Biographical Sketch: Alzahraa Amer

NAME Alzahraa Amer **EMAIL:** alzahraa.amer@northwestern.edu	**POSITION/TITLE:** Postdoctoral Research Fellow		
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	**DEGREE**	**YEAR(s)**	**FIELD OF STUDY**
Cairo University	B.Sc.	2009	Physical Therapy: Neurological Rehabilitation
The University of the State of New York (Office of Professions)	NYS PT License	2013	Physical Therapy: License Number 036943
The City University of New York	M.Sc.	2015	Neuroscience and Developmental Disabilities
The City University of New York	PhD	2021	Biology/Neuroscience: (Laboratory of Dr. John Martin) Neuroplasticity of the Corticospinal System- Applications of Neuromodulation-Based Therapies

A. Personal Statement.

I aspire to craft bridges between the hands-on world of clinical practice and the visionary realm of research. Leveraging state-of-the-art techniques such as large-scale neural recordings and optogenetics, I examine the mechanisms of motor learning and recovery post-injury. My ambition is to establish an independent research trajectory in academia, centered on understanding neural mechanisms, promoting repair, and innovating breakthrough treatments for neurological injuries and disorders. My overarching goal is to translate novel neural understandings into tangible therapeutic strategies, ensuring a better quality of life for individuals with neurological disorders.

B. Positions and Honors.

Positions:

Northwestern University
Postdoctoral Fellow
Dr. Andrew Miri's Lab for Neural Dynamics of Rodent Movement (02/2024- present)

Burke Neurological Institute
Postdoctoral Fellow
Dr. Yutaka Yoshida's Lab for Neural Connectivity Development in Physiology and Disease (06/2021-01/2024)

The City University of New York
Graduate/Research Assistant
Dr. John Martin's Neural Development and Repair Cluster (08/2013-02/2021)

The CUNY School of Medicine at The City University of New York
Teaching Assistant- Neuroanatomy/Neuroscience class (06/2017 - 06/2018)

Williamsbridge Manor Nursing Home
Neurological Physical Therapist (06/2016-09/2020)

Faculty of Physical Therapy- Cairo University
Clinical Instructor at the Department of Physical Therapy for Neurological Disorders (11/2011-08/2012)
Free2Move Neurological Rehabilitation Center (Cairo, Egypt)
Neurological Physical Therapist (06/2009-02/2012)

Honors:
• New York State Department of Health Individual Postdoctoral Fellowship in Spinal Cord Injury Research, the award amount is $182,261 (2022). [achieved the highest score among all applicants for training awards in R5]
• New York State Department of Health Individual Predoctoral Fellowship in Spinal Cord Injury Research ,the award amount is $135,600 (2016).
• Neuroscience Fellowship from The Graduate Center at CUNY covers tuition for 5 years and two-year graduate assistantship totaling $29,000 (2014).
• Outstanding Masters Degree Award; by the faculty of the Biology Department at the College of Staten Island at the City University of New York (2015).
• Teaching Staff Grant from Primephysio, to attend BOBATH Neurodevelopmenal technique Introductory Course –Adult Hemiplegia (2011)

C. Selected peer-reviewed publications or manuscripts in press (in chronological order) from a total of 5.

• Song, W., **Amer, A**., Ryan, D., & Martin, J.H. (2016). Combined motor cortex and spinal cord neuromodulation promotes corticospinal system functional and structural plasticity and motor function after injury. Experimental neurology, 277, 46-57.

• Zareen, N., Shinozaki, M., Ryan, D., Alexander, H., **Amer, A**., Truong, D. Q., ... & Martin, J.H. (2017). Motor cortex and spinal cord neuromodulation promote corticospinal tract axonal outgrowth and motor recovery after cervical contusion spinal cord injury. Experimental neurology, 297, 179-189.

• Jiang, Y. Q., Sarkar, A., **Amer, A**., & Martin, J. H. (2018). Transneuronal downregulation of the premotor cholinergic system after corticospinal tract loss. Journal of Neuroscience, 38(39), 8329-8344.

