Formal instruction in surgery begins during the third year, with the required 12-week Integrated Surgical Disciplines Clerkship. During this surgical clerkship, students are assigned to clinical rotations, mostly within the Department of Surgery, with some exposure to other surgical-related disciplines outside of the department. The clerkship gives students opportunities to participate in the care of surgical patients (both inpatient and outpatient); to spend time in the operating rooms; and to attend seminars, teaching conferences and didactic sessions on a regular basis. During the fourth year, students may select sub-internship electives within the Division of General Surgery, which include a variety of general surgical specialties. In addition to the general surgery sub-internships, electives are available in several other surgical subspecialties (e.g., pediatric surgery, transplant surgery, vascular surgery, cardiovascular and thoracic surgery, urologic surgery, plastic and reconstructive surgery).

Website: http://www.surgery.wustl.edu

### Degrees & Requirements

#### MPH5 Program

Within the Department of Surgery, the Division of Public Health Sciences offers a Master of Population Health Sciences (MPHS) program, which prepares students for clinical research careers by accelerating and deepening their expertise in population health and clinical outcomes research. Students gain a strong foundation and hands-on experience in leading, designing, conducting and moving clinical research findings to applications that will improve patient care and treatment. In the MD/MPHS program, medical students have an opportunity to add clinical research methods training to their medical school experience. Medical students in the program work on a research project and use that project to complete their MPHS course work in 10 months, creating the ideal combination of didactic training and hands-on experience. MPHS program leadership can help students find a research project or lab to work in that would provide a good fit for their goals and interests.

To learn more about the MD/MPHS Program, contact Blanka Hodzic at by phone at 314-286-0881 or by email at bhodzic@wustl.edu.

#### Other Courses

Some of the Department of Surgery’s courses are also 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 (http://bulletin.wustl.edu/medicine/degrees) section of this Bulletin.

### Research

#### M95 Surgery

**Section of Minimally Invasive Surgery**

660 S. Euclid, Box 8109
Phone: 314-454-8877

Under the direction of **L. Michael Brunt, MD**, students may investigate minimally invasive gastrointestinal and hernia surgery. The minimum rotation length is four weeks. Under the auspices of the Section of Minimally Invasive Surgery and the Washington University Institute for Minimally Invasive Surgery, a number of surgeons are investigating outcomes of various minimally invasive surgical approaches to abdominal wall hernias, benign foregut disorders, bariatric surgery and cholecystectomy. Dr. Brunt is currently investigating the clinical outcomes and standardization of various minimally invasive surgical procedures, opioid prescribing patterns and opioid use in surgical patients, and education-related research and skills training for medical students planning to enter a surgical internship.

**Website:** http://www.surgery.wustl.edu

**Division of Plastic and Reconstructive Surgery**

660 S. Euclid, Box 8238
Phone: 314-747-0541

The Division of Plastic Surgery offers many opportunities for research projects on various topics related to plastic surgery. A project will be designed with students prior to their rotation on plastic surgery so that all of the materials and methods will be available at the beginning of the rotation. The basic science laboratories primarily investigate nerve injury and regeneration, including nerve transplantation. Students will be encouraged to design and complete their own research study during the elective. The minimum rotation length is six weeks. The research rotation can be conducted in the plastic surgery laboratories under the direction of **Drs. Moore, Snyder-Warwick, Wood** or **Mackinnon**.

Ongoing projects include the following:

- The influence of the immune system on nerve regeneration;
- Neural tissue engineering and regenerative medicine therapeutics, such as electrical stimulation to promote tissue regeneration
- The investigation of glial cells at the neuromuscular junction during development, maintenance, aging, and after nerve injury

Additional clinical and educational research opportunities in various fields of plastic surgery are available with **Drs. Fox, Myckatyn, Patel, Tung, and Woo**.
These various projects include the following:

- In vivo tissue generation and tissue differentiation
- The mechanical, structural and biochemical effects of stress on scar tissue maturation
- In vivo anatomy of craniofacial deformities
- Outcome analysis of methods of cleft lip and palate management
- Breast reconstruction (3D imaging of breasts after cosmetic or reconstructive surgery, interpretation of angiograms of the breast to measure nipple perfusion)
- The use of nerve transfer to improve hand function in patients with cervical spinal cord injury/quadriplegia
- Surgical education (specifically web-based multimedia strategies for peripheral nerve surgery education)

The Department of Surgery can host Washington University medical students in any of its labs either to receive credit for a class they are currently enrolled in or to add them into the system as Washington University student employees to be paid for their time worked. Student work may be obtained through the Federal Work-Study program, the Office of Medical Student Research, or direct communication initiated by the student with faculty they wish to work alongside on specific subjects of interest with the goal of furthering their education. This can occur during any year of a medical student's education.

