we should not forget that poverty goes beyond this framework to include other components that further complicate this process like, emotions, relationships, conduct and behaviour of individuals that are in poverty. It is aim of this study bring relations to the centre of analysis, not excluding the attributes responsible for poverty, since they both influence each other continuously. To give shape this goal is intended to go down with a Network Analysis study, associated with poverty of groups such as the homeless and families in high poverty. Studies of this type are reduced but already the subject, of much international attention and are crucial to understand the relational dimension of poverty and in a much more detail the relationship patterns that surround individuals. For gathering information, we used a survey that were initially do to a number of social institutions for open contact with the target audience of this study, which is also the target of another survey. The objective of this study is to clarify the influence that social networks have on the understanding of poverty processes.

- **10983 | Solid lipid nanoparticles for specific delivery of rifampicin to alveolar macrophages**

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Tuberculosis (TB) is an infectious disease caused by the bacillus *Mycobacterium tuberculosis* (MTB). MTB enters the respiratory airways tract and the infectious bacteria penetrate to the alveoli, where they are phagocytized by the alveolar macrophages (AMs). Particularly, MTB has the remarkable capacity to survive within the hostile environment of the acidic vesicles phagosomes and phagolysosomes, where the bacteria are located inside the AMs. The objective of the present work was to develop a delivery system for the pulmonary administration of the first-line anti-TB drug rifampicin. The solid lipid nanoparticles (SLNs) were synthesized by ultra-sonication method and were characterized concerning diameter, polydispersity index, zeta potential, entrapment efficiency, stability studies, Fourier transform infrared spectroscopy, differential scanning calorimetry, transmission electron microscopy and in vitro drug release studies. The produced SLNs possess adequate physicochemical properties, including an appropriate size for lung deposition, validating the proposed pulmonary route of administration. The obtained results suggest that the developed formulations are suitable carriers for pulmonary administration of rifampicin, allowing a selective targeting of the drug inside the AMs.

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- **10978 | Solid state fermentation of Brewers Spent Grains with *Aspergillus* sp for upgrading nutritional value.**

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Brewers' spent grain (BSG) is the solid residue left after the separation during the brewing process. It is the major by-product of the brewing industry, representing around 85% of the total by-products generated. However, the BSG inclusion in animal feeds are restricted to some species due to anti-nutritional factors, mainly non-starch polysaccharides. BSG may be improved by fungal fermentation, through the process known as solid-state fermentation (SSF) that allows the lignocellulolytic biodegradation of agricultural by-products. During this process, the by-product are partially digested by the enzymes produced by fungi and the produced enzymes and fungal biomass remains within the substrate, so the final product composition may have an added-value for high trophic level species.

The aim of this study is to improve the nutritional quality of BSG, through SSF using *Aspergillus* species. For that purpose the SFF process was optimized using 10 g of dry solid substrate, the moisture level was adjusted to 75%, inoculated with 2 mL of spore suspension and incubated at 30 oC for 7 days.

The nutrient composition of ingredients before and after the fermentation was analyzed, as well as the enzymes activity in the fermented ingredients. The protein content of fermented BSG increased due to enzymes produced by the fungi. The content in total phenols and reducing sugars also increased. The exogenous enzymes xylanases and cellulases were also detected on the fermented substrates.

- **11083 | SOX2 as a prognostic marker of treatment response in gastric cancer patients**

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Gastric cancer is the fifth most common cause of cancer worldwide, with a prognosis that remains poor. Novel prognostic biomarkers are urgently needed, which reliably distinguish different biological behaviors of the tumor and predict the treatment response in these patients. In a previous study, we proved that the expression profile of SOX2 and CDX2 allows to stratify patients into groups with different clinical prognosis. Our aim is to study if SOX2 can be used as a prognostic marker of treatment response in gastric cancer patients.

SOX2 protein expression was assessed by immunohistochemistry in 269 gastric adenocarcinomas. SOX2 expression was analyzed in relation to clinicopathological, treatment and survival data.

SOX2 was found expressed in 44% of gastric adenocarcinomas. SOX2 expression did not significantly associate to any clinicopathological features, though a tendency is observed concerning male gender, TNM stage \geq II, T stage T3/T4 and vascular invasion, however not reaching statistical significance. Furthermore, SOX2 expression stratifies groups with differential response to chemotherapy regimens with 5FU + cisplatin and capecitabine + oxaliplatin, where patients with positive tumors behave much worse and much better, respectively. This may hold promising in future treatment options and have great impact on better patient care.

- **11052 | Standing out or blending in: Are pipefish males able to reduce developmental heterogeneity within the brood pouch?**

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The family Syngnathidae is characterized by the unique phenomenon of male pregnancy, an extreme form of paternal care translated into protection and nourishment of developing embryos. In several syngnathid species, males are able to receive eggs from different females, and larger males display higher multi-maternity rates from mating with different size females. Larger females produce larger oocytes, likely to originate larger juveniles. Therefore, the male's brood pouch is a likely arena for post-copulatory sexual selection. Here, using the black-striped pipefish, *Syngnathus abaster*, we aimed to understand whether males are able to compensate for female's oocyte investment. This will be accomplished by measuring embryos in pregnant males in order to assess heterogeneity in the brood development. Our null hypothesis is that males do not compensate for female's initial investment in reproduction and embryo development heterogeneity is a direct result of differential female investment. Alternatively, if males are able to compensate female's investment, embryo development heterogeneity should be lower, especially in larger males that consistently show higher reproductive success. Understanding if males are able to differentially allocate resources to developing embryos of different females is key to allow for the unraveling of new processes underlying male post-copulatory selection.

- **11211 | Study of the behavior of pulses during soaking and cooking: sensory and instrumental analysis of the texture**

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Introduction: Pulses, due to their high protein content, represent an alternative source of protein. The soaking and cooking are essential procedures for increasing the bioavailability of nutrients and decreasing anti-nutrients content.

Objectives: The main objectives of this research were to evaluate the water uptake of pulses during soaking and to study the effect of cooking time on pulses texture.

Materials and methods: Samples from 14 varieties of pulses were soaked and moisture content was assessed at different time points. Peleg's model was fitted to experimental values. Samples from 3 varieties of pulses (red bean, cowpea and chickpea) were cooked and the effect of cooking time on texture and texture preference was evaluated using a texturometer and a sensorial panel of 21 untrained individuals, respectively. Pearson correlation coefficients and Friedman test were applied.

Results: The adequacy of Peleg's model to the soaking behavior of pulses increases as the permeability of the testa increases. The volume, density and weight of pulses significantly affect the rate and the capacity of water absorption during soaking. In general, increasing cooking time decreases firmness of the pulses increasing the sensorial preference.

