

# Super-Resolution Confocal/Multiphoton Imaging facility for Multiparametric Experimental Designs (SCI-MED): Conditions of Use

Updated version April 2020

*The present conditions of use came into effect as of January 2019 (original version).*

*Access to an online booking system will be provided within the next months. For now, contact the facilities manager for microscope bookings.*

The conditions of use apply to all authorized SCI-MED users and their responsible superior. Non-compliance will result in re-evaluation of access privileges. The conditions of use are subject to revision, if necessary (compliance with general data protection regulations, additional instruments etc.). All active users will be informed about modifications via e-mail.

## Contact

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## Facility address

Universitäts-Herzzentrum Freiburg · Bad Krozingen (UHZ)  
Institut für Experimentelle Kardiovaskuläre Medizin  
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## Access to SCI-MED

SCI-MED was established at the Institute for Experimental Cardiovascular Medicine (IEKM), University Heart Centre Freiburg - Bad Krozingen (UHZ) with the dedicated aim of advancing experimental research on cardiovascular systems. The confocal and multiphoton microscopes were financed by funds from the Deutsche Forschungsgemeinschaft (DFG: 44%), the Ministry for Science, Research and Arts in Baden-Württemberg (MWK: 44%) and from the budget of IEKM (12%). The automated slide scanner was funded by IEKM.

In principle, SCI-MED is available for use by researchers from across the Medical Faculty, the wider University of Freiburg, and external collaborators. A key criterion is that users have projects requiring complex multiparametric experimental designs that cannot reasonably be accommodated at the Life Imaging Center Freiburg (LIC) or at other imaging resources in Freiburg. Cardiovascular research will be given priority.

During the first three years of full operation (starting January 2019), teams that have been involved in raising funding for SCI-MED equipment have priority access during 75% of regular business hours (Mo – Fri, 8.00AM - 06.00PM). All other hours, and non-used time-slots during regular hours, are equally available to all authorized users.

Access to SCI-MED will be organised via the facilities manager, using online booking and scheduling tools. For authorised users, IEKM/SCI-MED staff are usually available to provide access to the facility

during regular business hours. Out of hours access requires prior arrangements with the SCI-MED management committee and IEKM director.

## Equipment and techniques

The available microscopes, computers, software, etc. are described in detail on the web site of SCI-MED (<https://www.herzzentrum.de/englisch/departments-sections/institute-for-experimental-cardiovascular-medicine/microscopy-facility-sci-med.html>). Brief notes on operating procedures of equipment and tools are available for authorized users as PDF document and as hardcopy at the facility. All documents are provided in English.

### Systems:

- A. Leica TCS SP8 X (inverted confocal), white light laser 470-670 nm, 405 nm, Argon laser (457 nm, 488 nm, 514 nm); spectral detectors, FLIM, deconvolution-based superresolution
- B. Leica TCS SP8 DIVE (upright MP/confocal), MP (680-1300 nm, 1045 nm), Confocal (488 nm, 552 nm, 638 nm); spectral detectors, FLIM, SHG, deconvolution-based superresolution
- C. Leica offline image analysis: HP workstation
- D. Zeiss Axio Scan.Z1 (automated slide scanner), brightfield mode for histology, fluorescence mode (up to 6 channels), magazine for 100 slides

### Additional instrumentation:

- A tissue clearing system (LogosBio X-Clarity) has been recently re-located from the LIC Freiburg to SCI-MED (<https://miap.eu/microscopy/special-setups/lic/x-clarity>, originally funded by AG Bartos, AG Haas, AG Huber, AG Kohl, AG Walz, AG Diester, AG Roussa).

## SCI-MED application process

Requests for access to SCI-MED should be addressed to the facilities manager via e-mail. All submitted information will be treated as confidential.

All aspiring users need to fill out an application form including a brief outline of the proposed research project, declarations on biological, chemical, and operational safety, information on personal experience in confocal/ MP imaging, and where applicable, a copy of their Ethics Approval (*e.g.* for human tissue use). The Conditions of Use statement has to be signed by the user and the supervising project manager. The application document is available from the facilities manager or as download from the SCI-MED web site.

Any requests with incomplete or incorrect declarations of biological and chemical safety or, in case of human tissue use, without ethical approval, will not be considered. For S2 work, the user is responsible for contacting the delegate for biological safety (Dr Dörte Ortmann, 0761/203 4303) to obtain clearance for planned research *prior to the start* of any S2 work at SCI-MED. A copy of the clearance confirmation must be sent to the facilities manager before starting the work. In general, actual S2 work in the facility should be kept to a minimum. Any S2 work must be discussed with SCI-MED staff before starting and clearly indicated in the booking system.

