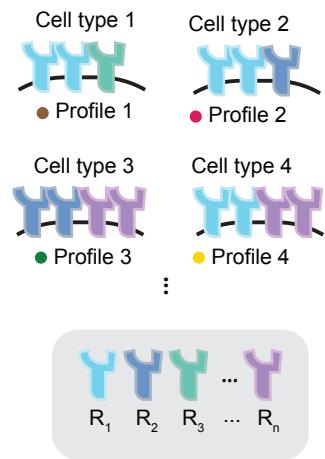


Figure 1: Pathway expression profiles could recur across diverse cell types

A

Receptor expression profiles



B

Pathway profiles could be...

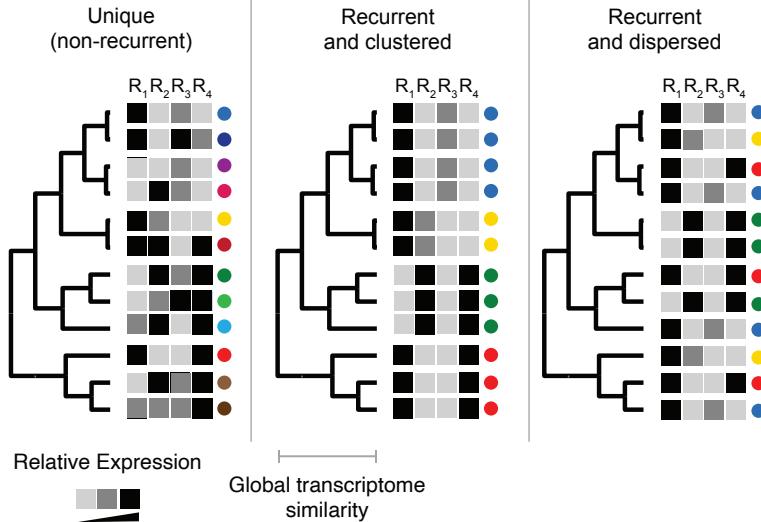
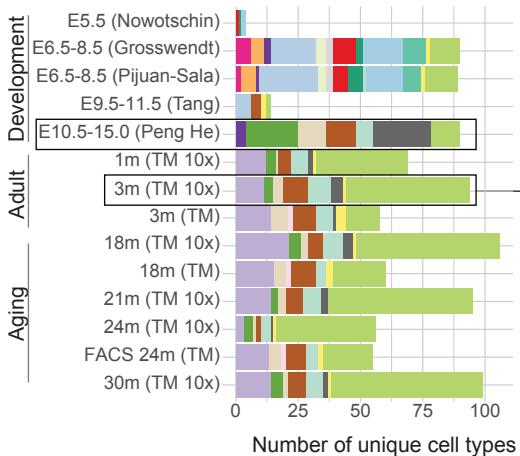


Figure 2: Pathway expression profiles could recur across diverse cell types

A

Multiple mouse cell atlas datasets



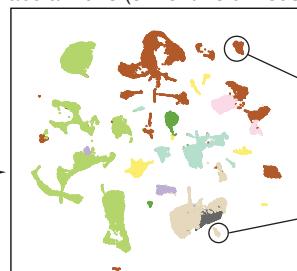
Cell type class

| | | |
|---------------|--------------|------------------|
| Blood | Epiblast | Mesenchymal |
| Brain/Neurons | Epithelium | Mesoderm |
| Connective | Ex Ectoderm | Muscle |
| Ectoderm | Gut | Neural crest |
| Endoderm | Heart | Organ specific |
| Endothelial | Keratinocyte | Primitive streak |
| | | Spinal cord |

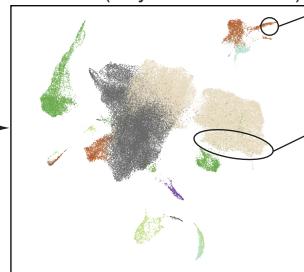
B

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

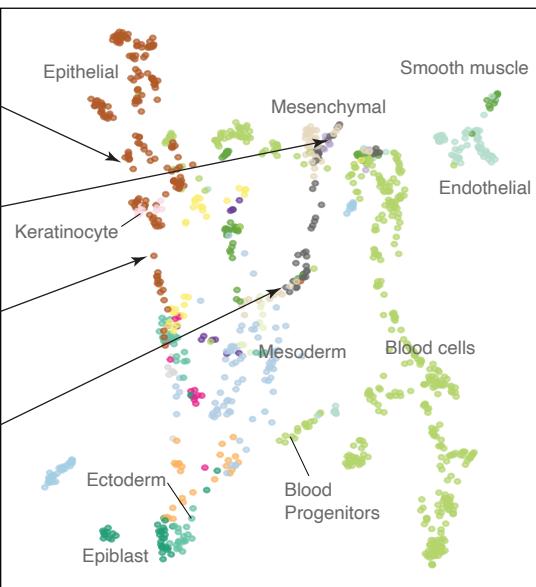
Tabula muris (3 month old mouse)



Forelimb (Days E10.5 - E15.0)



