The Role of Molecular Chaperones in Protein Homeostasis

Ashley Baker
PhD
University of Milan
Via Festa del Perdono, 7, 20122 Milano MI, Italy

Adrian Lee
Dr.
Utrecht University
Heidelberglaan 8, 3584 CS Utrecht, Netherlands

Chris Miller
Prof.
Seoul National University
1 Gwanak-ro, Gwanak-gu, Seoul 08826, South Korea

Abstract. Molecular chaperones are essential for maintaining protein homeostasis within cells. This article explores their function in assisting protein folding and preventing aggregation, which is crucial for cellular health. Our study provides insights into the mechanisms by which chaperones facilitate proper protein conformation, highlighting their potential therapeutic applications in diseases characterized by protein misfolding.

Keywords: Molecular Chaperones, Protein Homeostasis, Protein Folding, Cellular Health, Therapeutic Applications

Introduction

Molecular chaperones are a class of proteins that play a vital role in ensuring protein homeostasis by assisting in the proper folding of nascent polypeptides and preventing the aggregation of misfolded proteins. These chaperones operate as part of a sophisticated quality control system that maintains cellular proteome integrity. Our research focuses on elucidating the molecular mechanisms of chaperone function, examining their interactions with client proteins, and assessing their impact on cellular health. By understanding the role of chaperones in maintaining protein homeostasis, we can explore their potential as therapeutic targets in diseases such as neurodegeneration and cancer, where protein misfolding and aggregation are prevalent.

References

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