Berns-1168 Ad5mSPC-Cre
Plasmid Origin: Dr. Anton Berns and
Kate Sutherland
pAdPL-DEST-mSPC-Cre

The vector was amplified from particles deposited by Dr. Kate Sutherland and Dr. Anton Berns in 2007.

The investigator used a replication deficient Adenovirus pAd PL-DEST from Invitrogen Life Technologies/Thermofisher. Please see below information.

Please acknowledge Dr. Anton Berns from the Netherlands Cancer Institute in any publications using this virus (a.berns2@nki.nl). Publication: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5065004/

**Inserts:**
Mus musculus pulmonary surfactant protein SP-C (SFTP2) gene (M28214) 4.8kb
Cre-recombinase coding sequence, 1.5kb.

**Vector Bio-safety Information**
At the University of Iowa, all varieties of viral vectors produced at the Viral Vector Core are required to be handled at Biosafety Level 2 (BSL2). In animal studies, adenoviral vectors require ABL2 containment. Please check with your institution’s Biosafety Officer to confirm local requirements.
The ViraPower™ Adenoviral Expression System

The ViraPower™ Adenoviral Expression System facilitates highly efficient, in vitro or in vivo delivery of a target gene to dividing and non-dividing mammalian cells using a replication-incompetent adenovirus. Based on the second-generation vectors developed by Bett et al., 1994, the ViraPower™ Adenoviral Expression System takes advantage of the Gateway® Technology to simplify and greatly enhance the efficiency of generating high-titer, recombinant adenovirus.

The plasmid, pAd-DEST, is an E1 and E3-deleted expression vector into which the gene of interest will be cloned. Expression of the gene of interest is controlled by the human cytomegalovirus (CMV) promoter (in pAd/CMV/V5-DEST) or the promoter of choice (in pAd/PL-DEST). The vector, an “all in one” adenoviral plasmid, contains the elements required to allow packaging of the expression construct into virions (e.g. 5’ and 3’ ITRs, encapsidation signal, adenoviral late genes). For more information about the pAd-DEST expression vectors, refer to the pAd/CMV/V5-DEST and pAd/PL-DEST Gateway® Vector manual.

Adenovirus enters target cells by binding to the Coxsackie/Adenovirus Receptor (CAR) (Bergelson et al., 1997). After binding to the CAR, the adenovirus is internalized via integrin-mediated endocytosis (Russell, 2000) followed by active transport to the nucleus. Once in the nucleus, the early events are initiated (e.g. transcription and translation of E1 proteins), followed by expression of the adenoviral late genes and viral replication. Note that expression of the late genes is dependent upon E1. In the ViraPower™ Adenoviral Expression System, E1 is supplied by the 293A producer cells. The viral life cycle spans approximately 3 days. For more information about the adenovirus life cycle and adenovirus biology, refer to published reviews (Russell, 2000).

Adenovirus Background:
Adenoviruses are very important tool in basic research. They are used to identify proteins role in different biological processes both in vivo and in vitro.

Characteristics:
- Episomal gene expression.
- Infects dividing and non-dividing cells.
- Transient high-level protein expression.
- Accommodates inserts of up to 7.5kb. Larger inserts can be added, provided that an equivalent part of the viral genome has been properly deleted.
- High viral titer can be produced, 1E+10 to 5E+10pfu/ml (1E+12pt/ml) to 8E+10 to 1E+11/ml (1E+13pt/ml).

Disadvantages and adverse effects:
- Elicits host immune response, thus depleting the number of transduced cells in-vivo.
- Viral particles can be neutralized by the host immune response.
- Short-term expression of the transgene due to lack of integration into the host genome.

Recombination:
The recombinant adenoviruses can revert to wild type during virus production, thus packaging replication competent particles (RCA). For this reason, each new lot produced at the core is tested for the presence of RCA by immuno-staining.

Storage Buffer:

Background on Virus production
All of our adenoviral vector preparations are made in HEK293 cells, purified by double CsCl protocol, and dialyzed and stored in our A-195 buffer. All preparations are titered on HEK 293 cells using the Clonetech Adeno-X titer kits and also tested for replication competent particles (RCA).
Hypothetical Plasmid Sequence. Sequence not provided by Dr. Berns and not confirmed by the Viral Vector Core. Unknown cloning sites are represented with N.

**pAd5PL-DEST-mSPCce**

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CATCACATATAATATACCTATTTTTGTAGTTGAAAGCCAAATATGATAATGAGGGGGTGGAGTTTGTGACGTGGCGCGGG
GGCGTGGGAACGGGGCGGGTGACGTAGTAGTGTGGCGGAAGTGTGATGTTGCAAGTGTGGCGGAACACATGTAAG
CGACGGATGTGGCAAAAGTGACGTTTTTGGTGTGCGCCGGTGTACACAGGAAGTGACAATTTTCGCGCGGTTTTAG
GCGGATGTTGTAGTAAATTTGGGCGTAACCGAGTAAGATTTGGCCATTTTCGCGGGAAAACTGAATAAGAGGAAG
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TGTAACAACTAAATATACCTAGTCACTATNNNNNNNNNNNNNNAGGGGGTCTGGACTCACAGGATGAGAACTGAT
GCTCTAGAGGGAAAGCATAAGATGATAGATCAAGACACTCTCGGCCGTATAGTGAGGTTTTC
CATCAGCTCTGCTATTTTTGGTGTGACGTGGCGCGGGTCTGGACTCACAGGATGAGAACTGAT
GCTCTAGAGGGAAAGCATAAGATGATAGATCAAGACACTCTCGGCCGTATAGTGAGGTTTTC
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