Site RPCA

Repeated Measures PERMANOVA

Luminal

```
Permutation: free
Number of permutations: 0

Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2      Pr(>F)
Sequencing_Run   1    43.405  43.405  85.969 0.35295 0.00009999 ***
Sex              1     6.247   6.247  12.372 0.05080    0.3706
Site_General     1    45.051  45.051  89.228 0.36634 0.00009999 ***
Residuals       56    28.274   0.505         0.22991 0.00009999 ***
Total           59   122.977                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Mucosal

```
Permutation: free
Number of permutations: 0

Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2      Pr(>F)
Sequencing_Run   1    36.380  36.380 109.969 0.37052     0.0177 *
Sex              1     7.760   7.760  23.457 0.07903     0.3195
Site_General     1    39.491  39.491 119.371 0.40220 0.00009999 ***
Residuals       44    14.556   0.331         0.14825 0.00009999 ***
Total           47    98.187                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Mucosal SI

```
Permutation: free
Number of permutations: 0
```

```
Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2      Pr(>F)
Sequencing_Run   1    19.088 19.0877 14.3256 0.39171 0.0006999 ***
Sex              1     2.776  2.7755  2.0831 0.05696 0.6544346
Site             2     1.550  0.7749  0.5815 0.03180 0.3372663
Residuals       19    25.316  1.3324         0.51953 0.0245975 *
Total           23    48.729                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Mucosal Colon

```
Permutation: free
Number of permutations: 0

Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2      Pr(>F)
Sequencing_Run   1    21.126 21.1262 24.3919 0.43939 0.00009999 ***
Sex              1     8.084  8.0839  9.3335 0.16813     0.2843
Site             2     2.415  1.2074  1.3941 0.05022     0.0278 *
Residuals       19    16.456  0.8661         0.34226     0.0025 **
Total           23    48.081                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Luminal SI

```
Permutation: free
Number of permutations: 0

Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run   1    20.614 20.6144 14.4106 0.33565 0.005499 **
Sex              1     3.701  3.7012  2.5874 0.06026 0.532147
Site             2     1.338  0.6688  0.4676 0.02178 0.443556
Residuals       25    35.762  1.4305         0.58230 0.013399 *
Total           29    61.416                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Luminal Colon

```
Permutation: free
Number of permutations: 0

Terms added sequentially (first to last)

               Df SumsOfSqs MeanSqs F.Model      R2      Pr(>F)
Sequencing_Run  1    22.665 22.6646 17.2488 0.37332 0.00009999 ***
Sex             1     3.113  3.1131  2.3692 0.05128    0.63314
Site            2     2.083  1.0415  0.7927 0.03431    0.07829 .
Residuals      25    32.850  1.3140         0.54109    0.01240 *
Total          29    60.710                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

PERMANOVA

Luminal Subset

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

               Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run  1    43.405  43.405  85.969 0.35295 9.999e-05 ***
Sex             1     6.247   6.247  12.372 0.05080 9.999e-05 ***
Site_General    1    45.051  45.051  89.228 0.36634 9.999e-05 ***
Residuals      56    28.274   0.505         0.22991
Total          59   122.977                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

               Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run  1    43.405  43.405  83.352 0.35295 9.999e-05 ***
```

