

# Comprehensive Solutions For Next Generation Biopharma

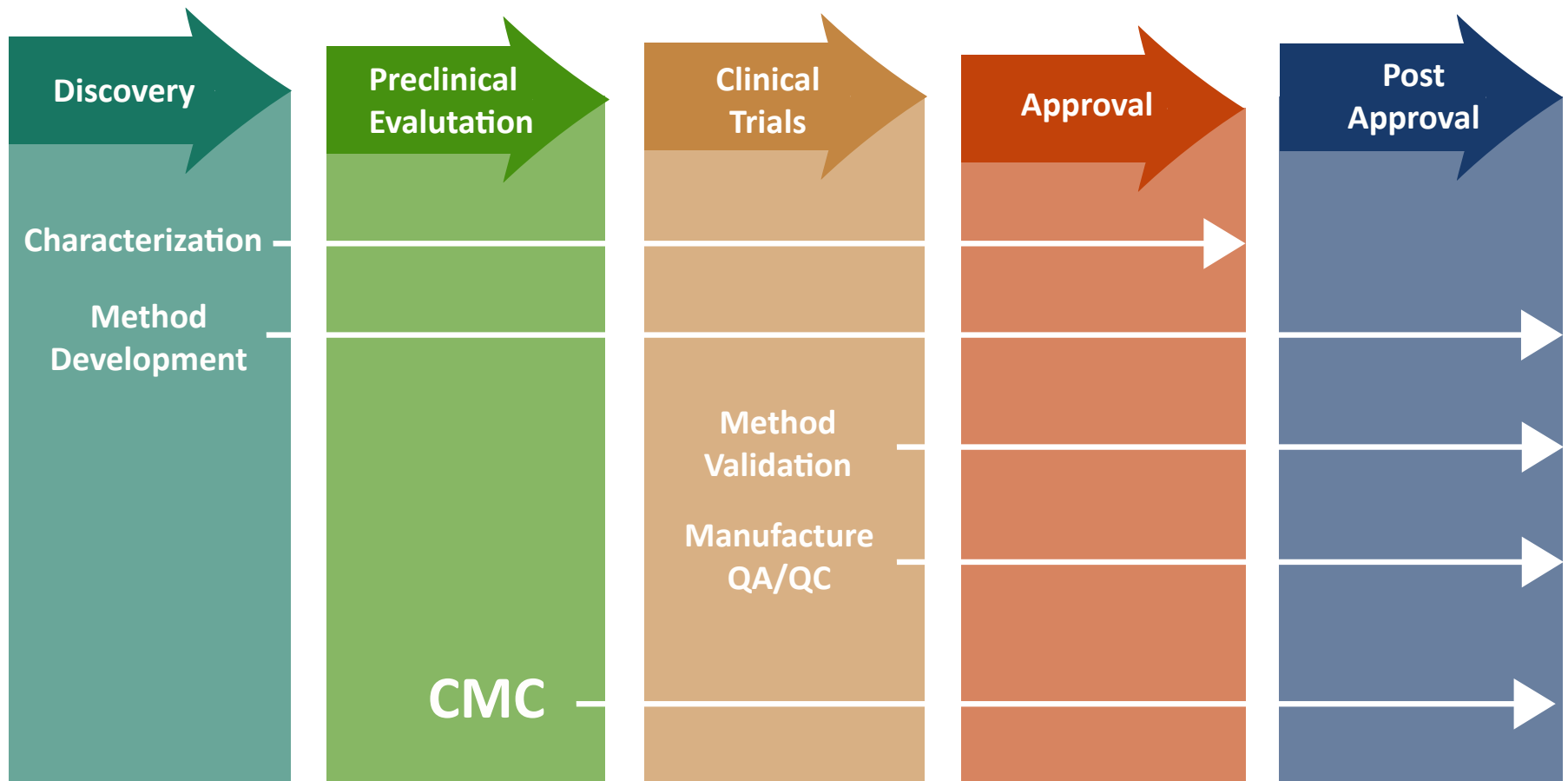


Innovations  
Make Breakthrough  
Solutions

# Questions

- 1.** Do you need the iCIEF fractionation and preparation of protein charged variants ?
- 2.** At the same time you want to realize the direct connection of iCIEF to mass spectrometry detection ?
- 3.** You are looking for the more subtle characterization of extreme complex protein and the related bio-vesicles with ultra-high resolution ampholytes?

