Long report

March 2022 – February 2023

Please include highlights.

PI Name: Marius Schmidt

Global summary to explain your project(s):

The aim of the MX-2429-BAG proposal is to facilitate time-resolved TR-SSX experiments on bacteriophytochromes, photoactive yellow protein, cytochrome-c nitrite reductase and photoactive yellow protein

Results obtained in the last one year:

- The BAG proposal was submitted last year March, 2022 and beamtimes were allocated in September, 2022.
  - We successfully performed experiments at ID-29[1,2] on photoactive yellow protein, bacteriophytochrome and cytochrome-c nitrite reductase by scanning fixed target chips through the X-ray beam.
  - We used the CrystFEL software pipeline integrated into the NPC GUI for giving quick feedback on data quality during beamtimes.

Structure still in progress since the last biannual review:

- SSX diffraction on PYP
- SSX diffraction from ccNIR
- SSX diffraction from bacteriophytochrome

Publication:

1. Robert D. Healey, **Shibom Basu**, Anne-Sophie Humm, Cedric Leyrat, Xiaojing Cong, Jérôme Golebiowski, Florine Dupeux, Andrea Pica, Sébastien Granier, José Antonio Márquez. An automated platform for structural analysis of membrane proteins through serial crystallography, ***Cell Reports Methods***, Volume 1, Issue 6, **2021**
2. **de Sanctis D**, Beteva A, Caserotto H, Dobias F, Gabadinho J, Giraud T, *et al.* ID29: a high-intensity highly automated ESRF beamline for macromolecular crystallography experiments exploiting anomalous scattering. ***J Synchrotron Radiat***. 19: 455–461, **2012**

Beamline performance (your opinion on beamlines and/or the improvements you will need):

The beamlines performed extremely well. We are extremely grateful for the generous support of ESRF and EMBL colleagues.

RESEARCH Highlights

See research highlights below

Team returned to the US on March 2nd. Data analysis is proceeding. We cannot report research highlights for SSX with this short notice.