

Antibody holds promise for treatment of type 1 diabetes

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Prof. Ofer Mandelboim, winner of the 2015 Kaye Innovation Award. Credit: Bruno Charbit

Type 1 diabetes, which usually appears in children and adolescents, affects over 30 million people worldwide. Resulting from an auto-

immune reaction that destroys the pancreatic beta cells that produce insulin, the disease leads to pathologically high levels of sugar in the blood and urine, resulting in high rates of morbidity and mortality. The current treatment for type 1 diabetes is lifetime administration of insulin by injection.

Working at the Hebrew University of Jerusalem, Prof. Ofer Mandelboim identified an important role played by a protein receptor called NKp46 in the development of type 1 [diabetes](#). Mandelboim is a professor and researcher at the Lautenberg Center for Immunology and Cancer Research at IMRIC—the Institute for Medical Research Israel-Canada, in the Hebrew University's Faculty of Medicine.

Prof. Mandelboim and his research collaborators found that the NKp46 receptor present on [natural killer](#) or NK cells (an essential part of the immune system) play a critical role in the development of the disease in mice. This happens because the NKp46 receptor recognizes [pancreatic beta cells](#), leading to their destruction.

The research also showed that inhibiting the NKp46 receptor almost entirely prevented the development of diabetes. If replicated in humans, this effect could significantly delay, and potentially prevent, the need for chronic insulin use by [type 1 diabetes](#) patients, and help minimize diabetes-related complications.

This groundbreaking research is the basis for BioLineRx's BL-9020, a monoclonal antibody that targets the natural killer receptor NKp46.

Yissum, the technology transfer company of the Hebrew University, together with partners, signed an exclusive license agreement with BioLineRx to develop and commercialize BL-9020 for the treatment of type 1 diabetes. BioLineRx is a clinical-stage biopharmaceutical company dedicated to identifying, in-licensing and developing promising

therapeutic candidates.

In January 2014, BioLineRx entered into a collaboration agreement with JHL Biotech for the further development and commercialization of BL-9020 in China and additional Southeast Asia countries. The type 1 diabetes market was estimated at over \$3.5 billion in 2012.

Studies in mouse models suggest that BL-9020 can inhibit beta cell death in the pancreas, thus preventing full maturation of type 1 diabetes. In humans it could potentially treat type 1 diabetes in early stage patients, during what is known as the "honeymoon period," when the pancreatic [beta cells](#) have not been completely destroyed and continue to secrete insulin.

The research that formed the basis for developing BL-9020 has earned Prof. Mandelboim the prestigious 2015 Kaye Innovation Award.

Provided by Hebrew University of Jerusalem

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