**PRESS RELEASE**

**#H2020research4diabetes**

**Fighting diabetes: novel cell therapies** **from 3 EU funded projects presented today in Rhodes**

*16 countries, 36 among universities, SMEs and research institutions across Europe, Israel and the United States are the protagonists of the EU-H2020 funded research that is being presented today at the European Chapter Meeting 2019 of the Tissue Engineering and Regenerative Medicine International Society (TERMIS). Novel therapeutic strategies and the latest advances in insulin-producing cell transplantation technologies will be discussed.*

Rhodes, May 27th, 2019 – The conference *Tissue Engineering Therapies: From Concept to Clinical Translation & Commercialisation* organised by TERMIS starts today in the beautiful Greek island of Rhodes, bringing together scientists, clinicians and industries interested in tissue engineering and regenerative medicine therapies. This year, the European Chapter Meeting of the Society dedicates one of its symposia to the theme ***Biomaterials and devices for the treatment of diabetes mellitus***. Thanks to **EU funding**, in the last years, **three international and multidisciplinary teams** have been pursuing three different research projects in this area of diabetes research: **BIOCAPAN**, **DRIVE**, and **ELASTISLET**, all aiming to develop tomorrow’s treatments for type 1 diabetes. Today, at TERMIS EU 2019, they are presenting **the results of their efforts**.

Type 1 diabetes is a chronic disease in which the insulin-producing islet cells of the pancreas are attacked by the immune system and destroyed. Insulin is a key hormone for blood glucose regulation, and in people living with type 1 diabetes the healthy balance of blood glucose levels is compromised. The millions of type 1 diabetics worldwide manage their condition by monitoring their glucose levels and making insulin injections, every single day of their lives. However, providing insulin is not like having your own specialized cells working on sensing glucose and producing the hormone. In the last decades, restoring the lost islet beta cells by transplanting new, functional, insulin-producing and glucose-responsive cells has emerged as a promising treatment option. However, what seems as a powerful solution to reverse the disease, restore physiological production of insulin, and free diabetic people from intense insulin therapy, actually still represents a challenging procedure. Major limitations of this cell-based therapeutic approach are the scarce availability of donor insulin-producing cells and the gradual loss of islet grafts due to immune rejection. **Advances in cell reprogramming and biomaterial technologies** have provided **key tools** to overcome these barriers. TERMIS symposium*Biomaterials and devices for the treatment of diabetes mellitus*will highlight BIOCAPAN, DRIVE, and ELASTISLET EU funded research, and their most recent **developments to advance cell transplantation and promote the long-term clinical efficacy of this treatment**. The three different approaches will be discussed. Anticipated disclosures will regard novel biomaterial designs developed in the frame of these projects; their methods to encapsulate islets or islet-like cells; their strategies to enable transplanted cells’ immunoisolation, and improve graft survival and function within the organism.

The following is just a snapshot of what is being presented at the symposium:

* the **innovative microcapsule-based advanced therapy medicinal product** developed in the frame of the BIOCAPAN project for pancreatic islets transplantation and a related method for obtaining bioactive scaffolds from components of the natural pancreatic tissue microenvironment;
* the **living implants and delivery systems** developed by DRIVE scientists and their efforts to formulate a novel biomaterial based on hyaluronic acid to encapsulate pancreatic islets and improve their survival and engraftment after transplantation;
* the **encapsulation approach** developed in the frame of ELASTISLET project, the features of its **elastin-inspired biomaterials**, its strategy to reprogram human induced pluripotent stem cells to insulin-producing cells and use them as an **unlimited source of transplantable cells**.

“We’ve all started this science&innovation enterprise four years ago with a few long term common goals: to improve the quality of life for the million people living with diabetes, widen the availability of treatments, and reduce the direct and indirect costs linked to this disease and its treatment. Today, this meeting represents a great opportunity to meet each other, exchange experiences and form new alliances against diabetes”, commented ELASTISLET scientific coordinator **José Carlos Rodríguez-Cabello**. The scientist, who is director of the BIOFORGE Laboratory at the University of Valladolid, Spain, will chair the symposium together with DRIVE scientist Eimear Dolan from the National University of Ireland Galway. The symposium will include invited presentations by BIOCAPAN scientist and coordinator **Frédéric Bottausci** from the Commissariat à l’Energie Atomique et aux Energies Alternatives (CEA), France, and by DRIVE scientific coordinator **Garry P. Duffy** from the National University of Ireland Galway.

