



PARKINSON'S DISEASE
RESEARCH,
EDUCATION AND CLINICAL
CENTERS

ANNUAL REPORT
2023

[Document subtitle]

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National PADRECC Director

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PADRECC 2023 Annual Report

Introduction: The Parkinson's Disease Research Education and Clinical Centers (PADRECCs) were established through RFP in 2001, then amended into Public Law 109-461. There are six Centers of Excellence: Philadelphia, Southeast (Richmond), Houston, Northwest (Portland/Seattle), San Francisco, and Southwest (West Los Angeles).

Our Mission: To provide comprehensive, state-of-the-art care to assure the highest quality of life for Veterans afflicted with Parkinson's disease and related Movement Disorders (PDMD); to advance investigation into the cause, treatment, and cure for those disorders; and to enhance understanding of those disorders by developing education programs for practitioners, patients, and caregivers.

Brief Description: The PADRECCs provide access to comprehensive, advanced medical and surgical care for Veterans afflicted with PDMD.

The focus of our educational and training programs is sharing contemporary information on the management of PDMD with clinicians, patients, and their families.

The PADRECC's research program focus is on advancing investigations into the epidemiology, treatment, prevention, and basic pathophysiology of PDMD.

Complementing the research and clinical care at the PADRECCs is the National VA Parkinson's Disease Network (formerly known as the National VA Parkinson's Disease Consortium), a professional consortium comprised of VA physicians, nurses, therapists, and pharmacists with interest and expertise in the field of movement disorders. The PADRECCs launched the consortium (network) in 2003 to expand Parkinson's disease awareness and education across VA. It offers peer networking, consultative services, education, and training. PADRECC Associated Sites (PAS) (formerly known as Consortium Centers) are VA clinics that offer specialized Parkinson's disease and movement disorder specialty care to Veterans who cannot travel to a PADRECC. These centers are staffed by movement disorder specialists or clinicians with vast experience and/or interest in the field of movement disorders. Together, the six PADRECCs and over 50 PASs provide convenient and state-of-the-art care to Veterans throughout the country.

FY23 Administrative Highlights: The National Neurology Program Office formally introduced John Duda, MD as the National PADRECC Clinical Lead and Dawn McHale as the Acting National PADRECC Administrator. These positions were created, at the request of VA Central Office, to provide oversight of the national PADRECC program and to standardize the national reporting structure throughout all the neurology centers of excellence.

With the national structure in place, change management was introduced to the PADRECCs to assist in the re-organizational shift from Specialty Care Program Office organizational chart to that of the PADRECC host facilities. The re-organization would also affect how funds are disbursed to the facilities. Three members of the PADRECC leadership team completed the three-day VHA Change Practitioner Training, while several other leaders completed the VHA Change Management Training. PADRECC leadership worked closely with change management champions and the national neurology program office to develop facility level communication strategies and memorandums of agreement to move the re-organization forward. After thoughtful consideration, Specialty Care Program Office is now leading this effort, focusing on communication and slowly rolling out the re-organization at the VISN level.

In February 2023 the PADRECCs received an unexpected disbursement of \$2,000,000. Given that the PASs have been an unfunded initiative since its inception in 2006, the PADRECC utilized most of those funds to support many of the PASs. The funds supported clinical FTEE, equipment, education, and travel to CEU programs. The funds also provided Cognitive Behavior Therapy (CBT) training to an additional six psychologists or social workers in preparation of expanding the CBT for Depression in PD program to all six PADRECCs.

Specialty Care Program Office and PADRECC entered into an MOA with SALIENT to evaluate the program based on these key objectives: (a) develop the PD cohort from FY2018-2022, (b) describe the characteristics and utilization

of Neurology/PD Specialty Care, and (c) conduct geospatial mapping and multivariable analyses regarding this PD cohort in FY22. Below is the final report completed in October 2023.



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FY23 Education Highlights

Professional Education: Training the next generation of neurologists, movement disorders and ancillary specialists.

The PADRECCs host clinical rotations for medical students, residents (neurology, pharmacy, PM&R and psychiatry) and fellows (geriatric, psychiatry, palliative care, PM&R and geriatric psychiatry). Northwest, Philadelphia, Southwest and San Francisco PADRECCs collaborate with the Office of Academic Affiliation to participate in the Advanced Fellowship in Movement Disorders Program. San Francisco has an additional slot for fellowship in Stereotactic and Functional Neurosurgery. Each fellow is required to complete a rigorous curriculum which includes didactic clinical training, mentored clinical outpatient and inpatient service, mentored research, and teaching.

During FY23: The PADRECC program trained **22** Movement Disorders Fellows and provided clinical rotations for **165** residents, **170** medical students and **25** clinical specialty fellows. PADRECC clinicians serve as faculty for the neurology residency program didactic lecture series at the affiliate university. In addition, PADRECC staff gave **166** lectures at local, regional, national, and international conference and symposia, participated in Journal Clubs and led video case conferences. The Philadelphia PADRECC monthly Video Case Conference has been expanded to include all VA providers and continued to grow in participation in 2023.

PD Rehab Community of Practice—This is a collaboration with rehabilitation subject matter experts across the VA with interest in PD with the goal to develop a platform to share evidence-based knowledge to inform PD specific rehab practices, provide access to up-to-date resource, program success and opportunities for improvement.

Other national education resources for providers and trainees can be found on the PADRECC website: [Parkinson's Disease Research, Education and Clinical Centers Home \(va.gov\)](#).

Patient Education: Sharing contemporary information on the management of Parkinson's disease with Veterans and their families.

The PADRECCs multi-faceted patient education program provides relevant information on disease management to Veterans and their family in several different ways. Education starts at diagnosis – clinicians have thoughtful conversations with the Veteran and family to explain the disease and ascertain appropriate, personalized treatment. Written material is available in the clinic for Veterans and family members and the PADRECC website is full of helpful information. Veterans and their caregivers have access to support groups and formal education programs planned by the PADRECCs as well as programs provided by our community partners. In FY23 PADRECC held **38** VA support group meetings and **17** patient education programs; PADRECC providers presented at **21** community support group meetings and **13** community patient programs.

The Department of Veterans Affairs partnership with the Parkinson's Foundation continues to be productive and beneficial for our Veteran population. The objectives of the partnership are to:

- 1) Increase Veterans' and providers' access to PD information and resources.
- 2) Educate VHA staff on PD disease management and modifying therapies.
- 3) Improve service coordination and navigation for Veterans with PD.

Activities of the partnership during FY23

- MOA renewed through 2027.
- 1910 unique Veterans and their care partners who registered for an event, requested resources, or contacted the Parkinson's Foundation Helpline in FY 2023 (10/1/22-8/31/23)
- 6 Regional events
 - Veterans and Parkinson's: Exercise, Nutrition and Wellness – Speakers Dr. John Duda and Dr. James Morley, Philadelphia PADRECC - 312 registered.
 - Surgical Options for Veterans Living with Parkinson's –Speakers: Dr. Scott Lewis and Dr. Robert McGovern, Minneapolis VA, PAS - 66 registered.
 - Veterans and Parkinson's: Managing Cognitive Changes –Speakers: Megan Gomez, PhD, Clinical Psychologist, VA Long Beach Healthcare System, PAS – 35 registered.
 - Veterans and Parkinson's: In person event, Columbus, OH – 51 attendees.
 - Veterans and Parkinson's: Resources for Veterans with Parkinson's- Gretchen Glenn, Philadelphia PADRECC co-presenter – 913 registered.
 - Veterans and Parkinson's: Managing Anxiety, Depression and Apathy – Speaker -Dr. Megan Gomez, VA Long Beach Healthcare System, PAS – 612 registered.

FY23 Research Highlights

PADRECC research: To advance investigation into the cause, treatment and cure for Parkinson's disease and related disorders.

PADRECC's groundbreaking research continues to be published in scholarly journals. Through these efforts, the VA has been internationally recognized as a principal player in the field of movement disorders and has joined forces with other key organizations such as the Department of Defense, Centers for Disease Control and Prevention, Michael J. Fox Foundation, and the Parkinson's Foundation. In FY2023 the PADRECC investigators had **72** funded research projects (**44** clinical, **8** health services, **11** epidemiology and **9** basic science), published **98** articles in scholarly publications, and presented 37 posters at national and international conferences or symposia.

Multi-center research that PADRECC Investigators participated in during FY2023:

- Multicenter, Randomized, Double-Blind Comparator Study of Antipsychotics Pimavanserin and Quetiapine for Parkinson's Disease Psychosis (C-SAPP Study) – VA CSP #2015
- The Veterans Parkinson's Disease Genetics Initiative (Vet-PD) – Michael J. Fox Foundation
- Behavioral or Solifenacin Therapy for Urinary Symptoms in Parkinson's Disease – VA R&D Merit
- Rural Veterans with Depression and Parkinson's Disease: A Telehealth Psychotherapy Solution. – VA Office of Rural Health
- PPMI - The Parkinson's Progression Markers Initiative – Michael J. Fox Foundation
- ENROLL-HD: A Prospective Registry Study in a Global Huntington's Disease Cohort -CHDI Foundation, Inc.

FY23 Clinical Highlights

There has been increasing recognition that PD involves both motor and non-motor symptoms and that the best care requires a multi-disciplinary approach. Motor symptoms include tremor, stiffness, slowness and gait dysfunction. The most common non-motor symptoms in Veterans from the SALIENT report include falls (20.3%) depression (32.8%), PTSD (20.3%), anxiety (20.1%), dementia (31.4%), sleep disorders (40.3%), constipation (25.8%) and dysphasia (17.9%). PADRECCs have established nationally recognized indicators of quality care (Cheng et al. *Mov Disord.* 2004;19:136-50) and have proven that specialist involvement in care and multidisciplinary care improves outcomes (Carne et al. *J Rehabil Res Dev.* 2005;42:779-86; Carne et al. *NeuroRehabilitation.* 2005;20:161-7; Cheng et al. *Parkinsonism Relat Disord.* 2008;14:8-14). The PADRECC system of care provides Veterans with Parkinson's disease and related movement disorders optimized care, in the appropriate location, time and capacity as dictated by the natural progression of disease. This not only includes access to state-of-the-art diagnostic and treatment modalities through the course of the disease, but also access to social work services, spiritual care

services and interdisciplinary care involving access to speech therapy, occupational therapy, physical therapy, and other physician specialists to care for the specific needs of Parkinson's disease and movement disorder patients in an integrated fashion. PADRECCs deliver comprehensive care with special expertise in chemodenervation, DBS surgery, neurostimulator programming, intestinal levodopa administration and telehealth.

Each PADRECC has one or more of the above disciplines in their clinic and have access to all the above therapies. However, the **Richmond PADRECC** has managed to organize the disciplines and has implemented an **Inter-disciplinary Treatment (IDT) clinic**. The IDT clinic is held one day a week for a four-hour block, during which three of their Veterans are assessed by appropriate therapists and or disciplines either face to face or VVC. At the end of the session the team meets to discuss treatment plans and needs. Veterans who have been evaluated (120) in the IDT clinic have provided positive feedback.

The **Houston PADRECC's** interdisciplinary approach to DBS care includes a monthly meeting with neurosurgery, social work services and beneficiary travel to ensure proper arrangements are in place for Veterans traveling long distances who are scheduled for DBS surgery.

In addition to PD, the PADRECCs provide specialized care for Veterans with other movement disorders as well. A functional movement disorder (FMD)(sometimes referred to as psychogenic movement disorders) occurs when you experience unusual, involuntary movements or body positions. It is caused by a problem with the way signals are sent throughout the brain. The **Northwest PADRECC (Portland/Seattle)** is tackling this disorder using a combination of PT and cognitive behavioral therapy (CBT) for Veterans with (FMD). In 2023, Dr. Mack also spearheaded the development of a workbook-based therapeutic care program for people with FMDs, that he is now offering to Veterans. In addition, Dr. Joel Mack provides education on FMD locally and nationally through lecture speaker series. He also assists other VAMCs with identifying FMD in Veterans and recommending strategies to assist with treatment.

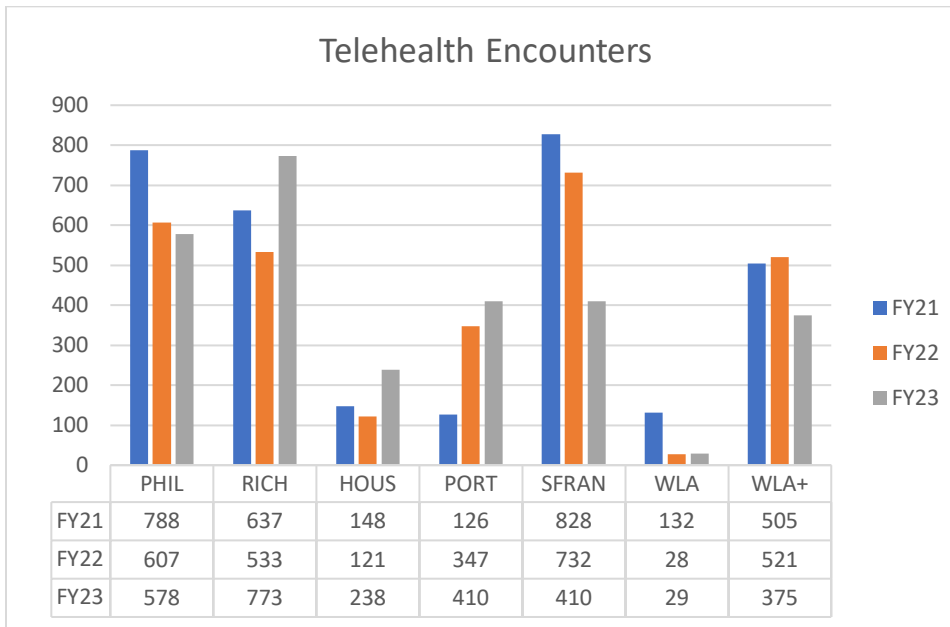
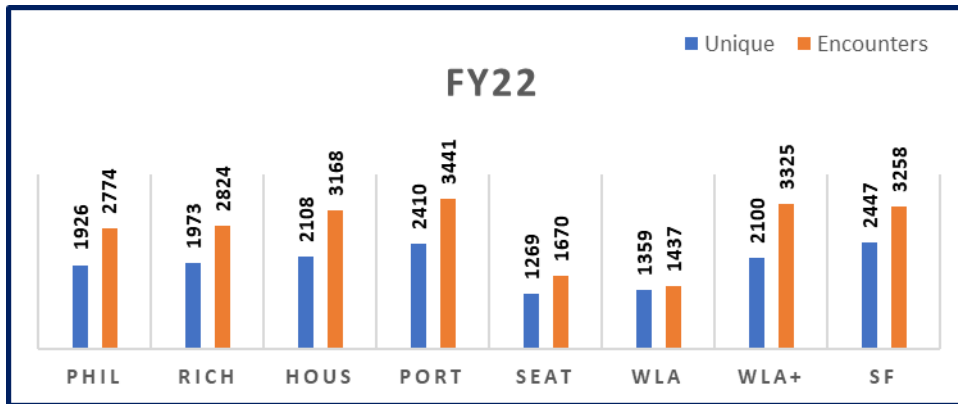
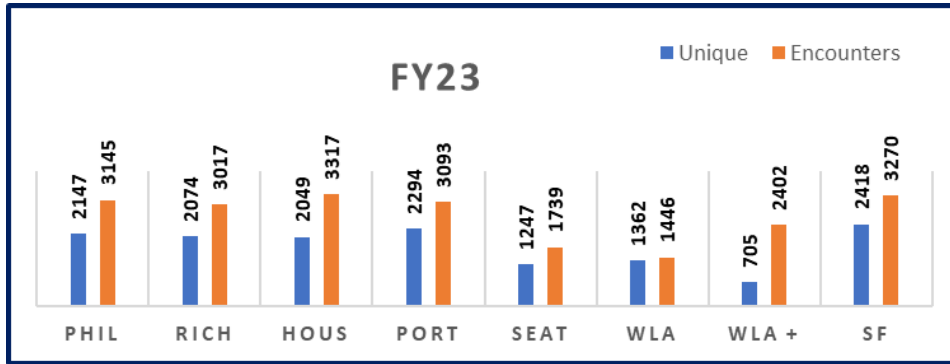
The **San Francisco PADRECC** is rebuilding its unique multidisciplinary **palliative care** clinic to improve the quality of life for Veteran's with advanced PD dealing with significant non-motor symptoms. The team is comprised of a palliative care specialist, nurse, social worker, chaplain and other ancillary professionals depending on the needs of the Veteran. The team works with the Veteran and family to provide medical, social, emotional, and practical support.

