

Multidisciplinary Benign Urology Virtual Research Day

Friday, April 24, 2020

Duke Multidisciplinary K12 Urologic Research Career Development Program



Friday, April 24, 2020

8:00 AM to 4:00 PM

Duke University Medical Center

Durham, North Carolina

- 8:00 am **CHECK IN:** Test your audio, video, chat box, raise hands; obtain link to the program booklet
- 8:30 am **WELCOME AND INTRODUCTIONS:** Cindy L. Amundsen, MD, KURe PI and Program Director
- 8:40 am **KEYNOTE SPEAKER:** Carlos R. Estrada, Jr., MD, MBA, Harvard Medical School
Urological Tissue Engineering in 2020: A Clinician-Scientist's Perspective
- 9:20 am **PANEL DISCUSSION: Regenerative Medicine/Tissue Engineering for Urologic Conditions**
Panelists: Joshua R. Mauney, PhD, Urology and Biomedical Engineering, UC, Irvine
Jiro Nagatomi, PhD, Bioengineering, Clemson University
J. Koudy Williams, DVM, Regenerative Medicine, Wake Forest Institute
Carlos R. Estrada, Jr., MD, MBA, Harvard University
Moderator: William Boysen, MD, Urology, Duke Surgery
- 10:10 am **BREAK or Check-In for Presenters of Flash Talks Session 1**
- 10:15 am **FLASH TALKS SESSION-1: Abstracts 1 to 28**
1 or 2-minute presentations, each followed by 1-minute Q&A
- 11:30 am **BEST ABSTRACTS ORAL TRAINEE PRESENTATIONS**
- 11:30 am **Clinical Science:** Rohit Tejwani, MD, Duke Univ. School of Medicine
Assessing Clinical Outcomes Based on Pediatric Experience in Pediatric Surgical Patients
- 11:45 am **Basic Science:** Casey Steadman, PhD, Duke Univ. Pratt School of Engineering.
Effect of Epidural Kilohertz Frequency Spinal Cord Stimulation on Lower Urinary Tract Function
- 12:00 pm **Translational Science:** Julie Bennington, DVM, Wake Forest Univ. School of Medicine
Chemokine Regenerative Therapy for Chronic Fibrotic Kidney Disease: Translational Studies
- 12:15 pm **BREAK/LUNCH or CONVERSATIONS WITH the EXPERTS**
Small groups of trainees meet with experts in virtual breakout rooms (sign-up required)
- 1:00 pm **BREAK or Check-In for Presenters of Flash Talks Session 2**
- 1:05 pm **FLASH TALKS SESSION-2 – Abstracts 29 to 56**
1 or 2-min presentations, each followed by 1-minute Q&A
- 2:20 pm **BREAK –** Judges turn in scores for Flash Talks
- 2:25 pm **KEYNOTE SPEAKER:** Nicole L. Miller, MD, Urology, Vanderbilt University Medical Center
Innovations in the Surgical Treatment of BPH
- 3:05 pm **PANEL DISCUSSION: Innovative Technologies for Benign Prostatic Hyperplasia**
Panelists: Samdeep K. Mouli, MD, MS, Radiology, Northwestern University, Feinberg
Neal D. Shore, MD, FACS, Urology, Carolina Urologic Research Center
Brian M. Whitley, MD, MPH, Urology, Duke University Medical Center
Nicole L. Miller, MD, FACS, Urology, Vanderbilt University Medical Center
Moderator: Ashley W. Johnston, MD, Urology, Duke Surgery
- 3:55 pm **PRESENTATION OF TRAINEE AWARDS AND CLOSING REMARKS**

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We Thank our Sponsors

Grant K12DK100024 from the NIDDK:
Duke Multidisciplinary **K12 Urologic Research Career Development Program (KURe)**

Department of Obstetrics and Gynecology, Duke University School of Medicine
Department of Surgery, Division of Urology, Duke University School of Medicine
Department of Biomedical Engineering, Duke University
Pelvic Medicine Research Consortium (PMRC);

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Distinguished Judges**Oral Presentation Awards**

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Flash Talk Presentation Awards

Carlos R. Estrada, Jr., MD, MBA
Joshua Mauney, PhD
Nicole L Miller, MD
Samdeep K Mouli, MD, MS
Jiro Nagatomi, PhD
Neal D Shore, MD, FACS
Brian M Whitley, MD, MPH
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Research Day Organizing Committee

Cindy L. Amundsen, MD, KURe PI and Program Director, Duke Ob-Gyn
Friederike L. Jayes, DVM, PhD, KURe Program Coordinator, Duke Ob-Gyn
Rebecca Kameny, PhD, Research Program Leader, Duke Ob-Gyn
Robin Phillips, CME Program Coordinator, Duke Urologic Surgery

Trainee Oral Presentation: Best Clinical Science Abstract (O-1)**Assessing Clinical Outcomes Based on Pediatric Experience in Pediatric Surgical Patients.**

Tejwani, Rohit; Chandrapal, Jason; Young, Brian J.; Routh, Jonathan C.

Division of Urologic Surgery, Duke University Medical Center, Durham, NC

Research Areas: Clinical Outcomes Research, Health Sciences Research, Pediatric Urology

Trainee Oral Presentation: Best Basic Science Abstract (O-2)**Effect of Epidural Kilohertz Frequency Spinal Cord Stimulation on Lower Urinary Tract Function**

Steadman, Casey J¹; Langdale, Chris L¹; Grill, Warren M^{1,2,3,4}

Duke University, ¹Biomedical Engineering, ²Electrical and Computer Engineering, ³Neurobiology,

⁴Neurosurgery, Durham, NC.

Research Areas: Neurourology, Therapeutic Development, Urodynamics, Bladder dysfunction after spinal cord injury

Trainee Oral Presentation: Best Translational Science Abstract (O-3)**Chemokine Regenerative Therapy for Chronic Fibrotic Kidney Disease: Translational Studies**

Julie Bennington¹, Doug Hepler², Gopal Badlani³, Shannon Lankford¹, Renata Magalhaes¹, Jason Fanning⁴, Cucu Kartini⁵, Irma Suparto⁶, Winda Kusumawardhani⁵, ArRaniri Putra⁵, Silmi Mariya⁶, J Koudy Williams¹

¹Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC; ²Piedmont Animal Health, Greensboro, NC; ³Wake Forest School of Medicine, Winston-Salem, NC; ⁴Wake Forest University, Winston-Salem, NC; ⁵PDHB Joint Veterinary Clinic, Sunter, Indonesia; ⁶Primate Research Center, Institut Pertanian Bogor, Bogor Agricultural University, Indonesia

Research Area: Regenerative Medicine / Tissue Engineering

Flash Talks # 1-28 are presented in the AM-session, # 29-56 are presented in the PM session.
2-min talks are finalists in the trainee competition.

Talk	Presenter	Title	Length
F-43	Abdelaal	Purging of Leukemia Cells Prior to Spermatogonial Stem Cell (SSC) Auto Transplantation to Restore Fertility	2 min
F-14	Amato	Hindlimb cells in the penis: A newly identified cell population involved in penis formation	1 min
F-55	Bandin	Readmission After Uteroscopy for Patients Stented Due to Febrile UTI with Obstructing Stone	1 min
F-38	Boysen	Medical management of penile and urethral Lichen Sclerosus with topical clobetasol improves long term voiding symptoms and quality of life	1 min
F-39	Boysen	Resection of pubic symphysis with cystectomy and urinary diversion improves long term patient reported physical health measures among patients with urosymphyseal fistula	1 min
F-51	Boysen	Admissions for radiation cystitis are increasing among cancer survivors in the United States: Analysis of the Health Care Cost and Utilization Project	1 min
F-09	Broman	Immune Cell Interactions in Benign Prostatic Hyperplasia	1 min
F-15	Burleson	"Chronic High Fat Diet Increases Vaginal Sphincter Laxity but not Pelvic Floor Muscle Function in Mice"	2 min
F-18	Cohen	A Five Year Look In Review Of The Wake Forest Baptist Health Experimental Pediatric And Adolescent Fertility Preservation Program	1 min
F-44	Cohen	Heavy Metal Toxicity In The Testis: Comparative Assessment Using 2D Cell Culture And A 3D Organoid System	1 min
F-06	Cullingsworth	Quantification of Spontaneous Rhythmic Contractions Throughout Filling: Is All Detrusor Overactivity Clinically Relevant?	1 min
F-20	Dunton	Differential Effects of Simulated Bladder Voiding Cycles on Urothelial Cell Function In vitro.	2 min
F-36	Garvey	Stromal estrogen receptor-alpha is involved in the development of lower urinary tract dysfunction.	1 min
F-07	Gonzalez	Chronic Monitoring of Voiding Function in a Novel Model of Detrusor Underactivity	2 min
F-41	Gracely	Preoperative and Postoperative Factors that Impact Renal Function After Incontinent Urinary Diversion for Benign Indications	1 min

