

## Alumni Connection

### A Message From the Chair

John P. Williams MD

*Peter and Eva Safar Professor and Chair, Department of Anesthesiology  
Associate Medical and Scientific Director, UPMC International Division*



Welcome everyone to the re-creation of the alumni newsletter!

The old newsletter was discontinued early on in my tenure as Chair primarily because of cost overruns. It was extremely costly to produce, and while interesting, it appeared to engage only a very few of our over 2,000 alumni.

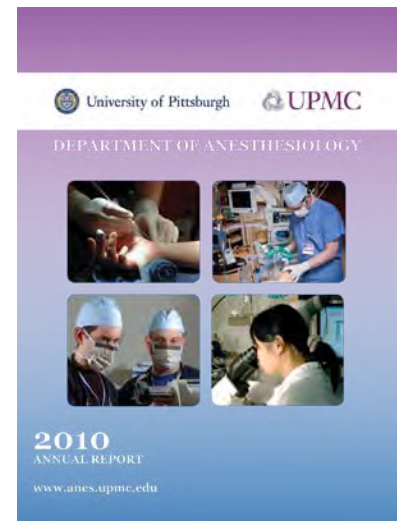
I am very pleased to offer this new PDF version of the newsletter and provide it to as wide a group of our alumni as possible. The PDF format is extremely versatile and allows for almost instantaneous changes and reformatting. Further, the cost of production is vastly reduced, as is the cost of delivery for those with email addresses. Not to mention the reduction in the use of paper and paper products, ink, and waste, all of which represent significant improvements in environmental responsibility.

We will publish the newsletter on a bi-annual basis (issues will be sent in the spring and fall), so please expect to hear more from us in the future. Also, we will provide links to our webpage so that you are kept up to date in regard to departmental functions and appearances at major meetings in the US, Europe, and elsewhere in the world. We also ask that you please provide us with an updated email address (we do not share our email list with anyone without your express permission) so that we can keep the costs of publishing and sharing our stories as low as possible.

I think you will enjoy this inaugural issue as we bring you up to date with changes, promotions, and awards for members of the department, as well as provide you with opportunities to hear from our faculty on topics ranging from pediatric anesthesia (a debate raging in the FDA currently), to pain medicine, to volunteer activities, to our recently created diversity outreach program. Overall, I hope that this newsletter will provide you with an avenue to keep in touch with the department, to hear from old friends, and to make new ones as we continue to expand and grow. Welcome back home to one and all!!

*-John P. Williams MD*

[Our Fiscal Year 2010 Annual Report is now online!](#)



### Department at a Glance- FY 10

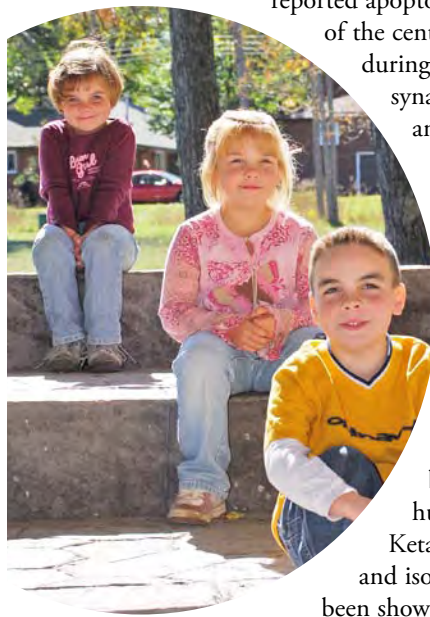
<i>Anesthesiology Cases</i>	185,016
<i>Chronic and Acute Pain Visits</i>	66,566
<i>OB Deliveries</i>	9,731
<i>Faculty FTEs</i>	191
<i>CRNA FTEs</i>	321
<i>Graduating SRNAs</i>	43
<i>Residents and Fellows</i>	79
<i>Active Clinical Trials</i>	20
<i>Total NIH Awards</i>	\$5,175,575
<i>Total Awards</i>	\$5,463,573

# Anesthesia Neurotoxicity in The Developing Brain: Do Anesthetic Agents Make Your Child Stupid?

Peter J. Davis MD, *Chief Anesthesiologist, Children's Hospital of Pittsburgh of UPMC*



An area of intense interest in both the scientific community and lay press involves the findings of anesthetic-associated toxicity in the developing central nervous system. Early work in the 1980s by Uemura and colleagues noted that rats exposed to varying concentrations of halothane from the time of conception to PND28 had a decrease in synaptic density and that these exposed animals also demonstrated behavioral disturbances (1). More recent investigations with newborn animal models have



reported apoptosis in multiple areas of the central nervous system during this period of rapid synaptogenesis when these animals are exposed to drugs that work via N-methyl D aspartate antagonists (NMDA) or Gamma-aminobutyric acid (GABA) agonists (2-11). These findings have been reported in both rodent and non human primate models. Ketamine, sevoflurane, and isoflurane have all been shown to have dose-

dependent and time-exposure effects on neuroapoptosis in the developing brain. When these agents are combined, they act synergistically with regards to both their anesthetic and neuroapoptotic effect. In addition to experiencing a dose effect, these animals also have a period, or window of vulnerability, in which these agents act in the developing brain. This window of vulnerability differs among species, and though there are no specific studies on the vulnerability period in humans, these animal models suggest that the vulnerable period in humans is probably late pregnancy to early childhood. Although the data is mixed with respect to the behavioral/neurocognitive outcomes in rodents, the scant data on the neurocognitive function following anesthetic exposure in the nonhuman primate suggest that these animals have learning disorders later in life.

To complicate the issue of anesthesia's effect on the developing brain, rodent studies have shown that ketamine exposure during this period of rapid synaptogenesis can increase neuroapoptosis and alter behavior in exposed rat pups; however, if rat pups are exposed to chronic pain (in the absence of the drug), chronic pain can also cause an increase in neuroapoptosis. However, if these animals are exposed to chronic pain and ketamine, neuroapoptosis is markedly attenuated (12). Stratmann and colleagues have shown in rat pups that exposure to increased levels of carbon dioxide results in an increase in neuroapoptosis to a level that is similar to that observed with exposure to isoflurane. However,

neurocognitive performance in the carbon dioxide exposed group was similar to control animals, while animals exposed to isoflurane had neurocognitive impairment (7). Recent animal work suggests that magnesium administration can cause neuroapoptosis (13). Thus, women receiving magnesium infusions to suppress labor or treat preeclampsia may create a risk factor for neurocognitive behavior disorders. Anesthetic agent exposure in not only the developing brain, but also in older aged rodents has also been shown to have adverse neurocognitive effects (14-18, 29, 30). With isoflurane exposure, these anesthetic effects may be more pronounced at low concentrations rather than high concentrations (17-20). How do these findings translate to the human experience? The answers are less clear. In adults, however, anesthetic exposure has been associated with postoperative cognitive dysfunction, which has been associated as a marker for 1 year postoperative mortality.

Though numerous adult studies have demonstrated an association between POCD and anesthesia, the role of comorbid disease and the natural history of age-related neurocognitive decline could not be eliminated. In a study of adult patients with coronary artery disease treated medically and surgically, the incidence of neurocognitive decline was similar in both groups, thus lending credence to comorbid disease, not anesthetic agents, being the relevant factor (21-24).

Two studies in children suggest a possible association with neurocognitive impairment and one does not. Wilder and others suggest that exposure to anesthesia may have a detrimental effect in regards to learning disabilities. In this study, the investigators reported on a cohort of 5,357 births in Rochester, Minnesota between 1976 and 1982. The incidence of learning disabilities and its relationship to anesthetic exposure was determined while adjusting for other possibly relevant co-variables (25). In this study, the authors concluded that 2 or more anesthetic exposures increased the odds of developing a learning disability. Though this paper has a significant number of strengths (sample size, inclusion of covariates, a wide range of surgical procedures, varying anesthetic exposures, no preconceived outcome results [i.e. no selection or observational bias]), there are a few limitations that raise caution in interpreting the results. Namely, the study population received anesthesia before pulse oximetry and end-tidal monitoring were the standard of care or even available. In addition, because of the retrospective nature of the study, learning disability evaluations may have been self-selective. Another study suggesting an association between anesthetic exposure and neurobehavioral outcome is the report of Kalkman and colleagues (26) on 249 children following exposure to anesthesia between 0-6 years of age during years 1987, 1991, 1993 and 1995. In a cross-sectional study, these investigators surveyed parents of children from the Netherlands who had undergone GU surgery

with a questionnaire on behavioral development. The behavioral development measurement involved the Dutch translation of the Child Behavior Check List, which was developed and validated in the US. This test, completed by the parents, reports their children's competencies and behavior/emotional problems based on the activities, social relations and school performance. The parents reported a higher trend in learning deficits. However, based on their findings, a cohort of over 6,000 patients would be needed to confirm or refute the findings.

However, in a study of twin cohorts from the Netherlands, Bartels and others reported no causal relationship between anesthesia and learning deficits. In their study of 1,143 monozygotic twin pairs, Bartels noted that twins exposed to anesthesia before age 3 had significantly more cognitive problems and lower educational achievement scores than did twins not exposed to anesthesia. However, in twin pairs that were discordant for anesthesia (i.e. one twin exposed and one twin not exposed), these twins were not different from each other (27).

What is the clinician to do with all this information (28)?

