

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 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 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.

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Faculty

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

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Department Vice Chair for Professional Development & Diversity, Equity and Inclusion

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Department Vice Chair for Research

Ivan Kangrga, MD, PhD (<https://wuphysicians.wustl.edu/for-patients/find-a-physician/ivan-kangrga/>)
Department Vice Chair for Health Systems Liaison

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

A

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Associate Professor of Emergency Medicine
Master of Public Health, University of Pittsburgh, 2007
Doctor of Medicine, University of Pittsburgh, 2007

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Associate Professor of Medicine
Bachelor of Science, SRM Easwari Engineering College, 2001
Main Campus, 2010

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Foreign MD equivalent, King's College London, 2010

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Doctor of Medicine, Meharry Medical College, 2013

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Doctor of Medicine, Loyola University Chicago, 2015

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Doctor of Philosophy, State University of New York at Buffalo, 1997

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Doctor of Medicine, Ankara University, 1993
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New Brunswick, 2008
Doctor of Medicine, Washington University in St Louis, 2013
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Champaign, 2014
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Doctor of Medicine, The Tamil Nadu Dr. M.G.R. Medical University, 2013

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Doctor of Medicine, University of Missouri Kansas City, 2008

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Professor of Psychiatry
Dr. Seymour and Rose T Brown Professor of Anesthesiology
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B

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Doctor of Medicine, Freie Universität Berlin, 1989

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Doctor of Philosophy, Washington University in St Louis, 2011

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Doctor of Medicine, Texas A&M University, 2013

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Doctor of Philosophy, University of Washington, 1999
Doctor of Medicine, University of Washington, 1999

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Doctor of Medicine, Case Western Reserve University, 2014

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Doctor of Medicine, All India Institute of Medical Sciences, 2012

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Doctor of Medicine, University of Texas Health Science Center, 2014

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Doctor of Philosophy, University of California, 1968

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C

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Professor of Biochemistry and Molecular Biophysics
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Master of Science, Savitribai Phule Pune University, 1993
Doctor of Philosophy, National Centre for Biological, 2000

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Bachelor of Science, Emory University, 2012
Doctor of Medicine, Meharry Medical College, 2017

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Assistant Professor of Emergency Medicine
Bachelor of Science, University of Florida, 2009
Doctor of Medicine, Washington University in St Louis, 2014

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Master of Science, Wuhan University (#####), 2010
Doctor of Philosophy, Case Western Reserve University, 2015
Bachelor of Science, Wuhan University (#####), 2017

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Foreign MD equivalent, Dalian Medical University (#####), 1995
Master of Science, Dalian Medical University (#####), 1998
Doctor of Philosophy, Peking University (#####), 2001

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Doctor of Philosophy, Washington University in St Louis, 2012
Doctor of Medicine, Washington University in St Louis, 2012

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Doctor of Medicine, University of Missouri Columbia, 1999

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Associate Professor of Medicine
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Doctor of Medicine, Washington University in St Louis, 1984

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Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Baylor University, 1977

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Assistant Professor of Anesthesiology (primary appointment)
Doctor of Philosophy, Northwestern University, 2012

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Associate Professor of Psychiatry
Associate Professor of Neuroscience
Bachelor of Science, University of Toronto, 2008
Doctor of Philosophy, University of Toronto, 2012

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Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Arts, Barnard College, 2001
Doctor of Philosophy, Washington University in St Louis, 2013
Doctor of Medicine, Washington University in St Louis, 2013

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Bachelor of Science, Tufts University, 1988
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D

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Bachelor of Science, University of Notre Dame, 2013
Doctor of Medicine, Duke University, 2017

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Doctor of Medicine, Washington University in St Louis, 2006

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Main Campus, 2006
Doctor of Medicine, Washington University in St Louis, 2009

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Master of Science, University of Cape Town, 2020

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E

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Associate Professor of Anesthesiology (primary appointment)
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F

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Doctor of Medicine, University of Missouri Columbia, 1982

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Bachelor of Science, Southern Methodist University, 2012
Doctor of Medicine, Indiana University Indianapolis, 2016

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Doctor of Medicine, University of Connecticut, 2004

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Bachelor of Arts, University of California Berkeley, 2008
Doctor of Medicine, University of Chicago, 2016

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Doctor of Medicine, Saint Louis University, 2013

