

Supplemental Table 1. Predicted protein function for each CDS in the *Thermococcus kodakaraensis* KOD1 genome.

**DNA metabolism**

*Chromosome-associated proteins*

|        |  |
|--------|--|
| TK0560 | Archaeal chromatin protein, Alba       |
| TK1413 | Archaeal histone A                     |
| TK1574 | Histone acetyltransferase Elp3 homolog |
| TK2289 | Archaeal histone B                     |

*Replication*

|        |   |
|--------|---|
| TK0001 | DNA-directed DNA polymerase, family B; two inteins                |
| TK0470 | Reverse gyrase; intein  |
| TK0535 | DNA polymerase sliding clamp (proliferating cell nuclear antigen) |
| TK0798 | Type II DNA topoisomerase VI, subunit A                           |
| TK0799 | Type II DNA topoisomerase VI, subunit B                           |
| TK0805 | Ribonuclease HII  |
| TK1091 | DNA topoisomerase I; intein                                       |
| TK1281 | Flap structure-specific endonuclease                              |
| TK1410 | DnaG-related protein, containing Toprim domain                    |
| TK1411 | DnaG-related small protein, containing Toprim domain              |
| TK1620 | DNA replication licensing factor, MCM2/3/5 family; two inteins    |
| TK1790 | Eukaryotic-type DNA primase, large subunit                        |
| TK1791 | Eukaryotic-type DNA primase, small subunit                        |
| TK1901 | Cell division control protein 6 homolog                           |
| TK1902 | DNA polymerase II, small subunit                                  |
| TK1903 | DNA polymerase II, large subunit; intein                          |
| TK1959 | Replication factor A complex, RPA32 subunit                       |
| TK1960 | Replication factor A complex, RPA14 subunit                       |
| TK1961 | Replication factor A complex, RPA41 subunit                       |
| TK2140 | ATP-dependent DNA ligase  |
| TK2218 | Replication factor C, small subunit; intein                       |
| TK2219 | Replication factor C, large subunit                               |

*Recombination and repair*

|        |  |
|--------|--|
| TK0069 | Predicted exonuclease, RecB family                           |
| TK0170 | Endonuclease IV  |
| TK0178 | DNA helicase, UvrD/REP family                                |
| TK0345 | 3-Methyladenine DNA glycosylase                              |
| TK0447 | Hypothetical protein, conserved, RAMP superfamily            |
| TK0450 | DEAD/DEAH box helicase                                       |
| TK0452 | Hypothetical protein, conserved, RAMP superfamily            |
| TK0458 | Predicted exonuclease, RecB family                           |
| TK0460 | DEAD/DEAH box helicase, fused to N-terminal HD domain        |
| TK0461 | Hypothetical protein, conserved, RAMP superfamily            |
| TK0464 | Hypothetical protein, conserved, RAMP superfamily            |
| TK0682 | MutS-like DNA mismatch repair ATPase                         |
| TK0777 | Integrase/recombinase  |
| TK0784 | ERCC2/XPD/Rad3-related DNA repair helicase                   |
| TK0906 | Endonuclease V (deoxyinosine 3'-endonuclease)                |
| TK0928 | Predicted DNA/RNA repair helicase                            |
| TK0951 | XPA-binding protein 1 homolog                                |
| TK1021 | Helicase-associated endonuclease for fork-structured DNA     |
| TK1141 | Endonuclease III (DNA-(apurinic or apyrimidinic site) lyase) |
| TK1165 | Predicted AP endonuclease                                    |
| TK1175 | Archaeal type Holliday junction resolvase                    |
| TK1252 | ssDNA-specific exonuclease                                   |
| TK1865 | Predicted AP endonuclease                                    |
| TK1899 | RadA/Rad51 recombinase; intein                               |
| TK1914 | Exonuclease SbcD homolog                                     |
| TK1971 | Methylated-DNA-protein-cysteine S-methyltransferase          |
| TK2111 | Nucleoside triphosphate phosphohydrolase, Ham1p homolog      |
| TK2143 | Uracil-DNA glycosylase                                       |
| TK2210 | 5'-3' Nuclease, encoded next to Rad50 and Mre11 homologs     |
| TK2211 | DNA double-strand break repair ATPase Rad50 homolog          |
| TK2212 | DNA repair exonuclease Rad32/Mre11 homolog                   |
| TK2213 | Bipolar DNA helicase   |
| TK2231 | RadB recombinase   |
| TK2253 | Hypothetical protein, conserved, RAMP superfamily            |
| TK2284 | Probable 8-oxo-dGTPase, MutT homolog, NUDIX hydrolase family |

*DNA degradation and restriction*

|        |  |
|--------|--|
| TK0008 | Predicted DNA methylase  |
| TK0155 | RecJ-like exonuclease, containing OB-fold nucleic acid-binding domains |
| TK0317 | TatD-related deoxyribonuclease   |
| TK0794 | Putative 5-methylcytosine restriction system, catalytic subunit        |
| TK0795 | Putative 5-methylcytosine restriction system, GTPase subunit           |
| TK1009 | Putative 5-methylcytosine restriction system, GTPase subunit           |
| TK1010 | Putative 5-methylcytosine restriction system, catalytic subunit        |
| TK1034 | Predicted restriction endonuclease                                     |
| TK1147 | Predicted type II restriction endonuclease                             |
| TK1158 | Predicted endonuclease-methyltransferase fusion protein                |
| TK1250 | Intein/rRNA intron-related DNA endonuclease                            |
| TK1460 | Predicted endonuclease-methyltransferase fusion protein                |
| TK1863 | Predicted N6-adenine-specific DNA methylase                            |
| TK1933 | Predicted DNA methylase  |

|   |  |
|---|--|
| TK2239                                    | PhoI-related type II restriction endonuclease                                    |
| <b>Transcription</b>                      |  |
| <i>RNA polymerase</i>                     |  |
| TK0616                                    | DNA-directed RNA polymerase, subunit P   |
| TK0901                                    | DNA-directed RNA polymerase, subunit F   |
| TK1081                                    | DNA-directed RNA polymerase, subunit A''   |
| TK1082                                    | DNA-directed RNA polymerase, subunit A'  |
| TK1083                                    | DNA-directed RNA polymerase, subunit B   |
| TK1084                                    | DNA-directed RNA polymerase, subunit H   |
| TK1167                                    | DNA-directed RNA polymerase, subunit L   |
| TK1498                                    | DNA-directed RNA polymerase, subunit K   |
| TK1499                                    | DNA-directed RNA polymerase subunit N  |
| TK1503                                    | DNA-directed RNA polymerase, subunit D   |
| TK1698                                    | DNA-directed RNA polymerase subunit E''  |
| TK1699                                    | DNA-directed RNA polymerase, subunit E'  |
| <i>Transcription factors</i>              |  |
| TK0132                                    | TATA box-binding protein (transcription initiation factor TFIID)                 |
| TK0533                                    | Archaeal transcription factor S  |
| TK1079                                    | Transcription termination-antitermination factor, NusA homolog                   |
| TK1172                                    | TBP-interacting protein  |
| TK1199                                    | TBP-interacting protein Tip49 homolog  |
| TK1280                                    | Transcription initiation factor IIB  |
| TK1419                                    | Transcription antitermination protein  |
| TK1973                                    | Transcription factor, nascent polypeptide-associated complex (NAC) alpha homolog |
| TK2024                                    | Transcription initiation factor IIE, alpha subunit                               |
| TK2287                                    | Transcription initiation factor IIB  |
| <b>Translation</b>                        |  |
| <i>Ribosomal proteins - large subunit</i> |  |
| TK0615                                    | LSU ribosomal protein L37AE  |
| TK0902                                    | LSU ribosomal protein L21E   |
| TK0969                                    | LSU ribosomal protein L35AE  |
| TK0975                                    | LSU ribosomal protein L37E   |
| TK1080                                    | LSU ribosomal protein L30E   |
| TK1098                                    | LSU ribosomal protein L44E   |
| TK1309                                    | LSU ribosomal protein L24E   |
| TK1311                                    | LSU ribosomal protein L7AE   |
| TK1319                                    | LSU ribosomal protein L39E   |
| TK1320                                    | LSU ribosomal protein L31E   |
| TK1322                                    | LSU ribosomal protein L20A   |
| TK1415                                    | LSU ribosomal protein L12A   |
| TK1416                                    | LSU ribosomal protein L10E   |
| TK1417                                    | LSU ribosomal protein L1P  |
| TK1418                                    | LSU ribosomal protein L11P   |
| TK1454                                    | LSU ribosomal protein L15E   |
| TK1495                                    | LSU ribosomal protein L40E   |
| TK1501                                    | LSU ribosomal protein L13P   |
| TK1502                                    | LSU ribosomal protein L18E   |
| TK1513                                    | LSU ribosomal protein L14E   |
| TK1515                                    | LSU ribosomal protein L34E   |
| TK1519                                    | LSU ribosomal protein L15P   |
| TK1520                                    | LSU ribosomal protein L30P   |
| TK1522                                    | LSU ribosomal protein L18P   |
| TK1523                                    | LSU ribosomal protein L19E   |
| TK1524                                    | LSU ribosomal protein L32E   |
| TK1525                                    | LSU ribosomal protein L6P  |
| TK1528                                    | LSU ribosomal protein L5P  |
| TK1530                                    | LSU ribosomal protein L24P   |
| TK1531                                    | LSU ribosomal protein L14P   |
| TK1535                                    | LSU ribosomal protein L29P   |
| TK1537                                    | LSU ribosomal protein L22P   |
| TK1539                                    | LSU ribosomal protein L2P  |
| TK1540                                    | LSU ribosomal protein L23P   |
| TK1541                                    | LSU Ribosomal protein L4P  |
| TK1542                                    | LSU ribosomal protein L3P  |
| TK1546                                    | LSU ribosomal protein L10E   |
| TK1915                                    | LSU ribosomal protein L41E   |
| <i>Ribosomal proteins - small subunit</i> |  |
| TK0307                                    | SSU ribosomal protein S10P   |
| TK1077                                    | SSU ribosomal protein S7   |
| TK1078                                    | SSU ribosomal protein S12  |
| TK1099                                    | SSU ribosomal protein S27E   |
| TK1191                                    | SSU ribosomal protein S8E  |
| TK1251                                    | SSU ribosomal protein S15P   |
| TK1254                                    | SSU ribosomal protein S3AE   |
| TK1276                                    | SSU ribosomal protein S19E   |
| TK1310                                    | SSU ribosomal protein S28E   |
| TK1496                                    | SSU ribosomal protein S2P  |
| TK1500                                    | SSU ribosomal protein S9P  |
| TK1504                                    | SSU ribosomal protein S11P   |
| TK1505                                    | SSU ribosomal protein S4P  |
| TK1506                                    | SSU ribosomal protein S13P   |
| TK1521                                    | SSU ribosomal protein S5P  |
| TK1526                                    | SSU ribosomal protein S8P  |

|  |  |
|--|--|
| TK1527                                       | SSU ribosomal protein S14P   |
| TK1529                                       | SSU ribosomal protein S4E  |
| TK1532                                       | SSU ribosomal protein S17P   |
| TK1536                                       | SSU ribosomal protein S3P  |
| TK1538                                       | SSU ribosomal protein S19P   |
| TK1695                                       | SSU ribosomal protein S27AE  |
| TK1696                                       | SSU ribosomal protein S24E   |
| TK1951                                       | SSU ribosomal protein S6E  |
| TK2292                                       | SSU ribosomal protein S17E   |
| <i>tRNA aminoacylation</i>                   |  |
| TK0444                                       | Cysteinyl-tRNA synthetase  |
| TK0492                                       | Aspartyl-tRNA synthetase   |
| TK0550                                       | Prolyl-tRNA synthetase   |
| TK0568                                       | Tyrosyl-tRNA synthetase  |
| TK0759                                       | Asparaginyl-tRNA synthetase  |
| TK0908                                       | Archaeal Glu-tRNA(Gln) amidotransferase, subunit D   |
| TK0911                                       | Archaeal Glu-tRNA(Gln) amidotransferase, subunit E containing GAD domain                         |
| TK0921                                       | Phenylalanyl-tRNA synthetase, alpha subunit  |
| TK0925                                       | Phenylalanyl-tRNA synthetase, beta subunit   |
| TK0978                                       | Glycyl-tRNA synthetase   |
| TK1049                                       | Methionyl-tRNA synthetase  |
| TK1140                                       | Seryl-tRNA synthetase  |
| TK1170                                       | Threonyl-tRNA synthetase   |
| TK1235                                       | Arginyl-tRNA synthetase  |
| TK1274                                       | Valyl-tRNA synthetase  |
| TK1408                                       | Glutamyl-tRNA synthetase   |
| TK1461                                       | Ieucyl-tRNA synthetase   |
| TK1562                                       | Histidyl-tRNA synthetase   |
| TK1567                                       | Alanyl-tRNA synthetase   |
| TK1748                                       | Isoleucyl-tRNA synthetase  |
| TK1874                                       | Tryptophanyl-tRNA synthetase   |
| TK2240                                       | Lysyl-tRNA synthetase  |
| TK2300                                       | Peptidyl-tRNA hydrolase  |
| <i>tRNA/rRNA modification and processing</i> |  |
| TK0031                                       | Ribonuclease P component, Rpp21 homolog  |
| TK0183                                       | snoRNP component, Fibrillarin homolog  |
| TK0184                                       | snoRNP component, Nop56p/58p homolog   |
| TK0233                                       | Ribosomal protein-serine acetyltransferase RimL homolog  |
| TK0302                                       | RNA 2'-phosphotransferase  |
| TK0360                                       | tRNA/rRNA cytosine-C5-methylase, NOL1/NOP2/Sun family  |
| TK0422                                       | tRNA m1G methyltransferase   |
| TK0617                                       | U3 snoRNP component, archaeal imp4 homolog, containing Brix domain                               |
| TK0760                                       | Archaeosine tRNA-guanine transglycosylase  |
| TK0773                                       | Predicted ATP-dependent endonuclease, OLD family   |
| TK0872                                       | tRNA/rRNA cytosine-C5-methylase, NOL1/NOP2/Sun family  |
| TK0876                                       | Ribosome biogenesis protein Nep1p homolog, suppressor Mra1 family                                |
| TK0899                                       | Dimethyladenosine transferase (16S rRNA dimethylase)   |
| TK0927                                       | tRNA pseudouridine synthase A  |
| TK0970                                       | N2,N2-Dimethylguanosine tRNA methyltransferase   |
| TK0981                                       | N2,N2-Dimethylguanosine tRNA methyltransferase   |
| TK1114                                       | Ribonuclease Z   |
| TK1116                                       | 23S rRNA (uracil-5-)methyltransferase  |
| TK1328                                       | tRNA (1-methyladenosine) methyltransferase   |
| TK1395                                       | Predicted ATP-dependent endonuclease, OLD family   |
| TK1428                                       | Cleavage and polyadenylation specificity factor subunit homolog                                  |
| TK1450                                       | Ribonuclease P component, Rpp30 homolog  |
| TK1451                                       | Predicted exosome subunit, DUF54 family  |
| TK1507                                       | Ribosomal RNA small subunit methyltransferase C  |
| TK1509                                       | tRNA pseudouridine synthase B  |
| TK1533                                       | Ribonuclease P component, Rpp29 homolog  |
| TK1615                                       | RNA 3'-terminal phosphate cyclase  |
| TK1633                                       | Exosome subunit Rrp42p homolog, 3'-5' exoribonuclease  |
| TK1634                                       | Exosome subunit Rrp41p homolog, 3'-5' exoribonuclease  |
| TK1635                                       | Exosome subunit Rrp4p homolog, RNA-binding protein   |
| TK1636                                       | Predicted exosome subunit, UPF0023 family  |
| TK1738                                       | 2'-5' RNA ligase   |
| TK1741                                       | tRNA nucleotidyltransferase (CCA-adding enzyme)  |
| TK1767                                       | Ribonuclease P component, Rpp14 homolog  |
| TK1785                                       | Probable tRNA/rRNA methyltransferase   |
| TK1935                                       | tRNA/rRNA cytosine-C5-methylase, NOL1/NOP2/Sun family  |
| TK1970                                       | Probable tRNA/rRNA methyltransferase, SpoU family  |
| TK2064                                       | Probable 2-methylthioadenine synthetase  |
| TK2122                                       | tRNA/rRNA cytosine-C5-methylase, NOL1/NOP2/Sun family, containing RNA-binding PUA domain         |
| TK2135                                       | 23S rRNA (uracil-5-)methyltransferase  |
| TK2214                                       | Ribosomal protein-alanine acetyltransferase RimI homolog   |
| TK2215                                       | Archaeal tRNA-intron endonuclease  |
| TK2286                                       | snoRNP component, Gar1 homolog   |
| TK2302                                       | tRNA pseudouridine synthase D  |
| TK2304                                       | tRNA/rRNA cytosine-C5-methylase, NOL1/NOP2/Sun family, fused to N-terminal NusB regulator domain |
| <i>mRNA processing</i>                       |  |
| TK0976                                       | snRNP component, Sm-like protein   |
| TK1297                                       | Nonsense-mediated mRNA decay protein NMD3 homolog  |
| <i>Translation factors</i>                   |  |

