**Dataset S3.**

List of base-substitution mutation calls for *Agrobacterium tumefaciens* (Agt), *Bacillus subtilis* (Bs), *Escherichia coli* (Ec), *Mesoplasma florum* (Mf), and *Vibrio cholerae* (Vc). Line column indicates the organism and MA line where indel is called seperated by (|). IG - intergenic, EX - exon, syn - synonymous, nonsyn - nonsynonymous. Gene is the gene name or type of gene where the base substitution occurs. Confirmed (conf.) column indicates if the mutation was verified using direct sequencing (seq).

| Line | Scaffold:Position | Mut | Type | Codon Change | Amino Acid Change | Gene | syn nonsyn | Conf. |
|---|---|---|---|---|---|---|---|---|
| Agt\|11 | NC_003062:2110 | G>T | EX | GCG>TCG | A>S | shikimate | nonsyn | |
| Agt\|59 | NC_003064:3426 | A>G | EX | GAG>GGG | E>G | replication | nonsyn | |
| Agt\|14 | NC_003065:6186 | G>A | EX | GGG>GGA | G>G | C' | syn | |
| Agt\|33 | NC_003062:7280 | G>A | EX | GGC>AGC | G>S | hypothetical | nonsyn | |
| Agt\|55 | NC_003063:7913 | C>T | IG | | | | | |
| Agt\|54 | NC_003062:9249 | G>A | EX | GCC>ACC | A>T | DNA | nonsyn | |
| Agt\|54 | NC_003062:10200 | G>C | EX | GTT>CTT | V>L | DNA | nonsyn | |
| Agt\|19 | NC_003062:13517 | C>T | EX | GGC>GGT | G>G | intracellular | syn | |
| Agt\|13 | NC_003063:13737 | T>C | EX | GTC>GCC | V>A | sugar | nonsyn | |
| Agt\|34 | NC_003062:15711 | C>T | EX | ACC>ACT | T>T | tryptophan | syn | |
| Agt\|6 | NC_003065:18170 | C>G | EX | CCG>CGG | P>R | tryptophan | nonsyn | |
| Agt\|20 | NC_003062:20222 | C>T | EX | CCG>CCA | P>P | ATP-dependant | syn | |
| Agt\|25 | NC_003064:20373 | C>T | EX | ATG>ATA | M>I | hypothetical | nonsyn | |
| Agt\|42 | NC_003065:23616 | T>A | EX | GAA>GTA | E>V | D-nopaline | nonsyn | |
| Agt\|7 | NC_003062:38383 | C>A | EX | GGC>GGA | G>G | phosphoenolpyruvate | syn | |
| Agt\|20 | NC_003064:38970 | A>G | IG | | | | | |
| Agt\|40 | NC_003063:40424 | G>A | EX | GAA>AAA | E>K | hydantoinase | nonsyn | |
| Agt\|36 | NC_003063:41161 | A>G | EX | ACG>GCG | T>A | asparaginase | nonsyn | |
| Agt\|33 | NC_003063:45990 | A>G | EX | TGC>CGC | C>R | oligopeptide | nonsyn | |
| Agt\|55 | NC_003064:46303 | T>C | IG | | | | | |
| Agt\|55 | NC_003065:46430 | C>A | EX | GAG>TAG | E>* | conjugal | nonsyn | |
| Agt\|51 | NC_003062:47306 | C>G | EX | GGC>GGG | G>G | hypothetical | syn | |
| Agt\|10 | NC_003063:51054 | A>G | EX | ATG>ACG | M>T | peptide | nonsyn | |
| Agt\|43 | NC_003063:53886 | G>A | EX | GTC>GTT | V>V | hypothetical | syn | |
| Agt\|40 | NC_003062:54600 | C>T | EX | CTG>CTA | L>L | helicase | syn | |
| Agt\|24 | NC_003065:56650 | T>G | EX | GCA>GCC | A>A | DNA | syn | |
| Agt\|51 | NC_003063:58636 | C>A | IG | | | | | |
| Agt\|22 | NC_003065:69034 | C>G | EX | CCA>CGA | P>R | ABC | nonsyn | |
| Agt\|2 | NC_003064:69952 | C>T | IG | | | | | |
| Agt\|45 | NC_003062:79525 | G>A | EX | CCG>TCG | P>S | D-isomer | nonsyn | |
| Agt\|30 | NC_003065:81832 | C>T | EX | GTA>ATA | V>I | ABC | nonsyn | |
| Agt\|53 | NC_003064:101622 | G>C | EX | CTC>CTG | L>L | ATP-dependent | syn | |
| Agt\|5 | NC_003062:105414 | C>T | IG | | | | | |
| Agt\|40 | NC_003065:107215 | T>C | EX | GAT>GAC | D>D | hypothetical | syn | |
| Agt\|48 | NC_003063:108500 | G>A | EX | ACC>ATC | T>I | sugar | nonsyn | |
| Agt\|54 | NC_003063:113162 | T>C | IG | | | | | |
| Agt\|16 | NC_003064:118893 | A>C | EX | ATC>CTC | I>L | conjugal | nonsyn | |
| Agt\|2 | NC_003064:124727 | A>T | EX | GTG>GAG | V>E | hypothetical | nonsyn | |
| Agt\|55 | NC_003064:124997 | T>C | IG | | | | | |
| Agt\|46 | NC_003065:125393 | A>T | EX | GAT>GTT | D>V | SNF2 | nonsyn | |
| Agt\|33 | NC_003063:125935 | A>G | IG | | | | | |
| Agt\|43 | NC_003064:129638 | G>T | EX | CCC>ACC | P>T | acetolactate | nonsyn | |
| Agt\|17 | NC_003064:133911 | G>T | EX | GGG>TGG | G>W | ABC | nonsyn | |
| Agt\|9 | NC_003063:133957 | C>A | EX | GCA>TCA | A>S | acetyltransferase | nonsyn | |

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|---|---|---|---|---|---|---|---|
| Agt\|14 | NC_003065:134655 | G>T | EX | ACC>ACA | T>T | hypothetical | syn |
| Agt\|9 | NC_003062:138112 | G>A | EX | ACC>ACT | T>T | hypothetical | syn |
| Agt\|10 | NC_003063:146320 | G>A | EX | GCC>GCT | A>A | hypothetical | syn |
| Agt\|41 | NC_003062:148488 | C>A | EX | ATC>ATA | I>I | hypothetical | syn |
| Agt\|9 | NC_003063:149329 | G>A | EX | GCC>GTC | A>V | 2-deoxy-D-gluconate | nonsyn |
| Agt\|53 | NC_003063:150802 | A>T | IG | | | | |
| Agt\|7 | NC_003062:157731 | C>T | EX | CCG>CCA | P>P | enoyl-(acyl-carrier-protein) | syn |
| Agt\|5 | NC_003065:161987 | T>C | EX | TTG>TCG | L>S | ABC | nonsyn |
| Agt\|2 | NC_003062:163548 | G>A | EX | CCG>CCA | P>P | ABC | syn |
| Agt\|32 | NC_003062:164790 | C>T | EX | ATC>ATT | I>I | ABC | syn |
| Agt\|22 | NC_003065:165904 | G>T | EX | GAT>TAT | D>Y | hypothetical | nonsyn |
| Agt\|59 | NC_003065:169532 | G>C | EX | TGG>TCG | W>S | P-450 | nonsyn |
| Agt\|25 | NC_003063:170691 | G>A | EX | ATC>ATT | I>I | hypothetical | syn |
| Agt\|30 | NC_003062:173021 | C>A | EX | GTT>TTT | V>F | hypothetical | nonsyn |
| Agt\|16 | NC_003064:183921 | T>G | IG | | | | |
| Agt\|42 | NC_003063:194294 | A>C | IG | | | | |
| Agt\|16 | NC_003063:196816 | C>A | EX | GCC>GCA | A>A | glycerol-3-phosphate | syn |
| Agt\|40 | NC_003065:197439 | G>T | EX | GCA>TCA | A>S | type | nonsyn |
| Agt\|47 | NC_003062:208230 | C>T | IG | | | | |
| Agt\|15 | NC_003065:210421 | G>A | IG | | | | |
| Agt\|44 | NC_003062:215751 | A>C | EX | ACC>CCC | T>P | hypothetical | nonsyn |
| Agt\|17 | NC_003063:221868 | G>A | EX | GGC>GAC | G>D | diguanylate | nonsyn |
| Agt\|59 | NC_003063:226233 | T>C | IG | | | | |
| Agt\|53 | NC_003064:241750 | G>T | EX | CCC>CCA | P>P | amidase | syn |
| Agt\|33 | NC_003064:247699 | G>A | EX | GCC>GCT | A>A | pyridoxal | syn |
| Agt\|30 | NC_003063:250757 | G>A | EX | ACC>ATC | T>I | NAD | nonsyn |
| Agt\|29 | NC_003062:252718 | T>C | IG | | | | |
| Agt\|10 | NC_003064:252969 | C>T | EX | GCT>GTT | A>V | ABC | nonsyn |
| Agt\|19 | NC_003064:253000 | C>T | EX | ACC>ACT | T>T | ABC | syn |
| Agt\|11 | NC_003063:256863 | G>A | IG | | | | |
| Agt\|16 | NC_003064:271545 | T>C | EX | CGA>CGG | R>R | hypothetical | syn |
| Agt\|40 | NC_003064:276193 | T>C | EX | GAT>GGT | D>G | dehydrogenase | nonsyn |
| Agt\|43 | NC_003064:287122 | G>A | EX | GGA>AGA | G>R | dehydrogenase | nonsyn |
| Agt\|58 | NC_003064:288460 | C>T | EX | CTG>TTG | L>L | TetR | syn |
| Agt\|28 | NC_003064:291087 | C>T | EX | CCC>CCT | P>P | arylester | syn |
| Agt\|59 | NC_003062:291368 | G>A | EX | TTC>TTT | F>F | hypothetical | syn |
| Agt\|38 | NC_003063:292400 | G>A | EX | GTG>ATG | V>M | exopolysaccharide | nonsyn |
| Agt\|43 | NC_003062:292441 | C>G | EX | GTG>CTG | V>L | hypothetical | nonsyn |
| Agt\|33 | NC_003062:294372 | G>A | EX | GGC>GGT | G>G | DNA | syn |
| Agt\|59 | NC_003064:305818 | C>G | EX | CAC>GAC | H>D | TonB-dependent | nonsyn |
| Agt\|57 | NC_003063:306404 | T>C | EX | ATC>ACC | I>T | ABC | nonsyn |
| Agt\|55 | NC_003064:309783 | A>C | IG | | | | |
| Agt\|10 | NC_003063:310028 | C>T | EX | CTG>TTG | L>L | sugar | syn |
| Agt\|11 | NC_003064:311752 | A>G | IG | | | | |
| Agt\|51 | NC_003062:316640 | C>T | EX | CTG>TTG | L>L | 30S | syn |
| Agt\|41 | NC_003063:317684 | A>G | IG | | | | |
| Agt\|7 | NC_003063:317823 | C>A | EX | GCC>GAC | A>D | alanine | nonsyn |
| Agt\|28 | NC_003063:322604 | G>A | EX | CCC>CTC | P>L | two | nonsyn |
| Agt\|16 | NC_003064:327134 | C>T | EX | ATC>ATT | I>I | dehydrogenase | syn |
| Agt\|24 | NC_003062:348534 | A>G | EX | AAC>AGC | N>S | ferric | nonsyn |
| Agt\|21 | NC_003064:354538 | A>C | EX | TGC>GGC | C>G | aquaporin | nonsyn |
| Agt\|13 | NC_003062:360745 | A>G | IG | | | | |
| Agt\|32 | NC_003063:362300 | A>T | EX | GCT>GCA | A>A | hypothetical | syn |
| Agt\|27 | NC_003064:364836 | A>T | IG | | | | |
| Agt\|44 | NC_003062:370135 | G>A | EX | GGC>GGT | G>G | inosine-uridine | syn |
| Agt\|30 | NC_003063:376491 | C>T | EX | GTC>GTT | V>V | trehalose/maltose | syn |
| Agt\|7 | NC_003063:390528 | T>A | EX | GGA>GGT | G>G | pyrroloquinoline-quinone-dependent | syn |
| Agt\|2 | NC_003064:399468 | T>G | IG | | | | |
| Agt\|14 | NC_003064:400601 | A>C | IG | | | | |

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|---|---|---|---|---|---|---|---|
| Agt\|20 | NC_003063:416529 | A>T | EX | TGG>AGG | W>R | peptide | nonsyn |
| Agt\|14 | NC_003064:419113 | A>G | EX | GAC>GGC | D>G | oxidoreductase | nonsyn |
| Agt\|4 | NC_003064:423797 | C>T | IG | | | | |
| Agt\|59 | NC_003064:434276 | T>G | EX | CTT>CGT | L>R | ABC | nonsyn |
| Agt\|40 | NC_003064:437254 | A>G | IG | | | | |
| Agt\|30 | NC_003062:438032 | T>C | IG | | | | |
| Agt\|5 | NC_003063:448065 | C>A | EX | CCC>ACC | P>T | succinate | nonsyn |
| Agt\|30 | NC_003063:456551 | T>C | EX | CTG>CCG | L>P | ABC | nonsyn |
| Agt\|26 | NC_003063:469175 | C>T | EX | GCG>GCA | A>A | monooxygenase | syn |
| Agt\|53 | NC_003064:470214 | C>T | EX | GCG>ACG | A>T | chloromuconate | nonsyn |
| Agt\|38 | NC_003064:471392 | C>T | EX | GCC>ACC | A>T | acetylornithine | nonsyn |
| Agt\|48 | NC_003064:472081 | T>C | EX | AAC>AGC | N>S | acetylornithine | nonsyn |
| Agt\|59 | NC_003064:474764 | T>G | IG | | | | |
| Agt\|41 | NC_003062:478067 | T>A | IG | | | | |
| Agt\|17 | NC_003064:478655 | C>T | EX | CGC>TGC | R>C | hypothetical | nonsyn |
| Agt\|17 | NC_003062:494085 | T>C | EX | CGT>CGC | R>R | enoyl-CoA | syn |
| Agt\|24 | NC_003062:495774 | G>C | EX | GAG>GAC | E>D | hypothetical | nonsyn |
| Agt\|28 | NC_003063:512307 | C>T | EX | GGC>GGT | G>G | dehydrogenase | syn |
| Agt\|33 | NC_003064:514069 | C>G | EX | GGT>GCT | G>A | hypothetical | nonsyn |
| Agt\|13 | NC_003063:517433 | A>C | EX | CTT>CTG | L>L | phosphoglyceromutase | syn |
| Agt\|43 | NC_003062:518364 | C>T | EX | ACG>ACA | T>T | two | syn |
| Agt\|13 | NC_003064:526869 | C>T | EX | ACG>ATG | T>M | ABC | nonsyn |
| Agt\|14 | NC_003064:532724 | C>T | EX | GGA>AGA | G>R | mercuric | nonsyn |
| Agt\|43 | NC_003062:541096 | A>T | EX | GTC>GAC | V>D | flagellar | nonsyn |
| Agt\|2 | NC_003062:545362 | A>C | EX | ATG>AGG | M>R | hypothetical | nonsyn |
| Agt\|34 | NC_003062:558515 | C>T | EX | CTG>TTG | L>L | transcriptional | syn |
| Agt\|14 | NC_003063:563131 | G>T | EX | GGC>GGA | G>G | hypothetical | syn |
| Agt\|13 | NC_003063:572431 | C>A | EX | CTT>ATT | L>I | polysaccharide | nonsyn |
| Agt\|53 | NC_003062:579436 | C>G | EX | GGC>GGG | G>G | alpha-glucosidase | syn |
| Agt\|40 | NC_003062:585964 | T>G | EX | AAG>ACG | K>T | glucose-6-phosphate | nonsyn |
| Agt\|57 | NC_003063:588700 | G>A | IG | | | | |
| Agt\|33 | NC_003062:591613 | G>T | IG | | | | |
| Agt\|57 | NC_003062:602978 | G>C | EX | ACC>ACG | T>T | two | syn |
| Agt\|9 | NC_003062:623347 | C>G | EX | GCG>GCC | A>A | octaprenyl-diphosphate | syn |
| Agt\|15 | NC_003062:633577 | C>A | EX | CTG>ATG | L>M | glycyl-tRNA | nonsyn |
| Agt\|37 | NC_003063:652176 | G>T | EX | GGT>GTT | G>V | 3-hydroxybutyryl-CoA | nonsyn |
| Agt\|58 | NC_003062:652258 | T>G | EX | GAA>GAC | E>D | phosphate | nonsyn |
| Agt\|38 | NC_003063:653177 | C>G | EX | TCA>TGA | S>* | argininosuccinate | nonsyn |
| Agt\|38 | NC_003063:653178 | A>C | EX | TCA>TCC | S>S | argininosuccinate | syn |
| Agt\|5 | NC_003062:660105 | T>G | IG | | | | |
| Agt\|46 | NC_003063:661017 | C>A | EX | GAT>TAT | D>Y | hypothetical | nonsyn |
| Agt\|29 | NC_003062:661699 | T>C | IG | | | | |
| Agt\|41 | NC_003063:675986 | C>A | EX | CCG>CCT | P>P | cobyrinic | syn |
| Agt\|9 | NC_003063:676200 | G>A | EX | GCG>GTG | A>V | cobyrinic | nonsyn |
| Agt\|43 | NC_003062:684364 | T>C | EX | GAT>GAC | D>D | hypothetical | syn |
| Agt\|51 | NC_003063:698722 | A>C | EX | CAA>CAC | Q>H | hypothetical | nonsyn |
| Agt\|6 | NC_003062:699323 | A>C | EX | CAG>CCG | Q>P | two | nonsyn |
| Agt\|9 | NC_003062:714219 | A>G | EX | CAC>CGC | H>R | hypothetical | nonsyn |
| Agt\|11 | NC_003062:740198 | C>T | EX | GCG>GTG | A>V | transcriptional | nonsyn |
| Agt\|29 | NC_003062:754609 | T>C | EX | GAC>GGC | D>G | enoyl-(acyl-carrier-protein) | nonsyn |
| Agt\|38 | NC_003062:758571 | C>T | IG | | | | |
| Agt\|10 | NC_003062:758811 | G>C | EX | GCC>CCC | A>P | hypothetical | nonsyn |
| Agt\|22 | NC_003062:767514 | G>T | EX | TGC>TTC | C>F | cytochrome | nonsyn |
| Agt\|44 | NC_003063:775685 | C>G | EX | CTG>CTC | L>L | hypothetical | syn |
| Agt\|10 | NC_003063:779726 | A>G | IG | | | | |
| Agt\|34 | NC_003063:788218 | A>G | IG | | | | |
| Agt\|29 | NC_003063:791250 | G>A | EX | GCA>GTA | A>V | metalloprotease | nonsyn |
| Agt\|24 | NC_003062:792433 | A>G | EX | ACT>ACC | T>T | putative | syn |
| Agt\|4 | NC_003062:820596 | T>C | EX | GTC>GCC | V>A | ABC | nonsyn |

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|---|---|---|---|---|---|---|---|
| Agt\|55 | NC_003063:822696 | G>C | EX | GAA>CAA | E>Q | fructose | nonsyn |
| Agt\|58 | NC_003062:842511 | G>C | IG | | | | |
| Agt\|20 | NC_003062:843560 | A>G | EX | TGG>CGG | W>R | P | nonsyn |
| Agt\|32 | NC_003063:846339 | G>A | EX | CGC>CGT | R>R | sigma | syn |
| Agt\|27 | NC_003062:850675 | A>T | EX | GGT>GGA | G>G | ABC | syn |
| Agt\|39 | NC_003063:860579 | C>T | EX | CAG>TAG | Q>* | hypothetical | nonsyn |
| Agt\|30 | NC_003063:873550 | A>G | EX | GAC>GGC | D>G | threonine | nonsyn |
| Agt\|5 | NC_003062:881511 | C>T | IG | | | | |
| Agt\|53 | NC_003063:884801 | G>C | EX | TTC>TTG | F>L | L-asparagine | nonsyn |
| Agt\|20 | NC_003062:892265 | A>G | EX | ACC>GCC | T>A | 6-O-methylguanine-DNA | nonsyn |
| Agt\|39 | NC_003062:902547 | C>A | EX | ACC>AAC | T>N | Na+/H+ | nonsyn |
| Agt\|9 | NC_003062:906024 | A>G | IG | | | | |
| Agt\|6 | NC_003062:912073 | G>C | EX | GCC>GCG | A>A | hypothetical | syn |
| Agt\|2 | NC_003062:918237 | G>C | EX | CAG>GAG | Q>E | amide | nonsyn |
| Agt\|17 | NC_003062:927723 | C>A | EX | ACG>AAG | T>K | copper | nonsyn |
| Agt\|28 | NC_003062:928847 | G>C | IG | | | | |
| Agt\|27 | NC_003063:932057 | G>C | EX | CCT>CGT | P>R | hypothetical | nonsyn |
| Agt\|13 | NC_003062:937948 | C>G | EX | GCC>GGC | A>G | hypothetical | nonsyn |
| Agt\|42 | NC_003062:940069 | T>A | IG | | | | |
| Agt\|4 | NC_003062:940210 | C>T | EX | GAC>GAT | D>D | hypothetical | syn |
| Agt\|32 | NC_003063:959774 | C>A | EX | ATC>ATA | I>I | hypothetical | syn |
| Agt\|42 | NC_003062:961875 | G>A | EX | GGC>GAC | G>D | cycH | nonsyn |
| Agt\|19 | NC_003062:970181 | C>G | IG | | | | |
| Agt\|2 | NC_003063:976973 | G>A | EX | CCC>CTC | P>L | sugar | nonsyn |
| Agt\|51 | NC_003063:977775 | A>G | IG | | | | |
| Agt\|42 | NC_003062:1009637 | C>T | EX | TCA>TTA | S>L | aldolase | nonsyn |
| Agt\|4 | NC_003062:1012593 | A>G | EX | GAC>GGC | D>G | outer | nonsyn |
| Agt\|27 | NC_003063:1023951 | T>A | EX | GAG>GTG | E>V | replication | nonsyn |
| Agt\|10 | NC_003063:1026702 | C>G | IG | | | | |
| Agt\|55 | NC_003063:1031977 | A>G | EX | ACT>ACC | T>T | hypothetical | syn |
| Agt\|51 | NC_003063:1034098 | C>T | EX | GGC>GAC | G>D | urocanate | nonsyn |
| Agt\|44 | NC_003062:1034285 | A>G | EX | GTA>GCA | V>A | hypothetical | nonsyn |
| Agt\|2 | NC_003063:1040330 | C>T | EX | TCC>TTC | S>F | N-formimino-L-glutamate | nonsyn |
| Agt\|14 | NC_003063:1041515 | T>C | IG | | | | |
| Agt\|45 | NC_003062:1044622 | G>A | EX | CAG>TAG | Q>* | hypothetical | nonsyn |
| Agt\|30 | NC_003062:1055422 | C>A | EX | CGC>CTC | R>L | ABC | nonsyn |
| Agt\|32 | NC_003062:1074308 | G>A | EX | GCC>ACC | A>T | hypothetical | nonsyn |
| Agt\|5 | NC_003063:1088232 | C>T | IG | | | | |
| Agt\|32 | NC_003062:1100114 | C>T | EX | GCC>GCT | A>A | cytosol | syn |
| Agt\|19 | NC_003062:1120345 | G>T | IG | | | | |
| Agt\|13 | NC_003062:1120451 | A>G | IG | | | | |
| Agt\|6 | NC_003063:1131558 | C>T | EX | ACG>ACA | T>T | two | syn |
| Agt\|48 | NC_003063:1140805 | T>A | EX | CTG>CAG | L>Q | ferrichrome | nonsyn |
| Agt\|4 | NC_003063:1153224 | C>T | EX | GGT>AGT | G>S | glucose | nonsyn |
| Agt\|37 | NC_003062:1175996 | A>G | IG | | | | |
| Agt\|38 | NC_003062:1183589 | G>C | EX | GGT>GCT | G>A | hypothetical | nonsyn |
| Agt\|21 | NC_003062:1193274 | C>T | EX | TTC>TTT | F>F | ABC | syn |
| Agt\|34 | NC_003063:1201024 | G>C | EX | CGC>GGC | R>G | glutamine | nonsyn |
| Agt\|38 | NC_003063:1204722 | C>G | EX | GCC>CCC | A>P | 2-hydroxy-3-oxopropionate | nonsyn |
| Agt\|39 | NC_003062:1218555 | G>C | IG | | | | |
| Agt\|36 | NC_003063:1222225 | C>T | EX | CCG>CTG | P>L | cytidylate | nonsyn |
| Agt\|44 | NC_003062:1224524 | A>G | EX | GTG>GCG | V>A | polysaccharide | nonsyn |
| Agt\|40 | NC_003063:1232628 | A>G | EX | AAC>AGC | N>S | dipeptide | nonsyn |
| Agt\|2 | NC_003063:1232815 | C>G | EX | TAC>TAG | Y>* | dipeptide | nonsyn |
| Agt\|30 | NC_003062:1246470 | G>T | EX | GCG>TCG | A>S | ATP-dependent | nonsyn |
| Agt\|58 | NC_003062:1250220 | A>C | EX | GAT>GCT | D>A | ATP-dependent | nonsyn |
| Agt\|28 | NC_003062:1260599 | C>G | EX | CTG>GTG | L>V | NADH | nonsyn |
| Agt\|28 | NC_003062:1266985 | G>A | EX | GAA>AAA | E>K | NADH | nonsyn |
| Agt\|26 | NC_003062:1267561 | C>A | EX | TTC>TTA | F>L | NADH | nonsyn |

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|---|---|---|---|---|---|---|---|
| Agt\|33 | NC_003062:1267639 | C>T | EX | AGC>AGT | S>S | NADH | syn |
| Agt\|7 | NC_003062:1271601 | C>G | EX | ATC>ATG | I>M | NADH | nonsyn |
| Agt\|10 | NC_003062:1288825 | C>A | IG | | | | |
| Agt\|22 | NC_003063:1294976 | G>A | EX | GAA>AAA | E>K | phosphoenolpyruvate-protein | nonsyn |
| Agt\|6 | NC_003063:1295987 | C>T | EX | TCC>TTC | S>F | peptide | nonsyn |
| Agt\|15 | NC_003062:1303451 | C>T | EX | GCC>GTC | A>V | acyl-CoA | nonsyn |
| Agt\|9 | NC_003063:1304022 | C>A | EX | CTG>CTT | L>L | hypothetical | syn |
| Agt\|10 | NC_003063:1305815 | T>C | IG | | | | |
| Agt\|15 | NC_003063:1311363 | T>G | EX | CAA>CCA | Q>P | dihydropicolinate | nonsyn |
| Agt\|10 | NC_003063:1314997 | C>T | EX | CTG>TTG | L>L | oligopeptide | syn |
| Agt\|2 | NC_003062:1322817 | C>G | EX | CGG>GGG | R>G | hypothetical | nonsyn |
| Agt\|29 | NC_003063:1324649 | G>A | EX | CGC>TGC | R>C | methyltransferase | nonsyn |
| Agt\|40 | NC_003062:1329450 | A>G | EX | GAA>GAG | E>E | penicillin-binding | syn |
| Agt\|7 | NC_003063:1339888 | T>G | IG | | | | |
| Agt\|32 | NC_003062:1345667 | A>G | IG | | | | |
| Agt\|39 | NC_003062:1349152 | G>C | IG | | | | |
| Agt\|36 | NC_003063:1352899 | A>T | EX | GAA>GTA | E>V | amidophosphoribosyltransferase | nonsyn |
| Agt\|2 | NC_003063:1362161 | A>G | IG | | | | |
| Agt\|27 | NC_003062:1373663 | C>G | EX | GCC>GCG | A>A | zinc | syn |
| Agt\|7 | NC_003062:1374946 | A>G | EX | ATC>GTC | I>V | group | nonsyn |
| Agt\|58 | NC_003062:1375128 | C>A | EX | GCC>GCA | A>A | group | syn |
| Agt\|58 | NC_003062:1375434 | C>G | EX | AGC>AGG | S>R | group | nonsyn |
| Agt\|38 | NC_003062:1376269 | C>G | EX | CGC>GGC | R>G | group | nonsyn |
| Agt\|57 | NC_003062:1382988 | A>C | IG | | | | |
| Agt\|36 | NC_003062:1411771 | C>T | EX | GCG>GCA | A>A | long-chain-fatty-acid-CoA-ligase | syn |
| Agt\|54 | NC_003062:1416168 | C>T | EX | CAG>TAG | Q>* | transcriptional | nonsyn |
| Agt\|57 | NC_003062:1423725 | A>G | IG | | | | |
| Agt\|47 | NC_003062:1426455 | G>A | IG | | | | |
| Agt\|51 | NC_003062:1426480 | G>A | IG | | | | |
| Agt\|25 | NC_003062:1438309 | T>A | EX | CAT>CAA | H>Q | two | nonsyn |
| Agt\|25 | NC_003062:1438310 | C>T | EX | CTT>TTT | L>F | two | nonsyn |
| Agt\|6 | NC_003062:1439200 | C>T | EX | GAC>GAT | D>D | two | syn |
| Agt\|14 | NC_003062:1443034 | G>A | EX | GGG>GGA | G>G | two | syn |
| Agt\|46 | NC_003062:1446204 | G>C | EX | CTG>CTC | L>L | putative | syn |
| Agt\|54 | NC_003063:1459767 | C>T | EX | GCT>ACT | A>T | serine/threonine | nonsyn |
| Agt\|13 | NC_003062:1465326 | G>C | EX | GGT>GCT | G>A | Camphor | nonsyn |
| Agt\|29 | NC_003063:1467791 | T>C | EX | GAA>GGA | E>G | forkhead-type | nonsyn |
| Agt\|10 | NC_003063:1480640 | C>T | EX | TCA>TTA | S>L | hypothetical | nonsyn |
| Agt\|53 | NC_003062:1488422 | C>A | EX | CCG>CCT | P>P | thymydilate | syn |
| Agt\|15 | NC_003062:1490675 | A>C | EX | GTT>GTG | V>V | rare | syn |
| Agt\|2 | NC_003062:1491913 | G>A | IG | | | | |
| Agt\|43 | NC_003062:1496248 | T>C | EX | ACC>GCC | T>A | DNA | nonsyn |
| Agt\|15 | NC_003063:1505626 | C>T | IG | | | | |
| Agt\|25 | NC_003063:1509227 | C>G | EX | CTG>GTG | L>V | sugar | nonsyn |
| Agt\|28 | NC_003063:1509365 | C>G | EX | GGC>GGG | G>G | ribose | syn |
| Agt\|40 | NC_003063:1529182 | C>T | EX | GCG>GTG | A>V | denitrification | nonsyn |
| Agt\|57 | NC_003062:1537053 | G>A | EX | GCG>GTG | A>V | magnesium | nonsyn |
| Agt\|26 | NC_003062:1540418 | G>A | EX | CGC>CAC | R>H | formate | nonsyn |
| Agt\|17 | NC_003062:1543348 | C>A | IG | | | | |
| Agt\|33 | NC_003062:1543350 | C>A | IG | | | | |
| Agt\|30 | NC_003063:1543889 | A>T | EX | ACC>TCC | T>S | nitrate | nonsyn |
| Agt\|37 | NC_003063:1555080 | G>T | EX | GCG>TCG | A>S | bacteriocin | nonsyn |
| Agt\|59 | NC_003062:1555269 | C>T | EX | GCG>ACG | A>T | transcriptional | nonsyn |
| Agt\|44 | NC_003063:1555761 | G>C | EX | GTC>CTC | V>L | bacteriocin | nonsyn |
| Agt\|59 | NC_003063:1557276 | C>G | EX | GAA>CAA | E>Q | hypothetical | nonsyn |
| Agt\|33 | NC_003063:1570366 | C>A | IG | | | | |
| Agt\|40 | NC_003062:1576477 | A>G | EX | TTC>TCC | F>S | lipid | nonsyn |
| Agt\|28 | NC_003062:1576623 | C>A | EX | AAG>AAT | K>N | lipid | nonsyn |
| Agt\|55 | NC_003062:1580343 | G>A | EX | AAC>AAT | N>N | 3-oxoacyl-(acyl-carrier-protein) | syn |

