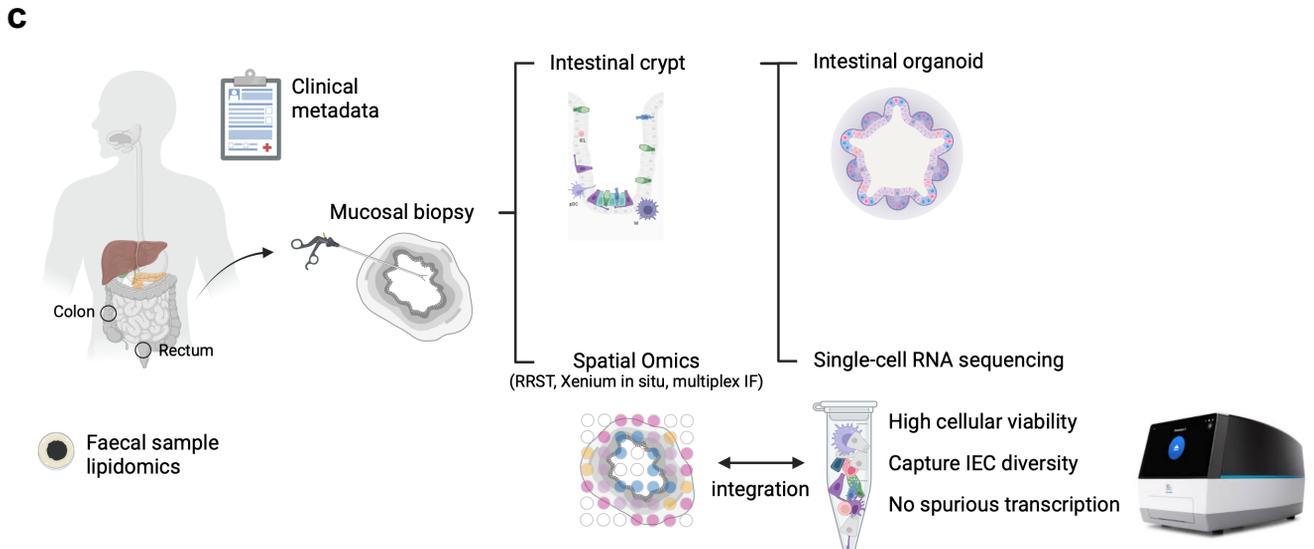
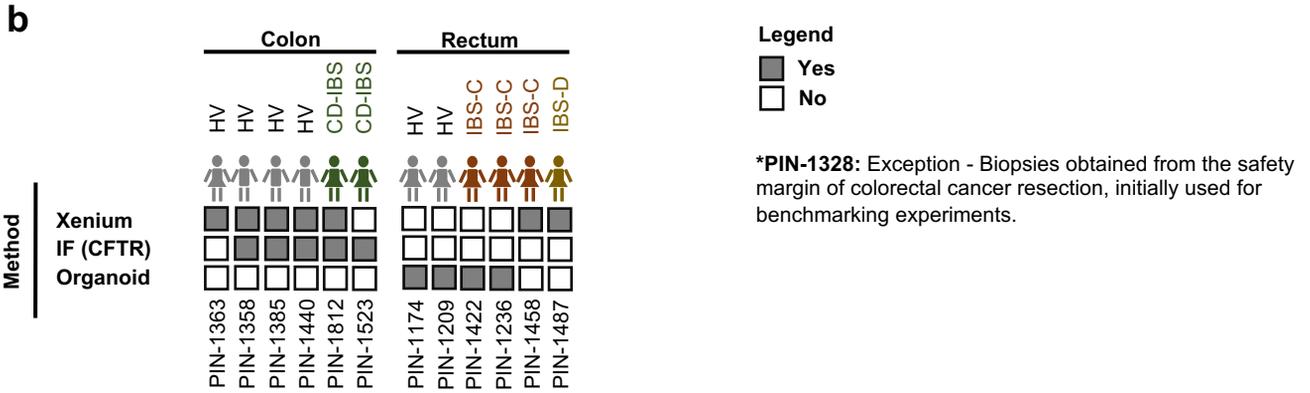
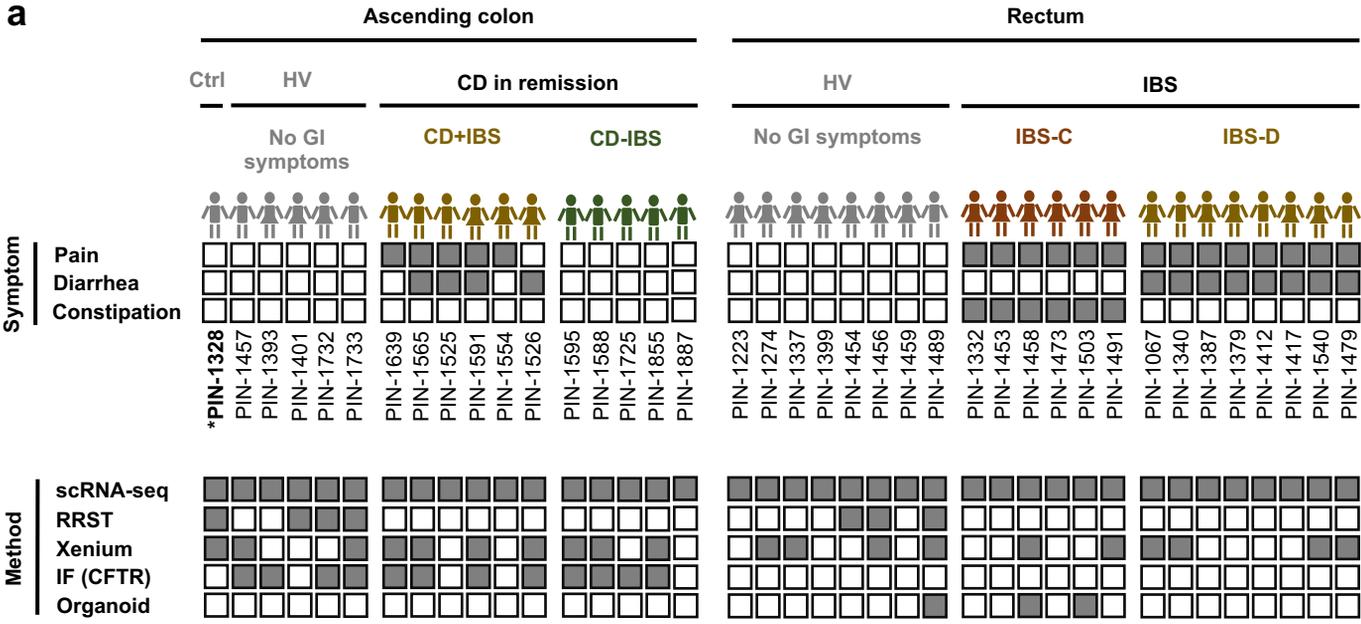
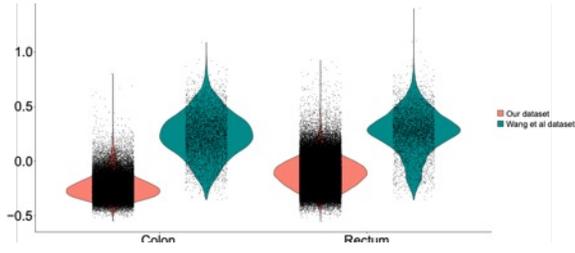


Extended Data Fig. 1. Overview of the human cohort and omics workflow

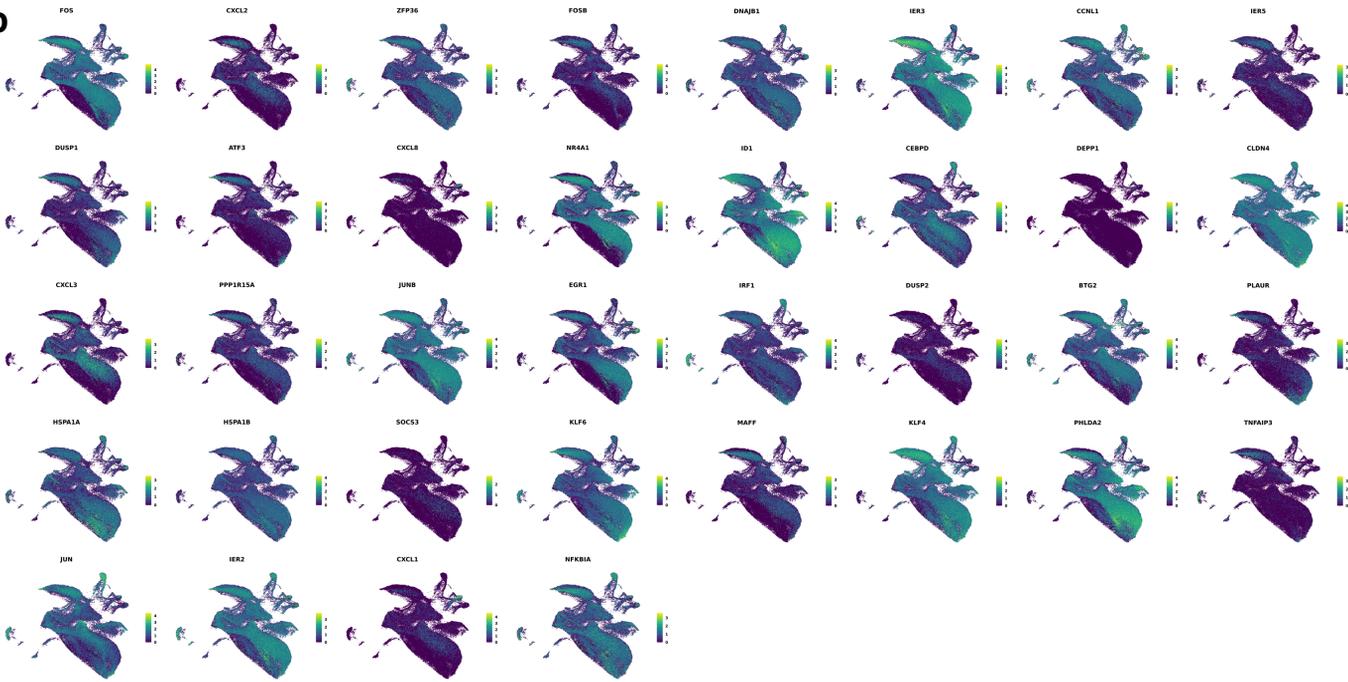


Extended Data Fig. 2. Relative expression of heat-stress genes

a

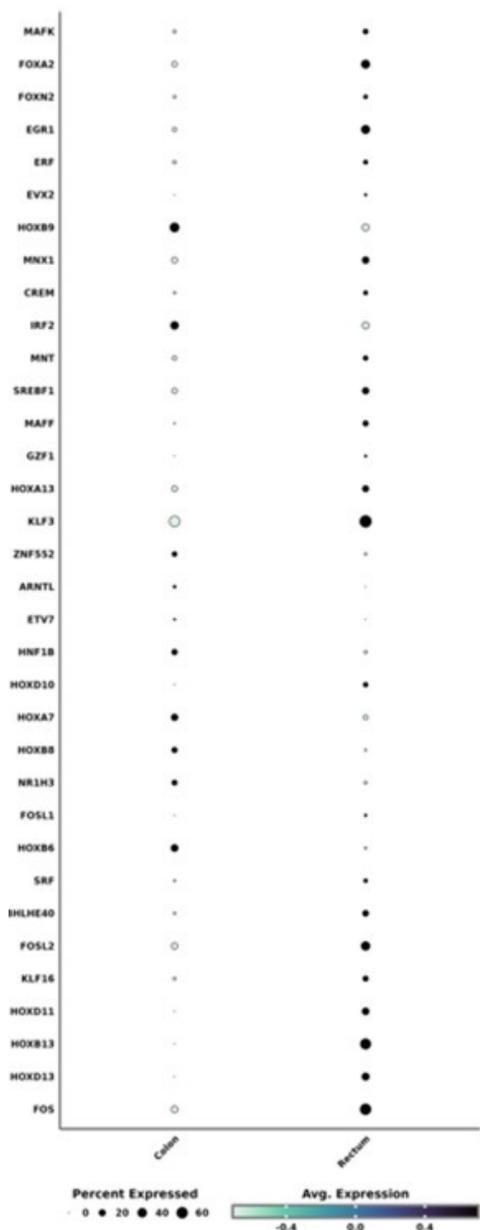


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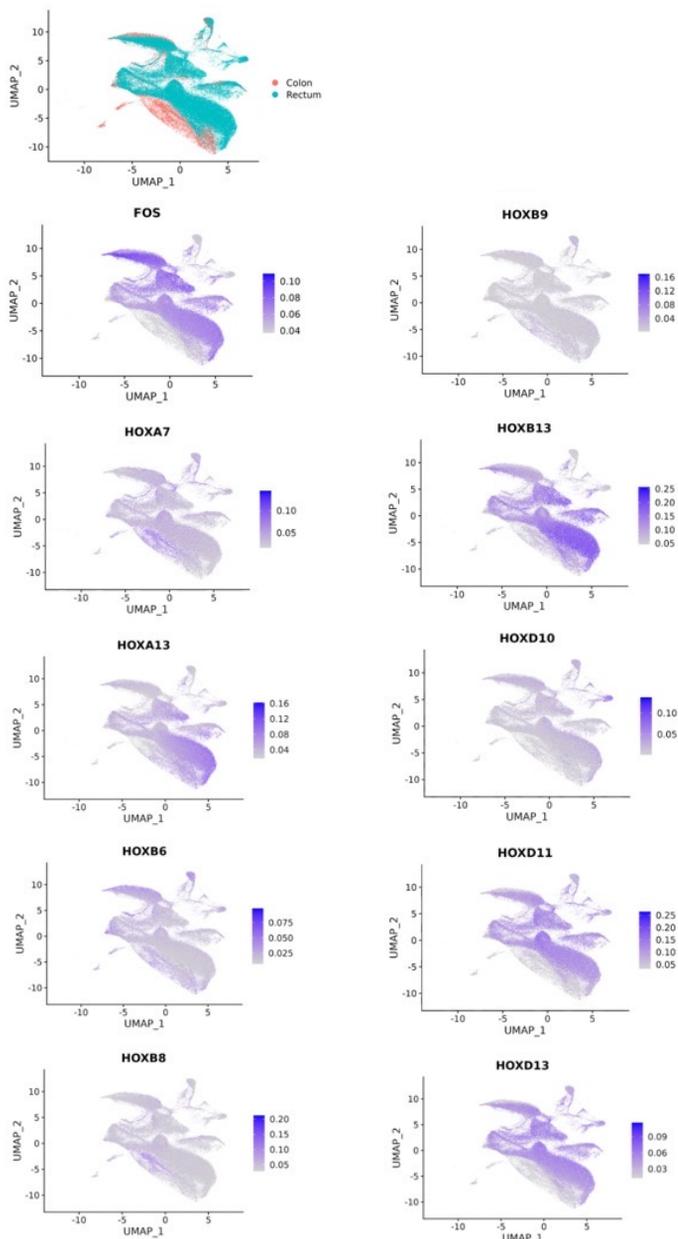


Extended Data Fig. 3. Transcription factors differentially active within the human health colorectum

