

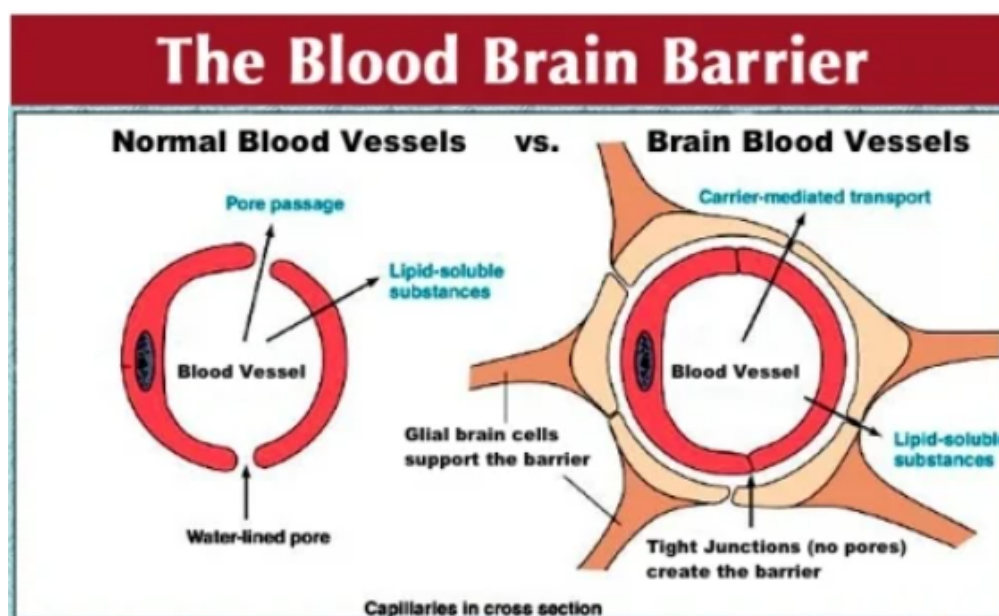
## Brain Microbiome in Fish

### Why in News?

*A new study, published in Science Advances, shows that bacteria can not only make their way to the brain, they can thrive there.*

- **Study species** - Salmon and Trout.
- **Observation** - Using DNA extraction and microscopic imaging, it was identified that bacteria were living in the fishes' olfactory bulbs and other brain regions.
- **Evasion of blood brain barrier** - Microbes possessed unique adaptations that helped them breach the blood-brain barrier.
- Some produced molecules called polyamines that can open tight junctions in the barrier fluid
- Others were able to evade immune responses or outcompete their rivals, ensuring their survival in the brain's delicate environs.

**Blood-brain barrier (BBB)** is a tightly locked layer of cells that defend the brain from harmful substances, germs and other things that could cause damage.



- **Adaptability of bacteria** - Some bacteria seemed to have colonised the brain much before the blood-brain barrier had evolved to its present form.
- Others likely travelled up from the gut or the bloodstream, continuously infiltrating the brain throughout the fishes' lives.
- **Significance of the study** - It opens the door to rethinking the brain's microbiome in vertebrates, including humans.

- If bacteria can thrive on fish brains, it's possible they may do so on human brains as well.

## Reference

[The Hindu| Bacteria's thriving in Fish Brain](#)

