Chaperone activation by unfolding.

Foit L et al.

Proceedings of the National Academy of Sciences of the United States of America. 2013 Apr 02; 110(14):E1254-62

https://doi.org/10.1073/pnas.1222458110

PMID: 23487787

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Evaluations

Very Good ★ ★ 15 Apr 2013

Eleanor Lederer

pH is recognized as an important modulator of protein and cell function, but its mechanisms do not seem to be particularly well worked out. Additionally, there seems to be a tendency to think of protein function as something of an all-or-nothing phenomenon – it's working or it's not. Finally, as described in the article, we tend to equate order with function. This article addresses all three issues, turning some ideas on their heads. The authors determine that HdeA, a chaperone protein, is inactive in its ordered state, but unfolds partially in the face of low pH and assumes its function. Selective amino acid mutations allow the authors to identify key residues important for the chaperone process and for the interactions between monomers. I chose this paper for the concepts raised. While the existence of intrinsically disordered proteins has been described, the idea is not widely disseminated in most biological literature. Additionally, the notion of unfolding conferring function, again, while not entirely new, is highlighted well as a mechanism for partial and complete activation. Finally, an intriguing mechanism for pH-stimulated protein modulation is elegantly described in this manuscript.

Classifications

Interesting Hypothesis New Finding

Cite this Recommendation:

Lederer E: Faculty Opinions Recommendation of [Foit L et al., Proc Natl Acad Sci USA 2013 110(14:E1254-62)]. In Faculty Opinions, 15 Apr 2013;

https://doi.org/10.3410/f.717996643.793474019

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Recommended 9.3

Score 9.3

Relative citation ratio: **2.05**

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1 Recommendation

0 ★★★ Exceptional

1 ★★ Very good

0 ★ Good

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