

# Test

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character(0)
[1] "The data files listed below match the conditions in the 'dataload' function:"
[1] "FR_RNA_T1D_MS_20251103_P1_1363029033.csv"
[2] "FR_RNA_T1D_MS_20251103_P1_1363029192.csv"
[1] TRUE
[1] FALSE
[1] FALSE
[1] TRUE
[1] "User selected Panel 1 and CellID"
[1] "These are the plates that were assessed by Panels 1 and CellID. They will be loaded into R for analysis"
[1] "FR_RNA_T1D_MS_20251103_P1"
[1] "The panel's pulled for analysis are: "
[1] "Panel1" "CellID"
[1] "Number of rows prior to duplicate genes, per cell, being combined: 18432"
[1] "Predicted number of rows after removing duplicate genes, per cell: 18432"
[1] "The predicted number of rows DOES match the number of rows, post duplicate gene removal"
[1] "Are blood samples in this table? FALSE"
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No expression detected in 0/96 cells

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[1] "Column Names are: "
[1] "cellSource" "probe"      "age"        "patient"    "SPA"
[6] "SPAM"       "SPAMcell"   "cellType"   "ACTA2"     "ACVR1"
[11] "ADGRE1"    "Aim2"       "ANGPT1"    "ANPEP"     "Bcl2"
[16] "Bc16"       "BMP5"       "BMP7"      "Ccr1"      "ccr2"
[21] "ccr3"       "ccr4"       "ccr5"      "ccr6"      "Ccr7"
[26] "CD14"       "CD24A"     "cd28"      "CD36"      "cd3e"
[31] "CD3E"       "cd4"        "CD4"       "cd40"      "Cd44"
[36] "CD44"       "CD74"       "cd80"      "CD80"      "CD83"
[41] "cd86"       "CD86"       "cd8a"      "CD8A"      "Ceacam1"
[46] "CLEC7A"     "COL11A1"   "COL1A1"    "COL1A2"    "CSF1"
[51] "CSF1R"      "CSF2RA"     "CSF2RB"    "ctla4"     "Cxcl10"
[56] "CXCL13"    "Cxcr3"     "Cxcr4"     "DES"       "EGFR"
[61] "FAP"        "FCGR1"     "FGFR1"     "FGFR3"     "FGR"
[66] "FLT4"       "foxp3"     "Fyn"       "gapdh"     "gata4"
[71] "GCG"        "GFAP"       "GHRL"      "GM13889"   "gsk3a"
[76] "gsk3b"      "H2-AA"      "H2-DMA"    "HIF1A"     "Hprt"
[81] "IAPP"       "icam1"     "ICAM1"     "ICAM2"     "Icos"
[86] "ICOSL"      "Ifi44"     "Ifi44l"    "Ifit1"     "Ifit3"
[91] "ifng"       "IFNG"      "Ifngr1"    "IGF1"      "IGF2"
[96] "IL-21"      "il10"       "il12b"     "Il12rb"    "il17A"
[101] "Il18r1"    "IL1A"       "IL1B"      "il1r2"     "il2"
[106] "il25"       "IL27"       "Il27r"     "il2ra"     "il3"
[111] "IL34"       "il4"        "il4ra"     "il5"       "il5ra"
[116] "il6"        "il7"        "il7r"      "INS1"      "INS2"
[121] "Irf1"       "Irf2"       "Irf4"      "Irf7"      "Isg15"
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[126] "ITGAX"      "ITGB1"       "Jak1"        "Jak2"        "KDR"
[131] "KLF5"        "LCK"         "LEPR"        "Ly6e"        "LY75"
[136] "Map2k6"      "Mapk8"       "MMP1A"       "MMP2"        "MMP3"
[141] "MMP9"         "Mx1"         "NFATC1"      "nfkb1"       "NLRP3"
[146] "Nur77"        "Oas1b"       "Oas2"        "Oasl1"       "Pd1"
[151] "PDGFA"        "PDGFB"       "PDGFRB"      "Pdl-1"       "PDPN"
[156] "PECAM1"      "ppara"       "pparg"       "ppargc1a"    "PPY"
[161] "pten"         "PTGS2"       "PTK2"        "Rsad2"       "RSP01"
[166] "SELE"         "SFRP1"       "Socs3"       "SPP1"        "SST"
[171] "Stat1"        "Stat3"       "Stat4"        "Stat5"       "Tbx21"
[176] "TEK"          "TGFB1"       "Tgfbr2"      "TIMP1"       "TIMP2"
[181] "TLR3"         "TLR4"        "TLR7"        "TLR9"        "TNC"
[186] "tnf"          "Tnfaip3"     "tnfrsf1a"    "tnfrsf1b"    "TNFSF11"
[191] "Traf2"        "Vav1"        "VCAM1"       "VEGFA"       "VEGFB"
[196] "WNT2B"        "WNT4"        "Zap70"       "ZAP70"       "Zeb2"
[1] TRUE
[1] TRUE
[1] TRUE
[1] TRUE
[1] "The panel observed in the panel detection tests, in the 'clusterFilter.R' script, is 1 and 3"
[1] "Warning! The panel detected and the panel number input by the user are not the same!"

```

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[1] "Test 1 is FALSE"
[1] "Test 2 is FALSE"
[1] "Test1and2 is TRUE"
[1] "Test3 is FALSE"
[1] "cellSource" "probe"      "age"        "patient"    "SPA"
[6] "SPAM"       "SPAMcell"    "cellType"   "ACTA2"      "ACVR1"
[11] "ADGRE1"    "Aim2"       "ANGPT1"    "ANPEP"      "Bcl2"
[16] "Bc16"       "BMP5"       "BMP7"       "Ccr1"       "ccr2"
[21] "ccr3"       "ccr4"       "ccr5"       "ccr6"       "Ccr7"
[26] "CD14"       "CD24A"      "cd28"      "CD36"       "cd3e"
[31] "CD3E"       "cd4"        "CD4"        "cd40"       "Cd44"
[36] "CD44"       "CD74"       "cd80"      "CD80"       "CD83"
[41] "cd86"       "CD86"       "cd8a"      "CD8A"       "Ceacam1"
[46] "CLEC7A"     "COL11A1"    "COL1A1"    "COL1A2"    "CSF1"
[51] "CSF1R"      "CSF2RA"      "CSF2RB"    "ctla4"      "Cxcl10"
[56] "CXCL13"    "Cxcr3"      "Cxcr4"     "DES"        "EGFR"
[61] "FAP"         "FCGR1"      "FGFR1"     "FGFR3"     "FGR"
[66] "FLT4"       "foxp3"      "Fyn"        "gapdh"     "gata4"
[71] "GCG"         "GFAP"       "GHRL"      "GM13889"   "gsk3a"
[76] "gsk3b"      "H2-AA"      "H2-DMA"    "HIF1A"      "Hprt"
[81] "IAPP"        "icam1"      "ICAM1"     "ICAM2"      "Icos"
[86] "ICOSL"      "Ifi44"      "Ifi44l"    "Ifit1"      "Ifit3"
[91] "ifng"        "IFNG"       "Ifngr1"    "IGF1"       "IGF2"
[96] "IL-21"       "il10"       "il12b"     "Il12rb"    "il17A"
[101] "Il18r1"    "IL1A"       "IL1B"      "il1r2"      "il2"
[106] "il25"        "Il27"       "Il27r"     "il2ra"      "il3"
[111] "IL34"        "il4"        "il4ra"     "il5"        "il5ra"
[116] "il6"         "il7"        "il7r"      "INS1"       "INS2"
[121] "Irf1"        "Irf2"       "Irf4"      "Irf7"       "Isg15"
[126] "ITGAX"      "ITGB1"       "Jak1"       "Jak2"       "KDR"
[131] "KLF5"        "LCK"         "LEPR"      "Ly6e"       "LY75"
[136] "Map2k6"      "Mapk8"       "MMP1A"     "MMP2"       "MMP3"

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[141] "MMP9"      "Mx1"       "NFATC1"    "nfkb1"     "NLRP3"
[146] "Nur77"     "Oas1b"     "Oas2"      "Oasl1"     "Pd1"
[151] "PDGFA"     "PDGFB"     "PDGFRB"   "Pdl-1"     "PDPN"
[156] "PECAM1"    "ppara"     "pparg"     "ppargc1a"  "PPY"
[161] "pten"      "PTGS2"     "PTK2"      "Rsad2"     "RSP01"
[166] "SELE"      "SFRP1"     "Socs3"    "SPP1"      "SST"
[171] "Stat1"     "Stat3"     "Stat4"     "Stat5"     "Tbx21"
[176] "TEK"        "TGFB1"     "Tgfbr2"   "TIMP1"     "TIMP2"
[181] "TLR3"       "TLR4"      "TLR7"      "TLR9"      "TNC"
[186] "tnf"        "Tnfaip3"   "tnfrsf1a" "tnfrsf1b"  "TNFSF11"
[191] "Traf2"     "Vav1"      "VCAM1"    "VEGFA"    "VEGFB"
[196] "WNT2B"     "WNT4"      "Zap70"    "ZAP70"    "Zeb2"
[1] "The first column you'll pull is: 9"
[1] "The last column you'll pull is: 200"
[1] "ACTA2"      "ACVR1"     "ADGRE1"   "Aim2"      "ANGPT1"   "ANPEP"
[7] "Bc12"       "Bc16"      "BMP5"     "BMP7"     "Ccr1"     "ccr2"
[13] "CCR3"       "CCR4"      "CCR5"     "CCR6"     "Ccr7"     "CD14"
[19] "CD24A"     "cd28"      "CD36"     "cd3e"     "CD3E"     "cd4"
[25] "CD4"        "cd40"      "Cd44"     "CD44"     "CD74"     "cd80"
[31] "CD80"       "CD83"      "cd86"     "CD86"     "cd8a"     "CD8A"
[37] "Ceacam1"   "CLEC7A"   "COL11A1"  "COL1A1"   "COL1A2"   "CSF1"
[43] "CSF1R"      "CSF2RA"   "CSF2RB"   "ctla4"    "Cxcl10"   "CXCL13"
[49] "Cxcr3"     "Cxcr4"    "DES"      "EGFR"    "FAP"      "FCGR1"
[55] "FGFR1"     "FGFR3"    "FGR"      "FLT4"    "foxp3"    "Fyn"
[61] "gapdh"     "gata4"    "GCG"      "GFAP"    "GHRL"    "GM13889"
[67] "gsk3a"     "gsk3b"    "H2-AA"    "H2-DMA"  "HIF1A"    "Hprt"
[73] "IAPP"       "icam1"    "ICAM1"    "ICAM2"   "Icos"     "ICOSL"
[79] "Ifi44"      "Ifi44l"   "Ifit1"    "Ifit3"   "ifng"     "IFNG"
[85] "Ifngr1"    "IGF1"     "IGF2"     "IL-21"   "il10"     "il12b"
[91] "Il112rb"   "il117A"   "Il118r1"  "IL1A"    "IL1B"     "il1r2"
[97] "il2"        "il25"     "Il27"     "Il27r"   "il2ra"    "il3"
[103] "IL34"       "il4"      "il4ra"    "il5"     "il5ra"    "il6"
[109] "il7"        "il7r"     "INS1"     "INS2"   "Irf1"     "Irf2"
[115] "Irf4"       "Irf7"     "Isg15"    "ITGAX"   "ITGB1"    "Jak1"
[121] "Jak2"       "KDR"      "KLF5"     "LCK"     "LEPR"     "Ly6e"
[127] "LY75"       "Map2k6"   "Mapk8"    "MMP1A"   "MMP2"     "MMP3"
[133] "MMP9"       "Mx1"      "NFATC1"   "nfkb1"   "NLRP3"    "Nur77"
[139] "Oas1b"     "Oas2"     "Oasl1"    "Pd1"     "PDGFA"   "PDGFB"
[145] "PDGFRB"    "Pdl-1"    "PDPN"     "PECAM1"  "ppara"    "pparg"
[151] "ppargc1a"  "PPY"      "pten"     "PTGS2"   "PTK2"     "Rsad2"
[157] "RSP01"      "SELE"     "SFRP1"    "Socs3"   "SPP1"     "SST"
[163] "Stat1"      "Stat3"    "Stat4"    "Stat5"   "Tbx21"    "TEK"
[169] "TGFB1"     "Tgfbr2"   "TIMP1"    "TIMP2"   "TLR3"     "TLR4"
[175] "TLR7"       "TLR9"     "TNC"      "tnf"     "Tnfaip3"  "tnfrsf1a"
[181] "tnfrsf1b"  "TNFSF11"  "Traf2"    "Vav1"    "VCAM1"   "VEGFA"
[187] "VEGFB"     "WNT2B"   "WNT4"     "Zap70"   "ZAP70"   "Zeb2"
[1] "PanelNumber equals: 1 and 3 . Columns to be sent for kmeans testing: "
[1] "ACTA2"      "ACVR1"     "ADGRE1"   "Aim2"      "ANGPT1"   "ANPEP"
[7] "Bc12"       "Bc16"      "BMP5"     "BMP7"     "Ccr1"     "ccr2"
[13] "CCR3"       "CCR4"      "CCR5"     "CCR6"     "Ccr7"     "CD14"
[19] "CD24A"     "cd28"      "CD36"     "cd3e"     "CD3E"     "cd4"
[25] "CD4"        "cd40"      "Cd44"     "CD44"     "CD74"     "cd80"
[31] "CD80"       "CD83"      "cd86"     "CD86"     "cd8a"     "CD8A"
[37] "Ceacam1"   "CLEC7A"   "COL11A1"  "COL1A1"  "COL1A2"   "CSF1"

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[43] "CSF1R"      "CSF2RA"      "CSF2RB"      "ctl4a"       "Cxcl10"      "CXCL13"
[49] "Cxcr3"      "Cxcr4"       "DES"        "EGFR"        "FAP"         "FCGR1"
[55] "FGFR1"      "FGFR3"       "FGR"        "FLT4"        "foxp3"       "Fyn"
[61] "gapdh"       "gata4"       "GCG"        "GFAP"        "GHRL"       "GM13889"
[67] "gsk3a"       "gsk3b"       "H2-AA"       "H2-DMA"      "HIF1A"       "Hprt"
[73] "IAPP"        "icam1"       "ICAM1"      "ICAM2"      "Icos"        "ICOSL"
[79] "Ifi44"        "Ifi44l"      "Ifit1"      "Ifit3"       "ifng"        "IFNG"
[85] "Ifngr1"      "IGF1"        "IGF2"       "IL-21"       "il10"        "il12b"
[91] "Il12rb"      "il17A"       "Il18r1"     "IL1A"        "IL1B"        "il1r2"
[97] "il2"          "il25"        "Il27"       "Il27r"      "il2ra"       "il3"
[103] "IL34"        "il4"         "il4ra"      "il5"         "il5ra"       "il6"
[109] "il7"          "il7r"        "INS1"       "INS2"       "Irf1"        "Irf2"
[115] "Irf4"         "Irf7"        "Isg15"      "ITGAX"      "ITGB1"       "Jak1"
[121] "Jak2"         "KDR"         "KLF5"       "LCK"        "LEPR"        "Ly6e"
[127] "LY75"         "Map2k6"      "Mapk8"      "MMP1A"      "MMP2"        "MMP3"
[133] "MMP9"         "Mx1"         "NFATC1"     "nfkb1"      "NLRP3"      "Nur77"
[139] "Oas1b"        "Oas2"        "Oasl1"      "Pd1"        "PDGFA"      "PDGFB"
[145] "PDGFRB"      "Pdl-1"       "PDPN"       "PECAM1"     "ppara"      "pparg"
[151] "ppargc1a"    "PPY"         "pten"       "PTGS2"      "PTK2"        "Rsad2"
[157] "RSP01"        "SELE"        "SFRP1"      "Socs3"      "SPP1"        "SST"
[163] "Stat1"        "Stat3"       "Stat4"      "Stat5"       "Tbx21"      "TEK"
[169] "TGFB1"        "Tgfbr2"     "TIMP1"      "TIMP2"      "TLR3"        "TLR4"
[175] "TLR7"          "TLR9"        "TNC"        "tnf"        "Tnfaip3"    "tnfrsf1a"
[181] "tnfrsf1b"    "TNFSF11"    "Traf2"      "Vav1"        "VCAM1"      "VEGFA"
[187] "VEGFB"        "WNT2B"      "WNT4"       "Zap70"      "ZAP70"      "Zeb2"

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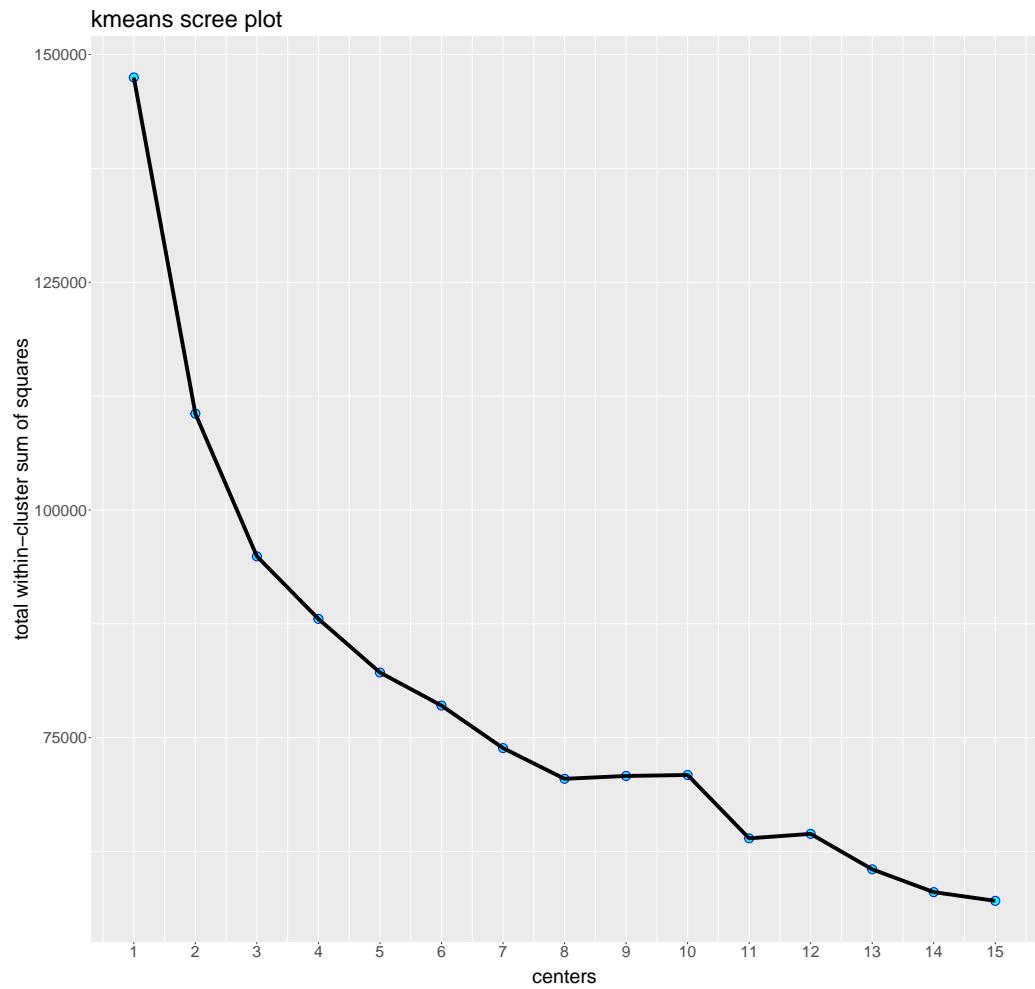
[1] "Column names after searching for the column pattern and after selecting the right columns. The following table shows the resulting names."

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[1] "ACTA2"       "ACVR1"      "ADGRE1"     "Aim2"       "ANGPT1"     "ANPEP"
[7] "Bcl2"        "Bcl6"       "BMP5"       "BMP7"       "Ccr1"       "ccr2"
[13] "ccr3"        "ccr4"       "ccr5"       "ccr6"       "Ccr7"       "CD14"
[19] "CD24A"       "cd28"       "CD36"       "cd3e"       "CD3E"       "cd4"
[25] "CD4"         "cd40"       "Cd44"       "CD44"       "CD74"       "cd80"
[31] "CD80"        "CD83"       "cd86"       "CD86"       "cd8a"       "CD8A"
[37] "Ceacam1"    "CLEC7A"     "COL11A1"    "COL1A1"    "COL1A2"    "CSF1"
[43] "CSF1R"       "CSF2RA"     "CSF2RB"     "ctl4a"      "Cxcl10"     "CXCL13"
[49] "Cxcr3"       "Cxcr4"      "DES"        "EGFR"      "FAP"        "FCGR1"
[55] "FGFR1"       "FGFR3"      "FGR"        "FLT4"      "foxp3"      "Fyn"
[61] "gapdh"       "gata4"      "GCG"        "GFAP"      "GHRL"      "GM13889"
[67] "gsk3a"       "gsk3b"      "H2-AA"      "H2-DMA"     "HIF1A"      "Hprt"
[73] "IAPP"        "icam1"      "ICAM1"      "ICAM2"     "Icos"      "ICOSL"
[79] "Ifi44"        "Ifi44l"      "Ifit1"      "Ifit3"      "ifng"      "IFNG"
[85] "Ifngr1"      "IGF1"        "IGF2"       "IL-21"      "il10"      "il12b"
[91] "Il12rb"      "il17A"      "Il18r1"     "IL1A"      "IL1B"      "il1r2"
[97] "il2"          "il25"       "Il27"       "Il27r"     "il2ra"      "il3"
[103] "IL34"        "il4"         "il4ra"      "il5"       "il5ra"      "il6"
[109] "il7"          "il7r"        "INS1"       "INS2"      "Irf1"      "Irf2"
[115] "Irf4"         "Irf7"        "Isg15"      "ITGAX"      "ITGB1"      "Jak1"
[121] "Jak2"         "KDR"         "KLF5"       "LCK"        "LEPR"      "Ly6e"
[127] "LY75"         "Map2k6"      "Mapk8"      "MMP1A"      "MMP2"      "MMP3"
[133] "MMP9"         "Mx1"         "NFATC1"     "nfkb1"      "NLRP3"      "Nur77"
[139] "Oas1b"        "Oas2"        "Oasl1"      "Pd1"        "PDGFA"      "PDGFB"
[145] "PDGFRB"      "Pdl-1"       "PDPN"       "PECAM1"     "ppara"      "pparg"
[151] "ppargc1a"    "PPY"         "pten"       "PTGS2"      "PTK2"        "Rsad2"
[157] "RSP01"        "SELE"        "SFRP1"      "Socs3"      "SPP1"        "SST"
[163] "Stat1"        "Stat3"       "Stat4"      "Stat5"      "Tbx21"      "TEK"

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[169] "TGFB1"      "Tgfb2r"       "TIMP1"        "TIMP2"        "TLR3"        "TLR4"
[175] "TLR7"        "TLR9"         "TNC"          "tnf"          "Tnfaip3"     "tnfrsf1a"
[181] "tnfrsf1b"    "TNFSF11"     "Traf2"        "Vav1"        "VCAM1"       "VEGFA"
[187] "VEGFB"        "WNT2B"        "WNT4"         "Zap70"        "ZAP70"       "Zeb2"
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```
[1] "Column Names for ctClust are: "
[1] "cellSource"      "probe"           "age"            "patient"
[5] "SPA"             "SPAM"            "SPAMcell"       "cellType"
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[9] "ACTA2"           "ACVR1"           "ADGRE1"          "Aim2"
[13] "ANGPT1"          "ANPEP"            "Bcl2"             "Bcl6"
[17] "BMP5"             "BMP7"              "Ccr1"             "ccr2"
[21] "CCR3"             "CCR4"              "CCR5"             "CCR6"
[25] "CCR7"             "CD14"              "CD24A"            "cd28"
[29] "CD36"             "cd3e"              "CD3E"             "cd4"
[33] "CD4"               "cd40"              "Cd44"             "CD44"
[37] "CD74"             "cd80"              "CD80"             "CD83"
[41] "cd86"             "CD86"              "cd8a"             "CD8A"
[45] "Ceacam1"          "CLEC7A"            "COL11A1"          "COL1A1"
[49] "COL1A2"            "CSF1"              "CSF1R"            "CSF2RA"
[53] "CSF2RB"            "ctla4"              "Cxcl10"           "CXCL13"
[57] "Cxcr3"            "Cxcr4"             "DES"               "EGFR"
[61] "FAP"               "FCGR1"             "FGFR1"            "FGFR3"
[65] "FGR"               "FLT4"              "foxp3"             "Fyn"
[69] "gapdh"             "gata4"             "GCG"               "GFAP"
[73] "GHRL"              "GM13889"           "gsk3a"             "gsk3b"
[77] "H2.AA"              "H2.DMA"             "HIF1A"             "Hprt"
[81] "IAPP"              "icam1"             "ICAM1"             "ICAM2"
[85] "Icos"              "ICOSL"             "IFI44"             "IFI44l"
[89] "Ifit1"              "Ifit3"              "ifng"               "IFNG"
[93] "Ifngr1"             "IGF1"              "IGF2"               "IL.21"
[97] "il10"              "il12b"             "Il12rb"            "il17A"
[101] "Il18r1"            "IL1A"              "IL1B"              "il1r2"
[105] "il2"                "il25"              "IL27"              "Il27r"
[109] "il2ra"              "il3"              "IL34"              "il4"
[113] "il4ra"              "il5"              "il5ra"             "il6"
[117] "il7"                "il7r"              "INS1"              "INS2"
[121] "Irf1"              "Irf2"              "Irf4"              "Irf7"
[125] "Isg15"              "ITGAX"             "ITGB1"             "Jak1"
[129] "Jak2"              "KDR"              "KLF5"              "LCK"
[133] "LEPR"              "Ly6e"              "LY75"              "Map2k6"
[137] "Mapk8"              "MMP1A"             "MMP2"              "MMP3"
[141] "MMP9"              "Mx1"              "NFATC1"            "nfkb1"
[145] "NLRP3"              "Nur77"             "Oas1b"             "Oas2"
[149] "Oas1l"              "Pd1"              "PDGFA"             "PDGFB"
[153] "PDGFRB"             "Pdl.1"             "PDPN"              "PECAM1"
[157] "ppara"              "pparg"             "ppargc1a"          "PPY"
[161] "pten"              "PTGS2"             "PTK2"              "Rsad2"
[165] "RSP01"              "SELE"              "SFRP1"             "Socs3"
[169] "SPP1"              "SST"              "Stat1"              "Stat3"
[173] "Stat4"              "Stat5"              "Tbx21"              "TEK"
[177] "TGFB1"              "Tgfbbr2"           "TIMP1"              "TIMP2"
[181] "TLR3"              "TLR4"              "TLR7"              "TLR9"
[185] "TNC"                "tnf"              "Tnfaip3"            "tnfrsf1a"
[189] "tnfrsf1b"            "TNFSF11"           "Traf2"              "Vav1"
[193] "VCAM1"              "VEGFA"             "VEGFB"             "WNT2B"
[197] "WNT4"              "Zap70"             "ZAP70"              "Zeb2"
[201] "normFit.cluster"

[1] "Column Numbers for ctClust after moving around the columns:"
[1] "cellSource"          "probe"             "age"              "patient"
[5] "SPA"                 "SPAM"              "SPAMcell"          "cellType"
[9] "kmeans.cluster"       "ACTA2"             "ACVR1"            "ADGRE1"
[13] "Aim2"                "ANGPT1"            "ANPEP"             "Bcl2"

```

```

[17] "Bcl6"           "BMP5"           "BMP7"           "Ccr1"
[21] "ccr2"            "ccr3"            "ccr4"            "ccr5"
[25] "ccr6"            "Ccr7"            "CD14"            "CD24A"
[29] "cd28"            "CD36"            "cd3e"            "CD3E"
[33] "cd4"              "CD4"              "cd40"            "Cd44"
[37] "CD44"            "CD74"            "cd80"            "CD80"
[41] "CD83"            "cd86"            "CD86"            "cd8a"
[45] "CD8A"            "Ceacam1"         "CLEC7A"          "COL11A1"
[49] "COL1A1"          "COL1A2"          "CSF1"            "CSF1R"
[53] "CSF2RA"          "CSF2RB"          "ctla4"           "Cxcl10"
[57] "CXCL13"          "Cxcr3"          "Cxcr4"           "DES"
[61] "EGFR"             "FAP"              "FCGR1"           "FGFR1"
[65] "FGFR3"            "FGR"              "FLT4"            "foxp3"
[69] "Fyn"              "gapdh"           "gata4"           "GCG"
[73] "GFAP"             "GHRL"            "GM13889"         "gsk3a"
[77] "gsk3b"            "H2.AA"            "H2.DMA"          "HIF1A"
[81] "Hppt"             "IAPP"             "icam1"           "ICAM1"
[85] "ICAM2"            "Icos"             "ICOSL"           "Ifi44"
[89] "Ifi441"           "Ifit1"            "Ifit3"            "ifng"
[93] "IFNG"             "Ifngr1"          "IGF1"             "IGF2"
[97] "IL.21"             "il10"             "il12b"           "Il12rb"
[101] "il17A"            "Il18r1"          "IL1A"             "IL1B"
[105] "il1r2"            "il2"              "il25"             "Il27"
[109] "Il27r"            "il2ra"            "il3"              "IL34"
[113] "il4"              "il4ra"            "il5"              "il5ra"
[117] "il6"              "il7"              "il7r"             "INS1"
[121] "INS2"             "Irf1"             "Irf2"             "Irf4"
[125] "Irf7"             "Isg15"            "ITGAX"            "ITGB1"
[129] "Jak1"              "Jak2"             "KDR"              "KLF5"
[133] "LCK"              "LEPR"             "Ly6e"             "LY75"
[137] "Map2k6"           "Mapk8"            "MMP1A"            "MMP2"
[141] "MMP3"              "MMP9"             "Mx1"              "NFATC1"
[145] "nfbk1"            "NLRP3"            "Nur77"            "Oas1b"
[149] "Oas2"              "Oasl1"            "Pd1"              "PDGFA"
[153] "PDGFB"            "PDGFRB"          "Pdl.1"            "PDPN"
[157] "PECAM1"           "ppara"            "pparg"            "ppargc1a"
[161] "PPY"               "pten"             "PTGS2"            "PTK2"
[165] "Rsad2"             "RSP01"            "SELE"             "SFRP1"
[169] "Socs3"             "SPP1"             "SST"              "Stat1"
[173] "Stat3"             "Stat4"             "Stat5"            "Tbx21"
[177] "TEK"               "TGFB1"            "Tgfbr2"           "TIMP1"
[181] "TIMP2"             "TLR3"              "TLR4"              "TLR7"
[185] "TLR9"              "TNC"              "tnf"              "Tnfaip3"
[189] "tnfrsf1a"          "tnfrsf1b"          "TNFSF11"          "Traf2"
[193] "Vav1"              "VCAM1"            "VEGFA"            "VEGFB"
[197] "WNT2B"             "WNT4"              "Zap70"            "ZAP70"
[201] "Zeb2"

[1] "The values in lenghtofkmeans is: 9"
[1] "The length of lengthofkmeans object is 1"
[1] "When heatmapfactor is set to 'kmeans.cluster', the first column being pulled is kmeans.cluster"
[1] "Value laoded into idCols: 9 which corresponds to column kmeans.cluster. The second to last column :"
[1] "cellSource"          "probe"            "age"              "patient"
[5] "SPA"                 "SPAM"             "SPAMcell"         "cellType"
[9] "kmeans.cluster"      "ACTA2"            "ACVR1"           "ADGRE1"

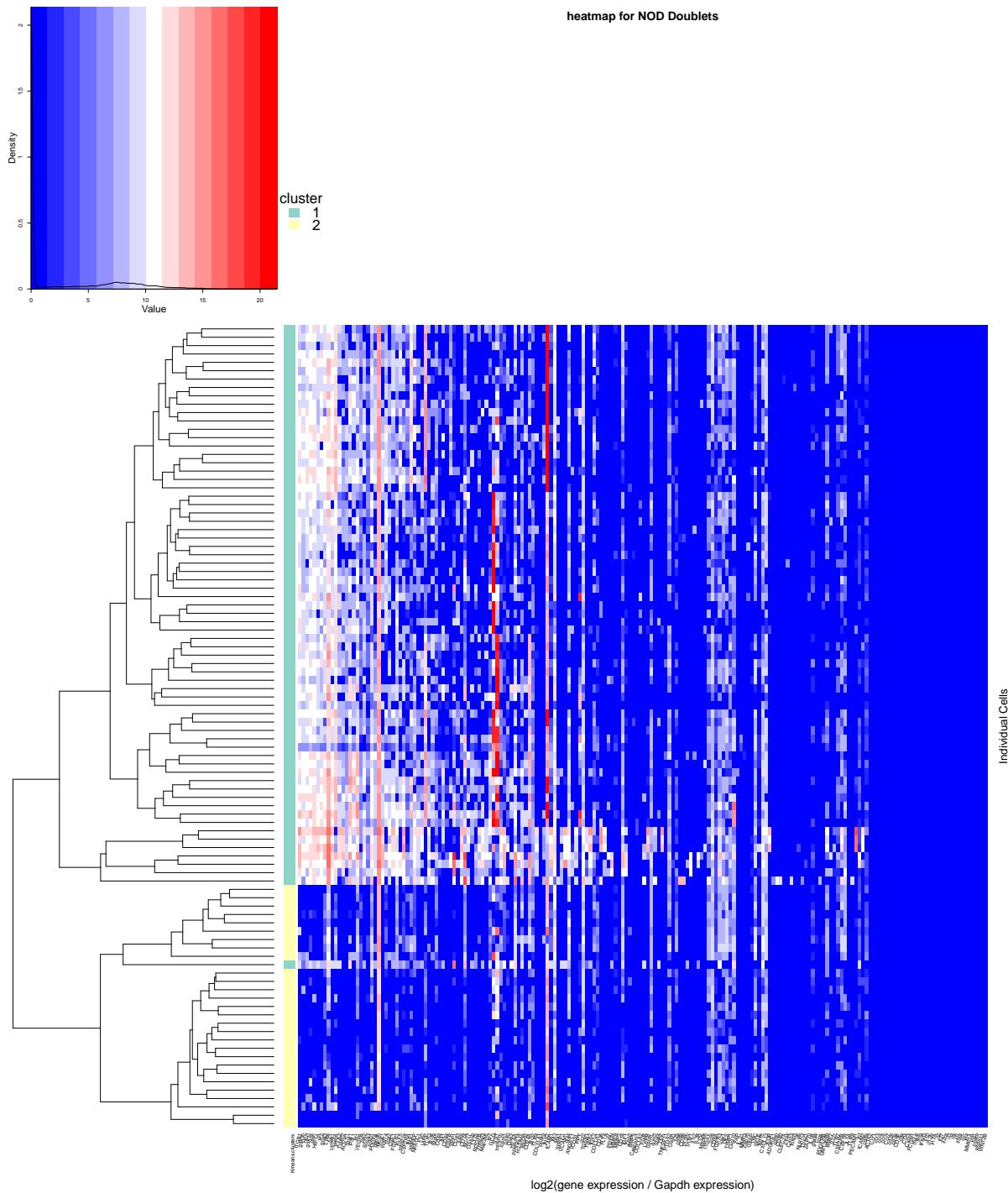
```

