



AAV Capsid Characterization using LC-MS



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Activities

I worked with the Product Characterization team to transfer methods that would characterize Adeno-Associated Virus (AAV) capsids using a Liquid Chromatography-Mass Spectrometry (LC-MS) system. The two main assays I tested were intact mass and peptide mapping. The intact mass assay measures the mass of each viral protein that makes up the AAV capsid. The peptide mapping assay records the amino acid sequence coverage of the AAV sample.

Site Information

MilliporeSigma: Life Sciences

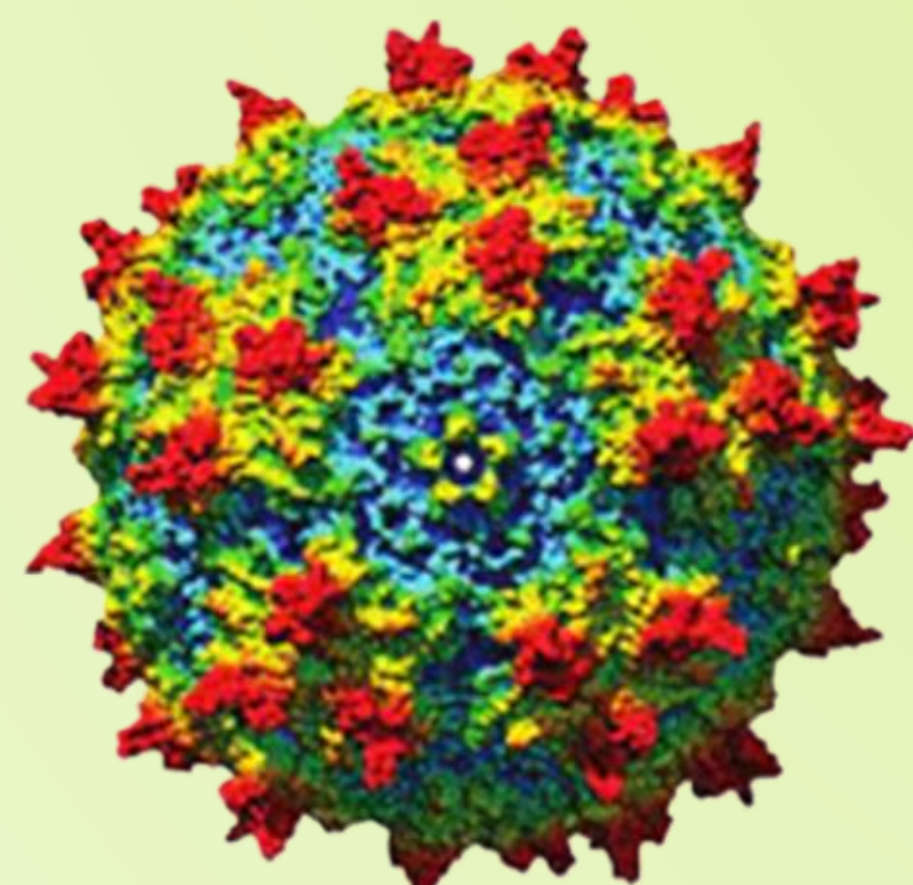
14920 Broschart Rd, Rockville, MD 20850

Supervisor: Yun Zhang

Site Mission: We work in partnership with our customers and people to progress life-saving therapies, diagnostics and preventative solutions, driving breakthroughs with the global scientific community