• **Amer, A**., Xia, J., Smith, M. and Martin, J.H. (2021). Spinal cord representation of motor cortex plasticity reflects corticospinal tract LTP. Proceedings of the National Academy of Sciences, 118(52).

• **Amer, A**., & Martin, J. H. (2022). Repeated motor cortex theta-burst stimulation produces persistent strengthening of corticospinal motor output and durable spinal cord structural changes in the rat. Brain Stimulation, 15(4), 1013-1022.

D. Teaching and mentoring.

Teaching:

Neuroscience Lab at the Sophie Davis School of Biomedical Education and CCNY School of Medicine (2015-2017, ~16 medical/ first-year graduate students per lab), a course focusing on neuroanatomy and neurophysiology of the most relevant neurological conditions using engaging animations and real-life examples.

Musculoskeletal Pathologies and ***Neuropsychiatric Disorders*** **peer-based-learning modules** for advanced-medical students (2018).

An Introduction to Neuroscience course at Burke Neurological Institute for highly motivated high school students.

Mentoring:

I am a mentor in the reputable NYAS '1000 Girls 1000 Futures' program. In addition, I mentored several medical, graduate, and undergraduate students in my PhD and post-doctoral labs to enhance their research experience and scholarly development.

- **Gabriel Shakarov**, MD (2015-2017) (currently a General Ophthalmology resident at Icahn School of Medicine at Mount Sinai). Rudin Fellowship awardee (1-year long program) for his work in the lab.
- **Yasmin Soliman**, MD (2015-2017) (a Pediatric resident at Jacobi Medical Center)
- **Adrish Sarkar**, MD (2018-2020) (a Radiology Resident at Nassu University Medical Center).
- **Jasmine Pathan** (2021-2023), a graduate student of Neuroscience who is also a mentor in the reputable NYAS '1000 Girls 1000 Futures' program.
- **Hirohide Takatani**, DVM (2021-2023) a visiting PhD student from the University of Tokyo, determined to start a career in spinal cord injury research.
- **Roodley Francois** (2022-2023) (currently a student at Mercy U.niversity Graduate Program in Physician Studies)

E. Continuing Education Courses and Conferences Attended

- Federation of European Neuroscience Societies - Cajal course: Applications for Extracellular Electrophysiology (October 2023).
- Advanced EMG Methods: Simons-Emory International Consortium on Motor Control (March 2023)
-Scientific and Engineering Principles of Adaptive Neurotechnologies 2021 focus course organized by the National Center for Adaptive Neurotechnologies (July 2021)
- Society for Neuroscience- functional, structural and molecular imaging and big data analysis, San Diego (November 2, 2018)
- Federation of European Neuroscience Societies - Cajal course: linking neural circuits and behavior, Bordeaux France (October 7-27, 2018)
- CSHL- Molecular Mechanisms of Neural Connectivity (September 2018)
- Neuroscience School of Advanced Studies - Spinal Cord Injury Course, Venice Italy (September 8-15, 2018)
- Spinal Cord Injury Training Program sponsored by the Craig H. Nielsen Foundation (May 2017)
- Zeiss- Image Analysis, NY (June 2018)
- Zeiss- Best Practice in Imaging, NY (May 2018)
- Responsible Research Conduct, the Graduate Center of the City University of New York, (August 2013)
- International Publishing of Research- Faculty and Leadership Development Center at Cairo University, (March-April 2012)
- Teaching Gross Anatomy and Kinesiology of the Lower Extremity for Medical Students (December 2011)
- BOBATH NDT Introductory Course – Adult Hemiplegia (Primephysio- IBITA), October, (November2011)
- Applied Behavioural Analysis (December 2010)
- Developmental Neurokinesiology (January 2010)
- Radiosonography for Physical Therapists (December 2009)
- The Fourth National Conference on Human Performance and Disability (June 2008) (presented a student-talk on: Basic Ergonomic Principles)
- Cerebral Palsy in Clinical Practice (December 2008)
- Introduction to Evidence Based Medicine (July 2008)