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|---|---|---|---|---|---|---|---|
| Agt\|6 | NC_003062:1585605 | T>A | EX | CTT>CTA | L>L | poly-beta-hydroxybutyrate | syn |
| Agt\|14 | NC_003063:1588294 | G>C | EX | GGC>CGC | G>R | hippurate | nonsyn |
| Agt\|10 | NC_003063:1592428 | C>A | EX | AAC>AAA | N>K | sorbitol | nonsyn |
| Agt\|57 | NC_003062:1604819 | C>A | IG | | | | |
| Agt\|32 | NC_003062:1607432 | G>A | EX | GAA>AAA | E>K | DNA | nonsyn |
| Agt\|42 | NC_003063:1613547 | A>G | IG | | | | |
| Agt\|51 | NC_003063:1624568 | C>T | EX | ATC>ATT | I>I | MFS | syn |
| Agt\|25 | NC_003063:1625784 | A>G | IG | | | | |
| Agt\|16 | NC_003062:1628852 | T>G | EX | GAG>GCG | E>A | ABC | nonsyn |
| Agt\|9 | NC_003062:1639773 | C>T | EX | GCG>ACG | A>T | nitroreductase | nonsyn |
| Agt\|46 | NC_003063:1641991 | A>G | IG | | | | |
| Agt\|43 | NC_003062:1648053 | C>A | EX | ATC>ATA | I>I | soluble | syn |
| Agt\|4 | NC_003062:1652748 | G>A | IG | | | | |
| Agt\|36 | NC_003063:1652772 | C>T | EX | TTC>TTT | F>F | hypothetical | syn |
| Agt\|24 | NC_003063:1653511 | T>C | EX | TTC>TCC | F>S | dehydrogenase | nonsyn |
| Agt\|7 | NC_003062:1657276 | G>C | EX | GCG>CCG | A>P | hypothetical | nonsyn |
| Agt\|21 | NC_003063:1659543 | G>A | EX | CGC>CGT | R>R | myo-inositol | syn |
| Agt\|32 | NC_003063:1667916 | C>T | EX | GAG>GAA | E>E | AraC | syn |
| Agt\|14 | NC_003062:1673649 | G>C | EX | GCC>CCC | A>P | molybdenum | nonsyn |
| Agt\|29 | NC_003062:1674138 | G>T | EX | GAT>TAT | D>Y | molybdopterin | nonsyn |
| Agt\|29 | NC_003063:1680599 | C>A | EX | GAG>TAG | E>* | amino | nonsyn |
| Agt\|26 | NC_003063:1689054 | C>G | EX | CGC>CGG | R>R | LysR | syn |
| Agt\|27 | NC_003062:1694602 | G>T | EX | CGC>AGC | R>S | hypothetical | nonsyn |
| Agt\|34 | NC_003063:1707810 | C>T | EX | TCG>TCA | S>S | hypothetical | syn |
| Agt\|42 | NC_003062:1711026 | C>A | IG | | | | |
| Agt\|55 | NC_003063:1711334 | C>T | IG | | | | |
| Agt\|13 | NC_003062:1711797 | C>T | IG | | | | |
| Agt\|22 | NC_003062:1722946 | G>T | EX | GCC>GCA | A>A | manganese | syn |
| Agt\|42 | NC_003063:1723918 | C>A | IG | | | | |
| Agt\|33 | NC_003063:1725329 | A>G | IG | | | | |
| Agt\|17 | NC_003062:1725860 | G>A | IG | | | | |
| Agt\|33 | NC_003062:1738886 | G>A | EX | CTC>TTC | L>F | hypothetical | nonsyn |
| Agt\|2 | NC_003062:1750169 | A>G | IG | | | | |
| Agt\|6 | NC_003062:1750595 | C>G | EX | CGC>GGC | R>G | hypothetical | nonsyn |
| Agt\|6 | NC_003062:1753540 | C>T | IG | | | | |
| Agt\|53 | NC_003063:1758474 | G>C | EX | GCC>GCG | A>A | transposase | syn |
| Agt\|28 | NC_003062:1762701 | G>C | EX | GCC>GCG | A>A | transcription-repair | syn |
| Agt\|43 | NC_003062:1766369 | G>C | IG | | | | |
| Agt\|40 | NC_003063:1771819 | T>G | IG | | | | |
| Agt\|29 | NC_003063:1773593 | C>T | EX | GCA>GTA | A>V | mannonate | nonsyn |
| Agt\|47 | NC_003062:1776367 | C>A | EX | ATG>ATT | M>I | lipoprotein | nonsyn |
| Agt\|32 | NC_003062:1785869 | C>T | EX | GCT>ACT | A>T | hypothetical | nonsyn |
| Agt\|40 | NC_003062:1792868 | A>C | EX | CAA>CAC | Q>H | hypothetical | nonsyn |
| Agt\|32 | NC_003062:1797103 | C>T | EX | CTT>TTT | L>F | hypothetical | nonsyn |
| Agt\|17 | NC_003063:1808391 | C>A | EX | GAA>TAA | E>* | sugar | nonsyn |
| Agt\|39 | NC_003062:1818469 | T>C | IG | | | | |
| Agt\|20 | NC_003062:1822170 | G>A | EX | ACG>ACA | T>T | hypothetical | syn |
| Agt\|41 | NC_003062:1826965 | G>T | EX | CGC>CTC | R>L | hypothetical | nonsyn |
| Agt\|5 | NC_003063:1828472 | C>G | EX | ACG>AGG | T>R | ABC | nonsyn |
| Agt\|9 | NC_003063:1831441 | C>T | IG | | | | |
| Agt\|32 | NC_003063:1833023 | A>C | EX | ACT>CCT | T>P | cell | nonsyn |
| Agt\|33 | NC_003063:1834432 | C>T | IG | | | | |
| Agt\|29 | NC_003062:1836785 | A>T | EX | CTC>CAC | L>H | inositol | nonsyn |
| Agt\|16 | NC_003062:1837357 | G>C | EX | TCC>TCG | S>S | inositol | syn |
| Agt\|48 | NC_003063:1848598 | C>A | EX | CTC>CTA | L>L | amino | syn |
| Agt\|10 | NC_003063:1851314 | A>C | EX | TAT>TCT | Y>S | diguanylate | nonsyn |
| Agt\|24 | NC_003062:1884026 | T>A | EX | ATC>TTC | I>F | ABC | nonsyn |
| Agt\|6 | NC_003062:1897405 | C>T | IG | | | | |
| Agt\|39 | NC_003062:1900502 | C>T | EX | GCC>GTC | A>V | hypothetical | nonsyn |

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|---|---|---|---|---|---|---|---|
| Agt\|51 | NC_003062:1902061 | C>T | EX | ACG>ACA | T>T | DNA-directed | syn |
| Agt\|42 | NC_003062:1903363 | T>C | IG | | | | |
| Agt\|14 | NC_003063:1905218 | T>G | IG | | | | |
| Agt\|28 | NC_003062:1910068 | G>A | EX | GGC>GGT | G>G | 50S | syn |
| Agt\|10 | NC_003062:1911466 | C>G | EX | GAG>CAG | E>Q | 30S | nonsyn |
| Agt\|29 | NC_003062:1915392 | G>A | IG | | | | |
| Agt\|42 | NC_003063:1920950 | C>G | EX | CCC>GCC | P>A | hypothetical | nonsyn |
| Agt\|30 | NC_003062:1924559 | T>C | EX | ACC>GCC | T>A | DNA-directed | nonsyn |
| Agt\|47 | NC_003062:1933329 | C>A | EX | GAC>TAC | D>Y | 50S | nonsyn |
| Agt\|22 | NC_003062:1933880 | G>A | EX | CCG>TCG | P>S | 50S | nonsyn |
| Agt\|47 | NC_003063:1934849 | C>T | EX | GCC>GTC | A>V | hypothetical | nonsyn |
| Agt\|10 | NC_003062:1935030 | C>G | IG | | | | |
| Agt\|13 | NC_003062:1935797 | T>C | EX | GAT>GGT | D>G | UDP-glucose | nonsyn |
| Agt\|44 | NC_003063:1936259 | C>G | EX | CGG>CCG | R>P | hypothetical | nonsyn |
| Agt\|10 | NC_003062:1941946 | G>A | EX | CTG>TTG | L>L | cyclopropane-fatty-acyl-phospholipid | syn |
| Agt\|32 | NC_003063:1976371 | A>T | EX | CCT>CCA | P>P | hypothetical | syn |
| Agt\|38 | NC_003062:1988944 | G>A | EX | GAC>GAT | D>D | hypothetical | syn |
| Agt\|42 | NC_003062:1990792 | G>C | EX | CTG>CTC | L>L | hypothetical | syn |
| Agt\|58 | NC_003063:1991393 | C>T | EX | CCT>TCT | P>S | UDP-phosphate | nonsyn |
| Agt\|13 | NC_003063:1993247 | G>T | EX | GCG>TCG | A>S | hypothetical | nonsyn |
| Agt\|21 | NC_003062:1994765 | G>A | EX | CGC>TGC | R>C | acetolactate | nonsyn |
| Agt\|4 | NC_003063:2004467 | A>T | EX | ATC>AAC | I>N | IclR | nonsyn |
| Agt\|7 | NC_003062:2021475 | G>C | EX | ATG>ATC | M>I | DNA | nonsyn |
| Agt\|11 | NC_003062:2023284 | G>A | IG | | | | |
| Agt\|29 | NC_003063:2033942 | G>T | EX | ATC>ATA | I>I | hypothetical | syn |
| Agt\|11 | NC_003063:2034898 | G>T | EX | CTC>CTA | L>L | hypothetical | syn |
| Agt\|41 | NC_003062:2046583 | G>C | EX | GCC>GGC | A>G | UDP-3-0-(3-hydroxymyristoyl) | nonsyn |
| Agt\|26 | NC_003063:2046593 | C>T | IG | | | | |
| Agt\|57 | NC_003062:2047509 | T>C | EX | GCA>GCG | A>A | cell | syn |
| Agt\|11 | NC_003062:2049241 | G>T | EX | CGC>AGC | R>S | cell | nonsyn |
| Agt\|11 | NC_003062:2049246 | C>T | EX | GGC>GAC | G>D | cell | nonsyn |
| Agt\|36 | NC_003063:2052723 | A>C | EX | CTC>CGC | L>R | oxidoreductase | nonsyn |
| Agt\|28 | NC_003063:2054152 | A>G | EX | CTG>CCG | L>P | NADP-dependent | nonsyn |
| Agt\|43 | NC_003062:2060951 | G>A | EX | TCC>TCT | S>S | UDP-N-acetylmuramoyl-L-alanyl-D-glutama | syn |
| Agt\|36 | NC_003062:2080737 | C>A | EX | CTG>ATG | L>M | hypothetical | nonsyn |
| Agt\|5 | NC_003062:2087307 | G>A | IG | | | | |
| Agt\|38 | NC_003062:2096409 | G>A | EX | AGC>AGT | S>S | hypothetical | syn |
| Agt\|15 | NC_003062:2098874 | C>A | EX | CGC>CGA | R>R | hypothetical | syn |
| Agt\|7 | NC_003062:2102147 | T>G | EX | AAA>CAA | K>Q | chromosome | nonsyn |
| Agt\|48 | NC_003062:2109543 | C>A | IG | | | | |
| Agt\|5 | NC_003062:2110339 | C>T | IG | | | | |
| Agt\|42 | NC_003062:2134060 | T>A | EX | GAG>GTG | E>V | hypothetical | nonsyn |
| Agt\|51 | NC_003062:2157870 | A>G | EX | GAT>GAC | D>D | hypothetical | syn |
| Agt\|42 | NC_003062:2158585 | A>C | IG | | | | |
| Agt\|44 | NC_003062:2163412 | T>C | IG | | | | |
| Agt\|40 | NC_003062:2163600 | G>C | IG | | | | |
| Agt\|33 | NC_003062:2176939 | A>G | EX | ACG>GCG | T>A | two | nonsyn |
| Agt\|39 | NC_003062:2202170 | G>A | EX | GTG>GTA | V>V | ABC | syn |
| Agt\|43 | NC_003062:2216799 | C>G | EX | CGG>CCG | R>P | hypothetical | nonsyn |
| Agt\|42 | NC_003062:2221661 | G>A | EX | TCA>TTA | S>L | poly(A) | nonsyn |
| Agt\|34 | NC_003062:2225834 | C>T | EX | CCG>TCG | P>S | hypothetical | nonsyn |
| Agt\|6 | NC_003062:2233382 | G>A | EX | CCC>TCC | P>S | acetyltransferase | nonsyn |
| Agt\|10 | NC_003062:2274061 | C>A | IG | | | | |
| Agt\|13 | NC_003062:2276897 | C>T | EX | GCC>ACC | A>T | hypothetical | nonsyn |
| Agt\|30 | NC_003062:2278523 | G>A | EX | GAA>AAA | E>K | hypothetical | nonsyn |
| Agt\|26 | NC_003062:2339410 | A>C | EX | GTC>GGC | V>G | ABC | nonsyn |
| Agt\|59 | NC_003062:2343265 | G>T | EX | GAT>TAT | D>Y | Hypothetical | nonsyn |
| Agt\|2 | NC_003062:2405531 | G>A | EX | CTG>CTA | L>L | two | syn |
| Agt\|17 | NC_003062:2416269 | T>C | IG | | | | |

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|---|---|---|---|---|---|---|---|---|
| Agt\|19 | NC_003062:2420743 | G>A | EX | TCG>TCA | S>S | hypothetical | syn | |
| Agt\|37 | NC_003062:2422428 | G>A | IG | | | | | |
| Agt\|15 | NC_003062:2446288 | T>C | IG | | | | | |
| Agt\|20 | NC_003062:2449521 | G>A | EX | GGC>AGC | G>S | HlyD | nonsyn | |
| Agt\|42 | NC_003062:2465510 | C>G | EX | GTC>GTG | V>V | NAD(P)+ | syn | |
| Agt\|55 | NC_003062:2488439 | G>A | EX | TGG>TAG | W>* | dipeptidase | nonsyn | |
| Agt\|37 | NC_003062:2512099 | C>T | EX | CTT>TTT | L>F | N-methylproline | nonsyn | |
| Agt\|58 | NC_003062:2534359 | G>A | EX | GAA>AAA | E>K | ABC | nonsyn | |
| Agt\|36 | NC_003062:2540528 | C>T | EX | TGG>TGA | W>* | thiamine | nonsyn | |
| Agt\|28 | NC_003062:2580720 | T>G | EX | ATG>CTG | M>L | ABC | nonsyn | |
| Agt\|4 | NC_003062:2606662 | C>T | EX | GAG>AAG | E>K | ATP | nonsyn | |
| Agt\|16 | NC_003062:2608924 | G>A | EX | CGC>TGC | R>C | ATP | nonsyn | |
| Agt\|24 | NC_003062:2643419 | C>T | EX | CGA>TGA | R>* | hypothetical | nonsyn | |
| Agt\|21 | NC_003062:2666987 | C>T | IG | | | | | |
| Agt\|43 | NC_003062:2696055 | T>C | EX | GAA>GGA | E>G | hypothetical | nonsyn | |
| Agt\|44 | NC_003062:2701803 | C>T | EX | CCG>CCA | P>P | ABC | syn | |
| Agt\|17 | NC_003062:2734240 | C>T | EX | GCA>ACA | A>T | oxidoredutase | nonsyn | |
| Agt\|47 | NC_003062:2737023 | T>C | EX | ATA>ACA | I>T | oxidoreductase | nonsyn | |
| Agt\|41 | NC_003062:2739373 | C>T | EX | ATC>ATT | I>I | hypothetical | syn | |
| Agt\|9 | NC_003062:2766294 | G>C | IG | | | | | |
| Agt\|51 | NC_003062:2794483 | G>C | EX | GGC>GGG | G>G | hypothetical | syn | |
| Agt\|24 | NC_003062:2802078 | C>T | EX | GCT>ACT | A>T | precorrin-3B | nonsyn | |
| Agt\|16 | NC_003062:2802228 | T>C | EX | TGA>TGG | *>W | precorrin-2 | nonsyn | |
| Agt\|10 | NC_003062:2820870 | C>T | EX | CAG>CAA | Q>Q | ABC | syn | |
| Agt\|10 | NC_003062:2823898 | G>A | IG | | | | | |
| Agt\|59 | NC_003062:2825078 | G>A | EX | GGC>AGC | G>S | D-galactarate | nonsyn | |
| Agt\|25 | NC_003062:2837494 | C>G | EX | CGG>CCG | R>P | tRNA | nonsyn | |
| Bs\|65 | NZ_CM000488:1807 | T>C | IG | | | | | |
| Bs\|65 | NZ_CM000488:1810 | G>A | IG | | | | | |
| Bs\|57 | NZ_CM000488:2854 | T>C | EX | TCG>CCG | S>P | DNA | nonsyn | |
| Bs\|3 | NZ_CM000488:3701 | A>C | EX | AAA>CAA | K>Q | recombination | nonsyn | seq |
| Bs\|54 | NZ_CM000488:4731 | G>A | IG | | | | | seq |
| Bs\|69 | plasmid:18786 | G>A | IG | | | | | |
| Bs\|52 | plasmid:37642 | T>A | IG | | | | | |
| Bs\|68 | NZ_CM000488:52841 | C>T | EX | GGC>GGT | G>G | hypothetical | syn | |
| Bs\|24 | NZ_CM000488:67598 | A>G | EX | GAA>GGA | E>G | hypothetical | nonsyn | |
| Bs\|32 | plasmid:71964 | G>T | IG | | | | | |
| Bs\|40 | NZ_CM000488:75323 | A>G | EX | ACA>GCA | T>A | hypothetical | nonsyn | |
| Bs\|71 | NZ_CM000488:75492 | G>A | EX | AGC>AAC | S>N | hypothetical | nonsyn | |
| Bs\|2 | plasmid:77327 | A>C | IG | | | | | |
| Bs\|69 | NZ_CM000488:109377 | T>C | EX | GTT>GCT | V>A | hypothetical | nonsyn | |
| Bs\|8 | NZ_CM000488:120051 | G>C | IG | | | | | |
| Bs\|55 | NZ_CM000488:120607 | C>T | EX | GCT>GTT | A>V | 50S | nonsyn | seq |
| Bs\|30 | NZ_CM000488:143224 | C>T | EX | GCT>GTT | A>V | 50S | nonsyn | |
| Bs\|8 | NZ_CM000488:254839 | T>C | IG | | | | | |
| Bs\|17 | NZ_CM000488:295122 | T>G | EX | TAT>TCT | Y>S | hypothetical | nonsyn | seq |
| Bs\|40 | NZ_CM000488:315244 | C>T | EX | CAG>TAG | Q>* | hypothetical | nonsyn | seq |
| Bs\|24 | NZ_CM000488:319694 | C>T | EX | CGG>CGA | R>R | hypothetical | syn | |
| Bs\|48 | NZ_CM000488:340482 | C>T | EX | GCG>ACG | A>T | hypothetical | nonsyn | |
| Bs\|63 | NZ_CM000488:435548 | C>T | IG | | | | | |
| Bs\|45 | NZ_CM000488:442405 | C>T | EX | GCG>GTG | A>V | 4-aminobutyrate | nonsyn | |
| Bs\|43 | NZ_CM000488:479685 | A>G | EX | ATC>GTC | I>V | hypothetical | nonsyn | |
| Bs\|11 | NZ_CM000488:486200 | C>T | EX | CAA>TAA | Q>* | hypothetical | nonsyn | |
| Bs\|48 | NZ_CM000488:498298 | C>A | EX | AAC>AAA | N>K | two-component | nonsyn | |
| Bs\|45 | NZ_CM000488:563093 | T>C | IG | | | | | |
| Bs\|45 | NZ_CM000488:572257 | A>G | EX | ATA>GTA | I>V | hypothetical | nonsyn | |
| Bs\|45 | NZ_CM000488:582286 | T>C | EX | TAC>TGC | Y>C | hypothetical | nonsyn | |
| Bs\|31 | NZ_CM000488:600726 | A>G | EX | ATT>GTT | I>V | hypothetical | nonsyn | |
| Bs\|41 | NZ_CM000488:604739 | C>A | EX | GGG>TGG | G>W | ATP-binding | nonsyn | |

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|---|---|---|---|---|---|---|---|---|
| Bs\|1 | NZ_CM000488:625853 | A>G | IG | | | | | seq |
| Bs\|30 | NZ_CM000488:634373 | G>A | IG | | | | | |
| Bs\|40 | NZ_CM000488:634589 | A>G | IG | | | | | |
| Bs\|71 | NZ_CM000488:646830 | C>T | EX | TTC>TTT | F>F | redox-sensing | syn | |
| Bs\|38 | NZ_CM000488:668109 | A>G | EX | GAA>GGA | E>G | H+-symporter | nonsyn | |
| Bs\|44 | NZ_CM000488:680633 | A>G | IG | | | | | |
| Bs\|45 | NZ_CM000488:696305 | G>A | IG | | | | | |
| Bs\|7 | NZ_CM000488:706589 | A>G | EX | TAT>TGT | Y>C | phosphoribosylaminoimidazole | nonsyn | |
| Bs\|24 | NZ_CM000488:709521 | T>A | EX | CTC>CAC | L>H | phosphoribosylamine--glycine | nonsyn | seq |
| Bs\|62 | NZ_CM000488:710269 | G>A | EX | ATG>ATA | M>I | phosphoribosylamine--glycine | nonsyn | |
| Bs\|15 | NZ_CM000488:715395 | T>G | EX | TAT>TAG | Y>* | hypothetical | nonsyn | |
| Bs\|17 | NZ_CM000488:741098 | C>T | EX | GCT>GTT | A>V | hypothetical | nonsyn | |
| Bs\|36 | NZ_CM000488:766349 | G>A | EX | GGA>AGA | G>R | hypothetical | nonsyn | |
| Bs\|45 | NZ_CM000488:772453 | T>C | EX | GTC>GCC | V>A | hypothetical | nonsyn | |
| Bs\|8 | NZ_CM000488:786981 | G>T | IG | | | | | |
| Bs\|45 | NZ_CM000488:800565 | A>T | EX | GAA>GTA | E>V | hypothetical | nonsyn | |
| Bs\|30 | NZ_CM000488:806166 | T>C | IG | | | | | |
| Bs\|24 | NZ_CM000488:806593 | C>T | EX | TTC>TTT | F>F | hypothetical | syn | |
| Bs\|19 | NZ_CM000488:849567 | G>A | IG | | | | | |
| Bs\|44 | NZ_CM000488:851409 | C>T | EX | CTA>TTA | L>L | trehalose-6-phosphate | syn | |
| Bs\|60 | NZ_CM000488:858089 | C>T | EX | GAA>AAA | E>K | bifunctional | nonsyn | |
| Bs\|45 | NZ_CM000488:859822 | T>C | EX | ACA>GCA | T>A | hypothetical | nonsyn | |
| Bs\|62 | NZ_CM000488:905413 | A>G | EX | AAA>GAA | K>E | hypothetical | nonsyn | |
| Bs\|69 | NZ_CM000488:923045 | A>G | EX | GAG>GGG | E>G | hypothetical | nonsyn | |
| Bs\|69 | NZ_CM000488:927180 | G>A | EX | GCA>ACA | A>T | hypothetical | nonsyn | |
| Bs\|45 | NZ_CM000488:945566 | A>G | EX | CAC>CGC | H>R | hypothetical | nonsyn | |
| Bs\|55 | NZ_CM000488:951042 | T>C | IG | | | | | |
| Bs\|41 | NZ_CM000488:958925 | C>A | EX | CGC>CTC | R>L | vegetative | nonsyn | |
| Bs\|63 | NZ_CM000488:970888 | C>T | EX | GCA>GTA | A>V | hypothetical | nonsyn | |
| Bs\|68 | NZ_CM000488:980449 | C>T | EX | TCT>TTT | S>F | hypothetical | nonsyn | |
| Bs\|40 | NZ_CM000488:996728 | T>A | EX | CTG>CAG | L>Q | hypothetical | nonsyn | |
| Bs\|36 | NZ_CM000488:1005692 | C>T | EX | CGC>CGT | R>R | glycerol-3-phosphate | syn | |
| Bs\|68 | NZ_CM000488:1018011 | G>A | IG | | | | | |
| Bs\|3 | NZ_CM000488:1020218 | C>G | EX | ATG>ATC | M>I | LysR | nonsyn | seq |
| Bs\|65 | NZ_CM000488:1036955 | C>A | EX | GTT>TTT | V>F | camphor | nonsyn | |
| Bs\|57 | NZ_CM000488:1040572 | T>C | EX | CAC>CGC | H>R | hypothetical | nonsyn | |
| Bs\|19 | NZ_CM000488:1065041 | A>T | EX | AAA>AAT | K>N | hypothetical | nonsyn | seq |
| Bs\|35 | NZ_CM000488:1069888 | A>G | EX | GAT>GAC | D>D | molecular | syn | |
| Bs\|2 | NZ_CM000488:1084215 | T>C | EX | GCT>GCC | A>A | penicillin-binding | syn | |
| Bs\|8 | NZ_CM000488:1089001 | A>G | IG | | | | | |
| Bs\|4 | NZ_CM000488:1100489 | A>C | EX | ATC>CTC | I>L | acyl-CoA | nonsyn | seq |
| Bs\|22 | NZ_CM000488:1105144 | G>A | IG | | | | | |
| Bs\|36 | NZ_CM000488:1105183 | C>T | IG | | | | | |
| Bs\|37 | NZ_CM000488:1118207 | A>G | EX | AAG>AGG | K>R | hypothetical | nonsyn | |
| Bs\|7 | NZ_CM000488:1143110 | T>C | EX | CCT>CCC | P>P | exonuclease | syn | seq |
| Bs\|45 | NZ_CM000488:1198656 | C>T | EX | CAT>TAT | H>Y | carbamoyl | nonsyn | |
| Bs\|46 | NZ_CM000488:1219615 | C>T | EX | GCT>GTT | A>V | oligopeptide | nonsyn | |
| Bs\|62 | NZ_CM000488:1224266 | G>A | EX | GGC>GAC | G>D | oligopeptide | nonsyn | |
| Bs\|32 | NZ_CM000488:1252649 | G>A | IG | | | | | |
| Bs\|17 | NZ_CM000488:1257260 | C>T | EX | AGG>AAG | R>K | hypothetical | nonsyn | |
| Bs\|15 | NZ_CM000488:1279138 | A>C | EX | TGG>GGG | W>G | heme | nonsyn | seq |
| Bs\|44 | NZ_CM000488:1279814 | A>G | IG | | | | | |
| Bs\|50 | NZ_CM000488:1282818 | C>T | EX | CGG>TGG | R>W | hypothetical | nonsyn | |
| Bs\|54 | NZ_CM000488:1285484 | G>T | EX | ATG>ATT | M>I | hypothetical | nonsyn | |
| Bs\|31 | NZ_CM000488:1293747 | A>G | EX | ACA>GCA | T>A | uroporphyrinogen-III | nonsyn | |
| Bs\|55 | NZ_CM000488:1295550 | A>G | EX | ATA>ACA | I>T | hypothetical | nonsyn | |
| Bs\|57 | NZ_CM000488:1308713 | T>C | EX | AGT>AGC | S>S | LacI | syn | |
| Bs\|45 | NZ_CM000488:1317936 | C>T | EX | GCC>ACC | A>T | hypothetical | nonsyn | |
| Bs\|57 | NZ_CM000488:1320449 | T>C | IG | | | | | seq |

