Acceptance speech

19 June 2025

Svetlana Mojsov, awardee in the Biology and Biomedicine category (17th edition)

It is a great honor for me to receive the BBVA Foundation Frontiers of Knowledge Award for my contribution to the discovery of GLP-1.

My interest in the role of peptides in regulating glucose metabolism and in the development of peptide-based therapeutics for treatment of diabetes goes back to the mid-1970s when I was a graduate student with Professor Bruce Merrifield at the Rockefeller University in New York. We were interested in understanding glucagon biology, and the solid phase method developed by Professor Merrifield in the 1960s was the method of choice for producing glucagon analogs and inhibitors. But the synthetic strategy used in the solid phase method used in the 1970s produced biologically inactive glucagon, because the sequence contained amino acids that would undergo chemical modifications during the stepwise assembly of glucagon. Dr. Merrifield encouraged me to devise alternative synthetic strategies, which I did, first for my doctoral work and later on as a postdoctoral fellow.

My knowledge of the glucagon amino acid sequence and glucagon biology provided critical insights that led to my discovery of GLP-1 in the early 1980s at the Massachusetts General Hospital in Boston.

In the fall of 1983, I identified the biologically active sequence of GLP-1 as a 31-amino acid long peptide that I named GLP-1(7-37). Furthermore, I predicted that GLP-1(7-37) would be an incretin, or peptide secreted in the intestine in response to a meal that would stimulate insulin release from the pancreas.

To detect GLP-1(7-37) in the intestine, in my laboratory at the Endocrine Unit I synthesized GLP-1(7-37) by the solid phase method, and developed specific and highly sensitive antibodies, radioimmunoassays and chromatographic methods that allowed me to detect GLP-1(7-37) in the intestine where the incretin should be secreted.

After I detected GLP-1(7-37) in the intestine, I initiated productive collaborations with Drs. Joel Habener and David Nathan from the Massachusetts General Hospital and Dr. Gordon Weir from the Joslin Diabetes Center in Boston.

My collaborative studies with Dr. Gordon Weir established that GLP-1(7-37) stimulates insulin release in a glucose dependent manner at the same low concentrations that exist in the blood stream. They established that GLP-1(7-37) is the long-sought incretin.

Collaborative clinical studies with Dr. Nathan were the first to report that GLP-1(7-37) stimulates insulin release and lowers blood glucose in individuals with type 2 diabetes and established the therapeutic potential of GLP-1 (7-37) for treatment of diabetes.

After I returned to the Rockefeller University with my colleague Yang Wei, we showed that identical GLP-1 receptors are expressed in the pancreas, the brain and other organs like the heart and the kidney, indicating that GLP-1 effects in these organs would be regulated by a single GLP-1 receptor.

Twenty-five years after publication of my collaborative papers, Novo Nordisk and Lilly pharmaceutical companies developed long-lasting GLP-1 analogs. They represent a first example of a single medicine that is used to treat multiple disorders in human health, from diabetes to obesity, and has beneficial effects on the heart, kidney and possibly neurodegenerative diseases.

GLP-1 medicines impact the quality of life and health of millions of people.

It is my great privilege to have been present at the very beginning of this long scientific journey.

Thank you very very much.