SCIF Cleanroom Orientation

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Purpose

- Introduce new members to the SCIF Cleanroom environment
- Provide an overview of SCIF Cleanroom policies and guidelines
- Explain cleanroom access requirements and procedures
- Review standard operating procedures (SOPs) for cleanroom use
- Emphasize key safety practices and protocols
- Guide users through the SCIF website for resources and documentation

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Introduction

All prospective SCIF cleanroom users must complete the following training steps:

- **General Chemical Lab Safety Training** – Provided by Environmental Health & Safety (EH&S)
- **Hazardous Waste Safety Training** – Provided by EH&S
- **Cleanroom Orientation** – Provided by SCIF staff
- **Process-Specific Training** – Conducted by Principal Investigators (PIs) and SCIF staff
- **Submission of Signed SCIF Disclosures**

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General Rules for SCIF Cleanroom Access

All individuals must comply with the following rules to maintain a safe and controlled cleanroom environment:

- **Access Restriction**: Only individuals who have completed SCIF training and are fully qualified may enter the cleanroom.
- **Personal Hygiene**:
  - **Makeup** is strictly prohibited.
  - **Smoking** is not permitted within 30 minutes prior to entry.
  - **Chewing gum** is not allowed.
- **Food & Beverages**: Absolutely no food or drinks are permitted inside the cleanroom.
- **Contact Lenses**: Avoid wearing contact lenses, as they can absorb or trap harmful vapors and may interfere with effective eye rinsing during an emergency.
- **Dress Code**:
  - Full-length **pants and shirts** are mandatory.
  - Shoes must be closed-toe and made of non-absorbent material (e.g., leather).
  - **Open-toed shoes and sandals are not allowed.**

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Cleanroom Conduct and Contamination Control

- **Writing Tools**: Use only **pens**; **pencils are strictly prohibited** due to the risk of particle contamination.
- **Required PPE**: Hair nets, shoe covers, safety glasses, mustache/beard nets, and gloves must be worn **at all times** inside the cleanroom.
- **Personal Belongings**: Leave nonessential items such as tools, books, and backpacks **outside the lab or in the gowning area**.
- **Hygiene Practices**:
  - Avoid sneezing, coughing, or breathing directly on wafers, substrates, or clean surfaces.
  - **Do not allow skin** to come into contact with any cleanroom surface.
  - **Never touch your face** with gloved hands.
  - Do not touch the outside of gloves with bare hands, **except at the wrist edge** when removing them.
- **Access Control**: Do **not enter the service area** without prior authorization.
- **Housekeeping**: Always **clean your workspace thoroughly** before leaving the cleanroom.

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Chemical & Equipment Safety Requirements

To ensure safe and responsible use of SCIF cleanroom facilities:

- **Chemical Handling**:
  - You must have a **thorough understanding** of all chemicals you intend to use at the wet benches.
  - Always **read and follow the Wet Bench SOP** before beginning any process.
- **Equipment Use**:
  - Understand the **full operation** of any equipment before use.
  - **Certification is required**—complete all necessary SOP reviews and schedule training sessions **in advance**.
- **Chemical Safety Data**:
  - Always review **Material Safety Data Sheets (MSDS)** for each chemical.
  - Be familiar with associated **hazards, risks**, and **emergency response procedures**.
- ⚠️ **Never Work Alone**:
  - A **qualified buddy** must always be present when you are in the cleanroom.
  - Your buddy must have completed the Cleanroom Access Training and be capable of assisting in case of an emergency.

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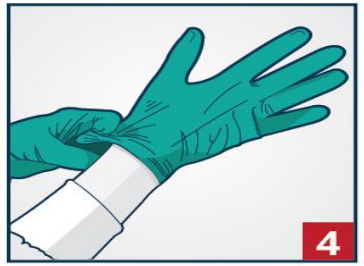
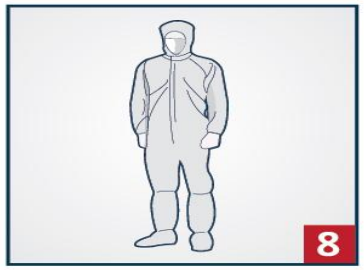
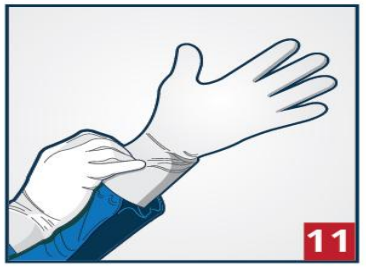
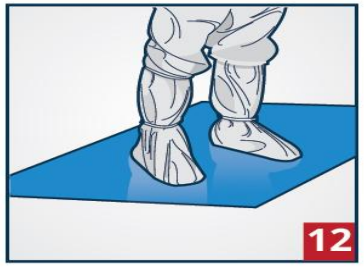
Cleanroom Gowning Procedure

