Department of Neurology

Neurology concerns itself with the diseases of brain, spinal cord, peripheral nerves and muscles. An introduction to the anatomy and physiology of the nervous system is presented in the first-year neuroscience course by faculty from the Department of Neuroscience (http://neurosci.wustl.edu), with participation of faculty from the Department of Neurology (http://neuro.wustl.edu). A first-year selective titled Clinical Correlations in Neurosciences (FYSelect 5017) is available, which is an opportunity for interested students to shadow physicians in neuro-related fields and attend basic science or clinical conferences. Another first-year selective titled Alzheimer’s Disease (AD) in the Clinic and the Lab is also available, which is an opportunity for interested students to get an overview of the most exciting areas of AD clinical and science research. In the second year, the Department of Neurology presents the course Diseases of the Nervous System (Neurol 632) in conjunction with the departments of Pathology & Immunology (http://pathology.wustl.edu), Neurosurgery (http://neurosurgery.wustl.edu) and Ophthalmology & Visual Sciences (http://ophthalmology.wustl.edu). The course emphasizes the pathophysiology, pathology, clinical manifestations and treatment of the major neurological and neurosurgical diseases. The department also participates in the Practice of Medicine course, providing lectures, demonstrations and teaching exercises with patients in neurological physical diagnosis.

For more information about the Department of Neurology and its thirteen divisions, please visit the department website.

Website: https://neuro.wustl.edu/education

Degrees & Requirements

While the Department of Neurology 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.

Research

M35 Neurol 900

In the fourth year, opportunities exist for many varieties of advanced clinical or research experience.

Beau Ances, MD
Taylor Avenue Building Extension, 2nd Floor
Phone: 314-747-8423

Neuroimaging of Neurodegenerative Disorders. Students can work in a neuroimaging laboratory that is focused on translational discovery of neuroimaging biomarkers for neurodegenerative diseases. The laboratory focuses on the pathogenesis of Alzheimer’s disease (AD) and HIV-associated neurocognitive disorders (HAND). We are investigating the effects of neurodegenerative diseases on brain network level using functional (blood oxygen level dependent imaging, arterial spin labeling), structural (volumetrics, diffusion tensor imaging), and metabolic (PET amyloid and tau). Multiple projects that involve bioengineering, neuroimaging, and infectious disease are available depending on the interest of the student.

Randall Bateman, MD
Biotechnology Center, Room 304
Phone: 314-747-7066

Central nervous system protein metabolism in aging and dementia. This research elective will expose the student to translational research in the study of Alzheimer’s disease. The student will participate in multiple areas of the research including participant consent, enrollment, and admission to a research hospital unit. Lumbar catheter placement and CSF sample collection will be demonstrated. The student will participate in sample analysis including processing for mass spectrometry quantitation, ELISA, and western gel methods. Quantitation, analysis and modeling of the data will be taught in the context of data interpretation and study design.

Anne H. Cross, MD, and Laura Piccio, MD, PhD
McMillan, 3rd Floor
Phone: 314-747-4591 or 314-747-0405

Understanding interactions of the immune system with the central nervous system as it relates to multiple sclerosis and other neuroimmunological disorders. Our goal is to understand how immune cells cross the blood-brain barrier and initiate the cascade of events leading to lesions of multiple sclerosis. We are also funded to study the effects of diet and adipokines on neuroinflammation. Depending upon the time commitment of the student and their individual interests and goals, they will either assist with ongoing projects or be given a laboratory project on which to work. Projects may involve animal models for MS, cell culture or studies of human samples (CSF, blood, autopsied specimens). Interested students should contact Dr. Cross (crossa@neuro.wustl.edu) or Dr. Piccio (picciol@neuro.wustl.edu) several weeks in advance before signing up for this research to allow for sufficient planning.

