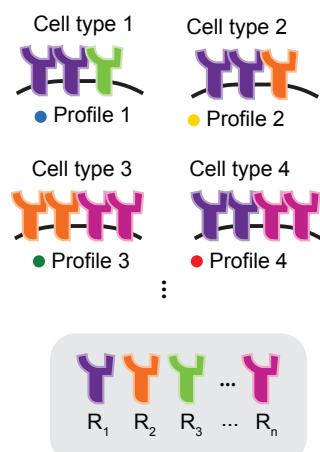


Figure 1: Pathway expression profiles could recur across diverse cell types

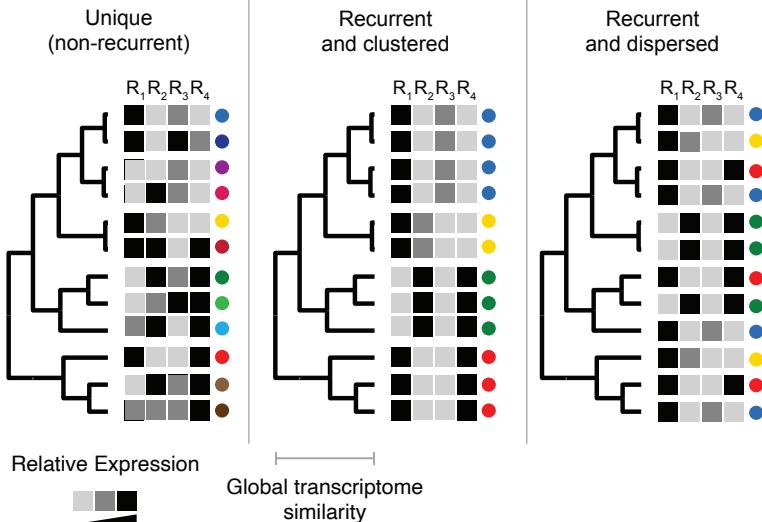
A

Receptor expression profiles



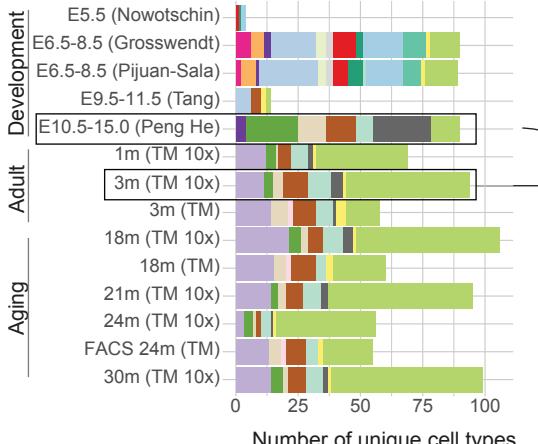
B

Pathway profiles could be...



C

Multiple mouse cell atlas datasets



Cell type class

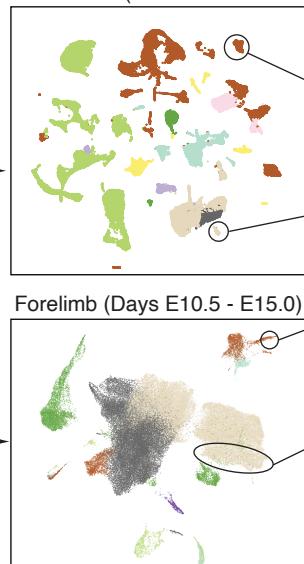
Blood	Epiblast	Mesenchymal
Brain/Neurons	Epithelium	Mesoderm
Connective	Ex Ectoderm	Muscle
Ectoderm	Gut	Organ specific
Endoderm	Heart	Primitve streak
Endothelial	Keratinocyte	Spinal cord

D

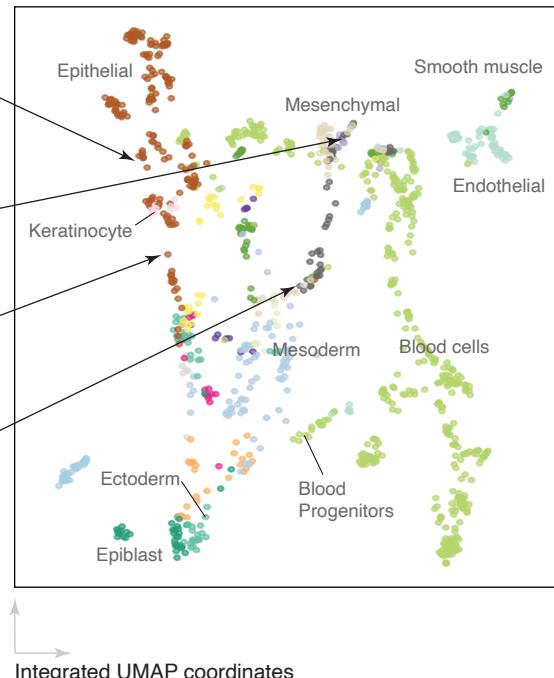
Individual cell atlases
Single-cell transcriptome profiles

1 dot = 1 cell

Tabula muris (3 month old mouse)

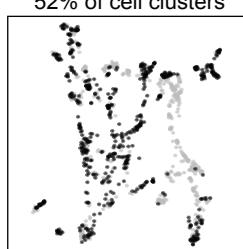


Integrated cell state atlas
Global cluster-averaged profiles
All data sets in (C)
1 dot = 1 cell cluster

