

**Shaking with Laughter and the Cleveland Brain Health Initiative**

Brain health is a primary concern the world over. From childhood disorders like autism, traumatic brain injuries in adolescents and young adults, to degenerative conditions like Alzheimer’s disease (AD) and Parkinson’s disease (PD) affecting the population, no stage of life is immune to brain health concerns. Fortunately, Cleveland is home to some of the best and brightest researchers and physicians who work tirelessly toward solutions for brain health. Case Western Reserve University (CWRU) has laid an extensive foundation for cooperation in pursuit of medical discoveries among its School of Medicine faculty and clinical partners throughout the City of Cleveland, including University Hospitals, Cleveland Clinic, MetroHealth and the Louis Stokes Cleveland VA Medical Center.

Building upon this foundation and seizing a strategic opportunity to dramatically accelerate the research and translation process, CWRU formally established the citywide Cleveland Brain Health Initiative (CBHI) in 2017. Since then, citywide efforts and community connections have brought the collaborative vision of the CBHI to life, nurturing existing partnerships, exploring opportunities for growth, and streamlining communication among CBHI researchers and clinicians at the partner sites. The formalization and promising development of the CBHI has established CWRU as the research hub for brain health in Cleveland, with translational trials and clinical care at participating hospital sites.

Together, the CBHI is replacing competition with cooperation in search for better patient outcomes, enhancing the quality of research and care taking place in Cleveland, advancing understanding of myriad diseases and disorders, and disseminating discoveries made in Cleveland throughout the world.

**Philanthropy in Action**

The success of the CBHI to date is a function of generous support from sources ranging from the National Institutes of Health, to community and family foundations, to generous individuals. Notable among this cadre of support is the ongoing engagement of ***Shaking with Laughter***, a local fundraising endeavor to support Parkinson’s disease research founded by Karen Jaffe, MD and her husband Marc. Personally impacted by the disease, the Jaffes aimed to present a single fundraiser with a goal of $20,000. Since its founding in 2011, however, Shaking with Laughter has raised nearly $1.2 million to support PD research.

Concurrent with Shaking with Laughter’s efforts, additional PD focused fundraising was attained in the form of the ***Jaffe, Armsden, Butler (JAB) Endowed Fund***. This fund, established in 2020, provides funding to prioritize research projects focused on a cure and dramatic symptom reduction for persons with this disease.

As the School of Medicine and the Jaffes prepare to host the 2023 Shaking with Laughter fundraiser in early April, the School of Medicine is pleased to highlight the impact of this generosity by briefly describing two research projects that were directly supported by these vitally important partnerships in the past year.

**Project Summaries**

With funds raised by Shaking with Laughter and the JAB Endowed Fund, the School of Medicine supported CBHI member research in Parkinson’s disease in the laboratories of two accomplished researchers over the past year. Support of this nature enables promising early-stage research to advance to a phase where large-scale foundation and government grants are more attainable and is a key piece in the pipeline of discovery.

*Fatema Ghasia, MD – Environmental Navigation*

According to Dr. Ghasia, up to 20 percent of PD patients develop diplopia [double vision], and that occurs because of strabismus and impaired vergence. Vergence is described as the eye movements people make routinely while viewing objects at different distances and depths. In the study funded by donor support of the CBHI, Dr. Ghasia and her collaborators will examine how Parkinson’s patients navigate their environment – how they use their eyes to “search and scan” their surroundings.

Dr. Ghasia’s role is to assess eye movements in patients before the implementation of deep brain stimulation (DBS), while DBS is on and while it is off. “We have the capability to record the eye, head and limb movement simultaneously,” she says. “This allows us to independently assess the abnormalities of the eye movements and tease apart the eye movement abnormalities from the head oscillations and tremor that are frequently seen in Parkinson’s patients.” The team approach is to investigate the use of DBS to see its effect on vergence and eye movements, in particular binocular coordination of eye movements, says Ghasia. “From the clinical perspective, the studies would provide valuable guidance to understand what the optimal stimulation parameters are for better motor outcomes in Parkinson’s disease patients.” The collective effort of Shaikh’s research projects has great potential.

*Dawn Taylor, PhD*

Dr. Taylor has been a pioneer in the development of brain-computer interfaces for 20 years and continues to make contributions to the understanding of brain function and to the development of treatments to compensate for brain injuries. She is an Assistant Professor of Biomedical Engineering at CWRU and, like Dr. Ghasia, a member of the Cleveland Functional Electrical Stimulation (FES) Center. The supported area of her study is improving brain-stimulation technologies used to treat Parkinson’s disease and understanding how exercise and sensory feedback training can help reduce its symptoms.

She serves as a member of several industry groups, including the Society for Neuroscience, International Functional Electrical Stimulation Society, Brain Computer Interfacing Society, Biomedical Engineering Society and Women in Neural Engineering.

**Looking Ahead**

With tremendous gratitude for all of its partners, the CBHI is eager to build on the successes of Shaking with Laughter and continue to secure critically important funding for ongoing PD research. Despite challenges brought on by the pandemic, our dedicated team of world-class researchers and clinicians has achieved a great deal since the launch of the CBHI, and the potential for life-changing breakthroughs is limited only by the ability to fund cutting-edge research that will minimize, treat and ultimately cure PD and other neurodegenerative conditions.

To learn more about the CBHI or Shaking with Laughter and how you can get involved, please contact the School of Medicine’s Heather McNally, Senior Director of Strategic Events, at heather.mcnally@case.edu or 216-368-5853.