Talk	Presenter	Title	Length
F-48	Gracely	Risk of Urinary Tract Infection after Intradetrusor Botulinum Toxin A Injection in Catheter-Dependent Patients with Neurogenic Bladder with Asymptomatic Bacteriuria	1 min
F-46	Harper	Annexin A1 Inhibits NLRP3 and Prevents Inflammation During Bladder Outlet Obstruction	2 min
F-31	Hendrickson	Efficacy of 100 units Compared to 200 units of Intradetrusor OnabotulinumToxinA for Non-Neurogenic Urgency Incontinence: A Secondary Analysis	1 min
F-32	High	Preliminary analysis of higher neural function in women with overactive bladder after anticholinergic versus beta-3 adrenergic agonist versus placebo: A randomized controlled pilot trial	2 min
F-56	Ho	The Role of Cavitation in Energy Delivery and Stone Damage During Laser Lithotripsy Treatment	1 min
F-03	Hokanson	Intravesical Prostaglandin E2: Bladder Irritant or Urethral Smooth Muscle Relaxant?	1 min
F-01	Hudson	Using Enzymes to Induce Hypoxia for an in vitro Bladder Outlet Obstruction Model	1 min
F-22	Hughes	A possible mechanism underlying mood disorders associated with LUTS: Chronic bladder outlet obstruction causes NLRP3-dependent inflammation in the hippocampus and depression in rats	1 min
F-30	Hughes	Sexual Dysfunction In Spina Bifida Patients: A Systematic Review	2 min
F-47	Hughes	NLRP3 Regulates the Progression from Bladder Overactivity to Underactivity in a Mouse Genetic Model of Type 1 Diabetes (Akita)	1 min
F-40	Inouye	Use of Isotonic Contrast Solution in the Artificial Urinary Sphincter Does Not Impact Device Longevity	2 min
F-53	Inouye	Increasing Comorbidity and Frailty Do Not Impact Postoperative Complications Among Men Undergoing Artificial Urinary Sphincter Implantation	1 min
F-23	Kelly	Determining the Prevalence of Lower Urinary Tract Symptoms in Children with Diabetes: Multi-center Cross-sectional Survey	2 min
F-05	Langdale	Stimulation of the Pudendal Sensory Nerve Alters Voiding Behavior in Conscious Unrestrained Wistar Rats	1 min
F-33	Li	Heightened Sensation in Response to the Sight or Sound of Running Water Identified in Individuals with Overactive Bladder	1 min

Talk	Presenter	Title	Length
F-34	Li	A Nomogram for Identifying Irregular Bladder Shapes During Filling Using Ultrasound in Women with Overactive Bladder	2 min
F-12	Liu	Steroid Hormone Metabolism Mediated Racial Disparity in Men with Benign Prostatic Hyperplasia	2 min
F-54	Ludvigson	Does CT scan after ultrasound change surgical planning for nephrolithiasis?	2 min
F-02	Mackay	Prospective Evaluation of Intradetrusor Injections of OnabotulinumtoxinA in Adults with Spinal Dysraphism	2 min
F-42	Morhardt	Viscoelastic properties of fresh human bladder tissue	1 min
F-45	Nikmehr	Efficient Selection Method For Human Round Spermatid In TESE Negative Men	1 min
F-10	Nose	The endogenous anti-inflammatory Annexin A1 augments recovery following bladder outlet de-obstruction	2 min
F-21	Odom	Diabetes Dysregulates Genes Controlling Urothelial Barrier Function in a NLRP3 Dependent Manner	1 min
F-11	Ortiz Hernandez	Role of Estrogens in Fibrosis and Myofibroblast Phenoconversion of Prostate Stromal Cells	1 min
F-16	Pandya	Evaluating the Impact of Anxiety on Postoperative Pain in Pelvic Reconstructive Surgery	1 min
F-37	Popovics	Prostatic Osteopontin Expression is Associated with Symptomatic Benign Prostatic Hyperplasia	2 min
F-27	Qi	Topiramate induced nephrolithiasis may be mitigated by appropriate medical therapy	1 min
F-04	Randolph	Co-culture with Healthy Schwann Cells is Unable to Recover Major Pelvic Ganglia Neuron Survival after Radiation	2 min
F-52	Raphael	Association of Lifetime Interpersonal Violence with Urinary Tract Infections and Painful Bladder Symptoms in a Multiethnic Cohort of Community-Dwelling Middle-Aged to Older Women in California	1 min
F-13	Roldán-Alzate	MRI Based Patient Specific Urinary Flow Dynamics Simulation	1 min
F-49	Rounds	Intravesical Probiotic Use Decreases Urinary Symptoms, Changes Urine Microbiome and Microbial Communities of those with Neurogenic Lower Urinary Tract Dysfunction: First In-Human Trial	1 min

Talk	Presenter	Title	Length
F-08	Ruetten	An Immunohistochemical Prostate Cell Identification Key Indicates that Aging Shifts Procollagen 1A1 Production from Myofibroblasts to Fibroblasts in Dogs Prone to Prostate-related Urinary Dysfunction	1 min
F-17	Schrott	Sperm DNA Methylation Altered by THC and Nicotine: Vulnerability of Neurodevelopmental Genes with Bivalent Chromatin	1 min
F-29	Simmons	Utility Estimation for Neurogenic Bowel Dysfunction in the General Population	1 min
F-25	Souders	Underrepresentation of Benign Urologic Conditions in Federal Research Funding	2 min
F-24	Sysoeva	Analysis of Carbapenem-Resistant Enterobacteriaceae Isolates From Duke University Hospital	1 min
F-50	Tran	Classification of Multiple Sclerosis Women with Voiding Dysfunction using Machine Learning: is Functional or Structural Connectivity a Better Predictor?	2 min
F-35	Vickman	Characterization of Inflammatory Cells in Human Benign Prostatic Hyperplasia	1 min
F-28	Whelan	Examining outcomes for totally tubeless percutaneous nephrolithotomy	1 min
F-19	Wilson	Whole Testes Cryopreservation For Future Auto-Transplantation: Comparison of Different Freezing Methods	1 min
F-26	Zhao	Risk Factors for Surgical Shunt Placement Among Patients with Ischemic Priapism	1 min

Trainee F-01**Using Enzymes to Induce Hypoxia for an in vitro Bladder Outlet Obstruction Model**Britney N Hudson¹, J. Todd Purves^{2,3}, Francis M. Hughes², and Jiro Nagatomi¹¹Clemson University, Clemson, SC USA²Departments of Surgery and ³Pediatrics, Duke University Medical Center, Durham, NC, USA**Research Area:** Bladder Outlet Obstruction**Trainee F-02****Prospective Evaluation of Intradetrusor Injections of OnabotulinumtoxinA in Adults with Spinal Dysraphism**Mackay, Alexander; Sosland, Rachel; Tran, Khue; Stewart, Julie; Boone, Timothy; Khavari, Rose
Houston Methodist Hospital, Department of Urology, Houston, TX**Research Areas:** Neurourology, Urodynamics**Trainee F-03****Intravesical Prostaglandin E2: Bladder Irritant or Urethral Smooth Muscle Relaxant?**James Hokanson¹, Christopher Langdale¹, Phil Milliken⁵, Arun Sridhar⁵, Warren M. Grill^{1,2,3,4}Departments of Biomedical Engineering¹, Electrical and Computer Engineering², Neurobiology³, and Surgery⁴; Duke University, Durham, NC; Galvani Bioelectronics⁵ Stevenage, UK**Research Area:** Overactive Bladder (OAB)**Trainee F-04****Co-culture with Healthy Schwann Cells is Unable to Recover Major Pelvic Ganglia Neuron Survival after Radiation**

Randolph, Joshua T., Pak, Elena S., Koontz, Bridget F., Hannan, Johanna L.

