Dear Medical Students,

We welcome your interest in the Cleveland Clinic Glickman Urological and Kidney Institute's Urology Residency Training Program. Ours is a six-year program integrating one year of pre-specialty training, one year of research and four years of clinical urology training. This brochure provides an overview of our program, as well as information about living in the Cleveland area.

All institute members are committed to maintaining an academic environment that fosters the best possible graduate urologic training. Our residency training program offers a variety of challenging clinical experiences as well as numerous opportunities for basic and clinical research. The Glickman Urological and Kidney Institute's collegial atmosphere and ample support staff enable residents to balance clinical and investigative training with family and personal interests outside the hospital.

Urology is a rapidly advancing specialty, and the Cleveland Clinic Glickman Urological and Kidney Institute is at the forefront of progress with strong programs in all of the subspecialty areas. We believe that our residency program is among the best, and that it will enable our graduates to take their place among tomorrow’s leaders in clinical and investigative urology.

Sincerely,

Steven Campbell, MD
Director, Urology Residency Training Program

Drogo K. Montague, MD
Associate Director, Urology Residency Training Program

Institute Leadership

Andrew C. Novick, MD
Chairman, Glickman Urological and Kidney Institute

Inderbir Gill, MD, MCh
Chairman, Urology

J. Stephen Jones, MD, FACS
Chairman, Regional Urology
Cleveland Clinic is dedicated to providing patients with excellence in all aspects of their care. As one of the world’s first group practices, Cleveland Clinic was formed in 1921 when four Cleveland physicians came together and set forth their professional standards: “Better care of the sick, investigation of their problems, and further education of those who serve.”

The second-largest medical group practice in the world, Cleveland Clinic includes outpatient clinics, more than 1,000 staffed beds, the Pediatric Institute & Children’s Hospital, the Taussig Cancer Institute, the Cole Eye Institute, the Cleveland Clinic Educational Foundation and the Lerner Research Institute. This integration of clinical and hospital care with research and education in a private, non-profit group practice distinguishes Cleveland Clinic in American medicine. In 2007, Cleveland Clinic recorded more than 3.2 million patient visits and 73,986 surgical cases. Among them are patients from all 50 states and more than 80 countries. More than 1,700 physicians and scientists provide patient care in 120 specialties and subspecialties. The Lerner Research Institute oversees more than 2,000 clinical and basic research activities. Total annual research expenditures exceed $150 million from federal agencies, non-federal societies and associations, and endowment funds — a dynamic endorsement by others of the quality of Cleveland Clinic research.

And the quality of medical care at Cleveland Clinic has been recognized repeatedly. Every year since 1990, U.S. News & World Report has named Cleveland Clinic one of the nation’s best hospitals in its “America’s Best Hospitals” survey. For the past seven years, U.S. News has designated Cleveland Clinic’s urology program as one of the top two urology programs in the United States.

The founding fathers’ dedication to training future generations of physicians continues today. About 920 residents and fellows were involved in patient care within Cleveland Clinic in 2007.
The Cleveland Clinic Glickman Urological and Kidney Institute

The Cleveland Clinic Glickman Urological and Kidney Institute’s urology program has a professional staff of 64 physicians and scientists representing all subspecialties of urology and comprising the largest full-time urology faculty in the United States. More than 22,000 surgical urological procedures were performed at Cleveland Clinic in 2007, and there were more than 88,000 outpatient visits.

Residents participate in all aspects of patient care in general and subspecialty urology from outpatient evaluation in clinics to office surgical procedures to inpatient and outpatient surgery to post-operative care. A large staff of physician assistants and nurse practitioners are available to handle non-educational patient responsibilities during the day.

Upon completion of the construction of the 10-story Glickman Tower in 2008 (see drawings, right), the institute will double its current capacity, occupying five floors for outpatient clinics, procedure suites, office space and a conference center.

Above and right: Renderings of the new home of the Glickman Urological and Kidney Institute, scheduled to open in 2008.
Residency Training Program

Cleveland Clinic is approved for five years of clinical training, with one year of general surgery and four years of urology training. In addition, one year is spent developing skills in basic urological research. Four residents are appointed each year. There is an emphasis on clinical and operative urology with residents pursuing a diversity of specialties within urology upon completion of the training program. During the last 10 years, two-thirds of our residents have pursued competitive fellowships with half of all graduates going on to academic careers.

