

Anti-AAV Antibody

Catalog # AN2033

Product Information

Application	WB
Host	Rabbit
Clonality	Rabbit Polyclonal
Isotype	IgG

Additional Information

Other Names	Adeno-associated virus
Dilution	WB~~1:1000
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	Anti-AAV Antibody is for research use only and not for use in diagnostic or therapeutic procedures.
Shipping	Blue Ice

Background

Adeno-associated virus (AAV) is a small, non-enveloped single-stranded DNA virus belonging to the Pavoviridae family in the genus Dependoparvovirus, which requires a helper virus in order to replicate (1-3). The AAV genome consists of a rep and cap gene which are flanked by inverted terminal repeats (ITRs) (1-4). The rep gene encodes for AAV's non-structural proteins that function in replication, packaging, and integration (2-4). The cap gene encodes the structural proteins (VP1, VP2, VP3) that form the viral capsid made up of 60 protein subunits (2-4). Recombinant AAV vectors are generated by replacing the rep and cap genes and inserting a promoter, followed by a transgene, and then a poly-A (pA) tail, flanked by ITRs (3-4). Recombinant vectors are then packaged by providing the rep and cap genes in trans and helper genes for AAV replication (3). AAV vectors have been studied for their potential in human gene therapy and are considered a safe platform given their low immunogenicity and that they are not associated with any known diseases (1-4). Additionally, recombinant AAV vectors are typically non-integrating (1). There are 13 identified human and non-human primate AAV serotypes and over 100 natural AAV variants (2-4). The AAV serotypes are further classified into six clades (A-F) and two clonal isolates (AAV4 and AAV5) according to the VP1 amino acid (aa) sequence (3). These AAV serotypes share ~65-99% sequence identity and ~95-99% structural identity (3). Research has shown that the different AAV serotypes have varying tissue tropism and transduction efficiency based on tissue origin (2). For instance, AAV8 and AAV9 are optimal for transduction in the liver, while AAV2 is ideal for the kidney (2). AAV2 is the best characterized and most commonly used AAV serotype in preclinical studies and clinical trials (4). AAV vectors have been employed in a number of oncology models for their ability to carry and deliver a variety of factors including anti-angiogenic genes, suicide genes, tumor suppressors, cytokines, and monoclonal antibodies (4). Advances in engineering AAV vectors and combining AAV gene delivery with other treatment modalities, like chemotherapeutics, is promising for the future of human gene therapy (2-4).

References

1. Zengel J, Carette JE. Structural and cellular biology of adeno-associated virus attachment and entry. *Adv Virus Res.* 2020;106:39-84. <https://doi.org/10.1016/bs.aivir.2020.01.002>
2. Wu Z, Asokan A, Samulski RJ. Adeno-associated virus serotypes: vector toolkit for human gene therapy. *Mol Ther.* 2006;14(3):316-327. <https://doi.org/10.1016/j.ymthe.2006.05.009>
3. Drouin LM, Agbandje-McKenna M. Adeno-associated virus structural biology as a tool in vector development. *Future Virol.* 2013;8(12):1183-1199. <https://doi.org/10.2217/fvl.13.112>
4. Santiago-Ortiz JL, Schaffer DV. Adeno-associated virus (AAV) vectors in cancer gene therapy. *J Control Release.* 2016;240:287-301. <https://doi.org/10.1016/j.jconrel.2016.01.001>

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