



AUA

Association of University Anesthesiologists

Update

Fall 2012

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President’s Message: Advancing Our Academic Objects: We Need Your Innovative Ideas

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It has been 60 years since Austin Lamont, a Professor at the University of Pennsylvania, wrote to Henry Beecher of Harvard to propose the formation of a national organization that became the Association of University Anesthesiologists. In this letter, he stated that the primary purpose of forming the small group was to exchange information regarding research. The four founders (Beecher, Dripps, Lamont, and Papper of Columbia) had a series of exchanges between 1952-1954, that is eloquently discussed by Dr. Papper in his special article published in *Anesthesia & Analgesia* in 1992, about how best to form such a group with this purpose. These giants of the specialty were formally elected as the four founders in 1955 and so began the formal history of this organization. Despite the comments of these luminaries regarding the state of research in the specialty at that time, in the first issue of the journal *Anesthesiology* in 1940 is an editorial regarding the role of research within the development of the specialty:

The specialty of anesthesia is finally becoming interpenetrated with the scientific attitude. This attitude, joined with resolute conviction, will be an answer to its problem. There is a definite return to the truly scientific tradition and an alignment that gives it a form consistent with modern science. The anesthesiologists have accepted the challenge imposed with the new order of anesthesia.

Over the intervening years, the size of the membership of the AUA has increased and the scientific nature of the meetings has continued. It is in this context that we must review the mission of the AUA and its relevance today:

The mission of the Association of University Anesthesiologists (AUA) is to advance the field of academic anesthesiology and to support the career development of academic anesthesiologists by (1) promoting scholarship in anesthesiology education, (2) encouraging original investigations in basic translational and clinical science, (3) advocating for academic anesthesiology and (4) fostering the open and informal exchange of ideas among practitioners in the field.

It is clear that academic anesthesiology, and in fact all of academic medicine is at a crossroads with pressures and threats that could not have been imagined by AUA’s founders and charter members. Given the external pressures of the implementation of the Affordable Care Act, the bending of the healthcare cost curve in order to decrease the rate of healthcare inflation and the flattening or reduction in NIH and other government funding sources, what role can and should the AUA play in ensuring the future of our academic specialty? We have always



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President's Message: Advancing Our Academic Objects: We Need Your Innovative Ideas

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been an honorific body with a robust annual meeting in which senior and junior scientists from all interests and subspecialties of Anesthesiology get to mix and discuss their latest work. How are we to deal with this changing landscape?

We are fortunate that during his Presidency, Ron Pearl and the Council underwent a strategic planning session and outlined ways in which the AUA can provide more value to the specialty. The group defined a few key areas to focus upon:

- 1. Increase opportunities for junior academic anesthesiologists, fellows and residents interested in careers in academia to become involved in the Association.**

One way to achieve this goal is to increase ties and explore collaborative opportunities with the Foundation for Anesthesiology Education and Research's (FAER) mentoring academy. We have already started including a mentoring event at the Annual meeting, have a regular FAER report in the AUA newsletter, provide financial support for FAER, and will continue to explore more opportunities.

- 2. Increase AUA's visibility and improve its image in the academic and scientific community.** This includes work on the website and other communication venues.
- 3. Conduct advocacy activities on behalf of academic anesthesiology.** This includes development of white papers and other communications on important issues in academic anesthesia in conjunction/cooperation with other stakeholders. Increase overall communication to members on topics in academic anesthesia.

"Given the production pressures on all academic departments, should we forgo our research heritage and focus only on our clinical and educational missions? I would argue that such a strategy is exactly the wrong one to implement at this point in time."

Given the production pressures on all academic departments, should we forgo our research heritage and focus only on our clinical and educational missions? I would argue that such a strategy is exactly the wrong one to implement at this point in time. Complacency with the status quo in the manner in which we deliver our product, outstanding patient outcomes when undergoing surgery or procedures, can only lead to irrelevance. Many industries have watched others innovate around them while they have been complacent with their past accomplishments. This underscores the importance of research and innovation in support of maintaining and continuously improving on clinical excellence. Our research mission, and the role

that the AUA can play in fostering it, is what distinguishes us to our colleagues and eventually the public. We should continue to strive to do better. This includes advancing our work in basic, translational, clinical and health services research. It includes studying how we deliver care and education and learning from these endeavors. I suggest that advancing these goals and those outlined in the strategic plan should be the focus of AUA's efforts.

I look forward to your thoughts at this critical and exciting time for both academic anesthesiology and academic medicine. As Einstein said: "We cannot solve our problems with the same thinking we used when we created them."

Feel free to email me with your innovative ideas or thoughts at lee.fleisher@uphs.upenn.edu.

EAB Call for Nominations

The AUA Educational Advisory Board (EAB) helps to develop programs for the Annual Meeting. These programs are oriented toward the educational mission of our specialty. The EAB also contributes articles to the AUA newsletter. The full committee meets during the AUA Annual Meeting (April 4-6, 2013 in Miami, Florida).

Committee members are expected to attend the AUA Annual Meeting and the EAB committee meeting as well as actively participate in all committee activities. AUA members who are interested in serving on the EAB, who plan on attending AUA Annual Meetings and who are willing to help undertake the work of the committee are encouraged to submit their names and a brief CV. Alternatively, AUA members can submit the name of another member along with a brief CV. Nomination materials should be sent by Friday, December 7, 2012 to: David J. Murray, M.D., EAB Chair, at murrayd@notes.wustl.edu.

The AUA Council and the EAB chair will choose three candidates who will then be contacted in the winter to confirm their willingness to serve. The three-year term begins at the 2013 AUA Annual Meeting in Miami.

EAB Report: Online education and flipping the classroom in training of anesthesia residents

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With every passing year, residents are having to learn more and more with no change in the length of their residencies. Educators are increasingly looking for innovative teaching methods that yield greater efficiencies in the imparting and absorbing of information.

One such novel approach is the ‘flipped-classroom’ model, used by Salman Khan. The “flip” refers to a reversal of the typical orientation of the day’s learning – students first watch the lecture component online and then come to the ‘classroom’ for active discussion and exploration of the topic with an instructor and fellow trainees. Is this “flipped classroom” a viable model for anesthesia residents?

Presently, PowerPoint presentations run the risk of relegating housestaff to disengaged boredom, driving them to the relative stimulation of their smartphones, while teaching points go unheeded.

Instead, imagine the best faculty in the nation producing an interactive teaching video no longer than 15 minutes followed by a simple formative assessment to foster active engagement. This virtual video library could then be used by all anesthesia trainees in the country, and afterwards reinforced by the department’s own faculty in an interactive case based discussion.

On April 19, 2012 the majority of the 2 hour meeting of the Stanford University Faculty Senate was dedicated to online learning.¹ Several take home points made an impression:

- The printed book was the most important educational technology ever invented because it allowed students to learn even if the originators of the knowledge were not around.
- If the book transformed higher education by increasing the efficiency with which knowledge could be disseminated, then will digital technology have a similar effect? A convergence of several innovations suggests the answer is yes.
- These innovations include: video on demand (residents can watch the videos when it is convenient for them), widespread Web connectivity, automated assessment/feedback (multiple-choice questions that are easy to

grade and provide quick feedback), social media allowing trainees to interact, and semi-synchronous delivery whereby professor and students need not get together at the same time.

- The concept of “crowd-sourcing” - the population of students learning online at a given time may be high enough such that if one student has a question, there will likely be another student who has the answer.



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Separating aspects of the anesthesia curriculum best suited for dissemination in a digital/online environment and those that still need a more traditional teaching format deserves research attention.

Observations from the Kahn Academy’s data on “flipped” classrooms in elementary schools point to two findings.² First, learners who might otherwise be considered “slower” tend to catch up when they are given the opportunity to revisit topics as many times as necessary. Second, the class as a whole progresses through the material faster than a traditional classroom. The online course material is packaged in 10-minute multimedia lectures for use online at home. This duration is consistent with the shortened attention span of today’s society. Even I find myself getting fidgety in a traditional lecture after the first 20 minutes. When students come to class the next day, they do their “homework” during school hours and the teacher acts as a common tutor. This model has also been successful at the university level. A physics curriculum taught in smaller groups with multimedia and progressive quizzing outperformed their counterparts by 33% and ranked higher on tests of engagement and attendance.³

Incorporating online content is an appealing solution, but what forms are available? Developing, posting, and finding material online is easy. OpenAnesthesia makes available a variety of content including short videos for learning (http://www.openanesthesia.org/index.php?title=TEE_of_the_Month).⁴ Another resource under development is the Journal of AudioVisual Medicine where anyone can submit a video lesson and the videos are rated by members and peers. When a given video is rated highly, it rises to the top (<http://javmed.com/Publications/Browse?category=Anesthesiology>). Another website, <http://www.anesthesiaillustrated.com/>, is an encyclopedia of anesthesia videos.

