

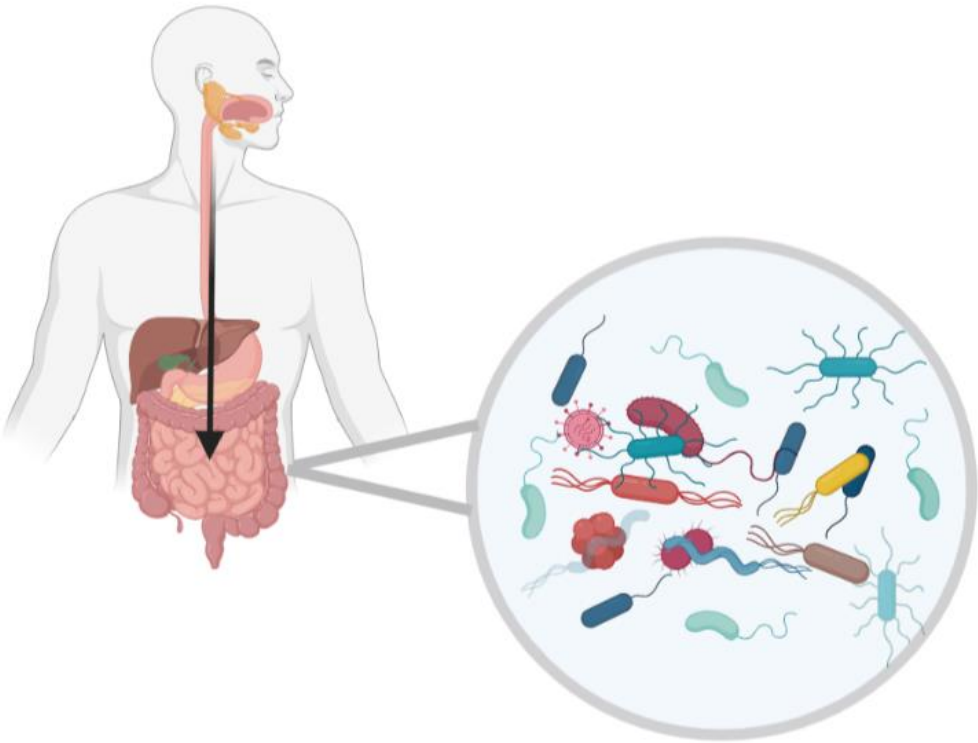
Characterization of intestinal organoids and interaction with the intestinal microbiota

Séminaire Groupement de Recherche
Organoides

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Commensal micro-organisms inhabit human gut



The gut microbiota: a superdominant and superabundant ecosystem

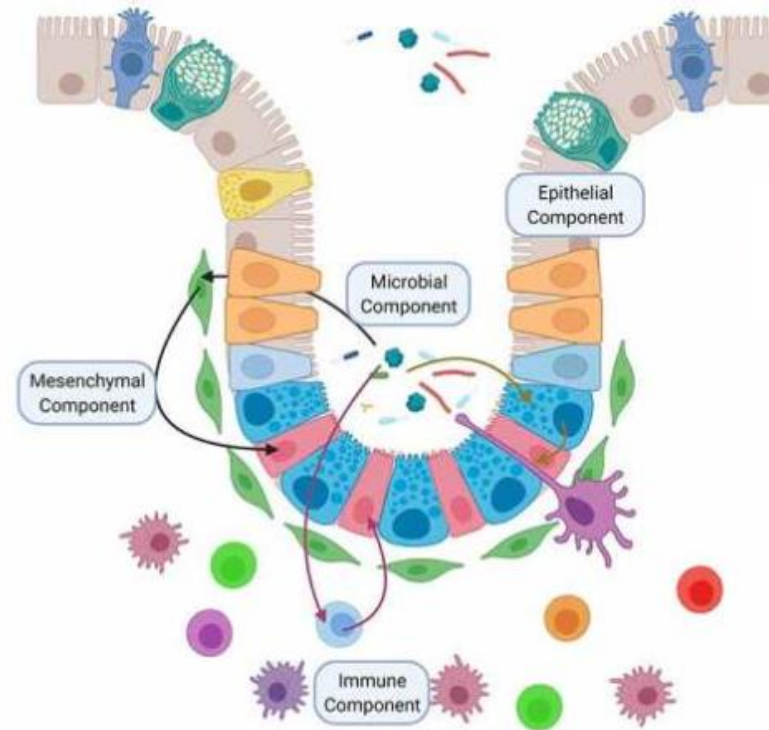
Commensal microbes are performing a huge range of beneficial functions

