AUA
Association of University Anesthesiologists
Update
Summer 2015

CONTENTS

Update on the Proposed Initiative for AUA Scholars

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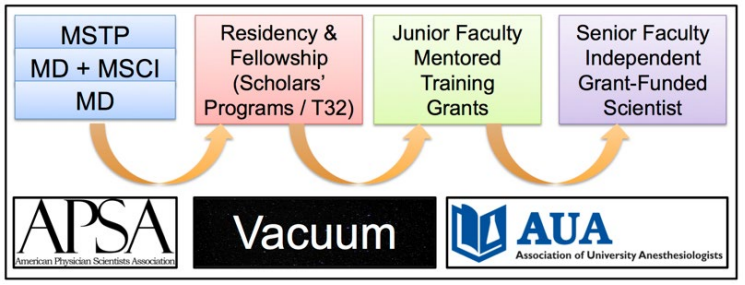
At this year's Association of University Anesthesiologists (AUA) and International Anesthesia Research Society (IARS) conferences, ad-hoc meetings took place to discuss the formation of a group focused on scholars in the field of anesthesiology who are early in their academic careers, including T32 fellows and other research trainees. We are currently on track to launch the inaugural meeting for this group to coincide with next year's AUA and IARS meetings in San Francisco. In order to support this important initiative, we have secured funding commitments from both the IARS and from the Foundation for Anesthesia Education and Research (FAER), and have applied to the National Institutes of Health (NIH) for an R13 grant, which would potentially provide some support for a meeting for up to five years.

Together with colleagues in our field, we have recognized that rising scholars in anesthesiology were lacking an academic



home, and were keen to work with them to try to address this vacuum (See Figure). Anesthesiology has been a recognized leader in patient safety and quality improvement, with dramatic reductions in intraoperative mortality over the past five decades. Despite these important clinical contributions that make modern medicine possible, the academic development of anesthesiology has not kept pace with other fields of medicine. NIH funding is generally lower in anesthesiology compared with other disciplines. There are several explanations for this, including national trends in scientific funding and increasing demands on clinical medicine. Three particular factors must be highlighted to provide insight into the situation of academic anesthesiology today. First, through successfully minimizing intraoperative deaths, anesthesiology has created the false impression that surgery is no longer hazardous. The reality is that 1-2% of patients die within the first month of inpatient surgeries, and between 5-10% of patients are dead one year after surgery. Second, there is a perception that, as an umbrella service specialty, anesthesiology is not suited to investigating specific diseases. This ignores the potential for anesthesiology, which spans the breadth of surgical fields, to contribute in diverse areas. Third, there is a major gap in academic leadership in anesthesiology.

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Update on the Proposed Initiative for AUA Scholars

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This blight was created in the 1990s by the dramatic reduction of medical graduates choosing anesthesiology because they were misinformed regarding the scarcity of future employment opportunities. Today, anesthesiology is a competitive specialty with many talented clinician-scientists entering its training programs. However, the relative dearth of intellectual leaders has resulted in fewer advocates for academic needs and fewer mentors for rising scholars.

Before moving forward with our agenda, we felt that it was essential to ascertain whether current scholars in anesthesiology shared our opinions, and would be supportive of an initiative to provide them with an academic home. To assess the needs and perspectives of current NIH T32 fellows, mentored grantees, and research residents in anesthesiology, we distributed a national survey to these trainees. Of 78 respondents, approximately 50% either disagreed or strongly disagreed with the statement "There are currently adequate opportunities for rising academic scholars in anesthesiology to engage and collaborate with like-minded colleagues nationally and internationally." Almost 50% of respondents either agreed or strongly agreed that "Anesthesiology faces an uncertain future as an academic specialty." We believe that these and other opinions expressed by the trainees endorse the need for the initiative we are proposing.

There is, in our opinion, a need to direct energy and resources to securing the future of academic anesthesiology. We believe that junior academic anesthesiologists and associated trainees represent a population that is particularly vulnerable to current threats, but also a key target for high-impact interventions.

In pursuing these goals, we have been enthusiastically supported by many leaders of academic anesthesiology departments, including all 14 anesthesiology NIH T32 programs in the country. Our goal is to use the face-to-face encounters at the meetings to guide the current generation through a particularly difficult era of academic anesthesiology, but also to help catalyze the formation of an organization that will fill the void for junior academic anesthesiology faculty and research trainees. We expect that the launch of an association for anesthesiology scholars will facilitate mentorship by senior leaders in the field and will also provide an important forum for developing scientific collaborations. We are excited about this initiative and have been struck by the enthusiastic and energetic response from a diverse group of anesthesiology scholars. We are, therefore, optimistic that this enterprise will continue to gain momentum and will help to restore vigor and purpose to academic anesthesiology.

AUA Council Report on Bylaws Amendments

At the AUA 62nd Annual Meeting, which took place in Nashville, the AUA Council proposed amendments to the AUA Bylaws. The majority of AUA members present at the AUA Annual Business Meeting ratified these proposed amendments, which were as follows:

1. Active Membership requirements were changed to add relevant post-doctoral training as an alternative to residency for membership qualification.
   - This clarified that those non-physician scientists and academics who make substantial contributions to academic anesthesiology are eligible to be elected as active AUA members.
2. An amended nomination process was approved in principle with a mandate to the AUA Council to flesh this out in the administrative procedures document.
   - This was done to make the nomination process of membership candidates more user friendly for current members.
3. AUA members will be able to vote on member nominations to the AUA two times a year instead of one. Voting will in future be conducted via electronic ballot involving all members rather than a paper ballot at the Annual Business Meeting. Members will be able to vote by mailed ballot upon request.
   - The motivation was to help streamline the nomination and election process, and to take advantage of electronic voting options given that electronic communications are reliable and secure. This would potentially allow for a more inclusive voting process. It was deemed important to provide a voting option using regular mail for members more comfortable with this option.
4. A new membership type, Associate Member, will be created for individuals earlier in their career with all the privileges of membership except voting and holding office. Nomination for Associate Membership would be by a Chair of an Anesthesiology Department. Associate Members could become Active AUA members when they satisfied the membership criteria of the AUA, and would be admitted through the usual procedure.
   - This membership category was created to encourage participation in the AUA by rising scholars in anesthesiology who do not yet fulfill the criteria for Active Membership. A key criterion for eligibility for Associate Membership would be evidence of (training) grant funding (e.g. from IARS, FAER, NIH, comparable funding agencies around the world). However, ongoing grant funding would not be prerequisite for continuing Associate Membership.

Regional Anesthesia: Expanding the Horizons of Anesthesia Practice

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Anesthesiologists have led academic medicine, innovating to make the perioperative patient experience safer. Some suggest that anesthesia is losing its status as a "legitimate academic discipline."[1] Regional Anesthesia (RA) expands our role as perioperative physicians, growing our practice and directly counteracting this notion of a blasé formulaic specialty. Progressively, RA will enjoy greater prominence in health care delivery as facilities acknowledge the detriments that inadequate pain relief has on patient recovery and function.

"Pre-procedure block rooms improve block times and success, increasing consults for RA[6] and countering concerns[7] that RA delays surgical start times and lacks patient benefit."

Practice Improvements

RA, compared to systemic analgesia, presents global improvements via cost savings as well as a reduction in opioid use and comorbidities.[2] These benefits are echoed in the orthopedic literature[3] for anterior cruciate ligament surgery and total knee arthroplasty (TKA), allowing for decreased post-operative pain, morphine consumption and adverse effects.[4]

RA improves anesthesia practices' fiscal health. Developing[5] an acute pain/RA service spurred revenue growth in both academic and private practice settings. Pre-procedure block rooms improve block times and success, increasing consults for RA[6] and countering concerns[7] that RA delays surgical start times and lacks patient benefit.

Technical Advancements

Technical advancements have extended patient analgesia. Peripheral nerve catheter use vs a single-shot technique has the theoretical improvement of pain management for trauma patients.[8-12] Also, peripheral nerve blocks were shown to cause fewer side effects vs. epidural analgesia in TKA patients.[13]

Ultrasound-Guided Regional Anesthesia (USGRA) has revolutionized our role in multi-site patient care. Military experience in combat situations demonstrates the benefit of continuous catheters along with ultrasound (US) superiority over blind technique.[14,15] Improved pain management outside of the operating room has been seen with USGRA.[14-16]

"Ultrasound-Guided Regional Anesthesia (USGRA) has revolutionized our role in multi-site patient care."