At this time, no studies demonstrate that anesthetic drugs cause harmful effects to the nervous systems of children. There is no phenotype for this anesthetic-associated neurocognitive disorder. The retrospective studies to date suggest that multiple exposures might entail risk. However, these studies suffer from all the weaknesses inherent in retrospective designs. Specifically, they cannot control for the multiple confounding variables that exist with normal growth and development. However, the scant existing human data and the clinical impression suggest that anesthetic exposures up to several hours are not associated with risk. This is similar to the findings in animal models. The bottom line for the practicing anesthesiologist and concerned parents is that at present, there is no direct evidence that exposure to anesthetic drugs, per se, is unsafe for children. Of course, there are real risks of anesthesia in children, including hypoxia and cardiovascular compromise. The available data suggest that discussions about anesthetic risks in young children continue to focus primarily on the very real risks of airway compromise, hypoxia, and cardiovascular instability, and not on the hypothetical risk of neurologic injury from anesthetic drugs. The present data do not support postponing necessary surgery in children until a later age to avoid hypothetical dangers of exposure to anesthetic drugs.

#### References:

- Uemura E, Levin ED, Bowman RE. Effects of halothane on synaptogenesis and learning behavior in rats. *Exp Neurol* 1985;89:520-9.
- Jevtic-Todorovic V, et al. Early exposure to common anesthetic agents causes widespread neurodegeneration in the developing rat brain and persistent learning deficits. *J Neurosci* 2003;23(3):876-82.
- Mellon RD, Simone AF, Rappaport A. Use of anesthetic agents in neonates and young children. *Anesth Analg* 2007;104(3):509-20.
- Loepke AW, Soriano SG. An assessment of the effects of general anesthetics on developing brain structure and neurocognitive function. *Anesth Analg* 2008;106(6):1681-707.
- Loepke AW, et al. The effects of neonatal isoflurane exposure in mice on brain cell viability, adult behavior, learning, and memory. *Anesth Analg* 2009;108(1):90-104.
- Fredriksson A, et al: Neonatal exposure to a combination of N-methyl-D-aspartate and gamma-aminobutyric acid type A receptor anesthetic agents potentiates apoptotic neurodegeneration and persistent behavioral deficits. *Anesthesiology* 2007;107(3):427-36.
- Stratmann G, et al. Effect of hypercarbia and isoflurane on brain cell death and neurocognitive dysfunction in 7-day-old rats. *Anesthesiology* 2009;110(4):849-61.
- Slikker W, Jr, et al. Ketamine-induced neuronal cell death in the perinatal rhesus monkey. *Toxicol Sci* 2007;98(1):145-58.
- Sanders RD, et al. Dexmedetomidine attenuates isoflurane-induced neurocognitive impairment in neonatal rats. *Anesthesiology* 2009;110(4):1077-85.
- Wang C, Slikker W, Jr. Strategies and experimental models for evaluating anesthetics: effects on the developing nervous system. *Anesth Analg* 2008;106:1643-58.
- Cattano D, Young C, Straiko MM, Olney JW. Subanesthetic doses of propofol induce neuroapoptosis in the infant mouse brain. *Anesth Analg* 2008;106:1712-4.
- Anand KJ, Garg S, Rovnaghi CR, et al. Ketamine reduces the cell death following inflammatory pain in newborn rat brain. *Pediatr Res* 2007;62(3):283-90.
- Dribben WH, Creeley CE, Wang HH, et al. High dose magnesium sulfate exposure induces apoptotic cell death in the developing neonatal mouse brain. *Neonatology* 2009;96(1):23-32.
- Culley DJ, Baxter M, Yukhananov R, Crosby G. The memory effects of general anesthesia persist for weeks in young and aged rats. *Anesth Analg* 2003;96:1004-9.
- Komatsu H, Nogaya J, Anabuki D, et al. Memory facilitation by posttraining exposure to halothane, enflurane, and isoflurane in ddN mice. *Anesth Analg* 1993;76:609-12.
- Stratmann G, Sall JW, May LD, et al: Isoflurane differentially affects neurogenesis and long-term neurocognitive function in 60-day-old and 7-day-old rats. *Anesthesiology* 2009;110:834-48.
- Culley DJ, Baxter MG, Crosby CA, et al: Impaired acquisition of spatial memory 2 weeks after isoflurane and isoflurane-nitrous oxide anesthesia in aged rats. *Anesth Analg* 2004;99:1393-7.
- Crosby C, Culley DJ, Baxter MG, et al. Spatial memory performance 2 weeks after general anesthesia in adult rats. *Anesth Analg* 2005;101:1389-92.
- Valentim AM, Di Giminiani P, Ribeiro PA, et al. Lower isoflurane concentration affects spatial learning and neurodegeneration in adult mice compared with higher concentrations. *Anesthesiology* 2010;113:1099-1108.
- Valentim AM, Alves HC, Olsson IA, Antunes LM. The effects of depth of isoflurane anesthesia on the performance of mice in a simple spatial learning task. *J Am Assoc Lab Anim Sci* 2008;47:16-9.
- McDonagh DL, Mathew JP, White WD, et al. Cognitive function after major noncardiac surgery, apolipoprotein E4 genotype, and biomarkers on brain injury. *Anesthesiology* 2010;112:852-9.
- Newman S, Stygal J, Hirani S, et al. Postoperative cognitive dysfunction after noncardiac surgery: A systematic review. *Anesthesiology* 2007;106:572-90.
- Selnes OA, Grega MA, Bailey MM, et al. Cognition 6 years after surgical or medical therapy for coronary artery disease. *Ann Neurol* 2008;63:581-90.
- Avidan MS, Searleman AC, Storandt M, et al. Long-term cognitive decline in older subjects was not attributable to noncardiac surgery or major illness. *Anesthesiology* 2009;111:964-70.
- Wilder RT, Flick RP, Sprung J, et al. Early exposure to anesthesia and learning disabilities in a population based birth cohort. *Anesthesiology* 2009;110:796-804.
- Kalkman CJ, Peelen L, Moons KG, et al: Behavior and development in children and age at the time of first anesthetic exposure. *Anesthesiology* 2009;110:805-12.
- Bartels M, Althoff RR, Boomsma DI. Anesthesia and cognitive performance in children: no evidence of a causal relationship. *Twin Res Hum Genet* 2009;12(3):246-53.
- McGowan FX, Jr, Davis PJ: Anesthetic-related neurotoxicity in the developing infant: of mice, rats, monkeys and, possibly, humans. *Anesth Analg* 2008;106(6):1599-602.
- Saab BJ, BacLeau AJB, Kanisek M, et al. Short-term memory impairment after isoflurane in mice is prevented by the 5-HT<sub>2A</sub>-aminobutyric acid type A receptor inverse agonist L-655,708. *Anesthesiology* 2010;113:1061-1071.
- Valentim AM, Di Giminiani P, Ribeiro PO, et al. Lower isoflurane concentration affects spatial learning and neurodegeneration in adult mice compared with higher concentrations. *Anesthesiology* 2010;113:1099-1108.

## The 9th Annual Safar Symposium and Second Multi-Departmental Trainees' Research Day

The 9th Annual Safar Symposium will be held on Thursday, June 23, 2011 on the University of Pittsburgh campus. The Symposium is a series of academic and scholarly activities spanning several days. The simulation specific part of the meeting will be held at WISER beginning at 2pm. This year's afternoon theme is "The Spectrum of Simulation - A Quest to Improving Healthcare Education." The Symposium is free, but we kindly request pre-registration.

As part of the symposium, we will also hold the second Multi-Departmental Trainees' Research Day on Wednesday, June 22, 2011, at the Thomas E. Starzl Biomedical Science Tower from

11am-6pm. The event will showcase research from the Departments of Anesthesiology, Critical Care Medicine, Emergency Medicine, Physical Medicine & Rehabilitation, and WISER

For more information, a preliminary program, and to register, please go to <http://www.wiser.pitt.edu/safar11>.

This year's symposium lecturer is Dr. Hugo Van Aken, Professor and Chairman of the Department of Anesthesiology and Intensive-Care Medicine at the University Hospital in Münster, Germany and Editor-in-Chief of Current Opinion in Anesthesiology.



## Research on the Genetics of Pain

William R. Lariviere PhD, *Assistant Professor*

Clinical observations and impressions tell us that patients with seemingly similar injuries have a wide range of reported pain. Experimental studies of healthy human subjects confirm that people experience and report widely different pain intensities in response to identical, standardized

painful stimuli in the lab (1). Genetics contribute significantly to this variability, as polymorphisms (SNPs) of specific genes are associated with variability in both experimental and clinical pain traits (1). Animal studies also show that specific genomic regions and genes are significantly linked to pain, the desirable effects of analgesic treatments, and the undesirable effects of the same treatments.

Although preclinical pain studies have been inordinately criticized for not studying clinically relevant pain models, and probably mistakenly blamed for translational failures in clinical trials, several recent findings reassure us that continued study of the genetics of sensitivity and susceptibility in preclinical pain models is warranted. Linkage analysis that discovered pain1, the genomic locus linked to pain behavior in a mouse neuropathic pain model of sciatic and saphenous nerve transection (2), has led to the recent discovery of association of polymorphisms of a key candidate gene for a calcium channel subunit (CACNG2) with postmastectomy pain (3). Another calcium channel subunit gene, CACNA2D3, has also been shown to have a highly conserved role in pain across species as diverse as the fruit fly and humans (co-authored by our department's own Inna Belfer) (4).

In my lab and program of research, we are using preclinical rodent pain models and so-called genetic reference populations of mice to determine high priority candidate genes for a number of pain traits, including in inflammatory pain models, neuropathic pain models, and more recently, the side effects of analgesic and anesthetic treatments. Using the powerful genetic model of large panels of BXD recombinant inbred strains of mice and genome-wide linkage mapping, we are able to determine regions of the genome that contain polymorphisms underlying marked strain differences in sensitivity to pain, analgesia, and side effects (5).

