



THIRD ANNUAL  
**ISSPP**  
Congress 2022

*International Society  
for the Study of Pleura  
and Peritoneum*



**PLENARY ABSTRACT | COLORECTAL CANCERS**

# A Single-cell Resolution Landscape of Peritoneal Metastases of Colorectal Cancer

**Jesse Demuytere, MD**

PhD-Student, Department of Human Structure and Repair  
Laboratory of Experimental Surgery  
Ghent University

*Advancing Innovative Therapies for Cancers That Invade the Peritoneum and the Pleura*

# Disclosures

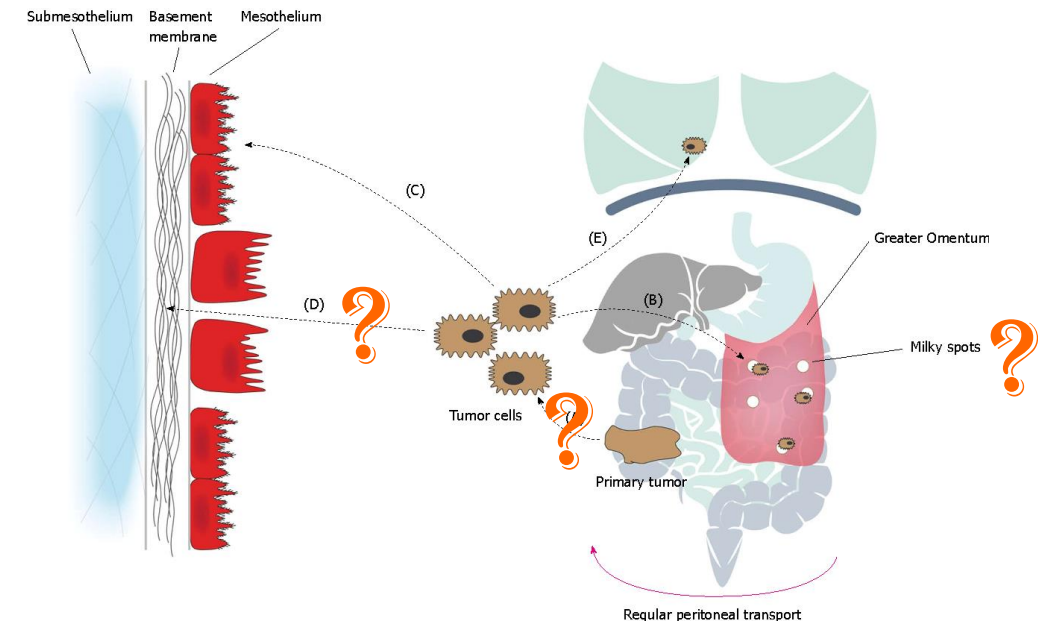
- I do not have any relevant financial relationships.

*This presentation and/or comments will provide a balanced, non-promotional, and evidence-based approach to all diagnostic, therapeutic and/or research related content.*