(Non-sterile)









1. Wash Hands Thoroughly
2. Take a Few Steps Over a Tacky Mat
3. Don Disposable Booties *(Shoe Covers)*
4. Put on Donning Gloves
5. Apply Bouffant *(beard covers for users with facial hair)*
   You can enter the gowning area.
6. Don Hood, Hood Should completely Cover your Bouffant.
7. Apply Face Mask.
8. Don Coverall
9. Don Cleanroom Booties
10. Don Goggles or Shield
11. Put on Cleanroom Gloves
12. Walk Over Tacky Mat.
    Now, you can enter the cleanroom.

Emergency Equipment

Safety Showers

Purpose:
To provide immediate chemical decontamination for individuals and their clothing in the event of chemical exposure or spills.

Location:
- Within the Class 1000 cleanroom area
- Both outside and inside the wet lab (Room 154)

Emergency Equipment…

Eye Wash Station

Purpose:

To provide immediate flushing and mitigation of chemical splashes or contaminants in the eyes.

Location:

Within the Class 1000 cleanroom area

Both outside and inside the wet labs (Room 154)

Emergency Equipment…

Fire Extinguishers

Use:

For extinguishing small fires (smaller than a waste paper basket) by trained personnel only.

Location:

Class 100 area

Class 1000 area

Wet lab area

Emergency Equipment…

First Aid Kit

Use:

For treatment of minor injuries and minor burns, including pain relief.

Location:

Inside the gowning cabinet

Emergency Equipment…

MSDS Book

Use:

For all users to obtain detailed information on chemical hazards, safe handling, and necessary precautions.

Location:

Physical copy available in the gowning area

Online access at www.scif.ucmerced.edu

Emergency Equipment…

Telephone

Use:

Environmental Health & Safety (EHS) Emergencies

Emergency Contact Options:

Dial 911 or **9-9-1-1** from a campus phone for immediate emergencies

UC Merced Police Department (CAT-COPS): 209-228-2677

EHS Emergency Line: 209-228-4234

After Hours Reporting:

For hazardous materials spills or environmental incidents, call **911** or **CAT-COPS (209-228-2677)**

Non-Emergency Lab Inquiries:

Call 209-500-7821

Location:

In the gowning area

Safety Equipment

Personal Protective Equipment (PPE)

Purpose:

To provide personal protection against chemical spills and exposure.

Use:

When working with chemicals, wear the following in addition to cleanroom apparel:

- Full-sleeved aprons
- Face shields
- Chemical-resistant gloves

Location:

Hanging on the wall near the wet benches and lithography room

⚠️ **Warning:**

These items are chemical resistant, NOT chemical proof.

Do NOT immerse gloves in chemicals!

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Specific Rules When Working with Chemicals

- **DO NOT use a chemical without first reading its MSDS.**
- Use **dedicated beakers only**, and clearly **label the chemicals and processes** on each beaker.
- Always **wear personal protective equipment (PPE)** in addition to the required cleanroom apparel.
- **Do not work with acids or bases in the solvent hoods.**
- **Put the cap back on each chemical bottle securely.**

Clean and dry the outside of the bottle of any residual chemicals **before returning it to storage.**

- **Do not wear safety apparel outside of wet bench areas** unless working under emergency or HAZMAT cleanup conditions.
- Ensure all PPE is **clean and dry before returning** to storage areas.
- **Do not work with solvents in the acid or base hoods.**
- Use **only one bottle of chemical at a time**, and store it back in its chemical cabinet when not in use.
- **Do not pour used chemicals back into a new bottle.**

For chemical waste disposal, refer to the Wet Benches SOP.

- Make sure that **gloves are clean and dry before transferring chemicals** to or from the bench.

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EMERGENCY RESPONSES: Chemical Spill Clean-Up

🧪 Minor Spill (Excluding HF)

Definition:

A **minor spill** is:

•Less than ½ gallon of liquid

•Not toxic

•Does not spread rapidly

•Does not pose a health, fire, or property risk

Response Guidelines:

•The lab occupant responsible is expected to clean up simple spills.

