

Allegro con brio: Dr. Jessica Cassidy's Adventures as an Assistant Professor

In my former life, prior to my clinical and research training, I studied vocal performance with dreams of becoming the next great coloratura soprano, making my operatic debut at the Metropolitan Opera amongst renowned artists like Renée Fleming and Kathleen Battle. Ultimately, biochemistry and neuroscience prevailed over music theory and Italian. Yet, I am grateful that many of the skills acquired during my musical training have translated to my career as a rehabilitation scientist. One pivotal component linking both music and science that I wish to highlight here is *tempo*. In music, the tempo determines how fast (or slow) a piece is played. Tempo also often conveys emotion (think neurotransmitters and arousal). If I were to assign a tempo to my first four years as a tenure-track assistant professor, *allegro con brio* (fast and spirited) comes to mind. That “spirited” quality comes largely from the collaborations that I’ve cultivated along the way.



Before I describe my collaborative partnership with Dr. Swati Surkar, a few additional details of my background are necessary. Upon graduating from physical therapy (PT) school, I worked as a pediatric physical therapist in both inpatient and outpatient settings, gaining critical experience working with infants, children, and adolescents with neuromotor conditions. Pursuing a PhD was only an aspiration at the time, however, a phone call from one of my favorite PT professors, Dr. Jim Carey, changed that mindset. Jim and his talented graduate student, Bernadette Gillick, were recently awarded an NIH Challenge Grant to investigate the efficacy of a combined intervention of repetitive transcranial magnetic stimulation (rTMS) and modified constraint-induced movement therapy in children with hemiplegia. I began my PhD studies working as a graduate research assistant on that project.

After five years of studying neuromodulation in adult and pediatric stroke, I moved from Minnesota to sunny California to begin a postdoc position in Dr. Steve Cramer's laboratory. During my time with Steve, I was fortunate to receive an NIH K99/R00 award that funded my work to develop neuroimaging-based biomarkers of early post-stroke motor recovery in adults. Writing the K99/R00 was not only a valuable exercise in grant-writing, but the process also encouraged me to contemplate how I intended to separate or differentiate myself from my mentors during the postdoc-to-faculty transition. My answer was to establish a laboratory that focused on innovative brain mapping and neuromodulation strategies across the lifespan to better understand brain-behavior relationships during injury, disease, and development. My involvement and membership with the American Society of Neurorehabilitation (ASNR) as a postdoc afforded me invaluable networking opportunities and career development resources,

which gave me the confidence to embark upon this research pathway during my transition from postdoc to faculty.

Shortly after starting my faculty position at the University of North Carolina at Chapel Hill, I pursued funding opportunities to build the pediatric arm of my research program. My colleague Dr. Deborah Thorpe introduced me to Dr. Swati Surkar, a fellow ASNR Member and an assistant professor at East Carolina University and director of the Pediatric Assessment and Rehabilitation Lab (PeARL). Having recently completed a postdoc with Dr. Catherine Lang at Washington University, Swati was planning an ambitious set of studies examining the feasibility and efficacy of remote ischemic conditioning paired with bimanual training in children with unilateral cerebral palsy. Swati was also hoping to incorporate TMS measures of corticospinal excitability in these studies to evaluate potential neuroplasticity effects post-intervention. Given my interest in building a pediatric research program and lifespan lab, Swati's interest in pediatric neuromodulation, and our mutual investigations of brain-behavior relationships in children with neuromotor disabilities, our collaborative partnership quickly flourished.



Over the past two years, we've published together and served as Co-Investigators on one another's research funded by the American Physical Therapy Association's Academy of Pediatric Physical Therapy, American Academy for Cerebral Palsy and Developmental Medicine, C-PROGRESS, and NIH. I've driven the 240-mile route to Greenville, NC to meet with Swati and her research team and observe data collections as part of her R03 work. She, too, has driven that same route to Chapel Hill, NC to meet with my graduate students and, most recently, join me in volunteering at a yearly pediatric hemiplegia camp directed by my occupational therapy colleagues whom she now collaborates with.

Beyond the research and scholarship, our friendship has been instrumental. Navigating the tenure track with a friend in a similar career stage has made the process less stressful and more fulfilling— *allegro con brio*, shall we say. Power lunches with Swati involve thoughtful discussion and exchange of ideas. We listen to one another and share our work and life experiences, often encompassing the challenges associated with building and growing a lab, mentoring students, fostering safe scientific spaces, writing, family, travel, and finding time to pursue passions outside of the lab. The occasional venting happens, but it is usually followed by solutions and next steps. Having someone to share good news with that truly understands the achievement and obstacles overcome is key, and I'm a better person and scientist for it. This has been the right collaboration at the right time for me that not even the most formidable operatic librettist could write.