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|---|---|---|---|---|---|---|---|---|
| Bs\|1 | NZ_CM000488:1327052 | T>A | EX | TTT>TAT | F>Y | hypothetical | nonsyn | seq |
| Bs\|26 | NZ_CM000488:1328269 | A>G | EX | GGA>GGG | G>G | hypothetical | syn | |
| Bs\|15 | NZ_CM000488:1334273 | G>A | IG | | | | | |
| Bs\|28 | NZ_CM000488:1351919 | C>T | EX | GCC>ACC | A>T | hypothetical | nonsyn | |
| Bs\|14 | NZ_CM000488:1365167 | G>T | IG | | | | | |
| Bs\|32 | NZ_CM000488:1386408 | G>T | IG | | | | | |
| Bs\|17 | NZ_CM000488:1394780 | A>C | EX | TAA>TCA | *>S | hypothetical | nonsyn | |
| Bs\|68 | NZ_CM000488:1395164 | G>A | EX | TCG>TCA | S>S | hypothetical | syn | |
| Bs\|38 | NZ_CM000488:1409406 | C>T | EX | GCC>GTC | A>V | hypothetical | nonsyn | seq |
| Bs\|53 | NZ_CM000488:1409851 | A>G | IG | | | | | |
| Bs\|22 | NZ_CM000488:1410578 | C>T | EX | GTC>GTT | V>V | hypothetical | syn | |
| Bs\|7 | NZ_CM000488:1418709 | T>C | EX | TCT>CCT | S>P | two-component | nonsyn | |
| Bs\|63 | NZ_CM000488:1461920 | G>A | EX | GAA>AAA | E>K | spore | nonsyn | |
| Bs\|2 | NZ_CM000488:1499082 | A>G | IG | | | | | seq |
| Bs\|45 | NZ_CM000488:1502040 | T>A | EX | TAT>AAT | Y>N | hypothetical | nonsyn | seq |
| Bs\|68 | NZ_CM000488:1509006 | A>T | EX | GAA>GTA | E>V | phosphotransferase | nonsyn | |
| Bs\|35 | NZ_CM000488:1511575 | A>G | IG | | | | | |
| Bs\|24 | NZ_CM000488:1538980 | T>C | IG | | | | | |
| Bs\|46 | NZ_CM000488:1574667 | C>T | EX | GCG>GTG | A>V | hypothetical | nonsyn | |
| Bs\|54 | NZ_CM000488:1576391 | G>A | EX | GAC>GAT | D>D | hypothetical | syn | |
| Bs\|52 | NZ_CM000488:1599437 | C>A | EX | GGC>GGA | G>G | bacillopeptidase | syn | |
| Bs\|27 | NZ_CM000488:1619202 | G>C | EX | GTG>GTC | V>V | uracil | syn | |
| Bs\|51 | NZ_CM000488:1630251 | G>C | EX | GGC>GCC | G>A | phosphoadenosine | nonsyn | |
| Bs\|51 | NZ_CM000488:1630255 | T>A | EX | TGT>TGA | C>* | phosphoadenosine | nonsyn | |
| Bs\|51 | NZ_CM000488:1630266 | C>A | EX | ACT>AAT | T>N | phosphoadenosine | nonsyn | |
| Bs\|51 | NZ_CM000488:1630267 | T>A | EX | ACT>ACA | T>T | phosphoadenosine | syn | |
| Bs\|7 | NZ_CM000488:1645316 | C>T | EX | CAT>TAT | H>Y | primosome | nonsyn | |
| Bs\|15 | NZ_CM000488:1646988 | A>G | EX | AAC>AGC | N>S | methionyl-tRNA | nonsyn | seq |
| Bs\|43 | NZ_CM000488:1670591 | A>G | EX | GTT>GCT | V>A | hypothetical | nonsyn | |
| Bs\|27 | NZ_CM000488:1681434 | G>A | EX | GGA>AGA | G>R | succinyl-CoA | nonsyn | |
| Bs\|15 | NZ_CM000488:1682464 | A>C | EX | CAA>CCA | Q>P | DNA | nonsyn | |
| Bs\|1 | NZ_CM000488:1692793 | A>T | EX | AGC>TGC | S>C | flagellar | nonsyn | seq |
| Bs\|54 | NZ_CM000488:1713940 | C>T | EX | ACT>ATT | T>I | two-component | nonsyn | |
| Bs\|69 | NZ_CM000488:1717754 | A>G | EX | GTA>GTG | V>V | 30S | syn | |
| Bs\|19 | NZ_CM000488:1728130 | A>G | EX | AAA>GAA | K>E | DNA | nonsyn | |
| Bs\|17 | NZ_CM000488:1752456 | A>G | EX | ACA>GCA | T>A | DNA | nonsyn | |
| Bs\|40 | NZ_CM000488:1759170 | G>T | EX | GGG>GGT | G>G | 3-ketoacyl-(acyl-carrier-protein) | syn | |
| Bs\|46 | NZ_CM000488:1763811 | T>G | IG | | | | | seq |
| Bs\|40 | NZ_CM000488:1774095 | T>C | IG | | | | | |
| Bs\|60 | NZ_CM000488:1781664 | T>C | EX | GTG>GCG | V>A | transcriptional | nonsyn | seq |
| Bs\|48 | NZ_CM000488:1784118 | C>T | IG | | | | | |
| Bs\|49 | NZ_CM000488:1788828 | C>T | EX | CAT>TAT | H>Y | polyketide | nonsyn | |
| Bs\|54 | NZ_CM000488:1796764 | A>G | EX | ACA>GCA | T>A | polyketide | nonsyn | |
| Bs\|41 | NZ_CM000488:1804735 | C>T | EX | CAA>TAA | Q>* | polyketide | nonsyn | |
| Bs\|49 | NZ_CM000488:1816086 | T>G | EX | GTC>GGC | V>G | polyketide | nonsyn | |
| Bs\|17 | NZ_CM000488:1833150 | T>C | EX | GTT>GCT | V>A | polyketide | nonsyn | |
| Bs\|20 | NZ_CM000488:1856383 | A>G | EX | CCA>CCG | P>P | polyketide | syn | |
| Bs\|36 | NZ_CM000488:1864188 | C>T | EX | GCT>ACT | A>T | multidrug | nonsyn | |
| Bs\|48 | NZ_CM000488:1864847 | C>T | EX | GGG>AGG | G>R | hypothetical | nonsyn | |
| Bs\|13 | NZ_CM000488:1875641 | A>G | IG | | | | | |
| Bs\|3 | NZ_CM000488:1887763 | A>T | EX | TTA>TTT | L>F | H+-symporter | nonsyn | seq |
| Bs\|3 | NZ_CM000488:1900124 | C>T | IG | | | | | seq |
| Bs\|31 | NZ_CM000488:1901359 | C>T | IG | | | | | |
| Bs\|1 | NZ_CM000488:1904003 | C>A | IG | | | | | seq |
| Bs\|54 | NZ_CM000488:1915494 | A>G | EX | TCT>CCT | S>P | hypothetical | nonsyn | |
| Bs\|24 | NZ_CM000488:1915729 | A>G | IG | | | | | seq |
| Bs\|37 | NZ_CM000488:1919396 | G>C | EX | GGA>GCA | G>A | transketolase | nonsyn | |
| Bs\|1 | NZ_CM000488:1925714 | T>A | IG | | | | | seq |
| Bs\|49 | NZ_CM000488:1930701 | G>A | IG | | | | | |

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|---|---|---|---|---|---|---|---|---|
| Bs\|37 | NZ_CM000488:1934289 | G>A | EX | GGG>AGG | G>R | DNA | nonsyn | seq |
| Bs\|2 | NZ_CM000488:1936697 | T>G | EX | GAT>GAG | D>E | DNA | nonsyn | seq |
| Bs\|55 | NZ_CM000488:1945157 | C>G | IG | | | | | |
| Bs\|45 | NZ_CM000488:1947170 | T>C | EX | TTC>TCC | F>S | hypothetical | nonsyn | |
| Bs\|30 | NZ_CM000488:1954548 | G>C | EX | CCC>CCG | P>P | acyl-CoA | syn | |
| Bs\|55 | NZ_CM000488:1955568 | C>A | EX | GCA>TCA | A>S | hypothetical | nonsyn | seq |
| Bs\|8 | NZ_CM000488:1964164 | C>T | EX | CCG>CCA | P>P | plipastatin | syn | |
| Bs\|74 | NZ_CM000488:1977750 | G>A | EX | CTT>TTT | L>F | plipastatin | nonsyn | |
| Bs\|57 | NZ_CM000488:1983591 | A>G | EX | ATA>ACA | I>T | plipastatin | nonsyn | |
| Bs\|63 | NZ_CM000488:1992969 | A>G | EX | ATC>ACC | I>T | plipastatin | nonsyn | |
| Bs\|2 | NZ_CM000488:1997445 | T>C | IG | | | | | seq |
| Bs\|32 | NZ_CM000488:1998593 | C>T | EX | GAT>AAT | D>N | penicillin-binding | nonsyn | |
| Bs\|49 | NZ_CM000488:2003425 | T>C | IG | | | | | |
| Bs\|54 | NZ_CM000488:2009251 | T>C | EX | CAG>CGG | Q>R | glutamate | nonsyn | |
| Bs\|4 | NZ_CM000488:2015305 | C>T | EX | GCT>ACT | A>T | gamma-glutamyl | nonsyn | seq |
| Bs\|46 | NZ_CM000488:2035993 | C>T | IG | | | | | |
| Bs\|55 | NZ_CM000488:2036065 | C>T | IG | | | | | seq |
| Bs\|69 | NZ_CM000488:2050660 | G>A | EX | GTC>GTT | V>V | phosphoenolpyruvate | syn | seq |
| Bs\|32 | NZ_CM000488:2054393 | A>C | EX | TTA>TGA | L>* | endo-1,4-beta-xylanase | nonsyn | seq |
| Bs\|57 | NZ_CM000488:2054488 | A>G | IG | | | | | |
| Bs\|14 | NZ_CM000488:2058851 | T>C | IG | | | | | |
| Bs\|65 | NZ_CM000488:2081564 | A>T | EX | TAT>AAT | Y>N | hypothetical | nonsyn | |
| Bs\|54 | NZ_CM000488:2098288 | A>T | EX | ATC>TTC | I>F | hypothetical | nonsyn | |
| Bs\|22 | NZ_CM000488:2103353 | G>A | EX | GCT>ACT | A>T | superoxide | nonsyn | |
| Bs\|55 | NZ_CM000488:2104440 | G>A | EX | CGA>TGA | R>* | hypothetical | nonsyn | |
| Bs\|57 | NZ_CM000488:2133034 | T>G | EX | GCT>GCG | A>A | hypothetical | syn | |
| Bs\|57 | NZ_CM000488:2134117 | G>A | EX | GCT>GTT | A>V | hypothetical | nonsyn | |
| Bs\|14 | NZ_CM000488:2141260 | A>G | EX | TGG>CGG | W>R | acetylornithine | nonsyn | |
| Bs\|15 | NZ_CM000488:2143032 | T>C | EX | GCA>GCG | A>A | hypothetical | syn | |
| Bs\|14 | NZ_CM000488:2151223 | A>G | IG | | | | | seq |
| Bs\|40 | NZ_CM000488:2174720 | A>G | IG | | | | | |
| Bs\|22 | NZ_CM000488:2210135 | G>A | EX | ACC>ATC | T>I | hypothetical | nonsyn | |
| Bs\|38 | NZ_CM000488:2224366 | T>A | IG | | | | | |
| Bs\|2 | NZ_CM000488:2224432 | C>T | IG | | | | | seq |
| Bs\|37 | NZ_CM000488:2243177 | C>T | EX | GCC>GTC | A>V | hypothetical | nonsyn | |
| Bs\|65 | NZ_CM000488:2246794 | C>T | IG | | | | | |
| Bs\|24 | NZ_CM000488:2250659 | C>T | EX | AGC>AGT | S>S | hypothetical | syn | seq |
| Bs\|45 | NZ_CM000488:2252368 | A>G | EX | CAG>CGG | Q>R | hypothetical | nonsyn | |
| Bs\|54 | NZ_CM000488:2256497 | G>A | EX | TGG>TAG | W>* | hypothetical | nonsyn | |
| Bs\|65 | NZ_CM000488:2276623 | T>C | IG | | | | | |
| Bs\|65 | NZ_CM000488:2303696 | T>C | EX | GAA>GGA | E>G | hypothetical | nonsyn | |
| Bs\|31 | NZ_CM000488:2316172 | G>A | EX | CCG>CTG | P>L | naringenin-chalcone | nonsyn | |
| Bs\|6 | NZ_CM000488:2364666 | A>G | EX | TTA>TCA | L>S | hypothetical | nonsyn | seq |
| Bs\|45 | NZ_CM000488:2383352 | T>C | EX | ATG>GTG | M>V | heptaprenyl | nonsyn | |
| Bs\|11 | NZ_CM000488:2396273 | C>T | EX | GAA>AAA | E>K | hypothetical | nonsyn | |
| Bs\|26 | NZ_CM000488:2403866 | A>G | EX | TGG>CGG | W>R | hypothetical | nonsyn | |
| Bs\|55 | NZ_CM000488:2409337 | G>A | EX | CCG>TCG | P>S | hypothetical | nonsyn | seq |
| Bs\|49 | NZ_CM000488:2415148 | C>T | EX | CGG>CAG | R>Q | two-component | nonsyn | |
| Bs\|20 | NZ_CM000488:2422476 | G>A | EX | GCC>GTC | A>V | spore | nonsyn | |
| Bs\|1 | NZ_CM000488:2422749 | G>A | EX | CCG>TCG | P>S | D-alanyl-D-alanine | nonsyn | seq |
| Bs\|17 | NZ_CM000488:2441354 | A>G | EX | TGG>CGG | W>R | sporulation | nonsyn | |
| Bs\|11 | NZ_CM000488:2451304 | G>A | EX | CCG>CTG | P>L | malolactic | nonsyn | |
| Bs\|71 | NZ_CM000488:2455294 | T>C | EX | TAC>TGC | Y>C | L-asparaginase | nonsyn | |
| Bs\|48 | NZ_CM000488:2477618 | T>C | EX | AAG>GAG | K>E | ribonuclease | nonsyn | |
| Bs\|71 | NZ_CM000488:2480215 | G>A | EX | GCG>GTG | A>V | 6-phosphogluconate | nonsyn | |
| Bs\|15 | NZ_CM000488:2486374 | A>G | EX | TTA>TCA | L>S | hypothetical | nonsyn | |
| Bs\|38 | NZ_CM000488:2488616 | A>C | EX | ATG>AGG | M>R | hypothetical | nonsyn | |
| Bs\|3 | NZ_CM000488:2491962 | C>T | IG | | | | | |
| Bs\|13 | NZ_CM000488:2493177 | G>A | EX | GGA>GAA | G>E | multidrug | nonsyn | |

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|---|---|---|---|---|---|---|---|---|
| Bs\|38 | NZ_CM000488:2493385 | T>A | EX | ATT>ATA | I>I | multidrug | syn | |
| Bs\|17 | NZ_CM000488:2505101 | G>T | EX | CCG>ACG | P>T | transcriptional | nonsyn | |
| Bs\|31 | NZ_CM000488:2514114 | T>C | IG | | | | | |
| Bs\|4 | NZ_CM000488:2521363 | A>C | EX | CTT>CGT | L>R | DNA | nonsyn | seq |
| Bs\|44 | NZ_CM000488:2536274 | G>A | EX | GCC>GCT | A>A | mutants | syn | |
| Bs\|37 | NZ_CM000488:2547916 | C>T | EX | TGG>TGA | W>* | glycine | nonsyn | |
| Bs\|65 | NZ_CM000488:2552669 | A>T | EX | CTT>CAT | L>H | translocation-dependent | nonsyn | |
| Bs\|26 | NZ_CM000488:2553444 | T>G | EX | ATT>CTT | I>L | type | nonsyn | seq |
| Bs\|22 | NZ_CM000488:2554482 | T>C | IG | | | | | |
| Bs\|32 | NZ_CM000488:2568229 | T>C | EX | ACC>GCC | T>A | hypothetical | nonsyn | seq |
| Bs\|14 | NZ_CM000488:2592655 | C>T | EX | CTG>CTA | L>L | endonuclease | syn | |
| Bs\|49 | NZ_CM000488:2602147 | T>C | EX | ATA>ATG | I>M | DNA | nonsyn | |
| Bs\|45 | NZ_CM000488:2604517 | A>T | EX | GTG>GAG | V>E | hypothetical | nonsyn | |
| Bs\|27 | NZ_CM000488:2611365 | A>G | EX | GTT>GTC | V>V | putative | syn | |
| Bs\|69 | NZ_CM000488:2627094 | T>C | EX | GCA>GCG | A>A | class | syn | |
| Bs\|8 | NZ_CM000488:2632687 | A>C | EX | AGT>AGG | S>R | required | nonsyn | |
| Bs\|60 | NZ_CM000488:2633074 | G>A | EX | CAC>CAT | H>H | required | syn | |
| Bs\|11 | NZ_CM000488:2634837 | T>C | IG | | | | | |
| Bs\|63 | NZ_CM000488:2660640 | T>G | EX | TCC>GCC | S>A | hypothetical | nonsyn | |
| Bs\|7 | NZ_CM000488:2672636 | G>A | EX | AGC>AGT | S>S | hypothetical | syn | |
| Bs\|49 | NZ_CM000488:2687116 | A>C | EX | AAT>AAG | N>K | hypothetical | nonsyn | seq |
| Bs\|45 | NZ_CM000488:2690431 | T>C | EX | AAA>GAA | K>E | hypothetical | nonsyn | |
| Bs\|48 | NZ_CM000488:2715058 | A>C | EX | CTG>CGG | L>R | hypothetical | nonsyn | |
| Bs\|20 | NZ_CM000488:2725031 | G>A | IG | | | | | |
| Bs\|35 | NZ_CM000488:2738566 | A>G | IG | | | | | |
| Bs\|7 | NZ_CM000488:2741608 | A>C | EX | TTA>GTA | L>V | RNA | nonsyn | |
| Bs\|32 | NZ_CM000488:2746214 | T>C | EX | GTG>GCG | V>A | hypothetical | nonsyn | |
| Bs\|26 | NZ_CM000488:2762817 | T>G | EX | ACC>CCC | T>P | NifA/NtrC | nonsyn | |
| Bs\|22 | NZ_CM000488:2773493 | G>A | EX | GCA>GTA | A>V | hypothetical | nonsyn | seq |
| Bs\|38 | NZ_CM000488:2786088 | T>C | EX | AAA>GAA | K>E | hypothetical | nonsyn | |
| Bs\|20 | NZ_CM000488:2798615 | T>C | EX | AAA>GAA | K>E | alanyl-tRNA | nonsyn | |
| Bs\|26 | NZ_CM000488:2839854 | C>A | EX | TTC>TTA | F>L | YrzF | nonsyn | |
| Bs\|6 | NZ_CM000488:2848696 | T>C | IG | | | | | seq |
| Bs\|54 | NZ_CM000488:2856726 | T>C | EX | CAG>CGG | Q>R | inhibition | nonsyn | |
| Bs\|49 | NZ_CM000488:2894422 | T>C | EX | GCA>GCG | A>A | acetolactate | syn | |
| Bs\|69 | NZ_CM000488:2913378 | T>C | EX | GAA>GGA | E>G | alpha-L-arabinosidase | nonsyn | |
| Bs\|7 | NZ_CM000488:2916561 | C>T | EX | GCG>GCA | A>A | enoyl-CoA | syn | |
| Bs\|7 | NZ_CM000488:2924745 | T>C | EX | CAC>CGC | H>R | hypothetical | nonsyn | |
| Bs\|52 | NZ_CM000488:2934603 | C>T | EX | CTC>CTT | L>L | hypothetical | syn | |
| Bs\|55 | NZ_CM000488:2942235 | G>A | EX | CCG>TCG | P>S | arabinose | nonsyn | |
| Bs\|30 | NZ_CM000488:2943679 | T>C | EX | GAA>GGA | E>G | arabinose | nonsyn | |
| Bs\|60 | NZ_CM000488:2959963 | T>C | EX | CAC>CGC | H>R | threonyl-tRNA | nonsyn | |
| Bs\|35 | NZ_CM000488:2963717 | T>C | EX | GAA>GGA | E>G | membrane | nonsyn | |
| Bs\|30 | NZ_CM000488:2975894 | G>A | EX | CCG>CTG | P>L | two-component | nonsyn | |
| Bs\|7 | NZ_CM000488:2976801 | G>A | EX | CGC>TGC | R>C | two-component | nonsyn | |
| Bs\|62 | NZ_CM000488:2982646 | T>C | EX | CTG>CCG | L>P | hypothetical | nonsyn | |
| Bs\|51 | NZ_CM000488:2987660 | A>G | EX | CTA>CCA | L>P | acetyl-CoA | nonsyn | |
| Bs\|45 | NZ_CM000488:2990888 | A>G | EX | TTT>TTC | F>F | DNA | syn | |
| Bs\|57 | NZ_CM000488:3001983 | A>C | EX | GTT>GGT | V>G | hypothetical | nonsyn | |
| Bs\|17 | NZ_CM000488:3014116 | C>T | IG | | | | | |
| Bs\|17 | NZ_CM000488:3014117 | A>T | IG | | | | | |
| Bs\|40 | NZ_CM000488:3021499 | C>T | EX | AGC>AAC | S>N | hypothetical | nonsyn | |
| Bs\|52 | NZ_CM000488:3034470 | T>C | IG | | | | | |
| Bs\|41 | NZ_CM000488:3046432 | T>C | EX | TTA>TTG | L>L | hypothetical | syn | |
| Bs\|60 | NZ_CM000488:3046936 | T>C | EX | CTA>CTG | L>L | hypothetical | syn | seq |
| Bs\|2 | NZ_CM000488:3049575 | C>T | IG | | | | | |
| Bs\|1 | NZ_CM000488:3057130 | G>A | EX | AGC>AGT | S>S | malate | syn | seq |
| Bs\|63 | NZ_CM000488:3058144 | G>T | EX | TGC>TGA | C>* | hypothetical | nonsyn | |
| Bs\|43 | NZ_CM000488:3062178 | G>A | EX | ATC>ATT | I>I | pullulanase | syn | |

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|---|---|---|---|---|---|---|---|---|
| Bs\|46 | NZ_CM000488:3071818 | T>G | IG | | | | | seq |
| Bs\|52 | NZ_CM000488:3082500 | A>T | EX | TAC>TTC | Y>F | hypothetical | nonsyn | |
| Bs\|26 | NZ_CM000488:3085315 | G>A | EX | CCG>CTG | P>L | hypothetical | nonsyn | |
| Bs\|2 | NZ_CM000488:3086881 | A>G | EX | TTT>TTC | F>F | hypothetical | syn | seq |
| Bs\|48 | NZ_CM000488:3090224 | C>A | EX | GGC>TGC | G>C | biotin | nonsyn | |
| Bs\|62 | NZ_CM000488:3094539 | A>G | IG | | | | | |
| Bs\|46 | NZ_CM000488:3130586 | C>T | EX | AAG>AAA | K>K | hypothetical | syn | |
| Bs\|2 | NZ_CM000488:3164354 | T>C | EX | AAA>GAA | K>E | glycogen | nonsyn | seq |
| Bs\|28 | NZ_CM000488:3177536 | T>C | IG | | | | | |
| Bs\|68 | NZ_CM000488:3205251 | G>A | EX | AGC>AGT | S>S | methyl-accepting | syn | |
| Bs\|57 | NZ_CM000488:3205342 | T>C | EX | CAC>CGC | H>R | methyl-accepting | nonsyn | |
| Bs\|50 | NZ_CM000488:3207261 | T>C | IG | | | | | |
| Bs\|43 | NZ_CM000488:3231026 | G>T | EX | CGG>AGG | R>R | sporulation | syn | |
| Bs\|35 | NZ_CM000488:3232518 | C>T | EX | CTC>TTC | L>F | hypothetical | nonsyn | seq |
| Bs\|55 | NZ_CM000488:3264862 | T>C | EX | GAC>GGC | D>G | short | nonsyn | |
| Bs\|11 | NZ_CM000488:3287821 | G>A | EX | CCC>TCC | P>S | 2,3-dihydroxybenzoate-AMP | nonsyn | seq |
| Bs\|60 | NZ_CM000488:3317605 | G>A | EX | GCA>GTA | A>V | hypothetical | nonsyn | seq |
| Bs\|15 | NZ_CM000488:3318211 | G>A | EX | TTC>TTT | F>F | hypothetical | syn | |
| Bs\|74 | NZ_CM000488:3323458 | G>A | EX | CTC>CTT | L>L | hypothetical | syn | |
| Bs\|74 | NZ_CM000488:3329546 | C>T | EX | CTC>TTC | L>F | uric | nonsyn | seq |
| Bs\|44 | NZ_CM000488:3346730 | A>G | EX | GTT>GCT | V>A | hypothetical | nonsyn | |
| Bs\|53 | NZ_CM000488:3393986 | C>T | EX | GCG>GCA | A>A | hypothetical | syn | |
| Bs\|40 | NZ_CM000488:3394547 | G>A | EX | CGG>TGG | R>W | hypothetical | nonsyn | |
| Bs\|44 | NZ_CM000488:3395222 | G>A | EX | AGC>AGT | S>S | hypothetical | syn | |
| Bs\|57 | NZ_CM000488:3408022 | C>G | EX | GCG>GCC | A>A | hypothetical | syn | |
| Bs\|57 | NZ_CM000488:3408460 | C>T | IG | | | | | |
| Bs\|17 | NZ_CM000488:3442860 | C>A | IG | | | | | seq |
| Bs\|44 | NZ_CM000488:3471640 | G>A | EX | GCG>ACG | A>T | hypothetical | nonsyn | |
| Bs\|74 | NZ_CM000488:3478975 | T>G | EX | CAA>CCA | Q>P | triosephosphate | nonsyn | |
| Bs\|20 | NZ_CM000488:3509165 | C>T | EX | GCA>ACA | A>T | YvfI | nonsyn | |
| Bs\|26 | NZ_CM000488:3515627 | T>C | EX | AAA>GAA | K>E | hypothetical | nonsyn | |
| Bs\|62 | NZ_CM000488:3536896 | G>A | EX | GGG>GAG | G>E | hypothetical | nonsyn | |
| Bs\|6 | NZ_CM000488:3557526 | T>C | EX | GAA>GAG | E>E | hypothetical | syn | seq |
| Bs\|27 | NZ_CM000488:3563754 | A>G | EX | TAC>CAC | Y>H | hypothetical | nonsyn | |
| Bs\|50 | NZ_CM000488:3633821 | T>C | IG | | | | | |
| Bs\|40 | NZ_CM000488:3653031 | C>T | IG | | | | | |
| Bs\|46 | NZ_CM000488:3666701 | T>C | EX | AGG>GGG | R>G | membrane-bound | nonsyn | seq |
| Bs\|62 | NZ_CM000488:3678489 | C>A | EX | GAG>GAT | E>D | UDP-glucose:polyglycerol | nonsyn | |
| Bs\|27 | NZ_CM000488:3692310 | G>A | EX | GCG>GTG | A>V | hypothetical | nonsyn | |
| Bs\|44 | NZ_CM000488:3698952 | G>A | EX | CTC>CTT | L>L | hypothetical | syn | |
| Bs\|30 | NZ_CM000488:3735752 | C>T | EX | AAC>AAT | N>N | hypothetical | syn | |
| Bs\|50 | NZ_CM000488:3744710 | G>T | EX | CAG>AAG | Q>K | flagellar | nonsyn | |
| Bs\|40 | NZ_CM000488:3754454 | C>T | EX | GGG>AGG | G>R | hypothetical | nonsyn | |
| Bs\|52 | NZ_CM000488:3755722 | T>C | IG | | | | | seq |
| Bs\|19 | NZ_CM000488:3765396 | A>C | EX | GGT>GGG | G>G | hypothetical | syn | |
| Bs\|36 | NZ_CM000488:3798374 | C>T | EX | GCG>GCA | A>A | hypothetical | syn | |
| Bs\|48 | NZ_CM000488:3803924 | T>C | IG | | | | | seq |
| Bs\|4 | NZ_CM000488:3804463 | G>A | EX | GCT>GTT | A>V | fructose | nonsyn | seq |
| Bs\|14 | NZ_CM000488:3809172 | T>G | EX | CTG>CGG | L>R | hypothetical | nonsyn | |
| Bs\|1 | NZ_CM000488:3814530 | A>T | EX | TGG>AGG | W>R | hypothetical | nonsyn | seq |
| Bs\|57 | NZ_CM000488:3818544 | G>A | EX | TTC>TTT | F>F | hypothetical | syn | |
| Bs\|24 | NZ_CM000488:3821104 | G>A | EX | GGC>GGT | G>G | hypothetical | syn | |
| Bs\|22 | NZ_CM000488:3835012 | A>G | IG | | | | | |
| Bs\|28 | NZ_CM000488:3855430 | A>T | IG | | | | | seq |
| Bs\|19 | NZ_CM000488:3856077 | A>T | EX | CTC>CAC | L>H | methylenomycin | nonsyn | |
| Bs\|26 | NZ_CM000488:3861032 | A>C | EX | CTA>CTC | L>L | transcriptional | syn | |
| Bs\|31 | NZ_CM000488:3870542 | T>C | EX | ACA>GCA | T>A | hypothetical | nonsyn | |
| Bs\|51 | NZ_CM000488:3873281 | C>A | IG | | | | | |
| Bs\|3 | NZ_CM000488:3876855 | T>C | EX | GAA>GGA | E>G | involved | nonsyn | seq |

