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Research Article

Systems Biology of the Proteomic Analysis of Cytotoxic Gold Compounds in A2780 Ovarian Cancer Cell Line: A Network Analysis

Tania Gamberi¹, Francesca Magherini¹, Tania Fiaschi¹, Elisa Valocchia¹, Giovanni Raugeri¹, Pietro A. Modesti², Luigi Messori³ and Alessandra Modesti^{1*}

¹Department of Scienze Biomediche Sperimentali e Cliniche "Mario Serio", University of Florence, Florence, Italy

²Department of Medicina Sperimentale e Clinica, University of Florence, Florence, Italy; AOU Careggi, Florence, Italy.

³Department of Chimica "Ugo Schiff", University of Florence, Florence Italy

*Corresponding author: Prof. Alessandra Modesti, University of Florence, Department of Scienze Biomediche Sperimentali e Cliniche "Mario Serio", viale GB Morgagni 50-50134 Florence, Italy, Tel: +390552751237; Email: alessandra.modesti@unifi.it

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Supplementary Table 1. Gene Ontology over-representation analysis of the input list A2780/S performed by Webgestalt.

C: the number of reference genes in the category; O: the number of genes in the gene set and also in the category; E: the expected number in the category; R: ratio of enrichment; rawP: p value from the Fisher exact test; adjP: p value adjusted for multiple by Benjamini-Hochberg correction.

Database: **GOBP** Name: **Protein folding** ID: **GO:0006457**

C=218; O=17; E=1.53; R=11.08; rawP=1.75e-13; adjP=1.81e-10

Gene Symbol

Gene Name

PPIB	peptidylprolyl isomerase B (cyclophilin B)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
VBP1	von Hippel-Lindau binding protein 1
HSPA8	heat shock 70kDa protein 8
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PPIA	peptidylprolyl isomerase A (cyclophilin A)
MESDC2	mesoderm development candidate 2
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)

CALR	calreticulin
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
PPID	peptidylprolyl isomerase D
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
CCT7	chaperonin containing TCP1, subunit 7 (eta)
HSPA4L	heat shock 70kDa protein 4-like
HSPD1	heat shock 60kDa protein 1 (chaperonin)

Database: **GO BP** Name: **'de novo' protein folding** ID:GO:0006458
 C=53; O=10; E=0.37; R=26.80; rawP=2.90e-12; adjP=1.50e-09

Gene Symbol **Gene Name**

CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
CCT2	chaperonin containing TCP1, subunit 2 (beta)

TCP1	t-complex 1
VBP1	von Hippel-Lindau binding protein 1
HSPA8	heat shock 70kDa protein 8
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
CCT7	chaperonin containing TCP1, subunit 7 (eta)
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
CCT2	chaperonin containing TCP1, subunit 2 (beta)

Database: **GO BP** Name: **'de novo' posttranslational protein folding** ID:GO:0051084
 C=48; O=9; E=0.34; R=26.63; rawP=3.98e-11; adjP=1.37e-08

Gene Symbol **Gene Name**

CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
TCP1	t-complex 1

VBP1	von Hippel-Lindau binding protein 1
HSPA8	heat shock 70kDa protein 8
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta 60
CCT7	chaperonin containing TCP1, subunit 7 (eta)
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)

Database: **GO**

BP Name: **primary metabolic process** ID: GO:0044238

C=8719; O=85; E=61.38; R=1.38; rawP=4.67e-07; adjP=9.65e-05

**Gene Sym-
bol**

Gene Name

HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
PRDX6	peroxiredoxin 6

RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
EEF1B2	eukaryotic translation elongation factor 1 beta 2
ANK-RD42	ankyrin repeat domain 42
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
SSBP1	single-stranded DNA binding protein 1, mitochondrial
CCT7	chaperonin containing TCP1, subunit 7 (eta)
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydrolipoamide dehydrogenase
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
LAP3	leucine aminopeptidase 3
VBP1	von Hippel-Lindau binding protein 1
HSPA8	heat shock 70kDa protein 8
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1
ACAT2	acetyl-CoA acetyltransferase 2

TCP1	t-complex 1
RUVBL1	RuvB-like 1 (E. coli)
TRAF1	TNF receptor-associated factor 1
H2AFX	H2A histone family, member X
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
HSPA4L	heat shock 70kDa protein 4-like
ATG5	autophagy related 5
TPI1	triosephosphate isomerase 1
MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor)
HMGB1	high mobility group box 1
PPIB	peptidylprolyl isomerase B (cyclophilin B)
GALK1	galactokinase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
PPIA	peptidylprolyl isomerase A (cyclophilin A)
MESDC2	mesoderm development candidate 2
GSS	glutathione synthetase
CALR	calreticulin
OXCT1	3-oxoacid CoA transferase 1
EEF2	eukaryotic translation elongation factor 2
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydro-lase
PMPCA	peptidase (mitochondrial processing) alpha
GMPS	guanine monphosphate synthetase
FUBP3	far upstream element (FUSE) binding protein 3
HSPD1	heat shock 60kDa protein 1 (chaperonin)

CTSD	cathepsin D
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
MTHFD1	Methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase
SP1	Sp1 transcription factor
TXNRD1	thioredoxin reductase 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
HSPA9	heat shock 70kDa protein 9 (mortalin)
NAP1L1	nucleosome assembly protein 1-like 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
PGK1	phosphoglycerate kinase 1
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
YWHAZ	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
ALDH1A1	aldehyde dehydrogenase 1 family, member A1

Database: **GO BP** Name: **single-organism metabolic process** ID: **GO:0044710**

C=9232; O=88; E=65.00; R=1.35; rawP=4.26e-07; adjP=9.65e-05

Gene Symbol

Gene Name

HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
PRDX6	peroxiredoxin 6
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
NIT2	nitrilase family, member 2

YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
EEF1B2	eukaryotic translation elongation factor 1 beta 2
ANKRD42	ankyrin repeat domain 42
SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
SSBP1	single-stranded DNA binding protein 1, mitochondrial
CCT7	chaperonin containing TCP1, subunit 7 (eta)
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydrolipoamide dehydrogenase
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
CDKN2AIP	CDKN2A interacting protein
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
LAP3	leucine aminopeptidase 3
VBP1	von Hippel-Lindau binding protein 1
HSPA8	heat shock 70kDa protein 8
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1
ACAT2	acetyl-CoA acetyltransferase 2
TCP1	t-complex 1
RUVBL1	RuvB-like 1 (E. coli)
TRAF1	TNF receptor-associated factor 1
H2AFX	H2A histone family, member X
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
HSPA4L	heat shock 70kDa protein 4-like