Recently, we reported that nociceptive sensitivity to an inflammatory irritant (in the mouse model of intraperitoneal administration of dilute acetic acid) maps to three loci, so-called quantitative trait loci (QTLs), of the mouse genome on chromosomes (Chr) 3, 10 and 16 (6). Interestingly, the locus on Chr 16 is male-specific, providing pharmacogenetic evidence for how males and females have different mechanisms of modulating painful stimuli—and perhaps indicating a modulatory mechanism lacking in females that may contribute to greater sensitivity in females. The locus on Chr 10 QTL is consistent with a previous genome-wide study of sensitivity to inflammatory nociception (in the mouse intraplantar formalin test) (7), and has led us to study the role of a candidate gene in the QTL region in both mice and humans with Jeffrey Mogil of McGill University, Carey Balaban of Otolaryngology, Inna Belfer of our department, and others.

A publication of these results is currently in revision at a top journal; we hope to have good news in the near future. Finally, patterns of genome-wide gene expression in particular brain areas of the BXD strains of mice that match the strain differences in sensitivity to acetic acid have provided us with convergent evidence for a candidate gene in the QTL on Chr 3 (6). With Inna Belfer and colleagues at Harvard, we are testing for translation of these findings to human chronic pain patients, for which preliminary results are highly promising.

Also with Inna Belfer and others, we have other promising preliminary results to indicate translation of my lab's preclinical results to humans. In a genome-wide linkage mapping study of hypersensitivity to stimuli induced by an earlier subcutaneous injection of an inflammatory irritant (melittin) that we presented at the 13th World Congress on Pain in Montreal, we have identified for the first time three genomic regions of the mouse genome containing polymorphisms and candidate genes for prolonged inflammatory hypersensitivity. These loci and candidate genes do not overlap with genomic regions and candidate genes for the immediate and brief spontaneous response of inflammatory nociception immediately after inflammatory insult. These results are also sex-specific, suggesting that the optimal treatment strategy may be to target the distinct molecular mechanisms of heritable sensitivity for each of the sexes and for each of immediate versus prolonged painful consequences of inflammation. Inna Belfer and colleagues at Harvard have strong preliminary evidence for translation of findings for a specific candidate gene in one of the three loci of my preclinical study.

This is an exciting time for translation of genetics of pain findings from preclinical models to human pain patients. Patterns of results are now beginning to emerge and interpretations are expected to be facilitated by further cross-talk between studies and researchers of rodent models and clinical pain populations. There remains a significant amount of work to identify the specific genes to target and their precise relevance to particular human clinical pain conditions, but work here in our department and across the country is continuously driving us to reach the goal of individualized care of pain patients.

### References:

1. Diatchenko, L., Slade, G. D., Nackley, A. G., Bhalang, K., Sigurdsson, A., Belfer, I., Goldman, D., Xu, K., Shabalina, S. A., Shagin, D., Max, M. B., Makarov, S. S. and Maixner, W. (2005) Genetic basis for individual variations in pain perception and the development of a chronic pain condition. *Hum Mol Genet* 14, 135-143.
2. Devor, M., Gilad, A., Arbilly, M., Yakir, B., Raber, P., Pisante, A. and Darvasi, A. (2005) pain1: a neuropathic pain QTL on mouse chromosome 15 in a C3HxC58 backcross. *Pain* 116, 289-293.
3. Nissenbaum, J., Devor, M., Seltzer, Z., Gebauer, M., Michaelis, M., Tal, M., Dorfman, R., Abitbul-Yarkoni, M., Lu, Y., Elahipanah, T., delCanto, S., Minert, A., Fried, K., Persson, A. K., Shpigler, H., Shabo, E., Yakir, B., Pisante, A. and Darvasi, A. (2010) Susceptibility to chronic pain following nerve injury is genetically affected by CACNG2. *Genome Res* 20, 1180-1190.
4. Neely, G. G., Hess, A., Costigan, M., Keene, A. C., Goulas, S., Langeslag, M., Griffin, R. S., Belfer, I., Dai, F., Smith, S. B., Diatchenko, L., Gupta, V., Xia, C. P., Amann, S., Kreitz, S., Heindl-Erdmann, C., Wolz, S., Ly, C. V., Arora, S., Sarangi, R., Dan, D., Novatchikova, M., Rosenzweig, M., Gibson, D. G., Truong, D., Schramek, D., Zoranovic, T., Cronin, S. J., Angjeli, B., Brune, K., Dietzl, G., Maixner, W., Meixner, A., Thomas, W., Pospisilik, J. A., Alenius, M., Kress, M., Subramaniam, S., Garrity, P. A., Bellen, H. J., Woolf, C. J. and Penninger, J. M. (2010) A genome-wide *Drosophila* screen for heat nociception identifies alpha2delta3 as an evolutionarily conserved pain gene. *Cell* 143, 628-638.
5. Lariviere, W. R. and Mogil, J. S. (2010) The genetics of pain and analgesia in laboratory animals. *Methods Mol Biol* 617, 261-278.
6. Nair, H. K., Hain, H., Quock, R. M., Philip, V. M., Chesler, E. J., Belknap, J. K. and Lariviere, W. R. (2011) Genomic loci and candidate genes underlying inflammatory nociception. *Pain* 152, 599-606.
7. Wilson, S. G., Chesler, E. J., Hain, H. S., Rankin, A. J., Schwarz, J., Call, S. B., Murray, M. R., West, E. E., Teuscher, C., Rodriguez-Zas, S., Belknap, J. K. and Mogil, J. S. (2002) Identification of quantitative trait loci for chemical/inflammatory nociception in mice. *Pain* 96, 385-391.

## Quality and Patient Safety Update

Dan Sullivan MD, JD, MBA, *Chief Anesthesiologist, UPMC Passavant*

On December 9, 2010, department physicians and CRNAs, UPMC safety officials, and volunteer attorneys conducted a mock anesthesia court trial. The mock trial was based on a [2009 Ohio malpractice lawsuit](#). The plaintiff in the case was a then 20 year old college student severely burned during a MAC anesthetic for removal of a facial mole. A key argument in the case was the failure of communication between the surgeon and the anesthesiologist regarding the administration of oxygen and use of the Bovie. The jury ruled in favor of the plaintiff, imposing not only an award for damages, but also a punitive award because of the defendants' failure to disclose the cause of the surgical fire to the patient and family. During our mock trial, Richard Kidwell, Esq., Senior Associate Counsel/ Director of UPMC Risk Management, noted the importance of honesty and the availability of 24/7 coverage of counsel to help practitioners communicate with patients and families.

In the mock trial, one of plaintiff's key tactics was to demonstrate the inconsistencies between the defendants' actions and a poster/advisory from ECRI on the prevention of surgical fires. Plaintiffs must establish a breach of the standard of care to prevail in medical malpractice cases. A breach of the standard is the failure to act as a similar provider would under the same circumstances. The standard of care is established by plaintiff through expert testimony, often times with reference to published standards, guidelines, or practice advisories. While every case is different based on its facts, the acts or omissions of Anesthesiologists and CRNAs may be measured against a variety of published standards or guidelines.

Quality and patient safety (QPS) remains a core focus for our department. In addition to participating in UPMC-wide safety initiatives, we keep our clinical staff up-to-date on the latest published standards, guidelines, regulations, product recalls and warnings, and practice advisories through our internal QPS SharePoint site. Since the site is only accessible to current department staff, we share some useful resources here.

Of note, a report by the American Society of Anesthesiologists Task Force on Operating Room Fires was published in the May 2008 issue of Anesthesiology (Anesthesiology 2008; 108:786-801.) This practice advisory included a one page algorithm emphasizing communication between surgical team members, minimization of the use of oxygen compatible with physiologic demands, adequate drying of alcohol based prep solutions, configuration of surgical drapes to minimize the accumulation of oxygen, and modification of the anesthetic plan to eliminate the use of an ignition source in an oxygen enriched environment. The Anesthesia Patient Safety Foundation also has made available a [high quality video presentation on surgical fires through DVD or internet streaming](#).



### LINKS TO QUALITY AND PATIENT SAFETY RESOURCES

#### *Organizations:*

- [Anesthesia Patient Safety Foundation](#)
- [National Patient Safety Foundation](#)
- [Agency for Health Care Research and Quality](#)
- [Institute for Health Care Improvement](#)
- [The Joint Commission](#)
- [ASA Closed Claims Project](#)
- [US Food and Drug Administration](#)

#### *Publications/Developments:*

- [Quality and Safety Indicators in Anesthesia: A Systematic Review](#)
- [Ongoing Professional Practice Evaluation](#)
- [The Registry Imperative](#)

#### *Regulatory:*

- [FDA Recalls, Market Withdrawals, and Safety Alerts](#)
- [Pennsylvania Patient Safety Authority Advisories](#)
- [Joint Commission Sentinel Event Alerts](#)



## Department Collects Over 200 Winter Coats and 86 Soccer Balls for Children in Afghanistan

In November 2011, CRNA Derek Reckard initiated a Department-wide clothing and soccer ball drive for children in Afghanistan on behalf of his brother and his military unit at the Armed Forces station at Bagram Airfield. Through collections and donations, we were able to send over 200 winter coats and 86 soccer balls to children in need.

In the words of Derek's brother Jay, "...these kids deserve it. They have so little. And they have never known anything but war. They live and play next to minefields and the ever present fear of danger. I don't know how the Afghan people manage, but they love their children as much as we do."