|  |   |
|--|---|
| TK0111                                 | Predicted zinc-ribbon RNA-binding protein involved in translation         |
| TK0112                                 | Translation elongation factor EF-1, beta subunit                          |
| TK0185                                 | Translation initiation factor eIF-2B, delta subunit                       |
| TK0308                                 | Translation elongation factor EF-1, alpha subunit                         |
| TK0309                                 | Translation elongation factor EF-2  |
| TK0556                                 | Translation initiation factor eIF-2B, beta subunit                        |
| TK0802                                 | Translation initiation factor eIF-1A                                      |
| TK0878                                 | Translation initiation factor eIF-5A                                      |
| TK0948                                 | Putative translation factor Sua5p homolog                                 |
| TK1047                                 | Translation initiation factor eIF-2B, delta subunit                       |
| TK1100                                 | Translation initiation factor eIF-2, alpha subunit                        |
| TK1239                                 | Peptide chain release factor eRF1   |
| TK1305                                 | Translation initiation factor IF-2; intein                                |
| TK1321                                 | Translation initiation factor eIF-6                                       |
| TK1534                                 | Protein translation factor SU11 homolog                                   |
| TK1621                                 | Translation initiation factor eIF-2, beta subunit                         |
| TK1946                                 | Translation initiation factor eIF-2, gamma subunit                        |
| <i>Helicases with unknown function</i> |   |
| TK0306                                 | DEAD/DEAH box RNA helicase  |
| TK0521                                 | DEAD/DEAH box RNA helicase, fused to C-terminal uncharacterized domain    |
| TK0566                                 | DEAD/DEAH box RNA helicase  |
| TK0764                                 | Large helicase-related protein; intein                                    |
| TK1015                                 | Large helicase-related protein  |
| TK1332                                 | RNA helicase Ski2 homolog; intein   |
| <b>Cellular processes</b>              |   |
| <i>Cell division</i>                   |   |
| TK0349                                 | ATPase involved in chromosome partitioning, ParA/MinD family              |
| TK0378                                 | Chromosome partitioning protein ParB homolog                              |
| TK0514                                 | Chromosome condensation protein CrcB homolog                              |
| TK0669                                 | CDC48/VCP homolog, AAA superfamily  |
| TK0701                                 | ATPase, ParA/MinD family, containing ferredoxin domains                   |
| TK0702                                 | ATPase, ParA/MinD family, containing ferredoxin domains                   |
| TK0915                                 | ATPase involved in chromosome partitioning, ParA/MinD family              |
| TK0952                                 | ATPase involved in chromosome partitioning, ParA/MinD family              |
| TK0954                                 | Septum formation inhibitor Maf homolog                                    |
| TK0964                                 | Cell division protein pelota homolog                                      |
| TK1017                                 | Chromosome segregation ATPase   |
| TK1157                                 | CDC48/VCP homolog, AAA superfamily  |
| TK1421                                 | Cell division GTPase  |
| TK1669                                 | Cell division GTPase  |
| TK2007                                 | ATPase involved in chromosome partitioning, ParA/MinD family, Mrp homolog |
| TK2021                                 | ATPase involved in chromosome partitioning, ParA/MinD family, Mrp homolog |
| TK2137                                 | ATPase involved in chromosome partitioning, ParA/MinD family              |
| TK2271                                 | Cell division GTPase  |
| TK2272                                 | ATPase involved in chromosome partitioning, ParA/MinD family, Soj homolog |
| <i>Signal transduction</i>             |   |
| TK0241                                 | Protein-tyrosine phosphatase  |
| TK0507                                 | Adenylate cyclase, class 2  |
| TK0679                                 | Serine/threonine protein kinase, RIO1 family                              |
| TK0801                                 | Serine/threonine protein kinase Rio1p homolog                             |
| TK1113                                 | Predicted signaling protein, TraB family                                  |
| TK1179                                 | Adenylate cyclase, class 2  |
| TK2250                                 | Serine/threonine protein kinase, RIO1 family                              |
| <i>Cell motility</i>                   |   |
| TK0038                                 | Archaeal flagellin B1 precursor   |
| TK0039                                 | Archaeal flagellin B2 precursor   |
| TK0040                                 | Archaeal flagellin B3 precursor   |
| TK0041                                 | Archaeal flagellin B4 precursor   |
| TK0042                                 | Archaeal flagellin B5 precursor   |
| TK0043                                 | Archaeal flagella-related protein C                                       |
| TK0044                                 | Archaeal flagella-related protein D, internal insertion                   |
| TK0045                                 | Archaeal flagella-related protein F                                       |
| TK0046                                 | Archaeal flagella-related protein G                                       |
| TK0047                                 | Archaeal flagella-related protein H, predicted ATPase                     |
| TK0048                                 | Archaeal flagella-related protein I, predicted secretion ATPase           |
| TK0049                                 | Archaeal flagella-related membrane protein J, DUF110 family               |
| TK0156                                 | Methyl-accepting chemotaxis protein                                       |
| TK0629                                 | Chemotaxis signal transduction protein                                    |
| TK0630                                 | Methyl-accepting chemotaxis protein                                       |
| TK0631                                 | Chemotaxis protein methyltransferase                                      |
| TK0632                                 | Chemotaxis response regulator   |
| TK0633                                 | Chemotaxis protein-glutamate methylesterase, containing receiver domain   |
| TK0634                                 | Chemotaxis histidine kinase, flame shift                                  |
| TK0635                                 | Chemotaxis histidine kinase, flame shift                                  |
| TK0636                                 | Chemotaxis protein CheC   |
| TK0637                                 | Chemotaxis protein CheC   |
| TK0638                                 | Methyl-accepting chemotaxis protein                                       |
| TK0639                                 | Chemotaxis protein CheD   |
| TK1606                                 | Methyl-accepting chemotaxis protein                                       |
| TK2147                                 | Methyl-accepting chemotaxis protein                                       |
| <i>Detoxification</i>                  |   |
| TK0189                                 | Predicted stress-inducible protein, OsmC/Ohr family                       |
| TK0304                                 | NADH oxidase  |

|        |  |
|--------|--|
| TK0523 | Ruberythrin  |
| TK0524 | Rubredoxin   |
| TK0525 | Superoxide reductase   |
| TK0537 | Peroxiredoxin, AhpC/TSA family   |
| TK0815 | Peroxiredoxin, AhpC/TSA family   |
| TK0828 | NAD(P)H:rubredoxin oxidoreductase  |
| TK0842 | Arsenical-resistance membrane protein  |
| TK0843 | Trx-linked arsenate reductase (arsenical pump modifier)                      |
| TK0880 | Arsenical pump membrane protein  |
| TK0994 | Arsenical pump-driving ATPase  |
| TK1055 | Peroxiredoxin, bacterioferritin comigratory protein homolog, AhpC/TSA family |
| TK1299 | NADH oxidase   |
| TK1392 | NADH oxidase   |
| TK2017 | Predicted stress-inducible protein, OsmC/Ohr family                          |
| TK2032 | Periplasmic divalent cation tolerance protein                                |

#### Protein fate

##### Protein and peptide degradation

|        |  |
|--------|--|
| TK0002 | Predicted zinc-dependent protease, DUF45 family                        |
| TK0160 | D-Aminopeptidase   |
| TK0347 | Predicted membrane-bound serine protease, NfeD homolog                 |
| TK0348 | Predicted membrane protease subunit, stomatin/prohibitin homolog       |
| TK0423 | Prolyl endopeptidase   |
| TK0439 | Membrane-associated metalloprotease, CaaX family                       |
| TK0494 | Bifunctional carboxypeptidase/aminoacylase                             |
| TK0499 | Zinc-dependent protease, TldD/PmbA family                              |
| TK0502 | Zinc-dependent protease, TldD/PmbA family                              |
| TK0512 | Predicted zinc-dependent protease                                      |
| TK0677 | Zinc-dependent protease HtpX homolog, M48 family                       |
| TK0698 | Zinc-dependent protease, TldD/PmbA family                              |
| TK0699 | Zinc-dependent protease, TldD/PmbA family                              |
| TK0752 | Acylamino acid-releasing enzyme (acylaminoacyl-peptidase)              |
| TK0775 | Deblocking aminopeptidase  |
| TK0781 | Deblocking aminopeptidase  |
| TK0967 | Xaa-Pro aminopeptidase   |
| TK1022 | D-Aminopeptidase   |
| TK1033 | Predicted metalloprotease, containing Jab1/MPN domain                  |
| TK1164 | Predicted endopeptidase IV, S49 family                                 |
| TK1177 | Deblocking aminopeptidase  |
| TK1247 | Membrane-associated metallopeptidase, M50 family                       |
| TK1262 | Predicted metalloprotease, containing Jab1/MPN domain                  |
| TK1264 | ATP-dependent protease Lon   |
| TK1284 | Intracellular protease I   |
| TK1316 | Predicted membrane protease subunit, stomatin/prohibitin homolog       |
| TK1429 | Proteasome, beta subunit   |
| TK1455 | Xaa-Pro aminopeptidase   |
| TK1467 | Predicted membrane-associated metallopeptidase, M50 family             |
| TK1637 | Proteasome, alpha subunit  |
| TK1820 | Membrane-associated metalloprotease, M50 family, containing PDZ domain |
| TK1835 | Pyrrolidone-carboxylate peptidase                                      |
| TK1840 | Cobalt-activating carboxypeptidase, M32 family                         |
| TK1912 | Aminopeptidase, family M28, containing PA domain                       |
| TK2040 | Microsomal dipeptidase homolog   |
| TK2049 | Acylamino acid-releasing enzyme (acylaminoacyl-peptidase)              |
| TK2126 | O-Sialoglycoprotein endopeptidase                                      |
| TK2169 | Zinc-dependent protease, TldD/PmbA family                              |
| TK2170 | Zinc-dependent protease, TldD/PmbA family                              |
| TK2207 | Proteasome, beta subunit 2   |
| TK2258 | Zinc-dependent protease HtpX homolog, M48 family                       |

##### Protein and peptide secretion and trafficking

|        |  |
|--------|--|
| TK0053 | Archaeal signal peptidase, A24 family                          |
| TK0653 | Signal recognition particle GTPase                             |
| TK1330 | Signal recognition particle, SRP19 subunit                     |
| TK1420 | Preprotein translocase, SecE subunit                           |
| TK1486 | Signal recognition particle, SRP54 subunit                     |
| TK1518 | Preprotein translocase, SecY subunit                           |
| TK1593 | Protein-export membrane protein SecF                           |
| TK1594 | Protein-export membrane protein SecD                           |
| TK1703 | Signal peptidase I, fused to C-terminal uncharacterized domain |
| TK1853 | Type II/IV secretion system ATPase; intein                     |
| TK1952 | Preprotein translocase, SEC61 beta subunit                     |
| TK2037 | Signal peptidase I   |

##### Protein folding and stabilization

|        |   |
|--------|---|
| TK0441 | FKBP-type peptidyl-prolyl cis-trans isomerase, fused to C-terminal uncharacterized domain |
| TK0643 | Prefoldin, beta subunit   |
| TK0678 | Chaperonin, alpha subunit (thermosome, alpha subunit)                                     |
| TK1005 | Prefoldin, alpha subunit  |
| TK1121 | Prefoldin, alpha subunit  |
| TK1122 | Prefoldin, beta subunit   |
| TK1155 | Small heat shock protein  |
| TK1850 | FKBP-type peptidyl-prolyl cis-trans isomerase   |
| TK2303 | Chaperonin, beta subunit (thermosome, beta subunit)                                       |

##### Protein modification and repair

|        |   |
|--------|---|
| TK0051 | Protein-L-isoaspartate carboxylmethyltransferase, flame shift |
|--------|---|

|        |   |
|--------|---|
| TK0106 | Diphthine synthase, methylase subunit   |
| TK0290 | Pyruvate-formate lyase-activating enzyme  |
| TK0671 | Deoxyhypusine synthase  |
| TK0722 | Probable protein-S isoprenylcysteine O-methyltransferase                          |
| TK0819 | Peptide methionine sulfoxide reductase  |
| TK0838 | Thioredoxin   |
| TK0893 | Pyruvate formate-lyase activating enzyme-related protein, radical SAM superfamily |
| TK0961 | Hydrogenase expression/formation protein HypE                                     |
| TK1032 | Hydrogenase expression/formation protein HypE                                     |
| TK1085 | Protein disulfide oxidoreductase  |
| TK1183 | Methionyl aminopeptidase  |
| TK1198 | Organic radical activating enzyme, radical SAM superfamily                        |
| TK1673 | N5-Glutamine methyltransferase, HemK family                                       |
| TK1928 | Diphthine synthase, DPH2 subunit  |
| TK1993 | Hydrogenase expression/formation protein HypE                                     |
| TK1997 | Hydrogenase maturation protein HypF   |
| TK2000 | Hydrogenase expression/formation protein hypD                                     |
| TK2001 | Hydrogenase expression/formation protein HypC                                     |
| TK2004 | Hydrogenase maturation protease HypI  |
| TK2008 | Hydrogenase nickel-incorporation protein HypA                                     |
| TK2066 | Hydrogenase-specific maturation endopeptidase                                     |
| TK2100 | Thioredoxin reductase   |

#### Regulatory functions

##### Transcription regulators

|        |  |
|--------|--|
| TK0017 | Predicted transcription regulator, SpoVT/AbrB family   |
| TK0107 | Manganese-dependent transcription regulator  |
| TK0126 | Predicted transcription regulator, containing DNA-binding HTH domain                                 |
| TK0142 | Predicted transcription regulator, containing cell wall binding repeat 2 and DNA-binding HTH domains |
| TK0151 | Transcription regulator, PspC family   |
| TK0168 | Predicted transcription regulator, Lrp/AsnC family   |
| TK0169 | Predicted transcription regulator, MarR family   |
| TK0225 | Predicted transcription regulator, ArsR family   |
| TK0448 | Predicted transcription regulator, containing DNA-binding HTH domain                                 |
| TK0457 | Transcription regulator, SpoVT/AbrB family   |
| TK0471 | Probable transcription regulator, DUF118 helix-turn-helix family                                     |
| TK0508 | Predicted transcription regulator, Lrp/AsnC family   |
| TK0539 | Predicted transcription regulator, containing DNA-binding HTH domain                                 |
| TK0559 | Transcription regulator, ArsR family   |
| TK0567 | Transcription regulator, Lrp/AsnC family   |
| TK0697 | Predicted transcription regulator, containing DNA-binding HTH domain                                 |
| TK0770 | Transcription regulator, PadR-like family  |
| TK0834 | Transcription regulator, Lrp/AsnC family   |
| TK0888 | Transcription regulator, SpoVT/AbrB family   |
| TK0997 | Transcription regulator, SpoVT/AbrB family   |
| TK1041 | Transcription regulator, ArsR family   |
| TK1057 | Iron(II) uptake regulation protein, frame shift  |
| TK1058 | Iron(II) uptake regulation protein, frame shift  |
| TK1076 | Transcription regulator, SpoVT/AbrB family   |
| TK1086 | Predicted transcription regulator, ArsR family   |
| TK1143 | Transcription regulator, PadR-like family  |
| TK1210 | Transcription regulator, Lrp/AsnC family   |
| TK1259 | Predicted transcription regulator, Lrp/AsnC family   |
| TK1261 | Transcription regulator, ArsR family   |
| TK1266 | Predicted transcription regulator, containing CBS domains  |
| TK1272 | Predicted transcription regulator, containing Crp and DUF120 domains                                 |
| TK1285 | Transcription regulator, Lrp/AsnC family   |
| TK1291 | Predicted transcription regulator, SpoVT/AbrB family   |
| TK1331 | Predicted transcription regulator, Lrp/AsnC family   |
| TK1339 | Predicted transcription regulator, containing DNA-binding HTH domain                                 |
| TK1439 | Probable nickel responsive regulator   |
| TK1487 | Predicted transcription regulator, Lrp/AsnC family   |
| TK1491 | Transcription regulator, Lrp/AsnC family   |
| TK1494 | Transcription regulator, PadR-like family  |
| TK1591 | Predicted transcription regulator, encoded next to RecA superfamily ATPase                           |
| TK1654 | Transcription regulator, PadR-like family  |
| TK1688 | Predicted transcription regulator, containing DNA-binding HTH domain                                 |
| TK1769 | Predicted transcription regulator, DUF118 helix-turn-helix family                                    |
| TK1815 | Transcription regulator, CopG/RepA family  |
| TK1826 | Predicted transcription regulator, ArsR family   |
| TK1881 | Transcription regulator, ArsR family   |
| TK1883 | Transcription regulator, ArsR family   |
| TK1913 | Transcription regulator, ArsR family   |
| TK1924 | Transcription regulator, PadR-like family  |
| TK1955 | Predicted transcription regulator, Lrp/AsnC family   |
| TK1962 | Predicted transcription regulator, YpuH-like family  |
| TK2052 | Predicted transcription regulator, Lrp/AsnC family   |
| TK2107 | Transcription regulator, PadR-like family  |
| TK2110 | Transcription regulator, Lrp/AsnC family   |
| TK2134 | Transcription regulator, Lrp/AsnC family   |
| TK2151 | Archaeal transcription regulator   |
| TK2190 | Predicted transcription regulator, ArsR family   |
| TK2197 | Predicted transcription regulator, fused to C-terminal uncharacterized domain                        |
| TK2229 | Transcription regulator, SpoVT/AbrB family   |

|        |  |
|--------|--|
| TK2245 | Transcription regulator, SpoVT/AbrB family, containing PhoU domain |
| TK2259 | Predicted transcription regulator, penicillinase repressor family  |
| TK2261 | Transcription regulator, SpoVT/AbrB family                         |
| TK2263 | Predicted transcription regulator, ExsB family                     |
| TK2273 | Predicted transcription regulator, CopG/RepA family                |
| TK2291 | Archaeal heat shock regulator, ArsR family                         |

*Others*

|        |   |
|--------|---|
| TK0329 | Lysine/arginine/ornithine transport system kinase                     |
| TK0626 | Predicted regulator of amino acid metabolism, containing ACT domain   |
| TK0685 | NAD-dependent protein deacetylase Sir2p homolog                       |
| TK0868 | Probable bis(5'-adenosyl)-triphosphatase, HIT family                  |
| TK1031 | Predicted ATPase, RNase L inhibitor homolog                           |
| TK1227 | Predicted regulator of amino acid metabolism, containing ACT domain   |
| TK1435 | Nitrogen regulatory protein P-II                                      |
| TK1456 | Probable phosphate transport system regulator, fused to TrkA-C domain |
| TK1457 | Probable phosphate transport system regulator, fused to TrkA-C domain |
| TK1572 | NGG1p interacting factor 3 homolog                                    |
| TK1639 | Probable bis(5'-adenosyl)-triphosphatase, HIT family                  |
| TK1869 | Probable phosphate transport system regulator                         |
| TK1870 | Phosphate transport system regulator                                  |
| TK1967 | Distant homolog of phosphate transport system regulator PhoU          |
| TK2060 | Distant homolog of phosphate transport system regulator PhoU          |
| TK2149 | Putative effector of murein hydrolase                                 |
| TK2150 | Putative effector of murein hydrolase                                 |
| TK2252 | Proteasome-activating nucleotidase (proteasome regulatory subunit)    |

**Cell envelope**

*Lipid metabolism*

|        |   |
|--------|---|
| TK0059 | CDP-alcohol phosphatidyltransferase                     |
| TK0180 | Acetyl-CoA acetyltransferase                            |
| TK0181 | 3-Hydroxy-3-methylglutaryl-CoA synthase                 |
| TK0789 | Glycerol-1-phosphate dehydrogenase                      |
| TK0914 | 3-Hydroxy-3-methylglutaryl-CoA reductase                |
| TK1026 | Geranylgeranylgllycerol diphosphate synthase            |
| TK1088 | Geranylgeranyl hydrogenase                              |
| TK1173 | Undecaprenyl pyrophosphate synthase                     |
| TK1468 | Bifunctional short-chain isoprenyl diphosphate synthase |
| TK1470 | Isopentenyl-diphosphate delta-isomerase                 |
| TK1474 | Mevalonate kinase                                       |
| TK1836 | Geranylgeranyl hydrogenase                              |

