

Marta BARANOWSKA – KUCZKO PhD (Pharmaceutical Sciences)

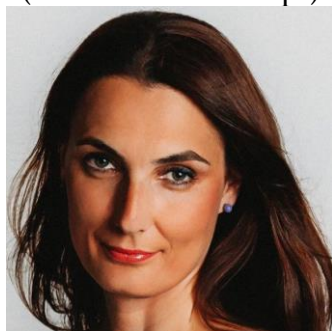
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Academic and Research Career:

Researcher, Teaching Assistant (2005 - 2010), Researcher, Professor Assistant (Adjunct) (since 2010) at Department of Experimental Physiology and Pathophysiology MUB, Acting Head of the Department of Clinical Pharmacy MUB (since 2011). Member of Polish Pharmaceutical Society, Polish Physiological Society, International Cannabinoid Research Society, Affiliate Member of British Physiological Society, Member of The Faculty Team for Ensuring and Improving the Quality of Education and Faculty Team for Animal Welfare at MUB.

Research Fellow of European Respiratory Society at Research Institute of Cardiovascular and Medical Sciences, University of Glasgow, Scotland (2007 – 2008).
Specialization in the Clinical Pharmacy (2016).

Research and Implementation Achievements:

- **Cardiovascular physiology and pharmacology.** Functional experiments on isolated vessels, including isolated systemic rat mesenteric, renal (mice, rat) and pulmonary arteries (rat and human).
- **Understanding of the mechanisms regulating the vascular tone by cannabinoids,** exo- and endocannabinoids - endogenous physiological ligands of cannabinoid receptors, their pharmacological actions and characterization of novel molecular targets for endocannabinoids, particularly in human cardiopulmonary circulation, during physiological and pathological conditions, such primary and secondary hypertension, diabetes.
- **Studying the pharmacology of serotonergic system** under physiology and pathophysiology (hypoxic-induced arterial pulmonary hypertension) in experimental animals, genetically modified animals, namely mice with overexpression of the trans-

porter for serotonin (SERT⁺) and mice deficient in tryptophan hydroxylase type 1 (Tph1) (Tph1^{-/-}-mice).

- **Identification of novel therapeutic targets for cardiovascular disorders** associated with increased pulmonary arteries resistance, e.g. in pulmonary arterial hypertension: peroxisome proliferator activated receptors γ (PPAR γ) agonists.
- **Studying the pharmacology of prostaglandin receptor.**
- **Studying the pharmacology of atypical and/or the low affinity state of β_1 -adrenergic receptor** in isolated rat and human vessels.

Skills and Techniques:

Experimental models used to determine the cardiovascular responses:

- *In vitro* experiments: Mounting vessels in organ baths and in wire myography and measurements of changes in isometric tension and vascular tone of isolated arteries, including human pulmonary arteries; rat mesenteric, renal and pulmonary arteries and mice mesenteric and pulmonary arteries.

List of publications from the last ten years:

1. Morecroft I, Pang L, **Baranowska M**, Nilsen M, Loughlin L, Dempsie Y, Millet C, MacLean MR. In vivo effects of a combined 5-HT_{1B} receptor/SERT antagonist in experimental pulmonary hypertension. *Cardiovasc Res.* 2010; 85:593-603.
2. Zakrzaska A, Schlicker E, **Baranowska M**, Kozłowska H, Kwolek G, Malinowska B. Involvement of the endothelial cannabinoid receptor in the anandamide-induced delayed hypotension in anaesthetized rats. *Br J Pharmacol.* 2010; 160:574-584.
3. Malinowska B, **Baranowska-Kuczko M**, Schlicker E. Triphasic blood pressure responses to cannabinoids: do we understand the mechanism? *Br J Pharmacol.* 2012; 165:2073-88.
4. **Baranowska-Kuczko M**, MacLean MR, Kozłowska H, Malinowska B. Endothelium-dependent mechanisms of the vasodilatory effect of the endocannabinoid, anandamide, in the rat pulmonary artery. *Pharmacol Res.* 2012, 66:251-259.
5. Kozłowska H, **Baranowska-Kuczko M**, Schlicker E, Kozłowski M, Zakrzaska A, Grzęda E, Malinowska B. EP3 receptor-mediated contraction of human pulmonary arteries and inhibition of neurogenic tachycardia in pithed rats. *Pharmacol Rep.* 2012; 64:1526-1536.
6. Kozłowska H, **Baranowska-Kuczko M**, Schlicker E, Kozłowski M, Kloza M, Malinowska B. Relaxation of human pulmonary arteries by PPAR γ agonists. *Naunyn Schmiedebergs Arch Pharmacol.* 2013; 386:445-53.
7. **Baranowska-Kuczko M**, Kozłowska H, Kozłowski M, Schlicker E, Kloza M, Surażyński A, Grzęda E, Malinowska B. Mechanisms of endothelium-dependent relaxation evoked by anandamide in isolated human pulmonary arteries. *Naunyn Schmiedebergs Arch Pharmacol.* 2014; 387:477-486.
8. Schlicker E, Pędzińska-Betiuk A, Kozłowska H, Szkaradek N, Żelaszczyk D, **Baranowska-Kuczko M**, Kieć-Kononowicz K, Marona H, Malinowska B. MH-3: evidence for non-competitive antagonism towards the low-affinity site of β_1 -adrenoceptors. *Naunyn Schmiedebergs Arch Pharmacol.* 2014; 387:743-752.
9. Kloza M, **Baranowska-Kuczko M**, Pędzińska-Betiuk A, Jackowski K, Kozłowska H. Serotonin hypothesis and pulmonary artery hypertension. *Postepy Hig Med Dosw.* 2014;68:738-48.

