Curriculum vitae

Personal information:

Name:	Magdalena Walczak
Nationality:	Polish
Date of birth:	01 January 1993
E-mail address:	magda.kasia.walczak@gmail.com
University:	Department of Neurophysiology and Chronobiology, Institute of Zoology, Jagiellonian University, Cracow

Education:

High school education:	2009 - 2012, Secondary School of General Education in Wroclaw.
University education:	October 2012 – June 2015, Jagiellonian University, Neurobiology, bachelor degree

Research experience:

July – August 2014	trainee at Laboratory of Neuroscience, Department of Biophysics, Wroclaw Medical University *(patch-clamp on neuronal slices and cultured cells HEK-293)*
September 2014	trainee at Laboratory of Molecular and Systemic Neuromorphology, Nencki Institute of Experimental Biology, Polish Academy of Sciences *(immunohistochemistry and fluorescent in situ hybridization)*
May 2014 – April 2015	working in research project entitled "The influence of selective, induced knock-out of NMDA receptors on bursting activity of midbrain dopaminergic neurons- in vivo electrophysiological studies"

Languages:

English	advanced (C1)
German	upper-intermediate (B2+)
Spanish	basic (A1/2)

Conference attendance:

May 2015	Cellular mechanism of generating bursts and pauses in midbrain dopaminergic neurons. **I International Student Conference of Cell Biology, Cracow**
April 2015	The influence of selective, induced knock-out of NMDA receptors on bursting activity of midbrain dopaminergic neurons- in vivo electrophysiological studies. **Neuronus IBRO-IRUN Froum, 17-19 April 2015, Cracow**
April 2015	The role of NMDA-receptor dependent phasic activity of dopamine neurons in motivation and effort discounting. **Neuronus IBRO-IRUN Forum, 17-19 April 2015, Cracow**

Original research articles:

2015

Correlation between activity pattern of midbrain dopaminergic neurons and spontaneous brain state alternations in urethane anaesthetised rats.

***Magdalena Walczak**, Tomasz Błasiak (in submission)*

The loss of NMDA-receptor dependent phasic activity of dopaminergic neurons selectively affects the behavioral drive to obtain rewards without reducing their hedonic value.

*Kamila Łopata, Przemysław Cieślak, Łukasz Szumiec, Mateusz Turbasa, **Magdalena Walczak,** Tomasz Błasiak, Jan Rodriguez Parkitna (in preparation)*

Awards:

2015 Stephen W. Kuffler Research Scholarship

Research objectives:

After my first year of neurobiology bachelor studies, I had a great opportunity to join workgroup at the Department of Neurophysiology and Chronobiology, Jagiellonian Univeristy. Since then I have been working under supervision of assistant professor Tomasz Błasiak.

My research is focused on electrophysiological properties of midbrain dopaminergic neurons in rodents brain. Previous researches aimed to reveal both electrophysiology and drug response of DA neurons were conducted mainly under urethane anaesthesia. This type of anaesthetic is proposed as model of natural sleep, because of inducing two different brain states: cortical activation and deactivation which have some similarities to natural sleep, mostly in brain waves characteristic. It has been shown, that in freely-moving animals activity of dopaminergic neurons depends on alternation of brain state (REM and nonREM phase shift). The influence of cyclic sleep like brain state alternations under urethane anaesthesia on dopaminergic cells is unknown and thus disregarding its influence may lead to false conclusions. My in vivo electrophysiological studies revealed that shifting between cortical activation and deactivation strongly affects activity pattern of DA neurons, promoting bursting activity during deactivation state and more regular, tonic firing pattern during activation state. This results show opposite correlation to the one observed in freely moving animals and thus lead to the conclusion that urethane anaesthesia despite some similarities to natural sleep differently affects some neuronal population activity.

Our results will contribute to better understand of physiology of dopaminergic neurons. In the future, I would like to continue my work during master studies and pursue a career in neuroscience research.