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Message from the Department Chair

JOHN P. WILLIAMS MD
Peter & Eva Safar Professor & Chair

John P. Williams MD is the Peter and Eva Safar Professor and Chair of the Department of Anesthesiology at the University of Pittsburgh/UPMC. He is also the Associate Medical and Scientific Director of the UPMC International Division.

Dr. Williams graduated summa cum laude from Texas A & M University and received his medical degree from the Baylor College of Medicine. He completed an internship at St. Joseph Hospital in Houston, an anesthesiology residency at the University of Texas Medical School in Houston, and a fellowship at Guy's Hospital in London, England. He is board certified in anesthesiology and critical care medicine.

“Pittsburgh is a dynamic and vibrant community in which to live. The growth of UPMC, Pitt, and the remainder of the academic community (roughly composed of at least 14 different institutions throughout the region) drives an extraordinary renaissance of medical and technological innovation, economic prosperity, and cultural renewal. As we expand each year in size and significance, we continue to recruit outstanding scientists and physicians to contribute innovative ideas and maintain our role as one of the world leaders in all aspects (anesthesiology, pain medicine and critical care) of our specialty’s role in research and clinical care”

- John P. Williams MD
**Departmental Goals**

**CLINICAL** The clinical goals of the department are to enhance patient care by focusing on pain management, management of nausea or vomiting, and rapid reintegration into society. We strive to emphasize patient safety, which is not only a rational basis for the practice of medicine, but also serves as the foundation upon which all of our other goals are built.

**EDUCATIONAL** We strive to excel in the education of medical students, nurses, paraprofessionals, residents, fellows, and faculty. We achieve this goal through consistently applying our core teaching principles: every student is different, every student is capable, and every student deserves our best. These three principles guide our training programs at all levels and serve as a beacon for both our faculty and our students. The department participates in the medical student core learning experience through an interdisciplinary course designed to integrate patient safety, medical availability, and information technology across the dimensions of training, as well as a clinical procedures course. Our faculty offer much to the medical students in their courses in pharmacology, physiology, problem-based learning discussions (PLBDs), and other teaching methodologies. We are also becoming more involved in the medical students' lives during their first year. We provide the basic lectures in anesthetic pharmacology (both general and local); analgesic pharmacology (emphasis on acute pain therapy); and amnestic use (perioperative period), especially in the area of procedural sedation. We have had much success in bringing medical students into the specialty of anesthesiology.

**SCIENTIFIC** Our current research focus is the search for the molecular basis of anesthesia. Even though man has been administering anesthetics for well over 150 years, we are only now beginning to understand this basis. We also have a large clinical trials program and have initiated a serious and sustained effort to not only address the unknown issues surrounding pain mechanisms, but also to explore the genetic underpinnings of pain. We continue to enlighten our colleagues and the rest of Pittsburgh with our focused effort on patient safety. The Peter M. Winter Institute for Simulation, Education, and Research (WISER) uses simulation-based education to improve patient safety; it is the longest-tenured simulation education facility in the world and is a tremendous resource for the university, the health system, and the city of Pittsburgh.

**MISSION STATEMENT**

The mission of the Department of Anesthesiology is to provide superlative service, achieve excellence in education, and conduct world-renowned research. In short, this translates into our motto of the **three Es** — **Enhance, Excel, and Enlighten**
Chiefs & Vice Chairs

John P. Williams MD
Peter and Eva Safar Professor and Chair
University of Pittsburgh School of Medicine
Department of Anesthesiology
Associate Medical and Scientific Director
UPMC International Division

CLINICAL

Mark E. Hudson MD, MBA
Vice Chair for Clinical Operations

**Position Currently Vacant**
Vice Chair for Pain Medicine

Jacques E. Chelly MD, PhD, MBA
Director, Acute & Interventional Perioperative Pain Service

EDUCATION

Evelyn T. Gonzalez-Abola MD
Chief, UPMC McKeensport

Antonio F. Arcadipane MD
Chief, UPMC Palermo (IsMeTT)

Robert H. Borestsky MD
Chief, UPMC Shadyside

Peter J. Davis MD
Chief, Children’s Hospital of Pittsburgh of UPMC

Gregory J. Godla MD
Chief, UPMC South Surgery Center

Andrew Herlich DMD, MD, FAAP
Chief, UPMC Mercy

Michael L. Kentor MD
Chief, UPMC Mercy/South Side Surgery Center

John J. Magner MD
Chief, UPMC Dublin (Beacon)

Michael P. Mangione MD
Chief, Veterans Affairs Pittsburgh Health System

Joseph J. Quinlan MD
Chief, UPMC Presbyterian/ Montefiore

Jay A. Roskopf MD
Chief, UPMC St. Margaret/ UPMC Harmar Surgery Center

Christopher J. Samuel MD
Chief, UPMC Bedford Memorial

Daniel Sullivan MD, JD, MBA
Chief, UPMC Passavant

Jonathan H. Waters MD
Chief, Magee Womens Hospital of UPMC

Rita M. Patel MD
Vice Chair for Education
The Department of Anesthesiology of UPMC and the University of Pittsburgh currently serves 14 hospitals:

- **UPMC Presbyterian** is a Level I Regional Resource Trauma Center, as well as a renowned center for organ transplantation and a recognized leader in cardiology and cardiothoracic surgery, critical care medicine and trauma services, and neurosurgery. **UPMC Montefiore** is part of the UPMC Presbyterian system and specializes in ambulatory services and liver transplantation.

- **Children’s Hospital of Pittsburgh of UPMC (CHP)** is devoted solely to the care of infants, children, and young adults and is one of the few hospitals in the nation to go completely paperless. CHP is one of eight pediatric hospitals in the United States named to U.S. News & World Report’s Honor Roll of America’s “Best Children’s Hospitals” for 2010–2011.

- **Magee-Womens Hospital of UPMC** is ranked among the top 12 hospitals in the nation for gynecological care and is a National Center of Excellence in Women’s Health, one of the first recognized by the U.S. Department of Health and Human Services. Their Neonatal Intensive Care Unit (NICU) is the largest in Pennsylvania and one of the largest in the country.

- **UPMC St. Margaret**, a 249-bed acute care and teaching hospital in Aspinwall, is a Magnet™ designated hospital. Magnet status is the highest international recognition for nursing excellence and leadership.

- **UPMC Shadyside** also holds Magnet™ status and is home to the Hillman Cancer Center, one of the nation’s largest and most advanced cancer research and patient care facilities.

- The **Veterans Affairs Pittsburgh Healthcare System** serves as an acute care facility and major surgical tertiary care facility for veterans of the United States military.

- **UPMC McKeesport** is an acute care community hospital and an approved site for the Program of All-inclusive Care for the Elderly (PACE).

- **UPMC Mercy** is Pittsburgh’s only Catholic hospital with specialized services, including Level I trauma and burn services, the neurosciences, physical medicine and rehabilitation, and women’s health. UPMC South Side was absorbed by UPMC Mercy, converting into an ambulatory surgical center and reopening as **UPMC Mercy South Side Outpatient Center** in 2009. The center is a one-stop location for diagnostic and routine outpatient services such as x-rays, lab work, and same-day surgery.

- **UPMC Passavant** is a tertiary care center north of Pittsburgh with two campuses in McCandless and Cranberry, focusing on specialties such as cancer, cardiac care, orthopedics, and spine surgery.

- **UPMC South Surgery Center**, located in Pittsburgh’s South Hills, accommodates outpatient procedures such as dental surgery, gastroenterology, general surgery, gynecology, neurosurgery, ophthalmology, orthopaedics, otolaryngology, pediatrics, plastic surgery, podiatry, and urology.

- **UPMC Bedford Memorial**, an acute care general hospital with units for medical, surgical, obstetrical, intensive care, coronary care, and telemetry services, is the newest division in our department. The hospital also operates a cardiac-pulmonary rehabilitation program, an outpatient procedure unit, and an ambulatory surgical unit.

- **UPMC Palermo (IsMeTT)** serves as a major transplantation center for Southern Italy and other countries in the Mediterranean region.

- **UPMC Dublin (Beacon Hospital)**, located in Sandyford, Dublin, is a full service hospital that includes eight operating theatres with dedicated rooms for urology and neurological, cardiac, general, orthopedic and ophthalmic surgery.

Plans for expansion are underway; the department will provide anesthesia services at **UPMC Northwest** and **UPMC East** starting in 2012.
UPMC Presbyterian/Montefiore is the largest quaternary care hospital of the UPMC Health System and the largest in Western Pennsylvania. It remains the department’s core hospital in terms of clinical activity and resident education and is a nexus for clinical research.

The UPMC Presbyterian clinical site is larger than many entire academic departments found elsewhere in the country. It is comprised of 40 faculty members who cover 41 operating rooms and up to 11 additional, non-OR anesthetizing locations. The site is staffed by more than 100 full time equivalent Certified Registered Nurse Anesthetists (CRNAs). Up to 15 residents and 10 student nurse anesthetists (SRNAs) rotate at UPMC Presbyterian at any one time.

In FY11, UPMC Presbyterian faculty supervised a grand total of 36,696 anesthetics, an increase of 939 cases (2.6%) over the previous fiscal year. Procedures spanned the entire spectrum of surgical and special procedures, from combined heart-liver transplantation to anesthesia for electroconvulsive therapy. We remain one of the top lung transplant centers in the world (130 lung transplants performed, an increase of six over the prior fiscal year). The anesthesiology faculty managed more cases outside the OR environment - 12,507 - an increase of 1,187 procedures over the previous year, representing just over 34% of the total cases managed at UPMC Presbyterian. Locations where services were provided include the gastroenterology lab, bronchoscopy suite, electroconvulsive therapy suite (at Western Psychiatric Institute and Clinic [WPIC]), electrophysiology suite, cardiac catheterization lab, interventional radiology, and the MRI suite.

Many of the advanced anesthesiology subspecialty resident rotations (liver transplantation, cardiac, ENT, thoracic, trauma, and neuroanesthesia) are based at UPMC Presbyterian; many novice residents and SRNAs perform their first cases there. Faculty are very active in medical student and resident education. Regular teaching conferences specifically for trainees rotating at UPMC Presbyterian are held on Wednesday mornings. Monthly Quality Improvement Morbidity and Mortality conferences and PBLDs are also conducted at UPMC Presbyterian. Subspecialty services hold conferences on topics in their subspecialty areas (e.g., neuroanesthesia, cardiac, hepatic transplant, and ambulatory anesthesia).
The Center for Minimally Invasive and Cranial Base Surgery continues to thrive both in terms of volume of cases and uniqueness of surgical approaches. Pioneering cutting-edge endoscopic minimally invasive craniotomy techniques, the team has performed close to 500 procedures in the past academic year, attracting national and international recognition. This recognition also manifests itself in their evolving success in filling their fellowship positions for at least the next five years.

The neuroanesthesiology didactic program currently consists of a weekly and monthly subspecialty conference, intraoperative teaching, and a manual of guided reading. In addition, residents may now access an online multimedia version of neuroanesthesia instruction. Increasing attendance at the monthly neuroanesthesia conference has fostered lively and informative discussion. Twenty-three lectures were given in the last academic year, seven by faculty members and 16 by residents rotating through neuroanesthesia. Faculty lectures included guest lectures by neurosurgeons, neurophysiologists, and neuroradiologists, all of which brought refreshing new perspectives and productive dialogue.

The remainder of the clinical caseload continues to include various stereotactic procedures, such as magnetic resonance imaging (MRI)-guided and computed tomography (CT)-guided stereotactic surgery and three-dimensional localization. In addition, deep hypothermic circulatory arrest is being used in conjunction with cardiopulmonary bypass for the clipping of particularly inaccessible intracranial aneurysms.
Same Day Services at UPMC Presbyterian/Montefiore includes both Same Day Surgery (SDS) and the Preoperative Evaluation Center (PEC). During FY11, 14,765 patients were processed through Same Day Surgery, either as same day-admitted patients (7,977) or outpatient surgery patients (6,788); 5,288 patients were seen in the PEC.

Most patients scheduled for outpatient surgical procedures at UPMC Presbyterian or Montefiore are cared for at the SDS unit at UPMC Montefiore. The PEC continues to receive referrals from surgeons for prior anesthetic problems, complex medical conditions, or patient concerns. All preoperative testing and consults are then combined with a detailed pre-anesthetic history and physical examination conducted by an anesthesiology resident or nurse practitioner. An attending anesthesiologist is available to review complicated patients or testing results with the PEC staff. The entire evaluation is then available to the patient’s attending anesthesiologist on the day of surgery in an electronically retrievable PowerNote. Patients who are not seen in the PEC are called and evaluated the day before surgery by SDS nurses. The goal of the unit is 100% patient review prior to surgery, resulting in minimal unforeseen delays and cancellations on the day of surgery. Current data shows that the patients who are seen in the PEC are significantly less likely to have their scheduled surgeries delayed or cancelled.

