**Table S4**. Strain Tokyo 01T’s ORFs with the highest similarity to proteins of “*Ca*. Modulibacteria” organism

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| locus tag | Protein name | Organism name | e-value | identity |
| DENIS\_0194 | hypothetical protein U14\_01102  | *Ca*. Moduliflexus flocculans | 9.26E-18 | 44.9 |
| DENIS\_0456 | DNA polymerase III, alpha subunit  | *Ca*. Moduliflexus flocculans | 0 | 56.6 |
| DENIS\_0844 | pyruvate formate-lyase  | *Ca*. Moduliflexus flocculans | 0 | 71.1 |
| DENIS\_1896 | polysaccharide deacetylase  | *Ca*. Moduliflexus flocculans | 1.2E-159 | 67.0 |
| DENIS\_2093 | transposase  | *Ca*. Moduliflexus flocculans | 2.89E-40 | 57.3 |
| DENIS\_2422 | SsuB protein  | *Ca*. Moduliflexus flocculans | 5.55E-66 | 49.1 |
| DENIS\_2423 | SsuC protein  | *Ca*. Moduliflexus flocculans | 3.31E-74 | 47.4 |
| DENIS\_3040 | hypothetical protein U14\_04437  | *Ca*. Moduliflexus flocculans | 2.44E-24 | 35.0 |
| DENIS\_3119 | transposase  | *Ca*. Moduliflexus flocculans | 1.54E-38 | 50.4 |
| DENIS\_3264 | hypothetical protein U14\_04635  | *Ca*. Moduliflexus flocculans | 3.44E-57 | 41.4 |
| DENIS\_3407 | transcriptional regulator, LysR family  | *Ca*. Moduliflexus flocculans | 7.9E-94 | 47.0 |
| DENIS\_3774 | NUDIX hydrolase  | *Ca*. Moduliflexus flocculans | 7.08E-92 | 57.3 |
| DENIS\_4639 | hypothetical protein U14\_04437  | *Ca*. Moduliflexus flocculans | 2.79E-26 | 35.2 |
| DENIS\_4935 | hypothetical protein U14\_00770  | *Ca*. Moduliflexus flocculans | 6.68E-45 | 51.1 |
| DENIS\_0031 | hypothetical protein U27\_01213  | *Ca*. Vecturithrix granuli | 8.92E-31 | 79.7 |
| DENIS\_0129 | endonuclease/exonuclease/phosphatase family protein  | *Ca*. Vecturithrix granuli | 1.35E-126 | 60.1 |
| DENIS\_0162 | aminotransferase class I and II  | *Ca*. Vecturithrix granuli | 1.23E-169 | 60.7 |
| DENIS\_0290 | hypothetical protein U27\_06677  | *Ca*. Vecturithrix granuli | 1.66E-141 | 38.8 |
| DENIS\_0485 | MscS Mechanosensitive ion channel  | *Ca*. Vecturithrix granuli | 0 | 41.3 |
| DENIS\_1191 | putative amino acid ABC transporter  | *Ca*. Vecturithrix granuli | 3.98E-80 | 56.3 |
| DENIS\_1279 | putative transcriptional regulator, GntR family  | *Ca*. Vecturithrix granuli | 0 | 68.9 |
| DENIS\_1432 | probable amino acid ABC transporter, permease protein  | *Ca*. Vecturithrix granuli | 3.86E-175 | 64.9 |
| DENIS\_1433 | probable amino acid ABC transporter, permease protein  | *Ca*. Vecturithrix granuli | 4.11E-170 | 56.6 |
| DENIS\_1998 | two-component hybrid sensor and regulator  | *Ca*. Vecturithrix granuli | 2.34E-133 | 56.0 |
| DENIS\_1999 | multi-sensor hybrid histidine kinase  | *Ca*. Vecturithrix granuli | 3.61E-145 | 42.6 |
| DENIS\_2001 | putative two-component system sensor protein  | *Ca*. Vecturithrix granuli | 0 | 43.6 |
| DENIS\_2048 | transcriptional regulator, AraC family  | *Ca*. Vecturithrix granuli | 1.39E-87 | 50.0 |
