FOCIS Workshop in Systems Immunology 2024

Papers discussed during the workshop:

Systems Immunology & Immune Oncology: A Data-Centric View

1. Eleven grand challenges in single-cell data science
   https://genomebiology.biomedcentral.com/articles/10.1186/s13059-020-1926-6
2. Optimal-Transport Analysis of Single-Cell Gene Expression Identifies Developmental Trajectories in Reprogramming https://www.cell.com/cell/pdf/S0092-8674(19)30039-X.pdf
3. Gene trajectory inference for single-cell data by optimal transport metrics
   https://www.nature.com/articles/s41587-024-02186-3

From Systems Immunology to Novel Therapeutic Insights

1. Personalized Immunomonitoring Uncovers Molecular Networks that Stratify Lupus Patients https://www.ncbi.nlm.nih.gov/pubmed/27040498

2. Genetics of rheumatoid arthritis contributes to biology and drug discovery https://www.ncbi.nlm.nih.gov/pubmed/24390342

3. Single-cell RNA sequencing of human tissue supports successful drug targets
   Single-cell RNA sequencing of human tissue supports successful drug targets | medRxiv

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Biology is Spatial: A Primer on Spatial Biology and its Applications in Oncology and Immunology

Single cell and spatial transcriptomics of non-small cell lung cancer (10 Genomics sc + visium).
https://pubmed.ncbi.nlm.nih.gov/38782901/

Charting the cellular bidgeography in colitis reveals fibroblast trajectories and coordinated spatial remodeling. (Merfish in situ spatial).
https://pubmed.ncbi.nlm.nih.gov/38569542/

Spatial transcriptomics stratifies psoriatic disease severity by emergent cellular ecosystems (10X Visium + Multiplex IF).
https://pubmed.ncbi.nlm.nih.gov/37267384/

Unraveling Immunity through Machine Learning and AI: A Primer for Immunologists

1. [Broad immune activation underlies shared set point signatures for vaccine responsiveness in healthy individuals and disease activity in patients with lupus](#)

2. [Assessing GPT-4 for cell type annotation in single-cell RNA-seq analysis](#)

4. [Nicheformer: a foundation model for single-cell and spatial omics](#)

Interactive Data Analysis Session

1. TGFβ attenuates tumour response to PD-L1 blockade by contributing to exclusion of T cells https://www.nature.com/articles/nature25501
2. The cancer-immunity cycle: Indication, genotype, and immunotype https://www.sciencedirect.com/science/article/pii/S1074761323004168?via%3Dihub