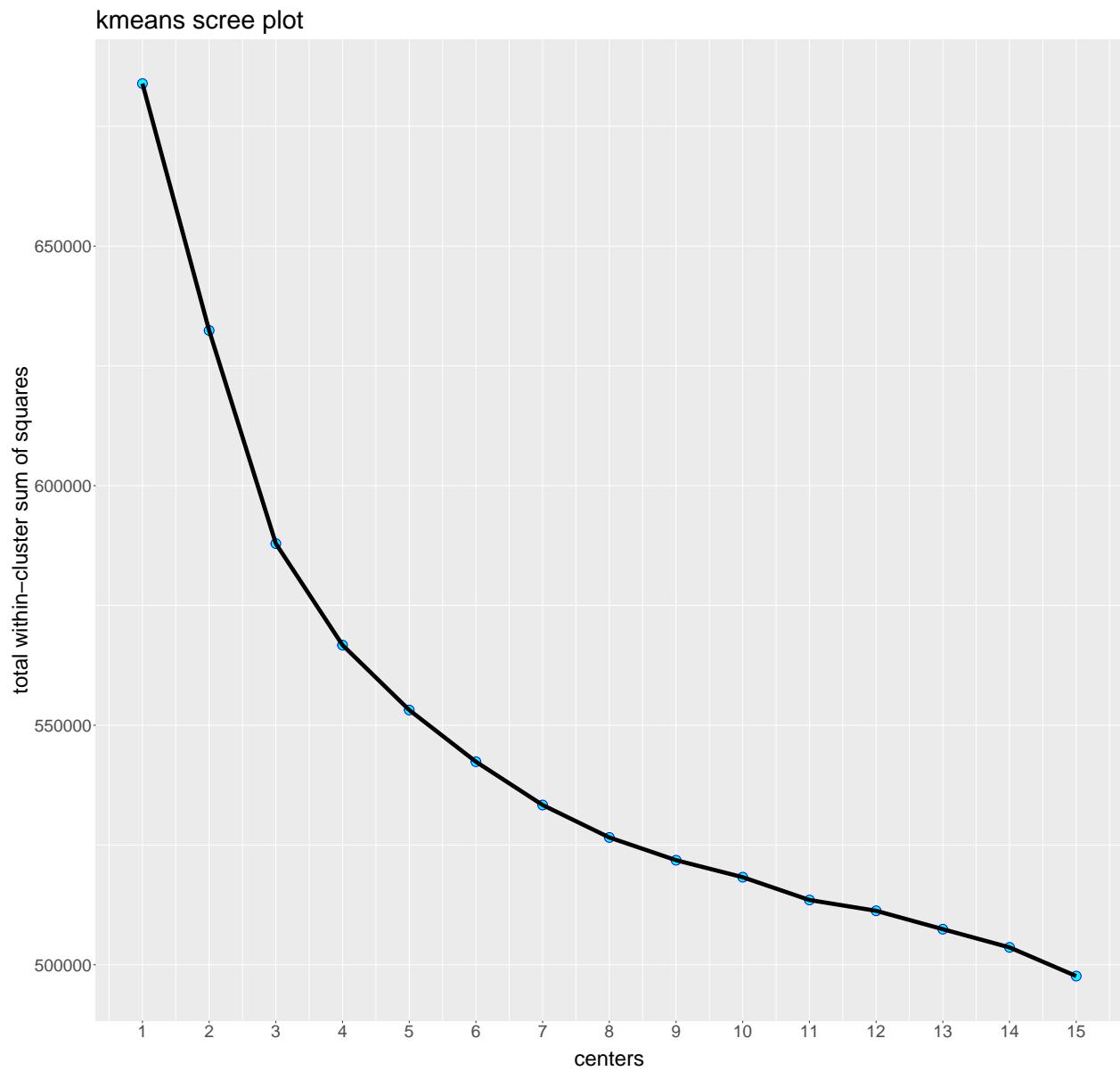
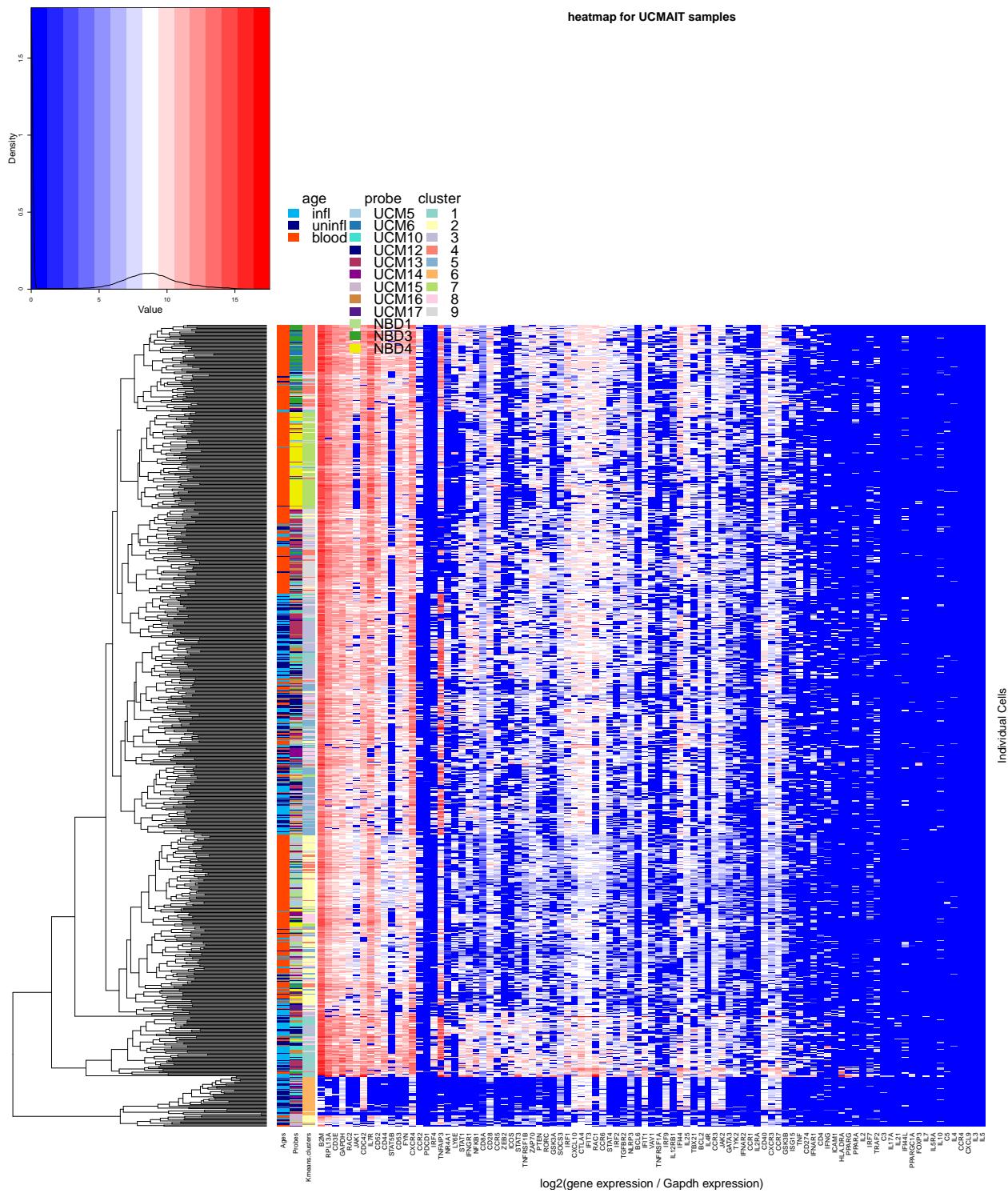


# UC-MAIT analysis

No expression detected in 15/796 cells





[1]

[1]

## [1] Probe vs. Cluster

probe\_UCM5 probe\_UCM6 probe\_UCM10 probe\_UCM12 probe\_UCM13

|                  |    |   |    |    |    |
|------------------|----|---|----|----|----|
| <i>cluster_1</i> | 0  | 0 | 33 | 12 | 7  |
| <i>cluster_2</i> | 26 | 2 | 2  | 2  | 0  |
| <i>cluster_3</i> | 0  | 0 | 18 | 26 | 35 |

|           |             |             |             |             |            |
|-----------|-------------|-------------|-------------|-------------|------------|
| cluster_4 | 4           | 43          | 0           | 5           | 0          |
| cluster_5 | 2           | 0           | 7           | 15          | 3          |
| cluster_6 | 0           | 0           | 10          | 10          | 6          |
| cluster_7 | 0           | 0           | 0           | 1           | 0          |
| cluster_8 | 3           | 3           | 7           | 17          | 3          |
| cluster_9 | 0           | 0           | 12          | 2           | 40         |
|           | probe_UCM14 | probe_UCM15 | probe_UCM16 | probe_UCM17 | probe_NBD1 |
| cluster_1 | 3           | 0           | 14          | 0           | 0          |
| cluster_2 | 10          | 25          | 7           | 7           | 37         |
| cluster_3 | 1           | 3           | 22          | 2           | 0          |
| cluster_4 | 0           | 2           | 4           | 0           | 2          |
| cluster_5 | 9           | 27          | 21          | 4           | 4          |
| cluster_6 | 7           | 5           | 0           | 0           | 0          |
| cluster_7 | 0           | 1           | 5           | 0           | 0          |
| cluster_8 | 22          | 4           | 6           | 5           | 4          |
| cluster_9 | 3           | 1           | 15          | 0           | 1          |
|           | probe_NBD3  | probe_NBD4  |             |             |            |
| cluster_1 | 1           | 0           |             |             |            |
| cluster_2 | 0           | 10          |             |             |            |
| cluster_3 | 0           | 0           |             |             |            |
| cluster_4 | 37          | 0           |             |             |            |
| cluster_5 | 3           | 1           |             |             |            |
| cluster_6 | 0           | 0           |             |             |            |
| cluster_7 | 1           | 81          |             |             |            |
| cluster_8 | 6           | 1           |             |             |            |
| cluster_9 | 0           | 1           |             |             |            |

Pearson's Chi-squared test with simulated p-value (based on 2000 replicates)

```
data: probeTable
X-squared = 1804.2, df = NA, p-value = 0.0004998
```

```
[1]
[1]
[1] Tissue vs. Cluster
      cellSource_blood cellSource_tissue
cluster_1           2            68
cluster_2          111           17
cluster_3           0            107
cluster_4          95            2
cluster_5          21            75
cluster_6           0            38
cluster_7          88            1
cluster_8          48            33
cluster_9          63            12
```

Pearson's Chi-squared test with simulated p-value (based on 2000 replicates)

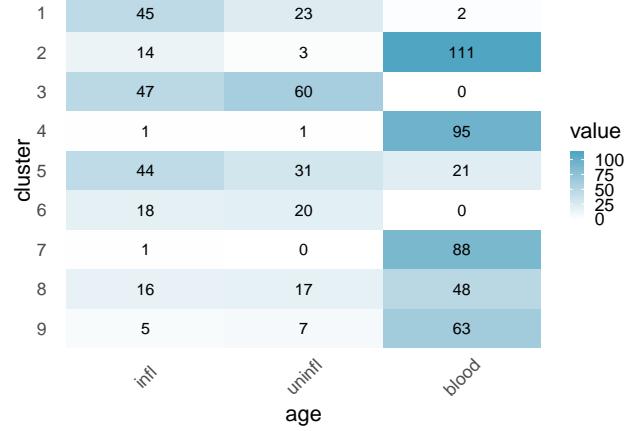
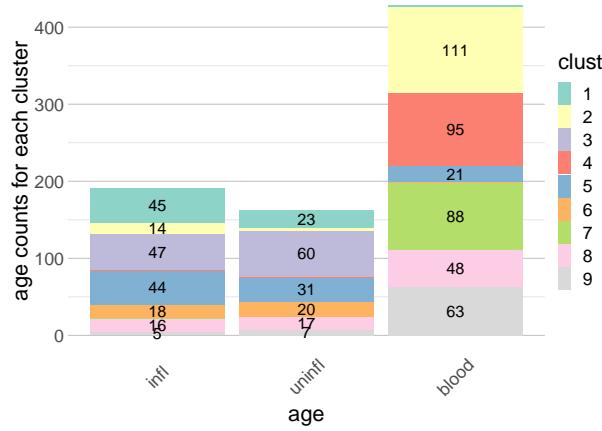
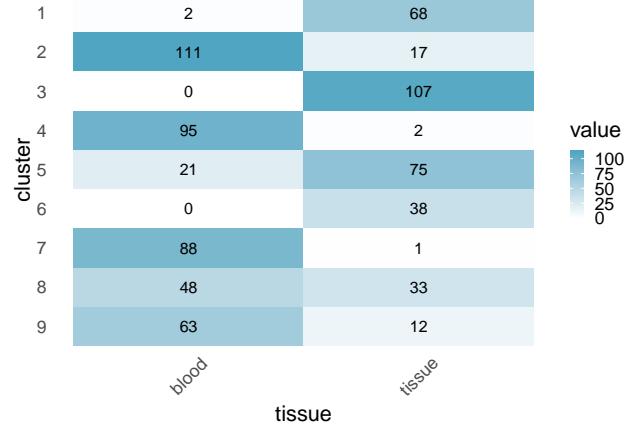
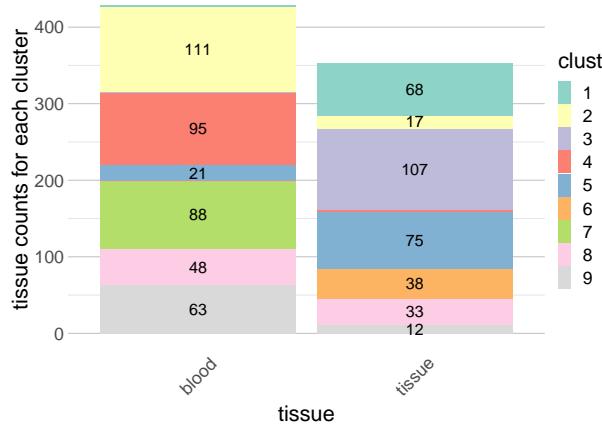
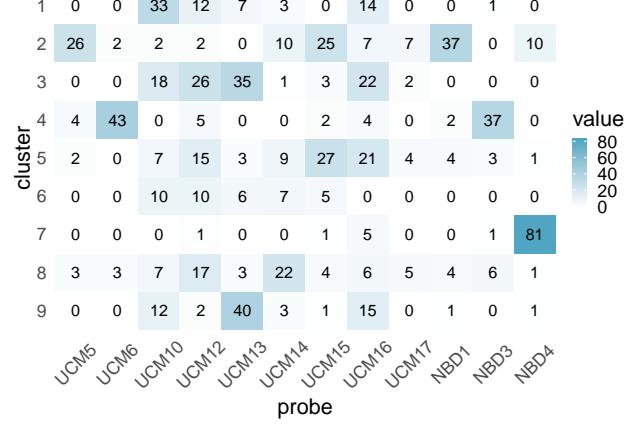
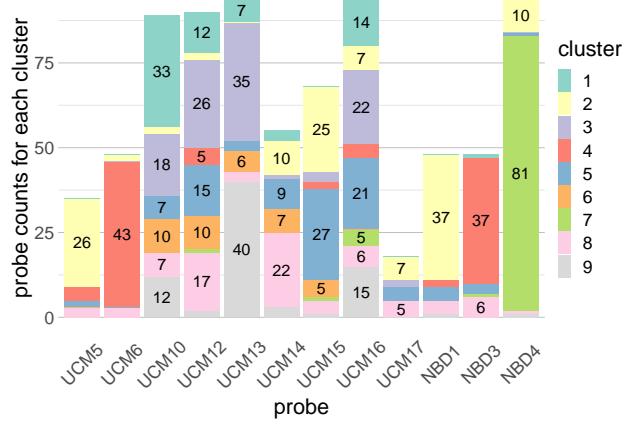
```
data: sourceTable
X-squared = 515.86, df = NA, p-value = 0.0004998
```

