

Note that the IBC must review each individual project involving viral vectors to determine the appropriate biosafety level prior to initiating work with the vector. The biosafety levels listed below apply to replication incompetent vector systems only for *in vitro* (during production in tissue culture) and *in vivo* (rodents only, where all experiments would be terminal). In all cases, additional biosafety precautions may be recommended.

The IBC always recommends testing for replication competent virus (RCV) in the vector stock. However, prior RCV testing of vector stock may be required in order to house injected animals at Animal Biosafety Level-1 (ABSL-1) as indicated below.

Viral Vector	Risk Group	Biosafety Level		Special Requirements	Acceptable RCV levels
		<i>in vitro</i>	<i>in vivo</i> (rodents)		
Adenovirus	2	BSL-2	ABSL-1 w/ special precautions ¹	Animals may be housed at ABSL-1 ¹ if vector stock is tested for RCV and found to be negative before injection	<1 PFU of RCV/10 ⁶ PFU recombinant virus
			ABSL-2	Without RCV testing of vector stock, or if stock tests positive, animals must be housed at ABSL-2	
Murine Retrovirus-Ecotropic	1	BSL-1	ABSL-1 w/ special precautions ¹	Animals may be housed at ABSL-1 with special precautions ¹	RCV testing is not required
Murine Retrovirus-Amphotropic (or VSV-G pseudotyped)	2	BSL-2	ABSL-1 w/ special precautions ¹	Animals may be housed at ABSL-1 ¹ if vector stock is tested for replication-competent virus (RCV) before injection	0 RCV in 10 ⁶ infectious units
			ABSL-2	If insert codes for a toxin ² or oncogene ³ , or if stock is not tested for RCV, animals must be housed at ABSL-2	
Lentivirus-3rd generation (3 or 4 vector system)	3	BSL-2	ABSL-1	-Injection should take place using BSL-2 containment and practices, and needle protective devices should be used for injection procedures -After injection of animals, the injection site should be cleansed with 70% ethanol and then animals should be placed into a secondary container without bedding. Once injection site is dry, animals can be returned to original cage(s) and returned to the ABSL-1 animal facility. The secondary container should also be cleaned with 70% ethanol.	RCV testing is not required, however, testing with p24 ELISA assay is recommended ⁴ (sensitivity depends on assay)
			ABSL-2	If lentiviral vectors are used to infect human cells which are subsequently injected into rodents, ABSL-2 housing will be required for these animals.	

AAV (w/ adenovirus helper)	2	BSL-2	ABSL-1 w/ special precautions ¹	Animals may be housed at ABSL-1 ¹ if vector stock is tested for RCV (adenovirus) and found to be negative before injection	<1 PFU of RCV/10 ⁶ PFU recombinant virus
			ABSL-2	Without RCV testing of vector stock, or if stock tests positive, animals must be housed at ABSL-2.	
AAV (helper-free)	1	BSL-1	ABSL-1 w/ special precautions ¹	Animals may be housed at ABSL-1 with special precautions ¹	Not required

Footnotes:

¹ABSL-1 special precautions must be followed including: handling infected animals last, changing gloves after handling, clearly labeling cages and notifying DCM or DAR prior to moving animals into room;

²link to biological toxin definition on IBC website: <http://www.ohsu.edu/xd/research/about/integrity/ibc/#agentToxin>

³If not known, but can demonstrate that no oncogenic properties exist in cell culture, okay for ABSL-1 housing with testing

⁴There are labs at OHSU who routinely perform p24 ELISA tests. You may contact one of these labs for assistance:

-Dr. Ashlee Moses, mosesa@ohsu.edu

- ONPRC Virology Core - CoreyAyne Singleton, singletc@ohsu.edu or call 503-690-5568

or Greg Dissen, disseng@ohsu.edu or call 503-690-5382

For additional information regarding the safety of Lentiviral vectors, please see the NIH guidance: http://oba.od.nih.gov/rdna_rac/rac_guidance_lentivirus.html

Links to RCV testing protocols and references are available at: <http://www.ohsu.edu/xd/research/about/integrity/ibc/protocols.cfm>