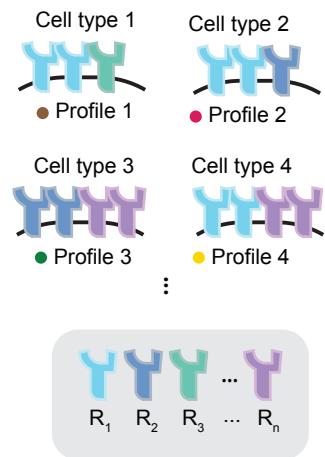


Figure 1: Pathway expression profiles could recur across diverse cell types

A

Receptor expression profiles



B

Pathway profiles could be...

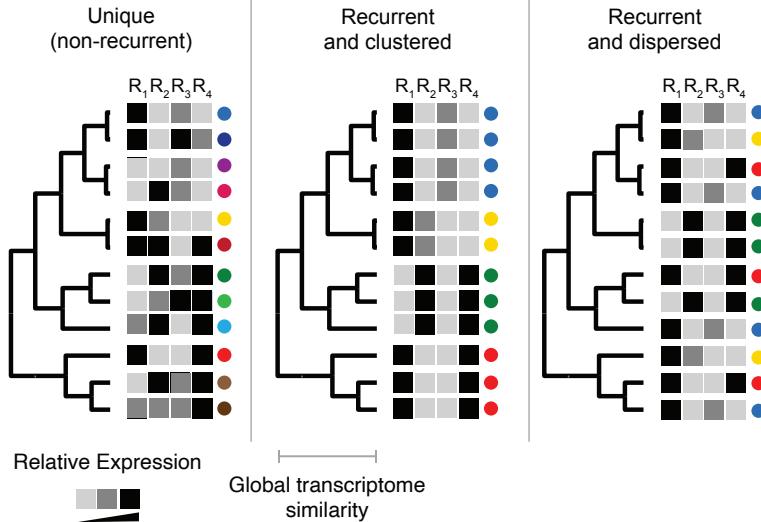
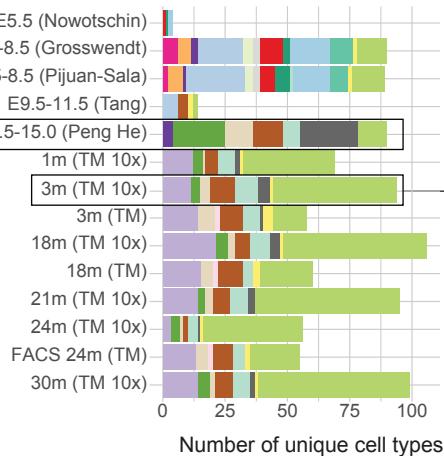


Figure 2: Pathway expression profiles could recur across diverse cell types

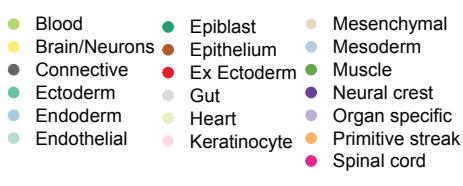
A

Multiple mouse cell atlas datasets

Development
Adult
Aging



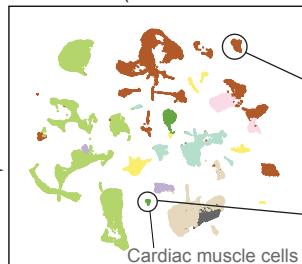
Cell type class



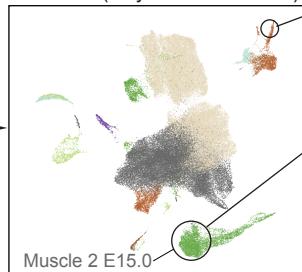
B

Individual cell atlases
Single-cell transcriptome profiles
1 dot = 1 cell

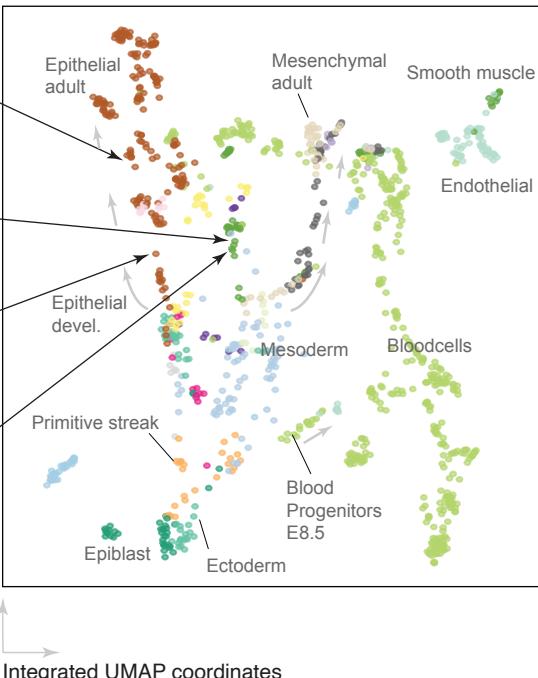
Tabula muris (3 month old mouse)



Forelimb (Days E10.5 - E15.0)



Integrated cell state atlas
Global cluster-averaged profiles
All data sets in (C)
1 dot = 1 cell cluster

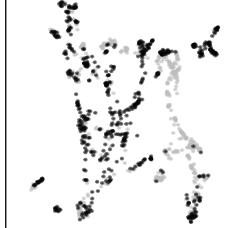


Dataset UMAP coordinates

Integrated UMAP coordinates

C

TGF- β
52% of cell clusters



Min. # of genes exp: 2
Threshold for exp.: 0.2

Notch
37% of cell clusters



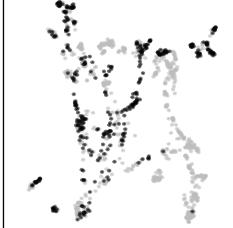
Min. # of genes exp: 2
Threshold for exp.: 0.2

