

## Neurogenesis is Altered Between and Across Brain Regions After Neurodegeneration and Injury

Adult neurogenesis is the addition of new neurons in the adult brain. In mammals, neurogenesis is largely restricted to the hippocampus and olfactory bulb, which underlie learning, memory, and olfaction. In songbirds, new neurons are incorporated into telencephalic regions that subserve the production, perception, and maintenance of song. Studies of the regulation of neurogenesis have exclusively focused on a single brain region and within a single hemisphere. Interestingly, it has yet to be investigated whether there are correlations between numbers of new neurons across regions and hemispheres within the same animal. Here we examined these differences in a rat model of a neurodegenerative disease and in songbirds with peripheral nerve damage. We found that neurogenesis is regulated across brain regions and within hemispheres of both animal models. An understanding of how neurogenesis is impacted across and within healthy and diseased brains may lead to strategies that consider interconnected effects in a whole brain system to help promote neurogenesis, which may ultimately mitigate cognitive impairment.