## Lymphatic drainage

The lymphatic drainage system of the brain, composed of the glymphatic system and meningeal lymphatic vessels (MLVs), plays an essential role in the clearance of toxic waste after brain injury. The neuroprotective effect of interleukin 33 (IL-33) in TBI mice has been demonstrated; however, its impact on the brain lymphatic drainage is unclear. Liu et al. established a fluid percussion injury model to examine the IL-33 administration effects on neurological function and lymphatic drainage in the acute brain of TBI mice. They verified that exogenous IL-33 could improve the motor and memory skills of TBI mice and demonstrated that in the acute phase, it increased the exchange of cerebrospinal and interstitial fluid, reversed the dysregulation and depolarization of aquaporin 4 in the cortex and hippocampus, improved the drainage of MLVs to deep cervical lymph nodes, and reduced tau accumulation and glial activation. Liu et al. speculated that the protective effect of exogenous IL-33 on TBI mice's motor and cognitive functions is related to the enhancement of brain lymphatic drainage and toxic metabolite clearance from the cortex and hippocampus in the acute stage. These data further support the notion that IL-33 therapy may be an effective treatment strategy for alleviating acute brain injury after TBI. <sup>1)</sup>

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Using the model of the sound-induced opening of the BBB, Semyachkina-Glushkovskaya et al. clearly show how the brain clears dextran after it crosses the BBB via the meningeal lymphatic vessels. They first demonstrate the successful application of optical coherence tomography (OCT) for imaging of the lymphatic vessels in the meninges after the opening of the BBB, which might be a new useful strategy for noninvasive analysis of lymphatic drainage in daily clinical practice. Also, we give information about the depth and size of the meningeal lymphatic vessels in mice. These new fundamental data with the applied focus on the OCT shed light on the mechanisms of brain clearance and the role of lymphatic drainage in these processes that could serve as an informative platform for the development of therapy and diagnostics of diseases associated with injuries of the BBB such as stroke, brain trauma, glioma, depression, or Alzheimer disease<sup>2</sup>.

## 1)

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