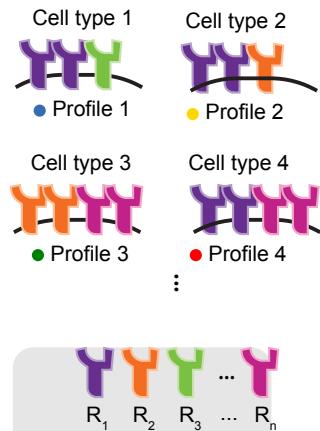


Figure 1: Pathway expression profiles could recur across diverse cell types

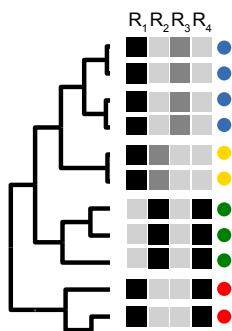
A

Receptor expression profiles

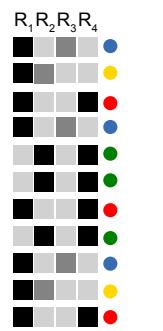


B

Regime 1:
Similar cell types share
similar pathway profiles



Regime 2:
Pathway profiles recur
in diverse cell types



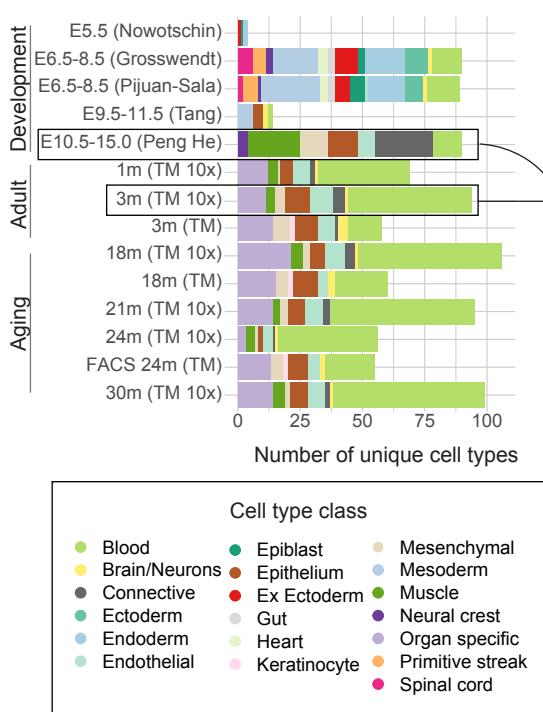
Relative Expression



Global transcriptome
similarity

C

Multiple mouse cell atlas datasets

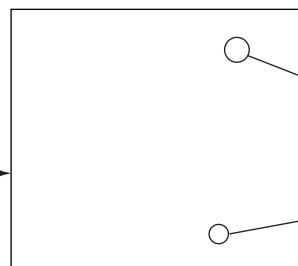


D

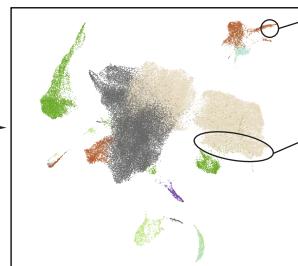
Individual cell atlases

1 dot = 1 cell

Tabula muris (3 month old mouse)



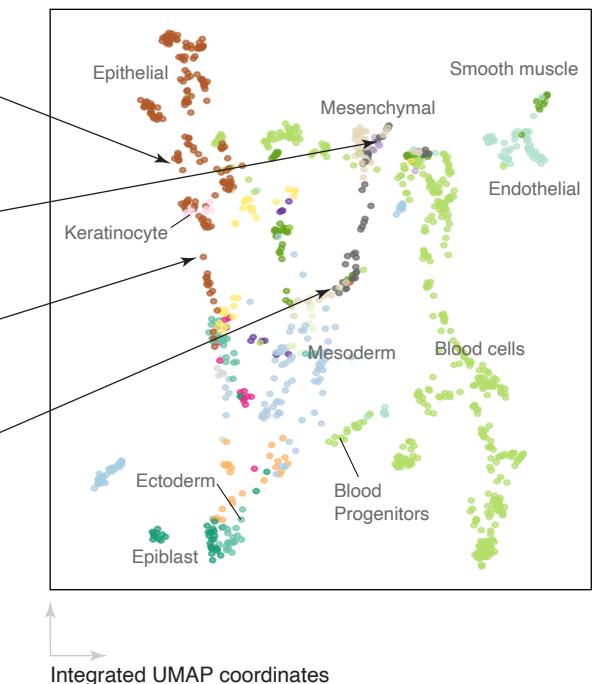
Forelimb (Days E10.5 - E15.0)