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Doctor of Medicine, Washington University in St Louis, 2015

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Doctor of Medicine, University of Alabama in Tuscaloosa, 2003

G

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Associate Professor of Anesthesiology (primary appointment)
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Professor of Neuroscience
Division Chief - WU Pain Center
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Doctor of Philosophy, Emory University, 1995

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Doctor of Medicine, University of North Carolina at Chapel Hill, 2008

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Doctor of Medicine, Southern Illinois University Carbondale, 2006

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Doctor of Medicine, Loyola University Chicago, 1985

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Master of Arts, Hofstra University, 1986
Doctor of Philosophy, Saint Louis University, 1994

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Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Universidad de la Habana, 1997

Doctor of Philosophy, Universidad de Valparaíso, 2009

Burel Goodin, Ph.D.

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Doctor of Philosophy, University of Maryland Baltimore County, 2010

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Doctor of Medicine, Saint Louis University, 2005

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Associate Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Saint Louis University, 2012

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Foreign MD equivalent, University of Cape Town, 1983

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Katharine Nicole Gurba, Ph.D., M.D.

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Doctor of Philosophy, Vanderbilt University, 2013
Doctor of Medicine, Vanderbilt University, 2014

H

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Professor of Anesthesiology (primary appointment)
Bachelor of Arts, University of Michigan Ann Arbor, 1971
Master of Arts, Davenport University, 1973
Doctor of Medicine, Davenport University, 1977

Courtney Alan Hardy, M.D.

Vice Chair - Department of Anesthesiology
Doctor of Medicine, Loyola University Chicago, 2000

Simon Haroutounian, M.A., Ph.D.

Associate Professor of Anesthesiology (primary appointment)
Division Chief - Division of Clinical and Translational Research
Master of Arts, Hebrew University of Jerusalem, 2005
Doctor of Philosophy, Hebrew University of Jerusalem, 2011

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Associate Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Kentucky, 1997
Doctor of Medicine, University of Kentucky, 2001

Mohammad Anas Helwani, M.D.

Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Surgery (Cardiothoracic Surgery)
Doctor of Medicine, Damascus University, 1998

Bernadette M Henrichs, M.S.N., Ph.D.

Professor of Anesthesiology (primary appointment)
Master of Science in Nursing, Saint Louis University, 1993

Doctor of Philosophy, Saint Louis University, 1999

Omokhaye M Higo, M.B.A., MBBS

Associate Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Ibadan, 1984
Foreign MD equivalent, University of Ilorin, 1990
Master of Business Administration, Washington University in St Louis, 2021

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Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
Doctor of Medicine, Columbia University, 2013

Jiggar Rashmikant Hindia, M.D.

Instructor in Clinical Anesthesiology
Bachelor of Science, Truman State University (Formerly Northeast Missouri State University), 2004
Doctor of Medicine, A T Still University of Health Sciences, 2007

Gary E Hirshberg, M.D.

Professor Emeritus of Anesthesiology
Bachelor of Arts, Princeton University, 1968
Doctor of Medicine, Hahnemann University, 1972

Katherine Jeanne Holzer, M.S., Ph.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Arts, Illinois Wesleyan University, 2010
Master of Science, Washington University in St Louis, 2012
Doctor of Philosophy, Saint Louis University, 2019

Richard S Hotchkiss, M.D.

Professor of Anesthesiology (primary appointment)
Professor of Surgery (General Surgery)
Professor of Developmental Biology
Professor of Medicine
Doctor of Medicine, University of Virginia, 1976

Hawpeng Stephen Hsu, M.S., M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Taipei Medical University, 1983
Bachelor of Arts, Georgia State University, 1991
Master of Science, Emory University, 1993

Hongzhen Hu, Ph.D.

Professor of Anesthesiology (primary appointment)
Professor of Medicine (Dermatology)
Main Campus, 2004

Rocco Hueneke, M.D.

Associate Professor of Anesthesiology (primary appointment)
University, 1996

I

Catherine Ifune, M.B.A., Ph.D., M.D.

