Analytical Ultracentrifuge PROTEOME LAB XL-I at ISB3D facilities

Web address
Visit Website

Institution
Institute of Structural Biology Drug Discovery and Development

Contact for service or sample analysis
Dr Srinivas Sistla (ssistla@vcu.edu)
Dr John Burgner (john.w.burgner@vcuhealth.org)
Analytical Ultracentrifugation (AUC)

- A first principle approach for particle characterization
  - No labelling
  - No immobilization
  - No unique buffers
- A multi-faceted technique that is the gold standard when it comes to:
  - Protein Characterization (Size Distribution, MW)
  - Protein-Ligand Interactions (Kd, Ka, Stoichiometry)
  - Protein-Protein interactions (Self Associations)
  - DNA/RNA/Viruses/Carbohydrates
- Non-Biological Characterizations
  - Exosomes
  - Lipid Nanoparticles
  - Polymers
  - Quantum Dots

Beckman Coulter XLI

Boundary Movement showing particle sedimentation

Self Association (Stoichiometry)

Nanoparticle Size Distribution

Hetero-Association (DNA:Protein)

Virus Characterization
AUC Applications

- Molecular Weight
- Stoichiometry
- Protein Aggregation
- Ligand Binding
- Conjugation efficiency
- Polydispersity
- Viral vector characterization

### AUC requirements

<table>
<thead>
<tr>
<th>Optical Systems</th>
<th>ProteomeLab XL-I</th>
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</thead>
<tbody>
<tr>
<td>Fastest Data Acquisition Rate</td>
<td>ABS: 90 sec/cell</td>
</tr>
<tr>
<td></td>
<td>INT: 5 sec/scan</td>
</tr>
<tr>
<td>Max # of Wavelengths</td>
<td>3</td>
</tr>
<tr>
<td>Wavelength Precision</td>
<td>+/- 3 nm</td>
</tr>
<tr>
<td>Lowest Radial Resolution</td>
<td>30 μm</td>
</tr>
<tr>
<td>Absorbance Flash Lamp Frequency</td>
<td>50 Hz</td>
</tr>
<tr>
<td>CCD Camera Specifications</td>
<td>2048 x 96 pixels</td>
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<tr>
<td>Interference Fringes</td>
<td>&gt; 4 fringes/cell</td>
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<tr>
<td>Usable Concentration Ranges</td>
<td>ABS: .005 - 1.5 mg/mL</td>
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<tr>
<td></td>
<td>INT: .025 - 3-4 mg/mL</td>
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