Institute for Translational Neuroscience at Northwestern Medicine

Les Turner ALS Center
THE INSTITUTES AT NORTHWESTERN MEDICINE

LES TURNER ALS CENTER AT NORTHWESTERN MEDICINE

Northwestern University Feinberg School of Medicine is known the world over for leading groundbreaking ALS (amyotrophic lateral sclerosis) research, and for providing exceptional care and support to patients and families living with this devastating and complex disease. At Northwestern, we continue to make scientific inroads and to champion the way forward, even though the battle to overcome ALS is daunting.

ALS, also known as Lou Gehrig’s disease, is a progressive and fatal neurodegenerative disease that often strikes people in the prime of their lives. Anyone can be diagnosed with ALS: a mother, a son, a sister, or a grandfather. There are an estimated 140,000 new cases of ALS each year worldwide, with an average survival of three to five years. The degeneration of nerves leads to muscle weakness and impaired speaking, swallowing, and breathing, eventually causing paralysis and death. There is no cure. Every 90 minutes, someone in the United States is diagnosed with ALS, and every 90 minutes, someone in the United States dies from ALS.

In 2014, we launched the Les Turner ALS Center at Northwestern Medicine with the transformational philanthropic support of the Les Turner ALS Foundation—a steadfast partner with Northwestern for more than 35 years. The Les Turner ALS Foundation is Chicagoland’s leader in the fight against ALS and is one of the nation’s preeminent organizations dedicated to treating and finding a cure for ALS. Our union with the Les Turner ALS Foundation has helped our scientists to establish themselves as forerunners in ALS research, ensuring that the future for those fighting ALS is brighter and accelerating the progress toward ending the disease.

Through the Les Turner ALS Center, we are offering hope and a pathway for the future of ALS care, research, training, and outreach. Currently, Northwestern and the Les Turner ALS Foundation are jointly leading a major effort to raise $10 million in funds to fully endow the Center in perpetuity.

The Les Turner ALS Center brings together all ALS research, including four world-renowned, dedicated ALS research laboratories, the pre-eminent Lois Insolia ALS Clinic, and other ALS research, clinical, and education activities at Northwestern, all under one comprehensive umbrella. The Center is a part of the Ken and Ruth Davee Department of Neurology and operates within the Institute for Translational Neuroscience at Northwestern Medicine.

Research to Find Answers and Provide Hope

Under the leadership of Director Robert G. Kalb, MD, chief of the Division of Neuromuscular Medicine and professor of Neurology, the Les Turner ALS Center continues to bring forth meaningful advances from the laboratories of Teepu Siddique, MD, Les Turner ALS Foundation/Herbert C. Wenske Foundation Professor, P. Hande Ozdinler, PhD, associate professor of Neurology, and Evangelos Kiskinis, PhD, assistant professor of Neurology, who collaborate within multiple areas of Northwestern, including physiology, chemistry, molecular biology, bionanotechnology, and urology.

**New Center Director: Robert Kalb, MD**

In December 2017, Dr. Kalb joined Northwestern as the first director of the Les Turner ALS Center, chief of the Division of Neuromuscular Medicine, and professor of Neurology.

A native of New York City, Dr. Kalb received his medical degree from Cornell University College of Medicine and completed a neurology residency at Yale University. His medical training was followed by postdoctoral laboratory research in neuroscience at Yale, where he was supported by a Clinical Investigator Development Award, and where he initiated his independent laboratory in 1990. Dr. Kalb has had continuous support from the National Institutes of Health (NIH) for the past 27 years, and has sat on various NIH grant review committees, including as chair of study sections. After more than 15 years at Yale, Dr. Kalb moved to the University of Pennsylvania, serving as the Joseph Stokes Jr. Research Investigator and professor of Neurology and Pediatrics. Dr. Kalb is a board-certified neurologist with a special expertise in the diagnosis and management of individuals with ALS.

Dr. Kalb’s laboratory studies the basic mechanisms underpinning ALS using genetically engineered mice, primary neuron cultures, C.elegans, and yeast disease models. His work has focused on the fundamental molecular processes that go awry during disease. For example, Dr. Kalb’s group discovered that derangement of energy metabolism is a key contributor to neuronal death in models of ALS. In addition, he identified two cell biological pathways (GTPase mediated vesicle trafficking and RAD23 mediated protein degradation) that can be targeted for ALS treatment. The Kalb laboratory is passionately committed to bending the arc of disease and finding a cure for ALS through innovation and collaboration.

In addition to his clinical and research focus, Dr. Kalb also is known as a passionate and popular educator and mentor to students, residents, and other trainees.
Dr. Teepu Siddique’s laboratory has made several groundbreaking discoveries in the field of ALS over the years, including the identification of significant genetic causes of ALS. More recently, a major breakthrough from Dr. Siddique and his laboratory was the discovery of a novel gene for typical Parkinson’s disease. This appears to be only the third gene definitively linked to confirmed cases of Parkinson’s disease. Currently, Dr. Siddique and his colleagues are applying a new imaging technology using a special microscope to visualize the brains of living animals through a cranial window made in a unique genetic mouse model of ALS/dementia. They will then be able to directly monitor the natural history of pathology, screen the effect of systemic administration or local application of promising drugs, gene editing, and delivery, and conduct many other manipulations in this living model of ALS/dementia. Dr. Siddique and his team believe that this will greatly expedite the identification of therapies for human ALS.