**Faculty**

**Clerkship Director**

Michael M. Awad, MD, PHD

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

A

**Aaron Michael Abarbanell, MS, MD**

Assistant Professor of Surgery (Cardiothoracic Surgery) (primary appointment)

BA Cornell University 1993

MS Indiana University Indianapolis 2010

MD University of Michigan 2005

**Rebecca L Aft, MD, PHD**

Professor of Surgery (General Surgery) (primary appointment)

MD Washington Univ in St. Louis 1992

PHD Univ of Wisconsin Madison 1983

BS Univ of Wisconsin Madison 1978

**Dorothy A Andrióle, MD**

Associate Professor of Surgery (General Surgery) (primary appointment)

Assistant Dean for Student Affairs and Medical Education

BA New York University 1976

MD New York University 1980

Gerald L Andrióle, MD

Robert Killian Royce, M.D. Distinguished Professor of Urologic Surgery (primary appointment)

BS Pennsylvania State University 1976

MD Jefferson Medical College 1978

Christopher Thomas Aret, MD

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MD Washington Univ in St. Louis 2003

BS Washington Univ in St. Louis 1999

Bracken Abram Armstrong

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PHD Brown University 2001

MD Brown University 2001

B

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MD Johns Hopkins University 2006

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MD Univ of Wisconsin Madison 2008

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BA Dartmouth College 1963

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BS Xavier University Lousiana 1983

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M PH Columbia University 2009

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Assistant Professor of Anesthesiology

C

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BS University of Queensland 1977
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UNKNOWN Duke University 1978
MD University of Tennessee 1967
BS University of Mississippi 1964

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MS Georgetown University 2006
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MPH Saint Louis University 2007
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BA Brown University 1983

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PHD University of South Carolina 2006

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D SC University of CA Los Angeles 1993
MD University of CA Los Angeles 1993

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MS1 Medical University of Sth Car 2006
BA1 Williams College 1987
MS Medical Univ South Carolina 2006

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BA Princeton University 1984
PHD Duke University 1991

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MS Saint Louis University 1978  
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Professor of Medicine  
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MD University of Minnesota 2010  
BS Truman State University 2005  

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BS Bucknell University 1999  

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Assistant Professor of Surgery (Public Health Sciences) (Pending Executive Faculty Approval) (primary appointment)  
BA University of Washington 2005  
MPA George Mason University 2007  
MSCRM Washington Univ in St. Louis 2014  
OTD Washington Univ in St. Louis 2014  

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Instructor in Surgery (Public Health Sciences) (primary appointment)  
Instructor of Anthropology (Courtesy Affiliation)  
M PH Northwestern University 2011  
PHD Northwestern University 2011  
BA Vanderbilt University 1998  

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MD Stanford University 1997  

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PHD Tohoku University Sendai Miyag 2010  
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M PH University of Texas Houston 2000  
PHD University of Houston 1999  
MA University of Houston 1998  
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MS University of Western Ontario 2016  
BS Simon Fraser University 2015  
PHD University of Waterloo 2018  

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BS University of Southern Calif 1996  
MD University of CA Irvine 2003  
MS University of Southern Calif 1999  

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MS Columbia University 2003  
MD Ross Univ School of Medicine 2007  
BS Boston University 2001  

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BS University of Michigan 1985
MD Wayne State University 1989

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BS University of Pennsylvania 1985
MD University of Vermont 1990

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BS Bahria University 1997
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DDENT Washington Univ in St. Louis 1984
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MA Seoul National University 1990
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MS University of Illinois 1999
BS University of Illinois 1988
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Mary Culver Distinguished Professor
Vice Chairman for Education, Department of Surgery

