

ADENO-ASSOCIATED VIRUS CAPSIDS FOR ENHANCED TARGETING OF SCHWANN CELLS

Tech ID: 34687 / UC Case 2026-139-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

The success of gene therapy relies heavily on the ability of delivery vehicles to reach specific cells without being intercepted by the immune system or accumulating in non-target organs. UC Berkeley researchers have developed engineered capsids for recombinant adeno-associated virus that are specifically optimized to target Schwann cells, which are the essential support cells of the peripheral nervous system. While naturally occurring varieties like adeno-associated virus 1 and adeno-associated virus 2 often struggle to infect these cells efficiently or are diverted to the liver, these new variant capsids show significantly increased infectivity in Schwann cells. Furthermore, they are designed to be more resistant to the neutralizing antibodies commonly found in humans, which can often render traditional viral treatments ineffective. This breakthrough enhances both the manufacturing potential and the safety profile of genetic treatments for peripheral nerve disorders.

SUGGESTED USES

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Gene Therapy for Peripheral Neuropathies: Treating hereditary conditions such as Charcot-Marie-Tooth disease by delivering therapeutic genes directly to the affected peripheral nerve architecture.

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Nerve Regeneration and Repair: Delivering specialized growth factors to Schwann cells to accelerate the healing process after traumatic nerve injuries.

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Chronic Pain Treatment: Modulating the activity of the peripheral nervous system to block or reduce the transmission of chronic pain signals.

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Neuromuscular Disease Research: Providing a high-efficiency tool for scientists to study the underlying mechanisms of nerve-related diseases in laboratory models.

ADVANTAGES

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Precision Targeting: Engineered specifically for Schwann cells, ensuring the therapeutic payload is delivered where it is most needed within the peripheral nervous system.

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Enhanced Safety: Demonstrates lower biodistribution to the liver compared to wild-type viruses, significantly reducing the risk of off-target toxicity.

CONTACT

Laleh Shayesteh
lalehs@berkeley.edu
tel: 510-642-4537.



INVENTORS

» Schaffer, David V.

OTHER INFORMATION

CATEGORIZED AS

» **Biotechnology**

» Health

» **Medical**

» Therapeutics

» **Research Tools**

» Expression System

RELATED CASES

2026-139-0

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Improved Manufacturing: Achieves higher packaging titers during production, making the therapeutic easier and more cost-effective to manufacture at an industrial scale.

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Immune System Evasion: Resists neutralization by pre-existing antibodies in the human population, potentially allowing a broader range of patients to receive effective treatment.

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](#)
- ▶ [Genetically Engineering Cell Lines for Enhanced AAV Manufacturing](#)



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