|       |            |            |           |            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-------|------------|------------|-----------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| [13]  | "Aim2"     | "ANGPT1"   | "ANPEP"   | "Bcl2"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [17]  | "Bcl6"     | "BMP5"     | "BMP7"    | "Ccr1"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [21]  | "ccr2"     | "ccr3"     | "ccr4"    | "ccr5"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [25]  | "ccr6"     | "Ccr7"     | "CD14"    | "CD24A"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [29]  | "cd28"     | "CD36"     | "cd3e"    | "CD3E"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [33]  | "cd4"      | "CD4"      | "cd40"    | "Cd44"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [37]  | "CD44"     | "CD74"     | "cd80"    | "CD80"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [41]  | "CD83"     | "cd86"     | "CD86"    | "cd8a"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [45]  | "CD8A"     | "Ceacam1"  | "CLEC7A"  | "COL11A1"  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [49]  | "COL1A1"   | "COL1A2"   | "CSF1"    | "CSF1R"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [53]  | "CSF2RA"   | "CSF2RB"   | "ctla4"   | "Cxcl10"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [57]  | "CXCL13"   | "Cxcr3"    | "Cxcr4"   | "DES"      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [61]  | "EGFR"     | "FAP"      | "FCGR1"   | "FGFR1"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [65]  | "FGFR3"    | "FGR"      | "FLT4"    | "foxp3"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [69]  | "Fyn"      | "gapdh"    | "gata4"   | "GCG"      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [73]  | "GFAP"     | "GHRL"     | "GM13889" | "gsk3a"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [77]  | "gsk3b"    | "H2.AA"    | "H2.DMA"  | "HIF1A"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [81]  | "Hprt"     | "IAPP"     | "icam1"   | "ICAM1"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [85]  | "ICAM2"    | "Icos"     | "ICOSL"   | "Ifi44"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [89]  | "Ifi441"   | "Ifit1"    | "Ifit3"   | "ifng"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [93]  | "IFNG"     | "Ifngr1"   | "IGF1"    | "IGF2"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [97]  | "IL.21"    | "il10"     | "il12b"   | "Il12rb"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [101] | "il17A"    | "Il18r1"   | "IL1A"    | "IL1B"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [105] | "il1r2"    | "il2"      | "il25"    | "Il27"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [109] | "Il27r"    | "il2ra"    | "il3"     | "IL34"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [113] | "il4"      | "il4ra"    | "il5"     | "il5ra"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [117] | "il6"      | "il7"      | "il7r"    | "INS1"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [121] | "INS2"     | "Irf1"     | "Irf2"    | "Irf4"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [125] | "Irf7"     | "Isg15"    | "ITGAX"   | "ITGB1"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [129] | "Jak1"     | "Jak2"     | "KDR"     | "KLF5"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [133] | "LCK"      | "LEPR"     | "Ly6e"    | "LY75"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [137] | "Map2k6"   | "Mapk8"    | "MMP1A"   | "MMP2"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [141] | "MMP3"     | "MMP9"     | "Mx1"     | "NFATC1"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [145] | "nfbk1"    | "NLRP3"    | "Nur77"   | "Oas1b"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [149] | "Oas2"     | "Oas1l"    | "Pd1"     | "PDGFA"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [153] | "PDGFB"    | "PDGFRB"   | "Pdl.1"   | "PDPN"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [157] | "PECAM1"   | "ppara"    | "pparg"   | "ppargc1a" |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [161] | "PPY"      | "pten"     | "PTGS2"   | "PTK2"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [165] | "Rsad2"    | "RSP01"    | "SELE"    | "SFRP1"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [169] | "Socs3"    | "SPP1"     | "SST"     | "Stat1"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [173] | "Stat3"    | "Stat4"    | "Stat5"   | "Tbx21"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [177] | "TEK"      | "TGFB1"    | "Tgfbr2"  | "TIMP1"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [181] | "TIMP2"    | "TLR3"     | "TLR4"    | "TLR7"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [185] | "TLR9"     | "TNC"      | "tnf"     | "Tnfaip3"  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [189] | "tnfrsf1a" | "tnfrsf1b" | "TNFSF11" | "Traf2"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [193] | "Vav1"     | "VCAM1"    | "VEGFA"   | "VEGFB"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [197] | "WNT2B"    | "WNT4"     | "Zap70"   | "ZAP70"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [201] | "Zeb2"     |            |           |            |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [1]   | 119        | 68         | 72        | 67         | 153 | 71  | 114 | 164 | 126 | 120 | 186 | 155 | 172 | 2   | 163 | 146 | 113 | 187 |
| [19]  | 121        | 160        | 136       | 143        | 61  | 85  | 189 | 183 | 42  | 55  | 123 | 180 | 44  | 111 | 6   | 135 | 60  | 73  |
| [37]  | 173        | 8          | 166       | 27         | 81  | 28  | 52  | 161 | 32  | 105 | 29  | 138 | 139 | 127 | 144 | 179 | 128 | 116 |
| [55]  | 63         | 162        | 181       | 74         | 26  | 140 | 69  | 151 | 70  | 156 | 19  | 7   | 174 | 39  | 150 | 112 | 75  | 82  |
| [73]  | 134        | 159        | 185       | 79         | 5   | 78  | 152 | 12  | 169 | 170 | 87  | 40  | 21  | 58  | 109 | 147 | 133 | 131 |
| [91]  | 18         | 86         | 192       | 9          | 37  | 41  | 57  | 125 | 65  | 4   | 165 | 168 | 182 | 154 | 141 | 98  | 33  | 34  |

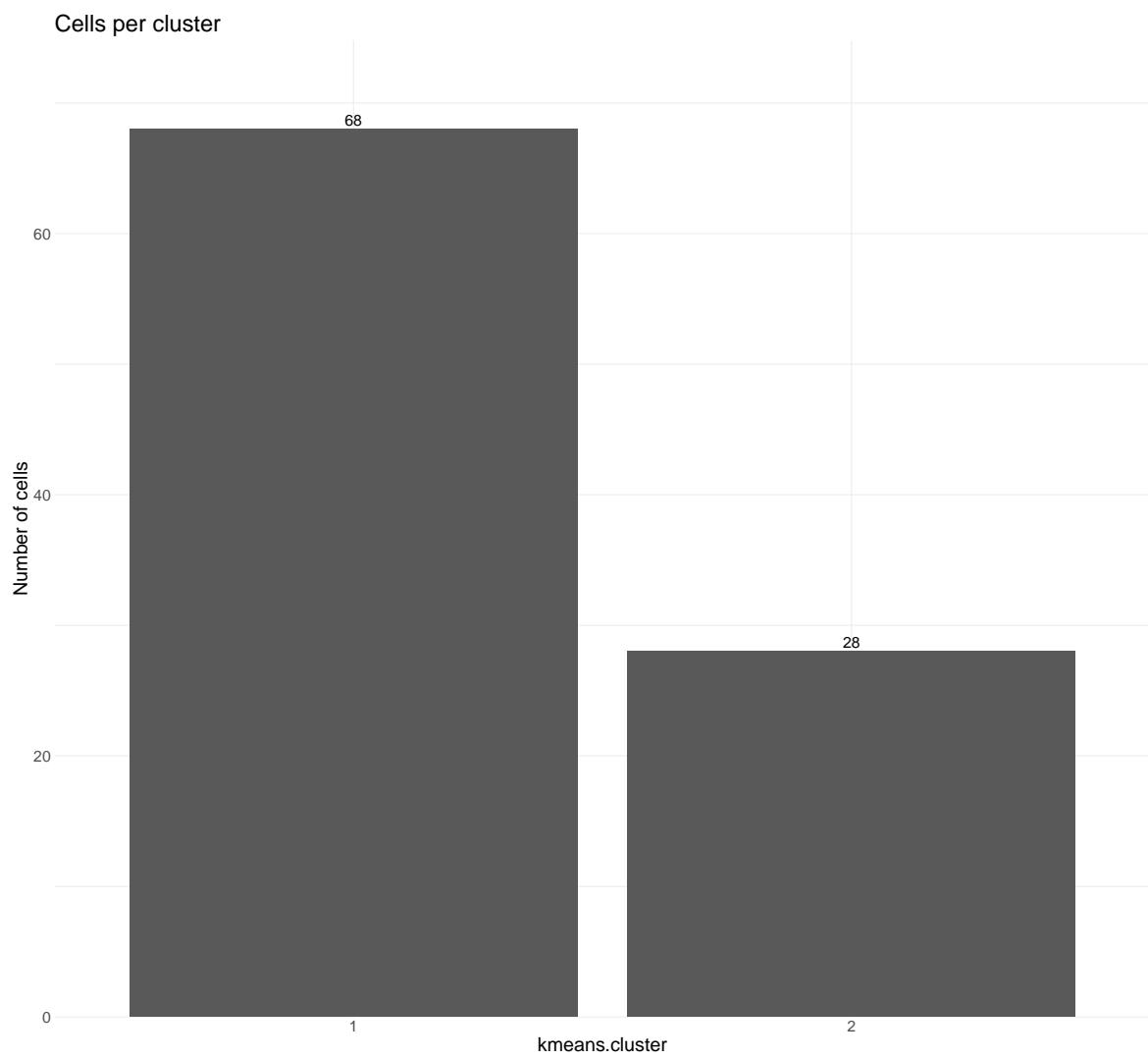
```

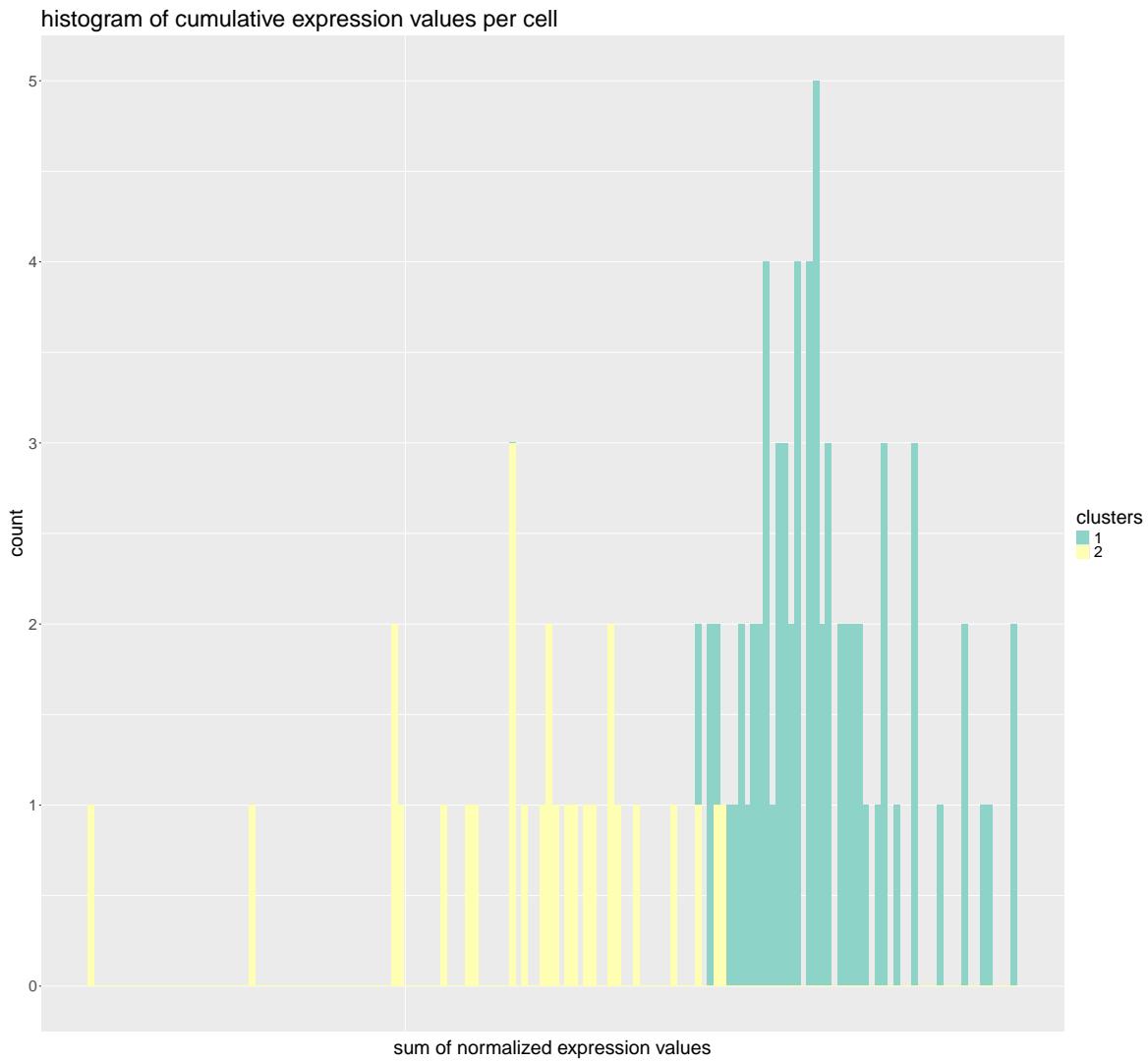
[109]  91  93  96 103 124 129 118  16  36  56 184  51 171  47  53  88 132 190
[127]  64 177 158 117  48 122   3  30  31  38  46  49  59 108 137 167 191  95
[145]  62  77 145  66  10 100 175  45  43  94 176 148 178  76  35   1  11  13
[163]  14  15  17  20  22  23  24  25  50  54  80  83  84  89  90  92  97  99
[181] 101 102 104 106 107 110 115 130 142 149 157 188
[1] "Length of pvals is 192"
  uniqueAges      colorsList
  "islets" "deepskyblue2"
 [,1]      [,2]
[1,] "islets" "deepskyblue2"
uniqueSources      colorsList
  "tissue"          NA
[1] "The value in idCols is 9 which should be the 'kmeans' column"
[1] "The value in  and the first column for the heatmap is ITGB1. The last gene is: WNT2B"
chr [1:96, 1] "#FFFFB3" "#FFFFB3" "#FFFFB3" "#FFFFB3" "#FFFFB3" "#FFFFB3" ...
- attr(*, "dimnames")=List of 2
..$ : NULL
..$ : chr "Kmeans.clusters"

```



```
Cells per Cluster
    n_cells
cluster_1      68
cluster_2      28
```





```
[1] "Column Names are: "
[1] "cellSource"      "probe"          "age"           "patient"
[5] "SPA"             "SPAM"            "SPAMcell"       "cellType"
[9] "kmeans.cluster" "ITGB1"           "gsk3b"          "Hprt"
[13] "gsk3a"           "pten"            "HIF1A"          "Irf2"
[17] "Stat3"            "Ly6e"            "Jak1"           "VEGFA"
[21] "PTK2"             "TIMP2"           "ACVR1"          "Stat1"
[25] "Pdl.1"            "Irf1"            "VEGFB"          "Jak2"
```

```

[29] "Socs3"           "nfbk1"           "PDGFA"           "gapdh"
[33] "Ifngr1"          "WNT4"            "Traf2"            "CSF1"
[37] "FGFR1"           "KLF5"            "tnfrsf1a"         "CSF2RA"
[41] "INS1"             "ANPEP"           "NFATC1"           "Fyn"
[45] "IAPP"              "TLR3"            "Bc16"             "Stat5"
[49] "Cd44"              "Ifit1"            "CD44"             "EGFR"
[53] "SPP1"              "CD83"            "il4ra"            "CD74"
[57] "Nur77"             "Oas1b"           "LY75"             "PDGFB"
[61] "Tnfaip3"          "Map2k6"           "Irf7"             "GCG"
[65] "SST"               "tnfrsf1b"         "icam1"            "cd40"
[69] "Oas2"              "H2.AA"            "ppargc1a"         "H2.DMA"
[73] "Rsad2"             "CD24A"            "Bc12"             "TLR4"
[77] "COL11A1"           "pparg"            "INS2"             "ICAM1"
[81] "Ifit3"              "Mx1"              "SFRP1"            "VCAM1"
[85] "Ifi44"              "ANGPT1"           "ICOSL"            "PPY"
[89] "ccr2"               "TGFB1"            "Tgfbr2"           "IGF2"
[93] "COL1A1"             "CD36"             "FLT4"             "i17"
[97] "PDPN"              "MMP9"             "MMP2"             "CD14"
[101] "IGF1"              "Zeb2"             "BMP5"             "Ceacam1"
[105] "COL1A2"             "FGR"              "LEPR"             "GHRL"
[109] "Aim2"              "Stat4"            "TEK"              "TNFSF11"
[113] "PTGS2"             "Oas1l"            "il25"             "cd86"
[117] "CD86"              "Il12rb"           "Il18r1"           "il1r2"
[121] "IL34"              "LCK"              "Mapk8"            "ITGAX"
[125] "ccr6"              "CD8A"             "FGFR3"            "Vav1"
[129] "DES"                "TIMP1"            "Cxcl10"           "FAP"
[133] "IL.21"              "MMP3"             "Zap70"            "GFAP"
[137] "TNC"                "SELE"             "Isg15"            "CXCL13"
[141] "KDR"                "ADGRE1"           "cd80"             "CD80"
[145] "CLEC7A"             "ctl4"             "Cxcr3"            "foxp3"
[149] "il6"                "NLRP3"            "Tbx21"            "ZAP70"
[153] "IL1B"                "gata4"            "Icos"             "PDGFRB"
[157] "GM13889"            "BMP7"             "Il27r"            "TLR7"
[161] "CSF2RB"             "CSF1R"            "IL1A"              "TLR9"
[165] "PECAM1"             "tnf"              "ICAM2"            "cd8a"
[169] "ACTA2"              "Ccr1"             "CCR3"             "CCR4"
[173] "ccr5"              "Ccr7"             "cd28"             "cd3e"
[177] "CD3E"              "cd4"              "CD4"              "Cxcr4"
[181] "FCGR1"              "Ifi441"           "ifng"             "IFNG"
[185] "il10"              "il12b"            "il17A"            "il2"
[189] "Il27"              "il2ra"            "il3"              "il4"
[193] "il5"              "il5ra"            "il7r"             "Irf4"
[197] "MMP1A"              "Pd1"              "ppara"            "RSP01"
[201] "WNT2B"

[1] TRUE
[1] FALSE
[1] TRUE
[1] FALSE
[1] "The panel determined in the 'Panel Detection' tests, in the 'clusterFilter.R' script, is 1"
[1] "Warning! The panel detected and the panel number input by the user are not the same!"


```

```

[1] "cellSource"        "probe"           "age"              "patient"
[5] "SPA"               "SPAM"            "SPAMcell"         "cellType"
[9] "kmeans.cluster"    "ITGB1"           "gsk3b"            "Hprt"