•Refer to the **Chemical Spills & Injuries SOP** available online: www.scif.ucmerced.edu

Steps to Clean Up a Minor Spill:

1.Wear proper PPE in addition to cleanroom apparel:

1. Full-sleeved apron
2. Face shield
3. Respirator (if required)
4. Chemical-resistant gloves

2.Review the MSDS for the chemical to understand specific hazards.

3.Contain and clean the spill following the instructions in the "Chemical Spills and Injuries SOP."

4.Use appropriate absorbents available in the cleanroom for containment and cleanup.

5.If unsure, call a cleanroom staff member for assistance.

Ask your cleanroom buddy to stay by the spill and **alert others** while you go seek help.

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EMERGENCY RESPONSES: Chemical Spill Clean-Up…

☣️ Major Spill

Definition:

A **major spill** is:

- More than ½ gallon of liquid
- **Any amount of Hydrofluoric Acid (HF)**
- Toxic, rapidly spreading, or poses an immediate health, fire, or property risk

Emergency Actions:

1. **Call for help immediately** (Dial emergency number).
2. **Alert others** to evacuate the cleanroom.
3. **DO NOT de-gown** (Keep cleanroom apparel on to prevent contamination spread).
4. **Inform and meet with cleanroom staff** as soon as possible.

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EMERGENCY RESPONSES

☢ Mercury Release Hazard:

A **high-pressure mercury lamp explosion** releases **toxic mercury vapor**, creating an **extremely hazardous situation**.
(Mercury lamps are located in all **mask aligners** and **steppers**.)

Response Procedure:

1.Evacuate the building immediately.
2.On your way out, **activate the HAZMAT alarm** by **pushing the blue button**.
3.DO NOT attempt to finish your experiment.
4.DO alert others in the area to evacuate.
5.DO NOT de-gown before exiting the cleanroom.
6.Proceed to the designated evacuation meeting point.
7.Report the incident to cleanroom staff immediately.

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Emergency Response: Chemical Exposure

Minor Chemical Exposure on Skin (Excluding HF):

•Immediately place the affected area **under running water for at least 15 minutes**.

•**Remove** any **jewelry or clothing** contaminated by the chemical.

•After rinsing, **DO NOT dry the skin**—keep it moist to prevent further irritation.

Flammable Solids on Skin:

•**Brush off** as much of the solid as possible **without using water**.

•Then, treat the exposure as a **minor or major liquid spill on skin**, depending on severity.

Chemical Splash in Eyes:

•Flush eyes at the **eye wash station** for **15 minutes** or **until emergency personnel arrive**.

•While flushing:

- Hold eyelids **open** with your hands.
- Rotate the eyeball **up, down, and side to side** to rinse all surfaces.

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🚨 Emergency Response: Chemical Exposure…

👥 For the Person Assisting the Victim:

- **Wear proper PPE** before assisting.
- Help the victim **reach the eye wash station** and activate it.
- **Call for emergency help**:
- Retrieve the **MSDS** for the chemical involved and hand it to the **emergency response team**.
- **Inform cleanroom staff** of the incident and follow their instructions.
- Seek **medical assistance** if advised.

Emergency Response: Chemical Inhalation

Immediate Actions:

•**Close all chemical containers** to prevent further exposure.

•**Move the affected person to an area with fresh air** as quickly as possible.

•**Call Poison Control** and follow their instructions.

Seek medical attention if advised.

In Severe Cases:

•**Begin rescue breathing** if the person is unresponsive and not breathing.

•Administer **shock prevention** treatment:

- Lay the person down
- Cover them lightly to maintain body heat
- Provide reassurance to reduce anxiety

Ongoing Symptoms:

•If the person experiences **persistent symptoms** such as:

- Headache
- Nose or throat irritation
- Dizziness
- Drowsiness

→ **Seek medical attention immediately**

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Emergency Response: Fire Alarm

If the Fire Alarm Sounds:

- **YOU MUST exit the building immediately** through the nearest exit.
- **DO NOT** attempt to finish your experiment.
- **DO NOT** try to determine the cause of the alarm.
- **DO NOT** de-gown before exiting.
- **DO** warn others in your vicinity to evacuate the building.

After Evacuation:

- All cleanroom users and staff must **gather at the designated evacuation assembly point**.
- Wait for further instructions from emergency personnel or cleanroom staff.