Robert T. Naismith, MD
McMillan, Room 310B
Phone: 314-747-0432

Clinical Imaging Research in Multiple Sclerosis (8 weeks). The student will learn about neuroimaging, imaging analyses, data collection, data management, and clinical study endpoints in multiple sclerosis (MS). They will observe patient participants undergoing a detailed evaluation of disability measures, such as ambulation, symptom scales, cognition, vision, upper extremity function, etc. They will witness the entire process of image acquisition, processing, analyses, and data extraction. They
will have the opportunity to interact with many people who are vital to the research, including research coordinators, imaging technologists, imaging physicists/chemists, and specialized research clinicians (i.e., neurocognitive and physical therapy research specialists).

The student will assist with hands-on clinical investigative research. They will gain an excellent appreciation of MS, from its pathophysiology within the central nervous system, to how it affects the neurological function of individuals. Through detailed and quantitative imaging analysis, the student will become very adept at analyzing brain MRI scans. They will mark and track lesions, determine their effects on clinical function, normal appearing white matter, cortex and gray-matter structures. They will become familiar with Amira Imaging Analysis Software, SPSS Statistical Analysis Software, SIENA Volume Analysis Software, and Matlab Imaging Analysis Software.

Steven E. Petersen, PhD
East Building, Room 2108
Phone: 314-362-3319
This lab is interested in brain organization and function, particularly for language, attention, and memory. Our main approaches to these issue is through functional MRI and large-scale network analysis.

Joel S. Perlmutter, MD
East Building, 2nd Floor
Phone: 314-362-6026
Pathophysiology of Movement Disorders. The lab is primarily interested in etiology, pathophysiology and treatment of basal ganglia disorders. We have several studies of PD. We investigate mechanisms of action of deep brain stimulation, a dramatic new treatment. These studies combine PET, cognitive testing and quantified measures of movement. We also test new drugs that might rescue injured nigrostriatal neurons (a model of PD). For these, we use PET to measure dopamine pathways and also quantify motor behavior. We also have an active program developing and validating neuroimaging biomarkers for PD and integrity of the nigrostriatal pathway that includes studies in people and animal models of PD. We have an active program combining a variety of approaches to develop biomarkers and investigate the pathophysiology of dementia associated with PD. We use PET to measure radioligand binding and sensorimotor processing in dystonia. We developed a new animal model of dystonia to investigate pharmacologic and physiologic changes. We use PET to investigate drug-mediated pathways in the brain and parse out the effects of selective dopaminergic agonists. We also are working to develop MR-based methods including DTI and resting-state functional connectivity to investigate brain mechanisms underlying PD and dystonia.

Brad A. Racette, MD
McMillan, 9th Floor
Phone: 314-362-5291
Our lab is primarily interested in environmental risk factors associated with Parkinson's disease. We use a variety of techniques to study these risk factors, including traditional field epidemiology in which we evaluate workers exposed to metals in the U.S. and residents living near a smelter in South Africa, neuroimaging where we study the pathophysiology of toxin-mediated parkinsonism, geographic information systems research where we associate environmental toxin exposures with incident and prevalent Parkinson's disease in the U.S. and Finland, and neuropathologic studies in manganese-exposed workers from South Africa. There are numerous opportunities available for students to be involved with any of these projects. Students will have some clinical exposure, as well, to familiarize them with pertinent clinical syndrome.

Marcus E. Raichle, MD
Neuro Imaging Laboratory – East Building, 2nd Floor
Phone: 314-362-6907
In vivo brain hemodynamic, metabolic and functional studies of human cognition and emotion using cyclotron-produced isotopes and emission tomography (PET) as well as functional magnetic resonance imaging (fMRI) in humans. Refer also to the listing on this page for Steven E. Petersen, PhD.

Gregory Wu, MD, PhD
McMillan, 3rd Floor
Phone: 314-362-3293
Understanding how immune responses are generated that target the central nervous system. Specifically, studies on antigen presentation cell contributions to autoimmune animal models of multiple sclerosis. Our goal is to understand what cellular interactions are critical to the development of immune-mediated demyelination.

Faculty

Department Chair

David Holtzman, MD
Visit our website for more information about our faculty (https://neuro.wustl.edu/about-us/physician-faculty-directory) and their appointments.

