

Crystallization of Biological Macromolecules in Warwick

www.warwick.ac.uk/go/crystal

Background: A suite of equipment in Life Science to enable high throughput crystallization and X-ray crystal structure determination of soluble and membrane proteins, nucleic acids and other biological macromolecules is available to the wider research community at Warwick.

Crystallisation Robot: We have obtained Mosquito LCP robot which can set up 96 well sitting or hanging drop crystallization plates with either 2 or 3 sample shelves. Using this device between 50 μ l - 200nl (nanolitre!) drops of sample can be dispensed so that a single 96 well screen will require less than 5-20 μ l of sample. The reduction in the amount and volume of sample means that screening against difficult to acquire or expensive ligands is possible with protein samples of less than 1mg in quantity.

Crystal Imaging Robots: Two Crystal-Pro crystal imaging systems have been installed at 18°C and 4°C for individual or parallel temperature controlled crystallisation experiments. Each device has a holder for 120 plates which the device will image according to a user defined schedule and robotic imaging microscope. The system uses a remote laboratory information management system which is web-based allowing remote access to the machine (e.g. from your own desktop) to see the images from your experiment or control the machine. This allows for a much more systematic and defined crystallisation experiment with time lapse identification of crystallisation conditions*.

Sealed Tube X-ray generator, MAR345dtb image plate & Oxford Cryostream: Our ability to screen crystals prior to synchrotron data collection has been updated with a Xenocs sealed tube X-ray generator linked to our existing Wellcome Trust funded MAR 345 image plate system. The sealed tube system provides similar X-ray intensities to traditional rotating anode sources but with significant savings in maintenance and operating costs. The system also includes a new Oxford Cobra cryostream system that uses atmospheric nitrogen as the source for a cryogenic cooling system required for crystal protection and storage. In total this suite of equipment provides Warwick with state of the art, internationally competitive macromolecular biological x-ray crystallography facilities. Through our membership of the Midlands block allocation scheme we have regular access to the Diamond and ESRF synchrotron facilities for high resolution data collection.

Access to the facility: For access, training or other details please contact either Dr David Roper (david.roper@warwick.ac.uk), Dr Alex Cameron (a.cameron@warwick.ac.uk) or Professor Vilmos Fulop (vilmos.fulop@warwick.ac.uk)

* www.warwick.ac.uk/go/proteincrystals

