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“Neuroinflammation is not only a hallmark of Alzheimer’s disease but a key pathological feature in other neurodegenerative disorders”

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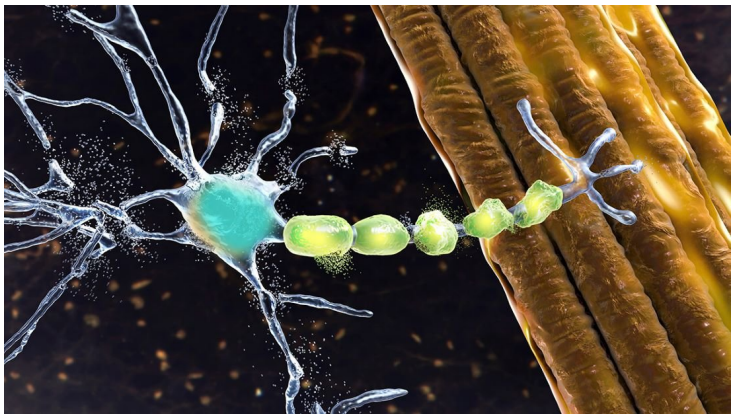
As dementia becomes the leading cause of death in Australia and Alzheimer’s disease continues to affect millions worldwide, the urgency for fundamentally new treatment strategies has never been clearer. Against this backdrop, December 2025 marks the official launch of Evinco Therapeutics, a Melbourne-based biotechnology company focused on redefining how neuroinflammatory diseases, including Alzheimer’s, are treated. In this interview with BioSpectrum Asia, Jing Yang Tee, Principal Scientist, and Andrew French, Senior Researcher and Scientific Consultant at Evinco Therapeutics, outline the scientific rationale behind the company’s NK cell–derived extracellular vesicle (NK-EV) platform and the data supporting its potential as a therapy for Alzheimer’s disease. They also discuss why intranasal delivery represents a breakthrough in non-invasive brain-targeted treatment, how immune modulation addresses neuroinflammation, and the broader implications of this approach for future therapeutic development in neurodegenerative disease, including opportunities to overcome historical barriers in central nervous system drug delivery and clinical translation.



What was the scientific moment or data point that convinced you NK cell–derived extracellular vesicles could become a viable therapy for Alzheimer’s disease?

Jing Yang Tee: When NK cell–derived extracellular vesicles (NK-EVs) were applied to cultured human microglia, the cells exhibited a markedly enhanced ability to clear amyloid protein aggregates from their surrounding environment - a critical mechanism for reducing pathological plaque accumulation in Alzheimer’s disease. The next step is for us to investigate why NK-EVs have such a property and how microglia-modulation happens.

Intranasal delivery of NK-EVs is highly novel. What advantages does this approach offer over traditional systemic or invasive brain delivery methods?

Jing Yang Tee: The nose-to-brain pathway provides a direct route for delivering therapeutic agents - such as NK-EVs - into the brain to target neurological disorders. This underutilised approach enables more efficient brain biodistribution while minimising systemic exposure typically associated with intravenous or oral administration. By bypassing peripheral circulation, intranasal delivery can reduce the required effective dose, limit off-target effects and toxicities in organs such as the liver and spleen, and ultimately expand the clinical therapeutic window.

Many Alzheimer's therapies have failed at the clinical stage. What makes Evinco's immune-based strategy fundamentally different from past approaches?

Jing Yang Tee: Alzheimer's disease is a complex, multifactorial brain disorder that requires innovative strategies targeting multiple pathological pathways rather than traditional monomodal approaches focused on narrow aspects such as single-protein aggregation or neuronal overstimulation. One emerging multimodal target is neuroinflammation and the dysfunction of brain-resident immune cells, particularly microglia, which occurs prior to pathological protein accumulation and is further aggravated by uncontrolled plaque formation. Our strategy seeks to restore immune balance and suppress inflammation - an essential step to prevent neuronal loss.

Do you believe the future of Alzheimer's treatment lies more in prevention, early detection, or disease-modifying therapies?

Andrew French: A comprehensive approach is essential to address the growing burden of Alzheimer's disease driven by global ageing. Significant progress has been made in identifying robust blood biomarkers that enable earlier detection and improved patient stratification. However, safe and effective therapies capable of halting disease progression remain elusive. In Australia, dementia - including Alzheimer's disease - surpassed heart disease as the leading cause of death in 2024. Our goal is to help close this therapeutic gap by developing NK-EVs as a novel drug class that targets neuroinflammation, offering a scientifically grounded strategy to modify disease progression.

Which recent advances in Alzheimer's research are you most excited about today, and why?

Andrew French: Recent advances in Alzheimer's disease diagnostics have significantly improved the ability to identify various forms of dementia, driven by a deeper understanding of key blood-based biomarkers such as phosphorylated Tau (pTau217 and pTau181), glial fibrillary acidic protein (GFAP), and neurofilament light chain (NfL). Notably, GFAP and NfL are closely associated with neuroinflammation, reflecting damage and hyperactivation of brain-resident cells under abnormal inflammatory conditions. As research continues to unravel the role of neuroinflammation in Alzheimer's pathology, we anticipate a shift from traditional monotherapies toward multimodal treatment strategies that specifically target this critical component.

Beyond Alzheimer's, which other neurological or neuroinflammatory conditions do you see as the strongest follow-on opportunities for the NK-EV platform?

Andrew French: Neuroinflammation is not only a hallmark of Alzheimer's disease but also a key pathological feature in other neurodegenerative disorders such as Parkinson's disease, amyotrophic lateral sclerosis (ALS), and Huntington's disease, as well as in acute brain injuries including traumatic brain injury (TBI). Collectively, these conditions represent a significant unmet medical need for effective disease-modifying therapies. This challenge creates a unique opportunity as we continue to optimise our NK-EV lead candidate as a potent immune modulator to reduce neuroinflammation - initially for Alzheimer's disease, but with potential applicability across multiple brain disorders by targeting the shared underlying mechanism of inflammation. The prospect of developing a multi-indication therapeutic that can be delivered directly to the brain underscores our commitment to addressing the growing global burden of neurological diseases.

Australia is building momentum in advanced cell and immune therapies. How does Evinco fit into the country's broader biotech and neuro-innovation ecosystem?

Andrew French: Australia has established itself as a hub for preclinical research innovation and early-phase clinical trials, supported by streamlined regulatory frameworks and robust R&D initiatives. Evinco Therapeutics was founded by a team committed to developing novel solutions for the growing medical need in dementia, particularly Alzheimer's disease. While significant progress has been made in cell and immune therapies, we believe extracellular vesicles - especially those derived from NK cells - represent a promising new class of brain therapeutics. To leverage Melbourne's position as a leading biotech ecosystem, Evinco is forging strategic collaborations with academic researchers and utilising state-of-the-art analytical platforms housed in premier local core facilities. Our mission is to advance Australian innovation toward clinical application, ultimately benefiting not only Australians but patients worldwide living with Alzheimer's and other neurological disorders.

Ayesha Siddiqui