

March 2020

CURRICULUM VITAE

BRIAN D. BERMAN, MD, MS, FAAN
Associate Professor of Neurology, Psychiatry, and Radiology

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Biographical Sketch

Dr. Brian D. Berman is an Associate Professor of Neurology, Psychiatry, and Radiology at the University of Colorado Anschutz Medical Campus. He earned a bachelor's degree in Physics from the University of New Mexico followed by a master's degree in Medical Physics from the University of Colorado. He went on to receive his medical education at the University of Colorado and then did neurology residency training at the University of California at San Francisco. After a post-doctoral clinical research fellowship with Dr. Mark Hallett at the Human Motor Control Section of the National Institutes of Health, he returned to join the faculty at the University of Colorado. His clinical duties include seeing patients in the Movement Disorders Clinic at UHealth (Aurora and Boulder) and in the Neurology Clinic at the Denver Veteran's Affairs Medical Center. His investigative activities include applying advanced structural and functional imaging techniques to gain a better understanding of the pathophysiology of Parkinson disease, Parkinson disease dementia, and dystonia, and develop neuroimaging biomarkers for these disorders. Additional investigative activities include advancing our understanding of the non-motor features of dystonia and developing non-invasive neurostimulation strategies to treat dystonia and enhance sleep as an approach to improve cognition in Parkinson disease and potentially slow disease progression. In addition to his clinical and investigative activities, Dr. Berman has a passion for educating and training medical students, neurology residents, and movement disorder fellows, as well as for mentoring junior faculty who will be the future leaders in academic medicine.

Education and training:

1988 – 1992 B.S. in Physics, magna cum laude, University of New Mexico, Albuquerque, New Mexico.

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- 1993 – 1996 M.S. in Medical Physics, University of Colorado Health Sciences Center, Denver, Colorado.
- 2000 – 2004 M.D., University of Colorado Health Sciences Center, Denver, Colorado.
- 2004 – 2005 Intern in Internal Medicine, University of California at San Francisco, San Francisco, California.
- 2005 – 2008 Resident in Neurology, University of California at San Francisco, San Francisco, California.
- 2008 – 2010 Clinical Fellow in Movement Disorders, Human Motor Control Section, NINDS/NIH, Bethesda, Maryland.

Academic appointments:

- 2010 – 2015 Assistant Professor of Neurology, Psychiatry, and Radiology, University of Colorado Anschutz Medical Campus.
- 2015 – Present Associate Professor of Neurology, Psychiatry, and Radiology, University of Colorado Anschutz Medical Campus.

Hospital, government or other professional positions:

- 1995 – 2000 Medical Physicist, Centennial Medical Physics, L.L.C.
- 2006 – 2008 Clinical Neurologist, Center for Imaging of Neurodegenerative Diseases, San Francisco Veterans Administration Medical Center.
- 2010 – 2012 Special Volunteer, Human Motor Control Section, NINDS/NIH.
- 2012 – Present Attending Neurologist, Denver VA Medical Center, Denver, Colorado.
- 2016 – Present Chair, Radioactive Drug Research Committee (RDRC), University of Colorado, Anschutz Medical Campus.
- 2017 – Present Co-Director/Primary mentor, Colorado Clinical Translational Sciences Institute (CCTSI) Clinical Faculty Scholars Program, University of Colorado, Anschutz Medical Campus.
- 2018 – Present Voting member, Committee on Ionizing Radiation for Human Use (huCIR), University of Colorado, Anschutz Medical Campus.

Honors, special recognitions and awards:

- 1990 Associated Western Universities DOE Student Research Fellowship
- 1991 American Physical Society Summer Research Fellowship

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- 1988 – 1992 Dean’s Honor Roll, New Mexico State University, University of New Mexico
1992 Feynman Award for Best Student in Contemporary Physics, University of New Mexico
1994 Master’s Fellowship, University of Colorado Health Sciences Center
2004 Joseph and Regina Glaser Research Prize for Outstanding Research in Medical School, University of Colorado Health Sciences Center
2004 Achievement Rewards for College Scientists Foundation Scholar, University of Colorado Health Sciences Center
2011 – 2013 Scholar, Colorado Clinical & Translational Sciences Institute’s Clinical Faculty Scholars Program
2011 26th Annual Parkinson Study Group Symposium on Etiology, Pathogenesis, and Treatment of Parkinson’s Disease Travel Stipend Awardee
2011 American Neurological Association 136th Annual Meeting travel award
2011 5th International Dystonia Symposium Travel Stipend Awardee
2012 American Neurological Association Junior Academic Neurologist Scholarship
2013 Movement Disorder Society 17th International Congress Travel Grant Awardee
2015 Nominated for the 2015 University of Colorado School of Medicine Golden Stethoscope Award: Best Role Model and Best Specialty Preceptor
2016 Department of Neurology Faculty Student Teaching Appreciation Award, University of Colorado School of Medicine
2018 The 2018 University of Colorado School of Medicine Golden Stethoscope Award: Patient/Physician Communication.
2018 Elected Fellow of the American Academy of Neurology
2019 Parkinson’s Foundation Center of Excellence designation

Membership in professional organizations:

- 1989 – Present Sigma Xi, The Scientific Research Society
2006 – Present Movement Disorder Society
2007 – Present American Academy of Neurology
2008 – Present Society for Neuroscience
2011 – Present Parkinson Study Group
2011 – Present University of Colorado Center for NeuroScience
2012 – Present American Neurological Association

Major committee and service responsibilities:

Department of Neurology

- 2011 – 2015 Director, Movement Disorders Block of the Neurology Seminar Series for the neurology resident teaching curriculum, University of Colorado Anschutz Medical Campus.
2012 – 2014 Member, Data Safety and Monitoring Board Member for COMIRB #10-1143 (“A Phase II, Double Blinded, Placebo Controlled, Randomized Study Comparing Rituximab Induction Therapy followed by Glatiramer

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Acetate Therapy to Glatiramer Acetate Monotherapy in Patients with Relapsing Forms of Multiple Sclerosis”).

2012 – Present Neurology Resident Journal club (lead annually), University of Colorado Anschutz Medical Campus Department of Neurology.

2013 – 2018 Faculty Advisor, Student Interest Group in Neurology (SIGN).

2013 – Present Associate Director of Research, Movement Disorders Center, University of Colorado Anschutz Medical Campus.

University of Colorado Anschutz Medical Campus:

2010 – Present Charter Member of the Colorado Translational Research Imaging Center (C-TRIC) Scientific Staff.

2013 – 2017 Instructor, UCD Foundations of Doctoring Neurological Examination Review.

2014 – 2015 Co-Director of Medical Student Education, Neurological Care Clerkship, University of Colorado Anschutz Medical Campus.

2016 – Present Grant Reviewer, Colorado Clinical & Translational Sciences Institute (CCTSI): KL2 (2016, 2018), Colorado Pilot Program (CO-Pilot; 2018, 2019), KTR Program (2020).

2018 Grant Reviewer, Health Research Board (HRB), Ireland: Clinical Scientist Award.

2019 – Present Council Member, Cochrane US Network – University of Colorado

Community:

2013 – Present Co-creator and moderator of regional “Movement Disorders Video Conference” held semi-annually in Denver, CO.

2019 – Present Board member, Parkinson Association of the Rockies (www.parkinsonrockies.org).

National:

2011 – 2015 Editorial Board Member, Journal of Neurology & Neurophysiology.

2013 – Present Member, Medical Advisory Board, National Spasmodic Torticollis Association.

