



GUIDELINES FOR WORKING WITH REPLICATION INCOMPETENT LENTIVIRAL AND ADENO-ASSOCIATED VIRAL VECTORS IN ANIMALS

Default standards for containment and management of rodents administered with Replication-Incompetent Lentiviral and Adeno- Associated Vectors

Currently used replication-incompetent lentiviral and adeno-associated viral (AAV) vectors are used within BSL2 conditions within the laboratories. Due to their replication-incompetent status and inability to replicate (even in wild-type form) in rodents, long-term use in infected rodents within animal biosafety 1 (ABSL1) conditions is generally considered acceptable. However, the method by which animals are transferred from animal biosafety level 2 (ABSL2) following surgery, a time in which they may still have infectious virus on their wound or body secretions that could be transmitted to research staff, and when they can be 'stepped-down' to ABSL1 conditions requires clarification.

To ensure the ongoing protection of our research staff with the increasing use of viral vectors we have adopted the following guidelines for work with lentiviral and adeno-associated viral vectors. These guidelines were based upon the NIH Recombinant DNA Advisory Committee (RAC) Guidance Document on Research with Lentiviral Vectors (document can be viewed at http://www4.od.nih.gov/oba/rac/Guidance/LentiVirus_Containment/index.htm). Unless otherwise specifically approved by the Institutional Health and Biosafety Committee (IHBC) of Emory University, the use of lentiviral-based viral vectors and AAV for gene delivery in animal models requires the following procedures:

NOTE: guidelines pertain only to replication-incompetent lentiviral vectors produced with established 3 and 4-plasmid systems or AAV vectors produced without helper virus that pose minimal risk of replication-competent virus for the purpose of gene transfer into animals.

- 1) The initial delivery of viral vector should be performed under laboratory BSL2 conditions, and animals should be housed in ABSL2 conditions in filter top cages and in designated containment areas.
- 2) Transfer of recipient animals from laboratory to the animal research facility containment site must be performed using filter top cages.
- 3) Once the period of potential infectivity is over, the containment level can be reduced to ABS1 provided this has been requested and approved by IHBC and where the following procedures are involved:
 - a. Following surgical infection with the lentivirus or AAV vector, animals are housed in ABSL2 conditions for at least 72 hours following infection.
 - b. The ABSL2 conditions will be arranged with the director or designee of DAR and the veterinary staff at each research facility. These will typically be provided as a temporary, quarantine-type ABSL2 cubicle that the animals will be held in during the 72 hour period. In special cases in arrangement with vet staff, specified ABSL2 containment animal racks may be used within an otherwise ABSL1 designated vivarium room.
 - c. There will be specific signage / labeling on each ABSL2 cage stating 'ABSL2 Biohazard Containment – Quarantine for Lentiviral (or AAV) Vector Research', and these cages will not be allowed out of the ABSL2 containment space.
 - d. On the fourth day following infection, animals can be transferred to ABSL1 standard conditions. The animals will be transferred to a clean cage, and the ABSL2 cage will stay in the ABSL2 quarantine space for appropriate waste disposal and cleaning. Once animals have been transferred to ABSL 1, they can be used within ABSL 1 behavioral facilities, etc. as with other ABSL1 animals.