

Agent Summary– Retrovirus vectors

([NIH Guidelines Appendix B-V](#) and [Biological Safety-Principle and Practices p. 512](#))

1. Precaution

Retroviral vectors are derived from the moloney murine leukemia virus (MMLV). MMLV integrates into the host genome and is present in infected cells as a DNA provirus. Retroviral vectors transduce a wide range of hard-to-transfect dividing cells.

Biosafety level 2 is recommended for amphotropic, xenotropic (chimeric), dualtropic, and pantropic strains of murine leukemia virus agents that are infectious to human cells

Biosafety level 1 is recommended for ecotropic retroviral particles that infect only mouse and rat cells.

Retroviral vectors that include marker genes such as green fluorescent protein (GFP) pose no special risk. However, vectors that include genes involved in oncogenesis, growth regulation, innate or adaptive immunity, or infectious diseases obviously carry a greater risk. A strong oncogene (e.g., ras) in a vector that is later rescued into an RCR by recombination events would recreate a human version of mouse leukemia viruses ([Retroviral vector safety](#)).

In vivo infection in humans appears to require direct injection with amphotropic or pseudotyped virus.

Recombination may occur (1) between endogenous murine retroviral sequences in the packaging cells line and (2) between vector coding sequences and the helper packaging sequences to generate infectious viral particles.

Examples of retroviral vectors are Constitutive Expression Vectors, Tetracycline-Inducible Expression Vectors (Tet-On 3G), MSCV vectors, and shRNA vectors.

2. PPE: follow SOP #2.0 donning and doffing procedure
3. Lab area : _____
4. Animal holding area : _____
5. Animal procedure area: _____