Mary Culver  
Department of Surgery

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

Faculty

Clerkship Director
Bethany Sacks, MD

Assistant Clerkship Director
Sara Holden, MD (https://surgery.wustl.edu/people/sara-holden-md/)

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

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MD University of Michigan 2005  
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MD Washington Univ in St. Louis 1992  
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B

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BS University of MO Kansas City 2000
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MD Queen's University 1974

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MS Creighton University 2007
MD Washington Univ in St. Louis 2009

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Baddr Ahed Shakhshereer, MD
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BA University of Virginia 2005

Courtney Shands III, MD
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MD Vanderbilt University 1982
BA Stanford University 1978

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

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

Matthew Leon Silviera, MS1, MD
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MS1 Temple University 2010
MD Temple University 2005
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
Assistant Professor of Surgery (Urologic Surgery) (primary appointment)
<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Department</th>
<th>Appointment Details</th>
<th>University Details</th>
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<tbody>
<tr>
<td>MD Madras Medical College 2005</td>
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<tr>
<td>Radhika K Smith, MD</td>
<td>Assistant Professor of Surgery (General Surgery)</td>
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<td>MD University of MO Kansas City 2010</td>
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<tr>
<td>Zachary Lee Smith, MD</td>
<td>Assistant Professor of Surgery (Urologic Surgery)</td>
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<td>Jason Andrew Snyder, MD</td>
<td>Assistant Professor of Surgery (General Surgery)</td>
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<td>MD Marshall University 2008</td>
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<tr>
<td>Alisson K Snyder-Warwick, MD</td>
<td>Assistant Professor of Surgery (Plastic and Reconstructive Surgery)</td>
<td>(primary appointment)</td>
<td>BA Knox College 2000</td>
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<tr>
<td>Dirk M Spitzer, PHD</td>
<td>Assistant Professor of Surgery (General Surgery)</td>
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<td>MD Washington Univ in St. Louis 2004</td>
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<td>Melissa Kay Stewart, MD</td>
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<td>MD University of Pittsburgh 2011</td>
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<tr>
<td>Daniel Charles Stoeckel</td>
<td>Instructor in Clinical Surgery</td>
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<tr>
<td>Steven M Strasberg, MD</td>
<td>Pruett Professor of Surgery (General Surgery)</td>
<td>(primary appointment)</td>
<td>MD University of Toronto 1963</td>
</tr>
<tr>
<td>Herbert Sunshine, MD</td>
<td>Instructor in Clinical Surgery</td>
<td>(Urologic Surgery)</td>
<td>BA Washington Univ in St. Louis 1950</td>
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<tr>
<td>Siobhan Sutcliffe, MHS, PHD, MS</td>
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<tr>
<td>Tsuyoshi Takahashi, PHD, MD</td>
<td>Instructor in Surgery (Cardiothoracic Surgery)</td>
<td>(primary appointment)</td>
<td>PHD University of Tokyo 2018</td>
</tr>
<tr>
<td>Marissa Morningstar Tenenbaum, MD</td>
<td>Associate Professor of Surgery (Plastic and Reconstructive Surgery)</td>
<td>(primary appointment)</td>
<td>MD Washington Univ in St. Louis 2002</td>
</tr>
<tr>
<td>Ajit K Tharakar</td>
<td>Visiting Assistant Professor of Surgery</td>
<td>(primary appointment)</td>
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<tr>
<td>Lewis Jones Thomas IV, MD</td>
<td>Assistant Professor of Surgery (Urologic Surgery)</td>
<td>(Pending Executive Faculty Approval)</td>
<td>BS Washington Univ in St. Louis 2008</td>
</tr>
<tr>
<td>Robert W Thompson, MD</td>
<td>Professor of Surgery (General Surgery)</td>
<td>(primary appointment)</td>
<td>MD University of Michigan 1983</td>
</tr>
<tr>
<td>Adetunji Toriola, PHD</td>
<td>Associate Professor of Surgery (Public Health Sciences)</td>
<td>(primary appointment)</td>
<td>PHD University of Tampere 2011</td>
</tr>
<tr>
<td>Ralph J Torrence, MD</td>
<td>Asst Prof of Clinical Surgery</td>
<td>(Urologic Surgery)</td>
<td>MD Georgetown University 1983</td>
</tr>
<tr>
<td>Erica J Traxel, MD</td>
<td>Assistant Professor of Surgery (Urologic Surgery)</td>
<td>(primary appointment)</td>
<td>BS Texas A&amp;M University 1998</td>
</tr>
<tr>
<td>Thomas H Tung, MD</td>
<td>Professor of Surgery (Plastic and Reconstructive Surgery)</td>
<td>(primary appointment)</td>
<td>BS Duke University 1986</td>
</tr>
<tr>
<td>Isaiah Turnbull, MS, MD</td>
<td></td>
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<td>MD University of Maryland 1990</td>
</tr>
</tbody>
</table>
Assistant Professor of Surgery (General Surgery) (primary appointment)
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Erika Waters, MS PSYC, M PH, PHD
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MS Ohio State University 1975  
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JD Saint Louis University 1997

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PHD University of North Carolina 2007  
MD University of North Carolina 2009

Christian W Zemlin  
Associate Professor of Surgery (Cardiothoracic Surgery)  
(Pending Executive Faculty Approval) (primary appointment)

**Research Electives**

**Surgery Research Electives**

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

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 laparoscopic 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.

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.
Courses

M95 Surgery 790 Integrated Surgical Disciplines Clerkship
During the 12-week surgery clerkship, students are assigned to three separate rotations. 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. Through completion of this subinternship, the student will gain an ability to evaluate, resuscitate and manage trauma and emergency general surgery patients. Subinterns will actively interact with patients in the outpatient office, hospital ward and operating room. Practical experience will involve preoperative patient evaluation, resuscitation of acutely ill patients, operative patient management, in-hospital patient care and postoperative outpatient follow-up. The student will also participate in affiliated 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 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 as first responders to patients with acute abdominal pain, chest pain, hypotension, mental status changes, and other ER/on-call type 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 Cardi thoracic 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 of performing bronchoscopy, esophagoscopy, gastroscopy, and participate in surgical resections of lung cancer and esophageal cancer, as well as 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, the student 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. Student will perform a ten-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 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 H&Ps.

M95 Surgery 850 Urology Subinternship
The four-week clinical subinternship will offer the interested student experience with a spectrum of problems in clinical urology - both adult and pediatric. The student will learn the basic diagnostic procedures and management of surgical and non-surgical aspects of patient care under the supervision of the attending staff and house staff. Clinical conferences are held two days per week. Medical students are also invited to participate in ongoing research projects under the mentorship of urology faculty. Please contact course director prior to the start of the elective if you are interested in this option.

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 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, he/she must make special arrangements with the Colorectal Surgery Office prior to beginning this elective.

M95 Surgery 863 Surgical Oncology & Endocrine Surgery Subinternship
This subinternship 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 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 opportunity 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 exploration of the ethical challenges discussed during didactic conferences and in clinical settings within the Department of Surgery at Washington University in St. Louis School of Medicine. 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 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 opportunity 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, he/she 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 opportunity 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, he/she 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, nurse practitioner, and attending staff, and 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, ED/Trauma, and GI conferences. Students have the 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 procurement of allografts from cadaveric or living donors, organ preservation, and transplantation. Emphasis is also placed on postoperative care, multimodality immunosuppression and management of allograft rejection. Basic hepatic and renal physiology, fluid and electrolyte balance, and transplantation immunology are stressed. Rotation provides an elaborate exposure to different facets of 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 the 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.