

MACROMOLECULAR CRYSTALLISATION

The Monash Macromolecular Crystallisation Platform is an automated platform for the high-throughput crystallisation of biological macromolecules.

Macromolecular crystallography provides unparalleled details of the 3D structures of biological macromolecules and forms the basis for the rational design of therapeutics.

Our platform also helps to prepare crystals for collecting crystallographic data at the Australian Synchrotron.

KEY INSTRUMENTATION

- Four liquid handling robots (three for crystallisation drop dispensing and one for making optimisation screens).
 - NT8 (Formulatrix) – nanolitre-volume liquid handler for dispensing all crystallisation drops, including LCP.
 - Mosquito LCP (STP Labtech) – using positive displacement technology and LCP.
 - Crystal Phoenix (Art Robbins) – featuring nano-dispensing capability and 96 syringe head for simultaneous transfer of screen solutions.
 - Formulator (Formulatrix) – liquid handler that uses microfluidic technology for dispensing optimisation screens.
- Four automated imaging systems: four Rock Imagers 1000 (Formulatrix), with combined capacity to handle and automatically inspect 4000 crystallisation plates, providing visible, UV and SONICC technology imaging at either 20°C or 4°C.
- Prometheus NT.48 (NanoTemper) to investigate protein stability for crystallisation through changes in intrinsic fluorescence during thermal melting.

WORKING WITH US

- Fee for service

SPECIALIST SERVICES

To increase the probability of growing crystals suitable for X-ray diffraction studies, our team uses many well-known optimisation techniques. The use of robotics allows for the miniaturisation of crystallisation experiments, enabling us to screen a wide range of conditions from limited sample volumes.

Crystallisation of macromolecules

- Drop dispensing
 - Vapour diffusion
 - Lipid cubic phase (LCP)
- Hit optimisation
 - Custom (fine) screen making
 - Additive screening
 - Seeding
- Drop imaging (automated: visible, polarised, UV and SONICC; and manual)
- Remote access to images via web interface

Stability of macromolecules for crystallisation and binding interactions

Differential scanning fluorimetry (DSF) through thermal melting of macromolecules.

Working beyond crystallisation

The Monash Macromolecular Crystallisation Platform works closely with partner platforms and can refer you to them for more protein characterisation services.

The Platform can harvest and cryo-protect crystals for users and collect diffraction data at the Australian Synchrotron. It has regular beam time allocations open to all users after internal demands are prioritised.

MONASH MACROMOLECULAR CRYSTALLISATION PLATFORM

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