Eph-ephrin
36% of cell clusters



Min. # of genes exp: 2
Threshold for exp.: 0.3

Wnt
31% of cell clusters

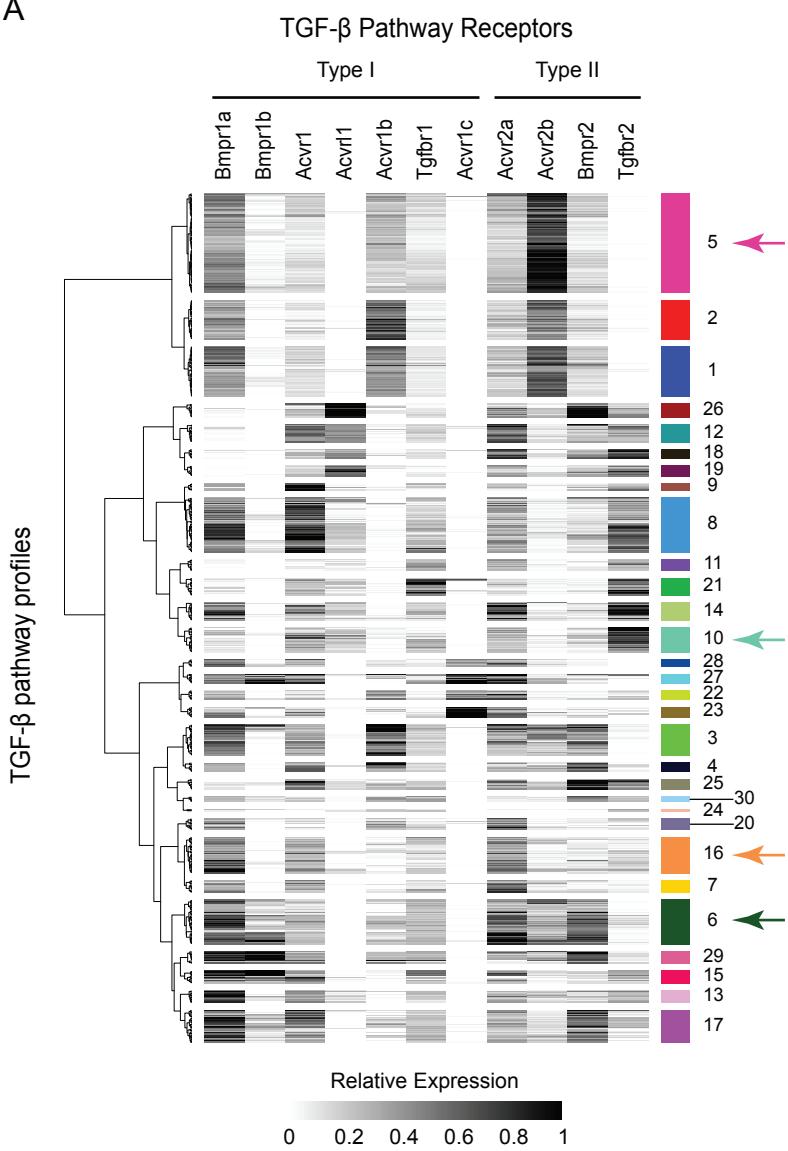


Min. # of genes exp: 2
Threshold for exp.: 0.3

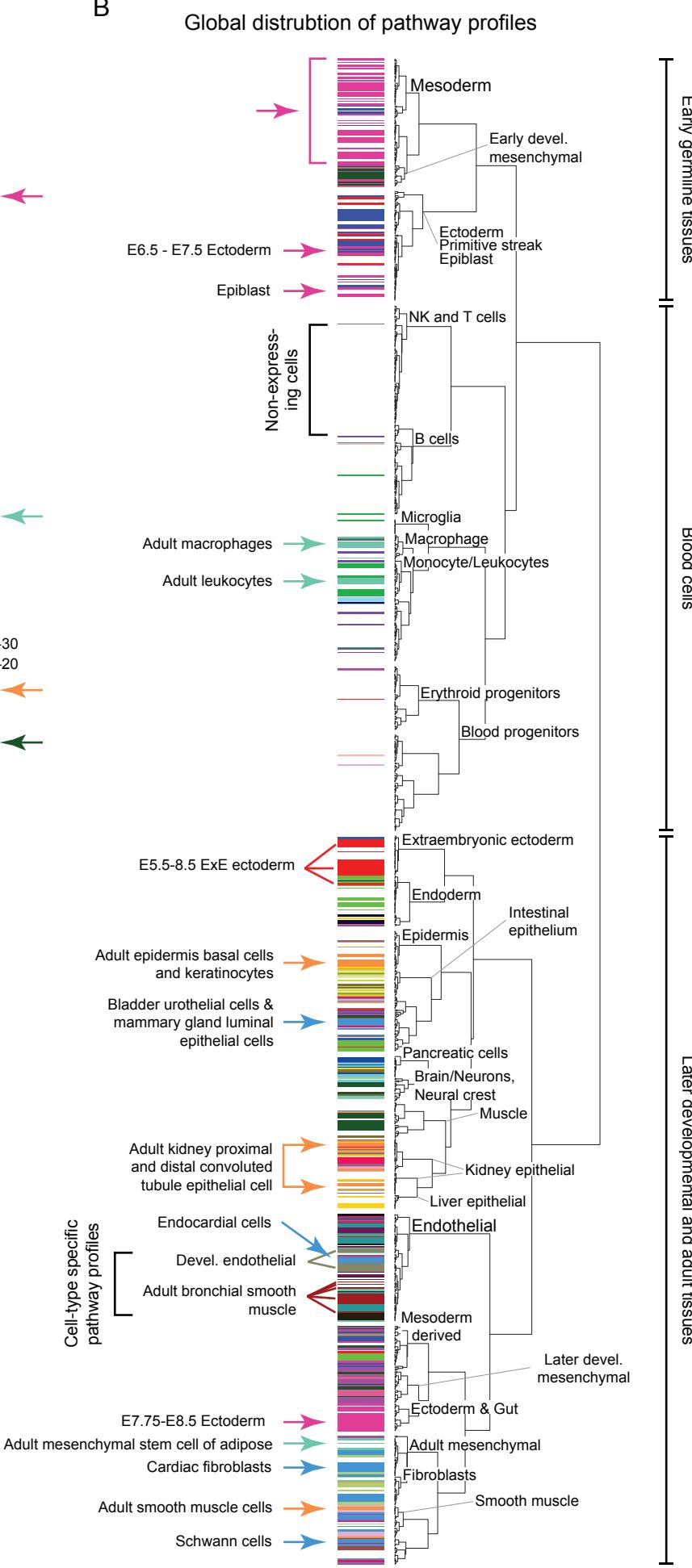
Dataset UMAP coordinates

Figure 3: TGF- β Receptors exhibit distinct and recurrent pathway expression profiles

A



B



C

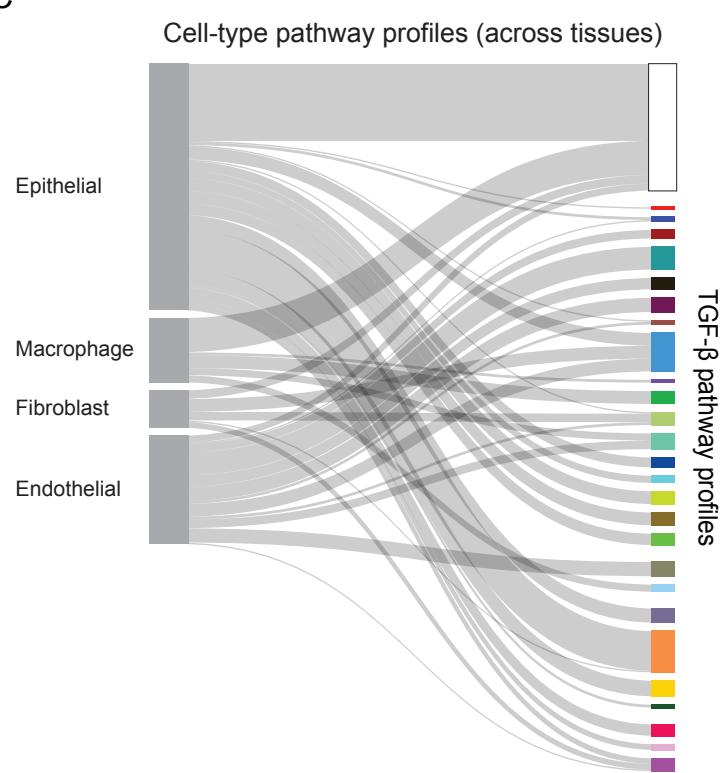
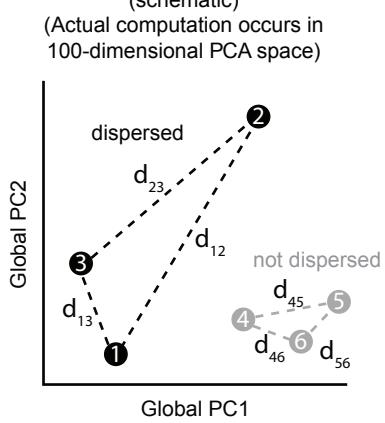
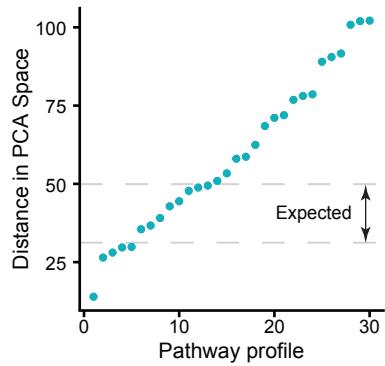


Figure 4: TGF- β expression motifs are dispersed across cell types and organs

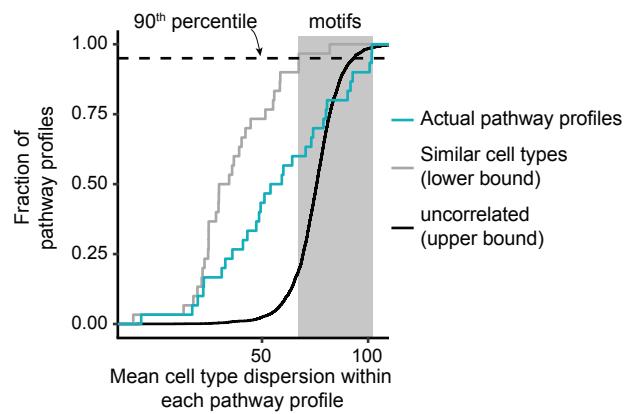
A Pairwise distance computation (schematic)
(Actual computation occurs in 100-dimensional PCA space)



Number of cell types with TGF- β profile

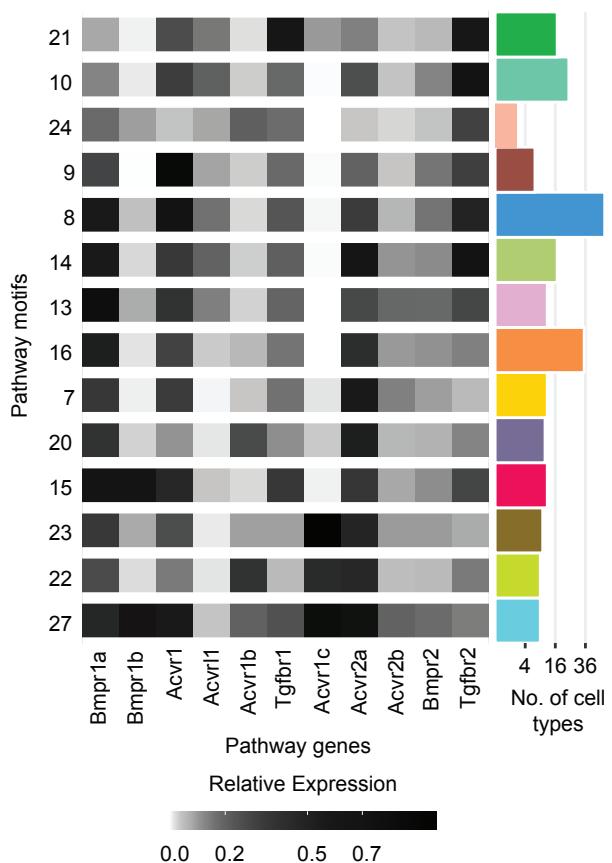


B



C

Broadly Dispersed TGF- β Motifs



D

Broadly Dispersed TGF- β Motifs

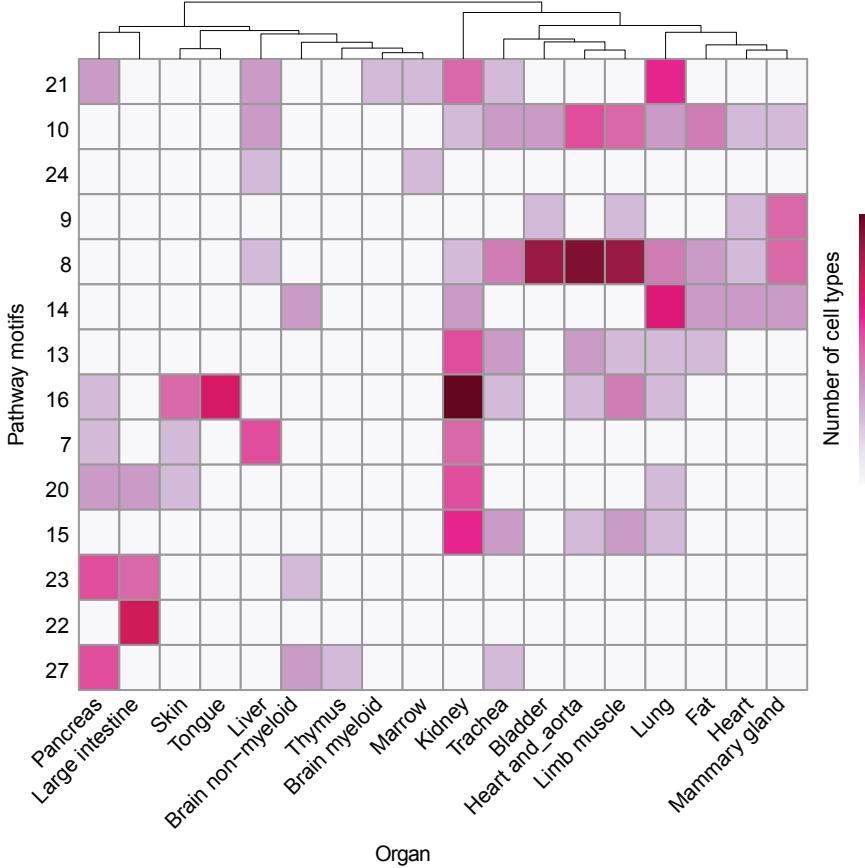
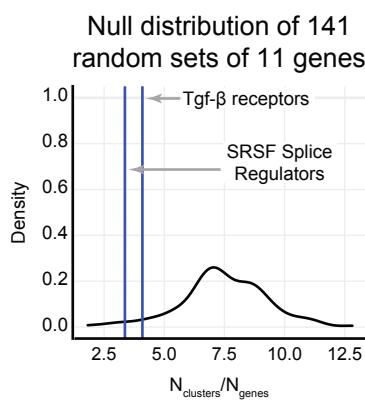
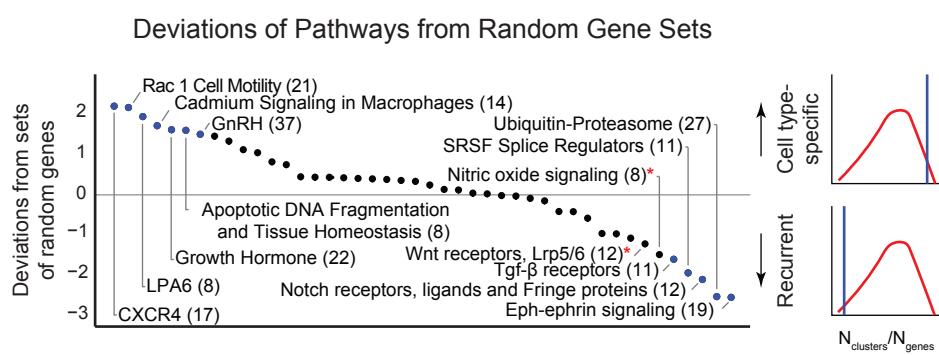


