



## International Symposium and Research Workshop Series

### “MODERN APPROACHES IN TRANSLATIONAL RESEARCH ON NEURODEGENERATION AND NEUROPATHOLOGY: FROM MECHANISMS TO NEW THERAPIES”

**WORKSHOP-PRACTICUM (31.03-06.04.2023) & SYMPOSIUM (04.04-06.04.2023)  
for PhD students and young researchers**

#### **Venue:**

53 Kabanbay Batyr Avenue, Block S1, National Laboratory Astana, Nazarbayev University,  
Astana, Kazakhstan, <https://nla.nu.edu.kz/>

#### **Organizers:**

National Laboratory Astana (Nazarbayev University, Kazakhstan),  
Neuroplast BV / Maastricht University (Netherlands)  
PhytoAPP and Aqua-Synapse Consortia (HORIZON-2020,-2021 EU)  
NIIOPP (Moscow, Russia)  
Medical State University (Astana, Kazakhstan)

#### **Organizing Committee:**

Prof. Sholpan Askarova (National Laboratory Astana, Nazarbayev University),  
Prof. Tatyana Strekalova (University of Maastricht, Neuroplast BV, Netherlands)  
Prof. Kureysh Khamchiev (Department of Normal Physiology, Astana Medical State  
University, Kazakhstan)  
Dr. Johannes de Munter (Neuroplast BV, Netherlands).

## Summary:

The goal of this event is to share practical and theoretical knowledge on animal models and new treatment strategies for neurodegenerative disorders in frames of ongoing work of PhytoAPP EU consortium “Innovative water-soluble phytomaterial inhibitors for Alzheimer’s and Parkinson’s disease prevention” (HORIZON-2020 research and innovation the Marie Skłodowska-Curie program), primarily with young researchers and PhD students. The program of WORKSHOP-PRACTICUM will cover advanced methods used in translational neuroscience in mice. A program of SYMPOSIUM will allow sharing the latest achievements and developments of PhytoAPP laboratories, researchers from Republic of Kazakhstan and other research Institutions in the field of genetic models of Alzheimer’s disease and amyotrophic lateral sclerosis, other disorders, the use of new antioxidants and stem cells transplantation therapy. An additional section will be offered discussing the environmental and ecological aspects of neurodegeneration and related mechanisms (supported by Aqua-Synapse EU HORIZON-2021 program). Finally, two sessions for PhD students and young researchers will be provided to ease their first steps in the challenging path of neuroscientists.

## Speakers:

- ☐ Prof. Dos Sarbassov (Nazarbayev University, Astana, Kazakhstan) *in person*
- ☐ Prof. Daniel C. Anthony (University of Oxford, UK) *in person*
- ☐ Prof. Tatyana Strekalova (University of Maastricht and Neuroplast BV) *in person*
- ☐ Dr. Evgenii Svirin (Sechenov University, Moscow and Neuroplast BV, Netherlands) *in person*
- ☐ Dr. Johannes de Munter (Neuroplast BV, Maastricht, Netherlands) *in person*
- ☐ Dr. Alexey Lyundup (People’s Friendship University, Moscow Russia) *in person*
- ☐ Prof. Eugene D. Ponomarev (Nazarbayev University, Astana, Kazakhstan) *in person*
- ☐ Dr. Kirill Chaprov (University of Cardiff, UK), *in person*
- ☐ Dr. Ekaterina Kikteva (Thaisse, Paris, France) *in person*
- ☐ Prof. Tursonjan Tokay (Nazarbayev University, Kazakhstan) *in person*
- ☐ Prof. Vyacheslav Ogay (National Center for Biotechnology, Astana, Kazakhstan), *in person*
- ☐ Prof. Marbek Askarov (National Scientific Medical Center, Astana, Kazakhstan), *in person*
- ☐ Dr. Anastassiya Ganina (National Scientific Medical Center, Astana, Kazakhstan), *in person*
- ☐ Dr. Yuliya Safarova (Nazarbayev University, Astana, Kazakhstan) *in person*
- ☐ Dr Farkhad Olzhayev (Nazarbayev University, Astana, Kazakhstan) *in person*

- ☐ Dr. Careen Schroeter (University Clinic in Bad Homburg, Germany) **online**
- ☐ Prof. Raymond Cespuglio (Sechenov University, Moscow and C.Bernard University in Lyon, France) **online**
- ☐ Prof. S. Lyubchik (Lusofona & NOVA Lisbon Universities, Portugal) **online**
- ☐ Prof. Boris Kramer (University of Western Australia) **online**
- ☐ Dr. Gabor Somlyai (HYD LLC, Budapest, Hungary) **online**
- ☐ Dr. Nurbol Appazov (Kyzylorda University, Kyzylorda, Kazakhstan) **on line**
- ☐ Dr. Alexander Trofimov (University of Coimbra, Portugal) **on line**

