UNIVERSITY OF CALIFORNIA, MERCED

SCIF Cleanroom Facility
Cleanroom Training Protocol

Purpose, scope, responsibilities, training workflow, safety requirements, and authorization procedures for cleanroom and instrument training.

Document Type	Operational/Training Protocol
Prepared For	SCIF Cleanroom Facility Users
Contact	pkumar22@ucmerced.edu

Purpose

This protocol defines expectations and procedures to be followed during instrument training sessions. The goal is to ensure safe learning, proper understanding of equipment, and effective preparation for independent operation.

1. General Principles

- Training is mandatory before independent instrument use.
- All activities must follow cleanroom safety and contamination control protocols.
- Training sessions are structured to ensure safe, repeatable, and standardized learning.
- Users must actively participate and engage throughout the session.

Training Documentation and Recording

- Training sessions may be recorded at the discretion of SCIF Cleanroom staff for documentation, training quality assurance, compliance, and safety purposes.
- Recordings, when applicable, may be used to maintain an accurate record of training provided, support consistency and standardization of training delivery, assist in resolving discrepancies or misunderstandings regarding training content, and support compliance with facility policies and operational requirements.
- Users will be informed if a training session is being recorded. Recordings will be used solely for internal facility purposes unless otherwise required by institutional policy.
- By participating in the training session, users acknowledge and consent to such documentation and recording practices, when applicable.

2. Training Scope

- Training is conducted using standard samples and predefined processes only.
- Users are not expected to bring any materials or samples for training. The SCIF Cleanroom will provide all standard samples and required materials for training purposes.
- The objective is to teach instrument operation, safety, and basic workflow.
- Training does not include running or optimizing user-specific research experiments.
- Users are expected to independently apply training knowledge to their own research.
- General cleanroom training coverage is detailed in Section 2A.
- Instrument-specific training coverage is detailed in Section 2B.

2A. General Cleanroom Training - Session Coverage

- Overview of cleanroom classifications (Class 100, Class 1000) and contamination control principles
- Cleanroom protocols, behavior, and best practices

- Gowning procedures (PPE, proper sequence, do's and don'ts)
- Entry and exit procedures (airlocks, material transfer)
- Personal conduct and contamination prevention (particles, chemicals, handling)
- Cleanroom safety (chemical, electrical, thermal, vacuum, and general hazards)
- Equipment use policies and training requirements
- Chemical handling, labeling, and storage guidelines
- Waste disposal procedures (no drain disposal; use designated containers and proper labeling)
- Emergency procedures (spill response, exposure, equipment failure)
- Documentation and compliance (iLab usage, logging, reporting issues)
- Housekeeping and maintaining a clean working environment
- Communication protocols and reporting concerns

Note

Note Cleanroom training is mandatory prior to any facility access. Users must review all relevant manuals, SOPs, and safety materials before operating any equipment. Users are responsible for adhering to all cleanroom protocols and for conducting their own research activities independently.

2B. Instrument-Specific Training - Session Coverage

- Overview of the instrument purpose, capabilities, and limitations
- Identification of system components, controls, and configuration
- Introduction to software interface and operational controls
- Step-by-step operational workflow following established SOPs
- Explanation of critical process parameters and their impact on results
- Instrument-specific safety considerations, hazards, and precautions
- Hands-on operation under direct supervision of cleanroom staff
- Proper startup and shutdown procedures
- Use of standard samples and predefined processes for training purposes
- Basic troubleshooting guidance within the scope of standard operation
- Clean-up procedures and workspace maintenance after use
- Review of common operational errors and how to avoid them
- Clarification of operational boundaries and user responsibilities

Important Note

Important Note Instrument-specific training is limited to teaching safe operation, system understanding, and baseline workflow. Training does not include optimization of user-specific processes, execution of research experiments, or fabrication of devices for users. Users are responsible for independently applying training knowledge to their own research workflows.

3. Roles and Responsibilities

User Responsibility	Staff Responsibility
Arrive prepared and on time for the training session	Provide structured, step-by-step instruction
Review relevant manuals, SOPs, and instructional material beforehand	Demonstrate correct operation and safety procedures
Follow all instructions provided by cleanroom staff	Ensure safe use of equipment during training

Actively participate and perform hands-on steps	Answer questions and clarify operational concepts
Ask questions when clarification is needed	Maintain instrument readiness and proper training environment
Maintain focus and avoid distractions during training	
Follow all safety, gowning, and cleanroom protocols	

Important Clarification Cleanroom staff are not responsible for running or executing user research programs. Staff provide training, guidance, and operational support only. Users are fully responsible for applying training to their own experiments and research outcomes.