ATG5	autophagy related 5
TPI1	triosephosphate isomerase 1
MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor)
HMGB1	high mobility group box 1
PPIB	peptidylprolyl isomerase B (cyclophilin B)
GALK1	galactokinase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
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PPIA	peptidylprolyl isomerase A (cyclophilin A)
MESDC2	mesoderm development candidate 2
GSS	glutathione synthetase
CALR	Calreticulin
OXCT1	3-oxoacid CoA transferase 1
EEF2	eukaryotic translation elongation factor 2
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
PMPCA	peptidase (mitochondrial processing) alpha
GMPS	guanine monphosphate synthetase
FUBP3	far upstream element (FUZE) binding protein 3
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CTSD	cathepsin D
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
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SP1	Sp1 transcription factor
TXNRD1	thioredoxin reductase 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
HSPA9	heat shock 70kDa protein 9 (mortalin)
NAP1L1	nucleosome assembly protein 1-like 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
PGK1	phosphoglycerate kinase 1

HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
ALDH1A1	aldehyde dehydrogenase 1 family, member A1

Database: **GO BP** Name: **organic substance metabolic process**
 ID:GO:0071704
 C=9024; O=86; E=63.53; R=1.35; rawP=1.14e-06;
 adjP=0.0001

Gene Symbol	Gene Name
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
PRDX6	peroxiredoxin 6
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
EEF1B2	eukaryotic translation elongation factor 1 beta 2
ANKRD42	ankyrin repeat domain 42
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
SSBP1	single-stranded DNA binding protein 1, mitochondrial
CCT7	chaperonin containing TCP1, subunit 7 (eta)
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BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydrolipoamide dehydrogenase
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
CDKN2AIP	CDKN2A interacting protein
CCT2	chaperonin containing TCP1, subunit 2 (beta)
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GAPDH	glyceraldehyde-3-phosphate dehydrogenase

RIPK2	receptor-interacting serine-threonine kinase 2
LAP3	leucine aminopeptidase 3
VBP1	von Hippel-Lindau binding protein 1
HSPA8	heat shock 70kDa protein 8
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1
ACAT2	acetyl-CoA acetyltransferase 2
TCP1	t-complex 1
RUVBL1	RuvB-like 1 (E. coli)
TRAF1	TNF receptor-associated factor 1
H2AFX	H2A histone family, member X
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
HSPA4L	heat shock 70kDa protein 4-like
ATG5	autophagy related 5
TPI1	triosephosphate isomerase 1
MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor)
HMGB1	high mobility group box 1
PPIB	peptidylprolyl isomerase B (cyclophilin B)
GALK1	galactokinase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
PPIA	peptidylprolyl isomerase A (cyclophilin A)
MESDC2	mesoderm development candidate 2
GSS	glutathione synthetase
CALR	Calreticulin
OXCT1	3-oxoacid CoA transferase 1
EEF2	eukaryotic translation elongation factor 2
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
PMPCA	peptidase (mitochondrial processing) alpha
GMPS	guanine monphosphate synthetase
FUBP3	far upstream element (FUSE) binding protein 3
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NAP1L1	nucleosome assembly protein 1-like 1
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HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
ALDH1A1	aldehyde dehydrogenase 1 family, member A1

Database: Name: **cellular metabolic process** ID:GO:0044237
GO BP
 C=8612; O=84; E=60.63; R=1.39; rawP=7.19e-07; adjP=0.0001

Gene Symbol	Gene Name
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
PRDX6	peroxiredoxin 6
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
EEF1B2	eukaryotic translation elongation factor 1 beta 2
ANKRD42	ankyrin repeat domain 42
SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)

PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
SSBP1	single-stranded DNA binding protein 1, mitochondrial
CCT7	chaperonin containing TCP1, subunit 7 (eta)
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydroliipoamide dehydrogenase
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (<i>S. cerevisiae</i>)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
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UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1
TCP1	t-complex 1
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TRAF1	TNF receptor-associated factor 1
H2AFX	H2A histone family, member X
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HSPA4L	heat shock 70kDa protein 4-like
ATG5	autophagy related 5
TPI1	triosephosphate isomerase 1
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ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
ALDH1A1	aldehyde dehydrogenase 1 family, member A1

Database:

GO BPName:**metabolic process**

ID:GO:0008152

C=9488; O=89; E=66.80; R=1.33; rawP=7.10e-07; adjP=0.0001

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ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
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GMPS	guanine monphosphate synthetase
FUBP3	far upstream element (FUSE) binding protein 3
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CTSD	cathepsin D
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydro-
lase,	
	formyltetrahydrofolate synthetase
SP1	Sp1 transcription factor
TXNRD1	thioredoxin reductase 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
PRDX1	peroxiredoxin 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
NAP1L1	nucleosome assembly protein 1-like 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
PGK1	phosphoglycerate kinase 1
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle

ALDH1A1 aldehyde dehydrogenase 1 family, member A1

Database: **GO BP** Name: **cellular macromolecular complex subunit organization**
 ID:GO:0034621

C=690; O=16; E=4.86; R=3.29; rawP=2.45e-05; adjP=0.0025

Gene Symbol	Gene Name
HMGB1	high mobility group box 1
CCT2	chaperonin containing TCP1, subunit 2 (beta)
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
VDAC2	voltage-dependent anion channel 2
ENAH	enabled homolog (Drosophila)
SRSF1	serine/arginine-rich splicing factor 1
SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
CALR	Calreticulin
TCP1	t-complex 1
NAP1L1	nucleosome assembly protein 1-like 1
RUVBL1	RuvB-like 1 (E. coli)
H2AFX	H2A histone family, member X
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CFL1	cofilin 1 (non-muscle)
TUBB	tubulin, beta class I
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)

Database:

GO BP Name: **cellular macromolecular complex assembly** ID:GO:0034622

C=535; O=14; E=3.77; R=3.72; rawP=2.23e-05; adjP=0.0025

Gene Symbol	Gene Name
CALR	Calreticulin
SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
HMGB1	high mobility group box 1
CCT2	chaperonin containing TCP1, subunit 2 (beta)
NAP1L1	nucleosome assembly protein 1-like 1
TCP1	t-complex 1
RUVBL1	RuvB-like 1 (E. coli)
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
H2AFX	H2A histone family, member X
VDAC2	voltage-dependent anion channel 2
HSPD1	heat shock 60kDa protein 1 (chaperonin)
TUBB	tubulin, beta class I
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
SRSF1	serine/arginine-rich splicing factor 1

