Since the stunning discovery in Toronto in 1921 that type 1 diabetes arises from a deficiency of insulin, a novel hormone produced in the pancreas, the management of diabetes has been firmly grounded in scientific advances that continue to shape our understanding of the pathophysiology and guide our choices in selecting optimal therapies for type 1 and type 2 diabetes. As the IDF World Diabetes Congress Vancouver 2015 (WDC15) returns once again to Canada, attendees will find a rich assortment of basic and clinical science lectures, expert sessions, symposia, focused poster sessions and debates to quench their thirst for the latest information on scientific and treatment advances.

After more than 90 years, there continues to be tremendous interest in the science of insulin action, novel insulin analogues and insulin delivery devices. Multiple symposia at WDC15 are devoted to consideration of how insulin works, new insulin analogues, and refinements in delivery of insulin, ranging from new devices to closed loop systems to the latest in islet transplantation and updates in progress for stem cell-derived therapies. The pathophysiology of type 1 diabetes will be extensively discussed, with sessions devoted to genetics, autoimmunity and virus-mediated beta cell toxicity. Similarly, we will review the role of the liver, beta cell, brain, adipose tissue, and the gut in the control of glucose homeostasis in a variety of dedicated scientific sessions.

The complications of diabetes will receive extensive coverage in Vancouver with sessions devoted to oxidative stress, glucolipotoxicity, and both microvascular and macrovascular disease, encompassing retinopathy, neuropathy, nephropathy, hypertension and both endothelial cells and vascular biology. The latest updates in major cardiovascular outcome studies will be provided, with study investigators highlighting new insights from clinical trials examining the safety of DPP-4 inhibitors, GLP-1 receptor agonists, and SGLT2 inhibitors.

Recognising the emerging importance of obesity and its relevance to type 2 diabetes, special sessions will be focused on the management of obesity and its complications, the role of bariatric surgery, and the intersection of obesity and diabetes in special populations, including gestational diabetes, as well as type 2 diabetes and obesity in children and adolescents. The efficacy and safety of new therapies that target both glucose and body weight, principally the GLP-1 receptor agonists and the SGLT2 inhibitors will be reviewed, with special attention to appraising the risk:benefit ratio for individuals living with type 2 diabetes.
Many of the recent advances in our understanding of diabetes have stemmed directly from the application of new technology. Hence, special sessions will feature highlights from studies of epigenetics, new stem-cell technologies, a broad potpourri of “omics” technologies, population genetics, monogenic and polygenic forms of diabetes, advances in immunology and autoimmunity, complemented by updates on early stage drugs in the pipeline for diabetes and its complications.

WDC15 will embrace discussion and controversy, and we look forward to the numerous debates that will rigorously review and discuss all sides of complex basic science and clinical issues. Given the breadth and depth of the programme, perhaps the biggest challenge facing attendees will be the selection of individual sessions and topics. Attendees with a broad range of interest in both clinical and basic science may face scheduling challenges in how to maximize their available time, in deciding which sessions to prioritize. Nevertheless, this is likely to be a challenge we all welcome and the organizing committee looks forward to your participation and feedback during and following WDC15 in Vancouver.

About the Author
Daniel Drucker is Senior Investigator at the Samuel Lunenfeld Research Institute of Mount Sinai Hospital, Professor of Medicine and Director of the Banting and Best Diabetes Centre at the University of Toronto and the Deputy Stream Lead for Basic and Clinical Science WDC15.