

Publication

Age-Dependent Niche Signals from the Choroid Plexus Regulate Adult Neural Stem Cells

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Author(s) Silva-Vargas, Violeta; Maldonado-Soto, Angel R; Mizrak, Dogukan; Codega, Paolo; Doetsch, Fiona

Author(s) at UniBasel [Doetsch, Fiona](#) ; [Silva Vargas, Violeta](#) ;

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Specialized niches support the lifelong maintenance and function of tissue-specific stem cells. Adult neural stem cells in the ventricular-subventricular zone (V-SVZ) contact the cerebrospinal fluid (CSF), which flows through the lateral ventricles. A largely ignored component of the V-SVZ stem cell niche is the lateral ventricle choroid plexus (LVCP), a primary producer of CSF. Here we show that the LVCP, in addition to performing important homeostatic support functions, secretes factors that promote colony formation and proliferation of purified quiescent and activated V-SVZ stem cells and transit-amplifying cells. The functional effect of the LVCP secretome changes throughout the lifespan, with activated neural stem cells being especially sensitive to age-related changes. Transcriptome analysis identified multiple factors that recruit colony formation and highlights novel facets of LVCP function. Thus, the LVCP is a key niche compartment that translates physiological changes into molecular signals directly affecting neural stem cell behavior.

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