*Surface polysaccharides and protein glycosylation*

|        |   |
|--------|---|
| TK0219 | Sugar-phosphate nucleotidyltransferase  |
| TK0364 | Dolichol-phosphate mannosyltransferase  |
| TK0762 | Glycosyltransferase, family 2   |
| TK0806 | Putative membrane-bound dolichyl-phosphate-mannose-protein mannosyltransferase        |
| TK0809 | Glucosamine--fructose-6-phosphate aminotransferase (isomerizing)                      |
| TK0810 | Oligosaccharyl transferase, STT3 subunit  |
| TK0891 | Glycosyltransferase, family 4   |
| TK0892 | Polysaccharide deacetylase  |
| TK0949 | Glycosyltransferase, family 4   |
| TK0955 | Sugar-phosphate nucleotidyltransferase  |
| TK1004 | UDP-glucose 4-epimerase   |
| TK1108 | Phosphohexomutase   |
| TK1109 | Bifunctional mannoside-6-phosphate isomerase/mannose-1-phosphate guanylyl transferase |
| TK1188 | Sugar-phosphate nucleotidyltransferase  |
| TK1230 | UDP-N-acetylglucosamine 2-epimerase   |
| TK1231 | UDP-N-acetyl-D-mannosaminuronate dehydrogenase  |
| TK1293 | Putative membrane-bound dolichyl-phosphate-mannose-protein mannosyltransferase        |
| TK1323 | Glycosyltransferase, family 4   |
| TK1402 | Polysaccharide deacetylase  |
| TK1554 | Glycosyltransferase, family 2   |
| TK1708 | UDP-glucose 4-epimerase   |
| TK1711 | Sugar-phosphate nucleotidyltransferase  |
| TK1712 | Capsular polysaccharide biosynthesis protein  |
| TK1713 | Glycosyltransferase, family 4   |
| TK1714 | Glycosyltransferase, family 2   |
| TK1715 | CDP-glycerol:poly(glycerophosphate) glycerophosphotransferase                         |
| TK1716 | Cytidyllyltransferase   |
| TK1717 | Glycosyltransferase, family 2   |
| TK1718 | Oligosaccharyl transferase, STT3 subunit  |
| TK1719 | Capsular polysaccharide biosynthesis protein  |
| TK1720 | Dolichol-phosphate mannosyltransferase  |
| TK1721 | Glycosyltransferase, family 4   |
| TK1722 | Probable beta-1,3-galactosyltransferase   |
| TK1723 | Glycosyltransferase, family 4   |
| TK1731 | Glycosyltransferase, family 4   |
| TK1732 | Dolichol-phosphate mannosyltransferase, fused to C-terminal uncharacterized domain    |
| TK1733 | Glycosyltransferase, family 1   |
| TK1810 | Cytidyllyltransferase   |
| TK1819 | Capsular polysaccharide biosynthesis protein  |
| TK1828 | Galactose-1-phosphate uridylyltransferase   |
| TK1831 | Galactokinase   |
| TK1909 | Dolichol-phosphate mannosyltransferase, fused to membrane-bound GtrA-like domain      |
| TK2185 | Phosphohexomutase   |

|  |  |
|--|--|
| TK2254                                   | UDP-N-acetylglucosamine--dolichyl-phosphate N-acetylglucosaminephosphotransferase                    |
| TK2255                                   | Bifunctional phosphatase/dolichol-phosphate glucosyltransferase                                      |
| TK2274                                   | Glycerol-3-phosphate cytidylyltransferase  |
| TK2279                                   | Bifunctional sugar nucleotidyltransferase/CDP-alcohol phosphatidyltransferase synthase               |
| <i>Surface structure</i>                 |  |
| TK0164                                   | S-layer-like array protein   |
| TK0895                                   | S-layer protein precursor  |
| TK1589                                   | S-layer-like array protein   |
| <b>Central intermediary metabolism</b>   |  |
| <i>Extracellular protein degradation</i> |  |
| TK1295                                   | Predicted thiol protease   |
| TK1675                                   | Subtilisin-like serine protease precursor  |
| TK1689                                   | Subtilisin-like serine protease precursor  |
| TK1782                                   | Serine protease inhibitor Serpin homolog   |
| TK2168                                   | Archaeal serine protease   |
| <i>Polysaccharide degradation</i>        |  |
| TK0522                                   | Carbohydrate esterase, family 1  |
| TK0977                                   | Pullulanase type II, GH13 family   |
| TK1406                                   | Maltodextrin phosphorylase   |
| TK1434                                   | alpha-Glucosidase  |
| TK1436                                   | Probable alpha-amylase, GH57 family  |
| TK1754                                   | exo-beta-D-glucosaminidase   |
| TK1755                                   | Archaeal glucosamine-6-phosphate deaminase   |
| TK1761                                   | beta-Glycosidase, GH1 family   |
| TK1764                                   | N-Acetylchitobiose deacetylase   |
| TK1765                                   | Chitinase, containing dual catalytic domains   |
| TK1770                                   | Cyclomaltodextrinase   |
| TK1774                                   | Amylopullulanase, GH57 family  |
| TK1809                                   | 4-alpha-Glucanotransferase, GH57 family  |
| TK1827                                   | Membrane-bound beta-glycosidase, GH1 family  |
| TK1830                                   | Probable alpha-amylase, GH57 family  |
| TK1884                                   | alpha-Amylase precursor, GH13 family   |
| TK2172                                   | Cyclodextrin glucanotransferase, GH13 family   |
| <i>Polysaccharide (cytoplasmic)</i>      |  |
| TK1768                                   | Glycogen synthase  |
| <i>Polyamine</i>                         |  |
| TK0134                                   | Probable acetylpolyamine aminohydrolase, histon deacetylase family                                   |
| TK0147                                   | Spermidine synthase  |
| TK0149                                   | Pyruvoyl-dependent arginine decarboxylase  |
| TK0882                                   | Agmatinase   |
| TK1592                                   | S-Adenosylmethionine decarboxylase proenzyme   |
| <i>Compatible solute</i>                 |  |
| TK0787                                   | Archaeal inositol-1-monophosphatase/fructose-1,6-bisphosphatase                                      |
| TK1038                                   | 2-Phosphoglycerate kinase  |
| TK1039                                   | Cyclic 2,3-diphosphoglycerate synthetase   |
| TK2278                                   | myo-Inositol-1-phosphate synthase  |
| <i>Others</i>                            |  |
| TK0026                                   | Probable phosphoglycolate phosphatase, HAD superfamily   |
| TK0999                                   | Lysophospholipase, alpha/beta hydrolase superfamily  |
| TK1315                                   | 3'-Phosphoadenosine 5'-phosphosulfate reductase, fused to RNA-binding PUA and 4Fe-4S binding domains |
| TK1393                                   | Anaerobic glycerol 3-phosphate dehydrogenase   |
| TK1396                                   | Glycerol kinase  |
| TK1397                                   | Glycerophosphoryl diester phosphodiesterase  |
| TK1398                                   | Glycerophosphoryl diester phosphodiesterase  |
| TK1872                                   | 2-Hydroxyhepta-2,4-diene-1,7-dioate isomerase, FAA hydrolase family                                  |
| TK2132                                   | Fuculose-1-phosphate aldolase  |
| TK2167                                   | 3'-Phosphoadenosine 5'-phosphosulfate reductase, fused to N-terminal uncharacterized archaeal domain |
| <b>Amino acid metabolism</b>             |  |
| <i>Aromatic amino acid family</i>        |  |
| TK0252                                   | Indole-3-glycerol phosphate synthase   |
| TK0253                                   | Anthranilate phosphoribosyltransferase   |
| TK0254                                   | Anthranilate synthase, component I   |
| TK0255                                   | Anthranilate synthase, component II  |
| TK0256                                   | N-(5'-Phosphoribosyl)anthraniilate isomerase   |
| TK0257                                   | Tryptophan synthase, beta subunit  |
| TK0258                                   | Tryptophan synthase, alpha subunit   |
| TK0259                                   | Prephenate dehydrogenase   |
| TK0260                                   | Probable aromatic aminotransferase   |
| TK0261                                   | Predicted chorismate mutase, N-truncation  |
| TK0262                                   | Chorismate synthase  |
| TK0263                                   | 5-Enolpyruvylshikimate-3-phosphate synthase  |
| TK0264                                   | Archaeal shikimate kinase  |
| TK0265                                   | Shikimate 5-dehydrogenase  |
| TK0266                                   | 3-Dehydroquinate dehydratase   |
| TK0267                                   | 3-Dehydroquinate synthetase  |
| TK0268                                   | 2-Dehydro-3-deoxyphosphoheptonate aldolase   |
| TK1442                                   | Tryptophan synthase beta subunit-related protein   |
| <i>Aspartate family</i>                  |  |
| TK0028                                   | S-Adenosyl-L-homocysteine hydrolase  |
| TK0504                                   | Aspartate racemase   |
| TK0545                                   | S-Adenosylmethionine synthetase  |
| TK0916                                   | Threonine 3-dehydrogenase  |
| TK0950                                   | Asparagine synthase (glutamine-hydrolyzing)  |

|                              |  |
|------------------------------|--|
| TK1443                       | Aspartate-semialdehyde dehydrogenase   |
| TK1444                       | Homoserine kinase  |
| TK1445                       | Aspartokinase  |
| TK1446                       | Methionine synthase II (cobalamin-independent)   |
| TK1447                       | Methionine synthase II (cobalamin-independent)   |
| TK1448                       | 5,10-Methylenetetrahydrofolate reductase   |
| TK1449                       | Cystathionine gamma-synthase   |
| TK1471                       | Aspartate racemase   |
| TK1478                       | Threonine synthase   |
| TK1627                       | Homoserine dehydrogenase   |
| TK1656                       | L-Asparaginase   |
| TK2205                       | Threonine synthase   |
| TK2246                       | L-Asparaginase   |
| <i>Glutamate family</i>      |  |
| TK0119                       | Proline dehydrogenase, alpha subunit (dye-linked NADH dehydrogenase)                               |
| TK0120                       | Proline dehydrogenase, gamma subunit (4Fe-4S cluster-binding component)                            |
| TK0121                       | Proline dehydrogenase, delta subunit (2Fe-2S cluster-binding component)                            |
| TK0122                       | Proline dehydrogenase, beta subunit (dye-linked proline dehydrogenase component)                   |
| TK0240                       | Arginase   |
| TK0272                       | Pyrroline-5-carboxylate reductase, flame shift   |
| TK0273                       | Pyrroline-5-carboxylate reductase, flame shift   |
| TK0474                       | Arginase   |
| TK0871                       | Ornithine carbamoyltransferase   |
| TK1431                       | Glutamate dehydrogenase  |
| TK1796                       | Glutamine synthetase   |
| TK1814                       | Glutamate decarboxylase  |
| <i>Histidine family</i>      |  |
| TK0242                       | ATP phosphoribosyltransferase, predicted regulatory subunit  |
| TK0243                       | ATP phosphoribosyltransferase  |
| TK0244                       | Histidinol dehydrogenase   |
| TK0245                       | Imidazoleglycerol-phosphate dehydratase  |
| TK0246                       | Imidazoleglycerol-phosphate synthase, subunit H  |
| TK0247                       | 1-(5-Phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino] imidazole-4-carboxamide isomerase |
| TK0248                       | Imidazoleglycerol-phosphate synthase, cyclase subunit F  |
| TK0249                       | Bifunctional phosphoribosyl-AMP cyclohydrolase/phosphoribosyl-ATP pyrophosphohydrolase             |
| TK0250                       | Histidinol-phosphate aminotransferase  |
| <i>Lysine family</i>         |  |
| TK0274                       | N2-Acetyl-lysine deacetylase   |
| TK0275                       | N2-Acetyl-lysine aminotransferase  |
| TK0276                       | N2-Acetyl-amino adipate kinase   |
| TK0277                       | N2-Acetyl-amino adipyl-delta-phosphate reductase   |
| TK0278                       | RimK-related lysine biosynthesis protein   |
| TK0279                       | Probable lysine biosynthesis protein   |
| TK0280                       | Homoisocitrate dehydrogenase   |
| TK0281                       | Homoaconitase, small subunit   |
| TK0282                       | Homoaconitase, large subunit   |
| TK0283                       | Homocitrate synthase   |
| TK0875                       | Saccharopine reductase   |
| TK1237                       | Probable dihydropicoline synthase  |
| <i>Serine family</i>         |  |
| TK0052                       | Phosphoserine phosphatase  |
| TK0116                       | Sarcosine oxidase, alpha subunit   |
| TK0117                       | Sarcosine oxidase, beta subunit  |
| TK0150                       | Glycine cleavage system protein H  |
| TK0528                       | Serine hydroxymethyltransferase  |
| TK1379                       | Glycine cleavage system protein P (pyridoxal-binding), subunit 2                                   |
| TK1380                       | Glycine cleavage system protein P (pyridoxal-binding), subunit 1                                   |
| TK1548                       | Probable serine-glyoxylate aminotransferase, class V   |
| TK1687                       | Cysteine synthase  |
| TK1966                       | D-3-Phosphoglycerate dehydrogenase   |
| TK2035                       | Glycine cleavage system protein T (aminomethyltransferase)   |
| TK2217                       | 2-Amino-3-oxobutyrate coenzyme A ligase (glycine C-acetyltransferase)                              |
| <b>Nucleotide metabolism</b> |  |
| <i>Purines</i>               |  |
| TK0190                       | GMP synthase, glutamine amidotransferase component   |
| TK0193                       | GMP synthase, PP-loop-ATPase component   |
| TK0194                       | Inosine-5'-monophosphate dehydrogenase   |
| TK0197                       | Phosphoribosylformylglycynamidine synthase II  |
| TK2021                       | Phosphoribosylformylglycynamidine synthase I   |
| TK2022                       | Phosphoribosylformylglycynamidine synthase, PurS component   |
| TK2024                       | Phosphoribosylamine-glycine ligase   |
| TK2027                       | Formate-dependent phosphoribosylglycynamide formyltransferase                                      |
| TK2028                       | Phosphoribosylformylglycynamidine cyclo-ligase   |
| TK2029                       | Phosphoribosylaminoimidazole-succinocarboxamide synthase   |
| TK2029                       | Amidophosphoribosyltransferase   |
| TK0430                       | Inosine 5'-monophosphate cyclohydrolase  |
| TK0432                       | Phosphoribosylaminoimidazole-succinocarboxamide synthase   |
| TK0561                       | Adenylosuccinate lyase   |
| TK0835                       | Phosphoribosylaminoimidazole carboxylase, ATPase subunit   |
| TK0836                       | Phosphoribosylaminoimidazole carboxylase, catalytic subunit  |
| TK1002                       | Adenylosuccinate synthase  |
| <i>Pyrimidines</i>           |  |
| TK0870                       | Alternative thymidylate synthase   |

|   |   |
|---|---|
| TK1193  | CTP synthase (UTP--ammonia ligase)  |
| TK1805  | Dihydroorotate  |
| TK1806  | Probable dihydroorotate dehydrogenase, electron transfer subunit  |
| TK2138  | Orotate phosphoribosyltransferase   |
| TK2195  | Aspartate carbamoyltransferase, regulatory subunit  |
| TK2196  | Aspartate carbamoyltransferase, catalytic subunit   |
| TK2260  | Dihydroorotate dehydrogenase  |
| TK2276  | Orotidine-5'-phosphate decarboxylase  |
| <i>2-Deoxyribonucleotide metabolism</i>           |   |
| TK1736  | Ribonucleoside-diphosphate reductase; two inteins   |
| TK2298  | Anaerobic ribonucleoside-triphosphate reductase   |
| TK2299  | Anaerobic ribonucleoside-triphosphate reductase activating enzyme   |
| <i>Nucleotide and nucleoside interconversions</i> |   |
| TK0305  | Uridylate kinase  |
| TK0338  | Predicted nucleotide kinase, related to CMP and AMP kinases   |
| TK0700  | Nucleotide pyrophosphohydrolase   |
| TK0812  | Adenylate kinase  |
| TK1260  | Nucleotide pyrophosphohydrolase   |
| TK1307  | Nucleoside diphosphate kinase   |
| TK1403  | Thymidylate kinase  |
| TK1414  | Deoxycytidine triphosphate deaminase  |
| TK1514  | Cytidylate kinase   |
| TK1517  | Archaeal adenylate kinase   |
| TK1640  | Nucleotide pyrophosphohydrolase   |
| TK1891  | Probable guanine deaminase  |
| TK2257  | Deoxycytidylate deaminase   |
| <i>Purine and pyrimidine salvage</i>              |   |
| TK0352  | Thymidine phosphorylase   |
| TK0664  | Hypoxanthine/guanine phosphoribosyltransferase  |
| TK1287  | Uracil phosphoribosyltransferase  |
| TK1318  | Thymidine kinase  |
| TK1479  | Uridine phosphorylase   |
| TK1482  | Purine-nucleoside phosphorylase   |
| TK1489  | Adenine phosphoribosyltransferase, fused to N-terminal DNA-binding domain   |
| TK1737  | Xanthine/guanine phosphoribosyltransferase  |
| TK1895  | Purine-nucleoside phosphorylase   |
| <i>Cofactor and prosthetic group metabolism</i>   |   |
| <i>Molybdopterin</i>                              |   |
| TK0354  | Molybdenum cofactor biosynthesis protein C  |
| TK0541  | Molybdenum cofactor biosynthesis protein MoeA   |
| TK0544  | Molybdenum cofactor biosynthesis protein B  |
| TK0749  | Probable molybdopterin-guanine dinucleotide biosynthesis protein A  |
| TK0934  | Molybdopterin-guanine dinucleotide biosynthesis protein B   |
| TK1064  | Predicted metallocofactor modifying protein, radical SAM superfamily  |
| TK1065  | Molybdopterin converting factor, subunit 1  |
| TK1228  | Probable molybdenum cofactor biosynthesis protein A   |
| TK1282  | Molybdenum cofactor biosynthesis protein MoeA   |
| TK2002  | Molybdopterin-guanine dinucleotide biosynthesis protein A   |
| TK2115  | Molybdopterin converting factor, subunit 2  |
| TK2117  | Molybdenum cofactor biosynthesis protein MoeB   |
| TK2118  | Molybdopterin converting factor, subunit 1  |
| TK2225  | Molybdenum cofactor biosynthesis protein A  |
| <i>Pantothenate and CoA</i>                       |   |
| TK0153  | ATP:dephospho-CoA triphosphoribosyl transferase   |
| TK0363  | 3-Methyl-2-oxobutanate hydroxymethyltransferase   |
| TK0517  | Phosphopantothenoylcysteine synthetase/decarboxylase  |
| TK1334  | Dephospho-CoA kinase  |
| TK1968  | 2-Dehydropantoate 2-reductase   |
| TK2128  | Phosphopantetheine adenylyltransferase  |
| TK2192  | Dephospho-CoA kinase  |
| <i>Pyridine nucleotide</i>                        |   |
| TK0067  | Nicotinamide mononucleotide adenylyltransferase   |
| TK0218  | Nicotinate-nucleotide pyrophosphorylase   |
| TK0296  | Quinolinate synthetase A  |
| TK0297  | L-Aspartate oxidase (quinolinate synthetase B)  |
| TK1301  | Probable ATP-NAD kinase   |
| TK1650  | Probable nicotinamidase   |
| TK1676  | Nicotinate-nucleotide pyrophosphorylase   |
| TK1798  | NH3-dependent NAD <sup>+</sup> synthetase   |
| TK2124  | ATP-NAD kinase  |
| <i>Pyridoxine</i>                                 |   |
| TK0216  | Pyridoxine biosynthesis amidotransferase, SNO family  |
| TK0217  | Pyridoxine/pyridoxal 5-phosphate biosynthesis protein, SOR/SNZ family   |
| <i>Riboflavin</i>                                 |   |
| TK0424  | Riboflavin biosynthesis protein RibD<br>(Diaminohydroxyphosphoribosylaminopyrimidine deaminase and 5-amino-6-(5-phosphoribosylamino)uracil reductase) |
| TK0425  | Riboflavin synthase, alpha subunit  |
| TK0428  | Riboflavin biosynthesis protein RibA (GTP cyclohydrolase II and 3,4-dihydroxy-2-butanone 4-phosphate synthase)  |
| TK0429  | Riboflavin synthase, beta subunit   |
| <i>Thiamine</i>                                   |   |
| TK0366  | ThiI-related protein  |
| TK0368  | Thiamine biosynthesis protein ThiI  |
| TK0433  | Thiamine biosynthesis protein ThiC  |