A

Aninda Bhat Acharya, MD1, MD
Instructor in Clinical Neurology (primary appointment)
MD1 University of Kansas 1996
MD University of Kansas 1996
BS University of Kansas 1976

Muhammad Taher Al-Lozi, MS, MD
Professor of Neurology (primary appointment)
MS University of Jordan 1985
MD University of Panjab 1980
BA University of Panjab 1976

Denis Ian Altman, MBCH
Associate Professor of Clinical Neurology (primary appointment)
Assistant Professor of Clinical Pediatrics
Lizette Alvarez-Montero, MD
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Beau Mark Ances, MS, MD, PHD
Daniel J Brennan MD Professor of Neurology (primary appointment)
Professor of Biomedical Engineering
Professor of Radiology
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MS London School of Economics 1994
MD University of Pennsylvania 2001
PHD University of Pennsylvania 2000

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BA1 California State University 2004

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PHD Washington Univ in St. Louis 2014
MS University of Minnesota 2010
MS Washington Univ in St. Louis 2015
BS University of Minnesota 2008

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BS Brown University 1995
MD Washington Univ in St. Louis 2001
PHD Washington Univ in St. Louis 2005

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BS Paris Sud University 2005
MS Paris Sud University 2007

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BS Washington Univ in St. Louis 1995
MD Case Western Reserve Univ 2000

Max Prely Benzaquen

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BS McKendree College 1987

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PHD State Univ of NY Buffalo 2007
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PHD Univ of Wisconsin Madison 1981

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BS Duke University 1990
PHD University of Virginia 2000
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Associate Professor of Clinical Pediatrics
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BS School Not Listed 1964

C

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Professor of Neurology (primary appointment)
Professor of Pathology and Immunology
PHD University of London 1995

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MD Washington Univ in St. Louis 1986
BS University of Notre Dame 1982

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BA Georgetown University 2005
MD University of Pittsburgh 2011

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Associate Professor of Radiology
BS University of Illinois 1999
PHD Indiana State University 2004

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Instructor in Clinical Neurology (primary appointment)
BS School Not Listed 1985
MD University of Tennessee 1989

David A Carpenter, MD
Professor of Neurology (primary appointment)
BS Amherst College 1979
MD Washington Univ in St. Louis 1983

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Associate Professor of Neurology (primary appointment)
Associate Professor of Occupational Therapy
MD Harvard University 2003
PHD Harvard University 2003
BS Brandeis University 1991

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Assistant Professor of Neurology (primary appointment)
MS University of Pennsylvania 2013
MD Damascus University 2004

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PHD Washington Univ in St. Louis 2002
BA Tianjin University 1993
MA Washington Univ in St. Louis 2002

Luqi Chi, MA, MD
Associate Professor of Neurology (primary appointment)
MA University of Pennsylvania 2009

John R. Cirrito, PHD
Associate Professor of Neurology (primary appointment)
BA Boston College 1998
PHD Washington Univ in St. Louis 2004

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Melba and Forest Seay Professor of Clinical Neuropharmacology in Neurology (primary appointment)
Professor of Medicine
MD Washington Univ in St. Louis 1975
BA Southwestern University 1971

Anne Maureen Connolly, MD
Professor of Neurology (primary appointment)
Professor of Pediatrics
MD Indiana University Bloomington 1984
BS Saint Mary’s College 1980

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Norman J. Stupp Professor of Neurology (primary appointment)
Associate Professor of Psychological & Brain Sciences
Professor of Neuroscience
Professor of Radiology
MD University of Pavia 1985

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Associate Professor of Neurology (primary appointment)
BS University of Nebraska 1997
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BS University of South Alabama 1976
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R

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BA University of Texas Austin 1996
PHD Cornell University 2003
MD Cornell University 2004

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Assistant Professor of Neurology (primary appointment)
PHD Emory University 2009
MD Vanderbilt University 2011
BS Emory University 2002

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Assistant Professor of Neurology (primary appointment)
BS Harvard University 1997
MD University of Kentucky 2007
PHD University of Kentucky 2005

