NYU Langone
MEDICAL CENTER

UROLOGY

2014 YEAR IN REVIEW

CONTENTS

MESSAGE FROM THE CHAIR

Dear Colleagues and Friends,

As the chair of urology at NYU Langone Medical Center, it is incumbent upon me to lead a department that contributes to the excellence of our institution, furthering the vision and values of the Saul J. Farber Dean and CEO Robert I. Grossman, MD, and Chair of the Board of Trustees Kenneth G. Langone.

Over the past 21 years, I have been fortunate to recruit and retain a faculty of physicians and scientists who share my commitment to advance urologic healthcare delivery, research, and education. Every day, our team of dedicated healthcare professionals, scientists, and educators strive to achieve excellence one patient, one experiment, and one lecture at a time. Together, our urology team achieved extraordinary advances for patients in 2014.

We are #6 in the nation in terms of National Institutes of Health (NIH) funding, and 2014 has been another exceptional year for our researchers. Of particular note: Our Goldstein Family Bladder Cancer Research Group received a grant from the National Cancer Institute to study the molecular tumorigenesis of bladder cancer. In these pages you will also read about exceptional clinicians who are at the cutting edge of treatments for prostate cancer and diseases of the bladder and urinary system, as well as the latest minimally invasive surgical options offered by experienced surgeons working in our Robotic Surgery Center.

Many of our faculty members have achieved national stature through their research, leadership roles in national societies, and seats on the editorial boards of major peer-reviewed journals. I invite you to read on to learn more about our work and accomplishments over the past year, and our vision for moving forward.

HERBERT LEPOR, MD

Professor and Martin Spatz Chair
Department of Urology

Urologist-in-Chief

NYU Langone Medical Center

FACTS & FIGURES*

Urology

#12

IN THE COUNTRY

IN UROLOGY FOR 2014–15

according to *U.S. News & World Report's* Best Hospitals survey (an increase from #19 in 2013–14)

10+

urology-focused

SUBSPECIALTY PROGRAMS

P01

NIH PROGRAM

PROJECT GRANT FROM THE NCI

to study

the molecular tumorigenesis of bladder cancer

#6

IN THE UNITED STATES FOR

NIH FUNDING

for **2014**

(Source: Blue Ridge Institute for Medical Research)

1 in 8

PRACTICING U.S. UROLOGISTS

have come to NYU Langone for

POSTGRADUATE EDUCATION

160+

PUBLICATIONS

produced by

UROLOGY FACULTY IN 2013

$2.9 million

raised in

PHILANTHROPY IN 2014

to support Urology's academic mission

4

urology-related

CME COURSES

will be offered at NYU Langone in 2015

NYU Langone Medical Center

Ranked #1 for Two Years in a Row

in overall patient safety and quality, among leading academic medical centers across the nation that participated in the University HealthSystem Consortium Quality & Accountability Study

Ranked #15 on "Best Hospitals" Honor Roll

by *U.S. News & World Report* and nationally ranked in 13 specialties, including top 10 rankings in Orthopaedics (#4), Rheumatology (#6), Geriatrics (#8), Neurology & Neurosurgery (#8), and Rehabilitation (#9)

Ranked One of the Top 20 Medical Schools

by *U.S. News & World Report*

Magnet Designation for Third Consecutive Term

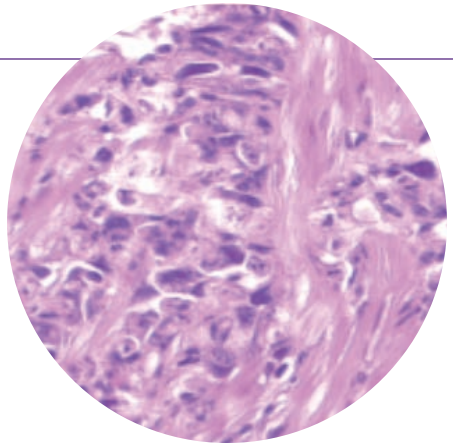
for Tisch Hospital and Rusk Rehabilitation, an honor achieved by only 2% of hospitals in the country. NYU Langone's Hospital for Joint Diseases received its first Magnet recognition in 2012.

*Numbers represent FY14 (Sept 2013-Aug 2014) unless otherwise noted

NEW & NOTEWORTHY

A Tradition of Innovation Continues

New NIH Program Project Grant May Lead to Improved Understanding of Bladder Cancer



Xue-Ru Wu, MD, professor and vice chair of urologic research and director of the Goldstein Family Bladder Cancer Research Group, has been awarded a program project grant from the National Cancer Institute to study the molecular tumorigenesis of bladder cancer. With approximately 75,000 new cases diagnosed annually in the United States, bladder cancer is the costliest cancer to diagnose and treat, but there is a dearth of research on its causes and potential treatments, resulting in very few effective detection and treatment methods.

Dr. Wu, who has been studying bladder biology and cancer for more than two decades, leads a group of three investigators with strong, diverse, yet complementary expertise to study the molecular pathways leading to the formation of the two major bladder cancer types: the low-grade noninvasive versus high-grade invasive bladder cancer.

The researchers hope to address several critical and pressing problems.

"Results from this team effort should contribute to a major leap forward in our understanding of the pathogenesis of bladder cancer," says Dr. Wu. "It could lead to the development of novel biomarkers and therapeutics for this highly prevalent but extremely under-studied disease."

KEY RESEARCH QUESTIONS

- What are the combinatorial molecular events that can drive bladder cancer formation along the divergent phenotypic pathways?
- How could insights from developing and analyzing genetically engineered mice benefit bladder cancer diagnostics and management?
- Is acrolein an important carcinogen for tobacco-smoke-caused bladder cancer, and are distinct bladder cancer pathways underlined by different DNA damage and repair capacities?
- What are the novel role, upstream regulators, downstream effectors, and the mechanisms of action of XIAP in bladder cancer invasion and progression?

NEW & NOTEWORTHY

Research Continues on Bladder Biology and Diseases

Funded by an existing program project grant from the National Institute of Diabetes and Digestive and Kidney Diseases, NYU Langone's Urothelial Biology Group is continuing its research studying the growth, differentiation, and disease of the bladder urothelium.

Tung-Tien Sun, PhD, the Rudolf L. Baer Professor of Dermatology as well as professor of urology; cell biology; and biochemistry & molecular pharmacology, is principal investigator on the grant, leading a multidisciplinary team of five labs. In previous work to date, Dr. Sun's team has focused on how the bladder urothelium form a water-tight barrier and how the bacteria that cause urinary tract infection (UTI) interact with and invade into host urothelial cells.