Professor of Anesthesiology (primary appointment)
Bachelor of Science, California Institute of Technology, 1985
Doctor of Philosophy, Washington University in St Louis, 1990
Doctor of Medicine, Washington University in St Louis, 1997

Master of Business Administration, Washington University in St. Louis, 2014

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Doctor of Philosophy, University of Khartoum, 1996

J

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Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Texas Austin, 2011
Doctor of Medicine, University of Texas San Antonio, 2016

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#####), 2016

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Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Washington University in St. Louis, 2009
Doctor of Medicine, University of Connecticut, 2013

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Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, University of Cape Town, 2008

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Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of California Davis, 2005
Doctor of Medicine, American University of the Caribbean, 2012

K

Mohammadmehdi Kafashan, M.S., Ph.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Amirkabir University of Technology, 2008
Master of Science, Sharif University of Technology, 2010
Doctor of Philosophy, Washington University in St. Louis, 2016

Muthuraj Kanakaraj, M.D., MBBS

Assistant Professor of Anesthesiology (primary appointment)
Foreign MD equivalent, Tirunelveli Medical College, 1995
Doctor of Medicine, Madras Medical College, 2005

Ivan M Kangrga, Ph.D., M.D.

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Doctor of Medicine, University of Belgrade, 1982
Doctor of Philosophy, Iowa State University, 1991

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Assistant Professor of Computer Science and Engineering
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Champaign, 2018

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Doctor of Medicine, National and Kapodistrian University of Athens, 1988

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Doctor of Medicine, Charles University, 1993

Monica Marie Keeline, M.D.

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Bachelor of Arts, Tulane University, 2006
Doctor of Medicine, Saint Louis University, 2010

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Doctor of Medicine, University of Tuebingen, 1987

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Associate Professor of Anesthesiology (primary appointment)
Bachelor of Science, King's College London, 2001
Foreign MD equivalent, King's College London, 2004

Shahrdad Khodamoradi, M.D.

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Bachelor of Arts, Vanderbilt University, 1985
Doctor of Medicine, Washington University in St. Louis, 1990

Bryan James Kidd, M.S., M.D.

Assistant Professor of Anesthesiology (primary appointment)
Champaign, 2006
Master of Science, University of Alabama in Tuscaloosa, 2010
Doctor of Medicine, Southern Illinois University Carbondale, 2015

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Doctor of Philosophy, University of Chicago, 2012
Doctor of Medicine, University of Chicago, 2014

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Doctor of Medicine, University of Kansas, 1997

Justin Knittel, M.D.

Associate Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Case Western Reserve University, 2009

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Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Boston University, 2010
Master of Science, Boston University, 2012
Doctor of Medicine, Boston University, 2015

Helga Komen, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, University of Zagreb, 1996

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Bachelor of Science, Loyola University Chicago, 1977
Doctor of Dentistry, Loyola University Chicago, 1982
Doctor of Medicine, Hahnemann University, 1991

Catherine P Krucylak, M.D.

Assistant Professor of Anesthesiology (primary appointment)
New Brunswick, 1982
Doctor of Medicine, University of Medicine and Dentistry of New Jersey,
1986

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Anand Lakshminarasimhachar, MBBS

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Foreign MD equivalent, Bangalore University, 1994

Demetrios G. Lappas, Ph.D., M.D.

Professor Emeritus of Anesthesiology
Bachelor of Science, Abet School, 1954
Doctor of Medicine, Aristotle University (Duplicate of Aristotle University
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Doctor of Philosophy, Aristotle University (Duplicate of Aristotle
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Chakrapol Lattanand, M.D.

Professor of Anesthesiology (primary appointment)
Division Chief - Progress West Anesthesiology Service
Doctor of Medicine, Hahnemann University, 2000

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Associate Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Hubei Medical University, 1985
Doctor of Philosophy, Beijing University, 1991
Master of Business Administration, Washington University in St Louis,
2021

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Voluntary Clinical Instructor in Anesthesiology
Doctor of Medicine, University of Nebraska, 1980
Master of Business Administration, Washington University in St Louis,
1990

Jun-Nan Li, Ph.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Harbin Medical University, 2010
Doctor of Philosophy, Harbin Medical University, 2015

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Professor of Anesthesiology (primary appointment)
Professor of Neuroscience
Bachelor of Science, University of Oregon, 1972
Doctor of Philosophy, University of Oregon, 1979

Mingchun Liu, M.D.

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Bachelor of Science, University of Alabama in Birmingham, 2013
Doctor of Medicine, University of Alabama in Tuscaloosa, 2017

Qianjin Liu, Ph.D., M.D.