Conclusions: The determination of an optimal firmness value for each pulse can serve as a basis for creating a system/ device to control and standardize quality during the cooking.

Keywords: pulses; soaking; texture; cooking; sensorial analysis

- **11131 | Study of the diversity of actinomycetes isolated from a coastal marine sediment**

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The human health is constantly being challenged with several ailments, and for many of them there is still no effective treatment. This problem is exacerbated with the widespread environmental pollution and with the emergence of antibiotic-resistant bacteria. It is thus essential to search for alternative treatment solutions, including the discovery of new bioactive substances.

Actinomycetes are a group of bacteria very proficuous in the production of bioactive compounds with high industrial and pharmaceutical interest.

This study aimed to investigate the diversity of actinomycetes in a coastal marine sample and their potential to produce bioactive compounds. The coastal marine sediment was collected in Parque Natural do Litoral Norte Esposende. In order to increase the success of actinomycetes isolation, three different pre-treatments were tested and three selective culture media were used. The obtained isolates were identified by 16S rDNA sequencing. A total of 140 isolates was obtained. 16S rDNA results obtained to date showed the isolation of several actinomycetes species as well as species belonging to the phylum Firmicutes. These isolates will be soon studied for their ability to produce bioactive compounds.

- **11019 | Study of the Electrochemical Behaviour of the First-Line Anti-Tuberculosis Drug Ethambutol**

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Ethambutol (ETB) is a first-line drug used in chemotherapy of tuberculosis (TB), a disease caused by *Mycobacterium tuberculosis* and one of the oldest infectious diseases affecting humankind. First-line anti-TB drugs include isoniazid, rifampicin, pyrazinamide, ETB and rifabutin, which are used in a multi-drug combination strategy, being associated with numerous side effects. Thus, the assay of anti-TB drugs levels is essential for effective therapeutic dosages and has encouraged the development of many methods for its determination. However, most of the reported techniques require complex pretreatment steps, long response times and expensive apparatus, being highly desirable to develop a simple, sensitive, robust and cost-effective method for the sensitive analytical detection of anti-TB drugs.

The objective of this work is to study the electrochemical behaviour of ETB on screen-printed electrodes, at the surface of different working electrodes (platinum, gold, bare-carbon, graphene-carbon and carbon nanotubes-carbon). The drug undergoes an irreversible oxidation process that was studied by cyclic voltammetry and square wave voltammetry. The method allowed the determination of ETB with low detection limits and notable reuse performance. The outcome of this work provides the basis for the development of an electrochemical sensor for the first-line anti-TB drug ETB.

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- **10948 | Synthesis of a natural marine antifouling compound**

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Marine natural products have been considered as one of the most promising sources of antifouling compounds in recent years. Zosteric acid (ZA, p-sulfated cinnamic acid, Fig. 1) derived from the marine angiosperm *Zostera marina*, has received much attention as a potential antifouling natural compound.¹ ZA is fully biodegradable and possesses a half-life in seawater of a few days but has high water solubility and its release from conventional antifouling paints is difficult to control.¹ In our group a series of sulfated small molecules were synthesized and promising results were obtained concerning antifouling activity (unpublished results). In order to compare the antifouling potency of the synthesized compounds with ZA, the synthesis of this natural product was undertaken from the available precursor, p-coumaric acid (CA, Fig. 1).

To achieve this goal, pyridine sulfur trioxide adduct ($\text{SO}_3 \cdot \text{Py}$) was firstly used to react with CA, accordingly to the described in literature.¹ In this work some technical procedures were made in order to improve the method, such as: the conventional heating was changed for microwave irradiation; due to toxicity issues, triethylamine sulfur trioxide adduct ($\text{SO}_3 \cdot \text{TEA}$) was later applied instead of $\text{SO}_3 \cdot \text{Py}$; with these conditions, a more rapid and friendly synthesis was achieved.

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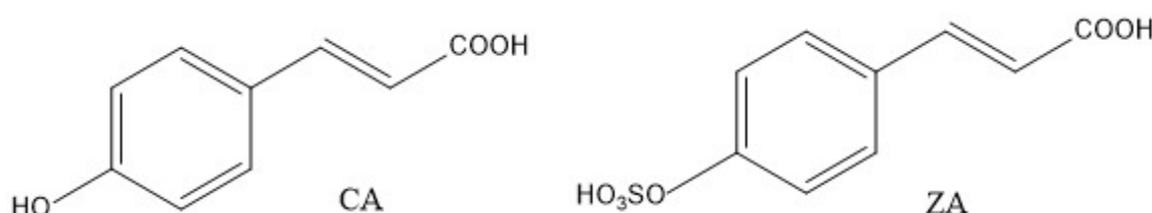


Fig. 1 Structure of p-coumaric acid (CA) and zosteric acid (ZA).

- **10930 | Synthesis of new chiral derivatives of xanthenes in enantiomerically pure form**

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Chiral compounds are of great interest and comprise an area in continuous development in Medicinal Chemistry [1]. Considering the group of compounds of the family of xanthone derivatives (Fig. 1), there are a large variety of natural and synthetic compounds [2] but only few examples with a chiral moiety.

In a previous research we have described the ability of chiral derivatives of xanthenes (CDX) to inhibit the growth of three human tumor cell lines [3]. Moreover, some of them exhibited results showing enantioselectivity on the evaluated cell lines.

The aim of this work was to synthesize new CDX in enantiomerically pure form in order to enlarge our library of bioactive compounds and to investigate the enantioselectivity in antitumor activity.

Herein, the new CDXs were successfully obtained by coupling a xanthonic chemical substrate with enantiomerically pure building blocks. The structure elucidation of the synthesized compounds was accomplished based on spectroscopic methods (IR and ¹H NMR).

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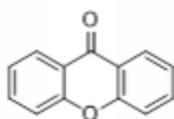


Figure 1. Xanthonic scaffold.

- **10877 | Synthesis of new thioxanthone derivatives**

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Thioxanthenes (Fig. 1) are S-heterocycles with a dibenzo-g-thiopyrone scaffold with several representatives showing interesting biological properties, such as antitumor and antischistosomal activities, and recently being described as P-glycoprotein modulators [1-3]. The aim of this work was to synthesize a library of new aminated thioxanthenes and a new functionalized thioxanthone derivative which will be available for future molecular modifications.

In this study, the new thioxanthone derivative was successfully obtained by total synthesis via Friedel Crafts acylation followed by a dehydrative process. The synthesis of aminated thioxanthenes was accomplished by a copper-mediated N-arylation with an halogenated thioxanthone. The structure elucidation of thioxanthenes and precursors was accomplished based on spectroscopic methods (IR and ¹H NMR).

