

**HEADACHE AND FACIAL PAIN
PROGRAM:
MONTEFIORE/ALBERT EINSTEIN
COLLEGE OF MEDICINE**

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1.0 Program Overview

Montefiore Medical Center and the Albert Einstein College of Medicine (AECOM) have a long tradition of excellence in headache clinical care, research and education. Established more than 60 years ago, the Montefiore Headache Center was the first facility in the world dedicated exclusively to the research, diagnosis and treatment of headache and facial pain syndromes. The Montefiore Headache Center has received international recognition for clinical excellence, for pioneering new approaches to headache treatment, and for research on headache classification and diagnosis, epidemiology and burden of disease, as well as clinical trials for the treatment of headache disorders.

The Headache Center provides clinical training for residents. We also offer 1 year and 2 year fellowship programs focusing on outpatient and inpatient management of headache as well as clinical research. The trainee will see headache out-patients in several settings and will round daily on our headache inpatients. In addition, the fellow is expected to participate in headache research. For trainees who spend two years, research opportunities are greatly expanded and include a Masters Degree in Clinical Research through Einstein's NIH-funded Clinical Research Training Program (CRTP).

Dr. Richard Lipton is the Director of the Montefiore Headache Center. Dr. Seymour Solomon is Director of the Clinical Care. Outpatient treatment is offered the Montefiore Headache Center. Other services include the Pediatric Headache Service (Dr. Ballaban-Gil), Pain Psychology Service (Drs. Dawn Buse and Dennis Thornton), and supporting fields including anesthesia pain, dentistry and neurosurgery.

Marcelo Bigal, M.D., Ph.D. is Director of Research for the Montefiore Headache Center. Research activity includes epidemiology, clinical trials, clinic-based observational studies, health services research, neuroimaging, biomarker and genetic research. Full-time faculty for the headache program include nine headache neurologists (one pediatric neurologist and two with dual training in neurology and psychiatry), two epidemiologists, two psychologists (one full-time), a biostatistician, a human geneticist and gynecologic endocrinologist. In addition, the fellow has access to over 60 full-time neurology faculty, a large neurosurgery department, an active neuroscience faculty, a large neuroradiology department, and the broader resources of a major medical school and several academic medical centers.

The prerequisites for training usually include successful completion of an accredited residency training program in a relevant discipline (i.e., neurology, psychiatry, anesthesiology, or internal medicine) and board eligibility in that field.

2.0 Faculty – Full-Time

Richard B. Lipton, M.D. (Clinical Neurology and Epidemiology)
Director, Montefiore Headache Center
Professor and Vice-Chair of Neurology, Professor of Epidemiology and Population Health,
Professor of Psychiatry and Behavioral Sciences,
Albert Einstein College of Medicine (AECOM)

Seymour Solomon, M.D. (Clinical Neurology)
Director Emeritus, Montefiore Headache Center
Professor of Neurology/AECOM
Director, Montefiore Headache Center

Marcelo E. Bigal, M.D., Ph.D. (Clinical Neurology, Neuroimaging)
Director of Research, Montefiore Headache Center
Assistant Professor of Neurology/AECOM

Brian M. Grosberg, M.D. (Clinical Neurology)
Assistant Professor of Neurology/AECOM

Mehdi Kazmi, M.D. (Neurology and Psychiatry)
Assistant Clinical Professor of Neurology and Psychiatry and Behavioral Sciences/AECOM
Co-Director, Headache and Research Institute

Randall Berliner, M.D. (Neurology and Psychiatry)
Assistant Clinical Professor of Neurology and Psychiatry and Behavioral Sciences/AECOM
Co-Director, Headache and Research Institute

Julie W. Pan, M.D., Ph.D. (Neuroimaging)
Associate Professor of Neurology and Neuroscience/AECOM
Associate Director of the Gruss Magnetic Resonance Research Center

Karen Ballaban-Gil, M.D. (Pediatric Neurology)
Professor of Neurology and Pediatrics/AECOM
Director, Pediatric Headache Service

Dawn Buse, Ph.D. (Psychology)
Assistant Professor of Neurology and Psychology/AECOM/Ferkauf

Dennis Thornton, Ph.D. (Psychology)
Associate Professor of Neurology/AECOM
Director of Psychology

Carol Derby, Ph.D. (Epidemiology)
Associate Professor of Neurology, Epidemiology and Population Health/AECOM

Charles Hall, Ph.D. (Biostatistics)
Associate Professor of Epidemiology and Population Health/AECOM

Nanette Santoro, M.D. (Gyno/Endocrinology)
Professor of Obstetrics and Gynecology/AECOM

Laurie Ozelius, Ph.D. (Genetics)
Associate Professor, Human Genetics/AECOM

3.0 Patient Care

3.1 Adult Outpatient Care

Adult outpatient care is provided at the Montefiore Headache Center. Under the tutelage of several renowned headache physicians, we care for a large and diverse out-patient population, with a broad spectrum of headache syndromes of varying complexity.

