It is with great pleasure that I present the 2007 Annual Report for the Department of Surgery of the University of Chicago Medical Center and Biological Sciences Division.

The University of Chicago has always been a unique institution, a place that prizes tradition while embracing the future. As a relative newcomer to this great university and medical center, I find myself in awe of its celebrated past. This is the place where Nobel Laureates walk and work, making multifaceted contributions to the field of surgery and the fields of science and medicine. A storied past gives us inspiration to reach for new heights as a department and as leaders in surgical innovation.

In keeping with the best traditions of the University of Chicago, we proudly support the commitment to discovery and innovation fostered by today’s leadership: Robert Zimmer, President of the University of Chicago; Thomas Rosenbaum, Provost of the University of Chicago; James L. Madara, MD, Dean of the Biological Sciences Division and CEO of the University of Chicago Medical Center; and David Hefner, President of the University of Chicago Medical Center.
We've already experienced progress using this model. The function and interdependencies among specialties have transformed the traditional tripartite mission and structure. For example, we have seen advances in minimally invasive and robotic surgery in the Sections of Urology, Vascular Surgery and General Surgery through their collaborative technological developments. These advances have also allowed shared resources. Another example is the application of new computer models of interactive communication to the clinical training process that has been developed in General Surgery.

A final example of the strength and efficiency of such a model is the developing Section of Surgical Research. It brings together basic and translational scientists around common themes that cross traditional disciplines. Broad research themes, including the biology of epithelial cells and tissue regeneration, are bringing together scientists from a range of specialties and backgrounds. The collaborations that are being built allow us to redesign our approach to the research endeavor. We can innovate and inspire by covering more ground, with a strong focus on efficiency and sustainability.

Jeffrey B. Matthews, MD
Dallas B. Phemister Professor of Surgery
Chairman, Department of Surgery
The University of Chicago

We’re fostering a culture of optimism and creativity that will ultimately further our tripartite mission of clinical practice, research and education. We hold ourselves to a high standard of excellence and continue to be:

» The best performer in quality, safety, cost, service and satisfaction.
» The leading provider of complex care in Illinois.
» A partner in a South Side Health system that optimizes deployment of finite societal resources.
» A campus with 21st century facilities and information technology that cuts across patient care, research and teaching.
» A unique research-rich environment that performs agenda-setting science, mining interfaces across and outside of the University.
» A magnet for the best students, residents and fellows in medicine and biology.

Working together, incredible things are possible. We’re moving into a new realm, a place that our predecessors could not have even imagined. The Department’s traditional academic values of excellence in education, clinical care and research are now interlocking in a number of ways that will provide efficiency and strength. However, these missions contain, at times, underlying opposing tensions, which we must harness into productive and innovative directions.

Our future will be one of interdependence. Structurally, we can view our enterprise as a geodesic dome, following R. Buckminster Fuller’s landmark work in architecture and urban planning. The geodesic dome’s design consists of triangles interlocked around common joints to form self-stabilizing building blocks. The result? The dome is incredibly strong, yet versatile and embodies efficiency by covering more space with less material. In this sense, we can envision the geodesic dome as a model for the Department of Surgery, as we bring our sections and their tripartite “triangular” mission (clinical care, research and education) together to create a new structure that is self-supporting, and allows us to cover more ground. This will offer opportunities for innovation, while conserving our finite resources.

We’re reaching for new heights not by building a vertical, siloed growth (a skyscraper), but by creating a smarter, broader, sustainable structure within which we will have the freedom to redesign academic surgery to match our vision.

Clinical Care

A final example of the strength and efficiency of such a model is the developing Section of Surgical Research. It brings together basic and translational scientists around common themes that cross traditional disciplines. Broad research themes, including the biology of epithelial cells and tissue regeneration, are bringing together scientists from a range of specialties and backgrounds. The collaborations that are being built allow us to redesign our approach to the research endeavor. We can innovate and inspire by covering more ground, with a strong focus on efficiency and sustainability.

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The University of Chicago
The University of Chicago Department of Surgery is comprehensive, including ten surgical specialties:
- Cardiac and Thoracic Surgery
- General Surgery
- Neurosurgery
- Orthopaedic Surgery and Rehabilitation Medicine
- Otolaryngology-Head and Neck Surgery and Dentistry
- Pediatric Surgery
- Plastic and Reconstructive Surgery
- Transplantation
- Urology
- Vascular Surgery

It is organized as a strong central core that welds its individual Sections into a coherent and effective whole through multidisciplinary clinical and academic programs. We strive to provide the highest level of complex, innovative surgical care as part of our balanced portfolio of clinical services necessary for comprehensive surgical education and training. Here, academically-driven faculty conduct patient or disease-focused research that creates new insights into the basic biology of surgical disease, bridges clinical practice, incorporates emerging technologies for clinical care and training, and shapes the future of surgical practice.

This report provides a glimpse into the multifaceted world of the University of Chicago Department of Surgery. The past year has been one of exciting initiatives and significant achievements on many fronts. Each Section has successfully developed programs that intersect with others. Furthermore, you will see a number of instances of an enterprise-wide approach. These connections are creating efficiencies in our operations while strengthening our position as an innovative leader. Among the highlights that you will discover:
Emerging Technologies, Simulation and Surgical Engineering
Our surgeons are nationally recognized for clinical expertise in robotic, endoluminal and other minimally invasive therapies across the spectrum of surgical subspecialties. To harness these talents and explore new opportunities in our clinical, research and teaching missions, the Department created a task force in Emerging Technologies. Along with these efforts, new investments have been made to acquire a second da Vinci Surgical System and training simulators. We have also recently launched a major initiative to integrate and enhance collaborations between our faculty and the scientists at Argonne National Laboratory of the United States Department of Energy. An inter-institutional steering committee is now actively engaged in project development in surgical engineering, especially in the development of new devices, computer interfaces and biomaterials. The Department of Surgery and the University of Chicago’s Center for Simulation and Safety in Healthcare are championing campus-wide solutions to the challenges of integrated simulation and virtual reality in the education of Prather medical students, residents and fellows.

