The Brain Institute at The Mount Sinai Medical Center

Driving discoveries for the treatment of brain and spinal cord diseases
Poised at the junction of societal need and scientific opportunity, the Brain Institute at The Mount Sinai Medical Center is uniquely positioned to advance research into diseases of the brain and spinal cord. By evolving our understanding of such diseases – possible only with the generous support of committed donors – the Brain Institute drives innovative approaches to new treatments and diagnostic tests for these disorders, at the same time training the next generation of researchers and clinicians in leading-edge brain science.

The ultimate goal is enabling longer, more fulfilling lives for patients, while offering hope for their families and caregivers.

"The nervous system is the last frontier of the molecular revolution in medicine. Thanks to remarkable advances in studying the brain and spinal cord – many developed and in practice at Mount Sinai – impressive strides have been made in understanding how the nervous system functions under normal conditions and malfunctions in disease. We are uniquely poised to take these advances and translate them into fundamentally new and improved treatments."

Eric J. Nestler, MD, PhD

Dr. Nestler is the Nash Family Professor, Chair of Neuroscience and Director of the Mount Sinai Brain Institute. Prior to joining Mount Sinai in 2008, he served as Chair of the Psychiatry Department at the University of Texas Southwestern Medical Center at Dallas. After obtaining his PhD and MD from Yale in 1982-1983, Dr. Nestler taught in the Departments of Psychiatry and Pharmacology and assumed the directorship of the Yale Center for Genes and Behavior in 1997.
The Brain Institute builds on Mount Sinai’s remarkable record of discovery and achievement in the area of brain and spinal cord disorders. Among the many accomplishments that set Mount Sinai apart are:

- Outstanding clinical and research programs for many neurologic and psychiatric illnesses, including addiction, Alzheimer’s disease, autism, brain and spinal cord injury, depression, multiple sclerosis, Parkinson’s disease, post-traumatic stress and schizophrenia.
- Mount Sinai was one of the original five Alzheimer’s Disease Research Centers funded in 1985 by the National Institutes of Health (NIH). Mount Sinai President and CEO Kenneth L. Davis, MD, was principal investigator on the clinical trial that led to the first approved drug for Alzheimer’s disease (Tacrine).
- Mount Sinai researchers are among the top three recipients of funding from the National Institute on Aging.
- Mount Sinai’s Department of Neuroscience ranks fourth nationally in NIH funding, and the Departments of Neurology and Psychiatry each rank in the top 10.

Drawing from the combined resources of The Mount Sinai Hospital and Mount Sinai School of Medicine, the Brain Institute has the opportunity to alter radically the trajectory of brain and spinal cord research, treatment and education – accelerating discoveries and putting them into practice to help improve patients’ lives. Our expertise in basic as well as translational (bench to bedside) and reverse translational (clinical observations back to the lab) research and our exceptional medical education programs ensure that tomorrow’s patients and healers will benefit from the work the Brain Institute undertakes today.

Psychiatric illnesses have a devastating effect on patients and their loved ones. To date, research has provided treatments that can help to manage and control the symptoms, but the Brain Institute has a far more ambitious goal: to cure and prevent psychiatric illnesses. This work involves molecular research to better understand how and why trouble starts and worsens, and it requires courageous patients working closely with committed physicians. This is both the ideal time and the ideal place to perform this important research.”

Wayne Goodman, MD
The Brain Institute has identified three broad areas of investigation in which it seeks to be on the vanguard of discovery: cognition, neural injury and repair and neuropsychiatry. Because these areas comprise some of the most common and debilitating illnesses, they represent the greatest opportunity for transformative medicine. Through the work of the following nine Centers of Excellence, each led by a renowned researcher in that Center's area of focus, the Brain Institute will advance the field of brain science on multiple fronts simultaneously.

The primary goal of these nine Centers of Excellence is to coordinate and support basic and clinical research teams and ensure the rapid translation of newly discovered knowledge from laboratory to bedside and vice versa – thereby accelerating both discovery and impact.

**Stemming the Effects of Time: Aging**
Led by Patrick R. Hof, MD, Irving and Dorothy Regenstreif Professor of Neuroscience, Vice Chair for Translational Neuroscience in the Department of Neuroscience and Director of the Kastor Neurobiology of Aging Laboratories, the Aging Center of Excellence focuses on endocrinology, metabolism and stress during aging as well as the cellular and synaptic pathology of aging. A key area of inquiry is the role and impact of hormones in the aging brain, such as the examination of the neurobiological and behavioral effects of estrogen in the context of aging.