The **Philadelphia PADRECC's Brain Wellness** Clinic embraces Whole Health principles by teaching Veterans with PD and other chronic nervous system disorders how dietary choices, fitness routines, stress management techniques, sleep routines and social connection can affect their brain health. Veterans who participate in the clinic get a thorough introduction to the benefits of lifestyle modifications for brain health and, jointly with Dr. Duda, develop a plan for modifying their own lifestyles accordingly. Regular follow-up is conducted to assess progress and modify or adopt new plans.

Continuing with the Whole Health principles, the **West LA PADRECC** utilizes a holistic approach to treating the whole Veteran, not just their movement disorders. Providers assess and address the unmet psychosocial needs of Veterans with PD such as loneliness and stigma. Resources are provided to Veterans and their family to help combat these feelings.

Mental Health in PD – Depression and anxiety are two of the most reported non-motor symptoms by Veterans. To address this, two PADRECC psychiatrists, Dr. Daniel Weintraub and Dr. Joel Mack, partnered with the VA National Expert Consultation & Specialized Services – Mental Health(NEXCSS-MH) formerly known as the National Tele-mental Health Clinic, to provide consultative service to 56 VAMCs for Veterans with neuropsychiatric complications. In addition, the PADRECCs provided funding to train additional psychologists or social workers in CBT to expand the CBT for Depression in PD program to all six PADRECCs.

Clinical Data



Appendix A - SOUTHWEST (WEST LA) PADRECC

Publications

The Relationship between Meaning in Life and Apathy in People with Parkinson's disease: A Cross-sectional Analysis. McDaniels, B., Lee, B., Rumrill, S., Endereka-Great, K., & Subramanian, I. *Aging Clinical and Experimental Research*. 2023 Jan;35(1):91-99. doi: 10.1007/s40520-022-02275-w. Epub 2022 Oct 21.

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A Prescription for Wellness in Early PD: Just What the Doctor Ordered. McDaniels B, Pontone GM, Keener AM, Subramanian I. *J Geriatr Psychiatry Neurol*. 2023 Mar 13:8919887231164358.

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Webinars and Blogs

Subramanian, I. Medscape Neurology- Blog and webinar-Wellness For PD -2023
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Subramanian, I. Medscape Neurology- Blog and webinar- Contemplative medicine-
<https://www.medscape.com/viewarticle/982008>

Subramanian, I. Medscape Neurology- Blog and webinar-PD and trauma-
<https://www.medscape.com/viewarticle/989130>

Subramanian, I. Medscape Neurology- Blog and webinar- AAN highlights-
<https://www.medscape.com/viewarticle/990629>

Subramanian, I. Medscape Neurology- Blog and webinar-PD Biomarkers-
<https://www.medscape.com/viewarticle/992674>

Subramanian, I. Medscape Neurology- Blog and webinar-WPC 2023 highlights-
<https://www.medscape.com/viewarticle/994630>

Subramanian, I. Medscape Neurology- Blog and webinar-Burnout in Neurology
<https://www.medscape.com/viewarticle/992885>

Professional Education – Presentations

Subramanian, I.

“Integrative Approaches to Blepharospasm”- BBERF- Phoenix, Az- Oct 2022

“Wellness in PD”- Ukrainian Neurological Society Virtual Conference- Nov 2022

“Cultural Considerations in Palliative Care in PD- “PDPal Conference”- U of Padua, Italy- Nov 2022

“Cultural context of PD Palliative Care” Webinar Series- U Of Padua/PD Pal- Dec 2022

“Loneliness in PD”- MIRECC/PADRECC Symposium- Virtual- March 2023

“Social Connection in PD”- AAN-Boston, April 2023

“Loneliness in PD”- AAN- Boston, April 2023

“World Parkinson Congress”- Barcelona, Spain-July 2023

Keener, A.

“Enabling Parkinson’s Disease Data Collection.” Michael J. Fox Foundation for Parkinson’s Disease PD Data Summit. New York, New York. November 2022.

“The Genetic Landscape of Parkinson’s Disease” Invited Speaker, West LA VA Neurology Grand Rounds Jan, 2023.

C138 - Skills Workshop: EMG Guided Injections: Spasticity and Dystonia Small Group Facilitator, Lower Limb Injections – AAN Annual Meeting, Boston, MA Apr 2023

Lessig, S “Medical Education and Residency Clinical Educator Track” UCSD Neurology Department Grand Rounds 6/9/23.

Pirio Richardson S

“Botulinum toxin for tics” TOXINS 2024 7th International Conference Berlin, Germany 2023.

“Patient Centered Outcomes for Voice Disorders” Next-Generation Clinical Phenotyping and Pathophysiology of Laryngeal Dystonia and Voice Tremor Mass Eye and Ear, Boston, Massachusetts 2023.

“Clinical Trials: What are the obstacles to testing new options?” 6th International Dystonia Symposium Dublin, Ireland 2023.

“Patient-Centered Outcomes Project” Dystonia Coalition 11th Annual Meeting Dublin, Ireland 2023.

Video Workshop on “Diagnostic Approach to Patients with Hyperkinetic Syndromes” XXVIII World Congress on Parkinson’s Disease and Related Disorders Chicago, Illinois 2023.

“Is There Evidence for Sleep Disturbance in Dystonia?” Non-Motor Symptoms of Dystonia Dystonia Medical Research Foundation Virtual Meeting 2023.

Presentations to Health Professional Trainees

Subramanian, I: Geriatrics Lecture WLA VA- “Parkinson Disease Treatment” – WLA VA, Jan 2023

Lessig, S

“DBS Programming Basics Part I and Part II” Fellow didactics, 8/25/23

“Movement Disorders Billing Basics” Fellow didactics, 6/19/23

“Communication of Diagnosis of Functional Neurologic Disorder” Residency didactics, 6/19/23

“Tardive syndromes” Fellow didactics, 12/16/22

“Wilson’s disease” Fellow didactics, 12/16/22

Keener, A

“Knowing the RITE (Exam) Stuff.” UCLA Neurology Resident Didactics. Los Angeles, CA. February 2023.

“Introduction to Movement Disorders” UCLA School of Nursing, Master of Science in Nursing – Advanced Practice Program, Course N239C Nov 22.

“Parkinson Plus Syndromes” Neurology Resident lecture, UCLA Nov 2022.

“Dystonia” Neurology Resident lecture, UCLA Nov 2022.

“Beyond Parkinson’s Disease: Differential diagnosis of tremors and parkinsonism”.

Invited Speaker, Geriatric Medicine Fellowship Thursday Lecture Series, UCLA Feb 2023

“Tardive Syndromes” Invited Speaker, Geriatric Psychiatry Fellowship lecture, UCLA Feb 2023

“Movement Disorders Cases” Invited Speaker, 9th Annual UCLA Review of Clinical Neurology CME course Mar 2023.

Leadership Workshop: Bedside Teaching and Feedback Strategies Neurology Senior Residents interactive workshop, UCLA Jun 2023.

Disorders of the Cerebellum UCLA DGSOM 1st year medical student lecture and interactive large group session Jul 2023.

Overview of Movement Disorders Neurology Resident Summer Stock lecture. UCLA Aug 2023.

Patient Education

Subramanian, I

“Wellness in PD”- Phoenix Support Group Talk- Virtual- Keynote Speaker- Feb 2023.

“Wellness in PD”- Houston Patient Support Group- Virtual- March 2023.

“Finding Connection and Support in PD”- Parkinson Foundation Wellness Webinar- May 2023.

“Meaning in Life in PD”- PWR/Becky Farley Retreat Talks- Phoenix, Az- June 2023.

The missing piece in the PD puzzle-Dietitians”- World Parkinson Congress- “Barcelona, Spain July 2023.

“Gaps in Care for Women with PD Roundtable”- World Parkinson Congress- Barcelona, Spain July 2023.

“Unmet Needs for Research and Women with PD Roundtable”- World Parkinson Congress- Barcelona, Spain July 2023.

“Breath and Mind Body Approaches in PD”- World Parkinson Congress- Barcelona, Spain July 2023.

“Rehab and PD Poster tour leader”- World Parkinson Congress- Barcelona, Spain July 2023.

Parkinson’s Assn of Northern California- Keynote Speaker- Sept 2023.

“Living Well with Parkinson’s Disease” Parkinson’s Association of Santa Barbara annual seminar in Santa Barbara, CA April 2023.

“Navigating Hospitalization with Parkinson’s Disease” Parkinson’s Community Los Angeles Let’s Talk Parkinson’s virtual webinar series, Los Angeles, CA Aug 2023.

Interview with Veterans Impact Day- Dec 2022.

Mulligan, C “PD 101: Medications”. UCSD Living with Parkinson’s disease community update symposium, September 2023.

RESEARCH

Funded

Name of Staff	Title of Research Project	Type of Project (Biomedical, applied clinic, HSR&D, Rehab)	Funding Source	Total Amount Of Funds	Total Direct Costs	Beginning/End Dates
Pirio Richardson, Sarah, MD	ABP-1900: A Phase 2< Randomized, Double— Blind, Multicenter, Placebo-Controlled Study of Intramuscular ABP-450 (prabotulinumtoxinA) Injection for the Treatment of Cervical Dystonia	Clinical Trial	AEON Pharmaceuticals			3/3/2021-
Lin, Tanya (PI)	Association of REM Sleep Behavior Disorder and Post Disorder and Post--traumatic Stress traumatic stress disorder in Parkinson’s Disease Disorder in Parkinson’s Disease Among Veterans Among Veterans	Student summer project	VA ORD			July 2022 - present
Andrew Wilson (co-PI)	California Parkinson’s Disease Registry EHR Demonstration Project	HSR&D	Michael J Fox Foundation	\$750,000		07/2020-06/2026

Andrew Wilson (IPA agreement)	PD Pilot for National Neurological Conditions Surveillance System	HSR&D	CDC		93,000	09/2021-08/2023
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APPENDIX B - SOUTHEAST (RICHMOND) PADRECC

Publications

Palys V, Moser M, Chitta S, Hachmann J, Holloway KL. Use of a pericranial flap technique for DBS hardware protection and improved cosmesis. *Neuromodulation: Technology at the Neural Interface* - in press 2022

Tashli M., Weistroffer, G. Mhaskar, A., Kumbhare, D., Baron, M.S., Hadimani R.L., Investigation of soft magnetic material cores in transcranial magnetic stimulation coils and the effect of changing core shapes on the induced electrical field in small animals. *AIP Advances* 13, 025319 (2023); <https://doi.org/10.1063/9.0000550>.

Kumbhare, D., Azam, A., Hadimani R., Tom, J., Weistroffer G., Jayasimha A., Baron M.S., Healthy and pathological pallidal regulation of thalamic burst versus tonic mode firing: a computational simulation. *Neuroreport* 2023 Nov 1;34(16):773-780. doi: 10.1097/WNR.0000000000001955.

Kumbhare, D., Weistroffer, G., Goyanaga, S., Huang, Z.L., Baron, M.S., Parkinsonism originates in a discrete secondary and dystonia in a primary motor subcircuit. *J Neurosci Res*, accepted.

Tashli, M., Mhaskar A., Weistroffer G., Baron M.S., Hadimani R.L., Multi-Magnetic Material Transcranial Magnetic Stimulation Coil Designs for Small Animal Application. *AIP Advances* 14, accepted.

Posters

Jessica Kaplan, BSN, RN: All Hands ON Deck!: Development and Implementation of a nurse-driven, rehab-focused, in-person or telehealth interdisciplinary clinic for Veterans with PD and other movement disorders. *World Parkinson's Congress*, July 5, 2023.

Carmona, I.C., Kumbhare D., Atulasimha, J., Baron M.S., Hadimani R.L. Development of innovative transcranial magnetic stimulation model for the basal ganglia-thalamocortical circuit in Parkinson's disease. *67th Annual Conference on Magnetism and Magnetic Materials*, Minneapolis, MN, Oct 31 – Nov 4, 2022.

Tashli M., Kumbhare, D., Baron, M.S., Hadimani R.L., Investigation of Soft Magnetic Material Cores in Transcranial Magnetic Stimulation Coils and the Effect of Changing Core Shapes on the Induced Electrical Field in Small Animals. *67th Annual Conference on Magnetism and Magnetic Materials*, Minneapolis, MN, Oct 31-Nov 4, 2022.

Hand, R.C., Baron M.S., Exoskeleton gait training to minimize freezing of gait in progressive supranuclear palsy: A Case Report. *2023 American Physical Therapy Association (APTA) Combined Sections Meeting*, San Diego, CA, Feb 22-25, 2023.

Tashli M., Weistroffer G., Mhaskar A., Kumbhare, D., Baron, M.S., Hadimani R.L., Investigation of Soft Magnetic Material Cores in Transcranial Magnetic Stimulation Coils and the Effect of Changing Core Shapes on the Induced Electrical Field in Small Animals. *11th International IEEE/EMBS Conference on Neural Engineering*, Baltimore MD, April 2023.