BA Wellesley College 1988
MD Duke University 1992

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Assistant Professor of Surgery (General Surgery) (primary appointment)
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BA St Johns College 1999

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MD Grant Medical College 2004

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MD University of Rochester 1997
BS University of Rochester 1993

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Professor of Pathology and Immunology
MD Mount Sinai School of Medicine 1995
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L

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Associate Professor of Anesthesiology
MD Cornell University 1999
BS Rice University 1994

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BA Colorado College 1999
PHD Mayo Clinic 2011
MD Mayo Clinic 2011

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MD Guangdong Medical College 1991
MS Sun Yat-Sen University 2004

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BS Duke University 1997
MD Washington Univ in St. Louis 2005
PHD Washington Univ in St. Louis 2005

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Assistant Professor of Surgery (Public Health Sciences) (primary appointment)
PHD University of Michigan 2014
Ying Liu, PHD, MD  
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PHD Texas Tech University 2006  
MD Southeast U Medical School 1995

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Instructor in Clinical Surgery (General Surgery) (primary appointment)  
MD Washington Univ in St. Louis 1961  
BA Washington Univ in St. Louis 1957

Stanley L London, MD  
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MD Washington Univ in St. Louis 1949

Esther Jiaxin Lu, MS, PHD  
Assistant Professor of Surgery (Public Health Sciences) (primary appointment)  
Assistant Professor of Biostatistics  
MS National Univ of Singapapore 2002  
BS Nankai University 1997  
PHD Medical College of Wisconsin 2007

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BA Emory University 1972  
MD University of Chicago 1976

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Associate Professor of Surgery (Public Health Sciences) (primary appointment)  
Associate Professor of Biostatistics  
Associate Professor of Medicine  
BS Renmin University of China 1998  
MS1 Duke University 2003  
MS Renmin University of China 2001  
PHD Duke University 2006

Nupam P Mahajan, PHD  
Professor of Surgery (Urological Surgery) (Pending Executive Faculty Approval) (primary appointment)  
PHD Indian Institute Of Technology 1997

Hersh Maniar, MD  
Associate Professor of Surgery (Cardiothoracic Surgery) (primary appointment)  
Associate Professor of Medicine  
MD University of Illinois 1998  
BS University of Michigan 1994

Julie Ann Margenthaler, MD  
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MD Southern Illinois University 1997  
BA Boston University 1993

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PHD University of Minnesota 1993  
BA California State Fresno 1973  
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BS Brigham Young University 1997  
MD University of Utah 2002

Bryan F Meyers, MD  
Patrick and Joy Williamson Endowed Professor of Surgery (Cardiothoracic Surgery) (primary appointment)  
BA Yale University 1982  
MD University of Chicago 1986

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MD Washington Univ in St. Louis 1966  
BA University of Texas Austin 1962

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BS Howard University 1981

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BS University of Michigan 1983  
MD Wayne State University 1988

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MD Virginia Comm University 2004

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BS Saint Louis University 2000  
MD Washington Univ in St. Louis 1972

Nabil A Munfakh, MD  
Professor of Surgery (Cardiothoracic Surgery) (primary appointment)  
MD University of Michigan 1985  
BS University of Michigan 1981

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MD University of Massachusetts 2011  
BA Tufts University 2006

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BA St Olaf College 1990  
MD Washington Univ in St. Louis 1994

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BS Univ of Northern British Colu 2003  
MD Univ of Northern British Colu 1997

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UNKNOWN University of Pune 1967

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BS EWHA Womans University 1994  
PHD Harvard University 2005  
MS1 EWHA Womans University 1996

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MD Washington Univ in St. Louis 1969  
BS University of South Dakota 1967

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BG Washington in St. Louis 1983
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Professor of Biomedical Engineering
Professor of Radiology
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MD School Not Listed 1969
PHD School Not Listed 1975

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BS Barnard College 2001
PHD George Washington University 2006
M PHIL George Washington University 2004

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BS Yale University 1997
MD University of Connecticut 2002
BS Yale University 1997