Brody School of Medicine, Department of Physiology, East Carolina University, Greenville, NC and
Duke University School of Medicine, Department of Radiation Oncology, Durham, NC**Research Area:** Sexual Dysfunction**F-05****Stimulation of the Pudendal Sensory Nerve Alters Voiding Behavior in Conscious Unrestrained Wistar Rats**Langdale, Christopher L¹; Hokanson, James A¹; Degoski, Danielle¹; Milliken, Phillip⁵;
Grill, Warren M^{1,2,3,4}Departments of Biomedical Engineering¹, Electrical and Computer Engineering², Neurobiology³, and
Neurosurgery⁴ Duke University, Durham, NC; Bioelectronics R&D⁵; Galvani Bioelectronics,
Stevenage, UK**Research Areas:** Overactive Bladder (OAB), Urodynamics

Trainee F-06

**Quantification of Spontaneous Rhythmic Contractions Throughout Filling:
Is All Detrusor Overactivity Clinically Relevant?**Cullingsworth¹, Zachary E; Li¹, Rui; Klausner², Adam P; Speich¹, John E.

1. Virginia Commonwealth University (VCU), Department of Mechanical and Nuclear Engineering, Richmond, Virginia; 2. VCU, Department of Surgery/Division of Urology, Richmond, Virginia.

Research Areas: Data Science / Predictive Analytics, Overactive Bladder (OAB), Urodynamics

Trainee F-07

Chronic Monitoring of Voiding Function in a Novel Model of Detrusor Underactivity

Gonzalez, Eric J; Odom, Michael R; Hannan, Johanna L; Grill, Warren M.

Duke University, Department of Biomedical Engineering, Durham, NC

East Carolina University, Department of Physiology, Greenville, NC

Research Areas: Neurourology, Voiding Dysfunction/Urinary Retention

Trainee F-08

**An immunohistochemical prostate cell identification key indicates that aging shifts
procollagen 1A1 production from myofibroblasts to fibroblasts in dogs prone to prostate-
related urinary dysfunction**Ruetten, Hannah^{1,2*}; Cole, Clara^{1,2*}; Wehber, Marlyse^{1,2*}; Wegner, Kyle A.^{2,3}; Girardi, Nicholas M.^{1,2}; Peterson, Nelson T.^{2,3}; Scharpf, Brandon R.^{2,3}; Romero, Michael F.⁴; Wood, Michael W.⁵; Colopy, Sara A.⁶; Bjorling, Dale E.⁶; Vezina, Chad M.^{1,2,3} *authors contributed equally to this work

1-University of Wisconsin- Madison, Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Madison, WI; 2- University of Wisconsin- Madison, George M. O'Brien Benign Urology Center, Madison, WI; 3- University of Wisconsin- Madison, Molecular and Environmental Toxicology Center, School of Medicine and Public Health, Madison, WI; 4- Mayo Clinic College of Medicine and Science, Physiology and Biomedical Engineering and Nephrology and Hypertension, George M. O'Brien Urology Research Center, Rochester, MN; 5- University of Wisconsin- Madison, Department of Medical Sciences, School of Veterinary Medicine, Madison, WI; 6- University of Wisconsin- Madison, Department of Surgical Sciences, School of Veterinary Medicine, Madison, WI

Research Areas: Benign Prostatic Hyperplasia, Voiding Dysfunction/Urinary Retention

Trainee F-09

Immune Cell Interactions in Benign Prostatic HyperplasiaBroman, Meaghan M.¹, Lanman, Nadia A.^{1,2}, Vickman, Renee E.³, Franco, Omar E.³, Hayward, Simon W.³, Henry, Gervaise⁴, Strand, Douglas W.⁴, Ratliff, Timothy L.^{1,2}¹Purdue University, Department of Comparative Pathobiology, West Lafayette, IN, USA, ²Purdue Center for Cancer Research, West Lafayette, IN, USA, ³NorthShore University HealthSystem Research Institute, Evanston, IL, USA, ⁴University of Texas Southwestern Medical Center, Department of Urology, Dallas, TX, US**Research Area:** Benign Prostatic Hyperplasia

Trainee F-10

The endogenous anti-inflammatory Annexin A1 augments recovery following bladder outlet de-obstructionBrent D. Nosé¹, Shelby Harper¹, Francis M. Hughes, Jr.¹, Todd J. Purves¹¹Division of Urology, Department of Surgery, Duke University Medical Center, Durham, NC**Research Areas:** Benign Prostatic Hyperplasia, Bladder Inflammation, Bladder Outlet Obstruction, Urodynamics, Voiding Dysfunction/Urinary Retention

Trainee F-11

Role of Estrogens in Fibrosis and Myofibroblast Phenoconversion of Prostate Stromal CellsOrtiz Hernandez, Christian J. ^{1,2,3}, Ricke, William A. ^{1,3}¹Department of Urology, University of Wisconsin- Madison, Madison, WI²Molecular and Cellular Pharmacology Training Program- Madison, Madison, WI³George M. O'Brien Center of Research Excellence, University of Wisconsin – Madison, WI**Research Areas:** Benign Prostatic Hyperplasia, Bladder Outlet Obstruction, Voiding Dysfunction/Urinary Retention

Trainee F-12

Steroid Hormone Metabolism Mediated Racial Disparity in Men with Benign Prostatic HyperplasiaTeresa T. Liu¹, Emily A. Ricke¹, Douglas Strand², Rajiv Dhir³, William A. Ricke¹¹University of Wisconsin – Madison, Department of Urology, Madison, WI²University of Texas Southwestern, Department of Urology, Dallas, TX³University of Pittsburgh Medical Center, Department of Pathology, Pittsburgh, PA**Research Area:** Benign Prostatic Hyperplasia

Trainee F-13

MRI Based Patient Specific Urinary Flow Dynamics SimulationRyan Pewowaruk, David Rutkowski, Diego Hernando, Wade Bushman and Alejandro Roldán-Alzate
University of Wisconsin, Mechanical Engineering and Radiology, Madison, Wisconsin**Research Areas:** Benign Prostatic Hyperplasia, Bladder Outlet Obstruction, Urodynamics

Trainee F-14

Hindlimb cells in the penis: A newly identified cell population involved in penis formation

Ciro M. Amato and Humphrey H.-C. Yao

Reproductive and Developmental Biology Lab, National Institute of Environmental Health Sciences, Research Triangle Park, NC 27709

Research Areas: Congenital Urogenital Anomalies / Embryology, Pediatric Urology

Trainee F-15

Chronic high fat diet increases vaginal sphincter laxity but not pelvic floor muscle function in mice

Burlson, Lindsey K, Odom, Michael, Amarose, Adam, Spengenburg, Espen, Hannan, Johanna Brody School of Medicine at East Carolina University, Department of Physiology, Greenville, NC

Research Areas: Female Pelvic Medicine, Sexual Dysfunction

Trainee F-16

Evaluating the Impact of Anxiety on Postoperative Pain in Pelvic Reconstructive Surgery

Pandya, Prerna R¹; Yanek, Lisa²; Lovejoy, David A¹; Muniz, Keila¹; Chen, Chi Chiung Grace¹; Blomquist, Joan L³; Jacobs, Stephanie³; Moss, Chailee¹; Powell, Anna¹; Handa, Victoria L¹

¹ Johns Hopkins University School of Medicine, Department of Gynecology and Obstetrics, Baltimore, Maryland

² Johns Hopkins University School of Medicine, Department of Medicine, Baltimore, Maryland

³ Greater Baltimore Medical Center, Department of Gynecology, Baltimore, Maryland

Research Area: Female Pelvic Medicine

Trainee F-17

Sperm DNA Methylation Altered by THC and Nicotine: Vulnerability of Neurodevelopmental Genes with Bivalent Chromatin

Schrott, Rose^{1,2}, Rajavel, Maya¹, Acharya, Kelly³, Huang, Zhiqing³, Acharya, Chaitanya⁴, Hawkey, Andrew⁵, Pippen, Erica⁵, Lyerly, H.K.⁴, Levin, Ed D.⁵, Murphy, Susan K.^{1,2,6}

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³ Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, Duke University Medical Center, Durham, North Carolina

⁴ Center for Applied Therapeutics, Division of Surgical Sciences, Dept. of Surgery, Duke University Medical Center, Durham, North Carolina

⁵ Department of Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, North Carolina

⁶ Department of Pathology, Duke University Medical Center, Durham, North Carolina

Research Areas: Toxicology, Basic Science Research

Trainee F-18

A Five Year Look In Review Of The Wake Forest Baptist Health Experimental Pediatric And Adolescent Fertility Preservation Program

Adam Cohen, MD^{1, 2}; Nima Pourhabibi Zarandi, MD¹; Guillermo Galdon¹, MD; Omar Abdelaal, MD¹; Banafsheh Nickmehr, PhD¹; Kimberly Stogner-Underwood, MD³; Stanley Kogan, MD^{1, 2}; Steve Hodges, MD²; Stuart Howards, MD²; Thomas McLean, MD⁴; Anthony Atala, MD^{1, 2}; Hooman Sadri-Ardekani, MD, PhD^{1, 2}

¹Wake Forest institute of Regenerative Medicine, ²Department of Urology; ³Department of Pathology

⁴Section of Hematology-Oncology, Department of Pediatrics; Wake Forest School of Medicine, Winston-Salem, NC.