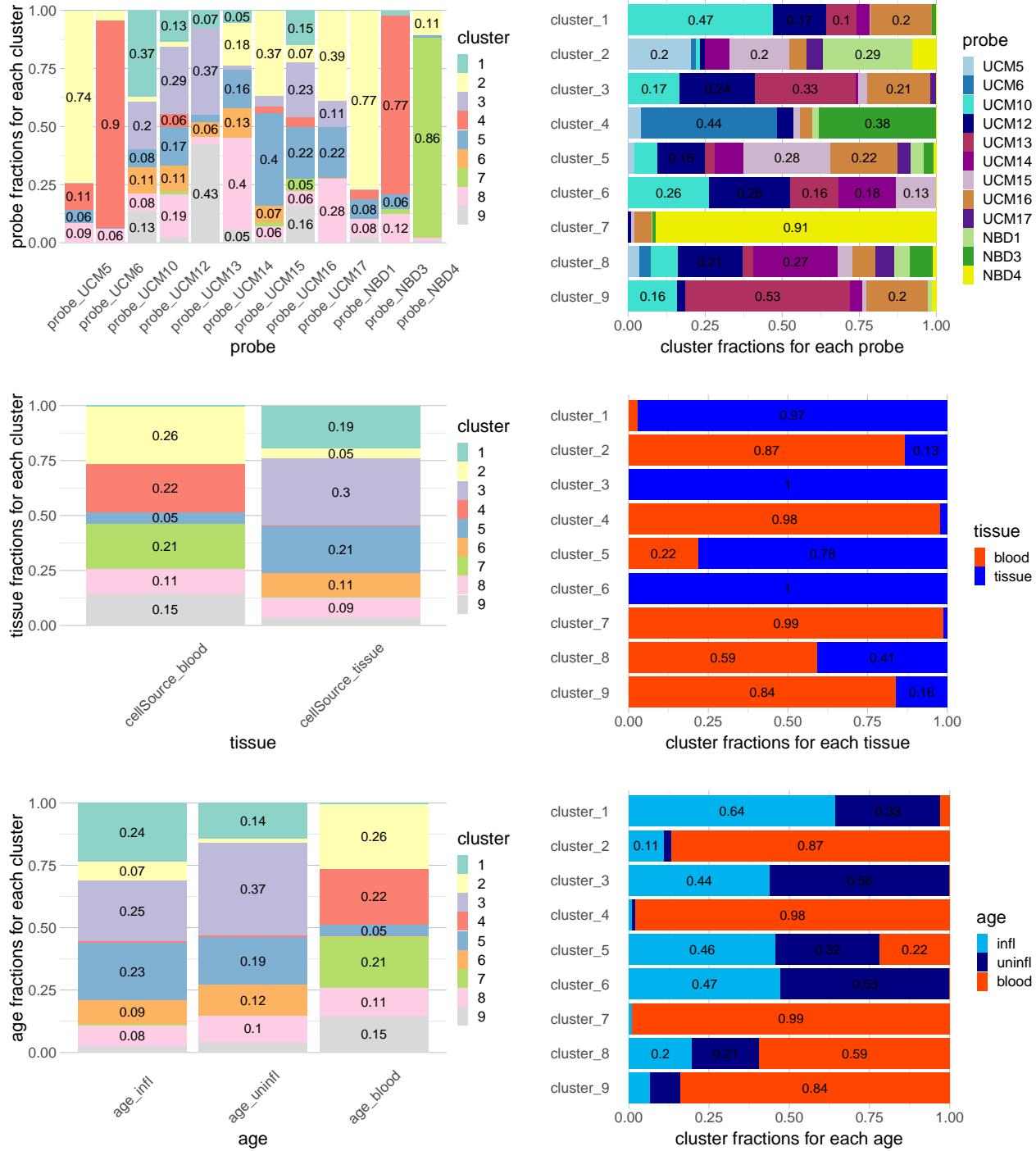
```
[1]
```

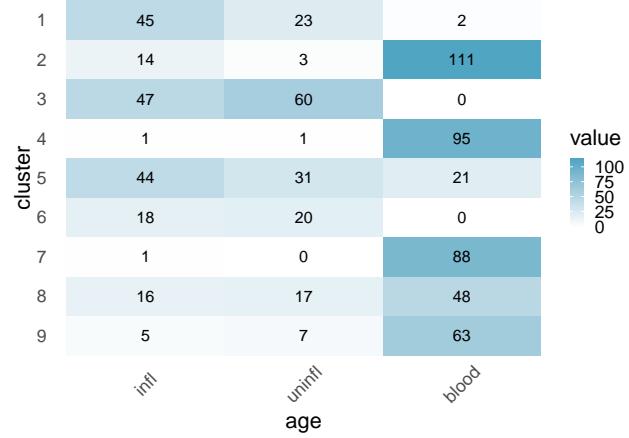
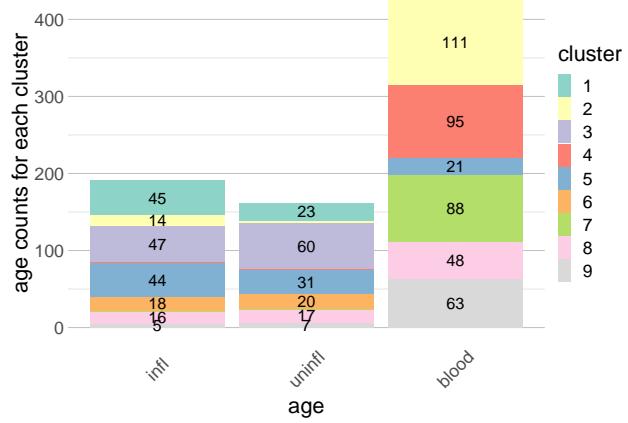
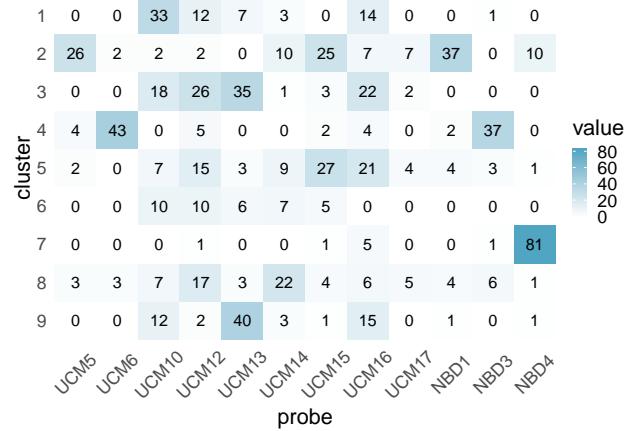
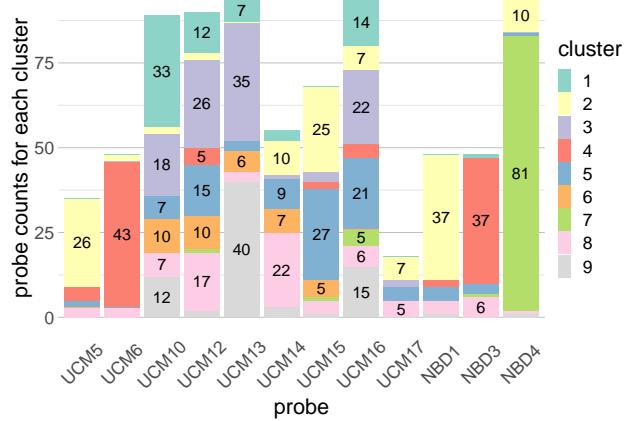
```
[1]
[1] age vs. Cluster
      age_infl age_uninfl age_blood
cluster_1     45        23        2
cluster_2     14         3       111
cluster_3     47        60        0
cluster_4      1         1       95
cluster_5     44        31       21
cluster_6     18        20        0
cluster_7      1         0       88
cluster_8     16        17       48
cluster_9      5         7       63

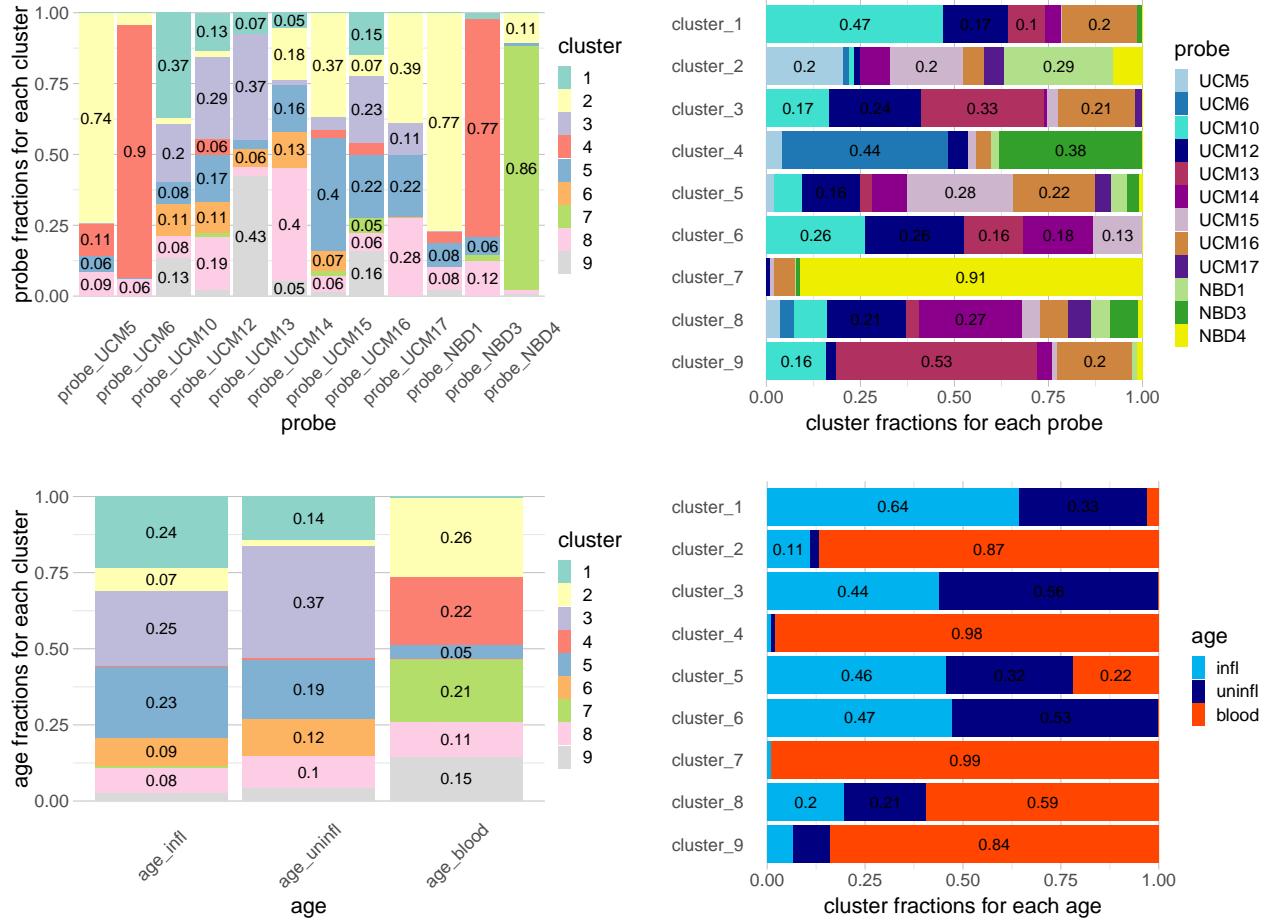
Pearson's Chi-squared test with simulated p-value (based on 2000
replicates)

data: ageTable
X-squared = 539.21, df = NA, p-value = 0.0004998
```