Applications will be reviewed by the SCI-MED management committee, consisting of the facilities manager, the head of 4D Imaging at IEKM (Dr Rog-Zielinska), and the IEKM director (Prof Kohl), in consultation with LIC (Dr Nitschke). If considered to match the scope of SCI-MED activities, access will be given to an online booking tool for a pre-determined number of hours/year (this will be flexibly reviewed and can be adjusted upon request).

After reviewing the application and following a personal meeting at SCI-MED to discuss the scientific project needs, the facilities manager will advise on the most suitable microscope set-up for the proposed imaging project, on the time effort to be expected, and on additional equipment that may be

required. The budget of bookable hours will be determined, and any additional needs (such as access to other IEKM facilities) will be discussed.

All new SCI-MED users have to participate in at least one mandatory training/introduction session with the facilities manager (min. 2 h, where the microscope access and assistance fee will be charged). Independent microscope access will be granted only to users who show the ability to operate the microscopes in a safe and useful manner. Less experienced users can get further assisted training sessions. If this is still not sufficient to acquire independent microscope handling capabilities, access to SCI-MED will be re-evaluated.

## Fees

The fees for microscope usage are, and will continue to be, matched to usage fees for similar microscopes at LIC Freiburg. Accordingly, changes in the LIC fee structure will be matched at SCI-MED.

SCI-MED is listed on the DFG RIsources platform ([https://risources.dfg.de/detail/RI\\_00484\\_en.html](https://risources.dfg.de/detail/RI_00484_en.html)). Microscope usage fees are eligible for financial support in applications to funding bodies such as DFG, BMBF, EU, etc.

The current standard fees per hour are listed below. Note that these fees do not even remotely cover the full economic cost of microscope operation.

Hourly fees for SCI-MED use:		
System A:	inverted confocal (Leica SP8X):	30 €
System B:	upright confocal/MP (488 nm, 552 nm, 638 nm) with MP laser	30 € +12 €
System C:	offline analysis workstation	4 €
System D:	automated slide scanner (Zeiss Axio Scan.Z1)	8 €
Technical assistance:	by SCI-MED manager	+20 €

The fee for technical assistance by SCI-MED staff includes initial training, support on new methods, etc. SCI-MED staff will not provide imaging as a paid-for service. The assistance fee will not apply to work involving mutual scientific collaboration agreements where a high level microscopy expertise is constantly required.

Co-applicants on the 91b grant that raised financial support for the microscopes enjoy a 50% fee reduction for the number of hours stated in the grant application. Thereafter they revert to full fees.

We are currently assessing the actual expenditure associated with operating the X-clarity system. Accordingly there are no fixed fees for clearing yet. Research groups who contributed to the funding can use the system without general fees until end of 2020. In case of heavy use a proportional contribution to consumables might be requested. Please contact the SCI-MED manager for more details.

## Equipment booking

SCI-MED will use the same electronic booking system as the LIC (EZbooking). Bookings can only be made by authorised users after login to the booking system. A link can be found on the SCI-MED web site (to be established).

Reservations should be made within a reasonable timeframe, i.e. 1-3 weeks in advance and on a fair-use basis. Booking of single slots with more than 4 hours or larger imaging projects that require access over a number of consecutive days have to be discussed with the facilities manager as early as

possible. Reservations will require users to indicate the system, laser lines, type of sample (fixed, living, cultured/primary cells, tissue, S1, S2, etc.).

In case of scheduling conflicts, imaging of live tissue samples will be considered as having a higher priority than fixed preparations. Occasionally, biopsies and human patient samples may become available on short notice. If these samples have to be imaged in a “living” state, time is a critical issue. In rare and well justified cases, SCI-MED reserves the right to cancel and postpone existing reservations for imaging of less time-sensitive samples (*e.g.* fixed tissue). We will try to avoid this necessity in as far as reasonably possible.

In case of unforeseen technical problems, fixing these issues has top priority. SCI-MED reserves the right to shift or cancel individual bookings in case of technical or organizational problems.

### **Late alteration, cancellation, no-show**

With respect to an efficient use of the equipment, users should stick to reserved time slots as closely as possible. Any necessary changes should be announced as early as possible. Late cancellations, received less than 24 h prior to the start of a scheduled appointment, will incur a charge of 50% of the fee as booked, unless the booking is fully or partially taken up by a different user.