|                                   |   |
|-----------------------------------|---|
| TK0434                            | Thiazole biosynthetic enzyme Thi4   |
| TK0435                            | Phosphomethylpyrimidine kinase, fused to C-terminal uncharacterized domain      |
| TK0890                            | Thiamine monophosphate kinase   |
| TK1093                            | Sulfur transfer protein involved in thiamine biosynthesis                       |
| <i>Cobalamin salvage</i>          |   |
| TK0846                            | Adenosylcobinamide amidohydrolase   |
| TK0853                            | NaMN:DMB phosphoribosyltransferase  |
| TK0854                            | Cobyric acid synthase   |
| TK0856                            | GTP:adenosylcobinamide-phosphate guanylyltransferase                            |
| TK0857                            | Cobalamin-5-phosphate synthase  |
| TK0863                            | Cobinamide synthase   |
| TK0864                            | Threonine-O-3-phosphate decarboxylase   |
| TK1045                            | Cobalamin adenosyltransferase   |
| TK2130                            | ATP:corrinoid adenosyltransferase   |
| <i>Others</i>                     |   |
| TK0509                            | 3-Octaprenyl-4-hydroxybenzoate decarboxylase UbiX                               |
| TK0730                            | ABC-type transport system involved in Fe-S cluster assembly, permease component |
| TK0731                            | ABC-type transport system involved in Fe-S cluster assembly, ATPase component   |
| TK0747                            | Bifunctional biotin-protein ligase/biotin operon repressor                      |
| TK0748                            | Biotin biosynthesis protein BioY  |
| TK0929                            | 3-Octaprenyl-4-hydroxybenzoate decarboxylase UbiD                               |
| TK0987                            | Biotin-protein ligase   |
| TK1119                            | 6-Pyruvoyl-tetrahydropterin synthase  |
| TK1161                            | Dihydropteroate synthase  |
| TK1234                            | Lipoate-protein ligase A, C-terminal section                                    |
| TK1324                            | 4-Hydroxybenzoate octaprenyltransferase   |
| TK1908                            | Lipoate-protein ligase A, N-terminal section                                    |
| TK1957                            | 4-Hydroxybenzoate octaprenyltransferase   |
| TK1990                            | Cysteine desulfurase  |
| <b>Energy metabolism</b>          |   |
| <i>Amino acid degradation</i>     |   |
| TK0135                            | Indolepyruvate: ferredoxin oxidoreductase, beta subunit                         |
| TK0136                            | Indolepyruvate: ferredoxin oxidoreductase, alpha subunit                        |
| TK0139                            | Acetyl-CoA synthetase II (NDP forming), alpha subunit                           |
| TK0186                            | Multiple substrate aminotransferase   |
| TK0465                            | Acetyl-CoA synthetase I (NDP forming), beta subunit                             |
| TK0548                            | Aromatic aminotransferase   |
| TK0665                            | Acetyl-CoA synthetase I (NDP forming), alpha subunit                            |
| TK0816                            | 2-Oxoacid:ferredoxin oxidoreductase, beta subunit                               |
| TK0817                            | 2-Oxoacid:ferredoxin oxidoreductase, alpha subunit                              |
| TK0943                            | Acetyl-CoA synthetase II (NDP forming), beta subunit                            |
| TK0944                            | Acyl-CoA synthetase (NDP forming), large subunit                                |
| TK1066                            | Tungsten-containing aldehyde:ferredoxin oxidoreductase                          |
| TK1094                            | Alanine aminotransferase  |
| TK1123                            | 2-Oxoacid:ferredoxin oxidoreductases, gamma subunit                             |
| TK1124                            | 2-Oxoacid:ferredoxin oxidoreductases, beta subunit                              |
| TK1125                            | 2-Oxoacid:ferredoxin oxidoreductases, alpha subunit                             |
| TK1126                            | 2-Oxoacid:ferredoxin oxidoreductases, gamma subunit                             |
| TK1129                            | 2-Oxoacid:ferredoxin oxidoreductases, beta subunit                              |
| TK1130                            | 2-Oxoacid:ferredoxin oxidoreductases, alpha subunit                             |
| TK1131                            | 2-Oxoacid: ferredoxin oxidoreductase, delta subunit                             |
| TK1211                            | Aminotransferase, class III   |
| TK1643                            | Indolepyruvate: ferredoxin oxidoreductase, alpha subunit                        |
| TK1880                            | Archaeal succinyl-CoA synthetase (NDP forming), large subunit                   |
| TK1978                            | Pyruvate/2-oxoisovalerate: ferredoxin oxidoreductases, common gamma subunit     |
| TK1979                            | 2-Oxoisovalerate:ferredoxin oxidoreductase, delta subunit                       |
| TK1980                            | 2-Oxoisovalerate:ferredoxin oxidoreductase, alpha subunit                       |
| TK1981                            | 2-Oxoisovalerate:ferredoxin oxidoreductase, beta subunit                        |
| TK1982                            | Pyruvate:ferredoxin oxidoreductase, delta subunit                               |
| TK1983                            | Pyruvate:ferredoxin oxidoreductase, alpha subunit                               |
| TK1984                            | Pyruvate:ferredoxin oxidoreductase, beta subunit                                |
| TK2101                            | Aminotransferase, class III   |
| TK2127                            | Acyl-CoA synthetase (NDP forming), large subunit                                |
| TK2244                            | Indolepyruvate: ferredoxin oxidoreductase, beta subunit                         |
| TK2268                            | Aspartate aminotransferase  |
| <i>Glycolysis/gluconeogenesis</i> |   |
| TK0376                            | ADP-dependent phosphofructokinase   |
| TK0511                            | Pyruvate kinase   |
| TK0705                            | NADP-dependent glyceraldehyde-3-phosphate dehydrogenase (non-phosphorylating)   |
| TK0765                            | Glyceraldehyde-3-phosphate dehydrogenase (phosphorylating)                      |
| TK0866                            | 2,3-Bisphosphoglycerate-independent phosphoglycerate mutase                     |
| TK0989                            | DhnA-type fructose-1,6-bisphosphate aldolase                                    |
| TK1110                            | ADP-dependent glucokinase   |
| TK1111                            | Archaeal glucose-6-phosphate isomerase  |
| TK1146                            | 3-Phosphoglycerate kinase   |
| TK1292                            | Phosphoenolpyruvate synthetase (pyruvate, water dikinase)                       |
| TK2106                            | Enolase   |
| TK2129                            | Triosephosphate isomerase   |
| TK2163                            | Tungsten-containing glyceraldehyde-3-phosphate:ferredoxin oxidoreductase        |
| TK2164                            | Thermophile-specific fructose-1,6-bisphosphatase                                |
| <i>Pentose metabolism</i>         |   |
| TK0269                            | Transketolase, C-terminal section   |
| TK0270                            | Transketolase, N-terminal section   |

|  |   |
|--|---|
| TK0475   | D-Arabinose 3-hexulose-6-phosphate formaldehyde lyase, fused to phosphohexulose isomerase   |
| TK1426   | Ribose 5-phosphate isomerase  |
| TK1777   | Phosphopentomutase  |
| TK2104   | Deoxyribose-phosphate aldolase  |
| TK2235   | Phosphoribosylpyrophosphate synthetase  |
| TK2290   | Ribulose 1,5-bisphosphate carboxylase/oxygenase, TypeIII                                    |
| <i>Pyruvate/oxaloacetate metabolism</i>        |   |
| TK0289   | Pyruvate-formate lyase  |
| TK0375   | Probable maleate cis-trans isomerase  |
| TK0990   | Oxaloacetate decarboxylase, alpha subunit   |
| TK1405   | Phosphoenolpyruvate carboxykinase (GTP)   |
| TK1963   | NADP-dependent malic enzyme   |
| TK1964   | Probable fumarate hydratase, beta subunit   |
| TK1965   | Probable fumarate hydratase, alpha subunit  |
| <i>Propanoate metabolism</i>                   |   |
| TK0328   | Methylmalonyl-CoA mutase, C-terminus of large subunit (cobalamin-binding)                   |
| TK0330   | Methylmalonyl-CoA epimerase   |
| TK1149   | Methylmalonyl-CoA mutase, N-terminus of large subunit                                       |
| TK1622   | Methylmalonyl-CoA decarboxylase, alpha subunit  |
| TK1623   | Methylmalonyl-CoA decarboxylase, delta subunit  |
| TK1624   | Methylmalonyl-CoA decarboxylase, gamma subunit  |
| TK1625   | Methylmalonyl-CoA decarboxylase, beta subunit   |
| <i>ATP-proton motive force interconversion</i> |   |
| TK1596   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit H                                    |
| TK1597   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit I                                    |
| TK1598   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit K                                    |
| TK1599   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit E                                    |
| TK1600   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit C                                    |
| TK1601   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit F                                    |
| TK1602   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit A                                    |
| TK1603   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit B                                    |
| TK1604   | Archaeal/vacuolar-type H <sup>+</sup> -ATPase, subunit D                                    |
| <i>Electron transport</i>                      |   |
| TK0072   | Tungsten-containing oxidoreductase  |
| TK0214   | Probable formate dehydrogenase, alpha subunit   |
| TK0284   | NAD(P)H-flavin oxidoreductase   |
| TK0316   | Rubrerythrin-related protein, fused to C-terminal DUF835 domain                             |
| TK0370   | NAD(P)H-flavin oxidoreductase   |
| TK0551   | D-Isomer specific 2-hydroxyacid dehydrogenase   |
| TK0650   | Rubrerythrin-related protein  |
| TK0651   | NAD(P)-dependent dihydrogenase, Gfo/Idh/MocA family   |
| TK0672   | Glutamate synthase beta chain-related oxidoreductase  |
| TK0673   | Short-chain alcohol dehydrogenase   |
| TK0683   | Glyoxylate reductase  |
| TK0690   | Molybdopterin oxidoreductase, molybdopterin-binding subunit                                 |
| TK0723   | Iron-molybdenum cofactor-binding protein  |
| TK0724   | Iron-molybdenum cofactor-binding protein  |
| TK0732   | Iron-molybdenum cofactor-binding protein  |
| TK0736   | Short-chain alcohol dehydrogenase   |
| TK0740   | 4Fe-4S cluster-binding protein  |
| TK0814   | Type A flavoprotein   |
| TK0839   | NAD(P)H-flavin oxidoreductase   |
| TK0840   | NAD(P)H-flavin oxidoreductase   |
| TK0844   | Tungsten-containing oxidoreductase  |
| TK0845   | Oxidoreductase, aldo/keto reductase family  |
| TK1008   | Fe-containing alcohol dehydrogenase   |
| TK1056   | Rubrerythrin-related protein  |
| TK1062   | Rubrerythrin-related protein  |
| TK1087   | Ferredoxin 2  |
| TK1208   | Glutaredoxin-related protein  |
| TK1209   | Transmembrane electron transport protein  |
| TK1214   | Membrane bound hydrogenase, 4Fe-4S cluster-binding subunit                                  |
| TK1215   | Membrane bound hydrogenase, NiFe-hydrogenase large subunit 2                                |
| TK1216   | Membrane bound hydrogenase, NiFe-hydrogenase large subunit 1                                |
| TK1217   | Membrane bound hydrogenase, NiFe-hydrogenase small subunit                                  |
| TK1218   | Membrane bound hydrogenase, MbxM subunit  |
| TK1219   | Membrane bound hydrogenase, MbxH' subunit   |
| TK1220   | Membrane bound hydrogenase, MbxH subunit  |
| TK1221   | Membrane bound hydrogenase, MbxG subunit  |
| TK1222   | Membrane bound hydrogenase, MbxF subunit  |
| TK1223   | Membrane bound hydrogenase, MbxD subunit  |
| TK1224   | Membrane bound hydrogenase, MbxC subunit  |
| TK1225   | Membrane bound hydrogenase, MbxB subunit  |
| TK1226   | Membrane bound hydrogenase, MbxA subunit  |
| TK1325   | Ferredoxin:NADP oxidoreductase, alpha subunit   |
| TK1326   | Ferredoxin:NADP oxidoreductase, beta subunit  |
| TK1391   | Molybdopterin oxidoreductase, 4Fe-4S cluster-binding subunit                                |
| TK1472   | CinA-related molybdopterin-binding protein  |
| TK1481   | NADH:polysulfide oxidoreductase   |
| TK1512   | Short-chain alcohol dehydrogenase   |
| TK1557   | Predicted dehydrogenase   |
| TK1569   | Iron-containing alcohol dehydrogenase   |
| TK1612   | Glutamate synthase beta chain-related oxidoreductase, containing 2Fe-2S and 4Fe-4S clusters |

|        |  |
|--------|--|
| TK1613 | NADH:ubiquinone oxidoreductase, NADH-binding subunit F       |
| TK1614 | NADH:ubiquinone oxidoreductase, subunit E                    |
| TK1674 | Flavin reductase-related oxidoreductase                      |
| TK1677 | Short-chain alcohol dehydrogenase                            |
| TK1684 | Ferredoxin:NADP oxidoreductase, alpha subunit                |
| TK1685 | Ferredoxin:NADP oxidoreductase, beta subunit                 |
| TK1694 | Ferredoxin 1   |
| TK2010 | Iron-molybdenum cofactor-binding protein, flame shift        |
| TK2011 | Iron-molybdenum cofactor-binding protein, flame shift        |
| TK2012 | Ferredoxin 3   |
| TK2016 | Iron-molybdenum cofactor-binding protein                     |
| TK2069 | Cytosolic NiFe-hydrogenase, alpha subunit                    |
| TK2070 | Cytosolic NiFe-hydrogenase, delta subunit                    |
| TK2071 | Cytosolic NiFe-hydrogenase, gamma subunit                    |
| TK2072 | Cytosolic NiFe-hydrogenase, beta subunit                     |
| TK2073 | 4Fe-4S cluster-binding protein                               |
| TK2074 | Glutamate synthase beta chain-related oxidoreductase         |
| TK2075 | 4Fe-4S cluster-binding protein                               |
| TK2076 | Probable formate dehydrogenase, alpha subunit                |
| TK2077 | 4Fe-4S cluster-binding protein                               |
| TK2078 | 4Fe-4S cluster-binding protein                               |
| TK2080 | Membrane bound hydrogenase, MbhA subunit                     |
| TK2081 | Membrane bound hydrogenase, MbhB subunit                     |
| TK2082 | Membrane bound hydrogenase, MbhC subunit                     |
| TK2083 | Membrane bound hydrogenase, MbhD subunit                     |
| TK2084 | Membrane bound hydrogenase, MbhE subunit                     |
| TK2085 | Membrane bound hydrogenase, MbhF subunit                     |
| TK2086 | Membrane bound hydrogenase, MbhG subunit                     |
| TK2087 | Membrane bound hydrogenase, MbhH subunit                     |
| TK2088 | Membrane bound hydrogenase, MbhI subunit                     |
| TK2089 | Membrane bound hydrogenase, NiFe-hydrogenase small subunit   |
| TK2090 | Membrane bound hydrogenase, NiFe-hydrogenase large subunit 1 |
| TK2091 | Membrane bound hydrogenase, NiFe-hydrogenase large subunit 2 |
| TK2092 | Membrane bound hydrogenase, MbhM subunit                     |
| TK2093 | Membrane bound hydrogenase, 4Fe-4S cluster-binding subunit   |
| TK2094 | Rubrerythrin-related protein                                 |
| TK2095 | Rubrerythrin-related protein                                 |
| TK2096 | Rubrerythrin-related protein                                 |
| TK2159 | Predicted oxidoreductase                                     |

#### Others

|        |                           |
|--------|---------------------------|
| TK1700 | Inorganic pyrophosphatase |
| TK2031 | Acylphosphatase           |

#### Nitrogen metabolism

|        |  |
|--------|--|
| TK0332 | Allophanate hydrolase, subunit 2                     |
| TK0333 | Allophanate hydrolase, subunit 1                     |
| TK2158 | Carbamate kinase-like carbamoyl phosphate synthetase |

#### Transport and binding proteins

##### Anions

|        |  |
|--------|--|
| TK0018 | ABC-type sulfate transport system, permease component      |
| TK0021 | ABC-type sulfate transport system, ATPase component        |
| TK0761 | Sodium/phosphate symporter                                 |
| TK0886 | Voltage-gated chloride channel protein                     |
| TK1864 | ABC-type phosphate transport system, periplasmic component |
| TK1866 | ABC-type phosphate transport system, permease component    |
| TK1867 | ABC-type phosphate transport system, permease component    |
| TK1868 | ABC-type phosphate transport system, ATPase component      |
| TK1977 | Sodium/phosphate symporter                                 |
| TK2061 | Sodium/phosphate symporter                                 |

##### Cations

|        |   |
|--------|---|
| TK0015 | ABC-type molybdate transport system, periplasmic component  |
| TK0158 | ABC-type iron(III) transport system, ATPase component   |
| TK0159 | ABC-type iron(III) transport system, permease component   |
| TK0505 | Magnesium and cobalt transporter  |
| TK0570 | ABC-type iron(III) transport system, periplasmic component  |
| TK0571 | ABC-type iron(III) transport system, permease component   |
| TK0572 | ABC-type iron(III) transport system, ATPase component   |
| TK0618 | Multisubunit sodium/hydrogen antiporter, MnHE subunit   |
| TK0619 | Multisubunit sodium/hydrogen antiporter, MnHF subunit   |
| TK0620 | Multisubunit sodium/hydrogen antiporter, MnHG subunit   |
| TK0621 | Multisubunit sodium/hydrogen antiporter, predicted subunit  |
| TK0622 | Multisubunit sodium/hydrogen antiporter, predicted subunit  |
| TK0623 | Multisubunit sodium/hydrogen antiporter, MnHB subunit   |
| TK0624 | Multisubunit sodium/hydrogen antiporter, MnHC subunit   |
| TK0625 | Multisubunit sodium/hydrogen antiporter, MnHD subunit   |
| TK0627 | NapA-type sodium/hydrogen antiporter  |
| TK0652 | Heavy-metal cation transporter, ZIP family  |
| TK0661 | ABC-type manganese/zinc transport system, periplasmic component (surface adhesin A homolog)                       |
| TK0706 | ABC-type iron(III)-siderophore transport system, periplasmic component fused to N-terminal uncharacterized domain |
| TK0707 | ABC-type iron(III)-siderophore transport system, permease component   |
| TK0708 | ABC-type iron(III)-siderophore transport system, ATPase component   |
| TK0714 | Iron(II) transport protein B  |
| TK0715 | Iron(II) transport protein A  |
| TK0716 | Iron(II) transport protein A  |