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

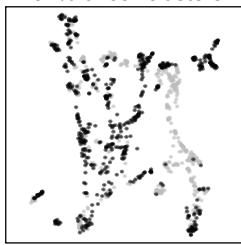


Dataset UMAP coordinates

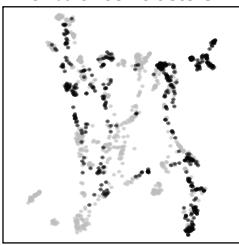
Integrated UMAP coordinates

C

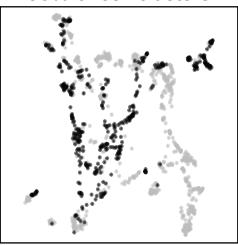
TGF-β
52% of cell clusters



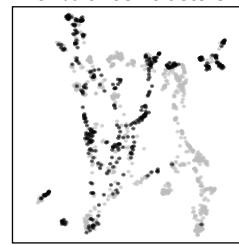
Notch
37% of cell clusters



Eph-ephrin
36% of cell clusters



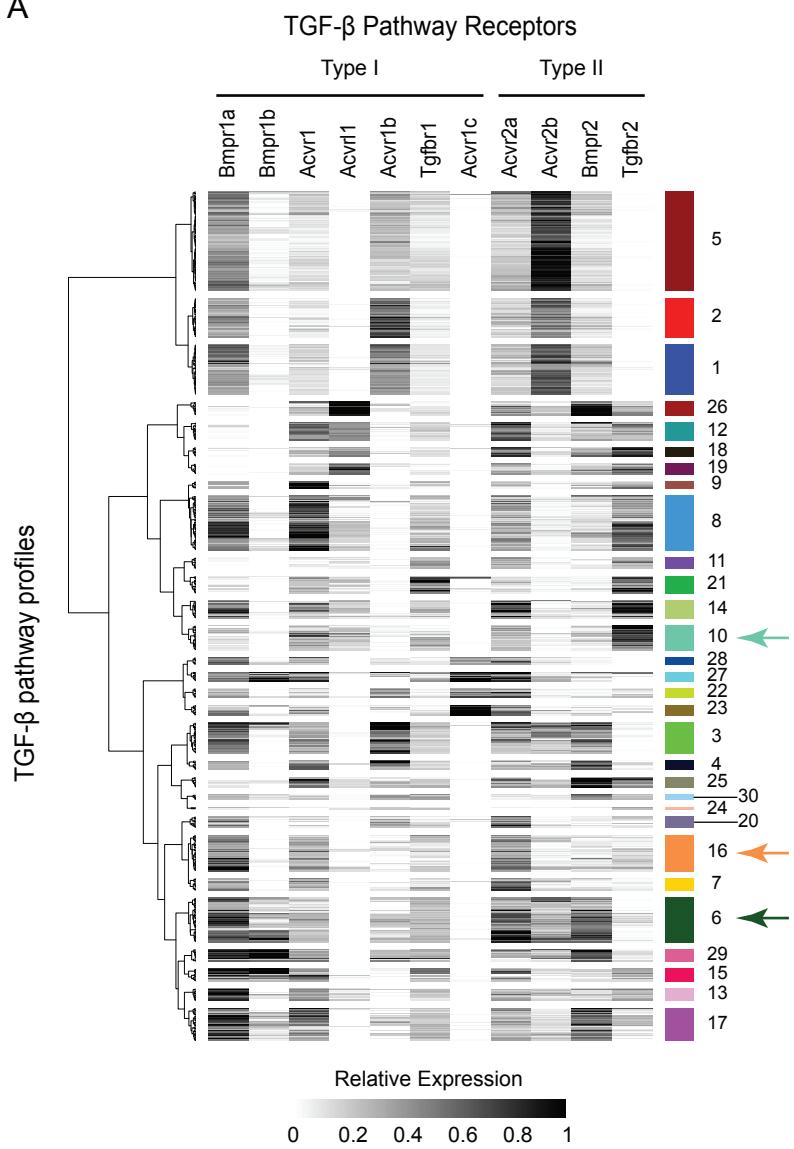
Wnt
31% of cell clusters



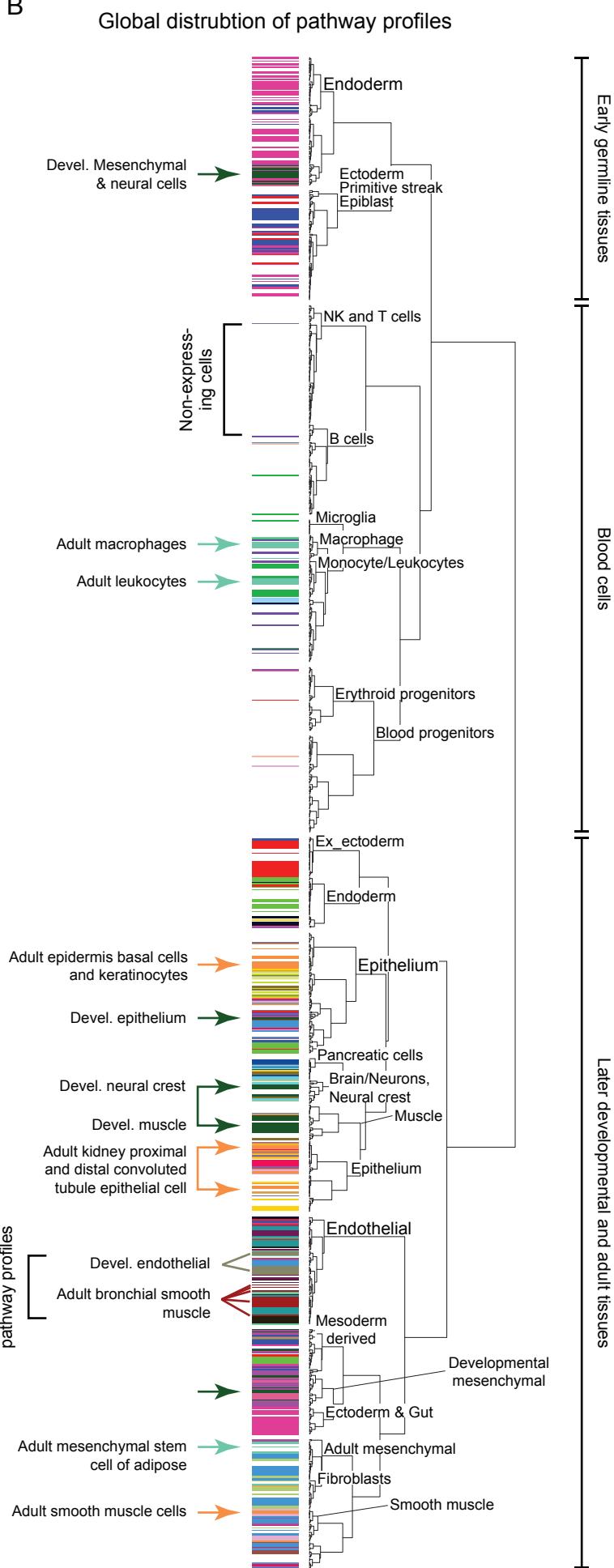
Dataset UMAP coordinates

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

A



B



C

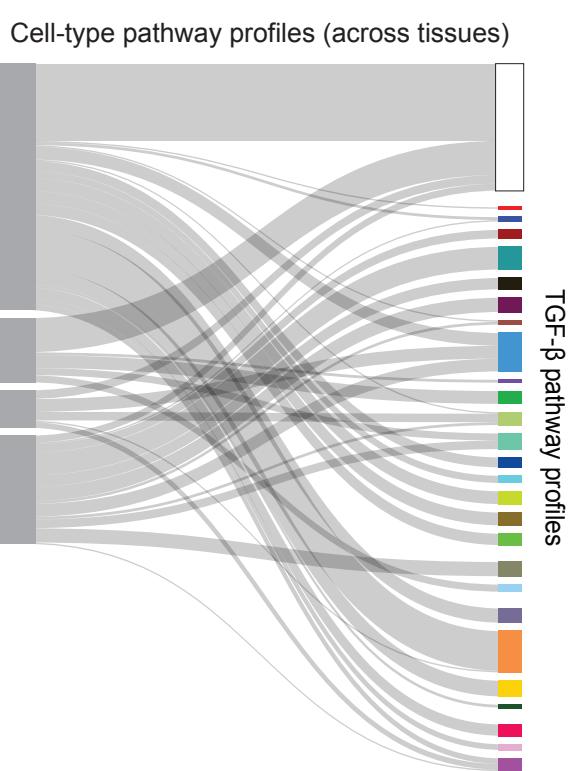
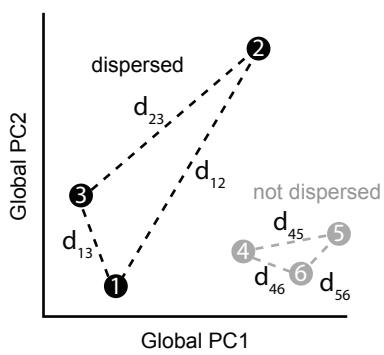


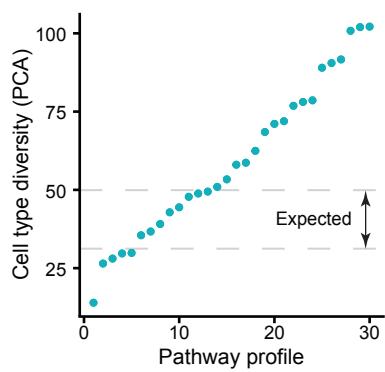
Figure 4: TGF- β expression motifs are dispersed across cell types and organs

