Department of Anesthesiology

Anesthesiology is a medical specialty encompassing a broad range of medical and scientific activities. The clinical practice of anesthesiology includes:

1. assessment of, consultation for and preparation of patients for anesthesia and surgery;
2. provision of insensibility to pain during surgical, obstetric, therapeutic and diagnostic procedures;
3. monitoring and restoration of physiologic homeostasis during the perioperative period, as well as homeostasis in the critically ill or seriously injured patient;
4. diagnosis and treatment of painful syndromes; and
5. clinical management and teaching of cardiopulmonary resuscitation (CPR).

The realm of scientific investigation in anesthesiology also spans a broad range. Scientific efforts at the cellular and molecular levels are directed to understanding the molecular mechanisms of anesthesia and analgesia. Clinical research in anesthesia includes broad epidemiological approaches to identifying indicators of outcome as well as prospective clinical studies examining new technologies, anesthetic agents and methods.

The Department of Anesthesiology (http://anest.wustl.edu) presents the student with the opportunity to:

1. acquire and apply pharmacologic knowledge related to anesthetic, narcotic, paralytic and sedative drugs and to drugs affecting the autonomic nervous system;
2. understand and apply the basic principles of airway management and mechanical ventilation;
3. understand and apply the principles of cardiopulmonary resuscitation;
4. understand and apply the technical skills and anatomic and pharmacologic knowledge used in performing regional nerve blocks;
5. learn and apply the fundamental principles of acute and chronic pain management; and
6. learn and apply the basic principles of critical care medicine.

Anesthesiology bridges the gap between basic science and clinical medicine. It provides experience in the clinical evaluation and management of patients, and in applied physiology and pharmacology. The Department of Anesthesiology offers student experiences in the operating room, the intensive care unit, the pain clinic and the laboratory.

Website: http://anest.wustl.edu

Degrees & Requirements

While the Department of Anesthesiology does not offer its own degree, some of the department's courses are open to students in the MD and MSTP (MD/PhD) programs. Further information about the MD and MSTP degrees can be found in the Degrees & Programs Offered (http://bulletin.wustl.edu/medicine/degrees) section of this Bulletin.

Research

Research Electives in Anesthesiology

Special electives in basic science research as it applies to anesthesiology can be arranged with the principal investigators in the Department of Anesthesiology (http://anest.wustl.edu), the Anesthesiology Research Unit and the Washington University Pain Center under the direction of Rob Gereau, PhD, or the Division of Clinical and Translational Research under the direction of Michael Avidan, MBCh.

These laboratories focus on various aspects of molecular neurobiology, including ion channel structure and function; G-protein molecular biology; molecular mechanisms of anesthetic action; genetics of anesthetic responsiveness; and the molecular, cellular and genetic basis of acute and chronic pain and itch. Arrangements for these special electives are made through the specific investigators: Walter A. Boyle III, MD; Zhou-Feng Chen, PhD; Alex S. Evers, MD; Narasimhan Gautam, PhD; Richard S. Hotchkiss, MD; Christopher J. Lingle, PhD; Gustav Akk, PhD; Michael Bruchas, PhD; Yu-Qing Cao, PhD; Robert W. Gereau, PhD; DP Mohapatra, PhD; or Jose Moron-Concepcion, PhD. In addition, opportunities exist for clinical research under the direction of Michael Avidan, MBCh; Evan Kharasch, MD, PhD; Peter Nagele, MD; or Ben Palanca, MD, PhD.

Faculty

Department Chair
Alex S. Evers, MD

Department Vice Chair
Ellen M. Lockhart, MD

Visit our website for more information about our faculty (http://anest.wustl.edu/about/faculty) and their appointments.

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MD University of Pittsburgh 2007
M PH University of Pittsburgh 2007

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MBBS Liaquat Medical College 1969
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PHD State Univ of NY Buffalo 1997
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PHD University of Surrey 2009

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MD Washington Univ in St. Louis 2013
BS1 Rutgers University 2008
BS Rutgers University 2008

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MD M.G.R. Medical University 2013

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MD University of MO Kansas City 2008
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Professor of Surgery (Cardiothoracic Surgery)
MBBCH University of the Witwatersra 1991

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BS Tirunelveli Medical College 1992
MD All-India Inst of Medical Sci 1998
PHD College of Anesthesiology 2008

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PHD University of MO St Louis 2012

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BS California Institute Technolo 1993