The clinic performed the first telemedicine preop evaluations this year between the Oakland campus and UPMC Bedford. Further uses of telemedicine technology for preoperative evaluation between UPMC sites are currently being explored.

Anesthesiology faculty members at Montefiore have continued to be active in resident education, teaching principles of ambulatory, ENT, orthopedic, and regional anesthesia. Residents participate in outpatient evaluations and learn a variety of regional anesthesia techniques and principles of outpatient anesthesia. The PEC is the site of the CA-1 preoperative evaluation rotation, which is mandated by the Accreditation Council for Graduate Medical Education (ACGME) for anesthesiology residency programs. Residents see a variety of patients prior to the day of surgery, order appropriate testing, and obtain consultations if necessary. The residents then create a note available to the attending or resident assigned to the case on the day of surgery. A monthly Montefiore subspecialty meeting is also held on the fourth Wednesday of each month, highlighting ambulatory anesthesia, preoperative evaluation, and regional anesthesia. This meeting is attended by faculty, residents, medical students, CRNAs, and student nurse anesthetists.
The Children’s Hospital of Pittsburgh of UPMC (CHP) anesthesiology clinical site comprises 31 faculty, 13 FTE CRNAs, and eight CRNPs (4.5 FTE) who provide both anesthesia and surgical perioperative care. CHP is one of the first fully-digital hospitals in the nation and sits on a 10-acre, environmentally sustainable campus. In June 2010, CHP became the first anesthesia department in the UPMC system to implement the Cerner Electronic Anesthesia Record.

In FY11, the division provided anesthesia service for 28,429 procedures, a 7% increase over the prior year (26,528). Anesthesia services were also provided at off-site outpatient surgical centers in Wexford and Bethel Park (CHP North and South, respectively). During FY11, these sites oversaw 8,852 anesthesia cases (up from 8,683 the previous year); 6,486 at CHP North (up from 6,381); and 2,366 at CHP South (up from 2,302).

Anesthesiologists at CHP performed 28,429 procedures, a 7% increase from last year

The pediatric anesthesia education programs continued to provide special training for Critical Care Medicine (CCM) fellows, pediatric dentists, emergency medical residents, and nurse anesthesia students on rotation through the service. In addition, faculty participated in an oral board preparation course for senior residents (CA-3 and CA-4).

Research efforts at CHP focus on pediatric anesthetic pharmacology, respiratory physiology, and outcomes-based protocols. Clinical investigations conducted through the department’s Clinical Trials Program are also an active research component at CHP.
The Magee-Womens Hospital (MWH) anesthesiology clinical site comprises 19 faculty members, 29 CRNAs, and one full-time CRNP who provide care within the operating and delivery suites, in the pre-anesthesia evaluation and testing center, and in off-site locations such as Radiation Oncology, MRI, and Invasive Radiology. The division also provides emergency airway management in conjunction with members of the Department of Critical Care Medicine for all cardio-respiratory arrests (Condition A). MWH anesthesiologists’ primary focus, however, is providing in-house, 24-hour anesthesia coverage in two primary anesthetizing locations: the Womancare Birth Center and the main Surgical Services Center.

This facility provides state-of-the-art anesthesia and obstetric care to the patients at MWH. The largest component of services is provided in the Womancare Birth Center. The section of Anesthesia for Obstetrics, directed by Dr. Manuel Vallejo, oversaw 9,845 deliveries from July 2010 through June 2011, a 1% increase over the previous year. Of these deliveries, 6,947 were vaginal births and 2,898 were cesarean deliveries. Additional procedures performed on the unit include combined cesarean/abdominal hysterectomy, external cephalic version (ECV), percutaneous umbilical blood sampling (PUBS), manual placental extraction, urogenital laceration repair, and postpartum tubal ligation (PPTL). Fetal surgery continues to increase as the hospital focuses more resources on this activity. It is expected that in the next fiscal year, Magee will perform their first in utero myelomeningocele repair.

Beyond the birthing suite, MWH provided anesthetic management for 17,604 cases in the surgical services center, a 2% increase from the previous year. The site total (including deliveries) was 27,449 cases, also a 2% increase from the previous year. The Surgical Services Center consists of 14 general operating rooms, a cystoscopy suite, and two minor procedure rooms. Of these, four state-of-the-art minimally invasive suites (MIS) were used to accommodate a growing variety of minimally invasive surgical procedures.

MWH is a primary educational site for medical students, SRNAs, residents, and fellows from programs within the University of Pittsburgh School of Medicine and UPMC. The division provides both obstetrical anesthesia and general gynecology anesthesia rotations. In addition, anesthesiology residents from other programs in the city rotate through the division for subspecialty obstetrical anesthesia training. All residents rotating through obstetrical anesthesia become certified in neonatal resuscitation.
The UPMC Shadyside anesthesiology clinical site consists of 23 faculty and 52 CRNAs. Adult anesthesia services are provided in a 21-room main operating suite, a six-room ambulatory surgery center, and a two-room comprehensive urological center. Construction is underway to build a new robotic OR which will have the capability for robotic open heart surgery. Coverage is also provided for two GI labs, two electrophysiology labs, and invasive radiology.

During FY11, clinical anesthesiology services were performed for 15,328 cases in the main operating rooms and 5,250 cases in the ambulatory surgery center, for a total of 20,578 cases. Off-site volume remained steady at approximately 1,300 cases performed.

The Shadyside anesthesiology caseload spans the full range of adult surgical procedure patients, including major thoracic, cardiovascular, neurosurgical, orthopedic, urologic, gynecologic, oncologic, and general surgical patients, as well as outpatient orthopedic, plastic, dental, gynecologic, and general surgical procedures. The site provides subspecialty care in cardiac anesthesiology and neuroanesthesiology, with subspecialty trained and credentialed faculty.

Shadyside anesthesiology provides educational opportunities to its staff and faculty, as well as to a diverse set of students from other departments. Teaching activities, including weekly case presentations and lectures, are prepared and presented by the faculty. A monthly morbidity and mortality conference is presented by Dr. Lawrence Marr, the department’s director of quality assurance. Faculty also participate in the didactic educational program.

UPMC Shadyside has become a major center for clinical research, generating numerous publications in acute pain management, surgical outcomes, OR management, and economics. Shadyside anesthesiology received a grant to study a video teleconferencing system that would allow Post-Anesthesia Care Unit (PACU) patients to communicate with their families in the waiting room.
The Veterans Affairs Pittsburgh Healthcare System (VAPHS) anesthesiology staff consists of eight full time anesthesiologists, three half time anesthesiologists, and 17 CRNAs who provide care for veterans in a 10-room operating suite, GI lab, cardiac EP suite, preoperative evaluation clinic, and pain clinic. The staff is also involved in a wide range of administrative, educational, research and quality assurance activities at both the University of Pittsburgh School of Medicine (UPSOM) as well as the VAPHS.

Clinical service for FY11 consisted of a total of 5,675 OR cases, an 8% increase over the previous year. Off-site anesthesia coverage continued to increase with 743 cases in the GI lab and 362 cases in the EP lab, a total increase of 12% compared to FY10.

Pain management activity continued to increase as well; the total number of outpatient encounters was 1,708, an 18% increase over the prior year. The number of interventional procedures performed was 206, an 8% increase over the preceding year.

Dr. Brian Williams was brought onto the staff to further develop the acute pain service and to coordinate the development of a new paradigm in preoperative management. Under his direction and with the assistance of Dr. Mangione, the IMPACT program was developed and initiated with the intention to fundamentally change and improve the way veteran patients are evaluated and optimized in the preoperative period. IMPACT integrates anesthesiology and internal medicine practitioners in a new way to bring about medical optimization prior to surgery.

During the course of the year, both third and fourth year medical students rotated through VAPHS under the direction of Dr. Catalin Ezaru. The rotation continues to be highly successful and highly rated, as do the teaching scores of the faculty.

The Department of Anesthesiology at VAPHS continues to provide clinical experience for two to three anesthesiology residents at a time. Evaluations of both the rotations and the individual faculty members remain consistently well above the mean and are some of the highest in the department. VAPHS anesthesiologists provide clinical training for SRNAs, dental residents, respiratory therapists, and anesthesia technology students. Teaching activities include weekly teaching conferences and lectures for UPSOM medical students and residents, as well as various programs for hospital employees.
UPMC St. Margaret bridges the gap between a community anesthesiology practice and tertiary care center, where efforts center on patient care in the operating rooms and GI suite of both the main hospital and Harmar Ambulatory Center. The UPMC St. Margaret anesthesiology clinical site comprises 10 full-time physicians and 60 CRNAs. In February 2009, UPMC St. Margaret achieved ANCC Magnet Recognition® status, the highest international recognition for nursing excellence and leadership, granted by the American Nurses Credentialing Center. The anesthesiology division was very active in the magnet designation process.

The Anesthesia Department at UPMC St. Margaret and Harmar Ambulatory Center constantly performed over 23,000 anesthetics each year for the past four years, with 24,074 administered in FY11. Anesthetics were provided in 25 sites at UPMC St. Margaret and the Harmar Ambulatory Center; these sites include 13 hospital and five ambulatory OR rooms, six GI rooms (two hospital and four ambulatory GI suites), and one remote location site, including a cardiology lab. A large variety of surgical procedures were performed at St. Margaret, including: orthopedic (spine, total joint, sports, and foot and ankle); general; thoracic; urologic; gynecological; vascular; ophthalmologic; plastic; and ear, nose, and throat surgery. St. Margaret is a Healthcare Bariatric Surgery Center of Excellence. Minimally invasive surgeries for knee and hip replacements were routinely performed here, and regional anesthesia with nerve blocks for anesthesia and post-operative pain control were used for orthopedic and general surgery cases. The combination of the two sites encompasses a large ultrasound based regional anesthesia and perioperative pain control program, and manages the largest of UPMC’s outpatient peripheral nerve block catheter program.

In FY11, St. Margaret was a rotation site for anesthesiology residents, medical students, SRNAs, dental anesthesia residents, and pain (acute and chronic) and critical care fellows. The hospital was also a popular rotation site for senior residents in the advanced clinical track focusing on Perioperative Pain Management and Operating Room Management. The faculty also provided an educational experience for other UPMC facility faculty members in the practice of ultrasound- based regional anesthesia. In addition, St. Margaret anesthesiologists participated in didactic sessions for the hospital medical staff and family practice residents. The group at UPMC St. Margaret has become increasingly involved in clinical research, participating in several industry-supported projects.

JAY A. ROSKOPH MD
Chief Anesthesiologist
UPMC McKeesport is a 215-bed community hospital serving the patients along the Mon Valley area. The McKeesport division consists of 3.8 FTE anesthesiologists and seven full-time, one part-time, and three casual CRNAs. The division provides anesthesia services for inpatients and ambulatory surgical patients as well as at off-OR sites such as the GI unit, Invasive Cardiology, and Invasive Radiology.

In FY11, the Anesthesia Department at UPMC Mckeesport provided anesthesia for 5,677 surgical cases and off-OR site procedures. In addition, clinicians provided acute pain services for immediate post-operative pain control, totaling 286 regional blocks. The McKeesport division also responded to consultation requests for chronic pain and the subsequent performance of 112 epidural steroid injections.

Typical of a community hospital, the surgical procedures performed at UPMC McKeesport include major vascular surgery, thoracic surgery, laminectomies/spinal fusions, total joint replacements/orthopedic, abdominal surgery, gynecologic surgery, urologic, ENT, ophthalmologic, plastic surgery, and invasive chronic pain procedures. Anesthesia services are also provided for off-OR sites for GI procedures, cardioversions, and invasive radiologic procedures.

The division supports patients with difficult airways for the emergency department physicians and the hospitalists, and has been instrumental in creating difficult airway carts in strategic locations within the hospital. The division also actively participates in the development and implementation of the hands-off protocol of post-surgical patients from the PACU to the Intensive Care Unit/Cardiovascular Unit.

Morbidity and mortality conferences, journal club meetings, and appropriate clinical updates are conducted on a regular basis. Periodic evaluations and assessments are performed to ascertain compliance with Surgical Care Improvement Project initiatives, central line associated bloodstream infection preventive measures, Physician Quality Reporting Initiatives, and patient safety measures.

