

Investigating vectorial protein transport through nanopores

Dr. Patricia Clarck, University of Notre Dame (Principal Investigator)

Dr. Masaru Kuno, (Co-Investigator)

Dr. Luca Gavioli, Università Cattolica (Co-Investigator)

The current paradigm of protein folding is primarily based on in vitro experiments where short model proteins that reproducibly fold to a global minimum conformation are studied. However, this is not representative of real proteins that are much larger and where folding can commence anywhere along the protein length. We are currently conducting single protein fluorescence resonance energy transfer (FRET) folding measurements which test the hypothesis that vectorial transport through a nanopore and where folding commences at a fixed location on the protein is more representative of actual in vivo protein folding. This work combines single molecule optical microscopy with modern protein synthesis and functionalization and involves a collaboration between Professors Patricia Clark, Masaru Kuno and Luca Gavioli.