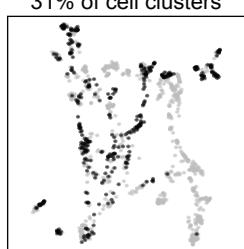


E

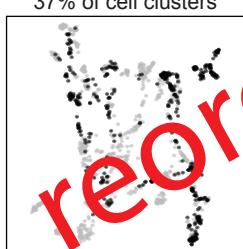
TGF- β
52% of cell clusters



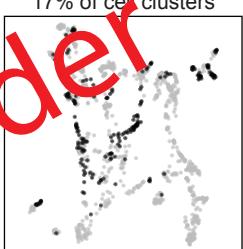
Wnt
31% of cell clusters



Notch
37% of cell clusters



Ephrin
17% of cell clusters

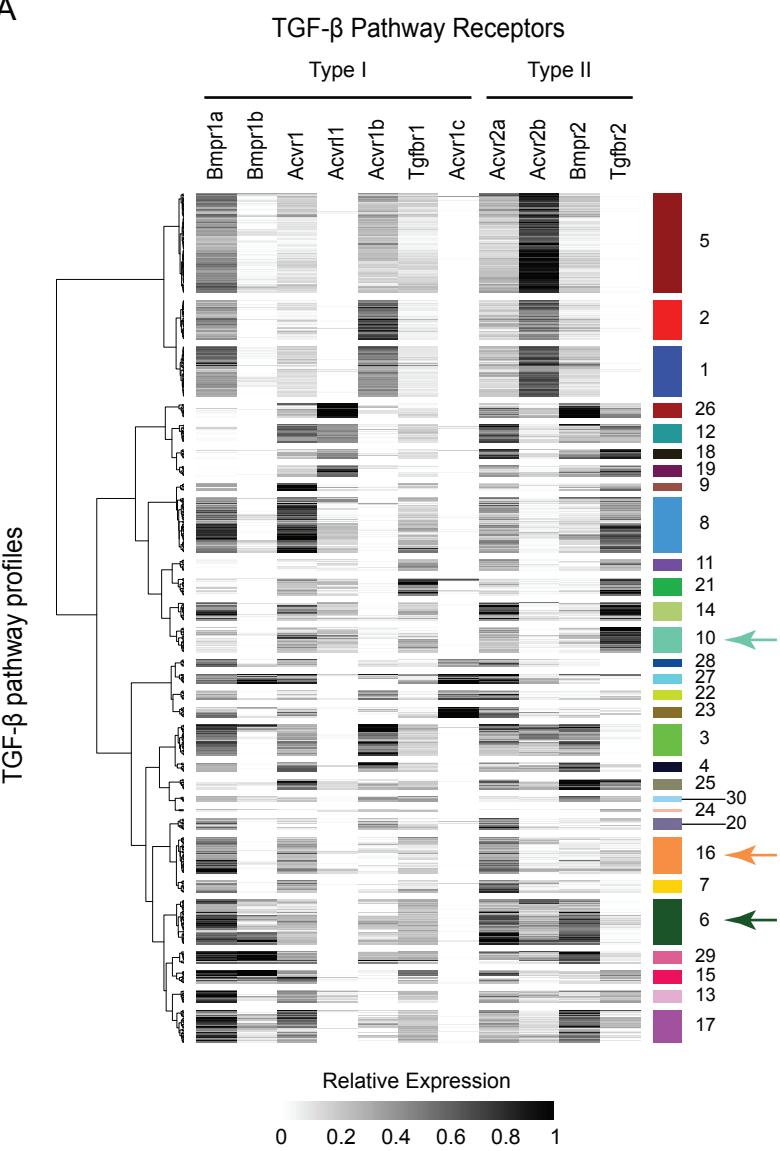


reorder

Dataset UMAP coordinates

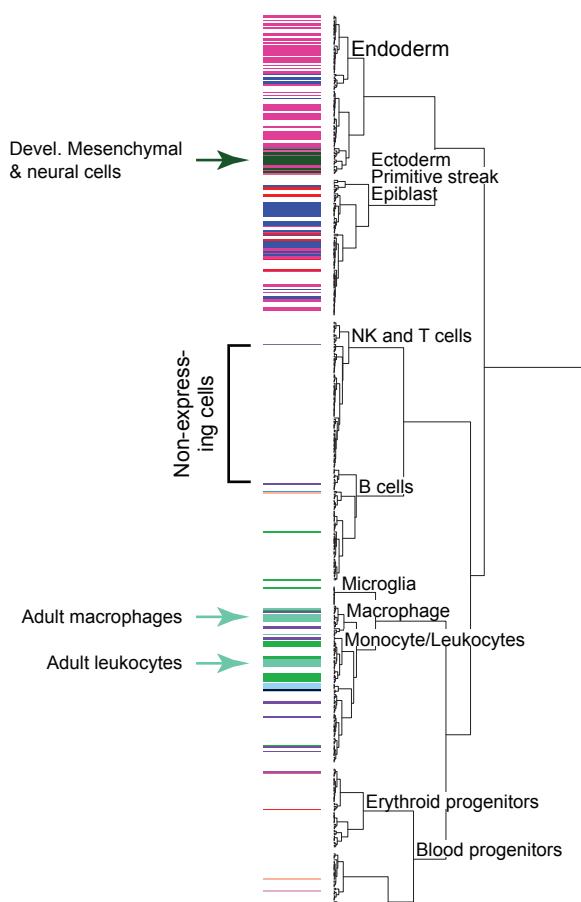
Figure 2: TGF- β Receptors exhibit distinct and recurrent pathway expression profiles

