

How can understanding misfolded proteins help improve disease treatments?

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Protein Folding

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Credit: American Chemical Society

Proteins are like tiny machines in our bodies, helping with almost everything we do, including breaking down food, carrying messages between cells, and building and repairing tissues, like muscles and skin.

Protein folding is a protein's way of twisting and bending into the right shape so it can do its job correctly in the body. However, when protein folding goes wrong, it can have detrimental consequences. Misfolded proteins may fail to perform their intended functions or adopt harmful structures that interfere with normal cellular processes.

These [misfolded proteins](#) can accumulate in cells, leading to various diseases, such as Alzheimer's disease, cystic fibrosis, cancers and more. In Alzheimer's, misfolded proteins mold into toxic plaques that disrupt neuronal function.

The [new book](#) by University of Hawai'i at Mānoa Department of Chemistry researchers, "Protein Folding," published by the American Chemical Society, is a comprehensive publication that delves into the intricate world of protein folding.

Authored by chemistry Ph.D. candidate Grace E. Orellana, and Assistant Professor Ellinor Haglund, the book provides a thorough overview of the fundamental principles governing protein folding, from basic concepts to advanced theories. With a focus on both experimental techniques and theoretical frameworks, Orellana and Haglund explore the dynamic process of protein folding, shedding light on the key factors that influence folding pathways and kinetics.

"By understanding [protein folding](#) at a fundamental level, researchers can unlock new avenues for [biomedical research](#) and drug discovery, hopefully leading to improved treatments for protein misfolding-related diseases," Orellana and Haglund said.

More information: Grace E. Orellana et al, Protein Folding (2024).
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