Dear Colleagues,

As we begin a new year, I’d like to take this opportunity to update you on activities of Wake Forest Baptist Medical Center Urology. We have added several outstanding faculty members and expanded our clinical and research initiatives. In this issue, you’ll read about our role as a Comprehensive Cancer Center as we help patients and referring physicians navigate the complexities of prostate cancer. Also included are updates on our faculty members, as well as highlights of their research.

All the best,

Anthony Atala, MD
W.H. Boyce Professor and Chair

For videos of our urologists discussing a variety of urologic topics, visit WakeHealth.edu/UrologyForum.
Prostate Cancer: Our Role as a Comprehensive Cancer Center

THE COMPLEXITIES OF PROSTATE CANCER SCREENING and treatment have been the focus of much debate over the past few months, and men are understandably confused about how to best take care of their health. “I have no family history of prostate cancer — should I be screened?” “I don’t want to risk the side effects of treatment — is active surveillance an option for me?”

Questions like these are common among our urology patients as well as in primary care practices.

“As one of only 41 Comprehensive Cancer Centers in the U.S., part of our role is to help patients and our referring physicians navigate the complexities of this common cancer,” said John D. McConnell, MD, a noted prostate disease authority who remains clinically active in addition to serving as CEO for Wake Forest Baptist Medical Center. “To that end, our Medical Center’s prostate cancer program takes a three-pronged approach: optimizing outcomes by utilizing a multidisciplinary clinical team; ensuring that patients have access to all of the latest technologies and treatment options; and conducting research not only to find more effective treatments, but to identify the men who require aggressive therapy.”

Integrated care
Medical Center urologists, radiation oncologists, medical oncologists and pathologists work closely together to ensure that patients’ treatments are tailored to their individual situation.

Research
The Prostate Cancer Center of Excellence — one of only a handful in the nation — focuses on chemoprevention, genetic epidemiology and novel therapies. It coordinates more than $20 million in federally funded grants on prostate cancer, most from the National Institutes of Health. Many of the center’s projects are translational. In the area of chemoprevention, studies focus primarily on two agents — soy and vitamin D. Wake Forest Baptist’s genetic susceptibility research includes work based on the identification of the first prostate cancer susceptibility gene, HPC1. In the area of novel therapies, research includes the use of genetically engineered vesicular stomatitis virus to kill prostate cancer cells as well as therapies exploiting the roles of calcium and para-thyroid hormone.

Urologist K.C. Balaji, MD, known for achieving multiple world-firsts in robotic surgery, is also an active researcher and a member of the Prostate Cancer Center of Excellence. His long-running federally funded research has identified protein kinase D1 (PKD1) as a novel regulator of epithelial-mesenchymal transition in cancer cells. The protein is down-regulated in advanced prostate, breast and gastric cancers. Further, his work has identified snail, a master transcriptional regulator of E-cadherin, as a novel target of PKD1 for substrate phosphorylation that induces

Full Range of Treatments
The Medical Center offers all treatment modalities, including the prostate cancer vaccine, advanced radiation therapies, brachytherapy, cryotherapy and minimally invasive surgery. The robotic team includes surgeons who are continually innovating new approaches and have achieved multiple “world firsts.” In addition, the Medical Center has one of a few Digital Integrated Brachytherapy Units (IBU) in the United States, which integrates all aspects of brachytherapy treatment in a single, shielded room. Wake Forest Baptist also offers Intensity Modulated Radiation Therapy and Image-Guided Radiation Therapy, which focuses radiation on the tumor and surrounding at-risk tissues while sparing nearby normal tissues.

Wake Forest Baptist Medical Center has one of the few Digital Integrated Brachytherapy Units (IBU) in the United States.
Regenerative Medicine Applied to Urethras in “World-First” Surgeries

WAKE FOREST BAPTIST MEDICAL CENTER led a team of researchers that was the first in the world to successfully replace damaged tissue by using patients’ own cells to build tailor-made urethras in the lab. As reported in The Lancet, the research team replaced damaged sections of urethras in five children. Tests to measure urine flow and tube diameter showed that the engineered tissue remained functional throughout the six-year (median) follow-up period.

“These findings suggest that engineered urethras can be used successfully in patients and may be an alternative to the current treatment, which has a high failure rate,” said Anthony Atala, MD, senior author, chair of Urology and director of the Wake Forest Institute for Regenerative Medicine. “This is an example of how the strategies of tissue engineering can be applied to multiple tissues and organs.”

Biopsies showed that the engineered urethras had normal layers of epithelial and smooth muscle within three months after implantation.

Atala’s team used a similar approach to engineer replacement bladders that were implanted in nine children beginning in 1999, becoming the first in the world to implant laboratory-grown organs in humans. Researchers at the institute are currently working to build replacement organs and develop therapies to promote healing from within for more than 30 different areas of the body.

