

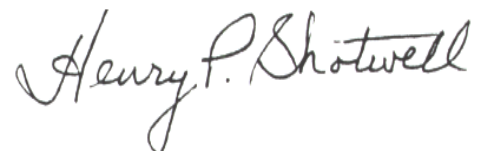
Laboratory Safety Program

Prepared For:

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A handwritten signature in cursive script that reads "Henry P. Shotwell". The signature is written in black ink and is positioned above the printed name and title.

**Henry P. Shotwell, Ph.D., CIH
Principal Author**

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**Laboratory Safety Program
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SAFETY AND HEALTH POLICY STATEMENT

It is the policy of the New York Stem Cell Foundation (NYSCF) to provide a laboratory environment that is conducive to the health and safety of those working within it. To that end, NYSCF has developed the procedures and standards contained within this document to protect you and your co-workers.

However, this is only half of the equation. You, the laboratory user, have a responsibility to know what these controls and items of protective equipment are and how to use them correctly. It goes without saying that this laboratory will only be as safe and healthful as we, the researchers who work here, make it.

This document is a tool. I expect each person who works here to become familiar with it and to follow the procedures contained within it.

Laboratory Director

SAFETY AND HEALTH PROGRAM DUTIES AND RESPONSIBILITIES

The Laboratory Director will assume primary responsibility for implementing and maintaining the elements of this health and safety program. The Director may assign responsibility for carrying out aspects of this program to other NYSCF laboratory staff, including but not limited to the Laboratory Manager, Research Scientists and Technicians. Individual Principle Investigators (PI) will be responsible for the health and safety of their research staff, the proper use and disposal of hazardous chemicals and biohazardous materials within their laboratories and are expected to comply with the NYSCF laboratory and the Columbia University's health and safety policies described in this document.

INCIDENT REPORTING

All laboratory members are required to notify their immediate supervisor or the laboratory manager in the event of an injury. An Incident Report detailing the injury, circumstances that lead to the injury and subsequent steps taken is required to be submitted within 24 hrs of the incident. Such incidents invariably signify either a defect in the health and safety program, or a condition which, if not addressed, will ultimately lead to physical injury or property damage.

ORIENTATION AND TRAINING

All newly employed laboratory personnel or guest researchers will receive a health and safety orientation specific to the NYSCF laboratory which will include:

- The location of Material Safety Data Sheets (MSDS) and the written health and safety program.
- Information on hazards associated with the use of chemicals and equipment, and processes performed in the laboratory.

- Proper use, storage, and disposal procedures for hazardous chemicals and biohazardous wastes.
- The location and proper use of eye wash and/or safety shower installations; the emergency evacuation procedures, including emergency exits, assembly areas and alternative escape paths.
- The location of fire extinguishers and instruction on their proper use.
- Safety information specific to the instruments, devices and/or chemicals the individual will use in the course of their work.

At the discretion of the Laboratory Director, additional topics may be included.

All laboratory members will attend a mandatory annual chemical hygiene course held at the laboratory. All researchers performing work in the NYSCF laboratory on a regular basis shall possess current certification for or obtain the following health and safety training from Columbia University or their home institution and provide written proof of passing the following health and safety training:

1. Basic EH&S Training
2. Bloodborne Pathogens
3. Laser Safety Training
4. Xylene and Formaldehyde Training
5. FDNY C14 Certificate of Fitness
6. FDNY G97 Cryogenic Liquids

For individuals lacking FDNY C14 and G97, access to the NYSCF laboratory will be restricted to normal working hours (weekdays from 9AM to 5PM).

