Stanford



Kevin Wilkins

Science Engineering Assoc 2, Adult Neurology

Bio

BIO

Kevin obtained a PhD in Neuroscience from Northwestern University while working in the Physical Therapy and Human Movement Sciences Department and a BS/BA in Psychology and English from Boston College. His dissertation research focused on understanding the neural mechanisms underlying upper extremity impairments in individuals with chronic stroke and subsequent motor improvements following novel interventions. His postdoctoral work at Stanford with Dr. Helen Bronte-Stewart focused on the neural features associated with different symptoms in individuals with Parkinson's disease using a combination of structural imaging, neurophysiology, and kinematic analysis, as well as carrying out closed-loop deep brain stimulation for freezing of gait. He was awarded a Postdoctoral Fellowship for Basic Scientists from the Parkinson's Foundation to investigate the cognitive correlates of gait impairment in Parkinson's disease. He now works as a Science and Engineering Associate and is helping conduct a new clinical trial using a novel deep brain stimulation approach for cognitive impairment in Parkinson's disease, as well as continuing his work on closed-loop deep brain stimulation.

CURRENT ROLE AT STANFORD

Science and Engineering Associate

EDUCATION AND CERTIFICATIONS

- Bachelor of Arts, Boston College , English (2014)
- Doctor of Philosophy, Northwestern University , Neuroscience (2019)
- Bachelor of Science, Boston College , Psychology (2014)

Publications

PUBLICATIONS

- **Beta burst-driven adaptive deep brain stimulation for gait impairment and freezing of gait in Parkinson's disease.** *Brain communications*
  Wilkins, K. B., Petrucci, M. N., Lambert, E. F., Melbourne, J. A., Gala, A. S., Akella, P., Parisi, L., Cui, C., Kehnemouyi, Y. M., Hoffman, S. L., Aditham, S., Diep, C., Dorris, et al
  2025; 7 (4): fcaf266
- **Bradykinesia and its progression are related to inter-hemispheric beta coherence.** *Annals of neurology*
  Wilkins, K. B., Kehnemouyi, Y. M., Petrucci, M. N., Anderson, R. W., Parker, J. E., Trager, M. H., Neuville, R. S., Koop, M. M., Velisar, A., Blumenfeld, Z., Quinn, E. J., Bronte-Stewart, H. M.
  2023
- **Modulation of beta bursts in subthalamic sensorimotor circuits predicts improvement in bradykinesia.** *Brain : a journal of neurology*
  Kehnemouyi, Y. M., Wilkins, K. B., Anidi, C. M., Anderson, R. W., Afzal, M. F., Bronte-Stewart, H. M.
  2020