Teaching activities at McKeesport include teaching airway management to non-anesthesiologist chronic pain fellows and internal medicine and family practice residents, as well as EMT students. The residents in both disciplines also receive training and gain experience in insertion of invasive lines. The staff anesthesiologists and CRNAs are committed to the clinical training of the SRNAs. The division is also committed to maintaining and improving staff proficiency in the use of supraglottic devices for patients with difficult airways.
UPMC Mercy is a large tertiary hospital located in the uptown district of Pittsburgh, with a rich history of caring for the underserved population in the region in addition to all other patients. The Mercy anesthesiology faculty consist of 14 full-time anesthesiologists who cover 16 in-patient ORs, six out-patient ORs, an obstetrical suite with two cesarean-section rooms, a busy endoscopy suite, interventional neuroradiology suite, MRI, hydrotherapy unit for burn care, and electrophysiology suite. A pre-anesthesia evaluation center is staffed by one CRNP and two physician assistants (PAs), with faculty oversight. The case selection includes all but solid organ transplants. Highlights include voice surgery, airway modifying surgery, and thoracic surgery. Burn care is a focal point at UPMC Mercy for both children and adults. UPMC Mercy is a Level I trauma center. UPMC Mercy’s trauma service has a dedicated team to care for the parturient who suffers either blunt or penetrating trauma.

In FY11, Mercy clinicians supervised more than 25,000 anesthetics, which is an increase of over 20% from the previous year. The vast majority of anesthetics were performed in the operating rooms.

In FY11, UPMC Mercy Anesthesiology’s independent residency program became integrated with the overall UPMC program. The hospital has been a focal point for teaching of students and residents from the University of Pittsburgh Schools of Medicine, Dental Medicine, and Nursing for many years. During FY11, the School of Medicine approved fourth year rotations for medical students to start in FY12.

Trainees taught at the UPMC Mercy anesthesiology site include approximately 10 rotating residents, four to six SRNAs, as well as off-service residents and students from the emergency medicine, surgery, and transitional year programs. Trainees from podiatric medicine and EMT programs and medical students from numerous medical schools spend time on the service. Hospital lectures include site Grand Rounds, Journal Club, and Quarterly Morbidity and Mortality conferences; monthly staff meetings are also included in the schedule. Most weekly departmental conferences have been certified for CME credits as well as CEU credits for CRNAs.
FY11 was UPMC Mercy/Southside Outpatient Center’s second year of service after its conversion from an inpatient facility to an ambulatory surgical center. The orthopedic sports medicine service remains the primary source of surgical cases, as well as a growing number of ophthalmology cases over the last year. Off-site provision of anesthesia for GI cases has also increased significantly over the past year. CRNAs continue to share time between Mercy-Southside and other institutions, mainly UPMC Mercy and the UPMC South Surgery Center in Bethel Park.

Despite a significant reduction in surgical case volume compared to when UPMC South Side was an inpatient facility, the number of peripheral nerve blocks has diminished to a lesser extent, since the sports medicine orthopedic service remains anchored at UPMC Mercy Southside Ambulatory Surgical Center. The anesthesia division continues to provide high-quality ambulatory services to these patients, using multi-modal analgesia, aggressive prophylaxis against postoperative nausea and vomiting, and regional anesthesia (when practical) to mitigate against postoperative pain. The total number of cases performed at this center, including off-site GI cases, was 5,451 during FY11, with approximately 2,700 peripheral nerve blocks.

Dr. Steve Orebaugh, in conjunction with Dr. Kentor and other investigators from other centers in the UPMC system, conducted a clinical study in which the impact of local anesthetic distribution in the interscalene groove, as visualized by ultrasound, was assessed for its impact on nerve block characteristics. The data was presented at the annual meeting of the American Society of Regional Anesthesia and Pain Medicine. Further data is accruing, with the intent to submit the investigation for publication in early 2012. Dr. Orebaugh worked with Dr. Paul Bigeleisen at UPMC Montefiore on a study of the effects of injection of local anesthetics into cervical nerve roots in human cadavers. The study was funded by a departmental seed grant. This data was presented at the same meeting, and is currently being written up for submission to an anesthesiology journal. Finally, the operating rooms at UPMC Mercy Southside served as the site for photographs and videos for the upcoming second edition of *Airway management: Tools and Techniques, An Airway Atlas*, edited by Drs. Orebaugh and Bigeleisen, which was published in late 2011.
UPMC Passavant is an acute care hospital located on two campuses in the northern suburbs of Pittsburgh. The 132-acre McCandless campus boasts 21 operating rooms, an EP lab, a GI lab, and a large cancer center. A recently completed seven-story tower provided an additional 220,000 square feet of space, more than doubling the size of the operating room suite, the emergency department, and the cancer center. The smaller Cranberry campus is a 32-bed institution with six operating rooms/procedure rooms.

UPMC Passavant’s combined surgical volume exceeds 16,000 procedures annually, ranging from complex quaternary/tertiary cases to more community-based procedures.

The anesthesiology department at UPMC Passavant consists of 60 credentialed physicians and 103 credentialed CRNAs. The division supports not only the surgical volume but numerous outside-the-OR cases, which include cases in the EP lab, GI lab, and minimally invasive image-guided procedures suite. Anesthetizing locations may run as high as 30 daily between both campuses. All surgical subspecialties are represented, with the exception of transplant and complex pediatric surgery. In 2010, UPMC Passavant expanded its busy neurosurgical program to include intracranial procedures and initiated a multispeciality robotic surgery service line. Members of the department recently organized a UPMC Passavant division of the Acute Interventional Perioperative Pain Service (AIPPS).

Three anesthesiology fellowship programs (acute pain/regional anesthesia, pain medicine, and cardiac anesthesiology) are active at UPMC Passavant. In July of 2011, the hospital became a rotation site for senior anesthesia residents and continues to serve as a rotation site for the University of Pittsburgh and La Roche College anesthesia MSN programs.
The Department of Anesthesiology began providing services at UPMC Bedford Memorial Hospital (located in Bedford County, PA) in January 2011. Currently, two anesthesiologists work at this site (Dr. Samuel and Nasr Yazigi, MD).

UPMC South Surgery Center

Anesthesia services at UPMC South Surgery Center increased from two to five days a week effective July 1, 2011. Department anesthesiologists treated 2,655 cases at the site in FY11.
The Certified Registered Nurse Anesthetist (CRNA) staff continued to grow during FY11 to meet the increasing needs of patient care service delivery. CRNAs provide services at all UPMC sites; the number of full time equivalent CRNAs has grown to 370 in the past year; our total staff exceeds 470 - the largest cohort of nurse anesthetists in the United States and in the world.

The CRNA staff has contributed to quality improvement measures within their respective departments and within the medical center. This year, the CRNAs paved the way to a standardized anesthesia workstation configuration. Each workstation is set up in a similar fashion across all of our campuses. This initiative makes the anesthesia work environment safer and more reliable for staff members and trainees who move between clinical campus locations.

Mentoring continues to be a key component in the socialization and success of new members of our profession. Given the complexity of UPMC and the many other demands on our graduate students, the work of active CRNA mentors has been invaluable in assuring student success. All CRNAs also serve as clinical instructors for the University of Pittsburgh Nurse Anesthesia program, which prepares Registered Nurses to become CRNAs. In FY11, 47 CRNAs graduated from our program, which has consistently been ranked third in U.S. News and World Report’s Best Graduate Schools.

**CRNA Awards**

Jeff Blackhurst, Karen Florian, and William Streitman: UPMC Physician Services Division “Star” Award

Robert Dukic, Tim Lyons, John O’Donnell, and Lacy Scalise: 2010 University of Pittsburgh School of Nursing’s Cameos of Caring Award

Brent Dunworth: first recipient of the University of Pittsburgh School of Nursing Alumni Association’s Outstanding Young Alumnus Award

Jane Jandreau: Children’s Hospital of Pittsburgh of UPMC Patient Safety Award

Nadine Kelley: 2010 Mary DePaolis-Lutzo, CRNA Clinical Instructor of the Year Award

Jennifer Kundick: 2011 Mary DePaolis-Lutzo, CRNA Clinical Instructor of the Year Award

Tim Lyons: Pennsylvania Association of Nurse Anesthetists Clinician of the Year Award

John O’Donnell: University of Pittsburgh Chancellor’s Distinguished Teaching Award

Aaron Ostrowski: Pennsylvania Association of Nurse Anesthetists Instructor of the Year Award

Gary M. Stanich: 2011 University of Pittsburgh School of Nursing’s Cameos of Caring Award

Jamie Vorhes: 2011 UPMC Richard L. Simmons, MD Speak Up for Patient Safety Award
The Department of Anesthesiology, in conjunction with the Peter M. Winter Institute for Simulation, Education, and Research (WISER), UPMC, the Mediterranean Institute for Transplantation and Advanced Specialized Therapies (IsMeTT), and the Renato Fiandaca Simulation Center, held the 2nd Mediterranean Transplantation Anesthesiology and Simulation Symposium (MedTASS) at the Grand Hotel Villa Igiea in Palermo, Italy on April 27-30, 2011. International experts presented up-to-date reviews of current standards of anesthesia practice.

The conference began with a day-long Difficult Airway Management workshop, where participants learned about the different aspects of airway management and practiced the skills that they learned on the Laerdal SimMan. The following two days included morning sessions of didactic presentations followed by simulation-based learning in the afternoon.

Dr. John Williams and Dr. David Metro delivered the keynote presentations, “Advanced Specialty Care: What to Expect in the Next Decade,” and “Role of Simulation in Medical Education,” respectively.

Simulation was used at MedTASS 2011 to teach and demonstrate techniques for physicians to deal with critical operating room scenarios, develop an understanding of potential medical errors, and practice crisis-management skills. Scenarios that were encountered included fire in the operating room, malignant hyperthermia, and transfusion reaction. Conference attendees also participated in interactive simulation sessions dealing with intraoperative decisions in real time crisis management scenarios. Specific sessions were also held to teach difficult airway management, fiberoptic intubation, and central line placement.

Plans are underway for the next MedTASS meeting to be held in Palermo in 2013.
IsMeTT’s clinical responsibilities are quite diverse and include OR anesthesia, 24-hour ICU staffing, and coverage of the invasive radiology procedures including the Cardiac Cath Lab, GI Clinical Laboratory, PACU, and Outpatient Center. In 2009, the Italian National Healthcare Service identified 14 medical centers to coordinate and address the care of H1N1 infected patients developing acute respiratory distress syndrome (ARDS). IsMeTT was the sole center designated to coordinate and assist within the extended regional area (Sicily) and was also available to assist within bordering regions (Calabria, Campania, Sardegna). The referral population includes approximately 12 million inhabitants.

During FY11, 1,272 surgical procedures were performed, including 15 kidney transplants (14 living related kidney transplants [one pediatric]), 60 liver transplants (three living related and nine pediatric), 699 cardiac and thoracic surgeries, 15 lung transplants, 13 heart transplants, and one combination liver kidney transplant. Additionally, Palermo had 820 ICU admissions. The total FY11 count for surgical cases and ICU admissions was 2,063. IsMeTT continued to receive patient referrals for both adult and pediatric complex surgery or ICU treatments. Currently, four ORs, 12 PACU beds, and 14 ICU beds are staffed. Also, anesthesia faculty from UPMC traveled to IsMeTT for various teaching and clinical activities in FY11.

In FY11, IsMeTT continued to host students and anesthesia residents who wish to spend part of their elective time in Palermo. Residents from other Italian medical schools have also participated in an IsMeTT ICU and OR rotation.

Active planning is still underway to bring IsMeTT faculty to the United States for varying terms, and at the same time to encourage University of Pittsburgh faculty to visit the Institute. The growth of the clinical and academic aspects of our Department was achieved thanks to the close relationship and team work between the Palermo and UPMC teams, led by Dr. John Williams.
UPMC Beacon Hospital is located in Sandyford, Dublin, Ireland. It is a full service hospital with a 214-bed capacity, including two critical care units comprising 14 isolated beds. The hospital serves as a showcase site for General Electric in Europe and therefore features state of the art radiology systems and digital radiology suites. The hospital contains eight operating theatres - specific rooms dedicated for neurosurgery, urology, cardiac, general, orthopedic, and ophthalmic surgery.

In FY11, 10,362 procedures were carried out in Beacon, a 28% increase in activity from FY10.

UPMC Beacon also provides an acute pain/regional service, chronic and palliative care, and has a pain nurse. Chronic pain is provided on a multidisciplinary level.
Anesthesiologists in the division of Transplantation Anesthesiology (TA) are responsible for the care of patients undergoing liver, intestinal, multivisceral, kidney, pancreas and composite tissue allograph transplantation. During FY11, a total of 260 solid organ transplants were performed at UPMC, including Children’s Hospital of Pittsburgh of UPMC. In addition, TA provides anesthesiology care and work-up for patients undergoing major hepatic resections.

The primary responsibilities of TA include preoperative assessment of transplant candidates, participation in candidate selection, intraoperative management, and postoperative visits. Preoperative consultation of transplant candidates is the main strength of the service. As true consultants, anesthesiologists provide hepatologists and surgeons with valuable information on extrahepatic organ function.

During FY11, over 100 liver transplants and more than 260 total solid organ transplants were performed. These include 75 cadaveric kidney, 50 live donor kidney, four combined kidney/liver, one kidney/split liver, 84 cadaveric liver, 15 live donor liver, 18 pancreas-kidney/pancreas and 16 small bowel transplants. In addition, five patients underwent composite tissue allograph transplantation (hand transplants), for a total of eight upper extremity transplants performed.