USGRA allows direct image guidance vs. a blind-nerve stimulator technique, allowing for theoretically safer procedures. Pleura visualization during a supraclavicular nerve block may decrease iatrogenic pneumothorax (estimated to be 0.4 per 1000 with U.S. guided techniques).[16] The Transversus Abdominal Plane (TAP) block has become precise intervention vs. the classical field block for general surgery patients.[15] Evidence-based reviews of USGRA literature highlight its efficacy and safety, meriting use as a practice standard. [17]

USGRA comes with a steep learning curve as a perceived impediment. Simulation training improves skill,[18] and programs individually tailoring performance to training benefits anesthesiologists at all levels.[19]

Graduate Medical Training

RA has altered graduate training. The ASRA.com website 20 lists 63 fellowship training programs in the U.S./Canada/Military devoted to acute pain/regional anesthesia. Formal fellowship training contrasts the prior mentor-mentee approach

"Simulation training improves skill,[18] and programs individually tailoring performance to training benefits anesthesiologists at all levels.[19]"

for RA previously seen in programs. Standardization and proficiency result for anesthesia.

Drug Development

Exparel (Pacira), a liposome-delivered extended release bupivacaine with drug levels up to 72 hours after initial administration, infuses a renewed interest in RA.[21-24] Initially utilized in colorectal surgery, Exparel has been suggested for general, breast, and orthopedic surgery. Recently, the FDA rejected Pacira Pharmaceutical's request to approve Exparel as a post-surgical nerve blocking agent, requiring further research.[25]

Scope for the Future

RA offers a dynamic educational and practice prospects to anesthesiologists. Improved operator technology with USGRA, enhances our technical precision. Drug research and development will lead to improved population-based outcomes. The end result is a continued and progressive role for anesthesiologists in patient care.

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Regional Anesthesia: Expanding the Horizons of Anesthesia Practice

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Meet the 2016 Educational Advisory Board

New members were elected to the Educational Advisory Board (EAB) during the AUA 62nd Annual Meeting while others ended their terms on the committee. The EAB is responsible for planning the educational program of the AUA Annual Meeting. Learn more about the 2016 Educational Advisory Board below.

Educational Advisory Board Chair

Robert R. Gaiser, MD
Term Expires 2017
University of Pennsylvania
Philadelphia, Pennsylvania

Committee Members

Brenda Bucklin, MD
Term Expires 2017
University of Colorado
Aurora, Colorado

C. David Collard, MD
Term Expires 2016
Baylor St. Luke's Medical Center
& Texas Heart Institute
Houston, Texas

Stephanie Jones, MD
Term Expires 2017
Beth Israel Deaconess Medical Center
Boston, Massachusetts

Matthew McEvoy, MD
Term Expires 2018
Vanderbilt University
Nashville, Tennessee

Manuel Pardo, MD
Term Expires 2017
University of California, San Francisco
San Francisco, California

Christine Park, MD
Term Expires 2018
Northwestern University
Chicago, Illinois

May Pian-Smith, MD
Term Expires 2018
Massachusetts General Hospital,
Harvard Medical School
Boston, Massachusetts

Rita Patel, MD
Term Expires 2016
University of Pittsburgh
Pittsburgh, Pennsylvania

Warren Sandberg, MD, PhD
Term Expires 2017
Vanderbilt University
Nashville, Tennessee

Randall Schell, MD
Term Expires 2016
University of Kentucky
Lexington, Kentucky

Mark Stafford-Smith, MD
Term Expires 2018
Duke University
Durham, North Carolina

Manuel Vallejo Jr., MD, DMD
Term Expires 2018
West Virginia University
Morgantown, West Virginia

Educational Advisory Board Program at the AUA 62nd Annual Meeting

Robert Gaiser, MD, MSEd
Chair, Educational Advisory Board
Professor of Anesthesiology and Critical Care, Perelman School of Medicine
Program Director, Department of Anesthesiology and Critical Care, Hospital of the University of Pennsylvania
Philadelphia, Pennsylvania

On Friday, April 24, the EAB conducted its program at the AUA 62nd Annual Meeting. There were two panels. The first panel was entitled, *State of the Art of Research in Education*.

The first panelist was Dr. Matthew McEvoy, Associate Professor of Anesthesiology at Vanderbilt University School of Medicine. His topic was *Conducting Quality Research in Education*. The concept of quality research consisting of a well-formulated problem, proper design, and data being the best available for the question was applied to education. The goal for research in education should be to advance the knowledge of how to train and to assess the anesthesiologist. For education research, there are various means of assessment which include multiple choice tests, oral examination, and performance assessments. One of the difficulties is that editorials and commentaries have moved ahead to an evidence-based approach. The outcomes of research in education must be reproducible and sustainable, but also must be able to determine whether the impact moves from the classroom to the clinical arena. It is to this area that researchers must take research in education to the next level.

The second member of the panel was Dr. David Murray, Professor of Anesthesiology, Washington University in St. Louis. His topic was *Review of the Key Literature in Research Education*. He challenged the field by setting the goal that research in education must begin and end in the real world of practice and that it must pay more attention to education theory. The best studied area is the acquisition of psychomotor skills using cumulative summation analysis, which determines how many attempts are required to achieve a defined successful endpoint. The next challenge was to use these results to reduce the frequency of failures and to improve the detection of failures before these failures lead to harm. The final challenge was the query as to how to measure expertise and importance of this expertise and whether it is important to determine the difference between expertise and experience.

The final panelist was Dr. Steven Shafer, Professor of Anesthesiology, Perioperative and Pain Medicine, Stanford University Medical Center, with his presentation being *An Editor's Perspective of Research in Education*. From 2008-2014, there were 15,191 submissions to *Anesthesia & Analgesia*. Of these submissions, 173 were related to education and 35 were accepted. The acceptance rate for education research (20%), was similar to the acceptance rate for clinical/basic science research (22%). Producing quality research is difficult, especially considering the fact that if a study achieved a p value of 0.05, there is a 50% chance of having the ability to repeat the study and achieve the same results. A p value of 0.005 or 0.001 is needed to achieve a study result that is able to be repeated.

Dr. Matthew McEvoy presented, *Conducting Quality Research in Education*.

Dr. Steven Shafer discussed *An Editor's Perspective of Research in Education*.

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Education Advisory Board Program at the AUA 62nd Annual Meeting

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With this criteria, conducting research in education is almost impossible. To assist with the dissemination of research in education, the journal *A&A Case Reports,* was created. This journal has broadened the definition of the case report and has incorporated a section for education. The journal encourages submissions on education in which the change or reaffirmation of a behavior is based upon experience.

The second panel was entitled, *Measuring Knowledge in Anesthesia.*

"The current goal for the OSCE in the board certification process is to assess the behaviors that cause anesthesiologist's to struggle that is not currently being assessed by a written or oral examination."

During this panel, Dr. Ann Harman, the Chief Assessment Officer of the American Board of Anesthesiology, presented, *The Science of Psychometrics.* Psychometrics is the science of measuring mental capacities and processes which includes knowledge, skills, and abilities learned through both formal and informal instruction and training. Psychometric principles include validity, reliability, and fairness. Validity refers to the degree in which theory and evidence support the intended use of tests and scores derived from them. Reliability refers to the degree to which test scores are reproducible. Fairness is the equitable treatment of examinees in terms of their opportunity to fully and accurately demonstrate their abilities with respect to their knowledge and capabilities. Reliability is evaluated by a single statistic, a correlation coefficient which measures the internal consistency. The examinations administered by the American Board of Anesthesiology are based upon a content outline which identifies the full scope of knowledge an anesthesiologist is expected to have. The examination is created

Dr. Brenda Bucklin discussed *The Use of the OSCE to Measure Anesthesia Knowledge.*

"In regards to board certification, 78% of graduates from training programs will pass on the first attempt."

