There were no anesthesiologists in Waxahachie, Texas where Leigh-Ann Langford grew up. At the region’s small hospital – a satellite of Baylor Medical Center – certified registered nurse anesthetists (CRNAs) were the sole anesthesia providers. One of the CRNAs, Dale Stevenson, was a close friend of Langford’s father.

“For a very long time, my dad didn’t know that anyone other than CRNAs gave anesthesia,” says Langford, who today is a CRNA at UCSF Medical Center.

Waxahachie’s anesthesia story is especially relevant today, because as UCSF Medical Center – like many of its counterparts – copes with increased demands for anesthesia and mandated cuts in residents’ hours, it is turning to CRNAs to help fill the gap.

A Long History of Qualified Care

In the United States, nurse anesthetists have been providing anesthesia care since the mid-nineteenth century and, today, CRNAs are either masters-prepared or doctoral-prepared in anesthesia care. Their training and history signify that what went on in Waxahachie is hardly unusual, especially in rural areas.
Whatever the flaws or merits of health care reform (Patient Protection and Affordable Care Act), the ongoing debate has focused my attention on the concept of health care value: optimally addressing patients’ presenting complaints, avoiding excess services, seamless transitions amongst care providers, preventing new health concerns, returning patients to functional lives, and averting readmissions. This renewed emphasis on value has powerful implications for anesthesiologists.

Consider the case of a patient whose arthritic knee has caused her debilitating pain for months to the extent that her shopping tasks are no longer performed without assistance. After entering the hospital, her surgeon completes a terrific knee replacement and she leaves relatively pain-free, with a knee able to move in all the right directions. By traditional measures, that’s high value care in which surrogate markers have been used to measure outcome.

But what if the care plan – from pre-op through post-discharge care – didn’t fully account for a variety of patient risk factors? What if the patient left the hospital cognitively impaired, and became more dependent on others to accomplish the activities of daily living? Is the patient better off than when she entered the hospital? Have costs or efficiency improved if the episode initiated an escalating need for other health care services?

In the hospital, anesthesiologists are the care providers best positioned to enhance value by orchestrating the episode of surgical care and taking a holistic view of the outcome. Many of the articles in this issue of the newsletter make clear why we must assume this responsibility.

Sepsis, pain, and the onset of cognitive dysfunction result from a complex set of factors that are beyond the reach of neat care silos. If anesthesiologists don’t guard against them across the entire hospital stay, no one will. We can work more closely with primary care providers before admission, bring together the plans of other care providers into one comprehensive plan, and communicate more effectively so that all of us are cognizant of the risks that need to be mitigated before, during, and after each surgical procedure. At an academic medical center like UCSF, we also can see that our resources and educational programs are geared towards creating value.

Of course, for many of us, the commitment to value is not new. But if we are to continue to meet that commitment effectively, we have to adapt to an evolving system. For anesthesiologists, that means accepting more responsibility for orchestrating each surgical patient’s entire episode of hospital care and linking these episodes seamlessly to primary care.

Mervyn Maze, MB ChB
Professor and Chair
In the intensive care unit – where UCSF anesthesiologist Judith Hellman, MD, does her clinical work – sepsis is the most feared and prolific killer. It’s no surprise then that Hellman spends her research hours tracking how the interactions between microorganisms and the body’s innate immune system lead to shock and organ dysfunction in sepsis.

Hellman, the UCSF Department of Anesthesia and Perioperative Care’s Associate Director of Research, is particularly focused on activity in the endothelium, the thin layer of cells that lines the interior of blood vessels. A recipient of an NIH RO1 grant funded through the ARRA program, as of this writing Hellman has a major paper on endothelium and sepsis in the January 2011 issue of the *Journal of Immunology*.

**A Career Spent Homing in on Sepsis**

Though she grew up in New York City, her family’s San Francisco roots eventually drew Hellman to UC Berkeley where she majored in microbiology; she then attended medical school at Columbia. “I thought I wanted to do medical research, but when I walked through the ICU during a medical school surgery rotation, I became excited about what goes on there, and eventually decided to become an ICU physician,” she says.

Then, she completed residencies in both internal medicine at Oregon Health Sciences University and anesthesia at Massachusetts General Hospital. At Mass General, her department chair discovered her microbiology background and referred her to the lab of H. Shaw Warren, MD, an infectious disease physician and sepsis researcher.

