Paweł Matryba

EDUCATION

2014 -	Medical University of Warsaw, First Faculty of Medicine, Poland course title: MD 6-year program
2013 -	University of Warsaw, Faculty of Biology, Poland course title: Biotechnology
2010 - 2013	Stanisław Staszic High School, Warsaw.

LANGUAGES

English (advanced, C1)

German (intermediate, B2)

RESEARCH EXPERIENCE

2014 Feb - present	Trainee at Institute of Neurobiology, head: Prof. Leszek Kaczmarek The Nencki Institute of Experimental Biology, PAS
2013 summer	Intern at Harvard Medical School, Research Science Institute Program
2012 - 2013	Intern at Institute of Genetics and Biotechnology, University of Warsaw

SCIENTIFIC AWARDS / SCHOLARSHIPS

2016	Stephen W. Kuffler Research Scholarship
2015	Professor Ostrowski Award for the best research presentation, VI Polish Conference Progress in Biomedical Research
	Amgen Scholars Program, Ludwig-Maximilians-Universität München (LMU)
2014	Rector scholarship for the best students, 1st place in ranking, University of Warsaw, Poland
2013	Harvard Medical School research scholarship - science and engineering program to combine theory course work and research (Center for Excellence in Education, hosted by MIT). Harvard Medical School, USA.
	EUCYS – European Union Contest for Young Scientists**,** distinction during polish qualifications.
	The Polish Children's Fund fellowship for exceptionally gifted pupils and students.

PUBLICATIONS

2016 Marzena Stefaniuk, Emilio J. Gualda, Monika Pawlowska, Diana Legutko, Paweł Matryba, Paulina Koza, Witek Konopka, Dorota Owczarek, Marcin Wawrzyniak, Pablo Alvarez-Loza, Leszek Kaczmarek. Light-sheet microscopy imaging of a whole cleared rat brain with Thy1-GFP transgene. *Sci. Rep.***6**, 28209; doi: 10.1038/srep28209

Textbook for high school students, individual author: „**Modern biology for life sciences universities candidates**", Kurs Sikory Publishing Group, Warsaw.

CONFERENCE ATTENDANCE

2015 VI Polish Conference Progress in Biomedical Research (Postępy w badaniach biomedycznych)Warsaw, Poland

Amgen Scholars Europe Symposium, Cambridge, UK

SUMMARY OF PERFORMED RESEARCH

Holistic description of anatomical and functional maps of organs, laying the basis for organism-level systems biology, serves as a challenge of great priority in science. Hitherto, study of tissues and organs in 3D relied either on (1) histological sectioning followed by labor-intensive and often imperfect volumetric reconstructions due to section loss, folding, scratching etc. or on (2) MRI studies, which on the contrary are perfect for three-dimensional imaging of gross anatomy structures, but simultaneously are far from providing cellular resolution. Recently, various techniques of optical clearing making tissues transparent were developed. Transparency accompanied by structure preservation and protein labeling, serves as a great tool for making 3D visualizations of whole, intact organs. Hence, the approach is ideal for deciphering connections between structures and way they interact. Adoption of light-sheet fluorescent microscopy (LSFM) to rapidly evolving field of cleared organs is a great advancement. Unique way of volume plane-by-plane scanning in LSFM allows both rapid and precise, single-cell resolution imaging of sizable samples, such as the entire mouse brain. The great limitation of the majority of existing protocols is the fact they are diffusion-based. Therefore, so far applicable only to mice, especially young individuals and embryos. To overcome limitation of diffusion-based clearing approaches I came with the idea and have developed system of intravascular, closed fluid circulation. I than combined it with modified water-based clearing method. **Novel approach allowed me to pass size-dependent barrier and for the first time, render whole body of rat transparent, introducing this widely used model species for whole-organ studies.** For this, transgenic rats expressing GFP under Thy1 promoter, created by our Institute, were used. Furthermore, I have optimized this rapid protocol so it is highly replicable and compatible with counterstaining with nucleic dies, such as nonlipophilic propidium iodide (PI). Method I have developed from scratches, allows making whole body of rat transparent within less than 4 days, in comparison to ~15 days, required for making young mice individuals transparent, with usage of currently existing protocols (Susaki et. al 2015).