Figure 5: Wnt and Notch also show broadly dispersed recurrent pathway expression motifs

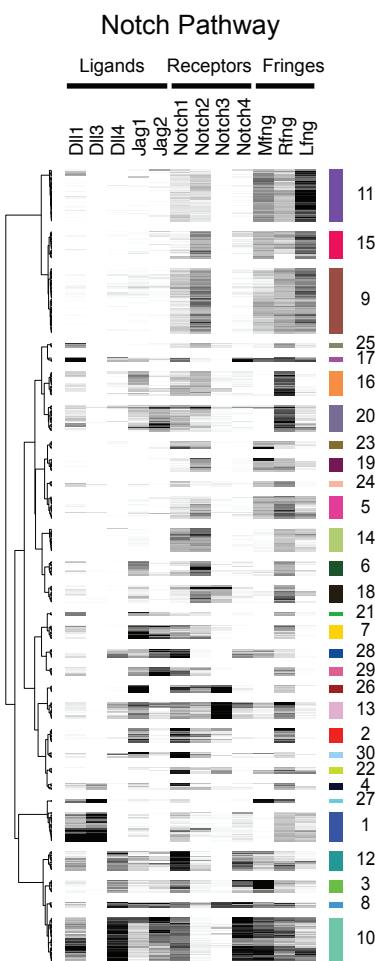
A



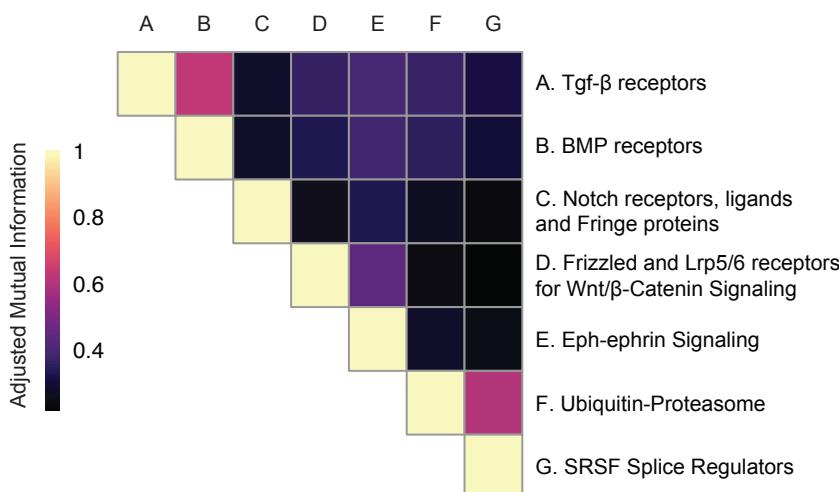
B



C



Mutual information between recurrent pathways



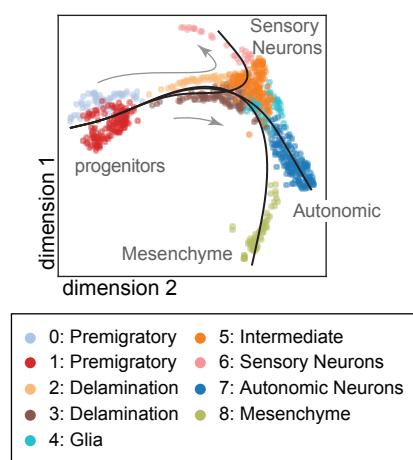
G

Figure 5:

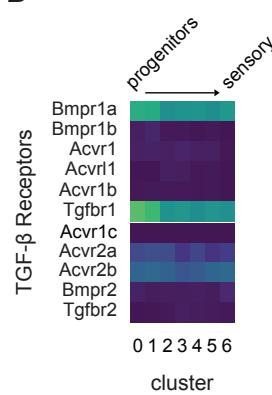
Developmental signaling pathways show distinct dynamics in neural crest differentiation

A

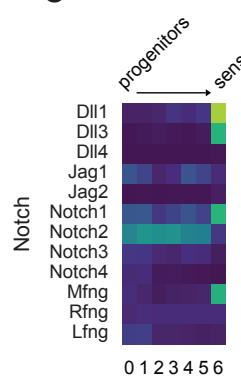
Trunk Neural Crest (E9.5)



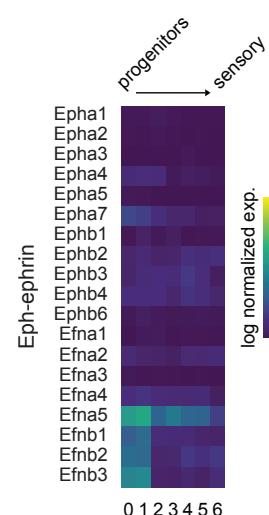
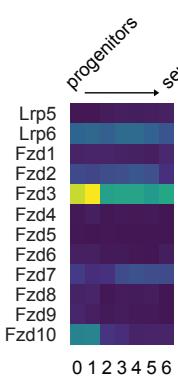
B



C

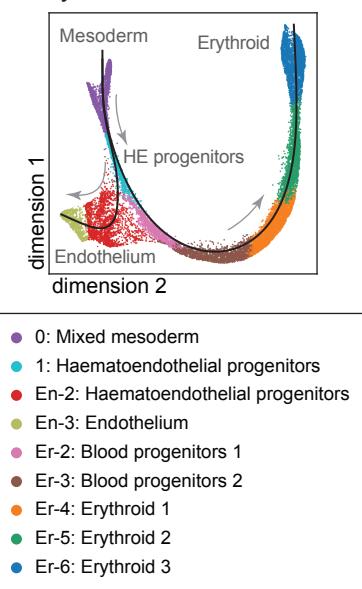


Wnt Receptors

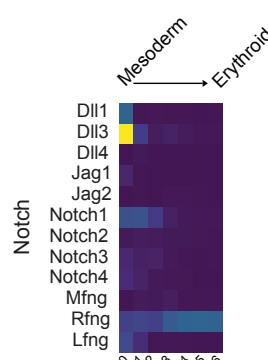
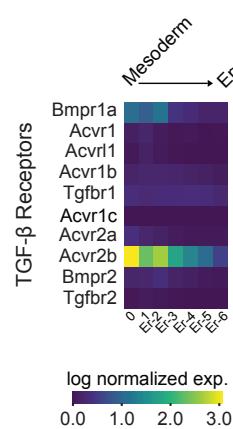


D

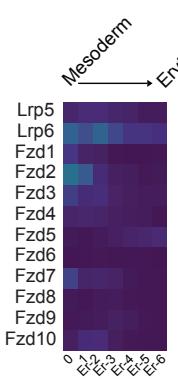
Early vascular differentiation



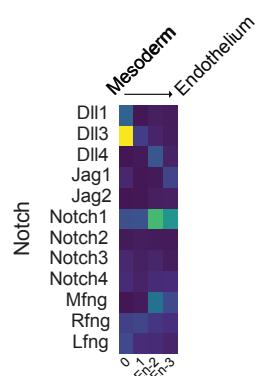
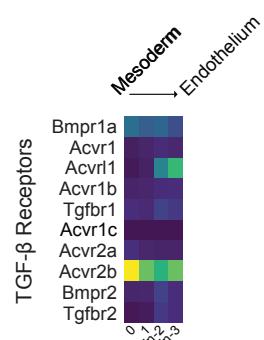
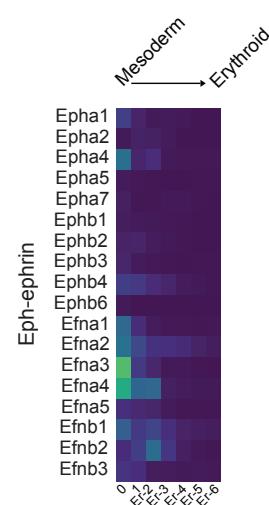
E