# Introduction

## Peritoneal metastases of CRC:

- Common
- Many knowledge gaps, particularly regarding TME
- CMS4!\*

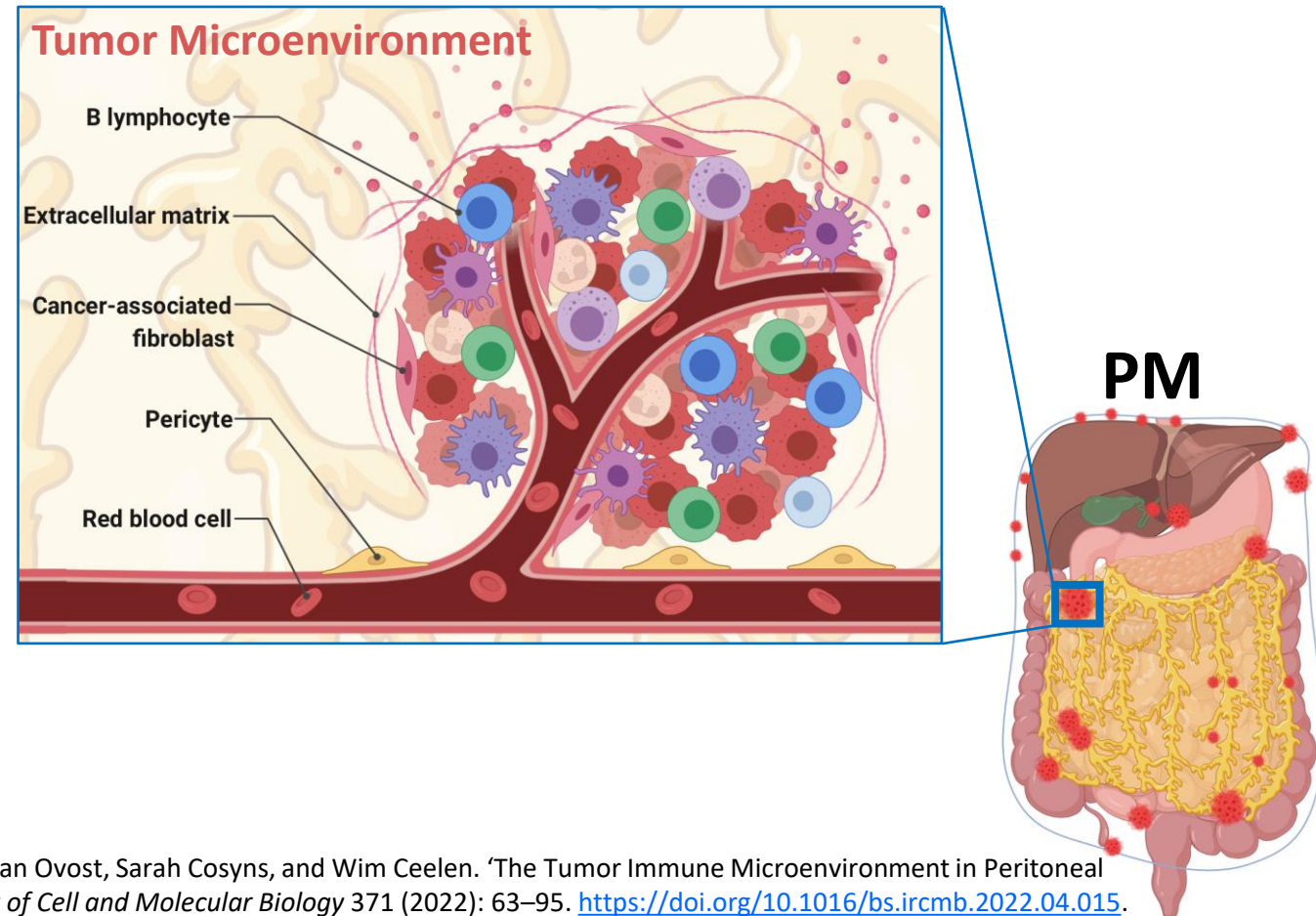


\*Lenos, Kristiaan J., Sander Bach, Leandro Ferreira Moreno, Sanne ten Hoorn, Nina R. Sluiter, Sanne Bootsma, Felipe A. Vieira Braga, et al. 'Molecular Characterization of Colorectal Cancer Related Peritoneal Metastatic Disease'. *Nature Communications* 13, no. 1 (December 2022): 4443. <https://doi.org/10.1038/s41467-022-32198-z>.

Ubink, I., W. J. van Eden, P. Snaebjornsson, N. F. M. Kok, J. van Kuik, W. M. U. van Grevenstein, M. M. Laclé, et al. 'Histopathological and Molecular Classification of Colorectal Cancer and Corresponding Peritoneal Metastases'. *The British Journal of Surgery* 105, no. 2 (2018): e204–11. <https://doi.org/10.1002/bjs.10788>.

# TME

- Little data on PM in general
- Location-specific: “seed and soil”



Demuytere, Jesse, Sam Ernst, Judith van Ovost, Sarah Cosyns, and Wim Ceelen. 'The Tumor Immune Microenvironment in Peritoneal Carcinomatosis'. *International Review of Cell and Molecular Biology* 371 (2022): 63–95. <https://doi.org/10.1016/bs.ircmb.2022.04.015>.