A Pairwise distance computation (schematic)

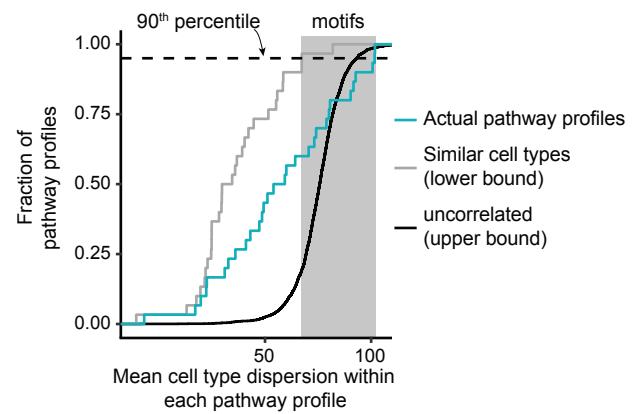
(Actual computation occurs in 100-dimensional PCA space)



Number of cell types with TGF- β profile

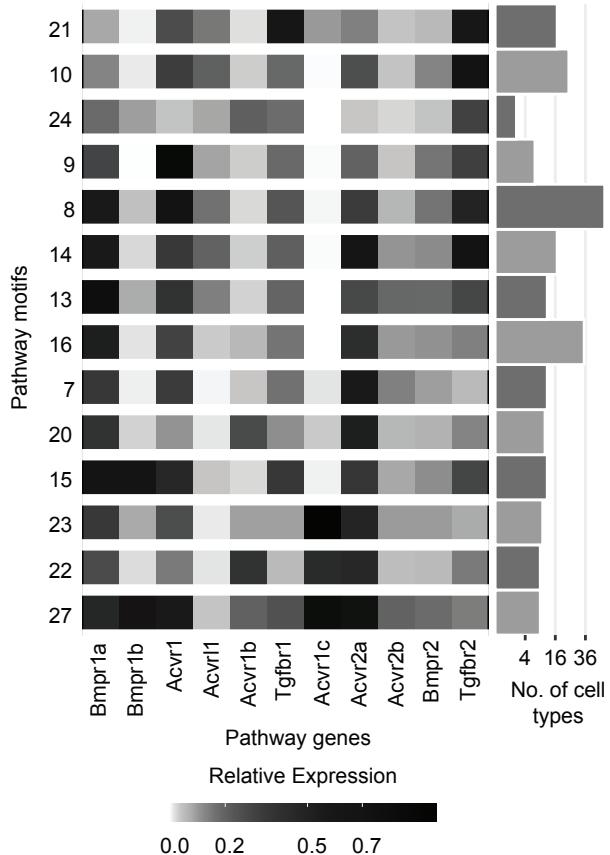


B



C

Broadly Dispersed TGF- β Motifs



D

Broadly Dispersed TGF- β Motifs

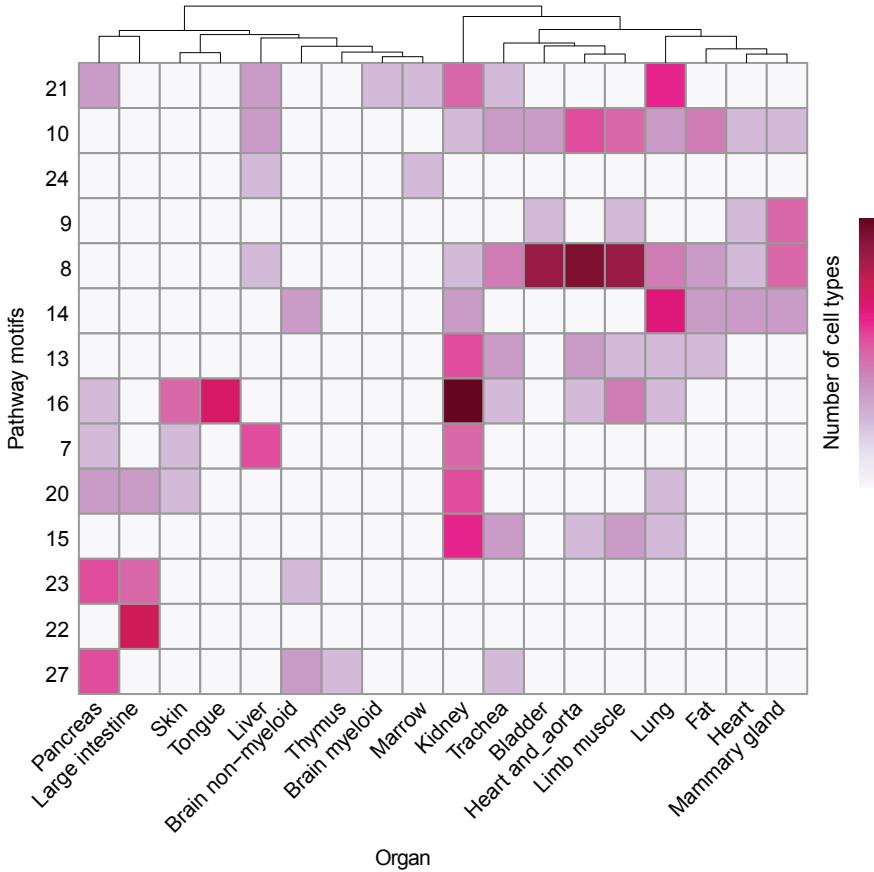
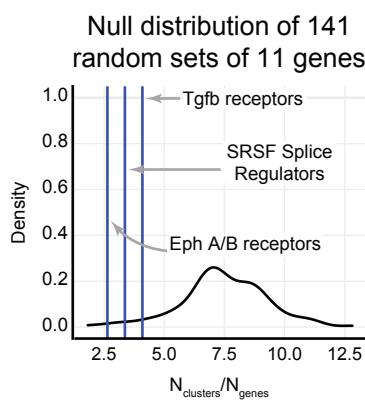
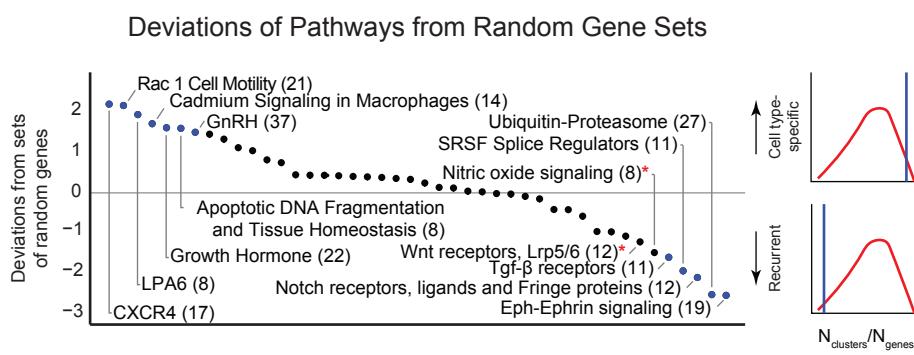


Figure 5: Wnt and Notch also show broadly dispersed recurrent pathway expression motifs

