Strategic projects

NanoTBTech – Nanoparticles-based 2D thermal bioimaging technologies

3 years; € 3M; 9 Partners

FET Open is one of the most competitive instruments of the Horizon2020 framework program and supports, among others, the early-stages of science and technology research and innovation focused on new ideas towards radically new future technologies. The NanoTBTech project, funded under the above mentioned scheme, is coordinated by UA and involves another 8 partner institutions from different sectors and 5 different countries, namely the Fundacion para la Investigacion Biomedica del Hospital Universitario Ramon Y Cajal and CSIC (Agencia Estatal Consejo Superior de Investigaciones Cientificas), Spain; CNRS (Centre National de la Recherche Scientifique), France; Institut Za Nuklearne Nauke Vinca, Serbia; Instytut Niskich Temperatur I Badan Strukturalnych IM. Wlodzimierza Trzebiatowskiego Polskiej Akademii Nauk, Poland, Universiteit Utrecht, The Netherlands and two SMEs, NANOIMMUNOTECH S, Spain, and BIOSPACE LAB, France.

The main goal of NanoTBTech is to develop a 2-D thermal bioimaging technology with submicroscopic resolution, based on nanotermometers and heater-thermometer nanostructures. The project includes the synthesis and bio-functionalization of non-toxic luminescent nanostructures, operating essentially in the optical window beyond 1000 nm for nanotermometry and nano-heating in vivo.

In addition, to monitor the temperature dependence of luminescent nanostructures, a new imaging system, to be implemented in two relevant biomedical applications, will be developed: spatially modulated intracellular magnetic / optical hyperthermia and in vivo detection, screening and tracking of cancer. It is expected that, in the long-term, this technology will have a broad impact on non-invasive clinical imaging and theranostics. For instance, the accurate measurement of temperature gradients´ sources will be an invaluable tool for real-time control of thermal therapies, thus making them harmless for the patient. Multiple conceptual breakthroughs can be further envisaged from the proposed 2D-thermal imaging system, credibly spreading its impact towards non-biomedical technological areas.

http://www.nanotbtech.eu/
https://cordis.europa.eu/project/rcn/216329/factsheet/en

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 801305.

MEDISIS : Promoting the involvement of key actors in the Central Region for the transfer of knowledge and creation of new partnerships in the areas of Systems Medicine, Regenerative Medicine and Precision Medicine