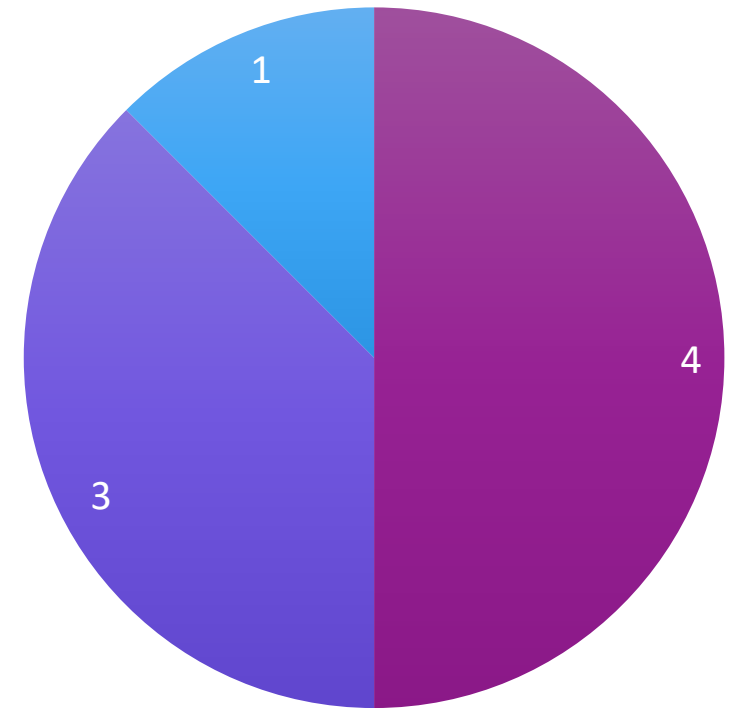
# Methods

Single-cell RNA Sequencing

8 HIPEC-naïve patients:

- four distinct anatomic locations (primary tumor, abdominal wall, bowel mesentery and omentum)

