



## **Tracy Fischer, PhD**

Dr. Tracy Fischer received her PhD in Biology at Temple University in Philadelphia, PA and has recently joined the Tulane faculty at the School of Medicine and Tulane National Primate Research Center from the Katz School of Medicine at Temple University, Department of Neuroscience. Dr. Fischer's research interest is on the pathophysiology underlying neurodegenerative disease, including age-associated Alzheimer's dementia, as well as viral infections affecting the CNS, such as HIV and SARS-

CoV-2. A major focus of Dr. Fischer's research is on the impact of chronic inflammation in the brain and how it impacts microglial function and microglia-neuron communication in the context of HIV infection. She has recently identified important functional changes in microglia of patients with HIV that could negatively affect neuronal health and may underly chronic neuroinflammation the context of HIV infection and other chronic diseases, as well as in aging and age-related neurodegenerative disorders. Dr. Fischer's work has advanced the field of HIV and neuroAIDS, demonstrating that perivascular macrophages and microglia are the major reservoirs of productive HIV in the brain in humans and in non-human primate models. She further demonstrated activation of microglia in patients fully suppressed on antiretroviral therapy, even in the absence of detectable virus. Moreover, functional impairments of microglia outside of their traditional immunological role were identified that would, presumably, also contribute to neurodegeneration. This state-of-the-art work provides important insights into the diverse roles microglia play in maintaining brain homeostasis and how impaired microglial function may contribute to neuronal injury and cognitive impairment in neuroAIDS that may also be significant to other neurodegenerative diseases.

In response to the SARS-CoV-2 pandemic, Dr. Fischer's lab turned their attention to investigating the potential impact of infection and COVID-19 on the brain. Using two non-human primate models of infection, Dr. Fischer and colleagues reported neuropathology that is consistent with human autopsy findings, even among animals that did not develop severe respiratory disease and offers key insights into the underlying cause of neurological symptoms of post-acute sequelae of COVID-19, or "long COVID" suffered by many individuals. Published in Nature Communications April 1, 2022, this groundbreaking work continues to be well-received among the scientific community and general public. Dr. Fischer's lab is currently extending this work to identify the mechanisms of SARS-CoV-2 brain injury.