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Immuno-profiling of non-tuberculous mycobacterial infection patients reveal global T cell dysfunction and individuals at risk**John J Miles^{1,2,3,4}, Viviana P Lutzky¹, Champa N Ratnatunga^{1,2,3}, Daniel J Smith^{1,4}, Andreas Kupz², Denise L Doolan^{1,2}, David W Reid^{1,5}, Rachel M Thomson^{3,5} and Scott C Bell^{1,3,4}**¹QIMR Berghofer Medical Research Institute, Australia²James Cook University, Australia³University of Queensland, Australia⁴Cardiff University School of Medicine, UK⁵Prince Charles Hospital, Australia

The increasing global incidence of nontuberculous mycobacterial (NTM) infection is of growing concern. New evidence of person-to-person transmission of multidrug-resistant NTM adds to the global alarm. The reasons why certain individuals are at risk of these infections is unknown. Using high definition flow cytometry we studied the immune profiles of two groups of at risk NTM patients and matched controls. The first group was cystic fibrosis (CF) patients and the second group was elderly individuals. CF patients with active NTM infection or a history of NTM infection exhibited a unique surface T cell phenotype with a marked global deficiency in TNF α production. Immune-based biomarkers were determined that could identify CF individuals at risk of NTM infection with a regression model of AUC=1. In contrast, elderly individuals with NTM infection exhibited a separate T cell phenotype underlined by the high prevalence of exhaustion markers and dys-regulation in type 1 cytokine release. Collectively, these data will be of significant diagnostic and prognostic value for NTM patient management and could be used to identify new therapeutic pathways and new targets to correct T cell dysfunction.

Biography

John J Miles is an NHMRC Career Development Fellow Level 2 (2017-2020) and leads Molecular Immunology at the Australian Institute of Tropical Health and Medicine, James Cook University, Cairns. He also holds adjunct Associate Professor Positions at University of Queensland, Griffith University and Cardiff University. He is a leader in understanding the interplay between the human immune system and infectious disease and chronic conditions. He has specialist expertise researching host-pathogen interactions and deconstructing the pathomechanisms of multiple human diseases. His research into human immune system function has been recognized through 19 awards and prizes including the Centenary Medal from Her Majesty Queen Elizabeth II for Distinguished Service to Medical Research and the Community and the 2013 Young Tall Poppy Science Award from the Federal Government and AIPS.

john.miles@jcu.edu.au

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