

<b>Metabolism</b>	<b>35</b>	tRNA modification other tRNA-transcription activities mRNA synthesis mRNA processing (splicing) mRNA processing (5'-end, 3'-end processing and mRNA degradation) other mRNA-transcription activities RNA transport other transcription activities	mitochondrial transport vesicular transport (Golgi network, etc.) peroxisomal transport vacuolar transport extracellular transport cellular import other intracellular-transport activities
<b>Energy</b>	<b>40</b>	<b>Protein synthesis</b> ribosomal proteins translation (initiation, elongation and termination) translational control tRNA synthetases other protein-synthesis activities	<b>Cellular organization and biogenesis</b> <b>54</b> organization and biogenesis of cell wall and plasma membrane organization and biogenesis of cytoskeleton organization and biogenesis of endoplasmic reticulum and Golgi organization and biogenesis of chromosome structure mitochondrial organization and biogenesis peroxisomal organization and biogenesis endosomal organization and biogenesis vacuolar and lysosomal organization and biogenesis other cellular organization and biogenesis activities
<b>Cell growth, cell division and DNA synthesis</b>	<b>41</b>	<b>Protein destination</b> <b>49</b> protein folding and stabilization protein targeting, sorting and translocation protein modification (glycosylation, acylation, myristylation, palmitoylation, farnesylation and processing) assembly of protein complexes proteolysis other protein-destination activities	<b>Signal transduction</b> <b>58</b> pheromone response generation morphogenesis osmosensing nutritional response other signal-transduction activities
<b>Transcription</b>	<b>45</b>	<b>Transport facilitation</b> <b>51</b> ion channels ion transporters sugar and carbohydrate transporters amino-acid transporters lipid transporters purine and pyrimidine transporters allantoin and allantate transporters transport ATPases ABC transporters drug transporters other transport-facilitators	<b>Cell rescue</b> <b>59</b> stress response generation DNA repair (direct repair, base excision repair and nucleotide excision repair) detoxification cell death and ageing degradation of exogenous polynucleotides other cell-rescue activities
		<b>Intracellular transport</b> <b>53</b> nuclear transport	<b>Unclassified proteins</b> <b>60</b>

**Metabolism**

**amino-acid metabolism**

**amino-acid biosynthesis**

[ORF]	[Gene]	[Encoded or related protein]
YHR037w	<i>PUT2</i>	1-pyrroline-5-carboxylate dehydrogenase
YDR035w	<i>ARO3</i>	2-dehydro-3-deoxyphosphoheptonate aldolase, phenylalanine-inhibited
YBR249c	<i>ARO4</i>	2-dehydro-3-deoxyphosphoheptonate aldolase, tyrosine-inhibited
YNL104c	<i>LEU4</i>	2-isopropylmalate synthase
YGL009c	<i>LEU1</i>	3-isopropylmalate dehydratase
YPR167c	<i>MET16</i>	3'-phosphoadenylylsulphate reductase
YGR019w	<i>UGA1</i>	4-aminobutyrate aminotransferase (GABA transaminase)
YER091c	<i>MET6</i>	5-methyltetrahydropteroyltryglutamate-homocysteine methyltransferase
YMR108w	<i>ILV2</i>	acetolactate synthase
YCL009c	<i>ILV6</i>	acetolactate synthase, regulatory subunit
YER069w	<i>ARG5,6</i>	acetylglutamate kinase and acetylglutamyl-phosphate reductase
YJL071w	<i>ARG2</i>	acetylglutamate synthase
YOL140w	<i>ARG8</i>	acetylornithine aminotransferase
YDR234w	<i>LYS4</i>	aconitate hydratase
YER086w	<i>ILV1</i>	anabolic serine and threonine dehydratase
YDR354w	<i>TRP4</i>	anthranilate phosphoribosyltransferase
YER090w	<i>TRP2</i>	anthranilate synthase component I
YKL211c	<i>TRP3</i>	anthranilate synthase component II
YJR109c	<i>CPA2</i>	arginine-specific carbamoylphosphate synthase, large subunit
YOR303w	<i>CPA1</i>	arginine-specific carbamoylphosphate synthase, small subunit
YOL058w	<i>ARG1</i>	argininosuccinate synthetase
YHR018c	<i>ARG4</i>	arginosuccinate lyase
YDR127w	<i>ARO1</i>	arom pentafunctional enzyme
YPR145w	<i>ASN1</i>	asparagine synthetase
YGR124w	<i>ASN2</i>	asparagine synthetase
YLR027c	<i>AAT2</i>	aspartate aminotransferase, cytosolic
YKL106w	<i>AAT1</i>	aspartate transaminase, mitochondrial
YDR158w	<i>HOM2</i>	aspartate-semialdehyde dehydrogenase
YFR030w	<i>MET10</i>	assimilatory sulphite reductase flavin-binding subunit
YER055c	<i>HIS1</i>	ATP phosphoribosyltransferase
YCL018w	<i>LEU2</i>	β-isopropyl-malate dehydrogenase
YJR148w	<i>TWT2</i>	branched-chain amino acid aminotransferase, cytosolic
YHR208w	<i>TWT1</i>	branched-chain amino acid aminotransferase, mitochondrial
YGR204w	<i>ADE3</i>	C1-tetrahydrofolate synthase, cytoplasmic

YBR084w	<i>MIS1</i>	C1-tetrahydrofolate synthase, mitochondrial
YPR060c	<i>ARO7</i>	chorismate mutase
YGL148w	<i>ARO2</i>	chorismate synthase
YGR155w	<i>CYS4</i>	cystathionine β-synthase
YAL012w	<i>CYS3</i>	cystathionine γ-lyase
YER023w	<i>PRO3</i>	δ 1-pyrroline-5-carboxylate reductase
YHR068w	<i>DYS1</i>	deoxyhypusine synthase
YOR236w	<i>DFR1</i>	dihydrofolate reductase
YFL018c	<i>LPD1</i>	dihydropolamide dehydrogenase
YJR016c	<i>ILV3</i>	dihydroxy-acid dehydratase
YLR172c	<i>DPH5</i>	diphthamide methyltransferase
YKL191w	<i>DPH2</i>	diphtheria toxin resistance protein
YOR323c	<i>PRO2</i>	γ-glutamyl phosphate reductase
YDR300c	<i>PRO1</i>	glutamate 5-kinase
YDL171c	<i>GLT1</i>	glutamate synthase (NAPDPH) (GOGAT)
YPR035w	<i>GLN1</i>	glutamate-ammonia ligase
YBR248c	<i>HIS7</i>	glutamine amidotransferase/cyclase
YFR025c	<i>HIS2</i>	histidinol phosphatase
YIL116w	<i>HIS5</i>	histidinol-phosphate aminotransferase
YMR038c	<i>LYS7</i>	homocitrate dehydrogenase
YDL182w	<i>LYS20</i>	homocitrate synthase
YJR139c	<i>HOM6</i>	homoserine dehydrogenase
YHR025w	<i>THR1</i>	homoserine kinase
YNL277w	<i>MET2</i>	homoserine O-acetyltransferase
YOR202w	<i>HIS3</i>	imidazoleglycerol-phosphate dehydratase
YLR355c	<i>ILV5</i>	ketol-acid reducto-isomerase
YBR115c	<i>LYS2</i>	L-aminoadipate-semialdehyde dehydrogenase, large subunit
YGL154c	<i>LYS5</i>	L-aminoadipate-semialdehyde dehydrogenase, small subunit
YER052c	<i>HOM3</i>	L-aspartate 4-P-transferase
YLR303w	<i>MET25</i>	O-acetylhomoserine sulphhydrylase
YLR438w	<i>CAR2</i>	ornithine aminotransferase
YIL088w	<i>ARG3</i>	ornithine carbamoyltransferase
YCL030c	<i>HIS4</i>	phosphoribosyl-AMP cyclohydrolase/phosphoribosyl-ATP pyrophosphatase/histidinol dehydrogenase
YDR007w	<i>TRP1</i>	phosphoribosylanthranilate isomerase
YGR208w	<i>SER2</i>	phosphoserine phosphatase
YOR184w	<i>SER1</i>	phosphoserine transaminase
YNL316c	<i>PHA2</i>	prephenate dehydratase
YBR165c	<i>TYR1</i>	prephenate dehydrogenase (NADP <sup>+</sup> )
YLR142w	<i>PUT1</i>	proline oxidase
YOL064c	<i>MET22</i>	protein ser/thr phosphatase
YCR054c	<i>CTR86</i>	putative threonine biosynthesis pathway protein
YEL046c	<i>GLY1</i>	required for glycine prototrophy in SHMT1 and SHMT2 double mutant
YIR034c	<i>LYS1</i>	saccharopine dehydrogenase
YNR050c	<i>LYS9</i>	saccharopine dehydrogenase (NADP <sup>+</sup> , L-glutamate forming)

YCL009c		similarity to acetolactate synthase III small subunit
YLR089c		similarity to alanine transaminases
YGL184c		similarity to cystathionine β-lyase
YHR112c		similarity to cystathionine γ-synthases
YIL074c		similarity to <i>E. coli</i> phosphoglycerate dehydrogenase
YGR012w		similarity to <i>E. nidulans</i> cysteine synthase
YMR250w		similarity to glutamate decarboxylases
YMR062c		similarity to glutamate N-acetyltransferase
YDL131w		similarity to homocitrate synthases and isopropylmalate synthases
YIL094c		similarity to isopropyl malate and tartrate dehydrogenases
YEL038w	<i>UTR4</i>	similarity to <i>K. oxytoca</i> enolase-phosphatase E-1
YML082w		similarity to <i>N. crassa</i> O-succinylhomoserine (thiol)-lyase
YJR130c		similarity to O-succinylhomoserine (thiol)-lyase
YKL215c		similarity to <i>P. aeruginosa</i> huYA and huYB
YOR280c		similarity to <i>S. pombe</i> dihydrofolate reductase
YFL030w		similarity to several transaminases
YOR108w		strong similarity to 2-isopropylmalate synthase
YAL004w		strong similarity to <i>A. klebsiana</i> glutamate dehydrogenase
YDR111c		strong similarity to alanine transaminase
YFR055w		strong similarity to β-cystathionases
YHR033w		strong similarity to glutamate 5-kinase
YHR070w		strong similarity to <i>N. crassa</i> met-10 <sup>+</sup> protein
YLL058w		strong similarity to <i>N. crassa</i> O-succinylhomoserine (thiol)-lyase
YER081w		strong similarity to phosphoglycerate dehydrogenases
YJR010w	<i>MET3</i>	sulphate adenylyltransferase
YCR053w	<i>THR4</i>	threonine synthase (o-p-homoserine p-lyase)
YPR074c	<i>TKL1</i>	transketolase 1
YBR117c	<i>TKL2</i>	transketolase 2
YGL026c	<i>TRP5</i>	tryptophan synthase
YML096w		weak similarity to asparagine synthases
<b>regulation of amino-acid metabolism</b>		
YDR173c	<i>ARG82</i>	arginine metabolism transcription factor
YKL112w	<i>ABF1</i>	ARS-binding factor
YER055c	<i>HIS1</i>	ATP phosphoribosyltransferase
YBR253w	<i>SRB6</i>	DNA-directed RNA polymerase II suppressor protein
YNL236w	<i>SIN4</i>	global regulator protein

YFL010w-a *AUA1* involved in ammonia regulation of amino-acid transport  
 YIL046w *MET30* involved in regulation of sulphur assimilation genes  
 YJR060w *CBF1* kinetochore protein  
 YDR159w *SAC3* leucine permease transcriptional regulator  
 YDR207c *UME6* negative transcriptional regulator  
 YKL015w *PUT3* positive activator of the proline utilisation pathway  
 YCR028c *FEN2* similarity to allantoin permease transporter  
 YMR116c strong similarity to *N. crassa* CPC2 protein  
 YKR099w *BAS1* transcription factor  
 YLR098c *CHA4* transcription factor  
 YLR451w *LEU3* transcription factor  
 YMR042w *ARG80* transcription factor involved in arginine metabolism  
 YML099c *ARG81* transcription factor involved in arginine metabolism  
 YMR043w *MCM1* transcription factor of the MADS box family  
 YIR023w *DAL81* transcriptional activator for allantoin and GABA catabolic genes  
 YEL009c *GCN4* transcriptional activator of amino acid biosynthetic genes  
 YDR034c *LYS14* transcriptional activator of lysine pathway genes  
 YIR017c *MET28* transcriptional activator of sulphur amino acid metabolism  
 YNL103w *MET4* transcriptional activator of sulphur metabolism

**amino-acid transport**

YBR068c *BAP2* amino-acid permease  
 YEL063c *CAN1* amino-acid permease  
 YBR069c *VAP1* amino-acid permease  
 YCL025c *AGP1* asparagine and glutamine permease  
 YPL265w *DIP5* dicarboxylic amino-acid permease  
 YKR039w *GAP1* general amino-acid permease  
 YDR508c *GNP1* high-affinity glutamine permease  
 YGR055w *MUP1* high-affinity methionine permease  
 YNL270c *ALP1* high-affinity permease for basic amino acids  
 YOL020w *SCM2* high-affinity tryptophan transport protein  
 YGR191w *HIP1* histidine permease  
 YLR375w *STP3* involved in pre-tRNA splicing and in uptake of branched-chain amino acids  
 YDL048c *STP4* involved in pre-tRNA splicing and in uptake of branched-chain amino acids  
 YNL268w *LYP1* lysine-specific high affinity permease  
 YDR130c *ARG11* member of the mitochondrial carrier family (MCF)  
 YHL036w *MUP3* methionine permease  
 YOR348c *PUT4* proline and  $\gamma$ -aminobutyrate permease  
 YFL055w similarity to Gap1p and other amino-acid permeases  
 YDR160w similarity to lysine transport protein LYP1  
 YLD061w strong similarity to amino-acid transport protein Gap1p  
 YPL274w strong similarity to amino-acid transport proteins  
 YDR046c (*PAP1*) strong similarity to amino-acid transport proteins  
 YBR132c strong similarity to amino-acid permeases

**amino-acid degradation**

YPL111w *CAR1* arginase  
 YDR321w *ASP1* asparaginase  
 YOR375c *GDH1* glutamate dehydrogenase (NADP<sup>+</sup>)  
 YMR189w *GSD2* glycine decarboxylase subunit  
 YDR019c *GCV1* glycine decarboxylase T subunit  
 YDR272w *GLO2* glyoxalase II  
 YOR040w *GLO4* glyoxalase II  
 YLR155c *ASP3A* L-asparaginase II  
 YLR157c *ASP3B* L-asparaginase II  
 YLR158c *ASP3C* L-asparaginase II  
 YLR160c *ASP3D* L-asparaginase II  
 YCL064c *CHA1* L-serine/L-threonine deaminase  
 YAL062w *GDH3* NADP-glutamate dehydrogenase  
 YDL215c *GDH2* NAD-specific glutamate dehydrogenase (NAD)  
 YKL184w *ORD1* ornithine decarboxylase  
 YLR142w *PUT1* proline oxidase  
 YLR180w *SAM1* S-adenosylmethionine synthetase 1  
 YDR502c *SAM2* S-adenosylmethionine synthetase 2  
 YIL167w *SDL1* serine dehydratase  
 YDR294c similarity to glutamate decarboxylases  
 YJR078w similarity to indoleamine 2,3-dioxygenase  
 YIL042c similarity to rat branched-chain  $\alpha$ -ketoacid dehydrogenase kinase  
 YGL202w similarity to rat kynurenine/ $\alpha$ -amino acid permease  
 YHR137w similarity to rat kynurenine/ $\alpha$ -amino acid permease  
 YFL030w similarity to several transaminases  
 YDR111c strong similarity to alanine transaminase  
 YBR006w strong similarity to *E. coli* succinate semialdehyde dehydrogenase  
 YAL044c *GCV3* strong similarity to human glycine cleavage system protein H  
 YIL168w *SDL1* strong similarity to L-serine dehydratase Cha1p  
 YLR231c strong similarity to rat kynureninase  
 YKL218c strong similarity to threonine dehydratase  
 YBR208c *DUR1,2* urea amidolyase

**other amino-acid metabolism activities**

YKL157w *APE2* aminopeptidase yscII  
 YGL017w *ATE1* arginyl tRNA transferase  
 YPR068c *SPE3* putrescine aminopropyltransferase (spermidine synthase)  
 YFR018c similarity to human glutamyl-peptide cyclotransferase

**nitrogen and sulphur metabolism**

**nitrogen and sulphur utilization**

YPR167c *MET16* 3'-phosphoadenylylsulphate reductase  
 YIR027c *DAL1* allantoinase  
 YIR029w *DAL2* allantoinase  
 YDR242w *AMD2* amidase  
 YOL058w *ARG1* argininosuccinate synthetase  
 YLR027c *AAT2* aspartate aminotransferase, cytosolic  
 YFR030w *MET10* assimilatory sulphite reductase flavin-binding subunit  
 YKL001c *MET14* ATP adenosine-5'-phosphosulphate 3'-phosphotransferase  
 YHR176w *FMO* flavin-containing monooxygenase  
 YOR375c *GDH1* glutamate dehydrogenase (NADP<sup>+</sup>)  
 YDL171c *GLT1* glutamate synthase (NAPDPH) (GOGAT)  
 YPR035w *GLN1* glutamate-ammonia ligase  
 YIL172w *CPS1* Gly-X carboxypeptidase YSCS  
 YAL062w *GDH3* NADP-glutamate dehydrogenase  
 YDL215c *GDH2* NAD-specific glutamate dehydrogenase (NAD)  
 YLR438w *CAR2* ornithine aminotransferase  
 YJR149w similarity to 2-nitropropane dioxygenase  
 YLR089c similarity to alanine transaminases  
 YMR293c similarity to amidases  
 YFL061w similarity to *M. verrucaria* cyanamide hydratase  
 YFL030w similarity to several transaminases  
 YOR251c similarity to thiol sulphate sulphurtransferases  
 YDR111c strong similarity to alanine transaminase  
 YER057c strong similarity to *Azotobacter* nitrogen fixation vnfA protein  
 YIL051c strong similarity to *Azotobacter* nitrogen fixation vnfA protein  
 YJL060w strong similarity to kynurenine aminotransferase  
 YPL135w strong similarity to nitrogen fixation protein (nifU)  
 YOR226c strong similarity to nitrogen fixation proteins  
 YJR010w *MET3* sulphate adenylyltransferase  
 YJR137c sulphite reductase  
 YBR208c urea amidolyase  
 YIR032c *DUR1,2* ureidoglycolate hydrolase  
 YJL035c weak similarity to *B. japonicum* nitrogen fixation protein  
 YKL040c weak similarity to nitrogen fixation protein nifU

**regulation of nitrogen and sulphur utilization**

YGR019w *UGA1* 4-aminobutyrate aminotransferase (GABA transaminase)  
 YPL111w *CAR1* arginase  
 YKL112w *ABF1* ARS-binding factor  
 YNL216w *RAP1* DNA-binding protein with repressor and activator activity  
 YFL010w-a *AUA1* involved in ammonia regulation of amino acid transport  
 YIR030c *DCG1* involved in nitrogen-catabolite metabolism  
 YBR213w *MET8* involved in the expression of PAPS reductase and sulphite reductase  
 YDR207c *UME6* negative transcriptional regulator  
 YNL229c *URE2* nitrogen catabolite repression regulator  
 YEL062w *NPR2* nitrogen permease regulator  
 YNL183c *NPR1* ser/thr protein kinase  
 YCR028c *FEN2* similarity to allantoin permease transporter  
 YLR013w similarity to nitrogen regulatory proteins  
 YGL254w *FZF1* sulphite resistance protein  
 YFL021w *GAT1* transcription factor for nitrogen regulation  
 YER040w *GLN3* transcription factor for positive nitrogen regulation  
 YMR042w *ARG80* transcription factor involved in arginine metabolism  
 YML099c *ARG81* transcription factor involved in arginine metabolism  
 YMR043w *MCM1* transcription factor of the MADS box family  
 YIR023w *DAL81* transcriptional activator for allantoin and GABA catabolic genes  
 YDL170w *UGA3* transcriptional activator for GABA catabolic genes  
 YNL103w *MET4* transcriptional activator of sulphur metabolism  
 YKR034w *DAL80* transcriptional repressor for allantoin and GABA catabolic genes

**nitrogen and sulphur transport**

YGR121c *MEP1* ammonia permease of high capacity and moderate affinity  
 YNL142w *MEP2* high-affinity low-capacity ammonia permease  
 YBR294w *SUL1* high-affinity sulphate transport protein  
 YPR003c similarity to sulphate transporter proteins  
 YPR138c *MEP3* strong similarity to ammonium transport proteins  
 YLR092w *SEL2* strong similarity to Sul1p  
 YHL016c *DUR3* urea transport protein

**nucleotide metabolism**

**purine-ribonucleotide metabolism**

YLR028c *ADE16* 5-aminoimidazole-4-carboxamide ribotide transformylase  
 YGR061c *ADE6* 5'-phosphoribosylformyl glycylamide synthetase  
 YML022w *APT1* adenine phosphoribosyltransferase  
 YDR441c *APT2* adenine phosphoribosyltransferase  
 YNL220w *ADE12* adenylosuccinate synthetase  
 YIR027c *DAL1* allantoinase  
 YIR029w *DAL2* allantoinase  
 YMR300c *ADE4* amidophosphoribosyltransferase  
 YML035c *AMD1* AMP deaminase  
 YGR204w *ADE3* C1-tetrahydrofolate synthase, cytoplasmic  
 YBR084w *MIS1* C1-tetrahydrofolate synthase, mitochondrial  
 YOR236w *DFR1* dihydrofolate reductase  
 YMR217w *GUA1* GMP synthase (glutamine-hydrolyzing)  
 YHR216w *PUR5* IMP dehydrogenase  
 YIR031c *DAL7* malate synthase 2  
 YKR080w *MTD1* methylentetrahydrofolate dehydrogenase (NAD<sup>+</sup>)  
 YAR015w *ADE1* phosphoribosylamidoimidazole-succinocarboxamide synthase  
 YGL234w *ADE5,7* phosphoribosylamine-glycine ligase and phosphoribosylformylglycinamide cyclo-ligase  
 YOR128c *ADE2* phosphoribosylamidoimidazole carboxylase  
 YDR408c *ADE8* phosphoribosylglycinamide formyltransferase (GART)  
 YKL181w *PRPS1* ribose-phosphate pyrophosphokinase  
 YER099c *PRS2* ribose-phosphate pyrophosphokinase  
 YHL011c *PRS3* ribose-phosphate pyrophosphokinase  
 YBL068w *PRS4* ribose-phosphate pyrophosphokinase  
 YLR058c *SHM2* serine hydroxymethyltransferase, cytoplasmic  
 YBR263w *SHM1* serine hydroxymethyltransferase, mitochondrial  
 YNL141w similarity to adenosine deaminase  
 YBR284w similarity to AMP deaminase  
 YJL070c similarity to AMP deaminases  
 YLR017w similarity to human 5'-methylthioadenosine phosphorylase  
 YOL061w similarity to ribose-phosphate pyrophosphokinases  
 YOR280c similarity to *S. pombe* dihydrofolate reductase  
 YDR020c similarity to uridine kinases and phosphoribulokinases  
 YLR359w strong similarity to adenylosuccinate lyase  
 YMR120c strong similarity to chicken purH bifunctional enzyme  
 YJR105w strong similarity to human adenosine kinase  
 YAR075w strong similarity to IMP dehydrogenases  
 YML056c strong similarity to IMP dehydrogenases  
 YAR073w *FUN63* strong similarity to IMP dehydrogenases  
 YLR432w strong similarity to IMP dehydrogenases, Pur5p and YML056c  
 YLR209c strong similarity to purine-nucleoside phosphorylases  
 YBR208c *DUR1,2* urea amidolyase  
 YIR032c *DAL3* ureidoglycolate hydrolase

**pyrimidine-ribonucleotide metabolism**

YBL039c *URA7* CTP synthase 1  
 YJR103w *URA8* CTP synthase 2  
 YHR144c *DCD1* deoxycytidylate deaminase  
 YLR420w *URA4* dihydroorotase  
 YKL216w *URA1* dihydroorotate dehydrogenase  
 YJR057w *CDC8* dTMP kinase  
 YBR252w *DUT1* dUTP pyrophosphatase, mitochondrial  
 YJL130c *URA2* multifunctional pyrimidine biosynthesis protein  
 YML106w *URA5* orotate phosphoribosyltransferase 1  
 YMR271c *URA10* orotate phosphoribosyltransferase 2  
 YEL021w *URA3* orotidine-5'-phosphate decarboxylase  
 YFL068w *THI5* pyrimidine biosynthesis protein  
 YKL181w *PRPS1* ribose-phosphate pyrophosphokinase  
 YER099c *PRS2* ribose-phosphate pyrophosphokinase  
 YHL011c *PRS3* ribose-phosphate pyrophosphokinase  
 YBL068w *PRS4* ribose-phosphate pyrophosphokinase  
 YOL061w similarity to ribose-phosphate pyrophosphokinases  
 YOR280c similarity to *S. pombe* dihydrofolate reductase  
 YLR245c strong similarity to *B. subtilis* cytidine deaminase  
 YNL332w strong similarity to Thi5p, YJR156c, YDL244w and *A. parasiticus*, *S. pombe* Nmt1p  
 YDL244w strong similarity to Thi5p, YJR156c, YNL332w and *A. parasiticus*, *S. pombe* nmt1 protein  
 YJR156c *THI11* thiamine regulated gene, homologous to nmt1a in *S. pombe*  
 YHR128w *FUR1* uracil phosphoribosyltransferase  
 YNR012w *URK1* uridine kinase  
 YKL024c *URA6* uridine-monophosphate kinase

**deoxyribonucleotide metabolism**

YDR513w *TRR1* glutaredoxin  
 YER070w *RNR1* ribonucleoside-diphosphate reductase, large subunit

YJL026w *RNR2* ribonucleoside-diphosphate reductase, small subunit  
 YGR180c *RNR4* ribonucleotide reductase small subunit  
 YJL066c *RNR3* ribonucleotide reductase, repair inducible large subunit  
 YBR014c similarity to glutaredoxin  
 YPL059w similarity to glutaredoxins  
 YOR269w *PAC1* similarity to human LJS-1 protein  
 YDL010w similarity to hypothetical protein YBR014c and glutaredoxins  
 YCL035c strong similarity to glutaredoxin  
 YDR353w strong similarity to thioredoxin reductase (NADPH)  
 YHR106w strong similarity to thioredoxin reductases  
 YOR074c *CDC21* thymidylate synthase

**metabolism of cyclic and unusual nucleotides**

YJL005w *CYR1* adenylate cyclase  
 YCL050c *APA1* ATP adenyltransferase I  
 YDR530c *APA2* ATP adenyltransferase II  
 YOL081w *IRA2* GTPase-activating protein for RAS proteins  
 YOR380c *PDE2* high affinity 3',5'-cyclic-nucleotide phosphodiesterase  
 YPL212c *PUS1* pseudouridine synthase 1  
 YGL063w *PUS2* pseudouridine synthase 2

**regulation of nucleotide metabolism**

YOL081w *IRA2* GTPase-activating protein for RAS proteins  
 YOR101w *RAS1* GTP-binding protein  
 YNL098c *RAS2* GTP-binding protein  
 YDL106c *GRF10* homeodomain protein  
 YGL248w *PDE1* low-affinity 3',5'-cyclic-nucleotide phosphodiesterase  
 YNL076w *MKS1* negative regulator of RAS-cAMP pathway  
 YJL096w putative regulator of purine and/or pyrimidine biosynthesis  
 YOL110w *SHR5* RAS suppressor  
 YKR099w *BAS1* transcription factor  
 YLR014c *PPR1* transcription factor regulating pyrimidine pathway  
 YIR023w *DAL81* transcriptional activator for allantoin and GABA catabolic genes  
 YNL314w *DAL82* transcriptional activator for allantoin catabolic genes

**polynucleotide degradation**

YMR287c *MSU1* 3'-5' exonuclease for RNA 3' ss-tail, mitochondrial  
 YPL029w *SUV3* ATP-dependent RNA helicase, mitochondrial  
 YOR033c *DHS1* exonuclease, interacting with Msh2p  
 YKL149c *DBR1* lariat-debranching enzyme  
 YGL173c *KEM1* multifunctional nuclease  
 YLR363c *NMD4* Nam7p/Upf1p-interacting protein  
 YJR132w *NMD5* Nam7p/Upf1p-interacting protein  
 YMR080c *NAM7* nonsense-mediated mRNA decay protein  
 YGR072w *UPF3* nonsense-mediated mRNA decay protein  
 YHR077c *NMD2* nonsense-mediated mRNA decay protein 2  
 YJL208c *NUC1* nuclease, mitochondrial  
 YMR234w *RNH1* ribonuclease H  
 YPL123c similarity to ribonucleases  
 YGR195w weak similarity to *P. aeruginosa* RNase PH

**nucleotide transport**

YMR056c *AAC1* ADP/ATP carrier protein (MCF)  
 YBL030c *AAC2* ADP/ATP carrier protein (MCF)  
 YBR085w *AAC3* ADP/ATP carrier protein (MCF)  
 YER056c *FCY2* purine-cytosine permease  
 YER060w *FCY21* purine-cytosine permease  
 YOR222w similarity to ADP/ATP carrier proteins  
 YPR011c similarity to ADP/ATP carrier proteins and Graves disease carrier protein  
 YOR071c similarity to allantoin or uracil transport proteins  
 YOR192c similarity to allantoin or uracil transport proteins  
 YLR237w similarity to allantoin transport protein  
 YGR096w similarity to bovine Graves disease carrier protein  
 YHR002w similarity to bovine mitochondrial carrier protein/Grave's disease carrier protein  
 YGL186c similarity to hypothetical protein YER060w and weak similarity to Fcy2p  
 YBL042c strong similarity to allantoin and uracil transport proteins  
 YER060w-a *FCY22* strong similarity to Fcy2p  
 YBR021w *FUR4* uracil permease

**other nucleotide-metabolism activities**

YDR226w *ADK1* adenylate kinase, cytosolic  
 YER170w *ADK2* adenylate kinase, mitochondrial  
 YDR454c *GUK1* guanylate kinase  
 YKL067w *YNK1* nucleoside diphosphate kinase  
 YDL125c *HNT1* similarity to protein kinase C inhibitor-I  
 YDR305c *HNT2* strong similarity to *S. pombe* diadenosine 5',5''-P<sub>1</sub>P<sub>4</sub>-tetrakisphosphate asymmetrical hydrolase

**phosphate metabolism**

**phosphate utilization**

YHR044c *DOG1* 2-deoxyglucose-6-phosphate phosphatase

YHR043c *DOG2* 2-deoxyglucose-6-phosphate phosphatase  
 YMR282c *AEP2* 2'-O-ribosyl phosphate transferase  
 YBR092c *PHO3* constitutive acid phosphatase  
 YHR201c *PPX1* exopolyphosphatase  
 YBR011c *IPP1* inorganic pyrophosphatase, cytoplasmic  
 YMR267w *PPA2* inorganic pyrophosphatase, mitochondrial  
 YBR093c *PHO5* repressible acid phosphatase  
 YAR071w *PHO11* secreted acid phosphatase  
 YHR215w *PHO12* secreted acid phosphatase  
 YDL024c strong similarity to acid phosphatase  
 YNL330c *RPD3* transcription modifier protein  
 YBR243c *ALG7* UDP-N-acetylglucosamine-1-phosphate transferase

**regulation of phosphate utilization**

YOL001w *PHO80* cyclin  
 YGR233c *PHO81* cyclin-dependent kinase inhibitor  
 YPL031c *PHO85* cyclin-dependent protein kinase  
 YNL121w *GTR1* GTP-binding protein  
 YDL106c *GRF10* homeodomain protein  
 YBR106w *PHO88* involved in phosphate transport  
 YFR034c *PHO4* transcription factor

**phosphate transport**

YLR348c dicarboxylate carrier protein  
 YML123c *PHO84* high-affinity inorganic phosphate/H<sup>+</sup> symporter  
 YJL117w *PHO86* inorganic phosphate transporter  
 YBR106w *PHO88* involved in phosphate transport  
 YCR037c *PHO87* member of the phosphate permease family  
 YJR077c *MIR1* phosphate transport protein, mitochondrial (MCF)  
 similarity to membrane protein Pho87p and hypothetical protein YJL198w  
 YCR098c *GIT1* similarity to phosphate transporter proteins  
 YER053c strong similarity to mitochondrial phosphate carrier protein  
 YJL198w strong similarity to Pho87p  
 YBR296c strong similarity to phosphate-repressible phosphate permease

**other phosphate-metabolism activities**

YDL236w *PHO13* 4-nitrophenylphosphatase  
 YOR008c *SLG1* weak similarity to *L. mexicana* Imsap2 gene

**carbohydrate metabolism**

**carbohydrate utilization**

YLR342w *FKS1* 1,3-D-glucan synthase, catalytic subunit  
 YGR032w *GSC2* 1,3-D-glucan synthase, subunit  
 YEL011w *GLC3* 1,4-glucan branching enzyme (glycogen branching enzyme)  
 YHR044c *DOG1* 2-deoxyglucose-6-phosphate phosphatase  
 YHR043c *DOG2* 2-deoxyglucose-6-phosphate phosphatase  
 YJL125w *KGD1* 2-oxoglutarate dehydrogenase complex E1 component  
 YDR148c *KGD2* 2-oxoglutarate dehydrogenase complex E2 component  
 YGR240c *PFK1* 6-phosphofructokinase, α subunit  
 YMR205c *PFK2* 6-phosphofructokinase, β subunit  
 YIL107c *PFK26* 6-phosphofructose-2-kinase, isoenzyme 1  
 YOL136c *PFK27* 6-phosphofructose-2-kinase, isoenzyme 2  
 YHR183c *GND1* 6-phosphogluconate dehydrogenase  
 YBR001c *NTH2* α,α-trehalase  
 YDR074w *TPS2* α,α-trehalose-phosphate synthase, 105K subunit  
 YMR261c *TPS3* α,α-trehalose-phosphate synthase, 115K subunit  
 YML100w *TSL1* α,α-trehalose-phosphate synthase, 123K subunit  
 YBR126c *TPS1* α,α-trehalose-phosphate synthase, 56K subunit  
 YJR131w *MNS1* α-1,2-mannosidase  
 YDR483w *KRE2* α-1,2-mannosyltransferase  
 YER001w *MNN1* α-1,3-mannosyltransferase  
 YGL038c *OCH1* α-1,6-mannosyltransferase  
 YAL054c *ACS1* acetyl-CoA synthetase  
 YLR153c *ACS2* acetyl-CoA synthetase  
 YPR026w *ATH1* acid trehalase, vacuolar  
 YBR299w *MAL32* α-glucosidase  
 YGR292w *MAL12* α-glucosidase of the *MAL1* locus  
 YOR377w *ATF1* alcohol acetyltransferase  
 YOL086c *ADH1* alcohol dehydrogenase I  
 YMR303c *ADH2* alcohol dehydrogenase II  
 YMR083w *ADH3* alcohol dehydrogenase III  
 YGL256w *ADH4* alcohol dehydrogenase IV  
 YBR145w *ADH5* alcohol dehydrogenase V  
 YGR177c *ATF2* alcohol O-acetyltransferase  
 YCL040w *GLK1* aldehyde-specific glucokinase  
 YGL156w *AMS1* α-mannosidase  
 YGL027c *CWH41* β-1,6-glucan assembly protein  
 YHR101c *BIG1* big cells phenotype  
 YBR110w *ALG1* β-mannosyltransferase  
 YBR084w *MIS1* C1-tetrahydrofolate synthase, mitochondrial  
 YNL322c *KRE1* cell-wall protein  
 YJL174w *KRE9* cell-wall synthesis protein  
 YJL099w *CHS6* chitin biosynthesis protein  
 YNL192w *CHS1* chitin synthase I  
 YBR038w *CHS2* chitin synthase II  
 YBR023c *CHS3* chitin synthase III  
 YNR001c *CIT1* citrate (si)-synthase, mitochondrial

YPR001w *CIT3* citrate (si)-synthase, mitochondrial  
 YCR005c *CIT2* citrate (si)-synthase, peroxisomal  
 YML086c *ALO* D-arabinonic-1,4-lactone oxidase  
 YNL071w *LAT1* dihydroloipoamide S-acetyltransferase  
 YDL174c *DLD1* D-lactate ferricytochrome c oxidoreductase (D-LCR)  
 YER062c *HOR2* DL-glycerol phosphate  
 YJL053w *RHR2* DL-glycerol phosphate  
 YJL227c *ALG5* dolichol-P-glucose synthetase  
 YPR183w *DPM1* dolichyl-phosphate β-D-mannosyltransferase  
 YJR143c *PMT4* dolichyl-phosphate-mannose-protein O-mannosyl transferase  
 YOR095c *RK11* D-ribose-5-phosphate ketol-isomerase  
 YJL121c *POS18* D-ribulose-5-phosphate 3-epimerase  
 YGR282c *BGL2* endo-1,3-glucanase of the cell wall  
 YLR286c *CTS1* endochitinase  
 YGR254w *ENO1* enolase I (2-phosphoglycerate dehydratase)  
 YHR174w *ENO2* enolase II (2-phosphoglycerate dehydratase)  
 YOR393w *ERR1* enolase-related protein  
 YPL281c *ERR2* enolase-related protein  
 YPR190w *SPR1* exo-1,3-glucanase  
 YDR261c *EXG2* exo-1,3-glucanase minor isoform  
 YLR300w *EXG1* exo-1,3-glucanase (I/II), major isoform  
 YIR019c *STA1* extracellular α-1,4-glucan glucosidase  
 YLR377c *FBP1* fructose-1,6-bisphosphatase  
 YJL155c *FBP26* fructose-2,6-bisphosphatase  
 YKL060c *FBA1* fructose-bisphosphate aldolase  
 YDL049c *KNH1* functional homologue of Kre9p  
 YBR020w *GAL1* galactokinase  
 YDR009w *GAL3* galactokinase  
 YOR120w *GCY1* galactose-induced protein of aldo/keto reductase family  
 YPR159w *KRE6* glucan synthase subunit  
 YGR143w *SKN1* glucan synthase subunit  
 YKL104c *GFA1* glucosamine-fructose-6-phosphate transaminase  
 YNL241c *ZWF1* glucose-6-phosphate dehydrogenase  
 YBR196c *PGI1* glucose-6-phosphate isomerase  
 YBR229c *ROT2* glucosidase II, catalytic subunit  
 YOR002w *ALG6* glucosyltransferase  
 YOR067c *ALG8* glucosyltransferase  
 YJL052w *TDH1* glyceraldehyde-3-phosphate dehydrogenase 1  
 YJR009c *TDH2* glyceraldehyde-3-phosphate dehydrogenase 2  
 YGR192c *TDH3* glyceraldehyde-3-phosphate dehydrogenase 3  
 YHL032c *GUT1* glycerol kinase  
 YDL022w *GPD1* glycerol-3-phosphate dehydrogenase (NAD<sup>+</sup>), cytoplasmic  
 YOL059w *GPD3* glycerol-3-phosphate dehydrogenase (NAD<sup>+</sup>), mitochondrial  
 YJL155c *GUT2* glycerol-3-phosphate dehydrogenase, mitochondrial  
 YPR160w *GPH1* glycogen phosphorylase  
 YFL014w *HSP12* heat-shock protein  
 YFR053c *HXK1* hexokinase I  
 YGL253w *HXK2* hexokinase II  
 YDL013w *HEX3* hexose metabolism-related protein  
 YDL182w *LYS20* homocitrate synthase  
 YOR126c *EST2* isoamyl acetate hydrolytic enzyme  
 YNL037c *IDH1* isocitrate dehydrogenase (NAD<sup>+</sup>) subunit 1, mitochondrial  
 YOR136w *IDH2* isocitrate dehydrogenase (NAD<sup>+</sup>) subunit 2, mitochondrial  
 YDL066w *IDP1* isocitrate dehydrogenase (NADP<sup>+</sup>), mitochondrial  
 YLR174w *IDP2* isocitrate dehydrogenase, cytosolic  
 YER065c *ICL1* isocitrate lyase  
 YOR336w *KRE5* killer toxin-resistance protein  
 YML054c *CYB2* lactate dehydrogenase cytochrome b2  
 YDL168w *SFA1* long-chain alcohol dehydrogenase  
 YOL126c *MDH2* malate dehydrogenase, cytoplasmic  
 YKL085w *MDH1* malate dehydrogenase, mitochondrial  
 YDL078c *MDH3* malate dehydrogenase, peroxisomal  
 YNL117w *MLS1* malate synthase 1  
 YJR031c *DAL7* malate synthase 2  
 YDL055c *PSA1* mannose-1-phosphate guanylyltransferase  
 YER003c *PM40* mannose-6-phosphate isomerase  
 YGL065c *ALG2* mannose-6-phosphate isomerase  
 YNL219c *ALG9* mannose-6-phosphate isomerase  
 YKR061w *KTR2* mannose-6-phosphate isomerase  
 YDL095w *PMT1* mannose-6-phosphate isomerase  
 YAL023c *PMT2* mannose-6-phosphate isomerase  
 YOR321w *PMT3* mannose-6-phosphate isomerase  
 YBL082c *RHK1* mannose-6-phosphate isomerase  
 YJL139c *YUR1* mannose-6-phosphate isomerase  
 YJL153c *INO1* myo-inositol-1-phosphate synthase  
 YPL175w *SPT14* N-acetylglucosaminyltransferase  
 YDR001c *NTH1* neutral trehalase (α,α-trehalase)  
 YPR006c *ICL2* non-functional isocitrate lyase  
 YJL002c *OST1* oligosaccharyltransferase α subunit  
 YEL002c *WBP1* oligosaccharyltransferase β subunit  
 YMR149w *SWP1* oligosaccharyltransferase δ subunit  
 YOR103c *OST2* oligosaccharyltransferase ε subunit  
 YOR085w *OST3* oligosaccharyltransferase ζ subunit  
 YDL232w *OST4* oligosaccharyltransferase subunit  
 YGL022w *STT3* oligosaccharyltransferase subunit  
 YEL058w *PCM1* phosphoacetylglucosamine mutase  
 YKR097w *PKC1* phosphoenolpyruvate carboxylkinase  
 YMR105c *PGM2* phosphoglucomutase, major isoform  
 YKL127w *PGM1* phosphoglucomutase, minor isoform  
 YGR256w *GND2* phosphogluconate dehydrogenase  
 YCR012w *PGK1* phosphoglycerate kinase  
 YKL152c *GPM1* phosphoglycerate mutase