```

```

[13] "gsk3a"          "pten"           "HIF1A"          "Irf2"
[17] "Stat3"           "Ly6e"            "Jak1"            "VEGFA"
[21] "PTK2"             "TIMP2"           "ACVR1"          "Stat1"
[25] "Pdl.1"            "Irf1"            "VEGFB"          "Jak2"
[29] "Socs3"            "nfkcb1"          "PDGFA"          "gapdh"
[33] "Ifngr1"           "WNT4"            "Traf2"           "CSF1"
[37] "FGFR1"            "KLF5"            "tnfrsf1a"        "CSF2RA"
[41] "INS1"              "ANPEP"           "NFATC1"          "Fyn"
[45] "IAPP"              "TLR3"            "Bc16"            "Stat5"
[49] "Cd44"              "Ifit1"            "CD44"            "EGFR"
[53] "SPP1"              "CD83"            "il4ra"           "CD74"
[57] "Nur77"             "Oas1b"           "LY75"            "PDGFB"
[61] "Tnfaip3"           "Map2k6"           "Irf7"            "GCG"
[65] "SST"               "tnfrsf1b"         "icam1"           "cd40"
[69] "Oas2"              "H2.AA"            "ppargc1a"        "H2.DMA"
[73] "Rsad2"             "CD24A"            "Bc12"            "TLR4"
[77] "COL11A1"            "pparg"            "INS2"            "ICAM1"
[81] "Ifit3"              "Mx1"              "SFRP1"           "VCAM1"
[85] "Ifi44"              "ANGPT1"           "ICOSL"           "PPY"
[89] "ccr2"              "TGFB1"            "Tgfbr2"          "IGF2"
[93] "COL1A1"             "CD36"             "FLT4"            "i17"
[97] "PDPN"              "MMP9"             "MMP2"            "CD14"
[101] "IGF1"              "Zeb2"             "BMP5"            "Ceacam1"
[105] "COL1A2"             "FGR"              "LEPR"            "GHRL"
[109] "Aim2"              "Stat4"            "TEK"              "TNFSF11"
[113] "PTGS2"             "Oasl1"            "il25"            "cd86"
[117] "CD86"              "Il12rb"           "Il18r1"          "il1r2"
[121] "IL34"              "LCK"              "Mapk8"            "ITGAX"
[125] "ccr6"              "CD8A"             "FGFR3"           "Vav1"
[129] "DES"                "TIMP1"            "Cxcl10"          "FAP"
[133] "IL.21"              "MMP3"             "Zap70"            "GFAP"
[137] "TNC"                "SELE"             "Isg15"            "CXCL13"
[141] "KDR"                "ADGRE1"           "cd80"            "CD80"
[145] "CLEC7A"             "ctla4"            "Cxcr3"           "foxp3"
[149] "il6"                "NLRP3"            "Tbx21"            "ZAP70"
[153] "IL1B"              "gata4"            "Icos"            "PDGFRB"
[157] "GM13889"            "BMP7"             "Il27r"            "TLR7"
[161] "CSF2RB"             "CSF1R"            "IL1A"             "TLR9"
[165] "PECAM1"             "tnf"              "ICAM2"           "cd8a"
[169] "ACTA2"              "Ccr1"             "CCR3"            "CCR4"
[173] "ccr5"              "Ccr7"             "cd28"            "cd3e"
[177] "CD3E"              "cd4"              "CD4"              "Cxcr4"
[181] "FCGR1"              "Ifi441"           "ifng"            "IFNG"
[185] "il10"              "il12b"            "il17A"            "il2"
[189] "Il27"              "il2ra"            "il3"              "il4"
[193] "il5"              "il5ra"            "il7r"            "Irf4"
[197] "MMP1A"              "Pd1"              "ppara"           "RSPO1"
[201] "WNT2B"

[1] "Which genes are dashed in the panel? IL-21 Pdl-1"
[1] "Test 1 is FALSE"
[1] "Test 2 is FALSE"
[1] "Test1and2 is FALSE"
[1] "Test3 is FALSE"
[1] "The first column you'll pull is: ITGB1"

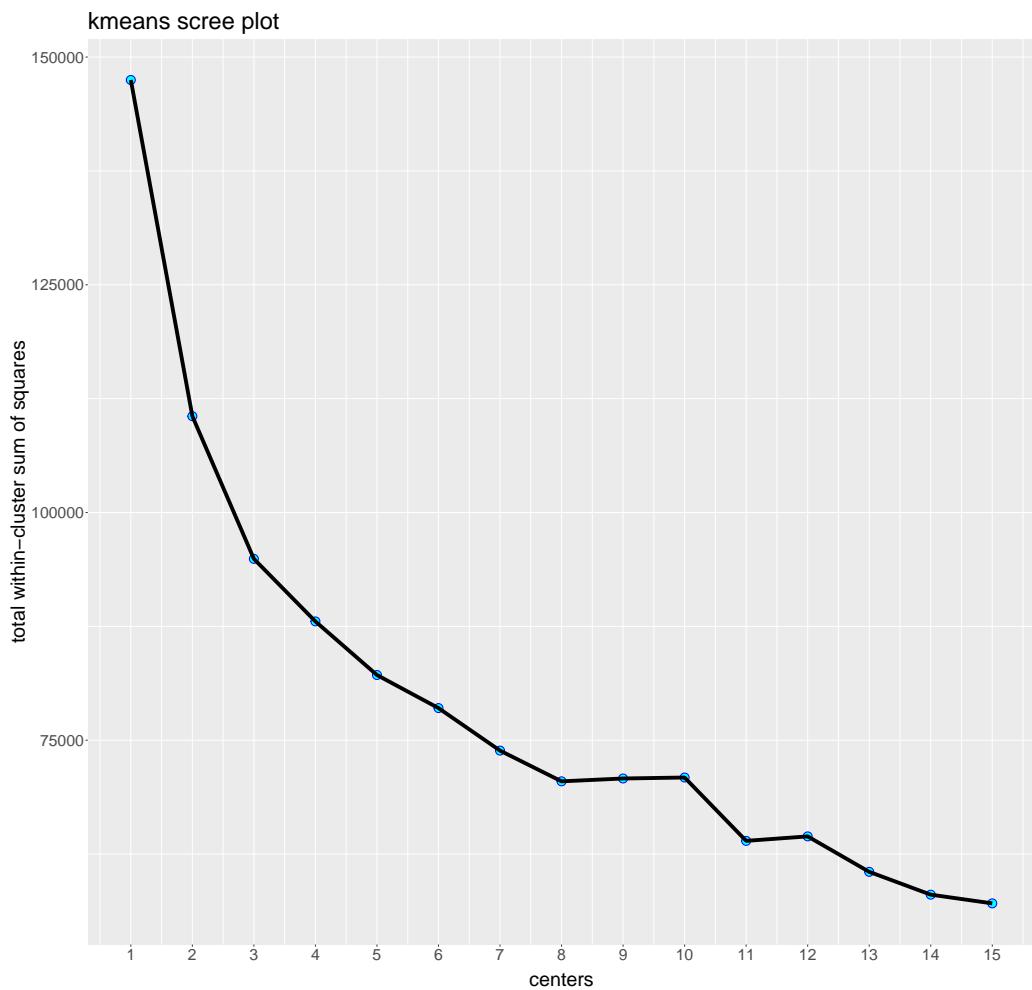
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[1] "The last column you'll pull is: WNT2B"
[1] "ITGB1"    "gsk3b"    "Hprt"     "gsk3a"    "pten"      "HIF1A"
[7] "Irf2"     "Stat3"    "Ly6e"     "Jak1"     "VEGFA"    "PTK2"
[13] "TIMP2"    "ACVR1"    "Stat1"    "Pdl-1"    "Irf1"     "VEGFB"
[19] "Jak2"     "Socs3"    "nfbk1"    "PDGFA"    "gapdh"    "Ifngr1"
[25] "WNT4"     "Traf2"    "CSF1"     "FGFR1"    "KLF5"     "tnfrsf1a"
[31] "CSF2RA"   "INS1"     "ANPEP"    "NFATC1"   "Fyn"      "IAPP"
[37] "TLR3"     "Bcl6"     "Stat5"    "Cd44"     "Ifit1"    "CD44"
[43] "EGFR"     "SPP1"     "CD83"     "il4ra"    "CD74"     "Nur77"
[49] "Oas1b"    "LY75"     "PDGFB"    "Tnfaip3"  "Map2k6"   "Irf7"
[55] "GCG"      "SST"      "tnfrsf1b" "icam1"    "cd40"    "Oas2"
[61] "H2.AA"    "ppargc1a" "H2.DMA"   "Rsad2"    "CD24A"   "Bcl2"
[67] "TLR4"     "COL11A1"   "pparg"    "INS2"     "ICAM1"   "Ifit3"
[73] "Mx1"      "SFRP1"    "VCAM1"    "Ifi44"    "ANGPT1"  "ICOSL"
[79] "PPY"      "ccr2"     "TGFB1"    "Tgfbr2"   "IGF2"    "COL1A1"
[85] "CD36"     "FLT4"     "il7"      "PDPM"    "MMP9"    "MMP2"
[91] "CD14"     "IGF1"     "Zeb2"     "BMP5"    "Ceacam1" "COL1A2"
[97] "FGR"      "LEPR"     "GHRL"     "Aim2"    "Stat4"   "TEK"
[103] "TNFSF11" "PTGS2"    "Oasl1"    "il25"    "cd86"    "CD86"
[109] "Il11rb"   "Il18r1"   "il1r2"    "IL34"    "LCK"     "Mapk8"
[115] "ITGAX"    "ccr6"     "CD8A"     "FGFR3"   "Vav1"    "DES"
[121] "TIMP1"    "Cxcl10"   "FAP"      "IL-21"    "MMP3"    "Zap70"
[127] "GFAP"     "TNC"      "SELE"     "Isg15"   "CXCL13"  "KDR"
[133] "ADGRE1"  "cd80"     "CD80"     "CLEC7A"  "ctla4"   "Cxcr3"
[139] "foxp3"   "il6"      "NLRP3"    "Tbx21"   "ZAP70"   "IL1B"
[145] "gata4"   "Icos"     "PDGFRB"   "GM13889" "BMP7"    "Il27r"
[151] "TLR7"     "CSF2RB"   "CSF1R"    "IL1A"    "TLR9"    "PECAM1"
[157] "tnf"      "ICAM2"    "cd8a"     "ACTA2"   "Ccr1"    "ccr3"
[163] "ccr4"     "ccr5"     "Ccr7"     "cd28"    "cd3e"    "CD3E"
[169] "cd4"      "CD4"      "Cxcr4"   "FCGR1"   "Ifi44l"  "ifng"
[175] "IFNG"     "il10"     "il12b"    "il17A"   "il2"     "Il27"
[181] "il2ra"   "il3"      "il4"      "il5"     "il5ra"   "il7r"
[187] "Irf4"     "MMP1A"    "Pd1"      "ppara"   "RSP01"   "WNT2B"
[1] "PanelNumber equals: 1 . Columns to be sent for kmeans testing: ITGB1 and WNT2B"
[1] "Column names after searching for the column pattern and after selecting the right columns. The fol
[1] "ITGB1"    "gsk3b"    "Hprt"     "gsk3a"    "pten"      "HIF1A"
[7] "Irf2"     "Stat3"    "Ly6e"     "Jak1"     "VEGFA"    "PTK2"
[13] "TIMP2"    "ACVR1"    "Stat1"    "Pdl-1"    "Irf1"     "VEGFB"
[19] "Jak2"     "Socs3"    "nfbk1"    "PDGFA"    "gapdh"    "Ifngr1"
[25] "WNT4"     "Traf2"    "CSF1"     "FGFR1"    "KLF5"     "tnfrsf1a"
[31] "CSF2RA"   "INS1"     "ANPEP"    "NFATC1"   "Fyn"      "IAPP"
[37] "TLR3"     "Bcl6"     "Stat5"    "Cd44"     "Ifit1"    "CD44"
[43] "EGFR"     "SPP1"     "CD83"     "il4ra"    "CD74"     "Nur77"
[49] "Oas1b"    "LY75"     "PDGFB"    "Tnfaip3"  "Map2k6"   "Irf7"
[55] "GCG"      "SST"      "tnfrsf1b" "icam1"    "cd40"    "Oas2"
[61] "H2.AA"    "ppargc1a" "H2.DMA"   "Rsad2"    "CD24A"   "Bcl2"
[67] "TLR4"     "COL11A1"   "pparg"    "INS2"     "ICAM1"   "Ifit3"
[73] "Mx1"      "SFRP1"    "VCAM1"    "Ifi44"    "ANGPT1"  "ICOSL"
[79] "PPY"      "ccr2"     "TGFB1"    "Tgfbr2"   "IGF2"    "COL1A1"
[85] "CD36"     "FLT4"     "il7"      "PDPM"    "MMP9"    "MMP2"
[91] "CD14"     "IGF1"     "Zeb2"     "BMP5"    "Ceacam1" "COL1A2"
[97] "FGR"      "LEPR"     "GHRL"     "Aim2"    "Stat4"   "TEK"
[103] "TNFSF11" "PTGS2"    "Oasl1"    "il25"    "cd86"    "CD86"
[109] "Il11rb"   "Il18r1"   "il1r2"    "IL34"    "LCK"     "Mapk8"

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|       |          |          |          |           |          |          |
|-------|----------|----------|----------|-----------|----------|----------|
| [115] | "ITGAX"  | "ccr6"   | "CD8A"   | "FGFR3"   | "Vav1"   | "DES"    |
| [121] | "TIMP1"  | "Cxcl10" | "FAP"    | "IL-21"   | "MMP3"   | "Zap70"  |
| [127] | "GFAP"   | "TNC"    | "SELE"   | "Isg15"   | "CXCL13" | "KDR"    |
| [133] | "ADGRE1" | "cd80"   | "CD80"   | "CLEC7A"  | "ctla4"  | "Cxcr3"  |
| [139] | "foxp3"  | "il6"    | "NLRP3"  | "Tbx21"   | "ZAP70"  | "IL1B"   |
| [145] | "gata4"  | "Icos"   | "PDGFRB" | "GM13889" | "BMP7"   | "Il27r"  |
| [151] | "TLR7"   | "CSF2RB" | "CSF1R"  | "IL1A"    | "TLR9"   | "PECAM1" |
| [157] | "tnf"    | "ICAM2"  | "cd8a"   | "ACTA2"   | "Ccr1"   | "ccr3"   |
| [163] | "ccr4"   | "ccr5"   | "Ccr7"   | "cd28"    | "cd3e"   | "CD3E"   |
| [169] | "cd4"    | "CD4"    | "Cxcr4"  | "FCGR1"   | "Ifi44l" | "ifng"   |
| [175] | "IFNG"   | "il10"   | "il12b"  | "il17A"   | "il2"    | "Il27"   |
| [181] | "il2ra"  | "il3"    | "il4"    | "il5"     | "il5ra"  | "il7r"   |
| [187] | "Irf4"   | "MMP1A"  | "Pd1"    | "ppara"   | "RSP01"  | "WNT2B"  |



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[1] "Column Names for ctClust after adding the 'normFit$cluster' to the dataframe are: "
[1] "cellSource"      "probe"          "age"            "patient"
[5] "SPA"             "SPAM"           "SPAMcell"       "cellType"
[9] "kmeans.cluster"  "ITGB1"          "gsk3b"          "Hprt"
[13] "gsk3a"           "pten"           "HIF1A"          "Irf2"
[17] "Stat3"           "Ly6e"           "Jak1"           "VEGFA"
[21] "PTK2"            "TIMP2"          "ACVR1"          "Stat1"
[25] "Pdl-1"           "Irf1"           "VEGFB"          "Jak2"
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[29] "Socs3"           "nfbk1"          "PDGFA"          "gapdh"
[33] "Ifngr1"          "WNT4"           "Traf2"          "CSF1"
[37] "FGFR1"           "KLF5"           "tnfrsf1a"       "CSF2RA"
[41] "INS1"            "ANPEP"          "NFATC1"         "Fyn"
[45] "IAPP"             "TLR3"           "Bcl6"           "Stat5"
[49] "Cd44"             "Ifit1"          "CD44"           "EGFR"
[53] "SPP1"             "CD83"           "il4ra"          "CD74"
[57] "Nur77"            "Oas1b"          "LY75"           "PDGFB"
[61] "Tnfaip3"          "Map2k6"          "Irf7"           "GCG"
[65] "SST"              "tnfrsf1b"        "icam1"          "cd40"
[69] "Oas2"              "H2.AA"          "ppargc1a"       "H2.DMA"
[73] "Rsad2"            "CD24A"          "Bcl2"           "TLR4"
[77] "COL11A1"          "pparg"          "INS2"           "ICAM1"
[81] "Ifit3"             "Mx1"            "SFRP1"          "VCAM1"
[85] "Ifi44"             "ANGPT1"         "ICOSL"          "PPY"
[89] "ccr2"              "TGFB1"          "Tgfbr2"         "IGF2"
[93] "COL1A1"            "CD36"           "FLT4"           "i17"
[97] "PDPN"              "MMP9"           "MMP2"           "CD14"
[101] "IGF1"              "Zeb2"           "BMP5"           "Ceacam1"
[105] "COL1A2"            "FGR"            "LEPR"           "GHRL"
[109] "Aim2"              "Stat4"          "TEK"            "TNFSF11"
[113] "PTGS2"             "Oasl1"          "il25"           "cd86"
[117] "CD86"              "Il12rb"         "Il18r1"         "il1r2"
[121] "IL34"              "LCK"            "Mapk8"          "ITGAX"
[125] "ccr6"              "CD8A"           "FGFR3"          "Vav1"
[129] "DES"                "TIMP1"          "Cxcl10"         "FAP"
[133] "IL-21"              "MMP3"           "Zap70"          "GFAP"
[137] "TNC"                "SELE"           "Isg15"          "CXCL13"
[141] "KDR"                "ADGRE1"         "cd80"           "CD80"
[145] "CLEC7A"             "ctla4"          "Cxcr3"          "foxp3"
[149] "il6"                "NLRP3"          "Tbx21"          "ZAP70"
[153] "IL1B"                "gata4"          "Icos"           "PDGFRB"
[157] "GM13889"            "BMP7"           "Il27r"          "TLR7"
[161] "CSF2RB"             "CSF1R"          "IL1A"           "TLR9"
[165] "PECAM1"             "tnf"            "ICAM2"          "cd8a"
[169] "ACTA2"              "Ccr1"           "CCR3"           "CCR4"
[173] "ccr5"              "Ccr7"           "cd28"          "cd3e"
[177] "CD3E"                "cd4"            "CD4"            "Cxcr4"
[181] "FCGR1"              "Ifi44l"         "ifng"           "IFNG"
[185] "il10"                "il12b"          "il17A"          "il2"
[189] "Il27"                "il2ra"          "il3"            "il4"
[193] "il5"                 "il5ra"          "il7r"           "Irf4"
[197] "MMP1A"              "Pd1"            "ppara"          "RSP01"
[201] "WNT2B"              "normFit$cluster"
[1] "Column Numbers for ctClust after moving around the columns:"
[1] "cellSource"          "probe"          "age"            "patient"
[5] "SPA"                  "SPAM"           "SPAMcell"       "cellType"
[9] "kmeans.cluster"      "ITGB1"          "gsk3b"          "Hprt"
[13] "gsk3a"                "pten"           "HIF1A"          "Irf2"
[17] "Stat3"                "Ly6e"            "Jak1"           "VEGFA"
[21] "PTK2"                 "TIMP2"          "ACVR1"          "Stat1"
[25] "Pdl-1"                "Irf1"            "VEGFB"          "Jak2"
[29] "Socs3"                "nfbk1"          "PDGFA"          "gapdh"
[33] "Ifngr1"              "WNT4"           "Traf2"          "CSF1"

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[37] "FGFR1"           "KLF5"           "tnfrsf1a"        "CSF2RA"
[41] "INS1"             "ANPEP"          "NFATC1"          "Fyn"
[45] "IAPP"              "TLR3"            "Bc16"            "Stat5"
[49] "Cd44"              "Ifit1"           "CD44"            "EGFR"
[53] "SPP1"              "CD83"            "il4ra"           "CD74"
[57] "Nur77"             "Oas1b"           "LY75"            "PDGFB"
[61] "Tnfaip3"           "Map2k6"          "Irf7"             "GCG"
[65] "SST"               "tnfrsf1b"        "icam1"           "cd40"
[69] "Oas2"              "H2.AA"           "ppargc1a"        "H2.DMA"
[73] "Rsad2"             "CD24A"           "Bc12"            "TLR4"
[77] "COL11A1"           "pparg"           "INS2"            "ICAM1"
[81] "Ifit3"              "Mx1"             "SFRP1"           "VCAM1"
[85] "Ifi44"              "ANGPT1"          "ICOSL"           "PPY"
[89] "ccr2"               "TGFBI"           "Tgfbr2"          "IGF2"
[93] "COL1A1"             "CD36"            "FLT4"            "i17"
[97] "PDPN"               "MMP9"            "MMP2"            "CD14"
[101] "IGF1"              "Zeb2"            "BMP5"            "Ceacam1"
[105] "COL1A2"             "FGR"             "LEPR"            "GHRL"
[109] "Aim2"               "Stat4"           "TEK"             "TNFSF11"
[113] "PTGS2"              "Oas11"           "il25"            "cd86"
[117] "CD86"               "Il12rb"          "Il18r1"          "il1r2"
[121] "IL34"               "LCK"             "Mapk8"           "ITGAX"
[125] "ccr6"               "CD8A"            "FGFR3"           "Vav1"
[129] "DES"                 "TIMP1"           "Cxcl10"          "FAP"
[133] "IL-21"              "MMP3"            "Zap70"           "GFAP"
[137] "TNC"                 "SELE"            "Isg15"           "CXCL13"
[141] "KDR"                 "ADGRE1"          "cd80"            "CD80"
[145] "CLEC7A"              "ctla4"           "Cxcr3"           "foxp3"
[149] "il6"                  "NLRP3"           "Tbx21"           "ZAP70"
[153] "IL1B"                 "gata4"           "Icos"            "PDGFRB"
[157] "GM13889"             "BMP7"            "Il27r"            "TLR7"
[161] "CSF2RB"              "CSF1R"           "IL1A"             "TLR9"
[165] "PECAM1"              "tnf"             "ICAM2"           "cd8a"
[169] "ACTA2"               "Ccr1"            "CCR3"            "CCR4"
[173] "ccr5"                 "Ccr7"            "cd28"            "cd3e"
[177] "CD3E"                 "cd4"             "CD4"             "Cxcr4"
[181] "FCGR1"                "Ifi44l"          "ifng"            "IFNG"
[185] "il10"                  "il12b"           "Il117A"          "il2"
[189] "Il27"                  "il2ra"           "il3"             "il4"
[193] "il5"                  "il5ra"           "il7r"            "Irf4"
[197] "MMP1A"                 "Pd1"             "ppara"           "RSP01"
[201] "WNT2B"

[1] "The values in lenghtofkmeans is: 9"
[1] "The length of lengthofkmeans object is 1"
[1] "When heatmapfactor is set to 'kmeans.cluster', the first column being pulled is kmeans.cluster"
[1] "Value laoded into idCols: 9 which corresponds to column kmeans.cluster. The last column name is: W
[1] "cellSource"           "probe"           "age"             "patient"
[5] "SPA"                  "SPAM"            "SPAMcell"        "cellType"
[9] "kmeans.cluster"       "ITGB1"           "gsk3b"           "Hprt"
[13] "gsk3a"                 "pten"            "HIF1A"           "Irf2"
[17] "Stat3"                 "Ly6e"            "Jak1"            "VEGFA"
[21] "PTK2"                  "TIMP2"           "ACVR1"           "Stat1"
[25] "Pdl-1"                 "Irf1"            "VEGFB"           "Jak2"
[29] "Socs3"                 "nfkb1"           "PDGFA"           "gapdh"

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|       |           |            |            |           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-------|-----------|------------|------------|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| [33]  | "Ifngr1"  | "WNT4"     | "Traf2"    | "CSF1"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [37]  | "FGFR1"   | "KLF5"     | "tnfrsf1a" | "CSF2RA"  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [41]  | "INS1"    | "ANPEP"    | "NFATC1"   | "Fyn"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [45]  | "IAPP"    | "TLR3"     | "Bcl6"     | "Stat5"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [49]  | "Cd44"    | "Ifit1"    | "CD44"     | "EGFR"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [53]  | "SPP1"    | "CD83"     | "il4ra"    | "CD74"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [57]  | "Nur77"   | "Oas1b"    | "LY75"     | "PDGFB"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [61]  | "Tnfaip3" | "Map2k6"   | "Irf7"     | "GCG"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [65]  | "SST"     | "tnfrsf1b" | "icam1"    | "cd40"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [69]  | "Oas2"    | "H2.AA"    | "ppargc1a" | "H2.DMA"  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [73]  | "Rsad2"   | "CD24A"    | "Bcl2"     | "TLR4"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [77]  | "COL11A1" | "pparg"    | "INS2"     | "ICAM1"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [81]  | "Ifit3"   | "Mx1"      | "SFRP1"    | "VCAM1"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [85]  | "Ifi44"   | "ANGPT1"   | "ICOSL"    | "PPY"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [89]  | "ccr2"    | "TGFB1"    | "Tgfbr2"   | "IGF2"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [93]  | "COL1A1"  | "CD36"     | "FLT4"     | "il7"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [97]  | "PDPN"    | "MMP9"     | "MMP2"     | "CD14"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [101] | "IGF1"    | "Zeb2"     | "BMP5"     | "Ceacam1" |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [105] | "COL1A2"  | "FGR"      | "LEPR"     | "GHRL"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [109] | "Aim2"    | "Stat4"    | "TEK"      | "TNFSF11" |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [113] | "PTGS2"   | "Oasl1"    | "il25"     | "cd86"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [117] | "CD86"    | "Il12rb"   | "Il18r1"   | "il1r2"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [121] | "IL34"    | "LCK"      | "Mapk8"    | "ITGAX"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [125] | "ccr6"    | "CD8A"     | "FGFR3"    | "Vav1"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [129] | "DES"     | "TIMP1"    | "Cxcl10"   | "FAP"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [133] | "IL-21"   | "MMP3"     | "Zap70"    | "GFAP"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [137] | "TNC"     | "SELE"     | "Isg15"    | "CXCL13"  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [141] | "KDR"     | "ADGRE1"   | "cd80"     | "CD80"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [145] | "CLEC7A"  | "ctla4"    | "Cxcr3"    | "foxp3"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [149] | "il6"     | "NLRP3"    | "Tbx21"    | "ZAP70"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [153] | "IL1B"    | "gata4"    | "Icos"     | "PDGFRB"  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [157] | "GM13889" | "BMP7"     | "Il27r"    | "TLR7"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [161] | "CSF2RB"  | "CSF1R"    | "IL1A"     | "TLR9"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [165] | "PECAM1"  | "tnf"      | "ICAM2"    | "cd8a"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [169] | "ACTA2"   | "Ccr1"     | "ccr3"     | "ccr4"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [173] | "ccr5"    | "Ccr7"     | "cd28"     | "cd3e"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [177] | "CD3E"    | "cd4"      | "CD4"      | "Cxcr4"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [181] | "FCGR1"   | "Ifi44l"   | "ifng"     | "IFNG"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [185] | "il10"    | "il12b"    | "il17A"    | "il2"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [189] | "Il27"    | "il2ra"    | "il3"      | "il4"     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [193] | "il5"     | "il5ra"    | "il7r"     | "Irf4"    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [197] | "MMP1A"   | "Pd1"      | "ppara"    | "RSP01"   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [201] | "WNT2B"   |            |            |           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| [1]   | 1         | 2          | 3          | 4         | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  |
| [19]  | 19        | 20         | 21         | 22        | 23  | 24  | 25  | 26  | 27  | 28  | 29  | 30  | 31  | 32  | 33  | 34  | 35  | 36  |
| [37]  | 37        | 38         | 39         | 40        | 41  | 42  | 43  | 44  | 45  | 46  | 47  | 48  | 49  | 50  | 51  | 52  | 53  | 54  |
| [55]  | 55        | 56         | 57         | 58        | 59  | 60  | 61  | 62  | 63  | 64  | 65  | 66  | 67  | 68  | 69  | 70  | 71  | 72  |
| [73]  | 73        | 74         | 75         | 76        | 77  | 78  | 79  | 80  | 81  | 82  | 83  | 84  | 85  | 86  | 87  | 88  | 89  | 90  |
| [91]  | 91        | 92         | 93         | 94        | 95  | 96  | 97  | 98  | 99  | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 |
| [109] | 109       | 110        | 111        | 112       | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 |
| [127] | 127       | 128        | 129        | 130       | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 |
| [145] | 145       | 146        | 147        | 148       | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 |
| [163] | 163       | 164        | 165        | 166       | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 |
| [181] | 181       | 182        | 183        | 184       | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 |     |     |     |     |     |     |

```

[1] "Length of pvals is 192"
uniqueAges      colorsList
  "islets" "deepskyblue2"
 [,1]      [,2]
[1,] "islets" "deepskyblue2"
uniqueSources    colorsList
  "tissue"      NA
 [1] "cellSource"   "probe"      "age"        "patient"
 [5] "SPA"          "SPAM"       "SPAMcell"   "cellType"
 [9] "kmeans.cluster" "ITGB1"     "gsk3b"      "Hprt"
[13] "gsk3a"        "pten"       "HIF1A"      "Irf2"
[17] "Stat3"         "Ly6e"       "Jak1"       "VEGFA"
[21] "PTK2"          "TIMP2"      "ACVR1"      "Stat1"
[25] "Pdl-1"         "Irf1"       "VEGFB"      "Jak2"
[29] "Socs3"         "nfkb1"      "PDGFA"      "gapdh"
[33] "Ifngr1"        "WNT4"       "Traf2"      "CSF1"
[37] "FGFR1"         "KLF5"       "tnfrsf1a"   "CSF2RA"
[41] "INS1"          "ANPEP"      "NFATC1"     "Fyn"
[45] "IAPP"          "TLR3"       "Bc16"       "Stat5"
[49] "Cd44"          "Ifit1"      "CD44"       "EGFR"
[53] "SPP1"          "CD83"       "il4ra"      "CD74"
[57] "Nur77"          "Oas1b"      "LY75"       "PDGFB"
[61] "Tnfaip3"        "Map2k6"     "Irf7"       "GCG"
[65] "SST"            "tnfrsf1b"   "icam1"      "cd40"
[69] "Oas2"           "H2.AA"      "ppargc1a"   "H2.DMA"
[73] "Rsad2"          "CD24A"      "Bcl2"       "TLR4"
[77] "COL11A1"        "pparg"      "INS2"       "ICAM1"
[81] "Ifit3"          "Mx1"        "SFRP1"      "VCAM1"
[85] "Ifi44"          "ANGPT1"     "ICOSL"      "PPY"
[89] "ccr2"           "TGFB1"      "Tgfbr2"     "IGF2"
[93] "COL1A1"          "CD36"       "FLT4"       "il7"
[97] "PDPN"           "MMP9"       "MMP2"       "CD14"
[101] "IGF1"           "Zeb2"       "BMP5"       "Ceacam1"
[105] "COL1A2"          "FGR"        "LEPR"       "GHRL"
[109] "Aim2"           "Stat4"      "TEK"        "TNFSF11"
[113] "PTGS2"          "Oas11"      "il25"       "cd86"
[117] "CD86"           "Il12rb"     "Il18r1"     "il1r2"
[121] "IL34"           "LCK"        "Mapk8"      "ITGAX"
[125] "ccr6"           "CD8A"       "FGFR3"      "Vav1"
[129] "DES"             "TIMP1"      "Cxcl10"     "FAP"
[133] "IL-21"           "MMP3"       "Zap70"      "GFAP"
[137] "TNC"             "SELE"       "Isg15"      "CXCL13"
[141] "KDR"             "ADGRE1"    "cd80"       "CD80"
[145] "CLEC7A"          "ctla4"      "Cxcr3"     "foxp3"
[149] "il6"              "NLRP3"      "Tbx21"      "ZAP70"
[153] "IL1B"             "gata4"     "Icos"       "PDGFRB"
[157] "GM13889"         "BMP7"       "Il27r"      "TLR7"
[161] "CSF2RB"          "CSF1R"      "IL1A"       "TLR9"
[165] "PECAM1"          "tnf"        "ICAM2"      "cd8a"
[169] "ACTA2"           "Ccr1"       "CCR3"       "CCR4"
[173] "ccr5"           "Ccr7"       "cd28"       "cd3e"
[177] "CD3E"            "cd4"        "CD4"        "Cxcr4"
[181] "FCGR1"           "Ifi44l"     "ifng"       "IFNG"
[185] "il10"            "il12b"      "il17A"      "il2"

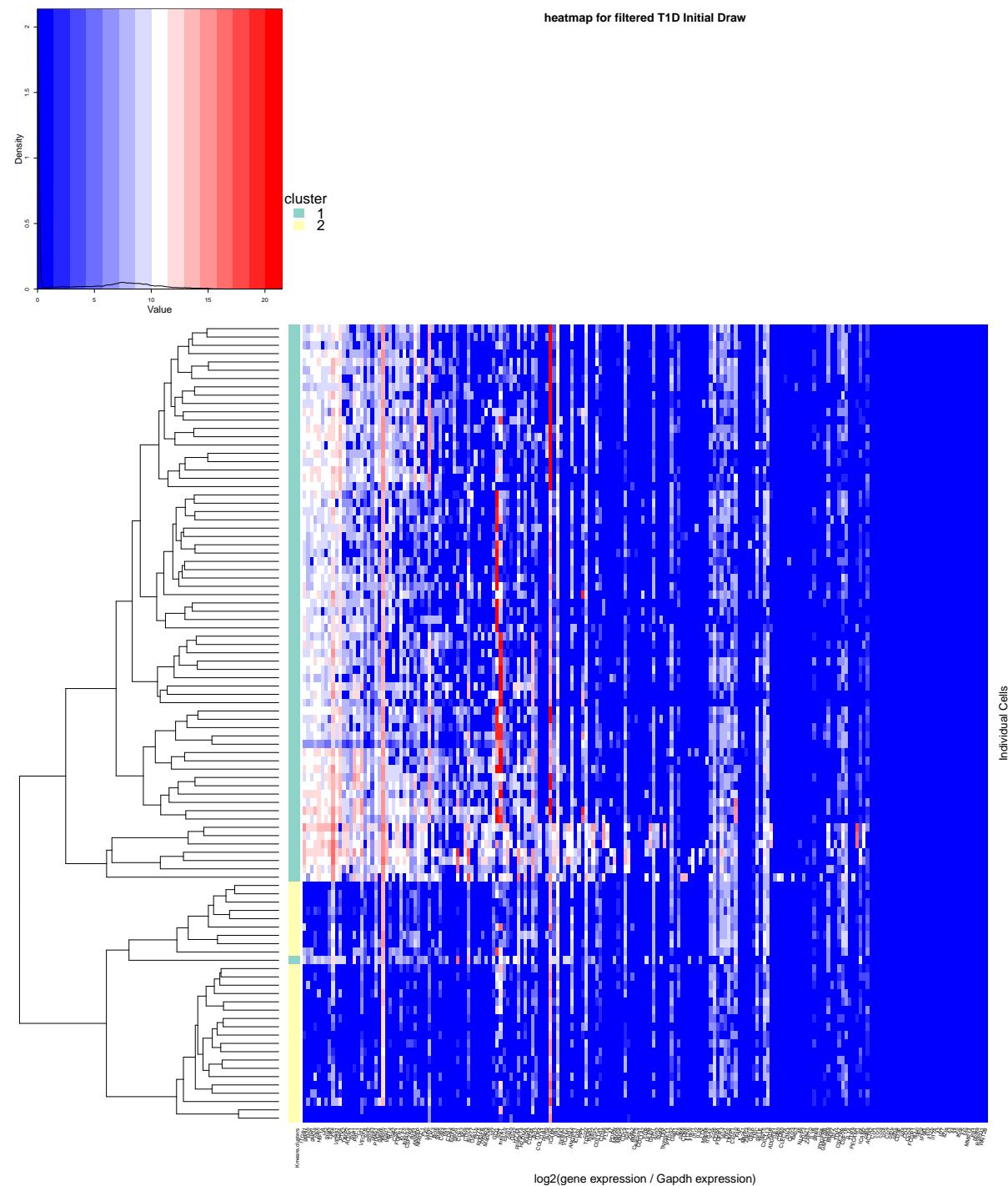
```

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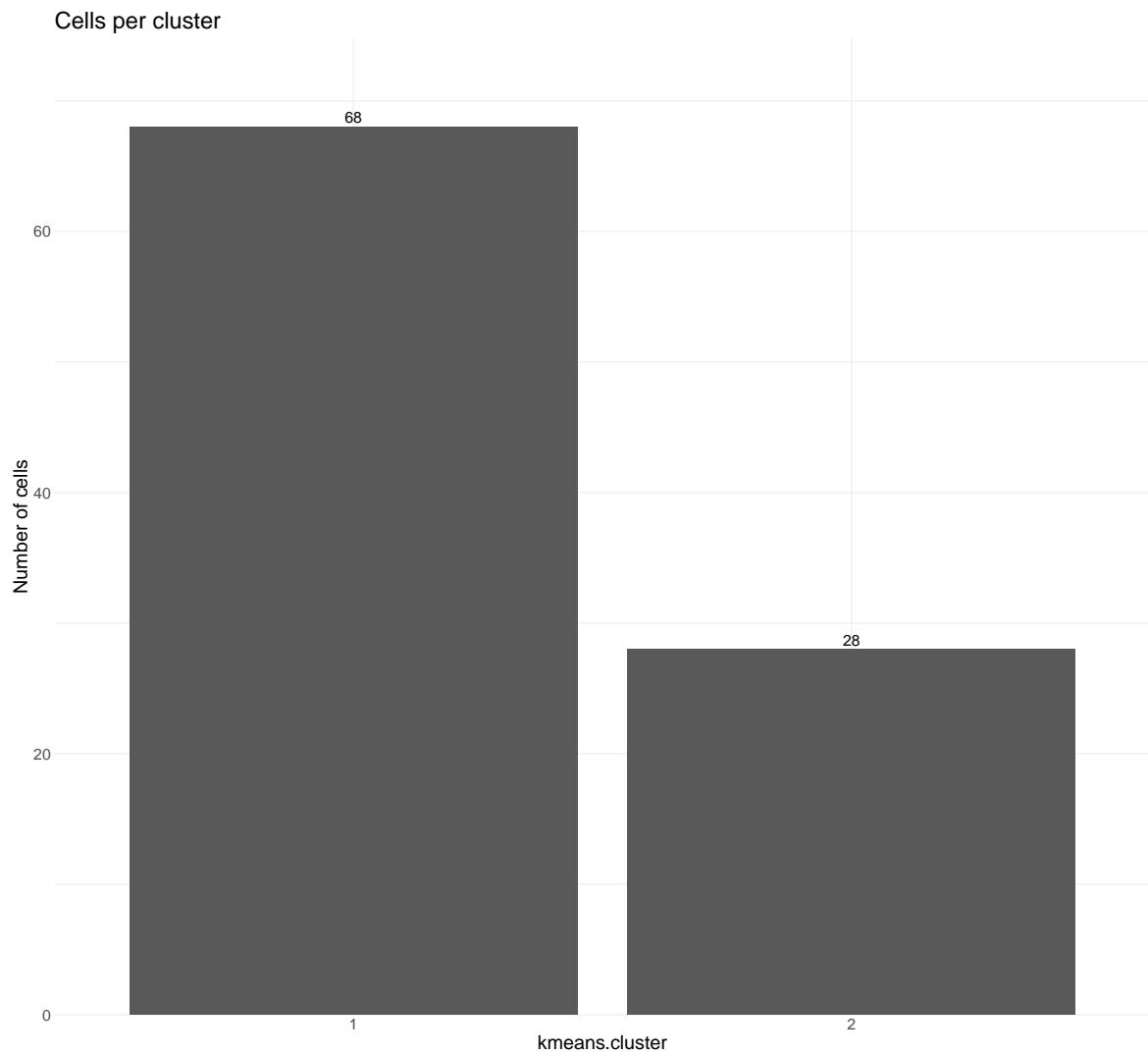
[189] "Il27"          "il2ra"          "il3"            "il4"
[193] "il5"           "il5ra"          "il7r"           "Irf4"
[197] "MMP1A"          "Pd1"            "ppara"          "RSP01"
[201] "WNT2B"

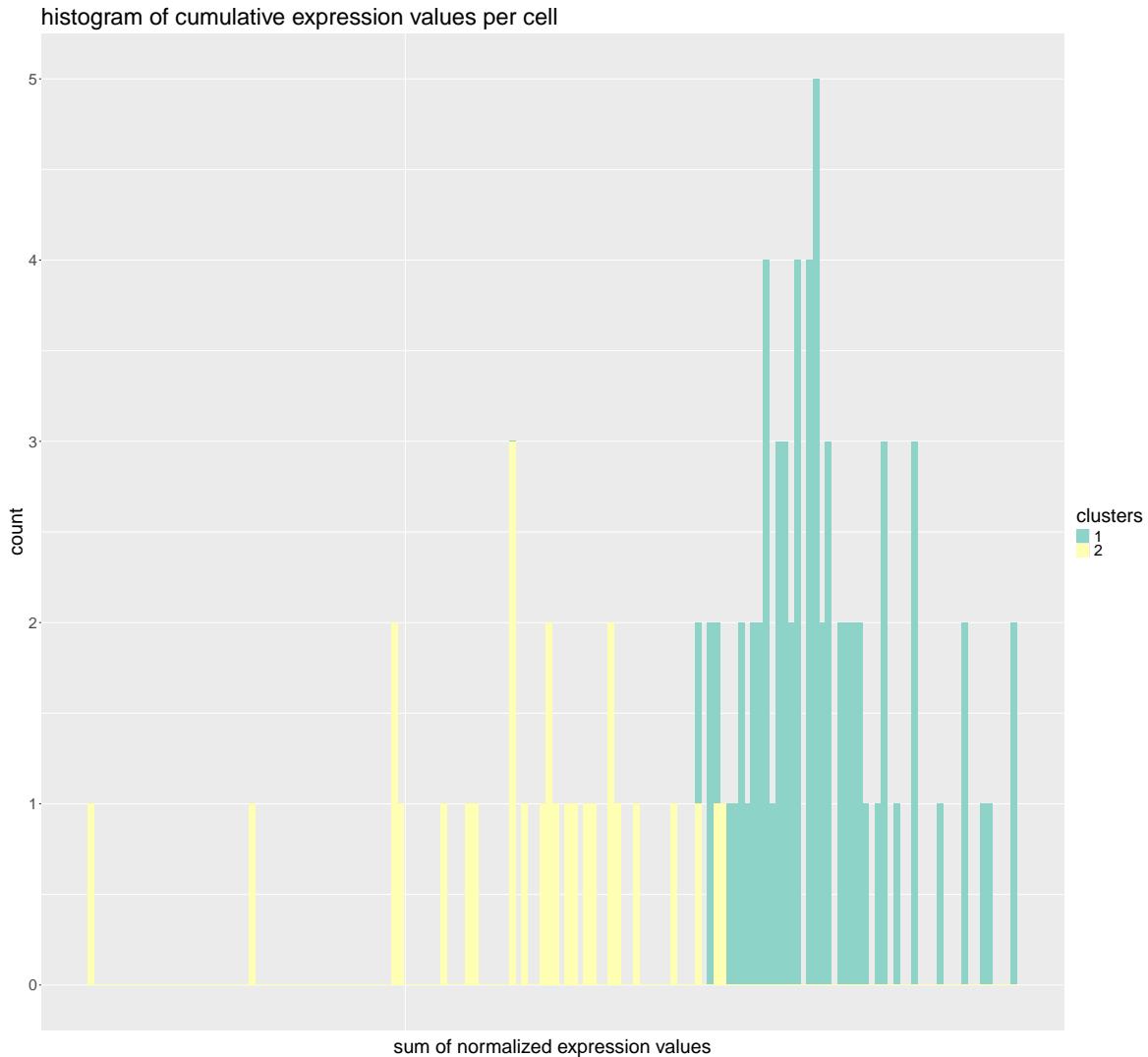
[1] "The value in idCols is 9 and the first column for the heatmap is kmeans.cluster while the last col"

```



```
Cells per Cluster
  n_cells
cluster_1      68
cluster_2      28
```





```
#### t-sne reports ####
###This function has been updated from LG's original. The colorby vector can take the following options

#ctClust <- plotTSNE(ctClust, colorby = c("kmeans.cluster", "Gene_List"), Genes = c("ACTA2", "ACVR1", "AD
##"CCL13", "CCR1", "CCR2", "CCR3", "CCR4", "CCR5", "CCR6", "CCR7", "CD14", "CD24A", "CD28",
##"CD36", "CD3E", "CD4", "CD40", "CD44", "CD74", "CD80", "CD83", "CD86", "CD8A", "CEACAM1",
##"CLEC7A", "COL11A1", "COL1A1", "COL1A2", "CSF1", "CSF1R", "CSF2RA", "CSF2RB", "CXCL10",
##"CXCL13", "CXCR3", "CXCR4", "DES", "EGFR", "FAP", "FCGR1", "FGFR1", "FGFR3", "FGR", "FYNN",
```

```

#"GAPDH", "GATA4", "GCG", "GFAP", "GHRL", "GM13889", "GSK3A", "GSK3B", "H2-AA", "H2-DMA",
#"HIF1A", "HPRT", "IAPP", "ICAM1", "ICAM2", "ICOS", "ICOSL", "IFIT1", "IFIT3", "IFI44",
#"IFI44L", "IFNG", "IFNCR1", "IGF1", "IGF2", "IL-21", "IL1A", "IL1B", "IL1R2", "IL2", "IL2RA",
#"IL3", "IL4", "IL4RA", "IL5", "IL5RA", "IL6", "IL7", "IL7R", "IL10", "IL12B", "IL12RB", "IL17A",
#"IL18R1", "IL25", "IL27", "IL27R", "IL34", "INS1", "INS2", "IRF1", "IRF2", "IRF4", "IRF7",
#"ISG15", "ITGAX", "ITGB1", "JAK1", "JAK2", "KDR", "KLF5", "LCK", "LEPR", "LY6E", "LY75",
#"MAP2K6", "MAPK8", "MMP1A", "MMP2", "MMP3", "MMP9", "MX1", "NFATC1", "NFKB1", "NLRP3",
#"NUR77", "OAS1B", "OAS2", "OASL1", "PD1", "PDL-1", "PDGFA", "PDGFB", "PDGFRB", "PDPN",
#"PECAM1", "PPARA", "PPARG", "PPARGC1A", "PPY", "PTEN", "PTGS2", "PTK2", "RSAD2", "RSP01",
#"SELE", "SFRP1", "SOCS3", "SPP1", "SST", "STAT1", "STAT3", "STAT4", "STAT5", "TBX21",
#"TEK", "TGFB1", "TGFB2", "TIMP1", "TIMP2", "TLR3", "TLR4", "TLR7", "TLR9", "TNC",
#"TNF", "TNFAIP3", "TNFRSF1A", "TNFRSF1B", "TNFSF11", "TRAF2", "VAV1", "VCAM1", "VEGFA",
#"VEGFB", "WNT2B", "WNT4", "ZAP70", "ZEB2"))

```

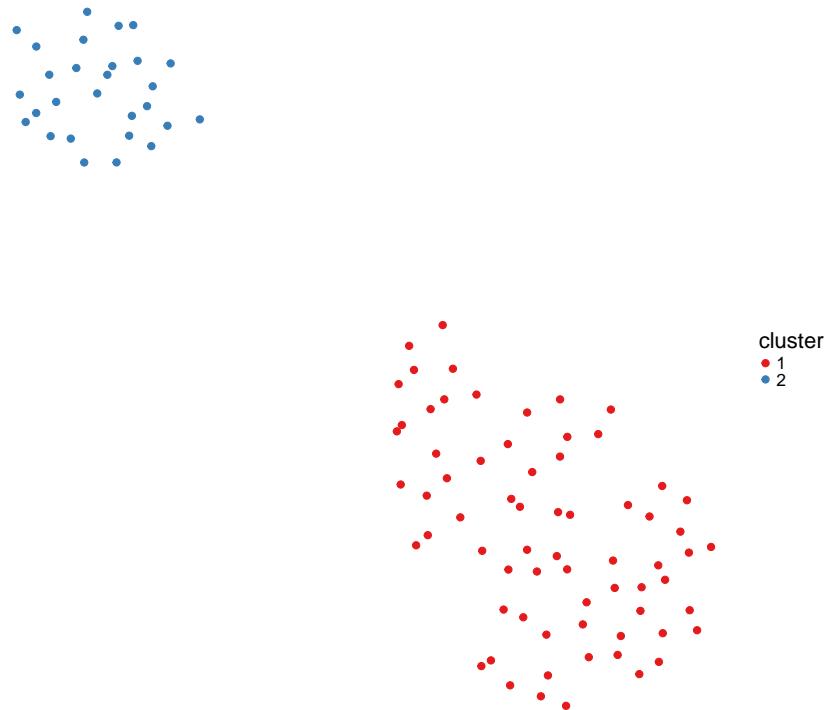
#Z0 edit: Now using UMAP

```

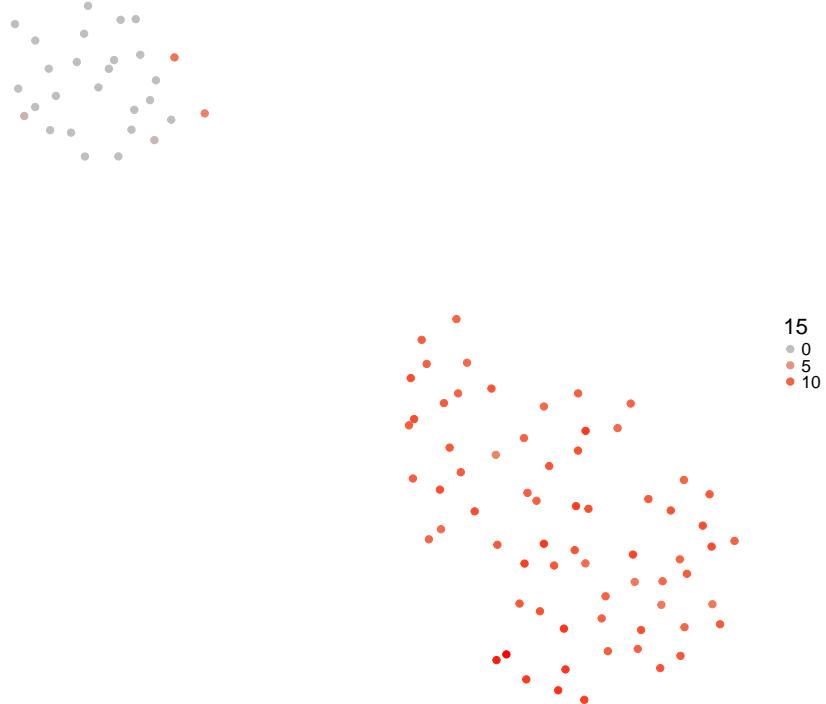
ctClust <- plotUMAP(ctClust, colorby = c("kmeans.cluster", "Gene_List"), Genes = c("ACTA2", "ACVR1", "ADG",
"CCL13", "CCR1", "CCR2", "CCR3", "CCR4", "CCR5", "CCR6", "CCR7", "CD14", "CD24A", "CD28",
"CD36", "CD3E", "CD4", "CD40", "CD44", "CD74", "CD80", "CD83", "CD86", "CD8A", "CEACAM1",
"CLEC7A", "COL11A1", "COL1A1", "COL1A2", "CSF1", "CSF1R", "CSF2RA", "CSF2RB", "CXCL10",
"CXCL13", "CXCR3", "CXCR4", "DES", "EGFR", "FAP", "FCGR1", "FGFR1", "FGFR3", "FGR", "FYN",
"GAPDH", "GATA4", "GCG", "GFAP", "GHRL", "GM13889", "GSK3A", "GSK3B", "H2-AA", "H2-DMA",
"HIF1A", "HPRT", "IAPP", "ICAM1", "ICAM2", "ICOS", "ICOSL", "IFIT1", "IFIT3", "IFI44",
"IFI44L", "IFNG", "IFNCR1", "IGF1", "IGF2", "IL-21", "IL1A", "IL1B", "IL1R2", "IL2", "IL2RA",
"IL3", "IL4", "IL4RA", "IL5", "IL5RA", "IL6", "IL7", "IL7R", "IL10", "IL12B", "IL12RB", "IL17A",
"IL18R1", "IL25", "IL27", "IL27R", "IL34", "INS1", "INS2", "IRF1", "IRF2", "IRF4", "IRF7",
"ISG15", "ITGAX", "ITGB1", "JAK1", "JAK2", "KDR", "KLF5", "LCK", "LEPR", "LY6E", "LY75",
"MAP2K6", "MAPK8", "MMP1A", "MMP2", "MMP3", "MMP9", "MX1", "NFATC1", "NFKB1", "NLRP3",
"NUR77", "OAS1B", "OAS2", "OASL1", "PD1", "PDL-1", "PDGFA", "PDGFB", "PDGFRB", "PDPN",
"PECAM1", "PPARA", "PPARG", "PPARGC1A", "PPY", "PTEN", "PTGS2", "PTK2", "RSAD2", "RSP01",
"SELE", "SFRP1", "SOCS3", "SPP1", "SST", "STAT1", "STAT3", "STAT4", "STAT5", "TBX21",
"TEK", "TGFB1", "TGFB2", "TIMP1", "TIMP2", "TLR3", "TLR4", "TLR7", "TLR9", "TNC",
"TNF", "TNFAIP3", "TNFRSF1A", "TNFRSF1B", "TNFSF11", "TRAF2", "VAV1", "VCAM1", "VEGFA",
"VEGFB", "WNT2B", "WNT4", "ZAP70", "ZEB2"))

```

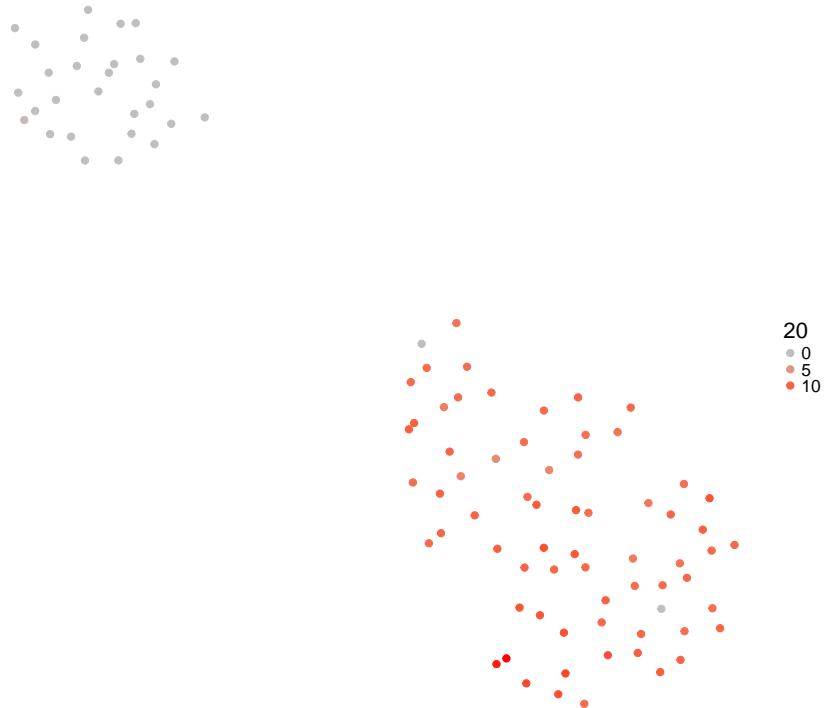
UMAP between tissues (colored by kmeans.cluster)



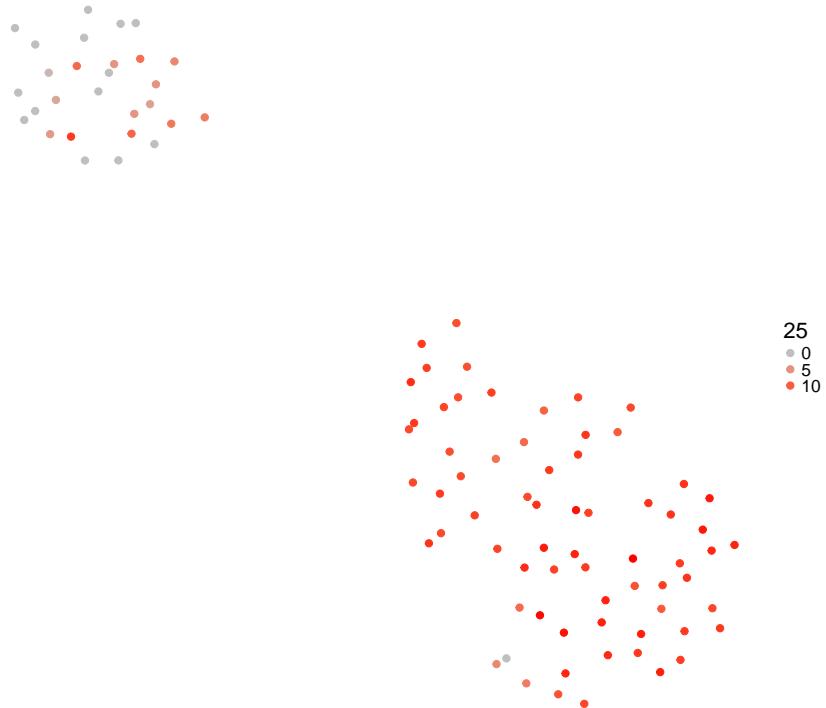
UMAP colored by ITGB1 expression



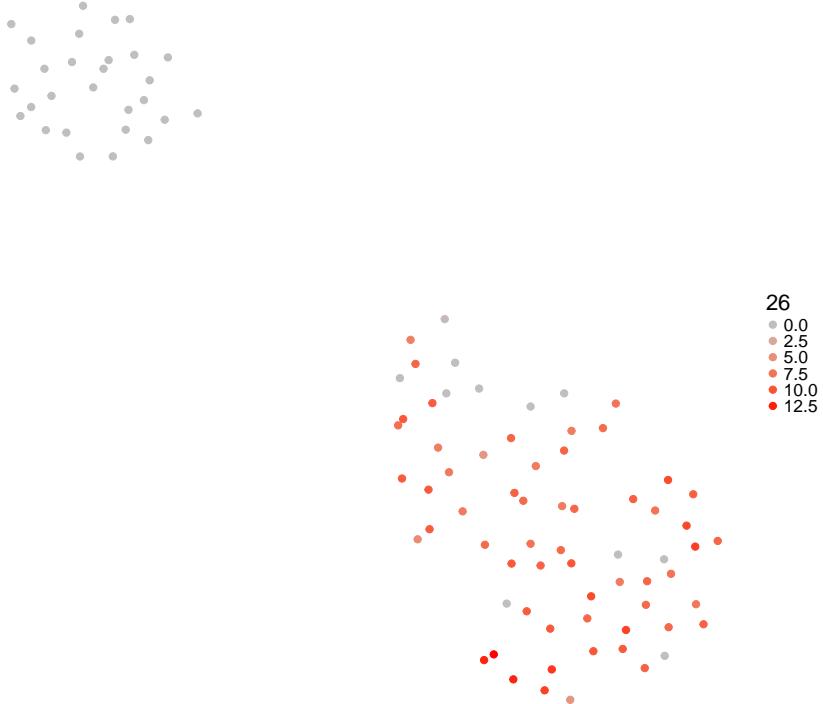
UMAP colored by HIF1A expression



UMAP colored by VEGFA expression



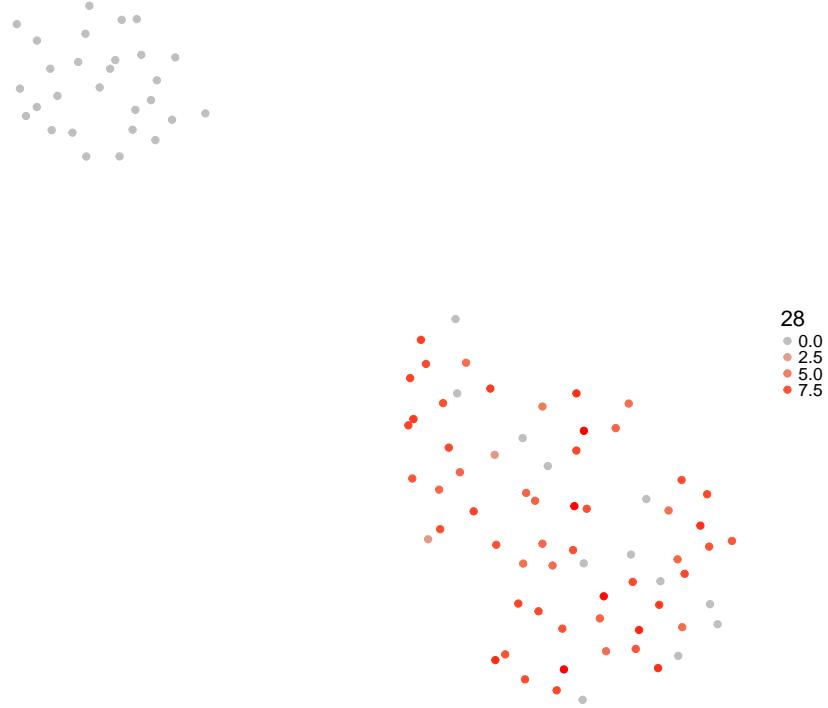
UMAP colored by PTK2 expression



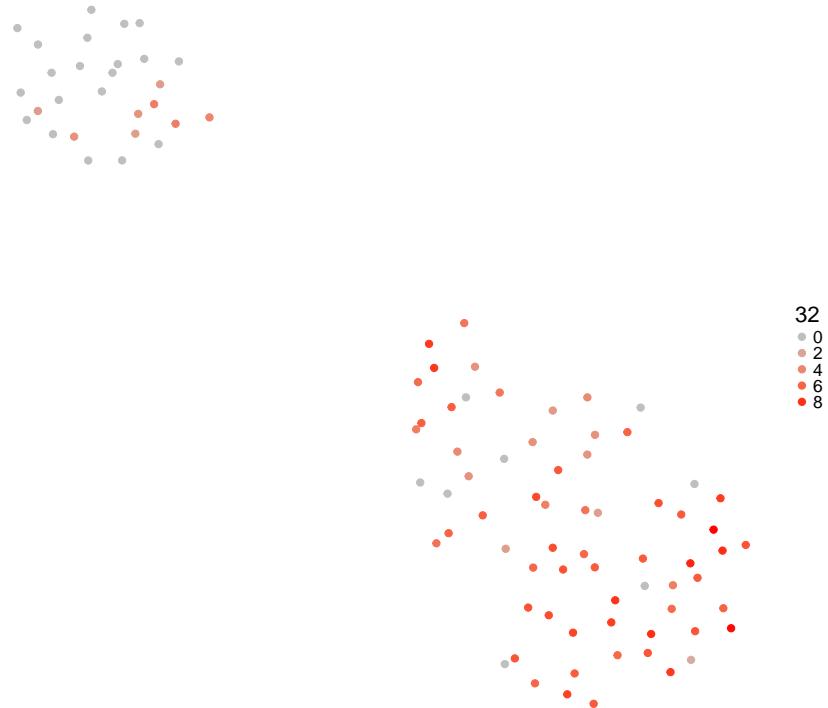
UMAP colored by TIMP2 expression



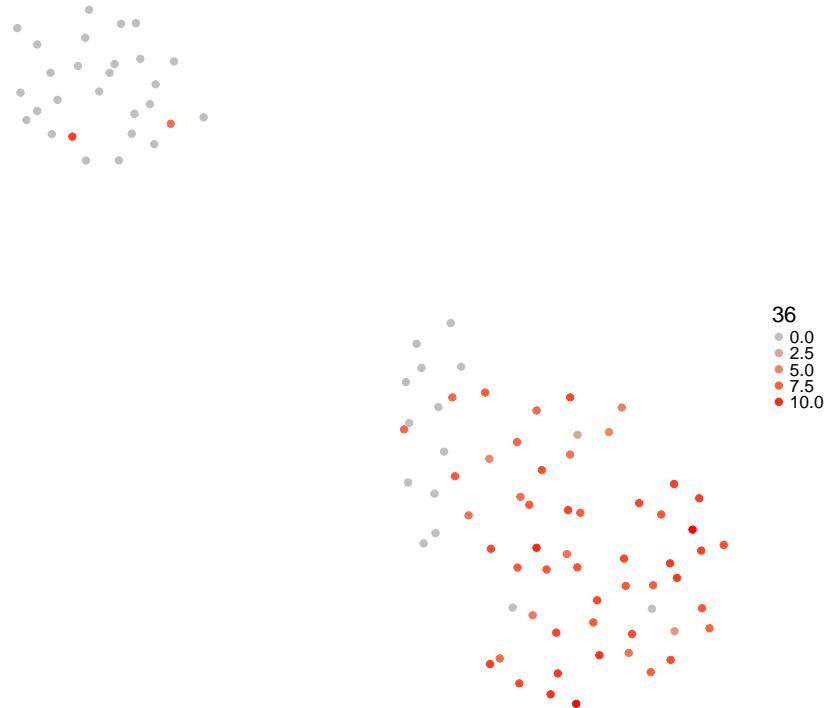
UMAP colored by ACVR1 expression



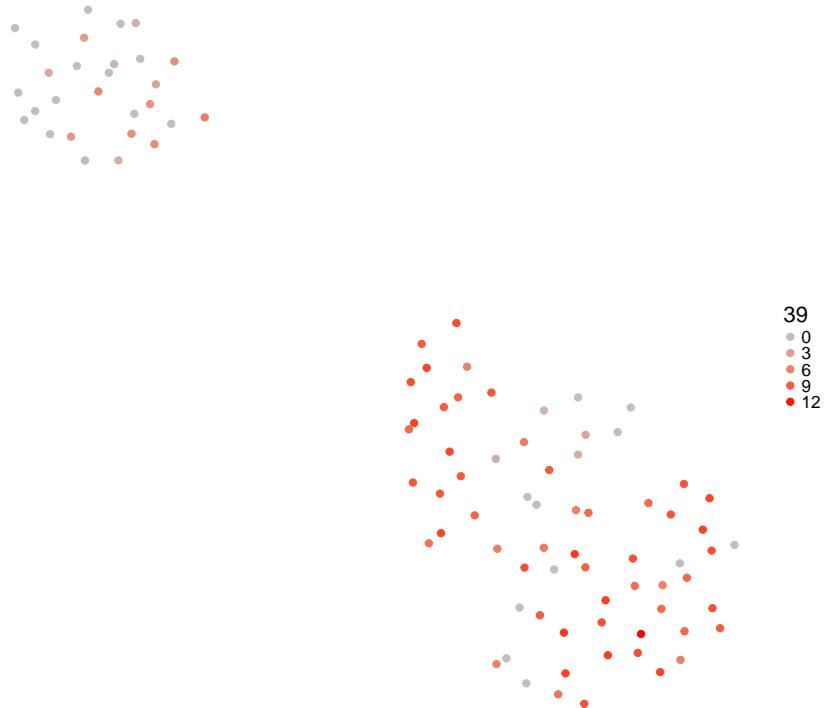
UMAP colored by VEGFB expression



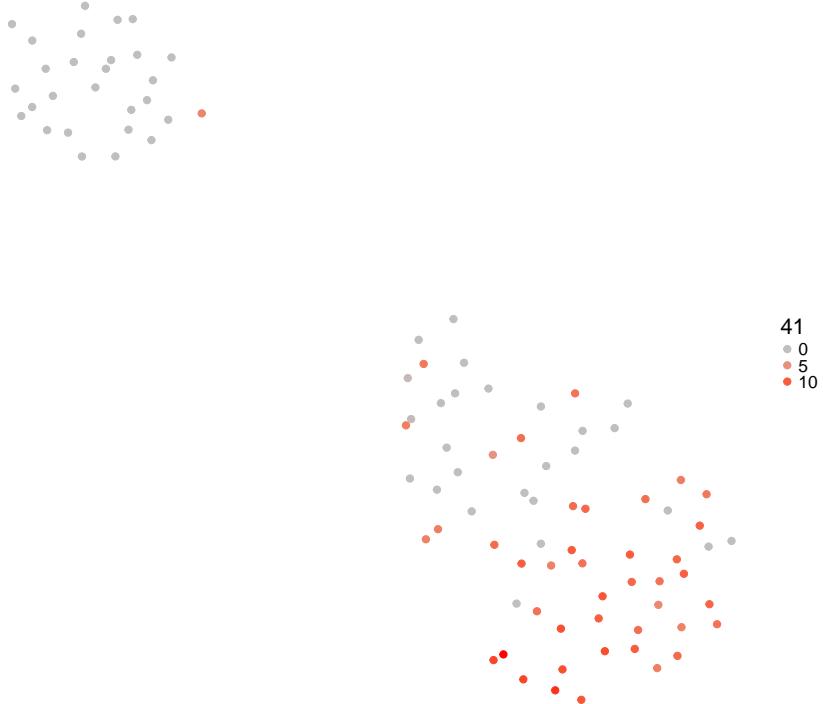
UMAP colored by PDGFA expression



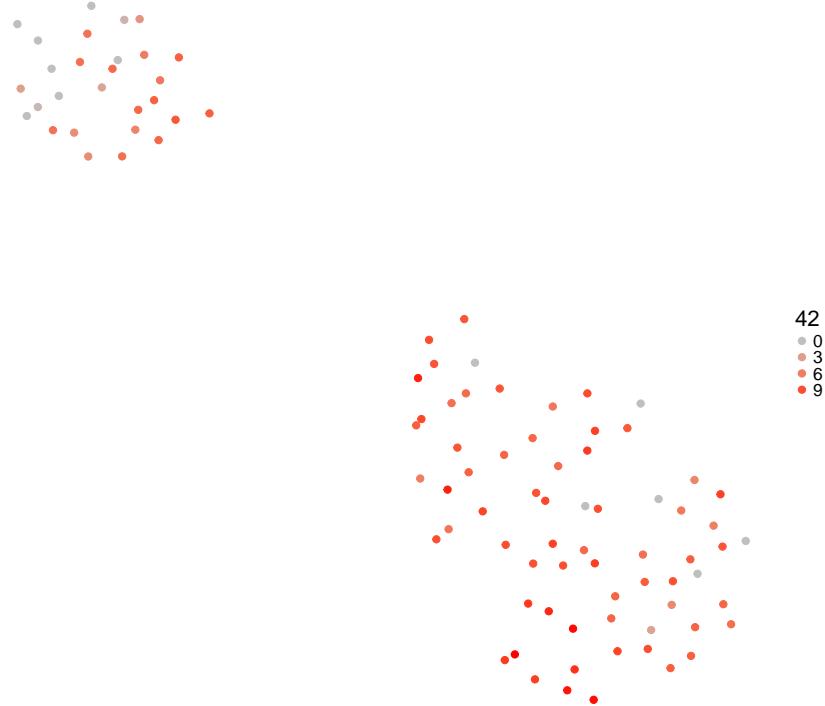
UMAP colored by WNT4 expression



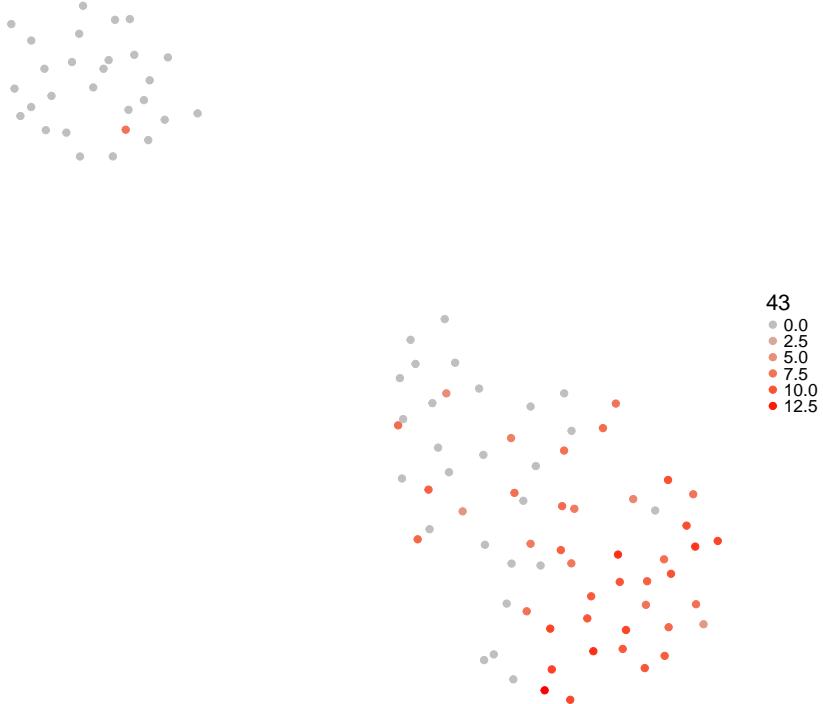
UMAP colored by CSF1 expression



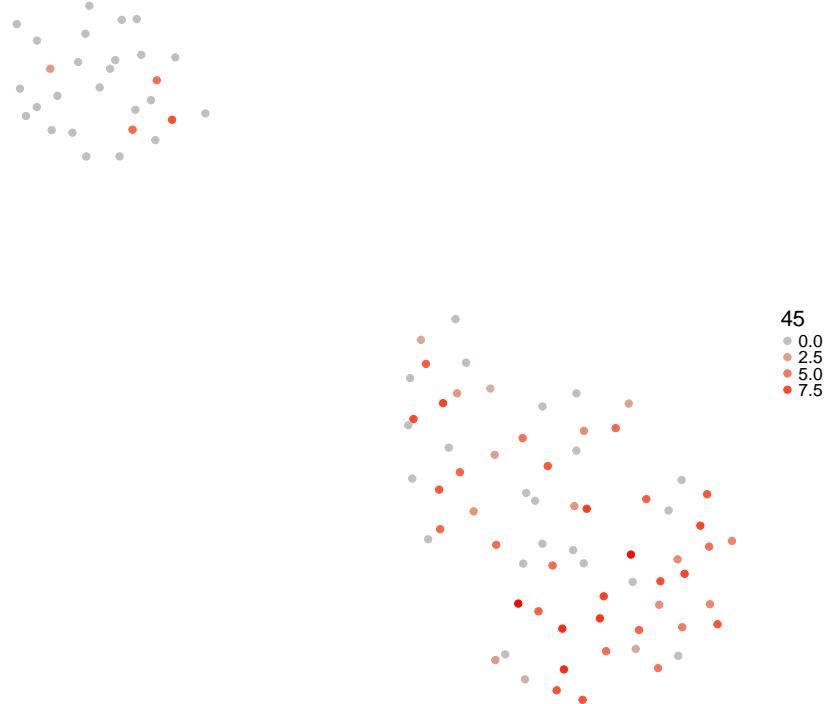
UMAP colored by FGFR1 expression



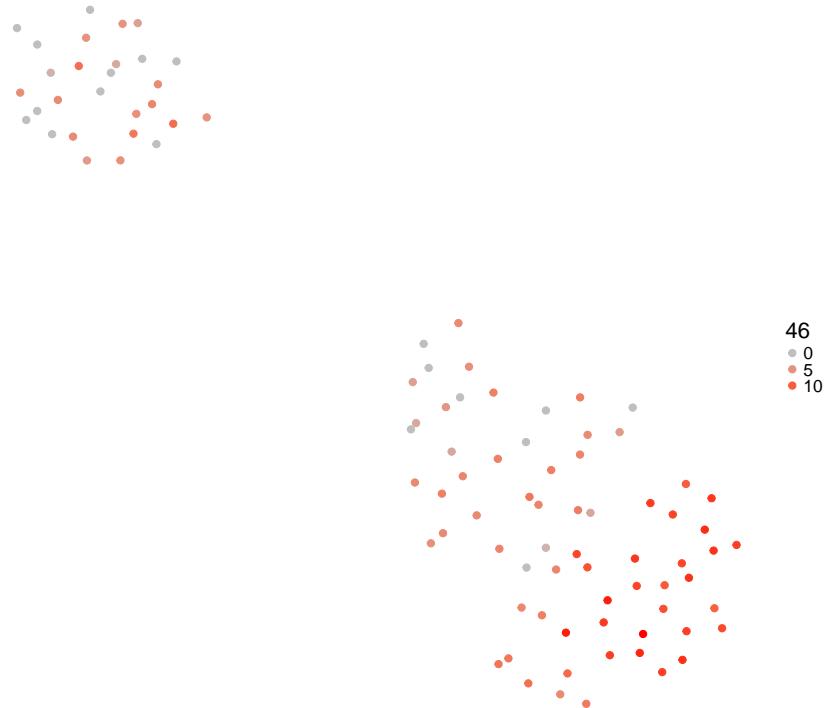
UMAP colored by KLF5 expression



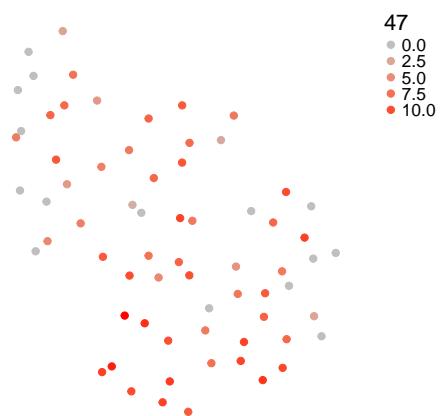
UMAP colored by CSF2RA expression



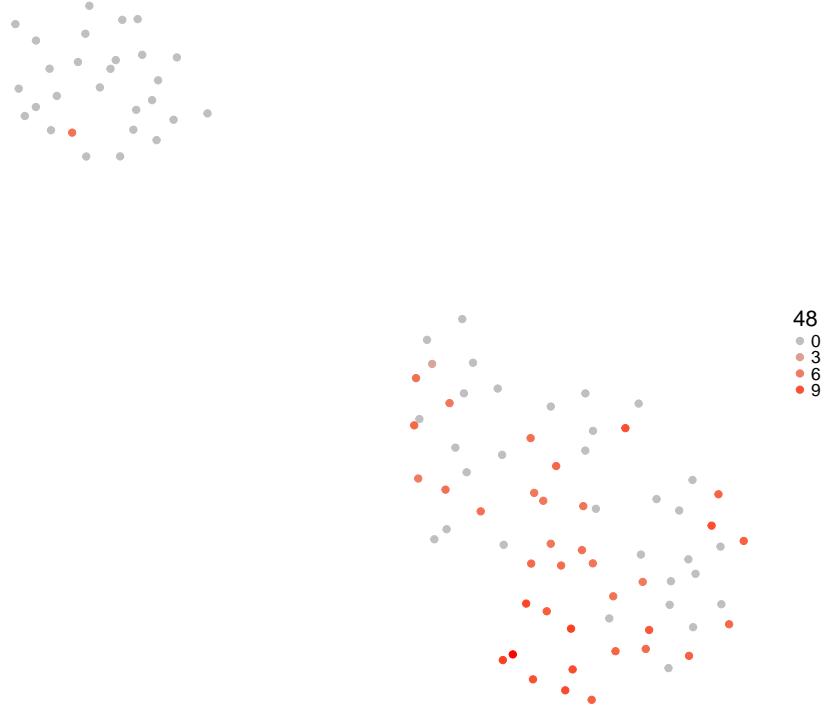
UMAP colored by INS1 expression



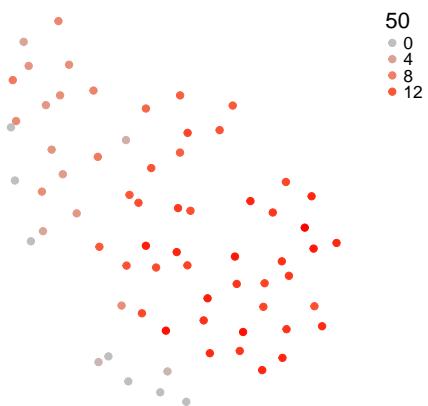
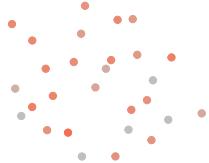
UMAP colored by ANPEP expression



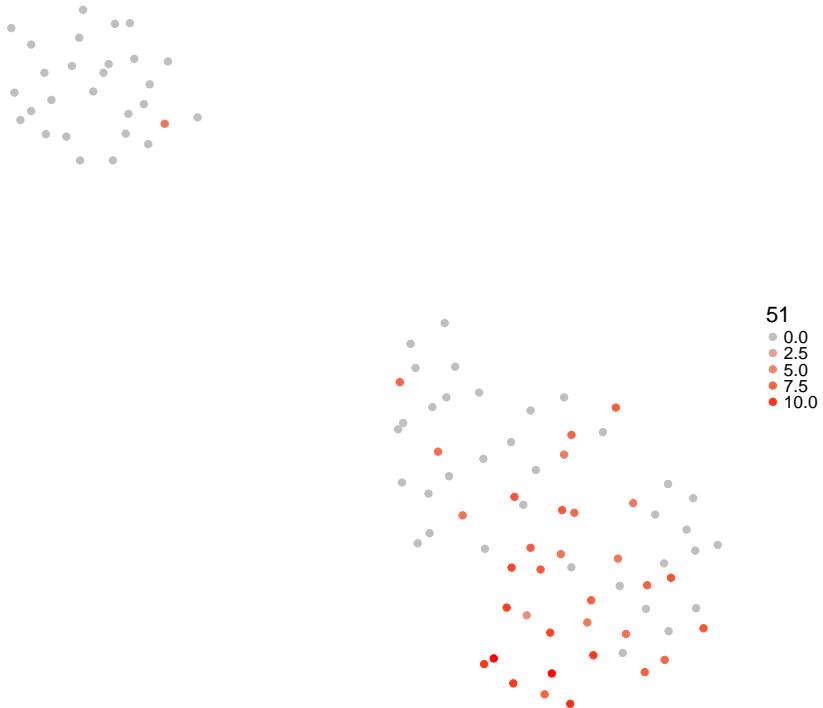
UMAP colored by NFATC1 expression



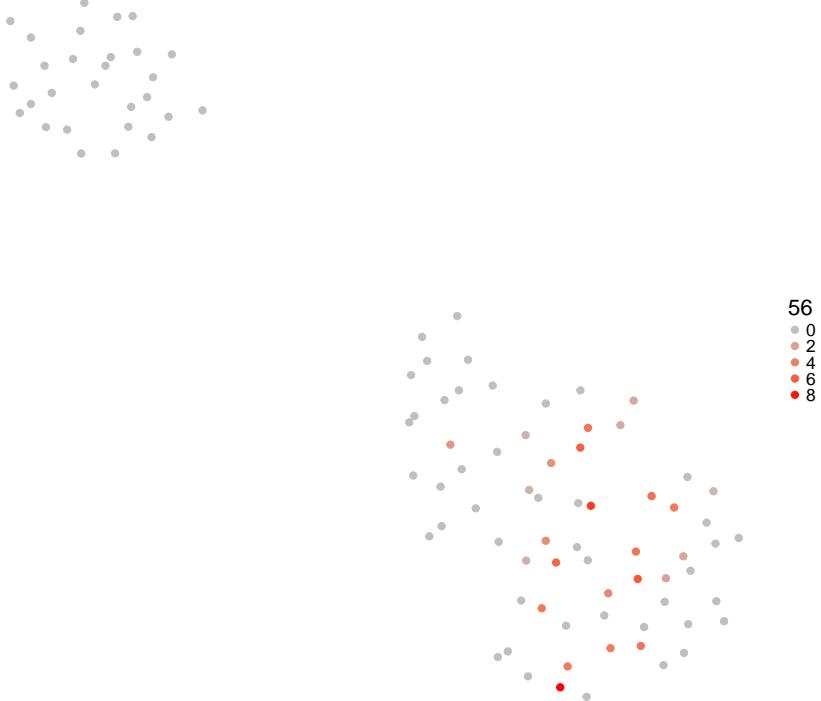
UMAP colored by IAPP expression



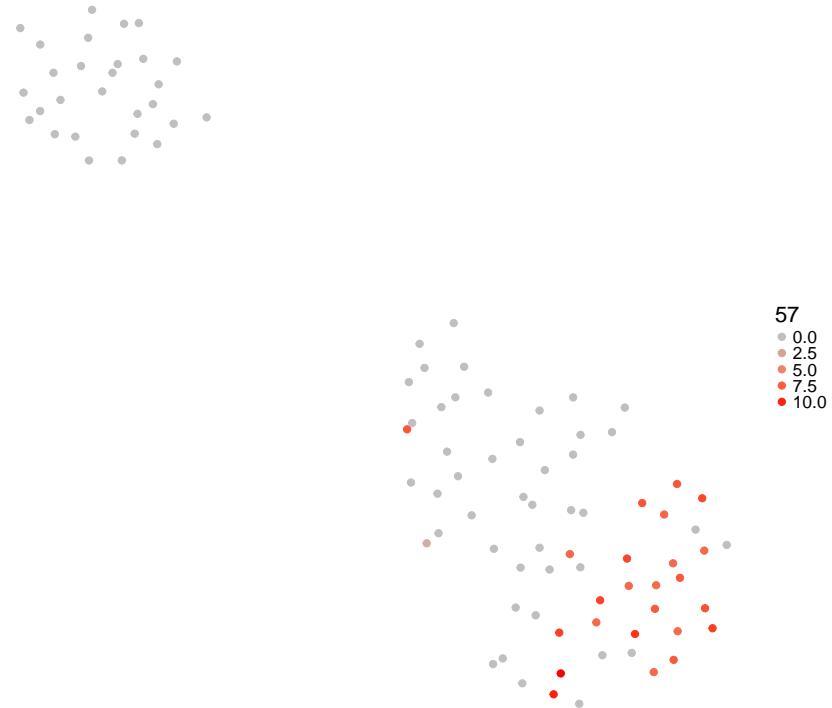
UMAP colored by TLR3 expression



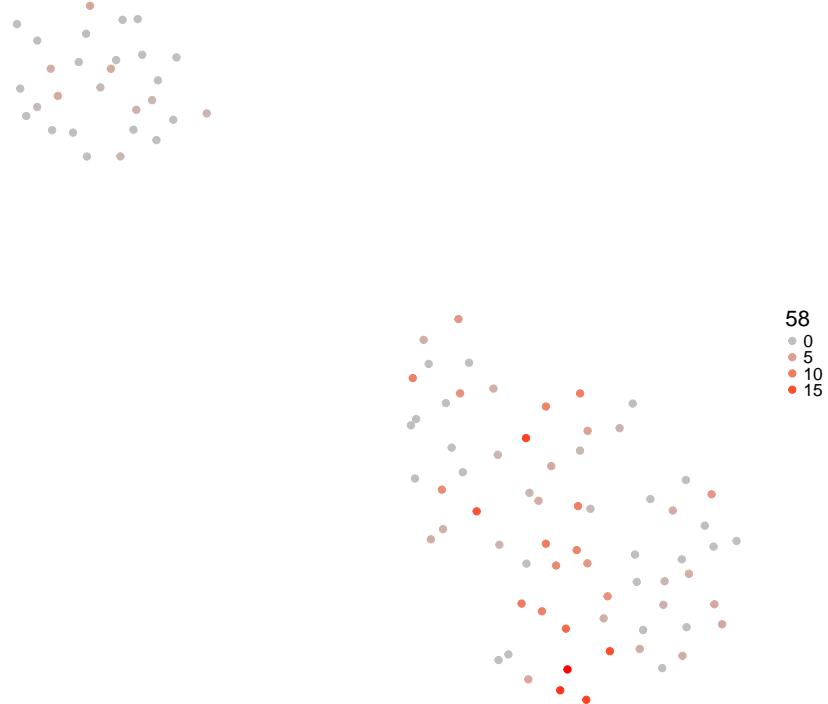
UMAP colored by CD44 expression



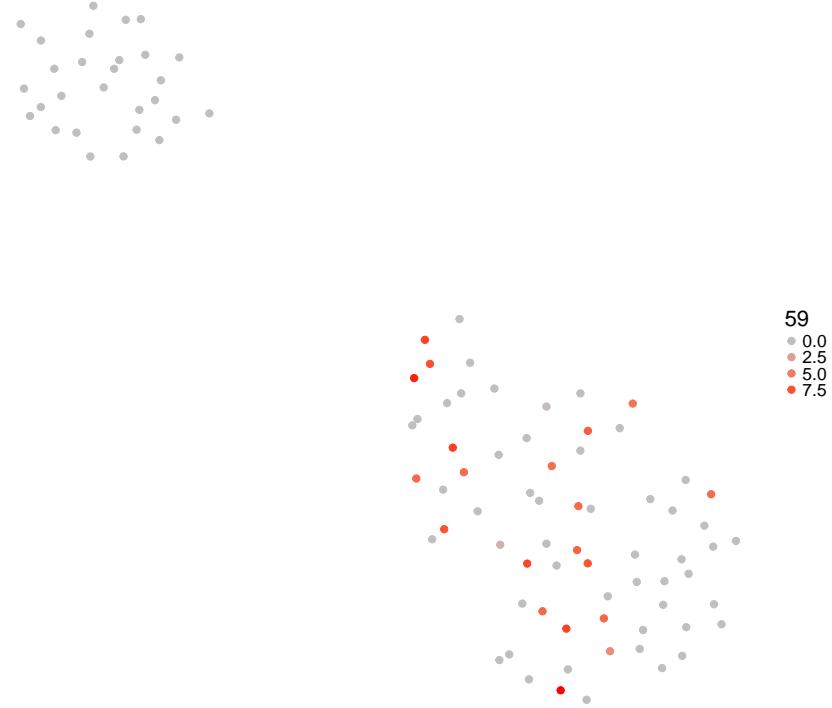
UMAP colored by EGFR expression



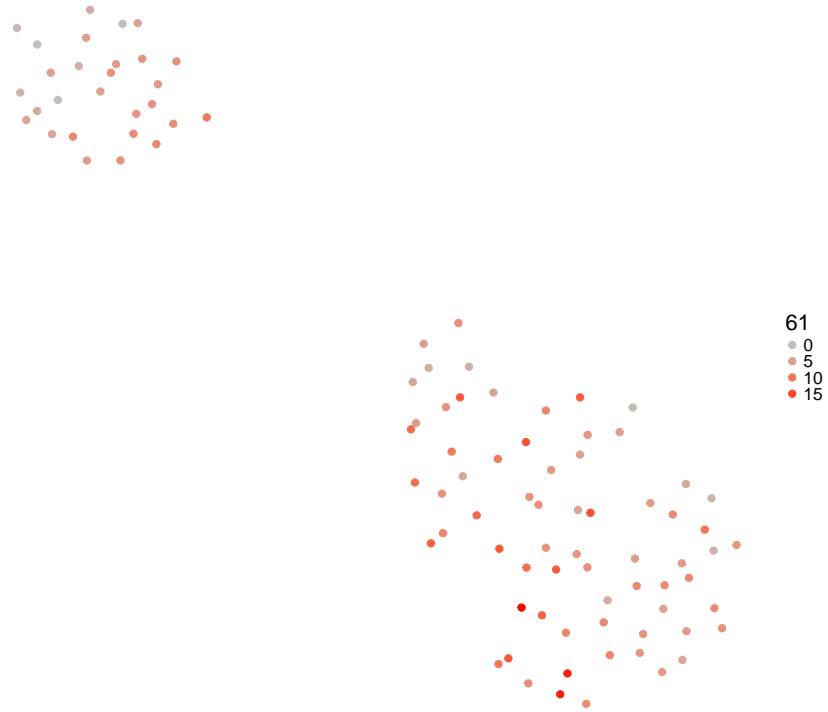
UMAP colored by SPP1 expression



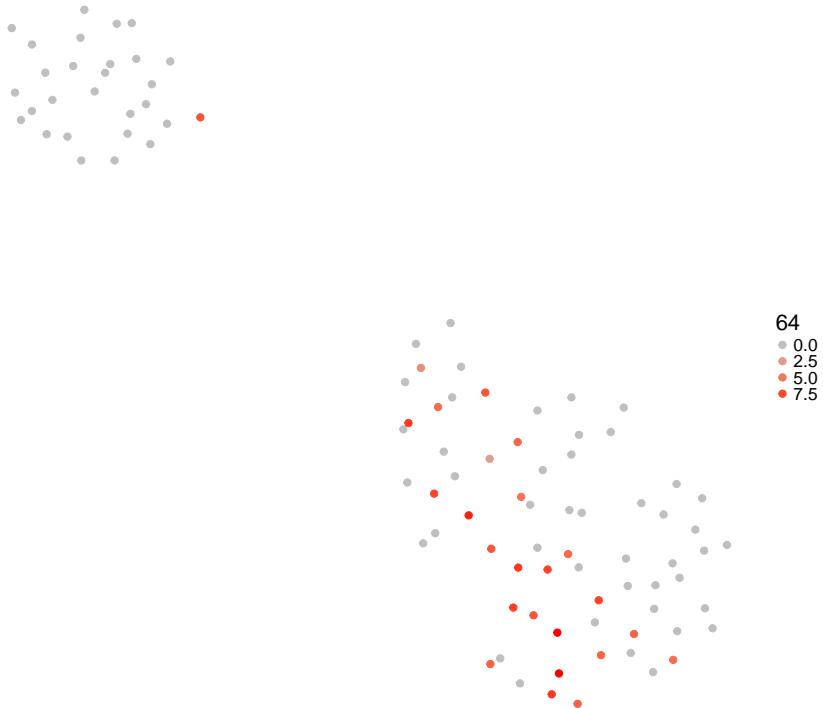
UMAP colored by CD83 expression



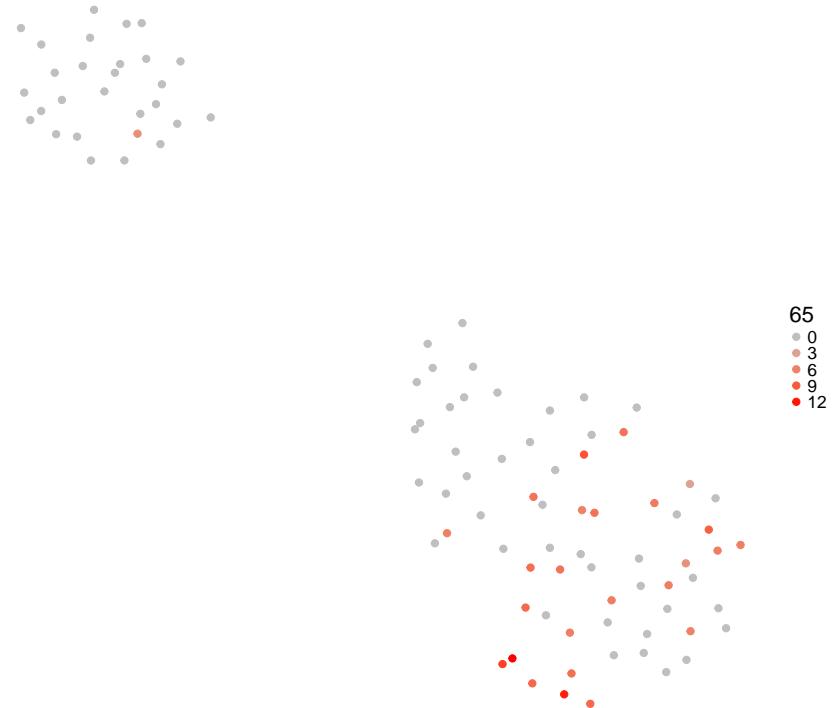
UMAP colored by CD74 expression



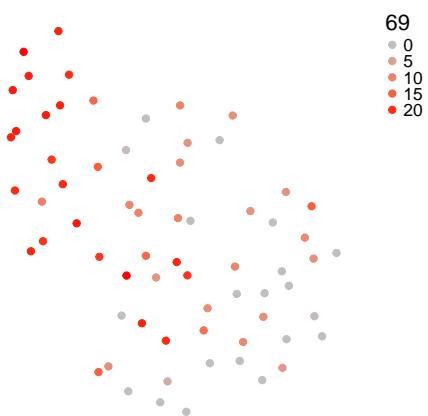
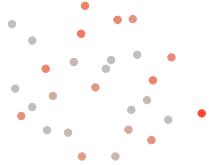
UMAP colored by LY75 expression



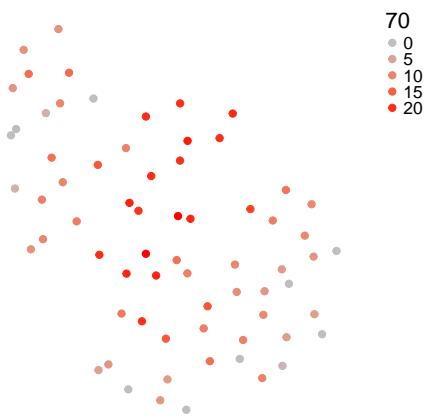
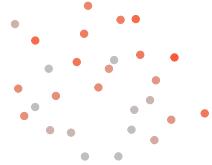
UMAP colored by PDGFB expression



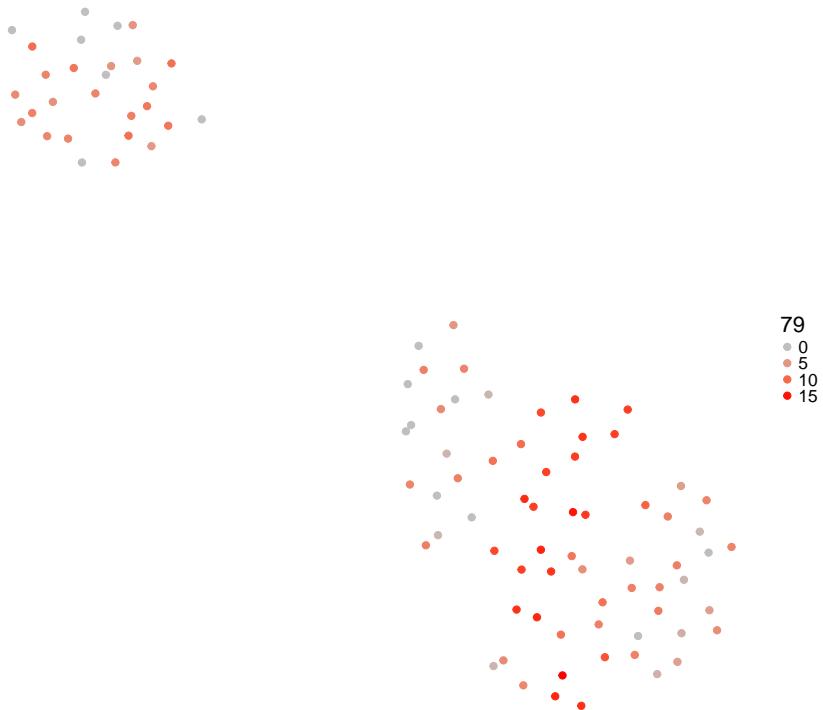
UMAP colored by GCG expression



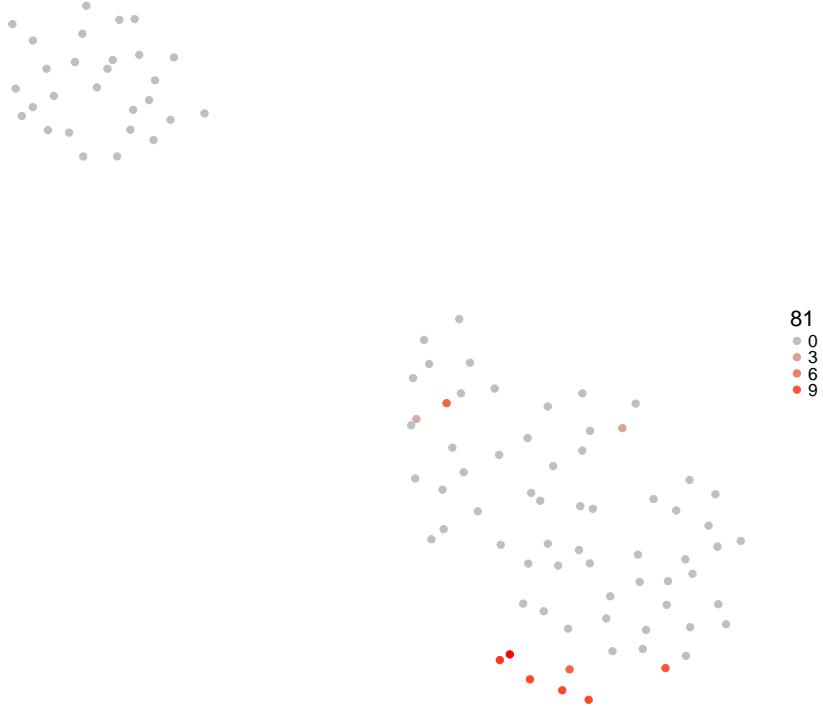
UMAP colored by SST expression



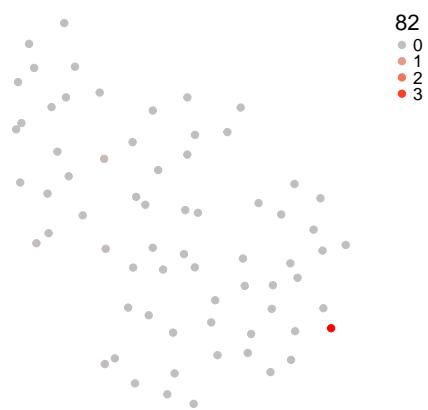
UMAP colored by CD24A expression



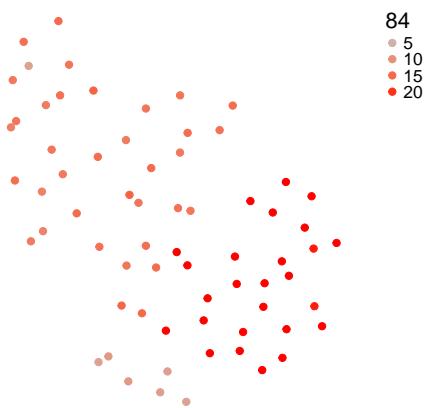
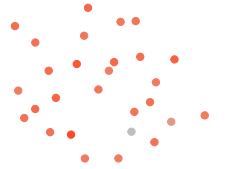
UMAP colored by TLR4 expression



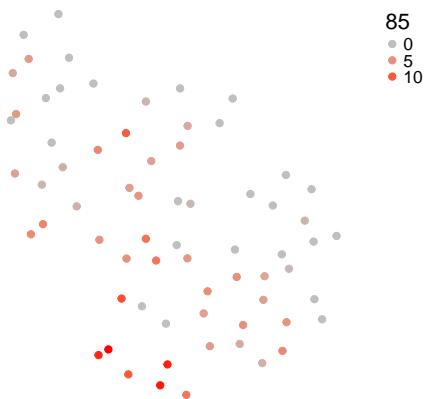
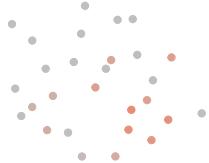
UMAP colored by COL11A1 expression



