

An update from the research team...

UMN Udall Center and Deep Brain Stimulation (DBS) Research

Dr. Gregory F. Molnar, PhD
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The University of Minnesota was recently named a Morris K. Udall Center of Excellence for Parkinson's Disease Research by the National Institutes of Health (NIH) (<http://www.health.umn.edu/news-releases/university-minnesota-named-udall-center-excellence-parkinsons-disease-research>).

This is a proud accomplishment by the broad, multi-disciplinary team at UMN led by our site director, Professor Jerrold Vitek MD, PhD, Professor and Chair of the Department of Neurology. UMN joins a select national network of nine Udall centers aimed at better understanding Parkinson's Disease (PD), advancing treatments and serving people with movement disorders and their families. The goal of the UMN Udall Center is to improve DBS treatment for Parkinson's Disease, Dystonia and other movement disorders.

The UMN Udall Center team will use a variety of brain recording techniques, clinical measurements, high resolution MRI, and computer modelling to optimize DBS therapy settings. New DBS technologies will also be explored in these studies; new DBS leads that shape the stimulation better and new devices that sense signals from the brain and delivery special types of electrical therapy pulse patterns.

The journey to the Udall Center accomplishment began years earlier Vitek returned to Minnesota as the Chair of Neurology with the goals building a strong clinical department, assembling a collaborative PD researchers, and establishing the Neuromodulation Research (<http://nmrc.umn.edu>). The U's clinical program is built on close collaboration between the Neurology and Neurosurgery departments in partnership with researchers in biomedical engineering and neuroscience. A Minnesota state investment as MnDRIVE (<https://mndrive.umn.edu/brain>) also further built up resources, infrastructure and faculty expertise at the U for treating brain conditions with neuromodulation therapies, like DBS.



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I'm also new to UMN, joining the Department of Neurology this past Winter and now the Udall Center too. I first met Dr. Vitek when I was training in DBS in Toronto, Canada, nearly 20 years ago. Then afterward I partnered him and also the UMN for many years when I was Director of Neuromodulation Research at Medtronic. It was certainly an honor when Dr. Vitek asked me to join the department and work with such a special team of movement disorder researchers. I am looking forward to returning to working directly with people and their families again. Another special part of this journey is that the new DBS technologies that I mentioned above were first created and developed by my wife, Gabi, and I while we worked at Medtronic and were initially tested at UMN. In my new role, I hope to build this translational focus to our program and help make sure our Udall discoveries will get on track to benefit patients of all types.

What's next at UMN?

We continue to expand our preclinical and clinical research programs focused on improving DBS for people with PD, Dystonia, Essential Tremor, and more. Important research questions remain, including: What are the changes in the brain function associated with PD/Dystonia/ET? How does DBS work? How can we better help people? How do we improve DBS? These are just some of the questions we continue to tackle as a collaborative team.

One area of innovation is in the actual DBS operating room procedure. We are currently evaluating the ability of our exclusive 7T MRI and analysis from Dr. Noam Harel at UMN's [Center for Magnetic Resonance Research \(CMRR\)](#) to predict the optimal DBS targeting and validating it to Dr. Vitek's world renowned brain mapping technique. Dr. Michael Park is pioneering the use of robotics to further improve DBS. If these explorations prove valuable it will be possible in the nearer future to conduct a *full asleep* DBS procedure that is faster and easier for patients, opening up this life changing therapy for more people with movement disorders around the world as well as the treatment of new conditions like epilepsy, dementia, and depression.

My hope is that the UMN Udall Center will serve as a regional hub for patients and their families for many years to come.

Sincerely,

Gregory F. Molnar, PhD
Associate Professor, Department of Neurology
Director – Deep Brain Stimulation Research Program
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The Kurt B. Seydow Dystonia Foundation is proud to have contributed funding for the research being performed at the University of Minnesota Department of Neurology. With the help of our generous donors and contributors, the KBSDF will continue to offer funding and grants to further education and research for Dystonia and related movement disorders.