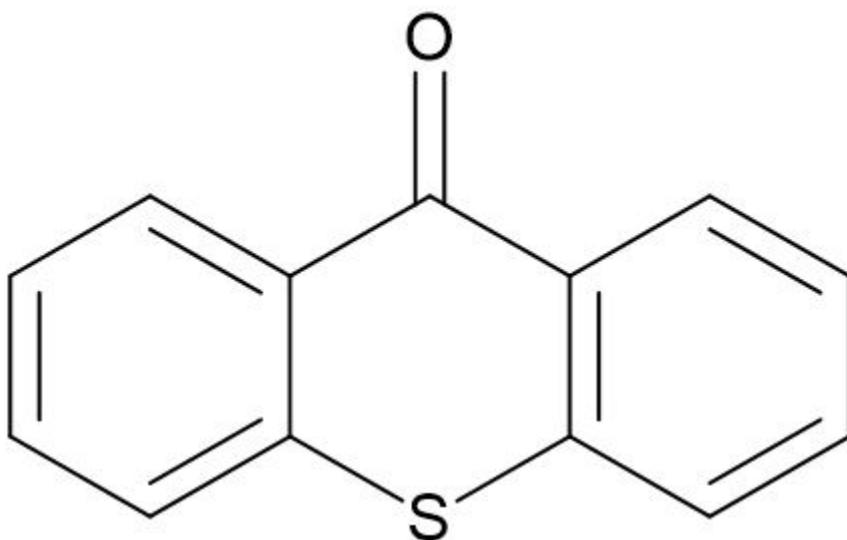


Figure 1. Thioxanthone scaffold.

- **10925 | Synthesis of Potential Bioactive Heterocyclic Chalcone Analogues**

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Chalcones (1,3-diphenyl-2-propen-1-ones) are natural flavonoid precursors that have been reviewed for their wide range of biological activities namely antioxidant, anticancer, antimicrobial, antiprotozoal, antiulcer, antihistaminic, anti-inflammatory and antifouling activities [1,2]. Taking into account these biological potential, several synthetic analogues possessing heterocyclic rings are well known and proved to be effective bioactive compounds [3]. Considering this, one natural chalcone and three heterocyclic chalcone analogues were synthesized using base catalyzed Claisen Schmidt condensation reactions via conventional and microwave assisted organic synthesis (MAOS). The structures of all synthesized chalcones were determined by NMR techniques (¹H NMR, ¹³C NMR, HSQC and HMBC).

Acknowledgments: This research was partially supported by the Strategic Funding UID/Multi/04423/2013 through national funds provided by FCT – Foundation for Science and Technology and European Regional Development Fund (ERDF), in the framework of the programme PT2020 and by the Projects PTDC/MAR-BIO/4694/2014, PTDC/AAG-TEC/0739/2014 and PTDC/DTP-FTO/1981/2014.

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- **11234 | Targeted nanostructured lipid carriers based epigallocatechin gallate delivery system to cancer cells**

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Cancer chemoprevention using phytochemicals is emerging as a promising approach for the treatment of early carcinogenic processes. Catechins and specifically (-)-epigallocatechin-3- gallate (EGCG), the major bioactive constituent in green tea, has been reported to effectively inhibit the formation and development of tumors. However, the low stability and bioavailability in the body makes administering free EGCG doses unrealistic. Therefore, the objective of this work was to design and develop nanostructured lipid carriers (NLCs) as drug delivery systems of EGCG to enhance the stability and bioavailability of EGCG. The nanoparticles were functionalized to specifically target cancer cells. The lipid nanoparticles were characterized in terms of size distribution, zeta potential and encapsulation efficiency (EE). Results showed particles with high EE and size and morphology suitable to reach the cancer cells after the oral administration of the nanoparticles.

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- **11134 | Targeting Bacterial GAPDH to Prevent Neonatal Sepsis**

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Neonatal sepsis is a serious cause of infant mortality. Group B streptococcus (GBS) and Staphylococcus spp are two of the leading agents. We showed that neonatal susceptibility to GBS is due to an inherited tendency of neonates to produce high levels of IL-10 early upon infection that are induced by extracellular bacterial GAPDH (bGAPDH). Moreover, antibody neutralization of bGAPDH protects newborn mice from GBS-induced sepsis. To avoid any possible cross-reactivity between human and bGAPDH, we developed a vaccine constituted only by surface peptides of bGAPDH, herein referred as PNV1. As GBS and staphylococcal GAPDH share high homology, we hypothesize that neutralization of bGAPDH with PNV1-elicited antibodies protects newborns from both infections.

Western blot analysis of the extracellular proteins of methicillin-resistant *S. aureus* (MRSA) and GBS showed that antibodies elicited with PNV1 recognize GAPDH from both bacteria. Hence, mice pups (<48h) were passively immunized (sub-cutaneous, sc) with 0,1 mg of PNV1-elicited IgG, 12h before sc infection with 5×10^5 CFU of MRSA or 10^6 CFU of GBS. When compared with pups that received control IgG, mice passively immunized with PNV1-IgGs showed increased survival upon bacterial challenge. Also, IL-10 KO pups infected as described above show increased survival compared to WT controls.

These results indicate that PNV1 could be used as an efficient vaccine to prevent neonatal infections caused by GBS and Staphylococcus spp.

- **10994 | The bond between pregnant fathers and their brood: do pipefish embryos gain or lose weight during development?**

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Parental care is not uncommon in fish and it can be expressed in a variety of forms, from the simplest egg guarding to more sophisticated post-fertilisation forms of care, involving osmoregulation, aeration and nutrient transference to offspring. The Syngnathidae family, characterised by the phenomenon of male pregnancy, displays one of the most fascinating forms of paternal care. Females transfer eggs into the male brood pouch, where they are fertilised and continue to grow up to parturition. The developing embryo can depend entirely on the yolk (lecithotrophy) or it can also be nourished by the nutrients provided by the brooding parent (matrotrophy: a somewhat misplaced term in the case of syngnathids where males undergo pregnancies). Lecithotrophic species tend to lose dry mass, while matrotrophic species tend to maintain or gain weight.

Using the pipefish *Syngnathus typhle*, we aim to understand if embryos gain or lose weight during development. We weighed males at different pregnancy stages to estimate brood weight alterations and understand the impact of paternal nutrient provisioning. As previous studies showed nutrient transfer to the brood in the genus *Syngnathus*, we hypothesised that embryos would gain weight. Surprisingly, we did not observe differences between the weight of the embryos at the beginning and end of their development. We discuss several possible interpretations of our results.

