

Table S4. Putative stress related proteins c

LAMAP LAMAP2480_0009
LAMAP LAMAP2480_0119
LAMAP LAMAP2480_0131
LAMAP LAMAP2480_0152
LAMAP LAMAP2480_0205
LAMAP LAMAP2480_0267
LAMAP LAMAP2480_0403
LAMAP LAMAP2480_0441
LAMAP LAMAP2480_0745
LAMAP LAMAP2480_0764
LAMAP LAMAP2480_1038
LAMAP LAMAP2480_1096
LAMAP LAMAP2480_1201
LAMAP LAMAP2480_1401
LAMAP LAMAP2480_1434
LAMAP LAMAP2480_1468
LAMAP LAMAP2480_1674
LAMAP LAMAP2480_1857
LAMAP LAMAP2480_2045
LAMAP LAMAP2480_2063
LAMAP LAMAP2480_2069
LAMAP LAMAP2480_2070

LAMAP	LAMAP2480_2077
LAMAP	LAMAP2480_2373
LAMAP	LAMAP2480_2453
LAMAP	LAMAP2480_2663
LAMAP	LAMAP2480_3126
LAMAP	LAMAP2480_3150
LAMAP	LAMAP2480_3350
LAMAP	LAMAP2480_3357
LAMAP	LAMAP2480_3440
LAMAP	LAMAP2480_3603
LAMAP	LAMAP2480_3757
LAMAP	LAMAP2480_3972
LAMAP	LAMAP2480_4090
LAMAP	LAMAP2480_4336
LAMAP	LAMAP2480_4338
LAMAP	LAMAP2480_4879
LAMAP	LAMAP2480_4890
LAMAP	LAMAP2480_5022
LAMAP	LAMAP2480_5966
LAMAP	LAMAP2480_6106
LAMAP	LAMAP2480_6178
LAMAP	LAMAP2480_6448
LAMAP	LAMAP2480_6504
LAMAP	LAMAP2480_6505
LAMAP	LAMAP2480_6507
LAMAP	LAMAP2480_6563
LAMAP	LAMAP2480_6691

LAMAP LAMAP2480_6814
LAMAP LAMAP2480_6917
LAMAP LAMAP2480_6926
LAMAP LAMAP2480_7125
LAMAP LAMAP2480_7420
LAMAP LAMAP2480_7421
LAMAP LAMAP2480_7422
LAMAP LAMAP2480_7464
LAMAP LAMAP2480_7482
LAMAP LAMAP2480_7504
LAMAP LAMAP2480_7551
LAMAP LAMAP2480_7674
LAMAP LAMAP2480_7820
LAMAP LAMAP2480_8061
LAMAP LAMAP2480_8135
LAMAP LAMAP2480_8309
LAMAP LAMAP2480_8380
LAMAP LAMAP2480_8438
LAMAP LAMAP2480_8609
LAMAP LAMAP2480_8695
LAMAP LAMAP2480_9065
LAMAP LAMAP2480_9100
LAMAP LAMAP2480_9123
LAMAP LAMAP2480_9334
LAMAP LAMAP2480_9676
LAMAP LAMAP2480_9797
LAMAP LAMAP2480_9845

LAMAP	LAMAP2480_10006
LAMAP	LAMAP2480_10082

onserved in Brettanomyces strains

vacuolar protein sorting-associated protein 16 homolog
proton symporter of the plasma membrane, subject to glucose-induced inactivation, strongly but transiently induced when cells are subjected to osmotic shock
of the Sec1p/Munc-18 family, essential for vacuolar protein sorting; required for the function of Pep12p and the early endosome/late Golgi SNARE Tlg2p; essential for fusion of Golgi-derived vesicles with the prevacuolar compartment
oxidase, integral membrane protein with similarity to Fet3p; may have a role in iron transport
fusion and transport protein UGO1
repair protein RAD57
subunit of the trehalose-6-phosphate synthase/phosphatase complex, which synthesizes the storage carbohydrate trehalose; expression is induced by stress conditions and repressed by the Ras-cAMP pathway
starvation modulator protein 1
oxide oxidoreductase, flavohemoglobin involved in nitric oxide detoxification; plays a role in the oxidative and nitrosative stress responses
protein of unknown function; expression repressed by inosine and choline in an Opi1p-dependent manner; expression induced by mild heat-stress on a non-fermentable carbon
and cobalt transport protein CorA
fumarate reductase, required with isoenzyme Osm1p for anaerobic growth; may interact with ribosomes, based on co-purification experiments; authentic, non-tagged protein is detected in purified mitochondria in high-throughput studies
transporter
resistance MFS transporter, drug:H ⁺ antiporter-2 (14 Spanner) (DHA2) family
b2 (L-lactate cytochrome-c oxidoreductase), component of the mitochondrial intermembrane space, required for lactate utilization; expression is repressed by glucose and anaerobic conditions
permease, required for high-affinity transport of proline; also transports the toxic proline analog azetidine-2-carboxylate (AzC); PUT4 transcription is repressed in ammonia-grown cells
resistance MFS transporter, drug:H ⁺ antiporter-2 (14 Spanner) (DHA2) family
symporter of the plasma membrane; transport activity is dependent on the pH gradient across the membrane; mediates high-affinity uptake of carbon sources lactate, pyruvate, and acetate, and also of the micronutrient selenite, whose structure mimics that of monocarboxylates; expression and localization are tightly regulated, with transcription repression, mRNA degradation, and protein endocytosis and degradation all occurring in the presence of glucose
transporter, sugar porter (SP) family
solute:sodium symporter (SSS) family
zinc transporter
secreted protein