## Diversity Update

Williams Simmons MD, *Visiting Clinical Associate Professor, Attending Physician, UPMC Presbyterian-Shadyside Hospital & Chair, Advisory Committee on Diversity*

UPMC has a vibrant committee of people interested in promoting diversity among its ranks of 50,000 employees. I have been participating in many of the diversity related discussions and events at both the University of Pittsburgh and UPMC level, intentionally becoming known by the deans, chancellors, and UPMC officials involved in these efforts to secure the Department of Anesthesiology a seat at that political table.

My observation over the past year is that the richness and diversity that we already have in our department has to be paraded in plain sight on our websites, in our advertisements, at our departmentally-sponsored meetings, and in our front offices. This will create marketing that will attract diverse candidates in unspoken ways. Establishing relationships among the members of our diverse department and encouraging staff get to know each other as friends as well as colleagues (inclusiveness) will promote retention. We can create a reliable stream of applicants and accumulate the desired diversity of the workforce by encouraging the medical school to increase diversity among its candidates and by recruiting stellar candidates from their ranks into our residency, fellowships, and staff. Appropriate marketing and inclusiveness of the workplace will lead to a more diverse workforce. Without these steps, just bringing in numbers of even the best diverse candidates will lead to a frustrating revolving door.

Diversity for this department must take on a broader meaning and celebrate all backgrounds and cultures. We are among the largest academic multi-site anesthesiology departments in the world. Establishing relationships begins by knowing who we work with. In spring 2010, I started the [“Profiles of Diversity” article series](#), which will allow the staff to get to know colleagues who have used their skills in unique ways or showed extreme determination.

In September 2010, I was approached to possibly serve in a new role as Faculty Advisor/Physician Liaison for minority students in the School of Medicine. UPMC is looking for ways to retain some of the minority residents and fellows who are enrolled in various training programs. Many of them leave as soon as their training is done. In this new role, I will work to create a community among young minority doctors and integrate that community with the growing young minority professional community in Pittsburgh. Many young doctors at UPMC feel isolated, lonely, and can't wait to get out of Pittsburgh. By creating connections, friendships, and putting a positive face on being an attending physician in Pittsburgh, more minority doctors that train in Pittsburgh may find a reason to stay in Pittsburgh. My job is to create a Minority House Staff Association. While I will still have a relationship with the medical students, I will also focus on the retention of residents and fellows as staff, which UPMC agrees is the key to improving diversity throughout the system.

I also recently joined the Physician Inclusion Council at UPMC/

PITT (formally the PSD Diversity Committee) to address diversity within the entire University System. The council's co-chairs are Dr. Joel Schuman (Eye & Ear Foundation Professor and Chairman, Department of Ophthalmology/Director of UPMC Eye Center) and Dr. Jeannette E. South-Paul (Andrew W. Mathieson Professor/ Chair, Department of Family Medicine); council members include Dr. Barbara Barnes (UPMC Vice President of Sponsored Programs, Research Support, and Continuing Medical Education), Candi Castalberry-Singleton (UPMC Chief Inclusion and Diversity Officer), Paula Davis (Assistant Vice Chancellor for Health Sciences Diversity), Dr. Chentis Pettigrew (Pitt Assistant Dean for Student Affairs/ Director of Diversity Programs), and Ester Bush (President/CEO of the Urban League of Greater Pittsburgh). I also Co-Chair of the council's university wide recruitment sub-committee. We will address the issue of minority and diverse faculty recruitment and retention for all departments.

My invitation to this council was not through UPMC, but through a community connection. I am Vice President of the Gateway Medical Society (GMS), which does a lot of Community Outreach work, partners with various community groups on noteworthy projects, and conducts a successful mentorship program for 6th, 7th, and soon, 8th graders. Many of our projects are supported in kind or sponsored by UPMC.

Developing the right connections takes time. Taking proper steps for the future requires learning from the past. Creating a pipeline of academically prepared African American students, as GMS is doing with middle school students, has encouraged others, such as the staff at The [Peter M. Winter Institute for Simulation, Education, and Research \(WISER\)](#), to meet with us to design curriculum for 9th - 12th grade inner city minority male students. The mentorship program strives to direct students to finish high school, become able to earn “Pittsburgh Promise Grants” for college education, and truly utilize those funds to become future doctors and scientists. Also, UPMC is highly involved with a City of Pittsburgh program that helps to pay for city students' college education. Unfortunately, few African American males use the program or are even encouraged to go to college. We are creating a pipeline to get more minority males in college and interested in medicine.

The Pennsylvania Medical Society (PMS), with recommendation from the Allegheny Medical Society (AMS), awarded the GMS a grant as an add-on to their Heinz Foundation Mentorship program grant to initiate a new program, “Gateway to Wellness, Closing the Gap Through Healthy Lifestyles.” This program is directed at the parents and extended family of our mentored students. “Gateway to Wellness” will address healthcare topics that African Americans



experience in higher percentages than other groups, such as heart disease, high blood pressure, stroke, diabetes, prostate cancer, breast cancer, and obesity. Monthly sessions on topics, including the importance of preventive healthcare, taking medication correctly, understanding nutrition labels, making good food choices for healthy families, and the importance of physical activity will be featured. GMS physicians have volunteered to serve as instructors. Families who didn't understand the value of our efforts removed three children from our mentorship program last year. By engaging and educating families as well as students, we stand a better chance of developing a support structure for students within their homes. We started the mentorship program last year with 15 sixth graders with an average GPA of about 3.0. At the end of the first mentorship year, the average GPA had increased to 3.56 and we gave cash prizes to four of our kids who earned 4.0s.

I'm also working with a group to conduct a Women's Health Conference at the Herberman Conference Center this May. We will spotlight minority women's health issues and highlight critical medical problems such as HIV/AIDS, which is increasing

in African Americans, particularly Black women, worldwide. In September, we will hold a Provider Symposium highlighting the research and contributions of minority and diverse fellows and young faculty, who will compete for monetary prizes based on the strength and depth of their research and presentation to the group. A panel will discuss and answer questions regarding job selection, reading contracts, private practice vs. University positions, and the benefits of staying here at UPMC.

My involvement in these various local and national diversity initiatives for students from middle school all the way to the post-graduate level will help attract and retain more minority candidates, benefitting not only Pitt and UPMC, but our department as well. Creating a positive community at our institutions could encourage and increase minority medical students' interest in training as residents and fellows in Pittsburgh. My presence advertises the anesthesiology field to minority medical students, potentially increasing their interest in anesthesiology, our residency, fellowships, and the possibly of retaining them as staff.

## From the Archives: The Forgotten Heroes of Freedom House

Christine Heiner, *Scientific Writer*



*Dr. Peter Safar*

Our founding chair Dr. Peter Safar documented the first 15 years of the department (known in the beginning as the Department of Anesthesiology and Critical Care Medicine, before CCM broke off into its own department in 2002) in a 1976 book currently housed in the University of Pittsburgh's Health Sciences Library. The book reveals historical struggles and fights to establish order, policies, and needed changes within the University, UPMC, the local community, and even the nation. Many of Dr. Safar's tremendous

accomplishments are well known – he is considered the “Father of CPR”, was a three time nominee for the Nobel Prize in medicine, and established the first ICU in the US. One of Dr. Safar's lesser-known accomplishments is his role in establishing Pittsburgh's Freedom House Enterprise Ambulance Service.

In 1967, nationwide emergency medical service standards were in dire need of reform, especially in Pittsburgh. The police officially ran the city's ambulance service, and routine transfers were handled by mortuary rigs. The situation in Allegheny County and the rest of the nation was similar; ambulance services were run independently by volunteer firefighters, funeral directors, and private companies. These police and fireman were not

medically trained, and their ambulances had little, no, or outdated equipment. Many patients died en-route to the hospital. Former Pennsylvania governor and Pittsburgh mayor David L. Lawrence was no exception; in 1966 he suffered a heart attack while giving a speech at and was taken to the hospital in a police emergency wagon. A nurse who just happened to be in the crowd performed CPR and accompanied Lawrence during the transport, only to find a broken inhalator/resuscitator in the ambulance; the vehicle also swayed and rocked so much during the ride that she kept losing her balance and was unable to continue CPR. While doctors were able to resuscitate Lawrence when he finally arrived at the hospital, his brain had gone too long without oxygen and he suffered permanent brain damage. He never regained consciousness and died two weeks later.

Racism also plagued Pittsburgh and many ambulance drivers simply refused to go to economically disadvantaged and predominantly African American neighborhoods, such as the Hill District.

Phil Hallen, president of the Maurice Falk Medical Fund, had a unique idea to start a private ambulance service in Pittsburgh's Hill District. He presented his idea to Presbyterian University Hospital (now part of UPMC), who introduced Hallen to Dr. Safar. Safar had already been fervently campaigning for national and local ambulance design standards and medical training for ambulance workers for several years. But he was constantly halted by roadblocks when negotiating with local organizations for a grant to standardize emergency services in Allegheny County. Physicians felt only they were qualified to provide medical care. Allegheny county volunteer firemen resented having to take training and feared they would be put out of business. The mayor passed the buck, claiming emergency services were a county responsibility.

Hallen and Safar recruited James McCoy Jr., founder of the Hill District's Freedom House Enterprise Corporation, and Morton

Coleman, an aide to the Pittsburgh mayor and part-time social work professor at the University of Pittsburgh. Their plan was to recruit uneducated, unemployed African American men for medical training to run an ambulance service in the Hill District. The project gave them the chance to try out Dr. Safar's ideas for pre-hospital emergency care, combat racism, provide better job opportunities to unemployed African Americans, and improve services in a minority neighborhood.



