**Tumor immune microenvironment (TIME) is associated with the survival outcome and progression in triple negative breast cancer**


**Abstract/summary**

**Introduction**
- Severe: breast cancer is a chronic disease that severely affect the world population (2022: 2.3 million women with breast cancer) (World Health Organization, 2024)
- Breast cancer: broadly divided into different clinical subtypes, including ER+, PR+, HER2+ breast cancer and TNBC
- TNBC is the most aggressive and deadly subtype of breast cancer
- Tumor-immune micro-environment (TIME) has been found to be crucial in determining the survival outcome of the patients
- Aim: characterize the crucial subtypes of tumor-associated cells that may potentially affect the survival outcome and tumor progression in TNBC

**Materials and Methods**

- Tumor
- Clinical Samples of invasive ductal carcinoma from 19 patients
- single-cell suspension (barcoded gel beads)
- Droplet-based protocol
- High throughput sequencing
- Gene expression analysis

**Results**

- Strong positive correlation between pro-inflammatory signature and gene signature of lipid macrophage signature
- Independent validation by TCGA-BRCA patients with basal phenotype (n = 148)

**Discussion**

- Inflammatory phenotype in myeloid cells
- mCAF and CD4-Treg: potential source of MIF signaling
- Association with immuno-suppression in myeloid cells
- Tuned down anti-cancer immunity by macrophage
- Future research directions:
  - Study the correlations between MIF signaling, lipid macrophage signature and other T cell signature (e.g. T-cell dysfunction in effector T cells)

**References**