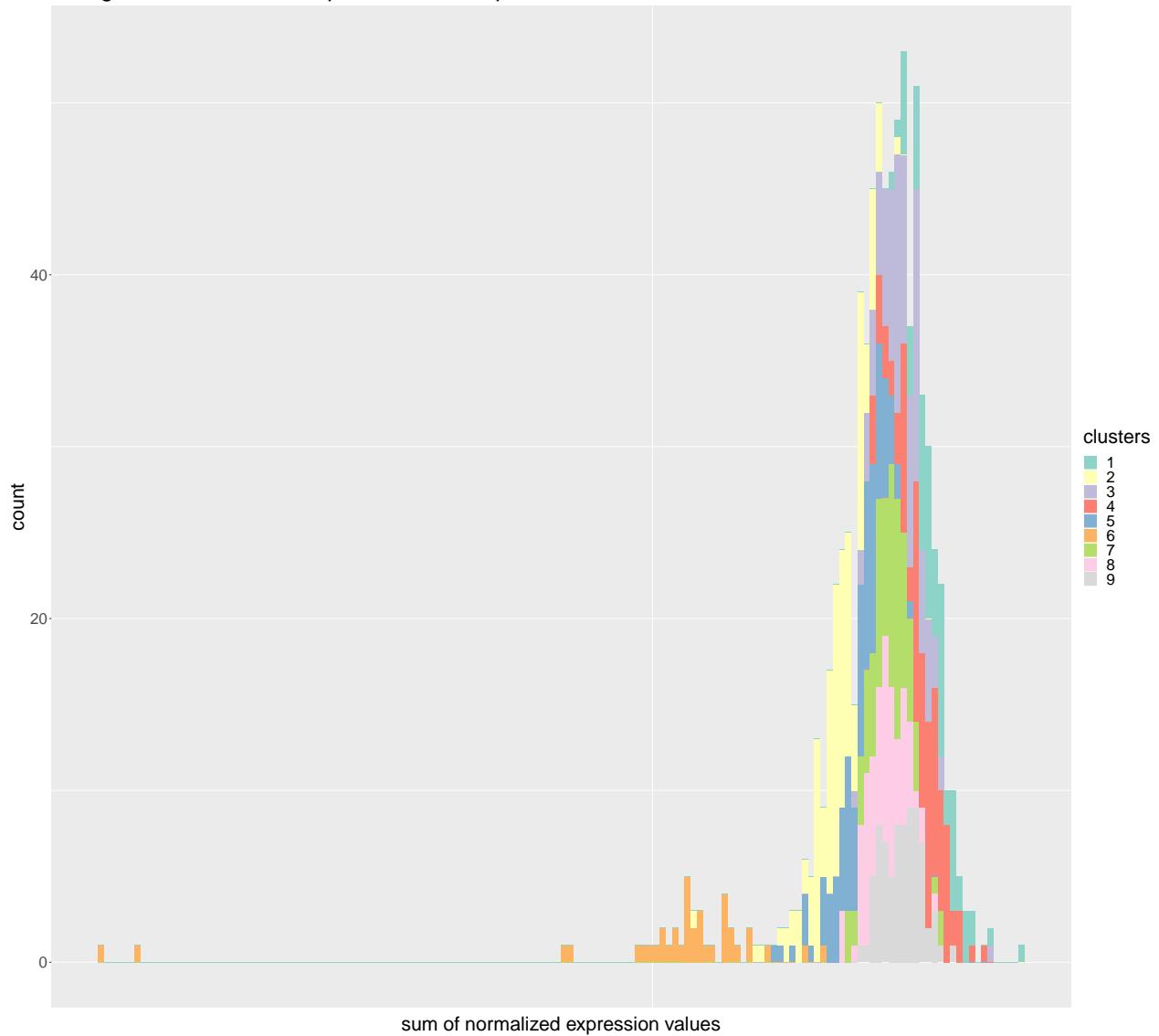






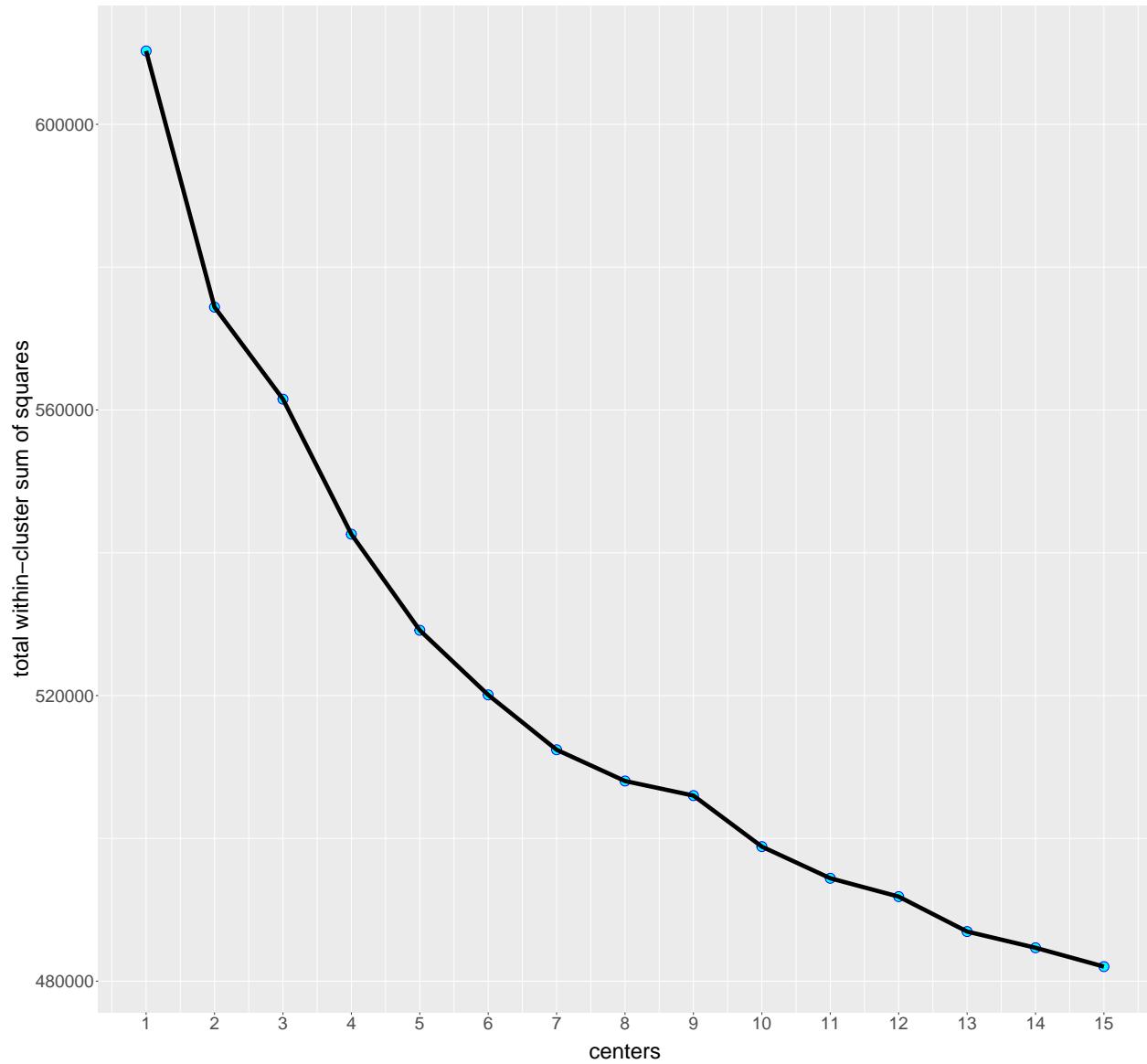


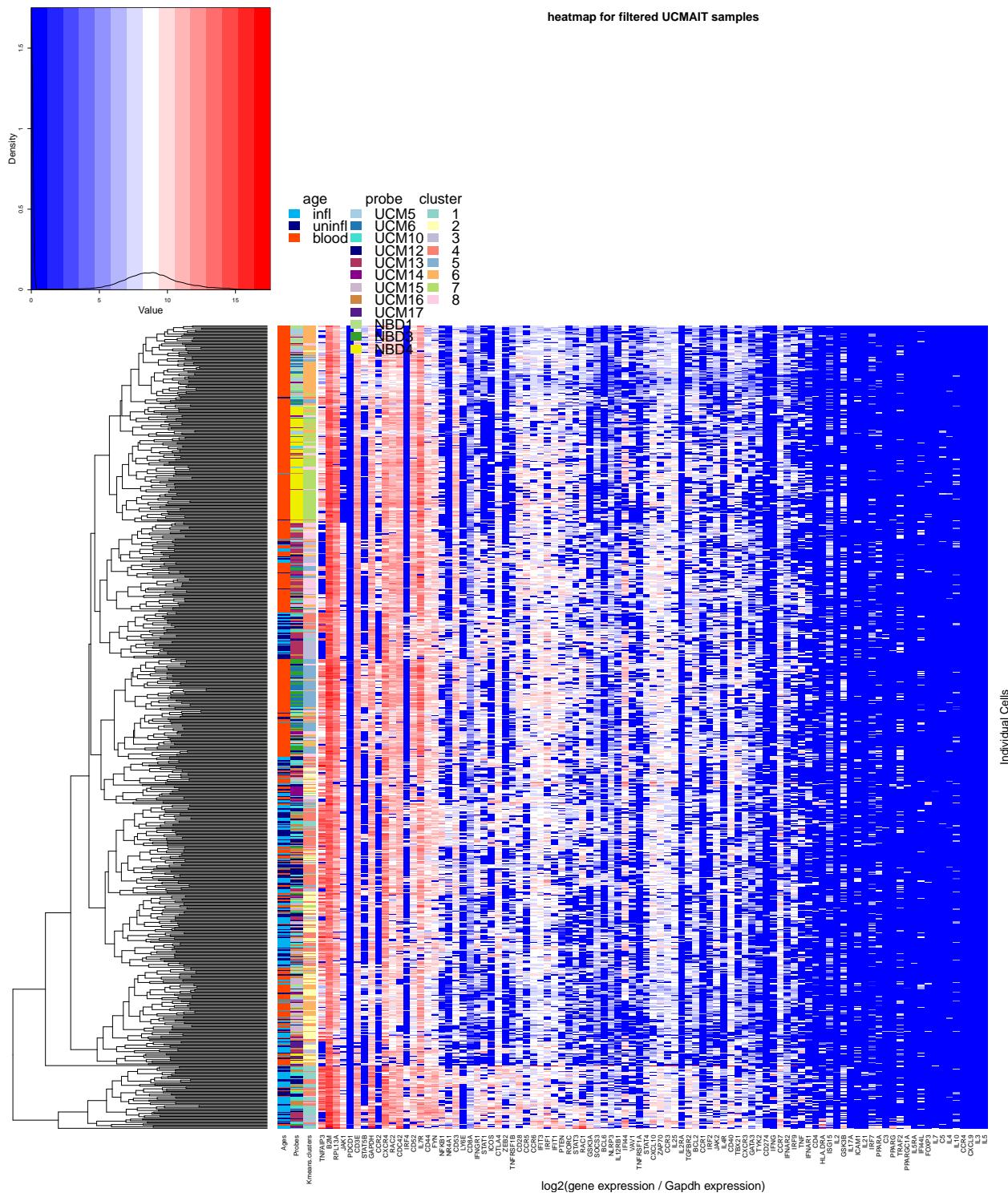
histogram of cumulative expression values per cell



38 / 781 cells were removed due to low gene expression (cluster ID of removed clusters: 6)

kmeans scree plot





[1]

[1]

[1] Probe vs. Cluster

|           | probe_UCM5 | probe_UCM6 | probe_UCM10 | probe_UCM12 | probe_UCM13 |
|-----------|------------|------------|-------------|-------------|-------------|
| cluster_1 | 0          | 0          | 30          | 9           | 4           |
| cluster_2 | 3          | 0          | 2           | 9           | 1           |
| cluster_3 | 0          | 0          | 0           | 0           | 53          |

|           |             |             |             |             |            |
|-----------|-------------|-------------|-------------|-------------|------------|
| cluster_4 | 0           | 0           | 31          | 47          | 0          |
| cluster_5 | 0           | 41          | 0           | 4           | 0          |
| cluster_6 | 29          | 6           | 3           | 4           | 2          |
| cluster_7 | 2           | 1           | 0           | 1           | 0          |
| cluster_8 | 1           | 0           | 13          | 6           | 28         |
|           | probe_UCM14 | probe_UCM15 | probe_UCM16 | probe_UCM17 | probe_NBD1 |
| cluster_1 | 5           | 0           | 8           | 0           | 0          |
| cluster_2 | 13          | 34          | 21          | 6           | 5          |
| cluster_3 | 1           | 0           | 1           | 6           | 0          |
| cluster_4 | 2           | 3           | 37          | 2           | 0          |
| cluster_5 | 0           | 0           | 3           | 0           | 0          |
| cluster_6 | 16          | 22          | 3           | 4           | 41         |
| cluster_7 | 0           | 2           | 4           | 0           | 0          |
| cluster_8 | 11          | 2           | 17          | 0           | 2          |
|           | probe_NBD3  | probe_NBD4  |             |             |            |
| cluster_1 | 0           | 0           |             |             |            |
| cluster_2 | 2           | 2           |             |             |            |
| cluster_3 | 0           | 0           |             |             |            |
| cluster_4 | 1           | 0           |             |             |            |
| cluster_5 | 42          | 0           |             |             |            |
| cluster_6 | 1           | 7           |             |             |            |
| cluster_7 | 2           | 84          |             |             |            |
| cluster_8 | 0           | 1           |             |             |            |

Pearson's Chi-squared test with simulated p-value (based on 2000 replicates)

```
data: probeTable
X-squared = 2156.3, df = NA, p-value = 0.0004998
```

```
[1]
[1]
[1] Tissue vs. Cluster
      cellSource_blood cellSource_tissue
cluster_1          0            56
cluster_2         29            69
cluster_3          1            60
cluster_4          2           121
cluster_5         89            1
cluster_6        134            4
cluster_7         95            1
cluster_8         78            3
```

Pearson's Chi-squared test with simulated p-value (based on 2000 replicates)

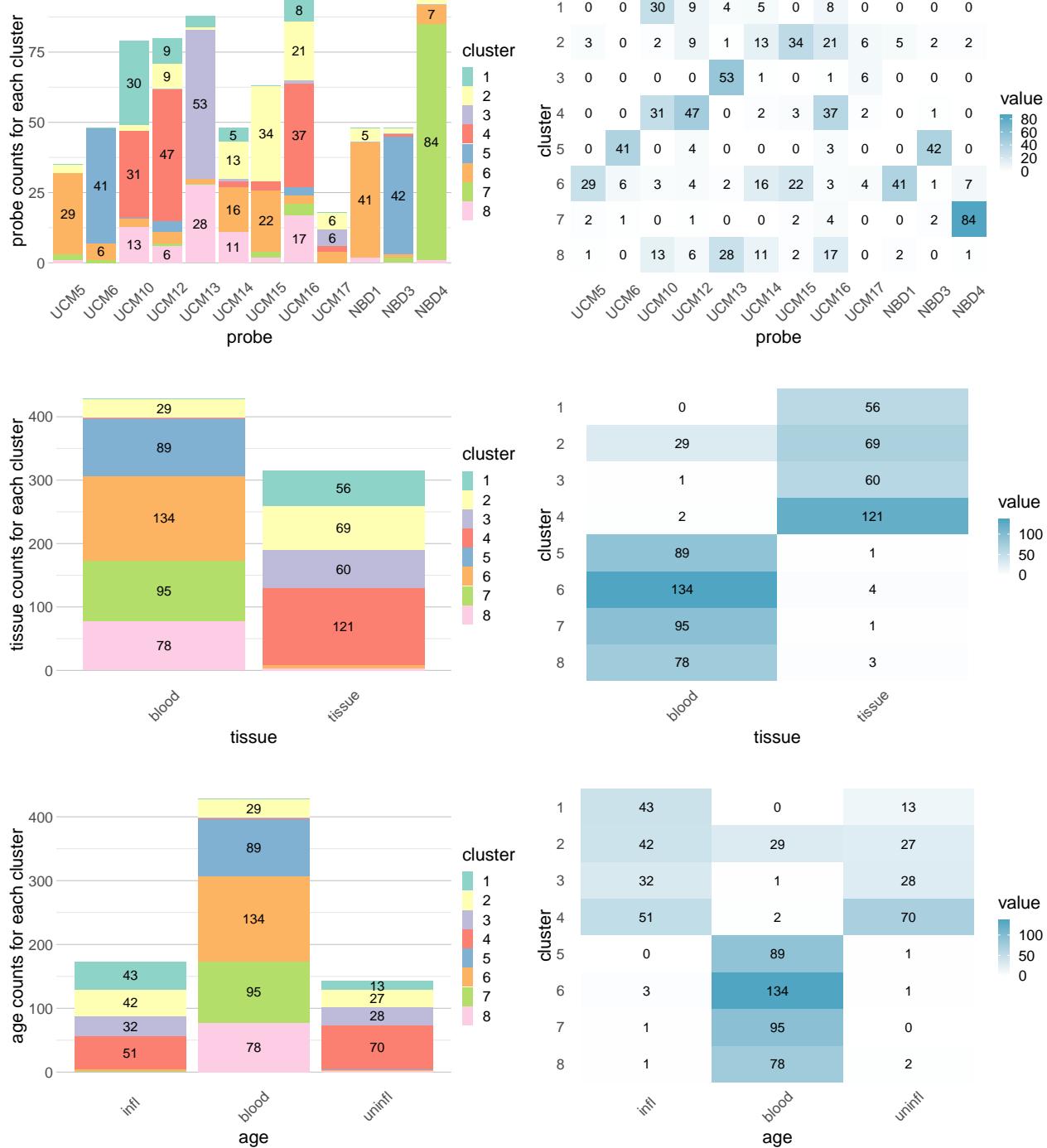
```
data: sourceTable
X-squared = 611.47, df = NA, p-value = 0.0004998
```

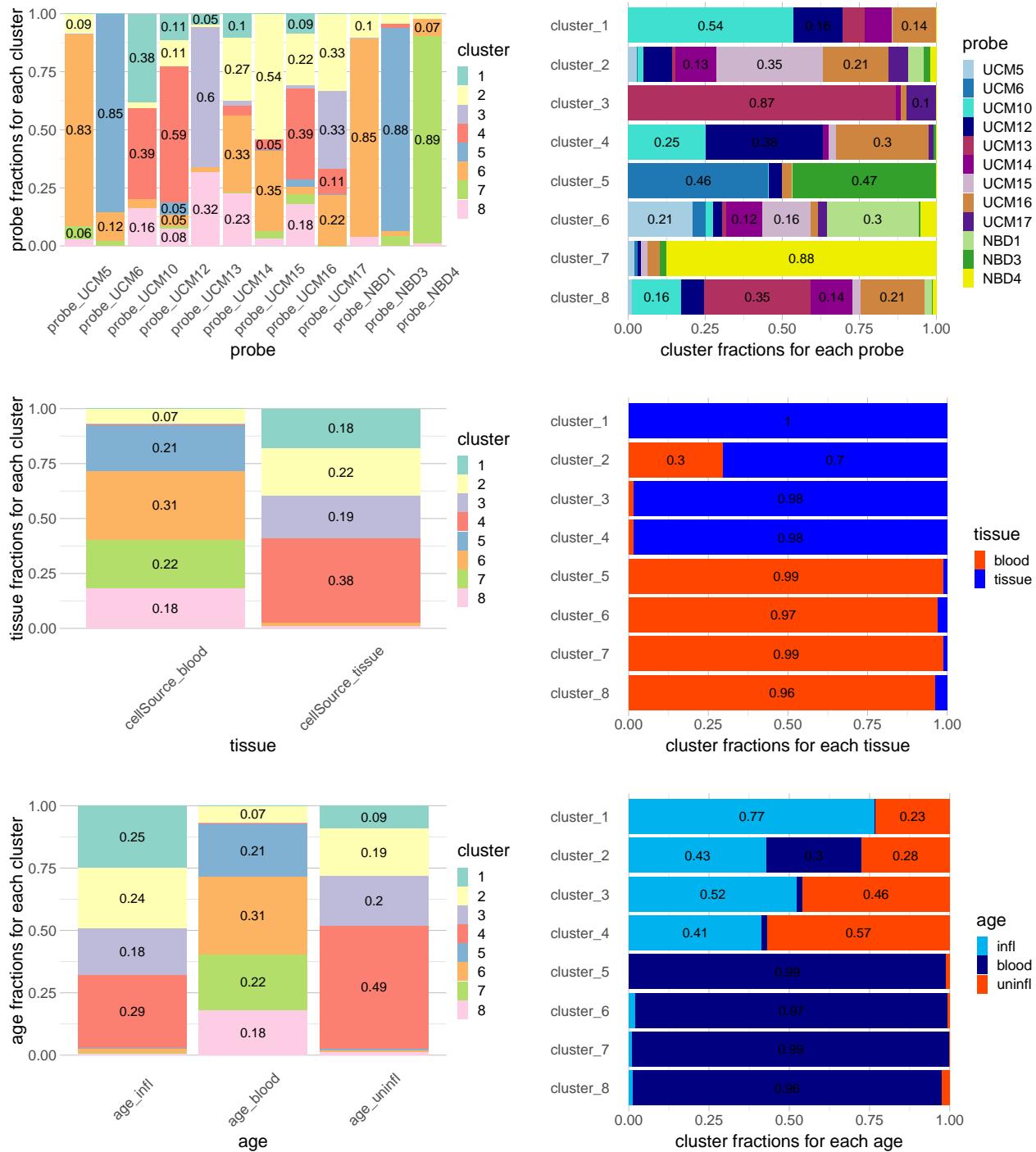
```
[1]
[1]
[1] age vs. Cluster
      age_infl age_blood age_uninfl
cluster_1       43        0        13
```