**Varun Puri, MD, MS**
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MD Washington Univ in St. Louis 2009
BS All-India Inst of Medical Sci 1998
MS Creighton University 2007

**R**

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BS1 St Johns University 2004

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BA University of CA San Diego 1983
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BS University of Notre Dame 2000
MD Baylor College of Medicine 2004

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BA Talladega College 1944
MD Howard University 1947

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Professor of Radiology
BA Colgate University 1979
MD University of Vermont 1984

**S**

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BS Harvard Radcliffe 1989
MD Columbia University 1993

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Gregorio A. Sicard Distinguished Professor
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BS Maryville University 2005
MD University of MO Columbia 2009

**Donald C Sauer, MD**
Assistant Professor Emeritus of Clinical Surgery (General Surgery) (primary appointment)
BA Washington Univ in St. Louis 1956
MD Washington Univ in St. Louis 1960

**Douglas J Schuerer, MD**
Professor of Surgery (General Surgery) (primary appointment)
BS Allegheny College 1991
MD University of Pittsburgh 1995

Richard B Schuessler, MS, PHD
Professor of Surgery (Cardiothoracic Surgery) (primary appointment)
Associate Professor of Biomedical Engineering
BS University of Missouri 1973
MS University of Missouri 1974
PHD Clemson University 1977

Maryls E Schuh, BS1, MD
Instructor in Clinical Surgery (General Surgery) (primary appointment)
BS1 University of North Dakota 1977
BS University of North Dakota 1973
MD Washington Univ in St. Louis 1979

Debra L Seoane, MD
Instructor in Clinical Surgery (General Surgery) (primary appointment)
MD University of Miami 1986

Dipesh K Shah, MD
Assistant Professor of Surgery (Cardiothoracic Surgery) (primary appointment)
MD L.P.S. Institute of Cardiology 2004

Courtney Shands III, MD
Instructor in Clinical Surgery (Urologic Surgery) (primary appointment)
MD Vanderbilt University 1982
BA Stanford University 1978

Surendra Shenoy, MD, PHD
Professor of Surgery (General Surgery) (primary appointment)
MD Kasturba Medical College 1984
BS Kasturba Medical College 1980
PHD Institute of Medical Science 1989

Michelle Ilana Silver, MS, PHD
Assistant Professor of Surgery (Public Health Sciences) (Pending Executive Faculty Approval) (primary appointment)
MS Johns Hopkins University 2009
BS Stanford University 2007
PHD Johns Hopkins University 2015

Matthew Leon Silviera, MD, MS1
Assistant Professor of Surgery (General Surgery) (primary appointment)
MD Temple University 2005
MS1 Temple University 2010
BS Pennsylvania State University 2001

David Siroospour, MD
Assistant Professor of Clinical Surgery (General Surgery) (primary appointment)
MD School Not Listed 2000

Arjun Sivaraman, MD
Instructor in Surgery (Urologic Surgery) (primary appointment)
MD Madras Medical College 2005

Radhika K Smith, MD
Assistant Professor of Surgery (General Surgery) (primary appointment)
MD University of MO Kansas City 2010

Zachary Lee Smith, MD
Assistant Professor of Surgery (Urologic Surgery) (primary appointment)
MD University of MO Kansas City 2010

Jason Andrew Snyder, MD
Assistant Professor of Surgery (General Surgery) (primary appointment)
MD Marshall University 2008
BS Kettering University 2004

Alison K Snyder-Warwick, MD
Assistant Professor of Surgery (Plastic and Reconstructive Surgery) (primary appointment)
MD Washington Univ in St. Louis 2004
BA Knox College 2000

Dirk M Spitzer, PHD
Assistant Professor of Surgery (General Surgery) (primary appointment)
PHD Technische U Braunschweig 1999
BS School Not Listed 1995

Charlie Srivilasa
Adjunct Assistant Professor of Surgery (primary appointment)

Alan Joel Stein, MD
Assistant Professor of Clinical Surgery (Urologic Surgery) (primary appointment)
BS Univ of Wisconsin Madison 1972
MD Wayne State University 1976

Melissa Kay Stewart, MD
Instructor in Surgery (General Surgery) (primary appointment)
MD University of Pittsburgh 2011

