**Title:** Agentic AI for Conversational Imaging Control and Cell Type Modeling with OMERO (AIMinO)

**Authors:**

Yingxiao Shi (TK), Chung-Ta Huang (Kida), Yinuo Cheng, Yuan Tian

**Milestone 2: MLOps Infrastructure**

**Data Background**

The sample analyzed in this study was obtained from a patient with metastatic melanoma who initially responded to immunotherapy and maintained stable disease for 12 years before tumor resection. Notably, the resected tumor still contained proliferating tumor cells without evidence of progression. We performed multiplex immunofluorescence staining using markers for both tumor and non-tumor cell populations to investigate the biological mechanisms underlying this prolonged stability. This approach aims to characterize tumor–immune interactions that may contribute to the non-progressive state of the disease.

**Data Format**

For pipeline testing, we selected a smaller region of the tumor to generate a reduced-size TIFF file. Segmentation was performed using **MCMICRO**, which produced a corresponding .csv datatable containing single-cell measurements for downstream analysis.

**Prototype PipelineA screen shot of a black circle

Description automatically generated**