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- 2014 – Present Member, Medical Advisory Board, Benign Essential Blepharospasm Research Foundation, Inc.
- 2014 – Present Grant Reviewer, Benign Essential Blepharospasm Research Foundation, Inc.
- 2018 Scientific reviewer, Peer Review Medical Research Program (PRMRP) for the Department of Defense Congressionally Directed Medical Research Programs (CDMRP)

International:

- 2018 – Present Co-Chair, Education Roadmap Program, International Parkinson and Movement Disorder Society (MDS).
- 2019 – Present Member, Clinical Research Subcommittee of the American Academy of Neurology (AAN).

Licensure and board certification:

- 1999 Diplomat, American Board of Radiology, Certificate in Therapeutic Radiologic Physics
- 2006 – 2008 Medical license, State of California
- 2008 – 2010 Medical license, State of Maryland
- 2008 – Present Diplomat, American Board of Psychiatry and Neurology (Recertification 2018)
- 2010 – Present Medical license, State of Colorado

Review and referee work:

- 2008 – 2010 Associate Faculty Editor, Faculty of 1000 Medicine (<http://f1000medicine.com>).
- 2010 Ad hoc reviewer, Current Biology, Frontiers in Systems Neuroscience
- 2011 Ad hoc reviewer, NeuroImage
- 2012 Ad hoc reviewer, NeuroImage, Parkinsonism & Related Disorders
- 2013 Ad hoc reviewer, NeuroImage, Parkinsonism & Related Disorders, Psychiatry Research: Neuroimaging
- 2014 Ad hoc reviewer, Parkinsonism & Related Disorders, Journal of Clinical Movement Disorders, American Journal of Neuroradiology
- 2015 Ad hoc reviewer, Movement Disorders, Parkinsonism & Related Disorders, Human Brain Mapping, JAMA Neurology, Journal of Neuroscience, American Journal of Neuroradiology
- 2016 Ad hoc reviewer, Movement Disorders, Human Brain Mapping
- 2017 Ad hoc reviewer, Movement Disorders, Parkinsonism & Related Disorders
- 2018 Ad hoc reviewer, Movement Disorders: Clinical Practice; Neurology: Clinical Practice, Parkinsonism & Related Disorders; Movement Disorders Abstract Reviewer for 2019 AAN meeting.

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2019 Ad hoc reviewer, Human Brain Mapping, Neurology: Clinical Practice, Parkinsonism & Related Disorders, Brain Sciences, F1000 Research, Trials; Movement Disorders Abstract Reviewer for 2020 AAN meeting.

2020 Ad hoc reviewer, Movement Disorders, Brain Sciences.

For additional details of review and referee work see: <https://publons.com/author/1583704/brian-d-berman#stats>

Invited extramural lectures, presentations and visiting professorships:

Local:

- “Mind Over matter: Real Time fMRI-Based Neurofeedback For The Treatment of Tourette Syndrome.” UCD Department of Neurology Grand Rounds, Aurora, CO. October 2009.
- “Parkinson’s disease.” “The Doctor Is In” series sponsored by the Parkinson Association of the Rockies, Grand Junction, CO. November 2011.
- “Investigating basal ganglia circuitry in Parkinson disease with functional connectivity MRI.” UCD Department of Neurology Grand Rounds, Aurora, CO. September 2011.
- “An Overview of Neuroimaging: Lions, and Tigers, and Bears!” UCD, Department of Neurology Monthly Multidisciplinary Conference Series, Aurora, CO. November 2011.
- “An Overview of Neuroimaging: Lions, and Tigers, and Bears!” University of Colorado Hospital-Children’s Hospital Colorado’s Neuropsychology Seminar Series, Aurora, CO. November 2011.
- “Dystonia Overview.” Physical Medicine and Rehabilitation didactic: theories of etiology diagnosis and management, University of Colorado. Aurora, CO. February 2012.
- “Parkinson’s disease and the quest for an imaging biomarker.” Colorado Translational Research Imaging Center Lecture Series, Aurora, CO. March 2012.
- “Parkinson’s Clinical Research in Colorado.” Seminar sponsored by the Parkinson’s Disease Foundation, Englewood, CO. May 2012.
- “Motor Symptom Management of Parkinson Disease Update.” UCD Movement Disorders and Multiple Sclerosis 2012 CME Conference, Englewood, CO. September 2012.
- “Parkinson’s disease.” Eagle Valley Chapter of the Parkinson Association of the Rockies, Vail, CO. February 2013.
- “Movement Disorders Cases: Guess the Diagnosis.” UCD Department of Neurology Grand Rounds, Aurora, CO. March 2013.
- “Parkinson’s disease: Ten New Things.” Support group meeting sponsored by the Parkinson Association of the Rockies. April 2013.
- “Frontal-subcortical dementia: investigating faulty circuits with MRI.” Department of Neurology Behavioral Neurology & Neuropsychiatry Conference, Aurora, CO. June 2013.
- “Dystonia Update: Diagnosis, Pathophysiology and Treatment.” UCD Epilepsy and Non-Parkinson Movement Disorders 2013 CME Conference, Englewood, CO. September 2013.

- “Movement Disorders Section Quality Improvement Project: Medication Adherence in Parkinson Disease.” UCD Department of Neurology Grand Rounds, Aurora, CO. May 2013.
- “Etiology & Pathophysiology of Dystonia.” Colorado Neurological Institute’s “Dystonia: A patient education symposium,” Englewood, CO. November 2013.
- “Blepharospasm: Overview and current research.” Denver chapter support group meeting of the Benign Essential Blepharospasm Research Foundation, Aurora, CO. February 2014.
- “Phenomenology of Movement Disorders Via YouTube.” UCD Department of Neurology Grand Rounds, Aurora, CO. February 2014.
- “Basal ganglia circuits and their role in disorders of movement.” Regis University, lecture for Neuroscience of Movement course, Denver, CO. March 2014.
- “Parkinson’s disease and tremor.” Denver VA SCAN ECHO Series, Denver, CO. September 2014.
- “Overview of Parkinson’s Disease Research at the University of Colorado.” “To the Future and Back - Parkinson’s Disease Tomorrow and Today” symposium sponsored by The Michael J. Fox Foundation, Aurora, CO. September 2014.
- “Cognitive Changes in Parkinson’s Disease.” “Dementia Focused Mini Series” sponsored by the Parkinson Association of the Rockies, Broomfield, CO. September 2014.
- “The Yips and Other Professional Maladies.” UCD Department of Neurology Grand Rounds, Aurora, CO. September 2014.
- “It’s Parkinson’s Disease: Now What?” “E3 Conference: Educate, Empower, Energize” sponsored by the Parkinson Association of the Rockies, Westminster, CO. October 2014.
- “From molecules to networks: How multimodal neuroimaging can help unravel the complexities of dystonia.” The Movement Disorders Center Conference Series. Aurora, CO. March 2015.
- “Plans for a MDC Dystonia Clinic.” University of Colorado Movement Disorder Center Retreat. Aurora, CO. May 2015.
- “Plans for a Dystonia Clinic.” Colorado Dystonia Support Group Meeting. Englewood, CO. June 2015.
- “Clinical Research: Who, What, Where, When, and Why?” “To the Future and Back II - Parkinson’s Disease Tomorrow and Today” patient symposium, Aurora, CO. September 2015.
- “An Introduction to MR Imaging with Neurological Case Studies.” University of Colorado Hospital-Children’s Hospital Colorado’s Neuropsychology Seminar Series, Aurora, CO. January 2016.
- “Questions about Parkinson Disease.” Summit County Parkinson Support Group, Dillon, CO. February 2016.
- “Research Roundtable Luncheon.” Colorado Community Conference, Parkinson Association of the Rockies, Westminster, CO. May 2016.
- “Welcome” and “Imaging research in blepharospasm.” 2016 Benign Essential Blepharospasm Research Foundation Symposium, held in Aurora, Colorado. August 2016.
- “Parkinson’s Disease: Recent Research Advances and Updates.” 3rd Annual Parkinson’s Disease Symposium, The University of Colorado Movement Disorders Center. October 2016.