SAFETY RULES

Employees and guest researchers will be expected to conduct themselves in a professional manner. In addition, the following safety rules are to be complied with:

- All researchers shall read and sign all applicable NYSCF User, Collaboration, and Confidentiality Agreements prior to working in the laboratory.
- Report all injuries, near-miss incidents, and hazardous conditions to your immediate supervisor or the NYSCF laboratory manager or designated safety officer as soon as possible.
- Incident reports must be filed by and submitted to the laboratory manager or designated safety officer within 24 hrs of the incident.
- In the event of an evacuation alarm, immediately stabilize on-going processes and shut down all flammable gas (Bunsen Burners) sources. Follow the established emergency evacuation procedures (q.v.).
- Do not disable or bypass any equipment guards, interlocks, alarms or other safety devices.
- When conducting activities that require the use of Personal Protective Equipment (PPE), it is the responsibility of the researcher to identify and use the PPE correctly and to ensure that it is in good operating condition. Report damaged or inappropriate PPE to the NYSCF laboratory manager for replacement.

EMERGENCY EVACUATION

When the Fire/Emergency Evacuation Alarm is sounded, immediately stabilize on-going processes and shut down all flammable gas (Bunsen Burners) sources. Follow the established Columbia University emergency evacuation procedures. Follow the emergency evacuation route to the established assembly area. Do not leave the area or return to the laboratory until given clearance by the FDNY, Columbia EH&S, or Columbia Security personnel.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Appropriate PPE will be made available to all researchers working in the NYSCF laboratory. Operations that require the use of PPE will be identified by the laboratory manager, who will specify the type(s) needed. It is the responsibility of the researcher to use the appropriate PPE for operations for which it is required.

Operations requiring the use of PPE include but are not limited to:

- General laboratory work, closed toe shoes, laboratory coats and latex or nitrile gloves shall be worn.
- Plastic face shields, thermal protective gloves and closed toe shoes for working with liquid Nitrogen (LN₂).
- Clear plastic face shields and protective latex or nitrile gloves for working with UV light sources and the DNA gel imager.
- Safety glasses, protective latex or nitrile gloves for working with hazardous chemicals.
- Dispensing of flammables, concentrated acids or bases, and formaldehyde solutions is to be done in the chemical hoods.

COMPRESSED GAS CYLINDERS

Compressed gas cylinders must always be secured to a wall or other non-moveable or stable object to prevent toppling. A compressed gas cylinder which topples over runs the risk of shearing off the flow-restricting valve, thus producing an uncontrolled rocket.

HAZARD COMMUNICATION

The Laboratory Manager or designated Safety Officer will inform employees and guest researchers of the hazards associated with the chemical, physical and biological agents present in the laboratory by means of Environmental Health and Safety (EHS) Plan, Material Safety Data Sheets (MSDS), Package Inserts, Product Technical Sheets and/or other means. This information will include the type and location of PPE that must be used when handling hazardous agents, and the correct and safe operation of equipment which has the capability of causing injury, fire, release of hazardous agents, or other property damage before being allowed to use such equipment.

INSPECTIONS

Daily

It is the responsibility of every individual working in the NYSCF Laboratory to monitor the physical laboratory systems and areas to ensure a safe and functional workplace. At the beginning of each work day, the designated technicians will inspect the common laboratories for proper operation of equipment, and to identify hazardous conditions. Specific areas to be monitored include:

- CO₂ / LN₂ supply tank storage and connections
- Liquid and Solid Biohazardous waste collection systems
- Refrigerators and Freezers
- Presence of liquid / solid spills
- Chemical and BSL Hood operation
- Chemical and Hazardous waste storage areas
- Sharps Containers

The presence of improperly stored waste material, clutter, dirt and/or objects that impede general movement about the laboratory area and specifically access to first aid kits, fire extinguishers or emergency evacuation routes will be brought to the attention of the Laboratory Director or Safety Officer and corrected immediately.

Weekly

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Monthly

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Bi Annually

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Annually

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SAFETY PERFORMANCE REVIEW

The Laboratory Safety Officer will review the results of daily, weekly and monthly inspections and any injury or incident reports, to look for signs of developing patterns of unacceptable conditions and/or actions. Such evidence (for example) might manifest itself as recurrent notations of poor housekeeping or chronically blocked access to a particular fire extinguisher. These notations might suggest an ulterior cause (such as a lack of space) which forces workers to block access. Investigation into probable ulterior or root causes of an unsafe condition allows the investigator greater latitude in creating an effective solution to the problem.