

## A Novel Cellular Crosstalk Promoting Tumor Progression and Metastasis

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Treatment of cancer patients with advanced or recurrent disease presents a considerable challenge. The reasons behind disease progression and spread are not fully understood. Our goals are to define what drives metastatic progression and to develop novel therapies that would eliminate the mortality associated with metastatic disease.

Emerging data support a key role of the tumor microenvironment (TME) in cancer progression, development of metastases, and response to therapy. Research indicates that tumor cells are involved in a complex and dynamic crosstalk with various cellular components of TME. Our team investigates the interaction of tumor cells with tumor-associated fibroblasts in breast carcinoma models. We have recently reported that the interaction of tumor cells with fibroblasts alters production and signaling by pro-inflammatory cytokines, e.g. TNF and IL1, and anti-inflammatory TGF- $\beta$  cytokines. Our studies revealed that the cytokine crosstalk may exert synergistic and neutral (cytokine-specific) responses. The overall force of these complex interactions leads to promotion of tumor blood vessels through a process of angiogenesis, changes in fibrotic material, and alterations in immune cell populations within the TME. The lecture will present updates on the molecular details underlying these cellular and cytokine interactions. We will also discuss the translational implications of our research and potential new venues for therapeutic intervention into cancer progression.

### Biography:

Professor Andrei Bakin has received a doctoral degree from Moscow Lomonosov University. He was trained in cancer research with Professor Tom Curran at St. Jude Children's Research Hospital, and in breast cancer with Professor Carlos Arteaga at Vanderbilt University. He is currently a principal investigator at Roswell Park Cancer Institute. Dr. Bakin has done pioneering studies on EMT in cancer progression and metastasis. His group has identified novel therapeutic targets driving metastasis to the bone and lungs. He has mentored over ten graduate students. He is also a member of Editorial Board of several scientific journals and active member of AACR.