At the Montefiore Headache Center, the Fellow will see new and follow-up headache patients with Drs. Grosberg, Solomon and Lipton. These patients are referred from a regional and national base and present with a broad range of interesting, unusual and refractory disorders.

3.2 Pediatric Outpatient Care

The Fellow will also work with Dr. Ballaban-Gil, the Director of the Pediatric Headache Service. The Fellow will learn how to diagnose and manage pediatric headache disorders, and will have the option of doing pediatric headache research.

3.3 Psychology

The Fellow will train with Dr. Dawn Buse in behavioral issues including psychological assessment, use of biofeedback and relaxation techniques, cognitive behavioral therapy, and strategies for producing and maintaining change in behavior.

3.4 Electives

Electives are available in Neuroimaging, Neurosurgery, Dentistry and Pain.

3.5 Inpatient Management

The Fellow will follow inpatients with headache admitted to the Weiler Hospital of the Albert Einstein College of Medicine, a division of Montefiore Medical Center. Patients are admitted from the headache outpatient service for inpatient management when outpatient therapies fail or when the severity of the headache disorder or the associated medical or psychiatric comorbidities require it. In addition, patients are admitted from the Emergency Department. Headache is a key factor for about 300 admissions per year to the Neurology Service. The Fellow will follow

and manage inpatients with primary headaches, using specific intravenous medications and detoxification techniques to accurately and effectively treat these patients. The Fellow will also follow patients with secondary headache.

4.0 Research Opportunities in Headache

The faculty have a broad range of research interests providing many opportunities for research.

Epidemiology and Health Services Research

- Descriptive epidemiology and disability
- Model intervention programs for headache management in primary care
- Emergency department studies
- Diagnostic screening and disability tools
- Natural history and risk factors for chronic daily headache
- Biomarkers
- Comorbidity research

Classification research

- Chronic daily headache (CDH) and subtypes
- Rare primary headaches
- Secondary headaches

Clinical trials

- Acute treatment
- Preventive treatment
- Outcomes studies

Neuroimaging

- Neurotransmitters (Glutamate and GABA) in migraine assessed by Magnetic Resonance Spectroscopy
- Drug effects on transmitter levels

Biomarker and Family Studies

5.0 Institutional Environment

5.1 Department of Neurology

The Department of Neurology at AECOM has 60 full-time faculty with diverse clinical and research interests. The adult neurology program includes 27 residents and 15 clinical and research fellows. The Department is committed to training clinicians skilled in the diagnosis and

treatment of neurologic disorders who are able to conduct or interpret clinical and basic research. In addition to headache, the Department has strong subspecialty clinical and research postgraduate fellowships in the following areas: epilepsy and EEG, EMG and neuromuscular disease, stroke, movement disorders, neuropsychiatry and neuroscience.

5.2 The Albert Einstein College of Medicine

The Albert Einstein College of Medicine (AECOM) and its affiliated hospitals are the major health resource in the Bronx. We serve more than one million residents of the borough and provide tertiary care in headache for the tri-state region comprising the greater New York metropolitan area and beyond. AECOM has strong departments in Neuroradiology, Neurosurgery, Epidemiology and Population Health as well as Dentistry.

The Einstein/Montefiore complex is geographically divided into two major sites - the East campus and the West campus. These sites, in the Northeast Bronx, are ten minutes apart and linked by a shuttle bus that runs frequently throughout the day.

The East campus includes the College of Medicine, Einstein Hospital, and the Jacobi Medical Center (JMC). The AECOM has a long tradition of excellence in the neurosciences. The Neurology Department's college based faculty maintain outstanding research laboratories in molecular biology, stem cell research, muscle disorders, biochemistry of CNS lipids, multiple sclerosis, evoked potentials, neurogeriatrics, neurotransmitters, neurotoxicology, neural development, neurochemistry and neuroimaging.

Many of the Department's faculty members have secondary appointments in the Neuroscience Department, providing additional educational opportunities for residents and fellows. In addition, the Department has a major clinical research program concerned with aging and dementia with a focus on headache and pain disorders in the elderly.

Einstein Hospital, a Division of Montefiore Medical Center, has 381 beds. The Department includes a 14-bed inpatient unit and stroke program, and provides adult neurology consultation to all hospital inpatient services. There is a new 2000 square foot Neurology Practice Center adjacent to the hospital. This center contains offices for our stroke team, pediatric neurology, and adult epilepsy. It also houses our departmental non-invasive vascular laboratory.

Jacobi Medical Center (JMC) is a 550 bed municipal hospital. The Neurology Department maintains an active consultation service with a research program on the primary care management of common neurologic disorders including headache.

The Rose F. Kennedy Center for Research in Mental Retardation and Human Development is part of the College of Medicine and is physically connected to the JMC campus. The Kennedy Center houses most of Neurology's basic science faculty with research labs focused on neuropeptides, neurophysiology, cognitive function, stem cell research, epilepsy, and developmental disorders.

