

Recombinant Proteins

Expression, Purification, and Characterization

Starting with sequence data, CBI can design over-expression systems, and generate purified recombinant proteins for biopharmaceutical development and diagnostic applications. CBI can support drug and diagnostic development organizations from discovery to market. GLP and CLIA compliance with BSL-3 facilities.

Protein Target Development

- ◆ Custom gene synthesis and codon optimization
- ◆ PCR amplification of encoding sequence from genomic or plasmid DNA
- ◆ Proteins can be designed with "HIS-TAGS", "GST-TAGS", or client selected

Expression Systems

- ◆ Selection of appropriate expression vector and insertion of target sequence
- ◆ Transfection of host cell lines including bacterial, yeast, mammalian, and insect cells
- ◆ *Pichia* expression
- ◆ Small scale fermentation to assess expression levels and characterize protein
- ◆ Cell lines include
 - o Mammalian
 - o Bacterial
 - o Yeast
 - o Insect

Purification of Recombinant Proteins

- ◆ Development of purification protocols
- ◆ Cell lysis and precipitation
- ◆ Chromatography and polishing chromatography
- ◆ Purification to > 95%

Characterization of Recombinant Proteins

- ◆ Protein sequencing and mass spectrometry
- ◆ Mass spectral analysis and mapping by MALDI-TOF/MS, ES/MS, PDS/CID/CAF
- ◆ ELISA
- ◆ SDS-Page and Western Blots
- ◆ Amino acid analysis
- ◆ Stability Testing

Biophysical Characterization

- ◆ Isothermal titration calorimetry (ITC). Determination the binding constant and stoichiometry of binding between molecules, as well as other thermodynamic parameters such as the molar heat, free energy, and entropy of binding.
- ◆ Thermal stability characterization by differential scanning calorimetry (DSC)
- ◆ Structural analysis by Circular Dichroism, Fluorescence Spectroscopy, Protein Fluorescence, Light Scattering Spectroscopy (SEC)

Scale Up Fermentation