Achievements in Surgical Education
A new Office of Surgical Education was established to integrate and support undergraduate and graduate medical education, as well as training programs across the Department. New fellowship programs were approved in Pediatric Surgery and Urologic Oncology.

We are currently engaged in program development in surgical simulation and virtual reality in the education of Prather medical students, residents and fellows.

New Section Chiefs:

- New Section Chiefs:
  - Vascular Surgery
  - Urology

Research and Academic Affairs

Clinical Programs of Distinction
Our interdisciplinary clinical programs at the University of Chicago continue to attract patients from across the nation. The University of Chicago Medical Center once again received acclaim from U.S. News & World Report, including Honor Roll status as one of the 18 best hospitals in the United States. Programs that ranked in the top 50 include: Digestive Disorders (6), Oncology (7), Endocrinology (11), Neurosurgery (14), Kidney Disease (22), Heart and Heart Surgery (23), Geriatrics (24), Ear, Nose and Throat (25), Gynecology (39) and Respiratory Disorders (50).

This past year, comprehensive multidisciplinary clinical centers with noteworthy momentum included our programs in Brain Tumors, Gastrointestinal Oncology, Urologic Oncology and Craniofacial Plastic Surgery. Additionally, we have several innovative collaborative programs currently underway, including:

- A skull base center (Otorhinolaryngology, Neurosurgery and Neurology)
- A multidisciplinary Center for Regenerative Medicine bringing together orthopaedic surgeons, physiatrists and basic scientists (Orthopaedics)
- An ophthalmic oncology program (Ophthalmology)
- Strong relationships with community hospitals in the western suburbs (Pediatric Surgery)
- An esophageal oncology program (General Surgery)
- Expansion of the breast reconstruction program (Plastic Surgery)
- New applications of minimally invasive and robotic technologies (Cardiac, Vascular and Transplantation)

Reorganization of Surgical Research
The Department of Surgery is uniquely positioned within the institution to be an interface among biomedical research, clinical practice and technological developments. In order to optimally leverage this potential, the Department has reorganized bench research into focused areas designed to permit the fluid interaction of clinicians and basic scientists as well as provide an intensive mentoring environment in translational research for surgical trainees, graduate students and postdoctoral fellows. These areas of focused emphasis include: transplant immunology, regenerative medicine, tissue biology and metastasis, epithelial pathology and cardiovascular research. Current appointees will be bolstered in the future by the recruitment of additional independent basic scientists, development of core research facilities and geographical co-localization of laboratories.

New Faculty
It was my distinct honor and privilege to join the University of Chicago this year as the Dallas B. Phemister Professor of Surgery and Chairman, succeeding Dr. Bruce Gewertz, who ably steered the Department in this role for 14 years. Also joining our faculty between July 2006 and September 2007 were:

- New Section Chiefs:
  - Neurosurgery
  - Orthopaedic Surgery and Rehabilitation Medicine
  - Urology
  - Vascular Surgery

Vice Chair Appointments:

- Academic Affairs
  - Clinical Programs
  - Education
  - Pediatric Programs

- Research
  - Karl Mattin, PhD

New Faculty Appointments:

- Shahab Akhtar, MD, Assistant Professor in Cardiac and Thoracic Surgery (heart transplantation and heart failure)
- Peter Angelos, MD, PhD, Professor in General Surgery (endocrine surgery and surgical ethics)
- Robert Bialski, MD, Assistant Professor in Orthopaedic Surgery and Rehabilitation Medicine (pediatric orthopaedics)
- Eugene Chai, MD, Instructor in General Surgery (surgical oncology)
- Joel Collier, PhD, Assistant Professor in Surgical Research (tissue engineering, systems biology and epithelial biology)
- Arnold Conan, MD, Clinical Associate in Pediatric Surgery (paediatric endocrine disease)
- Katherine Fix, PhD, Assistant Professor in Surgical Research (epithelial cell biology)
- Mahan Gundeti, MD, Assistant Professor in Urology (pediatric urology)

Ginard Henry, MD, Assistant Professor in Plastic and Reconstructive Surgery (hand and microsurgery)

Hue Luu, MD, PhD, Assistant Professor in Orthopaedic Surgery and Rehabilitation Medicine (orthopaedic oncology)

Karl Mattin, PhD, Professor in Surgical Research (epithelial cell biology)

Jeffrey B. Matthews, MD, Dallas B. Phemister Professor in General Surgery (pancreatic diseases)

Bassam Mora, MD, MBA, Assistant Professor in Cardiac and Thoracic Surgery (pediatric cardiac surgery and congenital heart disease)

Michael Morowitz, MD, Assistant Professor in Pediatric Surgery (reconstructing enterocutaneous and maternal-fetal microchimerism)

Russell Reid, MD, PhD, Bernhard Samet Scholar and Assistant Professor in Plastic and Reconstructive Surgery (craniofacial and maxillofacial surgery)

Sudhir Sivandtasta, MD, Assistant Professor in Cardiac and Thoracic Surgery (minimally invasive and robotic cardiac procedures)

Martin ter Beest, PhD, Assistant Professor in Surgical Research (epithelial cell biology)

