Mary Culver
Department of Surgery

The formal instruction in surgery begins in 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 the department. The clerkship gives students opportunities to participate in the care of surgical patients, both in- and outpatient; to spend time in the operating rooms; and to attend seminars, teaching conferences and didactic sessions on a regular basis. In 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, and plastic and reconstructive surgery).

Website: [http://www.surgery.wustl.edu](http://www.surgery.wustl.edu)

 Degrees & Requirements

**MPHS 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 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 314-286-0881 or by email (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 Offered (http://bulletin.wustl.edu/medicine/degrees) section of this Bulletin.

**Research Labs**

**L. Michael Brunt, MD**

Barnes-Jewish Hospital, 1160 Northwest Tower
Phone: 314-454-8877

Minimally invasive surgery, including endocrine applications. Minimum rotation length: four weeks. Under the auspices of the Washington University Institute for Minimally Invasive Surgery (WUIMIS), a number of surgeons are investigating the physiologic consequences of laparoscopic surgery and new applications for procedures and technologies. Dr. Brunt is currently investigating clinical outcomes of various laparoscopic surgical procedures, laparoscopic hiatal hernia surgery and adrenal surgery, and is carrying out education-related research of skills training for senior medical students planning to enter a surgical internship.

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 investigate primarily nerve injury and regeneration including nerve transplantation. Students will be encouraged to design and complete their own research study during the elective. 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:

1. influence of growth factors and blood flow on nerve regeneration;
2. neural tissue engineering;
3. diagnostic potential of biomarkers to identify nerve injury; and
4. investigation of glial cells at the neuromuscular junction during development, maintenance, aging, and following 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:

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

The Department of Surgery can utilize 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 a Washington University student employee 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 through direct communication initiated by the student to faculty they wish to work alongside on specific subjects of interest with the goal of furthering their education. This can be for any year medical student.

**Faculty**

**Clerkship Director**
John P. Kirby, MD, MS

**Clerkship Associate Director**
Eleanor Lynn Powell Drew, MD, AB

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

**A**

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MS Indiana University Indianopoli 2010
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PHD Univ of Wisconsin Madison 1983

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BA New York University 1976
MD New York University 1980

Gerald L Andriole, MD

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**B**

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M PA Golden Gate University 1986

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Professor of Medicine  
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MPH Saint Louis University 2007
AB Washington Univ in St. Louis 2018

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BA1 Williams College 1987  
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MS1 Medical University of Sth Car 2006  
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BA Washington Univ in St. Louis 1957

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Associate Professor of Medicine
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Professor of Occupational Therapy
Professor of Otolaryngology
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MD Queen's University 1975

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Associate Professor of Medicine
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MD University of Michigan 1982

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BA Boston University 1993

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BS Univ of Northern British Colu 2003

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MD Washington Univ in St. Louis 1952

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Professor of Emergency Medicine in Medicine
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UNKNOWN University of Pune 1967

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Professor of Biomedical Engineering
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MD School Not Listed 1969
PHD School Not Listed 1975

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MD University of Connecticut 2002
BS Yale University 1997

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

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BA Colgate University 1979

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BS Harvard Radcliffe 1989

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Professor of Radiology
MD Harvard University 1987
BS Yale University 1983

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BA Washington Univ in St. Louis 1956

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Professor of Surgery (General Surgery) (primary appointment)
MD University of Pittsburgh 1995
BS Allegheny College 1991

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Professor of Surgery (Cardiothoracic Surgery) (primary appointment)
Associate Professor of Biomedical Engineering
PHD Clemson University 1977
MS University of Missouri 1974

BS University of Missouri 1973

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BS1 University of North Dakota 1977
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BS University of North Dakota 1973

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MD University of Miami 1986

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MD Vanderbilt University 1982
BA Stanford University 1978

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MD Kasturba Medical College 1984
BS Kasturba Medical College 1980
PHD Institute of Medical Science 1989

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BS Pennsylvania State University 2001
MD Temple University 2005
MS1 Temple University 2010

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MD School Not Listed 2000

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MD University of MO Kansas City 2010

Jason Andrew Snyder, MD
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BS Kettering University 2004
MD Marshall University 2008

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BA Knox College 2000
MD Washington Univ in St. Louis 2004
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PHD Technische U Braunschweig 1999
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MD Wayne State University 1976
BS Univ of Wisconsin Madison 1972
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BS Princeton University 1998
MHS Johns Hopkins University 2001
MS Johns Hopkins University 2004
PHD Johns Hopkins University 2005
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Professor of Radiology
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MD University of Maryland 1990
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MS Bangalore University 1991
MS1 School Not Listed 1991
MD Bangalore University 1988
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MD University of Pennsylvania 2007
BS Yale University 2003
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MD University of MO Columbia 2006
BS Saint Louis University 2012
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PHD Rutgers University 2006
M PH Johns Hopkins University Med 2007
BS Arizona State University 1999