Daniel Charles Stoeckel
Instructor in Clinical Surgery (primary appointment)

Steven M Strasberg, MD
Pruett Professor of Surgery (General Surgery) (primary appointment)
Associate Professor of Cell Biology and Physiology
MD University of Toronto 1963

Herbert Sunshine, MD
Instructor in Clinical Surgery (Urologic Surgery) (primary appointment)
MD Washington Univ in St. Louis 1954
BA Washington Univ in St. Louis 1950

Siobhan Sutcliffe, MS, PHD, MHS
Marissa Morningstar Tenenbaum, MD
Associate Professor of Surgery (Plastic and Reconstructive Surgery) (primary appointment)
MD Washington Univ in St. Louis 2002
BS Univ of Wisconsin Madison 1998

Robert W Thompson, MD
Professor of Surgery (General Surgery) (primary appointment)
Professor of Cell Biology and Physiology
Professor of Radiology
BA Hope College 1979
MD University of Michigan 1983

Adetunji Toriola, PHD
Associate Professor of Surgery (Public Health Sciences) (primary appointment)
PHD University of Tampere 2011

Ralph J Torrence, MD
Asst Prof of Clinical Surgery (Urologic Surgery) (primary appointment)
MD Georgetown University 1983

Erica J Traxel, MD
Assistant Professor of Surgery (Urologic Surgery) (primary appointment)
MD Beaufort Technical College 2002
BS Texas A&M University 1998

Thomas H Tung, MD
Professor of Surgery (Plastic and Reconstructive Surgery) (primary appointment)
MD University of Maryland 1990
BS Duke University 1986

Isaiah Turnbull, MS, MD
Assistant Professor of Surgery (General Surgery) (primary appointment)
BS University of Oregon 1998
MS Washington Univ in St. Louis 2008
MD Washington Univ in St. Louis 2008

Kelly Jean Vallar, MD
Assistant Professor of Surgery (General Surgery) (primary appointment)
MD University of MO Kansas City 2011

Ramakrishna Venkatesh, MS1, MS, MD
Professor of Surgery (Urologic Surgery) (primary appointment)
MS1 School Not Listed 1991
MS Bangalore University 1991
MD Bangalore University 1988

Jesse Daya Vrecenak, MD
Assistant Professor of Surgery (Pediatric Surgery) (primary appointment)
MD University of Pennsylvania 2007
BS Yale University 2003

Gino J Vricella, MD
Assistant Professor of Surgery (Urologic Surgery) (primary appointment)
BS Saint Louis University 2012
MD University of MO Columbia 2006

Howard S Walker, MD
Instructor in Clinical Surgery (Cardiothoracic Surgery) (primary appointment)
MD Beaufort Technical College 1974
BA Citadel 1971

Fei Wan, PHD, MS
Assistant Professor of Surgery (Public Health Sciences) (primary appointment)
PHD University of Pennsylvania 2015
MS University of Vermont 2001

Brad W. Warner, MD
Jessie L. Ternberg, M.D., PhD. Distinguished Professor of Pediatric Surgery in Surgery (Pediatric Surgery) (primary appointment)
Professor of Pediatrics
MD University of MO Kansas City 1982
BS University of MO Kansas City 1982

Erika Waters, PHD, M PH, MS PSYC
Associate Professor of Surgery (Public Health Sciences) (primary appointment)
PHD Rutgers University 2006
M PH Johns Hopkns University Medic 2007
BS Arizona State University 1999
MS PSYC Rutgers University 2003

Michael D Weiss, BS1, DPM
Assistant Professor of Surgery (General Surgery) (primary appointment)
BS1 Ohio State University 1977
DPM Ohio College of Podiatric Medi 1981

Jason R Wellen, MD
Associate Professor of Surgery (General Surgery) (primary appointment)
BS Emory University 1998
MD St George's University 2002

Brad C White, MD
Instructor in Clinical Surgery (Urologic Surgery) (primary appointment)
BS Illinois State University 1986
MD Loyola University Chicago 1993

Bruce I White, MD
Instructor in Clinical Surgery (Plastic and Reconstructive Surgery) (primary appointment)
MD Washington Univ in St. Louis 1964