10. Karabowicz P, Grzęda E, **Baranowska-Kuczko M**, Malinowska B. Role of endocannabinoid 2-arachidonoylglycerol in the physiology and pathophysiology of the cardiovascular system. *Postepy Hig Med Dosw* 2014; 68:814-27.
11. Grzęda E, Schlicker E, Łuczaj W, Harasim E, **Baranowska-Kuczko M**, Malinowska B. Bi-directional CB₁ receptor-mediated cardiovascular effects of cannabinoids in anaesthetized rats: role of the paraventricular nucleus. *J Physiol Pharmacol*. 2015; 66: 343-353.
12. **Baranowska-Kuczko M**, Kozłowska H, Kloza M, Karpińska O, Toczek M, Harasim E, Kasacka I, Malinowska B. Protective role of cannabinoid CB₁ receptors and vascular effects of chronic administration of FAAH inhibitor URB597 in DOCA-salt hypertensive rats. *Life Sci*. 2016; 151:288-299.
13. Toczek M, **Baranowska-Kuczko M**, Grzęda E, Pędzińska-Betiuk A, Weresa J, Malinowska B. Age-specific influences of chronic administration of the fatty acid amide hydrolase inhibitor URB597 on cardiovascular parameters and organ hypertrophy in DOCA-salt hypertensive rats. *Pharmacol Rep*. 2016; 682:363-369.
14. Kloza M, **Baranowska-Kuczko M**, Malinowska B, Karpińska O, Harasim-Symbor E, Kasacka I, Kozłowska H. The influence of DOCA-salt hypertension and chronic administration of the FAAH inhibitor URB597 on K_{Ca}2.3/K_{Ca}3.1-EDH-type relaxation in rat small mesenteric arteries. *Vasc Pharmacol*. 2017; 99: 65-73.
15. Pędzińska-Betiuk A, Weresa J, Toczek M, **Baranowska-Kuczko M**, Kasacka I, Harasim-Symbor E, Malinowska B. Chronic inhibition of fatty acid amide hydrolase by URB597 produces differential effects on cardiac performance in normotensive and hypertensive rats. *Br J Pharmacol*. 2017; 174:2114-2129.
16. Karpińska O, **Baranowska-Kuczko M**, Kloza M, Ambrożewicz E, Kozłowski T, Kasacka I, Malinowska B, Kozłowska H. *Am J Physiol Regul Integr Comp Physiol*. 2017; 312:R883-R893.
17. Karpińska O, **Baranowska-Kuczko M**, Kloza M, Kozłowska H. Endocannabinoids modulate G_{q/11} protein-coupled receptor agonist-induced vasoconstriction via a negative feedback mechanism. *J Pharm Pharmacol*. 2018; 70:214-222.
18. Karpińska O, **Baranowska-Kuczko M**, Malinowska B, Kloza M, Kusaczuk M, Gęgotek A, Golec P, Kasacka I, Kozłowska H. Mechanisms of L-alpha-lysophosphatidylinositol-induced relaxation in human pulmonary arteries. *Life Sci*. 2018; 192:38-45.
19. Kloza M, **Baranowska-Kuczko M**, Karpińska O, Kozłowska H. Rola kanałów potasowych aktywowanych przez jony wapnia o małej i średniej przewodności w zależnej od śródbłonka hiperpolaryzacji naczyń krwionośnych w fizjologii i nadciśnieniu tętniczym. *Post Med Hig Dośw*. 2019; 73: 1-14.
20. Kloza M, **Baranowska-Kuczko M**, Toczek M, Kusaczuk M, Sadowska O, Kasacka I, Kozłowska H. Modulation of cardiovascular function in primary hypertension in rat by SKA-31, an activator of K_{Ca}2.x and K_{Ca}3.1 channels. *Int J Mol Sci*. 2019; 20:22pp.
21. **Baranowska-Kuczko M**, Kozłowska H, Kloza M, Sadowska O, Kozłowski M, Kusaczuk M, Kasacka I, Malinowska B. Vasodilatory effects of cannabidiol in human pulmonary and rat small mesenteric arteries: modification by hypertension and the potential pharmacological opportunities. *J Hypertens*. 2020; 38:896-911.
22. **Baranowska-Kuczko M**, Kozłowska H, Schlicker E, Göthert M, MacLean MR, Kozłowski M, Kloza M, Sadowska O, Malinowska B. Reduction of the serotonin 5-HT_{1B} and 5-HT_{2A} receptor-mediated contraction of human pulmonary artery by the combined 5-HT_{1B} receptor antagonist and serotonin transporter inhibitor LY393558. *Pharmacol Rep*. 2020; 72:756-762.
23. Biernacki M, **Baranowska-Kuczko M**, Niklińska GN, Skrzydlewska E. The FAAH Inhibitor URB597 Modulates Lipid Mediators in the Brain of Rats with Spontaneous Hypertension. *Biomolecules*. 2020; 10:1022.
24. Sadowska O, **Baranowska-Kuczko M**, Gromotowicz-Popławska A, Biernacki M, Kicman A, Malinowska B, Kasacka I, Krzyżewska A, Kozłowska H. Cannabidiol Ameliorates Monocrotaline-Induced Pulmonary Hypertension in Rats. *Int J Mol Sci*. 2020; 21:7077.

25. .Malinowska B, **Baranowska-Kuczko M**, Kicman A, Schlicker E. Opportunities, Challenges and Pitfalls of Using Cannabidiol as an Adjuvant Drug in COVID-19. *Int J Mol Sci.* 2021; 22:1986.