about the Cytoplasm-to-vacuole targetingpathway Cytoplasm-to-vacuole targetingis a constitutive and specific form of autophagy that uses autophagosomal-like vesicles for selective transport of hydrolases aminopeptidase Iand alpha-mannosidaseto the vacuole. Unlike autophagy, which is primarily a catabolic process, Cvt is a biosynthetic process. Like autophagosomes, Cvt vesicles form at a structure known as the phagophore assembly site. The PAS structure generates an isolation membrane, which expands and eventually fuses along the edges to complete vesicle formation. At the vacuole, the outer membrane of the Cvt vesicle fuses with the vacuolar membrane, the vesicle is degraded, and the cargos are released and processed into their mature forms by vacuolar peptidases. The Cvt pathway has not been observed outside of yeast, and enzymes specifically involved in this pathway are not well conserved in other organisms.about SNX4 Snx4p encodes a member of the sorting nexin family, which includes proteins that contain a Phox homologyphosphoinositide-binding domain and play a role in membrane protein sorting. Of the SNX family members, Snx4p is part of a sub-group of proteins that contain large C-terminal regions with multiple coiled-coil domains. The Snx4p PX domain binds phosphatidylinositol 3-phosphate and is required for Snx4p localization to the PAS, where the protein plays a role in the Cvt pathway. Snx4p also localizes to endosomes, where it functions in endosomal sorting. Null snx4 mutations prevent maturation of aminopeptidase I, indicating defects in Cvt pathway function, and cause improper localization of the v-SNARE Snc1p to the vacuole. The role of Snx4p in the Cvt pathway involves interaction with Atg20p; this complex appears to interact with the Atg1p-Atg13p complex via interaction with Atg17p and Atg11p. The Atg20p-Snx4p complex also helps mediate endosomal sorting of Snc1p, which is retrieved from post-Golgi endosomes back to the Golgi; Snc1p is mislocalized to the vacuole in an snx4null mutant. Snx4p also interacts with Btn2p, which is the yeast ortholog of the mammalian Hook1 protein and is likely to function in late endosome-Golgi recycling. Snx4p homologs have been identified in humansand fungi, but not in A. thaliana.about autophagy nomenclature The initial identification of factors involved in autophagy was carried out by several independent labs, which led to a proliferation of nomenclature for the genes and gene products involved. The differing gene name acronyms from these groups included APG, AUT, CVT, GSA, PAG, PAZ, and PDD. A concerted effort was made in 2003 by the scientists working in the field to unify the nomenclature for these genes, and \"AuTophaGy-related\" genes are now denoted by the letters ATG. In addition to the ATG gene names that have been assigned to S. cerevisiae proteins and their orthologs, several ATG gene names, including ATG25, ATG28, and ATG30, have been used to designate proteins in other ascomycete yeast species for which there is no identifiable equivalent in S. cerevisiae.