YOL056w	GPM3	phosphoglycerate mutase	YJL218w	strong similarity to <i>E. coli</i> galactoside O-acetyltransferase	YCR081w	SRB8	DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit
YFL045c	SEC53	phosphomannomutase	YDR248c	strong similarity to <i>E. coli</i> thermoresistant gluconokinase	YNL025c	SSN8	DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit, cyclin C homologue
YCR034w	GNS1	probable 1,3-glucan synthase subunit	YIL172c	strong similarity to Fsp2p	YLR071c	RGR1	DNA-directed RNA polymerase II holoenzyme subunit
YIL045w	PIG2	Protein interacting with Gsy2p	YDL037c	strong similarity to glucan 1,4-glucosidase	YBR253w	SRB6	DNA-directed RNA polymerase II suppressor protein
YIL085c	KTR7	putative $\alpha$ -1,2-mannosyltransferase	YDR516c	strong similarity to glucokinase	YOR047c	STD1	dosage-dependent modulator of glucose repression
YNL029c	KTR5	putative mannosyltransferase	YOR299w	strong similarity to hypothetical protein YMR237w and similarity to Chs6p	YIL155c	FBP28	fructose-2,6-bisphosphatase
YGR199w	PMT6	putative mannosyltransferase	YMR237w	strong similarity to hypothetical protein YOR299w and similarity to CHS6 protein	YPL037c	EGD1	GAL4 DNA-binding enhancer protein
YGL062w	PYC1	pyruvate carboxylase, isozyme 1	YNL009w	strong similarity to isocitrate dehydrogenase	YDR009w	GAL3	galactokinase
YBR218c	PYC2	pyruvate carboxylase, isozyme 2	YJL216c	strong similarity to Mal62p	YLL016w	SDC25	GDP/GTP exchange factor
YDR081c	PDC2	pyruvate decarboxylase regulatory protein	YGR287c	strong similarity to maltase	YLR310c	CDC25	GDP/GTP exchange factor for Ras1p and Ras2p
YIL044c	PDC1	pyruvate decarboxylase, isozyme 1	YOR099w	strong similarity to mannosyltransferases	YGR070w	ROM1	GDP/GTP exchange protein for Rho1p
YLR134w	PDC5	pyruvate decarboxylase, isozyme 2	YDR368w	strong similarity to members of the aldo/keto reductase family	YLR371w	ROM2	GDP/GTP exchange protein for Rho1p
YGR087c	PDC6	pyruvate decarboxylase, isozyme 3	YPR1	strong similarity to phosphoglycerate mutase Gpm1p	YDR176w	NGG1	general transcriptional adaptor or co-activator
YER178w	PDA1	pyruvate dehydrogenase (lipoamide) $\alpha$ subunit	YDL021w	strong similarity to phosphopyruvate hydratases	YER054c	GIP2	Glc7p-interacting protein
YBR221c	PDB1	pyruvate dehydrogenase (lipoamide) $\beta$ subunit	YMR323w	strong similarity to polygalacturonases	YNL238w	SIN4	global regulator protein
YGR193c	PDX1	pyruvate dehydrogenase complex protein X	YR153w	strong similarity to pyruvate decarboxylases	YHL025w	SNF6	global transcription activator
YAL038w	CDC19	pyruvate kinase	YOR347c	strong similarity to pyruvate kinase	YER027c	GAL83	glucose repression protein
YNL048w	ALG11	required for asparagine-linked glycosylation	YGR244c	strong similarity to rumen fungus $\beta$ -succinyl-CoA synthetase	YNL199c	GCR2	glycolytic genes transcriptional activator
YCR036w	RBK1	ribokinase	YKL029c	strong similarity to <i>S. pombe</i> malate oxidoreductase	YOR101w	RAS1	GTP-binding protein
YJL137c	GLG2	self-glucosylating initiator of glycogen synthesis	YBL001c	strong similarity to <i>S. xylosus</i> glucose kinase	YNL098c	RAS2	GTP-binding protein
YMR306w		similarity to 1,3-glucan synthases	YLR164w	strong similarity to Sdh4p	YPR165w	RHO1	GTP-binding protein of the RHO subfamily of RAS-like proteins
YAL060w	FUN49	similarity to alcohol/sorbitol dehydrogenase	YDL246c	strong similarity to Sor1p	YNL090w	RHO2	GTP-binding protein of the RHO subfamily of RAS-like proteins
YAL061w	FUN50	similarity to alcohol/sorbitol dehydrogenase	YJL045w	strong similarity to succinate dehydrogenase flavoprotein	YDR420w	HKR1	<i>Hansenula</i> MrakII k9 killer toxin-resistance protein
YMR318c		similarity to alcohol-dehydrogenase	YGR043c	strong similarity to transaldolase	YGL253w	HKK2	hexokinase II
YDL124w		similarity to aldose reductases	YNR071c	strong similarity to UDP-glucose 4-epimerase Gal10p	YPL002c	SNF8	involved in glucose derepression
YHR204w		similarity to $\alpha$ -mannosidases	YDR384c	strong similarity to <i>Y. lipolytica</i> GPR1 gene	YOR125c	CAT5	involved in glucose repression
YPL088w		similarity to aryl-alcohol dehydrogenases	YHR210c	strong similarity to UDP-glucose-4-epimerase	YNL048w	EFF2	involved in glucose repression
YML070w		similarity to <i>C. freundii</i> dihydroxyacetone kinase	YKL148c	succinate dehydrogenase flavoprotein	YNL201c		involved in regulation of carbon metabolism
YIL124w		similarity to <i>C. perfringens</i> nanH protein	YDR178w	succinate dehydrogenase membrane anchor subunit for Sdh2p	YGR227w	DIE2	ITR1 expression promoting protein
YDR371w		similarity to chitinases	YIL162w	sucrose hydrolyzing enzyme	YBR297w	MAL33	maltose fermentation regulatory protein
YIR036c		similarity to <i>E. coli</i> 3-ketoacyl-ACP reductase	YR074c	suppressor of <i>pkc1</i>	YGR288w	MAL13	maltose pathway regulatory protein
YBR149w		similarity to Gcy1p and aldose reductases	YPR074c	transketolase 1	YLR131c	ACE2	metallothionein expression activator
YBR056w		similarity to glucan 1,3-glucosidase	YBR117c	transketolase 2	YDR422c	SIP1	multicopy suppressor of <i>snf1</i>
YIL169c		similarity to glucan 1,4-glucosidase	YDR060c	triose-phosphate isomerase	YML051w	GAL80	negative regulator for expression of galactose-induced genes
YOL155c		similarity to glucan 1,4-glucosidase Mal5p	YBR019c	UDP-glucose 4-epimerase	YNL076w	MKS1	negative regulator of RAS-cAMP pathway
YNL274c		similarity to glycerate- and formate-dehydrogenases	YBR018c	UDP-glucose-hexose-1-phosphate uridylyltransferase	YIL119c	RPI1	negative regulator of RAS-cAMP pathway
YPL113c		similarity to glycerate dehydrogenases	YFR015c	UDP-glucose-starch glucosyltransferase, isoform 1	YLR025w	SNF7	nuclear protein
YPR184w		similarity to glycogen debranching enzymes	YLR258w	UDP-glucose-starch glucosyltransferase, isoform 2	YGL115w	SNF4	nuclear regulatory protein
YDL131w		similarity to homocitrate synthases and isopropylmalate synthases	YBR243c	UDP-N-acetylglucosamine-1-phosphate transferase	YLR273c	PIG1	protein interacting with Gsy2p
YJR096w		similarity to <i>Leishmania</i> reductase	YKL035w	UTP-glucose-1-phosphate uridylyltransferase	YIL045w	PIG2	protein interacting with Gsy2p
YKR096w		similarity to mitochondrial aldehyde dehydrogenase Ald1p	YKR043c	weak similarity to phosphoglycerate mutase	YDL006w	PTC1	protein ser/thr phosphatase 2c
YGL257c		similarity to Mnn1p	YOR283w	weak similarity to phosphoglycerate mutases	YDL134c	PPH21	protein ser/thr phosphatase PP2A-1
YIL014w		similarity to Mnn1p			YDL188c	PPH22	protein ser/thr phosphatase PP2A-2
YEL020c		similarity to <i>O. formigenes</i> oxalyl-CoA decarboxylase			YBL061c	SKT5	protoplast regeneration and killer toxin resistance protein
YDL093w	PMT5	similarity to O-mannosyltransferases Pmt1p-Pmt4p			YOL110w	SHR5	RAS suppressor
YMR278w		similarity to phosphomannomutases			YJR095w	ACR1	regulator of acetyl-CoA synthetase activity
YDR307w		similarity to Pmt1p			YKL038w	RG1	regulator of glucose induced genes
YDR380w		similarity to pyruvate decarboxylases			YDR028c	REG1	regulatory subunit for protein phosphatase Glc7p
YDR245w	MNN10	similarity to <i>S. pombe</i> galactosyltransferase			YMR311c	GLC8	regulatory subunit for protein ser/thr phosphatase Glc7p
YLR070c		similarity to sugar dehydrogenases			YBR050c	REG2	regulatory subunit of type I protein phosphatase
YNR059w		similarity to $\alpha$ -1,3-mannosyltransferase			YDR277c	MTH1	repressor of hexose transport genes
YHL012w		similarity to UDP glucose pyrophosphorylase			YNR052c	POP2	required for glucose derepression
YJR159w	SOR1	sorbitol dehydrogenase			YJR090c	GRR1	required for glucose repression and for glucose and cation transport
YIL099w	SGA1	sporulation specific glucan 1,4-glucosidase			YGL252c	RTG2	retrograde regulation protein
YER096w	SHC1	sporulation-specific protein			YJR076c	CDC11	septin
YLR307w	CDA1	sporulation-specific chitin deacetylase			YHR107c	CDC12	septin
YLR308w	CDA2	sporulation-specific chitin deacetylase			YER133w	GLC7	ser/thr phosphoprotein phosphatase 1, catalytic subunit
YNL331c		strong similarity to aryl-alcohol reductase			YOR178c	GAC1	ser/thr phosphoprotein phosphatase 1, regulatory subunit
YCR107w		strong similarity to dihydroliipoamide dehydrogenases			YLR113w	HOG1	ser/thr protein kinase of MAP kinase (MAPK) family
YPL017c		strong similarity to $\alpha$ -1,2-mannosyltransferase			YLR345w		similarity to 6-phosphofructo-2-kinase
YBR205w	KTR3	strong similarity to $\alpha$ -1,2-mannosyltransferase			YCR028c	FEN2	similarity to allantoin permease transporter
YBR199w	KTR4	strong similarity to $\alpha$ -1,2-mannosyltransferase			YFL053w		similarity to <i>C. freundii</i> dihydroxyacetone kinase
YPL053c	KTR6	strong similarity to $\alpha$ -1,2-mannosyltransferase Kre2p			YDL225w		similarity to Cdc11p, Cdc3p and human CDC10 protein
YJL221c	FSP2	strong similarity to $\alpha$ -D-glucosidase			YHR193c	EGD2	similarity to human $\alpha$ -NAC
YOL157c		strong similarity to $\alpha$ -glucosidases			YDL203c		similarity to Skt5p
YCR105w		strong similarity to alcohol dehydrogenases			YNL257c	SIP3	Snf1p protein kinase interacting protein
YDL243c		strong similarity to aryl-alcohol dehydrogenase			YLR150w	MPT4	specific affinity for guanine-rich quadruplex nucleic acids
YJR155w		strong similarity to aryl-alcohol dehydrogenase			YFL062w		strong similarity to Mal63p, Mal23p and Mal33p
YFL056c		strong similarity to aryl-alcohol dehydrogenases			YHR155w		strong similarity to Snf1p-interacting protein Sip3p
YFL057c		strong similarity to aryl-alcohol dehydrogenases			YNR002c	FUN34	strong similarity to <i>Y. lipolytica</i> glyoxylate pathway regulator GPR1
YOL165c		strong similarity to aryl-alcohol dehydrogenases			YCR010c		strong similarity to <i>Y. lipolytica</i> GPR1 protein and Fun34p
YKR027w		strong similarity to Chs6p			YIL154c	(IMP2)	sugar utilization regulatory protein
YHR104w		strong similarity to D-xylose 1-dehydrogenase			YPL026c	SKS1	suppressor kinase of <i>snf3</i>
YEL070w		strong similarity to <i>E. coli</i> D-mannonate oxidoreductase			YPL129w	ANC1	TFIIIF subunit (transcription initiation factor), 30K
YNR073c		strong similarity to <i>E. coli</i> D-mannonate oxidoreductase, identical to YEL070w			YPL248c	GAL4	transcription factor
					YMR125w	GCR3	transcription factor for glycolytic genes

YMR280c *CAT8* transcription factor involved in gluconeogenesis  
 YMR043w *MCM1* transcription factor of the MADS box family  
 YJL176c *SWI3* transcription regulatory protein  
 YPL075w *GCR1* transcriptional activator  
 YOL116w *MSN1* transcriptional activator  
 YKL062w *MSN4* transcriptional activator  
 YGL035c *MIG1* transcriptional repressor  
 YIL147c *SLN1* two-component signal transducer  
 YLR006c *SSK1* two-component signal transducer  
 YIL128c *PBS2* tyrosine protein kinase of the MAP kinase kinase family  
 YLR258w *GSY2* UDP-glucose-starch glucosyltransferase, isoform 2  
 YDR216w *ADR1* zinc-finger transcription factor

**carbohydrate transport**

YCL040w *GLK1* aldohexose specific glucokinase  
 YKL217w *JEN1* carboxylic acid transporter protein  
 YBR291c *CTP1* citrate transport protein, mitochondrial (MCF)  
 YLR348c *GAL2* dicarboxylate carrier protein  
 YLR081w *GAL2* galactose (and glucose) permease  
 YGR289c *AGT1* general α-glucoside permease  
 YLL043w *FPS1* glycerol channel protein  
 YNL318c *HXT14* hexose transport protein  
 YJL214w *HXT8* hexose transport protein  
 YJL219w *HXT9* hexose transport protein  
 YFL011w *HXT10* hexose transporter  
 YDL194w *SNF3* high-affinity glucose transporter  
 YEL069c *HXT13* high-affinity hexose transporter  
 YMR011w *HXT2* high-affinity hexose transporter  
 YDR343c *HXT6* high-affinity hexose transporter  
 YDR342c *HXT7* high-affinity hexose transporter  
 YOL156w *HXT11* low-affinity glucose transporter  
 YHR094c *HXT1* low-affinity hexose transporter  
 YDR345c *HXT3* low-affinity hexose transporter  
 YDR497c *ITR1* major myo-inositol permease  
 YBR298c *MAL31* maltose permease  
 YHR092c *HXT4* moderate- to low-affinity glucose transporter  
 YOL103w *ITR2* myo-inositol transport protein  
 YIR035c similarity to *C. lanceolata* 3-oxoacyl-[acyl-carrier-protein] reductase  
 YBR241c similarity to glucose transport proteins  
 YGL104c similarity to glucose transport proteins  
 YRP021c similarity to human citrate transporter protein  
 YDR387c similarity to Itr1p and Itr2p  
 YDL199c similarity to sugar transporter proteins  
 YFL040w similarity to yeast glucose transport proteins  
 YHR096c *HXT5* strong similarity to hexose transporters  
 YDL245c *HXT15* strong similarity to Hxt17p and Hxt7p  
 YJR160c strong similarity to Mal3Tp  
 YDR536w *STL1* strong similarity to members of the sugar permease family  
 YDL247w strong similarity to sugar transport proteins  
 YIL170w *HXT12* strong similarity to sugar transport proteins  
 YIL171w *HXT12* strong similarity to sugar transport proteins  
 YJR158w *HXT16* strong similarity to sugar transport proteins  
 YNR072w *HXT17* sugar transport protein  
 YDL138w *RG2* suppressor of *snf3* mutant

**lipid, fatty-acid and sterol metabolism**

**lipid, fatty-acid and sterol biosynthesis**

YML075c *HMG1* 3-hydroxy-3-methylglutaryl-CoA reductase 1  
 YLR450w *HMG2* 3-hydroxy-3-methylglutaryl-CoA reductase 2  
 YML126c *HMG5* 3-hydroxy-3-methylglutaryl-CoA synthase  
 YPL028w *ERG10* acetyl-CoA C-acetyltransferase, cytosolic  
 YNR016c *ACC1* acetyl-CoA carboxylase  
 YCR048w *ARE1* acyl-CoA sterol acyltransferase  
 YNR019w *ARE2* acyl-CoA sterol acyltransferase  
 YIL009w *FAA3* acyl-CoA synthase  
 YGR037c *ACB1* acyl-CoA-binding protein (diazepam-binding inhibitor)  
 YBR222c *PCS60* AMP-binding protein, peroxisomal  
 YER061c *CEM1* β-keto-acyl-ACP synthase  
 YNL280c *ERG24* C-14 sterol reductase  
 YMR015c *ERG5* C-22 sterol desaturase  
 YGR060w *ERG25* C-4 sterol methyl oxidase  
 YLR056w *ERG3* C-5 sterol desaturase  
 YMR202w *ERG2* C-8 sterol isomerase  
 YML042w *CAT2* carnitine O-acetyltransferase  
 YPR113w *PIS1* CDP diacylglycerol-inositol 3-phosphatidyltransferase  
 YER026c *CHO1* CDP-diacylglycerol serine O-phosphatidyltransferase  
 YBR029c *CDS1* CDP-diacylglycerol synthase  
 YLR133w *CK1* choline kinase  
 YGR007w *MUQ1* choline phosphate cytidyltransferase  
 YGR202c *PCT1* cholinephosphate cytidyltransferase  
 YNL111c *CYB5* cytochrome b5  
 YHR007c *ERG11* cytochrome P450 lanosterol 14α-demethylase  
 YHR190w *ERG9* farnesyl-diphosphate farnesyltransferase  
 YJL167w *ERG20* farnesyl-pyrophosphate synthetase  
 YDL052c *SLC1* fatty acyltransferase  
 YL231w *FAS2* fatty-acyl-CoA synthase, α subunit  
 YKL182w *FAS1* fatty-acyl-CoA synthase, β subunit

YPL069c *BTS1* geranylgeranyl diphosphate synthase  
 YGL126w *SCS3* inositol phospholipid synthesis protein  
 YOR237w *HES1* involved in ergosterol biosynthesis  
 YPL145c *KE51* involved in ergosterol biosynthesis  
 YPL117c *ID1* isopentenyl-diphosphate δ-isomerase  
 YHR072w *ERG7* lanosterol synthase  
 YMR246w *FAA4* long-chain-fatty-acid-CoA ligase  
 YNL219c *ALG9* mannosyltransferase  
 YJR073c *OPI3* methylene-fatty-acyl-phospholipid synthase  
 YNR043w *MVD1* mevalonate pyrophosphate decarboxylase  
 YPL076w *GPI2* N-acetylglucosaminyl-phosphatidylinositol biosynthetic protein  
 YPL175w *SPT14* N-acetylglucosaminyltransferase  
 YGR157w *CHO2* phosphatidylethanolamine N-methyltransferase  
 YDL142c *PGS1* phosphatidylglycerophosphate synthase  
 YNL169c *PSD1* phosphatidylserine decarboxylase 1  
 YGR170w *PSD2* phosphatidylserine decarboxylase 2  
 YCL004w *PEL1* phosphatidylserine synthase  
 YMR220w *ERG8* phosphomevalonate kinase  
 YCR034w *GNS1* probable 1,3–glucan synthase subunit  
 YGL001c putative 3–hydroxysteroid dehydrogenase  
 YJL196c *ELO1* required for elongation of fatty acids  
 YGR216c *GPI1* required for N-acetylglucosaminyl phosphatidylinositol synthesis  
 YML008c *ERG6* S-adenosyl-methionine 8-24-sterol-c-methyltransferase  
 YMR296c *LCB1* serine C-palmitoyltransferase subunit  
 YDR062w *LCB2* serine C-palmitoyltransferase subunit  
 YLR058c *SHM2* serine hydroxymethyltransferase, cytoplasmic  
 YBR263w *SHM1* serine hydroxymethyltransferase, mitochondrial  
 YMR207c *HFA1* similarity to acetyl-CoA carboxylase  
 YDR147w similarity to choline kinase  
 YBR159w similarity to human 17–hydroxysteroid dehydrogenase  
 YDR376w *ARH1* similarity to human adrenodoxin reductase  
 YML131w similarity to human leukotriene b4 12-hydroxydehydrogenase  
 YAR042w *OSH1* similarity to human oxysterol binding protein  
 YDR208w *MSS4* similarity to human PI 5-kinase  
 YHR001w similarity to Kes1p  
 YKR003w similarity to Kes1p, Hes1p and Osh1p  
 YDL019c similarity to Osh1p  
 YHR073w similarity to Osh1p, Hes1p, Kes1p  
 YGR175c *ERG1* squalene monooxygenase  
 YGL055w *OLE1* stearyl-CoA desaturase  
 YGL012w *ERG4* sterol C-24 reductase  
 YLR372w *SUR4* sterol isomerase  
 YKL192c strong similarity to acyl-carrier proteins  
 YNL045w strong similarity to human leukotriene-A4 hydrolase

**breakdown of lipids and phospholipids**

YPL288w *PLC1* 1-phosphatidylinositol-4,5-bisphosphate phosphodiesterase  
 YGL205w *POX1* acyl-CoA oxidase  
 YMR008c *PLB1* phospholipase B (lysophospholipase)  
 YKR031c *SPO14* phospholipase D  
 YLR020c similarity to triacylglycerol lipase  
 YLL012w similarity to triacylglycerol lipases  
 YJL068c strong similarity to human esterase D  
 YOL011w strong similarity to phospholipases  
 YMR006c strong similarity to Plb1p  
 YKL140w *TGL1* triacylglycerol lipase  
 YDR058c *TGL2* triacylglycerol lipase  
 YJR107w weak similarity to acylglycerol lipase  
 YBR204c weak similarity to peroxisomal serine-acyl lipase

**lipid, fatty-acid and sterol utilization**

YIL160c *POT1* acetyl-CoA C-acyltransferase, peroxisomal  
 YIL009w *FAA3* acyl-CoA synthase  
 YMR013c *SEC59* dolichol kinase  
 YDR331w *GPI8* essential for GPI-anchor attachment  
 YDR410c *STE14* farnesyl cysteine carboxyl-methyltransferase  
 YPL172c *COX10* farnesyl transferase  
 YOR370c *MSI4* geranylgeranyltransferase regulatory subunit  
 YGL155w *CDC43* geranylgeranyltransferase type I β subunit  
 YPR176c *BET2* geranylgeranyltransferase type II β subunit  
 YJL031c *BET4* geranylgeranyltransferase, α subunit  
 YFL014w *HSP12* heat-shock protein  
 YBR003w *COX1* hexaprenyl pyrophosphate synthetase  
 YKR009c *FOX2* hydratase-dehydrogenase-epimerase, peroxisomal  
 YOR317w *FAA1* long-chain-fatty-acid-CoA ligase  
 YER015w *FAA2* long-chain-fatty-acid-CoA ligase  
 YMR246w *FAA4* long-chain-fatty-acid-CoA ligase  
 YDL078c *MDH3* malate dehydrogenase, peroxisomal  
 YLR195c *NMT1* N-myristoyltransferase  
 YJR066w *TOR1* phosphatidylinositol 3-kinase  
 YKL019w *RAM2* protein farnesyltransferase, α subunit  
 YDL090c *RAM1* protein farnesyltransferase, β subunit  
 YHR013c *ARD1* protein N-acetyltransferase subunit  
 YDL040c *NAT1* protein N-acetyltransferase subunit

**regulation of lipid, fatty-acid and sterol biosynthesis**

YBL015w *ACH1* acetyl-CoA hydrolase  
 YDR123c *INO2* basic helix-loop-helix (BHLH) transcription factor  
 YOL108c *INO4* basic helix-loop-helix transcription factor

YGL162w *SUT1* hypoxic protein involved in sterol uptake  
 YMR208w *ERG12* mevalonate kinase  
 YHL020c *OPI1* negative regulator of phospholipid biosynthesis pathway  
 YDR207c *UME6* negative transcriptional regulator  
 YAL051w *OAF1* peroxisome proliferating transcription factor  
 YOR363c *PIP2* peroxisome proliferating transcription factor  
 YNL169c *PSD1* phosphatidylserine decarboxylase 1  
 YAL013w *DEP1* regulator of phospholipid metabolism  
 YMR207c *HFA1* similarity to acetyl-CoA carboxylase  
 YCR028c *FEN2* similarity to allantoate permease transporter  
 YMR043w *MCM1* transcription factor of the MADS box family  
 YOL004w *SIN3* transcription regulatory protein

**lipid and fatty-acid transport**

YGR037c *ACB1* acyl-CoA-binding protein (diazepam-binding inhibitor)  
 YNL130c *CPT1* diacylglycerol cholinephosphotransferase  
 YBR041w *FAT1* fatty-acid transporter  
 YKL188c *PAT1* long-chain-fatty-acid transporter  
 YPL147w *PXA1* long-chain-fatty-acid transporter  
 YOR317w *FAA1* long-chain-fatty-acid-CoA ligase  
 YER015w *FAA2* long-chain-fatty-acid-CoA ligase  
 YMR246w *FAA4* long-chain-fatty-acid-CoA ligase  
 YAR035w *YAT1* outer carnitine acetyltransferase, mitochondrial  
 YCL043c *PDI1* protein disulphide-isomerase  
 YER024w similarity to carnitine O-acetyltransferase  
 YKL174c similarity to choline transport protein  
 Ctr1p  
 YNR056c similarity to choline transport protein  
 Ctr1p  
 YHR123w *EPT1* sn-1,2-diacylglycerol ethanolamine- and cholinephosphotransferase

**lipid and fatty-acid binding**

YHR001w similarity to Kes1p  
 YMR020w *FMS1* suppressor of fenpropimorph resistance mutation *fen2*

**other lipid, fatty-acid and sterol metabolism activities**

YBR036c *CSG2* calcium dependent regulatory protein  
 YMR079w *SEC14* phosphatidylinositol/phosphatidylcholine transfer protein  
 YNL284c similarity to Sec14p  
 YKL091c strong similarity to Sec14p  
 YIL002c *SIH1* synaptotagmin homologue 1  
 YDR302w weak similarity to human GPI-anchor biosynthesis protein

**biosynthesis of vitamins, cofactors and prosthetic groups**

**metabolism of vitamins, cofactors and prosthetic groups**

YOL096c *COQ3* 3,4-dihydroxy-5-hexaprenylbenzoate methyltransferase  
 YDR232w *HEM1* 5-aminolevulinatase synthase  
 YOL143c *RIB4* 6,7-dimethyl-8-ribityllumazine synthase  
 YGR286c *ADJ2* biotin synthetase  
 YGR204w *BIO3* C1-tetrahydrofolate synthase, cytoplasmic  
 YBR084w *MIS1* C1-tetrahydrofolate synthase, mitochondrial  
 YDR044w *HEM13* coproporphyrinogen III oxidase  
 YPL132w *COX11* cytochrome c oxidase assembly protein  
 YNR058w *BIO3* DAPA aminotransferase  
 YDR487c *RIB3* DBP synthase  
 YOL066c *RIB2* DRAP deaminase  
 YPL172c *COX10* farnesyl transferase  
 YOR176w *HEM15* ferrochelatase  
 YDL045c *FAD1* flavin adenine dinucleotide (FAD) synthetase  
 YGR267c *FOL2* GTP cyclohydrolase I  
 YBL033c *RIB1* GTP cyclohydrolase II  
 YBR003w *COQ1* hexaprenyl pyrophosphate synthetase  
 YBR153w *RIB7* HTP reductase  
 YOR196c *LIP5* lipoidic acid synthase  
 YHR042w *NCP1* NADPH-cytochrome P450 reductase  
 YOR209c *NPT1* nicotinate phosphoribosyltransferase  
 YNR033w *ABZ1* para-aminobenzoate synthase  
 YNR041c *COQ2* para-hydroxybenzoate-polyprenyltransferase  
 YOR184w *SER1* phosphoserine transaminase  
 YDL205c *HEM3* porphobilinogen deaminase  
 YGL040c *HEM2* porphobilinogen synthase  
 YER014w *HEM14* protoporphyrinogen oxidase, mitochondrial  
 YNR057c *BIO4* putative dethiobiotin synthetase  
 YBR035c *PDX3* pyridoxamine-phosphate oxidase  
 YBR256c *RIB5* riboflavin synthase, α subunit  
 YER043c *SAH1* S-adenosyl-L-homocysteine hydrolase  
 YNL256w similarity to bacterial dithydropterote synthase  
 YKL027w similarity to *E. coli* molybdopterin-converting factor chN  
 YIL145c similarity to *E. coli* pantothenate synthetase  
 YGR255c similarity to *E. coli* ubiH protein  
 YMR113w similarity to folylpolyglutamate synthetases and strong similarity to hypothetical protein YKL132c  
 YGL125w similarity to human methylenetetrahydrofolate reductase

YPL023c similarity to human methylenetetrahydrofolate reductase  
 YFR047c similarity to human quinolinate phosphoribosyltransferase  
 YHR111w similarity to molybdopterin biosynthesis proteins  
 YOL151w similarity to plant dihydroflavonol-4-reductases  
 YMR222c similarity to *S. pombe* dihydrofolate reductase  
 YOR241w similarity to tetrahydrofolylpolyglutamate synthase  
 YJR142w similarity to thiamin pyrophosphokinase  
 YKR069w similarity to uroporphyrinogen methyltransferases  
 YGL039w similarity to *V. vinifera* dihydroflavonol reductase  
 YBR176w strong similarity to *E. coli* 3-methyl-2-oxobutanoate hydroxymethyltransferase  
 YHR003c strong similarity to molybdopterin-converting factor homologue YKL027w  
 YDL036c strong similarity to Rib2p  
 YOL049w strong similarity to *S. pombe* Gsa1p  
 YOR143c *THI80* thiamin pyrophosphokinase  
 YPL214c *THI6* thiamin-phosphate pyrophosphorylase and hydroxyethylthiazole kinase  
 YDR047w *HEM12* uroporphyrinogen decarboxylase  
 YOR278w *HEM4* uroporphyrinogen III synthase

**utilization of vitamins, cofactors and prosthetic groups**

YDL141w *BPL1* biotin holocarboxylase synthetase  
 YBR092c *PHO3* constitutive acid phosphatase  
 YAL039c *CYC3* holo-cytochrome c synthase (cytochrome c haem lyase)  
 YKL087c *CYT2* holo-cytochrome c1 synthase  
 YML120c *NDI1* NADH-ubiquinone-6 oxidoreductase  
 YBR093c *PHO5* repressible acid phosphatase  
 YKL132c similarity to *B. subtilis* foIC protein and strong similarity to hypothetical protein YMR113w

**regulation of vitamins, cofactors and prosthetic groups**

YPR065w *ROX1* haem-dependent transcriptional repressor of hypoxic genes  
 YOR125c *CAT5* involved in glucose repression

**transport of vitamins, cofactors and prosthetic groups**

YIL134w *FLX1* FAD carrier protein, mitochondrial (MCF)  
 YIL006w similarity to Flx1p

**other vitamin, cofactor and prosthetic-group activities**

YDR541c similarity to dihydroflavonol-4-reductases  
 YAL157w similarity to *E. gunnii* cinnamyl alcohol dehydrogenase  
 YER183c similarity to formyltetrahydrofolate cyclo-ligase  
 YHL018w similarity to human pterin-4-carbinolamine dehydratase  
 YGR169c similarity to Rib2p  
 YGR144w *THI4* thiamine-repressed protein

**ionic homeostasis**

**homeostasis of metal ions**

YNL259c *ATX1* antioxidant protein and metal homeostasis factor  
 YJR049c *UTR1* associated with ferric reductase activity  
 YMR058w *FET3* cell-surface ferroxidase  
 YOR316c *COT1* cobalt accumulation protein  
 YPL177c *CUP9* copper homeostasis protein  
 YDR515w *SLF1* copper homeostasis protein  
 YPR124w *CTR1* copper transport protein  
 YHR175w *CTR2* copper transport protein  
 YLR411w *CTR3* copper transport protein  
 YGL166w *CUP2* copper-dependent transcription factor  
 YLR214w *FRE1* ferric (and cupric) reductase  
 YKL220c *FRE2* ferric (and cupric) reductase  
 YOR176w *HEM15* ferrochelatase  
 YGL255w *ZRT1* high-affinity zinc-transport protein  
 YLL009c *COX17* interacts genetically with *SCO1* and *SCO2* in cytochrome oxidase assembly  
 YBR037c *SCO1* involved in stabilization of Cox1p and Cox2p  
 YGL071w *RCS1* iron-regulated transcriptional repressor  
 YLR130c *ZRT2* low-affinity zinc transporter  
 YMR319c *FET4* low-affinity Fe(II) iron transport protein  
 YOL122c *SMF1* manganese transporter  
 YBR290w *BSD2* metal homeostasis protein  
 YKL064w *MNR2* overexpression overcomes manganese toxicity  
 YDR270w *CCC2* probable copper-transporting ATPase  
 YBR295w *PCA1* P-type Cu<sup>2+</sup>-transporting ATPase  
 YGL096w similarity to copper homeostasis protein Cup9p  
 YDR506c similarity to Fet3p  
 YOL152w similarity to Fre1p and Fre2p  
 YGL160w similarity to hypothetical protein YLR047c and Fre2p  
 YJR126c similarity to transferrin receptor protein  
 YFL041w strong similarity to cell-surface ferroxidase Fet3p  
 YLL051c strong similarity to ferric reductase Fre2p  
 YOR381w strong similarity to ferric reductase Fre2p  
 YOR384w strong similarity to ferric reductase Fre2p  
 YNR060w strong similarity to Fre2p and hypothetical protein YOR381w, and similarity to Fre1p  
 YBR024w *SCO2* strong similarity to Sco1p

YOR031w *CRS5* suppressor of *cup1* deletion, metallothionein-like protein  
 YCL037c *SRO9* suppressor of *rho3*  
 YMR243c *ZRC1* zinc- and cadmium-resistance protein

**homeostasis of other ions**

YDL128w *VCX1* Ca<sup>2+</sup>-transport (H<sup>+</sup>/Ca<sup>2+</sup> exchange) protein, vacuolar  
 YGL006w *PMC1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YGL167c *PMR1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YGR217w *CCH1* calcium channel protein  
 YLR348c dicarboxylate carrier protein  
 YKL016c *ATP7* F1F0-ATPase complex, F0 D subunit  
 YBL099w *ATP1* F1F0-ATPase complex, F1  $\alpha$  subunit  
 YJR121w *ATP2* F1F0-ATPase complex, F1  $\beta$  subunit  
 YDL004w *ATP16* F1F0-ATPase complex, F1  $\delta$  subunit  
 YPL078c *ATP4* F1F0-ATPase complex, F1  $\epsilon$  subunit  
 YPL271w *ATP15* F1F0-ATPase complex, F1  $\zeta$  subunit  
 YBR039w *ATP3* F1F0-ATPase complex, F1  $\gamma$  subunit  
 YDR298c *ATP5* F1F0-ATPase complex, OSCP subunit  
 YLR295c *ATP14* F1F0-ATPase complex, subunit h  
 YCR024c-a *PMP1* H<sup>+</sup>-ATPase subunit, plasma membrane  
 YEL017c-a *PMP2* H<sup>+</sup>-ATPase subunit, plasma membrane  
 YMR054w *STV1* H<sup>+</sup>-ATPase V0 domain 102K subunit, vacuolar  
 YHR039c-a *VMA10* H<sup>+</sup>-ATPase V0 domain 13K subunit, vacuolar  
 YEL027w *CUP5* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YPL234c *TFP3* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YLR447c *VMA6* H<sup>+</sup>-ATPase V0 domain 36K subunit, vacuolar  
 YOR270c *VPH1* H<sup>+</sup>-ATPase V0 domain 95K subunit, vacuolar  
 YGR020c *VMA7* H<sup>+</sup>-ATPase V1 domain 14K subunit, vacuolar  
 YOR332w *VMA4* H<sup>+</sup>-ATPase V1 domain 27K subunit, vacuolar  
 YEL051w *VMA8* H<sup>+</sup>-ATPase V1 domain 32K subunit, vacuolar  
 YKL080w *VMA5* H<sup>+</sup>-ATPase V1 domain 42K subunit, vacuolar  
 YPR036w *VMA13* H<sup>+</sup>-ATPase V1 domain 54K subunit, vacuolar  
 YBR127c *VMA2* H<sup>+</sup>-ATPase V1 domain 60K subunit, vacuolar  
 YDL185w *TFP1* H<sup>+</sup>-ATPase V1 domain 69K subunit, vacuolar  
 YGL008c *PMA1* H<sup>+</sup>-transporting P-type ATPase  
 YPL036w *PMA2* H<sup>+</sup>-transporting P-type ATPase 2  
 YML123c *PHO84* high affinity inorganic phosphate/H<sup>+</sup> symporter  
 YJL129c *TRK1* high-affinity potassium transport protein  
 YBR294w *SUL1* high-affinity sulphate transport protein  
 YJL117w *PHO86* inorganic phosphate transporter  
 YLR220w *CCC1* involved in calcium regulation  
 YCR037c *PHO87* member of the phosphate permease family  
 YJL093c *TOK1* outward-rectifier potassium channel  
 YJR077c *MIR1* phosphate transport protein, mitochondrial (MCF)  
 YEL031w *SPF1* P-type ATPase  
 YDR040c *ENA1* P-type ATPase involved in Na<sup>+</sup> and Li<sup>+</sup> efflux  
 YDR039c *ENA2* P-type ATPase involved in Na<sup>+</sup> efflux  
 YDR038c *ENA5* P-type ATPase involved in Na<sup>+</sup> efflux  
 YLR138w *NHA1* putative Na<sup>+</sup>/H<sup>+</sup> antiporter  
 YBR235w similarity to bumetanide-sensitive Na<sup>+</sup>-K<sup>+</sup>-Cl<sup>-</sup> cotransport protein  
 YJL094c similarity to *E. hirae* Na<sup>+</sup>/H<sup>+</sup>-antiporter NapA  
 YNR013c similarity to membrane protein Pho87p and hypothetical protein YIL198w  
 YDR456w similarity to Na<sup>+</sup>/H<sup>+</sup> antiporters  
 YPR003c similarity to sulphate transporter proteins  
 YER053c strong similarity to mitochondrial phosphate carrier protein  
 YJL198w strong similarity to Pho87p  
 YBR296c strong similarity to phosphate-repressible phosphate permease  
 YLR092w *SEL2* strong similarity to Sul1p  
 YHL016c *DUR3* urea transport protein  
 YJR040w *GEF1* voltage-gated chloride channel protein

**Energy**

**glycolysis**

YGR240c *PFK1* 6-phosphofructokinase,  $\alpha$  subunit  
 YMR205c *PFK2* 6-phosphofructokinase,  $\beta$  subunit  
 YIL107c *PFK26* 6-phosphofructose-2-kinase, isoenzyme 1  
 YOL136c *PFK27* 6-phosphofructose-2-kinase, isoenzyme 2  
 YNL071w *LAT1* dihydroloipoamide S-acetyltransferase  
 YGR254w *ENO1* enolase I (2-phosphoglycerate dehydratase)  
 YHR174w *ENO2* enolase II (2-phosphoglycerate dehydratase)  
 YOR393w *ERR1* enolase-related protein  
 YPL281c *ERR2* enolase-related protein  
 YKL060c *FBA1* fructose-bisphosphate aldolase  
 YBR196c *PGI1* glucose-6-phosphate isomerase  
 YJL052w *TDH1* glyceraldehyde-3-phosphate dehydrogenase 1  
 YJR009c *TDH2* glyceraldehyde-3-phosphate dehydrogenase 2

YGR192c *TDH3* glyceraldehyde-3-phosphate dehydrogenase 3  
 YOL059w *GPD3* glycerol-3-phosphate dehydrogenase (NAD<sup>+</sup>), mitochondrial  
 YFR053c *HXK1* hexokinase I  
 YGL253w *HXK2* hexokinase II  
 YCR012w *PGK1* phosphoglycerate kinase  
 YKL152c *GPM1* phosphoglycerate mutase  
 YOL056w *GPM3* phosphoglycerate mutase  
 YER178w *PDA1* pyruvate dehydrogenase (lipoamide)  $\alpha$  subunit  
 YBR221c *PDB1* pyruvate dehydrogenase (lipoamide)  $\beta$  subunit  
 YGR193c *PDX1* pyruvate dehydrogenase complex protein X  
 YAL038w *CDC19* pyruvate kinase  
 YLR345w similarity to 6-phosphofructo-2-kinase  
 YDL021w *GPM2* strong similarity to phosphoglycerate mutase Gpm1p  
 YMR323w strong similarity to phosphopyruvate hydratases  
 YOR347c strong similarity to pyruvate kinase  
 YKL029c strong similarity to *S. pombe* malate oxireductase  
 YMR125w *GCR3* transcription factor for glycolytic genes  
 YDR050c *TP11* triose-phosphate isomerase  
 YKR043c weak similarity to phosphoglycerate mutase  
 YOR283w weak similarity to phosphoglycerate mutases

**gluconeogenesis**

YOR393w *ERR1* enolase-related protein  
 YPL281c *ERR2* enolase-related protein  
 YLR377c *FBP1* fructose-1,6-bisphosphatase  
 YBR196c *PGI1* glucose-6-phosphate isomerase  
 YER065c *ICL1* isocitrate lyase  
 YKR097w *PKC1* phosphoenolpyruvate carboxykinase  
 YCR012w *PGK1* phosphoglycerate kinase  
 YGL062w *PYC1* pyruvate carboxylase 1  
 YBR218c *PYC2* pyruvate carboxylase 2  
 YIL167w *SDL1* serine dehydratase  
 YOR347c strong similarity to pyruvate kinase  
 YMR280c *CAT8* transcription factor involved in gluconeogenesis  
 YDR050c *TP11* triose-phosphate isomerase

**pentose-phosphate pathway**

YHR183w *GND1* 6-phosphogluconate dehydrogenase  
 YOR095c *RK11* D-ribose-5-phosphate ketol-isomerase  
 YJL121c *POS18* D-ribulose-5-phosphate 3-epimerase  
 YNL241c *ZWF1* glucose-6-phosphate dehydrogenase  
 YGR256w *GND2* phosphogluconate dehydrogenase  
 YGR043c strong similarity to transaldolase  
 YLR354c *TAL1* transaldolase  
 YPR074c *TKL1* transketolase 1  
 YBR117c *TKL2* transketolase 2

**tricarboxylic-acid pathway**

YIL125w *KGD1* 2-oxoglutarate dehydrogenase complex E1 component  
 YDR148c *KGD2* 2-oxoglutarate dehydrogenase complex E2 component  
 YLR304c *ACO1* aconitate hydratase  
 YNR001c *CIT1* citrate (si)-synthase, mitochondrial  
 YPR001w *CIT3* citrate (si)-synthase, mitochondrial  
 YFL018c *LPD1* dihydroloipoamide dehydrogenase  
 YPL262w *FUM1* fumarate hydratase  
 YNL009w homology to isocitrate dehydrogenase  
 YNL037c *IDH1* isocitrate dehydrogenase (NAD<sup>+</sup>) subunit 1, mitochondrial  
 YOR136w *IDH2* isocitrate dehydrogenase (NAD<sup>+</sup>) subunit 2, mitochondrial  
 YLR174w *IDP2* isocitrate dehydrogenase, cytosolic  
 YOL126c *MDH2* malate dehydrogenase, cytoplasmic  
 YOR297c similarity to SDH4 protein  
 YJL200c strong similarity to aconitate hydratase  
 YGR244c strong similarity to rumen fungus  $\beta$ -succinyl-CoA synthetase  
 YLR164w strong similarity to Sdh4p  
 YMR118c strong similarity to succinate dehydrogenase  
 YJL045w strong similarity to succinate dehydrogenase flavoprotein  
 YOR142w strong similarity to succinate-CoA ligase  $\alpha$  subunit  
 YKL148c *SDH1* succinate dehydrogenase flavoprotein  
 YLL041c *SDH2* succinate dehydrogenase iron-sulphur protein subunit  
 YDR178w *SDH4* succinate dehydrogenase membrane anchor subunit for Sdh2p

**respiration**

YMR282c *AEP2* 2'-O-ribosyl phosphate transferase  
 YGR008c *STF2* ATPase stabilizing factor  
 YDL130w-a *STF1* ATPase stabilizing factor, 10K  
 YDR377w *ATP17* ATPase synthase subunit f  
 YER061c *CEM1*  $\beta$ -keto-acyl-ACP synthase  
 YIL043c *CBR1* cytochrome b5 reductase  
 YKL150w *MCR1* cytochrome b5 reductase  
 YKL141w *SDH3* cytochrome b560 subunit of respiratory complex II  
 YJR048w *CYC1* cytochrome c isoform 1  
 YEL039c *CYC2* cytochrome c isoform 2