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|---|---|---|---|---|---|---|---|---|
| Bs\|69 | NZ_CM000488:3879709 | A>T | IG | | | | | |
| Bs\|24 | NZ_CM000488:3881779 | A>T | IG | | | | | |
| Bs\|8 | NZ_CM000488:3917914 | T>C | EX | TGG>CGG | W>R | hypothetical | nonsyn | |
| Bs\|17 | NZ_CM000488:3924882 | A>G | EX | GTT>GCT | V>A | hypothetical | nonsyn | |
| Bs\|45 | NZ_CM000488:3931707 | T>C | EX | ATA>GTA | I>V | hypothetical | nonsyn | |
| Bs\|65 | NZ_CM000488:3978656 | T>A | IG | | | | | |
| Bs\|14 | NZ_CM000488:4005558 | T>C | EX | GTA>GCA | V>A | hypothetical | nonsyn | seq |
| Bs\|45 | NZ_CM000488:4025960 | T>C | EX | GAA>GGA | E>G | cell | nonsyn | |
| Bs\|41 | NZ_CM000488:4053309 | G>A | IG | | | | | |
| Bs\|50 | NZ_CM000488:4059405 | A>G | EX | CAT>CAC | H>H | hypothetical | syn | |
| Bs\|38 | NZ_CM000488:4061406 | G>A | EX | GGC>GGT | G>G | hypothetical | syn | |
| Bs\|17 | NZ_CM000488:4074623 | A>T | EX | TAT>AAT | Y>N | inositol | nonsyn | |
| Bs\|7 | NZ_CM000488:4086475 | T>C | EX | GTA>GCA | V>A | hypothetical | nonsyn | seq |
| Bs\|19 | NZ_CM000488:4117840 | G>A | IG | | | | | |
| Bs\|14 | NZ_CM000488:4130603 | T>C | EX | TAT>TGT | Y>C | hypothetical | nonsyn | seq |
| Bs\|51 | NZ_CM000488:4132788 | T>C | EX | AAA>GAA | K>E | hypothetical | nonsyn | |
| Bs\|57 | NZ_CM000488:4138637 | G>A | IG | | | | | |
| Bs\|51 | NZ_CM000488:4151353 | T>C | EX | AAA>GAA | K>E | hypothetical | nonsyn | |
| Bs\|44 | NZ_CM000488:4155800 | T>C | IG | | | | | seq |
| Bs\|45 | NZ_CM000488:4156086 | G>A | EX | CCG>CTG | P>L | hypothetical | nonsyn | seq |
| Bs\|55 | NZ_CM000488:4158225 | G>T | IG | | | | | |
| Bs\|31 | NZ_CM000488:4173504 | T>C | EX | TCA>CCA | S>P | hypothetical | nonsyn | |
| Bs\|71 | NZ_CM000488:4175417 | A>T | EX | CAT>CTT | H>L | hypothetical | nonsyn | |
| Bs\|36 | NZ_CM000488:4180435 | G>T | IG | | | | | |
| Bs\|52 | NZ_CM000488:4193254 | A>G | IG | | | | | |
| Bs\|15 | NZ_CM000488:4200542 | C>T | EX | TGG>TGA | W>* | hypothetical | nonsyn | |
| Ec\|83 | NC_000913:1927 | C>T | EX | CCG>TCG | P>S | fused | nonsyn | |
| Ec\|48 | NC_000913:13313 | G>A | EX | GGT>GAT | G>D | chaperone | nonsyn | |
| Ec\|75 | NC_000913:20158 | T>G | EX | AAA>CAA | K>Q | IS1 | nonsyn | |
| Ec\|11 | NC_000913:30799 | A>C | IG | | | | | |
| Ec\|55 | NC_000913:34237 | C>T | IG | | | | | |
| Ec\|50 | NC_000913:60747 | G>C | EX | CCG>GCG | P>A | RNA | nonsyn | |
| Ec\|61 | NC_000913:60965 | A>G | EX | GTG>GCG | V>A | RNA | nonsyn | |
| Ec\|35 | NC_000913:77036 | A>C | EX | GAT>GAG | D>E | transcriptional | nonsyn | |
| Ec\|17 | NC_000913:79763 | C>T | EX | GCG>ACG | A>T | 3-isopropylmalate | nonsyn | |
| Ec\|99 | NC_000913:80680 | T>G | EX | GAT>GCT | D>A | 3-isopropylmalate | nonsyn | |
| Ec\|84 | NC_000913:107482 | T>G | IG | | | | | |
| Ec\|8 | NC_000913:119211 | A>C | EX | GAT>GCT | D>A | 1,6-anhydro-N-acetylmuramyl-L-alanine | nonsyn | |
| Ec\|70 | NC_000913:120366 | G>T | EX | CGC>AGC | R>S | aromatic | nonsyn | |
| Ec\|68 | NC_000913:122177 | G>A | EX | CGC>CAC | R>H | DNA-binding | nonsyn | |
| Ec\|16 | NC_000913:136363 | A>G | EX | GAT>GAC | D>D | spermidine | syn | |
| Ec\|12 | NC_000913:146593 | G>A | EX | GAC>GAT | D>D | aspartate | syn | |
| Ec\|45 | NC_000913:160881 | C>G | EX | TTG>TTC | L>F | putative | nonsyn | |
| Ec\|44 | NC_000913:182689 | A>C | EX | CAG>CCG | Q>P | DNA-binding | nonsyn | |
| Ec\|28 | NC_000913:186442 | C>T | EX | GAC>AAC | D>N | uridylyltransferase | nonsyn | |
| Ec\|39 | NC_000913:220368 | C>T | EX | CTG>CTA | L>L | DL-methionine | syn | |
| Ec\|11 | NC_000913:222754 | G>A | IG | | | | | |
| Ec\|39 | NC_000913:223463 | C>T | IG | | | | | |
| Ec\|87 | NC_000913:231608 | G>T | EX | GGC>TGC | G>C | hypothetical | nonsyn | |
| Ec\|28 | NC_000913:231655 | A>C | EX | ATA>ATC | I>I | hypothetical | syn | |
| Ec\|71 | NC_000913:236978 | T>G | IG | | | | | |
| Ec\|39 | NC_000913:246540 | A>G | IG | | | | | |
| Ec\|65 | NC_000913:251974 | C>A | IG | | | | | |
| Ec\|50 | NC_000913:256366 | G>A | EX | CCG>CCA | P>P | guanine-hypoxanthine | syn | |
| Ec\|79 | NC_000913:284486 | A>G | IG | | | | | |
| Ec\|16 | NC_000913:286648 | C>T | EX | GTC>GTT | V>V | CP4-6 | syn | |
| Ec\|94 | NC_000913:286742 | C>T | EX | CAG>TAG | Q>* | CP4-6 | nonsyn | |
| Ec\|8 | NC_000913:340069 | T>G | EX | ATT>ATG | I>M | carbamate | nonsyn | |
| Ec\|50 | NC_000913:344490 | T>G | IG | | | | | |

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|---|---|---|---|---|---|---|---|
| Ec\|28 | NC_000913:353886 | T>C | IG | | | | |
| Ec\|28 | NC_000913:353893 | T>G | IG | | | | |
| Ec\|21 | NC_000913:377367 | C>T | EX | GTT>ATT | V>I | S-formylglutathione | nonsyn |
| Ec\|62 | NC_000913:386645 | T>G | EX | TTA>GTA | L>V | taurine | nonsyn |
| Ec\|70 | NC_000913:389285 | A>G | IG | | | | |
| Ec\|38 | NC_000913:396478 | G>C | EX | GGC>CGC | G>R | microcin | nonsyn |
| Ec\|35 | NC_000913:471102 | C>T | EX | CAG>TAG | Q>* | fused | nonsyn |
| Ec\|11 | NC_000913:498995 | T>A | EX | AAA>ATA | K>I | acetyl | nonsyn |
| Ec\|6 | NC_000913:526865 | A>G | EX | ACA>GCA | T>A | hypothetical | nonsyn |
| Ec\|90 | NC_000913:536137 | C>T | EX | CTG>TTG | L>L | tartronate | syn |
| Ec\|38 | NC_000913:537546 | G>A | EX | CTG>CTA | L>L | putative | syn |
| Ec\|29 | NC_000913:540043 | C>T | EX | ATC>ATT | I>I | putative | syn |
| Ec\|13 | NC_000913:543079 | G>A | EX | GTC>GTT | V>V | hypothetical | syn |
| Ec\|65 | NC_000913:557219 | C>T | IG | | | | |
| Ec\|49 | NC_000913:617563 | A>G | EX | TTA>TTG | L>L | regulator | syn |
| Ec\|44 | NC_000913:646804 | G>T | EX | GCA>GAA | A>E | apo-citrate | nonsyn |
| Ec\|94 | NC_000913:651482 | C>T | EX | CAG>TAG | Q>* | sensory | nonsyn |
| Ec\|41 | NC_000913:665947 | C>T | EX | CAG>CAA | Q>Q | transpeptidase | syn |
| Ec\|25 | NC_000913:682663 | C>T | IG | | | | |
| Ec\|74 | NC_000913:691456 | C>T | EX | GAA>AAA | E>K | metal-binding | nonsyn |
| Ec\|53 | NC_000913:700115 | A>C | EX | TTT>GTT | F>V | DNA-binding | nonsyn |
| Ec\|61 | NC_000913:730434 | T>C | EX | ACT>ACC | T>T | rhsC | syn |
| Ec\|65 | NC_000913:731563 | G>A | EX | GCC>ACC | A>T | rhsC | nonsyn |
| Ec\|39 | NC_000913:736113 | A>G | IG | | | | |
| Ec\|39 | NC_000913:736115 | A>T | IG | | | | |
| Ec\|39 | NC_000913:736174 | A>G | IG | | | | |
| Ec\|47 | NC_000913:753915 | A>C | IG | | | | |
| Ec\|66 | NC_000913:774426 | T>G | EX | GTT>GTG | V>V | membrane | syn |
| Ec\|50 | NC_000913:782795 | G>C | EX | CGC>CCC | R>P | nicotinamide | nonsyn |
| Ec\|89 | NC_000913:785034 | C>T | EX | CCA>CTA | P>L | 3-deoxy-D-arabino-heptulosonate-7-phospl | nonsyn |
| Ec\|68 | NC_000913:816164 | C>T | IG | | | | |
| Ec\|81 | NC_000913:858330 | G>A | IG | | | | |
| Ec\|48 | NC_000913:872465 | A>C | EX | AAA>AAC | K>N | putative | nonsyn |
| Ec\|82 | NC_000913:884568 | G>T | EX | CTT>ATT | L>I | FMN | nonsyn |
| Ec\|63 | NC_000913:890423 | A>G | EX | GAA>GGA | E>G | nitroreductase | nonsyn |
| Ec\|7 | NC_000913:897304 | C>G | EX | GCC>GCG | A>A | inner | syn |
| Ec\|63 | NC_000913:898959 | G>A | IG | | | | |
| Ec\|41 | NC_000913:906575 | C>A | EX | GCT>TCT | A>S | conserved | nonsyn |
| Ec\|59 | NC_000913:987136 | T>C | EX | AAC>AGC | N>S | asparaginyl | nonsyn |
| Ec\|28 | NC_000913:990526 | A>C | EX | ACC>CCC | T>P | aminopeptidase | nonsyn |
| Ec\|55 | NC_000913:1019090 | C>G | EX | GGT>CGT | G>R | outer | nonsyn |
| Ec\|16 | NC_000913:1023067 | C>T | EX | GCC>ACC | A>T | inner | nonsyn |
| Ec\|46 | NC_000913:1043601 | T>C | EX | GAG>GGG | E>G | phosphotyrosine-protein | nonsyn |
| Ec\|65 | NC_000913:1054504 | A>G | EX | TTT>CTT | F>L | hybrid | nonsyn |
| Ec\|85 | NC_000913:1067631 | G>T | IG | | | | |
| Ec\|10 | NC_000913:1074021 | C>T | EX | GCG>GTG | A>V | DNA-binding | nonsyn |
| Ec\|29 | NC_000913:1083417 | C>T | EX | CGC>CGT | R>R | deferrrochelatase, | syn |
| Ec\|74 | NC_000913:1102222 | C>T | EX | AAG>AAA | K>K | DNA-binding | syn |
| Ec\|44 | NC_000913:1103010 | T>C | IG | | | | |
| Ec\|8 | NC_000913:1104543 | A>C | IG | | | | |
| Ec\|41 | NC_000913:1127435 | C>G | EX | GCC>GGC | A>G | putative | nonsyn |
| Ec\|46 | NC_000913:1173231 | G>T | IG | | | | |
| Ec\|49 | NC_000913:1186360 | A>G | EX | TAT>TAC | Y>Y | cupin | syn |
| Ec\|74 | NC_000913:1189131 | C>T | EX | CCG>CCA | P>P | DNA-binding | syn |
| Ec\|75 | NC_000913:1201412 | T>C | IG | | | | |
| Ec\|50 | NC_000913:1222442 | A>C | IG | | | | |
| Ec\|21 | NC_000913:1242881 | A>T | EX | GAT>GTT | D>V | lytic | nonsyn |
| Ec\|49 | NC_000913:1301784 | T>G | EX | TTG>GTG | L>V | oligopeptide | nonsyn |
| Ec\|49 | NC_000913:1311017 | T>C | EX | AAC>AGC | N>S | inner | nonsyn |

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|---|---|---|---|---|---|---|---|
| Ec\|81 | NC_000913:1334655 | G>A | EX | CTG>CTA | L>L | aconitate | syn |
| Ec\|82 | NC_000913:1338450 | C>T | EX | CTG>TTG | L>L | DUF1049 | syn |
| Ec\|74 | NC_000913:1374071 | C>T | EX | ACA>ATA | T>I | putative | nonsyn |
| Ec\|45 | NC_000913:1384979 | A>T | EX | CAT>CTT | H>L | DNA-binding | nonsyn |
| Ec\|63 | NC_000913:1393393 | A>T | EX | ATC>AAC | I>N | mechanosensitive | nonsyn |
| Ec\|39 | NC_000913:1408092 | C>T | EX | ACC>ACT | T>T | ATP-dependent | syn |
| Ec\|83 | NC_000913:1416308 | G>A | IG | | | | |
| Ec\|85 | NC_000913:1424333 | G>T | IG | | | | |
| Ec\|28 | NC_000913:1435682 | C>T | EX | GGC>AGC | G>S | fused | nonsyn |
| Ec\|39 | NC_000913:1522323 | T>A | EX | AGT>AGA | S>R | ATP-binding | nonsyn |
| Ec\|83 | NC_000913:1535872 | A>T | EX | TGG>AGG | W>R | nitrate | nonsyn |
| Ec\|80 | NC_000913:1542879 | C>A | IG | | | | |
| Ec\|35 | NC_000913:1547775 | C>T | EX | GCG>GTG | A>V | formate | nonsyn |
| Ec\|56 | NC_000913:1558664 | A>G | EX | TTC>TCC | F>S | D-ala-D-ala | nonsyn |
| Ec\|7 | NC_000913:1605686 | T>A | EX | CTG>CAG | L>Q | trans-aconitate | nonsyn |
| Ec\|53 | NC_000913:1609699 | C>G | EX | GCG>GCC | A>A | putative | syn |
| Ec\|45 | NC_000913:1612205 | C>A | EX | GTG>TTG | V>L | succinate | nonsyn |
| Ec\|59 | NC_000913:1642727 | G>A | EX | GCA>GTA | A>V | Qin | nonsyn |
| Ec\|41 | NC_000913:1665800 | G>A | EX | GGC>GGT | G>G | global | syn |
| Ec\|12 | NC_000913:1666404 | T>C | EX | GAG>GGG | E>G | global | nonsyn |
| Ec\|66 | NC_000913:1681615 | G>A | EX | AGC>AAC | S>N | sensory | nonsyn |
| Ec\|63 | NC_000913:1695209 | T>C | IG | | | | |
| Ec\|23 | NC_000913:1702041 | T>C | EX | ACC>GCC | T>A | putative | nonsyn |
| Ec\|59 | NC_000913:1702790 | T>G | IG | | | | |
| Ec\|63 | NC_000913:1718872 | G>A | IG | | | | |
| Ec\|63 | NC_000913:1772674 | G>A | EX | GCC>ACC | A>T | quinate/shikimate | nonsyn |
| Ec\|92 | NC_000913:1773491 | A>G | IG | | | | |
| Ec\|29 | NC_000913:1775436 | G>C | EX | GCG>CCG | A>P | putative | nonsyn |
| Ec\|29 | NC_000913:1788431 | G>T | EX | CGT>AGT | R>S | conserved | nonsyn |
| Ec\|6 | NC_000913:1791978 | G>A | EX | GCC>GCT | A>A | glutathione | syn |
| Ec\|84 | NC_000913:1801027 | C>A | IG | | | | |
| Ec\|78 | NC_000913:1825900 | G>A | EX | ACC>ACT | T>T | succinylarginine | syn |
| Ec\|92 | NC_000913:1839765 | G>C | EX | TGG>TGC | W>C | CTP | nonsyn |
| Ec\|41 | NC_000913:1842577 | C>A | EX | GAG>TAG | E>* | inner | nonsyn |
| Ec\|99 | NC_000913:1855545 | A>G | EX | GGT>GGC | G>G | putative | syn |
| Ec\|61 | NC_000913:1856410 | G>A | EX | CTG>TTG | L>L | putative | syn |
| Ec\|28 | NC_000913:1882064 | A>C | EX | AAG>CAG | K>Q | putative | nonsyn |
| Ec\|6 | NC_000913:1900116 | G>A | EX | GAG>GAA | E>E | fused | syn |
| Ec\|10 | NC_000913:1920961 | A>C | EX | ATT>ATG | I>M | serine/threonine-specific | nonsyn |
| Ec\|38 | NC_000913:1942219 | G>C | EX | AGC>ACC | S>T | zinc | nonsyn |
| Ec\|77 | NC_000913:1948118 | T>C | EX | AAA>AAG | K>K | aspartyl-tRNA | syn |
| Ec\|99 | NC_000913:1974613 | A>C | EX | GTC>GGC | V>G | proton | nonsyn |
| Ec\|11 | NC_000913:1984131 | G>A | EX | CTG>TTG | L>L | L-arabinose | syn |
| Ec\|46 | NC_000913:1990116 | T>G | IG | | | | |
| Ec\|82 | NC_000913:2009458 | C>G | IG | | | | |
| Ec\|50 | NC_000913:2057939 | T>C | IG | | | | |
| Ec\|12 | NC_000913:2069933 | A>C | EX | AAC>ACC | N>T | CP4-44 | nonsyn |
| Ec\|35 | NC_000913:2073132 | T>G | EX | GCT>GCG | A>A | CP4-44 | syn |
| Ec\|62 | NC_000913:2085248 | C>T | IG | | | | |
| Ec\|14 | NC_000913:2110939 | A>T | EX | TCT>TCA | S>S | dTDP-glucose | syn |
| Ec\|69 | NC_000913:2136501 | C>A | EX | TTC>TTA | F>L | inner | nonsyn |
| Ec\|6 | NC_000913:2154439 | G>A | EX | GTT>ATT | V>I | multidrug | nonsyn |
| Ec\|13 | NC_000913:2173517 | G>T | EX | GCA>GAA | A>E | D-tagatose | nonsyn |
| Ec\|13 | NC_000913:2183882 | T>C | IG | | | | |
| Ec\|44 | NC_000913:2186233 | C>T | EX | CCG>CCA | P>P | putative | syn |
| Ec\|85 | NC_000913:2192922 | A>T | EX | ATG>TTG | M>L | methionyl-tRNA | nonsyn |
| Ec\|27 | NC_000913:2227875 | G>A | EX | GCG>GTG | A>V | tRNA-dihydrouridine | nonsyn |
| Ec\|61 | NC_000913:2231696 | A>C | EX | AAA>AAC | K>N | conserved | nonsyn |
| Ec\|23 | NC_000913:2301727 | T>C | EX | TAT>CAT | Y>H | hypothetical | nonsyn |

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|---|---|---|---|---|---|---|---|
| Ec\|35 | NC_000913:2312739 | G>T | EX | GCG>GCT | A>A | phosphotransfer | syn |
| Ec\|59 | NC_000913:2334355 | G>A | EX | AGC>AGT | S>S | DUF2138 | syn |
| Ec\|80 | NC_000913:2341516 | C>T | EX | GTA>ATA | V>I | adhesin | nonsyn |
| Ec\|78 | NC_000913:2342414 | A>G | IG | | | | |
| Ec\|5 | NC_000913:2355276 | G>A | EX | GTG>GTA | V>V | hypothetical | syn |
| Ec\|99 | NC_000913:2376697 | G>C | EX | GAC>GAG | D>E | bifunctional | nonsyn |
| Ec\|67 | NC_000913:2397470 | C>T | EX | GGT>AGT | G>S | NADH:ubiquinone | nonsyn |
| Ec\|66 | NC_000913:2411969 | G>T | EX | GAG>TAG | E>* | acetate | nonsyn |
| Ec\|14 | NC_000913:2442906 | C>T | EX | GGT>GAT | G>D | inner | nonsyn |
| Ec\|81 | NC_000913:2475550 | C>T | EX | CTG>CTA | L>L | DNA-binding | syn |
| Ec\|50 | NC_000913:2478388 | G>C | EX | GCG>CCG | A>P | D-serine | nonsyn |
| Ec\|71 | NC_000913:2485186 | A>G | EX | ACG>GCG | T>A | hybrid | nonsyn |
| Ec\|16 | NC_000913:2491655 | G>T | IG | | | | |
| Ec\|23 | NC_000913:2531316 | G>A | EX | GTG>ATG | V>M | cysteine | nonsyn |
| Ec\|53 | NC_000913:2558999 | T>A | IG | | | | |
| Ec\|56 | NC_000913:2562504 | T>C | IG | | | | |
| Ec\|80 | NC_000913:2562517 | G>T | IG | | | | |
| Ec\|99 | NC_000913:2597309 | G>A | EX | ATC>ATT | I>I | dihydrodipicolinate | syn |
| Ec\|44 | NC_000913:2629826 | T>G | EX | GCA>GCC | A>A | GMP | syn |
| Ec\|66 | NC_000913:2641447 | C>A | EX | GAC>TAC | D>Y | dual | nonsyn |
| Ec\|68 | NC_000913:2641821 | G>A | EX | GCA>GTA | A>V | dual | nonsyn |
| Ec\|63 | NC_000913:2649622 | G>A | EX | CAG>TAG | Q>* | hypothetical | nonsyn |
| Ec\|66 | NC_000913:2653740 | G>T | EX | TCG>TAG | S>* | aminopeptidase | nonsyn |
| Ec\|59 | NC_000913:2720716 | A>C | IG | | | | |
| Ec\|96 | NC_000913:2771854 | C>T | EX | TCC>TTC | S>F | CP4-57 | nonsyn |
| Ec\|29 | NC_000913:2795582 | T>C | EX | TTA>TCA | L>S | putative | nonsyn |
| Ec\|49 | NC_000913:2816581 | T>C | IG | | | | |
| Ec\|39 | NC_000913:2836375 | T>C | EX | GGA>GGG | G>G | DNA-binding | syn |
| Ec\|65 | NC_000913:2856362 | G>A | EX | CCG>CCA | P>P | methyl-directed | syn |
| Ec\|16 | NC_000913:2857900 | T>C | EX | TTC>TCC | F>S | serine/threonine-specific | nonsyn |
| Ec\|59 | NC_000913:2872430 | A>G | EX | TCG>CCG | S>P | sulfate | nonsyn |
| Ec\|29 | NC_000913:2879898 | A>G | EX | GAT>GAC | D>D | CRISP | syn |
| Ec\|41 | NC_000913:2909122 | T>G | EX | GAA>GAC | E>D | antitoxin | nonsyn |
| Ec\|37 | NC_000913:2914325 | T>A | EX | CTG>CAG | L>Q | hybrid | nonsyn |
| Ec\|91 | NC_000913:2932467 | T>C | EX | TAC>CAC | Y>H | L-fucose | nonsyn |
| Ec\|68 | NC_000913:2939183 | T>G | EX | GAA>GCA | E>A | 23S | nonsyn |
| Ec\|70 | NC_000913:2941560 | G>T | EX | GCA>TCA | A>S | cysteine | nonsyn |
| Ec\|12 | NC_000913:2961471 | A>T | EX | TGG>AGG | W>R | hypothetical | nonsyn |
| Ec\|44 | NC_000913:2993131 | T>C | IG | | | | |
| Ec\|66 | NC_000913:2993903 | C>G | IG | | | | |
| Ec\|8 | NC_000913:3003313 | T>C | EX | ATC>GTC | I>V | putative | nonsyn |
| Ec\|65 | NC_000913:3003735 | G>A | EX | GCC>GTC | A>V | putative | nonsyn |
| Ec\|69 | NC_000913:3008229 | G>A | EX | ACG>ACA | T>T | D-stereospecific | syn |
| Ec\|50 | NC_000913:3025203 | T>C | EX | TAT>CAT | Y>H | putative | nonsyn |
| Ec\|39 | NC_000913:3078108 | A>C | EX | ATC>AGC | I>S | transketolase | nonsyn |
| Ec\|44 | NC_000913:3125646 | A>C | EX | ATC>AGC | I>S | glycolate | nonsyn |
| Ec\|85 | NC_000913:3143361 | T>A | EX | CAG>CTG | Q>L | hydrogenase | nonsyn |
| Ec\|6 | NC_000913:3154268 | G>A | EX | GAT>AAT | D>N | aldehyde | nonsyn |
| Ec\|82 | NC_000913:3156659 | T>G | EX | ATT>AGT | I>S | outer | nonsyn |
| Ec\|11 | NC_000913:3186716 | G>A | IG | | | | |
| Ec\|79 | NC_000913:3218861 | T>C | EX | CTG>CCG | L>P | putrescine:2-oxoglutaric | nonsyn |
| Ec\|59 | NC_000913:3255556 | A>C | EX | GGT>GGG | G>G | putative | syn |
| Ec\|12 | NC_000913:3265238 | A>G | IG | | | | |
| Ec\|49 | NC_000913:3272211 | A>C | EX | CTG>CGG | L>R | putative | nonsyn |
| Ec\|56 | NC_000913:3303905 | G>A | IG | | | | |
| Ec\|79 | NC_000913:3313129 | G>A | EX | GCT>GTT | A>V | fused | nonsyn |
| Ec\|13 | NC_000913:3319333 | A>T | EX | GAT>GAA | D>E | putative | nonsyn |
| Ec\|45 | NC_000913:3368875 | G>A | EX | CGT>TGT | R>C | putative | nonsyn |
| Ec\|6 | NC_000913:3371956 | G>C | EX | CCA>GCA | P>A | DNA-binding | nonsyn |