- “Basics of Neuroradiology.” University of Colorado Hospital-Children's Hospital Colorado’s Neuropsychology Seminar Series, Aurora, CO. December 2016.
- “Parkinson’s disease: Q&A Session.” Never Give Up Parkinson's/Dystonia Support Group, Arvada, CO. February 2017.
- “Open forum.” Parkinson Association of the Rockies Support Group, Loveland, CO. July 2017.
- “New and upcoming treatments for PD.” 4th Annual Parkinson’s Disease Symposium, University of Colorado Movement Disorders Center, Aurora, CO. September 2017.
- “PD medications and their side effects.” Parkinson Association of the Rockies Support Group, Longmont, CO. October 2017.
- “Parkinson’s disease: Soup to Nuts.” University of Colorado Neuroscience Graduate Program Course (NRSC 7614): Biological Basis of Psychiatric and Neurological Disorders, Aurora, CO. February 2018.
- “Update on cognition and non-motor symptoms.” PD SELF (Parkinson Association of the Rockies Support Group), Erie, CO. March 2018.
- “Advances in Cervical Dystonia: Are we making any headway?” Brian D. Berman and Christopher L. Groth. UCD Department of Neurology Grand Rounds, Aurora, CO. March 2018.
- “Overview of Parkinson’s Disease Research at the University of Colorado.” Colorado Community Conference, Parkinson Association of the Rockies. Aurora, CO. May 2018.
- “Panel Discussion: PD and Movement Disorders.” Parkinson Association of the Rockies Support Group Meeting. Boulder, CO. October 2018.
- “Overview of treatment options for PD.” Self-Efficacy for PD, Parkinson Association of the Rockies Support Group Meeting. Denver, CO. January 2019.
- “Update on PD research at the University of Colorado.” Recently Diagnosed Support Group Meeting, Parkinson Association of the Rockies Support Group Meeting. Denver, CO. February 2019.
- “Improving the quality of sleep: A novel approach to improving cognition and slowing neurodegeneration in PD.” Parkinson’s 2.0 Translating Science Into Treatment, Rocky Mountain Movement Disorders Center. Denver, CO. October 2019.
- “Advanced Treatments for Parkinson’s Disease” and “Overview of Parkinson’s Disease Research at the University of Colorado.” Parkinson Association of the Rockies Chat with the Parkinson Pros: Fort Collins. Fort Collins, CO. October 2019.
- “An Overview of Neuroimaging: Lions, and tigers, and bears!” University of Colorado Hospital-Children's Hospital Colorado’s Neuropsychology Seminar Series, Aurora, CO. October 2019.
- “Out Like a Light: Sleep and PD.” 6th Annual Parkinson’s Disease Symposium, University of Colorado Movement Disorders Center, Aurora, CO. October 2019.
- “The Placebo Effect in Parkinson Disease” UCD Department of Neurology Grand Rounds, Aurora, CO. December 2019.
- “Parkinson’s disease: Soup to Nuts.” University of Colorado Neuroscience Graduate Program Course (NRSC 7614): Biological Basis of Psychiatric and Neurological Disorders, Aurora, CO. February 2020.

National/International:

- “58 year-old Male with a Progressive Movement Disorder: Evolving Therapeutic Options.” UCSF Department of Neurology Clinic Case Conference, San Francisco, CA. November 2006.
- “67 year-old Female with 15 year History of Urinary Incontinence and 10 year History of a Gait Disturbance Presenting with 5 year history of Progressive Cognitive Decline.” 41st Annual Recent Advances in Neurology (RAIN) Clinico-Pathologic Conference, San Francisco, CA. February 2008.
- “63 year-old Male with 4 Months Progressive Lower Extremity Weakness and Numbness.” UCSF Department of Neurology Clinic Case Conference, San Francisco, CA. April 2008.
- “Mind Over Matter: Real Time fMRI-Based Neurofeedback for the Treatment of Tourette Syndrome.” NINDS Clinical Grand Rounds: Bethesda, MD. June 2009.
- “Learning to Control the Mind with Real Time fMRI: A Potential Treatment for Tourette Syndrome?” University of Florida, Department of Neurology Grand Rounds, Gainesville, FL. February 2010.
- NIH Career Symposium Panel Member, NIH Office of Intramural Training & Education, Bethesda, MD. May 2011.
- “Dystonia Coalition Career Development Award – Update & Plans.” Dystonia Coalition’s 4th Annual Meeting, Chicago, IL. September 2012.
- “Neuroimaging in Spasmodic Torticollis.” Annual National Spasmodic Torticollis Association meeting, Atlanta, GA. October 2013.
- “Isolated Dystonias: From Gene to Network.” Part of Session: Novel Insights from Inherited Dyskinesias. 21st International Parkinson and Movement Disorder Society Congress in Vancouver, British Columbia, Canada. June 2017.
- “Symptomatic Approaches: Pharmacologic.” Part of NIH-funded workshop: Defining Emergent Opportunities in Dystonia Research.” Bethesda, MD. October 2018.
- “Improving the quality of sleep: A novel approach to improve cognition and slow neurodegeneration in PD.” Invicro Research Clinic, New Haven, CT. November 2019.
- “The Placebo Effect in Parkinson Disease” Virginia Commonwealth University Department of Neurology Grand Rounds, Richmond, VA. February 2020.

Teaching record:

Ward/Clinic attending duties:

2010 – Present	Supervision and teaching of Movement Disorders fellow, residents and medical students in the University of Colorado Movement Disorder Clinic.
2011, 2015 – 2016	Supervision and bedside teaching of residents and medical students during 1-2 weeks/year coverage attending on the UCHHealth Neurology wards.
2012 – Present	Supervision and bedside teaching of residents and medical students during 4 weeks/year attending on the VA Medical Center Neurology wards.
2012 – Present	Supervision and teaching of Movement Disorders fellow, residents and medical students in the VA Medical Center Neurology Clinic.

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Presentations to high school students:

2015 – Present “A Brief Introduction to Movement Disorders” (2015 – 2018), “An Introduction to Movement Disorders” (2019). Lecture given as part of the CampNeuro series, an annual weeklong day camp for high school students interested in careers in neurology and psychiatry.

Presentations to undergraduate students:

March 2014 “Basal ganglia circuits and their role in disorders of movement.” Lecture given at Regis University as part of Neuroscience of Movement course, Denver, CO.

Presentations to medical students:

2013 – 2017 Instructor, Neurological Examination Review, as part of annual small group sessions for Foundations of Doctoring Program, University of Colorado Anschutz Medical Campus.

2014 – 2016 Co-leader of Based Learning (PBL) sessions, which are case-based teaching sessions held twice a week for medical students during their Neurological Care Clerkship.

February 2013 Led 2-hour extra-curricular training session for 1st and 2nd year medical students on how to perform a comprehensive neurological examination.