FY11 was notable for continued expansion of the adult living related liver and kidney transplantation program at UPMC. Over 40% of kidney transplants performed in the United States are from live donors, and this trend is reflected at UPMC. A live liver donation continues to be an option for patients with end stage liver disease requiring transplantation and is available at UPMC due to the expertise of our transplant surgeons and anesthesiologists.

Education in the TA service is comprised of a mandatory rotation (four weeks) for CA-2 trainees and an elective rotation (three to nine months) for CA-3 and CA-4 trainees. CA-2 residents are expected to carry out anesthesia for liver transplantation with supervision and to apply clinical skills learned during this rotation to other high-risk patients undergoing major surgery. The CA-3 trainees should comprehend the complex pathophysiology of patients with hepatic dysfunction and perform anesthetic care with minimal supervision. The CA-4 trainees should be able to perform anesthetic care independently, and prepare themselves to become a consultant and/or a director of a liver transplantation anesthesia program.

In addition to one-on-one bedside teaching, each resident attends seven didactic sessions during the rotation. Topics include cerebral hemodynamic changes in acute and chronic hepatic encephalopathy, hemodynamic alterations during liver transplantation (pulmonary hypertension), hepatopulmonary syndrome, coagulation and thromboelastography during liver transplantation, electrolyte and acid base changes during liver transplantation, hepatic physiology, and pathophysiology. CA-3 and CA-4 trainees are encouraged to participate in research.
The cardiothoracic anesthesiology division serves five hospitals: UPMC Presbyterian-Shadyside (Presbyterian and Shadyside campuses), UPMC Passavant, UPMC Mercy, and the Veterans Affairs Pittsburgh Healthcare System (VAPHS). The number of cardiac surgical procedures performed system-wide in FY11 was 2,122 cardiac cases, compared to 2,086 during FY 10. These totals do not include heart, lung or heart-lung transplant procedures. Surgical procedures span the full spectrum of adult cardiac surgical practice from coronary artery bypass graft (CABG), including minimally invasive coronary artery bypass (Mid-CAB) and off-pump coronary artery bypass (OP-CAB), cardiac valve replacement and repair, thoracic aorta repair/reconstruction, arrhythmia ablation, pulmonary thromboendarterectomy, repair of ventricular and atrial septal defects, and removal of cardiac tumors/myxomas.

The UPMC Presbyterian campus is recognized as a world leader in heart, single lung, double lung, and heart-double lung transplants and is the designated site for these procedures. During FY11, 165 transplants were performed, consisting of 34 heart transplants, 21 single-lung transplants, 108 double-lung transplants, and 2 heart/double-lung transplants. This campus is also the primary site for surgical treatment of patients with end-stage cardiac disease. A variety of mechanical ventricular assist devices are used as a bridge to transplantation or “destination” therapy (Heartmate, Ventrassist, Levotronix, Heartware, Novocor, Abiomed and Thoratec); 31 devices were implanted at UPMC Presbyterian.

The cardiothoracic anesthesiology faculty perform intraoperative transesophageal echocardiography (TEE) on all patients undergoing cardiac and transplant surgery. Cardiothoracic anesthesiology fellows have the opportunity to obtain extensive exposure to intraoperative TEE to develop their skills in diagnostic TEE.

The division of cardiothoracic anesthesiology offers world-class opportunities for both basic and advanced training in adult cardiothoracic anesthesiology. The majority of CA-2 residents receive their initial exposure to cardiac anesthesiology at the UPMC Presbyterian campus. CA-3 residents are offered a three-month elective in advanced adult cardiac anesthesiology. Adult cardiothoracic anesthesiology fellows (CA-4) have the opportunity to receive advanced training in the subspecialty beyond the CA-3 year, in an ACGME accredited program, inclusive of: emergency and elective surgery, TEE, perfusion/ventricular assist device theory and operation, management of patients with electrophysiologic cardiac disturbances requiring ablation therapy or implantation of automated implantable cardioverter-defibrillators/pacemakers, management of patients for minimally invasive implantable cardiac devices in the cardiac cath lab, cardiothoracic critical care medicine, and heart/lung transplantation. Fellows who successfully complete the training program are eligible to take the PTEEEXAM administered by the National Board of Echocardiography.
In FY11, the Acute Interventional Perioperative Pain Service (AIPPS) mission remained the coordination and standardization of perioperative pain management of patients undergoing surgery while under AIPPS care at UPMC. In July 2010, AIPPS sites were established at Children’s Hospital of Pittsburgh of UPMC and UPMC Passavant (McCandless and Cranberry), and the AIPPS at UPMC Mercy was expanded. A total of 10.17 FTE anesthesiologists were assigned to the AIPPS Division.

Yearly revenue increased by 53.5% (based on the revenue cycle summary for July 2010–June 2011).

In FY11, the AIPPS performed 71,020 regional procedures, consults, and follow-up visits, representing an increase of 41% when compared to FY10. In FY10, 31,256 blocks were performed, representing an increase of 54% when compared to FY10. In FY11, 10,224 blocks were performed using an ultrasound guided technique. The AIPPS performed a total of 8,637 paravertebral blocks, including 6,747 continuous paravertebral blocks and 1,890 single paravertebral blocks.

In August 2010, the AIPPS organized the first ultrasound workshop specially designed for pediatric fellows. In April 2011, the division held the Seventh Update in Regional Anesthesia and Ultrasound Techniques/Update in Acute & Chronic Pain and Liver Transplantation Anesthesiology. In addition, several AIPPS members participated in various national and international ultrasound workshops.

The AIPPS hosted a total of nine regional anesthesia fellows from July 2010 through the end of June 2011. Fellows completed research rotations and clinical rotations at UPMC Presbyterian, UPMC Montefiore (OR rotation), UPMC Shadyside, UPMC Mercy, UPMC Passavant, UPMC CHP, and UPMC Harmarville. Furthermore, a total of eight pediatric pain fellows rotated for a month at the UPMC Shadyside campus.

During FY11, a total of nine clinical base year (CBY) residents rotated with the AIPPS at UPMC Presbyterian; 14 CA1 and CA2 residents rotated for at least a week at the UPMC Presbyterian campus for an acute pain rotation, while 11 CA3, 10 CA2, and five CA1 residents rotated at UPMC South Side for the regional rotation. A total of 15 CA-3 residents rotated for a month at the UPMC Shadyside or Mercy for an elective advanced regional anesthesia/acute pain rotation, while 21 CA-2 residents rotated at UPMC Shadyside or Mercy Hospitals for an acute pain rotation.
The UPMC Pain Medicine Program, consisting of ten faculty members, is a multidisciplinary clinical, teaching, and research endeavor spread over six clinic locations: UPMC St. Margaret, Centre Commons in East Liberty, Oakland campus, Monroeville, UPMC Passavant, and UPMC Mercy. The program is committed to the evaluation and treatment of the entire range of pain, disability, and rehabilitation problems. It offers an interdisciplinary team approach that includes dedicated professionals from various specialties including medicine, nursing, occupational therapy, physical therapy, and psychology.

The treatment team develops and coordinates programs designed to reduce pain and suffering whenever possible, assist patients in coping with any remaining discomfort; reduce disability to restore a more normal, meaningful, and satisfying life; reduce emotional distress caused by chronic pain; reduce dependency on drugs and on the healthcare system; and facilitate, as appropriate, the patient’s return to gainful employment and usual household and leisure activities.

During FY11, Department of Anesthesiology Pain Medicine physician visits totaled 49,801: 6,179 patient visits at UPMC St. Margaret, 14,454 patient visits at Centre Commons, 2,429 patient visits at Oakland campus, 4,068 patient visits at Monroeville, 4,095 patient visits at UPMC Passavant, 7,896 patient visits at UPMC Mercy, 188 at the South Hills Surgery Center, and 4,052 patient visits at UPMC Shadyside. Interventional modalities are carried out at all six locations, including somatic and sympathetic nerve blockade, neurolytic blocks, placement of intrathecal pumps and neurostimulators, joint injections, and pharmacotherapy.

UPMC Pain Medicine at Centre Commons provides effective therapies for conditions not requiring invasive procedures. Rehabilitative programs and services offered at Centre Commons include physical conditioning exercises, cardiovascular conditioning, coping skills training, work hardening, job-site evaluation, family counseling, relaxation therapy, stress management, biofeedback, self-hypnosis, gait and postural training, physical-capacity evaluation, work simulation, psychological counseling, and nutritional and sleep counseling.

In keeping with its mission, the UPMC Pain Medicine Program treats the entire spectrum of pain conditions, including persistent post-surgical pain, chronic back pain, complex regional pain syndrome (reflex sympathetic dystrophy), fibromyalgia, cancer pain, musculoskeletal injuries, headaches, post-herpetic neuralgia (shingles), and cumulative trauma syndromes.
FY11 was a productive year for Anesthesiology basic research. The department received a total of $5,474,845 in extramural grants, $4,166,112 of which was from the National Institutes of Health (NIH) (totals include both direct and indirect funds). The department continues to rank in the top ten anesthesiology departments in NIH funding nationwide.

The Department of Anesthesiology joined forces with the departments of Critical Care Medicine, Emergency Medicine, and Physical Medicine and Rehabilitation (PM&R), and the Peter M. Winter Institute for Simulation Research (WISER) to present the second annual Safar Symposium Multi-Departmental Trainees’ Research Day in June 2011. This collaborative event was designed to highlight research in areas spanning the interests of the late Dr. Peter Safar. Sixty-three scientific abstracts encompassing a range of basic and clinical research were submitted by trainees ranging from postdoctoral fellows, residents, graduate and medical students, and undergraduate students. The Department of Anesthesiology was well represented, with close to sixty percent of the abstracts submitted by our trainees and three trainees winning awards.

The division continues to encourage and foster research activity among the anesthesiology residents. A second successful Problem-Based Learning Discussion (PBLD) entitled “Keys to Successful Research” was presented to the anesthesiology residents in FY11. Using a clinical case scenario, this PBLD was designed to educate residents on the practical aspects of conducting a research project, from the formulation of a research idea to completion and submission of a manuscript. Future PBLDs will delve into other facets of research. The program was developed and presented jointly with the University’s Clinical and Translational Science Institute (CTSI). We continue to maintain a strong relationship with the CTSI staff, who have proven to be a valuable institutional resource for our faculty and trainees.

The department hosted three postdoctoral scholars through our NIH funded T32 program “Research Training in Anesthesiology and Pain Management.” This training program is designed to develop clinician-scientists who will be leaders in the field of anesthesiology research. We continue to cultivate residents with research interests as future T32 trainees and have several in the pipeline to join the program as T32 postdoctoral scholars in the future.

The department has been awarded a FAER (Foundation for Anesthesia Education and Research) grant with two slots for a Medical Student Anesthesia Research Fellowship (MSARF) continuously since summer 2008. This program encourages talented medical students to consider careers in anesthesiology research and perioperative medicine and offers them an eight week anesthesia-related research experience and the opportunity to present research findings at the American Society of Anesthesiologists (ASA) Annual Meeting. The department hosted one MSARF fellow in the summer of 2010 and two in the summer of 2011.