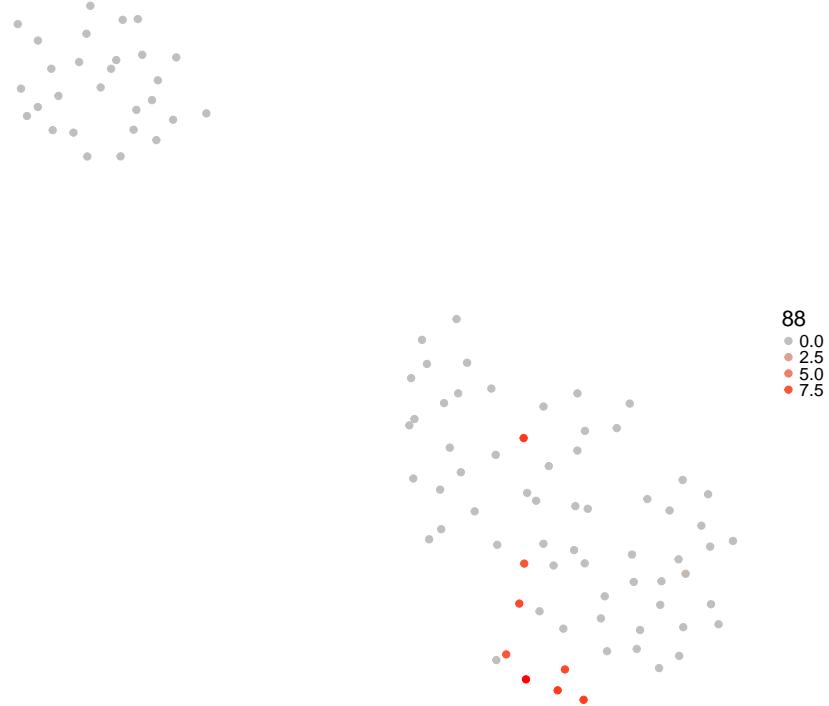
UMAP colored by INS2 expression



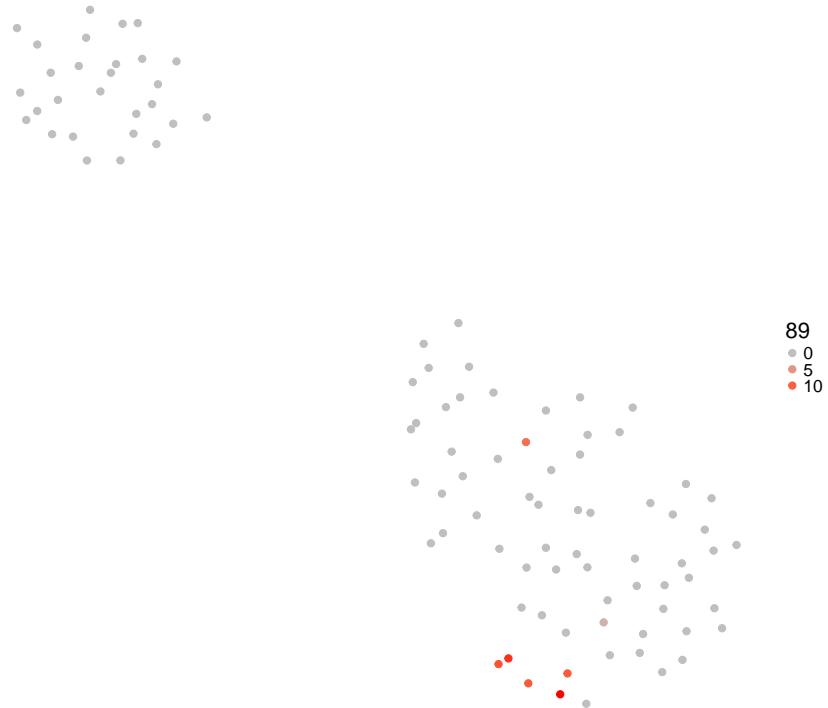
UMAP colored by ICAM1 expression



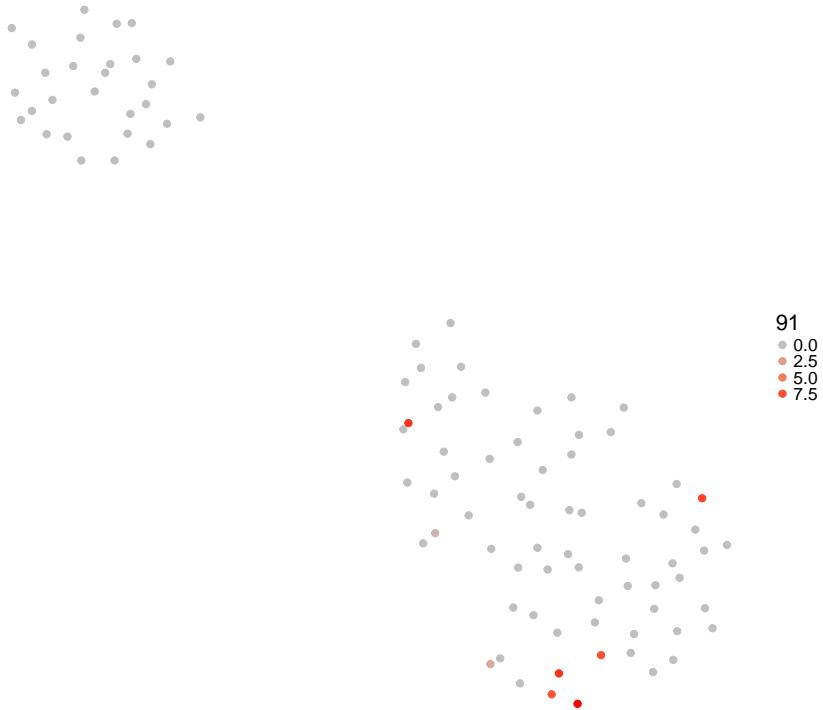
UMAP colored by SFRP1 expression



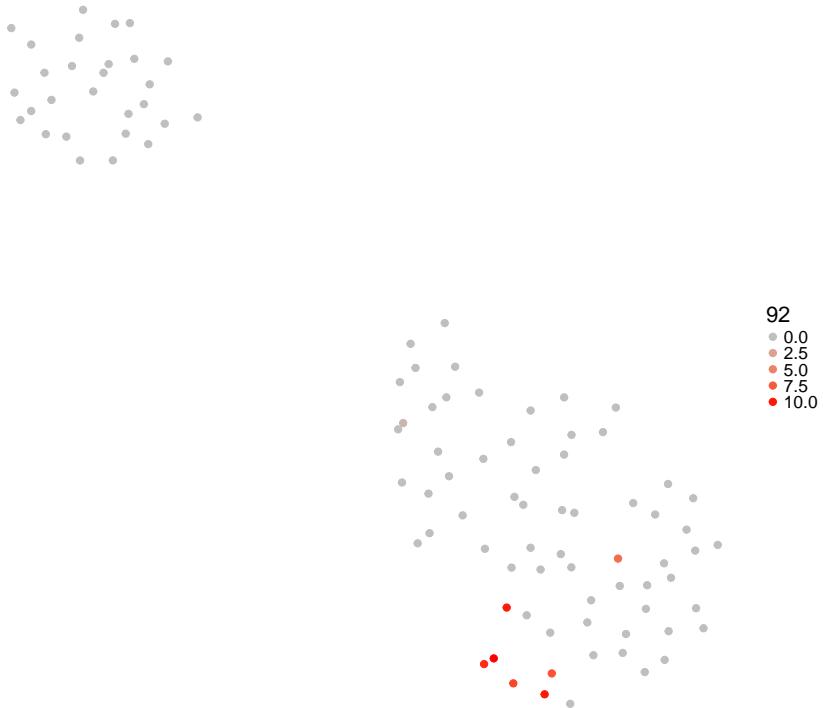
UMAP colored by VCAM1 expression



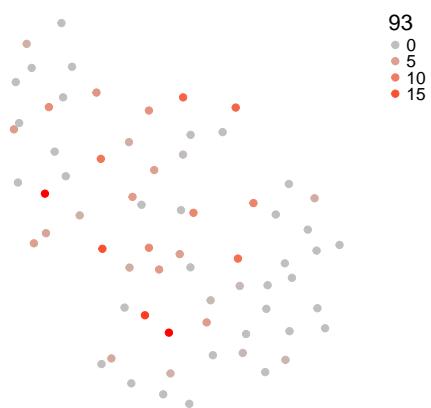
UMAP colored by ANGPT1 expression



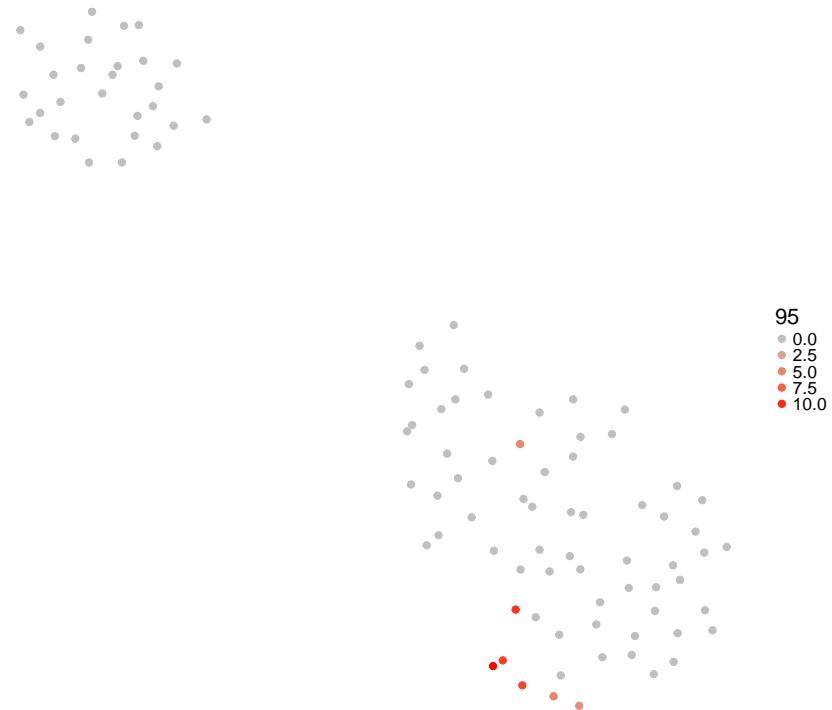
UMAP colored by ICOSL expression



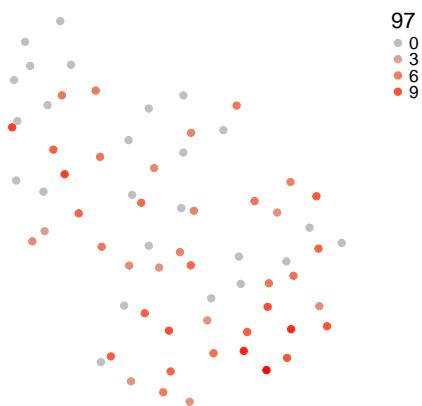
UMAP colored by PPY expression



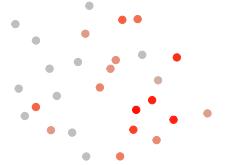
UMAP colored by TGFB1 expression



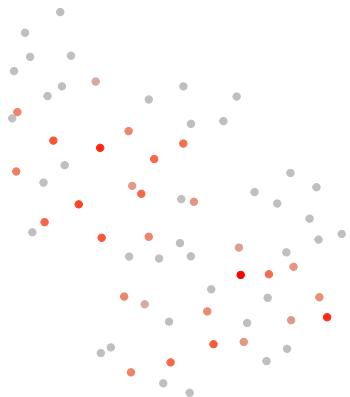
UMAP colored by IGF2 expression



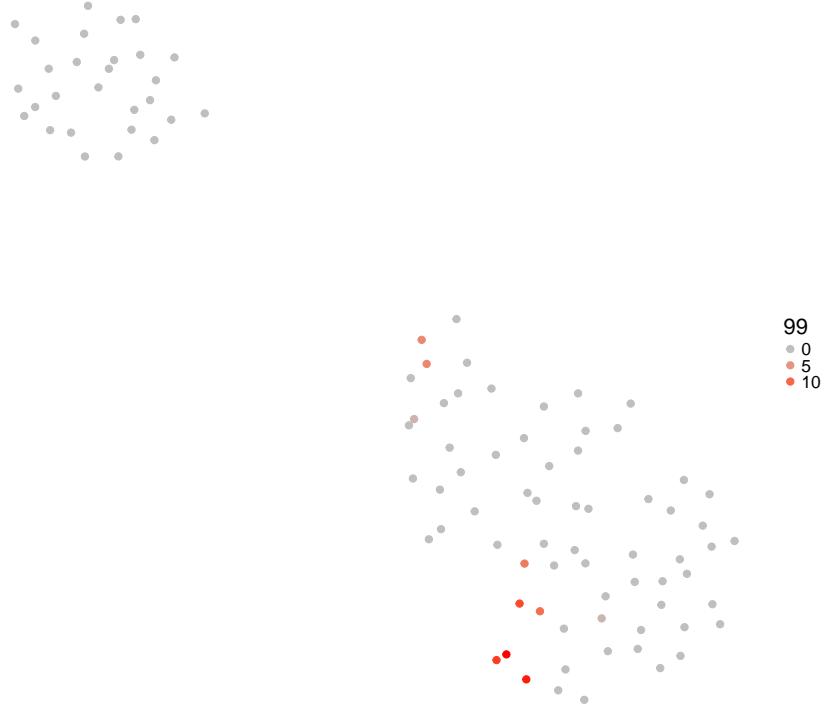
UMAP colored by COL1A1 expression



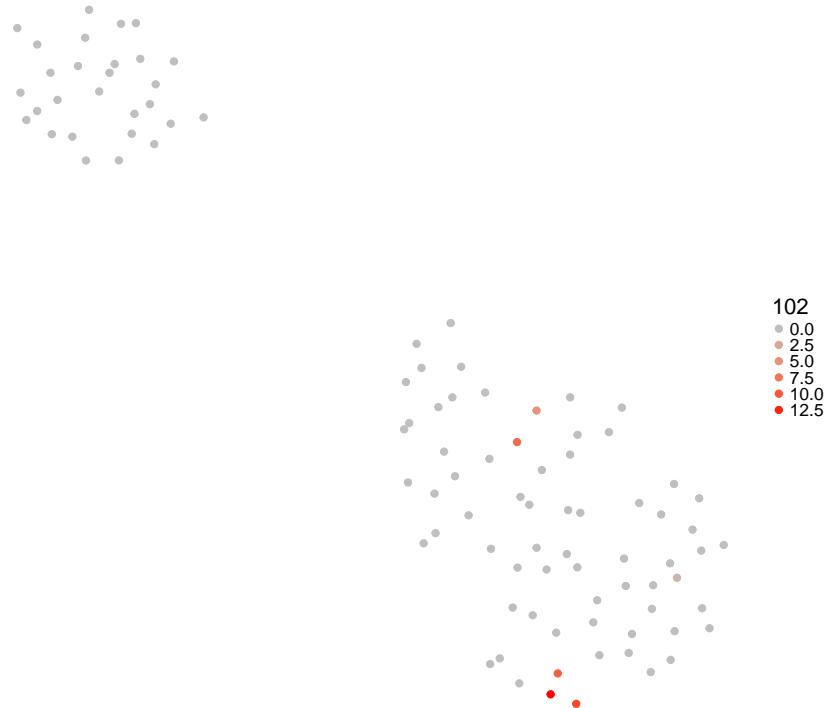
98  
• 0  
• 2  
• 4  
• 6



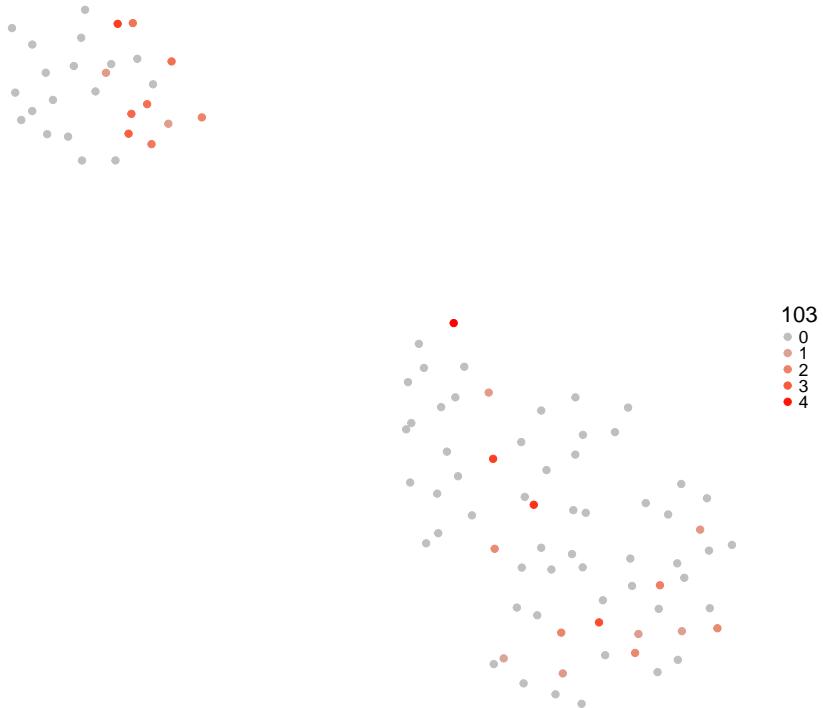
UMAP colored by CD36 expression



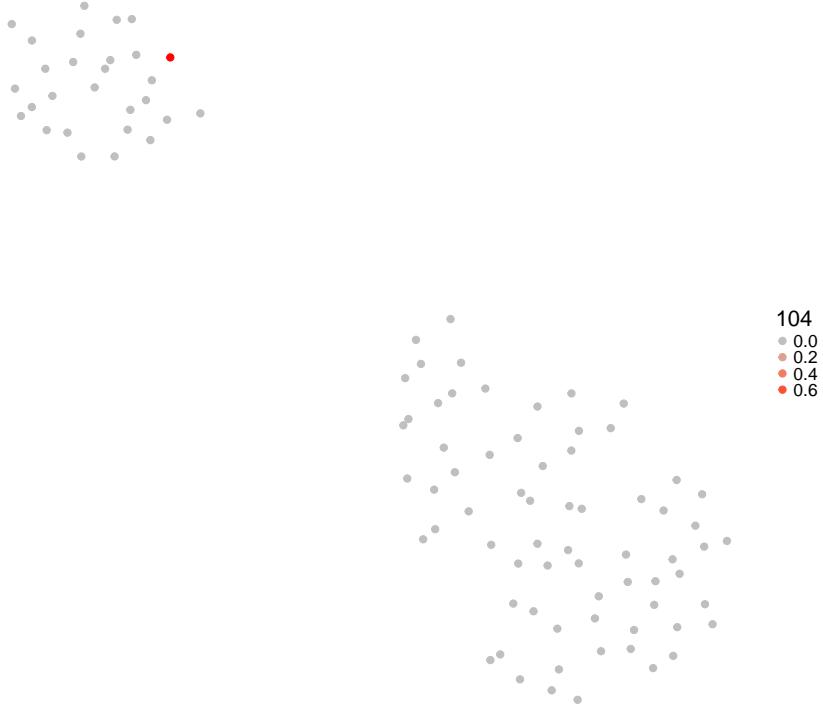
UMAP colored by PDPN expression



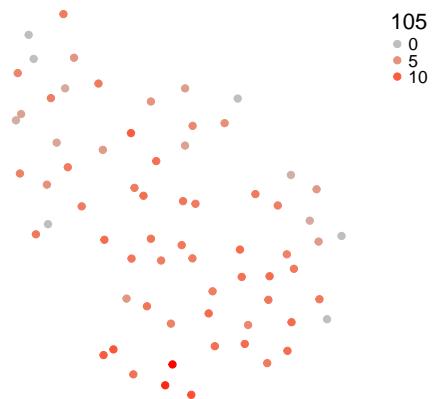
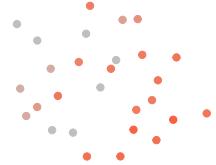
UMAP colored by MMP9 expression



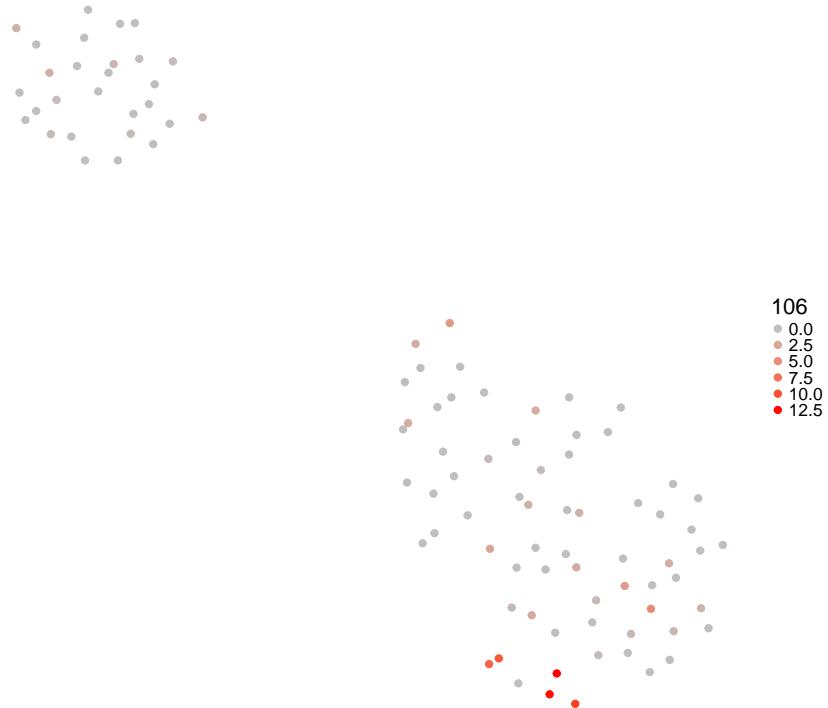
UMAP colored by MMP2 expression



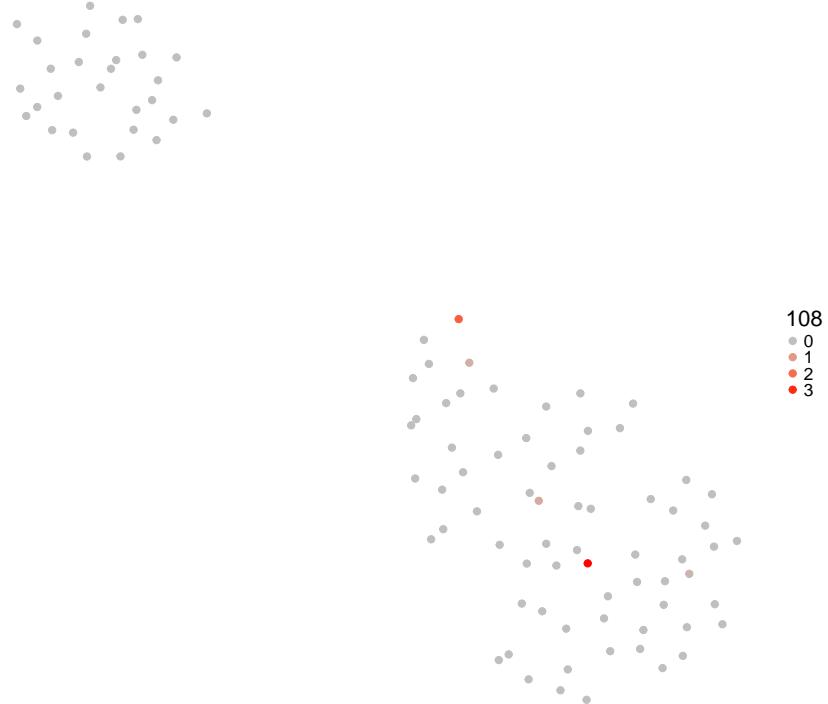
UMAP colored by CD14 expression



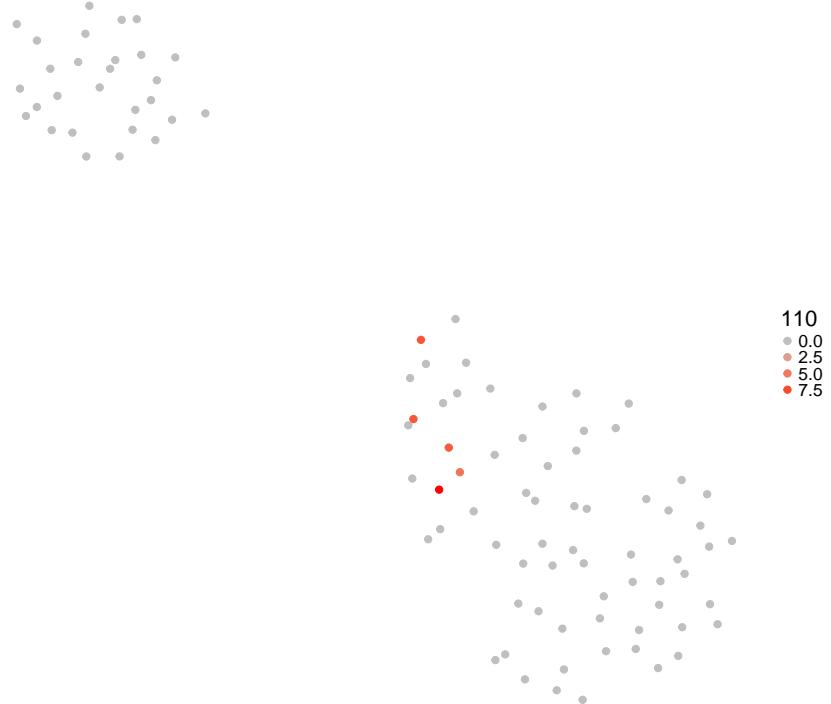
UMAP colored by IGF1 expression



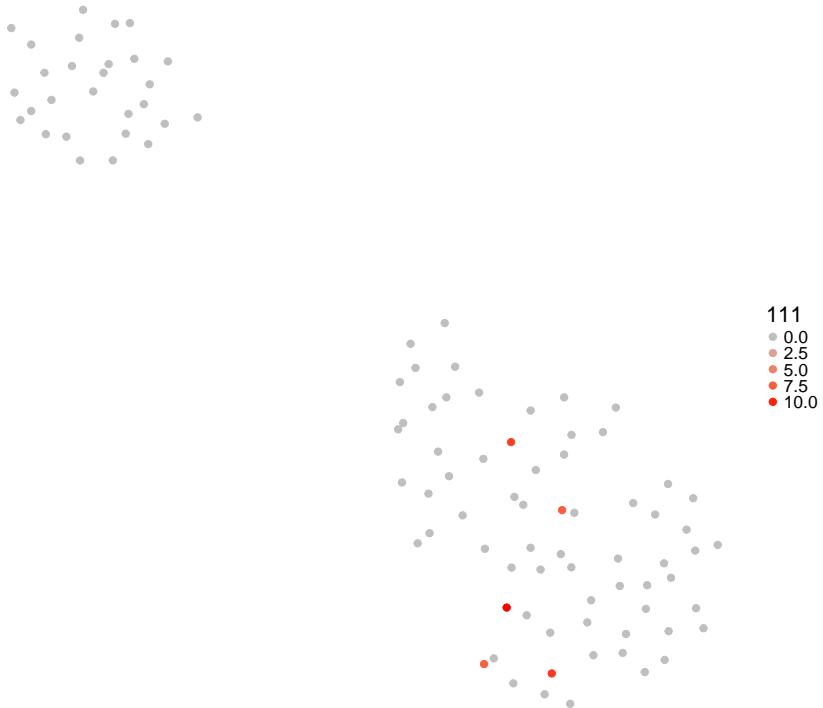
UMAP colored by BMP5 expression



UMAP colored by COL1A2 expression



UMAP colored by FGR expression

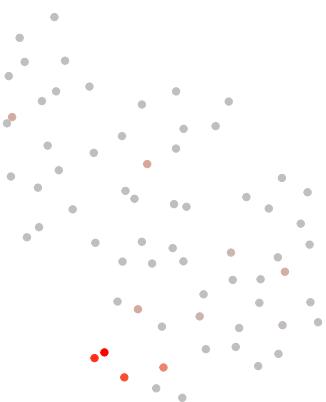


UMAP colored by LEPR expression

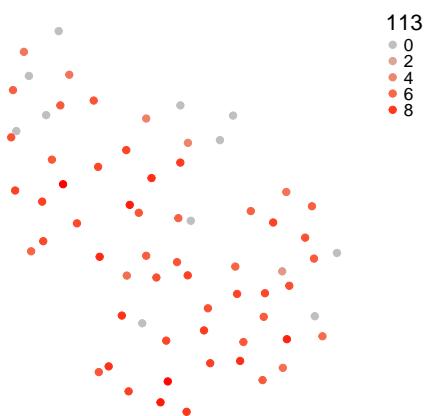
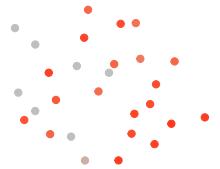


112

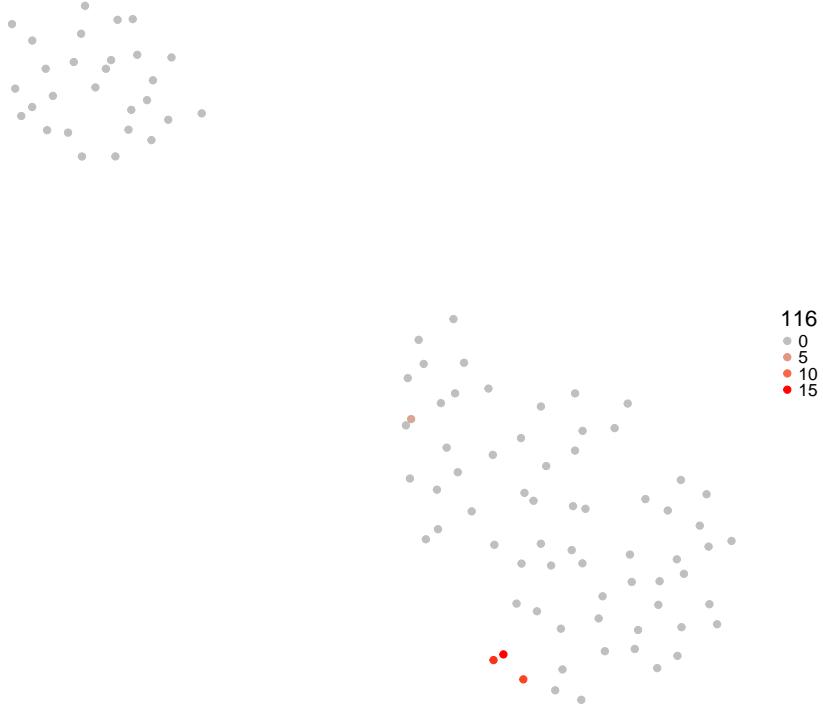
- 0
- 5
- 10
- 15



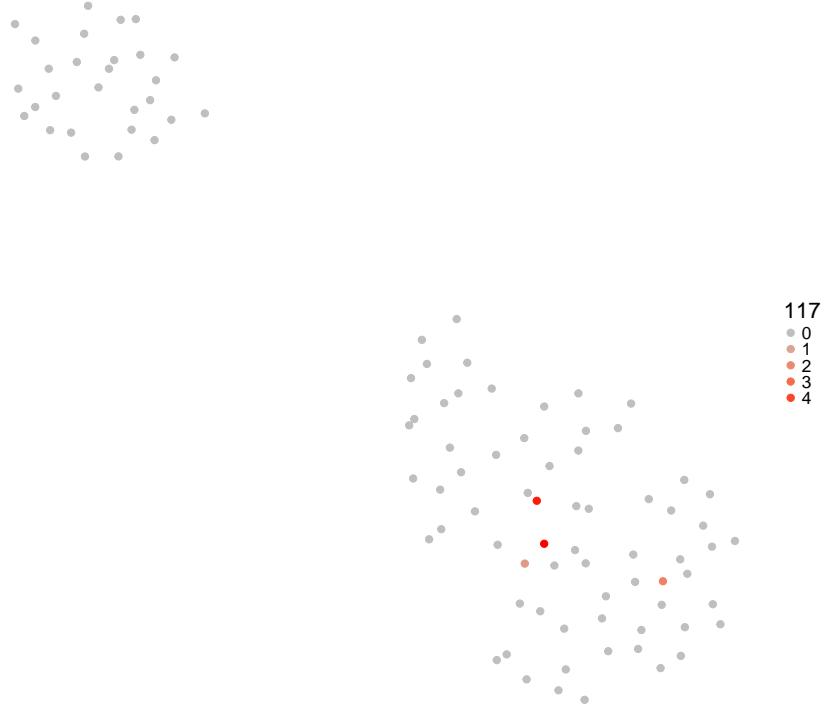
UMAP colored by GHRL expression



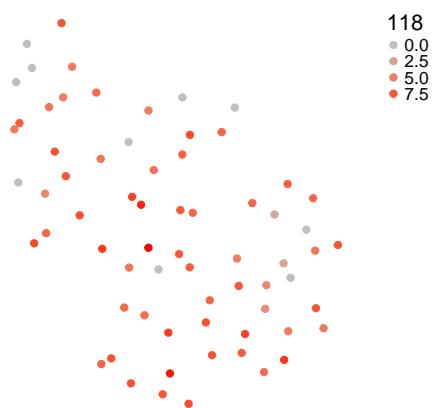
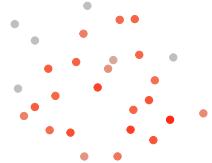
UMAP colored by TEK expression