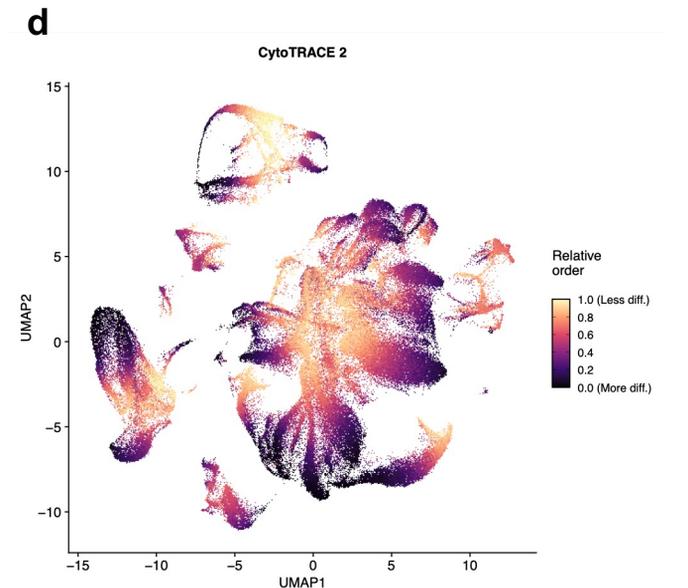
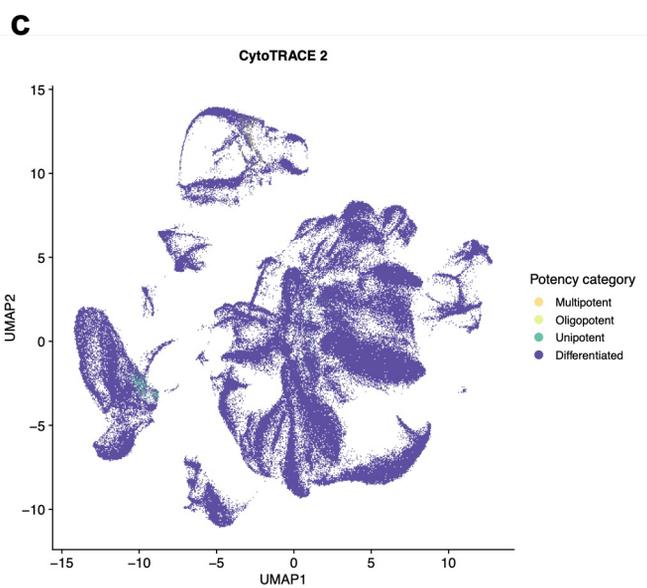
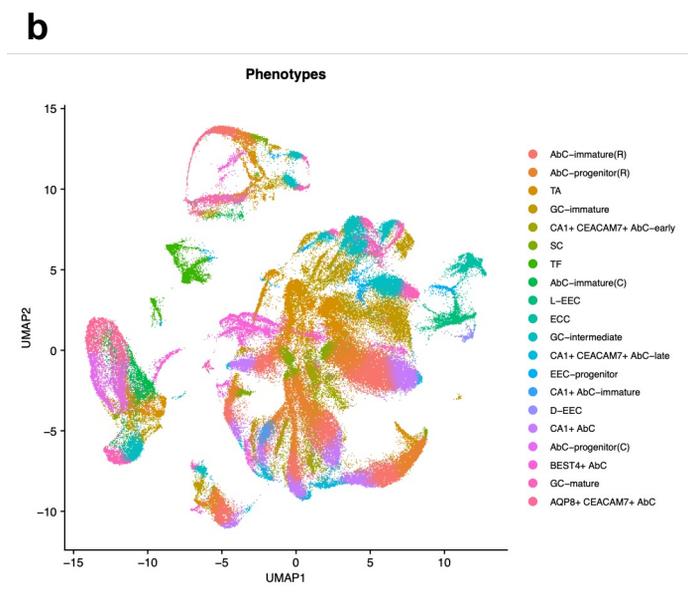
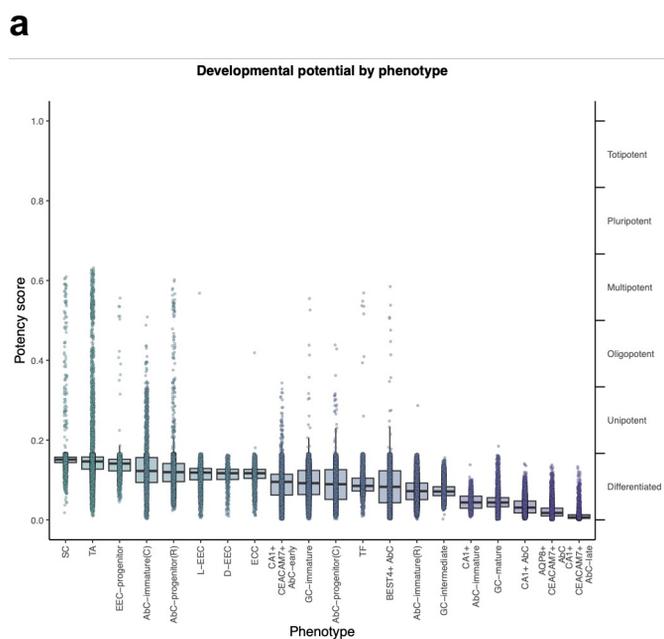
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