Database:

GO MF Name: **unfolded protein binding** ID: GO:0051082

C=127; O=13; E=0.86; R=15.04; rawP=3.11e-12; adjP=5.26e-10

Gene Symbol

Gene Name

CALR	Calreticulin
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PPIB	peptidylprolyl isomerase B (cyclophilin B)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
VBP1	von Hippel-Lindau binding protein 1
HSPA8	heat shock 70kDa protein 8
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)

CCT7 chaperonin containing TCP1, subunit 7 (eta)
 HSPD1 heat shock 60kDa protein 1 (chaperonin)
 PPIA peptidylprolyl isomerase A (cyclophilin A)

Database:

GO MF Name: **nucleoside phosphate binding** ID: GO:1901265

C=2437; O=43; E=16.58; R=2.59; rawP=4.95e-10; adjP=2.79e-08

Gene Symbol

Gene Name

GALK1	galactokinase 1
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
GSS	glutathione synthetase
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
EEF2	eukaryotic translation elongation factor 2
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
GMPS	guanine monphosphate synthetase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
CCT7	chaperonin containing TCP1, subunit 7 (eta)
HSPD1	heat shock 60kDa protein 1 (chaperonin)
DLD	dihydrolipoamide dehydrogenase
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase
TXNRD1	thioredoxin reductase 1
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
HSPA8	heat shock 70kDa protein 8
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
VDAC2	voltage-dependent anion channel 2
CCT3	chaperonin containing TCP1, subunit 3 (gamma)

PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
SRSF1	serine/arginine-rich splicing factor 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
RUVBL1	RuvB-like 1 (E. coli)
PGK1	phosphoglycerate kinase 1
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
HSPA4L	heat shock 70kDa protein 4-like
TUBB	tubulin, beta class I

Database: **GO** Name: **nucleotide binding** ID:GO:0000166
 MF ID:GO:0000166
 C=2436; O=43; E=16.58; R=2.59; rawP=4.88e-10; adjP=2.79e-08

Gene Symbol	Gene Name
GALK1	galactokinase 1
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
GSS	glutathione synthetase
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
EEF2	eukaryotic translation elongation factor 2
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
GMPS	guanine monophosphate synthetase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
CCT7	chaperonin containing TCP1, subunit 7 (eta)
HSPD1	heat shock 60kDa protein 1 (chaperonin)
DLD	dihydrolipoamide dehydrogenase
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase
TXNRD1	thioredoxin reductase 1
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
HSPA8	heat shock 70kDa protein 8
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
VDAC2	voltage-dependent anion channel 2
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
SRSF1	serine/arginine-rich splicing factor 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
RUVBL1	RuvB-like 1 (E. coli)
PGK1	phosphoglycerate kinase 1

CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
HSPA4L	heat shock 70kDa protein 4-like
TUBB	tubulin, beta class I

Database: **GO MFName:small molecule binding**

ID:GO:0036094

C=2630; O=43; E=17.90; R=2.40; rawP=5.52e-09; adjP=2.33e-07

Gene Symbol	Gene Name
GALK1	galactokinase 1
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
TGFBFR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
GSS	glutathione synthetase
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
EEF2	eukaryotic translation elongation factor 2
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
GMPS	guanine monphosphate synthetase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
CCT7	chaperonin containing TCP1, subunit 7 (eta)
HSPD1	heat shock 60kDa protein 1 (chaperonin)
DLD	dihydrolipoamide dehydrogenase
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase
TXNRD1	thioredoxin reductase 1
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
HSPA8	heat shock 70kDa protein 8
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
VDAC2	voltage-dependent anion channel 2
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
SRSF1	serine/arginine-rich splicing factor 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
RUVBL1	RuvB-like 1 (E. coli)
PGK1	phosphoglycerate kinase 1
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)

ACTB	actin, beta
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
HSPA4L	heat shock 70kDa protein 4-like
TUBB	tubulin, beta class I

Database: **GO MF** Name: **protein binding** ID:GO:0005515

C=7337; O=78; E=49.92; R=1.56; rawP=1.65e-08; adjP=5.58e-07

Gene Symbol	Gene Name
STIP1	stress-induced-phosphoprotein 1
IMMT	inner membrane protein, mitochondrial
PDCD6IP	programmed cell death 6 interacting protein
PRDX6	peroxiredoxin 6
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
ENAH	enabled homolog (Drosophila)
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
EEF1B2	eukaryotic translation elongation factor 1 beta 2
ANKRD42	ankyrin repeat domain 42
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
CCT7	chaperonin containing TCP1, subunit 7 (eta)
SSBP1	single-stranded DNA binding protein 1, mitochondrial
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
VCL	Vinculin
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
CDKN2AIP	CDKN2A interacting protein
CCT2	chaperonin containing TCP1, subunit 2 (beta)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
VBP1	von Hippel-Lindau binding protein 1
S100A4	S100 calcium binding protein A4
HSPA8	heat shock 70kDa protein 8

VDAC2	voltage-dependent anion channel 2
EZR	Ezrin
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1
TCP1	t-complex 1
HINT1	histidine triad nucleotide binding protein 1
RUVBL1	RuvB-like 1 (E. coli)
TRAF1	TNF receptor-associated factor 1
H2AFX	H2A histone family, member X
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
ATG5	autophagy related 5
TUBB	tubulin, beta class I
MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor)
HMGB1	high mobility group box 1
PPIB	peptidylprolyl isomerase B (cyclophilin B)
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PPIA	peptidylprolyl isomerase A (cyclophilin A)
MESDC2	mesoderm development candidate 2
GSS	glutathione synthetase
CALR	Calreticulin
OXCT1	3-oxoacid CoA transferase 1
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
HSPD1	heat shock 60kDa protein 1 (chaperonin)
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
SP1	Sp1 transcription factor
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
PRDX1	peroxiredoxin 1

HSPA9	heat shock 70kDa protein 9 (mortalin)	
NAP1L1	nucleosome assembly protein 1-like 1	
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein	
HNRNPK	heterogeneous nuclear ribonucleoprotein K	
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa	
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide	

