

Older Brains Lose Sleep’s Waste Clearance

MIT finds CSF waves drop in aging adults during deep sleep.

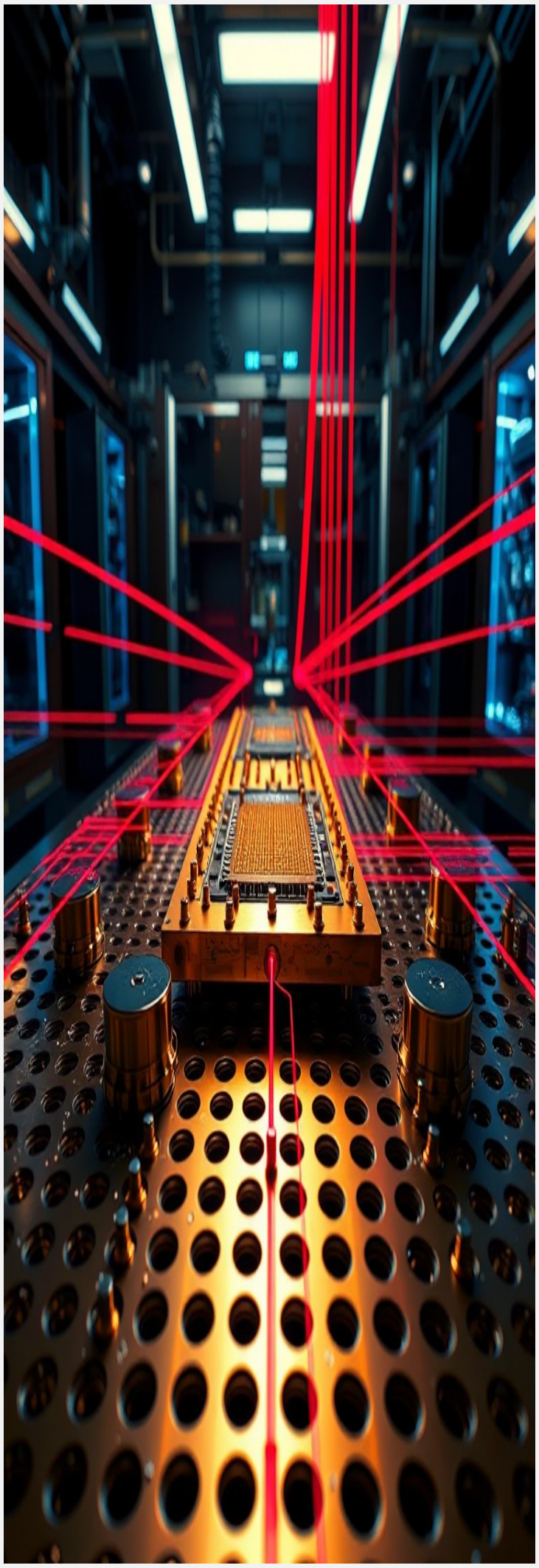
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THE DATA

Reduction in CSF wave amplitude

Compared to younger adults, older adults show significantly diminished cerebrospinal fluid flow during deep sleep.

The study, conducted at MIT, reveals that the brain's natural waste-clearing mechanism — crucial for preventing neurodegeneration — is compromised with age.



Source: Massachusetts Institute of Technology · Published November 13, 2026
https://news.mit.edu/2026/waste-clearing-waves-in-brain-during-sleep-are-impaired-in-older-adults-1113

01

Neural Efficiency Fails Before Symptoms Appear

This implies that AI-driven biomarker models should prioritize deep sleep dynamics as early indicators of neurodegenerative risk — not just structural MRI or blood tests.



02

Quantum Simulation of Brain Waste Dynamics

Given that CSF flow is modulated by slow brain waves and vascular responsiveness, quantum models of neurovascular coupling could simulate how aging alters fluid dynamics at a systems level. By encoding hemodynamic feedback loops into quantum circuits, we may predict individual risk trajectories with higher fidelity than classical models, especially in heterogeneous aging populations.

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