



CDB SEMINAR

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11:00~12:00 C4F S401

BMP signaling and spinal cord development

Summary

Bone morphogenic proteins (BMPs), a subfamily of cytokines of the transforming growth factor- β (TGF- β) superfamily, play key roles in regulating a wide range of biological responses during embryonic development and adult tissue homeostasis. Because deregulation of BMP signaling leads to many developmental disorders and diseases, the stringent control of its activity is critical for normal development and tissue maintenance. This stringent control of BMP activity could be achieved by cross-regulation between BMP and other signaling pathways, such as FGF, Wnt, retinoic acid (RA), and Notch pathways. We recently found that BMP down-stream target Id proteins could interact directly with Hes1, the down-stream target of Notch pathway, and release the negative feedback auto-regulation of Hes1 gene. This cross-talk between BMP and Notch pathways inhibits precocious neurogenesis and maintains the neural stem cell pool in early embryos (*Dev Cell*, 2007, 13, 183-297). We also showed that RA could regulate BMP signal duration by promoting the degradation of phosphorylated Smad1. And this cross-talk between BMP and RA pathways is involved in the proper patterning of dorsal neural tube of chicken embryo (*PNAS*, 2010, 107, 18886-18891). Furthermore, we showed that Smad6, a negative regulator of BMP signaling, could recruit the co-repressor, CtBP, into the β -Catenin/TCF complex to inhibit Wnt/ β -Catenin pathway, and this cross-talk between BMP and Wnt signaling pathways could promote neuronal differentiation in the intermediate zone of the dorsal neural tube of chicken embryo (*PNAS*, 2011, 108, 12119-12124).

Host:

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