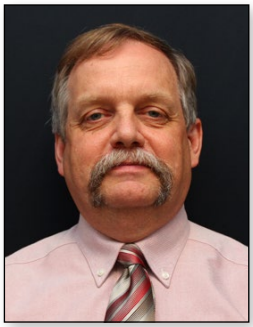
from a blueprint which includes a specific balance of knowledge, skills and abilities to be tested on each form. The decision of whether or not to pass is based upon a recommendation from a standard setting in which criterion-referenced (absolute) and norm-referenced (relative) standards are established.

Dr. Brenda Bucklin, Professor of Anesthesiology, University of Colorado School of Medicine, presented, *The Use of the OSCE to Measure Anesthesia Knowledge.* An OSCE is an observed, structured, clinical exam. It is designed to assess whether an individual is able to do things. The OSCE is excellent for the assessment of an individual's ability to 1) obtain and interpret data, 2) problem solve, 3) teach, 4) communicate, and 5) handle unpredictable behavior. The hallmark of the OSCE is the focus on clinical competence with the challenge to prove whether this exam in a simulated environment mimics real life. The current goal for the OSCE in the board certification process is to assess the behaviors that cause anesthesiologist's to struggle that is not currently being assessed by a written or oral examination. With the addition of the OSCE, it is hoped that the assessment for board certification will demonstrate that the individual knows what to do and possesses the skills to do it.

The final presenter in this panel was Dr. James Rathmell, the Henry Knowles Beecher Professor of Anesthesia, Harvard Medical School, who presented, *Changes in the Exam Process to Measure Anesthesia Knowledge.* The new examination process will include a Basic Exam of the scientific basis for Anesthesiology, an Advanced Exam of the clinical aspects of anesthetic practice, and an Applied Exam which is the oral examination with an OSCE. The Basic Exam increased the studying of residents as the In-Training Examination Scores had a statistically significant increase. In regards to board certification, 78% of graduates from training programs will pass on the first attempt. In an attempt to validate the examination process, oral exams correlate with faculty evaluations of residents but not with written examinations, proving the two examinations measure different abilities.

Both panels were followed by lively discussion and debate, allowing the members to explore the concepts presented to a greater degree.

Scientific Advisory Board Report from the AUA 62nd Annual Meeting



Charles Emala, MD
Chair, Scientific Advisory Board
Henrik H. Bendixen Professor of
Anesthesiology and Vice Chair for Research
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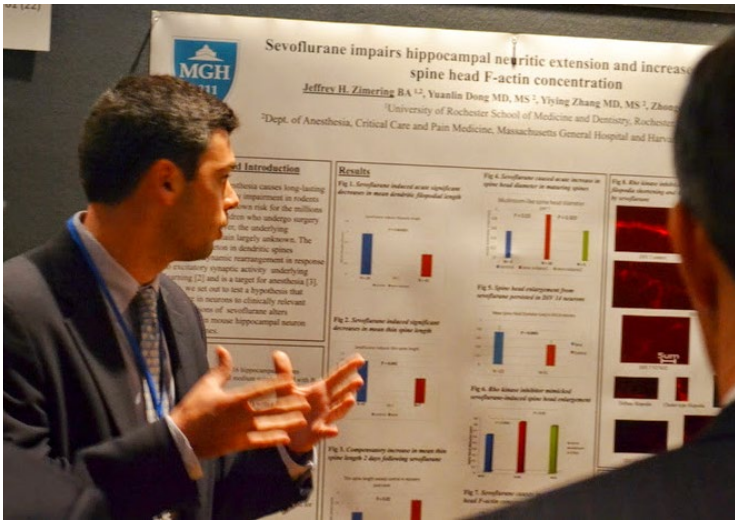
The best and the brightest of the specialty of anesthesiology were once again on display during the oral and poster discussion presentations at the AUA 62nd Annual Meeting. The Scientific Advisory Board again hosted 16 short Oral Presentations chosen from over 80 abstract submissions. These oral presentations included 3 resident research awards and 2 junior faculty awards selected from 19 resident abstracts and 19 junior faculty abstracts. This reflects a consistent trend in increased abstract submissions from younger members of the specialty over the last several years.

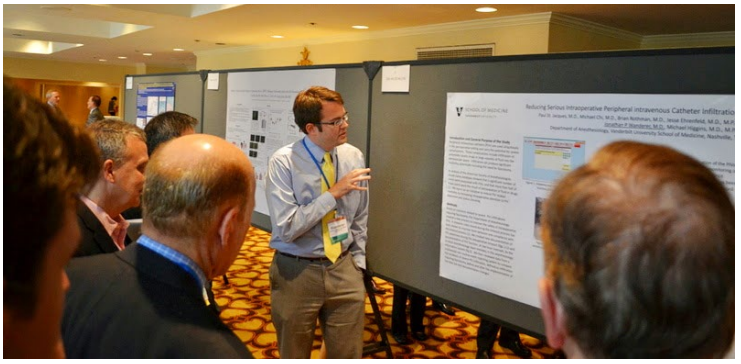
"This reflects a consistent trend in increased abstract submissions from younger members of the specialty over the last several years."

The two Resident Travel Awards were given to Nazish Hashmi of Duke University for her research entitled, *Effect of Race and Common Genetic Variation on Therapeutic Response Disparities in Postoperative Atrial Fibrillation* and to Maya Mikami from Columbia University for her research entitled, *Dexmedetomidine's Inhibitory Effects on Acetylcholine Release from Cholinergic Nerves in Guinea Pig Trachea: A Mechanism that Accounts for its Clinical Benefit during Airway Irritation.* This was the second year that the Margaret Wood Resident Research Award was offered, and it was given to Michael Kot of the Cleveland Clinic for research entitled, *The Relative Effects of Dexmedetomidine and Propofol on Cerebral Blood Flow and Brain Oxygenation: A Noninferiority Study.*

The two junior faculty awards were given to Heidi Smith of Vanderbilt University for her research entitled, *Pediatric Delirium in Critically Ill Infants and Preschool-aged Children: Validation and Reliability of the PreSchool Confusion Assessment Method for the Intensive Care Unit (psCAM-ICU),* and to Cyrus David Mintz of Johns Hopkins for his research entitled, *Isoflurane Disrupts the Development of Dendrites in the Mouse Hippocampus via Activation of the mTOR Pathway.*

The poster discussion format is a second component of the AUA Annual Meeting that the Scientific Advisory Board coordinates and moderates. Thanks to the members of the





Abstract authors presented their original investigations during two days of Moderated Poster Discussion Sessions.

"The Board anticipates that much of the traditional formatting of the Scientific Advisory Board's program will remain unchanged but enhanced by its proximity to the IARS Annual Meeting."

Scientific Advisory Board who moderate these sessions and the AUA membership who actively engage in these sessions, the Moderated Poster Discussion Session is an important forum for the exchange and critique of ongoing research discovery in our specialty. The Scientific Advisory Board chooses two of the most outstanding poster presentations for awards and this year's winners were Eric Gross from Stanford University for his research entitled, *Selective Inhibition of the Calcineurin Interaction Site of TRPV1 Reduces Myocardial Infarct Size by Reducing Mitochondrial Calcium Influx,* and Josh Billings, MD, MCSI, from Vanderbilt University for his research entitled, *Intraoperative Normoxia, Oxidative Damage, and Organ Injury Following Cardiac Surgery.*

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Scientific Advisory Board Report from the AUA 62nd Annual Meeting

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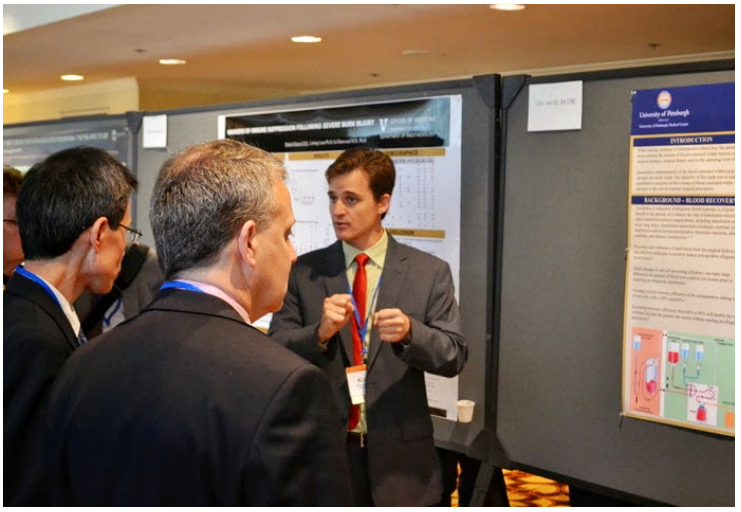
A selection of 16 abstract authors were chosen to present their research in oral presentations at the AUA 62nd Annual Meeting.

