INSTITUTE FOR TRANSLATIONAL NEUROSCIENCE AT NORTHWESTERN MEDICINE
CENTER FOR RARE NEUROLOGICAL DISEASES
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Dimitri Krainc, MD, PhD
Lysosomes serve as recycling organelles in neurons. They remove debris and toxic waste that accumulate in neurons during normal neuronal activity. When lysosomes do not work at full capacity (e.g. in neurodegenerative diseases), cells accumulate these toxic products and debris. Dr. Krainc’s goal is to improve lysosomal function and prevent toxic accumulations and the formation of Lewy bodies, plaques, and tangles that are seen in Parkinson’s disease, Alzheimer’s disease, and other neurodegenerative diseases.

By focusing on rare lysosomal diseases to examine more common neurodegenerative disorders, Northwestern and the Center for Rare Neurological Diseases have an unprecedented opportunity to understand the molecular basis of neurodegeneration and identify novel therapeutic targets. In pursuing the development of targeted therapies for Parkinson’s disease, Alzheimer’s disease, and other dementias, we have an opportunity to revolutionize care for patients with neurodegenerative diseases just like what has been and is being done for patients with cancer.

For example, if a patient has Parkinson’s disease that is in part caused by deficient activity of a particular lysosomal enzyme, that patient will be given an activator of the enzyme as the therapy. The concept of matching a drug to a person’s illness is generally referred to as “personalized medicine,” a concept that once seemed futuristic, but that now reflects a growing segment of the treatments in medicine, especially in cancer. The formation of the Center for Rare Neurological Diseases will position Northwestern Medicine to become a leader in launching a new wave of personalized treatments for neurodegenerative diseases.

The Center for Rare Neurological Diseases will bring together investigators from various fields of expertise within the Northwestern research and clinical community. Laboratories within the Center for Rare Neurological Diseases will provide training opportunities for undergraduates, graduate and medical students, and postdoctoral fellows. The robust interfaces and collaborations that occur within the Center for Rare Neurological Diseases will undoubtedly lead to clinical advances that benefit patients and their families locally, nationally, and across the globe.
Northwestern Memorial Hospital and Northwestern University Feinberg School of Medicine are seeking to impact the health of humankind through Northwestern Medicine. We aspire to be the destinations 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. Our commitment to transform healthcare and to be among the nation’s top academic medical centers will be accomplished through innovation and excellence.

The Center for Rare Neurological Diseases is an important part of our new Institute for Translational Neuroscience at Northwestern Medicine. The Institute for Translational Neuroscience will empower creative scientists and clinicians to translate a deep and rigorous understanding of disease mechanisms into new preventives, diagnostics, and therapeutics for use in diseases of the nervous system.

The Center for Rare Neurological Diseases will offer a rich environment for collaboration in the development and testing of novel therapies. At Northwestern, we have a history of utilizing innovative biology as a platform for the development of mechanism-based therapeutic approaches. Our institution has an outstanding clinical trials center and multidisciplinary team members who are leaders in their respective fields.

As we move forward in creating the Center for Rare Neurological Diseases, our utmost priorities are to:

- Conduct innovative discovery research to identify molecular and genetic links between rare and common disorders, focusing on neurodegeneration.
- Promote collaborative efforts across departments, institutions, and pharmaceutical industry and voluntary organizations to develop shared resources for discovery research and clinical trials.
- Develop innovative clinical trials to test targeted therapies on smaller populations of patients.