



TECHNION
Israel Institute
of Technology



*Cancer
Cure is
Born Here*



D. DAN AND BETTY KAHN
HUMAN HEALTH BUILDING

Michal Polonsky, PhD

Caltech,
California Institute of Technology

RTICC SEARCH COMMITTEE SEMINAR



25th December
11:00-12:00



**6th Floor seminar Room, The Ruth and
Bruce Rappaport Faculty of Medicine**

"Location matters – a spatial view of cellular interactions"

Cells constantly integrate localized signals and coordinate appropriate responses in time and space. To study these collective behaviors, I leveraged sequential Fluorescence In Situ Hybridization (seqFISH), a methodology which allows detection of thousands of mRNA molecules in intact tissues, and investigated cellular interactions within the native microenvironments within pathophysiological tissues. I used a mouse model of Acute Kidney Injury which progresses to chronic disease. I identified distinct microenvironments emerging post-injury, including fibroblast populations that drive immune activation and injury propagation. A subset of fibroblasts expressing *Crlf1* marked a persistently damaged microenvironment, while immune aggregates with pro-inflammatory cells and fibroblasts were linked to chronic inflammation. Additionally, I studied changes in microenvironments in Low-Grade Glioma patients. seqFISH revealed a microenvironment enriched in pericytes and endothelial cells associated with Malignant Transformation (MT), suggesting early processes involving vasculature are a potential factor predicting MT. These findings underscore the importance of studying cellular behavior in situ and highlight the critical role of stromal cells (Fibroblasts and Pericytes) in disease progression and immune regulation.

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