An imbalance in the composition of the gut microbiota is linked to many human chronic diseases



Dysbiosis

The intestinal epithelium: at the crossroads between the gut microbiota and the host



**Inflammatory
Chronic
Diseases**

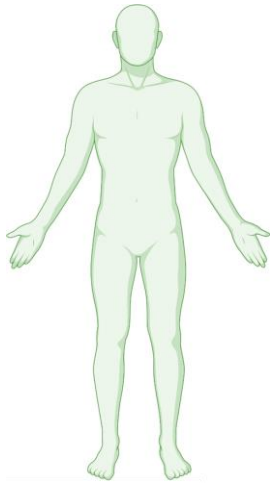


Homeostasis

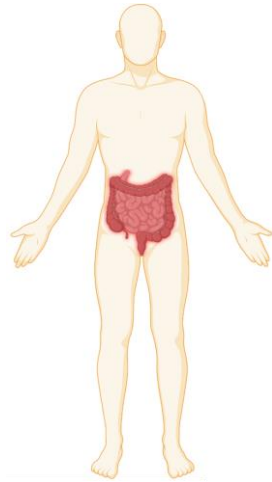
Objective

To better understand the interactions between intestinal epithelial cells and commensal bacteria in physiological and pathological situations.

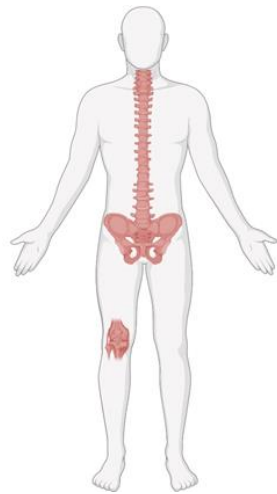
Human intestinal organoids to model diseases



