RoukenBio

# IBD *ex-vivo* model for drug discovery and development

**An *ex vivo* intestinal biopsy model for IBD drug discovery and development**

**RoukenBio has established a human *ex vivo* IBD platform** using fresh intestinal biopsies from IBD and non-IBD donors. The platform preserves native mucosal architecture, epithelial organisation, immune and stromal populations, and the inflammatory microenvironment.

This platform enables pharmacological interrogation of diseased human tissue in a clinically relevant setting recapitulating patient-specific IBD biology. The platform supports multi-parametric assessment of cytokine secretion, tissue integrity, transcriptional profiling, and therapeutic response.

## Technology

- **Tissue collection:** Fresh endoscopic biopsies (up to 6 per patient) from IBD (CD/UC) and non-IBD donors; processed within 4 hours of collection.
- ***Ex vivo* culture:** Biopsy fragments cultured for 24–72 hours ± pharmacological treatment under controlled conditions.
- **Supernatant harvest:** Multiplex cytokine profiling from culture supernatants.
- **Tissue processing:** H&E, Alcian Blue-PAS, and immunofluorescence (IF) staining (in development).
- **Biobanking:** Matched plasma and PBMCs from paired blood samples for downstream analyses.

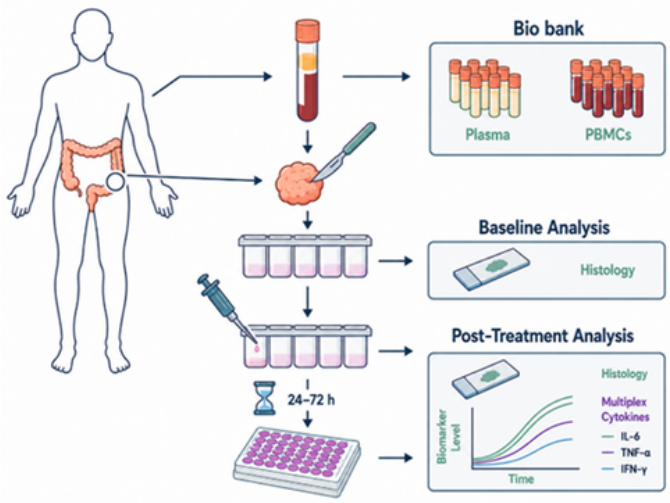



*Figure 1. Ex vivo workflow: biopsy collection → dissection → 24–72 h culture ± treatment → supernatant harvest for cytokine profiling and tissue processing for histology and gene expression.*

## Example Data

The platform was used to detect pharmacological response to adalimumab (Humira) treatment. The levels of TNF-α in supernatant was assessed after 24h post culture in ± of activation cocktail and ± Humira across a panel of IBD and non-IBD donors.

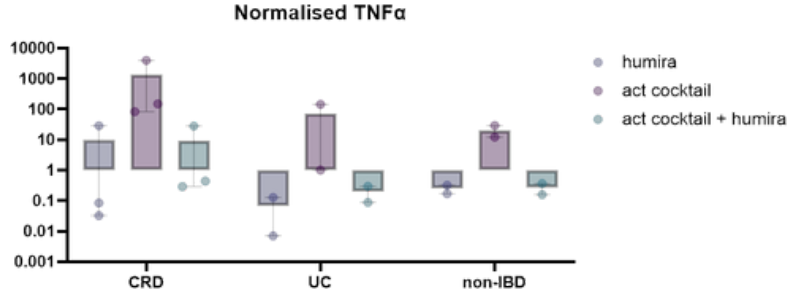



*Figure 2. Normalised TNF-α secretion relative to unstimulated control, ± activation cocktail ± adalimumab. Each dot represents an individual donor. IBD and non-IBD donors shown.*

## Applications

- **Preclinical efficacy testing** of anti-TNF biologics, JAK inhibitors, and novel IBD therapeutics
- **Mechanistic studies** of mucosal inflammation and barrier function in CD and UC
- **Translational biomarker discovery** using matched tissue, plasma, and PBMC samples
- **Proof-of-concept studies** for patient stratification and personalised medicine approaches

## Platform context

The IBD *ex vivo* biopsy platform is a core module within RoukenBio's translational in vitro biology offering, complementing biomarker discovery pipelines for a tissue-grounded view of therapeutic response.

## Key Benefits

**Physiologically relevant**
Patient-derived tissue preserving native mucosal architecture, epithelial organisation, and immune context.

**Pharmacologically responsive**
Detects intended therapeutic effects of approved biologics (adalimumab), supporting direct translation to clinical settings.

**Multi-readout platform**
Cytokine profiling, H&E and Alcian Blue-PAS histology, immunofluorescence, gene expression, and biobanked plasma/PBMCs from a single donor.

**Translational design**
Matched tissue, plasma, and PBMC samples from the same patient enable biomarker discovery and personalised medicine studies.

**Evaluate therapeutic candidates in patient-derived intestinal tissue to generate clinically relevant, translational insights.**

To learn more, download our slide deck.

## RoukenBio - The CRO redefined

Backed by our brilliant minds, we have turned the traditional CRO model on its head, by fostering a collaborative and personalised approach. Our mission is simple:

**Solve problems. Deliver quality data. Propel your drug discovery breakthroughs.**

United by a passion to make sense of complexities and overcome challenges, we apply our specialised knowledge to big-picture thinking. We will explore every option to deliver over and above for your project.

We are thought leaders with a deep understanding of immunology, bioassays, molecular biology and a track record of groundbreaking discoveries and novel cell-based tools.

**Contact hello@rouken.bio for more information, or visit www.rouken.bio**