

## **Description of Additional Supplementary Files**

File name: Supplementary Data 1

Description: DE genes in CD29<sub>high</sub> versus PDGFRa<sub>med</sub> comparisons

File name: Supplementary Data 2

Description: GO analyses of the CD29<sub>high</sub> signature

File name: Supplementary Data 3

Description: DE genes for PDGFRa<sub>high</sub>, PDGFRa<sub>med</sub> and EpCAM<sup>+</sup> populations

File name: Supplementary Data 4

Description: GO analyses of PDGFRa<sub>high</sub> and PDGFRa<sub>med</sub> signatures

File name: Supplementary Data 5

Description: DE genes for control versus PORCNI treated EpCAM<sup>+</sup> cells

File name: Supplementary Data 6

Description: Annotated TCF7L2 ChIP-seq peaks

File name: Supplementary Data 7

Description: DE genes for E13.5 EpCAM<sup>+</sup> populations

File name: Supplementary Movie 1

Description: Visualisation of morphological features in the fetal intestine. Segmentation of tissue into lumen (magenta), epithelium (blue), villi (cyan), and muscle (red) subsequent to 3D imaging, probability map building and surface rendering (see Methods). Scale bar, 50  $\mu\text{m}$ .

File name: Supplementary Movie 2

Description: Ex vivo cultured intestine undergoes villus formation. E13.5 fetal whole intestine isolated from PDGFRaCreERT2;mTmG animal and cultured for 48h in the presence of DMSO depicting the formation of PDGFRa<sup>+</sup> clusters and peristaltic movements.