Research Grants 2024

Multiple sclerosis | Clinically accessible imaging of pathogenetic processes underpinning deterioration in relapsing-remitting multiple sclerosis

Professor Tomas Kalincik

Multiple sclerosis [MS] is a chronic autoimmune neurological condition, which affects over 32,000 Australians. With the peak of incidence in the 3-4th decades of life, it has a profound life-long negative impact on quality of life and workforce participation of adults. While relapsing forms of MS are generally responsive to the available (immunomodulatory) therapies, their effect on slowing worsening of disability in progressive MS forms is limited. The distinction between the relapsing and the progressive MS forms is, however, somewhat arbitrary. It is a common experience that despite having a disease without overt clinical attacks (relapses) and without any new lesions on brain and spinal cord MRI, patients with relapsing MS may develop new disability, which typically remains unnoticed until it has become clinically significant and irreversible. Detection and prevention of this slowly evolving disability in relapsing MS is an area of unmet need.

The PRIMeS cohort, which will launch enrolment in early 2024, will enable us to develop and validate an instrument consisting of harmonised, sensitive and quantitative methods of measuring various aspects of neurological function, cognitive function, structural changes of the brain and biological markers, which will enable neurologists to monitor subtle, presently undetected signs of MS progression.

The present project will expand the scope of the PRIMeS cohort study. Among a subgroup of 40 participants, it will acquire clinical MRI imaging alongside a high-end high-field 7T brain MRI. This will enable us to translate findings from the 7T imaging - a research tool only available at a very limited number of large academic centres - into markers detectable with standard 3T clinical imaging. As a result of this, clinicians providing care for patients with MS will be able to asses radiological metrics of subtle progression of MS in routine practice.

Grant $32,000

Research Grants 2024

Multiple sclerosis | Clinically accessible imaging of pathogenetic processes underpinning deterioration in relapsing-remitting multiple sclerosis

Progress Report

The aim of this study is to add 3T imaging to accompany 7T research imaging in 40 patients from the PRIMeS cohort, in order to explore the importance of (i) paramagnetic and (ii) slowly expanding brain lesions in the pathogenesis, identification and quantification of latent progression in otherwise stable MS, and translate these metrics from research into clinical practice.

The PRIMeS cohort study has received ethics and governance approvals in May 2024 and the 7T and 3T imaging protocols have been finalised. PRIMeS has enrolled its first participant on 28th May 2024. To date, 87 participants (out of the intended 330) have consented to enrol in PRIMeS; most of these participants have completed the baseline visit or have their baseline visit scheduled in January-February 2025. 38 of the consented participants have also opted into the optional high-field imaging (7T MRI) component of the study).

We anticipate that enrolment into the PRIMeS study will be completed in 2025. Specific to this proposal, all 40 patients participating in the high-field imaging part of the study will be recruited and will complete their baseline visit. The follow-up high-field imaging visit (at 12 months) will be completed in 2026. After the imaging part of the project has been completed, the work on image post-processing and analysis will commence in 2027.

08/01/2025