Mirjam Zegers, PhD, Assistant Professor in Surgical Research (epithelial cell biology)

Four new endowed professorships were named in the Department this year:

- Donald Liu, MD, as the Mary Campau Ryerson Professor in Pediatric Surgery
- Terrance Peabody, MD, as the Simon and Karl Families Professor in Orthopaedic Surgery
- Mitchell Posner, MD, as the Thomas D. Jones Professor in General Surgery
- Aria Shahi, MD, as the Mary Lee Duda Professor in Urology

This Department continues to uphold its rich history and traditions as it meets the numerous challenges that face academic surgery and urban academic medical centers in 2007. We look forward to another year of achievement and distinction in our scholarly efforts, training programs and, above all, the care of our patients.
The Department of Surgery has created multidisciplinary, technological collaborations that have expanded the scope of our clinical, educational and research programs.

Transplantation Collaborates with Virtual Technology for Surgical Planning

General surgeon Jonathan Silverstein, MD, and transplant surgeons J. Michael Millis, MD, and Giuliano Tosta, MD, have collaborated with the Department of Radiology and the Computation Institute to develop a virtual method to calculate liver volumes quickly and accurately. During traditional living donor liver transplant surgery, liver volumes are determined from computed tomography scans by dividing the image into multiple regions and estimating the area of each region. This process is both labor-intensive and of uncertain accuracy. However, the new virtual method allows surgeons to simulate the operative resections in the virtual environment and then it automatically calculates the volume in approximately 15 seconds. The technology has already proven beneficial. In the first five patients, retrospective liver resection weight correlated more closely with the virtual method than the traditional method. Additionally, this new technology allows transplant surgeons to optimally balance the amount of liver remaining in the donor with the amount of liver required for transplantation.

Opening of the New Brain Tumor Center

The new Brain Tumor Center at the University of Chicago houses a multidisciplinary team of experts from neurosurgery, radiology, pathology and oncology to provide innovative and personalized clinical care for children and adults diagnosed with primary and metastatic brain tumors. The Center, under the leadership of Maciej Lesniak, MD, offers a full range of diagnostic and treatment options, including: computerized tomography scans, magnetic resonance imaging scans, surgery, radiation therapy, and chemotherapy. In addition to conventional treatments, the Center actively conducts and participates in clinical trials of new treatments. Therapeutic options currently under investigation include advances in drug delivery, gene therapy, anti-angiogenesis and immunotherapy.

Lung Transplant Program

The University of Chicago and the University of Chicago Medical Center have assembled a leading lung transplant team that intersects the fields of cardiac and thoracic surgery, cardiology and pulmonology to improve the quality of life for patients with end-stage cystic fibrosis or lung cancer. The multidisciplinary team, who successfully completed its first transplant in 2006, includes: Wikkee Vigneswaran, MD, Edward Garrity, MD, Sangeeta Bhorade, MD, Joe G.N. Garcia, MD, and Stuart Rich, MD.

New Initiative for Lung Volume Reduction Surgery

The Thoracic Group recently applied for certification to perform lung volume reduction surgery, which can improve quality of life and longevity for select patients with severe emphysema or other chronic respiratory diseases. This team of experts includes: Wikkee Vigneswaran, MD; Jishankar Ramani, MD, PhD, M Med, Mark Ferguson, MD; and Valluvan Jeevanandam, MD, all of whom offer surgical coverage for lung transplantation and other thoracic surgery treatments. Collaborating with the team are Ravi Salgia, MD, PhD, and Everett Vokes, MD, both from the Section of Hematology-Oncology, as well as Aliya Husain, MD, from the Section of Pathology.

Center for Liver Diseases

The Center for Liver Diseases brings together experts in hepatology, transplant surgery and the basic sciences to address fundamental issues in liver disease. The Center, under the direction of Donald M. Jensen, MD, in the Section of Gastroenterology, combines research and clinical programs centered around five main areas of liver disease: hepatitis C, hepatitis B, fatty liver disease, hepatocellular carcinoma and end-stage cirrhosis. The Center includes the expertise of Giuliano Totta, MD; the Director of Adult Liver Transplantation, and J. Michael Millis, MD, the Chief of Transplantation and Director of Pediatric Liver Transplantation.

Center for Gastrointestinal Oncology

The Center for Gastrointestinal Oncology provides a centralized location for patients to receive coordinated treatments across numerous specialties. Under the leadership of Mitchell Pomer, MD, the Center combines the clinical skills and knowledge of advanced interventional endoscopist Irving Wiman, MD, (Gastroenterology and Surgery); Ralph Weichselbaum, MD, (Radiation Oncology); Hedy Kindler, MD, (Hematology-Oncology). Other key members from Surgery include: Alessandro Fichera, MD, Roger Han, MD, Kevin Rogin, MD, and Jeffrey Matthews, MD.

Electronic Clinical Evaluations for Resident Learning

The Section of General Surgery has developed the Quality-Based Surgical Training Program to provide comprehensive evaluation of resident clinical performance. Surgical Oncology Fellow Paul Roach, MD, FACS, initiated the program in collaboration with Jonathan Silverstein, MD, Kevin Rogin, MD, and Mitchell Pomer, MD. To implement this program, the Section created the Surgical Training and Assessment Tool (STAT), a secure, web-based case assessment system that provides case-based feedback and training objectives for future cases based on previous ones. Residents and attendings independently fill out a 30-second electronic questionnaire rating the resident's performance on a five-point competency scale for each case. The program generates cumulative reports that show the scores for each surgery rated on general competencies (knowledge, skill and independence), specific competencies (surgical methods) and overall competence. It also has a comments section and shows a comparison of resident and attending ratings. This training program allows the residents to reflect upon their performance and learn from the constructive feedback.