“It all sort of came together at that point – microbiology, intensive care, sepsis,” says Hellman. After an intensive care fellowship, also at Mass General, Hellman moved on to do post-doctoral work in Warren’s lab on a T-32 training grant.

**A Convoluted, Contradictory Disease Process**

As she began her own research career, Hellman originally focused on lipoproteins that are present in the bacteria that cause sepsis and get released when infections are present.

“Then, in my clinical work, I was struck by the complex bleeding and clotting derangements that occur in patients with sepsis,” says Hellman. “I couldn’t help but think that processes that occur in the endothelium, which is important in coagulation homeostasis and is activated in sepsis, might be at the heart of sepsis-induced organ failure.”

That insight led to her current projects, where Hellman is studying the role of Toll-like receptor 2 (TLR2) and TLR2 agonists. TLRs are proteins that serve as surface receptors on many cells, including leukocytes and the endothelium; they recognize parts of bacteria – the TLR agonists – and decide how to react. This sets off a complex inflammatory cascade, which leads to coagulopathy, vascular leak, and, eventually, sepsis-induced organ failure.

Defining these cellular and chemical interactions is complicated enough, but the challenge for Hellman is to then make sense of their effects on human health. On the one hand many responses in sepsis have important roles in clearing infection and healing; on the other hand they can initiate fatal shock and organ failure. Hellman hopes to understand the cellular interactions well enough to target the harmful effects, without undermining beneficial effects, such as eradication of the infection.

“You can’t get paralyzed by the complexity,” she says. “You just have to accept it can take many years to achieve the goal.”

“I couldn’t help but think that processes that occur in the endothelium, which is important in coagulation homeostasis and is activated in sepsis, might be at the heart of sepsis-induced organ failure.”
The Essential Role of Nurse Anesthetists

Since 2009, California has been an “opt out” state allowing CRNAs to practice without physician supervision. At UCSF, however, hospital policy dictates that they practice under the “medical direction” of an anesthesiologist. At UCSF, CRNAs administer both general and regional anesthesia in the OR as well as in non-OR settings that include MRI, neuro-angiography, the endoscopy suite, the cardiac catheterization lab, and the electrophysiology lab. The ratio of CRNAs to anesthesiologists during a shift is typically 2:1.

The only areas where CRNAs do not practice at UCSF are the intensive care unit, obstetrics, open-heart surgery, liver transplant, and the pain services. “Some of what limits our practice at a teaching hospital is that these other services offer more of the experiences residents need,” says CRNA Ann Crowley.

Pleasures and Challenges
Both Crowley and Langford enjoy their work, but also know they face significant challenges, as any anesthesiologist can attest. “Surgical anesthesia requires that we maintain the patient’s homeostasis in a profoundly altered state. That’s our job, but it can be very stressful,” says Crowley.

“Also, many patients don’t even know we exist,” laughs Langford. “Frequently we have to explain what our profession is, despite it being over a century old. Although, this gets old after awhile, it is an opportunity to educate the community about the CRNA profession.”

But there are many rewards as well. For one, “I think our faculty enjoy working with us,” says Crowley.

“And UCSF is a vibrant university medical center, with a lot to learn – and everyone is interested in teaching,” says Langford. “In that environment, you don’t have to make as big of an effort to seek out cutting edge anesthesia practice. It’s all right here.”

“Many patients don’t even know we exist. Frequently we have to explain what our profession is, despite it being over a century old.”

A New Era

The past decade has seen significant advances in the management of both acute and chronic pain, as physicians scramble to respond to patients’ pain complaints, safety and regulatory demands, and the need to reduce hospital readmissions.

“Effective pain management has come front and center,” says Director of Pain Medicine Mark Schumacher, PhD, MD, from the UCSF Department of Anesthesia and Perioperative Care. “Yet pain management is notoriously complex, often touching on multiple sub-specialty areas across care settings.”

