**Agent Summary: Recombinant Adenovirus Vectors**

**Agent information**

* Adenoviruses are common, non-enveloped, icosahedral viruses composed of a nucleocapsid and duplex DNA genome that can infect a broad range of human tissues and vertebrate hosts and are capable of infecting dividing and non-dividing cells. There are greater than 50 adenovirus serotypes with varying clinical disease associations: gastroenteritis, bronchitis, pneumonia, urinary tract infection and inflammation and keratoconjunctivitis.
* Adenovirus transmission is by aspiration of virus and direct or indirect mucous membrane contact.
* Adenoviruses can be genetically modified to serve as gene-delivery/expression vectors.
* Replication-incompetent (RD) recombinant adenoviruses have deletions of specific adenovirus genes that render the virus incapable of replication and allow for the insertion of a desired nucleic acid sequence.
* First generation adenovirus vectors; deletion of adenoviral E1 and E3.
* Second generation adenovirus vectors; deletion of adenoviral E1, E2, E3 and E4.
* Third generation (gutless; high capacity) adenovirus vectors; all adenoviral genes are deleted except ITR and packaging signal.
* A helper cell line or helper virus, which provides expression of the required, deleted adenoviral proteins, is required for RD recombinant adenovirus propagation.
* Replication-competent (RC) recombinant adenoviruses are lytic in the context of the specific gene expression of the target cell types, such as specific cancer cell types.
* RD and RC recombinant adenoviruses are being employed in human gene therapy programs.
* Expression of adenoviral proteins by recombinant adenoviruses may induce a strong immunological response in the subject.
* As per NIH, human adenoviruses, all types, including recombinant adenoviruses, are risk group 2 (RG2) agents. RG2 agents require Biosafety Level 2 (BSL2) containment practices.
* Recombinant adenovirus-infected animals require ABSL2 containment.

**References:**

1. *NIH GUIDELINES FOR RESEARCH INVOLVING RECOMBINANT OR SYNTHETIC NUCLEIC ACID MOLECULES (NIH GUIDELINES)*, April 2019. DEPARTMENT OF HEALTH AND HUMAN SERVICES, National Institutes of Health. <https://osp.od.nih.gov/wp-content/uploads/NIH_Guidelines.html>
2. [W.S.M Wold and K.Toth. Curr Gene Ther. 2013 Dec; 13(6): 421–433](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4507798/pdf/nihms704021.pdf).
3. [C. S. Lee, et al., Genes & Diseases (2017) 4, 43-63](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5609467/pdf/main.pdf).

**Enter the following information:**

1. Name of the Principle Investigator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Applicable IBC protocol number(s) (approved or submitted): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. List the laboratory locations (building/room[s]) for recombinant adenovirus, a BSL2 agent.
* Procedures:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Storage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
1. If introducing adenovirus or adenovirus-containing agents into animals, list the animal facility locations (building/room[s]) for these animals. ABSL2 containment is required. Confirm with ULAR that the rooms listed below are suitable for ABSL2 animals.
* Procedures:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Housing:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
1. Date of Agent Summary form completion: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_