

Name: Rabies Viral Vector

BSL: 2+

1. Mode of Transmission to Humans (e.g. inhalation, inoculation, mucous membrane exposure, etc.):

The rabies viral vector currently used at UCSD is based on an attenuated strain of the wild type rabies virus used as a vaccine in Europe to control rabies in foxes. This vaccine strain SAD B19G is further attenuated by removing the wild type glycoprotein gene from the resulting viral vector which results in a replication defective viral vector, however, a low risk of replication competent contamination exists.

The most likely sources for exposure of laboratory and animal care personnel are accidental parenteral inoculation, cuts, or needle sticks with contaminated laboratory equipment, bites by infected animals, and exposure of mucous membranes or broken skin to infectious tissue or fluids.

Wild type rabies is thought to have caused laboratory infection via exposure to large quantities of aerosolised rabies virus and therefore all aerosolizing procedures with the viral vector must be done in a biosafety cabinet.

There are a few pseudotyped versions used at UCSD so it is critical to be familiar with the type used in your lab.

- 1) Rabies glycoprotein gene is deleted but the viral vector contains the rabies glycoprotein coat (infects human nerve cells)
- 2) Rabies glycoprotein gene is deleted and the viral vector contains avian glycoprotein coat (is not known to infect human cells)
- 3) Co-transformed cells or animals with rabies viral vector and various viral vectors carrying other genes that must be evaluated by the Institutional Biosafety Committee for increased risk.

2. Description of the Human Disease associated with this agent or vector (including instances of laboratory acquired infections):

The wild type rabies virus can cause an acute infection, marked by progressive encephalomyelitis, and is usually fatal. The initial symptoms of rabies resemble those of other systemic viral infections, including fever, headache, malaise, and upper respiratory and gastrointestinal tract disorders. This prodromal phase typically lasts about 4 days, but can last as long as 10 days before specific symptoms develop. Almost all cases of (untreated) clinical rabies are fatal.

Two cases of laboratory-acquired wild type rabies infections have been reported and are thought to have been acquired via high concentrations of aerosolized virus across mucous membranes. No cases of laboratory-acquired infections have been reported in the last several decades.

There is no documented LAI involving the replication defective rabies viral vector.

3. Personnel Protection Required (minimum requirement):

	Laboratory	Vivarium		Laboratory	Vivarium
Safety Glasses	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Shoe Covers	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lab Coat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Face Shield	<input type="checkbox"/>	<input type="checkbox"/>
Gloves	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Cap/Head Cover	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Goggles	<input type="checkbox"/>	<input type="checkbox"/>	Mask	<input type="checkbox"/>	<input type="checkbox"/>
Disposal Gowns	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other - Describe:	Betadine must be available in the laboratory to be used in the event of a percutaneous exposure.				

4. Engineering Controls (minimum requirement):

	Laboratory	Vivarium		Laboratory	Vivarium
Autoclave	<input type="checkbox"/>	<input type="checkbox"/>	Engineered Sharps Protection	<input type="checkbox"/>	<input type="checkbox"/>
BioSafety Cabinets	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Sharps Containers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Closed Centrifuge Rotors	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Closed Centrifuge Tubes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Other	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Other - Describe:	A Biosafety Cabinet must be used for all aerosol-generating procedures				

5. Disposal Procedures:

Liquids: add bleach to a final concentration of 10% bleach solution (Clorox or other bleach with Cal EPA registration number), let sit for 30 minutes, dispose of in sink (best while running water). Aspirator flasks: bleach is added to aspirator flasks initially so that the final concentration will be 10%. These must be emptied at least weekly.

Solids: disposed of in labeled, double red biohazard bags held in labeled, rigid, covered containers. Transport to biohazard collection area in a closed rigid container for final disposal by EH&S. These must be emptied at least weekly.

6. Disinfection Procedures:

Surface: 10% household bleach solution made up fresh daily (Clorox or other bleach with Cal EPA registration number) allowing 5-minutes contact time.

OR

Surface: 75 ppm of CA EPA approved iodophor (e.g. Wescodyne) allowing 5-minutes contact time.

7. Recommended/Required Vaccinations or other Medical Surveillance:

Prior to working with the rabies viral vector, all personnel are required to be counseled through the campus Occupational Health Nurse Bobbi Sawtelle (x48225) or Center for Occupational and Environmental Medicine (COEM), which includes completion of the Rabies vaccine accept/decline form. Immunization is offered for individuals at high risk for exposure.

8. Employee Exposures- first aid procedures:

- a. Eye exposure from splash or aerosols - rinse a minimum of 15 minutes in eye wash or flush area with water.
- b. Skin exposure - wash area with soap and water for 15 minutes, then apply povidine iodine (betadine)
- c. Needle stick and/or sharps exposure - wash wound area with soap and water for 15 minutes, then apply povidine iodine (betadine)
- d. Contamination of clothing - remove the contaminated clothing and place in biohazard bag, shower with the emergency douse shower, and put on clean clothes.
- e. Spill or release - Monday through Friday, 8a - 4:30p call EH&S; after hours call Campus Police

9. Employee Exposure - seek medical follow-up from the following medical providers: (TAKE THIS ECP WITH YOU)

24-hour walk-in service:

Hospital Emergency Room Or nearest Medical Center Emergency Room

Call your campus Occupational Health contact to determine if a follow up visit is required. Most exposures will require a visit to Occupational Health.

Monday - Friday, 8a - 4:30p

Post-exposure rabies prophylaxis with HDCV or PCECV together with the administration of rabies immunoglobulin (RIG) is highly effective, although this should not be used in persons who have previously received complete vaccine regimens (pre-exposure vaccination) who require vaccination only

10. Report All Injuries, Illnesses, and Exposures to EH&S:

Report the injury incident to their immediate supervisor and complete your campus injury report form

11. Required Biosafety Training:

Viral Vector Training is required before work with this agent begins.

Laboratory specific training on hazards, exposure evaluations, and the required precautions for experimental procedures used with this agent - provided by Principal Investigator

12. Lab specific instructions: