STUNNER

AAV & AdV Characterization

UNCHAINED LABS

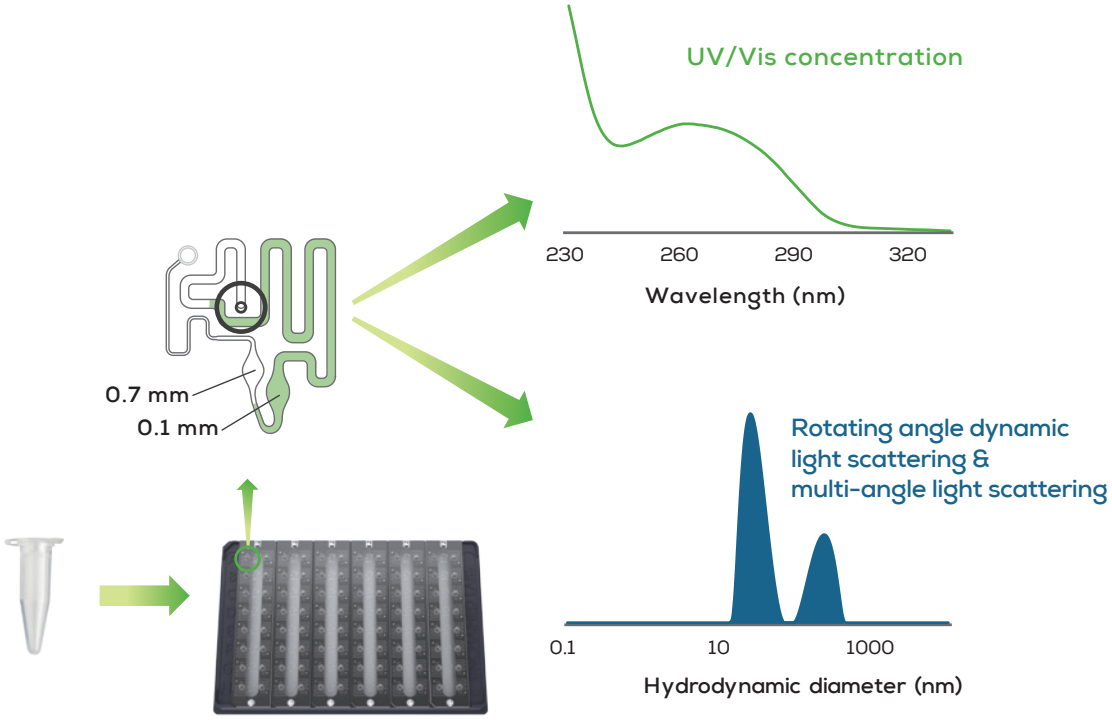
Combine and conquer

Stunner is the only system that pulls together UV/Vis concentration, dynamic light scattering (DLS) and static light scattering (SLS) data on the same 2 µL sample – so you can dig in to your AAV to get the total capsid titer and empty/full ratio. To get the same deets for bigger vectors like adenovirus (AdV), Stunner uses rotating angle dynamic light scattering (RADLS) and multi-angle light scattering (MALS). Without skipping a beat, you'll know if your AAV or AdV is good to go.