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|---|---|---|---|---|---|---|---|
| Ec\|45 | NC_000913:3375922 | A>C | EX | TTC>TGC | F>C | 30S | nonsyn |
| Ec\|90 | NC_000913:3377420 | C>T | EX | CAG>CAA | Q>Q | conserved | syn |
| Ec\|45 | NC_000913:3403174 | A>T | IG | | | | |
| Ec\|45 | NC_000913:3403196 | C>T | IG | | | | |
| Ec\|29 | NC_000913:3420219 | G>A | EX | GGG>GGA | G>G | putative | syn |
| Ec\|63 | NC_000913:3426974 | A>G | IG | | | | |
| Ec\|41 | NC_000913:3429821 | A>G | EX | ATC>ACC | I>T | putative | nonsyn |
| Ec\|14 | NC_000913:3441706 | A>G | EX | GGT>GGC | G>G | preprotein | syn |
| Ec\|96 | NC_000913:3446351 | C>A | EX | GAG>GAT | E>D | 30S | nonsyn |
| Ec\|35 | NC_000913:3450134 | G>T | EX | CCG>ACG | P>T | 50S | nonsyn |
| Ec\|28 | NC_000913:3450223 | T>A | EX | CAC>CTC | H>L | 50S | nonsyn |
| Ec\|85 | NC_000913:3451150 | C>A | EX | CGC>CTC | R>L | 30S | nonsyn |
| Ec\|93 | NC_000913:3451341 | A>G | IG | | | | |
| Ec\|28 | NC_000913:3487449 | T>C | EX | ACC>GCC | T>A | bifunctional | nonsyn |
| Ec\|39 | NC_000913:3499177 | G>A | EX | GGC>AGC | G>S | putative | nonsyn |
| Ec\|12 | NC_000913:3506601 | A>C | EX | GAT>GAG | D>E | putative | nonsyn |
| Ec\|29 | NC_000913:3519211 | C>T | EX | CTG>CTA | L>L | protein | syn |
| Ec\|61 | NC_000913:3519568 | G>A | EX | CAG>TAG | Q>* | protein | nonsyn |
| Ec\|44 | NC_000913:3587984 | T>G | EX | ATC>CTC | I>L | glycerol-3-phosphate | nonsyn |
| Ec\|29 | NC_000913:3620862 | A>G | EX | CGA>CGG | R>R | rhsB | syn |
| Ec\|59 | NC_000913:3678925 | G>A | EX | CTG>TTG | L>L | putative | syn |
| Ec\|14 | NC_000913:3704059 | G>A | IG | | | | |
| Ec\|47 | NC_000913:3752522 | C>T | IG | | | | |
| Ec\|64 | NC_000913:3796821 | G>A | EX | GCA>GTA | A>V | lipopolysaccharide | nonsyn |
| Ec\|49 | NC_000913:3833632 | G>T | EX | GGC>GGA | G>G | putative | syn |
| Ec\|23 | NC_000913:3913443 | A>T | IG | | | | |
| Ec\|29 | NC_000913:3939677 | A>G | IG | | | | |
| Ec\|49 | NC_000913:3944645 | G>T | IG | | | | |
| Ec\|99 | NC_000913:3944942 | T>G | IG | | | | |
| Ec\|21 | NC_000913:3950600 | T>G | EX | TAT>GAT | Y>D | branched-chain | nonsyn |
| Ec\|14 | NC_000913:3991950 | T>C | EX | AAT>GAT | N>D | iron-dependent | nonsyn |
| Ec\|85 | NC_000913:4030185 | G>A | EX | CCG>CCA | P>P | proline | syn |
| Ec\|85 | NC_000913:4030296 | C>T | EX | TGC>TGT | C>C | proline | syn |
| Ec\|39 | NC_000913:4033357 | C>T | IG | | | | |
| Ec\|45 | NC_000913:4036734 | A>C | IG | | | | |
| Ec\|76 | NC_000913:4075709 | A>T | EX | AAT>TAT | N>Y | putative | nonsyn |
| Ec\|28 | NC_000913:4077138 | C>T | IG | | | | |
| Ec\|48 | NC_000913:4077216 | A>G | IG | | | | |
| Ec\|62 | NC_000913:4090438 | G>A | EX | CAG>TAG | Q>* | putative | nonsyn |
| Ec\|10 | NC_000913:4166238 | A>T | IG | | | | |
| Ec\|10 | NC_000913:4166244 | T>A | IG | | | | |
| Ec\|86 | NC_000913:4182926 | A>C | EX | CAG>CCG | Q>P | RNA | nonsyn |
| Ec\|17 | NC_000913:4199652 | T>C | EX | GGA>GGG | G>G | Zn-dependent | syn |
| Ec\|8 | NC_000913:4206062 | A>G | IG | | | | |
| Ec\|70 | NC_000913:4248805 | A>T | IG | | | | |
| Ec\|13 | NC_000913:4267708 | A>C | EX | GAA>GCA | E>A | acid | nonsyn |
| Ec\|53 | NC_000913:4284754 | A>G | EX | GTA>GCA | V>A | acetyl-CoA | nonsyn |
| Ec\|44 | NC_000913:4327687 | A>C | EX | GAT>GCT | D>A | mutational | nonsyn |
| Ec\|74 | NC_000913:4380098 | C>T | EX | GTC>ATC | V>I | fumarate | nonsyn |
| Ec\|65 | NC_000913:4390487 | C>G | IG | | | | |
| Ec\|63 | NC_000913:4411810 | G>A | EX | GTG>ATG | V>M | glutathionylspermidine | nonsyn |
| Ec\|6 | NC_000913:4417711 | A>G | IG | | | | |
| Ec\|99 | NC_000913:4431312 | C>T | EX | GAT>AAT | D>N | NAD(P)H:quinone | nonsyn |
| Ec\|35 | NC_000913:4433910 | C>T | EX | GGG>AGG | G>R | 2':3'-cyclic-nucleotide | nonsyn |
| Ec\|87 | NC_000913:4442956 | C>A | EX | ATC>ATA | I>I | translocation | syn |
| Ec\|41 | NC_000913:4451827 | G>T | EX | GTG>GTT | V>V | putative | syn |
| Ec\|86 | NC_000913:4466603 | T>G | EX | CTG>CGG | L>R | magnesium | nonsyn |
| Ec\|38 | NC_000913:4481228 | T>A | EX | GCA>GCT | A>A | valyl-tRNA | syn |
| Ec\|17 | NC_000913:4502337 | C>A | EX | GCA>GAA | A>E | putative | nonsyn |

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|---|---|---|---|---|---|---|---|
| Ec\|63 | NC_000913:4515690 | G>A | EX | TCC>TCT | S>S | KpLE2 | syn |
| Ec\|50 | NC_000913:4522598 | T>G | EX | ACC>CCC | T>P | KpLE2 | nonsyn |
| Ec\|55 | NC_000913:4535483 | C>T | EX | GCG>GCA | A>A | 9-O-acetyl | syn |
| Ec\|17 | NC_000913:4580887 | C>T | EX | CGC>CAC | R>H | DNA | nonsyn |
| Ec\|85 | NC_000913:4588983 | G>A | EX | CCG>CTG | P>L | putative | nonsyn |
| Ec\|81 | NC_000913:4602391 | G>T | EX | CGC>CTC | R>L | bgl | nonsyn |
| Ec\|38 | NC_000913:4612417 | T>G | IG | | | | |
| Mf\|55 | NC_006055:880 | G>T | EX | GCC>TCC | A>S | chromosome | nonsyn |
| Mf\|12 | NC_006055:937 | G>A | EX | GTT>ATT | V>I | chromosome | nonsyn |
| Mf\|57 | NC_006055:3688 | T>A | IG | | | | |
| Mf\|50 | NC_006055:3979 | G>C | EX | GTT>CTT | V>L | nucleotidyltransferase, | nonsyn |
| Mf\|14 | NC_006055:5544 | T>C | EX | GGT>GGC | G>G | DNA | syn |
| Mf\|47 | NC_006055:5851 | G>A | EX | GAT>AAT | D>N | DNA | nonsyn |
| Mf\|42 | NC_006055:7958 | T>A | EX | ACT>ACA | T>T | DNA | syn |
| Mf\|92 | NC_006055:8912 | A>G | EX | TGA>TGG | *>W | DNA | nonsyn |
| Mf\|14 | NC_006055:9651 | C>A | EX | CAA>AAA | Q>K | DNA | nonsyn |
| Mf\|65 | NC_006055:9903 | G>A | EX | GCT>ACT | A>T | beta-glucoside | nonsyn |
| Mf\|6 | NC_006055:10267 | G>A | EX | TGT>TAT | C>Y | beta-glucoside | nonsyn |
| Mf\|39 | NC_006055:11632 | T>G | EX | ATG>AGG | M>R | beta-glucoside | nonsyn |
| Mf\|47 | NC_006055:13385 | C>T | EX | CCA>CTA | P>L | beta-glucosidase | nonsyn |
| Mf\|42 | NC_006055:14099 | C>A | EX | CGT>AGT | R>S | transcriptional | nonsyn |
| Mf\|50 | NC_006055:15075 | T>A | EX | TAT>TAA | Y>* | beta-glucosidase | nonsyn |
| Mf\|92 | NC_006055:15415 | C>T | EX | CAA>TAA | Q>* | beta-glucosidase | nonsyn |
| Mf\|58 | NC_006055:16165 | G>A | EX | GAT>AAT | D>N | beta-glucosidase | nonsyn |
| Mf\|58 | NC_006055:17611 | G>A | EX | GGA>AGA | G>R | beta-glucosidase | nonsyn |
| Mf\|58 | NC_006055:21424 | C>T | EX | GGC>AGC | G>S | arginine-ornithine | nonsyn |
| Mf\|42 | NC_006055:23722 | G>A | EX | TAC>TAT | Y>Y | seryl-tRNA | syn |
| Mf\|83 | NC_006055:24901 | C>T | EX | AGC>AGT | S>S | hsp33 | syn |
| Mf\|57 | NC_006055:27072 | T>C | EX | GTT>GTC | V>V | glutamine | syn |
| Mf\|11 | NC_006055:27539 | C>G | EX | ACA>AGA | T>R | glutamine | nonsyn |
| Mf\|19 | NC_006055:27981 | C>G | EX | CCC>CGC | P>R | hypothetical | nonsyn |
| Mf\|23 | NC_006055:28346 | G>T | EX | GCC>TCC | A>S | hypothetical | nonsyn |
| Mf\|76 | NC_006055:30387 | G>T | EX | GAA>TAA | E>* | hypothetical | nonsyn |
| Mf\|83 | NC_006055:33998 | G>T | EX | GGT>GTT | G>V | sn-glycerol-3-phosphate | nonsyn |
| Mf\|42 | NC_006055:34010 | G>A | EX | CGT>CAT | R>H | sn-glycerol-3-phosphate | nonsyn |
| Mf\|85 | NC_006055:35692 | G>T | EX | TTG>TTT | L>F | sn-glycerol-3-phosphate | nonsyn |
| Mf\|56 | NC_006055:37112 | T>C | EX | GAT>GAC | D>D | sn-glycerol-3-phosphate | syn |
| Mf\|68 | NC_006055:38477 | G>A | EX | GTA>ATA | V>I | sn-glycerol-3-phosphate | nonsyn |
| Mf\|56 | NC_006055:45632 | G>C | EX | TTG>TTC | L>F | beta-glucoside | nonsyn |
| Mf\|83 | NC_006055:46675 | C>T | EX | ACA>ATA | T>I | beta-glucoside | nonsyn |
| Mf\|56 | NC_006055:47390 | G>A | EX | AGA>AAA | R>K | 6-phospho-beta-glucosidase | nonsyn |
| Mf\|11 | NC_006055:47537 | C>A | EX | TCA>TAA | S>* | 6-phospho-beta-glucosidase | nonsyn |
| Mf\|26 | NC_006055:48797 | T>C | EX | AAC>AGC | N>S | transporter | nonsyn |
| Mf\|76 | NC_006055:49225 | T>C | EX | TTA>TTG | L>L | transporter | syn |
| Mf\|11 | NC_006055:49663 | T>C | EX | ATT>ACT | I>T | methionyl-tRNA | nonsyn |
| Mf\|19 | NC_006055:52834 | G>T | EX | GCG>GCT | A>A | lipoate-protein | syn |
| Mf\|47 | NC_006055:54986 | G>T | EX | GGA>TGA | G>* | pyruvate | nonsyn |
| Mf\|93 | NC_006055:55726 | C>G | EX | AAC>AAG | N>K | pyruvate | nonsyn |
| Mf\|6 | NC_006055:58529 | C>G | EX | CCA>CGA | P>R | dihydrolipate | nonsyn |
| Mf\|90 | NC_006055:62693 | A>G | EX | AAA>GAA | K>E | Mg2+ | nonsyn |
| Mf\|14 | NC_006055:64420 | C>A | IG | | | | |
| Mf\|76 | NC_006055:65457 | C>T | EX | GTT>ATT | V>I | MarR | nonsyn |
| Mf\|57 | NC_006055:67043 | C>T | EX | GCT>ACT | A>T | multidrug | nonsyn |
| Mf\|6 | NC_006055:68595 | C>T | EX | TGA>TAA | *>* | hypothetical | syn |
| Mf\|12 | NC_006055:69934 | C>T | IG | | | | |
| Mf\|55 | NC_006055:70086 | G>T | EX | TCT>TAT | S>Y | proline | nonsyn |
| Mf\|57 | NC_006055:70908 | G>A | EX | AAG>AAA | K>K | preprotein | syn |
| Mf\|55 | NC_006055:73473 | G>A | IG | | | | |
| Mf\|12 | NC_006055:74006 | C>T | EX | ACT>ATT | T>I | excinuclease | nonsyn |

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|---|---|---|---|---|---|---|---|
| Mf\|41 | NC_006055:75261 | A>G | EX | GAA>GAG | E>E | excinuclease | syn |
| Mf\|93 | NC_006055:76123 | T>C | EX | GTT>GCT | V>A | repair | nonsyn |
| Mf\|76 | NC_006055:76468 | C>T | EX | ACA>ATA | T>I | repair | nonsyn |
| Mf\|76 | NC_006055:77086 | A>G | EX | CAT>CGT | H>R | repair | nonsyn |
| Mf\|19 | NC_006055:77821 | G>T | EX | GGA>GTA | G>V | repair | nonsyn |
| Mf\|11 | NC_006055:80046 | G>C | EX | TTG>TTC | L>F | transporter | nonsyn |
| Mf\|49 | NC_006055:83764 | C>A | EX | GAC>GAA | D>E | prolipoprotein | nonsyn |
| Mf\|58 | NC_006055:89160 | G>A | EX | GGA>AGA | G>R | substrate | nonsyn |
| Mf\|65 | NC_006055:91290 | C>T | EX | CAA>TAA | Q>* | cytosol | nonsyn |
| Mf\|57 | NC_006055:95579 | C>G | EX | GGC>GGG | G>G | adenylosuccinate | syn |
| Mf\|55 | NC_006055:95951 | C>G | EX | GAC>GAG | D>E | adenylosuccinate | nonsyn |
| Mf\|23 | NC_006055:96815 | G>A | EX | GAG>AAG | E>K | adenylosuccinate | nonsyn |
| Mf\|6 | NC_006055:96891 | C>T | EX | GCA>GTA | A>V | adenylosuccinate | nonsyn |
| Mf\|92 | NC_006055:101397 | C>T | EX | CTG>TTG | L>L | hypothetical | syn |
| Mf\|90 | NC_006055:101544 | C>G | EX | CCT>GCT | P>A | hypothetical | nonsyn |
| Mf\|49 | NC_006055:101785 | C>G | EX | TCA>TGA | S>* | hypothetical | nonsyn |
| Mf\|68 | NC_006055:102497 | C>T | IG | | | | |
| Mf\|90 | NC_006055:108570 | C>G | EX | ACA>AGA | T>R | Glu-tRNA | nonsyn |
| Mf\|99 | NC_006055:108699 | G>T | EX | TGT>TTT | C>F | Glu-tRNA | nonsyn |
| Mf\|67 | NC_006055:110775 | C>T | EX | CTA>TTA | L>L | rRNA | syn |
| Mf\|19 | NC_006055:113671 | G>T | EX | AAG>AAT | K>N | metallo-beta | nonsyn |
| Mf\|14 | NC_006055:114754 | C>T | EX | AAC>AAT | N>N | oligopeptide | syn |
| Mf\|56 | NC_006055:116834 | G>A | EX | GCT>ACT | A>T | oligopeptide | nonsyn |
| Mf\|12 | NC_006055:117679 | C>G | EX | CTT>GTT | L>V | oligopeptide | nonsyn |
| Mf\|56 | NC_006055:118076 | G>T | EX | AGA>ATA | R>I | oligopeptide | nonsyn |
| Mf\|59 | NC_006055:118160 | C>A | EX | ACT>AAT | T>N | oligopeptide | nonsyn |
| Mf\|47 | NC_006055:119417 | G>A | EX | GGT>AGT | G>S | oligopeptide | nonsyn |
| Mf\|93 | NC_006055:120593 | C>A | EX | GCA>GAA | A>E | oligopeptide | nonsyn |
| Mf\|90 | NC_006055:124696 | C>T | EX | ATC>ATT | I>I | DNA | syn |
| Mf\|58 | NC_006055:125978 | C>T | EX | CCT>TCT | P>S | DNA | nonsyn |
| Mf\|12 | NC_006055:127441 | G>A | IG | | | | |
| Mf\|19 | NC_006055:127854 | C>A | EX | CCA>CAA | P>Q | repair | nonsyn |
| Mf\|76 | NC_006055:128445 | C>T | EX | ACA>ATA | T>I | repair | nonsyn |
| Mf\|57 | NC_006055:130118 | G>T | EX | GCA>TCA | A>S | tetrapyrrole | nonsyn |
| Mf\|83 | NC_006055:131141 | C>G | EX | GAA>CAA | E>Q | rhodanese-related | nonsyn |
| Mf\|49 | NC_006055:136038 | G>A | EX | AGA>AAA | R>K | ATP | nonsyn |
| Mf\|58 | NC_006055:137967 | G>A | EX | GGG>GAG | G>E | ATP | nonsyn |
| Mf\|41 | NC_006055:142455 | G>A | EX | GAT>AAT | D>N | multidrug | nonsyn |
| Mf\|58 | NC_006055:144431 | C>T | EX | ACT>ATT | T>I | phosphomannomutase | nonsyn |
| Mf\|76 | NC_006055:149859 | C>T | IG | | | | |
| Mf\|12 | NC_006055:151034 | C>A | EX | TCT>TAT | S>Y | 30S | nonsyn |
| Mf\|49 | NC_006055:151490 | C>T | EX | AAC>AAT | N>N | 50S | syn |
| Mf\|56 | NC_006055:152804 | C>T | EX | GAC>GAT | D>D | 50S | syn |
| Mf\|23 | NC_006055:152869 | C>T | EX | TCA>TTA | S>L | 50S | nonsyn |
| Mf\|58 | NC_006055:155006 | C>T | EX | AAC>AAT | N>N | 50S | syn |
| Mf\|55 | NC_006055:155078 | A>G | EX | GTA>GTG | V>V | 50S | syn |
| Mf\|12 | NC_006055:156509 | G>C | EX | GGG>GGC | G>G | preprotein | syn |
| Mf\|6 | NC_006055:158125 | C>G | EX | AAC>AAG | N>K | cytidine | nonsyn |
| Mf\|19 | NC_006055:159507 | G>C | EX | GAT>CAT | D>H | methionine | nonsyn |
| Mf\|39 | NC_006055:159961 | T>A | EX | ATT>AAT | I>N | 50S | nonsyn |
| Mf\|93 | NC_006055:161490 | C>A | EX | GCG>GAG | A>E | DNA-directed | nonsyn |
| Mf\|58 | NC_006055:161553 | C>G | EX | GCT>GGT | A>G | DNA-directed | nonsyn |
| Mf\|50 | NC_006055:162564 | C>A | EX | CAA>AAA | Q>K | cobalt | nonsyn |
| Mf\|99 | NC_006055:164938 | C>A | EX | CCT>CAT | P>H | cobalt | nonsyn |
| Mf\|68 | NC_006055:167051 | G>A | EX | GTT>ATT | V>I | substrate | nonsyn |
| Mf\|39 | NC_006055:167257 | C>A | EX | ATC>ATA | I>I | substrate | syn |
| Mf\|93 | NC_006055:168584 | G>C | EX | GTG>CTG | V>L | substrate | nonsyn |
| Mf\|47 | NC_006055:168715 | G>A | EX | GCG>GCA | A>A | substrate | syn |
| Mf\|58 | NC_006055:169583 | G>A | EX | GAT>AAT | D>N | substrate | nonsyn |

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|---|---|---|---|---|---|---|---|
| Mf\|58 | NC_006055:171854 | A>G | EX | TAT>TGT | Y>C | hypothetical | nonsyn |
| Mf\|58 | NC_006055:172565 | C>T | EX | ACG>ATG | T>M | hypothetical | nonsyn |
| Mf\|23 | NC_006055:174352 | G>A | EX | TCT>TTT | S>F | hypothetical | nonsyn |
| Mf\|92 | NC_006055:175428 | G>A | EX | TTC>TTT | F>F | hypothetical | syn |
| Mf\|19 | NC_006055:181686 | C>T | EX | TTC>TTT | F>F | DNA | syn |
| Mf\|49 | NC_006055:184687 | G>C | EX | GTA>CTA | V>L | aspartyl/glutamyl-tRNA | nonsyn |
| Mf\|58 | NC_006055:190520 | G>A | EX | ATG>ATA | M>I | methylenetetrahydrofolate | nonsyn |
| Mf\|19 | NC_006055:197380 | A>G | EX | AAA>AAG | K>K | substrate | syn |
| Mf\|58 | NC_006055:198338 | G>A | EX | GGG>AGG | G>R | substrate | nonsyn |
| Mf\|99 | NC_006055:200234 | G>C | EX | GGA>GCA | G>A | guanosine | nonsyn |
| Mf\|39 | NC_006055:202514 | G>T | EX | GAT>TAT | D>Y | dehydrogenase | nonsyn |
| Mf\|62 | NC_006055:203053 | T>C | EX | GTA>GCA | V>A | 6-phosphofructokinase | nonsyn |
| Mf\|57 | NC_006055:204548 | G>A | EX | GAC>AAC | D>N | pyruvate | nonsyn |
| Mf\|23 | NC_006055:204753 | C>G | EX | ACT>AGT | T>S | pyruvate | nonsyn |
| Mf\|39 | NC_006055:205232 | G>A | EX | GTA>ATA | V>I | pyruvate | nonsyn |
| Mf\|47 | NC_006055:206061 | G>A | IG | | | | |
| Mf\|39 | NC_006055:210357 | C>A | EX | CCT>ACT | P>T | fructose-specific | nonsyn |
| Mf\|83 | NC_006055:211515 | G>C | EX | GTA>CTA | V>L | fructose-specific | nonsyn |
| Mf\|42 | NC_006055:211522 | C>T | EX | GCC>GTC | A>V | fructose-specific | nonsyn |
| Mf\|92 | NC_006055:214957 | G>T | EX | AGA>ATA | R>I | amino | nonsyn |
| Mf\|49 | NC_006055:216413 | G>C | EX | CAC>CAG | H>Q | formate/nitrate | nonsyn |
| Mf\|67 | NC_006055:216967 | C>A | IG | | | | |
| Mf\|6 | NC_006055:218539 | G>T | IG | | | | |
| Mf\|90 | NC_006055:220338 | C>A | EX | AGG>AGT | R>S | tryptophanyl-tRNA | nonsyn |
| Mf\|76 | NC_006055:221028 | C>G | EX | CCA>CGA | P>R | NAD | nonsyn |
| Mf\|59 | NC_006055:224303 | T>C | EX | CTA>CCA | L>P | hypothetical | nonsyn |
| Mf\|90 | NC_006055:224317 | G>C | EX | GAA>CAA | E>Q | hypothetical | nonsyn |
| Mf\|6 | NC_006055:226327 | A>T | EX | AAA>AAT | K>N | GTP-binding | nonsyn |
| Mf\|6 | NC_006055:228086 | T>C | IG | | | | |
| Mf\|39 | NC_006055:231335 | G>A | EX | GAC>AAC | D>N | recombinase | nonsyn |
| Mf\|85 | NC_006055:235418 | G>A | EX | GAA>AAA | E>K | virulence | nonsyn |
| Mf\|14 | NC_006055:235829 | G>A | EX | GAA>AAA | E>K | virulence | nonsyn |
| Mf\|62 | NC_006055:236165 | G>C | EX | GTA>CTA | V>L | virulence | nonsyn |
| Mf\|65 | NC_006055:237199 | C>T | EX | TCT>TTT | S>F | hypothetical | nonsyn |
| Mf\|58 | NC_006055:237695 | G>C | EX | GTG>GTC | V>V | hypothetical | syn |
| Mf\|92 | NC_006055:238301 | C>T | EX | AAC>AAT | N>N | PTS | syn |
| Mf\|65 | NC_006055:242529 | C>T | IG | | | | |
| Mf\|55 | NC_006055:244653 | G>C | EX | GAT>CAT | D>H | S-adenosylmethionine-dependent | nonsyn |
| Mf\|50 | NC_006055:245331 | C>A | EX | TCA>TAA | S>* | hypothetical | nonsyn |
| Mf\|47 | NC_006055:246881 | C>T | EX | ACA>ATA | T>I | serine/threonine | nonsyn |
| Mf\|93 | NC_006055:247256 | G>C | EX | GGT>CGT | G>R | serine/threonine | nonsyn |
| Mf\|26 | NC_006055:247457 | G>T | EX | GAA>TAA | E>* | serine/threonine | nonsyn |
| Mf\|14 | NC_006055:247924 | C>T | EX | GAC>GAT | D>D | serine/threonine | syn |
| Mf\|56 | NC_006055:248189 | G>A | EX | GAA>AAA | E>K | serine/threonine | nonsyn |
| Mf\|59 | NC_006055:250037 | G>T | EX | GAA>TAA | E>* | hypothetical | nonsyn |
| Mf\|76 | NC_006055:251290 | G>C | EX | TGT>TCT | C>S | hypothetical | nonsyn |
| Mf\|26 | NC_006055:251317 | C>A | EX | GCT>GAT | A>D | hypothetical | nonsyn |
| Mf\|58 | NC_006055:254026 | G>A | EX | GCA>ACA | A>T | dihydroxyacetone | nonsyn |
| Mf\|92 | NC_006055:256804 | G>A | EX | GAT>AAT | D>N | structural | nonsyn |
| Mf\|56 | NC_006055:262342 | T>C | EX | TAC>CAC | Y>H | phosphate | nonsyn |
| Mf\|65 | NC_006055:263612 | G>T | EX | GAA>TAA | E>* | phosphate | nonsyn |
| Mf\|93 | NC_006055:264210 | A>C | IG | | | | |
| Mf\|56 | NC_006055:268748 | C>A | EX | CGT>AGT | R>S | membrane | nonsyn |
| Mf\|67 | NC_006055:269086 | C>T | EX | TAC>TAT | Y>Y | membrane | syn |
| Mf\|58 | NC_006055:269855 | C>T | EX | AAC>AAT | N>N | tRNA | syn |
| Mf\|50 | NC_006055:270629 | T>C | EX | CCT>CCC | P>P | tRNA | syn |
| Mf\|50 | NC_006055:271955 | C>G | EX | GCT>GGT | A>G | cmp-binding | nonsyn |
| Mf\|6 | NC_006055:275005 | C>T | EX | GAA>AAA | E>K | hypothetical | nonsyn |
| Mf\|85 | NC_006055:276438 | C>A | EX | GTA>TTA | V>L | hypothetical | nonsyn |

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|---|---|---|---|---|---|---|---|
| Mf\|76 | NC_006055:277561 | A>T | EX | GAT>GAA | D>E | hypothetical | nonsyn |
| Mf\|58 | NC_006055:281533 | G>A | EX | GAT>AAT | D>N | aldo/keto | nonsyn |
| Mf\|99 | NC_006055:284867 | G>T | EX | GGT>TGT | G>C | multidrug | nonsyn |
| Mf\|68 | NC_006055:289583 | G>A | EX | GTT>ATT | V>I | hypothetical | nonsyn |
| Mf\|90 | NC_006055:294286 | T>G | EX | CTT>CTG | L>L | substrate | syn |
| Mf\|42 | NC_006055:295358 | G>T | EX | GAT>TAT | D>Y | substrate | nonsyn |
| Mf\|58 | NC_006055:297174 | G>A | EX | GTA>ATA | V>I | substrate | nonsyn |
| Mf\|49 | NC_006055:297716 | G>T | EX | GCG>GCT | A>A | substrate | syn |
| Mf\|49 | NC_006055:303632 | A>G | EX | TGA>TGG | *>W | multidrug | nonsyn |
| Mf\|85 | NC_006055:304618 | G>A | EX | GGT>AGT | G>S | metal-dependent | nonsyn |
| Mf\|50 | NC_006055:306493 | G>C | IG | | | | |
| Mf\|49 | NC_006055:308466 | G>C | EX | GTT>CTT | V>L | DNA | nonsyn |
| Mf\|19 | NC_006055:310242 | C>T | EX | TAC>TAT | Y>Y | RNA | syn |
| Mf\|59 | NC_006055:311071 | C>A | EX | CAT>AAT | H>N | RNA | nonsyn |
| Mf\|67 | NC_006055:311501 | G>A | EX | GAT>AAT | D>N | SAM-dependent | nonsyn |
| Mf\|12 | NC_006055:311734 | C>T | EX | AAC>AAT | N>N | SAM-dependent | syn |
| Mf\|93 | NC_006055:314539 | G>A | EX | GGA>GAA | G>E | hypothetical | nonsyn |
| Mf\|99 | NC_006055:315564 | G>C | EX | GAA>CAA | E>Q | hypothetical | nonsyn |
| Mf\|41 | NC_006055:316795 | G>T | EX | GAG>GAT | E>D | protein-export | nonsyn |
| Mf\|65 | NC_006055:319587 | G>A | EX | GGA>GAA | G>E | protein-export | nonsyn |
| Mf\|57 | NC_006055:324024 | C>T | EX | CAC>CAT | H>H | hypothetical | syn |
| Mf\|19 | NC_006055:324141 | G>C | EX | ATG>ATC | M>I | hypothetical | nonsyn |
| Mf\|19 | NC_006055:327322 | C>T | EX | GCA>GTA | A>V | hypothetical | nonsyn |
| Mf\|57 | NC_006055:330221 | C>T | EX | GTC>GTT | V>V | DNA | syn |
| Mf\|68 | NC_006055:331452 | G>A | EX | GAC>AAC | D>N | DNA | nonsyn |
| Mf\|39 | NC_006055:334556 | C>T | EX | ACA>ATA | T>I | DAD(P)H | nonsyn |
| Mf\|50 | NC_006055:336440 | T>C | EX | ATT>ACT | I>T | hypothetical | nonsyn |
| Mf\|55 | NC_006055:339010 | A>G | EX | TAT>TGT | Y>C | translation | nonsyn |
| Mf\|85 | NC_006055:341167 | T>A | EX | TTT>ATT | F>I | hypothetical | nonsyn |
| Mf\|11 | NC_006055:341564 | C>A | EX | CCA>CAA | P>Q | hypothetical | nonsyn |
| Mf\|41 | NC_006055:348869 | C>T | EX | TTC>TTT | F>F | deoxycytosine | syn |
| Mf\|90 | NC_006055:349980 | G>C | EX | GCA>CCA | A>P | deoxycytosine | nonsyn |
| Mf\|92 | NC_006055:350801 | C>T | EX | ACA>ATA | T>I | hypothetical | nonsyn |
| Mf\|12 | NC_006055:351344 | G>T | EX | AGA>ATA | R>I | hypothetical | nonsyn |
| Mf\|65 | NC_006055:353519 | A>T | EX | AAT>AAA | N>K | type | nonsyn |
| Mf\|6 | NC_006055:356160 | G>A | EX | GGT>GAT | G>D | DNA | nonsyn |
| Mf\|26 | NC_006055:358919 | G>A | EX | GAA>AAA | E>K | DNA | nonsyn |
| Mf\|50 | NC_006055:362129 | C>T | EX | CTA>TTA | L>L | beta-glucoside | syn |
| Mf\|12 | NC_006055:362363 | G>T | EX | GTT>TTT | V>F | beta-glucoside | nonsyn |
| Mf\|57 | NC_006055:366801 | G>A | EX | GCT>ACT | A>T | DNA | nonsyn |
| Mf\|65 | NC_006055:369017 | G>A | EX | GCT>ACT | A>T | lysophospholipase | nonsyn |
| Mf\|58 | NC_006055:369212 | G>A | EX | GAT>AAT | D>N | lysophospholipase | nonsyn |
| Mf\|76 | NC_006055:371938 | G>A | EX | TTG>TTA | L>L | alpha | syn |
| Mf\|76 | NC_006055:373065 | G>T | EX | GAA>TAA | E>* | beta-glucoside | nonsyn |
| Mf\|49 | NC_006055:375644 | G>T | EX | CAT>AAT | H>N | hypothetical | nonsyn |
| Mf\|62 | NC_006055:378647 | C>T | EX | TCT>TTT | S>F | exodeoxyribonuclease | nonsyn |
| Mf\|57 | NC_006055:380197 | G>T | EX | TCA>TAA | S>* | hypothetical | nonsyn |
| Mf\|68 | NC_006055:380440 | G>A | EX | TCA>TTA | S>L | hypothetical | nonsyn |
| Mf\|58 | NC_006055:383797 | G>T | EX | TCA>TAA | S>* | hypothetical | nonsyn |
| Mf\|41 | NC_006055:387466 | G>T | EX | TCA>TAA | S>* | rRNA | nonsyn |
| Mf\|55 | NC_006055:389221 | C>A | EX | AGA>ATA | R>I | exodeoxyribonuclease | nonsyn |
| Mf\|58 | NC_006055:390543 | G>T | EX | TCA>TAA | S>* | endonuclease | nonsyn |
| Mf\|65 | NC_006055:390670 | C>T | EX | GCA>ACA | A>T | endonuclease | nonsyn |
| Mf\|57 | NC_006055:391566 | G>T | EX | GCT>GAT | A>D | riboflavin | nonsyn |
| Mf\|19 | NC_006055:394773 | C>A | EX | GTG>TTG | V>L | hypothetical | nonsyn |
| Mf\|12 | NC_006055:394872 | C>T | EX | GAT>AAT | D>N | hypothetical | nonsyn |
| Mf\|11 | NC_006055:395189 | G>A | EX | TCA>TTA | S>L | hypothetical | nonsyn |
| Mf\|23 | NC_006055:397049 | A>T | IG | | | | |
| Mf\|23 | NC_006055:397601 | G>A | EX | GCA>ACA | A>T | GMP | nonsyn |

