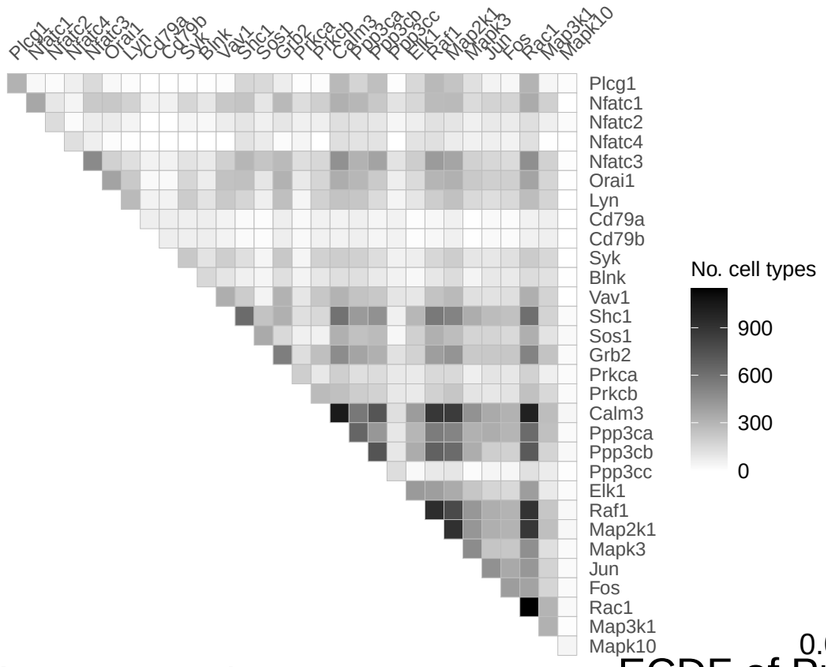
BCR Signaling Pathway (k_opt = 110)

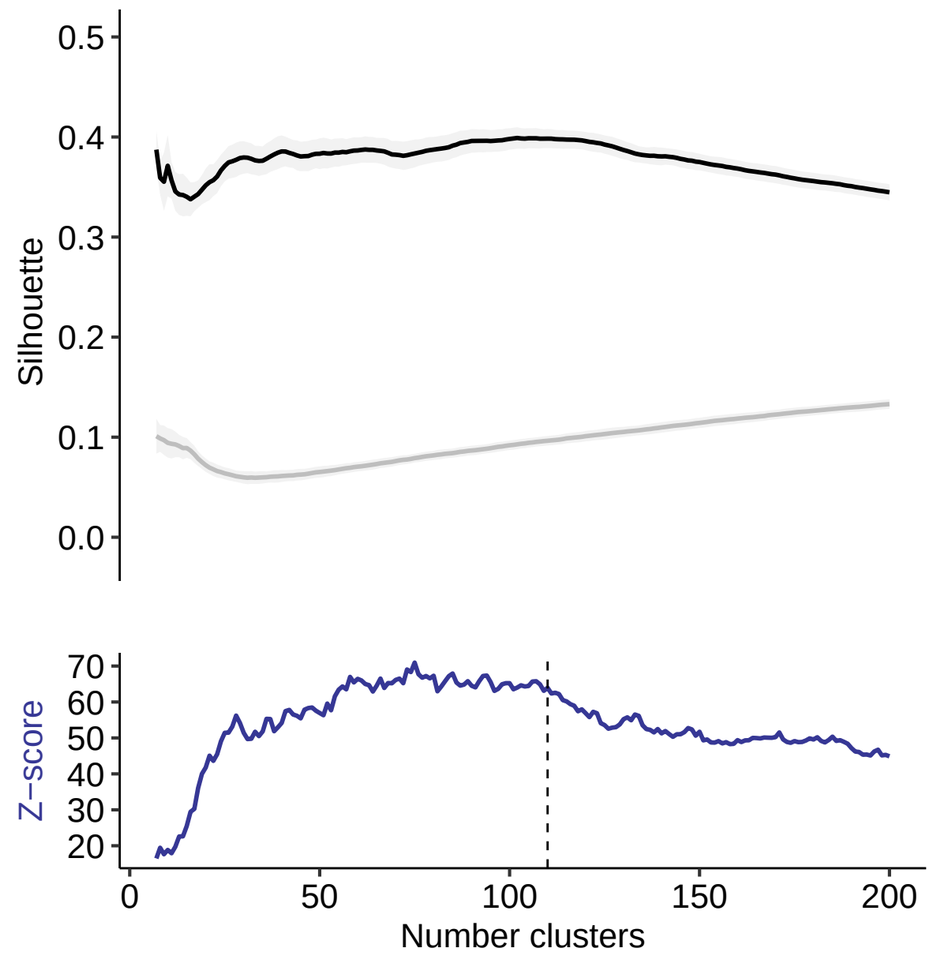
Pathway genes

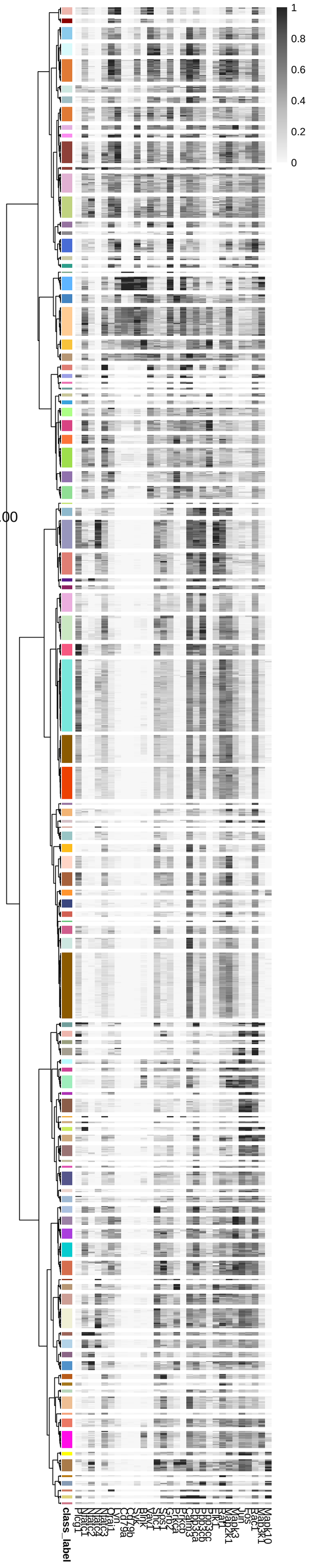
Plcg1	Blnk	Ppp3cc
Nfatc1	Vav1	Elk1
Nfatc2	Shc1	Raf1
Nfatc4	Sos1	Map2k1
Nfatc3	Grb2	Mapk3
Orai1	Prkca	Jun
Lyn	Prkcb	Fos
Cd79a	Calm3	Rac1
Cd79b	Ppp3ca	Map3k1
Syk	Ppp3cb	Mapk10

Gene Co−Expression Above Threshold

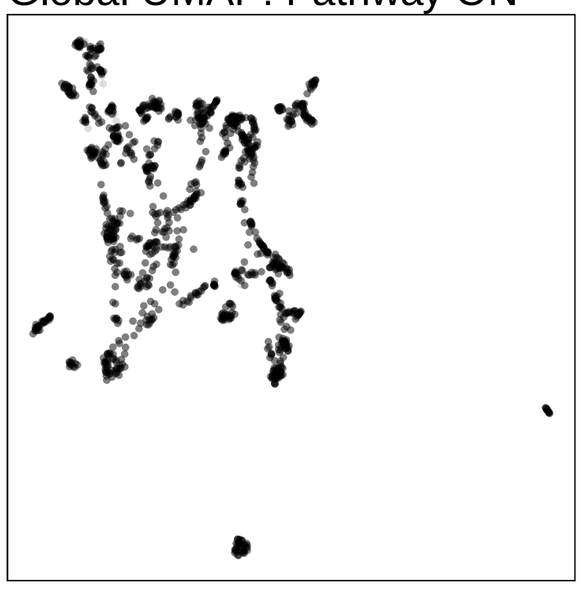


Silhouette and Z−score

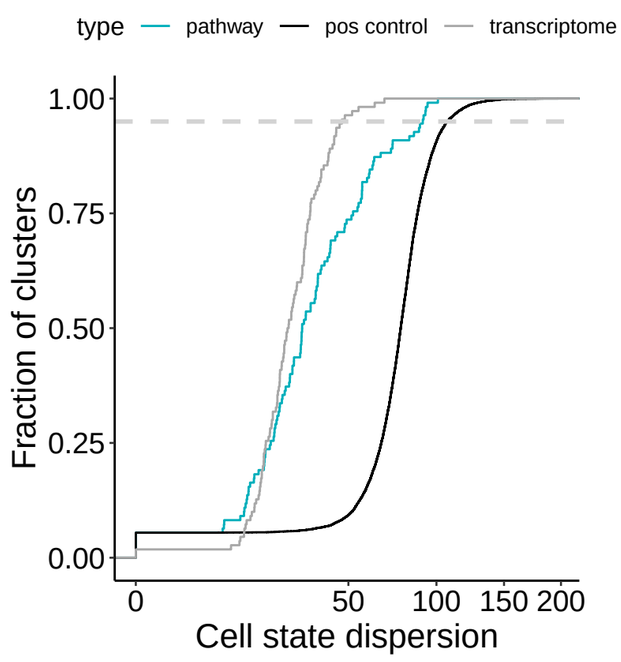




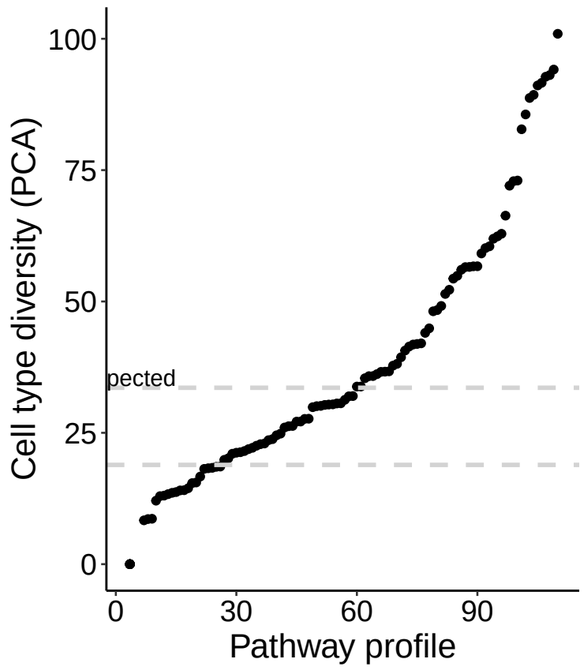
Global UMAP: Pathway ON



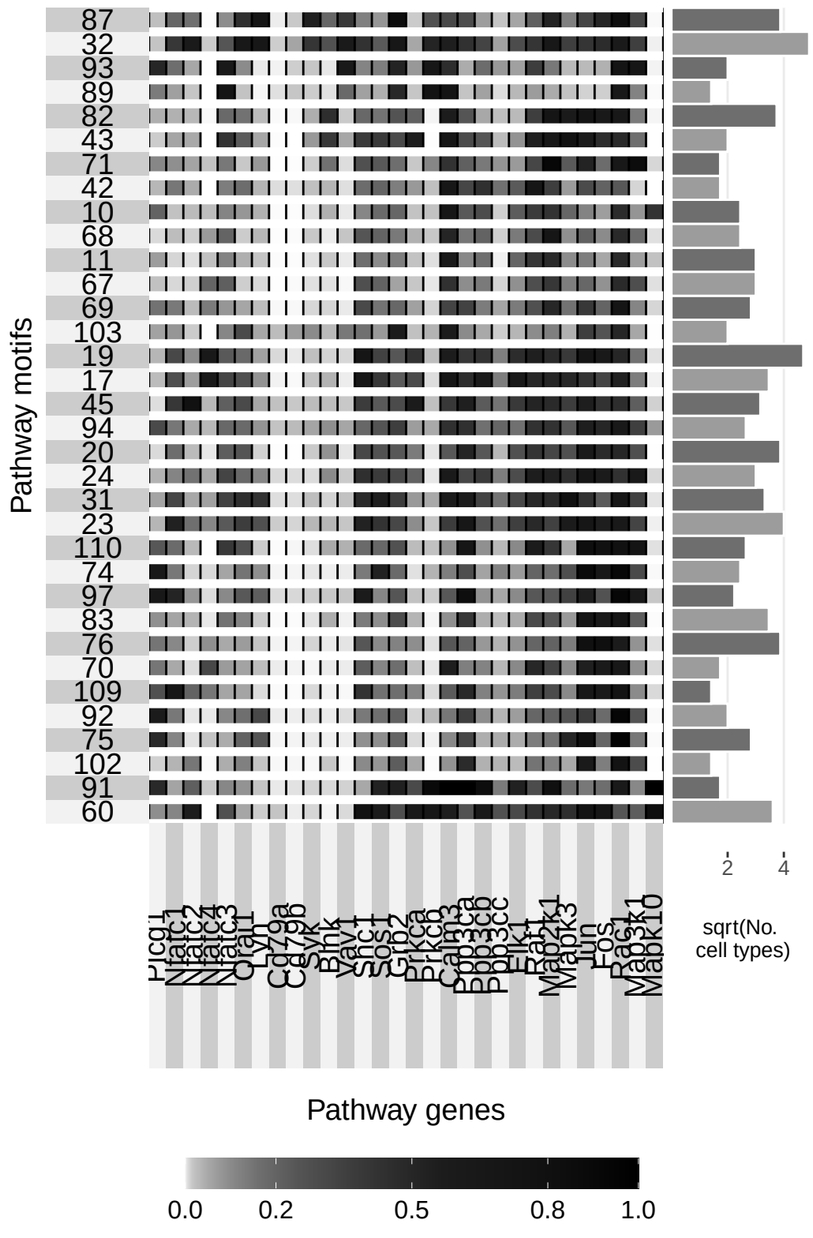
ECDF of Profile Dispersions



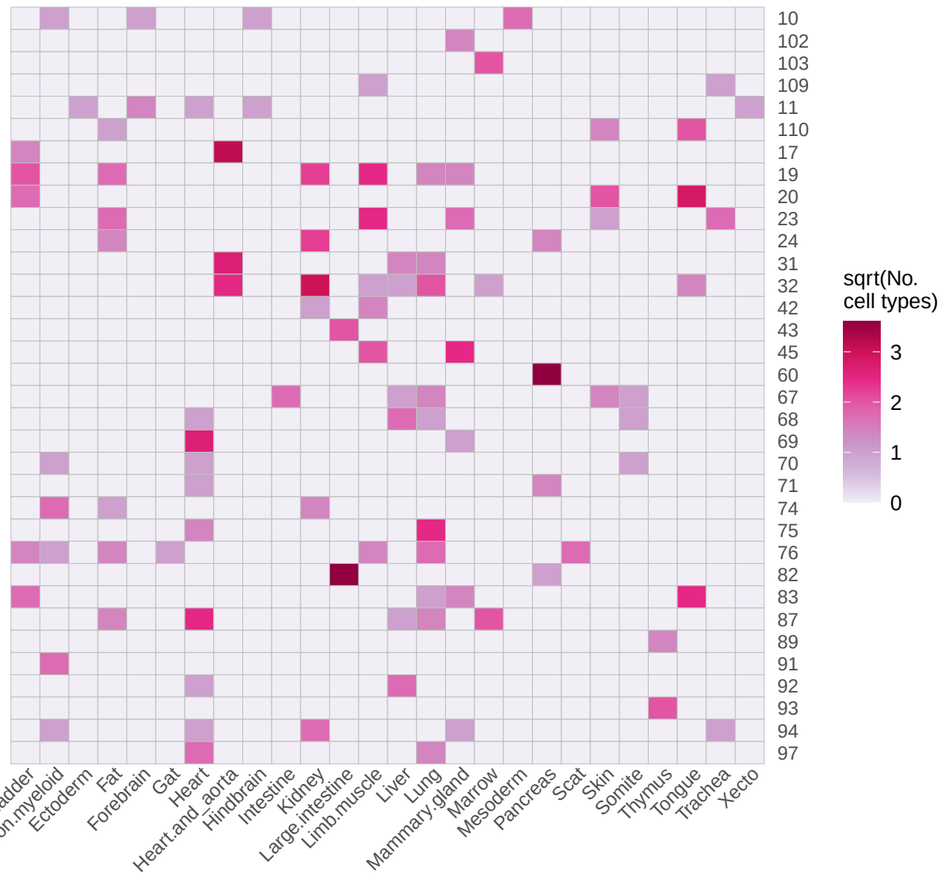
Profile Dispersion Plot



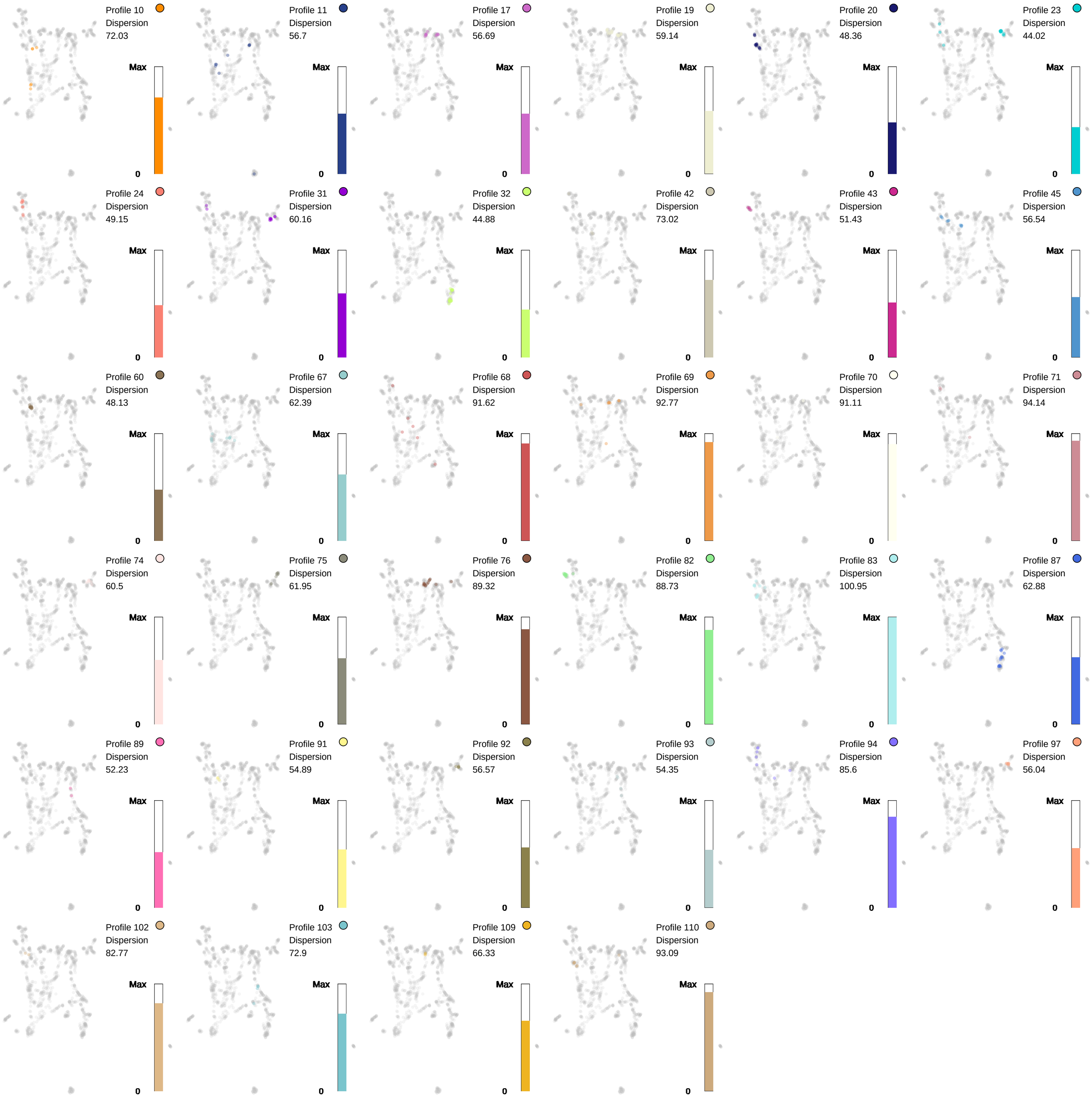
Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition



BCR Signaling Pathway (k_opt = 110)

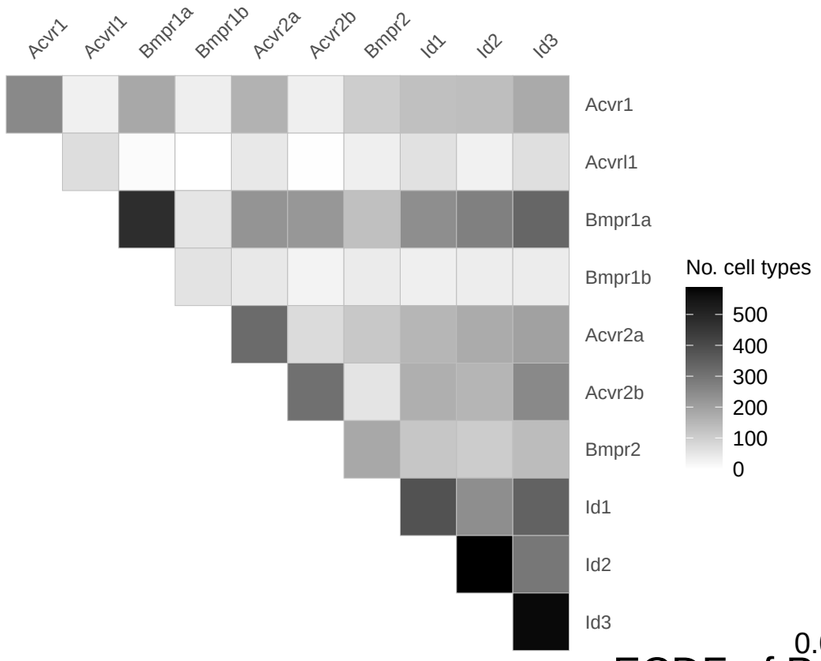


Bmp_down (k_opt = 50)

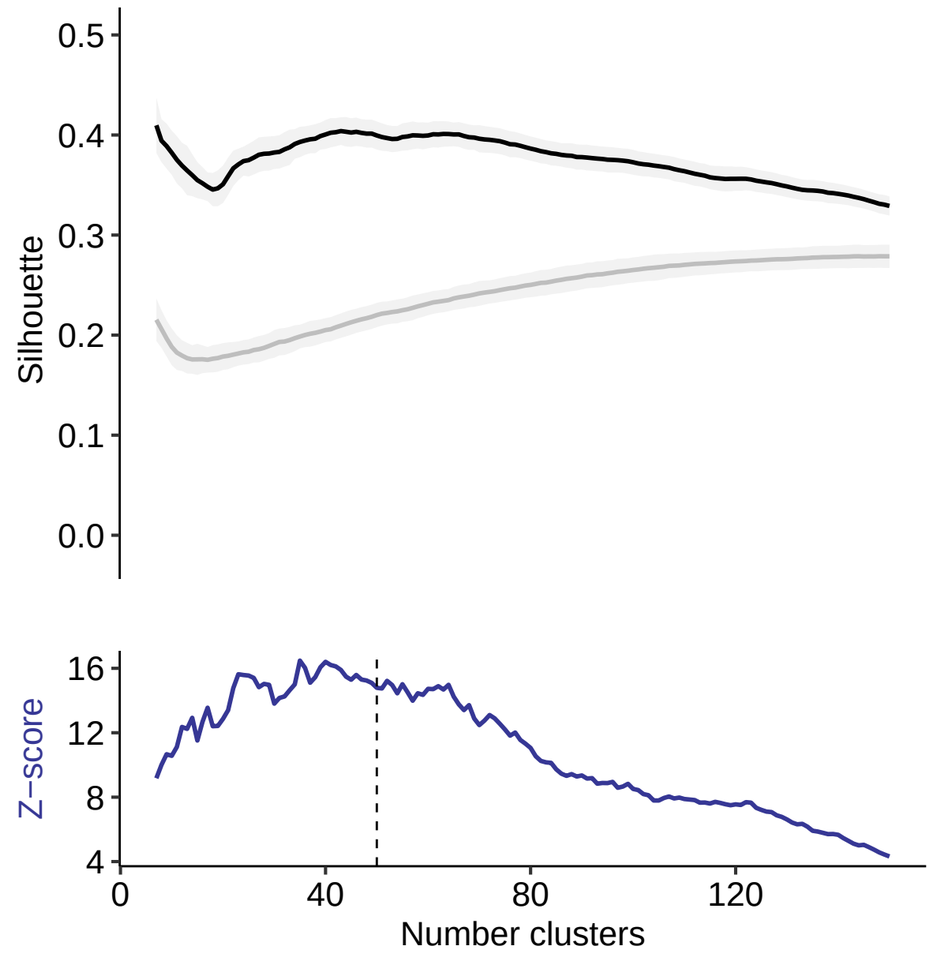
Pathway genes

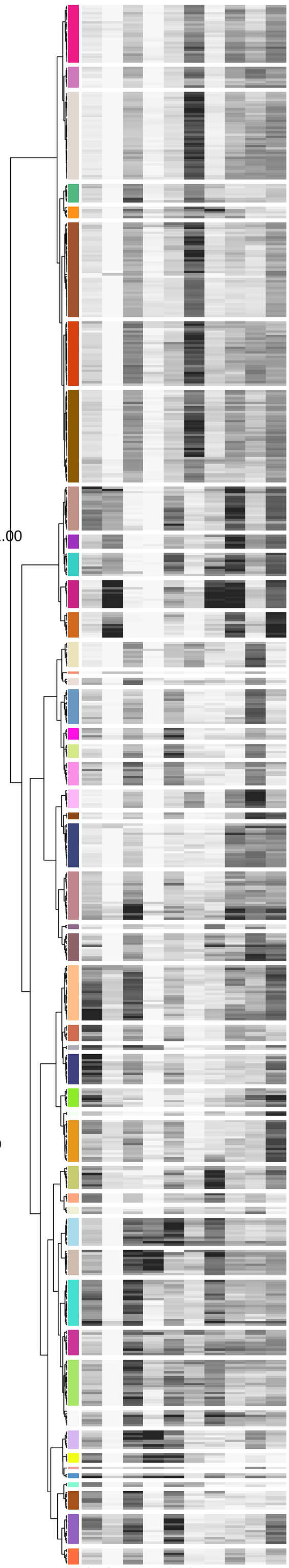
Acvr1
Acvrl1
Bmpr1a
Bmpr1b
Acvr2a
Acvr2b
Bmpr2
Id1
Id2
Id3

Gene Co−Expression Above Threshold

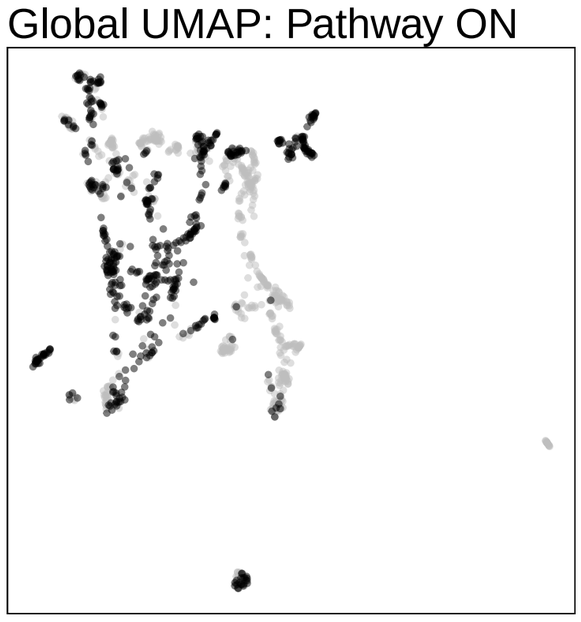


Silhouette and Z−score

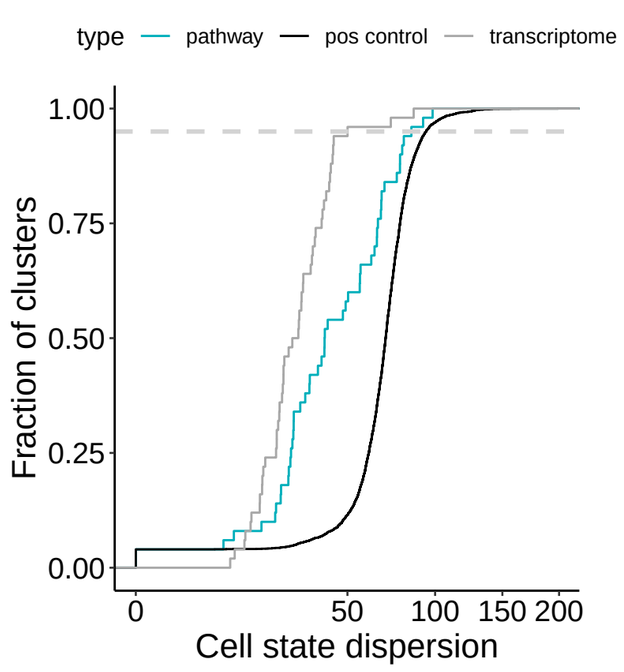




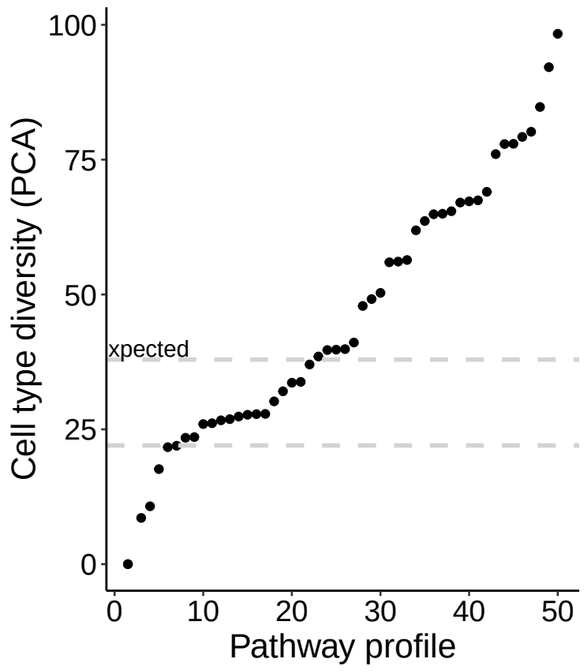
Global UMAP: Pathway ON



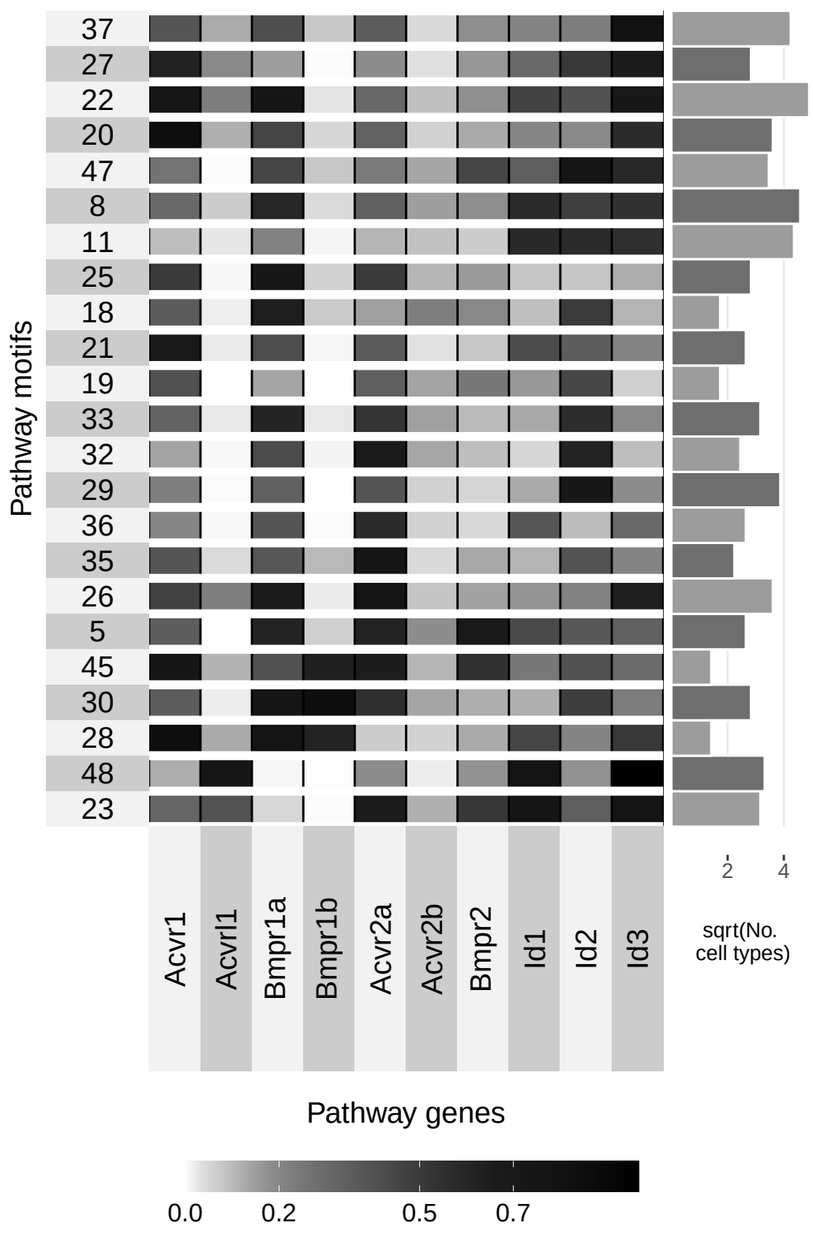
ECDF of Profile Dispersions



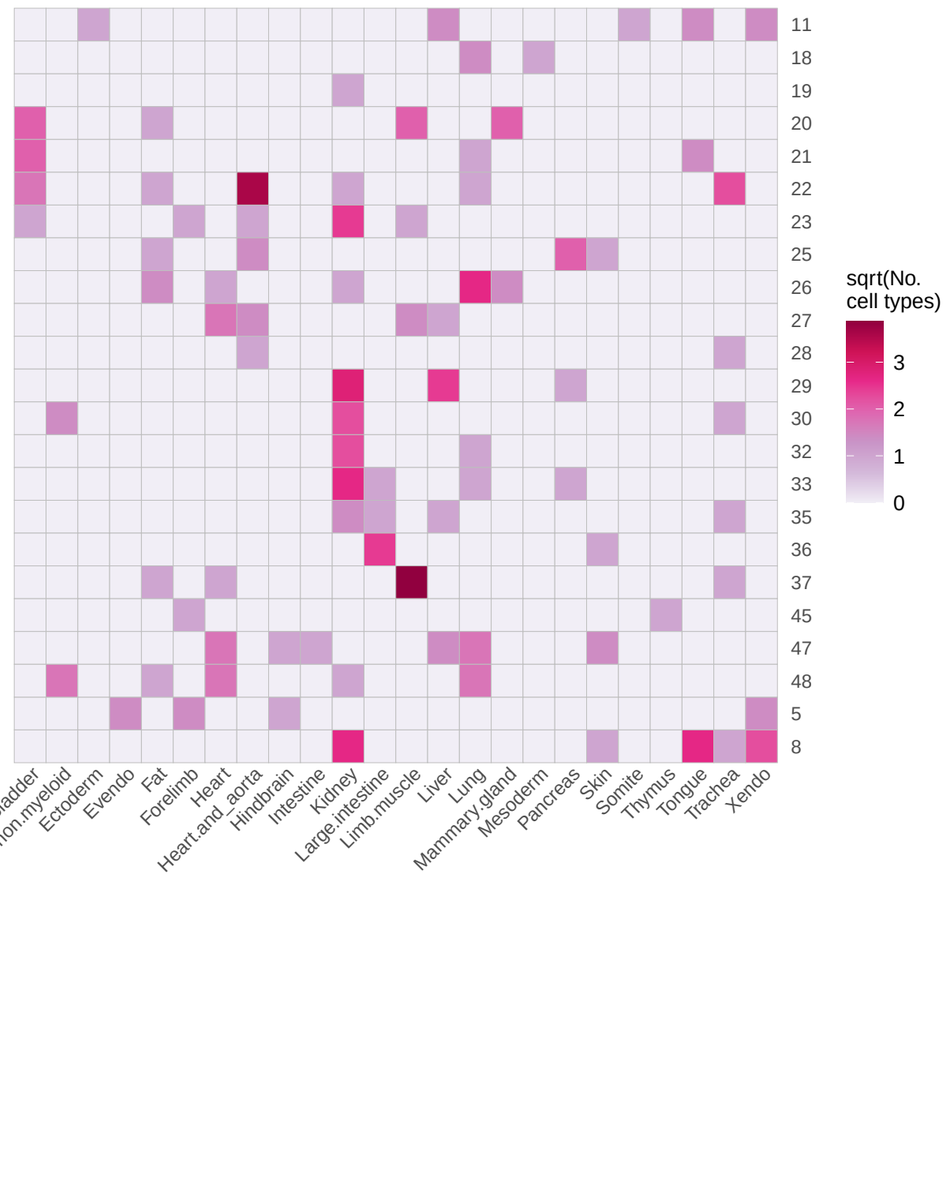
Profile Dispersion Plot



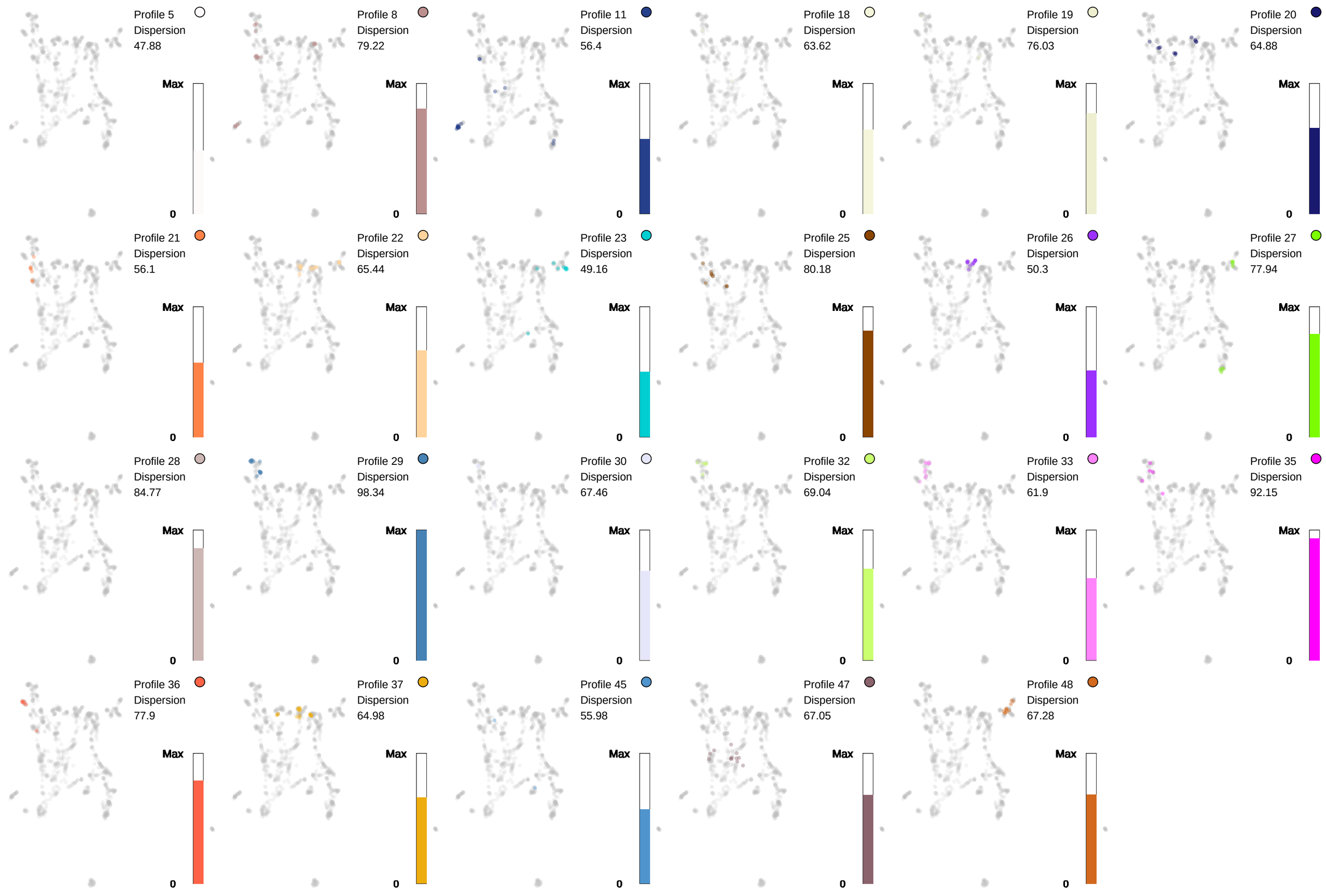
Motifs, Dispersion ≥ 90th percentile



Motif Tissue Composition



Bmp_down (k_opt = 50)

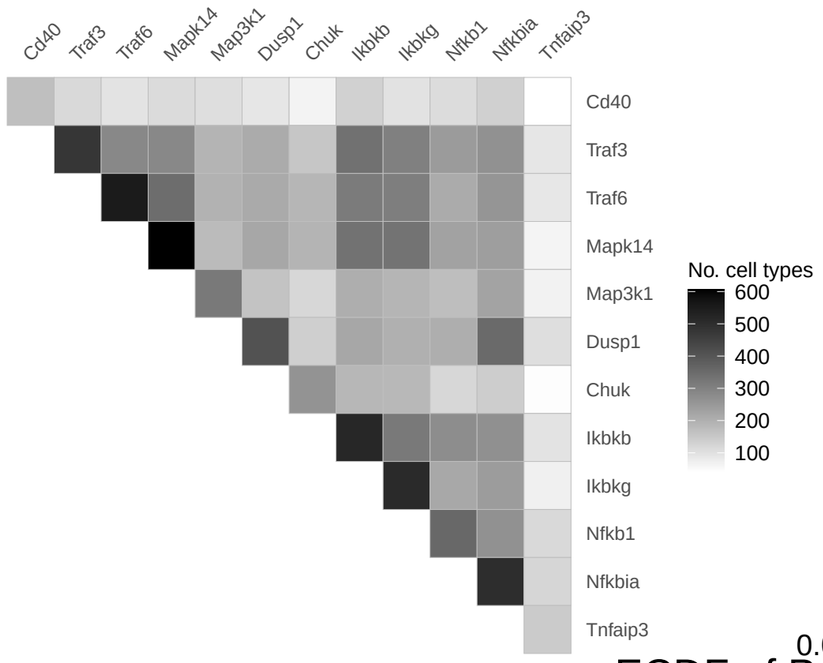


CD40L Signalling Pathway (k_opt = 67)

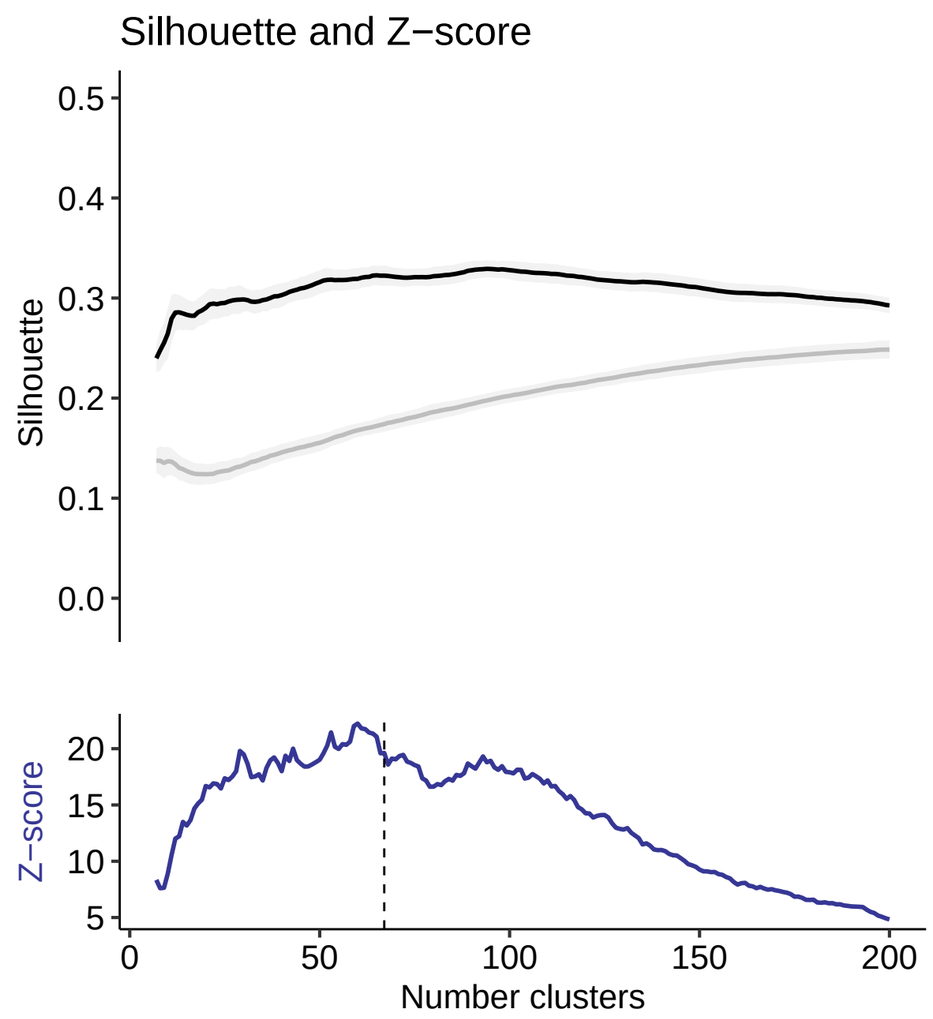
Pathway genes

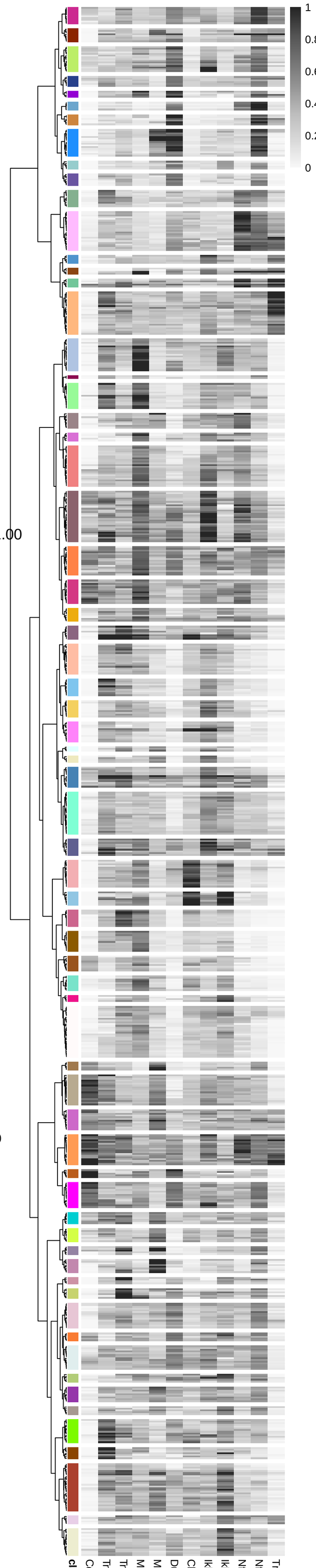
Cd40	Map3k1	Ikbkg
Traf3	Dusp1	Nfkb1
Traf6	Chuk	Nfkbia
Mapk14	Ikbkb	Tnfaip3

Gene Co−Expression Above Threshold

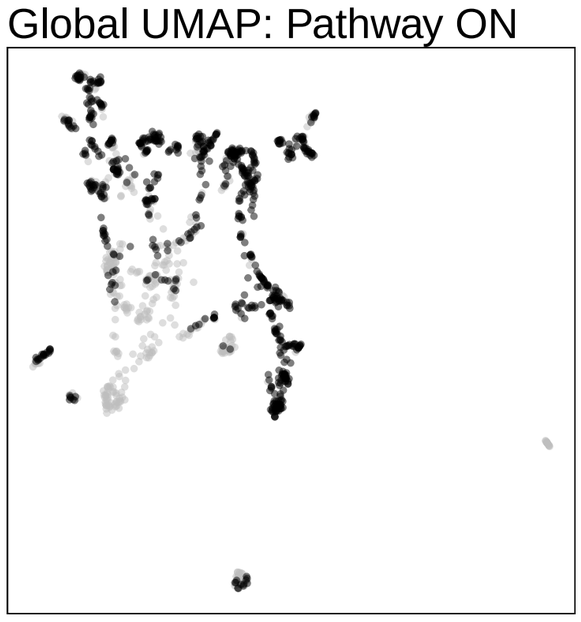


Silhouette and Z−score

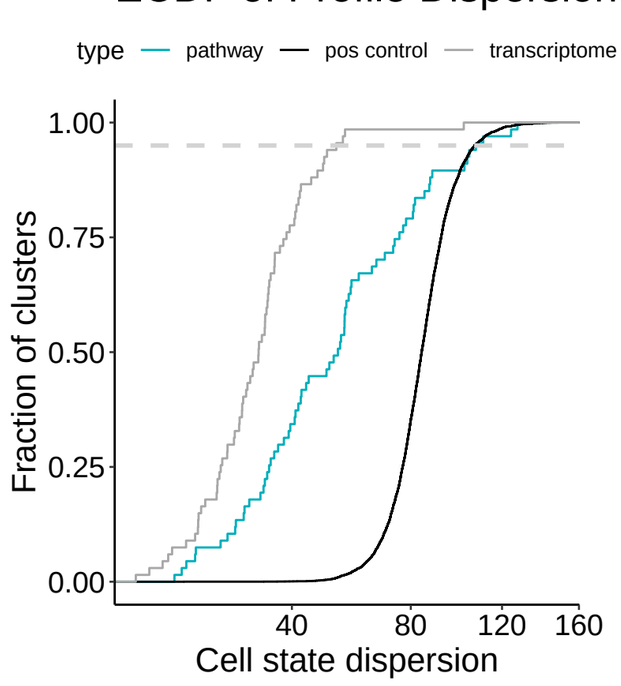




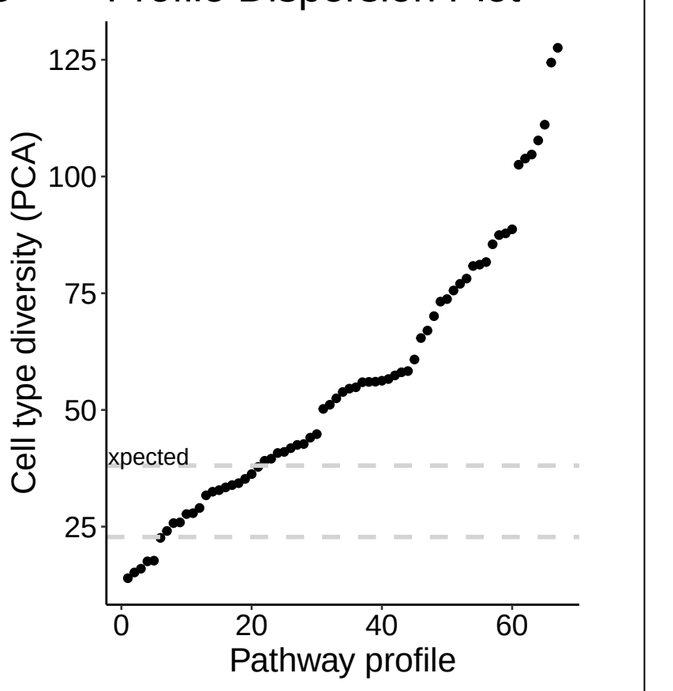
Global UMAP: Pathway ON



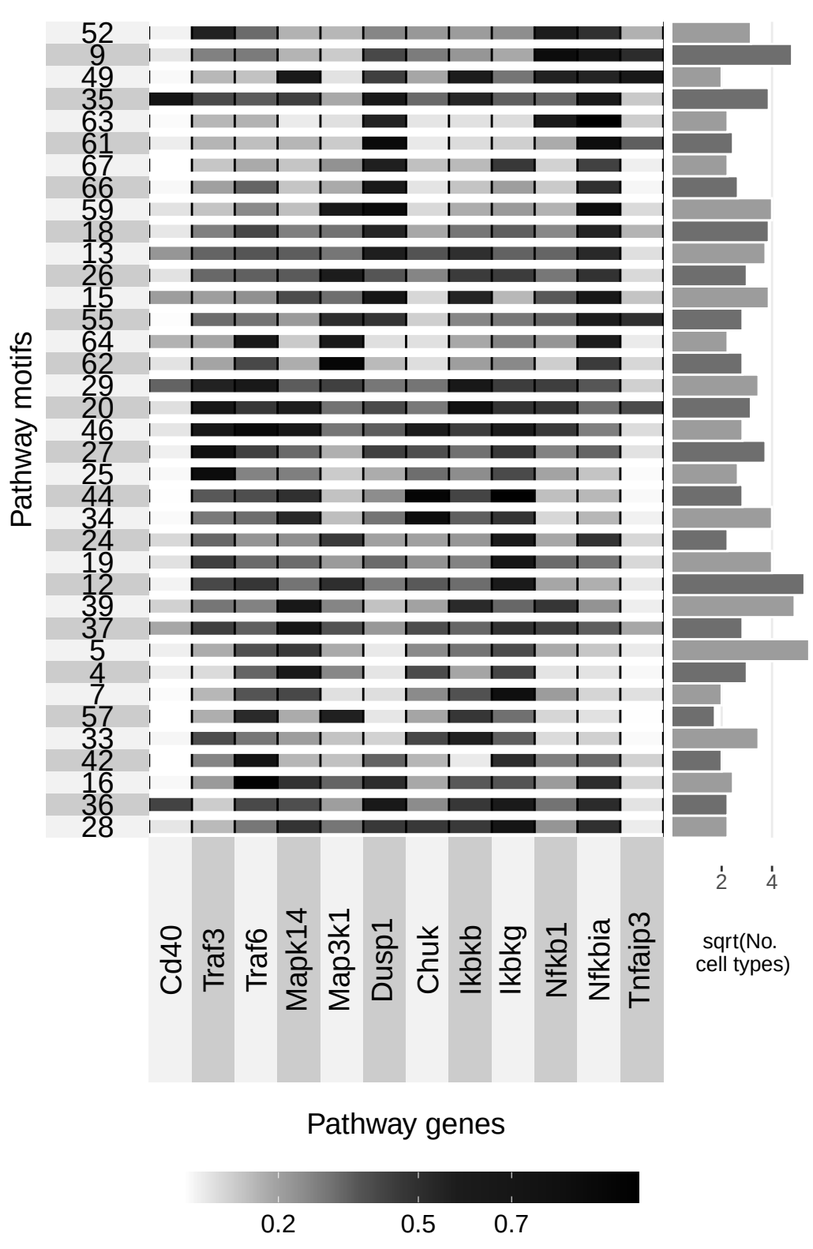
ECDF of Profile Dispersions



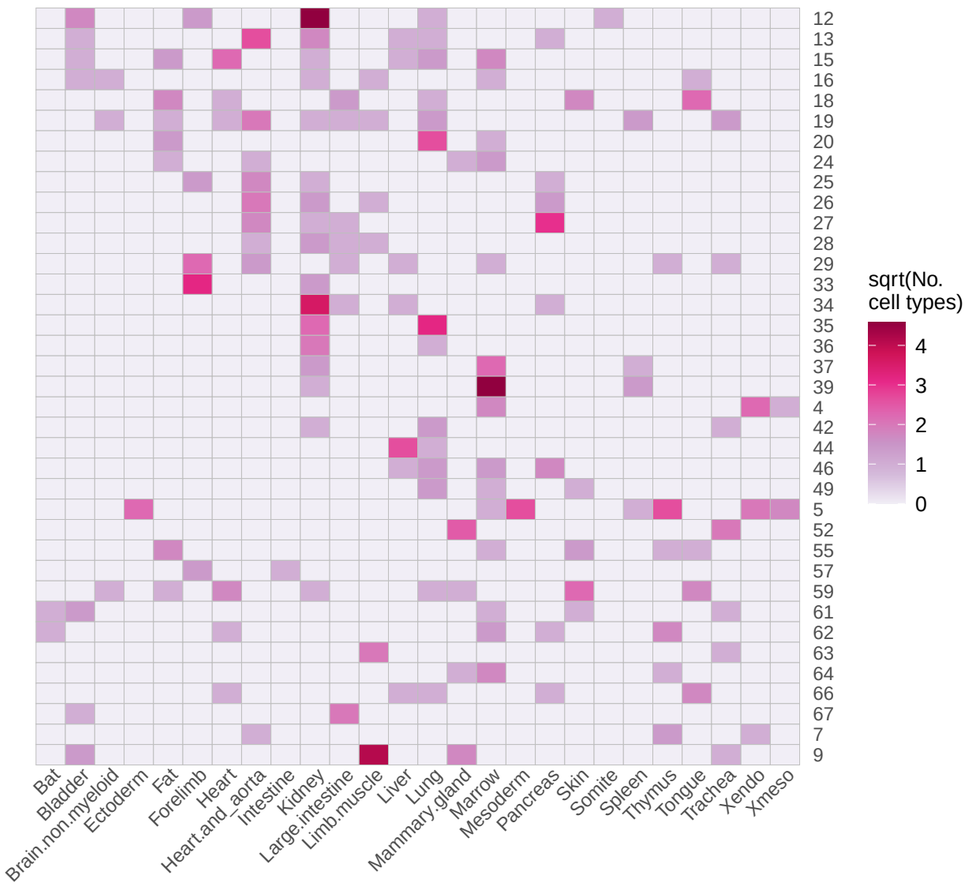
Profile Dispersion Plot



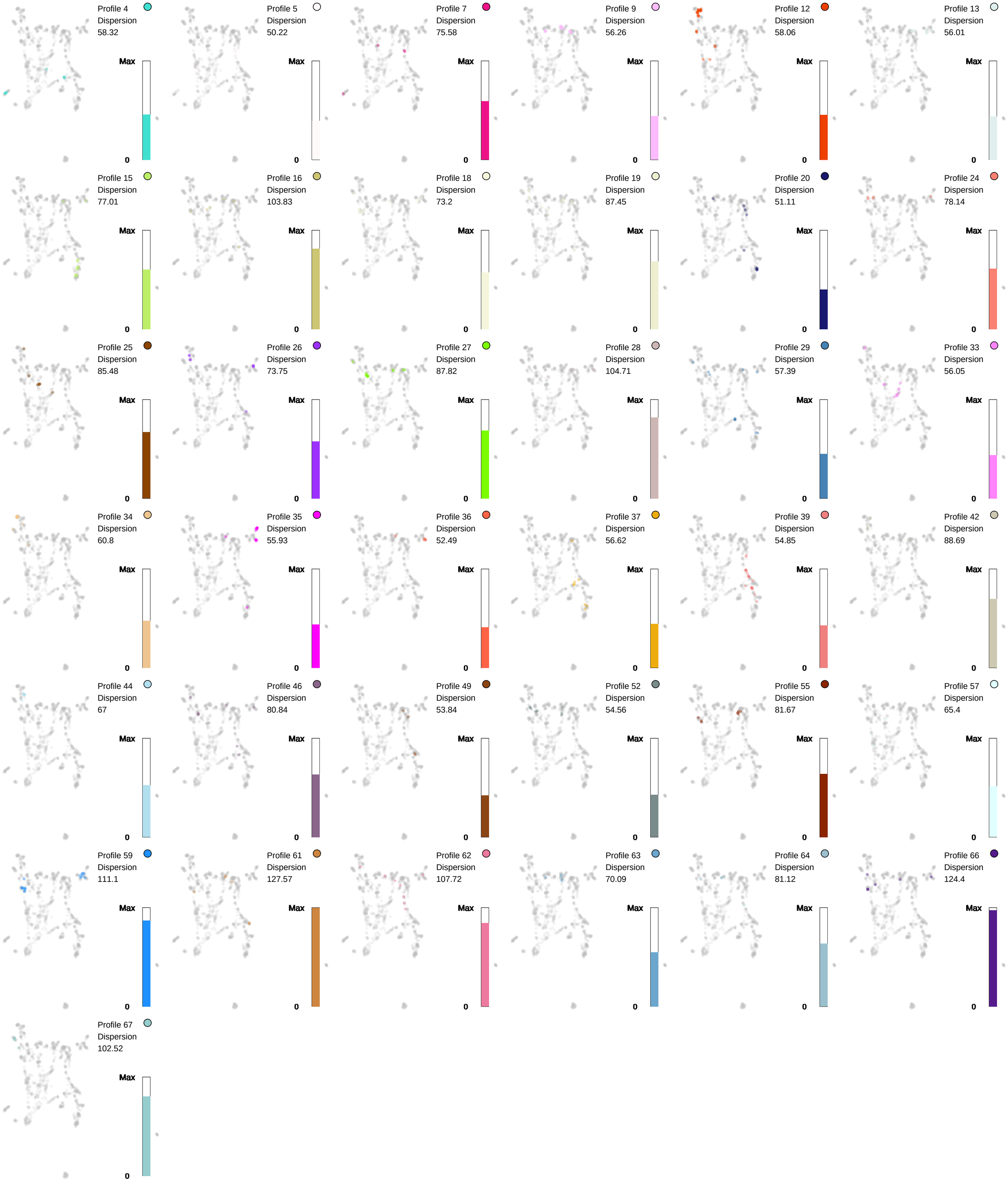
Motifs, Dispersion ≥ 90th percentile



Motif Tissue Composition



CD40L Signalling Pathway (k_opt = 67)

