February 2022 Spotlight

Luke Liu, Ph.D. candidate, Laboratory of Dr. Wei Zheng

Luke Liu received his Bachelor of Medicine from Tongji Medical College, and Master of Medicine from Fudan University in China. In the master program at Fudan, he studied the male reproductive toxicity induced by a popular herbicide flurochloridone (FLC). By intratesticular injection of tracers to rats, he found the blood-testis barrier integrity was dose-dependently compromised by FLC exposure due to disrupted tight junctions in Sertoli cells.

Luke has joined Dr. Wei Zheng’s laboratory since fall 2018. In Zheng lab, Luke’s research mainly focuses on the choroid plexus, a tiny tissue floated in brain ventricles secreting the cerebrospinal fluid (CSF). Specifically, he studies how choroid plexus contributes to the copper (Cu) homeostasis in the CSF and how this small tissue modulates an adjacent adult neurogenic region called subventricular zone (SVZ). To achieve the research goals, he used stereotaxic intraventricular (ICV) infusions/injections and in vitro neurosphere model. His recent work revealed a decreased Cu level in SVZ by ICV infusion of D-Penicillamine, a clinically used Cu chelator, to the CSF, could increase the newborn neurons in the olfactory bulb. With such findings, Luke attempts to ICV inject adenovirus-associated virus serotype 5 (AAV5), a viral vector known to specifically infect choroid plexus, to knockdown expression of Cu transporters in choroid plexus and characterize the changes of SVZ adult neurogenesis.

In Zheng lab, Luke also works with undergraduate students Vincent, Vivian, and high school student David, to help them develop their own projects. Their research progress is inspiring and by focusing on how heavy metals adversely affect choroid plexus, one peer-reviewed paper and multiple abstracts at the national level have been accepted and published.

Luke won the Society of Toxicology (SOT) Graduate Travel Award for the incoming SOT meeting in San Diego, California. In San Diego, Luke will also be a volunteer coordinator for the Continuing Education (CE) course Next-Level Neurotoxicology. Outside the lab, Luke enjoys playing basketball and watching NBA games.