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|---|---|---|---|---|---|---|---|
| Mf\|6 | NC_006055:397953 | C>T | EX | GCT>GTT | A>V | GMP | nonsyn |
| Mf\|83 | NC_006055:401473 | G>C | EX | TTC>TTG | F>L | chitinase | nonsyn |
| Mf\|67 | NC_006055:401825 | G>T | EX | CCT>CAT | P>H | chitinase | nonsyn |
| Mf\|42 | NC_006055:402425 | C>A | EX | GGA>GTA | G>V | chitinase | nonsyn |
| Mf\|99 | NC_006055:403449 | A>T | EX | TCA>ACA | S>T | chitinase | nonsyn |
| Mf\|99 | NC_006055:403450 | A>T | EX | GTT>GTA | V>V | chitinase | syn |
| Mf\|99 | NC_006055:403455 | A>T | EX | TAT>AAT | Y>N | chitinase | nonsyn |
| Mf\|62 | NC_006055:409021 | G>A | EX | CAA>TAA | Q>* | hypothetical | nonsyn |
| Mf\|92 | NC_006055:410584 | A>G | EX | TTA>CTA | L>L | chromosome | syn |
| Mf\|92 | NC_006055:410585 | G>A | EX | TTC>TTT | F>F | chromosome | syn |
| Mf\|57 | NC_006055:411195 | G>A | EX | TCA>TTA | S>L | chromosome | nonsyn |
| Mf\|11 | NC_006055:414792 | G>A | EX | TAC>TAT | Y>Y | valyl-tRNA | syn |
| Mf\|14 | NC_006055:416659 | C>A | EX | GAT>TAT | D>Y | Mg2+ | nonsyn |
| Mf\|19 | NC_006055:421247 | C>A | EX | TCA>TAA | S>* | hypothetical | nonsyn |
| Mf\|65 | NC_006055:422425 | G>A | EX | CAA>TAA | Q>* | 30S | nonsyn |
| Mf\|90 | NC_006055:422899 | T>G | EX | TTA>TTC | L>F | hypothetical | nonsyn |
| Mf\|19 | NC_006055:426085 | G>A | EX | ACA>ATA | T>I | histidyl-tRNA | nonsyn |
| Mf\|42 | NC_006055:427320 | G>A | EX | CTA>TTA | L>L | hypothetical | syn |
| Mf\|49 | NC_006055:429160 | G>T | EX | CAT>AAT | H>N | hypothetical | nonsyn |
| Mf\|55 | NC_006055:429611 | C>G | EX | ACA>AGA | T>R | 30S | nonsyn |
| Mf\|62 | NC_006055:429615 | G>A | EX | GCG>GCA | A>A | 30S | syn |
| Mf\|58 | NC_006055:429882 | G>A | EX | CAA>TAA | Q>* | DNA | nonsyn |
| Mf\|59 | NC_006055:431586 | G>A | EX | CAA>TAA | Q>* | DNA | nonsyn |
| Mf\|41 | NC_006055:432601 | A>G | EX | ATT>ACT | I>T | ribosome-binding | nonsyn |
| Mf\|58 | NC_006055:434827 | C>T | EX | TGA>TAA | *>* | rRNA | syn |
| Mf\|62 | NC_006055:435114 | C>A | EX | GAT>TAT | D>Y | xanthosine | nonsyn |
| Mf\|65 | NC_006055:435845 | T>G | EX | TTT>TTG | F>L | choline | nonsyn |
| Mf\|19 | NC_006055:439968 | G>A | IG | | | | |
| Mf\|49 | NC_006055:441361 | G>T | EX | GGA>TGA | G>* | hypothetical | nonsyn |
| Mf\|83 | NC_006055:441941 | C>T | IG | | | | |
| Mf\|26 | NC_006055:442143 | T>C | EX | CAT>CGT | H>R | 1-acyl-sn-glycerol-3-phosphate | nonsyn |
| Mf\|41 | NC_006055:444902 | G>A | EX | TCA>TTA | S>L | hypothetical | nonsyn |
| Mf\|59 | NC_006055:444959 | G>A | EX | CCA>CTA | P>L | hypothetical | nonsyn |
| Mf\|47 | NC_006055:447308 | C>G | EX | GGA>CGA | G>R | lipoprotein | nonsyn |
| Mf\|93 | NC_006055:447393 | C>A | EX | ATG>ATT | M>I | lipoprotein | nonsyn |
| Mf\|58 | NC_006055:448432 | C>T | EX | TTG>TTA | L>L | isoleucyl-tRNA | syn |
| Mf\|93 | NC_006055:449769 | C>A | EX | GTT>TTT | V>F | isoleucyl-tRNA | nonsyn |
| Mf\|76 | NC_006055:449805 | G>T | EX | CGT>AGT | R>S | isoleucyl-tRNA | nonsyn |
| Mf\|58 | NC_006055:449909 | G>A | EX | ACA>ATA | T>I | isoleucyl-tRNA | nonsyn |
| Mf\|39 | NC_006055:451989 | G>C | EX | TCC>TCG | S>S | hypothetical | syn |
| Mf\|6 | NC_006055:452222 | G>A | EX | GCT>GTT | A>V | cell | nonsyn |
| Mf\|26 | NC_006055:452235 | C>A | EX | GTA>TTA | V>L | cell | nonsyn |
| Mf\|12 | NC_006055:452331 | C>T | EX | GTT>ATT | V>I | cell | nonsyn |
| Mf\|68 | NC_006055:452334 | C>T | EX | GTT>ATT | V>I | cell | nonsyn |
| Mf\|26 | NC_006055:452799 | G>A | EX | CAA>TAA | Q>* | cell | nonsyn |
| Mf\|49 | NC_006055:452856 | C>G | EX | GCT>CCT | A>P | cell | nonsyn |
| Mf\|12 | NC_006055:453422 | A>G | EX | TAT>CAT | Y>H | hypothetical | nonsyn |
| Mf\|55 | NC_006055:453756 | C>T | EX | ATG>ATA | M>I | hypothetical | nonsyn |
| Mf\|23 | NC_006055:454220 | G>A | EX | CCA>TCA | P>S | hypothetical | nonsyn |
| Mf\|58 | NC_006055:454382 | C>T | EX | GAA>AAA | E>K | hypothetical | nonsyn |
| Mf\|65 | NC_006055:454496 | C>A | IG | | | | |
| Mf\|39 | NC_006055:454536 | G>A | EX | AGC>AGT | S>S | S-adenosyl-methyltransferase | syn |
| Mf\|42 | NC_006055:455013 | G>T | EX | AAC>AAA | N>K | S-adenosyl-methyltransferase | nonsyn |
| Mf\|65 | NC_006055:455464 | C>A | EX | GCT>TCT | A>S | cell | nonsyn |
| Mf\|68 | NC_006055:456315 | G>A | EX | ACT>ATT | T>I | hypothetical | nonsyn |
| Mf\|62 | NC_006055:461113 | C>A | EX | GAA>TAA | E>* | substrate | nonsyn |
| Mf\|92 | NC_006055:463957 | C>A | EX | GCA>TCA | A>S | substrate | nonsyn |
| Mf\|99 | NC_006055:472448 | C>T | EX | GCT>ACT | A>T | class | nonsyn |
| Mf\|68 | NC_006055:472456 | C>A | EX | GGA>GTA | G>V | class | nonsyn |

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|---|---|---|---|---|---|---|---|
| Mf\|19 | NC_006055:472648 | A>G | EX | ATT>ACT | I>T | class | nonsyn |
| Mf\|11 | NC_006055:473147 | C>A | EX | GAA>TAA | E>* | class | nonsyn |
| Mf\|26 | NC_006055:473264 | G>T | EX | CAA>AAA | Q>K | class | nonsyn |
| Mf\|6 | NC_006055:473516 | G>T | EX | CAT>AAT | H>N | class | nonsyn |
| Mf\|62 | NC_006055:473578 | C>G | EX | TGA>TCA | *>S | class | nonsyn |
| Mf\|85 | NC_006055:473693 | C>A | EX | GAA>TAA | E>* | class | nonsyn |
| Mf\|41 | NC_006055:474371 | G>C | EX | CAG>GAG | Q>E | class | nonsyn |
| Mf\|76 | NC_006055:474442 | C>T | EX | GGA>GAA | G>E | class | nonsyn |
| Mf\|19 | NC_006055:476970 | G>T | EX | CAA>AAA | Q>K | hypothetical | nonsyn |
| Mf\|11 | NC_006055:477017 | G>A | EX | TCA>TTA | S>L | hypothetical | nonsyn |
| Mf\|76 | NC_006055:480986 | A>C | EX | TTT>TTG | F>L | hypothetical | nonsyn |
| Mf\|93 | NC_006055:482305 | C>A | EX | GCT>TCT | A>S | tRNA-specific | nonsyn |
| Mf\|50 | NC_006055:482711 | G>T | EX | CAA>AAA | Q>K | xanthine/uracil | nonsyn |
| Mf\|90 | NC_006055:486103 | G>A | EX | GCG>GTG | A>V | molecular | nonsyn |
| Mf\|19 | NC_006055:486245 | C>T | EX | GAA>AAA | E>K | molecular | nonsyn |
| Mf\|90 | NC_006055:488795 | G>T | IG | | | | |
| Mf\|42 | NC_006055:490193 | G>A | EX | ACT>ATT | T>I | ATPase | nonsyn |
| Mf\|47 | NC_006055:490514 | G>A | EX | TCA>TTA | S>L | ATPase | nonsyn |
| Mf\|76 | NC_006055:493045 | C>T | EX | CTG>CTA | L>L | holliday | syn |
| Mf\|49 | NC_006055:495182 | C>A | EX | TGA>TTA | *>L | multidrug | nonsyn |
| Mf\|85 | NC_006055:498717 | T>C | EX | TTC>TCC | F>S | beta-glucosidase | nonsyn |
| Mf\|47 | NC_006055:499319 | G>A | EX | GTT>ATT | V>I | beta-glucosidase | nonsyn |
| Mf\|59 | NC_006055:500526 | C>G | EX | GCA>GGA | A>G | trehalose/sucrose/beta-glucoside | nonsyn |
| Mf\|57 | NC_006055:504931 | T>G | EX | ATC>CTC | I>L | hypothetical | nonsyn |
| Mf\|83 | NC_006055:507222 | G>C | EX | ACA>AGA | T>R | hypothetical | nonsyn |
| Mf\|58 | NC_006055:508938 | C>G | EX | TTG>TTC | L>F | 6-phospho-beta-glucosidase | nonsyn |
| Mf\|56 | NC_006055:510689 | A>G | EX | TAC>CAC | Y>H | transcriptional | nonsyn |
| Mf\|39 | NC_006055:511628 | C>A | EX | GGA>TGA | G>* | hypothetical | nonsyn |
| Mf\|90 | NC_006055:512062 | G>T | EX | ATG>ATT | M>I | hypothetical | nonsyn |
| Mf\|58 | NC_006055:514705 | G>A | EX | GCT>GTT | A>V | arginine | nonsyn |
| Mf\|58 | NC_006055:517256 | C>T | IG | | | | |
| Mf\|6 | NC_006055:518237 | A>G | EX | TTA>TCA | L>S | hypothetical | nonsyn |
| Mf\|90 | NC_006055:521293 | C>A | EX | GAT>TAT | D>Y | membrane-associated | nonsyn |
| Mf\|55 | NC_006055:523043 | C>A | IG | | | | |
| Mf\|12 | NC_006055:523496 | G>T | IG | | | | |
| Mf\|58 | NC_006055:523739 | A>G | IG | | | | |
| Mf\|76 | NC_006055:524223 | G>T | IG | | | | |
| Mf\|58 | NC_006055:524328 | G>T | IG | | | | |
| Mf\|50 | NC_006055:525001 | C>T | EX | ATG>ATA | M>I | membrane-associated | nonsyn |
| Mf\|47 | NC_006055:526392 | C>T | EX | GAT>AAT | D>N | membrane-associated | nonsyn |
| Mf\|6 | NC_006055:526610 | C>T | EX | GGA>GAA | G>E | membrane-associated | nonsyn |
| Mf\|92 | NC_006055:527046 | C>T | EX | GAA>AAA | E>K | membrane-associated | nonsyn |
| Mf\|76 | NC_006055:531159 | T>G | IG | | | | |
| Mf\|58 | NC_006055:531646 | G>A | EX | TCA>TTA | S>L | hypothetical | nonsyn |
| Mf\|23 | NC_006055:532517 | A>C | EX | GTT>GTG | V>V | multidrug | syn |
| Mf\|11 | NC_006055:534758 | G>A | IG | | | | |
| Mf\|47 | NC_006055:536946 | G>A | EX | ACA>ATA | T>I | histone-like | nonsyn |
| Mf\|19 | NC_006055:537926 | T>A | EX | TTA>TTT | L>F | histone-like | nonsyn |
| Mf\|58 | NC_006055:538407 | G>A | EX | ACT>ATT | T>I | hypothetical | nonsyn |
| Mf\|59 | NC_006055:539559 | G>A | EX | ACT>ATT | T>I | hypothetical | nonsyn |
| Mf\|49 | NC_006055:540304 | C>T | EX | GGC>GAC | G>D | hypothetical | nonsyn |
| Mf\|58 | NC_006055:540340 | G>A | EX | ACA>ATA | T>I | hypothetical | nonsyn |
| Mf\|41 | NC_006055:541068 | G>C | EX | TAC>TAG | Y>* | hypothetical | nonsyn |
| Mf\|59 | NC_006055:541640 | C>A | EX | GGT>TGT | G>C | hypothetical | nonsyn |
| Mf\|39 | NC_006055:544108 | G>T | EX | TCA>TAA | S>* | hypothetical | nonsyn |
| Mf\|12 | NC_006055:545977 | G>A | EX | GCA>GTA | A>V | multidrug | nonsyn |
| Mf\|19 | NC_006055:546911 | C>T | EX | GAA>AAA | E>K | multidrug | nonsyn |
| Mf\|65 | NC_006055:547934 | C>T | EX | GTA>ATA | V>I | multidrug | nonsyn |
| Mf\|93 | NC_006055:548212 | G>T | EX | TCA>TAA | S>* | multidrug | nonsyn |

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|---|---|---|---|---|---|---|---|
| Mf\|99 | NC_006055:550696 | C>T | EX | GTG>GTA | V>V | phosphatidylglycerophosphatase | syn |
| Mf\|26 | NC_006055:554350 | C>A | EX | TTC>TTA | F>L | GTP-binding | nonsyn |
| Mf\|57 | NC_006055:555265 | C>A | IG | | | | |
| Mf\|49 | NC_006055:555848 | C>T | EX | GTT>ATT | V>I | nucleoside | nonsyn |
| Mf\|93 | NC_006055:558669 | C>A | EX | GGG>GTG | G>V | GTP-binding | nonsyn |
| Mf\|68 | NC_006055:559862 | C>T | IG | | | | |
| Mf\|49 | NC_006055:560650 | T>G | EX | ATT>CTT | I>L | prolyl-tRNA | nonsyn |
| Mf\|12 | NC_006055:561732 | T>C | EX | TAC>TGC | Y>C | prolyl-tRNA | nonsyn |
| Mf\|62 | NC_006055:561991 | C>T | EX | GGA>GAA | G>E | hypothetical | nonsyn |
| Mf\|67 | NC_006055:565625 | C>T | EX | GTT>ATT | V>I | asparaginyl-tRNA | nonsyn |
| Mf\|47 | NC_006055:565949 | C>A | EX | GAC>TAC | D>Y | asparaginyl-tRNA | nonsyn |
| Mf\|62 | NC_006055:567517 | C>T | EX | GTA>ATA | V>I | lipase | nonsyn |
| Mf\|41 | NC_006055:569317 | G>T | EX | CCT>ACT | P>T | DNA-binding/iron | nonsyn |
| Mf\|58 | NC_006055:570305 | C>T | EX | GAG>GAA | E>E | hypothetical | syn |
| Mf\|67 | NC_006055:570997 | C>T | EX | GCA>ACA | A>T | hypothetical | nonsyn |
| Mf\|47 | NC_006055:572809 | C>G | EX | GTA>CTA | V>L | hypothetical | nonsyn |
| Mf\|6 | NC_006055:573092 | G>A | EX | AAC>AAT | N>N | hypothetical | syn |
| Mf\|39 | NC_006055:573709 | C>T | EX | GCA>ACA | A>T | hypothetical | nonsyn |
| Mf\|47 | NC_006055:575847 | G>C | EX | TCA>TGA | S>* | leucyl-tRNA | nonsyn |
| Mf\|67 | NC_006055:575852 | A>G | EX | GGT>GGC | G>G | leucyl-tRNA | syn |
| Mf\|56 | NC_006055:578464 | C>T | EX | ATG>ATA | M>I | hypothetical | nonsyn |
| Mf\|39 | NC_006055:578965 | C>T | EX | GGA>AGA | G>R | 30S | nonsyn |
| Mf\|85 | NC_006055:580964 | G>A | EX | CCA>TCA | P>S | Mg2+ | nonsyn |
| Mf\|58 | NC_006055:581065 | G>A | EX | ACA>ATA | T>I | Mg2+ | nonsyn |
| Mf\|14 | NC_006055:581368 | T>C | EX | GAA>GGA | E>G | Mg2+ | nonsyn |
| Mf\|26 | NC_006055:586812 | A>G | EX | GGT>GGC | G>G | trehalose | syn |
| Mf\|57 | NC_006055:588663 | T>G | EX | CAA>CCA | Q>P | trehalose | nonsyn |
| Mf\|76 | NC_006055:592003 | G>C | EX | GCT>GGT | A>G | triosephosphate | nonsyn |
| Mf\|47 | NC_006055:593026 | T>C | EX | GAT>GGT | D>G | hypothetical | nonsyn |
| Mf\|99 | NC_006055:593229 | G>C | EX | AAC>AAG | N>K | hypothetical | nonsyn |
| Mf\|42 | NC_006055:593553 | C>A | EX | ATG>ATT | M>I | hypothetical | nonsyn |
| Mf\|93 | NC_006055:593868 | C>A | EX | AAG>AAT | K>N | hypothetical | nonsyn |
| Mf\|83 | NC_006055:596599 | C>T | IG | | | | |
| Mf\|6 | NC_006055:598141 | G>A | EX | CCT>CTT | P>L | hypothetical | nonsyn |
| Mf\|59 | NC_006055:602385 | C>G | EX | GTG>CTG | V>L | spermidine/putrescine | nonsyn |
| Mf\|85 | NC_006055:603323 | G>C | EX | CAC>CAG | H>Q | spermidine/putrescine | nonsyn |
| Mf\|67 | NC_006055:604570 | G>T | IG | | | | |
| Mf\|58 | NC_006055:605201 | C>T | EX | GGT>AGT | G>S | HAD-superfamily | nonsyn |
| Mf\|55 | NC_006055:610126 | C>T | EX | GGT>AGT | G>S | sucrose | nonsyn |
| Mf\|47 | NC_006055:610520 | A>C | IG | | | | |
| Mf\|85 | NC_006055:611082 | C>T | IG | | | | |
| Mf\|55 | NC_006055:611205 | C>A | EX | ATG>ATT | M>I | phosphoenolpyruvate-protein | nonsyn |
| Mf\|99 | NC_006055:613403 | C>A | EX | GGT>TGT | G>C | NH3-dependent | nonsyn |
| Mf\|23 | NC_006055:613576 | G>T | EX | TCT>TAT | S>Y | NH3-dependent | nonsyn |
| Mf\|59 | NC_006055:613676 | G>A | EX | CCG>TCG | P>S | NH3-dependent | nonsyn |
| Mf\|92 | NC_006055:616893 | A>G | EX | CGT>CGC | R>R | ATP-dependent | syn |
| Mf\|50 | NC_006055:617221 | T>C | EX | AAT>AGT | N>S | ATP-dependent | nonsyn |
| Mf\|50 | NC_006055:617222 | T>C | EX | AAT>GAT | N>D | ATP-dependent | nonsyn |
| Mf\|56 | NC_006055:617305 | C>A | EX | AGA>ATA | R>I | ATP-dependent | nonsyn |
| Mf\|93 | NC_006055:617507 | C>T | EX | GTT>ATT | V>I | ATP-dependent | nonsyn |
| Mf\|23 | NC_006055:619728 | G>A | EX | GCA>GTA | A>V | sucrose-6-phosphate | nonsyn |
| Mf\|58 | NC_006055:620021 | T>A | EX | ACA>ACT | T>T | sucrose-6-phosphate | syn |
| Mf\|49 | NC_006055:620657 | C>T | EX | GTT>ATT | V>I | sucrose | nonsyn |
| Mf\|83 | NC_006055:621365 | C>G | EX | GAT>CAT | D>H | sucrose | nonsyn |
| Mf\|99 | NC_006055:623813 | G>A | EX | GCT>GTT | A>V | ribonucleotide-diphosphate | nonsyn |
| Mf\|56 | NC_006055:624419 | C>A | EX | GAA>TAA | E>* | ribonucleotide-diphosphate | nonsyn |
| Mf\|90 | NC_006055:626728 | T>C | EX | GAC>GGC | D>G | hypothetical | nonsyn |
| Mf\|59 | NC_006055:629205 | C>T | EX | GGA>AGA | G>R | multidrug | nonsyn |
| Mf\|68 | NC_006055:629220 | A>T | EX | TAC>AAC | Y>N | multidrug | nonsyn |

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|---|---|---|---|---|---|---|---|
| Mf\|83 | NC_006055:629327 | G>A | EX | ACA>ATA | T>I | multidrug | nonsyn |
| Mf\|67 | NC_006055:629955 | C>T | EX | GTG>ATG | V>M | multidrug | nonsyn |
| Mf\|58 | NC_006055:630138 | C>A | EX | GAA>TAA | E>* | multidrug | nonsyn |
| Mf\|93 | NC_006055:630486 | G>A | EX | CAA>TAA | Q>* | multidrug | nonsyn |
| Mf\|39 | NC_006055:631318 | G>A | EX | CAT>TAT | H>Y | multidrug/protein/lipid | nonsyn |
| Mf\|58 | NC_006055:631682 | T>A | EX | ACA>ACT | T>T | multidrug/protein/lipid | syn |
| Mf\|67 | NC_006055:632146 | G>C | EX | CAA>GAA | Q>E | multidrug/protein/lipid | nonsyn |
| Mf\|58 | NC_006055:632239 | T>C | EX | ACT>GCT | T>A | multidrug/protein/lipid | nonsyn |
| Mf\|67 | NC_006055:633492 | G>A | EX | TCA>TTA | S>L | single | nonsyn |
| Mf\|19 | NC_006055:633813 | C>G | EX | GAA>CAA | E>Q | ribonuclease | nonsyn |
| Mf\|59 | NC_006055:635956 | C>T | EX | AGG>AAG | R>K | tRNA | nonsyn |
| Mf\|39 | NC_006055:637099 | C>A | EX | GCA>TCA | A>S | 30S | nonsyn |
| Mf\|99 | NC_006055:637799 | C>A | EX | ATG>ATT | M>I | hypothetical | nonsyn |
| Mf\|55 | NC_006055:638455 | T>C | EX | TCT>TCC | S>S | inorganic | syn |
| Mf\|23 | NC_006055:639320 | T>C | EX | AAC>AGC | N>S | hypothetical | nonsyn |
| Mf\|67 | NC_006055:640546 | G>A | EX | GCT>GTT | A>V | hypothetical | nonsyn |
| Mf\|58 | NC_006055:640753 | G>C | EX | GAC>GAG | D>E | deoxynucleoside | nonsyn |
| Mf\|83 | NC_006055:641330 | A>G | EX | GAT>GAC | D>D | 23S | syn |
| Mf\|14 | NC_006055:643248 | G>A | EX | GCA>GTA | A>V | chromosomal | nonsyn |
| Mf\|99 | NC_006055:644453 | G>C | EX | GAC>GAG | D>E | hypothetical | nonsyn |
| Mf\|56 | NC_006055:645436 | C>A | EX | GTA>TTA | V>L | hypothetical | nonsyn |
| Mf\|92 | NC_006055:647355 | G>T | EX | TTC>TTA | F>L | arginyl-tRNA | nonsyn |
| Mf\|92 | NC_006055:648499 | G>C | EX | TCA>TGA | S>* | ribosome | nonsyn |
| Mf\|85 | NC_006055:650459 | G>T | EX | CAT>AAT | H>N | chitin | nonsyn |
| Mf\|99 | NC_006055:650879 | G>A | EX | GCT>GTT | A>V | hypothetical | nonsyn |
| Mf\|90 | NC_006055:651395 | C>A | EX | GAT>TAT | D>Y | elongation | nonsyn |
| Mf\|14 | NC_006055:652274 | C>A | EX | GTA>TTA | V>L | 30S | nonsyn |
| Mf\|41 | NC_006055:652370 | C>T | EX | GTA>ATA | V>I | 30S | nonsyn |
| Mf\|39 | NC_006055:653542 | G>A | EX | TCA>TTA | S>L | transporter | nonsyn |
| Mf\|56 | NC_006055:656145 | G>C | EX | GCA>GGA | A>G | CAAX | nonsyn |
| Mf\|12 | NC_006055:657159 | G>A | EX | GCT>GTT | A>V | phosphotransferase | nonsyn |
| Mf\|93 | NC_006055:662017 | C>A | EX | TCT>TAT | S>Y | polypeptide | nonsyn |
| Mf\|26 | NC_006055:663656 | C>A | EX | TCT>TAT | S>Y | metallo-beta | nonsyn |
| Mf\|12 | NC_006055:663721 | G>T | EX | GGT>TGT | G>C | metallo-beta | nonsyn |
| Mf\|99 | NC_006055:667602 | C>T | EX | GAA>AAA | E>K | hypothetical | nonsyn |
| Mf\|76 | NC_006055:668351 | G>T | EX | TCA>TAA | S>* | hypothetical | nonsyn |
| Mf\|99 | NC_006055:669668 | C>A | EX | TCA>TAA | S>* | hypothetical | nonsyn |
| Mf\|26 | NC_006055:670788 | C>T | IG | | | | |
| Mf\|23 | NC_006055:672603 | C>A | EX | GAT>TAT | D>Y | phosphoglycerate | nonsyn |
| Mf\|90 | NC_006055:679986 | T>C | EX | AAC>AGC | N>S | DNA | nonsyn |
| Mf\|76 | NC_006055:684844 | C>A | EX | AGT>ATT | S>I | chromosome | nonsyn |
| Mf\|85 | NC_006055:690508 | G>A | EX | GTT>ATT | V>I | fatty | nonsyn |
| Mf\|50 | NC_006055:690969 | G>C | EX | GAT>CAT | D>H | fatty | nonsyn |
| Mf\|68 | NC_006055:691383 | G>A | EX | GAA>AAA | E>K | fatty | nonsyn |
| Mf\|83 | NC_006055:691534 | G>C | EX | AGA>ACA | R>T | fatty | nonsyn |
| Mf\|11 | NC_006055:691708 | T>C | IG | | | | |
| Mf\|19 | NC_006055:692933 | G>C | EX | ACA>AGA | T>R | hypothetical | nonsyn |
| Mf\|14 | NC_006055:695941 | C>T | EX | GGA>AGA | G>R | DNA-directed | nonsyn |
| Mf\|93 | NC_006055:698824 | C>T | EX | GTT>ATT | V>I | DNA-directed | nonsyn |
| Mf\|65 | NC_006055:699544 | C>T | EX | GGA>AGA | G>R | DNA-directed | nonsyn |
| Mf\|26 | NC_006055:700578 | T>C | EX | AAC>AGC | N>S | DNA-directed | nonsyn |
| Mf\|90 | NC_006055:700618 | C>G | EX | GTT>CTT | V>L | DNA-directed | nonsyn |
| Mf\|50 | NC_006055:700747 | G>T | EX | CCT>ACT | P>T | DNA-directed | nonsyn |
| Mf\|23 | NC_006055:701907 | C>T | EX | GGA>GAA | G>E | DNA-directed | nonsyn |
| Mf\|23 | NC_006055:703407 | G>A | EX | CAA>TAA | Q>* | hypothetical | nonsyn |
| Mf\|99 | NC_006055:705464 | G>T | IG | | | | |
| Mf\|55 | NC_006055:705838 | G>T | IG | | | | |
| Mf\|58 | NC_006055:707246 | C>T | EX | GTA>ATA | V>I | ABC | nonsyn |
| Mf\|23 | NC_006055:708334 | G>A | EX | ACA>ATA | T>I | ABC | nonsyn |