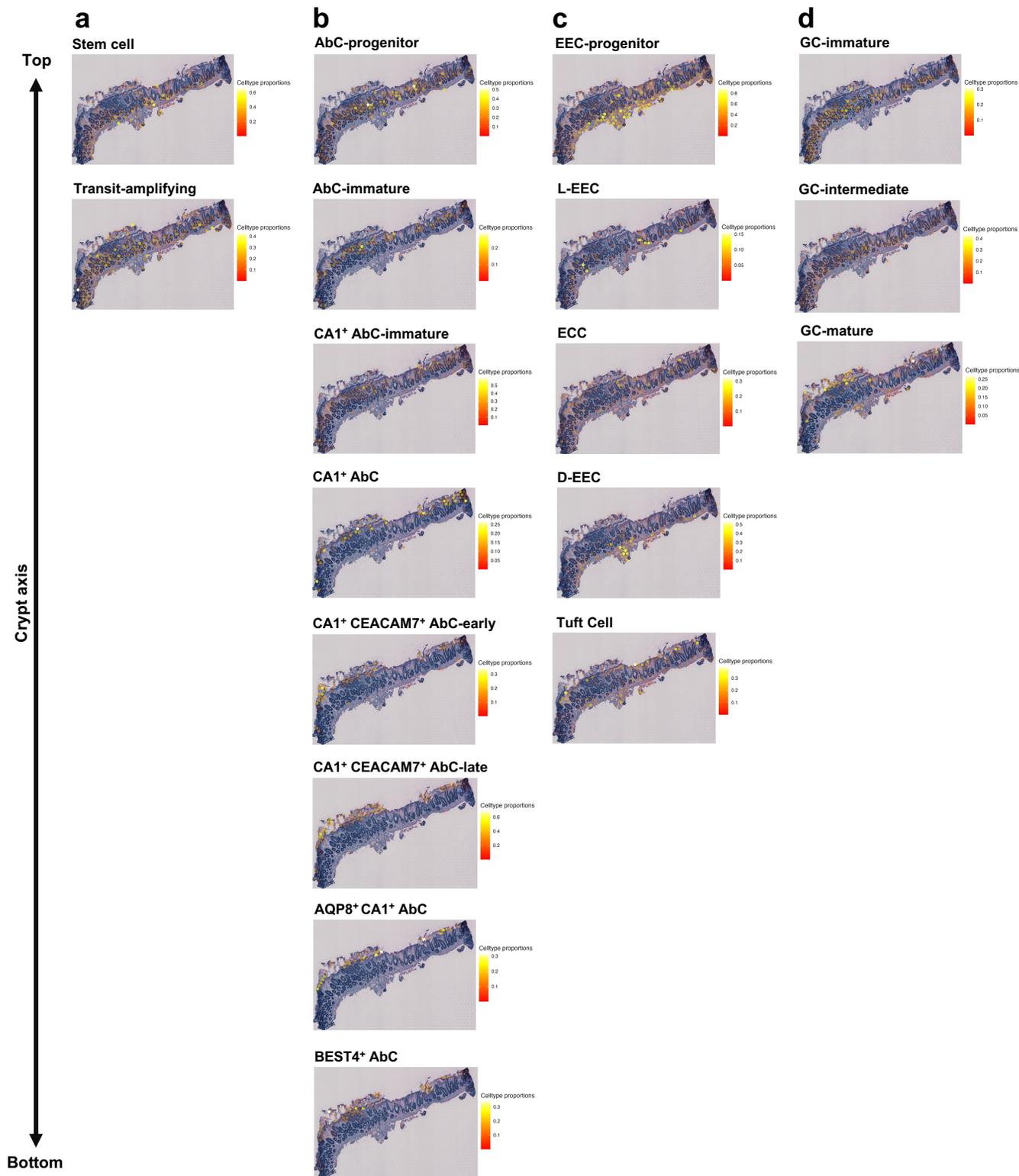
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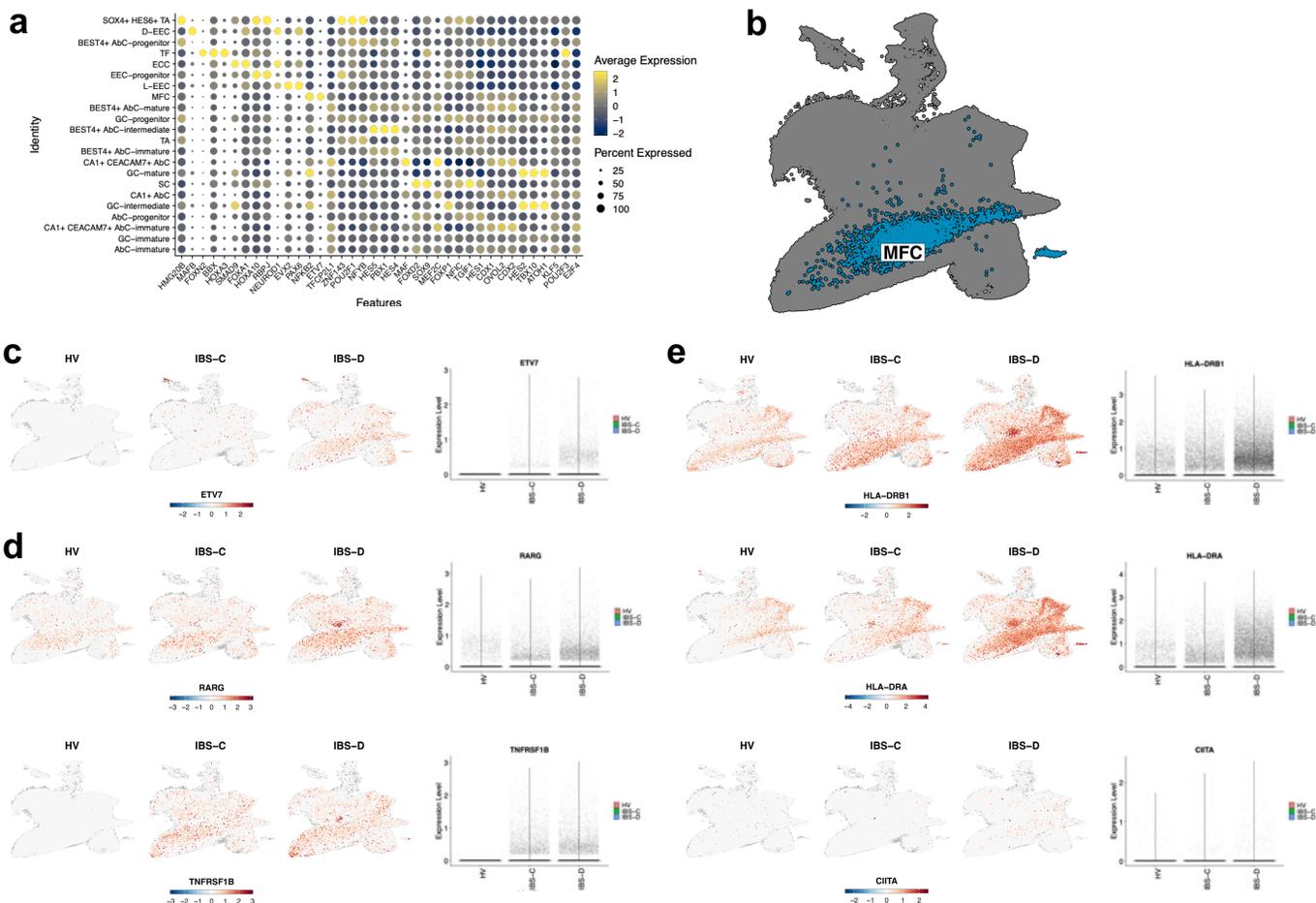
Extended Data Fig. 4. Stemness potential index inferred by CytoTRACE 2