Abnormalities in bladder urothelial cells are involved in several other important urologic diseases, including overactive bladder, painful bladder syndrome, and bladder cancer. Dr. Sun's team hopes to shed new light on urothelial function and its role in a number of important urological conditions, including bladder, outlet obstruction, and UTI.

Overcoming Treatment-Resistant Prostate Cancer

Susan K. Logan, PhD, associate professor of urology, as well as biochemistry and molecular pharmacology, is continuing to conduct a project funded by the National Institutes of Health (NIH) to understand altered regulation of a transcription repression complex leading to anti-hormone resistant prostate cancer.

While prostate cancers are initially treatable by drugs that block the production or action of testosterone, they inevitably become resistant to therapy. Dr. Logan's team will investigate the roles of androgen receptor (AR) trapped clone-27 (ART-27) and unconventional prefoldin RBP5 interactor (URI), two proteins that have a major impact on transcriptional regulation through the AR, in prostate cancer development.

Dr. Logan hypothesizes that ART-27 is a cell-type-specific and developmentally regulated protein that links AR to the URI transcriptional regulatory complex and affects AR target genes important in prostate growth regulation. Her team hopes to elucidate the role of ART-27 in prostate epithelial cell growth and differentiation in vivo. The long-term goal is to understand how AR directs cell metabolism and differentiation in some cellular contexts and proliferation in others.

Differentiating Prostate Cancer Risk with Genomics

More than thirty percent of prostate glands from men over the age of 50 years harbor prostate cancer—yet only 3 percent of these cancers are lethal. Prostate cancer is characterized by a combination of gene mutations and genomic rearrangements that can be observed as copy number variations (CNV).

NYU Langone is on the forefront of research attempting to differentiate biological aggressiveness of prostate cancer using novel molecular methods such as single-cell genomic profiling. Herbert Lepor, MD, professor and the Martin Spatz Chair of the Department of Urology, together with computational scientists and quantitative biologists at Cold Spring Harbor Laboratory (CSHL), was awarded a Department of Defense grant to investigate genetic signatures of prostate cancers. Scientists at CSHL have developed the technology to identify genetic deletions and amplifications within a single-cell nucleus. Many features of genomic complexity, such as degree and frequency of genomic instability, clonal emergence, heterogeneity among clones, ploidy violations, overlap with common patterns of CNV, and clone migration/trafficking, which cannot be readily observed by standard histopathology, are easily identified by ascertaining CNV. Preliminary observations of the NYU Langone investigation suggest that CNV provides insights into the pathogenesis of prostate cancer, and has the potential to differentiate the aggressiveness of prostate cancer beyond standard pathological examination.

30% of men over 50

harbor prostate cancer

—

3%

of these cancers may be lethal

—

Copy number variations may provide (CNV) clues

Clinical Trials

As an academic medical center, NYU Langone Urology is conducting clinical trials research in a variety of urology-related areas including prostate cancer, bladder cancer, imaging, bph, pelvic organ prolapse, and voiding dysfunction. Our researchers and physicians are performing clinical trials and research studies with the aim of translating laboratory findings into new, more effective treatments and diagnostic methods.

Gift Propels Growth of Cancer Center

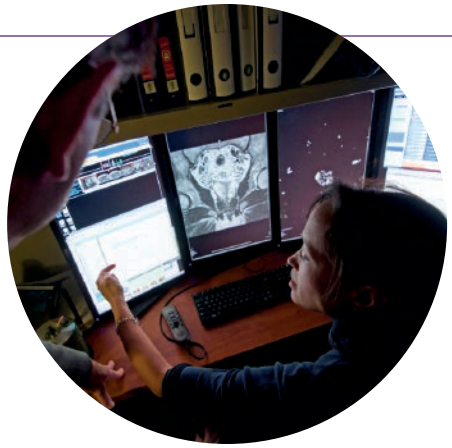
Benjamin G. Neel, MD, PhD, assumed the directorship of the NCI-designated Laura and Isaac Perlmutter Cancer Center (formerly NYU Cancer Institute) in January 2015. A world-renowned cancer biologist, Dr. Neel previously directed the Toronto-based Ontario Cancer Institute, Canada's largest cancer research center. The Perlmutter Cancer Center is poised for growth following a gift in excess of $50 million from the Laura and Isaac Perlmutter Foundation to advance cancer research and treatment at NYU Langone.

NEW & NOTEWORTHY

New Children's Hospital to Provide Multidisciplinary Care

NYU Langone urologists are part of a multidisciplinary team of specialists caring for children at NYU Langone's Hassenfeld Children's Hospital, whose forthcoming facility is made possible by a gift in excess of $50 million from the Hassenfeld family. The pediatric urology team is led by Ellen Shapiro, MD, professor of urology and director of pediatric urology. The team addresses the special needs of infants, children, and adolescents with disorders such as undescended testes, hernias, varicoceles, hypospadias, vesicoureteral reflux, prenatally diagnosed hydronephrosis, neurogenic bladder, and vaginal abnormalities.

Radiology Reading Room Improves Care Efficiency



Recent research published online January 31, 2014 in the *Journal of the American College of Radiology* shows that radiology reading rooms have the potential to improve care by facilitating closer communication between referring clinicians and radiologists. At NYU Langone, a case study of a new integrated reading room in the Urology Faculty Group Practice outpatient center also shows that on-site access to radiology consultations may lower costs by reducing repeat imaging orders.

Andrew B. Rosenkrantz, MD, associate professor of radiology and urology; Herbert Lepor, MD, professor and the Martin Spatz Chair of the Department of Urology and director of the Smilow Comprehensive Prostate Cancer Center; and Samir Taneja, MD, the James M. Neissa and Janet Riha Neissa Professor of Urologic Oncology and director of urologic oncology, reported that the reading room had an average of 1.8 consultations between a urologist and radiologist during each 3-hour shift. Just over half of the consultations were requested by patients for review of external cases, while 43 percent involved internal cases and 5 percent were for direct image review by the radiologist with patients. Urologists indicated that almost all of the consultations benefited patient care, and that having a radiologist available on-site made them more likely to seek out consultations and less likely to repeat outside imaging.

The findings are particularly relevant in light of changes to payment models under the Affordable Care Act (ACA), the authors note. The ACA model incentivizes physicians to use imaging appropriately by bundling the services into overall reimbursement for an episode of care.

"Clinically integrated reading rooms may have increasing importance as radiologists are expected to play a central role in ensuring appropriate imaging utilization," the authors conclude.

