Physical Biochemistry Core Facility

Dr. Peter Randolph
Physical Biochemistry Facility (PBF)
Institute of Molecular Biophysics
Florida State University

Physical Biochemistry Facility provides resources for biophysical experiments

- PBF is a core facility in the Institute of Molecular Biophysics (IMB) at Florida State University (FSU)
- Supply access and training on state-of-the-art instruments

Physical Biochemistry Facility provides resources for biophysical experiments

- Broad range of instrumentation which are usually not available in a typical laboratory

- Full-service facility which will run samples as well as assist in instrument operation, experimental design and data analysis

Instrumentation Offered in PBF

- While PBF focuses on biophysical techniques this term encompasses a large variety of instruments
- PBF acts as a catch-all core facility for instruments desired by the research faculty at FSU
- 3 or more investigators want an instrument? We start gathering quotes

Two Main Types of Instruments in PBF

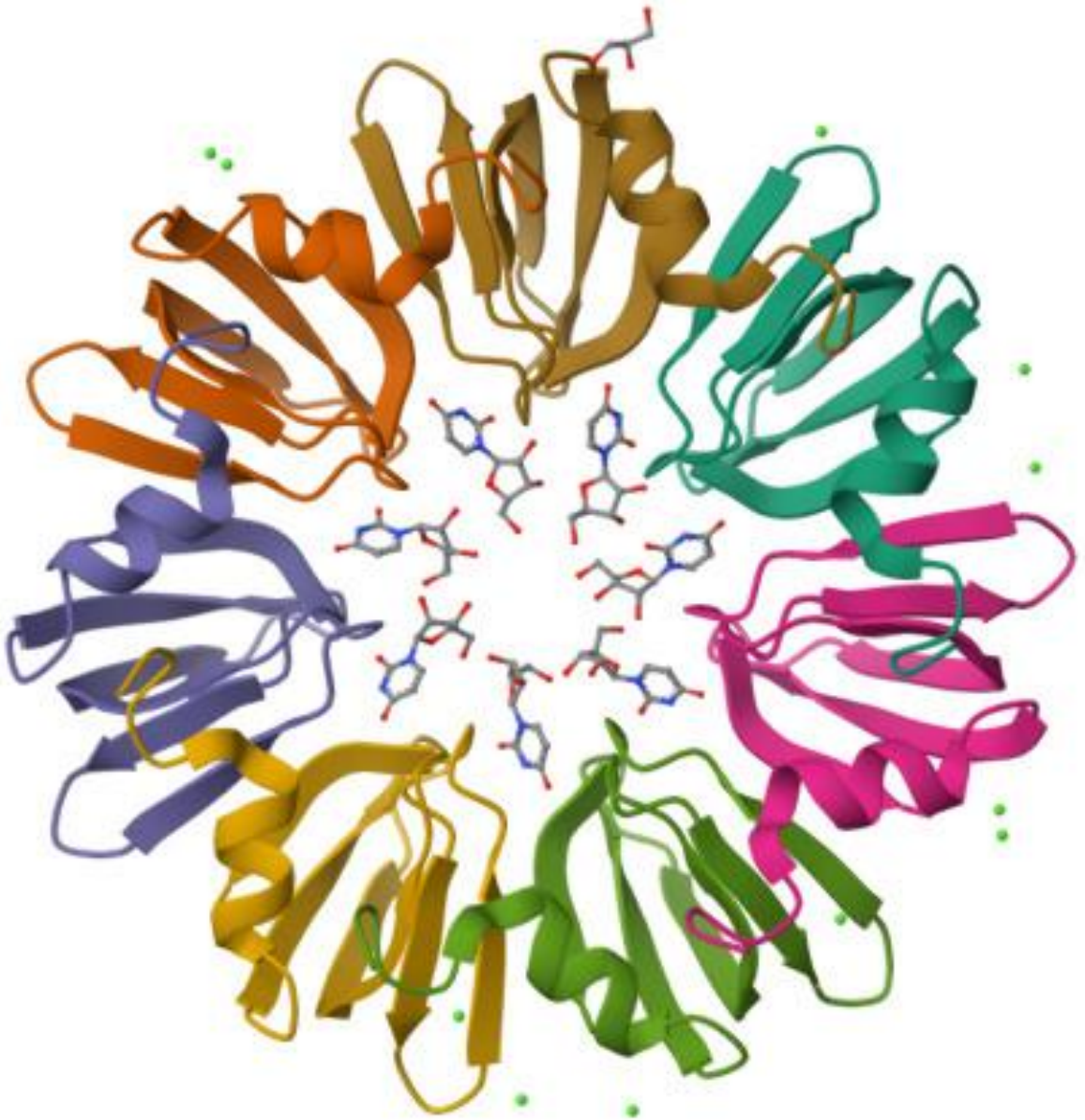
- Biophysical characterization
  - Dynamic Light Scattering (DLS)
  - Multi-angle Light Scattering (MALS)
  - Circular Dichroism (CD)
  - Analytical Ultracentrifugation (AUC)

- Binding/Activity characterization
  - NanoTemper Microscale Thermophoresis (MST)
  - Isothermal Titration Calorimetry (ITC)
  - Absorbance and Fluorescence experiments
  - Tecan Spark Microplate Reader
  - Stop-flow/Quench-flow

Common Research Requests

- Approached for characterization
  - Size and envelope
  - Oligomeric/complex state
  - Stability and melting temperatures
  - Secondary structure

- Binding and enzymatic assays



How my time is spent

- Majority of the time is spent on maintenance and training
- Run samples for select PIs
  - New PIs
  - Offsite users (infrequent)
  - Special collaborations
- Usually collaborate and publish 1 to 2 publications a year
- Bureacracy

Usage in a Small Core Facility

- Last year had 20 separate laboratories use facility
  - Around 60 researchers
- Tracked solely by my records
- 50% of research does not lead to publication
- Initially required acknowledgements and thanks, doesn’t mean anything, not trackable

RRID's and PID's for a Small Core

- Easier to implement as smaller number of instruments
  - Follow the lead of larger facilities/national laboratories
  - Flexible, but worry about long term
- RRIDs
  - Replace "acknowledgements"
  - Would be able to easily pull data on usage for reports
  - Show "value" of core easily

PIDs Opportunities

- Tracking instrument usage in terms of phasing in/out
  - AUC was one of our most used instruments 4 to 5 years ago
    - Usage has trended down for the last couple of years
    - Large service contract and expensive maintenance
      - Is it worth keeping?

- New instruments acquisitions
  - Track publications to see which instruments are in high demand
  - Multiple PIs approach about instrument
    - Use PIDs to see if worthwhile investment

PID ssues

- Incentivizing users
  - Control instrument access
  - From on high
- How to identify older instruments (that have been updated)
- How to identify modular instruments
- “Perfection is the Enemy of Progress”

Thank you for you time