**SUPPLEMENTARY TABLES**

Supplementary Table 1. Statistical analysis data of gut microbiota data at phylum.

| Graph            | Factor effect (Antibiotic) | Factor effect (MPTP) | Interaction effect (Antibiotic × MPTP) |
|------------------|---------------------------|----------------------|---------------------------------------|
| Bacteroidetes    | $F_{(1,36)} = 12.695, P = 0.001$ | $F_{(1,36)} = 21.180, P < 0.001$ | $F_{(1,36)} = 1.806, P = 0.187$ |
| Firmicutes       | $F_{(1,36)} = 14.284, P = 0.001$ | $F_{(1,36)} = 20.353, P < 0.001$ | $F_{(1,36)} = 2.272, P = 0.140$ |
| Proteobacteria   | $F_{(1,36)} = 40.495, P < 0.001$ | $F_{(1,36)} = 1.034, P = 0.316$ | $F_{(1,36)} = 0.190, P = 0.665$ |
| Deferribacteres  | $F_{(1,36)} = 10.911, P = 0.002$ | $F_{(1,36)} = 3.872, P = 0.057$ | $F_{(1,36)} = 3.948, P = 0.055$ |
| TM7              | $F_{(1,36)} = 10.916, P = 0.002$ | $F_{(1,36)} = 10.916, P = 0.002$ | $F_{(1,36)} = 10.916, P = 0.002$ |

Supplementary Table 2. Statistical analysis data of gut microbiota data at genus.

| Graph            | Factor effect (Antibiotic) | Factor effect (MPTP) | Interaction effect (Antibiotic × MPTP) |
|------------------|---------------------------|----------------------|---------------------------------------|
| lactobacillus    | $F_{(1,36)} = 40.826, P < 0.001$ | $F_{(1,36)} = 0.743, P = 0.394$ | $F_{(1,36)} = 0.744, P = 0.394$ |
| Mucispirillum    | $F_{(1,36)} = 10.835, P = 0.002$ | $F_{(1,36)} = 3.818, P = 0.059$ | $F_{(1,36)} = 3.893, P = 0.056$ |
| Candidatus Arthromitus | $F_{(1,36)} = 10.302, P = 0.003$ | $F_{(1,36)} = 1.204, P = 0.280$ | $F_{(1,36)} = 0.796, P = 0.378$ |
| Parasutterella   | $F_{(1,36)} = 81.500, P < 0.001$ | $F_{(1,36)} = 0.344, P = 0.561$ | $F_{(1,36)} = 0.495, P = 0.486$ |
| Blautia          | $F_{(1,36)} = 11.239, P = 0.002$ | $F_{(1,36)} = 1.430, P = 0.240$ | $F_{(1,36)} = 1.542, P = 0.222$ |
| Robinsoniella    | $F_{(1,36)} = 11.589, P = 0.002$ | $F_{(1,36)} = 0.211, P = 0.649$ | $F_{(1,36)} = 0.211, P = 0.649$ |
| Escherichia      | $F_{(1,36)} = 8.289, P = 0.007$ | $F_{(1,36)} = 2.245, P = 0.143$ | $F_{(1,36)} = 2.399, P = 0.130$ |
| Dorea            | $F_{(1,36)} = 7.766, P = 0.008$ | $F_{(1,36)} = 0.548, P = 0.464$ | $F_{(1,36)} = 1.104, P = 0.300$ |
| Eubacterium      | $F_{(1,36)} = 8.529, P = 0.006$ | $F_{(1,36)} = 3.508, P = 0.069$ | $F_{(1,36)} = 1.747, P = 0.195$ |
| Asaccharobacter  | $F_{(1,36)} = 1.292, P = 0.263$ | $F_{(1,36)} = 7.712, P = 0.009$ | $F_{(1,36)} = 4.353, P = 0.044$ |
| Clostridium      | $F_{(1,36)} = 7.982, P = 0.008$ | $F_{(1,36)} = 6.757, P = 0.013$ | $F_{(1,36)} = 1.664, P = 0.205$ |
| Parabacteroides  | $F_{(1,36)} = 43.663, P < 0.001$ | $F_{(1,36)} = 29.742, P < 0.001$ | $F_{(1,36)} = 29.742, P < 0.001$ |
| Bacteroides      | $F_{(1,36)} = 19.018, P < 0.001$ | $F_{(1,36)} = 12.176, P < 0.001$ | $F_{(1,36)} = 7.447, P = 0.010$ |
| Enterococcus     | $F_{(1,36)} = 8.910, P = 0.005$ | $F_{(1,36)} = 4.904, P = 0.033$ | $F_{(1,36)} = 4.624, P = 0.038$ |
Supplementary Table 3. Statistical analysis data of gut microbiota data at species.

