

Medical Chemistry Seminar

“Development of New CRISPR tools to investigate tumor-immune interactions”

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Date: October 14 (Tue), 2025

Time: 16:00–17:30

Venue: Conference Room (B1F, Faculty of Medicine Bldg. B)

10月14日(火)16時より、場所:B棟地階大会議室

My laboratory is focused on the development of new technologies for high-throughput functional genomics using the CRISPR/Cas9 system, and application of these tools to (a) identify drug targets in cancer and Parkinson's disease, and (b) study mechanisms of macrophage phagocytosis of diverse particles (ranging from bacteria, viruses, and protein toxins to cancer cells).

Recently we have developed new strategies to identify new 'don't eat me' signals expressed by tumor cells that prevent their recognition and engulfment by macrophages, as well as the cognate macrophage receptors (using reciprocal screens in each cell type). Many of these present promising new therapeutic targets for cancer. Using co-culture and tumor spheroid models, we have discovered immune signaling pathways from tumor cells, as well as changes to macrophage transcriptional programs following cancer cell phagocytosis. Most recently, we have developed a new strategy to perform inter-cellular CRISPR screens in vivo, using virally transmitted barcodes to reconstruct cell interaction networks at scale, with single cell resolution. Using this method, we have uncovered cancer cell dependencies that preferentially increase interactions with different immune populations and influence local immune cell states.

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Hosted by Department of Medical Chemistry

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