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| TK0717                                     | ABC-type molybdate transport system, periplasmic component                         |
| TK0718                                     | ABC-type molybdate transport system, permease component                            |
| TK0719                                     | ABC-type molybdate transport system, ATPase component                              |
| TK0745                                     | ABC-type cobalt transport system, permease component                               |
| TK0746                                     | ABC-type cobalt transport system, ATPase component                                 |
| TK0803                                     | ABC-type manganese/zinc transport system, ATPase component                         |
| TK0804                                     | ABC-type manganese/zinc transport system, permease component                       |
| TK0837                                     | Heavy-metal transporting P-type ATPase   |
| TK0867                                     | Sodium/calcium antiporter  |
| TK0884                                     | NapA-type sodium/hydrogen antiporter   |
| TK0957                                     | Iron(II) transport protein B   |
| TK0958                                     | Iron(II) transport protein A   |
| TK1063                                     | Small-conductance mechanosensitive channel   |
| TK1103                                     | ABC-type cobalt transport system, CbiM permease component                          |
| TK1105                                     | ABC-type cobalt transport system, CbiQ permease component                          |
| TK1106                                     | ABC-type cobalt transport system, ATPase component                                 |
| TK1181                                     | ABC-type cobalt transport system, ATPase component                                 |
| TK1182                                     | Trk-type potassium transport system, membrane component                            |
| TK1336                                     | ABC-type sodium efflux pump system, permease component                             |
| TK1337                                     | ABC-type sodium efflux pump system, ATPase component                               |
| TK1458                                     | Magnesium transporter  |
| TK1559                                     | NapA-type sodium/hydrogen antiporter   |
| TK1560                                     | NapA-type sodium/hydrogen antiporter   |
| TK1595                                     | Trk-type potassium transport system, NAD-binding component                         |
| TK1813                                     | NapA-type sodium/hydrogen antiporter   |
| TK1817                                     | Cobalt/zinc/cadmium cation efflux pump protein                                     |
| TK1900                                     | Calcium-gated potassium channel protein  |
| TK1940                                     | Small-conductance mechanosensitive channel   |
| TK2009                                     | Cobalt/zinc/cadmium cation efflux pump protein                                     |
| TK2018                                     | ABC-type iron(III)-siderophore transport system, periplasmic component             |
| TK2019                                     | ABC-type iron(III)-siderophore transport system, permease component                |
| TK2020                                     | ABC-type iron(III)-siderophore transport system, ATPase component                  |
| TK2142                                     | NhaC-type sodium/hydrogen antiporter   |
| TK2208                                     | ABC-type iron(III)-siderophore transport system, ATPase component                  |
| TK2209                                     | ABC-type iron(III)-siderophore transport system, permease component                |
| <i>Carbohydrates and organic compounds</i> |  |
| TK0157                                     | Xanthine/uracil permease   |
| TK0295                                     | Predicted sodium-dependent transporter   |
| TK0757                                     | ABC-type thiamine transport system, periplasmic component                          |
| TK0865                                     | Probable vitamin B12 transport protein precursor                                   |
| TK0935                                     | TRAP-type transporter, periplasmic component                                       |
| TK0937                                     | TRAP-type transporter, fused permease components                                   |
| TK1212                                     | Xanthine/uracil permease   |
| TK1432                                     | Sodium-dependent transporter, SNF family   |
| TK1771                                     | ABC-type maltodextrin transport system, maltodextrin-binding periplasmic component |
| TK1772                                     | ABC-type maltodextrin transport system, permease component                         |
| TK1773                                     | ABC-type maltodextrin transport system, permease component                         |
| TK1775                                     | ABC-type maltodextrin transport system, ATPase component                           |
| TK2015                                     | C4-Dicarboxylate transporter   |
| TK2079                                     | Probable formate transporter   |
| <i>Peptides and amino acids</i>            |  |
| TK0115                                     | Sodium/proline symporter, SSF family   |
| TK0684                                     | Aromatic amino acid permease   |
| TK0986                                     | Proton/glutamate symporter, SDF family   |
| TK1568                                     | Sodium/proline symporter, SSF family   |
| TK1659                                     | Small neutral amino acid transporter   |
| TK1756                                     | ABC-type dipeptide/oligopeptide transport system, ATPase component                 |
| TK1757                                     | ABC-type dipeptide/oligopeptide transport system, ATPase component                 |
| TK1758                                     | ABC-type dipeptide/oligopeptide transport system, permease component               |
| TK1759                                     | ABC-type dipeptide/oligopeptide transport system, permease component               |
| TK1760                                     | ABC-type dipeptide/oligopeptide transport system, periplasmic component            |
| TK1779                                     | Oligopeptide transporter, OPT family   |
| TK1800                                     | ABC-type dipeptide/oligopeptide transport system, ATPase component                 |
| TK1801                                     | ABC-type dipeptide/oligopeptide transport system, ATPase component                 |
| TK1802                                     | ABC-type dipeptide/oligopeptide transport system, permease component               |
| TK1803                                     | ABC-type dipeptide/oligopeptide transport system, permease component               |
| TK1804                                     | ABC-type dipeptide/oligopeptide transport system, probable periplasmic component   |
| TK1859                                     | Probable lipoprotein releasing system, ATP-binding protein                         |
| TK1860                                     | ABC-type dipeptide/oligopeptide transport system, permease component               |
| TK1861                                     | ABC-type dipeptide/oligopeptide transport system, permease component               |
| TK2057                                     | ABC-type dipeptide/oligopeptide transport system, permease component               |
| TK2058                                     | ABC-type dipeptide/oligopeptide transport system, permease component               |
| <i>General</i>                             |  |
| TK0019                                     | Predicted ABC-type transport system, ATPase component                              |
| TK0123                                     | Multidrug-efflux transporter   |
| TK0161                                     | ABC-type multidrug transport system, ATPase component                              |
| TK0198                                     | Predicted permease, major facilitator superfamily, flame shift                     |
| TK0199                                     | Predicted permease, major facilitator superfamily, flame shift                     |
| TK0223                                     | Predicted permease, major facilitator superfamily                                  |
| TK0230                                     | ABC-type multidrug transport system, ATPase component                              |
| TK0231                                     | ABC-type multidrug transport system, permease component                            |
| TK0235                                     | Predicted permease, major facilitator superfamily                                  |
| TK0326                                     | ABC-type multidrug transport system, ATPase component                              |

|        |   |
|--------|---|
| TK0355 | ABC-type multidrug transport system, ATPase component                     |
| TK0436 | ABC-type transporter, ATPase component, fused to acetyltransferase domain |
| TK0657 | ABC-type transport system, probable periplasmic component                 |
| TK0658 | ABC-type transport system, ATPase component                               |
| TK0659 | ABC-type transport system, permease component                             |
| TK0660 | ABC-type transport system, permease component                             |
| TK0676 | ABC-type multidrug transport system, ATPase and permease components       |
| TK0692 | Predicted permease  |
| TK0694 | ABC-type multidrug transport system, ATPase component                     |
| TK0726 | ABC-type multidrug transport system, permease component                   |
| TK0727 | ABC-type multidrug transport system, ATPase component                     |
| TK0774 | Predicted permease, auxin efflux carrier family                           |
| TK0827 | Predicted permease, major facilitator superfamily                         |
| TK0833 | Predicted permease, major facilitator superfamily                         |
| TK0942 | ABC-type multidrug transport system, ATPase component                     |
| TK0974 | Sodium-driven multidrug efflux pump protein                               |
| TK1007 | Predicted permease, major facilitator superfamily                         |
| TK1011 | Permease, major facilitator superfamily, flame shift                      |
| TK1012 | Permease, major facilitator superfamily, flame shift                      |
| TK1044 | Predicted permease, major facilitator superfamily                         |
| TK1144 | ABC-type multidrug transport system, ATPase component                     |
| TK1145 | ABC-type multidrug transport system, permease component                   |
| TK1151 | ABC-type transport system, permease component                             |
| TK1152 | ABC-type multidrug transport system, ATPase component                     |
| TK1267 | Permease, drug/metabolite transporter (DMT) superfamily                   |
| TK1288 | Sodium-driven multidrug efflux pump protein                               |
| TK1289 | Sodium-driven multidrug efflux pump protein                               |
| TK1399 | Predicted permease, major facilitator superfamily                         |
| TK1400 | Predicted permease, major facilitator superfamily                         |
| TK1452 | ABC-type multidrug transport system, ATPase and permease components       |
| TK1547 | Predicted permease, major facilitator superfamily                         |
| TK1579 | ABC-type multidrug transport system, ATPase component                     |
| TK1588 | ABC-type multidrug transport system, ATPase component                     |
| TK1655 | Predicted permease, major facilitator superfamily                         |
| TK1745 | Permease, drug/metabolite transporter (DMT) superfamily                   |
| TK1792 | Permease, drug/metabolite transporter (DMT) superfamily                   |
| TK1797 | Permease, drug/metabolite transporter (DMT) superfamily                   |
| TK1829 | Permease, major facilitator superfamily                                   |
| TK1858 | Predicted permease, containing FtsX domains                               |
| TK1876 | Permease, drug/metabolite transporter (DMT) superfamily                   |
| TK1936 | ABC-type multidrug transport system, ATPase component                     |
| TK1938 | ABC-type transport system, probable permease component                    |
| TK1992 | Permease, major facilitator superfamily                                   |
| TK2026 | ABC-type multidrug transport system, ATPase component                     |
| TK2027 | ABC-type multidrug transport system, permease component                   |
| TK2028 | ABC-type multidrug transport system, permease component                   |
| TK2036 | Permease, drug/metabolite transporter (DMT) superfamily                   |
| TK2053 | ABC-type multidrug transport system, ATPase component                     |
| TK2054 | ABC-type transport system, probable permease component                    |
| TK2055 | ABC-type transport system, probable permease component                    |
| TK2161 | ABC-type multidrug transport system, ATPase component                     |
| TK2186 | Predicted permease, containing DUP6 domain                                |
| TK2247 | Predicted permease, major facilitator superfamily                         |
| TK2251 | Permease, major facilitator superfamily                                   |
| TK2266 | Predicted permease, major facilitator superfamily                         |
| TK2281 | ABC-type multidrug transport system, ATPase component                     |

#### General function prediction only

|        |   |
|--------|---|
| TK0125 | N-Acetyltransferase, GNAT family  |
| TK0232 | N-Acetyltransferase, GNAT family  |
| TK0331 | N-Acetyltransferase, GNAT family  |
| TK0538 | N-Acetyltransferase, GNAT family  |
| TK1054 | N-Acetyltransferase, GNAT family  |
| TK1174 | Predicted acetyltransferase, isoleucine patch superfamily                             |
| TK0012 | GTP-binding protein   |
| TK0140 | Archaeal ATPase, fused to C-terminal DUF234 domain                                    |
| TK0285 | Archaeal ATPase, fused to C-terminal DUF234 domain, degenerate                        |
| TK0286 | Archaeal ATPase, fused to C-terminal DUF234 domain, degenerate                        |
| TK0287 | Archaeal ATPase, fused to C-terminal DUF234 domain, degenerate                        |
| TK0459 | Archaeal ATPase   |
| TK0498 | Predicted ATPase, AAA superfamily   |
| TK0506 | Predicted GTPase, containing TGS domain   |
| TK0557 | Predicted ATPase, DUF265 family   |
| TK0754 | Predicted ATPase, DUF699 family, fused to acetyltransferase domain                    |
| TK0776 | Archaeal ATPase   |
| TK0861 | ATP-binding protein   |
| TK0953 | Predicted ATPase, AAA superfamily, containing PIN and KH nucleic acid-binding domains |
| TK0960 | Predicted ATPase, PP-loop superfamily   |
| TK1048 | ATPase, RecA superfamily  |
| TK1139 | ATPase, AAA superfamily   |
| TK1190 | Predicted GTPase, containing NOG1 domain  |
| TK1236 | Archaeal ATPase   |

|                                 |  |
|---------------------------------|--|
| TK1283                          | Predicted ATPase, PP-loop superfamily  |
| TK1286                          | Predicted GTPase, GTP1/OBG family, containing TGS domain                             |
| TK1314                          | Predicted ATPase, AAA superfamily  |
| TK1465                          | Archaeal ATPase, fused to C-terminal DUF234 domain                                   |
| TK1544                          | Archaeal ATPase, fused to C-terminal DUF234 domain                                   |
| TK1549                          | Predicted ATPase   |
| TK1551                          | Predicted ATPase, PP-loop superfamily  |
| TK1556                          | ATPase, PP-loop superfamily  |
| TK1573                          | Archaeal ATPase, fused to C-terminal DUF234 domain                                   |
| TK1590                          | Predicted ATPase, AAA superfamily  |
| TK1692                          | Predicted ATPase, PP-loop superfamily  |
| TK1789                          | ATPase, RecA superfamily   |
| TK1821                          | ATPase, PP-loop superfamily  |
| TK1822                          | Predicted ATPase, AAA superfamily  |
| TK1846                          | MoxR-related ATPase, AAA superfamily   |
| TK1857                          | GTPase, MMR1/HSR1 family   |
| TK1877                          | Archaeal ATPase, fused to C-terminal DUF234 domain                                   |
| TK1910                          | ATPase, RecA superfamily   |
| TK1932                          | ATPase, RecA superfamily   |
| TK1954                          | Probable GTP-binding protein   |
| TK1976                          | HflX-related GTP-binding protein   |
| TK2042                          | ATPase, RecA superfamily   |
| TK2098                          | Predicted ATPase, AAA superfamily  |
| TK2202                          | Predicted ATPase, AAA superfamily  |
| TK2220                          | Archaeal ATPase  |
| TK2280                          | Archaeal ATPase  |
| <i>DNA/RNA-binding proteins</i> |  |
| TK0016                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0066                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0128                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0137                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0143                          | Nucleic acid-binding protein, containing C2H2 zinc-finger                            |
| TK0176                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0191                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0212                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0239                          | Putative tRNA-binding protein  |
| TK0334                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0337                          | Predicted nucleic acid-binding protein, containing PIN domain and zinc-ribbon module |
| TK0343                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0374                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0456                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0481                          | RNA-binding protein, containing KH domain  |
| TK0542                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0553                          | Nucleic acid-binding protein, containing OB-fold domain                              |
| TK0562                          | Predicted DNA-binding protein, DUF134 family   |
| TK0649                          | Putative tRNA-binding protein  |
| TK0734                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0796                          | DNA-binding protein, containing HTH domain of resolvase                              |
| TK0800                          | RNA-binding protein, containing KH domain  |
| TK0889                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0903                          | RNA-binding protein, containing THUMP domain   |
| TK0907                          | DNA-binding protein Translin homolog   |
| TK0910                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0924                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0956                          | LexA-related DNA-binding protein   |
| TK0972                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK0998                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1014                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1027                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1101                          | RNA-binding protein, Nop10p family   |
| TK1112                          | RNA-binding protein, containing KH domain  |
| TK1118                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1169                          | RNA-binding protein, containing S1 domain  |
| TK1185                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1256                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1257                          | RNA-binding protein, containing THUMP domain   |
| TK1275                          | Predicted RNA-binding protein, CRS1/YhbY family                                      |
| TK1278                          | Double-stranded DNA-binding protein  |
| TK1290                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1644                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1751                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1763                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1945                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK1995                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK2005                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK2065                          | Predicted RNA-binding protein, containing TRAM domain                                |
| TK2067                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK2097                          | RNA-binding protein, containing THUMP domain   |
| TK2155                          | Predicted nucleic acid-binding protein, containing PIN domain                        |
| TK2156                          | RNA-binding protein, containing PUA domain   |
| TK2227                          | RNA-binding protein FAU-1  |
| TK2228                          | Predicted nucleic acid-binding protein, containing PIN domain                        |

|                                |   |
|--------------------------------|---|
| TK2262                         | Predicted nucleic acid-binding protein, containing PIN domain                         |
| TK2275                         | RNA-binding protein, containing PUA domain  |
| TK2306                         | Predicted nucleic acid-binding protein, containing PIN domain                         |
| <i>Hydrolases</i>              |   |
| TK0014                         | Metal-dependent phosphohydrolase, HD superfamily                                      |
| TK0029                         | Zinc-dependent hydrolase, glyoxylase II family  |
| TK0058                         | Hydrolase, HAD superfamily  |
| TK0110                         | Hydrolase, HAD superfamily  |
| TK0141                         | Hydrolase, metallo-beta-lactamase superfamily   |
| TK0238                         | Carbon-nitrogen hydrolase   |
| TK0251                         | Predicted hydrolase, HAD superfamily  |
| TK0288                         | Phosphonate matabolism protein PhnP homolog, metallo-beta-lactamase superfamily       |
| TK0303                         | Membrane-bound metal-dependent hydrolase  |
| TK0312                         | Metal-dependent phosphohydrolase, HD superfamily                                      |
| TK0313                         | ArgE/DapE-related deacylase   |
| TK0314                         | Hydrolase, metallo-beta-lactamase superfamily   |
| TK0327                         | Phosphohydrolase, PHP family  |
| TK0365                         | Membrane-bound phosphoesterase, PAP2 superfamily                                      |
| TK0449                         | Metal-dependent phosphohydrolase, HD superfamily                                      |
| TK0477                         | Hydrolase, HAD superfamily  |
| TK0480                         | Metal-dependent phosphohydrolase, HD superfamily                                      |
| TK0540                         | Metal-dependent phosphohydrolase, HD superfamily                                      |
| TK0547                         | Metallophosphoesterase, calcineurin superfamily                                       |
| TK0574                         | Metallophosphoesterase, calcineurin superfamily                                       |
| TK0645                         | Predicted phosphohydrolase, DHH family  |
| TK0667                         | Metallophosphoesterase, calcineurin superfamily                                       |
| TK0686                         | Hydrolase, HAD superfamily  |
| TK0688                         | Membrane-associated phosphatase, PAP2 superfamily                                     |
| TK0712                         | Hydrolase, metallo-beta-lactamase superfamily   |
| TK0735                         | Hydrolase, metallo-beta-lactamase superfamily   |
| TK0758                         | Metal-dependent amidohydrolase  |
| TK0874                         | Predicted metallophosphoesterase, calcineurin superfamily                             |
| TK0887                         | Phosphohydrolase, PHP family  |
| TK0968                         | Predicted hydrolase, HAD superfamily  |
| TK1037                         | Metallophosphoesterase, calcineurin superfamily                                       |
| TK1071                         | Phosphodiesterase   |
| TK1137                         | Acid phosphatase SurE homolog   |
| TK1269                         | Predicted phosphoesterase, DHH family, fused to NAD-binding TrkA-N domain             |
| TK1383                         | Hydrolase, HAD superfamily  |
| TK1386                         | Metallophosphoesterase, calcineurin superfamily                                       |
| TK1401                         | Hydrolase, alpha/beta superfamily   |
| TK1466                         | ArgE/DapE-related deacylase   |
| TK1469                         | Hydrolase, metallo-beta-lactamase superfamily   |
| TK1605                         | Hydrolase, metallo-beta-lactamase superfamily   |
| TK1611                         | Predicted metal-dependent hydrolase   |
| TK1618                         | Metallophosphoesterase, calcineurin superfamily                                       |
| TK1652                         | Predicted thioesterase  |
| TK1681                         | Predicted hydrolase, metallo-beta-lactamase superfamily                               |
| TK1734                         | Predicted sugar phosphatase, HAD superfamily  |
| TK1778                         | Predicted hydrolase, metallo-beta-lactamase superfamily                               |
| TK1781                         | ArgE/DapE-related deacylase   |
| TK1811                         | Hydrolase, HAD superfamily  |
| TK1878                         | Alkylphosphonate utilization protein PhnP homolog, metallo-beta-lactamase superfamily |
| TK1916                         | Carbon-nitrogen hydrolase   |
| TK1944                         | Predicted metal-dependent phosphohydrolase, HD superfamily                            |
| TK2062                         | Metallophosphoesterase, calcineurin superfamily                                       |
| TK2099                         | Predicted membrane-bound metal-dependent hydrolase                                    |
| TK2166                         | ArgE/DapE-related deacylase   |
| TK2232                         | Hydrolase, metallo-beta-lactamase superfamily   |
| TK2288                         | Metallophosphoesterase, calcineurin superfamily                                       |
| TK2301                         | Hydrolase, HAD superfamily  |
| <i>Methyltransferases</i>      |   |
| TK0037                         | SAM-dependent methyltransferase, UbiE/COQ5 family                                     |
| TK0224                         | SAM-dependent methyltransferase, UbiE/COQ5 family                                     |
| TK0234                         | Predicted SAM-dependent methyltransferase   |
| TK0704                         | SAM-dependent methyltransferase, UbiE/COQ5 family                                     |
| TK0729                         | SAM-dependent methyltransferase, UbiE/COQ5 family                                     |
| TK1273                         | SAM-dependent methyltransferase, UbiE/COQ5 family                                     |
| TK1784                         | Predicted SAM-dependent methyltransferase, DUF890 family                              |
| TK1917                         | Predicted SAM-dependent methyltransferase   |
| TK2045                         | SAM-dependent methyltransferase, UPF0020 family                                       |
| TK2241                         | SAM-dependent methyltransferase, UbiE/COQ5 family                                     |
| <i>Nucleotidyltransferases</i> |   |
| TK0063                         | Nucleotidyltransferase, fused to N-terminal DNA-binding domain                        |
| TK0222                         | Nucleotidyltransferase  |
| TK0341                         | Nucleotidyltransferase, fused to N-terminal DNA-binding domain                        |
| TK0674                         | Nucleotidyltransferase  |
| TK0945                         | Nucleotidyltransferase  |
| TK0962                         | Nucleotidyltransferase  |
| TK1073                         | Nucleotidyltransferase  |
| TK1128                         | Nucleotidyltransferase  |
| TK1476                         | Nucleotidyltransferase  |
| TK1709                         | Nucleotidyltransferase  |