4. Training Workflow

Step	Stage	Coverage
1	Introduction and Safety Overview	• Instrument purpose and applications • Key hazards and safety precautions
2	System Overview	• Components and controls • Software/interface introduction
3	Demonstration	• Step-by-step operation by staff • Explanation of critical parameters
4	Hands-On Practice	• User performs operation under supervision • Guidance provided as needed
5	Shutdown and Cleanup	• Proper system shutdown procedure • Cleaning and workspace organization

5. Safety During Training

- Follow all PPE and gowning requirements
- Handle chemicals and materials only as instructed
- Do not bypass safety interlocks or procedures
- Immediately report any unsafe condition or incident
- Stop operation if unsure about any step

6. Equipment Handling Rules

- Operate controls only when instructed
- Do not change parameters beyond training scope
- Use only approved standard training samples
- Avoid unnecessary adjustments or experimentation

7. Questions and Clarifications

- Users are encouraged to ask questions at any stage
- Clarification is expected before proceeding to the next step
- Do not assume or guess procedures

8. Limitations of Training

- Training provides foundational knowledge only
- Research-specific optimization and troubleshooting are the responsibility of the user
- Additional sessions may be required for proficiency

9. Training Continuation Policy

- There is no limit on the number of training sessions
- Users may request additional training as needed
- Re-training may be required if improper usage is observed

10. Completion Criteria

Training is considered complete when the user:

- Demonstrates safe operation of the instrument
- Understands basic workflow and parameters
- Can perform the process under supervision with minimal guidance
- Staff will provide feedback regarding completion status and readiness for independent operation
- Final approval for independent use is at the discretion of cleanroom staff

11. Independent Access Authorization

Independent access to instruments will be granted only after successful completion of training and fulfillment of the completion criteria.

- Users must demonstrate competency and safe operation as defined in Section 10.
- Cleanroom staff will evaluate performance and provide feedback regarding training completion.

Required Step (Mandatory)

Required Step Before independent access is approved, the user must send a confirmation email to pkumar22@ucmerced.edu with their Principal Investigator (PI) copied. The email must clearly state that the user has successfully completed training, is competent in operating the instrument safely and correctly, there is no ambiguity regarding instrument operation, and the user is ready to operate the instrument independently.

Access Provisioning and Room Access (Post-Approval Process)

- After receiving the required confirmation email, iLab access will be provided once the request is processed, subject to staff availability.
- Room access will be requested through Facilities Management (FM Help).
- Once the request is submitted, processing typically takes 3-5 business days. After approval, a confirmation email from FM will be shared.
- FM confirmation emails may be delayed and may not be received immediately. Users are therefore advised to verify their access by visiting the cleanroom directly after the expected processing period.

12. Acknowledgment Requirement

We require that all publications, presentations, and posters acknowledge the SCIF Cleanroom Facility at UC Merced when facility resources, instruments, or expertise are utilized. Acknowledgment of facility personnel is at the discretion of the user and should follow standard academic practices.

Copies of resulting publications (PDF or link) should be provided to the facility for tracking purposes and inclusion in annual reporting.

13. Instrument and Specimen Care

When a user functions as the operator of any instrument within the SCIF Cleanroom Facility, the user assumes full responsibility for any damage to the instrument resulting from operator error, negligence, or use of inappropriate

specimens. It is the operator's responsibility to acquire sufficient training to qualify as a competent operator prior to independent use.

Specimens left in the laboratory for preparation and/or analysis will receive professional care. However, neither the facility, its employees, nor its users are responsible for accidental damage to or loss of specimens. Specimens left in the laboratory for more than 14 days may be discarded at the Principal Investigator's (PI's) expense unless prior arrangements are made.

12. Post-Training Expectation

- Users are expected to review manuals and SOPs regularly.
- Apply training knowledge to their own research processes.
- Follow the Post-Training Troubleshooting Protocol when issues arise.

13. Contact for Assistance

For any questions during or after training, please contact: pkumar22@ucmerced.edu

User Acknowledgment

- I have successfully completed the required cleanroom and instrument-specific training for_____
- I have reviewed and understood all relevant SOPs, safety protocols, and equipment manuals.
- Training is limited to safe operation and standard workflows.
- I am responsible for applying training knowledge to my own research.
- Cleanroom staff are not responsible for executing my research processes.
- Safety, contamination control, and equipment protection are my responsibility.
- I will follow all cleanroom rules, policies, and operational boundaries.
- I will not perform unauthorized modifications or unsafe operations.
- I understand and will follow troubleshooting protocols and SCIF policies.

I understand that acknowledgment of SCIF Cleanroom Facility is required in publications, presentations, and scholarly outputs resulting from facility use.

I understand that I am fully responsible for proper instrument use and for any damage resulting from misuse, negligence, or inappropriate samples, and that specimen storage and disposal policies apply.

- I am confident in safely operating the equipment independently.

Mandatory Confirmation Checklist

☐ Completed General Cleanroom Training

☐ Completed Instrument-Specific Training

☐ Demonstrated safe operation under supervision

☐ Reviewed SOPs and safety documentation

☐ Understands equipment limitations

☐ Completed confirmation email including PI

☐ Agrees to follow SCIF Cleanroom policies

☐ Acknowledges publication and reporting requirements

☐ Agrees to instrument responsibility and specimen handling policies

User Information

Name: _____

Department/Lab: _____

PI: _____

Email: _____

Signatures

User Signature: _____ Date: _____

Director Signature: _____ Date: _____