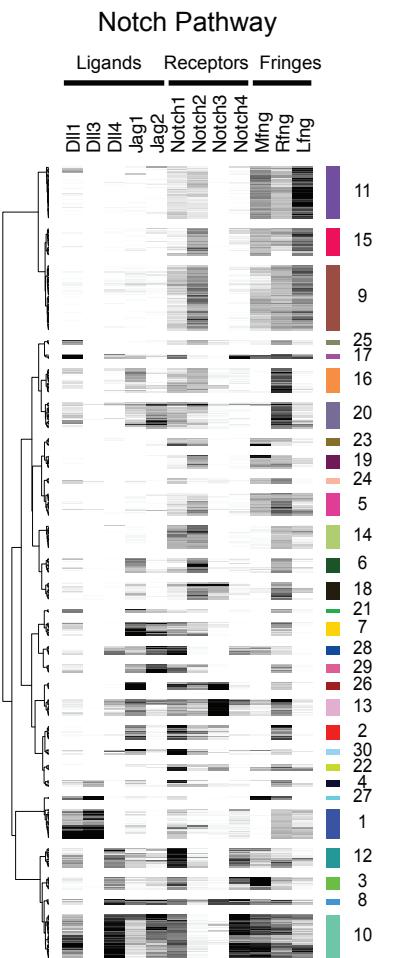
A



B



C



G

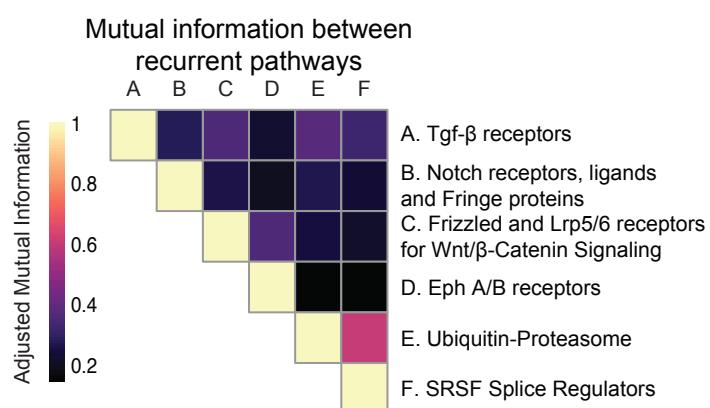
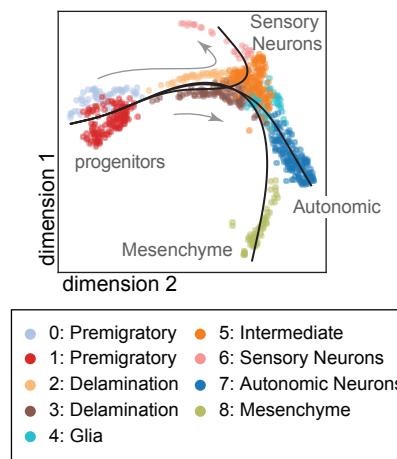


Figure 5:

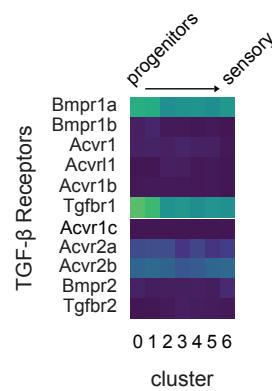
Developmental signaling pathways show distinct dynamics in neural crest differentiation

A

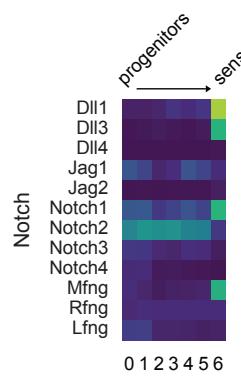
Trunk Neural Crest (E9.5)



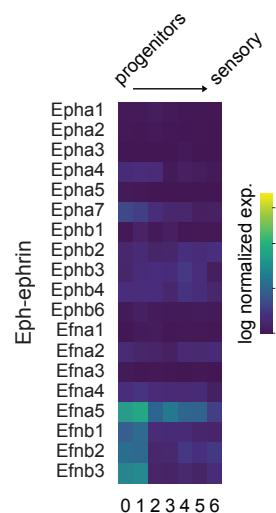
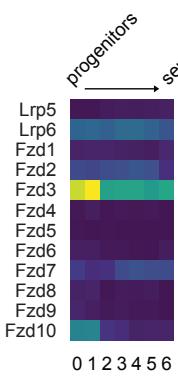
B



C

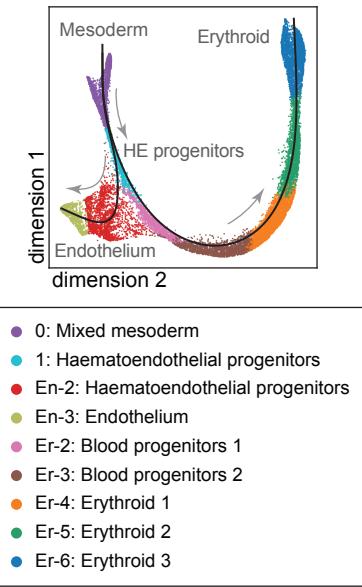


Wnt Receptors

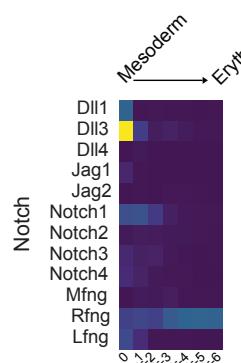
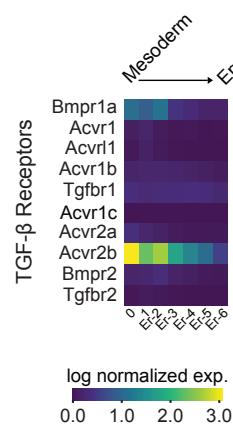


D

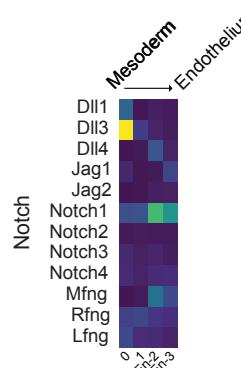
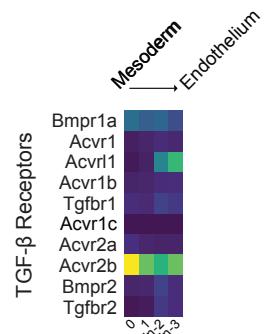
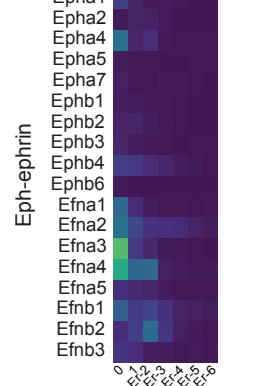
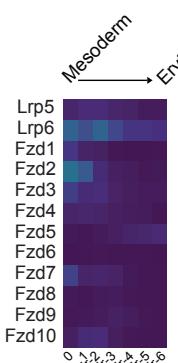
Early vascular differentiation