Extended Data Fig. 5. Spot-level deconvolution of epithelial cell populations in the healthy human rectum

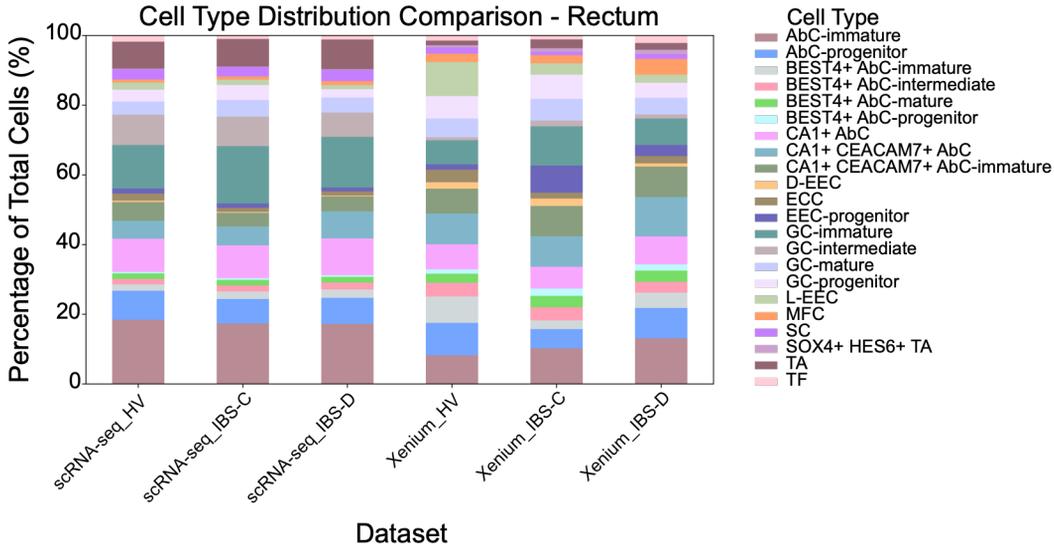


Extended Data Fig. 8. MHC Class II Gene Enrichment in Rectal Epithelial Cells from IBS-D