Detailed annotation of clusters

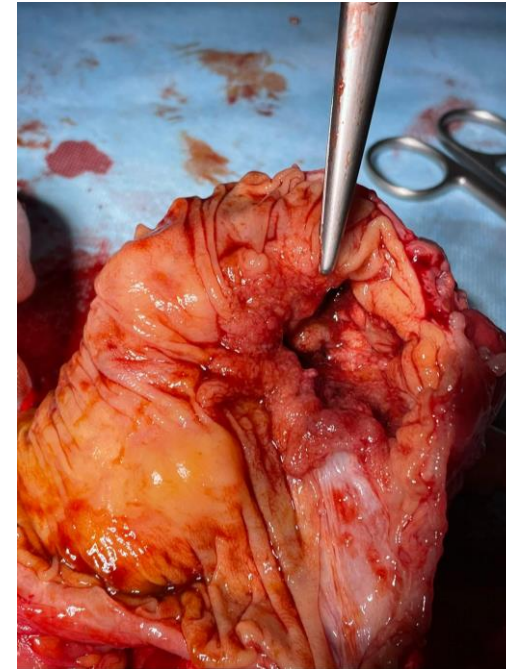


■ Conventional ■ Mucinous ■ Signet ring cell

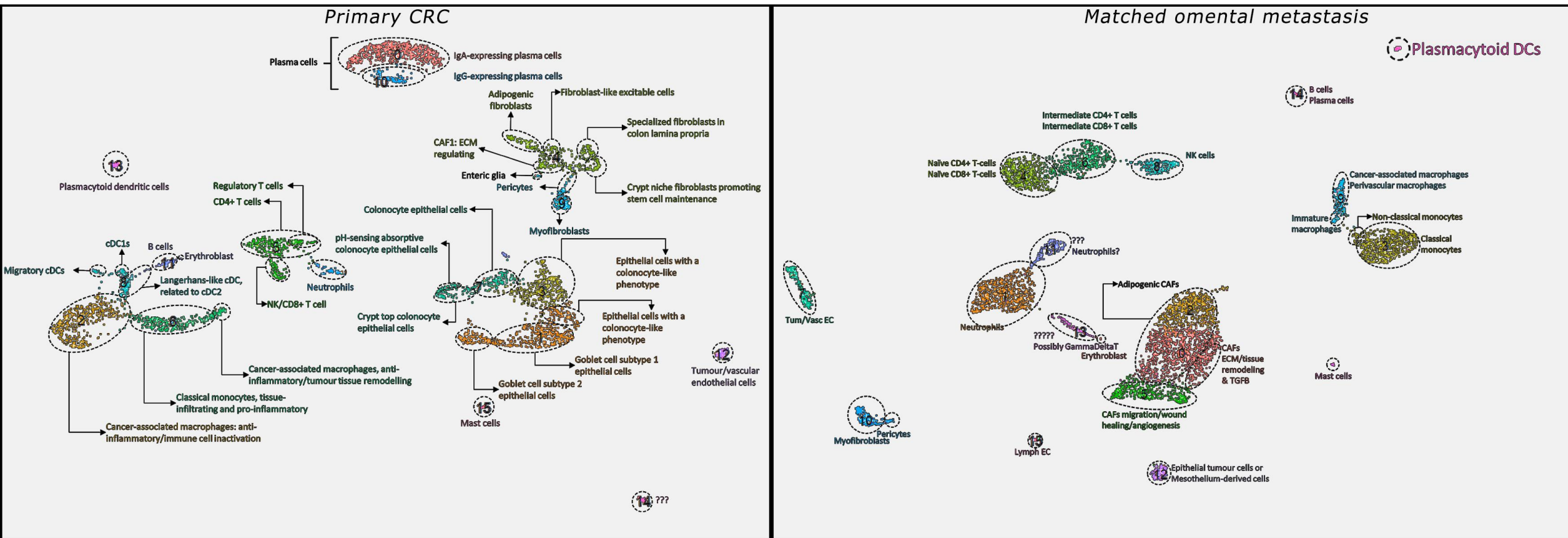


# Results

- 23 samples (126.316 cells) sequenced
- Inter- and inpatient heterogeneity: targeted anatomical sampling necessary



