



Protein folding, chaperones and ribosome dynamics

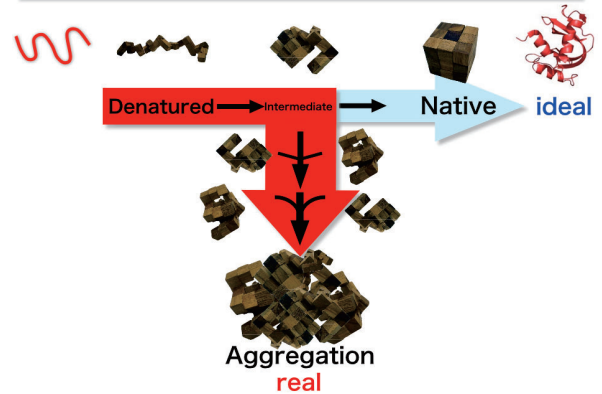
Cell Biology Center

<http://www.taguchi.bio.titech.ac.jp/>

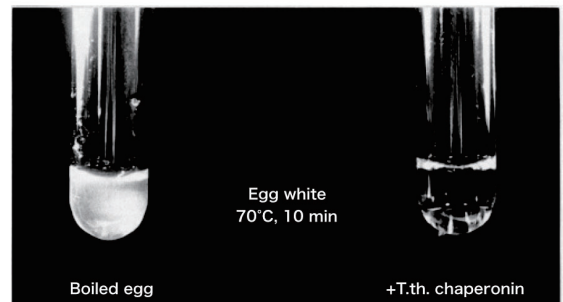
- Chaperone assisted protein folding
- Noncanonical translation dynamics
- Mass spec-based proteomics
- Single-molecule technique for protein science

Life depends on protein functions. Proteins, synthesized on the ribosome, must be folded into the correct tertiary structures. Protein folding is an essential prerequisite for proteins to execute nearly all cellular functions. Over the past half-century, tremendous efforts have been made toward to elucidate the mechanisms of translation and protein folding. However, recent progress has revealed that our knowledge on proteins is very limited. We pursue to understand the mechanism and physiological impact of chaperones and translation dynamics. Techniques include biochemistry, genetics, biophysics and so on. Our model organisms are mainly *Escherichia coli*, budding yeast.

Protein folding competes with aggregation

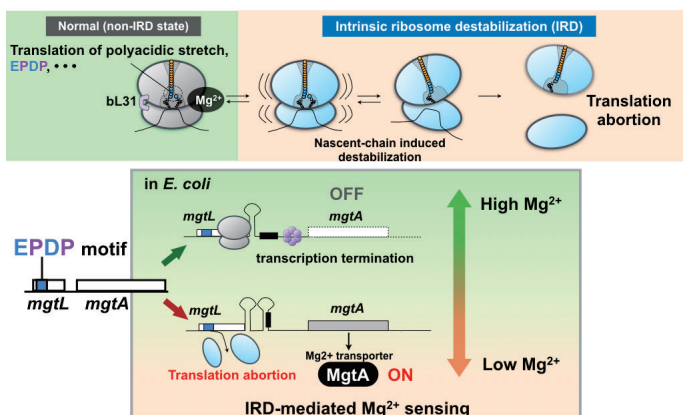


Chaperone prevents aggregation

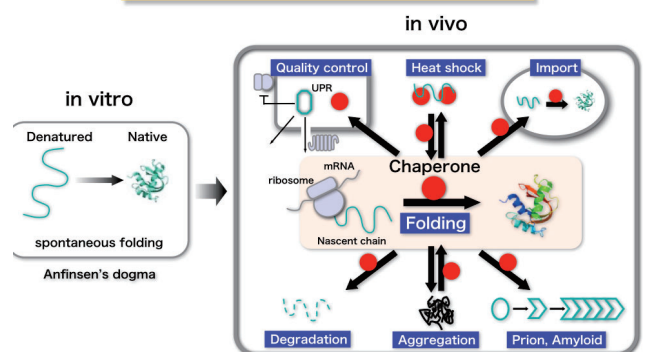


Unboiled egg in the presence of Chaperone

Nascent chain-induced ribosome destabilization



"Life of proteins" in the cell



Chaperones prevent protein aggregation, and do more