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Australian Study Targets Genetic Causes of MS

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Researchers from the University of South Australia have launched an Australian-first study aimed at understanding how genetic factors contribute to the risk of developing multiple sclerosis (MS), a chronic autoimmune condition affecting over 33,000 Australians.

MS is a complex disease of the central nervous system that causes a wide range of symptoms, including fatigue, muscle weakness, difficulty walking, pain, and problems with balance and coordination. The symptoms can vary significantly from person to person and often appear unpredictably. While the exact cause of MS remains unknown, scientists

believe it results from a combination of genetic predisposition, environmental triggers, and infections such as the Epstein-Barr virus (EBV).

Led by Dr David Stacey, the University of South Australia's study is exploring why only some individuals exposed to EBV go on to develop MS. EBV is a common virus that infects up to 90 percent of the global population, yet only a small proportion of those infected develop MS. Dr Stacey and his team aim to investigate whether differences in the immune response to EBV, driven by genetic variation, could help explain this discrepancy.

The study will use a research method known as "recall by genotype," marking the first time it has been applied to MS research. This approach involves calculating genetic risk scores for more than 1,000 healthy volunteers from South Australia who have no MS diagnosis. Participants will be grouped based on their genetic risk for MS and asked to undergo biological testing to help identify differences in immune function.

"Grouping participants by their genetic profile enables us to compare biological traits in those with high and low genetic risk," Dr Stacey explained. "This could give us valuable insights into how MS begins and why some people are more vulnerable than others."

The research also seeks to identify potential biomarkers or early warning signs that could be used for earlier detection or risk assessment in the future. However, researchers emphasize that while this study may improve understanding of MS, any diagnostic tools or preventative treatments will require further development and clinical validation.

In addition to scientific aims, the project will address ethical questions about informing participants of their genetic risk, particularly in cases where no medical intervention is currently available. These considerations are critical to ensuring that participants are informed and supported throughout the process.

The study is being supported by MS Australia through its Incubator Grant program and is considered a significant step forward in the search for ways to prevent or delay the onset of MS. Researchers hope the results will pave the way for new strategies to manage risk and improve long-term outcomes for Australians affected by the disease.