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Professor of Surgery (General Surgery)
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BS University of CA San Francisco 1974

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Associate Professor of Neuroscience
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Professor of Psychiatry
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BS Wuhan University 1983

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PHD Peking University 2001
MBBS Dalian Medical University 1995

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PHD Washington Univ in St. Louis 2012
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MD New York Medical College 2012
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BA Johns Hopkins University 1981
MD University of Virginia 1985

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MD University of Massachusetts 1994
BS Tufts University 1988

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MD BJ Medical College 1984

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Professor of Surgery (Cardiothoracic Surgery)
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Assistant Professor of Surgery (Cardiothoracic Surgery)
MD University of Kansas 2009

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MD Washington Univ in St. Louis 2006

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DOST Midwestern University 2001
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Professor of Pediatrics
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MD University of Kansas 1985
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Professor of Genetics
MS School Not Listed 1979
PHD University of Bombay 1985
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MBBS Bangalore University 1998

Robert W Gereau, PHD
Dr Seymour and Rose T Brown Professor of Anesthesiology (primary appointment)
Professor of Neuroscience
PHD Emory University 1995
BS Southwest Missouri St Universi 1991

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MD University of North Carolina 2008
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Jason R Gillihan, MD
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BS University of Southern Indiana 2002
MD Southern Illinois University 2006

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MD University of London 1986

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MD Loyola University Chicago 1985
BS University of Notre Dame 1980

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BS Hofstra University 1984
PHD Saint Louis University 1994
MA Hofstra University 1986

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PHD University of Valparaiso 2009

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Associate Professor of Surgery (Cardiothoracic Surgery)
MD Saint Louis University 2005

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MD University of Maryland 1992
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BA Yale University 1986

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MD Wayne State University 2007

H

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BS Davenport University 1971
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MD Loyola University Chicago 2000

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PHD Hebrew University 2011
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MD University of Kentucky 2001
BS University of Kentucky 1997

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Assistant Professor of Surgery (Cardiothoracic Surgery)
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Professor of Developmental Biology
Professor of Medicine
Professor of Surgery (General Surgery)
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MS Emory University 1993
BA Georgia St University 1991

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MD University of Khartoum 1987  
PHD University of Khartoum 1996  

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MD University of Belgrade 1982  
PHD Iowa State University 1991  

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MD1 School Not Listed 1998  
MD Athens University Med School 1988  

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MBBS King's College London 2004  
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MD Northwestern University Med 1984  

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BA School Not Listed 1993  

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BS Loyola University Chicago 1977  
DDENT Loyola University Chicago 1982  
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BA Rutgers University 1982  
MD U Medical-Dental Of New Jersey 1986  

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MD Hubei Medical University 1985  
PHD Beijing Medical University 1991  

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Professor of Neuroscience  
PHD University of Oregon 1979  
BS University of Oregon 1972  

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MD Nanjing Medical University 1983  
PHD Saint Louis University 1997  

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Assistant Professor of Ophthalmology and Visual Sciences  
PHD Chinese Academy of Sciences 2004  
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Vice Chairman of Anesthesiology  
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MD Saint Louis University 1984  

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MA Meharry Med College 1980  
MBA John Hopkins University 2010  
BA Howard University 1976  
MD Meharry Med College 1984  

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MD University of Bologna 1985  

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PHD Universite Paul Sabatier 2012  

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Professor of Pediatrics  
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PHD Washington Univ in St. Louis 2014  

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MD University of MO Columbia 1987  

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MD Loma Linda University 2005  

Konrad Meissner, MBBS  
Adjunct Instructor in Anesthesiology (primary appointment)  
MBBS University of Leipzig 1998  

Allison Denise Mitchell, MD  
Instructor in Anesthesiology (primary appointment)  
MD Univ Texas Health Sci San Anto 2012  
BS Howard University 2008  

Durga Prasanna Mohapatra, PHD  
Associate Professor of Anesthesiology (primary appointment)  
PHD University of Erlangen 2011  

David Thomas Monks  
Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)  

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Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)  
BA University of Virginia 2003  
MD Washington Univ in St. Louis 2012  

Robert Paul Moore, MD  
Assistant Professor of Anesthesiology (primary appointment)  
MD Washington Univ in St. Louis 2004  

Jose Moron-Concepcion, PHD  
Associate Professor of Anesthesiology (primary appointment)  
Associate Professor of Neuroscience  
PHD University of Barcelona 1998  