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University of Chicago – Argonne National Laboratory Bioengineering Institute for Advanced Surgery and Endoscopy

The Department of Surgery is developing collaborations with Argonne National Laboratory to develop joint research and engineering capabilities that will bring new technologies to the practice of surgery and endoscopy. John Alberli, MD, Vice Chair for Academic Affairs, is spearheading this project, which will focus on three themes: visualization, advanced instrumentation and biomaterials. Specifically, the project will introduce enhanced visualization techniques that incorporate principles of physics and application of near-real-time computer simulation for planning and executing surgical procedures, develop wireless components with continuously updated real-time sensor data and physics-based computer simulations for more precise surgical procedures, and investigate use of synthetic polymer materials that will advance such work as tissue engineering and hip sensors.
The Department of Surgery has a long and notable history in biomedical research, as exemplified by our own Nobel Laureate Dr. Charles B. Huggins. This tradition continues today with fundamental, translational and clinical research programs.

The field of surgery and, by extension, surgical research is unique in that it focuses not only on the treatment of disease, but also on the physical manipulation of the body. From a past focused primarily on injury repair and removal of diseased tissue, surgery in the present has engaged in the research activities of the department including facility recruitment, laboratory renovation, creation and expansion of shared resources as well as interactive mentoring of surgeon investigators and basic scientists.

Finally, efforts are underway to develop the Department’s research programs.

One of the important goals of OSR is to create programs that enhance research activities within the Department. Along this line, OSR started a weekly departmental research seminar in the spring of 2007 to improve communications among investigators. Initially, most of the speakers were faculty members. However, OSR will extend invitations to speakers from regional and national institutions during the fall of 2007.

A second initiative organizes investigations into surgical research interest groups whose membership transcends boundaries of clinical sections. The group will focus on research activities in the department including faculty recruitment, laboratory renovation, creation and expansion of shared resources as well as interactive mentoring of surgeon investigators and basic scientists.

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The Department of Surgery provides collaborative educational programs for medical students, residents, and fellows. Along with medical clerkships, the Department offers residency programs in General Surgery, Neurosurgery, Orthopaedics, Otolaryngology-Head and Neck, Plastics and Urology. It also has fellowship programs in Cardiac and Thoracic, Dentistry/Oral/Maxillofacial, Spine, Orthopaedics (Sports medicine, hand, orthopaedic oncology and joint), Otolaryngology (rhinology and facial cosmetic), Surgical Oncology, Transplant, Urology (minimally invasive), Urologic Oncology and Vascular.

A key educational initiative has focused on collaborations with University of Chicago departments and other educational institutions. Karl Matlin, PhD, for example, has been recruited as a course director for molecular and cell biology for Pritzker School of Medicine. The Department has also carved out resident exchange programs with other institutions, such as Loyola University. On a global scale, Otolaryngology-Head and Neck provides a three-month rotation in Alaska for specialized training in middle ear cases, while faculty in Plastics and Orthopaedics take residents and fellows to provide care in underserved areas of the world (e.g., Dominican Republic, Puerto Rico and Peru).

The education programs thrive on the exceptional teaching of the faculty, who have received numerous honors and awards. Pritzker School of Medicine students selected: Alessandro Fichera, MD, and Kevin Roggin, MD, as the 2007 Favorite Faculty Members. Benjamin Pearce, MD, and Adam Vogel, MD, to receive the Arnold P Gold Humanism and Excellence in Teaching Award. Peter Angelos, MD, Jeffrey Zawacki, MD, and Benjamin Pearce, MD, to receive the Golden Apple Award for Excellence in Teaching.

Additionally, the Committee on Graduate Medical Education awarded three medical education grants for the following teaching initiatives: Peter Angelos, MD, “Improving the Teaching of Professionalism in Surgery,” which addresses surgical ethics. Elizabeth Blair, MD, Jayant Pinto, MD, and Stephen Small, MD, “A Model Curriculum to Improve Resident Feedback and Professionalism Using Immersive Simulation.” Paul Reach, MD, Jonathan Silverstein, MD, Kevin Roggin, MD, and Mitchell Posner, MD, “Quality-Based Surgical Training,” a surgical assessment program.

Clinical Innovation Highlights:
Cardiac and Thoracic Surgeons perform totally endoscopic coronary artery bypass (closed beating heart off pump surgery) and lung volume reduction surgery.
The American Society for Bariatric Surgery designated the bariatric program as a Center of Excellence.
The new Brain Tumor Center treats children and adults diagnosed with primary and metastatic brain tumors.
Orthopaedic Surgeons perform accurate and degenerative reconstruction surgery as well as surgical removal of bone and soft tissue masses and tumors.
Otolaryngology-Head and Neck Surgeons collaborate with physicians from Hematology-Oncology and Radiation to treat head and neck cancer as well as with Pulmonary to treat sinus and allergy problems.
Pediatric Surgeons have developed the minimally invasive Nissen fundoplication, a procedure to repair esophageal vagal abnormalities.
Plastic Surgeons have developed and refined stentotomy closures with titanium plate fixation as well as perforator flap reconstructions for breast surgery.
Transplant Surgeons perform living liver and kidney transplants, islet cell transplantation and multi-organ transplants.
Urologists have developed new approaches to urologic reconstructive surgery.
Vascular Surgeons use non-invasive vascular ultrasound imaging technology and are collaborating with Cardiologists to create the Heart and Vascular Center.
The Section of Cardiac and Thoracic Surgery

The Section of Cardiac and Thoracic Surgery treats patients with complex medical conditions using the most advanced surgical techniques, including heart and lung transplantation, venous assist device implantation and complex cardiac reconstruction. The Section also specializes in minimally invasive valvular and arrhythmia surgeries, treating malignancies, esophageal diseases, and high-risk pulmonary resection.