Integrated cell state atlas, cluster-averaged profiles

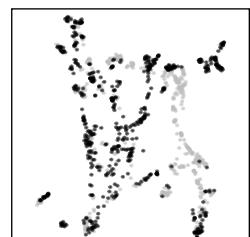
All data sets in (C)

1 dot = 1 cell cluster



E

TGF- β : 52% of cell types



Wnt: 31% of cell types

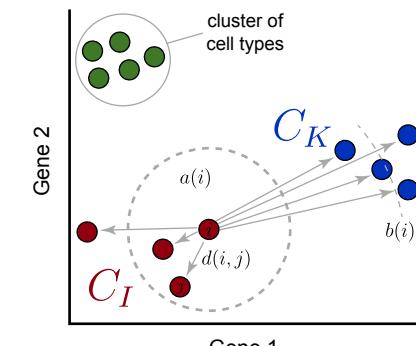


Notch: 37% of cell types



Dataset UMAP coordinates

F



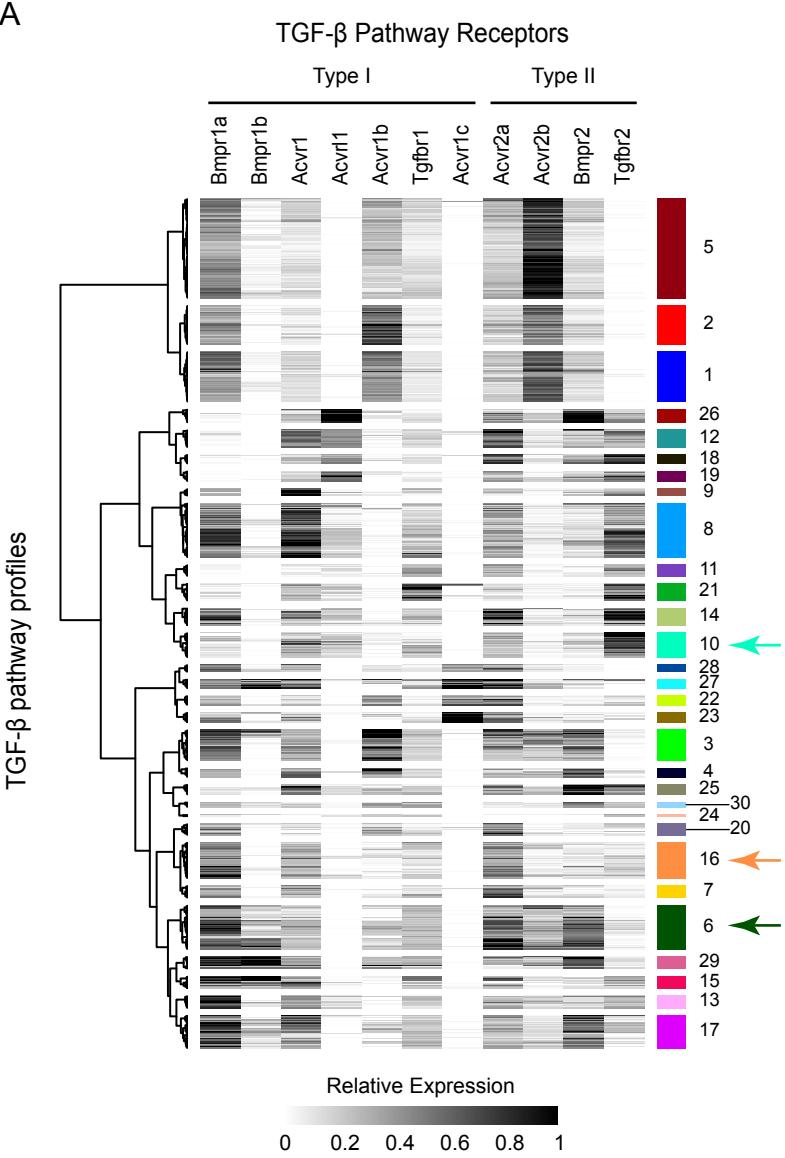
$$\text{In-class mean distance: } a(i) = \frac{1}{|C_I| - 1} \sum_{j \in C_I, j \neq i} d(i, j)$$