- **11297 | THE CULTURE OF IMPRISONMENT IN BRAZILIAN PENAL LAW AND CRIMINAL PROCEDURE**

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The "culture of imprisonment " currently experienced in Brazil , as well as Portugal , is the result of great hardening concerning criminalization policies led between the twentieth and twenty-first century in the United States and Europe. This period has brought the so-called punitive democracy , seen as the main means of segregation in the current prison system . What happened in Brazil during the 80s and 90s still has its effects nowadays. The country is now, after the United States, Russia and China, the one wich has the highest prison population in the world - 607 731 000 prisoners. The Analysis of Law 7210/84 , known as the Brazilian Penal Execution Law (LEP) , presents its main objectives related with the punishment of the criminal agent and its rehabilitation , such as: the effective implementation of the sentenced criminal penalty , in order to provide and ensure their rehabilitation and in addition to serving the sentence as justice measure. However, the picture presented by the Brazilian prison system , according to the National Penitentiary Department concerning to the conditions of prisons and jails , as well as the deficiency of the rehabilitation process through vocational training and psychological treatment of the prisoner, is the reverse of what the LEP and the Criminal Law seek as a whole. We have a state that shows its inefficiency involving aspects from the accommodation of the prison mass to recovery , rehabilitation and reintegration of the convict.

- **10973 | The demographic dynamics and the trends of population growth of the Brazilian Federative Units where the Cerrado biome is inset : 2010-2030**

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The demographic components are very important because any change on them affect spatial, economic and social aspects of a region or country.

This work aims to present the trends of population growth between 2010-2030 of the Brazilian Federative Units (UF's) where the Cerrado biome is inset. Therefore, we made population projections obtained by geometric population growth rates. This study becomes relevant because it fits in a region of great environmental, social and economic importance. The Cerrado presents high rates of degradation and, at the same time, is the main producing region of meats and grains, especially soybeans for export. The economic characteristics of the region has promoted a migratory dynamics, particularly inter-regional, which should be investigated more closely.

It was noticed that some UF's will stand out for the future population growth, as is the case of Maranhao. However, it became clear that in a general analysis, there is a clear trend that converges to reduce the population growth rate. Although only some states have been analyzed it can be inferred that this slowdown scenario of growth for the coming decades will be perceived in Brazil as a whole. It was also possible to infer that internal migration flows tend to strengthen at the expense of inter-regional flows. What is likely to contribute to the new spatial distribution of the population, a fact that may put the Midwest region in relative prominence on the national scene.

- **11002 | The diversity of bacteria in macroalgal biofilms assessed by culture based analysis and high-throughput sequence analysis**

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The surfaces of macroalgae are colonized by a diverse bacterial community that shows to be stable and specific of each macroalgal species. The main goal of this study was to analyse, by culture and molecular methods, the bacterial diversity present in the biofilm of three different species of macroalgae: *Ulva* sp., *Porphyra dioica* and *Sargassum muticum*. Through cultivation of pure bacterial cultures obtained from the macroalgae, 245 isolates were obtained. Of the 142 isolates already identify based on 16S rRNA gene analysis, Gammaproteobacteria, Alphaproteobacteria, Bacteroidetes, Planctomycetes, Firmicutes and Actinobacteria were obtained. *Vibrio* was the most abundant genus identified. The microbial diversity in samples were analysed by high-throughput sequencing of the 16S rRNA V1-V2. Proteobacteria Bacteroidetes, Actinobacteria, Planctomycetes, Firmicutes, Fusobacteria and Cyanobacteria were present in macroalgal biofilms. *Ulva* sp. and *S. muticum* presented a higher abundance of Proteobacteria while *P. dioica* showed a higher abundance of Actinobacteria, Planctomycetes, Fusobacteria, Firmicutes and Betaproteobacteria. *S. muticum* was the only alga that had representatives from the five classes of Proteobacteria and also the new Candidatus phylum OD1. In both methods Proteobacteria was the dominant group which is consistent with what has been described in the literature. This study revealed the existence of a diverse bacterial biofilm in the three macroalgae analyzed.

- **11022 | THE FLUORINATION EFFECT ON THE VOLATILITY OF IONIC LIQUIDS**

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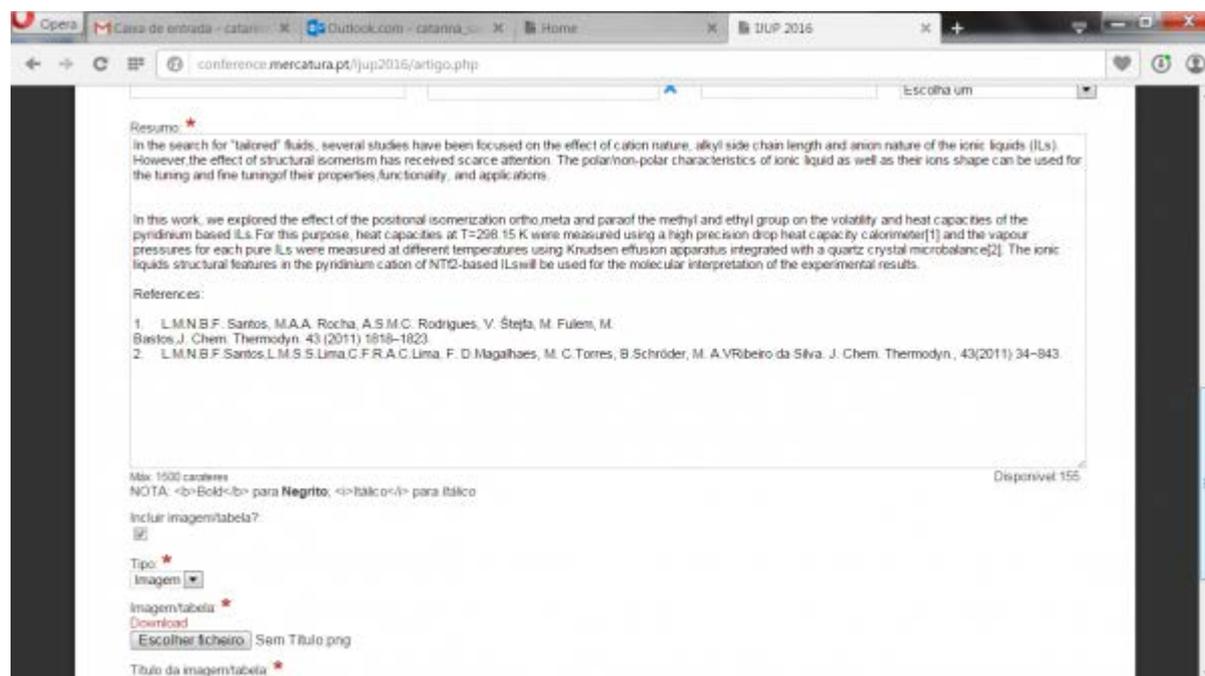
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Task-specific ionic liquids (ILs) incorporate functional groups chosen to confer particular properties and to render them useful for particular applications. Fluorinated aprotic ILs are examples of task-specific IL. The fluorination of the alkyl side-chain of imidazolium based ILs affects significantly their thermophysical properties such as density, viscosity and gas-solubility.

