Department of Otolaryngology

The Department of Otolaryngology-Head & Neck Surgery (http://oto.wustl.edu) at Washington University in St. Louis has a rich, 130-year history of leadership in our field that is built on the foundations of academic medicine: patient care, research, training and service. Our past leaders include luminaries in the field of otolaryngology such as John Blasdel Shapleigh, MD, Greenfield Sluder, MD, Lee Wallace Dean, MD, Theodore Walsh, MD, Joseph Ogura, MD, John Fredrickson, MD, Richard A. Chole, MD, PhD, and most recently Craig A. Buchman, MD, FACS. Even from our earliest days, prior to the inception of the McMillan Eye, Ear, Nose and Throat Hospital (circa 1943), excellence has been an integral part of the department's fabric. A look at former faculty and program graduates reveals many of the true innovators in our field. While we remain humbled by our beginnings and past achievements, we choose not to rest on our laurels. Rather, we aspire to further our commitment to improving patients' lives by leading our field and its clinical application.

Today more than ever, we are driven to provide the highest quality, cutting-edge patient care that is both safe and effective. Our Washington University physicians and team, together with our Honor Roll Award-winning hospital, Barnes-Jewish Hospital (U.S. News, 2016-17), are second to none in tackling the full spectrum of conditions involving the ear, nose, throat, head and neck. Our basic, translational and clinical research programs are remarkable, providing answers to a variety of relevant questions that build on our foundations of knowledge, lay the groundwork for future clinical trials, and provide cutting-edge patient solutions. Our educational programs for medical and graduate students, physicians in training, and established practitioners are committed to creating a culture of lifelong learning that firmly establishes our next generation of leaders in the field. Our residency program is highly rated by all metrics, providing balanced training across the clinical subspecialties and unique opportunities for growth and development as clinician scientists (T32 training grant) and educators. We are most proud that these activities are ongoing in a work culture that values collegiality, inclusiveness, diversity and mutual respect. The Department of Otolaryngology-Head & Neck Surgery at Washington University in St. Louis is a really outstanding place!

CID at Washington University School of Medicine

The consortium of graduate education, research and clinical programs known today as CID at Washington University School of Medicine was born out of the pioneering efforts of St. Louis physician Max Goldstein, MD. In 1914, he founded the Central Institute for the Deaf (CID), where doctors and teachers worked together to help deaf people. When CID's school building opened two years later, its auditory/oral methods for instructing deaf children were groundbreaking.

Washington University and CID first joined forces in 1931, when CID's established teacher training program became the first deaf education undergraduate program to affiliate with a university. Graduate programs in deaf education, audiology, and speech and hearing sciences soon followed.

CID's research efforts began in the 1930s to study the anatomy and science of hearing. During World War II, CID's research on hearing loss in military personnel laid the foundation for the field of audiology. CID also pioneered hearing testing and hearing aids and opened the country's first hearing aid clinic in 1941. In September 2003, a new affiliation transferred CID's graduate degree programs, research programs and adult audiology clinic, along with its building, to Washington University School of Medicine. The CID school continues to operate on the School of Medicine campus as CID — Central Institute for the Deaf.

Today, these programs continue to work together to fulfill a shared mission to serve people with hearing loss.

Website: http://oto.wustl.edu

Degrees & Requirements

While the Department of Otolaryngology does not offer its own degree, some of the department's courses are 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.

Otolaryngology Course Requirements

Otolaryngology is presented to students in the first-, second-, third- and fourth-year classes. Physical diagnosis skills are taught in the first year. Clinically oriented lectures and a physical diagnosis workshop are presented to second-year students. In the third year of the medical curriculum, four-week elective rotations on one of the services at Barnes-Jewish Hospital or St. Louis Children's Hospital are offered. During this period, there is teaching at the bedside, in the operating room and in the clinic, supplemented by daily afternoon lectures, Grand Rounds on Wednesdays, and an introduction to audiology.

Fourth-year students interested in ENT as a specialty may take a two- to four-week elective designed to give them exposure to patient care, both in the outpatient clinic and the operating room and postoperative setting. An additional four-week elective that provides comprehensive ambulatory experience is offered to students headed for primary care.
Research

M55 Oto 900

The type of research will depend upon the current phase of the research program in each laboratory. Students should contact the director of each laboratory to negotiate.

