



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://www.esrf.fr/misapps/SMISWebClient/protected/welcome.do>

Deadlines for submission of Experimental Reports

Experimental reports must be submitted within the period of 3 months after the end of the experiment.

Experiment Report supporting a new proposal (“relevant report”)

If you are submitting a proposal for a new project, or to continue a project for which you have previously been allocated beam time, you must submit a report on each of your previous measurement(s):

- even on those carried out close to the proposal submission deadline (it can be a “*preliminary report*”),
- even for experiments whose scientific area is different from the scientific area of the new proposal,
- carried out on CRG beamlines.

You must then register the report(s) as “relevant report(s)” in the new application form for beam time.

Deadlines for submitting a report supporting a new proposal

- 1st March Proposal Round - **5th March**
- 10th September Proposal Round - **13th September**

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.

Instructions for preparing your Report

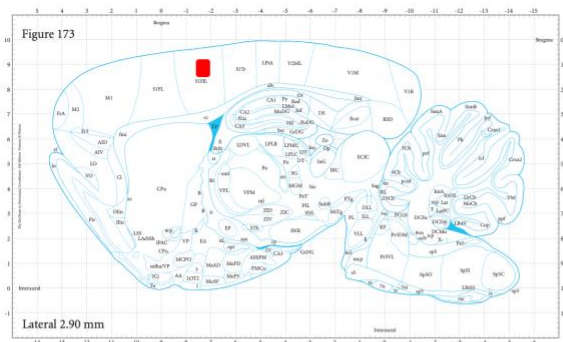
- fill in a separate form for each project or series of measurements.
- type your report in English.
- include the experiment number to which the report refers.
- make sure that the text, tables and figures fit into the space available.
- if your work is published or is in press, you may prefer to paste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



	Experiment title: Brain convergent beamlets for selective ablations of submillimetric cerebral cortex subsets in the study of diaschisis degeneration in rat models of Chronic Pain	Experiment number: LS-2815
Beamline: ID17	Date of experiment: 12 September 2018 / 14 September 2018	Date of report: 05/03/2020
Shifts: 9	Local contact(s): Hervig Requardt	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): Gabriele E. M. Biella ^{1*} , Antonio G. Zippo ^{1*} , Paola Coan ^{3*} , Alberto Bravin ^{2*} <ol style="list-style-type: none">1. Institute of Molecular Bioimaging and Physiology, Consiglio Nazionale delle Ricerche, Milan, Italy2. European Synchrotron Radiation Facility, Grenoble, France3. Ludwig-Maximillan University, Munich, Germany		

Report:

Diaschisis is the set of focal and non-focal changes in the structural inner brain connections and disconnections, involving areas distant from the lesion. We used deeply anaesthetized experimental rats opportunely placed on a rotating stage in order to allow for repeated (8) $\sim 100 \times 100 \mu\text{m}^2$ X-ray beamlets depositing each 55.6 Gy (100 μm width), coming from 8 different directions cumulating ~ 450 Gy at the target. Each beamlet crossing the path of the others in a small volume of a stereotactically identified brain sensory region to generate an inter-subject stable and repetitive degeneration hotspot analyzed at different time-lags from the experimental session. The aim was to understand whether the variety of experimental and clinical pictures resides in the unavoidable variability of the clinical and experimental models, in an idiopathic variability of the far involved areas. The experimental setup is depicted in the figure below. The lesional target has been identified in the hindlimb projection of the primary somatosensory cortex of experimental rats. The experiment gave us the unique opportunity to set up the experimental framework able to collimate several microbeams in a common focus through different projection on a sole axis. Most of beamtime shifts has been spent for this purpose. In addition, we preliminary found a clear cellular degeneration within the radiation focus but further analyses on the sliced brain sampled should be done accompanied by another set of experiments at the beamline to investigate the phenomenon in experimental models of chronic pain.



■ $8 \times 55.6 = \sim 440$ Gy, dose accumulation

8 convergent microbeams

