EUROPEAN SYNCHROTRON RADIATION FACILITY

INSTALLATION EUROPEENNE DE RAYONNEMENT SYNCHROTRON

ESRF

Experiment Report Form

The double page inside this form is to be filled in by all users or groups of users who have had access to beam time for measurements at the ESRF.

Once completed, the report should be submitted electronically to the User Office via the User Portal:

https://wwws.esrf.fr/misapps/SMISWebClient/protected/welcome.do

Reports supporting requests for additional beam time

Reports can be submitted independently of new proposals – it is necessary simply to indicate the number of the report(s) supporting a new proposal on the proposal form.

The Review Committees reserve the right to reject new proposals from groups who have not reported on the use of beam time allocated previously.

Reports on experiments relating to long term projects

Proposers awarded beam time for a long term project are required to submit an interim report at the end of each year, irrespective of the number of shifts of beam time they have used.

Published papers

All users must give proper credit to ESRF staff members and proper mention to ESRF facilities which were essential for the results described in any ensuing publication. Further, they are obliged to send to the Joint ESRF/ ILL library the complete reference and the abstract of all papers appearing in print, and resulting from the use of the ESRF.

Should you wish to make more general comments on the experiment, please note them on the User Evaluation Form, and send both the Report and the Evaluation Form to the User Office.

Deadlines for submission of Experimental Reports

- 1st March for experiments carried out up until June of the previous year;
- 1st September for experiments carried out up until January of the same year.

Instructions for preparing your Report

- fill in a separate form for each project or series of measurements.
- type your report, in English.
- include the reference number of the proposal to which the report refers.
- make sure that the text, tables and figures fit into the space available.
- if your work is published or is in press, you may prefer to paste in the abstract, and add full reference details. If the abstract is in a language other than English, please include an English translation.

ESRF	**Experiment title:** Conformational changes of the signal recognition particle	**Experiment number**: **MX-1221**
Beamline: ID14-3	**Date of experiment**: from: 27 Nov 2010 to: 28 Nov 2010	**Date of report**:
Shifts: 3	**Local contact(s)**: Cyril Dian	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

Dr. Tobias Hainzl *
Dr. Gitte Merilainen *

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Sweden

Report:

The signal recognition particle (SRP) functions as a molecular adapter coupling protein synthesis and membrane translocation. We are interested in the molecular mechanisms that govern the binding of signal sequences by SRP and downstream signaling. We perform biochemical, crystallographic and SAXS studies of an archaeal SRP, signal sequence and SRP-receptor. SRP54 is the critical protein component and comprises two major domains: the M domain, which anchors the protein onto the RNA and binds directly to the signal sequence, and the NG domain, which binds GTP and the SRP-receptor. It is beleived that the NG domain makes crucial domain movements during the signalling event, which ultimately lead to accelerated receptor interaction and signal sequence release.

We have measured various samples containing the SRP, signal sequences and the SRP receptor. Some of the samples have to be measured again and some new samples have to be measured to gain conclusive results. These SAXS data will be complement by our ongoing crystallographic studies.

The type III secretion system is a highly complex machinery that enables bacteria to deliver protein effectors across eukaryotic cellular membranes. Despite the ongoing concerted efforts of molecular and structural biologists, the role of many of the components which are required for assembly, regulation and function of this machinery remain unknown.

We have measured distinct protein complexes of the type III secretion system. These SAXS data will be complemented by our ongoing crystallographic studies.