

| Gene names | | Protein names | Largest Cluster (kcal/mol) | Num in Largest Cluster |
|------------|--------------------------------|--|----------------------------|------------------------|
| 1 | KYAT3 CCBL2 KAT3 | Kynurenine--oxoglutarate transaminase 3 (EC 2.6.1.7) (Cysteine-S-conjugate beta-lyase 2) (EC 4.4.1.13) (Kynurenine aminotransferase 3) (Kynurenine aminotransferase III) (KATIII) (Kynurenine--glyoxylate transaminase) (EC 2.6.1.63) (Kynurenine--oxoglutarate transaminase III) | -16.250000 | 66.000000 |
| 2 | GOT1 | Aspartate aminotransferase, cytoplasmic (cAspAT) (EC 2.6.1.1) (EC 2.6.1.3) (Cysteine aminotransferase, cytoplasmic) (Cysteine transaminase, cytoplasmic) (cCAT) (Glutamate oxaloacetate transaminase 1) (Transaminase A) | -16.240000 | 48.000000 |
| 3 | KYAT1 CCBL1 | Kynurenine--oxoglutarate transaminase 1 (EC 2.6.1.7) (Cysteine-S-conjugate beta-lyase) (EC 4.4.1.13) (Glutamine transaminase K) (GTK) (Glutamine--phenylpyruvate transaminase) (EC 2.6.1.64) (Kynurenine aminotransferase 1) (Kynurenine aminotransferase I) (KATI) (Kynurenine--oxoglutarate transaminase I) | -16.080000 | 79.000000 |
| 4 | SEPSECS TRNP48 | O-phosphoseryl-tRNA(Sec) selenium transferase (EC 2.9.1.2) (Liver-pancreas antigen) (LP) (SLA-p35) (SLA/LP autoantigen) (Selenocysteine synthase) (Sec synthase) (SelenocysteinyI-tRNA(Sec) synthase) (Sep-tRNA:Sec-tRNA synthase) (SepSecS) (Soluble liver antigen) (SLA) (UGA suppressor tRNA-associated protein) (tRNA(Ser/Sec)-associated antigenic protein) | -15.830000 | 46.000000 |
| 5 | AADAT KAT2 | Kynurenine/alpha-aminoadipate aminotransferase, mitochondrial (KAT/AadAT) (2-aminoadipate aminotransferase) (2-aminoadipate transaminase) (EC 2.6.1.39) (Alpha-aminoadipate aminotransferase) (AadAT) (Kynurenine aminotransferase II) (Kynurenine--oxoglutarate aminotransferase II) (Kynurenine--oxoglutarate transaminase 2) (EC 2.6.1.7) (Kynurenine--oxoglutarate transaminase II) | -15.760000 | 87.000000 |
| 6 | GOT2 | Aspartate aminotransferase, mitochondrial (mAspAT) (EC 2.6.1.1) (EC 2.6.1.7) (Fatty acid-binding protein) (FABP-1) (Glutamate oxaloacetate transaminase 2) (Kynurenine aminotransferase 4) (Kynurenine aminotransferase IV) (Kynurenine--oxoglutarate transaminase 4) (Kynurenine--oxoglutarate transaminase IV) (Plasma membrane-associated fatty acid-binding protein) (FABPpm) (Transaminase A) | -15.730000 | 36.000000 |
| 7 | BCAT2 BCATM BCT2 ECA40 | Branched-chain-amino-acid aminotransferase, mitochondrial (BCAT(m)) (EC 2.6.1.42) (Placental protein 18) (PP18) | -15.140000 | 40.000000 |
| 8 | SDS SDH | L-serine dehydratase/L-threonine deaminase (SDH) (EC 4.3.1.17) (L-serine deaminase) (L-threonine dehydratase) (TDH) (EC 4.3.1.19) | -14.860000 | 56.000000 |
| 9 | PYGB | Glycogen phosphorylase, brain form (EC 2.4.1.1) | -13.890000 | 39.000000 |
| 10 | AGXT AGT1 SPAT | Serine--pyruvate aminotransferase (SPT) (EC 2.6.1.51) (Alanine--glyoxylate aminotransferase) (AGT) (EC 2.6.1.44) | -13.810000 | 48.000000 |
| 11 | PYGL | Glycogen phosphorylase, liver form (EC 2.4.1.1) | -13.770000 | 37.000000 |
| 12 | SRR | Serine racemase (EC 5.1.1.18) (D-serine ammonia-lyase) (D-serine dehydratase) (EC 4.3.1.18) (L-serine ammonia-lyase) (L-serine dehydratase) (EC 4.3.1.17) | -13.600000 | 50.000000 |
| 13 | SGPL1 KIAA1252 SPTLC3 | Sphingosine-1-phosphate lyase 1 (S1PL) (SP-lyase 1) (SPL 1) (hSPL) (EC 4.1.2.27) (Sphingosine-1-phosphate aldolase) | -13.450000 | 26.000000 |