Pablo M Blazquez, PhD
East McDonnell Science Building
4566 Scott Avenue
Phone: 314-362-1013
Role of the vestibulo-cerebellum and its target nuclei in eye movement control and spatial orientation. We used a range of methodologies: single and multiunit recordings, electrical brain stimulation, computational methods, pharmacology and behavioral studies. Our main lines of research are:
1) Signal transformations carried out by the the vestibulo-cerebellum during visual and vestibular stimulation. 2) Neuronal computations performed by the anterior and posterior cerebellar vermis for spatial navigation in mice. 3) Role of the cerebellum-brainstem loop in motor learning in the vestibulo-ocular reflex.

Students will be instructed in one or several techniques and are expected to contribute significantly to the development of specific lab projects.

Joel A. Goebel, MD, FACS
McMillan, 9th Floor
Phone: 314-362-7344
Clinical research testing of posture and ocular motor control. Projects include measurement of gaze stabilization during head movement, otolith input into dynamic subjective visual vertical measurements, computerized historical data screening for dizziness, and head-mounted vibrotactile balance prosthesis (BalCap). We welcome students to join these projects at any stage.

Judith E.C. Lieu, MD, MSPH
3S35 Children’s Hospital; and McMillan, 9th Floor
Phone: 314-747-8205
Clinical Outcomes Research in Pediatric Otolaryngology. The Clinical Outcomes Research office performs clinical epidemiology and health services research. (Please reference the research elective offered by Dr. Jay Piccirillo in Otolaryngology for more details.) These techniques and methodologies are used to investigate clinical problems seen in pediatric otolaryngology. Projects currently underway include the evaluation of quality of life of young children with hearing loss, evaluation of hearing loss on perception of fatigue in children, use of MRI to investigate effects of hearing loss in children, and characterization of hearing loss in Wolfram syndrome. Potential studies include investigating the phenotypic variation of ear disease in children with immotile cilia syndrome, and evaluating change in quality of life of children who begin using hearing amplification devices. Other projects of the student’s choosing that would utilize these research techniques may also be pursued.

Kevin K. Ohlemiller, PhD
2205 Central Institute for the Deaf
Phone: 314-747-7179
Gene/environment interactions in cochlear injury. We study the interaction of genes and environment that increase cochlear injury due to noise and ototoxic exposure, with an emphasis on how these may yield apparent presbycusis. Because cochlear function and injury is the same in mice and humans, and governed by the same genes, we use mostly mouse models. Methods employed include standard ABR assessment and intra-cochlear recording, quantitative light microscopy, immunohistochemistry, and western blots. We also collaborate to map and perform expression profiling of genes that underlie traits we have discovered. We and our collaborators have identified specific genes and inbred strains of mice that mimic the three major forms of human presbycusis (sensory, neural and strial). Sensory presbycusis appears promoted by alleles and mutations that impair protective factors such as antioxidant enzymes, or that impair ion homeostasis. Neural presbycusis can be modeled by mutations that alter the function of cholinergic receptors. While we are not sure what types of genes and mutations can lead to strial presbycusis, we have discovered four mouse strains that show the key feature of this disease (age-related endocochlear potential reduction), and also show distinct types of strial pathology.

We have shown that some of the same gene alleles and mutations that promote presbycusis also promote cochlear noise injury. Such findings point to an interpretation of sensory presbycusis as principally cumulative injury. We have also published evidence for one or more QTLs that impact the qualitative character of noise injury. Important implications of our findings are (1) that there exists no single “mammalian” archetype of cochlear noise injury, and (2) that injury to the organ of Corti and lateral wall are mechanistically and genetically independent.

Our research is eminently adaptable in difficulty and scale to students’ schedules and other requirements. Students may expect to learn the full range of methods we employ, including physiology, immunohistochemistry, histopathology, and cellular/molecular techniques.

Jay F. Piccirillo, MD
McMillan, 9th Floor
Phone: 314-362-8641
The Clinical Outcomes Research Office of the Division of Research performs basic and applied clinical epidemiology and health services research. Clinical epidemiology is the study of the diagnosis, prognosis, and evaluation of treatment. Health service research is the study of the delivery of health care. The scientific methodology of clinical epidemiology is based on the architecture of clinical research, biostatistics and data processing. Current projects include studying the impact of
comorbidities on treatment and outcome for patients with cancer. We also conduct research into the neurobiology, treatment and outcomes for patients with tinnitus. We also use smart-phone technology to capture ecological momentary assessment of tinnitus. Additional projects include exploiting neuroplasticity as part of olfactory training for patients with anosmia. Using clinical epidemiology methodology, we can also study a variety of other diseases.