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🔐 Responsibilities

The procedures and precautions outlined in this presentation are designed to **protect both SCIF cleanroom users and sensitive equipment**.

Accountability:

•Anyone found **violating** these procedures may face **disciplinary action**, including:

- Temporary suspension of cleanroom privileges
- Permanent loss of cleanroom access

Your Responsibility:

To avoid such consequences, **you are responsible** for reviewing and adhering to all applicable **SCIF Standard Operating Procedures (SOPs)**.

All SOPs are available at:

👉 www.scif.ucmerced.edu

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SCIF Training & Access Process

The Stem Cell Instrumentation Foundry (SCIF) provides training to new users on its facilities and equipment. Please follow the steps below to gain access and certification:

Steps to Access and Train:

1.Sign up for an iLab account and get approval from your PI.
Visit our iLab Page for detailed instructions.
2.Complete the SCIF cleanroom service presentation and self-assessment test.
3.Review SCIF Policies and Procedures on our website.
4.Request hands-on training:

Cleanroom Core: Contact **Parveen Kumar** at pkumar22@ucmerced.edu.
Certification requires demonstrating competent equipment operation to the Cleanroom Director.
Only certified users may reserve and use equipment independently.

Training Rates:

•Training fees are billed at the instrument's **hourly rate plus operator-assisted hourly rate**.

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🧪 SCIF iLab Access & Registration

UC Merced uses iLab, a web-based platform to manage and schedule access to core facilities. Completing the registration process is the **first step** toward accessing SCIF equipment and training.

🔑 Steps to Get Started:

1.PI Account Setup

1. Your **PI must create an** **iLab account** and set up the lab group.
2. If your PI is **new to iLab**, email **Rosalina Aranda** at raranda@ucmerced.edu for assistance.

2.User Account Registration

1. Go to the **UC Merced iLab portal** and register.

3.PI Approval

1. Your PI will receive an email notification to **approve your request** and **assign FAUs** (fund numbers).

4.Schedule Equipment or Training

1. Once approved, contact pkumar22@ucmerced.edu and schedule a training session.
2. You can reserve session on the **SCIF iLab page.**
3. **After-hours access** requires lab manager approval and trained user status.

5.Instrument Use: iLab Kiosk

1. Use the **iLab Kiosk** to log instrument time.
2. Kiosk training is covered during hands-on sessions.

📌 Resources & Support

- **SCIF iLab Login:** SCIF iLab Page
- **Help Contact:** Rosalina Aranda – raranda@ucmerced.edu

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🔑 When Do I Get My Access?

You will receive cleanroom access only after completing all orientation and training requirements.

Before Your Orientation/Training is Considered Complete, You Must:

- ✅ **Set up your ilab account.**
- ✅ **Take the SCIF Cleanroom Tour**
- ✅ **Review and understand the cleanroom layout sketch**, including key **safety features and equipment locations**

Access is granted only after successful completion of these steps and verification by cleanroom staff.

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SCIF Acknowledgement and Publications

We kindly ask all users to **acknowledge the Stem Cell Instrumentation Foundry (SCIF)** in any **publications, presentations, posters, or reports** that involve data, devices, or expertise obtained through the use of our instruments, services, or facilities. Your acknowledgment supports the continued growth and enhancement of SCIF resources.

Why Acknowledge SCIF?
Your publications help us demonstrate the impact of our facility to stakeholders and funding agencies, directly supporting our mission to expand capabilities and services.

Authorship and Collaboration
If SCIF staff members contribute significantly—beyond training and routine technical assistance—such as through experimental design, data analysis, or manuscript preparation, their contribution should be considered **collaborative** and may warrant **co-authorship**.

Example Acknowledgment Language:
"We acknowledge the Stem Cell Instrumentation Foundry Cleanroom for assistance in fabricating devices and/or generating data."

Publication Notification
If you publish work that uses SCIF resources, please **email us a PDF copy or a link** to your publication. We log every citation as part of our annual reporting and program development.
Thank you for your support and partnership!

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🙏 THANK YOU

Please FAB Safely!

Stay alert. Follow protocols. Protect yourself and others.

"FAB safely" means:

- **Follow all safety protocols** during fabrication or lab work
- **Wear required PPE** and cleanroom garments properly
- **Handle chemicals and equipment responsibly**
- **Report hazards or unsafe conditions**
- **Protect yourself, your colleagues, and the cleanroom environment**

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