Weistroffer G., Blagg, J., Tashli M., Hadimani, R. L. Kumbhare, D., **Baron, M.S.**, Investigation of superficial brain stimulation (SBS) in Parkinsonian rats as a non-invasive alternative treatment for patients with movement disorders. International Congress of Parkinson's Disease and Movement Disorders, Copenhagen, Denmark, August 2023.

Professional Education - Presentations

Lehosit, J

PADRECC COE Neurology Community of Practice Updates – VISN6 ICC, November 2022.

“Urinary dysfunction in PD”, February 2023.

“PD inpatient management” PM&R staff meeting presentation, February 2023.

PADRECC Neurology Staff Development and QI initiatives, March 2023.

Lindsey, D (NP)

Presented at Virginia Council of Nurse Practitioners Pharmacology symposium in Charlottesville, VA on Parkinson's Disease and Essential tremor medication management. Jan 28, 2023.

“PD 101 for nurses. Introduction to PD and motor/non-motor symptoms”. Virtual Nationwide presentation to VA nurses: April 19, 2023.

Kaplan, J (BSN, RN)

“Interdisciplinary team clinic” National PADRECC Clinical Care Committee. February 7, 2023.

“PD 101 Nursing -Interdisciplinary team and empowering nurses”. Virtual Nationwide presentation to VA nurses: April 19, 2023.

“Interdisciplinary team clinic” National VA PD Consortium Conference. May 12, 2023.

Mathew, E “Integrated Care Model for Obstructive Sleep Apnea”, AAN, June 2023.

Holloway, K

“Long Term Effects of Deep Brain Stimulation of Nucleus Basalis of Meynert in a Rat Dementia Model”, Philip L. Gildenberg Resident Award (2023 Award Winner), American Academy of Neurosurgeons, April 2023.

“Symptom Specific Sweetspot, DTI, and Resting State Fmri Analysis of the STN and Gpi Regions in the CSP 468 Randomized Controlled Trial of DBS Stimulation in Parkinson's Patients.” American Academy of Neurosurgeons, April 2023.

"Applying low vision strategies to expand rehabilitation options for persons with Parkinsonian syndromes.", AVRT (Association of Vision Rehabilitation Therapists) National Conference, November 2022.

“Expanding Low vision strategies to veterans with excess disability”, Blind Rehab Services VACO, March 2023.

Presentations to Health Professional Trainees

Lindsey, D (NP) Presented to Neuropsychology fellows and residents. “Not all that shakes is Parkinson's disease”. May 2023.

Kaplan, J (BSN, RN) In-service to on PD Polytrauma. February 2023.

Thompson, K “Pelvic Floor PT in PD”. Movement Disorders Series – 3, February 2023.

Patient Education

Lehosit, J

“Advanced treatments for PD: when your typical medications aren’t cutting it.” Richmond/Philly PADRECC support group, March 2023.

“Hallucinations” Westminster Canterbury Progressive Living- PD support group, May 2023.

“Future medication options for PD”. Richmond PADRECC Early onset support group, Aug 2023.

Kaplan, J

“PADRECC/caregiving tips”. Caregiver support resource fair, Feb 2023.

“Caregiving”. Windsor Meade Assisted Living Community in Williamsburg, VA, March 2023.

“PADRECC and Interdisciplinary Team Approach” to VA Beach APDA support group, March 2023.

“PADRECC and Interdisciplinary Team Approach”. Parkinson’s Social Network, March 2023.

“Caregiving” to Brandermill Woods Assisted Living. April 2023.

Lindsey, D

“Parkinson’s disease”. Covenant Woods Progressive Living Facility. May 2023.

Hall, E

Caregiver support resource fair. Presented PADRECC. Feb 2023.

“Caregiving”. Brandermill Woods Assisted Living. April 2023.

“Traveling with PD”. Richmond/Philly PADRECC support group. June 2023.

Mathew, E

“Sleep in Parkinson’s disease”. Westminster Canterbury Progressive Living. PD support group. June 26, 2023.

Buckley, E

“Home safety devices, fall alerts, wander devices”. PADRECC caregivers support group. July 2023.

Baron, M

“PD presentation”. Brandermill Woods Community. May 2023.

Open discussion/Q&A to PADRECC early onset support group July 2023.

Jennings, C

“Palliative Care in PADRECC” – GEC Provider Meeting Presentation, 10/26/22.

“Palliative Care for Person’s with Parkinson’s” – HPNA Central Virginia Chapter presentation on 10/20/22.

RESEARCH

Funded

Name of Staff	Title of Research Project	Type of Project (Biomedical, applied clinic, HSR&D, Rehab)	Funding Source	Total Amount Of Funds	Total Direct Costs	Beginning/End Dates
Baron & Gitchel	Oculomotor functions in persons with movement disorders	Applied clinical research	Royalties from licensed IP.	\$250,000	No Additional cost	2017– May 2023
Baron	Rodent model of dystonia	HSR&D	VA MERIT	\$650,000	No additional cost	Jan 2019-Dec 2022
Baron	Cortical neuromodulation of pathological basal ganglia-thalamocortical sub circuitry for treatment of movement disorders	HSR&D	VA MERIT	\$708,431	No additional cost	2022-2026
Baron	Safety and efficacy of portable exoskeletons to improve mobility in Parkinson’s disease	HSR&D	SPIRE	\$225,500	No additional cost	7/26/23-present
Baron	Development of focused TMS to generate localized modulations in motor pathway network.	HSR&D	VCU Presidential Research Quest Fund	\$10,000	No additional cost	7/01/2023-12/31/2024
Holloway	DBS of the NBM: the role of stimulation parameters in neurogenesis	HSR & D	NIA	\$200,000	No additional cost	2022-2024

Primary Projects

Principal Investigator	Title of Research Project	Purpose/Hypothesis	Method Sample (size/selection)	Measures/ Criteria	Findings
Jessica Lehosit, DO	BOSS-PD, Urinary incontinence in PD	This study aims to determine the non-inferiority of pelvic floor muscle exercises to drug	IPD patients Urinary score qualifying	Behavioral vs medication treatment of urinary	Closed to recruitment. Awaiting data analysis.

		therapy that may cause cognitive slowing.		incontinence in PD patients.	
Jessica Lehosit, DO	Bile Acids and Gut Microbiome	Investigating the microbiome of patients with cirrhosis. Patients with PD are being recruited as a secondary arm to the study due to their known gut motility and microflora changes	IPD Patients	Evaluation and comparison of gut microflora in IPD, cirrhosis and control patients	Still in recruitment
Mark Baron, MD	Quantified Rigidity Monitor	This is a device that has been built in collaboration with the department of biomedical engineering at the local university. The device is a reliable, repeatable, quantifiable method to assess muscle rigidity in patients with PD	IPD patients, number TBD	UPDRS part 3 and UPDRS rigidity subscore. Looking for full range of rigidity severity symptoms	Still in design/testing phase of product development
Mark Baron, MD	Eye Movement Research in PADRECC	Utilizing a 5-minute-long data recording from an eye tracking device, the specific oculomotor parameters can be used to differentiate numerous neurological movement disorders	Recruitment: >3,600 subjects to date. Inclusion: any manifest neurological movement disorder or prodromal PD (as captured in subjects with RBD). Exclusion: Blindness	Numerous oculomotor parameters (saccades size, speed, smooth pursuit, etc). Raw data are cleaned and compiled into ~620 individual parameters, and finally reported out as ~42 individual statistics.	Closed to recruitment. Data analysis stage.
Kathryn Holloway MD	Optimization of Nucleus Basalis of Meynert stimulation for the treatment of dementia	This pilot study is intended for studying various parameters effecting memory through nucleus basalis of Meynert (NBM) stimulation and collecting data for larger grant. Our goal is to gain a better understanding of how we can effectively stimulate this nucleus to overcome the devastating effects of dementia	Initial pilot targeting 5+ subjects with dementia.	Surgical outcomes, and DRS scores	Collecting preliminary data. Project has not started yet.
Kathryn Holloway, MD	Long-term effects of stimulation induced neurogenesis in dementia rats	This project assesses the long term effects of NBM stimulation on learning, neurogenesis, cholinergic neuronal preservation and reversal of the cortical atrophy associated with cholinergic degeneration by assessing these over 2	Pilot grant	neurogenesis	Data collection underway.

		months after the end of stimulation.			
Kathryn Holloway, MD	Registry for the advancement of DBS in Parkinson's disease.	Data registry, Michael J Fox Foundation	Data registry	Outcomes of DBS	Data collection, 5-year project. Recruitment has been completed.
Kathryn Holloway, MD	Physiological Brain Atlas Development	Data registry	Data Registry	Outcomes of DBS	Data collection and recruitment
Kathryn Holloway, MD	Accuracy of targeting subthalamic nucleus vs globus pallidus and clinical implications	To determine accuracy of targeting STN and GPi and clinical implications using data from CSP 468 clinical trial "A comparison of best medical therapy and deep brain stimulation of subthalamic nucleus and globus pallidus for the treatment of Parkinson's disease"	Analysis of CSP 468 data	Outcomes of DBS	Data analysis underway.
Kathryn Holloway, MD	Assessment of the utility of QEEG during deep brain stimulation programming and correlation with dementia rating scale scores	To determine how the electrical activity in the brain changes during DBS programming.	analysis of EEG data	EEG changes in DBS programming	Analysis underway
Mark Baron, MD	Ocular tremor as a biomarker for manifest and prodromal Parkinson's disease	To validate the findings of our longstanding oculomotor control study in a double blinded, multisite, open enrollment study/	Targeting 80 subjects each in the categories of PD, control, and "other movement disorders". Additionally, targeting 120 subject with RBD.	Similar oculomotor recording analysis, as well as timed pegboard test, UPDRS, timed-up-and-go walking test, MOCA.	Closed to recruitment. Data analysis stage.
Jessica Lehosit, DO	CSP 2015: pimavanserin vs quetiapine	To evaluate efficacy of pimavanserin vs quetiapine for management of PD psychosis.	IPD patients with psychosis	Pimavanserin vs quetiapine –effectiveness in treating PD psychosis	Recruiting.
Jessica Lehosit, DO	VET PD	To find genes that increase risk of development of PD.	Under-represented population with PD; goal to enroll 50 patients	Under-represented population with PD; cheek swab and blood sample	Recruiting.
Jessica Lehosit DO Cameron Jennings NP Jessica Kaplan BSN	PCORI Study with PD foundation	Palliative care integrative study in PD clinics	Develop and enroll patients in Palliative Care PD clinic	PD patients with palliative care needs	Continuing palliative clinic development and implementation

APPENDIX C -San Francisco PADRECC

Publications

Double blind, nonrandomized crossover study of active recharge biphasic deep brain stimulation for primary dystonia. Wong JK, Lopes JMLJ, Hu W, Wang A, Au KLK, Stiep T, Frey J, Toledo JB, Raike RS, Okun MS, Almeida L. *Parkinsonism Relat Disord.* 2023 Apr; 109:105328. doi: 10.1016/j.parkreldis.2023.105328. Epub 2023 Feb 18. PMID: 36827951 Free article. *Clinical Trial.* <https://pubmed.ncbi.nlm.nih.gov/36827951/>

Cognitive and Functional Trajectories in Older Adults with Prediagnostic Parkinson Disease. Bock MA, Vittinghoff E, Bahorik AL, Leng Y, Fink H, Yaffe K. *Neurology.* 2023 Mar 28;100(13):e1386-e1394. doi: 10.1212/WNL.0000000000206762. Epub 2022 Dec 29. PMID: 36581466 <https://pubmed.ncbi.nlm.nih.gov/36581466/>

Double blind, nonrandomized crossover study of active recharge biphasic deep brain stimulation for primary dystonia. Wong JK, Lopes JMLJ, Hu W, Wang A, Au KLK, Stiep T, Frey J, Toledo JB, Raike RS, Okun MS, Almeida L. *Parkinsonism Relat Disord.* 2023 Apr;109:105328. doi: 10.1016/j.parkreldis.2023.105328. Epub 2023 Feb 18. PMID: 36827951 <https://pubmed.ncbi.nlm.nih.gov/36827951/>

Human upper extremity motor cortex activity shows distinct oscillatory signatures for stereotyped arm and leg movements. Starkweather CK, Morrison MA, Yaroshinsky M, Louie K, Balakid J, Presbrey K, Starr PA, Wang DD. *Front Hum Neurosci.* 2023 Aug 10;17:1212963. doi: 10.3389/fnhum.2023.1212963. eCollection 2023. PMID: 37635808 <https://pubmed.ncbi.nlm.nih.gov/37635808/>

Cortico-Subthalamic Field Potentials Support Classification of the Natural Gait Cycle in Parkinson's Disease and Reveal Individualized Spectral Signatures. Louie KH, Gilron R, Yaroshinsky MS, Morrison MA, Choi J, de Hemptinne C, Little S, Starr PA, Wang DD. *eNeuro.* 2022 Nov 11;9(6):ENEURO.0325-22.2022. doi: 10.1523/ENEURO.0325-22.2022. Print 2022 Nov-Dec. PMID: 36270803 <https://pubmed.ncbi.nlm.nih.gov/36270803/>

Posters

Bradley E, Bock M, Zuzuarregui JRP, Ostrem J and Tanner C. Psilocybin therapy for depression and anxiety associated with Parkinson's disease: a pilot study. International Parkinson and Movement Disorder Society 2023, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Hoang P and Zuzuarregui JR. A 78-year-old man with progressive ataxia, palatal tremor, parkinsonism and motor neuron disease. International Parkinson and Movement Disorder Society 2023, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Wiltshire A, Wang S and Zuzuarregui JR. Globus pallidus interna deep brain stimulation for Parkinson's Disease: Impact on Restless Legs Syndrome. International Parkinson and Movement Disorder Society 2023, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Mahes A, Wang S and Zuzuarregui JR. Impact of globus pallidus interna deep brain stimulation on REM sleep behavior disorder in Parkinson's disease. International Parkinson and Movement Disorder Society 2023, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Ng J and Stiep T. Case report on heterozygous OPA3 gene mutation causing ataxia. International Parkinson and Movement Disorder Society 2023, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Professional Education

Stiep, T "Apathy Following Bilateral Subthalamic Deep Brain Stimulation for Parkinson's Disease: The INTREPID Randomized Controlled Trial". Congress of Neurological Surgeons 2022 Annual Meeting, Oct, 2022.

Galifianakis, N "Deep Brain Stimulation (DBS) Update: What's New". San Francisco Neurological Society: Parkinson's Disease Symposium, October 2022.

Wang, D “Future of Parkinson’s Disease (PD) and HiFu”. San Francisco Neurological Society: Parkinson’s Disease Symposium, October 2022.