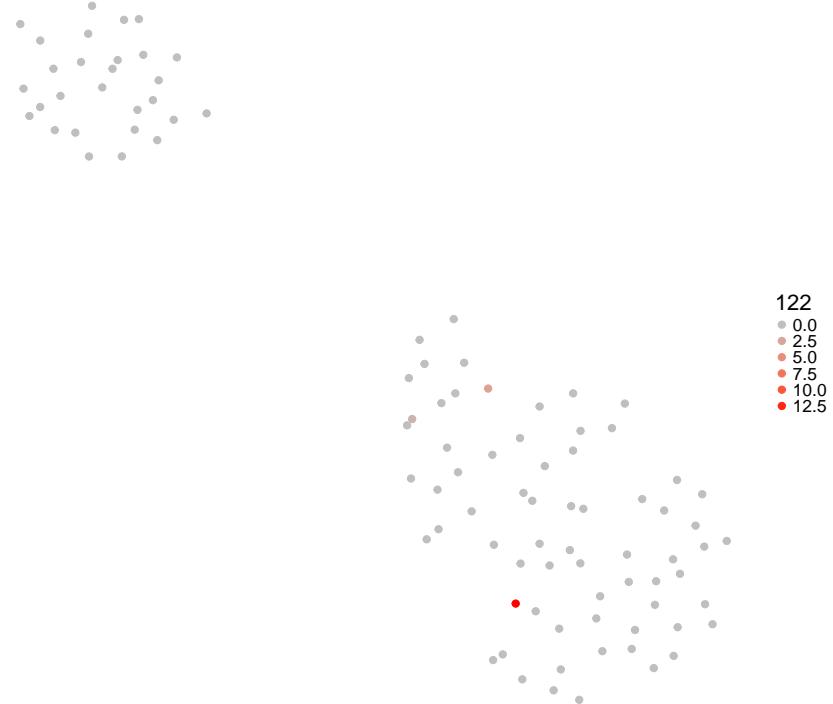
UMAP colored by TNFSF11 expression



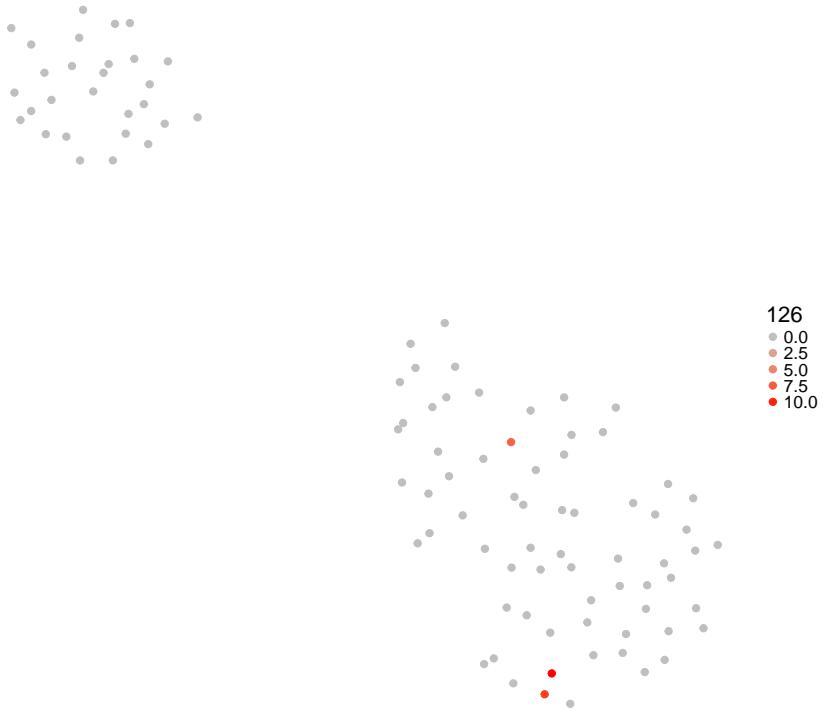
UMAP colored by PTGS2 expression



UMAP colored by CD86 expression



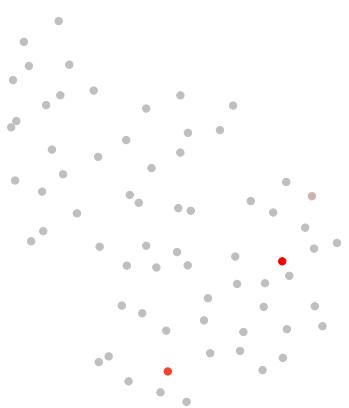
UMAP colored by IL34 expression



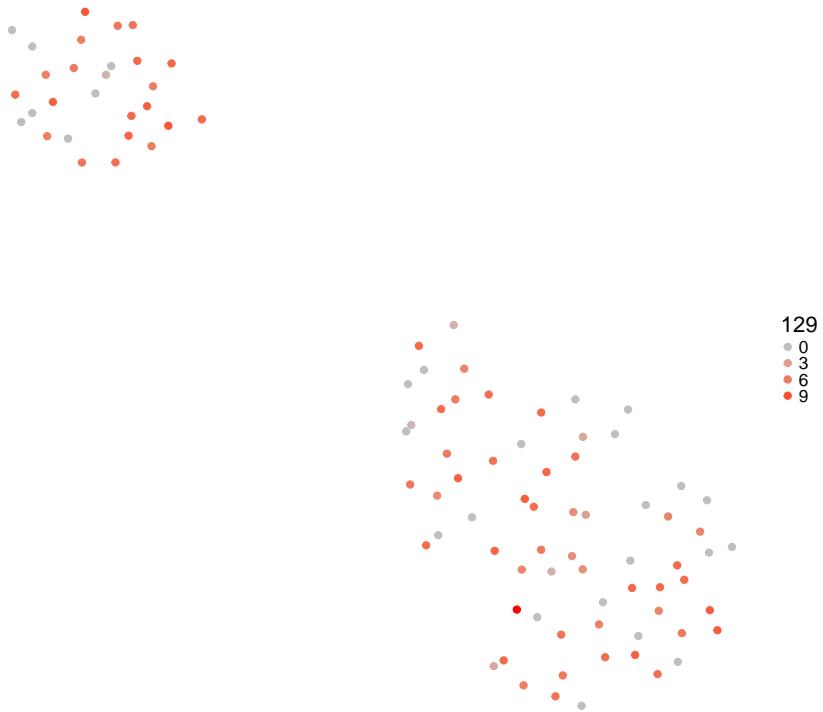
UMAP colored by LCK expression



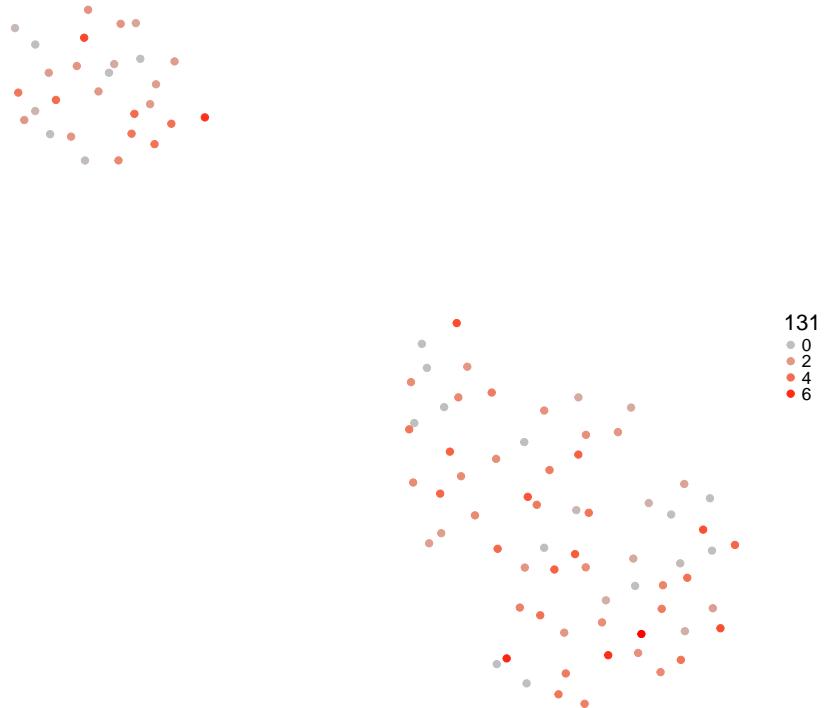
127  
0  
2  
4  
6  
8



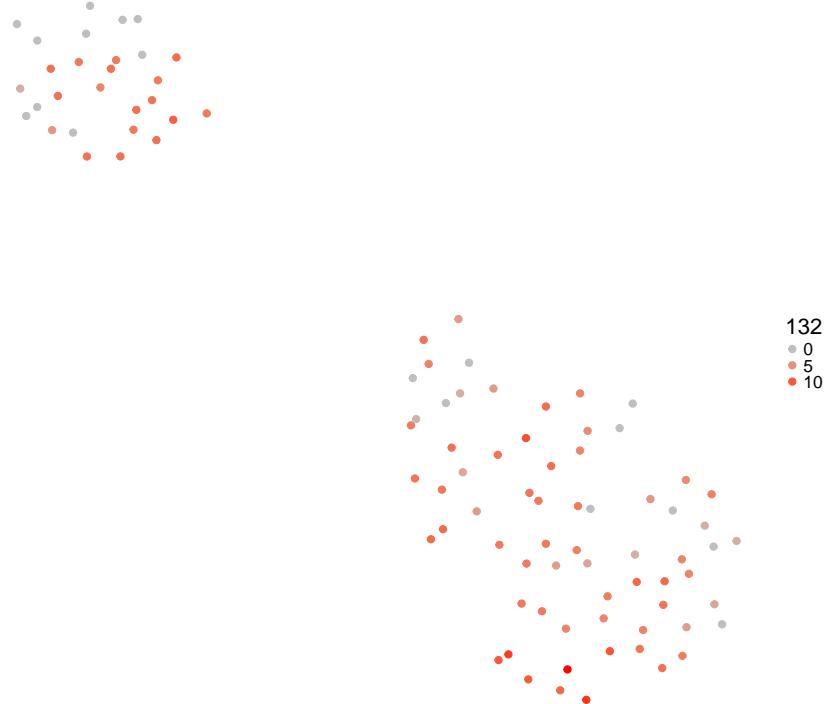
UMAP colored by ITGAX expression



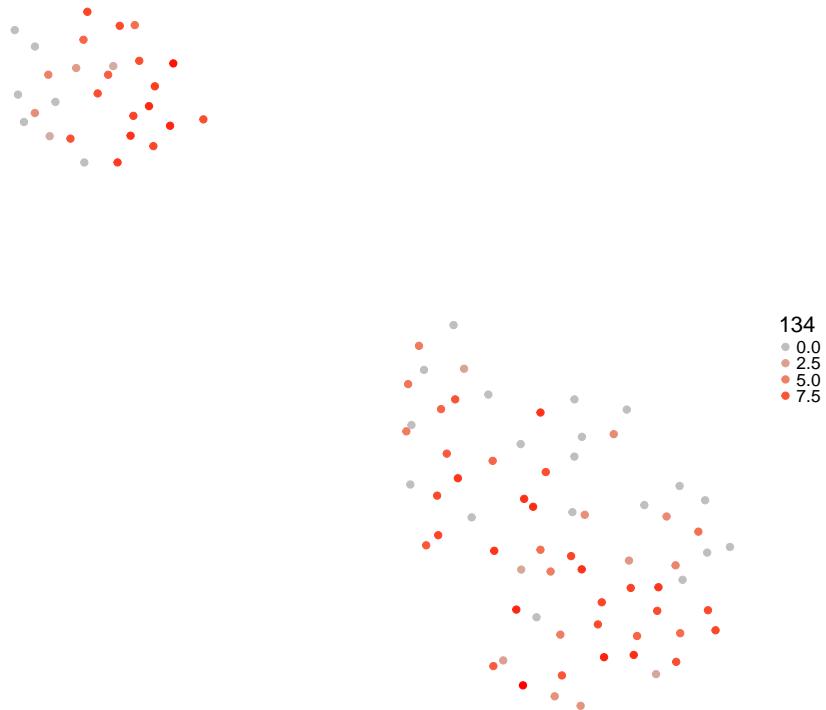
UMAP colored by CD8A expression



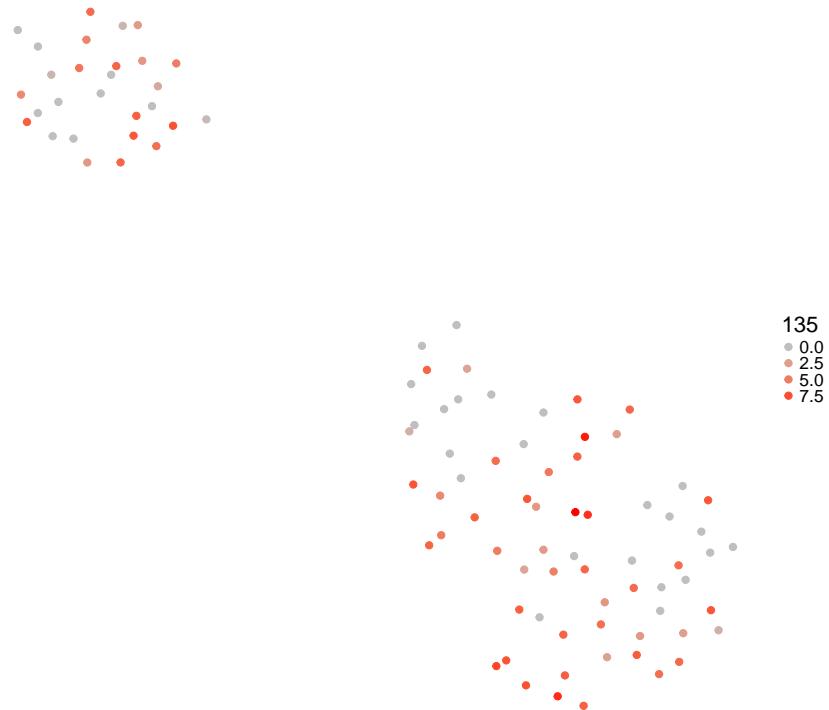
UMAP colored by FGFR3 expression



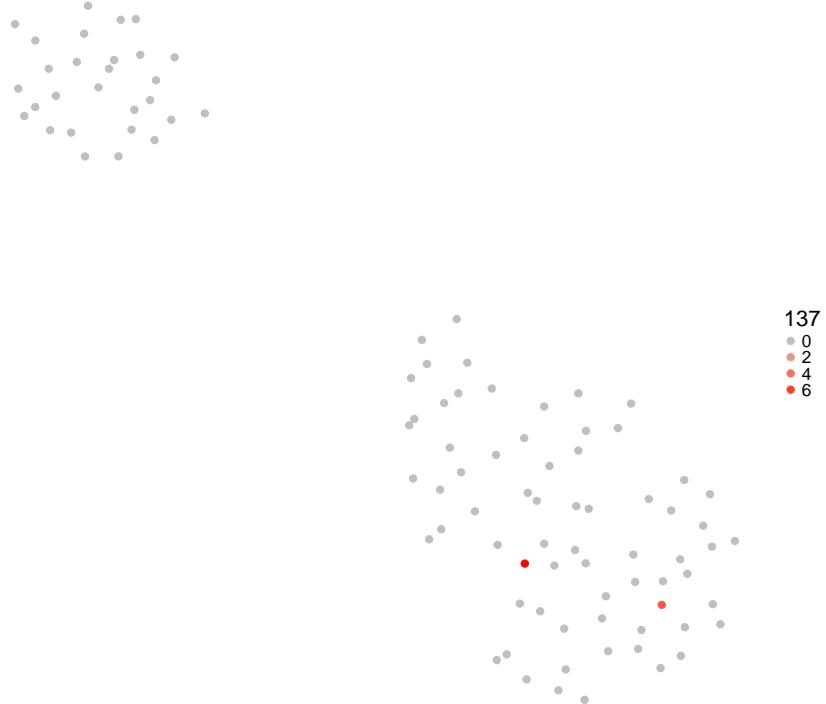
UMAP colored by DES expression



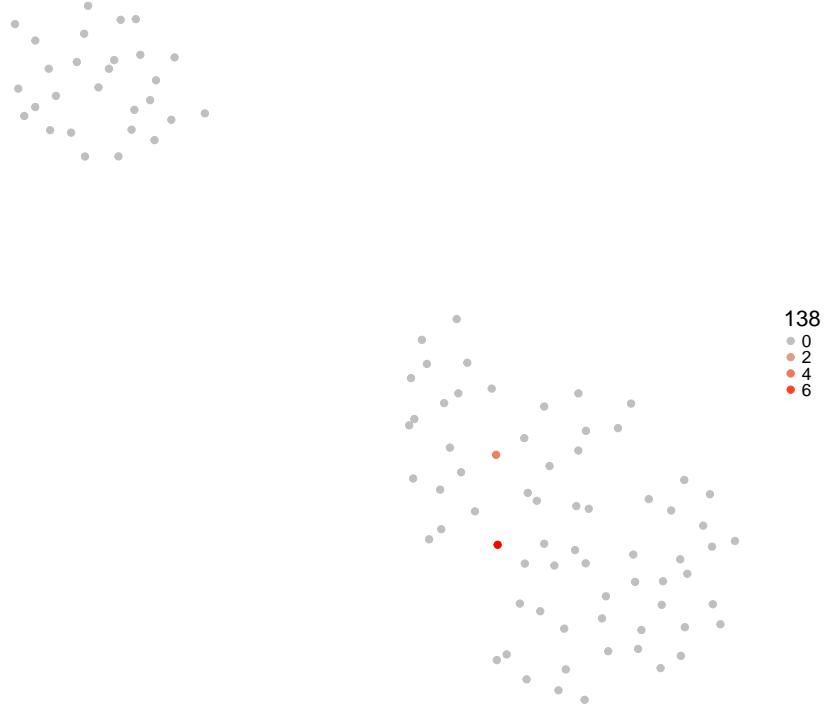
UMAP colored by TIMP1 expression



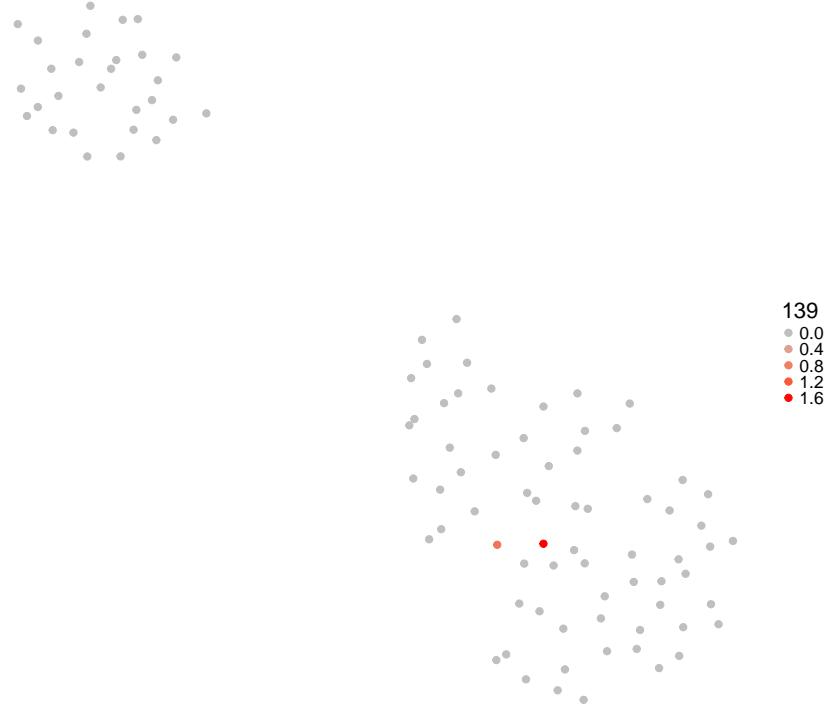
UMAP colored by FAP expression



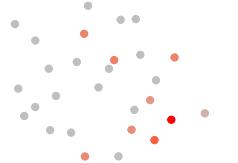
UMAP colored by IL-21 expression



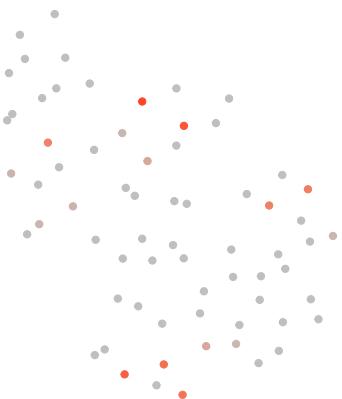
UMAP colored by MMP3 expression



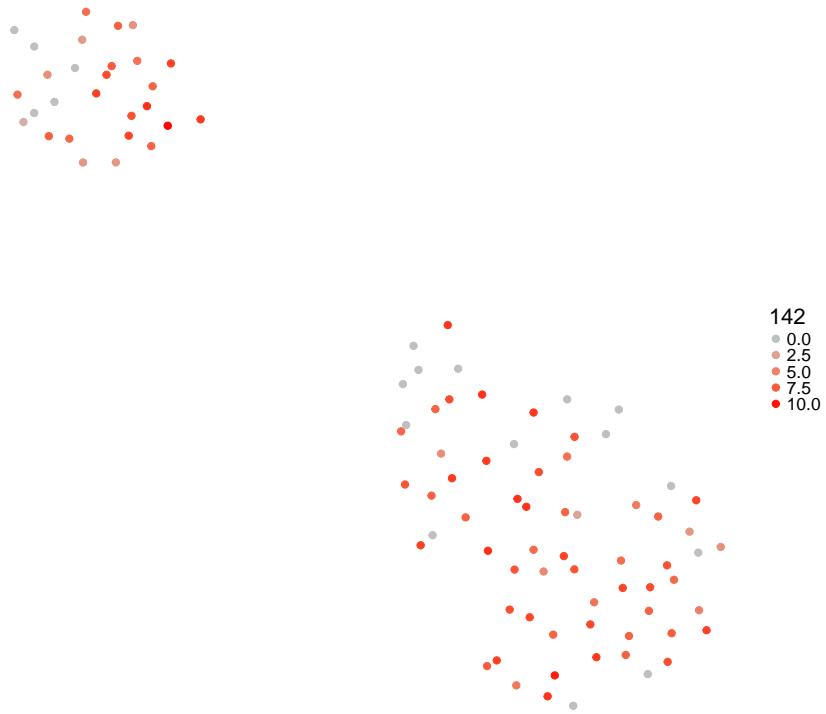
UMAP colored by GFAP expression



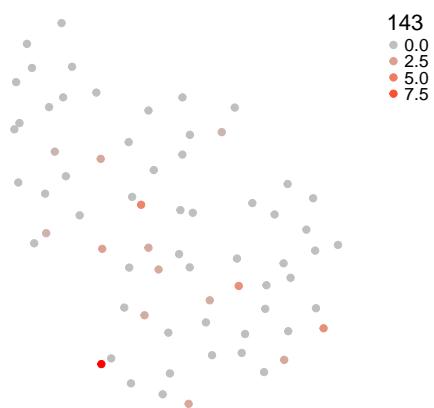
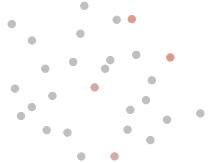
141  
• 0  
• 1  
• 2  
• 3



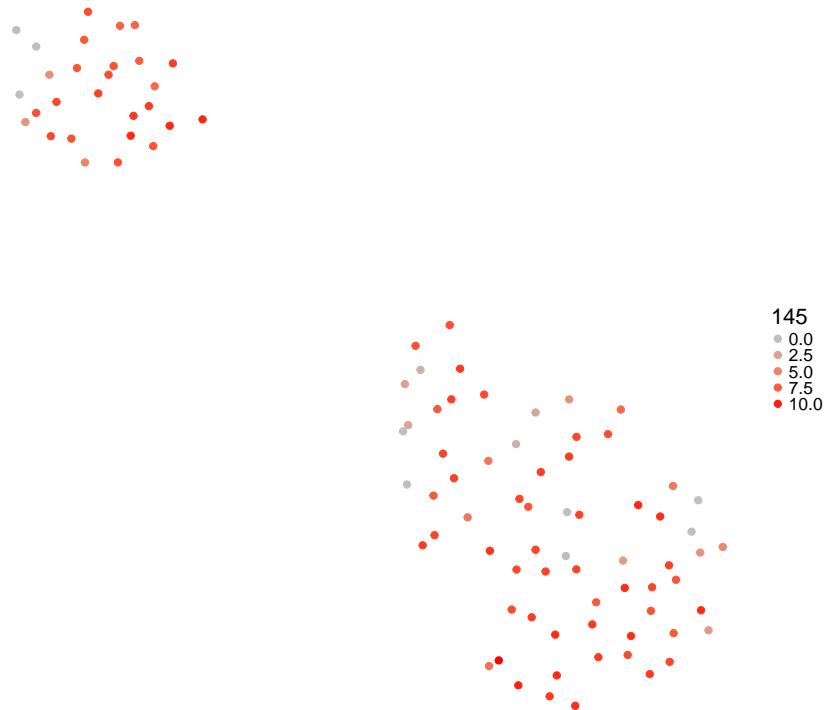
UMAP colored by TNC expression



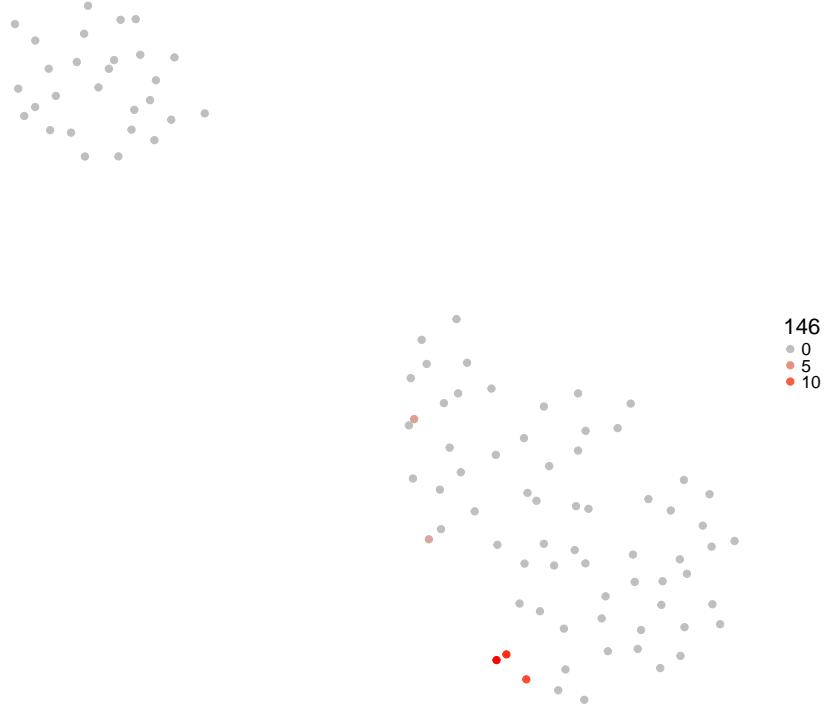
UMAP colored by SELE expression



UMAP colored by CXCL13 expression



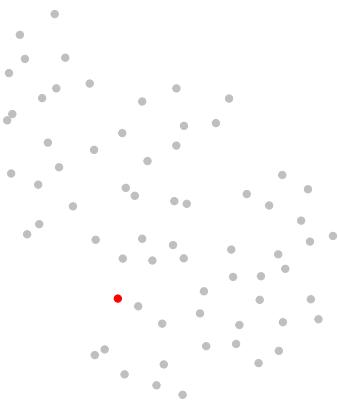
UMAP colored by KDR expression



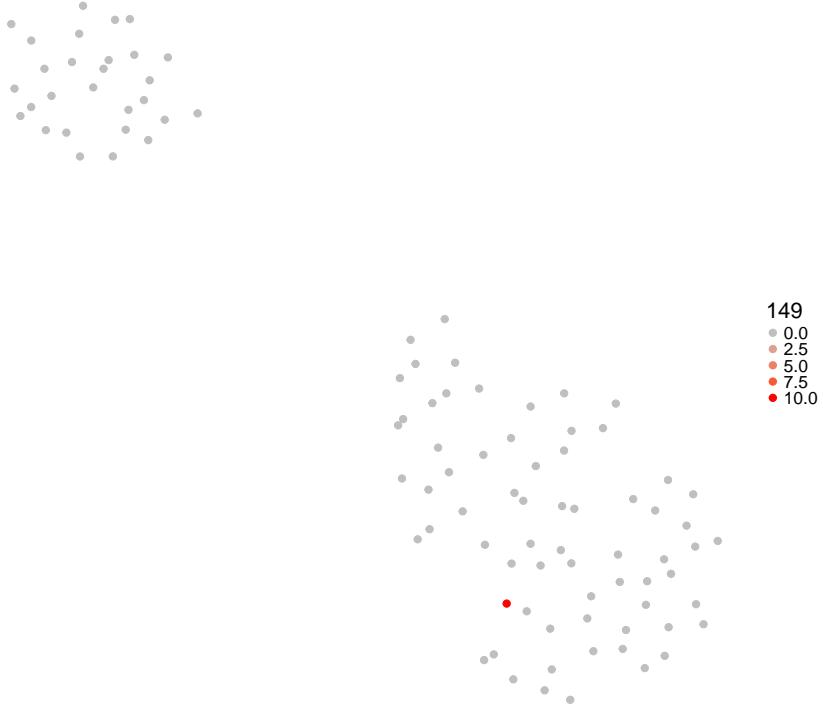
UMAP colored by ADGRE1 expression



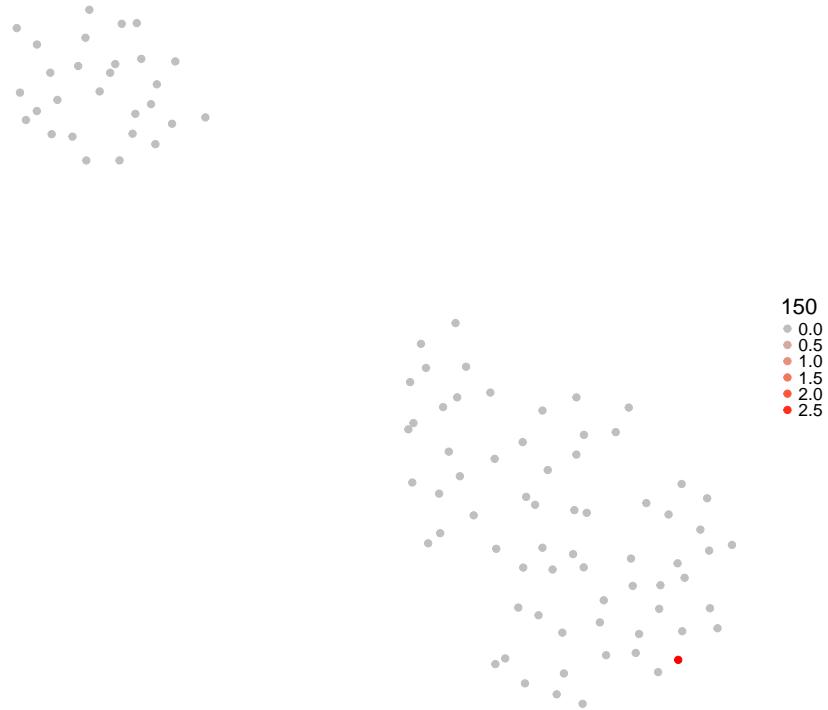
147  
• 0  
• 2  
• 4  
• 6



UMAP colored by CD80 expression



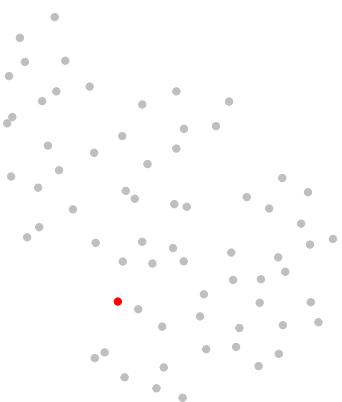
UMAP colored by CLEC7A expression



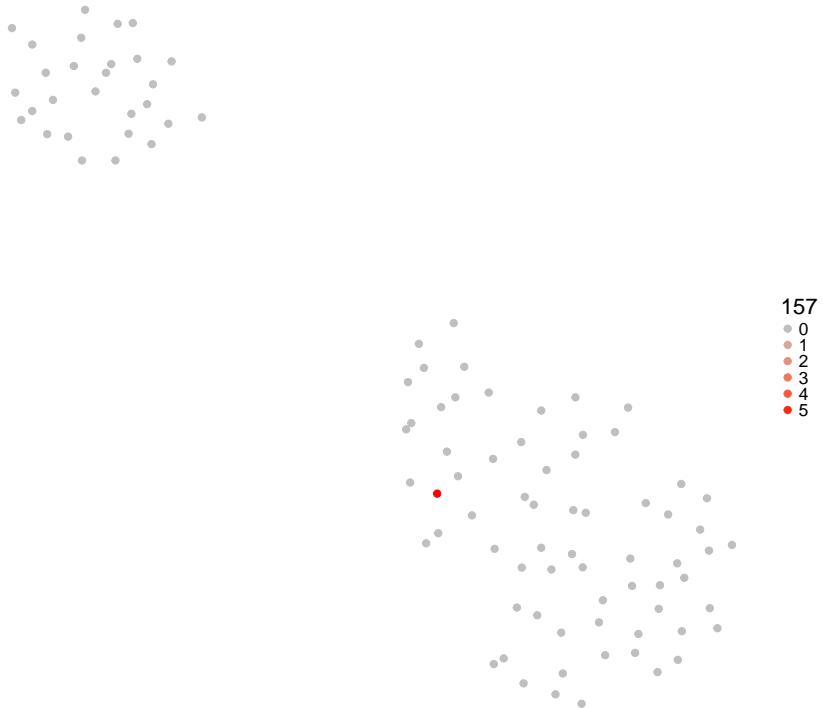
UMAP colored by NLRP3 expression



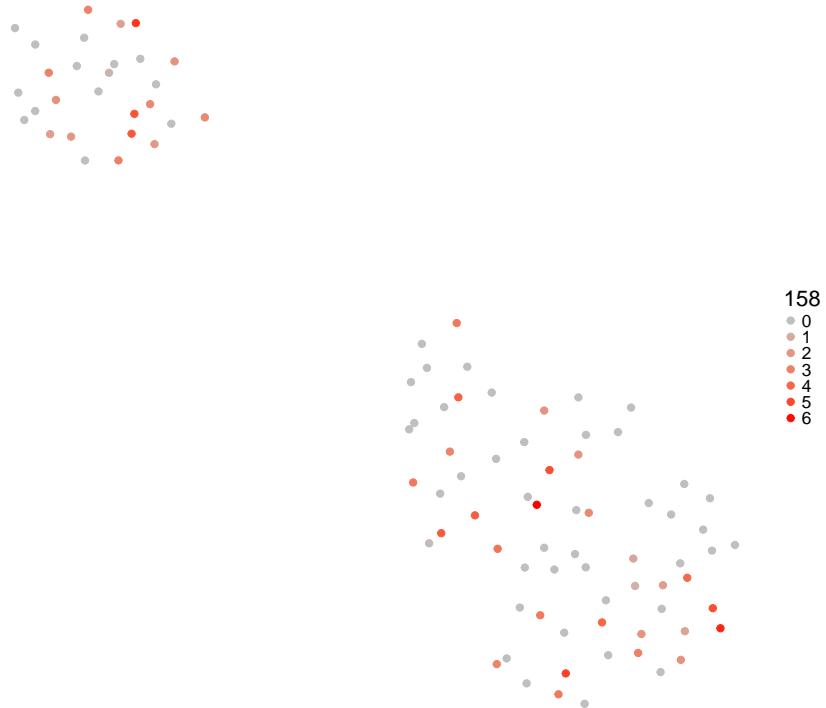
155  
• 0  
• 2  
• 4  
• 6



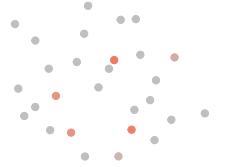
UMAP colored by ZAP70 expression



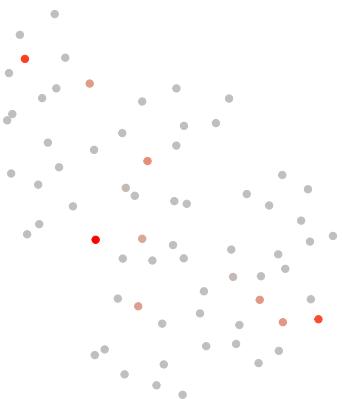
UMAP colored by IL1B expression



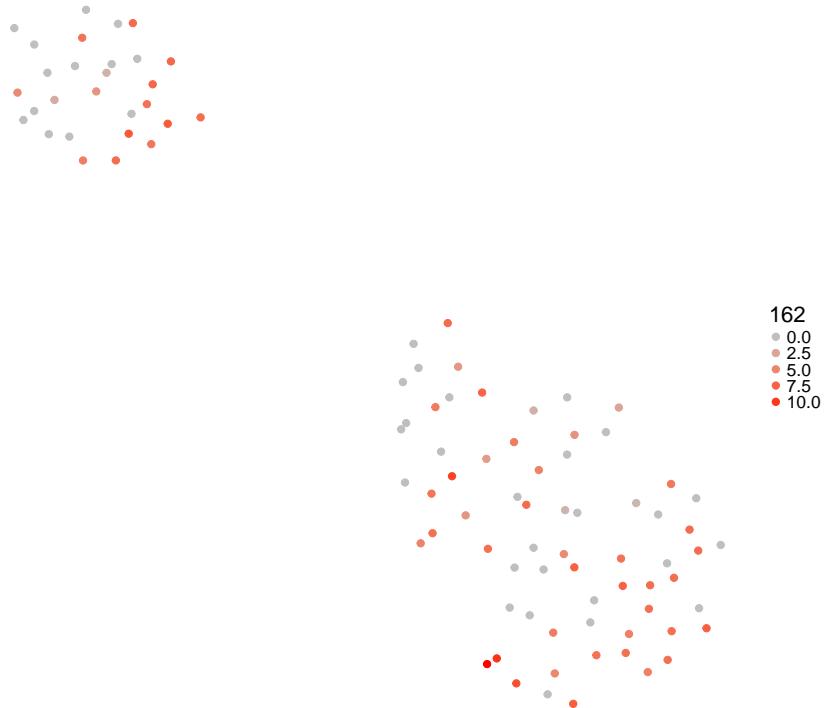
UMAP colored by PDGFRB expression



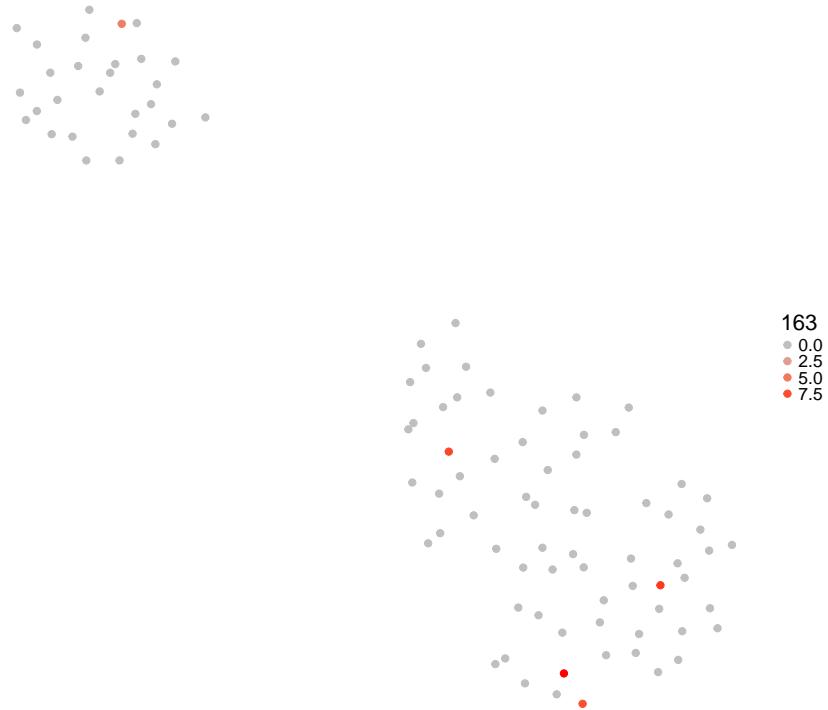
161  
● 0  
● 1  
● 2  
● 3  
● 4



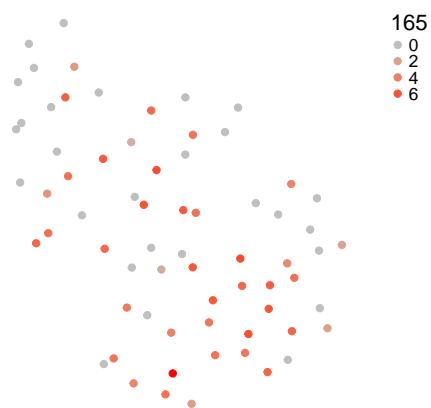
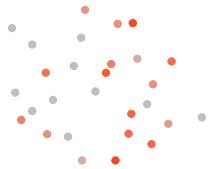
UMAP colored by GM13889 expression