## PRELIMINARY DATA. PLEASE DO NOT PHOTOGRAPH

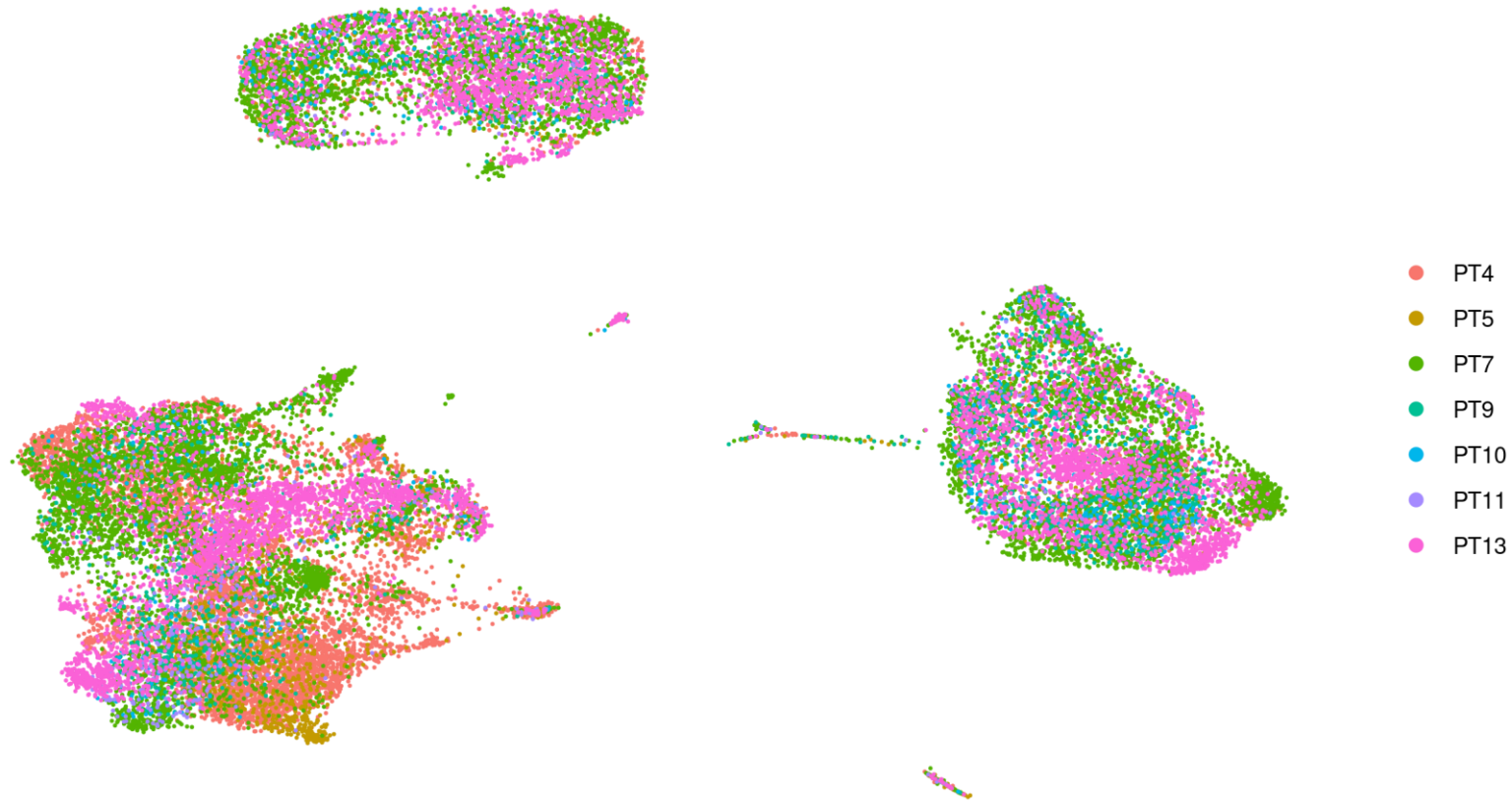


# Results

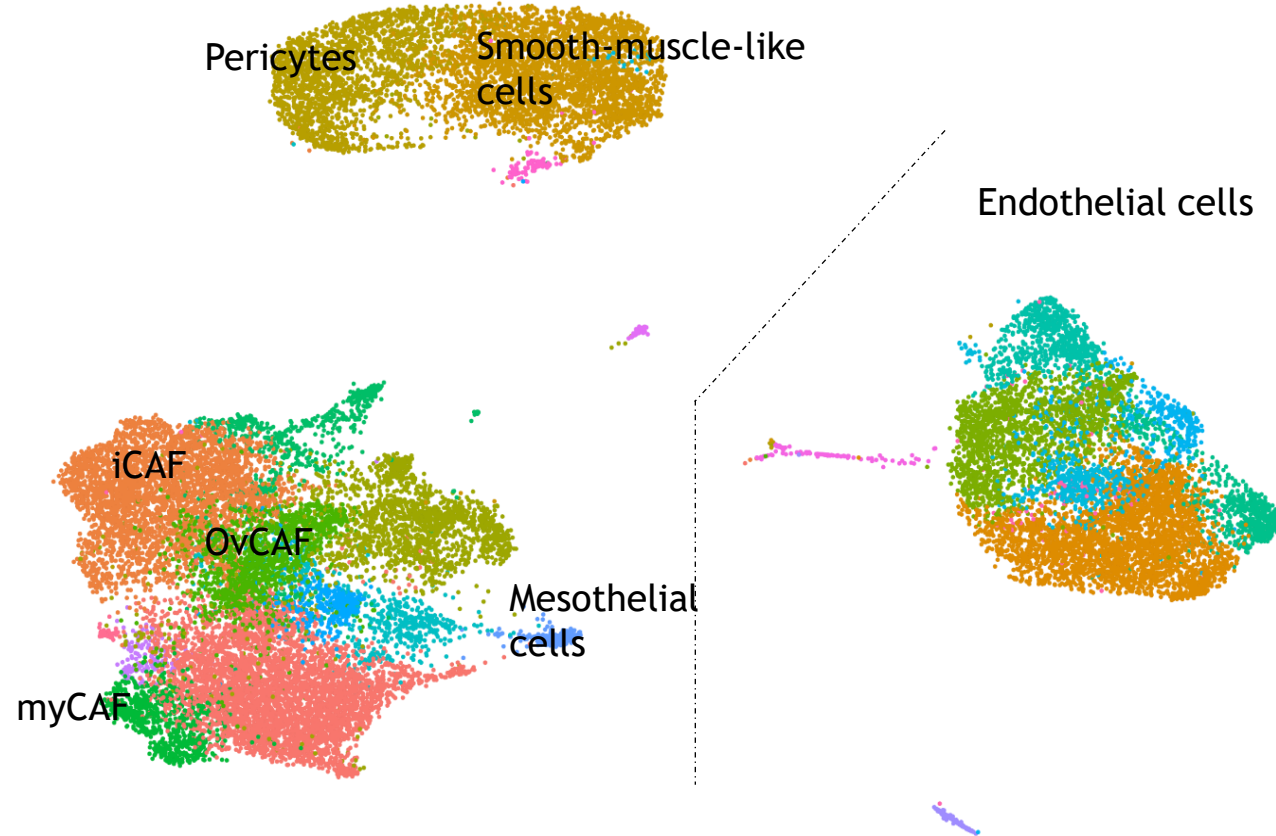
- Inflamed-immune-enriched environment:
  - Large T-cell populations: “hot” TIME
  - Macrophage subclusters: classical monocyte and cancer-associated macrophages
- Large CAF cluster, with functional subclusters



# Pooled data: stromal compartment



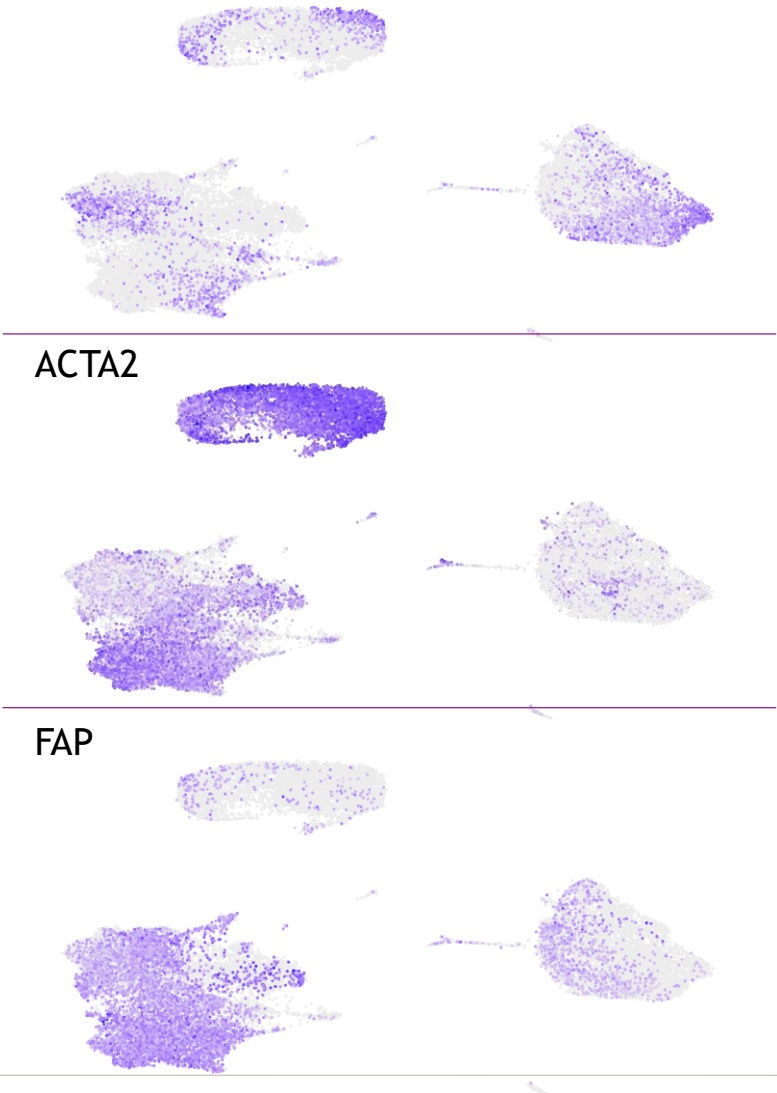
PRELIMINARY DATA. PLEASE DO NOT PHOTOGRAPH