These ILs present a high thermal stability and resistance towards oxidation and are promising due to the expected unique and specific characteristics properties associated with the fluorination.

In this project, we explore the effect of cation and anion fluorination on the volatility, enthalpies and entropies of vaporization of imidazolium ILs. The vapour pressures of pure ILs were measured at different temperatures using Knudsen effusion apparatus integrated with a quartz crystal microbalance. The results showed that the fluorination of the cation and the anion increases significantly the volatility of the imidazolium ILs in comparison to their hydrogenated alkyl chain counterparts.

The volatility and the thermodynamic properties of vaporization of the fluorinated ILs were analysed on the basis of the molecular interactions and structure of the ILs. It was found that the volatility increase of the fluorinated ILs is entropically driven, arising from the decrease of the molecular conformational entropy in the liquid.



Ionic Liquids

- **11209 | The homemade drug “Krokodil”: chromatographic and spectroscopy studies**

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“Krokodil” is a homemade drug, fast-acting and ten times more potent than morphine. Besides the opioid effects, its users also develop extreme skin ulcerations that resembles a crocodile. Since “Krokodil” is prepared at home with commercially available materials, its chemical composition is complex and poorly understood [1]. As “krokodil” is spreading in Europe, it is important, for forensic and public health reasons, to characterize and to know the composition of this drug.

In order to study the chemical composition of “Krokodil” its street synthesis was mimicked resorting to the same materials and conditions used by street manufacturers. The chemical profile of the drug was outlined by chromatographic (HPLC and GC-MS) and spectroscopic techniques. With our data it was possible to establish the typical chromatographic and spectroscopic profiles of “Krokodil”.

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- **11091 | The influence of light quality in *Gloeothece* sp. biomass and carotenoid production – a new setup in algal biotechnology.**

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Microalgae constitute a diverse group of photosynthetic organisms with great applications in biotechnology industries due to their diversity and physiology. The algal metabolism is influenced by biotic and abiotic factors, however, as photosynthetic organisms, light exerts a crucial role. This study aims to ascertain if LED can be an alternative for the use of regular fluorescent light in *Gloeothece* sp. cultures.

Gloeothece sp. grew until reaching stationary phase under blue, red and a mix of red-blue LEDs (1:1) – and compared with one grown under fluorescent light, for a total light intensity of 100 $\mu\text{mol.m}^2.\text{s}^{-1}$, at 25°C and pH 8. Growth was monitored by optical density and dry weight, and carotenoids production was assessed by HPLC analysis.

In terms of biomass production, our results show that blue LED leads to the highest rate of biomass specific growth (μ_{max}); however, the best biomass productivity was attained under red LED, with no significant differences when compared to fluorescent light, in addition, with red LED the greatest production of carotenoids was achieved (violoxanthin, lutein and β -carotene), except for neoxanthin, which was higher under fluorescent light .

As major conclusion, rising LED improves efficiency and energy savings, so it will likely be a better choice for algal cultivation. For further works, it could be used other microalgae species as well as other wavelength LEDs to evaluate the influence in compounds production.

- **10813 | The Military Order of Santiago: a quantitative perspective throughout the Portuguese Royal Chanceries (1248-1438)**

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Since medieval times, one thing that historians are most sure about is that a king always concerned himself with the growth of institutions that could somehow endanger his power. Therefore, throughout the Portuguese history we observe the design of multiple strategies that intended to contain the growth of the Military Orders, or at least constant attempts in instrumentalizing these institutions, and binding them to the central power. That said, and assuming that the royal political agenda always inserts itself in the documentation written under the jurisdiction of each King, we're capable of perceiving the relationship between the government and any institution. The Chancery, collection of diplomas validated by the monarch or his delegates, is an exceptionally rich source for the analysis at hand. Therefore, we focused on this pool of documents, between the reign of Afonso III (1248) and D. Duarte (1438) which provided a wide range of sources for the medieval period. Summarizing, the purpose of the present investigation is to unravel the political intentions behind the Chanceries towards Santiago's Order. Rapidly we jump to the conclusion that the documents and its various typologies issued by the King to the Order are actually very meaningful and explanatory. Practicing the exercise of definition and quantification of the documents typologies in the chanceries, we hope, not only, to establish a new standpoint of the source, but also to offer a fresh approach to the subject.

- **11233 | The origin of paired appendages in vertebrates: a perspective coming from shoulder girdles development in zebrafish**

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Vertebrates have two types of appendages: (1) unpaired appendages that develop from an embryonic fin-fold running along the dorsal and ventral midlines of the embryo and (2) paired appendages that develop from the latero-ventral body wall as 4 discrete buds.

Two influential theories explain the emergence of paired appendages, the fin-fold theory and in contrast the gill arch theory.

Our aim here is to gain insight into the “true story” of paired appendage by studying appendage development in organisms close to the genesis of these structures. To this end, we are using the zebrafish model to characterize both of these theories.

We are mainly focus on the proximal elements, the shoulder girdles, because they seem to have suffered fewer alterations than more distal endoskeleton elements, therefore given a better indication about basal developmental processes.

To achieve our goals we will characterize the expression pattern of a pool of genes during pectoral and pelvic girdles development in zebrafish. The selected genes were found to produce transcription factors that influence appendicular skeleton development and seem to be differently expressed in the pectoral and pelvic shoulder girdles from tetrapods. Thus, by characterizing their expression in fish we will be able to gain insight into ancient processes behind the formation of these structures and to discuss if pectoral and pelvic girdles had their origin in homologous or homoplastic developmental processes.

