

INSPIRE Lab

Team



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Research Project

Insulin Activity Project: Innovation for Everyday Insulin Use

Insulin can lose its effectiveness through heat, light or mechanical stress – yet how active it remains after storage and under real-life treatment conditions has barely been studied. The Insulin Activity Project aims to change that: we investigate insulin degradation under thermal stress and are developing the first methods to make activity loss measurable.

Our current focus lies on experimental analysis: using biophysical techniques alongside functional activity assays, we investigate how heat and storage affect insulin's structure and efficacy. In parallel, we are establishing an in-vitro reference method at DCB to characterize insulin activity – forming the basis for a model that links structural changes to functional

loss. This will lay the scientific foundation for a future point-of-care testing system.

The project is supported by a research grant from the Diabetes Center Berne and is conducted in close collaboration with FHNW, CSEM, and partners from industry and science. In 2024, the project advanced into its next phase with CHF 659,000 in Innosuisse funding. The emerging spin-off Beyond Diagnostics is supported by the DCB. A dedicated Lived Experience Panel ensures the patient perspective is embedded from the start. The long-term goal: a portable solution to verify insulin quality – with strong potential for patients, professionals, and the pharmaceutical industry.

