

A Biomedical Device For Precision Imaging Of Copper Levels In The CNS



THE UNIVERSITY OF
SYDNEY

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Diagnostic Imaging - Neurology



> Pre-Clinical

Problem

Copper imbalance within the brain is a critical factor in the progression of various neurological disorders, including Parkinson's disease and amyotrophic lateral sclerosis (ALS), as well as certain types of cancer. Current therapeutic strategies aim to correct copper levels, yet clinicians face a significant challenge: the absence of a non-invasive method to measure copper concentrations in the living brain. Without this capability, it is difficult to diagnose these conditions early, tailor treatments accurately, or monitor the efficacy and safety of copper-modulating therapies over time. The healthcare industry needs an innovative solution to visualize and quantify brain copper levels in vivo, enabling better management of diseases associated with copper dysregulation and improving patient outcomes.

Solution

Our groundbreaking technology is a copper-sensing molecular probe that revolutionizes the measurement of copper levels in the brain. Designed for dual-modality, it combines the precision of fluorescence imaging with the depth of PET scans, allowing for accurate copper quantification in biological systems. As a pro-probe, it is activated only in the presence of cellular copper and becomes immobilized for in situ quantification. This ensures that only relevant copper levels are measured, providing a clear and precise assessment. The novel probe is a game-changer for both in vitro studies and in vivo imaging, offering a significant leap forward in the diagnosis and treatment of copper-related diseases.

Commercial Opportunity

This is an opportunity to acquire a new copper-sensing molecular probe with potential applications for early diagnosis of Parkinson's disease and management of amyotrophic lateral sclerosis (ALS).

Intellectual Property Status

A provisional patent has been filed by the University of Sydney titled: In Vivo Metal Detection (2022900560). 100% owned by University of Sydney.

Inventors

Professor Elizabeth New, Professor Kay Double, Marcus Graziotto, Dr Liam Adair

Potential Commercial Applications

- Early diagnosis and monitoring of Parkinson's disease
- Management of amyotrophic lateral sclerosis (ALS)
- Personalized treatment strategies for copper-related cancers
- Research tool for understanding copper's role in the central nervous system

Contact Commercialisation Office

Name: Julius Juarez

Position: Commercialisation Manager

Email: julius.juarez@sydney.edu.au | Phone: +61 403 181 295
sydney.edu.au/innovation-and-enterprise