- Capsid titer
- Empty/full ratio
- Aggregation
- Sizing & polydispersity

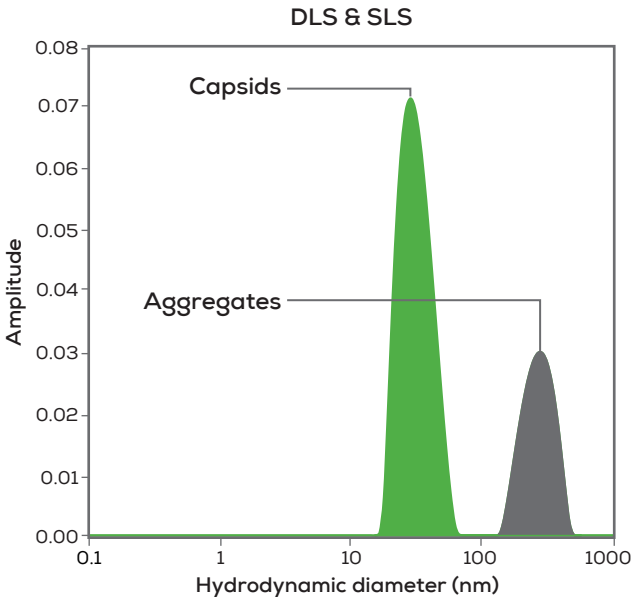
Teeny sample, tons of info

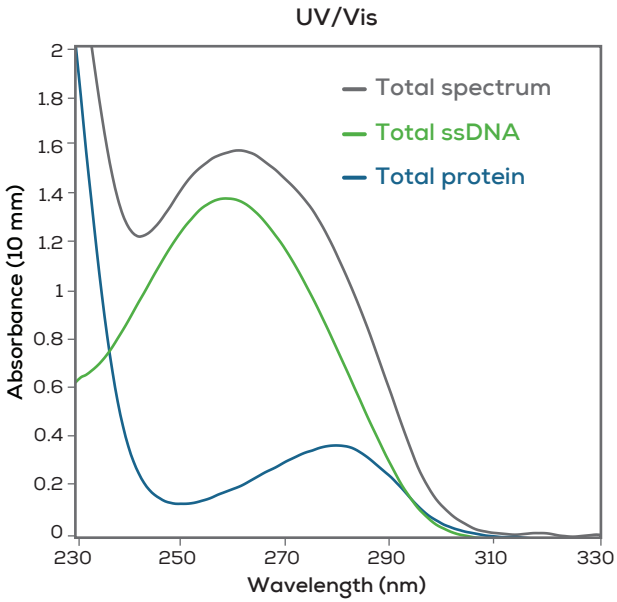
Just load 2 µL of AAV in a Stunner plate – don't bother with sample prep or dilution. Each microfluidic circuit has two fixed pathlengths built into it to cover a wide dynamic range of 0.03-275 OD. If you're dealing with a full plate, get 96 AAV measurements all done in 1 hour. For even heavier workflows, hook it up to your favorite robot to add more oomph.



Look your AAV up and down

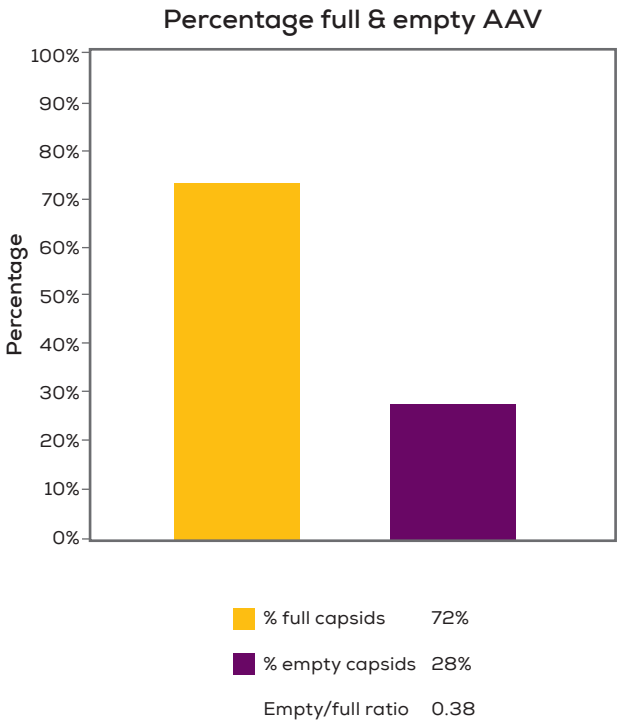
Drop in your AAV and before you can blink, DLS & SLS figure out how many intact capsids you have or if a bunch of aggregates are screwing things up. See empty/full ratio, total protein and total ssDNA in about a minute with UV/Vis. Don't worry about extinction coefficients or overlapping spectra – Stunner does all the math for you.