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BS Georgetown University 1992

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BS Saint Louis University 2005
BS Washington Univ in St. Louis 2009
PHD Washington Univ in St. Louis 2009
MS Washington Univ in St. Louis 2008

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

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 Acting Internship, Trauma Service
The student on this elective will function as a sub-intern 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 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 traumatized patients and other emergency care patients. The student will also participate in regular rounds, conferences, and in-house call.
dates for two- to four-week blocks are available. Certain rotation
M95 Surgery 832 Plastic Surgery Externship
This course is for visiting medical students only. Flexible start
dates may be limited, depending on the number of students
requesting rotations. 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. Student
will perform a 10-minute case presentation.

M95 Surgery 839 Orthopaedic Sports Medicine
This clinical elective is available for four weeks during which
the student participates in orthopaedic conferences, outpatient
clinics, surgical cases, and patient rounds on the Sports
Medicine service.

M95 Surgery 839A Orthopaedic Sports Medicine
This clinical elective is available for four weeks during which
the student participates in orthopaedic conferences, outpatient
clinics, surgical cases, and patient rounds on the Sports
Medicine service.

M95 Surgery 840A Orthopaedic Surgery-Foot/Ankle
This four-week clinical elective is available to medical students
looking to further their knowledge/experience in orthopaedics,
specifically foot and ankle surgery. Students will participate in
surgical cases, outpatient clinics, inpatient care and weekly
didactic sessions/conferences. At the completion of the elective,
students should have gained a basic knowledge of foot and
ankle problems as well as their operative and nonoperative care.

M95 Surgery 840B Orthopaedic Surgery-Foot/Ankle
This four-week clinical elective is available to medical students
looking to further their knowledge/experience in orthopaedics,
specifically foot and ankle surgery. Students will participate in
surgical cases, outpatient clinics, inpatient care and weekly
didactic sessions/conferences. At the completion of the elective,
students should have gained a basic knowledge of foot and
ankle problems as well as their operative and nonoperative care.

M95 Surgery 842B Orthopaedic Shoulder/Elbow Surgery
Clinical elective available, during which time the student will work
with attending surgeons primarily at Barnes-Jewish Hospital.
Activities will include participation in the care of hospitalized
inpatients, participation in inpatient and outpatient procedures,
attendance at designated attending office hours, attendance at
designated orthopaedic conferences, and dissection of upper-
extremity anatomical specimens.

M95 Surgery 842C Orthopaedic Shoulder/Elbow Surgery
Clinical elective available, during which time the student will work
with attending surgeons primarily at Barnes-Jewish Hospital.
Activities will include participation in the care of hospitalized
inpatients, participation in inpatient and outpatient procedures,
attendance at designated attending office hours, attendance at
designated orthopaedic conferences, and dissection of upper-
extremity anatomical specimens.

M95 Surgery 845A Orthopaedic Hand and Upper Extremity
Surgery
Clinical elective available, during which time the student will work
with attending surgeons primarily at Chesterfield and
Center for Advanced Medicine. The service includes care of adult patients with traumatic, sports (arthroscopy), nerve, and degenerative disease. Activities will include participation in outpatient procedures, attendance at faculty clinic office hours, and attendance at orthopaedic conferences.

**M95 Surgery 845B Orthopaedic Hand and Upper Extremity Surgery**
Clinical elective available, during which time the student will work with attending surgeons primarily at Barnes-Jewish Hospital, St. Louis Children's Hospital, and Shriner's Hospital. The service includes care of adult and pediatric patients with congenital, traumatic, sports (arthroscopy), nerve, and degenerative disease. Activities will include participation in outpatient procedures, attendance at faculty clinic office hours, attendance at orthopaedic conferences, and dissection of upper-extremity anatomical specimens.

**M95 Surgery 845C Orthopaedic Hand and Upper Extremity Surgery**
Clinical elective available, during which time the student will work with attending surgeon primarily at Barnes-Jewish Hospital. Activities will include participation in the care of hospitalized inpatients, participation in inpatient and outpatient procedures, attendance at designated attending office hours, attendance at designated orthopaedic conferences, and dissection of upper-extremity anatomical specimens.