In FY11, Department of Anesthesiology researchers authored many peer-reviewed publications which were published in journals with impact factors above four. Please see the publications section of this report for a detailed list.
Basic Research Investigators

Inna Belfer MD, PhD, Associate Professor and Director, Molecular Epidemiology of Pain Program  Genetic and Non-Genetic Factors Contributing to Chronic Postmastectomy and Postlumpectomy Pain; Genetic Determinants of Labor-Related Pain and Analgesia; Approaching Risk of Severe Acute and Chronic Pain After Total Knee Replacement with Genomics And Proteomics (collaboration with Jacques E. Chelly MD, PhD, MBA); Expression of Pain Candidate Genes in Human DRG; Pain Sensitivity and Vasopressin Analgesia in Mice And Humans

Gerald F. Gebhart PhD, Professor and Director, Pittsburgh Center for Pain Research  Mechanisms and Modulation of Visceral Pain; Peripheral Contributions to Bladder Sensitivity

Michael S. Gold PhD, Professor  Mechanisms Underlying the Sensitization of Dural Afferents; The Role of the Sympathetic Post-Ganglionic Neuron in the Link Between Stress And Migraine; The Impact of Persistent Inflammation on the Regulation of Intracellular Ca2+ and its Impact on Ca2+-Dependent Potassium Channels; The Impact of Persistent Inflammation on Voltage-Gated Sodium Channels in Pulpal Afferents; The Impact of Persistent Inflammation on GABA-A Receptor Signaling in Cutaneous Afferents; Enhancing Post-Traumatic Pain Relief with Alternative Perineural Drugs (collaboration with Brian A. Williams MD); Effects of Artemin on Nociceptors (Collaboration with Department of Medicine Professor Kathryn Albers PhD); HSV Vectors for the Selective Silencing of Subpopulations of Afferents (collaboration with Department of Microbiology and Molecular Genetics Professor Joseph Glorioso, PhD)

Gregg E. Homanics PhD, Professor  G Protein Modulation of Glycine Receptor Function and Ethanol Action; Ethanol Mechanisms in GABAA-R Gene-Targeted Mice

Eric E. Kelley PhD, Research Assistant Professor  Nitric Oxide Production from Xanthine Oxidase; Critical Reevaluation Of Xanthine Oxidase-Derived Reactive Species; Xanthine Oxidase-Derived Reactive Species Critically Impact Diabetes-Induced Vascular Inflammation

William Lariviere PhD, Assistant Professor  Genetics of Variation in Mechanosensation; Genetic Risk Factors of Susceptibility to Inflammatory and Neuropathic Pain; Genetic Risk Factors for Opioid-Induced Side Effects

Joseph Samosky PhD, Assistant Professor & Director of Simulation and Medical Technology Research and Development Center  BodyExplorerAR: An Augmented Reality System for Interactive “X-Ray Vision” Of Anatomy, Dynamic Physiology and Clinical Procedures In Mannequin Simulators; PleurAlert: An Augmented Chest Drainage System with Electronic Sensing, Automated Alerts and Internet Connectivity; A Novel Intravenous Drug Recognition System for Medical Simulators Based on Direct Fluid Identification; A Comprehensive Training Simulator of Peripheral Anesthesia with Ultrasound and Neurostimulator Guidance: A Hybrid Physical-Virtual Reality System; The Tool Positioning Tutor: A Laryngoscope Pose Targeting System with Real-Time 3D Tracking; Biomimetic Materials and 3D Fabrication Techniques for Anatomic Models

Pei Tang PhD, Professor  General Anesthetic Binding To α4β2 nAchR And its Effects On Global Dynamics; Higher Susceptibility to Halothane Modulation in Open-Than in Closed-Channel α4β2 nAchR Revealed by Molecular Dynamics Simulations; Unresponsive Correlated Motion in α7 nAchR to Halothane Binding Explains its Functional Insensitivity to Volatile Anesthetics; Anesthetic Effects on the Structure And Dynamics of the Second Transmembrane Domains Of nAchR α4β2; NMR Structure of the Transmembrane Domain of the N-Acetylcholine Receptor Beta2 Subunit

Yan Xu, PhD Professor and Vice Chair of Basic Research  NMR Studies of Mechanisms of General Anesthesia; Post-Treatment of Delayed Cerebral Injuries After Cardiac Arrest by Exogenous Stem Cell Signaling; Registration of Olfactory Events During General Anesthesia; Anesthetic Effects on Ion Channel Structures and Dynamics
The Department of Anesthesiology maintains its own industry-sponsored Clinical Trials Program (CTP). This self-contained program has been designed to provide, within the department, all the services necessary for faculty members, as both principal investigators and sub-investigators, to start and follow through with a clinical trial, including contract and budget negotiations, clinical research coordinator (CRC) support, and Institutional Review Board (IRB) submissions. The CTP is also committed to developing new study opportunities by promoting departmental resources to the pharmaceutical industry as a whole. In addition, the CTP supports the introduction and involvement of clinical research with the Fellowship Program.

To ensure satisfaction of all legal and ethical requirements, program staff prepare research protocols and patient consent forms, verify compliance with federal regulations and good clinical practices, and submit IRB materials. The program also manages all the financial aspects of clinical trials by developing and negotiating budgets; current year consolidated budgets totaled thirty percent over sponsors’ initially proposed budgets. Several studies met the contracted enrollment and negotiated additional enrollment. The CTP staff also oversee the trial itself by training and supervising five full-time clinical research coordinators, coordinating trial initiation, facilitating and monitoring patient enrollment and study progress, and sustaining quality control of data collection and record keeping.

FY11 was characterized by an increase in the number of contracted pediatric sponsored studies. The CTP contracted three new clinical trials and completed five of the 15 ongoing clinical trials involving over 30 faculty members at five UPMC sites. The following companies sponsored these trials: Avancen LLC., Endo Pharmaceuticals Inc., Merck & Co., Helsinn Therapeutics, Inc., Hospira Inc., NePathe Inc., Purdue Pharma L.P., and Pfizer Inc. FY11 contracted grants totaled $514,804 (Direct Contracted Revenue, $422,776; Indirect Contracted Revenue, $92,028).
## Clinical Trials

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<tr>
<th>INVESTIGATOR</th>
<th>TITLE</th>
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<tr>
<td>Jacques E. Chelly MD, PhD, MBA, et al.</td>
<td>A Multi Dose, Randomized, Double-Blind, Multicenter Study of the Efficacy and Safety of Progabalin Compared to Placebo in the Treatment of Patients with Post-Surgical Pain from Hysterectomy</td>
<td>Pfizer Inc.</td>
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<tr>
<td>Jacques E. Chelly MD, PhD, MBA, et al.</td>
<td>A Phase III, Randomized, Double-Blind, Placebo and Active-Comparator-Controlled, Multiple-Dose Clinical Trial to Study the Safety and Efficacy of MK-0663/Etoricoxib and Ibuprofen in the Treatment of Postorthopedic Knee Replacement Surgery Pain</td>
<td>Merck &amp; Co., Inc.</td>
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<tr>
<td>Jacques E. Chelly MD, PhD, MBA, et al.</td>
<td>A Prospective Randomized Trial of an Oral PCA Devise versus SOC Delivery of as Needed Oral Pain Medications Following Total Hip Arthroplasty</td>
<td>Avancen, LLC</td>
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<tr>
<td>Daniel Sabo MD, et al.</td>
<td>Phase II-Double -Blind, Placebo-Controlled,Dose Finding Study to Evaluate the Safety and Efficacy of Ipamorelin Compared to Placebo fo the Recovery of Gastrointestinal Function in Patients Following Small or Large Bowel Resection with Primary Anastomosis</td>
<td>Helsinn Therapeutics, Inc.</td>
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<tr>
<td>Doreen Soliman MD, et al.</td>
<td>A Phase III, Randomized, Double-Blind, Dose-Controlled, Multicenter Study Evaluating the Safety and Efficacy of Dexmedetomidine in Intubated and Mechanically Ventilated Pediatric Intensive Care Unit Subjects</td>
<td>Hospira Inc.</td>
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<tr>
<td>Charles Yang MD, et al.</td>
<td>An Open-Label Study to Characterize the Pharmacokinetics and Safety of Oxycodone Hydrochloride q12h Controlled-Release (ORF) Tablets in Pediatric Patients Aged Six to 16 Years Inclusive, Who Require Opioid Analgesia</td>
<td>Purdue Pharma L.P.</td>
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Other Research by Full Time Academic/Clinical Faculty

Nicholas G. Bircher MD, FCCM, et al.  Improving Overall and Neurological Outcomes After Resuscitation and Critical Care; Optimizing Use of Simulation for Education; Analysis of the Get With the Guidelines®-Resuscitation Database; Use of PET to Quantitatively Assess Cerebrovascular Reserve in Stroke Victims; Simulation Interventions to Reduce Back Injuries During Patient Transfers

Barbara Brandom MD, et al.  Maintenance of the North American Malignant Hyperthermia Registry at the University of Pittsburgh; Molecular Genetics of Malignant Hyperthermia Susceptibility; Clinical Correlates of the Confirmed Diagnosis of Malignant Hyperthermia Susceptibility

Patricia L. Dalby MD, et al.  Genetic Determinants of Antepartum, Partuition, And Postpartum Pain and Labor Analgesia; Patient and Family Satisfaction Following Emergency Obstetric Crisis: Development of a Valid And Reliable Questionnaire

Tomas Drabek MD, et al.  Novel Concept of Emergency Preservation With Delayed Resuscitation for Victims of Exsanguination Cardiac Arrest

Ferenc E. Gyulai MD  Potential Deleterious Effects of Anesthetics on Inflammatory Pain

Ibetsam Hilmi MD, et al.  Prospective Clinical Study Protocol: Pre-Emptive Hemodynamic Optimization of High-Risk Patients Undergoing Elective Major Surgical Procedures; Perioperative Myocardial Infarction and the Use of Beta-Blockers in High-Risk Surgical Patients; Awareness and Recall During General Anesthesia; Post-Anesthesia Confusion and Delirium; The Evaluation of Different Oxygen Saturation Monitoring Equipment to be Used in the High-Risk Surgical Population

Venkat R.R. Mantha FFARCSI  Maternal Fever During Labor Epidural Analgesia; Maternal and Cord Serum Cytokine Changes With Labor Epidural Analgesia; Nanoanesthesia: Feasibility Of Producing Intravenous Ankle Block in the Rat by Magnet-Directed Concentration of Nanoparticle – Ropivacaine Complex; Nanoanesthesia: Ankle Block in the Rat With Nanoparticle/Ropivacaine Complex


Steven L. Orebaugh MD  The Effect of Local Anesthetic Solution Distribution on Block Characteristics During Interscalene Block; Effects of Injection Into the Human Cervical Nerve Root: A Cadaver Study

Jerome Parness MD, PhD  Dantrolene and Ryanodine Receptor Coupled Calcium Entry

Tetsuro Sakai MD, PhD, et al.  Role of Tissue Inhibitor of Metalloproteinase – 1 and -2 in Stem Cell Mediated Neuronal Protection in Vitro; Role of Tissue Inhibitor of Metalloproteinase in Stem Cell Mediated Neuronal Protection in Vitro

Manuel C. Vallejo Jr. MD, DMD  A Randomized, Prospective, Placebo-Controlled, Double Blind Trial to Evaluate the Efficacy of Preoperative Aprepitant in Patients at Moderate-to-High Risk For Postoperative Nausea (PONV) Undergoing Ambulatory Plastic Surgery; The Use of the Sonosite® Micromaxx® Ultrasound System to Decrease the Failed Epidural Placement Rate at Magee-Womens Hospital; Prevention of Dental Injury Under Anesthesia: The Dental Risk Reduction and Injury Prevention Program (DRRIPP); An Audit of Postdural Puncture Headaches, Wet-Taps, and Failed Regional Anesthetics at Magee-Womens Hospital of UPMC; Inhaled Nitrous Oxide and Labor Analgesia; Ultrasound Assessment of Gastric Emptying Following the Addition of a High Protein Drink vs. Ice Chips During Labor; The Addition Of A High Protein Drink During Labor to Decrease The Incidence of Emesis and Promote Patient Satisfaction; A Novel Way to Estimate Epidural Depth in Morbidly Obese Parturients; Ultrasound-Guided Transversus Abdominis Plane Block for Post-Cesarean Section Analgesia

Jonathan Waters MD  Modification of Shear Induced Hemolysis by Anesthetic Agents; Postpartum Hemorrhage Among Women With an Undiagnosed Bleeding Disorder

Brian A. Williams MD, MBA  Outcomes After ACL Reconstruction: Femoral Nerve Block; Process Re-Engineering and Health Care Economic Considerations With Regional Anesthesia in Ambulatory Surgery; Benefits of Routine Antiemetic Prophylaxis; Peripheral Nerve Blocks With Multimodal Analgesics; Resident Training in Regional Anesthesia

Li-Ming Zhang MD  WNT1 Inducible Signaling Pathway Protein 1 Contributes to Ventilator-Induced Lung Injury (VILI)
The principal focus of Dr. Gebhart’s laboratory is investigation of mechanisms of enhanced sensitivity to pain (i.e., hypersensitivity or hyperalgesia) that develops following tissue insult. Because pain arising from internal organs is least well understood among the sources of pain, recent research has addressed mechanisms of visceral pain and visceral hypersensitivity. Experimental approaches include: use of knockout mice to study research questions, in vitro single sensory nerve fiber recording, whole cell patch clamp recording from identified (labeled) sensory neurons, and procedures for quantification or localization of peptides, G protein-coupled receptors, and ion channels that play an important role in pain and hypersensitivity.

The North American Malignant Hyperthermia Registry (NAMHR) contains over 2,700 reports of in vitro testing for Malignant Hyperthermia (MH) susceptibility and over 700 reports of adverse metabolic reactions in anesthetized patients (AMRAs), as well as reports of the anesthetic experience of individuals who believe they are MH susceptible and others who have experienced MH episodes but have not had contracture tests. Results of genetic screening of the ryanodine receptor gene type one (RYR1) in CLIA diagnostic molecular genetics labs such as those at UPMC are being added to the NAMHR database.

In the past several years, the NAMHR has supported several studies by investigators from UPMC and elsewhere including: investigation of RYR1 variants in patients and families with MH susceptibility, a survey of complaints of muscular pain or weakness in patients with positive versus negative biopsy results, a review of anesthetics administered and the course of symptoms of MH, review of the safety and efficacy of dantrolene as documented in AMRA reports and analysis of the recrudescence after malignant hyperthermia reactions.