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EAB Report: Online Education and Flipping the Classroom in Training of Anesthesia Residents

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A casual audit of YouTube reveals approximately 800 versions of central-line insertion technique, and around 500 versions of airway management (a surprising number show people intubating themselves) with countless methods performed with varying degrees of competence and completion.

Stanford University offers 43 courses on its YouTube channel and is getting 1.7 million views a month.⁵ At the Department level, on the Stanford Anesthesia website (<http://ether.stanford.edu/>) we have archived hundreds of lectures given in the normal course of Department activities. These videos require password access and are meant for trainees unable to attend a particular session live. In addition, some of our current residents tell me they view other videos not specifically designated for them as needed for review purposes. The learners are choosing their content based on their self-assessment. These lectures are generally not tailored for flipping the classroom as they are usually 45-60 minutes in length, and are not designed for discussion afterwards.

Recently-trained clinicians may also have been exposed to the Videos in Clinical Medicine series from the New England Journal of Medicine. Many employers and universities are using online content, or “e-learning,” for such tasks as HIPAA training which have embedded quizzes.

Flipping the classroom seems like a natural fit for postgraduate medical education because much of the studying during residency is already self-directed. The traditional model is similar to the flipped classroom. As it is, residents review material before an OR case and apply it in a subsequent clinical context. Adding online content should increase the yield of self-directed study time. 99% of our incoming residents carry smartphones. Many would rather read lectures of choice online and review pertinent literature at home based on upcoming cases, than discuss it formal scheduled conference settings.

With little additional effort, these web videos and archives could have accompanying review notes posted in the form of a discussion board, or as an open-source wiki-style compendium. The material can be further compounded with follow-up immersive simulation sessions targeted at recent topics.

An example of such an interactive online learning system is being used to prepare interns for Stanford anesthesia residency. The “Successful Transition to Anesthesia Residency Training” (START) program is an online anesthesia education and mentorship program.⁶ START blends e-learning with virtual mentorship. It combines different teaching styles and modes

of delivery to teach interns using online technology. Each START module contains three components: 1) a video podcast featuring a learning trigger and debriefing session; 2) a lecture accompanied by slides and quizzes; and 3) an interactive/collaborative assignment. Drs. Larry Chu and Kyle Harrison who run the START course have noted that the key issue with flipping the classroom is getting faculty to change their practice of simply giving the PowerPoint slide set they have given many times previously. Flipping requires reducing the important topics to 20 minutes, recording the lecture with high quality video and audio, and optimizing the additional teaching time during the interactive session.

We are encouraging a few select faculty members to try the flip approach for their scheduled lectures, and are doing a trial and error approach to see what works best. One aspect we are testing is placing some of the text of what the speaker is saying written on the video as a visual aid to learner.

This academic year Stanford Anesthesia is launching a flipping the classroom initiative for the categorical anesthesia interns titled: Intern PReparedness using INnovations in Teaching (ImPRINT). Dr. Ankeet Udani is the resident lead for this

innovative curriculum to increase intern’s preparedness to deal with common medical problems seen in the patient ward. He is the Senior Resident Teaching Scholar, a resident leadership position to promote the education mission in the department. ImPRINT consists of a half-day per month module which includes a prerecorded, streaming, 18-minute lecture viewed by the interns prior to group

discussion moderated by a faculty expert. Following discussion, interns undergo high-fidelity simulation, a directed, hands-on practice session with a part-task trainer, and debriefing.

Flip style units allow learners to advance at their own pace, resulting in the group to progress faster. It may be worthwhile to link this type of education with competency-based training as expected by the Next Accreditation System, the ACGME’s new vision for physician training. Several post-graduate medical programs are working to allow residents to progress based on competency rather than in the common stepwise year-by-year fashion.

More research is required to measure the benefits of new teaching techniques. Combined searches for medical education and “flip”, “flipping”, and “flipping the classroom” all were negative in MeSH, Pubmed, and Google Scholar. A pilot project of flipping the classroom for the core biochemistry course for medical students at Stanford found that positive reviews by the

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students went up, attendance at lectures increased from 30% to 80%, and faculty became newly energized in revamping and revitalizing their course.⁷

In conclusion, computers first entered American classrooms in the mid-1970s and now, as then, we are looking for more efficient ways for learners to learn and for teachers to teach. The content of the post-graduate medical curriculum grows annually due to the rapid expansion of the medical knowledge base, yet the length of training has remained stable. Finding time to teach and train more residents in the requisite time frame is challenging with constraints on budgets, number of teachers, and duty-hours restrictions as simultaneous obstacles.

The “flipped classroom” is a viable new model for competency-based resident education. Going forward, the challenge to educate Millennials born during or after the general introduction of digital technology will be to emphasize not the technology but rather advance instruction that increases “stickiness” (memorable and comprehensible leading to retention) of what is presented. Many faculty members believe we should be actively flipping all our lectures. This will require training faculty members who are used to PowerPoint presentations to change their style of teaching. Freeing up class time for higher-order and more interactive curricula seems like a good idea. This should augment but not replace personal student teacher 1:1 interaction while caring for a patient.

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AUA 60th Annual Meeting

April 4-6, 2013

J.W. Marriott Marquis
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Hosted by
Department of Anesthesiology
Perioperative Medicine and
Pain Management
University of Miami, School of Medicine

SAB Report: Perioperative Neuroprotection: Past, Present, and Future Roles of Anesthesiologists

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After the discovery of the neuroprotective role of anesthetic agents on the brain, anesthesiologists played a significant role in furthering understanding by performing studies to qualify, more specifically, different anesthetic agents' effects on various subjects and patients. This involvement has been, and continues to be, crucial because brain injury remains a serious problem — it carries an increased morbidity and mortality rate, is a driving force for increased health care costs, and is associated with significant impairment of quality of life. It is critical that anesthesiologists continue and expand on the work they have done in this area through the years, maintaining their consistent involvement with all of the aspects related to perioperative neuroprotection in both basic science and clinical arenas.

Anesthetic agents were first known to be neuroprotective more than four decades ago, when barbiturates were found to reduce cerebral metabolic rate. The decades of the 70s through the 90s brought growing understanding of the various aspects related to neuronal injury, brain pathophysiology and neuroprotection related to anesthetic agents. In spite of the initial belief that the reduction of brain metabolism induced by barbiturates did not exceed the reduction induced by cerebral ischemia and, therefore, there was no additional barbiturate-induced protective effect (Michenfelder JD. *Anesthesiology*. 1974; 41:397-403), other investigators found barbiturates to be beneficial in the settings of acute focal ischemia (Smith A. *Stroke*. 1974; 5:1-7). The dispute extended to the cardiac arena. Nussmeier reported barbiturate neuroprotection in coronary artery bypass surgical patients (Nussmeier NA. *Anesthesiology*. 1986; 64:165-70), findings contested later by a similar study of Zaidan (Zaidan JR. *Anesthesiology*. 1995; 82:1237-45). Meanwhile, Peter Safar, M.D. first reported emerging evidence of the neuroprotective effect of mild hypothermia in his models of cardiac arrest in dogs; these studies finally led, in recent years, to the introduction of induced moderate hypothermia after cardiac arrest as an effective method of brain resuscitation in humans. Safar was the first to study cerebral blood flow and metabolism after prolonged cardiac arrest, a difficult concept in those early years, and the first to demonstrate the transient cerebral hyperemia followed by extended hypoperfusion encountered during cardiac arrest (Lind B. *Resuscitation*. 1975; 2:97-113). All of these new studies and evidence emerging in a relatively narrow span of time led

"Safar was the first to study cerebral blood flow and metabolism after prolonged cardiac arrest, a difficult concept in those early years, and the first to demonstrate the transient cerebral hyperemia followed by extended hypoperfusion encountered during cardiac arrest."

to inconsistent study design and inconsistent proper control of all variables, temperature being one of the most important ones, with the final consequence of controversial results and findings.

Most inhaled anesthetic agents are known to antagonize glutamate at the level of N-methyl-D-aspartate (NMDA) receptor in addition to reducing glutamate release and increasing glutamate uptake from the synaptic cleft, with the final result of reduction of neuronal excitotoxicity. Traditionally, it was thought that isoflurane had an immediate, short-term neuroprotective effect, which faded after several weeks, post-ischemic injury (Kawaguchi. *Anesth Analg*. 2004; 98:798-805). More recently, investigators from David Warner's laboratory demonstrated convincingly that isoflurane neuroprotection is long-lasting in a model of focal ischemic injury in rats (Sakai H, Warner D. *Anesthesiology*. 2007; 106:92-99). Xenon was also found to



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have brain protective properties though an antiapoptotic mechanism synergistically enhanced by hypothermic conditions in both in vitro and in vivo neonatal animal models (Daquing Ma, Maze M. *Ann Neurol*. 2005; 58:182-193). The beneficial effect of isoflurane was also shown to extend to the area of preconditioning (Bickler PE. *Anesthesiology*. 2005; 103:532-539;

Warner DS. *J Neurosurgery*. 2004; 16:95-7). In the clinical arena, the most important aspect of cerebral protection provided by the inhaled anesthetics is related to reducing the extent of the insult, thus allowing a wider window of action for additional neuroprotective agents and measures, such as hypothermia, to be implemented.

