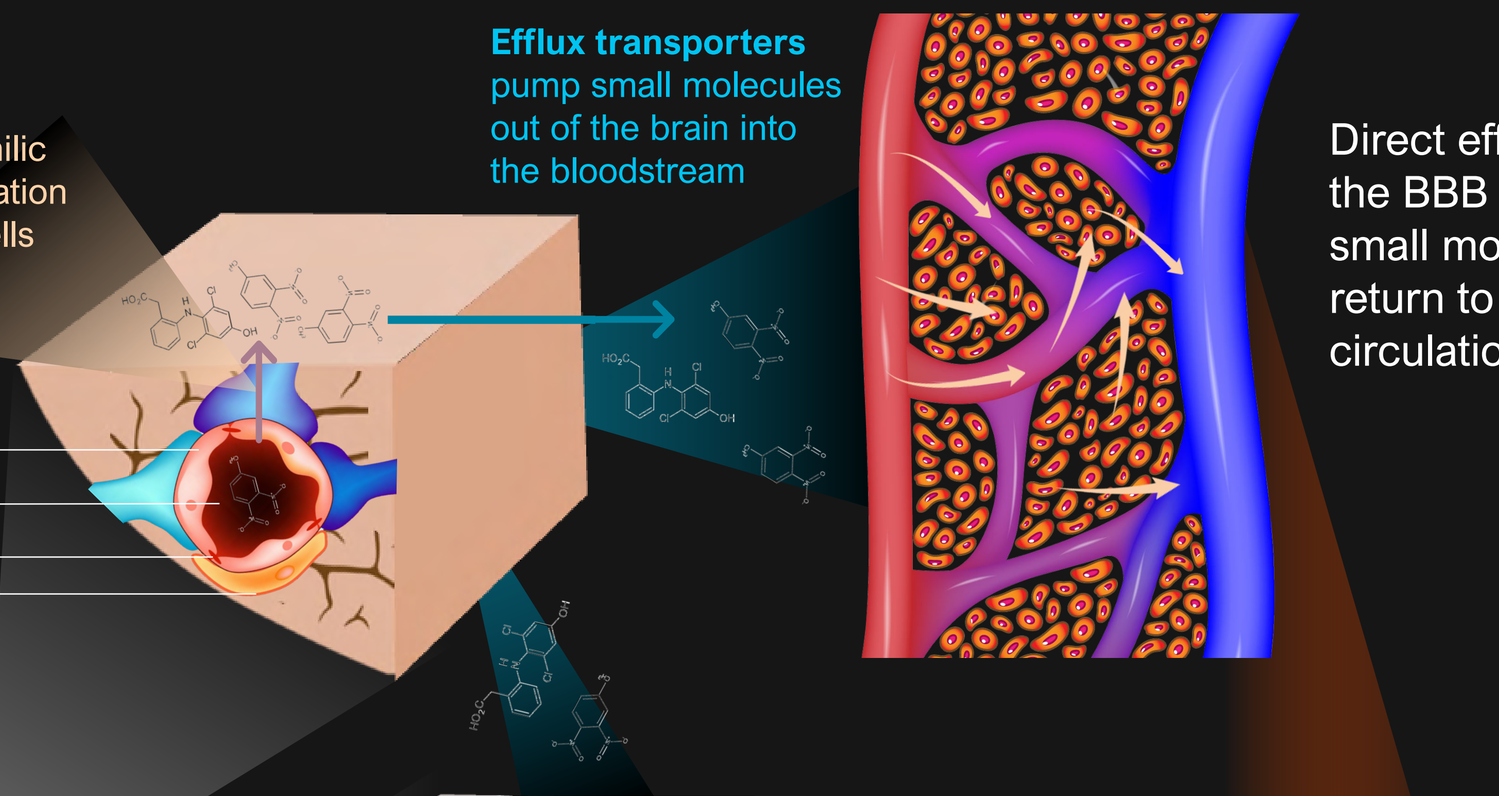
Capturing metabolites that originate from the CNS in broader circulation

The exchange of substances across the blood-brain barrier (BBB) is regulated by various mechanisms, including the selective transport of metabolites using transporters[1]