Associate Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Nanjing Medical University (#####), 1983
Doctor of Philosophy, Saint Louis University, 1997

Qin Liu, Ph.D.

Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Neuroscience
Associate Professor of Ophthalmology and Visual Sciences

Associate Professor of Medicine (Dermatology)
Bachelor of Science, Wuhan University (#####), 1998
Doctor of Philosophy, Chinese Academy of Sciences, 2004

Ellen Lockhart

Voluntary Clinical Instructor in Anesthesiology

George Alan Lodoly, M.D.

Instructor in Clinical Anesthesiology
Bachelor of Science, Saint Louis University, 1980
Doctor of Medicine, Saint Louis University, 1984

John Jacob Long, M.D.

Assistant Professor of Anesthesiology (Pending Executive Faculty
Approval) (primary appointment)
Bachelor of Science, North Carolina State University, 1995
Doctor of Medicine, A T Still University of Health Sciences, 2003

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Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Massachusetts Institute of Technology, 2009
Doctor of Philosophy, Stanford University, 2017
Doctor of Medicine, Stanford University, 2017

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Assistant Professor of Anesthesiology (primary appointment)
Assistant Professor of Emergency Medicine
Doctor of Medicine, Saint George's University, 2011

M

Jooyoung Maeng, M.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Cornell University, 2011
Doctor of Medicine, Indiana University School of Medicine, 2017

Susruta Majumdar, M.S., Ph.D.

Adjunct Associate Professor of Anesthesiology
Bachelor of Science, Delhi University, 1998
Master of Science, Delhi University, 2000
Doctor of Philosophy, University of Florida, 2006

Bruno Maranhao, Ph.D., M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of California Los Angeles, 2007
Doctor of Philosophy, University of California San Diego, 2015
Doctor of Medicine, University of California San Diego, 2016

Scott David Markowitz, M.S., M.D.

Professor of Anesthesiology (primary appointment)
Vice Chair - Professional Development, Diversity, Equity and Inclusion
Bachelor of Science, Boston University, 1989
Doctor of Medicine, Washington University in St Louis, 1993
Master of Science, Colorado State University, 2022

Jackie Lee Martin, M.A., M.B.A., M.D.

Adjunct Professor of Anesthesiology
Bachelor of Arts, Howard University, 1976
Master of Arts, Meharry Medical College, 1980
Doctor of Medicine, Meharry Medical College, 1984

Master of Business Administration, John Hopkins University (Duplicate of Johns Hopkins University), 2010

John D McAllister, M.D.

Professor of Anesthesiology (primary appointment)
Professor of Pediatrics
Doctor of Medicine, University of Manitoba, 1980
Bachelor of Science, University of Manitoba, 1982

Jordan Gary McCall, Ph.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Philosophy, Washington University in St Louis, 2014

Molly Ann McCormick, M.D.

Associate Professor of Anesthesiology (primary appointment)
Division Chief - Division of Anesthesiology, General
Doctor of Medicine, University of Missouri Columbia, 1987

Brennan Michael McMillan, M.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Arts, University of Colorado Boulder, 2012
Doctor of Medicine, Albany Medical College, 2017

Bhavi Deepak Mehta, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Arts, University of Missouri Kansas City, 2010
Doctor of Medicine, University of Missouri Kansas City, 2010

Gregory Charles Miller, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Missouri Kansas City, 2010
Doctor of Medicine, University of Missouri Kansas City, 2016

Allison Denise Mitchell, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Howard University, 2008
Doctor of Medicine, University of Texas Health Sciences at San Antonio, 2012

David Thomas Monks, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, University of Birmingham, 2018

John David Moore, M.D.

Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)
Doctor of Medicine, Universidad Autónoma de Centro América, 2020

David James Moquin, M.D.

Instructor in Anesthesiology (primary appointment)
Doctor of Medicine, University of Tennessee, 2017

Rachel Willis Moquin, M.Ed., Ph.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Arts, University of Mississippi, 2011
Master of Education, University of Mississippi, 2013
Doctor of Philosophy, Vanderbilt University, 2017

Ehab Samir Morcos, M.D.

Instructor in Clinical Anesthesiology
Instructor in Clinical Anesthesiology
Doctor of Medicine, Cairo University, 1991

Jose Moron-Concepcion, Ph.D.

