***Summary-topic***Our laboratory is focused on understanding myeloid plasticity in tumors.

We aim to uncover the genetic cues behind myeloid plasticity. We are interested in asking whether certain oncogenes or tumor suppressor-genes drive myeloid heterogeneity. By utilizing the Cancer Genome Atlas (TCGA: <https://www.cancer.gov/about-nci/organization/ccg/research/structural-genomics/tcga>) and crossing genome-wide datasets with scRNAesq data, this project aims to establish a **PAN-MYELOID score**, that dissects which driver mutations harbor the most abundant myeloid phenotypes in tumors, in order to design ad-hoc therapies for these cancers.

***Title***

*GENETIC LANDSCAPE DISSECTION OF TUMOR-ASSOCIATED MYELOID PHENOTYPES*

***Abstract***

Myeloid cells are the most abundant leukocyte population in solid tumors. The majority of leukocytes found in the TME is made up of myeloid cells, predominantly macrophages (M𝜑), but also monocytes (Mo) and neutrophils (Neu) at different stages of differentiation. This plasticity can give rise to therapy resistance and current immunotherapies aim to uncover the proper cell to target to regress cancer in their different manifestations. In this project we will analyze the complexity and the abundance of myeloid phenotypes in cancers that arise from different genetic mutations. The goal is to understand which driver mutations drive the most abundant and diverse class of myeloid subpopulations.

***Hypothesis***

Myeloid cells acquire an unique genetic-driven transcriptome profile across different solid tumors.

***Data availability***

1. ***Driver mutations:*** [***https://www.intogen.org/search?cancer=OV***](https://www.intogen.org/search?cancer=OV)
2. ***scRNAseq of myeloid cells in***

***OVARIAN cancer (Tp53, Braca1, Braca2, Kras)*** [***https://www.cell.com/cancer-cell/pdfExtended/S1535-6108(21)00212-9***](https://www.cell.com/cancer-cell/pdfExtended/S1535-6108(21)00212-9)

***Lung cancer NSCLC (p53 KO EGFR, KrasLSL-G12D) LUNG*** [***https://pubmed.ncbi.nlm.nih.gov/30979687/***](https://pubmed.ncbi.nlm.nih.gov/30979687/)

***BRAIN gliomas IDH wt*** [***https://pubmed.ncbi.nlm.nih.gov/32470396/***](https://pubmed.ncbi.nlm.nih.gov/32470396/)

***BREAST cancer (TNBC, Her2+) (need to identify human dataset, mouse available)***