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Instructor in Neurology (primary appointment)
BS Queen’s University 2003
MD Queen’s University 2009
MS Queen’s University 2006

Gabriela De Bruin, MD
Associate Professor of Neurology (primary appointment)
MD Federal University of Ceara 2005

Andrea Denny, JD, MSSW
Instructor in Neurology (primary appointment)
JD University of Texas Austin 1998
MSSW University of Texas Austin 1993
BA University of Virginia 1990

Amar Dhand, MD, PHD
Adjunct Assistant Professor of Neurology (primary appointment)
BS Dartmouth College 2001
MD Harvard University 2008
PHD Oxford University 2006

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MD McMaster University 2000

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MD University of San Francisco 1993
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MA University of Louisville 1978
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MD University of Kentucky 1982

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BS Saint Louis University 1954
MD Saint Louis University 1958

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Assistant Professor of Occupational Therapy
Assistant Professor of Pediatrics
BS Columbia University 2000
MD Washington Univ in St. Louis 2008
PHD Washington Univ in St. Louis 2008

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Adjunct Associate Professor of Occupational Therapy
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E
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MD Northwestern University 1997
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MD School Not Listed 1989
BS School Not Listed 1985

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MD Smolensk State Medical Academy 1996

F
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Professor of Neurology (primary appointment)
Professor of Physical Therapy
BS Washington Univ in St. Louis 1975
MS Washington Univ in St. Louis 1983
DPT Washington Univ in St. Louis 2002

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PHD Illinois Institute of Technol 2015
MA University of Hong Kong 2009
BS University of Nottingham 2005

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BS Duke University 1998
MD University of Oklahoma 2002

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BA Washington Univ in St. Louis 1982
MD Beaufort Technical College 1988
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PHD Washington Univ in St. Louis 1997
MA Washington Univ in St. Louis 1993
BA Washington Univ in St. Louis 1991

G
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BS University of New Mexico 1996
MD University of New Mexico 2007
PHD University of New Mexico 2005
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PHD University of Texas Southwest 2008
BS University of Texas El Paso 1999
MS Univ of Texas San Antonio 2002
PHD University of Texas Southwest 2008
BS University of Texas El Paso 1999
MS Univ of Texas San Antonio 2002

Stefanie Geisler, MD
Assistant Professor of Neurology (primary appointment)
MD Humboldt University 2001

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Associate Professor of Neurology (primary appointment)
Associate Professor of Psychiatry
PHD Northwestern University Med 2001
BA Iowa State University 1995
MD Northwestern University Med 2003

James M Goldring, PHD, MD
Instructor in Clinical Neurology (primary appointment)
PHD Washington Univ in St. Louis 1977
MD Washington Univ in St. Louis 1986
BA Washington Univ in St. Louis 1971

Paul T Golumbek, MD, PHD, MS
Assistant Professor of Neurology (primary appointment)
Assistant Professor of Pediatrics
BA University of Maryland 1984
MD Johns Hopkins University Med 1995
PHD Johns Hopkins University 1995
MS University of Maryland 1985

Royal Gene Grueneich, PHD
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BA School Not Listed 1973
PHD University of Minnesota 1979

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BS Bates College 2001
MD University of New England 2009

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Assistant Professor of Pediatrics
MD University of Virginia 2006
BS Furman University 2002

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Professor of Orthopaedic Surgery
Professor of Pediatrics
MD University of Iowa 1998
BS University of Notre Dame 1991
PHD University of Iowa 1998

David H Gutmann, PHD, MD, MS
Donald O. Schnuck Family Professor of Neurology (primary appointment)
Professor of Genetics
Professor of Neurological Surgery
Professor of Pediatrics
PHD Davenport University 1984
BS Davenport University 1979
MD Davenport University 1986
MS Davenport University 1980

H

Joseph Hanaway, MD
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Professor of Neurology (primary appointment)
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MD CHICAGO MEDICAL SCHOOL 2012

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Professor of Developmental Biology
BS Northwestern University 1983
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MD Case Western Reserve Univ 1981

