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Filming a Killer That Leads to Type 1 Diabetes

Filed under: [Diabetes Mellitus](#), [Endocrine Diseases](#) — Rebecca Voelker @ 4:53 pm

Now showing on a computer screen near you: the search-and-destroy mission of cytotoxic T cells that kill insulin-producing beta cells in the pancreas, leading to type 1 diabetes. The real-time cellular movies are the first to show how the assault plays out in diabetic mice.

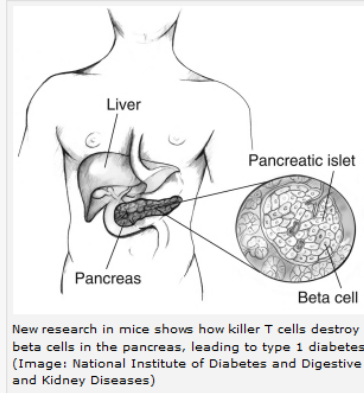
"Never before was diabetes imaged in real time, in the pancreas, in a living organism," said Matthias von Herrath, MD, senior author of the study, in an email. The findings are published online today in the *Journal of Clinical Investigation*.

The research sets the stage for investigators to develop prevention strategies that could keep the killer T cells out of the pancreas in the first place, said von Herrath, also director of the Diabetes Research Center at the La Jolla Institute for Allergy & Immunology. The findings also could lead to the development of combination therapies, he added.

Researchers at the La Jolla Institute used a customized imaging technique with a 2-photon microscope to watch how killer T cells get into the pancreatic islets—mini-organs that contain beta cells. It was somewhat surprising, von Herrath said, that killer T cells have little difficulty penetrating the outer capsule. "Previously it was thought that islets were somewhat protected by the surrounding membrane they have," he said. However, "every islet within their reach appears doomed," he noted.

Once inside the islets, killer T cells begin a lengthy random search to locate beta cells and extinguish them. "This would explain the long prediabetic phase in humans," said von Herrath.

Links to all 18 movies are available by scrolling down to the end of the online study. Movie 6 shows killer T cells in what looks like a dance around and into a mass of B cells. In movie 14, beta cells seem to simply vanish.



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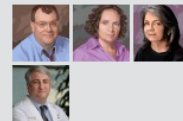
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