



Professor Tony Purcell

NHMRC Senior Research Fellow

Head, Immunoproteomics Laboratory



Monash Biomedicine Discovery Institute
Infection and Immunity Program

OTHER PROGRAM AFFILIATIONS



Cancer

EMAIL anthony.purcell@monash.edu

TELEPHONE +61 3 9902 9265

WEB med.monash.edu/biochem/labs/purcell

Our laboratory specialises in targeted and global quantitative proteomics of complex biological samples, with a specific focus on identifying targets of the immune response and host-pathogen interactions. The laboratory has an outstanding track record in delivering high end outcomes including recent publications in highly regarded peer reviewed journals including Nature, Nature Immunol, Nat Struc Mol Biol, PNAS, J Exp Med, Immunity, Elife, Mol Cell Proteomics, Proteomics and J Proteomics Res. We combine cutting edge proteomics with human immunology, molecular virology, structural and functional immunology to address a wide variety of questions related to fundamental immunology, translational medicine, vaccination and immunotherapy.

Research Projects

1. Understanding the relationship between cellular stress and antigen presentation (type 1 diabetes and infectious disease)
2. Allergic responses to drugs: new mechanisms and targeted interventions
3. Understanding host-virus interactions and the design of novel anti-virals (HIV, Ebolavirus, influenza)
4. What causes autoimmune disease (diabetes, arthritis, psoriasis)?
5. Cancer immunology – neoepitopes, check point blockade and the anti-tumour immune response



An artist's impression of immunoproteomics – the use of mass spectrometry to study the immune response.

Selected significant publications:

1. Wynne JW, Woon AP, Dudek NL, Croft NP, Ng JH, Baker ML, Wang LF, **Purcell AW**. 2016. Characterization of the Antigen Processing Machinery and Endogenous Peptide Presentation of a Bat MHC Class I Molecule. *J Immunol* 196, 4468-76.
2. Croft NP, de Verteuil DA, Smith SA, Wong YC, Schittenhelm RB, Tschärke DC, **Purcell AW**. 2015. Simultaneous quantification of viral antigen expression kinetics using data-independent mass spectrometry. *Mol Cell Proteomics*. 14, 1361-72
3. Illing PT, Vivian JP, Dudek NL, Kostenko L, Chen Z, Bharadwaj M, Miles JJ, Kjer-Nielsen L, Gras S, Williamson NA, Burrows SR, **Purcell AW***, Rossjohn J*, McCluskey J*. 2012. Immune self-reactivity triggered by drug-modified Human Leukocyte Antigen-peptide repertoire. *Nature*. 486, 554–558 (*co-corresponding authors)
4. Kjer-Nielsen L, Patel O, Corbett AJ, Le Nours J, Meehan B, Liu L, Bhati M, Chen Z, Kostenko L, Reantragoon R, Williamson NA, **Purcell AW**, Dudek NL, McConville MJ, O'Hair RAJ, Khairallah GN, Godfrey DI, Fairlie DP, Rossjohn J, McCluskey J. 2012. MR1 presents microbial vitamin B metabolites to MAIT cells. *Nature*. 491, 717-23
5. Gerlach B, Cordier SM, Schmukle AC, Emmerich CH, Rieser E, Haas TL, Webb AI, Rickard JA, Anderton H, Wong W, Nachbur U, Gangoda L, Warnken U, **Purcell AW**, Silke J, Walczak H. 2011. Linear ubiquitination prevents inflammation and regulates immune signalling. *Nature*. 471, 591-596