Healthy

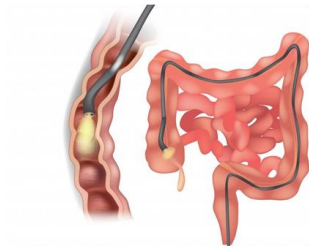


Inflammatory Bowel Diseases

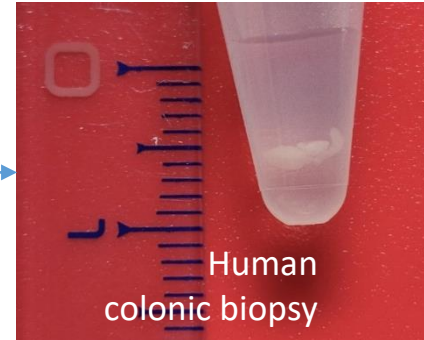


Spondyloarthritis

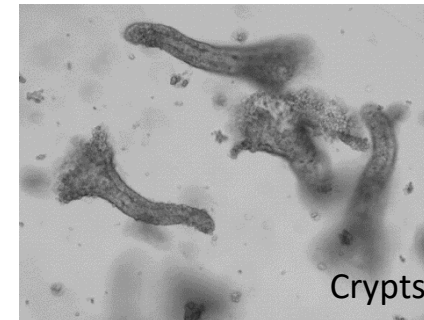
Dysbiosis
Chronic inflammation



Colonoscopic sampling



Human colonic biopsy



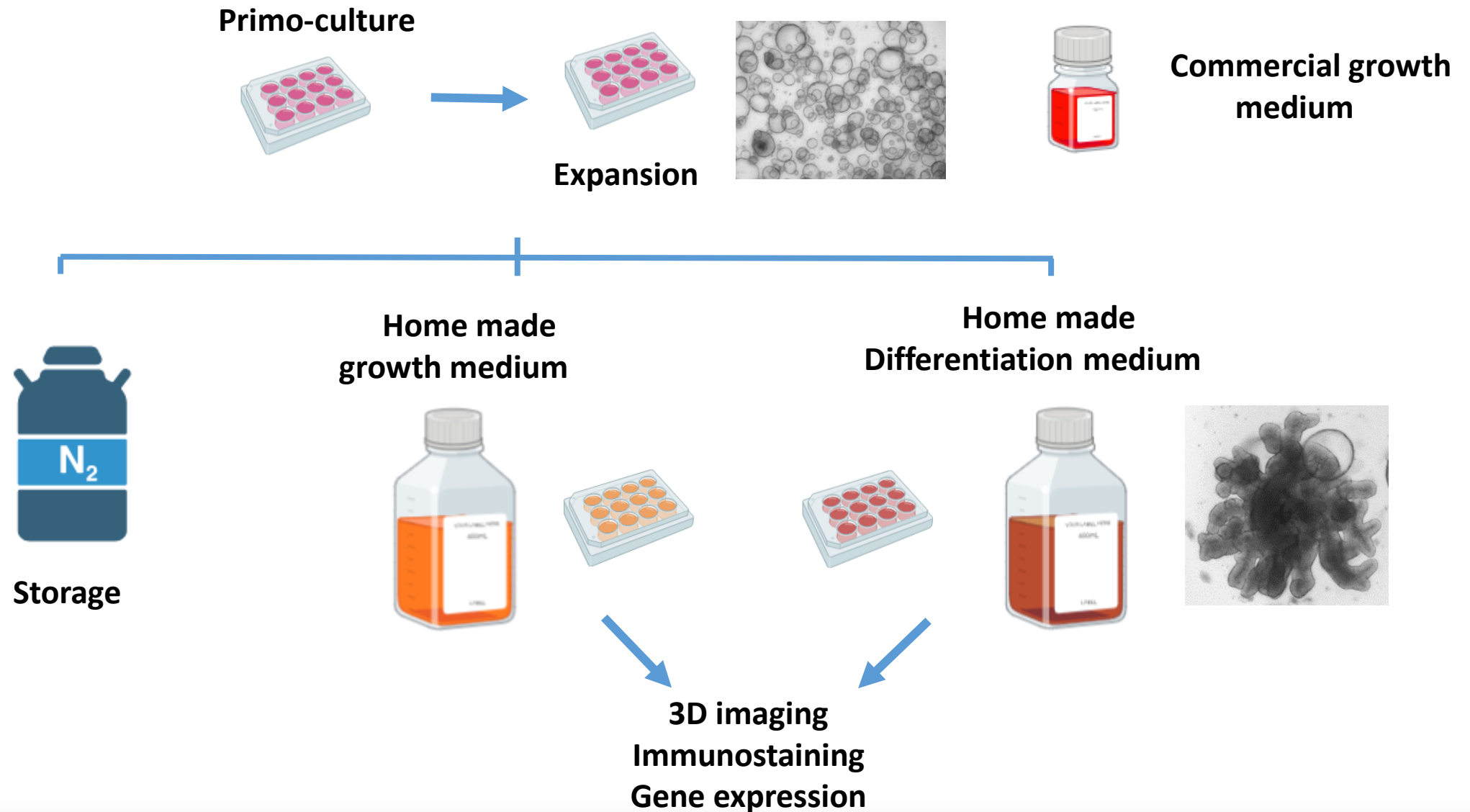
Crypts