Clinical Care
The Section offers cutting-edge surgical treatment. The implantation of a cardiac ventricular assist device (CardioVAD), for example, is a procedure not performed anywhere else. The heart and lung transplantation programs also have excellent patient and graft survival statistics. Additionally, the heart transplantation program consistently ranks above the national average for the amount of time it takes patients to receive a transplant.

Research
The Section successfully secured a new NIH-funded grant and renewed another to support research in ischemia reperfusion, the molecular basis of heart failure, lung immunology and transplantation. Mark Ferguson, MD, PhD, has ongoing national and international research collaborations with radiology, medicine, pathology and health studies. Research topics include: physician estimates of risk, quality of life outcomes after lung resection, predicting post-operative function after lung resection and genetic markers of risk after major lung resection.

Education
The advanced fellowship program, for surgeons who have finished their general surgery and cardiothoracic residencies, provides comprehensive, personalized training. Fellows have several opportunities to present their research findings at academic and clinical education conferences.

Recruitment
The Section appointed Sudhir Srivastava, MD, who has expertise in minimally invasive coronary revascularization and vascular surgeries, as Assistant Professor of Surgery and Director of Robotic & Minimally Invasive Cardiac Surgery; Shahab Akhter, MD, who specializes in heart failure and transplantation, as Assistant Professor of Surgery; and Bassem Mora, MD, MBA, who has extensive experience in minimally invasive pediatric cardiac surgery, as Assistant Professor of Surgery.

The Section of General Surgery

The Section of General Surgery provides the highest quality, tailored treatment and advanced minimally invasive surgical procedures, with particular expertise in surgical oncology, endocrine surgery, hepatobiliary and pancreatic surgery, obesity surgery and inflammatory bowel disease.

Clinical Care
This past year the Section developed collaborative initiatives that have enhanced patient care. Working with Gastroenterology and Hematology-Oncology, the Section opened the Center for Gastrointestinal Oncology to promote ease of patient coordination and access. Additionally, the Center for the Surgical Treatment of Obesity received designation from the American Society for Bariatric Surgery as a “Center of Excellence.”

Research
The Section continues research on cancer and investigation of the pathophysiology of surgical infections. Kevin Roggin, MD, has received a grant to study molecular advancements in detecting pre-malignant and malignant gastrointestinal cancers. Alessandro Fichera, MD, is studying chemoprevention for colorectal cancer. Jose Guevara-Patiño, MD, PhD, is studying chemoprevention for colorectal cancer. Jose Guevara-Patiño, MD, PhD, has funding to investigate the challenges of cancer vaccine development to overcome the immune system’s tolerance of self antigens. John Alverdy, MD, Don Liu, MD, PhD, (Pediatric Oncology to promote ease of patient coordination and access. Additionally, the Center for the Surgical Treatment of Obesity received designation from the American Society for Bariatric Surgery as a “Center of Excellence.”

Education
The residency program provides broad surgical experience to prepare residents for further training in their specific areas of interest. The Section received 854 applications for six positions, and matched in the top 15 percent of interviewed candidates. Along with residency training, the surgical oncology fellowship program prepares surgeons for leadership positions in cancer care and engages them in surgical oncology research.

Recruitment
The Section has appointed Peter Angelos, MD, PhD, an expert in the field of endocrine surgery, as Professor of Surgery, Chief of Endocrine Surgery and Associate Director of the MacLean Center for Clinical Medical Ethics; Jeffrey B. Matthews, MD, who specializes in the field of pancreatic diseases, as Dallas B. Phemister Professor of Surgery and Chairman of the Department of Surgery; and Eugene Choi, MD, who is an expert in epithelial cell research, as Instructor of Surgery.
The Section of Neurosurgery

The Section of Neurosurgery utilizes its clinical expertise and advanced neurosurgical technology to provide the most effective treatment for the entire spectrum of neurosurgical disease. Building on a legacy of excellence in clinical care, research and education, the Section’s innovative programs include: neurovascular surgery, neuro-oncology, surgical epilepsy, spinal surgery, pediatric neurosurgery, and functional and stereotactic neurosurgery.

Clinical Care

The Section has developed new multidisciplinary programs that draw national and international patient referrals. The Brain Tumor Center brings together experts from neurosurgery, radiology, pathology and oncology to provide advanced clinical care. The Pediatric Neurosciences Center at Comer Children’s Hospital unites physicians and nurses from neurosurgery, neurology, neuro-oncology and neurogenetics to treat pediatric neuro-disorders; emphasizing hydrocephalus and congenital anomalies of the nervous system, epilepsy, and brain and spine tumors. In addition, the interdisciplinary programs for adult epilepsy and skull base lesions provide leadership in clinical care by developing innovative and effective treatments.

Research

Leading the way in neurosurgical research and development, the Section supports ongoing investigations into treatments for brain tumors and epilepsy. Physicians at the Brain Tumor Center are developing new tumor models, drug delivery methods, anti-angiogenesis therapy, immunotherapy and gene therapy, all in an effort to bring new treatment options to the clinical setting. The University of Chicago Adult Epilepsy program collaborates with brain imaging experts to investigate ways to improve surgical epilepsy treatment with less invasive diagnostic techniques and more effective surgery. The Pediatric Neurosciences Center continues to define the field in cognitive outcomes after treatment for hydrocephalus and congenital anomalies, while providing Phase 1 trials for brain tumor treatment.