A significant amount of data in the area of cerebral oxygenation and brain protection came from Gary Fiskum's laboratory. Richards et al. (Richards EM, Roenthal RE, Fiskum G. *Free Radical Biology and Medicine*. 2006; 40:1960-70; Richards EM, Fiskum. *Stroke*. 2007; 36:1578-84) first described the deleterious effect of post-ischemic hyperoxia on cerebral metabolic function. Not surprisingly, normoxic resuscitation and oximetry-guided post-ischemic oxygenation techniques

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were also found to have a beneficial effect on brain metabolic function and neurological outcomes by the same group of researchers. Moreover, hyperbaric oxygenation post cardiac arrest was reported to reduce neuronal death and improve neurological outcomes (Rosenthal RE, Fiskum G. *Stroke*. 2003; 34:1311-131).

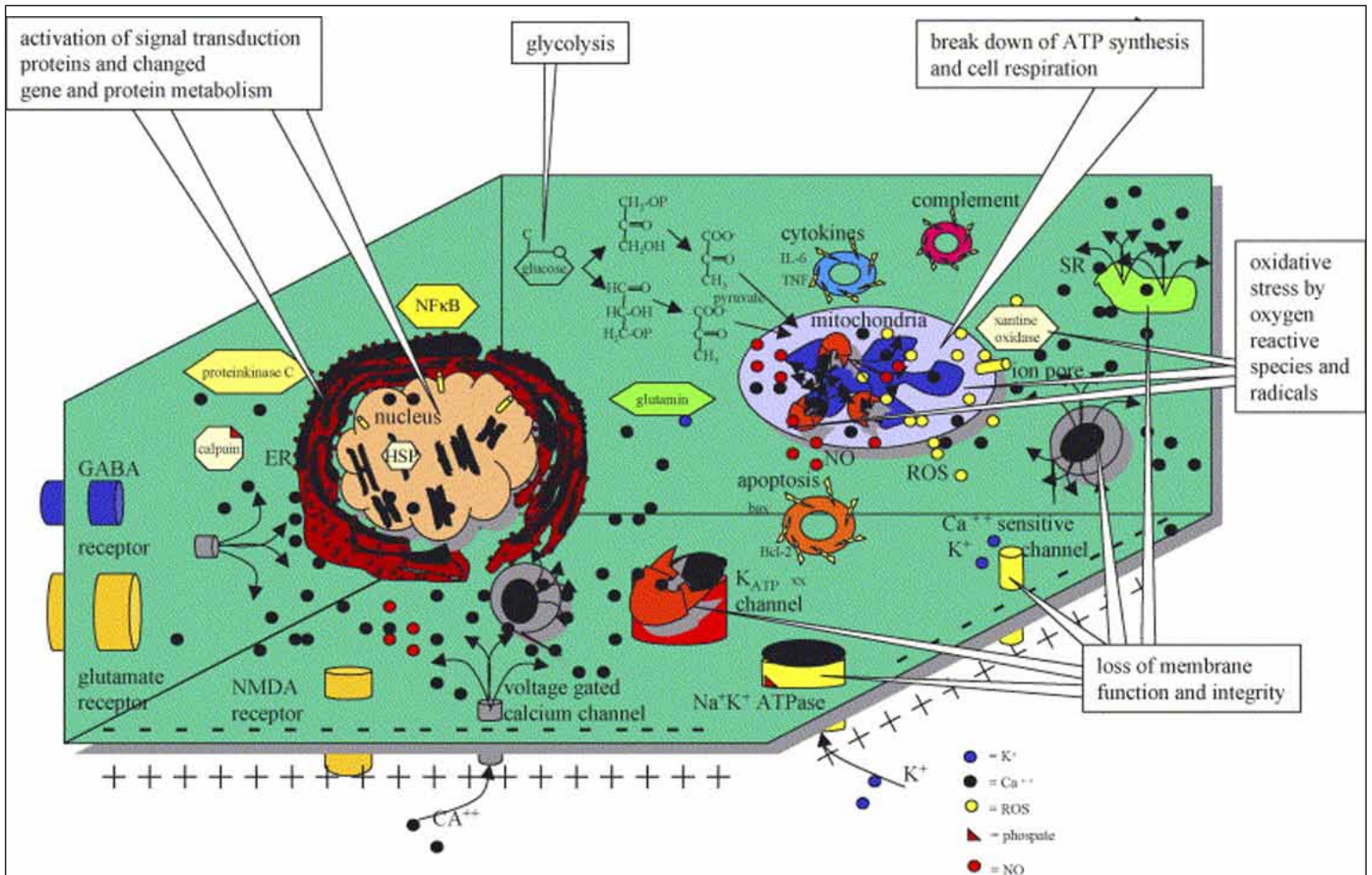
In the area of neuroprotection during neurosurgery, a significant step was taken by Michael Todd, M.D. and his collaborators, who demonstrated in a large, randomized, clinical trial that mild hypothermia had no significant benefit on the major outcomes in patients with subarachnoid hemorrhage and low scores on the Glasgow Coma Scale undergoing surgery for intracranial aneurysm (Todd MM. *NEJM*; 2005; 135-145). In addition, Rozet et al. (*Anesthesiology*. 2007; 107:697-704) brought important information in the areas of fluid management and brain relaxation and the role of hypertonic saline for craniotomy.

On another front, much advancement was made in the areas of neuroprotection, temperature management and cardiac surgery. Mora and collaborators (*J Cardiothorac Vasc Surg*.

1996; 112:514-22), who noted a higher incidence of neurologic events in patients who randomized to warm cardiopulmonary bypass, brought significant knowledge regarding the importance of temperature management during cardiac surgery. Newman et al. reported the importance of age, mean arterial pressure and rewarming in the prevention of neurocognitive dysfunction (Newman MF. *Anesth Analg*. 1995; 81:236-42). The neuroprotective effect of hypothermia, described by Mora, was not reproduced later in other randomized, controlled studies (Grigore AM, Mathew J, Grocott HP, Newman MF. *Anesthesiology*. 2001; 95:1110-9), which triggered interest and paved the way to additional research in temperature management, including the importance of avoidance of cerebral hyperthermia during the perioperative period (Grocott. *Stroke*. 2002; 33:537-41; Bar-Yosef. *Anesth Analg*. 2004; 99:641-6), the best sites for temperature monitoring (Nussmeier NA. *Anesth Analg*. 2006; 103:1373-9), and the significance of rewarming rate (Grigore AM. *Anesth Analg*. 2002; 94:4-10). Newman and his collaborators brought valuable contributions to the areas of genetic polymorphism and the risk of stroke and delirium (*Stroke*. 2005; 36:1854-58; *Psychosomatic Medicine*. 2008; 70:953-59). Hogue and his colleagues used near-infrared

