

FIGHT MND.

Project

Disease biomarkers

**The Glymphatic System:
A novel biomarker of disease
severity in MND**

Waste material is normally removed from the brain while we sleep. However, in MND, the system responsible for removing waste material may be impaired. This study examines if waste build-up in the brain can be detected by the latest brain imaging devices and be used as a biomarker to diagnose MND.



Project Lead A/Prof David Wright Monash University, VIC

A/Prof David Wright defines the glymphatic system as *"the brain's waste clearance system,"* explaining that it works *"while you sleep to get rid of the toxic waste proteins that build up during the day."*

His research is looking to see if the inefficient clearance of proteins causes them to *"accumulate in the brain and potentially result in, or exacerbate, neurodegeneration."*



Research highlights

Using magnetic resonance imaging (MRI), A/Prof Wright's team was able to show, for the first-time, that the glymphatic system is impaired in his team's mouse model of MND.

It is yet to be determined why the glymphatic system starts to fail, when it begins or how quickly it fails, but funding from FightMND will be put toward answering these questions.

Real world benefits

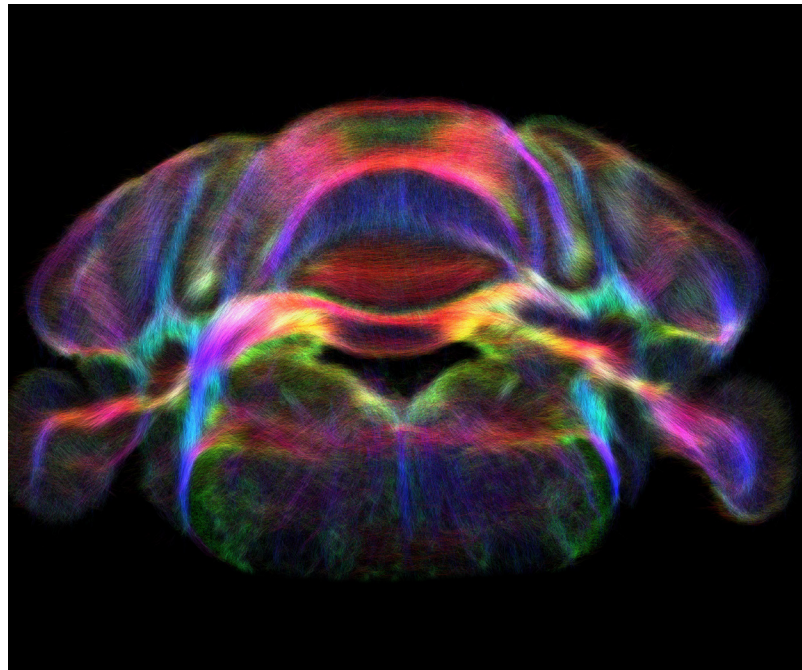
A/Prof Wright says he is excited by the potential of "real world" benefits for people living with MND that his research could provide.

"This support will allow us to improve our understanding of the glymphatic system and how it relates to MND disease progression," he says.

The goal of the project is to use this new knowledge to develop therapies that will specifically target the glymphatic function, improve the removal of toxic waste proteins and ultimately delay disease progression.

When asked how he felt when he heard he had received the funding from FightMND, A/Prof Wright says *"honestly, it was fantastic! To receive the recognition of our peers who judge these grants is just amazing – we're super excited that they can see the potential of our ideas!"*

FightMND has invested \$249,502 in this research project.



About A/Prof David Wright

A/Prof David Wright currently works in the Department of Neuroscience, Central Clinical School, Monash University. He came to this role in a circuitous way, beginning his career with an apprenticeship in electrical-instrumentation, while going to university in the evenings after work. After finishing his trade, he went to university full-time and as part of his course, worked at a research institute in Japan. He enjoyed it so much that he returned after graduating.

After eight years in Japan, he returned to Melbourne, and took up a position at The Florey Institute of Neuroscience and Mental Health, running the preclinical MRI, while completing his PhD. On graduating he was appointed Director of Preclinical Imaging and received a highly competitive Investigator Grant from the NHMRC.