Graduate Level I (Year 1)
- 7 months general surgery
- 1 month general urology
- 1 month renal transplantation
- 1 month emergency medicine
- 1 month surgical intensive care
- 1 month nephrology

Graduate Level II (Year 2)
- 1 month urologic oncology
- 2 months endourology
- 2 months prosthetics/reconstructive urology
- 1 month pediatric urology
- 1 month laparoscopic urology
- 1 month female urology and voiding dysfunction
- 1 month infertility/outpatient urology
- 2 months inpatient consults

Graduate Level III (Year 3)
- 3 months urologic oncology
- 1 month endourology
- 1 month prosthetics/reconstructive urology
- 1 month renal transplantation
- 1 month pediatric urology
- 1 month laparoscopic urology
- 1 month female urology and voiding dysfunction
- 1 month infertility/outpatient urology
- 1 month inpatient consults

Research Resident (Year 4)
Basic urological research with no clinical responsibilities

Graduate Level IV (Year 5)
- 5 months urologic oncology
- 2 months renal transplantation
- 1 month pediatric urology
- 1 month laparoscopic urology
- 1 month female urology and voiding dysfunction
- 1 month infertility/outpatient urology

Graduate Level V (Year 6)
Chief resident year with primarily operative, administrative and educational responsibilities as well as supervision of inpatient services

Teaching Conferences
- Chief Residents' Conference – Weekly
- Didactic Conference – Bi-weekly
- Morbidity and Mortality Conference – Monthly
- Oncology Multidisciplinary Conference – Monthly
- Patient Management Conference – Weekly
- Journal Club – Monthly
Resident Responsibilities

From the first day after internship, residents are entrusted with independently running their own inpatient services tailored to a subspecialty of urology. Residents work directly with faculty in a preceptor model to learn management of urologic disorders in an inpatient setting and outpatient clinics. Residents at each level participate in the operating room three to four days per week with emphasis on endourology and male genital surgery at junior levels, and on open and laparoscopic oncologic and reconstructive surgery at senior levels. Chief residents focus on refining operating skills in preparation for fellowship and practice, and shoulder administrative and educational responsibilities for the residency program.

On-call duties require GL2 residents to spend five to six nights per month and GL3 residents to spend two to three weeknights per month in the hospital. GL4 research residents are free from all clinical responsibilities. GL5 residents have home-call responsibilities during their two months on the transplant service. The four chief residents rotate weekly as the backup house officer.
Scope of Urology Services

The Cleveland Clinic Glickman Urological and Kidney Institute provides a wide range of adult and pediatric urological services. The patient population is diverse, with 34 percent of Cleveland Clinic patients coming from the city of Cleveland. One out of 10 patients comes from outside of Ohio. Patients from many countries throughout the world are frequently seen throughout Cleveland Clinic. In addition to providing general adult and pediatric urological services, the institute also provides many highly specialized tertiary care services, described in more detail in the following pages.

Urologic Oncology

Renal cancer – In 2007, 228 radical nephrectomies were performed at Cleveland Clinic with the majority being performed laparoscopically. A number of open radical nephrectomies with vena caval thrombectomy are performed each year in conjunction with cardiothoracic surgery. Our institute has the largest experience of partial nephrectomy in the world including about 375 performed in 2007 with a roughly equal number of laparoscopic and open approaches. The scope of nephron-sparing surgery is further expanded by our extensive experience in laparoscopic and percutaneous cryoablation of renal tumors.

Prostate cancer – About 930 radical prostatectomies were performed in 2007 with about 600 of these performed laparoscopically or with the assistance of the Da Vinci robot. As the demand for laparoscopic prostate surgery increases, our Section of Laparoscopic and Robotic Surgery continues to increase the number of these procedures performed annually. During the outpatient rotation, residents become adept at transrectal ultrasound-guided prostate biopsy and prostate brachytherapy.

Bladder cancer – Our physicians performed more than 600 cystoscopic resections for bladder cancer and more than 175 radical cystectomies in 2007. Recently, laparoscopic and robotic-assisted radical cystectomies have been added to the surgical options for bladder cancer. Residents also become adept at the full range of options for urinary diversion, with an emphasis on continent neobladders.

Testis cancer – Residents are educated in the management of testis cancer on a multi-disciplinary level. An average of 20 to 30 retroperitoneal lymph node dissection procedures are performed each year.