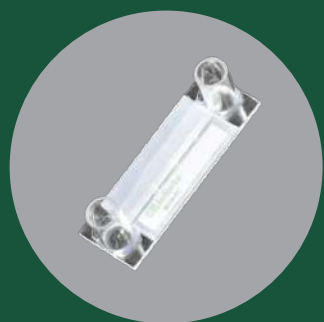
# AES provides total solutions from drug discovery to post approval



# AES Comprehensive Portfolio



## CEinfinite multifunction iCIEF platform



### Cartridges

The proprietary high-performance iCIEF cartridges with hydrophobic fluorocarbon or hydrophilic coating.



### pI Markers

High performance and reliable pI markers, most comprehensive, from 2.85 to 12.



### AESlytes

Next generation carrier ampholytes with unparalleled QC for high and consistent performance.



### Reagents

These solutions are manufactured under strict quality control standards.



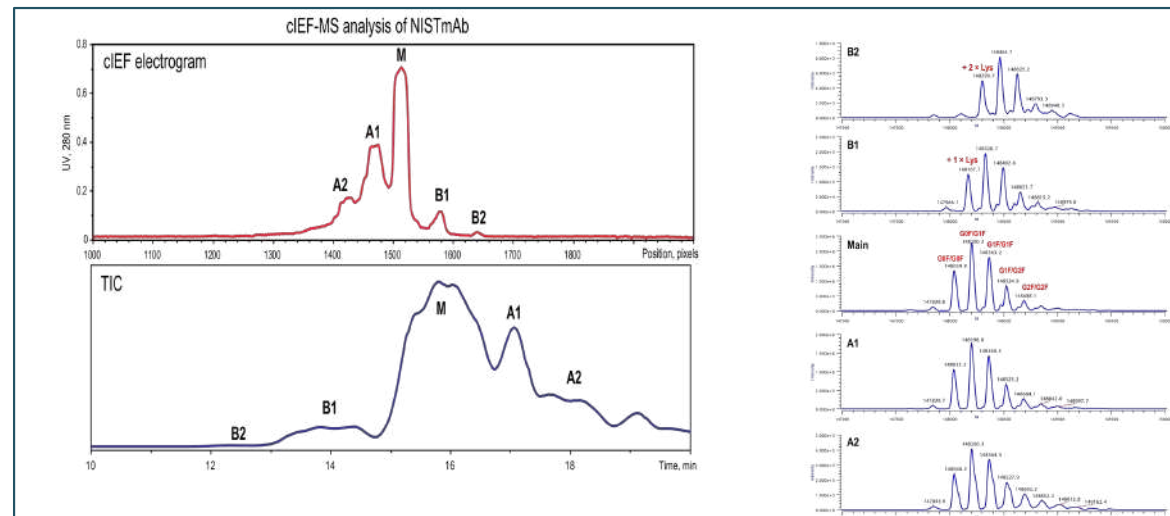
### Services

From custom reagent development to method development services and support, AES ensures customer success.

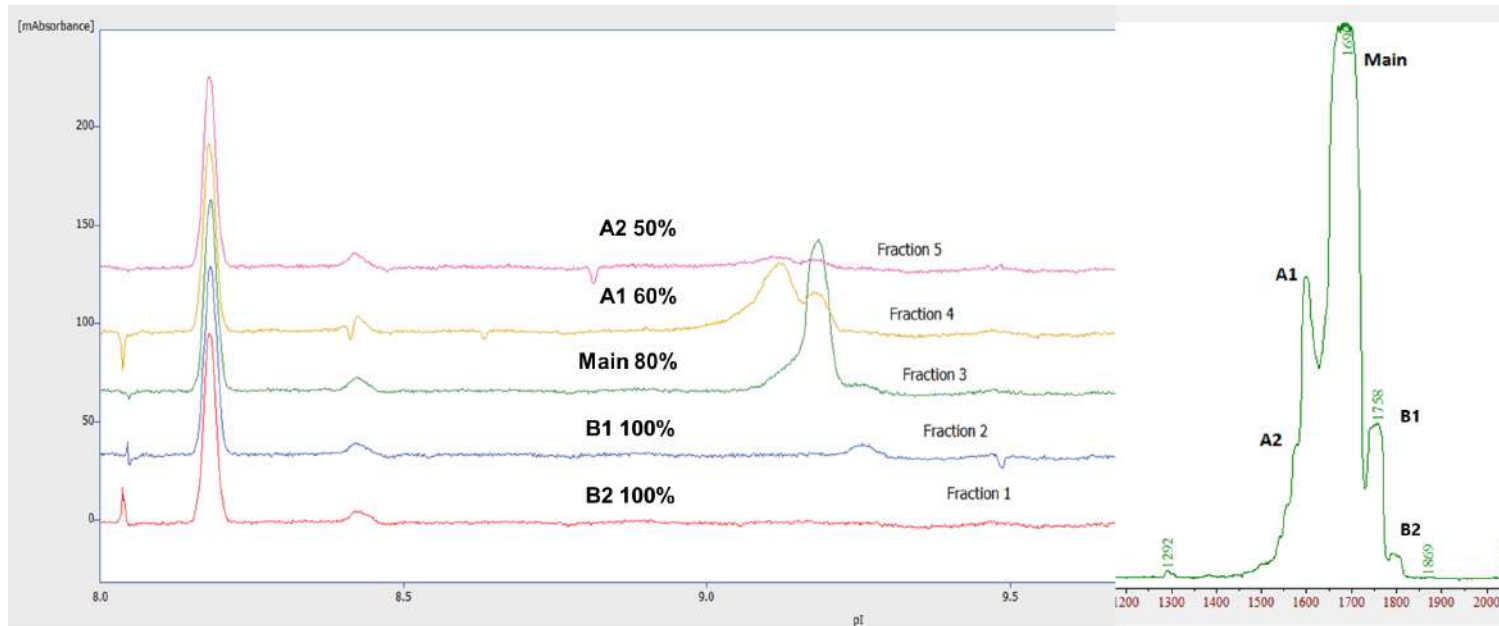
# Only platform for both online iCIEF-MS and offline preparative iCIEF