The West campus includes the Moses division of Montefiore Medical Center (MMC), a major voluntary teaching site. The Moses Division of MMC has 679 beds with a 32 bed neurology floor. In addition, a multidisciplinary 4 bed neurology stroke evaluation and intervention unit which focuses on patient centered care is located on this floor. The neurology floor houses a neurorehabilitation facility where patients receive intensive rehabilitation.

Beth Israel Medical Center (BIMC) is the Manhattan campus affiliate of the Albert Einstein College of Medicine. Residents may have pre-approved elective rotations at BIMC.

5.3 General Clinical Research Center (GCRC)

AECOM has an NIH funded General Clinical Research Center with a full-staffed research clinic capable of conducting a broad range of metabolic studies, biomarker studies, and human clinical trials. A core facility of the GCRC is the Gruss Magnetic Resonance Research Center (MRRC). Housing a cutting-edge whole body human 4T MR system and a 21cm bore 9.4T rodent MR system, biomedical research at the MRRC spans both animal models and human disease. The Gruss MRRC also houses a networked computing facility dedicated to the analysis of functional MR imaging and spectroscopic data. Work at the MRRC therefore provides an important bridge between developments in bench-top research towards their implementation and analysis under *in vivo* conditions. The Gruss Magnetic Resonance Research Center is located on the Jack and Pearl Resnick campus of the Albert Einstein College of Medicine. The Director of the MRRC is Hobe Hetherington, Ph.D and the Associate Director is Jullie Pan, M.D. Ph.D.

The Fellow will have the opportunity to participate in various studies, including metabolic imaging during and between headache attacks and studying the ictal and interictal effects of drugs on brain levels of neurotransmitters, such as glutamate and GABA.

5.4 Opportunities for Clinical Research Training

Headache fellows have the option of taking course work in the Clinical Research Training Program (CRTP). This program, funded by the NIH, provides future investigators with basic and applied knowledge in the core disciplines of clinical investigation: biostatistics and epidemiology. Additional course work is available in research ethics and medical communication, as well as elective courses geared to each participant's interest. All program scholars will learn how to effectively design clinical research studies; how to ensure that high ethical standards are met; how to organize the study team; how to apply for and obtain funding; how to collect, manage, and analyze data; and how to report their results. This will enhance the scholars' chances of developing successful careers in clinical research. Our faculty are drawn from the many programs and departments of the Albert Einstein College of Medicine.

6.0 Faculty Biosketches for Selected Bronx-Based Faculty

Richard B. Lipton, M.D. is Professor and Vice-Chair of Neurology, Professor of Epidemiology and Population Health, and the Lotti and Bernard Benson Faculty Scholar at Einstein. A headache clinician, epidemiologist and research methodologist, he is a Past President of the

American Headache Society. He chaired the International Headache Society Subcommittee on Migraine Classification. He has written over 400 original and review articles and six books including *Wolff's Headache* and *Headache in Clinical Practice*. His papers defined the epidemiology and burden of migraine in the U.S. and led to the development of widely used screening (ID Migraine) as well as disability tools (MIDAS) for migraine. He demonstrated the benefits of stratified care in the Disability in Strategies of Care (DISC) Study as well as the benefits of early acute treatment as a management strategy for migraine in the Spectrum Study. His work has also examined migraine genetics and biomarkers, migraine's comorbidities as well as health-related quality of life and health economics. He has conducted numerous clinical trials and written extensively on clinical trials methodology. He is an Associate Editor of the journal *Cephalalgia* and on the Editorial Boards of several journals including *Neurology*.

Seymour Solomon, M.D. is Professor of Neurology at Albert Einstein College of Medicine and Director of the Headache Center of Montefiore Medical Center. He is a Past President of the American Headache Society and Regent of that society, as well as Fellow of the American Academy of Neurology. He is an active member of the International Headache Society, American Neurological Association, American Pain Society, International Association for the Study of Pain. Dr. Solomon has written more than 200 scientific papers and reviews, as well as book chapters in such texts as the Comprehensive Textbook of Psychiatry, *The Headaches*, *Wolff's Headache and Other Head Pain*, as well as *The Headache Book* for the lay public. He was abstracts editor for the journal, *Headache*, and is ad hoc reviewer for several other journals. His current clinical interests are variants of migraine, cluster headache and post-traumatic head and neck pain.

Marcelo E. Bigal, M.D., Ph.D. is Assistant Professor of Neurology at AECOM and Director of Research, Montefiore Headache Center. He has written over 100 original and review articles, numerous book chapters and two books. He is interested in classification of headaches, pathophysiology, epidemiology, comorbidity, and treatment of chronic daily headache, epidemiology, comorbidity and impact of migraine, as well as in development of clinical trials.

Brian M. Grosberg, M.D. is Assistant Professor of Neurology at AECOM and Director of the Headache Fellowship. He is interested in headache diagnosis and treatment and has written about a number of rare headache disorders including retinal migraine and nummular headache.

Dawn Buse, Ph.D. is Assistant Professor of Neurology and Psychology and Director of Psychology for the Headache Center. She is interested in behavioral issues in headache treatment and women's health.