

Use of Adeno-associated virus (AAV) & Adeno-associated viral vectors

Purpose:

To provide guidance for the use of Adeno-associated virus (AAV) and Adeno-associated viral vectors in the laboratory and animal facility environment.

Guidance Information:

Wildtype AAV usually requires another virus for replication, therefore it can generally be considered Risk Group 1. The NIH Guidelines considers all serotypes of adenovirus-associated viruses, and recombinant or synthetic AAV constructs in which the transgene does not encode either a potentially tumorigenic gene product or a toxin molecule and are produced in the absence of a helper virus, to be Risk Group 1 agents. As per Policy for Select Opportunistic Pathogens (IBC Policy UW 6102), ABSL-1 laboratory precautions are acceptable for gutted AAV vectors unless higher hazard transgenes (e.g., oncogenes, toxins) are expressed or high titers and/or large volumes of virus are used, in which case ABSL-2 status is required.

Precautions:

Precautions for **ABSL-1**:

1. Personal Protective Equipment (PPE) Required: Lab coat, gloves (standard disposable nitrile or latex gloves), and safety glasses.
2. Animal housing and bedding/wastes:
 - a. Animals that have received vectors should be housed in microisolator or similar containment caging.
 - b. An animal transfer station (ATS) is sufficient for opening cages and handling animals. Signage is required on each individual cage containing the biohazard symbol and "Agent, End Date, and Disposal Method". Signs are removed or crossed out when special handling time has ended. *Cage signage available at www.ehs.wisc.edu
 - c. Animal waste should be autoclaved for at least 72 hours post exposure or until the initial cage change that occurs after the 72-hour time period.

Precautions for **ABSL-2**:

1. Personal Protective Equipment (PPE) Required: Lab coat, gloves (standard nitrile or latex) and safety glasses. When working outside of containment, an N95 respirator* and goggles are worn. *Respirator use requires medical clearance and fit testing through Occupational Medicine.
2. Animal housing and bedding/wastes:
 - a. Animals should be housed in microisolator or similar containment caging.
 - b. A biological safety cabinet (BSC) is needed when opening cages and handling animals.
 - c. ABSL2 signage is required to be posted on the housing and procedure room where this material is present.

- d. Cage labels are required on each individual cage containing the biohazard symbol and “Agent, End Date, and Disposal Method”. Cage labels are removed or crossed out when special handling time has ended. *Cage labels available at www.ehs.wisc.edu
- e. Decontamination of animal waste, caging and any other contaminated equipment is required before disposal. Autoclaving or a suitable chemical disinfectant is used prior to disposal into standard waste streams. Caging must be either bagged into biohazard bags for transport to the autoclave or must remain sealed during transport and at all times prior to autoclaving.

References:

“NIH Guidelines for Research Involving Recombinant and Synthetic Nucleic Acid Molecules”, National Institutes of Health, Appendix B, current edition.

https://osp.od.nih.gov/wp-content/uploads/NIH_Guidelines.pdf

Institutional Biosafety Committee Policy 6102. University of Wisconsin-Madison, Section 4.6, current edition.

<https://policy.wisc.edu/library/UW-6102>

“Biosafety in Microbiological and Biomedical Laboratories”, Centers for Disease Control and Prevention, current edition.

<https://www.cdc.gov/labs/bmbl/index.html>