## iCIEF-MS online coupling mode

- High throughput, fast method development.
- Directly couple with major brands of MS.
- Unique coatings and chemicals to accelerate the drug development process.
- Provides significant information about the quality of the drug substance within an hour.



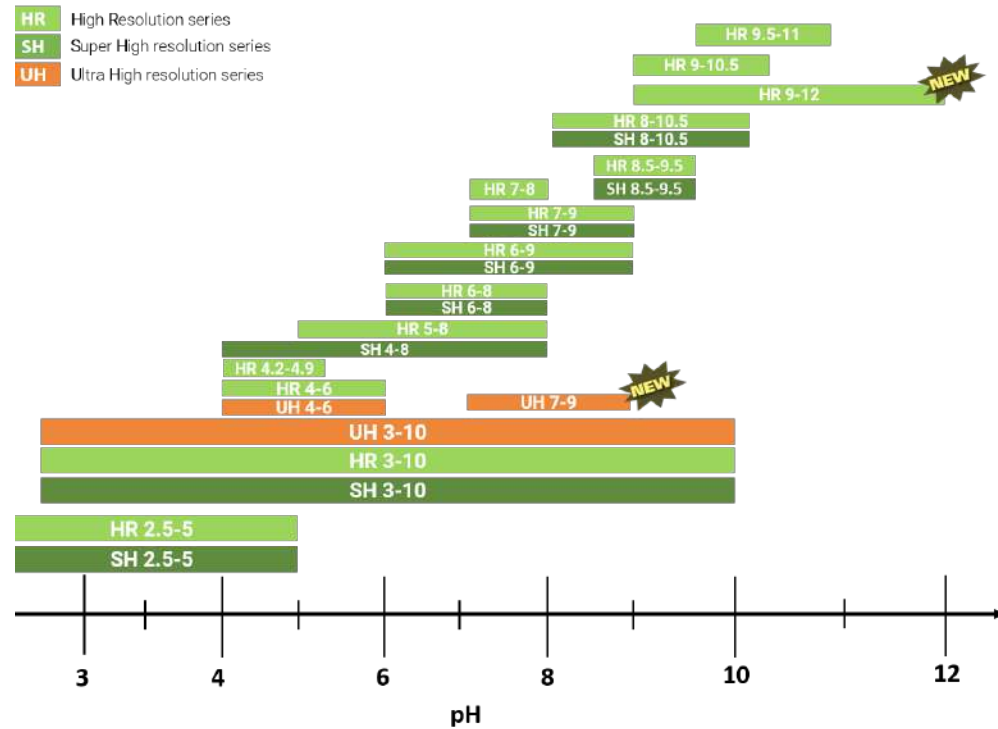
# Offline preparative mode



- ◆ Enables in-depth analysis of modifications such as deamidation at the peptide map level.
- ◆ Preparation sensitivity <math><0.1\text{ pl}</math> difference. Typical automated one run is <math><60\text{ min}</math>.
- ◆ A fully automated system allows Up to 96 fractions per run, ~100  $\mu\text{g}$  collections per day under temperature controlled environment.
- ◆ Achieve as high as 90% purity. Get as high as 8  $\mu\text{g}$  isomer per run.
- ◆ Fast method adoption and development with comprehensive ampholytes support.
- ◆ One platform for both online and off-line preparative iCIEF-MS to do cross verification and jointly conduct comprehensive and in-depth research on charge isomers.