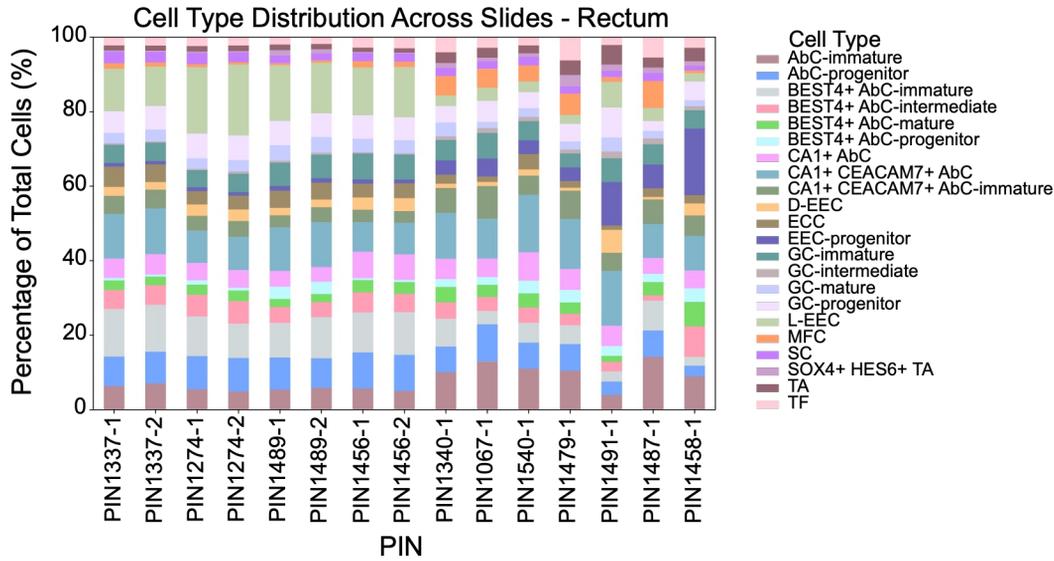


Extended Data Fig. 9. Xenium in situ integration of rectal tissue samples

a



b



Extended Data Fig. 10. Expression of barrier and transporter genes in IBS

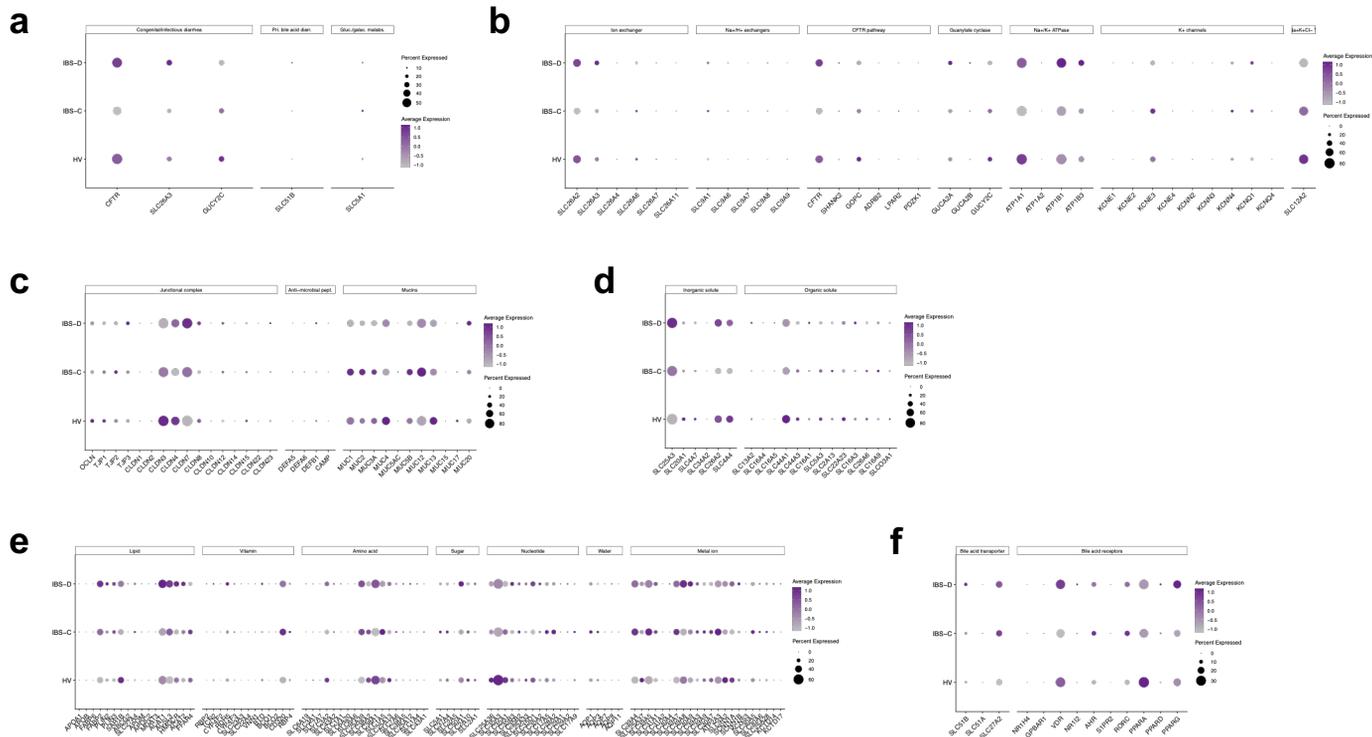
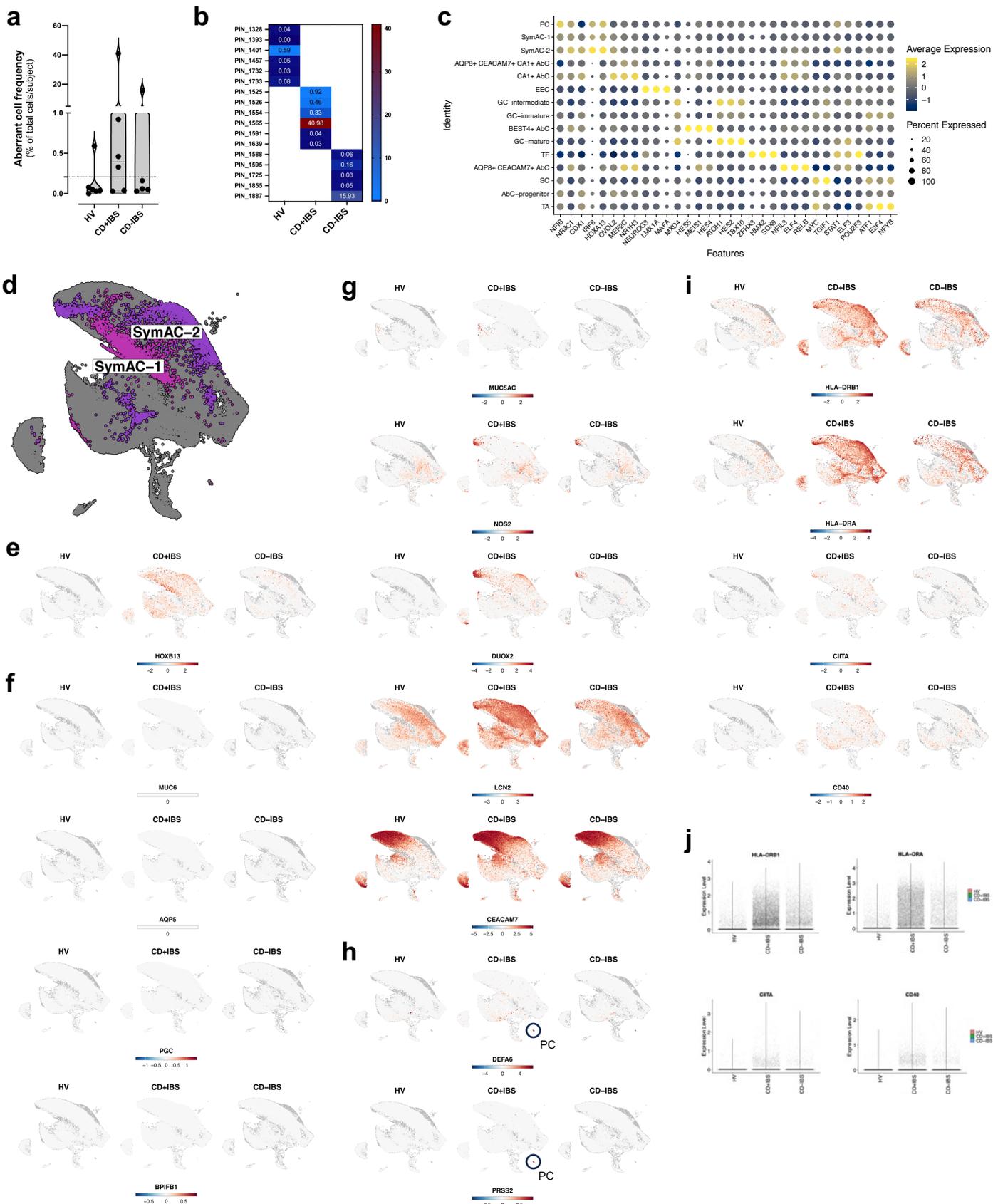