E



Wnt Receptors



Wnt Receptors

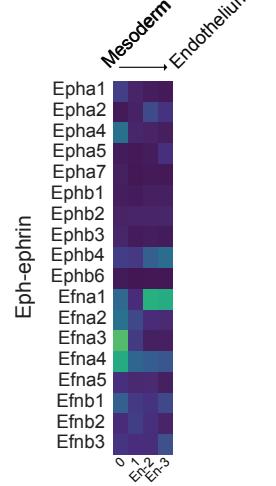
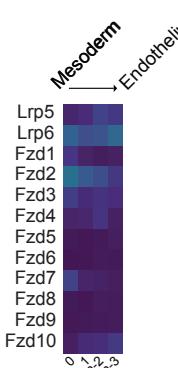
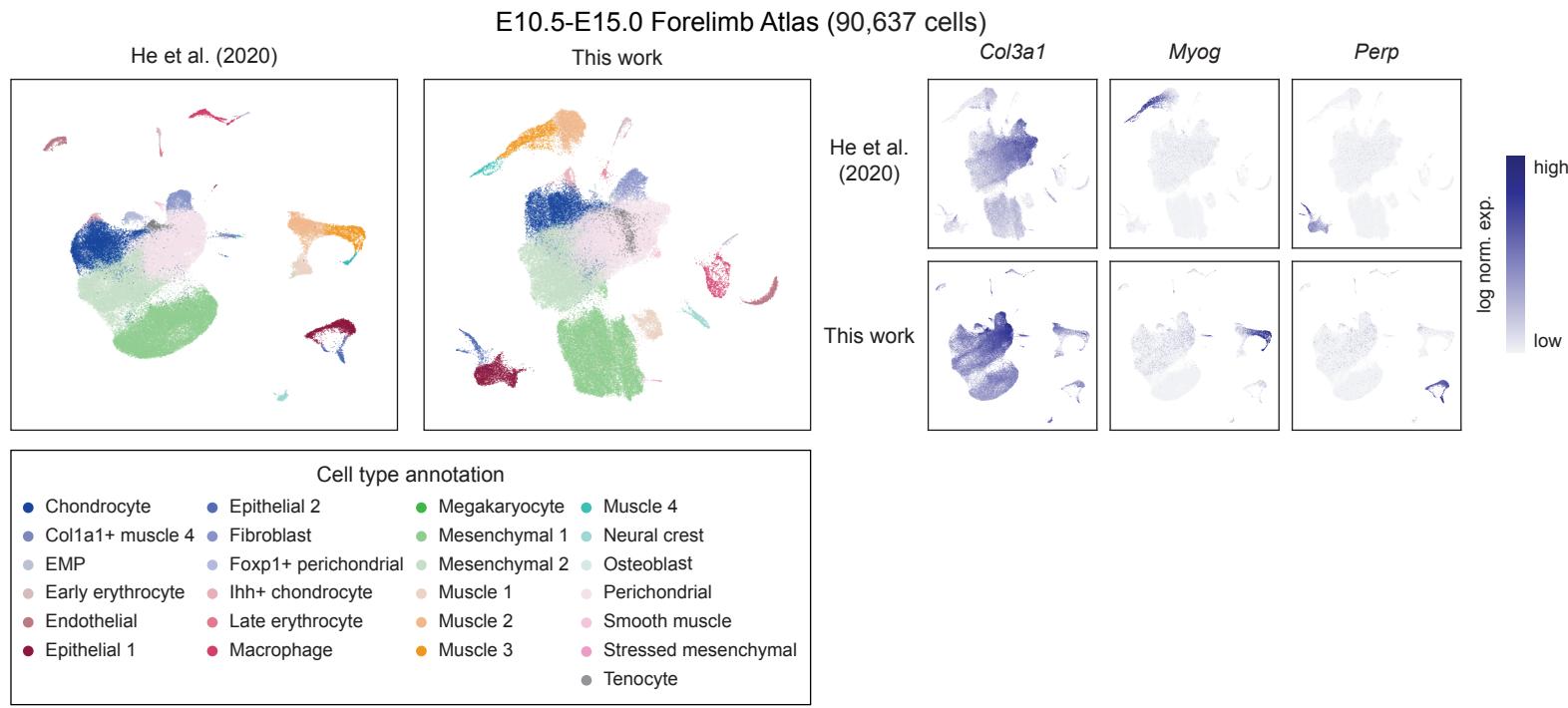
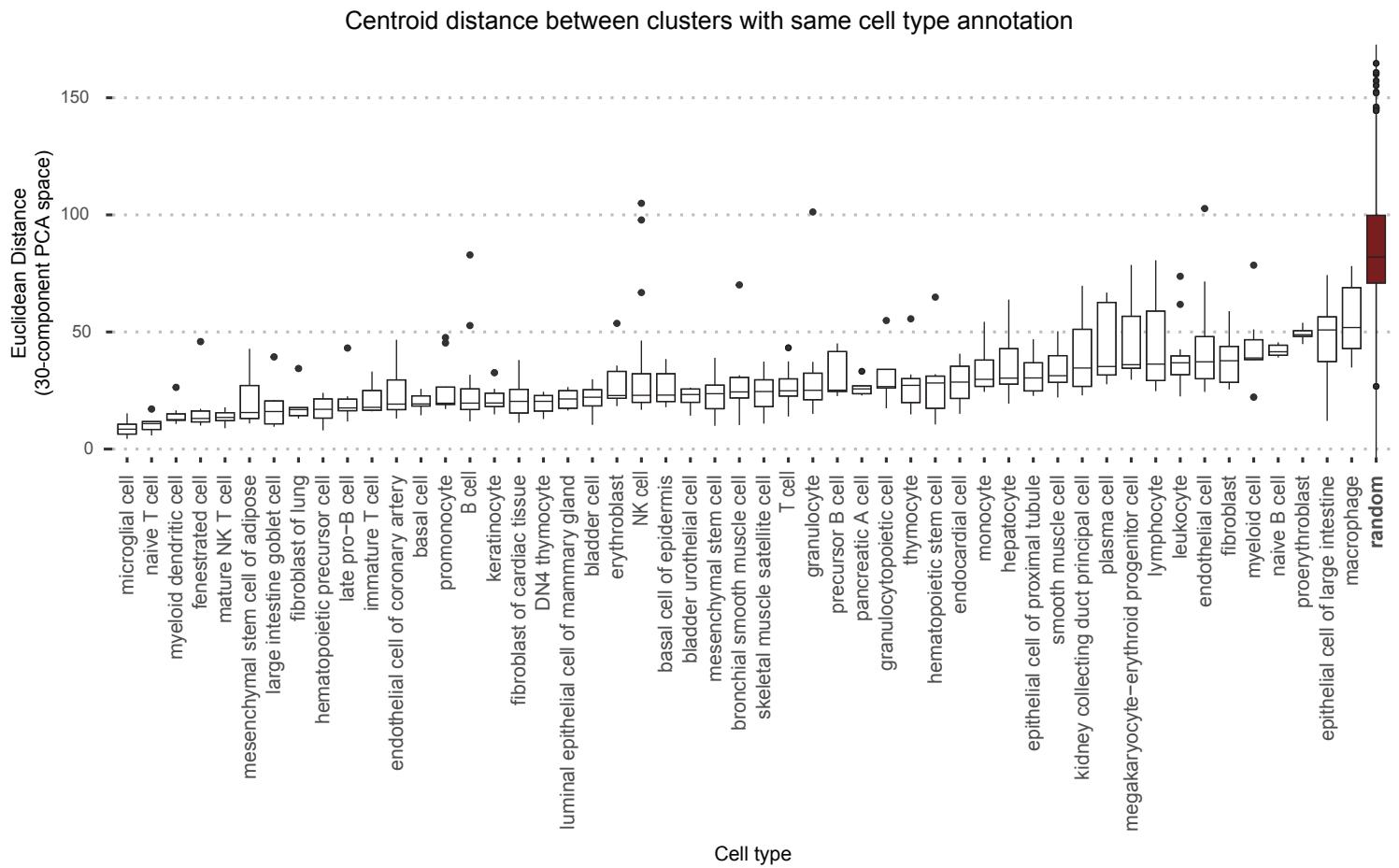


