UGA4 encodes a vacuolar membrane localized permease involved in the transport and utilization of the nitrogen source gamma-aminobutyric acid. GABA uptake is also mediated by the general amino acid permease, Gap1p and the proline-specific permease, Put4p. Triple mutants grow poorly when GABA is the sole nitrogen source, and have a very low rate of GABA uptake under all growth conditions tested. Uga4p also catalyzes the transport of the polyamine putrescine, and delta-aminolevulinic acid, a precursor of porphyrin biosynthesis. Based on both functional and phylogenetic criteria, Uga4p has been classified as a member of the amino acid/choline transportersubfamily, TC 2.A.3.4,, and by sequence similarity is most closely related to HNM1, the yeast choline transporter. Although UGA4 shares limited sequence similarity to previously identified GABA transporters in other species, functional complementation of the triple mutanthas been used to identify GABA transporters from Candida albicansand Arabidopsis thaliana.The expression of UGA4 is induced by GABA, as is that of UGA1 and UGA2, genes encoding enzymes that catalyze the two-step conversion of GABA to succinate, through the actions of Uga3p, a pathway specific transcriptional activator, and Dal81p, a pleiotrophic activator that regulates multiple nitrogen catabolic genes. These factors bind to an upstream activation site, called the UAS-GABA element, located in the promoters of the UGA genes. When cells are grown in the presence of a poor nitrogen source that lacks GABA, the expression of UGA4 is negatively regulated by the transcriptional repressor Dal80p, a member of the GATA family of sequence-specific DNA binding proteins that binds to adjacent repeats of a distinct upstream elementand functions as a conditional transcriptional repressor. Upon the addition of GABA, the transcriptional activator Gln3p, a second GATA family member, competes with Dal80p for UAS-GATA sites, resulting in increased UGA4 expression (