Research Areas: Infertility, Pediatric Urology, Regenerative Medicine / Tissue Engineering

Trainee F-19

Whole Testes Cryopreservation For Future Auto-Transplantation: Comparison of Different Freezing Methods

Wilson, Robert R.A, Bsc¹; Ademoyero, Oludamilola, Msc¹; Greene, Elizabeth D, LATG.²; Chen, Zhen, Msc²; Atala, Anthony, MD^{1,3}; Brockbank, Kelvin G.M., PhD^{2,4}; Sadri-Ardekani, Hooman, MD, PhD^{1,3}

¹Wake Forest Institute for Regenerative Medicine (WFIRM), Wake Forest School of Medicine, Winston-Salem, NC.; ²Tissue Testing Technologies LLC, North Charleston, SC; ³Department of Urology, Wake Forest School of Medicine, Winston-Salem, NC.; ⁴Department of Bioengineering, Clemson University, Clemson, SC

Research Areas: Infertility, Pediatric Urology, Regenerative Medicine / Tissue Engineering

Trainee F-20

Differential effects of simulated bladder voiding cycles on urothelial cell function *In vitro*.

Dunton, Cody L¹, Purves, James T^{1,2,3}, Hughes, Francis M^{1,2}, Nagatomi, Jiro¹

1) Clemson University, Department of Bioengineering, Clemson, SC 2) Duke University Medical Center, Department of Surgery, Durham, NC 3) Duke University Medical Center, Department of Pediatrics, Durham, NC.

Research Areas: Bladder Inflammation, Bladder Outlet Obstruction

Trainee F-21

Diabetes Dysregulates Genes Controlling Urothelial Barrier Function in a NLRP3 Dependent Manner

Odom, Michael R¹; Hughes Jr, Francis M¹; Jin, Huixia¹; Purves, J. Todd^{1,2}

¹Department of Surgery, Division of Urology, Duke University Medical Center, Durham, NC.

²Department of Pediatrics, Duke University Medical Center, Durham, NC.

Research Areas: Bladder Inflammation, Diabetes, Voiding Dysfunction/Urinary Retention

F-22

A possible mechanism underlying mood disorders associated with LUTS: Chronic bladder outlet obstruction causes NLRP3-dependent inflammation in the hippocampus and depression in rats

Hughes, Francis M, Jr^{1,2}; Hirshman, Nathan A¹; Malick, Hamza A¹; Jin, Huixia¹;

Harper, Shelby N¹; Purves, J Todd^{1,2,3}

¹Department of Surgery, Division of Urology, Duke University Medical Center, Durham, NC.

²Department of Bioengineering, Clemson University, Clemson, SC.

³Department of Pediatrics, Duke University Medical Center, Durham, NC.

Research Areas: Bladder Inflammation, Bladder Outlet Obstruction, Neurourology

Trainee F-23

Determining the Prevalence of Lower Urinary Tract Symptoms in Children with Diabetes: Multi-center Cross-sectional Survey

Maryellen S Kelly¹, Jonathan C Routh¹, Leah G Davis¹, J Todd Purves¹, Jennifer Stout¹, Akouros Afshar², Kathryn E Morgan³, Heidi Stephany⁴, Jill Sanvordenker⁵, Azadeh Wickham⁶, Robert Benjamin⁷, Matthew Maciejewski⁸

¹ Dept. of Surgery, Duke University, Durham, NC; ² Dept. of Urologic Sciences, British Columbia Children's Hospital, Vancouver, British Columbia, Canada; ³ Dept. of Pediatrics, University of Virginia Children's, Charlottesville, VA; ⁴ Dept. of Urology, University of California, Irvine, Irvine, CA; ⁵ Dept. of Urology, C.S. Mott Children's Hospital, Michigan Medicine, Ann Arbor, MI; ⁶ Dept. of Urology, Children's Mercy, Kansas City, MO; ⁷ Dept. of Pediatrics, Duke University, Durham, NC; ⁸ Center for Health Services Research and Development in Primary Care, Durham Veterans Affairs Medical Center, Durham, NC

Research Areas: Diabetes, Pediatric Urology, Voiding Dysfunction/Urinary Retention

F-24

Analysis of Carbapenem-Resistant *Enterobacteriaceae* Isolates From Duke University Hospital

L. P. Elam¹, K. Chittur², R. M. Addison³, S. S. Lewis³, B. A. Smith³, D. J. Anderson³, T. A. Sysoeva¹

¹The Univ. of Alabama in Huntsville, Huntsville, AL, ²GeneCapture, HudsonAlpha Institute for Biotechnology, Huntsville, AL, ³Duke Center for Antimicrobial Stewardship and Infection Prevention, Durham, NC

Research Areas: Infections of the Urinary Tract, Multidrug resistance in uropathogens

Trainee F-25

Underrepresentation of Benign Urologic Conditions in Federal Research Funding

Souders, Colby P¹; Lo, Eric M²; Ackerman, A. Lenore¹

¹ Department of Surgery, Division of Urology, Cedars-Sinai Medical Center, Los Angeles, CA

² Baylor College of Medicine, Houston, TX

Research Areas: Female Pelvic Medicine, Medical Education/Training

Trainee F-26

Risk Factors for Surgical Shunt Placement Among Patients with Ischemic Priapism

Zhao, Hanson¹; Dallas, Kai¹; Masterson, John¹; Berdahl, Carl¹; Pevnick, Joshua¹; Anger, Jennifer T¹

¹Cedars Sinai Medical Center, Los Angeles California

Research Areas: Clinical Outcomes Research, Sexual Dysfunction

Trainee F-27

Topiramate induced nephrolithiasis may be mitigated by appropriate medical therapy

Qi, Robert; Whelan, Patrick; Terry, Russell; Ketterman, Brian; Lipkin, Michael; Preminger, Glenn
Duke University Hospital, Durham, NC

Research Areas: Clinical Outcomes Research, Nephrolithiasis

Trainee F-28

Examining outcomes for totally tubeless percutaneous nephrolithotomy

Brian Ketterman, Patrick Whelan, Russell Terry, Robert Qi, Glenn Preminger, Michael Lipkin
Duke University Hospital, Durham, NC

Research Areas: Clinical Outcomes Research, Nephrolithiasis

Trainee F- 29

Utility Estimation for Neurogenic Bowel Dysfunction in the General Population

Simmons, Kirsten L., Davis, Leah G., Routh, Jonathan C., Maryellen, Kelly S.
Duke University School of Medicine, Division of Urologic Surgery Durham, NC; Duke University Medical Center, Durham, NC, USA

Research Areas: Health Sciences Research, Pediatric Urology, Bowel Dysfunction, Spina Bifida

Trainee F-30

Sexual Dysfunction In Spina Bifida Patients: A Systematic Review

Taylor L. Hughes, BS, Kirsten Simmons, BS, Rohit Tejwani, MD, Karen Barton MSLIS, John S. Wiener, MD, J. Todd Purves, MD, PhD, Jonathan C. Routh, MD, MPH
Division of Urology, Department of Surgery, Duke University School of Medicine, Durham, NC

Research Areas: Congenital Urogenital Anomalies / Embryology, Health Sciences Research, Pediatric Urology, Sexual Dysfunction

Trainee F-31

Efficacy of 100 units Compared to 200 units of Intradetrusor OnabotulinumToxinA for Non-Neurogenic Urgency Incontinence: A Secondary Analysis

Whitney K. Hendrickson, MD¹, Cindy L. Amundsen, MD¹, Megan Bradley, MD², Isuzu Meyer, MD³, Deborah L. Myers, MD⁴, David D. Rahn, MD⁵, Ariana L. Smith, MD⁶, Emily S. Lukacz, MD, MAS⁷

¹Dept. of OBGYN, Duke University Medical Center, Durham, NC, ²Dept. of Obstetrics, Gynecology & Reproductive Services, School of Medicine, University of Pittsburgh, ³Dept. of OBGYN, University of Alabama at Birmingham, ⁴Dept. of OBGYN, Brown University, Providence, Rhode Island, ⁵Dept. of OBGYN, UT Southwestern Medical Center, Dallas TX, ⁶ Dept. of Surgery, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania, ⁷Dept. of OBGYN & Reproductive Science, University of California San Diego, San Diego CA

Research Areas: Clinical Outcomes Research, Female Pelvic Medicine, Overactive Bladder