|                                     |  |
|-------------------------------------|--|
| TK1994                              | Nucleotidyltransferase   |
| <i>Others</i>                       |  |
| TK0187                              | Predicted glutamine amidotransferase, class I                          |
| TK0319                              | Pterin-binding protein   |
| TK0549                              | Carbamoyl transferase, NodU family                                     |
| TK0939                              | GHMP kinase  |
| TK1035                              | Predicted glutamine amidotransferase, class II                         |
| TK1473                              | Amino acid kinase  |
| TK1843                              | Carbohydrate/pyrimidine kinase, PfkB family                            |
| TK1886                              | YjeF-related probable carbohydrate kinase                              |
| TK2029                              | Carbohydrate/pyrimidine kinase, PfkB family                            |
| TK2141                              | GHMP kinase  |
| TK2242                              | GHMP kinase  |
| TK2285                              | Carbohydrate/pyrimidine kinase, PfkB family                            |
| <b>Unknown function</b>             |  |
| TK0005                              | CoA-binding protein  |
| TK0030                              | Cyclase-related protein  |
| TK0071                              | Met-10+ like protein   |
| TK0200                              | Phosphoenolpyruvate synthetase-related protein                         |
| TK0228                              | Met-10+ like protein (C-terminus)                                      |
| TK0358                              | RNA terminal phosphate cyclase operon orfB homolog, UPF0027 family     |
| TK0497                              | Met-10+ like protein   |
| TK0563                              | 6-Pyruvoyl-tetrahydropterin synthase-related protein                   |
| TK0779                              | Sugar fermentation stimulation protein                                 |
| TK0786                              | Integral membrane protein Rhomboid homolog                             |
| TK0831                              | Peroxiredoxin-related protein (C-terminus)                             |
| TK0881                              | Universal stress protein   |
| TK0984                              | Alanyl-tRNA synthetase-related protein (partial)                       |
| TK0991                              | Carbon starvation protein A  |
| TK1059                              | Ferritin-related protein   |
| TK1189                              | Bacitracin resistance protein BacA homolog                             |
| TK1205                              | Phospholipid-binding protein, PBP family                               |
| TK1382                              | Dopamine beta hydroxylase-related protein, containing DOMON domain     |
| TK1404                              | Phosphomannomutase-related protein                                     |
| TK1438                              | Predicted fibronectin-binding protein                                  |
| TK1497                              | Enolase-related protein  |
| TK1550                              | Asparaginyl-tRNA synthetase-related protein (N-truncation)             |
| TK1563                              | Phospholipase D-related protein  |
| TK1607                              | Alanyl-tRNA synthetase-related protein (C-terminus)                    |
| TK1890                              | Histone macroH2A-related protein (C-terminus)                          |
| TK1893                              | Glycerate kinase-related protein, containing MOFRL domain (C-terminus) |
| TK1974                              | Carboxymuconolactone decarboxylase-related protein                     |
| TK1999                              | Ferritin-like protein  |
| TK2034                              | Universal stress protein   |
| TK2109                              | Biotin synthase-related protein, radical SAM superfamily               |
| TK2181                              | Predicted calcium-binding protein                                      |
| TK2223                              | Met-10+ like protein   |
| TK2248                              | Biotin synthase-related protein, radical SAM superfamily               |
| TK2264                              | Predicted calcium-binding protein                                      |
| <b>Mobile elements</b>              |  |
| <i>Transposon-related functions</i> |  |
| TK0298                              | Probable transposase   |
| TK0495                              | Probable transposase   |
| TK0654                              | Probable transposase   |
| TK0655                              | Predicted site-specific integrase/resolvase                            |
| TK0850                              | Probable transposase   |
| TK0931                              | Probable transposase   |
| TK0932                              | IS200-like transposase   |
| TK1841                              | Predicted site-specific integrase-resolvase                            |
| TK1842                              | Probable transposase   |
| <i>TKVI</i>                         |  |
| TK0073                              | SSV1 integrase homolog, C-fragment                                     |
| TK0074                              | Hypothetical protein   |
| TK0075                              | Hypothetical protein   |
| TK0076                              | Subtilisin-like serine protease precursor                              |
| TK0077                              | Hypothetical membrane protein  |
| TK0078                              | Hypothetical membrane protein  |
| TK0079                              | Hypothetical membrane protein  |
| TK0080                              | Hypothetical membrane protein  |
| TK0081                              | Hypothetical protein   |
| TK0082                              | Hypothetical protein   |
| TK0083                              | Hypothetical membrane protein  |
| TK0084                              | Hypothetical protein   |
| TK0085                              | Hypothetical membrane protein  |
| TK0086                              | Predicted transcription regulator, ArsR family                         |
| TK0087                              | Hypothetical protein   |
| TK0088                              | Hypothetical membrane protein, conserved                               |
| TK0089                              | Hypothetical protein   |
| TK0090                              | Hypothetical protein   |
| TK0091                              | Hypothetical protein   |
| TK0092                              | Hypothetical membrane protein  |
| TK0093                              | Hypothetical membrane protein  |
| TK0094                              | Transcription regulator, SpoVT/AbrB family                             |

|             |   |
|-------------|---|
| TK0095      | Hypothetical protein  |
| TK0096      | DNA replication licensing factor, MCM2/3/5 family                         |
| TK0097      | Hypothetical protein  |
| TK0098      | Hypothetical protein  |
| TK0099      | Hypothetical protein  |
| TK0100      | Hypothetical protein  |
| TK0101      | Hypothetical protein  |
| TK0102      | Hypothetical protein, conserved   |
| TK0103      | Hypothetical protein  |
| TK0104      | Probable integrase/recombinase  |
| TK0105      | SSV1 integrase homolog, N-fragment  |
| <i>TKV2</i> |   |
| TK0381      | SSV1 integrase homolog, C-fragment  |
| TK0382      | Hypothetical protein  |
| TK0383      | Hypothetical protein  |
| TK0384      | Hypothetical membrane protein, conserved                                  |
| TK0385      | Hypothetical protein, conserved   |
| TK0386      | Hypothetical membrane protein, conserved                                  |
| TK0387      | Hypothetical membrane protein, conserved                                  |
| TK0388      | Hypothetical membrane protein, conserved                                  |
| TK0389      | Hypothetical membrane protein, conserved                                  |
| TK0390      | Hypothetical protein, conserved   |
| TK0391      | Hypothetical protein, conserved, containing leucine zipper motif          |
| TK0392      | Hypothetical protein, conserved   |
| TK0393      | Hypothetical membrane protein, conserved, containing leucine zipper motif |
| TK0394      | Predicted ATPase, AAA superfamily   |
| TK0395      | Hypothetical protein, conserved   |
| TK0396      | Hypothetical protein  |
| TK0397      | Hypothetical membrane protein, conserved                                  |
| TK0398      | Hypothetical protein  |
| TK0399      | Hypothetical protein  |
| TK0400      | Hypothetical protein  |
| TK0401      | Hypothetical protein, conserved   |
| TK0402      | Predicted transcription regulator, SpoVT/AbrB family                      |
| TK0403      | Hypothetical membrane protein, conserved                                  |
| TK0404      | Hypothetical protein, conserved   |
| TK0405      | Predicted transcription regulator, SpoVT/AbrB family                      |
| TK0406      | Predicted transcription regulator, SpoVT/AbrB family                      |
| TK0407      | Hypothetical protein  |
| TK0408      | Hypothetical protein, conserved   |
| TK0409      | Predicted transcription regulator, SpoVT/AbrB family                      |
| TK0410      | Hypothetical protein, conserved   |
| TK0411      | Hypothetical protein, conserved   |
| TK0412      | Hypothetical protein  |
| TK0413      | Hypothetical protein  |
| TK0414      | Hypothetical protein  |
| TK0415      | Hypothetical protein  |
| TK0416      | Hypothetical protein, conserved   |
| TK0417      | Hypothetical membrane protein   |
| TK0418      | Hypothetical protein  |
| TK0419      | Hypothetical protein  |
| TK0420      | Hypothetical protein, conserved   |
| TK0421      | Predicted integrase, N-fragment   |
| <i>TKV3</i> |   |
| TK0575      | Predicted integrase, N-fragment   |
| TK0576      | Hypothetical protein, conserved   |
| TK0577      | Hypothetical protein  |
| TK0578      | Hypothetical protein, conserved   |
| TK0579      | Hypothetical protein  |
| TK0580      | Hypothetical protein  |
| TK0581      | Hypothetical protein  |
| TK0582      | DNA polymerase sliding clamp (proliferating cell nuclear antigen)         |
| TK0583      | Hypothetical protein  |
| TK0584      | Hypothetical protein  |
| TK0585      | Hypothetical protein  |
| TK0586      | Hypothetical protein  |
| TK0587      | Hypothetical protein  |
| TK0588      | Predicted transcription regulator, SpoVT/AbrB family                      |
| TK0589      | Hypothetical protein  |
| TK0590      | Hypothetical protein  |
| TK0591      | Predicted N-acetyltransferase, GNAT family                                |
| TK0592      | Hypothetical protein, conserved   |
| TK0593      | Hypothetical protein, conserved   |
| TK0594      | Hypothetical membrane protein   |
| TK0595      | Hypothetical membrane protein   |
| TK0596      | Hypothetical membrane protein   |
| TK0597      | Hypothetical protein  |
| TK0598      | Hypothetical protein  |
| TK0599      | Hypothetical protein  |
| TK0600      | Hypothetical protein, conserved   |
| TK0601      | Predicted ATPase, AAA superfamily   |
| TK0602      | Hypothetical protein, conserved, containing leucine zipper motif          |
| TK0603      | Hypothetical protein, conserved   |

|        |  |
|--------|--|
| TK0604 | Hypothetical protein, conserved, containing leucine zipper motif |
| TK0605 | Hypothetical protein, conserved                                  |
| TK0606 | Hypothetical membrane protein, conserved                         |
| TK0607 | Hypothetical membrane protein, conserved                         |
| TK0608 | Hypothetical membrane protein, conserved                         |
| TK0609 | Hypothetical membrane protein, conserved                         |
| TK0610 | Hypothetical protein, conserved                                  |
| TK0611 | Hypothetical membrane protein, conserved                         |
| TK0612 | Hypothetical protein   |
| TK0613 | Hypothetical membrane protein                                    |
| TK0614 | SSV1 integrase homolog, C-fragment                               |

#### *TKV4*

|        |   |
|--------|---|
| TK1342 | Predicted integrase, C-fragment                               |
| TK1343 | Predicted nucleic acid-binding protein, containing PIN domain |
| TK1344 | Hypothetical protein  |
| TK1345 | Hypothetical protein  |
| TK1346 | Hypothetical protein  |
| TK1347 | Hypothetical protein  |
| TK1348 | Hypothetical protein  |
| TK1349 | Hypothetical protein, conserved                               |
| TK1350 | Hypothetical protein, containing leucine zipper motif         |
| TK1351 | Hypothetical membrane protein                                 |
| TK1352 | Hypothetical protein  |
| TK1353 | Hypothetical protein  |
| TK1354 | Hypothetical protein  |
| TK1355 | Hypothetical membrane protein                                 |
| TK1356 | Predicted ATPase, AAA superfamily                             |
| TK1357 | Hypothetical protein  |
| TK1358 | Hypothetical protein  |
| TK1359 | Hypothetical protein  |
| TK1360 | Hypothetical protein  |
| TK1361 | DNA replication licensing factor, MCM2/3/5 family             |
| TK1362 | Hypothetical membrane protein                                 |
| TK1363 | Hypothetical protein  |
| TK1364 | Hypothetical protein  |
| TK1365 | Hypothetical protein  |
| TK1366 | Hypothetical protein  |
| TK1367 | Hypothetical protein  |
| TK1368 | Hypothetical protein  |
| TK1369 | Hypothetical protein, conserved                               |
| TK1370 | Hypothetical protein  |
| TK1371 | Hypothetical protein  |
| TK1372 | Predicted transcription regulator, SpoVT/AbrB family          |
| TK1373 | Hypothetical protein  |
| TK1374 | Hypothetical protein, conserved                               |
| TK1375 | Hypothetical membrane protein                                 |
| TK1376 | Hypothetical protein  |
| TK1377 | Hypothetical protein  |
| TK1378 | Predicted integrase, N-fragment                               |

#### **Hypothetical proteins, conserved**

|        |  |
|--------|--|
| TK0003 | Hypothetical membrane protein, conserved                         |
| TK0004 | Hypothetical membrane protein, conserved                         |
| TK0006 | Hypothetical protein, conserved                                  |
| TK0007 | Hypothetical protein, conserved                                  |
| TK0009 | Hypothetical protein, conserved                                  |
| TK0011 | Hypothetical protein, conserved, UPF0047 family                  |
| TK0013 | Hypothetical protein, conserved                                  |
| TK0020 | Hypothetical protein, conserved                                  |
| TK0022 | Hypothetical protein, conserved, Band 7 family                   |
| TK0023 | Hypothetical protein, conserved                                  |
| TK0024 | Hypothetical protein, conserved                                  |
| TK0025 | Hypothetical membrane protein, conserved                         |
| TK0027 | Hypothetical protein, conserved, UPF0066 family                  |
| TK0032 | Hypothetical protein, conserved                                  |
| TK0033 | Hypothetical protein, conserved, containing leucine zipper motif |
| TK0034 | Hypothetical protein, conserved                                  |
| TK0035 | Hypothetical membrane protein, conserved                         |
| TK0036 | Hypothetical protein, conserved, DUF1495 family                  |
| TK0050 | Hypothetical membrane protein, conserved                         |
| TK0054 | Hypothetical protein, conserved                                  |
| TK0055 | Hypothetical protein, conserved, DUF1530 family                  |
| TK0056 | Hypothetical protein, conserved, DUF437 family                   |
| TK0060 | Hypothetical protein, conserved, DUF127 family                   |
| TK0061 | Hypothetical protein, conserved                                  |
| TK0062 | Hypothetical protein, conserved, DUF62 family                    |
| TK0064 | Hypothetical protein, conserved, DUF103 family                   |
| TK0065 | Hypothetical protein, conserved                                  |
| TK0068 | Hypothetical membrane protein, conserved                         |
| TK0070 | Hypothetical protein, conserved                                  |
| TK0108 | Hypothetical membrane protein, conserved                         |
| TK0109 | Hypothetical protein, conserved                                  |
| TK0113 | Hypothetical protein, conserved                                  |
| TK0114 | Hypothetical protein, conserved                                  |

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| TK0129 | Hypothetical protein, conserved, DUF356 family                          |
| TK0130 | Hypothetical protein, conserved, DUF114 family                          |
| TK0131 | Hypothetical protein, conserved, DUF505 family                          |
| TK0133 | Hypothetical protein, conserved   |
| TK0144 | Hypothetical protein, conserved   |
| TK0145 | Hypothetical membrane protein, conserved                                |
| TK0146 | Hypothetical membrane protein, conserved                                |
| TK0148 | Hypothetical protein, conserved   |
| TK0152 | Hypothetical membrane protein, conserved                                |
| TK0154 | Hypothetical protein, conserved   |
| TK0163 | Hypothetical membrane protein, conserved                                |
| TK0167 | Hypothetical protein, conserved, radical SAM superfamily                |
| TK0171 | Hypothetical protein, conserved   |
| TK0172 | Hypothetical membrane protein, conserved, DUF373 family                 |
| TK0173 | Hypothetical protein, conserved, DUF77 family                           |
| TK0174 | Hypothetical protein, conserved, AMMECR1 family                         |
| TK0175 | Hypothetical protein, conserved, DUF207 family                          |
| TK0177 | Hypothetical protein, conserved   |
| TK0179 | Hypothetical protein, conserved, DUF35 family                           |
| TK0182 | Hypothetical protein, conserved, DUF124 family                          |
| TK0188 | Hypothetical protein, conserved, radical SAM superfamily                |
| TK0192 | Hypothetical protein, conserved, DUF104 family                          |
| TK0195 | Hypothetical membrane protein, conserved, containing DUF835 domain      |
| TK0196 | Hypothetical protein, conserved, containing DUF1246 and DUF1297 domains |
| TK0203 | Hypothetical protein, conserved, containing DUF1246 and DUF1297 domains |
| TK0205 | Hypothetical protein, conserved   |
| TK0206 | Hypothetical protein, conserved   |
| TK0213 | Hypothetical protein, conserved, UPF0175 family                         |
| TK0215 | Hypothetical protein, conserved   |
| TK0221 | Hypothetical protein, conserved, DUF712 family                          |
| TK0226 | Hypothetical protein, conserved   |
| TK0227 | Hypothetical protein, conserved   |
| TK0271 | Hypothetical protein, conserved   |
| TK0291 | Hypothetical protein, conserved   |
| TK0292 | Hypothetical protein, conserved, DUF82 family                           |
| TK0293 | Hypothetical protein, conserved, DUF115 family                          |
| TK0299 | Hypothetical protein, conserved   |
| TK0310 | Hypothetical protein, conserved   |
| TK0311 | Hypothetical protein, conserved   |
| TK0315 | Hypothetical protein, conserved, DUF504 family                          |
| TK0318 | Hypothetical protein, conserved   |
| TK0320 | Hypothetical protein, conserved, DUF72 family                           |
| TK0322 | Hypothetical membrane protein, conserved                                |
| TK0323 | Hypothetical membrane protein, conserved                                |
| TK0324 | Hypothetical membrane protein, conserved                                |
| TK0325 | Hypothetical membrane protein, conserved                                |
| TK0335 | Hypothetical protein, conserved, DUF104 family                          |
| TK0336 | Hypothetical protein, conserved, LamB/YcsF family                       |
| TK0339 | Hypothetical protein, conserved, containing leucine zipper motif        |
| TK0340 | Hypothetical protein, conserved, DUF103 family                          |
| TK0342 | Hypothetical protein, conserved   |
| TK0346 | Hypothetical protein, conserved   |
| TK0350 | Hypothetical protein, conserved   |
| TK0351 | Hypothetical protein, conserved   |
| TK0356 | Hypothetical membrane protein, conserved                                |
| TK0357 | Hypothetical membrane protein, conserved                                |
| TK0359 | Hypothetical protein, conserved   |
| TK0361 | Hypothetical protein, conserved, DUF101 family                          |
| TK0367 | Hypothetical membrane protein, conserved, DUF998 family                 |
| TK0373 | Hypothetical protein, conserved   |
| TK0377 | Hypothetical protein, conserved, DUF835 family (C-terminus)             |
| TK0379 | Hypothetical protein, conserved, DUF763 family                          |
| TK0380 | Hypothetical protein, conserved, DUF89 family                           |
| TK0431 | Hypothetical protein, conserved, containing DUF1246 and DUF1297 domains |
| TK0440 | Hypothetical protein, conserved   |
| TK0442 | Hypothetical protein, conserved   |
| TK0445 | Hypothetical protein, conserved, DUF196 family                          |
| TK0446 | Hypothetical protein, conserved   |
| TK0451 | Hypothetical protein, conserved   |
| TK0453 | Hypothetical protein, conserved, DUF73 family, insertion                |
| TK0454 | Hypothetical protein, conserved   |
| TK0455 | Hypothetical protein, conserved, DUF48 family                           |
| TK0462 | Hypothetical protein, conserved   |
| TK0463 | Hypothetical protein, conserved   |
| TK0466 | Hypothetical protein, conserved   |
| TK0467 | Hypothetical protein, conserved   |
| TK0468 | Hypothetical protein, conserved   |
| TK0469 | Hypothetical protein, conserved, containing SWIM zinc finger domain     |
| TK0472 | Hypothetical protein, conserved   |
| TK0473 | Hypothetical protein, conserved, UPF0148 family                         |
| TK0476 | Hypothetical protein, conserved, containing leucine zipper motif        |
| TK0478 | Hypothetical protein, conserved   |
| TK0479 | Hypothetical protein, conserved   |