Professor of Anesthesiology (primary appointment)
Professor of Neuroscience
Professor of Psychiatry
Division Chief - Division of Anesthesiology, Research Unit
Henry Elliot Mallinckrodt Professorship in Anesthesiology
Doctor of Philosophy, University of Barcelona, 1998

Jeremiah J Morrissey, Ph.D.

Professor of Anesthesiology (primary appointment)
Bachelor of Arts, MacMurray College, 1969
Doctor of Philosophy, Saint Louis University, 1974

Jimmy Lewis Moss, M.D.

Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)
Bachelor of Science, Florida State University, 2010
Doctor of Medicine, Florida State University, 2015

Christopher Marlowe Murphy, M.A., M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Arkansas Main Campus, 2010
Master of Arts, University of Arkansas Main Campus, 2012
Doctor of Medicine, University of Arkansas Main Campus, 2016

Amjad Issam Musleh, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Assistant Professor of Emergency Medicine
Main Campus, 2008
Main Campus, 2013

N

Hadas Nahman-Averbuch, M.S., Ph.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Haifa University, 2005
Master of Science, Israel Institute of Technology, 2009
Doctor of Philosophy, Israel Institute of Technology, 2015

Jessica Lauren Nelson, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Assistant Professor of Emergency Medicine
Doctor of Medicine, University of Michigan Ann Arbor, 2012
Bachelor of Science, University of Wisconsin, 2018

Joan M Niehoff, M.D.

Associate Professor of Anesthesiology (primary appointment)
Bachelor of Arts, University of Missouri Kansas City, 1982
Doctor of Medicine, University of Missouri Columbia, 1982

Daniel C Nieva, M.D.

Associate Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Iowa, 1998
Doctor of Medicine, University of Iowa, 2003

Dolores Benedicta Njoku, M.D.

Professor of Anesthesiology (primary appointment)
Division Chief of Pediatric Anesthesiology
Rudolph L. and Mary Frances Wise Endowed Chair in Pediatric Anesthesiology
Doctor of Medicine, University of Mississippi, 1987

Aaron John Norris, Ph.D., M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Colorado State University, 2001
Doctor of Philosophy, Washington University in St Louis, 2012
Doctor of Medicine, Washington University in St Louis, 2012

Sydney Marie Nykiel-Bailey, M.D.

Associate Professor of Anesthesiology (primary appointment)
Bachelor of Science, Saint Louis University, 2001
Doctor of Medicine, University of Missouri Kansas City, 2005

O

Uchenna Ofoma, M.S., M.D.

Associate Professor of Anesthesiology (primary appointment)
Doctor of Medicine, University of Nigeria, 1998
Main Campus, 2010

Folasade Oladapo, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, University of Medicine and Dentistry of New Jersey, 2008

Lawrence Osei, M.S., M.D.

Instructor in Clinical Anesthesiology
Bachelor of Science, Kwame Nkrumah University of Science & Technology, 1994
Master of Science, Kwame Nkrumah University of Science & Technology, 1996
Doctor of Medicine, Kwame Nkrumah University of Science & Technology, 1996

William D Owens, M.D.

Professor Emeritus of Anesthesiology
Bachelor of Arts, Westminster College, 1961
Doctor of Medicine, Davenport University, 1965

P

Ben Julian Palanca, M.D.

Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Psychiatry
Bachelor of Science, University of Washington, 1997
Doctor of Medicine, Washington University in St Louis, 2005

Arvind Palanisamy, Ph.D., M.D.

Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Obstetrics and Gynecology
Division Chief - Division of Obstetrical Anesthesia
Doctor of Medicine, Tamilnadu Medical University, 2000
Doctor of Philosophy, All India Institute of Medical Sciences, 2003

Chris M Palmer, M.D.

Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Emergency Medicine
Bachelor of Science, Virginia Polytechnic Institute and State University, 2004
Doctor of Medicine, SUNY Empire State College, 2008

Hess Amir Panjeton, M.D.

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

Bachelor of Science, University of Miami, 2003
Doctor of Medicine, University of Miami, 2007

Kyle Edward Parker, Ph.D.

Instructor in Anesthesiology (primary appointment)
Doctor of Philosophy, University of Missouri Columbia, 2013

Jesus Ceferino Patino, M.D.

