



Universität
Basel

Research Project

Control of functional and structural plasticity of synapses by bone morphogenetic protein signaling

Third-party funded project

Project title Control of functional and structural plasticity of synapses by bone morphogenetic protein signaling

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Organisation / Research unit

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Department

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Status Completed

The connectivity and plasticity of neuronal networks underlies movement and more complex behaviors in all animals, including humans. The overarching goal of this project is to understanding the interface between molecular mechanisms and experience-dependent plasticity that shape the specificity and function of synaptic connections in the nervous system. Many examples for functional and structural plasticity have been described; however, there is a paucity of knowledge about the molecular and cell biological mechanisms that instruct these processes. One theme that recently emerged in molecular neuroscience is the “re-use” of neuronal patterning signals (that instruct early development) in later stages of neuronal development. Bone morphogenetic proteins (BMPs) represent one such example. Well-known for their roles in neural induction and patterning, BMPs also have novel, unexpected roles in synapse development. In this joint project, we will use a combination of genetic, cell biological, imaging, and electrophysiological approaches to test the hypothesis that BMP signaling controls structural and functional plasticity in the developing and mature nervous system.

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