Education

The Neurosurgical residency program received a five-year re- accreditation from the Accreditation Council for Graduate Medical Education. The program provides outstanding bedside teaching, cutting-edge weekly didactic sessions that cover multiple facets of neurosurgical science and subspecialty conferences in areas such as neuro-oncology, pediatric neurosurgery and spinal surgery. Faculty have also designed and implemented a nationally-recognized internet-based learning program that allows residents and students to expand their knowledge of the neurosciences at their own pace.

The Section of Orthopaedic Surgery and Rehabilitation Medicine

The Section of Orthopaedic Surgery and Rehabilitation Medicine is a cohesive academic unit with a full-time clinical and basic science faculty dedicated to the care of patients, education of students, residents and fellows as well as the creation of new knowledge in the clinical and basic science of musculoskeletal diseases.

Clinical Care

Centered at the University of Chicago Medical Center and Weiss Memorial Hospital, the Section has a cadre of extremely capable and industrious surgeons and clinicians. Musculoskeletal disorders encompass a broad range of diseases, from traumatic injuries to degenerative conditions to cancer, each potentially involving different components of the musculoskeletal system, such as bone, cartilage, tendon and muscle. The clinical care of orthopaedic surgery includes joint reconstruction, hand and upper extremity, spine, oncology, pediatrics, foot and ankle, trauma and sports medicine.

Education

The residency program integrates basic sciences into the educational program at the bedside, during clinical conferences and in a well-structured curriculum that covers anatomy, bioengineering, biology and pathology. The Section also offers multiple post-graduate fellowships, including orthopaedic oncology, sports, adult reconstruction, and hand and upper extremity.

Research

Current research focuses on the biomechanics of falling, biologic processes of flexor tendon healing, degenerative disk disease, bone repair, and regeneration of bone and cartilage. This year Tong-Chuan Ho, MD, received the American Cancer Society, Illinois Division Stephen F. Sener Research Scholar Award for his investigation of connective tissue growth factor, a protein involved in many of the processes that are not regulated correctly in cancer cells. The Section also opened the Orthopaedic Biomedical Imaging Institute, founded by John M. Martell, MD, which investigates two- and three-dimensional techniques for analysis of polyethylene wear in total hip replacements. Purnendu Gupta, MD, collaborated with Tong-Chuan Ho, MD, and Rex Hayden, MD, on translational research of spinal fusion. Dr. Gupta also has clinical research on surgical treatment of spondylolisthesis, a stress fracture in the spinal column, as well as pediatric and adult spinal deformities.
The Section of Otolaryngology-Head and Neck Surgery/Dentistry

The Section of Otolaryngology-Head and Neck Surgery (OHNS) diagnoses and treats the full range of Ear, Nose and Throat (ENT) disorders with sub-specialties in chronic nasal and sinus disorders, otolaryngology, head and neck cancer, minimally invasive surgery, allergies, hearing aid dispensing, and speech language and voice disorders. The Section was again recognized for its ENT programs, ranking 25th in the country and the best in Illinois by U.S. News & World Report.

Research
The Section has novel research initiatives in allergic diseases and its co-morbid conditions. Fuad Baroody, MD, and Robert Nacolrio, MD, are investigating how intranasal steroids relieve obscure symptoms of allergic rhinitis. Jayant Pinto, MD, obtained funding to research the effects of aging and allergic rhinitis on the sense of smell. Adam Markarian, MD, obtained funding to use the Section’s temporal bone collection to investigate presbycusis, a gradual loss of hearing that affects the aging population.

Education
The residency program continues to attract outstanding candidates, matching with their top two choices out of 275 applications. Developments in the educational program have led to greatly improved resident in-service scores. Dr. Suskind, clerkship director, has also increased the number of students interested in otolaryngology. This past summer the Section had five students pursuing summer research opportunities. Additionally, Elizabeth Blair, MD, collaborated with Stephen Small, MD, to develop a grant-funded educational program to improve the management of the difficult airway.

Clinical Care
This year, collaborations with Neurosurgery have broadened the Section’s capabilities in minimally invasive transnasal hypopharyngoes and removal of nasal and sinus tumors. Additionally, Dana Suskind, MD, developed a multidisciplinary pediatric cochlear implant team that provides comprehensive care before and after implantation.

The Section of Pediatric Surgery

The Section of Pediatric Surgery at the University of Chicago Comer Children’s Hospital treats diverse surgical problems in infants and children with particular specialization in congenital anomalies, gastrointestinal conditions, cancer and injuries. It has the largest minimally invasive surgery program in Chicago, averaging approximately 700 cases per year.

Clinical Care
The Section, together with a number of pediatric subspecialists, provides comprehensive care for congenital, neoplastic, infectious and other acquired conditions of the gastrointestinal system, the blood and vascular system, the integument, the diaphragm and thorax (exclusive of heart), the endocrine glands, the genitourinary system, and the head and neck. A prominent feature is the advanced program in minimally invasive pediatric surgery. Based on its strong reputation, the Section receives substantial surgical referrals, performing nearly 2,200 inpatient and outpatient surgeries annually.

Research
The Section has received significant institutional seed funding for a new research program. A major collaborative research initiative among John Alverdy, MD, Eugene Chang, MD, and Carol Offer, PhD, intersects their expertise in surgery, gastroenterology, and molecular biology. Currently, they are studying pathogenesis of the necrotizing enterocolitis (NEC) to determine the causal factors of a medical condition where portions of the bowel undergo tissue death.