- **11072 | The prevalence of psychological types in psychology professors**

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The present study aimed to investigate the relation between the psychologic types of Psychology professors of a private higher education college in São Paulo, Brazil. This study had a descriptive and exploratory character in which we has invited to participate all of 30 professors in practical and theoretical subjects of the Psychology course of a college in a country town of São Paulo state. Therefore, to the 22 professors that had accept to participate of que research was applied the QUATI test, a questionnaire to evaluate the typology, of Zacharias (1994), based on the psychological types of Jung. After that, the result was compare to the “Tabela de Profissões Mais Encontradas em Cada Tipo” (ZACHARIAS, 1994). The analysis and the processing of the results was analyze in a symbolic archetypic view by the Analytic Psychology perspective (PENNA, 2009). Among the main results, we found that the professors earn, as a main psychological function “Feeling”, detonating positive relation with the List of Zacharias (1994) to the Psychologist occupation. The result diverge when it compared to the college teacher occupation, which on had the type “Thinking” in the most prevalent typology. The hypothesis of the research about this is that psychologists teachers have chosen this occupation as a second option.

Keywords: Higher Education, Analytical Psychology, QUATI

- **11312 | The Reproductive Morphophysiology of a Nearly-Extinct Fish (*Epalzeorhynchus bicolor*) Kept Alive by Captive Breeding**

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Epalzeorhynchus bicolor is a critically endangered Asiatic cyprinid from Mekong and Chao Phraya river basins. Yet, it is a worldwide popular ornamental species. Artificial breeding is based on non-standardized/private practices, based on hormonal induction of maturation and spawning; this fish has no capacity for natural spawning in captivity. There are no articles on the species reproductive morphophysiology.

We aim to characterize its type of gonads and gametogenesis dynamics, and establish an effective protocol to induce gonadal maturation and spawning. We will use the well-known cyprinid goldfish (*Carassius auratus*) as “control”. Working with commercially raised immature male and female specimens, the reproduction-assisted method consists of hormonal conditioning of the pituitary-hypophysis-gonadal axis. We are comparing an in lab-made mixture of LHRH + a dopamine inhibitor with a commercial blend (Ovaprim) of an analogue of salmon GnRH + domperidone. Specimens will be sacrificed at some periods after intramuscular injections. Gametogenesis will be studied histologically. In addition to gains in reproductive morphophysiology, a final goal is to outline a reproducible protocol for inducing gonadal ripening with maximal fertility.

Based on a pilot histological study, we concluded that fish with 5 cm in total length and 3 g in mass already have well defined gonadal sexes, but displaying an immature status.

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- **11291 | The role of cytokinin metabolism during the seed development in *Arabidopsis thaliana***

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Seed formation is a key event in the life of plants as their reproductive success depends on it. SEEDSTICK is a MADS domain transcription factors (TF) and its heterodimers help to determine ovule identity, playing a huge role during seed development. Arabinogalactan Proteins (AGPs) are hydroxyproline rich glycoproteins involved in vital processes for plant development, like cell proliferation/differentiation, pollen tube growth and seed germination.

TFs, such as MADS-box, are process integrators connecting developmental processes as hubs in the network. The TF target gene analyses have revealed unexpected connections between previously unrelated processes, impossible to be predicted by classical genetic approaches. The CHIP-sequencing (ChIP-seq) data already published demonstrated that MADS-domain TFs bind to different genomic regions, including several genes involved in hormonal pathways.

A ChIP-seq analysis showed that AGP7, AGP9, AGP31 and FLA5 are STK targets, together with cytokinin (CK) oxidase-dehydrogenases (CKX) 6 and 7. CKX catalyse the irreversible degradation of CK. It has been clearly proved that CK has a significant role during ovule development, since in plants that are defective in the production/perception of this hormone, correct ovule formation is compromised and/or the number of ovule is drastically reduced.

Our research aims to understand the STK regulation linked with all these players and their role during seed development, especially in seed size.

- **11053 | The role of testosterone in the regulation of cooperative behaviour**

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Recent empirical research, refers that individuals' physiological state affects levels of cooperation. An individual's internal state may affect the perception and payoffs of behavioural alternatives, which in turn could influence the decision to either cooperate or to defect. However, little is known about the physiology underlying condition dependent cooperation. Here, we aim to find out if shifts in testosterone levels affect levels of cooperation in wild Indo-Pacific Bluestreak cleaner wrasse *Labroides dimidiatus*. These cleaners cooperate by removing ectoparasites from their visiting reef "client" fishes but prefer to eat client mucus, which constitutes "cheating". We exogenously administrated one of two different compounds to female adult cleaners,: (a) testosterone, (b) sham (saline), and observed their cleaning behaviour during the following 45 min, on 10 different reefs around Lizard Island, Australia. Results should provide first evidence of androgen-dependent effects to cooperative behavioural activities of this notorious cleanerfish species

- **11062 | The search for identity and the politics of recognition: some reflections**

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Considering a plurality of cultures easily perceived in our daily life, it becomes necessary to approach the subject with the challenge of taking on new perspectives for the modern world. In this way, the philosopher Charles Taylor brings us the idea of a recognition policy, which issues concern to situations that are often not dealt optimally and that have a great relevance in the legal, sociological or philosophical context, in other words, the discussion goes beyond the common sense and encompasses the relationship between people and the different cultures that surround them, and allows the reflection on this work, that even written around two decades ago, still reflecting situations experienced these days. Finally, we will analyze the idea of self-knowledge, in which the individuals must discover within themselves their origins to fight for their identities, without the other people saying what they are, without making the rule an unchanging truth, becoming essential a stronger education in relation to this aspect. Disregard the different cultures is to regrow so blindly on the point to tear all the devices that safeguard the dignity of the human person.

- **11015 | The study of grape bacterial community**

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Wine is a very important social and commercial drink, with recognized human health benefits. Microorganisms, through complex interactions, are fundamental for its production. As a consequence, an increasing amount of knowledge has been gained on their beneficial as well as deleterious effects. However, and even though there is a great microbial community commonly associated with the grape's surface, this microbiome's phylogenetic characterization and its relation to different varieties are far from being understood. In this study the grape bacterial community of two grapevine varieties from Portuguese regions Douro and Alentejo was assessed by culture and molecular methods. Several isolation methodologies were implemented which allowed us to verify the absence of bacteria in the grape pulp. Furthermore, a higher number of bacteria has been isolated from Alentejo grapes than from Douro ones. Both communities will be phylogenetically characterized based on the analysis of 16S rRNA gene and compared by Denaturing Gel Gradient Electrophoresis DGGE. Musts will also be analyzed by DGGE for comparative purposes.