Instructor in Clinical Anesthesiology
Bachelor of Science, University of the Philippines, 1997
Doctor of Medicine, University of the Philippines, 2002

Giovanni Pauletti, M.S., Ph.D.

Adjunct Professor of Anesthesiology
Master of Science, Swiss Fed Inst Tech (EPFL), 1987
Doctor of Philosophy, Swiss Fed Inst Tech (EPFL), 1994

Patricia A. Penkoske, M.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Lindenwood University, 1969
Doctor of Medicine, Washington University in St Louis, 1974

Bethany Pennington, Pharm.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Pharmacy, Saint Louis College of Pharmacy, 2010

John Albert Pieper, M.D.

Adjunct Professor of Anesthesiology
Bachelor of Science, University of Colorado Boulder, 1974
Doctor of Medicine, State University of New York at Buffalo, 1979

Mitchell R Platin, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Kent State University, 1987

Amynah Pradhan, Ph.D.

Associate Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
Bachelor of Science, McGill University, 1997
Doctor of Philosophy, McGill University, 2005

Debra D Pulley, M.M.E., M.D.

Professor of Anesthesiology (primary appointment)
Bachelor of Science, Vanderbilt University, 1978
Master of Mechanical Engineering, University of Missouri Columbia, 1982
Doctor of Medicine, Saint Louis University, 1987

R

Lesley Kathryn Rao, M.D.

Associate Professor of Anesthesiology (primary appointment)
Division Chief (Interim) - Division of Pain Management
Doctor of Medicine, Saint Louis University, 2006

Rashmi R Rathor, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Champaign, 2007

Satish Reddy, M.D.

Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
Bachelor of Science, University of Georgia, 2006

Doctor of Medicine, Medical College of Georgia, 2011

Andrea Bulkley Reidy, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Illinois Wesleyan University, 2005
Doctor of Medicine, Illinois Wesleyan University, 2010

Eduardo Reina, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, University of Illinois at Chicago, 2011

Clare H Ridley, M.D.

Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Surgery (Cardiothoracic Surgery)
Bachelor of Arts, Columbia College of Physicians and Surgeons, 2002
Doctor of Medicine, Washington University in St Louis, 2008

Isabella Rossi Riordan, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Interim Division Chief for the Progress West Division
Doctor of Medicine, Loyola University Chicago, 2014

Stephen L. Ristvedt, M.A., Ph.D.

Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Psychiatry
Bachelor of Arts, University of Minnesota, 1981
Master of Arts, University of Pennsylvania, 1983
Doctor of Philosophy, University of Pennsylvania, 1989

Charles M Robertson, M.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Arts, University of Virginia, 1997
Doctor of Medicine, University of Virginia, 2003

Evan Ward Roller, M.D.

Associate Professor of Anesthesiology (primary appointment)
Main Campus, 2010

S

Angela K Saeetele, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Simpson College, 2004
Doctor of Medicine, University of Missouri Columbia, 2008

Emine Aysu Salviz, M.D.

Instructor in Anesthesiology (primary appointment)
Doctor of Medicine, Baskent University, 2004

Vijaya K Samineni, Ph.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Philosophy, Southern Illinois University Carbondale, 2013

Jessica Lauren Sanford, M.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Arts, Emory University, 2009
Doctor of Medicine, University of Missouri Columbia, 2014

Benjamin Sanofsky, M.Ed., M.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Arts, Colgate University, 2008
Master of Education, CUNY Hunter College, 2012

Doctor of Medicine, Stony Brook School of Medicine, 2016

Matthew Stringfellow Sanzalone, M.D.

Instructor in Anesthesiology (Pending Dean's Approval) (primary appointment)
Doctor of Medicine, Louisiana State University, 2015

Charles R Schrock, M.D.

Associate Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Notre Dame, 1986
Doctor of Medicine, University of Missouri Columbia, 1991

Rajiv K Shah, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, University of Rochester, 2010

Nicole Jimin Shin, M.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Washington University in St Louis, 2010
Doctor of Medicine, Washington University in St Louis, 2015

Preet Mohinder Singh, M.D., MBBS

Assistant Professor of Anesthesiology (primary appointment)
Foreign MD equivalent, Dayanand Medical College, 2007
Doctor of Medicine, All India Institute of Medical Sciences, 2010

Pratik Sinha, Ph.D., M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Manchester, 2001
Doctor of Medicine, University of Manchester, 2002
Doctor of Philosophy, Imperial College, 2013

Sarah Kendall Smith, Ph.D., M.D.