Figure 1: Neuroprotective Strategies: A Review

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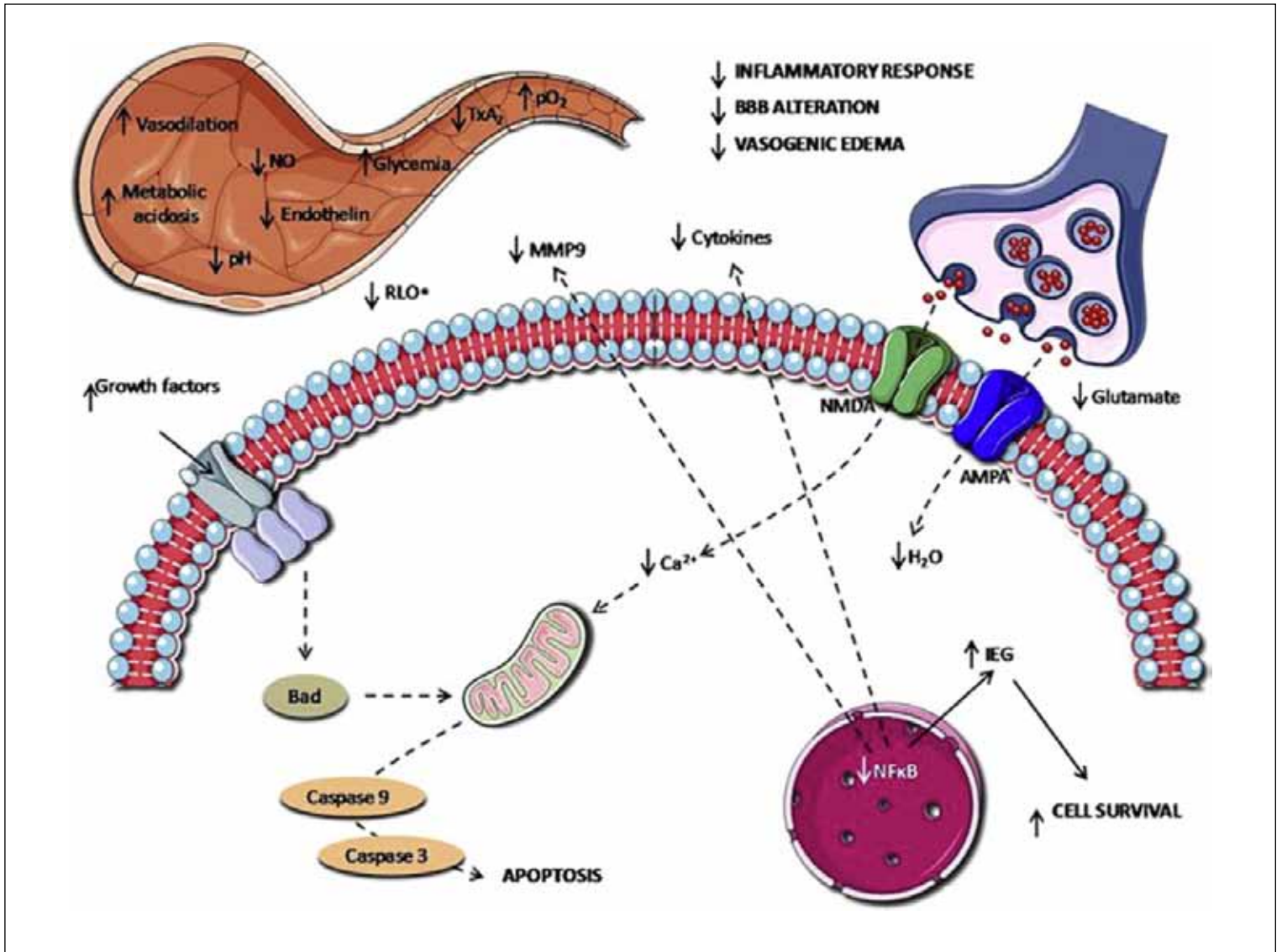
spectroscopy to measure and monitor the cerebral blood flow during cardiopulmonary bypass (Brady K. *Stroke*. 2010; 41:1951-56) and to predict the limits of cerebral autoregulation (Joshi B. *Anesth Analg*. 2012; 114:503-510).

Finally, Jevtic-Todorovic V and his research team (*J Neuroscience*. 2003; 23:876-82) reported clear evidence suggesting that anesthetics with NMDA receptor blockade properties could induce neuronal degeneration and apoptosis in the immature brain. These results were consistent with the findings of a large, comprehensive literature review, which also found evidence for anesthesia-induced neurotoxicity in animal models (Loepke AW, Soriano SG. *Anesth Analg*. 2008; 6:1681-1707). Isoflurane-induced hypoglycemia was also noted in newborn mice (Loepke AW. *Anesth Analg*. 2006; 102:75-80).

These reports have led to major concerns related to the safety of the anesthetic agents in infants and children. Currently, there are two large-scale clinical studies under way to further elucidate the potential neurotoxic effect of anesthetic agents in the pediatric population (Sun L. *Brit J Anaesth*. 2010; 105:i61-i68). The differential effect of anesthetic agents in relationship to age is quite intriguing, and thus the paradigm continues.

All of the aforementioned work referenced represents only a small portion of the significant contributions anesthesiologists have brought to the area of neuroprotection. We need to continue our focus on this important research, consistently building our knowledge in order to bring forth a greater understanding of the pathophysiologic mechanisms of cerebral injury and novel approaches for prevention and treatment of neurologic dysfunction during the perioperative period.

Figure 2: Mechanisms Involved in Neuroprotection-induced Hypothermia



Ed Miller Retires as Dean and CEO of Johns Hopkins Medicine

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Past AUA president Dr. Ed Miller, and Dean and CEO of Johns Hopkins Medicine, has announced his retirement. Dr. Miller's height at 6-foot 5-inches is a perfect metaphor for his stature among his colleagues. Effortlessly engaging and immediately trustworthy to those around him, he has been a natural role model in medical leadership. He has demonstrated that anesthesiologists can aspire to important hospital and institutional leadership positions.

Under Dr. Miller's tenure as dean, Hopkins Medical School introduced Genes to Society, an innovative curriculum which encourages students to think about health and illness as a spectrum, rather than dichotomous states. The changes at Hopkins also included massive rebuilding and renovation projects that have transformed the East Baltimore medical campus into a medical center with state-of-the-art clinical and research facilities. While planning this extensive renovation, Dr. Miller and the administration at Johns Hopkins reached out to the community, gaining their trust and cooperation.

Subsequently, a further amalgamation of the region's hospitals permitted the ethos and mission of Johns Hopkins Medicine to be delivered in other affiliated facilities such as Suburban Hospital and Health System in Bethesda, Maryland, Sibley Memorial Hospital in Washington, D.C., and All Children's Hospital in St. Petersburg, Florida.

Dr. Miller's influence at Hopkins reaches beyond the

Western Hemisphere. His international legacy includes establishing a network of partnerships with hospitals in Asia, the Middle East and Latin America, and opening the first private medical school and teaching hospital in Malaysia.

Originally from Rochester, New York, Dr. Miller attended Ohio Wesleyan University and then received his M.D. from the University of Rochester. After his surgical internship at University Hospital in Boston, he was an anesthesiology resident at the Peter Bent Brigham Hospital, and then a research fellow in physiology at Harvard Medical School.

Dr. Miller's career led him to the University of Virginia, where he investigated the cardiovascular effects of anesthetic drugs and vascular smooth muscle relaxation. For his discoveries, he was awarded an NIH Career Research Development



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Award. Before being recruited to Hopkins, Dr. Miller served as chairman of the Department of Anesthesiology at Columbia University.

Shortly after being appointed acting Dean at Hopkins in 1996, Dr. Miller became the first-ever CEO of Johns Hopkins Medicine, a then-new umbrella organization that formally integrated the school of medicine with the Johns Hopkins Health System. The unification of the two bodies was meant to harmonize not only their administration, but also their goals, which had, until his appointment, been clashing.

In a recent interview, Dr. Miller said, "My job was to be more than the dean of the medical school — it was to mesh the cultures of the two institutions and sometimes play referee."

Dr. Miller credited much of his early success to a well-



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Ed Miller Retires as Dean and CEO of Johns Hopkins Medicine

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sealed partnership between himself and Ron Peterson, the then-president of Johns Hopkins. With complimentary skill sets, they raised the profile of the already renowned institution. Consciously designing the mission of Hopkins Medicine was a management strategy borrowed from the corporate world. Dr. Miller describes that process:

“[The]first thing we did was take everybody away and spent a weekend talking about what are we all about. What’s our core mission? What do we really stand for? We brought Jim Collins who wrote the book *Built to Last*. He used data and looked at how companies had done over 30 years in the stock market and he found that those who knew their core values and had aligned themselves with their values performed the best. So we had a set of core values that I think everybody resonated with and kind of got them on the right page.”

Miller’s unassuming style and diplomacy helped him take the helm of the Johns Hopkins ship at the time of his predecessor’s stormy departure. He was able to navigate the cost cutting and emotional needs of both the board of directors and the departments whose salaries and budgets were at stake. His efforts to listen first and then make quick decisions were fruitful and earned him the trust of his colleagues.

Fundraising is one task that any CEO must accept. Dr. Miller presided over a \$2.2 billion campaign, commenting that development had become fun because, “Fundraising is really all about relationship building. People get to know you and get to know what the institution is doing and want to help.” Hopkins used this money to construct the new towers at the Science and Technology Park on the north campus. Presently, the Sheikh Zayed Tower and The Charlotte R. Bloomberg Children’s Center are open and their combined 560 patient rooms, all private, are part of one of the largest advanced care centers in the world.

In the summer of 2001, tragedy struck and a healthy 24-year-old research subject unexpectedly died after an asthma experiment. With national headlines assailing Hopkins’ patient safety and research protocols, Dr. Miller stood up to the maelstrom and supported both a grieving family and the stunned hospital, “Once we knew what the story was, we could go a couple of ways. You can say you have a stupid investigator who did a stupid thing and hang that person out to dry and wipe your hands of it. Or you can look at yourself and say, ‘What went wrong? What was our role and what are we going to do to fix it so it never happens again?’”

A short time later, in 2003, Johns Hopkins established the Center for Innovation in Quality Patient Care to increase translation of up-to-date clinical knowledge into everyday practice. The Center’s targets include medication administration errors and hospital-acquired infection prevention. It continues to make its mark on medicine with recent focus on radiation oncology, home care, and in-hospital handwashing.