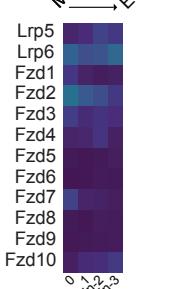
Wnt Receptors



Eph-ephrin



Wnt Receptors



Eph-ephrin

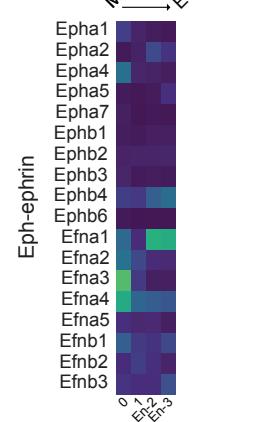
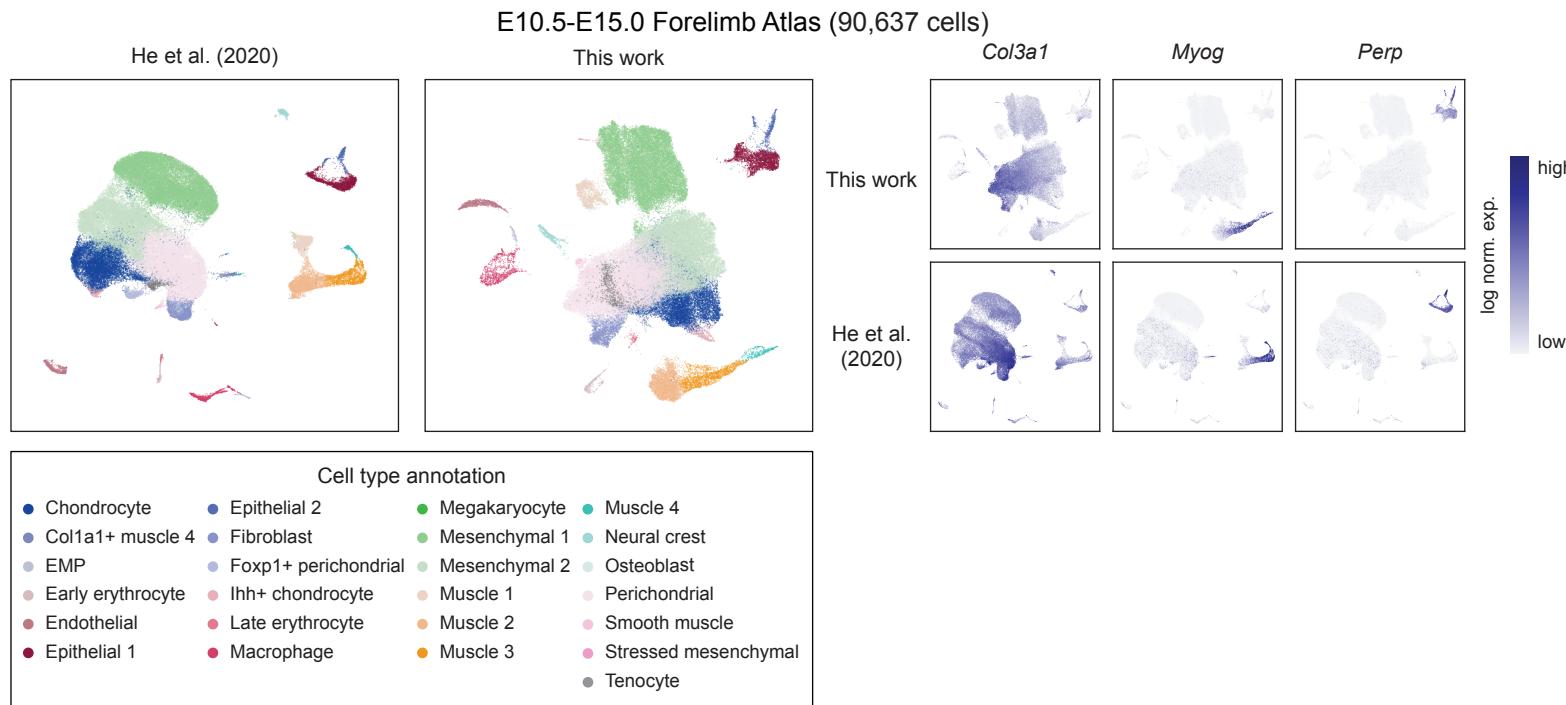
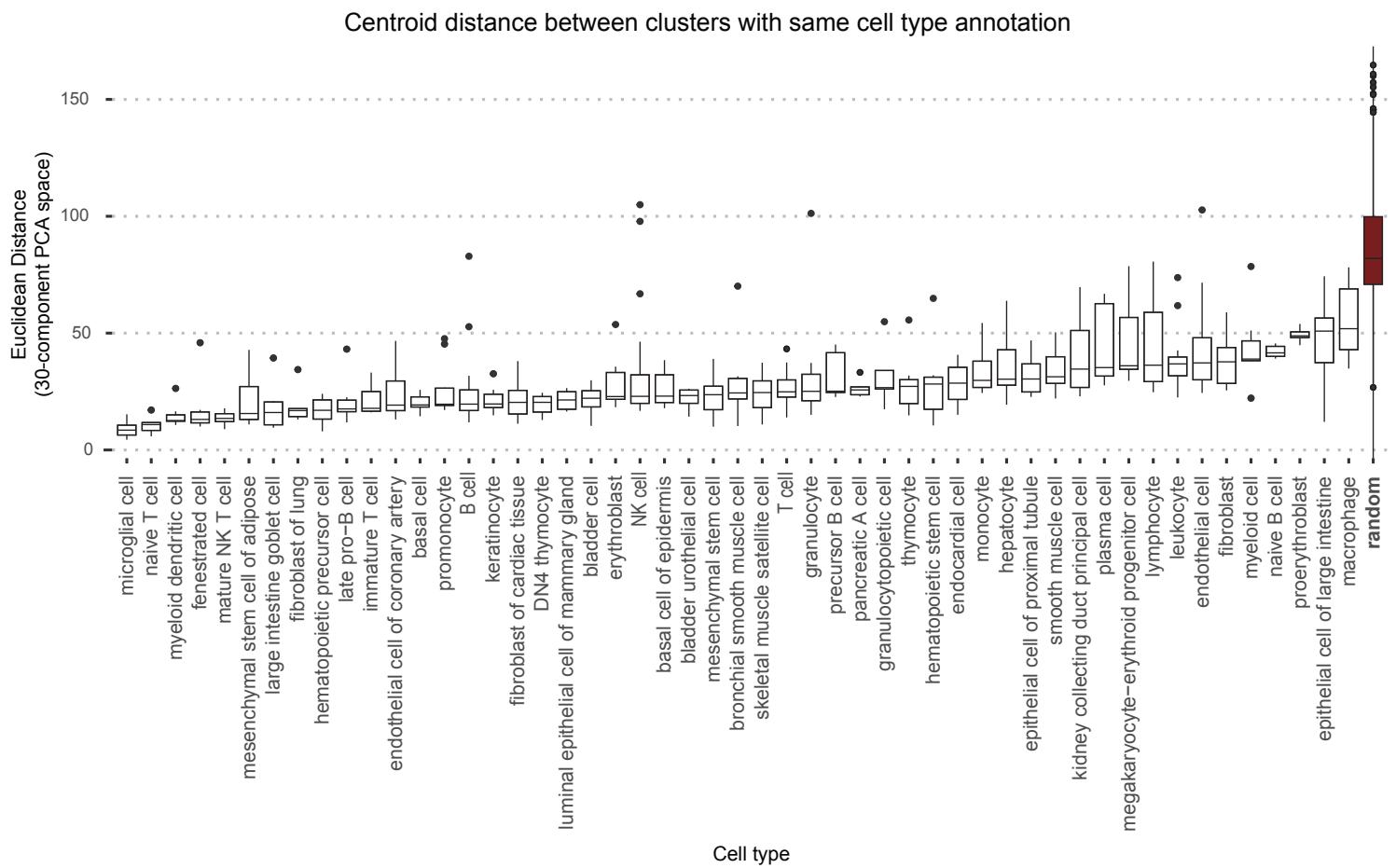


