High Accuracy Agents For Imaging Neuroinflammation

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Diagnostic Imaging - Neuroinflammation

> Pre-Clinical

Problem
Neuroinflammation (NI) is a critical factor in the pathogenesis of debilitating brain disorders such as Multiple Sclerosis, Alzheimer's Disease, Parkinson's Disease and Traumatic Brain Injury. Accurate imaging of NI is paramount for understanding these conditions at a biomolecular level, which is essential for improving patient management strategies and evaluating new therapeutics.

However, current diagnostic drugs for imaging the Translocator Protein 18kDa (TSPO), a validated biomarker of NI, are hampered by poor sensitivity and are ineffective in 30% of patients due to a genetic polymorphism. This limitation hinders our ability to diagnose and monitor neuroinflammatory diseases effectively across the entire patient population, creating a gap in personalized healthcare and disease management.

Solution
Our team has developed compounds that exhibit significantly higher affinity for the TSPO biomarker than existing second-generation ligands used in clinical settings. These novel ligands excel in imaging neuroinflammation with high sensitivity, ensuring that all patients benefit regardless of genetic variations.

Unlike previous diagnostic agents, our ligands bind equally well to both the wild-type and a polymorphic variant of TSPO, thus enabling accurate PET imaging across diverse patient backgrounds. This breakthrough has the potential to revolutionize neuroinflammation imaging, offering clinicians a powerful tool to improve patient classification, monitor disease progression, and assess the efficacy of new treatments in a personalized and inclusive manner.

Commercial Opportunity
This is an opportunity to acquire new ligands (high sensitivity) with potential applications to enhance neuroinflammation imaging. This technology can used to improve diagnostic imaging.

Intellectual Property Status
The University of Sydney has filed two separate patent families for this programme including an international application, PCT/AU2023/051173 and an Australian provisional application AU 2023903723, both entitled "TSPO ligands".

Inventors
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Potential Commercial Applications
- Diagnostic imaging for Multiple Sclerosis
- Tracking neuroinflammation in Alzheimer's Disease
- Monitoring Parkinson's Disease progression
- Assessing the efficacy of anti-inflammatory treatments
- Diagnostic imaging for Traumatic Brain Injury
- Personalized patient management strategies

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