

Supplementary Table S3. HC versus ICU-COV(-) (MaAsLin2 test)

| feature                                                                                                                     | metadata                       | value      | coef      | stderr | N  | N.not.0   | pval      | qval |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------|------------|-----------|--------|----|-----------|-----------|------|
| 1_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Ruminococcaceae.g__Oscillospira.____                           | SampleStatus_typeICU.Patient_R | -4.5106973 | 0.4895552 | 49     | 28 | 4.20E-12  | 1.05E-10  |      |
| 2_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Lachnospira.____                            | SampleStatus_typeICU.Patient_R | -4.3953994 | 0.579291  | 49     | 30 | 1.06E-09  | 2.03E-08  |      |
| 3_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Ruminococcaceae.g__Faecalibacterium.____                       | SampleStatus_typeICU.Patient_R | -4.1830705 | 0.9830144 | 49     | 29 | 9.88E-05  | 0.000437  |      |
| 4_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Christensenellaceae.____                                       | SampleStatus_typeICU.Patient_R | -4.0292137 | 0.8126631 | 49     | 33 | 9.69E-06  | 5.57E-05  |      |
| 5_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Lachnospira.____                            | SampleStatus_typeICU.Patient_R | -3.9242846 | 0.7325831 | 49     | 17 | 2.49E-06  | 1.59E-05  |      |
| 6_k_Bacteria.p__Tenericutes.c__Mollicutes.o__RF39.____                                                                      | SampleStatus_typeICU.Patient_R | -3.5715735 | 0.5766499 | 49     | 17 | 1.37E-07  | 1.58E-06  |      |
| 7_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Ruminococcaceae.g__Ruminococcus.____                           | SampleStatus_typeICU.Patient_R | -3.2905102 | 0.7255781 | 49     | 36 | 3.97E-05  | 0.0002077 |      |
| 8_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.____                                                              | SampleStatus_typeICU.Patient_R | -3.2155575 | 0.5706771 | 49     | 48 | 9.57E-07  | 7.86E-06  |      |
| 9_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Clostridiaceae.g__Clostridium.____                             | SampleStatus_typeICU.Patient_R | -3.1527298 | 0.6151162 | 49     | 31 | 5.50E-06  | 3.33E-05  |      |
| 10_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Anaerostipes.____                          | SampleStatus_typeICU.Patient_R | -2.9516189 | 0.5459242 | 49     | 19 | 2.10E-06  | 1.42E-05  |      |
| 11_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Ruminococcaceae.____                                          | SampleStatus_typeICU.Patient_R | -2.9324429 | 0.6510859 | 49     | 44 | 4.40E-05  | 0.0002134 |      |
| 12_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Bacteroidaceae.g__Bacteroides.s__ovatus.____              | SampleStatus_typeICU.Patient_R | -2.8833244 | 1.0112398 | 49     | 18 | 0.0064495 | 0.0151366 |      |
| 13_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.____                                          | SampleStatus_typeICU.Patient_R | -2.8376747 | 0.7192695 | 49     | 46 | 0.0002646 | 0.0011077 |      |
| 14_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Blautia.____                               | SampleStatus_typeICU.Patient_R | -2.8130215 | 0.6250702 | 49     | 37 | 4.45E-05  | 0.0002134 |      |
| 15_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Ruminococcus.____                          | SampleStatus_typeICU.Patient_R | -2.7749399 | 0.8307578 | 49     | 21 | 0.0016464 | 0.0048548 |      |
| 16_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Ruminococcaceae.g__Ruminococcus.____                          | SampleStatus_typeICU.Patient_R | -2.7712557 | 0.8486913 | 49     | 41 | 9.36E-05  | 0.0004306 |      |
