Seminar/Talk

Post-transcriptional regulation of embryonic and adult neurogenesis.

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Host: Simon Hippenmeyer

Ascl1 is a proneural transcription factor with important functions during brain development and adult neurogenesis. Overexpression of Ascl1 in neural stem cells rapidly induces cell cycle exit and differentiation. However, Ascl1 is also crucial for the proliferation of neural progenitors. We have previously shown that Ascl1 stability is regulated by the E3-ubiquitin ligase Huwe1. We demonstrated that adult hippocampal stem cells rely on Huwe1-dependent degradation of Ascl1 to exit the cell cycle and return to quiescence. This allowed us to show the importance of the return to quiescence of adult neural stem cells for the long-term maintenance of neurogenesis.Since Ascl1 is essential for the development of the ventral telencephalon, we are now analysing the effects of Huwe1 deletion at embryonic stages. Our results show that Ascl1 protein is highly increased in the brains of Huwe1 mutant mice. We observe that Ascl1 stabilisation not only does not promote neuronal differentiation but also impairs the exit from the cell cycle of neural precursors, resembling our findings in the adult brain. We are currently investigating the mechanisms behind the seemingly counterintuitive pro-proliferative effect of Ascl1 stabilisation. Overall, our findings will help understand how key factors in stem cell biology, such as Ascl1 for neural stem cells, can exert a great diversity of functions in a context-dependent manner.

Tuesday, November 7, 2017 01:00pm - 02:00pm
Seminar Room, Lab Building East

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