Figure 2, Supplement 1

A



B



C

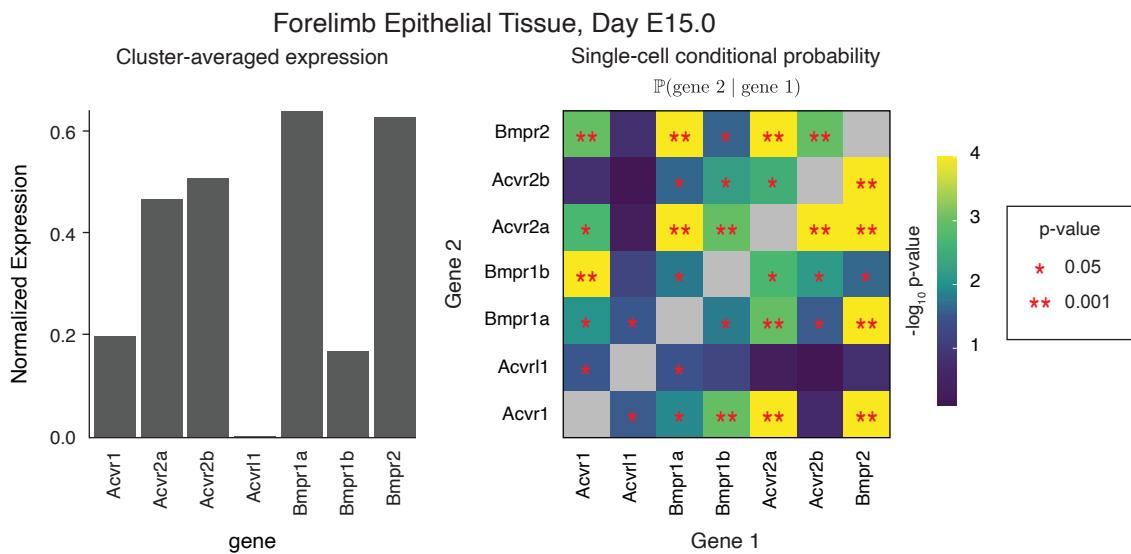
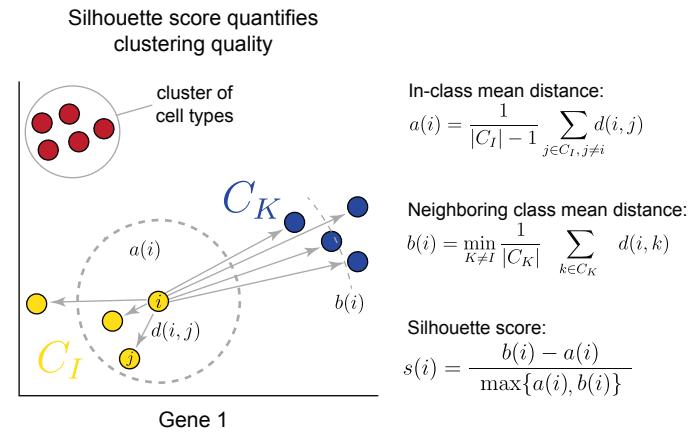


Figure 3, Supplement 1

A



B

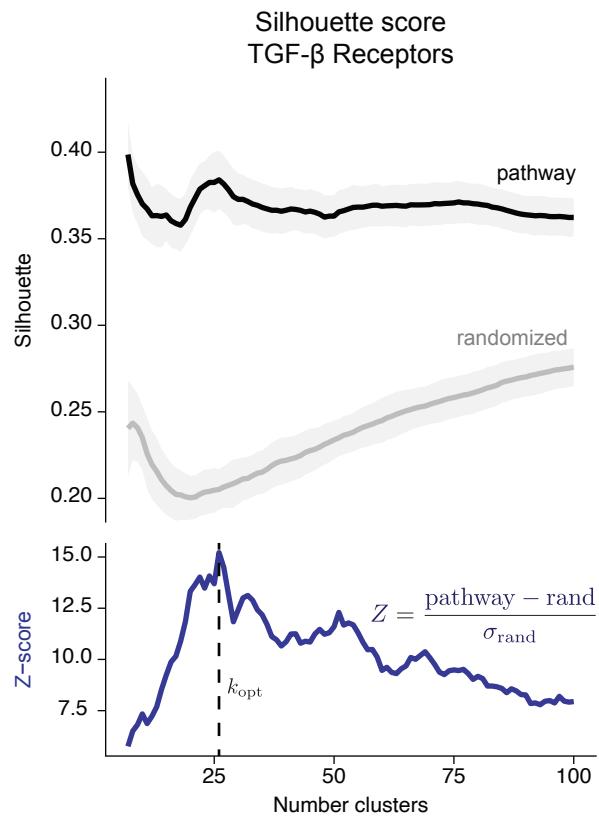
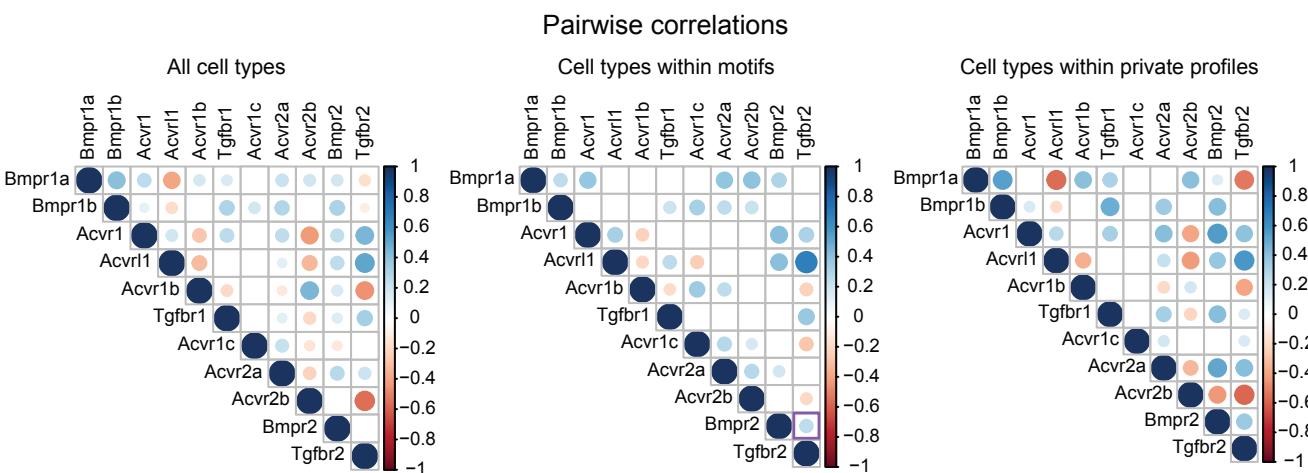


