



Protein Crystallography Unit



Summary

Proteins are the molecular machines of all living organisms and the malfunctioning of proteins is a major cause of disease. Knowledge of the precise shape of a protein provides an understanding, at the atomic level, of how a protein functions. Protein crystallography is the major tool for solving the shape of proteins and provides a wealth of information in the understanding of complex biological systems and the design of therapeutics.

The Monash University Protein Crystallography Unit is integrated with other complimentary, co-located bioplatforms and associated expertise relating to proteomics, protein production, the Australian Synchrotron and monoclonal antibody production, allowing the seamless conduct of commercial or academic multidisciplinary projects.

Capability

Protein crystal structure determination with expertise in three broad and interrelated areas

Infection

- Insights into bacterial pathogenesis via investigation into host recognition responses developed by the pathogen and investigation into the design of new therapeutics to modulate or counteract these events

Immunity

- Adaptive and innate immunity
- Understanding the structural and biophysical basis of MHC-restriction, TCR engagement and the structural correlates of T-cell signalling
- Structural basis of T-cell allorecognition, and T-cell mediated autoimmunity
- Lipid presentation and recognition

Rational Drug Design

- 3D structural determination of therapeutic targets in complex with rationally-designed inhibitors

Infrastructure

Crystallization Laboratory

- Temperature controlled room and anti-vibration shelving
- 3 Leica stereomicroscopes and Cartesian Crystallization robot

X-ray diffraction Laboratory

- Rikagu RU-3HBR rotating anode generator with OSMIC focussing mirrors as X-ray source
- R-AXIS IV++ detector

Utility

Protein crystallography is the major tool for solving the 3D structure of proteins and provides detailed information on the structure and function of proteins, as well as, a platform for rationally designing therapeutics.

Protein crystallography has immense utility in development processes associated with vaccines, identification of drug targets, anti-infectives or new biologics.

The Protein Crystallography Unit has an industrial and academic track record evidenced by a contribution to:

- A variety of ongoing commercial drug development programs and;

- Scientific knowledge-base through frequent publications in high impact journals (eg. "Nature")

Engagement basis

Our personnel are experienced and sensitive to your research or industry requirements. We offer flexibility to the basis of engagement including:

- Collaborative research;
- Fee for service;
- Consultancy or other flexible arrangements.

For more information contact us or visit us at www.med.monash.edu.au/biochem/staff/rossjohn.html

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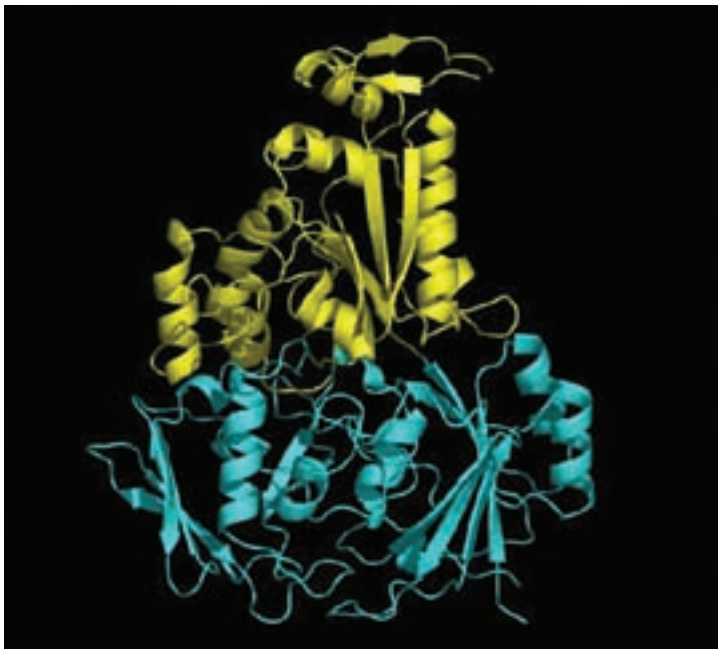
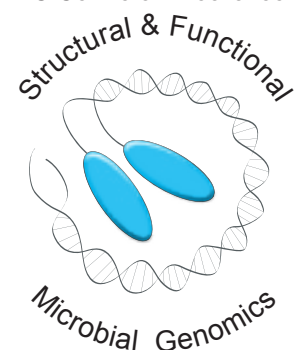
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ARC Centre of Excellence in



Australian Government
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