ATP5A1 ATP synthase, H⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle

Database: **GO MF** Name: **translation elongation factor activity**

ID:GO:0003746

C=18; O=5; E=0.12; R=40.82; rawP=1.06e-07; adjP=2.99e-06

Gene Symbol

Gene Name

EEF2	eukaryotic translation elongation factor 2
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
EEF1A2	eukaryotic translation elongation factor 1 alpha 2

TUFM Tu translation elongation factor, mitochondrial
 eukaryotic translation elongation factor 1
 EEF1B2 beta 2

Database: **GO MF** Name: **organic cyclic compound binding**

ID:GO:0097159

C=5443; O=63; E=37.04; R=1.70; rawP=1.76e-07; adjP=4.25e-06

Gene Symbol

Gene Name

GALK1	galactokinase 1
HMGB1	high mobility group box 1
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
HEBP1	heme binding protein 1
PHB	Prohibitin
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
APP	amyloid beta (A4) precursor protein
GSS	glutathione synthetase
EEF1B2	eukaryotic translation elongation factor 1 beta 2

CALR	Calreticulin
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
EEF2	eukaryotic translation elongation factor 2
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
FUBP3	far upstream element (FUSE) binding protein 3
GMPS	guanine monphosphate synthetase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
CCT7	chaperonin containing TCP1, subunit 7 (eta)
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
HSPD1	heat shock 60kDa protein 1 (chaperonin)
DLD	dihydrolipoamide dehydrogenase

ENO1	enolase 1, (alpha)
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
formyltetrahydrofolate synthetase	MTHFD1 methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase,
SP1	Sp1 transcription factor
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
TXNRD1	thioredoxin reductase 1
CDKN2AIP	CDKN2A interacting protein
CCT2 (beta)	chaperonin containing TCP1, subunit 2
DTYMK kinase)	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
PSMC3 subunit, ATPase, 3	proteasome (prosome, macropain) 26S
HSPA8	heat shock 70kDa protein 8
TUFM	Tu translation elongation factor, mitochondrial
VDAC2	voltage-dependent anion channel 2
CCT3 (gamma)	chaperonin containing TCP1, subunit 3
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
SRSF1	serine/arginine-rich splicing factor 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
RUVBL1	RuvB-like 1 (E. coli)
PGK1	phosphoglycerate kinase 1
H2AFX	H2A histone family, member X
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
HSPA4L	heat shock 70kDa protein 4-like
ALDH1A1	aldehyde dehydrogenase 1 family, member A1
TUBB	tubulin, beta class I

Database: **GO MF** Name: **binding** ID:GO:0005488
 C=11955; O=100; E=81.35; R=1.23; rawP=2.40e-07; adjP=5.07e-06

Gene Symbol	Gene Name
STIP1	stress-induced-phosphoprotein 1
IMMT	inner membrane protein, mitochondrial
PDCD6IP	programmed cell death 6 interacting protein
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
PRDX6	peroxiredoxin 6
HEBP1	heme binding protein 1
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
ENAH	enabled homolog (Drosophila)
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
EEF1B2	eukaryotic translation elongation factor 1 beta 2
ANKRD42	ankyrin repeat domain 42
SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
CCT7	chaperonin containing TCP1, subunit 7 (eta)
SSBP1	single-stranded DNA binding protein 1, mitochondrial
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydrolipoamide dehydrogenase
VCL	vinculin
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
CDKN2AIP	CDKN2A interacting protein
CCT2	chaperonin containing TCP1, subunit 2 (beta)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
DTYMK	deoxythymidylate kinase (thymidylate kinase)
RIPK2	receptor-interacting serine-threonine kinase 2
VBP1	von Hippel-Lindau binding protein 1
LAP3	leucine aminopeptidase 3
S100A4	S100 calcium binding protein A4
HSPA8	heat shock 70kDa protein 8
VDAC2	voltage-dependent anion channel 2
EZR	ezrin
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
RCN2	reticulocalbin 2, EF-hand calcium binding domain
UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1
TCP1	t-complex 1
HINT1	histidine triad nucleotide binding protein 1

RUVBL1	RuvB-like 1 (E. coli)
TRAF1	TNF receptor-associated factor 1
H2AFX	H2A histone family, member X
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
HSPA4L	heat shock 70kDa protein 4-like
ATG5	autophagy related 5
TUBB	tubulin, beta class I
MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor)
HMGB1	high mobility group box 1
PPIB	peptidylprolyl isomerase B (cyclophilin B)
GALK1	galactokinase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
PPIA	peptidylprolyl isomerase A (cyclophilin A)
GSS	glutathione synthetase
MESDC2	mesoderm development candidate 2
CALR	calreticulin
EEF2	eukaryotic translation elongation factor 2
OXCT1	3-oxoacid CoA transferase 1
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
PMPCA	peptidase (mitochondrial processing) alpha
FUBP3	far upstream element (FUSE) binding protein 3
GMPS	guanine monphosphate synthetase
HSPD1	heat shock 60kDa protein 1 (chaperonin)
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydro-
lase,	formyltetrahydrofolate synthetase
SP1	Sp1 transcription factor
TXNRD1	thioredoxin reductase 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
PRDX1	peroxiredoxin 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
NAP1L1	nucleosome assembly protein 1-like 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
PGK1	phosphoglycerate kinase 1
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
PPP2R3C	protein phosphatase 2, regulatory subunit B'', gamma
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
ALDH1A1	aldehyde dehydrogenase 1 family, member A1

Database: **GO MF** Name:**heterocyclic compound binding**

ID:GO:1901363

C=5391; O=62; E=36.68; R=1.69; rawP=3.35e-07; adjP=6.29e-06

Gene Symbol	Gene Name
GALK1	galactokinase 1
HMGB1	high mobility group box 1
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
HEBP1	heme binding protein 1
PHB	Prohibitin
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
TGFBR1	transforming growth factor, beta receptor 1
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
APP	amyloid beta (A4) precursor protein
GSS	glutathione synthetase
EEF1B2	eukaryotic translation elongation factor 1 beta 2
CALR	Calreticulin
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
EEF2	eukaryotic translation elongation factor 2
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
FUBP3	far upstream element (FUSE) binding protein 3
GMPS	guanine monphosphate synthetase
UBE2G1	ubiquitin-conjugating enzyme E2G 1
CCT7	chaperonin containing TCP1, subunit 7 (eta)
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
HSPD1	heat shock 60kDa protein 1 (chaperonin)
DLD	dihydrolipoamide dehydrogenase
ENO1	enolase 1, (alpha)
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase
SP1	Sp1 transcription factor
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
TXNRD1	thioredoxin reductase 1
CD- KN2AIP	CDKN2A interacting protein

CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
HSPA8	heat shock 70kDa protein 8
TUFM	Tu translation elongation factor, mitochondrial
VDAC2	voltage-dependent anion channel 2
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
SRSF1	serine/arginine-rich splicing factor 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
RUVBL1	RuvB-like 1 (E. coli)
PGK1	phosphoglycerate kinase 1
H2AFX	H2A histone family, member X
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
HSPA4L	heat shock 70kDa protein 4-like
TUBB	tubulin, beta class I

Database: **GO MF** Name: **ribonucleoside binding** ID:GO:0032549

C=1842; O=30; E=12.53; R=2.39; rawP=3.17e-06; adjP=4.12e-05

Gene Symbol	Gene Name
GALK1	galactokinase 1
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
RIPK2	receptor-interacting serine-threonine kinase 2
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
HSPA8	heat shock 70kDa protein 8
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
TUFM	Tu translation elongation factor, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
TGFBR1	transforming growth factor, beta receptor 1

PKM	pyruvate kinase, muscle
GSS	glutathione synthetase
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
EEF2	eukaryotic translation elongation factor 2
RUVBL1	RuvB-like 1 (E. coli)
PGK1	phosphoglycerate kinase 1
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
GMPS	guanine monophosphate synthetase
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
UBE2G1	ubiquitin-conjugating enzyme E2G 1
ACTB	actin, beta
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
CCT7	chaperonin containing TCP1, subunit 7 (eta)
HSPD1	heat shock 60kDa protein 1 (chaperonin)
HSPA4L	heat shock 70kDa protein 4-like
TUBB	tubulin, beta class I
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP ⁺ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase

Database: **GO CC** Name: **cytoplasm** ID:GO:0005737

C=9130; O=99; E=56.22; R=1.76; rawP=1.93e-20; adjP=3.01e-18

**Gene Sym-
bol**

Gene Name

STIP1	stress-induced-phosphoprotein 1
IMMT	inner membrane protein, mitochondrial
PDCD6IP	programmed cell death 6 interacting protein
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
PRDX6	peroxiredoxin 6
HEBP1	heme binding protein 1
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
NIT2	nitrilase family, member 2
ENAH	enabled homolog (Drosophila)
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
CIAPIN1	cytokine induced apoptosis inhibitor 1
EEF1B2	eukaryotic translation elongation factor 1 beta 2
SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen

PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
CCT7	chaperonin containing TCP1, subunit 7 (eta)
SSBP1	single-stranded DNA binding protein 1, mitochondrial
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydrolipoamide dehydrogenase
VCL	vinculin
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
ACTR6	ARP6 actin-related protein 6 homolog (yeast)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
DTYMK	deoxythymidylate kinase (thymidylate kinase)
RIPK2	receptor-interacting serine-threonine kinase 2
VBP1	von Hippel-Lindau binding protein 1
LAP3	leucine aminopeptidase 3
S100A4	S100 calcium binding protein A4
HSPA8	heat shock 70kDa protein 8
VDAC2	voltage-dependent anion channel 2
EZR	ezrin
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
RCN2	reticulocalbin 2, EF-hand calcium binding domain
UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1
ACAT2	acetyl-CoA acetyltransferase 2
TCP1	t-complex 1
HINT1	histidine triad nucleotide binding protein 1
RUVBL1	RuvB-like 1 (E. coli)
TRAF1	TNF receptor-associated factor 1
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
HSPA4L	heat shock 70kDa protein 4-like
ATG5	autophagy related 5
TUBB	tubulin, beta class I
TPI1	triosephosphate isomerase 1
MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor)
HMGB1	high mobility group box 1
PPIB	peptidylprolyl isomerase B (cyclophilin B)
GALK1	galactokinase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
PPIA	peptidylprolyl isomerase A (cyclophilin A)
GSS	glutathione synthetase
MESDC2	mesoderm development candidate 2
CALR	calreticulin
EEF2	eukaryotic translation elongation factor 2
OXCT1	3-oxoacid CoA transferase 1
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
PMPCA	peptidase (mitochondrial processing) alpha

FUBP3	far upstream element (FUSE) binding protein 3
GMPS	guanine monphosphate synthetase
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CTSD	cathepsin D
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase
SP1	Sp1 transcription factor
TXNRD1	thioredoxin reductase 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
PRDX1	peroxiredoxin 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
NAP1L1	nucleosome assembly protein 1-like 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
PGK1	phosphoglycerate kinase 1
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
PPP2R3C	protein phosphatase 2, regulatory subunit B'', gamma
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
ALDH1A1	aldehyde dehydrogenase 1 family, member A1

Database: **GO CC** Name: **cytoplasmic part**

ID:GO:0044444

C=6772; O=81; E=41.70; R=1.94; rawP=5.32e-15; adjP=4.15e-13

Gene Symbol

Gene Name

STIP1	stress-induced-phosphoprotein 1
IMMT	inner membrane protein, mitochondrial
PDCD6IP	programmed cell death 6 interacting protein

PRDX6	peroxiredoxin 6
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1

ENAH	enabled homolog (Drosophila)
NIT2	nitrilase family, member 2

YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
EEF1B2	eukaryotic translation elongation factor 1 beta 2

SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
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CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
DUT	deoxyuridine triphosphatase
SSBP1	single-stranded DNA binding protein 1, mitochondrial
CCT7	chaperonin containing TCP1, subunit 7 (eta)
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydrolipoamide dehydrogenase
VCL	Vinculin
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
LAP3	leucine aminopeptidase 3
VBP1	von Hippel-Lindau binding protein 1
S100A4	S100 calcium binding protein A4
HSPA8	heat shock 70kDa protein 8
VDAC2	voltage-dependent anion channel 2
EZR	Ezrin
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
RCN2	reticulocalbin 2, EF-hand calcium binding domain
UBQLN1	ubiquilin 1
ACAT2	acetyl-CoA acetyltransferase 2
TCP1	t-complex 1
RUVBL1	RuvB-like 1 (E. coli)
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
ATG5	autophagy related 5
TUBB	tubulin, beta class I
TPI1	triosephosphate isomerase 1
PPIB	peptidylprolyl isomerase B (cyclophilin B)
GALK1	galactokinase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
PHGDH	phosphoglycerate dehydrogenase
PPIA	peptidylprolyl isomerase A (cyclophilin A)
MESDC2	mesoderm development candidate 2
GSS	glutathione synthetase
CALR	Calreticulin
OXCT1	3-oxoacid CoA transferase 1
EEF2	eukaryotic translation elongation factor 2
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
PMPCA	peptidase (mitochondrial processing) alpha