Assistant Professor of Anesthesiology (Pending Executive Faculty Approval) (primary appointment)
Bachelor of Science, University of Kansas, 2004
Doctor of Philosophy, University of Kansas Medical Center, 2011
Doctor of Medicine, University of Kansas Medical Center, 2013

Joshua Spiro, M.D.

Instructor in Anesthesiology (primary appointment)
Instructor in Anesthesiology (primary appointment)
Bachelor of Arts, New York University, 2013
Doctor of Medicine, University of Arizona, 2017

John Charles Spitler, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Missouri Columbia, 1998
Doctor of Medicine, University of Missouri Columbia, 2003

Joseph H Steinbach, Ph.D.

Professor Emeritus of Anesthesiology
Bachelor of Arts, Reed College, 1968
Doctor of Philosophy, University of California San Diego, 1973

Tracey Wagner Stevens, M.D.

Associate Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Washington University in St Louis, 2008

Sanjay Subramanian, M.D.

Associate Professor of Anesthesiology (primary appointment)
Associate Professor of Medicine
Doctor of Medicine, Christian Medical College, 1994

Robert A Swarm, M.D.

Professor of Anesthesiology (primary appointment)
Bachelor of Arts, Oberlin College, 1978
Doctor of Medicine, Washington University in St Louis, 1983

T

Rene Tempelhoff

Professor Emeritus of Anesthesiology

Raghu P Terkonda, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Missouri University of Science and Technology
(Formerly University of Missouri at Rolla), 1983
Doctor of Medicine, University of Missouri Columbia, 1987

Loc Vinh Thang, Ph.D., M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Michigan State University, 2015
Doctor of Philosophy, Michigan State University, 2103

Douglas Royce Thompson, M.D.

Professor of Anesthesiology (primary appointment)
Vice Chair - Education
Bachelor of Science, University of California San Diego, 1998
Doctor of Medicine, University of California San Diego, 2003

Silvestre A Tomeldan, M.D.

Instructor Emeritus in Anesthesiology
Doctor of Medicine, School Not Found, 1970

V

Swarup Varaday, MBBS

Associate Professor of Anesthesiology (primary appointment)
Foreign MD equivalent, Andhra University, 1989

Anandhalakshmi Varadharajan, M.D., MBBS

Voluntary Clinical Instructor in Anesthesiology
Foreign MD equivalent, Sri Ramachandra Institute of Higher Education
and Research, 2000
Doctor of Medicine, St. Lukes, 2007

Gershon Ram Volotzky, M.D.

Associate Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Tel Aviv University, 1979

W

Brian Louis Weber, J.D., M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Missouri in St Louis, 2005
Juris Doctor, Washington University in St Louis, 2008
Doctor of Medicine, University of Missouri Kansas City, 2015

Ashley Brooke Weinhold, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, University of Arkansas Main Campus, 2011

Brian T Wessman, M.D.

Associate Professor of Anesthesiology (primary appointment)
Division Chief - Division of Critical Care Medicine

Associate Professor of Emergency Medicine
Associate Professor of Emergency Medicine
Bachelor of Science, College of William and Mary, 2000
Doctor of Medicine, Commonwealth College, 2005

Troy S Wildes, M.D.

Division Chief - Division of Perioperative Medicine
Bachelor of Science, Illinois Wesleyan University, 1998
Doctor of Medicine, Washington University in St Louis, 2002

James Douglas Wirthlin, M.D.

Instructor in Anesthesiology (Pending Dean's Approval) (primary
appointment)
Bachelor of Science, Brigham Young University, 2006
Doctor of Medicine, Uniformed Services University of the Health
Sciences, 2012

Maxim Wolfson, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Washington University in St Louis, 2015

X

Xiaoming Xia, M.S., Ph.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Fudan University (#####), 1984
Master of Science, Shanghai Jiao Tong University (#####), 1987
Doctor of Philosophy, Vollum Institute of Oregon Health and Science
University, 1998

Zili Xie, Ph.D.