A third component of the Annual Meeting sponsored by the Scientific Advisory Board of the AUA is the mini-symposium, which attempts to address emerging and important topics in medicine and anesthesiology each year. The theme of the 2015 mini-symposium was *Perioperative Genomics*, drawing on the local talent and expertise of the Vanderbilt University community. The content of this mini-symposium is reviewed in a separate item in this newsletter.

The Scientific Advisory Board looks forward to the new alignment of the 2016 Annual Meeting with the IARS. The Board anticipates that much of the traditional formatting of the Scientific Advisory Board's program will remain unchanged, but enhanced by its proximity to the IARS Annual Meeting. Oral presentations, poster discussion formats and thematic mini-symposia will continue in a venue and atmosphere that hopes to unite all that is promising and inspiring in academic anesthesiology.



Attendees had the opportunity to discover original research in the clinic and laboratory during the Moderated Poster Discussion Sessions.

Meet the 2016 Scientific Advisory Board

New members began their terms on the Scientific Advisory Board (SAB) at the AUA 62nd Annual Meeting while others cycled off the committee. The SAB is responsible for planning the scientific program of the AUA Annual Meeting. Learn more about the current Scientific Advisory Board below.

Scientific Advisory Board Chair

Charles W. Emala, MD
Term Expires 2016
Columbia University
New York, New York

Committee Members

Nabij Alkayed, MD, PhD
Term Expires 2016
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Massachusetts General Hospital,
Harvard Medical School
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Jianguo Cheng, MD, PhD, FIPP
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Term Expires 2018
Weill Cornell Medical College
New York, New York

Roy Levitt, MD
Term Expires 2016
University of Miami
Miami, Florida

Y.S. Prakash, MD, PhD
Term Expires 2016
Mayo Clinic Rochester
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Matthias Ludwig Riess, MD, PhD
Term Expires 2017
Vanderbilt University
Nashville, Tennessee

Zhongcong Xie, MD, PhD
Term Expires 2016
Massachusetts General Hospital
Boston, Massachusetts

AUA 62nd Annual Meeting in Nashville, Tennessee

More than 240 members and guests of the Association of University Anesthesiologists gathered together for the AUA 62nd Annual Meeting, April 23-25 at the Loews Vanderbilt Hotel in Nashville, Tennessee, to exchange new ideas and develop new methods for teaching anesthesia. The Annual Meeting Planning Committee, led by Drs. Charles W. Emala, Robert R. Gaiser, and Warren S. Sandberg, developed a robust educational and scientific program including sessions focused on genomic technology, personalizing health in the academic medical center, opioid pharmacology, the state of the art for research in education, original investigations in the clinic and laboratory, and oral presentations highlighting award winners.

Announcing the AUA 62nd Annual Meeting Award Winners

The following 2015 abstract award winners were recognized for their valuable contribution to the subspecialty of academic anesthesiology and for their outstanding scientific research and oral presentations at the AUA 62nd Annual Meeting.

Margaret Wood Resident Research Award Winner

The Relative Effects of Dexmedetomidine and Propofol on Cerebral Blood Flow and Brain Oxygenation: A Noninferiority Study

Michael Kot, MD
Cleveland Clinic
Cleveland, Ohio

2015 Best Poster Presentations

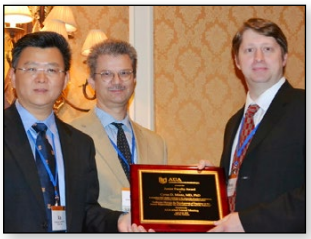
Selective inhibition of the Calcineurin Interaction Site of TRPV1 Reduces Myocardial Infarct Size by Reducing Mitochondrial Calcium Influx

Eric R. Gross, MD, PhD
Stanford University,
Stanford, California

Intraoperative Normoxia, Oxidative Damage, and Organ Injury following Cardiac Surgery

Frederic (Josh) T. Billings, IV
(Not pictured)
Vanderbilt University,
Nashville, Tennessee

Junior Faculty Award Winners



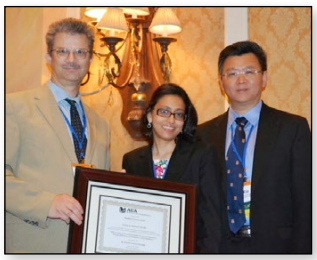
Isoflurane Disrupts the Development of Dendrites in the Mouse Hippocampus via Activation of the mTOR Pathway

C. David Mintz, MD, PhD
The Johns Hopkins University School of Medicine
Baltimore, Maryland

Pediatric Delirium in Critically Ill Infants and Preschool-aged Children: Validation and Reliability of the PreSchool Confusion Assessment Method for the Intensive Care Unit (psCAM-ICU)

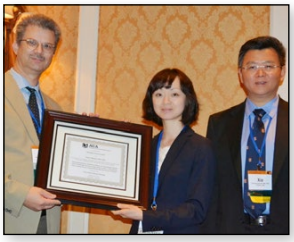
Heidi A. B. Smith, MD, MSCi,
Vanderbilt University,
Nashville, Tennessee

Resident Travel Award Winners



Effects of Race and Common Genetic Variation on Therapeutic Response Disparities in Postoperative Atrial Fibrillation

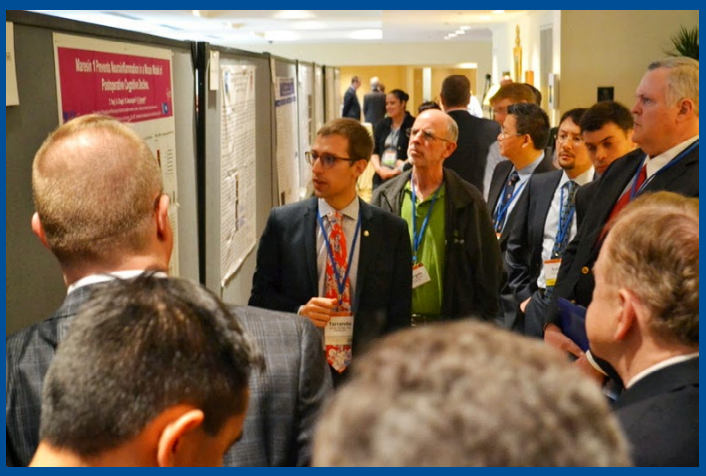
Nazish K. Hashmi, MB, BS
Duke University Medical Center
Durham, North Carolina

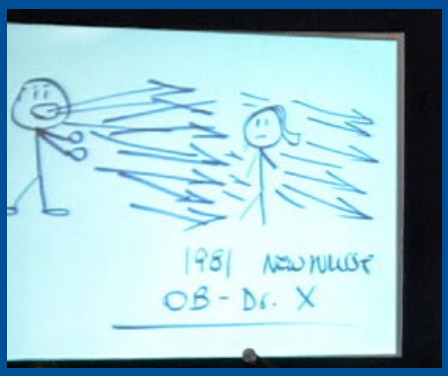


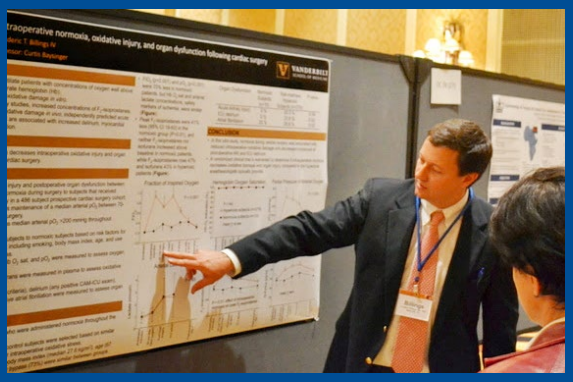
Dexmedetomidine's Inhibitory Effects on Acetylcholine Release from Cholinergic Nerves in Guinea Pig Trachea: A Mechanism That Accounts for Its Clinical Benefit during Airway Irritation