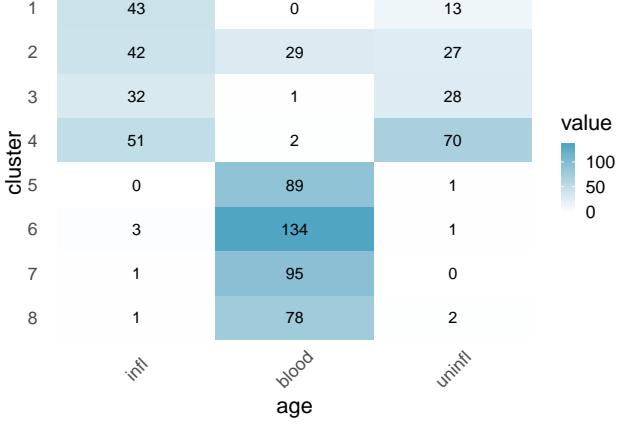
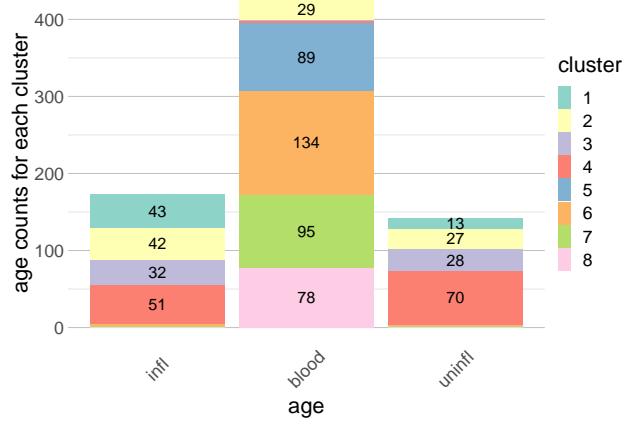
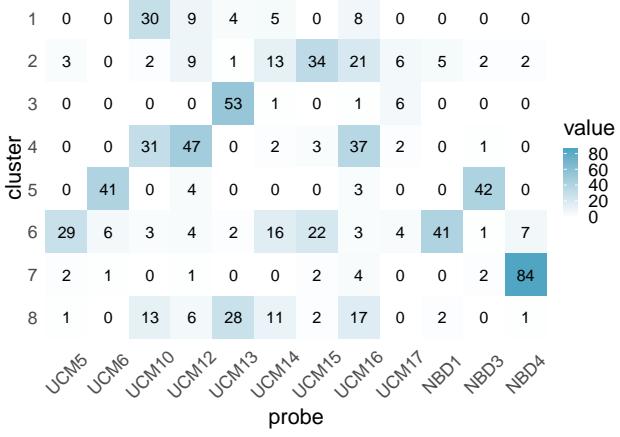
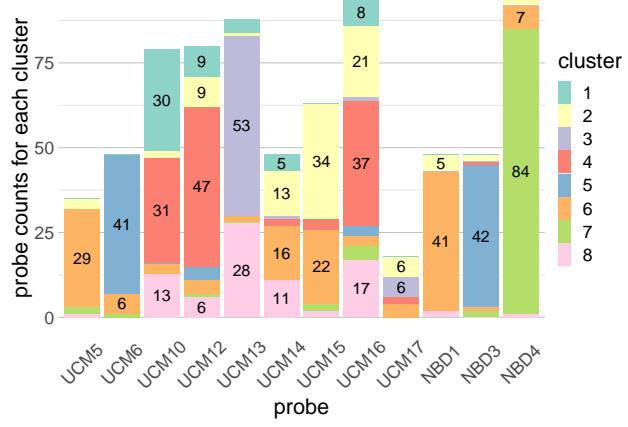
|           |    |     |    |
|-----------|----|-----|----|
| cluster_2 | 42 | 29  | 27 |
| cluster_3 | 32 | 1   | 28 |
| cluster_4 | 51 | 2   | 70 |
| cluster_5 | 0  | 89  | 1  |
| cluster_6 | 3  | 134 | 1  |
| cluster_7 | 1  | 95  | 0  |
| cluster_8 | 1  | 78  | 2  |

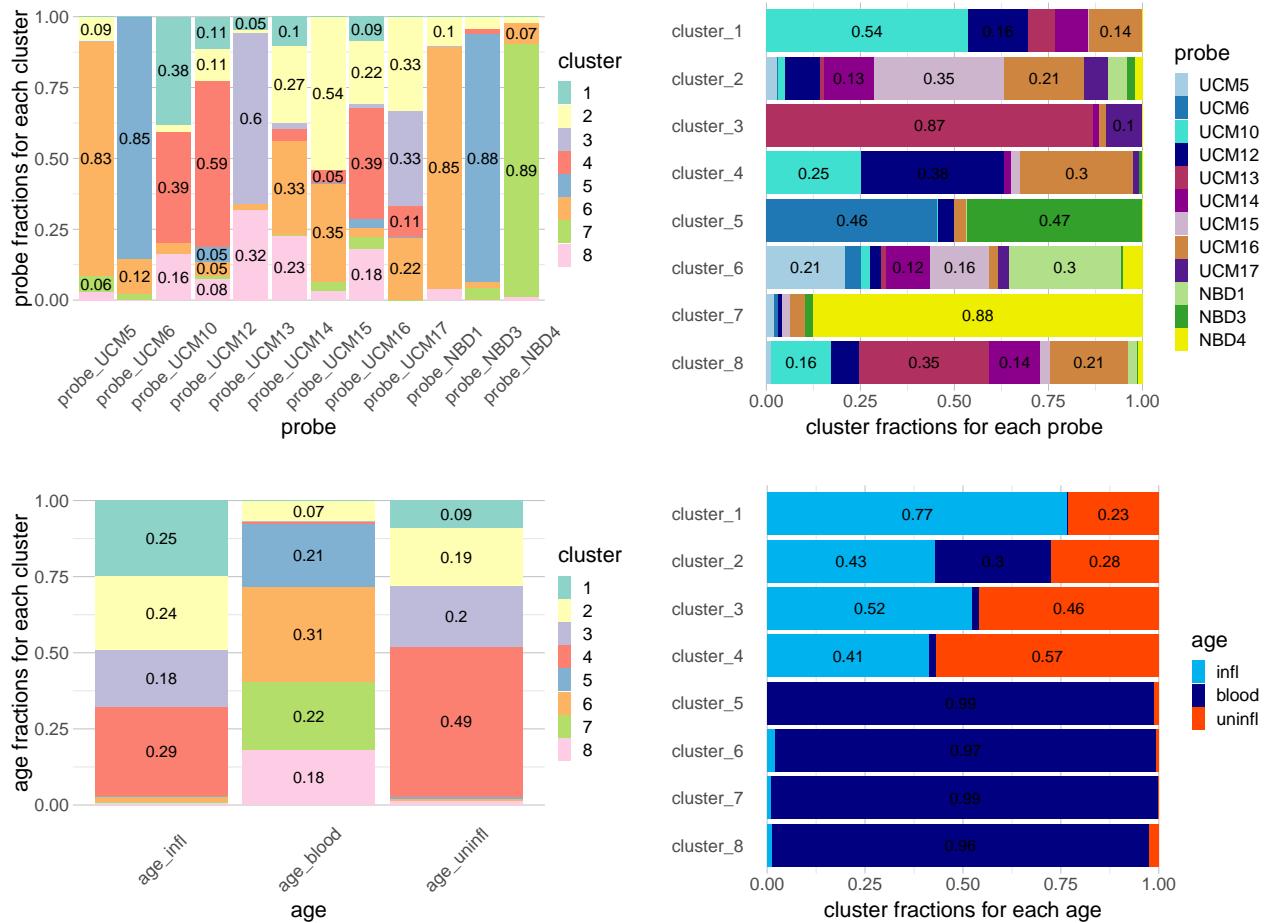
Pearson's Chi-squared test with simulated p-value (based on 2000 replicates)

```
data: ageTable  
X-squared = 657.41, df = NA, p-value = 0.0004998
```

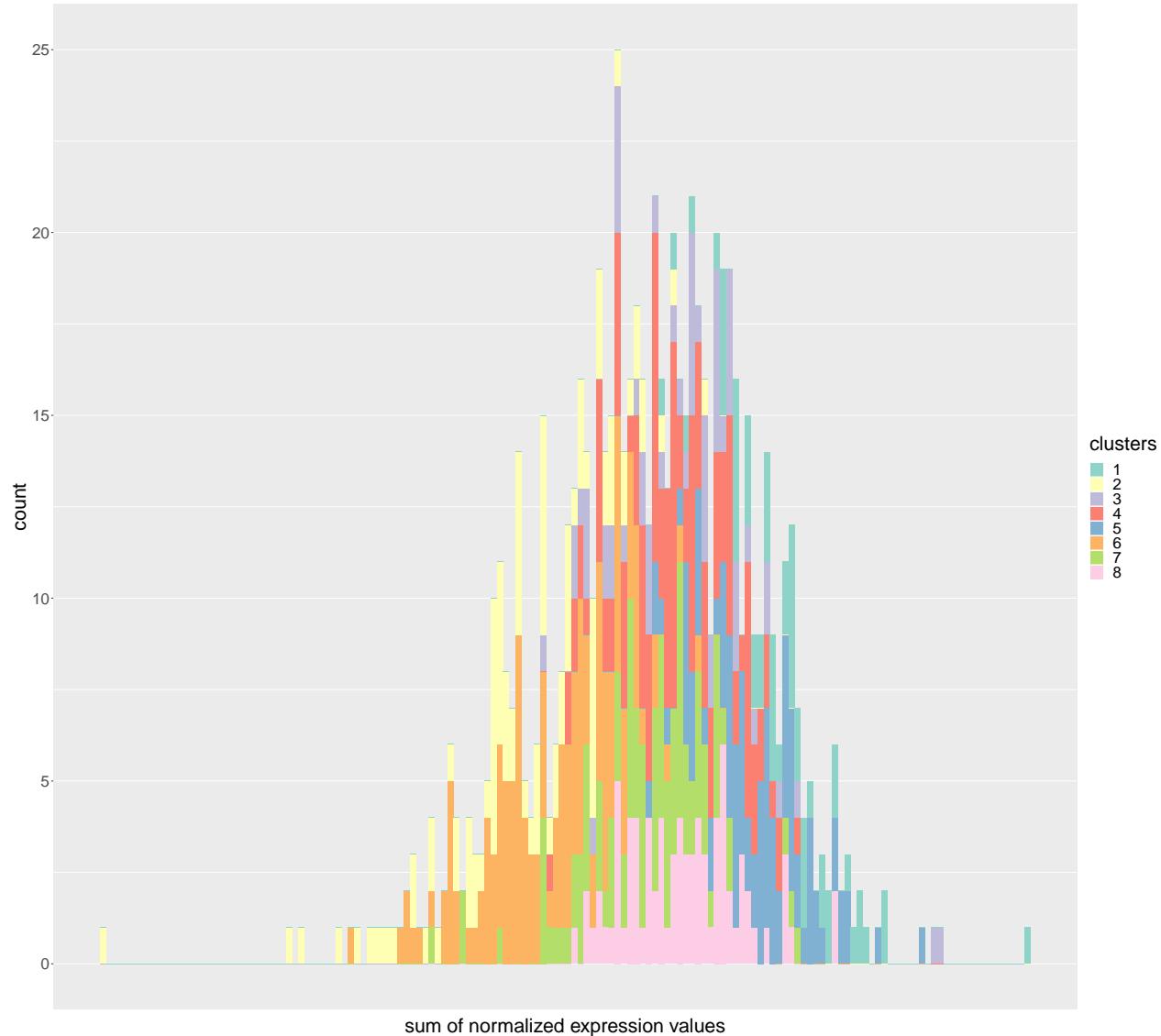




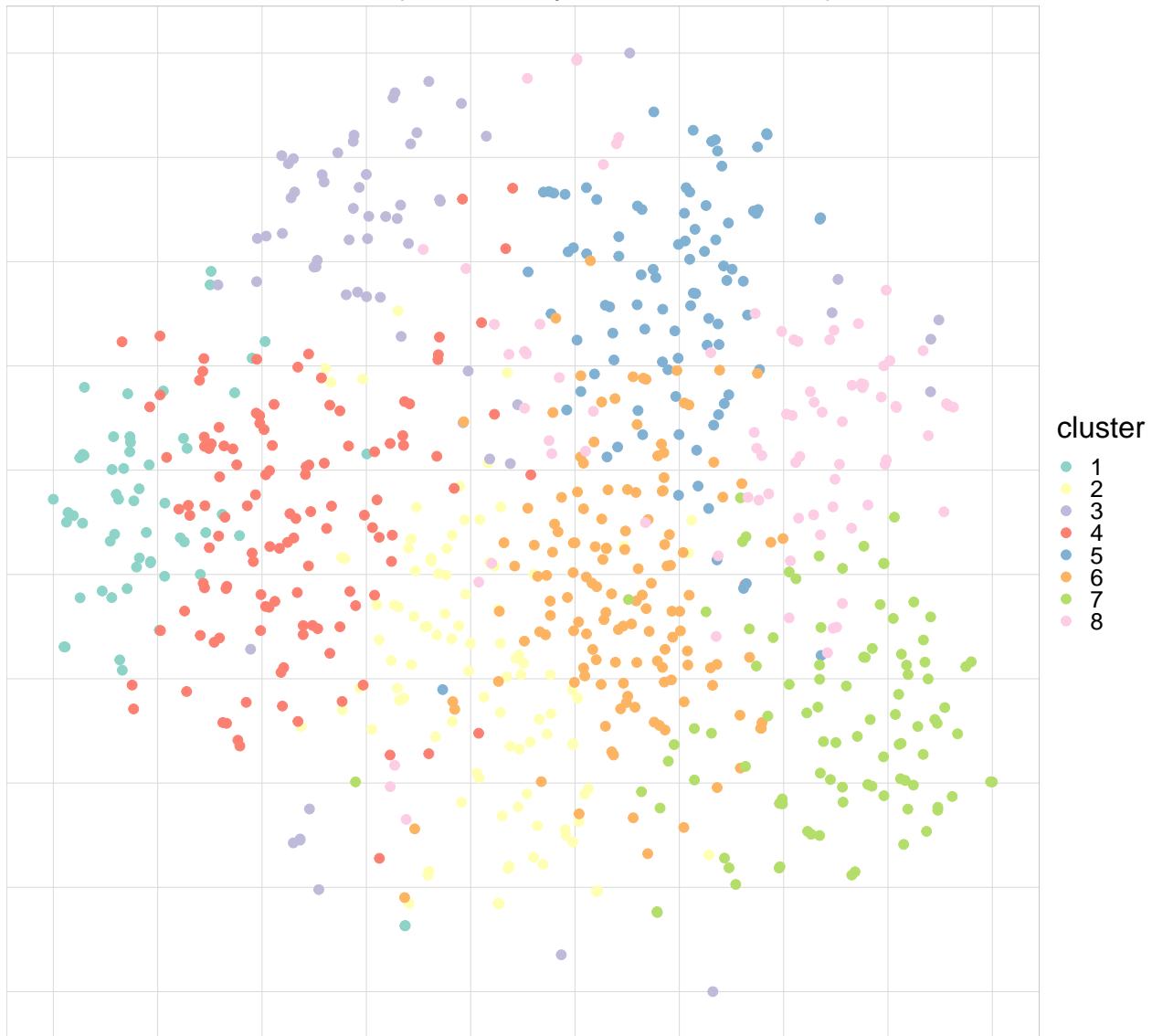




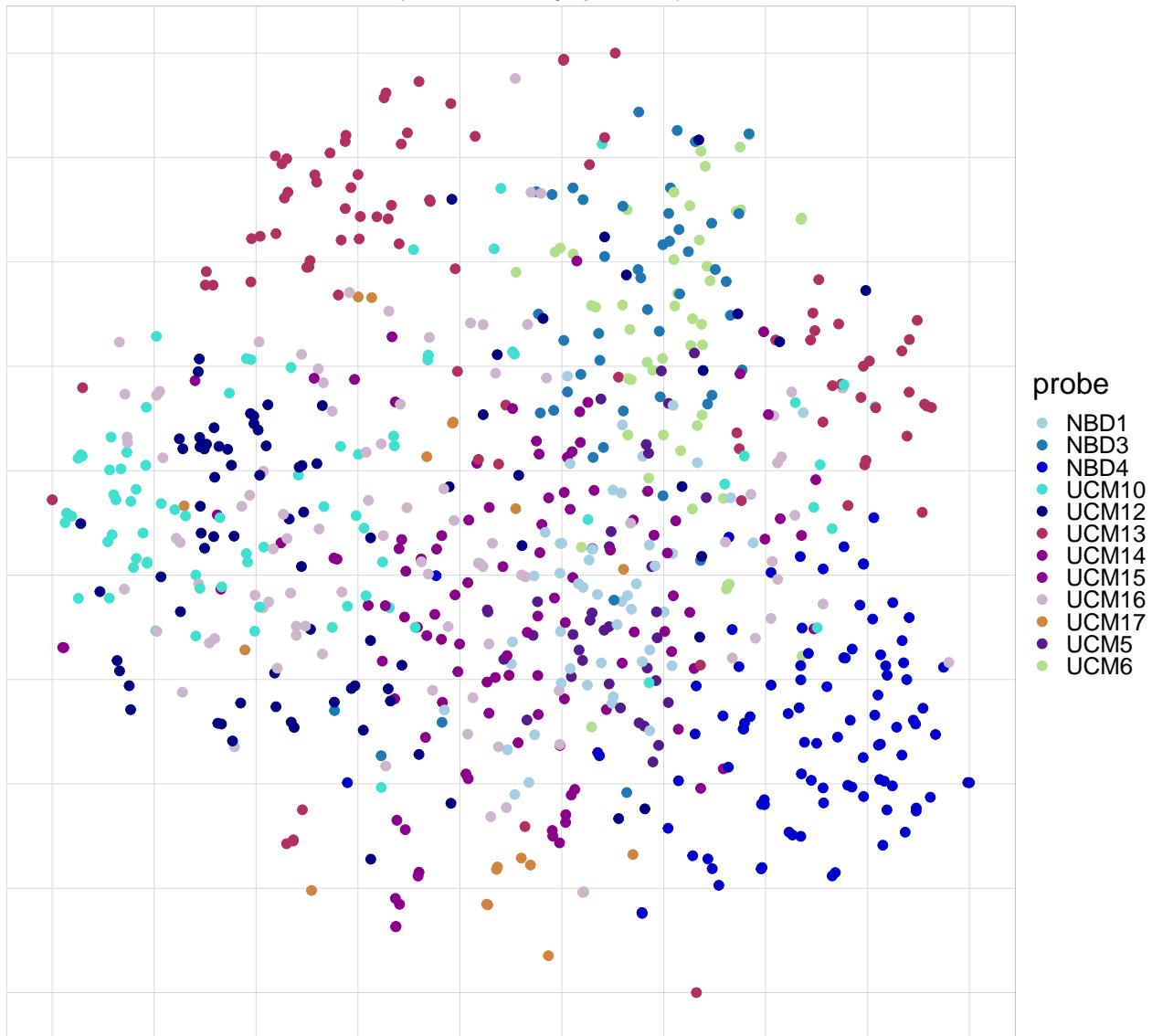
histogram of cumulative expression values per cell



