MENINGEAL NEURAL PRECURSORS CONTRIBUTE TO CORTICAL NEURONS OF AGED MICE.

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We recently described that meningeal cells are able to migrate to the posterior cortex postnatally, and differentiate into functional neurons that express the marker Satb2. These meningeal neurogenic cells belongs to the platelet-derived growth factor receptor β (PDGFRβ)+ lineage. By Single-cell RNA sequencing analysis we found in meninges the presence of radial glia-like cells, neuronal cells, and a cell type with an intermediate phenotype, thus possibly representing then radial glia-like meningeal cells in their differentiation process to neurons (Bifari et al.,2015, 2017). However, whether these newly added meningeal-derived postnatal neurons are maintained during aging is not known. With this work, we aimed to investigate the long-term survival of migrated meningeal cells in the upper layers of the mice cortex. We found that meningeal-derived cells in the brain cortex survived up to 1 year after meningeal labelling at postnatal day (P) 0 and they express the neuronal marker Satb2 (~52%). Meningeal derived neurons of aged mice showed a similar phenotype compared to meningeal derived neurons in young mice suggesting that the postnatal generated meningeal neurons are maintained during aging. This study underlines the importance of meningeal-derived neurons in aging cortex, opening new questions about their role and their functions in the adult/aged brain in health and disease.

Bifari (2015). Front Cell Neurosc.

Bifari (2017). Cell Stem Cell.