

# CMX\_SEMINAR

(神戸大学CMX創発医学講演会/大学院講義)

## Biomarkers of endothelial dysfunction in mice model of breast cancer metastasis

<乳がんマウスにおける内皮機能不全のバイオマーカー>

Speaker: Prof. Maria Walczak

がん転移における血管内皮の意義に注目した、薬学スペシャリストによる、初期のがん（特に転移性乳がん）の血管内皮バイオマーカーの診断・予後判定指標として果たす役割についてのご講演です。

日時：2022. 12. 6(火) 17:30-19:00

オンライン開催

ZOOM URL: <https://kobe-u-ac->

[id.zoom.us/j/84352152283?pwd=VUUh6O0NaUGhZTVNSSThGNnNneVVLdz09](https://zoom.us/j/84352152283?pwd=VUUh6O0NaUGhZTVNSSThGNnNneVVLdz09)

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### Abstract:

In recent years, attention has been focused on the significance of the vascular endothelium in cancer metastasis. Healthy endothelial cells inhibit tumour cell adhesion, transmigration and metastasis formation, whereas endothelial dysfunction, characterised by a shift towards decreased synthesis of vasoprotective mediators and activation of pro-inflammatory and pro-thrombotic molecules, promotes cancer metastasis. Given the key role of the endothelium in metastasis formation we characterise changes in endothelial function that take place during the early and late phases of breast cancer development in mice by simultaneous determination of secreted proteins, receptors or cleaved surface proteins circulating in plasma, e.g. syndecan-1, endocan, vascular cell adhesion molecule, intercellular adhesion molecule 1, E-selectin, fms-like tyrosine kinase 1, angiopoietin 2, von Willebrand factor, tissue plasminogen activator, plasminogen activator inhibitor 1, adrenomedullin and adiponectin. In our study we use targeted metabolomics and lipidomics for finding a relationship between pathological characteristics of breast cancer and metabolites of the arginine pathway, glucose metabolism, and structural and signalling lipids in the early and late stages of murine breast cancer metastasis. Alterations in lipid composition and abundance have been established as a hallmark of cancer aggressiveness that may strongly influence the signal transduction process upon conversion into bioactive lipid mediators, e.g. eicosanoids.

### References:

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3. Suraj J, Kurpińska A, Zakrzewska A, Sternak M, Stojak M, Jasztal A, Walczak M, Chlopicki S: Early and late endothelial response in breast cancer metastasis in mice: simultaneous quantification of endothelial biomarkers using a mass spectrometry-based method. Dis Model Mech. 2019 Mar 1;12(3):dmm036269. doi: 10.1242/dmm.036269.
4. Kurpińska A, Suraj J, Bonar E, Zakrzewska A, Stojak M, Sternak M, Jasztal A, Walczak M: Proteomic characterization of early lung response to breast cancer metastasis in mice. Exp Mol Pathol. 2019 Apr;107:129-140. doi: 10.1016/j.yexmp.2019.02.001.

### Introducing the speaker (Self-introduction):

Maria Walczak has graduated at the Faculty of Pharmacy, Medical Academy in Krakow (Poland). She received her PhD degree and habilitation at the Faculty of Pharmacy, Jagiellonian University Medical College (UJ CM). Currently she is a head of the Chair and Department of Toxicology at the Faculty of Pharmacy UJ CM and a group leader at the Jagiellonian Centre for Experimental Therapeutics (JCET, UJ). Her research primarily focuses on the pharmacokinetic and toxicokinetic studies of bioactive compounds, metabolite identification, assessment of drug protein binding - subsequently crucial for drug development. At the core of her work stands the bioanalysis of biomarkers related to civilisation diseases, as prognostic and diagnostic targets using mass spectrometry-based methods. She is a specialist in clinical pharmacy.

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