Between March 2004 and July 2007, the research team built engineered urethras for five boys, ages 10 to 14, using the patients’ own cells. Three patients had widespread injury because of pelvic trauma and two patients had previous urethra repairs that had failed. The engineered tubes were used to replace entire segments of damaged urethra in the posterior section—considered the most difficult to repair. The children were treated at the Federico Gomez Children’s Hospital in Mexico City.

The first step in engineering the replacement urethral segments was taking a small (1/2” x 1/2”) bladder biopsy from each patient. From each sample, scientists isolated smooth muscle and endothelial cells and cultured them in the lab until having sufficient quantities for seeding on a three-dimensional, biodegradable scaffold shaped like a urethral tube. After cell placement, the scaffolds were incubated for seven days—with the total time for construction ranging from four to seven weeks. By day six, all surface areas were completely covered with cells. After incubation, the tubes were surgically implanted by removing the defective segment of the urethra and scar tissue and sewing the replacement tubes in place. Once in the body, the cells continued to expand and tissue formation began. Biopsies showed that the engineered urethras had normal layers of epithelial and smooth muscle within three months after implantation. Flow measurements, urine tests and patient questionnaires confirmed patient satisfaction as measured by lack of leaking, straining to urinate and urinary tract infections—common symptoms when urethral tubes become narrowed.

The research was supported in part by the National Institute of Diabetes and Digestive and Kidney Diseases. Co-researchers were James J. Yoo, MD, PhD, and Shay Soker, PhD, Wake Forest Baptist Medical Center, and Atlantida Raya-Rivera, Diego R. Esquiliano and Esther Bayghen, Metropolitan Autonomous University, Mexico.
Protection Against Kidney Stones?

Enteric colonization with Oxalobacter formigenes, a bacterium whose main energy source is oxalate, has been shown to decrease the risk of recurrent calcium oxalate kidney stone formation. In the current study, Dean Assimos, MD, et al studied the interplay between oxalate and calcium in the diets of individuals colonized and not colonized with the bacterium. Although a diet low in calcium has been shown to increase the risk of calcium oxalate stone formation, these current results suggest that O. formigenes colonization may be protective during periods of low calcium intake and moderate oxalate intake.


Definitive Stricture Repair

In this article, Ryan Terlecki, MD, coins the concept of “urethral rest” in preoperative management for patients pursuing definitive repair of urethral strictures. It was determined that strictures in men who had been recently instrumented often become obliterator after a three-month period of rest, often facilitated by suprapubic diversion. Delineation of stricture disease was felt to allow for higher rates of success than would otherwise be expected according to a philosophy of “you need to see it to treat it.”


View Terlecki discussing the benefits of urethral rest at WakeHealth.edu/UrologyForum.

New Robotic Technique

Ashok K. Hemal, MD, et al report what is believed to be the first case series performing robot-assisted nephroureterectomy with bladder cuff excision with lymphadenectomy for upper tract transitional cell carcinoma. All 15 procedures were performed uneventfully with mean operating time of 184 minutes and hospital stay of 2.7 days. There were no positive surgical margins and no oncologic recurrence at short-term follow-up. The technique allows a seamless transition from kidney to the lower part of the ureter and bladder without changing patient position or redocking the robot.


A Future Treatment to Prevent Strictures?

The development of urethral stricture is a fibrotic process associated with increased deposits of collagen after injury or infection. This novel study by Steve Hodges, MD, et al is the first to show that coating a urethral catheter with halofuginone (HF), a potent type 1 collagen inhibitor, is feasible with drug release to the surrounding tissue. In a rat model, HF successfully inhibited periurethral type I collagen deposits after urethral injury, and may become an important therapy to prevent urethral stricture formation or recurrence after endoscopic therapy.


Our Role as a Comprehensive Cancer Center

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epithelial-to-mesenchymal transition and stemness in prostate cancer. His ongoing research includes developing novel in vitro prostate microenvironment modeling using microcapsule technology and studying Ras signaling in prostate cancer. The ultimate goal is to identify biomarkers of indolent versus aggressive disease and to identify protein targets for therapeutics.

For videos of our urologists discussing prostate cancer and other topics, visit WakeHealth.edu/UrologyForum.
Sushil S. Lacy Receives Wake Forest Alumni Award

Sushil S. Lacy, MD, FACS, current president of the American Urologic Association (AUA), received the department’s Distinguished Alumni Award at the fifth annual Urology Today Conference in October 2011. Lacy was the second recipient of the award, which is the highest honor the department can bestow upon any graduate or trainee and is presented to individuals whose contributions to the profession are notable and merit special recognition.

