PROJECT TITLE: Adult neurogenesis dysfunction after traumatic brain injury

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Project Description

The dentate gyrus is a specialized region of the hippocampus supporting the generation of new neurons in adulthood. In non-injury settings, adult neurogenesis benefits cognitive performance, while neurogenesis in the context of traumatic brain injury (TBI) may be dysfunctional. After TBI, many immature neurons die, overall neuronal proliferation is increased, and despite formation of new neurons, cognitive deficits persist. This research involves TBI injured rodent brain tissue, collected under UC IACUC approved protocols. The WISE student will help investigate two critical signaling pathways, AKT-GSK3β-mTOR, and mitogen-activated protein kinase (MAPK), that regulate the proliferation, maturation, migration, and integration of new neurons in the dentate gyrus. The WISE student will learn techniques such as immunohistochemistry and western blotting while participating in the acquisition and analysis of data.