**S2 Table. Manual annotation of hydrogenase genes in seven investigated strains**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Strain name | NCBI Genome URL | RefSeq protein ID | Hydrogenase group | HydDB annotation {Sondergaard, 2016 #61} |
| *Blautia coccoides* JCM 1395 | https://www.ncbi.nlm.nih.gov/nuccore/NZ\_CP022713.1 | WP\_065541253.1 | [FeFe] Group A3 | Bifurcating |
| *Clostridium leptum* ATCC 29065 | https://www.ncbi.nlm.nih.gov/nuccore/ABCB00000000.2 | WP\_003534157.1WP\_003530568.1WP\_003532170.1WP\_003534146.1 | [FeFe] Group A3[FeFe] Group B[FeFe] Group B[FeFe] Group C | BifurcatingEvolvingEvolvingSensory |
| *Bacteroides fragilis* ATCC 25285 | https://www.ncbi.nlm.nih.gov/nuccore/NC\_003228.3 | WP\_010993508.1 | [FeFe] Group B | Evolving |
| *Bifidobacterium pseudocatenulatum* ATCC 27919 | https://www.ncbi.nlm.nih.gov/nuccore/NZ\_AP012330.1 | - | - | - |
| *Atopobium parvulum* ATCC 33793 | https://www.ncbi.nlm.nih.gov/nuccore/NC\_013203.1 | - | - | - |
| *Lactobacillus casei* ATCC 334 | https://www.ncbi.nlm.nih.gov/nuccore/NC\_008526.1 | - | - | - |
| *Escherichia coli* W3110 | https://www.ncbi.nlm.nih.gov/nuccore/NC\_007779.1 | WP\_000083065.1WP\_000107384.1WP\_001288122.1WP\_001102321.1 | [NiFe] Group 1c[NiFe] Group 1d[NiFe] Group 4a[NiFe] Group 4a | Anaerobic UptakeAerobic UptakeEvolvingEvolving |

Hydrogenase genes were unlikely to exist in 3 strains, and are indicated by hyphens. Note that *Lactobacillus* produced no hydrogen, and *Bifidobacterium* and *Atopobium* produced marginal amounts of hydrogen.