| DENIS\_2049 | branched-chain amino acid permease (azaleucine resistance)-like protein  | *Ca*. Vecturithrix granuli | 5.73E-116 | 69.5 |
| DENIS\_2317 | hypothetical protein U27\_05584  | *Ca*. Vecturithrix granuli | 8.45E-92 | 44.6 |
| DENIS\_2405 | 3-dehydroquinate dehydratase  | *Ca*. Vecturithrix granuli | 1.12E-80 | 75.0 |
| DENIS\_2785 | ABC transporter permease protein  | *Ca*. Vecturithrix granuli | 1.02E-157 | 70.0 |
| DENIS\_2799 | hypothetical protein U27\_04998  | *Ca*. Vecturithrix granuli | 5.67E-74 | 59.1 |
| DENIS\_3278 | methyl-accepting chemotaxis sensory transducer  | *Ca*. Vecturithrix granuli | 0 | 38.6 |
| DENIS\_4012 | putative cyclohexadienyl dehydratase  | *Ca*. Vecturithrix granuli | 1.18E-139 | 73.3 |
| DENIS\_4056 | restriction endonuclease  | *Ca*. Vecturithrix granuli | 3.32E-76 | 78.2 |
| DENIS\_4220 | hypothetical protein U27\_01123  | *Ca*. Vecturithrix granuli | 1.51E-09 | 28.7 |
| DENIS\_4393 | response regulator receiver domain protein  | *Ca*. Vecturithrix granuli | 1.94E-67 | 54.9 |
| DENIS\_4396 | response regulator receiver domain protein  | *Ca*. Vecturithrix granuli | 0 | 52.4 |
| DENIS\_4398 | CheR methyltransferase, SAM binding domain protein  | *Ca*. Vecturithrix granuli | 3.61E-114 | 44.4 |
| DENIS\_4611 | hypothetical protein U27\_01909  | *Ca*. Vecturithrix granuli | 4.65E-45 | 70.3 |
| DENIS\_4612 | hypothetical protein U27\_01908  | *Ca*. Vecturithrix granuli | 3.19E-64 | 65.4 |
| DENIS\_4840 | HAD-superfamily hydrolase, subfamily IA, variant 3  | *Ca*. Vecturithrix granuli | 4.35E-55 | 42.2 |
| DENIS\_4889 | lytic transglycosylase catalytic  | *Ca*. Vecturithrix granuli | 1.42E-161 | 44.2 |
| DENIS\_0195 | hypothetical protein CSB45\_04955  | candidate division KSB3 bacterium | 1.11E-126 | 36.1 |
| DENIS\_0274 | hypothetical protein CSA56\_01490, partial  | candidate division KSB3 bacterium | 3.71E-60 | 36.1 |
| DENIS\_0839 | hypothetical protein CSA56\_07410  | candidate division KSB3 bacterium | 5.65E-59 | 68.2 |
| DENIS\_0840 | hypothetical protein CSA56\_03965  | candidate division KSB3 bacterium | 1.82E-49 | 53.2 |
| DENIS\_1762 | membrane dipeptidase  | candidate division KSB3 bacterium | 1.19E-169 | 66.6 |
| DENIS\_1942 | acetylesterase  | candidate division KSB3 bacterium | 3.68E-167 | 68.9 |
| DENIS\_2494 | succinate dehydrogenase/fumarate reductase iron-sulfur subunit  | candidate division KSB3 bacterium | 3.25E-164 | 85.9 |
| DENIS\_2758 | hypothetical protein CSA56\_17280  | candidate division KSB3 bacterium | 0 | 50.5 |
| DENIS\_2759 | hypothetical protein CSA56\_17275  | candidate division KSB3 bacterium | 0 | 68.4 |
| DENIS\_2761 | RNA-dependent DNA polymerase  | candidate division KSB3 bacterium | 0 | 63.4 |
| DENIS\_4067 | ABC transporter substrate-binding protein  | candidate division KSB3 bacterium | 1.52E-115 | 44.9 |