- **10929 | Theoretical Optimization of the Rate-Determining Step of Coelenterazine Chemiluminescence**

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Chemiluminescence occurs when light emission results from the oxidation of a substrate in a chemical reaction.[1] Coelenterazine (Scheme 1) is a chemiluminescent substrate found in many aquatic organisms across seven phyla, and react with either molecular oxygen or reactive oxygen species (ROS), which allowed its use as a probe for ROS.[2] In this reaction (Scheme 1) there is an electron transfer (ET) from Coelenterazine to an oxidizing agent, which results in a coupling reacting with ROS to form a peroxide intermediate. This latter compound is decomposed in the light emitter. The rate-limiting step of the whole process was found to be the ET.[3]

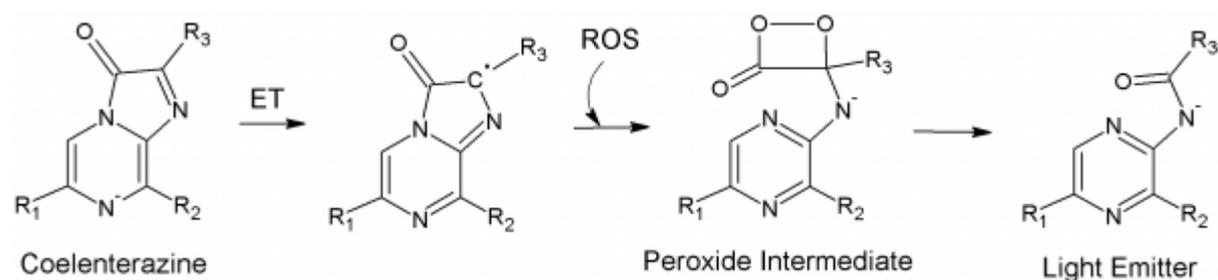
This finding indicates that the optimization of the ET step can improve the reaction rate, by decreasing the ionization energy of Coelenterazine. Thus, in this work we have studied by theoretical methods the effect of the chemical structure of Coelenterazine in its ionization energy, in order to obtain useful structure-energy relationships. This approach allowed us to predict new derivatives with lower ionization energies (a decrease up to 8.7 kcal/mol), which can be potential used in chemiluminescent reactions with improved rates of reaction.

Reference

[1] L. Pinto da Silva, J.C.G. Esteves da Silva, ChemPhysChem 2012, 13, 2257.

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Scheme 1 - Coelenterazine chemiluminescent reaction.

- **10954 | THERMOCHEMICAL STUDY OF 4-(2-ETHYLAMINO)MORPHOLINE**

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Experimental studies were performed aiming the evaluation and the understanding of the energetic effect inherent to the substitution of the hydrogen of the amino group of the morpholine scaffold by a bulky substituent (ethylamino), according the structure depicted in figure 1. This goal has been performed studying the 4-ethylaminomorpholine and comparing it with morpholine [1].

This communication reports the enthalpy of vaporization and the massic energy of combustion of the title compound, measured by Calvet microcalorimetry and static bomb combustion calorimetry techniques, respectively. These quantities were used to derive the enthalpy of formation of the 4-(2-ethylamino)morpholine in the liquid and gaseous phases, at $T=298.15$ K.

The value derived, from the experimental measurements, for the gas-phase enthalpy of formation of 4-(2-ethylamino)morpholine will be discussed and compared with those determined for other related derivatives. The structural changes and the energetic effects, associated with the substitution of the hydrogen's amino group by a ethylamino will be analyzed.

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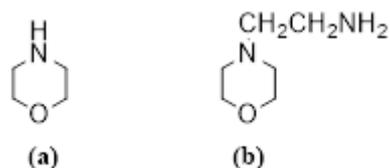


Figure 1. Structural formulae for morpholine (a) and 4-(2-ethylamino)morpholine (b).

- **10987 | Total Synthesis and Structural Elucidation of Carboxyxanthone Derivatives**

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Searching of new chiral derivatives of xanthenes (CDX) with potential pharmacological properties has remained in the area of interest of our group [1,2]. The present work is part of this study and its major aim was to obtain carboxyxanthone derivatives (XCar) as chemical substrates for the synthesis of CDX.

In this work, it is described the total synthesis of three XCar by multi-step pathways with the generic synthetic strategy involving Ullmann reaction between an aryl bromide with a phenol. However, for one XCar the diaryl ether intermediate was obtained using 3,5-dimethylphenol, picolinic acid, CuI in dimethyl sulfoxide/K₃PO₄ at 80 °C, under nitrogen atmosphere, while in the other two XCar the Ullmann reaction was carried out using 3-methoxyphenol, N,N-dimethyl glycine, CuI, in dioxane/Cs₂CO₃ at 90 °C, under nitrogen atmosphere.

The synthesis of all XCar was successfully accomplished and the structure elucidation of the synthesized compounds was established based on spectroscopic methods (IR, ¹H and ¹³C NMR).

This research was partially supported by the Strategic Funding UID/Multi/04423/2013 through national funds provided by FCT and ERDF, in the framework of the programme PT2020, UID/QUI/00062/2013 and the Portuguese NMR Network.

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[2] Fernandes, C. et al. (2012), *European Journal of Medicinal Chemistry*, 2012, 55, 1-11.

- **11186 | Toxicological mixture effects of drugs of distinct pharmacological classes in rat primary hepatocytes**

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It is common practice among misusers to consume multiple substances concomitantly. This exposure relates not only to the intentional licit and illicit polydrug abuse patterns, but also to the intake of pharmaceuticals during treatment regimens.

Our work aimed at studying the hepatotoxic mixture effects of nine recreational and pharmaceutical drugs frequently co-ingested: 3,4-methylenedioxymethamphetamine, methamphetamine, caffeine, ethanol, paracetamol, butylone, phenobarbital, tobacco and benzylpiperazine.

Primary cultured hepatocytes were exposed to the drugs, individually or in combination. The mixture ratio was selected based on the potency of the drugs (EC₅₀) to avoid disproportional contributions of single agents. After 24h, cytotoxicity was recorded by the MTT viability assay. Mixture expectations were calculated using the concentration addition (CA) and independent action (IA) models, based on the detailed cytotoxic information of the individual drugs.

Tobacco and ethanol proved to be the most and the least toxic drugs (EC₅₀ 0.14 mg/mL and 15.37 mg/mL, respectively). Mixture toxicity was reasonably predicted by CA (EC₅₀ 2.90 mg/mL and 3.01 mg/mL, respectively) while IA severely underestimated the combined effects (EC₅₀ 7.85 mM).

The tested drugs acted together to generate additive effects over a large range of concentrations. Based on CA assumptions this suggests that substantial mixture effects may arise even when each drug is present at non-effective concentrations.

