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We have brought together a multidisciplinary international consortium to create a singleport artificial pancreas that will be tested, validated and introduced to clinical practice, in order to improve the clinical management of diabetes, and to bring better quality of life and healthier aging for diabetes patients.

The project

Existing therapeutic devices for diabetic patients suffer from bulky size, inaccurate measurements and the inconvenience of handling two body interfaces. Suboptimal control of blood-glucose levels in type 1 or type 2 diabetes mellitus patients results in periods of hypo- and hyperglycaemia leading to severe and life-threatening complications. We have brought together a multidisciplinary international consortium to create a singleport artificial pancreas that will be tested, validated and introduced to clinical practice, in order to improve the clinical management of diabetes, and to bring better quality of life and healthier aging for diabetes patients.

JOANNEUM RESEARCH's HEALTH – Institute for Biomedicine and Health Sciences will coordinate the SPIDIMAN project with a total budget of almost € 6.4 mio. The project started on November 1, 2012 and will last for 4 years.

The project will exploit a novel glucose-sensor technology that has been developed as part of the national project i-cath, funded by the BMVIT. The consortium will develop a new coating technology to apply a glucose-sensitive luminescent dye onto a standard insulin infusion catheter. This integrated glucose sensor will then be incorporated into a single-port artificial pancreas system. The system will utilize advanced optical continuous glucose monitoring technology (smart tattoos) with improved sensor accuracy, faster response times, a wider dynamic range and higher signal stability, which will improve diabetes management by reducing hypo- and hyperglycaemic episodes.



This project is funded by the EU Framework 7 Programme, contract no 305343.



The consortium

To achieve its ambitious goals, SPIDIMAN will rely on an established collaborative research network consisting of participants with complementary expertise from research focused SMEs, universities, hospitals and a private research organization.



JOANNEUM RESEARCH
Forschungsgesellschaft mbH - JR
- Austria -
www.joanneum.at/health.html



Medical University of Graz - MUG
- Austria - www.medunigraz.at



RESCOLL - RES - France -
www.rescoll.fr



AKIRA Technologies - AKI -
France - akira-technologies.fr



Pyro Science GmbH - PYR -
Germany - www.pyro-science.com



The Chancellor, Masters and
Scholars of the University of
Cambridge - CAM - United
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Profil Institute for Metabolic
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Rescoll (SME, France) will advance smart tattoo technology by developing a suitable coating for a standard insulin catheter with a special luminescent dye. **AKIRA Technologies** (SME, France) will provide quality control for standardizing the thickness of the luminescent coating to ensure reproducibility. **Pyro Science GmbH** (SME, Germany) will design and miniaturize the optical reader located outside the body to read out glucose concentration measurements, **University of Cambridge** (Great Britain) will adapt existing control algorithms to the new integrated smart-tattoo glucose sensor, paying particular attention to the characteristics of children and adolescents, while the **HEALTH Institute of JOANNEUM RESEARCH** will integrate the system to achieve a new easy-to-use, cost effective, single-port artificial pancreas. This technical expertise is complemented by the clinical research expertise of the **Medical University of Graz**, the **Profil Institute** (Germany) and the **Centre Hospitalier de Luxembourg**. These clinical research partners will conduct investigator-driven clinical trials to evaluate the new device in a wide range of glycaemic episodes, measuring the time spent in the target glycaemic range, and assessing the ability of the device to reduce hypo- and hyperglycaemic events. They will also validate the performance and applicability of the new single-port artificial pancreas system in clinical trials including adult as well as paediatric type 1 diabetes mellitus patients. **BioNanoNet** is responsible for the day-to-day management of the whole project.

The SPIDIMAN consortium will thus pave the way for a single-port device that integrates improved glucose measurement and more accurate insulin delivery to provide better glycaemic management for patients with insulin-dependent diabetes. The new device is expected to be particularly suitable for patients in childhood and adolescence, who will form a special focus of the project.