

Research to Illuminate Causes of Overactive Bladder and Urinary Incontinence



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Over the past 20 years, Dr. Petkov's studies have focused on the modulation of excitation-contraction coupling in various types of smooth muscle, including vascular, gastrointestinal, and urinary bladder.

Petkov is a standing member of the National Institutes of Health Urologic and Genitourinary Physiology and Pathology Study Section and serves on several editorial boards of journals in the field of physiology, pharmacology, and urology.

Petkov has a long-term record of independent extramural funding from the National Institutes of Health (NIH), the National Kidney Foundation (NKF), and Pfizer OAB-LUTS Competitive Grants Program.

Urologic problems are common ailments in society. Overactive bladder (OAB), lower urinary tract symptoms (LUTS) and related urinary incontinence (UI) are poorly understood disorders, and effective therapeutic agents are lacking. OAB-LUTS affect approximately 17 percent of the adult population in the US and Europe. OAB-LUTS is a primary reason people enter nursing homes. It can disrupt sleep, work, sexual activity, relationships and social interaction.

The current pharmacological treatment for OAB is based primarily on anti-muscarinic drugs. These drugs are associated with dose-related side effects including dry mouth, dry eyes, constipation, and tachycardia. Thus, there is a significant need to identify novel therapeutic treatments for OAB with fewer collateral effects elsewhere in the body.

"The hallmark of OAB and related UI is increased urinary bladder smooth muscle contractility," said **Dr. Georgi V. Petkov**. Dr. Petkov currently has a \$1.6M grant from the National Institute of Diabetes and Digestive and Kidney Disease to illuminate the role of membrane ion channels and receptor molecules and their regulatory mechanisms to control

bladder dysfunction. Petkov has established a urological laboratory conducting cutting-edge research related to urinary bladder function and dysfunction. In addition, he has established a strong research group, consisting of undergraduate and graduate students, technicians, postdoctoral fellows, and junior faculty. Petkov's research group employs an array of approaches, using innovative techniques, to determine the bladder regulatory mechanisms, including:

- patch-clamp electrophysiology, confocal microscopy
- imaging approaches
- functional studies on smooth muscle contractility
- pharmacological and molecular biological techniques.

Their research has resulted in a series of peer-reviewed articles published in top ranking journals with each article representing a critically important advancement in the field of urology and influencing urological research worldwide. "This research may lead to a better understanding of the nature of urologic diseases, including their causes and potential treatments," said Petkov.

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Education

Ph.D., Physiology, 1997, University of Sofia, Sofia, Bulgaria

M.S., Biochemistry and Microbiology with specialization in Human and Animal

Physiology, 1992, University of Sofia, Sofia, Bulgaria

The long-term goal of Petkov's research program is to understand the mechanisms that regulate the urinary bladder under normal pathological conditions in order to develop novel therapeutic strategies to control OAB and UI.



Learn how you can help support the efforts of Dr. Petkov.
Contact our Director of Development at (803) 777-5426.