The collaborative leadership style modeled by Dr. Miller has become a distinguishing feature among department heads. He said in a recent interview, “I spend a lot of time picking people. You have to pick them right.” Appropriately, collegiality has become the hallmark of Hopkins leadership.

When asked about his retirement plans earlier this year, Dr. Miller said, “...when the buildings are done it would be a good ending point... I want to spend a little bit of time with my wife. And we have a couple of grandkids we would like to see more.” Dr. Miller will continue to be involved part time with the Hopkins Department of Anesthesiology with mentorship and philanthropy efforts.

There is much to celebrate in the prolific career of Dr. Ed Miller. His contributions to the field of Anesthesia, medical leadership, and health care have been remarkable..

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FAER Supports Pain Research

Denham Ward, M.D., Ph.D., President
Foundation for Anesthesia Education and Research (FAER)

At the Spring AUA Meeting, the FAER Board of Directors decides on grant funding using the reviews of the ASA Committee on Research and the FAER Education Grant Study Section. In the last issue of this newsletter, I gave the statistics for the number of grants funded this year. In 2012, 16 anesthesiologists received FAER funding that will allow them not only to advance their knowledge, but also to learn research techniques and scientific methods that will help them become independent physician-scientists. A full list of the 2012 FAER grant recipients is available on our website at FAER.org.

As always, it is exciting to look at the common themes that run through the research being funded. This research will advance our knowledge and ultimately impact our clinical practices. Several of this year's grants focus on mechanisms of pain. As we take on the important role of perioperative physicians, the ability to manage the pain that our patients suffer, both acutely in the postoperative period as well as chronically from various pain syndromes, will become increasingly important. There is an urgent need to understand both the basic neurophysiology of the mechanisms of pain and the best use of the clinical tools we currently have. The research funded by FAER and the careers that are helped to get started will contribute to solving some of these difficult problems.



Patrick J. Tighe, M.D.

Patrick J. Tighe, M.D. received the Alan D. Sessler, M.D. Mentored Research Training Grant for "Learning from Pain: Application of Machine Learning Classifiers to Predict Severe Acute Postoperative Pain." Dr. Tighe is a true "Gator." He received his B.S., M.D. and an M.S. in clinical and translational science from the University of Florida. After completing his residency and a fellowship in acute pain medicine and regional anesthesia at the University of Florida, he was

appointed assistant professor in 2010.

For this research Roger Fillingim, Ph.D., will be his mentor. Dr. Tighe has made the common observation that many of our patients — up to 40 percent — still report moderate to severe pain in the postoperative period. Predicting which patients will have the most pain during this period could help optimize their care and could be a useful research tool. Because of electronic medical records, patient information is readily accessible and can be used in automated computer algorithms. Dr. Tighe will use various machine learning classifiers, such as Bayesian networks, and will use these multidimensional data sets to predict severe postoperative pain.

One of FAER's primary goals is to help launch the careers of physician-scientists in anesthesiology. It was exciting to learn that Dr. Tighe received a K23 grant from the NIH for this research. This career development award will allow him "to complete a rigorous didactic curriculum emphasizing classification theory, algorithm evaluation and development of clinical decision support systems." Because of this NIH award, Dr. Tighe had to relinquish FAER funding, but he will continue to be listed as the recipient for the Alan D. Sessler, M.D. Mentored Research Training Grant. This named grant was established by the FAER Board of Directors to honor the service that Dr. Sessler provided to FAER during his presidency and continues to provide to FAER (and to me personally) as president emeritus.



Denham Ward, M.D., Ph.D.



Thomas M. Austin, M.D.

While Dr. Tighe's research has obvious immediate clinical applications, there is still much basic science to be learned about pain. Thomas M. Austin, M.D. will be pursuing a FAER Mentored Research Training Grant titled "Effect of Neuronal K-Cl Cotransporter KCC2 Activation on Pain Perception." Dr. Austin has moved around a bit more than Dr. Tighe, but he also began his medical studies in Florida with a B.S. from the University of West Florida. Since then,

except for an internship at the Mayo Clinic, he has been at Vanderbilt University for his medical degree, anesthesiology residency and pediatric anesthesiology fellowship.

Dr. Austin's mentor for the FAER-funded research will be Eric Delpire, Ph.D. His initial research on this topic has already been honored by the AUA Resident Travel Award and the ASA Residents' Research Essay award. The FAER-funded research will allow Dr. Austin to continue and extend this work.

As we all know chronic pain is a major problem, with more than 100 million U.S. adults afflicted each year. The treatment of this pain is problematic: many of the available drugs are not fully efficacious or have limiting side effects. New non-opioid analgesics are desperately needed. The neuronal K⁺-

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FAER Supports Pain Research

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CL cotransporter KCC2 is a promising pharmacologic target, since this cotransporter is critically involved in regulating the intracellular chloride concentration in spinal cord and primary afferent neurons. In mice, Dr. Austin has injected intrathecally a novel and specific KCC2 antagonist, demonstrating pain latency. Thus, this provides additional evidence for the role of KCC2 in nociception. His FAER-sponsored research will try to answer the question of how KCC2 activation leads to anti-nociception using a knockout mouse model and/or new pharmacological agents. He will also be learning new laboratory techniques that will help him become an independent investigator.

The two-year Mentored Research Training Grants are aimed at junior faculty who plan on progressing to become independent investigators through subsequently applying for NIH K and R awards. FAER also funds one-year Research Fellowship Grants intended to start residents and clinical fellows on a possible academic research career.



Anna Woodbury, M.D.

Anna Woodbury, M.D. was awarded a research fellowship grant in conjunction with her anesthesiology residency at Emory University. She obtained her B.A. from Rice University and M.D. from Washington University before moving to Atlanta. Her research, mentored by Ling Wei, M.D., is titled "Neonatal pain results in neuro-psychiatric disorders: Honokiol's role in treatment and prevention."

Dr. Woodbury has long been interested in alternative medicine, specifically in utilizing natural remedies from various cultures, and to subject these remedies to the same rigorous standards that we apply to all therapies. Honokiol is a traditional Japanese therapy that is derived from the cones, bark and leaves of the magnolia tree. It has been previously shown to alleviate inflammatory pain through multifactorial mechanisms involving the NMDA and glutamatergic and serotonergic neurotransmitter systems.

For her FAER-funded study, Dr. Woodbury will be using a neonatal rat model to test the ability of honokiol to attenuate the long-term neurocognitive complications of neonatal pain. This research fellowship is in conjunction with a clinical pain fellowship at Emory and will launch her academic career in pain management.

Like all of our grant recipients, these anesthesiologists are launching their careers as physician-scientists. The work they do will make important changes in our clinical practices in the future.

Advances in anesthesiology are only possible because of organizations such as the AUA and people like you. Your contributions to FAER provide funding to help the physician-scientists of today and tomorrow advance medicine and strengthen the specialty.

If you would like to make a donation, please visit our new website, FAER.org. There you will find interesting information for anesthesiologists thinking about applying for a FAER grant, mentors and donors. Thanks for helping FAER advance medicine through research and education in anesthesiology.

SAB Call for Nominations

The AUA Council would like to invite AUA members to nominate another member or apply themselves for service on the Scientific Advisory Board (SAB). The SAB determines the scientific content of the Annual Meeting program and provides input to the AUA Council on issues pertinent to the scientific mission of AUA. The SAB has three responsibilities:

1. Grade abstracts for the AUA Annual Meeting and organize accepted abstracts into sessions;
2. Attend the AUA Annual Meeting to assist at poster and oral discussion sessions and attend the SAB working luncheon for discussion of issues relevant to the SAB; and
3. Contribute a 500- to 1,000-word article to the AUA newsletter once during the three-year term on the SAB. Articles might be short reviews of some recent scientific advance or pertinent topic, a meeting review or an opinion piece.

To nominate a member or to apply for service on the SAB, please email curriculum vitae by Monday, January 21, 2013 to: Charles W. Emala, M.D., SAB Chair at cwe5@columbia.edu. The AUA Council and the SAB Chair will choose two candidates who will then be contacted to confirm their willingness to serve. The three-year term begins after the AUA Annual Meeting, April 4-6, 2013 in Miami.

Association of University Anesthesiologists Meeting April 4-6, 2013, Miami, FL

*Michael C. Lewis, M.D.
Professor of Clinical of Anesthesiology
Senior Associate Dean for Graduate Medical Education
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The Department of Anesthesiology at the University of Miami's Miller School of Medicine is proud to host the Annual Meeting of the Association of University Anesthesiologists (AUA) on April 4-6, 2013. We wish to extend to the AUA membership a warm welcome to Miami, the multicultural "Magic City" on Biscayne Bay between the Florida Everglades and the Atlantic Ocean.