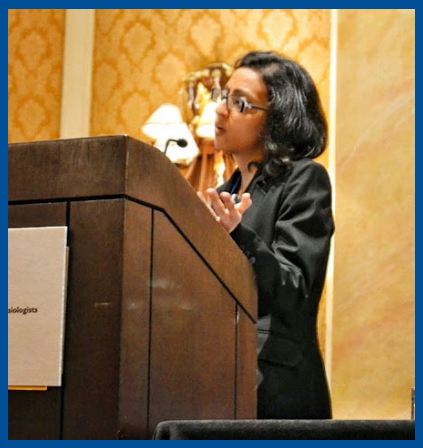
Maya Mikami, MD, PhD,
Columbia University
College of Physicians and Surgeons,
New York, New York

AUA 62nd Annual Meeting in Pictures



















April 23-25, 2015 • Nashville, Tennessee

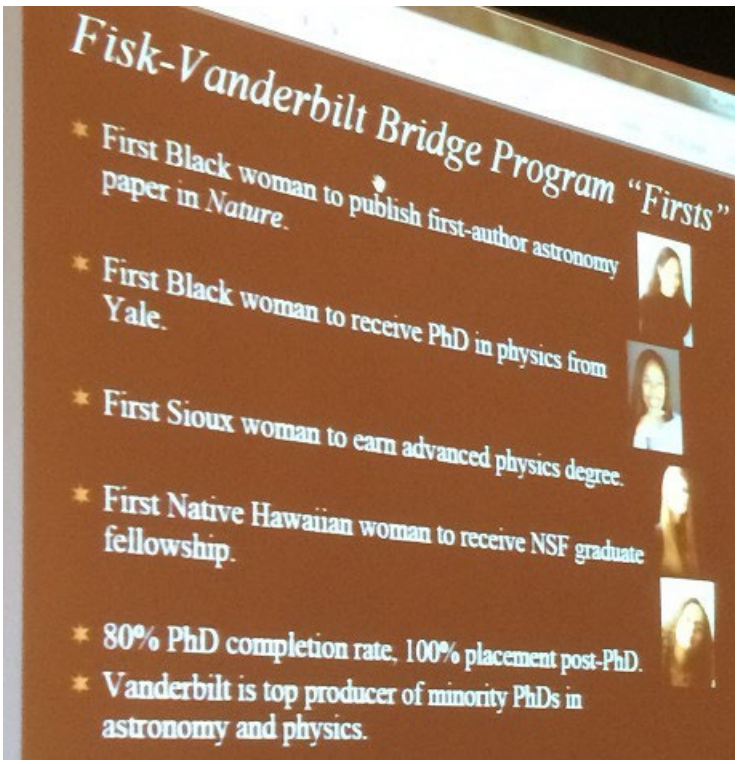
Host Program Report from the AUA 62nd Annual Meeting

Warren S. Sandberg, MD, PhD
Host Chair, AUA 62nd Annual Meeting Chair,
Department of Anesthesiology
Professor, Department of Anesthesiology,
Surgery and Biomedical Informatics
Vanderbilt University,
Nashville, Tennessee

The Host Program of the Association of University Anesthesiologists (AUA) 62nd Annual Meeting, potentially the last in a free-standing format, took place on Saturday, April 25, 2015, in Nashville, Tennessee. Vanderbilt University's diverse faculty interests and accomplishments were showcased in four lectures on different topics — all connected to the interests of academic anesthesiologists — by four distinguished lecturers.

Professor of Physics and Astronomy Keivan Guadalupe Stassun, Ph.D., kicked off the program. Professor Stassun's lecture, entitled *Earth 2.0: The Quest for Other Worlds and The Diverse Scientists Who Find Them,* had a dual focus, both to describe a new NASA mission to discover earth-like exoplanets, and, more importantly, to describe a program to bring diverse students into the physical sciences. Professor Stassun demonstrated that standardized testing shaves off many of the otherwise qualified students from diverse backgrounds, thereby filtering them out of the applicant pool for higher education programs that rely on standardized test scores for initial screening of potential candidates. He then linked the value of diversity in the cadre of scientists through two examples from his own lab, of non-traditional students who made foundational contributions to the likely future success of missions to discover earth-like exoplanets. The problem of unintended screening out of trainees from diverse backgrounds is pertinent to anesthesiology, where resident applicants will have been subjected to not one or two, but rather multiple rounds of standardized testing, thus diminishing the number of potential applicants from diverse backgrounds remaining in the pool at every turn. Professor Stassun illustrated the role of "grit" as a valuable predictor of future success in science education – and one that potentially crosses over into academic medicine.

Kenneth Catania, PhD, Stevenson Professor of Biological Sciences, provided the next lecture, entitled, *Comparative Neurobiology: What We Can Learn from the Adaptations of Interesting Predators.* Dr. Catania talked about the many things that have been learned in both basic science and about specialized animals by studying adaptations and the neurobiology of interesting predators. Through a series of richly illustrated examples, Professor Catania demonstrated



Dr. Keivan Stassun revealed some statistics on the Fisk-Vanderbilt Master's-to-PhD Program during his presentation, *Earth 2.0: The Quest for Other Worlds and The Diverse Scientists Who Find Them.*

"Professor Stassun illustrated the role of 'grit' as a valuable predictor of future success in science education – and one that potentially crosses over into academic medicine."

that comparative neurobiology is not only really cool, but also just plain fun to do. One of his examples, wherein electric eels take over motor control of their prey at some distance through water via high voltage electric discharge, was recently featured on the cover of *Science.*

Continued on Page 13

Host Program Report from the AUA 62nd Annual Meeting

Continued from Page 12

One of Dr. Kenneth Catania's examples of adaptation during his lecture described how electric eels take over motor control of their prey at some distance through water via high voltage electric discharge and was recently featured on the cover of Science.

Professor Van Horn's lecture, entitled, *You Either Believe in Magic or You Believe in Math: The Changing Economics and Regulation of Health Care,* gave a high level view of the U.S. economy as it relates to healthcare and entitlements.

David W. Wright, PhD, Stevenson Professor and Chair of the Department of Chemistry at Vanderbilt University, led off the second half of the Host Program. His presentation focused on the novel metabolic pathways parasites use to detoxify metal loads from blood meals and was titled, *What's a Guy Got to Do to Get A Meal Around Here—Vectors, Parasites, and Homeostasis in Tropical Diseases.* Along the way, he demonstrated, in a humble yet entertaining style, how one can get scooped early in career and still survive in basic science. The Wright lab's work opens up a novel pathway of attack against malaria, still a scourge in much of the developing world.

"As patients become more exposed to the actual price of care, this sets the stage for a new world in which patients care about price, value and easy access above many other things in healthcare, a future for which few centers are truly prepared."

The final lecturer was presented by Associate Professor of Management (Economics) and Executive Director of Health Affairs at Vanderbilt University R. Lawrence Van Horn, PhD, MBA, MPH, of the Owen Graduate School of Management. Professor Van Horn's lecture, entitled, *You Either Believe in Magic or You Believe in Math: The Changing Economics and Regulation of Health Care,* gave a high level view of the U.S. economy as it relates to healthcare and entitlements. His main themes were that the current rate of spending on healthcare is unsustainable, and that the macroeconomic situation of the U.S. government will soon necessitate drastic rollbacks in the level of entitlement support provided. This will lead to a two-tier system of healthcare, in which only those who can afford to pay will have generous health insurance benefits. Professor Van Horn presented this position as a mathematically inescapable reality. Looking at the near-term horizon, Professor Van Horn challenged the supposition that patients care about the current quality and value discussions underway in healthcare and upon which so much hope for the future is placed. He asserted that as long as patients don't have visibility into pricing, they will not gauge value when making usage choices, and that they further ASSUME quality is universally high. Consequently, they currently care almost entirely about ease of access — something that academic medical centers struggle with. Moreover, the Affordable Care Act has finally created some visibility into pricing, through high-deductible, narrow-network health plans for many Americans.

Looking at the near-term horizon, Professor Van Horn challenged the supposition that patients care about the current quality and value discussions underway in healthcare and upon which so much hope for the future is placed.