A

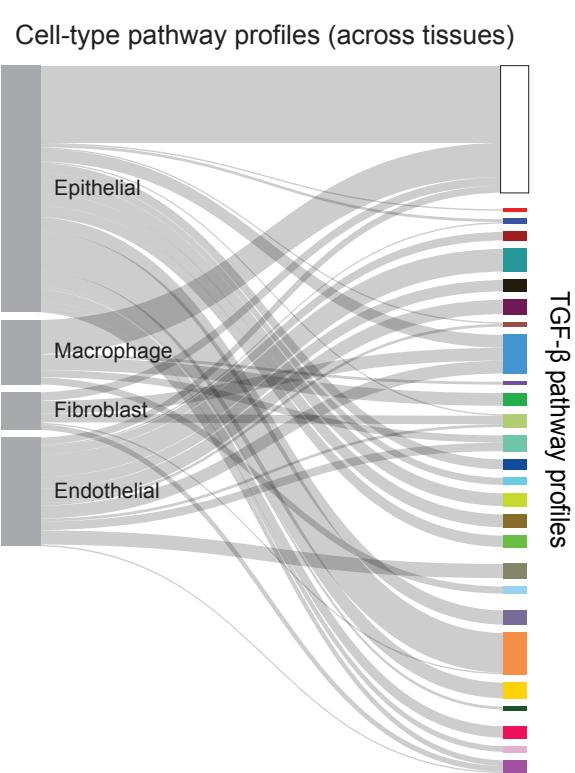


B

Global distribution of pathway profiles



C



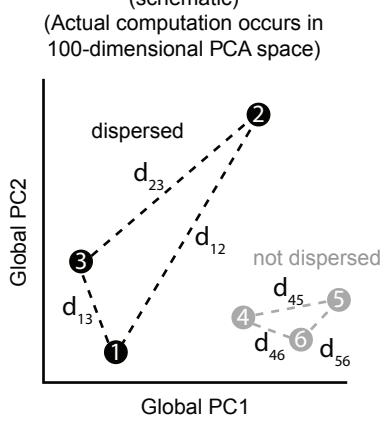
Early germline tissues

Blood cells

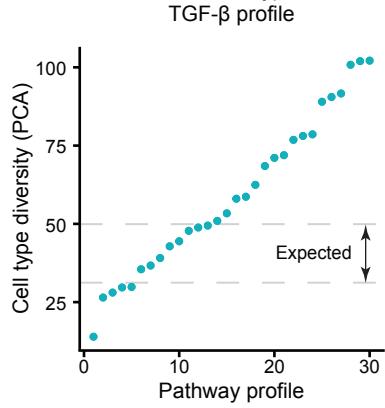
Later developmental and adult tissues

Figure 3: TGF- β expression motifs are dispersed across cell types and organs

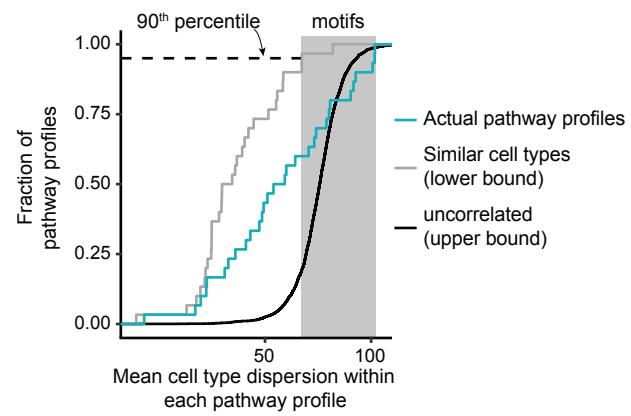
A Pairwise distance computation (schematic)
(Actual computation occurs in 100-dimensional PCA space)



B Number of cell types with TGF- β profile

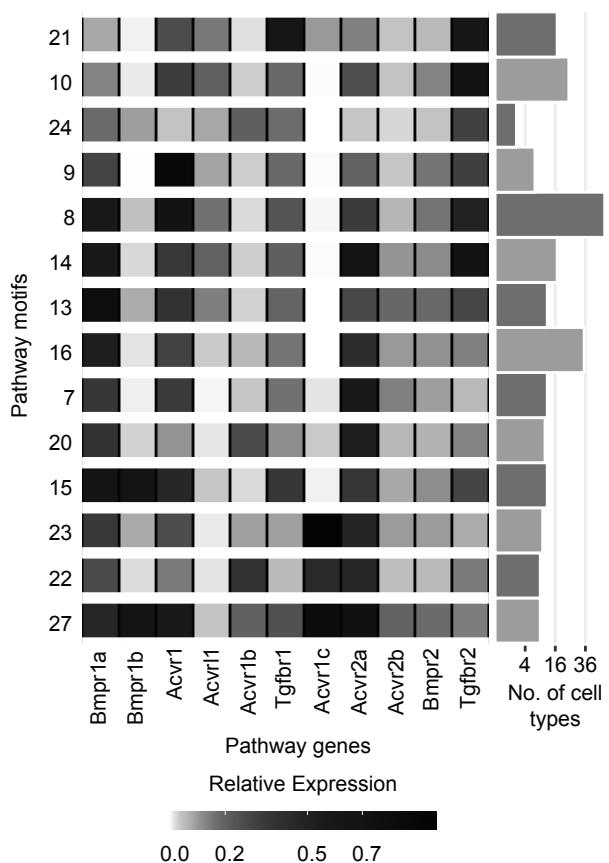


B



D

Broadly Dispersed TGF- β Motifs



E

Broadly Dispersed TGF- β Motifs

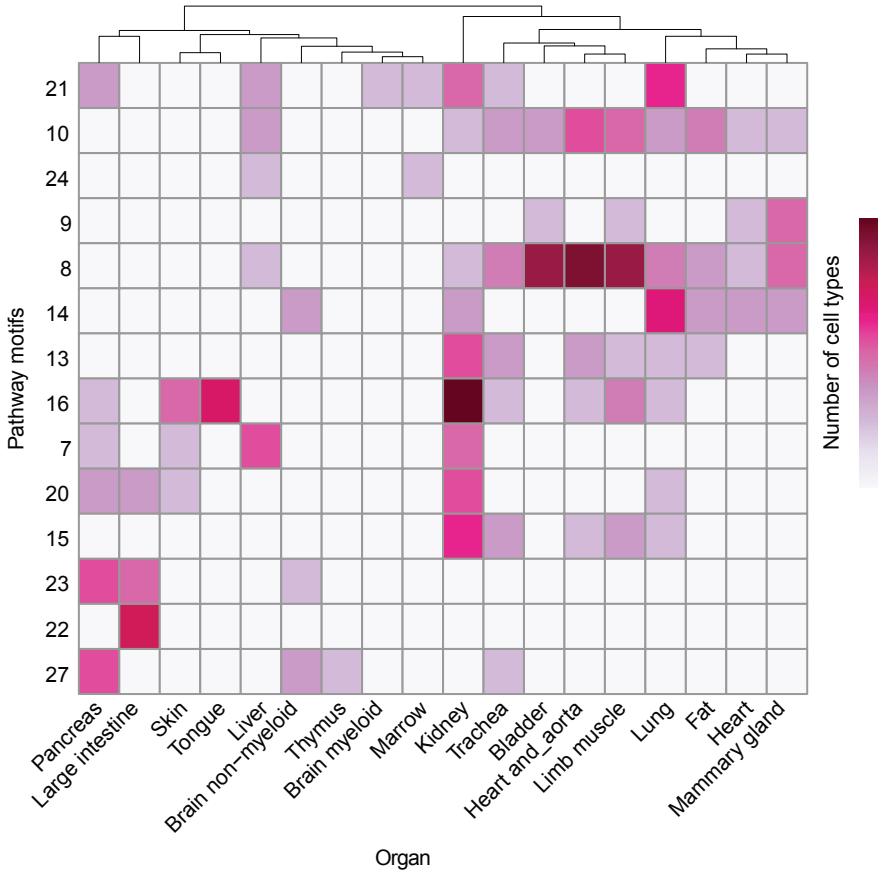
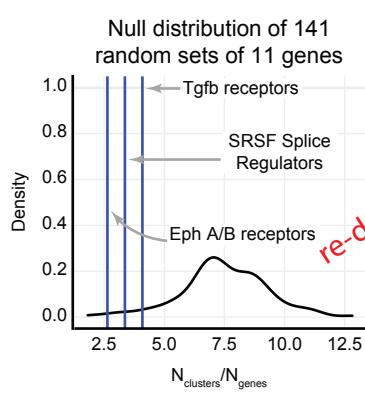
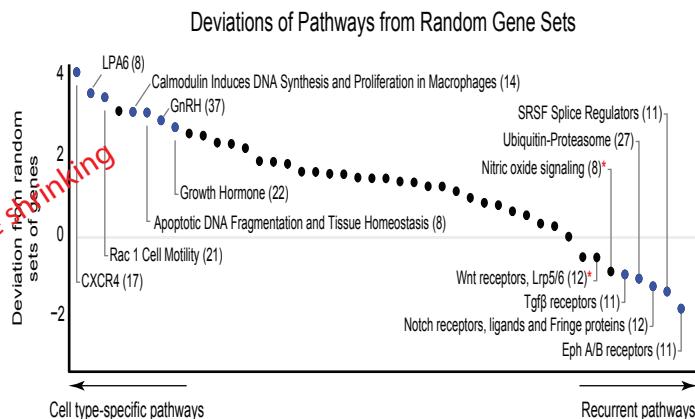


