Post-doctoral Fellow – Department of Neuroscience
Location: Center City, Philadelphia, PA
Job: REQ-0002585
Full/Part Time: Full-Time

Postdoctoral position in neuroimmunology/neurovirology

We are seeking a talented and self-motivated postdoctoral fellow to join our team in the laboratory of Dr. Richard Smeyne at the Vickie & Jack Farber Institute for Neuroscience, Thomas Jefferson University, Philadelphia. The successful candidate will investigate neuro-immune interactions in preclinical models of Parkinson's disease (PD). This position is ideal for someone with a strong background in immunology that would like to transition to neuroscience.

Our recent studies have shown that infections, including pandemic influenza and SARS-CoV-2, as well as bacterial infections, directly contribute to PD pathogenesis (bioRxiv [Preprint]; 2024 Dec 2:2024.12.02.626375); (for examples see: Brain. 2018 Jun 1;141(6):1753-1769); (NPJ Parkinsons Dis. 2022 Mar 15;8(1):24). We uncovered a pivotal insight into immune dysfunction in PD, demonstrating that a major monogenic cause of LRRK2-associated PD is mediated by the peripheral immune system rather than the CNS-intrinsic. This paradigm-shifting discovery has profound implications for our understanding of Parkinson's etiology, highlighting the malfunction of the innate and adaptive immune response as a primary causal factor. Currently, using clinically relevant human pathogens such as H1N1 and SARS-CoV-2 viruses, we seek to uncover the molecular mechanisms of peripheral and meningeal immunity that may trigger neuronal loss in PD with the ultimate goal of identifying early biomarkers and potential peripheral therapeutic targets outside the CNS.

This interdisciplinary project will involve working with the viruses and different PD mouse models (LRRK2, viral- and toxin-based models) and requires extensive hands-on experience with handling animals (i.p./i.v. injections, perfusions, brain tissue dissections). Previous experience in immunology or virology is preferred. Additional background in neuroscience is is helpful but not required.

Ideal candidate has:

- Ph.D. in neuroscience, immunology or virology.
- Excellent skills in basic molecular biology: WB, qPCR, ELISA, multiplex assays (Luminex).
- Experience with mouse immune cell isolation and flow cytometry/FACS/MACS.
- Prior experience with brain histology and tissue preparation, IHC-P, IHC-Fr, fluorescent and confocal microscopy, image analysis, stereology is a plus.
- A background in RNAseq will be considered an advantage.
- Prior experience with interdisciplinary projects and a willingness to tackle challenging research questions.
- Excellent communication, organizational, and problem-solving skills.

Interested candidates should send a cover letter with a brief description of their research interests and achievements as well as a CV to Dr. Richard Smeyne at richard.smeyne@jefferson.edu and

Dr. Elena Kozina at elena.kozina@jefferson.edu. Only potential candidates who meet the requirements will be considered for this position.