FACULTY LEADERSHIP HIGHLIGHTS

NYU LANGONE PHYSICIANS LEAD NATIONAL SOCIETIES

- Victor W. Nitti, MD, vice chair and professor of urology, was recently appointed as director of education for the American Urological Association (AUA) following a national search. Dr. Nitti will be responsible for organizing the AUA's national educational programs.
- Stacy Loeb, MD, MSc, assistant professor of urology and population health, is a member of the AUA and European Association of Urology social media committees.
- Ellen Shapiro, MD, professor of urology and director of pediatric urology, and Ojas Shah, MD, associate professor of urology and director of endourology and stone disease, served on AUA guidelines committees.
- Herbert Lepor, MD, professor and the Martin Spatz Chair of the Department of Urology, and Dr. Nitti, are 2 of only 72 active members elected to the American Association of Genitourinary Surgeons (AAGUS).
- Dr. Lepor is 1 of only 22 active members elected to the Clinical Society of Genitourinary Surgeons (CSGUS), a subgroup of AAGUS. Dr. Lepor hosted the annual meeting of the CSGUS at NYU Langone.

FACULTY MEMBERS SERVE ON PEER-REVIEWED EDITORIAL BOARDS

Many NYU Langone faculty members serve on editorial boards for major peer-reviewed journals, including:

- *The Journal of Urology* (Dr. Taneja)
- *Urology* (Drs. Lepor and Shapiro)
- *European Urology* (Drs. Taneja and Loeb)
- *Reviews in Urology* (Drs. Lepor [editor], Shapiro, Loeb, and Brucker)
- *British Journal of Urology International* (Dr. Loeb)
- *Neurourology and Urodynamics* (Dr. Nitti)
- *Female Pelvic Medicine and Reconstructive Surgery* (Dr. Nitti)
- *International Urogynecology Journal* (Dr. Nitti)
- *Bladder* (Drs. Sun and Wu)
- *Natural Medicine Journal* (Geovanni Espinosa, ND, LAc)
- *Urology Practice* (Dr. Loeb)

NATIONAL INSTITUTES OF HEALTH/FOOD AND DRUG ADMINISTRATION APPOINT NYU LANGONE FACULTY

Susan K. Logan, PhD, associate professor of urology, and biochemistry and molecular pharmacology; Tung-Tien Sun, PhD, professor in the departments of cell biology, biochemistry and molecular pharmacology, and urology, and the Ronald O. Perelman Department of Dermatology; and Xue-Ru Wu, MD, professor and vice chair of urologic research, recently served on National Institutes of Health (NIH) study sections, while Danil V. Makarov, MD, MHS, assistant professor of urology and population health, was recently appointed consultant to the Food and Drug Administration (FDA) Advisory Panel.

NYU LANGONE UROLOGISTS FEATURED AT AMERICAN UROLOGICAL ASSOCIATION MEETING

NYU Langone urologists were featured prominently at the 2014 American Urological Association (AUA) meeting in Orlando, Florida. Plenary sessions led by NYU Langone faculty included:

- "Advanced Paternal Age: What are the Real Risks?" Joseph Alukal, MD (presenter)
- "Crossfire—Controversies in Urology" debate: "Have Robots Made a Difference in the Outcomes for Prostate Cancer Patients?" Herbert Lepor, MD (debater)
- "Synthetic Sling is the Correct Choice for Index Patients with SUI." Victor W. Nitti, MD (moderator)
- "Live Surgery: Robotic Reconstruction." Michael D. Stifelman, MD (surgeon)

LEADING POSTGRADUATE MEDICAL EDUCATION

NYU Langone faculty members provide a seminal, multidisciplinary offering of CME courses in urology. Over the past 20 years, over 1,500 urologists—representing 1 in 8 practicing urologists—have traveled to NYU Langone in pursuit of these postgraduate education courses. Here is a sampling of the recent and upcoming courses offered on our campus.

CME postgraduate courses to be offered in 2015:

- Advances in Female Pelvic Medicine and Reconstructive Surgery, March 27–28
- Multi-Specialty Robotic Surgery Course, June 12–13
- Advances in Prostate Imaging and Focal Ablative Treatment of Prostate Cancer, June 19–20
- Surgical, Pharmacological, and Technological Advances in Urology, December 10–12

For more information, visit nyulmc.org/cme.

Past CME offerings:

- Surgical and Pharmacological and Technological Advances in Urology, the largest course of its kind in the country, was attended by 226 urologists representing 35 states in 2014.
- Advances in Prostate Imaging and Ablative Treatment of Prostate Cancer was attended by 132 urologists and radiologists representing 30 states and several other countries.
- Advances in Female Pelvic Medicine and Reconstructive Surgery: A total of 100 urologists and gynecologists attended the first course in 2014.

CLINICAL CARE

Clinical Care

➡ ***We offer a comprehensive team of urologists, each with a specific sub-specialty. Patients whose needs go beyond a single specialty benefit from seeing other team experts including nephrologists, urogynecologists, and radiologists.***

Studies Shed Light on Long-Term Quality of Life After Radical Prostatectomy

LIFE AFTER SURGERY

Three studies led by NYU Langone urologists offer insights into prostate cancer survivors' quality of life in the decade following radical prostatectomy.

Most previous research suggests that recovery of erectile and sexual function plateaus two years following radical prostatectomy, but a recent study by Herbert Lepor, MD, professor and the Martin Spatz Chair of the Department of Urology, and director of the Smilow Comprehensive Prostate Cancer Center, demonstrates that some men continue to make progress. In one of the longest prospective longitudinal studies on outcomes to date, Dr. Lepor and colleagues demonstrate that sexual function remains generally stable in most men for up to 10 years, and that younger men (less than age 60) may experience improvements for up to 8 years. The findings were published in the January 2014 issue of *European Urology*.

Recovery of sexual function may extend well beyond perceived two-year plateau, up to 10 years.

In the same issue of the journal, Dr. Lepor and colleagues present findings from a second long-term study showing that most men notice slight decreases in continence rates for 10 years following radical prostatectomy, with patients older than age 60 experiencing steeper declines than younger men. Having long-term data will help physicians in counseling prostate cancer patients, the authors note.

"Median survival after treatment for prostate cancer is approximately 14 years. Therefore, it is important to examine quality of life beyond the two-year time frame in which many experts erroneously thought functional recovery plateaued," Dr. Lepor and colleagues wrote in the study. "Elucidating the long-term impact of radical prostatectomy on quality-of-life outcomes is important in establishing realistic expectations for men electing surgical treatment of clinically localized prostate cancer."

A third prospective study by Dr. Lepor and Danil V. Makarov, MD, MHS, assistant professor of urology and population health and director of urological health services research, demonstrates that radical prostatectomy is the only treatment option that has been shown to improve and prevent lower urinary tract symptoms (LUTS). Researchers found that men who underwent radical prostatectomy experienced immediate improvements in LUTS that lasted for 10 years. Their findings were published in *The Journal of Urology*.