$$\text{Neighboring class mean distance: } b(i) = \min_{K \neq I} \frac{1}{|C_K|} \sum_{k \in C_K} d(i, k)$$

$$\text{Silhouette score: } s(i) = \frac{b(i) - a(i)}{\max\{a(i) - b(i)\}}$$

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

A



C

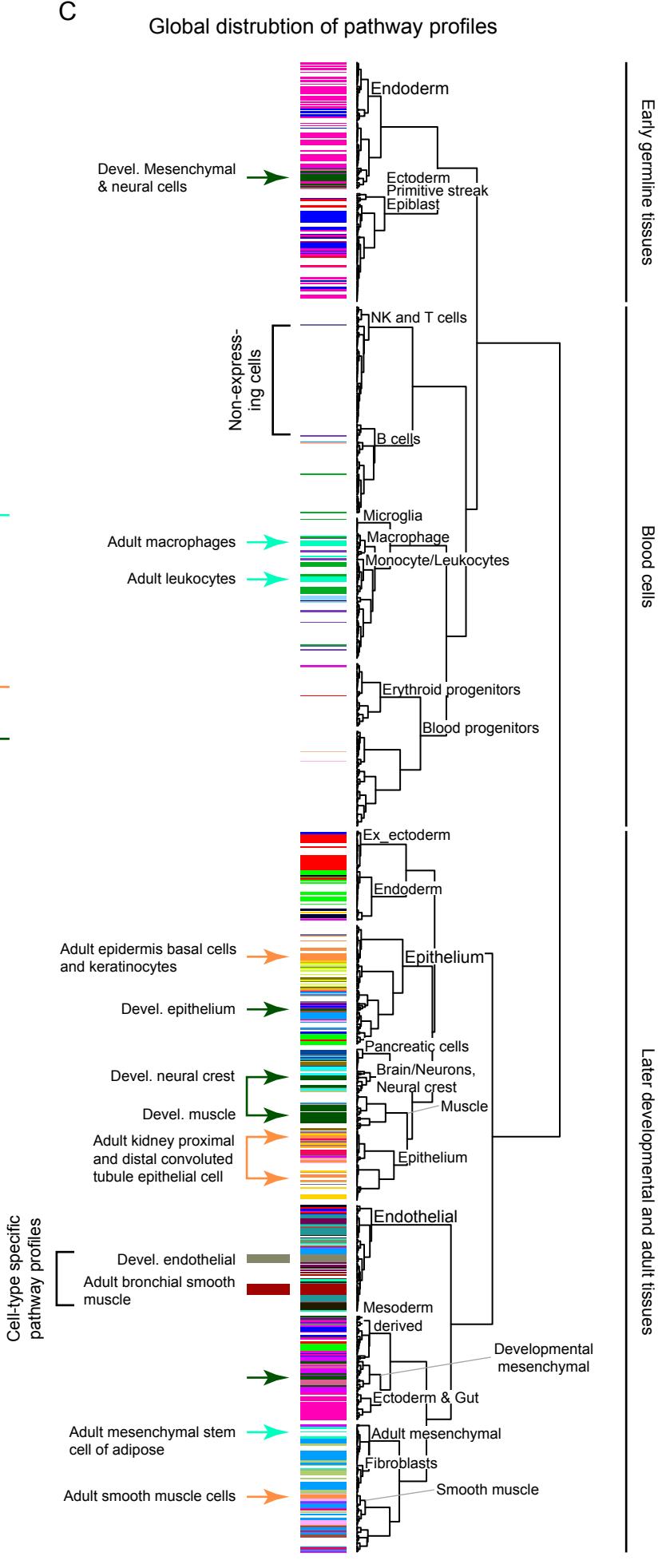
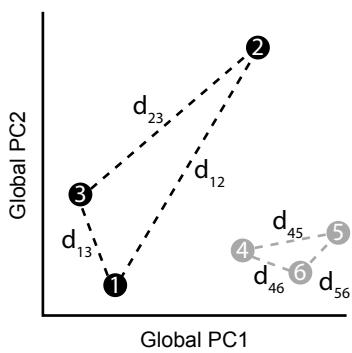


