**Investigator Questions**

Can you help me make protein?
- E. coli expression
- Size Exclusion Chromatography

Can I remove aggregates from my sample?
- Static Light Scattering
- Dynamic/Static Light Scattering Instrument
- DynaPro NanoStar (Wyatt Technology)

What is the molecular weight of my protein?
- Dynamic Light Scattering
- Thermal Shift Assay

Is my protein a monomer, dimer, tetramer...?
- Differential Scanning Fluorimetry using an RT-PCR
- Screen 96-well stabilizing conditions in 2 hours

How thermostable is my protein?
- BLI Instrumentation
- ForteBio Octet RED06

Can I enhance stability of my protein?
- BLI Instrumentation
- ForteBio Octet RED06

Can I study protein:protein or protein:DNA interactions?
- Bio-Layer Interferometry

Can I get a low resolution structure?
- Small Angle X-ray Scattering
- Negative Stain Electron-Microscopy

Can I get a high resolution structure?
- X-ray Crystallography
- Cryo-Electron Microscopy

Can I get a model of my protein based on an existing high resolution structure?
- Homology Modeling

**Techniques**

**Instrumentation**

- Chromatography Instrumentation
  - Four Bio-Rad systems (Duoflow, NGC)
  - Affinity, ion exchange, hydrophobic, size exclusion columns

- Dynamic/Static Light Scattering Instrument
  - DynaPro NanoStar (Wyatt Technology)

- Differential Scanning Fluorimetry using an RT-PCR
  - Screen 96-well stabilizing conditions in 2 hours

- BLI Instrumentation
  - ForteBio Octet RED06

- Small Angle X-ray Scattering
  - Argonne National Laboratory
  - SEC-MALS-SAXS

- Negative Stain Electron-Microscopy
  - JOEL 1230
  - Hitachi 7800 (Spring 2021)

- X-ray Crystallography
- Cryo-Electron Microscopy

- Crystallization Instrumentation
  - SPT LabTech Mosquito and Dragonfly for setting up and optimizing crystallization drops
  - Forumlatrix RockImager 2 system to visualize drops post set-up

- Cryo-EM Instrumentation
  - National Centers- Portland, Stanford, New York
  - Iowa State University - Glacios
  - Hitachi 7800 (Spring 2021)

**Data Workstations**
- Stereo 3-D Linux workstations for processing and visualization

**Data Storage and Archiving**
- Dual 6TB Netgear ReadyNAS Pro filerservers and backup

**Synchrotron Access**

The Carver College of Medicine has invested a 1/10 share in the 4.2.2 synchrotron beam line located at the Advanced Light Source (ALS) in the Lawrence Berkeley National Laboratory. ALS produces high intensity X-ray radiation and our 4.2.2 beam line end station is set up to remotely collect diffraction data to determine three-dimensional structures of proteins. "Reserved" time enables researchers to carry out high quality crystallographic structure determinations at fast rates.