**M95 Surgery 845D Orthopaedic Hand and Upper Extremity Surgery**
Clinical elective available, during which time the student will work with attending surgeons primarily at Barnes-Jewish Hospital, St. Louis Children's Hospital, Washington University Orthopedics at Center for Advanced Medicine and South County. The service includes care of adult and pediatric patients with traumatic, sports (arthroscopy), nerve, and degenerative disease. The rotation will cover general hand surgery as well as brachial plexus and peripheral nerve surgery. Activities will include participation in outpatient procedures, attendance at faculty clinic office hours, and attendance at orthopaedic conferences.

**M95 Surgery 845E Orthopaedic Hand and Upper Extremity Surgery**
Clinical elective available, during which time the student will work with attending surgeons primarily at St Louis Children's Hospital, Chesterfield, Center for Advanced Medicine and St. Louis Children's Specialty Care Center. The service includes care of adult and pediatric patients with congenital, traumatic, sports (arthroscopy), nerve, and degenerative disease. Activities will include participation in outpatient procedures, attendance at faculty clinic office hours, attendance at orthopaedic conferences, and dissection of upper-extremity anatomical specimens.

**M95 Surgery 845F Orthopaedic Hand and Upper Extremity Surgery**
Clinical elective available, during which time the student will work with attending surgeons primarily at Barnes-Jewish Hospital, Center for Advanced Medicine and the Chesterfield office. The service includes care of adult and pediatric patients with traumatic, sports (arthroscopy), nerve, and degenerative disease. Activities will include participation in outpatient procedures, attendance at faculty clinic office hours, and attendance at orthopaedic conferences.

**M95 Surgery 846A Orthopaedic Trauma**
Clinical elective available for a four-week period, during which time the student will work in orthopaedic trauma at Barnes-Jewish Hospital. The student will work with a team of attendings, residents, PAs, and NPs to provide care for orthopaedic trauma patients. Activities include participation in the care of hospitalized inpatients, outpatient surgical procedures, outpatient office visits and daily conferences.

**M95 Surgery 846B Orthopaedic Trauma**
Clinical elective available for a four-week period, during which time the student will work in orthopaedic trauma at Barnes-Jewish Hospital. The student will work with a team of attendings, residents, PAs, and NPs to provide care for orthopaedic trauma patients. Activities include participation in the care of hospitalized inpatients, outpatient surgical procedures, outpatient office visits and daily conferences.

**M95 Surgery 848A Orthopaedic Pediatric Surgery Elective**
Clinical elective available for four weeks during which the student will work with attending surgeon primarily at St. Louis Children's Hospital observing and assisting in outpatient and inpatient care. To be included are activities in the OR, ER, and outpatient clinics. Attendance at and participation in the weekly pediatric orthopaedic conference activities required.

**M95 Surgery 848B Orthopaedic Pediatric Surgery Elective**
Clinical elective available for four weeks during which the student will work with attending surgeon primarily at St. Louis Children's Hospital observing and assisting in outpatient and inpatient care. To be included are activities in the OR, ER, and outpatient clinics. Attendance at and participation in the weekly pediatric orthopaedic conference activities required.

**M95 Surgery 848C Orthopaedic Pediatric Surgery Elective**
Clinical elective available for four weeks during which the student will work with attending surgeon primarily at St. Louis Children's Hospital observing and assisting in outpatient and inpatient care. To be included are activities in the OR, ER, and outpatient clinics. Attendance at and participation in the weekly pediatric orthopaedic conference activities required.

**M95 Surgery 849A Orthopaedic Spine Surgery In Adult Patients**
This clinical elective is available for four weeks during which time the student will work with the attending surgeon primarily at Barnes-Jewish Hospital observing and assisting when appropriate in outpatient and inpatient care. To be included are activities in the OR, ER, and outpatient clinics. Attendance at and participation in the weekly orthopaedic conference activities is required. The spine fellow assigned to this service will serve as a primary contributor to the student's education experience on this rotation.

**M95 Surgery 849B Orthopaedic Spine Surgery In Adult Patients**
This clinical elective is available for four weeks during which time the student will work with the attending surgeon primarily at Barnes-Jewish Hospital observing and assisting when appropriate in outpatient and inpatient care. To be included are
activities in the OR, ER, and outpatient clinics. Attendance at and participation in the weekly orthopaedic conference activities is required. The spine fellow assigned to this service will serve as a primary contributor to the student's education experience on this rotation.

