



July 29, 2014

This year, the VCU Parkinson's and Movement Disorders Center (PMDC) has moved closer to our goal of putting Parkinson's and related disorders into the history books. Thank you for all that you have done and continue to do to help us. We have made significant progress in several of our research lines, both clinical and basic laboratory. These projects are showing positive results, and we are confident that the results from these research projects can be rapidly "translated" into meaningful therapies. Here are the highlights from our most promising work.

Basic Laboratory Projects:

1. *Generating human stem cells and neurons from blood samples.* The ability to produce "inducible", pluripotential stem cells (iPSC's) from patient samples both bypasses the complex ethics of embryonic stem cell research and allows for the creation of cell lines from patients with specific diseases. The iPSC's generated from PD patients and patients with other degenerative diseases like Alzheimer's and ALS can be turned into nerve cells that can then be studied in the laboratory. PMDC investigators are in a unique position to determine how these stem cell-derived nerve cells resemble (or not) nerve cells in brains of persons who died with PD or other degenerative conditions. This is a very important path to pursue. If the derived nerve cells resemble nerve cells found in diseased brains, then we will have an excellent model to:
 - a. Determine how nerve cells get sick and die
 - b. Create advanced models of neurodegenerative diseases ("brain disease in a dish")
 - c. Test drugs on a reliable platform. This last point is crucial because available cell and animal models of degenerative diseases have failed repeatedly to predict whether a drug can slow the progression of disease in humans.

Thanks to a generous anonymous gift we were able to outfit our stem cell lab to produce iPSC's. We have been successful and are now turning the iPSC's into neurons. We have established a collaboration with investigators at Northwestern University to obtain a genetic tool that will allow us to create special nerve cells from iPSC's that are representative of the neurons that die in Parkinson's patients who get dementia.

2. *Neuroprotective drug development.* We are working with a pharmacologist investigator at the University of Crete to develop his drugs that mimic the actions of an important protective brain protein, nerve growth factor. These small molecule drugs have great potential to stop cell death and restore health in neurons from patients with Parkinson's, Alzheimer's, ALS and other degenerative conditions. We are testing his drugs in human neurons we make from iPSC's derived from white blood cells. We hope to have one of these drugs into early human trials within 2 years.

Clinical Research Projects

1. *Testing of cognitive training intervention to treat Mild Cognitive Impairment in PD.* This exciting research program was developed by Dr. Sarah Lageman, a clinical neuropsychologist at the PMDC. Donor support was leveraged to obtain external funding by the Michael J. Fox Foundation to support this work. The goal of this study is to evaluate the practicality and effectiveness of memory and problem solving training compared to supportive therapy in individuals with PD with Mild Cognitive Impairment (MCI) and their support persons. MCI is a diagnosis associated with increased risk for developing dementia. Preliminary data, which was presented at the World Parkinson Congress in October 2013, has been very encouraging and suggests that this approach can help reverse cognitive decline in PD. Her treatment paradigm could have a substantial impact on reducing the severity of mild cognitive impairment and dementia and need for institutional care in PD patients in Virginia.
2. *New therapeutic option for gastrointestinal problems in PD.* Dr. Leslie Cloud has partnered with RaQualia Pharma, Inc., the maker of the drug RQ-00000010 to assess the potential of the drug as a new treatment option for gastroparesis associated with Parkinson's disease. Dr. Cloud hopes to find an improvement in upper and possibly lower GI motility after dosing with RQ-00000010. A secondary aim is to determine if there is an improvement in the pharmacokinetics and pharmacodynamics of orally-administered levodopa after dosing with RQ-00000010. Dr. Cloud has submitted a sponsor-investigator Investigational New Drug (IND) application to the US Food and Drug administration to study this new drug. When approved, the clinical trial will begin.

We also held our inaugural Movin' & Shakin' 5K race this past May. It was a huge success, and thank you to those who participated. Over 500 participants gathered to raise awareness and funds for movement disorders. This event raised \$64,000 in net proceeds to fund research and services offered by PMDC. Be sure to hold May 2, 2015 on your calendar for next year's event.

All of this was made possible by you – you have helped change the lives of individuals and families afflicted with Parkinson's and movement disorders. All PMDC programs depend on your continued support. For us to continue to develop and offer our unique approach to clinical evaluation, treatment, and clinical-translational research, your financial partnership with us is essential. As a participant in the creation of the PMDC, you have the gratitude of not only all of us who work here, but also of those in the larger Parkinson's and movement disorder community who benefit, and will continue to benefit, from your support.

Please don't hesitate to contact me to share your ideas and suggestions.

With all best regards,

Sincerely,



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