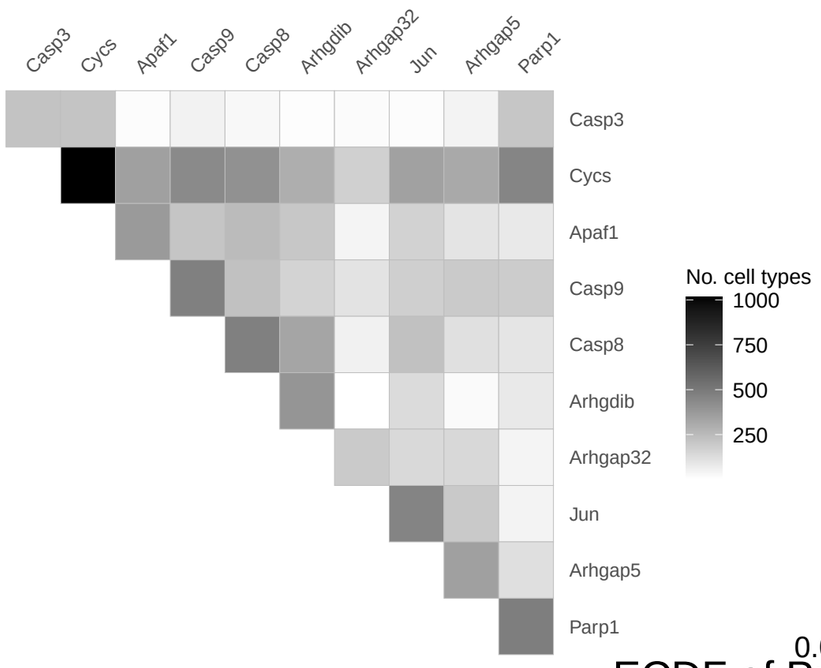


D4−GDI Signaling Pathway (k_opt = 77)

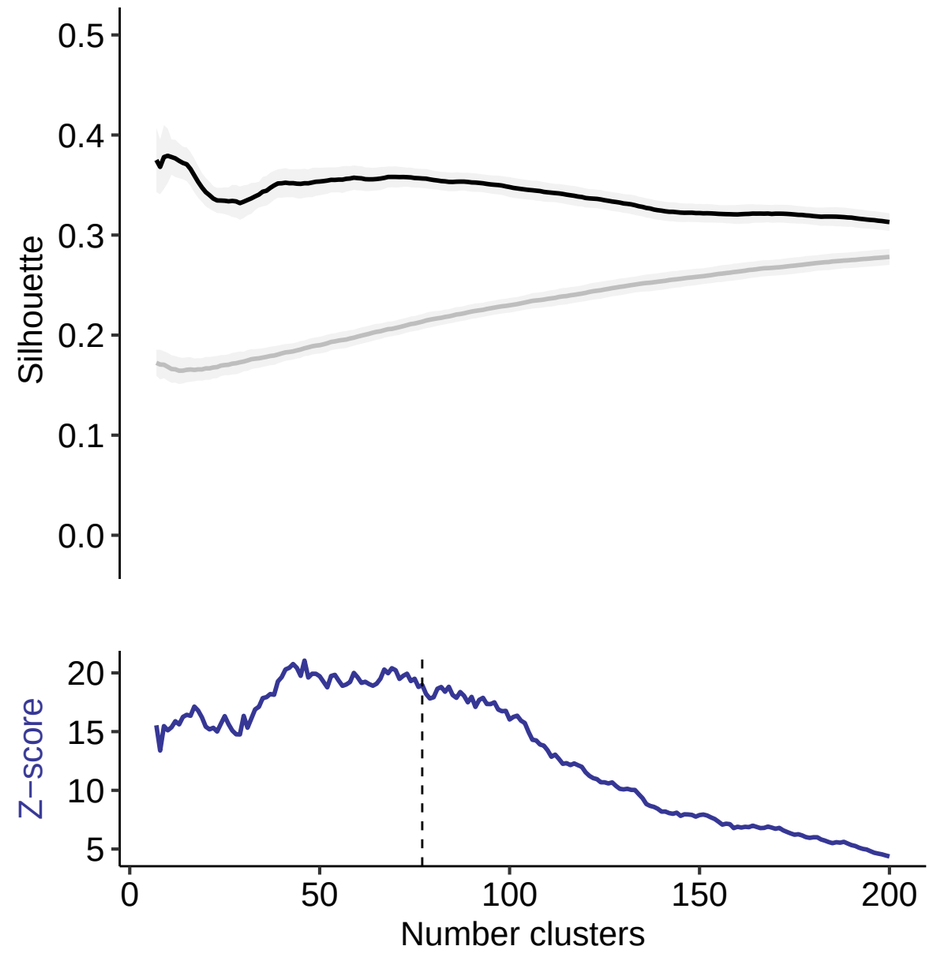
Pathway genes

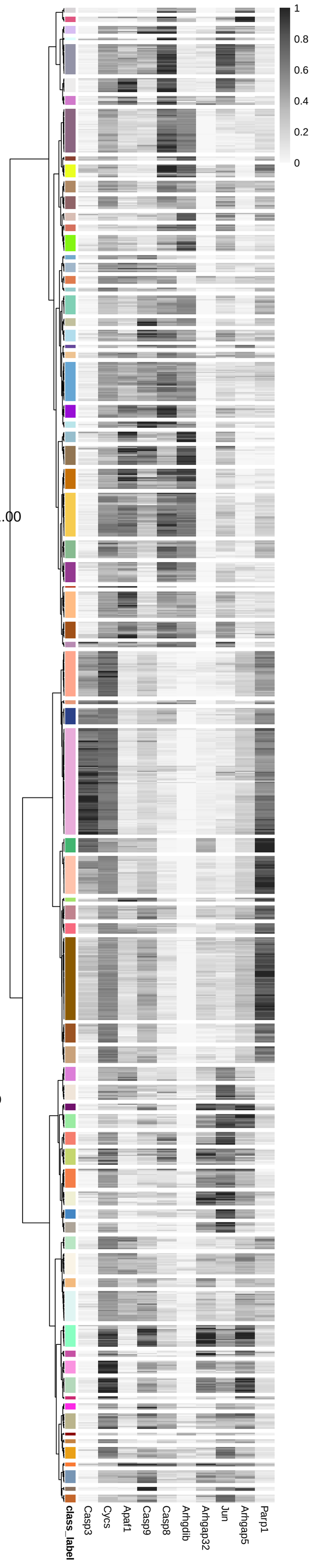
Casp3
Cycs
Apaf1
Casp9
Casp8
Arhgdib
Arhgap32
Jun
Arhgap5
Parp1

Gene Co−Expression Above Threshold

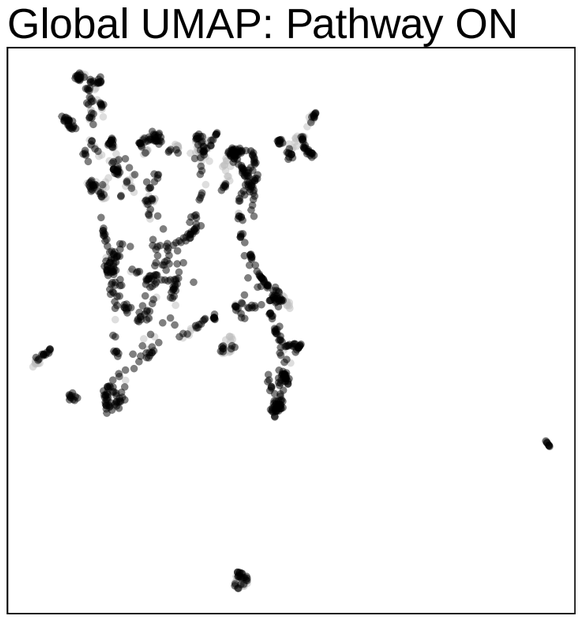


Silhouette and Z−score

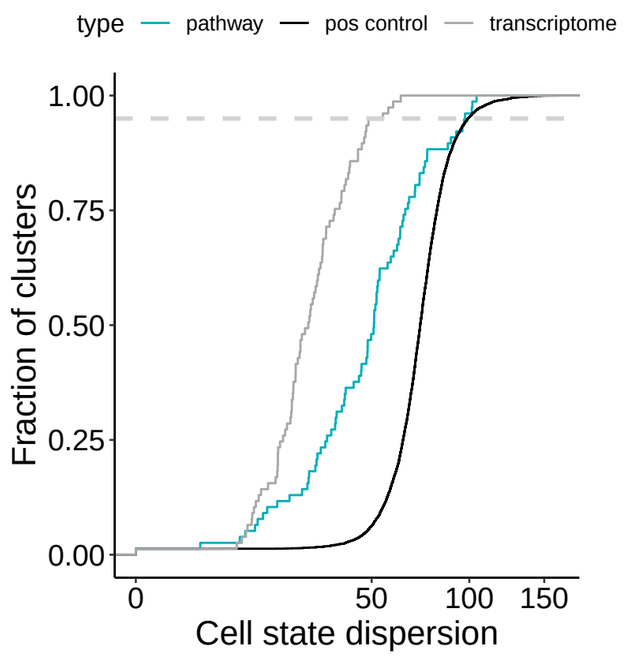




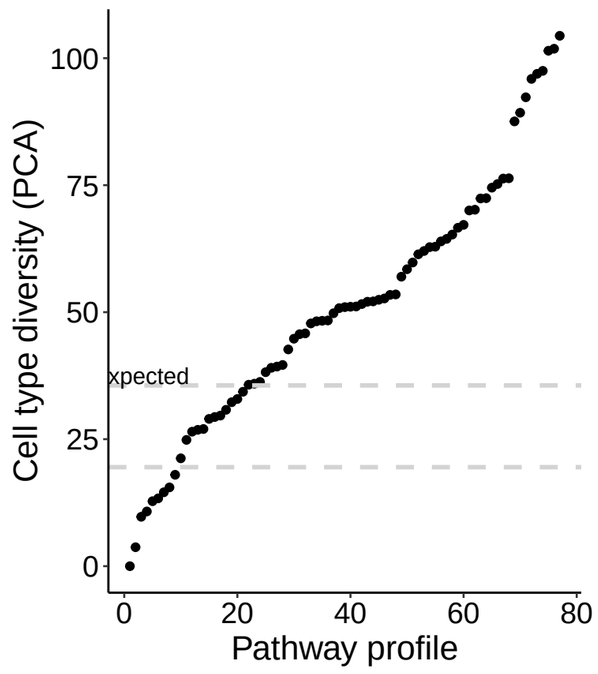
Global UMAP: Pathway ON



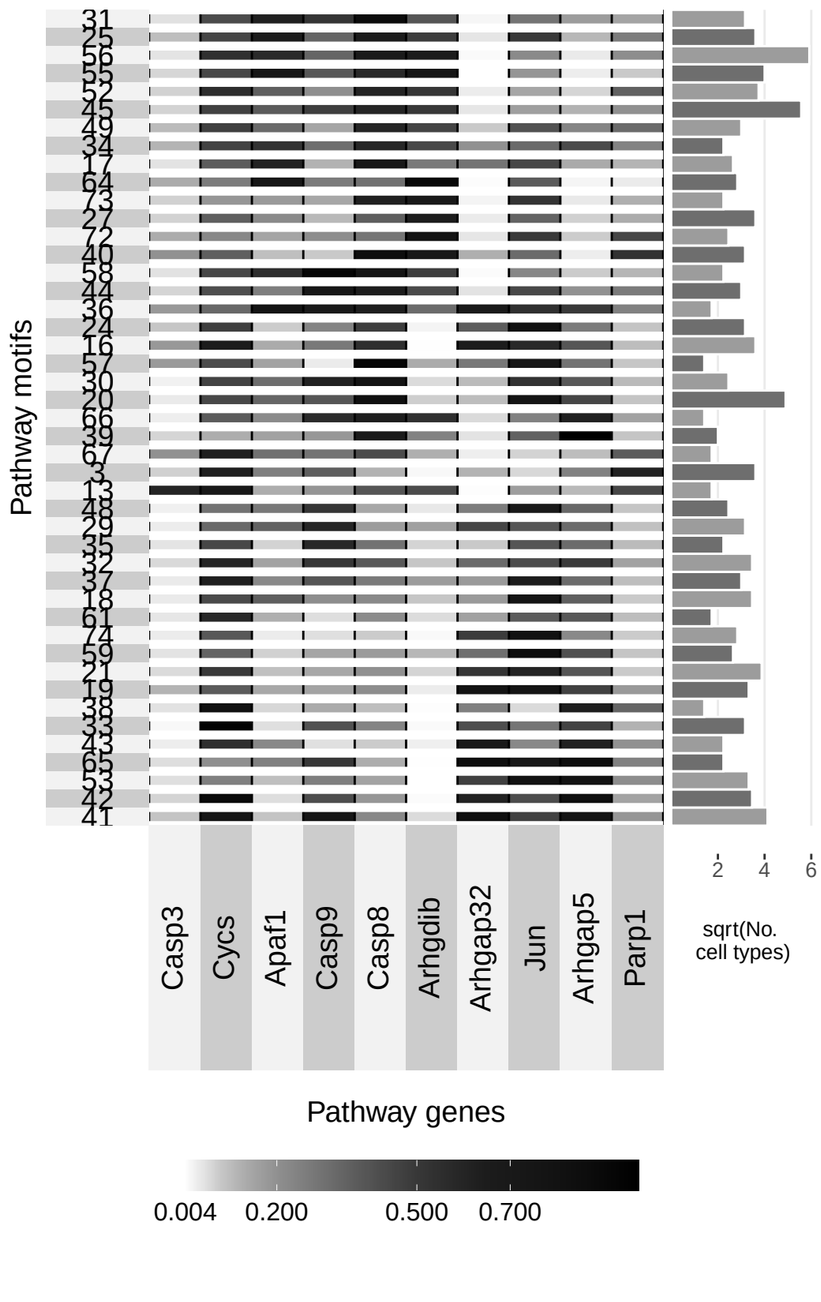
ECDF of Profile Dispersions



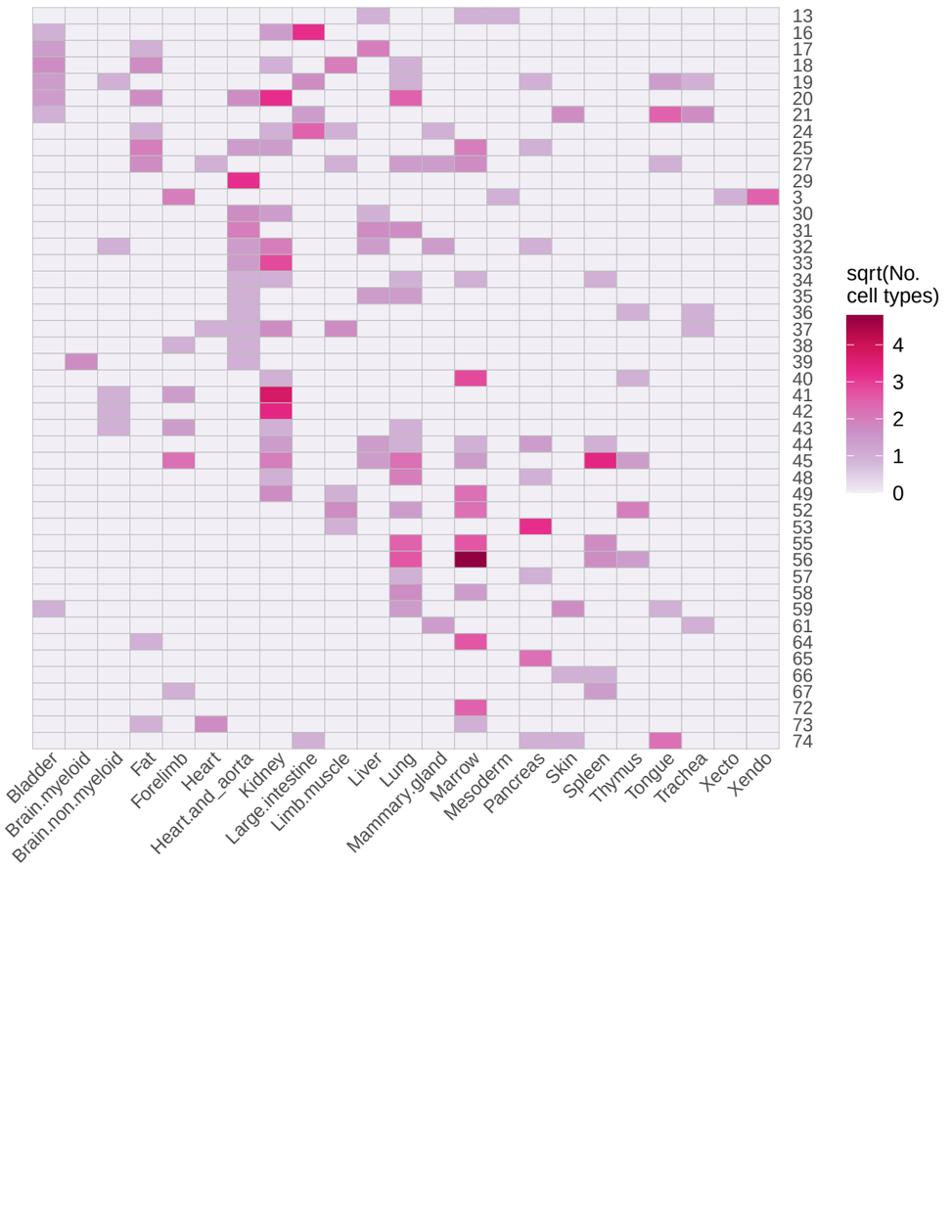
Profile Dispersion Plot



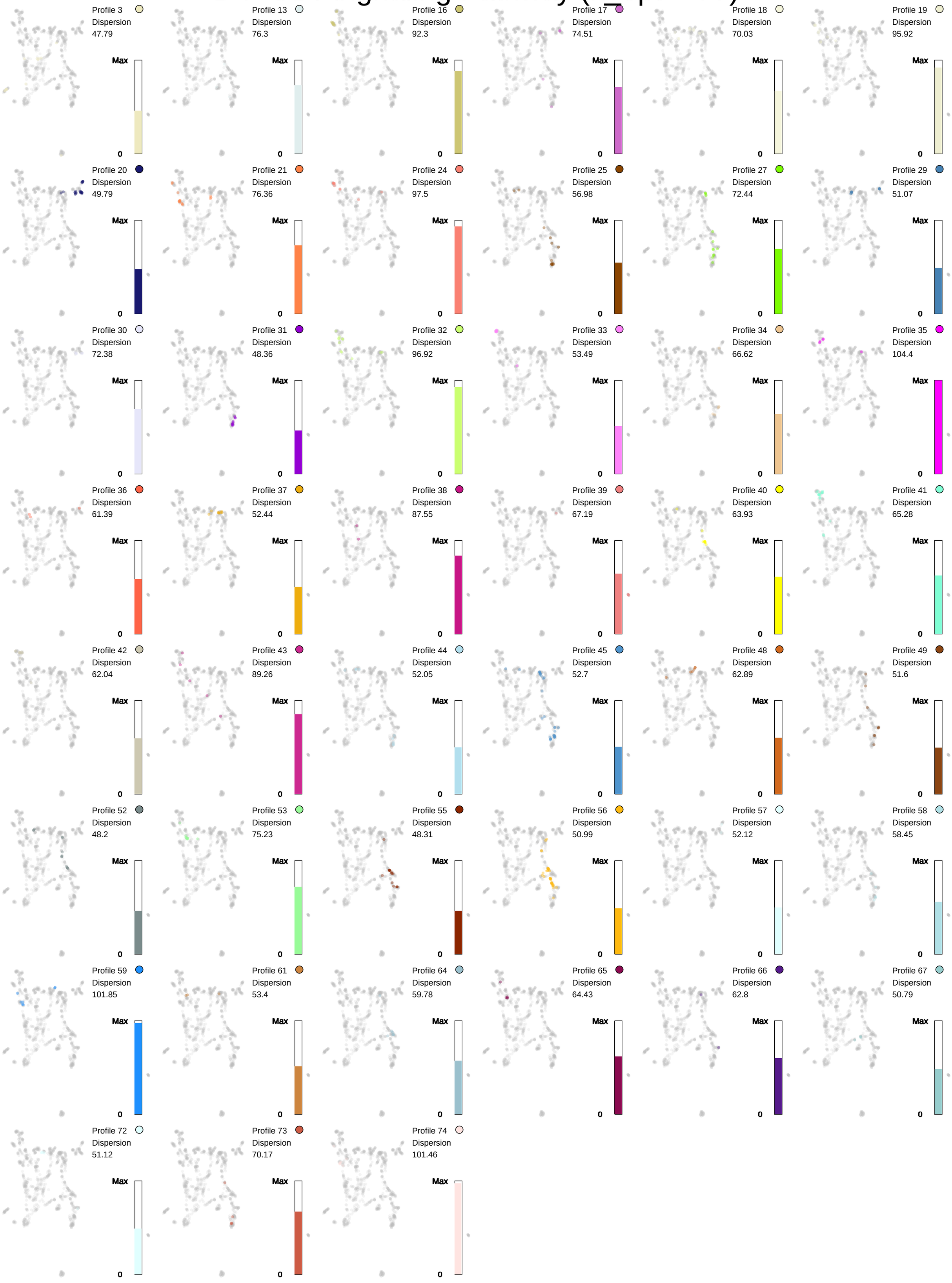
Motifs, Dispersion ≥ 90th percentile



Motif Tissue Composition



D4−GDI Signaling Pathway (k_opt = 77)

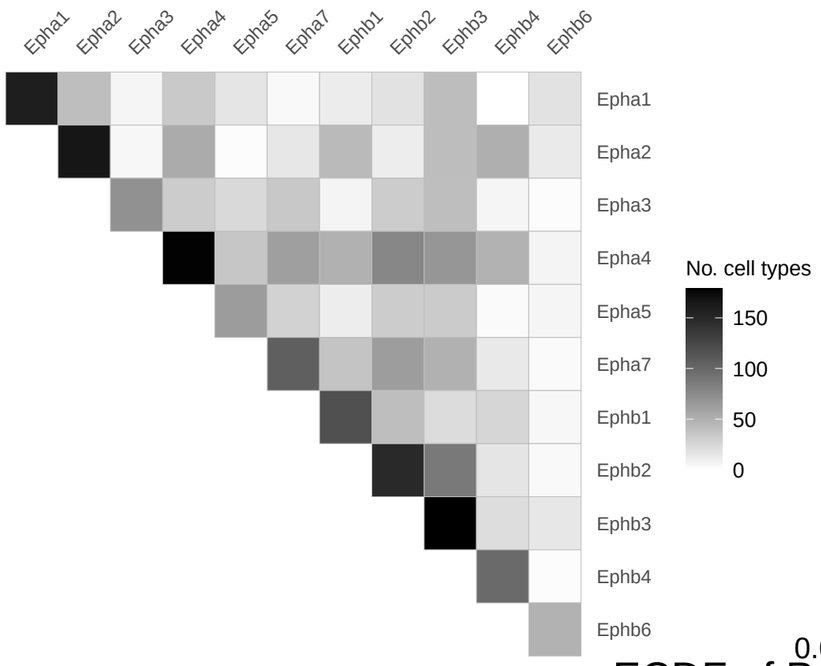


Eph A−B receptors (k_opt = 31)

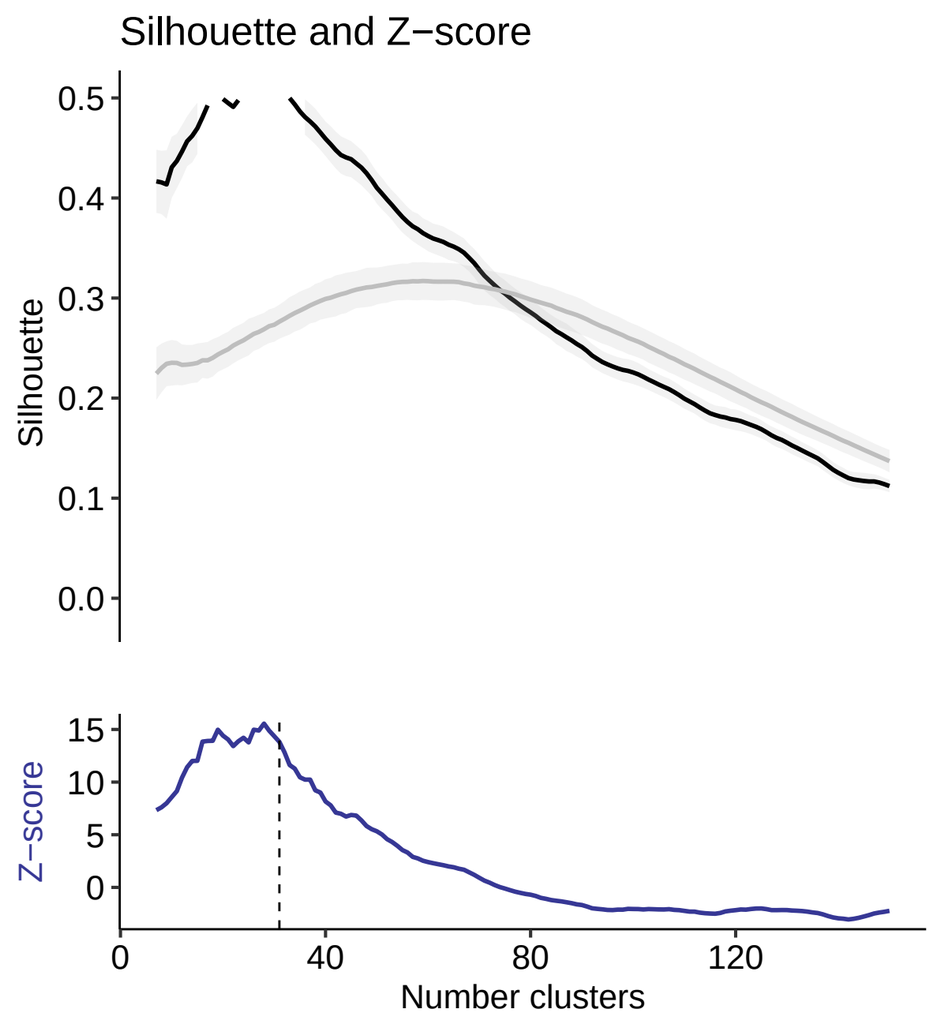
Pathway genes

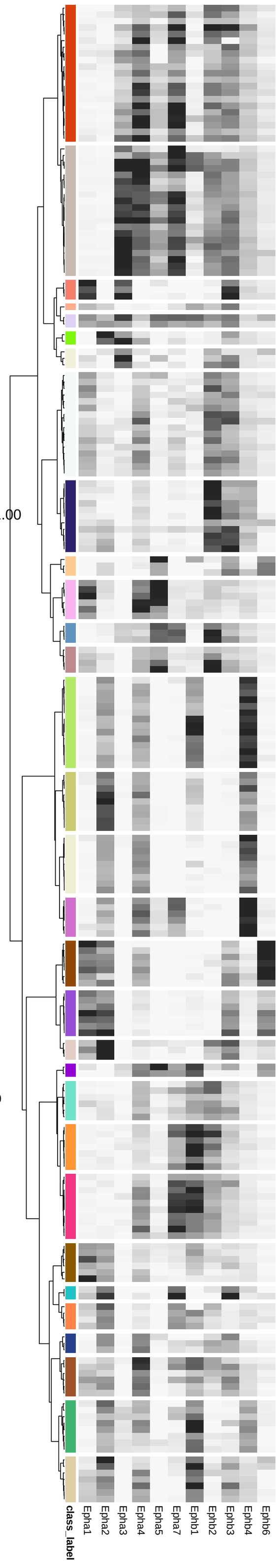
Epha1
Epha2
Epha3
Epha4
Epha5
Epha7
Epha1
Ephb2
Ephb3
Ephb4
Ephb6

Gene Co−Expression Above Threshold

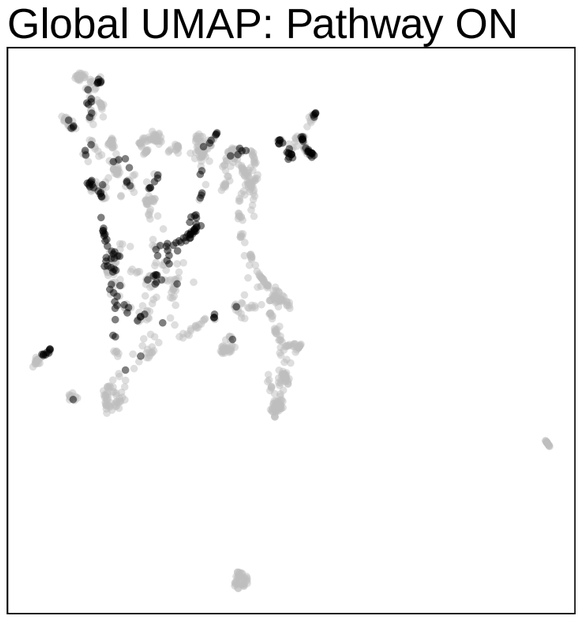


Silhouette and Z−score

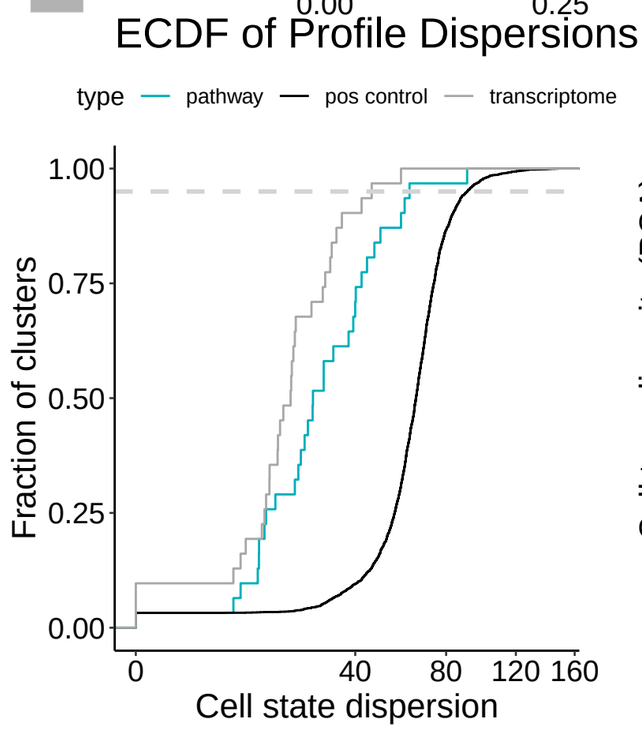




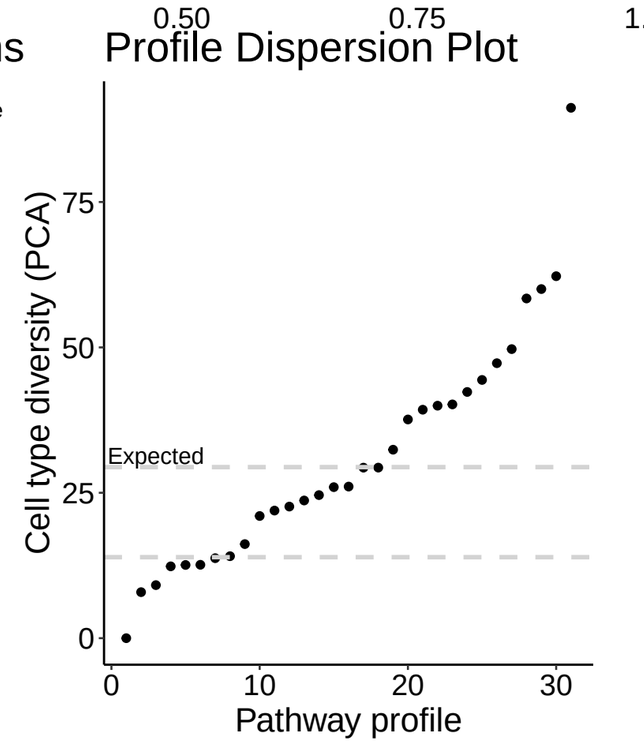
Global UMAP: Pathway ON



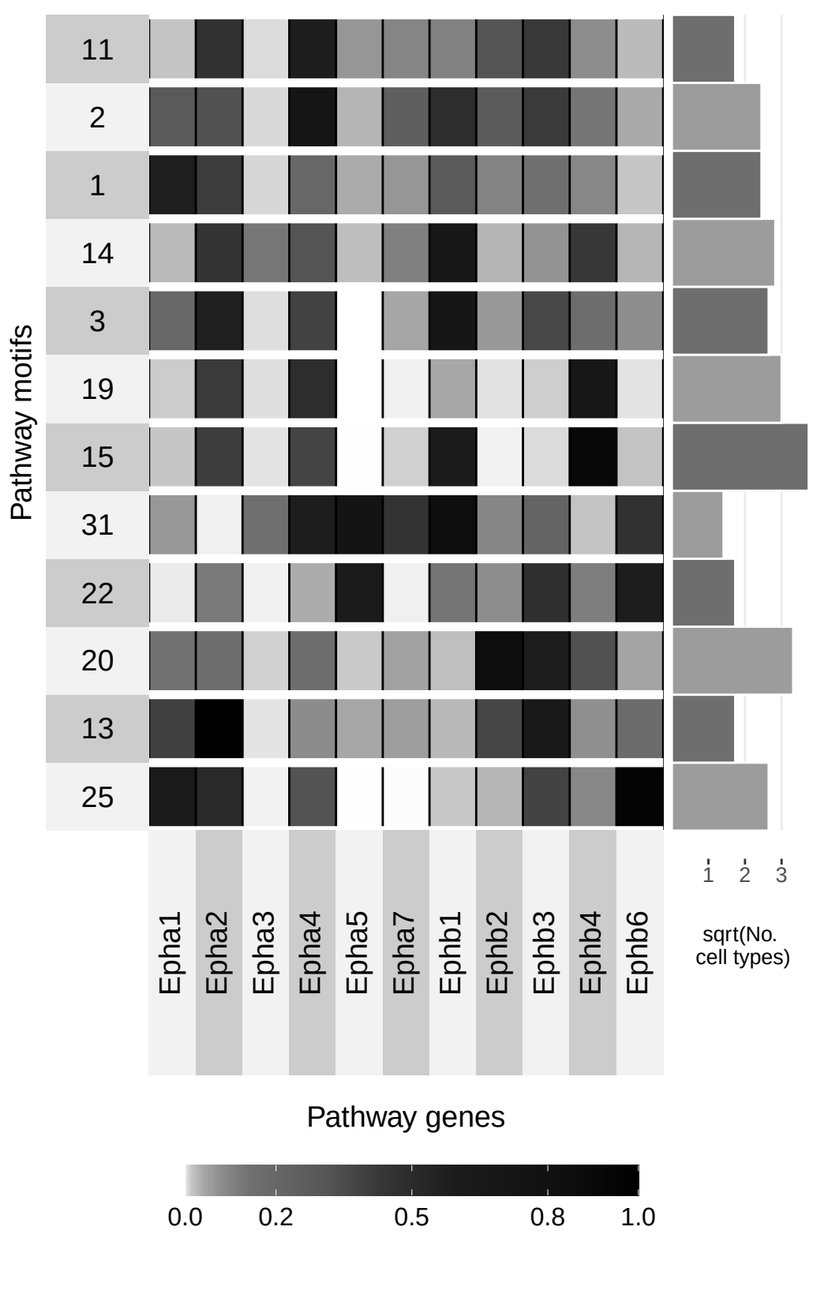
ECDF of Profile Dispersions



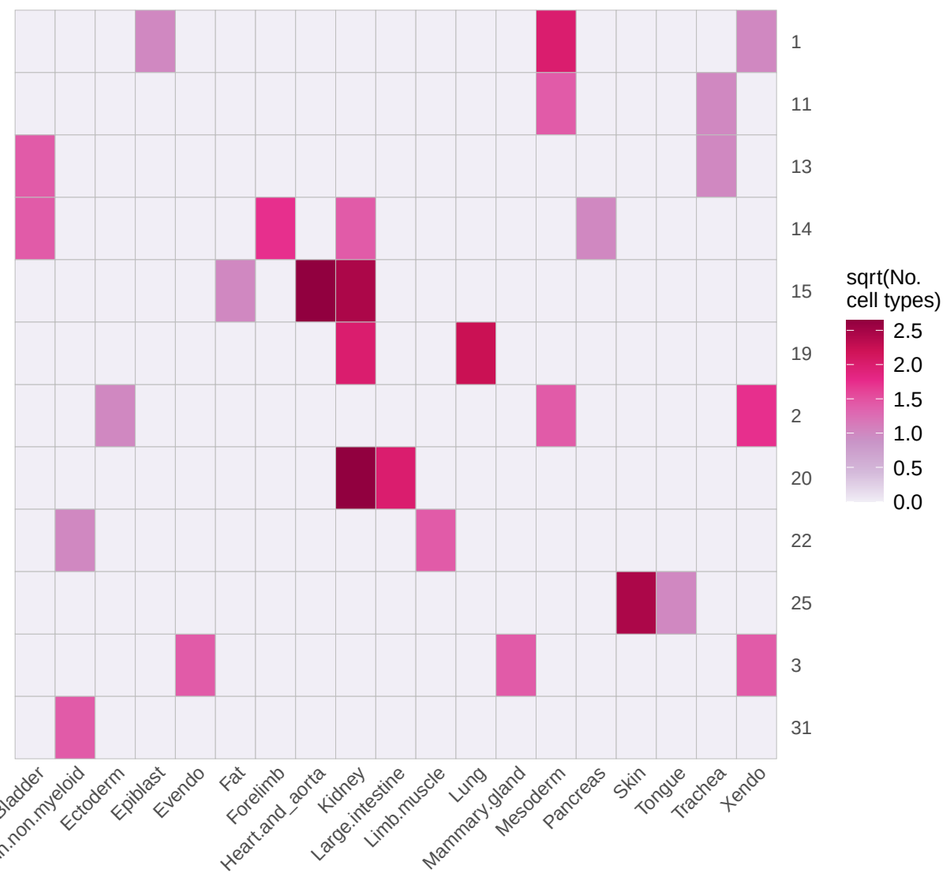
Profile Dispersion Plot



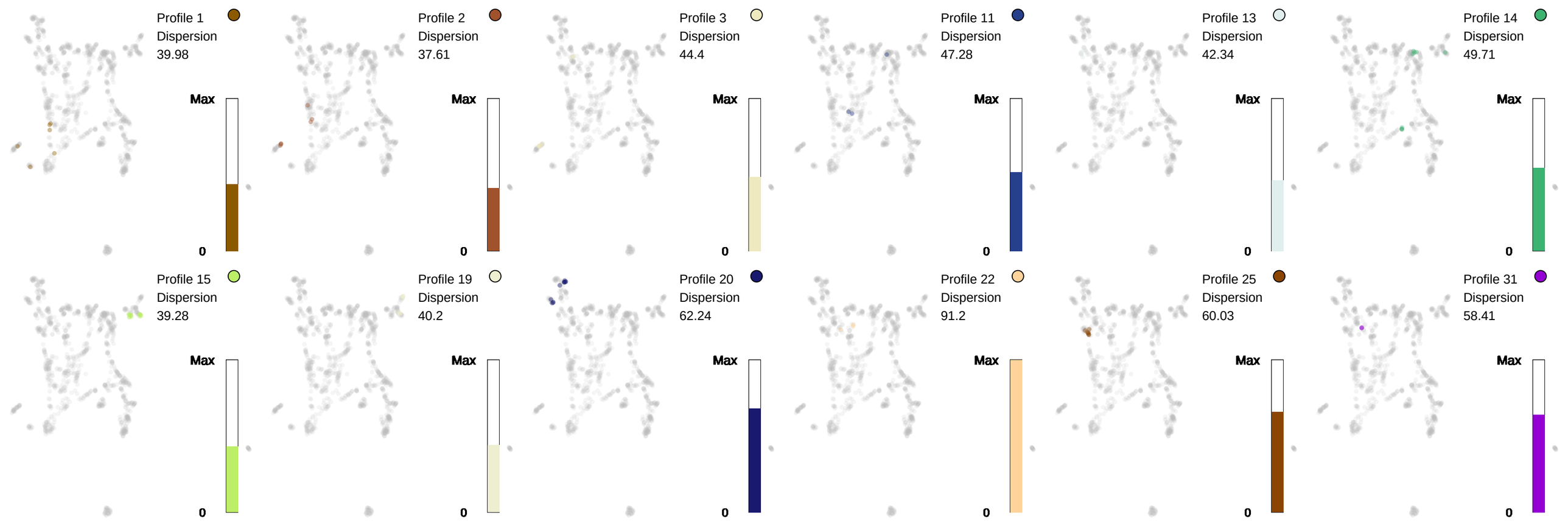
Motifs, Dispersion ≥ 90th percentile



Motif Tissue Composition



Eph A−B receptors (k_opt = 31)

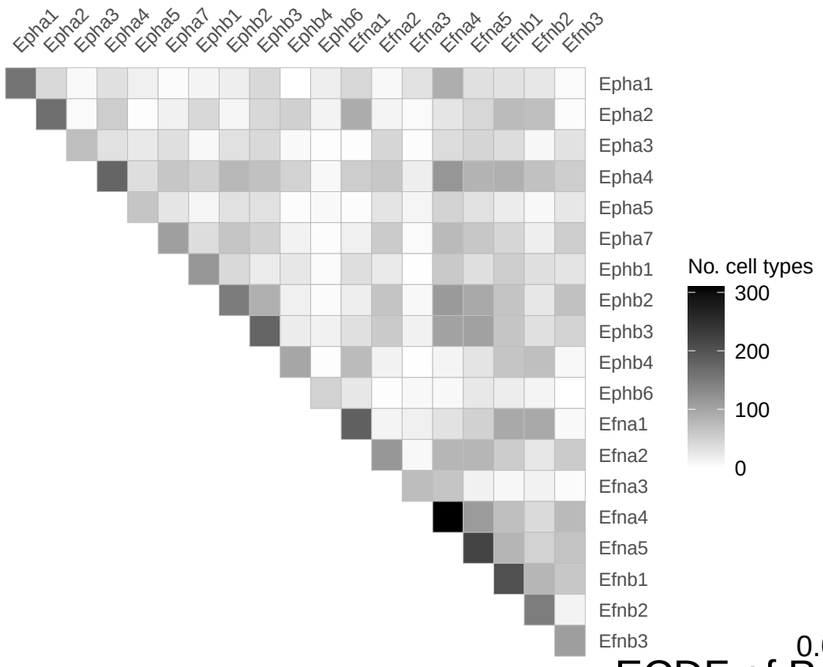


Eph receptors and ligands (k_opt = 52)

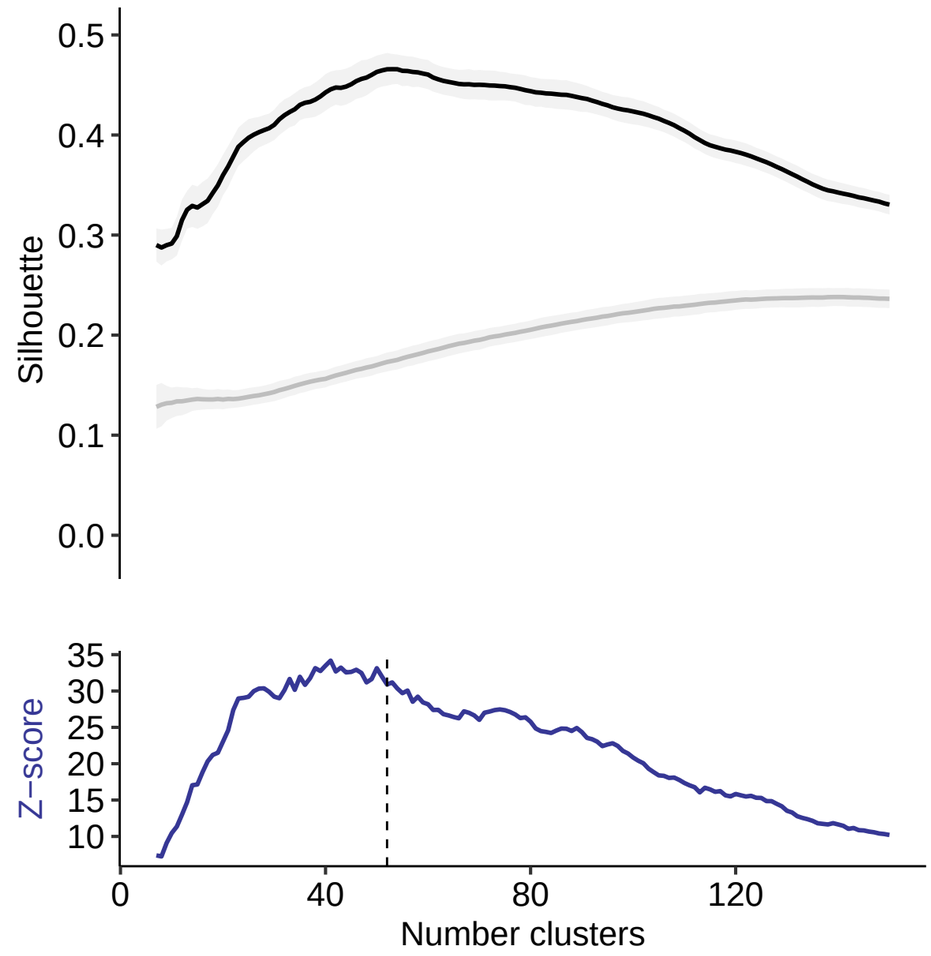
Pathway genes

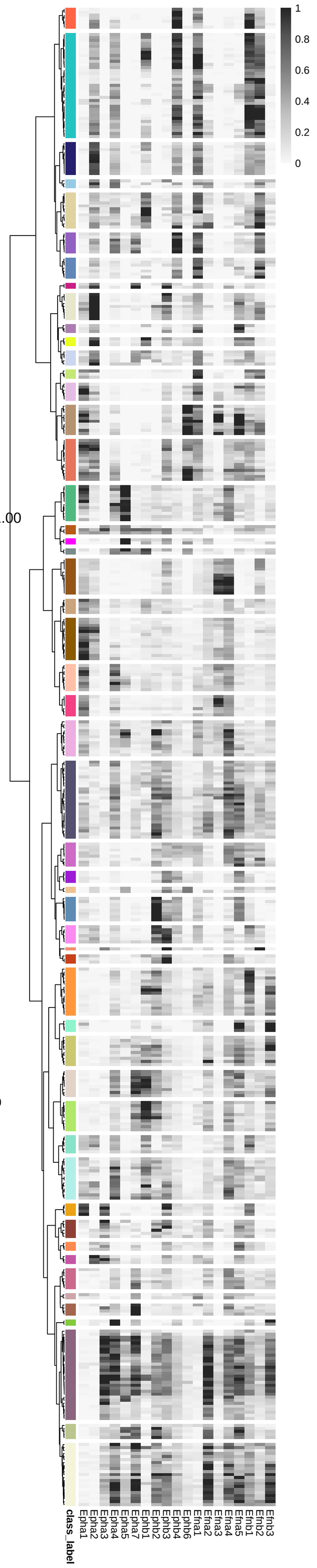
Epha1
Epha2
Epha3
Epha4
Epha5
Epha7
Ephb1
Ephb2
Ephb3
Ephb4
Ephb6
Efna1
Efna2
Efna3
Efna4
Efna5
Efnb1
Efnb2
Efnb3