In order to realize this option, and with the goal of achieving optimal system utilisation, any user cancelling a booking must actively notify (i) the users who hold the time slot immediately before and after the cancelled appointment, (ii) potential users on a waitlist (who will be ‘visible’ within the booking system), and (iii) the SCI-MED facilities manager.

Repeated no-shows or habitual cancellations will incur a warning and may lead to revocation of access rights.

## **Reservations, logging of usage times, and invoicing data protection**

Microscope reservations have to be made in an online booking system with user identification. For safety reasons it is mandatory to indicate the sample type (fixed, live, S1, S2, etc.).

The time and duration of individual user logins at the microscope workstations will be logged electronically. The utilization of different imaging modules and individual microscope components can be monitored using software based logging tools. This electronic log is used to provide real-time statistics and to generate reports on effective usage. The actual microscope usage by a user (start, end, utilized components) has to be recorded in an offline log-book which must be signed after each session.

These logs are required for: (i) calculation of usage fee charges; (ii) identification of the last user in case of questions or technical problems; (iii) provision of usage statistics of the individual components such as light sources and lasers. Providing incorrect or incomplete information in the log-book will incur a warning and may result in termination of SCI-MED access.

The data from the booking system and the usage logs will be used to calculate the total charged fees including actual usage, late-cancellation and no-show fees. The usage hours will be corrected, for example if a microscope has been accessed but was not operational due to technical reasons (such incidents have to be noted in the log-book and reported to the facilities manager or described on a detailed report sheet).

Invoices will be sent by SCI-MED/IEKM staff for payment once every quarter. They will show total hours per month for each system accessed. The invoices should be processed for payment without delay.

## **Statement on general data protection and user rights/obligations**

SCI-MED users need to provide information during the application process which includes: name, contact information, institute/department, cost centre, name of the project leader, project description. Nondisclosure of these data will result in rejection of the application. The complete user-associated data are only visible to the SCI-MED management committee and the persons handling the invoicing. Information according to Article 13, EU GDPR (DSGVO) is provided in the appendix A.

Due to practical reasons, the individual reservations and the linked contact information as well as the most recent offline usage log sheets can be read by other authorized facility users. All SCI-MED users must consent to a confidential treatment of such information. It is not allowed to share or discuss any user-related information with third parties.

The facility manager is responsible for the administration of the collected data and for an appropriate archiving. All logged usage data will be kept confidential and used only for the purpose of invoicing and for optimizing system usage in general. The use of any user-associated information for any other purpose is explicitly excluded. The logged data will be archived throughout the legal retention period for financial accounting of the individual projects.

## **User Responsibilities**

All users are obliged to operate the microscopes with due care and according to the operation procedures presented in the introductory sessions. If you are unsure about anything at all – ask! After completion of work all equipment has to be reset to the recommended reference state.

Operating procedures, available as hardcopy at each microscope and in electronic form, will be updated if practical circumstances make this necessary. In case of any doubt concerning an operating step, SCI-MED personnel have to be consulted. To avoid potential secondary damages, SCI-MED staff have to be notified immediately in case of any unforeseen problem, in particular in case of (but not limited to) fluid leaks, debris from broken glass, or any form of real or potential biological or chemical contamination.

All instruments and workspaces must be kept clean, also during the experiments. Spills etc. have to be removed immediately. After completion, used objective lenses and the microscope stage need to be cleaned with caution, auxiliary tools have to be returned to their designated spaces, and waste, samples and notes have to be removed. The systems should be left switched-on in case there is a subsequent booking starting within less than 2h (check booking calendar or ask SCI-MED staff if in doubt); otherwise the proper shutdown procedures for the given instrument have to be followed. The recommended switching-off recommendations can be found in the operation procedure.

## **Laser safety**

SCI-MED microscopes include a class 3B (system A) and a class 4 laser (system B). An initial laser safety introduction is mandatory before starting independent microscope work (the facilities manager is also the laser safety officer). The theoretical training has to be repeated annually. Several dates per year will be offered, which will be announced to active users via e-mail. Each user is responsible to participate in one annual update. For using the multiphoton microscope an additional practical safety introduction is required, which will be combined with the initial training session.

If extra devices need to be installed on the microscopes (*e.g.* electrophysiology setup) the laser safety situation in the microscopy lab has to be re-examined jointly with the SCI-MED facilities manager ahead of the planned experiments, since this might affect all SCI-MED users and can even result in a temporary restriction of facility access.

