

Core Facility for 3D Super Resolution Operator and User regulations

1. Introduction

The facility for 3D Super Resolution (3DSRF) is equipped with both expensive and potentially dangerous optical machinery. Moreover, the equipment is vulnerable to malfunction due to incorrect usage. To maintain high quality standards, the 3DSRF implements regulations on how to work safely with the equipment and collegial behavior in the facility laboratories, which are located on the first floor, room 1.133 of the 2. Sammelbau Biologie.

The core facility imaging laboratory is located within the Chemosensation Institute, the rules and regulations of the Institute also apply to the 3DSRF.

The detailed equipment available at the 3DSRF is listed in appendix 1. Contact details of the supervisory board and the head of core facility are listed in appendix 2.

2. User Regulations

A. Basic core facility regulations

- No experiments may be conducted without the authorization of the head of the core facility and/or other core facility supervisors. Authorization of experiments is only granted after the planned experiment has been explained and the potential and possibilities of the study have been discussed (Appendix 6).
- Requests for experiments and equipment reservation may be made by either sending an email to staff@3dsr.rwth-aachen.de or by contacting the head of the facility (Appendix 2).
- Entrance to the core facility imaging laboratory is only granted by the core facility staff.
- The prerequisite for using the facility is acknowledgment of facility guidelines including imaging fees and the acknowledgements/co-authorship policy (please sign the "User and PI Agreement").
- To access the core facility imaging laboratory the user must acknowledge the S1 laboratory status. Therefore, users are only permitted to enter the laboratory under supervision of a trained core facility staff member.
- Access to imaging system is only allowed under direct supervision of a member of the 3DSRF staff.
- In case of emergency such as fire, standard safety regulations and guidelines as currently implemented RWTH premises apply.
- The users of the core facility are divided into three categories:
 - (1) Internal users: Members of RWTH Aachen University
 - (2) Uniklinik Aachen users: Members of medical faculty of RWTH Aachen
- (3) External users: a. Other universities or academic partners b. Industrial partners
- All users have equal rights and responsibilities during their work in the facility. The user groups reflect the fees for usage of the 3DSRF. The fees cover imaging costs, assistance and basic consumables. Cost can be modified to cover general price changes.

Please note:

Users of the 3DSRF are obliged to refer to the support provided by the facility as an acknowledgement in their publications. Please use the following wording:

This work was supported by the facility for 3D Super Resolution, a core facility of the RWTH Aachen University.

OR

Diese Arbeit wurde unterstützt durch die Facility für 3D Super Resolution, eine Core Facility der RWTH Aachen.

B. Regulations regarding the usage of imaging and analysis systems in the facility

- The facility is not responsible for storage of the acquired data.
- All users should protect their own data by transferring it to an external storage device that is free of viruses directly after facility usage.
- The core facility offers short-term storage space on internal data structures for imaging data to transfer it to an analysis workstation.
- The head of core facility reserves the right to delete old data or data without reference to a user.

C. Regulations regarding S1 laboratory guidelines

- All rooms of the core facility are classified as S1 laboratories and are subject to the official security regulations. Follow the S1 working guidelines during the use of the core facility.
- Wear lab coats at all times during your work in the facility.
- It is strictly forbidden to bring food or drinks into the room.
- Coats and bags must be stored in the office space appointed by the respective staff member.
- All bottles, tubes, opened flasks etc. containing lab material, chemicals and solutions must be labeled with name of the content, date and name of the user. All unlabeled or old material will be discarded during routine controls.
- Facility users should bring their own consumables such as syringes, fluorescent dyes, etc. needed for experiments. In case of regular usage of the facility, storage of consumables at a dedicated location within the facility can be discussed with the core facility staff.
- Experiments at the microscopes with toxic or infectious material (e. g. blood) are permitted only with special care and with additional measures to protect the microscope. Appropriate cleaning after experiments is obligatory.
- Use the 3DSRF session sheet to communicate sample specific properties that are important to identify your sample and prepare an adequate naming paradigm for data to be stored. Reduce paperwork to a minimum.
- Keep the workspace, sink and fridge/freezer clean.
- Inform the core facility Staff about violation of the working guidelines.

Appendix 1 3DSRF Equipment:

The 3DSRF operates an inverted Leica SP8 Tau-STED3X.

A White Light Laser (WLL) allows to excite fluorophores at tunable wavelengths in a range of 470 to 670 nm. FLIM experiments can be performed using WLL light.

This system also incorporates an argon laser (458 nm, 476 nm, 488 nm, 496 nm, 514 nm) and an UV-laser (405 nm DMOD).

For STED and tauSTED superresolution imaging, two different depletion lasers are available: 592 nm and 775 nm. TauSTED experiments can only be executed utilizing WLL excitation (470 to 670 nm).

The microscope has a transparent enclosure for long-term live-cell imaging experiments that is temperature-controlled at both 22.5°C [MS1] and 37°C and provides humidified air with 5% CO₂. The facility also allows experiments at biosafety level 1 (S1).