- **Reduced pre-movement subthalamic beta desynchronization marks motor deficit in Parkinson's disease.** *Brain communications*
  Seo, G., Wilkins, K. B., Bronte-Stewart, H. M.
  2026; 8 (4): fcag245
- **Real-Time Kinematic Adaptive Deep Brain Stimulation Safely Reduces Gait Impairment and Freezing of Gait in Parkinson's Disease.** *medRxiv : the preprint server for health sciences*
  Karjagi, S., Kehnemouyi, Y. M., Petrucci, M. N., Parisi, L., Lambert, E. F., Melbourne, J. A., Akella, P., Wilkins, K. B., O'Day, J., Dorris, H. J., Diep, C., Gala, A. S., Cui, et al
  2026
- **At home monitoring of chronic adaptive deep brain stimulation for Parkinson's disease.** *Brain stimulation*
  Cui, C., Choi, J. W., Karjagi, S., Wilkins, K. B., Negi, A., Bronte-Stewart, H. M.
  2026: 103028
- **Subthalamic deep brain stimulation alleviates the gait sequence effect and freezing of gait in Parkinson's disease.** *Parkinsonism & related disorders*
  Cui, C., Je, G., Wilkins, K. B., Schulte, T., Bronte-Stewart, H. M.
  2025: 108062
- **The effect of subthalamic nucleus deep brain stimulation on speech metrics in Parkinson's disease.** *Parkinsonism & related disorders*
  Je, G., Akella, P., Wilkins, K. B., Bronte-Stewart, H. M.
  2025; 140: 108053
- **Remote real time digital monitoring fills a critical gap in the management of Parkinson's disease.** *NPJ Parkinson's disease*
  Negi, A. S., Karjagi, S., Parisi, L., Daley, K. W., Abay, A. K., Gala, A. S., Wilkins, K. B., Hoffman, S. L., Ferris, M. S., Zahed, H., Chattree, G. M., Palushaj, B., Bronte-Stewart, et al
  2025; 11 (1): 239
- **Closing the loop in DBS: A data-driven approach.** *Parkinsonism & related disorders*
  Acharyya, P., Daley, K. W., Choi, J. W., Wilkins, K. B., Karjagi, S., Cui, C., Seo, G., Abay, A. K., Bronte-Stewart, H. M.
  2025: 107348
- **N2GNet tracks gait performance from subthalamic neural signals in Parkinson's disease.** *NPJ digital medicine*
  Choi, J. W., Cui, C., Wilkins, K. B., Bronte-Stewart, H. M.
  2025; 8 (1): 7
- **Lateral thinking: Neurodegeneration of the cortical cholinergic system in Alzheimer's disease.** *Neurobiology of disease*
  Crockett, R. A., Casselton, C., Howard, T. M., Wilkins, K. B., Seo, G., Brontë-Stewart, H. M.
  2024: 106677
- **The digital signature of emergent tremor in Parkinson's disease.** *NPJ Parkinson's disease*
  Gala, A. S., Wilkins, K. B., Petrucci, M. N., Kehnemouyi, Y. M., Velisar, A., Trager, M. H., Bronte-Stewart, H. M.
  2024; 10 (1): 147
- **Comprehensive real time remote monitoring for Parkinson's disease using Quantitative DigitoGraphy.** *NPJ Parkinson's disease*
  Hoffman, S. L., Schmiedmayer, P., Gala, A. S., Wilkins, K. B., Parisi, L., Karjagi, S., Negi, A. S., Revlock, S., Coriz, C., Revlock, J., Ravi, V., Bronte-Stewart, H.
  2024; 10 (1): 137
- **An individualized tractography pipeline for the nucleus basalis of Meynert lateral tract.** *Imaging neuroscience (Cambridge, Mass.)*
  Crockett, R. A., Wilkins, K. B., Zeineh, M. M., McNab, J. A., Henderson, J. M., Buch, V. P., Brontë-Stewart, H. M.
  2024; 2
- **Proceedings of the 11th Annual Deep Brain Stimulation Think Tank: pushing the forefront of neuromodulation with functional network mapping, biomarkers for adaptive DBS, bioethical dilemmas, AI-guided neuromodulation, and translational advancements.** *Frontiers in human neuroscience*
  Johnson, K. A., Dosenbach, N. U., Gordon, E. M., Welle, C. G., Wilkins, K. B., Bronte-Stewart, H. M., Voon, V., Morishita, T., Sakai, Y., Merner, A. R., Lazaro-Munoz, G., Williamson, T., Horn, et al
  2024; 18: 1320806
- **An individualized tractography pipeline for the nucleus basalis of Meynert lateral tract** *Imaging Neuroscience*

Crockett, R. A., Wilkins, K. B., Zeineh, M. M., McNab, J. A., Henderson, J. M., Buch, V. P., Brontë-Stewart, H. M.
2024: 1–13.

- **The Effect of Deep Brain Stimulation on the Sequence Effect in Speech in Parkinson's Disease**
  Je, G., Wilkins, K. B., Melbourne, J. A., Bronte-Stewart, H. M.
  WILEY.2023: S185

- **No laughing white matter: Reduced integrity of the cortical cholinergic pathways in Parkinson's disease-related cognitive impairment.** *Neurobiology of disease*
  Crockett, R. A., Wilkins, K. B., Aditham, S., Brontë-Stewart, H. M.
  2023: 106243

- **Kinematic adaptive deep brain stimulation for gait impairment and freezing of gait in Parkinson's disease.** *Brain stimulation*
  Melbourne, J. A., Kehnemouyi, Y. M., O'Day, J. J., Wilkins, K. B., Gala, A. S., Petrucci, M. N., Lambert, E. F., Dorris, H., Diep, C., Herron, J. A., Bronte-Stewart, H. M.
  2023

- **The Sequence Effect Worsens Over Time in Parkinson's Disease and Responds to Open and Closed-Loop Subthalamic Nucleus Deep Brain Stimulation.** *Journal of Parkinson's disease*
  Kehnemouyi, Y. M., Petrucci, M. N., Wilkins, K. B., Melbourne, J. A., Bronte-Stewart, H. M.
  2023

- **Unraveling the complexities of programming neural adaptive deep brain stimulation in Parkinson's disease.** *Frontiers in human neuroscience*
  Wilkins, K. B., Melbourne, J. A., Akella, P., Bronte-Stewart, H. M.
  2023; 17: 1310393

- **Quantitative Digitography Measures Motor Symptoms and Disease Progression in Parkinson's Disease.** *Journal of Parkinson's disease*
  Wilkins, K. B., Petrucci, M. N., Kehnemouyi, Y., Velisar, A., Han, K., Orthlieb, G., Trager, M. H., O'Day, J. J., Aditham, S., Bronte-Stewart, H.
  2022

