CENTRE FOR DIGITAL LIFE NORWAY

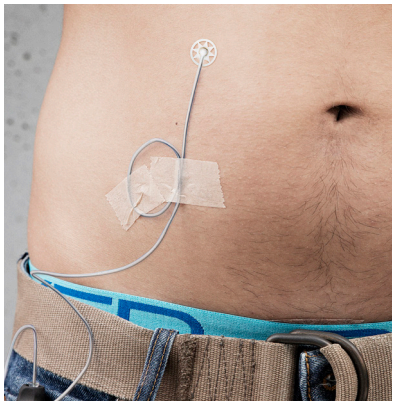
Double Intraperitoneal Artificial Pancreas (DIAP)

– an Easier Life with Diabetes

Diabetes Type 1 is a chronic condition that cannot be cured. If not well managed through regular blood glucose monitoring and proper insulin treatment by the patients themselves, the disease will threaten their health and life.

To release this monitoring burden of diabetes patients we are developing a fully automated artificial pancreas, the DIAP, that mimics the healthy body's way of controlling blood sugar levels. The DIAP consists of an optical fibre for glucose sensing and a thin tube for insulin delivery, entering the abdominal cavity through a small port in the abdominal wall. By measuring the glucose level inside the abdominal cavity and delivering insulin to the same place, the DIAP will be able to respond to changing conditions much faster than current products where the monitoring is done through the skin. Hence, rapid changes in blood sugar, such as after a meal or strenuous exercise, will be possible to handle and the patient does not need to think about the diabetes even when he or she is eating or exercising.

The insulin pump will be placed outside of the abdomen and have a connection that allows for removal of the device whenever needed. The DIAP will be robust and reliable due to our built in safety mechanisms which are based on thorough risk and failure research. The sensor of the DIAP will have a longer duration than the sensors currently available on the market, minimizing the need for frequent changes and possible variations in its performance.



Value proposition
Fully automatic control of insulin delivery and normalized glucose levels for patients with diabetes type 1.

Opportunities for collaboration

We welcome collaboration with both academia and industry on all aspects of our artificial pancreas solution.

Scientific fields and technology
Medicine, bioengineering, mathematical modelling, sensor technology, pharmacology.

Resources and partners

- Total budget of € 5.6 M for 2014-2022 (€ 4.4 M from the Research Council of Norway, € 1.2 M from Helse Midt Norge)
- Member project of the Centre for Digital Life Norway.
- Collaboration with Trondheim University Hospital, NTNU and SINTEF
- IPR is handled by NTNU Technology Transfer

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