Paul Edward Wise, MD
Professor of Surgery (General Surgery) (primary appointment)
BS Georgetown University 1992
MD John Hopkins University 1996

Brian Wing-Chi Wong, PHD
Assistant Professor of Surgery (Plastic and Reconstructive Surgery) (primary appointment)
BS Washington Univ in St. Louis 2009
PHD Washington Univ in St. Louis 2009
BS Saint Louis University 2005
MS Washington Univ in St. Louis 2008

Yan Yan, PHD, MD, MHS
Professor of Surgery (Public Health Sciences) (primary appointment)
Professor of Biostatistics
PHD Johns Hopkins University 1998
MD Nanjing Medical University 1983
MHS Johns Hopkins University 1995

Muhammad T Yasin, MD
Assistant Professor of Surgery (General Surgery) (primary appointment)
MD Punjab University 1985

William D Yates, MD
Instructor in Clinical Surgery (General Surgery) (primary appointment)
BA Northwestern University 1983
MD Northwestern University 1985

Robert A Young, MS, JD, MD
Instructor in Clinical Surgery (Plastic and Reconstructive Surgery) (primary appointment)
BA University of Michigan 1973
MS Ohio State University 1975
JD Saint Louis University 1997
MD Ohio State University 1978

Mohamed A Zayed, PHD, MD
Assistant Professor of Surgery (General Surgery) (primary appointment)
PHD University of North Carolina 2007
MD University of North Carolina 2009
BS University North Carolina 2002

Courses

M95 Surgery 790 Integrated Surgical Disciplines Clerkship
During the 12-week surgery clerkship, each student is assigned to three separate rotations. Each student is assigned to a required general surgery rotation at Barnes-Jewish Hospital or the John Cochran Veterans Administration Medical Center. In addition, each student selects elective rotations in other general surgical fields, surgical subspecialties and related disciplines of critical care. The student is an active participant in the daily care of patients on each service and attends the service teaching conferences and rounds. For the duration of the 12-week rotation, there are weekly small-group tutorial sessions with faculty members and a biweekly lecture series. Credit 462 units.

M95 Surgery 814 Trauma Service Subinternship
The student on this elective will function as a subintern on the Trauma and Acute Care Surgical Service within the Section of Acute and Critical Care Surgery. Student involvement in all aspects of clinical surgery is accomplished by student attendance in the operating room, outpatient office, preoperative patient evaluation, in-hospital patient management, and postoperative outpatient follow-up after discharge. Practical experience will focus on the initial evaluation and resuscitation of trauma patients and other emergency general surgical patients. The student will also participate in regular rounds, conferences, and in-house call.

M95 Surgery 818 Surgical Night Float & ED Subinternship
This subinternship is specifically designed to give senior medical students an intern-level experience in managing acute on-call problems in surgical patients and in evaluating urgent and emergent problems in the emergency department (ED). The rotation will be divided into two two-week segments: one segment in the ED and the second on night float call on the surgical floors. Students will gain experience evaluating and managing the types of acute problems they will encounter as surgical interns and first responders to patients with acute abdominal pain, chest pain, hypotension, mental status changes, and other ED/on-call types of problems. They will be assigned to the on-call surgical resident and will have a structured experience in order to maximize development of their diagnostic, management, and case presentation skills in the acute care setting so that they may more smoothly make the transition to a surgical internship.

M95 Surgery 820 Cardiothoracic Surgery Subinternship
The senior elective in cardiothoracic surgery is a four-week clinical rotation with two-week blocks divided between adult cardiac, pediatric cardiothoracic, and general thoracic surgery
according to the student’s preference. Students will participate in morning work rounds, attend the operative procedures of their choice, and attend weekly conferences and teaching rounds. Students will be introduced not only to the surgical procedures but also to the postoperative care of the surgical patients. On the pediatric and adult cardiac services, students will be introduced to the principles of cardiopulmonary bypass, ventricular assist devices, cardiac transplantation, coronary artery bypass surgery (on and off pump), valve repair and replacement, complex aortic surgery, the MAZE procedures, and others. On the adult cardiac surgery service, students will function as subinterns under the direct supervision of a faculty member. On the thoracic surgical rotation, students will have the opportunity to perform bronchoscopy, esophagoscopy, and gastroscopy; to participate in surgical resections of lung cancer and esophageal cancer; and to participate in surgery for emphysema and for benign esophageal conditions. Students will also participate in lung transplantation surgery.