Trainee F-32

Preliminary analysis of higher neural function in women with overactive bladder after anticholinergic versus beta-3 adrenergic agonist versus placebo: A randomized controlled pilot trial

High, Rachel A¹; Danford, Jill M³; Shi, Zhaoyue²; Karmonik, C²; Kuehl, Thomas J¹; Bird, Erin T³; Khavari R⁴

(1) Baylor Scott and White Health Department of Obstetrics & Gynecology, Temple, Texas (2) Methodist Research Institute Department of MRI Core, Houston, Texas (3) Baylor Scott and White Health Department of Urology, Temple, Texas (4) Houston Methodist Hospital, Department of Urology, Houston, Texas

Research Area: Overactive Bladder (OAB)

Trainee F-33

Heightened Sensation in Response to the Sight or Sound of Running Water Identified in Individuals with Overactive BladderLi, Rui¹; Sivagnanalingam, Urmila²; Koirala, Priscilla²; Maddra, Kaitlyn M²; Egenberger, Kyla¹; Roberts, Sydney¹; Swavely, Natalie R²; Weprin, Samuel²; Speich, John E¹; & Klausner, Adam P¹¹Virginia Commonwealth University (VCU), Department of Mechanical & Nuclear Engineering, Richmond, VA. ²VCU, Department of Surgery/Division of Urology, Richmond, VA.**Research Area:** Overactive Bladder (OAB)

Trainee F-34

A Nomogram for Identifying Irregular Bladder Shapes During Filling Using Ultrasound in Women with Overactive BladderLi, Rui¹; Maddra, Kaitlyn M²; Nagle, Anna S¹; Klausner, Adam P²; & Speich, John E¹¹Virginia Commonwealth University (VCU), Department of Mechanical & Nuclear Engineering, Richmond, VA. ²VCU, Department of Surgery/Division of Urology, Richmond, VA.**Research Areas:** Data Science / Predictive Analytics, Overactive Bladder, Uroradiology

Trainee F-35

Characterization of Inflammatory Cells in Human Benign Prostatic HyperplasiaVickman, Renee E.¹, Lanman, Nadia A.^{2,3}, Broman, Meaghan M.², Franco, Omar E.¹, Cresswell, Gregory M.², Helfand, Brian T.¹, Glaser, Alexander¹, Katz, Lori¹, Petkewicz, Jacqueline¹, Talaty, Pooja¹, Crawford, Susan E.¹, Ratliff, Timothy L.^{2,3}, and Hayward, Simon W.¹¹NorthShore University HealthSystem, Department of Surgery, Evanston, IL²Purdue University, Department of Comparative Pathobiology, West Lafayette, IN³Purdue University, Purdue Center for Cancer Research, West Lafayette, IN**Research Area:** Benign Prostatic Hyperplasia

Trainee F-36

Stromal estrogen receptor-alpha is involved in the development of lower urinary tract dysfunction.Debra Garvey¹, Kristen S. Uchtmann¹, Richard E. Peterson², and Chad M. Vezina^{1,3,4} and William A. Ricke^{1,3}¹George M. O'Brien Center of Research Excellence, Department of Urology, University of Wisconsin-Madison, Madison, WI,²School of Pharmacy, University of Wisconsin-Madison, Madison, WI, USA;³Molecular and Environmental Toxicology Center, University of Wisconsin-Madison, Madison, WI, USA;⁴School of Veterinary Medicine, University of Wisconsin-Madison, Madison, WI, USA**Research Areas:** Benign Prostatic Hyperplasia, Toxicology, Voiding Dysfunction/Urinary Retention

Trainee F-37

Prostatic osteopontin expression is associated with symptomatic benign prostatic hyperplasia

Popovics, Petra^{1,2,3*}, Awadallah, Wisam N.^{3,4}, Kohrt, Sarah E.^{4,5}, Case, Thomas C.⁶, Miller, Nicole L.⁶, Ricke, Emily, A.^{1,2}, Huang, Wei⁷, Ramirez-Solano, Marisol⁸, Liu, Qi⁸, Vezina, Chad M.^{2,9,10}, Matusik, Robert J.⁶, Ricke, William A.^{1,2} and Grabowska, Magdalena M.^{3,4,5,11}

¹Dept. of Urology, School of Medicine and Public Health, University of Wisconsin-Madison, Madison, WI; ²George M. O'Brien Center of Research Excellence, University of Wisconsin School of Medicine and Public Health; ³Dept. of Urology, Case Western Reserve University, Cleveland, OH; ⁴Case Comprehensive Cancer Center, Case Western Reserve; ⁵Dept. of Pharmacology, Case Western Reserve; ⁶Dept. of Urology, Vanderbilt University Medical Center, Nashville, TN; ⁷Dept. of Pathology and Laboratory Medicine, School of Medicine and Public Health, University of Wisconsin-Madison; ⁸Center for Quantitative Sciences, Vanderbilt University Medical Center, Nashville, TN; ⁹Dept. of Comparative Biosciences, University of Wisconsin-Madison; ¹⁰Molecular and Environmental Toxicology Center, University of Wisconsin-Madison; ¹¹Dept. of Biochemistry, Case Western Reserve
Research Areas: Benign Prostatic Hyperplasia, Voiding Dysfunction/Urinary Retention

Trainee F-38

Medical management of penile and urethral Lichen Sclerosus with topical clobetasol improves long term voiding symptoms and quality of life

Boysen, William R and Peterson, Andrew C

Duke University Medical Center, Department of Surgery, Division of Urology, Durham NC USA

Research Areas: Clinical Outcomes Research, Urinary Reconstruction

Trainee F-39

Resection of pubic symphysis with cystectomy and urinary diversion improves long term patient reported physical health measures among patients with urosymphyseal fistula

Boysen, William R; Inouye, Brian; Peterson, Andrew C

Duke University Medical Center, Department of Surgery, Division of Urology, Durham NC USA

Research Areas: Clinical Outcomes Research, Urinary Reconstruction

Trainee F-40

Use of Isotonic Contrast Solution in the Artificial Urinary Sphincter Does Not Impact Device Longevity

Brian M. Inouye¹, William R. Boysen¹, Gregory J. Barton¹, Andrew C. Peterson¹

Duke University Medical Center, Department of Surgery, Division of Urology, Durham NC USA

Research Areas: Therapeutic Development, Incontinence

Trainee F-41

Preoperative and Postoperative Factors that Impact Renal Function After Incontinent Urinary Diversion for Benign Indications

Alyssa Greiman, Minsoo Choo, Paholo Barboglio Romo, Bahaa S. Malaeb, Ann P. Cameron, J. Quentin Clemens, John T. Stoffel

Department of Urology, University of Michigan, Ann Arbor, MI, USA.

Research Area: Urinary Reconstruction

Trainee F-42

Viscoelastic properties of fresh human bladder tissue

Duncan R. Morhardt, Andrea Poli, John M. Park, Ellen M. Arruda

Department of Urology, Boston Children's Hospital, Boston, MA

Department of Urology, Michigan Medicine, Ann Arbor, MI

Department of Mechanical Engineering, College of Engineering, University of Michigan, Ann Arbor, MI

Research Area: Bladder Biomechanics

Trainee F-43

Purging of Leukemia Cells Prior to Spermatogonial Stem Cell (SSC) Auto Transplantation to Restore Fertility

Abdelaal, Omar A. MD^{1,2}; Hickerson, Darren Ms, MDiv¹; Allickson, Julie PhD¹; Atala, Anthony, MD^{1,3}; Sadri-Ardekani, Hooman MD, PhD^{1,3}

¹Wake Forest Institute for Regenerative Medicine, Wake Forest School of Medicine, Winston-Salem, NC,

²Department of Urology, Zagazig Faculty of Medicine, Zagazig, Egypt,

³Department of Urology, Wake Forest School of Medicine, Winston-Salem, NC

Research Areas: Infertility, Pediatric Urology

Trainee F-44

Heavy Metal Toxicity In The Testis: Comparative Assessment Using 2D Cell Culture And A 3D Organoid System

Adam Cohen, MD ^{1, 2}, Nima Pourhabibi Zarandi, MD ^{1, 2}, Anthony Atala, MD ^{1, 2}, Hooman Sadri-Ardekani, MD, PhD ^{1, 2}

¹Wake Forest institute of Regenerative Medicine, ²Department of Urology, Wake Forest School of Medicine, Winston-Salem, NC.