YML129c *COX14* cytochrome c oxidase assembly protein  
 YDR079w *PET100* cytochrome c oxidase assembly protein  
 YGL187c *COX4* cytochrome c oxidase subunit IV  
 YNL052w *COX5A* cytochrome c oxidase subunit VA  
 YIL111w *COX5B* cytochrome c oxidase subunit Vb  
 YHR051w *COX6* cytochrome c oxidase subunit VI  
 YGL191w *COX13* cytochrome c oxidase subunit VIa  
 YLR038c *COX12* cytochrome c oxidase subunit VII  
 YMR256c *COX7* cytochrome c oxidase subunit VIIb  
 YDL067c *COX9* cytochrome c oxidase subunit VIIA  
 YLR395c *COX8* cytochrome c oxidase subunit VIII  
 YOR065w *CYT1* cytochrome c1  
 YER154w *OXA1* cytochrome oxidase biogenesis protein  
 YGR207c *ETF-β* electron-transferring flavoprotein, β subunit  
 YKL016c *ATP7* F1F0-ATPase complex, F0 D subunit  
 YBL099w *ATP1* F1F0-ATPase complex, F1 α subunit  
 YJR121w *ATP2* F1F0-ATPase complex, F1 β subunit  
 YDL004w *ATP16* F1F0-ATPase complex, F1 δ subunit  
 YDR078c *ATP4* F1F0-ATPase complex, F1 ε subunit  
 YPL271w *ATP15* F1F0-ATPase complex, F1 ε subunit  
 YBR039w *ATP3* F1F0-ATPase complex, F1 γ subunit  
 YDR298c *ATP5* F1F0-ATPase complex, OSCP subunit  
 YLR295c *ATP14* F1F0-ATPase complex, subunit h  
 YEL053c *MAK10* glucose-repressible protein  
 YLL009c *COX17* interacts genetically with *SCO1* and *SCO2* in cytochrome oxidase assembly  
 YJR034w *PET191* involved in assembly of cytochrome oxidase  
 YMR165c *SMP2* involved in plasmid maintenance, respiration and cell proliferation  
 YML054c *CYB2* lactate dehydrogenase cytochrome b2  
 YBR192w *RIM2* mitochondrial carrier protein (MCF)  
 YMR089c *YTA12* protease of the *SEC18/CDC48/PAS1* family of ATPases (AAA)  
 YLR044c *PDC1* pyruvate decarboxylase, isozyme 1  
 YGR062c *COX18* required for activity of mitochondrial cytochrome oxidase  
 YBR185c *MBA1* respiratory chain assembly protein  
 YDL107w *MSS2* ser/thr protein kinase  
 YPR048w similarity to *M. domestica* NADPH-ferritinoprotein reductase and mammalian nitric-oxide synthases  
 YGL226w similarity to *N. crassa* cytochrome c oxidase subunit V  
 YMR244w similarity to NCA3 and SUN4 protein  
 YML087c strong similarity to cytochrome b5- and nitrate reductases  
 YML125c strong similarity to cytochrome b5- and nitrate reductases  
 YPR004c strong similarity to electron transfer flavoproteins α subunit  
 YOR356w strong similarity to human electron transfer flavoprotein-ubiquinone oxidoreductase  
 YDL085w strong similarity to NADH dehydrogenase (ubiquinone)  
 YMR145c strong similarity to NADH dehydrogenase (ubiquinone)  
 YDL080c strong similarity to pyruvate decarboxylases  
 YDR178w *SDH4* succinate dehydrogenase membrane anchor subunit for Sdh2p  
 YNL118c *PSU1* suppressor protein of a yeast *pet* mutant  
 YFR033c *QCR6* ubiquinol-cytochrome c reductase 17K protein  
 YPR191w *QCR2* ubiquinol-cytochrome c reductase 40K subunit II  
 YBL045c *COR1* ubiquinol-cytochrome c reductase 44K core protein  
 YHR001w-a *QCR10* ubiquinol-cytochrome c reductase 8.5K subunit  
 YGR174c *CBP4* ubiquinol-cytochrome c reductase assembly factor  
 YGL119w *ABC1* ubiquinol-cytochrome c reductase complex assembly protein  
 YEL024w *RIP1* ubiquinol-cytochrome c reductase iron-sulphur protein  
 YDR529c *QCR7* ubiquinol-cytochrome c reductase subunit 7  
 YGR183c *QCR9* ubiquinol-cytochrome c reductase subunit 9  
 YJL166w *QCR8* ubiquinol-cytochrome c reductase subunit VIII  
 YMR073c weak similarity to C-terminal part of cytochrome b5 and b2  
 YNL237w *YTP1* weak similarity to mitochondrial electron transport proteins

**fermentation**

YOL086c *ADH1* alcohol dehydrogenase I  
 YMR303c *ADH2* alcohol dehydrogenase II  
 YMR083w *ADH3* alcohol dehydrogenase III  
 YGL256w *ADH4* alcohol dehydrogenase IV  
 YBR145w *ADH5* alcohol dehydrogenase V  
 YER073w aldehyde dehydrogenase (NAD<sup>+</sup>)  
 YPL061w *ALD6* aldehyde dehydrogenase, cytosolic  
 YDL174c *DLD1* D-lactate ferriocytocrome c oxidoreductase (D-LCR)  
 YML004c *GLO1* glyoxalase I  
 YOR126c *EST2* isoamyl acetate hydrolytic enzyme  
 YPL275w putative formate dehydrogenase/putative pseudogene  
 YPL276w putative formate dehydrogenase/putative pseudogene  
 YDR081c *PDC2* pyruvate decarboxylase regulatory protein  
 YLR044c *PDC1* pyruvate decarboxylase, isozyme 1

YLR134w *PDC5* pyruvate decarboxylase, isozyme 2  
 YGR087c *PDC6* pyruvate decarboxylase, isozyme3  
 YAL060w similarity to alcohol/sorbitol dehydrogenase  
 YAL061w *FUN50* similarity to alcohol/sorbitol dehydrogenase  
 YMR318c similarity to alcohol-dehydrogenase  
 YHR039c similarity to aldehyde dehydrogenases  
 YPL088w similarity to aryl-alcohol dehydrogenases  
 YMR285c similarity to Ccr4p  
 YHL008c similarity to *M. formicicum* formate dehydrogenase  
 YKR096w similarity to mitochondrial aldehyde dehydrogenase Ald1p  
 YDR380w similarity to pyruvate decarboxylases  
 YNL331c strong similarity aryl-alcohol reductase  
 YCR107w strong similarity aryl-alcohol reductases  
 YCR105w strong similarity to aryl-alcohol dehydrogenases  
 YMR169c *ALD4* strong similarity to aldehyde dehydrogenase  
 YDL243c strong similarity to aryl-alcohol dehydrogenase  
 YJR155w strong similarity to aryl-alcohol dehydrogenase  
 YFL056c strong similarity to aryl-alcohol dehydrogenases  
 YFL057c strong similarity to aryl-alcohol dehydrogenases  
 YOL165c strong similarity to aryl-alcohol dehydrogenases  
 YOR388c strong similarity to *H. polymorpha* formate dehydrogenase

**metabolism of energy reserves (glycogen and trehalose)**

YEL011w *GLC3* 1,4-glucan branching enzyme (glycogen branching enzyme)  
 YBR001c *NTH2* α,α-trehalase  
 YDR074w *TPS2* α,α-trehalose-phosphate synthase, 105K subunit  
 YMR261c *TPS3* α,α-trehalose-phosphate synthase, 115K subunit  
 YML100w *TSL1* α,α-trehalose-phosphate synthase, 123K subunit  
 YBR126c *TPS1* α,α-trehalose-phosphate synthase, 56K subunit  
 YPR026w *ATH1* acid trehalase, vacuolar  
 YBR299w *MAL32* α-glucosidase  
 YHR047c *AAP1* alanine/arginine aminopeptidase  
 YPL031c *PHO85* cyclin-dependent protein kinase  
 YLR071c *RGR1* DNA-directed RNA polymerase II holoenzyme subunit  
 YER054c *GIP2* Glc7p-interacting protein  
 YBR229c *ROT2* glucosidase II, catalytic subunit  
 YPR160w *GPH1* glycogen phosphorylase  
 YPL240c *HSP82* heat-shock protein  
 YKL128c *PMU1* high copy suppressor of ts *tps2* mutant phenotype  
 YDR001c *NTH1* neutral trehalase (α,α-trehalase)  
 YMR105c *PGM2* phosphoglucosyltransferase, major isoform  
 YKL127w *PGM1* phosphoglucosyltransferase, minor isoform  
 YNR032w *PPG1* phosphoprotein phosphatase PPG catalytic subunit  
 YBL058w *SHP1* potential regulatory subunit for Glc7p  
 YLR273c *PIG1* protein interacting with Gsy2p  
 YIL045w *PIG2* protein interacting with Gsy2p  
 YJL137c *GLG2* self-glycosylating initiator of glycogen synthesis  
 YKR058w *GLG1* self-glycosylating initiator of glycogen synthesis  
 YER133w *GLC7* ser/thr phosphoprotein phosphatase 1, catalytic subunit  
 YOR178c *GAC1* ser/thr phosphoprotein phosphatase 1, regulatory subunit  
 YPR184w similarity to glycogen debranching enzymes  
 YJL221c *FSP2* strong similarity to α-D-glucosidase  
 YOL157c strong similarity to α-glucosidases  
 YIL172c strong similarity to Fsp2p  
 YJL216c strong similarity to Mal62p  
 YFR015c *GSY1* UDP-glucose-starch glucosyltransferase, isoform 1  
 YLR258w *GSY2* UDP-glucose-starch glucosyltransferase, isoform 2  
 YKL035w *UGP1* UTP-glucose-1-phosphate uridylyltransferase

**other energy-generation activities**

YIL160c *POT1* acetyl-CoA C-acyltransferase, peroxisomal  
 YGL205w *POX1* acyl-CoA oxidase  
 YMR170c *ALD5* aldehyde dehydrogenase 2 (NAD<sup>+</sup>), mitochondrial  
 YML035c *AMD1* AMP deaminase  
 YCR005c *CIT2* citrate (si)-synthase, peroxisomal  
 YKR009c *FOX2* hydratase-dehydrogenase-epimerase, peroxisomal  
 YMR267w *PPA2* inorganic pyrophosphatase, mitochondrial  
 YDL066w *IDP1* isocitrate dehydrogenase (NADP<sup>+</sup>), mitochondrial  
 YER065c *ICL1* isocitrate lyase  
 YKL085w *MDH1* malate dehydrogenase, mitochondrial  
 YDL078c *MDH3* malate dehydrogenase, peroxisomal  
 YNL117w *MLS1* malate synthase 1  
 YIR031c *DAL7* malate synthase 2

YHR179w *OYE2* NAPDH dehydrogenase (old yellow enzyme), isoform 1  
 YPL171c *OYE3* NAPDH dehydrogenase (old yellow enzyme), isoform 3  
 YPR006c *ICL2* non-functional isocitrate lyase  
 YDL079w similarity to NADH dehydrogenase  
 YEL020c similarity to *O. formigenes* oxalyl-CoA decarboxylase  
 YDR384c strong similarity to *Y. lipolytica* *GPR1* gene

**Cell growth, cell division and DNA synthesis**

**cell growth**

YPL268w *PLC1* 1-phosphatidylinositol-4,5-bisphosphate phosphodiesterase  
 YCR088w *ABP1* actin-binding protein  
 YDL029w *ACT2* actin-like protein  
 YOL052c *SPE2* adenosylmethionine decarboxylase  
 YNL138w *SRV2* adenylate cyclase-associated protein, 70K  
 YER170w *ADK2* adenylate kinase, mitochondrial  
 YBR109c *CMD1* calmodulin  
 YHR135c *YCK1* casein kinase I isoform  
 YNL154c *YCK2* casein kinase I isoform  
 YJL174w *KRE9* cell-wall synthesis protein  
 YNL327w *EGT2* cell-cycle regulation protein  
 YLR175w *CBF5* centromere/microtubule binding protein  
 YGR167w *CLC1* clathrin light chain  
 YDR251w *PAM1* coiled-coil protein multiplicity suppressor of loss of PP2A  
 YBL007c *SLA1* cytoskeleton assembly control protein  
 YFL001w *DEG1* depressed growth-rate protein  
 YLR300w *EXG1* exo-1,3-glucanase (I/II), major isoform  
 YDR261c *EXG2* exo-1,3-glucanase minor isoform  
 YPR159w *KRE6* glucan synthase subunit  
 YBR212w *NGR1* glucose-repressible RNA-binding protein  
 YOR043w *WHI2* growth regulation protein  
 YKL021c *MAK11* involved in cell growth and replication of M1 dsRNA virus  
 YMR165c *SMP2* involved in plasmid maintenance, respiration and cell proliferation  
 YNL197c *WHI3* involved in regulation of cell size  
 YDR293c *SSD1* involved in the tolerance to high concentration of Ca<sup>2+</sup>  
 YOR336w *KRE5* killer toxin-resistance protein  
 YDR480w *DIG2* MAP kinase-associated protein  
 YOR032w *CPB7* member of the cytopliphin family  
 YGR029w *ERV1* mitochondrial biogenesis and cell viability protein  
 YBR089c-a *NHP6B* nonhistone chromosomal protein  
 YPR052c *NHP6A* nonhistone chromosomal protein related to mammalian HMG1  
 YKL203c *TOR2* phosphatidylinositol 3-kinase  
 YCR034w *GNS1* probable 1,3-glucan synthase subunit  
 YOR149c *SMP3* protein kinase C pathway protein  
 YPL140c *MKK2* protein kinase of the MAP kinase kinase (MEK) family  
 YDR151c *CTH1* protein of the inducible CCCH zinc-finger family  
 YDR075w *PPH3* protein ser/thr phosphatase  
 YDL006w *PTC1* protein ser/thr phosphatase 2c  
 YDL134c *PPH21* protein ser/thr phosphatase PP2A-1  
 YDL188c *PPH22* protein ser/thr phosphatase PP2A-2  
 YDR137w *RGP1* reduced growth phenotype protein  
 YJR090c *GRR1* required for glucose repression and for glucose and cation transport  
 YGL190c *CDC55* ser/thr phosphatase 2A regulatory subunit B  
 YAL016w *TPD3* ser/thr phosphatase 2A, regulatory subunit A  
 YOR231w *MKK1* ser/thr protein kinase  
 YPR161c *SGV1* ser/thr protein kinase  
 YHR030c *SLT2* ser/thr protein kinase of MAP kinase family  
 YJL095w *BCK1* ser/thr protein kinase of the MEKK family  
 YER167w *BCK2* ser/thr protein kinase of the protein kinase C pathway  
 YNL180c similarity to *S. pombe* Cdc42p and other GTP-binding proteins  
 YOR027w *STI1* stress-induced protein  
 YGL106w strong similarity to calmodulins  
 YER177w *BMH1* strong similarity to mammalian 14-3-3 proteins  
 YPL032c strong similarity to Pam1p  
 YKL161c strong similarity to ser/thr-specific protein kinase Sit2p  
 YDL224c strong similarity to WHI3 protein  
 YDR099w *BMH2* suppressor of clathrin deficiency  
 YJR075w *HOC1* suppressor of *pkc1*  
 YOR075w *UFE1* syntaxin (T-SNARE) of the ER  
 YHR206w *SKN7* transcription factor with similarity to Hsf1p  
 YNL079c *TPM1* tropomyosin 1  
 YLR337w *VRP1* verplogin  
 YLR403w *SFP1* zinc-finger protein

**budding, cell polarity and filament formation**

YFL039c *ACT1* actin  
 YDR129c *SAC6* actin filament bundling protein, fimbrin  
 YCR088w *ABP1* actin-binding protein  
 YDL029w *ACT2* actin-like protein  
 YNL138w *SRV2* adenylate cyclase-associated protein, 70K  
 YOR304c-a *BAT2* AIP3 binding protein

YBL085w *BOI1* BEM1 protein-binding protein  
 YBR200w *BEM1* bud emergence mediator  
 YPL161c *BEM4* bud emergence protein  
 YDR351w *SBE2* bud growth protein  
 YLR319c *BUD6* bud site selection protein  
 YNL271c *BNI1* budding protein  
 YER114c *BOI2* budding protein  
 YJR092w *BUD4* budding protein  
 YLR353w *BUD8* budding protein  
 YGR041w *BUD9* budding protein  
 YBR109c *CMD1* calmodulin  
 YHR135c *YCK1* casein kinase I isoform  
 YNL154c *YCK2* casein kinase I isoform  
 YPL255w *BBP1* cell division control protein  
 YDR182w *CDC1* cell division control protein  
 YLR314c *CDC3* cell division control protein  
 YFL009w *CDC4* cell division control protein  
 YJL174w *KRE9* cell-wall synthesis protein  
 YBR038w *CHS2* chitin synthase II  
 YBR023c *CHS3* chitin synthase III  
 YLR330w *CHS5* chitin synthesis protein  
 YLL050c *COF1* cofillin, actin binding and severing protein  
 YDR251w *PAM1* coiled-coil protein multicopy suppressor of loss of PP2A  
 YPL256c *CLN2* cyclin, G1/S specific  
 YBR160w *CDC28* cyclin-dependent protein kinase  
 YNL243w *SLA2* cytoskeleton assembly control protein  
 YLR071c *RGR1* DNA-directed RNA polymerase II holoenzyme subunit  
 YKL007w *CAP1* F-actin capping protein,  $\alpha$  subunit  
 YJL034c *CAP2* F-actin capping protein,  $\beta$  subunit  
 YJL157c *FAR1* factor arrest protein  
 YAL041w *CDC24* GDP/GTP exchange factor for Cdc42p  
 YCR038c *BUD5* GDP/GTP exchange factor for Rsr1p/Bud1p  
 YGR070w *ROM1* GDP/GTP exchange protein for Rho1p  
 YLR371w *ROM2* GDP/GTP exchange protein for Rho1p  
 YGL155w *CDC43* geranylgeranyltransferase type I  $\beta$  subunit  
 YER155c *BEM2* GTPase-activating protein  
 YLR092c *BUD2* GTPase-activating protein for Bud1p/Rsr1p  
 YPL115c *BEM3* GTPase-activating protein for Cdc42p and Rho1p  
 YGR152c *RSR1* GTP-binding protein  
 YLR229c *CDC42* GTP-binding protein of RAS superfamily  
 YJL118w *RHO3* GTP-binding protein of the RHO family  
 YKR055w *RHO4* GTP-binding protein of the RHO family  
 YPR165w *RHO1* GTP-binding protein of the RHO subfamily of RAS-like proteins  
 YNL090w *RHO2* GTP-binding protein of the RHO subfamily of RAS-like proteins  
 YOR156c *NFI1* interacts with Cdc12p in 2-hybrid assay  
 YBR063c *LAS1* involved in cell morphogenesis, cytoskeletal regulation and bud formation  
 YLL021w *SPA2* involved in cell polarity  
 YDR085c *AFR1* involved in morphogenesis of the mating projection  
 YMR273c *ZDS1* involved in negative regulation of cell polarity  
 YER149c *PEA2* involved in oriented growth towards mating partner  
 YDR293c *SSD1* involved in the tolerance to high concentration of Ca<sup>2+</sup>  
 YKL079w *SMY1* kinesin-related protein  
 YOR198c *BFR1* maintenance of normal ploidy  
 YJL158c member of the Pir1p/Hsp150p/Pir3p family  
 YJL159w member of the Pir1p/Hsp150p/Pir3p family  
 YJL160c member of the Pir1p/Hsp150p/Pir3p family  
 YOR188w *MSB1* morphogenesis-related protein  
 YGR014w *MSB2* multicopy suppressor of a *cdc24* bud emergence defect  
 YHR023w *MYO1* myosin I isoform (type II myosin) heavy chain  
 YOR326w *MYO2* myosin heavy chain  
 YAL029c *MYO4* myosin heavy chain, unconventional (class V) isoform  
 YMR109w *MYO5* myosin I  
 YKL129c *MYO3* myosin type I  
 YBR089c-a *NHP6B* nonhistone chromosomal protein  
 YPR052c *NHP6A* nonhistone chromosomal protein related to mammalian HMG1  
 YCR057c *PWP2* periodic tryptophan protein  
 YBL058w *SHP1* potential regulatory subunit for Gic7p  
 YCR034w *GNS1* probable 1,3-glucan synthase subunit  
 YER108c *FLO8* probable transcriptional activator of Flo1p  
 YOR122c *PFY1* profilin  
 YPR122w *AXL1* protease  
 YOR149c *SMF3* protein kinase C pathway protein  
 YPL140c *MKK2* protein kinase of the MAP kinase kinase (MEK) family  
 YDL047w *SIT4* protein ser/thr phosphatase  
 YDL006w *PTC1* protein ser/thr phosphatase 2c  
 YDL134c *PPH21* protein ser/thr phosphatase PP2A-1  
 YDL188c *PPH22* protein ser/thr phosphatase PP2A-2  
 YDR388w *RVS167* reduced viability upon starvation protein  
 YMR016c *SOK2* regulatory protein in the PKA signal transduction pathway  
 YCL014w *BUD3* required for axial budding  
 YJL140w *SRO4* required for axial pattern of budding  
 YER109c *FLO8* required for diploid filamentous growth  
 YNL084c *END3* required for endocytosis and cytoskeletal organization  
 YJR090c *GRR1* required for glucose repression and for glucose and cation transport

YDL135c *RDI1* RHO GDP dissociation inhibitor with activity toward Rho1p  
 YOR127w *RGA1* RHO-type GTPase-activating protein for Cdc42p  
 YKL181w *PRPS1* ribose-phosphate pyrophosphokinase  
 YJR076c *CDC11* septin  
 YHR107c *CDC12* septin  
 YGL190c *CDC55* ser/thr phosphatase 2A regulatory subunit B  
 YAL016w *TPD3* ser/thr phosphatase 2A, regulatory subunit A  
 YER133w *GLC7* ser/thr phosphoprotein phosphatase 1, catalytic subunit  
 YOR178c *GAC1* ser/thr phosphoprotein phosphatase 1, regulatory subunit  
 YKL048c *ELM1* ser/thr protein kinase  
 YOR231w *MKK1* ser/thr protein kinase  
 YBL105c *PKC1* ser/thr protein kinase  
 YHR030c *SLT2* ser/thr protein kinase of MAP kinase family  
 YJL095w *BCK1* ser/thr protein kinase of the MEKK family  
 YLR362w *STE11* ser/thr protein kinase of the MEKK family  
 YER167w *BCK2* ser/thr protein kinase of the protein kinase C pathway  
 YDL159w *STE7* ser/thr/tyr protein kinase of MAP kinase kinase family  
 YDL225w similarity to Cdc11p, Cdc3p and human CDC10 protein  
 YGL054c similarity to *D. melanogaster* cni protein  
 YCR009c *RVS161* similarity to human amphiphysin and Rvs167p  
 YDR208w *MSS4* similarity to human PI 5-kinase  
 YDR409w similarity to Nfi1p  
 YDL125c *YHI1* similarity to protein kinase C inhibitor-I  
 YDR245w *MNN10* similarity to *S. pombe* galactosyltransferase  
 YFR040w *SAP155* Sit4p-associated protein  
 YKR028w *SAP190* Sit4p-associated protein  
 YJL098w *SAP185* Sit4p-associating protein  
 YLR372w *SUR4* sterol isomerase  
 YHR103w *SBE22* strong similarity to budding protein Sbe2p  
 YGL106w strong similarity to calmodulins  
 YBR210w strong similarity to *D. melanogaster* cornichon protein  
 YPL032c strong similarity to Pam1p  
 YNL321w strong similarity to *S. pombe* Bem46p  
 YKL161c strong similarity to ser/thr-specific protein kinase Slk2p  
 YBR161w strong similarity to Sur1p  
 YJR075w *HOC1* suppressor of *pkc1*  
 YDR297w *SUR2* suppressor of *rvs161* and *rvs167* mutations  
 YPL057c *SUR1* suppressor of *rvs161*, *rvs167*, and *cls2* mutations  
 YKL043w *PHD1* transcription factor  
 YGL181w *GTS1* transcription factor of the Gcs1p/Glc3p/Sps18p family  
 YHR084w *STE12* transcriptional activator  
 YNL079c *TPM1* tropomyosin 1  
 YJL138c *TPM2* tropomyosin 2  
 YBR083w *TEC1* Ty transcription activator  
 YGL095c *VPS45* vacuolar protein sorting-associated protein  
 YLR337w *VRP1* verprolin

**pheromone response and mating-type determination**

YJR004c *SAG1*  $\alpha$ -agglutinin  
 YNR044w *AGA1*  $\alpha$ -agglutinin anchor subunit  
 YGL032c *AGA2*  $\alpha$ -agglutinin binding subunit  
 YDR264c *AKR1* ankyrin repeat-containing protein  
 YKL209c *STE6* ATP-binding cassette transporter protein  
 YJL015w *BAR1* barrier peptin  
 YBR200w *BEM1* bud emergence mediator  
 YPL161c *BEM4* bud emergence protein  
 YNL057w *CMF2* calcineurin B, catalytic subunit  
 YLR433c *CNA1* calcineurin B, catalytic subunit  
 YKL190w *CNB1* calcineurin B, regulatory subunit  
 YBR109c *CMD1* calmodulin  
 YCR002c *CDC10* cell division control protein  
 YLR314c *CDC3* cell division control protein  
 YNL188w *KAR1* cell fusion protein  
 YCL027w *FUS1* cell-wall synthesis protein  
 YJL174w *KRE9* cell-wall synthesis protein  
 YNL192w *CHS1* chitin synthase I  
 YBR023c *CHS3* chitin synthase III  
 YLR330w *CHS5* chitin synthesis protein  
 YDR073w *SNF11* component of SWI/SNF transcription activator complex  
 YOR290c *SNF2* component of SWI/SNF transcription activator complex  
 YBR289w *SNF5* component of SWI/SNF transcription activator complex  
 YPL016w *SWI1* component of SWI/SNF transcription activator complex  
 YPL256c *CLN2* cyclin, G1/S specific  
 YNL243w *SLA2* cytoskeleton assembly control protein  
 YER095w *RAD51* DNA repair protein  
 YDR076w *RAD55* DNA repair protein  
 YDR004w *RAD57* DNA repair protein  
 YAR007c *RFA1* DNA replication factor A, 69K subunit  
 YOL051w *GAL11* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit  
 YLR071c *RGR1* DNA-directed RNA polymerase II holoenzyme subunit

YBR253w *SRB6* DNA-directed RNA polymerase II suppressor protein  
 YNL053w *MSG5* dual-specificity protein phosphatase  
 YNL238w *KEX2* endopeptinase of late Golgi compartment  
 YLR300w *EXG1* exo-1,3-glucanase (I/II), major isoform  
 YDR261c *EXG2* exo-1,3-glucanase minor isoform  
 YKL007w *CAP1* F-actin capping protein,  $\alpha$  subunit  
 YJL034c *CAP2* F-actin capping protein,  $\beta$  subunit  
 YJL157c *FAR1* factor arrest protein  
 YAL041w *CDC24* GDP/GTP exchange factor for Cdc42p  
 YGL097w *SRM1* GDP/GTP exchange factor for Gsp1p/Gsp2p  
 YNL236w *SIN4* global regulator protein  
 YHL025w *SNF6* global transcription activator  
 YKL104c *GFA1* glucosamine-fructose-6-phosphate transaminase  
 YPL115c *BEM3* GTPase-activating protein for Cdc42p and Rho1p  
 YHR005c *GPA1* GTP-binding protein  $\alpha$  subunit of the pheromone pathway  
 YOR212w *STE4* GTP-binding protein  $\beta$  subunit of the pheromone pathway  
 YJR086w *STE18* GTP-binding protein  $\gamma$  subunit of the pheromone pathway  
 YLR229c *CDC42* GTP-binding protein of RAS superfamily  
 YNL173c *MDG1* GTP-binding protein of the pheromone pathway  
 YER020w *GPA2* guanine nucleotide-binding regulatory protein  
 YDL227c *HO* homothallic switching endonuclease  
 YNL291c *MID1* involved in Ca<sup>2+</sup> influx during mating  
 YLL021w *SPA2* involved in cell polarity  
 YLR452c *SST2* involved in desensitization to  $\alpha$ -factor pheromone  
 YDR085c *AFR1* involved in morphogenesis of the mating projection  
 YER149c *PEA2* involved in oriented growth toward mating partner  
 YMR052w *FAR3* involved in pheromone-mediated cell cycle arrest  
 YMR127c *SAS2* involved in silencing at HMR  
 YPR141c *KAR3* kinesin-related protein  
 YPL187w *MFA1* mating pheromone  $\alpha$ -1 factor  
 YGL089c *MFA2* mating pheromone  $\alpha$ -2 factor  
 YDR461w *MFA1* mating pheromone  $\alpha$ -factor 1  
 YNL145w *MFA2* mating pheromone  $\alpha$ -factor 2  
 YLR332w *MID2* mating process protein  
 YHR066w *SSF1* mating protein  
 YDR143c *SAN1* mating type regulatory protein  
 YCR040w *MAT $\alpha$ 1* mating type regulatory protein (expressed copy at MAT locus)  
 YCR039c *MAT $\alpha$ 2* mating type regulatory protein (expressed copy at MAT locus)  
 YCL066w  *$\alpha$ 1* mating type regulatory protein (silenced copy at HML locus)  
 YCL067c  *$\alpha$ 2* mating type regulatory protein (silenced copy at HML locus)  
 YCR097w *A1* mating type regulatory protein (silenced copy at HMR locus)  
 YCR096c *A2* mating type regulatory protein (silenced copy at HMR locus)  
 YIL047c *SYG1* member of the major facilitator superfamily  
 YBL016w *FUS3* mitogen-activated protein kinase (MAP kinase)  
 YGL151w *NUT1* negative regulator of HO endonuclease  
 YPR168w *NUT2* negative regulator of HO endonuclease  
 YKL185w *ASH1* negative regulator of HO expression  
 YCL029c *BIK1* nuclear fusion protein  
 YML065w *ORC1* origin recognition complex, 104K subunit  
 YNL261w *ORC5* origin recognition complex, 50K subunit  
 YHR118c *ORC6* origin recognition complex, 50K subunit  
 YPR162c *ORC4* origin recognition complex, 56K subunit  
 YLL004w *ORC3* origin recognition complex, 62K subunit  
 YBR060c *RRR1* origin recognition complex, 72K subunit  
 YFL026w *STE2* pheromone  $\alpha$ -factor receptor  
 YKL178c *STE3* pheromone  $\alpha$ -factor receptor  
 YCL032w *STE50* pheromone response pathway protein  
 YDR103w *STE5* pheromone signal transduction pathway protein  
 YCR034w *GNS1* probable 1,3-glucan synthase subunit  
 YLR389c *STE23* protease involved in  $\alpha$ -factor processing  
 YML032c *RAD52* recombination and DNA repair protein  
 YDR392w *SPT3* regulatory protein  
 YCL055w *KAR4* regulatory protein required for pheromone induction of karyogamy genes  
 YMR232w *FUS2* required for cell fusion during mating  
 YBR040w *FIG1* required for efficient mating  
 YCR089w *FIG2* required for efficient mating  
 YNL084c *END3* required for endocytosis and cytoskeletal organization  
 YKL130c *SHE2* required for mother cell-specific expression of HO  
 YOR035c *SHE4* required for mother cell-specific gene expression  
 YOR127w *RGA1* RHO-type GTPase-activating protein for Cdc42p  
 YLR441c *RP10A* ribosomal protein S3a.e  
 YJR076c *CDC11* septin  
 YHR107c *CDC12* septin  
 YPR161c *SGV1* ser/thr protein kinase  
 YGR040w *KSS1* ser/thr protein kinase of the MAP kinase family  
 YLR362w *STE11* ser/thr protein kinase of the MEKK family  
 YHL007c *STE20* ser/thr protein kinase of the pheromone pathway





YLR182w *SWI6* transcription factor  
 YDR054c *CDC34* ubiquitin-conjugating enzyme  
 YGL068w *RAD6* ubiquitin-conjugating enzyme

**recombination and DNA repair**

YGL127c *SOH1* allows *hpr1* null mutant to grow at 37°C  
 YBR136w *ESR1* cell-cycle checkpoint protein  
 YER173w *RAD24* cell-cycle checkpoint protein  
 YDR182w *CDC1* cell-division control protein  
 YMR106c *HDF2* component of DNA end-joining repair pathway  
 YKL011c *CCE1* cruciform-cutting endonuclease, mitochondrial  
 YER176w DNA-dependent ATPase/DNA helicase B  
 YLR032w *RAD5* DNA helicase  
 YMR190c *SGS1* DNA helicase  
 YML061c *PIF1* DNA helicase involved in mitochondrial DNA repair and telomere length  
 YDL164c *CDC9* DNA ligase  
 YMR167w *MLH1* DNA mismatch repair protein  
 YOL090w *MSH2* DNA mismatch repair protein  
 YNL082w *PMS1* DNA mismatch repair protein  
 YHR120w *MSH1* DNA mismatch repair protein, mitochondrial  
 YCR014c *POL4* DNA polymerase  
 YMR224c *MRE11* DNA repair and meiotic recombination protein

YJR035w *RAD26* DNA repair and recombination protein  
 YEL019c *MMS21* DNA repair protein  
 YML095c *RAD10* DNA repair protein  
 YCR066w *RAD18* DNA repair protein  
 YNL250w *RAD50* DNA repair protein  
 YER095w *RAD51* DNA repair protein  
 YDR076w *RAD55* DNA repair protein  
 YDR004w *RAD57* DNA repair protein  
 YDR369c *XRS2* DNA repair protein  
 YAR007c *RFA1* DNA replication factor A, 69k subunit  
 YOL006c *TOP1* DNA topoisomerase I  
 YNL088w *TOP2* DNA topoisomerase II (ATP-hydrolysing)  
 YGL163c *RAD54* DNA-dependent ATPase of the Snp2p family  
 YFR023w *PES4* DNA-directed DNA polymerase ε suppressor  
 YPL167c *REV3* DNA-directed DNA polymerase ζ  
 YCR092c *MSH3* DNA-repair protein  
 YKR056w *RNC1* endo-exonuclease  
 YOR033c *DHS1* exonuclease, interacting with Msh2p  
 YDR288c *MEC3* G2-specific checkpoint protein  
 YMR284w *HDF1* high-affinity DNA-binding protein  
 YDR138w *HPR1* hyperrecombination protein related to Top1p

YHL022c *SPO11* meiosis-specific protein  
 YER179w *DMC1* meiosis-specific protein  
 YL072w *HOP1* meiosis-specific protein  
 YHR157w *REC104* meiosis-specific protein  
 YLR263w *RED1* meiosis-specific protein  
 YPL121c *MEI5* meiotic protein  
 YNL210w *MER1* meiotic recombination protein  
 YHR086w *NAM8* meiotic recombination protein  
 YLR323w *REC102* meiotic recombination protein  
 YJR021c *REC107* meiotic recombination protein  
 YGL175c *SAE2* meiotic recombination protein  
 YBR114w *RAD16* nucleotide excision repair protein  
 YGL025c *PGD1* probable transcription factor  
 YBR088c *POL30* proliferating cell nuclear antigen (PCNA)  
 YML032c *RAD52* recombination and DNA repair protein  
 YDL059c *RAD59* recombination and DNA repair protein  
 YLR383w *RHC18* recombination repair protein  
 YBR073w *RDH54* required for meiosis  
 YL066c *RNR3* ribonucleotide reductase, repair inducible  
 YMR228w *MTF1* RNA polymerase specific factor, mitochondrial  
 YOR351c *MEK1* ser/thr protein kinase  
 YPL164c similarity to mismatch repair protein Mlh1p

**cell-cycle control and mitosis**

YFR052w *NIN1* 26S proteasome regulatory subunit  
 YPR103w *PRE2* 26S proteasome subunit  
 YGL048c *SUG1* 26S proteasome subunit  
 YKL145w *YTA3* 26S proteasome subunit  
 YJL005w *CYR1* adenylate cyclase  
 YPL239w *YAR1* ankyrin repeat-containing protein  
 YHR101c *BIG1* big cells phenotype  
 YHR208w *TWT1* branched-chain amino-acid aminotransferase, mitochondrial  
 YFL037w *TUB2* β-tubulin  
 YBR200w *BEM1* bud emergence mediator  
 YBR109c *CMD1* calmodulin  
 YOR061w *CKA2* casein kinase II α' subunit  
 YL035c *CKA1* casein kinase II, catalytic α subunit  
 YER123w *YCK3* casein kinase, isoform 3  
 YLR178c *TFS1* cdc25-dependent nutrient- and ammonia-response cell-cycle regulator  
 YGL029c *cdc4* suppressor  
 YMR055c *cdk-activating protein kinase* cell-cycle arrest protein

YOR026w *BUB3* cell-cycle arrest protein  
 YPL178w *SAE1* cell-cycle block in meiotic prophase  
 YBR136w *ESR1* cell-cycle checkpoint protein  
 YPR111w *DBF20* cell-cycle protein kinase related to Dbf2p  
 YDR113c *PDS1* cell-cycle regulator  
 YBR215w *HPC2* cell-cycle regulatory protein  
 YOR373w *NUD1* cell-cycle regulatory protein  
 YPL255w *BBP1* cell division control protein  
 YDR182w *CDC1* cell division control protein  
 YCR002c *CDC10* cell division control protein  
 YDL220c *CDC13* cell division control protein  
 YGL116w *CDC20* cell division control protein  
 YLR314c *CDC3* cell division control protein  
 YDR168w *CDC37* cell division control protein  
 YFL009w *CDC4* cell division control protein  
 YDR364c *CDC40* cell division control protein  
 YLR274w *CDC46* cell division control protein  
 YBR202w *CDC47* cell division control protein  
 YJL194w *CDC6* cell division control protein  
 YNL188w *KAR1* cell division control protein  
 YDL226c *GCS1* cell proliferation zinc-finger protein  
 YNL327w *EGT2* cell-cycle regulation protein  
 YHR129c *ACT5* centractin  
 YLR175w *CBF5* centromere/microtubule binding protein  
 YDR254w *CHL4* chromosome segregation protein  
 YOR349w *CIN1* chromosome segregation protein  
 YFL008w *SMC1* chromosome segregation protein  
 YFR031c *SMC2* chromosome segregation protein  
 YMR028w *TAP42* component of the Tor signalling pathway  
 YL106w *MOB1* conditional mutants arrest in late mitosis  
 YDL132w *CDC53* controls G1/S transition  
 YPR120c *CLB5* cyclin, B-type  
 YGR109c *CLB6* cyclin, B-type  
 YMR199w *CLN1* cyclin, G1/S specific  
 YPL256c *CLN2* cyclin, G1/S specific  
 YAL040c *CLN3* cyclin, G1/S specific  
 YNL289w *PCL1* cyclin, G1/S specific  
 YDL127w *PCL2* cyclin, G1/S specific  
 YGR108w *CLB1* cyclin, G2/M-specific  
 YPR119w *CLB2* cyclin, G2/M-specific  
 YDL155w *CLB3* cyclin, G2/M-specific  
 YLR210w *CLB4* cyclin, G2/M-specific  
 YBR135w *CKS1* cyclin-dependent kinase regulatory subunit

YBR160w *CDC28* cyclin-dependent protein kinase  
 YPL031c *PHO85* cyclin-dependent protein kinase  
 YDL108w *KIN28* cyclin-dependent ser/thr protein kinase  
 YGL215w *CLG1* cyclin-like protein  
 YOR368w *RAD17* DNA damage checkpoint control protein  
 YDR217c *RAD9* DNA repair checkpoint protein  
 YOR217w *RFC1* DNA replication factor C, 95k subunit  
 YLR234w *TOP3* DNA topoisomerase III  
 YKL017c *DIP1* Dom34p-interacting protein  
 YLR129w *DIP2* Dom34p-interacting protein  
 YNL053w *MSG5* dual-specificity protein phosphatase  
 YKR054c *DYN1* dynein heavy chain, cytosolic  
 YDR172w *SUP35* eukaryotic peptide chain release factor  
 YNL292w *EXM1* exit from mitosis  
 YDL087c *EXM2* exit from mitosis  
 YJL157c *FAR1* factor arrest protein  
 YLR212c *TUB4* γ tubulin  
 YLR288c *MEC3* G2-specific checkpoint protein  
 YAL024c *LTE1* GDP/GTP exchange factor  
 YL016w *SDC25* GDP/GTP exchange factor  
 YAL041w *CDC24* GDP/GTP exchange factor for Cdc42p  
 YLR310c *CDC25* GDP/GTP exchange factor for Ras1p and Ras2p

YGL207w *SPT16* general chromatin factor  
 YGL155w *CDC43* geranylgeranyltransferase type I β subunit  
 YER155c *BEM2* GTPase-activating protein  
 YMR138w *CIN4* GTP-binding protein  
 YNL098c *RAS2* GTP-binding protein  
 YLR229c *CDC42* GTP-binding protein of RAS superfamily  
 YML064c *TEM1* GTP-binding protein of the RAS superfamily  
 YNL007c *SIS1* heat-shock protein  
 YBR133c *HSL7* histone synthetic lethality  
 YJL080c *SCP160* histone-like protein  
 YOL076w *DEC1* interacts genetically with *CIN8*  
 YOR156c *NF1* interacts with Cdc12p in 2-hybrid assay  
 YNR010w *CSE2* interacts with centromeric element CDEII  
 YML104c *MDM1* intermediate filament protein  
 YKR072c *SIS2* involved in cell cycle-specific gene expression  
 YKR063c *LAS1* involved in cell morphogenesis, cytoskeletal regulation and bud formation  
 YPL241c *CIN2* involved in chromosome segregation  
 YPL018w *CTF19* involved in chromosome segregation  
 YJL090c *DPB11* involved in DNA replication and S-phase checkpoint  
 YMR273c *ZDS1* involved in negative regulation of cell polarity  
 YMR052w *FAR3* involved in pheromone-mediated cell cycle arrest  
 YMR052w *FAR3* involved in pheromone-mediated cell cycle arrest  
 YMR001c *CDC5* involved in regulation of DNA replication  
 YMR127c *SAS2* involved in silencing at HMR  
 YKR042w *UTH1* involved in the aging process  
 YDR293c *SSD1* involved in the tolerance to high concentration of Ca<sup>2+</sup>  
 YNL189w *SRP1* karyopherin-α or importin  
 YEL061c *CIN8* kinesin-related protein  
 YPR141c *KAR3* kinesin-related protein  
 YBL063w *KIP1* kinesin-related protein  
 YJR060w *CBF1* kinetochore protein

YGR140w *CBF2* kinetochore protein complex CBF3, 110k subunit  
 YMR094w *CTF13* kinetochore protein complex CBF3, 58k subunit

YMR168c *CEP3* kinetochore protein complex CBF3, 71k subunit  
 YDR328c *SKP1* kinetochore protein complex CBF3, subunit D  
 YOR198c *BFR1* maintenance of normal ploidy  
 YLR332w *MID2* mating process protein  
 YER179w *DMC1* meiosis-specific protein  
 YHR079c *SAE3* meiosis-specific protein  
 YPR019w *CDC54* member of the Cdc46p/Mcm2p/Mcm3p family  
 YDL126c *CDC48* microosomal protein  
 YOR058c *ASE1* CDC48/PAS1/SEC18 family of ATPases  
 YNL064c *YDI1* microtubule-associated protein  
 YGR029w *ERV1* mitochondrial and ER import protein  
 YBL016w *FUS3* mitochondrial biogenesis and regulation of cell cycle  
 YMR294w *JNM1* mitogen-activated protein kinase (MAP kinase)  
 YMR036c *MIH1* mitosis protein, involved in nuclear migration  
 YGL178w *MPT5* M-phase inducing protein tyrosine phosphatase  
 YML109w *ZDS2* multicopy suppressor of *pop2*  
 YGL173c *KEM1* multicopy suppressor of *sin4*  
 YDR207c *UME6* multifunctional nuclease  
 YBL020w *RFT1* negative transcriptional regulator  
 YNL299w *TRF5* nuclear division protein  
 YML031w *NDC1* nuclear division protein  
 YJR112w *NNF1* nuclear envelope protein  
 YCL029c *BIK1* nuclear fusion protein  
 YJL034w *KAR2* nuclear fusion protein  
 YDR150w *NUM1* nuclear migration protein  
 YAL025c *MAK16* nuclear viral propagation protein  
 YKR048c *NAP1* nucleosome assembly protein I  
 YLR079w *SIC1* p40 inhibitor of Cdc28p-Cln protein kinase complex

YJR066w *TOR1* phosphatidylinositol 3-kinase  
 YKL203c *TOR2* phosphatidylinositol 3-kinase  
 YLR305c *STT4* phosphatidylinositol-4-kinase  
 YCL004w *PEL1* phosphatidylserine synthase  
 YBL058w *SHP1* potential regulatory subunit for Glc7p  
 YGL238w *CSE1* probable kinetochore protein  
 YGR132c *PHB1* prohibitin, antiproliferative protein  
 YDL017w *CDC7* protein kinase  
 YOR149c *SMP3* protein kinase C pathway protein  
 YPL140c *MKK2* protein kinase of the MAP kinase kinase (MEK) family  
 YAR019c *CDC15* protein kinase of the MAP kinase kinase family  
 YHR013c *ARD1* protein N-acetyltransferase subunit  
 YPL008w *CHL1* protein of the DEAH box family  
 YDL047w *SIT4* protein ser/thr phosphatase  
 YDL134c *PPH21* protein ser/thr phosphatase PP2A-1  
 YDL188c *PPH22* protein ser/thr phosphatase PP2A-2  
 YBR267w *PPS1* protein tyrosine phosphatase  
 YFR028c *CDC14* protein-tyrosine-phosphatase  
 YOL021c *DIS3* Ran binding protein  
 YDR137w *RGP1* reduced growth phenotype protein  
 YDR052c *DBF4* regulatory subunit for Cdc7p protein kinase

