Human Cell Lines

Risk Group: Requires BSL-2 practices

Health Hazards

Human cells originate from various human tissues. Primary cells are cells that have been taken directly from the source tissue and have not been adapted to tissue culture. Cell lines are cells that have been passed through culture at least once and may be more adapted to cell culture conditions.

Human materials, including cell lines, are considered potentially infectious materials by the Occupational Safety and Health Administration (OSHA) as defined in the Bloodborne Pathogen Standard and a 1994 interpretation of The Standard and its application regarding human cell lines. They are considered biohazardous meaning they have the potential to carry and transmit bloodborne pathogens.

Furthermore, the CDC's Biosafety in Microbiological and Biomedical Laboratories (BMBL), makes the recommendation that all human and non-human primate cells and tissues be handled using biosafety level 2 practices. Due to limitations in tests for and inactivation of every known and unknown pathogen, standard precautions and BSL 2 practices must be followed.

Mode of Transmission

Likely modes of transmission include direct contact with broken skin or across the mucous membranes (eyes, nose, mouth and urogenital tract), parenteral inoculation through sharps injury, inhalation or ingestion of aerosolized contaminated materials.

Administrative Controls

- Access to the laboratory shall be restricted, doors must remain closed during experimentation.
- Signs and labels incorporating the biohazard symbol must be posted at the entrance of the laboratory where agent is being used and on any equipment that may be used to manipulate the agent.
- ALL laboratory personnel must be advised of potential hazards present.
- ALL laboratory personnel, including Principle Investigators, must be trained in the proper handling, use and disposal prior to working with Human materials.

- Employees must be offered the Hepatitis B vaccination free of charge.
- PPE must be made available to employees.
- A tuberculocidal disinfectant must be available and used appropriately.
- Engineering controls must be made available.
- All laboratory personnel must remove lab coats, discard gloves in the proper biological waste container and wash hands thoroughly before exiting the lab.

Engineering Controls

- All work with ***Human Cells and Materials*** must be performed in a BSL-2 laboratory and require an annually **Certified Class II BSC.** If circumstances require an exception, contact the Biosafety Officer.

- **NO** open-bench work!
- **Biohazard Sharps Containers** shall be available to dispose of sharps waste, including broken glass, needles, blades, etc.
- **Centrifugation** must be performed in closed containers and using **sealed rotors or safety cups** to minimize the risk of aerosol generation. Samples must be placed into and/or removed from cups within a BSC.

- **Vacuum:** all vacuum lines must be **fitted with a HEPA filter** and a **vacuum flask**, containing the appropriate tuberculocidal disinfectant in a volume sufficient to provide the recommended final concentration for that disinfectant when the flask is near full. At the end of the work session, aspirate a small volume of concentrated disinfectant through the vacuum tubing, into the vacuum flask. The vacuum flask must sit for a minimum time of 30 minutes prior to drain disposal.

- **Vortexing:** must be done in BSC.

- **Pipetting:** Aerosol resistant (filtered) tips must be used when pipetting.

- **Sharps (ONE-TIME USE):** All sharps should be immediately disposed of in to a sharps container (located within the BSC). Needles must never be recapped.

Personal Protective Equipment

The following PPE must be worn at **ALL** times when handling ***Human Cells and Materials***

Gloves
Lab Coats

Safety goggles/glasses

Disinfection

A regular decontamination schedule of surfaces and equipment must be established.

- **Disinfectants:** 10% Sodium Hypochlorite (1:10 dilution 5.25% household bleach, such as Clorox)
- **Contact time:** 30 minutes before cleanup

Disposal

Liquid waste may be treated by autoclaving or with exposure to bleach (final concentration volume 10%) for 30 minutes or longer before disposal down the sink.

Solid biohazardous waste, such as culture vials, plates, plastic tubes, etc., are disposed of into an autoclave bag, autoclaved for 60 minutes at 121°C under 15lbs psi of steam pressure, sealed, and labeled, and placed in a biohazardous box-bag unit for pickup by EH&S.

Sharps waste, such as broken glass, pasteur pipets, razor blades, and needles, are disposed of into an approved biohazard sharps containers, autoclaved for 60 minutes, placed in a box- bag unit for pickup by EH&S. NEVER RECAP NEEDLES

Practices for Animal Injections

Procedures involving Human materials must be conducted in a biosafety cabinet when possible. Work with animals will require added precautions as determined by the Institutional Animal Care and Use Committee (IACUC).
Animal materials that have been exposed to Human cells or materials must be disposed of in the biohazardous waste stream.

Spill and Exposure Procedures

See pages 5-7 of the Laboratory Specific Biosafety Manual

Medical Surveillance

All laboratory personnel must be advised by the PI on the health hazards of the ***Human Cells and Materials*** prior to starting work within the laboratory. Personnel must be made aware of the signs and symptoms of infection. In the event of an exposure or potential exposure, personnel must seek medical attention. The medical treatment provider may

require continued self-monitoring of symptoms or further testing, such as serology. Follow-up visits may be required.

First Aid/Treatment

If an exposure incident involving a parenteral or transcutaneous injury occurs, immediately rinse the area with cool running water and wash with soap while applying pressure to encourage bleeding from the wound. After thoroughly rinsing the area, apply antiseptic and a clean dressing. Report the incident to a supervisor and seek medical attention.

If an exposure incident involving a mucous membrane (eye, nose, mouth or urogenital tract) splash occurs begin rinsing the area with cool water right away and continue to rinse for 10-15 minutes. Report the incident to a supervisor and seek medical attention.

Agent: *Human Cells and Materials* Training Record

I have reviewed and understand the risks associated working with *Human Cells and Materials*. I understand that my signature below indicates I agree to comply and work safely with the said agent.

Lab Personnel	Training Date	Signature