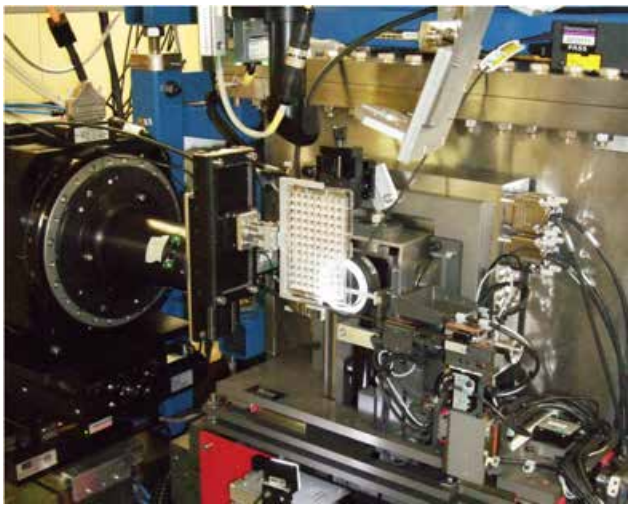
Poster Presentations

[MS7-P01] Challenges and Opportunities in Structure Determination of Membrane Proteins Isabel Moraes

Membrane proteins are important pharmaceutical targets as they are associated with many diseases. The knowledge of their atomic structure it is critical in drug discovery and thus to the welfare of our global society. X-ray crystallography is the common method of choice to obtain structural information at atomic level. However, expression, purification and crystallization of well ordered membrane protein crystals for X-ray diffraction studies remains a challenge.

To facilitate structural studies on membrane proteins, The Membrane Protein Laboratory (MPL) at Diamond Light Source was created. The MPL is a research and training state-of-the-art user facility open to scientists from laboratories anywhere in the world interested in solving the 3-dimensional structures of membrane proteins by X-ray crystallography. Because membrane proteins are unstable, hard to crystallize and crystals difficult to handle, more systematic approaches and technical developments are needed to improve the success rate of the structure determination of membrane proteins.



The MPL has also a formal collaboration with MX beamlines at Diamond to develop new techniques for crystallization and structural determination of membrane proteins, including prototype systems for high throughput methods, improving handling of small and delicate crystals, and methods for collecting and merging data from a large number of small crystals.

Crystallization plate mounted directly in the X-ray beam allowing the diffraction quality to be assessed. (I24 beamline at Diamond Light Source).

Axford, Danny, *et al.* "In situ macromolecular crystallography using microbeams." Acta Crystallographica Section D: Biological Crystallography 68(5) 2012: 592-600