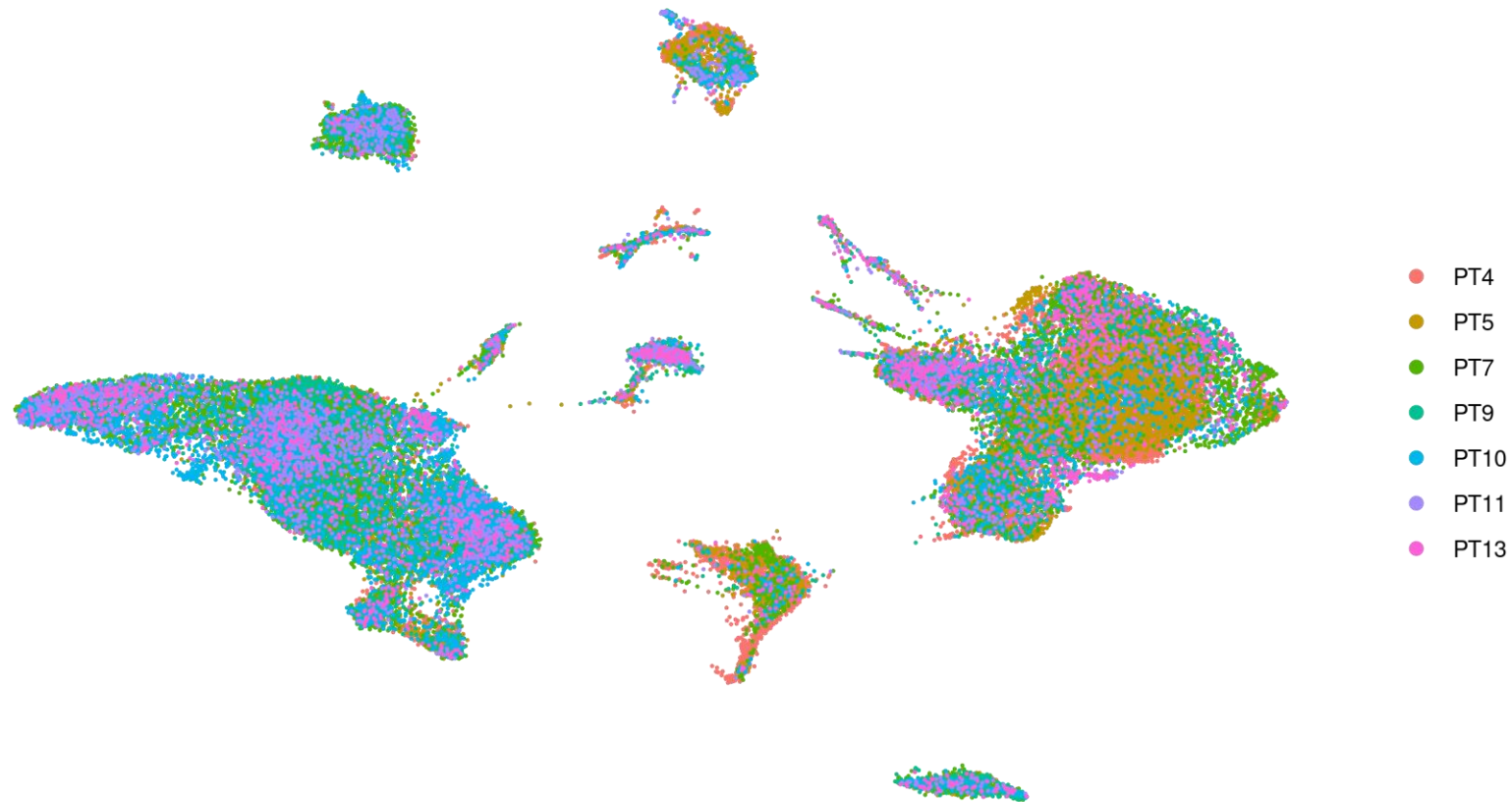
IL-6

ACTA2

FAP

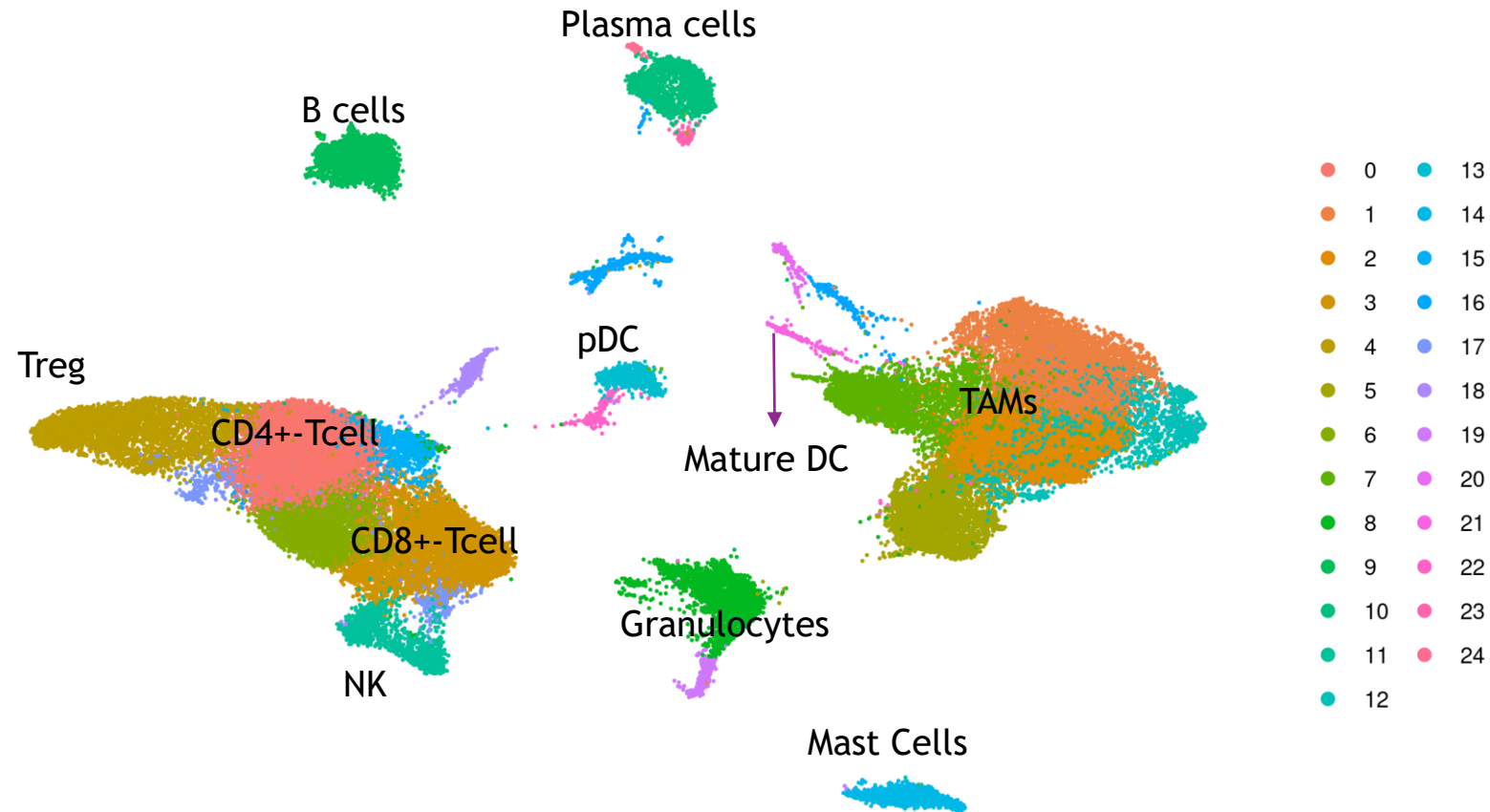


# Immune compartment



PRELIMINARY DATA. PLEASE DO NOT PHOTOGRAPH

# Immune compartment



# Conclusions

- First “map” of the CRC PM TME
- Inflamed, mesenchymal, CMS4-like phenotype!
- Further analysis ongoing



# Thank you!

- The experimental surgery lab
- All collaborators at the Berx lab, VIB Gent
- CRIG



# Let's connect!



Jesse.demuytere@ugent.be



@demuyterejesse



/jesse-demuytere

## Department of Human Structure and Repair

Laboratory of Experimental Surgery (entrance 36 – blok B floor -1)

Campus UZ Gent

Corneel Heymanslaan 10

B-9000 Ghent, Belgium

Follow me on Researchgate!