Instructor in Anesthesiology (primary appointment)
Doctor of Philosophy, Wuhan University (#####), 2017

Y

Branden Edward Yee, M.P.H., M.D.

Associate Professor of Anesthesiology (primary appointment)
Bachelor of Science, Tufts University, 2004
Master of Public Health, Tufts University, 2008
Doctor of Medicine, Tufts University, 2008

Xiaobin Yi, M.D.

Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Hunan Medical University, 1985

Alexander H Young, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Arts, University of Mississippi, 1986
Doctor of Medicine, University of Arkansas Main Campus, 1990

Anna Rebecca Young, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, Asbury College, 2004
Doctor of Medicine, University of Kentucky, 2008

Z

Paul Battista Zanaboni, Ph.D., M.D.

Professor of Anesthesiology (primary appointment)
Doctor of Philosophy, Saint Louis University, 1990

Doctor of Medicine, Saint Louis University, 1992

Jing Zhong, M.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Duke University, 2009
Doctor of Medicine, University of North Carolina at Chapel Hill, 2017

Yu Zhou, M.S., Ph.D.

Instructor in Anesthesiology (primary appointment)
Bachelor of Science, Wuhan University (#####), 1996
Master of Science, Zhejiang Medical University, 1999
Doctor of Philosophy, State University of New York at Buffalo, 2005

Anita Mathew Zimmerman, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Bachelor of Science, University of Illinois at Chicago, 2010
Doctor of Medicine, University of Illinois at Chicago, 2014

Jonathan Kramer Zoller, M.D.

Assistant Professor of Anesthesiology (primary appointment)
Doctor of Medicine, Tulane University, 2009

Research Electives

Anesthesiology Research Electives

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 Kannamapallil, PhD; Michael Montana, MD, PhD; Ben Palanca, MD, PhD; or Troy Wildes, MD.

Courses

Visit online course listings to view offerings for M10 Anesth (<https://courses.wustl.edu/CourseInfo.aspx?sch=M&dept=M10>).

M10 Anesth 811 Cardiothoracic Anesthesiology (Clinical Elective)

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 (Clinical Elective)

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 active participation with pediatric anesthesiologists at St. Louis Children's Hospital where you will have the opportunity to learn about pre-anesthetic assessment, the performance of routine anesthetics (which includes instruction and practice in pediatric airway skills), other technical skills such as intravenous line placement, and the management of patients in the post-anesthesia care unit (PACU). 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.

M10 Anesth 819 CTICU: Cardiothoracic Intensive Care Unit (Clinical Elective)

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 821 Pain Management (Clinical Elective)

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.

M10 Anesth 822 Anesthesiology for Neurosurgery (Clinical Elective)

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 (Clinical Elective)

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 910 Anesthesiology Advanced Clinical Rotation (ACR)

This advanced clinical rotation 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 regional anesthesia / acute pain management, labor and delivery, pediatric anesthesia, and the Center for Preoperative Assessment and Planning. The student will interact with patients across all age ranges and demographics. 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 clinical simulator sessions using a simulator mannequin for practical management of airway problems, resuscitation, and trauma emergencies as well as supplemental educational sessions covering relevant topics in anesthesiology. By the end of the rotation, the student should be able to independently (under supervision) provide anesthesia for uncomplicated surgical procedures.

Credit 140 units.

M10 Anesth 915 Surgical Critical Care Advanced Clinical Rotation (ACR)

The 4400 Surgical ICU provides an exciting and challenging opportunity to care for some of the sickest patients in the hospital. From acute trauma to complex organ transplants, the SICU offers incredible teaching and education about a variety of medical topics and conditions. The ACR SICU rotation integrates medical students into one of the two SICU teams, and each medical student, in conjunction with a resident, will care for 3-5 patients on the service. This entails, at minimum, examining the patient, gathering pertinent information (lab results, significant events, etc.), and presenting the patient on rounds. Working with the resident, medical students will develop a problem list, as well as an organized plan for their patients. They will then need to follow up on the execution of all determined labs/interventions/consults, closely communicating with the residents, fellow, and attending throughout the shift, as well as presence for sign-outs each morning/evening at shift change. In addition, medical students will be expected to attend and participate in multiple educational conferences throughout the week/rotation, as well as sessions for skills such as line placement and ultrasound.

Credit 140 units.