Figure 4, Supplement 1

A



B

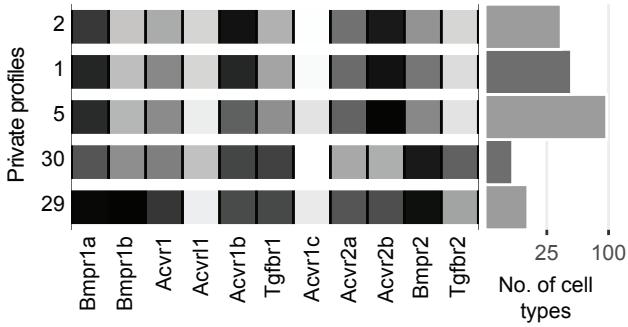
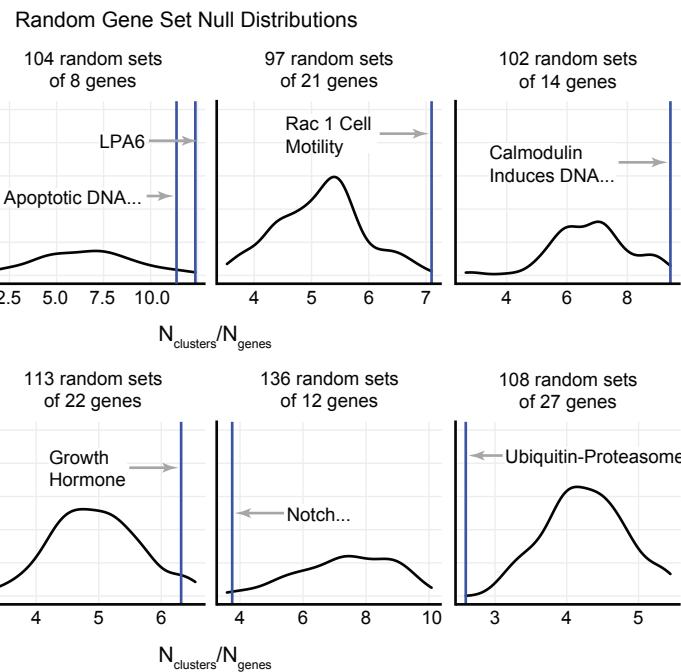


