GENETICALLY ENGINEERING CELL LINES FOR ENHANCED AAV MANUFACTURING

Tech ID: 30275 / UC Case 2019-126-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,577,539	03/17/2026	2019-126

BRIEF DESCRIPTION

The production of viral vectors for gene therapy remains a major bottleneck in biotechnology, often constrained by low manufacturing yields and inefficient packaging from standard cell lines. To address this challenge, UC Berkeley researchers have developed genetically modified mammalian cells optimized specifically for the enhanced production of adeno-associated virus virions. These in vitro host cells are engineered to significantly boost the replication and assembly of viral particles. By improving the cellular machinery involved in viral synthesis, these modified cells can efficiently package heterologous nucleic acids that encode therapeutic gene products. This technology provides a scalable, high-yield production method that streamlines the manufacturing of gene delivery vehicles, ultimately reducing production costs and expanding the availability of genetic medicines.

SUGGESTED USES

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Gene Therapy Manufacturing: Scaling up the commercial production of recombinant adeno-associated virus vectors for approved genetic therapies.

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Biopharmaceutical Scale-Up: Optimizing industrial bioreactor workflows to lower the production cost per dose of viral-vectored medicines.

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Therapeutic Pipeline Development: Producing high-titer viral batches for preclinical testing and clinical trials of novel gene therapies.

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Cell Line Engineering Research: Serving as a high-performance host system for academic and industrial research into viral replication and assembly mechanisms.

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Custom Vector Production: Assisting contract development and manufacturing organizations in generating custom viral vectors containing diverse foreign genes.

ADVANTAGES

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INVENTORS

» Schaffer, David V.

OTHER INFORMATION

CATEGORIZED AS

» **Biotechnology**

» Health

» **Research Tools**

» Expression System

RELATED CASES

2019-126-0

Increased Manufacturing Yield: Significantly enhances the total number of viral particles produced per cell compared to unmodified, standard mammalian cell lines.

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Scalable Architecture: Integrates smoothly into existing industrial cell culture and fermentation infrastructure for large-scale production.

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High-Quality Packaging: Successfully generates functional recombinant virions containing targeted foreign genetic material for accurate therapeutic delivery.

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Cost-Efficient Processing: Higher production efficiency reduces the overall volume of media and bioreactor runs needed to achieve therapeutic doses.

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Consistent Performance: The genetic modifications within the host cell line provide a stable, reproducible platform for standardized batch manufacturing.

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Compositions And Methods For Production Of Recombinant Adeno-Associated Virus
- Membrane-Associated Accessory Protein Variants Confer Increased AAV Production
- Human Central Nervous System (CNS) Targeting AAV Variants
- High-Throughput Expression-Linked Promoter Selection (ELiPS) in Mammalian Cells
- Improving Packaging and Diversity of AAV Libraries with Machine Learning
- Adeno-Associated Virus Capsids for Enhanced Targeting of Schwann Cells

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