**Faculty**

**Department Head**

Craig A. Buchman, MD, FACS

Visit our website for more information about our faculty (http://oto.wustl.edu/About-Us/Faculty-Physicians) and their appointments.

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**A**

**Azadeh Afshari, MS, DDENT**

Instructor in Clinical Otolaryngology (primary appointment)

MS Univ of Texas Med Sch Houston 2013

BS West Virginia University 2004

DDENT Univ of Texas Med Sch Houston 2014

**Nawal Mona Ahmed**

Instructor in Clinical Otolaryngology (DDS) (primary appointment)

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**B**

**Sean B Bailey, MS, MD**

Instructor in Clinical Otolaryngology (primary appointment)

MS Tulane University 1988

BS Tulane University 1981

MD Tulane University 1987

**Jianxin Bao, PHD**

Adjunct Associate Professor of Otolaryngology (primary appointment)

PHD University of Florida 1992

**Perry J Bartels, DDENT**

Instructor in Clinical Otolaryngology (primary appointment)

DDENT Marquette University 1991

BA Ripon College 1986

**Lynda Cheryl Berkowitz, MS**

Instructor in Otolaryngology (primary appointment)

Instructor in Audiology and Communication Sciences

BS University of Illinois 1981

MS Washington Univ in St. Louis 1983

**Pablo M Blazquez Gamez, PHD**

Associate Professor of Otolaryngology (primary appointment)

PHD University of Seville 1998

**Joseph P Bradley, MD**

Assistant Professor of Otolaryngology (primary appointment)

MD University of Kansas Medical 2008

BS Washington Univ in St. Louis 2003

**Gregory Harris Branham, MD**

Professor of Otolaryngology (primary appointment)

MD University of South Carolina 1983

BS University of South Carolina 1979

**Craig Alan Buchman, MD**

Lindburg Professor of Otolaryngology (primary appointment)

Head of the Department of Otolaryngology

MD University of Florida 1990

BA University of Georgia 1986

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**C**

**Chad Phadung Chadaratana, UNKNOWN, MD**

Instructor in Clinical Otolaryngology (primary appointment)

MD School Not Listed 1964

**John Jeonhwan Chi, MD, MS**

Assistant Professor of Otolaryngology (primary appointment)

BS Columbia University 2001

MD SUNY DOWNSTATE MED BROOKLYN 2007

MS City College 2003

**John N Chipel**

Instructor in Clinical Otolaryngology (primary appointment)

**Richard A Chole, PHD, MD**

Professor of Otolaryngology (primary appointment)

Professor of Audiology and Communication Sciences

Professor of Developmental Biology

PHD University of Minnesota 1977

MD University of Southern Calif 1969

**William W. Clark, PHD, PHD1, MS**

Professor of Otolaryngology (primary appointment)

Director of the Program in Audiology and Communication Sciences

Professor of Audiology and Communication Sciences

Professor of Education

BA University of Michigan 1969

PHD University of Michigan 1975

PHD1 University of Michigan 1975

MS University of Michigan 1973

**Gene C Cohen, DDENT**

Instructor in Clinical Otolaryngology (DDS) (primary appointment)

DDENT University of Missouri 1975

BS University of Missouri 1971

**Sheldon C Cohen, DDENT**

Instructor in Clinical Otolaryngology (primary appointment)

DDENT Southern Illinois University 1976

BS Washington Univ in St. Louis 1973

**John Michael Conoyer, MD**

Instructor in Clinical Otolaryngology (primary appointment)
Lisa S. Davidson, MS, PHD  
Associate Professor of Otolaryngology (primary appointment)  
Associate Professor of Audiology and Communication Sciences  
MS Washington Univ in St. Louis 1987  
BS East Tennessee State Univ 1985  
PHD Washington Univ in St. Louis 2003  
  
Richard Davidson, MS, DDENT  
Instructor in Clinical Otolaryngology (DMD) (primary appointment)  
BA Washington Univ in St. Louis 1966  
MS University of Missouri 1979  
DDENT Washington Univ in St. Louis 1970  
  
Sheldon L Davis  
Assistant Professor of Clinical Otolaryngology (primary appointment)  
  
Andrew J. Drescher, MD  
Assistant Professor of Otolaryngology (primary appointment)  
MD University of Michigan 2002  
BS Yale University 1998  
  
Norman Steven Druck, MD  
Assistant Professor of Clinical Otolaryngology (primary appointment)  
MD University of Illinois 1970  
BA Washington Univ in St. Louis 1967  
  
