The biogenesis of peroxisomes requires a group of protein factors referred to as peroxins which are encoded by the PEX genes. Peroxisomal proteins are synthesized on free polyribosomes and imported posttranslationally. The transport of peroxisomal matrix proteins from the cytoplasm to the peroxisome is mediated by two peroxisome-targeting signal sequences. Peroxisomal membrane proteinsare imported independently of the matrix proteins by a distinct mechanism mediated by the membrane PTS signal.Pex7p, Pex18p, and Pex21p are involved in peroxisome biogenesis and the import of peroxisomal matrix proteins that contain the peroxisomal targeting sequence PTS2. The PTS2 is located within the first 20 amino acids and has the consensus sequence H/R-L-X5-H-L. Pex7p binds PTS2-containing proteins in the cytoplasm and delivers them to the peroxisomal membrane where Pex18p and Pex21p contribute to their interaction with the peroxisomal import machinery.Two subcomplexes of the peroxisomal import machinery have been defined: the docking subcomplex comprises Pex14p, Pex17p, and Pex13p, while the translocation subcomplex contains Pex2p, Pex10p, and Pex12p. The proteins of the translocation complex expose their RING finger domains to the outer face of the peroxisomal membrane, and act downstream of Pex14p, Pex17p, and Pex13p during the peroxisomal protein import process. Association of both subcomplexes into a larger import complex requires Pex8p, an intraperoxisomal protein. Pex8p organizes the formation of the larger import complex from the trans side of the peroxisomal membrane and thus might enable functional communication between both sides of the membrane.Localization studies suggest that Pex7p shuttles between the cytoplasm and the peroxisomal matrix, as Pex7p with an amino-terminal tag localized to the cytoplasm while Pex7p with a carboxy-terminal tag primarily localized to the peroxisome. Although peroxisome biogenesis can be induced by growing S. cerevisiae on oleic acid, PEX7 expression was not induced in the presence of oleic acid.Pex7p is a member of the family of proteins that contain WD repeats. Orthologs of PEX7 have been identified in other fungi, plants, and humans but not in nematodes. The human PEX7 is responsible for the rare developmental disorder rhizomelic chondrodysplasia punctata.