Research Areas: Infertility, Regenerative Medicine / Tissue Engineering, Toxicology

Trainee F-45

Efficient Selection Method For Human Round Spermatozoa In TESE Negative Men

Nikmehr, Banafsheh¹; Cohen, Adam B^{1,2}; Halicigil, Cihan⁴; Pettenati, Mark J³; Atala, Anthony^{1,2}; Sadri-Ardekani, Hooman MD^{1, 2}

¹Wake Forest Institute of Regenerative Medicine, ²Department of Urology, ³Department of Pathology, Wake Forest School of Medicine, Winston Salem, NC.; ⁴Carolinas Fertility Institute (CFI), Winston Salem, NC.

Research Areas: Infertility, Regenerative Medicine / Tissue Engineering

Trainee F-46

Annexin A1 Inhibits NLRP3 and Prevents Inflammation During Bladder Outlet Obstruction

Harper, Shelby N.¹; Hughes, Jr., Francis M.¹; Nosé, Brent D.¹; Zheng, Michael¹; Jin, Huixia ¹; Purves, J. Todd ¹

¹Division of Urology, Department of Surgery, Duke University Medical Center, Durham, NC

Research Area: Bladder Inflammation

F-47

NLRP3 Regulates the Progression from Bladder Overactivity to Underactivity in a Mouse Genetic Model of Type 1 Diabetes (Akita)Hughes, Francis M, Jr;¹ Odom, Michael R;¹ Jin Huixia;¹ Purves, J Todd^{1,2}¹Department of Surgery, Division of Urology, Duke University Medical Center, Durham, NC.²Department of Pediatrics, Duke University Medical Center, Durham, NC.**Research Areas:** Bladder Inflammation, Diabetes

Trainee F-48

Risk of Urinary Tract Infection after Intradetrusor Botulinum Toxin A Injection in Catheter-Dependent Patients with Neurogenic Bladder with Asymptomatic Bacteriuria

Alyssa Greiman, Giulia Lane, Rachel Bergman, Paholo Barboglio Romo, J. Quentin Clemens, Priyanka Gupta, Diana O'Dell, John Stoffel, Anne P. Cameron

Department of Urology, University of Michigan, Ann Arbor, MI, USA.

Research Areas: Infections of the Urinary Tract, Neurourology

Trainee F-49

Intravesical Probiotic Use Decreases Urinary Symptoms, Changes Urine Microbiome and Microbial Communities of those with Neurogenic Lower Urinary Tract Dysfunction: First In-Human TrialAmanda K Rounds, PhD^{1,2}; Suzanne L Groah, MSPH, MD²; Marcos Pérez-Losada⁵, PhD; Inger H Ljungberg, MPH^{1,2}; Bruce Sprague, BS⁴; Elizabeth Davis, MPP²MedStar Health Research Institute, Hyattsville, MD¹, MedStar National Rehabilitation Hospital, Washington, DC², Children's National Medical Center, Washington, DC⁴, The George Washington University, Washington, DC⁵**Research Areas:** Bladder Inflammation, Clinical Outcomes Research, Infections of the Urinary Tract, Neurourology, Therapeutic Development

Trainee F-50

Classification of Multiple Sclerosis Women with Voiding Dysfunction using Machine Learning: is Functional or Structural Connectivity a Better Predictor?Tran, Khue¹; Karmonik, Christof²; Boone, Timothy¹; Khavari, Rose¹¹Houston Methodist Hospital, Department of Urology, Houston, Texas²Houston Methodist Research Institute, Translational Imaging Center, Houston, Texas**Research Areas:** Data Science / Predictive Analytics, Neurourology, Voiding Dysfunction/Urinary Retention

Trainee F-51

Admissions for radiation cystitis are increasing among cancer survivors in the United States: Analysis of the Health Care Cost and Utilization Project

Boysen, William R; Inouye, Brian; Peterson, Andrew C

Duke University Medical Center, Department of Surgery, Division of Urology, Durham NC USA

Research Areas: Health Sciences Research, Urinary Reconstruction

Trainee F-52

Association of Lifetime Interpersonal Violence with Urinary Tract Infections and Painful Bladder Symptoms in a Multiethnic Cohort of Community-Dwelling Middle-Aged to Older Women in CaliforniaRaphael, Eva¹, Van Den Eeden, Stephen K.^{2,3}, Hernandez, Cesar⁴, Schembri, Michael⁵, Thom, David⁶, Huang, Alison⁴¹University of California, San Francisco, Dept. of Family and Community Medicine, San Francisco, California; ²Kaiser Permanente Northern California, Division of Research, Oakland, California; ³UCSF, Dept. of Urology, San Francisco, California; ⁴UCSF, Dept. of Medicine, San Francisco, California; ⁵UCSF, California, Dept. of Obstetrics, Gynecology, and Reproductive Medicine, San Francisco, California; ⁶Stanford University, Dept. of Medicine, Primary Care and Population Health, Palo Alto, California**Research Areas:** Infections of the Urinary Tract, Interstitial Cystitis/Painful Bladder Syndrome (IC/PBS)

Trainee F-53

Increasing Comorbidity and Frailty Do Not Impact Postoperative Complications Among Men Undergoing Artificial Urinary Sphincter or Sling Implantation

Brian M. Inouye, Stephanie J. Sexton, William R. Boysen, Urszula Kowalik, Tracy Truong, Maragatha Kuchibhatla, Andrew C. Peterson

Research Areas: Clinical Outcomes Research, Health Sciences Research, Incontinence

Trainee F-54

Does CT scan after ultrasound change surgical planning for nephrolithiasis?

Ludvigson, Adam; Motamedinia, Piruz

Yale University, Department of Urology, New Haven, CT

Research Areas: Nephrolithiasis, Quality Improvement, Uroradiology

Trainee F-55

Readmission After Ureteroscopy for Patients Stented Due to Febrile UTI with Obstructing Stone

Bandin, Alexander J; Press, Benjamin; Green, Jeremy; Ludvigson, Adam; Martin, Thomas V; Motamedinia, Piruz

Yale New Haven Hospital Department of Urology

Research Areas: Clinical Outcomes Research, Infections of the Urinary Tract, Nephrolithiasis

Trainee F-56

The Role of Cavitation in Energy Delivery and Stone Damage During Laser Lithotripsy TreatmentHo, Derek S.,¹ Terry, Russell,² Scialabba, Dominick,¹ Whelan, Patrick,² Qi, Robert,² Preminger, Glenn,² Lipkin, Michael E.,² Zhong, Pei¹¹Duke University, Department of Mechanical Engineering and Materials Science, Durham, North Carolina; ²Duke University Medical Center, Division of Urology, Durham, North Carolina**Research Area:** Nephrolithiasis



Jennifer Anger, MD, MPH

Associate Professor of Surgery-Urology
Associate Director of Urological Research
Urologic Reconstruction, Urodynamics, and Female Urology
Cedars-Sinai Medical Center
Adjunct Assistant Professor of Urology
Surgery, Division of Urology, UCLA

Dr. Anger is a fellowship-trained reconstructive urologist with extensive experience treating pelvic floor disorders in men and women. She completed her Master's degree in Public Health at UCLA under the mentorship of Dr. Mark Litwin, a pioneer in urological health services research. She has over ten years of research experience using administrative claims, including data from the VA. In 2007, she received a mentored career development award (K23) from the NIDDK. Dr. Anger's research has focused on the quality of care for women with urinary incontinence and pelvic prolapse, including the safety and efficiency of robotic-assisted surgery. The research team at Cedars-Sinai is a site for the NIH-funded Multidisciplinary Approach to the Study of Chronic Pelvic Pain (MAPP) Network. Urologic chronic pelvic pain syndromes (UCPPS) are debilitating conditions and a lack of objective clinical diagnostic criteria has severely affected our ability to adequately identify and treat UCPPS. The goal of this MAPP discovery site is to use genomics and proteomics approaches to develop sensitive and non-invasive diagnostic biomarkers that will allow objective phenotyping of UCPPS patients. Dr. Anger's team employs state-of-the-art resources in microbiome genomic sequencing and characterization to define the microbiome/mycobiome of UCPPS patients. The resultant protein patterns in the urine and blood create a signature diagnostic of UCPPS. Dr. Anger serves on the KURe Advisory Board.