"Men contemplating the various treatment options for clinically localized prostate cancer should be counseled regarding the significant long-term benefit radical prostatectomy has in improving and preventing LUTS," the authors wrote. "One should not underestimate the clinical relevance of relieving and preventing the development of LUTS, given that millions of men make a lifetime commitment to medical therapy or surgical treatment of LUTS to improve quality of life."

CLINICAL CARE

New Imaging Techniques Aid Prostate Cancer Detection and Treatment

TREATING PROSTATE CANCER

NYU Langone urologists are pioneering new strategies for detecting and treating prostate cancer, using new imaging techniques that help them more precisely diagnose and target tumors.

More than 30 percent of prostates in men over the age of 50 harbor prostate cancer. Only one in ten of these cancers will ultimately be lethal. The conundrum for urologists is to detect only those "significant" cancers. The standard of practice in the United States is to perform transrectal ultrasound (TRUS)-guided random biopsy of the prostate on men with an elevated PSA level in order to detect prostate cancer. Random biopsies of the prostate are performed since ultrasound does not identify the site of clinically significant prostate cancers. The limitations of random prostate biopsies are the detection of insignificant cancers and failure to detect lethal prostate cancers. NYU Langone radiologists and urologists are on the cutting edge of using advanced MRI that includes dynamic contrast enhancement and diffusion-weighted imaging to identify the site of significant cancers.

The limitations of random prostate biopsies are the detection of insignificant cancers and failure to detect lethal prostate cancers.

NYU Langone urologists have also pioneered three-dimensional co-registration of MRI and real-time TRUS to target biopsies in order to detect only significant prostate cancer. This novel fusion biopsy technique, performed on more than 1,000 men at the Smilow Comprehensive Prostate Cancer Center, has been shown to be more effective than conventional biopsy in detecting high-grade, aggressive cancers, resulting in fewer false-negative results.

The NYU Langone experience with advanced prostate MRI and MRI/ultrasound co-registration targeted biopsy, published in major urologic journals, has shown that this technology increases the detection of significant cancers. If biopsies are limited to those areas suspicious for cancer on MRI, the detection and treatment of low-risk cancers can be greatly decreased.

Organ-sparing surgical treatment has gained widespread acceptance for many cancers, including breast, kidney, and lung. The ability of MRI to identify the site of significant prostate cancer provides the opportunity to destroy only those areas harboring prostate cancer, thereby greatly decreasing complications of whole-gland treatment.

NYU Langone urologists are on the forefront of investigating focal ablation of prostate cancer using various energy sources, including high-intensity focused ultrasound, cryotherapy, radio frequency, and laser energy.

Herbert Lepor, MD, professor and the Martin Spatz Chair of the Department of Urology, and director of the Smilow Comprehensive Prostate Cancer Center, was senior author of a paper published last year (*Reviews in Urology*) detailing early findings of a prospective study involving 23 men who underwent focal laser ablation. Of 13 patients who subsequently underwent targeted biopsies of the ablation zone, 3-month post-ablation, 12 showed no cancer. None of the patients experienced a single incontinent episode, and erectile function was unchanged from baseline. To date, 33 men have been treated with focal laser ablation by Dr. Lepor and colleagues, with a biopsy negative rate of the ablation zone at 96 percent.

Focal laser ablation appears to be a reasonable

option

for men with low- to intermediate-risk disease

>30%

of prostates in men over the age of 50 harbor prostate cancer

Only

1 in 10

of these cancers will ultimately be lethal

There are many potential energy sources to ablate prostate cancer; the challenge is to reliably image the significant disease and select appropriate candidates. While there is still uncertainty about whether the focal laser ablation technique results in long-term cancer control, it appears to be a reasonable option for men with low- to intermediate-risk disease, provided that it is performed by a highly skilled team of urologists and interventional radiologists trained in the procedure, note the study authors.

"We now have compelling evidence that focal laser ablation is a very reasonable option for men with low- to intermediate-risk cancer and a biopsy-proven cancer suspicious region (CSR) on MRI," says Dr. Lepor. "While we lack data on long-term outcomes, our experience suggests that we can successfully ablate potentially lethal prostate cancer in an outpatient center using local anesthesia, with virtually no complications or adverse effects on urinary, erectile, or rectal function."

CLINICAL CARE

Screening Tool Identifies MS Patients with Incontinence

VOIDING DYSFUNCTION

Up to 75 percent of multiple sclerosis (MS) patients suffer from neurogenic detrusor overactivity, a bladder disorder that causes incontinence, but the condition is often overlooked for many years. A new, patient-friendly screening tool being developed at NYU Langone and elsewhere may help physicians identify and treat these patients before their symptoms become severe.

The Actionable Bladder Symptom Screening Tool (ABSST), developed with input from clinicians and patients, uses a 17-point scoring system to identify patients who may benefit from urologic evaluation and treatment. Patients rate each item on a scale of 0–3, and the numbers are tallied to derive a final score. A validation study co-authored by Victor W. Nitti, MD, professor and vice chair of urology, was published in the *International Journal of MS Care*.

MS patients interviewed for the study reported that their most common symptoms were urgency, nocturia, leakage, frequency, and incontinence. Many reported that the symptoms had significant physical as well as emotional and social effects, including feeling embarrassed, depressed, and angry; restricting social and sexual interactions; and interfering with walking and sleeping.

Importantly, the tool is designed specifically for the MS population to alert physicians to potential bladder issues, as opposed to other tools that assume the patient already has a diagnosis. It also facilitates communication between neurologists and urologists, according to the study. At NYU Langone, Benjamin M. Brucker, MD, assistant professor of urology and obstetrics and gynecology, treats MS patients on-site at the Multiple Sclerosis Comprehensive Care Center.

"Urologists would find an MS-specific bladder health screening tool to be very helpful in the early identification of patients who may need urologic evaluation and treatment," the authors write. "Neurologists may find that this tool allows for quick, simple, and reliable screening, especially for patients who need more comprehensive management of bladder symptoms."

Drug Shows Promise for Overactive Bladder

In an analysis of data from three randomized trials, researchers concluded that the beta-3-adrenoceptor agonist mirabegron is effective in treating overactive bladder symptoms in patients with incontinence. The findings are published in the January 2015 issue of *European Urology*.

The analysis included pooled data from three randomized, double-blind, placebo-controlled phase 3 studies. Researchers found that patients given 50 mg daily of mirabegron over 12 weeks had statistically significant improvements in incontinence and urgency episodes. The treatment effect increased with increased severity of symptoms.

