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Neuronus 2024

NENCKI INSTITUTE OF EXPERIMENTAL BIOLOGY, WARSAW, POLAND

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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 Jawaid[1] and Michał Ślęzak[2]**
[1] *Nencki Institute of Experimental Biology, Warsaw, Poland*
[2] *Łukasiewicz–PORT, Wroclaw, Poland*

20:15–21:15 **Scientific communication by Joanna Podgórska[1] and Ilona Kotlewska[2]**
[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 Guguła

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 Kałamała- Ligęza, 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 Pudełko-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 Świderska, Anjaly Yadav

Symposia Session XVII – Large hall B
Microglia in Health and Disease
Speakers: João Relvas, Izabela Lepiarz-Raba, Natalia Małek, Natalia Stelmach

Symposia Session XVIII – Medium hall B
EEG correlates of consciousness
Speakers: Marcin Koculak, Klaudia Krystecka, Urszula Górska-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 Zacharjasz, Natalia Konopinska, Naveen Nedunchezhian

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 Więcławski, 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**

EFOP-3.6.2-16-2017-00008; "The role of neuroinflammation in neurodegeneration: from molecules to clinics"; and Higher Education Institutional Excellence Programme of the Ministry of Human Capacities in Hungary: 20765/3/2018/FEKUTSTRAT, 2020-4.1.1-TKP2020—FIKP III. Project No. TKP2020-IKA-08 has been implemented with the support provided from the National Research, Development and Innovation Fund of Hungary, financed under the 2020-4.1.1-TKP2020 funding scheme.

EFFECT OF TRIS(2,3-DIBROMOPROPYL) ISOCYANURATE ON MOUSE HIPPOCAMPAL NEURONAL CELLS

Dominika Szlachcikowska*, Anna Tabęcka-Łonczyńska

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Tris(2,3-dibromopropyl) isocyanurate (TBC) is one of the novel brominated flame retardants (NBFR), widely used in industry. Current data showed significant bioaccumulation of TBC in the environment and living organisms. Because it has been showed that TBC is a lipophilic substance, while nervous tissue is rich in fat, so probably TBC can pass through the blood-brain barrier. To date, TBC is also known as an endocrine disruptor which may have a particularly negative effect on the nervous system of the human and animals. This may be important for the induction of inflammatory processes that cause disorders and development of neurodegenerative diseases. Therefore, the aim of our research was to evaluate the effect of TBC treatment on the mouse hippocampal neuronal cell line (HT-22) *in vitro* as a model cells. It is also important to understand the mechanism of action of TBC. The basic parameters of the research were changed in HT-22 cells after use TBC with cotreatment. Additionally, we analyzed the effect of TBC and cotreatment on the expression of proteins related to inflammatory processes. Our results indicate the involvement of TBC in these processes, which may indicate a negative impact on neuronal cells.

Funding: This work was supported by statutory funds from the University of Information Technology and Management in Rzeszow, Poland (DS 503-07-01-59).

TITANIUM(IV) OXIDE NANOPARTICLES SURFACE-MODIFIED WITH SALICYLIC AND 5-AMINOSALICYLIC ACID AFFECT LIPID AND PROTEIN OXIDATION IN THE BRAIN OF WISTAR RATS

Katarina Bobić[1]*, Dunja Drakulić[1], Snežana Pejić[1], Tijana Milovanović[2], Jadranka Miletić Vukajlović[3], Snežana Pajović[1], Ana Todorović[1]

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The broad use of titanium(IV) oxide (TiO2) particles in various products, and toxicity indicators of particles with diameters<100 nm (nanoparticles, NPs), inspire scientists to find a suitable, non-toxic replacement. An effective approach to diminish TiO2 NPs toxic impact might comprise altering their physicochemical properties by surface modification. Therefore, commercially available TiO2 NPs were surface-modified with antioxidants: salicylic acid (SA-TiO2) or 5-aminosalicylic acid (ASA-TiO2), with a goal to compare their ability to reduce oxidative stress, specifically levels of lipid peroxidation (LPO) and advance oxidation protein products (AOPP) in the brain of Wistar rats. Oxidative stress markers were determined in whole cell brain extracts, isolated 14 days following acute oral intake of either vehicle (V, 2.5 ml 0.01 M HCl) or TiO2/SA-TiO2/ASA-TiO2 NPs (1000 mg/kg dissolved in V). The results showed that LPO levels were evenly elevated in all TiO2 treated groups relative to the V group. However, AOPP levels in ASA-TiO2 group were similar to V group and significantly lower compared to TiO2 and SA-TiO2 groups; suggesting that this modification moderates some of the TiO2 NPs-induced toxicity. Additional experiments are required to investigate their effects on toxicity mechanisms and fully elucidate the potential of ASA-TiO2 as TiO2 NPs substitute.

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