Figure 5, Supplement 1

A



B

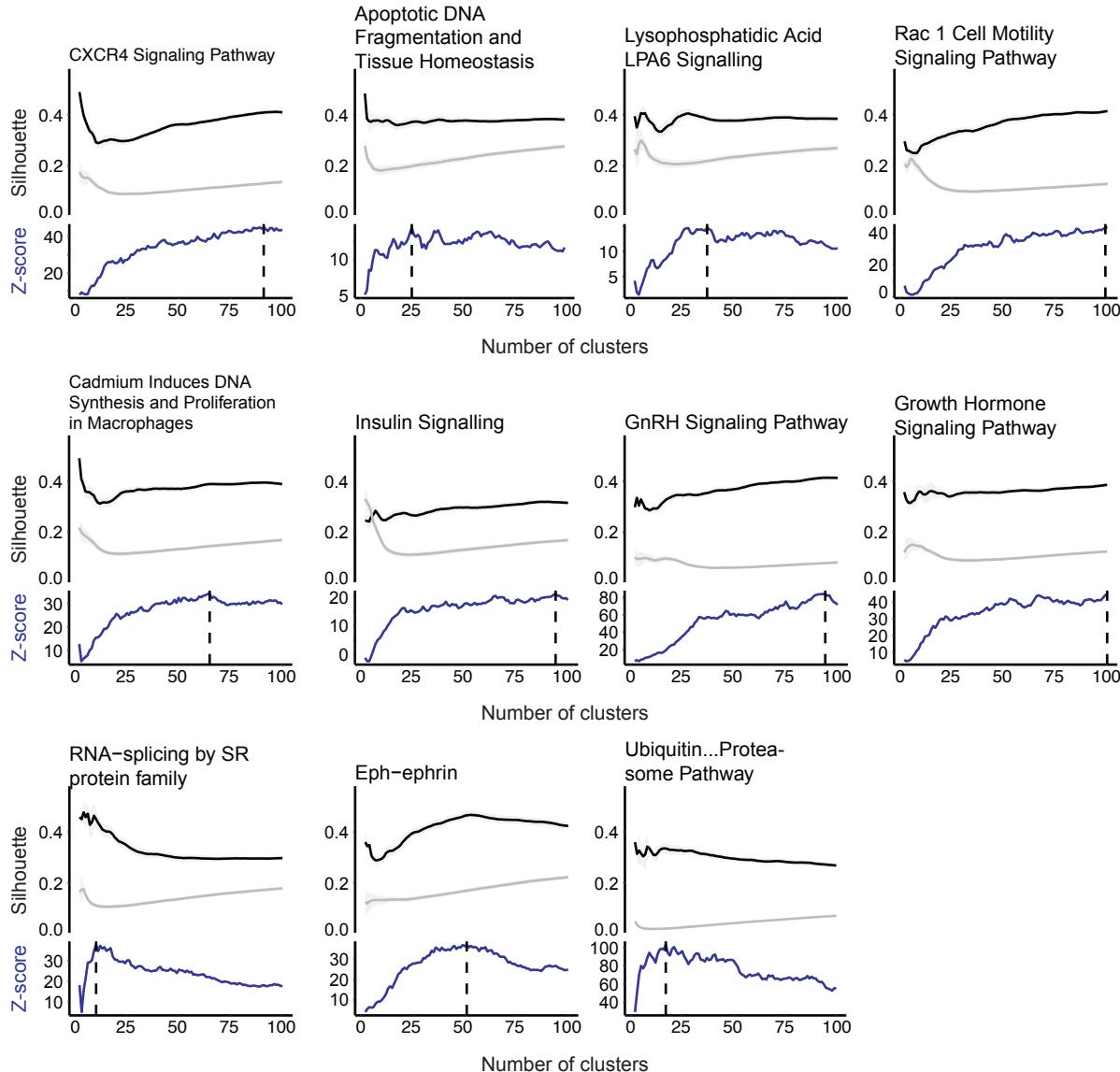
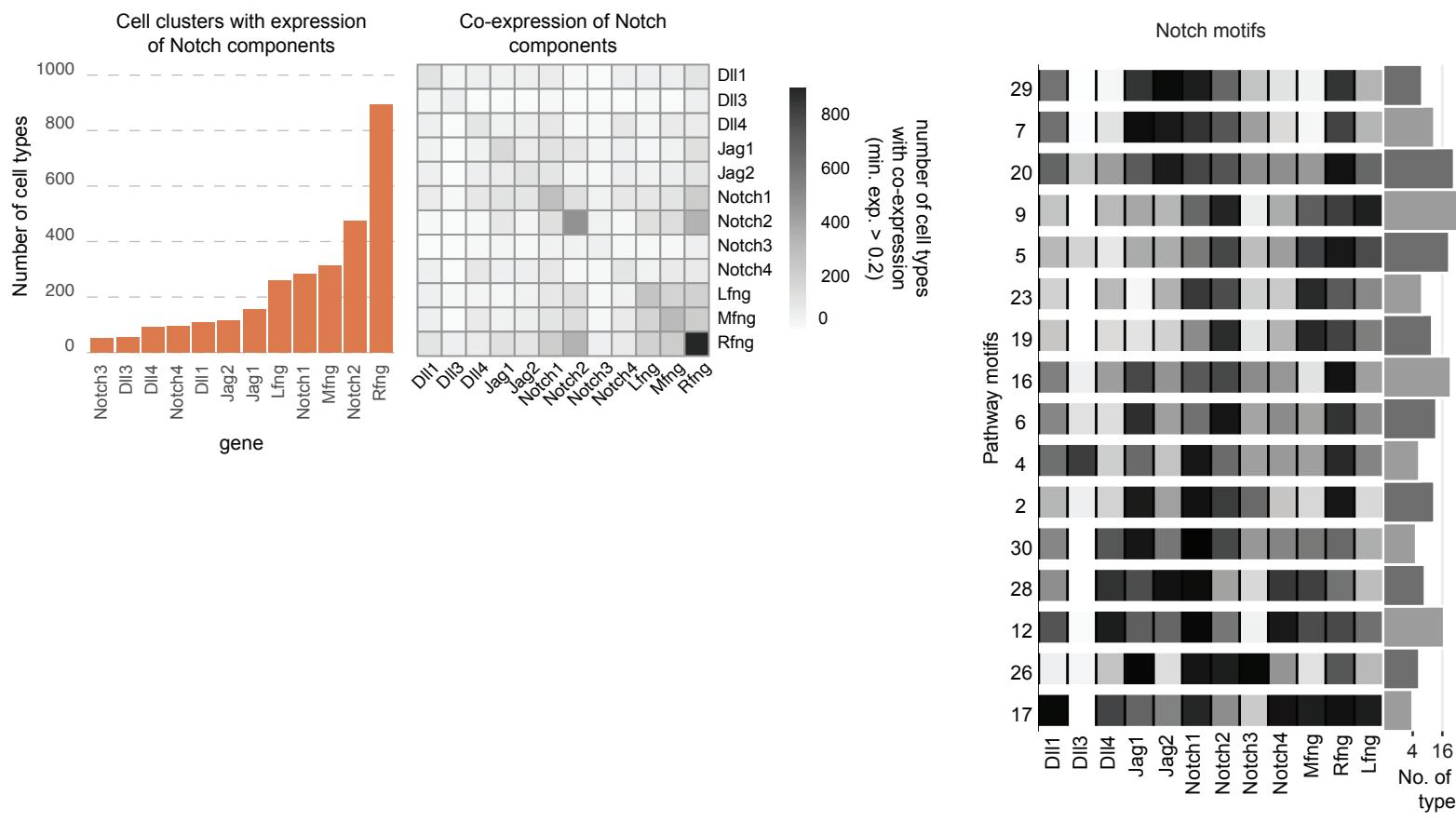
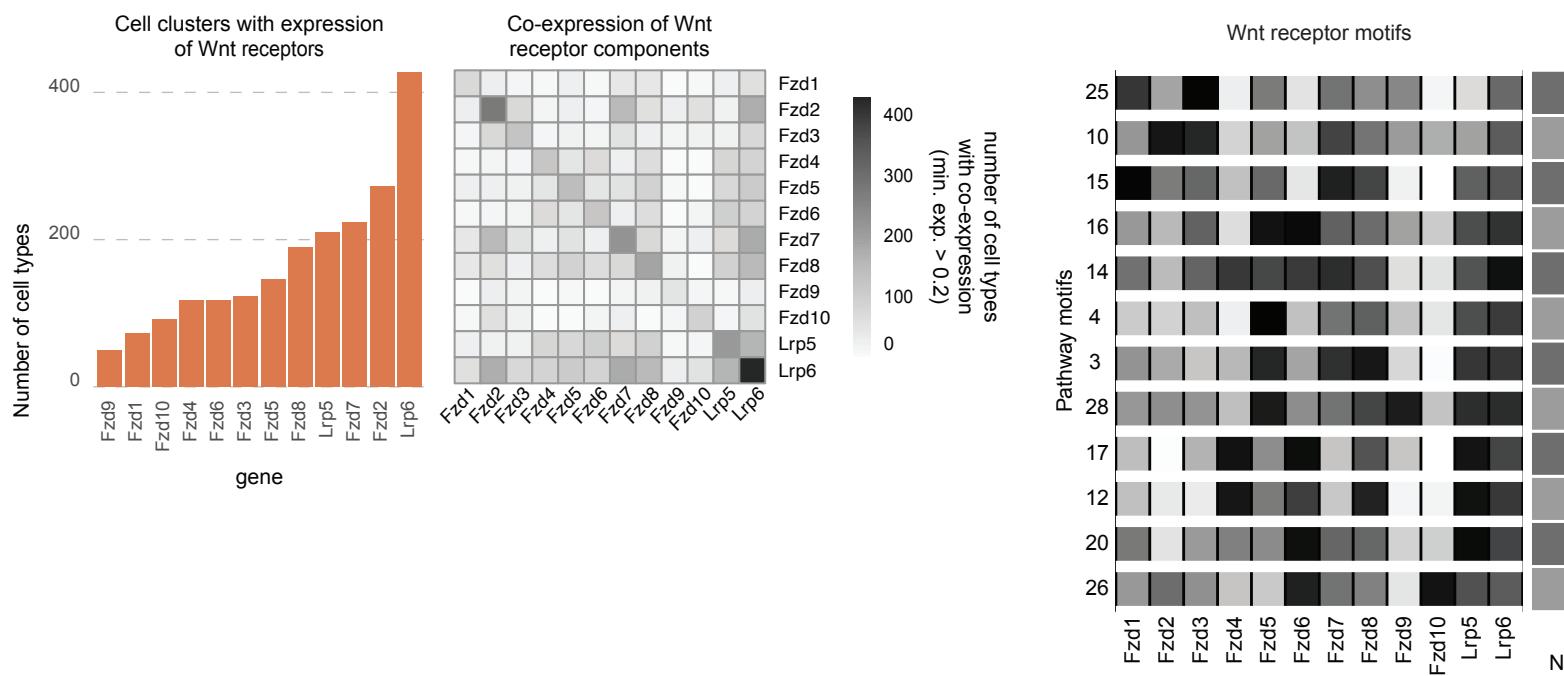


Figure 4 Supplement 2

A



B



C

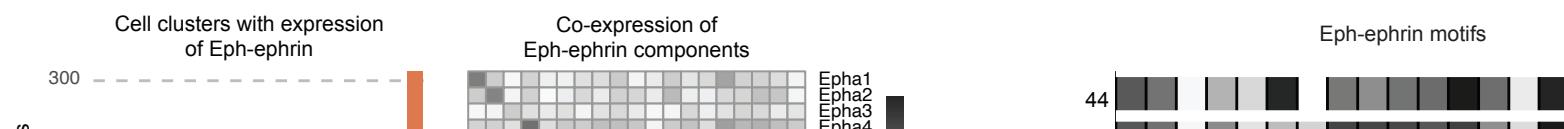


Figure 3, Supplement 2