The group brought Hallen's idea to fruition and in April 1967, the Freedom House Ambulance Service Committee held its inaugural meeting. Dr. Safar's first class of 20 African American men graduated the first round of medical studies and began nine-months of on-the-job training running two second-hand police ambulances donated by the city.



In their first year, Freedom House Ambulance Service made 5,868 runs and transported 4,627 patients, responding to an average of 15 calls a day, with a DOA record of only 1.9 percent. Pretty soon Freedom House was serving not only the Hill District, but the entire city of Pittsburgh. The Freedom House crew were the nation's first paramedics, literally setting the standard for emergency care for the entire nation. Hallen, Safar, McCoy, and Coleman's experiment pioneered a whole new profession – the EMT. More than 50 Freedom House paramedics and dispatchers handled more than 45,000 emergency calls over their eight-year history. They were no longer running second hand donated police ambulances, but five mobile intensive care ambulances.

The revolutionary Freedom House experiment came to a screeching halt in 1975 when the City of Pittsburgh finally decided to launch its own ambulance service. They did not renew Freedom House's contract and absorbed their assets. While a few exiting Freedom House staff paramedics joined the city's ambulance service, none were given any special consideration for jobs. The ones who stayed on were forced to take new rounds of academic tests. The new ambulance service became mostly white.

Recognition of Freedom House as the first pioneers of emergency

medical care is scarce. Try googling "Freedom House Ambulance Services" and you will see virtually no references outside the Pittsburgh media. One person who has made it his life's mission to tell the Freedom House story is Pittsburgh native and Hollywood movie medic Gene Starzenski, who created a 2009 documentary, *Freedom House: Street Saviors*. Although Gene's movie was an HBO Martha's Vineyard African American Film Festival Award finalist, he's been unable to find a distribution deal. The movie has only been shown at film festival screenings and isn't available on DVD. Gene has poured a fortune of his own money into completing and promoting the documentary. Gene interviewed Dr. Safar about Freedom House for the documentary before Safar's death in 2003. The Freedom House story also came close to being made into a major studio motion picture, but the deal fell through. Since Gene wrote his own screenplay and is still tirelessly campaigning to have the movie made.

The Freedom House story also lives on in Dr. Safar's chronicles. The story is retold in his articles, books, and in a master's degree thesis of a student who worked with him to revitalize Pittsburgh's emergency services. Among his numerous groundbreaking medical accomplishments, Dr. Safar made sure that this story wasn't forgotten.

References:

Bell RC. [The Next Page: Freedom House Ambulance -- 'We were the best'](#). Pittsburgh Post Gazette, October 25, 2009

Blake SS, Ross, M. [Freedom House: Documentary Tells the Story of the Nation's First Paramedics—Trained by Pitt Physicians](#). Pitt Chronicle, January 29, 2007.

Dyer E. [Freedom House ambulance service saved the day for many](#). Pittsburgh Post Gazette, February 28, 2007.

[Freedom House "Feature Documentary Trailer"](#). Accessed May 4, 2011.

[Freedom House: Street Saviors Documentary Website](#). Accessed May 4, 2011.

Interview, Gene Starzenski, Thursday, May 4, 2011.

Public health aspects of critical care medicine and anesthesiology. Peter Safar, editor. Publisher: Philadelphia : F. A. Davis Co., c1974.

Safar P. The Critical Care Medicine Program: Meeting the Community's Emergencies. *Communique* (University of Pittsburgh Health Center). P. 7, Vol. 1, No. 2, Summer 1972.

Safar PM, Sands PA. University of Pittsburgh Department of Anesthesiology and Critical Care Medicine: The First 15 Years 1961-1976. Publisher: Pittsburgh, Pa: Department of Anesthesiology, University of Pittsburgh School of Medicine, 1976.

Sands, PA. Political roadblocks to implementation of emergency medical services in Allegheny County. 1973 Portion of Master's Thesis for the University of Pittsburgh School of Public Health.



## Faculty Spotlight: Rita M. Patel MD

Dr. Rita M. Patel came to Magee-Womens Hospital of UPMC (MWH) in 1984 to pursue an Obstetrical Anesthesiology Fellowship. Interestingly, she appeared on Cable News Network (CNN) that year for her work on Patient-Controlled-Analgesia (PCA), a new method to administer postoperative pain medicine at that time. She instituted PCA at MWH in 1985 and it was subsequently expanded to other departmental sites. She has served the department, medical school, UPMC and the University as an anesthesiologist and educator since that time.

Prior to her current department appointment as Professor and Vice-Chair for Education, Dr. Patel was the Director of the Medical Student Program and Program Director for the Residency Program.

During her tenure directing the anesthesiology residency program, she was a finalist for the ACGME Parker J. Palmer Courage to Teach Award, given to the top 2% of program directors in the country.

As Vice-Chair for Education, Dr. Patel oversees the anesthesiology medical student, residency, fellowship, and continuing medical education programs. In addition, she has been involved in multiple faculty development programs, including organizing and directing several educational retreats and “Teaching the Teacher” sessions, throughout the years. She serves as the Program Chair of our department’s nationally recognized Anesthesiology Board Review Course, for which over 40 department faculty share their expertise and review topics relevant to certification and maintenance of certification in anesthesiology (MOCA). Dr. Patel provided the structure for our educational programs, which has been in place for almost 15 years and still exists today, which includes educational committees focused on specific functions; a method to reward clinician-educators for educational activities; and the incorporation of novel teaching methods, including Problem-Based-Learning Discussion (PBLD), Evidence-Based-Medicine, Systems-Based-Practice Projects, and Simulation. Dr. Patel serves on the ACGME Residency Review Committee (RRC) for anesthesiology. In addition, she has served on the Board of the Society for Education in Anesthesiology (SEA) and was elected to membership in the prestigious Association of University Anesthesiologists (AUA) in 2007.

Within the medical school, Dr. Patel is Associate Dean for Graduate Medical Education and Representative to the Association of American Medical Colleges Group on Resident Affairs. She is the course director for the second-year clinical procedures course (UPSOM II), and has served as a PBL facilitator for Medicine, Ethics and Society, Ethics, Law and Professionalism, Introduction to Medicine, and Clinical Epidemiology and Biostatistics. Dr. Patel is also a member of the University of Pittsburgh School of Medicine Executive and Curriculum Committees, has served



as an advisor for third- and fourth- year medical students, and as a member of the Non-Tenured Faculty Promotions and Appointment Committee. She was appointed to the Academy of Master Educators, an honor reserved for only 50 of the 2500+ physician faculty of the School of Medicine, in 2006 and served as Chair of the Teaching Residents to Teach Committee. This group provides all 500+ incoming UPMC Medical Education Program residents and fellows with an annual “Introduction to Teaching” Session at UPMC Orientation. She received the Sheldon Adler Award from the School of Medicine for Innovation in Medical Education in 2008 and the University of Pittsburgh “Pitt Innovator” Award in 2009.

Dr. Patel is UPMC’s Designated Institutional Official (DIO) for the Accreditation Council for Graduate Medical Education (ACGME) and the National Residency Matching Program (NRMP). The ACGME is responsible for the accreditation of post-MD medical training programs within the United States; they establish national standards for graduate medical education and approve and continually assess educational programs under its authority. The NRMP provides an orderly and fair mechanism to match the preferences of applicants to US residency positions with the preferences of residency program directors for those applicants. As the ACGME and NRMP DIO, Dr. Patel oversees all of the ACGME-accredited training programs at UPMC as well as the matching program for all UPMC’s residency and fellowship programs. She is responsible for 100+ accredited programs and 1300+ residents and fellows training within UPMC Hospitals and Clinical sites; the third-largest ACGME sponsoring-institution in the country. She received UPMC’s Award for Commitment and Excellence in Service (ACES) in 2004, and multiple Distinguished Service Awards from ACGME.

Dr. Patel’s clinical practice is in the subspecialty of Obstetrical Anesthesiology at MWH, a tertiary referral center for high-risk pregnancies. She is best known for her exceptionally busy days in the labor and delivery suite, and has worked with hundreds of medical students, residents, and fellows over her 30 years of clinical practice.

She has a national reputation, both within and outside anesthesiology, related to educational activities revolving around medical students, residents, fellows, and faculty. Topics include departmental and web-based evaluation systems, best practices in faculty development, training residents in the management of critical events through full-scale simulation, challenges of creating and implementing effective continuing medical education, incorporating the ACGME general competencies, professionalism, assessment of physician competence, the promotions process and teaching portfolios, and compensation for clinician-educators.

## Recent Promotions, Honors & Awards

**Karsten Bartels MD** was selected as a Junior Editor for the Joint Council on In-Training Examinations of the American Board of Anesthesiology, effective June 1, 2011 and ending May 31, 2015.

**Jacques Chelly, MD, PhD, MBA** was selected as a grant reviewer for the Combat Casualty Care Research Program (CCCRP).



*Doris K. Cope, MD, MS*

**Doris K. Cope MD, MS** was invited to serve on the Medical Education Committee of the American Medical Association (AMA) House of Delegates at their annual meeting on June 18–22, 2011 in Chicago, IL.

**Doris K. Cope MD, MS** was selected by Castle Connolly Medical Ltd. as one of America's Top Doctors.

**Andrew Herlich, DMD, MD, FAAP**, was elected to an Honorary Fellowship in

the American Association of Oral and Maxillofacial Surgeons (AAOMS).

**Mark E. Hudson MD, MBA** completed his coursework to receive the MBA from the University of Tennessee, College of Business Administration, Knoxville, TN.

