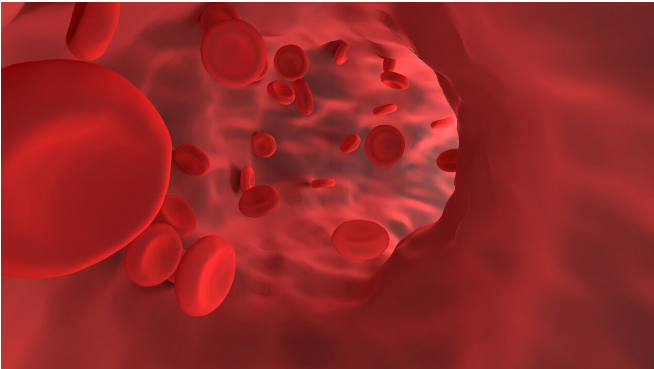


# Researchers discover a mechanism that reduces blood vessels in Alzheimer's patients

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Researchers at the Biomedicine Institute of Seville (IBiS) have discovered a new mechanism of Alzheimer's disease that disorganizes the blood vessels around amyloid plaques, one of the characteristic features of the disease. The study, published in the international journal *Nature Communications*, was led by the laboratory of Dr. Alberto Pascual, from the Neuronal Maintenance Mechanisms Group at IBiS and was chiefly carried out by María Isabel Álvarez Vergara and Alicia E. Rosales-Nieves.

## Relevance of the finding

Alzheimer's disease is the leading cause of dementia worldwide. In Spain, its incidence is increasing dramatically as the population ages, and yet, unfortunately, the origin of the disease is still unknown.

The mechanism put forward in this study is mediated by the dysfunction of a physiological process, angiogenesis. This mechanism is important during development to form the vessels

of the brain and in adulthood to revert possible damage to pre-existing vessels. The study shows that Alzheimer's disease induces angiogenesis dysfunction that causes the loss of vessels instead of the formation of new ones, undoubtedly aggravating the pathology. By identifying the molecular pathways involved, new therapeutic strategies to alleviate the effects of this disease can be rationally designed. The data also link familial (genetic) Alzheimer's to problems in the formation of new blood vessels, highlighting the importance of the vascular component of the disease.

Destruction of [blood vessels](#) complicates the [disease](#).

A characteristic feature of Alzheimer's patients is the accumulation of highly toxic substances in their brains, known as [senile plaques](#). The brain has the capacity to clean these toxic substances via transport through the blood. Thus, the fact that the plaques cause the loss of the vessels constitutes a vicious circle: Having fewer vessels reduces the ability to clean the brain, allowing more toxic substances to accumulate, which in turn continue to destroy the vessels and worsen the situation.

The brain consumes much of the body's oxygen and nutrients. Thus, a local reduction in the supply of these substances through the blood represents an additional strain above and beyond the existing strain from the accumulation of [toxic substances](#).

**More information:** Maria I. Alvarez-Vergara et al, Non-productive angiogenesis disassembles A $\beta$  plaque-associated blood vessels, *Nature Communications* (2021). DOI: [10.1038/s41467-021-23337-z](https://doi.org/10.1038/s41467-021-23337-z)

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