Interneurons find their way to the striatum

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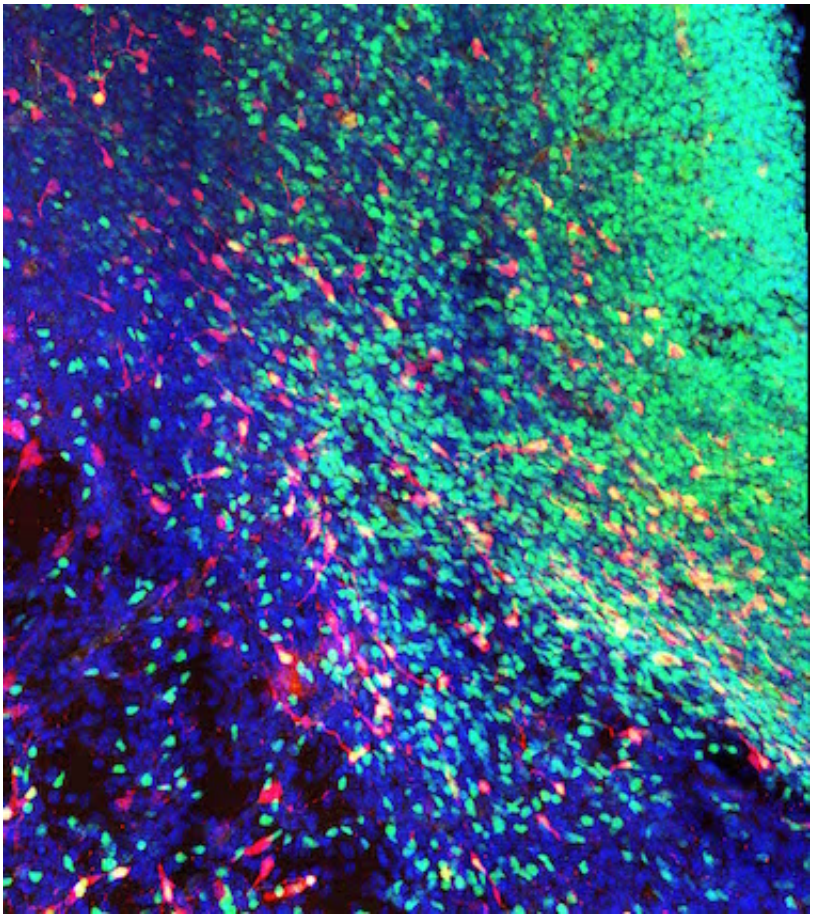

MGE-derived interneurons are shown expressing EphB3 (red) and Nkx2-1 (green) migrating to the striatum. Credit: Verona Villar-Cerviño, PhDInstituto de Neurociencias (CSIC-UMH)

Researchers from the MRC Centre for Developmental Neurobiology (MRC CDN) at King´s College London, led by Prof. Oscar Marín, have

identified the mechanisms guiding interneurons to the striatum, a major brain centre involved in the coordination of body movement and motivation. These results, published in *Journal of Neuroscience* in collaboration with investigators from the Instituto de Neurociencias in Alicante (Spain), also reveal the molecule nature of the cues regulating the migration of striatal interneurons.

During development, the medial ganglionic eminence (MGE), a transitory brain structure, produces several populations of GABAergic inhibitory neurons, including cortical and striatal interneurons. While most research studies have focused on the migration of interneurons to the cortex, very little is known about the mechanisms through which interneurons colonise the striatum. Both cortical and striatal interneurons can be attracted by Nrg1 sources present in the cerebral cortex and the striatum. Therefore, the segregation of these two populations of interneurons must depend on repulsive signals that prevent the colonization of regions outside their final target.

Experiments carried out by the group of Prof. Marín demonstrated that striatal interneurons are repelled by the cerebral cortex through a mechanism that involves Eph/ephrins signalling. This new study also showed that responsiveness of MGE-derived striatal interneurons to attractive and repulsive cues is at least in part controlled by the postmitotic activity of the transcription factor Nkx2-1. These results reveal parallel mechanisms of target chemoattraction and off-target chemorepulsion for the migration of interneurons to the cortex and striatum.

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