Research to Illuminate Causes of Overactive Bladder and Urinary Incontinence

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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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.