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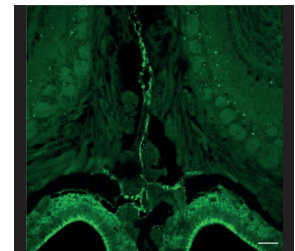
The Institute explores molecular mechanisms involved in inflammation, focusing on immune cell migration during immune surveillance and inflammation employing cutting-edge 3D live cell imaging. It teaches immunology, vascular cell biology, transgenic mouse technologies, cell migration, inflammation, and live cell imaging.

Visualizing the routes of cerebrospinal fluid clearance

In this study we elucidated the anatomical connections between the subarachnoid space and lymphatic vessels located near the cribriform plate in mice. This work builds upon previous work from the Proulx group that has indicated the importance of the lymphatic pathways for clearance of cerebrospinal fluid.



[Spera et al., EBioMedicine, 2023.](#)



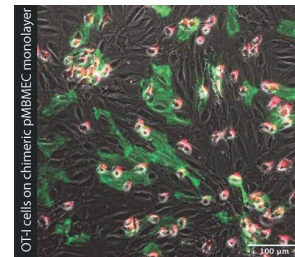
Lymphatics (green) positioned to drain CSF

Antigen recognition detains CD8 T cells at the blood-brain barrier and contributes to its breakdown

Antigen presentation at the blood-brain barrier (BBB) has been suggested to promote CD8 T cell entry into the CNS during multiple sclerosis. Our study rather shows that although brain endothelial cells can present antigens to CD8 T cells during neuroinflammation, this prevents CD8 T-cell migration across the BBB and rather triggers cell death of the endothelial cells.



[Aydin and Pareja et al., Nat Commun, 2023](#)



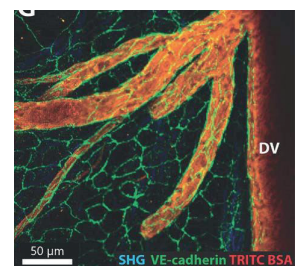
In vitro imaging showing CD8 T cells crawling on brain endothelial cells

VE-cadherin serves as a leptomeningeal landmark for imaging of CNS immune surveillance and inflammation

In this study, we describe VE-cadherin at intercellular junctions of arachnoid and pia mater cells that border the subarachnoid space (SAS) filled with cerebrospinal fluid. In vivo imaging of the spinal cord and brain in VE-cadherin-GFP reporter mice allows for direct observation of tracers and T cells in the SAS during health and neuroinflammation.



[Mapunda and Pareja et al., Nat Commun, 2023](#)



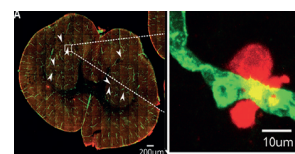
VE-cadherin-GFP allows for visualization of the cell-cell contacts of the pia mater

Blood-brain barrier integrity affects melanoma brain metastasis

Formation of melanoma brain metastasis depends on the successful extravasation of metastatic melanoma cells across the tight blood-brain barrier (BBB). This study emphasizes that preserving the integrity of the BBB is an important measure to limit the formation of melanoma brain metastasis.



[Saltarin et al., Cancers \(Basel\), 2023.](#)



Analysis of melanoma cell (red) extra - versus intravascular (green) localization