salk
Where cures begin.

Retroviral Packaging Cell Line Generating High-Titer Vectors

INVENTION:
Packaging cell lines can generate virus particles at very high titers, which can be used for both research and therapeutic purposes. They can be derived from various cell lines to produce Sendai virus, influenza virus, herpes virus and vesicular stomatitis virus. However, many vectors are not suitable for in vivo gene delivery because they can transduce dividing cells only. Our scientists have created a packaging cell line that expresses an envelope protein that allows vector concentration and expands the range of target tissues. The resulting viral vectors are able to transduce both dividing and non-dividing cells, both in culture and in immunocompetent rats. This new packaging cell line allows large-scale production of lentiviral vectors with potential utility in research and gene therapy approaches for humans.

APPLICATIONS:
- Large scale production of lentiviral vectors
- Gene therapy
- Virus production for research applications
- Viral biology studies

ADVANTAGES:
- High titers of virus can be produced (more than 10^9 IU/ml) for at least 3-4 days
- Resulting vectors can transduce both dividing and non-dividing cells, in vitro and in vivo
- Helper-free system

STAGE OF DEVELOPMENT:
Our investigators have generated lentiviral vectors capable of infecting various tissues in vivo, and those tissues demonstrated long-term expression of reporter genes.

BACKGROUND:
Retrovirus vectors have been used extensively for gene therapies. However, most of which are available are not suitable for in vivo gene delivery because they can only transduce dividing cells. In addition, large amounts of vector is required for in vivo experiments in larger animals. Our scientists have created a packaging cell line that generates high titers of vectors that are engineered to transduce both dividing and non-dividing cells.

INVENTORS: Drs. Inder Verma, Tal Kafri, Frederic Bushman, and Mark Hansen

PATENT STATUS: U.S. Patents 6,218,181 and 6,727,058

PUBLICATIONS:

- Kafri, et al. 1999. A packaging cell line for lentivirus vectors. J. Virol., 73:576-584.
- Miyoshi, et al. 1999. Transduction of human CD34+ cells that mediate long-term engraftment of NOD/SCID mice by HIV vectors. Science, 283:682-686.

CONTACT: Michelle Booden; mbooden@salk.edu; (858) 453-4100 x1612

TECHNOLOGY ID: S97022A