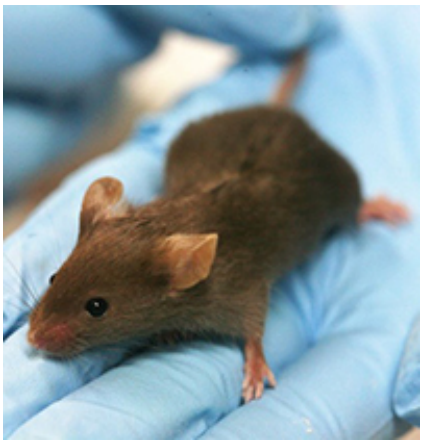
Lower Urinary Tract Function Testing in Mice

1– 5 pm ET Thursday October 29, 2020

1:00 – 1:10	Welcome and Introduction
1:10 – 1:40	Void Spot Assay – Dr. Warren Hill, Harvard University
1:40 – 2:00	Q&A with Dr. Chad Vezina and Dr. Kim Stietz, U of WI
2:00 – 2:30	Uroflowmetry – Dr. Dale Bjorling, University of Wisconsin
2:30 – 2:50	Q&A with Will Ricke, U of WI
2:50 – 3:35	Cystometry – Dr. Matt Fraser, Duke University
3:35 – 3:55	Q&A with Dr. Maryrose Sullivan, Harvard University
3:55 – 4:30	In Vitro Testing – Dr. Mike Ruggieri, Sr, Temple University
4:30 – 4:50	Q&A with Rosalyn Adam, Harvard University
4:50 – 5:00	Wrap up



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Speakers and Discussants

Rosalyn Adam, PhD
Director, Urology Research
Associate Professor of Surgery, Harvard Medical School, Harvard University
Dr. Adam holds the David E. Retik Chair and serves as Director of Urology Research at Boston Children's Hospital. Her laboratory has been funded by the NIDDK since 2004, and research is currently focused on two primary areas: (i) delineation of the molecular mechanisms that underlie urinary tract remodeling and detrusor overactivity following spinal cord injury; and (ii) investigation of novel mechanisms of smooth muscle contractility in hollow organs. She also serves as Program Director for the Boston Children's Hospital NIDDK-funded T32 program "Research Training in Pediatric Urology".

Dale E. Bjorling, DVM, MS
Associate Dean for Research and Graduate Training, School of Veterinary Medicine, University of Wisconsin-Madison
Dr. Bjorling has directed the Rodent Urinary Function Testing facility as part of the Biomedical Core for the UW/UMAS Boston/UT Southwestern O'Brien Center for Benign Urology Dr. Bjorling's research has focused on the effects of inflammation on pain and function of the LUT. This work has entailed the use of mouse models, and the most recent research in his laboratory investigates regulation of fibrosis of the LUT by microRNA.

Matthew O. Fraser, PhD
Associate Professor of Surgery, Duke University
Dr. Fraser directs the Laboratory of Neurourology that is focused on pelvic visceral function and dysfunction. In addition to further elucidating the physiology of pelvic viscera, the laboratory is heavily involved in therapeutic development efforts, including pharmacological, medical devices, cell therapy, and tissue engineering approaches, including: cell therapy for neurogenic bladder; pharmacotherapy for ureteric stent pain, overactive and underactive bladder, and neurogenic bladder secondary to spinal cord injury or traumatic brain injury; neurostimulation therapy for overactive and underactive bladder, and neurogenic bladder secondary to spinal cord injury or traumatic brain injury; pelvic visceral cross-sensitization under normal conditions and following spinal cord injury; evolution of lower urinary tract dysfunction in diabetes mellitus; and host responses under different conditions following mesh implantation.

Warren G. Hill, PhD
Assistant Professor of Medicine, Harvard Medical School, Harvard University
The primary research interests in Dr. Hill's lab relate to sensory functioning of the bladder and cellular changes which occur in response to diabetes and aging. The lab uses 1) genetically modified Cre-lox mice to conditionally delete genes, 2) monogenic and polygenic diabetic strains, and 3) aging diversity outbred populations from The Jackson Laboratory which are genetically unique; to investigate hypotheses related to these questions. The lab employs a range of physiological and molecular techniques to explore the role of integrins, glycosaminoglycans, hyperglycemia and aging on bladder function.