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| TK0482 | Hypothetical protein, conserved  |
| TK0483 | Hypothetical protein, conserved  |
| TK0484 | Hypothetical protein, conserved  |
| TK0485 | Hypothetical protein, conserved  |
| TK0486 | Hypothetical protein, conserved  |
| TK0487 | Hypothetical protein, conserved  |
| TK0488 | Hypothetical protein, conserved  |
| TK0489 | Hypothetical protein, conserved  |
| TK0490 | Hypothetical protein, conserved  |
| TK0491 | Hypothetical protein, conserved, containing ATP/GTP-binding site motif A     |
| TK0493 | Hypothetical membrane protein, conserved, containing DUF11 domain            |
| TK0500 | Hypothetical protein, conserved  |
| TK0501 | Hypothetical protein, conserved  |
| TK0503 | Hypothetical protein, conserved, cupin superfamily                           |
| TK0510 | Hypothetical protein, conserved, DUF147 family                               |
| TK0513 | Hypothetical protein, conserved  |
| TK0515 | Hypothetical protein, conserved, DUF190 family                               |
| TK0518 | Hypothetical protein, conserved  |
| TK0519 | Hypothetical protein, conserved, UPF0029 family                              |
| TK0526 | Hypothetical membrane protein, conserved                                     |
| TK0527 | Hypothetical protein, conserved  |
| TK0529 | Hypothetical protein, conserved  |
| TK0534 | Hypothetical protein, conserved  |
| TK0536 | Hypothetical protein, conserved  |
| TK0546 | Hypothetical protein, conserved  |
| TK0554 | Hypothetical protein, conserved, DUF358 family                               |
| TK0558 | Hypothetical protein, conserved, containing CBS domains and PHD finger motif |
| TK0565 | Hypothetical protein, conserved, DUF296 family                               |
| TK0569 | Hypothetical protein, conserved  |
| TK0573 | Hypothetical protein, conserved, DUF447 family                               |
| TK0628 | Hypothetical protein, conserved  |
| TK0640 | Hypothetical protein, conserved, containing leucine zipper motif             |
| TK0641 | Hypothetical protein, conserved, DUF439 family                               |
| TK0642 | Hypothetical protein, conserved  |
| TK0644 | Hypothetical protein, conserved  |
| TK0646 | Hypothetical protein, conserved  |
| TK0648 | Hypothetical protein, conserved  |
| TK0656 | Hypothetical protein, conserved  |
| TK0663 | Hypothetical protein, conserved  |
| TK0666 | Hypothetical protein, conserved  |
| TK0668 | Hypothetical protein, conserved, containing PRC-barrel domain                |
| TK0670 | Hypothetical protein, conserved  |
| TK0675 | Hypothetical protein, conserved, radical SAM superfamily                     |
| TK0687 | Hypothetical protein, conserved, DUF437 family                               |
| TK0689 | Hypothetical membrane protein, conserved                                     |
| TK0691 | Hypothetical membrane protein, conserved, containing DUF835 domain           |
| TK0693 | Hypothetical membrane protein, conserved                                     |
| TK0695 | Hypothetical protein, conserved  |
| TK0696 | Hypothetical protein, conserved  |
| TK0703 | Hypothetical protein, conserved, radical SAM superfamily                     |
| TK0710 | Hypothetical protein, conserved, DUF364 family                               |
| TK0711 | Hypothetical protein, conserved, UPF0066 family                              |
| TK0713 | Hypothetical membrane protein, conserved                                     |
| TK0720 | Hypothetical protein, conserved  |
| TK0721 | Hypothetical protein, conserved  |
| TK0725 | Hypothetical protein, conserved  |
| TK0728 | Hypothetical membrane protein, conserved                                     |
| TK0733 | Hypothetical protein, conserved, DUF104 family                               |
| TK0737 | Hypothetical protein, conserved (C-terminus)                                 |
| TK0738 | Hypothetical membrane protein, conserved                                     |
| TK0739 | Hypothetical membrane protein, conserved                                     |
| TK0741 | Hypothetical protein, conserved  |
| TK0742 | Hypothetical membrane protein, conserved, DUF998 family                      |
| TK0743 | Hypothetical membrane protein, conserved, DUF63 family                       |
| TK0744 | Hypothetical protein, conserved  |
| TK0750 | Hypothetical protein, conserved  |
| TK0751 | Hypothetical protein, conserved  |
| TK0755 | Hypothetical protein, conserved, DUF88 family                                |
| TK0756 | Hypothetical protein, conserved, DUF88 family                                |
| TK0763 | Hypothetical protein, conserved  |
| TK0767 | Hypothetical protein, conserved  |
| TK0768 | Hypothetical protein, conserved, YggU family                                 |
| TK0769 | Hypothetical protein, conserved, DUF402 family                               |
| TK0771 | Hypothetical protein, conserved (N-terminus)                                 |
| TK0772 | Hypothetical membrane protein, conserved                                     |
| TK0778 | Hypothetical protein, conserved, containing Toprim domain                    |
| TK0783 | Hypothetical membrane protein, conserved                                     |
| TK0788 | Hypothetical membrane protein, conserved, DUF63 family                       |
| TK0790 | Hypothetical protein, conserved, UPF0179 family                              |
| TK0791 | Hypothetical protein, conserved, DUF79 family                                |
| TK0793 | Hypothetical protein, conserved, DUF198 family                               |
| TK0797 | Hypothetical protein, conserved, DUF530 family                               |
| TK0807 | Hypothetical protein, conserved  |

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| TK0808 | Hypothetical protein, conserved  |
| TK0811 | Hypothetical protein, conserved  |
| TK0813 | Hypothetical protein, conserved, containing leucine zipper motif         |
| TK0821 | Hypothetical membrane protein, conserved                                 |
| TK0822 | Hypothetical membrane protein, conserved, containing DUF835 domain       |
| TK0824 | Hypothetical protein, conserved  |
| TK0825 | Hypothetical protein, conserved  |
| TK0826 | Hypothetical protein, conserved  |
| TK0829 | Hypothetical membrane protein, conserved, DUF998 family                  |
| TK0830 | Hypothetical protein, conserved (N-terminus)                             |
| TK0832 | Hypothetical membrane protein, conserved                                 |
| TK0841 | Hypothetical membrane protein, conserved                                 |
| TK0849 | Hypothetical protein, conserved  |
| TK0851 | Hypothetical protein, conserved, N-truncation                            |
| TK0852 | Hypothetical protein, conserved, radical SAM superfamily                 |
| TK0855 | Hypothetical protein, conserved  |
| TK0858 | Hypothetical protein, conserved, DUF64 family                            |
| TK0859 | Hypothetical protein, conserved  |
| TK0862 | Hypothetical protein, conserved  |
| TK0873 | Hypothetical protein, conserved  |
| TK0877 | Hypothetical membrane protein, conserved                                 |
| TK0879 | Hypothetical protein, conserved  |
| TK0883 | Hypothetical protein, conserved, containing CBS domains                  |
| TK0885 | Hypothetical protein, conserved  |
| TK0894 | Hypothetical protein, conserved  |
| TK0896 | Hypothetical membrane protein, conserved                                 |
| TK0897 | Hypothetical protein, conserved, radical SAM superfamily                 |
| TK0898 | Hypothetical protein, conserved, C-truncation                            |
| TK0900 | Hypothetical protein, conserved, DUF655 family                           |
| TK0904 | Hypothetical protein, conserved  |
| TK0909 | Hypothetical protein, conserved, DUF104 family                           |
| TK0917 | Hypothetical protein, conserved, UPF0175 family                          |
| TK0918 | Hypothetical protein, conserved  |
| TK0922 | Hypothetical protein, conserved  |
| TK0930 | Hypothetical protein, conserved  |
| TK0933 | Hypothetical protein, conserved  |
| TK0940 | Hypothetical protein, conserved  |
| TK0941 | Hypothetical membrane protein, conserved                                 |
| TK0946 | Hypothetical protein, conserved  |
| TK0947 | Hypothetical protein, conserved  |
| TK0959 | Hypothetical membrane protein, conserved, UPF0132 family                 |
| TK0963 | Hypothetical protein, conserved, DUF712 family                           |
| TK0965 | Hypothetical protein, conserved, DUF79 family                            |
| TK0966 | Hypothetical protein, conserved  |
| TK0971 | Hypothetical membrane protein, conserved, DUF125 family                  |
| TK0973 | Hypothetical protein, conserved  |
| TK0979 | Hypothetical membrane protein, conserved, DUF81 family                   |
| TK0992 | Hypothetical protein, conserved  |
| TK0993 | Hypothetical protein, conserved  |
| TK0995 | Hypothetical protein, conserved, DUF59 family                            |
| TK0996 | Hypothetical membrane protein, conserved                                 |
| TK1001 | Hypothetical protein, conserved  |
| TK1003 | Hypothetical protein, conserved  |
| TK1006 | Hypothetical protein, conserved  |
| TK1013 | Hypothetical protein, conserved, DUF104 family                           |
| TK1016 | Hypothetical protein, conserved (C-terminus)                             |
| TK1018 | Hypothetical protein, conserved, DUF173 family                           |
| TK1019 | Hypothetical protein, conserved  |
| TK1020 | Hypothetical membrane protein  |
| TK1023 | Hypothetical protein, conserved  |
| TK1025 | Hypothetical protein, conserved, containing ATP/GTP-binding site motif A |
| TK1028 | Hypothetical protein, conserved, DUF104 family                           |
| TK1029 | Hypothetical protein, conserved, DUF123 family                           |
| TK1030 | Hypothetical protein, conserved  |
| TK1036 | Hypothetical protein, conserved, containing CBS domains                  |
| TK1040 | Hypothetical protein, conserved  |
| TK1042 | Hypothetical membrane protein, conserved                                 |
| TK1043 | Hypothetical protein, conserved  |
| TK1046 | Hypothetical protein, conserved, containing PKD domain                   |
| TK1050 | Hypothetical membrane protein, conserved                                 |
| TK1053 | Hypothetical membrane protein, conserved, DUF81 family                   |
| TK1060 | Hypothetical protein, conserved  |
| TK1061 | Hypothetical protein, conserved  |
| TK1067 | Hypothetical protein, conserved, containing DUF650 and DUF651 domains    |
| TK1068 | Hypothetical protein, conserved  |
| TK1069 | Hypothetical protein, conserved  |
| TK1072 | Hypothetical protein, conserved, DUF103 family                           |
| TK1074 | Hypothetical protein, conserved  |
| TK1090 | Hypothetical membrane protein, conserved                                 |
| TK1092 | Hypothetical protein, conserved, containing ATP/GTP-binding site motif A |
| TK1095 | Hypothetical membrane protein, conserved                                 |
| TK1096 | Hypothetical membrane protein, conserved, DUF340 family                  |
| TK1097 | Hypothetical protein, conserved  |

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| TK1102 | Hypothetical protein, conserved, DUF75 family  |
| TK1104 | Hypothetical membrane protein, conserved   |
| TK1107 | Hypothetical protein, conserved  |
| TK1115 | Hypothetical protein, conserved, containing TPR-repeat domain                        |
| TK1120 | Hypothetical protein, conserved, DUF192 family                                       |
| TK1127 | Hypothetical protein, conserved, DUF103 family                                       |
| TK1135 | Hypothetical protein, conserved, radical SAM superfamily                             |
| TK1136 | Hypothetical protein, conserved  |
| TK1138 | Hypothetical membrane protein, conserved   |
| TK1142 | Hypothetical protein, conserved  |
| TK1148 | Hypothetical protein, conserved  |
| TK1150 | Hypothetical membrane protein, conserved   |
| TK1153 | Hypothetical protein, conserved  |
| TK1162 | Hypothetical membrane protein, conserved, DUF20 family                               |
| TK1163 | Hypothetical protein, conserved  |
| TK1166 | Hypothetical protein, conserved  |
| TK1168 | Hypothetical protein, conserved  |
| TK1171 | Hypothetical protein, conserved, N-truncation  |
| TK1176 | Hypothetical membrane protein, conserved   |
| TK1178 | Hypothetical protein, conserved  |
| TK1180 | Hypothetical protein, conserved  |
| TK1184 | Hypothetical protein, conserved  |
| TK1186 | Hypothetical protein, conserved, containing CBS domains                              |
| TK1187 | Hypothetical membrane protein, conserved, containing DUF835 domain                   |
| TK1192 | Hypothetical membrane protein, conserved   |
| TK1194 | Hypothetical protein, conserved, DUF555 family                                       |
| TK1195 | Hypothetical protein, conserved, DUF357 family                                       |
| TK1196 | Hypothetical protein, conserved  |
| TK1197 | Hypothetical protein, conserved  |
| TK1201 | Hypothetical protein, conserved  |
| TK1202 | Hypothetical protein, conserved, flame shift   |
| TK1203 | Hypothetical protein, conserved, flame shift   |
| TK1204 | Hypothetical protein, conserved  |
| TK1206 | Hypothetical membrane protein, conserved   |
| TK1207 | Hypothetical protein, conserved  |
| TK1213 | Hypothetical membrane protein, conserved, DUF996 family                              |
| TK1232 | Hypothetical protein, conserved, DUF354 family                                       |
| TK1233 | Hypothetical membrane protein, conserved, DUF95 family                               |
| TK1238 | Hypothetical protein, conserved  |
| TK1240 | Hypothetical membrane protein, conserved   |
| TK1241 | Hypothetical protein, conserved  |
| TK1242 | Hypothetical protein, conserved  |
| TK1243 | Hypothetical protein, conserved  |
| TK1245 | Hypothetical protein, conserved  |
| TK1246 | Hypothetical protein, conserved  |
| TK1248 | Hypothetical protein, conserved, DUF126 family                                       |
| TK1249 | Hypothetical protein, conserved, DUF521 family                                       |
| TK1253 | Hypothetical protein, conserved  |
| TK1255 | Hypothetical protein, conserved  |
| TK1258 | Hypothetical membrane protein, conserved, DUF92 family                               |
| TK1263 | Hypothetical protein, conserved  |
| TK1268 | Hypothetical protein, conserved  |
| TK1270 | Hypothetical protein, conserved, containing PRC-barrel domain                        |
| TK1294 | Hypothetical membrane protein, conserved, DUF70 family                               |
| TK1296 | Hypothetical protein, conserved, DUF424 family                                       |
| TK1298 | Hypothetical protein, conserved, DUF1464 family                                      |
| TK1300 | Hypothetical membrane protein, conserved   |
| TK1302 | Hypothetical membrane protein, conserved   |
| TK1303 | Hypothetical protein, conserved  |
| TK1304 | Hypothetical protein, conserved  |
| TK1312 | Hypothetical protein, conserved, containing V4R domain                               |
| TK1313 | Hypothetical protein, conserved  |
| TK1317 | Hypothetical membrane protein, conserved   |
| TK1329 | Hypothetical protein, conserved, DUF257 family                                       |
| TK1333 | Hypothetical membrane protein, conserved   |
| TK1335 | Hypothetical protein, conserved, DUF54 family  |
| TK1338 | Hypothetical membrane protein, conserved   |
| TK1340 | Hypothetical membrane protein, conserved   |
| TK1385 | Hypothetical protein, conserved  |
| TK1387 | Hypothetical membrane protein, conserved   |
| TK1388 | Hypothetical protein, conserved  |
| TK1390 | Hypothetical protein, conserved  |
| TK1407 | Hypothetical membrane protein, conserved   |
| TK1412 | Hypothetical protein, conserved, radical SAM superfamily fused to B12-binding domain |
| TK1422 | Hypothetical protein, conserved, DUF516 family                                       |
| TK1423 | Hypothetical protein, conserved  |
| TK1424 | Hypothetical protein, conserved  |
| TK1425 | Hypothetical protein, conserved  |
| TK1427 | Hypothetical membrane protein, conserved   |
| TK1433 | Hypothetical protein, conserved  |
| TK1440 | Hypothetical protein, conserved  |
| TK1453 | Hypothetical protein, conserved  |
| TK1459 | Hypothetical protein, conserved  |

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| TK1463 | Hypothetical protein, conserved                                     |
| TK1464 | Hypothetical protein, conserved                                     |
| TK1475 | Hypothetical protein, conserved, DUF86 family                       |
| TK1477 | Hypothetical protein, conserved, DUF52 family                       |
| TK1480 | Hypothetical protein, conserved                                     |
| TK1483 | Hypothetical protein, conserved                                     |
| TK1484 | Hypothetical protein, conserved                                     |
| TK1488 | Hypothetical protein, conserved, UPF0153 family                     |
| TK1492 | Hypothetical protein, conserved                                     |
| TK1493 | Hypothetical protein, conserved, FUN14 family                       |
| TK1508 | Hypothetical membrane protein, conserved                            |
| TK1510 | Hypothetical protein, conserved                                     |
| TK1511 | Hypothetical protein, conserved, UPF0150 family                     |
| TK1516 | Hypothetical membrane protein, conserved, DUF106 family             |
| TK1543 | Hypothetical protein, conserved, DUF171 family                      |
| TK1545 | Hypothetical protein, conserved, DUF135 family                      |
| TK1552 | Hypothetical membrane protein, conserved                            |
| TK1553 | Hypothetical protein, conserved                                     |
| TK1555 | Hypothetical membrane protein, conserved                            |
| TK1558 | Hypothetical protein, conserved, containing CBS domains             |
| TK1561 | Hypothetical membrane protein, conserved, MarC family               |
| TK1565 | Hypothetical protein, conserved                                     |
| TK1566 | Hypothetical protein, conserved                                     |
| TK1571 | Hypothetical protein, conserved                                     |
| TK1575 | Hypothetical membrane protein, conserved, containing TrkA-C domain  |
| TK1576 | Hypothetical membrane protein, conserved                            |
| TK1577 | Hypothetical membrane protein, conserved                            |
| TK1578 | Hypothetical membrane protein, conserved                            |
| TK1580 | Hypothetical protein, conserved, UPF0153 family                     |
| TK1581 | Hypothetical protein, conserved, UPF0113 family                     |
| TK1586 | Hypothetical membrane protein, conserved                            |
| TK1608 | Hypothetical protein, conserved, DUF257 family                      |
| TK1609 | Hypothetical protein, conserved, DUF257 family                      |
| TK1610 | Hypothetical protein, conserved                                     |
| TK1617 | Hypothetical protein, conserved                                     |
| TK1619 | Hypothetical protein, conserved, DUF1288 family                     |
| TK1626 | Hypothetical protein, conserved, containing CBS domains             |
| TK1629 | Hypothetical protein, conserved                                     |
| TK1630 | Hypothetical protein, conserved, containing ZPR1 zinc-finger domain |
| TK1631 | Hypothetical protein, conserved                                     |
| TK1641 | Hypothetical protein, conserved                                     |
| TK1642 | Hypothetical membrane protein, conserved                            |
| TK1646 | Hypothetical protein, conserved                                     |
| TK1649 | Hypothetical membrane protein, conserved, DUF20 family              |
| TK1651 | Hypothetical protein, conserved                                     |
| TK1653 | Hypothetical membrane protein, conserved                            |
| TK1657 | Hypothetical protein, conserved                                     |
| TK1658 | Hypothetical protein, conserved                                     |
| TK1660 | Hypothetical protein, conserved                                     |
| TK1661 | Hypothetical membrane protein, conserved                            |
| TK1662 | Hypothetical protein, conserved, internal deletion                  |
| TK1663 | Hypothetical protein, conserved, insertion                          |
| TK1664 | Hypothetical protein, conserved, insertion                          |
| TK1665 | Hypothetical protein, conserved                                     |
| TK1666 | Hypothetical protein, conserved                                     |
| TK1667 | Hypothetical membrane protein, conserved, containing DUF361 domain  |
| TK1668 | Hypothetical protein, conserved                                     |
| TK1670 | Hypothetical protein, conserved                                     |
| TK1671 | Hypothetical protein, conserved, radical SAM superfamily            |
| TK1679 | Hypothetical protein, conserved                                     |
| TK1683 | Hypothetical protein, conserved                                     |
| TK1686 | Hypothetical protein, conserved, DUF137 family                      |
| TK1690 | Hypothetical membrane protein, conserved                            |
| TK1691 | Hypothetical protein, conserved, DUF43 family                       |
| TK1693 | Hypothetical protein, conserved, containing DUF59 domain            |
| TK1697 | Hypothetical protein, conserved, DUF359 family                      |
| TK1701 | Hypothetical protein, conserved                                     |
| TK1702 | Hypothetical protein, conserved, DUF1102 family                     |
| TK1704 | Hypothetical protein, conserved                                     |
| TK1705 | Hypothetical protein, conserved                                     |
| TK1706 | Hypothetical protein, conserved                                     |
| TK1710 | Hypothetical protein, conserved, DUF86 family                       |
| TK1725 | Hypothetical membrane protein, conserved                            |
| TK1726 | Hypothetical protein, conserved, flame shift                        |
| TK1727 | Hypothetical protein, conserved, flame shift                        |
| TK1728 | Hypothetical membrane protein, conserved                            |
| TK1729 | Hypothetical membrane protein, conserved                            |
| TK1735 | Hypothetical protein, conserved                                     |
| TK1740 | Hypothetical membrane protein, conserved                            |
| TK1743 | Hypothetical protein, conserved                                     |
| TK1744 | Hypothetical protein, conserved                                     |
| TK1746 | Hypothetical protein, conserved                                     |
| TK1747 | Hypothetical protein, conserved, DUF84 family                       |

