

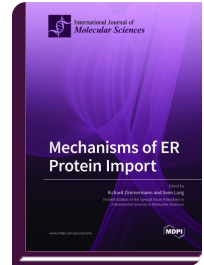


Special Issue Reprint

Mechanisms of ER Protein Import

www.mdpi.com/books/reprint/5416

Edited by
Richard Zimmermann
Sven Lang



ISBN 978-3-0365-4094-8 (Hardback)
ISBN 978-3-0365-4093-1 (PDF)

Protein import into the endoplasmic reticulum (ER) is the first step in the biogenesis of approximately 10,000 different soluble and membrane proteins of human cells, which amounts to about 30% of the proteome. Most of these proteins fulfill their functions either in the membrane or lumen of the ER plus the nuclear envelope, in one of the organelles of the pathways for endo- and exocytosis (ERGIC, Golgi apparatus, endosome, lysosome, and trafficking vesicles), or at the cell surface as plasma membrane or secreted proteins. An increasing number of membrane proteins destined to lipid droplets, peroxisomes or mitochondria are first targeted to and inserted into the ER membrane prior to their integration into budding lipid droplets or peroxisomes or prior to their delivery to mitochondria via the ER-SURF pathway. ER protein import involves two stages, ER targeting, which guarantees membrane specificity, and the insertion of nascent membrane proteins into or translocation of soluble precursor polypeptides across the ER membrane. In most cases, both processes depend on amino-terminal signal peptides or transmembrane helices, which serve as signal peptide equivalents. However, the targeting reaction can also involve the ER targeting of specific mRNAs or ribosome–nascent chain complexes. Both processes may occur co- or post-translationally and are facilitated by various sophisticated machineries, which reside in the cytosol and the ER membrane, respectively. Except for resident ER and mitochondrial membrane proteins, the mature proteins are delivered to their functional locations by vesicular transport.



Order Your Print Copy
You can order print copies at
www.mdpi.com/books/reprint/5416

MDPI Books offers quality open access book publishing to promote the exchange of ideas and knowledge in a globalized world. MDPI Books encompasses all the benefits of open access – high availability and visibility, as well as wide and rapid dissemination. With MDPI Books, you can complement the digital version of your work with a high quality printed counterpart.



Open Access

Your scholarly work is accessible worldwide without any restrictions. All authors retain the copyright for their work distributed under the terms of the Creative Commons Attribution License.



Author Focus

Authors and editors profit from MDPI's over two decades of experience in open access publishing, our customized personal support throughout the entire publication process, and competitive processing charges as well as unique contributor discounts on book purchases.



High Quality & Rapid Publication

MDPI ensures a thorough review for all published items and provides a fast publication procedure. State-of-the-art research and time-sensitive topics are released with a minimum amount of delay.



High Visibility

Due to our global network and well-known channel partners, we ensure maximum visibility and broad dissemination. Title information of books is sent to international indexing databases and archives, such as the Directory of Open Access Books (DOAB), and the Verzeichnis Lieferbarer Bücher (VLB).



Print on Demand and Multiple Formats

MDPI Books are available for purchase and to read online at any time. Our print-on-demand service offers a sustainable, cost-effective and fast way to publish MDPI Books printed versions.