

Poster Presentations

[MS5-P20] The Structural Biology and Genomics Technology Platform at the IGBMC.

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As part of the French national (FRISBI) and European (INSTRUCT) structural biology infrastructure, the Structural Biology and Genomics Technology Platform (SBGTP) is recognised for its expertise in the production and structural characterization of proteins and macromolecular complexes. The SBGT Platform offers facilities for expression of recombinant protein complexes in various vectors and in different hosts, production, purification and biophysical characterization of selected candidates, automated crystallization screening and 3D structure determination approaches ranging from very high-resolution isolated proteins and single particle complexes up to cellular resolution. Users have access to state of the art equipments for robotized expression tests, large scale prokaryotic and eukaryotic sample production, purification facilities, biophysical sample characterization, high-throughput crystallization screening and X-ray facilities.

We collaborate in many structural biology projects on macromolecular complexes (multi-protein and protein-DNA complexes), mainly related to human health, notably those involved in the regulation of gene expression (transcription, translation).

A combined biophysical approach is routinely used to characterize these macromolecular complexes which contribute to the understanding of their biological function and increase the success rate of their structural study. We provide expertise in state of the art techniques including Dynamic Light Scattering (DLS),

Circular Dichroism (CD), Multi-Angle Laser Light Scattering (MALLS), Analytical Ultracentrifugation (AUC), Microcalorimetry (ITC), Microscale Thermophoresis (MST Nanotemper) and Small-Angle X-ray Scattering (SAXS) for biophysical characterization. After optimization of the sample quality and stability, crystallization experiments can be carried out. When proteins and macromolecular complexes are available in very limited amounts, our techniques can be adapted to make the most of the precious sample. For crystallogenes, micro-scale and nano-scale robots and automated imaging systems are routinely used. A Mosquito robot permits the setting up of crystallization experiments with volumes between 100 nl and 500 nl, and can also easily be used for automated microseeding and additive screening experiments. An initial screen of 480 conditions, using 110 µl of sample, is usually performed, but tests can be done with as little as 10 µl. An Emerald Biosystems Plug Maker has recently been installed which allows for fine gradient microbatch optimization of up to 800 combinations from 8 µl of sample. Once crystals have been grown, they are routinely tested for diffraction quality using our in-house Rigaku 007 HF generator. Crystals are either cryo-cooled before being mounted on the goniometer or tested directly in the plate or PlugMaker chip using a PlateMate from Rigaku. The platform also has access to various synchrotron sources, including the ESRF, Soleil, SLS and DESY, for high resolution data collection. Facilities for cryo-Electron Microscopy and NMR analysis may also be available in association with the platform. Biophysical and crystallization developments and results obtained in the framework of our collaboration on different structural biology projects will be presented. As an INSTRUCT centre the SBGT Platform is open to external users for all aspects of purification, characterization, and crystallization. Information on how to apply can be found at <http://lbgs.u-strasbg.fr/sbgrp/>. This work was supported by the French Infrastructure for Integrated Structural

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