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IPR030659 SecY conserved site ★

InterPro entry

Short name *SecY_CS*

Description

The eubacterial secY protein [1 (/interpro/entry/InterPro/IPR030659/#PUB00003823)] plays an important role in protein export. It interacts with the signal sequences of secretory proteins as well as with two other components of the protein translocation system: secA and secE. SecY is an integral plasma membrane protein of 419 to 492 amino acid residues that apparently contains ten transmembrane segments. Such a structure probably confers to secY a 'translocator' function, providing a channel for periplasmic and outer-membrane precursor proteins.

Homologues of secY are found in archaebacteria [2 (/interpro/entry/InterPro/IPR030659/#PUB00000694)]. SecY is also encoded in the chloroplast genome of some algae [3 (/interpro/entry/InterPro/IPR030659/#PUB00001631)] where it could be involved in a prokaryotic-like protein export system across the two membranes of the chloroplast endoplasmic reticulum (CER) which is present in chromophyte and cryptophyte algae.

In eukaryotes, the evolutionary related protein sec61-alpha plays a role in protein translocation through the endoplasmic reticulum; it is part of a trimeric complex that also consist of sec61-beta and gamma [4 (/interpro/entry/InterPro/IPR030659/#PUB00004170)].

This entry represents two conserved sites for secY. The first corresponds to the second transmembrane region, which is the most conserved section of these proteins. The second spans the C-terminal part of the fourth transmembrane region, a short intracellular loop, and the N-terminal part of the fifth transmembrane region.

Contributing Member Database Entry

PROSITE patterns:
PS00756 (/interpro/entry/prosite/PS00756/)
,
PS00755 (/interpro/entry/prosite/PS00755/)

References

1. (/interpro/entry/InterPro/IPR030659/#description-1) SecY and integral membrane components of the Escherichia coli protein translocation system. Ito K. *Mol. Microbiol.* 6, 2423-8, (1992). PMID: 1406280 (https://europepmc.org/abstract/MED/1406280) View article (https://doi.org/10.1111/j.1365-2958.1992.tb01414.x) PMID: 15444217 (https://europepmc.org/abstrac

2. (/interpro/entry/InterPro/IPR030659/#description-2) Presence of a gene in the archaebacterium Methanococcus vannielii homologous to secY of eubacteria. Auer J, Spicker G, Bock A. *Biochimie* 73, 683-8, (1991). View article (https://doi.org/10.1016/0300-9084(91)90048-6) PMID: 1764515 (https://europepmc.org/abstract/MED/1764515)

3. (/interpro/entry/InterPro/IPR030659/#description-3) A secY homologue is found in the plastid genome of Cryptomonas phi. Douglas SE. *FEBS Lett.* 298, 93-6, (1992). View article (https://doi.org/10.1016/0014-5793(92)80029-A) PMID: 1544427

4. (/interpro/entry/InterPro/IPR030659/#description-4) Evolut conservation of components of the protein translocation complex. Hartmann E, Sommer T, Prehn S, Gorlich D, Jentsch S, Rapoport TA. *Nature* 367, 654-7, (1994). View article (https://doi.org/10.1038/367654a0) PMID: 8107851 (https://europepmc.org/abstrac