Dietiker, C

“Huntington’s Disease Clinical Trials Update”. Huntington’s Disease Society of America / UCSF Education Day, December 2022.

“An Interaction Session: Difficult Diagnosis”. UCSF 56th Annual Recent Advances in Neurology 2023, February 2023.

“An Ataxic Journey”. UCSF 56th Annual Recent Advances in Neurology 2023, February 2023.

Zuzuarregui, R

“What a Night: Sleep and Neurodegenerative Disorders”. NW PADRECC Lecture Series, January 2023.

“Progression of Parkinson’s disease – what does this look like?”. Parkinson’s Foundation Fresno, Parkinson’s Disease Symposium, February 2023.

Bradley, E

“Psychedelic Research and Parkinson’s”. Parkinson’s Disease Research Forum, Iowa State University, February 2023.

“Psychedelic Clinical Research Science and Therapeutics Session”. Bay Area Psychedelics Conference, San Francisco, April 2023.

“Psilocybin for anxiety and depression in Parkinson’s disease”. Psychedelics Research Workshop, San Francisco, May 2023.

“The Translational Psychedelic Research (TrPR) Program at UCSF”. UCSF Insights 2023, June 2023.

Bock, M “Cognitive and Functional Trajectories in Prediagnostic Parkinson’s Disease”. AAN American Association Neurologists Annual Meeting April 22-27.

Presentations to Health Professional Trainees

Stiep, T “Review of Parkinson’s disease Medications”. UCSF Neuropsychiatry Lectures with Psychiatry Fellows, January 2023.

Zuzuarregui, R “What a Night: Sleep and Neurodegenerative Disorders”. UCSF/SFVA Sleep Disorders Fellowship Lecture Series, January 2023.

Dale, M

“How to measure balance and gait in progressive supranuclear palsy: a review of objective measures and exercise interventions” [Virtual]. University of Texas Southwestern Neurology Grand Rounds {Fellows, Residents, Medical Students}, 2023.

“Long-duration progressive supranuclear palsy: clinical course and pathological underpinning”. Virtual] OHSU Movement Disorders Journal Club {Student/Resident}, 2023.

Patient Education

Greater Fresno Parkinson’s Disease Support Group -Presentation by Rafael Zuzuarregui at the PF sponsored annual symposium in Fresno, CA.

Huntington's Disease Society of America/UCSF Education Day -Presentation by Cameron Dietiker on Huntington's Disease Clinical Trials Update.

Exercise for Life Foundation -Presentation by Rafael Zuzuarregui at the annual fundraiser for a PD focused non-profit organization in Fresno, CA.

UCSF Movement Disorders and Neuromodulation Center Parkinson’s Disease Symposium -Presentations by Nicholas Galifianakis and Tamara Stiep at the patient focused annual symposium.

RESEARCH

Funded

Name of Staff	Title of Research Project	Type of Project (Biomedical, applied clinic, HSR&D, Rehab)	Funding Source	Total Amount Of Funds	Total Direct Costs	Beginning/End Dates
Co-PI: Rafael Zuzuarregui, MD (PI: Caroline Tanner)	PPMI - The Parkinson's Progression Markers Initiative. The primary objective of this study is to identify clinical, imaging, and biologic markers of Parkinson's disease progression for use in clinical trials of disease-modifying therapies. I primarily functioned as a sub-investigator to perform clinic visits for participants but became the co-investigator for a new observational arm of the study focusing on recruitment of participants with REM Behavior Disorder and tracking progression over time with use of biomarkers as noted above.	Epidemiology	Michael J. Fox Foundation	\$555,453		04/01/2010 – 12/31/2025
Sub-Investigator Rafael Zuzuarregui, MD (PI: Caroline Tanner)	Prevention of Hip Fracture in Patients with Parkinson's Disease (PD)	Clinical research	NIH/NIA grant	\$573,094		09/01/2018 – 11/31/2024
Sub-Investigator Rafael Zuzuarregui, MD (PI: Caroline Tanner)	Determining the circuits and signals of sleep dysfunction in Parkinson's disease through chronic intracranial recordings and closed-loop Deep Brain Stimulation	Clinical research	NIH/NIA grant	\$3,977.653		04/01/2023 – 03/31/2028

Sub-Investigator: Tamara Stiep, MD (PI: Caroline Tanner)	PPMI - The Parkinson's Progression Markers Initiative. The primary objective of this study is to identify clinical, imaging and biologic markers of Parkinson's disease progression for use in clinical trials of disease-modifying therapies. I primarily functioned as a sub-investigator to perform clinic visits for participants but became the co-investigator for a new observational arm of the study focusing on recruitment of participants with REM Behavior Disorder and tracking progression over time with use of biomarkers as noted above.	Epidemiology	Michael J. Fox Foundation	\$555,453		04/01/2010 – 12/31/2025
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PI: Ellen Bradley	Examining ketamine effects on depression, neuroplasticity, and inflammation in Veterans with Parkinson's disease	Clinical	VA ORD (CDA-2)	1,830,444		Jul 01 2024 – June 30 2029
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Name of Staff	Title of Research Project	Type of Project (Biomedical, applied clinic, HSR&D, Rehab)	Funding Source	Total Amount Of Funds	Total Direct Costs	Beginning/End Dates
Sub-I: Cameron Dietiker (PI: Michael Geschwind)	ENROLL-HD: A Prospective Registry Study in a Global Huntington's Disease Cohort (CHDI Foundation, Inc.). <i>This is a longitudinal, observational, multinational study that integrates two former Huntington's disease registries and expands site inclusion, with the primary objective of developing a comprehensive repository of prospective and systematically collected clinical research data and biological specimens from individuals with manifest HD, non-manifest mutation carriers, and control participants.</i>	Epidemiology	CHDI Foundation			07/01/2019 - ongoing
Sub-Investigator: Cameron Dietiker (PI: Michael Geschwind)	A Phase I/II, Randomized, Double-blind, Sham Control Study to Explore Safety, Tolerability, and Efficacy Signals of Multiple Ascending Doses of Striatically-Administered rAAV5- <i>miHTT</i> Total Huntingtin Gene (HTT) Lowering Therapy (AMT-130) in Early Manifest Huntington Disease	Clinical research	uniQure			05/01/2020 - ongoing
Sub-Investigator: Cameron Dietiker, MD	READISCA, <i>an observational, international, multi-site study aiming to establish clinical trial readiness by enrolling/combining large cohorts of patients with pre-manifest/early SCA1 and SCA3. This population is likely to benefit most from disease-modifying interventions prior to irreversible brain</i>		READISCA			12/08/2020 - present

	<i>damage. This study will also gather clinical outcome assessment data, bio-fluid samples, and validate biochemical and functional biomarkers.</i>					
Sub-Investigator: Cameron Dietiker (PI: Michael Geschwind)	BHV4157-201: A Phase IIb/III, Randomized, Double-Blind, Placebo-Controlled Trial of Troriluzole in Adult Subjects with Spinocerebellar Ataxia. <i>Phase IIb/III trial investigating the drug Troriluzole for its efficacy, safety, and tolerability in spinocerebellar ataxias. It is thought to work through its main byproduct, riluzole, but can be dosed less frequently and potentially may have fewer side effects. It will be compared to placebo for its ability to improve ataxia symptoms in SCA types 1, 2, 3, 6, 7, 8, and 10.</i>	Clinical research	Biohaven Pharmaceuticals			07/01/2021 - ongoing
Sub-Investigator: Cameron Dietiker, MD (PI: Caroline Tanner)	PASADENA: <i>A randomized, double-blind, placebo-controlled, 52-week phase II study to evaluate the efficacy of intravenous RO7046015 (PRX002) in participants with early Parkinson's disease with a 52-week blinded extension. (F. Hoffmann-La Roche Ltd). Phase 2 clinical trial to evaluating safety and efficacy of intravenous PRX002, a C-terminus alpha-synuclein antibody, in participants with early Parkinson's disease.</i>	Clinical research	Roche Genentech			07/01/2021 - ongoing
Sub-Investigator: Cameron Dietiker, MD (PI: Michael Geschwind)	Clinical Research Consortium for the Study of Cerebellar Ataxia (CRC-SCA), <i>funded by the National Ataxia Foundation, a natural history and biomarker development study aiming to understand factors that determine disease progression in cerebellar ataxia with the goal of enhancing knowledge of the disease process, treatments, and development of disease modifying therapies (for SCA types 1, 2, 3, 6, 7, 8, and 10).</i>	Epidemiology	National Ataxia Foundation			07/01/2021 - ongoing
Principle Investigator: Cameron Dietiker, MD	AMULET, <i>funded by H. Lundbeck A/S, a phase 2 trial designed to assess the safety and tolerability of LuAF82422 and its ability to slow disease progression in patients with MSA. LuAF82422 is a human recombinant monoclonal antibody that recognizes all major species of alpha-synuclein and targets extracellular alpha-synuclein, inhibiting seeding and spreading of pathological forms.</i>	Clinical Research	H. Lundbeck A/S		\$29,835	03/29/2022 - present

Primary Projects

Principal Investigator	Title of Research Project	Purpose/Hypothesis	Method Sample (size/selection)	Measures/ Criteria	Findings
Rafael Zuzuarregui	Use of Seroquel versus Primavarserin for Psychosis in Parkinson's disease.	The primary objective of this study is to evaluate use of Seroquel and Pimavanserin for treatment of psychosis in Parkinson's disease in a randomized controlled trial.	20-30		N/A
Ellen Bradley	Examining ketamine effects on depression, neuroplasticity, and inflammation in Veterans with Parkinson's disease	The primary objective is to evaluate the use of ketamine for treatment of anxiety and depression in Parkinson's Disease in a clinical trial	30-50		N/A

Collaborative Projects

Principal Investigator	Title of Research Project	Purpose/ Hypothesis	Method Sample (size/selection)	Measures/ Criteria	Findings
Tamara Stiep, MD	An investigation of the relationship between toxicant exposures during Gulf War deployment and prodromal Parkinson's disease.	The primary objective of this study is to evaluate the relationship between toxicant exposure during Gulf War deployment and prodromal Parkinson's disease.	50		N/A

APPENDIX D -Northwest (Portland/Seattle) PADRECC

Publications

Dale M, Patterson C, Joslin E, Gil A, Spigle W, Nemet T, Chahine L, Christiansen C, Melanson E, Kohrt W, Mancini M, Josbeno D, Balfany K, Garrett G, dunlap M, Lamotte G, Suttman E, Larson D, Branson C, McKee K, Goelz L, Poon C, Tilley B, Kang U, Tansey M, Luthra N, Tanner C, Haus J, Fantuzzi G, McFarland N, Gonzalez-Latapi P, Foroud T, Motl R, Schwarzcchild M, Simuni T, Marek K, Naito A, Lungu C, Corcos D (2023). Study in Parkinson's disease of exercise phase 3 (SPARX3): study protocol for a randomized controlled trial. *BMC Trials*, S7:855. 10.1186/s13063-022-06703-0.

Dale ML, King LA, Carlson-Kuhta P, Wilhelm JL, Lapidus JA, Talman LS, Barlow N, Mancini M, Horak FB (2023). TURN-IT: a novel turning intervention program to improve quality of turning in daily life in people with Parkinson's disease. *BMC Neurology*, S7:442. 10.1186/s12883-022-02934-5.

Dale ML, Mancini M, Stevens A, Brumbach BH, Prewitt A, Harker G, Silva-Batista C, Ragothaman A, Folmer RL, **Quinn JF**, Horak FB (2023). C-STIM: Protocol for a randomized, single-blind, crossover study of cerebellar repetitive transcranial magnetic stimulation (rTMS) for postural instability in people with progressive supranuclear palsy (PSP). *Contemporary Clinical Trials Communications*, S7:. 10.1016/j.conctc.2023.101165.

Dale ML, Silva-Batista C, Oliveira de Almeida F, Horak FB (2023). Balance and gait in progressive supranuclear palsy: a narrative review of objective metrics and exercise interventions. *Frontiers in Neurology*, S7:. 10.3389/fneur.2023.1212185.

Geroin C, Artusi CA, Nonnekes J, Aquino C, Garg D, **Dale ML**, Schlosser D, Lai Y, Al-Wardat M, Salari M, Wolke R, Labou VT, Imbalzano G, Camozzi S, Merello M, Bloem BR, Capato T, Djaldetti R, Doherty K, Fasano A, Tibar H, Lopiano L, Margraf NG, Moreau C, Ugawa Y, Bhidayasiri R, Tinazzi M (2023). Axial Postural Abnormalities in Parkinsonism: Gaps in Predictors, Pathophysiology, and Management. *Movement Disorders*, S7:732-739. 10.1002/mds.29377.

Hansen MJ, **Neilson LE**, Parikh M, Katirji B (2023). Greater Number of Plasma Exchanges Does Not Improve Outcome in Myasthenic Crisis. *Journal of Clinical Neuromuscular Diseases*, S7:199-206. 10.1097/CND.0000000000000421.

Hollen C, **Neilson LE**, Barajas RF Jr, Greenhouse I and Spain RI (2003). Oxidative stress in multiple sclerosis- Emerging imaging techniques. *Frontiers in Neurology*, S7:. 10.3389/fneur.2022.1025659.

Neilson LE, Wilhelm J, McDonnell MM, Mann L, **Kraakevik JA** (2023). Extension of community healthcare outcomes in Parkinson disease (Parkinson ECHO): A feasibility study. *Clinical Parkinsonism & Related Disorders*, S7:. 10.1016/j.prdoa.2022.100167.

Neilson LE, **Quinn JF**, Lim MM (2023). Screening and Targeting Risk Factors for Prodromal Synucleinopathy: Taking Steps toward a Prescriptive Multi-modal Framework. *Aging and Disease*, S7:1243-1263. 10.14336/AD.2022.1024.

Scott GD, **Neilson LE**, Woltjer R, **Quinn JF**, Lim MM (2023). Lifelong association of disorders related to military trauma with subsequent Parkinson's disease. *Movement Disorders*, S7:148-1492. 10.1002/mds.29457.

Stewart T, Sossi V, Aasly JO, Wszolek ZK, Uitti RJ, Hasegawa K, Yokoyama T, **Zabetian CP**, Leverenz JB, Stoessl AJ, Wang Y, Ghingina C, Liu C, Cain KC, Auinger P, Kang UJ, Jensen PH, Shi M, Zhang J (2023). Phosphorylated α -synuclein in Parkinson's disease: correlation depends on disease severity. *Acta neuropathologica communications*, S7:. doi: 10.1186/s40478-015-0185-3.

Xie T, Wills AM, Liao C, **Dale ML**, Ramsden DB, Padmanaban M, Abou Char W, Pantelyat A, Golbe LI (2023). Using Downgaze Palsy Progression Rate to Model Survival in Progressive Supranuclear Palsy-Richardson Syndrome. *Movement Disorders*, S7:304-312. 10.1002/mds.29299.