The City

Miami is not only a travel paradise for vacationers, but a principal location for finance, commerce, culture, entertainment, the arts, and international trade, all pulsing with a Latin beat. Boasting the largest concentration of international banks in the United States, Miami is the de facto capital of Latin America, an international melting pot with an eclectic mix of attractions that add to the area's exotic appeal. Zoo Miami, Vizcaya, Fairchild Tropical Botanic Garden, Jungle Island, Biscayne National Park and, of course, the Everglades are among the highlights.

Just west of downtown Miami, the Civic Center is a major hub for hospitals, research institutes, medical centers, and biotechnology industries.

Miami is also home to four professional sports teams: football's Miami Dolphins, ice hockey's Florida Panthers, baseball's Miami Marlins and the NBA's world champion Miami Heat! The conference is close to numerous museums and a multitude of shopping, dining and performing arts experiences, not only in the city center but across the bay on Miami Beach's famous South Beach, home to Lincoln Road and the Art Deco district. Superb year-round weather, premier beaches, top-notch restaurants, and the best in entertainment have elevated Miami to one of the premier vacation spots in the United States. There will be no shortage of things to do during "downtime" at the meeting.

The University of Miami

Established in 1925, during the region's famous real estate boom, the University of Miami (UM) has evolved into a major research university engaged in \$360 million in research and sponsored programs a year. While the majority of this work is housed at the Miller School of Medicine, investigators conduct dozens of studies in other areas, including marine science, engineering, education, and psychology. Ours is a private research university with more than 15,000 students from around the world. Like the city, the UM is a vibrant and diverse community with 12 schools and colleges serving undergraduate and graduate students in more than 180 majors and programs. Under the stewardship of President Donna E. Shalala for the past decade, the University has moved up 29 spots - to No. 38 -

in U.S. News & World Report's «Best Colleges» rankings. U.S. News also cited several UM programs in "America's Best Graduate Schools."

During the host program you will be exposed not only to the richness of the region but some of the cutting-edge academic work that characterizes the institution.

The Medical School

Founded in 1952, UM's medical school, renamed the Leonard M. Miller School of Medicine in December 2004, was Florida's first accredited medical school. Through clinical facilities in five counties and scores of outreach activities, the Miller School touches lives throughout South Florida and far beyond. It is dedicated to innovative research, education, and patient care initiatives that nurture the health and vitality of our regional and global communities.

The Miller School provides medical staff for the University of Miami/Jackson Memorial Medical Center and all of the University of Miami Health System (UHealth), which is comprised of the flagship University of Miami Hospital, Sylvester Comprehensive Cancer Center, Anne Bates Leach Eye Hospital and top-ranked Bascom Palmer Eye Institute, which U.S. News & World Report has ranked the nation's No. 1 ophthalmology program for nine consecutive years.

Our other affiliated hospitals on the medical campus include Holtz Children's Hospital and the Miami Veterans Affairs Medical Center. The school's history is intertwined with that of the AUA. In 1953, Emanuel M. "Manny" Papper, M.D., Ph.D., co-founded the AUA with Dr. Robert Dripps. Dr. Papper later served as Dean and Vice-President of the University of Miami School of Medicine, from 1969 to 1981. He passed away 10 years ago. David Lubarsky now holds the chair endowed in his name.

The medical school's 1,500 faculty physicians have more than a million patient encounters and offer a range of services, including comprehensive cancer care, complex multi-organ transplants, the very latest protocols for heart disease and stroke, novel approaches to preserving vision, intricate cochlear implants that restore hearing, and pediatric expertise that saves young lives.

Life-enhancing translational research is also a top priority. Physicians and scientists are using stem cell transplants to rejuvenate damaged hearts and heal painful chronic wounds. Geneticists are unlocking the secrets of susceptibility to common complex genetic diseases.



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Our cardiologists are at the cutting-edge of percutaneous cardiac valve repairs. Our Diabetes Research Institute is developing ingenious strategies to cure diabetes. Our researchers are also harnessing the promise of nanotechnology to fight heart disease and cancer and making heartening progress on healing spinal cord injuries at The Miami Project to Cure Paralysis.

Together with Jackson Memorial Hospital, UM offers residency and fellowship training in virtually all available specialties, as well as a wide gamut of postdoctoral fellowships for senior trainees. Many enriching workshops for visiting students ranging from high schoolers to seasoned physicians also are available. Training the next generation of physician-scientists is an ongoing priority.

A committed community partner for the past six decades, the Miller School continues to transform the South Florida health care landscape, last year opening the first phase of the University of Miami Life Science & Technology Park. An array of strategic physical improvements is also bringing modernized laboratories, powerful new diagnostic tools, and renovated clinics to the Sylvester Comprehensive Cancer Center and the Bascom Palmer Eye Institute. New and remodeled patient care and administrative suites at University of Miami Hospital and integration of advanced surgical technologies across the medical campus are enhancing the outstanding clinical care that we strive to provide.

The Department

The Department of Anesthesiology, Perioperative Medicine and Pain Management was founded by Dr. J. Gerard Converse in 1958. For 28 years, from 1972 to 2001, Dr. N.W. Brian Craythorne served as chairman. In November 2001 Dr. David A. Lubarsky took the reins and steered the department and residency program forward. The department prides itself on an unparalleled esprit de corps.

Diverse learning environments are provided through clinical education that is conducted at seven sites. These experiences prepare our residents for practice opportunities ranging from tertiary/quaternary care facilities, similar to our own primary training sites, to community hospitals like Jackson South.

One of the department's greatest assets is its residency program, the largest in the country. More than 90 faculty anesthesiologists oversee more than 125 interns, residents, and fellows. Current fellowship programs include pediatric anesthesia, acute and chronic pain, cardiovascular anesthesia, critical care medicine, regional, obstetric anesthesia, liver transplant anesthesia, and Patient Safety. Approximately 50,000 anesthetics are delivered annually, primarily by subspecialty teams, and much of it for complicated tertiary surgical care. Today the Graduate Medical Education Program is poised to be the premier anesthesia training program in the country. We strive to be not only the largest program but the best!

The Department boasts a number of nationally and internationally recognized faculty. Example after example of academic innovation abound. David Birnbach, long recognized for his expertise in Obstetric Anesthesia, has developed national reputation as a leader in Patient Safety and Simulation. The new UM/JMH Center for Patient Safety he leads is a multimillion-dollar, 8,000-square-foot facility funded jointly by the Department, the University, and Jackson Memorial Hospital. The staff hopes to offer tours and simulation sessions as part of the meeting. Our Trauma Anesthesia Team, led by Albert Varon, M.D., handles some of the highest trauma volumes in the country and is also highly productive academically. Steve Gayer, whose workshop on Ophthalmic Anesthesiology at the ASA annual meeting consistently sells out, has a significant scientific portfolio, and is considered a leader in this relatively new subspecialty.

The faculty is committed to advancing its reputation as one of the finest, most technologically advanced teaching programs in the world. Both the residents and faculty are involved in cutting-edge clinical and translational research. This includes initiatives in pain, transplantation, spine surgery, brain tumors, high-risk obstetrics, intensive care, ophthalmology, and trauma. The Department boasts a large basic science laboratory, which is used in diverse animal investigations into genetic susceptibility to neuropathic pain, mechanisms of postoperative cognitive dysfunction, development of transformational therapeutics, and more.

International Partnerships – Potential Impact on Academic Anesthesia

Armin Schubert, M.D., M.B.A.
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Ochsner Health System
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For more than 20 years I taught, practiced and lead at a medical organization where we referred to ourselves as an international health resource. No, it was not the World Health Organization or Physicians Without Borders. It was a well known Health System in the American Midwest, Cleveland Clinic. First, physicians from many countries came to study formally or informally, constantly enlarging an sizable international network of professional, referral and academic relationships. Initially, income from patient referrals was the primary economic goal; gradually contractual partnerships with hospitals or state agencies in Egypt, Saudi Arabia, United Emirates and other countries were forged that now bring lucrative consulting dollars to the organization in exchange for intellectual and management expertise.

This is by no means unique to Cleveland, Ohio. Four years ago, my current organization, New Orleans-based Ochsner Health System forged a partnership with the University of Queensland in Brisbane, Australia, that resulted in the creation of the Ochsner Clinical School of the University of Queensland (UQ) for the purpose of producing more doctors for New Orleans, Louisiana, and the US. Next year 120 students will be admitted to the Ochsner-UQ program, and in a few years we will be graduating 120 new doctors from the Ochsner Clinical School program annually. Since UQ is a world renowned research institution, we recently launched Phase II of our partnership – establishing translational research programs across our respective organizations. Among other benefits, this allows our physician scientists to tap into Australian government research funding sources.