Lacy has been a faculty member at the University of Nebraska Medical Center since 1970, where he currently serves as a clinical professor of urology. He received his medical degree from Christian Medical College in Vellore, India, and completed his postgraduate general surgery residency at King George’s Medical College in Lucknow, India. Lacy conducted his vascular surgery fellowship at Duke University and his urology residency training at Bowman Gray School of Medicine, now Wake Forest School of Medicine.

Lacy has been a member of the AUA since 1973, serving in many capacities, including on the AUA Board of Directors and several AUA committees. He presently serves on the AUA Foundation Development Council and is a mentor in the AUA Leadership Program.

Wake Forest School of Medicine Urology Residents Excel

Wake Forest Urology residents won awards in four out of six categories at the annual NC Urology Residents Competition. Residents from Duke University, the University of North Carolina at Chapel Hill and Wake Forest School of Medicine participated in clinical topic debates and made presentations based on their research.

Wake Forest School of Medicine winners were: Irina Stanasel, MD, “Sacral Stimulation Vs Botox Injection;” Victor Romero, MD, “Observation Vs Pyeloplasty;” Brandon Craven, MD, “Stent Vs Nephrostomy;” and Jessica Lange, MD, who won second place for her presentation on the research project “The Effects of Dietary Calcium and Oxalate on Urinary Parameters.”

“Our department is fortunate to have a great group of dedicated residents, all who work hard to uphold our mission of research, education and providing the best urologic care and service for our patients,” said Dean Assimos, MD, residency program director.

CME Events Announced

Registration is now open for the third annual International Robotic Urology Symposium, to be held March 9–10 in Winston-Salem, NC. See details and registration information on back cover.

Mark your calendars and plan to attend the Prostate Cancer Research and Translation Symposium, to be held May 4-5 in Winston-Salem, NC.

Nationally recognized experts in prostate cancer will share the latest clinical advances and basic science research. With a focus on opportunities and challenges in prostate cancer research—and the need to align research with clinical need—the symposium is designed for urologists, medical and radiation oncologists, allied health professionals, and basic and translational scientists. Program Director is K.C. Balaji, MD, professor of Urology and Cancer Biology.

In October, the Wake Forest School of Medicine Department of Urology hosted its fifth annual Urology Today conference in Charleston, SC. Department faculty were joined by faculty from the University of South California, the Medical University of South Carolina, the University of Wisconsin and the University of Texas Health Science Center to discuss the latest evidence-based approaches to care. Topics ranged from female incontinence and prostate cancer to surgical management and urolithiasis. The course was directed by Gopal Badlani, MD, professor.

The 2012 event is set for Oct. 11–14 in Williamsburg, Va.

Visiting Professors

Urology trainees and faculty were honored to have the following as visiting professors during the year: Brian Matlaga, MD, MPH, Johns Hopkins Medical Institutions; Edmond T. Gonzales Jr, MD, Texas Children’s Hospital; W. Hardy Hendren III, MD, Children’s Hospital Boston; and Michael O’Donnell, MD, University of Iowa.
Meet Our Faculty

**Anthony Atala, MD, FACS**, professor and chair, is editor-in-chief of the journals *Therapeutic Advances in Urology*, *Current Stem Cell Research and Therapy*, and *Stem Cells Translational Medicine*, and serves as associate editor or editorial board member of 22 other journals. He was the 2011 recipient of the Barringer Medal by the American Association of Genitourinary Surgeons. Atala serves as the Urology Program Chair and on the Board of Governors of the American College of Surgeons. He was recently elected to membership in the Institute of Medicine of the National Academies. Atala directs a team of more than 250 researchers at the Wake Forest Institute for Regenerative Medicine that works to engineer replacement organs and develop healing cell therapies for more than 30 different areas of the body.

**Dean Assimos, MD**, professor and vice chair for academic affairs, is vice chair of the American Urological Association’s Nephrolithiasis Guidelines Panel. He is a section editor for *Reviews in Urology* and the *Journal of Endourology* and is on the editorial boards of *Urologic Survey* and *Urological Research*. He delivered a “state-of-the-art” plenary at the 2011 American Urological Association annual meeting. Assimos directed the fellowship program at the 28th World Congress of Endourology & SWL. The stone research group, which is headed by Assimos and *Ross Holmes, PhD*, has five federal grants to study the mechanisms of kidney stone formation.

**Gopal Badlani, MD, FACS**, professor and vice chair for clinical affairs, is serving a four-year term as secretary of the American Urological Association (AUA). As part of his role, Badlani edits the AUA News, is in charge of the AUA’s annual meeting, and directs international education efforts in Brazil, China, India and Japan. Badlani heads the Male Health Task Force and co-moderated the AUA’s Urinary Reconstruction Steering Committee. He also serves as historian of the Endourological Society. Badlani’s research focuses on determining the genetic basis for stress urinary incontinence.