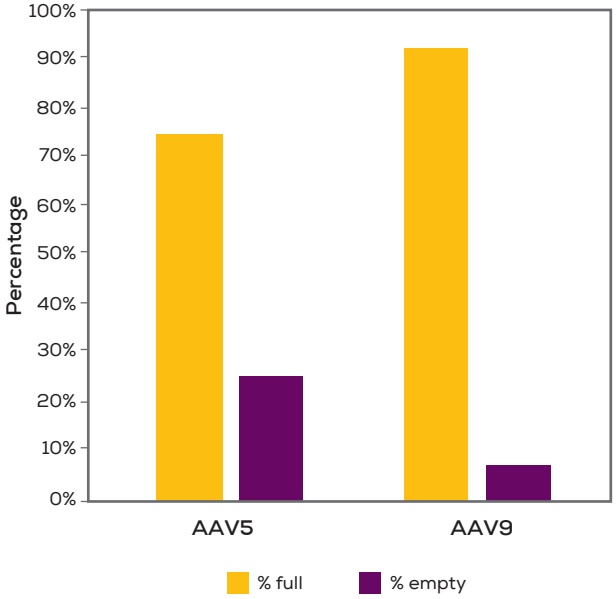
Know your AAV inside out

Get to the numbers you actually want – titers. Stunner bridges DLS and UV/Vis data to tally up how many full and empty capsids are present, and how much extra protein and DNA is left over. Take your cleaned up AAV and sneak a peek down to 10^{12} vg/mL. In just one assay, Stunner's dye-free, label-free, standard-free, hassle-free workflow tells the whole titer story.



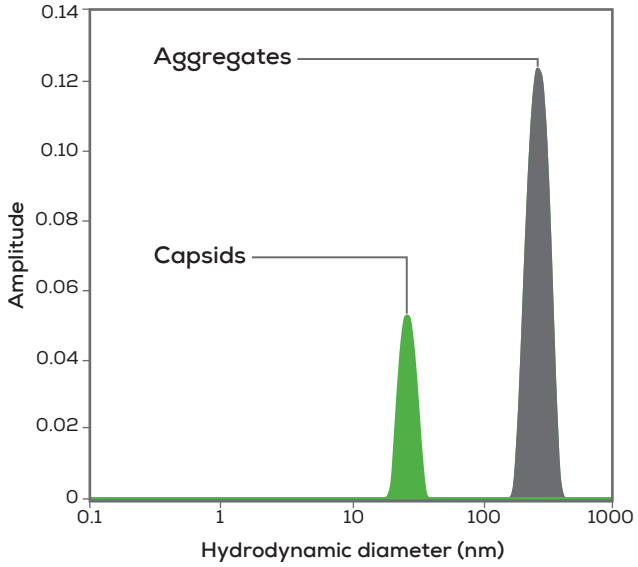
Titer for any serotype

Every AAV is different, but Stunner figures them all out. Pick a preloaded serotype or feed in the specs for your virus and get answers in seconds. Now you can check capsid titers and empty/full ratio as often as you want.