transporter, sugar porter (SP) family
alpha of assimilatory sulfite reductase, which converts sulfite into sulfide
shock protein 26
xylose and arabinose reductase; member of the aldo-keto reductase (AKR) family; GFP-fusion protein is induced in response to the DNA-damaging agent MMS
transporter ESBP6
permease, mediates purine (adenine, guanine, and hypoxanthine) and cytosine accumulation
nicotinic acid transporter
transporter AQR1
with a potential role in cell survival pathways, required for the diauxic growth shift; expression in mammalian cells increases survival under conditions inducing apoptosis; mutant has increased aneuploidy tolerance
membrane H ⁺ -pantothenate symporter; confers sensitivity to the antifungal agent fenpropimorph
of the multi-drug and toxin extrusion (MATE) family of the multidrug/oligosaccharidyl-lipid/polysaccharide (MOP) exporter superfamily; overproduction confers ethionine resistance and accumulation of S-adenosylmethionine
osmotic stress response (OSM) domain
nucleoside permease
shock factor protein
transporter ESBP6
carboxypeptidase yscS; expression is induced under low-nitrogen conditions
transporter ESBP6
membrane antiporter with Ca ²⁺ /H ⁺ and K ⁺ /H ⁺ exchange activity, involved in control of cytosolic Ca ²⁺ and K ⁺ concentrations; has similarity to sodium/calcium exchangers, including the bovine Na ⁺ /Ca ²⁺ ,K ⁺ antiporter
symporter
sulfate permease; physically interacts with Hsp82p; green fluorescent protein (GFP)-fusion protein localizes to the ER; YPR003C is not an essential gene
transporter
transporter C757.13
nucleoside transporter family
permease, transports maltose, maltotriose, alpha-methylglucoside, and turanose; identical to Mph3p; encoded in a subtelomeric position in a region likely to have undergone duplication
transporter, sugar porter (SP) family
malate dehydrogenase, catalyzes interconversion of malate and oxaloacetate; involved in the tricarboxylic acid (TCA) cycle; phosphorylated
transport protein SEC20

membrane riboflavin transporter; facilitates the uptake of vitamin B2; required for FAD-dependent processes; sequence similarity to mammalian monocarboxylate permeases, however mutants are not deficient in monocarboxylate transport
resistance MFS transporter, drug:H ⁺ antiporter-2 (14 Spanner) (DHA2) family
transporter, sugar porter (SP) family
MFS-type transporter C1683.03c
nucleoside transporter family
beta-glucosidase I
transporter C36.03c
endopeptidase ctsD
and cobalt transport protein CorA
membrane zinc transporter, transports zinc from the cytosol into the vacuole for storage; also has a role in resistance to zinc shock resulting from a sudden influx of zinc into the
metal ion transporter involved in manganese homeostasis; has broad specificity for di-valent and tri-valent metals; post-translationally regulated by levels of metal ions; member of the Nramp family of metal transport proteins
ABC transporter
uptake protein, Trk family
converts D-xylulose and ATP to xylulose 5-phosphate and ADP; rate limiting step in fermentation of xylulose; required for xylose fermentation by recombinant <i>S. cerevisiae</i> strains
integral membrane protein required for efflux of amino acids during autophagic body breakdown in the vacuole; null mutation causes a gradual loss of viability during starvation
dehydrogenase, oxidizes D-lactate to pyruvate, transcription is heme-dependent, repressed by glucose, and derepressed in ethanol or lactate; located in the mitochondrial inner
protein of unknown function, member of the multi-drug and toxin extrusion (MATE) family of the multidrug/oligosaccharidyl-lipid/polysaccharide (MOP) exporter superfamily
protein kinase; may play a role in stress response, many CA ⁺⁺ /calmodulin dependent phosphorylation substrates demonstrated in vitro, amino acid sequence similar to Cmk1p and mammalian Cam Kinase II
exo-1,3-beta-glucanase; contributes to ascospore thermoresistance
permease, localized to the plasma membrane; expression is tightly regulated by uracil levels and environmental cues
resistance MFS transporter, drug:H ⁺ antiporter-2 (14 Spanner) (DHA2) family
transporter, sugar porter (SP) family
MFS-type transporter C1271.10c
MFS-type transporter C947.06c
transporter PTR2
amino acid permease, may act to supply the cell with amino acids as nitrogen source in nitrogen-poor conditions; transcription is induced under conditions of sulfur limitation; plays a role in regulating Ty1 transposition
membrane protein PEX13

transporter ESBP6
MFS-type transporter C3E7.06c