To address that complexity and ensure all patients receive the highest quality care and outpatient follow up, Schumacher and Chair of the Department of Anesthesia and Perioperative Care Mervyn Maze, MB ChB, are working both within Anesthesia and with other departments to craft a unified approach to pain management. The initial effort will include Interventional Radiology, Neurology, Neurosurgery, Obstetrics-Gynecology, Orthopedics, Osher Center for Integrative Medicine, Palliative Care and Pharmacy.
“Effective pain management has come front and center. Yet pain management is notoriously complex, often touching on multiple sub-specialty areas across care settings.”

**in Pain Management**

“The goal is to create a Pain Medicine Consortium that will coordinate pain management across all medical center services – outpatient, inpatient, and follow-up care – both now, and at the future Women’s, Children’s and Cancer Centers at Mission Bay,” says Schumacher.

**More Effective Use of Pain Management Expertise**

As at many other institutions, UCSF pain management services have grown in response to patient needs. At the Parnassus and Mount Zion hospitals, what began as a post-operative acute pain service now includes inpatient chronic pain management for patients admitted or readmitted due to poorly controlled pain.

In theory, the outpatient UCSF Pain Management Center – with its dedicated, multidisciplinary faculty – complements the two inpatient services but, understandably, the services can overlap. In an effort to more effectively deploy the department’s expertise, Schumacher has refocused the Parnassus and Mount Zion pain services towards acute post-operative care, while making a team of dedicated faculty from the outpatient Pain Management Center available at both inpatient hospitals for chronic pain management care and consultations.

“The chronic pain team fosters continuous care, either by working with referring physicians on a long-term plan or by following patients back to the Pain Management Center,” says Schumacher. “And as efforts proceed to unify pain medicine at UCSF, the multi-modality Center will continue to provide an important anchor for patients suffering from chronic painful conditions.”

**Translating Research, Disseminating Knowledge**

“Perhaps the most exciting part of forming a Pain Medicine Consortium is how it can help bring the work of the many world-class pain researchers at UCSF directly to patients’ bedsides,” says Schumacher. That work includes a number of unconventional, non-opioid therapies, many of them developed or advanced in part at UCSF. Among them: gabapentin for neuropathic and post-operative pain; the use of capsaicin for blocking pain at its source, including cancer pain; use of low-dose ketamine for patients who have built a resistance to narcotic analgesics; and intravenous lidocaine for post-operative pain reduction.

“Whether through optimizing more established regional and interventional techniques or integration of novel non-narcotic pain management strategies, we will more safely and effectively manage patients’ pain complaints,” says Schumacher.

To that end, he believes that centralizing pain management expertise will also help disseminate that expertise to others. “There’s no way one physician or team can manage all pain patients at UCSF, but we can now do a better job of working with other physicians, physician trainees, nurses, and pharmacists on emerging pain management strategies.”
Paul Riegelhaupt
**Intern, Research Scholars Track**
I’ve always been a math and science nerd. I went to Albert Einstein College of Medicine for an MD/PhD, more to be a scientist than a doctor, but then fell in love with being a doctor, and decided I wanted both.

I found anesthesia while studying the GABA receptor for my thesis project. My work was focused on the molecular structure of protein transporters on membranes, which certainly come into play in anesthesia, so it was an easy transition for me.

I came to UCSF because they put it all together here: research, clinical excellence, and a great place to live. They understand what it takes to get started as a clinical scientist and they foster your growth with outstanding people and more long-term support than other residency programs. The department believes that research matters and they’re dedicated to supporting it.

In my med school essay, I told a story of a guy who keeps jumping into the water to save people from drowning…. I want to be the guy who figures out who’s throwing all the people in the water to save people from drowning....

I initially came to UCSF in 2006 as a plastic surgery resident, but made a career change into anesthesia in 2009. The Anesthesia Department has given me the opportunity to take part in the Global Health Scholars Program, a unique program through UCSF’s Institute of Global Health where residents and graduate students participate in course work and develop research projects in the global health sciences.

For my project I want to combine my backgrounds in surgery and anesthesia training to look at perioperative trauma outcomes and create systems changes to improve those outcomes, because injury from trauma is a leading cause of morbidity and mortality in developing countries. My long-term goals are to investigate and use systems changes and education to improve our ability to care for all perioperative patients in developing countries.

UCSF has a strong relationship with a university hospital in Uganda and we are in touch with a network of people in Uganda who are excited to collaborate with us. We will begin with an observational study and then work together to design systems change that could help improve perioperative trauma outcomes. We are not going to Uganda to impose changes on their medical system, but as collaborative partners. It’s their hospital, their country.

