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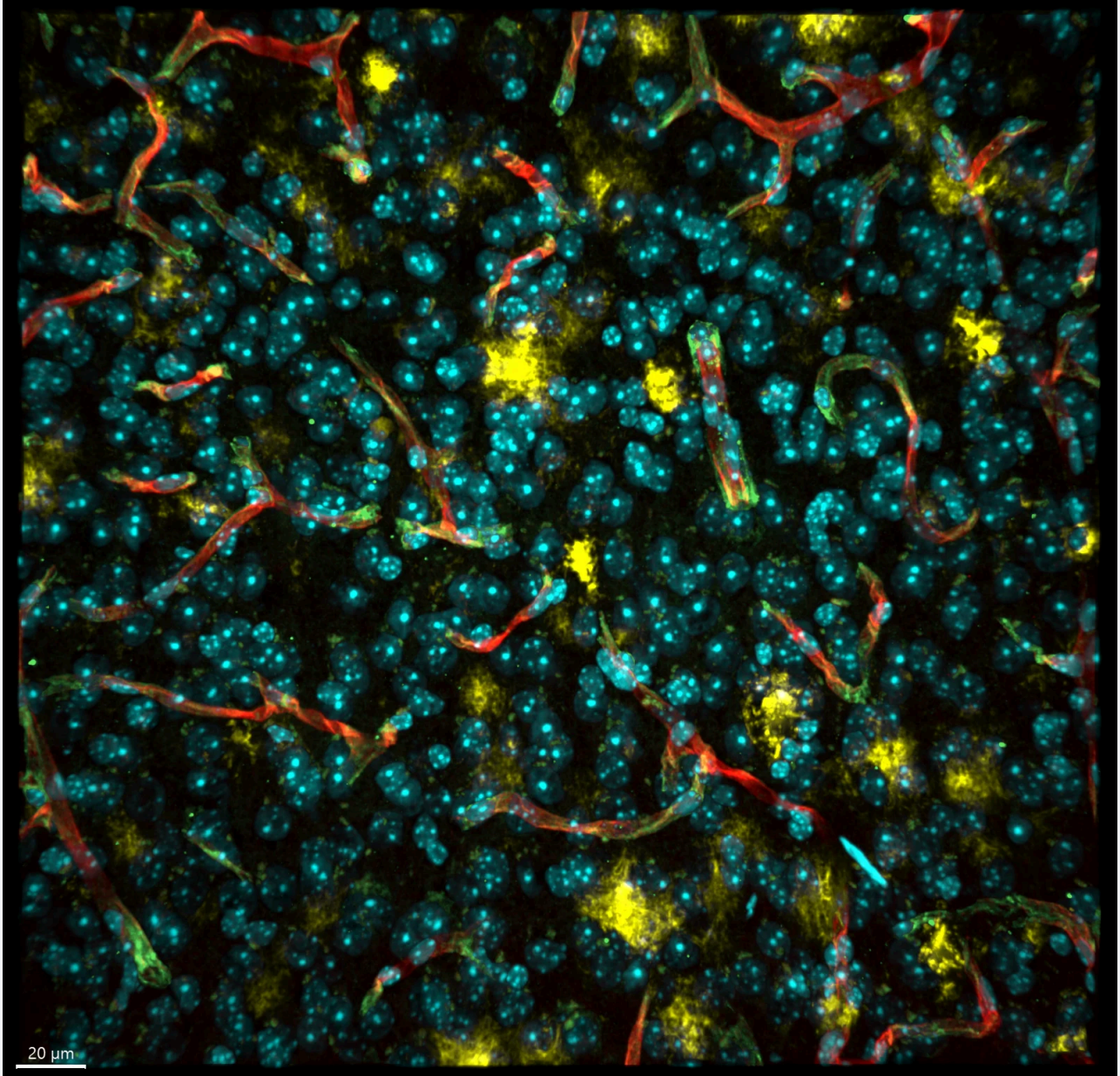
Okun Lab

Inside Our Research



At the Crossroads of Blood Vessels and Alzheimer's Disease

This image shows a tiny blood vessel in the brain of an aged mouse model of Alzheimer’s disease. The vessel is marked in green and red, while the yellow signal shows amyloid beta, a sticky protein that can build up in Alzheimer’s disease.

