UM IBC Guide to Animal Housing Containment

Note: The IBC reserves the right to recommend a different animal housing containment from what is listed below, if deemed necessary through IBC review of a registration.

Transgenic animals

To determine the appropriate animal housing containment for your work with transgenic animals, please consider the following:

Are you introducing any additional rDNA into your transgenics?

1) If not, **BL1N** animal housing containment is appropriate (see the NIH *Guidelines* Section III-D-4 for cautions and additional information: http://oba.od.nih.gov/oba/rac/Guidelines/NIH_Guidelines.htm#_Toc7261570)

2) If you **will** be introducing additional rDNA into your transgenics, please refer to the list below to determine the appropriate animal housing containment and duration.

Animals injected with recombinant virus or cells containing rDNA

In general:

- Handling and direct injection of viral vectors should be done at BL2
- Transfer of cells transfected with replication defective vectors is safer than direct vector injection
- Limit down-grading of containment for housing animals to the use of vector systems in which the potential for replication-competent revertants is very low, or to situations where that replication-competent revertant would be incapable of replicating anyway
- Most fully replication competent viruses are cleared within two to three weeks from immunocompetent hosts
- Please note the containment conditions for animal work are conditioned on proof that each batch of virus used is substantially free of replication competent virus. ULAM may require such proof prior to commencement of animal experimentation.

Please take special note of the containment level durations identified for certain constructs below.

CELLS CONTAINING rDNA (TRANSFECTED/TRANSDUCED with rDNA)
BL1N animal housing containment is appropriate **IF:**
- The cells are transfected/transduced with **replication-defective vectors,** and
- The **transfection/transduction occurs one day prior to animal administration,** and
- The **transfected/transduced cells are washed** prior to animal administration.

PLASMID DNA

- Mice receiving plasmid DNA by direct injection or electroporation **may be housed at BL1N**.

RETROVIRUS AND LENTIVIRUS VECTORS

- > 0 risk, though urine and feces are not major routes of transmission
- Membrane-bound viruses tend not to hang around unless there is a continued source of new virus
- Replication-competent retrovirus or lentivirus is the main risk
- Handle vector in lab at BL2
- Clean injection site with virucidal agent

Animal housing:

- Animals injected with retroviruses or lentiviruses or receiving them intranasally, or topically **need to be kept at BL2-N for a minimum of 3 days/72 hours, assuming there is no replication-competent retrovirus or lentivirus.**
- Animals injected with retroviruses or lentiviruses intracranially, intraarticularly, or intraocularly **may be housed at BL1N.**

ADENOVIRUS VECTORS

- Humans given vector through IV showed none in biological fluids after 48 hours
- Wild-type form of adenovirus only permissive in humans so unlikely it would be worse for animals
- Handle vector in lab at BL2
- Clean injection site with virucidal agent

Animal housing:

- If administration of adenovirus to animals is intravenous, into the pericardial space, intranasal, or topical, **housing should be BL2-N for 3 days/72 hours.**
- Animals given adenovirus intracranially, subcutaneously, intraarticularly, or intraocularly **may be housed at BL1N.**

ADENO-ASSOCIATED VIRUS (AAV) VECTORS

- May keep transduced animals in a clean facility alongside non-transduced animals, with transduced animals in cages with filters built into lids
- Handle vector in lab at BL2
- Clean injection site with virucidal agent
- **Animal housing: BL1-N containment acceptable**

HERPES SIMPLEX VIRUS (HSV1 AND HSV2) VECTORS

- Handle vector in lab at BL2
- Clean injection site with virucidal agent
- For replication-competent HSV viral shedding should end in 7-8 days
- **Animal housing:**
  - **<u>Not</u> replication-competent HSV: BL2-N for a minimum of 3 days/72 hours.**
  - **<u>Replication-competent HSV</u>: BL2-N for a minimum of 9 days.**

PSEUDORABIES VIRUS (PRV) VECTORS

- PRV infected animals do not secrete PRV in feces or urine
- PRV strains used for tracing experiments are attenuated; most are based on live vaccine strains. They are not virulent strains.
- Isolate infected animals from uninfected animals, in separate cages or even better, separate rooms
- Handle vector in lab at BL2
- Clean injection site with virucidal agent
- **Animal housing: BL1-N containment acceptable**

RABIES VIRUS

Mice injected with **modified defective pseudotyped rabies virus** (pseudotyped for avian, rabies G deleted) **may be housed at BL1N**.

SINDBIS VIRUS VECTORS

- Mosquito-borne virus
- Handle vector in lab at BL2
- Clean injection site with virucidal agent
- **Animal housing: BL2-N for duration.**

GUIDANCE ON VECTORS DERIVED FROM ANIMAL VIRUSES:

Vectors derived from animal viruses can potentially be transmitted to healthy animals of the same species that are housed in the animal facilities. As a result, animals given these vectors should be housed at BL2N for 3 days/72 hours even though the vectors pose little risk to humans.

Mouse derived vectors:

- Mouse adenovirus type 1 (horizontal transmission demonstrated)
- Gamma herpes virus 68 (horizontal transmission demonstrated)
- Maloney murine leukemia virus (no horizontal transmission)

Mice given replication-defective mouse derived vectors should be housed at BL2N for 3 days/72 hours.

Vectors derived from other species:

- Feline retrovirus
- Avian retrovirus

Mice given replication-defective vectors derived from species other than mice should be housed at BL2N for 3 days/72 hours. If replication-defective vectors are used in the natural host species, the animals should be housed at BL2N for the duration of the experiment.