| 17_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Ruminococcaceae.____                                          | SampleStatus_typeICU.Patient_R | -2.7549925 | 0.5891555 | 49     | 48 | 2.48E-05  | 0.0001356 |      |
| 18_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Veillonellaceae.g__Phascolarctobacterium.____                 | SampleStatus_typeICU.Patient_R | -2.6315089 | 0.6857596 | 49     | 10 | 0.0003701 | 0.0014188 |      |
| 19_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Barnesiellaceae.____                                      | SampleStatus_typeICU.Patient_R | -2.6193279 | 0.7592956 | 49     | 31 | 0.0011952 | 0.0038181 |      |
| 20_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.____                                          | SampleStatus_typeICU.Patient_R | -2.6081001 | 0.682858  | 49     | 46 | 0.0003913 | 0.0014515 |      |
| 21_k_Bacteria.p__Firmicutes.c__Erysipelotrichi.o__Erysipelotrichales.f__Erysipelotrichaceae.____                            | SampleStatus_typeICU.Patient_R | -2.5409869 | 0.785588  | 49     | 37 | 0.0022327 | 0.0064191 |      |
| 22_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Clostridiaceae.____                                           | SampleStatus_typeICU.Patient_R | -2.4357277 | 0.728614  | 49     | 34 | 0.0016236 | 0.0048548 |      |
| 23_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Rikenellaceae.____                                        | SampleStatus_typeICU.Patient_R | -2.3171583 | 0.5889819 | 49     | 45 | 0.0002739 | 0.0011077 |      |
| 24_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.____                                                             | SampleStatus_typeICU.Patient_R | -2.0951886 | 0.7114452 | 49     | 28 | 0.0050988 | 0.0122559 |      |
| 25_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Odoribacteraceae.g__Odoribacter.____                      | SampleStatus_typeICU.Patient_R | -2.0934061 | 0.7738788 | 49     | 38 | 0.0094819 | 0.0201929 |      |
| 26_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Paraprevotellaceae.g__Paraprevotella.____                 | SampleStatus_typeICU.Patient_R | -2.0025376 | 0.8429489 | 49     | 20 | 0.0216483 | 0.0388992 |      |
| 27_k_Archaea.p__Euryarchaeota.c__Methanobacteria.o__Methanobacteriales.f__Methanobacteriaceae.g__Methanobrevibacter.____    | SampleStatus_typeICU.Patient_R | -1.9804114 | 0.6480702 | 49     | 24 | 0.0036931 | 0.0096523 |      |
| 28_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Ruminococcaceae.g__Oscillospira.____                          | SampleStatus_typeICU.Patient_R | -1.9282466 | 0.6637918 | 49     | 39 | 0.0055839 | 0.0133781 |      |
| 29_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Dorea.____                                 | SampleStatus_typeICU.Patient_R | -1.8898437 | 0.7184729 | 49     | 33 | 0.0114954 | 0.0236067 |      |
| 30_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Blautia.____                               | SampleStatus_typeICU.Patient_R | -1.5456324 | 0.5091967 | 49     | 42 | 0.0039081 | 0.0097702 |      |
| 31_k_Bacteria.p__Tenericutes.c__RF3_o__ML615J.28.____                                                                       | SampleStatus_typeICU.Patient_R | -1.3252884 | 0.4695425 | 49     | 9  | 0.0069638 | 0.0160166 |      |
| 32_k_Bacteria.p__Lentisphaerae.c__Lentisphaeria.o__Victivallales.f__Victivallaceae.____                                     | SampleStatus_typeICU.Patient_R | -1.2541478 | 0.461163  | 49     | 14 | 0.0091321 | 0.0198149 |      |
| 33_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Lachnobacterium.____                       | SampleStatus_typeICU.Patient_R | -0.823584  | 0.2681031 | 49     | 10 | 0.0035321 | 0.0096523 |      |