Enhancing Patient Communication for Better Diagnosis

Patients with overactive bladder (OAB) often fail to report urgency as a bothersome symptom, resulting in imprecise symptom reporting that can interfere with making accurate diagnoses, according to a pilot study co-authored by Victor W. Nitti, MD, professor and vice chair of urology.

In the study, published in *Urology*, 102 patients with OAB were given a questionnaire asking them to identify which symptoms were most bothersome and contributed to urinary frequency Participants reported frequency (84 percent) and nocturia (88 percent) more often than urgency (82 percent), but also identified "fear of leakage"—the accepted definition of urgency—as the factor driving their frequency.

"The fact that some patients will not explicitly identify urgency or urgency incontinence as a symptom they experience unless specifically queried regarding the underlying reason for frequency highlights the role of patient understanding (or misunderstanding) in communicating with practitioners about lower urinary tract symptoms," the authors note. "This highlights the limitations of questionnaire-based symptom assessments in OAB that may inaccurately capture symptom profile based on these word errors."

Fixed Male Sling Improves Patient Outcomes

NYU Langone urologists participated in a small, prospective trial demonstrating that a fixed version of a male sling may improve outcomes for men undergoing surgery to treat post-prostatectomy incontinence.

The study compared one-year outcomes for two cohorts of patients: one treated with an unfixed sling and another with the Coloplast Virtue® quadratic sling, which includes a novel fixation mechanism to prevent early sling loosening. Objective success, defined as more than a 50 percent decrease in 24-hour pad weight, was 79.2 percent in the fixation group, compared to 42 percent in the unfixed group. Men in the fixation group also were more likely to report their improvement as "much" or "very much" better (71 percent versus 42 percent).

The findings, published last year in *Urology*, suggest that fixation prevents early sling loosening without adversely affecting bladder emptying, the authors say.

CLINICAL CARE

Robotics Expands Options for Men and Women with Complex Urologic Conditions

EXPANDING OPTIONS

Robotic surgery has gained popularity as a tool for performing radical prostatectomy. Michael D. Stifelman, MD, professor of urology and director of NYU Langone's Robotic Surgery Center, has championed this innovative technology and extended its use to partial nephrectomy, sacrocolpopexy, complex urinary reconstruction, and simple prostatectomy, making NYU Langone one of the country's leading tertiary referral centers for robotic surgical procedures.

"Employing robotic technology in the surgical arena helps to simplify complex procedures," says Dr. Stifelman, "with the ultimate goal of minimizing trauma to the patient and improving outcomes."

Nirit M. Rosenblum, MD, assistant professor of urology, and Benjamin M. Brucker, MD, assistant professor of urology and obstetrics and gynecology, are both surgeons in the Center for Female Pelvic Medicine who specialize in treating issues related to pelvic organ prolapse, incontinence, and other gynecological problems, with particular expertise in complex pelvic reconstructive surgical procedures. Robotic surgery procedures are used in the repair of cystocele, rectocele, uterine prolapse, prolapse of the vaginal cuff after hysterectomy, and uterine-preserving sacrohysteropexy.

"Robotic surgery is a great option for women who are seeking a long-lasting, minimally invasive procedure, where a quick recovery is desired," says Dr. Brucker, who specializes in treating urinary incontinence and pelvic organ prolapse. "We have had tremendous success maintaining sexual and urinary function using the *da Vinci*® robot, which allows us to repair prolapse without inserting mesh vaginally, as vaginal mesh has been associated with unwanted complications."

NYU Langone is one of a few centers in the region to offer the option of uterine-sparing robotic surgery, avoiding the need for a hysterectomy.

"Robotic surgery is particularly advantageous for correcting pelvic organ prolapse," notes Dr. Rosenblum, who specializes in the treatment of voiding dysfunction, urinary incontinence, pelvic organ prolapse, and sexual dysfunction in women. "It allows preservation of natural vaginal length and depth, thereby preserving normal sexual function; and it avoids the need to place a synthetic mesh in the vagina, which can lead to vaginal scarring, painful intercourse, and possible mesh extrusion into the vaginal canal."

COMPLEX PROCEDURES

ROBOT-ASSISTED PARTIAL CYSTECTOMY

This procedure treats certain invasive bladder cancers that involve a single favorable site in the bladder, such as the dome. The tumor and a small amount of bladder tissue surrounding it are removed. Because the majority of the bladder is left intact, the patient is able to retain normal bladder function. While this approach is not applicable to most patients with bladder cancer, it can be extremely effective in carefully selected cases and can be performed for benign disease of the bladder, such as diverticulum, or for patients with urachal abnormalities.

URINARY DIVERSION

When bladder cancer invades deep into the muscle, the entire bladder must be removed, which requires creating a new bladder out of intestines. This is one of the most complex surgical procedures performed by uro-oncological surgeons. At NYU Langone, assistant professors of urology William C. Huang, MD, and Lee C. Zhao, MD, have developed a technique to remove the bladder and create a new bladder using a robotic approach, with encouraging preliminary outcomes.

ROBOTIC RECONSTRUCTION WITH BUCCAL MUCOSA

Our faculty members have also pioneered the use of buccal mucosa to help reconstruct the ureter in complex urinary reconstruction.

HEALTH SERVICES RESEARCH

Health Services Research

➡ ***NYU Langone health policy experts work to assess the costs and benefits of urologic procedures, protocols, and guidelines.***

Examining and Improving Prostate Cancer Care

BALANCING COST AND QUALITY

NYU Langone urologists are at the forefront of the national conversation about how to improve the quality and efficiency of care for men with prostate cancer. A key issue is maximizing benefits and reducing downstream harms from prostate cancer screening. Recent studies by Danil V. Makarov, MD, MHS, assistant professor of urology and population health, and director of urological health services research, and Stacy Loeb, MD, MSc, assistant professor of urology and population health, have highlighted the many different facets to this issue and proposed methods for improvement.

The first step in the process is focusing screening and diagnostic evaluation on the men who are most likely to benefit. A recent study co-authored by Dr. Makarov assessed the cost of screening and downstream procedures, such as biopsy, in a group of male Medicare beneficiaries 65 or older who had never been diagnosed with prostate cancer. The findings were published in *Cancer*.

NYU Langone urologists are at the forefront of the national conversation about how to improve the quality and efficiency of care for men with prostate cancer.

About half of the men received PSA screening tests during the 3-year study period, with 3 percent subsequently undergoing biopsy. Overall, the costs of screening were substantial and varied significantly by region, with biopsy-related procedures accounting for 72 percent of the overall costs, researchers reported. Notably, costs for men age 75 or older—the group least likely to benefit from screening—accounted for about one-third of the total.