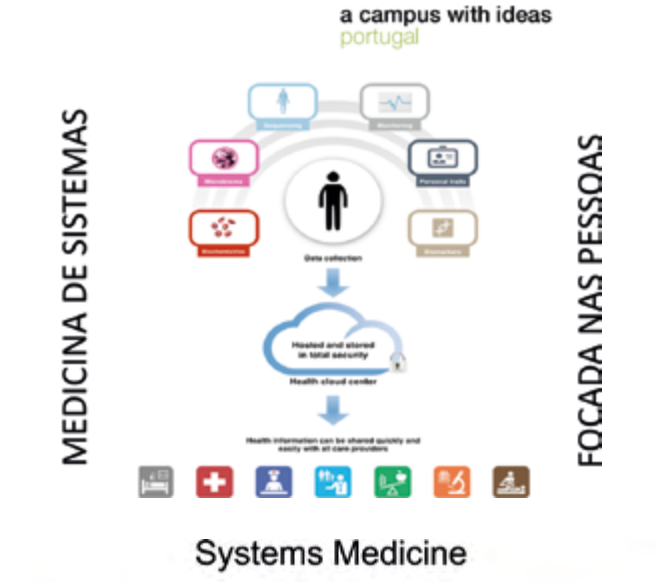
2 years; aprox. € 900 000

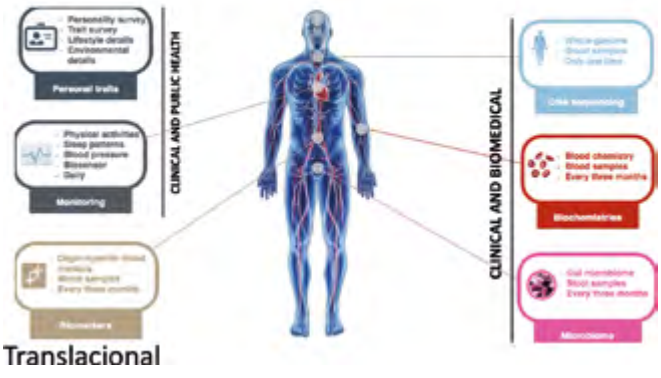
MEDISIS is a 24-month project, funded by Centro Region, whose main objective is to leverage the development of the EU TEAMING project Discoveries CTR: Discoveries Center for Regenerative and Precision Medicine.

UA was chosen by the Discoveries CTR consortium to lead the development of Systems Medicine for cardiovascular, neurodegenerative and musculoskeletal diseases. Systems Medicine focus on the study of human populations with the aim to understand their global health status and take effective actions to detect and correct early signs of disease. It is a data intensive science (BigData) that integrates curated clinical records, disease cohorts, disease biobanks and biomedical data to develop personalized therapies for everyone. MEDISIS is the basis for the development of a new wave of innovation in the health sector focused on Predictive, Preventive, Personalized and Participatory Medicine and it will take advantage of the UA skills in Digital Medicine, BigData Analytics, Clinical and Biomedical Research to mobilize the main players of the health sector.

With the MEDISIS implementation UA intends to identify R&D needs across multiple value chains, to promote the involvement of key actors of the region and transfer the existing knowledge to them and to the society, in general, and to further develop the establishment of strategic partnerships with multiple benefits for UA, Discoveries CTR and its stakeholders, in particular, and for the regional economy and society, in general. The project envisages three major activities to pursue these goals, namely 1) Mapping and raising awareness of the stakeholders of the CENTRO region in the areas of Systems Medicine; 2) Technology Scouting – Mapping and Valorization of R&D results and technologies and 3) Streamlining Participation in National and International Networks.

MEDISIS will create and strengthen the conditions for translational research, contributing for the development of new approaches to detect and correct early signs of disease through personalized and participatory medicine activities and proof of concept actions that will improve quality of life, lower health related costs and foster the relationship with the relevant regional actors, which are necessary for the success of the national Discoveries CTR.





This project has been co-funded by Centro 2020 program, Portugal 2020 and European Union, through the European Regional Development Fund.

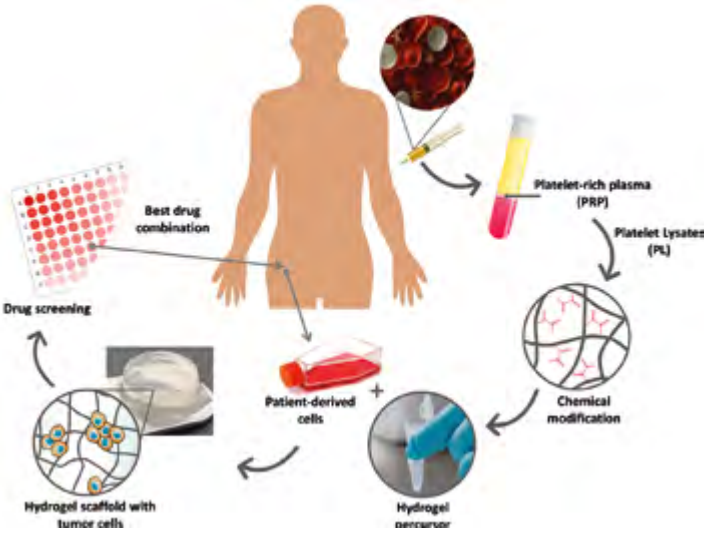
MICROBONE – Novel 3D platforms to engineer bone microtissues for in vitro disease models

17 months; € 150 000

The European Research Council grants, through the funding scheme ERC Proof-of-Concept (ERC-PoC), support activities in the initial stage of transforming results obtained by researchers with previous ERC Grants into applications with commercial potential capable of achieving economic or social benefits. Based on the new knowledge that resulted from the ERC Advanced Grant (ERC-AdG) ATLAS, Professor João F. Mano and his team, from CICECO – Aveiro Institute of Materials and the Department of Chemistry of University of Aveiro, have been working on the validation and commercial exploitation of novel human-derived hydrogels as a platform for tissue engineering applications.