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|---|---|---|---|---|---|---|---|
| Mf\|6 | NC_006055:712338 | T>C | EX | AAC>AGC | N>S | 50S | nonsyn |
| Mf\|76 | NC_006055:712955 | G>A | EX | GCT>GTT | A>V | 50S | nonsyn |
| Mf\|26 | NC_006055:713653 | C>A | IG | | | | |
| Mf\|41 | NC_006055:714052 | T>C | EX | GTG>GCG | V>A | hypothetical | nonsyn |
| Mf\|59 | NC_006055:714565 | G>A | EX | GGG>GAG | G>E | hypothetical | nonsyn |
| Mf\|47 | NC_006055:715274 | G>T | EX | CCA>CAA | P>Q | hypothetical | nonsyn |
| Mf\|42 | NC_006055:720375 | G>A | EX | TCA>TTA | S>L | beta-glucosidase | nonsyn |
| Mf\|59 | NC_006055:720594 | G>A | EX | TCA>TTA | S>L | beta-glucosidase | nonsyn |
| Mf\|68 | NC_006055:721662 | T>C | EX | ATT>GTT | I>V | transcriptional | nonsyn |
| Mf\|19 | NC_006055:723109 | C>T | EX | GTT>ATT | V>I | 6-phospho-beta-glucosidase | nonsyn |
| Mf\|62 | NC_006055:723466 | C>G | EX | GTT>CTT | V>L | 6-phospho-beta-glucosidase | nonsyn |
| Mf\|65 | NC_006055:724610 | G>A | EX | ACA>ATA | T>I | transcriptional | nonsyn |
| Mf\|19 | NC_006055:727128 | C>A | EX | GGG>GGT | G>G | substrate | syn |
| Mf\|26 | NC_006055:727328 | C>T | EX | GTG>ATG | V>M | substrate | nonsyn |
| Mf\|58 | NC_006055:728007 | G>A | EX | CCA>CTA | P>L | elongation | nonsyn |
| Mf\|99 | NC_006055:731438 | G>A | EX | AAC>AAT | N>N | 30S | syn |
| Mf\|67 | NC_006055:732133 | C>T | EX | GCG>GCA | A>A | 30S | syn |
| Mf\|58 | NC_006055:733804 | G>A | EX | CCA>CTA | P>L | cardiolipin | nonsyn |
| Mf\|11 | NC_006055:736487 | C>A | EX | GAA>TAA | E>* | hypothetical | nonsyn |
| Mf\|83 | NC_006055:738077 | G>A | EX | CTT>TTT | L>F | polypeptide | nonsyn |
| Mf\|58 | NC_006055:738229 | G>A | EX | TCA>TTA | S>L | polypeptide | nonsyn |
| Mf\|58 | NC_006055:739931 | C>T | EX | GCC>ACC | A>T | peptide | nonsyn |
| Mf\|49 | NC_006055:744513 | G>T | IG | | | | |
| Mf\|85 | NC_006055:747858 | C>T | EX | GCG>GCA | A>A | ribokinase | syn |
| Mf\|76 | NC_006055:749091 | C>T | EX | GAT>AAT | D>N | PTS | nonsyn |
| Mf\|23 | NC_006055:749659 | T>C | IG | | | | |
| Mf\|85 | NC_006055:751595 | G>T | EX | GCT>GAT | A>D | multidrug | nonsyn |
| Mf\|62 | NC_006055:751842 | G>A | EX | CAA>TAA | Q>* | multidrug | nonsyn |
| Mf\|65 | NC_006055:752332 | C>G | IG | | | | |
| Mf\|93 | NC_006055:755692 | C>T | EX | ATG>ATA | M>I | HD | nonsyn |
| Mf\|6 | NC_006055:758000 | C>T | EX | GTT>ATT | V>I | sodium-glutamate | nonsyn |
| Mf\|99 | NC_006055:759951 | G>T | EX | AAC>AAA | N>K | NADH | nonsyn |
| Mf\|85 | NC_006055:760327 | G>A | EX | ACA>ATA | T>I | NADH | nonsyn |
| Mf\|58 | NC_006055:761490 | G>A | EX | GGA>AGA | G>R | DNA | nonsyn |
| Mf\|55 | NC_006055:764884 | C>A | EX | GAT>TAT | D>Y | hypothetical | nonsyn |
| Mf\|50 | NC_006055:769966 | C>T | EX | GTT>ATT | V>I | phosphatidylglycerophosphate | nonsyn |
| Mf\|58 | NC_006055:770689 | G>A | EX | TCA>TTA | S>L | putrescine/ornithine | nonsyn |
| Mf\|62 | NC_006055:771271 | G>A | EX | ACT>ATT | T>I | putrescine/ornithine | nonsyn |
| Mf\|65 | NC_006055:771571 | C>T | EX | GGT>GAT | G>D | putrescine/ornithine | nonsyn |
| Mf\|50 | NC_006055:772078 | G>A | EX | CTT>TTT | L>F | purine-nucleoside | nonsyn |
| Mf\|55 | NC_006055:772909 | C>T | EX | GGT>GAT | G>D | ribose | nonsyn |
| Mf\|14 | NC_006055:774218 | G>A | EX | ACA>ATA | T>I | ribose | nonsyn |
| Mf\|59 | NC_006055:774359 | C>T | EX | GGA>GAA | G>E | ribose | nonsyn |
| Mf\|14 | NC_006055:776162 | G>A | EX | ACA>ATA | T>I | ribose | nonsyn |
| Mf\|19 | NC_006055:777359 | G>C | EX | CCA>CGA | P>R | xylose | nonsyn |
| Mf\|68 | NC_006055:778817 | G>A | EX | GCT>GTT | A>V | DNA-binding | nonsyn |
| Mf\|68 | NC_006055:778837 | C>T | EX | GCG>GCA | A>A | DNA-binding | syn |
| Mf\|68 | NC_006055:778838 | G>A | EX | GCG>GTG | A>V | DNA-binding | nonsyn |
| Mf\|6 | NC_006055:779199 | C>A | EX | GCA>TCA | A>S | DNA-binding | nonsyn |
| Mf\|56 | NC_006055:779820 | G>T | EX | ACT>AAT | T>N | tRNA | nonsyn |
| Mf\|93 | NC_006055:782021 | C>A | EX | GCT>TCT | A>S | cell | nonsyn |
| Mf\|50 | NC_006055:782380 | C>G | EX | GGT>GCT | G>A | cell | nonsyn |
| Mf\|55 | NC_006055:782440 | G>A | EX | GCA>GTA | A>V | cell | nonsyn |
| Mf\|12 | NC_006055:785976 | C>T | EX | GTT>ATT | V>I | DNA | nonsyn |
| Mf\|76 | NC_006055:787942 | T>C | EX | GAA>GGA | E>G | DNA | nonsyn |
| Mf\|55 | NC_006055:790847 | G>T | EX | CAA>AAA | Q>K | HAD-superfamily | nonsyn |
| Mf\|58 | NC_006055:791129 | C>T | IG | | | | |
| Mf\|41 | NC_006055:791249 | G>T | EX | CGT>AGT | R>S | inner | nonsyn |
| Mf\|62 | NC_006055:791908 | G>A | EX | ACA>ATA | T>I | inner | nonsyn |

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|---|---|---|---|---|---|---|---|
| Se\|70 | NC_005003:1464 | G>A | IG | | | | |
| Se\|66 | NC_005008:1544 | G>A | IG | | | | |
| Se\|62 | NC_005004:1706 | C>A | EX | CTT>ATT | L>I | hypothetical | nonsyn |
| Se\|2 | NC_005008:3500 | T>C | EX | AGT>AGC | S>S | RepC | syn |
| Se\|39 | NC_005007:4079 | C>A | EX | GCG>GAG | A>E | RLX | nonsyn |
| Se\|39 | NC_005003:5939 | G>A | IG | | | | |
| Se\|75 | NC_005004:10466 | T>G | IG | | | | |
| Se\|38 | NC_004461:13129 | A>G | IG | | | | |
| Se\|75 | NC_004461:14691 | C>T | IG | | | | |
| Se\|67 | NC_004461:17081 | C>A | EX | CTG>ATG | L>M | homoserine-o-acetyltransferase | nonsyn |
| Se\|11 | NC_005004:17598 | G>T | IG | | | | |
| Se\|3 | NC_004461:21923 | A>T | EX | TCA>TCT | S>S | replicative | syn |
| Se\|38 | NC_004461:34294 | G>A | EX | GGG>GGA | G>G | teichoic | syn |
| Se\|13 | NC_004461:39377 | A>T | IG | | | | |
| Se\|12 | NC_004461:40860 | A>T | EX | AAA>ATA | K>I | penicillin | nonsyn |
| Se\|12 | NC_004461:59880 | A>G | EX | ATA>ACA | I>T | cassette | nonsyn |
| Se\|66 | NC_004461:60149 | G>A | EX | TAC>TAT | Y>Y | cassette | syn |
| Se\|70 | NC_004461:69607 | A>T | EX | GAT>GTT | D>V | hypothetical | nonsyn |
| Se\|59 | NC_004461:70211 | G>A | EX | GTT>ATT | V>I | hypothetical | nonsyn |
| Se\|63 | NC_004461:82427 | T>G | EX | GTC>GGC | V>G | regulatory | nonsyn |
| Se\|59 | NC_004461:86584 | T>G | EX | ACT>ACG | T>T | dihydrolipoamide | syn |
| Se\|12 | NC_004461:108640 | T>G | EX | GAA>GCA | E>A | pyridoxal-deC | nonsyn |
| Se\|75 | NC_004461:120131 | C>T | IG | | | | |
| Se\|11 | NC_004461:123802 | G>T | EX | GAA>TAA | E>* | hypothetical | nonsyn |
| Se\|2 | NC_004461:132566 | G>A | IG | | | | |
| Se\|62 | NC_004461:170678 | G>A | EX | GGA>AGA | G>R | adenosylmethionine-8-amino-7-oxononanc | nonsyn |
| Se\|63 | NC_004461:182083 | G>T | EX | GCT>TCT | A>S | Zn-binding | nonsyn |
| Se\|4 | NC_004461:184153 | C>T | IG | | | | |
| Se\|34 | NC_004461:184980 | A>T | EX | CAA>CAT | Q>H | NADH-dependent | nonsyn |
| Se\|7 | NC_004461:188114 | G>A | EX | GGT>AGT | G>S | transmembrane | nonsyn |
| Se\|2 | NC_004461:201039 | G>T | EX | AGT>ATT | S>I | ABC | nonsyn |
| Se\|7 | NC_004461:204655 | C>A | EX | GCT>GAT | A>D | formate | nonsyn |
| Se\|69 | NC_004461:207022 | C>A | EX | CGC>CTC | R>L | succinyl-diaminopimelate | nonsyn |
| Se\|10 | NC_004461:214647 | A>G | EX | TTA>TTG | L>L | glycine | syn |
| Se\|10 | NC_004461:217646 | A>C | EX | TTC>GTC | F>V | hypothetical | nonsyn |
| Se\|70 | NC_004461:224256 | A>G | IG | | | | |
| Se\|2 | NC_004461:228462 | G>T | EX | GGC>GGA | G>G | multidrug | syn |
| Se\|63 | NC_004461:231309 | T>G | EX | TTC>GTC | F>V | multidrug | nonsyn |
| Se\|69 | NC_004461:236135 | C>T | EX | GCT>GTT | A>V | surfactin | nonsyn |
| Se\|3 | NC_004461:236986 | T>A | EX | TAT>AAT | Y>N | surfactin | nonsyn |
| Se\|12 | NC_004461:255006 | G>T | EX | GGG>TGG | G>W | branched-chain | nonsyn |
| Se\|38 | NC_004461:257948 | C>T | EX | TCC>TCT | S>S | hypothetical | syn |
| Se\|50 | NC_004461:258275 | T>C | IG | | | | |
| Se\|59 | NC_004461:265982 | C>T | EX | GGT>AGT | G>S | malate:quinone | nonsyn |
| Se\|62 | NC_004461:281215 | T>A | IG | | | | |
| Se\|59 | NC_004461:295465 | C>T | EX | CAT>TAT | H>Y | tRNA/rRNA | nonsyn |
| Se\|2 | NC_004461:299847 | G>T | EX | CGT>CTT | R>L | 50S | nonsyn |
| Se\|10 | NC_004461:301563 | A>G | IG | | | | |
| Se\|13 | NC_004461:333412 | C>T | EX | CAA>TAA | Q>* | Ser-Asp | nonsyn |
| Se\|4 | NC_004461:334590 | C>T | EX | GAC>GAT | D>D | Ser-Asp | syn |
| Se\|4 | NC_004461:334629 | C>A | EX | TCC>TCA | S>S | Ser-Asp | syn |
| Se\|4 | NC_004461:334632 | T>C | EX | GAT>GAC | D>D | Ser-Asp | syn |
| Se\|4 | NC_004461:334641 | G>A | EX | TCG>TCA | S>S | Ser-Asp | syn |
| Se\|3 | NC_004461:337670 | C>A | EX | CAC>CAA | H>Q | hypothetical | nonsyn |
| Se\|38 | NC_004461:352812 | C>T | EX | GGC>GGT | G>G | cationic | syn |
| Se\|75 | NC_004461:375658 | A>T | EX | AAA>AAT | K>N | hypothetical | nonsyn |
| Se\|75 | NC_004461:380105 | G>T | EX | GCG>GCT | A>A | iron-binding | syn |
| Se\|3 | NC_004461:388607 | G>C | EX | TCT>TGT | S>C | hypothetical | nonsyn |
| Se\|38 | NC_004461:392574 | G>C | EX | CGT>CCT | R>P | monovalent | nonsyn |

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|---|---|---|---|---|---|---|---|
| Se\|13 | NC_004461:393788 | C>T | EX | CAT>TAT | H>Y | monovalent | nonsyn |
| Se\|75 | NC_004461:433604 | G>T | IG | | | | |
| Se\|13 | NC_004461:447598 | C>A | EX | GGT>GTT | G>V | undecaprenyl | nonsyn |
| Se\|38 | NC_004461:449335 | C>A | EX | CCT>CAT | P>H | hypothetical | nonsyn |
| Se\|65 | NC_004461:449548 | G>C | EX | GGT>GCT | G>A | hypothetical | nonsyn |
| Se\|4 | NC_004461:462739 | A>T | EX | AAA>AAT | K>N | transcription | nonsyn |
| Se\|34 | NC_004461:489682 | G>A | EX | GAT>AAT | D>N | ABC | nonsyn |
| Se\|69 | NC_004461:494579 | A>T | IG | | | | |
| Se\|34 | NC_004461:495944 | C>A | EX | GCT>GAT | A>D | hypothetical | nonsyn |
| Se\|10 | NC_004461:497763 | C>A | EX | GAC>TAC | D>Y | bifunctional | nonsyn |
| Se\|75 | NC_004461:501808 | A>T | EX | TTA>TAA | L>* | di-tripepride | nonsyn |
| Se\|70 | NC_004461:502669 | T>A | IG | | | | |
| Se\|7 | NC_004461:514279 | C>T | EX | GCA>ACA | A>T | hypothetical | nonsyn |
| Se\|2 | NC_004461:514708 | C>T | IG | | | | |
| Se\|75 | NC_004461:519140 | C>T | EX | GGT>GAT | G>D | hypothetical | nonsyn |
| Se\|67 | NC_004461:523198 | A>C | EX | GTC>GGC | V>G | hypothetical | nonsyn |
| Se\|62 | NC_004461:528592 | T>G | EX | TTT>TTG | F>L | preprotein | nonsyn |
| Se\|66 | NC_004461:543285 | C>T | EX | CTT>TTT | L>F | hypothetical | nonsyn |
| Se\|8 | NC_004461:545580 | C>T | EX | GCA>GTA | A>V | hypothetical | nonsyn |
| Se\|7 | NC_004461:554343 | A>G | EX | CAC>CGC | H>R | glyceraldehyde-3-phosphate | nonsyn |
| Se\|12 | NC_004461:572238 | A>G | EX | TTA>CTA | L>L | hypothetical | syn |
| Se\|39 | NC_004461:579262 | C>A | EX | GAA>TAA | E>* | hypothetical | nonsyn |
| Se\|7 | NC_004461:580374 | T>A | IG | | | | |
| Se\|59 | NC_004461:580448 | G>C | IG | | | | |
| Se\|34 | NC_004461:593568 | T>A | EX | GGT>GGA | G>G | ABC | syn |
| Se\|34 | NC_004461:608615 | C>G | IG | | | | |
| Se\|59 | NC_004461:610535 | C>G | EX | CTT>GTT | L>V | DltB | nonsyn |
| Se\|70 | NC_004461:627607 | C>T | EX | GTG>ATG | V>M | monovalent | nonsyn |
| Se\|66 | NC_004461:645498 | G>A | EX | GGT>AGT | G>S | hypothetical | nonsyn |
| Se\|59 | NC_004461:660859 | G>A | EX | ATG>ATA | M>I | hypothetical | nonsyn |
| Se\|4 | NC_004461:668674 | T>A | EX | GTT>GTA | V>V | 3-oxoacyl-ACP | syn |
| Se\|39 | NC_004461:687790 | T>A | EX | GAT>GAA | D>E | inorganic | nonsyn |
| Se\|4 | NC_004461:689530 | G>A | EX | GAT>AAT | D>N | Mg2+ | nonsyn |
| Se\|13 | NC_004461:700673 | C>A | IG | | | | |
| Se\|62 | NC_004461:706991 | A>T | EX | CCT>CCA | P>P | diacylglycerol | syn |
| Se\|59 | NC_004461:710039 | A>C | EX | AAA>ACA | K>T | peptide | nonsyn |
| Se\|38 | NC_004461:719747 | A>G | IG | | | | |
| Se\|50 | NC_004461:725555 | T>G | IG | | | | |
| Se\|50 | NC_004461:752293 | T>G | EX | TGT>GGT | C>G | phosphoribosylaminoimidazole | nonsyn |
| Se\|2 | NC_004461:759880 | G>T | EX | GAC>TAC | D>Y | phosphoribosylglycinamide | nonsyn |
| Se\|13 | NC_004461:763866 | C>T | EX | GAA>AAA | E>K | cation | nonsyn |
| Se\|11 | NC_004461:775282 | T>A | EX | ATT>ATA | I>I | cytochrome | syn |
| Se\|70 | NC_004461:796310 | T>A | EX | GCA>GCT | A>A | manganese | syn |
| Se\|7 | NC_004461:817228 | C>T | EX | ATG>ATA | M>I | hypothetical | nonsyn |
| Se\|11 | NC_004461:818705 | C>T | EX | CAT>TAT | H>Y | hypothetical | nonsyn |
| Se\|39 | NC_004461:837123 | G>A | EX | GCA>ACA | A>T | succinate | nonsyn |
| Se\|50 | NC_004461:842238 | A>C | IG | | | | |
| Se\|69 | NC_004461:855203 | A>T | EX | AGT>TGT | S>C | cell | nonsyn |
| Se\|3 | NC_004461:891218 | G>T | EX | GTC>TTC | V>F | PP2C | nonsyn |
| Se\|67 | NC_004461:894721 | C>T | EX | ACA>ATA | T>I | ribulose-phosphate | nonsyn |
| Se\|70 | NC_004461:908615 | G>T | EX | CCG>CCT | P>P | chromosome | syn |
| Se\|12 | NC_004461:912689 | G>A | IG | | | | |
| Se\|39 | NC_004461:931541 | C>T | EX | GCT>GTT | A>V | ATP-dependent | nonsyn |
| Se\|75 | NC_004461:933004 | A>T | EX | AAA>ATA | K>I | transcriptional | nonsyn |
| Se\|67 | NC_004461:934727 | A>T | IG | | | | |
| Se\|75 | NC_004461:941768 | G>A | EX | GGC>AGC | G>S | prolyl-tRNA | nonsyn |
| Se\|12 | NC_004461:978277 | A>G | EX | AAT>AGT | N>S | (dimethylallyl)adenosine | nonsyn |
| Se\|39 | NC_004461:1023530 | G>T | IG | | | | |
| Se\|2 | NC_004461:1073788 | T>G | EX | CAA>CAC | Q>H | oligopeptide | nonsyn |

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|---|---|---|---|---|---|---|---|
| Se\|59 | NC_004461:1073992 | C>T | EX | TGG>TGA | W>* | oligopeptide | nonsyn |
| Se\|59 | NC_004461:1077752 | G>A | EX | GGC>GAC | G>D | oligoendopeptidase | nonsyn |
| Se\|50 | NC_004461:1095693 | T>G | EX | TAT>TCT | Y>S | ABC | nonsyn |
| Se\|7 | NC_004461:1111089 | G>T | IG | | | | |
| Se\|10 | NC_004461:1121744 | G>T | IG | | | | |
| Se\|4 | NC_004461:1123368 | T>A | EX | GGA>GGT | G>G | undecaprenyldiphospho-muramoylpentape | syn |
| Se\|3 | NC_004461:1129122 | C>T | EX | GAG>AAG | E>K | dihydrofolate | nonsyn |
| Se\|10 | NC_004461:1134366 | C>A | EX | GCA>GAA | A>E | hypothetical | nonsyn |
| Se\|75 | NC_004461:1140329 | C>A | EX | CTG>CTT | L>L | ebhA | syn |
| Se\|8 | NC_004461:1144884 | G>A | EX | ACT>ATT | T>I | ebhA | nonsyn |
| Se\|50 | NC_004461:1158627 | G>T | EX | ACA>AAA | T>K | ebhA | nonsyn |
| Se\|62 | NC_004461:1165805 | G>A | EX | GCC>GCT | A>A | hypothetical | syn |
| Se\|65 | NC_004461:1167586 | T>A | EX | CAA>CTA | Q>L | hypothetical | nonsyn |
| Se\|11 | NC_004461:1170320 | G>T | EX | CAA>AAA | Q>K | hypothetical | nonsyn |
| Se\|66 | NC_004461:1182805 | A>G | EX | TCA>CCA | S>P | dinG | nonsyn |
| Se\|69 | NC_004461:1193140 | A>T | EX | CTT>CAT | L>H | 3-dehydroquinate | nonsyn |
| Se\|75 | NC_004461:1195203 | G>T | EX | AGC>AGA | S>R | nucleoside | nonsyn |
| Se\|8 | NC_004461:1215453 | C>T | EX | GCT>ACT | A>T | hypothetical | nonsyn |
| Se\|13 | NC_004461:1223560 | G>A | EX | AGT>AAT | S>N | glucose-6-phosphate | nonsyn |
| Se\|62 | NC_004461:1224078 | G>A | EX | GAA>AAA | E>K | glucose-6-phosphate | nonsyn |
| Se\|69 | NC_004461:1235825 | C>T | EX | ATG>ATA | M>I | branched-chain | nonsyn |
| Se\|62 | NC_004461:1243467 | G>T | EX | GCG>GAG | A>E | hypothetical | nonsyn |
| Se\|39 | NC_004461:1250957 | C>T | EX | AAG>AAA | K>K | Xaa-Pro | syn |
| Se\|3 | NC_004461:1254397 | G>T | IG | | | | |
| Se\|59 | NC_004461:1256500 | C>T | EX | GAG>AAG | E>K | glycine | nonsyn |
| Se\|3 | NC_004461:1256590 | C>A | EX | GCT>TCT | A>S | glycine | nonsyn |
| Se\|10 | NC_004461:1262915 | A>T | EX | TTA>ATA | L>I | late | nonsyn |
| Se\|62 | NC_004461:1264324 | A>T | EX | GTT>GAT | V>D | glucokinase | nonsyn |
| Se\|50 | NC_004461:1264683 | G>T | EX | GCC>GCA | A>A | glucokinase | syn |
| Se\|11 | NC_004461:1267362 | G>T | IG | | | | |
| Se\|75 | NC_004461:1268447 | G>A | EX | GCA>GTA | A>V | penicillin-binding | nonsyn |
| Se\|7 | NC_004461:1284691 | T>C | EX | GAT>GGT | D>G | DNA | nonsyn |
| Se\|10 | NC_004461:1286588 | C>T | EX | GCG>GCA | A>A | diacylglycerol | syn |
| Se\|34 | NC_004461:1291649 | C>A | IG | | | | |
| Se\|75 | NC_004461:1292049 | G>A | IG | | | | |
| Se\|69 | NC_004461:1302144 | T>A | EX | AAA>ATA | K>I | GTP-binding | nonsyn |
| Se\|70 | NC_004461:1309714 | T>A | EX | GAG>GTG | E>V | hypothetical | nonsyn |
| Se\|2 | NC_004461:1315145 | C>A | EX | GAA>TAA | E>* | hypothetical | nonsyn |
| Se\|11 | NC_004461:1328303 | C>T | EX | GTT>ATT | V>I | alanyl-tRNA | nonsyn |
| Se\|10 | NC_004461:1334078 | T>C | EX | GAT>GGT | D>G | iron-sulfur | nonsyn |
| Se\|50 | NC_004461:1338625 | G>A | IG | | | | |
| Se\|75 | NC_004461:1342547 | T>A | EX | ACA>TCA | T>S | histidyl-tRNA | nonsyn |
| Se\|70 | NC_004461:1353283 | A>C | EX | TCT>TCG | S>S | bifunctional | syn |
| Se\|59 | NC_004461:1354941 | G>T | EX | TTC>TTA | F>L | queuine | nonsyn |
| Se\|75 | NC_004461:1359215 | C>G | EX | GAG>CAG | E>Q | GTPase | nonsyn |
| Se\|75 | NC_004461:1363245 | C>G | EX | GAA>CAA | E>Q | hypothetical | nonsyn |
| Se\|7 | NC_004461:1369464 | C>A | IG | | | | |
| Se\|67 | NC_004461:1384791 | G>T | EX | ACT>AAT | T>N | translation | nonsyn |
| Se\|59 | NC_004461:1388434 | G>A | EX | GAC>GAT | D>D | threonyl-tRNA | syn |
| Se\|62 | NC_004461:1412544 | C>T | EX | GAC>AAC | D>N | DNA | nonsyn |
| Se\|7 | NC_004461:1434516 | A>T | EX | TTA>ATA | L>I | hypothetical | nonsyn |
| Se\|75 | NC_004461:1453525 | C>A | EX | CAG>CAT | Q>H | DNA | nonsyn |
| Se\|75 | NC_004461:1475946 | G>A | EX | GCA>GTA | A>V | FmtB | nonsyn |
| Se\|7 | NC_004461:1498044 | G>T | EX | GAT>TAT | D>Y | hypothetical | nonsyn |
| Se\|59 | NC_004461:1499992 | A>C | IG | | | | |
| Se\|38 | NC_004461:1500452 | G>T | EX | AGC>ATC | S>I | hypothetical | nonsyn |
| Se\|13 | NC_004461:1510172 | G>A | EX | GAT>AAT | D>N | phosphoenolpyruvate | nonsyn |
| Se\|11 | NC_004461:1532097 | G>T | EX | GCA>GAA | A>E | hypothetical | nonsyn |
| Se\|59 | NC_004461:1540678 | T>C | EX | GAT>GGT | D>G | hypothetical | nonsyn |

