

## 293AAV Cell Line

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**CATALOG NUMBER:** AAV-100

**STORAGE:** Liquid nitrogen

*Note: For best results begin culture of cells immediately upon receipt. If this is not possible, store at -80°C until first culture. Store subsequent cultured cells long term in liquid nitrogen.*

**QUANTITY & CONCENTRATION:** 1 mL, 1 x 10<sup>6</sup> cells/mL in 90% complete medium, 10% DMSO

### **Background**

Adeno-associated virus (AAV) belongs to the family of Parvoviridae, a group of viruses among the smallest of single-stranded and non-enveloped DNA viruses. There are nine different AAV serotypes reported to date. AAV can infect both dividing and non-dividing cells and can be maintained in the human host cell, creating the potential for long-term gene transfer. Recombinant AAV-2 is the most common serotype used in gene delivery, and can be produced at high titers with a helper virus or Cell Biolabs' AAV Helper-Free System in 293 cells.

The 293AAV Cell Line is a permanent line established from primary embryonic human kidney transformed with human adenovirus type 5 DNA. The genes encoded by the E1 region of adenovirus (E1a and E1b) are expressed in these cells and participate in transactivation of viral promoters, allowing these cells to produce high levels of protein.

293AAV is derived from the parental 293 cell line, through cloning and multiple rounds of testing, 293AAV is specifically selected for a high level of AAV production in a helper-free system. It offers several advantages over the regular 293 cells:

- Larger cell surface area resulting higher transfection and better yield of AAV.
- Flattened morphology.
- Firm attachment to culture plate, ideal for large scale culture and AAV production.

### **Quality Control**

This cryovial contains at least 1.0 × 10<sup>6</sup> 293AAV cells as determined by morphology, trypan-blue dye exclusion, and viable cell count. The 293AAV cells are tested free of microbial contamination.

### **Medium**

1. Culture Medium: D-MEM (high glucose), 10% fetal bovine serum (FBS), 0.1 mM MEM Non-Essential Amino Acids (NEAA), 2 mM L-glutamine, 1% Pen-Strep (optional)
2. Freeze Medium: 90% complete medium, 10% DMSO

## **Methods**

### **Establishing 293AAV Cultures from Frozen Cells**

1. Place 10 mL of complete DMEM growth medium in a 50-mL conical tube. Thaw the frozen cryovial of cells within 1–2 minutes by gentle agitation in a 37°C water bath. Decontaminate the cryovial by wiping the surface of the vial with 70% (v/v) ethanol.
2. Transfer the thawed cell suspension to the conical tube containing 10 ml of growth medium.
3. Collect the cells by centrifugation at 1000 rpm for 5 minutes at room temperature. Remove the growth medium by aspiration.
4. Resuspend the cells in the conical tube in 15 mL of fresh growth medium by gently pipetting up and down.
5. Transfer the 15 mL of cell suspension to a T-75 tissue culture flask. Place the cells in a 37°C incubator at 5% CO<sub>2</sub>.
6. Monitor cell density daily. Cells should be passaged when the culture reaches 95% confluence.

### **Recent Product Citations**

1. Park, J. et al. (2023). Chemogenetic regulation of the TARP-lipid interaction mimics LTP and reversibly modifies behavior. *Cell Rep.* **42**(8):112826. doi: 10.1016/j.celrep.2023.112826.
2. Keng, C.T. et al. (2023). AAV-CRISPR-Cas13 eliminates human enterovirus and prevents death of infected mice. *EBioMedicine.* **93**:104682. doi: 10.1016/j.ebiom.2023.104682.
3. Kuga, N. et al. (2023) Hippocampal sharp wave ripples underlie stress susceptibility in male mice. *Nat Commun.* **14**(1):2105. doi: 10.1038/s41467-023-37736-x.
4. Hou, J. et al. (2023). Ginkgo biloba extracts improve choroidal circulation leading to suppression of myopia in mice. *Sci Rep.* **13**(1):3772. doi: 10.1038/s41598-023-30908-1.
5. Hartweger, H. et al. (2023). Gene Editing of Primary Rhesus Macaque B Cells. *J Vis Exp.* doi: 10.3791/64858.
6. Hossen, E. et al. (2022). Rho-Kinase/ROCK Phosphorylates PSD-93 Downstream of NMDARs to Orchestrate Synaptic Plasticity. *Int J Mol Sci.* **24**(1):404. doi: 10.3390/ijms24010404.
7. Xi, Z. et al. (2022). Gene augmentation prevents retinal degeneration in a CRISPR/Cas9-based mouse model of PRPF31 retinitis pigmentosa. *Nat Commun.* **13**(1):7695. doi: 10.1038/s41467-022-35361-8.
8. Yoshizawa, T. et al. (2022). SIRT7 suppresses energy expenditure and thermogenesis by regulating brown adipose tissue functions in mice. *Nat Commun.* **13**(1):7439. doi: 10.1038/s41467-022-35219-z.
9. McQuillan, H.J. et al. (2022). Definition of the estrogen negative feedback pathway controlling the GnRH pulse generator in female mice. *Nat Commun.* **13**(1):7433. doi: 10.1038/s41467-022-35243-z.
10. Keng, C.T. et al. (2022). Multiplex viral tropism assay in complex cell populations with single-cell resolution. *Gene Ther.* **29**(9):555-565. doi: 10.1038/s41434-022-00360-3.
11. Rodrigues, A. et al. (2022). Modeling PRPF31 retinitis pigmentosa using retinal pigment epithelium and organoids combined with gene augmentation rescue. *NPJ Regen Med.* **7**(1):39. doi: 10.1038/s41536-022-00235-6.
12. Agnetti, J. et al. (2022). PI3K $\delta$  activity controls plasticity and discriminates between EMT and stemness based on distinct TGF $\beta$  signaling. *Commun Biol.* **5**(1):740. doi: 10.1038/s42003-022-03637-w.