Dr. P. Hande Ozdinler’s research is aimed at understanding the cause of cortical motor neuron degeneration in ALS patients. Her laboratory focuses on the corticospinal motor neurons (CSMN), which are the neurons that are important for the initiation and modulation of voluntary movement. CSMN degeneration is a key feature in many motor neuron diseases, including ALS. Because movement is initiated by the brain, brain health is very important to maintain patient health and function. Dr. Ozdinler and her laboratory have made very important discoveries, including being the first laboratory in the world to make these brain neurons fluorescent so that they can be analyzed with precision and clarity. This allowed the group to develop a novel drug discovery approach, which was previously not available.

Dr. Evangelos Kiskinis’ research focuses on using patient-specific induced pluripotent stem cells (iPSC) to generate spinal motor neurons. This is a process where his team takes a blood or skin sample from a patient affected by ALS and “rewinds the clock” on these blood or skin cells, turning them into stem cells. His team then uses these patient-specific stem cells to generate spinal motor neurons, the exact kind of cell that is affected by ALS. Dr. Kiskinis is especially interested in studying the motor neurons of ALS patients with a particular mutation in the gene named C9ORF72. This “C9” mutation is by far the largest known genetic contributor to ALS disease, and understanding this genetic sub-type of ALS is a key to one day finding a cure that could potentially treat all ALS patients.

ALS Research Grant Program
The Les Turner ALS Center sponsors an ALS research grant program and awards grants to innovative ALS research projects. Funds have been awarded to Northwestern scientists in the research areas of basic science, ALS drug development, and genetics. These seed grants allow our researchers to collaborate with scientists around the world on new and novel ideas. The hope is that successful findings from these studies will enable Northwestern scientists to compete for large funding awards from the National Institutes of Health and other external funders. With these funds, they can pursue larger-scale studies in ALS.

Patient Care and Support that Makes a Difference
The Les Turner ALS Center and the Les Turner ALS Foundation are proud to bring comprehensive, world-class care and support to people living with ALS in the Chicago area and beyond. Northwestern was recently ranked by U.S. News & World Report as the number one program in Illinois and one of the top nine hospitals nationwide for neurology and neurosurgery, making it the top-ranked Chicago area hospital in this specialty.
Through the Les Turner ALS Foundation’s Support Services Team, individualized resources are available to patients and their families in coordination with care provided at the Lois Insolia ALS Clinic. Services offered include home visits with a Support Services Coordinator who provides valuable disease information and who can help with continuity of care; augmentative communication devices or durable medical equipment from its equipment bank; support groups throughout the Chicagoland area; a patient resource guide; and other personalized programs. For more information, please contact the Les Turner ALS Foundation at 847-679-3311 or visit lesturnerals.org.

The Lois Insolia ALS Clinic at Northwestern was established in 1986 with funds from the James V. Insolia Family Foundation and the Les Turner ALS Foundation—one of the first such clinics in the country, and the first in Chicago. Through the multidisciplinary clinic directed by Senda Ajroud-Driss, MD, associate professor of Neurology, Northwestern specialists are using a team approach to provide comprehensive treatment.

The clinic is dedicated to the total care and support of people with ALS, their families, and caregivers. During a visit, patients meet with several members of the multidisciplinary team, which includes five neurologists, two pulmonologists, and neuromuscular experts who provide genetic counseling, occupational therapy, speech therapy, respiratory therapy, dietetic counseling, and coordination of clinical trial studies. After 30 milestone years, the Lois Insolia ALS Clinic not only provides the pinnacle of care to those with ALS, but also remains the only fully multidisciplinary ALS clinic in the Chicagoland area.

THROUGH NORTHEASTERN MEDICINE, WE ARE CREATING A NATIONAL EPICENTER FOR ALS HEALTHCARE, EDUCATION, RESEARCH, COMMUNITY SERVICE, AND ADVOCACY.

Northwestern Medicine

Northwestern Memorial HealthCare and Northwestern University Feinberg School of Medicine are seeking to impact the health of humankind through Northwestern Medicine. We aspire to be the destination of choice for people seeking quality healthcare; for those who provide, support, and advance that care through leading-edge treatments and breakthrough discoveries; and for people who share our passion for educating future physicians and scientists. Through the Les Turner ALS Center at Northwestern Medicine, we are enhancing the care provided to people with ALS today and in the future and furthering scientists’ understanding of this very challenging disease. Each day, we recognize that every positive contribution we have made to ALS discovery, care, training, and outreach has been made possible by donors who have continued to entrust us with their philanthropic support. We invite interested friends to join us in advancing our Center through gifts of outright support and endowment.

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