

Table S1 Detailed characteristics of the recruited subjects

Number	Disorder status	Sex	Age/year	BMI/kg*m ⁻²	Previous medication history	Probiotic using history	GAD-7	PHQ-9	HAMA	HDRS-17	MADRS
1	BD	Male	17	20.1	NO	NO	6	18	21	29	27
2	BD	Male	16	19.9	NO	NO	10	9	34	28	33
3	BD	Male	25	25.9	NO	NO	12	12	16	22	15
4	BD	Male	17	19.4	NO	NO	17	21	21	30	27
5	HC	Male	21	21.4	NO	NO	NA	NA	NA	NA	NA
6	HC	Male	20	21.3	NO	NO	NA	NA	NA	NA	NA
7	HC	Male	21	25.4	NO	NO	NA	NA	NA	NA	NA
8	HC	Male	22	23.0	NO	NO	NA	NA	NA	NA	NA

Abbreviations: HC, healthy controls; BD, bipolar disorder; BMI, body mass index; GAD-7, Generalized Anxiety Disorder 7-item; PHQ-9, Patient Health Questionnaire-9; HAMA, Hamilton Anxiety Scale; HDRS-17, 17-item Hamilton Depression Rating Scale; MADRS, Montgomery-Asberg Depression Rating Scale.

Table S2 Primers for *β-actin*, *Grin1*, *Grin2A*, *Grin2B*, *Grin2C*, *Grin2D*, *Gria1*, *Gria2*, *Gria3*, *Gria4*

Genes	Forward primer (5'-3')	Reverse primer (5'-3')
<i>Grin1</i>	AGAATGTGACTCCCGCAGCAATG	GGGCATCCTTGTGTCGCTTGTAG
<i>Grin2A</i>	ATATCGGCAGAACTCCACGCATTG	CATCCGCAGACAGGCATCACAC
<i>Grin2B</i>	GGCAAGCCTGGCATGGTCTTC	GGAGCAAGCGTAGGATATTGGAGTG
<i>Grin2C</i>	CATCGGCTCCCTCACCATCAATG	CCGTTGCTCCTTGCCACCATC
<i>Grin2D</i>	CATCGGCTCAGGCAAGGTCTTC	CCGCTCCAGCATCTCAATCTCATC
<i>Gria1</i>	AGCGTCGTCCTCTTCCCTGGTC	CACGTGTTGTCTGATCTCGTCCTC
<i>Gria2</i>	TGTGAGGACTACGGCAGAAAGGAG	TTCATGGTGTGCGCAAGGCTTCC
<i>Gria3</i>	CGCTGGGTGAGACTGGATGAAAG	GGTATCGGAAGGCTTCTGCTATGAC
<i>Gria4</i>	AGACGAGTGCCTTGAGCCTGAG	CCACCTTCATTCTCTTCGCCTCTG
<i>β-actin</i>	TATGCTCTCCCTCACGCCATCC	GTCACGCACGATTTCCTCTCTCAG

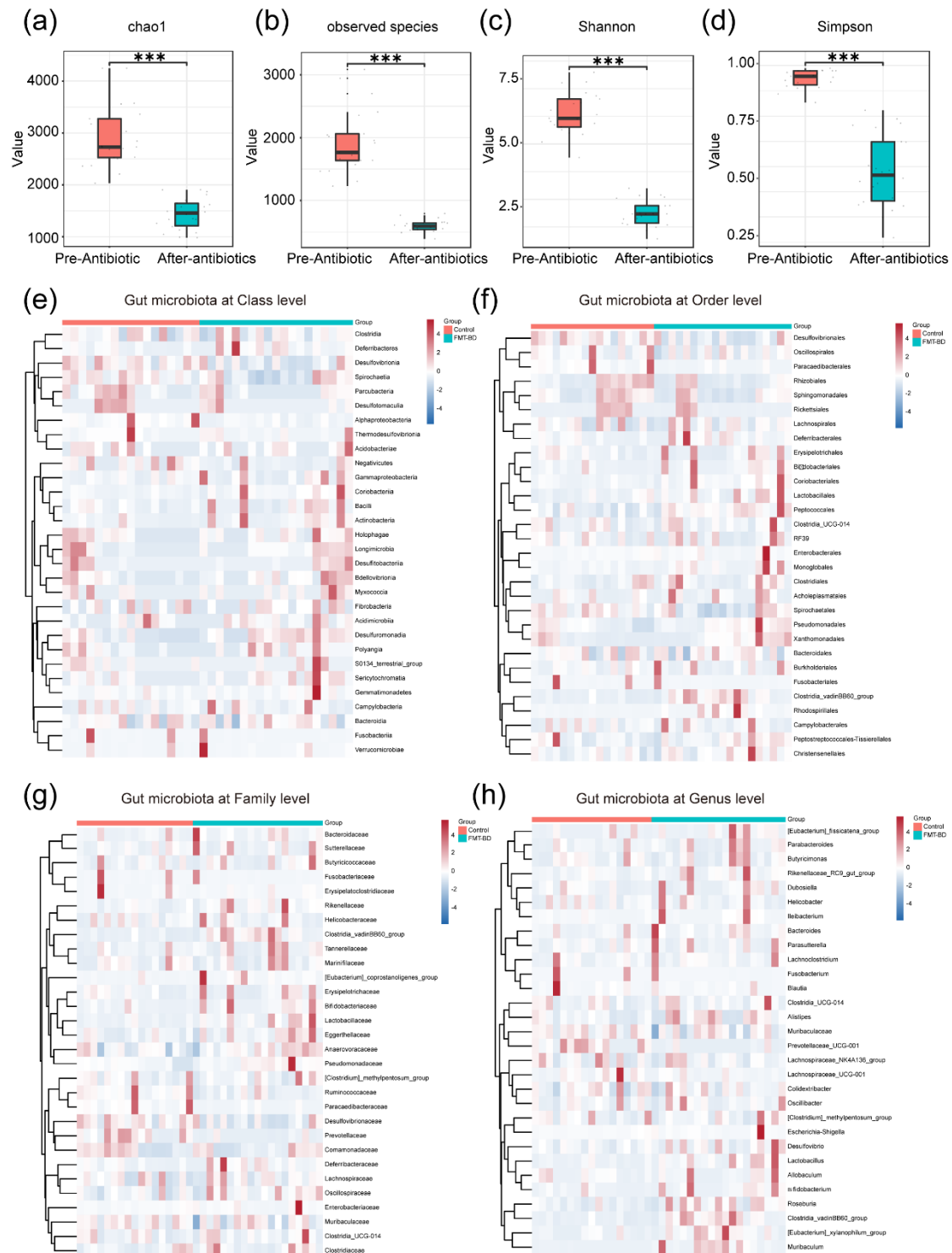


Fig. S1 The alpha diversity of gut microbiota in mice before and after antibiotic treatment and differences in the abundance of gut microbes at the class, order, family and genus levels between the BD and control mice groups. (a-d) The alpha diversity of gut microbiota by the Chao1 index, observed species, Shannon index and Simpson index of mice before and after antibiotic treatment. (e-f) The changes of gut microbes at the class, order, family, and genus levels between the two groups.