"Given the high percentage of screening cost that is attributable to biopsy, it would be important to test the utility of alternative, lower-cost approaches for downstream workup after detection of an elevated PSA," writes Dr. Makarov and colleagues.

One new blood test that has recently been developed is called the Prostate Health Index (phi). Dr. Loeb and colleagues recently published an article in *The Journal of Urology* showing that phi is better than total PSA to identify aggressive prostate cancer. These new screening modalities may help to reduce the number of unnecessary biopsies and overdiagnosis in the future.

Another important way to reduce the downstream harms of screening is to increase the use of active surveillance (AS).

In another study published last year in *European Urology*, Drs. Loeb, Makarov, and colleagues collected data on almost 2,000 men diagnosed with low- to intermediate-risk prostate cancer who chose AS as their primary management strategy. After 5 years, 64 percent of the men remained on AS, showing that it is a durable option for many men.

Furthermore, one-fifth of those who discontinued AS did so for nonbiologic reasons.

"There is a need for support and counseling for men to continue AS in the absence of signs of progression, to improve adherence to AS and decrease overtreatment," the authors conclude.

HEALTH SERVICES RESEARCH

Tracking Robotics' Return on Investment

BENEFITS VERSUS COST

Despite its potential benefits, robotic surgery has been the subject of ongoing debate about high acquisition and operating costs, and whether the technology significantly improves patient outcomes. At NYU Langone, surgeons have access to state-of-the-art equipment, featuring five *da Vinci*® robotic platforms, including the *da Vinci*® *Si* and *Xi* systems—which expand access to multiple areas of the pelvis, abdomen, and chest—as well as advanced near-infrared imaging. Recent studies by NYU Langone urologists and others have provided some of the first concrete evidence of which procedures these robotics investments are most likely to benefit.

According to the findings, early adopters of robotic surgery are more likely than late adopters to perform partial versus radical nephrectomies in patients with operable kidney cancer. Hospitals that had not adopted robotics by 2008 performed partial nephrectomies in only 20 percent of cases, compared to 38 percent among those that started between 2001 and 2004. The retrospective study, which included data on more than 21,000 kidney surgeries in 7 states, is published in the January 2015 issue of *Medical Care*.

The findings suggest that even though the surgical robot was not initially marketed for the management of renal tumors, it has been successfully reinvented, resulting in greater use of this guideline-supported procedure.

Other recent studies by NYU Langone urologists also point to the potential for robotic surgery to improve patient outcomes, including:

- A large, multi-institutional study published in the September 2014 *British Journal of Urology International*, co-authored by Michael D. Stifelman, MD, professor of urology, director of NYU Langone's Robotic Surgery Center, concluded that robotic is superior to laparoscopic partial nephrectomy in terms of postoperative surgical outcomes measured by the trifecta (negative surgical margin, zero perioperative complications, and warm ischemia less than or equal to 25). The review included more than 2,300 consecutive cases at 5 high-volume centers between 2004 and 2013.

- Benjamin M. Brucker, MD, assistant professor of urology and obstetrics and gynecology, along with Victor W. Nitti, MD, professor of urology and obstetrics and gynecology, and Nirit Rosenblum, MD, assistant professor of urology, authored a review of 15 cases between 2005 and 2011 involving robotic-assisted laparoscopic sacrohysteropexy, a uterine-sparing procedure to correct pelvic organ prolapse. Uterine prolapse improved in all patients, with an objective success rate (Baden-Walker grade 0 uterine prolapse) of 93 percent and subjective success (no complaint of vaginal bulge or pressure) of 90 percent. The authors concluded that the procedure is safe and feasible for women who desire uterine preservation.

In the area of nerve-sparing anatomic (open) radical retropubic prostatectomy, there is evidence that the open approach may be more cost-effective and beneficial than the robotic approach. Herbert Lepor, MD, professor and the Martin Spatz Chair of the Department of Urology, and co-author of a landmark paper

