Type 1 diabetes (T1D) is an autoimmune disease characterized by the progressive loss of pancreatic beta cell function, eventually culminating in patients' dependence upon exogenous insulin to control blood glucose. While disease progression occurs over time, it is diagnosed after more than 80% of beta cells are destroyed, making study of disease pathogenesis very difficult. Our humanized mouse model provides an opportunity to study disease pathogenesis, including genetic and environmental factors. Novel treatments of T1D includes replacement of pancreatic islet cells, vaccination with self-antigens, nanoparticle-based approaches and regulatory T cell (Treg) therapy. Type 2 diabetes (T2D) is a disorder that disrupts the way the body uses sugar. The disease pathogenesis includes a combination of varying degrees of insulin resistance and relative insulin deficiency. T2D is often accompanied by other conditions, including hypertension, high serum low-density lipoprotein (LDL) cholesterol concentrations, and low serum high-density lipoprotein (HDL) cholesterol concentrations that, like T2D, increase cardiovascular risk. This constellation of clinical conditions is referred to as the metabolic syndrome. Increased free fatty acid levels, inflammatory cytokines from fat, and oxidative factors have all been implicated in the pathogenesis of metabolic syndrome, T2D, and their cardiovascular complications. To reduce the chances of getting T2D, the most important thing you can do is control your weight. Medicines that help control blood sugar, make more insulin or that help insulin do its job. An unbalanced microbiome composition has been found in patients with T2D. Researchers have recently shown that fecal transplants, used to transfer the microbiome of a healthy person to the gut of one with diabetes, can result in a short-term improvement of insulin resistance in obese patients with type 2 diabetes. Anti inflammatory medications of immunotherapies could be the promising future treatments for T2D. Surgical treatment of obese patients with diabetes results in a large degree of sustained weight loss and, in parallel, large improvements in blood glucose control.