

Protein Folding and Misfolding

Anfinsen's Principle

- Sequence determines structure
- Spontaneous folding possible
- Minimum free energy state
- Reversible denaturation

Chaperone Proteins

- Assist protein folding
- Prevent aggregation
- HSP70, HSP90 families
- ATP-dependent mechanisms

Folding Funnels

- Energy landscape model
- Multiple pathways to native state
- Local minima can trap
- Kinetic vs thermodynamic control

Misfolding Diseases

- Alzheimer's: A β plaques
- Parkinson's: α -synuclein
- Prion diseases: PrP
- Therapeutic targets