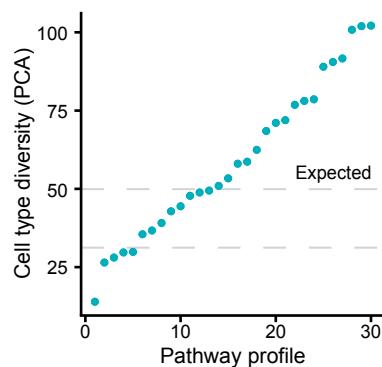
Figure 3: TGF- β expression motifs are dispersed across cell types and organs

A

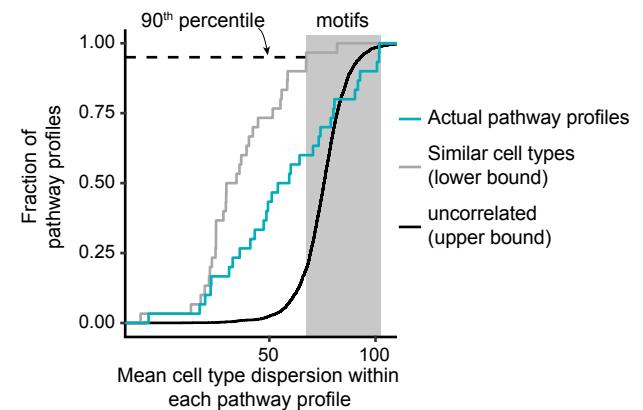
Pairwise distance computation (schematic)
(Actual computation occurs in 100-dimensional PCA space)



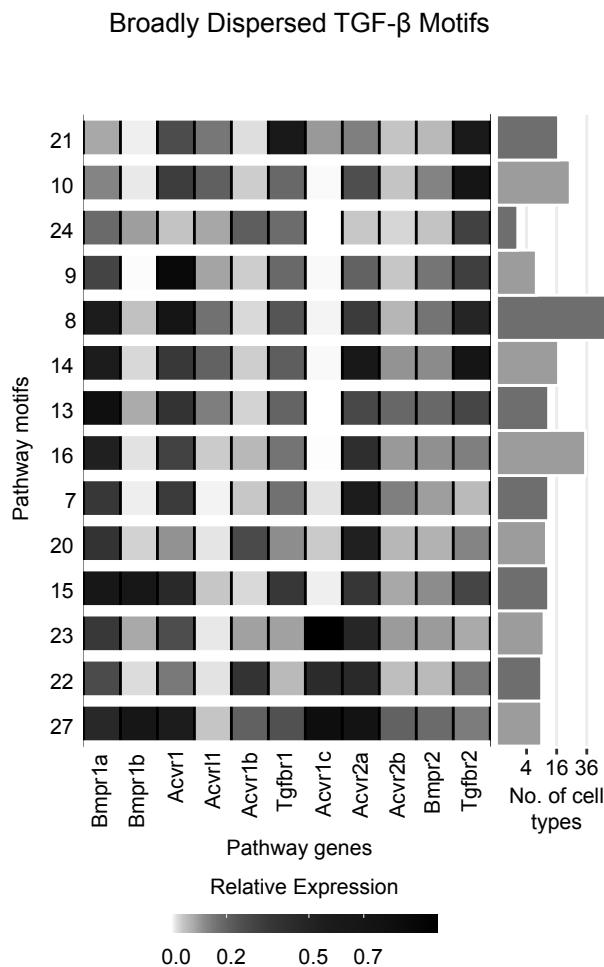
Number of cell types with
TGF- β profile



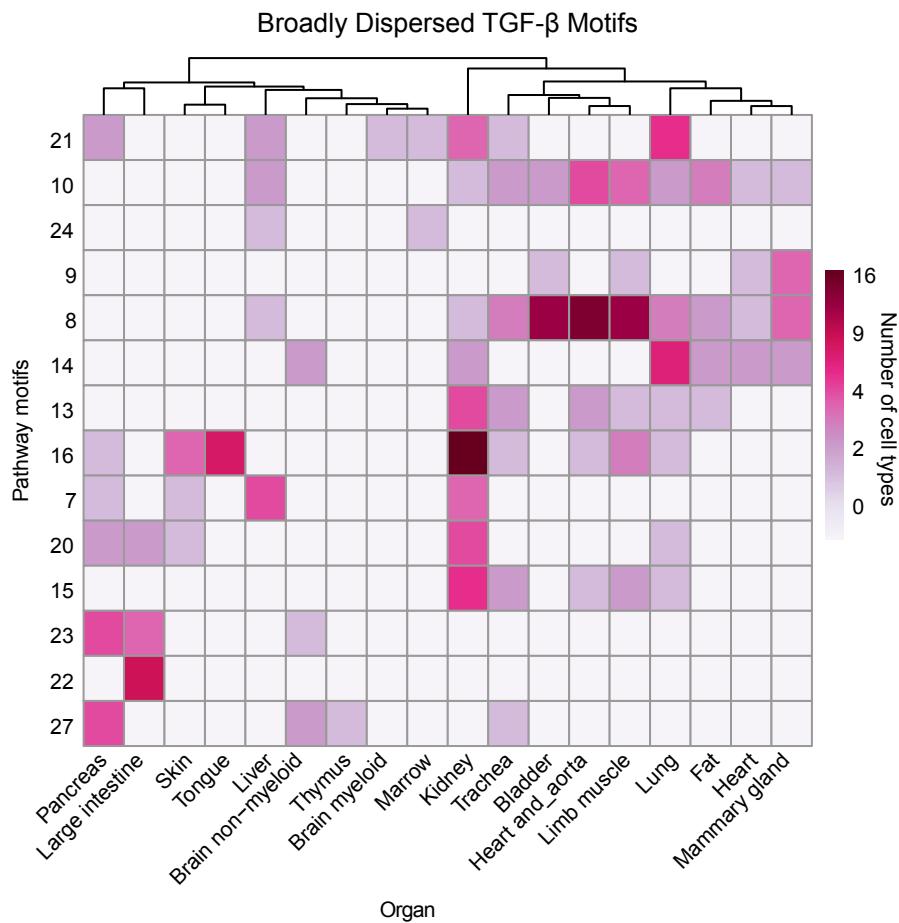
B



D



E



Add some cool examples?

is it possible that epithelial or mesenchymal cells in different tissues tend to share the same profile?

Profile 16 is in a lot of epithelial cells (kidney, skin, bladder)

Barplot (w/ error bars) and listed cell types
below for 2 interesting profiles (16 + 8?)