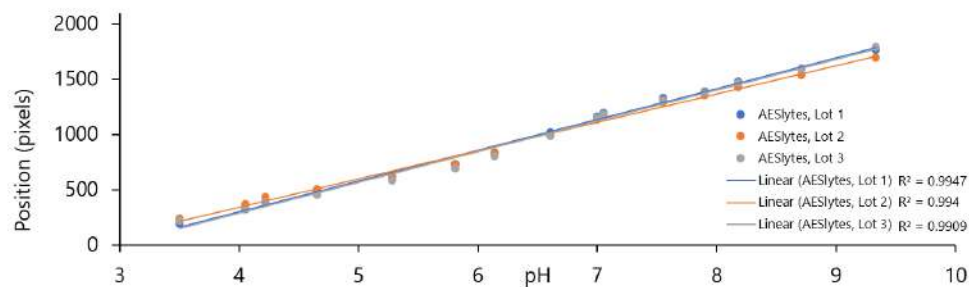
# Unparallel ampholytes

## AESlyte product line



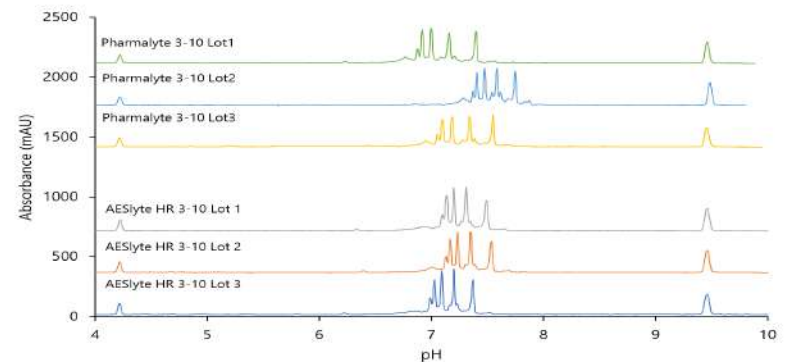
### Good pH gradient linearity

pH Linearity of AESlyte HR 3-10



### Good lot to lot sample egram consistency

ICIEF of AFSC Hemoglobin to Compare the Lot-to-Lot Consistency of AESlytes HR 3-10 and Pharmalyte 3-10