Carlos R. Estrada, Jr., MD, MBA

Associate Professor of Surgery, Harvard Medical School
Rose Zimmerman Mandell Chair in Innovative Urological Technology
Vice Chair, Department of Urology, Boston Children's Hospital
Director, Center for Spina Bifida
Co-Director, Urodynamics and Neurourology

Dr. Carlos Estrada is an Associate Professor of Surgery at Harvard Medical School and a pediatric urologist at Boston Children's Hospital. In 2019 he was awarded the Boston Children's Hospital Rose Zimmerman Mandell Chair in Innovative Urological Technology. He divides his time between clinical work, administrative duties, and basic research. Clinically, his areas of expertise include neurogenic bladder dysfunction, urodynamics, and complex genitourinary tract reconstruction. He is the Vice Chair of Urology, directs the multidisciplinary Boston Children's Hospital Spina Bifida Center, and co-directs the Urodynamics and Neuro-urology program. His basic science laboratory studies tissue engineering, with a particular interest in hollow organ regeneration. The majority of his laboratory's work involves silk-based biomaterials, which have been applied to regeneration of the bladder, urethra, esophagus, and trachea. The laboratory is funded by the National Institutes of Health. He has authored more than 50 peer-reviewed articles, 12 book chapters, and has given numerous national and international lectures on both clinical topics and his basic research. Most recently, Dr. Estrada earned an MBA from the MIT Sloan School of Management. He holds degrees from the College of the Holy Cross (AB, Biology), Wright State University (MD), and MIT (MBA).

**Karl J. Kreder, Jr., MD, MBA**

Professor
Rubin H. Flocks Chair in Urology
Department Executive Officer
University of Iowa

Dr. Kreder's clinical research focuses on two main areas of interest: overactive bladder/female incontinence, and interstitial cystitis. Within these fields of study, Dr. Kreder acts as principal or co-principal investigator on a number of clinical trials, including conventional medications and surgical treatments, as well as complementary and alternative therapies. His work in the area of overactive bladder and female urinary incontinence encompasses the entire spectrum of treatments, including behavior and diet modifications and pelvic floor exercises, medications, or one of numerous reconstructive surgical procedures. Dr. Kreder's emphasis of study in interstitial cystitis begins with collaborations in the basic science research labs to help determine the etiology of this disease. His clinical work addresses both the reduction of symptoms through conventional therapies and alternative options, as well as the psychosocial impact of this condition on the patient. Dr. Kreder serves on the KURe Advisory Board.

**Maragatha (Maggie) Kuchibhatla, Ph.D.**

Professor Biostatistics and Bioinformatics,
Psychiatry and Behavioral Sciences
Duke University School of Medicine

Dr. Kuchibhatla received her PhD from Texas A&M University. She is a Senior Fellow in the Center for the Study of Aging and Human Development, and a Third Year Mentor in the Clinical Research Study Program (CRSP). She is an expert in statistical research methodology, analysis of repeated measurements, latent growth curve models, latent class growth models, classification/regression trees, and designing of clinical trials in psychiatry -- both treatment and non-treatment trials in various comorbid populations. Dr. Kuchibhatla serves on the KURe Advisory Board.

**Joshua R. Mauney**

Associate Professor

Jerry D. Choate Presidential Endowed Chair in Urology Tissue Engineering
Departments of Urology and Biomedical Engineering
University of California, Irvine

Dr. Joshua Mauney is a tenured Associate Professor in the Departments of Urology and Biomedical Engineering at the University of California, Irvine. He holds the Jerry D. Choate Presidential Endowed Chair in Urology Tissue Engineering. He received his B.Sc. in Chemical Engineering and Ph.D. in Biotechnology Engineering from Tufts University. Dr. Mauney's laboratory focuses on the development and evaluation of silk fibroin grafts for the repair of visceral hollow organs including the bladder and urethra. He also specializes in the creation of novel large animal models of urinary tract disease for preclinical medical device testing. Dr. Mauney has been continuously funded from the National Institutes of Health since 2011 and currently serves as the principal investigator on 2 R01 grants from NIDDK. Dr. Mauney has authored >40 international peer-reviewed journal publications.

**Nicole L. Miller, MD, FACS**

Associate Professor of Urology

Vanderbilt University Medical Center
Nashville, TN

Dr. Nicole Miller currently holds the position of Associate Professor of Urology at Vanderbilt University School of Medicine in Nashville, TN. She joined the department in 2007. She completed her M.D. degree at the University of Pittsburgh School of Medicine in 2000, and received her urology residency training at the University of Virginia. Dr. Miller went on to complete a 2 year fellowship in Endourology and Minimally Invasive Surgery at the Indiana University School of Medicine under the mentorship of Dr. James E. Lingeman. She specializes in the medical and surgical treatment of kidney stone disease as well as laser surgery for BPH. Dr. Miller's research interests include investigation of Randall's plaque in the pathophysiology of nephrolithiasis, new laser technologies for kidney stone and BPH treatment, novel platforms for BPH surgery and investigation of pathophysiologic pathways for refractory BPH/LUTS. She has been the major contributor of transition zone prostate tissues from men undergoing surgery for refractory BPH/LUTS as part of Vanderbilt University's Biorepository in the Center for Benign Urologic Diseases (CBUD) and has co-authored work on this developing resource. She has served as course faculty member and moderator both nationally and internationally for the American Urological Association and Endourological Society in the area of surgical treatment of BPH and nephrolithiasis. Dr. Miller is an Editorial Board Member for the Journal of Urology, Journal of Endourology and Co-director of the Minimally Invasive Surgery and Endourology Fellowship at Vanderbilt University Medical Center. She also served as a member of the AUA guidelines panel for the Surgical Management of Nephrolithiasis and AUA Leadership Class of 2017.

**Samdeep K. Mouli, MD, MS**

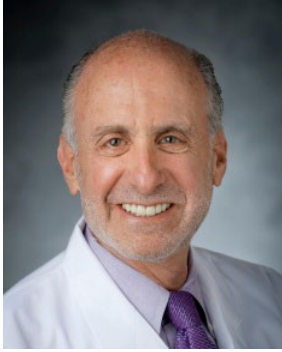
Assistant Professor in Radiology
Northwestern University Feinberg School of Medicine

I am an Interventional Radiologist who specializes in research regarding imaging and treatment of liver and prostate cancers. I maintain a highly active clinical practice specializing in liver/GI malignancies and GU interventions. Along with Dr. Riad Salem, I manage the Prostate Artery Embolization program at Northwestern University, and have completed 2 prospective IDE clinical trials. From a basic science standpoint, I lead a rapidly developing translational research program focused specifically upon the application of novel therapies in the setting of image-guided therapy for GI and GU cancers. I am co-director of the Interventional Oncology Laboratory (along with Dr. Andrew Larson) of Northwestern University's Feinberg School of Medicine. I completed an NIH R25 training program specifically targeted to MDs; this program provided an intensive, immersive experience working in the field of nanotechnology for cancer therapeutics and imaging (during later renewal I participated in an advisor role). Over the past eight years, with my colleagues at Northwestern University, I have been a key collaborator in many pre-clinical and clinical research projects. My postgraduate training has covered the gamut from surgery to interventional radiology. My extensive clinical exposure has solidified my understanding of both disease diagnosis and patient management. I have dedicated my career to research as a physician scientist.

**Jiro Nagatomi, PhD**

Professor, Department of Bioengineering
Director, Cell Mechanics and Mechanobiology Laboratory
Clemson University

Jiro Nagatomi is a professor of bioengineering and the director of Cell Mechanics and Mechanobiology Laboratory at Clemson University (South Carolina). He has been an active researcher and educator in the field of mechanobiology for the past 15 years. He completed his BS followed by a PhD in biomedical engineering at Rensselaer Polytechnic Institute (New York). His doctoral thesis was on an in vitro investigation of the effects of hydrostatic pressure on bone cell functions. He worked as a postdoctoral research associate at the University of Pittsburgh (Pennsylvania) in the field of soft tissue biomechanics before assuming his current faculty position at Clemson University. He has established his own research program and administered federally funded research projects as PI, published 45+ papers and book chapters, and mentored 1 post-doc, 20 graduate (18 graduated) and 50+ undergraduate students. His research group is interested in understanding the mechanisms involved in cellular and molecular responses to mechanical loading associated with various pathophysiological conditions. In addition, his group is active in biomaterials and regenerative medicine research.

**Glenn M. Preminger, MD**

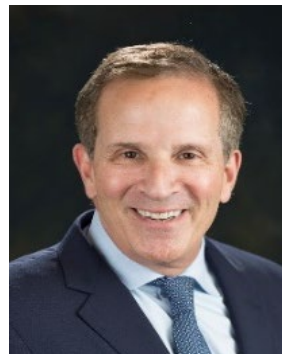
James F. Glenn, M.D. Distinguished Professor of Urology

Chief, Division of Urology

Director, Endourology, Metabolic Stone Disease, Laparoscopic and Robotic Surgery Fellowship

Professor of Surgery, Duke University

Dr. Preminger is Director of the Endourology, Metabolic Stone Disease, Laparoscopic and Robotic Surgery Fellowship at Duke University School of Medicine. He is a nationally and internationally recognized leader in the minimally invasive management of urinary tract stones including shock wave lithotripsy, percutaneous and ureteroscopic stone removal, as well as the comprehensive metabolic evaluation and preventative medical treatment of nephrolithiasis. He has had extensive experience in the development of endoscopic instrumentation for minimally invasive urologic procedures and holds eight patents in shock wave lithotripsy design. He along with his collaborator established The Lithotripsy Laboratory within the Comprehensive Kidney Stone Center to study shock wave physics and tissue effects within the realms of shock wave lithotripsy and intracorporeal lithotripsy devices. He has held numerous national and international committee chair positions, including American Urological Association Office of Education and holds an editorial position with Urology and Journal of Endourology. Dr. Preminger serves on the KURe Advisory Board.

