

## **Problem Statement – Continuous Glucose Monitoring**

### **Summary**

We are seeking non-invasive and minimally invasive technologies that allow for accurate and multi-day continuous monitoring. We are interested in non invasive technologies, commonly based on optical spectroscopy read through the skin or other tissues, as well as minimally invasive technologies where the glucose detection sensor is embedded into the patient.

### **Problem Background**

There is a need for accurate and convenient multi-day continuous glucose monitoring technologies that will replace painful fingerstick measurements and enable the patient to better manage diabetes. Current episodic fingerstick tests using teststrips and a meter are only performed occasionally throughout the day and significant glucose level excursions may be missed. A continuous monitor that is easy to use and gives accurate glucose level readings could help identifying these excursions and direct the action taken by the patient to intervene and thus support better glucose level control.

Excursions to low glucose levels, also called hypoglycemia, are especially dangerous and can lead to coma or even death. Patients with diabetes are known to become desensitized to the symptoms as their disease progresses and a continuous monitor with high accuracy at low glucose levels is of particular interest.

### **Specific Technical Needs**

We are looking for technologies that meet the following requirements:

- (1) Technologies that can measure glucose level continuously for more than 3 days.
- (2) Technologies that can measure glucose levels accurately (as demonstrated by in vitro measurements or, ideally, by animal model studies).
- (3) Technologies that can measure low glucose levels with high accuracy.
- (4) Technologies that measure glucose levels in an individual non-invasively through the skin or other tissues without having to insert a probe or sensor into the individual.
- (5) Technologies that measure glucose levels minimally-invasively, where a sensor or probe might be implanted and the glucose level signal is send to a receiver or where a sensor or probe is inserted under the skin and signal is transmitted back to a receiver.
- (6) Continuous glucose monitoring technologies that show correlation with blood glucose levels in animal model studies.
- (7) Continuous glucose monitoring technologies that use instrumentation that can be miniaturized, that is convenient to use and produced at low cost.
- (8) Methods to convert continuous glucose monitoring data into information that a patient can use to make a therapeutic decision.