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Associate Professor in Neurology (primary appointment)
BS University of the Phillipines 1987
MD CEBU Institute of Medicine 1991

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Associate Professor of Neurology (primary appointment)
Associate Professor of Pediatrics
BA Brigham Young University 1999
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BS Yale University 1975

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PHD University of Chicago 2000
BS University of Illinois 1990

Mingjie Li, MD, PHD
Associate Professor of Neurology (primary appointment)
MD Heilong jiang Coll of Trad Med 1983
PHD Kochi Medical School 1989

Yan Li, PHD
Instructor in Neurology (primary appointment)
Amy K Licis, MD  
Assistant Professor of Neurology (primary appointment)  
MD Washington Univ in St. Louis 2004  
BS Rice University 2000

Matthew Chandler Loftspring, BAS, PHD, MD  
Assistant Professor of Neurology (primary appointment)  
BAS DePauw University 2004  
PHD University of Cincinnati 2011  
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Jane Loitman, MS, MD  
Assistant Professor of Clinical Neurology (primary appointment)  
Instructor in Clinical Medicine  
MS Georgetown University 1988  
BA Tufts University 1982  
MD University of Minnesota 1992

Glenn Lopate, MD  
Professor of Neurology (primary appointment)  
MD Ohio State University 1987  
BS Colorado St University 1983

Brendan Patrick Lucey, MD  
Assistant Professor of Neurology (primary appointment)  
BA University of Vermont 1999  
MD John Hopkins University 2003

Luigi Maccotta, MD, PHD  
Assistant Professor of Neurology (primary appointment)  
Assistant Professor of Radiology  
BS St Peters College 1994  
MD Washington Univ in St. Louis 2005  
PHD Washington Univ in St. Louis 2005

Baijayanta Maiti, MD, PHD  
Assistant Professor of Neurology (primary appointment)  
MD Calcutta University 2003  
PHD University of Utah 2010

Raman Kant Malhotra  
Associate Professor of Neurology (Pending Executive Faculty Approval) (primary appointment)

John F Mantovani, MD  
Associate Professor of Clinical Neurology (primary appointment)  
Assistant Professor of Clinical Pediatrics  
BA University of Evansville 1971  
MD University of Missouri 1974

Soe S Mar, MD  
Professor of Neurology (primary appointment)  
Professor of Pediatrics  
MD Institute of Medicine 1987

Robert P Margolis, MD  
Assistant Professor of Clinical Neurology (primary appointment)  
MD Saint Louis University 1975  
BA Kent St University 1971

Pietro Mazzoni, PHD, MD  
Associate Professor of Neurology (primary appointment)  
BS University of CA San Diego 1988  
PHD Mass Inst of Technology (MIT) 1994  
MD Harvard University 1995

Eric Martin McDade, DOST  
Associate Professor of Neurology (primary appointment)  
DOST Chicago Coll of OsteopathicMed 2004  
BA Canisius College 1998

Bryan Edward McGill, MD  
Instructor in Neurology (primary appointment)  
Instructor in Pediatrics  
BS Denison University 1999  
MD Baylor University 2008

Timothy M Miller, PHD, MD  
Clayson Professor of Neurology (primary appointment)  
PHD Washington Univ in St. Louis 1998  
MD Washington Univ in St. Louis 1998

John Carl Morris, MD  
Harvey A and Dorismae Hacker Friedman Distinguished Professor of Neurology (primary appointment)  
Professor of Occupational Therapy  
Professor of Pathology and Immunology  
Professor of Physical Therapy  
BA Ohio Wesleyan University 1970  
MD University of Rochester 1974

Stephanie Morris, MD  
Instructor in Neurology (primary appointment)  
BS University of Arizona 2007  
MD University of Phoenix 2011

Michael Justin Morrissey, PHD  
Instructor in Clinical Neurology (primary appointment)  
PHD Saint Louis University 2005

Krista L Moulder, PHD  
Associate Professor of Neurology (primary appointment)  
BA Northwestern University 1993  
PHD Washington Univ in St. Louis 2001

