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Institute of Psychiatry and Neuroscience of Paris

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(Host A Joutel)

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The development and plasticity of the post-natal cerebral vasculature

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Room D Levy, 102-108 rue de la santé - 75014 Paris

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The brain is densely perfused by the vascular network, which provides nutrients and oxygen to support neuronal function. To better understand the relationship between the metabolic need of the different neural cell types and the topology of the adult vascular network, we built a 3D developmental atlas of the brain vasculature. For this, we generated the annotation maps and templates for the developing mouse brain to align vascular datasets onto. We next optimized a series of computational tools to measure and classify the organization of the different brain regions. We used these tools to generate a system's view of the developmental trajectories for the various brain regions. Finally, we tested in different models of neuronal activity modulation its impact on the development and maintenance of the network. This work reveals how the vascular network can cater differently to the metabolic needs of both the developing and adult brain, and how cerebral networks shape the development and maintenance of the cerebral vasculature.

Keywords:

Developmental biology, Histology, Microscopy, Neuro-anatomy, Vascular network

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