To know more about this event and its EU funded research, visit the symposium website at [**www.h2020research4diabetes.eu**](http://www.h2020research4diabetes.eu), where the symposium agenda, and other informative materials are available for download.

**FACTSHEET**

**About EU actions to tackle diabetes**

The EU has always given a strong priority to the research on diabetes. In over a decade, it has supported **numerous research and innovation actions on diabetes** through its framework programmes. Under **Horizon 2020,** [**a specific challenge was launched**](https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/nmp-10-2014): to develop more functional biomaterials for the long-term clinical efficacy of cell transplantation as treatment for diabetes. In May 2014, 23 international and multidisciplinary research consortia submitted their research proposals in response to this call. Three were selected and received funding for tackling the challenge: BIOCAPAN, DRIVE, and ELASTISLET.

**BIOCAPAN**, which stands for BIOactive implantable CApsule for PANcreatic islets immunosuppression free therapy, developed an innovative GMP-grade cell-therapy product, to treat diabetes without insulin injections and immunosuppressants administration. BIOCAPAN strategy is based on the implantation of smartly microencapsulated insulin secreting cells (pancreatic islets) from donors, to allow an effective long-lasting blood glucose level normalization and stabilisation without the need for immunosuppressive drugs. To produce a favourable microenvironment for the microencapsulated islets and protect them from immune rejection, researchers in BIOCAPAN consortium formulated a new composition for the microcapsule that enhances biocompatibility, functionality, and survival of transplanted islets aiming at reaching 2-years of insulin injection free. An automatize GMP-grade microfluidic platform has also developed to quickly microencapsulate freshly harvested islets providing standardized and reproducible bioactive microcapsules. BIOCAPAN consortium includes 9 partners, 10 teams from 6 different countries. This project has received funding from the European Union’s Horizon 2020 research and innovation program under grant agreement 646272. Discover more on BIOCAPAN and its partners on [BIOCAPAN website](http://www.biocapan.eu).

**DRIVE**, which stands for Diabetes-Reversing Implants for enhanced Viability and long-term Efficacy, developed an encapsulation system based on a pancreo-mimetic gel that contains native pancreatic proteins and oxygen producing compounds to provide a suitable protective environment to the transplanted islets, and supply them with oxygen while they are most vulnerable. DRIVE strategy also entails the use of specific delivery system and surgical procedure for pancreatic islet transplantation. DRIVE team comprises 15 partners from 7 countries. DRIVE encompasses a multidisciplinary team of scientists, engineers and clinicians from academia, industry and clinical partners who work together on this multifactorial challenge. To know more about the project and its consortium, visit [DRIVE website](http://www.drive-project.eu/) and social profiles on [Twitter](https://twitter.com/DRIVE4diabetes) and [Facebook](https://www.facebook.com/DRIVEforDiabetes). This project has received funding from the European Union’s Horizon 2020 research and innovation program under grant agreement n. 645991.

**ELASTISLET**, which stands for Tailored Elastin-like Recombinamers as Advanced Systems for Cell Therapies in Diabetes Mellitus: a Synthetic Biology Approach towards a Bioeffective and Immunoisolated Biosimilar Islet/Cell Niche, developed an encapsulating strategy entailing a bio-inspired material designed to mimic elastin, an elastic protein found in connective tissue of the body. ELASTISLET encapsulation strategy is designed to protect cells from immune disruption, promotes complete integration and fusion of the transplanted system into the surrounding tissues, allow insulin diffusion from the inside, and access to blood supplies and nutrients to the transplanted cells. ELASTISLET consortium is an international, multidisciplinary team of 11 partners spread across 8 countries, including Universities, SMEs and research institutions.  
To learn more about Elastislet partners and their endeavour, visit [ELASTISLET website](http://www.elastislet.eu) and social profiles on [Twitter](https://twitter.com/elastislet) and [Facebook](https://www.facebook.com/Elastislet-2051127981675379). This research project has received funding from the EU's H2020 framework program for research and innovation under grant agreement n. 646075