Erik S Musiek, PHD PMCG, MD  
Assistant Professor of Neurology (primary appointment)  
BS College of William and Mary 1999  
PHD PMCG Vanderbilt University 2005  
MD Vanderbilt University 2007

Robert T Naismith II, MD  
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MD Case Western Reserve Univ 1998
BS Case Western Reserve Univ 1994

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Assistant Professor of Neurology (primary appointment)
BA Evergreen St College 1992
MA University of Washington 2000
PHD University of Washington 2004

Anne Fagan Niven, PHD
Professor of Neurology (primary appointment)
BA Wellesley College 1984
PHD University of CA San Diego 1992

Michael Justin Noetzel, MD
Professor of Neurology (primary appointment)
Professor of Pediatrics
Vice Chair of Pediatric and Developmental Neurology
BA Yale University 1973
MD University of Virginia 1977

Scott Norris, MD
Assistant Professor of Neurology (primary appointment)
BA Washington Univ in St. Louis 2000
MD University of MO Columbia 2008

Sheel Jitendra Pathak, MD
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MD University of Texas Galveston 2008
BS University of Texas Austin 2004

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MS Oklahoma St University 1995
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BS California State Long Beach 1993

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Instructor in Clinical Neurology (primary appointment)
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MD Ohio State University 1979
BS Ohio State University 1975

Joel S Perlmutter, MD
Professor of Neurology (primary appointment)
Professor of Neuroscience
Professor of Occupational Therapy
Professor of Physical Therapy
Professor of Radiology
MD University of MO Columbia 1979

BA Princeton University 1975

Alan Pestronk, MD
Professor of Neurology (primary appointment)
Professor of Pathology and Immunology
BA Princeton University 1966
MD Johns Hopkns University Medic 1970

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MD Washington Univ in St. Louis 1980
BS Northwestern University 1976
BE Northwestern University 1982

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MD Cambridge University 2006
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Professor of Pediatrics
Professor of Psychiatry
Professor of Radiology
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PHD Ball State University 2002

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MD Emory University 1982
MS Emory University 1982

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U

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BS Quincy College 2004

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MS Washington Univ in St. Louis 2007

V

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MD Northwestern University 1977
BS Grinnell College 1972

Michael Wong, MD, PHD
Allen P and Josephine B Green Professor of Pediatric Neurology
(primary appointment)
Professor of Neuroscience
Professor of Pediatrics
BA Princeton University 1987
MD University of Texas Southwest 1995
PHD University of Texas Southwest 1995

Gregory Frederick Wu, PHD, MD
Assistant Professor of Neurology (primary appointment)
Assistant Professor of Pathology and Immunology
BS Washington Univ in St. Louis 1993
PHD University of Iowa 2001
The goal of this course is to provide an introduction to the diseases of the central and peripheral nervous systems, including their clinical manifestations, pathology, pathophysiology and pharmacotherapy. The course includes reading assignments, lectures, laboratories, conferences and clinical presentations.
Credit 53 units.

M35 Neurol 720 Neurology Clerkship
A full-time, four-week clerkship is provided on the neurology services at Barnes-Jewish Hospital. Patients are assigned to students who evaluate and follow them with the resident staff and discuss them regularly in conferences with the senior neurological staff. Students also work in the neurology clinic under staff supervision and attend a series of lectures on neurosurgical problems.
Credit 154 units.