**K.C. Balaji, MD**, professor, is chief of urology at the Veterans Affairs Medical Center in Salisbury, N.C. He specializes in prostate and kidney cancers and is an expert in robotic and laparoscopic urological surgery. He has performed and published many world firsts in robotic surgery including radical nephrectomy and urinary diversion. His federally funded basic science research focuses on cell signaling and stem cells in prostate cancer, and he serves as a study section reviewer for the Department of Defense’s Prostate Cancer Research Program.

**Ronald L. Davis, MD, MBA, FACS**, associate professor, specializes in adult urology with an emphasis on urologic oncology. Davis is an experienced clinical investigator and has been involved in numerous trials evaluating drug treatments for progressive prostate cancer, bladder cancer, overactive bladder, prostate cancer risk reduction, erectile dysfunction and other urologic conditions. He was part of one of the first teams in the nation to offer modern ultrasound-directed brachytherapy for prostate cancer. His expertise includes robotic surgery and new generation cryosurgery for prostate cancer.

**Robert J. Evans III, MD, FACS**, associate professor, directs the department’s clinic operations. He specializes in pelvic pain syndrome, including painful bladder syndrome/interstitial cystitis. He is a member of the board of directors of the Interstitial Cystitis Association and serves on the association’s Medical Advisory Board. He was invited to provide an educational course at the annual meeting of the AUA, was a guest speaker at the 2011 Urogynecology and Minimally Invasive Gynecologic Surgery Symposium, and was an invited lecturer for the American College of Surgeons 2011 meeting. Evans directed a 23-center study that showed preliminary efficacy of a monoclonal antibody for treating pain associated with interstitial cystitis.
Ashok K. Hemal, MD, MCh, FACS, professor and director of the Robotic and Minimally Invasive Urologic Surgery Program, specializes in uro-oncology, robotic and pure laparoscopic reconstructive and ablative surgeries of the kidney, bladder and prostate. His clinical research focuses on prostate, kidney and bladder cancer. He has developed several new techniques in the field of urologic surgery. A current project is to evaluate the role of indocyanine green dye with NIFR imaging and surgeon-controlled robotic instruments as a strategy to decrease warm ischemia times for partial nephrectomy. Hemal is on the editorial boards of several journals and is invited to deliver lectures and perform live demonstrations at conferences around the world.

Hector Henry II, MD, MPH, clinical professor, is an attending urologist at the Veterans Affairs Medical Center in Salisbury, NC, where he provides clinical services and also coordinates urology residents who rotate through the center. He serves on the executive board and as the historian for the Southeastern Section of the American Urological Association and gave an invited lecture at the 2011 meeting.

Steve Hodges, MD, assistant professor, specializes in pediatric urology. His research interests include the prevention of luminal strictures and scar disease throughout the urinary tract and body, and dysfunctional elimination. He is an associate editor of Scientific World Journal, and on editorial boards of the Indian Journal of Urology and BMC Urology. Multiple new treatments developed by Hodges have been licensed to start-up companies, including drug-coated catheters and stents designed to prevent or treat urethral strictures, and a wipe to prevent urinary tract infections in young girls. He has developed an online teaching tool for toileting problems in children and authored a book for consumers on toilet training and voiding dysfunction.

John D. McConnell, MD, FACS, is chief executive officer of Wake Forest Baptist Medical Center. A noted urologist and international authority on prostate disease, he remains clinically active. He received the American Association of Genitourinary Surgeons Barringer Medal for his contributions to the field of urology and is a member of the Institute of Medicine. Before joining the Medical Center, McConnell was executive vice president for health system affairs at the University of Texas Southwestern, where he had also served as chair of the Department of Urology and directed the NIH-designated George W. O’Brien Urology Research Center.

Ryan Terlecki, MD, assistant professor, specializes in urethral and urologic reconstruction, sexual dysfunction and Peyronie's disease. He is fellowship-trained in urologic reconstruction, female urology and urodynamics, as well as in trauma and prosthetics. He earned his medical degree and completed his residency at Wayne State University. Terlecki was invited to perform a live surgery and lecture at the 2011 Annual Congress of the Venezuelan Urologic Society. His recent publications include reports on the use of the Boari flap in ureteral reconstruction and postoperative imaging after urethroplasty.
This two-day course will feature the latest and most advanced robotic surgery techniques. The primary goal of the symposium is for surgeons to learn how to translate robotic surgical skills to the lower and upper urinary tract, including the prostate, kidney and bladder. Twelve live cases, as well as interaction with panelists and physicians in the operating room, will expose attendees to world experts utilizing robot-assisted surgery beyond the prostate.

Course Director:
Ashok K. Hemal, MD, Professor of Urology and Director, Robotic and Minimally Invasive Urologic Surgery Program, Wake Forest Baptist Medical Center

For information or to register online, call 336-713-7755 or visit nwahec.org/?35853.

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WakeHealth.edu/Urology