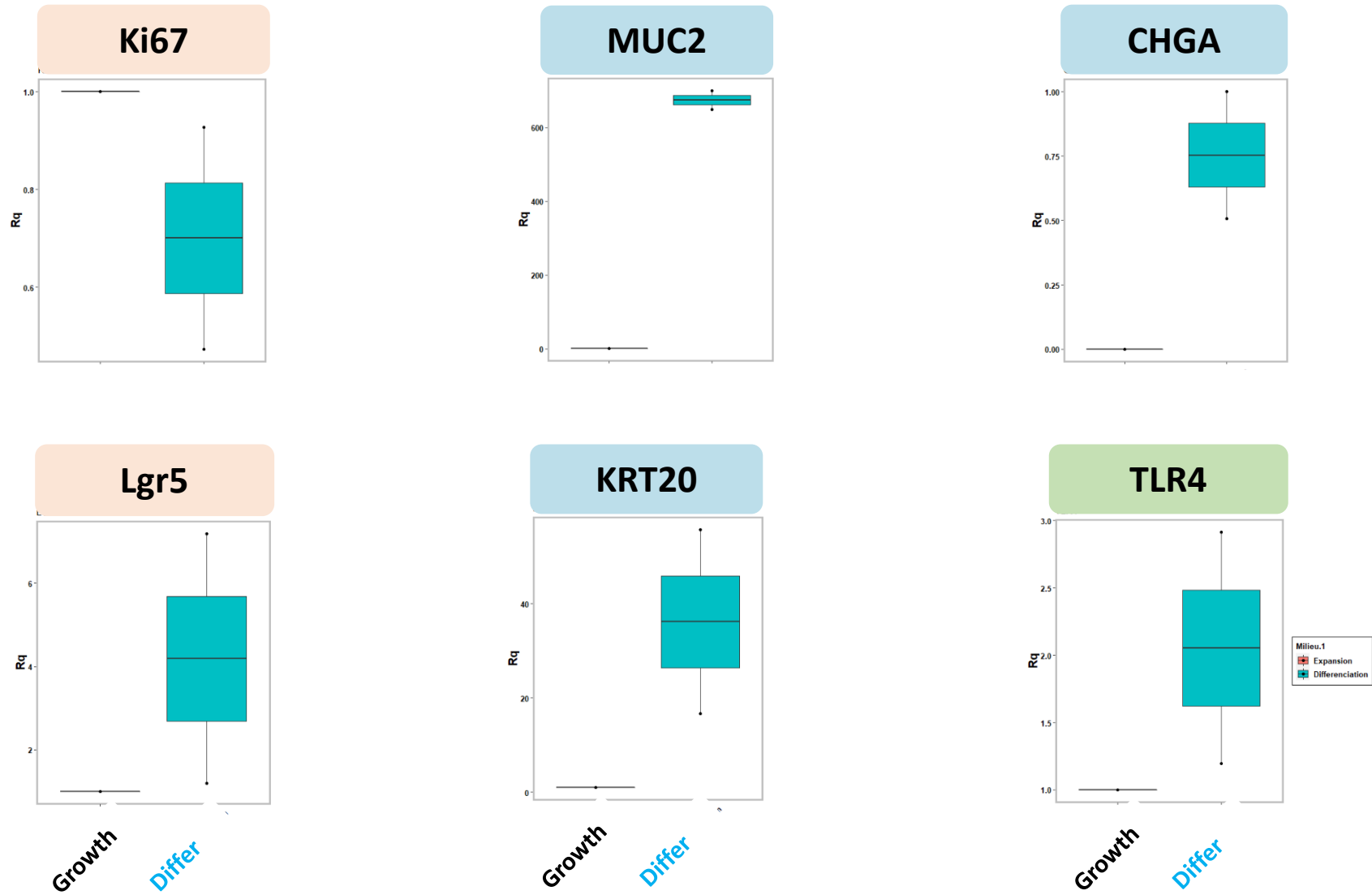
Chemical and mechanical dissociation

Culture in basement membrane extract

Protocol - Organoids biobank and expansion

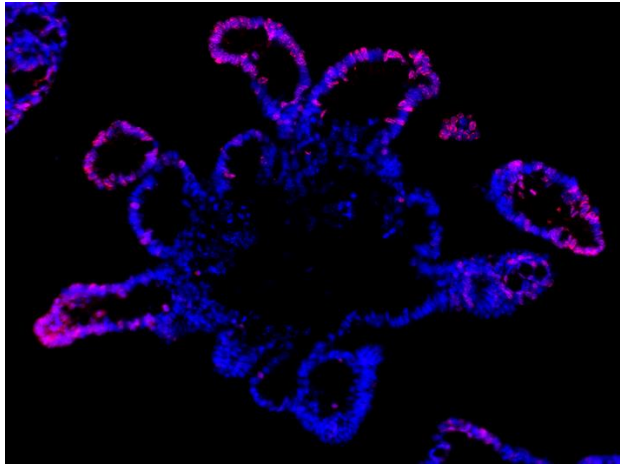


The differentiation medium increases epithelial differentiation markers and preserves proliferating cells