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|---|---|---|---|---|---|---|---|
| Se\|69 | NC_004461:1558656 | C>A | IG | | | | |
| Se\|10 | NC_004461:1558780 | G>T | IG | | | | |
| Se\|2 | NC_004461:1565389 | G>T | IG | | | | |
| Se\|62 | NC_004461:1592599 | G>A | IG | | | | |
| Se\|67 | NC_004461:1594035 | C>G | IG | | | | |
| Se\|7 | NC_004461:1609536 | G>T | EX | GTA>TTA | V>L | hypothetical | nonsyn |
| Se\|66 | NC_004461:1612439 | A>T | EX | CTC>CAC | L>H | teichoic | nonsyn |
| Se\|12 | NC_004461:1624187 | C>A | EX | GCT>TCT | A>S | hypothetical | nonsyn |
| Se\|2 | NC_004461:1634967 | C>A | EX | GGG>GGT | G>G | RNA | syn |
| Se\|4 | NC_004461:1636776 | T>G | EX | AGA>AGC | R>S | aspartyl/glutamyl-tRNA | nonsyn |
| Se\|13 | NC_004461:1646298 | G>A | EX | GCT>GTT | A>V | ATP-dependend | nonsyn |
| Se\|3 | NC_004461:1647093 | C>T | EX | GTA>ATA | V>I | geranylgeranylglyceryl | nonsyn |
| Se\|66 | NC_004461:1656277 | C>A | EX | GCT>TCT | A>S | hypothetical | nonsyn |
| Se\|62 | NC_004461:1661883 | G>A | EX | CCG>CCA | P>P | hypothetical | syn |
| Se\|62 | NC_004461:1661886 | T>C | EX | TTT>TTC | F>F | hypothetical | syn |
| Se\|62 | NC_004461:1661887 | A>G | EX | ATT>GTT | I>V | hypothetical | nonsyn |
| Se\|7 | NC_004461:1663574 | T>C | EX | GGA>GGG | G>G | bla | syn |
| Se\|13 | NC_004461:1686685 | A>T | EX | TCA>ACA | S>T | Ser-Asp | nonsyn |
| Se\|10 | NC_004461:1693269 | A>G | EX | TTA>CTA | L>L | fructokinase | syn |
| Se\|50 | NC_004461:1695354 | A>T | EX | TTG>TAG | L>* | sucrose | nonsyn |
| Se\|70 | NC_004461:1718218 | C>A | EX | CAG>AAG | Q>K | threonine | nonsyn |
| Se\|70 | NC_004461:1729555 | G>T | EX | CAA>AAA | Q>K | sigmaB | nonsyn |
| Se\|75 | NC_004461:1737319 | C>G | IG | | | | |
| Se\|3 | NC_004461:1743238 | A>G | EX | TAC>TGC | Y>C | cardiolipin | nonsyn |
| Se\|75 | NC_004461:1759723 | A>T | EX | TTC>ATC | F>I | ATP | nonsyn |
| Se\|66 | NC_004461:1777105 | G>A | IG | | | | |
| Se\|12 | NC_004461:1781173 | G>T | EX | CGA>AGA | R>R | spermine/spermidine | syn |
| Se\|34 | NC_004461:1784707 | C>A | EX | GAG>GAT | E>D | amidase | nonsyn |
| Se\|8 | NC_004461:1785020 | A>G | EX | GTA>GCA | V>A | amidase | nonsyn |
| Se\|39 | NC_004461:1796618 | G>A | EX | GGC>GGT | G>G | hypothetical | syn |
| Se\|10 | NC_004461:1805460 | A>T | EX | TTT>TTA | F>L | phosphoglucosamine | nonsyn |
| Se\|75 | NC_004461:1812882 | C>G | IG | | | | |
| Se\|4 | NC_004461:1818482 | A>T | EX | TTT>TAT | F>Y | multidrug | nonsyn |
| Se\|39 | NC_004461:1833466 | T>C | EX | AAA>GAA | K>E | alkaline | nonsyn |
| Se\|12 | NC_004461:1838760 | G>T | IG | | | | |
| Se\|62 | NC_004461:1848340 | A>C | EX | TCA>TCC | S>S | NAD-dependent | syn |
| Se\|59 | NC_004461:1856258 | A>T | EX | GAT>GAA | D>E | adenylate | nonsyn |
| Se\|62 | NC_004461:1856778 | A>T | EX | ATG>AAG | M>K | adenylate | nonsyn |
| Se\|8 | NC_004461:1857670 | C>T | EX | CAG>CAA | Q>Q | preprotein | syn |
| Se\|10 | NC_004461:1862923 | C>T | EX | GGC>GAC | G>D | 50S | nonsyn |
| Se\|69 | NC_004461:1865507 | C>A | EX | GCG>GCT | A>A | 50S | syn |
| Se\|66 | NC_004461:1865708 | T>C | EX | GTA>GTG | V>V | 50S | syn |
| Se\|13 | NC_004461:1884581 | C>T | IG | | | | |
| Se\|4 | NC_004461:1900254 | A>T | EX | ACA>TCA | T>S | urease | nonsyn |
| Se\|11 | NC_004461:1900328 | T>C | EX | CGT>CGC | R>R | urease | syn |
| Se\|4 | NC_004461:1904706 | A>G | EX | ATT>GTT | I>V | urease | nonsyn |
| Se\|34 | NC_004461:1917551 | A>T | EX | TTT>TTA | F>L | hypothetical | nonsyn |
| Se\|38 | NC_004461:1924227 | A>T | EX | AAT>TAT | N>Y | hypothetical | nonsyn |
| Se\|69 | NC_004461:1926714 | C>T | EX | GGC>GGT | G>G | PTS | syn |
| Se\|38 | NC_004461:1929542 | G>T | EX | GCT>GAT | A>D | transport | nonsyn |
| Se\|8 | NC_004461:1930756 | C>T | IG | | | | |
| Se\|59 | NC_004461:1938335 | G>T | EX | GGC>GGA | G>G | hypothetical | syn |
| Se\|70 | NC_004461:1974800 | C>T | EX | CGT>TGT | R>C | two | nonsyn |
| Se\|50 | NC_004461:1984557 | T>C | EX | AAT>GAT | N>D | teichoic | nonsyn |
| Se\|8 | NC_004461:1987990 | A>T | IG | | | | |
| Se\|70 | NC_004461:2000368 | T>C | EX | AGC>GGC | S>G | hypothetical | nonsyn |
| Se\|4 | NC_004461:2011364 | G>A | EX | CCA>TCA | P>S | respiratory | nonsyn |
| Se\|7 | NC_004461:2014683 | C>T | EX | CGT>CAT | R>H | nitrite | nonsyn |
| Se\|66 | NC_004461:2014897 | A>T | EX | TAT>AAT | Y>N | nitrite | nonsyn |

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|---|---|---|---|---|---|---|---|
| Se\|50 | NC_004461:2029797 | A>T | EX | TTA>ATA | L>I | ABC | nonsyn |
| Se\|7 | NC_004461:2029930 | A>G | IG | | | | |
| Se\|39 | NC_004461:2033666 | T>A | EX | AAT>ATT | N>I | hypothetical | nonsyn |
| Se\|75 | NC_004461:2037051 | T>G | EX | TTT>TGT | F>C | bicyclomycin | nonsyn |
| Se\|10 | NC_004461:2045532 | G>A | EX | GGA>GAA | G>E | lipoprotein | nonsyn |
| Se\|12 | NC_004461:2057986 | G>A | EX | GGT>AGT | G>S | sorbitol | nonsyn |
| Se\|3 | NC_004461:2060367 | T>A | EX | TTT>TTA | F>L | amino | nonsyn |
| Se\|8 | NC_004461:2074414 | C>A | EX | CTC>ATC | L>I | polyphosphate | nonsyn |
| Se\|70 | NC_004461:2094383 | G>A | EX | CAA>TAA | Q>* | hypothetical | nonsyn |
| Se\|59 | NC_004461:2095515 | T>C | EX | GTA>GCA | V>A | hypothetical | nonsyn |
| Se\|12 | NC_004461:2101576 | G>A | IG | | | | |
| Se\|38 | NC_004461:2119111 | G>T | EX | CAC>AAC | H>N | NAD(P)H-flavin | nonsyn |
| Se\|67 | NC_004461:2138913 | C>A | IG | | | | |
| Se\|69 | NC_004461:2161041 | C>T | IG | | | | |
| Se\|75 | NC_004461:2164906 | G>A | EX | GAG>AAG | E>K | copper-transporting | nonsyn |
| Se\|13 | NC_004461:2178128 | A>T | EX | CTT>CAT | L>H | hypothetical | nonsyn |
| Se\|7 | NC_004461:2181155 | T>A | EX | ATA>TTA | I>L | hypothetical | nonsyn |
| Se\|7 | NC_004461:2181488 | A>T | IG | | | | |
| Se\|62 | NC_004461:2182307 | A>C | EX | GGT>GGG | G>G | TcaA | syn |
| Se\|67 | NC_004461:2184047 | T>C | IG | | | | |
| Se\|63 | NC_004461:2193342 | T>G | IG | | | | |
| Se\|10 | NC_004461:2197932 | G>A | EX | GCT>GTT | A>V | hypothetical | nonsyn |
| Se\|62 | NC_004461:2203530 | G>T | IG | | | | |
| Se\|4 | NC_004461:2207856 | G>A | EX | CAA>TAA | Q>* | pyruvate | nonsyn |
| Se\|39 | NC_004461:2224164 | T>C | EX | ACA>ACG | T>T | anaerobic | syn |
| Se\|70 | NC_004461:2227104 | G>T | EX | GCA>GAA | A>E | sulfate | nonsyn |
| Se\|11 | NC_004461:2271633 | G>T | IG | | | | |
| Se\|59 | NC_004461:2274246 | A>T | IG | | | | |
| Se\|4 | NC_004461:2274326 | A>T | IG | | | | |
| Se\|50 | NC_004461:2275555 | C>A | EX | GGT>TGT | G>C | succinyl-diaminopimelate | nonsyn |
| Se\|4 | NC_004461:2276592 | G>A | EX | TCG>TCA | S>S | hypothetical | syn |
| Se\|75 | NC_004461:2277035 | G>A | EX | GGT>GAT | G>D | hypothetical | nonsyn |
| Se\|75 | NC_004461:2277046 | G>T | EX | GTA>TTA | V>L | hypothetical | nonsyn |
| Se\|2 | NC_004461:2279764 | G>A | EX | GGC>GGT | G>G | acetoin | syn |
| Se\|34 | NC_004461:2295975 | G>A | EX | CGT>TGT | R>C | hypothetical | nonsyn |
| Se\|70 | NC_004461:2300541 | G>A | EX | CAG>TAG | Q>* | hypothetical | nonsyn |
| Se\|69 | NC_004461:2302285 | G>A | EX | CCT>TCT | P>S | lipopolysaccharide | nonsyn |
| Se\|70 | NC_004461:2307896 | T>C | EX | GAC>GGC | D>G | hypothetical | nonsyn |
| Se\|13 | NC_004461:2309356 | G>A | EX | GCG>GTG | A>V | preprotein | nonsyn |
| Se\|69 | NC_004461:2316667 | C>T | IG | | | | |
| Se\|34 | NC_004461:2321134 | C>A | IG | | | | |
| Se\|38 | NC_004461:2332105 | A>C | EX | TTA>TTC | L>F | GntR | nonsyn |
| Se\|62 | NC_004461:2338126 | G>A | IG | | | | |
| Se\|2 | NC_004461:2340255 | G>A | EX | CAT>TAT | H>Y | lysyl-tRNA | nonsyn |
| Se\|66 | NC_004461:2340742 | C>A | IG | | | | |
| Se\|3 | NC_004461:2342964 | C>A | EX | GGC>GTC | G>V | cysteine | nonsyn |
| Se\|70 | NC_004461:2351050 | C>T | EX | AGT>AAT | S>N | hypothetical | nonsyn |
| Se\|10 | NC_004461:2355344 | G>T | EX | CAA>AAA | Q>K | transcription-repair | nonsyn |
| Se\|50 | NC_004461:2364631 | C>A | EX | GAT>TAT | D>Y | veg | nonsyn |
| Se\|11 | NC_004461:2376115 | T>C | EX | ATC>GTC | I>V | lysine | nonsyn |
| Se\|39 | NC_004461:2382242 | A>T | IG | | | | |
| Se\|10 | NC_004461:2415458 | G>T | EX | GCA>GAA | A>E | hypothetical | nonsyn |
| Se\|10 | NC_004461:2427575 | C>A | IG | | | | |
| Se\|62 | NC_004461:2429329 | G>T | EX | CCA>ACA | P>T | inositol-monophosphate | nonsyn |
| Se\|66 | NC_004461:2455399 | C>T | EX | CGG>TGG | R>W | bifunctional | nonsyn |
| Se\|62 | NC_004461:2460674 | G>A | EX | GCG>GTG | A>V | acetyl-CoA | nonsyn |
| Se\|7 | NC_004461:2472200 | C>A | EX | TCG>TCT | S>S | Ser-Asp | syn |
| Se\|50 | NC_004461:2490267 | G>A | EX | GGA>AGA | G>R | hypothetical | nonsyn |
| Vc\|39 | NZ_AAUT01000042:261 | G>A | EX | CGC>TGC | R>C | fumarate | nonsyn |

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|---|---|---|---|---|---|---|---|
| Vc\|47 | NZ_AAUT01000200:393 | G>A | EX | AGC>AGT | S>S | outer | syn |
| Vc\|9 | NZ_AAUT01000041:445 | G>A | EX | CCG>CCA | P>P | magnesium | syn |
| Vc\|34 | NZ_AAUT01000249:560 | C>G | EX | GGG>GGC | G>G | UDP-glucose | syn |
| Vc\|16 | NZ_AAUT01000056:643 | G>C | EX | GGC>GGG | G>G | aspartokinase, | syn |
| Vc\|23 | NZ_AAUT01000092:103 | C>T | EX | CCT>TCT | P>S | GGDEF | nonsyn |
| Vc\|31 | NZ_AAUT01000175:104 | C>A | EX | GGC>GGA | G>G | hypothetical | syn |
| Vc\|47 | NZ_AAUT01000006:149 | G>A | EX | GTC>ATC | V>I | protein-P-II | nonsyn |
| Vc\|68 | NZ_AAUT01000029:166 | A>G | EX | AAG>AGG | K>R | GTP | nonsyn |
| Vc\|39 | NZ_AAUT01000130:167 | T>G | EX | ATC>CTC | I>L | Na+/H+ | nonsyn |
| Vc\|35 | NZ_AAUT01000059:192 | C>G | IG | | | | |
| Vc\|31 | NZ_AAUT01000117:196 | T>G | EX | GAT>GCT | D>A | glycogen | nonsyn |
| Vc\|70 | NZ_AAUT01000104:206 | T>G | EX | TCC>GCC | S>A | GGDEF | nonsyn |
| Vc\|39 | NZ_AAUT01000101:208 | C>A | EX | CCC>CCA | P>P | imidazolonepropionase | syn |
| Vc\|32 | NZ_AAUT01000050:210 | A>G | EX | GTA>GCA | V>A | 1-deoxyxylulose-5-phosphate | nonsyn |
| Vc\|26 | NZ_AAUT01000090:236 | A>T | EX | ATC>AAC | I>N | sugar | nonsyn |
| Vc\|33 | NZ_AAUT01000108:244 | G>A | EX | GCC>GTC | A>V | orotidine | nonsyn |
| Vc\|19 | NZ_AAUT01000087:254 | C>A | IG | | | | |
| Vc\|1 | NZ_AAUT01000007:274 | C>T | EX | GCG>GTG | A>V | UDP-3-O-3-hydroxymyristoyl | nonsyn |
| Vc\|59 | NZ_AAUT01000032:281 | C>T | EX | GGT>GAT | G>D | rod | nonsyn |
| Vc\|70 | NZ_AAUT01000032:315 | G>A | EX | TCT>TTT | S>F | rod | nonsyn |
| Vc\|16 | NZ_AAUT01000019:323 | C>T | EX | ATG>ATA | M>I | hypothetical | nonsyn |
| Vc\|31 | NZ_AAUT01000032:326 | C>T | EX | GGT>AGT | G>S | rod | nonsyn |
| Vc\|35 | NZ_AAUT01000125:385 | G>A | EX | GCA>GTA | A>V | adenylosuccinate | nonsyn |
| Vc\|29 | NZ_AAUT01000053:396 | A>C | EX | GAT>GAG | D>E | sensor | nonsyn |
| Vc\|8 | NZ_AAUT01000085:429 | C>T | EX | GAT>AAT | D>N | exodeoxyribonuclease | nonsyn |
| Vc\|19 | NZ_AAUT01000102:435 | C>T | EX | CCT>CTT | P>L | isocitrate | nonsyn |
| Vc\|16 | NZ_AAUT01000122:439 | T>A | EX | ATT>ATA | I>I | inner | syn |
| Vc\|45 | NZ_AAUT01000092:477 | G>A | EX | CTG>CTA | L>L | hypothetical | syn |
| Vc\|33 | NZ_AAUT01000036:517 | C>A | IG | | | | |
| Vc\|48 | NZ_AAUT01000065:520 | C>A | EX | ACC>ACA | T>T | UDP-glucose | syn |
| Vc\|59 | NZ_AAUT01000097:664 | T>G | EX | GAT>GCT | D>A | hypothetical | nonsyn |
| Vc\|20 | NZ_AAUT01000075:765 | G>A | EX | CCA>CTA | P>L | carbamoyl-phosphate | nonsyn |
| Vc\|26 | NZ_AAUT01000088:770 | C>A | IG | | | | |
| Vc\|59 | NZ_AAUT01000016:780 | G>A | EX | GTC>ATC | V>I | hypothetical | nonsyn |
| Vc\|45 | NZ_AAUT01000048:786 | G>A | EX | GGT>AGT | G>S | hypothetical | nonsyn |
| Vc\|59 | NZ_AAUT01000050:804 | G>A | IG | | | | |
| Vc\|48 | NZ_AAUT01000029:835 | G>A | EX | CAA>TAA | Q>* | regulator | nonsyn |
| Vc\|65 | NZ_AAUT01000093:838 | C>A | IG | | | | |
| Vc\|35 | NZ_AAUT01000068:840 | A>C | EX | GGT>GGG | G>G | spermidine/putrescine | syn |
| Vc\|30 | NZ_AAUT01000026:853 | T>G | IG | | | | |
| Vc\|57 | NZ_AAUT01000066:897 | T>G | EX | ATC>CTC | I>L | exopolyphosphatase | nonsyn |
| Vc\|34 | NZ_AAUT01000075:954 | G>T | IG | | | | |
| Vc\|43 | NZ_AAUT01000041:977 | T>C | EX | ATT>ACT | I>T | fructose-1,6-bisphosphatase | nonsyn |
| Vc\|48 | NZ_AAUT01000018:100 | G>C | EX | GAC>GAG | D>E | multidrug | nonsyn |
| Vc\|4 | NZ_AAUT01000088:101 | C>T | EX | CCA>TCA | P>S | aspartate | nonsyn |
| Vc\|11 | NZ_AAUT01000033:103 | C>T | EX | CCC>CTC | P>L | single-stranded-DNA-specific | nonsyn |
| Vc\|16 | NZ_AAUT01000064:104 | T>C | EX | CAT>CGT | H>R | hypothetical | nonsyn |
| Vc\|31 | NZ_AAUT01000059:106 | G>T | EX | ACC>AAC | T>N | hypothetical | nonsyn |
| Vc\|33 | NZ_AAUT01000080:111 | T>A | EX | TAT>AAT | Y>N | MutT/nudix | nonsyn |
| Vc\|22 | NZ_AAUT01000058:122 | C>T | IG | | | | |
| Vc\|5 | NZ_AAUT01000060:124 | T>C | EX | TCC>CCC | S>P | hypothetical | nonsyn |
| Vc\|31 | NZ_AAUT01000010:130 | T>G | EX | TTT>TTG | F>L | hypothetical | nonsyn |
| Vc\|48 | NZ_AAUT01000080:135 | A>G | EX | AAC>AGC | N>S | 4-hydroxyphenylpyruvate | nonsyn |
| Vc\|17 | NZ_AAUT01000035:140 | A>G | EX | AGT>GGT | S>G | hypothetical | nonsyn |
| Vc\|57 | NZ_AAUT01000030:144 | C>T | EX | GTT>ATT | V>I | hypothetical | nonsyn |
| Vc\|22 | NZ_AAUT01000056:146 | G>A | IG | | | | |
| Vc\|35 | NZ_AAUT01000004:147 | G>A | EX | ACC>ATC | T>I | MdsD | nonsyn |
| Vc\|34 | NZ_AAUT01000007:151 | C>T | EX | GGC>GGT | G>G | hypothetical | syn |
| Vc\|4 | NZ_AAUT01000047:155 | G>A | EX | CCA>TCA | P>S | transcriptional | nonsyn |

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|---|---|---|---|---|---|---|---|
| Vc\|19 | NZ_AAUT01000011:156( | C>A | EX | CCC>ACC | P>T | hypothetical | nonsyn |
| Vc\|11 | NZ_AAUT01000066:158: | C>T | EX | GCA>GTA | A>V | phosphate | nonsyn |
| Vc\|59 | NZ_AAUT01000068:160( | T>C | EX | TGG>TGG | W>W | hypothetical | syn |
| Vc\|1 | NZ_AAUT01000064:161: | C>T | EX | TGA>TAA | *>* | hypothetical | syn |
| Vc\|41 | NZ_AAUT01000013:164: | G>T | EX | GCT>GAT | A>D | hypothetical | nonsyn |
| Vc\|10 | NZ_AAUT01000037:165- | C>T | IG | | | | |
| Vc\|25 | NZ_AAUT01000020:170( | G>T | EX | GAG>GAT | E>D | sensor | nonsyn |
| Vc\|1 | NZ_AAUT01000021:171- | C>T | IG | | | | |
| Vc\|30 | NZ_AAUT01000054:179' | C>T | EX | ATG>ATA | M>I | sulfate | nonsyn |
| Vc\|19 | NZ_AAUT01000046:181: | T>G | EX | GGT>GGG | G>G | RTX | syn |
| Vc\|11 | NZ_AAUT01000016:184( | T>G | IG | | | | |
| Vc\|30 | NZ_AAUT01000010:185: | C>T | IG | | | | |
| Vc\|49 | NZ_AAUT01000029:195: | G>T | EX | CTC>ATC | L>I | transporter | nonsyn |
| Vc\|39 | NZ_AAUT01000046:195' | A>T | EX | CAA>CAT | Q>H | RTX | nonsyn |
| Vc\|39 | NZ_AAUT01000046:195' | A>T | EX | CAA>CAT | Q>H | RTX | nonsyn |
| Vc\|19 | NZ_AAUT01000011:196( | G>T | IG | | | | |
| Vc\|61 | NZ_AAUT01000053:200: | A>C | IG | | | | |
| Vc\|5 | NZ_AAUT01000008:203- | G>T | EX | GAG>TAG | E>* | hypothetical | nonsyn |
| Vc\|23 | NZ_AAUT01000064:210' | C>A | EX | GAT>TAT | D>Y | 3-oxoacyl-(acyl-carrier-protein) | nonsyn |
| Vc\|16 | NZ_AAUT01000043:211' | C>T | EX | GAT>AAT | D>N | sensory | nonsyn |
| Vc\|63 | NZ_AAUT01000054:218: | C>T | EX | GCC>ACC | A>T | GGDEF | nonsyn |
| Vc\|43 | NZ_AAUT01000004:219( | C>T | EX | TTC>TTT | F>F | sodium/dicarboxylate | syn |
| Vc\|53 | NZ_AAUT01000035:223' | T>G | EX | GTA>GTC | V>V | polysaccharide | syn |
| Vc\|61 | NZ_AAUT01000005:225: | T>C | EX | TTT>TTC | F>F | hypothetical | syn |
| Vc\|70 | NZ_AAUT01000009:225- | G>A | EX | CTG>CTA | L>L | lipase, | syn |
| Vc\|39 | NZ_AAUT01000037:225( | G>A | IG | | | | |
| Vc\|17 | NZ_AAUT01000018:232' | C>T | EX | GAG>AAG | E>K | alpha-1,6-galactosidase, | nonsyn |
| Vc\|4 | NZ_AAUT01000006:237: | C>A | EX | GAA>TAA | E>* | GGDEF | nonsyn |
| Vc\|9 | NZ_AAUT01000052:243' | G>A | EX | GGC>AGC | G>S | aspartokinase, | nonsyn |
| Vc\|49 | NZ_AAUT01000033:271: | T>C | EX | AGT>AGC | S>S | UDP-N-acetylmuramoylalanyl-D-glutamyl-2 | syn |
| Vc\|48 | NZ_AAUT01000026:287: | G>A | EX | GAG>GAA | E>E | glutaminyl-tRNA | syn |
| Vc\|31 | NZ_AAUT01000004:288: | C>A | EX | CTC>ATC | L>I | methyl-accepting | nonsyn |
| Vc\|63 | NZ_AAUT01000026:295( | A>G | EX | AAG>AGG | K>R | glutaminyl-tRNA | nonsyn |
| Vc\|17 | NZ_AAUT01000035:313( | G>T | IG | | | | |
| Vc\|23 | NZ_AAUT01000034:327: | C>T | IG | | | | |
| Vc\|53 | NZ_AAUT01000017:331- | T>G | EX | GTG>GGG | V>G | flagellar | nonsyn |
| Vc\|33 | NZ_AAUT01000002:332: | T>C | EX | ACC>GCC | T>A | oxaloacetate | nonsyn |
| Vc\|35 | NZ_AAUT01000027:333: | A>G | EX | CTG>CCG | L>P | LuxO | nonsyn |
| Vc\|33 | NZ_AAUT01000030:346: | C>T | IG | | | | |
| Vc\|8 | NZ_AAUT01000013:347: | G>T | IG | | | | |
| Vc\|43 | NZ_AAUT01000014:370' | T>A | IG | | | | |
| Vc\|37 | NZ_AAUT01000009:388' | G>A | EX | GCA>ACA | A>T | hydrolase, | nonsyn |
| Vc\|47 | NZ_AAUT01000021:393: | G>T | EX | GCG>GCT | A>A | carbonic | syn |
| Vc\|51 | NZ_AAUT01000010:404' | A>C | EX | TAT>TCT | Y>S | hypothetical | nonsyn |
| Vc\|4 | NZ_AAUT01000021:425( | A>T | EX | TAC>AAC | Y>N | glycine | nonsyn |
| Vc\|1 | NZ_AAUT01000020:441' | G>A | EX | GGC>AGC | G>S | cysteine | nonsyn |
| Vc\|45 | NZ_AAUT01000016:442- | C>G | EX | AAC>AAG | N>K | vgrG | nonsyn |
| Vc\|52 | NZ_AAUT01000005:448( | T>G | IG | | | | |
| Vc\|29 | NZ_AAUT01000018:449: | A>G | IG | | | | |
| Vc\|51 | NZ_AAUT01000004:452' | T>G | EX | CAA>CCA | Q>P | vgrG | nonsyn |
| Vc\|28 | NZ_AAUT01000004:467( | G>A | EX | GGC>GGT | G>G | hcp | syn |
| Vc\|53 | NZ_AAUT01000008:471: | G>A | EX | CTT>TTT | L>F | acyl | nonsyn |
| Vc\|39 | NZ_AAUT01000011:490: | G>A | EX | CAA>TAA | Q>* | methyl-accepting | nonsyn |
| Vc\|48 | NZ_AAUT01000011:560: | T>G | EX | CTA>CTC | L>L | 6-phospho-beta-glucosidase | syn |
| Vc\|22 | NZ_AAUT01000012:584: | C>T | EX | GTT>ATT | V>I | type | nonsyn |
| Vc\|70 | NZ_AAUT01000008:639: | A>G | EX | CAG>CGG | Q>R | 3-deoxy-D-manno-octulosonic-acid | nonsyn |
| Vc\|57 | NZ_AAUT01000002:644( | A>G | EX | ATA>GTA | I>V | ToxR-activated | nonsyn |
| Vc\|65 | NZ_AAUT01000005:696' | G>C | IG | | | | |
| Vc\|66 | NZ_AAUT01000006:709( | G>T | EX | CTG>CTT | L>L | transcriptional | syn |

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|---|---|---|---|---|---|---|---|
| Vc\|51 | NZ_AAUT01000007:757 | C>T | IG | | | | |
| Vc\|34 | NZ_AAUT01000007:761 | C>T | IG | | | | |
| Vc\|30 | NZ_AAUT01000005:806 | T>G | EX | TTT>GTT | F>V | acetyltransferase, | nonsyn |
| Vc\|23 | NZ_AAUT01000002:857 | C>T | EX | TAC>TAT | Y>Y | leader | syn |
| Vc\|37 | NZ_AAUT01000002:903 | G>T | EX | GGT>TGT | G>C | tagE | nonsyn |
| Vc\|63 | NZ_AAUT01000001:954 | G>A | EX | ACA>ATA | T>I | sugar | nonsyn |
| Vc\|51 | NZ_AAUT01000001:971 | C>T | EX | CAA>TAA | Q>* | sodium/solute | nonsyn |
| Vc\|31 | NZ_AAUT01000003:975 | G>A | EX | AAG>AAA | K>K | hypothetical | syn |
| Vc\|25 | NZ_AAUT01000004:994 | C>T | EX | GTC>GTT | V>V | hypothetical | syn |
| Vc\|45 | NZ_AAUT01000002:103 | T>C | IG | | | | |
| Vc\|23 | NZ_AAUT01000001:112 | C>T | EX | GAA>AAA | E>K | sucrose | nonsyn |
| Vc\|10 | NZ_AAUT01000003:120 | A>G | EX | GAT>GAC | D>D | quinolinate | syn |