Figure 2, Supplement 1

A



B



C

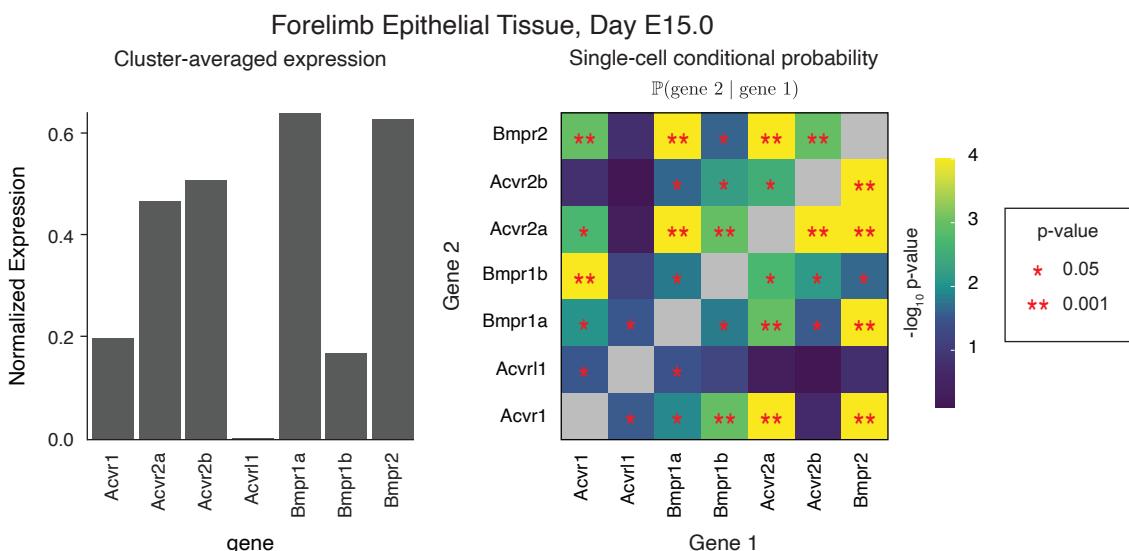
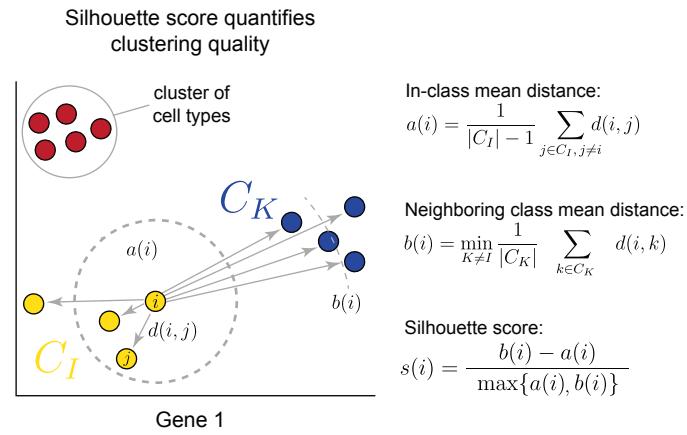


Figure 3, Supplement 1

A



B

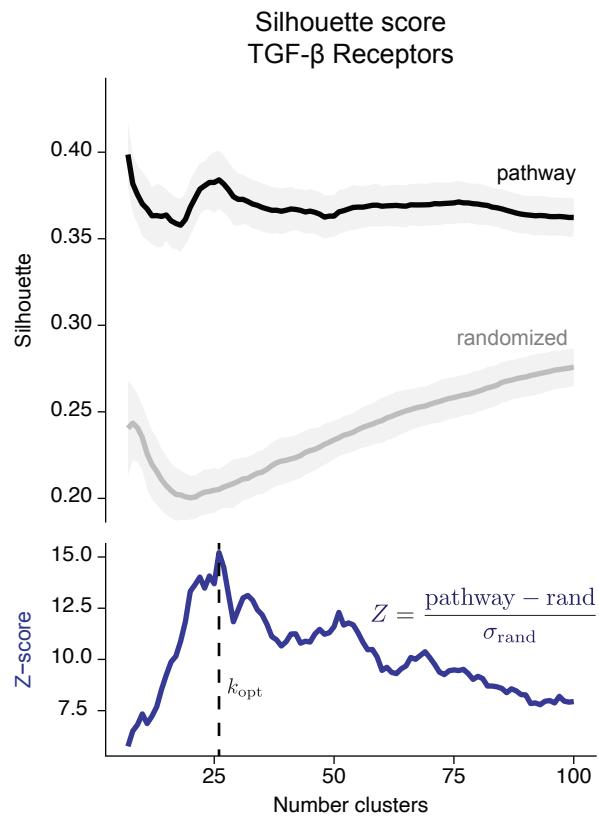
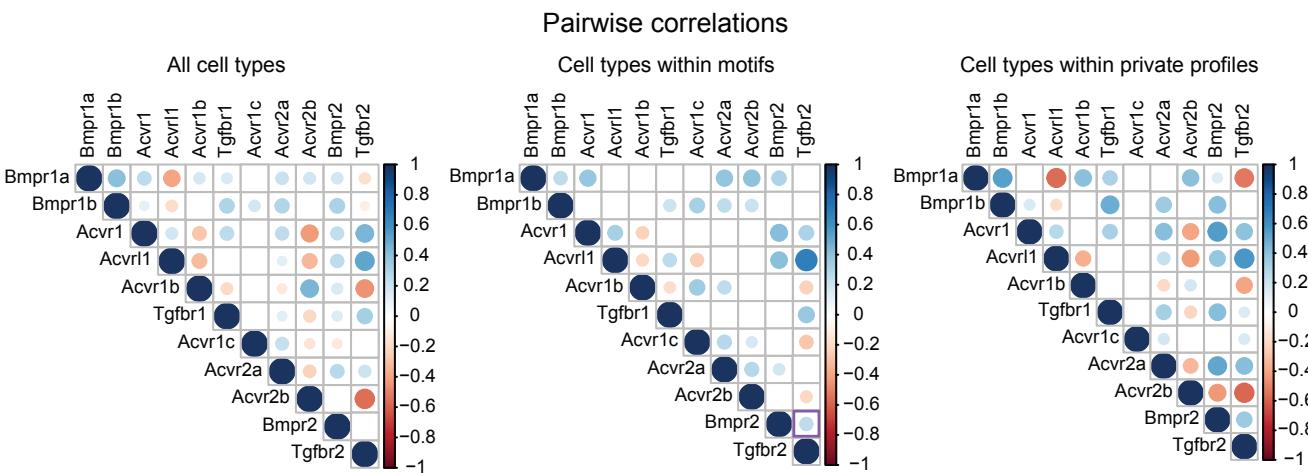