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| TK1750 | Hypothetical protein, conserved  |
| TK1752 | Hypothetical protein, conserved, DUF217 family   |
| TK1753 | Hypothetical membrane protein, conserved   |
| TK1762 | Hypothetical protein, conserved  |
| TK1766 | Hypothetical protein, conserved, radical SAM superfamily                                 |
| TK1776 | Hypothetical protein, conserved, UPF0146 family  |
| TK1780 | Hypothetical protein, conserved  |
| TK1786 | Hypothetical protein, conserved  |
| TK1787 | Hypothetical membrane protein, conserved, DUF112 family                                  |
| TK1788 | Hypothetical protein, conserved  |
| TK1793 | Hypothetical membrane protein, conserved   |
| TK1794 | Hypothetical membrane protein, conserved   |
| TK1795 | Hypothetical protein, conserved, DUF61 family  |
| TK1799 | Hypothetical membrane protein, conserved   |
| TK1807 | Hypothetical protein, conserved, radical SAM superfamily                                 |
| TK1808 | Hypothetical membrane protein, conserved   |
| TK1812 | Hypothetical membrane protein, conserved, DUF131 family                                  |
| TK1816 | Hypothetical protein, conserved, flame shift   |
| TK1818 | Hypothetical protein, conserved  |
| TK1823 | Hypothetical protein, conserved  |
| TK1824 | Hypothetical protein, conserved  |
| TK1825 | Hypothetical membrane protein, conserved   |
| TK1832 | Hypothetical membrane protein, conserved   |
| TK1833 | Hypothetical protein, conserved, containing DUF460 family                                |
| TK1837 | Hypothetical protein, conserved, DUF1530 family  |
| TK1839 | Hypothetical protein, conserved  |
| TK1844 | Hypothetical membrane protein, conserved   |
| TK1845 | Hypothetical membrane protein, conserved, containing DUF58 domain                        |
| TK1847 | Hypothetical membrane protein, conserved   |
| TK1848 | Hypothetical membrane protein, conserved   |
| TK1849 | Hypothetical protein, conserved  |
| TK1851 | Hypothetical membrane protein, conserved   |
| TK1852 | Hypothetical membrane protein, conserved   |
| TK1854 | Hypothetical protein, conserved  |
| TK1855 | Hypothetical protein, conserved, DUF515 family   |
| TK1856 | Hypothetical protein, conserved  |
| TK1871 | Hypothetical protein, conserved  |
| TK1873 | Hypothetical protein, conserved  |
| TK1875 | Hypothetical protein, conserved, DUF104 family   |
| TK1882 | Hypothetical protein, conserved, DUF211 family   |
| TK1888 | Hypothetical membrane protein, conserved   |
| TK1892 | Hypothetical protein, conserved, DUF553 family fused to N-terminal membrane-bound domain |
| TK1896 | Hypothetical protein, conserved, DUF75 family  |
| TK1897 | Hypothetical protein, conserved, DUF473 family   |
| TK1898 | Hypothetical protein, conserved, DUF91 family  |
| TK1904 | Hypothetical protein, conserved  |
| TK1905 | Hypothetical protein, conserved  |
| TK1907 | Hypothetical protein, conserved, DUF207 family   |
| TK1911 | Hypothetical protein, conserved  |
| TK1920 | Hypothetical protein, conserved  |
| TK1921 | Hypothetical membrane protein, conserved, flame shift                                    |
| TK1922 | Hypothetical membrane protein, conserved, flame shift                                    |
| TK1923 | Hypothetical membrane protein, conserved   |
| TK1925 | Hypothetical membrane protein, conserved   |
| TK1926 | Hypothetical protein, conserved, DUF74 family  |
| TK1927 | Hypothetical membrane protein, conserved   |
| TK1929 | Hypothetical protein, conserved  |
| TK1931 | Hypothetical protein, conserved  |
| TK1934 | Hypothetical protein, conserved  |
| TK1937 | Hypothetical membrane protein, conserved   |
| TK1939 | Hypothetical protein, conserved  |
| TK1941 | Hypothetical protein, conserved, DUF432 family   |
| TK1942 | Hypothetical protein, conserved  |
| TK1943 | Hypothetical protein, conserved, containing DUF434 domain                                |
| TK1953 | Hypothetical protein, conserved  |
| TK1956 | Hypothetical protein, conserved, containing ATP/GTP-binding site motif A                 |
| TK1958 | Hypothetical protein, conserved  |
| TK1972 | Hypothetical membrane protein, conserved, containing TPR-repeat domains                  |
| TK1975 | Hypothetical protein, conserved  |
| TK1989 | Hypothetical protein, conserved (C-terminus)   |
| TK1991 | Hypothetical protein, conserved  |
| TK1998 | Hypothetical protein, conserved  |
| TK2006 | Hypothetical protein, conserved  |
| TK2014 | Hypothetical membrane protein, conserved, DUF81 family                                   |
| TK2022 | Hypothetical membrane protein, conserved   |
| TK2023 | Hypothetical protein, conserved  |
| TK2025 | Hypothetical protein, conserved  |
| TK2030 | Hypothetical protein, conserved  |
| TK2033 | Hypothetical protein, conserved, DUF99 family  |
| TK2038 | Hypothetical protein, conserved, DUF531 family   |
| TK2039 | Hypothetical protein, conserved, containing TPR-repeat domain                            |
| TK2041 | Hypothetical protein, conserved  |
| TK2043 | Hypothetical protein, conserved, DUF257 family   |

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| TK2044 | Hypothetical protein, conserved, DUF257 family                              |
| TK2047 | Hypothetical membrane protein, conserved, DUF112 family                     |
| TK2050 | Hypothetical membrane protein, conserved                                    |
| TK2051 | Hypothetical protein, conserved   |
| TK2063 | Hypothetical protein, conserved, cupin superfamily                          |
| TK2068 | Hypothetical protein, conserved   |
| TK2102 | Hypothetical membrane protein, conserved, DUF1393 family                    |
| TK2103 | Hypothetical protein, conserved   |
| TK2105 | Hypothetical protein, conserved   |
| TK2108 | Hypothetical membrane protein, conserved                                    |
| TK2112 | Hypothetical protein, conserved, DUF355 family                              |
| TK2113 | Hypothetical protein, conserved   |
| TK2114 | Hypothetical protein, conserved   |
| TK2119 | Hypothetical membrane protein, conserved, DUF46 family                      |
| TK2120 | Hypothetical protein, conserved, containing DUF1511 family                  |
| TK2121 | Hypothetical protein, conserved   |
| TK2123 | Hypothetical membrane protein, conserved, UPF0104 family                    |
| TK2125 | Hypothetical membrane protein, conserved, containing DUF835 family          |
| TK2131 | Hypothetical protein, conserved, UPF0147 family                             |
| TK2133 | Hypothetical protein, conserved   |
| TK2136 | Hypothetical protein, conserved   |
| TK2139 | Hypothetical membrane protein, conserved                                    |
| TK2144 | Hypothetical protein, conserved   |
| TK2145 | Hypothetical protein, conserved, radical SAM superfamily                    |
| TK2146 | Hypothetical protein, conserved   |
| TK2148 | Hypothetical protein, conserved   |
| TK2152 | Hypothetical protein, conserved, DUF431 family                              |
| TK2153 | Hypothetical protein, conserved   |
| TK2154 | Hypothetical protein, conserved, UPF0175 family                             |
| TK2157 | Hypothetical protein, conserved   |
| TK2160 | Hypothetical protein, conserved, radical SAM superfamily                    |
| TK2162 | Hypothetical membrane protein, conserved                                    |
| TK2165 | Hypothetical protein, conserved   |
| TK2171 | Hypothetical protein, conserved, DUF257 family                              |
| TK2173 | Hypothetical protein, conserved   |
| TK2179 | Hypothetical protein, conserved, BtpA family                                |
| TK2180 | Hypothetical protein, conserved   |
| TK2183 | Hypothetical protein, conserved   |
| TK2184 | Hypothetical protein, conserved   |
| TK2187 | Hypothetical membrane protein, conserved                                    |
| TK2188 | Hypothetical membrane protein, conserved                                    |
| TK2191 | Hypothetical protein, conserved   |
| TK2193 | Hypothetical protein, conserved   |
| TK2194 | Hypothetical membrane protein, conserved                                    |
| TK2198 | Hypothetical protein, conserved, UPF0047 family                             |
| TK2200 | Hypothetical protein, conserved   |
| TK2203 | Hypothetical protein, conserved   |
| TK2204 | Hypothetical protein, conserved   |
| TK2206 | Hypothetical protein, conserved   |
| TK2216 | Hypothetical membrane protein, conserved                                    |
| TK2224 | Hypothetical membrane protein, conserved, containing DUF835 domain          |
| TK2226 | Hypothetical protein, conserved   |
| TK2233 | Hypothetical protein, conserved, DUF437 family                              |
| TK2234 | Hypothetical membrane protein, conserved                                    |
| TK2236 | Hypothetical protein, conserved   |
| TK2237 | Hypothetical protein, conserved, DUF366 family                              |
| TK2238 | Hypothetical membrane protein, conserved                                    |
| TK2243 | Hypothetical protein, conserved, DUF1464 family                             |
| TK2249 | Hypothetical protein, conserved, containing TPR-repeat domain, N-truncation |
| TK2256 | Hypothetical membrane protein, conserved                                    |
| TK2267 | Hypothetical membrane protein, conserved, UPF0016 family                    |
| TK2269 | Hypothetical protein, conserved, DUF509 family                              |
| TK2270 | Hypothetical protein, conserved   |
| TK2277 | Hypothetical protein, conserved   |
| TK2282 | Hypothetical membrane protein, conserved                                    |
| TK2283 | Hypothetical protein, conserved, DUF498 family                              |
| TK2293 | Hypothetical protein, conserved, DUF371 family                              |
| TK2294 | Hypothetical protein, conserved, UPF0128 family                             |
| TK2296 | Hypothetical protein, conserved, radical SAM superfamily                    |
| TK2297 | Hypothetical protein, conserved, containing TPR-repeat domains              |

#### Hypothetical proteins

|        |                               |
|--------|-------------------------------|
| TK0010 | Hypothetical protein          |
| TK0057 | Hypothetical protein          |
| TK0118 | Hypothetical protein          |
| TK0124 | Hypothetical protein          |
| TK0127 | Hypothetical protein          |
| TK0138 | Hypothetical protein          |
| TK0162 | Hypothetical membrane protein |
| TK0165 | Hypothetical protein          |
| TK0166 | Hypothetical protein          |
| TK0209 | Hypothetical protein          |
| TK0220 | Hypothetical membrane protein |
| TK0229 | Hypothetical protein          |

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| TK0236 | Hypothetical protein   |
| TK0237 | Hypothetical membrane protein                                  |
| TK0294 | Hypothetical membrane protein                                  |
| TK0300 | Hypothetical membrane protein                                  |
| TK0301 | Hypothetical membrane protein                                  |
| TK0321 | Hypothetical protein   |
| TK0344 | Hypothetical protein   |
| TK0353 | Hypothetical protein   |
| TK0362 | Hypothetical protein   |
| TK0369 | Hypothetical membrane protein                                  |
| TK0371 | Hypothetical protein   |
| TK0372 | Hypothetical protein   |
| TK0426 | Hypothetical protein   |
| TK0427 | Hypothetical protein   |
| TK0437 | Hypothetical protein   |
| TK0438 | Hypothetical protein   |
| TK0443 | Hypothetical membrane protein                                  |
| TK0496 | Hypothetical membrane protein                                  |
| TK0516 | Hypothetical protein   |
| TK0520 | Hypothetical protein, containing leucine zipper motif          |
| TK0530 | Hypothetical protein   |
| TK0531 | Hypothetical protein   |
| TK0532 | Hypothetical protein   |
| TK0543 | Hypothetical protein   |
| TK0552 | Hypothetical protein   |
| TK0555 | Hypothetical protein   |
| TK0564 | Hypothetical protein   |
| TK0647 | Hypothetical protein   |
| TK0662 | Hypothetical protein   |
| TK0680 | Hypothetical membrane protein                                  |
| TK0681 | Hypothetical protein   |
| TK0709 | Hypothetical protein   |
| TK0753 | Hypothetical membrane protein                                  |
| TK0766 | Hypothetical membrane protein                                  |
| TK0780 | Hypothetical protein   |
| TK0782 | Hypothetical protein   |
| TK0785 | Hypothetical protein   |
| TK0792 | Hypothetical protein   |
| TK0818 | Hypothetical protein   |
| TK0820 | Hypothetical protein   |
| TK0823 | Hypothetical membrane protein                                  |
| TK0847 | Hypothetical protein, containing leucine zipper motif          |
| TK0848 | Hypothetical protein   |
| TK0860 | Hypothetical protein   |
| TK0869 | Hypothetical protein   |
| TK0905 | Hypothetical membrane protein                                  |
| TK0912 | Hypothetical membrane protein, containing leucine zipper motif |
| TK0913 | Hypothetical protein   |
| TK0919 | Hypothetical protein   |
| TK0920 | Hypothetical protein   |
| TK0923 | Hypothetical protein   |
| TK0926 | Hypothetical protein   |
| TK0936 | Hypothetical protein   |
| TK0938 | Hypothetical protein, containing ATP/GTP-binding site motif A  |
| TK0980 | Hypothetical membrane protein                                  |
| TK0982 | Hypothetical membrane protein                                  |
| TK0983 | Hypothetical protein   |
| TK0985 | Hypothetical protein   |
| TK0988 | Hypothetical protein   |
| TK1000 | Hypothetical membrane protein                                  |
| TK1024 | Hypothetical membrane protein                                  |
| TK1051 | Hypothetical protein   |
| TK1052 | Hypothetical protein   |
| TK1070 | Hypothetical protein   |
| TK1075 | Hypothetical protein   |
| TK1089 | Hypothetical protein   |
| TK1117 | Hypothetical protein   |
| TK1132 | Hypothetical membrane protein                                  |
| TK1133 | Hypothetical protein   |
| TK1134 | Hypothetical membrane protein                                  |
| TK1154 | Hypothetical protein   |
| TK1156 | Hypothetical protein   |
| TK1159 | Hypothetical protein   |
| TK1160 | Hypothetical membrane protein                                  |
| TK1200 | Hypothetical membrane protein                                  |
| TK1229 | Hypothetical protein   |
| TK1244 | Hypothetical protein   |
| TK1265 | Hypothetical membrane protein                                  |
| TK1271 | Hypothetical membrane protein                                  |
| TK1277 | Hypothetical membrane protein                                  |
| TK1279 | Hypothetical protein   |
| TK1306 | Hypothetical membrane protein                                  |
| TK1308 | Hypothetical protein   |

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| TK1327 | Hypothetical membrane protein                                 |
| TK1341 | Hypothetical membrane protein                                 |
| TK1381 | Hypothetical protein  |
| TK1384 | Hypothetical protein  |
| TK1389 | Hypothetical protein  |
| TK1394 | Hypothetical protein  |
| TK1409 | Hypothetical membrane protein                                 |
| TK1430 | Hypothetical protein  |
| TK1437 | Hypothetical membrane protein                                 |
| TK1441 | Hypothetical protein  |
| TK1462 | Hypothetical membrane protein                                 |
| TK1485 | Hypothetical protein  |
| TK1490 | Hypothetical protein  |
| TK1564 | Hypothetical protein  |
| TK1570 | Hypothetical protein  |
| TK1582 | Hypothetical membrane protein                                 |
| TK1583 | Hypothetical protein  |
| TK1584 | Hypothetical membrane protein                                 |
| TK1585 | Hypothetical protein  |
| TK1587 | Hypothetical membrane protein                                 |
| TK1616 | Hypothetical protein  |
| TK1628 | Hypothetical protein  |
| TK1632 | Hypothetical membrane protein                                 |
| TK1638 | Hypothetical membrane protein                                 |
| TK1645 | Hypothetical protein  |
| TK1647 | Hypothetical protein  |
| TK1648 | Hypothetical protein  |
| TK1672 | Hypothetical protein  |
| TK1678 | Hypothetical membrane protein                                 |
| TK1680 | Hypothetical protein  |
| TK1682 | Hypothetical protein  |
| TK1707 | Hypothetical protein  |
| TK1724 | Hypothetical protein, containing ATP/GTP-binding site motif A |
| TK1730 | Hypothetical membrane protein                                 |
| TK1739 | Hypothetical protein  |
| TK1742 | Hypothetical protein  |
| TK1749 | Hypothetical protein  |
| TK1783 | Hypothetical membrane protein                                 |
| TK1834 | Hypothetical protein  |
| TK1838 | Hypothetical membrane protein                                 |
| TK1862 | Hypothetical protein  |
| TK1879 | Hypothetical protein  |
| TK1885 | Hypothetical protein  |
| TK1887 | Hypothetical membrane protein                                 |
| TK1889 | Hypothetical membrane protein                                 |
| TK1894 | Hypothetical membrane protein                                 |
| TK1906 | Hypothetical protein  |
| TK1918 | Hypothetical membrane protein                                 |
| TK1919 | Hypothetical membrane protein                                 |
| TK1930 | Hypothetical protein  |
| TK1947 | Hypothetical membrane protein                                 |
| TK1948 | Hypothetical membrane protein                                 |
| TK1949 | Hypothetical protein  |
| TK1950 | Hypothetical protein  |
| TK1969 | Hypothetical membrane protein                                 |
| TK1985 | Hypothetical membrane protein                                 |
| TK1986 | Hypothetical protein  |
| TK1987 | Hypothetical protein  |
| TK1988 | Hypothetical protein, containing leucine zipper motif         |
| TK1996 | Hypothetical protein  |
| TK2003 | Hypothetical protein  |
| TK2013 | Hypothetical protein  |
| TK2046 | Hypothetical membrane protein                                 |
| TK2048 | Hypothetical protein  |
| TK2056 | Hypothetical membrane protein                                 |
| TK2059 | Hypothetical protein  |
| TK2116 | Hypothetical protein  |
| TK2174 | Hypothetical protein  |
| TK2175 | Hypothetical protein  |
| TK2176 | Hypothetical protein  |
| TK2177 | Hypothetical membrane protein                                 |
| TK2178 | Hypothetical protein, containing ATP/GTP-binding site motif A |
| TK2182 | Hypothetical protein  |
| TK2189 | Hypothetical membrane protein                                 |
| TK2199 | Hypothetical protein  |
| TK2201 | Hypothetical membrane protein                                 |
| TK2221 | Hypothetical protein  |
| TK2230 | Hypothetical protein  |
| TK2265 | Hypothetical membrane protein                                 |
| TK2295 | Hypothetical membrane protein                                 |
| TK2305 | Hypothetical protein, containing leucine zipper motif         |