YKL193c *SDS22* regulatory subunit for the mitotic function of type I protein phosphatase  
 YMR078c *CHL12* required for accurate chromosome transmission in mitosis and maintenance of normal telomere length  
 YOL145c *CTR9* required for G1 cyclin expression  
 YLR103c *CDC45* required for minichromosome maintenance and initiation of chromosomal DNA replication  
 YKL089w *MIF2* required for normal chromosome segregation and spindle integrity  
 YGR098c *ESP1* required for normal spindle structure  
 YIL150c *DNA43* required for S-phase initiation or completion  
 YJL074c *SMC3* required for structural maintenance of chromosomes  
 YGR078c *PAC10* required in the absence of Cin8p  
 YDR488c *PAC11* required in the absence of Cin8p  
 YLR075w *GRC5* ribosomal protein  
 YJR076c *CDC11* septin  
 YHR107c *CDC12* septin  
 YAL016w *TPD3* ser/thr phosphatase 2A, regulatory subunit A  
 YER133w *GLC7* ser/thr phosphoprotein phosphatase 1, catalytic subunit  
 YOR178c *GAC1* ser/thr phosphoprotein phosphatase 1, regulatory subunit  
 YGR188c *BUB1* ser/thr protein kinase  
 YKL048c *ELM1* ser/thr protein kinase  
 YJL106w *IME2* ser/thr protein kinase  
 YPL209c *IPL1* ser/thr protein kinase  
 YOR231w *MKK1* ser/thr protein kinase  
 YBL105c *PKC1* ser/thr protein kinase  
 YPR161c *SGV1* ser/thr protein kinase  
 YJL141c *YAK1* ser/thr protein kinase  
 YMR104c *YPK2* ser/thr protein kinase  
 YHR030c *SLT2* ser/thr protein kinase of MAP kinase family  
 YJL095w *BCK1* ser/thr protein kinase of the MEKK family  
 YER167w *BCK2* ser/thr protein kinase of the protein kinase C pathway  
 YGR092w *DBF2* ser/thr protein kinase related to Dbf20p



YHR006w *STP2* involved in pre-tRNA splicing  
 YLR375w *STP3* involved in pre-tRNA splicing and in uptake of branched-chain amino acids  
 YDL048c *STP4* involved in pre-tRNA splicing and in uptake of branched-chain amino acids  
 YCL017c *NFS1* involved in tRNA processing and mitochondrial metabolism  
 YNR034w *SOL1* multicopy suppressor of *los1-1*  
 YCR073w-a *SOL2* multicopy suppressor of *los1-1*  
 YMR047c *NUP116* nuclear pore protein  
 YGL092w *NUP145* nuclear pore protein  
 YJR042w *NUP85* nuclear pore protein  
 YLR430w *SEN1* positive effector of tRNA-splicing endonuclease  
 YAL043c *PTA1* pre-tRNA processing protein  
 YKL205w *LOS1* pre-tRNA splicing protein  
 YDR463w *STP1* pre-tRNA splicing protein  
 YNL221c *POP1* protein component of ribonuclease P and ribonuclease MRP  
 YML091c *RPM2* ribonuclease P, mitochondrial  
 YFR004w *MPR1* strong similarity to *S. pombe* pad1 protein  
 YGR248w *SOL4* strong similarity to Sol3p  
 YLJ087c *TRL1* tRNA ligase  
 YLR105c *SEN2* tRNA splicing endonuclease  $\beta$  subunit  
 YHR163w *SOL3* weak multicopy suppressor of *los1-1*

**tRNA modification**

YGR204w *ADE3* C1-tetrahydrofolate synthase, cytoplasmic  
 YMR283c *RTI1* initiator tRNA phosphoribosyl-transferase  
 YDR120c *TRM1* N<sub>2</sub>,N<sub>2</sub>-dimethylguanine tRNA methyltransferase  
 YGL105w *G4P1* protein with specific affinity for G4 quadruplex nucleic acids  
 YPL212c *PUS1* pseudouridine synthase 1  
 YGL063w *PUS2* pseudouridine synthase 2  
 YFR010w similarity to *C. elegans* tRNA-guanine transglycosylase  
 YBL013w similarity to methionyl-tRNA formyltransferase  
 YOR274w *MOD5* tRNA isopentenyltransferase  
 YER168c *CCA1* tRNA nucleotidyltransferase

**other tRNA-transcription activities**

YOR061w *CKA2* casein kinase II  $\alpha'$  subunit  
 YOR039w *CKB2* casein kinase II  $\beta'$  subunit  
 YLJ041w *NSP1* nuclear pore protein

**mRNA synthesis**

**general transcription activities**

YDL108w *KIN28* cyclin-dependent ser/thr protein kinase  
 YLJ143c *SSL2* DNA helicase  
 YER171w *RAD3* DNA helicase/ATPase  
 YOR224c *RPB8* DNA-directed RNA polymerase I, II, III 16K subunit  
 YPR187w *RPO26* DNA-directed RNA polymerase I, II, III 18K subunit  
 YBR154c *RPB5* DNA-directed RNA polymerase I, II, III 25K subunit  
 YHR143w-a *RPC10* DNA-directed RNA polymerase I, II, III 7.7K subunit  
 YOR210w *RPB10* DNA-directed RNA polymerase I, II, III 8.3K subunit  
 YOL051w *GAL11* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit  
 YDR443c *SCA1* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit  
 YHR041c *SRB2* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit  
 YER022w *SRB4* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit  
 YGR104c *SRB5* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit  
 YDR308c *SRB7* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit  
 YCR081w *SRB8* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit  
 YNL025c *SSN8* DNA-directed RNA polymerase II holoenzyme and Kornberg's mediator (SRB) subcomplex subunit, cyclin C homologue  
 YLR071c *RGR1* DNA-directed RNA polymerase II holoenzyme subunit  
 YBR253w *SRB6* DNA-directed RNA polymerase II suppressor protein  
 YOL005c *RPB11* DNA-directed RNA polymerase II, 13.6K subunit  
 YGL070c *RPB9* DNA-directed RNA polymerase II, 14.2K subunit  
 YOR151c *RPB2* DNA-directed RNA polymerase II, 140K subunit  
 YDR404c *RPB7* DNA-directed RNA polymerase II, 19K subunit  
 YDL140c *RPO21* DNA-directed RNA polymerase II, 215K subunit  
 YLJ140w *RPB4* DNA-directed RNA polymerase II, 32K subunit  
 YFL036w *RPO41* DNA-directed RNA polymerase, mitochondrial

YIL021w *RPB3* DNA-directed RNA-polymerase II, 45K  
 YLJ28w *MMS19* involved in repair and RNA polymerase transcription  
 YMR228w *MTF1* RNA polymerase specific factor, mitochondrial  
 YPR056w similarity to human transcription factor BTF2/TFIIH subunit p34  
 YPL046c strong similarity to human DNA-directed RNA polymerase II elongation factor SIII, p15  
 YDR045c strong similarity to *S. acidocaldarius* transcription elongation factor tfs  
 YKL058w *TOA2* TFIIA subunit (transcription initiation factor), 13.5K  
 YOR194c *TOA1* TFIIA subunit (transcription initiation factor), 32K  
 YPR086w *SUA7* TFIIB subunit (transcription initiation factor), factor E  
 YER148w *SPT15* TFIID and TFIIB subunit  
 YGR274c *TAF145* TFIID subunit (TBP-associated factor), 145K  
 YMR236w *TAF17* TFIID subunit (TBP-associated factor), 17K  
 YML098w *TAF19* TFIID subunit (TBP-associated factor), 19K  
 YDR167w *TAF23* TFIID subunit (TBP-associated factor), 23K  
 YML015c *TAF40* TFIID subunit (TBP-associated factor), 40K  
 YGL112c *TAF60* TFIID subunit (TBP-associated factor), 60K  
 YDR145w *TAF61* TFIID subunit (TBP-associated factor), 61K  
 YMR227c *TAF67* TFIID subunit (TBP-associated factor), 67K  
 YBR198c *TAF90* TFIID subunit (TBP-associated factor), 90K  
 YKR062w *TFA2* TFIIE subunit (transcription initiation factor), 43K  
 YKL028w *TFA1* TFIIE subunit (transcription initiation factor), 66K  
 YGR186w *TFG1* TFIIF subunit (transcription initiation factor), 105K  
 YPL129w *ANC1* TFIIF subunit (transcription initiation factor), 30K  
 YGR005c *TFG2* TFIIF subunit (transcription initiation factor), 54K  
 YDR311w *TFB1* TFIIF subunit (transcription initiation factor), 75K  
 YPR025c *CCL1* TFIIF subunit (transcription initiation factor), cyclin C component  
 YLR005w *SSL1* TFIIF subunit (transcription initiation factor), factor B  
 YPL122c *TFB2* TFIIF subunit (transcription/repair factor)  
 YDR460w *TFB3* TFIIF subunit (transcription/repair factor)  
 YGL043w *DST1* TFIIS (transcription elongation factor)  
 YGR063c *SPT4* transcription initiation protein  
 YML010w *SPT5* transcription initiation protein  
 YGR116w *SPT6* transcription initiation protein

**transcriptional control**

YOR259c *CRL13* 26S proteasome subunit  
 YLJ115w *ASF1* anti-silencing protein  
 YDL197c *ASF2* anti-silencing protein  
 YDR173c *ARG82* arginine metabolism transcription factor  
 YKL112w *ABF1* ARS-binding factor  
 YDR123c *INO2* basic helix-loop-helix (BHLH) transcription factor  
 YOL108c *INO4* basic helix-loop-helix transcription factor  
 YOL067c *RTG1* basic helix-loop-helix transcription factor  
 YOR344c *TYE7* basic helix-loop-helix transcription factor  
 YBL103c *RTG3* bHLH/zip transcription factor  
 YHL009c bZip DNA binding protein  
 YGL209w *MIG2* C2H2 zinc-finger protein  
 YKL190w *CNB1* calcineurin B, regulatory subunit  
 YML112w *CTK3* carboxy terminal domain (CTD) kinase,  $\gamma$  subunit  
 YLJ006c *CTK2* carboxy-terminal domain (CTD) kinase,  $\beta$  subunit  
 YKL139w *CTK1* carboxy-terminal domain (CTD) kinase,  $\alpha$  subunit  
 YIL035c *CKA1* casein kinase II, catalytic  $\alpha$  subunit  
 YGL237c *HAP2* CCAAT-binding factor subunit  
 YBL021c *HAP3* CCAAT-binding factor subunit  
 YLJ109w *HAP4* CCAAT-binding factor subunit  
 YOR358w *HAP5* CCAAT-binding factor subunit  
 YJR122w *CAF17* CCR4-associated factor  
 YKR036c *CAF4* CCR4-associated factor  
 YBR215w *HPC2* cell-cycle regulatory protein  
 YDL220c *CDC13* cell division control protein component of SWI/SNF transcription activator complex  
 YDR073w *SNF11* component of SWI/SNF transcription activator complex  
 YNR023w *SNF12* component of SWI/SNF transcription activator complex  
 YOR290c *SNF2* component of SWI/SNF transcription activator complex  
 YBR289w *SNF5* component of SWI/SNF transcription activator complex  
 YPL016w *SWI1* component of SWI/SNF transcription activator complex  
 YCR042c *TSM1* component of TAF(II) complex  
 YLJ177c *CUP9* copper homeostasis protein  
 YGL166w *CUP2* copper-dependent transcription factor  
 YNL167c *SKO1* cre-binding bzip protein  
 YPL042c *SSN3* cyclin-dependent ser/thr protein kinase  
 YLR176c *RFX1* DNA binding protein  
 YDR217c *RAD9* DNA repair checkpoint protein  
 YNL216w *RAP1* DNA-binding protein with repressor and activator activity  
 YLR418c *CDC73* DNA-directed RNA polymerase II accessory protein  
 YBR279w *PAF1* DNA-directed RNA polymerase II regulator  
 YGL208w *SIP2* dominant suppressor of some ts mutations *rpo21* and *prp4*

YOR047c *STD1* dosage-dependent modulator of glucose repression  
 YER159c *NCB1* functional homologue of human NC2 $\alpha$   
 YDR397c *YNC2B* functional homologue of human NC2 $\beta$ /Dr1  
 YPL037c *EGD1* GAL4 DNA-binding enhancer protein  
 YLJ110c *GZF3* GATA zinc-finger protein 3  
 YIL038c *NOT3* general negative regulator of transcription, subunit 3  
 YBR112c *CYC8* general repressor of transcription  
 YCR084c *TUP1* general transcription repressor  
 YDR176w *NGG1* general transcriptional adaptor or co-activator  
 YBR045c *GIP1* Glc7p-interacting protein  
 YNL239w *SIN4* global regulator protein  
 YHL025w *SNF6* global transcription activator  
 YER027c *GAL83* glucose repression protein  
 YNL199c *GCR2* glycolytic genes transcriptional activator  
 YGL073w *HSF1* heat shock transcription factor  
 YPR065w *ROX1* heme-dependent transcriptional repressor of hypoxic genes  
 YDR006c *SOX1* high copy suppressor of a cyclic AMP-dependent protein kinase mutant  
 YMR070w *HMS1* high-copy suppressor of *mot1* *spt3* synthetic lethality  
 YGR252w *GCN5* histone acetyltransferase  
 YDR225w *HTA1* histone H2A  
 YBL003c *HTA2* histone H2A.2  
 YDR224c *HTB1* histone H2B  
 YBL002w *HTB2* histone H2B.2  
 YBR010w *HHT1* histone H3  
 YNL031c *HHT2* histone H3  
 YBR009c *HHF1* histone H4  
 YNL030w *HHF2* histone H4  
 YBL008w *HIR1* histone transcription regulator  
 YOR038c *HIR2* histone transcription regulator  
 YER161c *SPT2* HMG-like chromatin protein  
 YDL106c *GRF10* homeodomain protein  
 YDR138w *HPR1* hyperrecombination protein related to Top1p  
 YLJ089w *SIP4* interacts with SNF1 protein kinase  
 YKL032c *IXR1* intrastrand crosslink recognition protein and transcription factor  
 YBR081c *SPT7* involved in alteration of transcription start site selection  
 YKR072c *SIS2* involved in cell cycle-specific gene expression  
 YNL251c *NRD1* involved in regulation of nuclear pre-mRNA abundance  
 YIL046w *MET30* involved in regulation of sulphur assimilation genes  
 YDL153c *SAS10* involved in silencing  
 YMR127c *SAS2* involved in silencing at HMR  
 YGR097w *ASK10* involved in Skn7p-dependent transcription  
 YLR039c *RIC1* involved in transcription of ribosomal proteins and ribosomal RNA  
 YGL071w *RCS1* iron-regulated transcriptional repressor  
 YJR060w *CBF1* kinetochore protein  
 YDR159w *SAC3* leucine permease transcriptional regulator  
 YGR100w *MIC1* Mac1p interacting protein  
 YBR297w *MAL33* maltose fermentation regulatory protein  
 YGR288w *MAL13* maltose pathway regulatory protein  
 YCR040w *MAT $\alpha$ 1* mating type regulatory protein (expressed copy at MAT locus)  
 YCR039c *MAT $\alpha$ 2* mating type regulatory protein (expressed copy at MAT locus)  
 YCL067c  *$\alpha$ 2* mating type regulatory protein (silenced copy at HML locus)  
 YHL027w *RIM101* meiotic regulatory protein  
 YLR216c *CPB6* member of the cyclophilin family  
 YJR032w *CPB7* member of the cyclophilin family  
 YLR136c *TIS11* member of the inducible cox zinc-finger family  
 YOL148c *SPT20* member of the TBP class of SPT proteins that alter transcription site selection  
 YMR021c *MAC1* metal binding activator  
 YLR131c *ACE2* metallothionein expression activator  
 YBR026c *(MRP1)* mitochondrial respiratory function protein  
 YML051w *GAL80* negative regulator for expression of galactose-induced genes  
 YGL151w *NUT1* negative regulator of HO endonuclease  
 YPR168w *NUT2* negative regulator of HO endonuclease  
 YKL185w *ASH1* negative regulator of HO expression  
 YHL020c *OPI1* negative regulator of phospholipid biosynthesis pathway  
 YDR464w *SPP41* negative regulator of PRP3 and PRP4 gene expression  
 YNL076w *MKS1* negative regulator of RAS-cAMP pathway  
 YDR207c *UME6* negative transcriptional regulator  
 YGL221c *NIF3* Ngg1p-interacting factor 3  
 YGL115w *SNF4* nuclear regulatory protein  
 YCR093w *CDC39* nuclear transmembrane protein  
 YML065w *ORC1* origin recognition complex, 104K subunit  
 YNL261w *ORC5* origin recognition complex, 50K subunit  
 YHR118c *ORC6* origin recognition complex, 50K subunit  
 YPR162c *ORC4* origin recognition complex, 56K subunit  
 YLL004w *ORC3* origin recognition complex, 62K subunit  
 YBR060c *RRR1* origin recognition complex, 72K subunit  
 YAL051w *OAF1* peroxisome proliferating transcription factor  
 YOR363c *PIP2* peroxisome proliferating transcription factor  
 YBL005w *PDR3* pleiotropic drug resistance regulatory protein  
 YKL015w *PUT3* positive activator of the proline utilization pathway  
 YGL192w *IME4* positive transcription factor for *IME2*



YPR178w *PRP4* U4/U6 snRNP 52K protein  
 YGR006w *PRP18* U5 snRNA-associated protein  
 YHR165c *PRP8* U5 snRNP protein, pre-mRNA splicing factor  
 YER112w *USS1* U6 snRNA associated protein

**mRNA processing (5'-end, 3'-end processing and mRNA degradation)**

YJL209w *CBP1* apo-cytochrome b pre-mRNA processing protein  
 YBR120c *CBP6* apo-cytochrome b pre-mRNA processing protein  
 YPL178w *SAE1* cell cycle block in meiotic prophase  
 YGL094c *PAN2* component of Pab1p-stimulated poly(A) ribonuclease  
 YMR061w *RNA14* component of pre-mRNA 3'-end processing factor  
 YGL044c *RNA15* component of pre-mRNA 3'-end processing factor  
 YJR093c *FIP1* component of pre-mRNA polyadenylation factor  
 YKL025c *PAN3* component of the Pab1p-dependent poly(A)  
 YOL149w *DCP1* component of the yeast decapping enzyme  
 YGL097w *SRM1* GDP/GTP exchange factor for Gsp1p/Gsp2p  
 YGR158c *MTR3* involved in mRNA transport  
 YBR236c *ABD1* methyltransferase  
 YGL130w *CEG1* mRNA guanylyltransferase (mRNA capping enzyme,  $\alpha$  subunit)  
 YER165w *PAB1* mRNA polyadenylate-binding protein  
 YLR277c *BRR5* mRNA processing protein  
 YKR002w *PAP1* poly(A) polymerase  
 YGL122c *NAB2* poly(A)-binding protein  
 YPL190c *NAB3* polyadenylated RNA-binding protein  
 YDR301w *CFT1* pre-mRNA 3'-end processing factor  
 YJR017c *ESS1* processing/termination factor 1  
 YDR195w *REF2* RNA 3'-end formation protein  
 YOR179c *REF2* similarity to BRR5 protein  
 YOR319w *HSH49* similarity to human SAP49 and RNA-binding proteins  
 YHR015w similarity to PES4 PAB-like protein  
 YOR159c *SME1* strong similarity to human small nuclear ribonucleoprotein E

**other mRNA-transcription activities**

YGL171w *ROK1* ATP-dependent RNA helicase  
 YOL006c *TOP1* DNA topoisomerase I  
 YGL251c *HF1M* DNA/RNA helicase  
 YNL037c *IDH1* isocitrate dehydrogenase (NAD<sup>+</sup>) subunit 1, mitochondrial  
 YOR136w *IDH2* isocitrate dehydrogenase (NAD<sup>+</sup>) subunit 2, mitochondrial  
 YNL016w *PUB1* major polyadenylated RNA-binding protein of nucleus and cytoplasm  
 YHR170w *NMD3* nonsense-mediated mRNA decay protein  
 YMR064w *AEP1* nuclear control of ATPase messenger RNA expression protein  
 YOL123w *HRP1* polyadenylated RNA-binding protein  
 YLR067c *PET309* required for stability and translation of COX1 mRNA  
 YAL016w *TPD3* ser/thr phosphatase 2A, regulatory subunit A  
 YOL042w similarity to CCR4 protein  
 YER146w similarity to human snRNP E  
 YER029c similarity to human snRNP-associated protein B  
 YER028c similarity to Mig1p  
 YDR429c similarity to nuclear RNA binding proteins  
 YJR127c similarity to regulatory protein ADR1  
 YDL031w similarity to RNA helicases  
 YNL147w similarity to snRNP proteins  
 YNL021w similarity to transcription factor Rpd3p  
 YPR068c similarity to transcription factor Rpd3p  
 YPL213w similarity to U2 snRNP protein A'  
 YBL026w *SNP3* snRNP-related protein  
 YDL160c *DHH1* strong similarity to RNA helicases of the DEAD box family  
 YLR147c *SMD3* strong similarity to small nuclear ribonucleoprotein D3  
 YLR139c *SLS1* suppresses lethality of SSM4 deletion

**RNA transport**

YGL097w *SRM1* GDP/GTP exchange factor for Gsp1p/Gsp2p  
 YMR235c *RNA1* GTPase activating protein  
 YOR185c *GSP2* GTP-binding protein  
 YLR293c *GSP1* GTP-binding protein of the ras superfamily  
 YOR160w *MTR10* involved in mRNA transport  
 YGR158c *MTR3* involved in mRNA transport  
 YJL050w *MTR4* involved in nucleocytoplasmic transport of mRNA  
 YKL186c *MTR2* mRNA transport protein  
 YKL069w *NUP100* nuclear pore protein  
 YKL057c *NUP120* nuclear pore protein  
 YKR082w *NUP133* nuclear pore protein  
 YGL092w *NUP145* nuclear pore protein  
 YDR192c *NUP42* nuclear pore protein  
 YGL172w *NUP49* nuclear pore protein  
 YJL061w *NUP82* nuclear pore protein  
 YDR432w *NPL3* nucleolar protein  
 YGL122c *NAB2* poly(A)-binding protein  
 YKL205w *LOS1* pre-tRNA splicing protein

YER110c *KAP123* RAN-binding protein  
 YDR002w *YRB1* ran-specific GTPase-activating protein  
 YER107c *GLE2* required for nuclear pore complex structure and function  
 YIR011c *STS1* required for transport of Rna15p from the cytoplasm to the nucleus  
 YDL207w *GLE1* RNA export mediator  
 YLR119w *SRN2* suppressor of *ma1-1* mutation

**other transcription activities**

YGL127c *SOH1* allows *hpr1* null mutant to grow at 37°C  
 YOR113w *AZF1* asparagine-rich zinc-finger protein  
 YPR198w *SGE1* drug resistance protein  
 YBR212w *NGR1* glucose-repressible RNA-binding protein  
 YML027w *YOX1* homoeodomain protein  
 YNL068c *FKH2* homology to *D. melanogaster* forkhead protein  
 YIL030c *SSM4* involved in mRNA turnover  
 YNL282w *(POP2)* involved in processing RNAs  
 YCR087c-a *YLA1* nucleic acid-binding protein  
 YDL051w *YLA1* RNA binding protein  
 YMR164c similarity to CYC8 protein  
 YGL014w similarity to *D. melanogaster* pumilio protein and HTR1 protein  
 YIR001c similarity to *D. melanogaster* RNA binding protein  
 YNL004w *HRB1* similarity to Gbp2p  
 YBR233w similarity to human hnRNP-E1 protein  
 YPR031w similarity to human zinc-finger protein BR140  
 YCL033c similarity to *M. capricolum* transcription repressor  
 YIR005w similarity to RNA-binding proteins  
 YMR213w similarity to *S. pombe* putative transcription factor cdc5  
 YNL175c similarity to *S. pombe* Rnp24p  
 YOR244w similarity to SAS2 and SAS3 protein  
 YPR008w similarity to transcription factor  
 YPL230w similarity to transcription factors  
 YPR013c similarity to transcription factors  
 YPR015c similarity to transcription factors  
 YNL027w similarity to zinc-finger proteins  
 YPL038w similarity to zinc-finger proteins  
 YDR169c *STB3* SIN3 protein-binding protein  
 YPR107c strong similarity to *D. melanogaster* zinc-finger protein  
 YIL105c strong similarity to hypothetical protein YNL047c, similarity to hypothetical protein YNL115w and to probable transcription factor Ask10p  
 YNL255c strong similarity to nucleic acid-binding proteins  
 YHR169w strong similarity to RNA helicase  
 YGL078c strong similarity to RNA helicase DBP2 protein  
 YCR004c *YCP4* strong similarity to *S. pombe* protein obr1  
 YFL017w-a *SNP2* strong similarity to snRNP E  
 YDR451c strong similarity to Yox1p  
 YML017w *PSP2* suppressor of DNA polymerase  $\alpha$  mutation  
 YKR092c *SRP40* suppressor of mutant AC40 of RNA polymerase I and III  
 YKL005c weak similarity to *D. melanogaster* transcription elongation factor Dms-II  
 YNR063w weak similarity to CYC1/CYP3 transcription activator  
 YJL124c weak similarity to human Sm protein G  
 YDR043c weak similarity to *K. marxianus* Mig1 and other regulatory proteins  
 YIR018w weak similarity to transcription activator Pdr4p  
 YPR199c weak similarity to transcription activator Yap1p  
 YBR239c weak similarity to transcription factor Put3p  
 YBR150c weak similarity to transcription factors  
 YGR067c weak similarity to transcription factors  
 YPL133c weak similarity to transcription factors  
 YER116c zinc-finger protein

**Protein synthesis**

**ribosomal proteins**

YGR214w *NAB1A* 40S ribosomal protein p40 homologue A  
 YLR048w *NAB1B* 40S ribosomal protein p40 homologue B  
 YCR031c *CRY1* 40S ribosomal protein S14.e  
 YGL189c *RPS26A* 40S ribosomal protein S26.e.c7  
 YML009c *MRPL39A* 60S ribosomal protein, mitochondrial  
 YDL081c *RPLA1* acidic ribosomal protein a1  
 YLR340w *RPLA0* acidic ribosomal protein L10.e  
 YDL130w *RPLA3* acidic ribosomal protein L44prime  
 YDR382w *RPLA4* acidic ribosomal protein L45  
 YOL039w *RPLA2* acidic ribosomal protein P2.β  
 YOR369c *RS12* acidic ribosomal protein S12  
 YGL069w probable ribosomal protein L12  
 YLR325c putative ribosomal protein L38  
 YFL034c-a ribosomal protein  
 YFR032c-a ribosomal protein  
 YLR061w ribosomal protein  
 YMR142c ribosomal protein  
 YPL183w-a ribosomal protein  
 YLR075w *GRG5* ribosomal protein  
 YIL133c *RP22* ribosomal protein  
 YNL069c *RP23* ribosomal protein

YOR096w *RP30* ribosomal protein  
 YKL008w *RPL14A* ribosomal protein  
 YHL001w *RPL14B* ribosomal protein  
 YMR242c *RPL18A* ribosomal protein  
 YOR312c *RPL18B* ribosomal protein  
 YDR471w *RPL27B* ribosomal protein  
 YLR344w *RPL33A* ribosomal protein  
 YMR194w *RPL39A* ribosomal protein  
 YDL184c *RPL47A* ribosomal protein  
 YDL133c-a *RPL47B* ribosomal protein  
 YPL198w *RPL6B* ribosomal protein  
 YOL040c *RPS21* ribosomal protein  
 YLR287c-a *RPS30A* ribosomal protein  
 YDL191w *RPS01* ribosomal protein  
 YDL136w *SOS2* ribosomal protein  
 YPL220w *SSM1A* ribosomal protein  
 YGL135w *SSM1B* ribosomal protein  
 YGL123w *SUP44* ribosomal protein  
 YIL148w *UBI1* ribosomal protein  
 YKR094c *UBI2* ribosomal protein  
 YHL015w *URP2* ribosomal protein  
 YML073c *YL16A* ribosomal protein  
 YLR448w *YL16B* ribosomal protein  
 YDR500c *RPL35B* ribosomal protein L37.e  
 YPR102c *RPL16A* ribosomal protein L11.e  
 YDR418w *RPL15A* ribosomal protein L12.e  
 YEL054c *RPL15B* ribosomal protein L12.e  
 YDL082w ribosomal protein L13  
 YKL170w *MRPL38* ribosomal protein L14, mitochondrial  
 YLR029c *RPL13A* ribosomal protein L15.e.c12  
 YMR121c *RPL13B* ribosomal protein L15.e.c13  
 YJL063c *MRPL8* ribosomal protein L17, mitochondrial  
 YKL180w *RPL20A* ribosomal protein L17.e  
 YJL177w *RPL20B* ribosomal protein L17.e  
 YNL301c *RP28B* ribosomal protein L18.e  
 YBL027w *RPL19A* ribosomal protein L19.e  
 YBR084c-a *RPL19B* ribosomal protein L19.e  
 YPL079w *URP1B* ribosomal protein L21  
 YBR191w *URP1A* ribosomal protein L21.e  
 YBL087c *RPL17A* ribosomal protein L23.e  
 YER117w *RPL17B* ribosomal protein L23.e  
 YOL127w *RP25* ribosomal protein L23.a.e  
 YGL031c *RPL30A* ribosomal protein L24.e.A  
 YGR148c *RPL30B* ribosomal protein L24.e.B  
 YGR034w *RPL33B* ribosomal protein L26  
 YHR010w *RPL27A* ribosomal protein L27.e  
 YGL103w *CYH2* ribosomal protein L27.a.e  
 YBR031w *RPL2A* ribosomal protein L2A  
 YOR063w *TCM1* ribosomal protein L3.e  
 YGL030w *RPL32* ribosomal protein L30.e  
 YDL075w *RPL43A* ribosomal protein L31.e  
 YLR406c *RPL34B* ribosomal protein L31.e.c12  
 YBL092w ribosomal protein L32.e  
 YIL052c ribosomal protein L34.e  
 YOR234c *RPL37B* ribosomal protein L35.a.e.c15  
 YPL143w *RPL37A* ribosomal protein L35.a.e.c16  
 YNL162w *RPL41A* ribosomal protein L36.a.e  
 YHR141c *RPL41B* ribosomal protein L36.a.e  
 YLR185w *RPL35A* ribosomal protein L37.e  
 YPR043w ribosomal protein L37.a.e  
 YJL189w *RPL46* ribosomal protein L39.e  
 YDR012w *RPL2B* ribosomal protein L4.e.B  
 YPL131w *RPL1* ribosomal protein L5.e  
 YNL002c *RLP7* ribosomal protein L7.e  
 YGL076c *RPL6A* ribosomal protein L7.e.A  
 YHL033c *RPL4A* ribosomal protein L7.a.e.A  
 YLL045c *RPL4B* ribosomal protein L7.a.e.B  
 YIL018w *RPL5A* ribosomal protein L8.e  
 YFR031c-a *RPL5B* ribosomal protein L8.e  
 YGL147c *RPL9A* ribosomal protein L9.e  
 YNL067w *RPL9B* ribosomal protein L9.e.c14  
 YGR076c *MRPL25* ribosomal protein m (YML25), mitochondrial  
 YJR094w-a mitochondrial protein of the large subunit  
 YOR293w ribosomal protein S10.e  
 YDR025w *RPS18A* ribosomal protein S11.e  
 YBR048w *RPS18B* ribosomal protein S11.e.B  
 YPR166c *MRP2* ribosomal protein S14  
 YJL191w *CRY2* ribosomal protein S14.e.B  
 YJL190c *RPS24A* ribosomal protein S15.a.e.c10  
 YLR367w *RPS24B* ribosomal protein S15.a.e.c12  
 YPL013c ribosomal protein S16, mitochondrial  
 YMR143w *RPS16A* ribosomal protein S16.e  
 YDL083c *RPS16B* ribosomal protein S16.e  
 YML024w *RP51A* ribosomal protein S17.e.A  
 YDR447c *RP51B* ribosomal protein S17.e.B  
 YOL120c *RP28A* ribosomal protein S18.e  
 YML026c *RPS18EB* ribosomal protein S18.e.c13  
 YDR450w *RPS18EA* ribosomal protein S18.e.c4  
 YOL121c *RP55A* ribosomal protein S19.e  
 YNL302c *RP55B* ribosomal protein S19.e  
 YKR057w *RPS25A* ribosomal protein S21.e  
 YJL136c *RPS25B* ribosomal protein S21.e  
 YGR118w *RPS28A* ribosomal protein S23.e  
 YPR132w *RPS28B* ribosomal protein S23.e  
 YER074w *RP50A* ribosomal protein S24.e  
 YIL069c *RP50B* ribosomal protein S24.e  
 YLR333c *RPS31B* ribosomal protein S25.e.c12  
 YGR027c *RPS31A* ribosomal protein S25.e.c7  
 YER131w *RPS26A* ribosomal protein S26.e-c5  
 YKL156w *RPS27A* ribosomal protein S27.e  
 YHR021c *RPS27B* ribosomal protein S27.e  
 YDR064w *YS15* ribosomal protein S27.A  
 YLR264w *RPS33B* ribosomal protein S28.e.c12  
 YOR167c *RPS33A* ribosomal protein S28.e.c15  
 YLR388w *YS29A* ribosomal protein S29.e.A  
 YDL061c *YS29B* ribosomal protein S29.e.B  
 YNL178w *RPS3* ribosomal protein S3.e

YLR441c *RP10A* ribosomal protein S3a.e  
 YML063w *RP10B* ribosomal protein S3a.e  
 YJR145c *RPS7B* ribosomal protein S4.e.c10  
 YHR203c *RPS7A* ribosomal protein S4.e.c8  
 YBR251w *MRPS55* ribosomal protein S5, mitochondrial  
 YJR123w *RPS5* ribosomal protein S5.e  
 YBR181c *RPS101* ribosomal protein S6.e  
 YPL090c *RPS10B* ribosomal protein S6.e  
 YBL072c *RPS8A* ribosomal protein S8.e  
 YER102w *RPS8B* ribosomal protein S8.e  
 YBR146w *MRPS9* ribosomal protein S9, mitochondrial  
 YPL081w *RPS13B* ribosomal protein S9.e.A  
 YBR189w *SUP46* ribosomal protein S9.e.B  
 YGR085c *RPL16B* ribosomal protein YmL16.B  
 YKR006c *MRPL13* ribosomal protein YmL13, mitochondrial  
 YNL005c *MRPL2* ribosomal protein YmL2, mitochondrial  
 YKR085c *MRPL20* ribosomal protein YmL20, mitochondrial  
 YBR282w *MRPL27* ribosomal protein YmL27, mitochondrial  
 YDR462w *MRPL31* ribosomal protein YmL28, mitochondrial  
 YNL252c *MRPL32* ribosomal protein YmL30, mitochondrial  
 YKL138c *MRPL31* ribosomal protein YmL31, mitochondrial  
 YCR003w *MRPL32* ribosomal protein YmL32, mitochondrial  
 YBR122c *MRPL36* ribosomal protein YmL36, mitochondrial  
 YBR268w *MRPL37* ribosomal protein YmL37, mitochondrial  
 YPL173w *MRPL44* ribosomal protein YmL44, mitochondrial  
 YMR225c *RPL39B* ribosomal protein, cytoplasmic  
 YPL249c-a *MRP1* ribosomal protein, mitochondrial  
 YML025c *MRP1* ribosomal protein, mitochondrial  
 YDR347w *MRP13* ribosomal protein, mitochondrial  
 YGR084c *MRP17* ribosomal protein, mitochondrial  
 YKL003c *MRP20* ribosomal protein, mitochondrial  
 YDR405w *MRP4* ribosomal protein, mitochondrial  
 YHL004w *MRP4* ribosomal protein, mitochondrial  
 YKL167c *MRP49* ribosomal protein, mitochondrial  
 YKL142w *MRP8* ribosomal protein, mitochondrial  
 YLR312w-a *MRPL15* ribosomal protein, mitochondrial  
 YBL038w *MRPL16* ribosomal protein, mitochondrial  
 YMR193w *MRPL24* ribosomal protein, mitochondrial  
 YMR024w *MRPL3* ribosomal protein, mitochondrial  
 YMR286w *MRPL33* ribosomal protein, mitochondrial  
 YLR439w *MRPL4* ribosomal protein, mitochondrial  
 YHR147c *MRPL6* ribosomal protein, mitochondrial  
 YGR220c *MRPL9* ribosomal protein, mitochondrial  
 YDR337w *MRPS28* ribosomal protein, mitochondrial  
 YNL137c *NAM9* ribosomal protein, mitochondrial  
 YOR158w *PET123* ribosomal protein, mitochondrial  
 YCR046c *PETCR46* ribosomal protein, mitochondrial  
 YFR049w *YMR31* ribosomal protein, mitochondrial  
 YJR113c similarity to ribosomal protein S7  
 YHR148w similarity to ribosomal protein L1  
 YDR116c similarity to ribosomal protein L13  
 YOR150w similarity to ribosomal protein L15  
 YNL284c similarity to ribosomal protein L2  
 YEL050c similarity to ribosomal protein L24.e.B  
 YLR009w similarity to ribosomal protein L34  
 YDR115w similarity to ribosomal protein L5  
 YDR237w similarity to ribosomal protein S13  
 YNL081c similarity to ribosomal proteins  
 YDR041w similarity to Rpl10p and S.solfataricus  
 YKL009w ribosomal protein L10  
 YDL208w *NHP2* strong similarity to high-mobility group (HMG) family  
 YEL026w strong similarity to high-mobility group-like protein Nhp2p  
 YOR182c *RPS30B* strong similarity to human ubiquitin-like protein/ribosomal protein S30  
 YNR037c strong similarity to *Mycoplasma* ribosomal protein S19  
 YNL185c strong similarity to ribosomal protein L11  
 YER056c-a strong similarity to ribosomal protein L34.e  
 YMR230w strong similarity to ribosomal protein S10  
 YNR036c strong similarity to ribosomal protein S12  
 YNL096c strong similarity to ribosomal protein S7  
 YLR167w *UBI3* ubiquitin/ribosomal protein S27a  
 YMR188c weak similarity to 30S ribosomal protein S17  
 YDL202w weak similarity to ribosomal protein

**translation (initiation, elongation and termination)**

YDL081c *RPLA1* acidic ribosomal protein a1  
 YMR309c *NIP1* associated with 40s ribosomal subunit  
 YGL094c *PAN2* component of Pab1p-stimulated poly(A) ribonuclease  
 YDR172w *SUP35* eukaryotic peptide chain release factor  
 YNL007c *SIS1* GTP-binding subunit  
 YBL091c *MAP2* heat-shock protein  
 YMR023c *MSS1* methionine aminopeptidase, isoform 2  
 mitochondrial GTPase involved in expression of *COX1*  
 YGL143c *MRF1* mitochondrial peptide chain release factor  
 YGL049c *TIF4632* mRNA cap-binding protein (eIF4F), 130K subunit  
 YGR162w *TIF4631* mRNA cap-binding protein (eIF4F), 150K subunit  
 YOR276w *CAF20* mRNA CAP-binding protein (eIF4F), 20K subunit  
 YER165w *PAB1* mRNA polyadenylate-binding protein  
 YKL173w *GIN10* similarity to elongation factor 2 eEF1  
 YHR015w similarity to PES4 PAB-like protein  
 YGR201c similarity to Tef3p and Tef4p  
 YPL226w similarity to translation elongation factor eEF3

YLR289w *GUF1* strong similarity to *E. coli* elongation factor-type GTP-binding protein Iepa  
 YDL084w strong similarity to nuclear RNA helicase (DEAD family)  
 YDR021w strong similarity to translation initiation factor eIF4A  
 YKL010c *SOS1* suppressor of *sis1*  
 YLR005w *SSL1* TFIIH subunit (transcription initiation factor), factor B  
 YKR084c *HBS1* translation elongation factor eEF1  $\alpha$  subunit homologue  
 YPR080w *TEF1* translation elongation factor eEF1  $\alpha$ -A subunit, cytosolic  
 YBR118w *TEF2* translation elongation factor eEF1  $\alpha$ -A subunit, cytosolic  
 YPL048w *CAM1* translation elongation factor eEF1,  $\alpha$  subunit  
 YKL081w *TEF4* translation elongation factor eEF1,  $\gamma$  subunit  
 YAL003w *EFB1* translation elongation factor eEF1 $\beta$   
 YOR133w *EFT1* translation elongation factor eEF2  
 YDR385w *EFT2* translation elongation factor eEF2  
 YLR249w *YEF3* translation elongation factor eEF3  
 YNL014w translation elongation factor eEF3 homologue  
 YNL163c translation elongation factor eEF4  
 YLR069c *MEF1* translation elongation factor G, mitochondrial  
 YOR187w *TUF1* translation elongation factor TU, mitochondrial  
 YJL102w *MEF2* translation elongation factor, mitochondrial  
 YOL023w *IFM1* translation initiation factor 2, mitochondrial  
 YNL244c *SUI1* translation initiation factor 3 (eIF3)  
 YKR059w *TIF1* translation initiation factor 4A  
 YMR260c *TIF11* translation initiation factor eIF1A  
 YPL237w *SUI3* translation initiation factor eIF2  $\beta$  subunit  
 YJR007w *SUI2* translation initiation factor eIF2,  $\alpha$  subunit  
 YER025w *GCD11* translation initiation factor eIF2,  $\gamma$  subunit  
 YKR026c *GNC3* translation initiation factor eIF2 $\beta$ , 34K,  $\alpha$  subunit  
 YLR291c *GCD7* translation initiation factor eIF2 $\beta$ , 43K subunit  
 YGR083c *GCD2* translation initiation factor eIF2 $\beta$ , 71K ( $\delta$ ) subunit  
 YDR211w *GCD6* translation initiation factor eIF2 $\beta$ ,  $\epsilon$  81K subunit  
 YOR260w *GCD1* translation initiation factor eIF2 $\beta$ ,  $\gamma$  subunit  
 YOR361c *PR1* translation initiation factor eIF3 subunit  
 YMR146c *TIF34* translation initiation factor eIF3, P39 subunit  
 YNL062c *GCD10* translation initiation factor eIF3, RNA-binding subunit  
 YJL138c *TIF2* translation initiation factor eIF4A  
 YPR163c *TIF3* translation initiation factor eIF4B  
 YOL139c *CDC33* translation initiation factor eIF4E  
 YPR041w *TIF5* translation initiation factor eIF5  
 YEL034w *HYP2* translation initiation factor eIF5A.1  
 YJR047c *ANB1* translation initiation factor eIF5A.2  
 YGL169w *SUA5* translation initiation protein  
 YBR143c *SUP45* translational release factor

**translational control**

YMR282c *AEP2* 2'-O-ribosyl phosphate transferase  
 YBR120c *CBP6* apo-cytochrome b pre-mRNA processing protein  
 YPL029w *SUV3* ATP-dependent RNA helicase, mitochondrial  
 YOR017w *PET127* component of mitochondrial translation system  
 YMR028w *TAP42* component of the Tor signalling pathway  
 YDR197w *CBS2* cytochrome b translational activator protein  
 YNL216w *RAP1* DNA-binding protein with repressor and activator activity  
 YER054c *GIP2* Glc7p-interacting protein  
 YMR080c *NAM7* nonsense-mediated mRNA decay protein  
 YGR072w *UPF3* nonsense-mediated mRNA decay protein  
 YHR077c *NMD2* nonsense-mediated mRNA decay protein 2  
 YMR064w *AEP1* nuclear control of ATPase messenger RNA expression protein  
 YPL179w *PPQ1* phosphoprotein phosphatase  
 YFR009w *GCN20* positive effector of Gcn2p  
 YLR203c *MSS51* possibly involved in translational activation of *COX1* and *COB* mRNA  
 YBL058w *SHP1* potential regulatory subunit for Glc7p  
 YNL139c *RLR1* regulatory protein  
 YLR067c *PET309* required for stability and translation of *COX1* mRNA  
 YMR257c *PET111* required for translation of *COX2* mRNA  
 YER133w *GLC7* ser/thr phosphoprotein phosphatase 1, catalytic subunit  
 YOR178c *GAC1* ser/thr phosphoprotein phosphatase 1, regulatory subunit  
 YDR283c *GCN2* ser/thr protein kinase  
 YGR222w *PET54* splicing protein and translational activator, mitochondrial  
 YBR024w *SCO2* strong similarity to Sco1p  
 YGL195w *GCN1* translational activator  
 YDL069c *CBS1* translational activator of cob mRNA  
 YER153c *PET122* translational activator of cytochrome c oxidase subunit III  
 YNR045w *PET494* translational activator, mitochondrial  
 YJL125c *GCD14* translational repressor of GCN4

