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Input from the thalamus creates diversity of the cortical neurons

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Brain development at the embryonic stage is heavily controlled by intrinsic factors. Such as, number of cells to generate and types of cells to differentiate, are controlled by cues at ventricular/subventricular zone and at their early postmitotic stages. Axons are guided to their target area and make connections by guidance cues. However, this blueprint of neuronal circuit development needs to be modified and rewired at their postnatal stages. This plasticity is important for animal to obtain better neuronal circuit that control animals behavior in most efficient way for survival. Meanwhile, negative factors such as stress in early postnatal stage can also change circuit development which causes abnormal behavior later in their adult stages. Therefore, revealing mechanism of experience dependent brain development is important to understand how we can grow healthy brain or avoid developing sick brain. In my talk, I would like to discuss about molecular mechanism of experience dependent neuronal circuit development take place in postnatal brain, especially how cortical neurons are specified by input coming from thalamus.

References:

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