Education
The Section offers a new fellowship program in pediatric surgery that is one of only 25 U.S. programs approved and accredited by the Accreditation Council for Graduate Medical Education. The fellowship, under the leadership of Program Director Donald Liu, MD, PhD, provides a structured basic science curriculum as well as conferences and daily rounds that incorporate discussion of relevant basic science subjects. These conferences include the Case Management Conference, Departmental Grand Rounds and multidisciplinary conferences (e.g., Pathology and Radiology Conference).

Recruitment
The Section has appointed Michael Morowitz, MD, an expert in minimally invasive surgery and maternal-fetal microchimerism, as Assistant Professor in Pediatric Surgery, and Arnold Coren, MD, an expert in pediatric surgery who served as Editor of the the standard reference Pediatric Surgery and the journal Pediatric Surgery International, as Clinical Associate.
The Section of Plastic and Reconstructive Surgery advances the field of complex microsurgical reconstruction of the head/neck, extremity and breast. Collaborations across disciplines shape several important treatment protocols, particularly for cancer reconstruction using advanced surgical procedures.

- **Clinical Care**
  - The Section of Plastic and Reconstructive Surgery encompasses a broad range of surgical services, such as treating people suffering the compromising effects of injury or disease and helping people wishing to modify a certain physical feature. In particular, microsurgical breast reconstruction with perforator flaps (DIEP, SIEA, SGAP) received national exposure, increasing the number of patients coming from outside Illinois. Additionally, the head and neck reconstruction with perforator flaps are unparalleled in the Midwest region.

- **Research**
  - The Section has developed innovative research initiatives. David Song, MD, is involved in two multicenter clinical trials addressing acellular regenerative dermal matrix for breast reconstruction. Raphael C. Lee, MD, received an additional five years of NIH funding and successfully renewed the Henry Jackson Award. The American Society of Maxillofacial Surgeons (ASMS) awarded Russell Reid, MD, PhD, funding for his work on the acceleration of mandibular distraction-associated bone regeneration healing via electrophysiological stimulation. Dr. Reid is also collaborating with Tong-Chuan He, MD, PhD, to form the Center for Tissue Regeneration.

- **Education**
  - The Section has revamped the residency training model. Previously, the model functioned as a 4/2 program, with the first four years under general surgery and the last two years under plastic surgery. Currently, the approved model functions as a coordinated 3/3 program. As a result, residents will receive more exposure to the breadth of plastic surgery and its subspecialties. The Section will also streamline the application process and accept applicants only through the National Resident Match Program.

- **Recruitment**
  - The Section has appointed Russell Reid, MD, PhD, an expert in craniofacial and maxillofacial surgery, as Assistant Professor of Surgery, and Ginard Henry, MD, an expert in hand and microsurgery, as Assistant Professor of Surgery.

The Section of Transplantation provides expert, compassionate care for patients needing organ transplantation. Considered a leader in the field, the Section maintains above average patient and graft survival rates for all solid organ transplants, as determined by the Scientific Registry of Transplant Recipients. This year the Section rejuvenated the pediatric liver transplant program to include a pediatric hepatologist, and enhanced the living liver program to assist patients who may otherwise not get a transplant.

- **Clinical Care**
  - The Section performs cadaveric solid organ transplantation of the liver, kidney and pancreas as well as multi-organ transplants of the liver/kidney and heart/kidney. In addition to these advanced procedures, the Section leads the field in living donor transplantation of the liver and kidney. Furthermore, the islet cell transplant program, one of only a handful of funded sites, has successfully allowed some Type I diabetics to be completely free of daily insulin injections.

- **Research**
  - The Section has ongoing research initiatives in transplant immunology. Anita Cheng, PhD, newly promoted to the rank of Professor this year, has published a landmark paper in Science on the mechanisms of Beta cell regeneration and the role of the immune system. She will continue the investigation with Eric Grossman, MD, general surgery resident. Dr. Cheng is also researching how mature allo-reactive Beta cells are deleted in tolerance induction and how memory cells and allo-antibodies alter the activation requirements of T-cells. Emily Ahmed, MD, under Dr. Cheng’s mentorship, is investigating the impact of bacterial load on allograft immunogenicity and susceptibility to tolerance.

- **Education**
  - The transplantation fellowship, accredited by the American Society of Transplant Surgeons, offers specialization in liver and kidney/pancreas transplants. The program has developed outstanding transplant surgeons who have assumed leadership roles here and at other prestigious institutions. The Section hosted the delegation of surgeons from China’s Peking Union Medical Center in conjunction with J. Michael Mills, MD, who lectured at the first liver transplant training sessions to improve China’s transplantation programs and develop standards for transplantation.
The Section of Urology

The University of Chicago Section of Urology, located at the University of Chicago Hospital, provides the highest volume of complex urologic oncology, reconstructive urology, and minimally invasive urology procedures. The Section of Urology, under the leadership of Arieh Shalhav, MD, has grown significantly in the past five years and has a dedicated focus on training and clinical care.

Clinical Care

The Section provides compassionate, multidisciplinary care to meet patients’ needs and assist with quality of life issues, such as preserving normal urinary and sexual function. Locally and regionally, the Section has the highest volume of complex urologic oncology, reconstructive urology, and minimally invasive procedures, including robotically-assisted laparoscopic prostatectomy cases. Surgical volume for these cases has grown significantly in the past five years and will continue to grow with the addition of Kevin Zorn, MD, and the recruitment of an additional urologic oncologist.