**tRNA synthetases**

YOR335c *ALA1* alanyl-tRNA synthetase, cytosolic  
 YHR091c *MSR1* arginyl-tRNA synthetase, mitochondrial  
 YCR024c asn-tRNA synthetase, mitochondrial  
 YHR019c *DED81* asparaginyl-tRNA-synthetase  
 YPL104w *MDS1* aspartate-tRNA ligase, mitochondrial  
 YLL018c *DPS1* aspartyl-tRNA synthetase, cytosolic  
 YOR168w *GLN4* glutamyl-tRNA synthetase  
 YOL033w *MSE1* glutamyl-tRNA synthetase, mitochondrial  
 YBR121c *GRS1* glycine-tRNA ligase  
 YPR033c *HTS1* histidine-tRNA ligase, mitochondrial  
 YPL040c *ISM1* isoleucine-tRNA ligase, mitochondrial  
 YBL076c *ILS1* isoleucyl-tRNA synthetase  
 YPL160w *CDC60* leucine-tRNA ligase, cytosolic  
 YLR382c *NAM2* leucine-tRNA ligase, mitochondrial  
 YDR037w *KRS1* lysyl-tRNA synthetase, cytosolic  
 YNL073w *MSK1* lysyl-tRNA synthetase, mitochondrial  
 YGR264c *MES1* methionyl-tRNA synthetase  
 YGR171c *MSM1* methionyl-tRNA synthetase  
 YPR047w *MSF1* phenylalanine-tRNA ligase  $\alpha$  subunit, mitochondrial  
 YFL022c *FRS2* phenylalanine-tRNA ligase  $\beta$  subunit, cytosolic  
 YLR060w *FRS1* phenylalanyl-tRNA synthetase,  $\alpha$  subunit, cytosolic  
 YHR011w seryl-tRNA synthetase  
 YDR023w *SES1* seryl-tRNA synthetase, cytosolic  
 YNL247w similarity to cysteinyl-tRNA synthetases  
 YER087w similarity to *E. coli* prolyl-tRNA synthetase  
 YDR341c strong similarity to arginine-tRNA ligase and mitochondrial arginyl-tRNA synthetase  
 YGL245w strong similarity to glutamine-tRNA ligase  
 YPR081c strong similarity to glycyl-tRNA synthetases  
 YHR020w strong similarity to human glutamyl-prolyl-tRNA synthetase  
 YKL194c *MST1* threonine-tRNA ligase, mitochondrial  
 YL078w *THS1* threonyl tRNA synthetase, cytosolic  
 YOL097c *WRS1* tryptophan-tRNA ligase  
 YDR268w *MSW1* tryptophanyl-tRNA synthetase, mitochondrial  
 YPL097w *MSY1* tyrosyl-tRNA synthetase  
 YGR185c *TYS1* tyrosyl-tRNA synthetase  
 YGR094w *VAS1* valyl-tRNA synthetase

**other protein-synthesis activities**

YDL229w *SSB1* heat-shock protein of HSP70 family  
 YNL209w *SSB2* heat-shock protein of HSP70 family, cytosolic  
 YGR147c *NAT2* N-acetyltransferase for N-terminal methionine  
 YJR066w *TOR1* phosphatidylinositol 3-kinase  
 YDL044c *MTF2* protein involved in mRNA splicing and protein synthesis, mitochondrial  
 YDL040c *NAT1* protein N-acetyltransferase subunit  
 YJL023c *PET130* protein synthesis protein, mitochondrial  
 YMR005w *MPT1* required for protein synthesis  
 YBL080c *PET112* required to maintain RHO<sup>+</sup> mitochondrial DNA  
 YHR189w similarity to peptidyl-tRNA hydrolases  
 YLL039c *UBI4* ubiquitin

**Protein destination**

**protein folding and stabilization**

YEL030w heat-shock protein of HSP70 family  
 YKL073w *LHS1* chaperone of the ER lumen  
 YIL142w *CCT2* chaperonin of the TCP1 ring complex, cytosolic  
 YJL014w *CCT3* chaperonin of the TCP1 ring complex, cytosolic  
 YDR212w *CCT1* component of chaperonin-containing T-complex  
 YDL143w *CCT4* component of chaperonin-containing T-complex  
 YJL111w *CCT7* component of chaperonin-containing T-complex  
 YJL008c *CCT8* component of chaperonin-containing T-complex  
 YDR188w *CCT6* component of chaperonin-containing T-complex ( $\zeta$  subunit)  
 YDR155c *CPH1* cyclophilin (peptidylprolyl isomerase)  
 YML078w *CPH3* cyclophilin (peptidylprolyl isomerase), mitochondrial  
 YOR288c *MPD1* disulphide isomerase related protein  
 YER048c *CAJ1* dnaJ homologue  
 YDR519w *FKB2* FK506/rapamycin-binding protein of the ER  
 YFL016c *MDJ1* heat-shock protein - chaperone  
 YOR232w *MGE1* heat-shock protein - chaperone  
 YLR259c *HSP60* heat-shock protein - chaperone, mitochondrial  
 YJR045c *SSC1* heat-shock protein 70-related protein, mitochondrial  
 YAL005c *SSA1* heat-shock protein of HSP70 family  
 YLL024c *SSA2* heat-shock protein of HSP70 family, cytosolic  
 YDR171w *HSP42* heat-shock protein with similarity to Hsp26p  
 YLR216c *CPR6* member of the cyclophilin family  
 YJR032w *CPR7* member of the cyclophilin family  
 YJL034w *KAR2* nuclear fusion protein

YHR057c *CYP2* peptidyl-prolyl *cis-trans* isomerase  
 YCR069w *SOC3* peptidyl-prolyl *cis-trans* isomerase  
 YDR304c *CYP5* peptidyl-prolyl *cis-trans* isomerase D (cyclophilin D) of the ER  
 YNL135c *FPR1* peptidyl-prolyl *cis-trans* isomerase, FK506-binding protein  
 YML074c *NPI46* proline *cis-trans* isomerase  
 YDR518w *EUG1* protein disulphide isomerase  
 YCL043c *PDI1* protein disulphide-isomerase  
 YHR097w similarity to Caj1p  
 YBR044c similarity to chaperonin HSP60 proteins  
 YOL088c similarity to disulphide isomerases and ER60 proteases  
 YNL077w similarity to dnaJ protein homologue YDJ1  
 YMR161w *HLJ1* similarity to dnaJ proteins  
 YIR004w similarity to DNAJ-like proteins  
 YLR090w *XDJ1* similarity to *E. coli* dnaJ  
 YJL073w similarity to heat-shock proteins  
 YNR028w similarity to peptidylprolyl isomerase Scc3p  
 YIL005w similarity to protein disulphide isomerases  
 YLR369w strong similarity to heat-shock protein 70-related proteins  
 YLR449w strong similarity to peptidylprolyl isomerase FRP3  
 YIR064w *CCT5* T-complex protein 1,  $\epsilon$  subunit  
 YFR041c weak similarity to dnaJ-like heat-shock proteins  
 YNL227c weak similarity to dnaJ-like proteins

**protein targeting, sorting and translocation**

YKL073w *LHS1* chaperone of the ER lumen  
 YGL206c *CHC1* clathrin heavy chain  
 YOL062c *APM4* clathrin-associate protein YAP54  
 YPL259c *APM1* clathrin-associated protein  
 YDR288c *APM3* clathrin-associated protein complex, medium subunit  
 YDL212w *SHR3* endoplasmic reticulum membrane protein  
 YLR040c *ERD2* ER lumen protein-retaining receptor  
 YER019c-a *SEB2* ER protein-translocation complex subunit  
 YLR378c *SEC61* ER protein-translocation complex subunit  
 YPL094c *SEC62* ER protein-translocation complex subunit  
 YOR254c *SEC63* ER protein-translocation complex subunit  
 YBR171w *SEC66* ER protein-translocation complex subunit  
 YLR292c *SEC72* ER protein-translocation complex subunit  
 YDR086c *SSS1* ER protein-translocation complex subunit  
 YOR089c *VPS21* GTP-binding protein  
 YKR014c *YPT52* GTP-binding protein of the RAB family  
 YNL093w *YPT53* GTP-binding protein of the RAB family (RAS superfamily)  
 YOR270c *VPH1* H<sup>+</sup>-ATPase V0 domain 95K subunit, vacuolar  
 YAL005c *SSA1* heat-shock protein of HSP70 family  
 YCR075c *ERS1* intracellular protein transport protein  
 YGR028w *MSP1* intra-mitochondrial sorting protein  
 YOR069w *VPS5* involved in Golgi retention and vacuolar sorting  
 YLR347c *KAP95* karyopherin- $\beta$   
 YOL122c *SMF1* manganese transporter  
 YKR001c *VPS1* member of the dynamin family of GTPases  
 YOR020c *HSP10* mitochondrial chaperonin  
 YNR017w *MAS6* mitochondrial inner membrane import translocase subunit  
 YJL143w *TIM17* mitochondrial inner membrane import translocase subunit  
 YIL022w *TIM44* mitochondrial inner membrane import translocase subunit  
 YMR035w *IMP2* mitochondrial inner membrane protease subunit  
 YNL131w *TOM22* mitochondrial outer membrane import receptor subunit  
 YGR082w *TOM20* mitochondrial outer membrane import receptor subunit, 20K  
 YMR060c *TOM37* mitochondrial outer membrane import receptor subunit, 37K  
 YMR203w *TOM40* mitochondrial outer membrane import receptor subunit, 40K  
 YOR045w *TOM6* mitochondrial outer membrane import receptor subunit, 6K  
 YNL070w *TOM7* mitochondrial outer membrane import receptor subunit, 7K  
 YNL121c *TOM70* mitochondrial outer membrane specialized import receptor  
 YMR150c *IMP1* mitochondrial protease  
 YJL034w *KAR2* nuclear fusion protein  
 YMR091c *NPL6* nuclear protein localization factor  
 YBR170c *NPL4* nuclear protein localization factor and ER translocation component  
 YDR432w *NPL3* nucleolar protein  
 YLR191w *PAS20* peroxisomal protein involved in protein import  
 YPR047w *MSF1* phenylalanine-tRNA ligase  $\alpha$  subunit, mitochondrial  
 YNL106c *PIE3* phosphatidylinositol phosphate phosphatase  
 YBL069w *AST1* PMA1 protein targeting protein  
 YLR168c (*MSF1*) probably involved in intramitochondrial protein sorting  
 YDR244w *PAS10* putative peroxisomal targeting signal receptor  
 YCL001w *RER1* required for correct localization of Sec12p  
 YDR414c *ERD1* required for retention of luminal ER proteins  
 YDR005c *MAF1* required for sorting of Mod5p  
 YMR004w *MVP1* required for vacuolar protein sorting  
 YDR498c *SEC20* secretory pathway protein

YBR162w-a *YSY6* secretory pathway protein  
 YBR097w *VPS15* ser/thr protein kinase  
 YPL243w *SRP68* signal recognition particle protein  
 YPL210c *SRP72* signal recognition particle protein  
 YDR292c *SRP101* signal recognition particle receptor,  $\alpha$  subunit  
 YML105c *SEC65* signal recognition particle subunit  
 YDL092w *SRP14* signal recognition particle subunit  
 YKL122c *SRP21* signal recognition particle subunit  
 YPR088c *SRP54* signal recognition particle subunit  
 YOR285w similarity to *D. melanogaster* heat-shock protein 67B2  
 YOR286w similarity to *D. melanogaster* heat-shock protein 67B2  
 YHR110w similarity to human gp25L2 protein  
 YAR002c-a similarity to mammalian gp25L protein  
 YKL154w similarity to mouse signal recognition particle receptor  $\beta$  subunit  
 YKL196c similarity to Sec22p  
 YMR018w similarity to tetratricopeptide-repeat protein PAS10  
 YMR214w *SCJ1* similarity to *E. coli* dnaJ  
 YNL304w similarity to Ypt1p and other GTP-binding proteins  
 YER101c *AST2* strong similarity to Ast1p  
 YOR016c strong similarity to FUN54 protein, similarity to hamster COOP-coated vesicle membrane protein  
 YGL002w strong similarity to human gp25L2 protein  
 YER087c-a *SEB1* strong similarity to mammalian Sec61 $\beta$  subunit  
 YCR099c strong similarity to Pep1p  
 YCR100c strong similarity to Pep1p  
 YCR101c strong similarity to Pep1p  
 YIL173w strong similarity to Pep1p  
 YJL222w strong similarity to Pep1p  
 YBR283c strong similarity to Sec61p  
 YOR327c *SNC2* strong similarity to synaptobrevin  
 YOR329c *SCD5* suppressor of clathrin deficiency  
 YHR050w *SMF2* suppressor of mitochondrial matrix mutant  
 YOR036w *PEP12* syntaxin (T-SNARE)  
 YLR148w *PEP3* vacuolar membrane protein  
 YBL017c *PEP1* vacuolar protein sorting/targeting protein  
 YJL053w *PEP8* vacuolar protein sorting/targeting protein  
 YOR132w *VPS17* vacuolar protein sorting-associated protein  
 YNR006w *VPS27* vacuolar protein sorting-associated protein  
 YGL095c *VPS45* vacuolar protein sorting-associated protein  
 YJL154c *VPS35* vacuolar protein-sorting protein  
 YDR323c *PEP7* vacuolar segregation protein  
 YPL045w *VPS16* vacuolar sorting protein  
 YDR495c *VPS3* vacuolar sorting protein  
 YLR396c *VPS33* vacuolar sorting protein  
 YAL002w *VPS8* vacuolar sorting protein  
 YML097c *VPS9* vacuolar sorting protein

**protein modification (glycosylation, acylation, myristylation, palmitoylation, farnesylation and processing)**

YJR131w *MNS1*  $\alpha$ -1,2-mannosidase  
 YDR483w *KRE2*  $\alpha$ -1,2-mannosyltransferase  
 YER001w *MNN1*  $\alpha$ -1,3-mannosyltransferase  
 YGL038c *OCH1*  $\alpha$ -1,6-mannosyltransferase  
 YBR164c *ARL1* ADP-ribosylation factor  
 YKL157w *APE2* aminopeptidase yscil  
 YJR062c *NTA1* amino-terminal amidase  
 YGL017w *ATE1* arginyl tRNA transferase  
 YPL154c *PEP4* aspartyl protease  
 YLR120c *YAP3* aspergillopepsin  
 YDL141w *BPL1* biotin holo-carboxylase synthetase  
 YBR110w *ALG1*  $\beta$ -mannosyltransferase  
 YGL203c *KEX1* carboxypeptidase (YSC- $\alpha$ )  
 YPL227c *ALG5* dolichol-P-glucose synthetase  
 YJR143c *PMT4* dolichyl-phosphate-mannose-protein O-mannosyl transferase  
 YDL212w *SHR3* endoplasmic reticulum membrane protein  
 YNL238w *KEX2* endoprotease of late Golgi compartment  
 YDR331w *GPI8* essential for GPI-anchor attachment  
 YDR410c *STE14* farnesyl cysteine carboxyl-methyltransferase  
 YOR370c *MSI4* geranylgeranyltransferase regulatory subunit  
 YGL155w *CDC43* geranylgeranyltransferase type I  $\beta$  subunit  
 YPR176c *BET2* geranylgeranyltransferase type II  $\beta$  subunit  
 YJL031c *BET4* geranylgeranyltransferase,  $\alpha$  subunit  
 YOR002w *ALG6* glucosyltransferase  
 YOR067c *ALG8* glucosyltransferase  
 YEL042w *GDA1* guanosine diphosphatase  
 YOR252w *GON5* histone acetyltransferase  
 YPL001w *HAT1* histone acetyltransferase subunit  
 YBR034c *HMT1* hnRNP methyltransferase  
 YAL039c *CYC3* holocytochrome c synthase (cytochrome c heme lyase)  
 YKL087c *CYT2* holocytochrome c1 synthase  
 YGL065c *ALG2* mannosyltransferase  
 YDL095w *PMT1* mannosyltransferase  
 YAL023c *PMT2* mannosyltransferase  
 YOR321w *PMT3* mannosyltransferase  
 YBL082c *RHK1* mannosyltransferase  
 YLR244c *MAP1* methionine aminopeptidase, isoform 1  
 YBL091c *MAP2* methionine aminopeptidase, isoform 2  
 YMR035w *IMP2* mitochondrial inner membrane protease subunit

YKL134c (*IMP1*) mitochondrial intermediate peptidase  
 YLR163c *MAS1* mitochondrial processing peptidase  
 YHR024c *MAS2* mitochondrial processing peptidase, catalytic 53K ( $\alpha$ ) subunit  
 YMR150c *IMP1* mitochondrial protease  
 YPR051w *MAK3* N-acetyltransferase  
 YGR147c *NAT2* N-acetyltransferase for N-terminal methionine  
 YBR247c *ENP1* N-glycosylation protein  
 YLR195c *NMT1* N-myristoyltransferase  
 YJL002c *OST1* oligosaccharyltransferase  $\alpha$  subunit  
 YEL002c *WBP1* oligosaccharyltransferase  $\beta$  subunit  
 YMR149w *SWP1* oligosaccharyltransferase  $\delta$  subunit  
 YOR103c *OST2* oligosaccharyltransferase  $\epsilon$  subunit  
 YOR085w *OST3* oligosaccharyltransferase  $\gamma$  subunit  
 YDL232w *OST4* oligosaccharyltransferase subunit  
 YGL022w *STT3* oligosaccharyltransferase subunit  
 YFL045c *SEC53* phosphomannomutase  
 YPR122w *AXL1* protease  
 YEL060c *PRB1* protease B, vacuolar  
 YLR389c *STE23* protease involved in a-factor processing  
 YCL043c *PDI1* protein disulphide-isomerase  
 YKL019w *RAM2* protein farnesyltransferase,  $\alpha$  subunit  
 YDL090c *RAM1* protein farnesyltransferase,  $\beta$  subunit  
 YHR013c *ARD1* protein N-acetyltransferase subunit  
 YDL040c *NAT1* protein N-acetyltransferase subunit  
 YIL085c *KTR7* putative  $\alpha$ -1,2-mannosyltransferase  
 YGL194c *RTL1* putative deacetylase  
 YNL029c *KTR5* putative mannosyltransferase  
 YGR199w *PMT6* putative mannosyltransferase  
 YKL193c *SDS22* regulatory subunit for the mitotic function of type I protein phosphatase  
 YNL048w *ALG11* required for asparagine-linked glycosylation  
 YLR088w *GAA1* required for attachment of GPI anchor onto proteins  
 YPL050c *MNN9* required for complex N-glycosylation  
 YJR010c-a *SPC1* signal peptidase 10.8K subunit  
 YML055w *SPC2* signal peptidase 18K subunit  
 YIR022w *SEC11* signal sequence processing protein  
 YDL042c *SIR2* silencing regulatory protein  
 YER005w similarity to Gda1p  
 YMR223w similarity to human putative ubiquitin carboxyl-terminal hydrolase  
 YDR098c similarity to *Legionella* glutaredoxin-like protein  
 YER174c similarity to *Legionella* glutaredoxin-like protein  
 YGL257c similarity to Mnn1p  
 YIL014w similarity to Mnn1p  
 YPR131c similarity to N-acetyltransferases  
 YDL093w *PMT5* similarity to O-mannosyltransferases  
 YDR307w Pmt1p-Pmt4p  
 YDR245w *MNN10* similarity to Pmt1p  
 YLR066w similarity to *S. pombe* galactosyltransferase  
 YNR059w similarity to signal peptidase  
 YPL003w similarity to  $\alpha$ -1,3-mannosyltransferase  
 YPR180w similarity to ubiquitin-activating enzymes  
 YGL087c similarity to ubiquitin-activating enzymes  
 YIR039c similarity to ubiquitin-protein ligase  
 YBR205w *KTR3* similarity to Yap3p  
 YBR199w *KTR4* strong similarity to  $\alpha$ -1,2-mannosyltransferase  
 YPL053c *KTR6* strong similarity to  $\alpha$ -1,2-mannosyltransferase Kre2p  
 YPL051w strong similarity to ADP-ribosylation factors  
 YLR121c strong similarity to aspartylproteases  
 YOR099w *KTR1* strong similarity to mannosyltransferases  
 YCR083w strong similarity to thioredoxin  
 YOR339c strong similarity to ubiquitin conjugating enzymes  
 YPR066w strong similarity to ubiquitin-activating enzymes  
 YML111w strong similarity to ubiquitination protein Bul1p  
 YGL226c-a *OST5* subunit of N-oligosaccharyltransferase,  $\zeta$  subunit  
 YEL056w *HAT2* subunit of the major yeast histone acetyltransferase  
 YJR075w *HOC1* suppressor of *pkc1*  
 YLR043c *TRX1* thioredoxin I  
 YGR209c *TRX2* thioredoxin II  
 YOR219c *STE13* type IV dipeptidyl aminopeptidase  
 YMR275c *BUL1* ubiquitination pathway protein  
 YDR054c *CDC34* ubiquitin-conjugating enzyme  
 YGR133w ubiquitin-conjugating enzyme  
 YMR022w *QR18* ubiquitin-conjugating enzyme  
 YGL058w *RAD6* ubiquitin-conjugating enzyme  
 YDR177w *UBC1* ubiquitin-conjugating enzyme  
 YLR306w *UBC12* ubiquitin-conjugating enzyme  
 YDR092w *UBC13* ubiquitin-conjugating enzyme  
 YDR059c *UBC5* ubiquitin-conjugating enzyme  
 YER100w *UBC6* ubiquitin-conjugating enzyme  
 YEL012w *UBC8* ubiquitin-conjugating enzyme  
 YDL064w *UBC9* ubiquitin-conjugating enzyme  
 YDR139c ubiquitin-like protein  
 YER125w *RSP5* ubiquitin-protein ligase  
 YKL210w *UBA1* ubiquitin-protein ligase  
 YJR099w *YUH1* ubiquitin-specific protease  
 YBR243c *ALG7* UDP-N-acetylglucosamine-1-phosphate transferase  
 YKL035w *UGP1* UTP-glucose-1-phosphate uridylyltransferase  
 YDR495c *VPS3* vacuolar sorting protein



YJR117w *STE24* zinc metallo-protease

**assembly of protein complexes**

YGR214w *NAB1A* 40S ribosomal protein p40 homologue A  
 YLR048w *NAB1B* 40S ribosomal protein p40 homologue B  
 YPL195w *YKS4*  $\alpha$ - or  $\gamma$ - adaptin, large subunit of the clathrin-associated protein(AP) complex  
 YBL037w *APL3*  $\beta$ -adaptin, large subunit of the clathrin-associated protein(AP) complex  
 YOR094w *ARF3* ADP-ribosylation factor 3  
 YBL022c *PIM1* ATP-dependent protease, mitochondrial  
 YKL135c *APL2*  $\beta$ -adaptin  
 YGR261c *YKS5*  $\beta$ -adaptin, large subunit of the clathrin-associated protein(AP) complex  
 YBR195c *MSI1* chromatin assembly complex, subunit p50  
 YPR018w *RLF2* chromatin assembly complex, subunit p90  
 YLR170c *APS1* clathrin-associated protein (AP) complex, small subunit AP19  
 YJR058c *APS2* clathrin-associated protein 17, small subunit  
 YJR005w *YAP80* clathrin-associated protein complex,  $\beta$  subunit  
 YJL024c *APS3* clathrin-associated protein(AP) complex, small subunit  
 YER058w *PET117* cytochrome c oxidase assembly factor  
 YPL132w *COX11* cytochrome c oxidase assembly protein  
 YML129c *COX14* cytochrome c oxidase assembly protein  
 YDR079w *PET100* cytochrome c oxidase assembly protein  
 YLR038c *COX12* cytochrome c oxidase subunit VIB  
 YMR256c *COX7* cytochrome c oxidase subunit VII  
 YDL067c *COX9* cytochrome c oxidase subunit VIIA  
 YER141w *COX15* cytochrome oxidase assembly factor  
 YER154w *OXA1* cytochrome oxidase biogenesis protein  
 YBL007c *SLA1* cytoskeleton assembly control protein  
 YNL243w *SLA2* cytoskeleton assembly control protein  
 YLR393w *ATP10* F1F0 ATPase complex assembly protein  
 YNL315c *ATP11* F1F0-ATPase complex assembly protein  
 YJL180c *ATP12* F1F0-ATPase complex assembly protein  
 YPL172c *COX10* farnesyl transferase  
 YDL231w *FAS2* fatty-acyl-CoA synthase,  $\alpha$  subunit  
 YPR029c *APL4*  $\gamma$ -adaptin, large subunit of the clathrin-associated protein(AP) complex  
 YDL192w *ARF1* GTP-binding protein of the ARF family  
 YDL137w *ARF2* GTP-binding protein of the ARF family  
 YKL119c *VPH2* H<sup>+</sup>-ATPase assembly protein, vacuolar  
 YPL234c *TFP3* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YLR447c *VMA6* H<sup>+</sup>-ATPase V0 domain 36K subunit, vacuolar  
 YOR270c *VPH1* H<sup>+</sup>-ATPase V0 domain 95K subunit, vacuolar  
 YOR332w *VMA4* H<sup>+</sup>-ATPase V1 domain 27K subunit, vacuolar  
 YKL080w *VMA5* H<sup>+</sup>-ATPase V1 domain 42K subunit, vacuolar  
 YLL009c *COX17* interacts genetically with *SCO1* and *SCO2* in cytochrome oxidase assembly  
 YJR034w *PET191* involved in assembly of cytochrome oxidase  
 YBR037c *SCO1* involved in stabilization of Cox1p and Cox2p  
 YDR375c *BCS1* mitochondrial protein of the CDC48/PAS1/SEC18 (AAA) family of ATPases  
 YPL085w *SEC16* multidomain vesicle coat protein  
 YKR048c *NAP1* nucleosome assembly protein I  
 YML102w *CAC2* p60 subunit of the chromatin assembly factor-I (CAF-I)  
 YKL197c *PAS1* peroxisomal assembly protein  
 YDR265w *PAS4* peroxisomal assembly protein  
 YNL329c *PAS8* peroxisomal assembly protein  
 YBR237w *PRP5* pre-mRNA processing RNA-helicase  
 YJL203w *PRP21* pre-mRNA splicing factor  
 YER017c *AFG3* protease of the SEC18/CDC48/PAS1 family of ATPases (AAA)  
 YPR024w *YME1* protease of the SEC18/CDC48/PAS1 family of ATPases (AAA)  
 YMR089c *YTA12* protease of the SEC18/CDC48/PAS1 family of ATPases (AAA)  
 YPL215w *CBP3* required for assembly of cytochrome bc1 complex  
 YBR185c *MBA1* respiratory chain assembly protein  
 YLL008w *DRS1* RNA helicase of the DEAD box family  
 YBR227c similarity to *E. coli* ATP-binding protein clpX  
 YGR241c similarity to rat clathrin assembly protein  
 YHR161c similarity to rat clathrin assembly protein AP180  
 YGR074w *SMD1* snRNA-associated protein  
 YBR024w *SCO2* strong similarity to Sco1p  
 YLR327c strong similarity to STF2p  
 YOR134w *BAG7* structural homologue of Sac7p  
 YDR389w *SAC7* suppressor of actin mutation  
 YOR106w *VAM3* syntaxin related protein  
 YDR460w *TFB3* TFIIF subunit (transcription/repair factor)  
 YPR178w *PRP4* U4/U6 snRNP 52K protein  
 YGL119w *ABC1* ubiquinol cytochrome c reductase complex assembly protein  
 YPR191w *QCR2* ubiquinol-cytochrome c reductase 40K subunit II  
 YGR174c *CBP4* ubiquinol-cytochrome c reductase assembly factor  
 YLL039c *UBI4* ubiquitin  
 YGR133w *PAS2* ubiquitin-conjugating enzyme

YGR105w *VMA21* vacuolar ATPase assembly integral membrane protein  
 YHR060w *VMA22* vacuolar ATPase assembly protein  
 YDR495c *VPS3* vacuolar sorting protein

**proteolysis**

YPL149w *APG5* involved in autophagy and nutrient starvation  
 YOL013c *HRD1* involved in degradation of Hmg2p  
 YLR207w *HRD3* involved in degradation of Hmg2p  
 YMR174c *PAI3* protease A (ysca) inhibitor IA3  
 YNL015w *PBI2* proteinase B inhibitor 2  
 YCL052c *PBN1* required for Prb1p expression  
 YHR132c similarity to carboxypeptidase  
 YNR069c similarity to central part of Bul1p  
 YBR227c similarity to *E. coli* ATP-binding protein clpX  
 YNL186w similarity to human putative ubiquitin carboxy-terminal hydrolase  
 YJL137c similarity to *M. musculus* aminopeptidase  
 YKR038c similarity to Qri7p  
 YER047c similarity to regulatory subunit Yta6p of 26S proteasome  
 YCR045c similarity to serin proteases  
 YER078c similarity to X-Pro aminopeptidase II  
 YBR139w strong similarity to carboxypeptidase  
 YBL067c ubiquitin carboxy-terminal hydrolase  
 YOL111c weak similarity to human ubiquitin-like protein GDx

**cytoplasmic degradation**

YFR052w *NIN1* 26S proteasome regulatory subunit  
 YJL075c *SEN3* 26S proteasome regulatory subunit  
 YOR259c *CRL13* 26S proteasome subunit  
 YPR103w *PPE2* 26S proteasome subunit  
 YFR050c *PPE4* 26S proteasome subunit  
 YOR157c *PUP1* 26S proteasome subunit  
 YGR253c *PUP2* 26S proteasome subunit  
 YER094c *PUP3* 26S proteasome subunit  
 YGL048c *SUG1* 26S proteasome subunit  
 YHR200w *SUN1* 26S proteasome subunit  
 YER021w *SUN2* 26S proteasome subunit  
 YOR117w *YTA1* 26S proteasome subunit  
 YDR394w *YTA2* 26S proteasome subunit  
 YKL145w *YTA3* 26S proteasome subunit  
 YGR270w *YTA7* 26S proteasome subunit  
 YOR362c *PPE10* 26S proteasome subunit C1  
 YER012w *PPE1* 26S proteasome subunit C11  
 YGR135w *PPE9* 26S proteasome subunit Y13  
 YML092c *PPE8* 26S proteasome subunit Y7  
 YGL011c *SCL1* 26S proteasome subunit YC7 $\alpha$ /Y8  
 YMR314w *PPE5* 26S proteasome subunit,  $\alpha$ -type  
 YNL239w *LAP3* aminopeptidase of cysteine protease family  
 YJR062c *NTA1* amino-terminal amidase  
 YGL017w *ATE1* arginyl tRNA transferase  
 YDL132w *CDC53* controls G1/S transition  
 YLR452c *SST2* involved in desensitization to  $\alpha$ -factor pheromone  
 YKL213c *DOA1* involved in ubiquitin-dependent proteolysis  
 YDL126c *CDC48* microsome protein of CDC48/PAS1/SEC18 family of ATPases  
 YJL001w *PRE3* multicatalytic endopeptidase complex subunit  
 YOL038w *PRE6* multicatalytic endopeptidase complex subunit  
 YBL041w *PRE7* multicatalytic endopeptidase complex subunit  
 YDL020c *SON1* nuclear protein  
 YBR165w *UBS1* positive regulator of Cdc34p  
 YDL007w *YTA5* probable component of 26S proteasome complex  
 YJL148w *UBI1* ribosomal protein  
 YKR094c *UBI2* ribosomal protein  
 YMR223w similarity to human putative ubiquitin carboxyl-terminal hydrolase  
 YDR390c *UBA2* similarity to Uba1p  
 YPL003w similarity to ubiquitin-activating enzymes  
 YPR180w similarity to ubiquitin-activating enzymes  
 YGL087c similarity to ubiquitin-protein ligase  
 YPL074w *YTA6* similarity to Vps4p and Yta4p  
 YOR261c strong similarity to human 26S proteasome regulatory subunit, p40  
 YOR339c strong similarity to ubiquitin conjugating enzymes  
 YPR066w strong similarity to ubiquitin-activating enzymes  
 YML111w strong similarity to ubiquitination protein Bul1p  
 YHR027c *HRD2* subunit of 26S proteasome  
 YKL022c *CDC16* subunit of anaphase-promoting complex (cytosome)  
 YHR166c *CDC23* subunit of anaphase-promoting complex (cytosome)  
 YBL084c *CDC27* subunit of anaphase-promoting complex (cytosome)  
 YLL039c *UBI4* ubiquitin  
 YJL156w *UBP7* ubiquitin carboxy terminal hydrolase  
 YER098w *UBP9* ubiquitin carboxyl-terminal hydrolase  
 YKR098c *UBP11* ubiquitin C-terminal hydrolase  
 YJL197w *UBP12* ubiquitin C-terminal hydrolase  
 YGR048w *UFD1* ubiquitin fusion degradation protein  
 YDL190c *UFD2* ubiquitin fusion degradation protein  
 YBR058c *UBP14* ubiquitin specific protease  
 YLR167w *UBI3* ubiquitin/ribosomal protein S27a  
 YMR275c *BUL1* ubiquitination pathway protein

YDR054c *CDC34* ubiquitin-conjugating enzyme  
 YMR022w *QR8* ubiquitin-conjugating enzyme  
 YDR177w *UBC1* ubiquitin-conjugating enzyme  
 YLR306w *UBC12* ubiquitin-conjugating enzyme  
 YDR092w *UBC13* ubiquitin-conjugating enzyme  
 YBR082c *UBC4* ubiquitin-conjugating enzyme  
 YDR059c *UBC5* ubiquitin-conjugating enzyme  
 YER100w *UBC6* ubiquitin-conjugating enzyme  
 YDL064w *UBC9* ubiquitin-conjugating enzyme  
 YDR139c ubiquitin-like protein  
 YER125w *RSP5* ubiquitin-protein ligase  
 YKL210w *UBA1* ubiquitin-protein ligase  
 YGR184c *UBR1* ubiquitin-protein ligase  
 YDR069c *DOA4* ubiquitin-specific protease  
 YDL122w *UBP1* ubiquitin-specific protease  
 YER144c *UBP5* ubiquitin-specific protease  
 YJR099w *YUH1* ubiquitin-specific protease  
 YOR124c *UBP2* ubiquitin-specific proteinase  
 YER151c *UBP3* ubiquitin-specific proteinase

**lysosomal and vacuolar degradation**

YBR286w *APE3* aminopeptidase Y, vacuolar  
 YKL103c *LAP4* aminopeptidase yscl, vacuolar  
 YPL154c *PEP4* aspartyl protease  
 YMR297w *PRC1* carboxypeptidase y, serine-type protease  
 YHR028c *DAP2* dipeptidyl aminopeptidase B  
 YJL172w *CP51* Gly-X carboxypeptidase YSCS  
 YEL060c *PRB1* protease B, vacuolar  
 YOR003w *YSP3* subtilisin-like protease III

**other subcellular degradation**

YDR144c *MKC7* aspartyl protease of the periplasmic space  
 YBL022c *PIM1* ATP-dependent protease, mitochondrial  
 YJL015w *BAR1* barrierpepsin  
 YBR201w *DER1* involved in degradation proteins in the ER  
 YER017c *AFG3* protease of the SEC18/CDC48/PAS1 family of ATPases (AAA)  
 YPR024w *YME1* protease of the SEC18/CDC48/PAS1 family of ATPases (AAA)  
 YMR089c *YTA12* protease of the SEC18/CDC48/PAS1 family of ATPases (AAA)  
 YCL057w *PRD1* proteinase yscD  
 YHR113w similarity to vacuolar aminopeptidase Lap4p/Ape1p  
 YFR006w similarity to X-Pro dipeptidases

**other protein-destination activities**

YDR258c *HSP78* heat-shock protein of clpb family of ATP-dependent proteases, mitochondrial  
 YDL104c *QR17* similarity to *H. influenzae* sialoglycoprotease (gcp)  
 YDR415c strong similarity to bacterial leucyl aminopeptidase

**Transport facilitation**

**ion channels**

YGR217w *CCH1* calcium channel protein  
 YLL052c member of mip family transmembrane channels  
 YJL093c *TOK1* outward-rectifier potassium channel  
 YPR192w similarity to plasma membrane and water channel proteins  
 YLL053c similarity to water channel proteins  
 YJL114c *POR2* voltage-dependent anion channel (YVDAC2)  
 YJR040w *GEF1* voltage-gated chloride channel protein

**ion transporters**

YNR055c *HOL1* member of major facilitator superfamily multidrug-resistance protein subfamily 1  
 YJL048w similarity to amino-phospholipids-ATPase Drs2p

**metal ion transporters (Cu, Fe, etc.)**

YOR316c *COT1* cobalt accumulation protein  
 YPR124w *CTR1* copper transport protein  
 YHR175w *CTR2* copper transport protein  
 YLR411w *CTR3* copper transport protein  
 YGL255w *ZRT1* high-affinity zinc transport protein  
 YLR130c *ZRT2* low-affinity zinc transporter  
 YMR319c *FET4* low-affinity Fe(II) iron transport protein  
 YOL122c *SMF1* manganese transporter  
 YBR290w *BSD2* metal homeostasis protein  
 YDR270w *CCO2* probable copper-transporting ATPase  
 YBR295w *PCA1* P-type Cu<sup>2+</sup>-transporting ATPase  
 YMR243c *ZRC1* zinc- and cadmium resistance protein

**other cation transporters (Na, K, Ca, NH<sub>4</sub>, etc.)**

YGR121c *MEP1* ammonia permease of high capacity and moderate affinity  
 YDL128w *VCX1* Ca<sup>2+</sup>-transport (H<sup>+</sup>/Ca<sup>2+</sup> exchange) protein, vacuolar  
 YGL006w *PMC1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YGL167c *PMR1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YCR024c-a *PMP1* H<sup>+</sup>-ATPase subunit, plasma membrane  
 YEL017c-a *PMP2* H<sup>+</sup>-ATPase subunit, plasma membrane  
 YMR054w *STV1* H<sup>+</sup>-ATPase V0 domain 102K subunit, vacuolar  
 YHR039c-a *VMA10* H<sup>+</sup>-ATPase V0 domain 13K subunit, vacuolar

YEL027w *CUP5* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YPL234c *TFP3* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YLR447c *VMA6* H<sup>+</sup>-ATPase V0 domain 36K subunit, vacuolar  
 YOR270c *VPH1* H<sup>+</sup>-ATPase V0 domain 95K subunit, vacuolar  
 YGR020c *VMA7* H<sup>+</sup>-ATPase V1 domain 14K subunit, vacuolar  
 YOR332w *VMA4* H<sup>+</sup>-ATPase V1 domain 27K subunit, vacuolar  
 YEL051w *VMA8* H<sup>+</sup>-ATPase V1 domain 32K subunit, vacuolar  
 YKL080w *VMA5* H<sup>+</sup>-ATPase V1 domain 42K subunit, vacuolar  
 YPR036w *VMA13* H<sup>+</sup>-ATPase V1 domain 54K subunit, vacuolar  
 YBR127c *VMA2* H<sup>+</sup>-ATPase V1 domain 60K subunit, vacuolar  
 YDL185w *TFP1* H<sup>+</sup>-ATPase V1 domain 69K subunit, vacuolar  
 YGL008c *PMA1* H<sup>+</sup>-transporting P-type ATPase  
 YPL038w *PMA2* H<sup>+</sup>-transporting P-type ATPase 2  
 YNL142w *MEP2* high-affinity low-capacity ammonia permease  
 YJL129c *TRK1* high-affinity potassium transport protein  
 YAL026c *DRS2* membrane-spanning P-type amino-phospholipids-ATPase  
 YKR050w *TRK2* moderate-affinity potassium transport protein  
 YHR026w *PPA1* proteolipid protein of proton-transporting ATPase  
 YEL031w *SPF1* P-type ATPase  
 YLR138w *NHA1* putative Na<sup>+</sup>/H<sup>+</sup> antiporter  
 YBR235w similarity to bumetanide-sensitive Na<sup>+</sup>-K<sup>+</sup>-Cl<sup>-</sup> cotransport protein  
 YJL094c similarity to *E. hirae* Na<sup>+</sup>/H<sup>+</sup>-antiporter NapA  
 YDR456w similarity to Na<sup>+</sup>/H<sup>+</sup> antiporters  
 YPR138c *MEP3* strong similarity to ammonium transport proteins  
 YHL016c *DUR3* urea transport protein

**anion transporters (Cl, SO<sub>4</sub>, PO<sub>4</sub>, etc)**  
 YLR348c dicarboxylate carrier protein  
 YML123c *PHO84* high-affinity inorganic phosphate/H<sup>+</sup> symporter  
 YBR294w *SUL1* high-affinity sulphate transport protein  
 YJL117w *PHO86* inorganic phosphate transporter  
 YCR037c *PHO87* member of the phosphate permease family  
 YJR077c *MIR1* phosphate transport protein, mitochondrial (MCF)  
 YBR235w similarity to bumetanide-sensitive Na<sup>+</sup>-K<sup>+</sup>-Cl<sup>-</sup> cotransport protein  
 YJL094c similarity to *E. hirae* Na<sup>+</sup>/H<sup>+</sup>-antiporter NapA  
 YNR013c similarity to membrane protein Pho87p and hypothetical protein YJL198w  
 YCR098c *GIT1* similarity to phosphate transporter proteins  
 YPR003c similarity to sulphate transporter proteins  
 YER053c strong similarity to mitochondrial phosphate carrier protein  
 YJL198w strong similarity to Pho87p  
 YBR296c strong similarity to phosphate-repressible phosphate permease  
 YLR092w *SEL2* strong similarity to Sul1p

**sugar and carbohydrate transporters**  
 YPR021c similarity to human citrate transporter protein  
 YKL217w *JEN1* carboxylic-acid transporter protein  
 YBR291c *CTP1* citrate transport protein, mitochondrial (MCF)  
 YLR348c dicarboxylate carrier protein  
 YLR081w *GAL2* galactose (and glucose) permease  
 YGR289c *AGT1* general α-glucoside permease  
 YLL043w *FPS1* glycerol channel protein  
 YNL318c *HXT14* hexose transport protein  
 YJL214w *HXT8* hexose transport protein  
 YJL219w *HXT9* hexose transport protein  
 YFL011w *HXT10* hexose transporter  
 YDL194w *SNF3* high-affinity glucose transporter  
 YEL069c *HXT13* high-affinity hexose transporter  
 YMR011w *HXT2* high-affinity hexose transporter  
 YDR343c *HXT6* high-affinity hexose transporter  
 YDR342c *HXT7* high-affinity hexose transporter  
 YML123c *PHO84* high-affinity inorganic phosphate/H<sup>+</sup> symporter  
 YOL156w *HXT11* low-affinity glucose transporter  
 YHR094c *HXT1* low-affinity hexose transporter  
 YDR345c *HXT3* low-affinity hexose transporter  
 YDR497c *ITR1* major myo-inositol permease  
 YBR298c *MAL31* maltose permease  
 YDL198c *YHM1* member of the mitochondrial carrier family (MCF)  
 YHR092c *HXT4* moderate- to low-affinity glucose transporter  
 YOL103w *ITR2* myo-inositol transport protein  
 YBR241c similarity to glucose transport proteins  
 YGL104c similarity to glucose transport proteins  
 YDR387c similarity to Trp1p and Itr2p  
 YFR045w similarity to mitochondrial citrate transport proteins

