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Monash Univ finds how IFNÎ² activates immune response

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Singapore: Monash University researchers have gained new insights into the early stages of immune response, providing novel pathways to develop treatments for diseases from multiple sclerosis to cancer.

In a study published in *Nature Immunology*, a team of researchers led by Professor Paul Hertzog, of the Monash Institute of Medical Research (MIMR) and Professor Jamie Rossjohn, of the School of Biomedical Sciences, have characterized for the first time how interferon beta (IFNÎ²) proteins bind to cells and activate an immune response.

Professor Hertzog of MIMR's Center for Innate Immunity and Infectious Diseases said that interferon function was vital for developing and refining therapies for incurable diseases such as lupus and multiple sclerosis.

"Interferon therapy is useful in treating a number of diseases; however these treatments have dose-limiting side effects. Further, interferons appear to drive some autoimmune diseases, raising the prospect of interferon blockers as treatment," Professor Hertzog said. "The more refined our understanding of interferon function, the more we can tailor treatments to optimise effectiveness - whether by boosting or blocking their actions."

Lead author on the paper, Dr Nicole de Weerd, also of the Center for Innate Immunity and Infectious Diseases, said the research provided new pathways for rational drug design. "We found that when IFNÎ² binds to a cell, it transmits an unusual signal that seems linked to some of the toxic side effects of interferon therapy, like sepsis. This provides a promising avenue to pursue more selective activation of interferon action," Dr de Weerd said.