Abstract of Presentation

Presentation Title

Regulatory Mechanism of Adult Neural Stem Cell Activation

Name (Underline the family name)

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Abstract

The generation of new neurons continues throughout adulthood in the mammalian brain due to the coordinated proliferation and differentiation of adult neural stem cells. However, the mechanisms that regulate these processes remain poorly understood. Depletion of Rbpj or Hes1/3/5/Hey1 in adult neural stem cells at the SVZ/LV resulted in the transient increase of cell proliferation and neurogensis, but after 3 months, dividing neural stem cells totally disappeared. In contrast, sustained expression of Hes1 from Rosa26-Hes1 allele inhibited proliferation of adult neural stem cells and neurogenesis. These results indicated that the Notch-Hes pathway regulates the transition between quiescent and actively dividing state of adult neural stem cells. It has been reported that Hes1 expression is dynamically oscillating in embryonic neural stem cells, and that Hes1 oscillation contributes to the efficient expansion of neural stem cell pools. We are monitoring the Hes expression dynamics in adult neural stem cells, and we would like to discuss the functional significance of the dynamic change of Hes-expression mode in the proliferation and differentiation of adult neural stem cells.