M95 Surgery 849C Orthopaedic Spine Surgery in Adult Patients
This clinical elective is available for four weeks during which the student will work with the attending surgeon primarily at Barnes-Jewish Hospital, Barnes-Jewish West County Hospital, Washington University Orthopedics - Center for Advanced Medicine observing and assisting when appropriate in outpatient and inpatient care. To be included are activities in the OR, ED, and outpatient clinics. Attendance at and participation in the weekly orthopaedic conference activities is required. The spine fellow assigned to this service will serve as a primary contributor to the student's education experience on this rotation.

M95 Surgery 850 Urology
A four-week clinical clerkship in pediatric and/or adult urology will offer the interested student experience with a spectrum of problems in 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 three days per week.

M95 Surgery 855A Reconstructive/Joint Preservation Surgery
Clinical elective available, during which the student will work with the attending physician on the Adult Reconstruction and Joint Preservation/Replacement service. This rotation is primarily centered at Barnes-Jewish Hospital and includes care of hospitalized inpatients, participant in inpatient and outpatient procedures, attendance at designated office hours, and attendance at and participation in orthopaedic educational conferences and anatomy sessions.

M95 Surgery 855B Reconstructive/Joint Preservation Surgery
Clinical elective available, during which the student will work with the attending physician on the Adult Reconstruction and Joint Preservation/Replacement service. This rotation is primarily centered at Barnes-Jewish Hospital and includes care of hospitalized inpatients, participant in inpatient and outpatient procedures, attendance at designated office hours, and attendance at and participation in orthopaedic educational conferences and anatomy sessions.

M95 Surgery 855C Reconstructive/Joint Preservation Surgery
Clinical elective available, during which the student will work with the attending physician on the Adult Reconstruction and Joint Preservation/Replacement service. This rotation is primarily centered at Barnes-Jewish Hospital and includes care of hospitalized inpatients, participant in inpatient and outpatient procedures, attendance at designated office hours, and attendance at and participation in orthopaedic educational conferences and anatomy sessions.

M95 Surgery 855D Reconstructive/Joint Preservation Surgery
Clinical elective available, during which time the student will work with the attending physician on the Adult Reconstruction and Joint Preservation/Replacement service. This rotation is primarily centered at Barnes-Jewish Hospital and includes care of young patients with hip impingement pathology and older patients with end stage joint arthritis, hospitalized inpatients, participant in inpatient and outpatient procedures, attendance at designated office hours, and attendance at and participation in orthopaedic educational conferences and anatomy sessions.

M95 Surgery 859 Orthopaedic Oncology
Clinical elective available for four weeks, during which time the student will work with the attending physicians on the Musculoskeletal Oncology service. The student will participate in orthopaedic conferences, outpatient clinics, surgical cases and patient rounds.

M95 Surgery 862 Acting Internship, Colon and Rectal Surgery
This sub-internship 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, they must make special arrangements with the Colorectal Surgery Office prior to beginning this elective.

M95 Surgery 863 Acting Internship, Surgical Oncology and Endocrine Surgery
This sub-internship 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 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 finished manuscript to be submitted for publication 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 Acting Internship, Vascular Surgery**
This sub-internship 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, they must make special arrangements with the faculty member prior to beginning this elective.

**M95 Surgery 879 Acting Internship, Hepatobiliary-Pancreatic Surgery**
This sub-internship elective is designed to give students in-depth experience in the clinical management of patients on the Hepatobiliary-Pancreatic (Unit II) Service. The Unit II Service is a busy upper-gastrointestinal service with a focus on hepatobiliary and pancreatic diseases and their treatment. The course will offer 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 and attending residents. 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, they must make special arrangements with the faculty member prior to beginning this elective.

**M95 Surgery 880 Pediatric Surgery**
This sub-internship elective 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 an opportunity to understand the widely differing anatomy and physiology of patients ranging from newborn infant 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**
The care of transplant patients requires the integration of multiple diverse medical and surgical disciplines. This elective clerkship 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 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 Acting Internship, Minimally Invasive Surgery**
This sub-internship 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 8991 Orthopaedic Surgery Externship (Visiting Students Only)**
Flexible scheduling is available for this externship. Students rotate on Orthopaedic Services in four-week blocks. During their rotations, students are assigned to two different services for two weeks each. Students may rotate on a variety of subspecialties including trauma sports medicine, hand and upper extremity, foot and ankle, musculoskeletal oncology, adult reconstructive surgery, pediatric orthopaedics, shoulder and elbow, and spine. For more information about the Orthopaedic Surgery Externship Program (https://www.ortho.wustl.edu/content/Education/2905/Training-Programs/Med-Student-Programs/Externship-Program/Overview.aspx), visit our website.

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