

FLSC Standard Operating Procedures for Husbandry and Safety Practices for Mice Infected with Viral Vectors

Purpose

The use of viral vectors to introduce a targeted gene into a cell population is used in the production of transgenic animals and to alter the genome of specific tissues. Guidelines and safeguards for using the parent viral strains are only broadly applicable to the advanced, later-generation agents that have been specifically modified to deliver target genes without generating associated vector-induced disease or uncontrollable replication. As more researchers are utilizing this tool, there is a need for operating procedures that are not based on the biologic properties of the parent (virulent and replicative) strains of the vectors but based on a risk assessment derived from studies quantifying the shedding and potential of human exposure to the viral vectors.

Initial Procedure (from time of infection through day 7 post infection)

1. All animals injected with viral vectors must be housed in disposable cages for one week post injection in BSL-2 conditions and handled with BSL-2 procedures at all times. Excluded from this requirement are animals administered cells transduced with virus to express foreign genes.
2. Personal protective equipment (PPE) required includes: disposable gown, particulate filter mask, safety glasses and disposable Nitrile gloves. PPE will be placed in biohazard trash after use. Do not reuse PPE.
3. All work with infected or animals transplanted with transduced cells must be done in a Biosafety Cabinet (BSC) suitable for BSL-2 work.
4. Soiled cages and water bottles must be placed intact into an autoclave bag and autoclaved prior to disposal.
5. Rooms or cubicles housing animals inoculated with viral vectors must have BSL-2 signage.
6. Cages containing animals must be clearly labeled with a biohazard label indicating viral vector use.

Procedure (beginning day 8 post infection)

1. Viral vector treated animals will be transferred to standard caging after the initial week in disposable cages.
2. PPE required includes: gloves, particulate filter mask, and lab coat.
3. Caging will be handled at BSL-1 with routine sanitation practices.
4. Cage cards will clearly indicate viral vector use and date of infection. Biohazard labels are not needed.

Safety Precautions:

1. A recapping device **MUST** be used with any syringe and needle used for injection of animals with cells that have been transduced with adenovirus.
2. All needles and syringes will be disposed as an intact unit to avoid creation of aerosols.
3. All counters and tables will be cleaned completely with 30% bleach. Any stainless steel surfaces wiped with bleach must be wiped dry then rinsed with 70% alcohol to prevent pitting of the metal.
4. The BSC must be UV light sterilized whenever available.
5. Wash hands immediately after working with the animals.
6. Any remaining cell suspensions or media that was in contact with virus will be removed from the animal facility and discarded by the Investigator according to their biosafety protocol.
7. Animals injected with vectors must have the date of death, animal ID#, and infectious agent clearly written on the carcass bag prior to disposal. Carcasses returned to FLSC will be autoclaved prior to RM&S pickup.
8. This SOP includes but is not limited to the use of: Deletion Mutant Rabies Virus (DMRV), Adeno-Cre-IRES-GFP, Adeno-GFP type 5 viral stocks, and Adeno-Associated Virus Chr2 (AAVCR).

Reference

1. Reuter, JD, Fang, X, Ly, CS, Suter, KK, Gibbs, D. Assessment of Hazard Risk Associated with the Intravenous Use of Viral Vectors in Rodents, Comparative Medicine 2012; Vol 62, No. 5, pp 361-370.