Project 1A: Relating peptide binding affinity to gene expression via cell typing
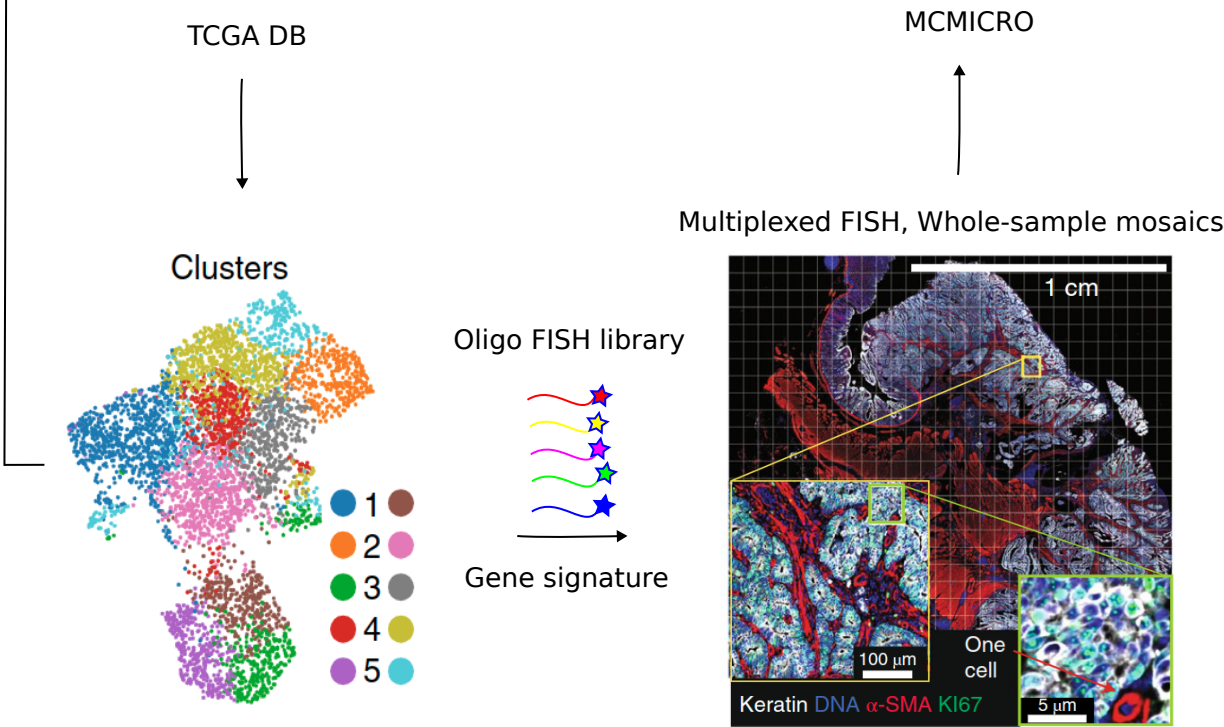
X-mer peptide library

MARIA

Oligo FISH library

T2

T2

T2 Shift

anti-HLA-A2 fluor

Type A
Type B
Type C
Type D
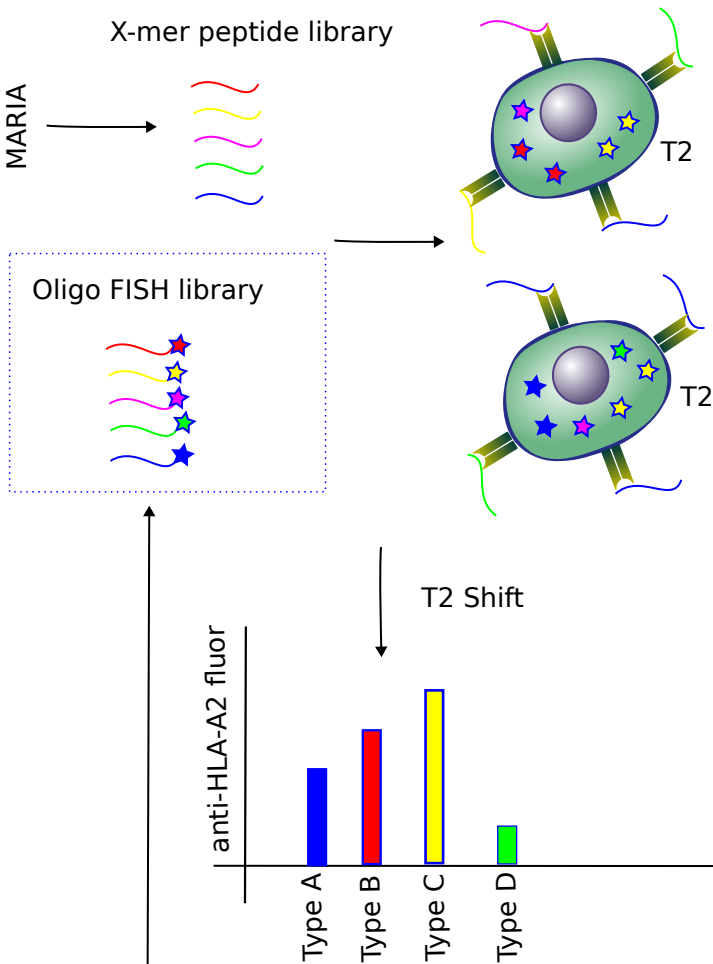
Project 1B: In-vitro transcriptional dynamics of PD-L1

T cell

PD-1
PD-L1
TCR
MHC
Interferon gamma
IFNGR2
IFNGR1
JAK2
JAK1
STAT1
STAT1
P
P
Melanoma cell
IRF1
IRF1 Promoter
IRF1
PDL1 Promoter
PD-L1
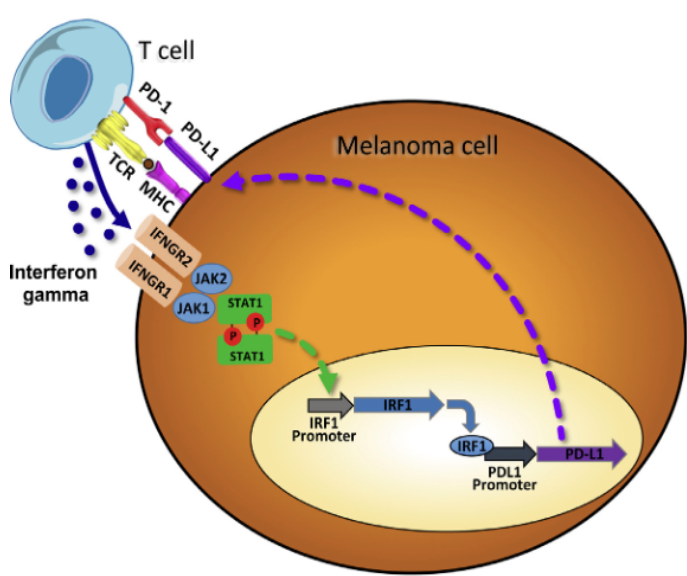
PACMENSL inference of transcriptional dynamics from FISH data

Statistical fluctuation analysis as in Munsky 2018

Project 2: Multiplexed imaging tissue imaging to understand tumor immunogenicity

TCGA DB

MCMICRO

Multiplexed FISH, Whole-sample mosaics

Clusters

Oligo FISH library

1
2
3
4
5

Gene signature

1 cm

One cell

100 μm

5 μm

Keratin DNA α-SMA KI67

Cell types with unique immunogenic features e.g., T-cell inflammation vs non T-cell inflamed