M35 Neurol 730 Physical Medicine and Rehabilitation Clerkship
Clerkship in PM&R for third-year medical students provides an opportunity to gain basic knowledge and clinical skills in evaluation and management of a wide range of neurological and musculoskeletal diseases and conditions that require specialized rehabilitative medical and therapeutic care. Students spend two weeks on Spinal Cord Injury Unit (SCI) and two weeks on Brain Injury (BI) & Stroke Unit at The Rehabilitation Institute of St. Louis. Students are expected to be a part of the rehabilitation team, follow two to three patients, participate in daily morning rounds, participate in performing consults, attend team meetings and family conferences. Students are required to attend several outpatient clinics such as SCI, BI, Amputee and Stroke. During the entire rotation, students work together with PM&R residents and fellows, and under direct guidance of the NeuroRehabilitation faculty. The usual duty hours are 7-7:30 a.m. to 5 p.m. during weekdays, and 8 a.m.-noon on Saturdays. There is no night call. Students are required to attend all PM&R curriculum lectures and conferences. On the first day of rotation, students meet with the PM&R program director to go over goals, objectives and schedules. Upon completion of the rotation, students are required to fill out the evaluation form to provide feedback regarding rotation experience.
Credit 154 units.

M35 Neurol 827 Neurology Sub-Internship for WUSM Students
This four-week elective will be customized to include inpatient and outpatient experiences desired by WU students who have completed the WU Neurology Clerkship. Students may choose this elective to further improve their neurology knowledge and skills. Students considering neurology as a career may also desire additional exposure to supplement their prior clerkship experience. The elective is split into two two-week rotations which may include: 1. Adult Inpatient General Service (with one clinic/week) 2. Adult Inpatient Stroke Service (with one clinic/week) 3. Adult Inpatient Consult Service (with one clinic/week) 4. Pediatric Neurology Consult Service (with one clinic/week) 5. Adult Neurology ICU (with one clinic/week) 6. Outpatient Clinics (with 8-10 clinics/week).

M35 Neurol 828 Neurology Sub-Internship for Visiting US Medical Students
This four-week elective for fourth-year visiting students from a U.S. medical school provides the option (space permitting) of four weeks of Adult Inpatient Service (Stroke for two weeks, General Neurology for two weeks), or two weeks on an Adult
Inpatient Service and two weeks on the Adult Consult Service. Students on the inpatient service will function as a Sub-Intern under the supervision of their junior resident, chief resident, and attending physician. The student will also attend weekly clinical conferences and a weekly outpatient clinic experience. This elective is suitable for visiting fourth-year students interested in neurology, who wish to improve their neurology knowledge and skills.

**M35 Neurol 830 Neuro-Oncology**

Provide an outpatient-oriented combined pediatric and adult neuro-oncology experience for fourth-year medical students.
1. Attend multidisciplinary adult and pediatric neuro-oncology clinics and case conferences (tumor boards); 2. Attend adult and pediatric radiation oncology clinics; 3. Attend neuropathology brain tumor review; 4. Participate in subspecialty brain tumor clinics; 5. Attend monthly brain tumor research conferences.

**M35 Neurol 851 Clinical Aspects of Aging and Dementia**

This elective provides the opportunity to learn about clinical research and clinical care in health brain aging and dementia. Students should contact the course directors to discuss this, as this elective is customized based on student interests. This can be a two-week or four-week elective. Students can gain proficiency in interviewing techniques and in the neurologic examination of the geriatric patient, and be introduced to neuropsychology, neuropathology, biomarkers, neuroimaging, genetics, and other biomedical procedures important in the diagnostic evaluation of older adults. The Knight ADRC is an interdisciplinary group, so students have the opportunity to interact with physicians, nurse clinicians, psychologists and social workers, and to explore the neuropsychology, neuropathology, biomarkers, neuroimaging, genetics, and other biomedical procedures used in the diagnosis of dementing disorders such as Alzheimer's disease, dementia with Lewy bodies, frontotemporal dementias, cerebrovascular disorders, and affective disorders.

**M35 Neurol 859 Neonatal Neurology**

The Neonatal Neurology elective will consist of a combination of inpatient and outpatient experiences designed to provide medical students with comprehensive exposure to the field. Through the rotation, students will actively participate in all aspects of patient care, acquiring the knowledge and skill necessary to effectively manage infants with neurological disorders, including encephalopathy, stroke, seizures, hypotonia, intraventricular hemorrhage, and periventricular leukomalacia, among others. Clinical activities will be tailored to fit the interests and goals of the individual student and include a combination of inpatient and outpatient experiences. Inpatient activities will occur in the St. Louis Children's Hospital Neonatal Intensive Unit as part of the Neonatal Neurology Consultation service. Outpatient activities will occur in the St. Louis Children's Hospital Outpatient Clinics. Students will also attend educational conferences specific to the field during the rotation, including Neonatal Neurology Clinical Conference and Neonatal Neuroradiology Conference.

