

Immune responses spread from one protein to another in type 1 diabetes

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Type 1 diabetes (T1D) occurs when the immune system inappropriately attacks cells in the pancreas. Although many of the proteins attacked during T1D have been identified, it has not been determined whether immune responses to the individual proteins develop independently or whether a response to one protein then spreads to others. Now, a new study shows that in mice the immune system first attacks a single protein and then expands its attack to other proteins.

Using mice that develop a disease very similar to T1D (NOD mice), Thomas Kay and colleagues showed that NOD mice that were unable to mount an immune response to proinsulin also had no immune cells that recognized a second protein IGRP and did not develop diabetes.

By contrast, NOD mice that were unable to mount an immune response to IGRP had immune cells that recognize proinsulin and developed diabetes. This study demonstrates that diabetes in NOD mice is triggered by an immune response to a single protein that then spreads to other proteins. This study therefore has important implications for the development of therapeutics designed to make individuals with T1D no longer mount an immune response to a particular protein.

In an accompanying commentary, Lucienne Chatenoud and Sylvaine You from the Hôpital Necker-Enfants Malades, France, discuss how it is important to determine the molecular and cellular events that underlie this spreading of the immune response so that the information can be translated to therapeutics for T1D and perhaps other autoimmune

diseases.

Source: Journal of Clinical Investigation

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