YCR098c *GIT1* similarity to phosphate transporter proteins  
 YDL199c similarity to sugar transporter proteins  
 YFL040w similarity to yeast glucose transport proteins  
 YHR096c *HXT5* strong similarity to hexose transporters  
 YDL245c *HXT15* strong similarity to Hxt17p and Hxt7p  
 YJR160c strong similarity to Mal3Tp  
 YDR536w *STL1* strong similarity to members of the sugar permease family  
 YOR271c strong similarity to *Rattus* tricarboxylate carrier  
 YDL247w strong similarity to sugar transport proteins  
 YIL171w strong similarity to sugar transport proteins  
 YIL170w *HXT12* strong similarity to sugar transport proteins  
 YJR158w *HXT16* strong similarity to sugar transport proteins  
 YNR072w *HXT17* sugar transport protein  
 YDL138w *RG2* suppressor of *snf3* mutant

**amino-acid transporters**  
 YBR068c *BAP2* amino-acid permease  
 YEL063c *CAN1* amino-acid permease  
 YBR069c *VAP1* amino-acid permease  
 YCL025c *AGP1* asparagine and glutamine permease  
 YGL077c *HNM1* choline permease  
 YPL265w *DIP5* dicarboxylic amino-acid permease  
 YDL210w *UGA4* GABA-specific high-affinity permease  
 YKR039w *GAP1* general amino-acid permease  
 YDR508c *GNP1* high-affinity glutamine permease  
 YGR055w *MUP1* high-affinity methionine permease  
 YNL270c *ALP1* high-affinity permease for basic amino acids  
 YOL020w *SCM2* high-affinity tryptophan transport protein  
 YGR191w *HIP1* histidine permease  
 YNL268w *LYP1* lysine-specific high-affinity permease  
 YOR130c *ARG11* member of the mitochondrial carrier family (MCF)  
 YHL036w *MUP3* methionine permease  
 YOR348c *PUT4* proline and γ-aminobutyrate permease  
 YKL174c similarity to choline transport protein  
 YNR056c similarity to choline transport protein  
 YFL055w similarity to Gap1p and other amino-acid permeases  
 YDR160w similarity to lysine transport protein LYP1  
 YLL061w strong similarity to amino-acid transport protein Gap1p  
 YDR046c (*PAP1*) strong similarity to amino-acid transport proteins  
 YBR132c strong similarity to amino-acid permeases  
 YPL274w strong similarity to amino-acid transport proteins

**lipid transporters**  
 YBR041w *FAT1* fatty-acid transporter  
 YKL188c *PAT1* long-chain-fatty-acid transporter  
 YPL147w *PXA1* long-chain-fatty-acid transporter  
 YKL174c similarity to choline transport protein  
 YNR056c similarity to choline transport protein  
 YHR123w *EPT1* sn-1,2-diacylglycerol ethanalamine- and cholinephosphotransferase

**purine and pyrimidine transporters**  
 YMR056c *AAC1* ADP/ATP carrier protein (MCF)  
 YBL030c *AAC2* ADP/ATP carrier protein (MCF)  
 YBR085w *AAC3* ADP/ATP carrier protein (MCF)  
 YBR192w *RIM2* mitochondrial carrier protein (MCF)  
 YER056c *FCY2* purine-cytosine permease  
 YOR060w purine-cytosine permease  
 YOR222w similarity to ADP/ATP carrier proteins  
 YPL134c similarity to ADP/ATP carrier proteins  
 YPR011c similarity to ADP/ATP carrier proteins and Graves disease carrier protein  
 YOR071c similarity to allantoin or uracil transport proteins  
 YOR192c similarity to allantoin or uracil transport proteins  
 YGR096w similarity to bovine Graves disease carrier protein  
 YHR002w similarity to bovine mitochondrial carrier protein/Grave's disease carrier protein  
 YGL186c similarity to hypothetical protein YER060w and weak similarity to FCY2 protein  
 YBL042c strong similarity to allantoin and uracil transport proteins  
 YER060w-a *FCY22* strong similarity to Fcy2p  
 YBR021w *FUR4* uracil permease

**allantoin and allantoate transporters**  
 YJR152w *DAL5* allantoate permease  
 YIR028w *DAL4* allantoin permease  
 YIL166c similarity to allantoate permease Dal5p  
 YCR028c *FEN2* similarity to allantoate permease transporter  
 YGR260w similarity to allantoate transport protein  
 YLR004c similarity to allantoate transport protein

YOR071c similarity to allantoin or uracil transport proteins  
 YOR192c similarity to allantoin or uracil transport proteins  
 YLR237w similarity to allantoin transport protein  
 YLL056w similarity to Dal5p  
 YBL042c strong similarity to allantoin and uracil transport proteins  
 YAL067c *SEO1* suppressor of sulphoxyde ethionine resistance

**transport ATPases**  
 YGL006w *PMC1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YGL167c *PMR1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YKL016c *ATP7* F1F0-ATPase complex, F0 D subunit  
 YBL099w *ATP1* F1F0-ATPase complex, F1 α subunit  
 YJR121w *ATP2* F1F0-ATPase complex, F1 β subunit  
 YDL004w *ATP16* F1F0-ATPase complex, F1 δ subunit  
 YPL078c *ATP4* F1F0-ATPase complex, F1 ε subunit  
 YPL271w *ATP15* F1F0-ATPase complex, F1 ζ subunit  
 YBR039w *STP3* F1F0-ATPase complex, subunit h  
 YDR298c *ATP5* F1F0-ATPase complex, OSCP subunit  
 YLR295c *ATP14* F1F0-ATPase complex, subunit h  
 YCR024c-a *PMP1* H<sup>+</sup>-ATPase subunit, plasma membrane  
 YEL017c-a *PMP2* H<sup>+</sup>-ATPase subunit, plasma membrane  
 YMR054w *STV1* H<sup>+</sup>-ATPase V0 domain 102K subunit, vacuolar  
 YHR039c-a *VMA10* H<sup>+</sup>-ATPase V0 domain 13K subunit, vacuolar  
 YEL027w *CUP5* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YPL234c *TFP3* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YLR447c *VMA6* H<sup>+</sup>-ATPase V0 domain 36K subunit, vacuolar  
 YOR270c *VPH1* H<sup>+</sup>-ATPase V0 domain 95K subunit, vacuolar  
 YGR020c *VMA7* H<sup>+</sup>-ATPase V1 domain 14K subunit, vacuolar  
 YOR332w *VMA4* H<sup>+</sup>-ATPase V1 domain 27K subunit, vacuolar  
 YEL051w *VMA8* H<sup>+</sup>-ATPase V1 domain 32K subunit, vacuolar  
 YKL080w *VMA5* H<sup>+</sup>-ATPase V1 domain 42K subunit, vacuolar  
 YPR036w *VMA13* H<sup>+</sup>-ATPase V1 domain 54K subunit, vacuolar  
 YBR127c *VMA2* H<sup>+</sup>-ATPase V1 domain 60K subunit, vacuolar  
 YDL185w *TFP1* H<sup>+</sup>-ATPase V1 domain 69K subunit, vacuolar  
 YGL008c *PMA1* H<sup>+</sup>-transporting P-type ATPase  
 YPL036w *PMA2* H<sup>+</sup>-transporting P-type ATPase 2  
 YAL026c *DRS2* membrane-spanning P-type amino-phospholipids-ATPase  
 YDR270w *CCC2* probable copper-transporting ATPase  
 YHR026w *PPA1* proteolipid protein of proton-transporting ATPase  
 YEL031w *SPF1* P-type ATPase  
 YDR040c *ENA1* P-type ATPase involved in Na<sup>+</sup> and Li<sup>+</sup> efflux  
 YDR039c *ENA2* P-type ATPase involved in Na<sup>+</sup> efflux  
 YDR038c *ENA5* P-type ATPase involved in Na<sup>+</sup> efflux  
 YBR295w *PCA1* P-type Cu<sup>2+</sup>-transporting ATPase  
 YLR048w similarity to amino-phospholipids-ATPase Drs2p  
 YER166w similarity to ATPase *P. falciparum* ATPase 2  
 YMR162c similarity to ATPases  
 YDR093w similarity to *P. falciparum* ATPase 2

**ABC transporters**  
 YDR406w *PDR15* ATP-binding cassette protein family member  
 YLR188w *MDL1* ATP-binding cassette transporter family member  
 YPL270w *MDL2* ATP-binding cassette transporter family member  
 YKL209c *STE6* ATP-binding cassette transporter protein  
 YGR281w *YOR1* ATP-binding cassette transporter protein required for oligomycin resistance  
 YMR301c *ATM1* ATP-binding cassette transporter protein, mitochondrial  
 YCR011c *ADP1* ATP-dependent permease  
 YDR135c *YCF1* glutathione S-conjugate transporter, vacuolar  
 YKL188c *PAT1* long-chain-fatty-acid transporter  
 YPL147w *PXA1* long-chain-fatty-acid transporter  
 YDR011w *SNQ2* multidrug resistance protein  
 YPL058c *PDR12* multidrug resistance transporter  
 YOR153w *PDR5* pleiotropic drug resistance protein  
 YLR075c similarity to *A. gambiae* ATP-binding-cassette protein  
 YER036c similarity to members of the ABC transporter family  
 YLL015w similarity to metal resistance proteins  
 YHL035c similarity to multidrug resistance proteins  
 YKR103w similarity to multidrug resistance proteins  
 YKR104w similarity to multidrug resistance proteins  
 YLL048c similarity to rat organic anion transporter  
 YIL013c *PDR11* similarity to Snq2p and other ATP-dependent permeases  
 YOR328w *PDR10* strong similarity to ABC transporter proteins  
 YOR311w strong similarity to ATP-dependent permeases

YDR091c strong similarity to human RNase L inhibitor and to *M. jannaschii* ABC transporter  
 YNR070w strong similarity to Snq2p

**drug transporters**

YML116w *ATR1* aminotriazole and 4-nitroquinoline resistance protein  
 YGR281w *YOR1* ATP-binding cassette transporter protein required for oligomycin resistance  
 YGR197c *SNG1* involved in nitroguanidine resistance  
 YEL065w probably multidrug resistance protein  
 YMR123w *PKR1* resistance against *Pichia farinosa* killer toxin (SMK toxin) when expressed by a multicopy plasmid  
 YMR088c similarity multidrug resistance proteins  
 YDR119w similarity to *B. subtilis* tetracycline resistance  
 YBR293w similarity to multidrug resistance proteins  
 YGR138c similarity to multidrug resistance proteins  
 YHR048w similarity to multidrug resistance proteins  
 YPR156c similarity to multidrug resistance proteins  
 YNL065w similarity to resistance proteins  
 YIL013c *PDR11* similarity to Snq2p and other ATP-dependent permeases  
 YMR279c strong similarity to aminotriazole resistance protein  
 YGR224w strong similarity to drug resistance protein SGE1  
 YBR052c strong similarity to *S. pombe* brefeldin A resistance protein obr1  
 YAL067c *SEO1* suppressor of sulphoxyde ethionine resistance

**other transport-facilitators**

YFL028c *CAF16* ATP-binding cassette transporter protein family member  
 YER019c-a *SEB2* ER protein-translocation complex subunit  
 YLR378c *SEC61* ER protein-translocation complex subunit  
 YPL094c *SEC62* ER protein-translocation complex subunit  
 YOR254c *SEC63* ER protein-translocation complex subunit  
 YBR171w *SEC66* ER protein-translocation complex subunit  
 YLR292c *SEC72* ER protein-translocation complex subunit  
 YDR086c *SSS1* ER protein-translocation complex subunit  
 YIL134w *FLX1* FAD carrier protein, mitochondrial (MCF)  
 YCR023c member of major facilitator superfamily multidrug-resistance protein family 2  
 YKL039w *PTM1* member of the major facilitator superfamily  
 YPR058w *YMC1* mitochondrial carrier protein (MCF)  
 YNR017w *MAS6* mitochondrial inner membrane import translocase subunit  
 YIL143w *TIM17* mitochondrial inner membrane import translocase subunit  
 YIL022w *TIM44* mitochondrial inner membrane import translocase subunit  
 YNL131w *TOM22* mitochondrial outer membrane import receptor subunit  
 YGR082w *TOM20* mitochondrial outer membrane import receptor subunit, 20K  
 YMR060c *TOM37* mitochondrial outer membrane import receptor subunit, 37K  
 YMR203w *TOM40* mitochondrial outer membrane import receptor subunit, 40K  
 YOR045w *TOM6* mitochondrial outer membrane import receptor subunit, 6K  
 YNL070w *TOM7* mitochondrial outer membrane import receptor subunit, 7K  
 YNL055c *POR1* mitochondrial outer membrane porin  
 YNL121c *TOM70* mitochondrial outer membrane specialized import receptor  
 YAR035w *YAT1* outer carnitine acetyltransferase, mitochondrial  
 YKR093w *PTR2* peptide transporter  
 YIL120w similarity to antibiotic resistance proteins  
 YIL121w similarity to antibiotic resistance proteins  
 YCL038c similarity to bacterial membrane transporter  
 YBR043c similarity to benomyl/methotrexate resistance protein  
 YHL040c similarity to *C. carbonum* toxin pump  
 YHL047c similarity to *C. carbonum* toxin pump  
 YER024w similarity to carnitine O-acetyltransferase Yat1p  
 YOR291w similarity to cation translocating ATPases  
 YFL054c similarity to channel proteins  
 YBR180w similarity to drug resistance proteins  
 YIL006w similarity to Flx1p  
 YOR306c similarity to human X-linked PEST-containing transporter  
 YIL056w similarity to hypothetical protein YER064c  
 YNL003c *PET8* similarity to mitochondrial rat tricarboxylate transport protein  
 YOL119c similarity to monocarboxylate transporter proteins  
 YGR065c similarity to *P. putida* phthalate transporter  
 YOL163w similarity to *P. putida* phthalate transporter  
 YEL006w similarity to peroxisomal membrane and mitochondrial carrier proteins  
 YJR124c similarity to *Staphylococcus* multidrug resistance protein  
 YNL125c similarity to YKL221w and human X-linked PEST-containing transporter  
 YBR008c strong similarity to benomyl/methotrexate resistance protein

YCL069w strong similarity to drug resistance protein SGE1  
 YER087c-a *SEB1* strong similarity to mammalian Sec61 $\beta$  subunit  
 YKR067w strong similarity to Sct1p  
 YBL011w suppresses a choline-transport mutant  
 YBL089w weak similarity to *A. thaliana* aminoacid permease AAP3  
 YIL088c weak similarity to *A. thaliana* aminoacid permease AAP4  
 YJR001w weak similarity to *A. thaliana* aminoacid permease AAP4  
 YER119c weak similarity to *E. herbicola* tyrosine permease  
 YKL221w weak similarity to human X-linked PEST-containing transporter  
 YEL064c weak similarity to members of the major facilitator superfamily  
 YJR106w weak similarity to Na<sup>+</sup>/H<sup>+</sup> antiporter  
 YDL206w weak similarity to transporter proteins  
 YKL146w weak similarity to transporter proteins

**Intracellular transport**

**nuclear transport**

YIL075c *SEN3* 26S proteasome regulatory subunit  
 YOR048c *RA11* 5'-3' exoribonuclease  
 YGL097w *SRM1* GDP/GTP exchange factor for Gsp1p/Gsp2p  
 YOR185c *GSP2* GTP-binding protein  
 YLR293c *GSP1* GTP-binding protein of the RAS superfamily  
 YAL005c *SSA1* heat-shock protein of HSP70 family  
 YOR160w *MTR10* involved in mRNA transport  
 YIL050w *MTR4* involved in nucleocytoplasmic transport of mRNA  
 YBR017c *KAP104* karyopherin  
 YNL189w *SRP1* karyopherin- $\alpha$  or importin  
 YLR347c *KAP95* karyopherin- $\beta$   
 YKL186c *MTR2* mRNA transport protein  
 YPL124w *NIP29* nuclear import protein  
 YPL174c *NIP80* nuclear import protein  
 YMR129w *POM152* nuclear pore membrane glycoprotein  
 YFR002w *NIC96* nuclear pore protein  
 YJL041w *NSP1* nuclear pore protein  
 YOR098c *NUP1* nuclear pore protein  
 YKL068w *NUP100* nuclear pore protein  
 YMR047c *NUP116* nuclear pore protein  
 YKL057c *NUP120* nuclear pore protein  
 YKR082w *NUP133* nuclear pore protein  
 YGL092w *NUP145* nuclear pore protein  
 YER105c *NUP157* nuclear pore protein  
 YIL115c *NUP159* nuclear pore protein  
 YBL079w *NUP170* nuclear pore protein  
 YML103c *NUP188* nuclear pore protein  
 YLR335w *NUP2* nuclear pore protein  
 YDR192c *NUP42* nuclear pore protein  
 YGL172w *NUP49* nuclear pore protein  
 YGR119c *NUP57* nuclear pore protein  
 YJL061w *NUP82* nuclear pore protein  
 YDL116w *NUP84* nuclear pore protein  
 YJR042w *NUP85* nuclear pore protein  
 YGL100w *SEH1* nuclear pore protein  
 YBR170c *NPL4* nuclear protein localization factor and ER translocation component  
 YER009w *NTF2* nuclear transport factor  
 YDR432w *NPL3* nucleolar protein  
 YER002w *YRB1* ran-specific GTPase-activating protein  
 YER107c *GLE2* required for nuclear pore complex structure and function  
 YIR011c *STS1* required for transport of Rna15p from the cytoplasm to the nucleus  
 YDL207w *GLE1* RNA export mediator  
 YIL063c *YRB2* similarity to Yrp1 and Nup2p  
 YLR119w *SRN2* suppressor of *mat1-1* mutation  
 YFL049w weak similarity to Npl6p

**mitochondrial transport**

YMR056c *AAC1* ADP/ATP carrier protein (MCF)  
 YBL030c *AAC2* ADP/ATP carrier protein (MCF)  
 YBR085w *AAC3* ADP/ATP carrier protein (MCF)  
 YMR301c *ATM1* ATP-binding cassette transporter protein, mitochondrial  
 YML042w *CAT2* carnitine O-acetyltransferase  
 YBR291c *CTP1* citrate transport protein, mitochondrial (MCF)  
 YOR316c *COT1* cobalt accumulation protein  
 YOR037w *CYC2* cytochrome c mitochondrial import factor  
 YLR348c dicarboxylate carrier protein  
 YKL016c *ATP7* F1F0-ATPase complex, F0 D subunit  
 YBL099w *ATP1* F1F0-ATPase complex, F1  $\alpha$  subunit  
 YJR121w *ATP2* F1F0-ATPase complex, F1  $\beta$  subunit  
 YDL004w *ATP16* F1F0-ATPase complex, F1  $\delta$  subunit  
 YPL078c *ATP4* F1F0-ATPase complex, F1  $\delta$  subunit  
 YPL271w *ATP15* F1F0-ATPase complex, F1  $\epsilon$  subunit  
 YBR039w *ATP3* F1F0-ATPase complex, F1  $\gamma$  subunit  
 YDR298c *ATP5* F1F0-ATPase complex, OSCP subunit  
 YLR295c *ATP14* F1F0-ATPase complex, subunit h  
 YIL134w *FLX1* FAD carrier protein, mitochondrial (MCF)  
 YOR232w *MGE1* heat-shock protein - chaperone  
 YLL024c *SSA2* heat-shock protein of HSP70 family, cytosolic  
 YGR028w *MSP1* intra-mitochondrial sorting protein

YOR130c *ARG11* member of the mitochondrial carrier family (MCF)  
 YDL198c *YHM1* member of the mitochondrial carrier family (MCF)  
 YNL064c *YDJ1* mitochondrial and ER import protein  
 YBR192w *RIM2* mitochondrial carrier protein (MCF)  
 YPR058w *YMC1* mitochondrial carrier protein (MCF)  
 YBR104w *YMC2* mitochondrial carrier protein (MCF)  
 YML062c *MFT1* mitochondrial fusion target protein  
 YNR017w *MAS6* mitochondrial inner membrane import translocase subunit  
 YIL143w *TIM17* mitochondrial inner membrane import translocase subunit  
 YIL022w *TIM44* mitochondrial inner membrane import translocase subunit  
 YNL131w *TOM22* mitochondrial outer membrane import receptor subunit  
 YGR082w *TOM20* mitochondrial outer membrane import receptor subunit, 20K  
 YMR060c *TOM37* mitochondrial outer membrane import receptor subunit, 37K  
 YMR203w *TOM40* mitochondrial outer membrane import receptor subunit, 40K  
 YOR045w *TOM6* mitochondrial outer membrane import receptor subunit, 6K  
 YNL070w *TOM7* mitochondrial outer membrane import receptor subunit, 7K  
 YNL055c *POR1* mitochondrial outer membrane porin  
 YNL121c *TOM70* mitochondrial outer membrane specialized import receptor  
 YAR035w *YAT1* outer carnitine acetyltransferase, mitochondrial  
 YJR077c *MIR1* phosphate transport protein, mitochondrial (MCF)  
 YBR091c *MRS5* regulator of mitochondrial intron splicing  
 YPL134c similarity to ADP/ATP carrier proteins  
 YER024w similarity to carnitine O-acetyltransferase Yat1p  
 YPR021c similarity to human citrate transporter protein  
 YER053c strong similarity to mitochondrial phosphate carrier protein  
 YLR034c strong similarity to SMF2 protein  
 YHR117w *TOM71* strong similarity to Tom70p/Mas70p  
 YHR050w *SMF2* suppressor of mitochondrial matrix mutant  
 YIL114c *POR2* voltage dependent anion channel (YVDAC2)

**vesicular transport (Golgi network, etc.)**

YBR164c *ARL1* ADP-ribosylation factor  
 YOR094w *ARF3* ADP-ribosylation factor 3  
 YGL167c *PMR1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YGR167w *CLC1* clathrin light chain  
 YOL062c *APM4* clathrin-associate protein YAP54  
 YPL259c *APM1* clathrin-associated protein  
 YBR288c *APM3* clathrin-associated protein complex, medium subunit  
 YPL010w *RET3* coatamer complex  $\zeta$  subunit  
 YDL145c *RET1* coatamer complex  $\alpha$  subunit of secretory pathway vesicles  
 YGL137w *SEC27* coatamer complex  $\beta'$  subunit ( $\beta'$ -cop) of secretory pathway vesicles  
 YDR238c *SEC26* coatamer complex  $\beta$  subunit of secretory pathway vesicles  
 YFR051c *RET2* coatamer complex  $\delta$  subunit  
 YNL287w *SEC21* coatamer complex  $\gamma$  subunit ( $\gamma$ -COP) of secretory pathway vesicles  
 YDR170c *SEC7* component of non-clathrin vesicle coat  
 YPR181c *SEC23* component of the COPII coat of ER-Golgi vesicles  
 YDL195w *SEC31* component of the COPII coat of ER-Golgi vesicles  
 YGL200c *EMP24* component of the COPII-coated vesicles, 24K  
 YML012w *ERV25* component of the COPII-coated vesicles, 25K  
 YMR017w *DBI9* Dbl2p interacting protein  
 YKR054c *DYN1* dynein heavy chain, cytosolic  
 YLR083c *EMP70* endosomal protein  
 YBL040c *ERD2* ER lumen protein-retaining receptor  
 YJR031c *GEA1* GDP/GTP exchange factor for ARF  
 YEL022w *GEA2* GDP/GTP exchange factor for ARF  
 YNR026c *SEC12* GDP/GTP exchange factor for Sar1p  
 YPR017c *DSS4* GDP/GTP exchange factor for Sec4p  
 YDL192w *ARF1* GTP-binding protein of the ARF family  
 YDL137w *ARF2* GTP-binding protein of the ARF family  
 YPL218w *SAR1* GTP-binding protein of the ARF family  
 YFL038c *YPT71* GTP-binding protein of the RAB family  
 YER031c *YPT31* GTP-binding protein of the RAB family  
 YLR262c *YPT6* GTP-binding protein of the RAB family  
 YML001w *YPT7* GTP-binding protein of the RAB family  
 YFL005w *SEC4* GTP-binding protein of the RAS superfamily  
 YLL024c *SSA2* heat-shock protein of HSP70 family, cytosolic  
 YLR268w *SEC22* high copy suppressor of *ypt1* null mutation  
 YDR189w *SLY1* hydrophilic suppressor of *ypt1* and member of the Sec1p family  
 YDL058w *USO1* intracellular protein transport protein involved in ergosterol biosynthesis  
 YPL145c *KES1* involved in targeting and fusion of ER to Golgi transport vesicles  
 YKR068c *BET3* involved in vesicle transport from Golgi to plasma membrane  
 YMR183c *SSO2* mitochondrial and ER import protein  
 YNL064c *YDJ1* mitochondrial and ER import protein

YIL004c *SYS1* multicopy suppressor of *ypt6*  
 YPL085w *SEC16* multidomain vesicle coat protein  
 YOR326w *MYO2* myosin heavy chain  
 YFL025c *BST1* negative regulator of COPII vesicle formation  
 YMR079w *SEC14* phosphatidylinositol/phosphatidylcholine transfer protein  
 YCR067c *SED4* protein of the endoplasmic reticulum  
 YIL004c *BET1* protein transport protein  
 YLR208w *SEC13* protein transport protein  
 YNL272c *SEC2* protein transport protein  
 YGR009c *SEC9* protein transport protein  
 YGL145w *TIP20* required for ER to Golgi transport  
 YDR498c *SEC20* secretory pathway protein  
 YBR097w *VPS15* ser/thr protein kinase  
 YBR264c similarity to GTP-binding proteins  
 YKL196c similarity to Sec22p  
 YIL193w similarity to Sly41p  
 YGL210w *YPT32* small GTP-binding protein  
 YKL006c-a *SFT1* SNARE-like protein  
 YPL051w strong similarity to ADP-ribosylation factors  
 YDR107c strong similarity to EMP70 protein  
 YAL030w *SNC1* strong similarity to synaptic vesicle-associated membrane protein  
 YOR327c *SNC2* strong similarity to synaptobrevin  
 YER039c strong similarity to vanadate resistance protein Van2p  
 YLR026c *SED5* syntaxin (T-SNARE)  
 YOR075w *UFE1* syntaxin (T-SNARE) of the ER  
 YPL232w *SSO1* syntaxin-related protein  
 YBL050w *SEC17* transport vesicle fusion protein  
 YLR396c *VPS33* vacuolar sorting protein  
 YML097c *VPS9* vacuolar sorting protein  
 YGL225w *GOG5* vanadate-resistance protein  
 YGL233w *SEC15* vesicular traffic control protein  
 YBR080c *SEC18* vesicular-fusion protein, functional homologue of NSF  
 YLR093c weak similarity to synaptobrevin  
 YLR078c *BOS1* weak similarity to synaptobrevin (V-SNARE)

**peroxisomal transport**

YML042w *CAT2* carnitine O-acetyltransferase  
 YKL188c *PAT1* long-chain-fatty-acid transporter  
 YER147w *PXA1* long-chain-fatty-acid transporter  
 YPL015w *FAA2* long-chain-fatty-acid-CoA ligase  
 YDR329c *PAS3* peroxisomal assembly protein  
 YIL210w *PAS5* peroxisomal assembly protein  
 YDR142c *PAS7* peroxisomal import protein  
 YLR191w *PAS20* peroxisomal protein involved in protein import  
 YDR244w *PAS10* putative peroxisomal targeting signal receptor

**vacuolar transport**

YDL128w *VCX1* Ca<sup>2+</sup>-transport (H<sup>+</sup>/Ca<sup>2+</sup> exchange) protein, vacuolar  
 YGL006w *PMC1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YDR135c *YCF1* glutathione S-conjugate transporter, vacuolar  
 YOR089c *VPS21* GTP-binding protein  
 YER031c *YPT31* GTP-binding protein of the RAB family  
 YKR014c *YPT52* GTP-binding protein of the RAB family  
 YNL093w *YPT53* GTP-binding protein of the RAB family (RAS superfamily)  
 YMR054w *STV1* H<sup>+</sup>-ATPase V0 domain 102K subunit, vacuolar  
 YHR039c-a *VMA10* H<sup>+</sup>-ATPase V0 domain 13K subunit, vacuolar  
 YEL027w *CUP5* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YPL234c *TFP3* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YLR447c *VMA6* H<sup>+</sup>-ATPase V0 domain 36K subunit, vacuolar  
 YOR270c *VPH1* H<sup>+</sup>-ATPase V0 domain 95K subunit, vacuolar  
 YGR020c *VMA7* H<sup>+</sup>-ATPase V1 domain 14K subunit, vacuolar  
 YOR332w *VMA4* H<sup>+</sup>-ATPase V1 domain 27K subunit, vacuolar  
 YEL051w *VMA8* H<sup>+</sup>-ATPase V1 domain 32K subunit, vacuolar  
 YKL080w *VMA5* H<sup>+</sup>-ATPase V1 domain 42K subunit, vacuolar  
 YPR036w *VMA13* H<sup>+</sup>-ATPase V1 domain 54K subunit, vacuolar  
 YBR127c *VMA2* H<sup>+</sup>-ATPase V1 domain 60K subunit, vacuolar  
 YDL185w *TFP1* H<sup>+</sup>-ATPase V1 domain 69K subunit, vacuolar  
 YPL066w *VPS28* involved in vacuolar traffic  
 YMR004w *MVP1* required for vacuolar protein sorting  
 YBR097w *VPS15* ser/thr protein kinase  
 YIL222w strong similarity to Pep1p  
 YOR036w *PEP12* syntaxin (T-SNARE)  
 YNR006w *VPS27* vacuolar protein sorting-associated protein  
 YGL095c *VPS45* vacuolar protein sorting-associated protein  
 YDR323c *PEP7* vacuolar segregation protein  
 YPL045w *VPS16* vacuolar sorting protein  
 YPR173c *VPS4* vacuolar sorting protein  
 YAL002w *VPS8* vacuolar sorting protein  
 YML097c *VPS9* vacuolar sorting protein

**extracellular transport**

YIL085w *EXO70* 70K exocyst component protein  
 YDR129c *SAC6* actin filament bundling protein, fimbrin  
 YKL209c *STE6* ATP-binding cassette transporter protein  
 YDL226c *GCS1* cell proliferation zinc-finger protein  
 YER136w *GDI1* GDP dissociation inhibitor  
 YLL043w *FPS1* glycerol channel protein  
 YHR044c *GYP6* GTPase-activating protein  
 YLR262c *YPT6* GTP-binding protein of the RAB family  
 YIL205c-a *NCE1* involved in non-classical protein export pathway  
 YPR149w *NCE2* involved in non-classical protein export pathway  
 YNL036w *NCE3* involved in non-classical protein export pathway  
 YOR326w *MYO2* myosin heavy chain  
 YJL093c *TOK1* outward-rectifier potassium channel  
 YMR308c *PSE1* protein secretion enhancer  
 YDR164c *SEC1* protein transport protein  
 YNL272c *SEC2* protein transport protein  
 YIL068c *SEC6* protein transport protein  
 YPR055w *SEC8* protein transport protein  
 YGR009c *SEC9* protein transport protein  
 YKL212w *SAC1* recessive suppressor of secretory defect  
 YLR166c *SEC10* required for exocytosis  
 YDR166c *SEC5* required for exocytosis  
 YNR049c *MSO1* secretion protein, multicopy suppressor of *sec1*  
 YER008c *SEC3* secretory pathway protein  
 YOR307c *SLY41* secretory pathway protein  
 YBR162w-a *YSY6* secretory pathway protein  
 YLR250w *SSP120* secretory protein  
 YCR032w similarity to human CDC4L protein  
 YER009w similarity to *P. polycyphalum* myosin-related protein mIpA  
 YGR131w strong similarity to Nce2p  
 YNL325c suppressor of *sac1* mutation  
 YPL232w *SSO1* syntaxin-related protein  
 YGL233w *SEC15* vesicular traffic control protein  
 YBR080c *SEC18* vesicular-fusion protein, functional homologue of NSF

**cellular import**

YPL195w *YKS4* α- or γ- adaptin, large subunit of the clathrin-associated protein(AP) complex  
 YBL037w *APL3* α-adaptin, large subunit of the clathrin-associated protein(AP) complex  
 YFL039c *ACT1* actin  
 YDR129c *SAC6* actin filament bundling protein, fimbrin  
 YDL029w *ACT2* actin-like protein  
 YGL040w *GLK1* aldohexose specific glucokinase  
 YJR152w *DAL5* allantoate permease  
 YIR028w *DAL4* allantoin permease  
 YBR068c *BAP2* amino-acid permease  
 YEL063c *CAN1* amino-acid permease  
 YBR069c *VAP1* amino-acid permease  
 YGR121c *MEP1* ammonia permease of high capacity and moderate affinity  
 YKL135c *APL2* β-adaptin  
 YGR261c *YKS5* β-adaptin, large subunit of the clathrin-associated protein(AP) complex  
 YBR109c *CMD1* calmodulin  
 YDL226c *GCS1* cell proliferation zinc-finger protein  
 YMR058w *FET3* cell-surface ferroxidase  
 YGL077c *HNM1* choline permease  
 YGL206c *CHC1* clathrin heavy chain  
 YGR167w *CLC1* clathrin light chain  
 YLR170c *APS1* clathrin-associated protein (AP) complex, small subunit AP19  
 YJR058c *APS2* clathrin-associated protein 17, small subunit  
 YJR005w *YAP80* clathrin-associated protein complex, β subunit  
 YJL024c *APS3* clathrin-associated protein(AP) complex, small subunit  
 YPR124w *CTR1* copper transport protein  
 YHR175w *CTR2* copper transport protein  
 YNL243w *SLA2* cytoskeleton assembly control protein  
 YLL001w *DNM1* dynamin-related protein  
 YDL210w *UGA4* GABA-specific high-affinity permease  
 YPR029c *APL4* γ-adaptin, large subunit of the clathrin-associated protein(AP) complex  
 YLR081w *GAL2* galactose (and glucose) permease  
 YNR026c *SEC12* GDP/GTP exchange factor for Sar1p  
 YKR039w *GAP1* general amino-acid permease  
 YLL043w *FPS1* glycerol channel protein  
 YOR089c *VPS21* GTP-binding protein  
 YER031c *YPT31* GTP-binding protein of the RAB family  
 YKR014c *YPT52* GTP-binding protein of the RAB family  
 YML001w *YPT7* GTP-binding protein of the RAB family  
 YNL093w *YPT53* GTP-binding protein of the RAB family (RAS superfamily)  
 YNL318c *HXT14* hexose transport protein  
 YJL214w *HXT8* hexose transport protein  
 YIL219w *HXT9* hexose transport protein  
 YFL011w *HXT10* hexose transporter  
 YDL194w *SNF3* high-affinity glucose transporter  
 YEL069c *HXT13* high-affinity hexose transporter  
 YMR011w *HXT2* high-affinity hexose transporter  
 YDR343c *HXT6* high-affinity hexose transporter  
 YDR342c *HXT7* high-affinity hexose transporter  
 YML123c *PHO84* high-affinity inorganic phosphate/H<sup>+</sup> symporter  
 YNL142w *MEP2* high-affinity low capacity ammonia permease  
 YGR055w *MUP1* high-affinity methionine permease

YNL270c *ALP1* high-affinity permease for basic amino acids  
 YJL129c *TRK1* high-affinity potassium transport protein  
 YBR294w *SUL1* high-affinity sulphate transport protein  
 YOL020w *SCM2* high-affinity tryptophan transport protein  
 YGR191w *HIP1* histidine permease  
 YMR319c *FET4* low-affinity Fe(II) iron transport protein  
 YOL156w *HXT11* low-affinity glucose transporter  
 YHR094c *HXT1* low-affinity hexose transporter  
 YDR345c *HXT3* low-affinity hexose transporter  
 YNL268w *LYP1* lysine-specific high-affinity permease  
 YDR497c *ITR1* major myo-inositol permease  
 YBR298c *MAL31* maltose permease  
 YOL122c *SMF1* manganese transporter  
 YKR050w *TRK2* moderate-affinity potassium transport protein  
 YHR092c *HXT4* moderate to low-affinity glucose transporter  
 YOL103w *ITR2* myo-inositol transport protein  
 YLR240w *VPS34* phosphatidylinositol 3-kinase  
 YOR348c *PUT4* proline and γ-aminobutyrate permease  
 YER056c *FCY2* purine-cytosine permease  
 YLR088w *GAA1* required for attachment of GPI anchor onto proteins  
 YNL084c *END3* required for endocytosis and cytoskeletal organization  
 YJR090c *GRR1* required for glucose repression and for glucose and cation transport  
 YCR009c *RVS161* similarity to human amphiphysin and Rvs167p  
 YDR046c *(PAP1)* strong similarity to amino-acid transport proteins  
 YHR096c *HXT5* strong similarity to hexose transporters  
 YIL170w *HXT12* strong similarity to sugar transport proteins  
 YJR158w *HXT16* strong similarity to sugar transport proteins  
 YNR072w *HXT17* sugar transport protein  
 YOR329c *SCD5* suppressor of clathrin deficiency  
 YPR129w *SCD6* suppressor of clathrin deficiency  
 YBR021w *FUR4* uracil permease  
 YMR231w *PEP5* vacuolar biogenesis protein  
 YLR337w *VRC1* verprolin  
 YBR080c *SEC18* vesicular-fusion protein, functional homologue of NSF  
 YJR040w *GEF1* voltage-gated chloride channel protein  
 YMR243c *ZRC1* zinc- and cadmium resistance protein

**other intracellular-transport activities**

YKR054c *DYN1* dynein heavy chain, cytosolic  
 YER019c-a *SEB2* ER protein-translocation complex subunit  
 YLR378c *SEC61* ER protein-translocation complex subunit  
 YPL094c *SEC62* ER protein-translocation complex subunit  
 YOR254c *SEC63* ER protein-translocation complex subunit  
 YBR171w *SEC66* ER protein-translocation complex subunit  
 YLR292c *SEC7* ER protein-translocation complex subunit  
 YDR086c *SSS1* ER protein-translocation complex subunit  
 YCR075c *ERS1* intracellular protein transport protein  
 YHL019c *APM2* involved in clathrin-dependent transport processes  
 YJL034w *KAR2* nuclear fusion protein  
 YBR170c *NPL4* nuclear protein localization factor and ER translocation component  
 YKR093w *PTR2* peptide transporter  
 YKL198c *PTK1* polyamine transport enhancing protein  
 YDR040c *ENA1* P-type ATPase involved in Na<sup>+</sup> and Li<sup>+</sup> efflux  
 YER060w *FCY21* purine-cytosine permease  
 YNL183c *NPR1* ser/thr protein kinase  
 YOR100c similarity to mitochondrial carrier protein YMC1  
 YGL216w similarity to mouse kinesin-related protein KIF3  
 YPR009w similarity to sterol uptake protein Sut1p  
 YHR123w *EPT1* sn-1,2-diaclyglycerol ethanolamine- and cholinephosphotransferase  
 YER060w-a *FCY22* strong similarity to Fcy2p  
 YER087c-a *SEB1* strong similarity to mammalian Sec61β subunit

**Cellular organization and biogenesis**

**organization and biogenesis of cell wall and plasma membrane**

YLR342w *FKS1* 1,3-D-glucan synthase, catalytic subunit  
 YGR032w *GSC2* 1,3-D-glucan synthase, subunit  
 YOR362c *PRE10* 26S proteasome subunit C1  
 YJR004c *SAG1* α-agglutinin  
 YNR044w *AGA1* α-agglutinin anchor subunit  
 YGL032c *AGA2* α-agglutinin binding subunit  
 YDR077w *SED1* abundant cell-surface glycoprotein  
 YJL005w *CYR1* adenylyate cyclase  
 YCL007c *CWH36* affects the mannoprotein layer of the cell wall  
 YOR335c *ALA1* alanyl-tRNA synthetase, cytosolic  
 YPL061w *ALD6* aldehyde dehydrogenase, cytosolic  
 YJR152w *DAL5* allantoin permease  
 YIR028w *DAL4* allantoin permease  
 YBR068c *BAP2* amino-acid permease  
 YEL063c *CAN1* amino-acid permease  
 YBR069c *VAP1* amino-acid permease







YPL147w *PXA1* long-chain-fatty-acid transporter  
 YER015w *FAA2* long-chain-fatty-acid-CoA ligase  
 YDL078c *MDH3* malate dehydrogenase, peroxisomal  
 YNL117w *MLS1* malate synthase 1  
 YIR031c *DAL7* malate synthase 2  
 YDR329c *PAS3* peroxisomal assembly protein  
 YDR265w *PAS4* peroxisomal assembly protein  
 YJL210w *PAS5* peroxisomal assembly protein  
 YNL329c *PAS8* peroxisomal assembly protein  
 YDR142c *PAS7* peroxisomal import protein  
 YOL147c *PMP27* peroxisomal membrane protein  
 YLR191w *PAS20* peroxisomal protein involved in protein import  
 YDR244w *PAS10* putative peroxisomal targeting signal receptor  
 YLR109w similarity to *C. bodinii* peroxisomal membrane protein 20K A  
 YGR077c similarity to peroxisomal matrix protein Per1p  
 YLR251w similarity to peroxisomal rat membrane protein PMP22  
 YNL202w *SPS19* sporulation-specific protein  
 YGR133w *PAS2* ubiquitin-conjugating enzyme  
 YBR204c weak similarity to peroxisomal serine-active lipase

**endosomal organization and biogenesis**

YKL135c *APL2*  $\beta$ -adaptin  
 YNL192w *CHS1* chitin synthase I  
 YBR023c *CHS3* chitin synthase III  
 YJR058c *APS2* clathrin-associated protein 17, small subunit  
 YJR005w *APL1* clathrin-associated protein complex,  $\beta$  subunit  
 YBR288c *APM3* clathrin-associated protein complex, medium subunit  
 YLR170c *APS1* clathrin-associated protein complex, small subunit AP19  
 YDL145c *RET1* coatomer complex  $\alpha$  subunit  
 YDR238c *SEC26* coatomer complex  $\beta$  subunit of secretory pathway vesicles  
 YGL137w *SEC27* coatomer complex  $\beta$  subunit  
 YFR051c *RET2* coatomer complex  $\delta$  subunit  
 YNL287w *SEC21* coatomer complex  $\gamma$  subunit  
 YOL101w *RET3* coatomer complex  $\zeta$  subunit  
 YPR181c *SEC23* component of COPII coat of ER-golgi vesicles  
 YDR170c *SEC7* component of non-clathrin vesicle coat  
 YLR083c *EMP70* endosomal protein  
 YPR017c *DSS4* GDP/GTP exchange factor for Sec4p  
 YOR089c *VPS21* GTP-binding protein  
 YDL137w *ARF2* GTP-binding protein of the ARF family  
 YML001w *YPT7* GTP-binding protein of the RAB family  
 YFL005w *SEC4* GTP-binding protein of the RAS superfamily  
 YLR268w *SEC22* high copy suppressor of ypt1 null mutation  
 YPL085w *SEC16* multidomain vesicle protein  
 YLR208w *SEC13* protein transport protein  
 YKL196c similarity to Sec22p  
 YLR080w strong similarity to Emp47p  
 YDR107c strong similarity to Emp70p  
 YAL030w *SNC1* strong similarity to synaptic vesicle-associated membrane protein  
 YOR327c *SNC2* strong similarity to synaptobrevin  
 YBL050w *SEC17* transport vesicle fusion protein  
 YNR006w *VPS27* vacuolar protein sorting-associated protein  
 YBR080c *SEC18* vesicular-fusion protein, functional homologue of NSF  
 YLR078c *BOS1* weak similarity to synaptobrevin (V-SNARE)