The 2015 Host Program presented a broad sample of scientific thought from Vanderbilt University, to remind the AUA membership that academic anesthesiologists are vital members of the community of scholars in higher education. The topics were interesting in and of themselves, but the meta-topics presented by the speakers should resonate strongly with members as we seek to attract the best and brightest into our specialty and promote new generations of scholars in anesthesiology. As the AUA and its meeting aligns more closely with the IARS, there is great anticipation for next year's Host Program from University of California, San Francisco.

Mini-Symposium on Perioperative Genomics at the AUA 62nd Annual Meeting

W. Andrew Kofke, MD, MBA
Newsletter Editor, AUA Update
Communications and Website Committee
Chair, AUA Council
Professor of Anesthesiology and Critical Care
Professor, Department of Neurosurgery
University of Pennsylvania
Philadelphia, Pennsylvania

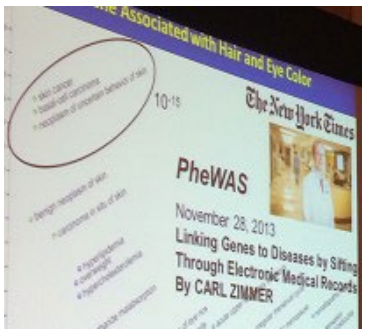
The symposium, *Perioperative Genomics*, moderated by Peter Nagele, MD, provided an overview of issues in the health system and personal applications of emerging knowledge in genomics, and was presented at the AUA 62nd Annual Meeting on Friday, April 24 in Nashville.

Jeff Balser, MD, Vice Chancellor for Health Affairs, and Dean, Vanderbilt University School of Medicine, described new advances in applications of health system and network databases and electronic health records, which can be combined with genomics to foster personalized approaches to medical care.

"Given the commitment of AHC faculty to discovery, this supports the notion that the electronic medical record can and should become a platform for research ultimately leading to highly personalized medical decision making."

Using drugs as an example, he indicated that 5.3% of admissions are related to adverse drug reactions and that most are predictable and thus preventable. He described academic health centers (AHCs) and networks as organizations committed to training, education and discovery, but also with extensive expertise in information technology which facilitates care across geography and across lifespans. As such AHCs are dependent on software of specific vendors but with IT expertise available, can add to vendor software to facilitate the merge of electronic records with personalized genomic and other –omic information. Given the commitment of AHC faculty to discovery, this supports the notion that the electronic medical record can and should become a platform for research ultimately leading to highly personalized medical decision making.

In a system where patient genomes are mapped routinely, this leads to the capability to do an inverse GWAS test (i.e., PheWAS). In a PheWAS procedure, a specific genetic polymorphism (SNP) is scanned across the medical record database to glean previously unknown phenotypes associated with the SNP.



The Scientific Advisory Board (SAB) presented a special Mini-Symposium, *Perioperative Genomics,* with a focus on genomic technology, personalizing health in the academic medical center, and opioid pharmacology.

Approaches such as this are facilitating creation of an undiagnosed disease network and promotion of pragmatic outcomes research. Technology such as this used in multihospital networks should support efforts to both improve quality and lower costs. An example of the power of this technology was presented where a patient with hypertension whose medications had been changed presented to an ED with hypotension. The IT infrastructure revealed that the patient had a SNP indicating she poorly metabolized the new medication resulting in high blood levels of active drug. No detailed cath, MRI, stress test was done. The patient's meds were changed, and she was sent home.

Dan Roden, MD, Vice Chancellor for Personalized Medicine at Vanderbilt University, presented a talk on *"Engineering a Healthcare System for Discovery and Implementation in Personalized Medicine."* As attested by both Hippocrates and President Obama, every patient is different. One challenge in ensuring a personalized approach is to create an EMR which promotes improved care of individuals and discover phenotype-genotype associations in populations and individuals. Such capability also facilitates an AHC in nimbly adjusting to change. VUMC now has 2.5 million patients in the EMR, and they have DNA on 215,000 patients. So, now they can determine how many patients have atrial fibrillation, 45,000, then look for those with DNA, 10,000, then find 4310 with AFib and genomic data. From this, discoveries can be made about genes contributing to AFib.

Continued on Page 15

Mini-Symposium on Perioperative Genomics at the AUA 62nd Annual Meeting

Continued from Page 14

This concept underlies the national eMERGE network, of which VUMC is the coordinating center. This network provides PheWAS capability in extremely large multiethnic populations. One example given is determining SNPs responsible for QRS duration, found to be related to polymorphisms in genes coding for sodium channels.

Simon Body, MB ChB MPH, Associate Professor at Harvard Medical School, presented a talk titled, *"Genomic Technology is Outpacing Utility This Decade but Perhaps Not Next Decade."* He began by noting that funding for this sort of work equals the cost of one fighter jet. He discussed the difference between hard-coded information and soft-coded information related to histone protein coating of DNA, underlying the property of epigenetics.

"The metabolism of various opioids can result in active metabolites, inactive metabolites, or creation of a toxic by product (e.g., normeperidine with meperidine)."

He gave some examples of the size and fees of various genotyping facilities around the world. The largest is in Hong Kong and least expensive in Germany. His lab currently has 150Tb of memory, and he predicts petabytes in the near future.

He reviewed a few examples of the use of genomic testing. In his own case, his genomic testing predicted his atrial fibrillation, obesity, and slow metabolism of warfarin. With the AFib example, although there is presently a list of associated genes, mechanisms by which these genes contribute to the genesis of AFib remain opaque. There are numerous other examples of SNP associations with various diseases.

Evan Kharasch, Director of Clinical and Translational Research at Washington University, presented *"Genomics and Opioid Pharmacology."* He overviewed some principles of the pharmacogenomics of drug response, indicating the two

Dan Roden, MD, Vice Chancellor for Personalized Medicine at Vanderbilt University, discussed *Engineering a Healthcare System for Discovery and Implementation in Personalized Medicine.*

primary parameters are genomic effects on pharmacokinetics and pharmacodynamics. Much of the source of variation in metabolism of drugs is due to the many SNPs associated with cytochrome P450. For example CPY2D6 has 70 variant alleles, although 15 are thought to be nonfunctional. Moreover, there is significant ethnic variability associated with this protein. The metabolism of various opioids can result in active metabolites, inactive metabolites, or creation of a toxic by product (e.g., normeperidine with meperidine).

An important example presented was in the metabolism of codeine to morphine. Without this conversion, codeine is an ineffective analgesic, and with excessive conversion, opioid overdose can arise even with acceptable routine dosing. A situation was presented of a post c-section mother taking codeine for post op pain. Unfortunately, she was a rapid metabolizer resulting in a lethal concentration of MS in her breast milk, leading to the death of her baby. Genotyping can have a role in cases like this and increase safety in a personalized manner. This panel on genomics helped to extrapolate many of the ways genotyping can prove valuable and revealed to AUA Annual Meeting attendees the emerging knowledge on the topic.

But I Read It in a Journal …

The editor of the *Lancet* recently published a statement declaring that a lot of published research is in fact unreliable at best, if not completely false.

"The case against science is straightforward: much of the scientific literature, perhaps half, may simply be untrue."

To read more about the statement made by Dr. Richard Horton, the current editor-in-chief of the *Lancet*, visit **http://goo.gl/93OmK2**.

$1.75 Million in New Research Funding

FAER Awards Given to 14 Anesthesiologists

Denham S. Ward, MD, PhD
President and CEO
Foundation for Anesthesia Education and Research (FAER)
Rochester, Minnesota

During its spring grant funding cycle, the Foundation for Anesthesia Education and Research (FAER) Board of Directors approved $1.75 million to fund the research of 14 anesthesiologists and trainees, who represent 11 academic institutions and medical centers. With this funding, FAER will have committed nearly $30 million to anesthesiology and perioperative research since 2000.

The purpose of FAER grant funding is to develop the research careers of anesthesiologists who seek to answer important questions and make scientific discoveries in the areas of anesthesiology, perioperative medicine, health care delivery and medical education research. Anesthesiologists who have received FAER grant funding often go on to have successful careers as independently funded physician scientists who advance medicine through newfound knowledge.