Figure 4: Wnt and Notch also show broadly dispersed recurrent pathway expression motifs

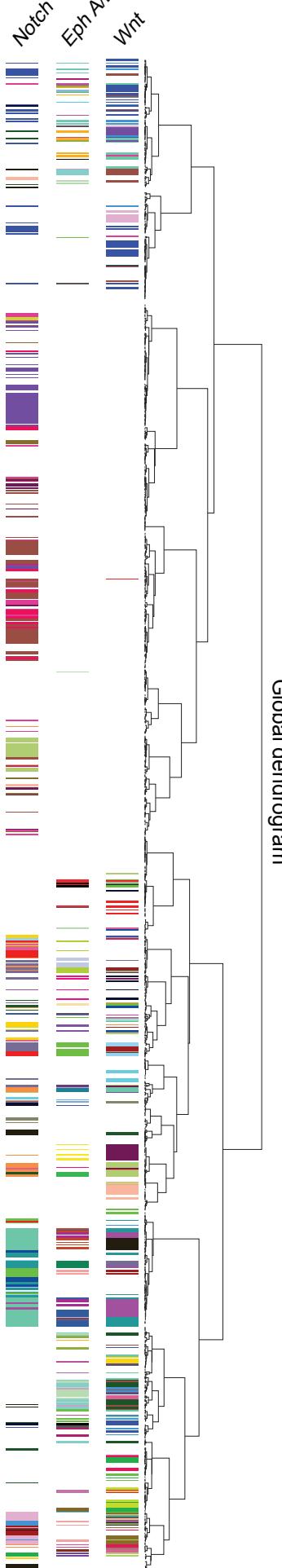
A



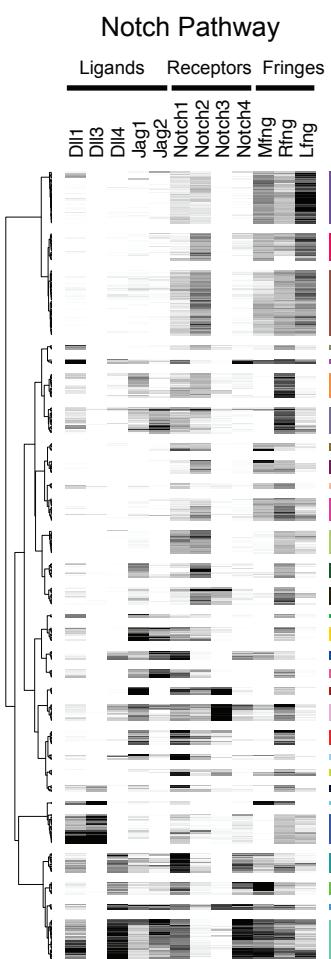
B



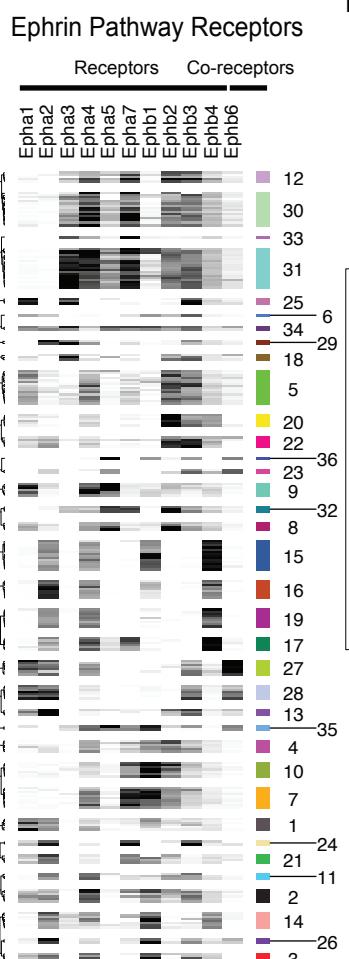
F



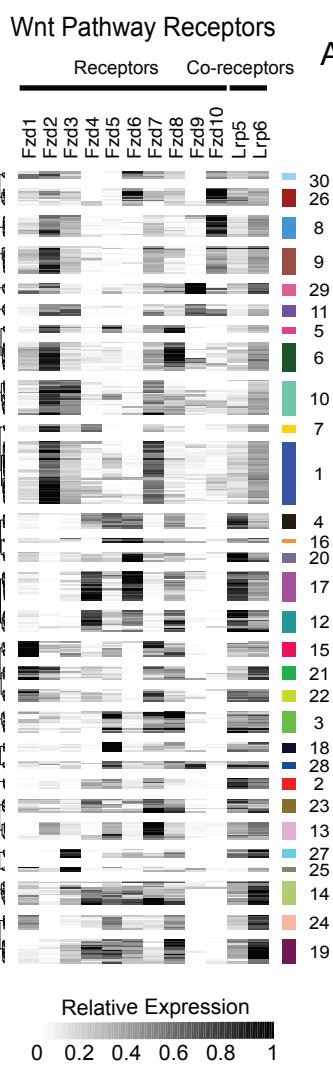
C



D



E



G

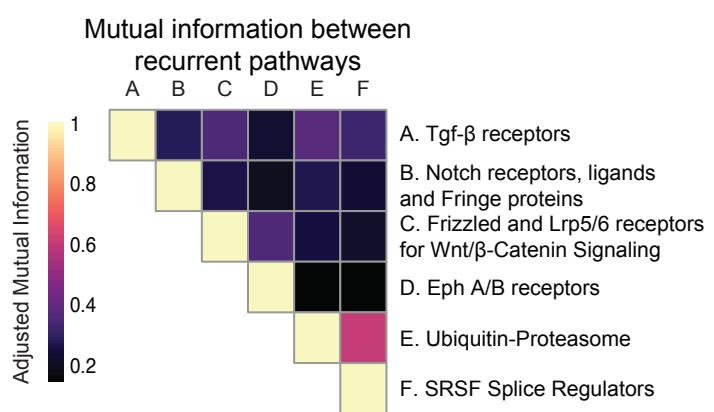
