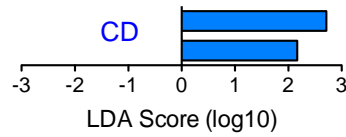


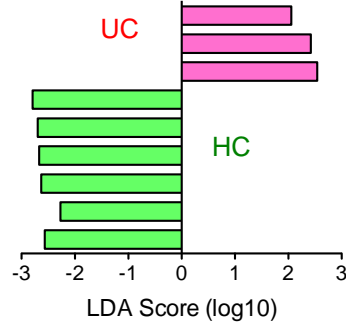
### CD vs HC

Ribosome Biogenesis  
Phosphonate and phosphinate metabolism



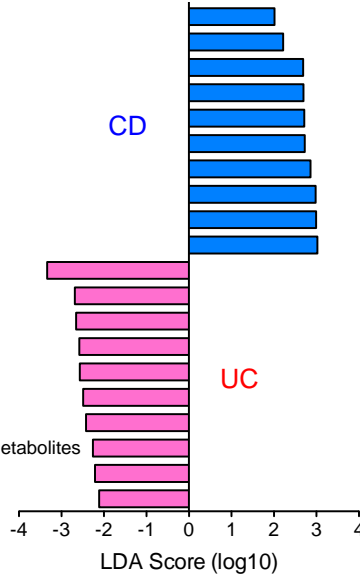
### UC vs HC

Transcription related proteins  
Electron transfer carriers  
Ascorbate and aldarate metabolism  
Amino acid related enzymes  
Valine, leucine and isoleucine biosynthesis  
Pantothenate and CoA biosynthesis  
Histidine metabolism  
C5-Branched dibasic acid metabolism  
Thiamine metabolism



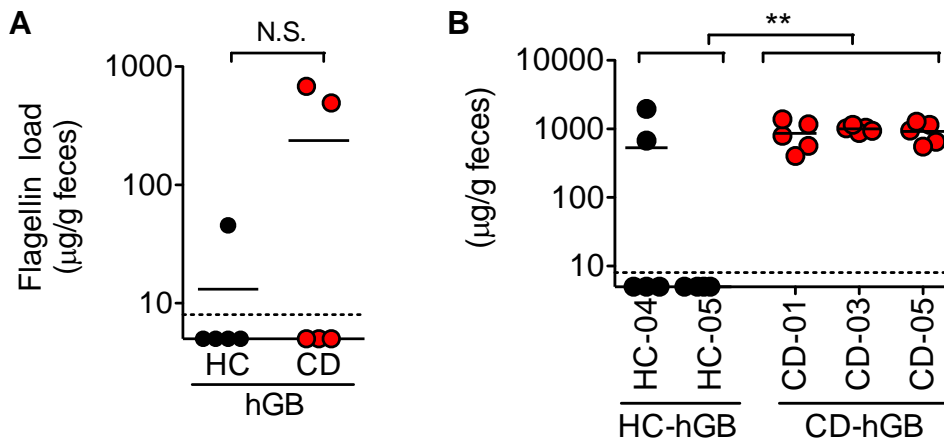
### CD vs UC

D-Glutamine and D-glutamate metabolism  
C5-Branched dibasic acid metabolism  
Valine, leucine and isoleucine biosynthesis  
Thiamine metabolism  
Histidine metabolism  
Pantothenate and CoA biosynthesis  
Alanine, aspartate and glutamate metabolism  
Arginine and proline metabolism  
Amino acid related enzymes  
Aminoacyl-tRNA biosynthesis  
Phosphotransferase system (PTS)  
Inorganic ion transport and metabolism  
Ascorbate and aldarate metabolism  
Protein kinases  
Amino acid metabolism  
Carbohydrate metabolism  
Electron transfer carriers  
Biosynthesis and biodegradation of secondary metabolites  
Limonene and pinene degradation  
Aminoacyl-tRNA biosynthesis