Gene Co−Expression Above Threshold

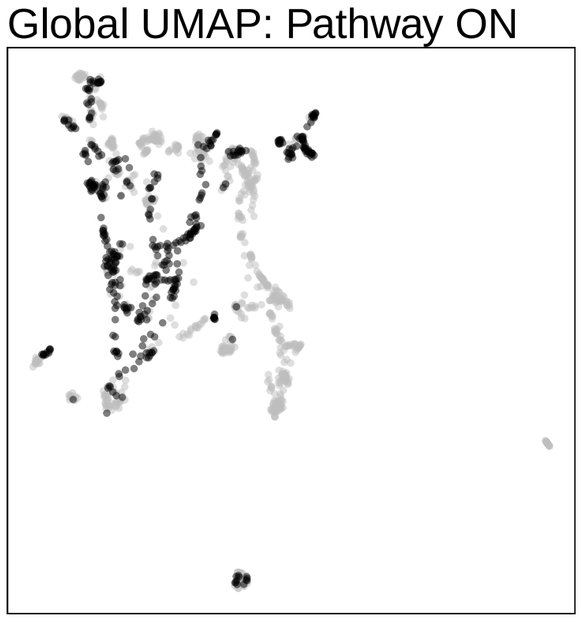


Silhouette and Z−score

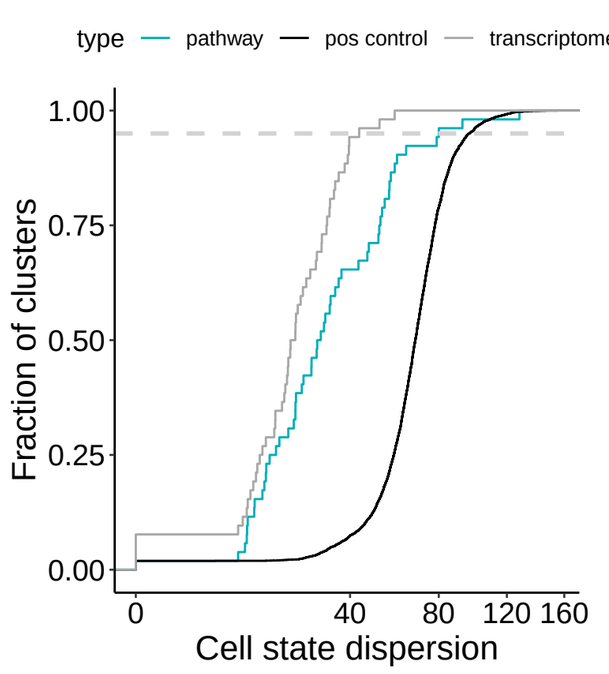




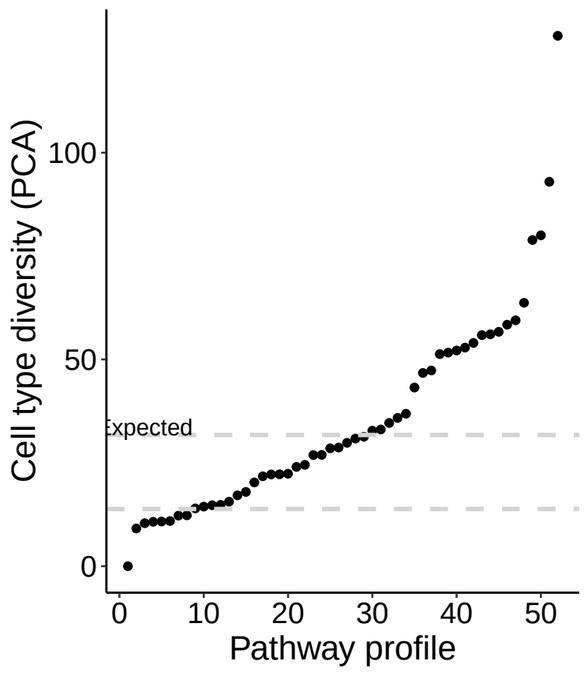
Global UMAP: Pathway ON



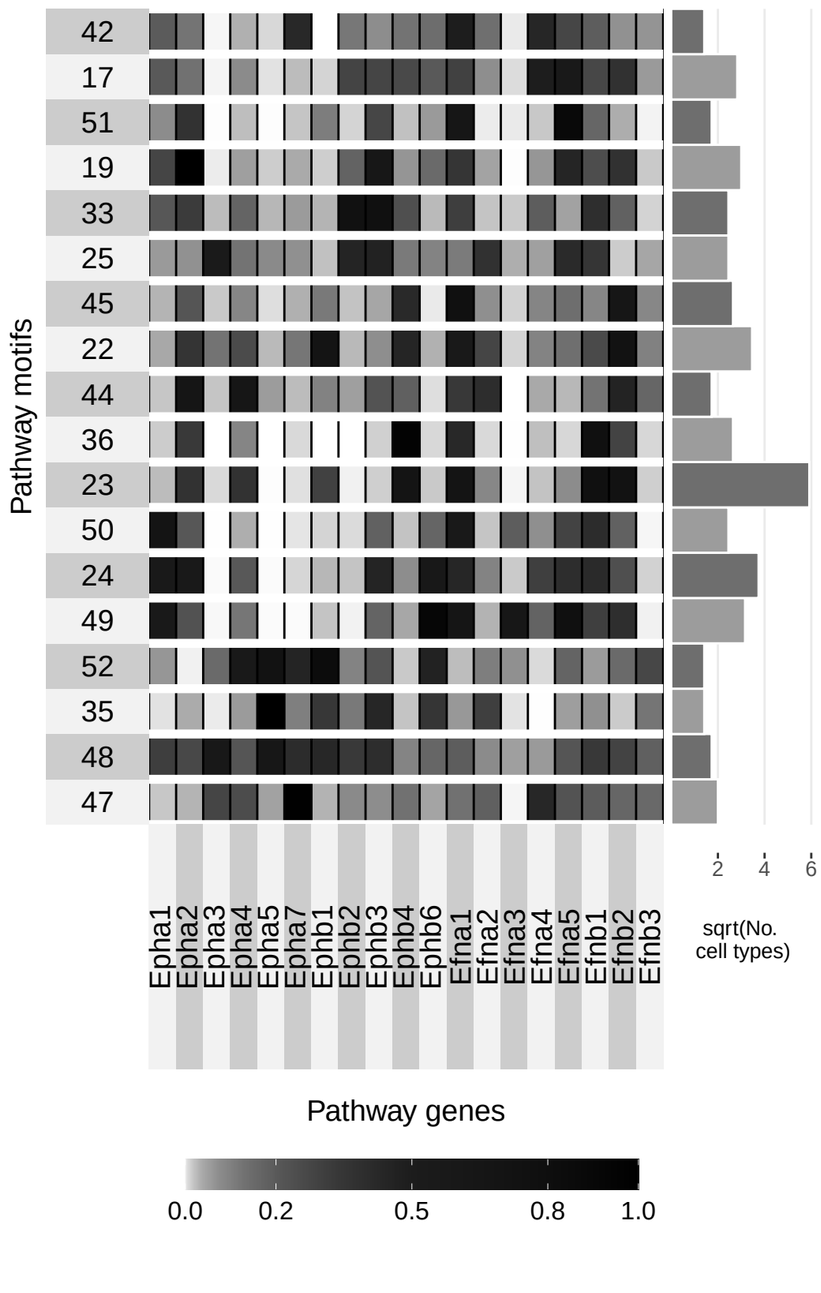
ECDF of Profile Dispersions



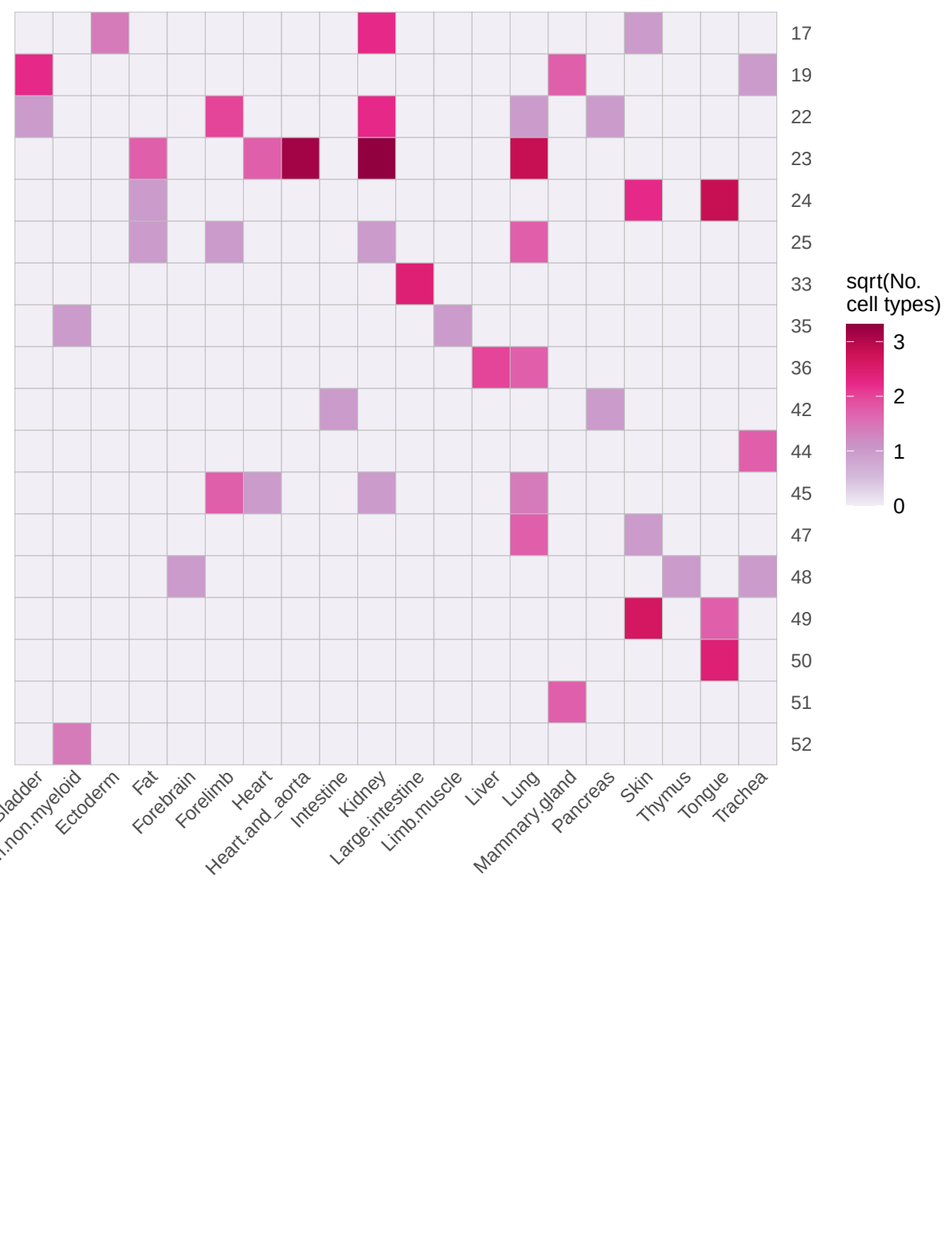
Profile Dispersion Plot



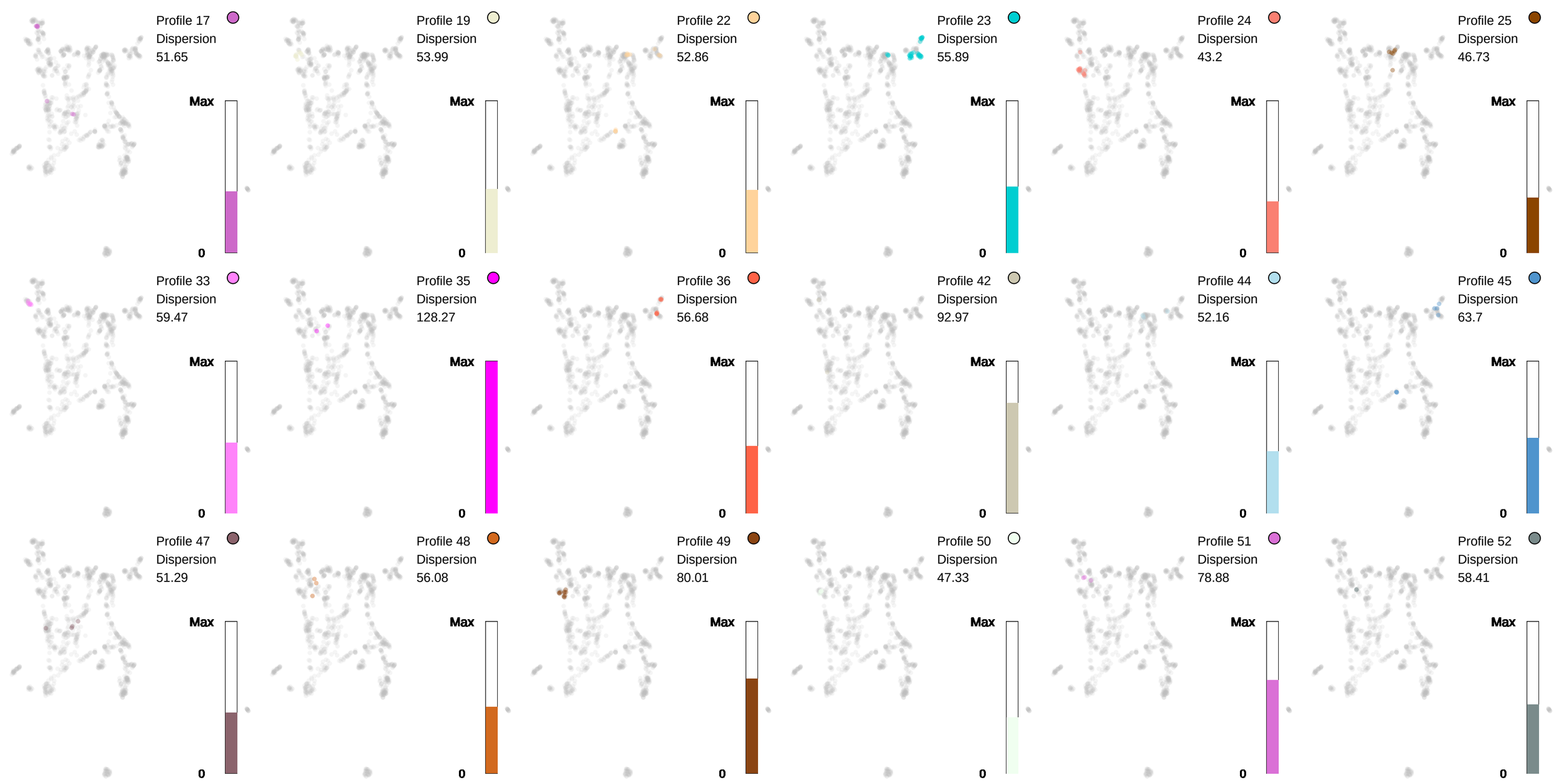
Motifs, Dispersion ≥ 90th percentile



Motif Tissue Composition



Eph receptors and ligands (k_opt = 52)

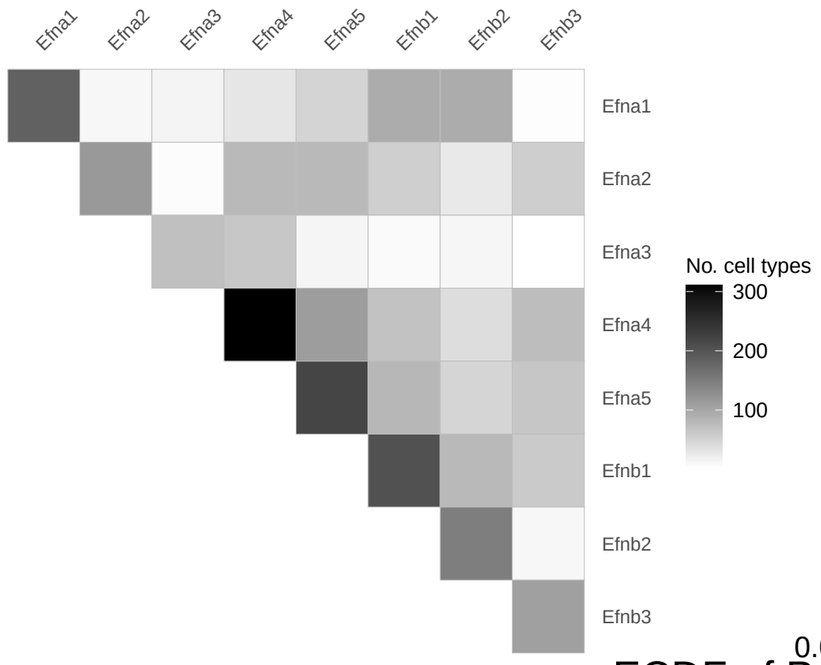


Eph_I (k_opt = 16)

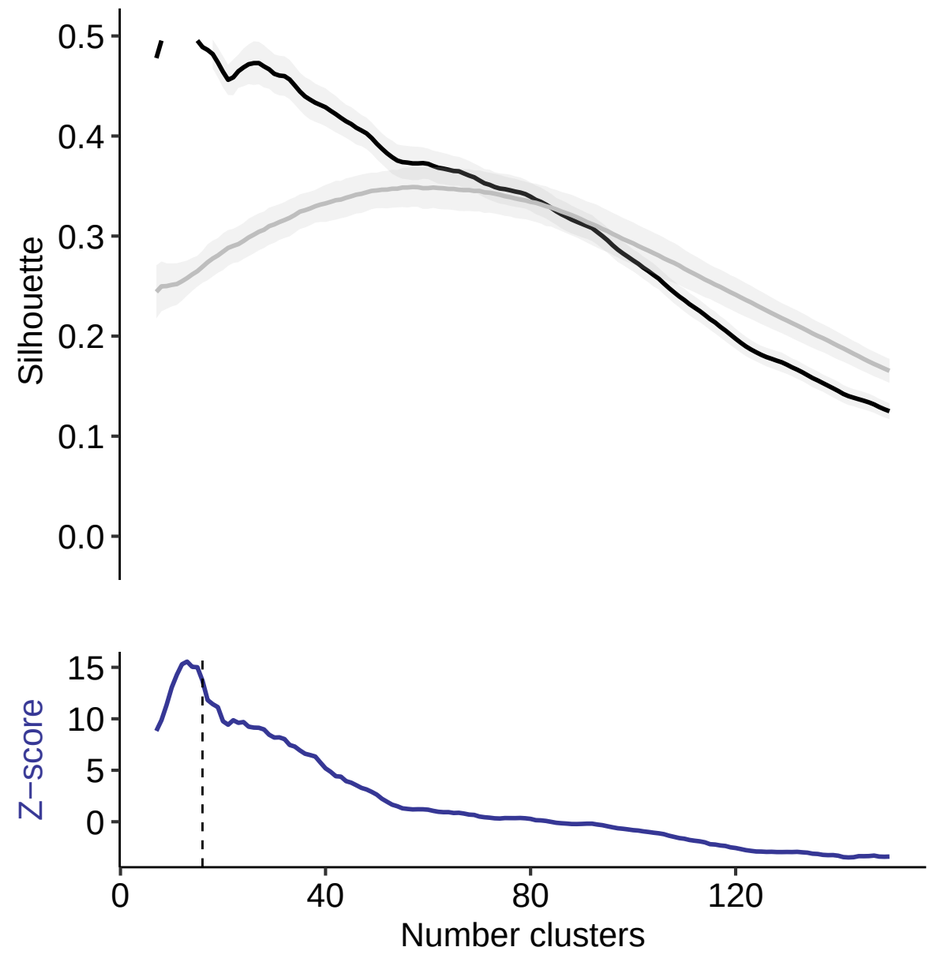
Pathway genes

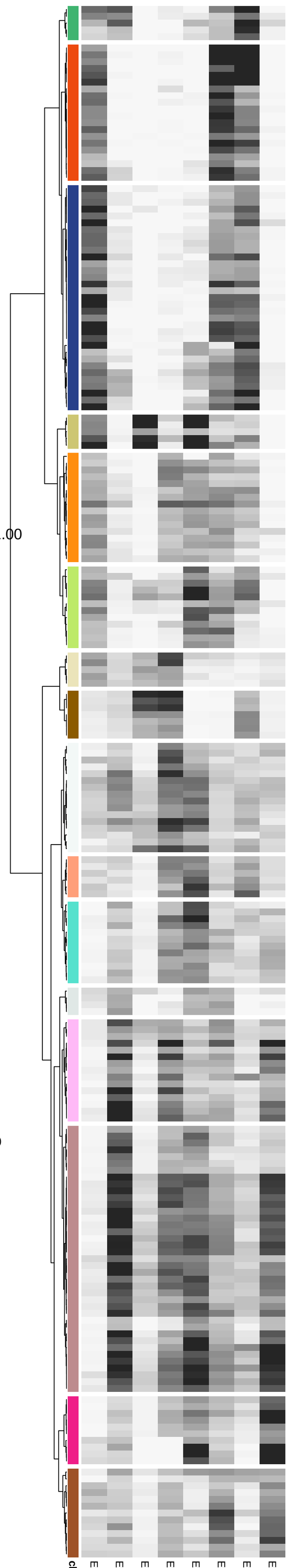
Efna1
Efna2
Efna3
Efna4
Efna5
Efnb1
Efnb2
Efnb3

Gene Co−Expression Above Threshold

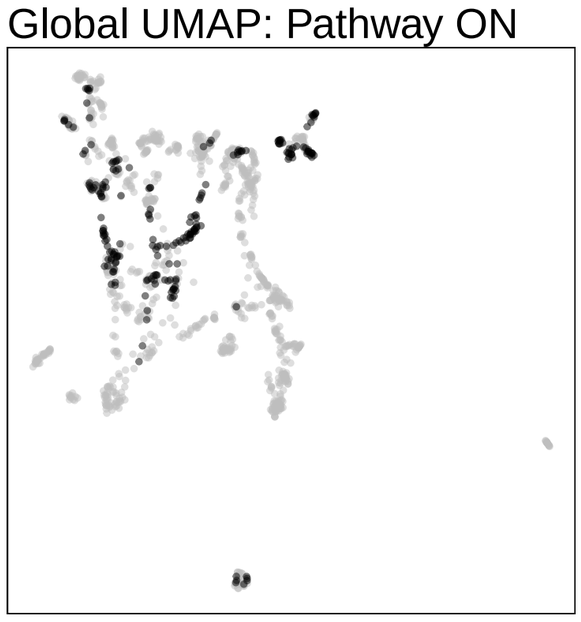


Silhouette and Z−score

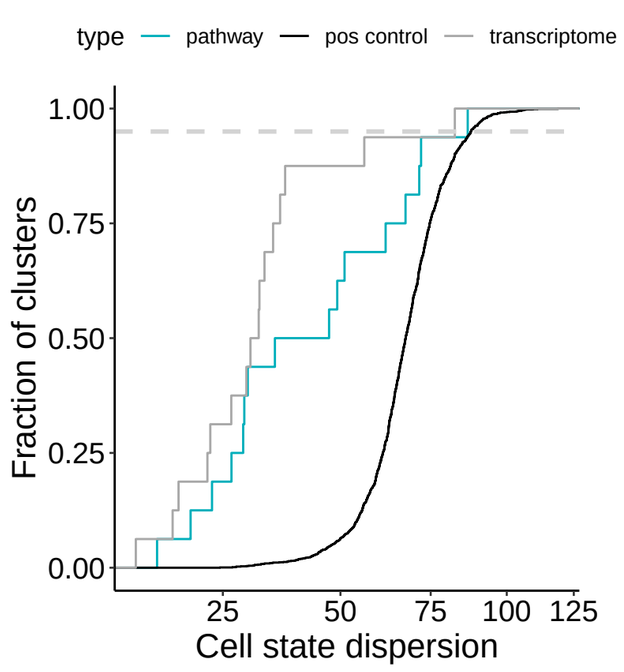




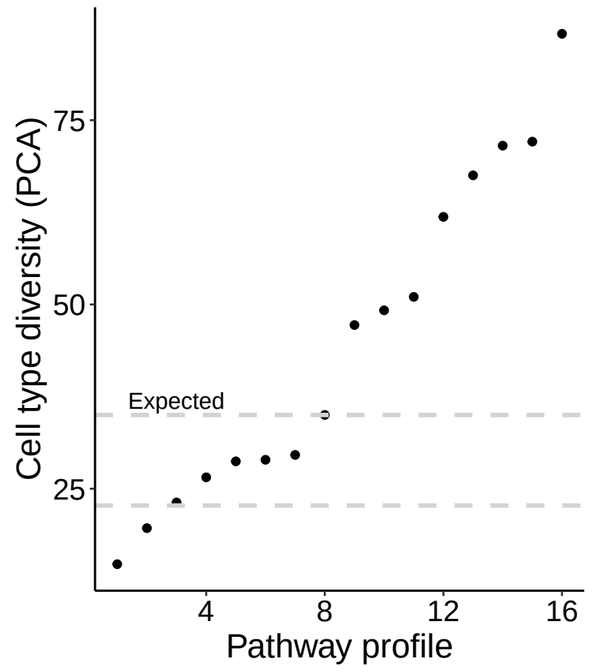
Global UMAP: Pathway ON



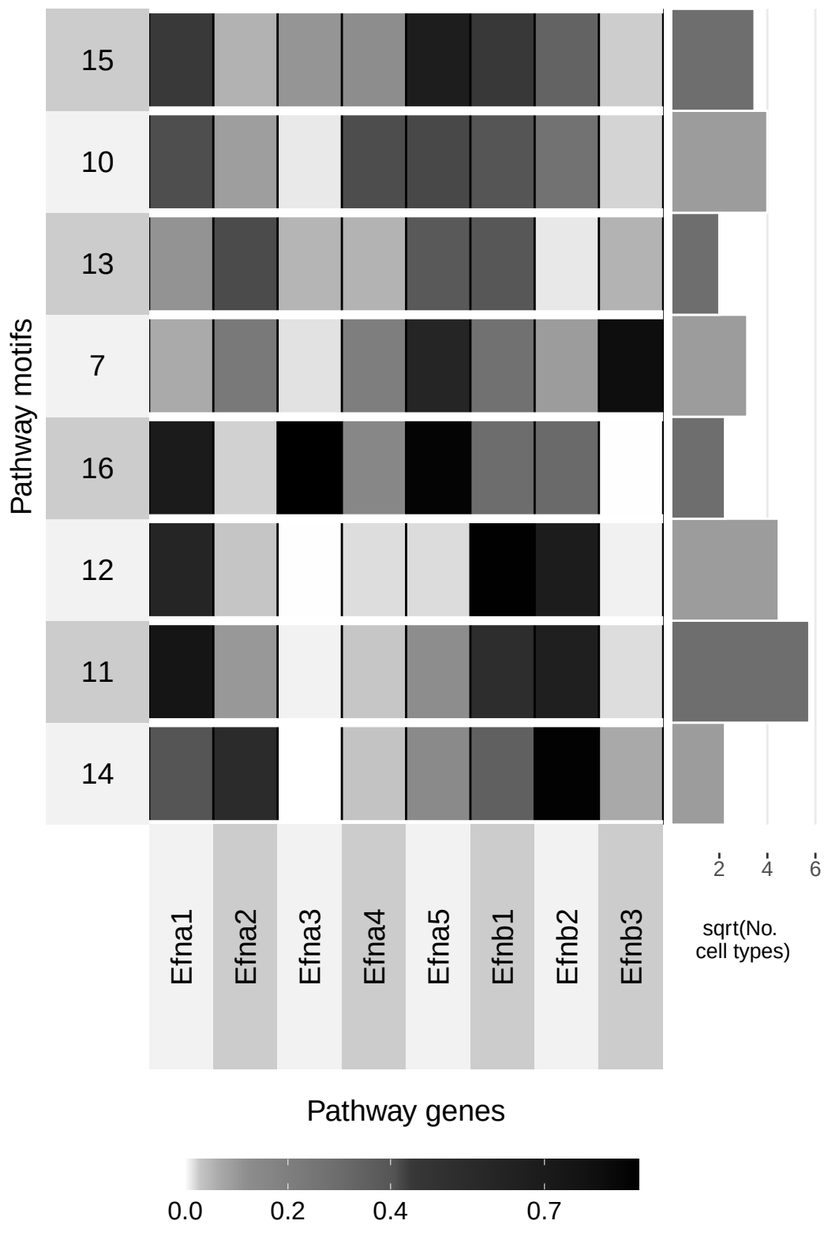
ECDF of Profile Dispersions



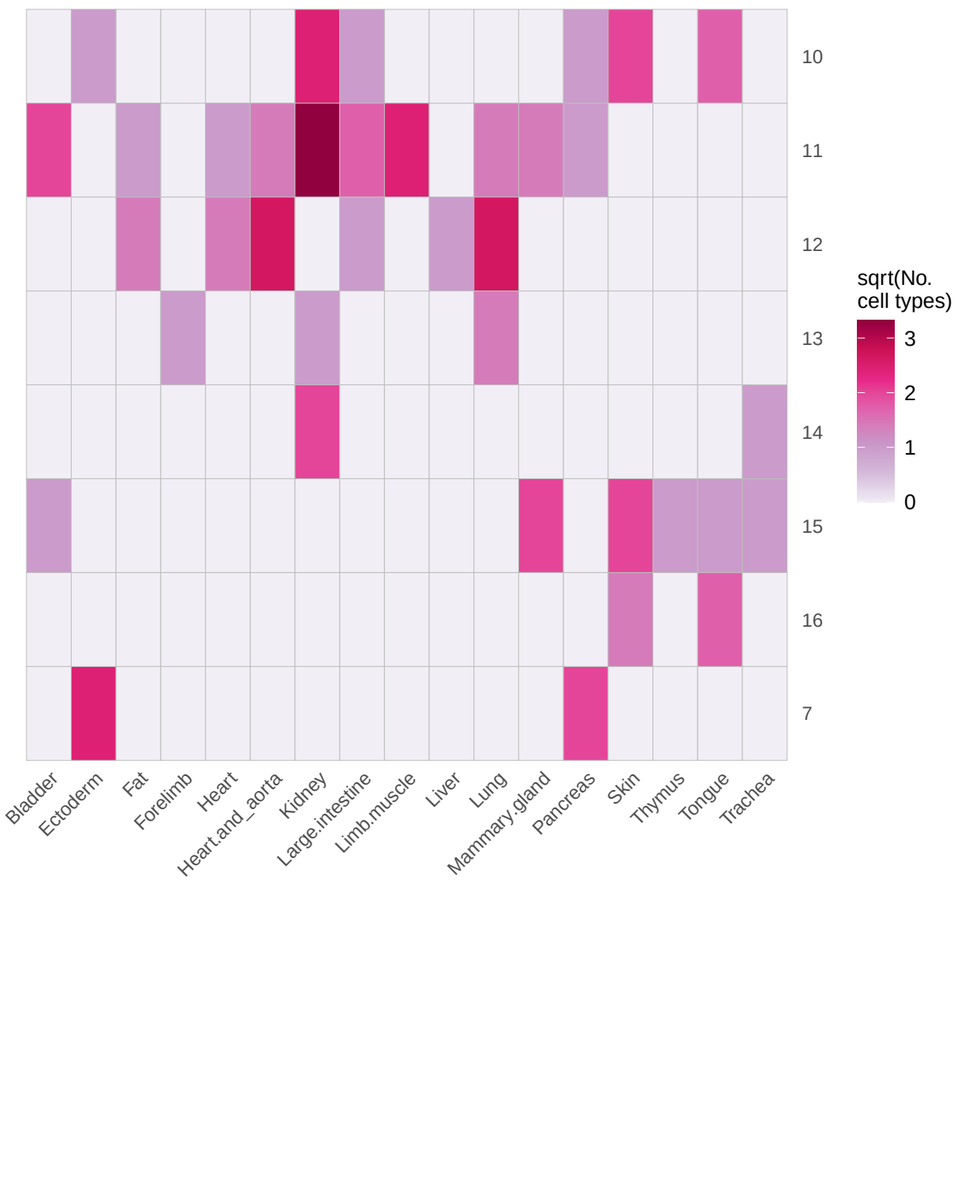
Profile Dispersion Plot



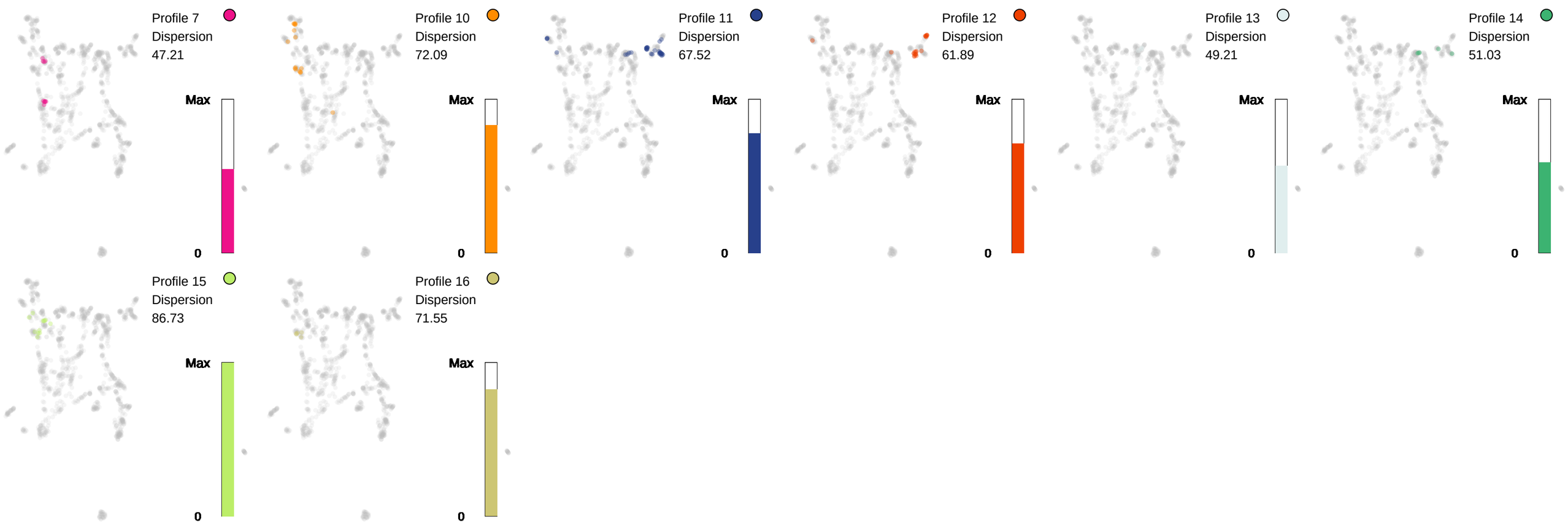
Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition



Eph_l (k_opt = 16)

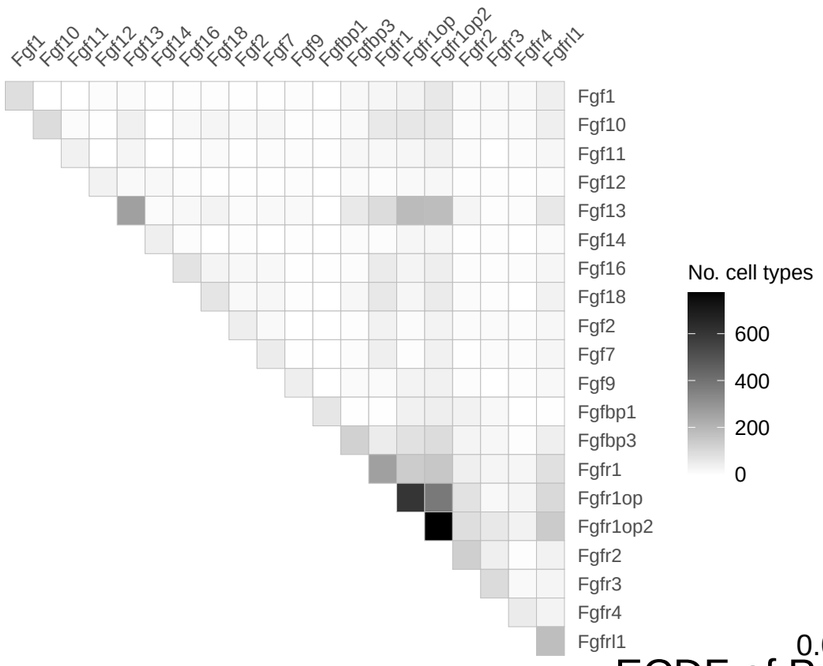

Profile 7
Dispersion
47.21
Max
0
Profile 10
Dispersion
72.09
Max
0
Profile 11
Dispersion
67.52
Max
0
Profile 12
Dispersion
61.89
Max
0
Profile 13
Dispersion
49.21
Max
0
Profile 14
Dispersion
51.03
Max
0
Profile 15
Dispersion
86.73
Max
0
Profile 16
Dispersion
71.55
Max
0

FGF cell signaling proteins (k_opt = 80)

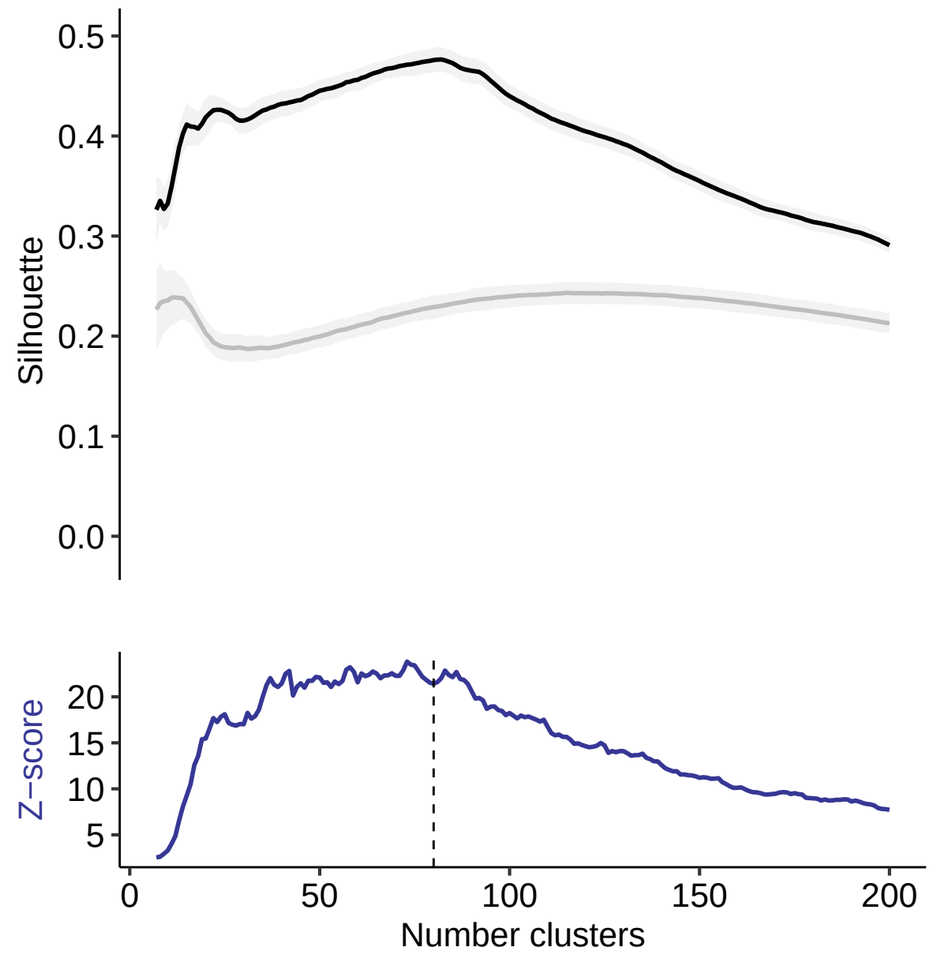
Pathway genes

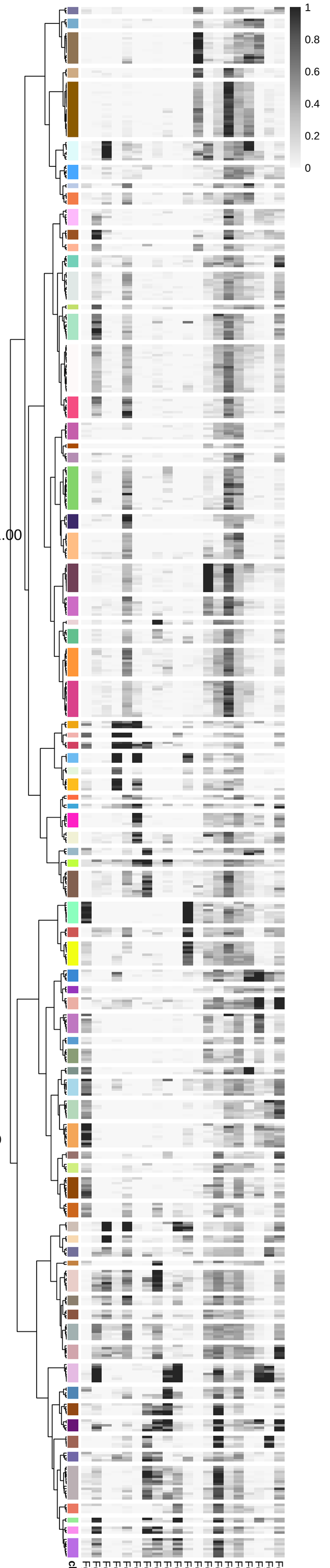
Fgf1
Fgf10
Fgf11
Fgf12
Fgf13
Fgf14
Fgf16
Fgf18
Fgf2
Fgf7
Fgf9
Fgfbp1
Fgfbp3
Fgfr1
Fgfr1op
Fgfr1op2
Fgfr2
Fgfr3
Fgfr4
Fgfrl1

Gene Co−Expression Above Threshold

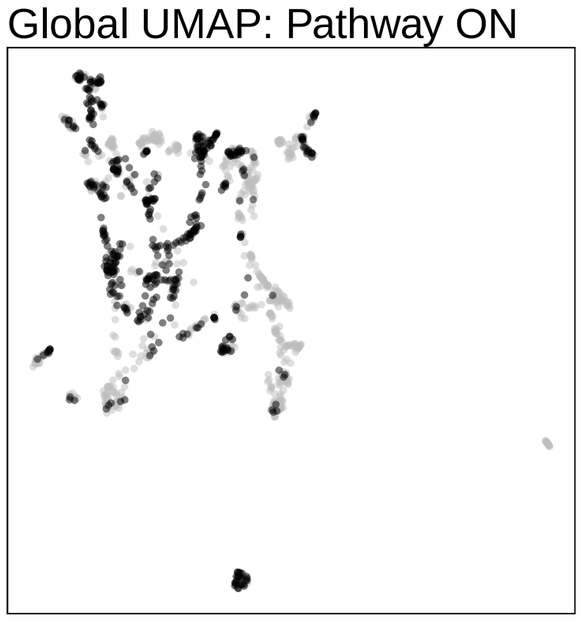


Silhouette and Z−score

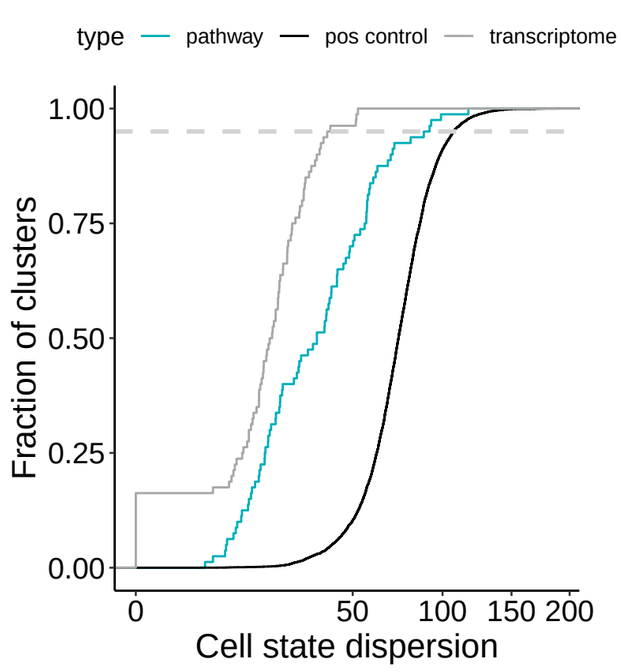




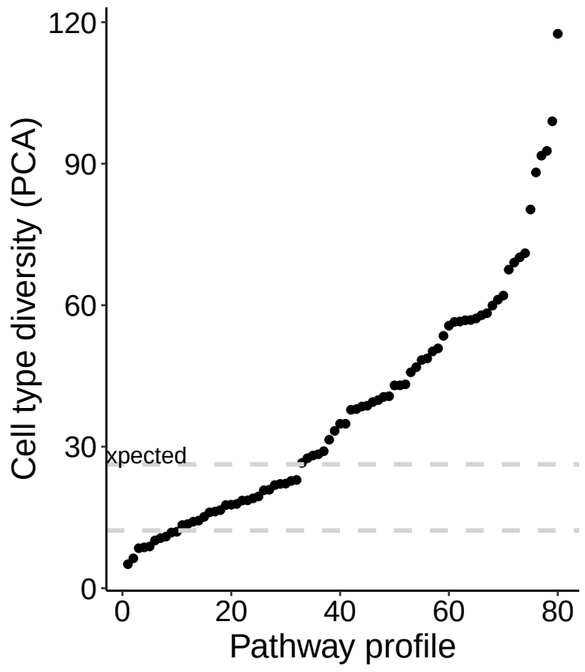
Global UMAP: Pathway ON



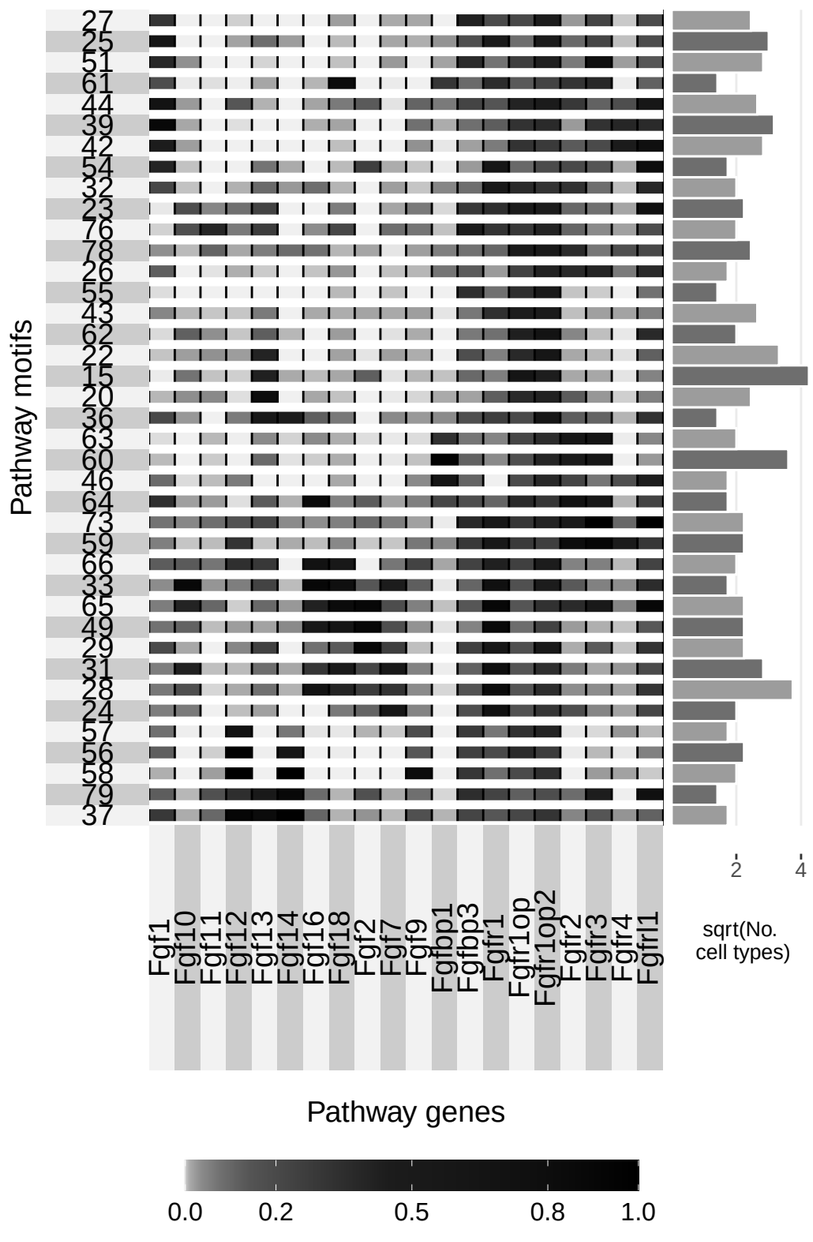
ECDF of Profile Dispersions



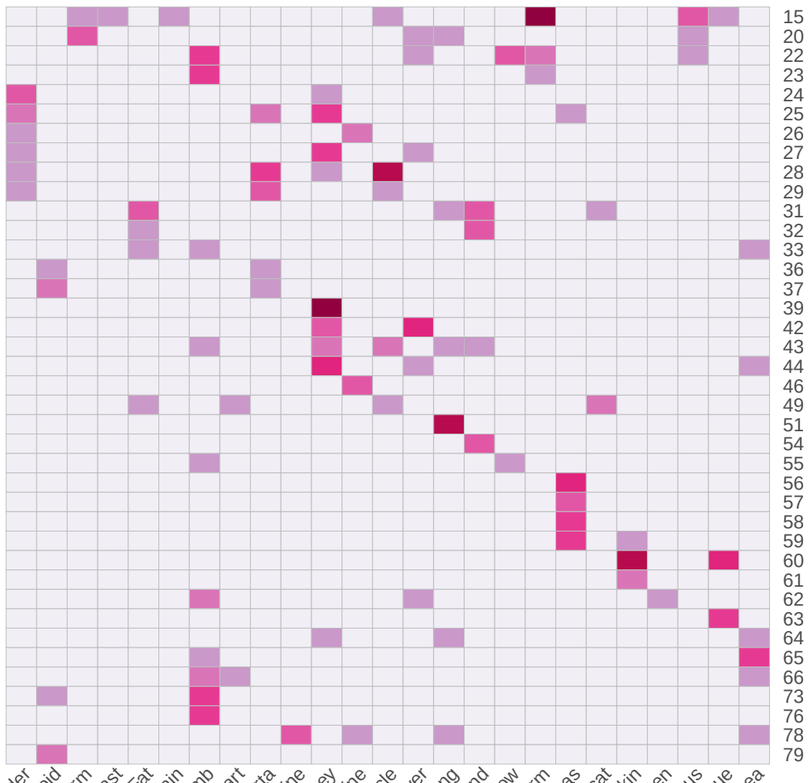
Profile Dispersion Plot



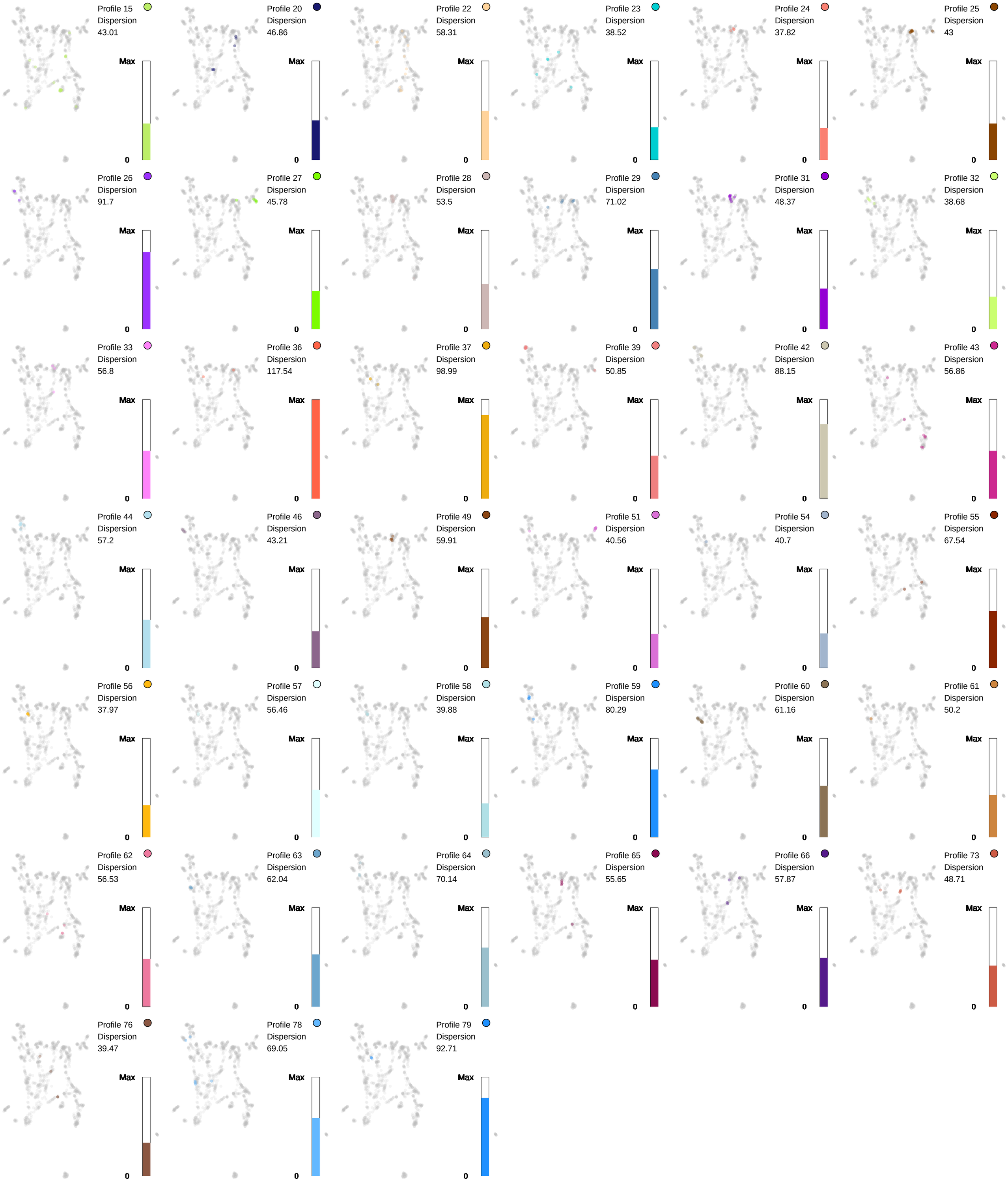
Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition



FGF cell signaling proteins (k_opt = 80)

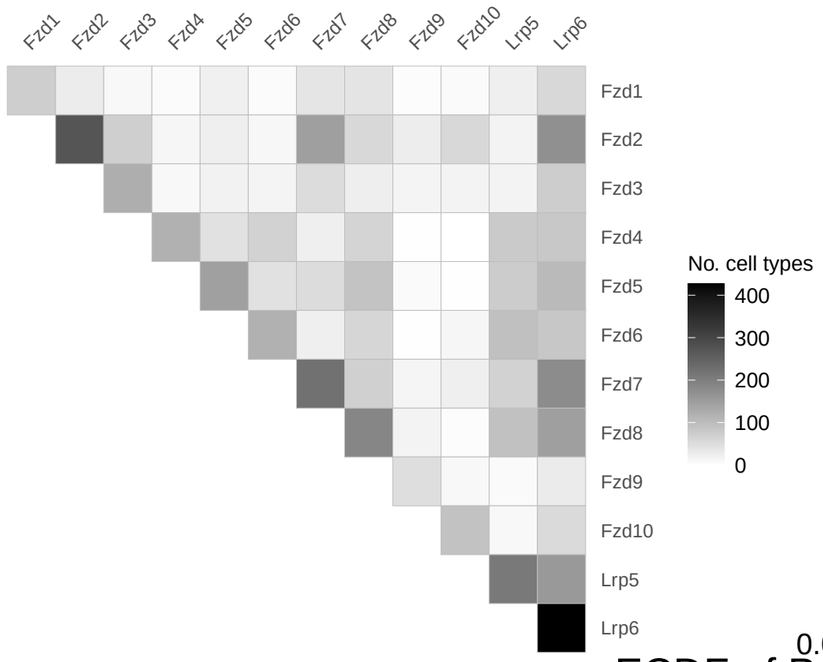


Frizzled and Lrp5 6 receptors for Wnt B Catenin Signaling (k_opt = 37)

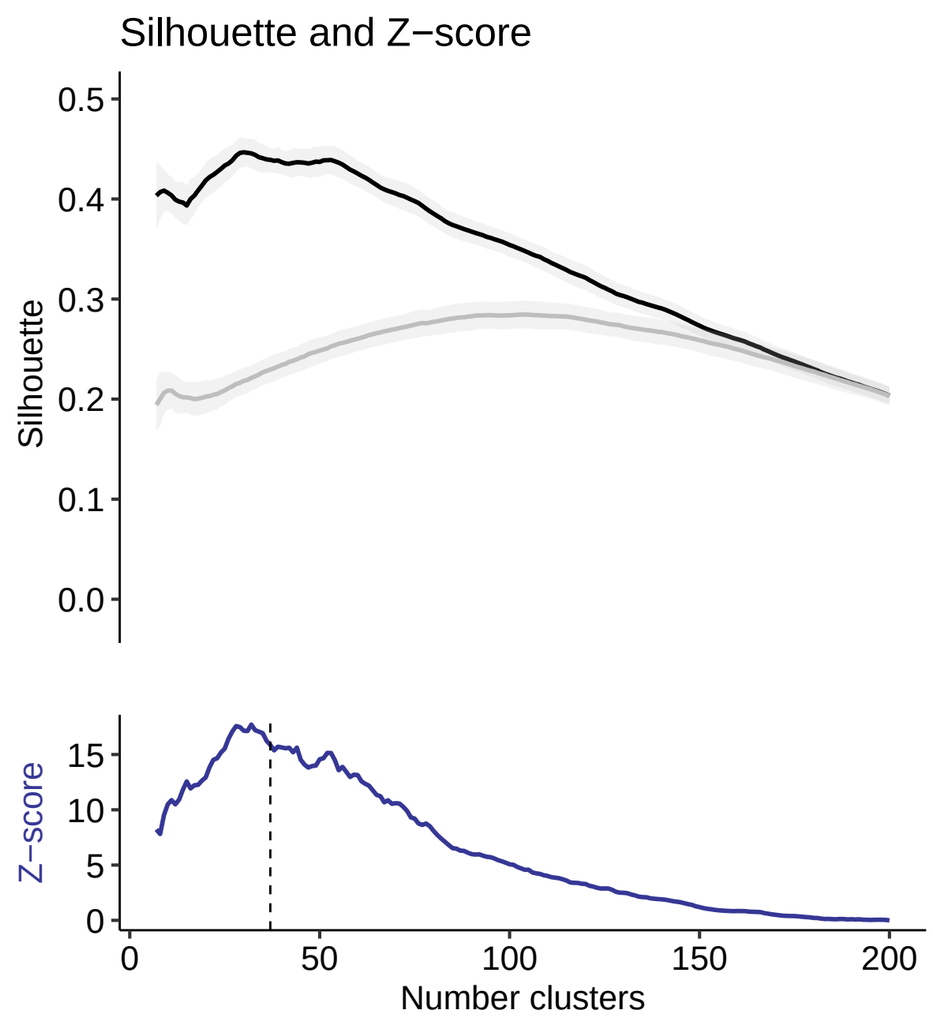
Pathway genes

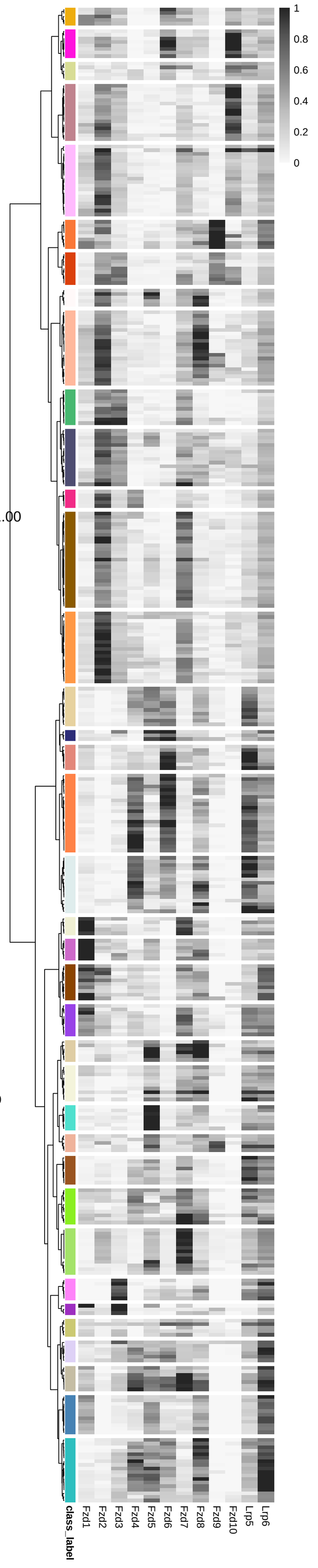
Fzd1	Fzd5	Fzd9
Fzd2	Fzd6	Fzd10
Fzd3	Fzd7	Lrp5
Fzd4	Fzd8	Lrp6