Jeremiah J Morrissey, PHD  
Professor of Anesthesiology (primary appointment)  
PHD Saint Louis University 1974  
BA Macmurray College 1969  

Jimmy Lewis Moss, MD  
Instructor in Clinical Anesthesiology (primary appointment)  
BS Florida State University 2010  
MD Florida State University 2015  

David J Murray, MD  
Carol B. and Jerome T. Loeb Professor of Anesthesiology (primary appointment)  
MD University of Saskatchewan 1978  
BS University of Saskatchewan 1973  

Guido Musch, MD  
Professor of Anesthesiology (primary appointment)  
MD University of Milan 1993  

Joan M Niehoff, MD  
Associate Professor of Anesthesiology (primary appointment)  
MD University of MO Columbia 1982  
BA University of MO Kansas City 1982  

Daniel C Nieva, MD  
Associate Professor of Anesthesiology (primary appointment)  
BS University of Iowa 1998  
MD University of Iowa 2003  

Aaron John Norris, MD, PHD  
Instructor in Anesthesiology (primary appointment)  
MD Washington Univ in St. Louis 2012  
BS Colorado St University 2001  
PHD Washington Univ in St. Louis 2012  

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Assistant Professor of Anesthesiology (primary appointment)  
BS Saint Louis University 2001  
MD University of MO Kansas City 2005
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BS University of California 2004
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MD U Medical-Dental Of New Jersey 2008
Lawrence Osei
Instructor in Clinical Anesthesiology (primary appointment)

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Arvind Palanisamy, PHD, MD
Assistant Professor of Anesthesiology (primary appointment)
PHD All-India Inst of Medical Sci 2003
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Assistant Professor of Emergency Medicine in Medicine
MD SUNY - Empire State College 2008
BS Virginia Tech 2004
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MD Shai Medical College 2006
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BS Lindenwood University 1969
MD Washington Univ in St. Louis 1974
Mitchell R Platin, MD
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MD Kent St University 1987
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PHD Washington St University 2011
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MD Saint Louis University 1987
MME University of MO Columbia 1982
BS Vanderbilt University 1978
Carlos Angel Puyo, MD
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MD Juan N Corpas School of Medici 1989

R

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MD Saint Louis University 2006
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Assistant Professor of Anesthesiology (primary appointment)
MD University of Illinois 2007
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MD1 Northrhein Westfalen Medical 1985
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MD University of Illinois Chicago 2011
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Assistant Professor of Surgery (Cardiothoracic Surgery)
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Associate Professor of Anesthesiology
Associate Professor of Psychiatry
MA University of Pennsylvania 1983
PHD University of Pennsylvania 1989
BA University of Minnesota 1981
Evan Ward Roller, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Cincinnati 2010

S

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Assistant Professor of Surgery (Cardiothoracic Surgery)
MD Royal College of Surgeons 2001
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Assistant Professor of Anesthesiology (primary appointment)
MD University of MO Columbia 2008
BS Simpson College 2004
Vijaya K Samineni, PHD
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PHD Southern Illinois University 2013
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Associate Professor of Anesthesiology (primary appointment)
BS University of Notre Dame 1986
MD University of MO Columbia 1991
Anne Stella Sebastiani, MD
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MD Johannes Gutenberg University 2008

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Professor of Genetics
Professor of Pathology and Immunology
BS Northwestern University 1981
PHD Vanderbilt University 1987
MA University of Toledo 1983

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Assistant Professor of Anesthesiology (primary appointment)
MD Loyola University Chicago 2006

Rajiv K Shah, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Rochester 2010

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MD Bharati Vidyapeeth Med College 2000
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Professor of Anesthesiology (primary appointment)
BA Government Medical College 1987
MD Institute of Medical Science 1990

Andrew John Shepherd, PHD
Instructor in Anesthesiology (primary appointment)
PHD University of Manchester 2006

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Assistant Professor of Anesthesiology (primary appointment)
BS University of MO Columbia 1998
MD University of MO Columbia 2003

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Assistant Professor of Anesthesiology (primary appointment)
MD Washington Univ in St. Louis 2008

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Associate Professor of Anesthesiology (pending executive
faculty approval) (primary appointment)
MD Christian Medical College 1994

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Professor of Anesthesiology (primary appointment)
BA Oberlin College 1978
MD Washington Univ in St. Louis 1983

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Assistant Professor of Anesthesiology (primary appointment)
MD Medical College of Ohio 1990