In 2011 University of Pittsburgh medical student, James Wilde, presented his study, Chronic pain symptoms in malignant hyperthermia, as a peer-reviewed poster at the annual meeting of the American Society of Anesthesiologists. He also received the Massik Award from for this work based on the responses of subjects in the North American MH Registry.
Research Programs

Molecular Epidemiology & Pain Program

INNA BELFER MD, PhD, Director

The principal focus of the Molecular Epidemiology and Pain Program (MEPP) is the relationship between human genetic polymorphism and complex phenotypes related to pain. For the past nine years, MEPP researchers have simultaneously addressed the development and extension of analytic approaches for identifying and characterizing genotype-phenotype relationships, and the application of those approaches to a variety of complex phenotypes, including acute and chronic post-surgical and chronic neuropathic pain, pain-related mood and motor disorders, and psychosocial traits. A recent series of collaborative studies has centered on the interaction between genetic and environmental factors influencing pain perception and analgesia. A complementary research focus is the analysis of human dorsal root ganglia (DRG) sensory neurons using genomic and proteomic tools as well as histology and immunocitochemistry and the study of pain candidate gene expression patterns as functional genomics follow-up for significant hits from association studies.

Ambulatory Anesthesiology

BRIAN A. WILLIAMS MD, MBA, Director

The Division of Ambulatory Anesthesia was created in 2009 to integrate research-based patient care principles for same-day surgery into a formal clinical entity. The foundation for the division is the development of new recovery criteria, the “WAKE Score,” which outlines recovery parameters after ambulatory surgery. The WAKE score not only predicts safe bypass of the “Phase 1 Recovery Unit” (Post-Anesthesia Care Unit), but also predicts successful same-day discharge (i.e., no unplanned hospital admission). The WAKE score was authored by Drs. Brian A. Williams and Michael L. Kentor, Chief Anesthesiologist at UPMC Mercy South Side Outpatient Center. In August 2010, the WAKE score was “rolled out” for daily clinical use en route to becoming the official recovery criteria for the UPMC health system (not only in anesthesiology contexts, but also in contexts of moderate sedation). This important initiative for standardizing recovery criteria system-wide is a Joint Commission on Accreditation of Healthcare Organizations (JHACO)-driven patient care directive, and this rollout involved top-level teamwork with many departments and committees.

Dr. Brian Williams continues to direct the Ambulatory Division. In October 2010, he relocated to the VA Pittsburgh Healthcare System to direct ambulatory and regional anesthesia, the acute pain medicine service, and the Interdisciplinary Medical Perioperative Assessment Consultation and Treatment (IMPACT) clinic.

Several ambulatory anesthesia research studies were conducted in FY11, including investigating femoral nerve block effectiveness, comparing regional and general anesthesia in ambulatory surgery, examining the benefits of applying recommendations for low-risk antiemetic prophylaxis, and developing a multimodal analgesic single-injection nerve block.
The ninth annual Safar Symposium was held on June 22-23, 2011. This yearly event honors the late Dr. Peter Safar and his wife Eva for their contributions to the scientific community and highlights current research in areas spanning Dr. Safar’s interests.

The symposium began with the second annual Multi-Departmental Trainees’ Research Day on June 22nd, a collaboration between the Departments of Anesthesiology, Critical Care Medicine, Emergency Medicine, and Physical Medicine & Rehabilitation, and the Peter M. Winter Institute for Simulation Education and Research (WISER). This multi-departmental event featured 57 posters and six oral presentations from trainees in the four collaborating departments. Sixty percent of the abstracts were submitted by trainees in the Department of Anesthesiology.

Dan Willenbring PhD, a T32 postdoctoral scholar working in Dr. Pei Tang’s laboratory, won best poster from the Department of Anesthesiology for “Isoflurane Perturbs Intersubunit Interactions in GLIC.” Erica S. Schwartz PhD, postdoctoral associate working in Dr. Gerald Gebhart’s laboratory, won best overall poster for “Synergistic Antagonism of TRPV1 and TRPA1 Reduces Afferent Excitability and Inflammation in the Progression of Chronic Pancreatitis.” Her poster was also the only one to receive a 1.0 score from every judge. In addition, Qing Liu MD, PhD, research fellow working in Dr. Michael Gold’s laboratory, won first place for his oral presentation, “Peripheral Inflammation Results in a Decrease in the Potency of Local Anesthetic-Induced Conduction Block of the Rat Sciatic Nerve.”

The second day of the symposium included both the Peter and Eva Safar Lecture, as well as morning and afternoon sessions highlighting current research in traumatic brain injury (TBI) and simulation. The morning session featured several lectures from experts both inside and outside the department and Pitt/UPMC. Hugo Van Aken MD, PhD, FRCA, Professor and Chairman of Anesthesiology and Intensive Care Medicine, University Hospital, Münster, Germany, delivered the 31st Peter and Eva Safar Annual Lecture in Medical Sciences and Humanities on the topic of “Update on Thoracic Epidural Anesthesia and the Stress Response – Are the Benefits Worth the Trouble and the Risks?” This annual lectureship is co-hosted by Patrick M. Kochanek MD (Director, Safar Center for Resuscitation Research) and John P. Williams MD (Peter and Eva Safar Professor and Chair, Department of Anesthesiology).
In March 2011, Dr. Rita M. Patel, Program Chair, Dr. Jerry Clark, Course Director, and 39 academic faculty of the Department of Anesthesiology presented a five-day Anesthesiology Board Review Course at the Doubletree Hotel and Suites in Pittsburgh. Dr. Andrew Murray served as Director of the Simulation Program and Mr. James Walker as Program Coordinator. The course was based on the highly successful UPP Department of Anesthesiology “A Comprehensive Review of Anesthesiology” that was produced in conjunction with CMEinfo in 2003 and again in early 2007. The company, CMEinfo, specializes in the production of continuing medical education programs by partnering with strong academic and clinical departments.

The objective of the course is to provide anesthesiologists and other health care professionals with current, relevant information to prepare for the American Board of Anesthesiology Certification Examination and Maintenance of Certification Examination. Complex principles emphasizing physiology, pharmacology, and physics necessary for state-of-the-art practice are explained in a comprehensive and easy to understand manner. The management of patients in various subspecialty areas and overviews of techniques for regional anesthesia and airway management are presented. In addition, an introductory test-taking skills lecture offers advice on strategically approaching the oral and written board examinations. The course also offers participants the opportunity to participate in simulation sessions at the Peter M. Winter Institute for Simulation, Education and Research Center (WISER). The program offers a comprehensive, concise, and practical review of important core information in the field. Each clinician-scholar was responsible for reviewing and presenting a critical topic in anesthesiology, pain or critical care medicine.
GRAND ROUNDS ONLINE

In response to concerns over time and distance constraints limiting physician attendance at grand rounds, Drs. Rita M Patel and Charles Boucek, Director of the Grand Rounds Program, developed the Anesthesiology Grand Rounds On-Line Series. This program allows viewing of digitally recorded presentations on-line from any computer with internet access. Multiple-choice review questions and an evaluation form are included with each presentation, and CME credit may be earned for review of modules up to 45 days from the date of posting. The modules are archived on-line indefinitely as an educational resource. In FY11, approximately 200 faculty members viewed 25 presentations, earning over 3,000 hours of CME credit. Evaluations and informal feedback from the faculty have been extremely positive, and there is ongoing discussion with the University of Pittsburgh School of Medicine Lab for Educational Technology for further refinement.

ACADEMY OF MASTER EDUCATORS

The Academy of Master Educators recognizes and rewards excellence in education, advances education through innovation and professional development of faculty, and supports and promotes educational scholarship. Five department faculty are members of the 67-member academy: Michael P. Mangione MD, William R. McIvor MD, Rita M. Patel Steven L. Orebaugh MD and Paul E. Phrampus MD. Members of the academy must be involved with the education of medical students, graduate students, and/or residents for the duration of appointment to the academy. Drs. Mangione, McIvor, Orebaugh, Patel and Phrampus were selected from the University of Pittsburgh School of Medicine faculty based upon their exceptional contributions to medical education. Dr. Rita M. Patel serves as a member and former Chair of the Task Force for the Academy on Teaching Residents to Teach. The Committee developed the Applying Principles and Practice of Learning and Education (APPLE) curriculum which was implemented in July 2008. The Committee also developed and presented “Introduction to Teaching” which was presented most recently to almost 500 new residents and fellows at the University of Pittsburgh Medical Center Medical Education Program System-Wide Orientation Program in June 2011.
The department’s medical student programs are recognized as the best in the nation. Faculty members continued their enthusiastic participation in clinical teaching during FY11.

The Summer Preceptorship Program in Anesthesiology is designed to expose first-year medical students to clinical medicine and to the field of anesthesiology, including acute pain management and the use of regional anesthesia. During this eight-week work-study program, students engage in clinical activities for forty hours per week, with afternoons reserved for case discussions and student case presentations. Responsibilities include anesthesiology and operating room technical work, as well as observation and participation in the perioperative care of patients as part of the anesthesia care team. Students keep patient logbooks, attend weekly discussions, and are required to present cases. Evaluations indicate that the program continues to be well received, providing students with a highly valued opportunity for direct patient contact and early exposure to clinical procedures correlating with their didactic instruction. This year’s preceptorship was conducted at Magee and Presbyterian Hospitals.

The Clinical Procedures Course is designed for second-year medical students just prior to the start of third-year clinical rotations. This four-week course consists of brief introductory lectures followed by “hands-on” sessions. Medical students study the details of airway assessment and endotracheal intubation and receive a brief introduction to hemodynamic monitoring and interpretation of blood-gas reports. Students learn how to assess back pain and perform lumbar puncture, insert nasogastric tubes and Foley catheters, and perform intravenous cannulation and venipuncture. We are unique among departments of anesthesiology because of our faculty’s extensive involvement in medical student education. Very few U.S. medical schools offer pre-clinical courses directed by clinical department faculty members. Based on written evaluations from the medical students, the Clinical Procedures Course received an overall approval rating of 86%. Students said they valued the opportunity to learn these basic procedures prior to performing them for patients.

The mandatory Surgery and Perioperative Care Clerkship consists of an eight-week course with fully integrated surgery and anesthesia segments. Thanks to the teaching efforts of the faculty this course enjoyed another very successful year, as evidenced by excellent evaluations and an increasing number of medical students considering anesthesiology as a career. The students continue to rate the overall quality of the clerkship as good or outstanding.

Thirty-six students participated in our electives. These month-long electives provide in-depth exposure to anesthesiology. Four electives are offered: General Anesthesiology, Anesthesiology Research, Subspecialties in Anesthesiology, and Pain Medicine.

Our Anesthesiology Interest Group, formed in 2005, continues to thrive. This group welcomes students from all four years of medical school who are interested in our specialty.

Each spring, our department chair, vice chair for education, residency and medical student program directors, along with several faculty and residents, host a “Specialty Night” for University of Pittsburgh students who are about to begin their final year of medical school. This proves to be an excellent forum for students who are interested in our specialty to learn about the residency application process and the specialty. Fifteen students from the Class of 2012 participated in this year’s event at The Pittsburgh Athletic Association (PAA) on April 19, 2011.
**SCHOLARLY PROJECTS** Several Anesthesiology faculty mentored medical student scholarly projects in FY11:

<table>
<thead>
<tr>
<th>Mentor</th>
<th>Student</th>
<th>Project</th>
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<tbody>
<tr>
<td>Inna Belfer MD, PhD</td>
<td>Christina Lee</td>
<td>Protein, RNA, and DNA Integrity in Human Dorsal Root Ganglia and Trigeminal Nuclei as a Function of Postmortem Time; Association of SNPs In KCNS1 And GCH1 With mRNA Expression</td>
</tr>
<tr>
<td>Barbara Brandom MD</td>
<td>James Wilde</td>
<td>A Survey of Musculoskeletal Pain in Malignant Hyperthermia Susceptible Individuals</td>
</tr>
<tr>
<td>Lawrence Borland MD</td>
<td>Alan Leung</td>
<td>Postoperative Risks of Apnea in Term Infant Inguinal Hernia Repair under General Anesthesia</td>
</tr>
<tr>
<td>Jacques E. Chelly MD, PhD, MBA</td>
<td>Justin Chou</td>
<td>The Relation of Social Support to Adherence, Metabolic Control, and Treatment Outcomes in Type I Diabetes Patients</td>
</tr>
<tr>
<td>Patricia L. Dalby MD</td>
<td>Hanzi Zhan</td>
<td>Patient and Family Satisfaction following Emergency Obstetric Crisis: Development of a Valid and Reliable Questionnaire</td>
</tr>
<tr>
<td>Tomas Drabek MD</td>
<td>Caleb Wilson</td>
<td>Effects of Depletion of Microglia on Neurologic Outcome using Intraparenchymal Clodronate Injection in Prolonged Cardiac Arrest Treated with Moderate and Deep Hypothermia in Rats</td>
</tr>
<tr>
<td>Gregg Homanics PhD</td>
<td>David Mazariegos</td>
<td>Epigenetic Effects of Alcohol</td>
</tr>
<tr>
<td>William McIvor MD</td>
<td>Asaff Harel</td>
<td>Evaluation of Candidate Inhibitors of the TRPV1 Ion Channel</td>
</tr>
<tr>
<td>William McIvor MD</td>
<td>Brian Lau</td>
<td>A Collection of Patient Simulations Illustrating Symptoms Consistent with Malignant Hyperthermia</td>
</tr>
<tr>
<td>William McIvor MD</td>
<td>Roger Huijon</td>
<td>Assessment of the Role of Simulation in Graduate Surgical Education: A Systematic Review of the Literature</td>
</tr>
<tr>
<td>William McIvor MD</td>
<td>Eric Wise</td>
<td>A Screen Based Simulation and Tutorial of Inserting a Pulmonary Artery Catheter into a Patient</td>
</tr>
<tr>
<td>William McIvor MD</td>
<td>Seth Linakis</td>
<td>Screen-Based Medical Simulation</td>
</tr>
<tr>
<td>Manuel Vallejo Jr MD, DMD</td>
<td>Traci Roberts</td>
<td>ER vs. ED – A Look at Television and Reality</td>
</tr>
<tr>
<td>Brian Williams MD, MBA</td>
<td>Duane Koh</td>
<td>Identifying New Targets in GIST</td>
</tr>
<tr>
<td>Yan Xu PhD</td>
<td>Renee Dallasen</td>
<td>Dose and Time Dependence of the Molecular Mechanisms Associated with Isoflurane Induced Neurotoxicity and Neurogenesis in the Adult Mouse Brain</td>
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**AWARDS**

*Best Student in Anesthesiology Award:* Rachel Wang  
*Department of Anesthesiology Peter M. Winter Award for Excellence in Medical Student Teaching:* Mario Montoya

**MATCHING** A total of nine UPSOM students (Class of 2011) matched into anesthesiology residencies:

<table>
<thead>
<tr>
<th>Student</th>
<th>Match</th>
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<tbody>
<tr>
<td>Michael Best</td>
<td>UPMC Medical Education, Pittsburgh, PA</td>
</tr>
<tr>
<td>Lauren Faulk</td>
<td>University of Michigan Hospital, Ann Arbor, MI</td>
</tr>
<tr>
<td>Christina Lee</td>
<td>UPMC Medical Education, Pittsburgh, PA</td>
</tr>
<tr>
<td>Colin Nabb</td>
<td>Beth Israel Deaconess Medical Center, Boston, MA</td>
</tr>
<tr>
<td>Adeola Sadik</td>
<td>Massachusetts General Hospital, Boston, MA</td>
</tr>
<tr>
<td>Aalap Shah</td>
<td>University of Washington Affil. Hospital, Seattle, WA</td>
</tr>
<tr>
<td>Becky Tsui</td>
<td>Massachusetts General Hospital, Boston, MA</td>
</tr>
<tr>
<td>Rachel Wang</td>
<td>Stanford University Programs, Stanford, CA</td>
</tr>
<tr>
<td>Mark Youngberg</td>
<td>University of Washington Affil. Hospital, Seattle, WA</td>
</tr>
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Our Anesthesiology Residency Program is fully accredited by the Accreditation Council of Graduate Medical Education (ACGME) to provide training and education in anesthesiology leading to certification by the American Board of Anesthesiology. As in previous years, FY11 was a period of excellence and innovation in education, as well as adaptation to the emergent and evolving changes that characterize contemporary graduate medical education. Dr. Ryan Ball served as Chief Resident and Drs. Dennis Phillips and Joshua Hensley served as Associate Chief Residents.

As of July 1, 2010, the UPMC Mercy Anesthesiology Residency Program (with 15 ACGME approved training positions) merged with the UPMC Presbyterian-Shadyside Residency Program (with 45 ACGME approved training positions), creating a combined residency program with 60 ACGME approved training positions.

FY11 was notable for the continuation of our excellent didactic program. The committee coordinated core topics for the CA-1 (PGY-2), CA-2 (PGY-3), and CA-3 (PGY-4) residents in seminar and lecture series formats. The CA-1 and CA-2 lectures and pertinent multiple-choice questions are posted to a special web site allowing residents unlimited access and review. Third-year residents participate in a curriculum consisting of evidence-based medicine, case management, and Oral Board preparatory sessions. Case-management sessions are presented in the American Society of Anesthesiology (ASA) Problem-Based Learning Discussion (PBLD) format to facilitate active learning in small groups. The educational program is augmented by a biweekly Grand Rounds in which local speakers and visiting professors provide current reviews of relevant topics. A monthly journal club format was also included in the Grand Rounds curriculum. During these sessions, residents from each class research and present important articles with the goals of increasing their understanding of scientific literature and the sharpening of residents’ presentation skills.

The CA-1 and CA-3 curriculum continues to include mock oral examination sessions proctored by department faculty in the fall and spring of each year. Subspecialty rotations during the CA-2 year also continue to include mock oral board examinations as part of the rotation.

In addition to regular attendance at lectures and Grand Rounds, residents are also required to participate in at least one session of the Clinical Procedures Course, sponsored by the University of Pittsburgh School of Medicine. This allows residents the opportunity to teach medical students in a traditional classroom setting, in addition to clinical teaching during the medical student clerkships and electives. Residents are also encouraged to participate in the Western Pennsylvania Society of Anesthesiologists’ monthly lecture series, which includes presentations on topics of interest to anesthesiologists by local and national faculty members.

Many resident courses are conducted at the Peter M. Winter Institute for Simulation, Education and Research (WISER). These courses provide both didactic and hands-on experience in the management of problems that are uncommon, or common but difficult. In simulation courses offered this year, residents were able to sharpen skills and build confidence in crisis leadership, fiberoptic intubation, central venous cannulation and difficult-airway management. In addition, residents were given the opportunity to orient or receive additional training for their subspecialty rotations in regional anesthesia, obstetric anesthesia and liver transplantation.
## GRADUATING RESIDENTS

<table>
<thead>
<tr>
<th>Graduate</th>
<th>Post-Residency</th>
</tr>
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<tbody>
<tr>
<td>Riyaz Ali MD</td>
<td>Looking to join a private practice group in Winchester, VA</td>
</tr>
<tr>
<td>Ryan Ball MD</td>
<td>Cardiac Anesthesia fellowship at UPMC</td>
</tr>
<tr>
<td>Nikhil Bhatnagar MD</td>
<td>Regional Anesthesia fellowship at UPMC</td>
</tr>
<tr>
<td>Brian Blasiole MD</td>
<td>Pediatric Anesthesia fellowship at UPMC</td>
</tr>
<tr>
<td>Philip Chuang MD</td>
<td>Cardiac Anesthesia fellowship at Albert Einstein Medical Center, NY</td>
</tr>
<tr>
<td>Stephen Esper MD</td>
<td>Cardiac Anesthesia fellowship at Duke University</td>
</tr>
<tr>
<td>David Glover DO</td>
<td>Joining the UPMC Faculty</td>
</tr>
<tr>
<td>Benjamin Grable MD</td>
<td>Cardiac Anesthesia fellowship at UPMC</td>
</tr>
<tr>
<td>Joshua Hensley MD</td>
<td>Cardiac Anesthesia fellowship at UPMC</td>
</tr>
<tr>
<td>R. Scott Lang MD</td>
<td>Pediatric Anesthesia fellowship at Children’s Hospital of Pittsburgh of UPMC</td>
</tr>
<tr>
<td>Charles Lin MD</td>
<td>Joining the UPMC Faculty</td>
</tr>
<tr>
<td>Mark Lischner DO</td>
<td>Critical Care Medicine fellowship at UPMC</td>
</tr>
<tr>
<td>Adam Munson-Young MD</td>
<td>Joining the Columbia Anesthesia Group in Vancouver, WA</td>
</tr>
<tr>
<td>Kristin Ondecko-Ligda MD</td>
<td>Joining the UPMC Faculty at Mercy Hospital</td>
</tr>
<tr>
<td>Dennis Phillips DO</td>
<td>Cardiac Anesthesia fellowship at UPMC</td>
</tr>
<tr>
<td>Giorgio Veneziano MD</td>
<td>Pediatric Anesthesia fellowship at UPMC</td>
</tr>
<tr>
<td>Audra Webber MD</td>
<td>Pediatric Anesthesia fellowship at UPMC</td>
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## TEACHING AWARDS

**Dr. Leroy Harris Excellence in Teaching Award:** Shawn Beaman

**Excellence in Clinical Teaching of Residents:** Scott Brancolini MD; Jerry Clark MD; Derek Davis MD; Calin Gorunescu MD; Richard Kuwick MD; Gordon Mandell MD; Steven Orebaugh MD; Humingala Rakesh MD; Doreen Soliman MD; and Kathirvel Subramaniam MD
RESIDENT AWARDS

**Philip Adams MD:** second place at the Western Pennsylvania Society of Anesthesiologists (WPSA) Resident Research Competition for his case report “Submental Endotracheal Intubation During Maxillomandibular Fixation.”

**Brian Blasiole MD, PhD:** first place at the WPSA in the scientific papers category for “Effect of Hyperoxia on Resuscitation of Experimental Combined Traumatic Brain Injury and Hemorrhagic Shock,” which also won third place in the Clinical Research category at the Pennsylvania Anesthesiology Residency Research Conference (PARRC).

**Trent Emerick MD:** second place in the category of scientific papers at the WPSA for his research project “Scholarly Activity Points: A New Tool for Evaluation of Resident Scholarly Productivity.”

**Stephen McHugh MD:** first place at PARRC for his case report “Thoracic Epidural Anesthesia as a Cause of Third-Degree Heart Block.”

**Dennis Phillips DO:** Department of Anesthesiology Mark H. Gilliand, MD Award for Best Clinical Resident.

**Kristin Schreiber MD, PhD:** first place at WPSA for her case report “Accidental Insertion of a Percutaneous Veno-Venous Cannula into the Persistent Left Superior Vena Cava of a Patient Undergoing Liver Transplantation.”

CONFERENCES & SCHOLARLY ACTIVITIES

Faculty, residents, fellows, and medical students participate in numerous scientific meetings. Here are some highlights from the department’s many scholarly activities:

**American Society for Anesthesiology (ASA) Annual Meeting** - San Diego, CA, October 16-20, 2010

- 3 Problem-Based Learning Discussions (PBLDs)
- 7 Workshops
- 21 Medically Challenging Cases
- 8 faculty serving on ASA committees
- 2 medical student delegates
- 11 panels
- 27 posters

**Society for Education in Anesthesia (SEA) Annual Meetings** - Fall meeting, San Diego, CA, October 15, 2010; Spring meeting, San Antonio, TX, June 3-5, 2011

- 4 abstracts
- 1 workshop
- 2 faculty served on SEA committees
- Tetsuro Sakai MD, PhD - Best Curriculum Poster, spring meeting
The Department of Anesthesiology offers ten fellowship training programs, including ACGME accredited fellowships in pediatric anesthesiology, pain medicine, anesthesiology critical care medicine, and adult cardiothoracic anesthesiology:

**CARDIAC:** Erin A. Sullivan MD  Fellows receive advanced training in adult and pediatric cardiothoracic anesthesiology inclusive of emergency and elective surgery, TEE, perfusion/ventricular assist device theory and operation, cardiothoracic critical care medicine, and heart/lung transplantation. Fellows are also eligible to take the PTEeXAM administered by the National Board of Echocardiography; **CRITICAL CARE MEDICINE:** A. Murat Kaynar MD  Fellows in this one-year program may rotate through radiology and general medical-surgical, coronary care, and surgical specialty ICUs such as cardiothoracic, burn, trauma/general surgery, neurosurgical, obstetric, liver and abdominal visceral transplantation, and general pre- and postoperative surgical critical care; **HEPATIC TRANSPLANTATION:** Raymond M. Planinsic MD  Fellows complete a three to nine month rotation. They perform anesthetic care at a high level of independence and are strongly encouraged to participate in research activities. This rotation is intended to train fellows to become a transplantation consultant and/or a director of a liver transplantation anesthesia program; **NEUROANESTHESIOLOGY:** Steven L. Whitehurst MD  Rotations include neurophysiologic monitoring, neuroradiology, neurosurgical intensive care, and pediatric neuroanesthesia. Research opportunities are available, including collaborative work with members of Neurosurgery and the Safar Center for Resuscitation Research; **RESEARCH:** Yan Xu PhD  Fellows have the opportunity to work with renowned clinical and basic science investigators in a variety of disciplines. Students can explore investigative careers, while others will develop into clinician-scientists who will be leaders in the field of anesthesiology research. Training programs include the NIH T32 Postdoctoral Research Fellowship, the Charles W. Schertz Research Fellowship, the FAER Medical Student Anesthesia Research Fellowship, and the Summer Undergraduate Research Program; **OBSTETRIC:** Manuel C. Vallejo Jr., MD  This fellowship provides advanced experience in all aspects of obstetric anesthesiology, including research, administration, and clinical management of the complex obstetrical-gynecological patient; **ORTHOPEDIC:** Jacques E. Chelly MD, PhD, MBA  This one-year program includes clinical training in orthopedic anesthesia, acute pain and rehabilitation, along with research activities and educational curricula; **PAIN MEDICINE:** Nashaat Rizk MD (Interim Director)  The one-year program is fully accredited by ACGME. Fellows rotate through outpatient services at various UPMC locations and collaborate with psychologists, physical therapists, occupational therapists, and pain medicine physicians from other disciplines; **PEDIATRIC:** Franklyn P. Cladis MD  The ACGME-accredited fellowship is designed to develop clinical expertise in caring for routine and complicated pediatric surgical patients. Based at Children’s Hospital of Pittsburgh of UPMC (a Level 1 Trauma Center), fellows will also understand the complex airway management needs and resuscitation procedures of pediatric trauma patients; **REGIONAL:** Jacques E. Chelly MD, PhD, MBA  The fellowship develops expertise in the practice and theory of regional anesthesiology and acute pain management techniques and understanding of the related physiology and pharmacology in the provision of patient care.