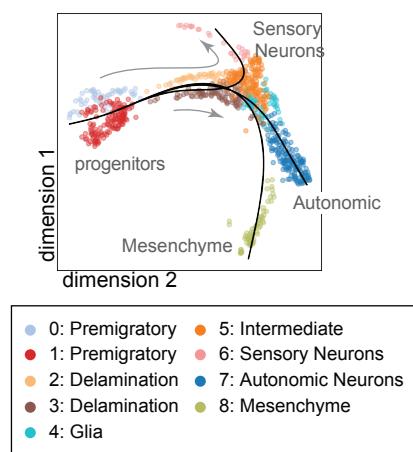


Figure 5:

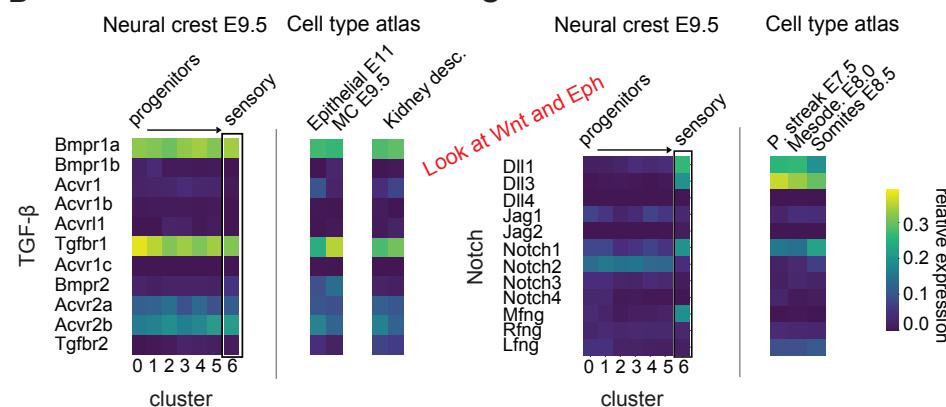
TGF- β and Notch show distinct dynamics in neural crest differentiation

A

Trunk Neural Crest (E9.5)



B

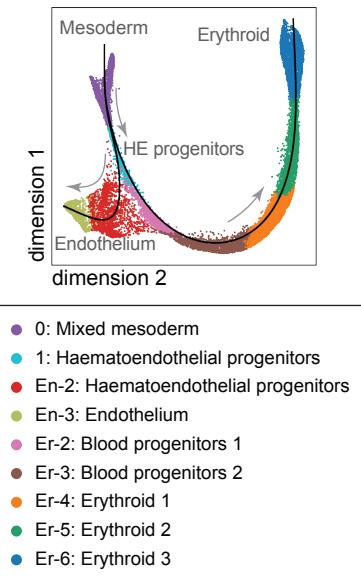


C

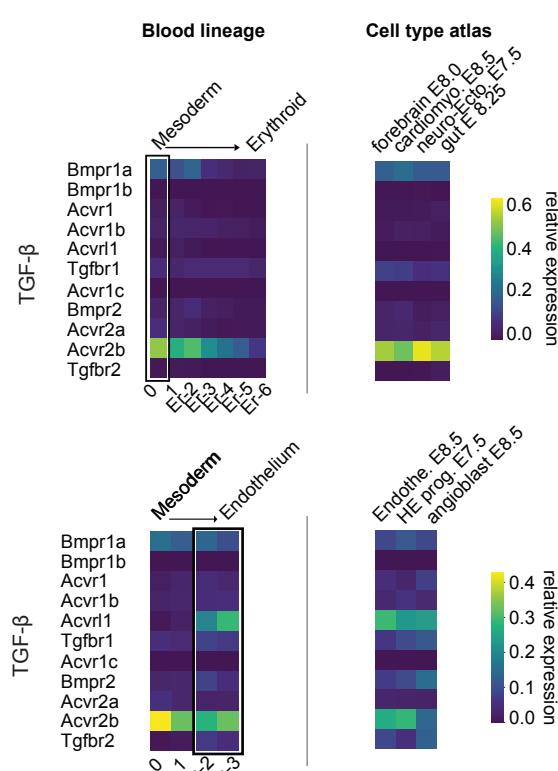
TGF- β shows fate-dependent dynamics in vascular differentiation