**Joseph T. Samosky, PhD, et al.** won a "best poster award" at the 18th Medicine Meets Virtual Reality (MMVR) Conference in Newport, California on February 8-12, 2011 for their project "Real-Time 'X-Ray Vision' for Healthcare Simulation: An Interactive Projective Overlay System to Enhance Intubation Training and Other Procedural Training."

**Jan D. Smith, MD** received the 2010 Physician Volunteer Award and 50 year award from the Allegheny County Medical Society (ACMS) Foundation at their gala on March 19, 2011.

**Erin Sullivan MD** was appointed as Chair of the American Society for Anesthesiologists (ASA) Committee on Governmental Affairs for the year 2012.



*Manuel C. Vallejo Jr. MD, DMD*

**Manuel C. Vallejo Jr. MD, DMD** 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 Board of Directors. Dr. Vallejo also received the Stephen C. Finestone Clinical Instructor of the



*Department Faculty and Residents at PARRC 2011*

Year Award from the University of Pittsburgh Nurse Anesthesia Program Spring 2011 graduating class.

**Yan Xu PhD** was elected to the Foundation for Anesthesia Education and Research (FAER) Academy of Research Mentors in Anesthesiology.

The following residents placed in the 6th Annual Pennsylvania Anesthesiology Resident Research Conference (PARRC), held on Saturday, May 7, 2011 at the Department of Anesthesiology Penn State College of Medicine in Hershey, PA:

### Case Report - Oral Presentations

- 1st Place was awarded to **Dr. Stephen McHugh** - "Thoracic Epidural Anesthesia as a Cause of Third-degree Heart Block"

### Original Research - Oral Presentations

- 2nd Prize was awarded to **Dr. James Ibinson** - "Bold fMRI of Pain - Does Accommodation Affect Studies that Use a Single Painful Stimulation?"
- 3rd Prize was awarded to **Dr. Brian Blasiole** - "Effect of Hyperoxia on Resuscitation of Experimental Combined Traumatic Brain Injury and Hemorrhagic Shock"

## Other Announcements

Dr. Charles Luke and his wife welcomed a new baby girl, Sarah Luke, to their family on April 5, 2011.

## In the News.....

[ABCNews.com interviewed Doris K. Cope MD, MS on the safety of opioids](#) and she was also interviewed for a [WTAE-TV Story on Chronic Pain](#). [Pittsburgh Magazine](#) also named Dr. Cope as one of their 2011 Top Doctors

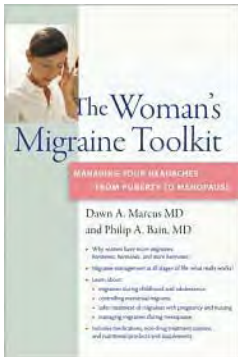
[The online talk show, Healing Hearts, interviewed Dawn Marcus MD on headache management](#). Dr. Marcus was also quoted in the October issue of [Ladies Home Journal](#) in a feature article entitled, "Is it Just a Headache?"

[The blog Engaging the Patient interviewed Jonathan Waters MD on patient safety](#)

[The Pittsburgh Post Gazette announced John P. Williams MD was one of the 2011 Allegheny County Medical Society Elected Officers](#)

## Recent Publications

### Books & Book Chapters:



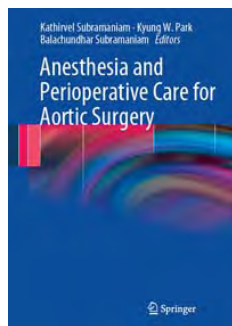
Marcus D, Bain P. The Woman's Migraine Toolkit: Managing Your Headaches from Puberty to Menopause. 256 pages. DiaMedica Publishing, New York, NY, 2011. ISBN 978-0982321928.

In Anesthesia and Perioperative Care for Aortic Surgery 1st Edition. Subramaniam K, Park KW, Subramaniam B, (editors). 448 pages, Springer, 2011. ISBN 978-0-387-85921-7:

• Drabek T, Quinlan JJ: Deep hypothermic circulatory arrest

In Smiths Anesthesia for Infants and Children, 8th edition. Davis PJ, Cladis FP, Motoyama EK, (editors), 1376 pages, Philadelphia, Elsevier, 2011. ISBN: 978-0-323-06612-9:

• Brett C, Davis PJ: Anesthesia for general surgery in the neonate.  
 • Davis PJ, Motoyama EK, Cladis FP: Special characteristics of pediatric anesthesia.  
 • Davis PJ, Bosenberg A, Davidson A, Jimenez N, Kharasch E, Lynn AM, Tofovic SP, Woelfel S: Pharmacology of pediatric anesthesia  
 • Hammer G, Hall S, Davis PJ: Anesthesia for General Abdominal, Thoracic, Urologic, and Bariatric Surgery.



Brandom BW, Visoui M: Malignant Hyperthermia. In: Pediatric Critical Care Fourth Edition, eds. Fuhrman BP and Zimmerman JJ, Mosby-Elsevier, Philadelphia, PA, Chapter 124, 2011.

Bial EJ, Cope DK. Introduction to Pain Management, Historical Perspectives, and Careers in Pain Management. In: Essentials of Pain Management, An Overview. Springer 2011.  
 Chelly JE, Mukalel J, Lucic A, Umeh U, Ben-Ari A. Regional Anesthesia in the Elderly Population, In: Manual of Geriatric Anesthesia. Editor: Sheila Ryan Barnett, 2011.

Marcus DA. Opioids for chronic pain management. In Parran T, Isaacson JH (eds.) Handbook of substance use disorders: a treatment guide. Humana Press, 2011

In Essence of Anesthesia Practice, 3rd edition, 3rd Edition. Fleisher LA, Roizen MF, (Editors) 2011, 768 p., ISBN 978-1-4377-1720-4:

- Metro DG, Phillips D: AV and Bifascicular Heart Block
- Talarico J, Tarasi P: Calcium Deficiency/Hypocalcemia
- Ball R, Cladis F: Craniosynostosis
- Chalifoux TM, Jooste EH: Coarctation of the Aorta
- Ferguson LH, Ibinson JW: Glaucoma Open-Angle
- Pomerantz JL, Vallejo MC: Herpes Type I
- Cladis F, Mansoor S: Hirschsprung's Disease
- Beaman ST, Cormican D: Hypokalemia
- Lin C, Romeo R: Hysterectomy Vaginal
- Cladis F, Pappachan S: Kasai Procedure
- Jayaraman AJ, Sakai T: Kidney Transplantation
- Planinsic RM, Young AM: Pancreas Transplantation
- Rajpal G, Vallejo MC: Rifampin
- Shah P, Sullivan E: Sick Sinus Syndrome
- Forte: Ulcerative Colitis Chronic"
- McHugh GL, Beaman ST: Ureteral Stent Placement

### Journal Papers:

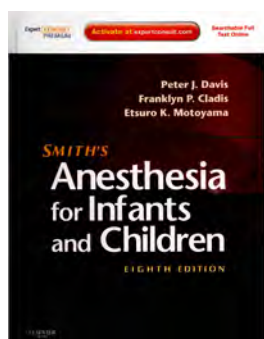
Alef MJ, Vallabhaneni R, Carchman E, Morris SM Jr, Shiva S, Wang Y, Kelley EE, Tarpey MM, Gladwin MT, Tzeng E, Zuckerbraun BS Nitrite-generated NO circumvents dysregulated arginine/NOS signaling to protect against intimal hyperplasia in Sprague-Dawley rats. J Clin Invest, 121:1646-1656., 2011

An JX, Zhang LM, Sullivan EA, Guo QL, Williams JP. Intraoperative cardiac arrest during anesthesia: a retrospective study of 218 274 anesthetics undergoing non-cardiac surgery. Chin Med J (Engl). 2011 Jan;124(2):227-32. PubMed PMID: 21362371.

Badve M, McConnell MJ, Shah T, Ondecko-Ligda KM, Poutous GW, Vallejo MC. Idiopathic Intracranial Hypertension in Pregnancy Treated with Serial Lumbar Punctures. Int J Clin Med 2011; 2: 9-12.

Blednov YA, Borghese CM, McCracken ML, Benavidez JM, Geil CR, Osterndorff-Kahanek E, Werner DF, Iyer S, Swihart A, Harrison NL, Homanics GE, Harris RA. Loss of Ethanol Conditioned Taste Aversion and Motor Stimulation in Knockin Mice with Ethanol-Insensitive  $\alpha 2$ -Containing GABAA Receptors J Pharmacol Exp Ther January 2011 336:145-154; published ahead of print September 27, 2010, doi:10.1124/jpet.110.171645

Borsari TE, Hilmi IA, Sakai T. Perioperative pulmonary aspiration of patients who have had an esophagectomy with a gastric pull-up: the value of preoperative computed tomography of the neck. J Clin Anesth. 2011 Mar;23(2):130-3. PubMed PMID: 21377077



• Herlich A, Martin BP, Vecchione L, Cladis FP: Anesthesia for Pediatric Dentistry  
 • Krane EJ, Davis PJ, Kain ZN: Preoperative preparation  
 • Luginbuehl I, Bissonnette B, Davis PJ: Thermoregulation: Physiology and perioperative disturbances.  
 • Maxwell LG, Goodwin S, Mancuso T, Baum V, Zuckerberg AL, Morgan P, Motoyama EK, Davis PJ, Sullivan K: Systemic disorders  
 • Reynolds P, Scattoloni JA, Ehrlich P, Cladis FP, Davis PJ: Anesthesia for the

pediatric trauma patient.