Gene Co−Expression Above Threshold

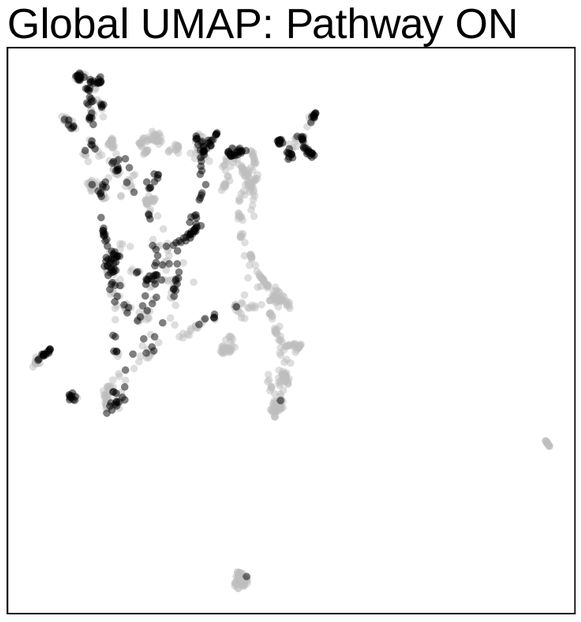


Silhouette and Z−score

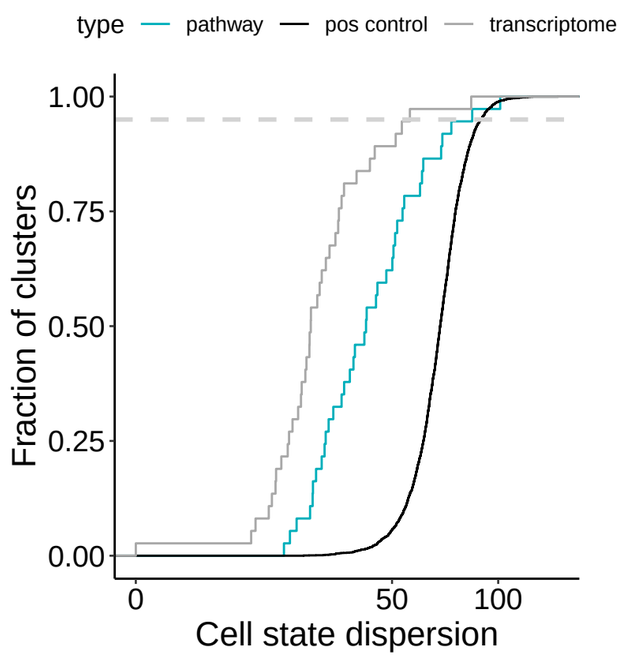




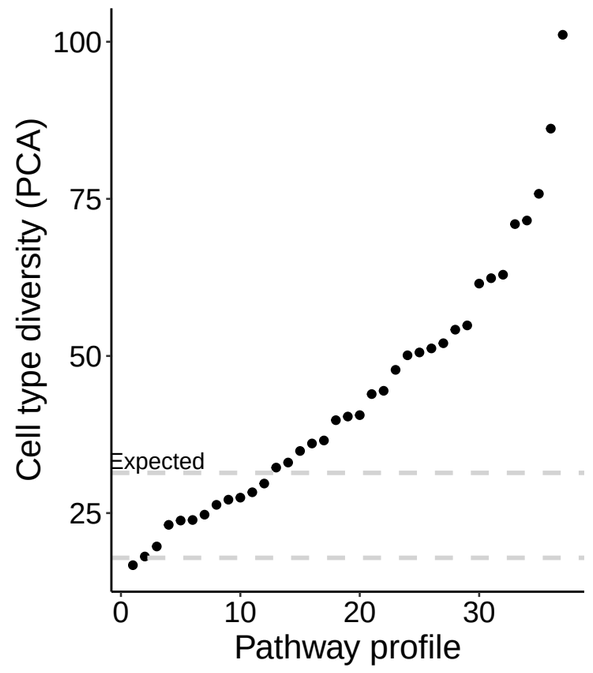
Global UMAP: Pathway ON



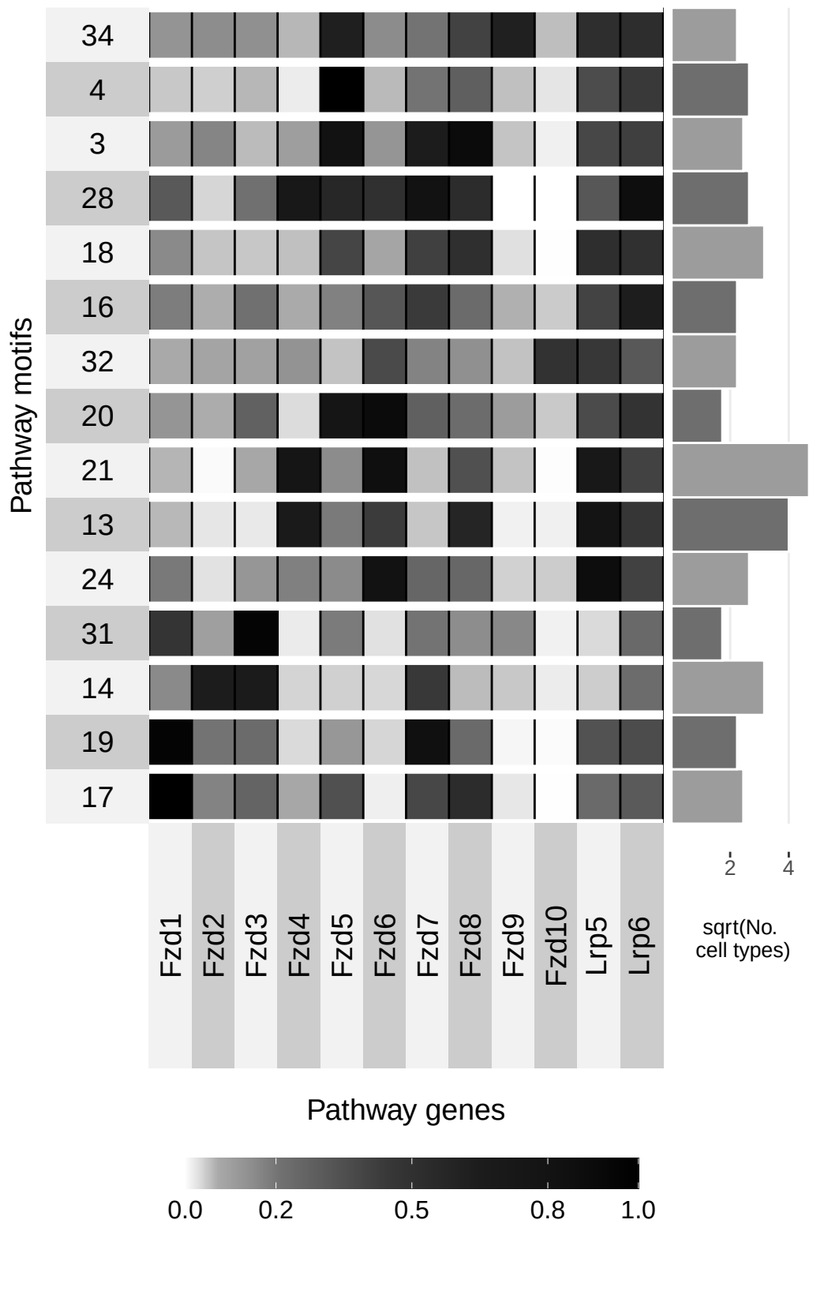
ECDF of Profile Dispersions



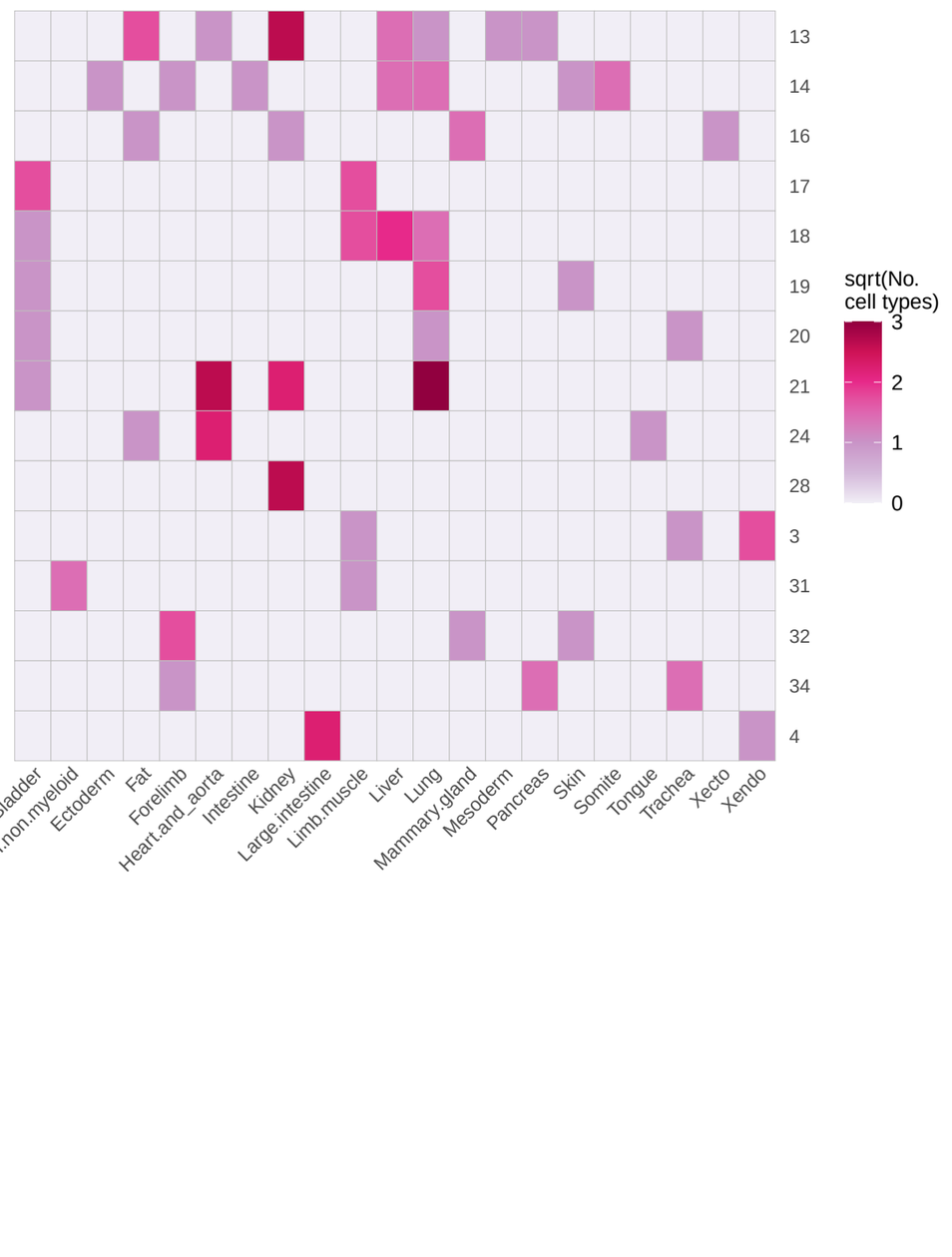
Profile Dispersion Plot



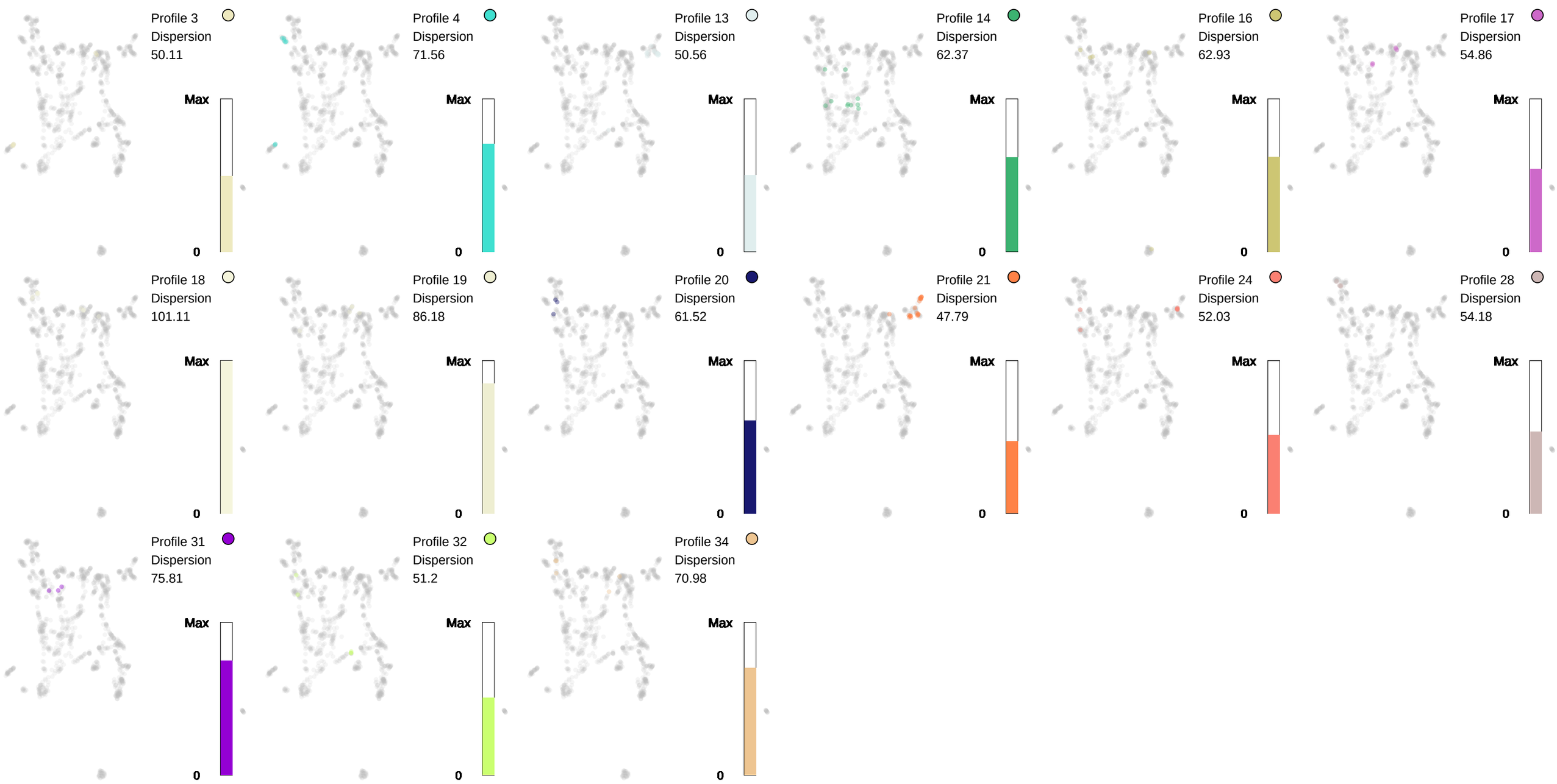
Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition



Frizzled and Lrp5 6 receptors for Wnt B Catenin Signaling (k_opt = 37)



acellular Signalling Through Adenosine Receptor A2a and Adenosine (k_opt =

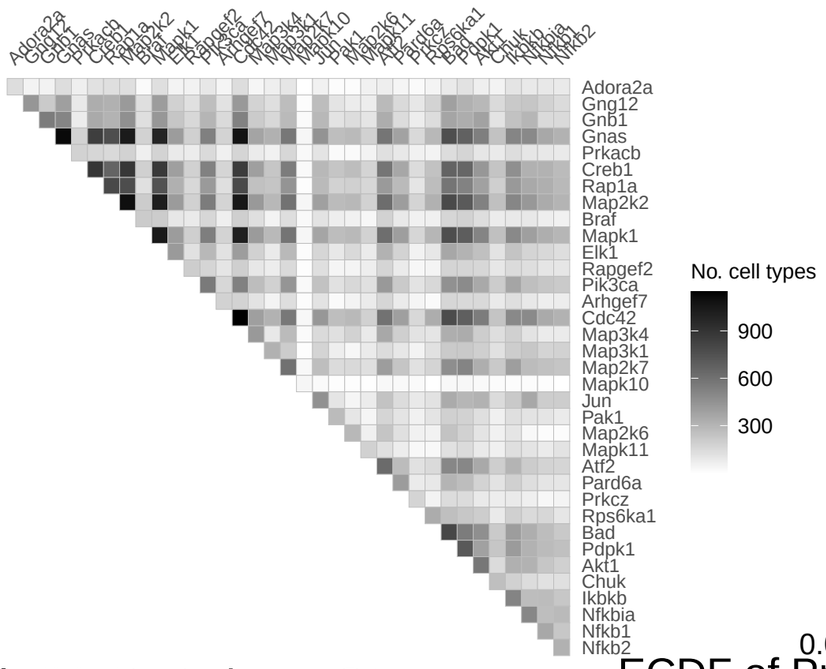
Pathway genes

Adora2a
Gng12
Gnb1
Gnas
Prkacb
Creb1
Rap1a
Map2k2
Braf
Mapk1
Elk1

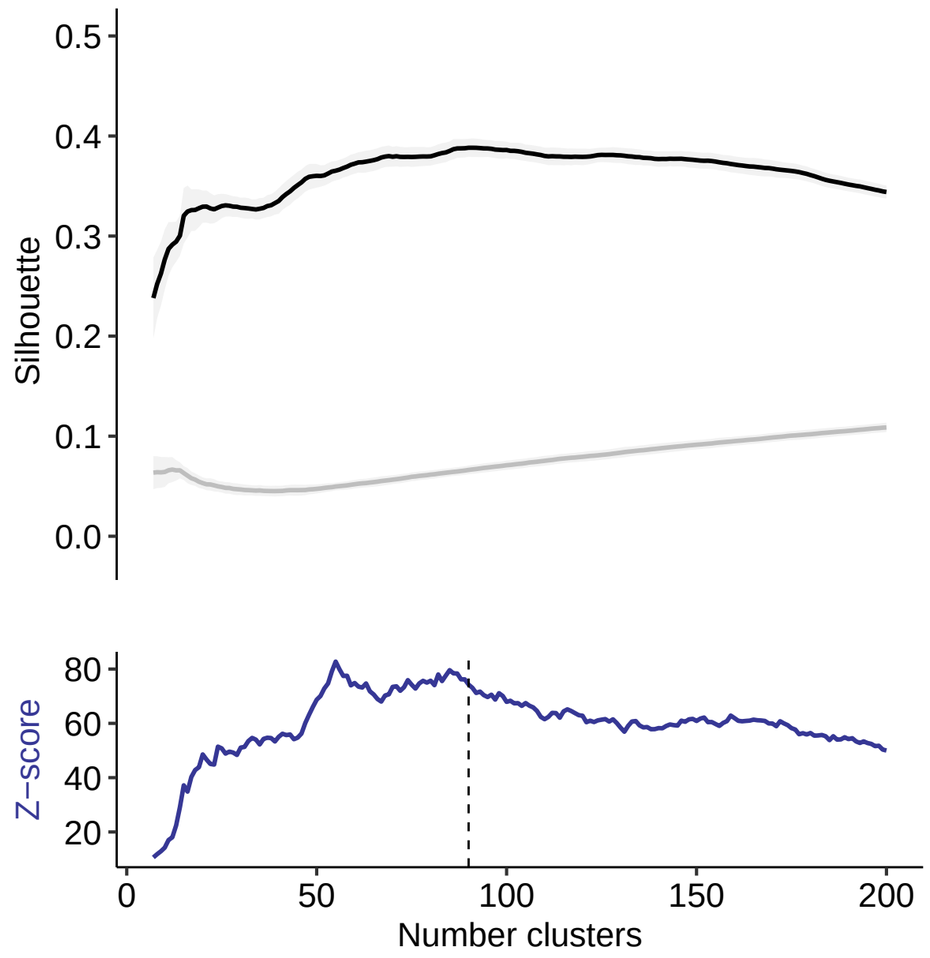
Pik3ca
Arhgef7
Cdc42
Map3k4
Map3k1
Map2k7
Mapk10
Jun
Pak1
Map2k6
Mapk11

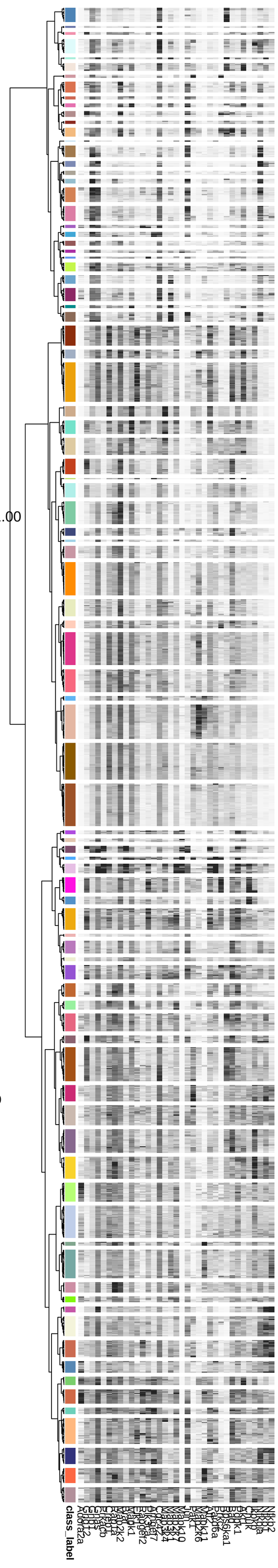
Atf2
Pard6a
Prkcz
Rps6ka1
Bad
Pdpk1
Akt1
Chuk
Ikbkb
Nfkbia
Nfkb1

Gene Co−Expression Above Threshold

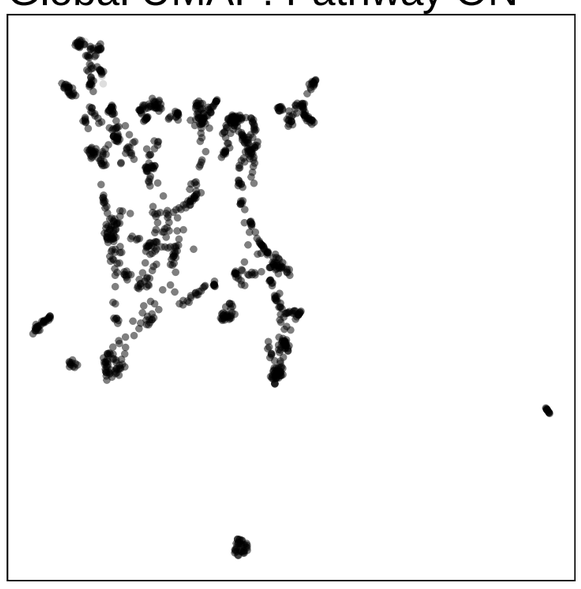


Silhouette and Z−score

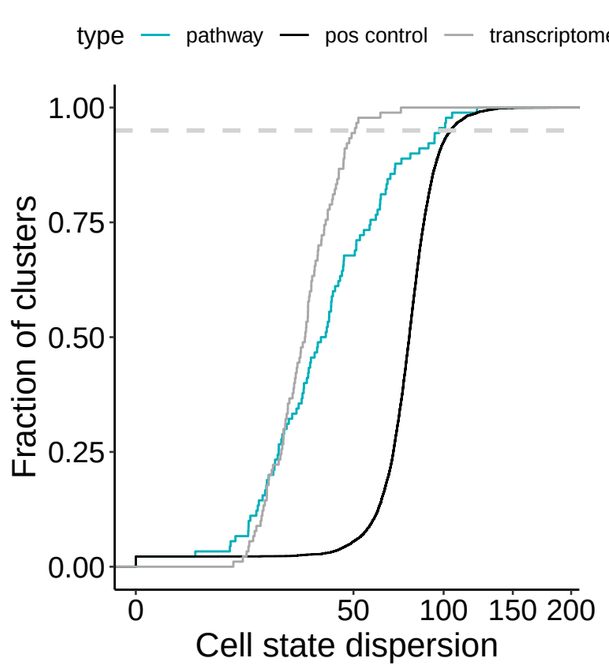




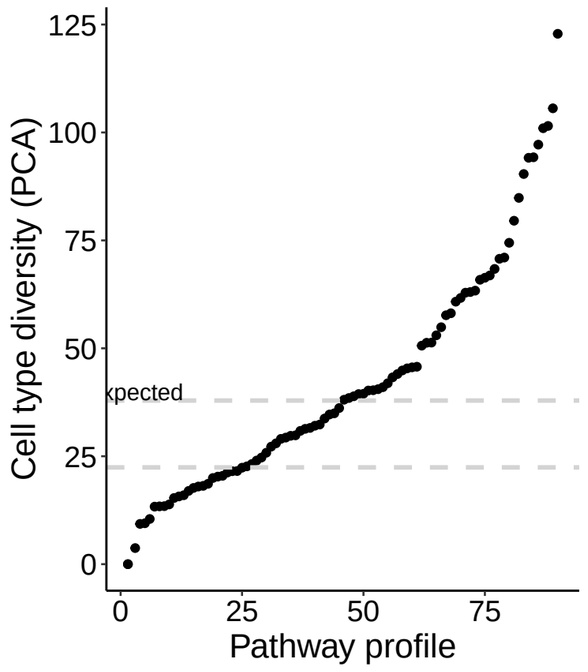
Global UMAP: Pathway ON



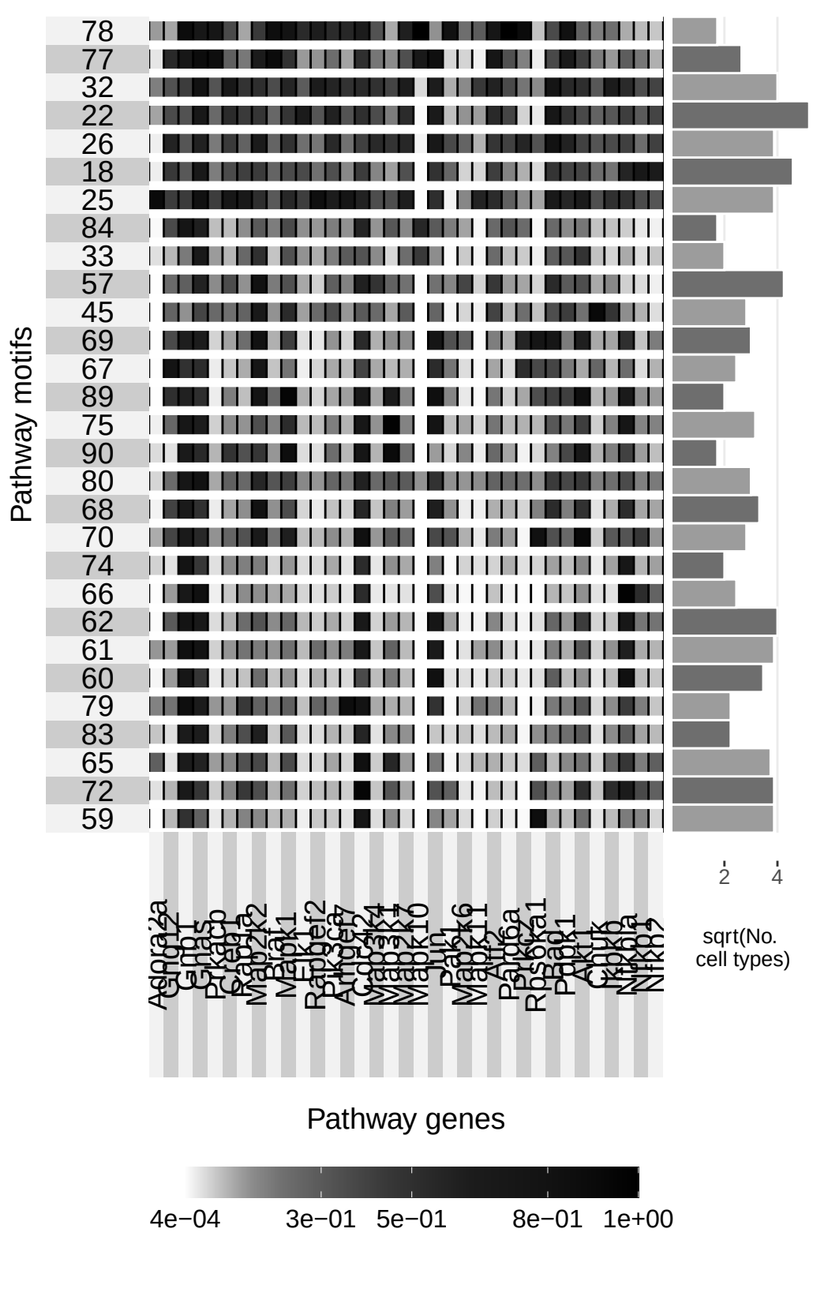
ECDF of Profile Dispersions



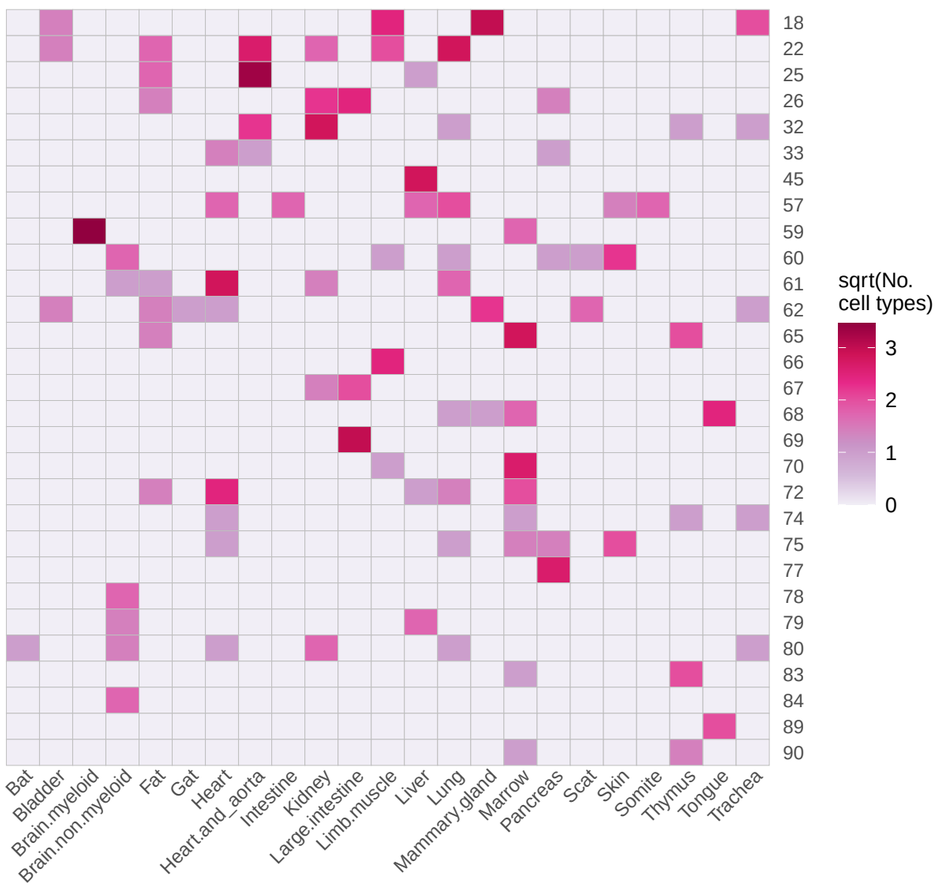
Profile Dispersion Plot



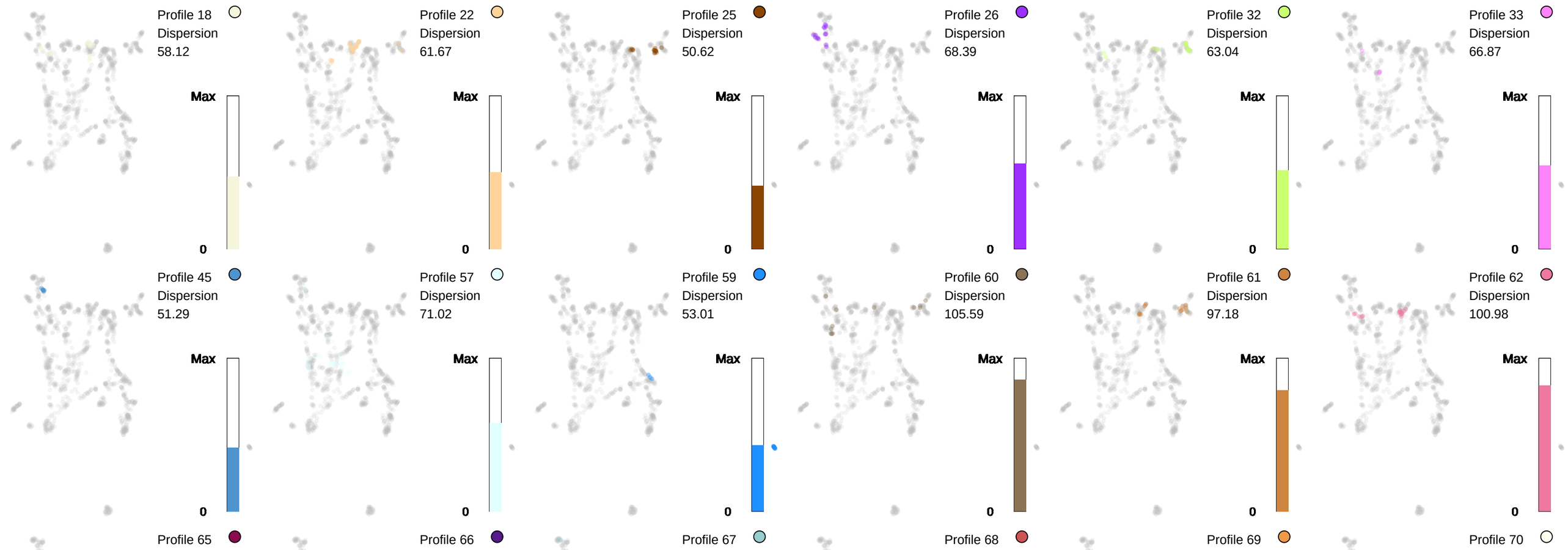
Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition



acellular Signalling Through Adenosine Receptor A2a and Adenosine (k_opt =



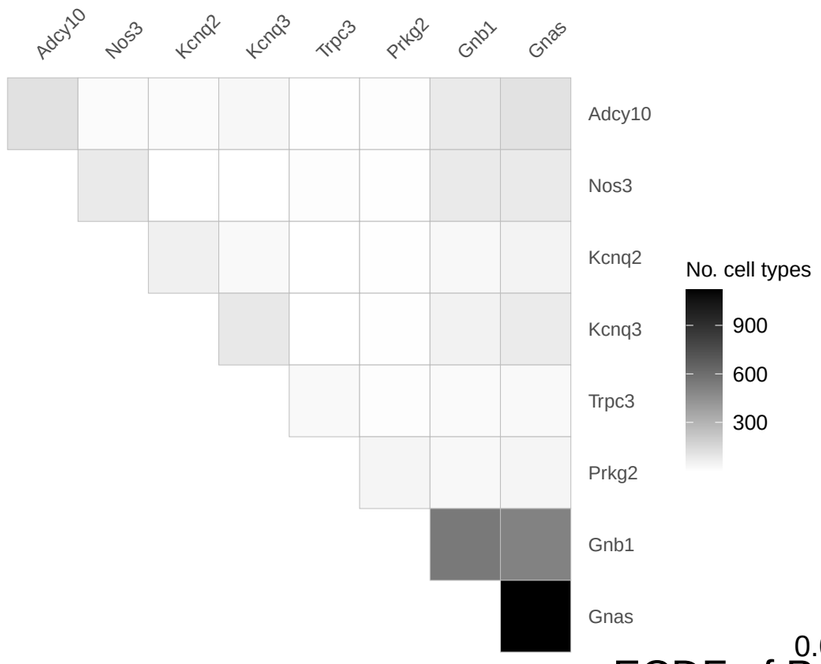
Ion Channels and Their Functional Role in Vascular Endothelium (k_opt = 32)

Adcy10
Nos3
Kcnq2

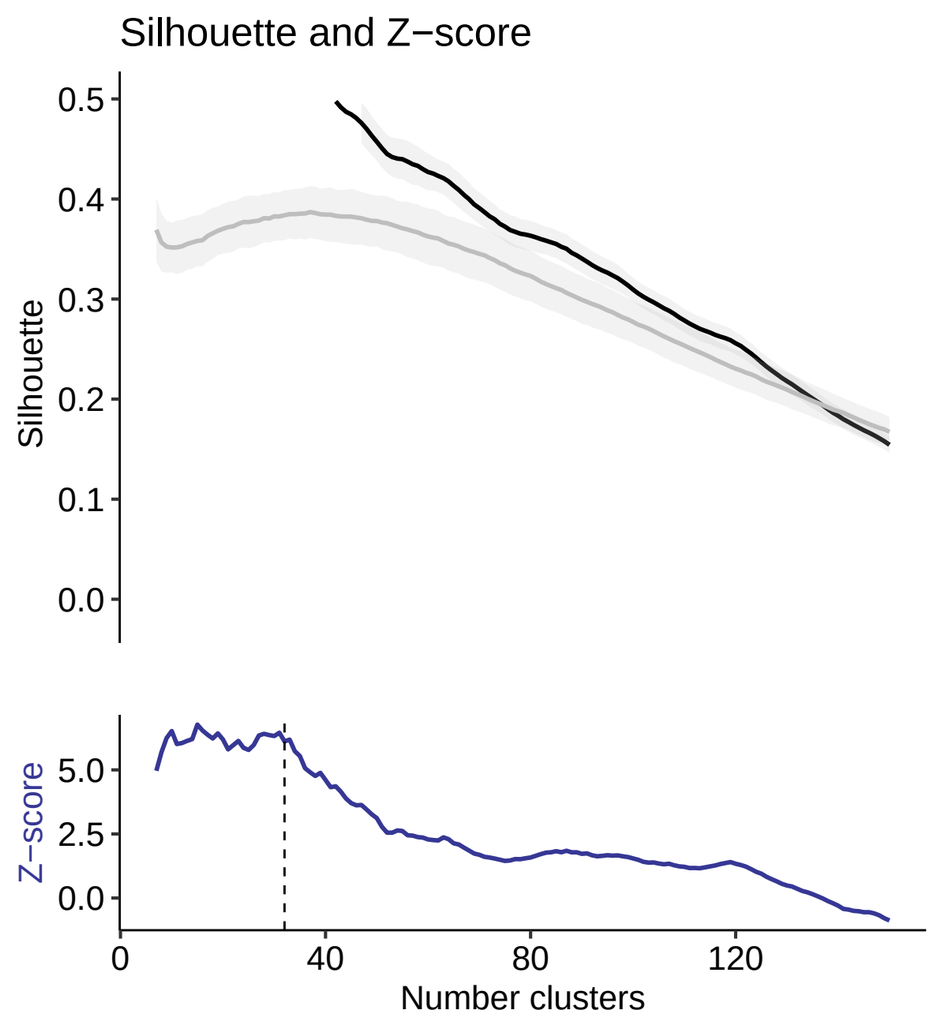
Pathway genes
Kcnq3
Trpc3

Prkg2
Gnb1
Gnas

Gene Co−Expression Above Threshold

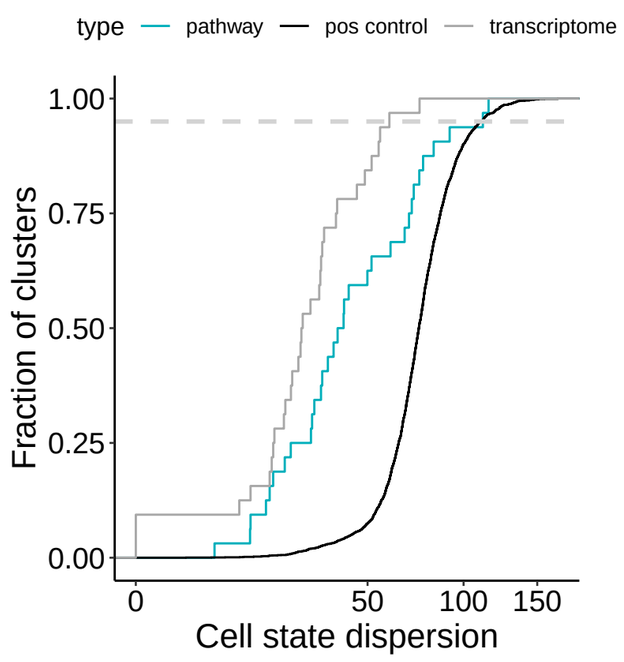


Silhouette and Z−score

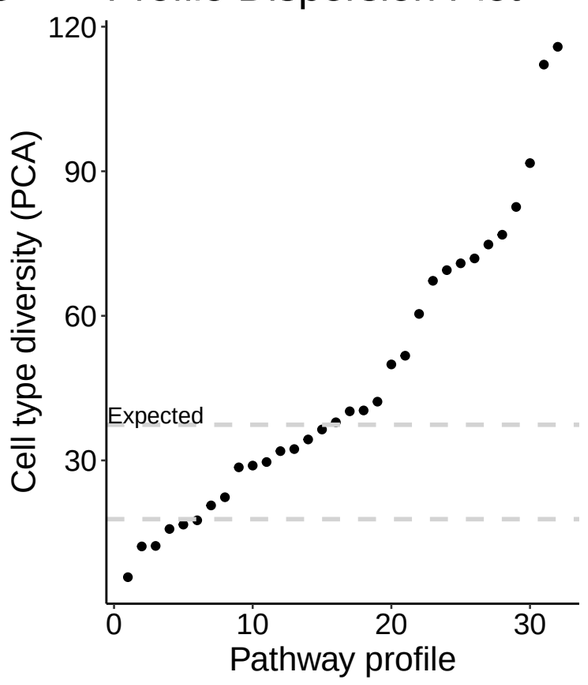


Global UMAP: Pathway ON

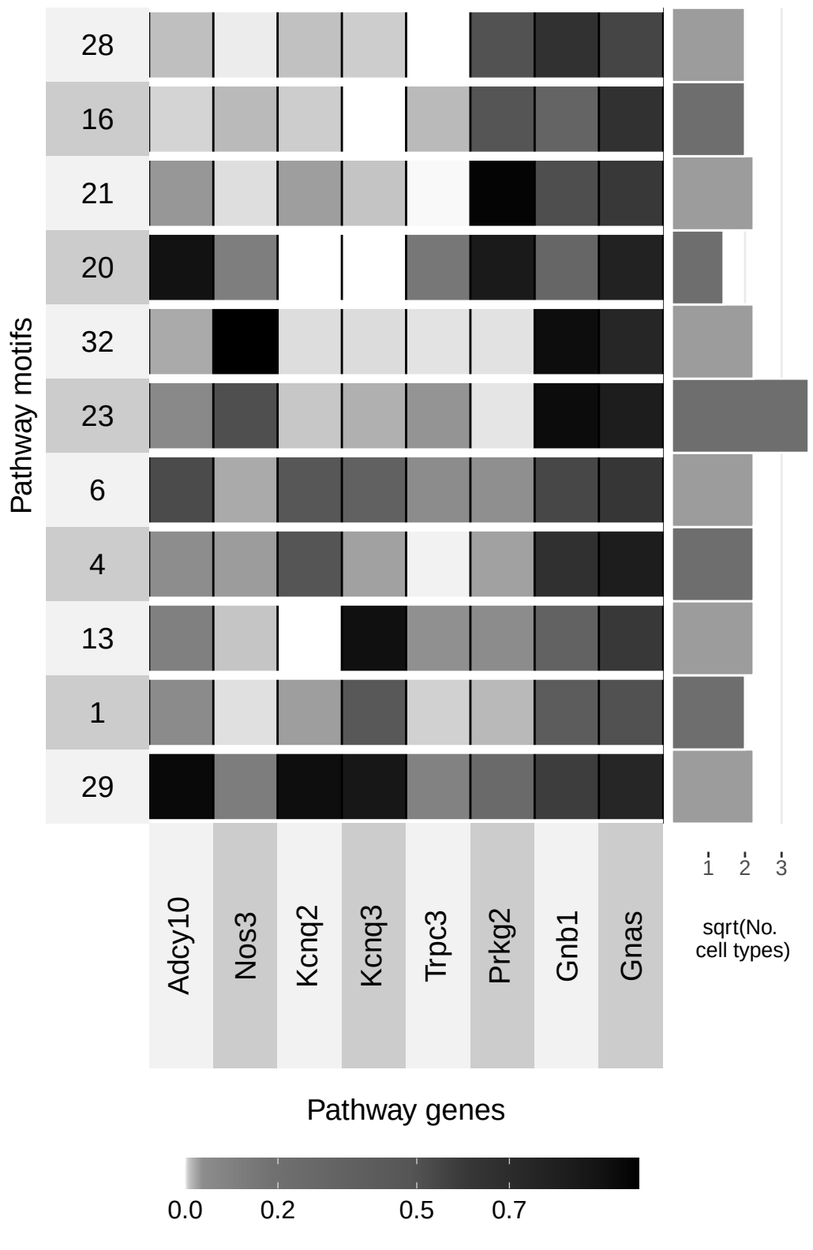
ECDF of Profile Dispersions



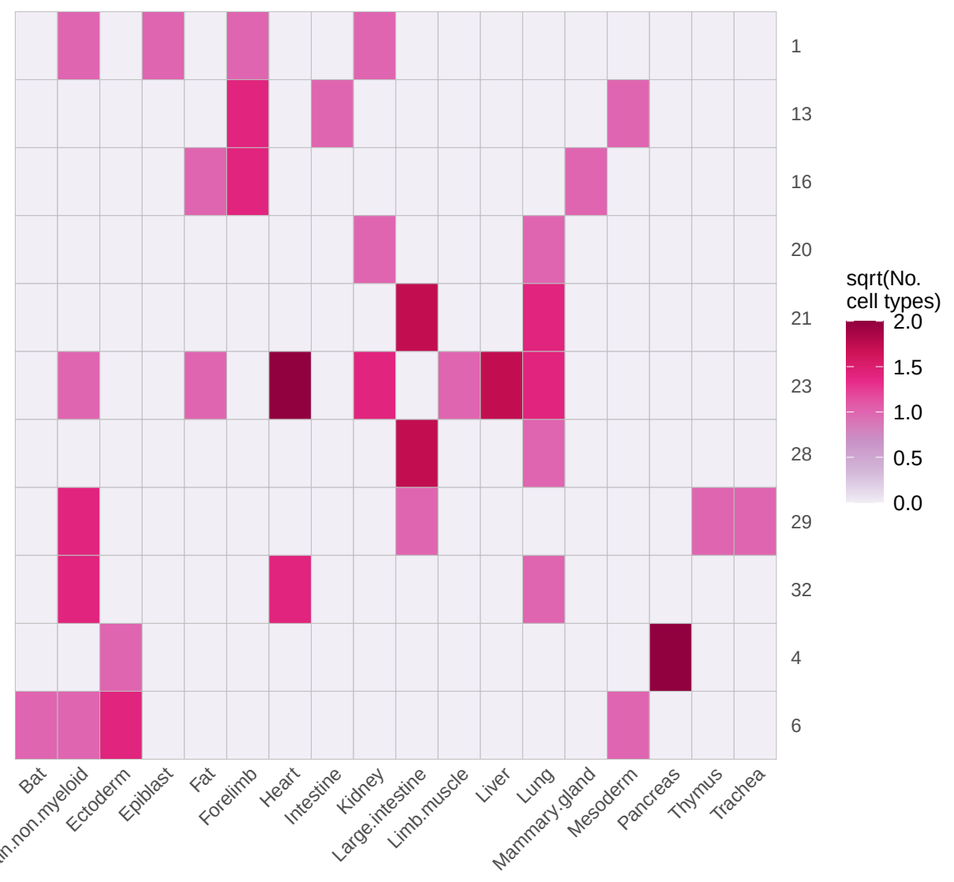
Profile Dispersion Plot



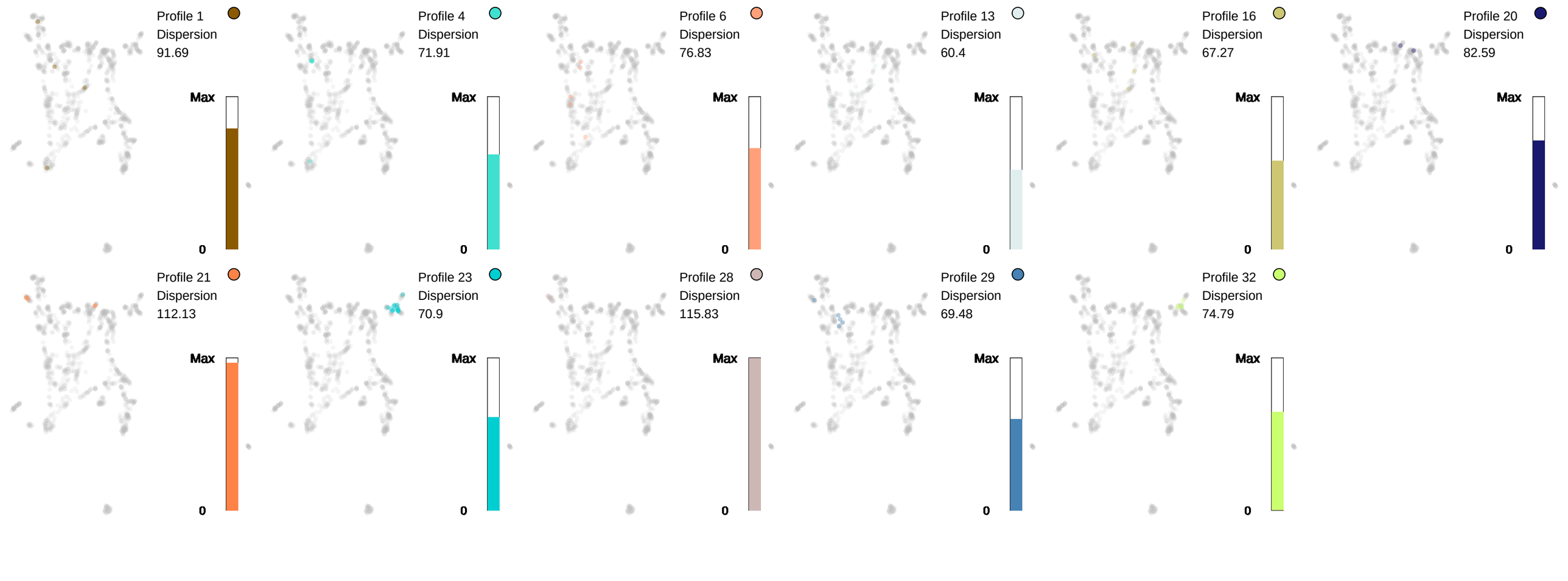
Motifs, Dispersion ≥ 90th percentile



Motif Tissue Composition



Ion Channels and Their Functional Role in Vascular Endothelium (k_opt = 32)



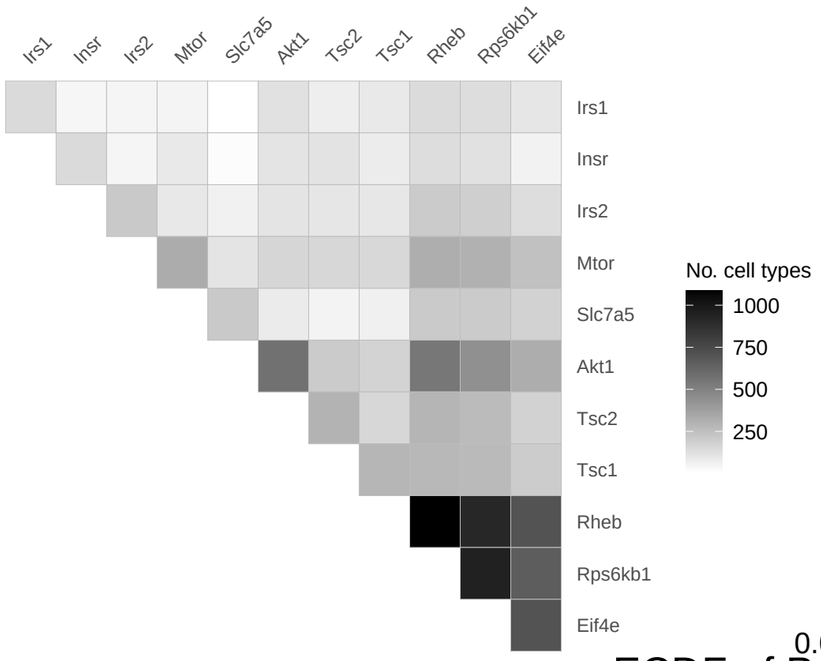
Leucine Stimulation on Insulin Signaling (k_opt = 34)