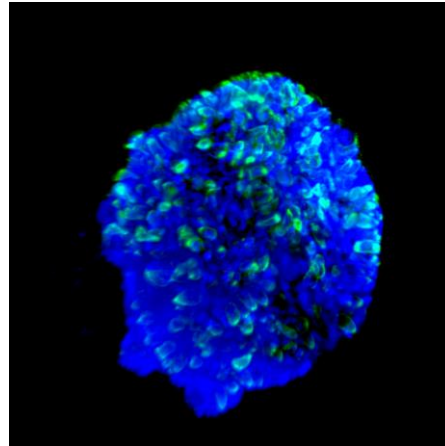


The cell types and their locations in organoids are similar to what is observed *in vivo*

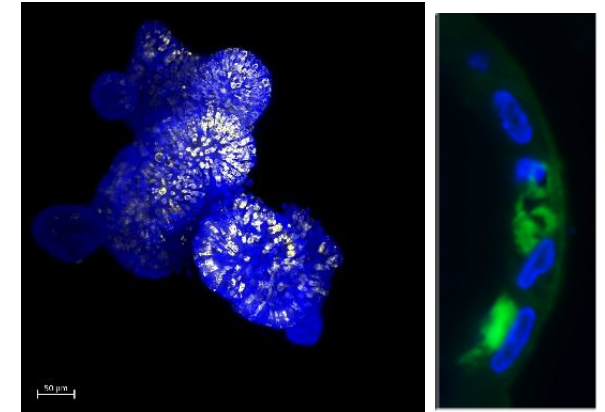
Ki67



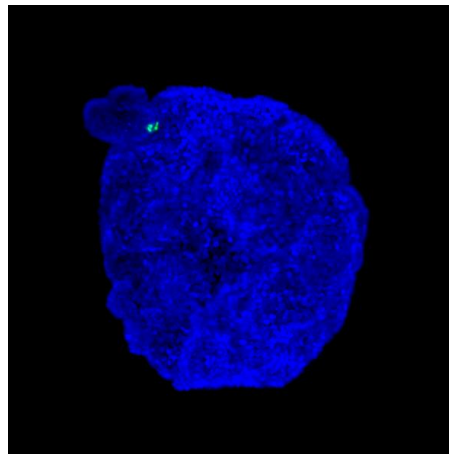
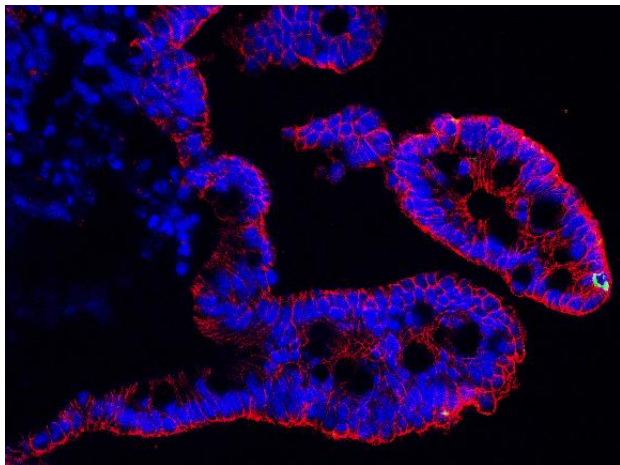
Cytokeratin 20



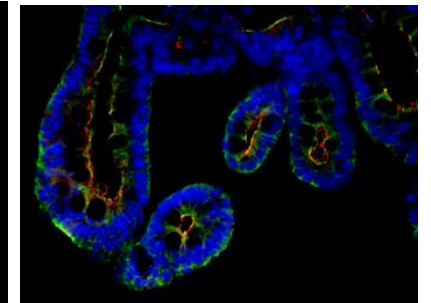
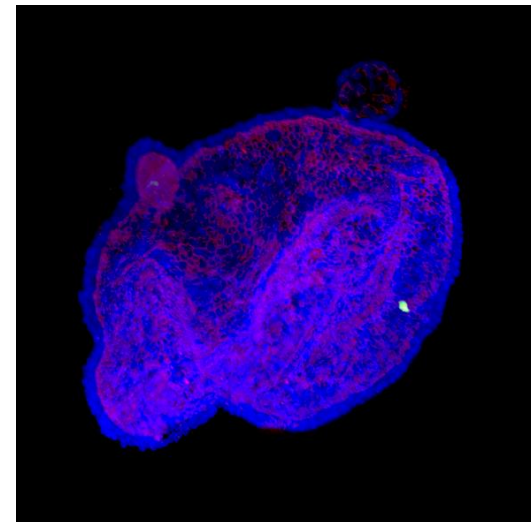
Muc2