September 2015 “The Neurological Exam.” Two-hour lecture given to 1st and 2nd year medical students as part of the Foundations of Doctoring course on how to perform a comprehensive neurological examination.

September 2016 Volunteer reviewer for the neurological live patient case run by the Center for Advancing Professional Excellence (CAPE) as part of the University of Colorado School of Medicine curriculum.

Presentations to residents and fellows:

August 2008 Led small group discussions of neurology teaching cases at UCSF Department of Internal Medicine: Intern Half Day.

2010 – Present Journal club and didactic teaching sessions (lead quarterly), UCD Movement Disorder Section.

May 2011 Co-led “Botulinum neurotoxin injection training” session for UCD neurology residents.

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- 2011 – Present Presentations to UCD neurology residents as part of the Movement Disorders Block teaching curriculum. Past lectures include:
2011: “Brief introduction to movement disorders,” “Imaging in movement disorders,” and “Other movement disorders.”
2012: “Tremor, dystonia, chorea, tics, and myoclonus,” “Imaging in movement disorders,” and “RLS/PLMS and oddball movement disorders.”
2013: “Tics, tremors, dystonia, chorea and other movement disorders.”
2014: “Tics, tremors, dystonia, chorea, and other movement disorders,” “Imaging in movement disorders,” and “Botulinum toxin injection workshop.”
2015: “Imaging in Movement Disorders” and “Botulinum toxin injection workshop.”
2016: “Dystonia” and “Myoclonus.”
2017: “Overview of dystonia” and “Overview of myoclonus.”
2018: “Overview of dystonia,” “Overview of myoclonus,” and “Botulinum toxin injection workshop.”
2019: “Dystonia,” “Myoclonus,” and “Botulinum toxin injection workshop.”
- February 2013 Gave lecture “Dystonia: Overview” as part of Physical Medicine and Rehabilitation Residency seminar series.

Mentoring record:

Undergraduate students:

- Summer 2009 Gaurav Venkataraman, NINDS Summer Internship Program (undergraduate). **Award(s):** Received the NINDS Exceptional Summer Student Award, Class of 2009. **Manuscript(s):** Berman BD, Horovitz SG, Venkataram G, Hallett M. “Self-modulation of primary motor cortex activity with motor and motor imagery tasks using real-time fMRI-based neurofeedback.” *NeuroImage*. 2012;59:917-25.
Brent Morel – NINDS Summer Internship Program (undergraduate). **Manuscript(s):** Berman BD, Horovitz SG, Morel B, Hallett M. “Neural correlates of blink suppression and the buildup of a natural bodily urge.” *NeuroImage*. 2012;59:1441-50. **Current Position:** Accepted into medical school, currently a neurology resident at University of Colorado (2018-2021).
Kristina Hsieh – NINDS Summer Internship Program (high school).
- Summer 2015 Salem Argaw, Research mentor during summer research project, student intern from Class of 2017 Cornell University. **Manuscript(s):** Nguyen P, Kelly D, Glickman A, Argaw S, Shelton E, Peterson D, Berman BD. “Abnormal Neural Responses During Reflexive Blinking in Blepharospasm: An Event-Related fMRI Study.” (Under review) **Current Position:** Accepted into Northwestern Medical School (2018-2022).

Medical students:

- 2011 – 2015 Christopher Kennel, Medical Student, UCD School of Medicine’s Research Track. Research Mentor. **Award(s):** Received 2012 General Excellence Award at 27th Annual Student Research Forum in the Neuroscience and Brain and Behavior - Adult category; received 2013 Achievement Rewards for College Scientists Scholarship - \$5000. **Manuscript(s):** Kennel C, Michas-Martin A, Berman BD, Poisson S. “Non-convulsive status epilepticus masquerading as stroke.” Am J Emerg Med. 2015 Mar;33(3):482.e1-2. **Current Position:** Matched into Otolaryngology residency program.
- 2011 – 2014 Fu Wang, Medical Student, UCD Foundations of Doctoring Program. Preceptor and faculty mentor.
- 2012 – 2016 Rebecca Tran, Medical Student, UCD School of Medicine’s Research Track. Clinical and research mentor. **Award(s):** Received 2013, 2014 and 2015 Achievement Rewards for College Scientists Scholarship - \$5000/year; Subspecialty Award at the 2014 Western Regional Meetings held January 23-25, 2014 in Carmel, California; 2015 AAN Medical Student Summer Research Scholarship; and 2016 AAN \$1,000 travel scholarship to attend the AAN Annual Meeting in Vancouver, BC, Canada. **Abstracts/posters:** Pollard R., Shelton E., Koo P. J., Berman B. D. “GABA-A receptor binding is abnormal in cervical dystonia.” (Poster) The 2016 Annual Meeting of the American Academy of Neurology, Vancouver, BC, April 2016. **Manuscript(s):** 1) Pollard R, Hannan M, Tanabe J, Berman BD. Early-onset Parkinson disease leading to diagnosis of 22q11.2 deletion syndrome. Parkinsonism Relat Disord. 2016 Apr;25:110-1. 2) Berman BD, Pollard R, Shelton E, Karki R, Smith-Jones PM, Miao Y. GABAA receptor availability changes underlie symptoms in isolated cervical dystonia. Front Neurol. 2018 Apr 4;9:188. **Current Position:** Matched into the 2016 neurology residency program at UCD, and into 2020 Stroke fellowship at UCD.
- 2014 – 2018 Diane Kelly, Medical Student, UCD School of Medicine’s Research Track. Clinical and research mentor. **Abstracts/posters:** Berman B. D., Kelly, D., Shelton, E. “Neural responses during reflexive blinking are abnormal in blepharospasm (BSP).” The 19th International Congress of Parkinson's Disease and Movement Disorders, San Diego, CA, June 2015. **Manuscript(s):** Nguyen P, Kelly D, Glickman A, Argaw S, Shelton E, Peterson D, Berman BD. “Neural Responses Underlying Reflexive Blinking Are Abnormal in Blepharospasm: An Event-Related fMRI Study.” (Under review). **Current Position:** Matched into Psychiatry residency.
- 2014 – 2016 Markus Hannan, Medical Student, UCD Foundations of Doctoring Program. Preceptor and faculty clinical mentor. **Manuscript(s):** Pollard R,

Hannan M, Tanabe J, Berman BD. Early-onset Parkinson disease leading to diagnosis of 22q11.2 deletion syndrome. *Parkinsonism Relat Disord*. 2016 Apr;25:110-1. **Current Position:** Matched into the 2016 neurology residency program at UCD and into 2020 Vascular fellowship at the University of Washington.

2015 – Present

Amanda Glickman, Medical Student, UCD School of Medicine's Research Track. Research mentor. **Abstracts/posters:** "Neural Mechanisms of Eye Muscle Spasm in Blepharospasm," Presented at 31st Annual Student Research Forum – University of Colorado School of Medicine (December 13) and received "Top Poster Award"; "Basal ganglia and cerebellar circuits have distinct roles in blepharospasm," 2019 AAN Annual Meeting, Philadelphia, PA. Oral presentation at Western Medical Student Research Forum (<http://www.wsmrf.net/>) in January 2017. Talk: "Eye Muscle Spasms Co-Activate with Cerebellar & Sensorimotor Cortical Regions in Blepharospasm," presented at UCD Movement Disorders Center Conference Series, August 2017. **Manuscript(s):** Nguyen P, Kelly D, Glickman A, Argaw S, Shelton E, Peterson D, Berman BD. "Abnormal Neural Responses During Reflexive Blinking in Blepharospasm: An Event-Related fMRI Study." (Under review). **Current Position:** Applying to residency programs in psychiatry.