### 2011 DEPARTING FELLOWS

**PAIN MEDICINE**  Ryan Almeida MD; John Hache MD; Jian Hu MD; Koshy Mathai MD; Ahdy Nassif MBBCh; Manijeh Ryan MD; Kamran Saraf MD; Adam Tune MD; Tracy Wimbush MD

**PEDIATRIC ANESTHESIA**  Mark Aittaniemi MD; Ralph Beltran MD; Eric Bernstein MD; Gagandeep Goyal MD; Denise Hall-Burton MD; Nishanthi Kandiah MD; Eduard Logvinskiy MD; Lena Mayes MD; Khoa Nguyen MD

**OB ANESTHESIA**  Manasi Badve MD; Tanmay Shah MD

**CARDIAC ANESTHESIA**  Erik Cooper DO; Lavinia Kolarczyk MD

**REGIONAL ANESTHESIA**  Jason Brookman MD; Jean Daniel Eloy MD; Johnny Lee MD; Qing Liu MD; Andrew Lucic MD; Jessen Mukalel MD; Uchenna Umeh MD; Gaurav Rajpal MD
The Peter M. Winter Institute for Simulation, Education, and Research (WISER) is dedicated to healthcare education and educational research. Utilizing the University of Pittsburgh’s standards of excellence and professionalism, WISER applies advanced instructional technology and various forms of simulation to study the efficacy of educational training programs and their impact on learning and clinical care. The objectives of WISER are as follows: 1) create a safer environment for patients and improve healthcare operational efficiency by using simulation and other state of the art educational technology in the training and assessment of healthcare system professionals, 2) serve as a laboratory to research the use of simulation and other advanced instructional technology in healthcare education and to publish the results, 3) create simulation-based education programs for primary education in various domains of the healthcare delivery system, 4) develop and validate simulation-based technology as a competency assessment evaluation tool for healthcare professionals, and 5) contribute to the education and mentorship of future generations of healthcare system educators and education researchers interested in creating or evaluating simulation based teaching methodologies.

WISER offers many anesthesia and non anesthesia-based courses that continue to improve patient safety throughout the health system. The anesthesia difficult airway management course for residents, SRNAs, CRNAs, and attending physicians was created to allow participants the opportunity to obtain a working knowledge and proficiency of the ASA Difficult Airway Management Guidelines and associated airway management techniques and equipment. Didactic training focuses on evaluation of the airway and the ASA guidelines. WISER also offers a fiberoptic bronchoscopy course, which provides the trainee with a firm foundation in all aspects of principles and psychomotor skill sets necessary to rapidly become clinically proficient in the basic and advanced uses of the fiberoptic bronchoscope in the anesthesia domain. A central venous cannulation course focuses on proper central line placement, including the use of ultrasound guidance and manometry for locating and verifying venous access sites. The course includes web-based content emphasizing patterns of injury, site anatomy, CVC indications and alternatives, as well as complication recognition and corrective maneuvers.

WISER offers an anesthesia for liver transplantation course. The course provides hands-on experience in a simulation setting for delivering anesthesia for orthotopic liver transplantation. Participants include anesthesiologists, residents, CRNAs, SRNAs, and fellow-visitors. This course emphasizes a multidisciplinary team approach that includes preoperative assessment, operating room setup, placement of central venous access and insertion of wide bore venous lines for infusion of large volumes of fluids,
The Simulation and Medical Technology Research & Development Center’s mission is to invent next-generation enabling technologies for simulation-based healthcare training and new medical devices with the end goal of improving patient care and enhancing patient safety. The center develops both basic technologies and practical system prototypes with a focus on user-centric design. Projects typically foster multidisciplinary collaborations among designers, engineers, clinicians and healthcare educators. The Center also engages students in healthcare technology research at both the undergraduate and graduate levels and serves as a pan-departmental bridge-building facility between the Schools of Engineering and Medicine, bringing clinicians and engineers together and serving as an incubator for innovation and prototyping.

Twenty research prototypes have been developed in the Sim|Med|Tech Center over the past four years, including 13 bioengineering and electrical engineering senior design projects that have led to three invention disclosures and provisional patent applications. In 2010-2011, projects were presented in four national conference presentations, one of which received a best poster award at Medicine Meets Virtual Reality 2011. Through classes and interactive “do-learn” workshops, the Center has to date introduced over 350 University of Pittsburgh and Carnegie Mellon University students to systems design, medical engineering and healthcare technology.

The center collaborates with local centers of excellence, most closely with the Department of Bioengineering at the Swanson School of Engineering and WISER, as well as other University of Pittsburgh, UPMC, and Carnegie Mellon University groups with expertise in technology, education, and patient safety.
Department of Anesthesiology faculty generated approximately 100 published peer-reviewed journal papers and numerous book chapters, abstracts, and editorials during 2010-2011. The following are peer-reviewed journal papers that were published in high-impact journals (20,000 or more citations).


The University of Pittsburgh is an internationally respected center of learning and research, offering exceptional educational opportunities in the humanities, sciences, and professions. A state-related, coeducational institution, the University’s Pittsburgh campus offers a multitude of degree-granting and other programs housed in 16 undergraduate, graduate, and professional schools.

The University of Pittsburgh’s mission is to advance teaching, research, and public service. This three-part commitment enables the University to serve others by educating diverse students from the region, the nation, and the world; expanding boundaries of knowledge, discovery, and technology; and enhancing quality of life in the Western Pennsylvania region and beyond.

- University of Pittsburgh Graduate and Professional Bulletin, www.bulletins.pitt.edu/graduate/about.htm
UPMC is one of the leading nonprofit health systems in the United States. A $10 billion integrated global health enterprise headquartered in Pittsburgh, Pennsylvania, UPMC develops and delivers Life Changing Medicine by harnessing the power of technology, translating science into cures, and accelerating the pace of innovation worldwide.

As Pennsylvania’s largest employer, with more than 55,000 employees, UPMC is comprised of more than 20 hospitals, more than 400 clinical locations that encompass long-term care and senior living facilities, a nearly 1.6-million member health plan, and a growing international and commercial segment. A passion for innovation lies at the heart of UPMC’s success. UPMC’s unique strategy of combining clinical and research excellence with business-like discipline translates into high-quality patient care for both western Pennsylvanians and the global community. Closely affiliated with the University of Pittsburgh Schools of the Health Sciences, UPMC continues to successfully develop internationally renowned programs in transplantation, cancer, neurosurgery, psychiatry, orthopaedics, and sports medicine.

To learn more about UPMC, visit www.upmc.com.

- UPMC Media Relations

2011 marked the 12th consecutive year UPMC ranked in *US News and World Report’s* Honor Roll of only 17 of the “nation’s best hospitals.” UPMC also ranked in 15 specialties.
Pittsburgh is a hidden gem. Located in the southwest corner of Pennsylvania, it offers the best of everything — an urban melting pot, historical landmarks, ethnic neighborhoods, a vibrant nightlife, picturesque countryside, and the famous three rivers. Pittsburgh is home to many “greats”:

**Sports**
- Pittsburgh Steelers - six time Super Bowl Champions/eight time AFC Champions
- Pittsburgh Penguins - three time Stanley Cup Winners

**Arts/Culture**
- Pittsburgh Symphony Orchestra;
- Pittsburgh Ballet
- Carnegie Science Center
- Carnegie Museums of Pittsburgh (Andy Warhol Museum;
  Carnegie Museum of Art;
  Carnegie Museum of Natural History)
- Phipps Conservatory and Botanical Gardens
- National Aviary

**Fun & Nightlife**
- Pittsburgh Zoo and PPG Aquarium
- Kennywood Park;
  Sandcastle Waterpark
- Rivers Casino

**Distinctions**
- “Most Livable City in the US,” *Forbes* (2010), Yahoo! (2010), and *The Economist* (2011)
- 29th Most Livable City in the World, *The Economist* (2011)
- 10th Best Walking Place in America, *Prevention* (2009)

To learn more about life in the “Most Livable City,” visit [www.coolpgh.pitt.edu](http://www.coolpgh.pitt.edu) or [www.visitpittsburgh.com](http://www.visitpittsburgh.com)
Dr. Jan Smith received the 2010 Physician Volunteer Award from the Allegheny County Medical Society

The ACGME accredited the Adult Cardiothoracic Anesthesiology Medical Education Program with no citations

Nine faculty were appointed to 13 American Society of Anesthesiologists (ASA) committees for the 2011-2013 time period

Dr. Andrew Herlich was elected to an Honorary Fellowship in the American Association of Oral and Maxillofacial Surgeons

The department was selected as a FAER Medical Student Anesthesia Research Fellowship Program host site for the fourth consecutive year

Dr. Yan Xu was elected to the Foundation for Anesthesia Education and Research Academy of Research Mentors in Anesthesiology

Dr. Robert Boretsky received the Stephen Finestone MD Anesthesiologist Instructor of the Year Award

Dr. Kathirvel Subramaniam’s textbook *Anesthesia and Perioperative Care for Aortic Surgery*, co-authored with Kyung Park and Balachundhar Subramaniam, was published.

The 8th edition of *Smith’s Anesthesia for Infants and Children*, edited by Drs. Peter J. Davis, Franklyn P. Cladis, and Etsurto Motoyama, was published. The editors and four additional department faculty contributed to chapters in the book

Drs. Tetsuro Sakai, Rita M. Patel, Yan Xu, and David G. Metro’s abstract “Director of Resident Research Rotation: a Facilitator for Resident Scholarly Activity” was chosen as Best Curriculum Poster at the Society for Education in Anesthesia 26th Spring Annual Meeting

Dr. Manuel C. Vallejo Jr. was honored at the Society for Obstetric Anesthesia and Perinatology (SOAP) 43rd Annual Meeting in Lake Las Vegas, Nevada on April 14th, 2011 for his 2008-2011 service on the SOAP Board of Directors

Acute Interventional Perioperative Pain and Regional Anesthesia doctors presented 17 posters at the American Society of Regional Anesthesia and Pain Medicine (ARSA) 36th Annual Regional Anesthesia Spring Meeting and Workshops

Seven residents and postdoctoral research fellows presented abstracts at the 2011 Association of University Anesthesiologists (AUA) annual meeting

Dr. Joseph T. Samosky and his research team won a “best poster award” at the 18th Medicine Meets Virtual Reality (MMVR) Conference for their project “Real-Time ‘X-Ray Vision’ for Healthcare Simulation: An Interactive Projective Overlay System to Enhance Intubation Training and Other Procedural Training”

Dr. Erin Sullivan and UPMC Presbyterian were chosen as the principal investigator/site for an AHRQ collaborative research study aimed at preventing infections in cardiac surgery patients
Acknowledgements

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## Department of Anesthesiology at a Glance

**FY 2011**

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiology Cases</td>
<td>196,324</td>
</tr>
<tr>
<td>Chronic and Acute Pain Visits</td>
<td>89,778</td>
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<tr>
<td>OB Deliveries</td>
<td>9,845</td>
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<tr>
<td>Faculty FTEs</td>
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<tr>
<td>Total ORs covered</td>
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<tr>
<td>Total Anesthetizing Locations</td>
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<tr>
<td>CRNA FTEs</td>
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<tr>
<td>Graduating SRNAs</td>
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<tr>
<td>Residents and Fellows</td>
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<tr>
<td>Active Clinical Trials</td>
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<tr>
<td>Total NIH Awards</td>
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<tr>
<td>Total Awards</td>
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