Posters

Bruno M, Ali F, **Dale ML**, Schmidt M, Comeau M, Spears C, Shurer J (2023). Identifying a path to improved diagnostic delay and access to care for PSP, CBS, and MSA. *International Parkinson and Movement Disorder Society 2023*,

Copenhagen, Denmark 8/27/2023- 8/31/2023.

Mack J, Marsh L, Sarwar A, Rodriguez K, King A, Hinojosa-Lindsey M, Miller R, St. Hill L, **Oconnor S, Ketchum K**, Latorre M, Interian A, Dobkin R (2023). Expanding the reach of a telehealth psychotherapy hub to advance coordinated depression care for rural veterans with Parkinson's Disease [abstract]. *International Parkinson and Movement Disorder Society 2023*, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Neilson L, Wilhelm J, Mann L, Cooper R, **Kraakevik J** (2023). Implementing Extension of Community Healthcare Outcomes (ECHO) framework to educate geographically underserved populations in complex Parkinson's disease management. *American Academy of Neurology Annual Meeting*, Boston, MA, United States 4/22/2023- 4/27/2023.

Neilson LE, Balba, NM, Elliott, JE, Scott, GD, Heinricher, MH, Lim, MM (2023). The potential role of chronic pain and the polytrauma clinical triad in predicting risk factors for prodromal PD. [Abstract]. *International Parkinson and Movement Disorder Society 2023*, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Saffari A, Neuser S, Strelko O, Mo A, Rosengarten H, Jordan C, **Davis MY**, Sahin M, Yang E, Ebrahimi-Fekhari D (2022). The Clinical, Molecular and Neuroimaging Spectrum of ZFYVE26-Related Hereditary Spastic Paraplegia (SPG15) – A Cross-sectional Analysis of 34 patients. *Child Neurology Society Annual Meeting*, Cincinnati, OH, United States 10/12/2022- 10/15/2022.

Seachirst E, Shindoll L, Pawar G, London Z, Khan H, **Kraakevik J**, Graber J, Gliksman F (2023). Question of the Day: A learning success. *American Academy of Neurology Annual Meeting*, Boston, MA, United States 4/22/2023- 4/27/2023.

Wile DJ, Dinelle K, McKenzie J, Heffernan N, Adam M, Miao Q, **Zabetian C**, Wszolek Z, Aasly J, Farrer M, Sossi V, Stoessl AJ (2023). Striatal and cortical elevations in serotonin transporter binding precede motor onset in asymptomatic patients with LRRK2 gene mutations [ABSTRACT]. *International Parkinson and Movement Disorder Society 2023*, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Block K, Hiller A, Leavell N, Sorge S (2023). Neuropalliative communication curriculum: A review of the literature and needs assessment. *International Parkinson and Movement Disorder Society 2023*, Copenhagen, Denmark 8/27/2023- 8/31/2023.

Professional Education

Davis, M

Mechanisms underlying Parkinson's disease: Insights from the genetic risk factor GBA [Presentation]. UW Nathan Shock Center Geroscience Symposium. Seattle, Washington, United States, 2022.

"Mechanisms underlying Parkinson's disease: Insights from the genetic risk factor GBA" [Presentation]. UW Neurology Department Research Retreat. Seattle, Washington, United States, 2022.

"Mechanisms underlying Parkinson's disease: Insights from the genetic risk factor GBA" [Presentation]. University of Wisconsin-Madison, Department of Neurology Grand Rounds. Madison, Wisconsin, United States, 2023

"Understanding how GBA mutations influence Parkinson's disease progression" [Presentation]. American Academy of Neurology 2023 Annual Meeting Movement Disorders Oral Platform Presentation. Boston, Massachusetts, United States, 2023.

"Mechanisms underlying Parkinson's disease: Insights from the genetic risk factor GBA" [Presentation]. UW Department of Neurology Grand Rounds. Seattle, Washington, United States, 2023.

"Understanding how GBA mutations influence Parkinson's disease progression" [Presentation]. Pacific Northwest Basal Ganglia Coterie. Union, Washington, United States, 2023.

“Understanding how GBA mutations influence Parkinson’s disease progression” [Presentation]. UW Department of Neurology Grand Rounds. Seattle, Washington, United States, 2023.

Hu, SC Update on PPMI [Presentation]. PPMI Annual Retention Event. Seattle, Washington, United States, 2023.

Mack, JD

“Neuropsychiatric Issues in Parkinson's Disease”. PADRECC Movement Disorder Lecture Series, 2023.

“Functional Neurological Disorder” on Psychiatry Explored with Dr. Jordan Anderson, a National Psychiatry education podcast, [Virtual] 2023.

Neilson, L “Diagnosis and Treatment of Functional Movement Disorders” [Virtual], MIRECC Presents {mental health professionals and allied health professionals}, 2023.

Su K. “Beneath the surface: Let’s talk about PD non-motor symptoms” [Presentation]. Take Control Series, American Parkinson’s Disease Association Northwest Chapter, 2023.

Zabetian, CP

“Genetics and Parkinson’s Disease – What to know for the Clinic”[Presentation]. National VA PD Consortium Virtual Conference. Virtua, 2023.

“The Veterans Parkinson’s Disease Genetics Initiative” [Presentation]. Pacific Northwest Basal Ganglia Coterie. Alderbrook Lodge, Union, Washington, United States, 2023.

“The Washington State Parkinson’s Disease Registry” [Presentation]. Parkinson’s Research Happy Hour (sponsored by the American Parkinson’s Disease Association). Murano Senior Living, Seattle, Washington, United States, 2023.

“The Veterans Parkinson’s Disease Genetics Initiative” [Presentation]. Global Parkinson's Genetics Program (GP2) Annual Investigators Meeting. Copenhagen, Denmark, 2023.

“Exploring the latest research” moderated by Sohini Chowdhury [Panelist]. MJFF Parkinson’s IQ + You. Seattle, Washington, United States, 2023.

Presentations to Health Professional Trainees

Davis, M

Genetic ataxias [Lecture]. Movement Disorders Fellowship Didactics. VA Puget Sound, Seattle, Washington, United States.

“Genetic movement disorders” [Lecture]. UW NEURO502 Introduction to Neurobiology. Seattle, Washington, United States, 2023

“Hereditary spastic paraplegias” [Lecture]. Movement Disorders Fellowship Didactics. VA Puget Sound, Seattle, Washington, United States, 2023.

“Underlying mechanisms of Parkinson’s disease” [Lecture]. UW NEU559 Neurobiology of Disease. Seattle, Washington, United States, 2023.

“Mechanisms of pathogenesis in neurodegeneration” [Lecture]. UW Neurological Surgery R25. Seattle, Washington, United States, 2023.

Hu, SC

“Coma and meningitis” [Lecture]. Harborview Medical Center Resident Orientation,. Seattle Washington, United States, 2023.

“Atypical parkinsonism” [Lecture]. VA Puget Sound Movement Disorder Conference. Seattle, Washington, United States, 2023.

Kraakevik, J Willamette Valley Medical Center Grand Rounds {Student/Resident} Clinical Assessment of Falls [Virtual], 2023.

Samii A.

“Movement disorders 101” [Lecture]. Medical Student and Resident Lecture. VA Puget Sound, Seattle, Washington, United States, 2023.

“Update on Parkinson’s disease treatment” [Lecture]. VAPSHCS Neurology Conference. VA Puget Sound, Seattle, Washington, United States, 2023.

“Case illustrations in Parkinson’s disease” [Lecture]. Neurology Resident Didactics. VA Puget Sound, Seattle, Washington, United States, 2023.

Quinn, JF

Portland VA Geriatric Medicine Fellow lecture Diagnosis and Management of Parkinson's Disease, 2023.

PMDA Cognitive changes in Parkinson's Disease: What we know and what we need to know Virtual],2023.

“Cognition Lecture”. PADRECC Movement Disorder Lecture Series, 2023.

“Medical Management of Parkinson's”. OHSU Primary Care CME {Student/Resident}, 2023.

“Genetics and the brain”. OBI Outreach {Neighborhood House 8-10 year old summer program students}, 2023.

Neurobiology of Disease Course Alzheimer's patient demonstration, 2023.

Neurobiology of Disease Course Alzheimer's Disease, 2023.

“Should beta amyloid be a therapeutic target in Parkinson's Dementia”? Movement Disorders Journal Club, 2023.

“Lewy Body Dementia”. Didactic for movement disorder fellows CME {Fellows}, 2023.

Zabetian, CP

“Differential Diagnosis of Parkinsonism and Management of Parkinson’s Disease” [Lecture]. VAPSHC Bldg. 100, Rm 5B-103. Seattle, Washington, United States, 2022

“Administration of the MDS-UPDRS III” [Lecture]. VAPSHCS, Bld 100, Rm 5B-103. Seattle, Washington, United States, 2022.

“Parkinson’s Disease; Differential Diagnosis and Management” [Lecture]. VAPSHCS, Bld 100, Rm 5B-103 Seattle, Washington, United States, 2023.

“Differential Diagnosis of Parkinsonism and the MDS-UPDRS III” [Lecture]. VAPSHCS, Bld 100, Rm 5B-103. Seattle, Washington, United States, 2023.

Patient Education

Quinn, J. “Thinking changes in Parkinson's Disease” [Virtual]. Parkinson's Foundation Webinar for patients and caregivers {Patient/Caregiver} 2023.

Kraakevik, J "Preventing Falls in Parkinson's Disease" [Virtual]. VA PADRECC Patient Education Series, 2023.

Su K. "Beneath the surface: Let's talk about PD non-motor symptoms" [Presentation]. American Parkinson's Disease Association Northwest Chapter, 2023.

RESEARCH -Grants by Employee

Chung, Kathryn

2019 – 2023 VA Merit Review Award (HSR&D) I01 CX001547 (Co-I) STAT-PD: Preventing Levodopa Induced Dyskinesia in Parkinson's Disease with HMG - CoA Reductase Inhibitors \$539,361.00

Dale, Marian (Livingston)

2022 - 2023 OHSU Parkinson Center Pilot Grant (PI) Supplementary motor area TMS for freezing of gait in Parkinson's disease \$50,000.00

Davis, Marie

2020 – 2025 NINDS R01 NS119897 (PI) Investigating the role of lipid metabolism in protein aggregation and neurodegenerative disease progression \$1,963,232.00

2017 - 2026 VA Merit Review Award (CSR&D) I01 CX001702 (Co-I) Genetic Movement Disorders: Etiologies and Pathogeneses \$1,247,989.00

Hiller, Amie (Peterson)

2023 - 2025 Department of Defense PD220064 (Co-PI) Cognitive Functions Impairment as a Novel Paradigm for Delineating Cognitive Dysfunction in Parkinson's Disease (PD-CFI) \$1,200,000.00

2021 – 2023 Department of Defense PD200016 (Site PI) Ontology-based, Real-time, Machine learning Informatics System for Parkinson's Disease (ORMIS-PD) \$400,000.00

Hu, Shu-Ching (Gene)

2020 - 2033 Michael J Fox Foundation (Site PI) Parkinsons Progression Markers Initiative (PPMI) 2.0 Clinical - Establishing a Deeply Phenotyped PD Cohort \$2,080,000.00

2019 - 2025 NIA R21 AG064271 (PI) Use of wearable sensors to improve the early diagnosis of DLB \$2,539,873.00

2016 - 2027 NINDS U01 NS100610 (Co-I) Dementia with Lewy Bodies Consortium \$8,085,540.00

Mack, Joel

2022 – 2027 VA Cooperative Studies Protocol #2015 (Site PI) Multicenter, Randomized, Double-Blind Comparator Study of Antipsychotics Pimavanserin and Quetiapine for Parkinson's Disease Psychosis (C-SAPP Study) \$668,534.00

Neilson, Lee

2022 - 2027 VA CSR&D CX002539-01A1 (PI) Biomarkers of disease severity and progression in Parkinsons (MITO-PD) \$1,393,704.00

Quinn, Joseph

2016 – 2018 Department of Defense PD200016 (Site Co-PI) Ontology-based, Real-time, Machine learning Informatics System for Parkinson's Disease (ORMIS-PD) \$400,000.00

2021 – Astra Zeneca (Site PI) A Randomized, Double-blind, Placebo-controlled Study of the Safety, Tolerability, Pharmacokinetics, and Pharmacodynamics of Multiple Ascending Doses of MEDI1341 in Subjects with Parkinson's Disease

2021 –	EIP-Pharma (Site PI) Expanded Access to Neflamapimod for Patients with Dementia with Lewy Bodies (DLB) Who Participated in and Completed Treatment in Study EIP19-NFD-501
2020 – 2025	NCCIH U19 AT010829 (Co-I) Botanicals enhancing neurological and functional resilience in aging (BENFRA) \$6,000,000.00
2020 – 2025	NIA P30 AG008017 (Biomarker & Genetics Core Leader) Oregon Alzheimer Disease Center \$1,999,896.00
2020 –	Proseek (Site PI) A Phase 2, Randomized, Double-Blind, Placebo-Controlled Study of K0706 in Subjects with Early Parkinson's Disease
2020 –	Biogen LRRK2 (Site PI) A Phase 1 Single- and Multiple-Ascending-Dose Study to Assess the Safety, Tolerability, and Pharmacokinetics of BIIB094 Administered Intrathecally to Adults With Parkinson's Disease
2019 – 2024	NIA RF1 AG059392 (Co-I) Establishing microRNA biomarkers for diagnosing Alzheimer's disease and predicting progression \$3,429,850.00
2019 –	Hoffman-LaRoche (Site PI) A randomized, double-blind, placebo-controlled, 52 week Phase II study to evaluate the efficacy of intravenous R07046015 (PRX002) in Participants with early parkinson's disease (open label extension)
2018 –	Sanofi (Site PI) Multicenter randomized, double-blind, placebo-controlled study to assess the efficacy, safety, pharmacokinetics, and pharmacodynamics of GZ/SAR402671 in patients with early-stage Parkinson's disease carrying a GBA mutation or other pre-specified varian
2017 –	Vtesse, Inc (Site PI) Intrathecal 2-hydroxypropyl-b-cyclodextrin for neurologic decline in patients with Niemann-Pick type C