2015 – Present

Phuong Nguyen, Medical Student, UCD School of Medicine's Research Track. Research mentor. **Award(s):** Recipient of 2009 Medical Student Scholarship to the AAN Annual Meeting. **Abstracts/posters:** "Interaction between the basal ganglia and the cerebellar circuits in Parkinsonian resting tremor"; "Neural responses are abnormal during reflexive blinking in blepharospasm: An event-related fMRI study," 2019 AAN Annual Meeting, Philadelphia, PA. Oral presentation at Western Medical Student Research Forum (<http://www.wsmrf.net/>) in January 2017. Talk: "Interaction between the Circuits of the Basal Ganglia and the Cerebellum in Resting Tremor in Parkinson Disease," presented at UCD Movement Disorders Center Conference Series, August 2017. **Manuscript(s):** Nguyen P, Kelly D, Glickman A, Argaw S, Shelton E, Peterson D, Berman BD. "Abnormal Neural Responses During Reflexive Blinking in Blepharospasm: An Event-Related fMRI Study." (Under review) **Current Position:** Matched in Neuroradiology residency program at the University of Florida.

2016 – 2019

David Kitzenberg, Medical Student, UCD Foundations of Doctoring Program preceptor and clinical mentor.

Graduate students:

2012 – 2017

Jason Smucny, Graduate Student, UCD Neuroscience Program. Mentor and doctorate research advisor, doctoral thesis committee member. PhD thesis title: The effects of nicotine on the neurobiology of selective

attention in schizophrenia. **Manuscript(s):** Berman BD, Smucny J, Wylie KP, Shelton E, Kronberg E, Leehey M, Tregellas JR. Levodopa modulates small-world architecture of functional brain networks in Parkinson's disease. *Mov Disord.* 2016 Nov;31(11):1676-1684. **Current position:** Research fellow at UC Davis.

2014 – 2015 Alex McCarthy. Externship mentor during required research project as part of Master's in Biomedical Sciences program at Regis University.

2016 – Present Matt Becker. MD/PhD Student, UCD Neuroscience Program. Clinical mentor, doctoral thesis committee member, and UCD Foundations of Doctoring Program preceptor. PhD thesis title: "Investigating the role of cerebellar output during skilled motor behavior." Grants: University of Colorado Movement Disorder Center Research Grant, "Cerebellar-dependent motor learning during skilled reach behavior in mice." (\$7,310). **Current position:** Returning to clinical rotations, pursuing residency in neurology.

2017 – 2018 Samantha Holden, MD. MS Clinical Science Student, UCD Clinical Science Graduate Program. Research project mentor and examination committee member. MS thesis title: "Validation of a performance-based assessment of functional ability related to cognition in Parkinson's disease." **Manuscript(s):** 1) Holden HK, Finseth T, Sillau SH, Berman BD. Progression of MDS-UPDRS scores over five years in de novo Parkinson disease from the PPMI cohort. *Mov Disord Clin Pract* 2018 Jan-Feb;5(1):47-53. 2) Holden SK, Medina LD, Hoyt B, Sillau SH, Berman BD, Goldman JG, Weintraub D, Kluger BM. "Validation of a performance-based assessment of functional ability related to cognition in Parkinson's disease." *Mov Disord.* 2018 Oct 10. **Current position:** Faculty, University of Colorado School of Medicine.

Neurology residents:

2011 – 2014 Alex Mohler, M.D., faculty mentor.

2012 – 2014 Andreas Michas-Martin, M.D., faculty mentor.

2012 – 2015 Taylor Finseth, M.D., faculty mentor.

2015 – 2017 Asher Jones, M.D., faculty mentor.

2017 – Present David Stevens, M.D., faculty mentor.

Movement disorder fellows:

2011 – 2012 Aaron Haug, M.D., faculty mentor. **Current position:** Blue Sky Neurology, Colorado.

- 2012 – 2014 Jessica Hedeman, D.O., faculty mentor. **Abstracts/posters:** J. Hedeman, J. Tanabe, T. Krmpotich, E. Shelton, B. Berman. “Subcortical gray matter volumes in Parkinson’s Disease (PD) and their relationship to clinical measures.” (Poster) The MDS 17th International Congress of Parkinson's Disease and Movement Disorders, Sydney, Australia, June 2013. **Manuscript(s):** Nyberg EM, Tanabe J, Honce JM, Krmpotich T, Shelton E, Hedeman J, Berman BD. “Morphologic changes in the mesolimbic pathway in Parkinson's disease motor subtypes.” *Parkinsonism Relat Disord.* 2015 May;21(5):536-40. **Current position:** Mercy Health Haunstein Neuroscience Center, Grand Rapids, MI.
- 2014 – 2015 Andreas Michas-Martin, M.D., faculty mentor. **Current position:** Montage Medical Group, Monterey California.
- 2014 – 2018 Samantha Holden, M.D., faculty mentor and master’s thesis committee member. Current position: Assistant Professor of Neurology, University of Colorado Anschutz Medical Campus. **Manuscript(s):** Holden HK, Finseth T, Sillau SH, Berman BD. “Progression of MDS-UPDRS scores over five years in de novo Parkinson disease from the PPMI cohort.” *Mov Disord Clin Pract.* 2018 Jan-Feb;5(1):47-53. 39. Holden SK, Medina LD, Hoyt B, Sillau SH, Berman BD, Goldman JG, Weintraub D, Kluger BM. “Validation of a performance-based assessment of functional ability related to cognition in Parkinson’s disease.” *Mov Disord.* 2018 Oct 10. doi: 10.1002/mds.27487. [Epub ahead of print]. **Current position:** Assistant Professor, University of Colorado School of Medicine.
- 2015 – 2016 Taylor Finseth, M.D., faculty mentor. **Abstracts/posters:** T Finseth, S Sillau, and BD Berman. “Parkinson’s Disease onset on non-dominant side predicts greater motor disability.” The MDS 20th International Congress of Parkinson's Disease and Movement Disorders, Berlin, Germany, June 2016. **Manuscript(s):** Holden HK, Finseth T, Sillau SH, Berman BD. Progression of MDS-UPDRS scores over five years in de novo Parkinson disease from the PPMI cohort. *Mov Disord Clin Pract.* 2018 Jan-Feb;5(1):47-53. doi: 10.1002/mdc3.12553. **Current position:** Aurora Neuroscience Innovation Institute, Milwaukee Wisconsin.
- 2015 – 2016 Ari Magill, M.D., faculty mentor. **Current position:** Neurologist, MySpecialistMD.
- 2016 – 2018 Trevor Hawkins, M.D., faculty mentor. Current position: Assistant Professor of Neurology, University of Colorado Anschutz Medical Campus. **Manuscript(s):** 1) Hawkins T and Berman BD. Manuscripts: Hawkins T, Berman BD. “Pimavanserin: A novel therapeutic option for Parkinson Disease Psychosis.” *Neurol Clin Pract* 2017;7:157–162. 2) Berman BD, Hawkins T. “Author response: Pimavanserin: A novel therapeutic option for Parkinson disease psychosis.” *Neurol Clin Pract.*

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2018 Jun;8(3):175-176. **Current position:** Assistant Professor, University of Colorado School of Medicine.