Objectives: HC PL APO 63x/1,40 OIL CS2
 HC PL APO 93x/1,30 GLYC CORR STED WHITE
 HC PL APO 10x/0,40 CS2
 HC PL APO 20x/0,75 CS2

Appendix 2 Contact information:

General Contact address: staff@3dsr.rwth-aachen.de

David Fleck

Head of core facility:

Phone: +49 241 80 20805

Email: fleck@3dsr.rwth-aachen.de

Location:

2. Sammelbau Biologie / Room 1.115

Helmertweg 3

D-52074 Aachen

Christoph Hamacher

Facility Technician

Phone: +49 241 80 20830

Email: hamacher@3dsr.rwth-aachen.de

Location:

2. Sammelbau Biologie / Room 1.110

Helmertweg 3

D-52074 Aachen

Appendix 3 Declaration regarding S1 laboratory guidelines:

The microscope room of the core facility for 3D Super Resolution is a Safety level1 (S1) laboratory and is subject to the official safety regulations. I hereby declare that I will follow the S1 laboratory guidelines and the working regulations during the use of the core facility.

I state that I will strictly follow the instructions of the facility Staff.

I am aware, that I am only allowed to work under supervision of a core facility staff member.

Appendix 4 Terms and conditions of use (Guidelines for the principal investigator):

- The use of the imaging systems will be invoiced on an hourly basis.
- The fees are based exclusively on equipment use, independent of staff support or scientific contribution of staff.
- You are obliged to inform the 3DSRF staff about the submission of publications containing data generated in the facility.
- Facility users are obliged to refer to the support provided by the facility as an acknowledgement in their publications. Please use the following wording:

This work was supported by the facility for 3D Super Resolution, a core facility of the RWTH Aachen University.

OR

Diese Arbeit wurde unterstützt durch die facility für 3D Super Resolution, eine core facility der RWTH Aachen.

- Send the imaging paragraph of the corresponding publication to the head of the core facility before submission. This regulation prevents possible errors in the methodological part of the paper and will improve the quality of the paper.
- Co-authorship should be guaranteed in case a member of the core facility staff adds a genuine, identifiable contribution to the content of a research publication of text, data or software by the main corresponding author.

General advice:

The management of the core facility offers pre-experimental consultation to help with the experimental set-up (e.g. sample preparation/staining).

During the experiments, we advise meeting on a regular basis to discuss progress, obtained imaging data, and possible new experiments. This consultation will help to generate high quality data, to prevent possible misinterpretations of imaging data, and to avoid unnecessary imaging time.

To summarize: all this will help to improve the scientific outcome and reduce your imaging costs.

Date City Name

Budget number Signature

Appendix 5 User Fees:

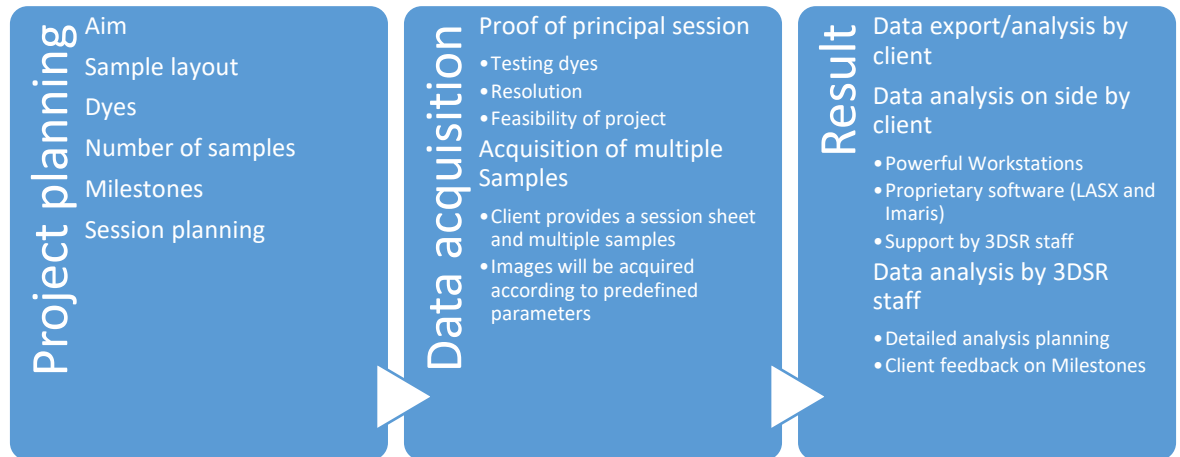
User fees will be charged based on microscope usage time according to the following scheme:

User Category	Fee per hour
RWTH intern Users	68 €
Medical Faculty UK Aachen Users	80,92 €
External Users	116,27 €

- The time of use is calculated based on the signed session sheets. (imaging will be performed by facility staff only).
- Data analysis time will be calculated by session log on time.
- Invoices are issued semi-annually.
- The invoice will be sent to the responsible principal investigator (PI) of the working group, who also has signed the “Terms and conditions of use (Guidelines for the principal investigator)” (appendix 3).
- Introductory consultations will not be invoiced.
- The fees for usage hours can be financed by research grants of DFG (including Collaborative Research Centers (SFB) or other scientific consortia), Emmy Noether or Heisenberg programmes, *Bundesministerium für Bildung und Forschung* (BMBF), European Union (EU) or other grant agencies.

Appendix6 Project planning:

A general outline of the workflow of a typical core facility project



A general outline of communication with the core facility users to plan a Project:

