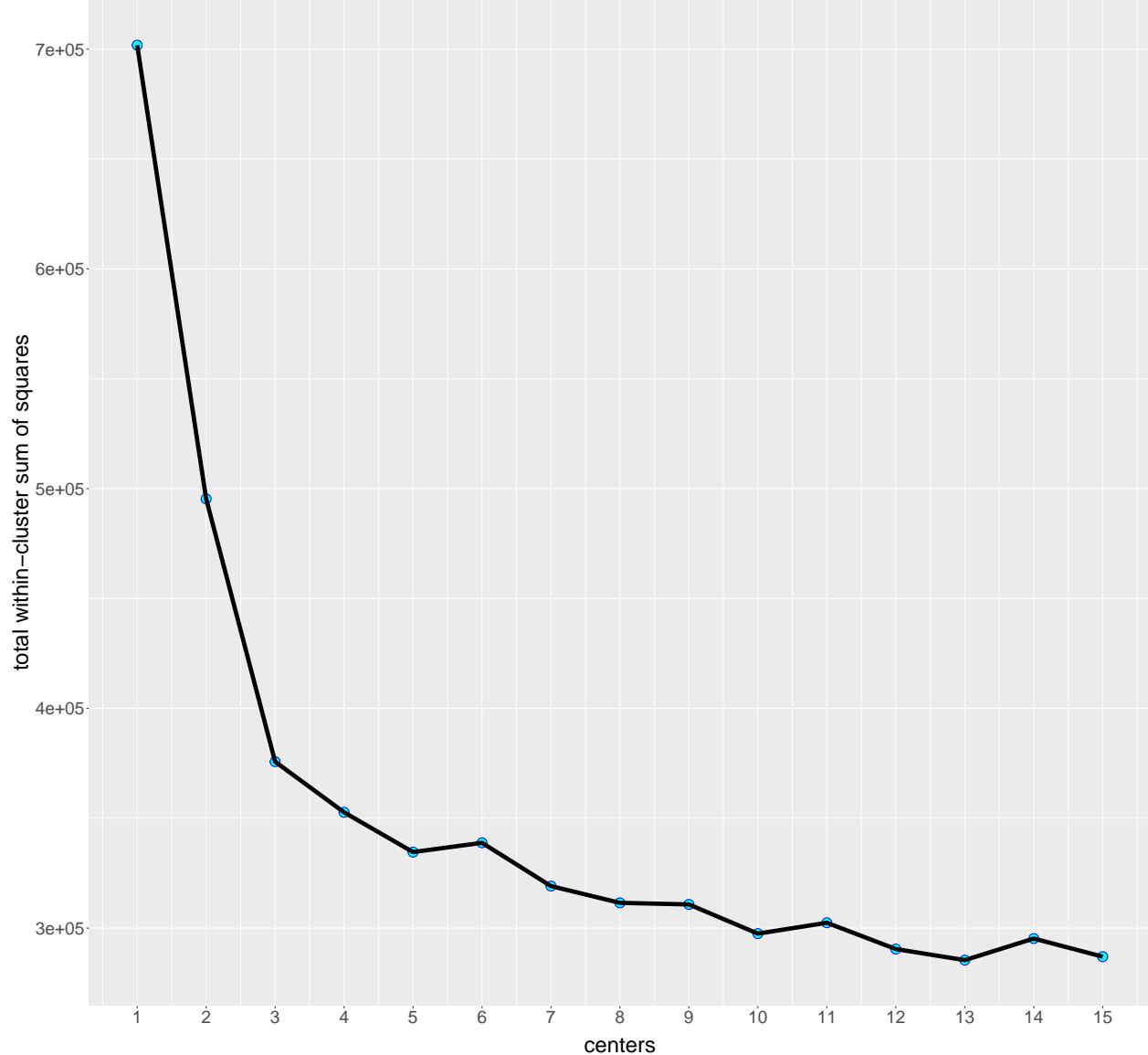


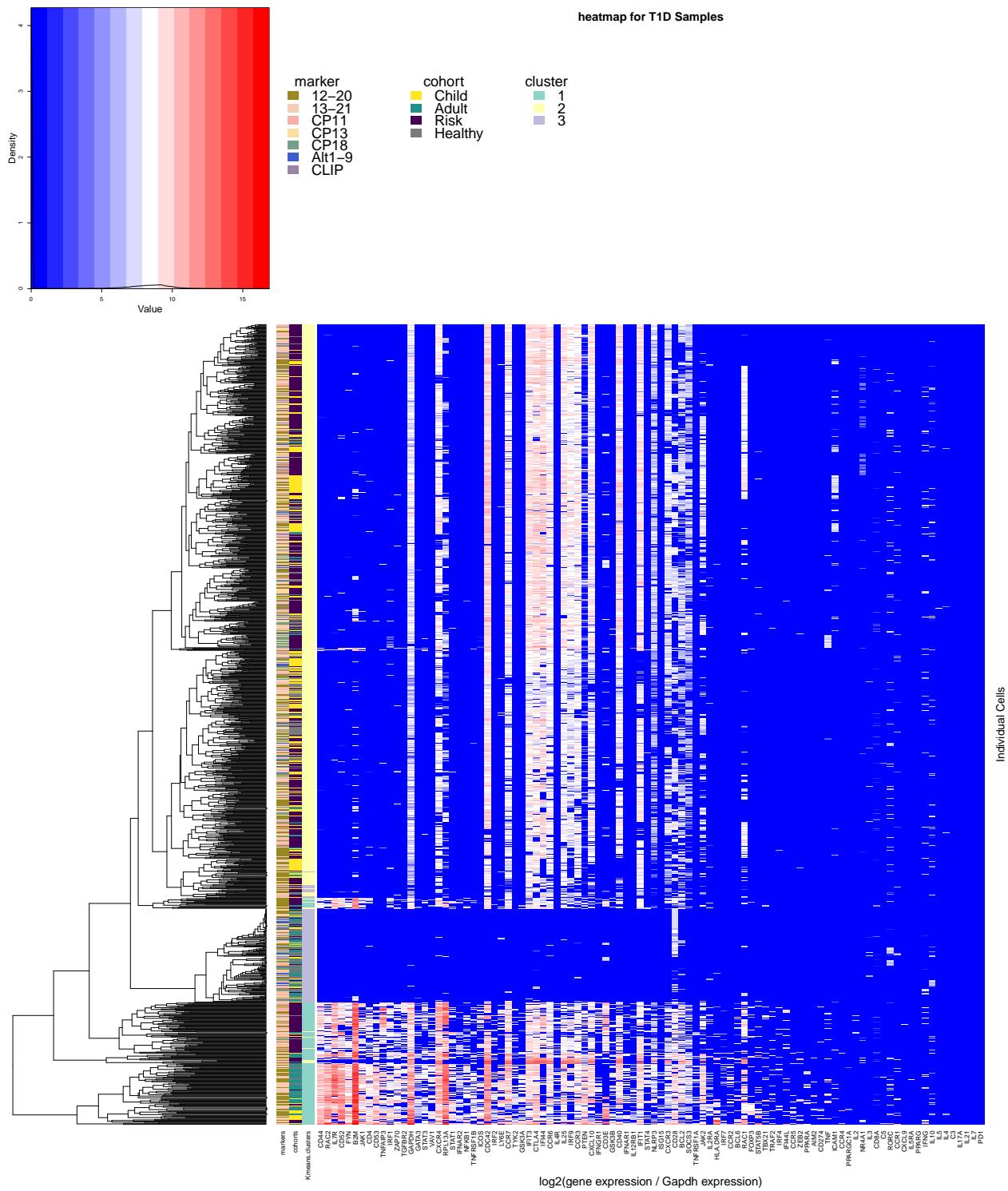
T1D_Tetramer_Cells_Analysis

No expression detected in 47/1950 cells

No expression detected in 19/1223 Tetramer cells

kmeans scree plot





```
[1]  
[1]  
[1] Cohort vs. Cluster  
      cohort_Child cohort_Adult cohort_Risk cohort_Healthy  
cluster_1          22           65          86           15  
cluster_2         227           35         486          115  
cluster_3          20           55          22           56
```