Samii, Ali

2021 - 2026	Prilenia Therapeutic PL101-HD301 (Co-I) A Phase III, Double - blind, Placebo - Controlled Study to Evaluate the Efficacy and Safety of pridopidine in Patients with Early Stage of Huntington Disease \$242,050.00
2020 - 2026	UniQure () A Phase I/II, Randomized, Double-blind, Sham Control Study to Explore Safety, Tolerability, and Efficacy Signals of Multiple Ascending Doses of Striatally - Administered rAAV5 - miHTT Total Huntingtin Gene (HTT) Lowering Therapy (AMT - 130) in Early M \$450,000.00
2012 – Indefinite	CHDI Foundation A-4908 (PI) Accelerating Therapeutic Development for Huntington's Disease Indirect and Out - of - Pocket costs on Huntington's disease in the United States \$439,189.00
2012 –	CHDI Foundation A-5807 (Site I) A Prospective Registry Study in a Global Huntington's Disease Cohort \$439,189.00
2007 - 2023	American Parkinson Disease Association (Co-PI) Washington Parkinson Disease Registry \$25,000.00

Su, Kimmy

2020 - 2033	Michael J Fox Foundation (Co-I) Parkinsons Progression Markers Initiative (PPMI) 2.0 Clinical - Establishing a Deeply Phenotyped PD Cohort \$2,080,000.00
2019 - 2025	NIA R21 AG064271 (Co-I) Use of wearable sensors to improve the early diagnosis of DLB \$2,539,873.00

Zabetian, Cyrus

2020 – 2024	NIA RF1AG068406 (Co-I) Extracellular Vesicle Transport of Brain-derived Proteins to the Blood in Alzheimer Disease \$2,981,849.00
2020 - 2033	Michael J Fox Foundation (Co-I) Parkinsons Progression Markers Initiative (PPMI) 2.0 Clinical - Establishing a Deeply Phenotyped PD Cohort \$2,080,000.00
2020 – 2025	Department of Defense PD190043 (Co-PI) Blood-Based Exosomal α - Synuclein Aggregates as a Quantifiable Biomarker of Parkinson's Disease \$998,711.00
2020 – 2023	NINDS/NIMH R33 MH118160 (Co-I) Characterization and quantification of CNS cell specific extracellular microvesicles in blood \$2,026,902.00
2019 – 2023	VA Merit Review Award (HSR&D) I01 CX001547 (Co-I) STAT-PD: Preventing Levodopa Induced Dyskinesia in Parkinson's Disease with HMG - CoA Reductase Inhibitors \$539,361.00
2017 - 2026	VA Merit Review Award (CSR&D) I01 CX001702 (PI) Genetic Movement Disorders: Etiologies and Pathogeneses \$1,247,989.00
2016 - 2027	NIA T32 AG052354 (Co-PI) Neurobehavior, Neuropathology, and Risk Factors in Alzheimer's Disease \$3,919,397.00
2016 - 2027	NINDS U01 NS100610 (Co-I) Dementia with Lewy Bodies Consortium \$8,085,540.00
2007 - 2023	American Parkinson Disease Association (PI) Washington Parkinson Disease Registry \$25,000.00

APPENDIX E -Philadelphia PADRECC

Publications

Abraham DS, Nguyen TPP, Blank LJ, Thibault D, Gray SL, Hennessy S, Leonard CE, **Weintraub D**, Willis AW. Channeling of new neuropsychiatric drugs-Impact on safety and effectiveness studies. *Neurotherapeutics* 20:375-388, 2023.

Abraham DS, Pham Nguyen TP, Newcomb CW, Gray SL, Hennessy S, Leonard CE, Liu Q, **Weintraub D**, Willis AW. Comparative safety of antimuscarinics versus mirabegron for overactive bladder in Parkinson disease. *Parkinsonism and Related Disorders*, in press.

Carceles-Cordon M, **Weintraub D**, Chen-Plotkin A. Cognitive heterogeneity in Parkinson's disease: a mechanistic view. *Neuron* (in press).

Cousins KAQ, Irwin DJ, Chen-Plotkin A, Shaw LM, Arezoumandan S, Lee EB, Wolk DA, **Weintraub D**, Spindler M, Deik A, Grossman M, Tropea TF. Plasma GFAP associates with secondary Alzheimer's pathology in Lewy body disease. *Annals of Clinical and Translational Neurology* 10:802-813, 2023.

Fernandez HH, **Weintraub D**, Macklin E, Litvan I, Schwarzschild MA, Eberling J, Videnovic A, Kenny C, on behalf of the Parkinson Study Group SYNAPSE Investigators. Safety, tolerability, and preliminary efficacy of SYN120, a dual 5-HT6/5-HT2A antagonist, for the treatment of Parkinson disease dementia: a randomized, controlled, proof-of-concept trial. *Parkinsonism and Related Disorders*. *Parkinsonism and Related Disorders*, doi.org/10.1016/j.parkreldis.2023.105511, 2023.

Grovoloa, M.R., Jinich, A., Paleologos, N., Arroyo, E.J., Browne, K.D., Swanson, R.L., **Duda, J.E.**, Cullen, D.K. : Persistence of Hyper-Ramified Microglia in Porcine Cortical Gray Matter after Mild Traumatic Brain Injury. *Biomedicines* 11: 1960, 2023.

Hamedani AG, **Weintraub D**, Willis AW. Hallucinations, antipsychotic use, and mortality in older adults with dementia. *Drugs & Aging* (in press).

Harris, J.P., Mietus, C.J., Browne, K.D., Wofford, K.L., Keating, C.E., Brown, D.P., Johnson, B.N., Wolf, J.A., Smith, D.H., Cohen, A.S., **Duda, J.E.**, Cullen, D.K.: Neuronal somatic plasmalemmal permeability and dendritic beading caused by head rotational traumatic brain injury in pigs-An exploratory study. *Frontiers in Cellular Neuroscience* 17: 1055455, 2023.

Hernandez-Con P, Lin I, Mamikonyan E, Deeb W, Feldman R, Althouse A, Barmore R, Eisinger RS, **Spindler M**, Okun MS, **Weintraub D**, Chahine LM. Course of impulse control disorder symptoms in Parkinson disease: deep brain stimulation versus medications. *Movement Disorders Clinical Practice* 10:903-913, 2023.

Holden, S.K., Bedenfield, N., Taylor, A.S., Bayram, E., Schwilk, C., Fleisher, J., **Duda, J.**, Shill, H., Paulson, H.L., Stacy, K., Wood, J., Corsentino, P., Sha, S.J., Litvan, I., Irwin, D.J., Quinn, J.F., Goldman, J.G., Amodeo, K., Taylor, J-P., Boeve, B.F., Armstrong, M.J.: Research Priorities of Individuals and Caregivers With Lewy Body Dementia: A Web-based Survey. *Alzheimer Disease and Associated Disorders* 37: 50-58, 2023.

Houser MC, Uriarte Huarte O, Wallings RL, Keating CE, MacPherson KP, Herrick MK, **Kannarkat GT**, Kelly SD, Chang J, Varvel NH, Rexach JE, Tansey MG. Progranulin loss results in sex-dependent dysregulation of the peripheral and central immune system. *Front Immunol*. 2022 Dec 22;13:1056417. doi: 10.3389/fimmu.2022.1056417. PMID: 36618392; PMCID: PMC9814971.

Jost ST, Kaldenbach M-A, Antonini A, Martinez-Martin P, Timmermann L, Odin P, Katzenschlager R, Borgohain R, Fasano A, Stocchi F, Hattori N, Prashanth LK, Rodriguez-Violante M, Falup-Pecurariu C, Metta V, **Weintraub D**, Poewe W, Deuschl G, Espay AJ, Tan EK, Bhidayasiri R, Fung V, Cardoso F, Trenkwalder C, Jenner P, Chaudhuri KR, Dafsari HS, on behalf of the Non-motor Parkinson Disease Study Group. Levodopa dose equivalency in Parkinson's disease: updated systematic review and proposals. *Movement Disorders* 38:1236-1252, 2023.

Marras C, Arbatti L, Hosamath A, Amara A, Anderson KE, Chahine LM, Eberly S, Kinel D, Mantri S, Mathur S, Oakes D, Purks JL, Standaert DG, Tanner CM, **Weintraub D**, Shoulson I. Large-scale analyses of replies to the Parkinson's Disease Patient Report of Problems (PD-PROP). *Journal of Parkinson's Disease* **13**:757-767, 2023.

Merchant K, Simuni T, Fedler J, Caspell-Garcia C, Brumm M, Nudelman K, Tengstrand E, Hsieh F, Alcalay R, Coffey C, Chahine L, Foroud T, Singleton A, **Weintraub D**, Hutten S, Sherer T, Siderowf A, Mollenhauer B, Tanner C, Marek K. Urinary bis(monacylglycerol) phosphate (BMP) levels are higher in LRRK2 and GBA1 variant carriers but do not predict disease progression in PPMI cohorts. *npj Parkinson's Disease* (in press).

Miller-Patterson, C, Hsu, J.Y., Chahine, L.M., **Morley, J.F.**, Willis, A.W.: Selected Autonomic Signs and Symptoms as Risk Markers for Phenoconversion and Functional Dependence in Prodromal Parkinson's Disease. *Clinical Autonomic Research* 2022 Notes: in press.

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Posters

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Chouhan D, Browne K, Ronit Patel, Cullen DK, **Duda JE**, "Development and Characterization of a Human Tissue Engineered Nigrostriatal Pathway as a Testbed for Understanding Pathophysiology in Parkinson's Disease", Society for Neuroscience, San Diego (November 2022).

Chouhan, D., Laimo, F., Karandikar, S., Patel, R., Browne, K., Cullen, D.K., **Duda, J.E.**: Understanding Synucleinopathy in Human iPSCs derived Dopaminergic and Striatal Cells Using a Tissue Engineered Nigrostriatal Pathway", PSG Meeting, Texas (December 2023). Poster presented at the Parkinson's Study Group Annual Meeting, Austin, TX. December 2022.

Chouhan, D., Browne, K., Gordián-Vélez, W., Karandikar, S., Patel, R., Shultz, R.B., **Duda, J.E.**, Cullen, D.K.: Biopreserved Human Tissue Engineered Nigrostriatal Pathway to Restore Axon Tracts in a Rat Model of Parkinson's Disease. Poster presented at the TERMIS-AM 2023 Annual Conference in Boston, MA. April 2023.

Cohen J, Phillips J, Das S, Rhodes E, Cousins K, Yushkevich P, Wolk **D**, **Weintraub W**, Irwin D, McMillan C: T1 MRI reveals differential hippocampal atrophy in Lewy Body Disorders with and without Alzheimer's copathology. Alzheimer's Association International Conference; July 19, 2023. Amsterdam, Netherlands. #432.

Chouhan, D., Browne, K., Patel, R., Karandikar, S., Laimo, F., Cullen, D.K., **Duda, J.E.** : A Human Tissue Engineered Nigrostriatal System as a Testbed for Understanding PD Pathophysiology And Therapeutic Development. Poster presented at the International Congress of Parkinson's and Movement Disorders, Copenhagen, Denmark. August 2023.

Chouhan, D., Karandikar, S., Laimo, F., Patel, R., Browne, K., Cullen, D.K., **Duda, J.E.**: Understanding Synucleinopathy in Parkinson's Disease Using a Human Tissue Engineered Nigrostriatal Pathway. Poster presented at the World Congress of Neuroscience, IBRO, Granada, Spain. September 2023.

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Professional Education

Weintraub, D

"Psychosis in Parkinson's Disease: Developments and Questions", John J. Lawser, PhD Parkinson's Lecture, Thomas Jefferson University, Philadelphia, Pennsylvania, Oct, 2022.

"Progress in Behavioral and Cognitive Therapies in PD", 9th Annual Shaping the Management of Parkinson's Disease: Debating Current Controversies & Discussing Recent Advances, Lake Tahoe, California, Dec, 2022.

"Parkinson Disease: The Interface of Psychiatry & Neurology", Department of Psychiatry Grand Rounds (Taylor Lecture), University of Maryland School of Medicine, Baltimore, Maryland, March, 2023.

"Neuropsychiatry, Cognition and Non-motor Fluctuations in PD", MDS Parkinson's Disease Educational Course for Industry Professionals, Copenhagen, Denmark, Aug, 2023.

"Cognition in Parkinson's Disease: An Update", Unmet Needs in Parkinson's Disease and Atypical Parkinsonism: Knowing the Unknown, A Satellite Meeting to the International Congress of Parkinson's Disease and Movement Disorders, Lund Sweden, Sept, 2023.

"Pharmacological Management of Psychosis in LBD", Psychosis in Parkinson's Disease, American Neurological Association 148th Annual Meeting, Philadelphia, Pennsylvania, Sept, 2023.

Morley, J

"Exercise is medicine for Parkinson's Disease", Parkinson's Foundation Caring for Veterans Symposium (virtual), Oct 2022.

"Medical Management of Parkinson's Disease". 4th Annual VA Neurology Symposium. (virtual) Nov, 2022.

"Evidence for the benefit of physical Activity in Parkinson's Disease". 13th PADRECC/MIRECC Symposium, A CME certified course, March, 2023.

"Exercise is Medicine. How do we get patients to take it?" Department of Neurology Grand Rounds. Thomas Jefferson University. Philadelphia, PA, June, 2023.

Vaswani, P

"Deep Brain stimulation: candidacy and expectations." PADRECC National Movement Disorders Series Webinar, Oct 2022.

"Updates in the treatment of Advanced PD", Geriatrics Grand Rounds, Division of Geriatrics, University of Pennsylvania, July 2023.

Duda, J

"The Whole Health Approach to Parkinson's Disease", 13th PADRECC/MIRECC Symposium entitled, 'Lifestyle Interventions to Promote Brain Health in Neuropsychiatric Disorders'. Virtual meeting, March 2023.

"How I Use Whole Health to Manage PD", National VA Parkinson's Disease Consortium Conference, virtual presentation, May 2023.

"A Human Tissue Engineered Nigrostriatal System as a Testbed for Understanding PD Pathophysiology and Therapeutic Development", International Congress of Parkinson's Disease and Movement Disorders, Copenhagen, Denmark, August 2023.

Kannarkat, G

"Assessment of the Perceived Benefit and Barriers of a Virtual Neuroscience Course for Practitioners in Low- and Middle-Income Countries.", American Neurological Association Annual Meeting, Chicago, IL, USA, Oct 2022.

"Plasma-Derived Conformations of Alpha-synuclein in Lewy Body Diseases.", Alzheimer's and Parkinson's Diseases Conference, Gothenburg, Sweden, March 2023.

"Plasma-Derived Alpha-Synuclein Strains Distinguish Parkinson's Disease from Dementia with Lewy Bodies". American Neurological Association, Philadelphia, PA, Sept 2023.

Presentations to Health Professional Trainees

Vaswani, P "Managing the challenging patient." National Introduction to PADRECC for Incoming Movement Disorders Fellows, July 2023.

Cohen, J

"CSF Glucocerebrosidase in PD" – Journal Club, Division of Movement Disorders, Phila., PA., Feb 2023.