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

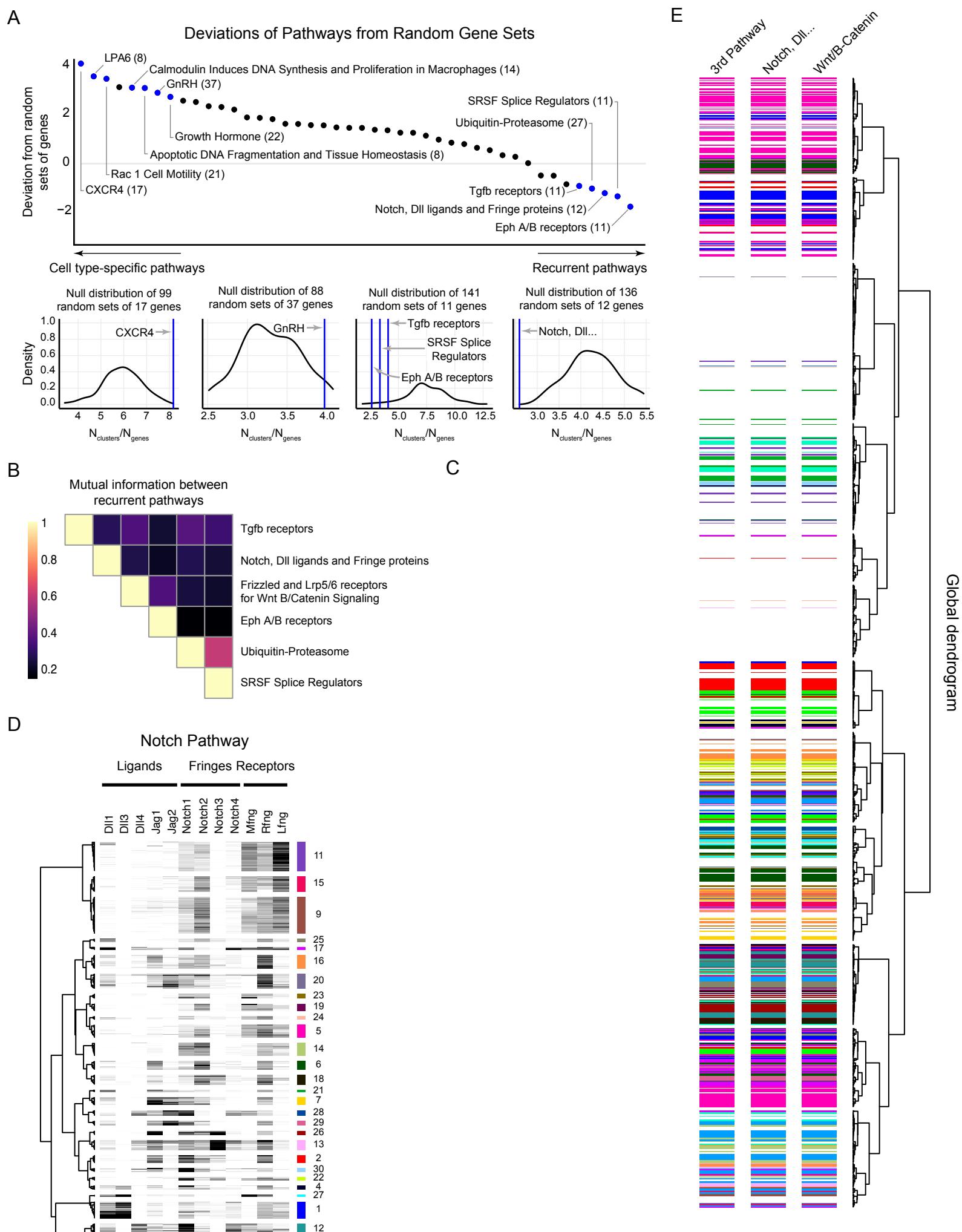
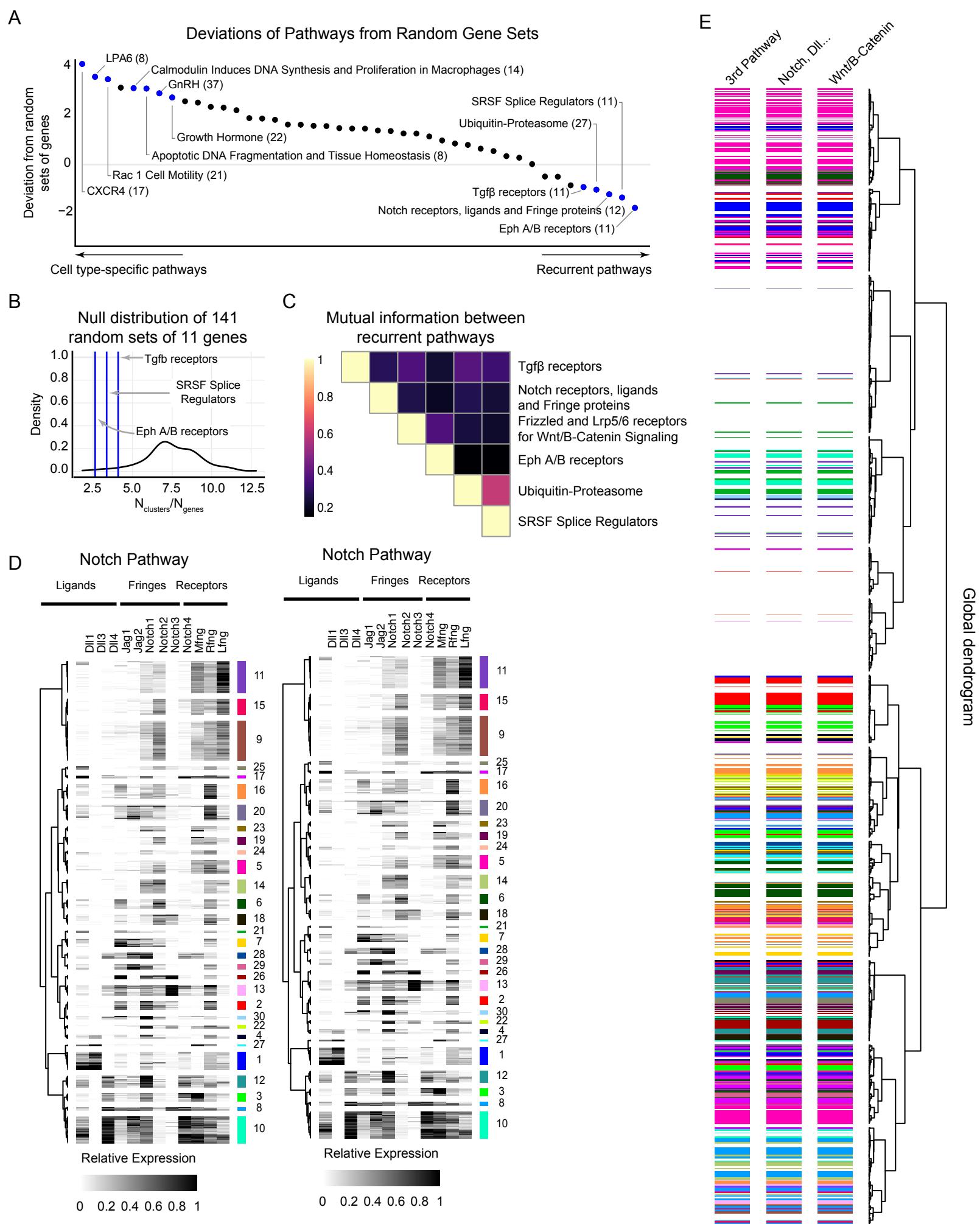
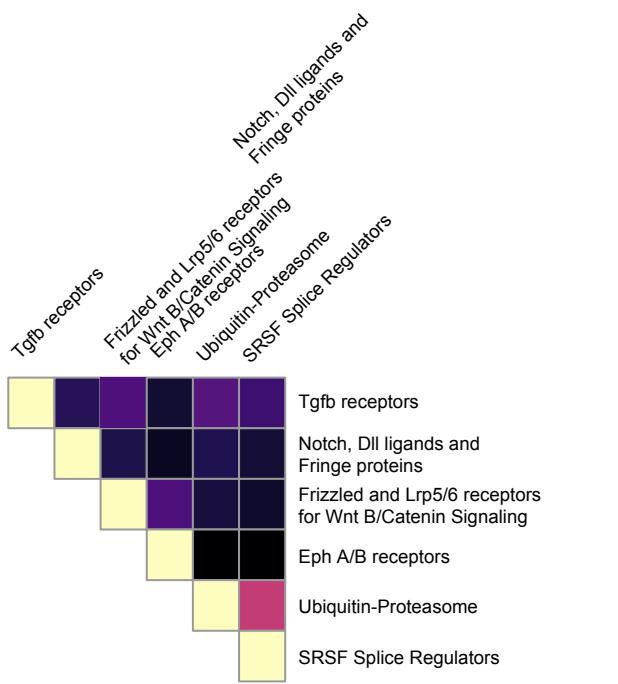


Figure 4: Wnt and Notch also show broadly dispersed recurrent pathway expression motifs





C

Wnt Pathway Receptors

Receptors Co-receptors

