Prof. Dr. Habil. Ryszard Tomasz Smoleński
PRA Leader 3 – Biochemistry, genetics and molecular biology

Head of the Department of Biochemistry, MUG doctoral of medical sciences (1990) habilitated doctor degree (2000)
title of professor (2016)

International scientific internships
Prof. dr hab. Ryszard Tomasz Smoleński headed the Research Group for Heart Metabolism operating within the Heart Science Centre, Imperial College London, headed by Prof. M. H. Yacoub (1997-2009), worked and interned at research centers in Germany, the Netherlands, Italy and the United States.

Leading research areas
Nucleotide metabolism and energy metabolism in the heart, the study of changes in these processes in pathology, and the development of new therapies. Development of new analytical methods based on LC/MS.
Research using genetic models of human diseases.
Clinical studies of disease mechanisms and identification of new biomarkers.

Scientific activities
The research conducted by of Prof. Ryszard T. Smolenski is related to nucleotide metabolism and the development of new methods for studying metabolism related to the use of high-performance liquid chromatography with mass detection. This research is aimed at finding new drugs, or rather molecular targets for drug action in cardiovascular and cancer diseases. It is also aimed at explaining why the development of these diseases occurs and to look for biomarkers, or substances that could indicate the presence or progression of these pathologies. The results of these studies have identified AMP deaminase as a therapeutic target in heart disease and dysfunction of the endothelium. The studies have also found that inhibition of adenosine ecto-deaminase activity in vessel walls slows the atherosclerotic process, and that increased ecto-5-nucleotidase activity inhibits rejection in interspecies grafts. Profesor Smoleński was the President of Purine and

Pyrimidine Society, Chairman of the Experimental Cardiology Section of the Polish Society of Cardiology, and is a member of the Scientific Committee of the Polish Metabolomics Society.

Scientific awards

Professor Ryszard T. Smoleński received the award of the Mayor of the City of Sopot for scientific activity.

Key projects

1. Foundation for Polish Science (Project: TEAM/2011-8/7, 2012-2015, 1868500 PLN): *Nucleotides in pathology, diagnosis and therapy of heart disease*.
2. National Science Center (Project: Opus 2011/01/B/NZ4/03719, 2011–2016, 597400 PLN): *Regulation of ecto-5'-nucleotidase expression - changes in pathology and therapeutic potential*.
3. The National Center For Research And Development (Strategmed1/233226/11/NCBR/2015, 2015-2018, 2500000 PLN) *Pharmacotherapy of endothelium and platelet activation dependent on prostacyclin, nitric oxide and carbon monoxide – new strategy for prevention in cancer metastasis*.
4. National Science Center (Project: Harmonia 2016/22/M/NZ4/00678, 2017-2020, 1400100 PLN): *Reversal of heart failure during mechanical support of left ventricular function - role of nucleotides and energetics in cardiac cells*.
5. National Science Center (Project: Opus: 2016/23/B/NZ4/03877, 2017-2020, 997 250 PLN) *Adaptations of cardiac myocyte energy metabolism in atherosclerosis - implications for pathology and therapeutic strategies*.

Key Publications

1. Kutryb-Zajac B., Jablonska P., Serocki M., Bulinska A., Mierzejewska P., Friebe D., Alter C., Jasztal A., Lango R., Rogowski J., Bartoszewski R., Slominska E. M., Chlopicki S., Schrader J., Yacoub M. H., Smolenski R. T., *Nucleotide ecto-enzyme metabolic pattern and spatial distribution in calcific aortic valve disease; its relation to pathological changes and clinical presentation*. Clin Res Cardiol. 2019 May 29. doi: 10.1007/s00392-019-01495-x. PMID: 31144065.
2. Kutryb-Zajac B., Mierzejewska P., Sucajtys-Szulc E., Bulinska A., Zabielska M. A., Jablonska P., Serocki M., Koszalka P., Milczarek R., Jasztal A., Bartoszewski R., Chlopicki S., Slominska E. M., Smolenski R. T., *Inhibition of LPS-stimulated ecto-adenosine deaminase attenuates endothelial*

cell activation. J Mol Cell Cardiol. 2019 Mar; 128:62-76. doi: 10.1016/j.yjmcc.2019.01.004. Epub 2019 Jan 11. PMID: 30641086.
3. Increased Activity of Vascular Adenosine Deaminase in Atherosclerosis and Therapeutic Potential of its Inhibition. Kutryb-Zajac B., Mateuszuk L., Zukowska P., Jasztal A., Zabielska A. M., Toczek M., Jablonska P., Zakrzewska A., Sitek B., Rogowski J., Lango R., Slominska E. M., Chlopicki S., Smolenski R. T., Cardiovasc Res (2016) 112 (2): 590-605.
4. Kalsi K. K., Yuen A. H., Rybakowska I. M., Johnson P. H., Slominska E., Birks E. J., Kaletha K., Yacoub M. H., Smolenski R. T., *Decreased cardiac activity of AMP deaminase in subjects with the AMPD1 mutation--a potential mechanism of protection in heart failure*. Cardiovasc Res. 2003 Sep 1;59(3):678-84.
5. Smolenski R. T., Raisky O., Slominska E. M., Abunasra H., Kalsi K. K., Jayakumar J., Suzuki K., Yacoub M. H., *Protection from reperfusion injury after cardiac transplantation by inhibition of adenosine metabolism and nucleotide precursor supply*. Circulation. 2001 Sep 18;104(12 Suppl 1): I246-52.

Bibliometric information (as of 28.08.2020)

Prof. Dr. Habil. Ryszard Tomasz Smolenski is the author or co-author of more than 270 original publications in scientific journals, including in: *Lancet, Circulation, Proceedings of the National Academy of Sciences of the United States of America, Biomaterials, PLOS Biology, Nature Communications*.
IF: 550,596 (based on MUG Bibliography database), number of citations without self-citation in the Web of Science database: 5011 (number of total citations: 5607), h index = 35.