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Professor of Anesthesiology (primary appointment)
Professor of Neurological Surgery
MD University of Lyon 1974

Raghu P Terkonda, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of MO Columbia 1987
BS University of MO Columbia 1983

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Associate Professor of Anesthesiology (primary appointment)
BS University of CA San Diego 1998
MD University of CA San Diego 2003

Swarup Varaday, MBBS
Assistant Professor of Anesthesiology (primary appointment)
MBBS Andhra University 1989

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Instructor in Clinical Anesthesiology (primary appointment)
MD St. Lukes 2007
MBBS Siriramachandra Medical College 2000

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Instructor in Anesthesiology (primary appointment)
MD U Medical-Dental Of New Jersey 2011

Gershon Ram Volotzky, MD
Assistant Professor of Anesthesiology (primary appointment)
MD Tel-Aviv University 1979

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Assistant Professor of Anesthesiology (primary appointment)
MD University of Arkansas 2011

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Assistant Professor of Anesthesiology (primary appointment)
Assistant Professor of Pediatrics
MD University of Cincinnati 2004

Brian T Wessman, MD
Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Emergency Medicine in Medicine
MD Commonwealth College 2005
BS College of William and Mary 2000

Troy S Wildes, MD
Associate Professor of Anesthesiology (primary appointment)
MD Washington Univ in St. Louis 2002
BS Illinois Wesleyan University 1998

Brett D Wolff, MD
Associate Professor of Anesthesiology (primary appointment)
BA Indiana University Bloomington 1981
MD Indiana University Bloomington 1985

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Assistant Professor of Anesthesiology (primary appointment)
MS Shanghai Jiao Tong University 1987
PHD Vollum Institute OHSU 1998
BS Fudan University 1984

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Braden Edward Yee, MD
Assistant Professor of Anesthesiology (primary appointment)
MD Tufts University 2008
BS Tufts University 2004

Xiaobin Yi, MD
Associate Professor of Anesthesiology (primary appointment)
MD Hunan Medical University 1985

Alexander H Young, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Arkansas 1990
BA University of Mississippi 1986

Anna Rebecca Young, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Kentucky 1990
BS Asbury College 2008

Yu Zhou, PHD, MS
Instructor in Anesthesiology (primary appointment)
PHD State Univ of NY Buffalo 2005
MS Zhejiang Medical University 1999
BS Wuhan University 1996

Jonathan Kramer Zoller, MD
Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)
MD Tulane University 2008

Z

Jessica Ann Zenga, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Kentucky 2008
BS St. Louis University 2006

M10 Anesth 811 Cardiothoracic Anesthesiology
This clinical elective offers practical experience in the perioperative assessment and management of surgical patients undergoing cardiothoracic procedures. The student, as an integral part of the cardiothoracic anesthesia team that is composed of faculty members, fellows and residents, will learn basic principles of airway management and lung ventilation, essential aspects of pharmacologic treatment of hemodynamic abnormalities and cardiac dysrhythmias, and management of intraoperative coagulation disturbances. Emphasis will be placed on the interpretation of intraoperative hemodynamic data, echocardiographic finding (TEE), and laboratory results. During this rotation, the student will also gain practical experience in endotracheal intubation as well as the placement of intravenous lines and invasive monitoring lines, including radial artery and pulmonary artery catheters. Students will learn how to use these parameters in clinical decision making during anesthesia. At the conclusion of the rotation, the student will have a better understanding of invasive monitoring and data interpretation, as well as a more systematic approach to the management of intra- and postoperative hemodynamic, pulmonary and coagulation abnormalities. The students are expected to attend the didactic sessions of CTA and the Department of Anesthesiology. A presentation will be assigned.

M10 Anesth 812 Pediatric Anesthesia
This clinical elective is designed to teach the theory and practice of pediatric anesthesiology and pain management. It features individualized instruction with faculty who specialize in the perioperative care of pediatric patients. The elective consists of four weeks of active participation with pediatric anesthesiologists at St. Louis Children's Hospital and St. Louis Shriners Hospital. The student will learn preanesthetic assessment, the performance of routine anesthesics (which includes instruction and practice in pediatric airway skills), learning other technical skills such as intravenous line placement and the management of post-anesthesia care, and acute and chronic pediatric pain management. The final week may be tailored to meet the student's individual interests, needs and career goals. Possibilities include exposure to sedation and anesthesia for procedures outside of the operating rooms, and to subspecialties including cardiovascular anesthesiology, neurosurgical anesthesia, and acute and chronic pediatric pain management. Students also will have an opportunity to learn the management of some common medical emergencies in the Clinical Simulation Center.