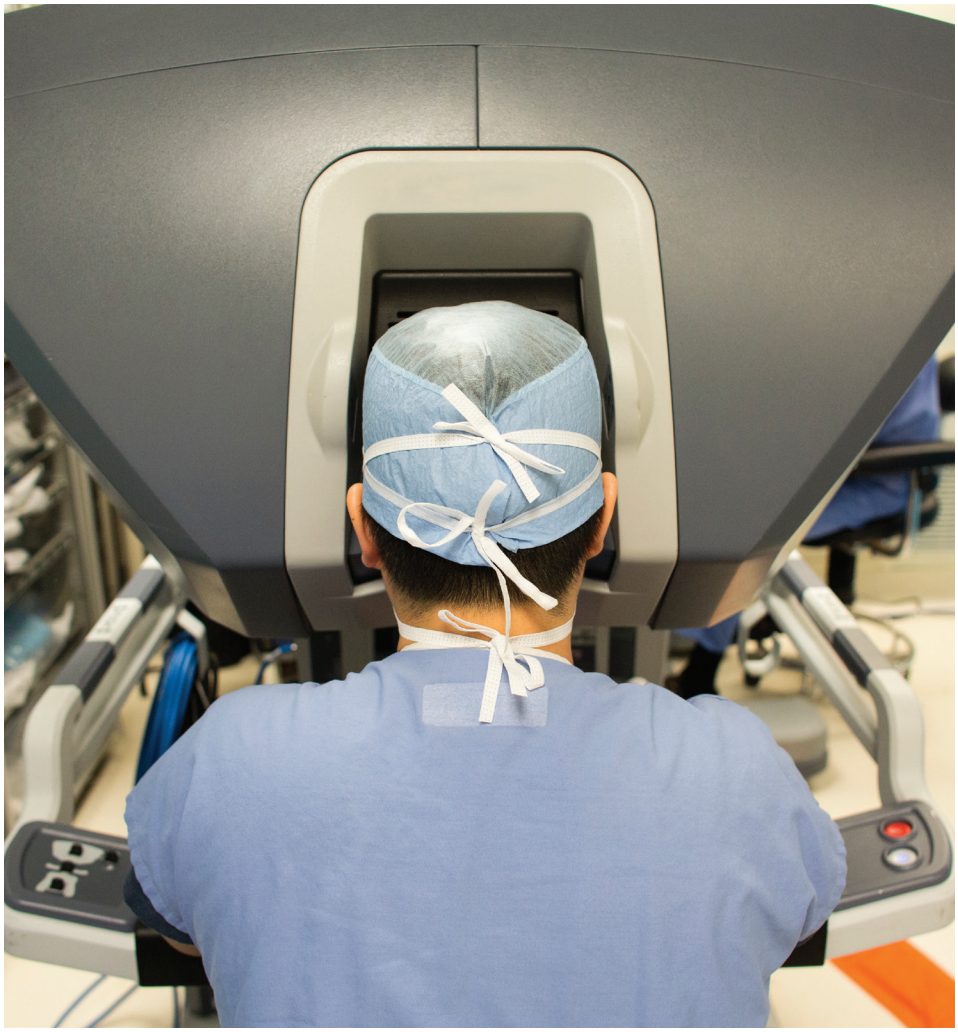
80%

of all kidney cancers are treated with partial nephrectomy at NYU Langone

>90%

of those cases were performed robotically

describing the technique for performing the procedure, has advocated that the robotic approach to radical prostatectomy has added cost and no meaningful advantages over the open approach. At the 2014 annual American Urological Association (AUA) meeting in Orlando, Florida, Dr. Lepor participated in the "Crossfire—Controversies in Urology" debate, "Have Robots Made a Difference in the Outcomes for Prostate Cancer Patients?" He presented evidence showing that cancer control, continence, potency, complications, length of hospital stay, pain, and recovery are equivalent or superior with the open approach.



SURGICAL ROBOTS: ASSESSING THE IMPACT OF EARLY ADOPTERS

Recent research led by Danil V. Makarov, MD, MHS, assistant professor of urology and population health and director of urological health services research at NYU Langone, aimed to understand the neighborhood effect on surgical robot acquisition and better comprehend what influences hospitals' decisions to purchase a surgical robot despite its high cost and controversy over its benefit.

The study, published in *Healthcare*, assessed the spatial and temporal diffusion of the surgical robot using a Markov chain model and adjusting for confounding factors such as size and teaching status. They concluded that hospitals were more likely to obtain a surgical robot if a neighboring facility already had one.

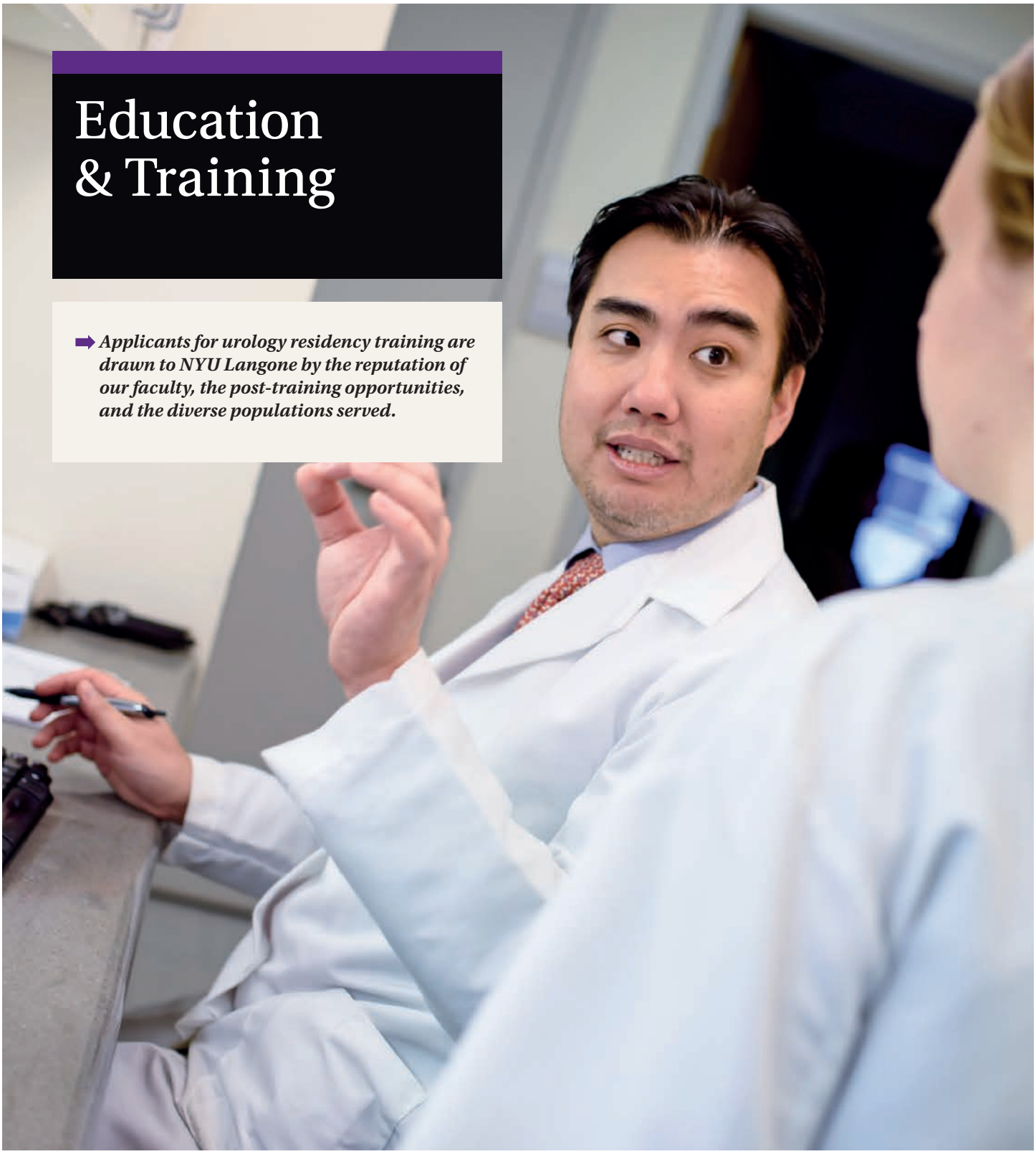
"Employing robotic technology in the surgical arena helps to simplify complex procedures," says Michael D. Stifelman, MD, "with the ultimate goal of minimizing trauma to the patient and improving outcomes."

"Perhaps it is not an intrinsic characteristic of urban hospitals that enables them to adopt new technology, but rather their proximity to a surfeit of neighbors," Dr. Makarov and colleagues wrote. "Our result is particularly valuable for physicians, patients, healthcare administrators, and policy makers, as it suggests that the diffusion of new medical technology may be driven at least in part by competition among neighboring hospitals rather than solely by the mission to provide optimal patient care."