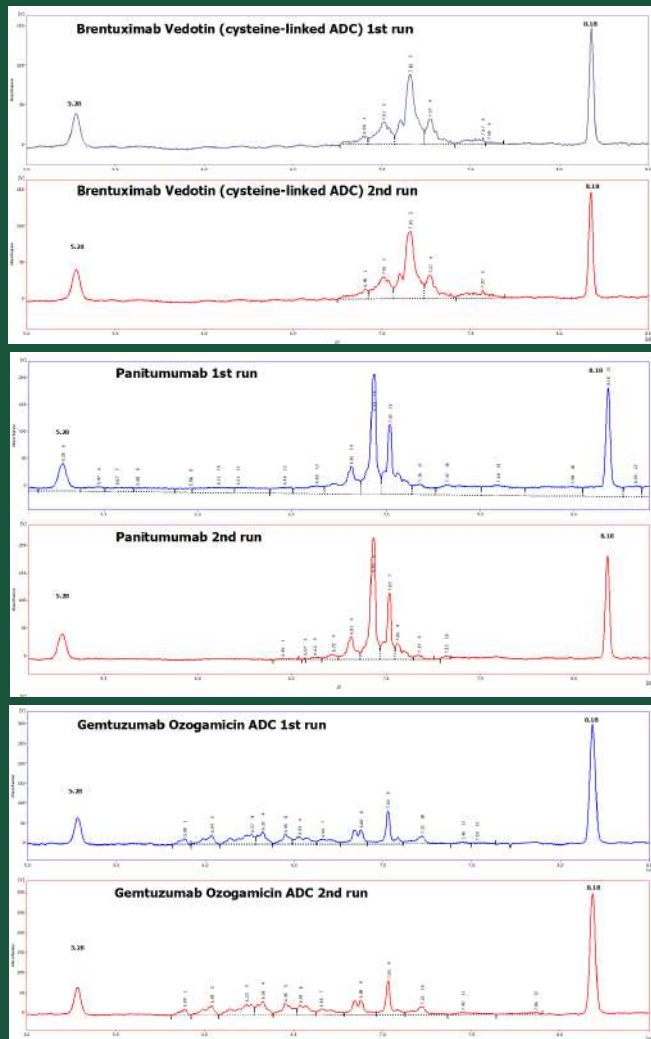




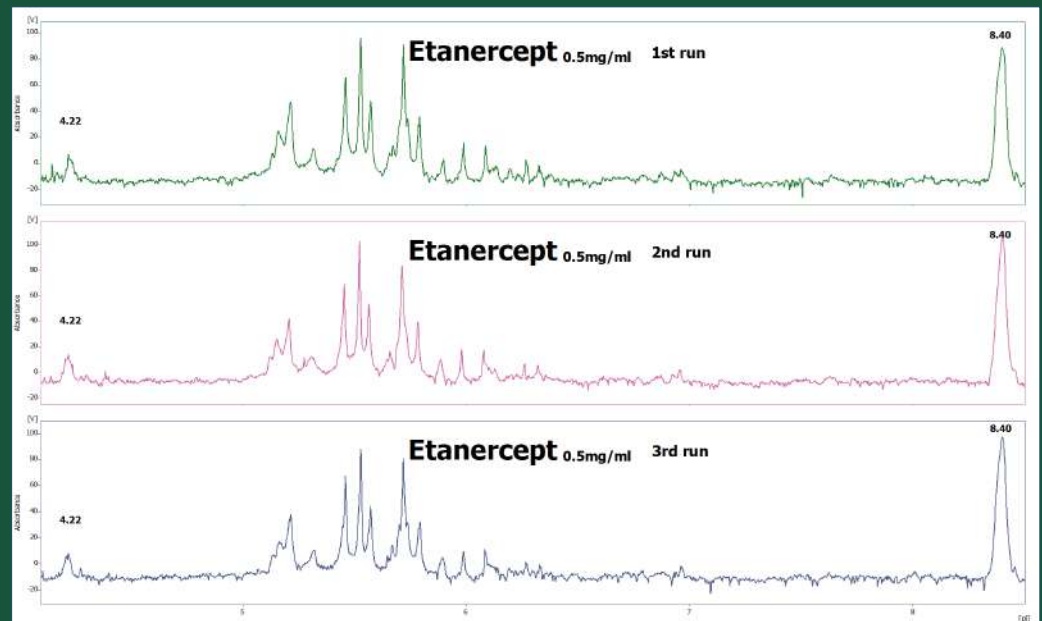
# AES critical reagent service brings your QA/QC to another level

- Carrier ampholyte customizations.
- QC using customers' criteria.
- Existing iCIEF profile matching.
- Guaranteed lot to lot consistency.
- Re-supply service.
- Help to succeed in regulation filing.

# Superior performance iCIEF for Next Generation Therapeutics:



- *Gene Therapy*
- *Cell Therapy*
- *Enzyme*
- *mRNA*
- *Lentivirus vector*
- *AAV*
- *mAbs*
- *ADCs*
- *Fusion proteins*
- *BsAbs*
- *LNP*



# Specifications

	Analytical Manual.	Analytical Auto.	Preparative Auto.
Detection mode	Whole column iCIEF		
Detector noise	Less than 0.001 AU, 280 nm		
Operation mode	<b>Manual</b>	<b>Automatic</b>	<b>Automatic</b>
Sample capacity	Single	84+3 vial tray, 96 well plate	
Sample tray temperature	-	4 - 10 °C	
Detection dynamic range	250 (0.004 – 1.0 AU, 280nm)		
Sample throughput	Up to 20 Injections per hour	Up to 12 injections per hour	-
Resolution	0.03 pI (3-10 ampholyte)		
Fractionation capability	N/A	N/A	<b>&lt;0.1 pI</b> difference
Minimum load volume	<b>2ul</b>	<b>10ul</b>	<b>20ul</b>
pI CV	<1 %	<1 %	<1 %
Peak area CV	<4%	<4%	<4%
Typical run time (one run)	10 mins	14 mins	<1 Hour
Fractionation efficiency	N/A		Up to 99% Purity
Fractionation amount	N/A		~ <b>8 µg</b> isomer/run ~ <b>100 µg</b> /day
High voltage range	0 – 3000 volts (continuously adjustable)		
Exposure time	0.02 – 99.9 ms		
ADC maximum	16386 AU		
Separation pH range	<b>2.1 – 12</b>		
Electrical requirement	100/240 VAC, 50 - 60 Hz		
Weight	25 kg	35kg	40kg



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