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

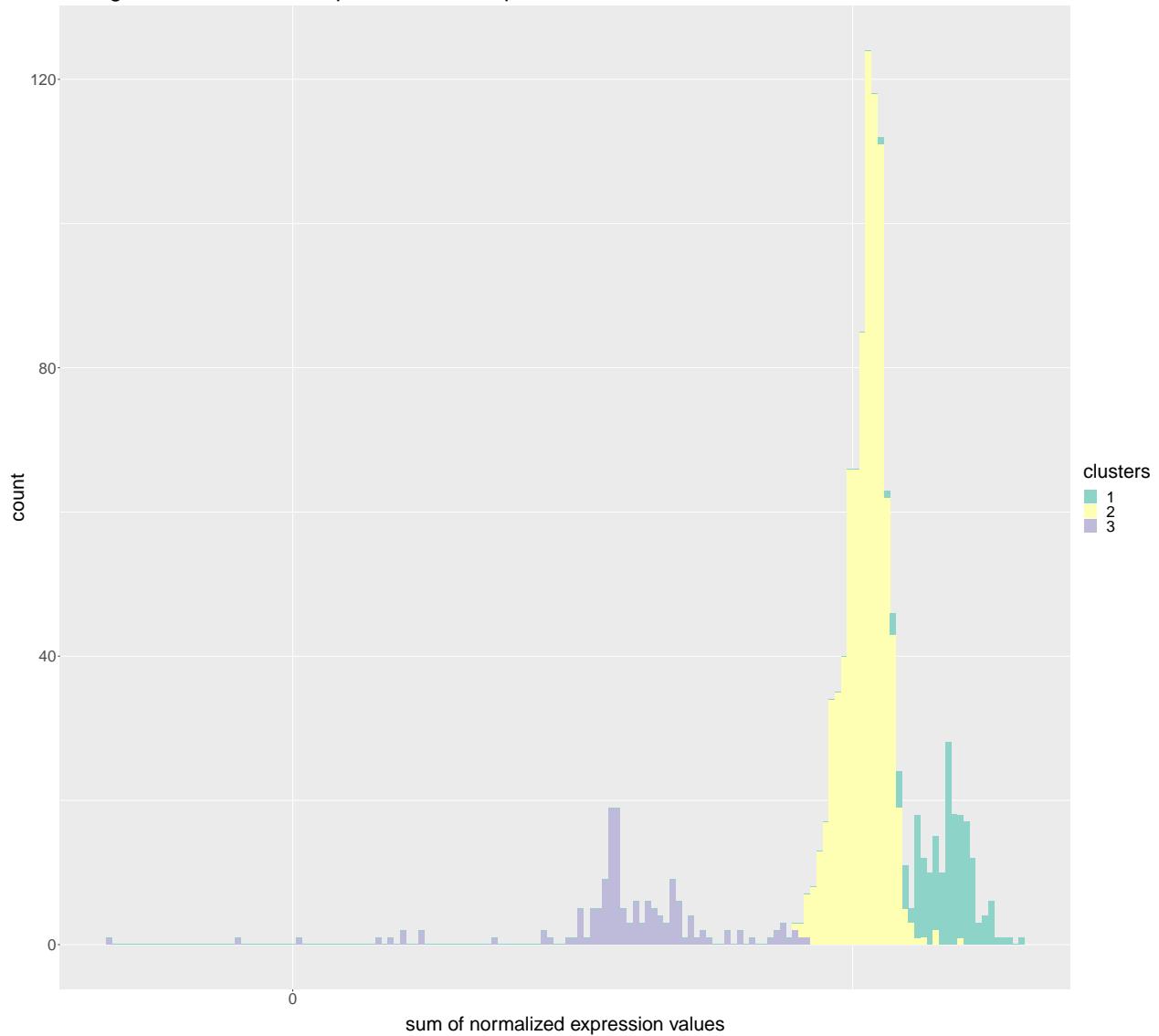
```
data: cohortTable  
X-squared = 306.17, df = NA, p-value = 0.0004998
```

```
[1]  
[1]  
[1] marker vs. Cluster  
      marker_12-20 marker_13-21 marker_CP11 marker_CP13 marker_CP18  
cluster_1        86          68          27          4          3  
cluster_2       271         253         102         94         83  
cluster_3        34          32          22         21         18  
      marker_Alt1-9 marker_CLIP  
cluster_1        0           0  
cluster_2       25          35  
cluster_3       23          3
```

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

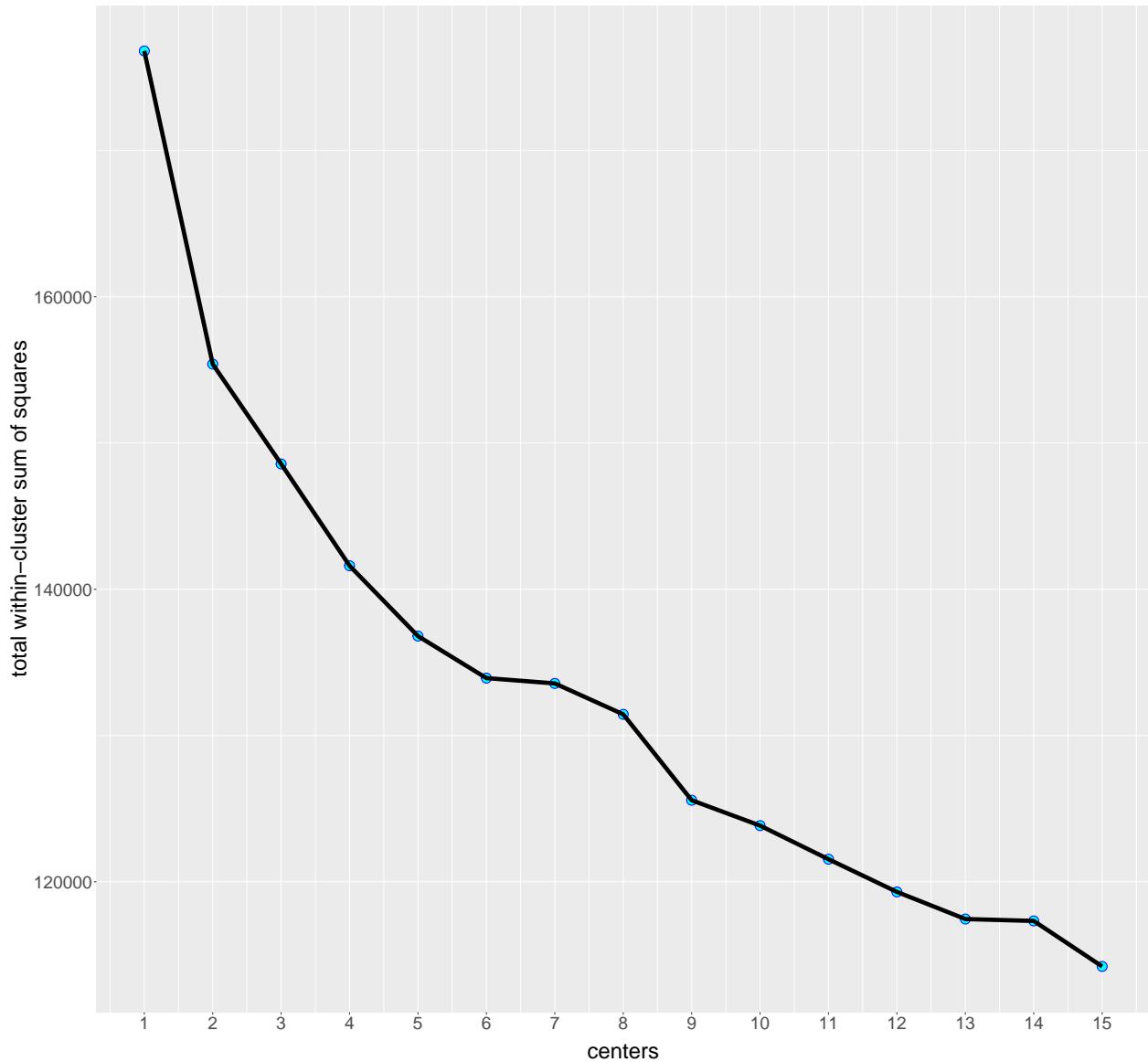
```
data: markerTable  
X-squared = 117.24, df = NA, p-value = 0.0004998
```

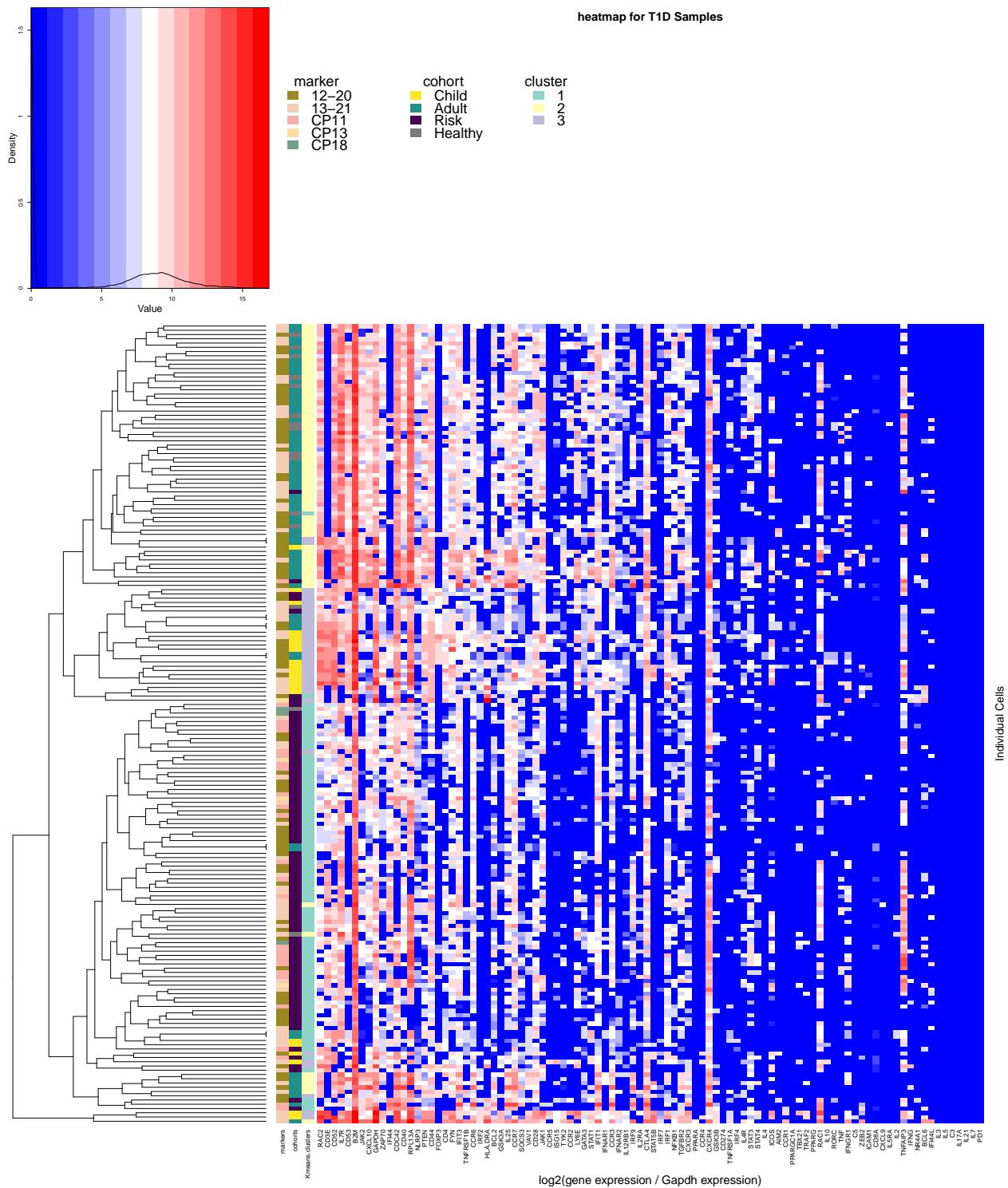
histogram of cumulative expression values per cell



1016 / 1204 cells were removed due to low gene expression (cluster ID of removed clusters: 2, 3)

kmeans scree plot





```
[1]
[1]
[1] Cohort vs. Cluster
      cohort_Child cohort_Adult cohort_Risk cohort_Healthy
cluster_1          2           5         77            2
cluster_2          1          51            3          12
cluster_3        19            9            6            1
```

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

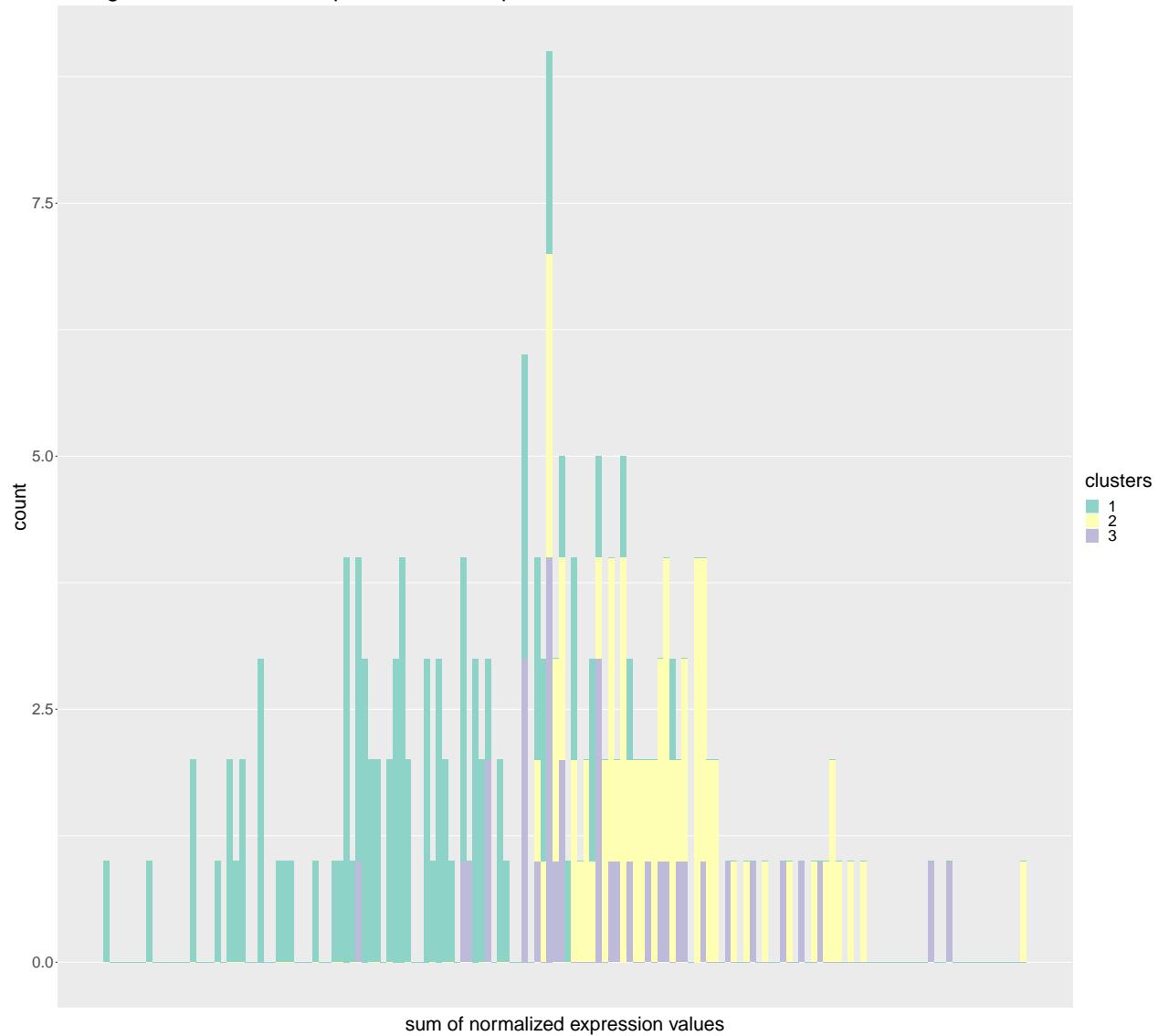
```
data: cohortTable  
X-squared = 201.61, df = NA, p-value = 0.0004998
```

```
[1]  
[1]  
[1] marker vs. Cluster  
      marker_12-20 marker_13-21 marker_CP11 marker_CP13 marker_CP18  
cluster_1          32        23        25         3         3  
cluster_2          37        29         1         0         0  
cluster_3          17        16         1         1         0
```

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

```
data: markerTable  
X-squared = 36.403, df = NA, p-value = 0.0004998
```

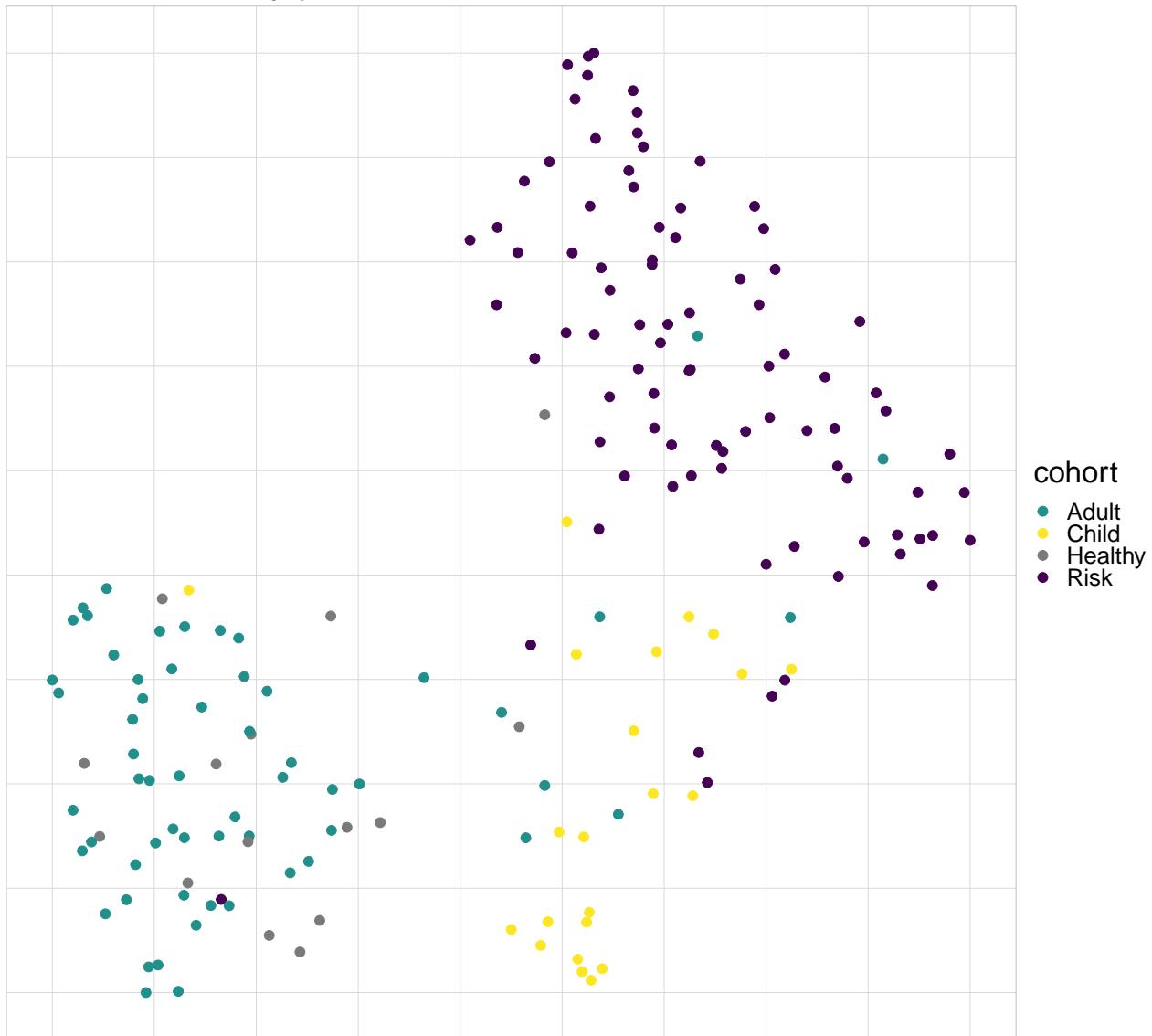
histogram of cumulative expression values per cell



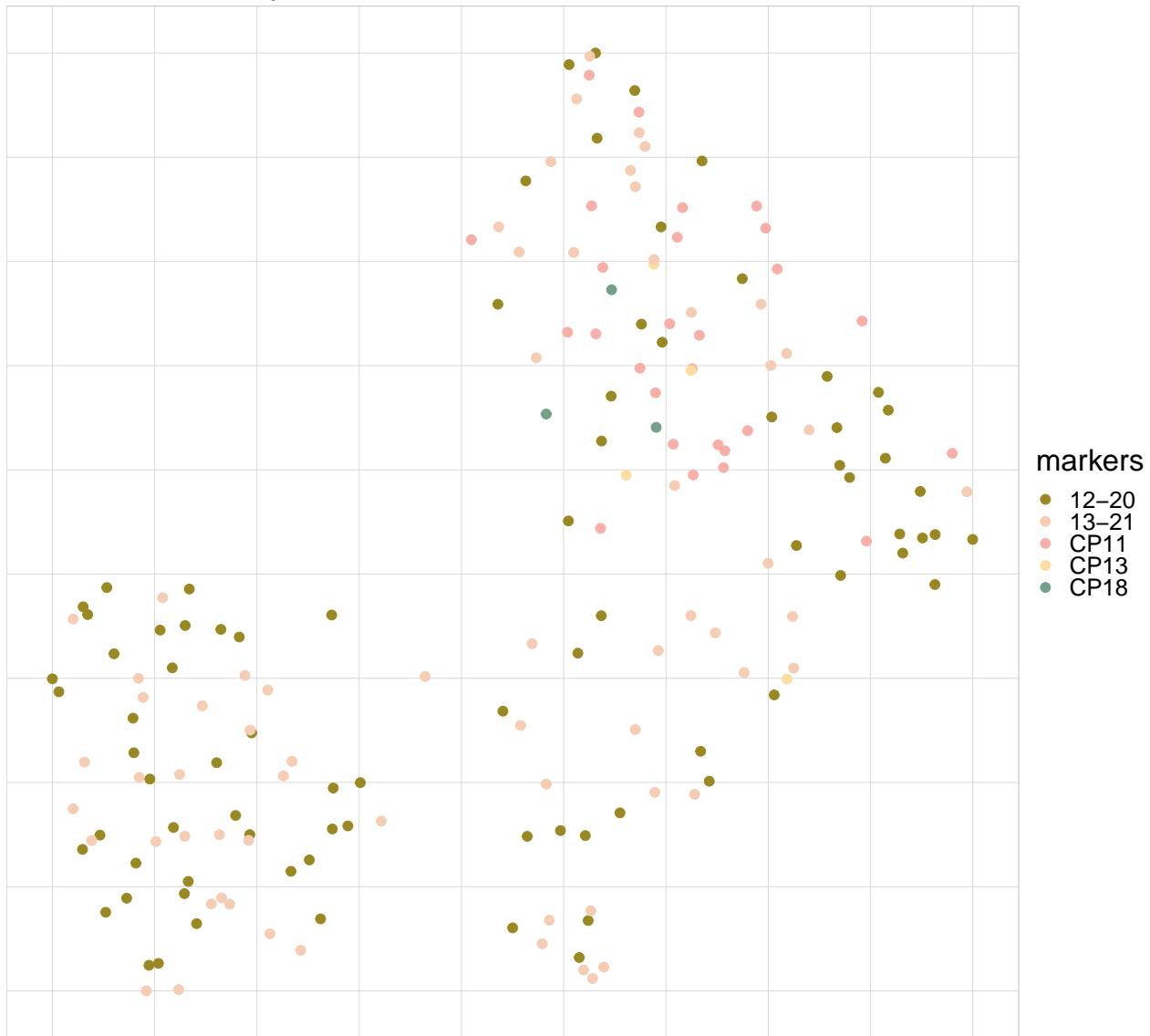
UMAP colored by kmeans.cluster



UMAP colored by patient cohorts



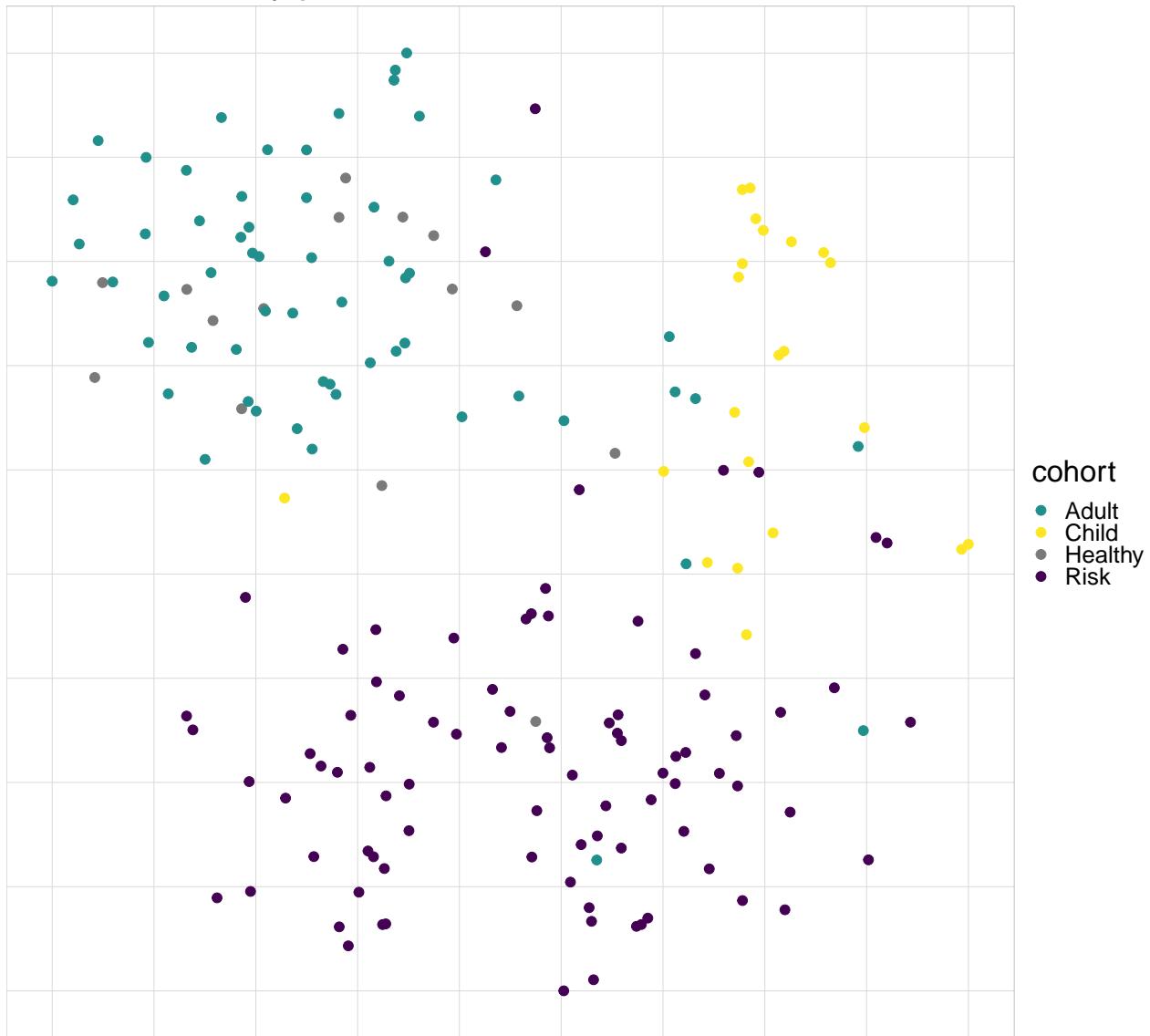
UMAP colored by different markers



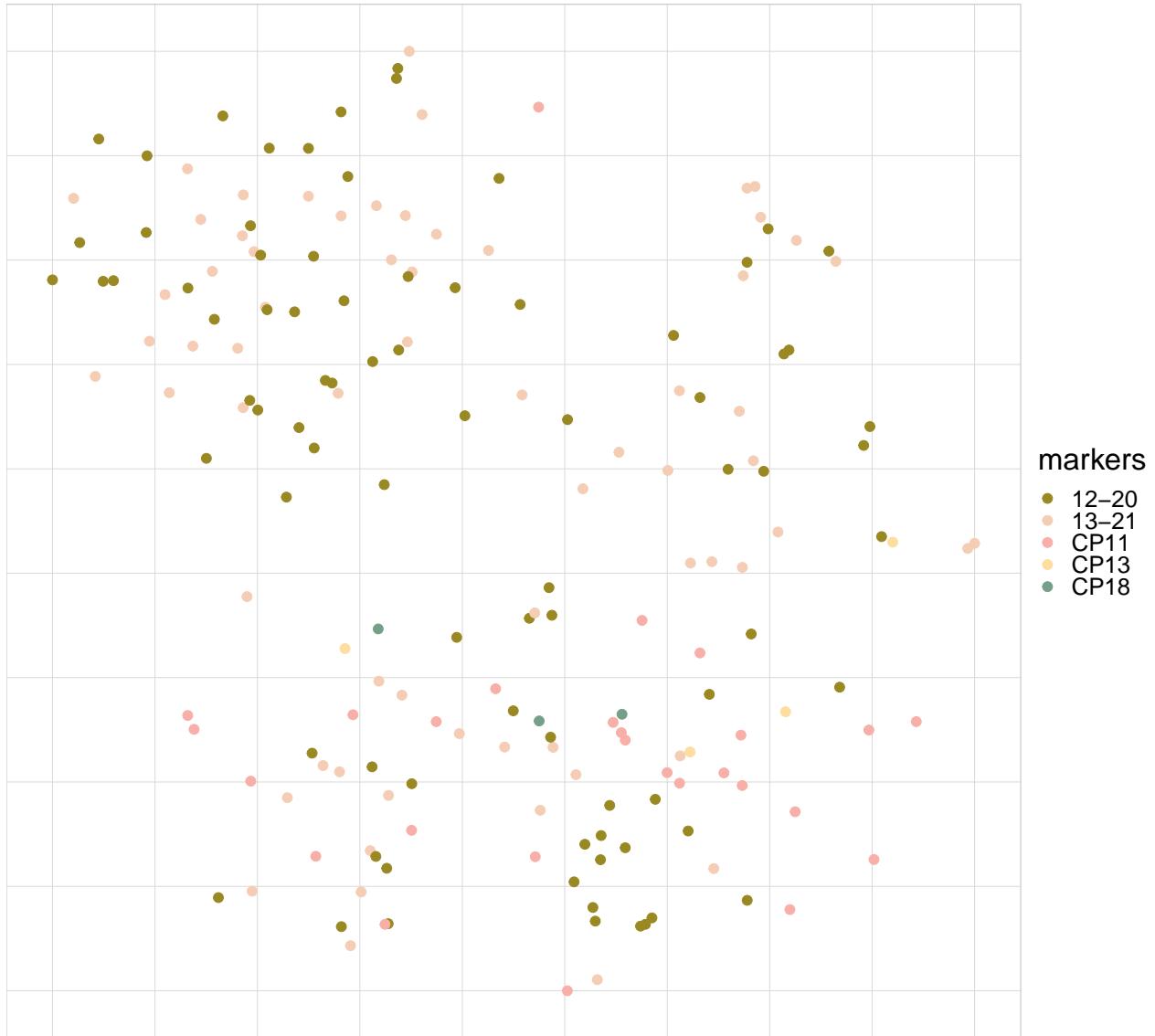
t-SNE colored by kmeans.cluster



t-SNE colored by patient cohorts



t-SNE colored by different markers

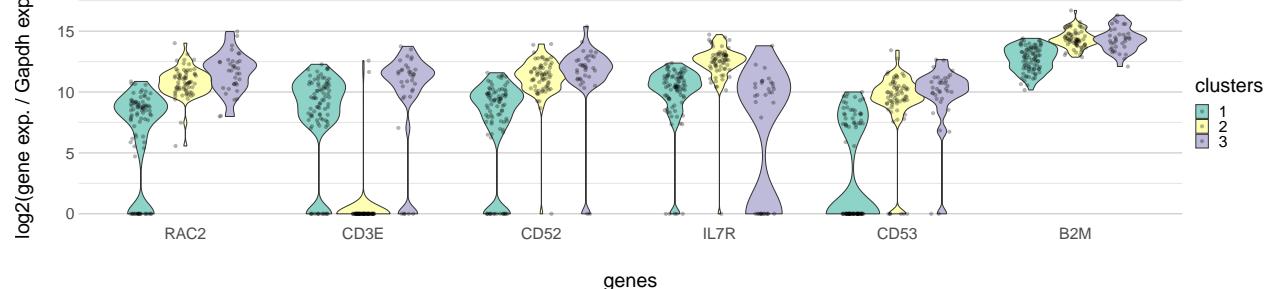


[1] Differentially expressed genes between clusters for human samples:

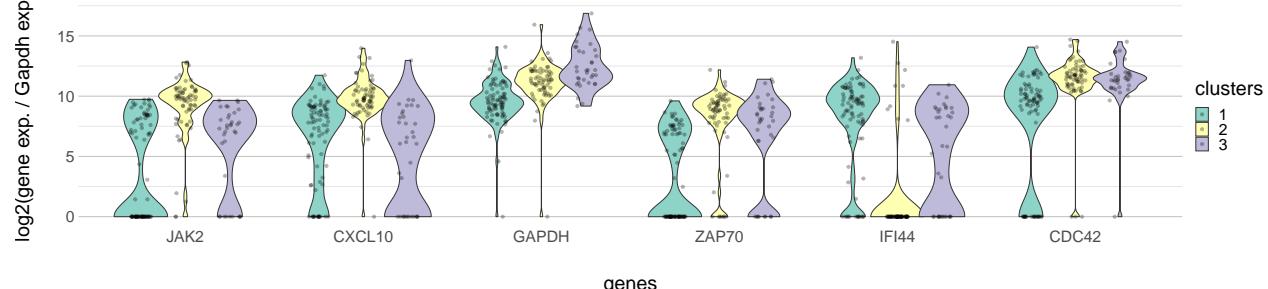
| | | | |
|------|---------------------|-------------------|--------------------|
| [1] | RAC2: 1.654e-23 | CD3E: 2.013e-20 | CD52: 2.381e-20 |
| [4] | IL7R: 6.41e-20 | CD53: 9.744e-20 | B2M: 2.301e-19 |
| [7] | JAK2: 9.489e-17 | CXCL10: 5.796e-15 | GAPDH: 9.534e-15 |
| [10] | ZAP70: 9.534e-15 | IFI44: 1.184e-13 | CDC42: 1.218e-13 |
| [13] | CD40: 1.218e-13 | RPL13A: 1.218e-13 | NLRP3: 1.697e-13 |
| [16] | PTEN: 1.008e-12 | CD44: 4.569e-12 | FOXP3: 1.02e-11 |
| [19] | CD4: 1.032e-11 | FYN: 9.767e-11 | IFIT3: 1.339e-10 |
| [22] | TNFRSF1B: 4.799e-10 | CCR6: 6.237e-10 | IRF2: 2.028e-09 |
| [25] | HLA.DRA: 2.332e-09 | BCL2: 3.6e-09 | GSK3A: 3.987e-09 |
| [28] | IL25: 1.143e-08 | CCR7: 1.527e-08 | SOCS3: 2.301e-08 |
| [31] | VAV1: 3.444e-08 | CD28: 1.029e-07 | JAK1: 1.868e-07 |
| [34] | CCR5: 2.306e-07 | ISG15: 2.306e-07 | TYK2: 2.895e-07 |
| [37] | CCR2: 3.607e-07 | LY6E: 4.655e-07 | GATA3: 4.66e-07 |
| [40] | STAT1: 5.162e-07 | IFIT1: 6.05e-07 | IFNAR1: 7.311e-07 |
| [43] | CCR3: 8.332e-07 | IFNAR2: 8.332e-07 | IL12RB1: 9.118e-07 |

| | | | |
|------|-------------------|-------------------|--------------------|
| [46] | IRF9: 9.118e-07 | IL2RA: 1.47e-05 | CTLA4: 1.538e-05 |
| [49] | STAT5B: 4.369e-05 | IRF7: 5.515e-05 | IRF1: 6.291e-05 |
| [52] | NFKB1: 0.0001096 | TGFBR2: 0.0001309 | CXCR3: 0.0001612 |
| [55] | PPARA: 0.0002202 | CCR4: 0.0002202 | CXCR4: 0.0003704 |
| [58] | GSK3B: 0.0007099 | CD274: 0.001519 | TNFRSF1A: 0.001965 |
| [61] | IRF4: 0.002797 | IL4R: 0.005615 | STAT3: 0.009402 |
| [64] | STAT4: 0.01043 | IL4: 0.0169 | ICOS: 0.03201 |

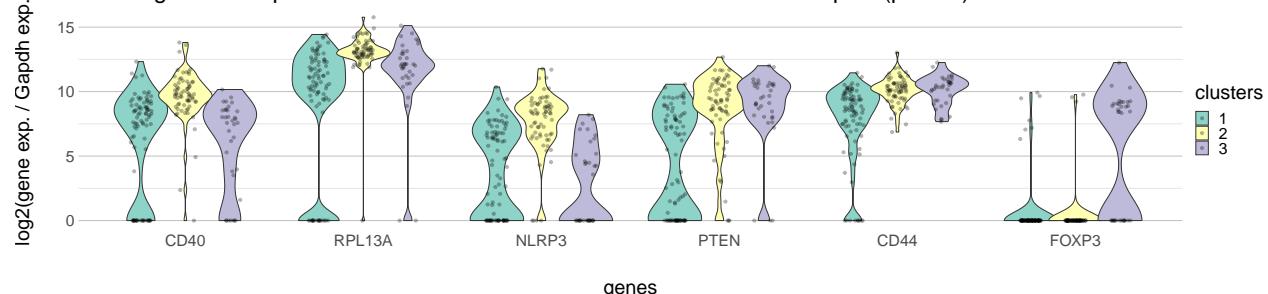
most significant expression differences between clusters for human samples (plot #1)



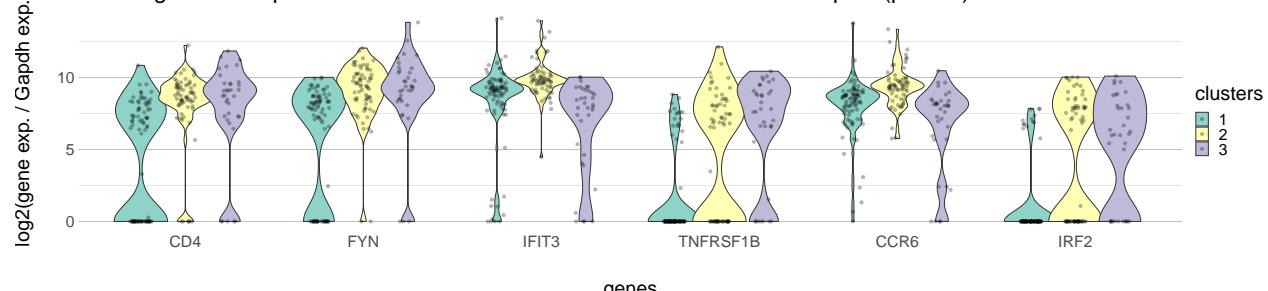
most significant expression differences between clusters for human samples (plot #2)

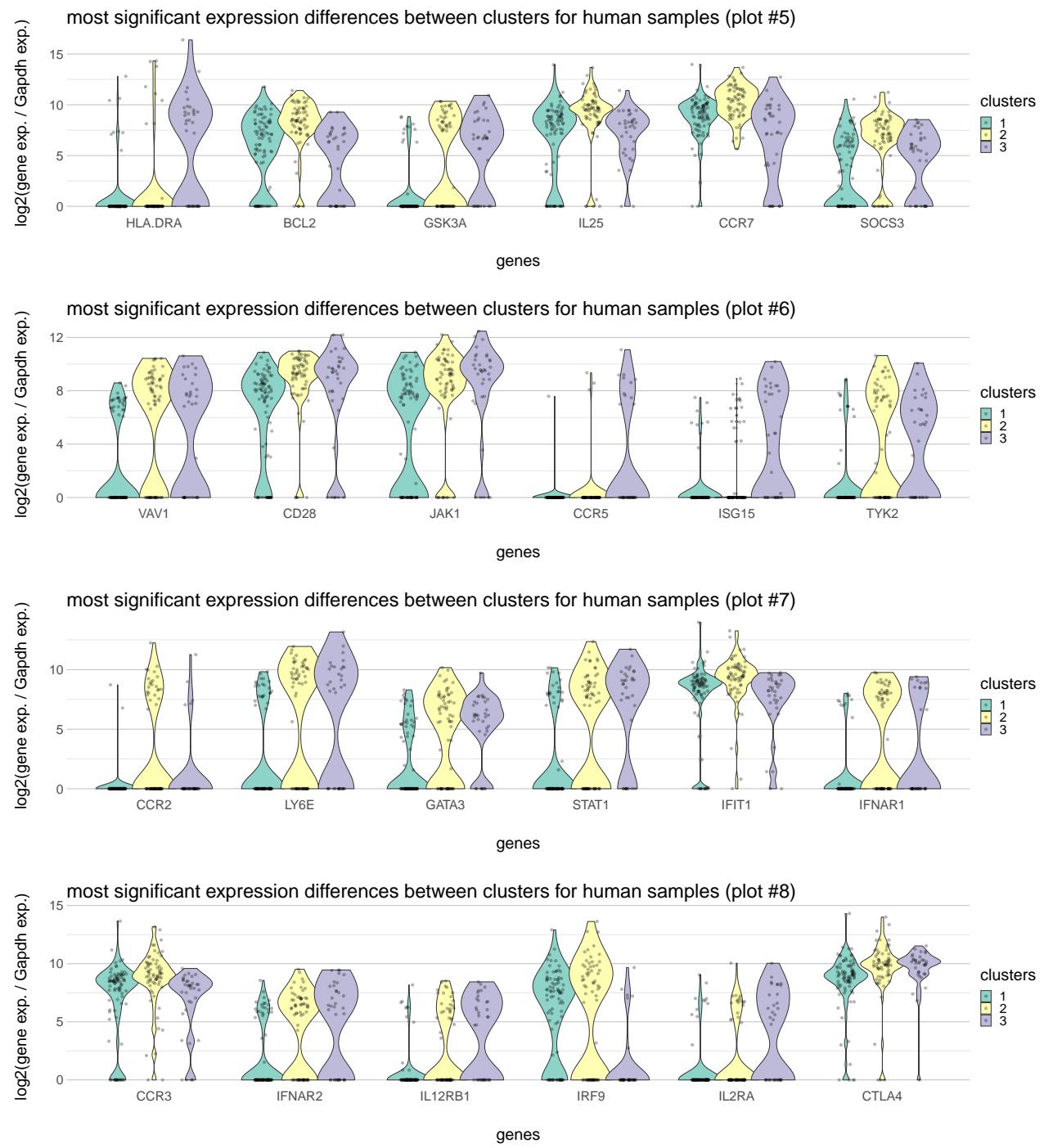


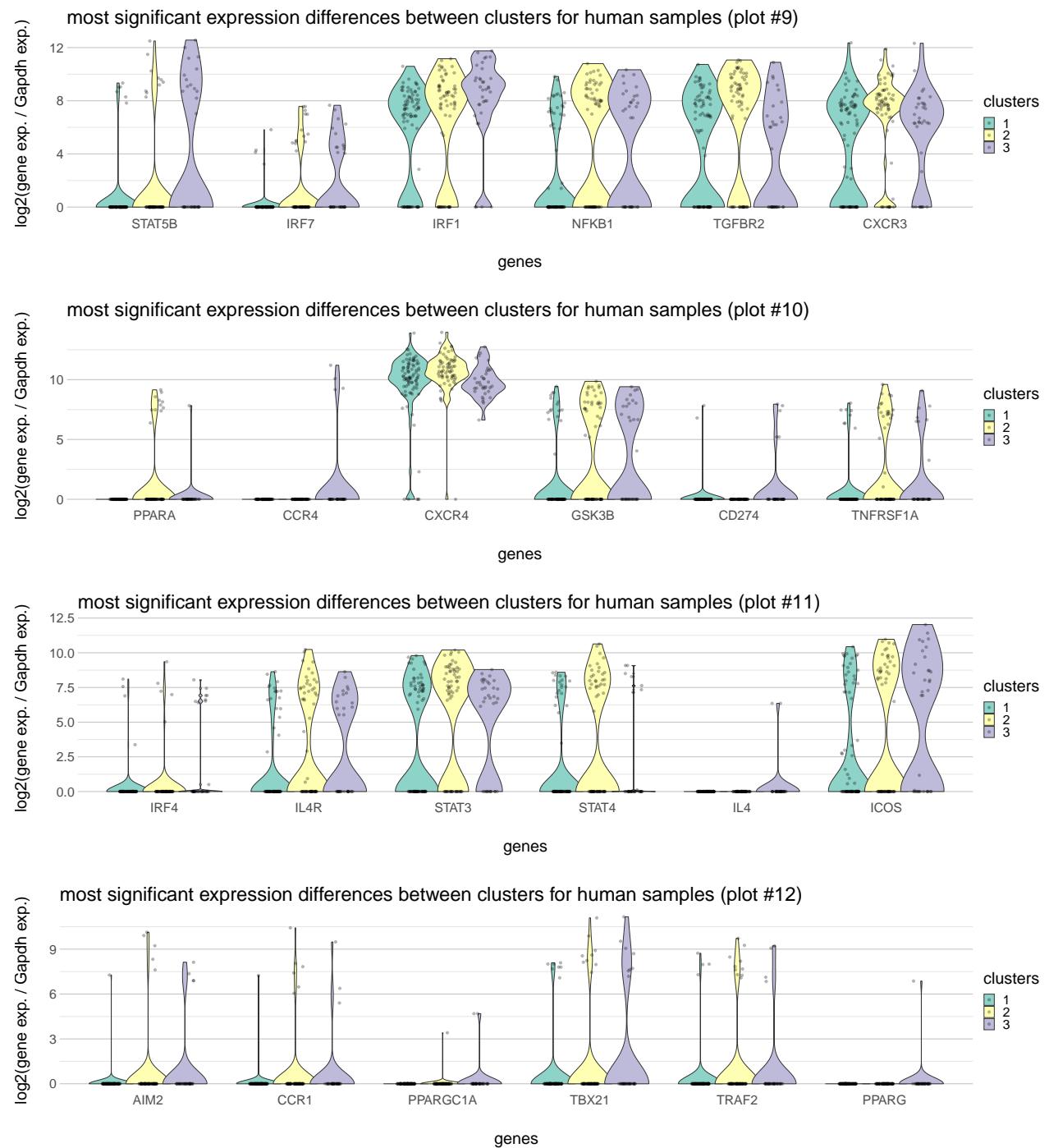
most significant expression differences between clusters for human samples (plot #3)

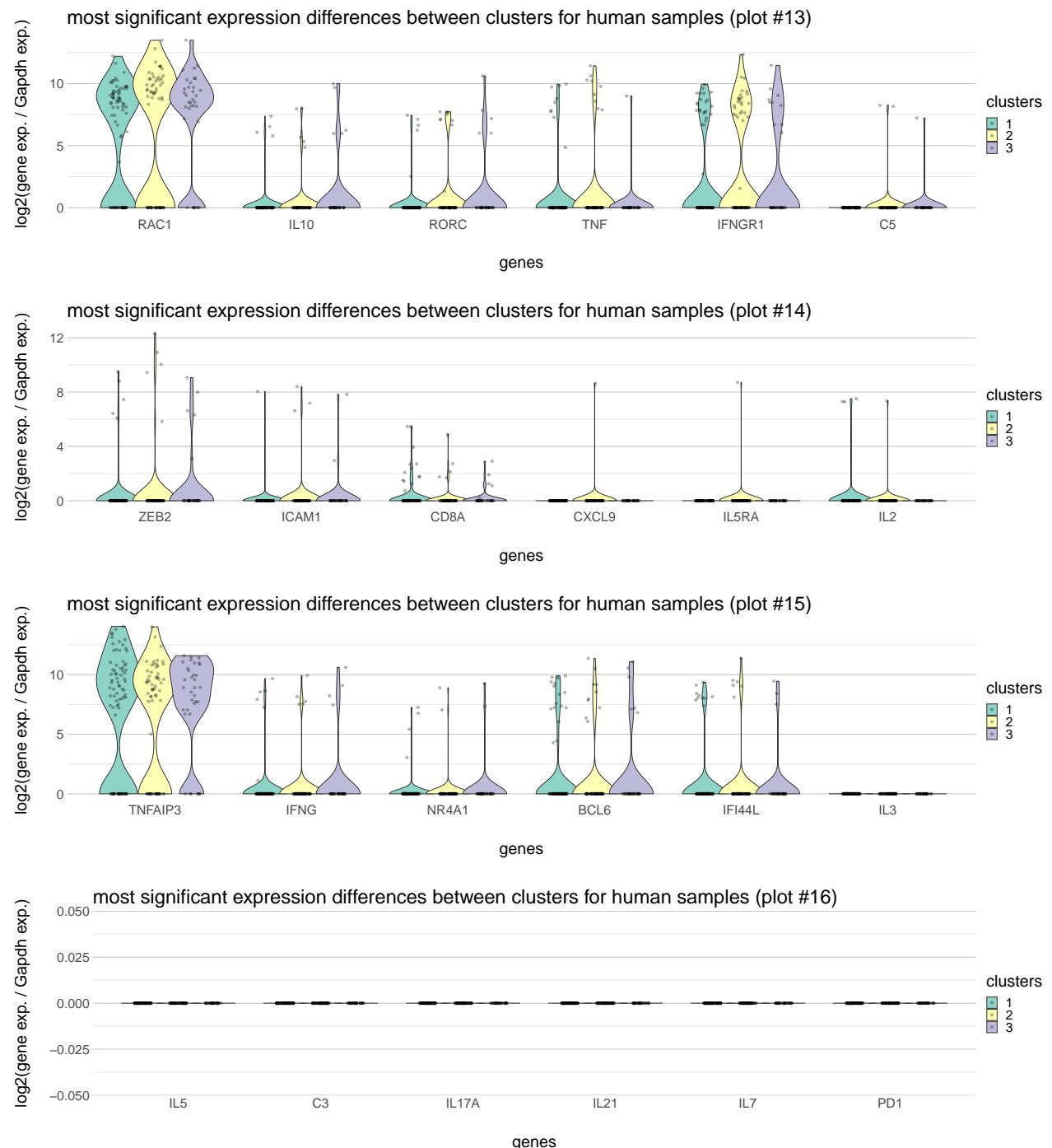


most significant expression differences between clusters for human samples (plot #4)