| 34_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Clostridiaceae.____                                           | SampleStatus_typeICU.Patient_R | -0.8152845 | 0.3222463 | 49     | 11 | 0.0148165 | 0.0283982 |      |
| 35_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Lachnospiraceae.g__Roseburia.____                             | SampleStatus_typeICU.Patient_R | -0.6588066 | 0.2549733 | 49     | 9  | 0.0129401 | 0.0252222 |      |
| 1_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Tissierellaceae.g__Gallicola.____                              | SampleStatus_typeICU.Patient_R | 0.69740998 | 0.2665434 | 49     | 11 | 0.0119096 | 0.0237737 |      |
| 2_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Veillonellaceae.g__Succinidacticum.____                        | SampleStatus_typeICU.Patient_R | 0.98975999 | 0.4231458 | 49     | 9  | 0.0236352 | 0.0418162 |      |
| 3_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.____                                                          | SampleStatus_typeICU.Patient_R | 1.26590981 | 0.4843086 | 49     | 11 | 0.0119092 | 0.0237737 |      |
| 4_k_Bacteria.p__Synergistetes.c__Synergistia.o__Synergistales.f__Dethiosulfovibroniaceae.____                               | SampleStatus_typeICU.Patient_R | 1.2691248  | 0.4730156 | 49     | 11 | 0.010303  | 0.0209906 |      |
| 5_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Peptostreptococcaceae.g__Peptostreptococcus.s__anaerobius.____ | SampleStatus_typeICU.Patient_R | 1.28960411 | 0.4685914 | 49     | 11 | 0.0083872 | 0.0185486 |      |
| 6_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Paraprevotellaceae.g__Prevotella.____                      | SampleStatus_typeICU.Patient_R | 1.38139067 | 0.5025812 | 49     | 9  | 0.0264029 | 0.0453184 |      |
| 7_k_Bacteria.p__Firmicutes.c__Bacilli.o__Bacillales.f__Staphylococcaceae.g__Staphylococcus.____                             | SampleStatus_typeICU.Patient_R | 1.48707892 | 0.5911557 | 49     | 12 | 0.0153611 | 0.0289594 |      |
| 8_k_Bacteria.p__Actinobacteria.c__Actinobacteria.o__Actinomycetales.f__Actinomycetaceae.g__Arcanobacterium.____             | SampleStatus_typeICU.Patient_R | 1.48838408 | 0.6046747 | 49     | 10 | 0.0175631 | 0.0325768 |      |
| 9_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Tissierellaceae.g__ph2.____                                    | SampleStatus_typeICU.Patient_R | 1.49138546 | 0.6169605 | 49     | 10 | 0.0195684 | 0.0357201 |      |
| 10_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Veillonellaceae.g__Megaspheara.____                           | SampleStatus_typeICU.Patient_R | 1.57658422 | 0.5081128 | 49     | 14 | 0.0032401 | 0.009088  |      |
| 11_k_Bacteria.p__Firmicutes.c__Erysipelotrichi.o__Erysipelotrichales.f__Erysipelotrichaceae.g__Eubacterium.s__dolichum.____ | SampleStatus_typeICU.Patient_R | 1.83550482 | 0.7883819 | 49     | 23 | 0.0242557 | 0.0422638 |      |
| 12_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Clostridiaceae.g__Clostridium.____                            | SampleStatus_typeICU.Patient_R | 2.07489518 | 0.7486779 | 49     | 12 | 0.0079719 | 0.0179759 |      |
| 13_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Mogibacteriaceae.g__Mogibacterium.____                        | SampleStatus_typeICU.Patient_R | 2.46597492 | 0.8122279 | 49     | 19 | 0.0039013 | 0.0097702 |      |
| 14_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__S24.7.____                                                | SampleStatus_typeICU.Patient_R | 2.58974542 | 0.846167  | 49     | 25 | 0.0036452 | 0.0096523 |      |
| 15_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Peptococcaceae.g__Peptococcus.____                            | SampleStatus_typeICU.Patient_R | 2.6681403  | 0.7237318 | 49     | 16 | 0.0005754 | 0.0020052 |      |