| Graph                                      | Factor effect (Antibiotic) | Factor effect (MPTP) | Interaction effect (Antibiotic × MPTP) |
|--------------------------------------------|----------------------------|----------------------|---------------------------------------|
| Lactobacillus murinus                      | $F_{(1,36)} = 19.973, P < 0.001$ | $F_{(1,36)} = 0.007, P = 0.935$ | $F_{(1,36)} = 0.006, P = 0.936$ |
| Lactobacillus johnsonii                    | $F_{(1,36)} = 21.666, P < 0.001$ | $F_{(1,36)} = 1.126, P = 0.296$ | $F_{(1,36)} = 1.126, P = 0.296$ |
| Mucispirillum schaedleri                   | $F_{(1,36)} = 10.803, P = 0.002$ | $F_{(1,36)} = 3.836, P = 0.058$ | $F_{(1,36)} = 3.912, P = 0.056$ |
| Candidatus Arthromitus sp. SFB-mouse       | $F_{(1,36)} = 10.302, P = 0.003$ | $F_{(1,36)} = 1.204, P = 0.280$ | $F_{(1,36)} = 0.796, P = 0.378$ |
| Escherichia coli                           | $F_{(1,36)} = 8.289, P = 0.007$ | $F_{(1,36)} = 2.245, P = 0.143$ | $F_{(1,36)} = 2.399, P = 0.130$ |
| Blautia sp. Ser8                           | $F_{(1,36)} = 10.059, P = 0.003$ | $F_{(1,36)} = 3.457, P = 0.071$ | $F_{(1,36)} = 3.457, P = 0.071$ |
| Robinsonella peoriensis                    | $F_{(1,36)} = 11.921, P = 0.001$ | $F_{(1,36)} = 0.239, P = 0.628$ | $F_{(1,36)} = 0.239, P = 0.628$ |
| Clostridium sp. Clone-27                  | $F_{(1,36)} = 6.957, P = 0.012$ | $F_{(1,36)} = 9.366, P = 0.004$ | $F_{(1,36)} = 6.036, P = 0.019$ |
| Blautia sp. canine oral taxon 143          | $F_{(1,36)} = 5.309, P = 0.027$ | $F_{(1,36)} = 5.309, P = 0.027$ | $F_{(1,36)} = 5.309, P = 0.027$ |
| Parabacteroides distasonis                | $F_{(1,36)} = 30.573, P < 0.001$ | $F_{(1,36)} = 40.561, P < 0.001$ | $F_{(1,36)} = 39.576, P < 0.001$ |
| Blautia cocoides                          | $F_{(1,36)} = 26.794, P < 0.001$ | $F_{(1,36)} = 6.406, P = 0.016$ | $F_{(1,36)} = 6.406, P = 0.016$ |
| Clostridium sp. HGF2                       | $F_{(1,36)} = 21.898, P < 0.001$ | $F_{(1,36)} = 12.850, P = 0.001$ | $F_{(1,36)} = 12.850, P = 0.001$ |
| Clostridium bolteae                        | $F_{(1,36)} = 8.670, P = 0.006$ | $F_{(1,36)} = 5.094, P = 0.030$ | $F_{(1,36)} = 5.094, P = 0.030$ |
| Lactobacillus intestinalis                 | $F_{(1,36)} = 23.328, P < 0.001$ | $F_{(1,36)} = 8.172, P = 0.007$ | $F_{(1,36)} = 8.105, P = 0.007$ |
| Lactobacillus reuteri                      | $F_{(1,36)} = 23.676, P < 0.001$ | $F_{(1,36)} = 8.288, P = 0.007$ | $F_{(1,36)} = 8.214, P = 0.007$ |
| Bacteroides acidifaciens                  | $F_{(1,36)} = 26.102, P < 0.001$ | $F_{(1,36)} = 18.528, P < 0.001$ | $F_{(1,36)} = 11.141, P = 0.002$ |
| [Clostridium] cocleatum                    | $F_{(1,36)} = 14.097, P = 0.001$ | $F_{(1,36)} = 9.975, P = 0.003$ | $F_{(1,36)} = 9.975, P = 0.003$ |
| Enterococcus casseliflavus                 | $F_{(1,36)} = 6.743, P = 0.014$ | $F_{(1,36)} = 5.058, P = 0.031$ | $F_{(1,36)} = 5.058, P = 0.031$ |
| Bacteroides sp. TP-5                      | $F_{(1,36)} = 7.426, P = 0.010$ | $F_{(1,36)} = 4.685, P = 0.037$ | $F_{(1,36)} = 4.747, P = 0.036$ |