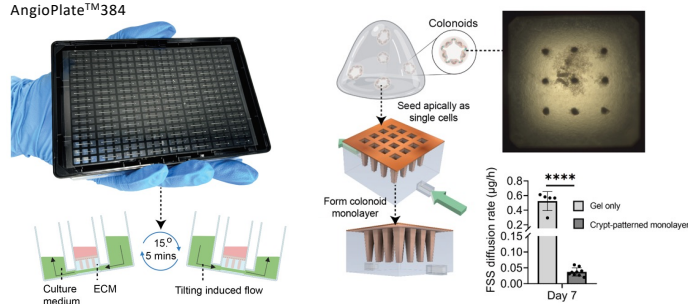


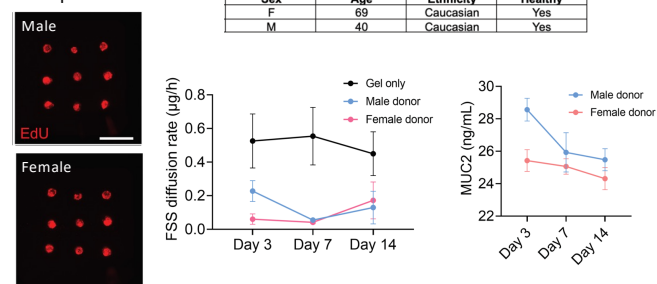
## Introduction

Colon models are essential tools for research on drug absorption and inflammatory disease modelling. However, traditional *in vitro* systems often fail to accurately recapitulate the structural and cellular complexity of native colon epithelium. The **AngioPlate384** platform addresses this shortfall by enabling the scalable production of crypt-patterned colon tissues from primary human colon organoids with colonic endothelium support, which help to provide key insights into cellular localization, tissue-drug responses, and pathophysiological processes. This poster outlines the principles behind the AngioPlate384 and its application in colon model development.

## AngioPlate™384



Sex	Age	Ethnicity	Healthy
F	69	Caucasian	Yes
M	40	Caucasian	Yes



**Experimental Timeline:**

- Day -2:** ECM casting
- Day 0:** Colon cell seeding
- Day 3:** FSS permeability assay
- Day 7:** FSS permeability assay
- Day 14:** Add 50 ng/mL TNF $\alpha$  + IFN $\gamma$  basally
- Day 15:** FSS permeability assay
- Day 17:** 1) FSS permeability assay, 2) EdU pulse and immunostain

**Results at Day 14:**

Micrographs show FSS permeability at 0 ng/mL, 50 ng/mL, and 500 ng/mL TNF $\alpha$ +IFN $\gamma$ . The 500 ng/mL condition shows significant cell death (indicated by asterisks) and increased permeability.

**FSS Diffusion Rate (Day 14):**

Condition	Day 3	Day 7	Day 15	Day 17
0 ng/mL TNF $\alpha$ +IFN $\gamma$ (green)	~0.05	~0.03	~0.04	~0.04
50 ng/mL TNF $\alpha$ +IFN $\gamma$ (blue)	~0.08	~0.03	~0.10	~0.19
500 ng/mL TNF $\alpha$ +IFN $\gamma$ (red)	~0.08	~0.03	~0.12	~0.19

**Figure 2: Effect of Adalimumab on TNF $\alpha$  and IFN $\gamma$ -induced FSS diffusion rate.**

The figure illustrates the effect of Adalimumab on TNF $\alpha$  and IFN $\gamma$ -induced FSS diffusion rate. The left diagram shows TNF $\alpha$  and IFN $\gamma$  binding to their receptors, leading to increased FSS diffusion rate. The right diagram shows Adalimumab blocking TNF $\alpha$ , leading to decreased FSS diffusion rate. The bar graphs show FSS diffusion rate ( $\mu\text{g/h}$ ) for various conditions.

**Left Graph: FSS diffusion rate (100  $\mu\text{g}$  of TNF $\alpha$  + 100  $\mu\text{g}$  of IFN $\gamma$ )**

TNF $\alpha$ + IFN $\gamma$ (50 ng/mL)	Adalimumab (10 $\mu\text{g/mL}$ )	FSS diffusion rate ( $\mu\text{g/h}$ )
-	-	~0.05
+	-	~0.21
+	+	~0.10

**Right Graph: FSS diffusion rate (100  $\mu\text{g}$  of TNF $\alpha$  + 100  $\mu\text{g}$  of IFN $\gamma$ )**

Prednisolone concentration ( $\mu\text{M}$ )	TNF $\alpha$ + IFN $\gamma$	FSS diffusion rate ( $\mu\text{g/h}$ )
10 (basal)	-	~0.28
0.1	+	~0.32
0.1	+	~0.28
0.1	+	~0.22
0.1	+	~0.18
0.1	+	~0.12
0.1	+	~0.10
Vehicle	+	~0.12

1. Sotra, A., Jozani, K. A. & Zhang, B. A vascularized crypt-patterned colon model for high-throughput drug screening and disease modeling. *Lab on a Chip* **23**, 3370–3387 (2023).
2. K., & Lutolf, M. P. (2024). Patient-derived mini-colons enable long-term modeling of tumor-microenvironment complexity. *Nature Biotechnology*, *43*(5), 727–736. <https://doi.org/10.1038/s41587-024-02301-4>

Condition	Day 3	Day 7	Day 14
Gel only	~0.50	~0.48	~0.58
Endothelium	~0.55	~0.50	~0.52
Co-culture	~0.08	~0.03	~0.06