M10 Anesth 819 Cardiothoracic Critical Care
This clinical elective offers practical experience in the perioperative management of cardiothoracic patients. The student will be fully integrated into the intensive care team and have the opportunity to contribute to the management of critically ill patients. Students will be afforded the opportunity to follow specific patients over the course of their stay on the ICU, during which time they will gain insight into holistic management of patients with multi-organ dysfunction. The CTICU environment is both challenging and exciting. Cardiorespiratory physiology and pharmacology will be demonstrated at the patients' bedside, an invaluable and unforgettable learning experience. Students
will have numerous opportunities to learn and sometimes assist with procedures, such as central lines, chest tubes, bronchoscopy and pulmonary artery catheter insertion. Principles of management and resuscitation of hemodynamically unstable patients following surgery will be emphasized. Students will also see and help manage patients on ventricular assist devices, ECMO, and following heart and lung transplantation. At the conclusion of the rotation, the student will have a better understanding of shock, sepsis, multi-organ failure, organ system support and compassionate withdrawal of life support. In addition to bedside teaching, there will be informal teaching sessions on a wide variety of topics as well as teaching on interpreting cardiac echo exams. Students will be encouraged to present on their patient at morning ward rounds, during which constructive feedback and interactive teaching will occur. Students will present on a topic related to one of their patients at the end of the block.

**M10 Anesth 820 Critical Care**

Students on this rotation are integral members of the multidisciplinary intensivist-led critical care team in the Surgical Intensive Care Unit (SICU). Students learn an organ systems-based approach for evaluation and management of critically ill and injured patients, and application of evidence-based principles in delivery of state-of-the-art critical care. Emphasis is placed on critical care knowledge and techniques used at the bedside in the clinical management of serious traumatic and surgical conditions. Students become familiar with resuscitation and cardiopulmonary support, including methods for noninvasive and invasive hemodynamic monitoring, and techniques for airway management and pulmonary support in respiratory failure. Basic knowledge and skills in the management of neurologic injuries, liver and/or renal failure, and life-threatening infections in the surgical patient are also taught, as is the importance of treatments to alleviate anxiety and pain, maintain fluid and electrolyte balance, and provide adequate nutrition. Practical experience is gained in placement of vascular access devices, interpretation of laboratory data, and use of guidelines, protocols and quality assurance tools in the management of critically ill patients.

**M10 Anesth 821 Pain Management**

Acute pain is the most common symptom of medical illness and is ubiquitous after major surgery. Chronic pain is the leading cause of worker disability. Severe pain afflicts most people with advanced cancer. Learning the fundamentals of pharmacologic, interventional, and multidisciplinary pain management is important for all areas of clinical medicine. Rotation is based at Barnes-Jewish Hospital with focus adjusted to meet student’s interest and career plans.

**M10 Anesth 821B Pain Management - Missouri Baptist Medical Center**

Acute pain is the most common symptom of medical illness and is ubiquitous after major surgery. Chronic pain is the leading cause of worker disability. Severe pain afflicts most people with advanced cancer. Learning the fundamentals of pharmacologic, interventional, and multidisciplinary pain management is important for all areas of clinical medicine. Rotation is based at Missouri Baptist Medical Center with focus adjusted to meet student's interest and career plans.

**M10 Anesth 822 Anesthesia for Neurosurgery**

Students will help care for patients having challenging neurosurgical procedures. Students will become familiar with complex procedures, brain monitoring, cardiovascular support and airway management and will be exposed to all kinds of neurosurgical pathology. Student must be prepared to participate in the intricate anesthetic management of patients undergoing surgery in our novel intraoperative MRI rooms. For those interested, clinical research projects are ongoing and student participation is encouraged.

**M10 Anesth 823 Obstetrical Anesthesia**

The medical students will learn the different analgesia/anesthetic options for the labor patient. They will also learn how the physiological adaptations of pregnancy influence anesthetic management. They will be actively involved in the parturient’s management, i.e., starting an IV, placement of spinal, epidural or CSE (combined spinal epidural) anesthetics. They will also attend the OB anesthesia conferences and interview patients in labor (with an OB anesthesia attending).

**M10 Anesth 900 Research Elective - Anesthesiology**

Research opportunities may be available. If interested, please contact the Department of Anesthesiology.