Department of Anesthesiology

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

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.

The realm of scientific investigation in anesthesiology also spans a broad range. Scientific efforts at the cellular and molecular levels are directed toward understanding the molecular mechanisms of anesthesia and analgesia. Clinical research in anesthesiology 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 do the following:

1. Acquire and apply pharmacologic knowledge related to anesthetic agents, opioids, paralytic and sedative drugs, and 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 with the clinical evaluation and management of patients as well as with applied physiology and pharmacology. The Department of Anesthesiology offers student experiences in the operating room, the intensive care unit, the pain management clinic and the laboratory.

Website: http://anest.wustl.edu

Faculty

Department Chair
Michael Avidan, MBBCh, FCA SA (https://anesthesiology.wustl.edu/people/michael-avidan-mbbch/)

Department Vice Chair for Faculty Affairs
Ellen M. Lockhart, MD (https://wuphysicians.wustl.edu/for-patients/find-a-physician/ellen-moseley-lockhart/)

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Department Vice Chair for Research
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Department Vice Chair for Health Systems Liaison
Ivan Kangr, MD, PhD (https://wuphysicians.wustl.edu/for-patients/find-a-physician/ivan-kangr/) Visit our website for more information about our faculty (http://anest.wustl.edu/about/faculty/) and their appointments.

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<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Institution(s)</th>
<th>Degree(s)</th>
<th>Field</th>
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<tbody>
<tr>
<td>Russell J.J. Groener, MBCHB</td>
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<tr>
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<tr>
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<td>Courtney Alan Hardy, MD</td>
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<td>Professor Emeritus of Anesthesiology (primary appointment)</td>
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<td>Professor of Anesthesiology (primary appointment)</td>
<td>Professor of Developmental Biology</td>
<td>Professor of Medicine</td>
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</tr>
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<td></td>
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PHD Washington Univ in St. Louis 2012
MD Washington Univ in St. Louis 2012
BS Colorado St University 2001

Sydney Marie Nykiel-Bailey, MD
Assistant Professor of Anesthesiology (primary appointment)
BS Saint Louis University 2001
MD University of MO Kansas City 2005

Uchenna Ofoma, MD, MS
Assistant Professor of Anesthesiology (primary appointment)
MD University of Nigeria 1998
MS Pennsylvania State University 2010

Folasade Oladapo, MD
Assistant Professor of Anesthesiology (primary appointment)
MD U Medical-Dental Of New Jersey 2008

Lawrence Osei, MD, MS
Instructor in Clinical Anesthesiology (primary appointment)
BS University of Science & Techn 1994
MD University of Science & Techn 1996
MS University of Science & Techn 1996

Ben Julian Palanca, MD
Associate Professor of Anesthesiology (primary appointment)
BS University of Washington 1997
MD Washington Univ in St. Louis 2005

Arvind Palanisamy, PHD, MD
Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Obstetrics and Gynecology
PHD All-India Inst of Medical Sci 2003
MD Tamilnadu Medical University 2000

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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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Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
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MD University of the Philippines 2002
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Adjunct Professor of Anesthesiology (primary appointment)
MS Swiss Fed Inst Tech (EPFL) 1987
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Instructor in Anesthesiology (primary appointment)
MD Washington Univ in St. Louis 1974
BS Lindenwood University 1969

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Adjunct Professor of Anesthesiology
MD State Univ of NY Buffalo 1979
BS University of Colorado Boulder 1974
BS University of Wyoming 1977
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Assistant Professor of Anesthesiology (primary appointment)
MD Kent St University 1987

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Professor of Anesthesiology (primary appointment)
MD Saint Louis University 1987
MME University of MO Columbia 1982
BS Vanderbilt University 1978

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Associate Professor of Surgery (General Surgery) (primary appointment)
BS Yale University 1997
BS Yale University 1997
MD University of Connecticut 2002

Lesley Kathryn Rao, MD
Associate Professor of Anesthesiology (primary appointment)
MD Saint Louis University 2006

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MD University of Illinois 2007

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Assistant Professor of Anesthesiology (primary appointment)
MD Madurai Kamaraj University 1979
MD1 Northrhein Westfalen Medical 1985

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Assistant Professor of Anesthesiology (primary appointment)
MD Illinois Wesleyan University 2010
BS Illinois Wesleyan University 2005

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Assistant Professor of Anesthesiology (primary appointment)
MD University of Illinois Chicago 2011

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Assistant Professor of Surgery (Cardiothoracic Surgery)
BA Columbia College of Phy & Surg 2002
MD Washington Univ in St. Louis 2008

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Instructor in Anesthesiology (primary appointment)
MD Loyola University Chicago 2014

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Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
MD University of Puerto Rico 2010
BS University of Puerto Rico 2005

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Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Psychiatry

BA University of Minnesota 1981
MA University of Pennsylvania 1983
PHD University of Pennsylvania 1989

Evan Ward Roller, MD
Assistant Professor of Anesthesiology (primary appointment)
MD University of Cincinnati 2010

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Assistant Professor of Anesthesiology (primary appointment)
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MD Royal College of Surgeons 2001
BS State Univ of NY Buffalo 1996

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MD University of MO Columbia 2008
BS Simpson College 2004

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Instructor in Anesthesiology (primary appointment)
Instructor in Cell Biology and Physiology
PHD University of Barcelona 2003
BS University of Barcelona 1997

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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
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MD University of Rochester 2010

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BA Government Medical College 1987
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MD University of Manchester 2002
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BS University of MO Columbia 1983
MD University of MO Columbia 1987

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MD University of CA San Diego 2003
BS University of CA San Diego 1998

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MBBS Andhra University 1989

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MD St. Lukes 2007
MBBS Sriramachandra Medical College 2000

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

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MD University of Panama 2006

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Associate Professor of Emergency Medicine in Medicine
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MD Saint Louis University 2014

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Associate Professor of Anesthesiology (primary appointment)
BA Indiana University Bloomington 1981
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Instructor in Anesthesiology (primary appointment)
MD Washington Univ in St. Louis 2015

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

Branden 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)
During the fourth year, opportunities exist for many varieties of advanced clinical or research experiences.