Introduction

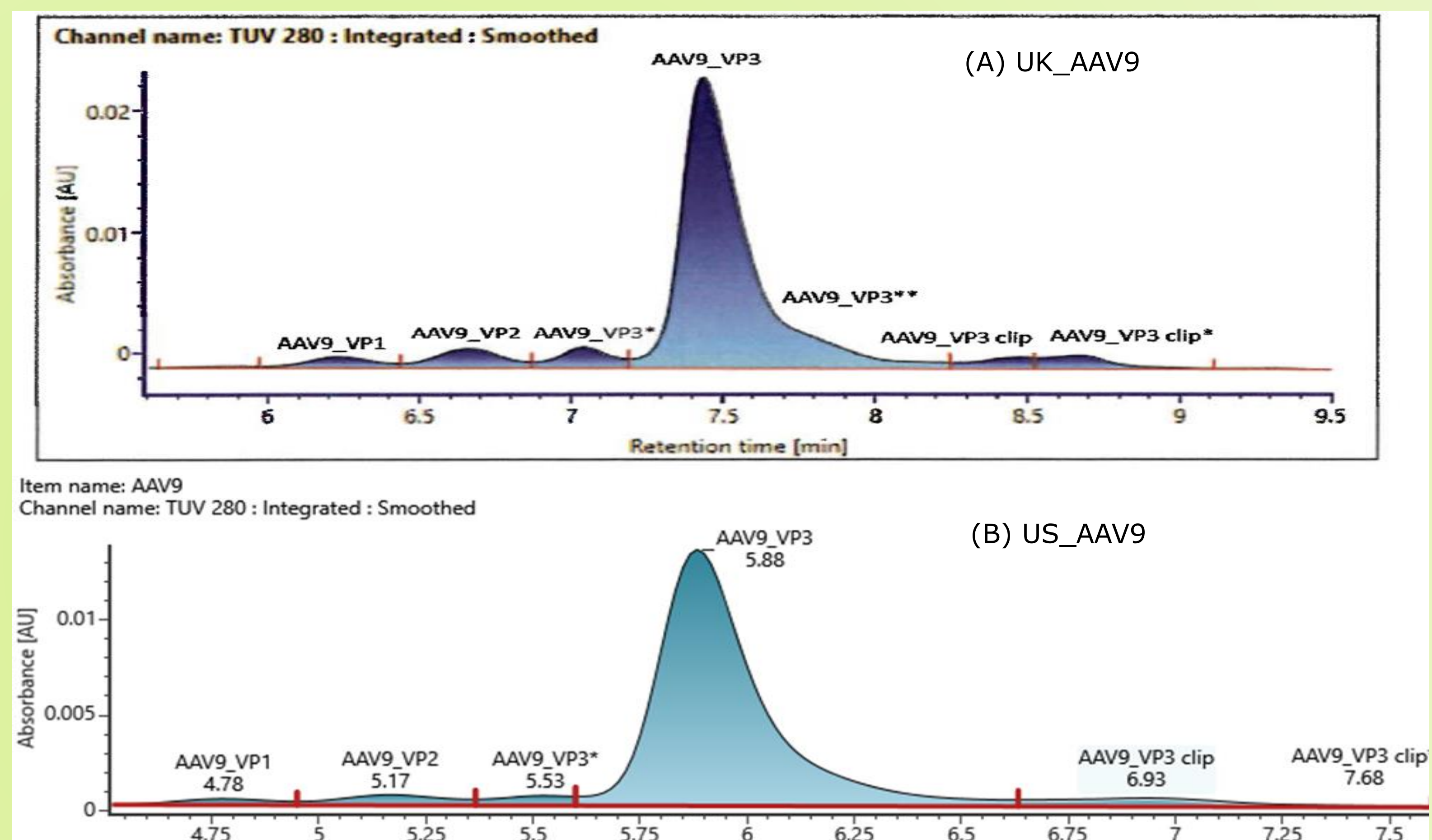
- Adeno-associated viruses (AAV) can be used as a delivery device for gene therapies
- Liquid Chromatography-Mass Spectrometry (LC-MS) separates molecules based on their size



Adeno-associated virus capsid (aavngene.com)

Issue Confronting Site

MilliporeSigma's UK site is in the process of closing so the Rockville site is transferring assay protocols so they can continue selling them to customers.



The results from my intact mass assay (B) compared to the UK results (A) I was aiming to replicate

Impacts

- As a result of my work, the site can now sell the assay to customers
- I learned aseptic technique, good manufacturing/lab practices (GMP/GLP), LC-MS, data analysis
- I started considering pursuing a Ph.D. upon graduation to lead me to a career in the research field

Future Work

- Customers will verify that the AAV capsids they distribute are characterized correctly
- This adds another layer of security for researchers who are studying AAV capsids as a delivery device in gene therapy



Lunch with the PC Custom team!

Acknowledgements

I'd like to thank all of the people who helped and supported me during my time with MilliporeSigma including Yun Zhang, Jing Jiang, the Product Characterization Custom team, and the internship coordinators. Of course, thank you to Science and Global Change for having such a big impact on my time in college and teaching me the meaning of good science!



SCIENCE AND GLOBAL CHANGE