GMPS	guanine monphosphate synthetase
CTSD	cathepsin D
HSPD1	heat shock 60kDa protein 1 (chaperonin)
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydro- lase,
	formyltetrahydrofolate synthetase
TXNRD1	thioredoxin reductase 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
PRDX1	peroxiredoxin 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
NAP1L1	nucleosome assembly protein 1-like 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
PGK1	phosphoglycerate kinase 1
KHSRP	KH-type splicing regulatory protein
PPP2R3C	protein phosphatase 2, regulatory subunit B'', gamma
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
ALDH1A1	<u>aldehyde dehydrogenase 1 family, member A1</u>

Database: **GO CC** Name: **cytosol** ID: **GO:0005829**

C=2372; O=47; E=14.61; R=3.22; rawP=1.57e-14; adjP=8.16e-13

Gene Symbol	Gene Name
GALK1	galactokinase 1
PDCD6IP	programmed cell death 6 interacting protein
PRDX6	peroxiredoxin 6
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
ENAH	enabled homolog (Drosophila)
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
PHGDH	phosphoglycerate dehydrogenase
APP	amyloid beta (A4) precursor protein
PPIA	peptidylprolyl isomerase A (cyclophilin A)
GSS	glutathione synthetase
EEF1B2	eukaryotic translation elongation factor 1 beta 2
CALR	calreticulin

CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
EEF2	eukaryotic translation elongation factor 2
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
GMPS	guanine monphosphate synthetase
CCT7	chaperonin containing TCP1, subunit 7 (eta)
HSPD1	heat shock 60kDa protein 1 (chaperonin)
BAG6	BCL2-associated athanogene 6
VCL	vinculin
ENO1	enolase 1, (alpha)
STRAP	serine/threonine kinase receptor associated protein
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase
TXNRD1	thioredoxin reductase 1
CCT2	chaperonin containing TCP1, subunit 2 (beta)
DTYMK	deoxythymidylate kinase (thymidylate kinase)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
RIPK2	receptor-interacting serine-threonine kinase 2
VBP1	von Hippel-Lindau binding protein 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
HSPA8	heat shock 70kDa protein 8
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
EZR	eZRin
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
TCP1	t-complex 1
PGK1	phosphoglycerate kinase 1
KHSRP	KH-type splicing regulatory protein
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ACTB	actin, beta
ALDH1A1	aldehyde dehydrogenase 1 family, member A1
TPI1	triosephosphate isomerase 1
TUBB	tubulin, beta class I

Database: **GO CC Name:intracellular part** ID:GO:0044424

C=12237; O=104; E=75.35; R=1.38; rawP=2.77e-14; adjP=1.08e-12

Gene Symbol	Gene Name
STIP1	stress-induced-phosphoprotein 1
IMMT	inner membrane protein, mitochondrial

PDCD6IP	programmed cell death 6 interacting protein
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
PRDX6	peroxiredoxin 6
HEBP1	heme binding protein 1
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
NIT2	nitrilase family, member 2
ENAH	enabled homolog (Drosophila)
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
CIAPIN1	cytokine induced apoptosis inhibitor 1
EEF1B2	eukaryotic translation elongation factor 1 beta 2
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
ANKRD42	ankyrin repeat domain 42
SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
CCT7	chaperonin containing TCP1, subunit 7 (eta)
SSBP1	single-stranded DNA binding protein 1, mitochondrial
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydrolipoamide dehydrogenase
VCL	Vinculin
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
CDKN2AIP	CDKN2A interacting protein
ACTR6	ARP6 actin-related protein 6 homolog (yeast)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
DTYMK	deoxythymidylate kinase (thymidylate kinase)
RIPK2	receptor-interacting serine-threonine kinase 2
VBP1	von Hippel-Lindau binding protein 1
LAP3	leucine aminopeptidase 3
S100A4	S100 calcium binding protein A4
HSPA8	heat shock 70kDa protein 8
VDAC2	voltage-dependent anion channel 2
EZR	Ezrin
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
RCN2	reticulocalbin 2, EF-hand calcium binding domain
UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1

ACAT2	acetyl-CoA acetyltransferase 2
TCP1	t-complex 1
HINT1	histidine triad nucleotide binding protein 1
RUVBL1	RuvB-like 1 (E. coli)
TRAF1	TNF receptor-associated factor 1
H2AFX	H2A histone family, member X
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
HSPA4L	heat shock 70kDa protein 4-like
ATG5	autophagy related 5
TUBB	tubulin, beta class I
TP11	triosephosphate isomerase 1
MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor)
HMGB1	high mobility group box 1
PPIB	peptidylprolyl isomerase B (cyclophilin B)
GALK1	galactokinase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
PPIA	peptidylprolyl isomerase A (cyclophilin A)
GSS	glutathione synthetase
MESDC2	mesoderm development candidate 2
CALR	Calreticulin
EEF2	eukaryotic translation elongation factor 2
OXCT1	3-oxoacid CoA transferase 1
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
PMPCA	peptidase (mitochondrial processing) alpha
FUBP3	far upstream element (FUSE) binding protein 3
GMPS	guanine monphosphate synthetase
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CTSD	cathepsin D
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
	MTHFD1 methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofo-
	late cyclohydrolase,
	formyltetrahydrofolate synthetase
SP1	Sp1 transcription factor
TXNRD1	thioredoxin reductase 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
ECCHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)

PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
PRDX1	peroxiredoxin 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
NAP1L1	nucleosome assembly protein 1-like 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
PGK1	phosphoglycerate kinase 1
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
PPP2R3C	protein phosphatase 2, regulatory subunit B'', gamma
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
ALDH1A1	<u>aldehyde dehydrogenase 1 family, member A1</u>

Database: **GO CC** Name: **chaperonin-containing T-complex** ID: GO:0005832

C=7; O=6; E=0.04; R=139.21; rawP=3.28e-13; adjP=1.02e-11

Gene Symbol

Gene Symbol	Gene Name
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
TCP1	t-complex 1
CCT7	<u>chaperonin containing TCP1, subunit 7 (eta)</u>