Adrenal surgery – About 40 adrenalectomies were performed in 2007 with the majority performed laparoscopically. Residents are trained in the surgical and medical management of adrenal masses manifesting as Cushing’s syndrome, pheochromocytoma, hyperaldosteronism and adrenal cortical carcinoma.
Laparoscopic and Robotic Surgery

As the highest volume single-center in the world for laparoscopic urologic surgery, the section has continued to remain on the forefront in developing new techniques and expanding the scope of minimally invasive surgery. Residents participate in laparoscopic adrenalectomy, partial nephrectomy, radical nephrectomy, renal cryoablation, radical cystectomy, prostatectomy, pyeloplasty, ileal ureter transposition, orchidectomy, sacrocolpopexy, and ureterolysis. Robotic surgery is being utilized for prostatectomy, cystectomy, and pyeloplasty procedures. In 2006, faculty in the section organized the largest and one of the most successful World Congress of Endourology conferences hosted at Cleveland Clinic.

Renal Transplantation

Since the first kidney transplant in 1963 at Cleveland Clinic, the institute has performed more than 3,000 renal transplants, including 150 in 2007 alone. Residents spend four months over three different years learning technique and principles of renal transplantation. During this rotation, residents perfect skills in vascular anastomosis, ureteroneocystotomy, cadaveric organ procurement, living donor open and laparoscopic nephrectomy, pancreas transplantation, immunosuppressive protocols, and evaluation of patients with end-stage renal disease.

Prosthetics and Reconstruction

Glickman Urological and Kidney Institute faculty possess special expertise in complex urethral reconstruction for stricture disease. Using plastic surgical principles, about 60 such procedures per year are performed using a combination of flaps, buccal mucosal grafts, and simpler anastomotic procedures. Additionally, complex fistula repairs are undertaken, often in conjunction with the Department of Colorectal Surgery. A high volume of patients with Peyronie’s disease or congenital penile curvature are seen for tunical plication procedures. On average, 150 prosthetic surgeries, including inflatable penile prosthesis, artificial urinary sphincters, and revisions, are done each year. Residents are educated in the non-surgical management of erectile dysfunction with faculty possessing expertise in this field.

Voiding Dysfunction and Female Urology

In 2007, more than 320 vaginal sling procedures were performed at Cleveland Clinic. More than 2,000 urodynamics procedures are performed each year in our dedicated urodynamics facility by specially trained nurses. Residents and faculty interpret studies in the management of patients with incontinence, neuro-urological disorders, or other types of voiding dysfunction. A number of patients with pelvic organ prolapse are seen and about 250 surgical procedures, including laparoscopic sacrocolpopexy, are performed each year for repair of vaginal prolapse. Interstim neurostimulatory devices for refractory overactive bladder or chronic pelvic pain are being used in increasing numbers with nearly 250 done in 2007.

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Endourology and Stone Disease
Residents participate at both the main campus and outpatient surgery centers in the surgical management of patients with renal calculus disease. One thousand procedures were performed in 2007, including shock wave lithotripsy, ureteroscopy and percutaneous kidney stone surgery. On average, 900 procedures for renal calculi are performed each year, including complex procedures on patients with solitary kidneys, morbid obesity or anatomically displaced kidneys. The Glickman Urological and Kidney Institute also utilizes laparoscopic and open pyeloplasty with about 60 adult and pediatric patients treated yearly for ureteropelvic junction (UPJ) obstruction. Additional patients are treated endoscopically with endopyelotomy for UPJ obstruction. Residents are trained in all aspects of stone treatment including gaining percutaneous access in the operating room.

Benign Prostatic Hyperplasia
At the junior level, residents become well versed in performing Photoselective Vaporization of the Prostate (PVP) procedures with the greenlight laser for BPH as well as the more traditional transurethral resection of the prostate (TURP) using the GYRUS instrument with saline irrigation.

Pediatric Urology
Almost 700 pediatric urological surgeries were performed in 2007. Residents work one-on-one with our pediatric urologists in outpatient management of urological issues and are well-trained in performing procedures such as hypospadias repair, open and laparoscopic pyeloplasty, open and laparoscopic orchidopexy, surgical and endoscopic management of vesicoureteral reflux, surgical management of Wilms’ tumor and testis cancer, hernia/hydrocele repair, and circumcision.