D

Early vascular differentiation



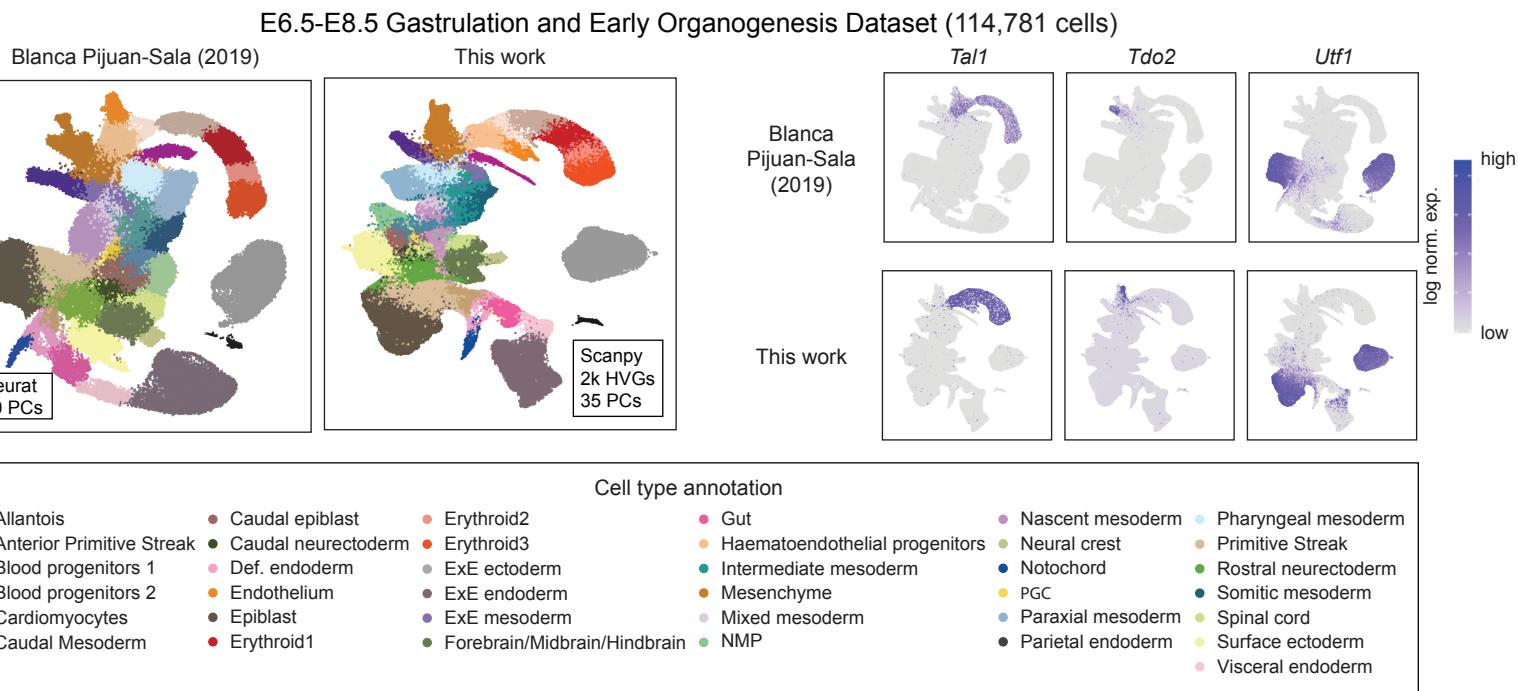
E



Stability during Aging result

Figure 1, Supplement 1

A



B

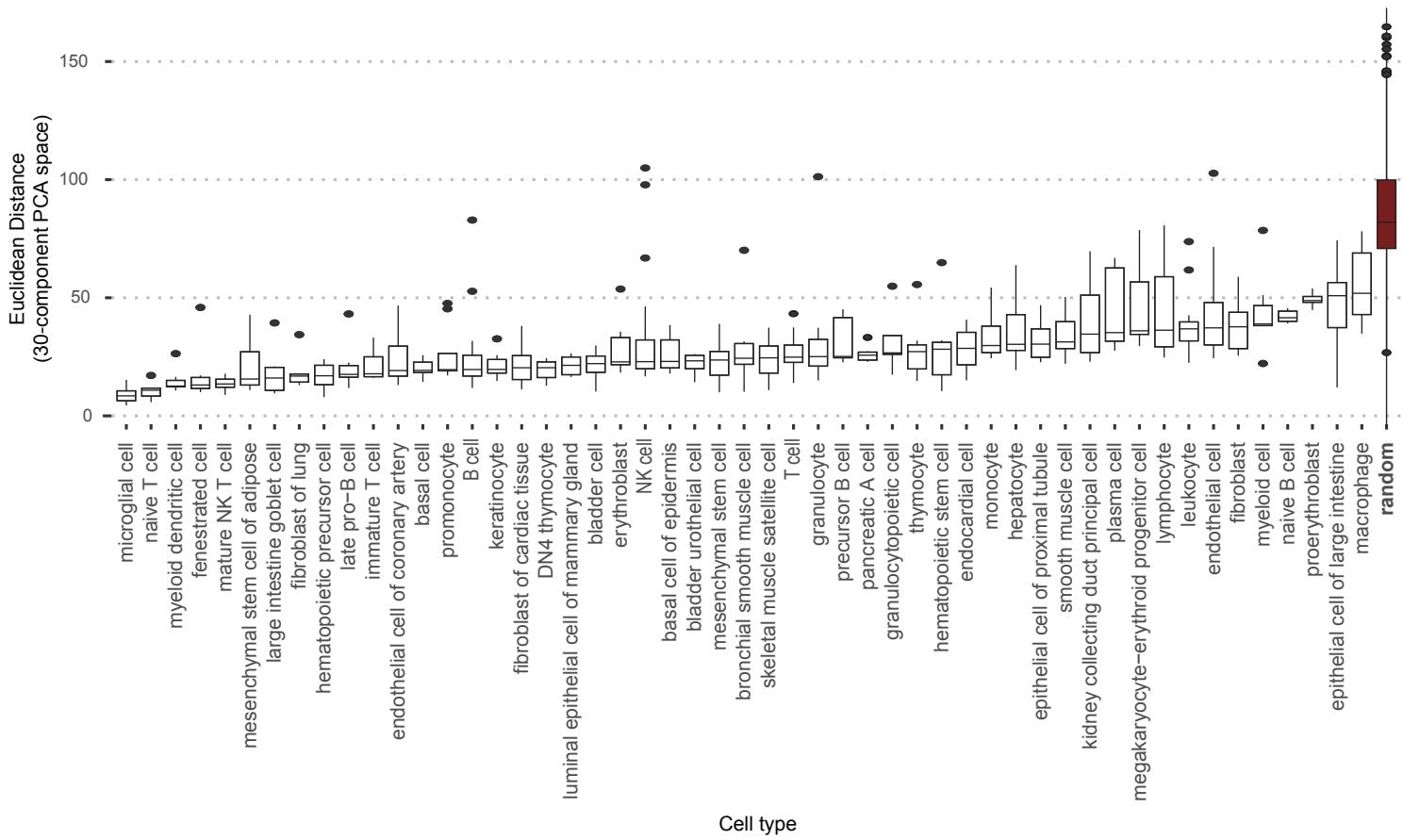
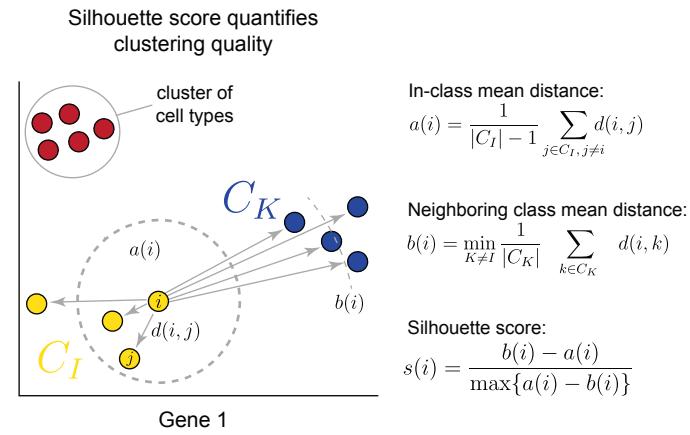


Figure 2, Supplement 1

A



B

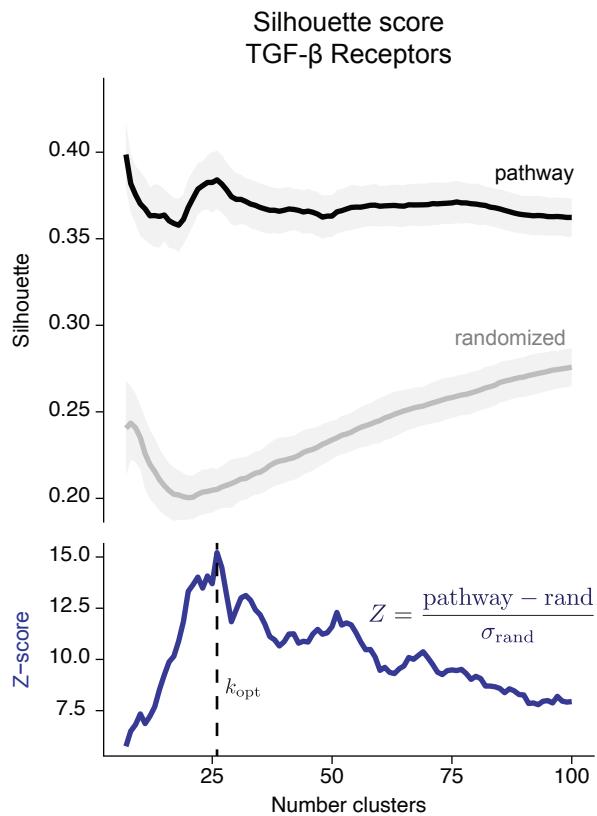


Figure 3 Supplement 1

A

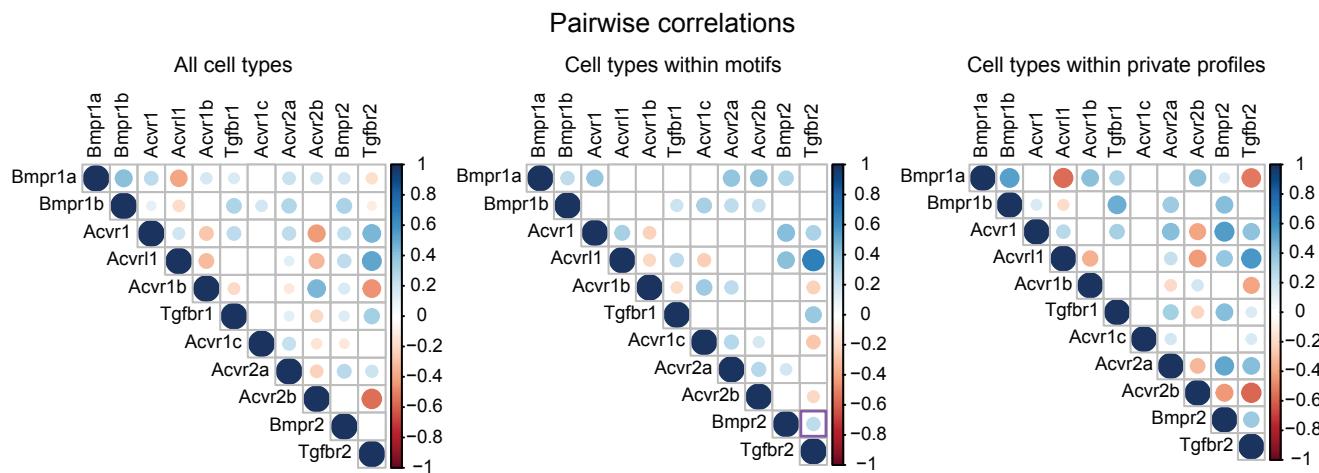
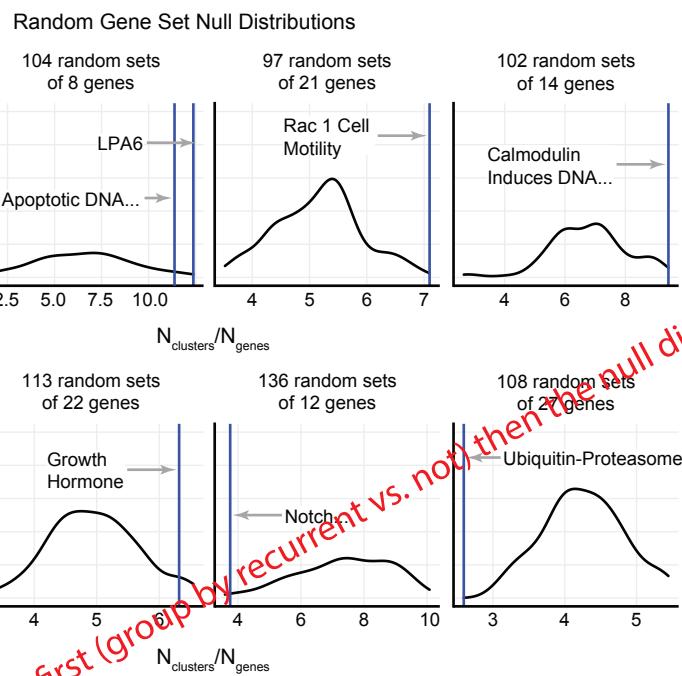
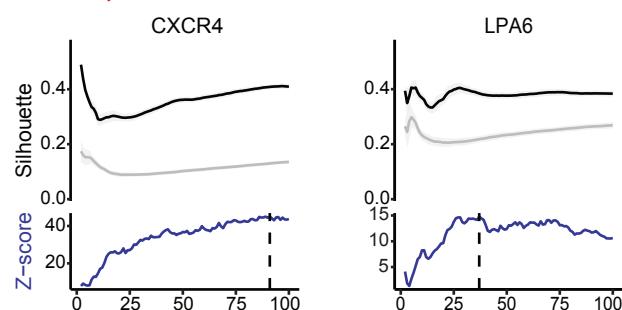