• **11141 | Trends in Salmonella serotypes and clones from traded food products in Portugal**

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Salmonella isolates (n=232), from food sources and regions (2014-15) were studied for class 1 integrons, antimicrobial (antibiotic/metal) resistance genes (PCR), susceptibility to antibiotics plus beta-lactamase production (CLSI/EUCAST) and clonal relatedness (PFGE/MLST). Results were compared with data from clinical isolates.

In S.4,[5],12:i:- we observed the expansion of multidrug-resistant (MDR) “European clone”-86% with PFGE-types similar to those emerging in clinical sources and the decreasing frequency of “Spanish clone”-5%. In S.Typhimurium, “DT104”-32% and “OXA-30-producing”-15% clones were the most frequent and presented identical MDR and PFGE profiles to those described in humans. “S.Typhimurium European clone”-8%, presented similar MDR and related PFGE-types to S.4,[5],12:i:- “European clone”. In S.Rissen persists the MDR clone-36%, frequently associated with class 1 integrons. Noteworthy, in 2 S.4,[5],12:i:- qnrS1 and in 1 S.Agona qnrB1+blaCTX-M-15 genes were found (Table1).

Acquisition of antimicrobial resistance genes seems to have a relevant role for the success of particular clinically relevant MDR clones (e.g. S.4,[5],12:i:-/European clone and S.Rissen). Detection of fluoroquinolones and/or extended-spectrum cephalosporins resistance genes (qnrS/qnrB1+blaCTX-M-15) in Salmonella from food products is also of concern. Understanding the adaptive factors promoting their persistence is crucial to implementing effective strategies in food safety at global level.

Epidemiological features and genotypic/phenotypic characterization of Salmonella isolates from traded food products in Portugal (2014-2015)

Table 1. Epidemiological features and genotypic/phenotypic characterization of Salmonella isolates from traded food products in Portugal (2014-2015)

Serotype (no. isolates)	Origin ^a	Molecular markers	Metal tolerance genes	Antibiotic resistance phenotype ^b
S.4,[5],12:i:- (n=97)				
“European clone” (n=83)	Pk=Py+Bf+CF	<i>int2+int1+int1</i>	<i>pcoD+intA</i>	ASSuT
“Spanish clone” (n=5)	Py	<i>int2+int1</i>	<i>pcoD+intA</i>	ACpPNaSSuTTr ^c
	Pk=Py+Bf	<i>int1+int1+int2+int3</i>	<i>intA</i>	ACSSuT(Tr)
S. Typhimurium (n=62)				
“DT104 clone” (n=20)	Pk=Py	<i>int1+5 CS-anaA2+5 CS-bla_{TEM-1}+int1</i>	-	ACSSuT
“OXA-30-producing clone” (n=9)	Pk	<i>int1+5 CS-bla_{CTX-M-15}+int1</i>	-	ACSSuT
“European clone” (n=5)	Pk	<i>int2</i>	<i>pcoD+intA</i>	ASSuT
S. Rissen (n=31)				
“MDR clone” (n=11)	Pk	<i>int1+int1+int3</i>	<i>pcoD+intA</i>	ASSuTTr
S. Agona (n=1) ^d	Py	<i>int2+int1</i>	<i>intP+arsB</i>	ACzCxPcCpGPNsSuTTr

^aPk, pork; Py, poultry; Bf, beef; CF, cooked food. ^bPredominant antibiotic resistance phenotype. A, ampicillin; Cz, ceftazidime; Cx, cefotaxime; Fp, cefepime; C, chloramphenicol; Cp, ciprofloxacin; G, gentamicin; K, kanamycin; Na, nalidixic acid; P, pefloxacin; S, streptomycin; Su, sulfamethoxazole; T, tetracycline; Tr, trimethoprim.

^cS.4,[5],12:i:- “European clone”-ST34 (n=2) carrying *qnrS1* gene (MIC to Cp=1 mg/L) recovered from processed poultry. ^dS. Agona-ST13-eBG54 carrying *bla_{CTX-M-15}* and *qnrB1* genes (MIC to Cx=12mg/L; MIC to Cp=1 mg/L), recovered from turkey sausage.

- **10861 | Turistic Routes and Conditioned Mobility - Santo Tirso Case Study**

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This Master's thesis on tourism focused on the study and analysis of tourist routes for people with reduced or limited mobility in Santo Tirso municipality. The relevance of this study is related to the need of divulging the offers that the municipality provides with regard to walking trails, adapting them to a more specific group: people with reduced or limited mobility. Although there are several hypotheses to do the routes, this study presents the adapted vehicle Joëlette. The data collection techniques used for this study were the exploratory interviews, the collection of statistical data on the handicapped population by the National Statistics Institute, and lastly, the inventory of the existing trails in Santo Tirso.

It is also part of this work an approach to the issues Adapted Sports, Accessible Tourism and Inclusive Tourism. It was also considered important the different impacts of tourism. The analysis of tourist and pedestrian routes and their articulation with tourism in general was another of the issues addressed in this work, as well as the role of municipalities and the cases of success in Portugal.

Finally, the study area was characterized, the trails on it were inventoried, the problems on these were identified and some proposals for improvement and/or correction were suggested.

- **11005 | Vascular reactivity of the mesenteric artery and vein to vasoconstrictors and vasodilators: influence of gender**

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Aim: To compare the response of the rat mesenteric artery (MA) and vein (MV) to vasoconstrictor and vasodilator drugs and to evaluate putative gender differences.

Animals and methods: The MA and MV of male and female Wistar rats, 10-12 weeks old, were dissected and mounted as small rings in a Mulvany´s wire myograph. MA and MV were normalized to a resting wall tension of 100 mmHg and 15 mmHg, respectively. Endothelium viability was confirmed by vasodilation (>50%) induced by acetylcholine on noradrenaline (NA)-precontracted vessels. Isometric responses to potassium chloride (KCl), NA, angiotensin II (Ang II), angiotensin (1-7) (Ang(1-7)) and H₂O₂ were quantified (those of Ang(1-7) in noradrenaline-precontracted preparations). Statistical analysis was done by Student´s t test.

Results: In males, the contraction induced by H₂O₂ was $\cong 2,5$ times higher in MA than in the MV ($p < 0.05$) but no differences were observed for the other drugs. In females, the response of the MA was higher than that of the MV for KCl ($\cong 4$ times; $p < 0.05$), NA ($\cong 9$ times; $p < 0.05$) and to H₂O₂ ($\cong 3$ times; $p < 0.05$). The response to every drug tested was similar between males and females, both MA and in MV.

Conclusions: The rat MA seems to be more reactive than the MV to vasoconstrictor, but not vasodilator drugs, both in males and in females. However, the response to the drugs tested seems to be independent from gender.

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