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► **COVER:** 'Shining a light on branching' by Kirsten Lee, inspired by the Review on p316.



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In keeping with the spring season, this issue contains a number of articles about neuron birth and development.

The generation of neurons from neural stem cells involves many steps, each of which is regulated by multiple intrinsic and extrinsic factors. Small regulatory RNAs have recently been added to the list of regulators. Li and Jin (page 329) describe how microRNAs in particular are implicated in the fate specification of neurons and glia by interacting with transcription factors and through epigenetic mechanisms.

What determines the intricate size and shape of dendritic arbors? In their Review on page 316, Jan and Jan discuss studies in *Drosophila melanogaster* that have uncovered the many factors that shape the dendritic branching pattern in a neuron type-specific manner and that influence the relative organization of dendritic fields. A comparison with studies in vertebrates points to general principles of dendritic pattern formation that may help to identify the causes of some neurodevelopmental disorders.

Neurogenesis is not limited to the prenatal and postnatal period but also occurs in restricted brain areas in adulthood. In a Review on page 339, Gage and colleagues focus on adult neurogenesis in the dentate gyrus and its possible role in learning and memory. On the basis of data from behavioural and computational studies, they propose that the specific contribution of newborn neurons to memory depends on their maturation stage.

Another article that shows how computational models can help to resolve long-standing neuroscientific questions is the Perspective on page 351. Pulvermüller and Fadiga describe computational, clinical and imaging studies showing, they argue, that motor cortex activation is required for speech perception.

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