Database: **GO CC** Name: **intracellular** ID: GO:0005622

C=12564; O=104; E=77.36; R=1.34; rawP=4.06e-13; adjP=1.06e-11

Gene Symbol

Gene Symbol	Gene Name
STIP1	stress-induced-phosphoprotein 1
IMMT	inner membrane protein, mitochondrial
PDCD6IP	programmed cell death 6 interacting protein
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
PRDX6	peroxiredoxin 6

HEBP1	heme binding protein 1
ACTR3	ARP3 actin-related protein 3 homolog (yeast)
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1

NIT2	nitrilase family, member 2
ENAH	enabled homolog (Drosophila)

YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
APP	amyloid beta (A4) precursor protein
CIAPIN1	cytokine induced apoptosis inhibitor 1

EEF1B2	eukaryotic translation elongation factor 1 beta 2
CCT5	<u>chaperonin containing TCP1, subunit 5 (epsilon)</u>

ANKRD42	ankyrin repeat domain 42
SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
PPID	peptidylprolyl isomerase D
DUT	deoxyuridine triphosphatase
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
CCT7	chaperonin containing TCP1, subunit 7 (eta)
SSBP1	single-stranded DNA binding protein 1, mitochondrial
BAG6	BCL2-associated athanogene 6
ENO1	enolase 1, (alpha)
DLD	dihydrolipoamide dehydrogenase
VCL	Vinculin
STRAP	serine/threonine kinase receptor associated protein
CFL1	cofilin 1 (non-muscle)
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (<i>S. cerevisiae</i>)
CCT2	chaperonin containing TCP1, subunit 2 (beta)
CDKN2AIP	CDKN2A interacting protein
ACTR6	ARP6 actin-related protein 6 homolog (yeast)
GAPDH	glyceraldehyde-3-phosphate dehydrogenase
DTYMK	deoxythymidylate kinase (thymidylate kinase)
RIPK2	receptor-interacting serine-threonine kinase 2
VBP1	von Hippel-Lindau binding protein 1
LAP3	leucine aminopeptidase 3
S100A4	S100 calcium binding protein A4
HSPA8	heat shock 70kDa protein 8
VDAC2	voltage-dependent anion channel 2
EZR	Ezrin
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
RCN2	reticulocalbin 2, EF-hand calcium binding domain
UBQLN1	ubiquilin 1
SRSF1	serine/arginine-rich splicing factor 1
ACAT2	acetyl-CoA acetyltransferase 2
TCP1	t-complex 1
HINT1	histidine triad nucleotide binding protein 1
RUVBL1	RuvB-like 1 (<i>E. coli</i>)
TRAF1	TNF receptor-associated factor 1
H2AFX	H2A histone family, member X
CCT6A	chaperonin containing TCP1, subunit 6A (zeta 1)
ACTB	actin, beta
HSPA4L	heat shock 70kDa protein 4-like
ATG5	autophagy related 5
TUBB	tubulin, beta class I
TPI1	triosephosphate isomerase 1
MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor)
HMGB1	high mobility group box 1

PPIB	peptidylprolyl isomerase B (cyclophilin B)
GALK1	galactokinase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
HNRNP1	heterogeneous nuclear ribonucleoprotein H1 (H)
PHGDH	phosphoglycerate dehydrogenase
PPIA	peptidylprolyl isomerase A (cyclophilin A)
GSS	glutathione synthetase
MESDC2	mesoderm development candidate 2
CALR	Calreticulin
EEF2	eukaryotic translation elongation factor 2
OXCT1	3-oxoacid CoA transferase 1
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
EEF1A2	eukaryotic translation elongation factor 1 alpha 2
PMPCA	peptidase (mitochondrial processing) alpha
FUBP3	far upstream element (FUSE) binding protein 3
GMPS	guanine monphosphate synthetase
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CTSD	cathepsin D
EEF1D	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase
SP1	Sp1 transcription factor
TXNRD1	thioredoxin reductase 1
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
CCT3	chaperonin containing TCP1, subunit 3 (gamma)
PKM	pyruvate kinase, muscle
EIF4H	eukaryotic translation initiation factor 4H
PRDX1	peroxiredoxin 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
NAP1L1	nucleosome assembly protein 1-like 1
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
PGK1	phosphoglycerate kinase 1
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
PPP2R3C	protein phosphatase 2, regulatory subunit B'', gamma
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H+ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle

ALDH1A1 aldehyde dehydrogenase 1 family, member A1

Database: **GO CC** Name: **membrane-enclosed lumen** ID:GO:0031974

C=3385; O=51; E=20.84; R=2.45; rawP=3.40e-11; adjP=7.58e-10

Gene Symbol	Gene Name
PPIB	peptidylprolyl isomerase B (cyclophilin B)
HMGB1	high mobility group box 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
APP	amyloid beta (A4) precursor protein
CIAPIN1	cytokine induced apoptosis inhibitor 1
CALR	Calreticulin
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
OXCT1	3-oxoacid CoA transferase 1
DUT	deoxyuridine triphosphatase
PMPCA	peptidase (mitochondrial processing) alpha
SSBP1	single-stranded DNA binding protein 1, mitochondrial
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CTSD	cathepsin D
DLD	dihydrolipoamide dehydrogenase
CFL1	cofilin 1 (non-muscle)
SP1	Sp1 transcription factor
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
TXNRD1	thioredoxin reductase 1
CDKN2AIP	CDKN2A interacting protein
CCT2	chaperonin containing TCP1, subunit 2 (beta)
LAP3	leucine aminopeptidase 3
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
HSPA8	heat shock 70kDa protein 8
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
VDAC2	voltage-dependent anion channel 2
EZR	Ezrin
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
RCN2	reticulocalbin 2, EF-hand calcium binding domain
SRSF1	serine/arginine-rich splicing factor 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
ACAT2	acetyl-CoA acetyltransferase 2
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
RUVBL1	RuvB-like 1 (E. coli)
H2AFX	H2A histone family, member X
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ACTB	actin, beta

ATP5A1 ATP synthase, H⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
 TUBB tubulin, beta class I