Education

The residency program provides challenging clinical training and offers research opportunities in the laboratory. The minimally invasive surgery/endourology fellowship program provides clinical and research training in an innovative surgical practice in laparoscopy, percutaneous renal and ureteroscopy procedures. Additionally, the Society of Urologic Oncology accredited fellowship, one of only 12 U.S. programs, provides two years of training for future academic urologic oncologists.

Research

The Section generates medical discoveries through laboratory and clinical research. The University of Chicago Urology Research Laboratories and the University of Chicago Cancer Research Center are investigating the basic scientific mechanisms of cancer metastasis as well as the molecular events involved in bladder cancer formation and progression. The Section also created a Bladder Cancer Research Group, composed of faculty from Medical and Radiation Oncology, Pathology, Urology, and the Urology Research Laboratory, that is enhancing the bladder cancer tissue bank and database. In addition, the Section continues to run an animal laboratory to evaluate various laparoscopic techniques and warm ischemia.

The Section of Vascular Surgery

The University of Chicago Section of Vascular Surgery treats patients with complex vascular disease utilizing the most innovative and cutting-edge minimally invasive techniques, including robotic and laparoscopic procedures for aortic aneurysms and severe aortoiliac occlusive disease. In addition to clinical expertise, the Section has a robust enterprise in basic clinical and translational research and a competitive vascular fellowship that provides a comprehensive, balanced education in non-invasive vascular diagnosis and the broad spectrum of vascular interventions.

Clinical Care

At the core of the Section’s clinical operation is a state-of-the-art non-invasive vascular laboratory for the reliable detection and quantification of arterial and venous disease as well as advanced operative and endovascular interventions. The Section utilizes hybrid approaches to manage complex forms of thoracoabdominal aneurysms and has extensive experience with endovascular technologies, including stenting, stent grafting, angioplasty, plaque excision and clot dissolution, to treat thoracic and aortic aneurysms, carotid stenosis and lower extremity ischemia. Efforts led by Giancarlo Piano, MD, and Hisham Bassiouny, MD, in minimally invasive urology, as Assistant Professor in Surgery, and Kevin Zorn, MD, an expert in minimally invasive urology, as Assistant Professor of Surgery and Co-Director of the Minimally Invasive Urology Program.

Research

The basic science laboratories pioneer investigations on the role of hemodynamics in atherogenesis and intimal hyperplastic restenosis in the arterial and venous system. With one of the largest human carotid plaque tissue banks worldwide, the lab also researches molecular and structural investigations in carotid plaque vulnerability as a case of stroke. Ongoing collaborations with Argonne National Laboratory and University of Illinois School of Biomechanical engineering allow for sophisticated characterizations of fluid dynamic force distribution in the human vasculature. More specifically, basic research includes biomechanical mechanisms in AV graft intimal hyperplasia (Hisham Bassiouny, MD) and investigating novel approaches to prevent arterial restenosis using novel vectors (Christopher Skelly, MD). The Section is also involved with industry-sponsored clinical outcomes research for stent grafting of small abdominal aortic aneurysms, role plaque excision as well as ethical considerations in clinical decision making (Tina Desai, MD).


Karger, James


Karger, James


Naclerio, Robert


**ORTHOPAEDIC SURGERY AND REHABILITATION MEDICINE**

**Benjamin, Holly**


Manning, David


**Reddy, Miriam**


**Redmond, Douglas**


Redmond, Douglas

**Plastic and ReconstrucTive surgery**

Burget, Gary

Burget GC, Weldon RL. Optimal use of microvascular free flaps. cartoons, grafts and a paroxysmal foreshadowed flap for aesthetic reconstruction of the nose and adjacent facial units. Plast Reconstr Surg 2007; 120(1):171-207; discussion 1208-18

Desai, Florin


Drisko, Jason


hollmann, Lawrence


**Plastic Surgery Educational Foundation. 2006**

**The Cornerstone of a Combined Otoplasty Technique and Pathology. Plastic Surgery News. 2006**

**Song, DH. The Time to Change our Swing is Now. Point/Counterpoint. Plastic Surgery News. 2006**

**Song, DH. The Time to Change our Swing is Now. Point/Counterpoint. Plastic Surgery News. 2006**


**Zeugos, Mirjam


**tRanSPlantation**

Chong, Anita


Tai Y, Shen J, Lee DJ, Ham M, Lopez J, Krommenhoek A, Ham M, Philipsen LH. Response to Comment on Chong et al. on Diabetes reversal in NOD mice. Science 2006; 314:1243


Garinick, Marc


Harland, Robert


Steinberg, Gary


The Department of Surgery has received generous contributions that have an increasing number of our patients grateful for the strong outreach of support. These donations are important for sustaining our tripartite mission of clinical care, research and education. Supporters of the Department help us create a brilliant future for surgical care through the realization of our aspirations and priorities, such as development of emerging technologies, tissue engineering, cancer, regenerative medicine and further research into the basic biology of surgical disease.

We would like to thank our corporations, foundations and individual donors for their extraordinary generosity in support of our academic programs. This year, some of the Department’s major donors include:

- The Brain Research Foundation
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- Mr. and Mrs. James Foley
- Kenneth and Anne Griffin

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Sally and Jonathan Kavel
James McHugh
Gladys Panceo and Arthur Pancoce
Mr. and Mrs. John B. Snyder

We look forward to a full year of outreach activities, which will include alumni functions, Discovery and Impact programs, trustee hosted dinners, tours and lectures. If you would like more information about one of these events or how you can make a difference to help educate the next generation of leaders, develop advanced treatments and offer hope to those in need, contact either:

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