



How molecular chaperones fold proteins

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Cells have developed a quality control system that ensures that the proteome folds correctly, keeps its native conformation and that unspecific aggregation is prevented. This is especially important under stress conditions when massive protein unfolding occurs or in the context of diseases when the cellular protein homeostasis is out of control. The key elements of the cellular stress defense system are molecular chaperones. These molecular machines of protein folding share the remarkable ability of specifically recognizing non-native proteins and assisting their folding to the native state. There are several classes of molecular chaperones, which evolved independently such as the small heat shock proteins, Hsp70 and Hsp90. Progress in recent years, combining in vitro reconstitution and cellular assays, allows us now to define mechanisms and reaction cycles of molecular chaperones as well as the principles of regulation.

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東北大学
学際科学フロンティア研究所
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& オンライン

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