Sarah Gebauer
**Global Health Scholar**
I grew up in Texas and was a Spanish major at Emory University, in part because I knew I wanted to do global health work. My grandmother had done medical and legal work in Guatemala, and that made us think about helping people outside of our small bubble. Then I went to Stanford for medical school, where I had some great mentors who took me to Guatemala to work with local health promoters.

I chose anesthesiology, because I really like the people and it offers a good mix of hands-on activities: critical care, pain medicine – there are lots of options, lots of ways for your life to look. I’m looking forward to my palliative care fellowship at San Diego Hospice next year.

I chose UCSF, because I was very impressed by the quality of the clinical training and the interest of the faculty in the projects they were doing. When I came here, I was hoping to continue my interest in global health and the program directors were nice enough to let me apply.

(Before I became pregnant), I was planning a project looking at cleft palate repair in Nepal, with Dr. (George) Gregory, looking at complication rates and other outcomes there. Now I’ll fulfill my requirements by creating an online education module for the Global Health Education Consortium. I still plan to make global health an important part of my career.

Catherine Chen
**Intern, Research Scholars Track**
My dad is an oncologist and I always wanted to be a doctor. But in my senior year at Rice (BA in English), I decided not to apply to medical school right away; instead I went to New York and spent three years doing investment banking.

Within the first year, I knew being a physician better matched my gifts and interests. I wound up getting into Johns Hopkins, where I had a surgeon mentor (Marty Makary, MD, MPH) who does a lot of research on patient safety and outcomes. While I was writing a book chapter for him, I realized that anesthesiologists have been doing this patient safety/quality of care thing longer than other specialties. Also, I had done my anesthesia rotation early – and loved it.

I was attracted to UCSF Anesthesia because of all the research history and because of the research track. The way the track is integrated throughout your residency lets you develop relationships over time, rather than starting from scratch on day one of a fellowship. And I like that this internship year has been balanced and doable; I really appreciate the thought given to the rotations, electives and schedules.

I would like to focus my research on the perioperative setting – and look at the system as a whole to see what types of things can make patients safer. There are so many subtleties and niches in patient safety that I don’t know where I’ll end up, but one goal is to come up with new ways to measure quality and the impact of the interventions we propose.

Kristine Breyer
**Global Health Scholar**
My interest in global health began as an undergraduate at the University of Colorado. Then, I attended medical school at Loyola University in Chicago, which really promotes working with underserved populations and gave me the opportunity to work at a free clinic on Chicago’s West Side and go on a medical trip to rural Guatemala.

I initially came to UCSF in 2006 as a plastic surgery resident, but made a career change into anesthesia in 2009. The Anesthesia Department has given me the opportunity to take part in the Global Health Scholars Program, a unique program through UCSF’s Institute of Global Health where residents and graduate students participate in course work and develop research projects in the global health sciences.

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In challenging economic times, Bradley Immanuel oversaw dramatic change in the Department of Anesthesia and Perioperative Care’s information technology operations. An amateur photographer who takes about 30,000 photos each year – and an avid bicyclist – Immanuel lives in San Francisco with his wife Catherine and his two sons Lucas, 7, and Jonah, 3.

How did you come to be director of IT for the UCSF Department of Anesthesia and Perioperative Care?

After graduating from Pepperdine University with a political science degree, I spent five years working for a nonprofit doing economic development in Russia. But it was a small operation and I often found myself acting as the computer fix-it guy. I’ve spent the last nine years in the department’s IT unit and have really enjoyed it. I was given the chance to build on successes and learn from failures; I would not have had that chance in most other organizations.

How does the department’s IT unit currently operate?

Our group does everything from helping a faculty member check email to creating programs that facilitate professional fee billing to serving as liaison to other campus IT groups. We’re a kind of IT concierge; we make sure Anesthesia faculty and staff get what they want and need so IT problems don’t take away from their ability to do world-class patient care, research and education.... We spend about 50-60 percent of our time troubleshooting, and the rest creating new systems or electronic workflows.

For example?