| 14 | C20orf38 SPTLC2L | Serine palmitoyltransferase 3 (EC 2.3.1.50) (Long chain base biosynthesis protein 2b) (LCB2b) (Long chain base biosynthesis protein 3) (LCB 3) (Serine-palmitoyl-CoA transferase 3) (SPT 3) | -13.360000 | 91.000000 |
| 15 | GAD1 GAD GAD67 | Glutamate decarboxylase 1 (EC 4.1.1.15) (67 kDa glutamic acid decarboxylase) (GAD-67) (Glutamate decarboxylase 67 kDa isoform) | -13.270000 | 41.000000 |
| 16 | ACCS PHACS | 1-aminocyclopropane-1-carboxylate synthase-like protein 1 (ACC synthase-like protein 1) | -13.120000 | 45.000000 |
| 17 | BCAT1 BCT1 ECA39 | Branched-chain-amino-acid aminotransferase, cytosolic (BCAT(c)) (EC 2.6.1.42) (Protein ECA39) | -13.090000 | 58.000000 |
| 18 | ALAS2 ALASE ASB | 5-aminolevulinate synthase, erythroid-specific, mitochondrial (ALAS-E) (EC 2.3.1.37) (5-aminolevulinic acid synthase 2) (Delta-ALA synthase 2) (Delta-aminolevulinate synthase 2) | -13.010000 | 92.000000 |
| 19 | SPTLC2 KIAA0526 LCB2 | Serine palmitoyltransferase 2 (EC 2.3.1.50) (Long chain base biosynthesis protein 2) (LCB 2) (Long chain base biosynthesis protein 2a) (LCB2a) (Serine-palmitoyl-CoA transferase 2) (SPT 2) | -12.930000 | 84.000000 |
| 20 | CTH | Cystathionine gamma-lyase (EC 4.4.1.1) (Cysteine-protein sulfhydrase) (Gamma-cystathionase) | -12.920000 | 46.000000 |
| 21 | HDC | Histidine decarboxylase (HDC) (EC 4.1.1.22) | -12.810000 | 57.000000 |
| 22 | PYGM | Glycogen phosphorylase, muscle form (EC 2.4.1.1) (Myophosphorylase) | -12.660000 | 47.000000 |
| 23 | PHYKPL AGXT2L2 PP9286 | 5-phosphohydroxy-L-lysine phospho-lyase (EC 4.2.3.134) (Alanine--glyoxylate aminotransferase 2-like 2) | -12.630000 | 15.000000 |
| 24 | ABAT GABAT | 4-aminobutyrate aminotransferase, mitochondrial (EC 2.6.1.19) ((S)-3-amino-2-methylpropionate transaminase) (EC 2.6.1.22) (GABA aminotransferase) (GABA-AT) (Gamma-amino-N-butyrate transaminase) (GABA transaminase) (GABA-T) (L-AIBAT) | -12.120000 | 35.000000 |
| 25 | ODC1 | Ornithine decarboxylase (ODC) (EC 4.1.1.17) | -12.100000 | 30.000000 |
| 26 | SDSL | Serine dehydratase-like (L-serine deaminase) (L-serine dehydratase/L-threonine deaminase) (L-threonine dehydratase) (TDH) (EC 4.3.1.19) (Serine dehydratase 2) (SDH 2) (EC 4.3.1.17) | -11.880000 | 13.000000 |
| 27 | SHMT2 | Serine hydroxymethyltransferase, mitochondrial (SHMT) (EC 2.1.2.1) (Glycine hydroxymethyltransferase) (Serine methylase) | -11.470000 | 48.000000 |
| 28 | TAT | Tyrosine aminotransferase (TAT) (EC 2.6.1.5) (L-tyrosine:2-oxoglutarate aminotransferase) | -11.450000 | 27.000000 |
| 29 | GPT AAT1 GPT1 | Alanine aminotransferase 1 (ALT1) (EC 2.6.1.2) (Glutamate pyruvate transaminase 1) (GPT 1) (Glutamic--alanine transaminase 1) (Glutamic--pyruvic transaminase 1) | -11.350000 | 55.000000 |
| 30 | PSAT1 PSA | Phosphoserine aminotransferase (EC 2.6.1.52) (Phosphohydroxythreonine aminotransferase) (PSAT) | -11.330000 | 29.000000 |
| 31 | CSAD CSD | Cysteine sulfinic acid decarboxylase (EC 4.1.1.29) (Aspartate 1-decarboxylase) (EC 4.1.1.11) (Cysteine-sulfinatate decarboxylase) (Sulfinoalanine decarboxylase) | -11.320000 | 29.000000 |
| 32 | OAT | Ornithine aminotransferase, mitochondrial (EC 2.6.1.13) (Ornithine delta-aminotransferase) (Ornithine--oxo-acid aminotransferase) [Cleaved into: Ornithine aminotransferase, hepatic form; Ornithine aminotransferase, renal form] | -11.170000 | 25.000000 |