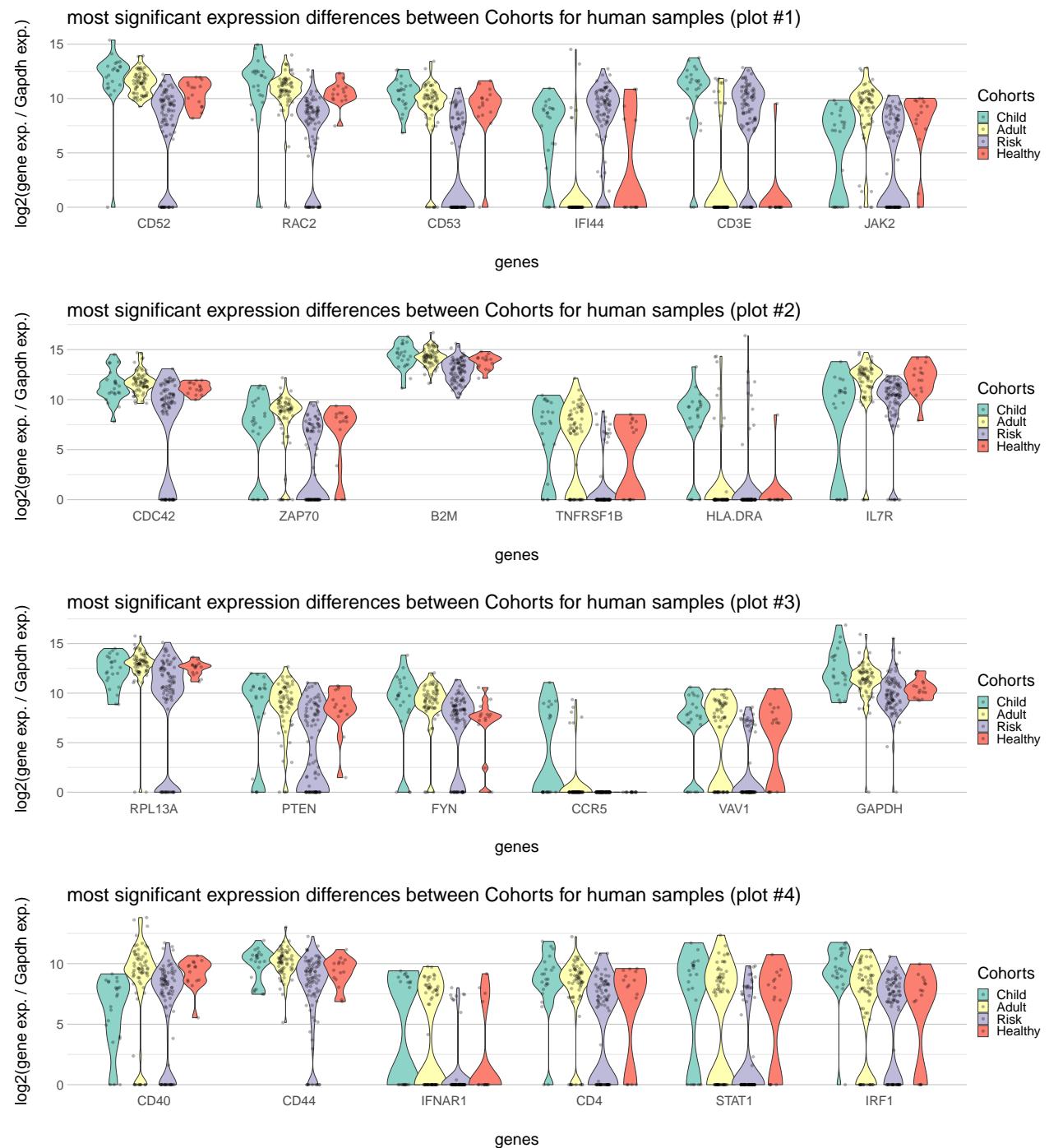


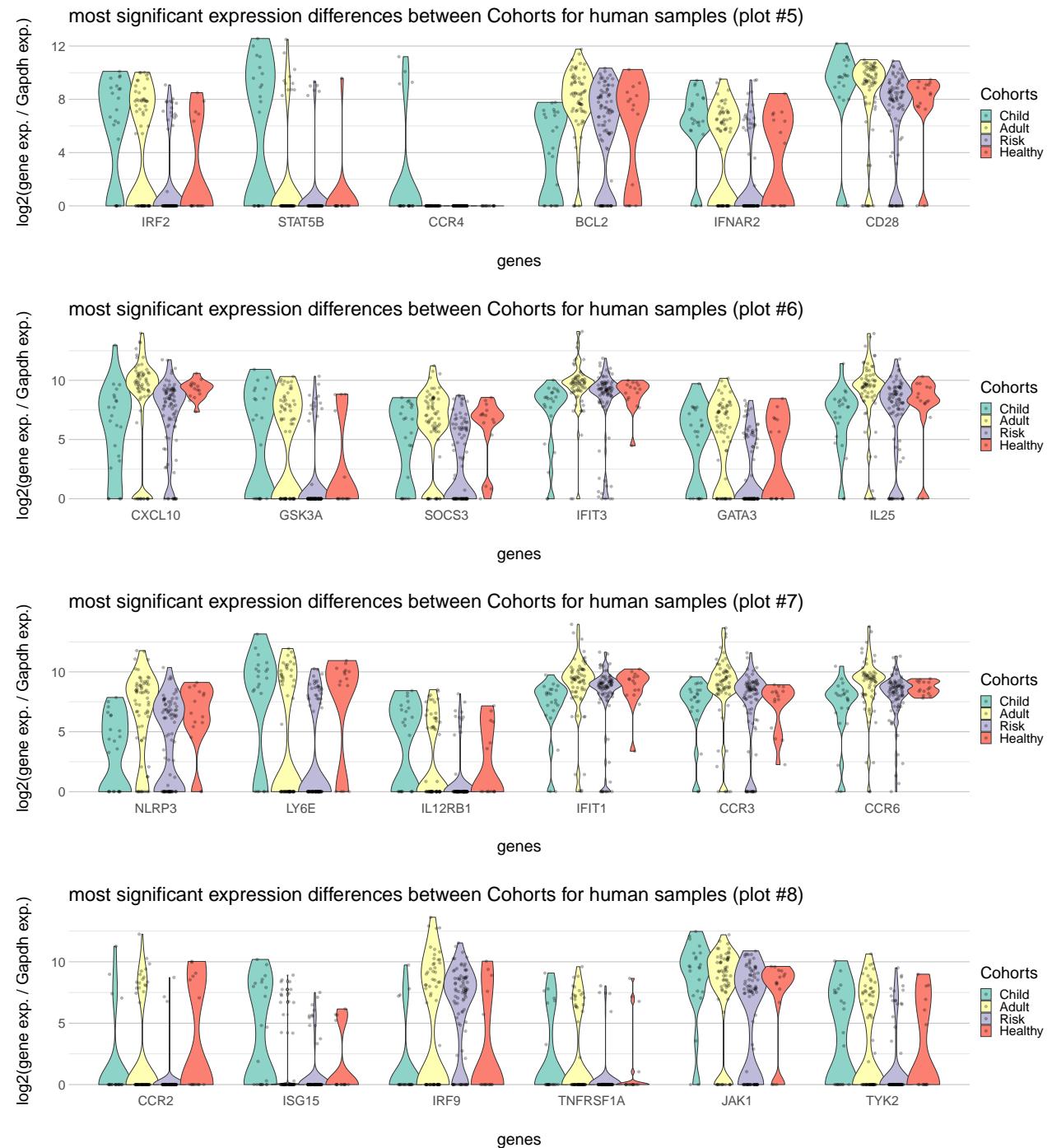


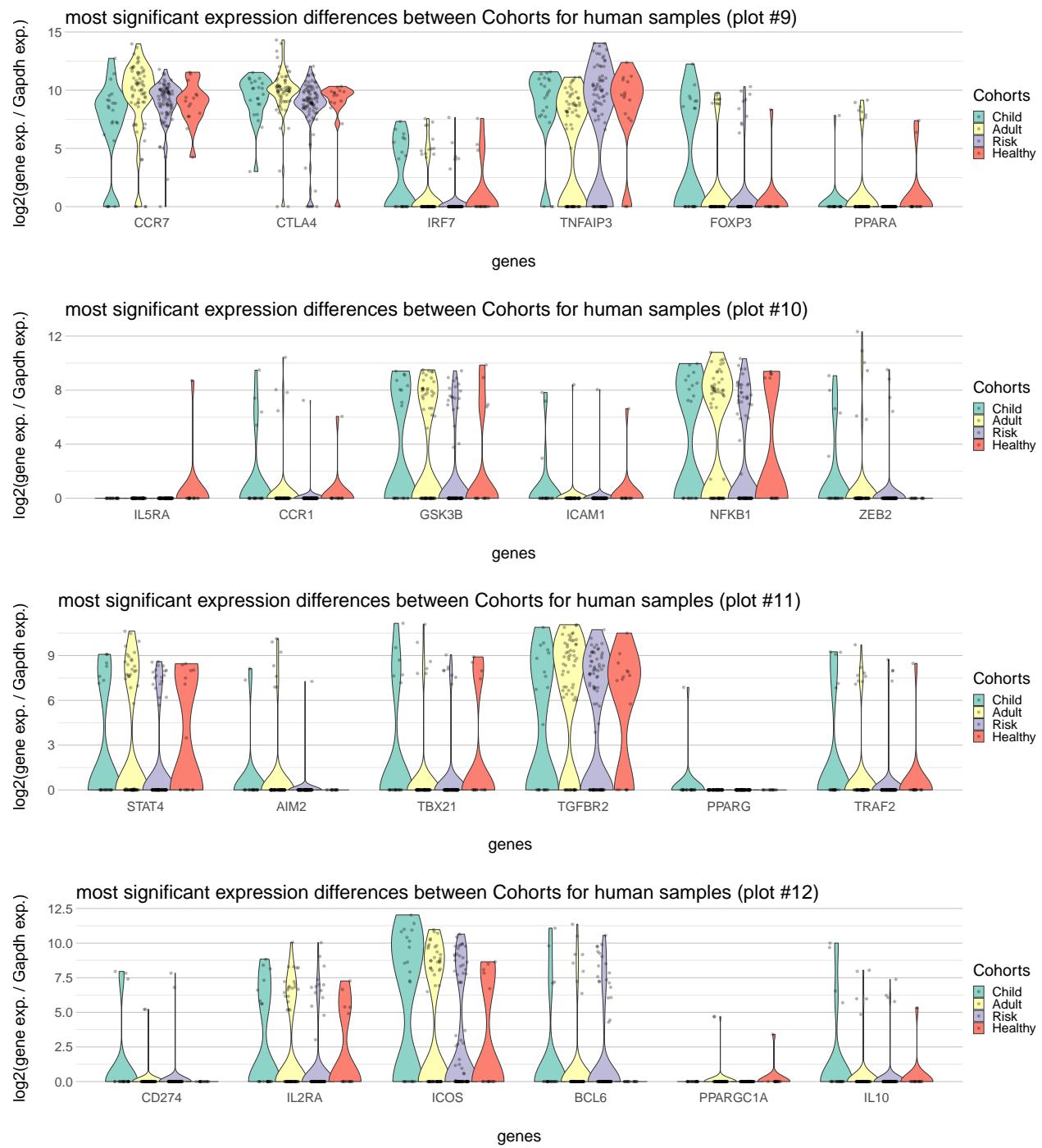


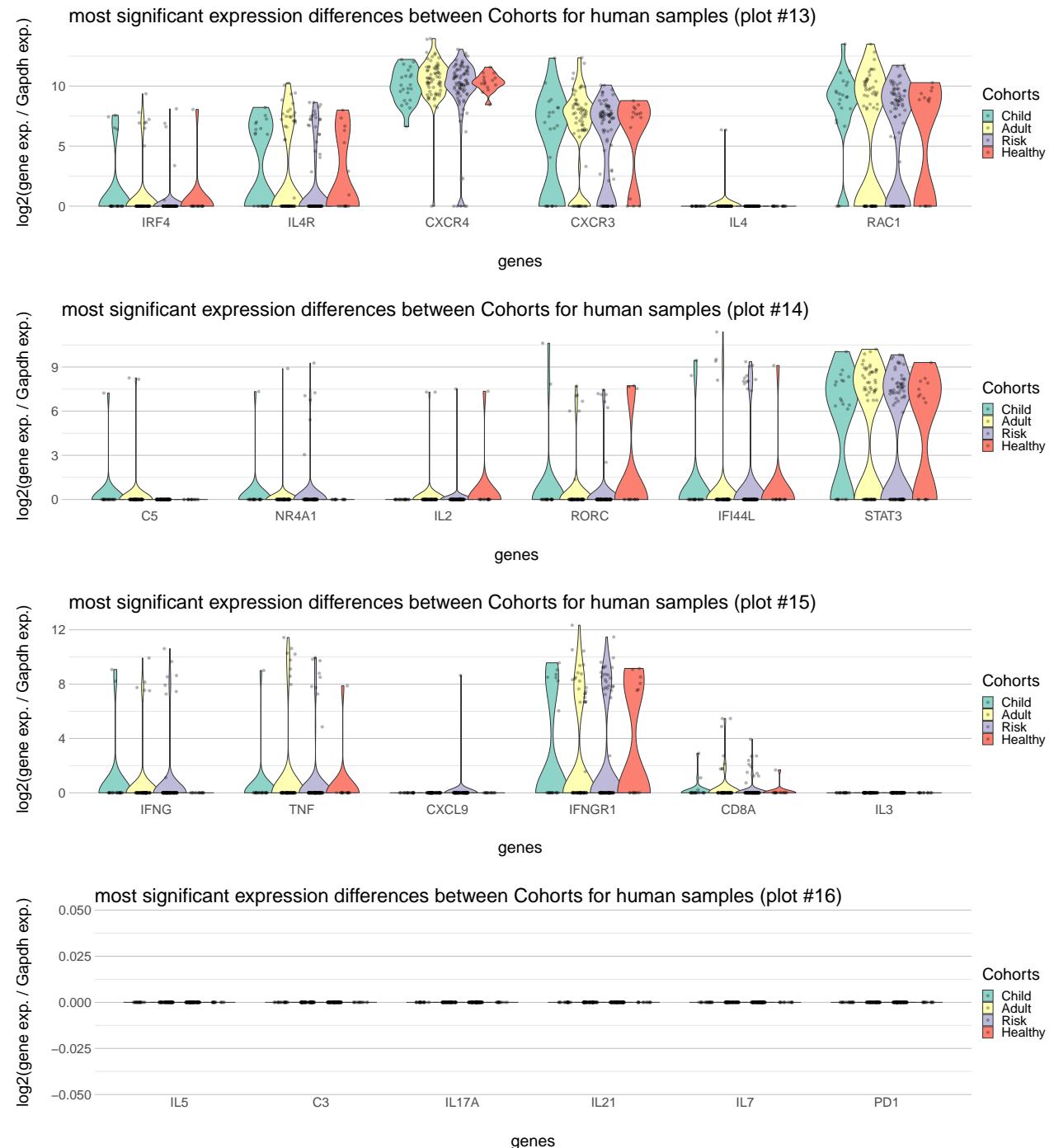
```
[1] Differentially expressed genes between Cohorts for human samples:
[1] CD52: 2.315e-19      RAC2: 1.141e-18      CD53: 3.774e-17
[4] IFI44: 3.62e-16      CD3E: 5.656e-14      JAK2: 2.158e-13
[7] CDC42: 4.486e-13     ZAP70: 4.834e-12     B2M: 6.066e-12
[10] TNFRSF1B: 1.013e-11   HLA.DRA: 5.642e-11    IL7R: 2e-10
[13] RPL13A: 8.296e-09     PTEN: 8.979e-09      FYN: 8.979e-09
[16] CCR5: 2.042e-08       VAV1: 3.348e-08     GAPDH: 6.018e-08
[19] CD40: 1.002e-07       CD44: 2.121e-07     IFNAR1: 4.002e-07
[22] CD4: 4.817e-07        STAT1: 7.691e-07     IRF1: 8.209e-07
[25] IRF2: 9.422e-07       STAT5B: 1.972e-06    CCR4: 3.289e-06
```

| | | | | | | |
|------|-----------|-----------|---------|-----------|----------|-----------|
| [28] | BCL2: | 3.765e-06 | IFNAR2: | 4.101e-06 | CD28: | 5.059e-06 |