2016 – 2018

Christopher Groth, M.D., faculty mentor and research mentor. **Grants:** University of Colorado Movement Disorder Center Research Grant, “Use of GABA Magnetic Resonance Spectroscopy to determine the role of inhibitory dysfunction in cervical dystonia.” (\$9,800); Clinical Fellowship, Dystonia Medical Research Foundation (\$75,000). **Manuscript(s):** 1) Groth CL, Berman BD. “Spinocerebellar Ataxia 27: A Review and Characterization of an Evolving Phenotype.” Tremor Other Hyperkinet Mov (N Y). 2018 Jan 30;8:534. 2) Berman BD, Groth CL, Shelton E, Sillau SH, Sutton B, Legget KT, Tregellas JR. “Hemodynamic responses are abnormal in isolated cervical dystonia.” J Neurosci Res. 2019 Nov 6. doi: 10.1002/jnr.24547. [Epub ahead of print]. 3) Groth CL, Brown M, Honce JM, Shelton E, Sillau SH, Berman, BD. “Cervical dystonia is associated with aberrant inhibitory signaling within the thalamus.” NeuroImage: Clinical (Under revision). **Current position:** Assistant Professor, University of Iowa.

2017 – 2018

Kristin Mitrovich, M.D., faculty mentor. **Current position:** Intermountain Healthcare, Salt Lake City, Utah.

2017 – 2018

Kristin King, M.D., faculty mentor. **Current position:** Saint Francis Health System, Tulsa, Oklahoma.

2017 – Present

Jeanne Feuerstein, M.D., faculty mentor. **Manuscript(s):** 1) Berman BD, Feuerstein J. Imaging of movement disorders. In: Roos RP, editor-in-chief. MedLink Neurology. San Diego: MedLink Corporation. Available at www.medlink.com. Original content added February 9, 2017. **Grants:** University of Colorado Movement Disorder Center Research Grant, “Social Cognition in Blepharospasm and Cervical Dystonia.” (\$5,000). **Current position (2020):** Assistant Professor, University of Colorado School of Medicine.

2018 – Present

Lisa Deuel, M.D., faculty mentor. **Abstracts/posters:** Deuel LM, Feuerstein JS, Berman BD, Hoyt B, Kern DS. Characteristics of patients with essential tremor evaluated for deep brain stimulation surgery at a tertiary center. (Poster) The 23rd International Congress of Parkinson's Disease and Movement Disorders, Nice, France. September 2019. **Current position (2020):** Assistant Professor, University of Vermont.

2019 – Present

Caroline Goldin, M.D., faculty mentor.

2019 – Present

Teresa Lee, M.D., faculty mentor.

Behavioral neurology fellows:

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2018 – Present Isaiah Kletenik, M.D., mentor. **Manuscript(s):** 1) Kletenik I, Sillau SH, Isfahani SA, LaFaver K, Hallett M, Berman BD. “Increased Prevalence of Functional Movement Disorders in Females: the role of sexual abuse.” *Mov Disord Clin Pract* (First published: 29 October 2019; <https://doi.org/10.1002/mdc3.12863>).

2018 – Present Bateman, James R., M.D., M.P.H., mentor. **Abstracts:** Bateman JR, Ferguson MA, Anderson CA, Arciniegas DB, Gilboa A, Berman BD, Fox MD. “Network Localization of Spontaneous Confabulation.” (Abstract) The 31st Annual Meeting of the American Neuropsychiatric Association. Philadelphia, PA. March 2020.

Junior faculty:

2017 – 2018 Clinical Faculty Scholars Program mentor for Sridharan Raghavan, M.D. Grants: American Heart Association Mentored Clinical & Population Research Award (17MCPRP33670728, 7/01/17-6/30/19, \$70,000/year); Department of Veterans Affairs Career Development Award, CSR&D (IK2 CX001907, 10/01/18-9/30/23, \$280,000/year).

2017 – 2018 Clinical Faculty Scholars Program mentor for Amy Tyler, M.D. Grants: IMPLementation to Achieve Clinical Transformation (IMPACT): The Colorado Training Program (NIH/NHLBI 5K12HL137862-02, 09/05/2017 - 06/30/2022, \$2,035,295).

2017 – 2019 Clinical Faculty Scholars Program mentor for Laura Wiley, Ph.D. Grants: Data Informed Management of Intracranial Aneurysms (D2V Pilot Grant, 07/2018-06/2019, \$75,000). NIH/NLM K01 (K01LM013088, 5/2019-4/2022, \$479,082).

2018 – Present Clinical Faculty Scholars Program mentor for Joshua Bear, M.D. **Abstracts/Posters:** 1) Bear JJ, Chapman KE, Berman BD, Kirsch H, Tregellas J. Characterizing Epileptic Networks with Spike-Associated MEG Functional Connectivity. (Poster.) American Clinical Neurophysiology Society, Las Vegas, NV. February 2019. 2) Bear JJ, Kirsch HE, Berman BD, Chapman KE, Tregellas JR. Spike-Associated Networks: A Novel MEG-Based Functional Connectivity Method to Identify Epileptic Networks. (Poster) American Epilepsy Society 2019 Annual Meeting. **Manuscripts:** Bear J, Kirsch H, Berman B, Chapman K, Tregellas J. Spike-Associated Networks and Intracranial Electrographic Findings. *Epilep Disord* (In Press).

2018 – Present Clinical Faculty Scholars Program primary mentor for Odette (Maria) Gore, M.D.

2019 – Present Clinical Faculty Scholars Program primary mentor for Premal Trivedi, M.D.

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2019 – Present Clinical Faculty Scholars Program primary mentor for Sarguni Singh, M.D.

Volunteer record:

Summer 2001 Interhealth South America. Participated in program that provided a guided field experience for exploration of international health opportunities integrated with language immersion study in Ecuador.

Grant support (completed):

- NIH Clinical Research Loan Repayment Program (Intramural) 2008-2010
Role: PI Total Award: \$70,000 COMPLETED
The LRP is designed to assist promising junior investigators dedicated to pursuing a career in clinical research. Research activities supporting this grant included investigations into applications of real-time fMRI-based neurofeedback.
- NIH/NINDS (Schenkman, PI) 2011-2015
Role: Co-I Total Award: \$673,384 COMPLETED
Exploratory study of different doses of endurance exercise in people with Parkinson disease
The goal of this Phase II study is to determine whether individuals with de novo Parkinson's disease can achieve the randomly assigned levels of mean exercise intensity and adhere to the exercise protocol. The primary objective of this study is to determine the futility of conducting a Phase III randomized controlled trial to determine effects of exercise on the progression of Parkinson's disease.
- Colorado Clinical & Translational Sciences Institute (CCTSI) 2012-2013
CCTSI Center for Neuroscience Innovation Award Total Award: \$30,000 COMPLETED
Role: PI
Changes in functional connectivity of the striatum during a motor task in Parkinson disease
The goal of this project was to investigate resting-state and task-based basal ganglia network dysfunction in Parkinson's disease.
- NIH/Dystonia Coalition 2012-2013
Career Development Award Total Award: \$49,218 COMPLETED
Role: PI
Functional Connectivity of the Basal Ganglia in Primary Focal Dystonia: A Pilot Study.
The goal of this project is to assess basal ganglia circuitry in primary focal dystonia and assess the role disturbances play in dystonic and psychiatric symptoms.
- NIH Clinical Research Loan Repayment Program (Extramural) 2012-2014
Role: PI Total Award: \$35,000 COMPLETED

Research activities supporting this grant included investigations into the relationship between basal ganglia circuit disturbances and motor and non-motor symptoms in Parkinson's disease using functional connectivity MRI.