Recently, we announced a new long-term partnership with the University of Tabuk in the Kingdom of Saudi Arabia. Under the agreement, faculty, staff and students from the Colleges of Medicine, Applied Medical Sciences and other healthcare-related disciplines at the University of Tabuk will receive education and training at Ochsner facilities in Louisiana. Our organization will collaborate with the University of Tabuk to design, develop and manage its tertiary hospital facility in Tabuk, Saudi Arabia, and its referral centers in the surrounding region. We are also going to develop research collaborations with their faculty and make our fellowship program in hospital management available to their rising talent. Additional contracts are being developed with other higher education institutions in the Middle East, such as an agreement with King Abdulaziz University in Jeddah, Saudi Arabia. Faculty, staff and students from King

Abdulaziz University College of Medicine will be educated and trained at various Ochsner healthcare facilities in Louisiana. Our institutions will also be engaged in faculty exchange programs and collaborations in the areas of tele-stroke, eICU, simulation labs and research. Funding for the training of students and staff will benefit the academic mission of clinical departments at Ochsner, including the department of Anesthesiology.

Similar arrangements have been consummated by a whole host of health systems and universities across the United States, some of which are Baptist Medical Center (Florida), Columbia Presbyterian Medical Center, Duke, Johns Hopkins, Mayo Clinic, Partners (Harvard) and University of Pittsburgh Medical Center. They generally involve knowledge collaborations that, in effect, export American clinical and medical management expertise.

Some would simply ascribe these trends to the increasing “globalization” of healthcare, in effect making the case that regulatory and geographic barriers are shrinking as overseas hospitals attain Joint Commission accreditation, telemedicine technology matures and Western-trained doctors perform large volumes of advanced procedures in countries as far as India. It appeared initially that an ever increasing number of Americans might seek care overseas in their quest to avoid the high price of US medical care. While such medical tourism certainly was and is going on, the focus of international health entities appears to have shifted.¹ Today, the underpinnings of joint ventures between US academic institutions and their overseas partners are pointedly strategic in nature. Their astounding growth has been the result of mutually unmet needs and the imaginative talent of their leadership.

Consider first the needs. American academic healthcare has been under considerable and increasing pressure from government regulators and payors. Regulation has taken on a degree of intrusiveness that specifies, for example, what physicians must do within minutes when restraints are needed for patients, as spelled out in the Conditions of Participation, Centers for Medicare & Medicaid Services (CMS). The increasing regulatory burden has contributed to higher administrative costs. Funding for the academic mission has plateaued, considering both federal and commercial sources, while expenses have continued to rise on the medical supplies and labor fronts. The quest for sources of innovatively acquired additional revenue



Armin Schubert, M.D.,
M.B.A.

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International Partnerships – Potential Impact on Academic Anesthesia

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stemming from accumulated expertise and intellectual capital was inevitable.

Developing countries have had to build medical infrastructure rapidly. Even to the present day, the Kingdom of Saudi Arabia does not have a functioning payer intermediary structure, such as is provided in the U.S. by medical insurer system. Moreover, many such countries have suffered a “brain drain” of their physicians to Western countries. High physician salaries in the United States have contributed to international physician migration. For example, the average salary of an employed surgeon in New Jersey is roughly \$216,000, compared to \$24,000 in Zambia.² Developing economies have spawned a populace who increasingly demand greater sophistication in the delivery of health care. International collaborators today are focused on improving medical and administrative infrastructure in their countries,¹ while also attracting patients from within their geographic regions. This should allay fears that the demand for American doctors might be depressed by competition from overseas medical institutions luring away Americans seeking care. On the other hand, the hayday of well-to-do patients from overseas preferentially seeking US medical care is certainly over. Little surprise is it then to see a steadily growing trend of these infrastructure collaborations take shape across the oceans. What will these partnerships bring? How will they affect academic institutions? How will they affect academic anesthesia?

The establishment of international partnerships, such as that of Ochsner Health System with the University of Queensland, has led to greater emphasis on academic activity and improved faculty development programs in our organization. Many faculty members have been recruited to Ochsner in part because of the relationship with the University of Queensland. In my own department, the collaboration agreements have been a critical facilitator in our strategy to grow Ochsner’s anaesthesiology residency training program. After realizing near double digit annual growth in patient volume and new program development during New Orleans’ rebuilding period after Katrina, Ochsner’s clinical resources and teaching staff outgrew the size of many of its physician training programs. In effect there are now still many unused clinical and teaching resources, only partially satisfied by sharing residency training programs with institutions such as Tulane and Louisiana State University in our area. Given our case volume and number of academically trained faculty, we could easily support a residency program twice the size of our current complement. The federal cap on residency positions, along with the financial challenges of health care reform would prevent any such expansion.

The new revenue streams from the collaboration with our Middle Eastern University partners has made it possible for us to seek and successfully gain internal approval of fielding an application to expand our residency training program. The intent is to train specialists for our partner organizations overseas and not to train international medical graduates for the American

market. In turn, the revenue from this activity is intended to better support the scholarly missions of our department, including our residency and fellowship training programs. Although not intended, in a free world some doctors trained under such a partnership agreement might well somehow end up practicing in the US. In the longer run, the US will still face physician shortages in primary care³ and in specialty care such as anaesthesiology.⁴ Training additional excellent physicians would appear to carry little risk of overproduction, given the additional demand created by health care reform legislation.³

Many would ask if there are strings attached. We have been very careful to insist on the same standard for admission for all candidates for anaesthesiology residency training regardless of their national origin or prior medical affiliation. Some would ask, whether we might not be “tempted” to take more international graduates and lower quality in our program. It is true that currently we enjoy a truly exceptional applicant pool and attract only the best and the brightest. The expansion of our program has not been accomplished with any reductions to access for American graduates. During my career as an anaesthesiologist and faculty member, I have had the privilege to work with hundreds of internationally trained physicians. It has been gratifying to see how many have attained scholarly status of note and how many have become leaders in their fields. Having access to an international applicant pool magnifies the potential to produce a truly superior mix of diverse raw medical talent.

We can only speculate on the number of exceptionally qualified international graduates who will become available through the partnership program. We look forward to enriching our program with their perspective; we enjoy the prospect of collaborating with institutions across the seas in advancing patient safety through an international symposium and we look forward to extend our professional ties to medical hosts worldwide. A network of the latter will likely develop much more quickly when compared with the situation where international medical graduates are in effect escaping from their country with the intention to settle and practice in this country. When we select international medical graduates under the collaborative program, they will be outstanding physicians who wish to return to help build their country’s medical expertise and infrastructure. This is as true for anaesthesiology as it is for medical and surgical training disciplines. The medical brain drain will be reversed and those of us who worry about “stealing” talent from countries in need will be able to sleep a little easier.

Despite the prediction of future physician shortages, the current economic slowdown has shown that graduating residents can, at least temporarily, experience conditions of lesser demand for their services.⁴ Relationships developed while working and training alongside international physicians, who return home to become leaders in their own institutions, may well open additional opportunities for practice and exposure

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International Partnerships – Potential Impact on Academic Anesthesia

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to different cultures. Some of these relationships have the opportunity to strengthen scholarly activity and to tap into the resources of other countries' funding agencies to support joint projects. The interest and capability of international medical professionals to perform high quality academic work has been increasing steadily. This is evidenced by the increasing prevalence of international scientific contributions relating to the field of anesthesiology that are published by in American anesthesia journals.

International collaborations have the potential to help many academic organizations continue to support their mission even in the face of federal program cuts for medical education. They are taking the shape of a fundamentally different dynamic when compared to the in-migration of international medical graduates of the past. They are likely to create a more stable

and lasting network of professional and academic international scholarly relationships and shared projects, both educational and investigational in nature. They might open new career pathways for academically oriented physicians and might spawn a new management discipline in international medical cooperation. The ultimate outcome will be determined by the rigor with which these collaborations are conducted, the standards maintained and the prejudices shed.

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Putting Technology Into Practice: Anesthesia Illustrated

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When asked where they go first for help about a question pertaining to clinical anesthesia in this year's Stanford AIM Lab educational technology survey of nine U.S. anesthesiology programs (240 respondents), the most common answer was: Google (36.8 percent), followed by textbooks (34percent), and faculty (15.1percent).

Today's anesthesia educators need to be online using multimedia content and educational technologies if they want to fully engage today's millennial learners. If Macario's article in this issue discussing "flipping the classroom" hasn't inspired you, consider the following information. In a recent 2011 educational technology survey conducted by the Stanford AIM lab, 76.5 percent of Yale residents, 87.5 percent of Mount Sinai residents, 80 percent of UC-Davis Residents and 82 percent of Stanford residents report using videos to supplement classroom teaching during medical school. The use of online quizzes and courses was even higher, 89 percent – 100 percent of residents in these programs used these educational tools during medical school. Our residents, in the final phase of their professional educational training, might ostensibly have similar expectations from their residency programs. Yet, how many of us have the time and resources to produce this content for our residents?