For example, to help the department more accurately bill, we’ve created a confirmation solution that downloads data from the current EMR system. In our system, areas that often get missed – such as when someone forgets to document an Anesthesia event – bubble to the top. It also helps us see which faculty members worked with which residents, so we can know who is best prepared to do evaluations. There are also things like the no-fault reporting system we set up with Dr. Caldwell; for just a few hours of a programmer’s time the department has received a lot of benefit.

But big changes are on the way?

Yes. The Medical Center’s EMR is changing from PICIS and UCare to APeX. This will have a big effect on faculty and residents; our role will largely be to ensure our confirmation system works with APeX and to help faculty when they need to access APeX from their office.

The bigger change for IT is the Chancellor’s Operational Excellence initiative – a response to state budget cuts. Up to now, IT at UCSF has been a series of small businesses and Anesthesia has had gold-plated service...Now we have to figure out how to make excellent service available to others without degrading our department’s ability to set our own IT agenda; we want to be able to continue providing specialized services to our faculty, staff and other department members.
FACULTY HONORS, AWARDS & APPOINTMENTS

Jon Matthew Aldrich, MD
CAMPUS AWARD:
UCSF Academy of Medical Educators Excellence in Teaching Award, 2010

Pedram Aleshi, MD
CAMPUS AWARD:
William K. Hamilton Award for Excellence in Teaching, 2010-2011

Matthias Braehler, MD
CAMPUS AWARD:
Ronald D. Miller Award for Excellence in Junior Faculty Advising and Mentoring of Residents, 2010-2011

Lee-Lynn Chen, MD
CAMPUS AWARD:
UCSF Academy of Medical Educators Excellence in Teaching Award, 2010

Neal Cohen, MD
CAMPUS APPOINTMENT:
Interim Vice Dean for Academic Affairs, 2011

Adam Collins, MD (above)
as part of a multidisciplinary team including Leslie Dubbin, RN, and Robert Mackersie, MD
CAMPUS AWARD:
Hearts Grant, SFGH, 2011
A Hearts grant for $92,500 was recently awarded to a multidisciplinary team at San Francisco General Hospital to initiate trauma team training and other courses to improve the delivery of patient care to the critically ill at SFGH. The grant awardees are Leslie Dubbin, RN, Robert Mackersie, MD, and Adam Collins, MD. The grant funds will be used to purchase a Laerdal SimMan 3G with accompanying software and hardware. Dr. Collins believes that hospital-based in-situ simulation programs will be a major part of the educational fabric of the UCSF and affiliated hospitals.

Adrian Gelb, MB ChB
EXTRAMURAL AWARD:
Distinguished Service Award, Society for Neuroscience in Anesthesiology and Critical Care, 2010

Michael Gropper, MD, PhD
CAMPUS APPOINTMENT:
UCSF Department of Anesthesia and Perioperative Care’s Executive Vice Chair, 2011

Jan Hirsch, MD
CAMPUS AWARD:
UCSF Academy of Medical Educators Excellence in Teaching Award, 2010

Benjamin Houseman, MD, PhD
CAMPUS AWARD:
UCSF Academy of Medical Educators Excellence in Teaching Award, 2010

Eric Lin, MD
CAMPUS AWARD:
UCSF Academy of Medical Educators Excellence in Teaching Award, 2010

Errol Lobo, MD, PhD
CAMPUS AWARD:
UCSF Exceptional Physician Award, 2011

Mervyn Maze, MB ChB
CAMPUS APPOINTMENT:
The William K. Hamilton, MD, Distinguished Professorship
Throughout his tenure at UCSF, Bill Hamilton was determined that while many anesthesia departments were held back by the yet undeveloped skills of anesthesiologists, his Department would proceed apace with other more established medical specialties. Not only did he succeed in this endeavor, but he was the force behind research discoveries that were implemented by all fields of medicine.