William A. Ricke, PhD
UWMF Professor of Urologic Research, School of Medicine and Public Health, University of Wisconsin-Madison
Dr. Ricke serves as Director of the UW/UMASS Boston/UT Southwestern O'Brien Center for Benign Urology and Director of Urology Research for the University of Wisconsin Carbone Cancer Center. His research encompasses basic and translational sciences as it pertains to pathogenesis lower urinary tract disorders. The synergy of basic and translational research allows his lab to explore both molecular mechanisms underlying disease progression, as well as pre-clinical treatments directed at modifying these pathways with a goal of developing novel therapies. In particular, Dr. Ricke's lab investigates the roles of hormonally regulatedparacrine signaling during pathogenesis. They investigate how steroid and endocrine-disrupting chemical (EDC) signaling function together with other factors in LUT pathogenesis, and how these findings can be translated into clinical trials.

Michael R. Ruggieri, Sr., PhD
Professor of Anatomy and Cell Biology, Temple University
Dr. Ruggieri is particularly interested, and highly accomplished, in clinically translatable basic science investigations, primarily mechanisms of neural control of visceral smooth muscle. This research uses animal models of clinically-relevant human disorders to identify potential etiologic and pathogenic mechanisms and then verify these mechanisms in human tissue specimens to develop targets for therapeutic interventions. His lab was one of the first groups to demonstrate that human urinary bladder muscle strips from patients with certain pathologic conditions show purinergic nerve mediated contractions. His current

research uses neural recording and stimulation techniques to monitor return of urinary bladder emptying function in a canine model with the goal of allowing direct clinical translation of his findings into nerve transfer surgeries in human patients. He is also part of a consortium that is generating a comprehensive understanding of the role of reactive oxygen species in the aging bladder and the role of the urothelium in this process. The objective of this work is to identify specific therapeutic targets for treatment of aging bladder dysfunction.

Kimberly P. Keil Stietz, PhD
Assistant Professor, Department of Comparative Biosciences
School of Veterinary Medicine, University of Wisconsin-Madison

Dr. Keil Stietz's research focuses on understanding the impact of the environment on the establishment and regulation of urinary function, in particular developmental exposure to environmental contaminants. An environmental toxicant of significant interest is the family of polychlorinated biphenyls (PCBs). PCBs are ubiquitous environmental contaminants known to have deleterious effects on the developing brain and central nervous system. However, their effects on the peripheral nervous system and peripheral target tissues - such as the bladder - are not understood. Her laboratory uses a combination of in vitro and in vivo mouse models to identify the effects of PCBs on urinary function, not only on bladder innervation and physiology, but also on input from the CNS and dorsal root ganglia. The ultimate goal is to identify targets for therapeutic intervention and/or identify critical windows of exposure to help mitigate risk.

Maryrose Sullivan, Ph.D.
Division of Urology, Veterans Affairs, Boston Healthcare System
Assistant Professor of Surgery, Harvard Medical School, Harvard University

Dr. Sullivan is the Director of the Urology Research Lab and Biomedical Engineer at the VA Boston Healthcare System, and an Assistant Professor of Surgery at Brigham and Women's Hospital, Harvard Medical School. Research in her lab is primarily focused on investigating smooth muscle and neurotransmission defects contributing to neurogenic and non-neurogenic bladder dysfunction. Her lab uses a number of animal models of disease, including diabetes, bladder outlet obstruction, spinal cord injury, and Parkinson's disease, to determine the functional consequences of lower urinary tract disorders with the goal of identifying novel therapeutic targets and testing new interventions for improving these dysfunctions.

Chad Vezina, PhD
Associate Professor, School of Veterinary Medicine, University of Wisconsin-Madison
Dr. Vezina is the recipient of a mid-career Vilas Professorship, Director of the Molecular & Environmental Toxicology Center, and co-Director of the UW/UMAS Boston/UT Southwestern O'Brien Center for Benign Urology. He is currently a member of the GenitoUrinary Development Molecular Anatomy Project (GUDMAP). Dr. Vezina's research, using mouse models, as well as dog and human tissues, is focused on benign diseases of the prostate that impair LUT function. His laboratory developed the Void Whizzard program for automated analysis of results of void spot assays.