RESEARCH GROUP

Tumor Microenvironment and Metastasis (TMM)

PRINCIPAL INVESTIGATOR

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KEY INTERESTS
Breast and Colon Cancer • Cell-Cell and Cell-Stroma Interactions • Cell Signalling • Cell Survival • Chemoresistance • Metastases • Myb • Tumor Microenvironment

RESEARCH FOCUS
The laboratory aims to identify key molecular determinants of breast and colon cancer metastases with emphasis on the importance of cellular plasticity and tumor-stromal interactions in this process. The TMM investigates the function of specific gene modulators of cell-cell and cell-substrate interactions and their alterations during various steps of metastatic dissemination. Furthermore, the modulatory role of tumor-and metastasis-specific microenvironment on efficacy of anti-cancer therapy, identification of synthetic lethal combinations of anti-cancer drugs and elucidation of mechanism of action of new potential anti-cancer compounds is the interest of TMM as well. The prevailing workflow of our studies is based on tissue culture experiments followed by in vivo verification in mouse cancer models with ultimate aim to participate in clinical studies to provide benefits to cancer patients.

RESEARCH OBJECTIVES
• Molecular mechanisms responsible for cancer cell survival and dissemination under conditions of specific tumor/metastatic microenvironment.
• The Myb protein family in the tumor-stroma cross-talk during mammary tumor cells dissemination.
• Molecular mechanisms of chemoresistance of solid tumors.

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TOP PUBLICATIONS

- Identification of c-Myb and its transcriptional program as modulator of dissemination in breast and colon cancers.
- Identification of new signalling pathway modulating chemosensitivity of colon cancer cells.
- Determination of molecular targets of wedelolactone.

BEST RESULTS


- PEKÁRČÍKOVÁ, L., KNOPFOVÁ, L., BENEŠ, P., ŠMARDÁ, J. c-Myb regulates NOX1/p38 to control survival of colorectal carcinoma cells. Cellular Signalling. 2016, 28(8), 924-936.


TECHNOLOGICAL EQUIPMENT

- Real-time monitoring of cancer cell phenotype – Life cell imaging, xCELLigence, SDR SensorDish Reader.
- System for manipulation and cultivation of cells in regulated atmosphere.

OFFERED SERVICES AND EXPERTISE


MAIN PARTNERS AND COLLABORATING INSTITUTIONS

- University of Zurich, Zurich, Switzerland
- University of Belgrade, Belgrade, Serbia
- Palladin Institute of Biochemistry, Kiev, Ukraine