**M95 Surgery 830 Plastic & Reconstructive Surgery Subinternship**
The period on Plastic Surgery may either be spent as a clinical clerkship or conducting a research project. The purpose of the clinical subinternship is to familiarize the student with the basic principles of plastic surgery. The student will have successive assignments to each of the attending staff and the ward resident services during the four weeks. This will expose the student to the breadth and depth of plastic surgery. Alternatively, if the student has identified a focus of interest, they may participate on those services of special interest, such as hand or pediatric plastic surgery. The student will assume an active role on the plastic surgery service and will participate in the total management of a wide variety of surgical problems, including congenital anomalies, microvascular surgery, surgery of the upper extremity, peripheral nerve surgery, cosmetic surgery, and general reconstructive plastic surgery. Research projects should be student-motivated and must be approved prior to scheduling and confirming the research rotation. Students will also prepare a 10-minute case presentation.

**M95 Surgery 832 Plastic Surgery Externship**
This course is for visiting medical students only. Students rotate on different plastic surgery services for two weeks each to maximize their exposure to all faculty. The student will assume an active role on the plastic surgery service and will participate in the total management of a wide variety of surgical problems, including congenital anomalies, microvascular surgery, surgery of the upper extremity, peripheral nerve surgery, cosmetic surgery, and general reconstructive plastic surgery. Participation in conferences is expected. Students will turn in two histories and physicals.

**M95 Surgery 850 Urology Subinternship**
This four-week clinical subinternship will offer the interested student experience with a spectrum of problems in both adult and pediatric clinical urology. The student will learn the basic diagnostic procedures and management of surgical and nonsurgical aspects of patient care under the supervision of the attending staff and house staff. Clinical conferences are held two days per week.

**M95 Surgery 862 Colon & Rectal Surgery Subinternship**
This subinternship elective is designed to give students in-depth experience in the clinical management of patients on the Colorectal Surgery Service. Students work closely with the attendings within the Section of Colon and Rectal Surgery, and clinical exposure is focused on a wide range of benign and malignant colorectal diseases. There is exposure to radiation oncology and the specialized areas of nursing related to the care of patients with colorectal cancer and inflammatory bowel disease. The course will offer opportunities for students to gain experience in preoperative, intraoperative, and postoperative patient management under house staff, fellows, and faculty guidance as well as ample opportunity to attend and participate in conferences. Notice: If a student desires to work more closely with a specific attending, they must make special arrangements with the Colorectal Surgery Office prior to beginning this elective.

**M95 Surgery 863 Surgical Oncology & Endocrine Surgery Subinternship**
This subinternship elective is designed to give students in-depth experience in the clinical management of patients on the Endocrine and Surgical Oncology Service (Unit I Service). Students will serve as clerks and will be responsible for patient management with house staff under the guidance of the chief resident and attending surgeons. Clinical exposure is focused on thyroid and parathyroid surgery as well as on breast oncology, melanoma, and soft-tissue sarcomas. The course will offer opportunities for students to gain experience in preoperative, intraoperative, and postoperative patient management. There will be opportunities for students to evaluate patients, decide on a diagnostic and management strategy, and provide care under house staff and faculty guidance, as well as ample opportunity to attend and participate in conferences.

**M95 Surgery 864 Ethical Challenges in Surgery and Medicine**
This elective will involve the exploration of the ethical challenges discussed during didactic conferences and in clinical settings within the Department of Surgery at Washington University School of Medicine in St. Louis. The student will be guided through readings, discussions, and projects by department faculty members with expertise in clinical ethics. The elective will result in a manuscript ready to be revised/finalized for publication submission with the student as lead author. This elective provides the opportunity to work closely with faculty mentors and should appeal to any student interested in the ethical and humanitarian challenges facing physicians in particular and society in general.

