

POROS™ CaptureSelect™ AAV Affinity Resins

Innovative downstream purification solutions for viral vectors

The non-pathogenic adeno-associated virus (AAV) has emerged as the vector of choice for many gene therapies. However, purification of biologically active viral vectors for large-scale commercial use remains a challenge due to long development lead times, yield losses with each unit operation and challenging feedstock.

Thermo Fisher Scientific has developed downstream purification solutions, enabling the scale-up of viral vector production. The POROS and CaptureSelect AAV affinity resins provide a scalable capture step for a broad range of AAV serotypes offering a significant improvement to the downstream process of these molecules.

Benefits

- Less chromatography steps = higher yields
- Simplified, scalable and consistent process
- Lower overall cost & complexity



	Binding Capacity (vg/mL)	Serotype Affinity
POROS™ CaptureSelect™ AAV8	$>10^{14}$	AAV8
POROS™ CaptureSelect™ AAV9	$>10^{13}$	AAV9
POROS™ CaptureSelect™ AAVX	$>10^{13*}$	AAV1, AAV2, AAV3, AAV4, AAV5, AAV6, AAV7, AAV8, AAV9, recombinant and chimeric vectors

*viral genomes per milliliter (vg)/mL, binding capacity will vary based on serotype, feed stream, additives, and mutations to parent serotypes

To learn more, go to
thermofisher.com/viralvectors

Purity and Vector Recovery: AAV affinity resins show excellent purity profiles, similar to multiple ion exchange steps (Fig. 1A) and consistent vector recovery in the upscaled process (Fig. 1B).

Figure 1A

Purity

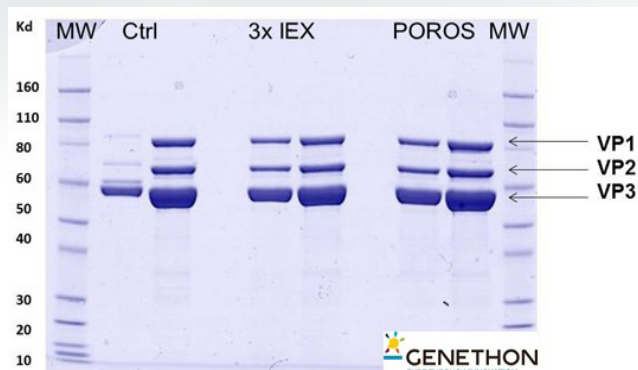


Figure 1A: SDS-PAGE comparing purity of AAV9 viral vector, purified by two downstream processing methods; one utilizing 3 IEX steps and the other utilizing 1 affinity capture step with POROS CaptureSelect AAV9 resin. The data shows the purity profile of viral vector AAV9 is equivalent when comparing both downstream processing approaches. The gel also reveals similar purity and the capsid viral protein (VP) topology for viral vector AAV9 is confirmed showing the bands corresponding to the viral structural proteins VP1, VP2, and VP3.

Figure 1B

Vector recovery using POROS AAV9 at various scales

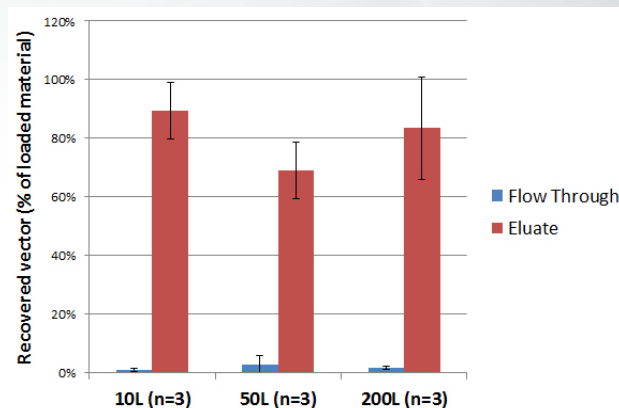


Figure 1B: Vector recovery throughout the process step was approximately 70%. The vector recovery stayed consistent to 20x scale up demonstrating scalability of the resins.

AAVX Serotype Specificity: AAVX affinity resin provides one platform solution for the purification of a large variety of AAV serotypes (Fig 2).

AAV Serotype	AAV1	AAV2	AAV2_HSPG	AAV4	AAV5	AAV6	AAV6.2	AAV7	AAV8	AAV9	AAV rh1010	AAV rh32.33	AAV 9PHPB	AAV 7m8
Binding % (in eluate)	99.63	97.8	98.33	98.05	97.88	97.45	98.93	98.37	97.76	98.43	96.28	99.29	98.51	98.39

Figure 2: Selectivity of POROS AAV. The AAVX resin serotype specificity was tested using a static binding assay with a wide variety of serotypes. Resin was mixed with AAV in a tube for 10 min. Specificity determined based on elution recovery; acidic elution buffer, pH 2. VG was determined by qPCR

Ordering information *

Volume (mL)	POROS CaptureSelect AAV8 resin	POROS CaptureSelect AAV9 resin	POROS CaptureSelect AAVX resin
10 mL	A30789	A27354	A36739
25 mL	A30790	A27353	A36740
50 mL	A30791	A27356	A36741
250 mL	A30792	A27355	A36742
1,000 mL	A30793	A27359	A36743
5,000 mL	A30794	A27358	A36744
10,000 mL	A30795	A27357	A36745

* For supporting products such as leakage ELISAs and analytical columns, please visit: www.thermofisher.com/viralvectors