**vacuolar and lysosomal organization and biogenesis**

YGL156w *AMS1*  $\alpha$ -mannosidase  
 YBR286w *APE3* aminopeptidase Y, vacuolar  
 YKL103c *LAP4* aminopeptidase yscI, vacuolar  
 YPL154c *PEP4* aspartyl protease  
 YDL128w *VCX1* Ca<sup>2+</sup>-transport (H<sup>+</sup>/Ca<sup>2+</sup> exchange) protein, vacuolar  
 YGL006w *PMC1* Ca<sup>2+</sup>-transporting P-type ATPase  
 YMR297w *PRC1* carboxypeptidase Y, serine-type protease  
 YHR028c *DAF2* dipeptidyl aminopeptidase B  
 YDR135c *YCF1* glutathione S-conjugate transporter, vacuolar  
 YJL172w *CPS1* Gly-X carboxypeptidase YCS  
 YKL119c *VPH2* H<sup>+</sup>-ATPase assembly protein, vacuolar  
 YHR039c-a *VMA10* H<sup>+</sup>-ATPase V0 domain 13K subunit, vacuolar  
 YEL027w *CUP5* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YPL234c *TFP3* H<sup>+</sup>-ATPase V0 domain 17K subunit, vacuolar  
 YLR447c *VMA6* H<sup>+</sup>-ATPase V0 domain 36K subunit, vacuolar  
 YOR270c *VPH1* H<sup>+</sup>-ATPase V0 domain 95K subunit, vacuolar  
 YGR020c *VMA7* H<sup>+</sup>-ATPase V1 domain 14K subunit, vacuolar  
 YOR332w *VMA4* H<sup>+</sup>-ATPase V1 domain 27K subunit, vacuolar  
 YEL051w *VMA8* H<sup>+</sup>-ATPase V1 domain 32K subunit, vacuolar  
 YKL080w *VMA5* H<sup>+</sup>-ATPase V1 domain 42K subunit, vacuolar

YPR036w *VMA13* H<sup>+</sup>-ATPase V1 domain 54K subunit, vacuolar  
 YBR127c *VMA2* H<sup>+</sup>-ATPase V1 domain 60K subunit, vacuolar  
 YDL185w *TFP1* H<sup>+</sup>-ATPase V1 domain 69K subunit, vacuolar  
 YFR019w *FAB1* probable PI P 5-kinase  
 YEL060c *PRB1* protease B, vacuolar  
 YDR481c *PHO8* repressible vacuolar alkaline phosphatase  
 YIL099w *SGA1* sporulation specific glucan 1,4-glucosidase  
 YOR036w *PEP12* syntaxin (T-SNARE)  
 YOR106w *VAM3* syntaxin related protein  
 YMR231w *PEP5* vacuolar biogenesis protein  
 YLR148w *PEP3* vacuolar membrane protein  
 YGL212w *VAM7* vacuolar morphogenesis protein  
 YJL053w *PEP8* vacuolar protein-sorting/targeting protein  
 YJL154c *VPS35* vacuolar protein-sorting protein  
 YDR323c *PEP7* vacuolar segregation protein  
 YPL045w *VPS16* vacuolar sorting protein  
 YDR495c *VPS3* vacuolar sorting protein  
 YLR396c *VPS33* vacuolar sorting protein  
 YPR173c *VPS4* vacuolar sorting protein

**other cellular organization and biogenesis activities**

YKL157w *APE2* aminopeptidase yscII  
 YIL015w *BAR1* barrier pepsin  
 YJL174w *KRE9* cell wall synthesis protein  
 YOR092c *PHO3* constitutive acid phosphatase  
 YLR286c *CTS1* endochitinase  
 YLR300w *EXG1* exo-1,3-glucanase (I/II), major isoform  
 YIR019c *STA1* extracellular  $\alpha$ -1,4-glucan glucosidase  
 YPL187w *Mfa1* mating pheromone  $\alpha$ -1 factor  
 YGL089c *Mfa2* mating pheromone  $\alpha$ -2 factor  
 YDR461w *Mfa1* mating pheromone a-factor 1  
 YNL145w *Mfa2* mating pheromone a-factor 2  
 YKL163w *PIR3* member of the Pir1p/Pir2p/Pir3p family  
 YBR093c *PHO5* repressible acid phosphatase  
 YKL164c *PIR1* required for tolerance to heat-shock  
 YML008c *ERG6* S-adenosyl-methionine  $\delta$ -24-sterol-c-methyltransferase  
 YAR071w *PHO11* secreted acid phosphatase  
 YHR215w *PHO12* secreted acid phosphatase  
 YNL160w *YGP1* secreted glycoprotein  
 YLR250w *SSP120* secretory protein  
 YBR046c *ZTA1* similarity to  $\zeta$ -crystallin  
 YMR215w similarity to GAS1 protein  
 YNL275w similarity to human band 3 anion transport protein  
 YIL162w *SUC2* sucrose hydrolyzing enzyme

**Signal transduction**

**pheromone response generation**

YDR264c *AKR1* ankyrin repeat-containing protein  
 YPL161c *BEM4* bud emergence protein  
 YCLO27w *FUS1* cell fusion protein  
 YNL053w *MSG5* dual-specificity protein phosphatase  
 YJL157c *FAR1* factor arrest protein  
 YAL041w *CDC24* GDP/GTP exchange factor for Cdc42p  
 YHR005c *GPA1* GTP-binding protein  $\alpha$  subunit of the pheromone pathway  
 YOR212w *STE4* GTP-binding protein  $\beta$  subunit of the pheromone pathway  
 YJR086w *STE18* GTP-binding protein  $\gamma$  subunit of the pheromone pathway  
 YLR229c *CDC42* GTP-binding protein of RAS superfamily  
 YNL173c *MDG1* GTP-binding protein of the pheromone pathway  
 YER020w *GPA2* guanine nucleotide-binding regulatory protein  
 YLR452c *SST2* involved in desensitization to  $\alpha$ -factor pheromone  
 YMR052w *FAR3* involved in pheromone-mediated cell cycle arrest  
 YDR461w *Mfa1* mating pheromone a-factor 1  
 YIL047c *SYG1* member of the major facilitator superfamily  
 YBL016w *FUS3* mitogen-activated protein kinase (MAP kinase)  
 YFL026w *STE2* pheromone  $\alpha$ -factor receptor  
 YKL178c *STE3* pheromone  $\alpha$ -factor receptor  
 YCLO32w *STE50* pheromone response pathway protein  
 YDR103w *STE5* pheromone signal transduction pathway protein  
 YGR040w *KSS1* ser/thr protein kinase of the MAP kinase family  
 YLR362w *STE11* ser/thr protein kinase of the MEKK family  
 YHL007c *STE20* ser/thr protein kinase of the pheromone pathway  
 YDL159w *STE7* ser/thr/tyr protein kinase of MAP kinase kinase family  
 YHR146w similarity to pheromone-response G-protein YNL173c  
 YHR084w *STE12* transcriptional activator

**morphogenesis**

YBR200w *BEM1* bud emergence mediator  
 YPL161c *BEM4* bud emergence protein  
 YBR109c *CMD1* calmodulin  
 YAL041w *CDC24* GDP/GTP exchange factor for Cdc42p  
 YGR070w *ROM1* GDP/GTP exchange protein for Rho1p

YLR371w *ROM2* GDP/GTP exchange protein for Rho1p  
 YPL116c *BEM3* GTPase-activating protein for Cdc42p and Rho1p  
 YLR229c *CDC42* GTP-binding protein of RAS superfamily  
 YPR165w *RHO1* GTP-binding protein of the RHO subfamily of RAS-like proteins  
 YNL090w *RHO2* GTP-binding protein of the RHO subfamily of RAS-like proteins  
 YPL106c *SSE1* heat-shock protein of HSP70 family  
 YOR149c *SMP3* protein kinase C pathway protein  
 YPL140c *MKK2* protein kinase of the MAP kinase kinase (MEK) family  
 YDL135c *RD1* RHO GDP dissociation inhibitor with activity towards Rho1p  
 YOR231w *MKK1* ser/thr protein kinase  
 YBL105c *PKC1* ser/thr protein kinase  
 YHR030c *SLT2* ser/thr protein kinase of MAP kinase family  
 YJL095w *BCK1* ser/thr protein kinase of the MEKK family  
 YER167w *BCK2* ser/thr protein kinase of the protein kinase C pathway  
 YOL113w *SKM1* Ste20p/PAK-like protein kinase  
 YGL106w strong similarity to calmodulins  
 YKL161c strong similarity to ser/thr-specific protein kinase Sit2p  
 YPL089c *RLM1* transcription factor of the MADS box family  
 YGL095c *VPS45* vacuolar protein sorting-associated protein

**osmosensing**

YDL022w *GPD1* glycerol-3-phosphate dehydrogenase (NAD<sup>+</sup>), cytoplasmic  
 YFL014w *HSP12* heat-shock protein  
 YER118c *SSU81* involved in the HOG1 high-osmolarity signal transduction pathway  
 YCR073c *SSK22* MAP kinase kinase kinase  
 YNR031c *SSK2* MAP kinase kinase kinase of the high-osmolarity signal transduction pathway  
 YDL006w *PTC1* protein ser/thr phosphatase 2c  
 YLR113w *HOG1* ser/thr protein kinase of MAP kinase (MAPK) family  
 YHR030c *SLT2* ser/thr protein kinase of MAP kinase family  
 YKL161c strong similarity to ser/thr-specific protein kinase Sit2p  
 YIL147c *SLN1* two-component signal transducer  
 YLR006c *SSK1* two-component signal transducer  
 YJL128c *PBS2* tyrosine protein kinase of the MAP kinase kinase family  
 YDR069c *DOA4* ubiquitin-specific protease

**nutritional response**

YJL005w *CYR1* adenylate cyclase  
 YLR178c *TF1* cdc25-dependent nutrient- and ammonia-response cell-cycle regulator  
 YBR195c *MSI1* chromatin assembly complex, subunit p50  
 YLL016w *SDC25* GDP/GTP exchange factor  
 YLR310c *CDC25* GDP/GTP exchange factor for Ras1p and Ras2p  
 YOR101w *RAS1* GTP-binding protein  
 YNL098c *RAS2* GTP-binding protein  
 YER020w *GPA2* guanine nucleotide-binding regulatory protein  
 YPL106c *SSE1* heat-shock protein of HSP70 family  
 YBR140c *IRA1* inhibitory regulator protein of the RAS-cyclic AMP pathway  
 YIL119c *RPI1* negative regulator of RAS-cAMP pathway  
 YIR026c *YVH1* protein tyrosine phosphatase  
 YOR208w *PTP2* protein tyrosine-phosphatase  
 YOL110w *SHR5* RAS suppressor  
 YPL084w *BRO1* required for normal response to nutrient limitation  
 YLR362w *STE11* ser/thr protein kinase of the MEKK family  
 YDL159w *STE7* ser/thr/tyr protein kinase of MAP kinase kinase family  
 YHR084w *STE12* transcriptional activator

**other signal-transduction activities**

YPL268w *PLC1* 1-phosphatidylinositol-4,5-bisphosphate phosphodiesterase  
 YNL138w *SRV2* adenylate cyclase-associated protein, 70K  
 YFR014c *CMK1* Ca<sup>2+</sup>/calmodulin-dependent ser/thr protein kinase, type I  
 YOL016c *CMK2* Ca<sup>2+</sup>/calmodulin-dependent ser/thr protein kinase, type II  
 YPL203w *TPK2* cAMP-dependent protein kinase 2, catalytic subunit  
 YKL166c *TPK3* cAMP-dependent protein kinase 3, catalytic subunit  
 YJL164c *SRA3* cAMP-dependent protein kinase, catalytic subunit 1  
 YMR028w *TAP42* component of the Tor signalling pathway  
 YML064c *TEM1* GTP-binding protein of the RAS superfamily  
 YJL146w *IDS2* IME2-dependent signalling protein  
 YJR066w *TOR1* phosphatidylinositol 3-kinase  
 YKL203c *TOR2* phosphatidylinositol 3-kinase  
 YLR240w *VPS34* phosphatidylinositol 3-kinase  
 YNL267w *PIK1* phosphatidylinositol 4-kinase  
 YNL106c *PIE3* phosphatidylinositol phosphate phosphatase  
 YLR305c *STT4* phosphatidylinositol-4-kinase  
 YDL101c protein kinase



YHR079c *IRE1* protein kinase  
 YMR016c *SOK2* regulatory protein in the PKA signal transduction pathway  
 YGR216c *GPI1* required for N-acetylglucosaminyl phosphatidylinositol synthesis  
 YPL153c *SPK1* ser/thr/tyr protein kinase  
 YHR046c similarity to bovine myo-inositol-1(or 4)-monophosphatase  
 YBR260c similarity to *C. elegans* GTPase-activating protein  
 YGR136w similarity to chicken growth factor receptor-binding protein GRB2 homologue  
 YDR379w similarity to Dbm1p  
 YDR208w *MSS4* similarity to human PI P 5-kinase  
 YCR027c similarity to human Ras-related GTP-binding protein  
 YDR287w similarity to inositol monophosphatase  
 YLR150w *MPT4* specific affinity for guanine-rich quadruplex nucleic acids  
 YPR054w *SMK1* sporulation-specific MAP kinase  
 YNL132w strong similarity to *A. ambisexualis* antheridial steroid receptor  
 YHR206w *SKN7* transcription factor with similarity to Hsf1p

**Cell rescue**

**stress response generation**

YFR052w *NIN1* 26S proteasome regulatory subunit  
 YIL075w *SEN3* 26S proteasome regulatory subunit  
 YDR074c *TPS2*  $\alpha,\alpha$ -trehalose-phosphate synthase, 105K subunit  
 YBR126c *TPS1*  $\alpha,\alpha$ -trehalose-phosphate synthase, 56K subunit  
 YPR026w *ATH1* acid trehalase, vacuolar  
 YIL033c *SRA1* cAMP dependent protein kinase, regulatory subunit  
 YDR477w *SNF1* carbon catabolite derepressing ser/thr protein kinase  
 YHR135c *YCK1* casein kinase I isoform  
 YNL154c *YCK2* casein kinase I isoform  
 YGR088w *CTT1* catalase T, cytosolic  
 YDR251w *PAM1* coiled-coil protein multicopy suppressor of loss of PP2A  
 YOR010c *TIR2* cold shock induced protein  
 YER011w *TIR1* cold-shock induced protein of the Tir1p, Tip1p family  
 YDR155c *CPH1* cyclophilin (peptidylprolyl isomerase)  
 YEL039c *CYC7* cytochrome c isoform 2  
 YER062c *HOR2* DL-glycerol phosphatase  
 YDR263c *DIN7* DNA damage inducible protein  
 YGL021w *ALK1* DNA damage-responsive protein  
 YAL015c *NTG1* DNA repair protein  
 YDR519w *FKB2* FK506/rapamycin-binding protein of the ER  
 YGR234w *YHB1* flavohemoglobin  
 YIR037w *HYR1* glutathione peroxidase  
 YLL043w *FPS1* glycerol channel protein  
 YNL098c *RAS2* GTP-binding protein  
 YHR064c heat-shock protein  
 YMR173w *DDR48* heat-shock protein  
 YOL052c-a *DDRA2* heat-shock protein  
 YMR186w *HSC92* heat-shock protein  
 YLL026w *HSP104* heat-shock protein  
 YFL014w *HSP12* heat-shock protein  
 YBR072w *HSP26* heat-shock protein  
 YCR021c *HSP30* heat-shock protein  
 YPL240c *HSP82* heat-shock protein  
 YFL016c *MDJ1* heat-shock protein - chaperone  
 YLR259c *HSP60* heat-shock protein - chaperone, mitochondrial  
 YJR045c *SSC1* heat-shock protein 70-related protein, mitochondrial  
 YDR258c *HSP78* heat-shock protein of clpB family of ATP-dependent proteases, mitochondrial  
 YEL030w heat-shock protein of HSP70 family  
 YAL005c *SSA1* heat-shock protein of HSP70 family  
 YER103w *SSA4* heat-shock protein of HSP70 family  
 YPL106c *SSE1* heat-shock protein of HSP70 family  
 YLL024c *SSA2* heat-shock protein of HSP70 family, cytosolic  
 YBL075c *SSA3* heat-shock protein of HSP70 family, cytosolic  
 YBR169c *SSE2* heat-shock protein of the HSP70 family  
 YGL073w *HSF1* heat-shock transcription factor  
 YMR251w-a *HOR7* hyperosmolarity-responsive protein  
 YMR273c *ZDS1* involved in negative regulation of cell polarity  
 YER118c *SSU81* involved in the *HOG1* high-osmolarity signal transduction pathway  
 YDR293c *SSD1* involved in the tolerance to high concentration of Ca<sup>2+</sup>  
 YKL143w *LTV1* low-temperature viability protein  
 YGR100w *MIC1* Mac1p interacting protein  
 YCR073c *SSK22* MAP kinase kinase kinase  
 YNR031c *SSK2* MAP kinase kinase kinase of the high-osmolarity signal transduction pathway  
 YIL158c member of the Pir1p/Hsp150p/Pir3p family  
 YIL159w member of the Pir1p/Hsp150p/Pir3p family  
 YIL160c member of the Pir1p/Hsp150p/Pir3p family  
 YKL163w *PIR3* member of the Pir1p/Pir2p/Pir3p family  
 YMR021c *MAC1* metal binding activator  
 YNL064c *YDJ1* mitochondrial and ER import protein

YGL178w *MPT5* multicopy suppressor of *pop2*  
 YGR159c *NSR1* nuclear localization sequence binding protein  
 YGL115w *SNF4* nuclear regulatory protein  
 YJR051w *OSM1* osmotic growth protein  
 YMR175w *SIP18* osmotic stress protein  
 YBR070c *SAT2* osmotolerance protein  
 YHR057c *CYP2* peptidyl-prolyl *cis-trans* isomerase  
 YOR014w *RTS1* potential regulatory subunit of protein phosphatase 2A  
 YMR174c *PAI3* protease A (*ysca*) inhibitor IA3  
 YHR079c *IRE1* protein kinase  
 YPL140c *MKK2* protein kinase of the MAP kinase kinase (MEK) family  
 YOL064c *MET22* protein ser/thr phosphatase  
 YDL006w *PTC1* protein ser/thr phosphatase 2c  
 YDR436w *PP22* protein ser/thr phosphatase of the PP-1 family  
 YOR208w *PTP2* protein-tyrosine-phosphatase  
 YJR090c *GRR1* required for glucose repression and for glucose and cation transport  
 YPL084w *BRO1* required for normal response to nutrient limitation  
 YKL164c *PIR1* required for tolerance to heat-shock  
 YPR005c *HAL1* salt-induced protein  
 YNL160w *YGP1* secreted glycoprotein  
 YGL190c *CDC55* ser/thr phosphatase 2A regulatory subunit B  
 YML016c *PPZ1* ser/thr phosphatase required for normal osmoregulation  
 YJL165c *HAL5* ser/thr protein kinase  
 YOR231w *MKK1* ser/thr protein kinase  
 YDR105c *PKC1* ser/thr protein kinase  
 YLR113w *HOG1* ser/thr protein kinase of MAP kinase (MAPK) family  
 YHR030c *SLT2* ser/thr protein kinase of MAP kinase family  
 YDL025c ser/thr protein kinase of the DEAD/DEAH box family  
 YJL095w *BCK1* ser/thr protein kinase of the MEKK family  
 YER167w *BCK2* ser/thr protein kinase of the protein kinase C pathway  
 YDR227w *SIR4* silencing regulatory protein  
 YKL088w similarity to *C. tropicalis* hal3 protein, to C-term. of Sis2p and to hypothetical protein YOR054c  
 YBR044c similarity to chaperonin HSP60 proteins  
 YJR147w similarity to heat-shock transcription factors  
 YGR249w *MGA1* similarity to heat-shock transcription factors  
 YBR054w *YRO2* similarity to HSP30 heat-shock protein Yro1p  
 YAR020c similarity to members of the Srp1p/Tip1p family  
 YCR008w *SAT4* similarity to Npr1p and Hal5p protein kinases  
 YOR009w similarity to SRP1 and TIR2 proteins  
 YCR060w similarity to stress inducible protein Sti1p  
 YMR037c stress responsive regulatory protein  
 YOR027w *STI1* stress-induced protein  
 YBL009w strong similarity to DNA damage responsive Alk1p  
 YLR369w strong similarity to heat-shock protein 70-related proteins  
 YHL046c strong similarity to members of the Srp1p/Tip1p family  
 YIL011w strong similarity to members of the Srp1p/Tip1p family  
 YOL161c strong similarity to members of the Srp1p/Tip1p family  
 YJL223c *PAU1* strong similarity to members of the Srp1p/Tip1p family  
 YEL049w *PAU2* strong similarity to members of the Srp1p/Tip1p family  
 YCR104w *PAU3* strong similarity to members of the Srp1p/Tip1p family  
 YFL020c *PAU5* strong similarity to members of the Srp1p/Tip1p family  
 YLR461w *PAU4* strong similarity to members of the Srp1p/Tip1p family  
 YNR076w *PAU6* strong similarity to members of the Srp1p/Tip1p family  
 YDR033w strong similarity to putative heat-shock protein Yro2p  
 YKL161c strong similarity to ser/thr-specific protein kinase Shi2p  
 YOR054c strong similarity to Sis2 protein and *C. tropicalis* hal3 protein  
 YBR067c *TIP1* temp.shock induced protein of the Srp1p/Tip1p family  
 YGR144w *THI4* thiamine-repressed protein  
 YBL093c *ROX3* transcription factor  
 YGL181w *GTS1* transcription factor of the Gcs1p/Glo3p/Sps18p family  
 YMR043w *MCM1* transcription factor of the MADS box family  
 YHR206w *SKN7* transcription factor with similarity to Hsf1p  
 YKL062w *MSN4* transcriptional activator  
 YML007w *YAP1* transcriptional activator involved in oxidative stress response  
 YIL147c *SLN1* two-component signal transducer  
 YLR006c *SSK1* two-component signal transducer  
 YJL128c *PBS2* tyrosine protein kinase of the MAP kinase kinase family  
 YLL039c *UBI4* ubiquitin  
 YMR022w *QR18* ubiquitin-conjugating enzyme  
 YBR082c *UBC4* ubiquitin-conjugating enzyme

YDR059c *UBC5* ubiquitin-conjugating enzyme  
 YER125w *RSP5* ubiquitin-protein ligase  
 YKL210w *UBA1* ubiquitin-protein ligase  
**DNA repair (direct repair, base excision repair and nucleotide excision repair)**  
 YER142c *MAG1* 3-methyladenine DNA glycosylase  
 YML060w *OGG1* 8-oxoguanine DNA glycosylase  
 YKL114c *APN1* AP endonuclease  
 YJL092w *HPR5* ATP-dependent DNA helicase  
 YPL204w *HRR25* casein kinase I, ser/thr/tyr protein kinase  
 YPL022w *RAD1* component of the nucleotide excision repairosome  
 YDL108w *KIN28* cyclin-dependent ser/thr protein kinase  
 YOR386w *PHR1* deoxyribodipyrimidine photo-lyase  
 YOR368w *RAD17* DNA damage checkpoint control protein  
 YER176w DNA dependent ATPase/DNA helicase B  
 YLR032w *RAD5* DNA helicase  
 YIL143c *SSL2* DNA helicase  
 YML061c *PIF1* DNA helicase involved in mitochondrial DNA repair and telomere length  
 YER171w *RAD3* DNA helicase/ATPase  
 YDL164c *CDC9* DNA ligase  
 YEL019c *MMS21* DNA repair protein  
 YAL015c *NTG1* DNA repair protein  
 YMR137c *PSO2* DNA repair protein  
 YML095c *RAD10* DNA repair protein  
 YCR066w *RAD18* DNA repair protein  
 YER095w *RAD51* DNA repair protein  
 YDR076w *RAD55* DNA repair protein  
 YDR004w *RAD57* DNA repair protein  
 YOR346w *REV1* DNA repair protein  
 YDR369c *XRS2* DNA repair protein  
 YGL163c *RAD54* DNA-dependent ATPase of the Snf2p family  
 YDL102w *CDC2* DNA-directed DNA polymerase  $\delta$ , catalytic 125K subunit  
 YFR023w *PES4* DNA-directed DNA polymerase  $\epsilon$  suppressor  
 YNL262w *POL2* DNA-directed DNA polymerase  $\epsilon$ , catalytic subunit A  
 YPL167c *REV3* DNA-directed DNA polymerase  $\zeta$   
 YKR056w *RNC1* endo-exonuclease  
 YOL043c *NTG2* endonuclease III-like glycosylase 2  
 YER162c *RAD4* excision repair protein  
 YLR288c *MEC3* G2-specific checkpoint protein  
 YFL014w *HSP12* heat-shock protein  
 YIL128w *MMS19* involved in repair and RNA polymerase transcription  
 YMR035w *IMP2* mitochondrial inner membrane protease subunit  
 YKR095w *MLP1* myosin-like protein related to Uso1p  
 YMR201c *RAD14* nucleotide excision repair protein  
 YBR114w *RAD16* nucleotide excision repair protein  
 YEL037c *RAD23* nucleotide excision repair protein  
 YJR052w *RAD7* nucleotide excision repair protein  
 YDL200c *MGT1* O6-methylguanine DNA repair methyltransferase  
 YDL101c *DUN1* protein kinase  
 YML032c *RAD52* recombination and DNA repair protein  
 YIL139c *REV7* required for DNA damage induced mutagenesis  
 YBR073w *RDH54* required for meiosis  
 YIL066c *RNF3* ribonucleotide reductase, repair inducible large subunit  
 YPL153c *SPK1* ser/thr/tyr protein kinase  
 YDR061w similarity to *E. coli* deoxyribodipyrimidine photolyase  
 YAL019w *FUN30* similarity to helicases of the Snf2/Rad54 family  
 YLR035c similarity to human mutL protein homologue  
 YPR056w similarity to human transcription factor BTF2/TFIIH subunit p34  
 YFR038w strong similarity to mouse lymphocyte specific helicase  
 YOR206w strong similarity to Rad4p  
 YGR258c *RAD2* structure-specific nuclease of the nucleotide excision repairosome  
 YDL088c *ASM4* suppressor of temperature-sensitive mutations in Pol3p  
 YDR311w *TFB1* TFIIH subunit (transcription initiation factor), 75K  
 YPR025c *CCL1* TFIIH subunit (transcription initiation factor), cyclin C component  
 YLR005w *SSL1* TFIIH subunit (transcription initiation factor), factor B  
 YPL122c *TFB2* TFIIH subunit (transcription/repair factor)  
 YDR460w *TFB3* TFIIH subunit (transcription/repair factor)  
 YGL058w *RAD6* ubiquitin-conjugating enzyme  
**detoxification**  
 YOL052c *SPE2* adenosylmethionine decarboxylase  
 YFL050c *ALR2* aluminum resistance protein  
 YML116w *ATR1* aminotriazole and 4-nitroquinoline resistance protein  
 YNL259c *ATX1* antioxidant protein and metal homeostasis factor  
 YLR398c *SK12* antiviral protein and putative helicase  
 YKL004w *AUR1* aureobasidin-resistance protein  
 YDR256c *CTA1* catalase A, peroxisomal  
 YGR088w *CTT1* catalase T, cytosolic  
 YJR104c *SOD1* copper-zinc superoxide dismutase  
 YKR066c *CCP1* cytochrome c peroxidase  
 YPR198w *SGE1* drug resistance protein  
 YJL101c *GSH1* glutamate-cysteine ligase

YDR513w *TRT1* glutaredoxin  
 YPL091w *GLR1* glutathione reductase (NADPH)  
 YDR135c *YCF1* glutathione S-conjugate transporter, vacuolar

YGR197c *SNG1* involved in nitroguanidine resistance  
 YDL168w *SFA1* long-chain alcohol dehydrogenase  
 YCR023c member of major facilitator superfamily multidrug-resistance protein family 2

YNR055c *HOL1* member of major facilitator superfamily multidrug-resistance protein subfamily 1

YHR053c *CUP1A* metallothionein  
 YHR055c *CUP1B* metallothionein  
 YOR079c *ATX2* multicopy suppressor of SOD-linked defects

YDR011w *SNQ2* multidrug resistance protein  
 YHR042w *NCP1* NADPH-cytochrome P450 reductase  
 YOR018w *ROD1* O-dinitrobenzene, calcium and zinc resistance protein

YKL064w *MNR2* overexpression overcomes manganese toxicity

YOR266w *PNT1* pentamidine resistance factor  
 YDR538w *PAD1* phenylacrylic acid decarboxylase  
 YOR153w *PDR5* pleiotropic drug resistance protein  
 YBL005w *PDR3* pleiotropic drug resistance regulatory protein

YGL016w *PDR6* pleiotropic drug resistance regulatory protein

YIL120w similarity to antibiotic resistance proteins  
 YIL121w similarity to antibiotic resistance proteins  
 YLR299w similarity to *B. subtilis*  $\gamma$ -glutamyltransferase

YHL040c similarity to *C. carbonum* toxin pump  
 YHL047c similarity to *C. carbonum* toxin pump  
 YBR180w similarity to drug resistance proteins  
 YDL100c similarity to *E. coli* arsenical pump-driving ATPase

YLL015w similarity to metal resistance proteins  
 YBR293w similarity to multidrug resistance proteins  
 YGR138c similarity to multidrug resistance proteins  
 YHR048w similarity to multidrug resistance proteins  
 YKR103w similarity to multidrug resistance proteins  
 YKR104w similarity to multidrug resistance proteins  
 YLL028w similarity to multidrug resistance proteins  
 YPR156c similarity to multidrug resistance proteins  
 YOR273c similarity to resistance proteins  
 YOR251c similarity to thiosulphate sulphurtransferases

YOR247w similarity to vanadate-sensitive suppressor Sys1p  
 YJR025c strong similarity to 3-hydroxyanthranilate 3,4-dioxygenase

YOL130w strong similarity to Alr2p  
 YMR279c strong similarity to aminotriazole resistance protein

YOR378w strong similarity to aminotriazole resistance protein

YBR008c strong similarity to benomyl/methotrexate resistance protein

YCL069w strong similarity to drug resistance protein SGE1

YKL026c strong similarity to glutathione peroxidase  
 YBR244w strong similarity to glutathione peroxidases

YKL033w-a strong similarity to halacid-halidohydrolase

YFR022w strong similarity to Rod1p  
 YLR046c strong similarity to Rta1p and Rtm1p protein

YER185w strong similarity to Rtm1p  
 YKR105c strong similarity to Sge1p and hypothetical protein YCL069w

YJR015w strong similarity to Sng1p  
 YNR070w strong similarity to Snq2p  
 YBL064c strong similarity to thiol-specific antioxidant enzyme

YDR453c strong similarity to thiol-specific antioxidant protein

YGL254w *FZF1* sulphite resistance protein  
 YPL092w *SSU1* sulphite sensitivity protein  
 YHR008c *SOD2* superoxide dismutase (Mn), mitochondrial  
 YOR031w *CRS5* suppressor of *cup1* deletion, metallothionein-like protein

YML028w *TSA1* thiol-specific antioxidant  
 YLR043c *TRX1* thioredoxin I  
 YGR209c *TRX2* thioredoxin II  
 YGL013c *PDR1* transcription factor  
 YMR043w *MCM1* transcription factor of the MADS box family

YDR423c *CAD1* transcriptional activator  
 YPL163c *SVS1* vanadate sensitive suppressor  
 YLL060c weak similarity to glutathione transferase  
 YMR243c *ZRC1* zinc- and cadmium resistance protein

## detoxification involving cytochrome P450

YMR015c *ERG5* C-22 sterol desaturase  
 YDR402c *DIT2* cytochrome P450 56  
 YHR007c *ERG11* cytochrome P450 lanosterol 14 $\alpha$ -demethylase

YLL057c similarity to *E. coli* dioxygenase  
 YDR403w *DIT1* spore wall maturation protein

## cell death and ageing

YOR101w *RAS1* GTP-binding protein  
 YNL098c *RAS2* GTP-binding protein  
 YOL025w *LAG2* involved in determining longevity  
 YJL116c *NCA3* involved in regulation of synthesis of Atp6p and Atp8p

YNL066w *SUN4* involved in the ageing process  
 YKR042w *UTH1* involved in the ageing process  
 YHL003c *LAG1* longevity-assurance protein  
 YER167w *BCK2* ser/thr protein kinase of the protein kinase C pathway

YDR227w *SIR4* silencing regulatory protein  
 YKL008c strong similarity to Lag1p  
 YIL123w strong similarity to Sun4p, Nca3p

## degradation of exogenous polynucleotides

YGL213c *SKI8* antiviral protein of the  $\beta$ -transducin (WD-40) repeat family

## other cell-rescue activities

YPR189w *SKI3* antiviral protein  
 YJR069c *HAM1* controls 6-N-hydroxyaminopurine sensitivity and mutagenesis

YGR213c *RTA1* involved in 7-aminocholesterol resistance  
 YKL110c *KT12* involved in resistance to *K. lactis* killer toxin

YER076c similarity to killer toxin Khrlp  
 YER187w similarity to killer toxin KHS

## Unclassified proteins

YEL052w *AFG1* ATPase family gene  
 YDR184c *BAT1* binds Aip3p

YCR072c  $\beta$ -transducin family (WD-40 repeat) protein  
 YLR459w *CDC91* cell division control protein  
 YJL079c *PRY1* contains homology to the plant PR-1 class of pathogen related proteins

YKR013w *PRY2* contains homology to the plant PR-1 class of pathogen related proteins  
 YJL078c *PRY3* contains homology to the plant PR-1 class of pathogen related proteins

YOR302w *CPA1-1* CPA1 leader peptide  
 YML113w *DAT1* datin, oligo(dA)/oligo(dT)-binding protein  
 YKL020c *SPT23* dosage-dependent suppressor of Ty-induced promotor mutations

YJL168c *EZL1* enhancer of zeste-like  
 YOR123c *LEO1* extremely hydrophilic protein  
 YLL065w *GIN11* growth inhibitory protein  
 YDL213c has an RNA recognition domain in the N-terminal region

YDR505c *PSP1* high copy suppressor of ts of mutations in DNA polymerase  $\alpha$

YNL087w homology to YOR086c  
 YLR161w identical to hypothetical proteins YLR156w and YLR161w

YLR156w identical to hypothetical proteins YLR159w and YLR161w

YLR159w identical to hypothetical proteins YLR161w and YLR156w

YHR212c identical with hypothetical protein YAR060c

YHR214w identical with hypothetical protein YAR066w

YAR066w identical with hypothetical protein YIL169c  
 YCR020c-a *MAK31* involved in stability of L-A dsRNA-containing particles

YPL049c *DIG1* MAP kinase-associated protein, down-regulator of invasive growth

YKL034w member of Kazal serine protease inhibitors family

YLR397c *AFG2* member of the Sec18p, Pas1p, Cdc48p, TBP-1 family of ATPases

YCR007c member of the YBR302c family

YGL036w *MTC2* Mtf1 two hybrid clone 2  
 YMR200w *ROT1* mutant suppresses *tor2* mutation  
 YAL059w *SIM1* mutants are hypersensitive to calcofluor white

YCR019w *MAK32* necessary for structural stability of L-A dsRNA-containing particles

YNL061w *NOP2* nucleolar protein  
 YFR011c ochre suppressor tyr-tRNA  
 YLR196w *PWP1* periodic tryptophan protein  
 YDL235c *YPD1* phosphorelay intermediate between Sln1p and Ssk1p

YOR014w *RTS1* potential regulatory subunit of protein phosphatase 2A

YOR181w *LAS17* proline-rich protein  
 YER129w *PAK1* protein kinase

YOR223w protein of unknown function  
 YHR093w *AHT1* protein of unknown function  
 YDL167c *ARP1* protein of unknown function  
 YHR191c *CTF8* protein of unknown function  
 YAL008w *FUN14* protein of unknown function  
 YAR002w *FUN17* protein of unknown function  
 YAR014c *FUN2* protein of unknown function  
 YAL031c *FUN21* protein of unknown function  
 YAL014c *FUN34* protein of unknown function  
 YAR008w *FUN4* protein of unknown function  
 YAL033w *FUN53* protein of unknown function  
 YDL234c *GYP7* protein of unknown function  
 YPL054w *LEE1* protein of unknown function  
 YDR335w *MSN5* protein of unknown function  
 YIR006c *PAN1* protein of unknown function  
 YDL105w *QRI2* protein of unknown function  
 YLR204w *QRI5* protein of unknown function  
 YLL003w *SFI1* protein of unknown function  
 YDR350c *TCM10* protein of unknown function  
 YDL169c *UGX2* protein of unknown function  
 YJR050w *UTR3* protein of unknown function  
 YEL035c *UTR5* protein of unknown function

YJR067c *YAE1* protein of unknown function  
 YGR172c *YIP1* protein of unknown function  
 YNL044w *YIP3* protein of unknown function  
 YBR111c *YSA1* protein of unknown function  
 YGR123c *PPT1* protein ser/thr phosphatase  
 YDL230w *PTP1* protein tyrosine phosphatase  
 YER075c *PTP3* protein tyrosine phosphatase  
 YPR073c *LTP1* putative phosphatase  
 YNL128w regulatory protein of the  $\beta$ -transducin family  
 YCL039w

YJR055w *HIT1* required for growth at high temperature  
 YNL085w *MKT1* required for propagation of M2 dsRNA satellite of L-A virus

YLL046c *RNP1* ribonucleoprotein  
 YOR046c *DBP5* RNA helicase

YDR466w ser/thr protein kinase  
 YDR490c ser/thr protein kinase  
 YGL179c ser/thr protein kinase  
 YGL180w ser/thr protein kinase  
 YKL168c ser/thr protein kinase  
 YKL171w ser/thr protein kinase  
 YLR063w ser/thr protein kinase  
 YMR291w ser/thr protein kinase  
 YNL161w ser/thr protein kinase  
 YOL045w ser/thr protein kinase  
 YOL100w ser/thr protein kinase

YAR018c *KIN3* ser/thr protein kinase  
 YOR233w *KIN4* ser/thr protein kinase  
 YCR091w *KIN82* ser/thr protein kinase  
 YLL019c *KNS1* ser/thr protein kinase  
 YHR082c *KSP1* ser/thr protein kinase  
 YDL079c *MRK1* ser/thr protein kinase with similarity to Npr1p

YMR216c ser/thr protein kinase with similarity to *S. pombe* dsk1  
 YKL116c ser/thr protein kinase with similarity to *S. pombe* nim1 protein

YBL056w *PTC3* ser/thr protein phosphatase PP2C  
 YDR507c *GIN4* ser/thr protein kinase  
 YKL126w *YPK1* ser/thr-specific protein kinase

YOR007c similarities to protein phosphatases  
 YOR119c similarity to a *C. elegans* ZK632.3 protein  
 YLR405w similarity to *A. brasiliense* nifR3 protein  
 YML079w similarity to *A. brasiliense* nifR3 protein  
 YML080w similarity to *A. eutrophus* cation efflux system membrane protein czdC, rat zinc transport protein ZnT1 and Cot1p  
 YDR205w similarity to *A. klebsiana* glutamate dehydrogenase

YDL228c similarity to *A. thaliana* hyp1 protein  
 YLL005c similarity to *A. thaliana* hyp1 protein  
 YMR266w similarity to *A. thaliana* hyp1 protein  
 YOL084w similarity to *A. thaliana* PRL1 protein  
 YNL317w similarity to a-agglutinin core protein  
 YOL105c AGA1 and mucin proteins

YPL252c similarity to adrenodoxin and ferredoxin  
 YMR110c similarity to aldehyde dehydrogenase  
 YIL112w similarity to ankyrin and coiled-coil proteins

YLR064w similarity to *Anopheles* NADH-ubiquinone oxidoreductase, subunit 4

YMR153w similarity to Asm4p  
 YDR349c similarity to aspartyl proteases  
 YDR072c similarity to Aur1p  
 YMR305c similarity to *B. japonicum* putative  $\beta$ -(6)-glucan transferase

YDR291w similarity to *B. subtilis* helicases  
 YPR201w similarity to *B. subtilis* hypothetical protein  
 YPR002w similarity to *B. subtilis* mngE protein  
 YPL258c similarity to *B. subtilis* transcriptional activator tenA, and strong similarity to hypothetical proteins YOL055c and YPR121w

YPR121w similarity to *B. subtilis* transcriptional activator tenA, strong similarity to hypothetical proteins YPL258c and YOL055c

YIL159w similarity to BNI1 protein  
 YDL119c similarity to bovine Graves disease carrier protein

YNR068c similarity to Bul1p  
 YNL218w similarity to *C. burnetii* trxB, spoIIIE and serS genes

YCR102c similarity to *C. carbonum* toxD gene  
 YNL134c similarity to *C. carbonum* toxD gene  
 YJR013w similarity to *C. elegans* B0493.1 protein  
 YPR040w similarity to *C. elegans* C02C2.6 protein  
 YGR257c similarity to *C. elegans* C16C10.1  
 YGR054w similarity to *C. elegans* E04D5.1 protein  
 YMR012w similarity to *C. elegans* hypothetical 139.9K protein F55H2.6