**M35 Neurol 860 Pediatric Neurology**

The senior elective experience in child neurology is designed to adapt to the individual goals and objectives of students. The elective takes place in two 2-week blocks that occur among five possible venues as chosen by the student: (1) Outpatient clinics, (2) Inpatient ward service, (3) Inpatient general consult service, (4) NICU consult service, and (5) Video EEG (VEEG) monitoring service. The combination of services and experiences will be arranged directly between the student and the course director prior to beginning the rotation. In the outpatient clinics, students will rotate between a variety of subspecialty clinics and work with a variety of attendings in order to experience the breadth of outpatient pediatric neurology. Students rotating on the inpatient ward service will have a different role than the third-year student on pediatrics. The fourth-year student will focus solely on neurology patients and work closely with the pediatric neurology resident to develop neurology-specific care plans.

No call or weekend duties will be expected on this rotation. On the general consult services, students will work with the consult attending and pediatric neurology residents on that team to see consults in the PICU, CICU, ER, and other hospital floors. The NICU consult team focuses on infants in the NICU. Students rotating on the VEEG monitoring service will focus on learning the indications and uses of VEEG and basic EEG reading skills. All students choosing a pediatric neurology elective will arrange their specific schedule with the course director beforehand.

**M35 Neurol 861 Neurology/Neurosurgery ICU**

The student will be integrated into the Critical Care Team that provides care in the Neurology/Neurosurgery ICU. Diseases frequently encountered include intracerebral hemorrhage, head trauma, subarachnoid hemorrhage, and stroke. The student will follow patients, participate in rounds and perform some procedures under supervision. Didactic sessions will be provided as conferences or lectures from the ICU attending.

**M35 Neurol 865 Adult and Pediatric Epilepsy**

Students will learn how epileptologists diagnose and manage epilepsy in adults and children. They will learn how to use the history and physical exam and laboratory studies such as EEG, MRI, PET, and SPECT to diagnose and manage patients with new onset epilepsy, established epilepsy, and medically intractable epilepsy. They will become familiar with the medical management of epilepsy as well as the treatment options for medically intractable epilepsy including surgery, the vagus nerve stimulator, and the ketogenic diet. They will also learn how to manage the co-morbid conditions that accompany epilepsy such as depression, behavioral problems, cognitive impairment, sleep disturbance, and non-epileptic events. Students will accomplish these goals by attending epilepsy clinics and rounding on the inpatient epilepsy service with the epilepsy team at Barnes-Jewish Hospital and St. Louis Children's Hospital. They will attend the Adult Epilepsy Conference, the Pediatric Epilepsy Conference, and Neurology Grand Rounds. Students will also have the opportunity to observe epilepsy surgery if they wish. They will have the option to present one 15-30 minute talk on a topic relevant to epilepsy.

**M35 Neurol 872 MS Center/Outpatient - Missouri Baptist**

Students will develop their skills in taking histories and performing neurological examinations on patients with multiple sclerosis under direct supervision of multiple sclerosis specialists. Localization of neurological findings and symptoms to the neuro-axis will be emphasized. A major goal for the students will be to increase the understanding of comprehensive patient management including disease treatment, symptom management, adjunctive therapy services, and psychosocial issues. The outpatient rotation will be four weeks at The MS Center for Innovations in Care at Missouri Baptist Medical Center with Dr. Barry Singer and Dr. Mark Tullman. An additional goal for students will be to understand process of clinical research and translation into approved therapies. The center has been a leader in clinical trial development of therapeutics that have been
or will soon be FDA-approved as new medications for multiple sclerosis.

**M35 Neurol 900 Research Elective - Neurology**
Research opportunities may be available. If interested, please contact the Department of Neurology.