A Distinguished Professorship within the Department of Anesthesia named for Dr. William K. Hamilton will recognize his past exemplary service, while signaling the promise that continued research, training and clinical care in anesthesiology at UCSF will spur the discoveries of tomorrow.
— Text from the William K. Hamilton Distinguished Professorship brochure

J. Renee Navarro, MD, PharmD
CAMPUS APPOINTMENT:
UCSF’s first Vice Chancellor for Diversity and Outreach, 2010

Mark Rollins, MD, PhD
CAMPUS APPOINTMENT:
Director of Fetal Anesthesia, UCSF Fetal Treatment Center, 2011

Arthur Wallace, MD, PhD
CAMPUS APPOINTMENT:
Vice Chair, UCSF Department of Anesthesia and Perioperative Care, 2011
Chief, San Francisco Veteran’s Affairs Medical Center, Anesthesiology Service, 2011

Jenson Wong, MD
CAMPUS APPOINTMENTS:
Medical Director, Health Information Technology for San Francisco General Hospital and Trauma Center, 2010

RESIDENT AWARDS

Michele Arnold, MD
CAMPUS AWARD:
Stuart C. Cullen Award for Excellence during Residency, 2010-2011

Brad Cohn, MD
CAMPUS AWARD:
Julius R. Krevans Award for Clinical Excellence, SFGH, 2010

Madina Gerasimov, MD
CAMPUS AWARD:
Jeffrey A. Katz Award for Work Ethic and Professionalism during Residency, 2010-2011

Anuj Malhotra, MD
CAMPUS AWARD:
Mark A. Rosen Award for Scholarship during Residency, 2010-2011

POST-DOCTORAL SCHOLAR AWARD

Niccolo Terrando, BSc, PhD
EXTRAMURAL AWARD:
2nd Place, Best Abstract Prize Competition session at Euroanaesthesia 2010, for “Unraveling the interactions between postoperative infection, surgery, and inflammation in post-operative cognitive dysfunction”
What can anesthesiologists do to decrease or prevent the occurrence of postoperative delirium?

Delirium is currently conceptualized as a geriatric syndrome, which means that rather than the cause being disease in a single organ, a constellation of events likely contributes to delirium’s occurrence.

For example, there are multiple patient-dependent risk factors for postoperative delirium, including: older age, lower educational level, impairment of cognitive status before surgery, and previous history of a central nervous system disorder. In addition, various baseline risk factors, including events that take place during the perioperative period, can be precipitating factors.

Among the most important of these factors, studies have identified intraoperative blood loss, medications such as opioids, and postoperative pain.

Risk Identification and Mitigation is Crucial

Therefore, decreasing or preventing the occurrence of postoperative delirium begins with rigorous risk identification during the preoperative evaluation. Since cognitive status is not routinely evaluated in the perioperative period, it is probably indicated to add a limited cognitive screen such as the mini-cog (an assessment instrument that combines an uncued 3-item recall test with a clock-drawing test) to exclude pre-existent cognitive impairment. When an at-risk patient is identified, a collaborative, proactive approach is indicated, which can involve nursing, geriatrics, surgery, and pharmacy services. This multi-disciplinary approach might include:

- early orientation upon anesthesia emergence, including having family members present in the post anesthesia recovery unit;
- minimization of sensory deprivation by providing hearing and visual aids;
- aggressive management of postoperative pain; consider the use of regional techniques for postoperative analgesia or the use of narcotic adjuvant to minimize the use of postoperative intravenous opioids;
- and avoidance of multiple drugs, particularly those with central nervous system effects, such as drugs with anti-cholinergic properties and benzodiazepines.

Other tactics can include monitoring for dehydration, bladder distention or ileus, and proactive prevention of falling injury by use of a “sitter.” Frequent checks of oxygen saturation and measurements of hemoglobin and renal function in the early postoperative period are also indicated for at risk patients since hypoxemia, anemia and uremia are clearly avoidable and potentially reversible precipitating factors for delirium.

The Role of Sleep

Finally, though we have long suspected that sleep disruption is another major precipitating factor, routine use of sleep aids should be avoided. Instead, consider non-pharmacologic approaches, such as the practice of early mobilization and avoiding sleep disruption by minimizing nighttime vital signs measurements and procedures. Sleep disruption is particularly prevalent in the intensive care unit (ICU), and here again, non-pharmacologic interventions designed to aid a good night’s sleep may be essential for ultimately decreasing the occurrence of delirium.

To that end, our department has organized a multi-disciplinary clinical study to address whether sleep disruption directly contributes to postoperative delirium in the ICU. Brain monitors will measure different sleep stages in the patients, and we will use a standardized measure for ICU delirium. We hope that this study will contribute to the understanding of the pathophysiology of delirium in the hospital and allow us to design effective strategies to prevent or minimize its occurrence.

