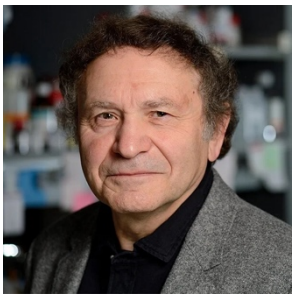

Aleksander Popel, Ph.D.

Titles & Department

Director, Systems Biology Laboratory; Professor of Biomedical Engineering, Professor of Medicine; Professor of Oncology

Specialization Areas

Systems pharmacology, immuno-oncology computational models, angiogenesis, therapeutic peptides.

Summary of Research & Work

Dr. Popel's Systems Biology Laboratory research includes:

- Immuno-oncology computational models, combining spatial transcriptomics and immune phenotyping to model and predict therapeutic responses.
- Fundamental research in cell biology, including cancer metastasis and angiogenesis.
- Identification of novel therapeutic peptides to inhibit tumor growth and metastasis.

Current Projects:

- Development of multiscale computational models to investigate the interaction of the immune cells with cancer cells in the tumor microenvironment.
- Using computational modeling approaches to investigate signal transduction pathways and build 3D models of angiogenesis using differential equations-based and agent-based approaches.
- Discovering and applying anti-angiogenic peptides as therapeutic agents in several animal models of age-related macular degeneration and diabetic macular edema.

Publications

- Leveraging multi-omics data to empower quantitative systems pharmacology in immuno-oncology
- Chemokine-derived oncolytic peptide induces immunogenic cancer cell death and significantly suppresses tumor growth
- Integrating spatial multi-omics data with spatial quantitative pharmacology (spQSP) model to simulate human neoadjuvant immunotherapy clinical trial of hepatocellular carcinoma
- Using quantitative systems pharmacology modeling to optimize combination therapy of anti-PD-L1 checkpoint inhibitor and T cell engager
- Systems biology of angiogenesis signaling: Computational models and omics
- Peptide/Particle Delivery Systems
- Simultaneous blockade of IL-6 and CCL5 signaling for synergistic inhibition of triple-negative breast cancer growth and metastasis.
- A computational multiscale agent-based model for simulating spatio-temporal tumour immune response to PD1 and PDL1 inhibition.