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Adenovirus Vector Generating System (20110090)

Technology No. 20110090

IP Status: Issued US Patent; **Patent #:** 10,208,304

Applications

- Medical applications
- Adenovirus library creation
- Viral-mediated transfection
- Transfection kits
- IV systemic delivery (Pharma companies)

Benefits

- Extremely high vector production capability
- Excellent diversity of library presented in the shape of adenovirus
- Rapid and high efficiency adenovirus vector production
- Could enable development of targeted adenovirus vectors for a variety of medical applications

Features

- Expression library in an adenovirus platform
- Constructs adenovirus library displaying random peptides on fiber knob
- Transfection of a fiber-modified plasmid library and a fiberless adenoviral DNA-TPC in Cre-expressing 293 cells
- In-cell Cre recombination and fiberless adenovirus simplify the library-making steps
- Fiberless adenovirus suppresses expansion of unnecessary adenovirus vectors
- 10^10 diversity of HI-loop and AB-loop libraries
- Successful identification of targeting motif shows specific binding and replication in target cells from adenovirus library
- Proven on a pancreatic cancer cell line model

Produces high quality, live adenovirus library

A novel adenovirus vector generating system can generate an expression library in an adenovirus platform. The strategy can be easily applied for rapid and high efficiency adenovirus vector production. The method constructs an adenovirus library displaying random peptides on the fiber knob, and its screening has led to successful selection of several particular targeted vectors. The method involves transfection of a fiber-modified plasmid library and a fiberless adenoviral DNA-TPC in Cre-expressing 293 cells. Using in-cell Cre recombination and fiberless adenovirus greatly simplifies the library-making steps, and the fiberless adenovirus suppresses expansion of unnecessary adenovirus vectors. The novel method can produce a high quality live adenovirus library, which could enable the development of targeted adenovirus vectors for a variety of medical applications, including potential for systemic delivery.

Significantly larger library size

Adenovirus has very high in vitro and in vivo transduction efficiency compared to other viral and non-viral gene transfer methods, so its application to various library works should benefit many fields. However, such development has been limited by extremely low conversion from virus coding plasmids to viruses (e.g., 1 ug DNA [equivalent to a 3 x 10^10 copy] transfection of plasmid-derived adenovirus sequence generates only 1-2 plaques after transfection). This new technology enables 10^8 virus copy production from a single 6cm culture dish, which means a regular laboratory scale experiment can easily generate 10^10 diversity. Library sizes in previously reported systems are in the 10^6 order. However, vector generation under this new process yields 10^8 copy in just 2 days.

Phase of Development

- The lead targeting motif VTINRSA has shown a good therapeutic effect in i.v. treatment of pancreatic cancer model.

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

Please contact TLO to share your business’ needs and learn more.

Publications

Mol. Pharmaceutics December 31, 2013

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