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ChorNEXUS

Principles of choroid plexus-mediated brain-body interactions in the context of systemic and peripheral pathologies

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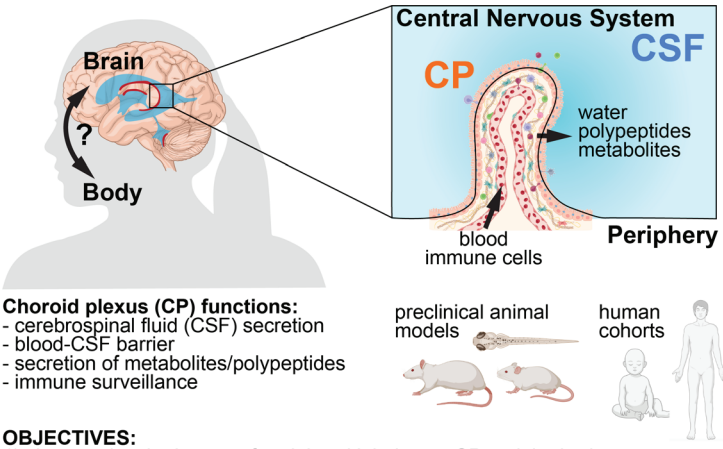
The choroid plexus (CP), a specialized epithelial-endothelial tissue in the brain, provides an interface between the blood and the central nervous system. It functions as the blood-cerebrospinal fluid (CSF) barrier, the CSF secretory organ, and a site for immune surveillance. Thereby, the CP is strategically positioned for regulating brain-body interactions. Yet, how the CP senses and responds to this flow of information in health and disease is poorly understood. It is also unclear whether the CP can be targeted for clinical interventions of brain diseases.

ChorNEXUS will investigate the principles of CP-mediated brain-body interactions in peripheral and systemic pathologies. We will study how the CP senses, processes, and responds to selective stimuli, and how this information influences neural circuits, in view to identify biomarkers and targets for clinical interventions.

ChorNEXUS aims to identify (1) the impact of peripheral injuries on the CP and the brain, (2) how CP alterations lead to maladaptive brain plasticity, (3) markers of CP dysfunction, and (4) CP interventions for treatment of brain disorders.

By combining preclinical expertise in CP, CSF, and neuronal physiology with the clinical management of patient cohorts with peripheral and central nervous system diseases, ChorNEXUS aims to identify the overarching principles of CP-mediated brain regulation in health and disease. This will be instrumental for future development of diagnostics and therapies.



Choroid plexus (CP) functions:
- cerebrospinal fluid (CSF) secretion
- blood-CSF barrier
- secretion of metabolites/polypeptides
- immune surveillance

OBJECTIVES:
1) characterize the impact of peripheral injuries on CP and the brain
2) identify how CP alterations lead to maladaptive brain plasticity
3) discover markers of CP dysfunction in biosamples
4) test CP interventions for treatment of brain disorders
5) evaluate whether treatment of brain disorders, such as multiple sclerosis, has influence on CP size