**M95 Surgery 871 Vascular Surgery Subinternship**
This subinternship elective is designed to give students in-depth experience in the clinical management of patients on the Vascular Surgery Service. The elective will offer opportunities for students to gain experience in the preoperative, intraoperative, and postoperative management of patients with surgically treated vascular diseases/conditions. Students will serve as clerks and will be responsible for patient management with house staff under the guidance of the fellow and attending surgeons. There will be opportunities for students to evaluate patients, decide on a diagnostic and management strategy, and provide care under house staff and faculty guidance, as well as ample opportunity to attend and participate in conferences. Notice: If a student desires to work more closely with a specific attending, they must make special arrangements with the faculty member prior to beginning this elective.
M95 Surgery 879 Hepatobiliary-Pancreatic Surgery Subinternship
This subinternship is designed to give students in-depth experience in the clinical management of patients on the Hepatobiliary-Pancreatic (HPB) Service. The HPB Service is a busy upper gastrointestinal service with a focus on hepatobiliary and pancreatic diseases and their treatment. The course offers opportunities for students to gain experience in preoperative, intraoperative, and postoperative patient management. Students will serve as clerks and will be responsible for patient management with house staff under the guidance of the fellow, chief resident, and attending surgeons. There will be opportunities for students to evaluate patients, decide on a diagnostic and management strategy, and provide care under house staff and faculty guidance, as well as ample opportunity to attend and participate in conferences. Note: If a student desires to work more closely with a specific attending, they must make special arrangements with the faculty member prior to beginning this elective.

M95 Surgery 880 Pediatric Surgery Subinternship
This subinternship will expose the student to a wide variety of pediatric surgical cases. This includes the preoperative and postoperative care of patients as well as the care of pediatric trauma patients. Daily walking or sit-down rounds are made with the resident, the nurse practitioner, and the attending staff; participation is expected in the pediatric surgery clinic and the operating room. Weekly conference attendance is mandatory and includes mortality and morbidity, radiology, pathology, solid tumor board, emergency department/trauma, and gastrointestinal conferences. Students have an opportunity to understand the widely differing anatomy and physiology of patients ranging from newborn infants to teenagers and young adults. The student functions as a team member and assumes level-appropriate responsibilities as determined by senior team members in this highly specialized care field.

M95 Surgery 891 Organ Transplantation Subinternship
The care of transplant patients requires the integration of multiple diverse medical and surgical disciplines. This subinternship in organ transplantation encompasses the preoperative evaluation and management of adult and pediatric recipients of liver, kidney, and pancreas. Students participate in the procurement of allografts from cadaveric or living donors, organ preservation, and transplantation. Emphasis is also placed on postoperative care, multimodality immunosuppression, and the management of allograft rejection. Basic hepatic and renal physiology, fluid and electrolyte balance, and transplantation immunology are stressed. The rotation provides an elaborate exposure to different facets of the management of end-stage renal and liver disease. Management of the complications of diabetes, hypertension, portal hypertension, and infectious problems are an integral part of pre- and post-transplant care. This course is designed to offer the student an overview of the field of organ transplantation; however, in addition to transplant surgery, students will also get some exposure to vascular access and hepatobiliary surgery. The student functions as a member of the transplant team and assumes appropriate responsibilities under supervision.

M95 Surgery 893 Minimally Invasive Surgery Subinternship
This subinternship elective in minimally invasive surgery is offered by the chief of the Section of Minimally Invasive Surgery in the General Surgery Division. Surgeons in the Minimally Invasive Surgery group regularly perform the following procedures laparoscopically: cholecystectomy, splenectomy, adrenalectomy, hiatal hernia repair, endoscopic myotomy for achalasia, inguinal hernia repair, ventral hernia repair, complex abdominal wall reconstruction, robotic surgery, and bariatric surgery for morbid obesity. The medical student electing this rotation will participate in the outpatient office and direct patient care, assist and observe in a wide range of laparoscopic procedures, and participate in teaching rounds and conferences. During this rotation, the student will also have the opportunity to observe and participate in minimally invasive surgical procedures performed by various surgeons within the Section of Minimally Invasive Surgery and will function as an acting intern.

M95 Surgery 900 Research Opportunities — Surgery
Research opportunities may be available. If interested, please contact the department of Surgery.