- **Proceedings of the Ninth Annual Deep Brain Stimulation Think Tank: Advances in Cutting Edge Technologies, Artificial Intelligence, Neuromodulation, Neuroethics, Pain, Interventional Psychiatry, Epilepsy, and Traumatic Brain Injury.** *Frontiers in human neuroscience*
  Wong, J. K., Deuschl, G., Wolke, R., Bergman, H., Muthuraman, M., Groppa, S., Sheth, S. A., Bronte-Stewart, H. M., Wilkins, K. B., Petrucci, M. N., Lambert, E., Kehnemouyi, Y., Starr, et al
  2022; 16: 813387

- **Lack of progression of beta dynamics after long-term subthalamic neurostimulation.** *Annals of clinical and translational neurology*
  Anderson, R. W., Wilkins, K. B., Parker, J. E., Petrucci, M. N., Kehnemouyi, Y., Neuville, R. S., Cassini, D., Trager, M. H., Koop, M. M., Velisar, A., Blumenfeld, Z., Quinn, E. J., Henderson, et al
  2021

- **Ramp Rate Evaluation and Configuration for Safe and Tolerable Closed-Loop Deep Brain Stimulation.** *International IEEE/EMBS Conference on Neural Engineering : [proceedings]. International IEEE EMBS Conference on Neural Engineering*
  Petrucci, M. N., Wilkins, K. B., Orthlieb, G. C., Kehnemouyi, Y. M., O'Day, J. J., Herron, J. A., Bronte-Stewart, H. M.
  2021; 2021: 959-962

- **Differential Effects of Pathological Beta Burst Dynamics Between Parkinson's Disease Phenotypes Across Different Movements.** *Frontiers in neuroscience*
  Neuville, R. S., Petrucci, M. N., Wilkins, K. B., Anderson, R. W., Hoffman, S. L., Parker, J. E., Velisar, A., Bronte-Stewart, H. M.
  2021; 15: 733203

- **A validated measure of rigidity in Parkinson's disease using alternating finger tapping on an engineered keyboard.** *Parkinsonism & related disorders*
  Trager, M. H., Wilkins, K. B., Koop, M. M., Bronte-Stewart, H.
  2020; 81: 161–64

- **Perspective: Evolution of Control Variables and Policies for Closed-Loop Deep Brain Stimulation for Parkinson's Disease Using Bidirectional Deep-Brain-Computer Interfaces** *FRONTIERS IN HUMAN NEUROSCIENCE*
  Bronte-Stewart, H. M., Petrucci, M. N., O'Day, J. J., Afzal, M., Parker, J. E., Kehnemouyi, Y. M., Wilkins, K. B., Orthlieb, G. C., Hoffman, S. L.
  2020; 14

- **A Novel Method for Calculating Beta Band Burst Durations in Parkinson's Disease Using a Physiological Baseline.** *Journal of neuroscience methods*
  Anderson, R. W., Kehnemouyi, Y. M., Neuville, R. S., Wilkins, K. B., Anidi, C. M., Petrucci, M. N., Parker, J. E., Velisar, A., Bronte-Stewart, H.
  2020: 108811
- **Intervention-induced changes in neural connectivity during motor preparation may affect cortical activity at motor execution.** *Scientific reports*
  Wilkins, K. B., Dewald, J. P., Yao, J.
  2020; 10 (1): 7326
- **Limited capacity for ipsilateral secondary motor areas to support hand function post-stroke** *JOURNAL OF PHYSIOLOGY-LONDON*
  Wilkins, K. B., Yao, J., Owen, M., Karbasforoushan, H., Carmona, C., Dewald, J. P. A.
  2020; 598 (11): 2153–67
- **Coordination of multiple joints increases bilateral connectivity with ipsilateral sensorimotor cortices** *NEUROIMAGE*
  Wilkins, K. B., Yao, J.
  2020; 207: 116344
- **Neural Closed loop deep brain stimulation for freezing of Gait.** *Brain stimulation*
  Petrucci, M. N., Neuville, R. S., Afzal, M. F., Velisar, A. n., Anidi, C. M., Anderson, R. W., Parker, J. E., O'Day, J. J., Wilkins, K. B., Bronte-Stewart, H. M.
  2020
- **Gait variability is linked to the atrophy of the Nucleus Basalis of Meynert and is resistant to STN DBS in Parkinson's disease.** *Neurobiology of disease*
  Wilkins, K. B., Parker, J. E., Bronte-Stewart, H. M.
  2020: 105134
- **Improving Hand Function of Severely Impaired Chronic Hemiparetic Stroke Individuals Using Task-Specific Training With the ReIn-Hand System: A Case Series** *FRONTIERS IN NEUROLOGY*
  Camona, C., Wilkins, K. B., Drogos, J., Sullivan, J. E., Dewald, J. P. A., Yao, J.
  2018; 9: 923
- **Neural Plasticity in Moderate to Severe Chronic Stroke Following a Device-Assisted Task-Specific Arm/Hand Intervention** *FRONTIERS IN NEUROLOGY*
  Wilkins, K. B., Owen, M., Ingo, C., Carmona, C., Dewald, J. P. A., Yao, J.
  2017; 8: 284