Figure 4, Supplement 1

A



B

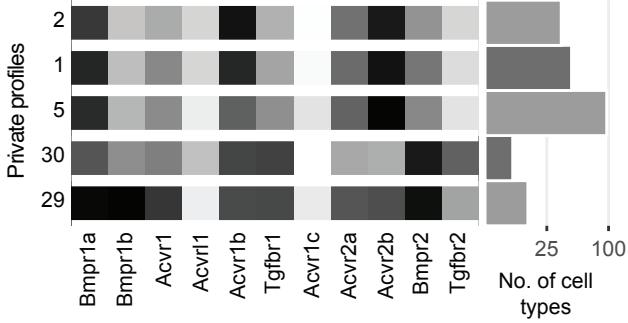
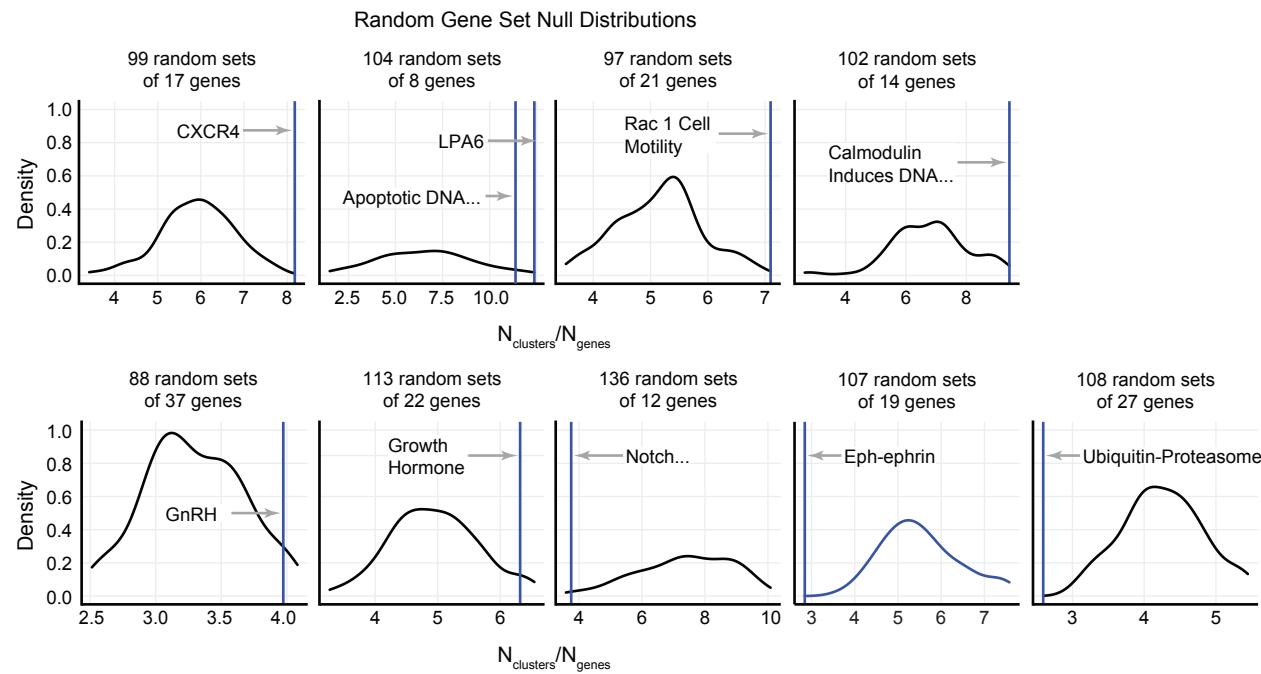