Irs1
Insr
Irs2
Mtor

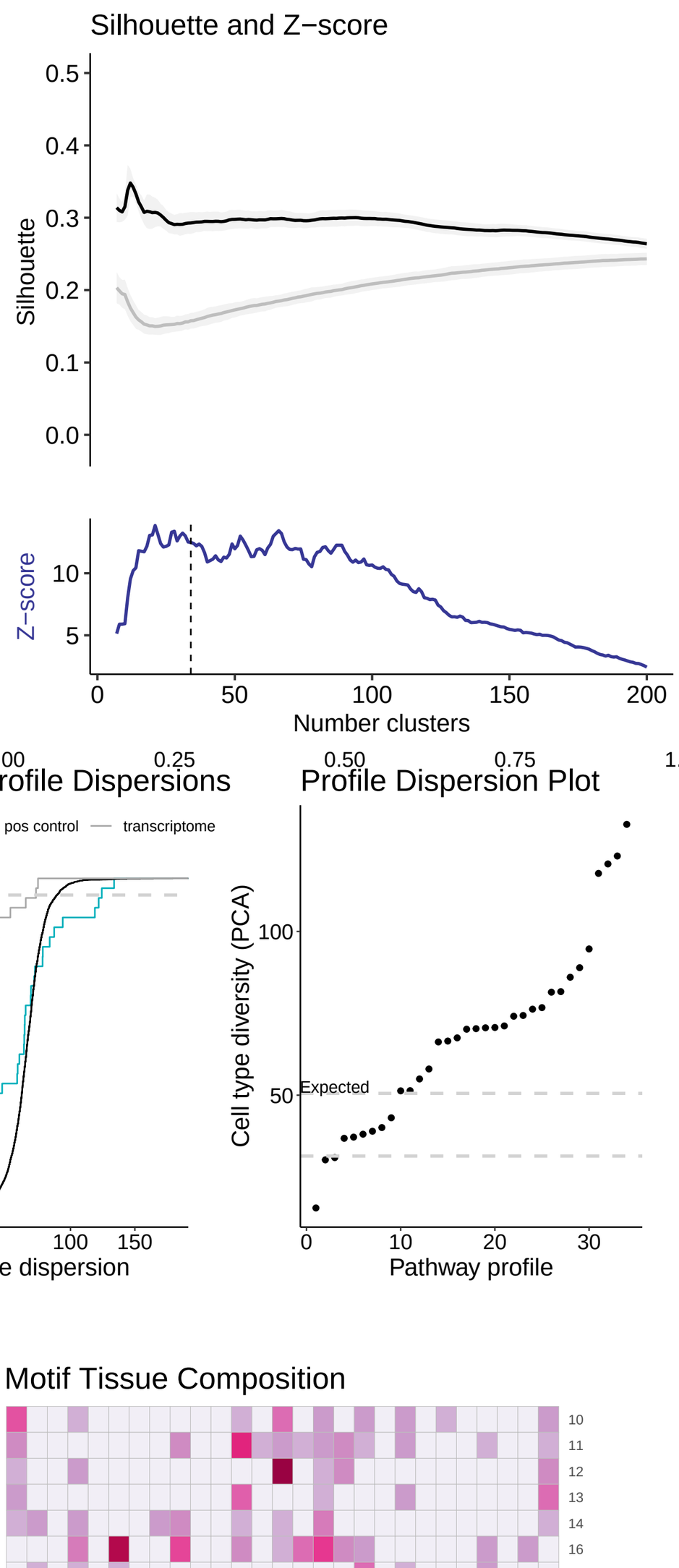
Pathway genes
Slc7a5
Akt1
Tsc2

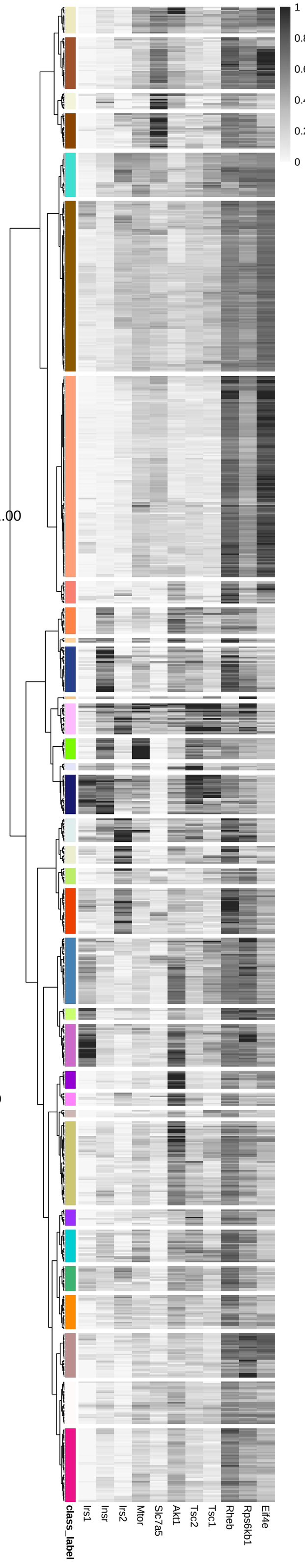
Tsc1
Rheb
Rps6kb1
Eif4e

Gene Co−Expression Above Threshold

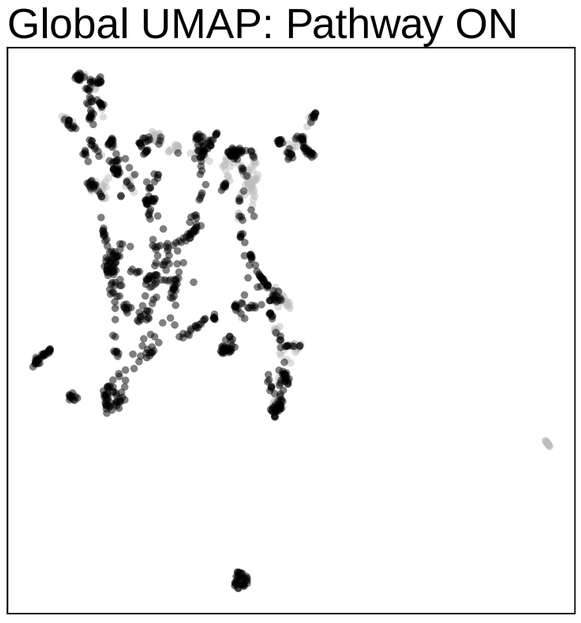


Silhouette and Z−score

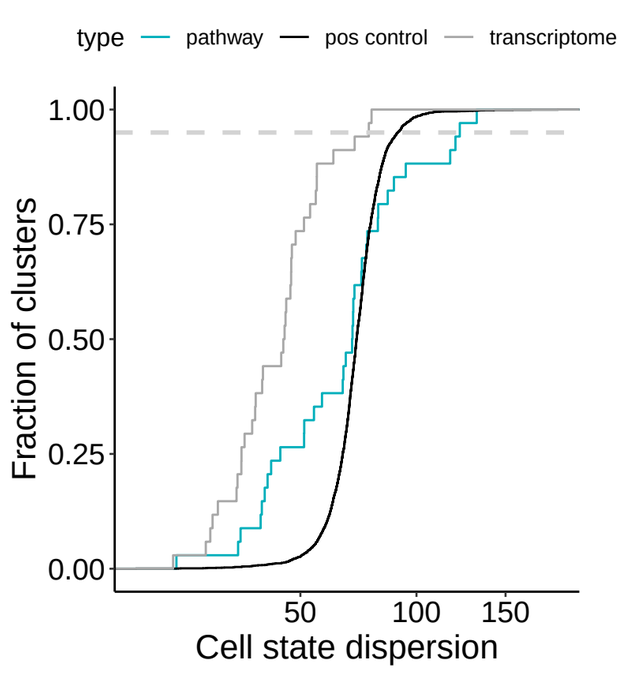




Global UMAP: Pathway ON

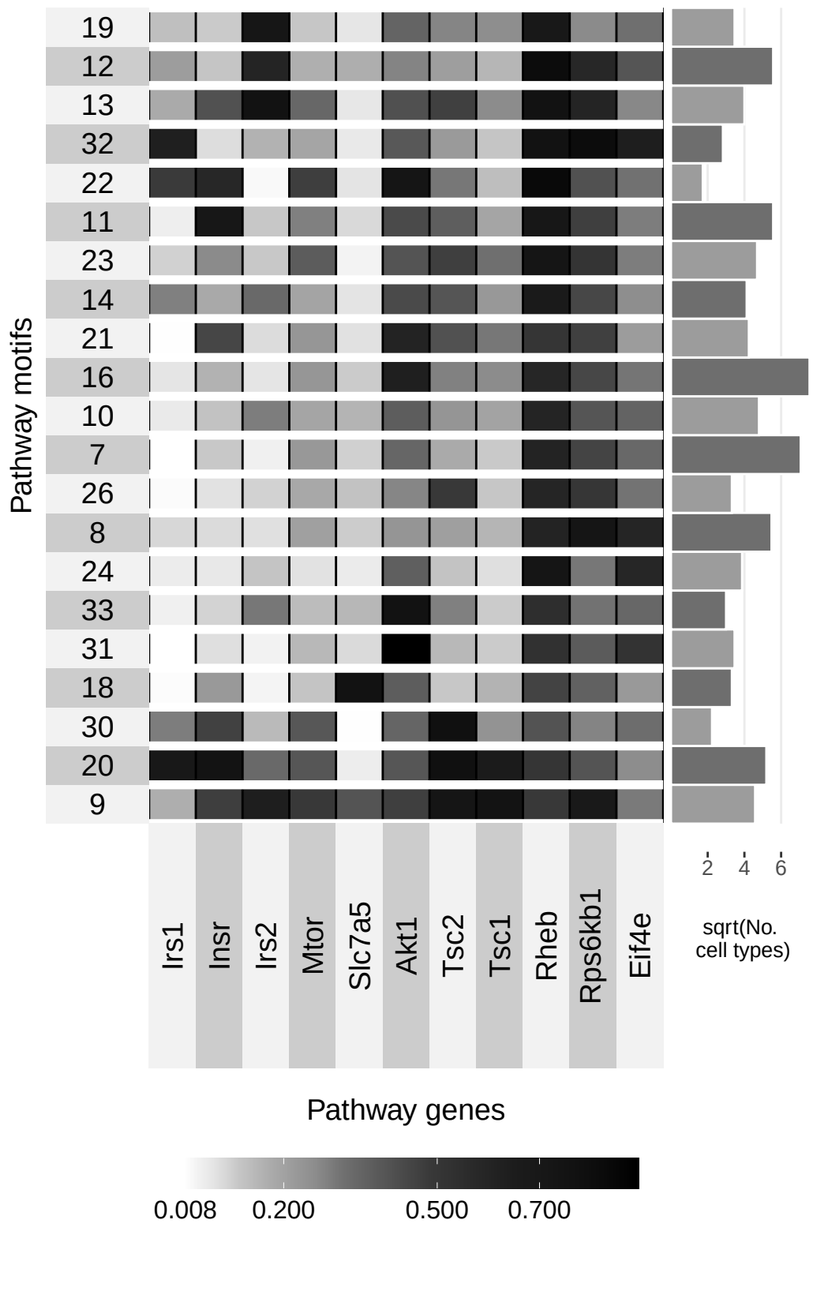


ECDF of Profile Dispersions

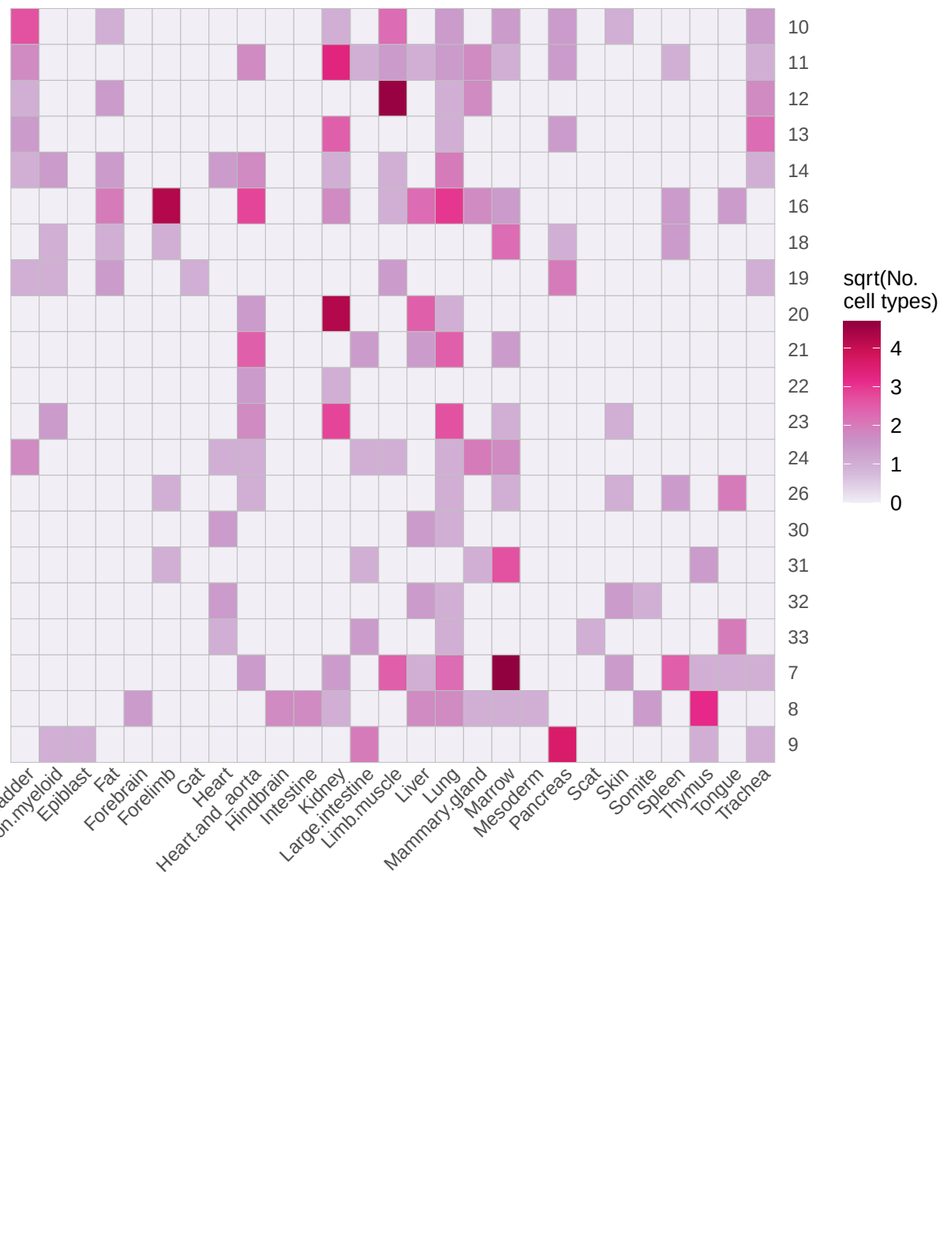


Profile Dispersion Plot

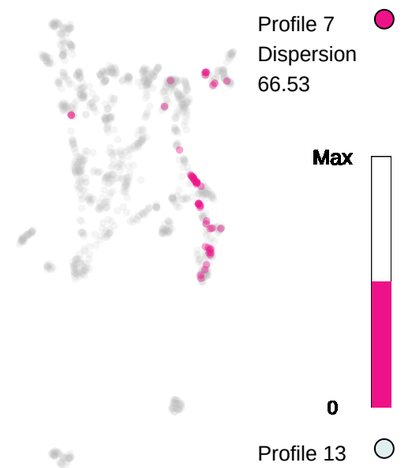
Motifs, Dispersion $\geq 90^{th}$ percentile



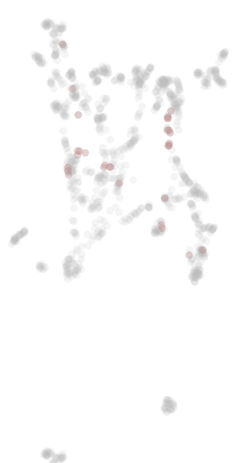
Motif Tissue Composition



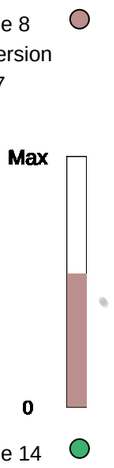
Leucine Stimulation on Insulin Signaling (k_opt = 34)



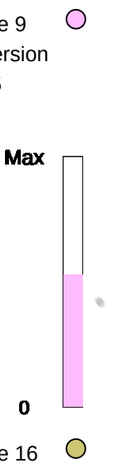
Profile 7
Dispersion
66.53



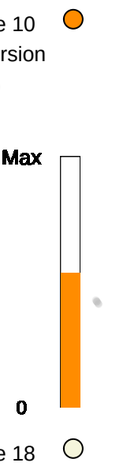
Profile 8
Dispersion
70.67



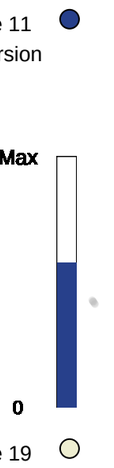
Profile 9
Dispersion
70.15

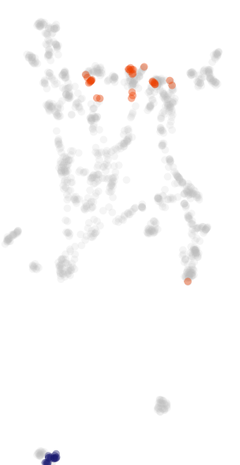


Profile 10
Dispersion
71.15

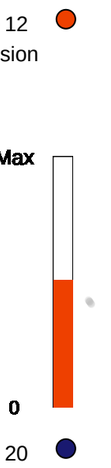


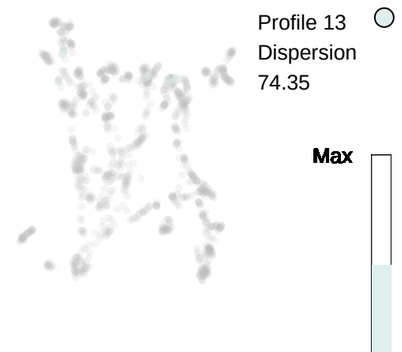
Profile 11
Dispersion
76.74





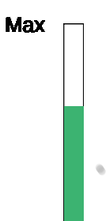
Profile 12
Dispersion
67.51

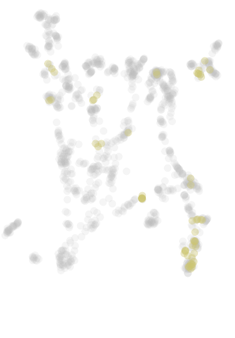




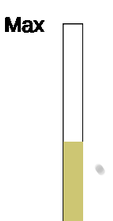
Profile 13
Dispersion
74.35

Profile 14
Dispersion
88.94

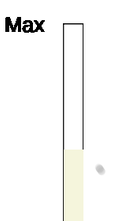




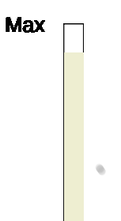
Profile 16
Dispersion
70.32

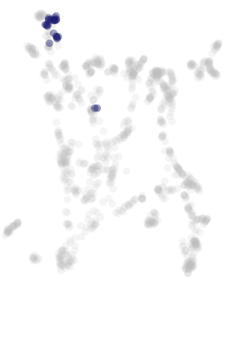


Profile 18
Dispersion
66.25

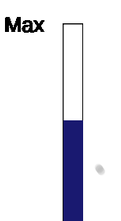


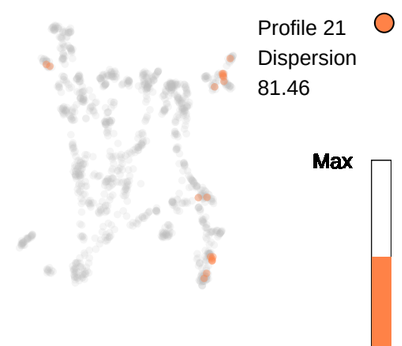
Profile 19
Dispersion
117.75





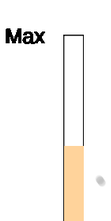
Profile 20
Dispersion
81.63

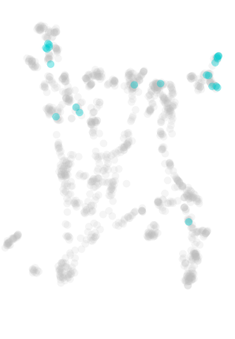




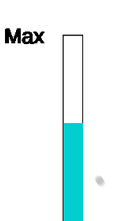
Profile 21
Dispersion
81.46

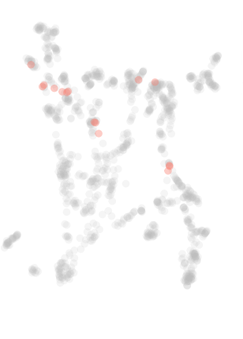
Profile 22
Dispersion
74.11



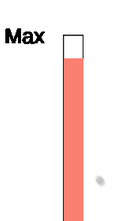


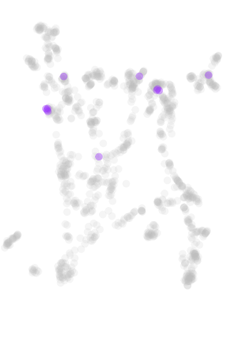
Profile 23
Dispersion
86.02



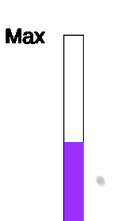


Profile 24
Dispersion
120.64

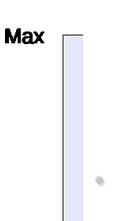


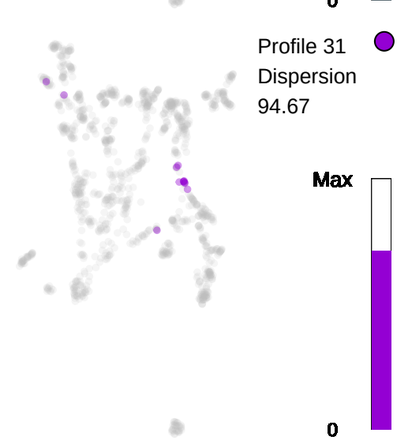


Profile 26
Dispersion
76.27

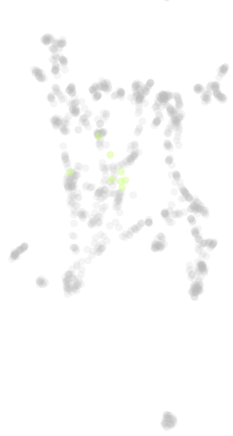


Profile 30
Dispersion
132.73

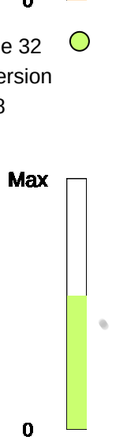




Profile 31
Dispersion
94.67



Profile 32
Dispersion
70.58



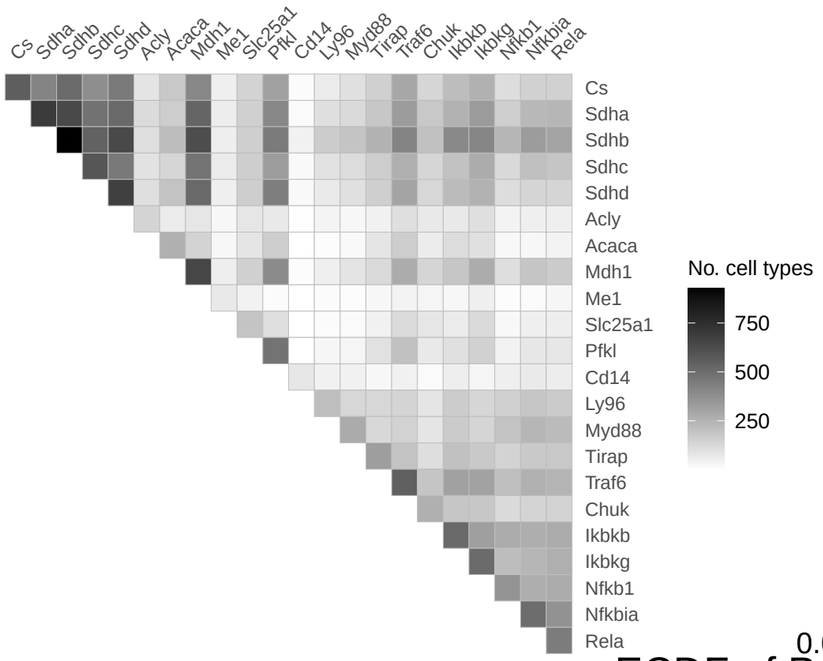
Profile 33
Dispersion
123.06

LPS and Citrate Signaling and Inflammation (k_opt = 112)

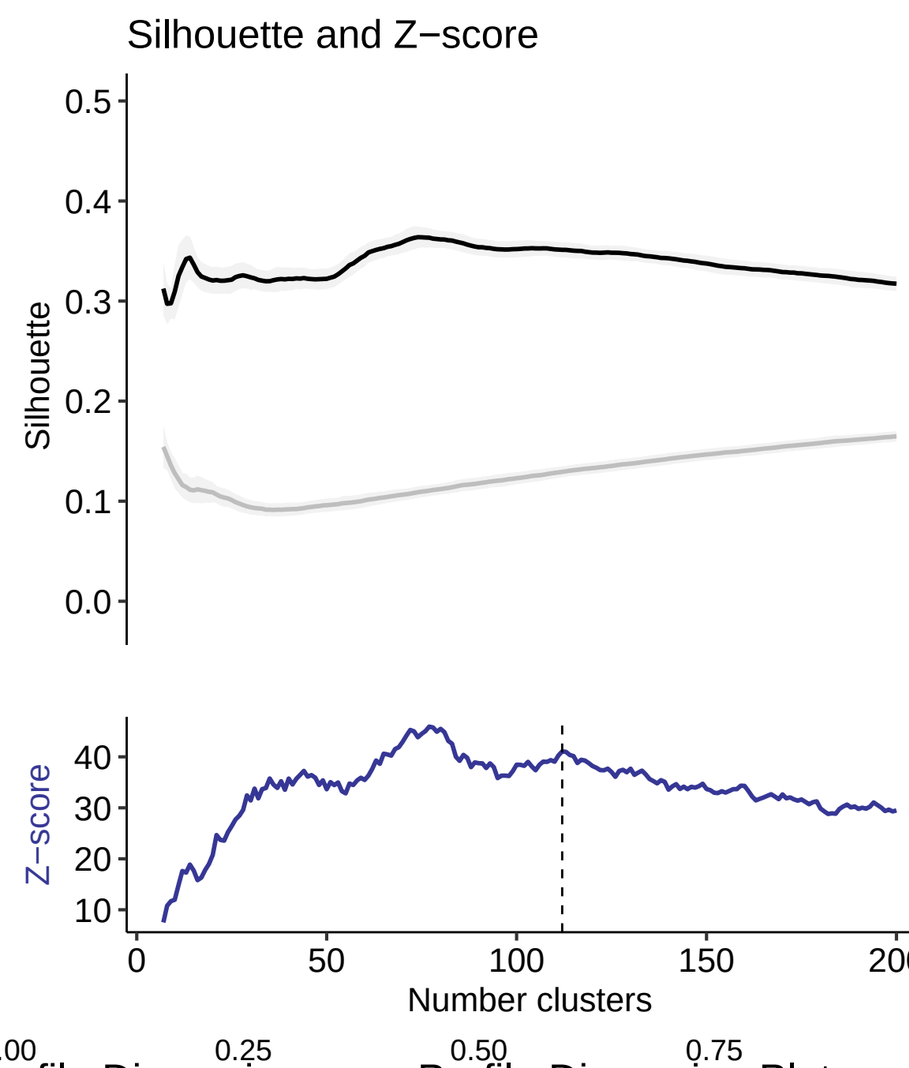
Pathway genes

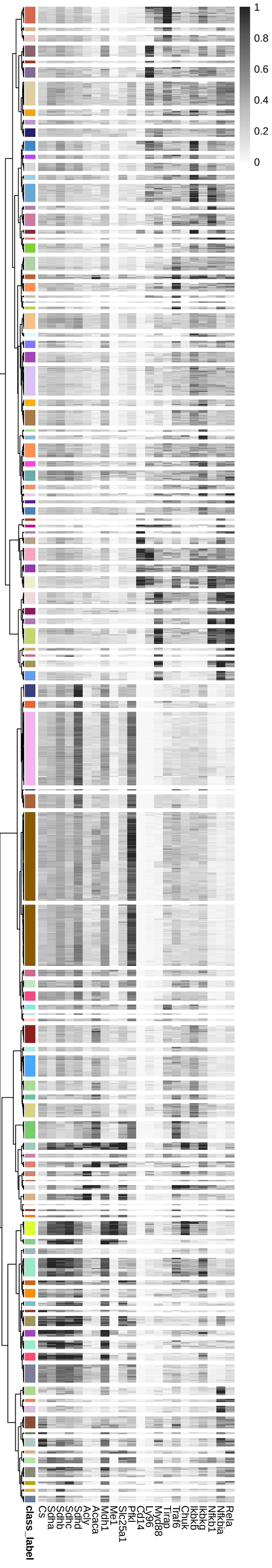
Cs	Me1	Traf6
Sdha	Slc25a1	Chuk
Sdhb	Pfkl	Ikbkb
Sdhc	Cd14	Ikbkg
Sdhd	Ly96	Nfkb1
Acly	Myd88	Nfkbia
Acaca	Tirap	Rela
Mdh1		

Gene Co−Expression Above Threshold

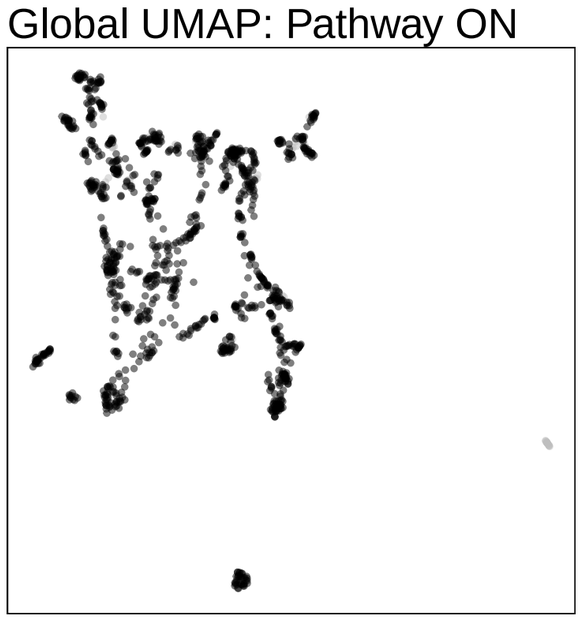


Silhouette and Z−score

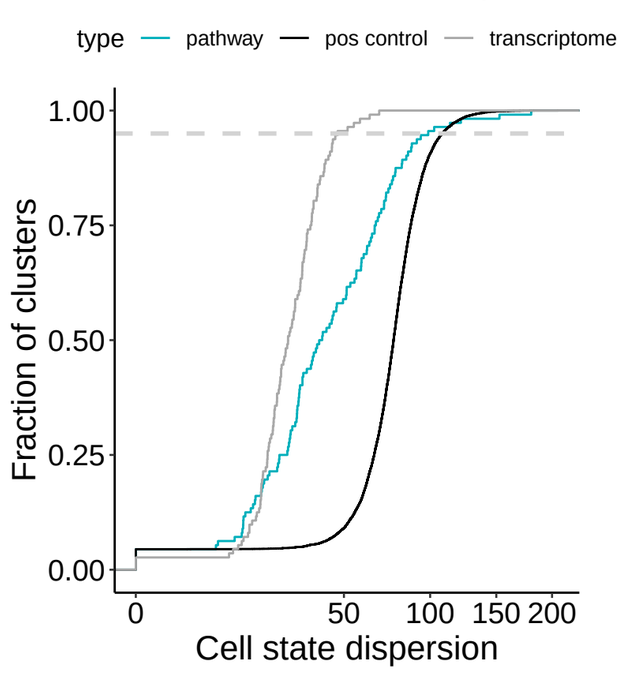




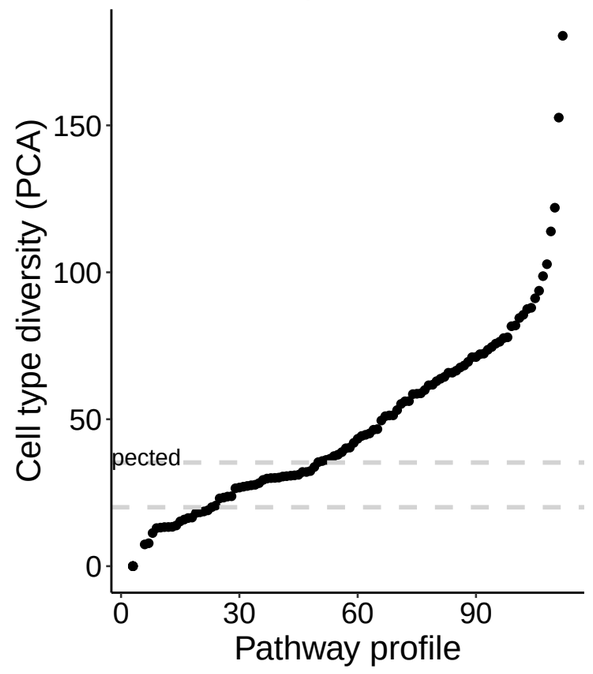
Global UMAP: Pathway ON



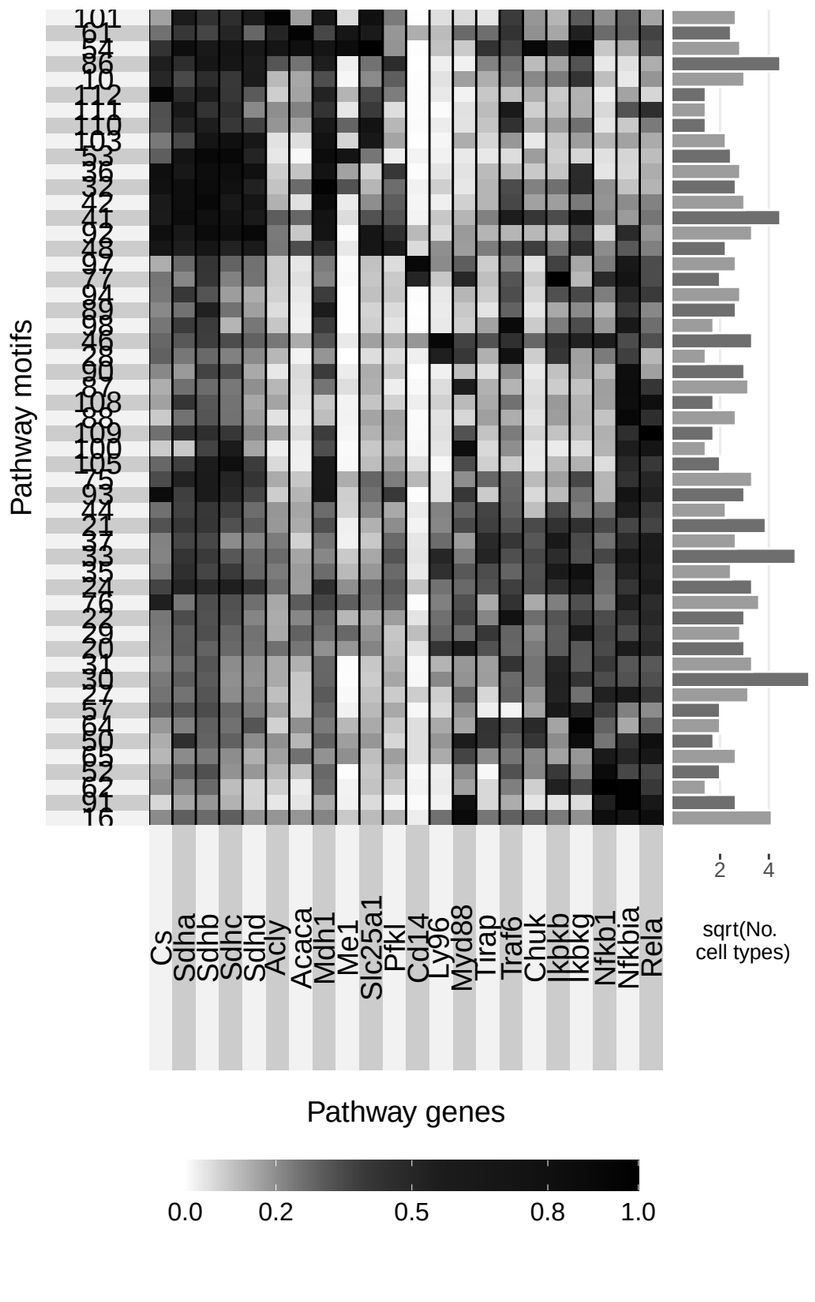
ECDF of Profile Dispersions



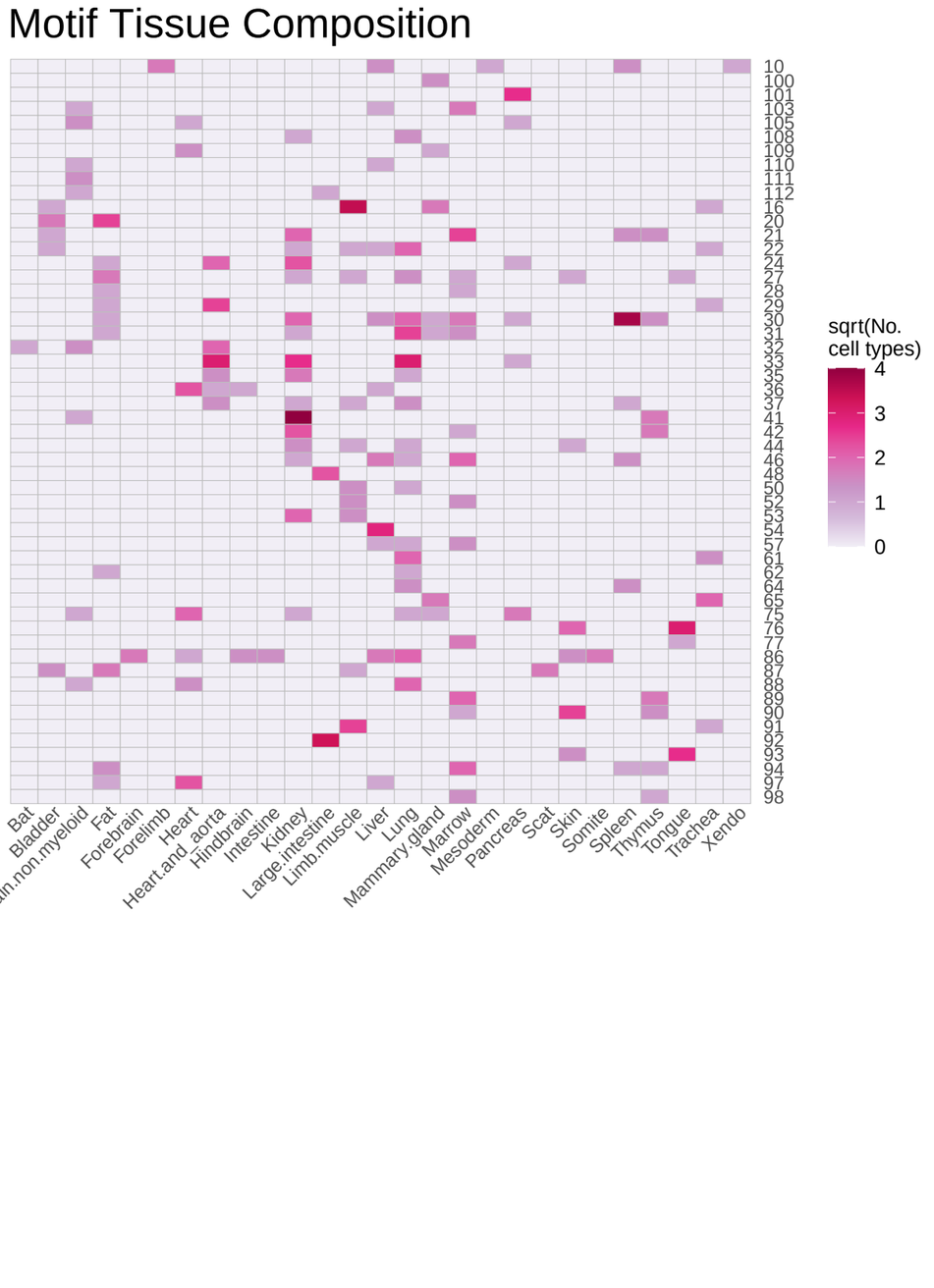
Profile Dispersion Plot



Motifs, Dispersion ≥ 90th percentile



Motif Tissue Composition



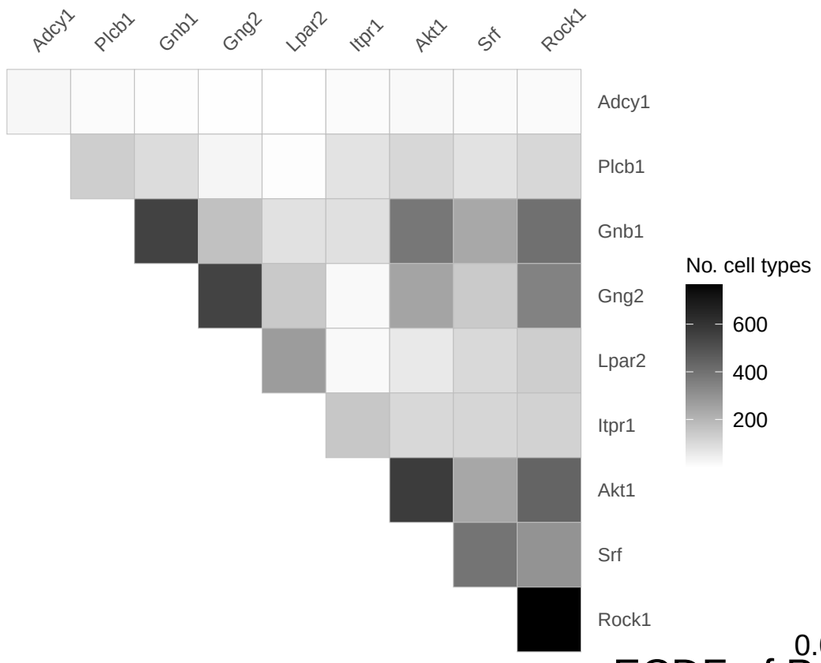
LPS and Citrate Signaling and Inflammation (k_opt = 112)

Lysophosphatidic Acid LPA2 Signalling (k_opt = 31)

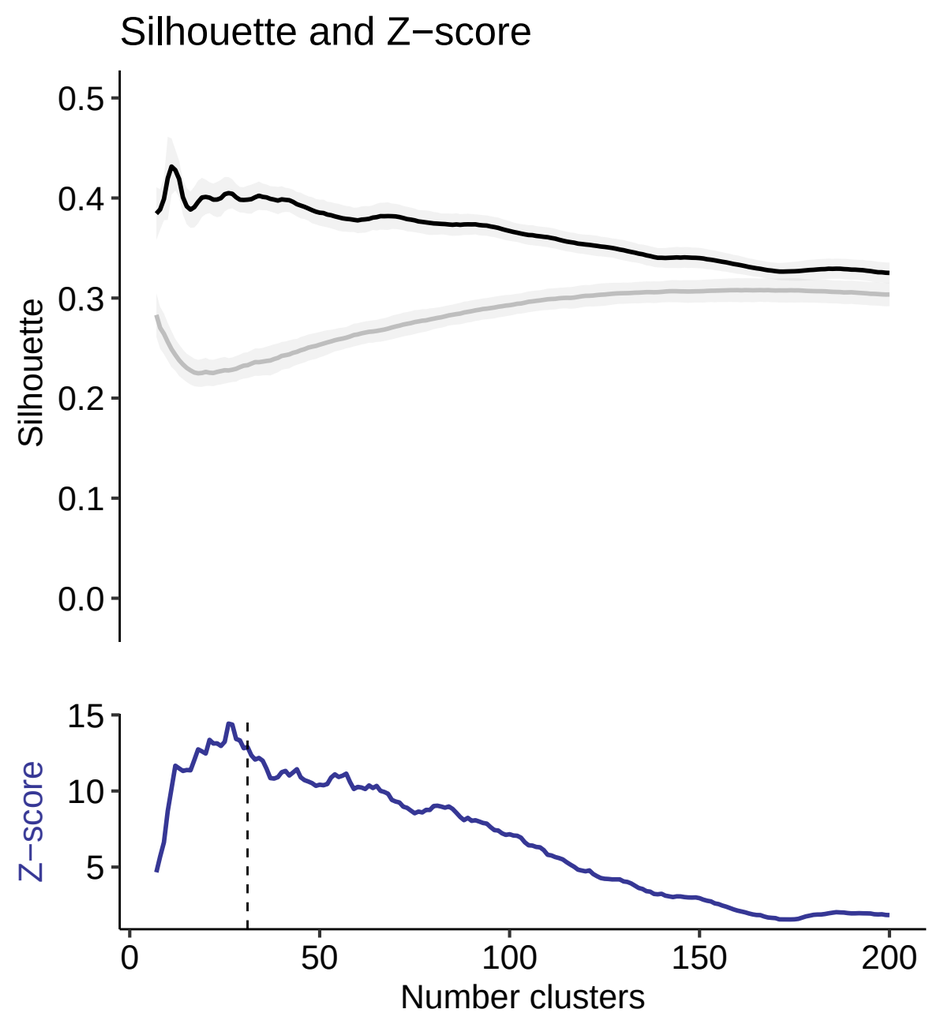
Pathway genes

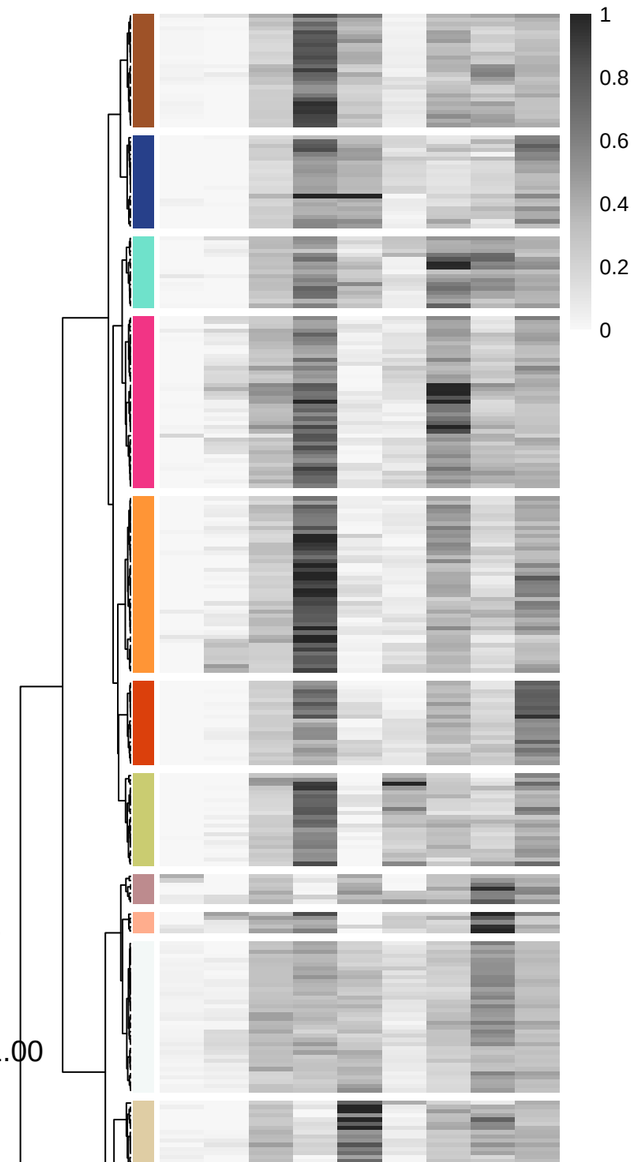
Adcy1	Gng2	Akt1
Plcb1	Lpar2	Srf
Gnb1	Itpr1	Rock1

Gene Co−Expression Above Threshold

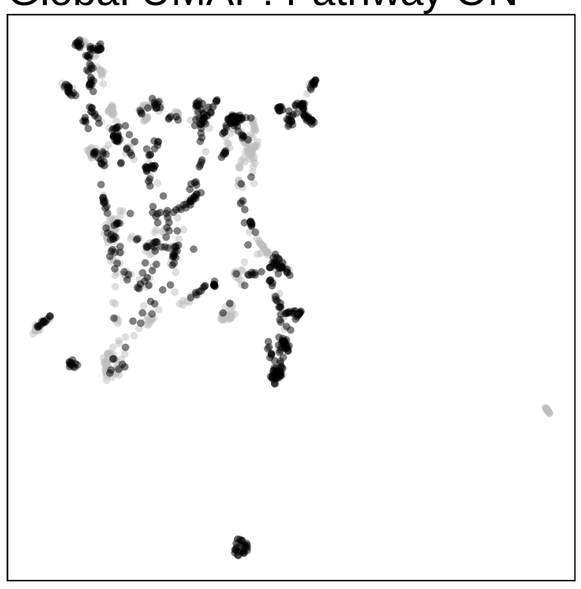


Silhouette and Z−score

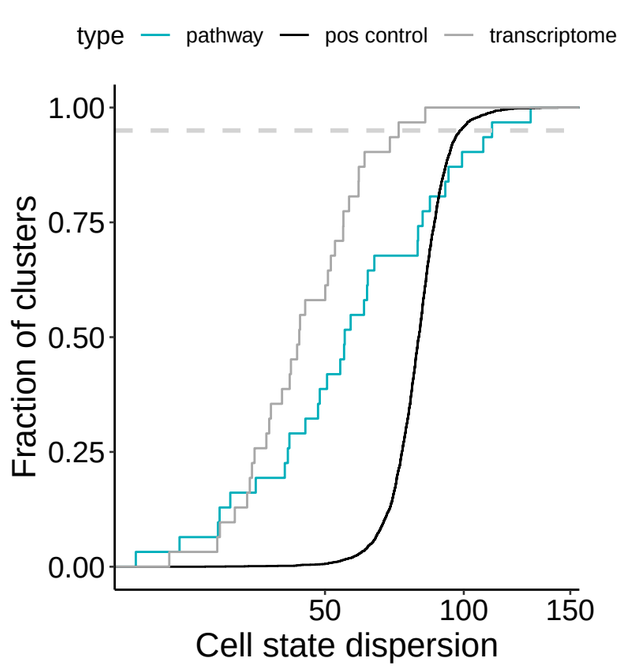




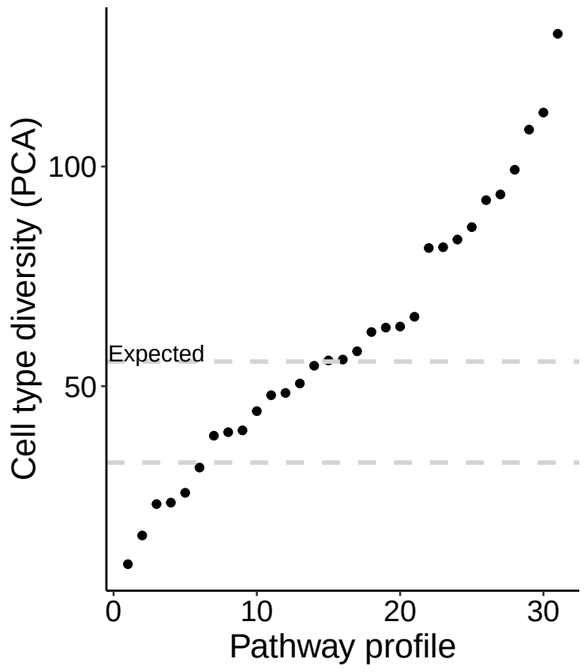
Global UMAP: Pathway ON



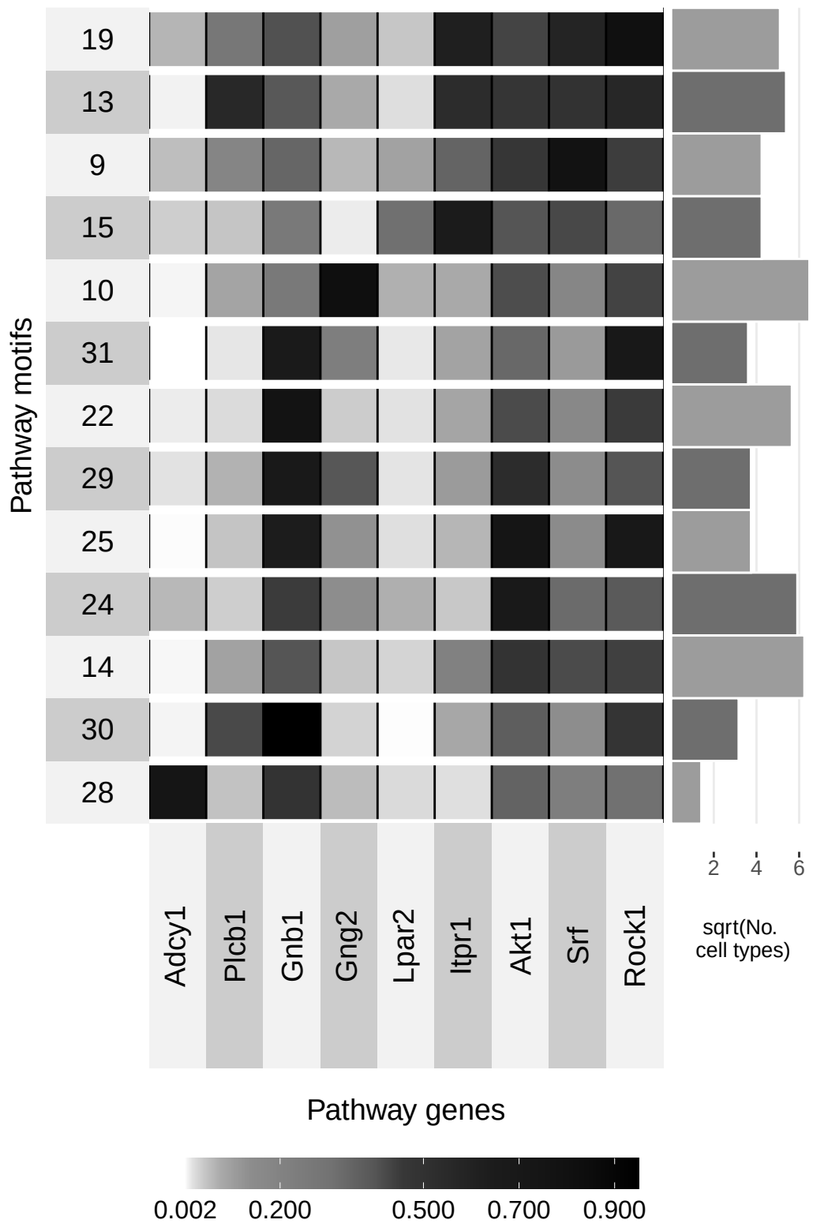
ECDF of Profile Dispersions



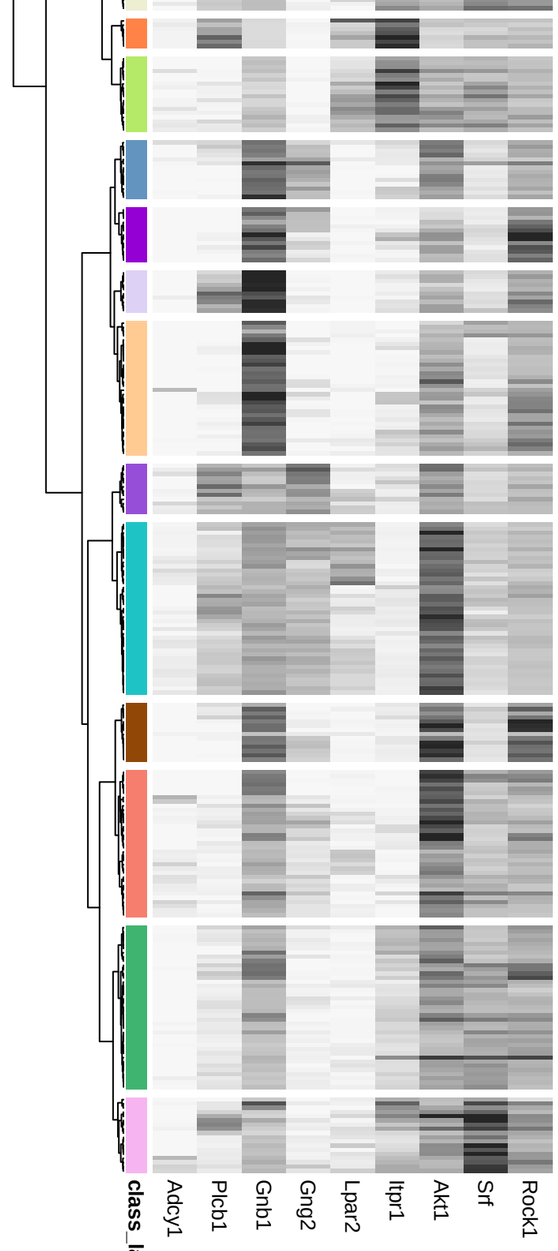
Profile Dispersion Plot



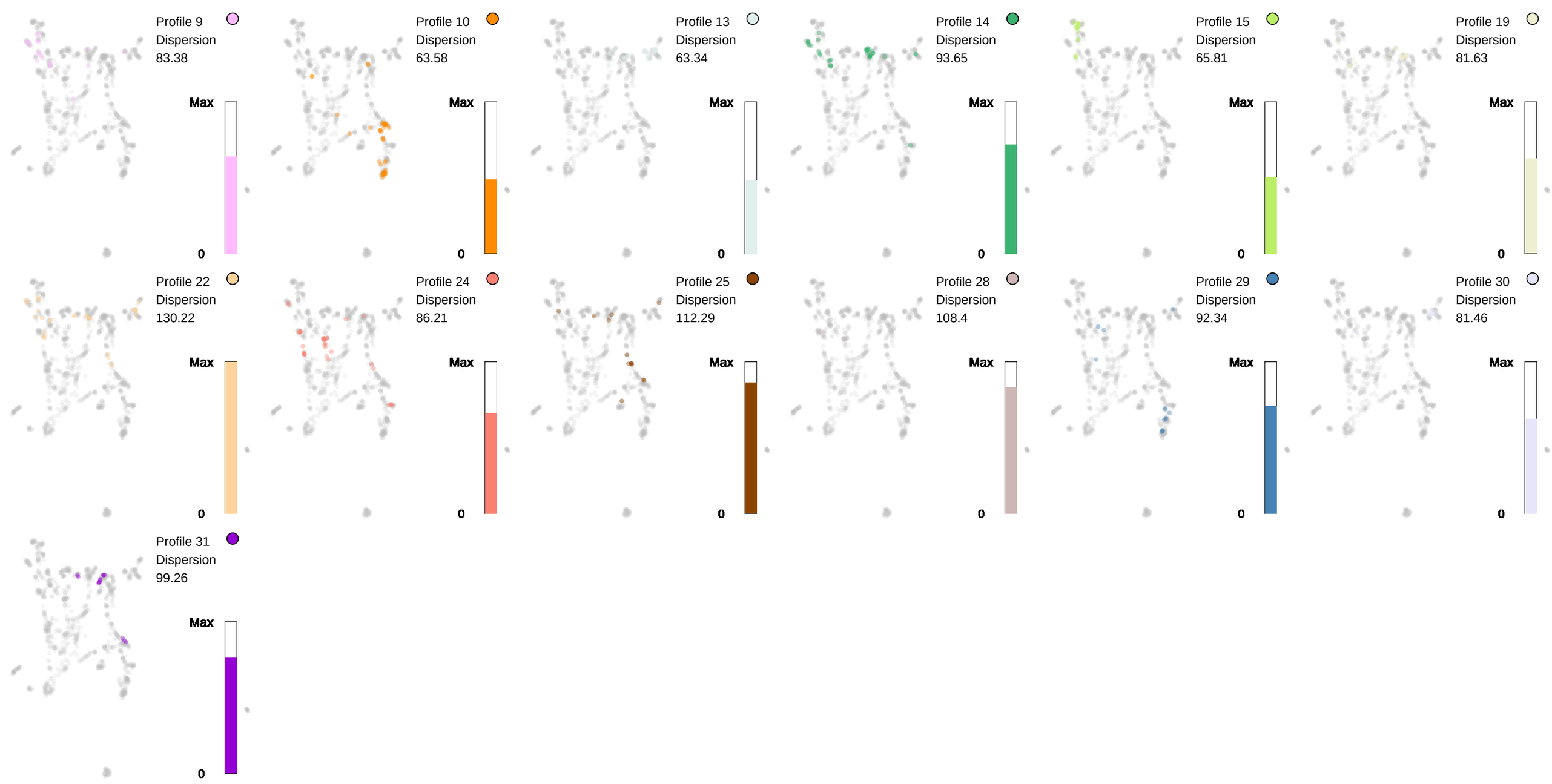
Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition



Lysophosphatidic Acid LPA2 Signalling (k_opt = 31)

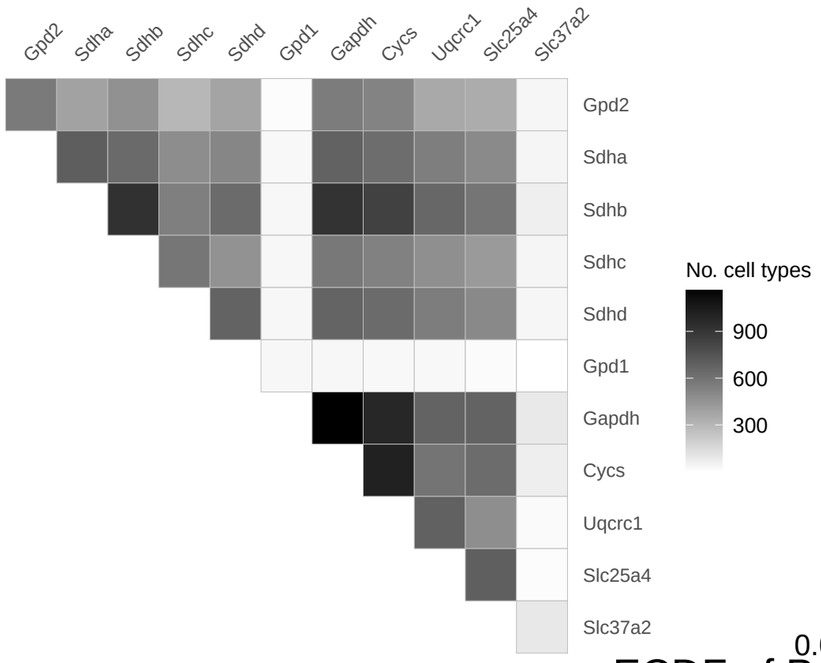


Mitochondrial Electron Transport Chain (k_opt = 43)

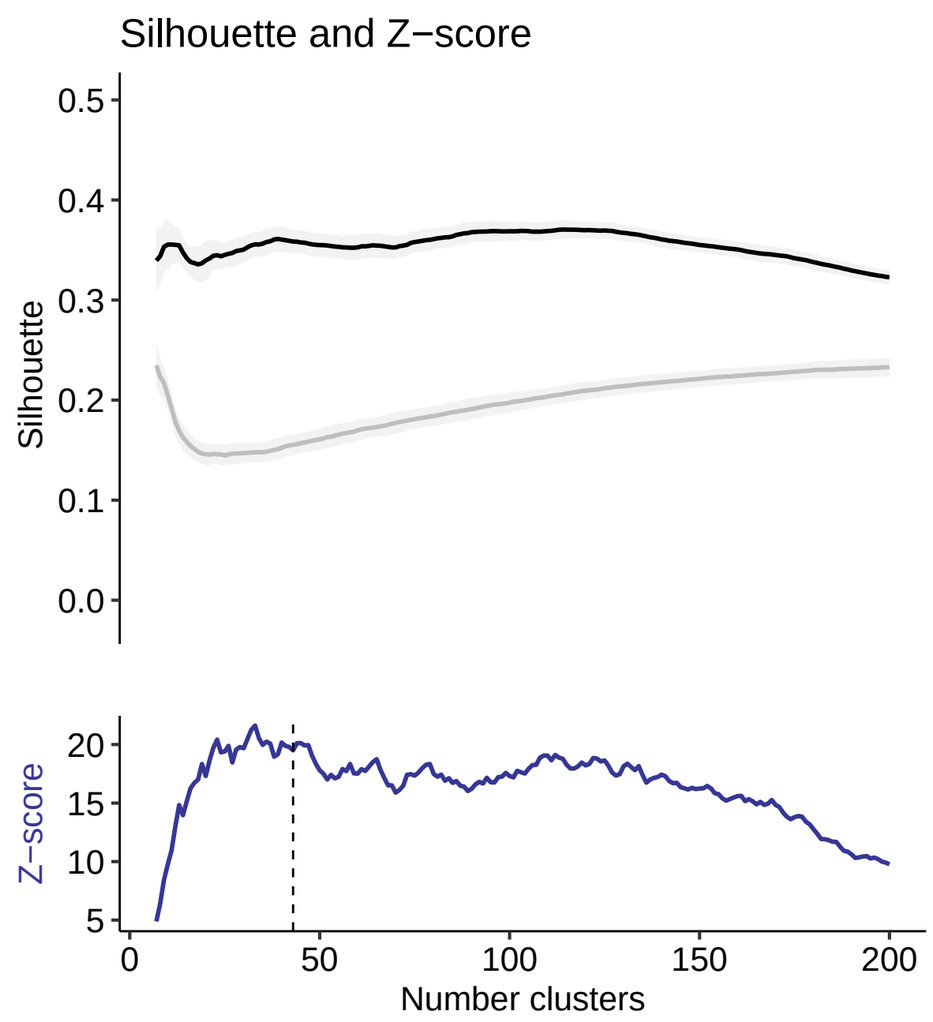
Pathway genes

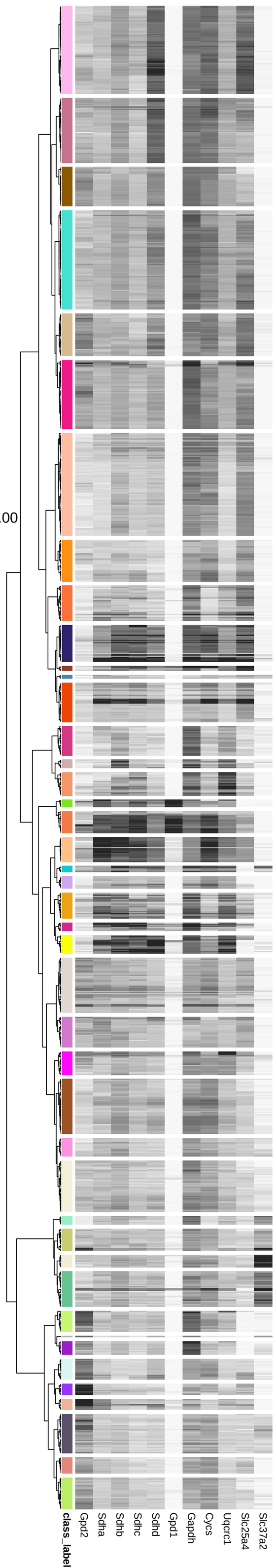
Gpd2
Sdha
Sdhb
Sdhc
Sdhd
Gpd1
Gapdh
Cycs
Uqcrc1
Slc25a4
Slc37a2

Gene Co−Expression Above Threshold

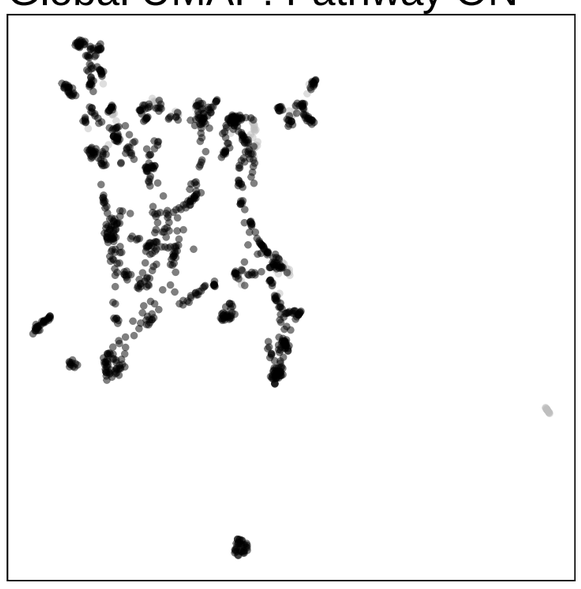


Silhouette and Z−score

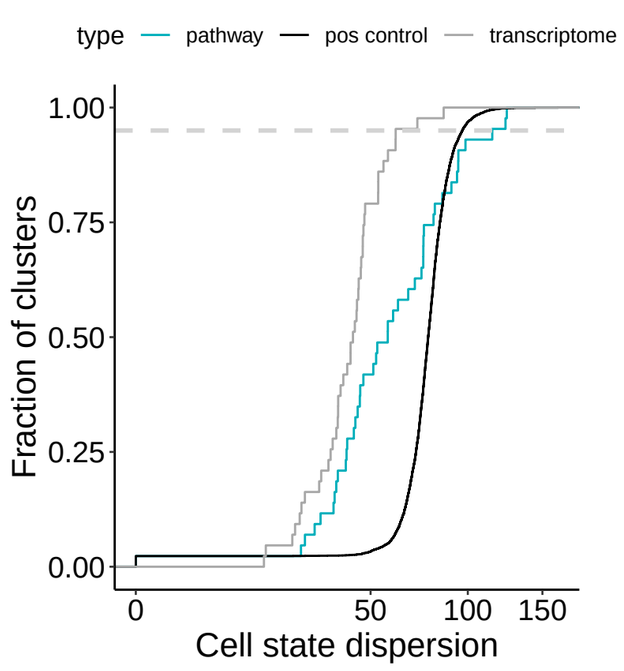




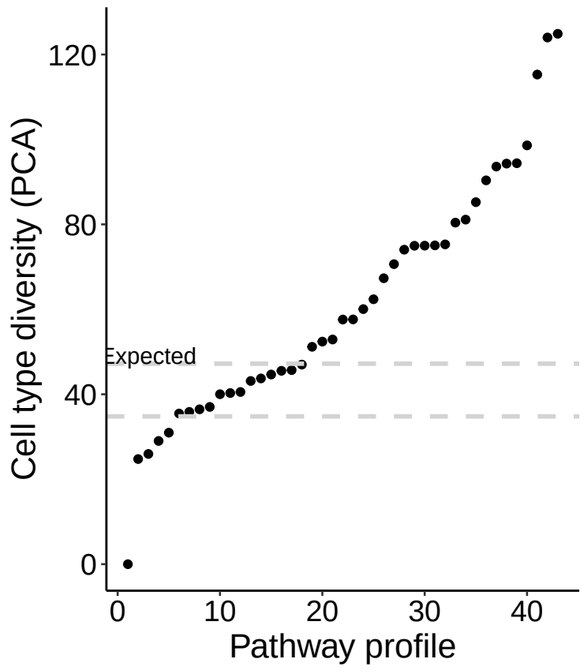
Global UMAP: Pathway ON



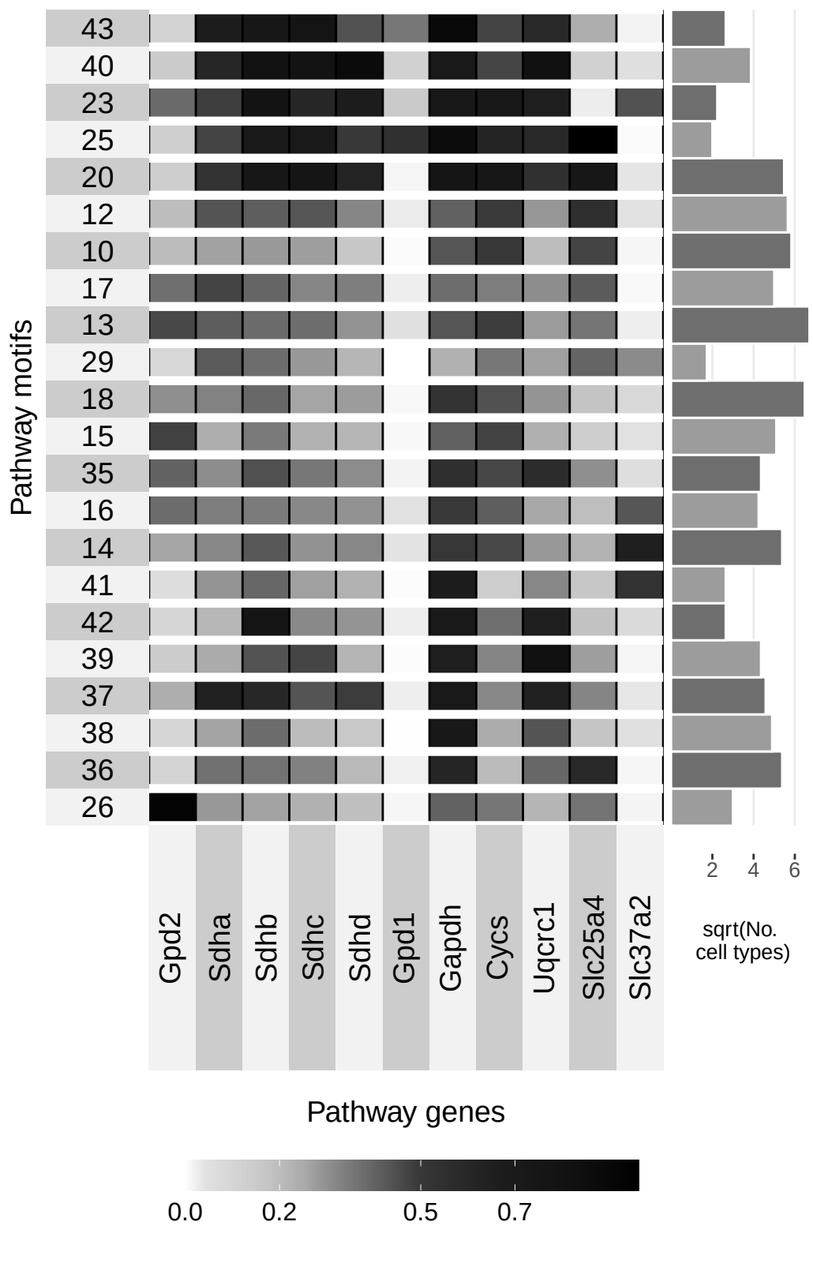
ECDF of Profile Dispersions



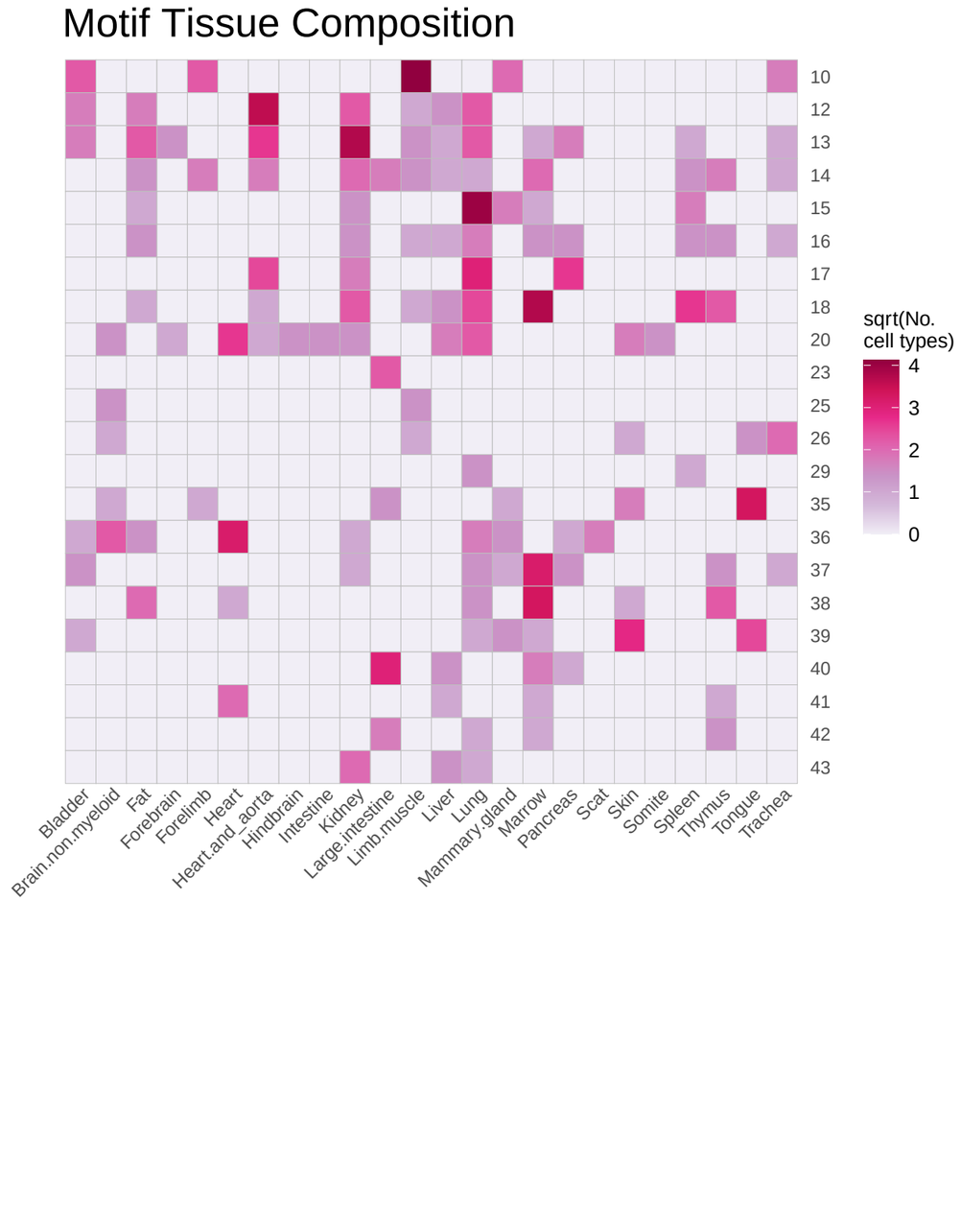
Profile Dispersion Plot



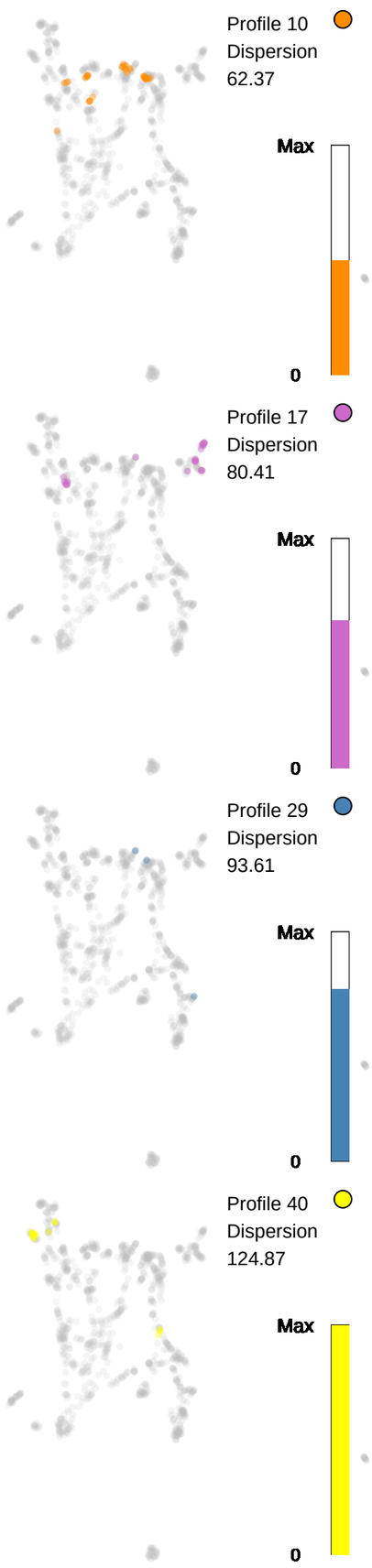
Motifs, Dispersion $\geq 90^{th}$ percentile



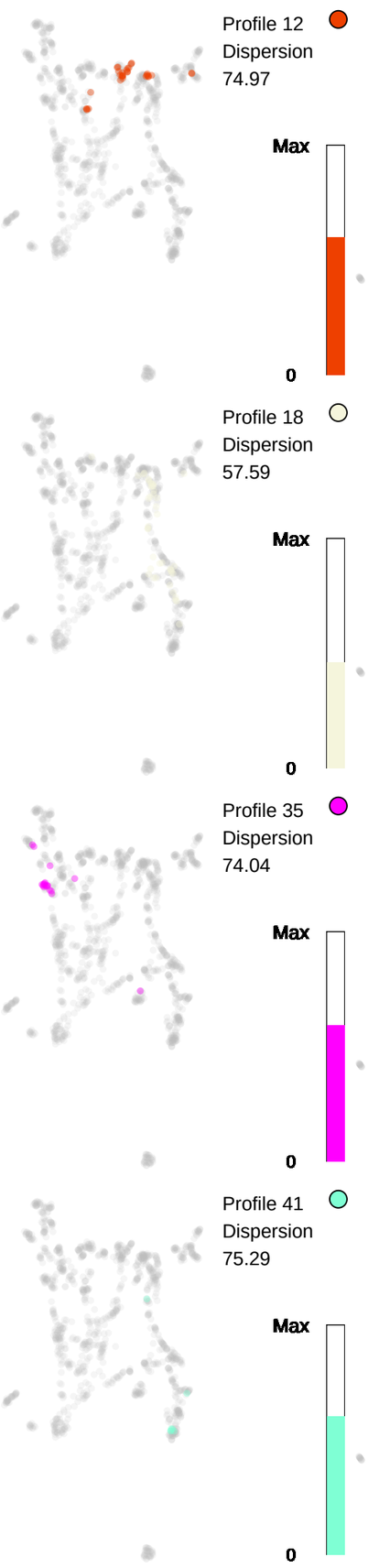
Motif Tissue Composition



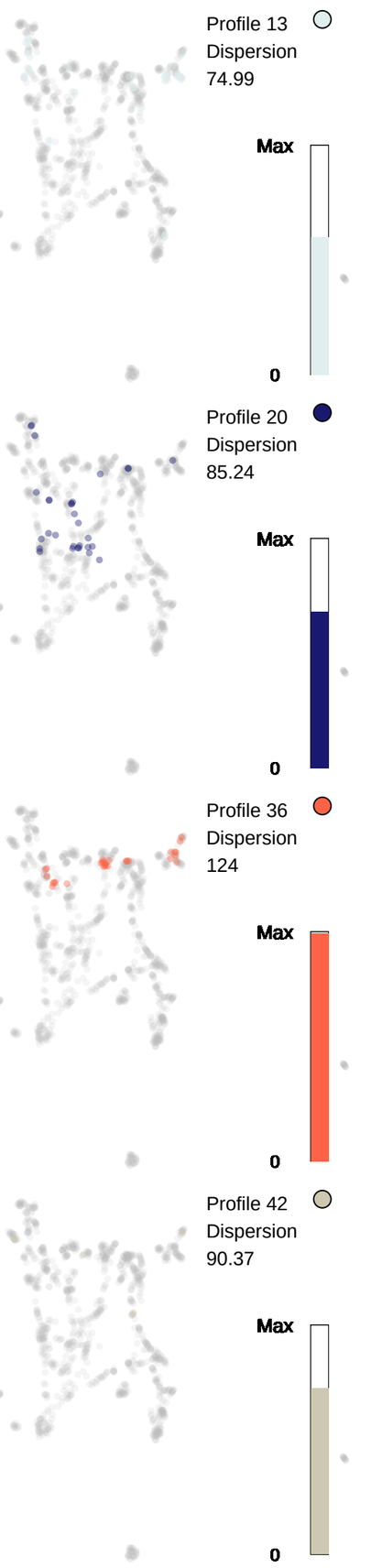
Mitochondrial Electron Transport Chain (k_opt = 43)



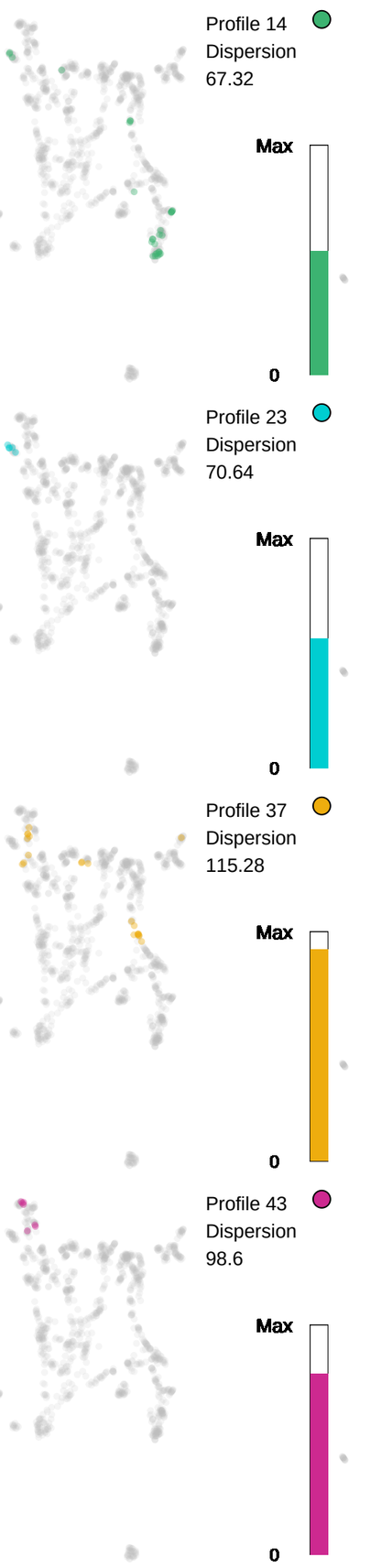
Profile 10
Dispersion
62.37



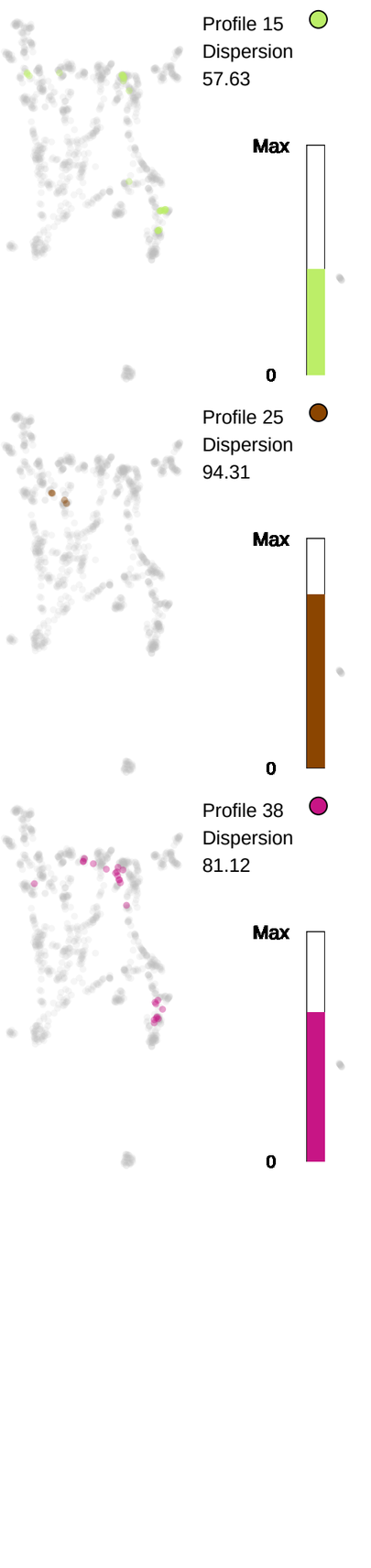
Profile 12
Dispersion
74.97



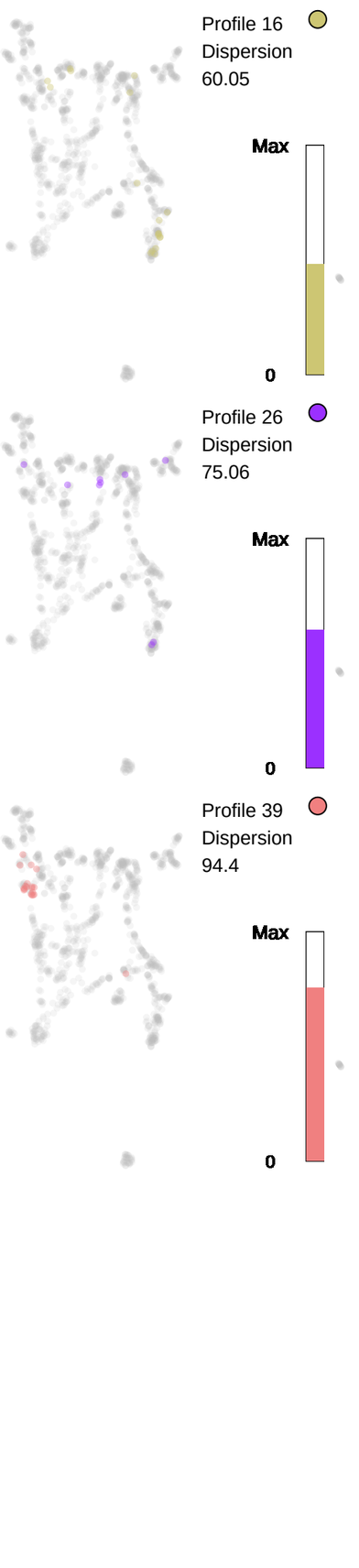
Profile 13
Dispersion
74.99



Profile 14
Dispersion
67.32



Profile 15
Dispersion
57.63



Profile 16
Dispersion
60.05

Profile 17
Dispersion
80.41

Profile 18
Dispersion
57.59

Profile 20
Dispersion
85.24

Profile 23
Dispersion
70.64

Profile 25
Dispersion
94.31

Profile 26
Dispersion
75.06

Profile 29
Dispersion
93.61

Profile 35
Dispersion
74.04

Profile 36
Dispersion
124

Profile 37
Dispersion
115.28

Profile 38
Dispersion
81.12

Profile 39
Dispersion
94.4

Profile 40
Dispersion
124.87

Profile 41
Dispersion
75.29

Profile 42
Dispersion
90.37

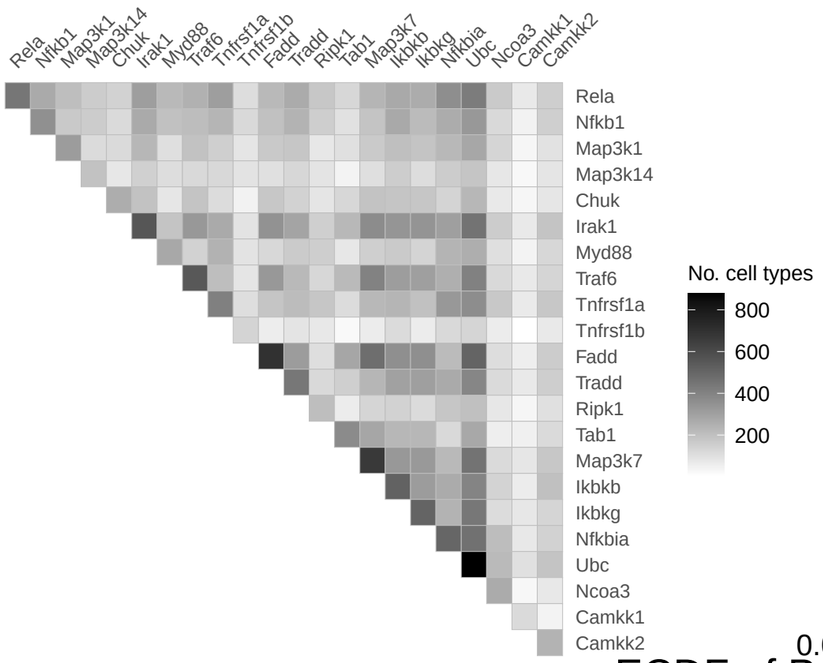
Profile 43
Dispersion
98.6

NF−kB Signaling Pathway (k_opt = 113)

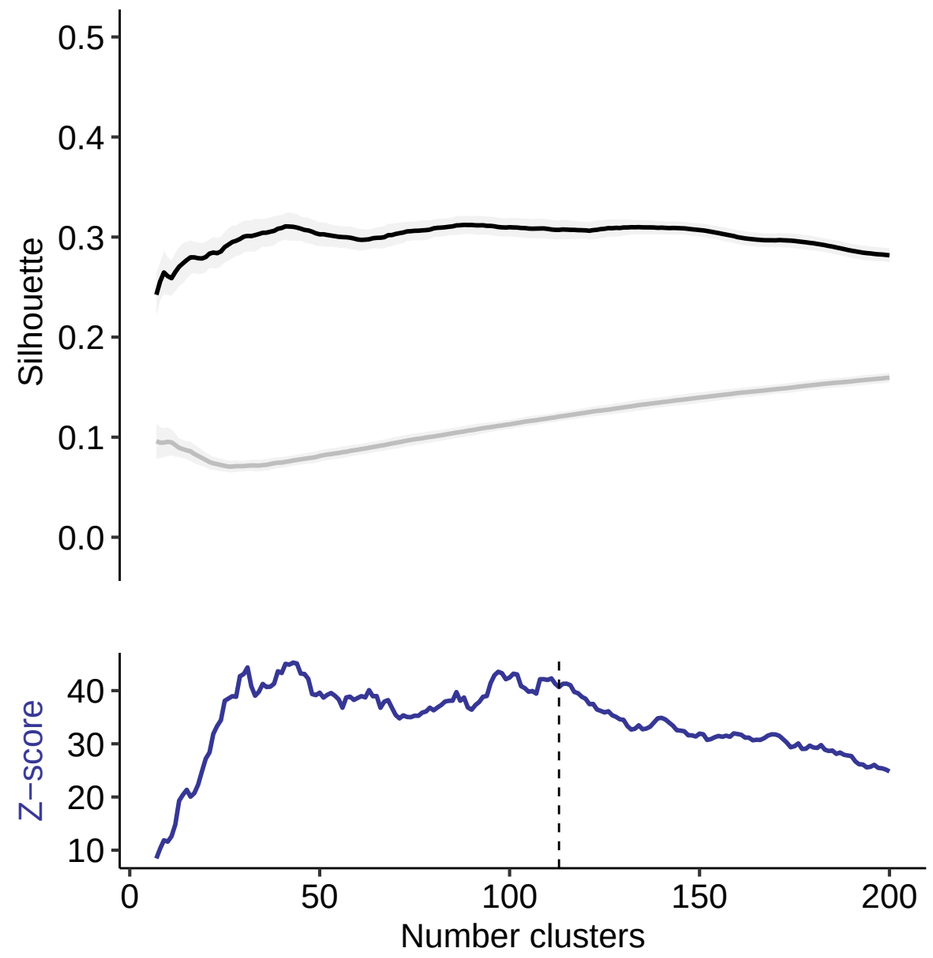
Pathway genes

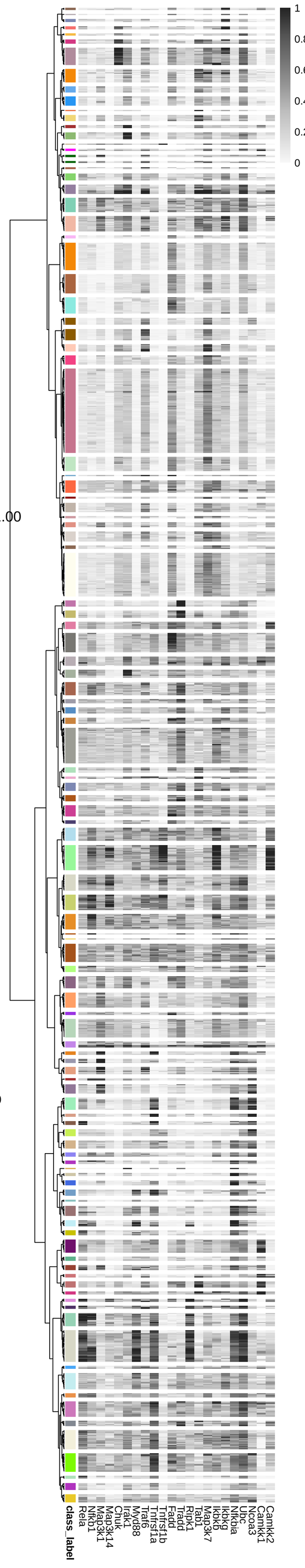
Rela
Nfkb1
Map3k1
Map3k14
Chuk
Irak1
Myd88
Traf6
Tnfrsf1a
Tnfrsf1b
Fadd
Tradd
Ripk1
Tab1
Map3k7
Ikbkb
Ikbkg
Nfkbia
Ubc
Ncoa3
Camkk1
Camkk2

Gene Co−Expression Above Threshold

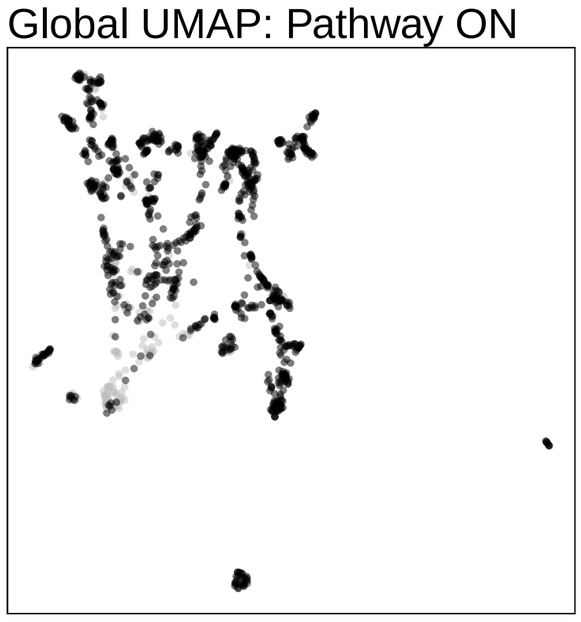


Silhouette and Z−score

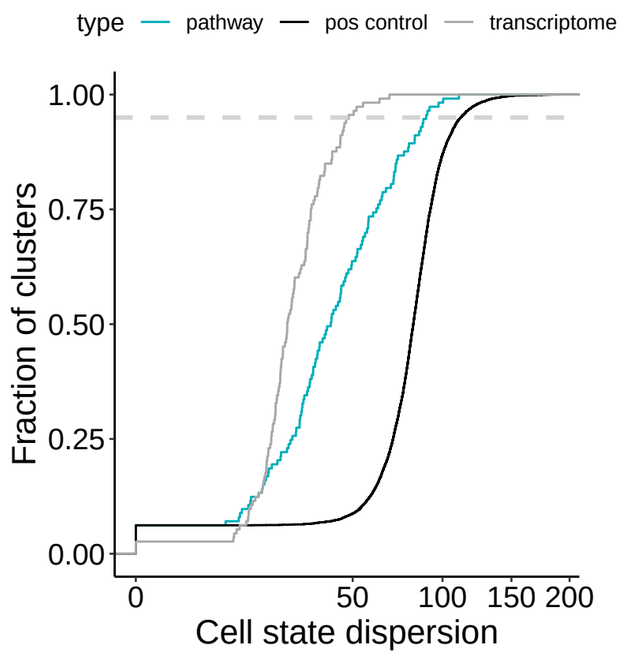




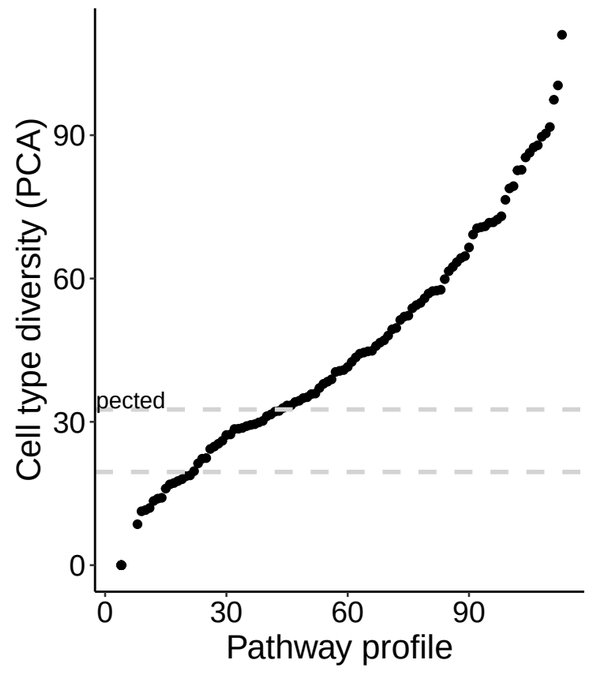
Global UMAP: Pathway ON



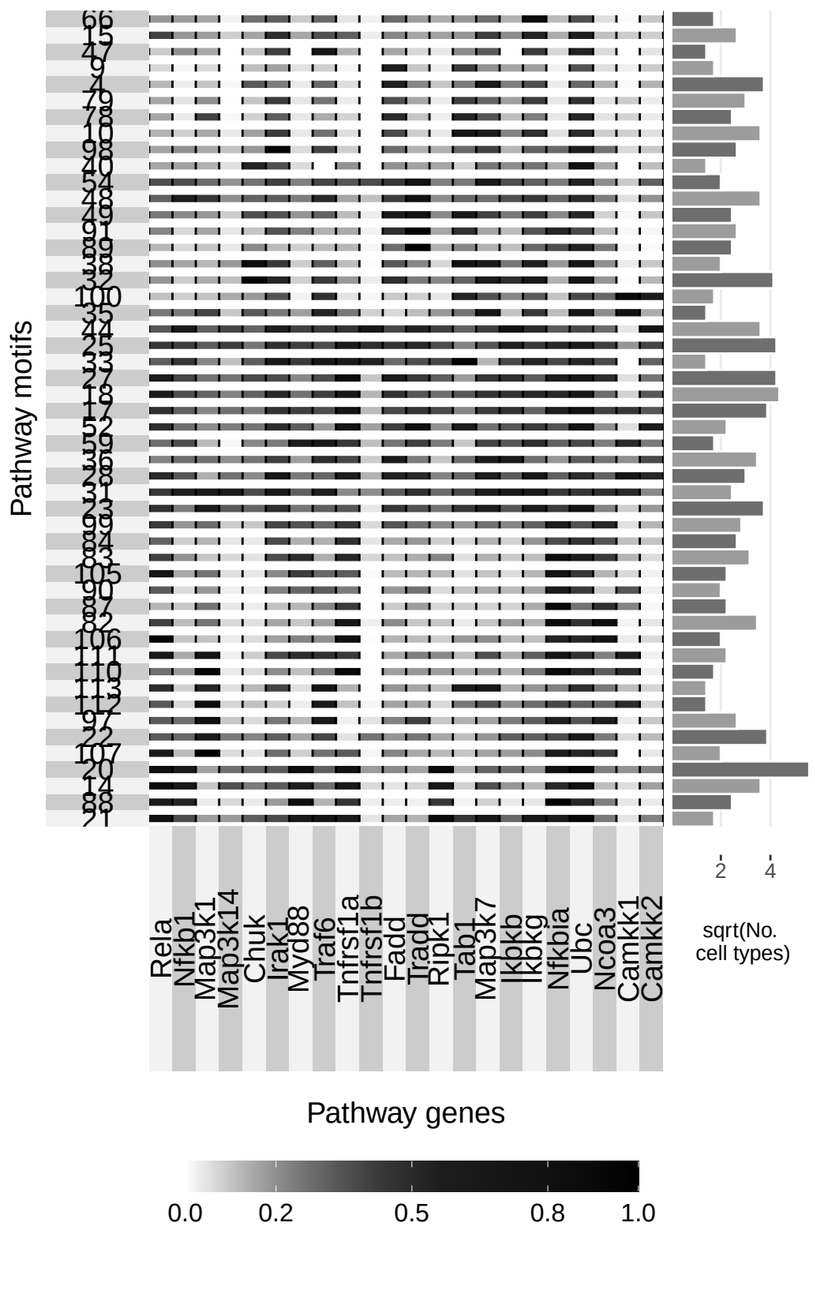
ECDF of Profile Dispersions



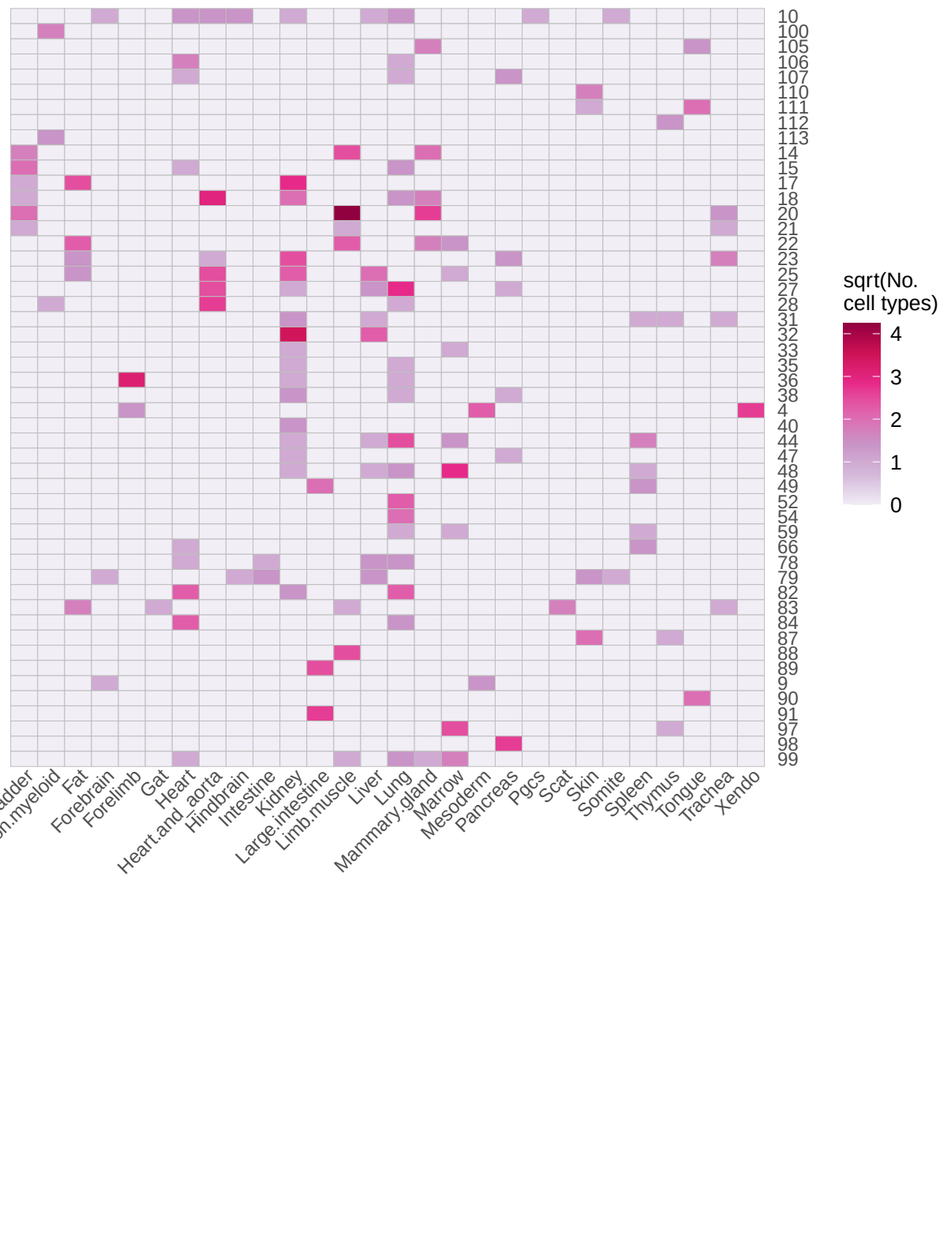
Profile Dispersion Plot



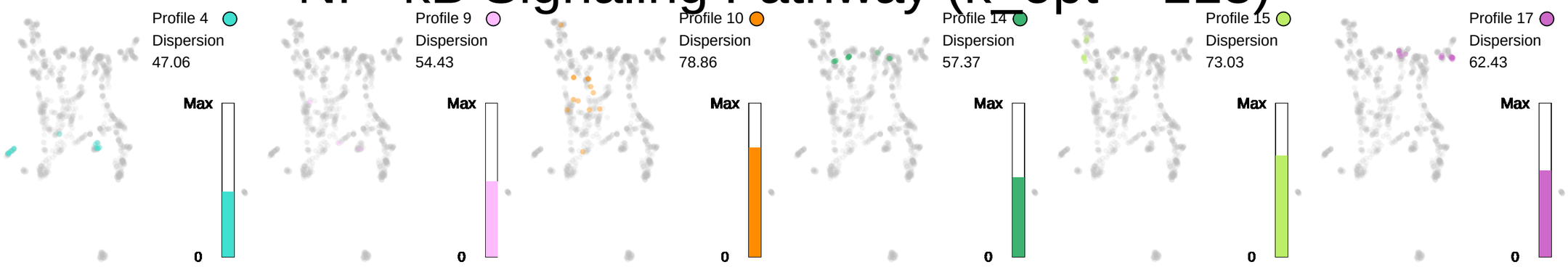
Motifs, Dispersion ≥ 90th percentile

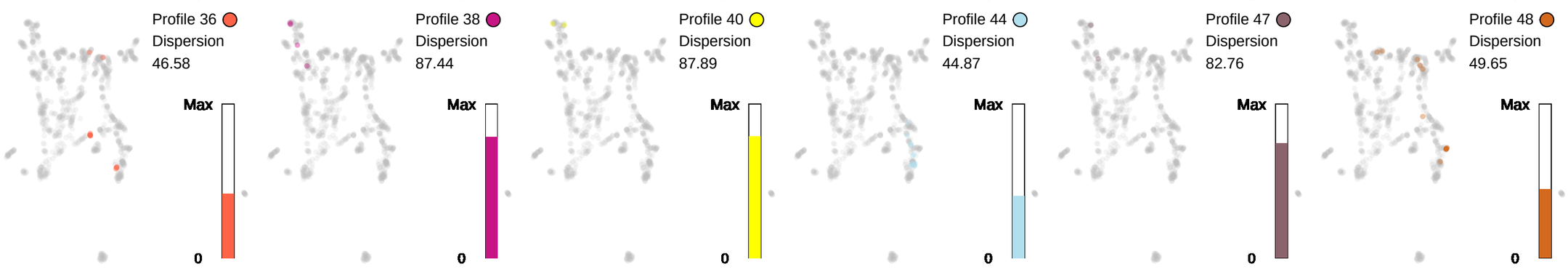


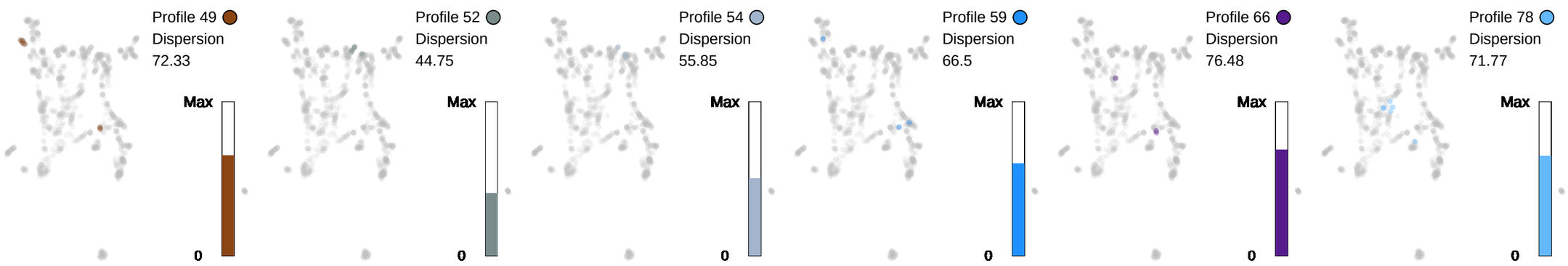
Motif Tissue Composition



NF−kB Signaling Pathway (k_opt = 113)







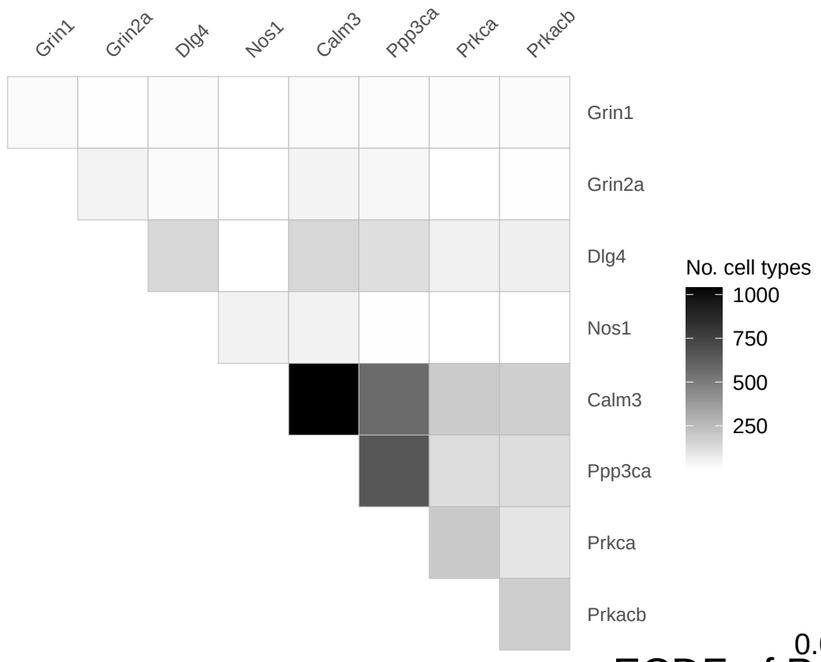
Nitric Oxide Signaling Pathway (k_opt = 28)