Database: GO CC Name:organelle lumen		ID:GO:0043233
C=3340; O=49; E=20.57; R=2.38; rawP=2.97e-10; adjP=5.79e-09		
Gene Symbol	Gene Name	
PIIB	peptidylprolyl isomerase B (cyclophilin B)	
HMGB1	high mobility group box 1	
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B	
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)	
PHB	Prohibitin	
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10	
HNRNP1	heterogeneous nuclear ribonucleoprotein H1 (H)	
APP	amyloid beta (A4) precursor protein	
CIAPIN1	cytokine induced apoptosis inhibitor 1	
CALR	Calreticulin	
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)	
PA2G4	proliferation-associated 2G4, 38kDa	
PCNA	proliferating cell nuclear antigen	
OXCT1	3-oxoacid CoA transferase 1	
DUT	deoxyuridine triphosphatase	
PMPCA	peptidase (mitochondrial processing) alpha	
SSBP1	single-stranded DNA binding protein 1, mitochondrial	
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit	
HSPD1	heat shock 60kDa protein 1 (chaperonin)	
CTSD	cathepsin D	
DLD	dihydrolipoamide dehydrogenase	
CFL1	cofilin 1 (non-muscle)	
SP1	Sp1 transcription factor	
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)	
TXNRD1	thioredoxin reductase 1	
CDKN2AIP	CDKN2A interacting protein	
CCT2	chaperonin containing TCP1, subunit 2 (beta)	
LAP3	leucine aminopeptidase 3	
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3	
HSPA8	heat shock 70kDa protein 8	
TUFM	Tu translation elongation factor, mitochondrial	
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial	
VDAC2	voltage-dependent anion channel 2	
EZR	Ezrin	
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble	
RCN2	reticulocalbin 2, EF-hand calcium binding domain	

SRSF1	serine/arginine-rich splicing factor 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
ACAT2	acetyl-CoA acetyltransferase 2
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
RUVBL1	RuvB-like 1 (E. coli)
H2AFX	H2A histone family, member X
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ACTB	actin, beta
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle

Database: GO CC Name:intracellular organelle lumen ID:GO:0070013

C=3294; O=48; E=20.28; R=2.37; rawP=6.62e-10; adjP=1.15e-08

**Gene Sym-
bol**

Gene Name

PPIB	peptidylprolyl isomerase B (cyclophilin B)
HMGB1	high mobility group box 1
HNRNPAB	heterogeneous nuclear ribonucleoprotein A/B
REL	v-rel reticuloendotheliosis viral oncogene homolog (avian)
PHB	Prohibitin
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
HNRNPH1	heterogeneous nuclear ribonucleoprotein H1 (H)
CIAPIN1	cytokine induced apoptosis inhibitor 1
CALR	Calreticulin
CCT5	chaperonin containing TCP1, subunit 5 (epsilon)
PA2G4	proliferation-associated 2G4, 38kDa
PCNA	proliferating cell nuclear antigen
OXCT1	3-oxoacid CoA transferase 1
DUT	deoxyuridine triphosphatase
PMPCA	peptidase (mitochondrial processing) alpha
POLE3	polymerase (DNA directed), epsilon 3, accessory subunit
SSBP1	single-stranded DNA binding protein 1, mitochondrial
HSPD1	heat shock 60kDa protein 1 (chaperonin)
CTSD	cathepsin D
DLD	dihydrolipoamide dehydrogenase
CFL1	cofilin 1 (non-muscle)
SP1	Sp1 transcription factor
PRPF19	PRP19/PSO4 pre-mRNA processing factor 19 homolog (S. cerevisiae)
TXNRD1	thioredoxin reductase 1
CD- KN2AIP	CDKN2A interacting protein

CCT2	chaperonin containing TCP1, subunit 2 (beta)
LAP3	leucine aminopeptidase 3
PSMC3	proteasome (prosome, macropain) 26S subunit, ATPase, 3
HSPA8	heat shock 70kDa protein 8
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
VDAC2	voltage-dependent anion channel 2
EZR	Ezrin
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
RCN2	reticulocalbin 2, EF-hand calcium binding domain
SRSF1	serine/arginine-rich splicing factor 1
HSPA9	heat shock 70kDa protein 9 (mortalin)
TCP1	t-complex 1
ACAT2	acetyl-CoA acetyltransferase 2
SYNCRIP	synaptotagmin binding, cytoplasmic RNA interacting protein
RUVBL1	RuvB-like 1 (E. coli)
H2AFX	H2A histone family, member X
HNRNPK	heterogeneous nuclear ribonucleoprotein K
KHSRP	KH-type splicing regulatory protein
CSTF2	cleavage stimulation factor, 3' pre-RNA, subunit 2, 64kDa
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ACTB	actin, beta
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle

Database: GO CC Name:mitochondrion ID:GO:0005739

C=1525; O=30; E=9.39; R=3.19; rawP=5.75e-09; adjP=8.97e-08

**Gene Sym-
bol**

Gene Name

TXNRD1	thioredoxin reductase 1
NDUFS1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa (NADH-coenzyme Q reductase)
IMMT	inner membrane protein, mitochondrial
LAP3	leucine aminopeptidase 3
PHB	Prohibitin
TUFM	Tu translation elongation factor, mitochondrial
ECHS1	enoyl CoA hydratase, short chain, 1, mitochondrial
HSD17B10	hydroxysteroid (17-beta) dehydrogenase 10
VDAC2	voltage-dependent anion channel 2
RIPK1	receptor (TNFRSF)-interacting serine-threonine kinase 1
NIT2	nitrilase family, member 2
PKM	pyruvate kinase, muscle
YWHAE	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, epsilon polypeptide
IDH1	isocitrate dehydrogenase 1 (NADP+), soluble
PRDX1	peroxiredoxin 1

SCO2	SCO cytochrome oxidase deficient homolog 2 (yeast)
HSPA9	heat shock 70kDa protein 9 (mortalin)
ACAT2	acetyl-CoA acetyltransferase 2
OXCT1	3-oxoacid CoA transferase 1
ATIC	5-aminoimidazole-4-carboxamide ribonucleotide formyltransferase/IMP cyclohydrolase
DUT	deoxyuridine triphosphatase
PMPCA	peptidase (mitochondrial processing) alpha
YWHAZ	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide
ATP5A1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit 1, cardiac muscle
CCT7	chaperonin containing TCP1, subunit 7 (eta)
SSBP1	single-stranded DNA binding protein 1, mitochondrial
HSPD1	heat shock 60kDa protein 1 (chaperonin)
DLD	dihydrolipoamide dehydrogenase
STRAP	serine/threonine kinase receptor associated protein
MTHFD1	methylenetetrahydrofolate dehydrogenase (NADP ⁺ dependent) 1, methenyltetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase