

ISSN 0065-1400 (PRINT)
ISSN 1689-0035 (ONLINE)

2024 Volume 84
Supplement

ACTA

NEUROBIOLOGIÆ
EXPERIMENTALIS

www.ane.pl

25 – 27th April
Krakow
Poland

Neuronus 2024



NENCKI INSTITUTE OF EXPERIMENTAL BIOLOGY, WARSAW, POLAND



NEURONUS 2024 NEUROSCIENCE FORUM

CONTENTS

ORGANIZERS.....	I
SCIENTIFIC COMMITTEE	II
HONORARY PATRONAGE.....	III
FUNDERS & SPONSORS.....	IV
MEDIA PATRONS.....	IV
PROGRAMME.....	V
KEYNOTE SPEAKERS.....	IX
SYMPOSIA SESSIONS	XII
POSTER SESSIONS.....	LXXI

ORGANIZERS

STUDENT NEUROSCIENCE SOCIETY 'NEURONUS'

Institute of Zoology and Biomedical Research, Jagiellonian University

PSYCHOLOGY STUDENTS' ASSOCIATION

Institute of Psychology, Jagiellonian University

Head of the Conference

Karolina Warzecha

Academic Organizers

Michał Ślęzak

Anna Błasiak

Przemysław Adamczyk

Michał Kuniecki

Ilona Kotlewska

Aleksandra Trenk

Members of Organizing Committee

Anna Leśniewska

Gabriela Rajtar

Gabriela Stopka

Emilia Goszczyńska

Joanna Jędrusik

Gabriela Czerniak

Aleksandra Jurgas

Anna Mrzygłód

Julia Netczuk

Monika Żuwała

Kaja Szymanek

Alicja Radzimska

Ada Zeńczak

Agnieszka Cieśla

Zofia Kołaczkowska

Karolina Piasecka

Klaudia Łastowska

Karolina Przyborowicz

Kornelia Tryzno

Maciej Kania

SCIENTIFIC COMMITTEE

Scientific Committee – Biological Section

Michał Ślęzak

Lukasiewicz Research Network, PORT Polish Center for Technology Development, Wrocław, Poland

Aleksandra Trenk

Department of Neurophysiology and Chronobiology, Jagiellonian University, Krakow, Poland

Steffen Kandler

Biozentrum, University of Basel, Switzerland

Gilles van Luitelaar

Donders Centre for Cognition, Radboud University Nijmegen, the Netherlands

Michał Zaręba

Jaume I University, Castellon de la Plana, Spain

Scientific Committee – Cognitive Section

Michał Kuniecki

Psychophysiology Lab of Jagiellonian University, Krakow, Poland

Ilona Kotlewska

Institute of Psychology, Krakow, Jagiellonian University, Krakow, Poland

Przemysław Adamczyk

Institute of Psychology, Jagiellonian University, Krakow, Poland

Scientific Committee – Computational Methods Section

Tomasz Pięciak

Universidad de Valladolid, Spain

Poster design

Irmina Mendera

irmina.mendera@gmail.com

Contact

neuronusforum@uj.edu.pl

HONORARY PATRONAGE

Dariusz Wieczorek – Minister of Science

Prof. Jacek Majchrowski – Mayor of the City of Krakow

Prof. Jacek Popiel – Rector of the Jagiellonian University

Prof. Joanna Zalewska-Gałosz – Dean of the Faculty of Biology of the Jagiellonian University

Prof. Jacek Nowak – Dean of the Faculty of Philosophy of the Jagiellonian University

Prof. Paweł Grzmil – Head of the Institute of Zoology and Biomedical Research
of the Jagiellonian University

Prof. Przemysław Bąbel – Head of the Institute of Psychology of the Jagiellonian University

Neurobiology Committee of the Polish Academy of Sciences

The Polish National Agency For Academic Exchange (NAWA)

Prof. Maciej Żylicz – President of Foundation for Polish Science

Polish Neuroscience Society (PTBUN)

European Brain Council (EBC)

Fundacja Młodej Nauki

Poland Innovative

Fulbright Poland

FUNDERS & SPONSORS

Co-financed by the program "Excellent Science II" of the Minister of Education and Science

International Brain Research Organization (IBRO)

The Company of Biologists

Boehringer Ingelheim Stiftung

Science Products

RWD Life Science

Selvita

IRtech

Interlab

Elmiko

MEDIA PATRONS

UJOT FM

BiologHelp.pl

UJOT TV

21. Wiek

Radio Krakow

Pismo Studentów WUJ

kraków.pl

Kopalnia Wiedzy

Avant

eDoktorant

TVP3 Krakow

PROGRAMME

24TH APRIL 2024

INSTITUTE OF PSYCHOLOGY OF JAGIELLONIAN UNIVERSITY

- 8:30–12:20** **Workshop I – Room 0.03**
Neuropixels by Cagatay Aydin
KU Leuven, Belgium
- 12:00–18:00** **Workshop II – Room 1.09**
QuPath by Ewelina Bartoszek
University of Basel, Switzerland
- 8:30–18:00** **Workshop III – Room 1.02**
DeepLabCut by Konrad Danielewski
Nencki Institute of Experimental Biology, Warsaw, Poland
- 9:00–13:00** **Workshop IV – Room 1.07**
NeuroImaging Data Analysis by Jakub Szewczyk and Mikołaj Compa
Institute of Psychology at the Jagiellonian University in Krakow, Poland
- 13:00–16:00** **Workshop V – Room 0.03**
Virtual reality, physiology and biofeedback by Slav Dimov
European Sales Executive bei BIOPAC Systems, Inc.

SCIENCE JAM – PIWNICA POD BARANAMI

- 19:00–20:00** **Career Development by Ali Jawaid¹ and Michał Ślęzak²**
¹ *Nencki Institute of Experimental Biology, Warsaw, Poland*
² *Łukasiewicz-PORT, Wrocław, Poland*
- 20:15–21:15** **Scientific communication by Joanna Podgórska¹ and Ilona Kotlewska²**
¹ *SWPS*
² *Institute of Psychology, Jagiellonian University*

25TH APRIL 2024

AUDITORIUM MAXIMUM, JAGIELLONIAN UNIVERSITY

- 9:00–10:10** **Official Opening and Opening Lecture – Large hall A**
Karolina Warzecha (Head of Neuronus 2024)
Letter of Rector of the Jagiellonian University Prof. dr hab. Jacek Popiel
Translating computational mechanisms to clinical applications
Speaker: Quentin Huys (Max Planck & UCL, UK)
- 10:10–10:45** **Flashtalks – Large hall A**
- 10:45–11:15** **Coffee Break**

- 11:15–12:45** **Symposia Session I – Large hall A**
Towards Precision Psychiatry
Speakers: Juan P. Lopez, Charlotta Henningson, Magdalena Ziemiańska, Anna Gugula
- Symposia Session II – Large hall B**
Integrating Spiking Neural Networks in Neurobiology and Computer Science
Speakers: Matej Mertik, Maciej Wielgosz, Kinga Przybylska, Szymon Mazurek, Joan Falco-Roget, Jan Argasiński
- Symposia Session III – Medium hall B**
Visual perception in cognitive psychology
Speakers: Piotr Buczkowicz, Ingrida Zelionkaitė, Katarzyna Jurewicz, Julia Papiernik
- 12:45–13:15** **Lunch**
- 13:15–14:30** **Poster Session I – Exhibition room**
- 14:30–15:30** **Keynote lecture – Large hall A**
Dynamic Algorithmic Networks of Visual Categorizations
Speaker: Philippe Schyns (University of Glasgow, Scotland)
- 15:30–17:00** **Symposia Session IV – Large hall A**
Visual perception in naturalistic environment
Speakers: Marius Peelen, Natalia Rutkowska, Michał Bola, Marek A. Pedziwiatr, Diana Kollenda
- Symposia Session V – Large hall B**
Bilateral Brain-Body Interactions
Speakers: Urte Neniskyte, Edyta Bulanda, Weronika Tomaszewska, Magdalena Gomolka, Ivan Arzhanov
- Symposia Session VI – Medium hall B**
Aging Retina
Speakers: Kai Kaarniranta, Michał Bogocz, Piotr Rodak, Anna Pacwa
- 17:00–17:30** **Coffee Break**
- 17:30–18:30** **Keynote lecture – Large hall A**
Non-canonical mechanisms underlying amygdala mediated memory representation
Speaker: Andrew Holmes (NIAAA, NIH, USA)
- 18:30** **Welcome Reception**

26TH APRIL 2024

AUDITORIUM MAXIMUM, JAGIELLONIAN UNIVERSITY

- 8:00–9:00** **NeuroFitness**
Speaker: Anna Pałasz
- 9:00–10:00** **Keynote lecture – Large hall A**
Neural circuits underlying curiosity-driven exploration
Speaker: Sebastian Haesler (NERF, Belgium)

- 10:00–11:30** **Symposia Session VII – Large hall A**
Inhibitory control: Responses, errors, and their neural and psychophysiological correlates
Speakers: Bob Barry, Krzysztof Bielski, Patrycja Kalamala-Ligeza, Christina Thunberg
- Symposia Session VIII – Large hall B**
Molecular profiling of neurodegenerative disorders
Speakers: Jörg Hanrieder, Jack Wood, Alicja Szadziewska
- Symposia Session IX – Medium hall B**
Posttranslational Modifications in the Brain
Speakers: Thomas Klarić, Ugne Kuliesiute, Natalia Pudelko-Malik, Savani Anbalagan
- 11:30–12:00** **Coffee Break**
- 12:00–13:30** **Symposia Session X – Large hall A**
Molecular Mechanisms of Synaptic Plasticity
Speakers: Jakub Włodarczyk, Monika Puchalska, Anbarieh Saadat, Bogna Badyra
- Symposia Session XI – Large hall B**
Computational approaches to understand brain complexity
Speakers: Wiktor Młynarski, Katarzyna Sawicka, Emilia Kaczmarczyk, Magdalena Szponar
- Symposia Session XII – Medium hall B**
Psychedelics
Speakers: Paweł Orłowski, Anastasia Ruban, Maja Wójcik, Čestmír Vejmola, Adam Wojtas
- 13:30–14:00** **Lunch**
- 14:00–15:15** **Poster Session II – Exhibition hall**
- 15:15–17:00** **Symposia Session XIII – Large hall A**
Untangling neural circuits supporting specific behavior
Speakers: Bianca Silva, Anthony Kischel, Katarzyna Hryniewiecka, Aleksandra Nogaj, Jakub Mlost, Oskar Markkula
- Symposia Session XIV – Large hall B**
Face Perception and its application in audiovisual integration
Speakers: Maria Ida Gobbini, Ilona Kotlewska, Magdalena Szmytke, Maria Nalberczak-Skóra
- Symposia Session XV – Medium hall B**
Exploring New Drugs for Brain Therapy
Speakers: Sara Xapelli, Angelika Jagielska, Nicolas Singewald, Judith Schweimer
- 17:00–17:30** **Coffee Break**
- 17:30–18:30** **Keynote lecture – Large hall A**
Hyperalignment: modeling shared and individuating information embedded in idiosyncratic fine-scale cortical topographies
Speaker: James Haxby (Dartmouth College, USA)
- 21:00** **Neuronus Party**

27TH APRIL 2024
AUDITORIUM MAXIMUM, JAGIELLONIAN UNIVERSITY

- 9:00–10:00** **Keynote lecture – Large hall A**
From Molecular Codes to Behavioral Patterns: Deciphering Autism Spectrum Disorders
Speaker: Gaia Novarino (IST, Austria)
- 10:00–11:30** **Symposia Session XVI – Large hall A**
Automatization in behavioral studies – a key to objectivity
Speakers: Aleksandra Badura, Veronika Kovarova, Patrycja Ziuzia, Julia Świdorska, Anjaly Yadav
- Symposia Session XVII – Large hall B**
Microglia in Health and Disease
Speakers: João Relvas, Izabela Lepiarz-Raba, Natalia Malek, Natalia Stelmach
- Symposia Session XVIII – Medium hall B**
EEG correlates of consciousness
Speakers: Marcin Koculak, Klaudia Krystecka, Urszula Górską-Klimowska, Anna Zofia Leśniewska
- 11:30–12:00** **Coffee Break**
- 12:00–13:30** **Symposia Session XIX – Large hall A**
Neuroendocrine Brain
Speakers: Michael Greenwood, Svenja Leibnitz, Julian Zacharjusz, Natalia Konopinska, Naveen Nedunchezian
- Symposia Session XX – Large hall B**
OpenfUS
Speakers: Marcin Lewandowski, Alan Urban, Michiel Camps, Nora Fitzgerald, Klaudia Csikós, Tianzi Wang
- Symposia Session XXI – Medium hall B**
How to train the brain
Speakers: Alicja Olszewska, Aurimas Mockevičius, Syanah Wynn, Tomasz Ściepuro, Gabriela Rajtar
- 13:30–14:00** **Lunch**
- 14:00–15:15** **Poster Session III – Exhibition hall**
- 15:15–16:45** **Symposia Session XXII – Large hall A**
Neuroimaging of abnormal brain functions in schizophrenia
Speakers: Todd Woodward, Rafał Skiba, Wiktor Więclawski, Camilo Enrique Sánchez
- Symposia Session XXIII – Large hall B**
Cellular Mechanisms of Pain and Touch
Speakers: Mateusz Kucharczyk, Felipe Meira de-Faria, Basil Duvernoy
- Symposia Session XXIV – Medium hall B**
Reading brain in blind individuals
Speakers: Anna-Lena Stroh, Maksymilian Korczyk, Małgorzata Paczyńska, Maciej Gaca, Jacek Matuszewski, Cemal Koba
- 16:45–17:15** **Coffee Break**
- 17:15–18:15** **Keynote lecture – Large hall A**
Habitats and human physiology on multiple time scales
Speaker: Kathrina Wulff (Umeå University, Sweden)
- 18:15** **Awards & Closing Ceremony – Large hall A**

RAPAMYCIN COMBINED WITH PITOLISANT ALLEVIATES ANXIETY AND DEPRESSION IN PENTYLENETETRAZOL (PTZ)-KINDLED RATS

M.P. Pervak³, O.B. Poshyvak², O.S. Yehorenko³, D.R. Arabadzy^{1*}, S.V. Marchenko¹

¹ *Physiology and Biophysics Department, Odesa National Medical University, Odesa, Ukraine*

² *Pharmacology Department, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine*

³ *Simulative Medical Technologies Department, Odesa National Medical University, Odesa, Ukraine*

*Email: riodefent@gmail.com

The work aimed to investigate the anxiety and depression manifestations in PTZ-kindled rats under combined treatment with the rapamycin and histamine H3 receptor inverse agonist pitolisant. Kindling was produced in Wistar male rats by administration of three-week PTZ (35.0 mg/kg, i.p.). Treatment with rapamycin (Pfizer, 0.5 mg/kg) and pitolisant (Selleck, 5.0 mg/kg) was performed for ten days in fully kindled rats. Control rats were treated with DMSO. Kindled animals spent less time (2.7 times) in the open area of the elevated plus maze (EPM) in comparison to the control ($P < 0.001$). Following the combined administration of drugs, the period that kindled rats spent on the open arms of EPM was increased by 2.2 times compared to

the control kindled rats. In the Porsolt forced swimming test, immobility response in kindled rats was higher by 37.5% ($P < 0.01$) than in control. The immobility duration in rapamycin-treated rats remained higher by 29.0% ($P < 0.01$) and by 23.7% ($P < 0.05$) in rats treated with pitolisant. After combined treatment, the immobility duration in kindled rats was shorter by 33.5% ($P < 0.001$) compared to the control. The synergy of rapamycin and pitolisant combined treatment was observed concerning abolishing in PTZ-kindled rats behavioral comorbidities such as anxiety and depression.

Funding: Research were supported by the Ministry of Health Care of Ukraine (grant N0121U114510).

POSTER SESSION III – COGNITION

27th April, 2024 (Saturday), 14:00–15:15

THE MORE DOGMATIC YOU ARE, THE LESS YOU CARE ABOUT EVIDENCE OF ERRORS: AN EVENT-RELATED POTENTIAL STUDY

Filip Kottik^{1*}, Anna Grabowska^{1,2}, Filip Sondej¹, Magdalena Senderecka¹

¹ *Institute of Philosophy, Jagiellonian University, Krakow, Poland*

² *Doctoral School in the Social Sciences, Jagiellonian University, Krakow, Poland*

*Email: filip.kottik@student.uj.edu.pl

Dogmatism is commonly defined as a measure of inflexibility of thinking, unwillingness to change one's beliefs, even when presented with contradictory evidence and rejecting evidence that does not align with preconceived notions. Higher levels of dogmatism have been linked to decreased speed of evidence accumulation. In this study, we aimed to evaluate the association between self-reported dogmatism and evidence accumulation during performance monitoring. We investigated the relationship between dogmatism and three event-related potential components: early and late error positivity (Pe), well-validated indexes of evidence accumulation, and, on an exploratory basis, error-related negativity (ERN). 225 participants (113 females, one non-binary, mean age 23.6 years) fulfilled Altemeyer's DOG Scale and performed a modified Flanker task,

while electroencephalography signal was recorded. 20 participants were excluded from the analysis. The results of the linear regression model revealed that the more increased the level of dogmatism, the less pronounced the late Pe. No significant associations were found between questionnaire data and other components. Our results indicate a negative association between dogmatism and the efficiency of evidence accumulation during error monitoring. They suggest that the mental inflexibility of highly dogmatic individuals is accompanied by diminished awareness of committed errors and an underestimation of their motivational value.

Funding: The study was funded by a Sonata Bis grant (2020/38/E/HS6/00490) from the National Science Center of Poland.