YLR022c similarity to *C. elegans* hypothetical protein

YNL127w similarity to *C. elegans* hypothetical protein

YKL095w *YJU2* similarity to *C. elegans* hypothetical protein

YML014w similarity to *C. elegans* hypothetical protein C14B1.5

YKL099c similarity to *C. elegans* hypothetical protein C16C10.2

YEL004w similarity to *C. elegans* hypothetical protein C53B4.6

YHL030w similarity to *C. elegans* hypothetical protein D2045.2



YKR078w	similarity to hypothetical protein YOR069w	YNL006w	similarity to Met30p	YGL164c	similarity to <i>S. pombe</i> hypothetical protein SPAC31A2.10
YHR194w	similarity to hypothetical protein YOR147w	YNL293w	similarity to Mic1p and human transforming protein tre-2, and strong similarity to hypothetical protein YOL112w	YPL236c	similarity to <i>S. pombe</i> hypothetical protein SPAC3H1.13
YAL028w	similarity to hypothetical protein YOR324c	YNR047w	similarity to microtubule-associated ser/thr protein kinases	YAL032c	<i>FUN20</i> similarity to <i>S. pombe</i> hypothetical protein SPAC8A4.06
YLR361c	similarity to hypothetical protein YOR3329c	YPL137c	similarity to microtubule-interacting protein Mhp1p and to hypothetical protein YOR227w	YEL007w	similarity to <i>S. pombe</i> pac2 protein
YAL034c	<i>FUN19</i> similarity to hypothetical protein YOR338w	YIL151c	similarity to mitochondrial aldehyde dehydrogenase Ald1p	YLR247c	similarity to <i>S. pombe</i> rad8 protein
YAL056w	similarity to hypothetical protein YOR371c	YGR058w	similarity to mouse calcium-binding protein	YJL062w	similarity to <i>S. pombe</i> SPAC13G6.3 protein
YFR021w	similarity to hypothetical protein YPL100w	YBL047c	similarity to mouse eps15R protein	YHR009c	similarity to <i>S. pombe</i> YAM3 protein
YML117w	similarity to hypothetical protein YPL184c	YLR200w	similarity to mouse Tbc2 protein	YBL051c	similarity to <i>S. pombe</i> Z66568.C protein
YGL133w	similarity to hypothetical protein YPL216w	YLO23c	similarity to mouse MHC H-2K/t-w5-linked ORF	YOR240w	similarity to <i>S. pombe</i> ZK1058.5 protein
YGL134w	similarity to hypothetical protein YPL219w	YCR033w	similarity to mouse nuclear receptor co-repressor N-Cor	YPL150w	similarity to ser/thr kinases
YMR180c	similarity to hypothetical protein YPL228w	YER030w	similarity to mouse nucleolin	YGR052w	similarity to ser/thr protein kinases
YMR181c	similarity to hypothetical protein YPL229w	YDR060w	similarity to mouse putative CCAAT binding factor 1	YAL017w	<i>FUN31</i> similarity to ser/thr protein kinases
YJR116w	similarity to hypothetical protein YPR114w	YBR187w	similarity to mouse putative transmembrane protein FT27	YOR090c	similarity to ser/thr protein phosphatases
YLR454w	similarity to hypothetical protein YPR117w	YGR284c	similarity to mouse Surf-4 protein	YBR059c	similarity to ser/thr-specific protein kinase Pak1p
YLO27c	similarity to hypothetical protein YPR125w	YGR127w	similarity to mouse T10 protein	YBR274w	similarity to ser/thr-specific protein kinases
YGR142w	similarity to hypothetical protein YPR158w	YMR192w	similarity to mouse Tbc1 protein	YLR118c	similarity to several esterases
YOL048c	similarity to hypothetical proteins YAL018c and YOL047c	YPL249c	similarity to mouse TEG-261 protein	YMR077c	similarity to SNF7 protein
YOL047c	similarity to hypothetical proteins YAL018c and YOL048c	YDR109c	similarity to MPA43p	YLR313c	similarity to SPA2 protein
YMR210w	similarity to hypothetical proteins YBR177c and YPL095c	YLO38c	similarity to mucin proteins	YIR033w	similarity to Spt23p
YML052w	similarity to hypothetical proteins YDL222c and YNL194c	YER085c	similarity to myosins	YBL109w	similarity to subtelomeric encoded proteins
YLR246w	similarity to hypothetical proteins YDR126w, YNL326c and YOL003c	YJL112w	similarity to <i>N. crassa</i> sulphur controller-2	YEL074w	similarity to subtelomeric encoded proteins
YER072w	similarity to hypothetical proteins YFL004w and YPL019c	YDR395w	similarity to NMD and CSE1 proteins	YGL263w	similarity to subtelomeric encoded proteins
YLR072w	similarity to hypothetical proteins YFL042c, YFL043c, YDR326c and YHR080c	YPR072w	similarity to N-terminal part of Cdc39p	YHL042w	similarity to subtelomeric encoded proteins
YGL028c	similarity to hypothetical proteins YGR279c and YMR305c	YBL024w	similarity to nucleolar Nop2p	YHL043w	similarity to subtelomeric encoded proteins
YFL042c	similarity to hypothetical proteins YHR080c, YDR326c and YLR072w	YDR071c	similarity to <i>O. aries</i> arylalkylamine N-acetyltransferase	YHL044w	similarity to subtelomeric encoded proteins
YNL097c	similarity to hypothetical proteins YHR090c and YHR090c	YOL164w	similarity to <i>P. aeruginosa</i> alkyl sulphatase	YIL177c	similarity to subtelomeric encoded proteins
YJR061w	similarity to hypothetical proteins YKL200c and YKL201c	YMR099c	similarity to <i>P. ciliare</i> possible apospory-associated protein	YKL219w	similarity to subtelomeric encoded proteins
YMR313c	similarity to hypothetical proteins YKR089c and YOR081c	YNR029c	similarity to <i>P. denitrificans</i> cobW protein	YMR326c	similarity to subtelomeric encoded proteins
YOL019w	similarity to hypothetical proteins YMR063w and YFR012w	YDR472w	similarity to <i>P. falciparum</i> 41-2 protein antigen	YLR177w	similarity to suppressor protein Gin5p
YPR027c	similarity to hypothetical proteins YNL019c and YNL033w	YNL136w	similarity to <i>P. falciparum</i> mature-parasite-infected erythrocyte surface antigen MESA	YNL191w	similarity to <i>Synechocystis</i> hypothetical protein
YNL056w	similarity to hypothetical proteins YNL032w and YNL099c	YIL010w	similarity to <i>P. falciparum</i> merozoite cap protein-1	YGR036c	similarity to <i>T. denticola</i> phosphatase
YNL099c	similarity to hypothetical proteins YNL032w, YNL056w and YDR067c	YLR107w	similarity to <i>P. troglodytes</i> prot GOR	YDR485c	similarity to trichohyalin
YNL032w	similarity to hypothetical proteins YNL099c, YNL056w and YDR067c	YOL065c	similarity to Pie3p and hypothetical proteins YIL002c	YOR195w	similarity to USO1 protein
YOL101c	similarity to hypothetical proteins YOL002c and YDR492w	YNL047c	similarity to probable transcription factor Ask10p and hypothetical protein YPR115w, and strong similarity to hypothetical protein YIL105c	YPL188w	<i>POS5</i> similarity to Utr1p and hypothetical protein YEL041w
YNL326c	similarity to hypothetical proteins YOL003c, YLR246w and <i>C. elegans</i> hypothetical protein ZK7571	YBR125c	similarity to protein phosphatase 2C	YLR213c	similarity to UTR2 protein
YML072c	similarity to hypothetical proteins YOR3141c and YNL087w and weak similarity to synaptogamines	YNR038w	similarity to Prp5p	YGR189c	similarity to Utr2p
YLR152c	similarity to hypothetical proteins YOR3165w and YNL095c	YER150w	similarity to putative cell surface glycoprotein Sed1p	YGL220w	similarity to <i>V. alginolyticus</i> bolA protein
YNL165w	similarity to hypothetical proteins YOR385w and YMR316w	YGL099w	similarity to putative human GTP-binding protein HSR1	YGR203w	similarity to <i>X. laevis</i> protein-tyrosin-phosphatase cdc homologue 2 and to hypothetical protein YPR200c
YMR316w	similarity to hypothetical proteins YOR385w and YNL165w	YPR062w	similarity to <i>R. corallinus</i> N-ethylmelleine chlorohydrolase trzA	YDR284c	similarity to YDR503c
YDR083w	similarity to hypothetical <i>S. pombe</i> protein	YJL055w	similarity to <i>R. fascians</i> hypothetical protein 6	YEL003w	similarity to Yke2p
YDR346c	similarity to hypothetical <i>S. pombe</i> protein	YOR191w	similarity to RAD5 protein	YIL135c	similarity to Ymk1p
YGR272c	similarity to hypothetical <i>S. pombe</i> protein	YGL059w	similarity to rat branched-chain $\alpha$ -ketoacid dehydrogenase kinase	YOL082w	similarity to YOL083w
YLR241w	similarity to hypothetical <i>S. pombe</i> protein	YBR053c	similarity to rat regucalcin	YDR534c	similarity to YOR383c, Sta1p and pig mucin
YML005w	similarity to hypothetical <i>S. pombe</i> protein	YDL015c	similarity to rat synaptic glycoprotein SC2	YBL101c	similarity to YPR030w
YOL098c	similarity to hypothetical <i>S. pombe</i> protein	YDR457w	similarity to rat URE-B1	YCR062w	similarity to Ytp1p protein
YOR091w	similarity to hypothetical <i>S. pombe</i> protein D83992.G	YBR028c	similarity to ribosomal protein kinases	YFR024c-a	strong similarity hypothetical protein YHR016c
YOL071w	similarity to hypothetical <i>S. pombe</i> protein SPAC12B10.06c	YLR278c	similarity to RNA helicases	YPL151c	strong similarity to <i>A. thaliana</i> PRL1 and PRL2 proteins
YFR048w	similarity to hypothetical <i>S. pombe</i> protein SPAC12G12.14 and to YDL001w and YDR282c	YPR112c	similarity to RNA-binding proteins	YOR034c	strong similarity to Akr1p
YOR322c	similarity to hypothetical <i>S. pombe</i> protein SPAC1F12.05	YPR016c	similarity to <i>S. acidocaldarius</i> ac2sac protein	YOR374w	strong similarity to aldehyde dehydrogenase
YOR250c	similarity to hypothetical <i>S. pombe</i> protein SPAC22H10.05c	YOL154w	similarity to <i>S. fumigata</i> Asp FII	YIL113w	strong similarity to <i>C. albicans</i> dual-specificity phosphatase MSG5
YER143w	similarity to hypothetical <i>S. pombe</i> protein SPAC5F8.08	YHR029c	similarity to <i>S. lincolnensis</i> lmbX protein	YLR460c	strong similarity to <i>C. carbonum</i> toxD protein
YDR504c	similarity to hypothetical <i>T. brucei</i> protein	YLO33c	similarity to <i>S. pombe</i> cek1 serine/threonine protein kinase	YKL013c	strong similarity to <i>C. elegans</i> hypothetical protein
YDR223w	similarity to <i>lfm1p</i>	YIL144w	similarity to <i>S. pombe</i> hypothetical protein	YNL288w	strong similarity to <i>C. elegans</i> hypothetical protein
YAL035w	<i>FUN12</i> similarity to <i>lfm1p</i>	YKR051w	similarity to <i>S. pombe</i> hypothetical protein	YOL077c	strong similarity to <i>C. elegans</i> K12H4.3 protein
YOR109w	similarity to inositol polyphosphate 5-phosphatases	YOL087c	similarity to <i>S. pombe</i> hypothetical protein	YGL080w	strong similarity to <i>C. elegans</i> R07E5.13 protein
YEL013w	similarity to intracellular attachment proteins	YBR004c	similarity to <i>S. pombe</i> hypothetical protein SPAC18B11.05	YPR194c	strong similarity to C-term. of <i>S. pombe</i> isp4 protein
YPR042c	similarity to Jsn1p	YKR079c	similarity to <i>S. pombe</i> hypothetical protein SPAC1D4.10	YAR023c	strong similarity to Fun55p, Fun59p, YGL051w, YCR007c, YAR031w, YAR031w and YAR028w
YMR226c	similarity to ketoreductases	YNL308c	similarity to <i>S. pombe</i> hypothetical protein SPAC22G7.05	YAR028w	strong similarity to Fun55p, YGL053w, YCR007c, YAR031w, Fun59p and YGL051w
YGR232w	similarity to <i>L. mactans</i> $\alpha$ -latroinsectotoxin	YAL042w	<i>FUN9</i> similarity to <i>S. pombe</i> hypothetical protein SPAC24B11.08c	YGL051w	strong similarity to Fun59p
YER010c	similarity to <i>L. pneumophila</i> dlpA protein	YNL310c	similarity to <i>S. pombe</i> hypothetical protein SPAC24H6.02c	YGL236c	strong similarity to <i>E. coli</i> protein
YGR210c	similarity to <i>M. capricolum</i> hypothetical protein SGC3	YGR125w	similarity to <i>S. pombe</i> hypothetical protein SPAC24H6.11c	YAL036c	<i>FUN11</i> strong similarity to GTP-binding proteins
YMR095c	similarity to <i>M. leprae</i> hisH protein	YMR075w	similarity to <i>S. pombe</i> hypothetical protein SPAC2F7.07c	YMR290c	strong similarity to helices of the DEAD/DEAH box family
YBR079c	similarity to <i>M. musculus</i> p162 protein	YDR175c	similarity to <i>S. pombe</i> hypothetical protein SPAC2F7.15	YDR276c	strong similarity to <i>Hordeum</i> blt101 protein
YNL335w	similarity to <i>M. verrucaria</i> cyanamide hydratase, identical to hypothetical protein YFL061w	YFL047w	similarity to <i>S. pombe</i> hypothetical protein SPAC2F7.18c	YDL103c	strong similarity to human AgX-1 antigen
YLL034c	similarity to mammalian valosin	YLR023c	similarity to <i>S. pombe</i> hypothetical protein SPAC30D11.11	YDR373w	strong similarity to human BDR-1 protein and other calcium binding proteins
YMR166c	similarity to members of the mitochondrial carrier protein family	YDR180w	similarity to <i>S. pombe</i> hypothetical protein SPAC31A2.05c	YNR053c	strong similarity to human breast tumor associated autoantigen
YIR041w	similarity to members of the Srp1p/Tip1p family			YDL120w	strong similarity to human frataxin (Friedreich's ataxia)
				YGR173w	strong similarity to human GTP-binding protein
				YKL056c	strong similarity to human IgE-dependent histamine-releasing factor

YPL152w		strong similarity to human phosphotyrosyl phosphatase activator	YDL109c		strong similarity to hypothetical protein YGL144c	YGR004w		strong similarity to hypothetical protein YLR324w
YPR028w		strong similarity to human protein TB2	YER037w		strong similarity to hypothetical protein YGL224c	YGR010w		strong similarity to hypothetical protein YLR328w
YCL059c		strong similarity to human Rev interacting protein Rip-1	YOR387c		strong similarity to hypothetical protein YGL258w	YGR038w	<i>ORM1</i>	strong similarity to hypothetical protein YLR350w
YLR146c		strong similarity to human spermidine synthase	YLR324w		strong similarity to hypothetical protein YGR004w	YGR056w		strong similarity to hypothetical protein YLR357w
YNL200c		strong similarity to human TGR-CL10C	YLR328w		strong similarity to hypothetical protein YGR010w	YKL187c		strong similarity to hypothetical protein YLR413w
YBL036c		strong similarity to hypothetical <i>C. elegans</i> protein	YLR350w		strong similarity to hypothetical protein YGR038w	YPR172w		strong similarity to hypothetical protein YLR456w
YBL078c		strong similarity to hypothetical <i>C. elegans</i> protein	YLR357w		strong similarity to hypothetical protein YGR056w	YDR438w		strong similarity to hypothetical protein YML018c
YMR292w		strong similarity to hypothetical <i>C. elegans</i> protein	YPL004c		strong similarity to hypothetical protein YGR086c	YBR002c		strong similarity to hypothetical protein YMR101c
YDR430c		strong similarity to hypothetical <i>C. perfringens</i> protein	YPR157w		strong similarity to hypothetical protein YGR141w	YKL121w		strong similarity to hypothetical protein YMR102c
YOR365c		strong similarity to hypothetical protein YAL053w	YHR162w		strong similarity to hypothetical protein YGR243w	YPL224c		strong similarity to hypothetical protein YMR177w
YHR214w-a		strong similarity to hypothetical protein YAR068w	YBR300c		strong similarity to hypothetical protein YGR293c	YOR295w		strong similarity to hypothetical protein YMR233w
YPR032w		strong similarity to hypothetical protein YBL106c	YHR054c		strong similarity to hypothetical protein YHR056c	YKL046c		strong similarity to hypothetical protein YMR238w
YDR003w		strong similarity to hypothetical protein YBR005w	YDR358w		strong similarity to hypothetical protein YHR108w	YPL264c		strong similarity to hypothetical protein YMR253c
YDR210w		strong similarity to hypothetical protein YBR016w	YNL116w		strong similarity to hypothetical protein YHR115c	YGR279c		strong similarity to hypothetical protein YMR305c
YDL012c		strong similarity to hypothetical protein YBR016w and YDR210w	YGR238c		strong similarity to hypothetical protein YHR158c	YOR385w		strong similarity to hypothetical protein YMR316w
YDR018c		strong similarity to hypothetical protein YBR042c	YGR243w		strong similarity to hypothetical protein YHR162w	YNL034w		strong similarity to hypothetical protein YNL018c
YOL092w		strong similarity to hypothetical protein YBR147w	YHR199c		strong similarity to hypothetical protein YHR198c	YNL033w		strong similarity to hypothetical protein YNL019c
YPL095c		strong similarity to hypothetical protein YBR177c	YHR198c		strong similarity to hypothetical protein YHR199c	YNL019c		strong similarity to hypothetical protein YNL033w
YPL087w		strong similarity to hypothetical protein YBR183w	YAR060c		strong similarity to hypothetical protein YHR212c	YNL018c		strong similarity to hypothetical protein YNL034w
YGL056c		strong similarity to hypothetical protein YBR214w	YAR068w		strong similarity to hypothetical protein YHR214w-a	YIL109c		strong similarity to hypothetical protein YNL049c
YGL060w		strong similarity to hypothetical protein YBR216c	YPR071w		strong similarity to hypothetical protein YL029c	YOR086c		strong similarity to hypothetical protein YNL087w and weak similarity to synaptogamines
YGL107c		strong similarity to hypothetical protein YBR238c	YER067w		strong similarity to hypothetical protein YL057c	YOR092w		strong similarity to hypothetical protein YNL095c
YGL101w		strong similarity to hypothetical protein YBR242w	YDL175c		strong similarity to hypothetical protein YL079c	YOR110w		strong similarity to hypothetical protein YNL108c
YIL058c		strong similarity to hypothetical protein YBR270c	YIL014c-a		strong similarity to hypothetical protein YL102c	YHR115c		strong similarity to hypothetical protein YNL116w
YGR293c		strong similarity to hypothetical protein YBR300c	YNL049c		strong similarity to hypothetical protein YL109c	YDL222c		strong similarity to hypothetical protein YNL194c and similarity to YML052w
YDR514c		strong similarity to hypothetical protein YCL036w	YOL162w		strong similarity to hypothetical protein YL166c	YLR144c		strong similarity to hypothetical protein YNR067c
YGL144c		strong similarity to hypothetical protein YDL109c	YJL038c		strong similarity to hypothetical protein YL037w	YDR492w		strong similarity to hypothetical protein YOL002c
YIL079c		strong similarity to hypothetical protein YDL175c	YJL037w		strong similarity to hypothetical protein YL038c	YPR125w		strong similarity to hypothetical protein YOL027c
YNL194c		strong similarity to hypothetical protein YDL222c and similarity to hypothetical protein YML052w	YBR270c		strong similarity to hypothetical protein YL068c	YBR147w		strong similarity to hypothetical protein YOL092w
YBR005w		strong similarity to hypothetical protein YDR003w	YKR018c		strong similarity to hypothetical protein YL082w	YDR391c		strong similarity to hypothetical protein YOR013w
YBR042c		strong similarity to hypothetical protein YDR018c	YKR021w		strong similarity to hypothetical protein YL084c	YAL007c		strong similarity to hypothetical protein YOR018c, similarity to hamster COP-coated vesicle membrane protein
YLR108c		strong similarity to hypothetical protein YDR132c	YKR053c		strong similarity to hypothetical protein YL134w	YKR089c		strong similarity to hypothetical protein YOR081c
YPL235w		strong similarity to hypothetical protein YDR190c	YML047c		strong similarity to hypothetical protein YJ064w	YNL095c		strong similarity to hypothetical protein YOR092w
YNL281w		strong similarity to hypothetical protein YDR214w	YKL200c		strong similarity to hypothetical protein YJ061w	YNL108c		strong similarity to hypothetical protein YOR110w
YLR225c		strong similarity to hypothetical protein YDR222w	YDR399w		strong similarity to hypothetical protein YJR133w	YLR260w		strong similarity to hypothetical protein YOR171c
YHR032w	<i>ERC1</i>	strong similarity to hypothetical protein YDR338c	YMR238w		strong similarity to hypothetical protein YKL046c	YLR270w		strong similarity to hypothetical protein YOR173w
YHR097c		strong similarity to hypothetical protein YDR348c	YMR040w		strong similarity to hypothetical protein YKL065c	YLR284c		strong similarity to hypothetical protein YOR180c
YHR108w		strong similarity to hypothetical protein YDR358w	YMR102c		strong similarity to hypothetical protein YKL121w	YLR243w		strong similarity to hypothetical protein YOR262w
YOR013w		strong similarity to hypothetical protein YDR391c	YLR413w		strong similarity to hypothetical protein YKL187c	YMR233w		strong similarity to hypothetical protein YOR295w
YJR133w		strong similarity to hypothetical protein YDR399w	YJL082w		strong similarity to hypothetical protein YKR018c	YGL258w		strong similarity to hypothetical protein YOR387c
YOL002c		strong similarity to hypothetical protein YDR492w	YJL084c		strong similarity to hypothetical protein YKR021w	YPL279c		strong similarity to hypothetical protein YOR390w
YOR383c		strong similarity to hypothetical protein YDR534c and similarity to <i>L. mexicana</i> secreted acid phosphatase 2	YJL134w		strong similarity to hypothetical protein YKR053c	YGR086c		strong similarity to hypothetical protein YPL004c
YPR193c		strong similarity to hypothetical protein YEL066w	YOR081c		strong similarity to hypothetical protein YKR089c	YFL004w		strong similarity to hypothetical protein YPL019c
YGL224c		strong similarity to hypothetical protein YER037w	YIR013c		strong similarity to hypothetical protein YLR013w	YBR183w		strong similarity to hypothetical protein YPL087w
YIL057c		strong similarity to hypothetical protein YER067w	YLL010c		strong similarity to hypothetical protein YLR019w	YBR177c		strong similarity to hypothetical protein YPL095c
YPL019c		strong similarity to hypothetical protein YFL004w	YDR125c		strong similarity to hypothetical protein YLR099c	YOR227w		strong similarity to hypothetical protein YPL137c and to microtubule-interacting protein MHP1
YMR096w		strong similarity to hypothetical protein YFL059w, YNL333w, and Para rubber tree ethylene-responsive protein 1	YDR132c		strong similarity to hypothetical protein YLR108c	YGL084c		strong similarity to hypothetical protein YPL189w
YHR016c	<i>YSC84</i>	strong similarity to hypothetical protein YFR024c-a	YDR185c		strong similarity to hypothetical protein YLR168c	YGL082w		strong similarity to hypothetical protein YPL191c
YBR214w		strong similarity to hypothetical protein YGL056c	YDL161w		strong similarity to hypothetical protein YLR208w and to human KIAA0171 protein	YGL139w		strong similarity to hypothetical protein YPL221w
YBR216c		strong similarity to hypothetical protein YGL060w	YDR222w		strong similarity to hypothetical protein YLR225c	YMR177w		strong similarity to hypothetical protein YPL224c
YPL191c		strong similarity to hypothetical protein YGL082w	YDR213w		strong similarity to hypothetical protein YLR228c	YDR190c		strong similarity to hypothetical protein YPL235w
YPL189w		strong similarity to hypothetical protein YGL084c	YOR171c		strong similarity to hypothetical protein YLR260w	YMR253c		strong similarity to hypothetical protein YPL264c
YBR242w		strong similarity to hypothetical protein YGL101w	YOR173w		strong similarity to hypothetical protein YLR270w			
			YOR180c		strong similarity to hypothetical protein YLR284c			

YOR390w	strong similarity to hypothetical protein YPL279c	YHL017w	strong similarity to putative transmembrane protein PTM1	YLR466w	strong similarity to subtelomeric encoded proteins
YIL029c	strong similarity to hypothetical protein YPR071w	YHR017w	strong similarity to <i>S. douglasii</i> YSD83	YLR467w	strong similarity to subtelomeric encoded proteins
YDL242w	strong similarity to hypothetical protein YPR079w	YDL219w	strong similarity to <i>S. equisimilis</i> hypothetical protein	YML132w	strong similarity to subtelomeric encoded proteins
YGR141w	strong similarity to hypothetical protein YPR157w	YPL118w	strong similarity to <i>S. kluyveri</i> hypothetical protein	YNL336w	strong similarity to subtelomeric encoded proteins
YLR456w	strong similarity to hypothetical protein YPR172w	YNR046w	strong similarity to <i>S. pombe</i> hypothetical protein SPAC31A2.02	YNL337w	strong similarity to subtelomeric encoded proteins
YEL066w	strong similarity to hypothetical protein YPR193c	YNL072w	strong similarity to <i>S. pombe</i> hypothetical protein SPAC4G9.02	YNL338w	strong similarity to subtelomeric encoded proteins
YGL053w	strong similarity to hypothetical proteins YAR031, YGL051w, YAR028w, Fun55p and YCR007c	YDR032c	strong similarity to <i>S. pombe</i> obr1	YNL339c	strong similarity to subtelomeric encoded proteins
YMR324c	strong similarity to hypothetical proteins YBL108w, YCR103c and YKL223w	YOL010w	strong similarity to <i>S. pombe</i> SPAC12G12.06c protein	YNR077c	strong similarity to subtelomeric encoded proteins
YNR048w	strong similarity to hypothetical proteins YCR094w and YNL323w	YOR163w	strong similarity to <i>S. pombe</i> SPAC13G6.14 protein	YOL158c	strong similarity to subtelomeric encoded proteins
YNL323w	strong similarity to hypothetical proteins YCR094w and YNR048w	YOR256c	strong similarity to secretory protein SSP134	YPL282c	strong similarity to subtelomeric encoded proteins
YBR016w	strong similarity to hypothetical proteins YDL012c and YDR210w	YCL024w	strong similarity to ser/thr protein kinase GNP1	YPL283c	strong similarity to subtelomeric encoded proteins
YNL334c	strong similarity to hypothetical proteins YFL060c and YMR095c	YOR310c	strong similarity to SIK1 protein	YPR202w	strong similarity to subtelomeric encoded proteins
YPL221w	strong similarity to hypothetical proteins YGL139w and YAL053w	YDR247w	strong similarity to Sks1p	YPR203w	strong similarity to subtelomeric encoded proteins
YDR326c	strong similarity to hypothetical proteins YHR080c, YFL042c and YLR072w	O7535	strong similarity to subtelomeric encoded proteins	YPR204w	strong similarity to subtelomeric encoded proteins
YMR251w	strong similarity to hypothetical proteins YKR076w and YGR154c	YAL068c	strong similarity to subtelomeric encoded proteins	YNR075w	<i>EDL1</i> strong similarity to subtelomeric encoded proteins
YGR154c	strong similarity to hypothetical proteins YKR076w and YMR251w	YBL108w	strong similarity to subtelomeric encoded proteins	YER042w	strong similarity to transcription factors and peptide methionine sulphoxide reductases
YKR076w	strong similarity to hypothetical proteins YMR251w and YGR154c	YBL111c	strong similarity to subtelomeric encoded proteins	YJL186w	strong similarity to Ttp1p
YFL060c	strong similarity to hypothetical proteins YNL334c and YMR095c	YBL112c	strong similarity to subtelomeric encoded proteins	YEL041w	strong similarity to Utr1p
YCR094w	strong similarity to hypothetical proteins YNR048w and YNL323w	YBL113c	strong similarity to subtelomeric encoded proteins	YCR063w	strong similarity to <i>Xenopus</i> G10 and human edg-2 protein
YOR230w	strong similarity to hypothetical proteins YOR229w and YPL139c	YBR302c	strong similarity to subtelomeric encoded proteins	YAR027w	<i>FUN55</i> strong similarity to YAR028w, YCR007c, YGL053w, YAR031w, FUN59p and YGL051w
YPL139c	strong similarity to hypothetical proteins YOR230w and YOR229w	YCL073c	strong similarity to subtelomeric encoded proteins	YAR029w	<i>FUN57</i> strong similarity to YAR031w, YGL053w, Fun55p, Fun59p and YGL051w
YOR229w	strong similarity to hypothetical proteins YOR230w and YPL139c	YCR103c	strong similarity to subtelomeric encoded proteins	YAR033w	<i>FUN59</i> strong similarity to YGL051w, YGL053w, YAR031w, Fun55p, YAR028w and YCR007c
YAL053w	strong similarity to hypothetical proteins YOR365c, YGL139w, YPL221w	YDL248w	strong similarity to subtelomeric encoded proteins	YAR031w	strong similarity to YGL053w, Fun59p, YGL051w, Fun55p, YAR028w and YCR007c
YPL280w	strong similarity to hypothetical proteins YOR391c, YMR322c and YDR533c	YDR542w	strong similarity to subtelomeric encoded proteins	YIL102c	strong similarity to YIL014c-a
YMR321c	strong similarity to hypothetical proteins YPL273w and YLL062c	YDR543c	strong similarity to subtelomeric encoded proteins	YBR025c	strong similarity to Ylf1p
YLL062c	strong similarity to hypothetical proteins YPL273w, weak similarity to <i>M. leprae</i> meth2 protein	YDR544c	strong similarity to subtelomeric encoded proteins	YKL065c	strong similarity to YMR040w
YOR391c	strong similarity to hypothetical proteins YPL280w, YMR322c and YDR533c	YDR545w	strong similarity to subtelomeric encoded proteins	YOL112w	strong similarity to YNL293w, similarity to Mic1p and human transforming protein tre-2
YDR533c	strong similarity to hypothetical proteins YPL280w, YOR391c and YMR322c	YEL075c	strong similarity to subtelomeric encoded proteins	YBL106c	strong similarity to YPR032w
YMR322c	strong similarity to hypothetical proteins YPL280w, YOR391c and YDR533c	YEL076c-b	strong similarity to subtelomeric encoded proteins	YLR045c	<i>STU2</i> suppressor of a cs tubulin mutation
YHR069c	strong similarity to hypothetical <i>S. pombe</i> and human proteins	YER188c-a	strong similarity to subtelomeric encoded proteins	YER120w	<i>SCS2</i> suppressor of an inositol auxotrophic and a choline sensitive mutant
YMR288w	strong similarity to hypothetical <i>S. pombe</i> protein	YER189w	strong similarity to subtelomeric encoded proteins	YCR044c	suppressor of <i>cdc1-1</i> ts growth defect
YER049w	strong similarity to hypothetical <i>S. pombe</i> protein YER049W	YER190w	strong similarity to subtelomeric encoded proteins	YGL083w	suppressor of GTase mutant
YNL240c	strong similarity to <i>K. marxianus</i> LET1 protein	YFL062w	strong similarity to subtelomeric encoded proteins	YDR510w	<i>SCY1</i> suppressor of <i>mi12</i> temperature-sensitive mutation
YBR301w	strong similarity to members of the Srp1p/Tip1p family	YFL063w	strong similarity to subtelomeric encoded proteins	YKL124w	suppressor of <i>shr3</i>
YGL261c	strong similarity to members of the Srp1p/Tip1p family	YFL064c	strong similarity to subtelomeric encoded proteins	YLR197w	suppressor of toxicity of Gal4-KB
YGR294w	strong similarity to members of the Srp1p/Tip1p family	YFL065c	strong similarity to subtelomeric encoded proteins	YOL102c	tRNA 2'-phosphotransferase
YIL176c	strong similarity to members of the Srp1p/Tip1p family	YFL066c	strong similarity to subtelomeric encoded proteins	YIL080w	Ty3-2 orf C fragment
YKL224c	strong similarity to members of the Srp1p/Tip1p family	YGL260w	strong similarity to subtelomeric encoded proteins	YBR015c	type II membrane protein
YLL025w	strong similarity to members of the Srp1p/Tip1p family	YGR295c	strong similarity to subtelomeric encoded proteins	YBR066c	weak similarity to <i>A. niger</i> carbon catabolite repressor protein
YLL064c	strong similarity to members of the Srp1p/Tip1p family	YGR296w	strong similarity to subtelomeric encoded proteins	YKL071w	weak similarity to <i>A. parasiticus</i> nor-1 protein
YLR037c	strong similarity to members of the Srp1p/Tip1p family	YHL045w	strong similarity to subtelomeric encoded proteins	YJL126w	weak similarity to <i>A. thaliana</i> nitrilase 3
YMR325w	strong similarity to members of the Srp1p/Tip1p family	YHL048w	strong similarity to subtelomeric encoded proteins	YCR079w	weak similarity to <i>A. thaliana</i> protein phosphatase 2C
YOR394w	strong similarity to members of the Srp1p/Tip1p family	YHR217c	strong similarity to subtelomeric encoded proteins	YHR143w	weak similarity to a-agglutinin core protein AGA1
YEL047c	strong similarity to Osm1p	YHR218w-a	strong similarity to subtelomeric encoded proteins	YOR353c	weak similarity to adenylate cyclases
YFL059w	strong similarity to Para rubber tree ethylene-responsive protein1	YIR040c	strong similarity to subtelomeric encoded proteins	YER158c	weak similarity to Afr1p
YNL333w	strong similarity to Para rubber tree ethylene-responsive protein 1 and identical to hypothetical protein YFL059w	YJL225c	strong similarity to subtelomeric encoded proteins	YBR074w	weak similarity to aminopeptidase Y
YNR065c	strong similarity to Pep1p	YJR161c	strong similarity to subtelomeric encoded proteins	YCR051w	weak similarity to ankyrins
YNR066c	strong similarity to Pep1p	YJR162c	strong similarity to subtelomeric encoded proteins	YNR039c	weak similarity to <i>Anopheles</i> mitochondrial NADH dehydrogenase subunit 2
YER089c	<i>PTC2</i> strong similarity to phosphoprotein phosphatases	YKL223w	strong similarity to subtelomeric encoded proteins	YMR152w	weak similarity to AST1 and AST2 protein
YPL141c	strong similarity to protein kinase Kin4p	YKL225w	strong similarity to subtelomeric encoded proteins	YJL109c	weak similarity to ATPase Drs2p
YOL128c	strong similarity to protein kinase Mck1p	YKR106w	strong similarity to subtelomeric encoded proteins	YIR002c	weak similarity to ATP-dependent RNA helicases
YNL020c	strong similarity to proteins of the Srp1p/Tip1p family	YLL066c	strong similarity to subtelomeric encoded proteins	YMR211w	weak similarity to $\beta$ tubulins
YJR150c	strong similarity to proteins of the Srp1p/Tip1p family	YLL067c	strong similarity to subtelomeric encoded proteins	YEL040w	weak similarity to <i>B. subtilis</i> 1,3-1,4--glucanase
YDL214c	strong similarity to putative protein kinase NPR1	YLR462w	strong similarity to subtelomeric encoded proteins	YNL203c	weak similarity to <i>B. subtilis</i> CDPdialcylglycerol-serine O-phosphatidyltransferase
YEL077c	strong similarity to putative purine nucleotide-binding protein YIL177c	YLR463c	strong similarity to subtelomeric encoded proteins	YDR336w	weak similarity to <i>B. subtilis</i> hypothetical protein X
		YLR464w	strong similarity to subtelomeric encoded proteins	YOR111w	weak similarity to <i>B. subtilis</i> maf protein
				YNR074c	weak similarity to <i>B. subtilis</i> nitrite reductase (nirB)
				YNR004w	weak similarity to bovine interferon $\gamma$
				YNL022c	weak similarity to <i>C. burnetii</i> FMU protein
				YGL246c	weak similarity to <i>C. elegans</i> dom-3 protein
				YKR071c	weak similarity to <i>C. elegans</i> hypothetical protein
				YNL207w	weak similarity to <i>C. elegans</i> hypothetical protein ZK632.3
				YLR242c	weak similarity to <i>C. elegans</i> R05H5.5 protein and <i>T. borreli</i> apocytochrome b

YKL037w	weak similarity to <i>C. elegans</i> ubc-2 protein	YNR061c	weak similarity to hypothetical protein YDL218w	YNR022c	weak similarity to protein phosphatases
YHR012w	PEP11 weak similarity to <i>C. elegans</i> Z47357_A ZK1128.1	YOR004w	weak similarity to hypothetical protein YDR339c	YBR276c	weak similarity to protein-tyrosine-phosphatase
YJR024c	weak similarity to <i>C. elegans</i> Z49131_E ZC373.5 protein	YMR010w	weak similarity to hypothetical protein YDR352w	YMR241w	weak similarity to putative carrier protein RIM2
YBR086c	weak similarity to calcium and sodium channel proteins	YGR223c	weak similarity to hypothetical protein YFR021w	YJR044c	weak similarity to putative transport protein YKR103w
YGR225w	weak similarity to Cdc20p	YGR095c	weak similarity to hypothetical protein YGR195w	YBR103w	weak similarity to Pwp2p
YNR051c	weak similarity to chicken nucleolin	YHR160c	weak similarity to hypothetical protein YGR239c	YMR093w	weak similarity to Pwp2p
YMR272c	weak similarity to cytochrome b5	YGR239c	weak similarity to hypothetical protein YHR160c	YNR064c	weak similarity to <i>R. capsulatus</i> bchO protein
YEL045c	weak similarity to cytochrome c oxidase III of <i>T. brucei</i> kinetoplast	YMR299c	weak similarity to hypothetical protein YLJ062w	YEL018w	weak similarity to Rad50p
YHR142w	weak similarity to cytochrome c oxidases	YKL041w	weak similarity to hypothetical protein YLR031w	YGL244w	weak similarity to Rad50p
YDL035c	weak similarity to <i>D. discoideum</i> protein tyrosine phosphatase	YMR124w	weak similarity to hypothetical protein YLR253w	YHR022c	weak similarity to RAS-related protein
YGL242c	weak similarity to <i>D. melanogaster</i> ANK protein	YPL109c	weak similarity to hypothetical protein YBR168w	YLR351c	weak similarity to rat $\beta$ -alanine synthase
YPR200c	weak similarity to <i>D. melanogaster</i> cdc25 protein, and similarity to hypothetical protein YGR203w	YBR168w	weak similarity to hypothetical protein YNR014w	YCR082w	weak similarity to Rbk1p
YHL041w	weak similarity to <i>D. melanogaster</i> hypothetical protein 6	YNR014w	weak similarity to hypothetical protein YMR206w	YOR246c	weak similarity to reductases
YOR022c	weak similarity to <i>D. melanogaster</i> probable Ca <sup>2+</sup> transporter rdgB	YER186c	weak similarity to hypothetical protein YMR316w	YJL012c	weak similarity to regulatory protein PHO81
YPL229w	weak similarity to <i>D. melanogaster</i> transcription factor shn	YJR129c	weak similarity to hypothetical protein YNL024c	YDL114w	weak similarity to <i>Rhizobium</i> nodulation protein nodG
YGL185c	weak similarity to dehydrogenases	YJL016w	weak similarity to hypothetical protein YNL278w and YLR187w	YGR068c	weak similarity to Rod1p
YLR222c	weak similarity to Dip2p	YMR206w	weak similarity to hypothetical protein YNR014w	YKL107w	weak similarity to <i>S. antibioticus</i> probable oxidoreductase
YER041w	weak similarity to DNA repair protein Rad2p	YDL218w	weak similarity to hypothetical protein YNR061c	YER093c	weak similarity to <i>S. epidermidis</i> PepB protein
YOR032c	weak similarity to DNA-binding proteins	YDR339c	weak similarity to hypothetical protein YOR004w	YMR065w	weak similarity to <i>S. pombe</i> hypothetical protein SPAC13C5.03
YJL162c	weak similarity to dnaJ proteins	YLR253w	weak similarity to hypothetical protein YPL109c	YGR212w	weak similarity to <i>S. pombe</i> hypothetical protein SPAC18B11.03c
YBR220c	weak similarity to <i>E. coli</i> ampG protein	YPR151c	weak similarity to hypothetical protein YPL159c	YER127w	weak similarity to <i>S. pombe</i> hypothetical protein SPAC18B11.06
YNL217w	weak similarity to <i>E. coli</i> bis(5'-nucleosyl)-tetraphosphatase	YPL159c	weak similarity to hypothetical protein YPR151c	YBR271w	weak similarity to <i>S. pombe</i> uvi22 protein and hypothetical protein YNL024c
YER126c	weak similarity to <i>E. coli</i> colicin N	YGR126w	weak similarity to hypothetical protein YPR151c	YLR311c	weak similarity to <i>S. tarentolae</i> cryptogene protein G4
YGL136c	weak similarity to <i>E. coli</i> ftsJ protein	YLR391w	weak similarity to hypothetical proteins YAR068w and YHR214w-a	YLR380w	weak similarity to Sec14p
YKL094w	YJU3 weak similarity to <i>E. coli</i> hypothetical protein	YNL024c	weak similarity to hypothetical proteins YBR271w and YJR129c	YNL231c	weak similarity to Sec14p
YMR155w	weak similarity to <i>E. coli</i> hypothetical protein f402	YAL018c	weak similarity to hypothetical proteins YOL047c and YOL048c	YJL123c	weak similarity to Sec7p
YER152c	weak similarity to <i>E. coli</i> hypothetical protein f470	YDR352w	weak similarity to hypothetical proteins YOL092w, YBR147w and YMR010w	YKL055c	weak similarity to short-chain alcohol dehydrogenases
YJR019c	weak similarity to <i>E. coli</i> thioesterase II	YDR517w	weak similarity to hypothetical <i>S. pombe</i> protein	YNR030w	weak similarity to Smp3p
YPR067w	weak similarity to <i>F. alni</i> nitrogen fixation protein	YCR013c	weak similarity to <i>M. leprae</i> B1496_F1_41 protein	YDR486c	weak similarity to Snf7p
YDR063w	weak similarity to glia maturation factor $\beta$	YPL273w	weak similarity to <i>M. leprae</i> meth2 protein, and strong similarity to hypothetical protein YLL062c	YEL015w	weak similarity to Spa2p
YCL028w	weak similarity to glutenins, high molecular weight subunit	YEL043w	weak similarity to Mad1p	YHR177w	weak similarity to Spombe pac2 protein
YPL206c	weak similarity to glycerophosphoryl diester phosphodiesterases	YBR186w	weak similarity to members of CDC48/PAS1/SEC18 family of ATPases	YBR155w	weak similarity to stress-induced Sti1p
YOR272w	weak similarity to GTP-binding protein $\beta$ subunits	YFL046w	weak similarity to middle part of <i>C. elegans</i> myosin heavy chain A	YJR101w	weak similarity to superoxide dismutases
YAL048c	weak similarity to GTP-binding proteins	YOR350c	MNE1 weak similarity to mitochondrial <i>L. illustris</i> cytochrome oxidase I	YBR099c	weak similarity to <i>T. brucei</i> mitochondrion hypothetical protein 6
YBR175w	weak similarity to GTP-binding proteins	YMR111c	weak similarity to MSN1 protein	YJL145w	weak similarity to <i>T. pacificus</i> retinal-binding protein
YPL093w	weak similarity to GTP-binding proteins	YMR172w	weak similarity to MSN1 protein	YJL204c	weak similarity to Tor2p
YGL067w	weak similarity to <i>H. influenzae</i> hypothetical protein	YDL223c	weak similarity to mucin	YER045c	weak similarity to transcription factor Sko1p
YLR165c	weak similarity to <i>H. influenzae</i> hypothetical protein HI0176	YJL036w	weak similarity to Mvp1p	YDR520c	weak similarity to transcription factors
YLR239c	weak similarity to <i>H. influenzae</i> lipote biosynthesis protein B	YNL063w	weak similarity to <i>Mycoplasma</i> protoporphyrinogen oxidase	YHR063c	weak similarity to translational activator CBS2
YNR062c	weak similarity to <i>H. influenzae</i> L-lactate permease (lctP) homologue	YLR309c	IMH1 weak similarity to myosin heavy chains	YGL004c	weak similarity to Tup1p
YNL176c	weak similarity to Hkr1p	YBR156c	weak similarity to myosins	YJR046w	weak similarity to <i>Xenopus</i> vimentin 4
YBL032w	weak similarity to hnRNP complex protein homologue YBR233w	YAL022c	weak similarity to Na <sup>+</sup> /H <sup>+</sup> antiporter	YOL031c	weak similarity to <i>Y. lipolytica</i> Sls1 protein
YER033c	weak similarity to human BRCA2 early onset breast cancer gene	YDR413c	weak similarity to NADH dehydrogenase	YLL056c	weak similarity to <i>Y. pseudotuberculosis</i> CDP-3,6-dideoxy-D-glycero-L-glycero-4-hexulose-5-epimerase
YJL036w	weak similarity to human cAMP response element-binding protein	YKR030w	weak similarity to NADH dehydrogenases	YCL063w	weak similarity to yeast translation regulator Gcd6p
YJL148w	weak similarity to human chromatin assembly factor I	YPR174c	weak similarity to Nbp1p	YGR110w	weak similarity to YLR099c and YDR125c
YDR030c	weak similarity to human CSA protein	YKR075c	weak similarity to negative regulator Srn1p/Hex2p	YDR090c	weak similarity to Yro2p
YGL243w	weak similarity to human double-stranded RNA adenosine deaminase	YCR047c	weak similarity to N-methyltransferases	YIL044c	weak similarity to zinc-finger protein GCS1
YJL091c	weak similarity to human G protein-coupled receptor	YJL131c	weak similarity to non-epidermal <i>Xenopus</i> keratin, type I	YLR040c	weak similarity to hypothetical protein YL011w
YER063w	weak similarity to human heterogeneous ribonuclear particle protein U	YHL024w	weak similarity to nuclear protein NOP4	YNL212w	weak similarity to <i>C. cardunculus</i> cypr4 protein
YJR002w	weak similarity to human kinesin-related protein CENP-E	YLR126c	weak similarity to <i>P. aeruginosa</i> anthranilate synthase component II		
YMR029c	weak similarity to human nuclear autoantigen	YHL021c	weak similarity to <i>P. aeruginosa</i> $\gamma$ -butyrobetaine hydroxylase		
YCL045c	weak similarity to human ORF	YMR009w	weak similarity to <i>P. aeruginosa</i> regulatory protein mmsR		
YJL057c	weak similarity to human P1/eIF-2a protein kinase	YGR276c	weak similarity to <i>P. troglodytes</i> GOR protein		
YNR008w	weak similarity to human phosphatidylcholine-sterol O-acyltransferase	YER059w	weak similarity to Pho80p		
YJL132w	weak similarity to human phospholipase D	YOR281c	weak similarity to phosphoducins		
YLL037w	weak similarity to human platelet-activating factor receptor	YMR221c	weak similarity to photosystem II protein D2		
YHR090c	weak similarity to human retinoblastoma binding protein 2	YBR094w	weak similarity to pig tubulin-tyrosine ligase		
YOR064c	weak similarity to human retinoblastoma binding protein 2	YOR287c	weak similarity to PITSLRE protein kinase isoforms		
YMR131c	weak similarity to human retinoblastoma-binding protein	YBR151w	weak similarity to potato sucrose cleavage protein		
YLR272c	weak similarity to hypothetical human ORF	YML050w	weak similarity to potato sucrose cleavage protein		
YDL111c	weak similarity to hypothetical human protein	YGR262c	weak similarity to protein kinases		
YCR059c	weak similarity to hypothetical protein YDL177c	YPR106w	weak similarity to protein kinases		