

# Stanford

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## Kevin Stein

Postdoctoral Research Fellow, Biology

### Bio

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#### BIO

My research explores protein biogenesis, one of the core cellular processes as generating a functional proteome is essential for cell viability. Specifically, I'm interested in understanding how cells decide the fate of nascent proteins, and what happens when such decision-making is impaired in disease.

Growing nascent proteins are unable to adopt their native conformation until translation completes. In this partially folded state, nascent proteins are inherently more susceptible to misfold than mature proteins. Many ribosome-associated factors are required to safeguard against misfolding and mediate the proper folding or degradation of nascent proteins. The rate of translation elongation is emerging as a major regulator of co-translational proteostasis. Impaired translation machinery or altered translation kinetics can disrupt proteostasis and lead to the aggregation of nascent proteins. My research investigates how the ribosome ensures proper translation kinetics to maintain co-translational proteostasis, and how disruption leads to protein misfolding and disease.

#### STANFORD ADVISORS

- Judith Frydman, Postdoctoral Faculty Sponsor

#### LINKS

- ResearchGate: [https://www.researchgate.net/profile/Kevin\\_Stein3](https://www.researchgate.net/profile/Kevin_Stein3)
- Google Scholar: <https://scholar.google.com/citations?user=Abk3AEoAAAAJ&hl=en>
- ORCID: <https://orcid.org/0000-0002-0622-8319>
- Twitter: <https://twitter.com/KevinCStein>
- Frydman Lab: <https://web.stanford.edu/group/frydman/web/>

### Publications

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#### PUBLICATIONS

- **Inhibition of DNAJ-HSP70 interaction improves strength in muscular dystrophy.** *The Journal of clinical investigation*  
Bengoechea, R., Findlay, A. R., Bhadra, A. K., Shao, H., Stein, K. C., Pittman, S. K., Daw, J., Gestwicki, J. E., True, H. L., Weihl, C. C.  
2020
- **Nascent Polypeptide Domain Topology and Elongation Rate Direct the Cotranslational Hierarchy of Hsp70 and TRiC/CCT.** *Molecular cell*  
Stein, K. C., Kriel, A., Frydman, J.  
2019
- **The stop and go traffic regulating protein biogenesis: how translation kinetics control proteostasis.** *The Journal of biological chemistry*  
Stein, K. C., Frydman, J.  
2018

- **Heterologous prion-forming proteins interact to cross-seed aggregation in *Saccharomyces cerevisiae*** *SCIENTIFIC REPORTS*  
Keefe, K. M., Stein, K. C., True, H. L.  
2017; 7: 5853
- **Prion Strains and Amyloid Polymorphism Influence Phenotypic Variation** *PLOS PATHOGENS*  
Stein, K. C., True, H. L.  
2014; 10 (9)
- **Structural variants of yeast prions show conformer-specific requirements for chaperone activity** *MOLECULAR MICROBIOLOGY*  
Stein, K. C., True, H. L.  
2014; 93 (6): 1156-1171
- **Myopathy-causing Mutations in an HSP40 Chaperone Disrupt Processing of Specific Client Conformers** *JOURNAL OF BIOLOGICAL CHEMISTRY*  
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- **Extensive Diversity of Prion Strains Is Defined by Differential Chaperone Interactions and Distinct Amyloidogenic Regions** *PLOS GENETICS*  
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2014; 10 (5)
- **Regulation of the Hsp104 Middle Domain Activity Is Critical for Yeast Prion Propagation** *PLOS ONE*  
Dulle, J. E., Stein, K. C., True, H. L.  
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- **Spontaneous Variants of the [RNQ plus ] Prion in Yeast Demonstrate the Extensive Conformational Diversity Possible with Prion Proteins** *PLOS ONE*  
Huang, V. J., Stein, K. C., True, H. L.  
2013; 8 (10)
- **The [RNQ(+)] prion A model of both functional and pathological amyloid** *PRION*  
Stein, K. C., True, H. L.  
2011; 5 (4): 291-298
- **Natural variation in life history and aging phenotypes is associated with mitochondrial DNA deletion frequency in *Caenorhabditis briggsae*** *BMC EVOLUTIONARY BIOLOGY*  
Estes, S., Coleman-Hulbert, A. L., Hicks, K. A., de Haan, G., Martha, S. R., Knapp, J. B., Smith, S. W., Stein, K. C., Denver, D. R.  
2011; 11
- **Selective sweeps and parallel mutation in the adaptive recovery from deleterious mutation in *Caenorhabditis elegans*** *GENOME RESEARCH*  
Denver, D. R., Howe, D. K., Wilhelm, L. J., Palmer, C. A., Anderson, J. L., Stein, K. C., Phillips, P. C., Estes, S.  
2010; 20 (12): 1663-1671