Express and Purify the Capsid Protein (CP) of Human Astroivirus (HAstV) VP90\textsuperscript{71–782} to uncover the structure of CP

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Project Objectives

Aim 1: Express and purify VP90\textsuperscript{71–782} capsid particles
Aim 2: Make the crystals to characterize the structure by the cryo-crystallization

Methods

\textbf{Step 1:}
- Culture bacteria which express the protein of VP90\textsuperscript{71–782}
- Purify the protein by Metal Affinity Chromatography
- Load SDS-PAGE to check the existence of the target protein

\textbf{Step 2:}
- Separate the protein by Size exclusion chromatography
- Load SDS-PAGE to check the existence of the protein

\textbf{Step 3:}
- Concentrate and screen the protein for crystal

Results

- VP90\textsuperscript{71–782} was purified by metal affinity chromatography.
- VP90\textsuperscript{71–782} is around 100 kDa. This indicates that CP\textsuperscript{71–782} exists.

Future Work

- When We Get a Good Crystal
  - Send the crystal to X-ray source
  - Get the atomic structure of the protein

- When We Get a High Molecular Weight Protein
  - Prepare the protein by negative staining
  - Observe the sample by using electron microscopy (EM)
  - If I could find a sample like Image 11,
  - Observe the protein by cryo-EM (Figure 12)

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Citations

1. Medical Virology, White, DO. Fenner, FJ

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