Grin1
Grin2a
Dlg4

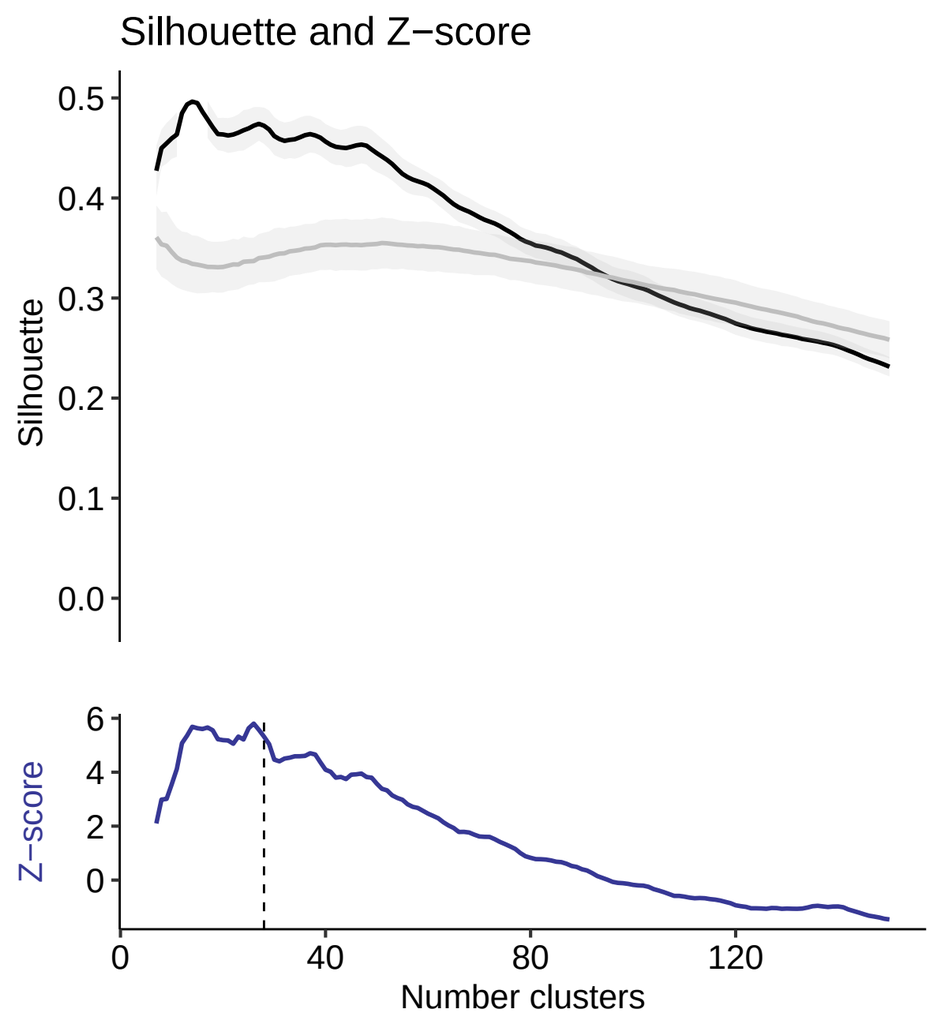
Pathway genes
Nos1
Calm3

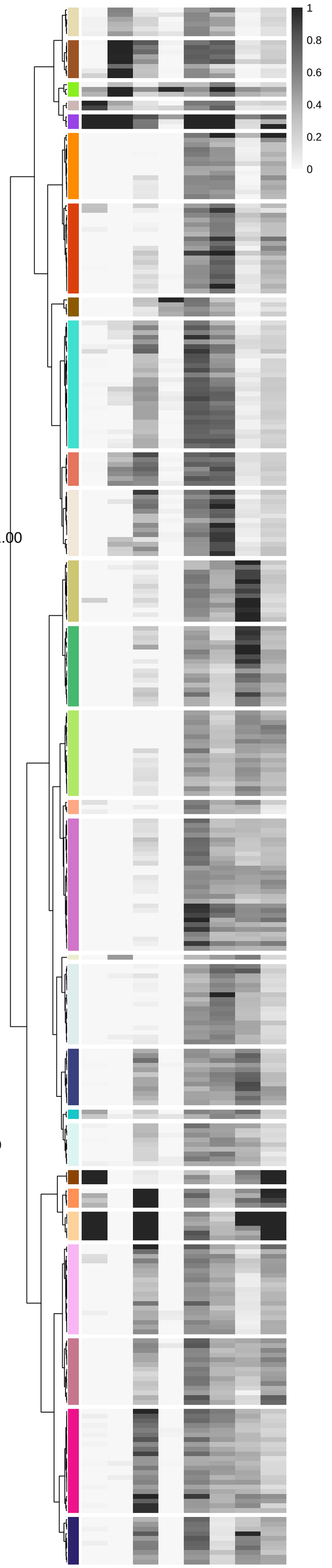
Ppp3ca
Prkca
Prkacb

Gene Co−Expression Above Threshold

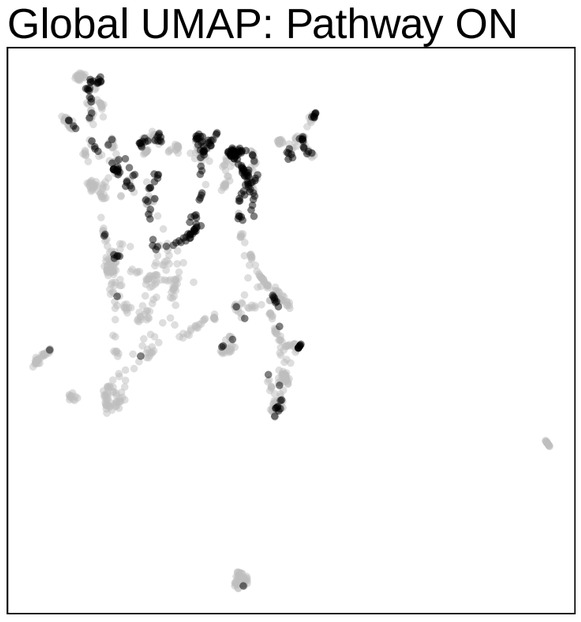


Silhouette and Z−score

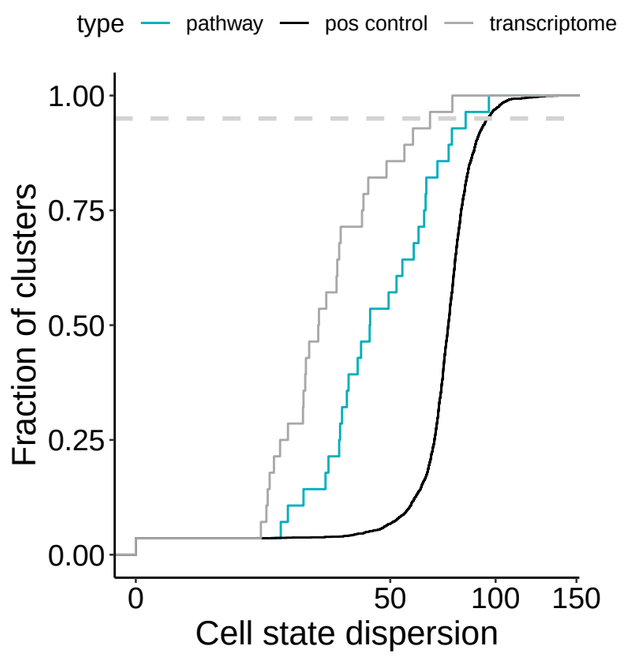




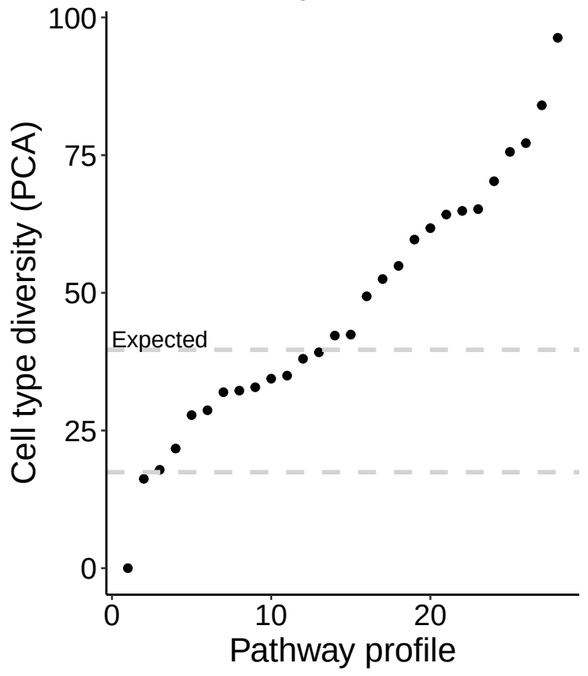
Global UMAP: Pathway ON



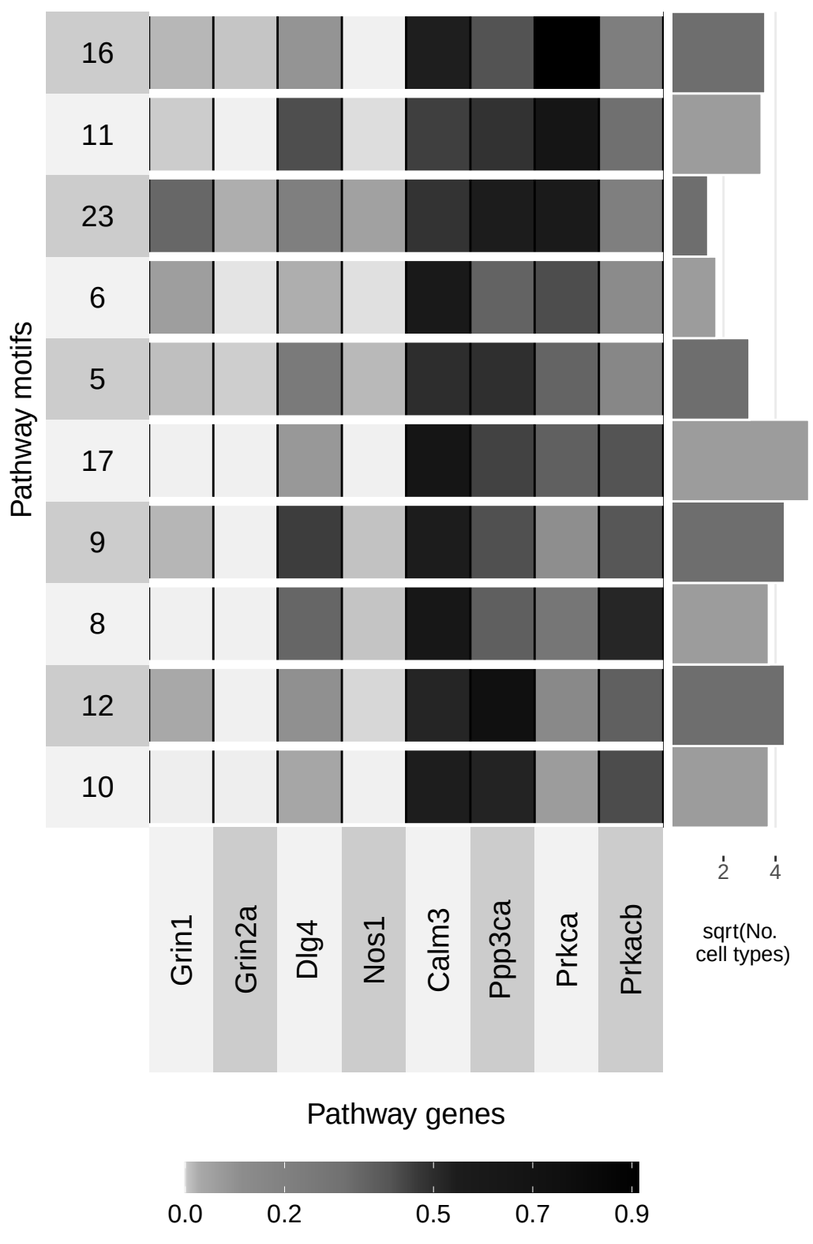
ECDF of Profile Dispersions



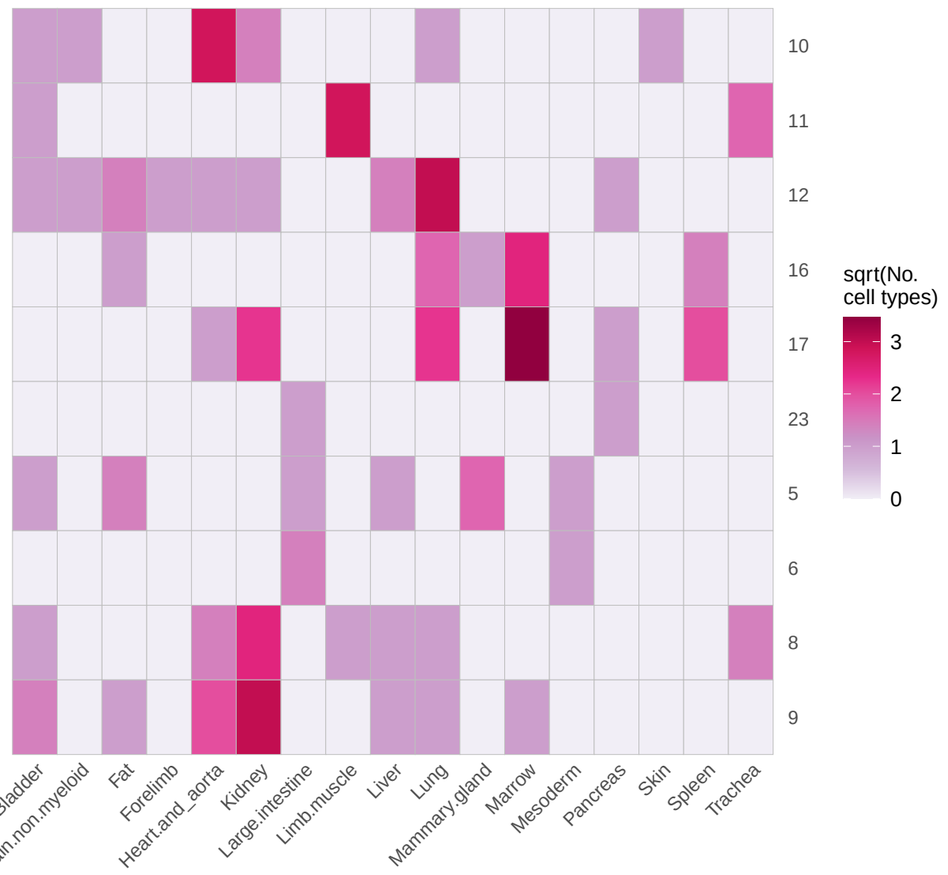
Profile Dispersion Plot



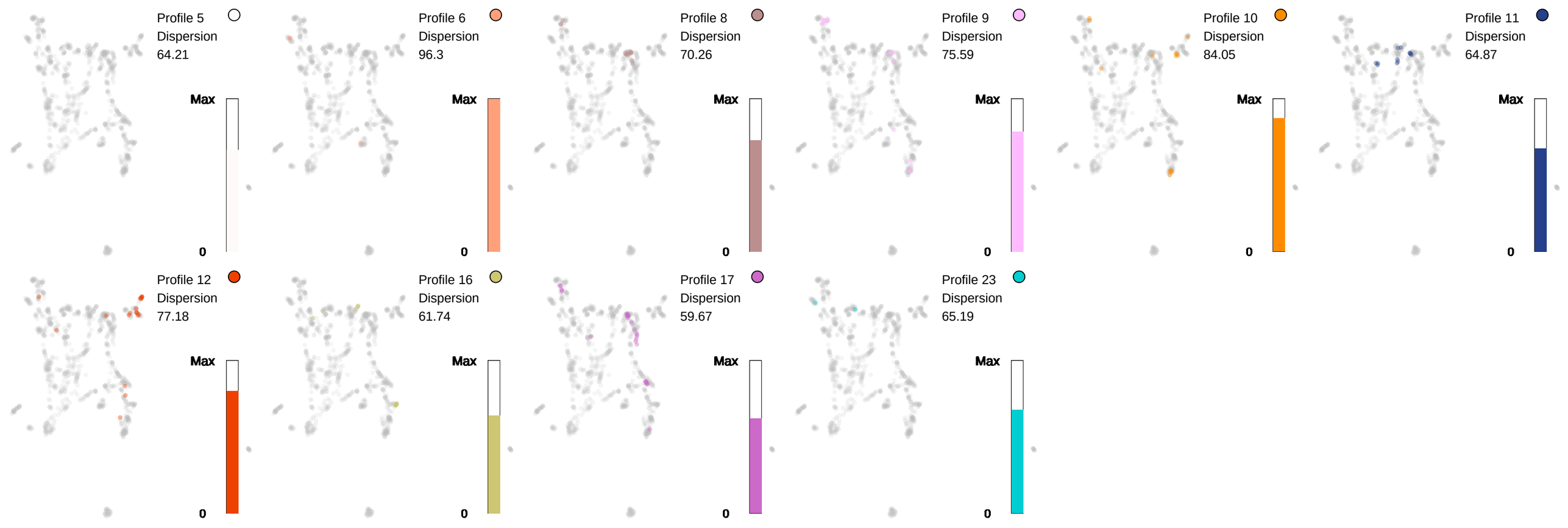
Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition



Nitric Oxide Signaling Pathway (k_opt = 28)

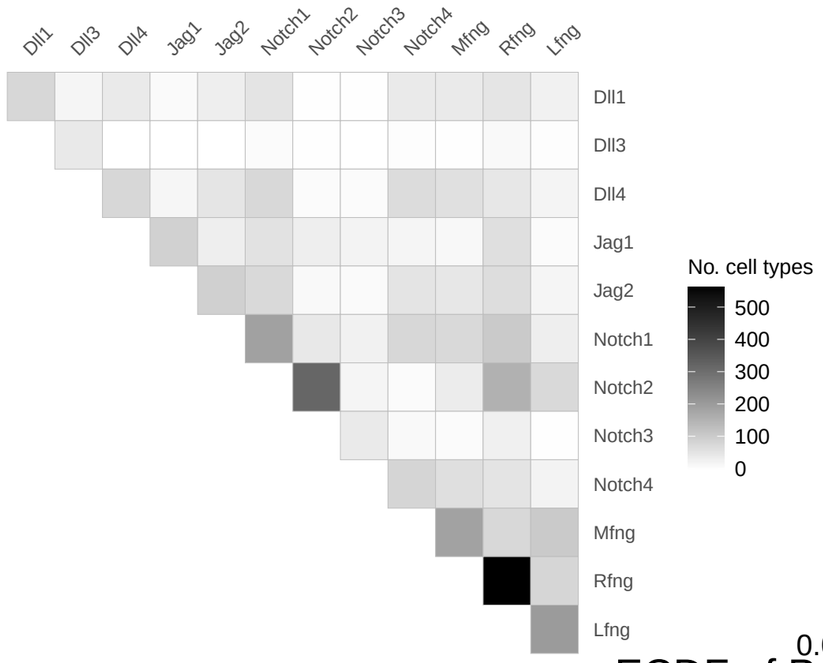


Notch receptors, Dll ligands and Fringe proteins (k_opt = 30)

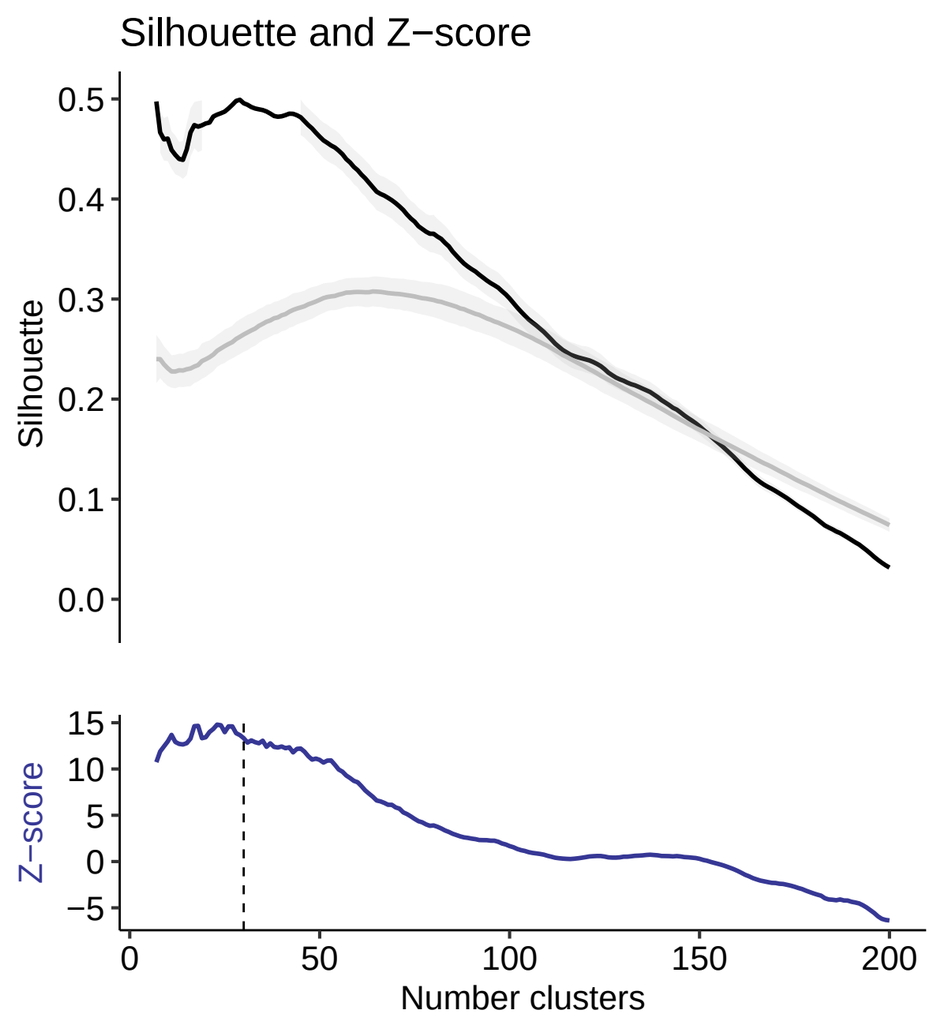
Pathway genes

Dll1	Jag2	Notch4
Dll3	Notch1	Mfng
Dll4	Notch2	Rfng
Jag1	Notch3	Lfng

Gene Co−Expression Above Threshold

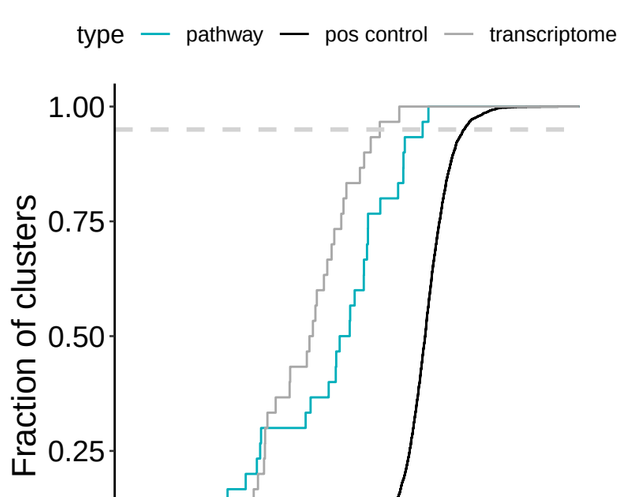


Silhouette and Z−score

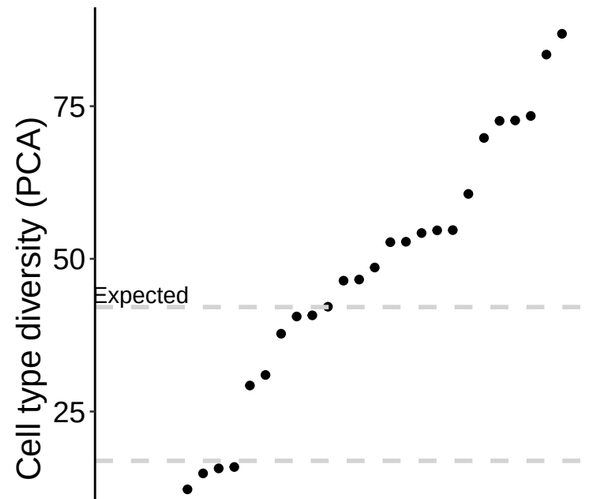


Global UMAP: Pathway ON

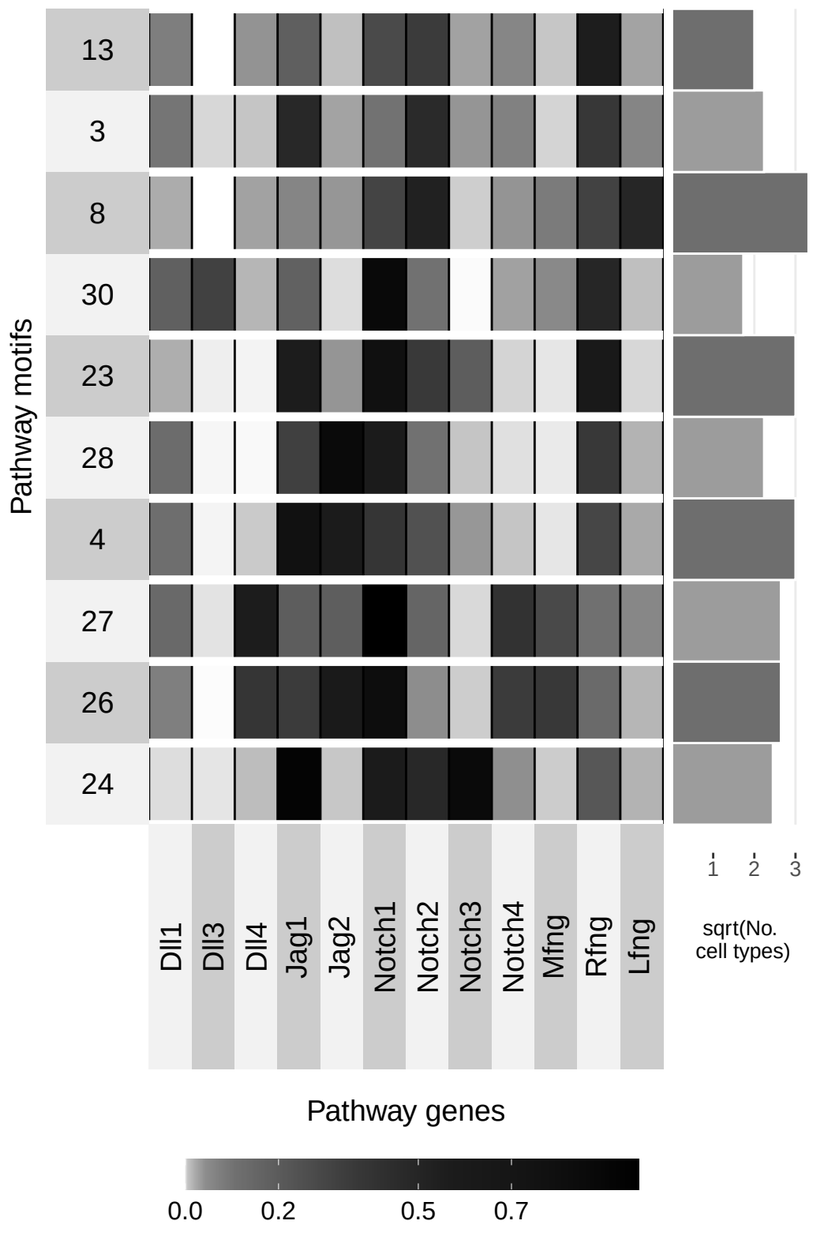
ECDF of Profile Dispersions



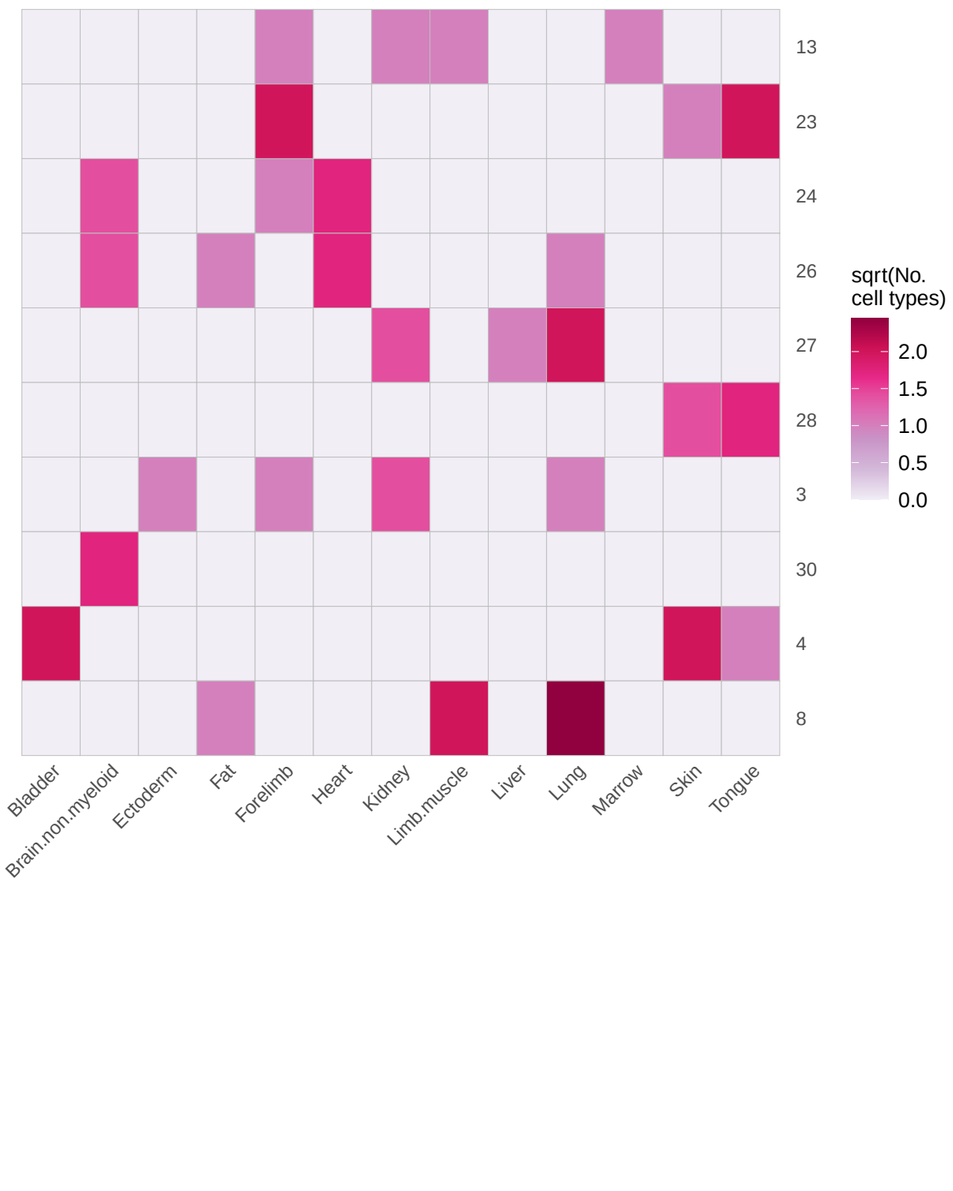
Profile Dispersion Plot

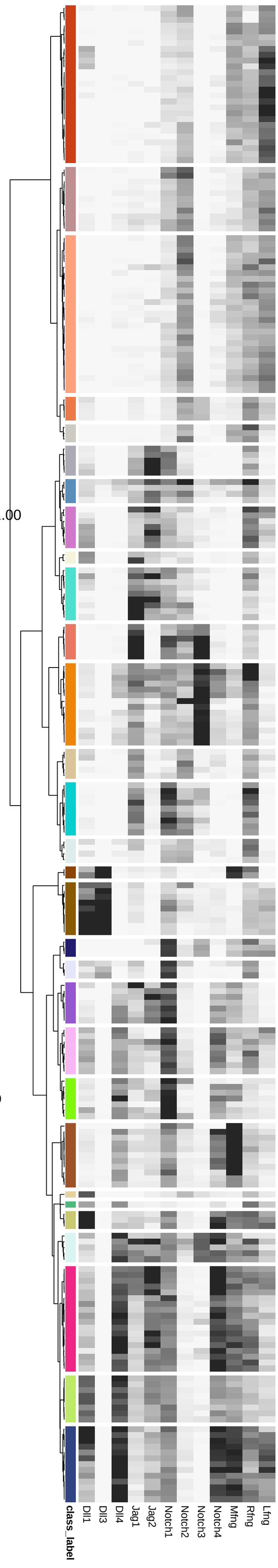


Motifs, Dispersion $\geq 90^{th}$ percentile

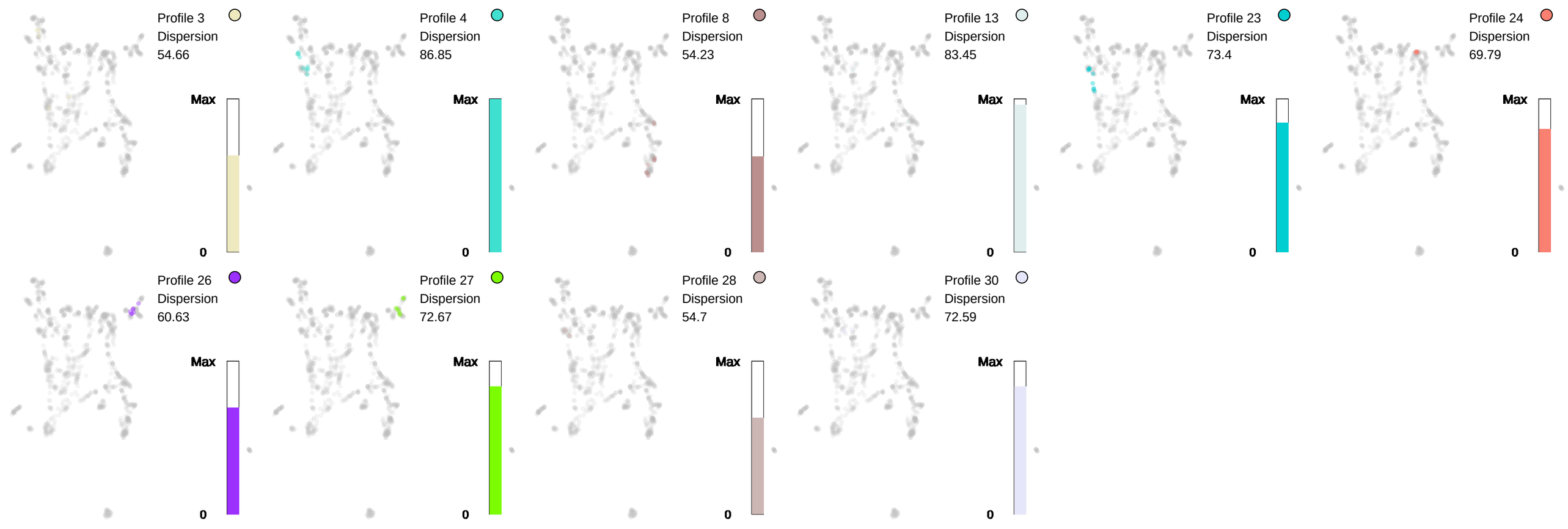


Motif Tissue Composition





Notch receptors, Dll ligands and Fringe proteins (k_opt = 30)

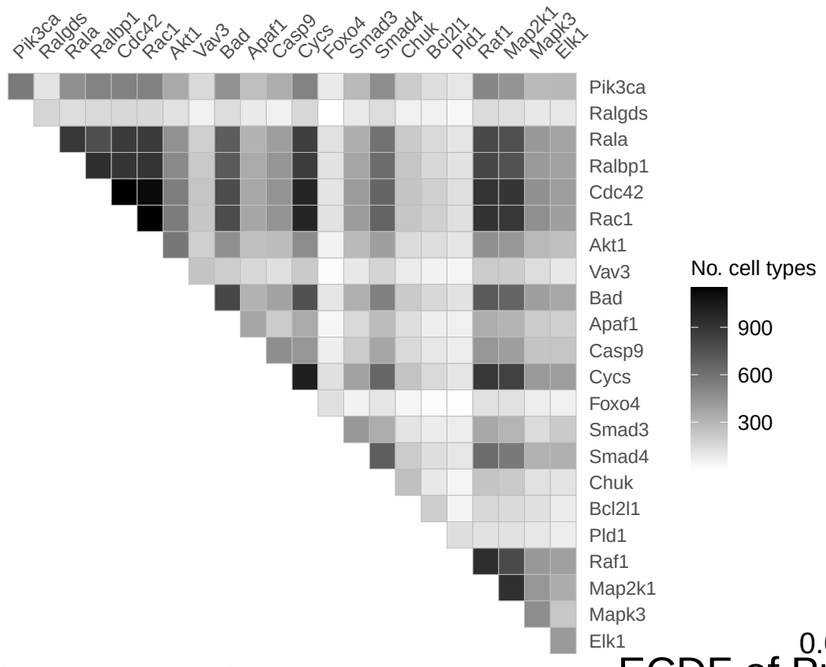


Ras Signaling Pathway (k_opt = 83)

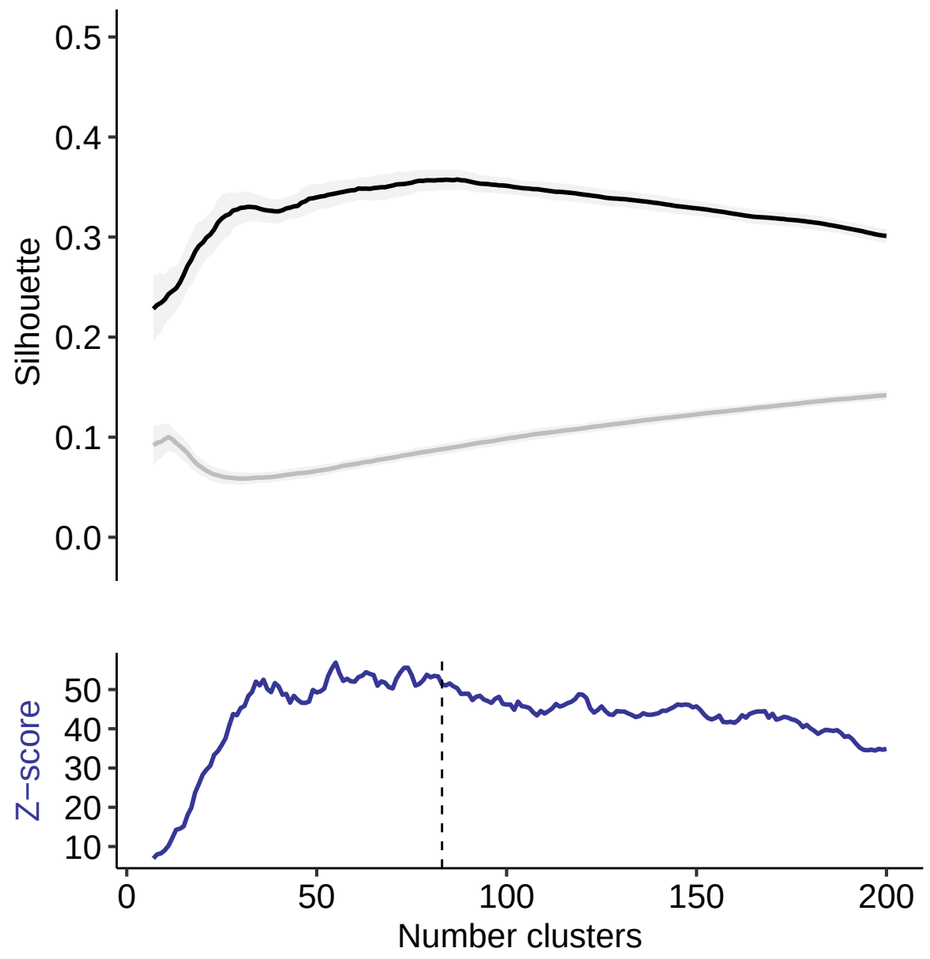
Pathway genes

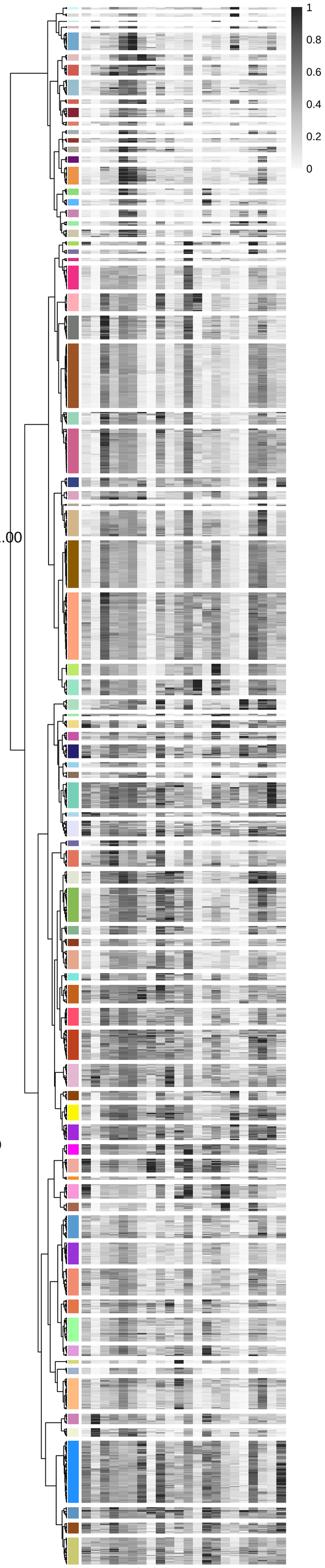
Pik3ca
Ralgds
Rala
Ralbp1
Cdc42
Rac1
Akt1
Vav3
Bad
Apaf1
Casp9
Cycs
Foxo4
Smad3
Smad4
Chuk
Bcl2l1
Pld1
Raf1
Map2k1
Mapk3
Elk1

Gene Co−Expression Above Threshold

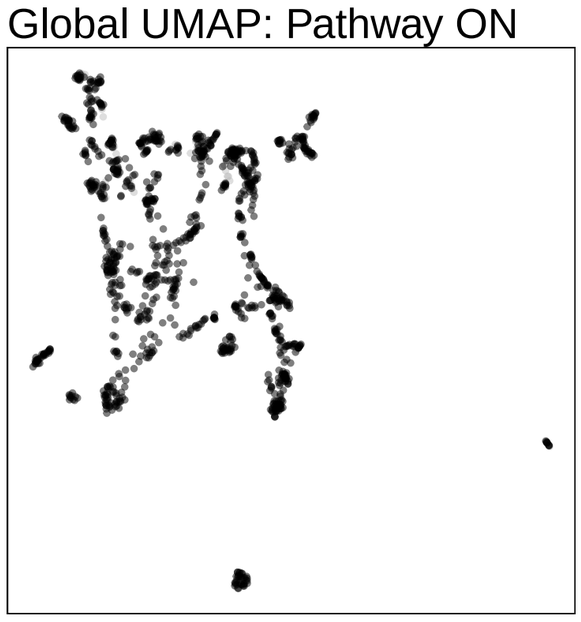


Silhouette and Z−score

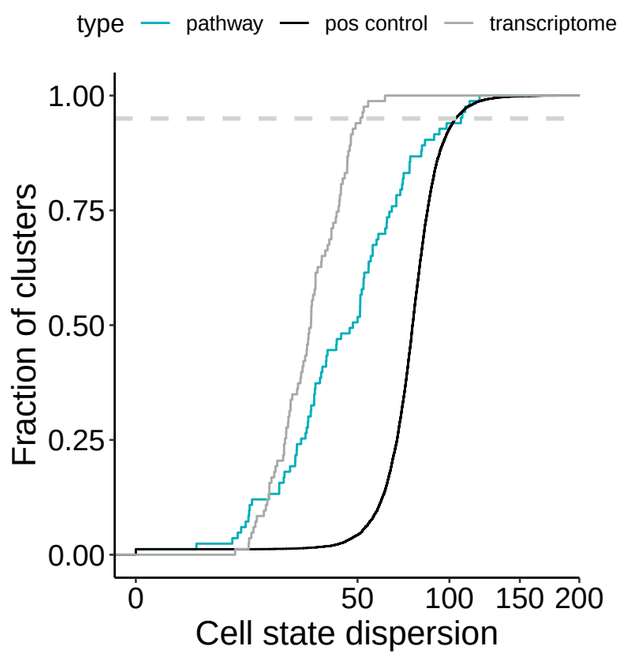




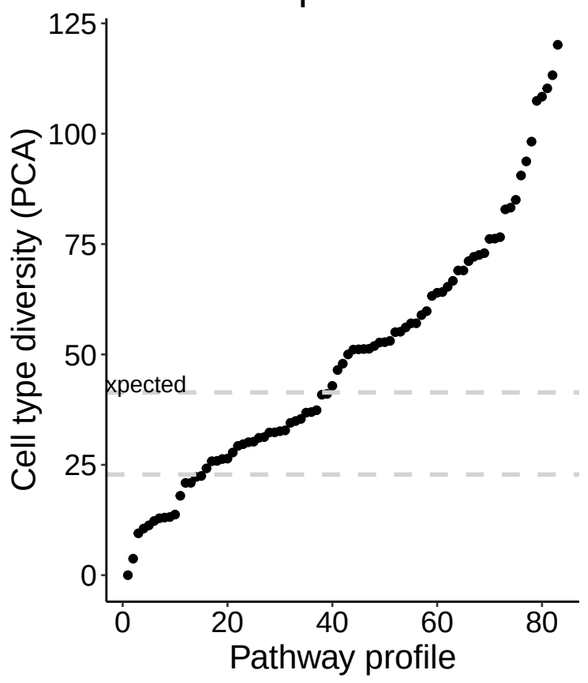
Global UMAP: Pathway ON



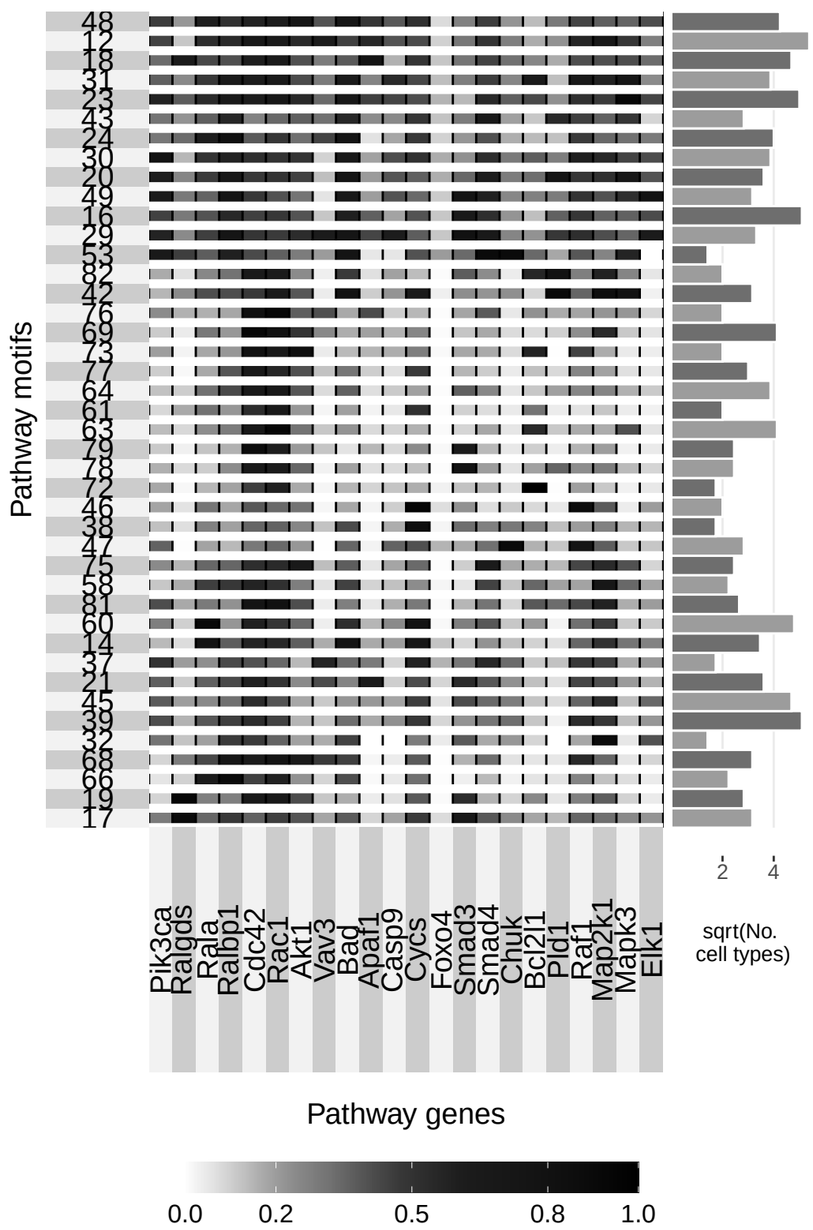
ECDF of Profile Dispersions



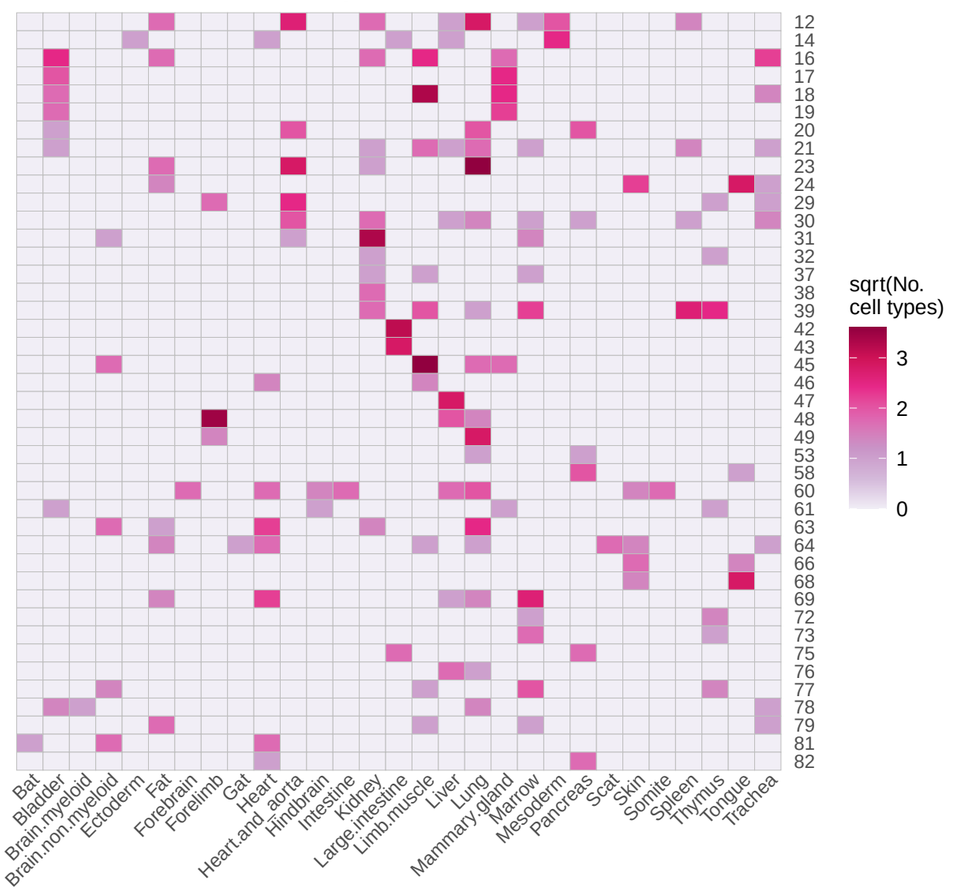
Profile Dispersion Plot



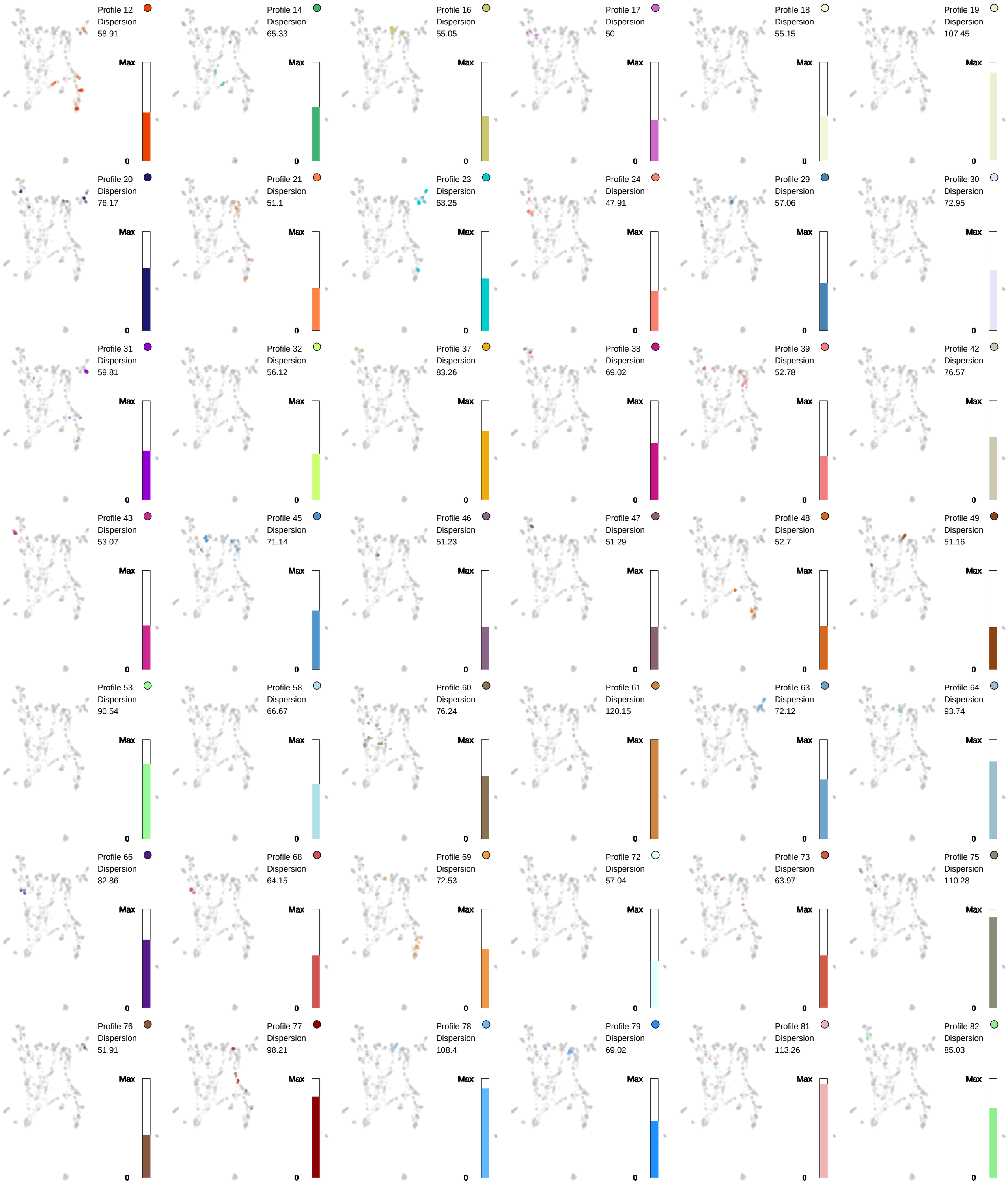
Motifs, Dispersion ≥ 90th percentile



Motif Tissue Composition



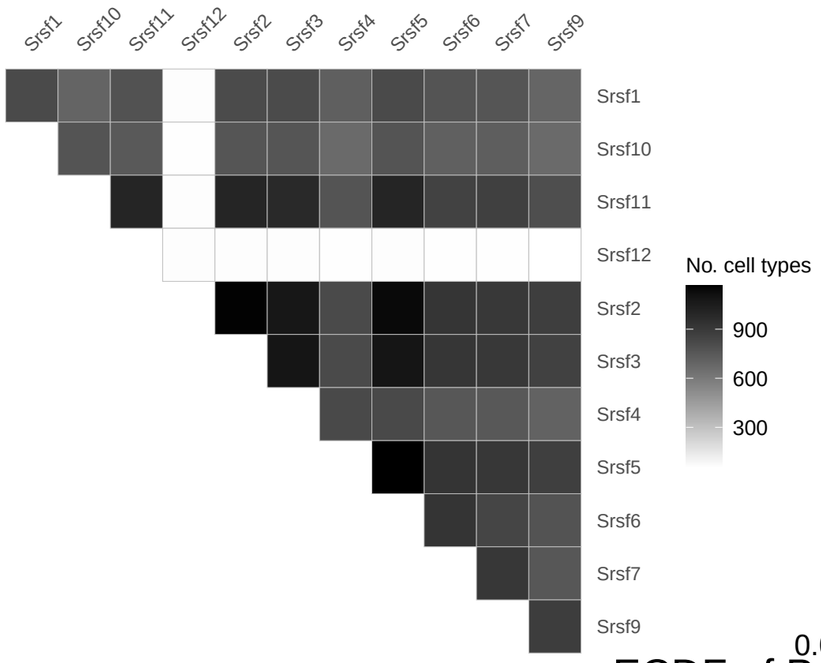
Ras Signaling Pathway (k_opt = 83)