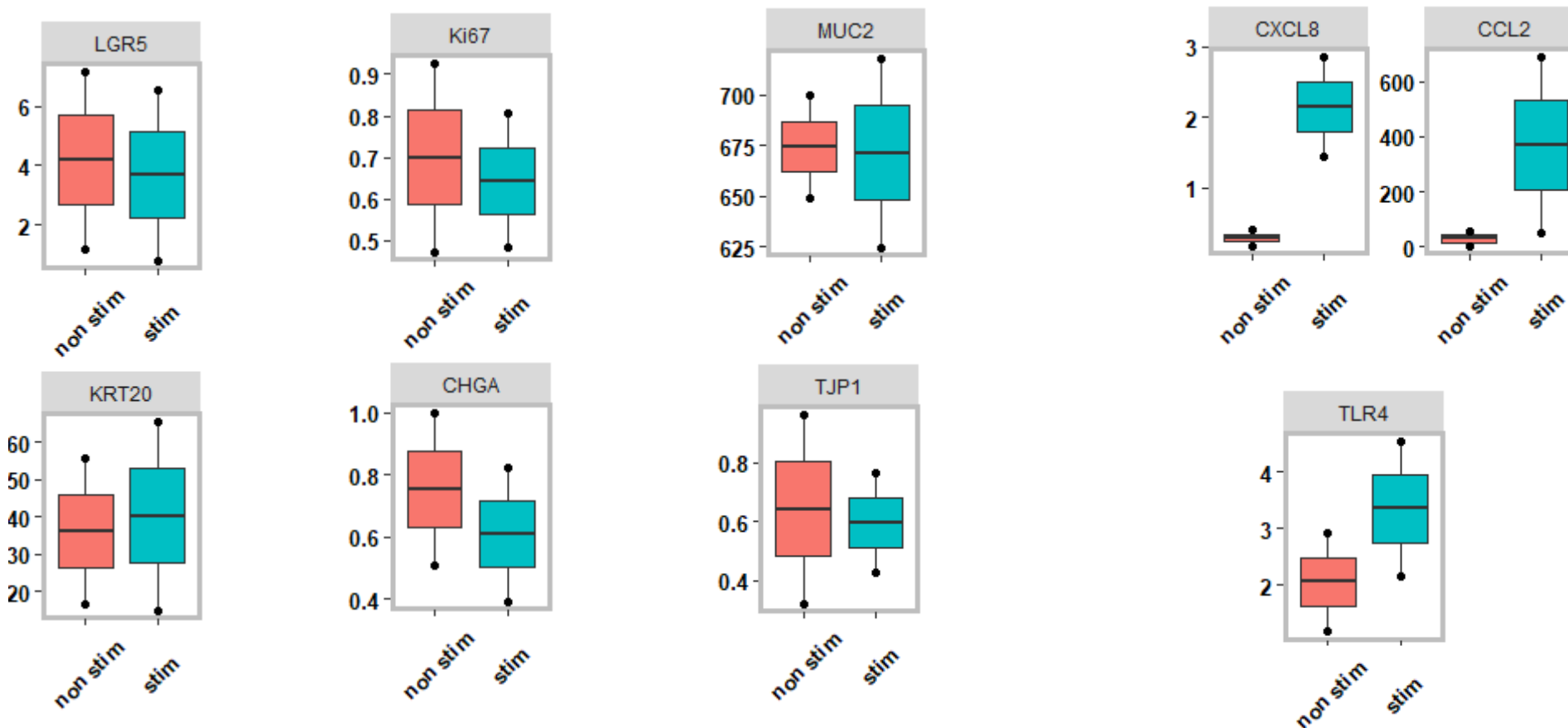
Chromogranin A



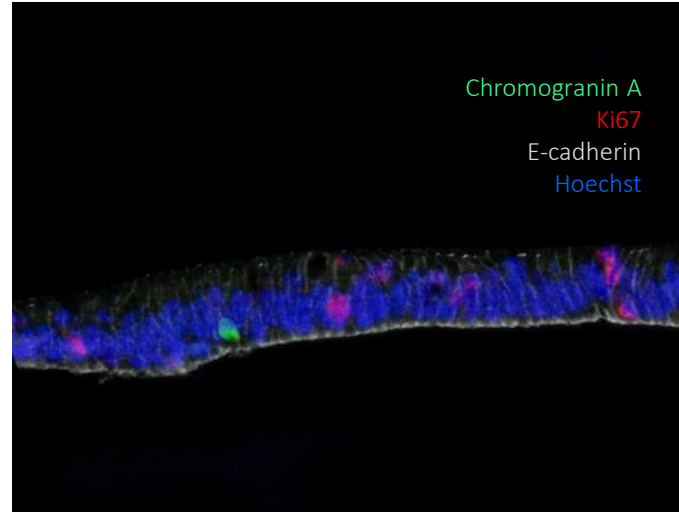
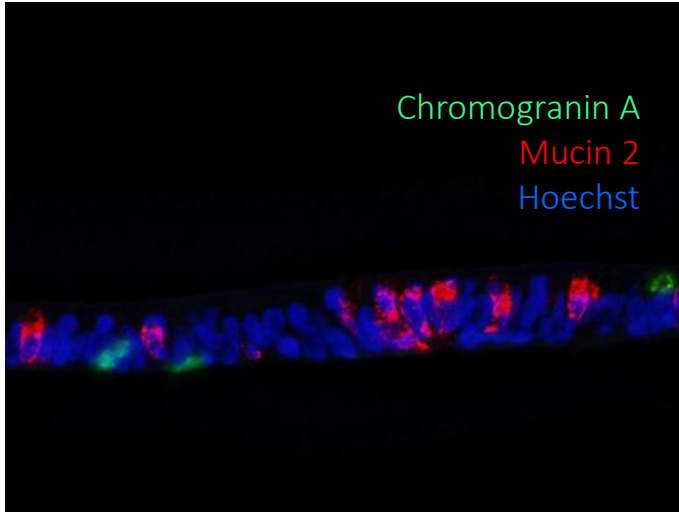
Zo-1



The organoids respond to pro-inflammatory cytokines

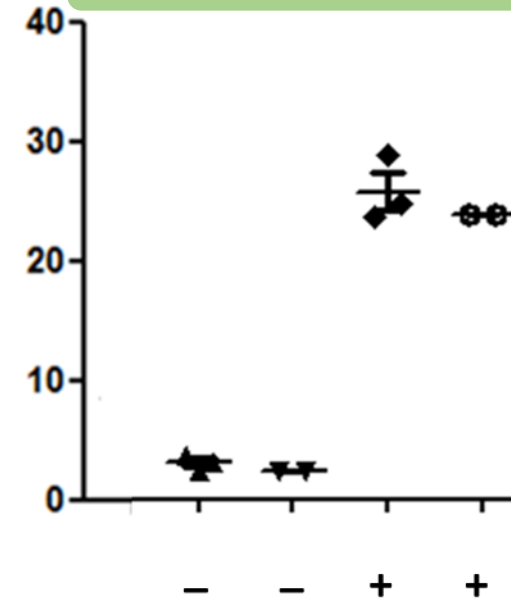


Human intestinal organoids can be used to study interactions between commensal bacteria and the intestinal epithelium



Impact of bacterial lysates coming from pro-inflammatory bacteria

CxCl8



Conclusions

- ◆ **Bio-collection of human organoids from healthy and sick individuals.**
- ◆ **Identification of bacteria/bacterial metabolites of health interest and studies of mechanisms of action.**
- ◆ **Next step: Developing organoid-on-chip technology,**

Thanks to

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