

Requirements on the Use of Human Cell Lines for Laboratory Personnel

Introduction

Human cell lines are commonly used in biomedical research, yet appropriate biosafety requirements for handling human cell lines are often subject to debate within the scientific community. In order to clarify the University's position on this matter, the Institutional Biosafety Committee has created the following requirements.

Background

In 1991, the Occupational Safety and Health Administration (OSHA) issued the Bloodborne Pathogens (BBP) Standard to protect employees who have occupational exposure to human blood or other potentially infectious materials. While human blood, most body fluids, unfixed human tissues and organs were clearly included within the scope and application of the standard, the inclusion of human cell lines was ambiguous.

In 1994, OSHA issued an interpretation of the applicability of the BBP Standard towards human cell lines. According to the interpretation, human cell lines are considered to be potentially infectious and within the scope of the BBP Standard unless the specific cell line has been characterized to be free of hepatitis viruses, HIV, Epstein-Barr virus, papilloma viruses and other recognized bloodborne pathogens.¹ In alignment with this interpretation, the American Type Culture Collection (ATCC) recommends that all human cell lines be accorded the same level of biosafety consideration as a line known to carry HIV.² Moreover, the Fourth Edition of the CDC publication, *Biosafety in Microbiological and Biomedical Laboratories (BMBL)*, recommends that human and other primate cells should be handled using Biosafety Level 2 (BSL2) practices and containment.³

In consideration of the aforementioned regulatory interpretation and consensus guidelines and other factors, the Carnegie Mellon University Institutional Biosafety Committee has adopted the following requirement in regards to the use of human cell lines.

Requirement

All cell and organ cultures of human origin, including well established cell lines, shall be handled in accordance with the OSHA Bloodborne Pathogens Standard and under Biosafety Level 2 (BSL2) containment.

References

1. OSHA Letter of Interpretation, URL:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=21519
2. American Type Culture Collection Frequently Asked Questions, URL:
<http://www.atcc.org/TechnicalInfo/faqCellBiology.cfm#Q53>

3. Biosafety in Microbiological and Biomedical Laboratories, 4th Edition, URL:
<http://www.cdc.gov/OD/OHS/biosfty/bmbl4/bmbl4toc.htm>