13. Yamahashi, Y. et al. (2022). Phosphoproteomic of the acetylcholine pathway enables discovery of the PKC- $\beta$ -PIX-Rac1-PAK cascade as a stimulatory signal for aversive learning. *Mol Psychiatry*. doi: 10.1038/s41380-022-01643-2.
14. Deroyer, C. et al. (2022). CEMIP (KIAA1199) regulates inflammation, hyperplasia and fibrosis in osteoarthritis synovial membrane. *Cell Mol Life Sci*. **79**(5):260. doi: 10.1007/s00018-022-04282-6.
15. Tanenhaus, A. et al. (2022). Cell-selective AAV-mediated SCN1A Gene Regulation Therapy Rescues Mortality and Seizure Phenotypes in a Dravet Syndrome Mouse Model and is Well Tolerated in Non-human Primates. *Hum Gene Ther*. doi: 10.1089/hum.2022.037.
16. Zhou, J. et al. (2022). Liver regeneration and ethanol detoxification: A new link in YAP regulation of ALDH1A1 during alcohol-related hepatocyte damage. *FASEB J*. **36**(4):e22224. doi: 10.1096/fj.202101686R.
17. Kashihara, T. et al. (2022). YAP mediates compensatory cardiac hypertrophy through aerobic glycolysis in response to pressure overload. *J Clin Invest*. doi: 10.1172/JCI150595.
18. Liu, J. et al. (2022). Intravitreal gene therapy restores the autophagy-lysosomal pathway and attenuates retinal degeneration in cathepsin D-deficient mice. *Neurobiol Dis*. **164**:105628. doi: 10.1016/j.nbd.2022.105628.
19. Faruk, M.O. et al. (2021). Muscarinic signaling regulates voltage-gated potassium channel KCNQ2 phosphorylation in the nucleus accumbens via protein kinase C for aversive learning. *J Neurochem*. doi: 10.1111/jnc.15555.
20. Ding, L. et al. (2021). Peroxisomal  $\beta$ -oxidation acts as a sensor for intracellular fatty acids and regulates lipolysis. *Nat Metab*. doi: 10.1038/s42255-021-00489-2.
21. Sveidahl Johansen, O. et al. (2021). Lipolysis drives expression of the constitutively active receptor GPR3 to induce adipose thermogenesis. *Cell*. **184**(13):3502-3518.e33. doi: 10.1016/j.cell.2021.04.037.
22. Bhat, N. et al. (2021). Dyrk1b promotes hepatic lipogenesis by bypassing canonical insulin signaling and directly activating mTORC2 in mice. *J Clin Invest*. doi: 10.1172/JCI153724.
23. Yun, T. et al. (2021). Inhibitor of DNA binding 2 (Id2) mediates microtubule polymerization in the brain by regulating  $\alpha$ K40 acetylation of  $\alpha$ -tubulin. *Cell Death Discov*. **7**(1):257. doi: 10.1038/s41420-021-00652-4.
24. Chao, G. et al. (2021). Measurement of Large Serine Integrase Enzymatic Characteristics in HEK293 Cells Reveals Variability and Influence on Downstream Reporter Expression. *FEBS J*. doi: 10.1111/febs.16037.
25. Sveidahl Johansen, O. et al. (2021). Lipolysis drives expression of the constitutively active receptor GPR3 to induce adipose thermogenesis. *Cell*. doi: 10.1016/j.cell.2021.04.037.
26. Hu, J. et al. (2021). Co-opting regulation bypass repair as a gene correction strategy for monogenic diseases. *Mol Ther*. doi: 10.1016/j.ymthe.2021.04.017.
27. Motori, E. et al. (2020). Larsson, Neuronal metabolic rewiring promotes resilience to neurodegeneration caused by mitochondrial dysfunction. *Sci. Adv*. **6**(35). doi: 10.1126/sciadv.aba8271.
28. Göbel, J. et al. (2020). Mitochondria-Endoplasmic Reticulum Contacts in Reactive Astrocytes Promote Vascular Remodeling. *Cell Metab*. pii: S1550-4131(20)30120-0. doi: 10.1016/j.cmet.2020.03.005.
29. Lin, Y.H. et al. (2020). Accumbal D2R-medium spiny neurons regulate aversive behaviors through PKA-Rap1 pathway. *Neurochem Int*. doi: 10.1016/j.neuint.2020.104935.
30. Siegrist, C.M. et al. (2020). CRISPR/Cas9 as an antiviral against Orthopoxviruses using an AAV vector. *Sci Rep*. **10**(1):19307. doi: 10.1038/s41598-020-76449-9.

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