



# Aneta Balcerczyk

ASSOCIATE PROFESSOR – UNIVERSITY OF LODZ · VICE DEAN OF INTERNATIONAL RELATIONS – UNIVERSITY OF LODZ

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## Currently held positions

**Head of the Department of Oncobiology and Epigenetics, Faculty of Biology and Environmental Protection**

University of Lodz

ASSOCIATE PROFESSOR

**Faculty of Biology and Environmental Protection**

University of Lodz

VICE DEAN OF INTERNATIONAL RELATIONS

## Scientific profile and collaborations

My scientific research focuses on epigenetics of endothelial cell biology and metabolic syndrome, particularly at the level of posttranslational modifications of histone proteins. Recently, I have also been investigating the molecular background of the ketogenic diet.

Chromatin architecture and histone posttranslational modifications play a crucial role in the regulation transcriptional machinery by controlling DNA accessibility and gene expression, thereby affecting cellular responses to metabolic signals. Dysregulation of these epigenetic mechanisms alters gene expression patterns, contributing to metabolic disorders, including cancer, obesity and cardiovascular diseases. Using in vitro mammalian cell models, primary endothelial cells, and cancer cells lines, together with my colleagues we investigate the role of key histone modifying factors, including lysine-specific demethylase 1 (LSD1), methyltransferase G9a and deiminases (PADs) in regulation of angiogenesis, a process essential for tumour growth and development. Additionally, our research has recently placed greater emphasis on the ketogenic diet and beta-hydroxybutyrylation. Using in vivo mice models with tissue-specific silencing of OXCT1 and HMGCS2, the genes involved in ketone body metabolism, we analyze the effects of ketogenic diet on e.g. insulin signalling and inflammatory reaction. The studies are conducted mainly in collaboration with INSERM U1060, Lyon, France (Laboratory in cardiovascular diseases, metabolism, diabetology and nutrition, CarMeN).

## Selected publications

- 2021 ***The Role of Lysine-Specific Demethylase 1 (LSD1) in Shaping the Endothelial Inflammatory Response*** [\[link\]](#)
- 2016 ***Pharmacological inhibition of arginine and lysine methyltransferases induces nuclear abnormalities and suppresses angiogenesis in human endothelial cells*** [\[link\]](#)
- 2011 ***Genome-wide analysis distinguishes hyperglycemia regulated epigenetic signatures of primary vascular cells*** [\[link\]](#)

## Research grants

**Project Manager/Principal Investigator:** 4 grants: NCN Opus, NCN Harmonia, NAWA Polonium, MNiSzW Iuventus Plus, KBN

**Co-Investigator:** 7 grants: NCN, NIH

**Supervisor:** 2 - NCN Preludium, 1- Diamond Grant MNiSzW, 9 – student projects WBiOŚ UŁ

## International research stays

**2019, three months internship in INSERM U1060, Lyon, France** Laboratory in cardiovascular diseases, metabolism, diabetology and nutrition, CarMeN; Prof. Hubert Vidal/ Prof. Luciano Pirola (fellowship form the Bekker Program, NAWA)

**2008-2011, three years internship in Baker IDI Health and Diabetes Research Institute, Melbourne, Australia**

Epigenetics in Health and Disease Laboratory, Prof. Assam El-Osta (fellowship form the Human Frontier Science Programme Organisation (HFSPO) and the Foundation for Polish Science (FNP))