References

### Active Research Grants

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<td>Christian Apfel</td>
<td>Smoking Status as a Risk Factor for Severe Acute Post-Operative Pain After Elective Surgery</td>
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<td>Roland Bainton</td>
<td>Physiological and Regulation of Drug Transport Across the Blood Brain Barrier</td>
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<td>Philip Bickler</td>
<td>Intracranial Signaling in Anesthetic and Hypoxic Preconditioning of Neurons</td>
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<td>Marek Brzezinski</td>
<td>Development of an Interdisciplinary, Web-Based Trauma Education Curriculum at San Francisco General Hospital</td>
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<td>Yongmei Chen</td>
<td>Inhibitors of Matrix Metalloproteinase in Brain Arteriovenous Malformations</td>
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<td>Adrian Gelb</td>
<td>Development of botulinum neurotoxin immunotherapy, serotypes C, D, F, and G</td>
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<td>Andrew Gray</td>
<td>Predicting Post-Sedation Brain Activity During Sedation</td>
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<td>Zhonghui Guan</td>
<td>Pharmacologic Dissection of the PI3-Kinase Pathway in Trauma</td>
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<td>Tomoki Hashimoto</td>
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<td>Judith Hellman</td>
<td>Genetic Influences on Clinical Outcome in Brain Arteriovenous Malformations</td>
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<td>Rondall Lane</td>
<td>Selection of Internalizing Human Antibodies Targeting Pancreatic Tumor Cells in Situ by Laser Capture Microdissection</td>
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<td>Jan Hirsch</td>
<td>Tobacco Smoke Exposure – a Predisposing Factor to Ventilator Induced Lung Injury and Damage to the Alveolar Epithelial Type II Cell</td>
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<td>Benjamin Houseman</td>
<td>Mesenchymal Stem Cells for Treatment of Acute Lung Injury</td>
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<td>Jacqueline Leung</td>
<td>Pathophysiology of Postoperative Delirium in Older Patients</td>
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<td>Lawrence Litt</td>
<td>Hypothermia, Anesthesia and NMR Metabolomics in Ischemic Neonatal Brain Slices</td>
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<td>Bin Liu</td>
<td>Identifying Antigens Bound by Human Antibodies Targeting Antibody-Based Tumor Targeting and Therapy</td>
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Georgetown University, Subcontract-Research, 09/03/08–06/30/11
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$244,683

Principa...


Upcoming Events

The Changing Practice of Anesthesia
September 22-25, 2011
Hotel Nikko San Francisco / San Francisco, California

COURSE CHAIRS:
Merlin Larson, MD
Professor Emeritus in Residence,
Department of Anesthesia and Perioperative Care
Binbin Wang, MD
Assistant Clinical Professor,
Department of Anesthesia and Perioperative Care
Susan Yoo, MD
Assistant Clinical Professor,
Department of Anesthesia and Perioperative Care

Program and registration information: www.cme.ucsf.edu

UCSF Center for Cerebrovascular Research
CCR/PPG SEMINARS
Presented by the Center for Cerebrovascular Research
Department of Anesthesia and Perioperative Care
University of California, San Francisco
San Francisco General Hospital
For a list of upcoming seminars: http://avm.ucsf.edu/
For a list of past seminars:
http://avm.ucsf.edu/research/recent_seminars.html

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in Anesthesia Simulator Course
The UCSF Department of Anesthesia Simulation Center is
endorsed by the American Society of Anesthesiologists for meeting
the standards required for conducting ABA MOCA® simulation
courses. This center offers eight hour, single day courses for four
participants. Each participant will play active roles in all four
scenarios, including one scenario as the primary anesthesiologist
and one as the secondary anesthesiologist. Each scenario is
recorded with sound and video, which is used to guide the
debriefing conference that follows.

Dec. 16, 2011 / Feb. 10 / Mar. 9 / Apr. 20 / or May 18, 2012

COURSE CHAIR:
Adam Collins, MD
Associate Professor of Clinical Anesthesia,
Director, UCSF Anesthesia Simulator Center

To reserve a spot, please contact Armando Leiva,
course administrator, at leivaa@anesthesia.ucsf.edu.