Abstract

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ADULT NEUROGENESIS IN THE MAMMALIAN CENTRAL NERVOUS SYSTEM

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Forty years since the initial discovery of neurogenesis in the postnatal rat hippocampus, investigators have now firmly established that active neurogenesis from neural progenitors continues throughout life in discrete regions of the central nervous systems (CNS) of all mammals, including humans. Significant progress has been made over the past few years in understanding the developmental process and regulation of adult neurogenesis, including proliferation, fate specification, neuronal maturation, targeting, and synaptic integration of the newborn neurons. The function of this evolutionarily conserved phenomenon, however, remains elusive in mammals. Adult neurogenesis represents a striking example of structural plasticity in the mature CNS environment. Advances in our understanding of adult neurogenesis will not only shed light on the basic principles of adult plasticity, but also may lead to strategies for cell replacement therapy after injury or degenerative neurological diseases.

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