TEMPORAL DYNAMICS OF CHOROID PLEXUS-CEREBROSPINAL FLUID DERIVED FACTORS: IMPACT IN THE SUBVENTRICULAR ZONE NEURAL STEM CELL NICHE

Fernanda Marques, Diana Afonso, Sandro Dá Mesquita, Ana Catarina Ferreira, Nuno Sousa, Joana Palha, João Carlos Sousa

Life and Health Sciences Research Institute (ICVS), School of Health Sciences, University of Minho, Campus Gualtar, 4710-057 Braga, Portugal; ICVS/3B’s – PT Government Associate Laboratory, Braga/Guimaraes, Portugal

Grant 217/12

**Background:** The choroid plexus (CP) is part of the barriers of the brain, and it limits and regulates the passage of blood-born molecules towards the cerebrospinal fluid (CSF). The CSF fills the brain ventricles and bathes the brain parenchyma modulating brain cells activity. The neurogenic niches, namely the subventricular zone (SVZ) is in close contact with the CSF. Thus any changes in the transcriptome/secretome of the CP will reflect in CSF composition and ultimately affect the SVZ neural stem cells.

**Objectives:** To determine temporal changes in the CP transcriptome and CSF content that impact the brain neural stem cell niches.

**Method:** Microarray profiling of the CP transcriptome and protein quantification in the CSF. In vitro cultures of CP cells and SVZ neurospheres.

**Results:** In the CP we observed a global shift in the gene expression pattern with age. Namely, during adult aging an increase in the expression of IFN alpha in the CP and the protein levels in the CSF. This changes correlated with poor performance in a cognitive task.

**Conclusion:** Physiological changes at the CP-CSF interface are key to brain functioning and impact neural cells which is of relevance in pathological conditions.

**Keywords:** Choroid plexus, Cerebrospinal fluid, Neural stem cells, Subventricular zone

**Publications:**
Marques F, Sousa JC. The choroid plexus is modulated by various peripheral stimuli: implications to diseases of the central nervous system. Front Cell Neurosci. 2015. 9:136