Core Unit Cytometry - User Guidelines

The Core Unit (CU) Cytometry is located within the Institute of Immunology at the University Medicine Greifswald. Our mission is to provide researchers and medical professionals with a state-of-the-art platform for multiparameter flow cytometry and multiplex immunoassays. The CU Cytometry's services and instruments are available to all research groups within the University Medicine Greifswald, as well as to external academic and industry researchers.

Services Offered

1. **Flow Cytometry**

Flow cytometry is a powerful, high-throughput technology that has become an indispensable tool for analyzing multiple characteristics of single cells within a population in a short period of time. This technology allows researchers to investigate the expression profile of surface and intracellular markers, cell cycle stage, cellular proliferation, and cell death (apoptosis or necrosis), among other applications.

- **Sony ID7000**

  The Sony ID7000 is a state-of-the-art spectral flow cytometer equipped with seven lasers, offering optimal flexibility and efficiency in high-parameter panel design. This high-performance platform delivers exceptional sensitivity and signal resolution, minimizes traditional compensation hurdles, and provides advanced handling of cellular autofluorescence. These features are crucial for resolving complex cell mixtures, particularly when analyzing limited sample volumes or investigating rare cell populations.

- **BD LSR II**

  The BD LSR II is a benchtop flow cytometer offered by BD Biosciences. Equipped with four laser lines, it can detect up to 14 colors / parameters simultaneously. The BD LSR II combines an advanced fluidics system with high-performance data acquisition, analysis, and optics.

2. Multiplex Immunoassays

Multiplex immunoassays enable the simultaneous, high-throughput quantification of multiple soluble analytes within a single, small sample volume. Using color-coded magnetic beads, this suspension-array technology provides a comprehensive profile of complex biological fluids - such as serum, plasma, or cell culture supernatants - saving both sample material and time compared to traditional single-analyte ELISAs.

- **Bio-Plex 200 System**

  The Bio-Plex 200 is a reliable, high-throughput suspension-array system powered by xMAP (Luminex) technology. It uses color-coded magnetic beads to simultaneously measure up to 100 different targets (such as proteins, peptides, or nucleic acids) from a single well of a 96-well plate, providing an efficient, sample-sparing solution for complex biomarker profiling and quantitative immunological assays.

User Duties and Responsibilities

The instruments in the CU Cytometry are shared, high-value resources. To ensure their longevity, precision, and reliability for all researchers, every user is expected to adhere strictly to the following rules:

- Device hardware and software configurations may only be changed by authorized CU Cytometry staff. Users must not alter system optics, fluidics, or core settings independently.
- Every new user must complete a mandatory introductory training and orientation session provided by CU Cytometry staff before operating any equipment.
- Unauthorized or untrained self-operation of instruments is strictly prohibited. Users who have not been formally introduced by CU Cytometry staff will lose access privileges.
- All users are personally responsible for following the correct start-up, cleaning, and shutdown protocols for whichever system they use.
- Failure to follow proper maintenance procedures, or leaving an instrument in an unclean state, will result in immediate suspension of facility access.
- In the event of a clog, software error, hardware malfunction, or unexpected reading, do not attempt unauthorized repairs. Stop your run and contact the technical staff immediately using the contact details listed at the end of this document.

Biosafety Guidelines

The CU Cytometry is a multi-user facility where samples from diverse sources - which might contain known or unknown human pathogens - are regularly investigated. The safety of all facility personnel and users is our highest priority, and complete transparency about sample sources and potential infectious agents is mandatory.

- All biological samples classified as Biosafety Level 2 (BSL-2) or higher that lack explicit approval for live measurements must be thoroughly fixed before entering the facility and undergoing analysis.
- Users must take all necessary precautions to minimize the risk of sample aerosolization or cross-contamination between instruments.
- Every user is responsible for maintaining general tidiness and proper waste disposal in the facility workspace.
- All biological or contaminated waste must be disposed of exclusively in the designated waste containers provided by the facility.
- All non-contaminated, general waste must be disposed of in standard facility trash bins.

Usage Fees and Billing

Fees for using the instruments and services of the CU Cytometry follow the guidelines of the DFG (German Research Foundation). Costs depend on the specific platform used and whether the instrument is operated independently or by CU Cytometry staff.