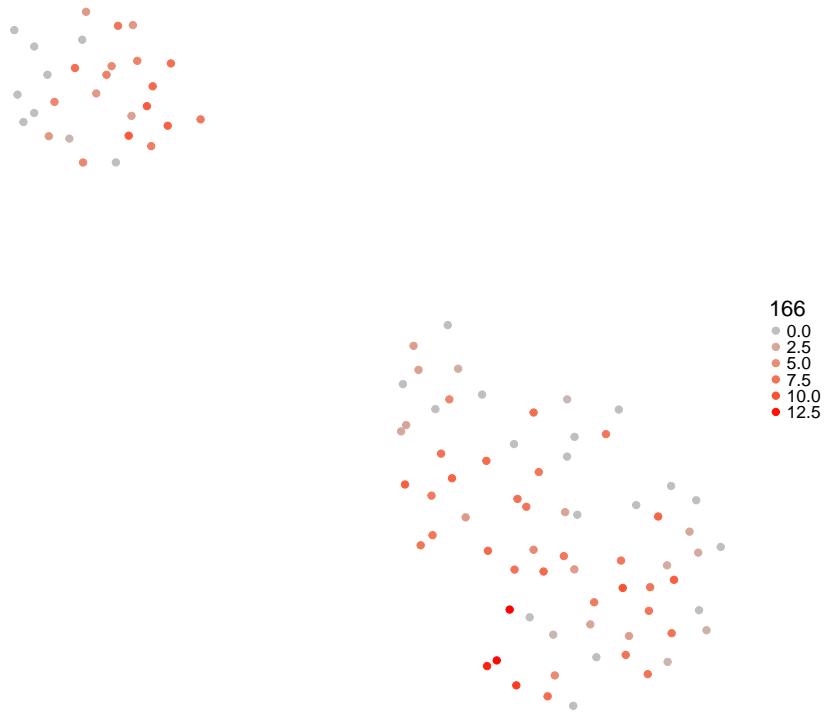
UMAP colored by BMP7 expression



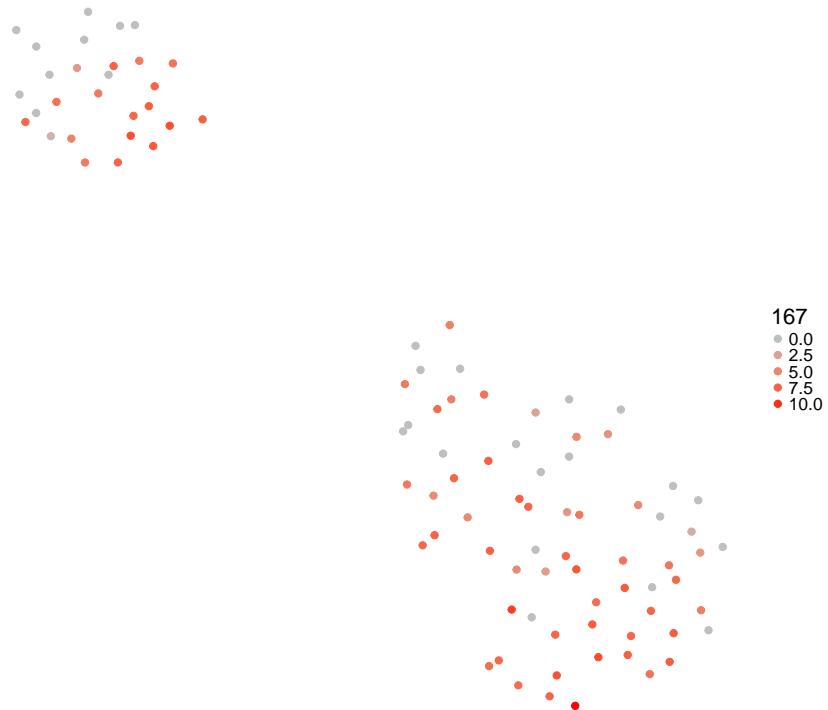
UMAP colored by TLR7 expression



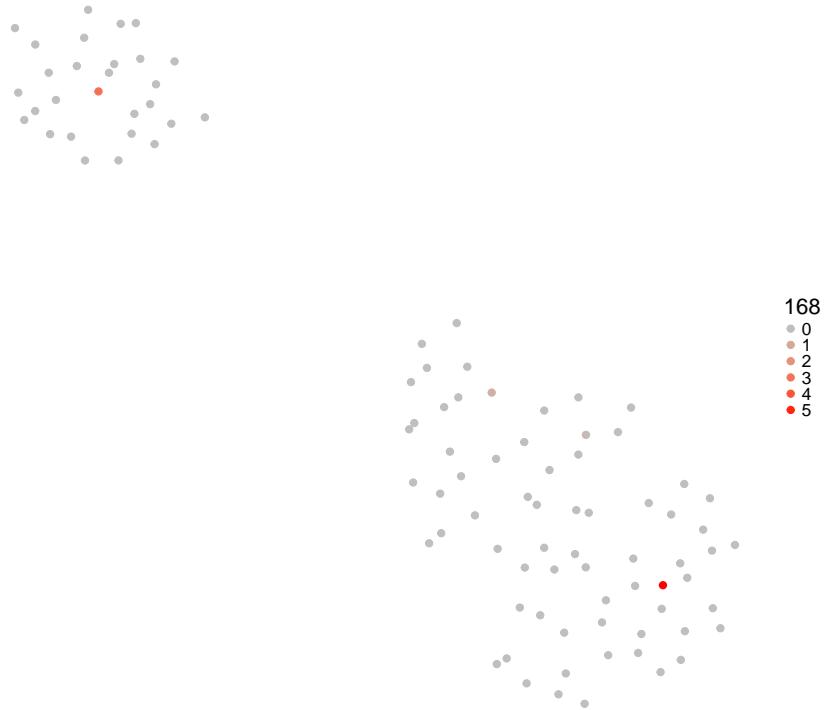
UMAP colored by CSF2RB expression



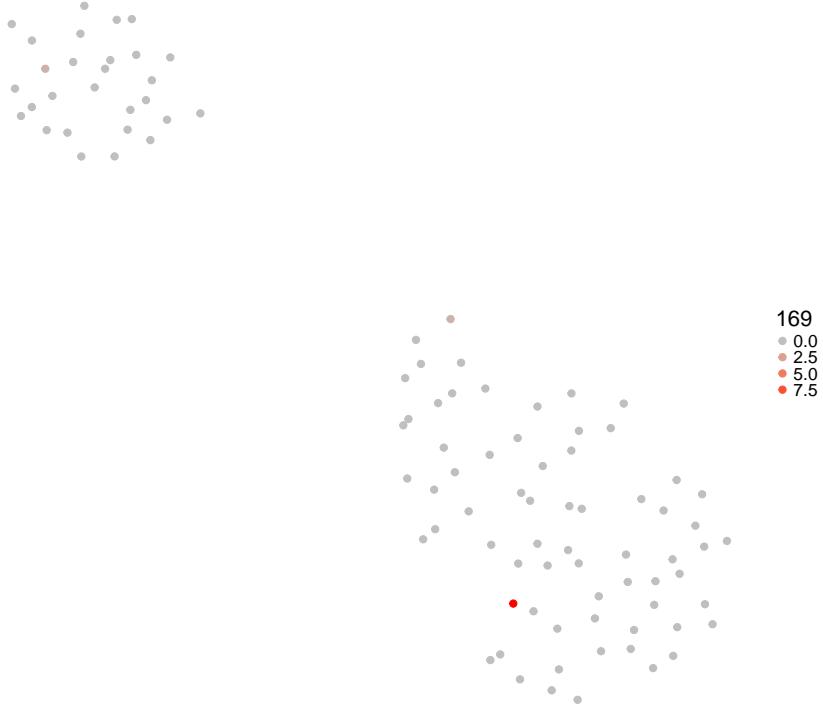
UMAP colored by CSF1R expression



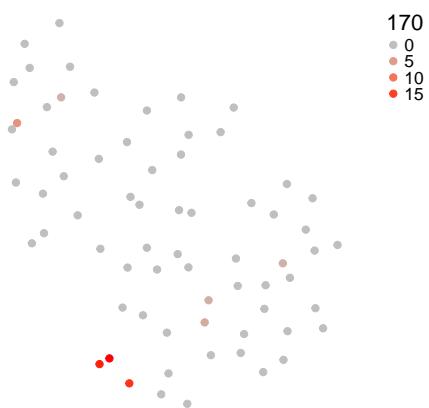
UMAP colored by IL1A expression



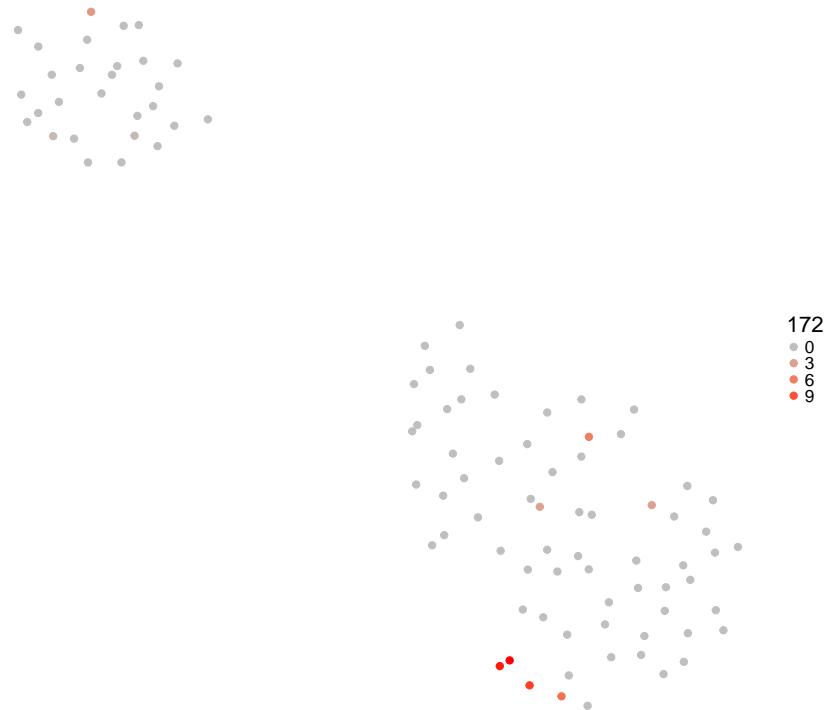
UMAP colored by TLR9 expression



UMAP colored by PECAM1 expression



UMAP colored by ICAM2 expression

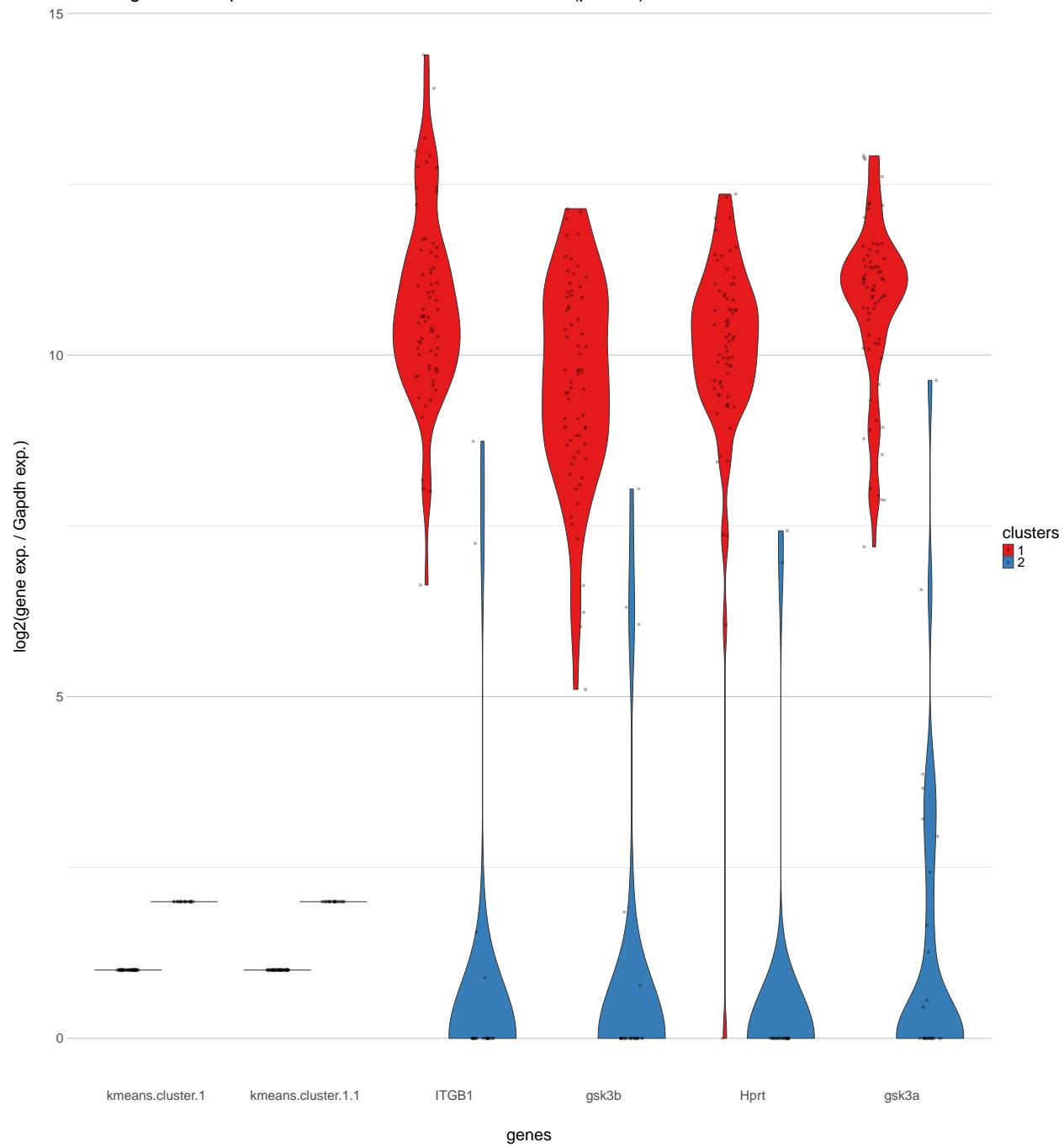


Differentially expressed genes between clusters :

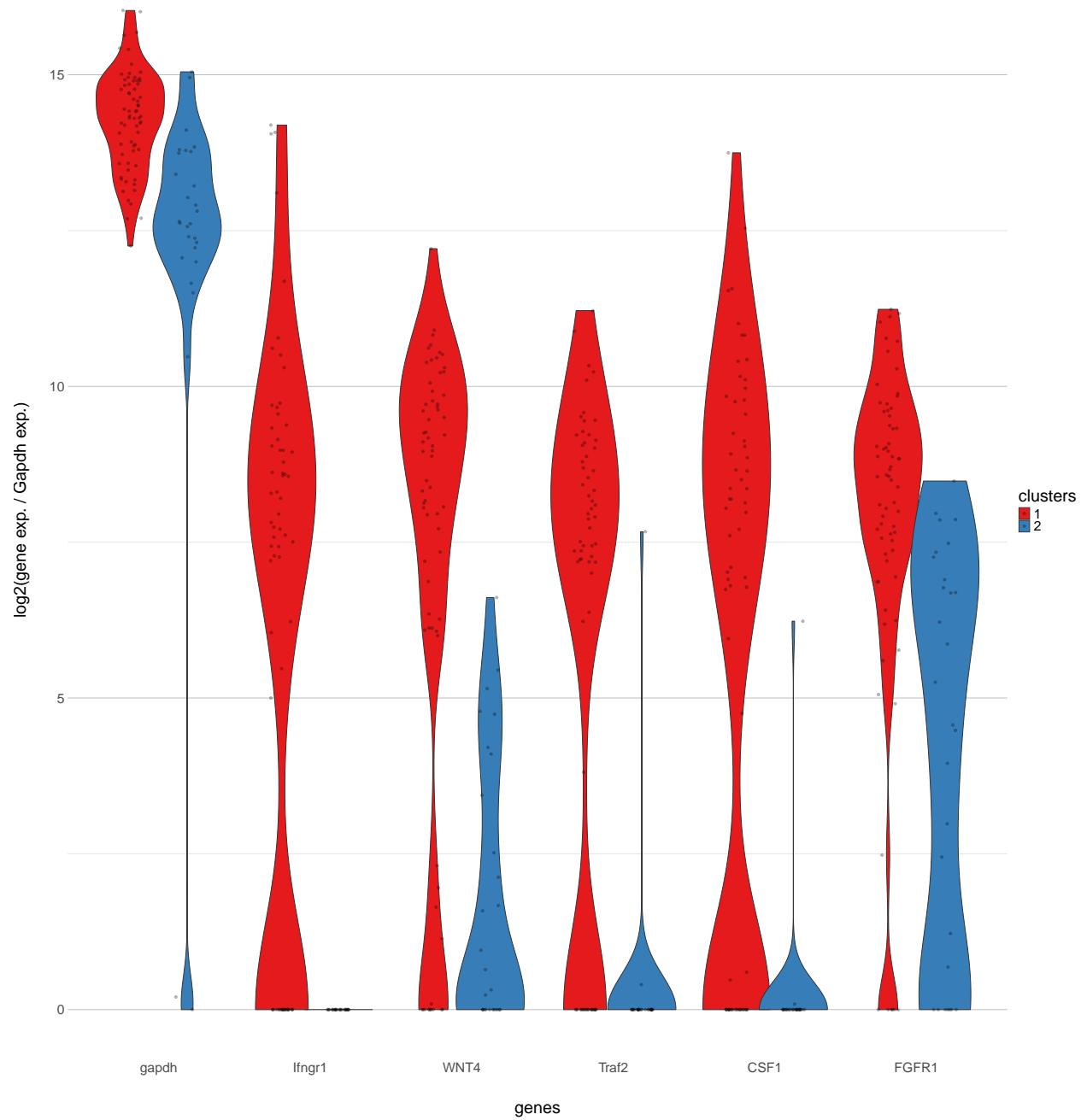
```
[1] kmeans.cluster.1: 1.523e-20    kmeans.cluster.1.1: 1.523e-20
[3] ITGB1: 7.283e-13               gsk3b: 7.283e-13
[5] Hpprt: 7.283e-13              gsk3a: 7.283e-13
[7] pten: 7.283e-13                HIF1A: 1.048e-12
[9] Irf2: 1.381e-12               Stat3: 1.621e-12
[11] Ly6e: 1.897e-12              Jak1: 1.897e-12
[13] VEGFA: 1.549e-11             PTK2: 1.598e-10
```

|      |           |           |           |           |
|------|-----------|-----------|-----------|-----------|
| [15] | TIMP2:    | 2.933e-10 | ACVR1:    | 5.337e-10 |
| [17] | Stat1:    | 6.361e-10 | Pdl-1:    | 4.501e-09 |
| [19] | Irf1:     | 5.882e-09 | VEGFB:    | 6.678e-09 |
| [21] | Jak2:     | 8.385e-09 | Socs3:    | 1.651e-08 |
| [23] | nfkbb1:   | 2.708e-08 | PDGFA:    | 5.145e-08 |
| [25] | gapdh:    | 2.237e-07 | Ifngr1:   | 2.237e-07 |
| [27] | WNT4:     | 3.755e-07 | Traf2:    | 5.676e-07 |
| [29] | CSF1:     | 1.734e-06 | FGFR1:    | 2.643e-06 |
| [31] | KLF5:     | 3.201e-06 | tnfrsf1a: | 6.057e-06 |
| [33] | CSF2RA:   | 2.092e-05 | INS1:     | 2.303e-05 |
| [35] | ANPEP:    | 2.579e-05 | NFATC1:   | 2.942e-05 |
| [37] | Fyn:      | 3.099e-05 | IAPP:     | 0.0001086 |
| [39] | TLR3:     | 0.0001456 | Bc16:     | 0.0002035 |
| [41] | Stat5:    | 0.0002194 | Cd44:     | 0.0003089 |
| [43] | Ifit1:    | 0.0003089 | CD44:     | 0.0009111 |
| [45] | EGFR:     | 0.0009111 | SPP1:     | 0.001506  |
| [47] | CD83:     | 0.002486  | i14ra:    | 0.002486  |
| [49] | CD74:     | 0.002685  | Nur77:    | 0.004627  |
| [51] | Oas1b:    | 0.004627  | LY75:     | 0.005312  |
| [53] | PDGFB:    | 0.005831  | Tnfaip3:  | 0.008453  |
| [55] | Map2k6:   | 0.01145   | Irf7:     | 0.01214   |
| [57] | GCG:      | 0.01416   | SST:      | 0.01758   |
| [59] | tnfrsf1b: | 0.04009   | icam1:    | 0.0435    |
| [61] | cd40:     | 0.04662   | Oas2:     | 0.04755   |

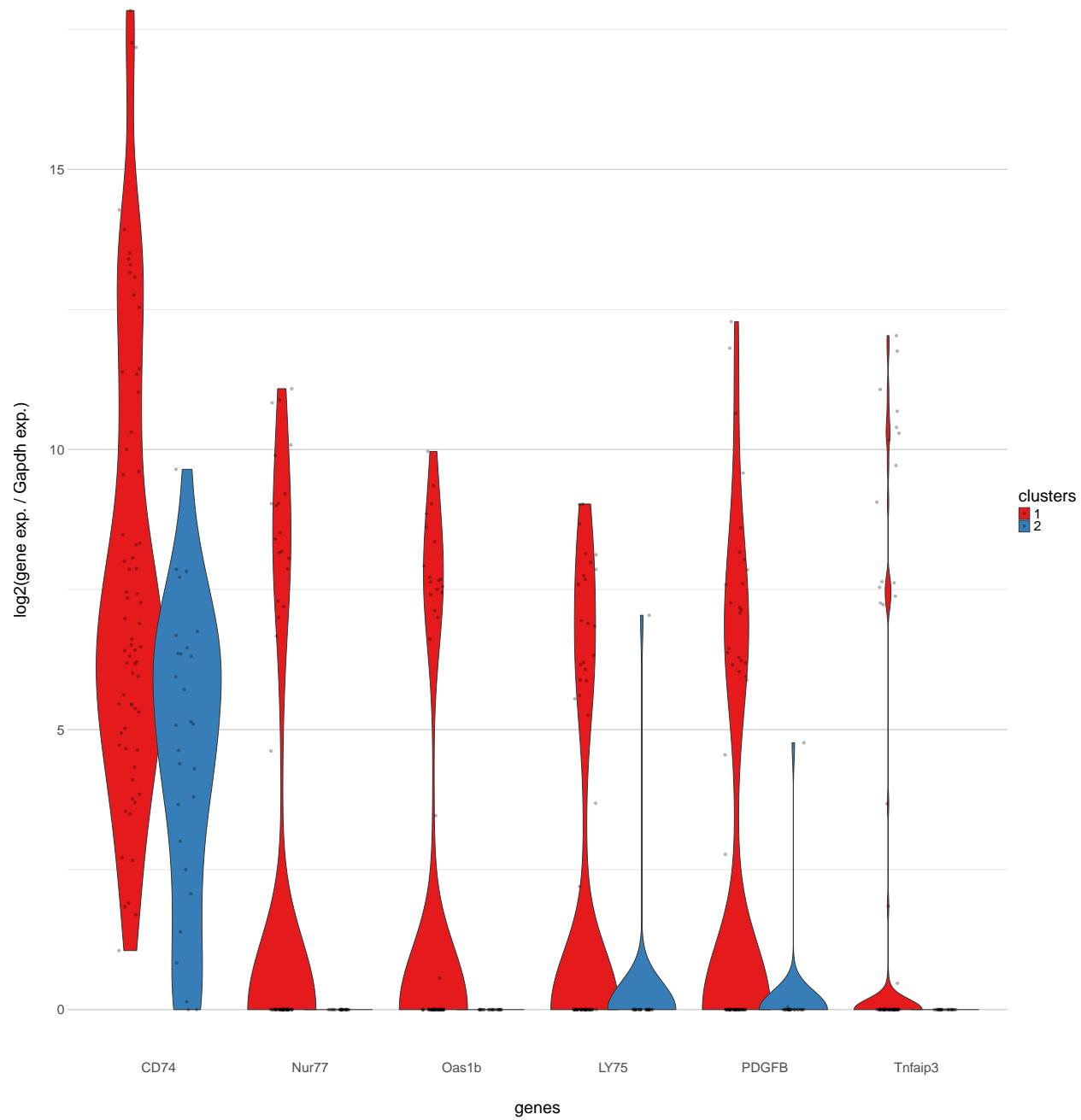
most significant expression differences between clusters (plot #1)



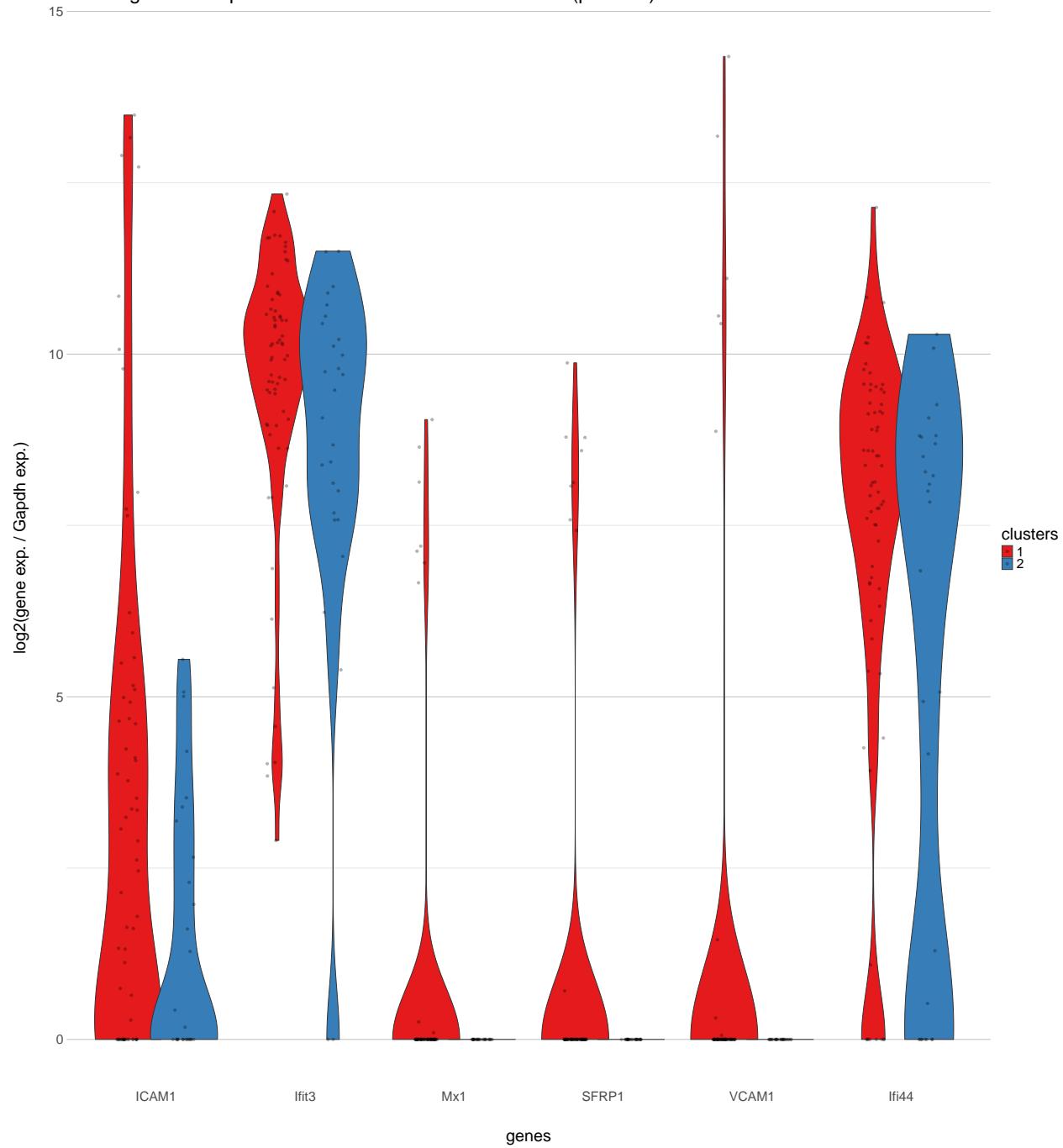
most significant expression differences between clusters (plot #5)



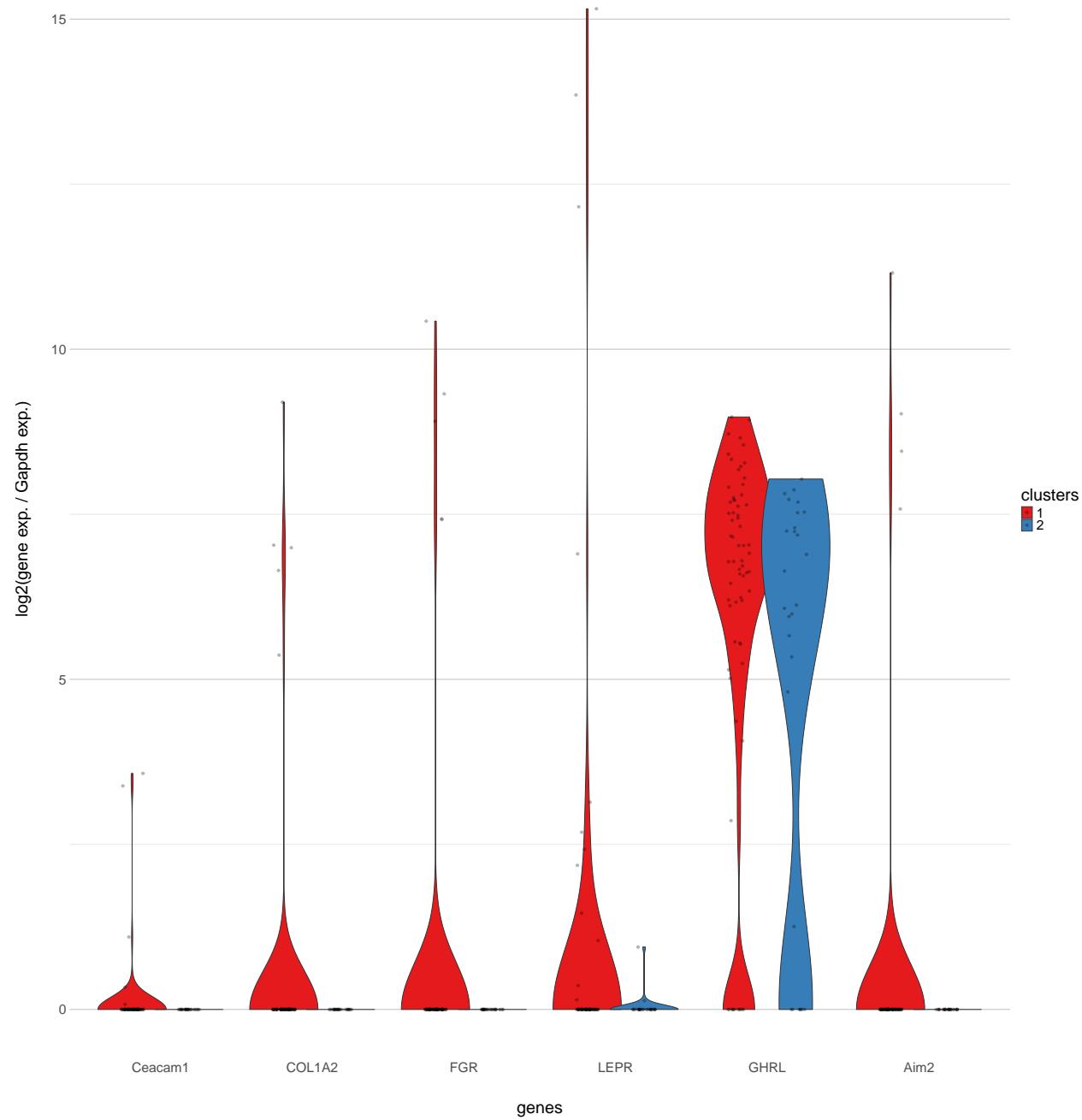
most significant expression differences between clusters (plot #9)



most significant expression differences between clusters (plot #13)



most significant expression differences between clusters (plot #17)



most significant expression differences between clusters (plot #21)