Figure 4 Supplement 1

B



A



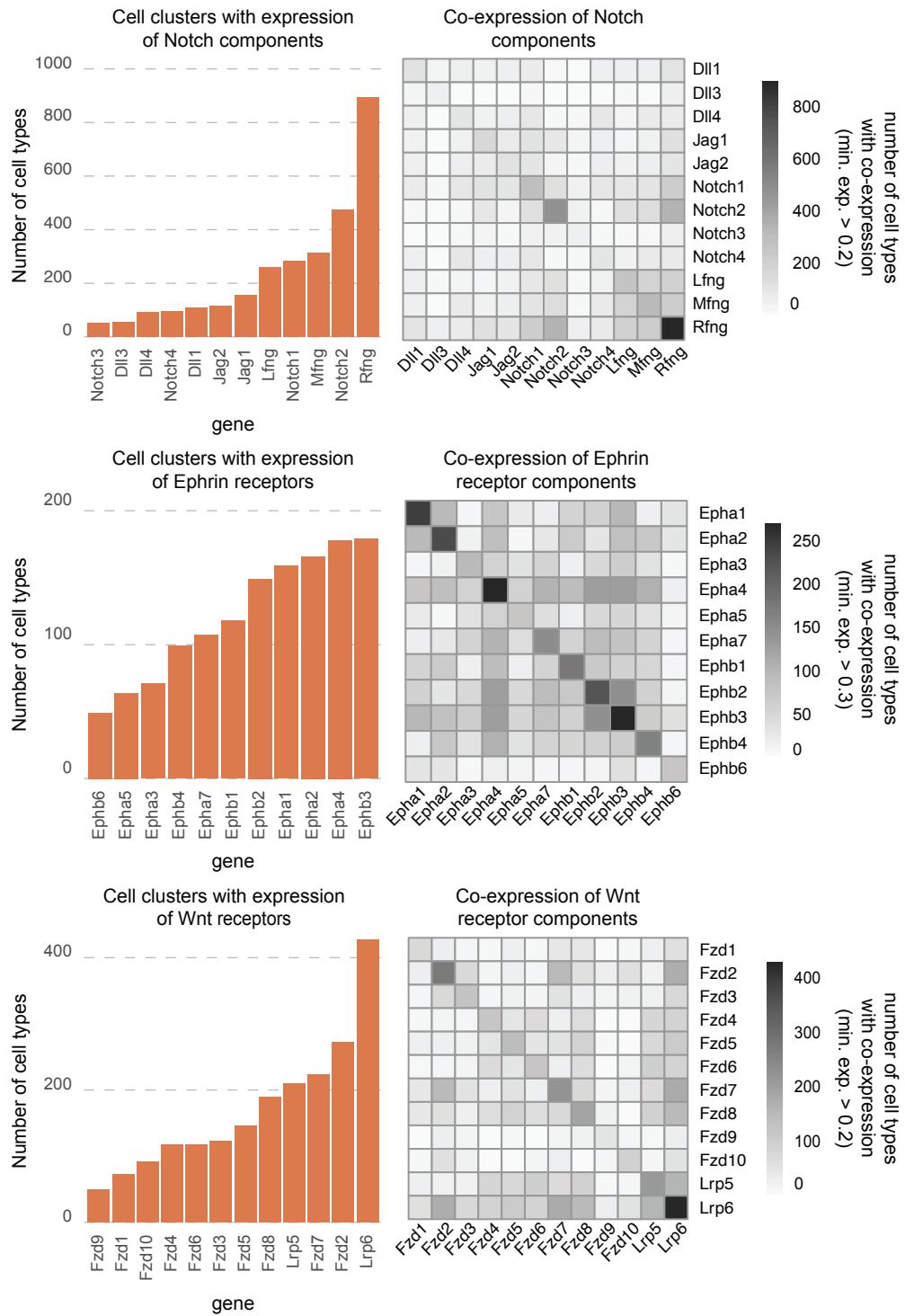
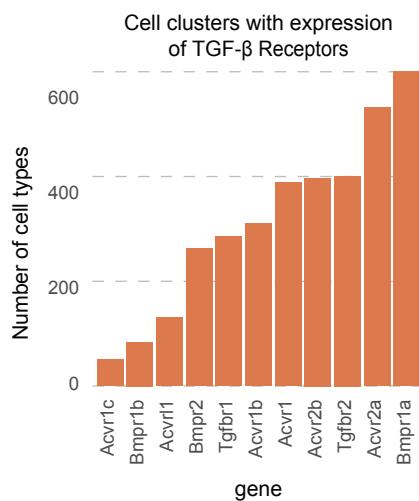
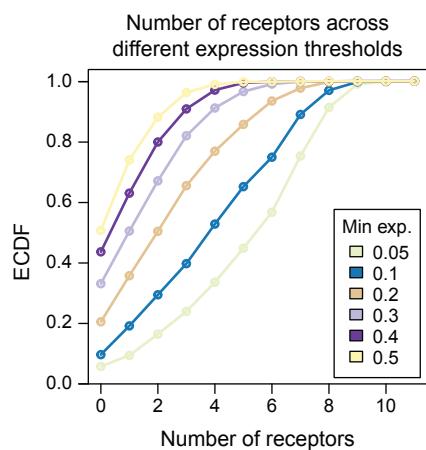


Figure 2, Supplement 2

A



B



C