General Rate Structure

Service	Self-Service (User = Operator)	CU-Operated (Staff = Operator)
Flow cytometry	25 € / h	65 € / h
Multiplex immunoassays	10 € / h	50 € / h

These fees include the basic reagents required to run the instruments (e.g., sheath fluid, standard system cleaning solutions), but not user-specific consumables such as antibodies, assay kits, or counting beads, which must be provided by the user.

Billing

- Invoices for facility usage are issued quarterly (every three months).
- Usage time and billing calculations are based strictly on the official system log-in data recorded by the instruments.
- For standard administrative processing, all calculated usage times are rounded up to the nearest half hour.

Registration and Access to the CU Cytometry

To gain access to the CU Cytometry and its equipment, all new users must complete the following mandatory onboarding steps:

1. **Registration Form:** complete and submit the official CU Cytometry registration form.
2. **Mandatory Training:** attend and successfully complete a formal training and orientation session provided by CU Cytometry technical staff.
3. **Access to Online Calendar:** following successful training, your user account will be activated, granting you login credentials to view the schedule and book instruments via the password-protected online booking calendar.
   - For scheduling support, planning complex runs, or estimating appropriate time blocks, please contact the CU Cytometry technical staff by email or telephone.
   - By booking an appointment, the user commits to appearing punctually at the scheduled time. If you expect a delay, you must inform the responsible CU Cytometry technical staff as soon as possible.
   - Repeated failure to show up for a booked session without prior cancellation will result in the suspension of facility access privileges.
4. **Facility Access:** receive authorized access clearance to the CU Cytometry rooms.
5. **Mailing List:** be added to the CU Cytometry mailing list to receive important updates, maintenance announcements, upcoming events, and facility news.

Data Management and Storage

To protect the security of our instrument computers and your experimental results, all users must adhere to the following data management policies:

- Connecting personal storage media (external hard drives or USB sticks) directly to instrument computers is strictly prohibited, to prevent malware and system corruption.
- Users must use the designated CU-provided USB stick to transfer data securely from the instrument computer to the data analysis workstation. CU Cytometry staff are available to assist with this process.
- Data stored on the instrument computers is temporary: files older than three months are automatically removed without warning. Users are strongly encouraged to back up their data immediately after their analysis session.
- The CU Cytometry assumes no responsibility for the maintenance, physical integrity, long-term storage, or potential loss of any user data.
- The CU Cytometry provides two dedicated data-analysis workstations, each equipped with FlowJo™ software.

Scientific Collaborations and Acknowledgements

Proper acknowledgement of the facility and its funding sources is mandatory for all resulting publications and presentations, and helps secure ongoing funding, maintenance, and sustainability of the CU Cytometry.

Facility Acknowledgement in Publications

- Any presentation, poster, or publication resulting from work performed using CU Cytometry instrumentation or services must include an acknowledgement of the facility. In accordance with DFG recommendations for core facilities, standard technical assistance (e.g., routine instrument start-up, basic operator training, or standard sample running) is covered by usage fees and appropriately recognized through such acknowledgements.
- Because specific instruments have been acquired through external grants or institutional funding, users must also include any grant numbers or funding-provider acknowledgements requested by CU Cytometry staff.

> *Suggested wording: "We thank the Core Unit Cytometry at the Institute of Immunology, University Medicine Greifswald, for providing technical support and instrument access [insert specific instrument names / grant numbers if applicable]."*

Scientific Collaboration and Co-Authorship

Co-authorship must be offered to CU Cytometry staff members who have made a significant intellectual or experimental contribution to the published work. This includes, but is not limited to: (i) in-depth assistance with experimental design; (ii) panel optimization, development, and complex testing; and (iii) advanced data analysis, troubleshooting, or methodological innovation.

Contact Information and Support

General Contact and Location

Core Unit Cytometry
Institute of Immunology, University Medicine Greifswald
F. Sauerbruch-Straße, DZ 7, 3rd Floor, Rooms J-03.06 / J-03.08 / J-03.11
17475 Greifswald

Website: https://www2.unimedizin-greifswald.de/immun/index.php?id=459

If you have questions regarding experimental design, instrument training, billing, or technical malfunctions, please contact the CU Cytometry staff:

Scientific Coordinator	Dr. rer. nat. **Dina Raafat** Email: dina.raafat@med.uni-greifswald.de Phone: 03834 86 5518
Technical Operations and Support	**Susanne Neumeister** Email: susanne.neumeister@med.uni-greifswald.de Phone: 03834 86 5455