


ZOOM ON CANCER
HYBRID LECTURE

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 Microbiology and Immunology
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Dissecting the immune-controlled signaling networks driving breast cancer progression

28th September 2023

Thursday

14:00 Candiotty Auditorium

Light refreshments will be served from 13:45

Intercellular signaling networks drive tissue fundamental processes. Immune cells present a wide range of versatile functions and distinctive plasticity, which position them as tissue signaling-hubs during tissue development, homeostasis and cancer. Recent genomic advances have greatly improved our understanding of cell composition and states; however, investigation of the molecular signatures of intercellular crosstalk at the single-cell level, induced at a specific signaling niche, remains limited. The mammary gland tissue goes-through major morphological and cellular changes during life, therefore we hypothesized that investigating the immune-non-immune bidirectional crosstalk during its development will shed light on novel molecular pathways that control breast cancer induction and progression. Dense sampling and transcriptional profiling of immune and non-immune cells from mammary gland tissues of female mice carrying the polyomavirus middle T-antigen (MMTV-PyMT+) and their littermate controls (MMTV-PyMT-), revealed differences in immune, stromal, and epithelial cell types and states between cancer and normal conditions. Analyzing patterns of cellular abundancies along the sampled time points revealed distinct cellular niches related to mammary gland development, maintenance or cancer. Application of physically interacting-cell sequencing (PIC-seq) on immune-epithelium PICs and singlets revealed cellular states and molecular signatures that are enriched only in the oncogene-carrier females, and are activated already during neoplasia stage, even before tumor appearance. Together, exploring tissue development, homeostasis and cancer from the point of view of immune-controlled signaling networks, has the potential to reveal novel diagnostic and therapeutic candidates with high biological and medical impact

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Host
Prof. Ido Amit

 Eden and Steven Romick
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