The awards included Mentored Research Training Grants ($175,000) and Research Fellowship Grants ($75,000) in basic science, clinical, translational or health services research, as well as Research in Education Grants ($100,000).

Spring 2015 Grant Awards

Mentored Research Training Grants

Lorenzo Berra, MD, Massachusetts General Hospital
Stored blood transfusion and nitric oxide
Mentor: Warren M. Zapol, MD

Helen H. Lee, MD, MPH, University of Illinois at Chicago
Improving access to care for the pediatric dental general anesthesia population
Mentors: Anthony T. Lo Sasso, PhD; Daniel Sessler, MD

James Rhee, MD, PhD, Massachusetts General Hospital
Role of GAPDH in the cardio-metabolic response to ischemia
Mentors: Anthony Rosenzweig, MD; Wei Chao, MD, PhD

Vivianne L. Tawfik, MD, PhD, Stanford University
Monitoring and modulating microglial cell activation in pain
Mentors: Sean Mackey, MD, PhD; David J. Clark, MD, PhD

Brant M. Wagener, MD, PhD, University of Alabama at Birmingham
Mechanisms of lung immunosuppression after traumatic brain injury
Mentors: Jean-Francois Pittet, MD; Sadis Matalon, PhD

Gene T. Yocum, MD, Columbia University
GABA-A alpha4 subunit mediates lung inflammation and bronchoconstriction
Mentors: Charles W. Emala, MD, MS; Jeanine D'Armiento, MD, PhD

Research Fellowship Grants

M. Yawar J Qadri, MD, PhD, University of North Carolina at Chapel Hill
Assessing differential microglial activation states in acute and chronic pain
Mentors: Ru-rong Ji, PhD; Thomas Van de Ven, MD, PhD

Weifeng Song, MD, PhD, University of Alabama at Birmingham
Low molecular weight hyaluronan mediated airway hyperresponsiveness in aspiration-induced acute lung injury
Mentors: Sadis Matalon, PhD; Jean-Francis Pittet, MD

Eric L. Vu, MD, Baylor Medicine / Texas Children's Hospital
Three-dimensional ST instability: Clinical evaluation of novel ST segment monitoring in single ventricle physiology
Mentors: Ken Brady, MD; Craig Rusin, PhD

Nathan H. Waldron, MD, Duke University
Temporary autonomic blockade to prevent atrial fibrillation after cardiac surgery
Mentors: Joseph P. Mathew, MD, MHSc, MBA; Jonathan Piccini, MD, MHSc

Research in Education Grants

Christopher L. Cropsey, MD, Vanderbilt University Medical Center
Effects of an electronic decision support tool on team performance during in-situ simulation of perioperative cardiac arrest
Mentor: Matthew D. McEvoy, MD

Sara N. Goldhaber-Fiebert, MD, Stanford University School of Medicine
Adoption of emergency manuals: Facilitators, barriers, and characteristics of clinical use
Mentors: David M. Gaba, MD; Steven Asch, MD, MPH

Robina Matyal MD, Beth Israel Deaconess Medical Center
Fundamentals of ultrasound course with verification of proficiency
Mentors: Feroze Mahmood, MD; Stephanie Jones, MD

Annette Rebel, MD, University of Kentucky
Anesthesia resident skill development assessed by competitive OSCE event: Anesthesia Olympics
Mentors: Randall M. Schell, MD, MACM; Marjorie Stiegler, MD

"Anesthesiologists who have received FAER grant funding often go on to have successful careers as independently funded physician scientists who advance medicine through newfound knowledge."

Future Opportunities, Upcoming Deadlines

The next application deadlines for FAER funding are August 15, 2015 and February 15, 2016. FAER encourages AUA members to apply for these awards.

Learn more about FAER grants at **FAER.org/research-grants**.

Support anesthesiology research and FAER at **FAER.org/donate**.

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$1.75 Million in New Research Funding FAER Awards Given to 14 Anesthesiologists

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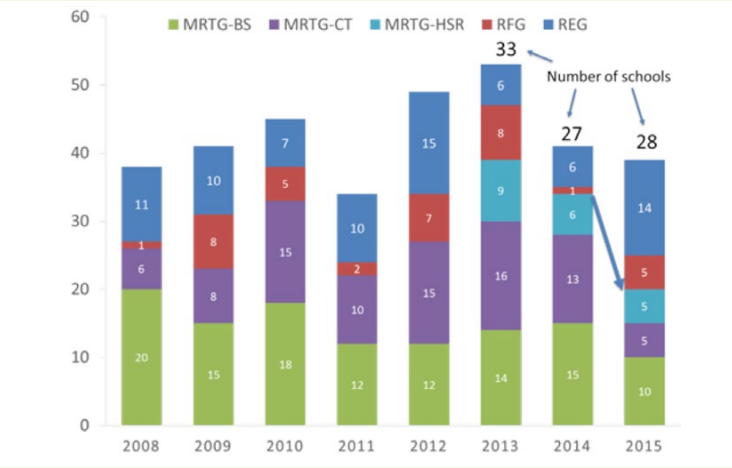

- After hitting a peak in 2013 with 54 submissions, the number of grant applications FAER has received each year over the past two years has declined, with 42 applications in 2014 and 39 in 2015.
- The number of applications for Mentored Research Training Grant applications dropped off in February 2015 (20) from February 2014 (35).
- The number of applications for Research in Education Grants in February 2015 (14) increased compared to 2014 and 2013.
- The decrease in the number of applications overall could be due to FAER's re-establishing of its August grant deadline. Some applicants may have decided to apply in August instead of February. If this is true, the total number of applications in 2015 may yet exceed 2014 and 2013.
- One goal of the FAER Board of Directors is to encourage resubmissions of applications that scored well but not high enough for funding the first time. Each applicant receives feedback from the study section, with guidance on what should be improved upon in order to successfully resubmit for funding.

For many years, the FAER Board has met just prior to the AUA Annual Meeting. In 2016, the AUA will be meeting later in May and the FAER Board needs to approve and fund the grants by mid-April. Therefore, the FAER Board will need to meet prior to the AUA Annual Meeting. However, this will not change the close connection that FAER has with the AUA. AUA members are the mentors on many of our grants and the FAER grantees are the future AUA members!

AUA Call for Member Nominations: Submit Candidates to AUA by September 15!

Nominations for AUA membership are now being accepted, and the process is easier than ever! Simply email your nomination letter and nominee's CV to AUANominate@iars.org by **Tuesday, September 15.** A bylaws change approved by membership at the AUA Annual Business Meeting in April now opens up nominations two times per year.

Qualifications for Nomination

Active Membership:

- An individual who occupies and has occupied a faculty position in anesthesiology in a medical school or its affiliated teaching hospital for at least twenty-four months, following completion of residency training in anesthesiology; or
- An individual whose work as an anesthesiologist, teacher, or investigator has demonstrated success in academic anesthesia or an individual who has shown a continued productive interest in and contribution to academic anesthesia.

Affiliate Membership:

- An individual who has made distinguished contributions to academic anesthesiology, but does not have a primary faculty appointment.

Associate Membership:

- An individual who holds a faculty position in anesthesiology in a medical school or its affiliate teaching hospital and who has been approved for funding for a K or R-Type Grant from NIH, FAER, AHA, APSF, IARS, or non-U.S. equivalents.
- Must be the nominated by a department chair.

International nominees are welcome for all three membership types. To learn more about the nomination requirements, please see the **AUA Member Nomination Instructions**.

Please feel welcome to contact the AUA Membership Department at AUANominate@iars.org or 415-296-6950 with any questions.

Nominate candidates today and play a part in shaping the future of the AUA!

Congratulations to the New AUA Members for 2015!

The following individuals were elected to active membership status at the AUA Annual Business Meeting on April 24, 2015 at the AUA 62nd Annual Meeting in Nashville, Tennessee. They bring a wealth of experience in a wide range of areas that will add to the membership base. Look forward to meeting them at the AUA 63rd Annual Meeting, May 19-21, 2016 in San Francisco, California!