• Scott VL, Wahl KM, Shukla A, Soltys K, Belani KG, Beebe DS, Davis PJ: Pediatric organ transplantation.  
 • Motoyama EK, FINDER JD: Respiratory Physiology in Infants and Children  
 • Litman RS, Cohen DE, Sclabassi RJ, Callahan P, Cladis FP, Motoyama EK: Monitoring  
 • Cohen IT, Deutsch N, Motoyama EK: Induction, Maintenance, and Recovery  
 • Landsman IS, Werkhaven JA, Motoyama EK: Anesthesia for Pediatric Otorhinolaryngologic Surgery  
 • Cladis FP, Grunwaldt L, Losee J: Anesthesia for Plastic Surgery  
 • Brandom BW: Malignant Hyperthermia  
 • Struyk BP, Tyler DC, Motoyama EK: Safety and Outcome in Pediatric Anesthesia

- Brandom BW, Callahan P, Micalizzi DA. What Happens When Things Go Wrong? *Pediatric Anesthesia* Article first published online: January 21, 2011.
- Brandom BW, Larach MG, Chen MSA, Young MC. Complications Associated with the Administration of Dantrolene 1987-2006 A Report from the North American Malignant Hyperthermia Registry of the Malignant Hyperthermia Association of the United States. *Anesthesia and Analgesia*.112:1115-1123, 2011.
- Drabek T, Kochanek PM, Stezoski J, Wu X, Bayir H, Morhard RC, Stezoski SW, Tisherman SA. Intravenous hydrogen sulfide does not induce hypothermia or improve survival from hemorrhagic shock in pigs *Shock* 2011 Jan; 35(1):67-73.
- Esper SA, Waters JH. Intra-operative cell salvage: a fresh look at the indications and contraindications. *Blood Transfus*. 2011 Jan 13. doi: 10.2450/2011.0081-10. [Epub ahead of print] PubMed PMID: 21251468.
- Feng B, Gebhart GF. Characterization of silent afferents in the pelvic and splanchnic innervations of the mouse colorectum. *Am J Physiol Gastrointest Liver Physiol* 2011 Jan;300(1):G170-80.
- Goss JR, Cascio M, Goins WF, Huang S, Krisky DM, Clarke RJ, Johnson JW, Yokoyama H, Yoshimura N, Gold MS, Glorioso JC (2011) HSV delivery of a ligand-regulated endogenous ion channel gene to sensory neurons results in pain control following channel activation. *Mol Ther*. 19(3): 500-506
- Harris RA, Osterndorff-Kahaneka E, Ponomareva I, Homanics GE, Blednov YA. 2011. Testing the silence of mutations: Transcriptomic and behavioral studies of GABAA receptor Alpha1 and Alpha 2 subunit knock-in mice. *Neuroscience Letters*. 188:31-35.
- Kroboth FJ, Zerega WD, Patel RM, Banes BE, Webster MW: Non-Standard Programs: The University of Pittsburgh Medical Center's Next Frontier in Graduate Medical Education. *Academic Medicine*: February 2011 – Vol 86, Issue 2, pp. 180-186
- Lariviere WR, Fiorenzani P, Ceccarelli I, Massafra C, Sorda G, Di Canio C, Aloisi AM. Central CRH administration changes formalin pain responses in male and female rats. *Brain Res*. 2011 Feb 24. [Epub ahead of print] PubMed PMID: 21300038.
- Li HH, Xu J, Wasserloos KJ, J Li, Tyurina YY, Kagan VE, Wang XR, Chen AF, ZQ Liu, Stoyanovsky D, Pitt BR. Zhang LM. Cytoprotective effects of Albumin, Nitrosated or Reduced, in Cultured Rat Pulmonary Vascular Cells. *Am J. Physiol Lung Cell Mol Physiol*: 2011 Jan 14 PMID:21239532
- Mao J, Gold MS, Backonja M. (2011) Combination Drug Therapy for Chronic Pain: A Call for More Clinical Studies. *J Pain* 12(2): 157-66
- McIvor W, Orebaugh S, Lin C, Gierl B, Zehnaly A, Kwok G, et al. Two Human Patient Simulations of Patients Having Acute Uncal Herniations. *MedEdPORTAL*; 2011.
- Nguyen KT, Kitisin K, Steel J, Jeyabalan G, Aggarwal S, Geller DA, Gamblin TC. Cirrhosis is not a contraindication to laparoscopic cholecystectomy: results and practical recommendations. *HPB (Oxford)*. 2011 Mar;13(3):192-7. doi: 10.1111/j.1477-2574.2010.00270.x. Epub 2011 Jan 25. PubMed PMID: 21309937.
- Rajpal G, Pomerantz J, Ragni M, Vallejo M, Waters J. 2011. The Use of Thromboelastography for the Peripartum Management of a Patient with Platelet Storage Pool Disorder. *International Journal of Obstetric Anesthesia*. 20:173-177.
- Schreiber KL, Matsusaki T, Bane BC, Bermude, CA, Hilmi IA, Sakai T. Accidental Insertion of a Percutaneous Venovenous Cannula into the Persistent Left Superior Vena Cava of a Patient Undergoing Liver Transplantation. *Canadian Journal of Anesthesiology* 2011
- Schwartz ES, Christianson JA, Chen X, Davis BM, Albers KM, Gebhart GF Synergistic role of TRPV1 and TRPA1 in pancreatic pain and inflammation. *Gastroenterology* 140:1283-1291, 2011.
- Scouras NE, Matsusaki T, Boucek CD, Wells C, Cooper EA, Planinsic RM, Sullivan EA, Bermudez CA, Toyoda Y, Sakai T. 2011. Portopulmonary hypertension as an indication for combined heart-lung-liver or lung-liver transplantation: literature review and case presentation. *Liver Transplantation*. 17:137-143.
- Shellington DK, Du L, Wu X, Exo J, Vagni V, Ma L, Janesko-Feldman K, Clark RS, Bayir H, Dixon CE, Jenkins LW, Hsia CJ, Kochanek PM. Polynitroxylated pegylated hemoglobin: A novel neuroprotective hemoglobin for acute volume-limited fluid resuscitation after combined traumatic brain injury and hemorrhagic hypotension in mice. *Crit Care Med*. 2011 Mar;39(3):494-505.
- Tanaka, T, Shinoda, M, Feng, B, Albers, KM, Gebhart, GF. Modulation of visceral hypersensitivity by glial cell line-derived neurotrophic factor (GDNF) family receptor alpha-3 in colorectal afferents. *Am J Physiol* 300: G418-424, 2011.
- Valenta J, Brodská H, Drabek T, Hendl J, Kazda. A High dose selenium substitution in sepsis: a prospective randomized clinical trial *Intensive Care Med*. 2011 Feb 24. [Epub ahead of print]
- Venkataramanappa V, Boujoukos AJ, Sakai T. A diagnostic challenge of the tracheal tear with a double lumen tracheal tube: a case developed with a massive air leak from the mouth during mechanical ventilation. *Journal of Clinical Anesthesia* 23:66-70;2011 (IF 1.324)
- Visoiu M, Yang C. Ultrasound-guided bilateral paravertebral continuous nerve blocks for a mildly coagulopathic patient undergoing exploratory laparotomy for bowel resection. *Paediatr Anaesth*. 2011 Apr;21(4):459-62
- Wang HJ, Kleinhammes A, Tang P, Xu Y, Wu Y. 2011. Temperature Dependence of Lysozyme Hydration and the Role of Elastic Energy. *Physical Review E*. 83:031924-1 - 031924-8.
- Waters JH, Dyga RM, Waters JFR, Yazer MH. The volume of returned RBCs in a Large Blood Salvage Program: Where does it all go? *Transfusion* 2011 [Epub ahead of print]
- Werner DF, Swihart A, Rau V, Jia F, Borghese CM, McCracken ML, Iyer S, Fanselow MS, Oh I, Sonner JM, Eger EI, Harrison NL, Harris RA, Homanics GE. Inhaled Anesthetic Responses of Recombinant Receptors and Knockin Mice Harboring 2(S270H/L277A) GABAA Receptor Subunits That Are Resistant to Isoflurane *JPET* January 2011 vol. 336 no. 1 134-144
- Xiong, W, Cheng K, Cui T, Godlewski G, Rice KC, Xu Y, Zhang L. Cannabinoid Potentiation of Glycine Receptors Contributes to Cannabis-Induced Analgesia. *Nature Chemical Biology*. published online April 3, 2011.

## Anesthesia and Analgesia Paper by Brandom, et al. Ranked in Top 10 Articles Read by MDxlinks Physician Subscribers



“Complications Associated with the Administration of Dantrolene 1987 to 2006: A Report from the North American Malignant Hyperthermia Registry of the Malignant Hyperthermia Association of the United States” by Professor Barbara Brandom, MD, et al. was published in the May 2011 issue of *Anesthesia and Analgesia*. The journal paper also ranked in MDLink’s “Week’s Best Anesthesia Articles”, the top 10 most-read anesthesia articles by US

physician subscribers, for the week of April 20, 2011 - April 27, 2011.

Dr. Brandom and her co-authors report the complications of the medication Dantrolene, which is the only specific treatment for malignant hyperthermia (MH), a genetic disorder in which life-threatening temperature increase is induced by inhalation anesthetics and succinylcholine. Dr. Brandom is the Director of the North American MH Registry (NAMHR). With help from the MH Association of the United States, the NAMHR collect data from MH susceptible people, their families, and health care providers.

The NAMHR, initiated at Penn State Hershey by Dr. Marilyn Larach in 1988, is now housed in the Department of Anesthesiology at UPMC. The extensive data on clinical MH in the NAMHR has supported the development of blood based diagnostic testing of MH susceptibility through the Center for Medical Genetics and the Molecular Genetics Diagnostic Laboratory at UPMC. We can learn more about this condition and our MH patients can better understand their risks. Deanna Steele, CGC, discusses this test with potential patients and health care providers, and can be reached at 800-454-8155.