- Colorado Translational Research Imaging Center Award 2012-2014
 Role: PI Total Award: \$41,273 COMPLETED
GABAergic Function in Primary Focal Dystonia
 The goal of this pilot project is to assess GABA binding in focal dystonia patients using [11C]-flumazenil and investigate if GABAergic dysfunction underlies basal ganglia network disturbances in dystonia.
- Benign Essential Blepharospasm Research Foundation 2014-2015
 Role: PI Total Award: \$73,923 COMPLETED
Neural Mechanisms of Reflexive Blinking and Eye Muscle Spasms in Blepharospasm: An event-related fMRI study
 The goal of this research project is to fill the gaps in our knowledge of the neural mechanisms underlying blinking and involuntary orbicularis oculi muscle spasms in blepharospasm using fMRI and MRI-compatible surface electrooculography.
- NIH Clinical Research Loan Repayment Program (Extramural) 2014-2016
 Role: PI Total Award: \$35,000 COMPLETED
 Research activities supporting this grant included investigations into the relationship between basal ganglia circuit disturbances and motor and non-motor symptoms in Parkinson's disease using functional connectivity MRI.
- The Dana Foundation: David Mahoney Neuroimaging Program 2014-2017
 Role: PI Total Award: \$200,000 COMPLETED
Inhibitory and network dysfunction in primary focal dystonia
 This multi-modal imaging project is aimed at determining whether GABA_A receptor binding is reduced in cervical dystonia using ¹¹C-flumazenil PET, how motor circuit function is altered in these patients using fMRI, and whether GABA_A receptor binding changes underlie widespread circuit dysfunction in dystonia.
- NIH/Colorado Clinical and Translational Sciences Institute KL2 2014-2017
 Role: PI Total Award: \$392,700 COMPLETED
Basal ganglia circuit dysfunction in Parkinson's Disease
 This research project involves the use of functional connectivity MRI and diffusion tensor imaging to gain a greater understanding of how basal ganglia circuits are altered in Parkinson's disease with the ultimate goal of developing neuroimaging biomarkers to aid in diagnosing Parkinson's and tracking disease progression and symptom severity.
- University of Colorado Movement Disorders Center (Groth, PI) 2016-2017
 Role: Primary mentor Total Award: \$9,800 COMPLETED
Use of GABA Magnetic Resonance Spectroscopy to determine the role of inhibitory dysfunction in cervical dystonia.
 The goals of this study are to investigate GABA concentration levels in the same cohort of cervical dystonia patients and healthy controls previously investigated using ¹¹C-

flumazenil PET to determine if GABA availability is reduced in cervical dystonia and if reductions in GABA receptor binding are linked to GABA availability.

- Dystonia Medical Research Foundation (Groth, PI) 2017-2018
Role: Primary mentor Total Award: \$75,000 COMPLETED
Clinical Fellowship Training Program
A one-year clinical fellowship to support the training of an exceptionally qualified physician in preparation for their clinical and/or research career in movement disorders with emphasis on dystonia and a special competence in use of botulinum toxins.
- University of Colorado SOM's Dean's Academic Enrichment Fund 2017-2018
Role: PI Total Award: \$50,000 COMPLETED
Research bridge funding
The competitive funding was awarded by the Dean of the University of Colorado's School of Medicine to ensure continued salary support for my research staff while pursuing additional and ongoing major grant support.

Grant support (active):

- NIH / Dystonia Coalition (Jinnah, PI) 2011-2022
Role: Site PI Total Award: \$6,335,298
Project 1: Natural History & Biospecimen Repository for Focal Dystonia
The goals of this multi-center study are to collect clinical data for future studies that will help to understand the varied clinical manifestations, natural history, and pathogenesis of the dystonias and to create a biospecimen repository as a resource for future research in dystonia and related diseases.
- NIH / Dystonia Coalition (Jinnah, PI) 2015-2020
Role: Site PI Total Award: \$352,234
Project 4: Diagnostic and Rating Tools for Blepharospasm
The goals of this multi-center study are to develop a comprehensive rating scale that encompasses motor and non-motor features of blepharospasm and explore how they contribute to overall disability and quality of life.
- NIH R01 DK103691 (Tregellas, PI) 2015-2020
Role: Co-I Total Award: \$297,500
Nicotinic Agonist Effects on BMI and Neuronal Response in Overweight/Obese Adults
This proposal investigates the effects of a nicotinic agonist on the neurobiology of food intake behavior and obesity in overweight and obese individuals.
- NIH R01 MH102224 (Tregellas, PI) 2014-2019
Role: Co-I Total Award: \$250,000
Neuronal Effects of Exercise on Schizophrenia
This proposal investigates the neurobiology of how neuroleptics contribute to obesity in schizophrenia and evaluates whether an intervention such as exercise causes changes in neuronal response that predict improved regulation of food intake behavior.

- Mary Rossick Kern and Jerome H. Kern 2017-2019
Role: PI Total Award: \$250,000 COMPLETED
Non-invasive brain stimulation for the treatment of cervical dystonia
The goals of this study are to investigate transcranial electrical stimulation as a therapeutic strategy for cervical dystonia.
- Tools4Patient 2018-2020
Role: Site-PI Total Award: \$53,000 COMPLETED
T1020-01: A Proof of Concept Study to Investigate the Effect of IPT803 Adjunct Treatment in Patients with Parkinson's Disease.
The objectives of this study are to evaluate the effect of IPT803 on symptoms in Parkinson's disease and to understand what patient-specific characteristics are related to treatment efficacy in order to develop more patient-oriented treatments.
- Benign Essential Blepharospasm Research Foundation, Inc. 1/1/2019-11/30/2020
Research Grant Total Award: \$74,769
Role: PI
Non-invasive inhibitory neurostimulation for the treatment of blepharospasm: A pilot study
The goal of this research project is to elucidate the disruptions to neuronal function within motor circuits in blepharospasm and test the ability of inhibitory transcranial alternating current stimulation to normalize these disruptions and assess whether the approach has therapeutic potential.
- Colorado Clinical & Translational Science Institute (CCTSI) 4/1/2019-3/31/2020
2019 CCTSI Center for Neuroscience Pilot Program Total Award: \$30,000
Role: PI
Gamma band neural stimulation on resting state default mode network connectivity: A combined transcranial alternating current stimulation and functional MRI
The goal of this research project is to determine the impact gamma-frequency stimulation has on the default mode network in healthy older adults during rest.
- Parkinson Study Group: WATCH-PD 2019-2021
Role: Site-PI Total Award: \$100,000
A Multi-center, Prospective, Longitudinal, Digital Assessment Study of Disease Progression in Subjects with Early, Untreated Parkinson Disease (PD)
The main objective of this study is to compare the ability of measurements obtained from wearable digital devices (including sensors, smart phones and smart watches) with traditional clinic exams and questionnaires to measure progressive changes in movement, thinking (cognition), and mood, activities of daily living and quality of life in individuals with early, untreated Parkinson disease over a one-year period.

