**Supplemental Material**

**Supplemental Table 1. Primer sequences used in RT-qPCR.**

|  |  |  |
| --- | --- | --- |
| Target | Forward | Reverse |
| IL10 | 5’-GCTCTTACTGACTGGCATGAG-3’ | 5’-CGCAGCTCTAGGAGCATGTG-3’ |
| TNFa | 5’-CCCTCACACTCAGATCATCTTCT-3’ | 5’-GCTACGACGTGGGCTACAG-3’ |
| RPL-10 | 5’-GTGATTGAGGCTCTGCGAAGAG-3’ | 5’-ATGAGCCGCTTCTCAGCAACCA-3’ |
| GAPDH | 5’-AGGTCGGTGTGAACGGATTTG-3’ | 5’-TGTAGACCATGTAGTTGAGGTCA-3’ |

**Supplemental Table 2. Significant differences in genus level relative abundance taxa after 4 weeks of vitamin B12 diet treatment.**

|  |  |  |  |
| --- | --- | --- | --- |
| Consenus Lineage | Deficient | Supplemented | Sufficient |
| f\_\_Porphyromonadaceae;g\_\_Parabacteroides | ↑↑↑ | ↑↑↑ | ↑↑↑ |
| f\_\_Bacteroidaceae;g\_\_Bacteroides | ↓↓ | ↓↓↓ | - |
| f\_\_Desulfovibrionaceae;g\_\_Bilophila | ↑ | - | ↑ |
| f\_\_Ruminococcaceae;g\_\_Ruminococcus | ↓ | ↓ | ↓ |
| o\_\_RF32;f\_\_;g\_\_ | ↓ | - | - |
| f\_\_Deferribacteraceae;g\_\_Mucispirillum | ↑ | - | ↑ |
| o\_\_Clostridiales;f\_\_;g\_\_ | ↓↓ | - | - |
| f\_\_[Mogibacteriaceae];g\_\_ | ↑ | ↑ | ↑ |
| f\_\_Alcaligenaceae;g\_\_Sutterella | ↑ | ↑ | ↑ |
| f\_\_[Paraprevotellaceae];g\_\_Paraprevotella | ↓ | ↓ | - |
| f\_\_Erysipelotrichaceae;g\_\_Clostridium | ↑ | - | ↑ |
| f\_\_Rikenellaceae;g\_\_ | ↑ | ↑ | ↑ |
| f\_\_Erysipelotrichaceae;g\_\_[Eubacterium] | - | ↑ | - |
| f\_\_Lachnospiraceae;Other | - | - | ↓↓↓ |
| f\_\_Lachnospiraceae;g\_\_Moryella | - | - | ↑ |
| f\_\_Clostridiaceae;g\_\_SMB53 | - | - | ↑ |

↑↑↑ > 15% change in relative abundance means, ↑↑ 4-15% change, ↑ <1% change, perm-t test FDR<0.10