| 33 | GAD2 GAD65 | Glutamate decarboxylase 2 (EC 4.1.1.15) (65 kDa glutamic acid decarboxylase) (GAD-65) (Glutamate decarboxylase 65 kDa isoform) | -11.060000 | 43.000000 |
| 34 | GADL1 | Acidic amino acid decarboxylase GADL1 (Aspartate 1-decarboxylase) (ADC) (HuADC) (EC 4.1.1.11) (Cysteine sulfinic acid decarboxylase) (CSADC) (HuCSADC) (EC 4.1.1.29) (Glutamate decarboxylase-like protein 1) | -11.010000 | 21.000000 |
| 35 | GCAT KBL | 2-amino-3-ketobutyrate coenzyme A ligase, mitochondrial (AKB ligase) (EC 2.3.1.29) (Aminoacetone synthase) (Glycine acetyltransferase) | -10.980000 | 29.000000 |
| 36 | GOT1L1 | Putative aspartate aminotransferase, cytoplasmic 2 (EC 2.6.1.1) (Glutamate oxaloacetate transaminase 1-like protein 1) (Transaminase A-like protein 1) | -10.960000 | 37.000000 |
| 37 | GPT2 AAT2 ALT2 | Alanine aminotransferase 2 (ALT2) (EC 2.6.1.2) (Glutamate pyruvate transaminase 2) (GPT 2) (Glutamic--alanine transaminase 2) (Glutamic--pyruvic transaminase 2) | -10.930000 | 32.000000 |
| 38 | THNSL1 | Threonine synthase-like 1 (TSH1) | -10.760000 | 67.000000 |
| 39 | CBSL | Cystathionine beta-synthase-like protein (EC 4.2.1.22) (Beta-thionase) (Serine sulfhydrase) | -10.710000 | 46.000000 |
| 40 | THNSL2 | Threonine synthase-like 2 (TSH2) (EC 4.2.3.-) (Secreted osteoclastogenic factor of activated T-cells) (SOFAT) | -10.620000 | 63.000000 |
| 41 | ALAS1 ALAS3 ALASH OK/SW-cl.121 | 5-aminolevulinate synthase, nonspecific, mitochondrial (ALAS-H) (EC 2.3.1.37) (5-aminolevulinic acid synthase 1) (Delta-ALA synthase 1) (Delta-aminolevulinate synthase 1) | -10.600000 | 19.000000 |
| 42 | SHMT1 | Serine hydroxymethyltransferase, cytosolic (SHMT) (EC 2.1.2.1) (Glycine hydroxymethyltransferase) (Serine methylase) | -10.590000 | 20.000000 |
| 43 | DDC AADC | Aromatic-L-amino-acid decarboxylase (AADC) (EC 4.1.1.28) (DOPA decarboxylase) (DDC) | -10.420000 | 22.000000 |
| 44 | NFS1 NIFS HUSSY-08 | Cysteine desulfurase, mitochondrial (EC 2.8.1.7) | -10.360000 | 20.000000 |
| 45 | SCLY SCL | Selenocysteine lyase (hSCL) (EC 4.4.1.16) | -10.280000 | 55.000000 |
| 46 | AGXT2 AGT2 | Alanine--glyoxylate aminotransferase 2, mitochondrial (AGT 2) (EC 2.6.1.44) ((R)-3-amino-2-methylpropionate--pyruvate transaminase) (EC 2.6.1.40) (Beta-ALAAAT II) (Beta-alanine-pyruvate aminotransferase) (D-AIBAT) | -9.800000 | 21.000000 |
| 47 | ACCSL | Probable inactive 1-aminocyclopropane-1-carboxylate synthase-like protein 2 (ACC synthase-like protein 2) | -9.570000 | 24.000000 |
| 48 | MOCOS | Molybdenum cofactor sulfurase (MCS) (MOS) (MoCo sulfurase) (hMCS) (EC 2.8.1.9) (Molybdenum cofactor sulfurtransferase) | -9.360000 | 15.000000 |
| 49 | KYNU | Kynureninase (EC 3.7.1.3) (L-kynurenine hydrolase) | -9.080000 | 32.000000 |
| 50 | GLDC GCSP | Glycine dehydrogenase (decarboxylating), mitochondrial (EC 1.4.4.2) (Glycine cleavage system P protein) (Glycine decarboxylase) (Glycine dehydrogenase (aminomethyl-transferring)) | -8.800000 | 44.000000 |
| 51 | PLPBP PROSC | Pyridoxal phosphate homeostasis protein (PLP homeostasis protein) (Proline synthase co-transcribed bacterial homolog protein) (Pyridoxal phosphate-binding protein) | -8.430000 | 21.000000 |
| 52 | ETNPPL AGXT2L1 | Ethanolamine-phosphate phospho-lyase (EC 4.2.3.2) (Alanine--glyoxylate aminotransferase 2-like 1) | -7.830000 | 17.000000 |
| 53 | AZIN1 OAZI OAZIN | Antizyme inhibitor 1 (AZI) (AZI1) (Ornithine decarboxylase antizyme inhibitor) | -6.740000 | 20.000000 |