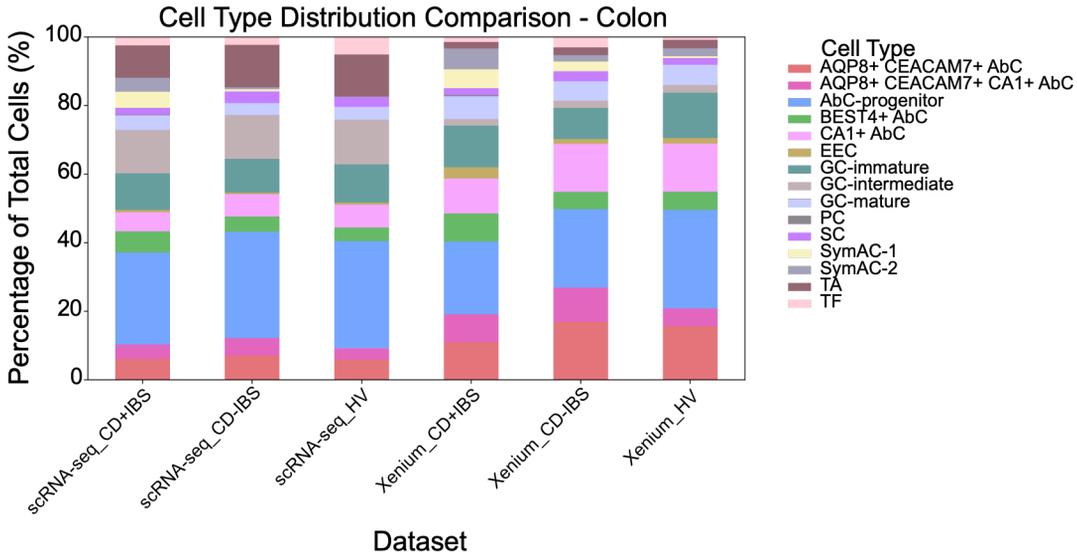
Figure 10: Expression of barrier and transporter genes in IBS. The figure consists of six dot plots (a-f) showing the expression of various genes across three groups: IBS-D, IBS-C, and HV. Each plot displays Average Expression (purple) and Percent Expressed (black dots) for a set of genes. The plots are categorized by biological pathways: a) Congenital/hereditary barrier, Pts. int. acid stan, Gut. digen. metab.; b) Ion exchanger, Na+/K+ exchangers, CFTR pathway, Quasibile cyclase, Na+/K+ ATPase, K+ channels; c) Junctional complex, Anti-neuronal jct., Mucus; d) Inorganic solute, Organic solute; e) Lipid, Vitamin, Amino acid, Sugar, Nucleotide, Water, Metal ion; f) Pts. acid transporter, Pts. acid receptors.

