



2023 WOLF PRIZE IN MEDICINE



Daniel Joshua Drucker

University of Toronto, Canada

The 2023 Wolf Prize in Medicine is awarded to
Prof. Daniel Joshua Drucker

"for pioneering work in elucidating the mechanisms and therapeutic potential
of enteroendocrine hormones".





Daniel Joshua Drucker

Drucker, is a Canadian Endocrinologist and Professor of Medicine at The University of Toronto. He is a Senior Scientist at the Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital, Toronto, and a fellow of the Royal Society. Prof. Drucker is known for his research into intestinal hormones and their use in treating diabetes and other metabolic diseases.

Drucker was born and grew up in Montreal, and then enrolled at the University of Ottawa. He graduated in Medicine from the University of Toronto (1980) and received postgraduate training (Medicine and Endocrinology) at Johns Hopkins Hospital (1980-81), the University of Toronto (1980-84), and the Massachusetts General Hospital, Harvard Medical School (1984-87).

Prof. Drucker's lab has gained worldwide recognition for its research and its focus on applying scientific breakthroughs to clinical treatment. The lab has made significant contributions to the development of new therapies for type 2 diabetes and a new therapy for short bowel syndrome. His research holds great potential for treating obesity.

Prof. Drucker studies a family of hormones produced in the pancreas, gastrointestinal tract, and brain. Controlling blood glucose and insulin secretion, these hormones also regulate our appetite, the absorption of nutrients from the food we eat, and the conversion of those nutrients to energy. In his lab, Drucker studies the action of hormones that regulate multiple aspects of metabolism. Since enhanced gut hormone action may be beneficial in diabetes, obesity, and inflammatory bowel disorders, these hormone analogues have the potential to lead to new treatments for diseases that afflict millions of people worldwide.

Prof. Drucker is awarded the Wolf prize for having made seminal contributions to our understanding of the physiology and pharmacology of glucagon-like peptides (GLPs) and their use for the benefit of patients.


His discoveries of GLP-1, GLP-2, and dipeptidyl peptidase-4 (DPP-4) activity have enabled the development of multiple new innovative classes of medications for the treatment of diabetes, obesity, and obesity-associated comorbidities. He demonstrated that GLP-1 directly stimulates insulin secretion from pancreatic beta cells.

Over the past 35 years, Drucker has led the field in delineating the importance of GLP-1 action for the control of pancreatic beta cell proliferation and survival, regulation of endoplasmic reticulum (ER)



W





stress, and beta cell plasticity. Drucker is widely recognized for his ongoing contributions to multiple new actions of GLP-1 in the brain, gut, in the endocrine and exocrine pancreas, the immune system, and the heart and blood vessels. He played a pivotal role in identifying cardiovascular mechanisms of action for incretin agents, including studies of heart rate, blood pressure, atherosclerosis, inflammation and cardioprotection, thus laying the scientific groundwork for the exciting results of recent cardiovascular outcome studies.

Collectively, these findings have provided broad support for the development, use, and safety of GLP-1 therapeutics in human subjects with diabetes and obesity, and have identified new disease areas (NASH, CNS disorders such as Parkinson's and Alzheimer's disease) that may benefit from therapy with GLP-1R agonists.

He also described the basic mechanisms linking DPP-4 activity to metabolic control. His pioneering studies validated DPP-4 as a drug target and described the importance of DPP-4 for the control of the enteroinsular axis.

W