Anesthesia Illustrated (<http://www.anesthesiaillustrated.org>) is a non-profit outshoot of the Stanford AIM Lab. Our sole mission is to produce high quality multimedia anesthesia content free of charge for anyone to use, including you! We

currently have 69 lectures and procedural videos that are freely available for viewing online. We have also partnered with a leading anesthesia society, SOAP (Society for Obstetric Anesthesia and Perinatology) to record lectures from their Sol Shnider and Annual meetings.

We are also building a library of online courses for residents to use free of charge. We currently have a course teaching general anesthesia for stat Cesarean section as well as a course that teaches crisis management in the context of advanced cardiac life support.

We are also working on collaborations to develop additional educational content at Yale, Massachusetts General Hospital, Brigham and Women's Hospital, Boston Children's Hospital, University of Massachusetts and many more institutions.

There might not be a better time to consider adding videos and online educational technologies to your resident educational programs. Open access educational resources like Anesthesia Illustrated (<http://www.anesthesiaillustrated.org>) are certainly making it easier for educators to engage today's technology-savvy learners.



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The Society for Neuroscience in Anesthesiology and Critical Care – A Ruby Year!

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This year is the 40th anniversary of SNACC.

SNACC is a fairly small society with a stable membership since the mid 70's at about 400 members. This anniversary has occasioned a review of the history of the society and the accomplishments of the membership. Full details of this will be published in the fall issue of the society's affiliate *Journal of Neurosurgical Anesthesiology*, this autumn coincident with the anniversary meeting the Friday before the ASA meeting. This issue of JNA will present an editorial by President Ansgar Brambrink, a history of SNACC by Andrew Kofke, a history of neuroanesthesia by William Lanier, and a review of scientific advances in neuroanesthesiology by Jeffrey Pasternak and William Lanier. It should be an historic issue.

The first discussion of the idea of there being formed a North American neuroanesthesia society is indicated to have been during a visiting professorship of Thomas Langfitt (Penn Neurosurgery) at the University of Pittsburgh in 1972. During this visit it came up in discussions with Maurice Albin. This resulted in a letter from James Harp of the University of Pennsylvania to Maurice Albin June 6, 1972, quickly followed by a supportive reply from Dr Albin on June 15, 1972. Subsequently Drs Albin, Harp and Shapiro developed nationwide support and enthusiasm for this idea to form a neuroanesthesia society resulting in the second meeting in Philadelphia in 1973 held jointly with the *Sixth International Cerebral Blood Flow Symposium*. This first meeting of the NAS took place June 5, 1973 in Philadelphia. Forty charter members were in attendance. Since these early activities, SNACC has grown in multiple areas, although at one point facing an existential challenge related to an embezzling episode by its management company, while through its 40 years consistently adhering to its mission.

SNACC has over the years given considerable attention to its mission. The current mission statement is: "The mission of the Society is to advance the art and science of the care of the neurologically impaired patient." One of the founders, Harvey Shapiro at the 10th anniversary meeting pointed out that SNACC was (and is) challenged to remain pertinent to neuroanesthesia clinicians while stimulating neuroscience researchers. Thus, after considerable debate the society has recently changed

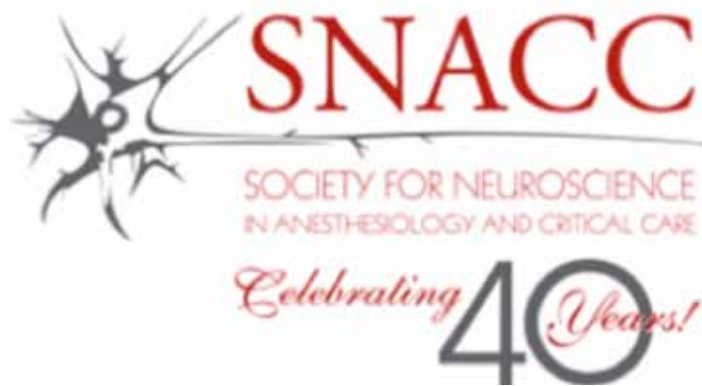
its name from the Society of Neuroanesthesia and Critical Care to the Society for Neuroscience in Anesthesiology and Critical Care. This change provides recognition to the multiple missions of the society and its members which include **operative neuroanesthesia and neuromonitoring, neurocritical care and basic and clinical neuroscience**. As such SNACC is the only focused forum for neuroscientists in Anesthesiology. SNACC leadership is hopeful that SNACC will provide a means for basic and clinical neuroscientists in anesthesia and critical care to co-mingle.



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As with the AUA, one of the most important activities of SNACC has been the annual meeting. Multiple topics and issues of the day have been discussed over the years at the annual meetings which reflect the changing trends in clinical practice, research, and education. At the first meetings in the early 70's meeting topics that were discussed included ICP physiology and management, induced hypotension, barbiturates for brain protection, effects of hypocapnea, advances in monitoring, intracranial compliance, microvascular decompression, cerebral blood flow monitoring during

CEA, brain protection with thiopental after global brain ischemia in monkeys, brain retractor monitoring, and a session on PEEP and ICP. Since those early meetings an extensive list of topics has been discussed at the annual meetings including presentations by two nobel laureates. There has nonetheless been consistent attention to issues in intracranial hypertension, neuroprotection, neuromonitoring, specific neuroanesthesia techniques, problems with specific types of neurosurgery, pediatrics, advances in neuroimaging, spinal cord injury, neurocritical care, basic neuroscience, and education along with occasional updates on important major clinical trials. Other topics discussed with high frequency in the early years were induced hypotension and venous air embolism. More recent favored topics have



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included interventional neuroradiology, complex monitoring issues, genomics, anesthetic neurotoxicity and postoperative cognitive dysfunction, and neuroinflammation. Presentations over the years indicate the active role that SNACC membership has had in addressing problems in neuroanesthesia and Neurocritical care.

Over these forty years research was presented and debates developed which are reflected in current practice. These include the use of hypertonic saline, management of intracranial hypertension and brain edema, the lack of use of hypothermia in neurosurgery, current neuromonitoring techniques and associated anesthetic support, and approaches to the sitting position and venous air embolism.

As with the AUA, SNACC is also a small society. This has supported active debate about various topics. For example, John Olney, a well known basic neuroscientist presented data on developmental neurotoxicity of anesthetics at the 2003 meeting. This spawned a memorable debate at the meeting and subsequent editorials and research projects. This continues to be a major research area and this SNACC meeting had a significant role in its development. Numerous other frank discussions have been hallmarks of SNACC meetings...similar to a typical AUA meeting.

At its inception SNACC was comprised of all North American anesthesiologists and neurosurgeons. However the society made early overtures to the British Neuroanesthesia Society, representing the first efforts to develop an international presence. The 1982 10th anniversary meeting however marked a significant European presence in terms of speakers from Scotland, England, Italy, and Germany. In 1995 Adrian Gelb from London, Ontario was elected president, a first for an international member since Brain Marshall (Canada) in 1973. Then, in 1998 Christian Werner from Germany was elected to the Board of Directors representing the first European in such a position. He later went on to be SNACC president 2000-2001. After this, other elected leadership roles were performed by international members including past board members and presidents Concezion Tommasino (Italy), Cor Kalkman

(Netherlands), and Basil Matta(UK), current president Ansgar Brambrink (originally from Germany), and current officers (and future presidents) Martin Smith (UK) and Kristen Englehart (Germany). Moreover the teacher of the year award has been recently awarded to international members Eberhardt Koch (Germany) and Hari Hara Dash (India). SNACC members are in leadership positions in the neuroanesthesia societies in other countries. It is apparent that SNACC is in fact now a leading international society of Neuroanesthesia, Neuromonitoring, Neurocritical care, and Neuroscience.

ASA Excellence in Research Awards. These ASA awards are presented annually to an ASA member with outstanding scientific contributions. This award has been presented to SNACC members **John Michenfelder**, **Richard Traystman**, **David Warner** and **William Young** by the American Society of Anesthesiologists. For an organization with about 400-500 members it is a pridesworthy observation to have had four of the twenty-six ASA excellence in research awardees be SNACC members recognized by the ASA, which has 46,000 members. This would suggest that SNACC has been successful in its support of neuroanesthesia research relevant to the larger field of anesthesiology.

As a tribute to SNACC members in the pipeline to develop into future research leaders, the ASA presidential scholar award has been won by two SNACC members, **Max Kelz** in 2010 and **George Mashour**, in 2011, have been recognized with this award. This award, presented since 2003, recognizes a particularly accomplished young investigator.

Current challenges facing SNACC include fostering greater interaction with basic neuroscientists, developing fellowship accreditation, and ensuring continued involvement in neuromonitoring and neurocritical care, and participating in development of important guidelines.

So on this 40th anniversary SNACC has much to be proud of and we expect will continue to be a vibrant contributing subspecialty society of Anesthesiology. The 40th anniversary meeting will be on the Thursday-Friday before the ASA with workshops, a commemorative banquet, and an exciting scientific and educational program (<http://www.snacc.org/index.iphtml>).



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