

Supplement Table S3. Mendelian randomized outliers and level pleiotropy test of exposure and outcome

| Group | Exposure | Outcome | Cochran's Q-derived P value | MR-PRESSO-Global-test-derived P value | MR-Egger intercept-derived P value |
|-------------------|---------------------------------|---------|-----------------------------------|---------------------------------------|---------------------------------------|
| <i>Class</i> | <i>Actinobacteria</i> | IgAN | 0.96 | 0.95 | 0.79 |
| <i>Family</i> | <i>Erysipelotrichaceae</i> | IgAN | 0.62 | 0.63 | 0.79 |
| <i>Genus</i> | <i>Lachnospira</i> | IgAN | 0.70 | 0.74 | 0.89 |
| | <i>Parabacteroides</i> | IgAN | 0.74 | 0.78 | 0.58 |
| | <i>Butyrivibrio</i> | IgAN | 0.55 | 0.55 | 0.71 |
| | <i>Phascolarctobacterium</i> | IgAN | 0.85 | 0.86 | 0.91 |
| | <i>Ruminococcus</i> | IgAN | 0.69 | 0.70 | 0.37 |
| <i>Order</i> | <i>Erysipelotrichales</i> | IgAN | 0.87 | 0.83 | 0.42 |
| <i>Metabolite</i> | <i>Beta_hydroxybutyric acid</i> | IgAN | 0.27 | 0.32 | 0.73 |