

“Unraveling Molecular Machinery and Mechanism of Cell Secretion”

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Abstract: Secretion is a fundamental cellular process responsible for numerous physiological functions in living organisms, such as neurotransmission and the release of hormones and digestive enzymes. It is therefore no surprise that defects in secretion and membrane fusion lead to diabetes, Alzheimer's, Parkinson's, and a host of diseases. In view of this, there has been significant effort during the past half century to understand the molecular machinery and mechanism of secretion and membrane fusion in cells. Type II Diabetes mellitus (T2DM) is a complex and heterogeneous metabolic disease that has reached epidemic proportions. The onset of T2DM is characterized by two determining factors: the insufficient ability of pancreatic beta-cells to secrete its two major hormones insulin and amylin, and the formation of toxic amyloid deposits in the pancreas consisting mainly of amylin. We integrate biochemical, cell biology and the high-resolution imaging approaches to study the molecular mechanisms of hormone release and the aberrant protein (amyloid) formation in the pancreatic beta-cells. Basic understanding of these mechanisms may allow the development of novel drug therapies with possibility to adjust secretory deficiencies.

BioSketch:

- 1994 *B. S. in Biochemistry, Faculty of Chemistry, University of Belgrade, Serbia.*
Mentor: Prof. Miroslav Vrvic. Research study: Optimization of biotechnological process for production of biomass enriched with organically bonded chromium.
- 1994-1996 *M. S. in Biochemistry, Faculty of Chemistry, University of Belgrade, Serbia.*
Mentor: Prof. Vesna Niketic. Research study: Optimization of experimental conditions for production and isolation of human β -interferon obtained by recombinant DNA technology.
- 1998-2001 *Ph.D. in Biomedical Sciences and Neuroscience, College of Veterinary Medicine, Iowa State University, Ames, IA.* Mentor: Prof. Srdija Jeftinija.
Research study: Role of astrocytes in brain signaling and neuron-glia communication.
- 2002-2006 *Post-Doctoral Fellow, Department of Physiology, Wayne State University School of Medicine, Detroit, MI.* Mentor: Prof. Bhanu P. Jena. Work on organization and structure of fusion pore complex and its role in membrane fusion and secretion.
- 9/2006-present *Assistant Professor of Biology, Department of Biology, George Washington University.* Research interests: molecular basis of hormone release in beta-cells; peptide-lipid interactions and etiology of diabetes.