**Wiping Out Memory Loss: Cognition & Plasticity**
Led by Cristina Alberini, PhD, and Matthew Shapiro, PhD, Associate Professors of Neuroscience, the Cognition & Plasticity Center of Excellence focuses on learning and memory, molecular plasticity and neural and synaptic plasticity. Cognitive function tends to decline as people age or because of disease or injury. By learning how cognition occurs at the cellular and molecular levels and how nerve cells work together to form circuits, we hope to discover how to prevent or repair loss of cognition regardless of its cause and to find ways for individuals to achieve their maximal cognitive capacity.

**Modeling Neural Networks: Computational & Systems Neuroscience**
Ehud Kaplan, PhD, Professor of Neuroscience, and Susan Wearne, PhD, Associate Professor of Biomathematics, lead the Computational & Systems Neuroscience Center of Excellence. The brain is composed of 100 billion nerve cells; each nerve cell forms contacts with thousands of others, with tens of thousands of genes and proteins responsible for each nerve cell's activity. This Center is developing the advanced, state-of-the-art mathematical and computer tools that are needed to better understand how the nervous system works under normal conditions and what goes wrong in disease.

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The Brain Institute owes its establishment and early momentum to the leadership support of a number of individuals and families. Their generosity and commitment to the cause of advancing research, care and education in the area of brain science is an inspiration to us and — we hope — to others who share their concern for the many people suffering from the effects of brain and spinal cord diseases. Our benefactors include the Nash Family, which has supported Mount Sinai for more than three decades. Jack Nash was a Trustee of Mount Sinai from 1990 until his passing in 2008. His wife, Helen, their son, Joshua — also a Mount Sinai Trustee — and daughter, Pamela, established the directorship for the Brain Institute, which includes the Nash Family Professorship and the Nash Family Laboratories. Sarah and Seth Glickenhaus, with their children, Jim and Nancy, have made significant and critically important gifts in support of strategic initiatives that will help shape the future of translational medicine and innovative medical education. Additionally, Andrew M. Alper, a Trustee since 2006, has made an important gift supporting the groundbreaking translational research at the Brain Institute.
Shedding Light onto Darkness: Mood & Motivation Disorders
Led by Yasmin Hurd, PhD, Professor of Neuroscience and Psychiatry, the Mood & Motivation Disorders Center of Excellence focuses on the problems of addiction, anxiety, bipolar disorder, depression and traumatic stress, which affect more than 20% of the U.S. population. By understanding the biological basis of these emotional illnesses, we hope to develop ways to better diagnose, treat and ultimately prevent them. Indeed, Mount Sinai is leading the way in identifying the causes of these conditions in highly coordinated preclinical and clinical investigations.

Restoring Neural Support: Myelin Disorders
Led by Patrizia Casaccia, MD, PhD, Professor of Neuroscience, the Myelin Disorders Center of Excellence focuses on multiple sclerosis, as well as developmental disorders of white matter and neuroinflammatory disorders. Multiple sclerosis is caused by the loss of myelin sheaths that serve as insulators for nerve cells. Mount Sinai’s interdisciplinary team is carrying out groundbreaking research to understand how this loss occurs and how to repair myelin sheaths, either by stimulating cells to regrow myelin or replacing it using stem cell-based therapies.

Reversing the Irreversible: Neural Injury & Repair
The Neural Injury & Repair Center of Excellence focuses on stroke, traumatic brain injury and spinal cord injury. Though degeneration and death of nerve cells have long been thought to be irreversible, we are using molecular and cellular investigations of neural injury to discover ways to prevent such injury or to detect it at the earliest opportunity, reversing and repairing the damage if possible. The selection of a national leader to serve as chief of this Center is under way.

Standing Up to Alzheimer’s, Parkinson’s and Related Diseases: Neurodegeneration
Led by Samuel E. Gandy, MD, PhD, Associate Director of the Mount Sinai Alzheimer’s Disease Research Center, Mount Sinai Professor of Alzheimer’s Disease Research and Professor of Neurology and Psychiatry, the Neurodegeneration Center of Excellence focuses on Alzheimer’s disease and movement disorders such as dystonias, Huntington’s disease and Parkinson’s disease. Thanks to recent research at Mount Sinai, fundamental new discoveries are being made about what causes these neurodegenerative disorders, and these advances are directing new treatment trials for these devastating illnesses.

Bridging Neural Disconnects: Neurodevelopmental Disorders
Led by Joseph D. Buxbaum, PhD, the G. Harold and Leila Y. Mathers Professor and Professor of Neuroscience and Psychiatry, the Neurodevelopmental Disorders Center of Excellence focuses on autism as well as attention deficit disorder, intellectual disability/developmental delay and schizophrenia. Highly innovative and creative research at Mount Sinai is discovering the genetic mutations that cause autism in some families. Now, up to one-third of children with autism can be diagnosed with a genetic test, and knowledge of the genes is leading to new treatment trials.

