

Handbook on Molecular Biology



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Published by

**Sree Balaji Medical College & Hospital
Bharath Institute of Higher Education & Research (BIHER)**

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Aksharaa Books

An imprint of Aksharaa Muthra Aalayam Pvt. Ltd.,

Published by

Aksharaa Muthra Aalayam Pvt. Ltd.,

No.441/303, Anna Salai, Teynampet, Chennai - 600 018, Tamilnadu, India.

&

in association with

Sree Balaji Medical College & Hospital

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Protein Targeting

Definition: Protein targeting or protein sorting is the biological mechanism by which proteins are transported to their appropriate destinations within or outside the cell.

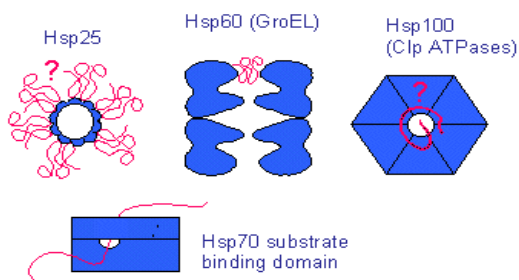
- Proteins can be targeted to the inner space of an organelle, different intracellular membranes, the plasma membrane, or to the exterior of the cell via secretion.
- Information contained in the protein itself directs this delivery process.
- Correct sorting is crucial for the cell; errors have been linked to multiple disease-states

Chaperones

Definition: Chaperone proteins, are proteins that assist others to fold properly during or after synthesis, to refold after partial denaturation, and to translocate to the cellular locales at which they reside and function.

- Chaperones are also involved in the regulation of their own genes and in the presentation of proteins destined for degradation by proteases.
- Some chaperones are themselves proteases
- Many chaperones are stress (heat shock) proteins, in that they increase in quantity on cell stress (also termed heat shock, although heat is not the only stressor known) so as to counteract the protein-denaturing effects of stressors (e.g., heat, alcohol, ischemia-hypoxia, heavy metals, and hypersalinity).
- There are many cell stressors that cause stress or heat shock and many stress or heat shock proteins, but not all of the latter are molecular chaperones

Modes of substrate binding by chaperones





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Typeset & Printed by

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ISBN: 978-93-94609-06-8



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