Katherine Dunsky, MD  
Assistant Professor of Otolaryngology (primary appointment)  
MD Saint Louis University 2010  
  
Tamara Kay Ehlert, MD  
Instructor in Clinical Otolaryngology (primary appointment)  
MD Univ of Wisconsin Madison 1983  
BA Northwestern University 1979  
  
Brian T Faddis, MS, PHD  
Assistant Professor of Otolaryngology (primary appointment)  
Assistant Professor of Audiology and Communication Sciences  
BS University of California 1982  
MS University of California 1989  
PHD University of California 1994  
  
James A Fernandez, MD  
Instructor in Clinical Otolaryngology (primary appointment)  
BS University of Notre Dame 1977  
MD Saint Louis University 1981  
  
Jeffrey T Fierstein, MD  
Assistant Professor of Clinical Otolaryngology (primary appointment)  
MD School Not Listed 1971  
BA Dartmouth College 1968  
  
Charles Coleman Finley  
Adjunct Research Associate Professor of Otolaryngology (primary appointment)  
  
Jill B Firszt, PHD, MS  
Professor of Otolaryngology (primary appointment)  
Professor of Audiology and Communication Sciences  
PHD University of Illinois 1998  
MS University of Illinois 1982  
BS University of Illinois 1978  
  
Joel Goebel, MD  
Professor of Otolaryngology (primary appointment)  
BS University of Notre Dame 1976  
MD Washington Univ in St. Louis 1980  
  
Debra Ann Gonzalez, MD  
Assistant Professor of Otolaryngology (primary appointment)  
MD Cornell University 1987  
BS Wellesley College 1982  
  
James Dean Gould, MD  
Instructor in Clinical Otolaryngology (primary appointment)  
MD University of Virginia 1993  
BA University of Virginia 1989  
  
Heather Jean Grantham, M ED, PHD  
Associate Professor of Otolaryngology (primary appointment)  
Associate Professor of Audiology and Communication Sciences  
Director of Deaf Education Studies in Audiology and Communication Sciences  
M ED Smith College 2005  
BA Emory University 1995  
PHD Washington Univ in St. Louis 2009  
  
Michael Anne Gratton, PHD  
Professor of Otolaryngology (primary appointment)  
PHD State Univ of NY Buffalo 1989  
  
Christine Hilleary Gustus, MS  
Instructor in Otolaryngology (primary appointment)  
Instructor in Audiology and Communication Sciences  
MS Washington Univ in St. Louis 1975  
BS Purdue University 1973  
  
Jason M. Hanson, MD  
Instructor in Clinical Otolaryngology (primary appointment)  
BA Johns Hopkins University 1988  
MD Northwestern University 1992  
  
Archie B Harmon Jr, PHD, MA  
Assistant Professor of Otolaryngology (primary appointment)  

William Hartel
Instructor in Clinical Otolaryngology (primary appointment)

Jacques A Herzog, MD
Associate Professor of Otolaryngology (primary appointment)
MD University of MO Kansas City 1980
BA University of Missouri 1980

Keiko Hirose, MD
Professor of Otolaryngology (primary appointment)
Professor of Audiology and Communication Sciences
Professor of Pediatrics
Vice Chairman for Pediatrics Dept of Otolaryngology
MD Harvard University 1993

Lawrence M Hoffman, DMD
Instructor in Clinical Otolaryngology (DMD) (primary appointment)
BA Indiana University Bloomington 1972
DMD Washington Univ in St. Louis 1976

Dee Jay Hubbard, MA, PHD, MA1
Adjunct Assistant Professor of Otolaryngology (Speech Pathology) (primary appointment)
BS Kansas State University 1962
MA University of Iowa 1965
PHD University of Iowa 1967
MA1 University of Missouri 1999

Timothy Everett Hullar, MD
Adjunct Professor of Otolaryngology (primary appointment)
BS Stanford University 1990
MD Harvard University 1996

Ryan Scott Jackson, MD
Assistant Professor of Otolaryngology (primary appointment)
BA Saint Louis University 2004
MD Saint Louis University 2009

Arnold Scott Jacobson, DMD, MS
Instructor in Clinical Otolaryngology (DMD) (primary appointment)
BA University of Missouri 1970
DMD Washington Univ in St. Louis 1976
MS University of Missouri 1977

Susan Jerger
Adjunct Research Professor of Otolaryngology (primary appointment)

