

Department of Microbiology and Immunology

SPECIAL SEMINAR

12:00 Noon, Tuesday, 26 April

Room BIG13, Ground Floor
Biochemistry Building
710 Cumberland St

Zoom:

<https://otago.zoom.us/j/98929322137?pwd=VWRIR2xMTkRvSzhkVy90ZG4waFpqUT09>

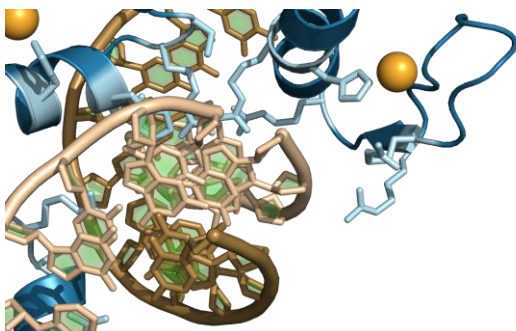
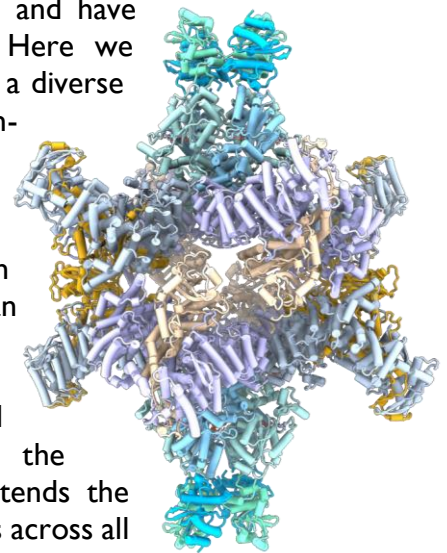
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Dr Max Wilkinson

Broad Institute of MIT and Harvard, Cambridge, MA, USA

‘Prokaryotic innate immunity via pattern recognition of conserved viral proteins’

Bacteria are in a constant arms race with their viral foes and have developed remarkable mechanisms to resist infection. Here we uncover a new mode of innate immunity in bacteria, where a diverse family of inflammasome-like ATPases act as pattern-recognition receptors that detect conserved viral proteins and activate diverse N-terminal effectors, including DNA endonucleases. Cryo-EM shows that the ATPases recognise phage protein folds, conserved active-site residues, and even enzyme ligands, explaining how single ATPase proteins can confer defence against a wide variety of phage. Pattern recognition triggers ATPase tetramerisation, leading to activation of an effector domain, DNA degradation, and cell death. This work reveals remarkable similarity between the defence strategies of prokaryotes and eukaryotes and extends the paradigm of pattern recognition of pathogen-specific proteins across all domains of life.



Department of Biochemistry

Seminars