Figure 5, Supplement 1

A



B

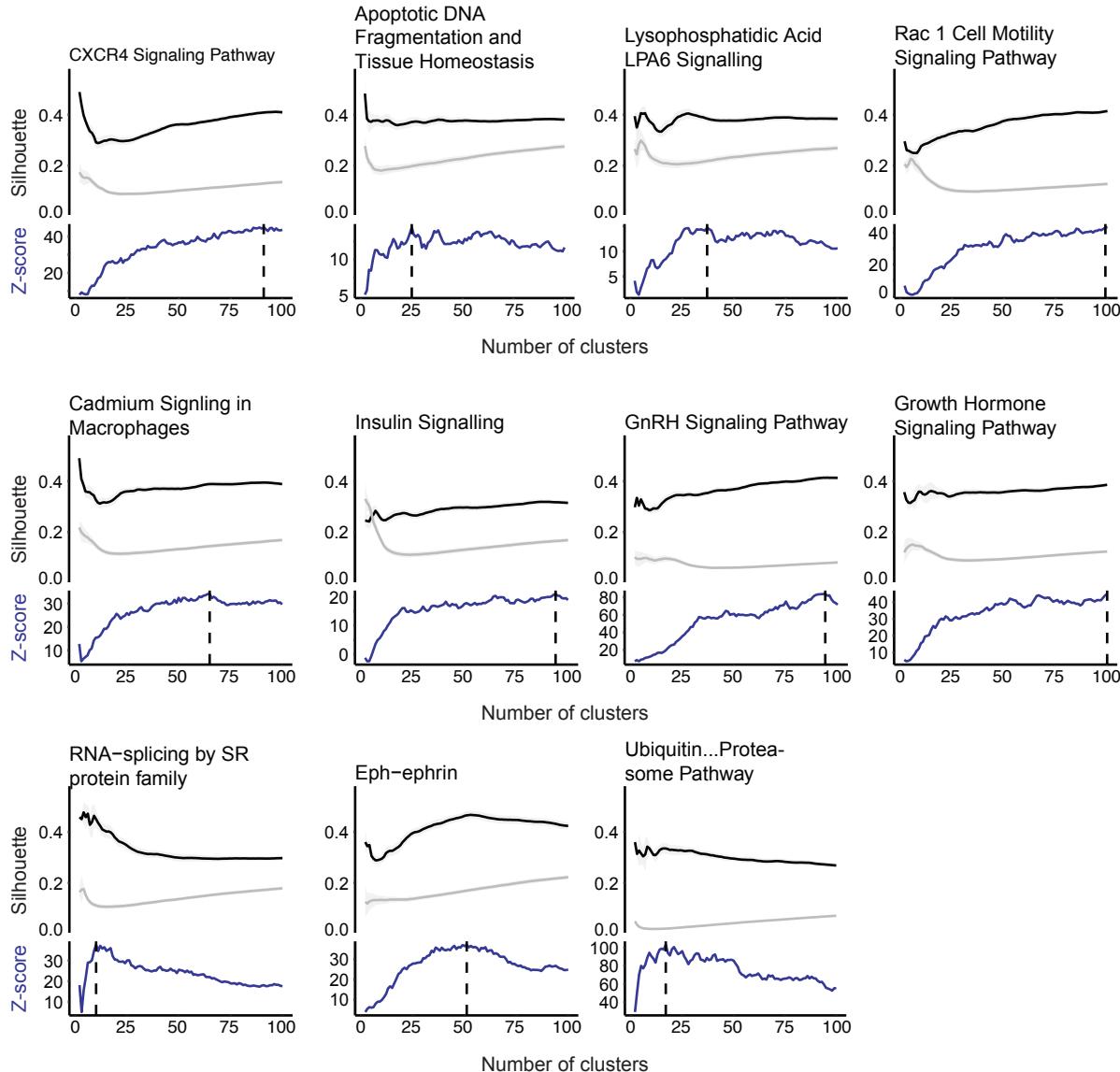
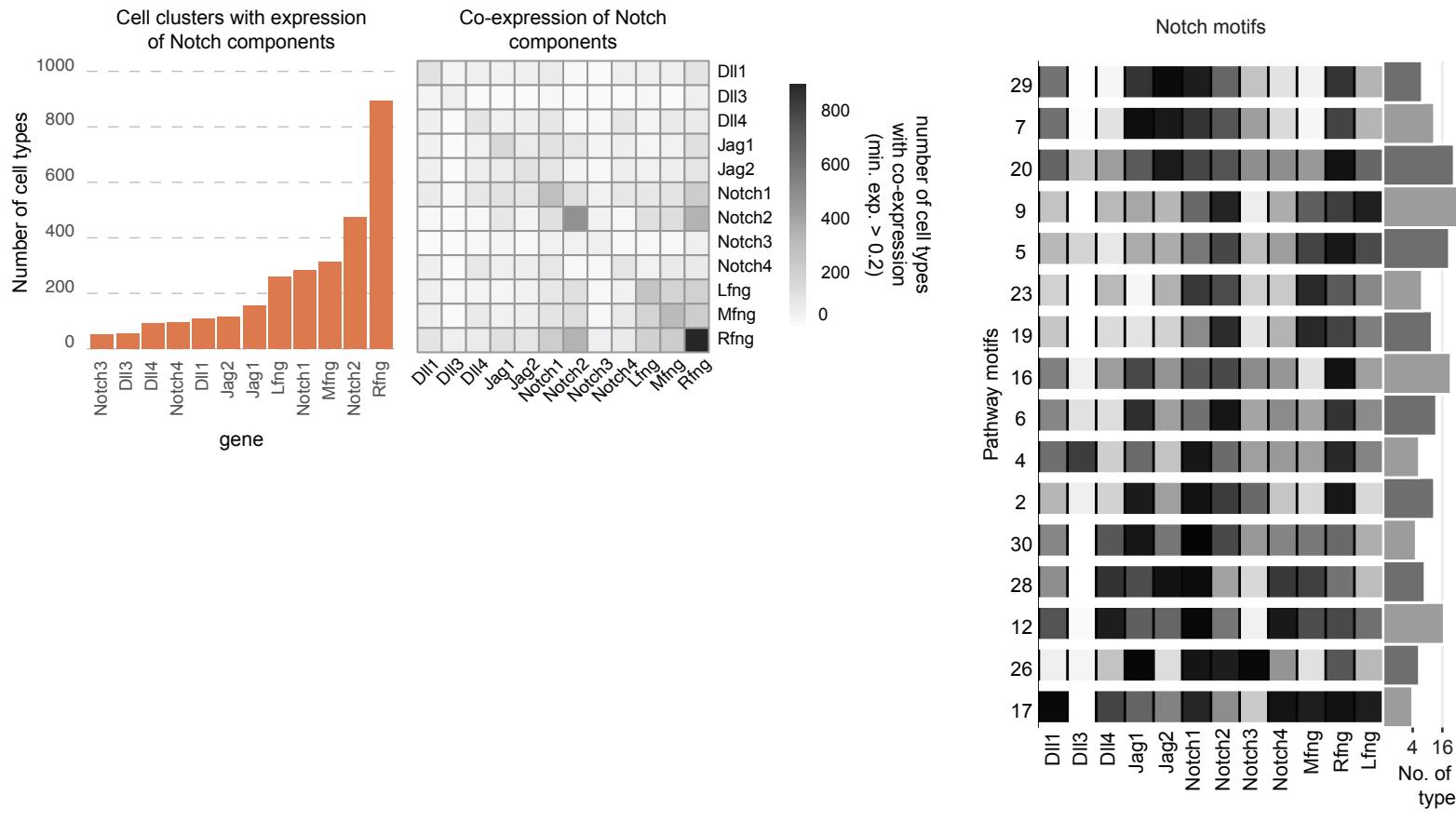
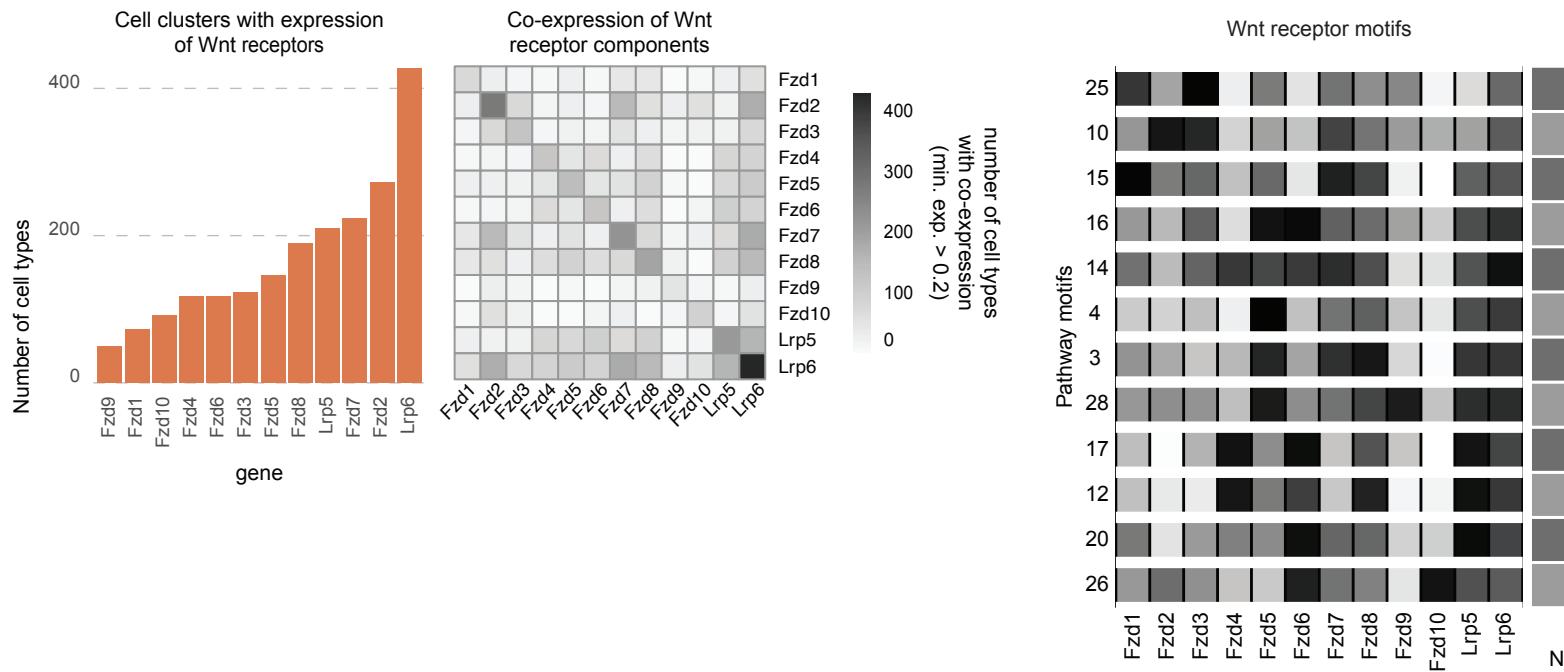


Figure 5 Supplement 2

A



B



C

Figure 3, Supplement 2

