

第 145 回 生物科学フロンティアセミナー  
第 56 回 ケミカルバイオロジー研究所セミナー

## Extracellular vesicles as metabolic indicators in disease – *in vivo* and *in vitro* studies

**Professor Dr. Ewa Stępień**

Institute of Physics, Jagiellonian University, Cracow, Poland  
Center for Theranostics, Jagiellonian University, Cracow, Poland

日時：令和 7 年 5 月 30 日（金）午後 1 時 30 分より  
場所：中百舌鳥キャンパス A13 棟 3 階 323 室

事前参加申し込みは不要です。  
会場まで直接お越しください。



The molecular composition of EVs is very complex, with lipid and protein components dominating [1-3]. Although it is known that they are composed of the same macromolecules as the cells from which they originate, we have observed differences between the proportion of macromolecules in different subpopulations of EVs and cells [4]. The proportions and share of individual protein and lipid metabolites also change depending on the metabolic state of the cells from which the individual EV fractions originate [1,5]. One of the main factors influencing their molecular composition is hyperglycemia, which we have observed in an *in vitro* model of pancreatic beta cells and in clinical studies in patients with diabetes [5-8]. The presentation will show the results of metabolomic studies of small and large EVs isolated from patients with type 1 and 2 diabetes and from in vitro cultures of beta-pancreatic cells in conditions of mild and high hyperglycemia.

### References

[1] Marzec ME, *et al.*, *Biochem Biophys Res Commun.* 2022;622:30-36, [2] Zapala B, Stępień EŁ. *Pharm Res.* 2023;40(4):817-832, [3] Kasprzyk-Pochopień J, *et al.*, *Molecules.* 2025;30(6):1384, [3] Stępień EŁ, *et al.*, *Biochem Biophys Rep.* 2021;25:100888, [4] Roman M, *et al.*, *Nanomedicine.* 2019;17:137-149, [5] Kamińska A, *et al.*, *J Diabetes Res.* 2016;2016:5741518, [6] Stępień EŁ, *et al.*, *Theranostics.* 2018;23;8(14):3874-3890, [7] Kamińska A, *et al.*, *Nanomedicine.* 2022;39:102468.

世話人・連絡先：中瀬生彦、藤原大佑、道上雅孝  
(大阪公立大学 大学院理学研究科 生物化学専攻)  
大阪公立大学 研究推進機構 ケミカルバイオロジー研究所  
〒599-8531 大阪府堺市中区学園町 1-1  
TEL: 072-254-9895/ e-mail: i-nakase@omu.ac.jp