

Research shows Type-2 diabetes may have an immune system link

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(PhysOrg.com) -- New research led by the twins Daniel and Shawn Winer, both of the University of Toronto, in conjunction with Lei Shen, research assistant at Stanford, has shown, in a paper published in *Nature Medicine*, a possible link between immune cell attacks and fat cell insulin resistance, the underlying cause of type-2 diabetes.

Building on work done by Edgar Engleman, of Stanford, (the Winder's were both students of his and Lei Shen is his research assistant) the researchers put a group of mice on a high fat diet and then after six weeks gave several of the mice a drug called anti-CD20, which in effect kills certain types of immune cells. The mice that did not get the drug all developed [insulin resistance](#), as expected, while the mice that did, did not.

The researchers believe that when too much fat accumulates in the body, particularly around the mid-section, the fat cells reach a point where they start to run out of room, and so become inflamed which leads to some of them dying. When that happens, the body responds as if from an external threat and sends in the immune cells to deal with the problem. These antibodies then begin to attack the fat cells, which causes them to become insulin resistant. And that is the very definition of [type-2 diabetes](#).

Unlike type-1 diabetes, which researchers have known for quite some time has an immune system component, the type-2 version has been thought to be a metabolic disorder, blamed solely on lifestyle choices.

Now, with this new research, new types of treatment will likely emerge for treating the immunity response, rather than just the insulin resistance. One step in this direction involved another part of the study, where the team took blood samples from 32 obese volunteers. They found that half of them had insulin resistance, and the other half didn't, which suggests a heredity factor in the immune system response as well. But it also suggests it might be possible to develop a vaccine that imitates the antibody properties of those who don't develop resistance, for those who do.

Almost 26 million people in this country have diabetes, with the vast majority of those of the type-2 variety. It's a condition that leads to other ailments such as blindness, heart disease and loss of limbs due to circulation problems. Any new research that might lead to a "cure" or at least a therapy to prevent the damage caused by [diabetes](#), would be truly historic.

More information: B cells promote insulin resistance through modulation of T cells and production of pathogenic IgG antibodies, *Nature Medicine* (2011) [doi:10.1038/nm.2353](https://doi.org/10.1038/nm.2353)

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