

## Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: Generalized estimated equations analysis of correlations between changes in mOTUs and BA compositions induced by Acarbose treatment, adjusted for BMI, sex and age

File Name: Supplementary Data 2

Description: The taxa distributions of genes involved in bile acid metabolism

File Name: Supplementary Data 3

Description: Bacterial pathways and modules responsive to treatment with Acarbose and Glipizide (Reporter Score >1.95)

File Name: Supplementary Data 4

Description: Comparison of bile acid metabolism gene annotation based on BLASTP and BlastKOALA

File Name: Supplementary Data 5

Description: Comparison of annotation results of gene encoding V1.CD3-0-PN\_GL0121220 based on BLASTP and BlastKOALA

File Name: Supplementary Data 6

Description: Comparison of annotation results of gene encoding 7 $\beta$ -HSDH based on BLASTP and BlastKOALA

File Name: Supplementary Data 7

Description: Validation of bile acid metabolism gene annotation by BlastP against the entire UniProt database