Lab Sequence for Capstone cCURE with Collaborations

|  |  |  |
| --- | --- | --- |
| Week | Focus of Lab | Associated Assignments |
| 1 | Bioinformatics and Molecular Visualization: Developing a Proposal | Hypothesis outline |
| 2 | Gel Filtration: SEC with native components, gMDH and CS  Channeling kinetics experiments |  |
| 3 | Cross-linking with gMDH and CS : SDS PAGE, Mass Spec |  |
| 4 | CD and Thermal Melts of Native gMDH and CS |  |
| 5 | Proposal Ideas, interactions with Collaborators | Proposal Draft/Collaboration experiments |
| 6 | Plasmid Purification and Primer Design |  |
|  | Spring Break |  |
| 7 | Expression and Purification of Mutants | Final Proposal: what you will do, what your collaborator will do |
| 8 | Basic Kinetics of Mutant proteins (compare with week 1 as appropriate) | Is the Mutant different from Native  Statistics etc |
| 9 | Exploration of Complex | Is the Mutant different from Native  Statistics etc |
| 10 | Exploration of complex | Figures preparation |
| 11 | Exploration of complex | Poster Draft etc |
| 12 | Conformation & Stability (B) or repeat key experiments | Figures preparation  Data Exchange with Collaborators |
| 13 | Repeat key experiments to confirm data/Collaborator Interactions | Present & Discuss data/Figures with collaborators |
| 14 | Research Project Presentations |  |

**Key Techniques acquired from earlier course include**

**Basic pipetting and solutions**

**Rate measurements: uv spectroscopy**

**Standard Curves: Bradford Assay**

**Michaelis-Menten Kinetics and Inhibitors**

**Bioinformatics: Clustal omega analysis**

**DNA Isolation**

**PCR, DNA Gels**

**Protein Purification, NiNTA affinity chromatography, SDS PAGE**

**Protein CD and Thermal Melts**

**Typical Collaborations may include**

**Western Blotting**

**Fluorescence Based Thermal Shift Assays**

**MALDI-tof and es-ms/peptide mapping**

**Ligand Binding studies**

**Fluorescence Spectroscopy**