"Translational Research Immersion Program: Mentor-Mentee Communication, ITMAT Phila., PA., June 2023

Patient Education

"Veterans and Parkinson's: Exercise, Nutrition and Wellness" The Parkinson's Foundation Veteran Webinar Series- John Duda and Jim Morley, Oct 2022.

"Living Well at Home-Pennsylvania Hospital's Movement Disorder Centers-Virtual Support Group- Rebecca Williamson, Oct 2022.

"Sleep Disorders in PD" – "Living Well" Patient Education Series, Phila., PA, Nov 2022.

"Renew! Retreat, Parkinson and Movement Disorders Alliance, "Talking to your Movement Disorders Specialist", Bethlehem, PA, USA, May 2023.

Substantial Matters: Life and Science of Parkinson's Podcast. "How to Prevent Sudden 'Off' Episodes", <https://www.parkinson.org/library/podcast/148>, April 2023.

"Traveling with PD"-Philly/Richmond PADRECC Virtual Support Group-Gretchen Glenn, June 2023.

"Veterans and Parkinson's: Resources for Veterans with Parkinson's" The Parkinson's Foundation Veteran Webinar Series- Gretchen Glenn co-presenter, June 2023.

"Practicing Gratitude" Pennsylvania Hospitals' Movement Disorders Center Caregiver Group-Gretchen Glenn, July 2023.

“Treatment of Motor Symptoms in PD” CMCVAMC Caregiver Support Program-Parkinson’s Group-Pavan Vaswani,
July 2023.

RESEARCH

Funded

Name of Staff	Title of Research Project	Type of Project (Biomedical, applied clinic, HSR&D, Rehab)	Funding Source	Total Amount Of Funds	Total Direct Costs	Beginning/End Dates
Morley (PI) Duda, Weintraub (mentors)	Effect of Exercise on recovery in Drug-Induced Parkinsonism and Parkinson Disease	Clinical (Rehab)	VA RR&D CDA-2	\$1,140,300		2017-2022
Morley (PI) Duda (co-I)	Developing Personalized Medicine Strategies to Increase Physical Activity in Parkinson’s Disease (PD) through Digital Health Technology	Clinical Trial	DoD CDMRP NETP	\$758,712		09/01/21 - 03/31/24
Morley (co-PI)	Parkinson's Disease Biomarkers In Human Olfactory Cleft Mucus	Observational Clinical Trial	NIA R21	\$144,000		10/1/2022-9/30/2024
Duda/ Weintraub/ (National co-PIs) Morley (Site PI)	Multicenter, Randomized, Double-Blind Comparator Study of Antipsychotics Pimavanserin and Quetiapine for Parkinson's Disease Psychosis (C-SAPP Study)	Interventional Clinical Trial	VA CSP	\$19,362,320 total for study \$537,842 Phila. PADRECC		01/15/20 - 01/14/26
Duda	Tissue engineered Nigrostriatal Pathway as a testbed for evaluating axonal pathophysiology in Parkinson’s disease	Biomedical Lab	VA BL R&D MERIT	\$710,000		4/01/2020- 3/31/2024
Duda (PI)	A Multi-center, Randomized, Active-controlled, Double-blind, Double-dummy, Parallel Group Clinical Trial Investigating the Efficacy, Safety, and Tolerability of Continuous Subcutaneous ND0612 Infusion in Comparison to Oral IR-LD/CD in Subjects with Parkinson's Disease Experiencing Motor Fluctuations (BouNDless)	Interventional Clinical Trial	Neuroderm	Allotted per patient enrolled		2022-2027
Duda (PI)	Nigrostriatal Pathway as a testbed for evaluating axonal pathophysiology in Parkinson’s disease	Biomedical Lab	I01 BX005079-01 BLR&D Merit Award	\$177,500		3/1/2020- 2/28/2024

Morley (PI) Whitley Aamodt (co-PI)	Freezing of Gait in the Evaluation of Drug Induced Parkinsonism and Parkinson's Disease	Observational Clinical Trial	PADRECC Pilot Fund			8/19/2020-9/30/2024
Morley (PI) Duda (co-I)	The Veterans Parkinson's Disease Genetics Initiative (Vet-PD)	Clinical Trial	SIBR MJFF	Allotted per patient enrolled (40000 max)		March 2023-April 2024

Primary Projects

Principal Investigator	Title of Research Project	Purpose/Hypothesis	Method Sample (size/selection)	Measures/ Criteria	Findings
Morley (PI)/ Duda (co-I)	Developing Personalized Medicine Strategies to Increase Physical Activity in Parkinson's Disease (PD) through Digital Health Technology	Test strategies to increase physical activity using digital health technologies	Ambulatory Veterans with PD		pre-planned interim analysis demonstrated a significant increase of 20% in average daily step count during the intervention phase
Morley (PI) Duda (o-I)	Degenerative Nigrostriatal Dysfunction in Drug-Induced Parkinsonism	Determine markers of underlying neurodegeneration in DIP	Veterans with Drug-Induced Parkinsonism		Aamodt, W.A., Dubroff, J.D., Cheng, G., Taylor, B., Wood, S., Duda, J.E., Morley, J.F.: Gait Abnormalities and Non-Motor Symptoms Predict Abnormal Dopaminergic Imaging in Presumed Drug-Induced Parkinsonism. npj Parkinson's Disease 8: 53, 2022
Morley (PI) Whitley Aamodt (co-PI)	Freezing of Gait in the Evaluation of Drug Induced Parkinsonism and Parkinson's Disease	Evaluate freezing of gait to learn how certain walking/ balance problems are associated with PD.	Veterans with PD or drug- induced parkinsonism and previous DAT-SPECT imaging		Ongoing
Duda/ Weintraub (National co-PIs) Morley (Site PI)	Multicenter, Randomized, Double-Blind Comparator Study of Antipsychotics Pimavanserin and Quetiapine for Parkinson's Disease Psychosis (C-SAPP Study)	Compare effectiveness of Pimavanserin and Quetiapine for PD psychosis	Veterans with PD and symptoms of psychosis		Ongoing
Duda (PI)	A Multi-center, Randomized, Active-controlled, Double-blind, Double-dummy, Parallel Group Clinical	Investigating ND0612 (form of levodopa/carbidopa (LD/CD) delivered as a continuous	Veterans with PD and Caregiver Partners		Ongoing

	Trial Investigating the Efficacy, Safety, and Tolerability of Continuous Subcutaneous ND0612 Infusion in Comparison to Oral IR-LD/CD in Subjects with Parkinson's Disease Experiencing Motor Fluctuations (BouNDless)	subcutaneous infusion as a possible treatment for PD			
Duda	Tissue engineered Nigrostriatal Pathway as a testbed for evaluating axonal pathophysiology in Parkinson's disease	To further develop bioengineered nigrostriatal pathways as a tool for developing a better understanding of the role of axonopathy and protein transmission in alpha-synuclein pathophysiology as well as testing novel therapeutic approaches for Parkinson's disease	Biomedical Lab		See Appendix C
Duda (PI)	Nigrostriatal Pathway as a testbed for evaluating axonal pathophysiology in Parkinson's disease	To further develop bioengineered nigrostriatal pathways as a tool for developing a better understanding of the role of axonopathy and protein transmission in alpha-synuclein pathophysiology as well as testing novel therapeutic approaches for PD	Biomedical Lab		See Appendix C
Duda (PI)	Development and Testing of a Human-Scale Tissue Engineered Nigrostriatal Pathway	To screen multiple human stem cell sources while employing novel biofabrication and quality assurance techniques to develop human-scale implantable brain pathways for treatment of Parkinson's disease.	Biomedical Lab		See Appendix C

Collaborative Projects

Principal Investigator	Title of Research Project	Purpose/ Hypothesis	Method Sample (size/selection)	Measures/ Criteria	Findings
Morley (co-I) Duda/ Wilkinson/ Weintraub (co-PIs)	Markers for Diagnosis and Prognosis in Parkinson's Disease	Determine markers that improve diagnosis of PD or better predict the development of movement, Psychiatric, and cognition complications	Veterans with PD		See Appendix C
Morley (site PI) Duda (site co-I)	Behavioral or Solifenacin Therapy for Urinary Symptoms in Parkinson's Disease	Compare Solifenacin with pelvic floor exercise for overactive bladder symptoms in PD patients	Veterans with PD and overactive bladder symptoms		recruitment completed. In data analysis
Noam Cohen (PI)/ Duda (co-PI)	The Role of Bitterome and Microbiome In Parkinson's Disease	Investigate whether DNA affect bacteria in the nasal cavity and colon differently in veterans with PD vs. healthy controls.	Veterans with PD and healthy controls		N/A
Morley (co-PI)	Parkinson's Disease Biomarkers In Human Olfactory Cleft Mucus	Examine protein biomarkers derived from olfactory cleft mucus to distinguish between subjects with PD and healthy controls	Veterans with PD and healthy controls		Ongoing
Morley (PI) Duda (co-I)	The Veterans Parkinson's Disease Genetics Initiative (Vet-PD)	To collect and share DNA, clinical/demographic data, and plasma biomarkers from a diverse PD cohort with the Global Parkinson's Genetics Program (GP2) for use in its ongoing PD genome-wide	Veterans with PD divided into two groups based on self-reported race and ethnicity		Ongoing
Duda (co-I)	Transplantable Micro-Tissue Engineered Neural Networks to Restore the Nigrostriatal Pathway in Parkinson's Disease	Further develop micro-tissue engineered neural networks as a possible implantable construct to recapitulate the nigro-striatal pathways.	Biomedical Lab		See Appendix C
Chen (PI)	Designing neuronal tissue that mimics	To use recent advances in the fields of neural tissue engineering and	Biomedical Lab		See Appendix C

Duda (Mentor)	brain-specific architecture	stem cell biology to engineer autologous neural tissue with complex cortical architecture for the purpose of treating brain injury.			
Duda (co-PI)	Restoring the nigrostriatal pathway with living micro-tissue engineered axonal tracts	This project utilizes preformed micro-tissue engineered neural networks to physically reconstruct the axonal connections from the substantia nigra pars compacta to the striatum in a rodent model of Parkinson's disease. This project explores the optimal dose, encasement, and starting biomass for this regenerative therapy.	Biomedical Lab		See Appendix C
Duda (co-I)	Chronic Neurodegenerative Sequelae Driven by Neuroinflammation After Mild TBI	This project will investigate the role of neuroinflammation as a major driver of chronic neurodegeneration following mild traumatic brain injury (TBI).	Biomedical Lab		See Appendix C
Duda (co-PI)	Biological "Living Electrodes" Using Tissue Engineered Axonal Tracts to Probe and Modulate the CNS	This project will mechanistically assess the ability of micro-Tissue Engineered Neural Networks to serve as biological "living electrodes" for neural-electrical interface. This project will focus on the ability of "living electrodes" to provide synaptic specificity, targeted inhibition/excitation and biological multiplexing in comparison to conventional neural interface modalities.	Biomedical Lab		See Appendix C

Duda (co-PI)	Restoring the nigrostriatal pathway with living micro-tissue engineered axonal tracts	This project is investigating the potential of using engineered tissue constructs to recapitulate the nigrostriatal pathway in rodent models of Parkinson's disease.	Biomedical Lab		See Appendix C

APPENDIX F - Houston PADRECC

Publications

Newsome, m., Martindale, S.L., Davenport, N., Dennis, E.L., Diaz, M., Esopenko, C., Hodges, C., Jackson, G.R., Liu, Q., Kenney, K., Mayer, A.R., Rowland, J.A., Scheibel, R.S., Steinberg, J., Taylor, B.A., Werner, K., Tatte, D.F., Walker, W., and Wilde, E. Subcortical Functional Connectivity and its Association with Walking Performance following Deployment Related Mild TBI. *Frontiers in Neurology*, accepted for publication.

Yusuff, T., Chang, Y.-C., Sang, T.-K., Jackson, G.R., and Chatterjee, S. "Codon-optimized TDP-43 mediates neurodegeneration in a Drosophila model of ALS/FTLD." *Front Genet.* 2023;14(881638); PMID: 369685.

York, MK and Alcalay, R. (2023). Enough vs. More: Neuropsychological Testing is More Useful than Genetic Testing in the Baseline Evaluation of Parkinson Disease. *Parkinsonism and Related Disorders*. May 11:105403. doi: 10.1016/j.parkreldis.2023.105403. PMID: 37198082.

McCauley, S.R., Nguyen, T., Nguyen, C., Strutt, A.M., Stinson, J.M., Windham, V., & York, M.K. (2023). Developing culturally competent foreign language neuropsychological assessment: Vietnamese-speaking patients with suspected dementia. *Archives of Clinical Neuropsychology*, acac035, <https://doi.org/10.1093/arclin/acac035>.

Stinson, J.M., Roman, C., Combs, H.L., York, M.K., Strutt, A.M., & McCauley, S.R. (2023) Geopolitical Considerations of Working with Medically Complex Patients: A Case Illustration. *Archives of Clinical Neuropsychology*, acad004, <https://doi.org/10.1093/arclin/acad004>.

Qi, W., Hong, Y., Sun, X., Stinson, J.M., York, M.K., McCauley, S.R., & Strutt, A.M. (2023). A Neuropsychological Battery for the Evaluation of Dementia among Mandarin-Speaking Older Adults in the United States. *Archives of Clinical Neuropsychology*, acac085, <https://doi.org/10.1093/arclin/acac085>.

Stinson, J.M., Armendariz, V., Hegazy, M.I.R., Strutt, A.M., McCauley, S.R., York, M.K. (2023). Developing a Culturally Competent Neuropsychological Battery for Diagnosis of Dementia in Arabic-Speaking Patients in the United States. *Archives of Clinical Neuropsychology*, acad017, <https://doi.org/10.1093/arclin/acad017>.

Strutt, A.M., Diaz Santos, A.L., de Minas Salerno Chiles, A.L., Furtado, M., York, M.K., Stinson, J.M., McCauley, S.R. (2023). Developing Culturally Competent Foreign Language Neuropsychological Assessments: Portuguese-Speaking Brazilians Living in the United States. *Archives of Clinical Neuropsychology*, acad016, <https://doi.org/10.1093/arclin/acad016>.

York, M.K., Kim, S., Lee, D., Windham, V., Strutt, A., Stinson, J., and McCauley, S. (2023). Culturally Competent Approaches for Neuropsychological Assessment for Differential Diagnosis of Dementia of Korean-speaking Patients in the United States. *Archives of Clinical Neuropsychology*, acac094, <https://doi.org/10.1093/arclin/acac>.

Henry, S.K., Talavari, D., York, M.K., Stinson, J.M., Strutt, A.M., & McCauley, S.R. (2023). Culturally Competent Approaches for Neuropsychological Assessment for Differential Diagnosis of Dementia of Farsi-speaking Patients in the United States. *Archives of Clinical Neuropsychology*, acac099, <https://doi.org/10.1093/arclin/acac099>.