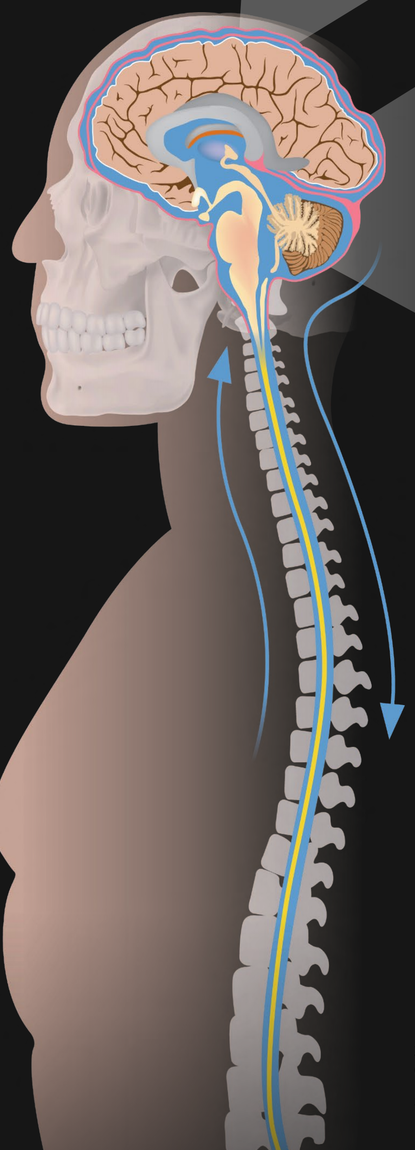
Uptake transporters
bring small non-lipophilic molecules from circulation into the endothelial cells and then the brain

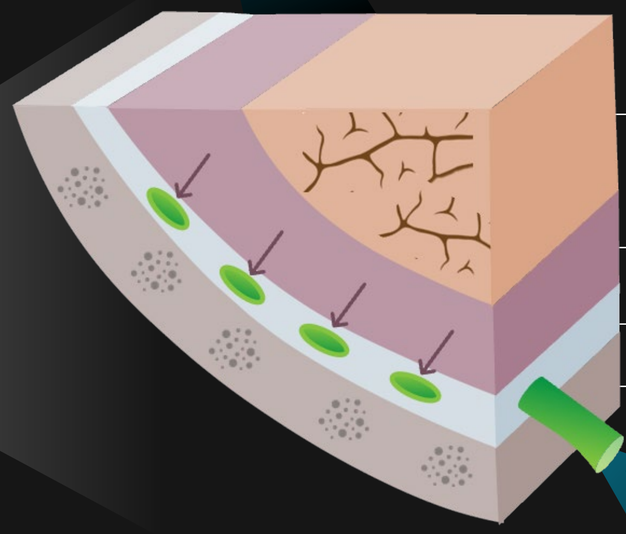
Efflux transporters
pump small molecules out of the brain into the bloodstream



Direct efflux from the BBB allows small molecules to return to broader circulation

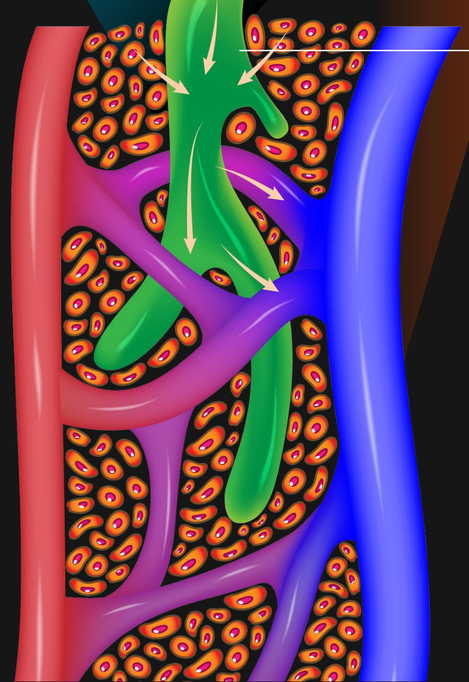
Brain-derived metabolites pass through the BBB, CSF, and lymphatic system into blood, where they can be **non-invasively captured**





Meningeal and cervical lymph nodes

Lymph



Cerebrospinal fluid (CSF) drainage can occur via lymphatic vessels at the base of the skull, among other routes[2]

CSF composition reflects the balance between the uptake and release of metabolites between interstitial fluid (ISF), cells of the CNS, and peripheral circulation[1,3]

1. Fabian et al. (2021). Lipid Transport and Metabolism at the Blood-Brain Interface: Implications in Health and Disease. *Front. Physiology.* doi: 10.3389/fphys.2021.645646.

2. das Neves et al. (2021). CNS-Draining Meningeal Lymphatic Vasculature: Roles, Conundrums and Future Challenges. *Front. Pharmacol.* doi: 10.3389/fphar.2021.655052.

3. Gianfranco et al. (2021). Glymphatic System as a Gateway to Connect Neurodegeneration From Periphery to CNS. *Front. Neuroscience*. doi: 10.3389/fnins.2021.639140