## Paper by Vallejo et al. Selected for Faculty of 1000 Medicine

Vallejo MC, Phelps AL, Singh S, Orebaugh SL, Sah N. Ultrasound decreases the failed labor epidural rate in resident trainees. *Int J Obstet Anesth.* 2010 Oct;19(4):373-8. was selected for [Faculty of 1000 Medicine](#), a literature awareness service that identifies and evaluates the most important published medical articles based on the recommendations of a Faculty of over 2000 peer-nominated leading researchers and clinicians. The identification and inclusion of this article provides peer recognition of its scientific merit and the positive contribution it makes to the medical literature.

## Glycine Receptor and Cannabis-Induced Pain Relief Paper by Xu, et al. Stirs Excitement

[“Cannabinoid Potentiation of Glycine Receptors Contributes to Cannabis-Induced Analgesia”](#) by Yan Xu PhD (Vice Chair for Basic Sciences) and co-authors from the National Institutes of Health was published in *Nature Chemical Biology* (advance online publication, April 3, 2011). *Nature Chemical Biology* has a 2009 ISI impact factor of 16.058, making it the leading primary research journal not only in chemical biology, but also across related chemical sciences.



Using mutagenesis and NMR analysis, Dr. Xu and colleagues identified a serine at 296 in the transmembrane domain of the GlyR critical for the potentiation of the current passing through the GlyR channel by  $\Delta^9$ -tetrahydrocannabinol (THC), a major psychoactive component of marijuana. Dr. Xu and colleagues also provided evidence to suggest that the site and the action of mechanism of cannabinoid potentiation of GlyRs critically contribute to the cannabis-induced analgesic effect. The group found a way to separate THC’s psychoactive power (by acting on CB1 receptors) from its analgesic power (by acting on glycine receptors), uncovering the potential to harness THC’s analgesic powers without the psychoactive side effects. These findings could lead the way to new painkillers without side effects such as impairment of short-term and working memory, psychomotor coordination, and concentration.

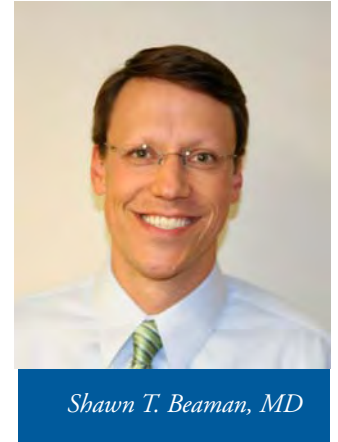
The publication by Dr. Xu and colleagues has attracted international media attention, sparking articles in *NewScientist*, *The Toronto Sun*, *The Times of India*, and *LA Weekly*:

[Cannabis-like Drugs Could Kill Pain Without the High](#)  
[Pot That Kills Pain With no High is Possible: Study](#)  
[Can Marijuana Kill the Pain Without the High?](#)  
[Modified Cannabinoid THC Offers Pain Relief Without the Buzz](#)  
[Marijuana Pain Reliever Without ‘Unwanted Highs’ Possible: L.A. Pot Shops Frightened at Prospect](#)  
[Scientists Set to Develop Cannabis Like Drugs to Relieve Pain Without the High](#)  
[Cannabis Relieves Pain Without the High](#)  
[Cannabis-like Drugs ‘Could Provide Pain Relief Without the High’](#)

# Faculty & Fellows on the Road

## Lectures & Presentations:

**Shawn T. Beaman, MD** will be presenting the Grand Rounds lecture “Reacting to Patient Death” at the Penn State Department of Anesthesiology, Hershey, PA, on Thursday, June 9, at 6:30am.



*Shawn T. Beaman, MD*



*Lawrence M. Borland, MD*

**Lawrence M. Borland MD** will be lecturing at the following Northwest Anesthesia Seminars (NWSA):

CURRENT TOPICS IN ANESTHESIA, Arlington, Virginia, June 14-17, 2012

- Evaluation of the Difficult Pediatric Airway
- Approaches to the Difficult Pediatric Airway
- Yo Man, Youn's the Problem: Dental Trauma from Airway Attempts
- Thermal Control in Pediatrics: The Connection with Water Losses
- Anesthesia for Pediatric Trauma Patients
- Pediatric Craniofacial Trauma

Dr. Borland will also be Co-Chairing and lecturing at the 6th International Symposium on the Pediatric Airway, June 17-19th, 2011, Denver Children's Hospital, Denver (Aurora), CO.

Sat, June 18, 2011:

- Base of Tongue/Epiglottis Collapse, Robert Yellon, MD and Lawrence Borland, MD, 11:30am
- Videostroboscopy, Lawrence Borland, MD and Joseph Dohar, MD, 2:30pm

Sun, June 19, 2011:

- Introduction, Lawrence Borland, MD, 8:00am
- Trisomy 21 and the Airway, Lawrence Borland, MD, 10:30am



*Takahashi Matsusaki  
MD, PhD*

**Jacques E. Chelly MD, PhD, MBA** will present “Current Concepts in Acute Pain Management” as part of a panel at the New York State Society of Anesthesiologists (NYSSA) Postgraduate Assembly on Saturday December 10, 2011 from 1:00-3:30 PM.

**Takahashi Matsusaki, MD, PhD** will present “Cardiac Arrest During Adult Liver Transplantation: Incidence, Cause, Outcome, And Risk Factors” (authors Matsusaki T, Hilmi IA, Aggarwal S, Boucek CD, Planinsic RM, Humar A, Sakai T [mentor]) at the Joint International Congress of ILTS, ELITA, & LICAGE, in Valencia, Spain on June 22-25, 2011.



*Jacques E. Chelly MD,  
PhD, MBA*

## Posters:

International Anesthesia Research Society Annual Meeting, Vancouver, Canada. May 21-24, 2011:

- Sakai T, Metro DG, Patel R, Xu Y. Can We Facilitate the Scholarly Activity of Anesthesiology Residents?

Society for Education in Anesthesia 26th Annual Meeting, San Antonio, Texas, June 3-5, 2011:

- Emerick T, Metro DG, Patel RM, Sakai T. Scholarly Activity Points: A New Tool for Evaluation of Scholarly Productivity by Residents. Scholarly Activity Points: A New Tool for Evaluation of Resident Scholarly Productivity.
- Backeris ME, Matsusaki T, Metro DG, Patel RM, Sakai T. Impact of Incentive System on Faculty Teaching in Operative Room (OR) Evaluated by Anesthesiology Residents.
- Sakai T, Patel RM, Xu Y, Metro DG. Director of Resident Research Rotation: a Facilitator for Resident Scholarly Activity.
- Sakai T, Karausky PL, Valenti SL, Sandusky SL, Hirsch SC, Emerick T, Xu Y. Research Training for Residents as Lead Investigators in a Simulated Prospective Randomized Clinical Trial: Use of PBLD Format.

## We Would Like to Hear From You!

*Alumni Connection* is not only a forum to keep alumni informed of the latest department news, but also what other alumni are up to. We would like to hear about where you are working and your recent projects and accomplishments!

Please send any news or suggestions to Christine Heiner at [heinerc@upmc.edu](mailto:heinerc@upmc.edu) or 412-647-7353.

## Alumni Fund

Please help us continue the tradition of excellence by supporting the department with your tax deductible gift. Your support will enable us to expand our efforts in teaching, research and clinical care.

To learn more about ways to support the department, include the department in your estate plans, or about planned or differed gifts, or gifts of securities, please contact:

Gary Dubin  
Medical and Health Sciences Foundation  
Forbes Tower, Suite 8084  
3600 Forbes Avenue at Meyran Avenue  
Pittsburgh, PA 15213  
412-647-9113  
Fax: 412-647-8300  
[dgary@pmhsf.org](mailto:dgary@pmhsf.org)

Please make checks payable to: University of Pittsburgh/  
Anesthesiology  
THANK YOU!

The University of Pittsburgh Department of Anesthesiology gratefully acknowledges the individuals [online](#) who have contributed to the Alumni Fund. Thank you for your generous donations.



# University of Pittsburgh

Department of Anesthesiology  
University of Pittsburgh/UPMC  
A-1305 Scaife Hall  
3550 Terrace Street  
Pittsburgh, PA, 15261  
412 647-2994  
[www.anes.upmc.edu](http://www.anes.upmc.edu)

John P. Williams MD  
*Peter and Eva Safar Professor and Chair  
Associate Medical and Scientific Director, UPMC  
International Division*

Jacques E. Chelly MD, PhD, MBA  
*Vice Chair for Clinical Research*

Doris K. Cope MD  
*Vice Chair for Pain Medicine*

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

Rita M. Patel MD  
*Vice Chair for Education*

Paul E. Phrampus MD  
*Director, Peter M. Winter Institute for Simulation,  
Education, and Research (WISER)*

Yan Xu PhD  
*Vice Chair for Basic Sciences*

Department of Anesthesiology  
*Alumni Connection*

John P. Williams MD  
*Senior Editor*

Christine Heiner  
*Editor & Designer*

*Alumni Connection* is published twice a year in the Spring and Fall. Issues of *Alumni Connection* are archived on our website, [www.anes.upmc.edu](http://www.anes.upmc.edu).

To join our e-mail distribution list to be notified when new issues are posted, please contact Christine Heiner at [heinerc@upmc.edu](mailto:heinerc@upmc.edu) or 412-647-7353.