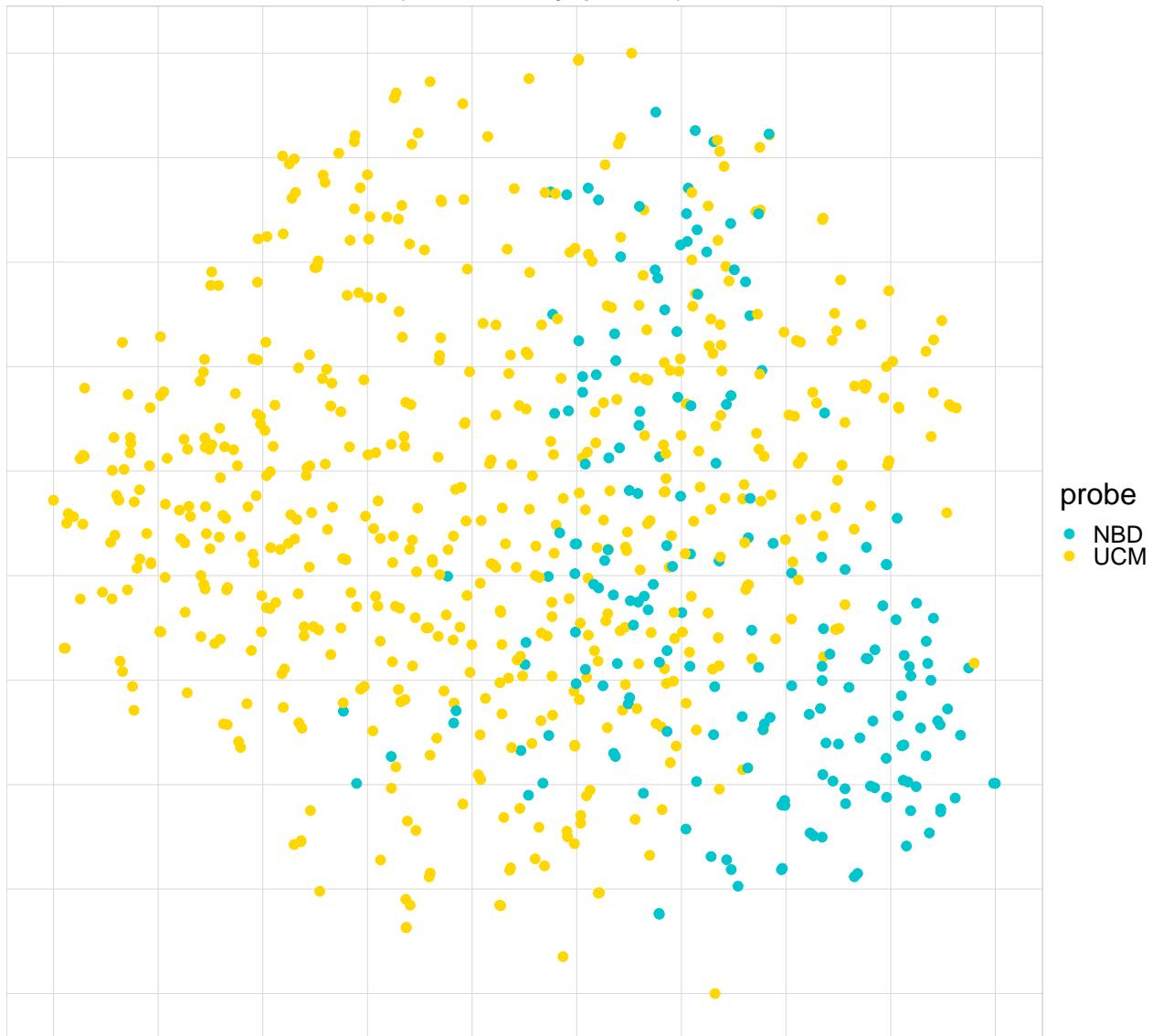
t-SNE between tissues (colored by kmeans.cluster)



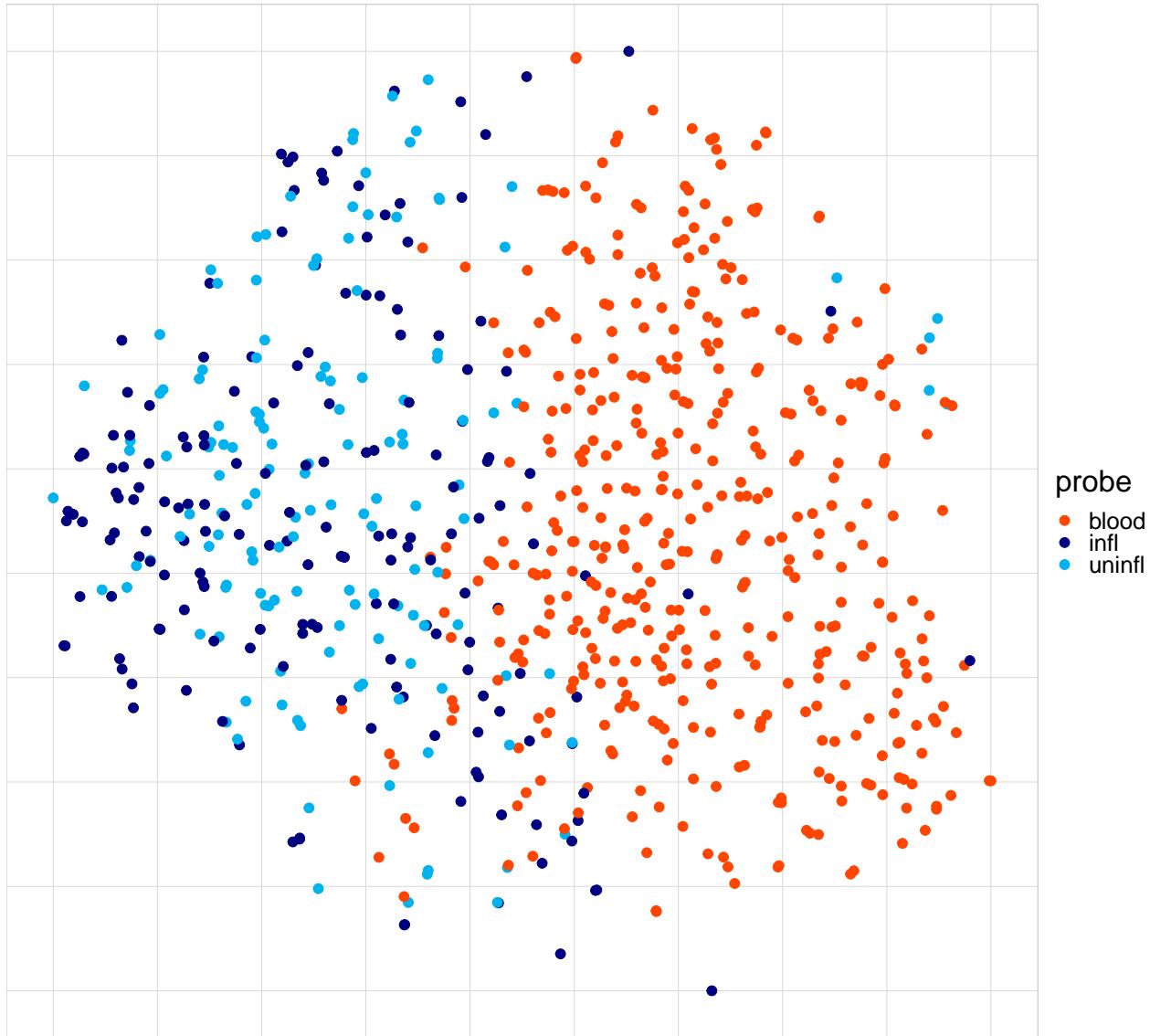
t-SNE between tissues (colored by probe)



t-SNE between tissues (colored by probe)



## t-SNE between tissues (colored by probe)



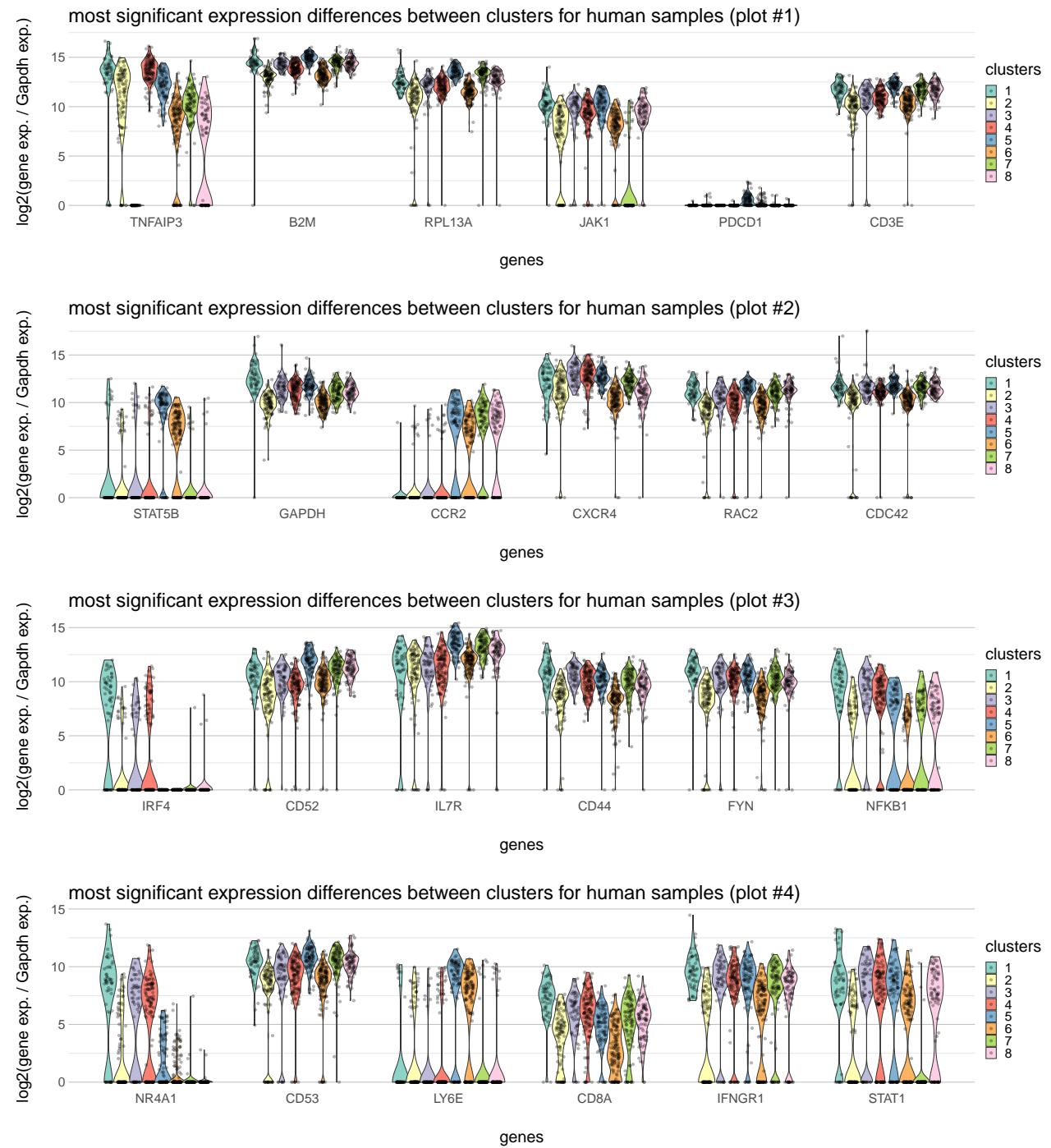
[1] Differentially expressed genes between clusters for human samples:

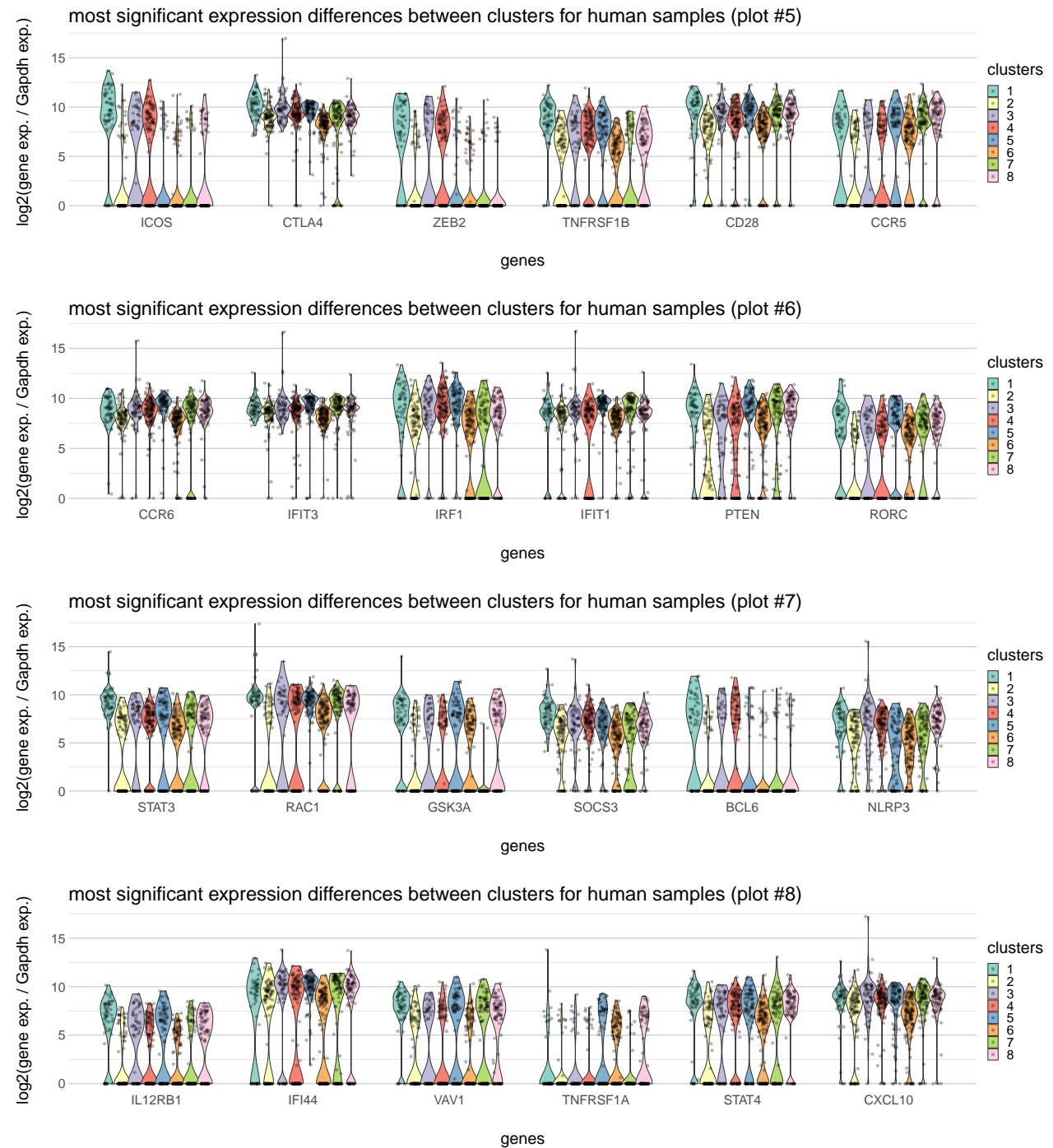
```

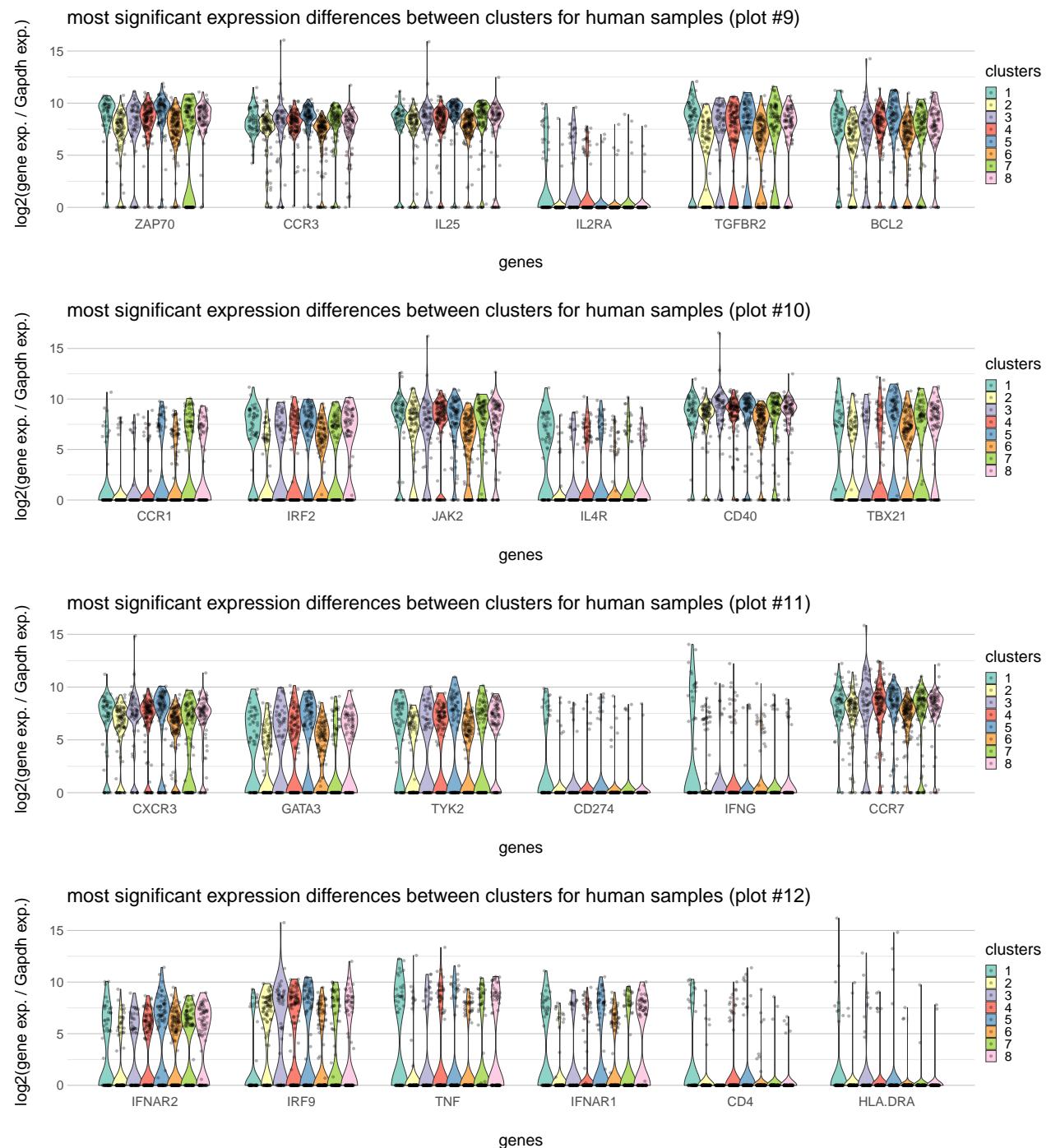
[1] TNFAIP3: 9.519e-98   B2M: 1.735e-79      RPL13A: 4.143e-77
[4] JAK1: 2.286e-63     PDCD1: 2.152e-62    CD3E: 2.56e-62
[7] STAT5B: 1.611e-60    GAPDH: 4.439e-60    CCR2: 1.257e-59
[10] CXCR4: 5.913e-58    RAC2: 4.761e-57    CDC42: 4.117e-55
[13] IRF4: 1.44e-52      CD52: 4.512e-52    IL7R: 1.582e-51
[16] CD44: 1.91e-51      FYN: 9.286e-51     NFKB1: 9.829e-51
[19] NR4A1: 1.176e-50    CD53: 6.319e-49     LY6E: 5.778e-46
[22] CD8A: 9.494e-41     IFNGR1: 2.361e-40   STAT1: 4.549e-40
[25] ICOS: 1.282e-38     CTLA4: 8.671e-36   ZEB2: 2.19e-33
[28] TNFRSF1B: 4.343e-31  CD28: 1.328e-30   CCR5: 7.239e-30
[31] CCR6: 9.012e-30     IFIT3: 5.552e-29   IRF1: 2.477e-28
[34] IFIT1: 5.391e-28     PTEN: 3.747e-26   RORC: 4.644e-26
[37] STAT3: 4.848e-26     RAC1: 5.419e-26   GSK3A: 6.211e-26
[40] SOCS3: 1.265e-23    BCL6: 3.437e-22   NLRP3: 8.486e-21
[43] IL12RB1: 1.86e-20   IFI44: 3.055e-20  VAV1: 8.874e-20

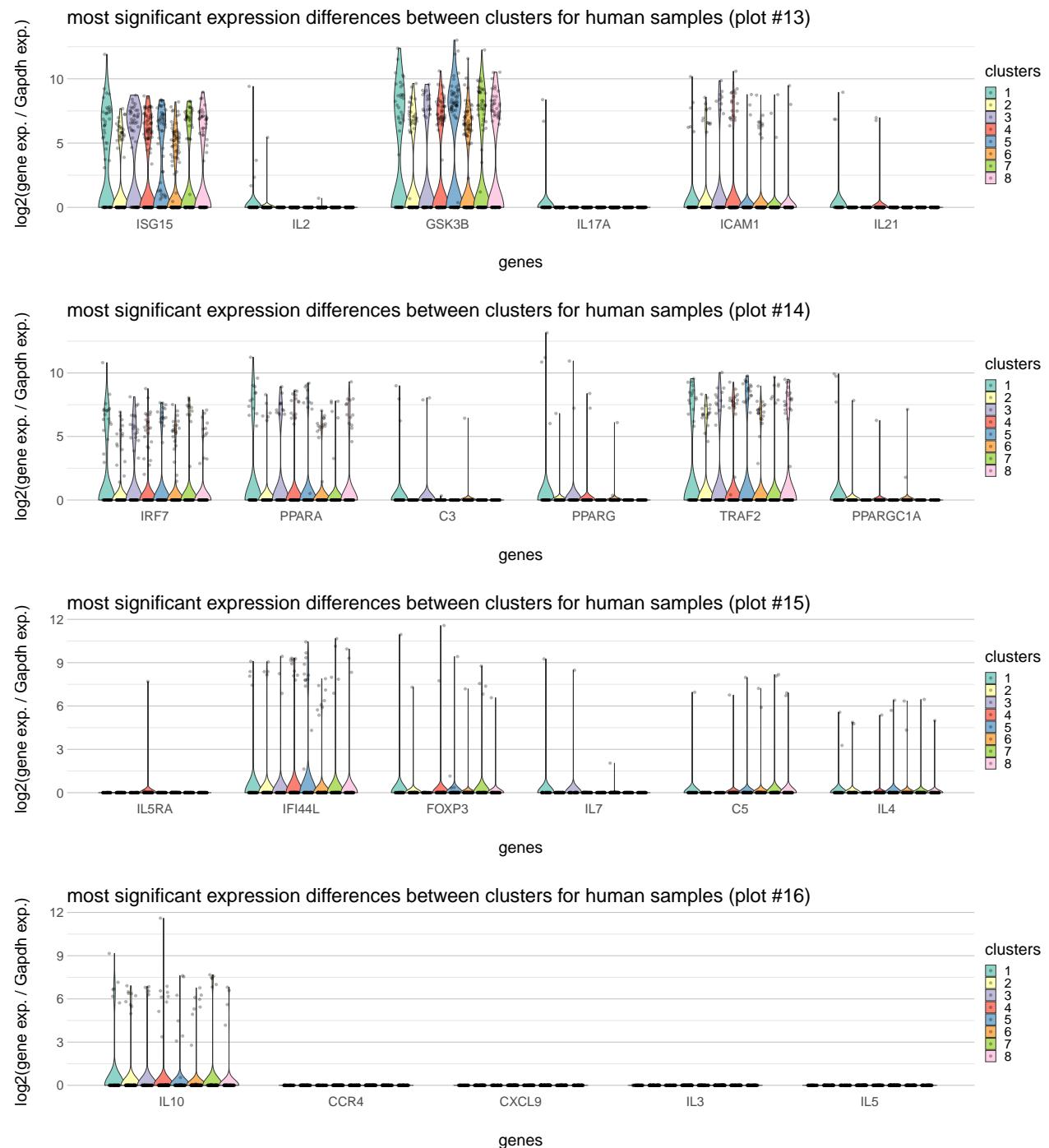
```

|      |           |           |         |           |           |           |
|------|-----------|-----------|---------|-----------|-----------|-----------|
| [46] | TNFRSF1A: | 1.502e-19 | STAT4:  | 1.716e-19 | CXCL10:   | 2.97e-19  |
| [49] | ZAP70:    | 4.615e-19 | CCR3:   | 6.481e-18 | IL25:     | 8.313e-18 |
| [52] | IL2RA:    | 7.168e-16 | TGFBR2: | 1.828e-15 | BCL2:     | 2.741e-14 |
| [55] | CCR1:     | 4.177e-14 | IRF2:   | 8.135e-14 | JAK2:     | 7.056e-13 |
| [58] | IL4R:     | 1.27e-12  | CD40:   | 2.149e-11 | TBX21:    | 1.008e-10 |
| [61] | CXCR3:    | 1.103e-10 | GATA3:  | 1.75e-09  | TYK2:     | 2.392e-08 |
| [64] | CD274:    | 4.143e-08 | IFNG:   | 8.31e-08  | CCR7:     | 1.695e-07 |
| [67] | IFNAR2:   | 2.56e-07  | IRF9:   | 5.872e-07 | TNF:      | 2.353e-06 |
| [70] | IFNAR1:   | 2.418e-06 | CD4:    | 5.47e-06  | HLA.DRA:  | 2.324e-05 |
| [73] | ISG15:    | 4.491e-05 | IL2:    | 5.436e-05 | GSK3B:    | 0.0005063 |
| [76] | IL17A:    | 0.001083  | ICAM1:  | 0.001331  | IL21:     | 0.001399  |
| [79] | IRF7:     | 0.008084  | PPARA:  | 0.008367  | C3:       | 0.009616  |
| [82] | PPARG:    | 0.01341   | TRAF2:  | 0.02041   | PPARGC1A: | 0.03476   |









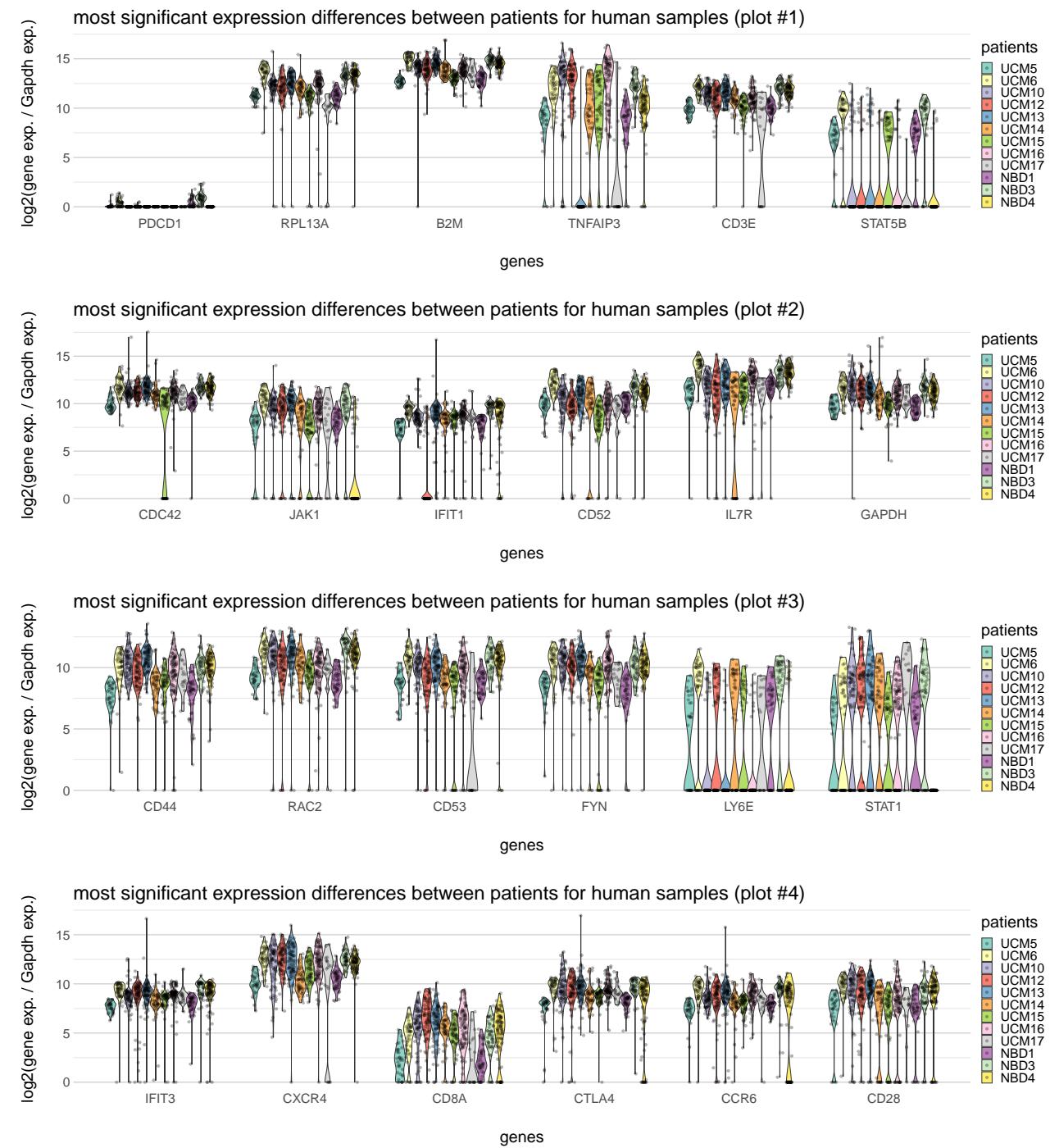
[1] Differentially expressed genes between patients for human samples:

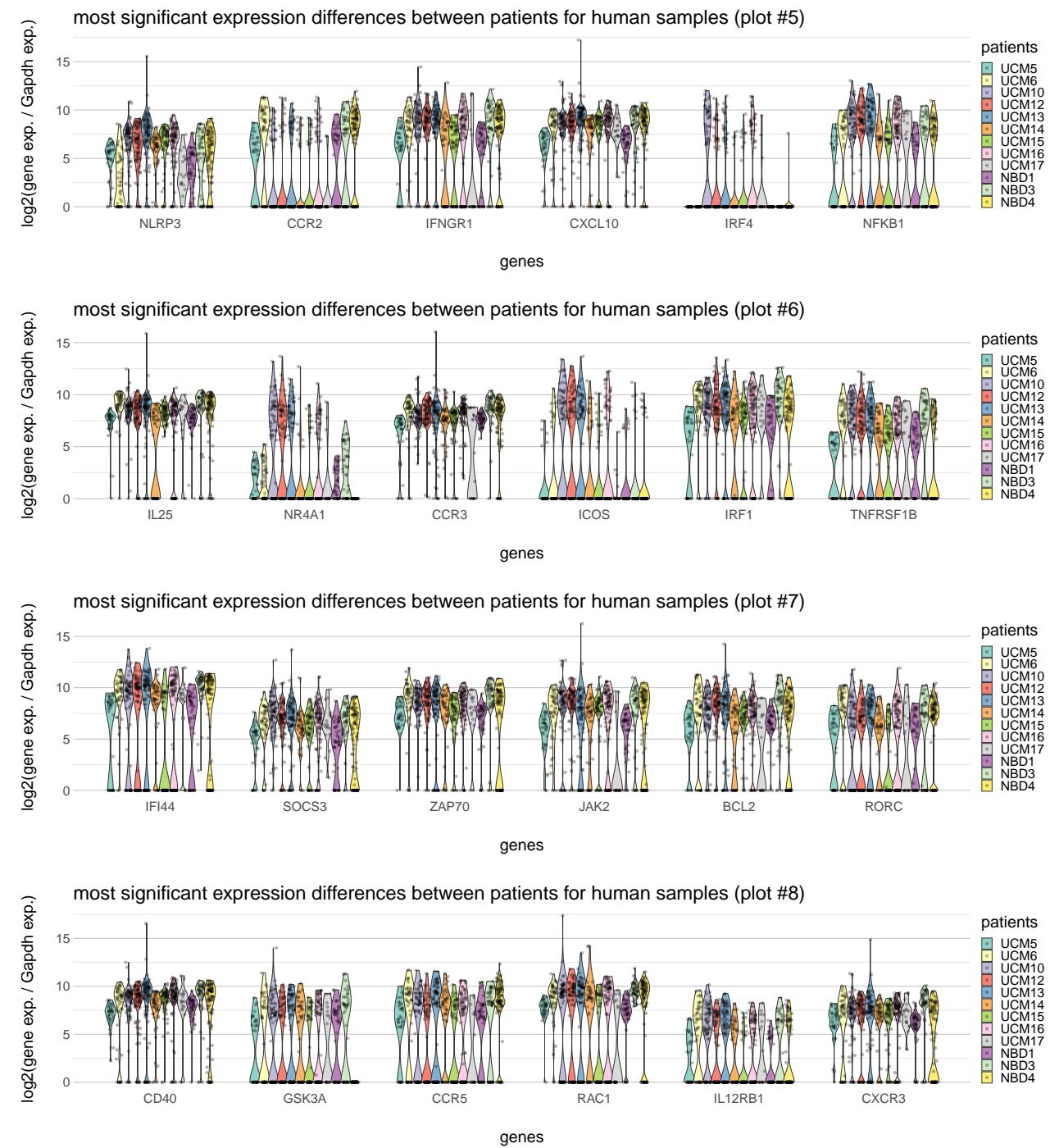
```

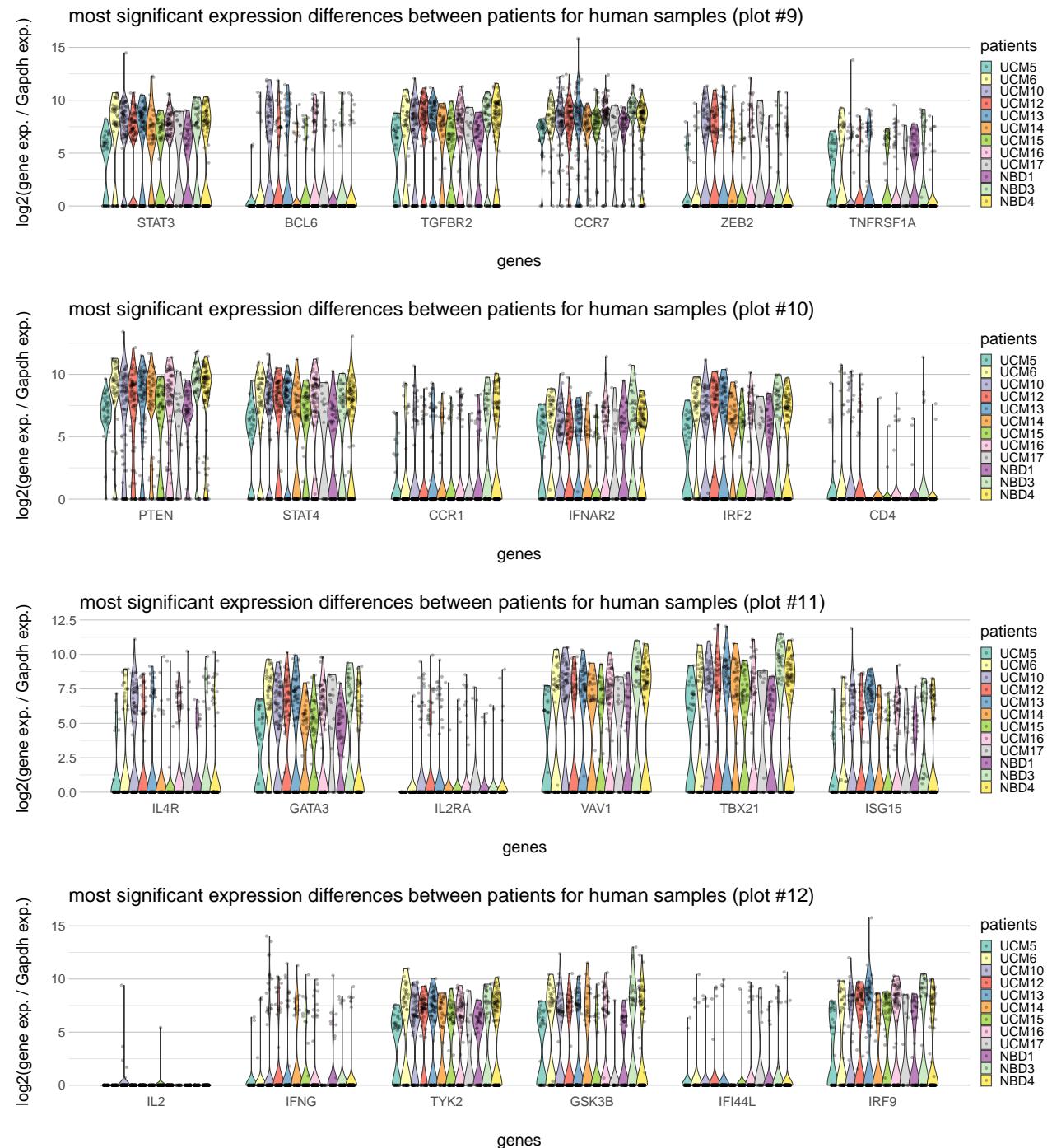
[1] PDCD1: 1.313e-90    RPL13A: 1.535e-77    B2M: 3.93e-77
[4] TNFAIP3: 2.43e-72    CD3E: 2.919e-61    STAT5B: 8.759e-57
[7] CDC42: 1.24e-53     JAK1: 1.206e-52    IFIT1: 1.555e-52
[10] CD52: 8.635e-50    IL7R: 2.712e-49    GAPDH: 5.973e-49
[13] CD44: 6.704e-46     RAC2: 2.92e-43    CD53: 5.199e-42
[16] FYN: 6.31e-42      LY6E: 3.235e-41    STAT1: 3.432e-37
[19] IFIT3: 3.201e-36    CXCR4: 1.819e-35    CD8A: 2.611e-34
[22] CTLA4: 4.105e-33    CCR6: 9.961e-31    CD28: 1.227e-30
[25] NLRP3: 2.002e-30    CCR2: 9.477e-27    IFNGR1: 4.679e-26

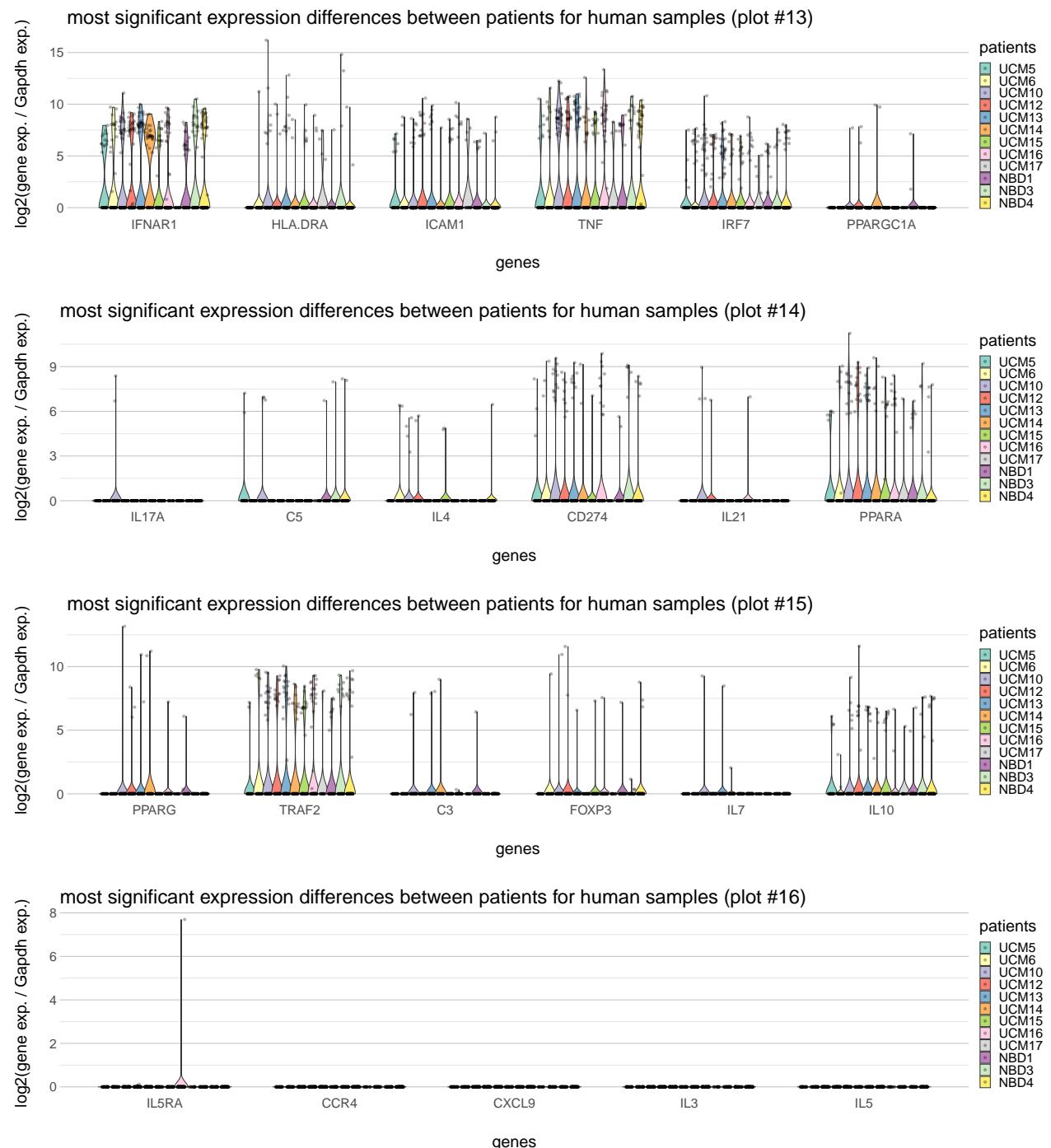
```

|      |         |           |          |           |           |           |
|------|---------|-----------|----------|-----------|-----------|-----------|
| [28] | CXCL10: | 1.017e-25 | IRF4:    | 2.317e-25 | NFKB1:    | 5.485e-25 |
| [31] | IL25:   | 5.648e-24 | NR4A1:   | 1.253e-23 | CCR3:     | 5.981e-23 |
| [34] | ICOS:   | 2.365e-21 | IRF1:    | 1.963e-20 | TNFRSF1B: | 1.681e-19 |
| [37] | IFI44:  | 7.793e-19 | SOCS3:   | 1.76e-17  | ZAP70:    | 2.564e-17 |
| [40] | JAK2:   | 8.342e-17 | BCL2:    | 2.16e-15  | RORC:     | 2.39e-15  |
| [43] | CD40:   | 2.39e-15  | GSK3A:   | 3.684e-15 | CCR5:     | 7.567e-15 |
| [46] | RAC1:   | 1.503e-14 | IL12RB1: | 5.904e-14 | CXCR3:    | 1.56e-13  |
| [49] | STAT3:  | 1.688e-13 | BCL6:    | 1.478e-12 | TGFBR2:   | 2.798e-12 |
| [52] | CCR7:   | 6.447e-12 | ZEB2:    | 1.174e-11 | TNFRSF1A: | 2.421e-11 |
| [55] | PTEN:   | 1.874e-10 | STAT4:   | 4.063e-09 | CCR1:     | 5.533e-09 |
| [58] | IFNAR2: | 1.278e-07 | IRF2:    | 1.329e-07 | CD4:      | 2.986e-07 |
| [61] | IL4R:   | 4.462e-07 | GATA3:   | 2.36e-06  | IL2RA:    | 5.031e-06 |
| [64] | VAV1:   | 7.873e-06 | TBX21:   | 1.027e-05 | ISG15:    | 4.829e-05 |
| [67] | IL2:    | 0.0002954 | IFNG:    | 0.001     | TYK2:     | 0.001318  |
| [70] | GSK3B:  | 0.002007  | IFI44L:  | 0.00719   | IRF9:     | 0.01977   |
| [73] | IFNAR1: | 0.01993   | HLA.DRA: | 0.01993   | ICAM1:    | 0.02974   |









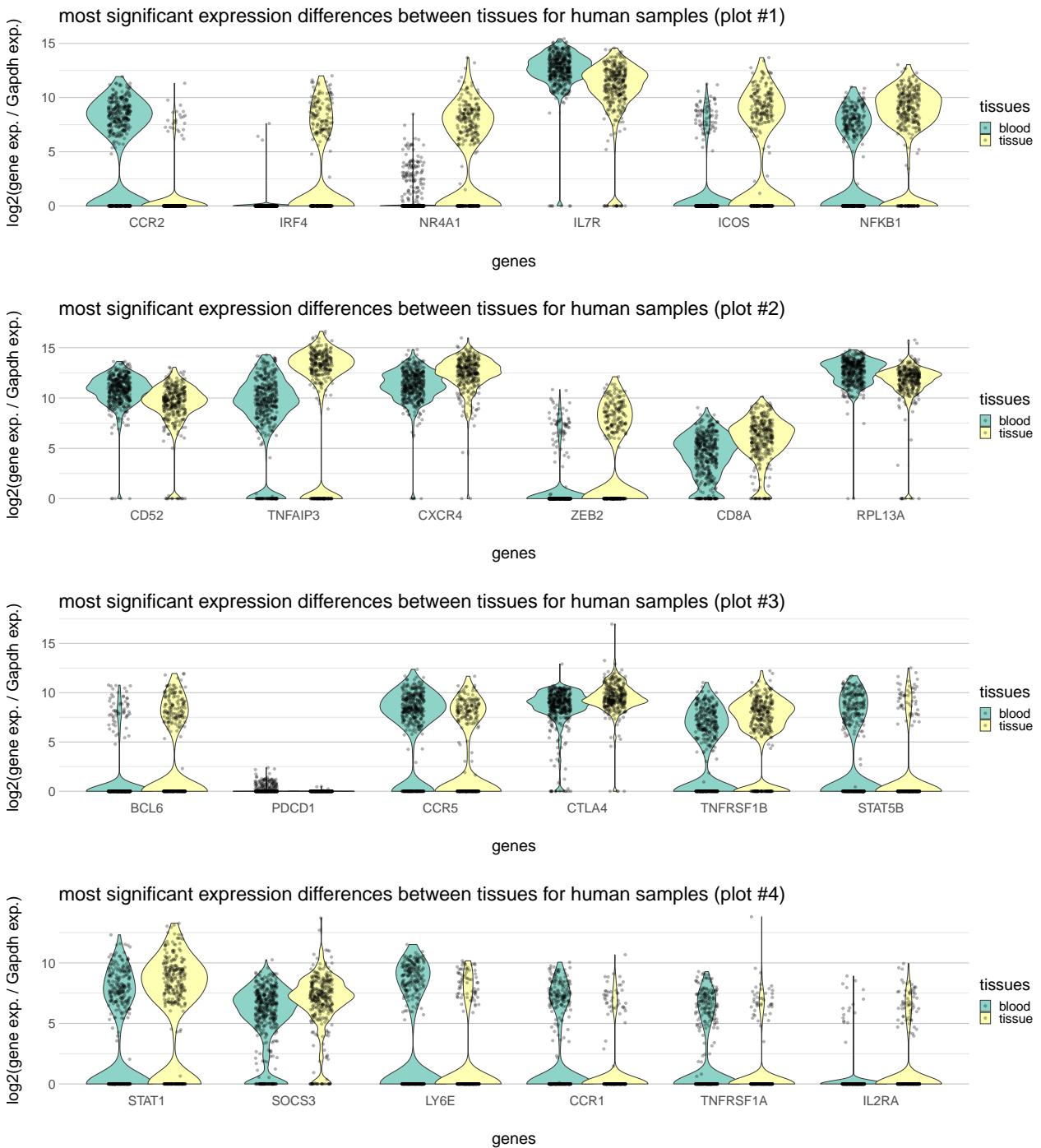
[1] Differentially expressed genes between tissues for human samples:

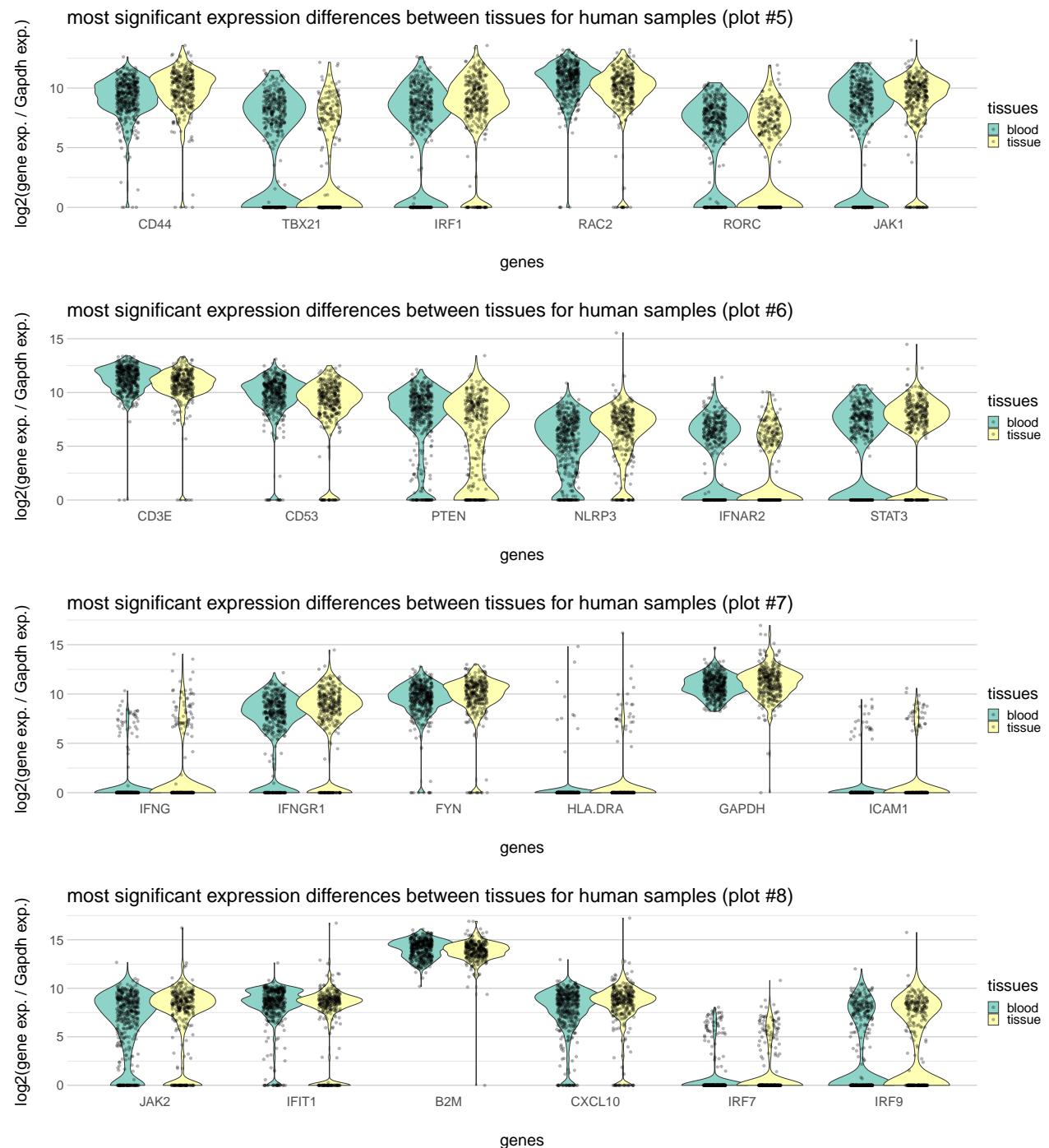
```

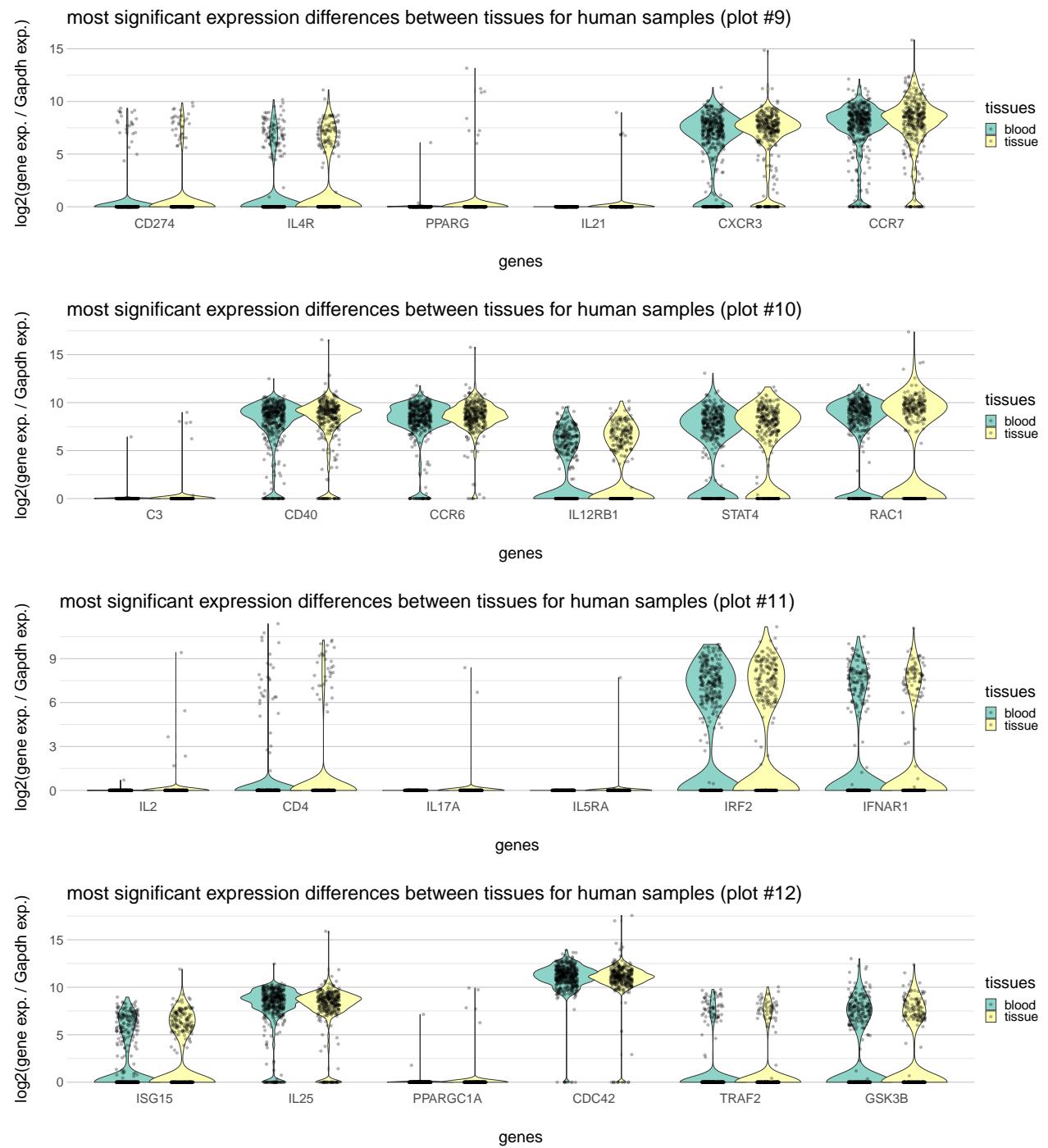
[1] CCR2: 3.834e-50    IRF4: 4.268e-45    NR4A1: 7.104e-36
[4] IL7R: 1e-33        ICOS: 4.964e-29    NFKB1: 4.977e-29
[7] CD52: 3.762e-28    TNFAIP3: 4.889e-27   CXCR4: 6.399e-27
[10] ZEB2: 2.228e-26   CD8A: 1.984e-21    RPL13A: 3.407e-19
[13] BCL6: 6.454e-19   PDCD1: 1.019e-18   CCR5: 4.825e-16
[16] CTLA4: 5.289e-14  TNFRSF1B: 1.037e-13  STAT5B: 3.048e-13
[19] STAT1: 1.459e-12  SOCS3: 1.505e-12   LY6E: 4.751e-12
[22] CCR1: 1.044e-11   TNFRSF1A: 2.022e-11  IL2RA: 2.354e-11
[25] CD44: 1.331e-09   TBX21: 2.097e-09   IRF1: 3.631e-09

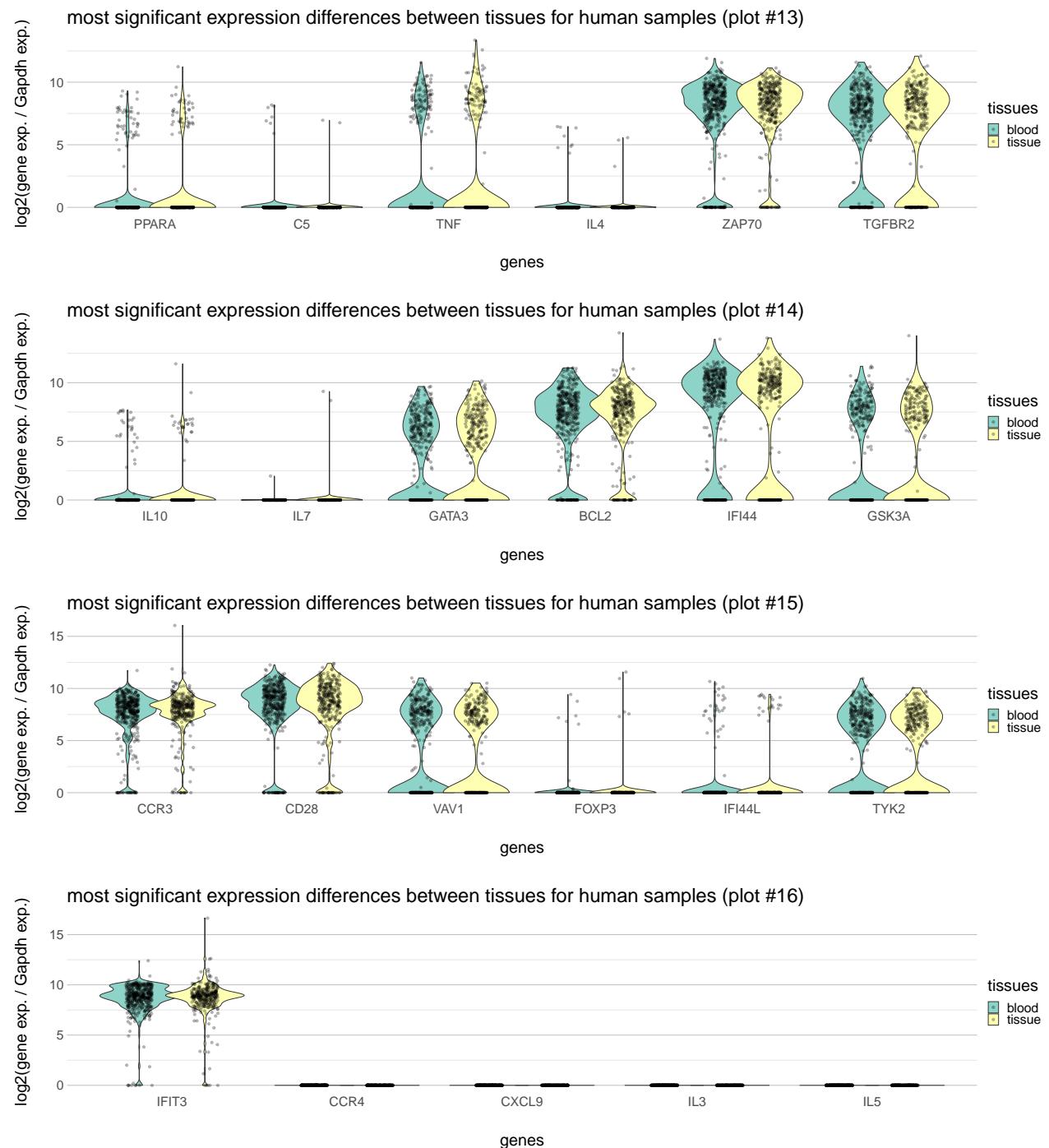
```

|      |          |           |         |           |        |           |
|------|----------|-----------|---------|-----------|--------|-----------|
| [28] | RAC2:    | 6.236e-09 | RORC:   | 1.236e-08 | JAK1:  | 2.019e-08 |
| [31] | CD3E:    | 2.648e-08 | CD53:   | 3.304e-08 | PTEN:  | 3.304e-08 |
| [34] | NLRP3:   | 4.265e-08 | IFNAR2: | 2.331e-07 | STAT3: | 2.415e-07 |
| [37] | IFNG:    | 1.422e-06 | IFNGR1: | 1.028e-05 | FYN:   | 3.032e-05 |
| [40] | HLA.DRA: | 4.561e-05 | GAPDH:  | 0.0001395 | ICAM1: | 0.0003246 |
| [43] | JAK2:    | 0.001304  | IFIT1:  | 0.001346  | B2M:   | 0.002136  |
| [46] | CXCL10:  | 0.002414  | IRF7:   | 0.002621  | IRF9:  | 0.003657  |
| [49] | CD274:   | 0.007612  | IL4R:   | 0.008887  | PPARG: | 0.01326   |
| [52] | IL21:    | 0.01568   | CXCR3:  | 0.01601   | CCR7:  | 0.01665   |
| [55] | C3:      | 0.03271   | CD40:   | 0.03967   | CCR6:  | 0.04226   |









[1] Differentially expressed genes between tissues for human samples:

- |                       |                         |                         |
|-----------------------|-------------------------|-------------------------|
| [1] CCR2: 6.864e-49   | [1] IRF4: 7.057e-47     | [1] NR4A1: 8.646e-36    |
| [4] IL7R: 2.398e-33   | [1] ICOS: 4.672e-28     | [1] NFKB1: 6.668e-28    |
| [7] CD52: 5.314e-27   | [1] TNFAIP3: 5.36e-26   | [1] CXCR4: 5.36e-26     |
| [10] ZEB2: 2.472e-25  | [1] CD8A: 2.294e-20     | [1] RPL13A: 1.732e-18   |
| [13] BCL6: 6.456e-18  | [1] PDCD1: 1.168e-17    | [1] CCR5: 4.894e-15     |
| [16] CTLA4: 1.361e-13 | [1] TNFRSF1B: 8.977e-13 | [1] STAT5B: 1.627e-12   |
| [19] STAT1: 6.519e-12 | [1] SOCS3: 1.143e-11    | [1] LY6E: 3.037e-11     |
| [22] CCR1: 8.313e-11  | [1] IL2RA: 1.605e-10    | [1] TNFRSF1A: 1.674e-10 |
| [25] CD44: 4.142e-09  | [1] RAC2: 9.296e-09     | [1] TBX21: 1.586e-08    |

|      |                  |                    |                   |
|------|------------------|--------------------|-------------------|
| [28] | IRF1: 2.634e-08  | CD53: 7.192e-08    | RORC: 7.354e-08   |
| [31] | CD3E: 1.016e-07  | JAK1: 1.074e-07    | PTEN: 1.73e-07    |
| [34] | NLRP3: 2.935e-07 | IFNAR2: 1.074e-06  | STAT3: 1.186e-06  |
| [37] | IFNG: 2.204e-06  | HLA.DRA: 1.921e-05 | IFNGR1: 3.567e-05 |
| [40] | FYN: 5.754e-05   | ICAM1: 0.0001428   | GAPDH: 0.0002261  |
| [43] | IFIT1: 0.002587  | B2M: 0.003168      | JAK2: 0.005725    |
| [46] | IRF7: 0.005822   | CXCL10: 0.006832   | IRF9: 0.01425     |
| [49] | CD274: 0.02432   | CCR7: 0.02916      | IL4R: 0.03346     |
| [52] | PPARG: 0.03348   |                    |                   |