| [31] | CXCL10: | 5.27e-06 | GSK3A: | 5.27e-06 | SOCS3: | 5.27e-06 |
| [34] | IFIT3: | 5.349e-06 | GATA3: | 7.586e-06 | IL25: | 8.146e-06 |
| [37] | NLRP3: | 1.004e-05 | LY6E: | 2.087e-05 | IL12RB1: | 3.179e-05 |
| [40] | IFIT1: | 3.893e-05 | CCR3: | 4.451e-05 | CCR6: | 5.276e-05 |
| [43] | CCR2: | 6.512e-05 | ISG15: | 8.543e-05 | IRF9: | 0.0001941 |
| [46] | TNFRSF1A: | 0.0003596 | JAK1: | 0.0004551 | TYK2: | 0.0006821 |
| [49] | CCR7: | 0.0007021 | CTLA4: | 0.001065 | IRF7: | 0.001365 |
| [52] | TNFAIP3: | 0.005047 | FOXP3: | 0.006733 | PPARA: | 0.006896 |
| [55] | IL5RA: | 0.01483 | CCR1: | 0.02803 | GSK3B: | 0.02956 |
| [58] | ICAM1: | 0.03185 | NFKB1: | 0.04812 | ZEB2: | 0.04856 |









```
[1] Differentially expressed genes between Markers for human samples:
[1] RAC2: 0.001132   CD52: 0.001132   CD53: 0.001132   IFI44: 0.001681
[5] PTEN: 0.002176   BCL6: 0.002982   CD4: 0.003058    B2M: 0.01783
[9] ISG15: 0.03355   TNFRSF1B: 0.03595  IL7R: 0.04237
```

