SDSU Institutional Biosafety Committee

Guidelines for Working with Adeno-Associated Virus (AAV) in Animal Models at ABSL1

Introduction

Adeno-Associated Virus (AAV) is a common viral vector used in animal models. For work with animals, researchers generally use a recombinant AAV for vector work. Adeno-associated viruses (AAV) belong to the family Parvoviridae. They are non-enveloped, single-stranded DNA viruses that can only replicate in the presence of a helper virus, adenovirus (Ad), herpes virus, or vaccinia. Wild-type AAV may integrate into the host-cell genome and remain latent until a helper virus supplies the necessary genes for replication.

Purpose

This document provides safe work practices for researchers and animal care personnel who work with rodents infected with recombinant AAV at ABSL 1 with the following vector requirements:

- Transgene does not express an oncogenic protein or toxin
- rAAV/AAV are not co-infected with a helper virus

Occupational Exposure Hazards

The primary occupational routes of exposure for AAV in animal models include aerosol exposure and accidental injection. While AAV is not associated with human diseases, there is research showing an association AAV in male infertility and infection in human embryos from the wild type virus.

Safe Work Practices

The Principal Investigator is responsible for conducting a thorough risk assessments for each individual experiment. Written procedures must be prepared with the following safe work practices in mind:

1. Administrative Controls
    - Work involving AAV in rodents must be included in the APF and approved by the IACUC.
    - Principal investigators shall develop and implement lab specific procedures in writing. Personnel must have documented training and must display competency before conducting any work.
    - Personnel with active or chronic Adenoviral infections should not work with AAV.
2. Engineering Controls
    - Safety-engineered sharps should be considered for AAV injections (self-sheathing syringes, luer-lock syringes, etc.). Any use of non-safety engineered sharps for AAV 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 physical or chemical means prior to administering injection.

3. Personal Protective Equipment (PPE): Personnel involved with any tasks where potential for AAV exposure exists must wear, at a minimum, the following PPE:

- lab coat
- gloves
- safety glasses or goggles

4. Work Methods

- Immediately after injection, animals should be housed as follows:
    - disposable caging
    - housed on non-ventilated rack
    - label cage card with "AAV" and date of exposure
- For 72 hours, all animal husbandry is the responsibility of the researchers
- Transfer of animals into a new cage after 72 hours is the responsibility of the researcher
- After 72 hours, the animals should be transferred to regular ventirack cage using the cage changing hood and returned to the vent rack.

5. Waste Disposal

- Biohazardous Waste Disposal is the responsibility of the researcher until after the first cage change 72 hours after AAV injection.
- Surplus AAV must be disposed as a biohazardous waste.
- Bedding materials and disposable caging generated following administration of AAV for 72 hours, under normal procedures and circumstances, must be disposed of as biohazardous waste. Carcasses contaminated with AAV during the 72 initial hold period must be disposed as biohazardous waste.
- All contaminated sharps waste materials must be placed in proper sharps container and disposed of as biohazardous waste.

6. Spills:

- Small spills of AAV should be cleaned and deactivated with 10% bleach with 10 minute contact time or other approved disinfectant effective against AAV. Appropriate PPE must be worn during clean-up. Waste generated during spill clean-up must be disposed as biohazardous waste.
- For larger spills of AAV, contact EHS at x46778.