Extended Data Fig. 11. Frequency and signature of aberrant cell types in CD

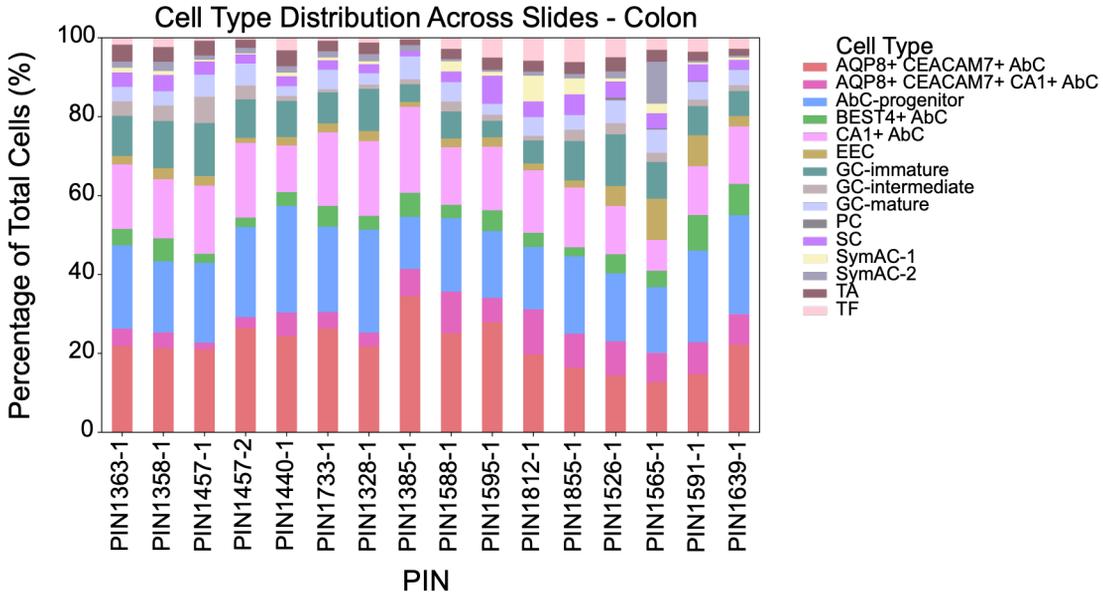


Extended Data Fig. 12. Xenium in situ integration of colonic tissue samples

a

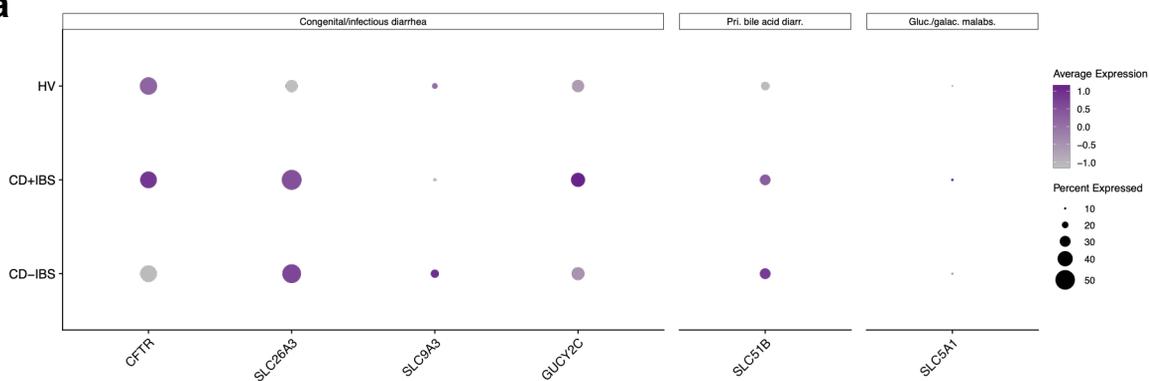


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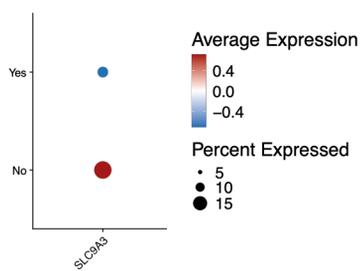


Extended Data Fig. 13. Expression of genes associated with diarrhea in CD

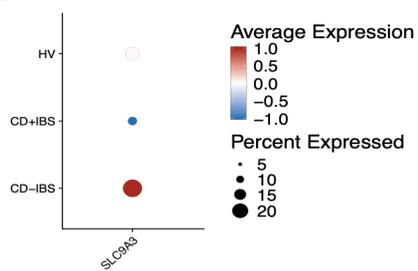
a



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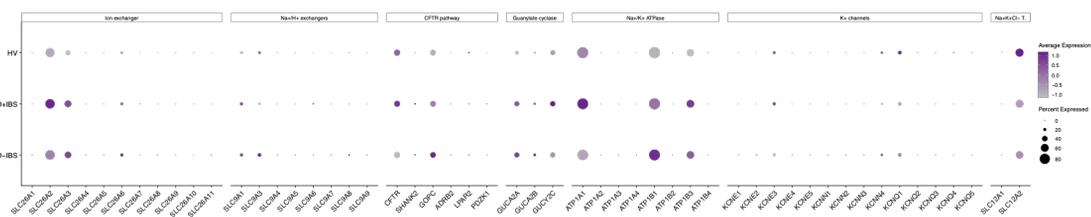


c

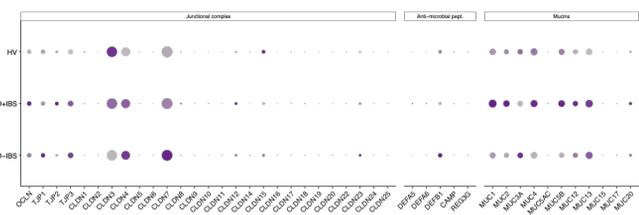


Extended Data Fig. 14. Expression of barrier and transporter genes in CD

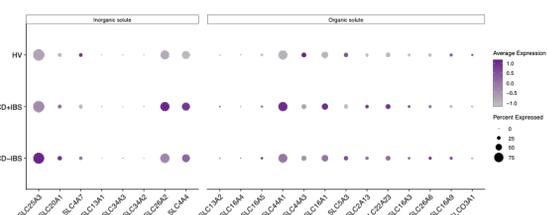
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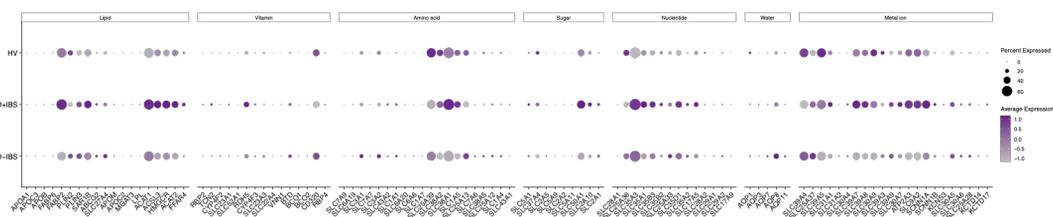
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c



d



e