Exploring Complementary Medicine: Novel Approaches to Neurodiagnostics & Neurotherapies
Led by Giulio M. Pasinetti, MD, PhD, Professor of Neurology, Neuroscience and Psychiatry, this Center of Excellence focuses on lifestyle medicine, nutrition and other new modalities of treatment. One example of the Center’s work is its study of polyphenols, the plant compounds associated with the protective effects of a daily glass of red wine. A Phase II clinical study is currently testing the ability of molecule NICS-15, derived from grape seeds, to prevent or delay Alzheimer’s disease.
The Brain Institute at The Mount Sinai Medical Center is poised to take advantage of the growing body of knowledge of brain and spinal cord disorders – much of it directly attributable to our work – to develop new and more effective diagnostic tests, treatments and, ultimately, cures and preventions. In addition to making important new discoveries in individual disease areas, we will be able to test whether treatments for one condition may also be useful in another. At the same time, we can quickly bring what we learn in the lab to the bedside and back again to inform further research.

The Brain Institute will occupy two floors of Mount Sinai’s new Center for Science and Medicine, scheduled for completion in 2012. This state-of-the-art research space will ensure an efficient synergy between basic and clinical researchers from many different departments – including Genetics and Genomic Sciences, Geriatrics, Neurology, Neuroscience, Neurosurgery, Pharmacology and Systems Therapeutics, Psychiatry and Rehabilitation Medicine – integral to the ability of the Brain Institute to achieve its goals.

“A Key Researcher”

“Mount Sinai has a rich history of innovative basic and translational science. We have the computational and scientific tools and the investigative skills and resources to conduct groundbreaking research at the molecular and cellular level. This leads to exciting discoveries at the very heart of brain-related diseases and disorders. In addition, the collaborative power of the Institute model gives us the ability not only to solve complex problems in one area, but to apply those findings in other areas as well.”

Stuart C. Sealfon, MD

Stuart C. Sealfon, MD, is the Sarah B. and Seth M. Glickenhaus Professor and Chair of the Department of Neurology; Director of the Center for Genomics, Proteomics and Bioinformatics; Director of the Center for Translational Systems Biology and Professor of Neurobiology and Pharmacology & Systems Therapeutics.

His research accomplishments include finding new signaling pathways activated by drugs for Parkinson’s disease, elucidating the mechanism of hallucinogen action and finding a new brain receptor complex implicated in schizophrenia and as a novel target for antipsychotic drugs.
Every type of disease elicits fear and uncertainty among patients and their loved ones. When the problem is in the brain, however, it can be especially disconcerting. The loss of memory, independence and self-control due to age or disease is heartbreaking, and unfortunately it’s all too common. My goal is to identify when and where changes in brain cell function take place, and how to intervene to promote successful brain cell adaptability. This may help reduce age- or disease-related cognitive decline.”

John H. Morrison, PhD

A Tireless Investigator

In addition, close relationships with Mount Sinai-based clinics such as The Robert and John M. Bendheim Parkinson’s Disease Center, The Corinne Goldsmith Dickinson Center for Multiple Sclerosis, the Memory and Cognition Center, The Seaver Autism Center for Research and Treatment and the Spinal Cord Injury Center will extend our expertise and enhance our research.

We have the vision, commitment and expertise to succeed in this important mission. All we need to realize our goals is the generous financial support of our donors.

John H. Morrison, PhD

Dr. Morrison has studied the effects of aging on the brain for more than two decades. In 2007, his work was recognized with a $5 million MERIT Award from the National Institute on Aging, a division of the National Institutes of Health.
Featured Priority Funding Objectives: Total goal: $100 million

**Intellectual Capital**
We will recruit and retain leading scientists, including:

- 25 basic neuroscientists across the Institute’s nine Centers of Excellence
- Endowed Scholars Program in Neuroscience

**Capital**
We will build new facilities to house state-of-the-art laboratory and clinical space as well as technological resources, enabling our basic and clinical scientists to create a seamless translational research hub.

- Two floors in the Center for Science and Medicine

**Programmatic**
We will further develop translational programs within the Brain Institute, including:

- Addiction Research Center
- Center for Brain Repair
- Depression and Resilience Research Center
- Memory and Cognition Research Center
- Spinal Cord Injury Research Center

**Donor Recognition Opportunities**
A leadership gift to name and endow the Brain Institute in perpetuity would provide the core financial resources necessary to advance the exciting mission of the Institute. Other recognition opportunities, including naming each of the Institute’s two dedicated floors in the Center for Science and Medicine, each of the nine Centers of Excellence and individual research programs and related needs within each Center of Excellence are also available beginning at the $100,000 level.

- Brain Institute
- Floors in Center for Science and Medicine
- Centers of Excellence
  - Disease-Specific Programs
  - Endowed Chairs
  - Endowed Fellowships
  - Advanced Scientific Equipment
  - Clinical Support Funds
  - Research Discovery Funds

To learn more about specific Brain Institute giving opportunities, please contact:

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