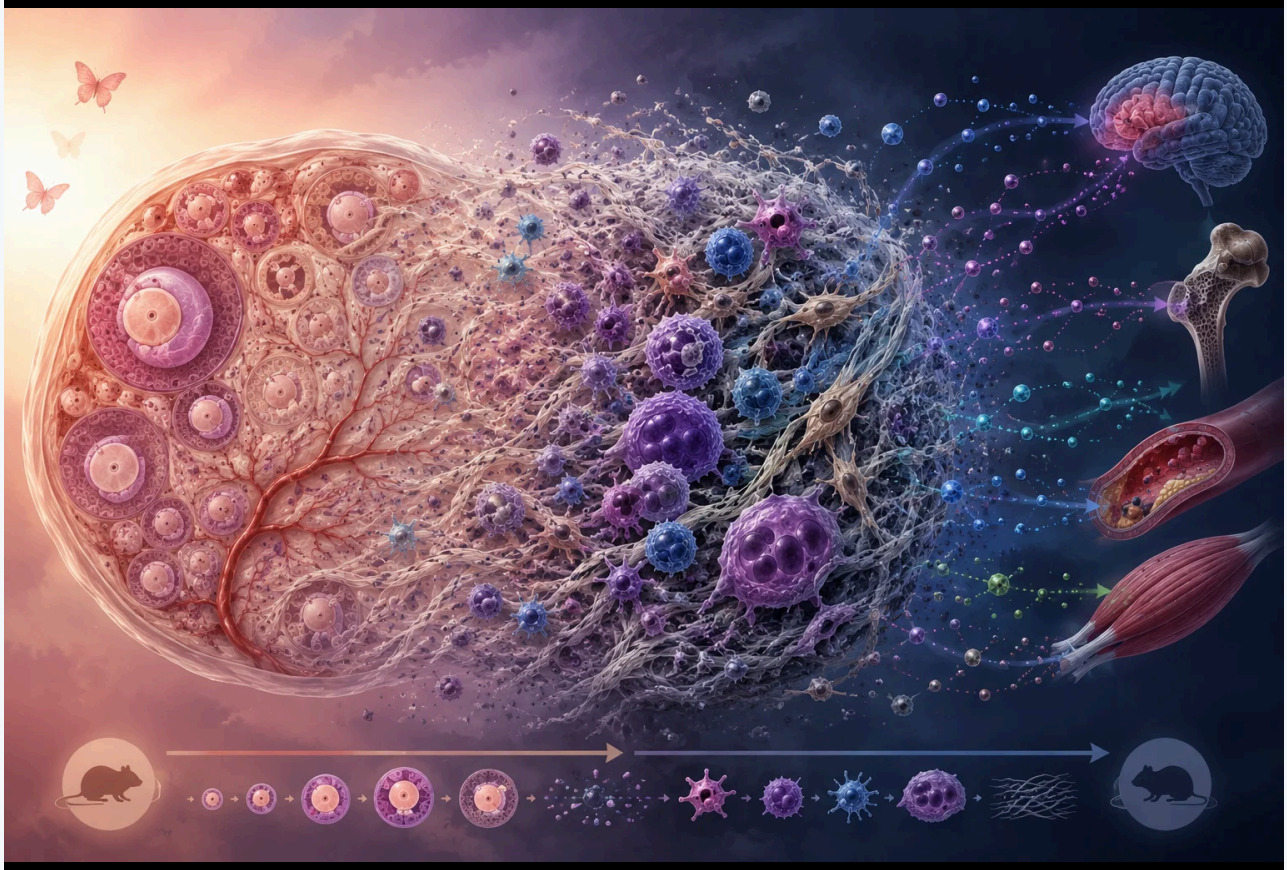
Most people have heard that amyloid beta can form plaques in brain tissue. Less well known is that amyloid can also collect in the walls of brain blood vessels. This condition is called cerebral amyloid angiopathy, or CAA. CAA becomes more common with age and is frequently found together with Alzheimer’s disease.

Why does this matter? Brain blood vessels are the delivery routes for oxygen and nutrients, but they also help clear waste from the brain. When amyloid builds up in vessel walls, the vessels may become less flexible and more fragile. In older adults, CAA is linked to memory problems, tiny brain bleeds, and a higher risk of bleeding stroke.

Autopsy studies suggest that mild CAA changes can be common in older brains, while more severe CAA rises sharply with age, from only a few percent in people in their late 60s and early 70s to roughly one in eight people after age 85. CAA is also reported in a large share of Alzheimer’s disease brains, with estimates reaching up to about 80 percent in some studies. By showing where amyloid sits in relation to the vessel, this image helps answer a simple but important question: **is Alzheimer’s related amyloid building up outside the vessel, inside the vessel, or directly in the vessel wall?**

Image credit: Tamir Hirsh. Fluorescent imaging of amyloid-beta deposition around cerebral blood vessels in an Alzheimer's disease mouse model. The Paul Feder Okun Laboratory for Alzheimer's Disease Research.

Highlights From The Field



The Ovary After Menopause: An Unexpected Immune Organ

For decades, scientists have viewed the ovary as largely inactive after menopause, once its reproductive function comes to an end. However, a new study challenges that assumption. Researchers found that after reproductive aging, the ovary undergoes a remarkable transformation,

shifting from an organ focused on reproduction to one that increasingly resembles an immune organ. In aged mice, the post-reproductive ovary contained far fewer follicles but showed a striking increase in immune cells, inflammatory activity, and immune-related gene expression.

The findings suggest that the ovary remains biologically active long after fertility ends. Rather than becoming dormant, it may contribute to age-related inflammation by producing immune signals that can affect other tissues throughout the body. These results raise intriguing questions about whether the post-menopausal ovary plays a broader role in healthy aging, immune function, and age-related disease than previously recognized.

As women now spend decades of their lives in the post-menopausal period, understanding how the aging ovary influences overall health could open new avenues for improving health-span and treating age-related conditions.

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