Bibliography:

Published work available in MyBibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/1xc2oWfFxobQI/bibliography/public/>

Google Scholar: *h-index* = 18; *citations* = 1219; *i10-index* = 27
ResearchGate: *h-index* = 17; *citations* = 929; *RG score* = 33.46

Peer-reviewed articles:

1. Yen YF, Brinkmöller B, Dehnhard D, Sterbenz SM, Yu YJ, Berman B, Burluson GR, Cranston K, Klein A, Kyle GS, Alarcon R, Averett T, Comfort JR, Görgen JJ, Ritchie BG, Tinsley JR, Barlett M, Hoffmann GW, Johnson K, Moore CF, Purcell M, Ward H, Williams A, Faucett JA, Greene SJ, Jarmer JJ, McGill JA, Morris CL, Penttilä S, Tanaka N, Fortune HT, Insko E, Ivie R, O'Donnell JM, Smith D, Khandaker MA, Chakravarti S. "Asymmetry measurement of pion elastic scattering from polarized ^{13}C in the energy region of the P33 resonance." *Phys Rev Lett*. 1991 Apr 15;66(15):1959-1962. (PMID: 10043354)
2. Kyle G, Klein A, Berman B, Burluson G, Cranston K, et al. "Analyzing powers for pion charge exchange on polarized ^{13}C ." *Phys Rev Lett*. 1991 Apr 29;66(17):2193-96. (PMID: 10043420)
3. Yen YF, Brinkmöller B, Dehnhard D, Franey MA, Sterbenz SM, Yu YJ, Berman B, Burluson GR, Cranston K, Klein A, Kyle GS, Alarcon R, Averett T, Comfort JR, Görgen JJ, Ritchie BG, Tinsley JR, Barlett M, Hoffmann GW, Johnson K, Moore CF, Purcell M, Ward H, Williams A, Faucett JA, Greene SJ, Jarmer JJ, McGill JA, Morris CL, Penttilä SI, Tanaka N, Fortune HT, Insko E, Ivie R, O'Donnell JM, Smith D, Khandaker MA, Chakravarti S. "Pion elastic scattering from polarized ^{13}C in the energy region of the P33 resonance." *Phys Rev C Nucl Phys*. 1994 Aug;50(2):897-908. (PMID: 9969733.)
4. Berman B, Seeberger L, Kumar R. "Long-term safety, efficacy, dosing, and development of resistance with botulinum toxin type B in cervical dystonia." *Movement Disorders*, 2005 Feb;20(2):233-7. (PMID: 15455449)
5. Berman B, Starr P, Marks W, Ostrem J. "Induction of bradykinesia with pallidal deep brain stimulation in patients with cranial-cervical dystonia." *Stereotact Funct Neurosurg*, 2009 Jan 28;87(1):37-44. (PMID: 19174619)
6. Ahn A, Berman B, Dillon W. "Spontaneous intracranial hypotension-hypovolemia associated with tacrolimus." *Headache*, 2010 Sept;50(8):1386-9. (PMID: 20533958)
7. Horovitz S, Berman B, Hallett M. "Real time BOLD functional MRI neuro-feedback affects functional connectivity." *Conf Proc IEEE Eng Med Biol Soc.*, 2010 Sep;1:4270-3. (PMID: 21096645)
8. Berman B. "Neuroleptic malignant syndrome: A review for neurohospitalists." *The Neurohospitalist*, 2011 Jan;1(1):41-7.
9. Mueller SG, Chao LL, Berman B, Weiner MW. "Evidence for functional specialization of hippocampal subfields detected by MR subfield volumetry on high resolution images at 4T." *Neuroimage*, 2011 Jun 1;56(3):851-7. (PMID: 21419225)
10. Benninger D, Berman BD, Houdayer E, Pal N, Luckenbaugh D, Schneider L, Miranda S, Hallett M. "Intermittent theta-burst transcranial magnetic stimulation for treatment of Parkinson disease: A Randomized, Double-Blind, Sham-Controlled Study." *Neurology*. 2011 Feb 15;76(7):601-9. (PMID: 21321333)

11. Berman BD, Horovitz SG, Venkataram G, Hallett M. “Self-modulation of primary motor cortex activity with motor and motor imagery tasks using real-time fMRI-based neurofeedback.” *NeuroImage*. 2012;59:917-25. (PMID: 21803163)
12. Berman BD, Horovitz SG, Morel B, Hallett M. “Neural correlates of blink suppression and the buildup of a natural bodily urge.” *NeuroImage*. 2012;59:1441-50. (PMID: 21906689)
13. Simonyan K, Berman BD, Herscovitch P, and Hallett M. “Abnormal striatal dopaminergic neurotransmission during rest and task production in spasmodic dysphonia.” *J Neurosci*. 2013;33(37):14705-14. (PMID: 24027271)
14. Berman BD, Horovitz SG and Hallett M (2013). “Modulation of functionally localized right insular cortex activity using real-time fMRI-based neurofeedback.” *Front Hum Neurosci*, 2013 Oct 10;7:638. doi: 10.3389/fnhum.2013.00638. (PMID: 24133436)
15. Berman BD, Hallett M, Herscovitch P, and Simonyan K. “Striatal dopaminergic dysfunction at rest and during task performance in Writer’s Cramp.” *Brain*. 2013;136(Pt 12):3645-58. (PMID: 24148273)
16. Kennel C, Michas-Martin A, Berman BD, Poisson S. “Non convulsive status epilepticus masquerading as stroke.” *Am J Emerg Med*. 2015 Mar;33(3):482.e1-2. doi: 10.1016/j.ajem.2014.08.066. Epub 2014 Aug 29. (PMID: 25239692)
17. Nyberg EM, Tanabe J, Honce JM, Krmpotich T, Shelton E, Hedeman J, Berman BD. “Morphologic changes in the mesolimbic pathway in Parkinson's disease motor subtypes.” *Parkinsonism Relat Disord*. 2015 May;21(5):536-40. doi: 10.1016/j.parkreldis.2015.03.008. (PMID: 25817514)
18. Berman BD, Jinnah HA. “Dystonia: Five new things.” *Neurol Clin Pract*. 2015 Jun;5(3):232-240. (PMID: 26124980; PMCID: PMC4469349)
19. Emmert K, Kopel R, Sulzer J, Brühl AB, Berman BD, Linden DE, Horovitz SG, Breimhorst M, Caria A, Frank S, Johnston S, Long Z, Paret C, Robineau F, Veit R, Bartsch A, Beckmann CF, Van De Ville D, Haller S. “Meta-analysis of real-time fMRI neurofeedback studies using individual participant data: How is brain regulation mediated?” *Neuroimage*. 2015 Sep 28;124(Pt A):806-812. (PMID: 26419389)
20. Pollard R, Hannan M, Tanabe J, and Berman BD. “Early-onset Parkinson disease leading to diagnosis of 22q11.2 deletion syndrome.” *Parkinsonism Relat Disord*, 2016 Feb 3. pii: S1353-8020(16)30027-X. doi: 10.1016/j.parkreldis.2016.01.027. (PMID: 26868161)
21. Nagae LM, Honce JM, Tanabe J, Shelton E, Sillau SH, Berman BD. Microstructural Changes within the Basal Ganglia Differ between Parkinson Disease Subtypes. *Front Neuroanat*. 2016 Feb 23;10:17. doi: 10.3389/fnana.2016.00017. (PMID: 26941615)
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23. Berman BD, Smucny J, Wylie KP, Shelton E, Kronberg E, Leehey M, Tregellas JR. Levodopa modulates small-world architecture of functional brain networks in Parkinson's disease. *Mov Disord*. 2016 Nov;31(11):1676-1684. doi: 10.1002/mds.26713. (PMID: 27461405)

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Scientific abstracts:

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