Eugenia Kardaris
Claire Matthews, PHD, MA
Adjunct Assistant Professor of Otolaryngology (Speech Pathology) (primary appointment)
PHD University of Kansas 1980
BA University of Kansas 1969
MA University of Kansas 1978

Angela Liu Mazul, PHD, MS
Assistant Professor of Otolaryngology (primary appointment)
Assistant Professor of Surgery (Public Health Sciences)
PHD University of North Carolina 2016
BS Georgia Tech 2009
MS Tulane University 2010

Murray D McGrady, MD
Instructor in Clinical Otolaryngology (primary appointment)
BS University of Illinois 1982
MD University of Illinois 1986

Jonathan L McJunkin, MD
Associate Professor of Otolaryngology (primary appointment)
BS Northwestern University 2001
MD Jefferson Medical College 2005

John W McKinney, MD
Instructor in Clinical Otolaryngology (primary appointment)
MD University of Missouri 1979
BS Southeast Missouri St Univers 1975

Maithilee D Menezes, MD
Assistant Professor of Otolaryngology (primary appointment)
MD Grinnell College 2002
BS Grinnell College 1997

David W. Molter, MD
Professor of Otolaryngology (primary appointment)
BS Duke University 1980
MD Duke University 1988

Nancy Tye Murray, PHD, MS
Professor of Otolaryngology (primary appointment)
Professor of Audiology and Communication Sciences
PHD University of Iowa 1984
BS Texas Christian University 1977
MS University of Iowa 1979

Johanna Grant Nicholas, PHD, MA
Adjunct Associate Professor of Otolaryngology (primary appointment)
BA University of Northern Colorado 1978
PHD Washington Univ in St. Louis 1990
MA University of Northern Colorado 1982

Margaret A Ogden, MD
Associate Professor of Otolaryngology (primary appointment)
Vice Chairman for Clinical Operations Dept of Otolaryngology
BA Amherst College 1997
MD Washington Univ in St. Louis 2002

Kevin Kenneth Ohiemiller, PHD
Associate Professor of Otolaryngology (primary appointment)
Associate Professor of Audiology and Communication Sciences
BS Indiana University Bloomington 1983
PHD Northwestern University 1990

Amanda J Ortmann, MS, PHD
Assistant Professor of Otolaryngology (primary appointment)
Assistant Professor of Audiology and Communication Sciences
Interim Director of Audiology Studies in Audiology and Communication Sciences
BS Missouri Baptist College 2001
PHD University of Pittsburgh 2012

Randal C Paniello, BS1, MS, MD, MBA
Professor of Otolaryngology (primary appointment)
BS1 University of Illinois 1979
MS University of Illinois 1980
MD University of Illinois 1984
BS University of Illinois 1979
MBA Washington Univ in St. Louis 1999

Margaret Grace Peak, MA, PHD
Adjunct Assistant Professor of Otolaryngology (Audiology) (primary appointment)
BS Maryville University 1959
MA Saint Louis University 1961
PHD Columbia University 1975

Jonathan Erik Peelle, MS PSYC, BAS, PHD
Associate Professor of Otolaryngology (primary appointment)
Associate Professor of Psychological & Brain Sciences
MS PSYC Brandeis University 2002
BAS Houghton College 1999
PHD Brandeis University 2005

Supote Phipatanakul, MD
Assistant Professor of Clinical Otolaryngology (primary appointment)
MD Chulalongkorn University 1965

Jay Francis Piccirillo, MD
Professor of Otolaryngology (primary appointment)
Professor of Biostatistics
Professor of Medicine
Professor of Occupational Therapy
Vice Chairman for Research, Dept of Otolaryngology
MD University of Vermont 1985
Assistant Professor of Otolaryngology (Pending Executive Faculty Approval) (primary appointment)
BS Duke University 2007

**T**

Isolde E Thalmann, MA, PHD
Professor Emeritus of Otolaryngology (primary appointment)
MA Washington Univ in St. Louis 1973
BS Washington Univ in St. Louis 1968
PHD California Western 1982

Ruediger Thalmann, MD
Professor Emeritus of Otolaryngology (primary appointment)
Lecturer in Otolaryngology
MD University of Vienna 1954

**U**

Rosalie May Uchanski, MS, PHD
Assistant Professor of Otolaryngology (primary appointment)
Assistant Professor of Audiology and Communication Sciences
BS University of Illinois Chicago 1978
MS Mass Inst of Technology (MIT) 1981
PHD Mass Inst of Technology (MIT) 1988