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); in the Division of Basic Research under the direction of Jose Moron-Concepcion, PhD; in the Washington University Pain Center under the direction of Rob Gereau, PhD; and in the Division of Clinical and Translational Research under the direction of Simon Haroutounian, PhD.

The basic science laboratories focus on various topics related to ion channel structure and function, molecular mechanisms of anesthetic action, sepsis, cellular and molecular mechanisms of reward and addiction, and the cellular and genetic basis of acute and chronic pain and itch. Arrangements for these special electives are made through the specific investigators: Zhou-Feng Chen, PhD; Meaghan Creed, PhD; Alex S. Evers, MD; Narasimhan Gautam, PhD; Robert W. Gereau, PhD; Richard S. Hotchkiss, MD; Hongzhen Hu, PhD; Christopher J. Lingle, PhD; Qin Liu, PhD; Jose Moron-Concepcion, PhD; or Arvind Palanisamy, MD. In addition, opportunities exist for clinical research under the direction of Joanna Abraham, PhD; Michael Avidan, MBBCh; Anne Drewry, MD; Brian Fuller, MD; Simon Haroutounian, PhD; Thomas Kannamapalli, PhD; Michael Montana, MD, PhD; Ben Palanca, MD, PhD; Tanya Wildes, MD; or Troy Wildes, MD.

### Courses


#### M10 Anesth 805 Anesthesia
This clinical elective is designed to familiarize the student with basic aspects of anesthesiology practice. The primary teaching method is patient care in a clinical setting (one-on-one). The student will learn the basics of preoperative evaluation of surgical patients, the use of intraoperative monitoring in patient management and postoperative care. In addition to perioperative care, the student will be exposed to other clinical areas which include our pain management clinic, regional anesthesia/acute pain management, cardiothoracic intensive care unit, labor and delivery, pediatric anesthesia, and the Center for Preoperative Assessment and Planning. During the four-week rotation, the student will learn airway management skills, practical perioperative fluid and electrolyte therapy, along with general and regional anesthetic techniques. As an integral part of the anesthesia care team, the student will participate actively in the anesthetic management of surgical patients. The student's specific requests to be assigned to certain types of cases will be honored as time and availability dictate. The rotation will include three clinical simulator sessions using a simulator mannequin for practical management of airway problems, resuscitation, and trauma emergencies. By the end of the rotation, the student should be able to independently (under supervision) provide anesthesia for uncomplicated surgical procedures.

#### M10 Anesth 811 Cardiothoracic Anesthesia Subinternship
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 post-operative 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 Anesthesiology
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 peroperative care of pediatric patients. The elective consists of active participation with pediatric anesthesiologists at St. Louis Children's Hospital and St. Louis Shriners Hospital learning pre-anesthetic assessment, the performance of routine anesthetics (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 pain therapies. 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 anesthesia, neurosurgical anesthesia, and acute and chronic pediatric pain management. Students will have an opportunity to learn the management of some common medical emergencies in the Clinical Simulation Center.

M10 Anesth 819 Cardiothoracic Critical Care Subinternship
This clinical elective offers practical experience in the postoperative management of cardiothoracic patients. The student will be fully integrated into one of the intensive care teams and have the opportunity to contribute to the management of critically ill patients. Students will have the opportunity to follow specific patients over the course of their stay in 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. Students will gain unique insight into cardiorespiratory physiology and pharmacology which will be demonstrated at the patients' bedside, an invaluable and unforgettable learning experience. Students will have opportunities to learn and sometimes assist with procedures, such as central lines, chest tubes, bronchoscopy and pulmonary artery catheter insertion as well as bedside ultrasound including TTE and TEE. Principles of management and resuscitation of hemodynamically unstable patients following surgery will be emphasized as well as ventilator management. Students will also see and help manage patients with unique physiology such as those patients on ventricular assist devices, and on ECMO. We also have a very busy and heart and lung transplantation program at the hospital - all of these patients are cared for in the CTICU. 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 hemodynamic data and waveforms, and cardiac echo exams. Students will be encouraged to present on their patient at morning rounds, during which constructive feedback and interactive teaching will occur. Medical students will be asked to present a short discussion on a topic of their choice. This should be a short 20 - 30 minute presentation followed by a discussion on the topic which will be moderated by the attending. Discuss the time and topic of choice with the attending of service.

M10 Anesth 820 Critical Care Subinternship
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 non-invasive and invasive hemodynamic monitoring, and techniques for airway management and pulmonary support in respiratory failure. Basic knowledge and skills in the management of blunt and penetrating trauma, neurologic injuries, multi-system organ 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 providing adequate nutrition. Practical experience is gained in placement of vascular access devices, airway equipment, ultrasonography and its applications, interpretation of imaging and 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 822 Anesthesiology for Neurosurgery Subinternship
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 Anesthesiology
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.