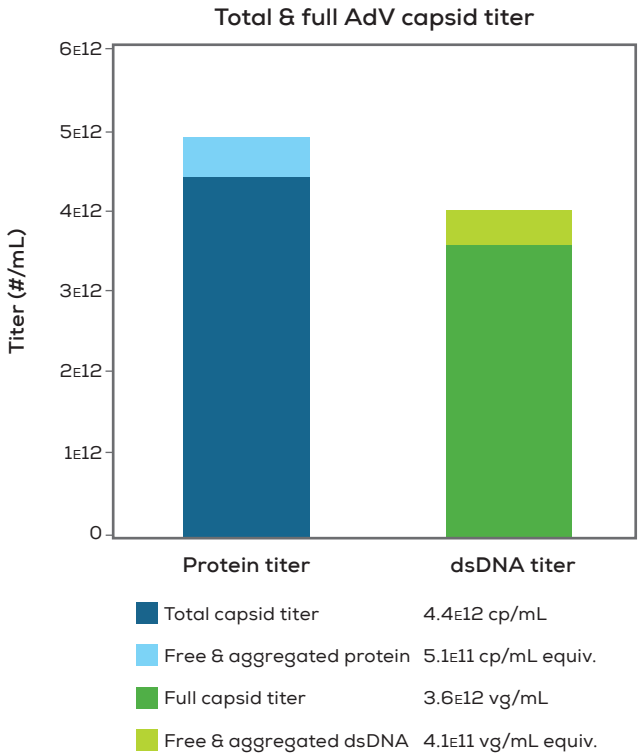
Aggregates ruin everything

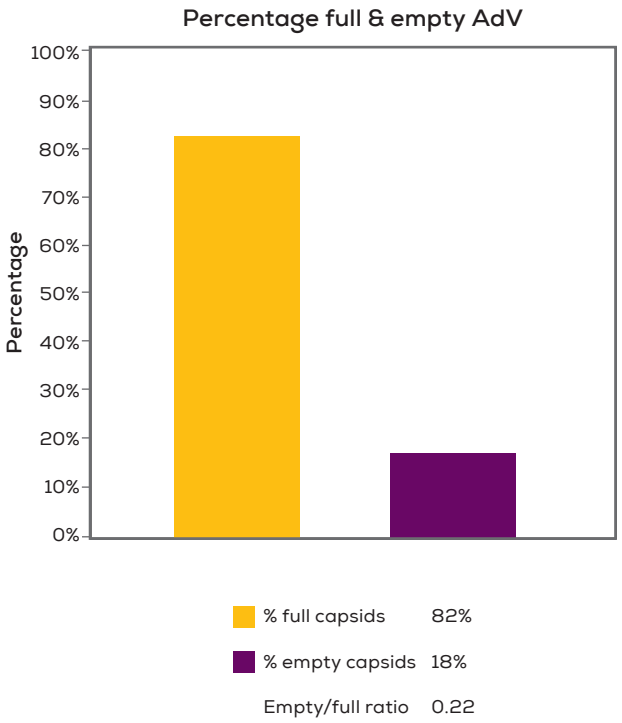
Globs of AAV can stand between you and high-quality data for pretty much every assay. DLS checks if your AAV is monodisperse so the rest of your process doesn't get tripped up by aggregates.



Adeno? I do know!

Get legit adenovirus (AdV) titers down to 10^9 cp/mL with Stunner's readouts on total, full and empty capsids without getting thrown off by annoying contaminants like aggregates and extra DNA. Outsmart old school A260 measurements by Unmixing the absorbance of your AdV into protein and dsDNA signal, so you get the low down on what's really in your sample.





Specifications

Stunner instrument specifications		
Dimensions	37 cm W x 54 cm D x 33 cm H; 30.4 kg	
Electrical	Universal input voltage 100–240 V AC, 50–60 Hz	
Computer	Separate computer with Windows 11 included	
Connection	USB, TCP/IP (Service)	
Approval	CE, FCC, CSA	
Regulatory compliance	Optional 21CFRp11 software package USP and Ph. Eur. Performance verification standards	
UV/Vis		
Light source	Xenon flash lamp	
Detectors	UV/Vis polychromatic spectrophotometer	
Wavelength range	230–750 nm	
Wavelength accuracy	≤400 nm: ±1nm; ≥400 nm: ±2 nm	
Spectral resolution	Better than 2 nm (toluene in hexane)	
Absorbance precision (1 cm quartz cuvette)	<1 OD: ±0.005 OD st dev	1–2 OD: ±0.5% CV
Absorbance accuracy (1 cm quartz cuvette)	<1 OD: ±0.01 OD	1–2 OD: ±1%
Rotational angle DLS		
Light sources	2 x 660 nm laser diodes	
Detection	Avalanche photodiode module	
Number of angles	1 (DLS), 5 – 30 (RADLS)	
Angular range	30–42° 110–162°	
Size accuracy	±2%	
Minimum sample concentration	0.1 mg/mL lysozyme	
Hydrodynamic diameter range	0.3–1000 nm	
Molecular weight range	1 kDa – 10 GDa	
Stunner plate specifications		
Samples per plate	96 (12 x 8 microplate format)	
Sample retention time	Up to 2 hours	
Recommended sample volume	2 µL	
Pathlength(s)	0.1 mm & 0.7 mm path	
Measurement time for full plate	~1 h for AAV Quant (UV/Vis + DLS) ~2 h 15 min for Adeno Quant (UV/Vis + RADLS)	
Measurement range: OD 10 mm AAV Quant Adeno Quant	 0.03–275 OD 10 mm 10^{12} – $5x10^{15}$ cp/mL 10^{9} – $5x10^{14}$ cp/mL	
Absorbance precision (10 mm pathlength)	<1 OD: ±0.01 OD st dev 1–200 OD: ±1% CV	
Absorbance accuracy (10 mm pathlength)	<1 OD: ±0.02 OD 1–200 OD: ±2%	

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Rev A