Moon, S., Devos, H., Santos, F., Foster, E., Goldman, J., Hirsch, M., Leroi, I., Walker, S., Kletzel, S., York, M.K. (2023). A Patient's Guide to Memory Changes in Parkinson's Disease. *Archives of Physical Medicine and Rehabilitation*. *Archives of Physical Medicine and Rehabilitation*, <https://doi.org/10.1016/j.apmr.2023.01.027>.

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Troyanskaya, M., Pastorek, N.J., Jamal, F., Jackson, G.R., Sarwar, A.I., Wilde, E.A., and Scheibel, R.S. "A pilot study of olfactory function in veterans with a history of deployment-related mild traumatic brain injury." *Neurocase*. 2022 Dec; PMID: 3657.

Posters

Sarwar A.I., MD. Risk factors of sleep disordered breathing in Veterans with Parkinson's disease. Accepted for publication and presentation at the International Congress of Parkinson's Disease and Movement Disorders®, in Copenhagen, Denmark from August 27-31, 2023.

Jamal F, Jackson JR, Sarwar A.I., Mandava P. Age at onset and therapeutic efficacy of Primidone in Essential Tremor patients. Accepted for publication and presentation at the International Congress of Parkinson's Disease and Movement Disorders®, in Copenhagen, Denmark from August 27-31, 2023.

Goldman, JG, Volpe, D., Ellis, T.D., Hirsch, M.A., Johnson, J., Wood, J., Aragon, A., Biundo, R., Di Rocco, A., Kasman, G.S., Iansek, R., Miyasaki, J., McConvey, V.M., Munneke, M., Pinto, S., St. Clair, K.A., Toledo, S., York, M.K., Todaro, R., Yarab, N., Wallock, K. (2023). An international consensus statement for rehabilitation care in Parkinson's disease. *International Parkinson and Movement Disorders Society Conference (accepted)*. Copenhagen, Denmark, 2023. Chosen as an oral platform presentation.

Gallagher J, Gochanour C, Fedler J, Roseanne Dobkin, Dag Aarsland, Alcalay R, Barrett M, Caspell-Garcia C, Chahine LM, Chen-Plotkin A, Coffey C, Dahodwala N, Eberling J, Espay A, Leverenz J, Litvan I, Mamikonyan E, Morley JF, Richard I, Rosenthal L, Siderowf A, Simuni T, York M.K., Willis A, Xie S.X., Weintraub D (2023). Long-term dementia prevalence in Parkinson disease: Glass half-full? *International Parkinson and Movement Disorders Society Conference (accepted)*. Copenhagen, Denmark, 2023.

Jimenez Shahed, J., Berg, A., York, M.K., Siddiqui, M., Schwalb, J., McInerney, J. (2023) Presurgical correlates of QOL (PDQ-39) in DBS eligible PD population. International Parkinson and Movement Disorders Society Conference (accepted). Copenhagen, Denmark, 2023.

Jimenez Shahed, J., Berg, A., York, M.K., Siddiqui, M., Schwalb, J., McInerney, J. (2023). Data-driven phenotypic clustering of Parkinson's disease patients seeking deep brain stimulation. American Academy of Neurology, Boston, MA, 2023.

Lee, M., Mishra, R.K., York, M.K., Kunik, M., Barchard, G., Vasurum A., et al. (2023) Instrumental Activities of Daily Living (IADL) as a Digital Biomarker of Cognitive Decline in Older Adults. American Academy of Neurology, Boston, MA, 2023.

Jamal F, Sarwar AI. Implementing a model of comprehensive care in Parkinson's Disease. Accepted for MEDVAMC QI &M summit. September 2023.

Professional Educations

York, M "Cognition in ALS". Presented to the Neuropsychology Grand Rounds, Houston, TX. February 12, 2023.

Sarwar, AI "Insight into brain stimulation for treating neurological disorders.", University and NSF I-Corps Program Presentation, Houston, TX, August 09, 2023.

"Sleep Issues in Parkinson's Disease". Parkinson & Movement Disorder Alliance. PMD Alliance Programs programs@PMDAlliance.org. National virtual lecture. July 12, 2023

"Parkinson's Disease Therapeutics". Virtual lecture. CHK, Karachi, Pakistan. July 26, 2023

"Circadian Dysregulation in PD" (Target Audience – PADRECC and Houston Consortium physicians and nurses), Oct 2022

"Whole Health for Parkinson's Disease", Feb 2023.

Jamal, F "Non-Motor Features of Parkinson's Disease". Internal Medicine Grand Rounds, BCM, MEDVAMC. October 2022.

Presentations to Health Professional Trainees

Jackson, G

"Pepinemab antibody blockade of SEMA4D in early Huntington's disease: a randomized, placebo-controlled, phase 2 trial", Journal club presentation. October 17, 2023.

York, M

"Neuropsychology 101". Presented to the Strake Jesuit College Prep School Advanced Placement Psychology Classes. Houston, TX. February 2023.

"Non-motor effects of deep brain stimulation in Parkinson's disease motor subtypes. Parkinsonism and Related Disorders". Presented to the PADRECC journal club. Houston, TX, March 21, 2023.

"Deep Brain Stimulation in Parkinson's Disease: A Meta-analysis of long-term neuropsychological outcomes". Neuropsychology Review (2023) 33:307. Journal Club presentation. September 26, 2023

Jamal F.

MEMED 607B, Elective for BCM first year medical students: “Clinical cases in medicine, Neurological disorders”, April 3rd, 2023

“BCM Neurology Boot Camp: Evaluation of movement disorders in Clinic”, June 12, 2023.

“Assessment of heterogeneity among participants in the Parkinson's Progression Markers Initiative cohort using α -synuclein seed amplification: a cross-sectional study”. Journal club presentation. Houston, TX, June 20, 2023.

BCM Resident lecture: Thalamus. July 20, 2023

BCM Resident lecture: Cerebellum. July 25, 2023

Patient Education

Sarwar, A

“Autonomic dysfunction in PD”. PD Community Caregiver discussion. August 22, 2023

“Medical Management of Parkinson’s Disease”. Patient and Caregiver Virtual Educational Forum December 14, 2022.

“Whole Health – Parkinson’s Disease”. Patient and Caregiver Virtual Educational Forum March 10, 2023.

“The experience of hallucinations and delusions in Parkinson's disease population”. Patient and Caregiver Virtual Educational Forum, Sept. 29, 2023.

RESEARCH

Funded

Name of Staff	Title of Research Project	Type of Project (Biomedical, applied clinic, HSR&D, Rehab)	Funding Source	Total Amount Of Funds	Total Direct Costs	Beginning/End Dates
PI (Scheibel, Co-I (Sarwar, Jackson, Jamal)	A longitudinal study of chronic TBI in OEF/OIF/OND veterans and service members	Applied Clinic/Rehab	VA Merit Review Grant	\$1.1 million total	\$189,100 initial yr.	2012-2026
PI (Interian)	Rural Veterans with Depression	Applied Clinic	Department of VA-Office of Rural Health	\$300,839 (\$50,000 – 1 year)	\$300,839 (\$50,000 – 1 year)	7/2020-2024
PI (Shulman) Co-I, (Jackson)	Houston Alzheimer’s Disease Research Center Consortium P30AG066510-A1	Biomedical, applied clinic	NIH	N/A	N/A	4/1/2020-3/31/2025 Unfunded (modified and re-submitted to Fidelity Foundation-see below)

PI (Jones), Co-I, (Sarwar AI, Jackson GR)	Screening for prodromal markers of alpha- synucleinopathies in post-9/11 veterans	Biomedical/ Applied Clinic	Baylor Center for Alzheimer's and Neurodegenerative Diseases (CAND)	\$37,500 for one year	\$37,500	12/28/2021- 11/9/2026 (Protocol approval dates)
PI (Shulman, Joshua M) Co-I, (Jackson, GR)	Precision Medicine for Alzheimer's Disease and Related Dementias.	Biomedical, Longitudinal observational prospective cohort biomarker/gene association study using amyloid and tau PET imaging, metabolomics, and whole genome sequencing.	Fidelity Foundation via BCM CAND	Approx., (\$3 million)	Approx., (\$3 million)	10/12/2022- 10/11/2023

Primary Projects

Principal Investigator	Title of Research Project	Purpose/Hypothesis	Method Sampl (size/selection)	Measures/ Criteria	Findings
Sarwar, AI	H-20822: Circadian Dysrhythmi & Common Sleep Complaints in Parkinson's disease VA Seed Grant (2012-2013) 2008-2026	To study the distribution of different "chronotypes" and their association with sleep complaints (excessive sleepiness, insomnia etc.) in Veterans with PD	Sample size: 300 Sleep diary, Questionnaires (PSQI, VA sleep lab) I RBD, PTSD, GDS) Actigraphy(grant) DLMO (grant)	Data from Standardized Questionnaires Actigraphy, DLMO for Study objectives	18 published abstracts (2011-2023) * MOST RECENT: Sarwar AI. Risk factors of sleep disordered breathing in Veterans with Parkinson's disease Presented at the International Parkinson Disease and Movement Disorder Society meeting, Copenhagen, Denmark August 27-31, 2023.
Jamal, F	H-43032 Study of clinical characteristics of tremor in veterans 2018-2026	To study the demographics and clinical features of Essential Tremor (ET) in veterans, for better understanding of ET phenotypes.	Sample size: Local: 1600 Worldwide: 1600	Descriptive Statistics from Chart review for study objectives	Six abstracts and a manuscript have been published. Shah C., Jackson GR, Sarwar AI, Mandava P., Jamal F. Treatment Patterns in Essential Tremor: A Retrospective Analysis. Tremor & Other Hyperkinetic Movement disorders. 2022 Mar 23; 12:10. Jamal F, Jackson GR, Sarwar AI,

					<p>Mandava P. Age at onset and therapeutic efficacy of Primidone in Essential Tremor patients. International Congress of Parkinson's Disease and Movement Disorders®, in Copenhagen, Denmark from August 27-31, 2023. Published [abstract]. Mov Disord. 2023; 38 (suppl 1)</p> <p>Jamal F Noorbhai IZ, Jackson JR, Sarwar AI. Racial Differences in Essential Tremor. International Parkinson Disease and Movement Disorder Society meeting, September 15-18, 2022. Published [abstract]. Mov Disord. 2022; 37 (suppl 1.) One in 2019, two in 2020, one in 2021</p>
Jamal, F	H-34191: Parkinson's disease and Vit D deficiency in Veterans 2014-2026	To determine the characteristics of PD in Vitamin D deficiency	Sample size: Local: 3000 Charts review for vitamin D levels, demographic and clinical parameters	Vit D levels are correlated with extracted variables.	<p>Abstracts: (3) Vitamin D Deficiency and Severity of Parkinson's Disease in Veterans. WPC 2016 Vitamin D and Clinical Phenotypes of Parkinson's Disease MDS 2017 Vitamin D assessment in veterans with Parkinson's disease. AAN (May 4-10, 2019</p>

Collaborative Projects

Principal Investigator	Title of Research Project	Purpose/Hypothesis	Method/ Sample (size/selection)	Measures/ Criteria	Findings
PI (Scheibel), Co (Sarwar, Al, Jackson GR, Jamal, F) 2012-2026 VA Merit Review	H-32150 A longitudinal study of chronic TBI in OEF/OIF/OND veterans & service members	To characterize the long-term effects of TBI on cognition, neuroimaging, and functional outcome in veterans & service members	Sample size: Local: 200 Worldwide: 270 Questionnaire /survey/imaging	Lifetime TBI history, cognition, functional, emotional and neurological status, blood biomarkers, Brain structural & Functional imaging.	Slight bradykinesia, rigidity and tremor was observed on 52 standardized quantitative neurological examinations using the Neurological Outcome Scale for TBI
PI: Viswanathan, Ashwin Co-I (Sarwar A, Jamal F, York, M) 2022-2027 VA/BCM Funded by: DEEPMIND TECHNOLOGIES (LONDON, UK); ALPHABET INC.	H-42723 Analysis of human cortical and subcortical electrophysiological recordings during deep brain stimulator implantation	To analyze human electrophysiological data collected during deep brain stimulator implantation through a combination of subcortical and cortical recordings, with the goal of understanding brain physiology and optimizing DBS placement	Pilot Sample size: 20 Neural signal power spectrum analysis and correlation with physiological parameters	Change in Physiologic Parameter (e.g., tremor) Signal analysis of deep brain & cortical regions to determine relationship between oscillatory activity	LFP correlation with tremor activity LFP can guide placement of DBS.
PI: Sharafkhaneh Co-I (Sarwar), 2019-2023 VA/BCM	H-32672- To define the health care utilization including inpatient & outpatient health care use before and after therapy with CPAP adjusted for various comorbid conditions and demographic characteristics.	As per the title	N =250000 Retrospective cohort study of patients with SRBD compared to non-SRBD cohort of veterans	Comparison of health care utilization and clinical outcomes of patients with SRBD treated with CPAP Vs matched controls.	Data is being analyzed
PI: Sharafkhaneh Co-I (Sarwar) 2019-2026 VA/BCM	H-35366 Sleep apnea, incidence and prevalence various chronic medical conditions, and related mortality in veterans	To determine whether Veterans who are diagnosed with sleep apnea and other sleep disorders have increased prevalence and incidence of various chronic and acute medical conditions	N=1,000,000 Retrospective data base review	Identifying multiple various comorbid conditions & their relationship with presence of OSA or other sleep disorders and its treatment.	On-going

<p>PI: Jones Co-I (Sarwar, Jackson) 2021-2026 BCM/VA</p>	<p>H-50496 Screening for prodromal markers of alpha-synucleinopathies in post-9/11 veterans</p>	<p>To assess prodromal features and investigate REM sleep without atonia using polysomnography to optimize screening methods for RBD and develop standardized protocols for detecting prodromal markers of synucleinopathies in post-9/11 Veterans.</p>	<p>N=35 Pilot, cross-sectional Questionnaire/survey/interview</p>	<p>Early features of synucleinopathies (REM sleep without atonia/rapid eye movement sleep behavior disorder, olfaction loss, subtle parkinsonism, autonomic and quantitative motor dysfunction)</p>	<p>On-going</p>
<p>Site PI: Jamal 08/12/2022-09/13/2027 International Parkinson's and Movement Disorder Society</p>	<p>A multi-center observational study on the Prevalence of Loss of benefit after DBS for medication-refractory tremor</p>	<p>To determine factors governing loss of neurostimulation benefit in medication refractory tremor</p>	<p>Observational Prospective</p>	<p>MDS-Tremor Study Group Defined Criteria</p>	<p>Initiated in FY 23 3 subjects have been recruited so far</p>