**Neal D. Shore, MD, FACS**

Director, CPI, Carolina Urologic Research Center

Myrtle Beach, South Carolina

Neal D. Shore, MD, FACS is the Medical Director for the Carolina Urologic Research Center. He practices with Atlantic Urology Clinics in Myrtle Beach, South Carolina. Carolina. Dr. Shore has conducted more than 350 clinical trials, focusing mainly on GU Oncology, and serves on the Executive Boards of: Society of Urologic Oncology Board, Bladder Cancer Advocacy Network, and is Immediate Past President, Large Urology Group Practice Association. He is a founder for both: CUSP Clinical Trials Consortium, as well as for DASHKO, large urology practices data registries. He serves as the National Urology Research Director for 21st Century Oncology. He has served on the AUA Male Health Committee and the AUA Data Committee, the SITC Task Force for Prostate Cancer, the Bladder Cancer Advocacy Think Tank and the editorial boards of Reviews in Urology, Urology Times, Chemotherapy Advisor, OncoLive, PLOS ONE(Academic Editor), Urology Practice, World Journal of Urology, and serves as Editor, Everyday Urology-Oncology. He has more than 200 peer reviewed publications and numerous book chapters; he performs peer review for Lancet Oncology, New England Journal of Medicine, European Urology, Journal Urology, Urology, BJUI, PCPD, and numerous other high impact scientific journals. A graduate of Duke University and Duke University Medical School, Dr. Shore completed a 6-month clinical research fellowship in Pretoria, South Africa, and then completed his General Surgery/Urology training at New York Hospital Cornell Medical Center and at Memorial Sloan-Kettering Cancer Center in New York City. He is a Fellow of the American College of Surgeons.

**Maryrose Sullivan, PhD**

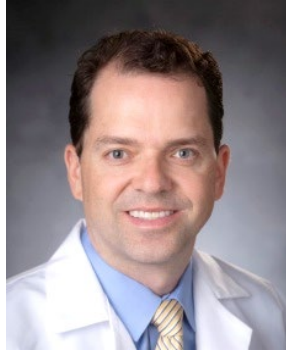
Research Health Scientist, VA Boston Healthcare System
Assistant Professor of Surgery, Brigham and Women's Hospital
Harvard Medical School

Dr. Sullivan's scientific interests have focused primarily on benign disorders of the bladder, including those related to outlet obstruction, diabetes, spinal cord injury and Parkinson's disease. Her research is aimed at uncovering mechanisms responsible for bladder function/dysfunction and urinary incontinence, with the ultimate goal of identifying targetable pathways for intervention and alleviating lower urinary tract symptoms. As a research scientist and biomedical engineer, her research projects exploit a number of multidisciplinary approaches to interrogate these pathways at the cellular, tissue and whole animal levels and include imaging, in vitro, ex vivo and in vivo techniques. With funding by the Department of Veterans Affairs and NIDDK, she has published numerous original articles, chapters and reviews on topics related to urinary incontinence, bladder contractility, bladder outlet obstruction, neurogenic and non-neurogenic detrusor overactivity, and diabetic bladder dysfunction. She has been fortunate to be involved in mentoring and supervising many urology residents, post-docs, medical students and junior faculty. She is also an active member of the AUA, SUFU, SPR and ICS, and serves on the editorial board of several urology focused journals. Dr. Sullivan serves on the KURe Advisory Board.

**Kevin P. Weinfurt, PhD**

Professor and Vice Chair of Research Population Health Sciences
Psychiatry and Behavioral Sciences
Psychology and Neuroscience
Duke University

Kevin Weinfurt is a faculty member of the Duke Clinical Research Institute and a Faculty Associate of the Trent Center for the Study of Medical Humanities and Bioethics. Dr. Weinfurt was a principal investigator in the NIH PROMIS Network, where he led the development of the SexFS to measure male and female sexual function and satisfaction. Currently, he serves as the President of the PROMIS Health Organization, is co-chair of the coordinating center for the NIH Health Systems Research Collaboratory, and co-chair of NIDDK's Symptoms of Lower Urinary Tract Dysfunction Research Network. As an educator, Dr. Weinfurt co-directs Duke's masters-level Clinical Research Training Program and has taught graduate courses in patient-reported outcomes research and multivariate statistics along with undergraduate courses in introductory psychology, judgment and decision making, and the psychology of medical decision making. Dr. Weinfurt's research has been featured on NPR Marketplace, Business Week, ABC News, and US News & World Report. Dr. Weinfurt received his PhD in psychology at Georgetown University and did graduate work in the history of science and philosophy of mind at Linacre College, Oxford. Dr. Weinfurt conducts research on measuring patient-reported outcomes, medical decision making, and bioethics. Dr. Weinfurt serves on the KURe Advisory Board.

**Brian M. Whitley, MD, MPH**

Assistant Professor of Surgery, Division of Urology
Duke Urology of Raleigh
Duke University

Brian Whitley received his MD degree from the University of Alabama at Birmingham and completed residency in Urology at Duke in 2013. After residency, he practiced urology in the community before returning to Duke as an Assistant Professor in the Division of Urology. His current clinical focus covers the broad aspects of general urology with special interest in minimally invasive surgical treatment of BPH. He performs a variety of BPH procedures including ThULEP, UroLift and REZUM, and focuses on introducing these techniques early in the resident learning experience.

**J Koudy Williams, DVM**

Professor of Regenerative Medicine
Professor of Pathology/Comparative Medicine
Wake Forest University

J Koudy Williams has been at Wake Forest University for 32 years. During that time, his research focus has been women's health. While now a faculty member of Regenerative Medicine, his past research focused on the use of animal models to explore regenerative medicine approaches for diseases urogenital systems. He has been funded by the NIH (NIDDK) to explore regenerative therapies for urinary sphincter dysfunction and has been involved from the beginning in the uterine regeneration project. He previously was funded by both the NIA and the NHLBI to study the effects of sex hormones on cardiovascular reproductive organ and bone health. He has focused his studies on regenerative medicine approaches to urogenital tissues using cells and small molecules to stimulate tissue regeneration. They recently reported the results of a study to use cell seeded polymer constructs for uterine tissue replacement in rabbits. The success of this study provides the rationale for extending this approach into nonhuman primates who have a human like uterine structure and reproductive physiology. He has over 40 years' experience performing studies in nonhuman primates studying the effects of treatments of chronic disease that affect both men and women. Throughout his career, he has always been committed to education and helping develop the next generation of scientists, especially those from underrepresented groups. He has trained over 30 young scientists. In the past 5 years, he has trained 6 graduate students. Four of the six are from underrepresented populations and all are women. All have gone on to academic or industrial jobs.

**Ann Word, MD**

Professor of Obstetrics and Gynecology
Mary Dees McDermott Hicks Chair in Medical Science
University of Texas Southwestern Medical Center

Ann Word, MD, is a member of the Divisions of Reproductive Endocrinology and Infertility, Female Pelvic Medicine and Reconstructive Surgery, and Basic Reproductive Biology Research. She is also a member of the Cecil H. and Ida Green Center for Reproductive Biology Sciences. Dr. Word is board certified in obstetrics and gynecology and in reproductive endocrinology and infertility.

Her research evaluates the molecular and cellular mechanisms of connective tissue remodeling of the pelvic floor, the lower urinary tract, and cervix during pregnancy, parturition, puerperium and menopause and as well as the pathological conditions of pelvic organ prolapse, urinary incontinence, and injury of the external anal sphincter. For the last 15 years, her lab has investigated both smooth muscle and extracellular matrix remodeling of the cervix, and how certain nuclear hormone receptors orchestrate remodeling of the cervix and endometrium. Animal models and human tissues and cells are used to study the molecular, biochemical, and biomechanical processes of cervical ripening, and how elastic fibers are regulated in the pelvic floor. For the past 20 years, she has directed the Human Biological Fluids and Tissue Core Repository. Dr. Word serves on the KURe Advisory Board.