Terrence Allen, MBBS, FRCA
Duke University Medical Center,
Durham, North Carolina

Katherine Arendt, MD
Mayo Clinic College of Medicine,
Rochester, Minnesota

Michael Ault, MD, FCCP, FCCM
Northwestern University,
Feinberg School of Medicine,
Chicago, Illinois

Arna Banerjee, MBBS
Vanderbilt University,
Nashville, Tennessee

Brian Bateman, MD, MSc
Massachusetts General Hospital,
Boston, Massachusetts

Dmitri Bezinover, MD
Penn State Milton S. Hershey Medical Center,
Hershey, Pennsylvania

Paul Bigeleisen, MD
University of Maryland School of Medicine,
Baltimore, Maryland

James Blum, MD
Emory University,
Atlanta, Georgia

Simon Body, MBChB, MPH
Brigham and Women's Hospital,
Boston, Massachusetts

Michael Brown, MD
Mayo Clinic,
Rochester, Minnesota

Amanda Burden, MD
Cooper Medical School of Rowan University,
Camden, New Jersey

Albert Dahan, MD, PhD
Leiden University Medical Center,
Leiden, Netherlands

Milo Engoren, MD
University of Michigan,
Ann Arbor, Michigan

Ana Fernandez-Bustamante, MD, PhD
University of Colorado Denver,
Aurora, Colorado

Jane Fitch, MD
University of Oklahoma,
Oklahoma City, Oklahoma

Peter Fleischut, MD
Weill Cornell Medical College,
New York, New York

Samuel Galvagno, DO, PhD
University of Maryland,
Baltimore, Maryland

Brenda Gentz, MD
University of Arizona College of Medicine,
Tucson, Arizona

Jacob Gutsche, MD
University of Pennsylvania,
Philadelphia, Pennsylvania

Nina Guzzetta, MD
Emory University School of Medicine,
Atlanta, Georgia

Paco Herson, PhD
University of Colorado Denver,
Aurora, Colorado

Laureen Hill, MD, MBA
Emory University School of Medicine,
Atlanta, Georgia

Michael Hutchens, MD
Oregon Health & Science University,
Portland, Oregon

Cor Kalkman, MD, PhD
University Medical Center Utrecht,
Utrect, Netherlands

Shubjeet Kaur, MD, MSc, HCM
University of Massachusetts Medical Center,
Worcester, Massachusetts

Allan Klock, MD
University of Chicago,
Chicago, Illinois

Ines Koerner, MD, PhD
Oregon Health & Science University,
Portland, Oregon

Antoun Koht, MD
Northwestern University
Feinberg School of Medicine,
Chicago, Illinois

Sandra Kopp, MD
Mayo Clinic,
Rochester, Minnesota

Chanhung Lee, MD, PhD
University of California San Francisco,
San Francisco, California

Lisa Leffert, MD
Massachusetts General Hospital,
Boston, Massachusetts

Andrew Mannes, MD
National Institutes of Health,
Bethesda, Maryland

Peggy McNaull, MD
University of North Carolina at Chapel Hill,
Chapel Hill, North Carolina

Matthias Merkel, MD, PhD
Oregon Health & Science University,
Portland, Oregon

Tim Miller, MBChB, FRCA
Duke University Medical Center,
Durham, North Carolina

Theodora Nicholau, MD, PhD
University of California San Francisco,
San Francisco, California

Thomas Papadimos, MD, MPH, FCCM
Ohio State University,
Columbus, Ohio

Jeffrey Pasternak, MS, MD
Mayo Clinic,
Rochester, Minnesota

Raymond Planinsic, MD
University of Pittsburgh,
Pittsburgh, Pennsylvania

Kane Pryor, MBBS
Weill Cornell Medical College,
New York, New York

Patrick Purdon, PhD
Massachusetts General Hospital,
Boston, Massachusetts

Zenaide Quezado, MD
George Washington University
School of Medicine and Health Sciences,
Washington, D.C.

Karthik Rahunathan, MD, MPH
Duke University Medical Center,
Durham, North Carolina

Satya Ramachandran, MBBS
University of Michigan,
Ann Arbor, Michigan

Leif Saager, MD
Cleveland Clinic,
Cleveland, Ohio

Jeffrey Sall, MD, PhD
University of California San Francisco,
San Francisco, California

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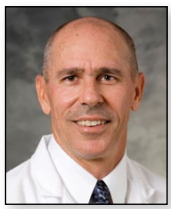

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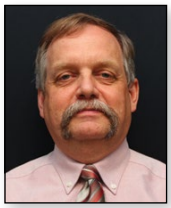

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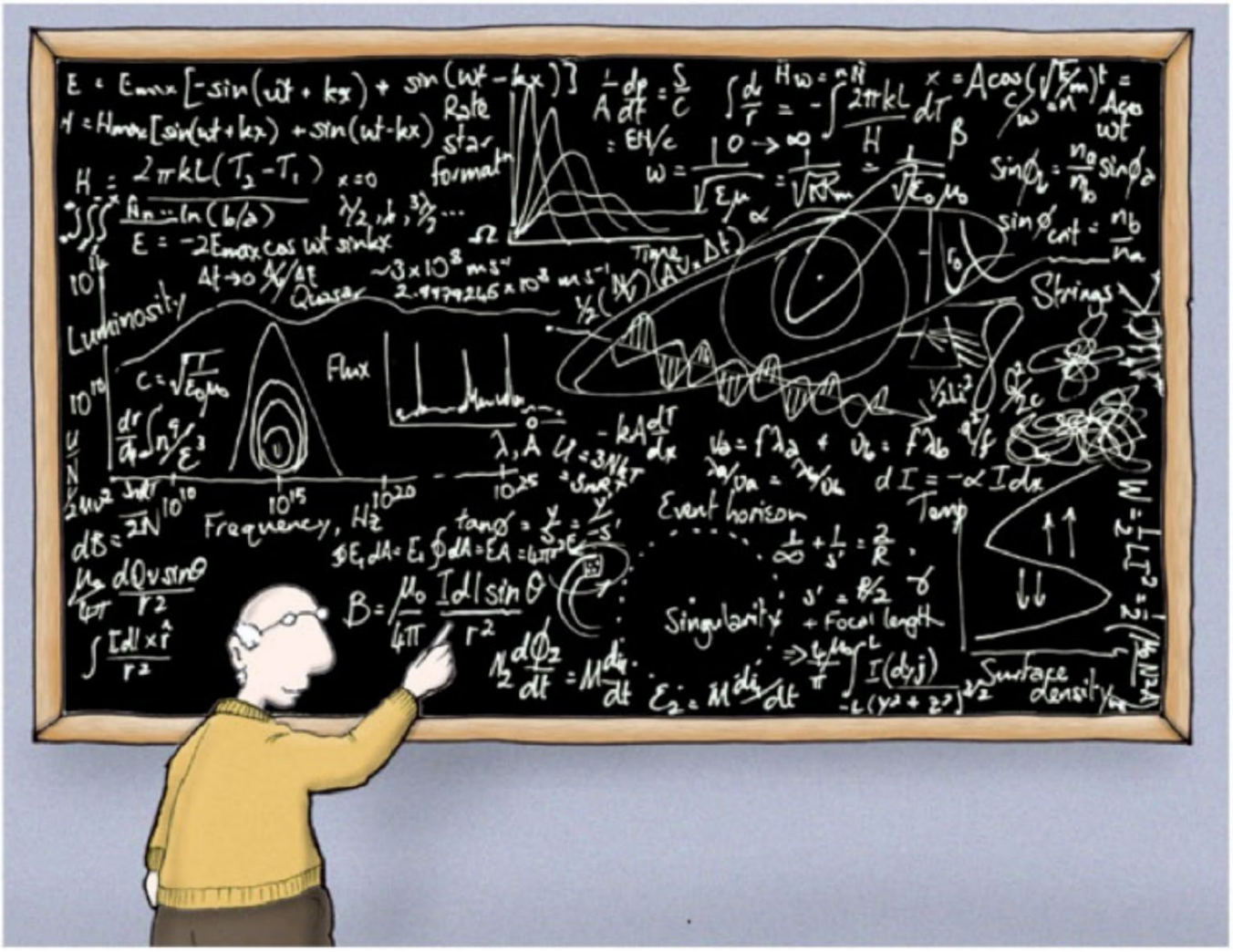

Anesthesia Mechanisms Made Simple

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