EDUCATION AND TRAINING

Education & Training

➡ ***Applicants for urology residency training are drawn to NYU Langone by the reputation of our faculty, the post-training opportunities, and the diverse populations served.***



Broad Base of Training

Applicants for urology residency training are drawn to NYU Langone by the reputation of our faculty, the post-training opportunities, and the diverse populations served through NYU Langone's Tisch Hospital; New York City Health and Hospital Corporation's member institutions Bellevue Hospital Center and Gouverneur Health; and the U.S. Department of Veterans Affairs, VA NY Harbor Healthcare System. Affiliations such as these allow our trainees to experience the full spectrum of disease. A fully accredited five-year program, the NYU Langone urology residency provides training in:

- General urology
- Urologic oncology
- Endourology and stone disease
- Pediatric urology
- Female pelvic medicine and reconstructive surgery
- Urinary tract reconstruction
- Erectile dysfunction, male infertility, and microsurgery
- Minimally invasive surgery, including laparoscopic and robotic surgery
- Urologic trauma

Residents spend their first year in general surgery and the subsequent four years in urology. Additionally, residents spend four months doing clinical research with a faculty mentor in year three and are expected to submit at least one peer-reviewed paper for publication.

High Standards

Out of 250 applicants, 40 medical students were interviewed and 3 were accepted into the NYU School of Medicine urology residency program in 2013—an acceptance rate of approximately 1 percent. Applicants are top students in their medical school classes and score very well on their board examinations. Following residency, those interested in fellowship training typically match into the top programs of their choice.

In 2014, all of our graduating residents pursued endourology fellowship training. They are now training at Indiana University, Vanderbilt University, and University of California, San Francisco. In 2015, all of our graduating residents are pursuing fellowships as well in urologic oncology, endourology, and female pelvic medicine and reconstructive surgery.

NYU Langone offers three urology fellowships in:

- Female pelvic medicine and reconstructive surgery (ACGME-accredited)
- Andrology/male reproductive health (new)
- Urologic oncology

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LOCATIONS

(as of December 2014)

1
NYU Langone Urology
150 East 32nd Street, Second Floor
New York, NY

2
Smilow Comprehensive Prostate Cancer Center (Part of the Laura and Isaac Perlmutter Cancer Center)
135 East 31st Street, Second Floor
New York, NY

3
NYU Langone at Columbus Medical
97-85 Queens Boulevard
Rego Park, NY

4
Ambulatory Care Center
240 East 38th Street, Fourteenth Floor
New York, NY

5
Joan H. Tisch Center for Women's Health
207 East 84th Street
New York, NY

6
Preston Robert Tisch Center for Men's Health
555 Madison Avenue, Second Floor
New York, NY

7
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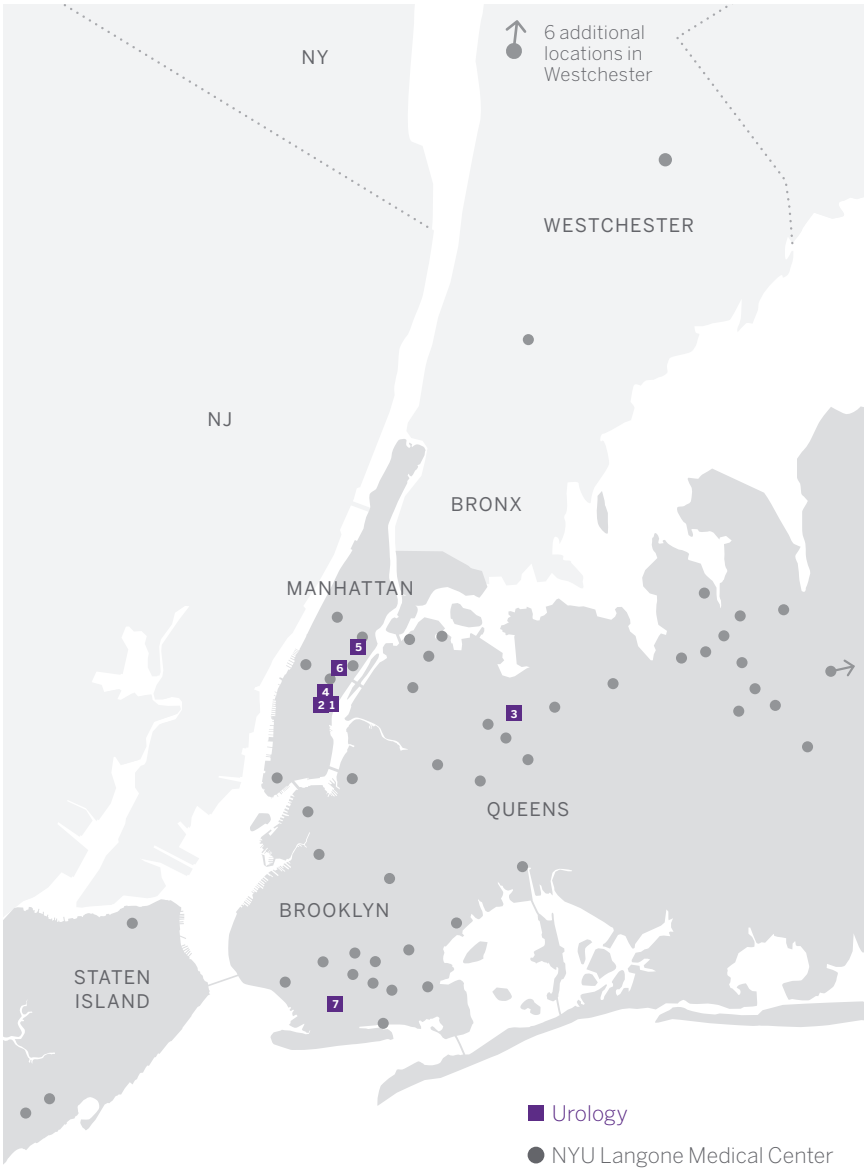
Brooklyn, NY



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NYU LANGONE MEDICAL CENTER
by the numbers*

1,069
Total Number of Beds

77
Operating Rooms

35,666
Patient Admissions

1,061,552
Hospital-Based Outpatient Visits

5,422
Births

2,000,000
Faculty Group Practice
Office Visits

1,408
Full-Time Faculty

1,047
Part-Time Faculty

2,500+
Voluntary Faculty

120
Endowed Professorships

2,515
Physicians

2,953
Registered and Advanced
Practice Nurses

550+
Allied Health Professionals

4,000+
Publications

550,000
Square Feet of Research Space

$245MM
NIH Funding

$285MM
Total Grant Funding

2,053
Inventions

936
US Patents Issued

475
US Patents Licensed

650
MD Candidates

70
MD/PhD Candidates

252
PhD Candidates

415
Postdoctoral Fellows

1,155
Residents and Fellows

*Numbers represent FY14 (Sept 2013-Aug 2014); inventions/patents are cumulative through Aug 31, 2014

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