**Table S1.** Differences in microbial relative abundance (in percentages) evaluated using the Wilcoxon and Kruskal-Wallis tests between samples from patients with Down syndrome and

periodontitis or a healthy periodontal condition at the phylum, genus and species levels. Only taxa that were significantly different between the two groups (p≤0.05) are presented.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Taxa** | **Proportion in HDS** | **Proportion in PDS** | **Wilcoxon.pr** | **Kw.pr** |
| **Phylum** | | | | |
| *Proteobacteria*  *Synergistetes*  *Chloroflexi* | 25.3127  0.1145  0.0017 | 13.3584  0.8059  0.0731 | 0.0416\*  0.0381\*  0.0119\* | 0.0407\*  0.0371\*  0.0114\* |
| **Genus** | | | | |
| *Atopobium*  *Olsenella*  *Cryptobacterium*  *Slackia*  *Phocaeicola*  *Paludibacteraceae F0058*  *Rikenellaceae RC9 gut group*  *Tannerella*  *Flexilinea*  *Lactococcus*  *Defluviitaleaceae UCG-011*  *[Eubacterium] nodatum group*  *Peptoanaerobacter*  *Selenomonas*  *Selenomonas 4*  *Gracilibacteria bacterium oral taxon 871*  *Saccharimonadaceae* spp.  *Lautropia*  *Ralstonia*  *Pseudomonas*  *Fretibacterium* | 0.0352  0.0263  0  0.002  0.0057  0.5967  0.0009  0.7171  0.0017  0.0021  0.0158  0.0757  0.0305  0.8424  0.1253  0.0037  0.05  0.4438  0.3784  4.7763  0.1145 | 0.165  0.0871  0.0036  0.0129  0.0845  2.2401  0.0802  1.6662  0.0731  0.0005  0.1127  0.2434  0.1998  1.3658  0.267  0  0.2995  0.1284  0.2128  0.029  0.7993 | 0.0289\*  0.0085\*\*  0.0412\*  0.0203\*  0.0172\*  0.0004\*\*\*  0.0119\*  0.0298\*  0.0119\*  0.0498\*  0.0434\*  0.0361\*  0.0307\*  0.0397\*  0.0198\*  0.0209\*  0.0034\*\*  0.0055\*\*  0.0344\*  0.0029\*\* | 0.0282\*  0.0082\*\*  0.0392\*  0.0197\*  0.0166\*  0.0004\*\*\*  0.0114\*  0.029\*  0.0114\*  0.048\*  0.042\*  0.0352\*  0.0299\*  0.0388\*  0.0193\*  0.0198\*  0.0033\*\*  0.0053\*\*  0.0336\*  0.0028\*\*  0.0371\* |
| **Species** | | | | |
| *Actinomyces graevenitzii F0530*  *Actinomycetaceae F0332 unidentified*  spp.  *Atopobium unidentified*  spp.  *Olsenella unidentified*  spp.  *Olsenella sp. oral taxon 807*  *Cryptobacterium unidentified*  spp.  *Slackia sp. S4-C6*  *Phocaeicola abscessus CCUG 55929*  *Paludibacteraceae F0058 uncultured bacterium*  *Porphyromonas* spp*. oral clone CW034*  *Alloprevotella uncultured Prevotellaceae bacterium*  *Prevotella denticola*  *Prevotella 7 uncultured organism*  *Prevotella sp. oral taxon G60*  *Uncultured Prevotellaceae bacterium*  *Bacteroidales oral clone MCE7\_164*  *Tannerella forsythia*  *Chloroflexi bacterium oral taxon 439 isolate Chl2*  *Lactococcus unidentified*  spp.  *Streptococcus anginosus subsp. anginosus*  *Defluviitaleaceae UCG-011 unidentified*  spp.  *Eubacterium minutum*  *Eubacterium nodatum*  *Mogibacterium timidum*  *Uncultured bacterium*  *Peptococcus sp. oral clone MCE10\_265*  *Eubacterium sp. oral clone BB142*  *Selenomonas unidentified*  spp.  *Leptotrichia sp. oral clone IK040*  *Gracilibacteria bacterium oral taxon 871*  *Saccharimonadaceae unidentified*  spp.  *Lautropia uncultured bacterium*  *Ralstoniapickettii*  *Neisseria unidentified*  spp.  *Pseudomonas unidentified*  spp.  *Treponema 2 unidentified*  spp.  *Treponema sp. canine oral taxon 356*  *Treponema sp. oral taxon 265*  *Uncultured Deferribacteraceae bacterium* | 0.0074  0.0114  0.0352  0.0004  0.0259  0  0.002  0.0057  0.5967  0.0942  0.0179  0.2018  0.0027  0.0528  0.168  0.0003  0.1458  0.0017  0.0021  0.2635  0.0158  0  0.0464  0.0021  0.0509  0.1337  0.2994  0.2994  0.0771  0.0037  0.05  0.4108  0.3784  2.3348  4.7763  0.0659  0  0  0.0366 | 0.0022  0.0785  0.165  0.013  0.0741  0.0036  0.0129  0.0845  2.2401  0.1653  0.0411  0.3795  0.0104  0.1058  0.2071  0.0321  1.1464  0.0731  0.0005  0.4381  0.1127  0.0059  0.1607  0.0065  0.1193  0.2377  0.6188  0.6188  0.3935  0  0.2995  0.1161  0.2128  0.8287  0.029  0.3156  0.0221  0.0627  0.1479 | 0.0286\*  0.0373\*  0.0289\*  0.0023\*\*  0.0471\*  0.0412\*  0.0203\*  0.0172\*  0.0004\*\*\*  0.0469\*  0.0147\*  0.0495\*  0.0441\*  0.0057\*\*  0.0394\*  0.0396\*  0.0023\*\*  0.0119\*  0.0498\*  0.0241\*  0.0434\*  0.0412\*  0.0134\*  0.0286\*  0.0466\*  0.0279\*  0.0263\*  0.0263\*  0.0379\*  0.0209\*  0.0034\*\*  0.027\*  0.0344\*  0.0378\*  0.0029\*\*  0.0235\*  0.0412\*  0.0209\*  0.0326\* | 0.0275\*  0.0363\*  0.0282\*  0.0022\*\*  0.046\*  0.0392\*  0.0197\*  0.0166\*  0.0004\*\*\*  0.0458\*  0.0143\*  0.0483\*  0.0426\*  0.0055\*\*  0.0385\*  0.0381\*  0.0022\*\*  0.0114\*  0.048\*  0.0235\*  0.042\*  0.0392\*  0.0129\*  0.0275\*  0.0455\*  0.0272\*  0.0256\*  0.0256\*  0.0369\*  0.0198\*  0.0033\*\*  0.0263\*  0.0336\*  0.0369\*  0.0028\*\*  0.0229\*  0.0392\*  0.0198\*  0.0316\* |

Abbreviations: HSD, Down syndrome individuals with healthy periodontium; PSD, Down syndrome individuals with periodontitis.

Significant differences: \*< 0.05, \*\*<0.01, \*\*\*<0.001