```
Sex              1       6.247    6.247   11.996 0.05080 9.999e-05 ***
Site             5      46.246    9.249   17.762 0.37606 9.999e-05 ***
Residuals       52      27.079    0.521          0.22019
Total           59     122.977                   1.00000
```

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

                  Df SumsOfSqs MeanSqs F.Model      R2      Pr(>F)
Sequencing_Run     1    43.405  43.405  86.245 0.35295 9.999e-05 ***
Sex                1     6.247   6.247  12.412 0.05080 9.999e-05 ***
Site_General       1    45.051  45.051  89.515 0.36634 9.999e-05 ***
Sex:Site_General   1     0.594   0.594   1.180 0.00483    0.3188
Residuals         55    27.680   0.503          0.22509
Total             59   122.977                  1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Mucosal Subset

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2      Pr(>F)
Sequencing_Run   1    36.380  36.380 109.969 0.37052 9.999e-05 ***
Sex              1     7.760   7.760  23.457 0.07903 9.999e-05 ***
Site_General     1    39.491  39.491 119.371 0.40220 9.999e-05 ***
Residuals       44    14.556   0.331          0.14825
Total           47    98.187                  1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2      Pr(>F)
Sequencing_Run   1    36.380  36.380 106.336 0.37052 9.999e-05 ***
Sex              1     7.760   7.760  22.682 0.07903 9.999e-05 ***
Site             5    40.362   8.072  23.595 0.41107 9.999e-05 ***
```

```
Residuals        40    13.685   0.342              0.13938
Total            47    98.187                      1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

                  Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run     1    36.380  36.380 110.046 0.37052 9.999e-05 ***
Sex                1     7.760   7.760  23.473 0.07903 9.999e-05 ***
Site_General       1    39.491  39.491 119.455 0.40220 9.999e-05 ***
Sex:Site_General   1     0.341   0.341   1.031 0.00347    0.3657
Residuals         43    14.215   0.331         0.14478
Total             47    98.187                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Luminal Colon

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run   1    22.665 22.6646 17.2488 0.37332 9.999e-05 ***
Sex              1     3.113  3.1131  2.3692 0.05128   0.09989 .
Site             2     2.083  1.0415  0.7927 0.03431   0.53875
Residuals       25    32.850  1.3140         0.54109
Total           29    60.710                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Luminal SI

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)
```

```
              Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run  1    20.614 20.6144 14.4106 0.33565 9.999e-05 ***
Sex             1     3.701  3.7012  2.5874 0.06026   0.08509 .
Site            2     1.338  0.6688  0.4676 0.02178   0.77822
Residuals      25    35.762  1.4305         0.58230
Total          29    61.416                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Mucosal Colon

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

              Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run  1    21.126 21.1262 24.3919 0.43939 9.999e-05 ***
Sex             1     8.084  8.0839  9.3335 0.16813    0.0003 ***
Site            2     2.415  1.2074  1.3941 0.05022    0.2533
Residuals      19    16.456  0.8661         0.34226
Total          23    48.081                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Mucosal SI

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

              Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run  1    19.088 19.0877 14.3256 0.39171 9.999e-05 ***
Sex             1     2.776  2.7755  2.0831 0.05696     0.138
Site            2     1.550  0.7749  0.5815 0.03180     0.683
Residuals      19    25.316  1.3324         0.51953
Total          23    48.729                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Type RPCA

Repeated Measures PERMANOVA

Colon

```
Permutation: free
Number of permutations: 0

Terms added sequentially (first to last)

                 Df SumsOfSqs MeanSqs F.Model      R2  Pr(>F)
Sequencing_Run    1    42.210  42.210  39.828 0.38819 0.00120 **
Sex               1    10.939  10.939  10.321 0.10060 0.38696
Site              2     2.814   1.407   1.328 0.02588 0.04820 *
Type              1     1.901   1.901   1.794 0.01748 0.07859 .
Residuals        48    50.872   1.060         0.46785 0.00250 **
Total            53   108.735                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

SI

```
Permutation: free
Number of permutations: 0

Terms added sequentially (first to last)

                 Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run    1    37.973  37.973 27.4174 0.34255 0.00009999 ***
Sex               1     5.620   5.620  4.0582 0.05070     0.6101
Site              2     0.447   0.223  0.1613 0.00403     0.8208
Type              1     0.334   0.334  0.2410 0.00301     0.7418
Residuals        48    66.479   1.385         0.59971     0.0192 *
Total            53   110.853                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

PERMANOVA

Colon

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run   1    42.210  42.210  39.828 0.38819 9.999e-05 ***
Sex              1    10.939  10.939  10.321 0.10060    0.0002 ***
Site             2     2.814   1.407   1.328 0.02588    0.2622
Type             1     1.901   1.901   1.794 0.01748    0.1694
Residuals       48    50.872   1.060         0.46785
Total           53   108.735                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

SI

```
Permutation: free
Number of permutations: 10000

Terms added sequentially (first to last)

                Df SumsOfSqs MeanSqs F.Model      R2     Pr(>F)
Sequencing_Run   1    37.973  37.973 27.4174 0.34255 9.999e-05 ***
Sex              1     5.620   5.620  4.0582 0.05070    0.0199 *
Site             2     0.447   0.223  0.1613 0.00403    0.9640
Type             1     0.334   0.334  0.2410 0.00301    0.7951
Residuals       48    66.479   1.385         0.59971
Total           53   110.853                 1.00000
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```