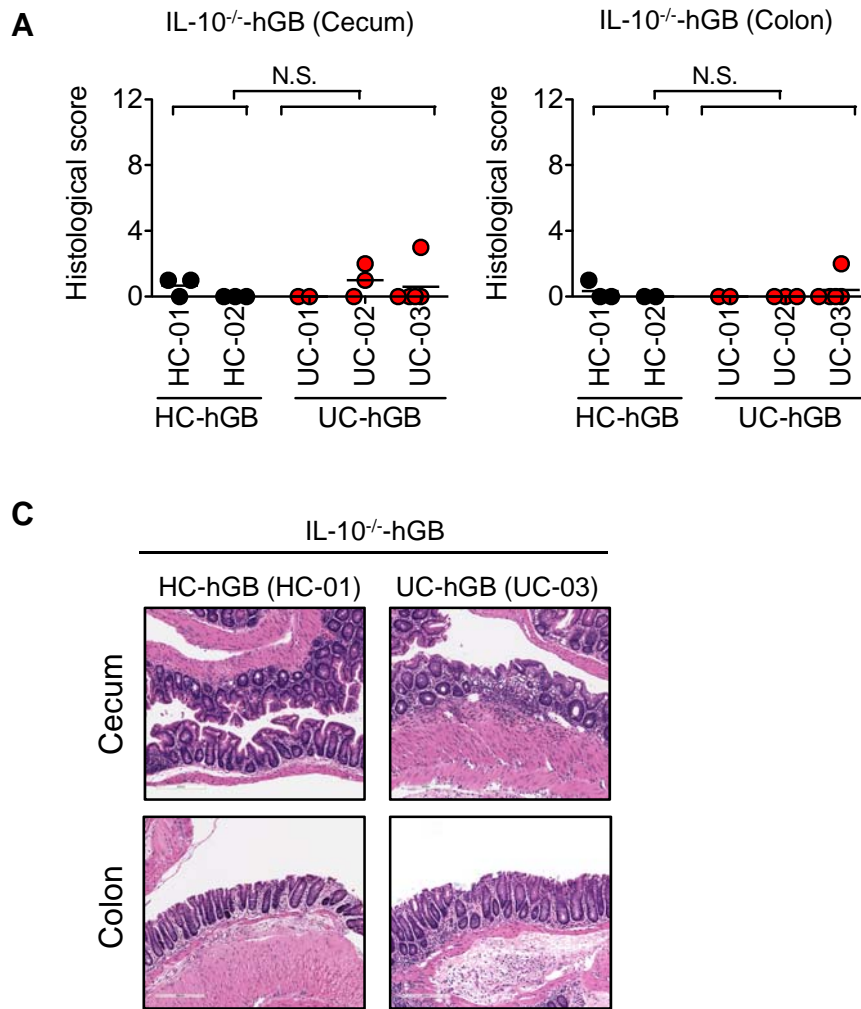
## **Figure S1. Microbial functional gene pathways in donor stool samples.**

The abundance of KEGG metabolic gene pathways was analyzed by PICRUSt based on 16S rRNA sequencing data in Fig. 2. Significantly altered pathway genes in 3 groups (HC-, CD-, and UC donors) were identified by LEfSe analysis. Linear Discriminant Analysis (LDA) score is shown.



**Figure S2. Flagellin production by the microbiota.**

(A) Flagellin load in feces from HC- and CD-hGB mice (WT B6). Each dot indicates a different donor described in Fig. 2 (HC-01 - HC-05 and CD-01 - CD05). (B) Flagellin load in IL-10<sup>-/-</sup>-HC-hGB mice (HC-04 and HC-05) and IL-10<sup>-/-</sup>-CD-hGB mice (CD-01, -03, -05) mice. Each dot indicates individual mouse. \*\*, P < 0.01, N.S.; Not significant by Mann-Whitney *U*-test. Dots under dotted line indicate flagellin concentration is below the detection limit.



**Figure S3. UC-associated microbiota does not promote development of severe colitis in IBD-prone mice.**

(A-B) Stool samples were isolated from HC-hGB mice and UC-hGB mice and then inoculated into GF *Il10*<sup>-/-</sup> mice. After 4 weeks of reconstitution, cecum and colonic tissues were harvested. (A) Histological score. Each dot indicates individual mouse. N.S.: Not significant by Mann-Whitney *U*-test. (B) A representative histological image of IL-10<sup>-/-</sup>-HC-hGB (HC-01) and UC-hGB mice (UC-03). Scale bar: 200  $\mu$ m.