Title: Supplementary Data 1

**Description:** Studies and samples used to construct a meta-dataset composed of 4,347 human stool

metagenomes.

Title: Supplementary Data 2

Description: Taxonomic information of the 313 microbial species found to be present across 4,347

stool metagenomes.

Title: Supplementary Data 3

**Description:** Evidence from recent studies reporting associations between Health-prevalent/- scarce

species and human health/disease.

Title: Supplementary Data 4

**Description:** Studies and samples used to construct the independent validation set composed of 679

human stool metagenomes