**V**

Michael Valente, PHD, MS
Professor of Otolaryngology (Audiology) (primary appointment)
Professor of Audiology and Communication Sciences
PHD University of Illinois 1975
BA Adelphi Univ 1970
MS Adelphi Univ 1972

Lora Maureen Valente, MS, PHD
Associate Professor of Otolaryngology (primary appointment)
Associate Professor of Audiology and Communication Sciences
MS University of Illinois 1975
PHD Washington Univ in St. Louis 2006
BS University of Illinois 1974

Wayne A Viers, MD
Associate Professor of Clinical Otolaryngology (primary appointment)
MD University of Oklahoma 1956
BS Phillips University 1952

**W**

Mark Edward Warchol, PHD
Professor of Otolaryngology (primary appointment)
Professor of Audiology and Communication Sciences
Professor of Neuroscience
BS University of Washington 1981
PHD Northwestern University 1989

Cameron Connelly Wick, MD
Assistant Professor of Otolaryngology (primary appointment)
BS Washington & Lee 2006
Tatyana Aleksandrovna Yakusheva, PHD, MS
Assistant Professor of Otolaryngology (primary appointment)
PHD Russian U of Friendship of Ppl 2002
MS Saratov State University 1997

Jose Pedro Zevallos, MD, MPH
Dr Joseph B Kimbrough Chair for Maxillofacial Surgery and Prosthodontics in the Washington University Department of Otolaryngology (primary appointment)
MD Rutgers University 2005
BS Middlebury College 2000
MPH Univ of Texas Med Sch Houston 2014

Courses

M55 Oto 660B Clinical Topics In Otolaryngology
This course consists of nine introductory lectures on common diseases of the head and neck, including voice disorders, head and neck cancer, hearing loss, management of vertigo, pediatric otolaryngology, salivary gland disorders, sinusitis, otolaryngologic emergencies and facial trauma. Additionally, there is a case-based roundtable focusing on otolaryngology disorders affecting the geriatric population and the involvement of allied health care disciplines in the evaluation and management of these patients. Each lecture is highlighted by case presentations and treatment options in addition to pathophysiology. This course follows the physical examination practicum given earlier in the academic year.
Credit 9 units.

M55 Oto 801 Otolaryngology
Four-week rotation includes evaluation of ENT problems presented to specialists for diagnosis and treatment. The student participates in the clinic, hospital and operating room. This also includes time on the Pediatric ENT Service, Audiology, Voice Laboratory, and Vestibular Evaluation Laboratory. Option of rotation on the ENT Service at VAMC is available.

M55 Oto 803 Pediatric Otolaryngology
The student will actively participate in the clinical office, inpatient consultations, and surgery with the attending staff at St. Louis Children's Hospital. Care would be taken to provide experience in the common problems one would see in primary care pediatrics or family practice. Participation in sub-specialty/multidisciplinary clinics such as the Cleft and Craniofacial clinic is encouraged. Opportunity will be provided to learn the fundamentals of audiological evaluation. Students participating in this elective will attend academic conferences in both the pediatric and adult divisions.

M55 Oto 820 Practicum in Adult Clinical Audiology
During this rotation, guidance will be provided in the administration and interpretation of audiometric tests, with an emphasis on defining the severity of auditory dysfunction and identifying sites of pathological processes. Theoretical bases of acoustics, anatomy and physiology, and electronics will be reviewed as they relate to auditory assessment. Modification of conventional test paradigms and hearing aid procedures will be covered according to each student's interests and needs.

M55 Oto 831 Neurotology
Students will actively participate in the physical exam, advanced testing and management of patients with balance dysfunction. Students will attend patient clinic two days a week, and test patients on ENG, rotary chair and computerized platform three days a week. Research participation is welcome with prior arrangements.

M55 Oto 833 Ambulatory Otolaryngology for the Primary Care Physician
This course offers a four-week exposure to ambulatory care of patients with diseases of the head and neck. Eight half-day sessions per week will be offered in attending clinics for general otolaryngology, head and neck cancer, otology and pediatric otolaryngology. Two half-day sessions are reserved for audiology, vestibular lab and voice lab experience. Surgical exposure is available for selected cases as identified by the student and attending physician, but the main goal of this rotation is outpatient diagnosis and management.

M55 Oto 900 Research Elective - Otolaryngology
Research opportunities may be available. If interested, please contact the Department of Otolaryngology.