MicroBone is an ERC-PoC funded project focusing on the development of a marketable model to test new treatments for osteosarcoma. Osteosarcoma is a rare but devastating bone tumour very resistant to therapy, that mainly affects children, adolescents and elderly. In vitro tumour models can recapitulate aspects of the native tumour environment and could be used to improve the predictive value of the effect of anticancer drugs, accelerating new therapies development. Therefore, MicroBone aims at the development of relevant 3D disease models that could be used as an enabling tool for personalized and precision drug discovery, increasing our understanding of the mechanisms behind osteosarcoma to test new drug-based therapies.

This prestigious grant is also supporting marketing research, quality assurance implementation, IP strategy and business planning activities of a new spin-off company created at the University of Aveiro in the scope of MicroBone. In parallel, the ATLAS project will continue with more fundamental research in the field of human tissue engineering, in particular the creation of miniaturized "living" devices capable of compartmentalizing cells and advanced biomaterials, suitable for, in a self-regulated way, promoting the formation of new functional tissue (see more recent news from ATLAS in http://compass.web.ua.pt/news_compass/3-years-of-erc-adg-atlas/).



Platelet-lysates obtained from the platelet-rich plasma fraction of the blood of a patient are chemically modified to obtain a biomaterial that can form hydrogels using light. Such hydrogels can be formed with the combination of cells of the patient, providing an adequate 3D environment to produce tumor models where new drugs can be tested. In such approach the best therapeutic solutions could be offered for this particular patient.

https://cordis.europa.eu/project/rcn/213602

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 789760.

InPaCTus – Innovative Products and Technologies from Eucalyptus Project

The InPaCTus – Innovative Products and Technologies from Eucalyptus Project' is a Research & Development Project promoted by THE NAVIGATOR COMPANY, RAIZ, the Universities of Aveiro (UA) and Coimbra (UC) and involving other research and industrial partners. The project is supported by Structural Fund managed by the Portuguese program Portugal 2020.

Inpactus, to be developed by the Consortium, aims to develop new solutions, such as cellulosic pulps with innovative features, new paper products with different specificities and functions, tissue paper with innovative properties, new bioproducts, biofuels and other materials obtained from the deconstruction and conversion of forest biomass and by-products from the pulp industry. This Project responds to challenges in the areas of Pulp, Paper and Tissue business and in the emerging area of Bio-refineries and Bioproducts. This Project aims to become an exemplary success story of University-Company cooperation, through the creation of a true Center of Excellence, multipolar and delocalized, in the area of knowledge and innovation, from eucalyptus.

It is structured in activities that will be developed over a period of 4 years, involving an investment of up to € 14,6 million (including 13.3 M€ investment from European Structural Funds), a global team of the various promoters of around 180 people (including PhD researchers, research fellows, industrial engineers and transversal areas of the company, coordinators, etc...), laboratory equipment, raw materials and consumables, acquisition of consulting services and technical-scientific assistance. The execution of this plan, together with a strategy of valorization and dissemination, will enable companies to enhance direct international sales of pulp, paper and tissue, create synergies with other sectors and end users. The consortium involved in the project will also promote the registration of around 10 patents, the publication of 100 scientific articles, the holding of 50 presentations at conferences and congresses, the creation of 4 spin-offs, the advanced training of researchers and future professionals related to Sector and the creation of 38 highly qualified jobs.

The project will thus bring a set of socio-economic impacts relevant to the national economy, promoting job creation, innovation in products and technologies in a relevant field for the country, valuing endogenous resources and sustainable industrial solutions.

This project has been co-funded by POCI 2020, Portugal 2020 and European Union, through the European Regional Development Fund.