# I. Introduction

This document provides essential information for researchers regarding work with human pathogenic Adenovirus and Adenoviral vector systems in the lab and in animal models. The IBC will determine the final Biosafety Level (BSL) and/or Animal Biosafety Level (ABSL) based on risk assessment. The work practices outlined in this document pertain to work with wild type or recombinant adenovirus, adenoviral vectors, and cells treated with adenovirus.

# II. Adenovirus

Adenovirus is a human pathogen and classified in the *NIH Guidelines* as a Risk Group 2 agent. Adenoviruses most commonly causes respiratory illness; however, depending on the infecting serotype, may also cause various other illnesses, such as gastroenteritis, conjunctivitis, cystitis (bladder infection), and rash illness. Occupational exposure to adenovirus is generally through aerosols, fomite contact, fecal-oral route and percutaneous exposure. Adenovirus can survive for prolonged periods outside of host body, up to 8 weeks on environmental surfaces at room temperature. Work with adenovirus generally must be conducted at BSL-2. The SDSU Institutional Biosafety Committee (IBC) will determine the final BSL of work involving Adenovirus based on risk assessment.

# III. Recombinant Adenoviral Vectors

Work involving adenoviral vectors will be evaluated for potential to generate:

- replication/competent adenovirus
- aerosols
- oncogenesis from the transgene
- other risk factors.

Work with adenoviral vectors generally must be conducted at BSL-2, but the IBC will determine the final BSL of work based on risk assessment.

# V. Safe Work Practices

In addition to complying with the corresponding facility and work practice containment as specified in the *BMBL: Section IV – Laboratory Biosafety Level Criteria* and if applicable, *NIH Guidelines*, work practices and containment for adenovirus require the following:

- All vacuum lines must be fitted with a HEPA filter (e.g. “Vacushield” in-line hydrophobic filter, Product #4402 from Gelman Sciences)
- No work with adenovirus is permitted on the open bench. A biosafety cabinet must be used for all manipulations including, but not limited to:
    - pipetting
    - harvesting infected cells for RNA/DNA/proteins
    - loading and opening containers
    - initial delivery of vector in animal hosts

- Reduce potential of replication competent adenovirus by using a late generation vector systems utilizing multiple plasmids
- The following PPE must be worn when working with adenovirus:
    - Gloves
    - Wrap around outer clothing when introducing vector into animals or performing necropsy. Lab coats are adequate for tissue culture manipulations in a biosafety cabinet
    - Goggles (not to be confused with safety glasses)
    - N-95 Respirator, to be used with concentrated titers or any procedure outside of the Biological Safety Cabinet (contact EH&S for further information) including animal work
- Materials transported outside of the lab must be contained within a sealed, leak-proof secondary container affixed with a biohazard sticker

# VI. Animal Research

Any work involving animals with adenovirus must be approved by the IACUC and the IBC. Work must generally be conducted at ABSL-2, but the IBC will determine the final ABSL of work based on risk assessment. The following work practices and containment are required:

- Safety-engineered sharps must be used for injections (self-sheathing syringes, luer-lock syringes, etc). Any use of non-safety engineered sharps for injections must be documented and approved by the IBC, typically in the BUA.
    - Sharps must be disposed in an approved sharps container immediately following use
    - Sharps must not be recapped or manipulated in any way prior to disposal
- Animals should be restrained by chemical or physical means prior to administering injections
- If animals were euthanized at ABSL-2, then necropsy must also be performed at ABSL-2

Infected animals may excrete adenovirus, especially in the first 72 hours after infection. After 72 hours, the IBC may consider allowing animals to be housed in an ABSL-1 facility.

Special training must be given to all research personnel and animal husbandry personnel on adenovirus, the hazards associated with the work, required practices and procedures and proper handling of bedding, cage washing, and all other husbandry materials associated with the experiment.

# IX. Decontamination and Disposal

Freshly prepared 10% bleach with a contact time of 10 minutes is an effective method of decontamination. The IBC may also approve an alternative decontamination method in the BUA.
The following waste disposal practices must be followed:

- Surplus adenovirus, adenoviral vectors, or cells treated with adenovirus must be disposed as biohazardous waste
- Disposable materials such as cell culture dishes, tubes, pipet tips, etc. must be disinfected using an approved liquid disinfectant for an appropriate contact time prior to disposal as biohazardous waste.

- Exception: sharps should be disposed directly in a sharps container without decontamination

## X. Spill Response

Small spills of adenovirus or related material should be cleaned and deactivated with 10% bleach with 10 minute contact time or other approved disinfectant effective against adenovirus. Appropriate PPE must be worn during clean-up. Waste generated during spill clean-up must be disposed as biohazardous waste.

For larger spills, contact EHS at x46778