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Mechanisms of membrane protein biogenesis

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More than 25% of the cellular proteome comprise membrane proteins that have to be inserted into the correct target membrane. Most membrane proteins are delivered to the membrane by the signal recognition particle (SRP) pathway which relies on the recognition of an N-terminal signal sequence. In contrast to this co-translational mechanism, which avoids problems due to the hydrophobic nature of the cargo proteins, tail-anchored (TA) membrane proteins utilize a post-translational mechanism for membrane insertion – the GET pathway (guided entry of tail-anchored membrane proteins). The SRP and GET pathways are both regulated by GTP and ATP binding proteins of the SIMIBI family. However, in the SRP pathway the SRP RNA plays a unique regulatory role. Recent insights into eukaryotic SRP will be discussed.

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