## **Biological safety**

SCI-MED offers a small work bench for basic sample preparation such as standard pipetting. Temporary access to a small 37°C/5% CO<sub>2</sub> incubator can be provided at IEKM. Any requirements for extended sample preparation have to be discussed with SCI-MED staff. The user and the respective PI have to ensure full compliance with biological safety regulations, which includes transport of samples to IEKM/SCI-MED, temporary storage, handling and disposal of such samples. Any potentially hazardous work has to be indicated to other SCI-MED users.

## **Work safety**

All users must comply with general work safety rules as usual in the UHZ and the university clinic.

In case of non-compliance with the operating procedures or severe neglect of safety regulations, access privileges to SCI-MED will be revoked.

## **Data Storage**

Usage fees do not cover permanent storage or back-up of experimental data. For ongoing projects the imaging data can be stored on the work stations up to an agreed limit (in terms of volume and duration). SCI-MED personnel will monitor disk usage and, if necessary, ask users to free storage space.

Non-IEKM users should copy their data to external media on a regular basis, and transfer them to their own IT resources for permanent storage. External storage media have to be scanned for malware or similar threats before connecting them to SCI-MED computers.

Using the workstations for private internet searches is not permitted and may result in withdrawal of SCI-MED access privileges.

## **Acknowledgment of SCI-MED in Publications**

The use of instrumentation at SCI-MED must be acknowledged in each publication containing images or data obtained at SCI-MED.

SCI-MED staff will be available to proof-read the microscopy methods part of publications to assure appropriate description of technical equipment and methods. DOI, or, in their absence (e.g. book chapters), PDF files of all final publications acknowledging SCI-MED must be sent by the responsible user to the SCI-MED facilities manager. This is very important for SCI-MED since the amount of acknowledgements will be an important aspect of the reviewing process of SCI-MED by the funding organizations.

A typical example text for the acknowledgement is: “Imaging data were obtained with the help of the SCI-MED facility at the Institute for Experimental Cardiovascular Medicine, University Heart Centre Freiburg · Bad Krozingen, and Medical Faculty, University of Freiburg”.

Co-authorship of SCI-MED staff on publications or patents is warranted only in case of substantial scientific input of the staff. This is usually the case when a mutual collaboration agreement has been set up. Manuscripts containing substantial contributions by SCI-MED staff must be indicated to the facility manager and sent for comment in good time (minimum 1 week) before journal submission.

## Liability

Users and their PIs are responsible for the cost of repairs to damage resulting from non-adherence to operating procedures. Users may wish to take out professional liability insurance to cover any residual risk using devices at SCI-MED.

Freiburg, 20 April 2020

A handwritten signature in black ink, reading "Madl Josef". The signature is written in a cursive style with a large initial 'M' and 'J'.

SCI-MED Facilities Manager Dr. Josef Madl

## Appendix A

Information according to Article 13, EU GDPR on the use of SCI-MED facility user data

- (1)
  - a. Responsible for collection of usage data: SCI-MED facility manager Dr. Josef Madl (contact: phone: 0761 270 63953; email: josef.madl@universitaets-herzzentrum.de)
  - b. Data Protection Officer of the UHZ Freiburg – Bad Krozingen: [datenschutz@universitaets-herzzentrum.de](mailto:datenschutz@universitaets-herzzentrum.de)
  - c. The legal basis for treatment of the usage data are the SCI-MED usage conditions. The usage data logs are required for:
    - (i) calculation of facility usage fee charges
    - (ii) documentation of the usage in case of questions or technical problems
    - (iii) provision of usage statistics of the individual system components such as light sources and lasers.
  - e. In general, no user-related information will be shared with third parties. The only exception is the LIC Freiburg, because LIC resources have to be used for equipment booking and usage logging. A data processing agreement with the LIC will be established.
  - f. The use of any user-associated information for any other purpose than stated in (1)-c is explicitly excluded.
- (2)
  - a. The logged data will be archived throughout the legal retention period for financial accounting of the individual projects.
  - b. The user has the right to request rectification of personal data in case of errors. Processing of the usage data is necessary for the accounting. The logged data will be deleted after the legal retention period.
  - e. SCI-MED users need to provide information during the application process which is essential for the invoicing. Nondisclosure of these data will result in rejection of the application to the SCI-MED facility.

Freiburg, 24 April 2019



SCI-MED facility manager Dr. Josef Madl