| 16_k_Bacteria.p__Proteobacteria.c__Gammaproteobacteria.o__Enterobacteriales.f__Enterobacteriaceae.____                      | SampleStatus_typeICU.Patient_R | 2.77404245 | 0.7384631 | 49     | 32 | 0.0004748 | 0.0017063 |      |
| 17_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Tissierellaceae.g__ph2.____                                   | SampleStatus_typeICU.Patient_R | 2.80361347 | 0.7955238 | 49     | 15 | 0.0009582 | 0.0031485 |      |
| 18_k_Bacteria.p__Actinobacteria.c__Actinobacteria.o__Actinomycetales.f__Actinomycetaceae.g__Actinomyces.____                | SampleStatus_typeICU.Patient_R | 2.91635751 | 0.8590208 | 49     | 24 | 0.0014036 | 0.0043626 |      |
| 19_k_Bacteria.p__Actinobacteria.c__Actinobacteria.o__Actinomycetales.f__Actinomycetaceae.____                               | SampleStatus_typeICU.Patient_R | 3.14785265 | 0.8014119 | 49     | 18 | 0.0002793 | 0.0011077 |      |
| 20_k_Bacteria.p__Fusobacteria.c__Fusobacteria.o__Fusobacteriales.f__Fusobacteriaceae.g__Fusobacterium.____                  | SampleStatus_typeICU.Patient_R | 3.27161556 | 0.9225814 | 49     | 18 | 0.0008976 | 0.0030359 |      |
| 21_k_Bacteria.p__Actinobacteria.c__Actinobacteria.o__Actinomycetales.f__Actinomycetaceae.g__Varibaculum.____                | SampleStatus_typeICU.Patient_R | 4.07414088 | 0.5769823 | 49     | 27 | 6.60E-09  | 1.08E-07  |      |
| 22_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Veillonellaceae.g__Dialister.____                             | SampleStatus_typeICU.Patient_R | 4.13626791 | 0.7304154 | 49     | 38 | 6.68E-07  | 7.68E-06  |      |
| 23_k_Bacteria.p__Actinobacteria.c__Actinobacteria.o__Actinomycetales.f__Corynebacteriaceae.g__Corynebacterium.____          | SampleStatus_typeICU.Patient_R | 4.40661596 | 0.6594121 | 49     | 28 | 2.48E-08  | 3.56E-07  |      |
| 24_k_Bacteria.p__Proteobacteria.c__Epsilonproteobacteria.o__Campylobacteriales.f__Campylobacteriaceae.g__Campylobacter.____ | SampleStatus_typeICU.Patient_R | 4.43107834 | 0.7241094 | 49     | 24 | 1.78E-07  | 1.86E-06  |      |
| 25_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Prevotellaceae.g__Prevotella.____                         | SampleStatus_typeICU.Patient_R | 4.54899126 | 0.7917309 | 49     | 44 | 6.52E-07  | 6.25E-06  |      |
| 26_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Tissierellaceae.g__Anaerococcus.____                          | SampleStatus_typeICU.Patient_R | 4.78284686 | 0.5205008 | 49     | 30 | 4.56E-12  | 1.05E-10  |      |
| 27_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Tissierellaceae.____                                          | SampleStatus_typeICU.Patient_R | 4.8849652  | 0.894348  | 49     | 22 | 1.74E-10  | 1.25E-05  |      |
| 28_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Tissierellaceae.g__Finegoldia.____                            | SampleStatus_typeICU.Patient_R | 4.92503406 | 0.4343523 | 49     | 31 | 4.76E-15  | 5.48E-13  |      |
| 29_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Porphyromonadaceae.g__Porphyromonas.s__endodontalis.____  | SampleStatus_typeICU.Patient_R | 5.00974622 | 0.9097838 | 49     | 23 | 1.49E-06  | 1.14E-05  |      |
| 30_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Tissierellaceae.g__Peptoniphilus.____                         | SampleStatus_typeICU.Patient_R | 5.78822607 | 0.5510934 | 49     | 31 | 6.41E-14  | 3.69E-12  |      |
| 31_k_Bacteria.p__Firmicutes.c__Clostridia.o__Clostridiales.f__Tissierellaceae.g__WAL_1855D.____                             | SampleStatus_typeICU.Patient_R | 5.99769423 | 0.95136   | 49     | 25 | 9.31E-08  | 1.19E-06  |      |
| 32_k_Bacteria.p__Bacteroidetes.c__Bacteroidia.o__Bacteroidales.f__Porphyromonadaceae.g__Porphyromonas.____                  | SampleStatus_typeICU.Patient_R | 6.59759703 | 0.6879694 | 49     | 30 | 1.22E-12  | 4.68E-11  |      |