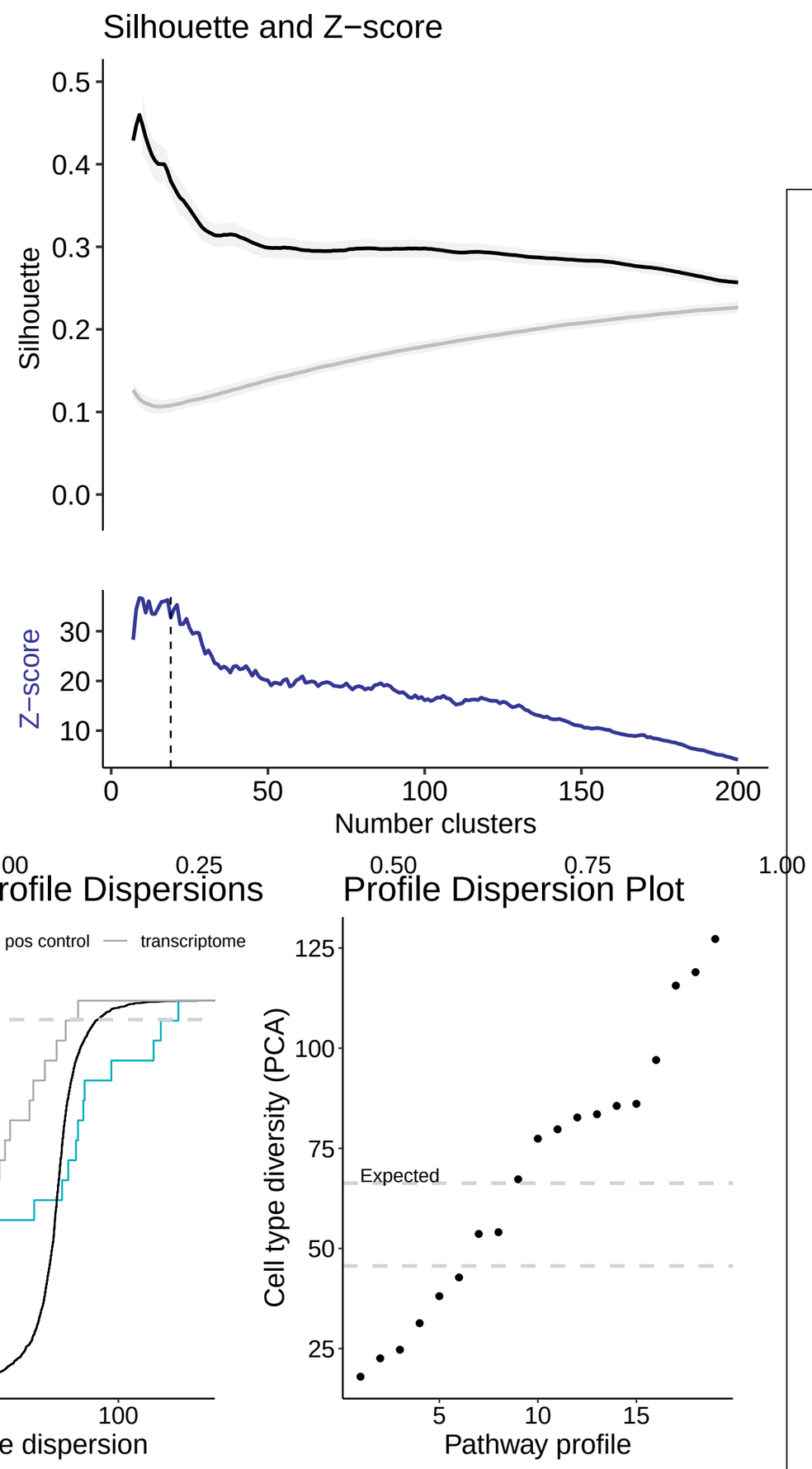
RNA−splicing by SR protein family (k_opt = 19)

Pathway genes
Srsf1
Srsf10
Srsf11
Srsf12
Srsf2
Srsf3
Srsf4
Srsf5
Srsf6
Srsf7
Srsf9

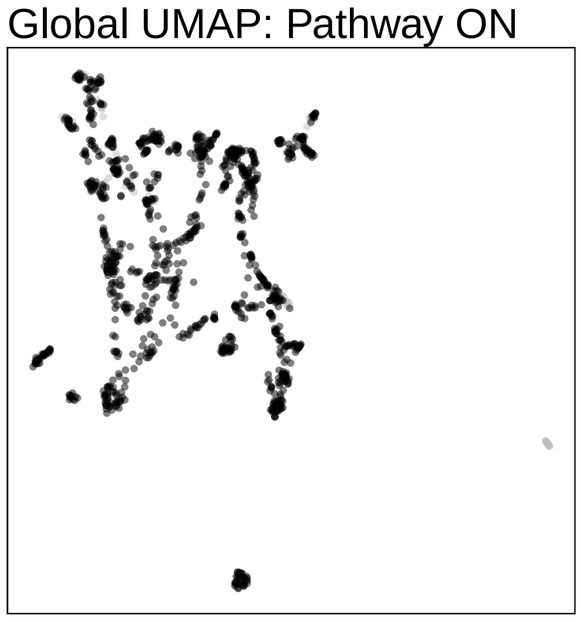
Gene Co−Expression Above Threshold



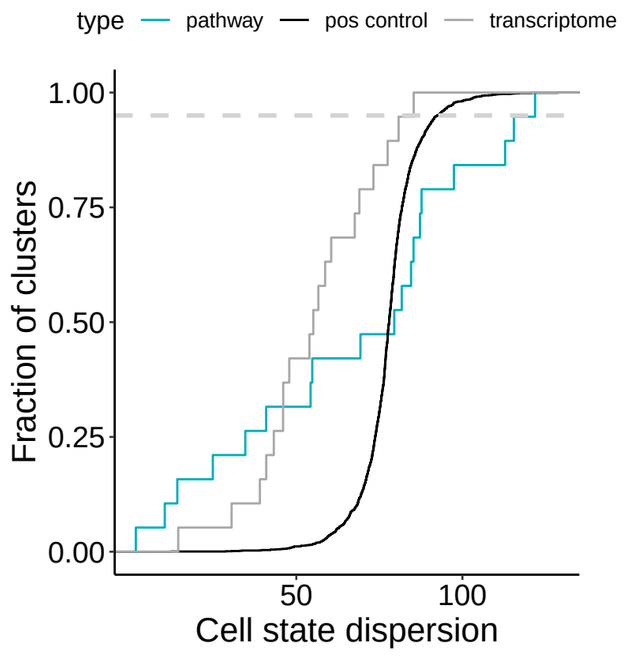
Silhouette and Z−score



Global UMAP: Pathway ON

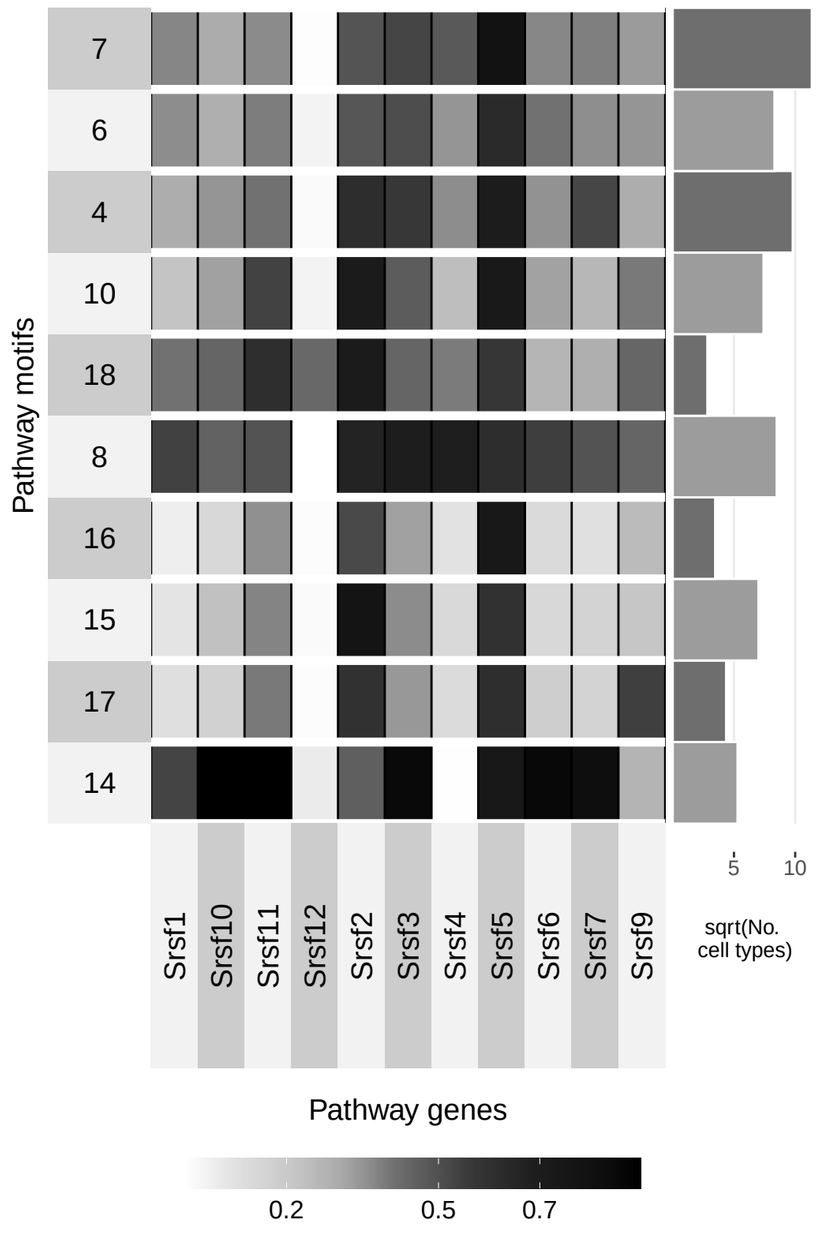


ECDF of Profile Dispersions

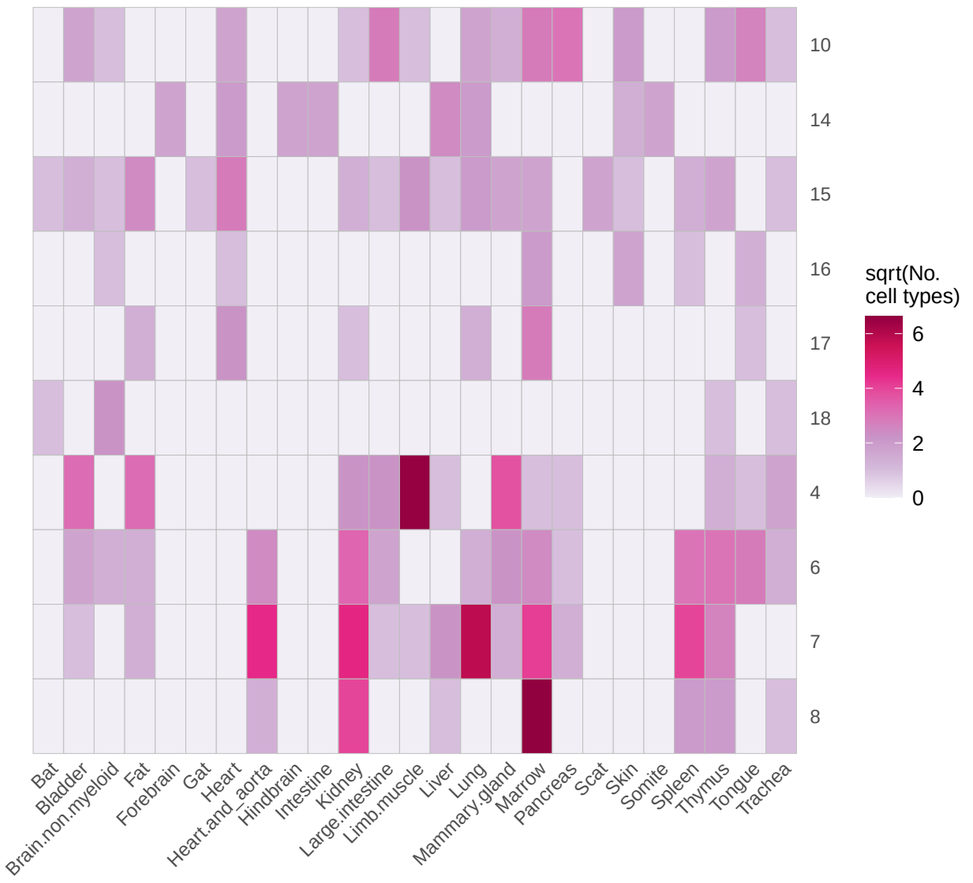


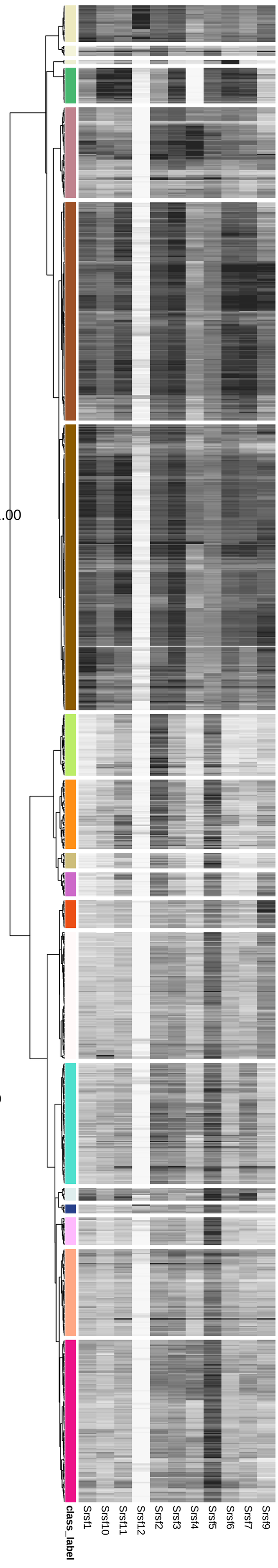
Profile Dispersion Plot

Motifs, Dispersion ≥ 90th percentile

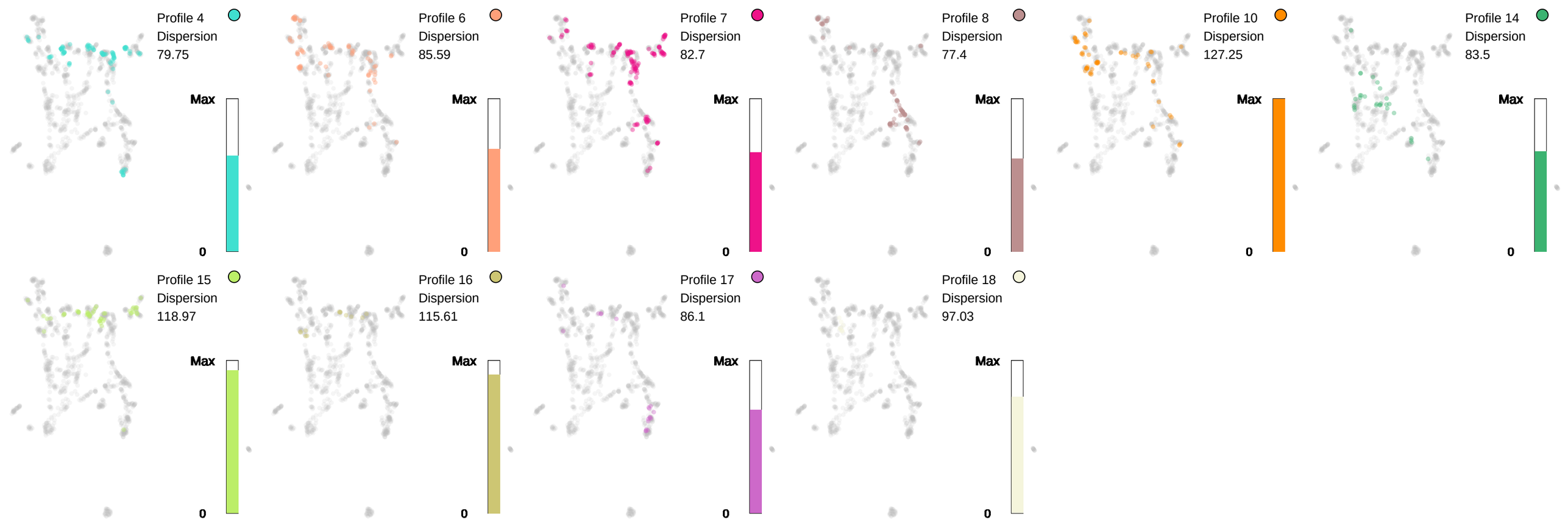


Motif Tissue Composition





RNA−splicing by SR protein family (k_opt = 19)

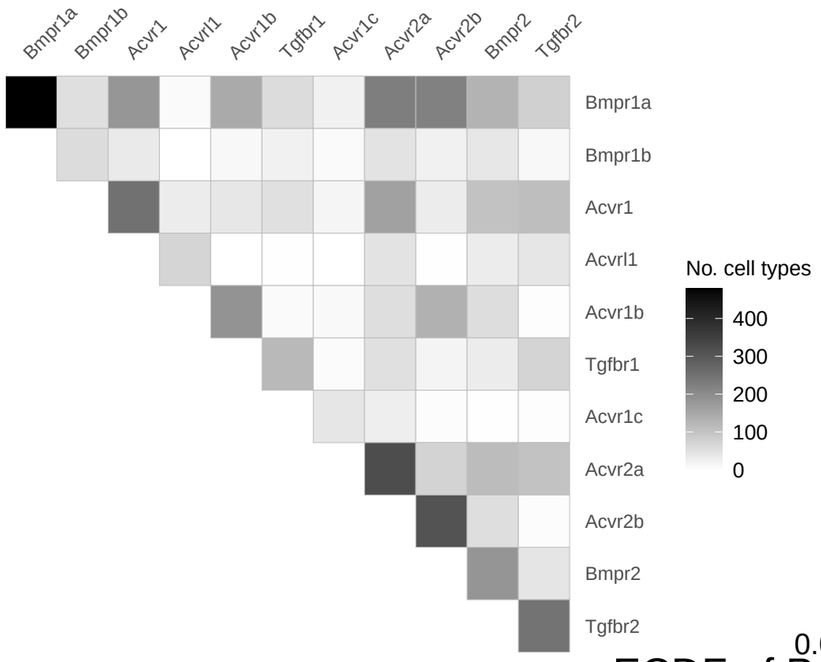


Tgf−beta family receptors (k_opt = 25)

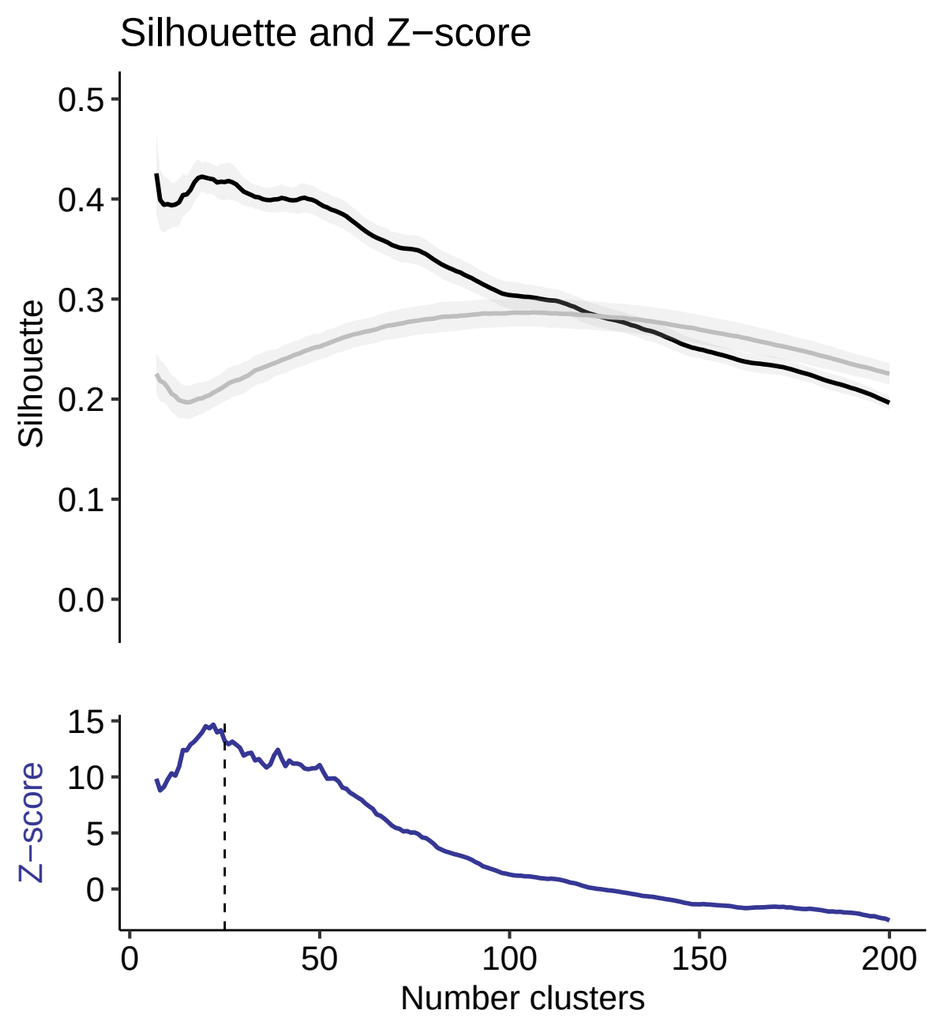
Pathway genes

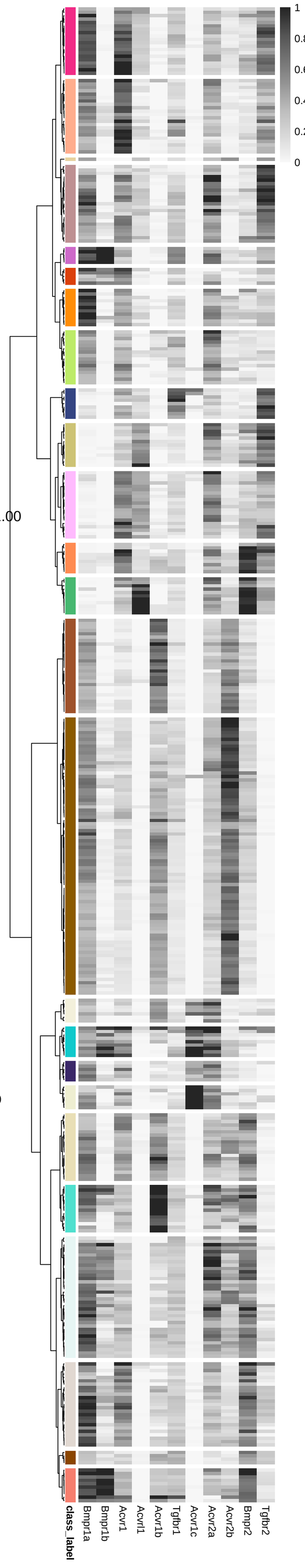
Bmpr1a
Bmpr1b
Acvr1
Acvrl1
Acvr1b
Tgfbr1
Acvr1c
Acvr2a
Acvr2b
Bmpr2
Tgfbr2

Gene Co−Expression Above Threshold

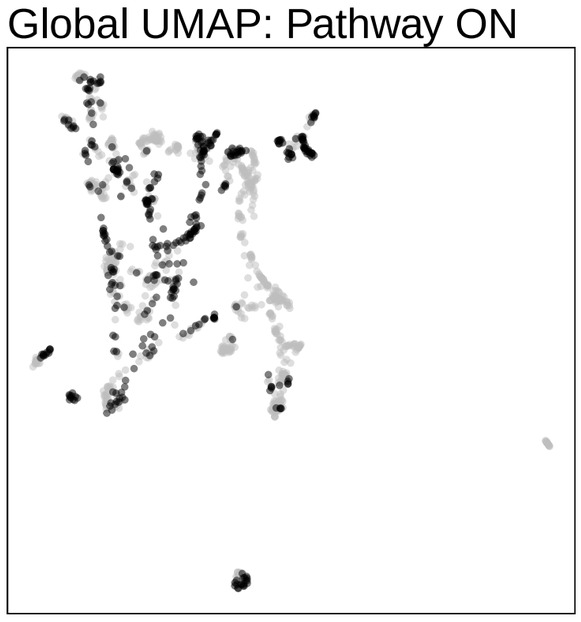


Silhouette and Z−score

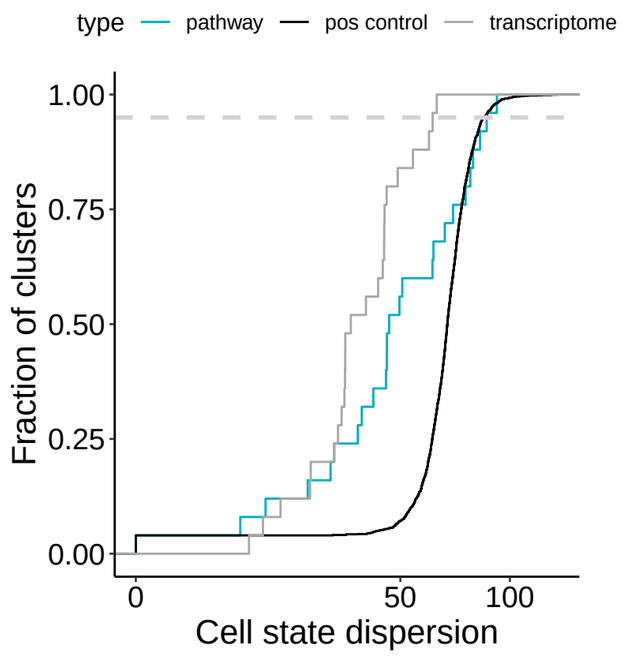




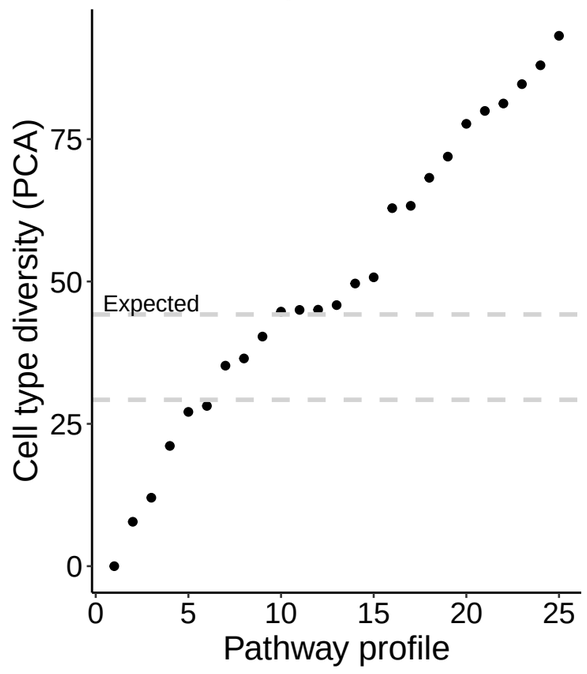
Global UMAP: Pathway ON



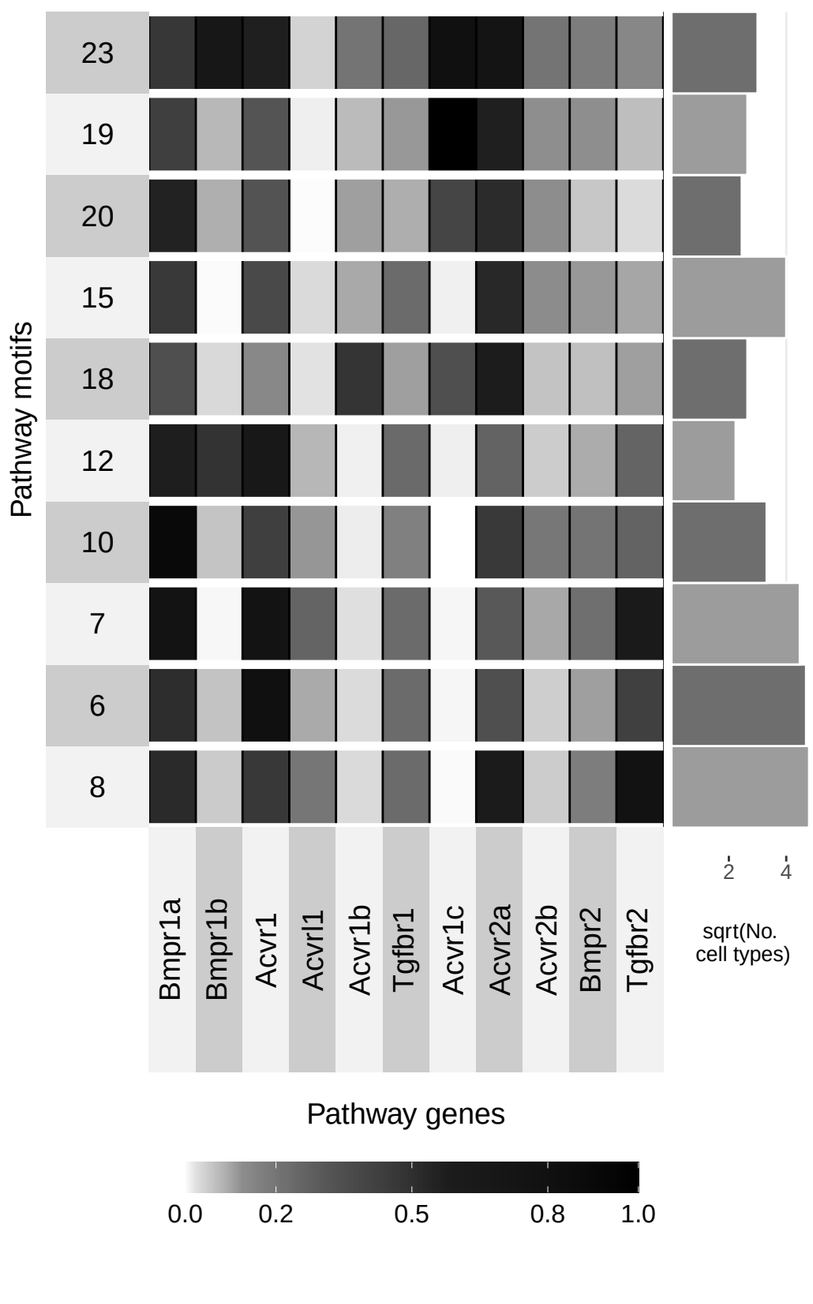
ECDF of Profile Dispersions



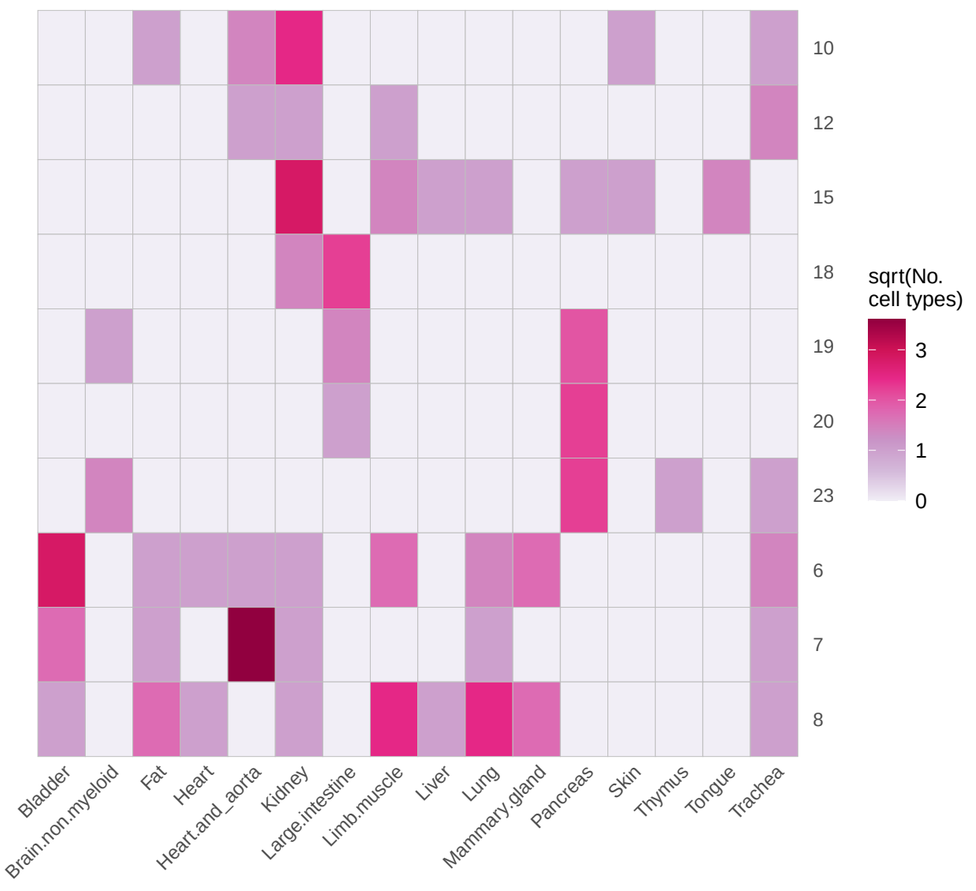
Profile Dispersion Plot



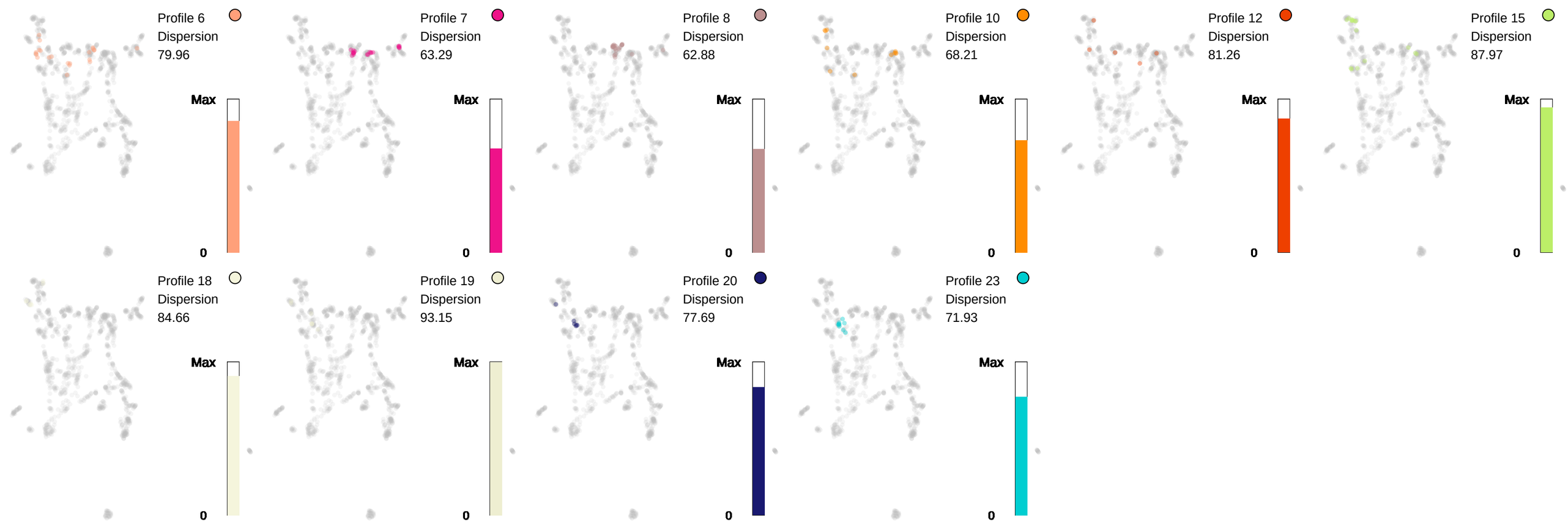
Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition



Tgf−beta family receptors (k_opt = 25)

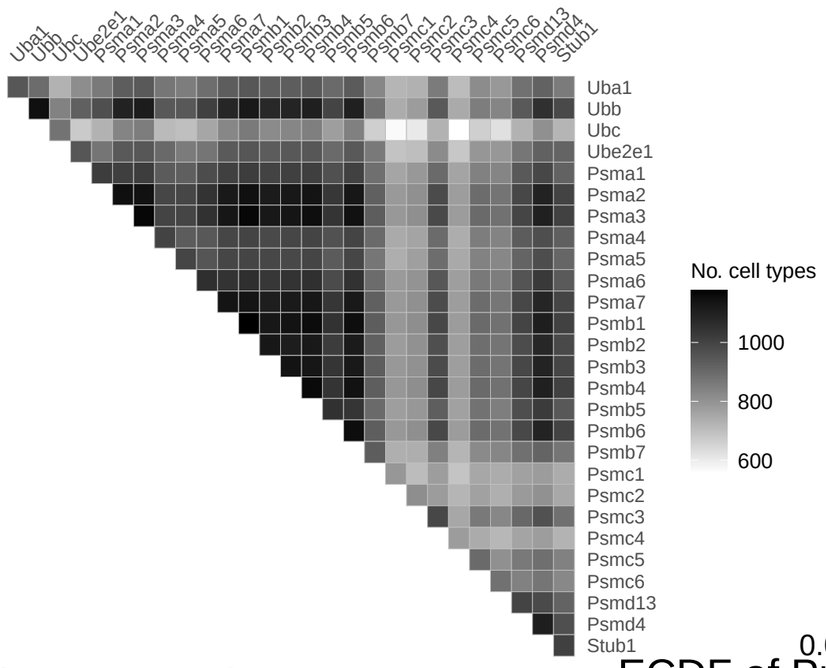


Ubiquitin−Proteasome Pathway (k_opt = 28)

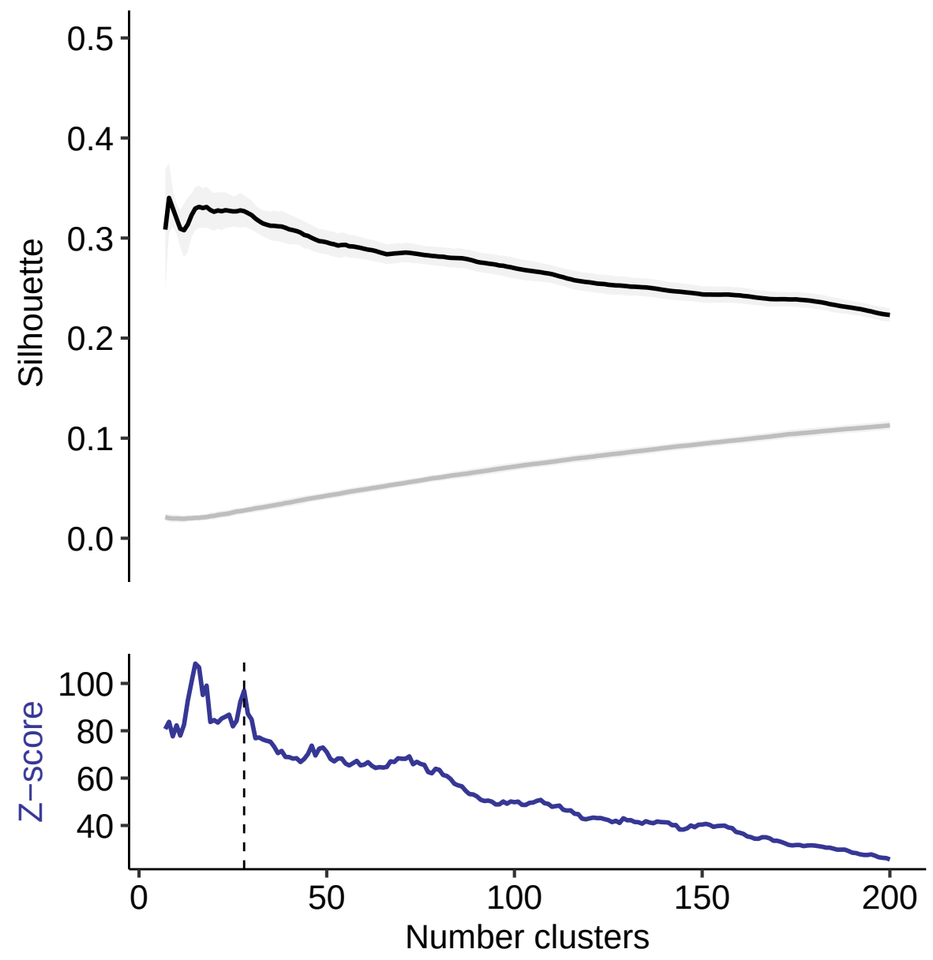
Pathway genes

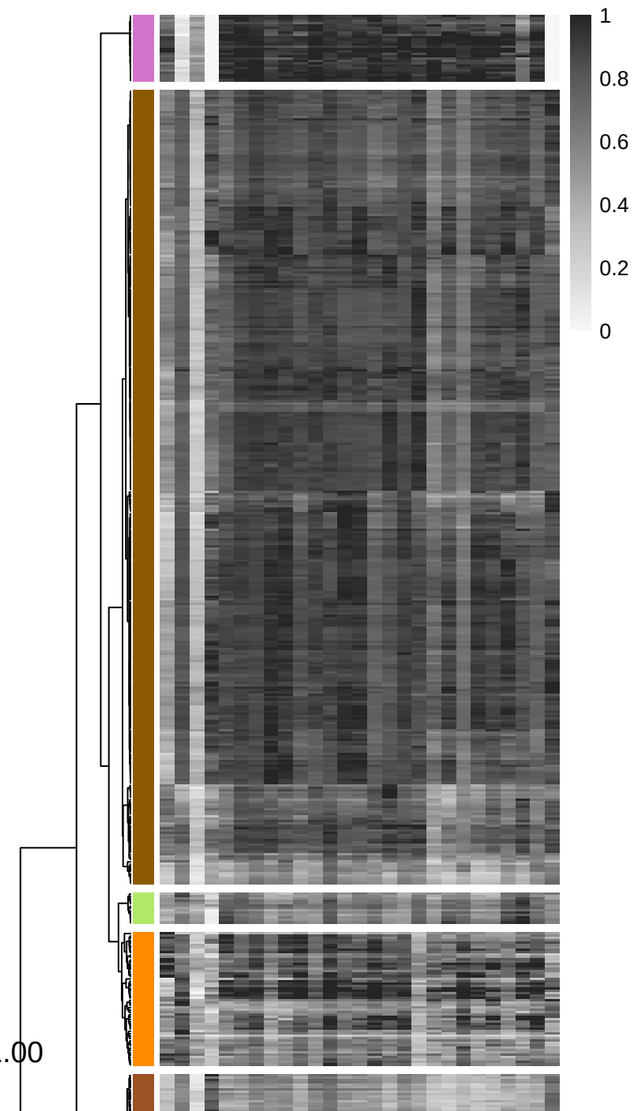
Uba1	Psma6	Psmc1
Ubb	Psma7	Psmc2
Ubc	Psmb1	Psmc3
Ube2e1	Psmb2	Psmc4
Psma1	Psmb3	Psmc5
Psma2	Psmb4	Psmc6
Psma3	Psmb5	Psmd13
Psma4	Psmb6	Psmd4
Psma5	Psmb7	Stub1

Gene Co−Expression Above Threshold

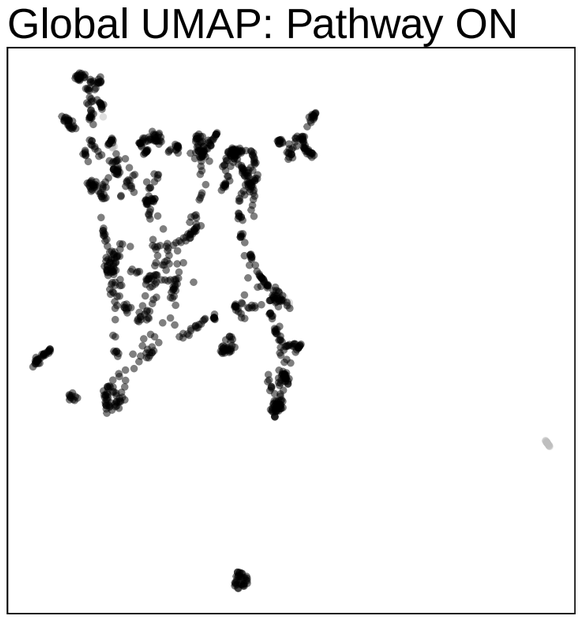


Silhouette and Z−score

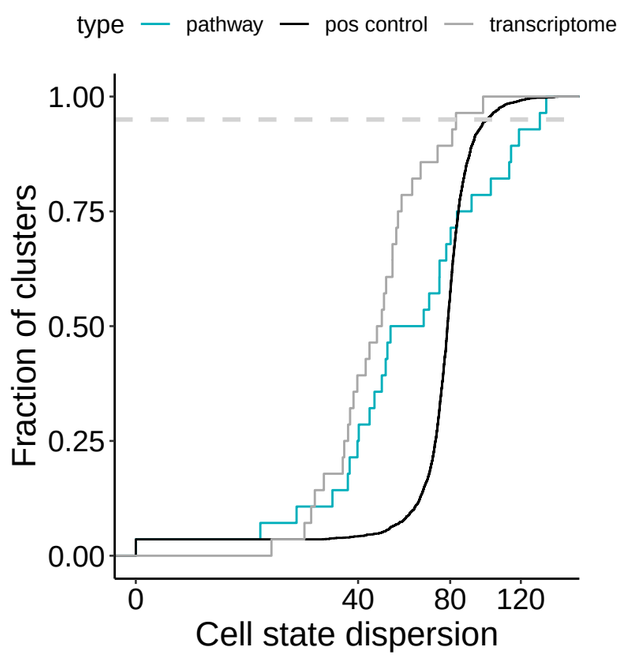




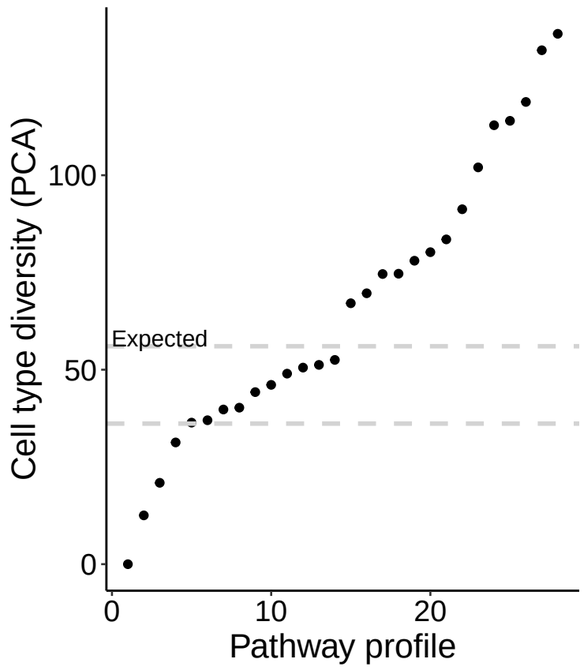
Global UMAP: Pathway ON



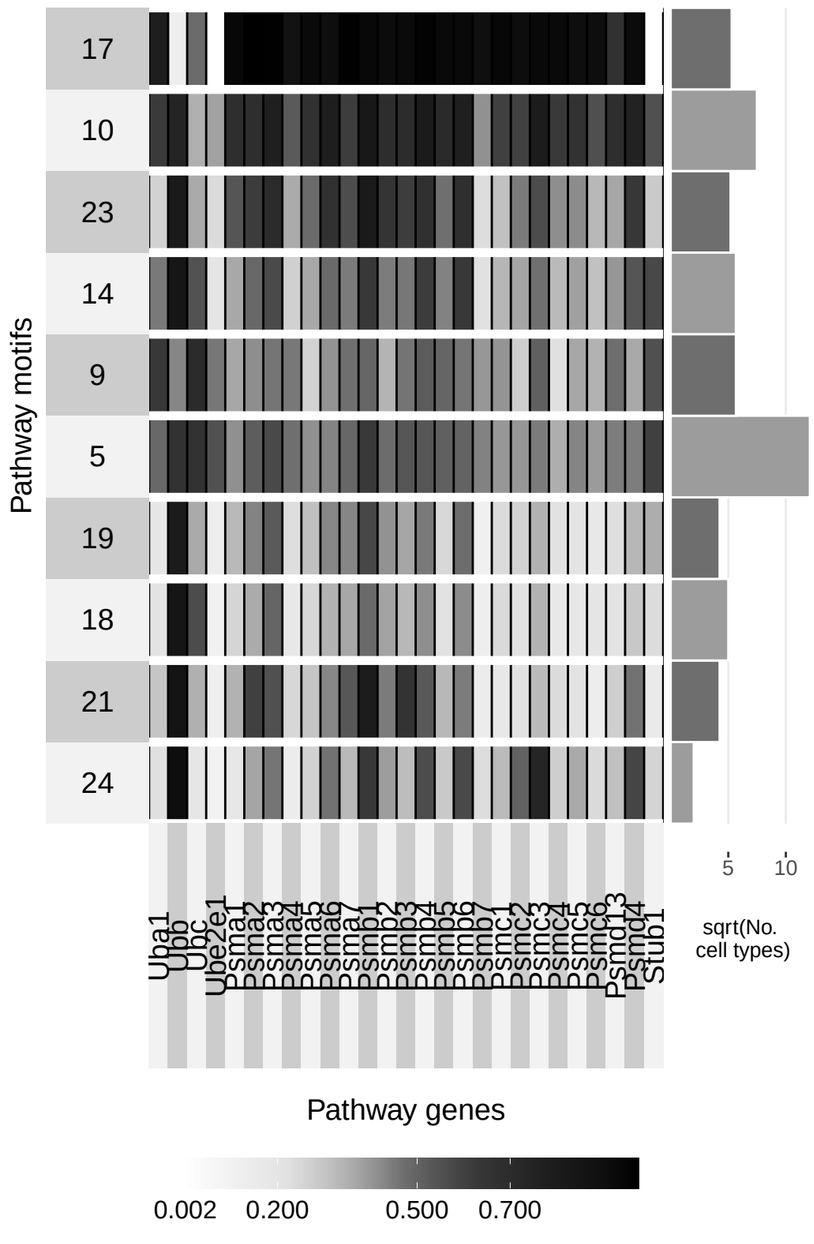
ECDF of Profile Dispersions



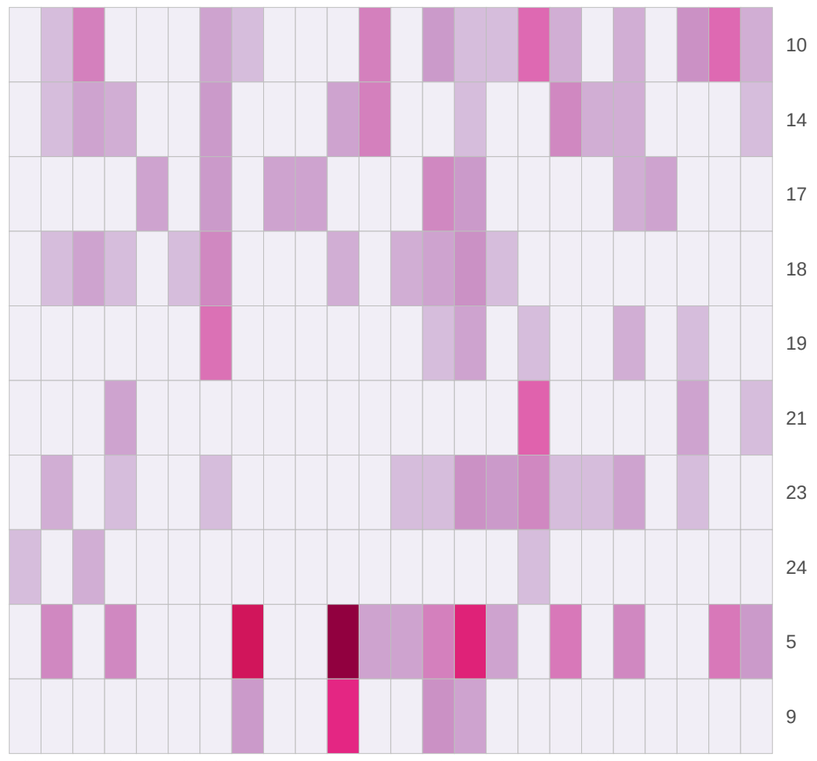
Profile Dispersion Plot

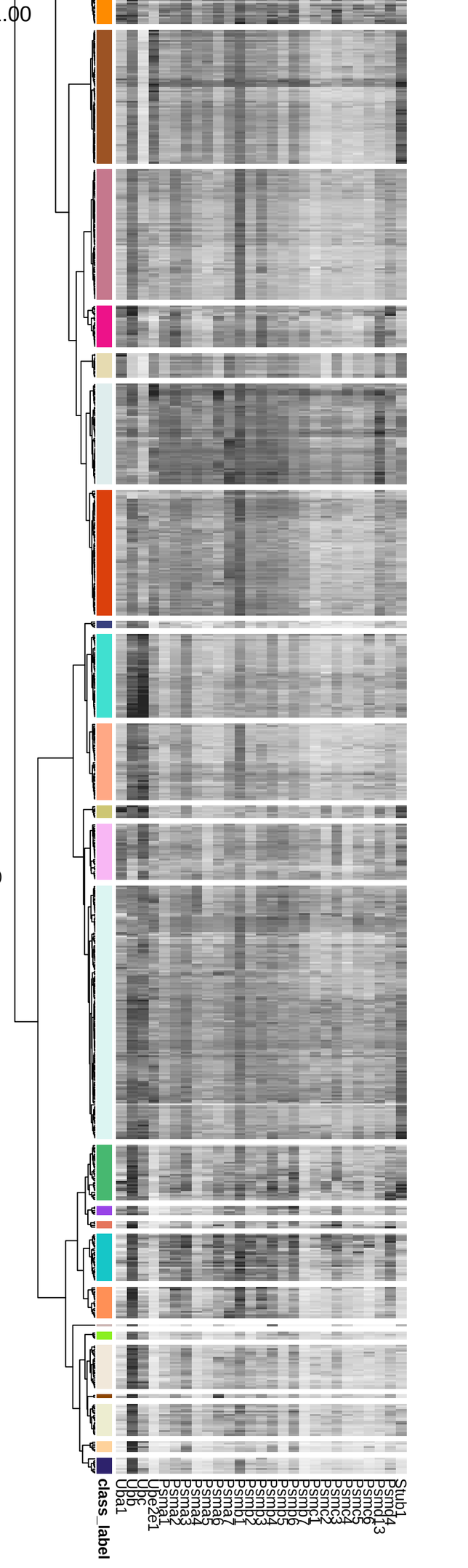


Motifs, Dispersion $\geq 90^{th}$ percentile



Motif Tissue Composition





Ubiquitin−Proteasome Pathway (k_opt = 28)