Male Infertility
Residents are trained in the thorough evaluation of men presenting with infertility and instructed in surgical techniques for varicocelectomy, microsurgical vasovasostomy and epididymo-vasostomy, and testicular sperm aspiration. The institute also houses a highly sophisticated andrology laboratory and active Center for Advanced Research in Human Reproduction, Infertility and Sexual Function. During internship, each resident takes a one-week dedicated microsurgery course with instruction on animal models.
Research

All urology residents are encouraged to take advantage of the opportunity to perform both clinical and basic research studies during their training. Residents perform such projects under the close supervision of one or more members of the attending staff, who assist in preparing manuscripts for publication. Residents also are encouraged to submit these papers for presentation at regional or national urology meetings. Residents presenting at national conferences are provided funds for travel during all years. In 2007, there were more than 300 publications by department faculty. Residents co-authored 60 publications and had 89 presentations at scientific meetings.

The Lerner Research Institute, a complex of laboratories, classrooms, libraries and multimedia centers, has been designed to provide a dynamic center for Cleveland Clinic's research and education activities. The Glickman Urological and Kidney Institute has several basic research laboratories where residents develop their scientific skills during the 12 months of the fourth year. These include:

**The urologic oncology basic research laboratories** are molecular biology facilities devoted to the immunobiology of renal cell carcinoma. Ongoing studies include impaired activation of NFkB in T cells from patients with renal cell carcinoma, T cell induced apoptosis in renal cell carcinoma, and chemokine gene expression in renal cell carcinomas.

Basic research in prostate cancer includes studies on XMRV and viral causes of prostate cancer as well as the role of PSA and prostate specific membrane antigen (PMSA) to guide targeted therapies in prostate cancer.

There are also ongoing studies for bladder cancer investigating intravesical immune-modulating gene therapy in an orthotopic, non-invasive bladder cancer model.

**The transplant immunology laboratory** is focused on defining T cell mediated inflammatory responses following organ transplantation. The understanding of mechanisms by which T cells are induced to mediate inflammation is essential to the design of practical clinical strategies to inhibit the priming of alloreactive T cells and to maintain allograft acceptance in transplant recipients.

**The Center for Advanced Research in Human Reproduction, Infertility and Sexual Function** is performing extensive studies on reactive oxygen species formation in human sperm and their role in male infertility. Additional areas of investigation include assessment of human sperm function after cryopreservation and methods of improving post-thaw semen quality in cancer patients.

**The neurology/urology laboratory and Center for Female Pelvic Medicine** are recognized nationally as an elite group focused on characterizing the regulatory mechanisms of benign bladder conditions and pelvic floor injury and repair. Areas of investigation include biomechanical properties of the bladder and pelvic floor, diabetic cystopathy, inflammatory diseases of the bladder, and stem cell homing after pelvic injury.

**The minimally invasive and robotic research laboratory** is focused on identifying new minimally invasive and non-invasive treatments for urologic disease and transferring these technologies to the operating room. Research areas include intraoperative imaging techniques, transcutaneous CT- and ultrasound-guided surgery, and development of new laparoscopic technologies.
Cleveland On America’s North Coast

Arts and Entertainment
University Circle, Cleveland's cultural center, has one of the greatest concentrations of museums and cultural activities in the country. Highlights of arts and entertainment in Cleveland include:

The Cleveland Museum of Art
The Cleveland Orchestra
Blossom Music Center, Quicken Loans Arena, Wolstein Center and Cleveland Browns Stadium hosting big-name rock, pop, country and jazz performers

The Cleveland Play House and Playhouse Square — home to the Cleveland Opera, Great Lakes Theater Festival and touring Broadway shows
The Rock and Roll Hall of Fame and Museum
The Great Lakes Science Museum, with the 320-seat Cleveland Clinic OMNIMAX Theater

Nightlife
For Cleveland nightlife, visit the Warehouse District, where former warehouses have been converted into modern apartments and office buildings, with elegant and trendy restaurants, nightclubs and bars on the street level. Or, visit the brick-lined East Fourth Street district, with gourmet dining and jazz venues, a comedy club and martini bars.

Recreation and Sports
The Cleveland Metroparks Zoo, Cedar Point Amusement Park and Six Flags Worlds of Adventure offer summer fun. Lake Erie provides entertainment for sailing enthusiasts, boaters, swimmers and fishermen. Winter in Cleveland unveils cross-country and downhill skiing, tobogganing and snowmobiling. Major league sports are represented by the Cleveland Browns, Cleveland Indians and Cleveland Cavaliers.

Little Italy
Many around the city enjoy the atmosphere of Cleveland's Little Italy, located five minutes from Cleveland Clinic's campus. This unique section of town features restaurants, shops, art galleries and more.
For more information about the urology residency training program, contact:

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