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| <b>March 31<sup>st</sup>, Friday</b>                                                               |                                                             |                                                                                                                                                                                                              |
| <b>WORKSHOP ON THE METHODS OF COGNITIVE FUNCTIONS AND<br/>BEHAVIOURAL MONITORING IN MICE</b>       |                                                             |                                                                                                                                                                                                              |
| <b>10.00-16.00</b>                                                                                 | <i>Neuroplast BV, Netherlands<br/>(to be signed up for)</i> | <ul style="list-style-type: none"> <li>- Social transmission of food preference in mice</li> <li>- Olfactory memory in group-housed mice</li> <li>- Y-maze as a model of spatial learning in mice</li> </ul> |
| <b>April 1<sup>st</sup>, Saturday</b>                                                              |                                                             |                                                                                                                                                                                                              |
| <b>WORKSHOP-PRACTICUM ON THE METHODS OF COGNITIVE FUNCTIONS</b>                                    |                                                             |                                                                                                                                                                                                              |
| <b>12.00-16.00</b>                                                                                 | <i>Neuroplast BV, Netherlands<br/>(to be signed up for)</i> | <ul style="list-style-type: none"> <li>- Barnes maze and its modifications</li> <li>- Marble test and its modifications</li> </ul>                                                                           |
| <b>April 2<sup>d</sup>, Sunday</b>                                                                 |                                                             |                                                                                                                                                                                                              |
| <b>WORKSHOP-PRACTICUM ON METHODS OF EMOTIONALITY IN MICE AND<br/>STRATEGIES OF CNS DRUG DESIGN</b> |                                                             |                                                                                                                                                                                                              |
| <b>10.00-16.00</b>                                                                                 | <i>Neuroplast BV, Netherlands<br/>(to be signed up for)</i> | <ul style="list-style-type: none"> <li>- Elevated O maze and elevated Plus maze in mice</li> <li>- Open field</li> </ul>                                                                                     |

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| <b>16.00-16.30</b> | Dr. Nurbol Appazov,<br>Kyzylorda University<br>(business centre of Hilton<br>Astana /zoom) | <ul style="list-style-type: none"> <li>- Object recognition test</li> <li>- Dark light box</li> </ul> <p>Integrated Green Chemical Approach to the Medicinal Plants Processing and synthesis of new antioxidants, (<i>on line</i>)</p> |
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| <b>April 3<sup>d</sup>, Monday</b>                                                                   |                                                                                                  |                                                                                                                                                                                                                                                                                      |
| <b>WORKSHOP-PRACTICUM ON METHODS OF SURGERY AND CENTRAL ADMINISTRATION IN MICE</b>                   |                                                                                                  |                                                                                                                                                                                                                                                                                      |
| <b>14.00-18.00</b>                                                                                   | Prof. Daniel C. Anthony<br><i>University of Oxford, UK</i><br><br>( <i>to be signed up for</i> ) | <ul style="list-style-type: none"> <li>- anesthesia of small rodents with isoflurane;</li> <li>- fixation of small rodents in a stereotactic frame;</li> <li>- monitoring of animal's well being during surgery;</li> <li>- drug administration in Cysterna magnus.</li> </ul>       |
| <b>April 4<sup>th</sup>, Tuesday</b>                                                                 |                                                                                                  |                                                                                                                                                                                                                                                                                      |
| <b>WORKSHOP-PRACTICUM ON METHODS OF SURGERY AND CENTRAL ADMINISTRATION IN MICE</b>                   |                                                                                                  |                                                                                                                                                                                                                                                                                      |
| <b>10.00-13.00</b>                                                                                   | Prof. Daniel C. Anthony<br><i>University of Oxford, UK</i><br><br>( <i>to be signed up for</i> ) | <ul style="list-style-type: none"> <li>- intracerebroventricular drug administration;</li> <li>- drug administration in Cysterna magnus.</li> <li>- intravenous drug administration;</li> <li>- brain and liver perfusion;</li> <li>- brain and liver dissection in mice.</li> </ul> |
| <b>13.00-14:00</b>                                                                                   | Lunch break                                                                                      |                                                                                                                                                                                                                                                                                      |
| <b>INTERNATIONAL SYMPOSIUM</b><br><br><b>“Translational research in neurodegenerative disorders”</b> |                                                                                                  |                                                                                                                                                                                                                                                                                      |

**Section I: UPDATE IN TRANSLATIONAL RESEARCH ON NEURODEGENERATION:  
FROM COGNITIVE ASPECTS TO SYSTEM METABOLOME ASSAY**

*Chairs: Prof. Sholpan Askarova and Prof. Tatyana Strekalova*

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| 14.00-14:15                                                  | Prof. Dos Sarbassov,<br><br>Prof. Tatyana Strekalova                                               | Opening remarks                                                                                                                                                         |
| 14.15 – 14.45                                                | Prof. Daniel C. Anthony<br><i>Department of<br/>Pharmacology, University of<br/>Oxford, UK</i>     | Metabolomics a new experimental and<br>clinical tool in understanding<br>neurodegenerative disorders                                                                    |
| 14.45 - 15.05                                                | Prof. Tatyana Strekalova<br><br><i>Maastricht University and<br/>Neuroplast BV, Netherlands</i>    | Mouse models of learning and memory and<br>their use in drug research and development.<br>Recent advances                                                               |
| 15.05 -15.25                                                 | Dr. Evgenii Svirin<br><br><i>Sechenov University and<br/>Neuroplast BV, Netherlands</i>            | APP/PS1 mice as a model of Alzheimer’s<br>disease and effects of new treatments with<br>phytochemicals                                                                  |
| 15.25 -15.45                                                 | Dr. Alexander Trofimov<br><i>University of Coimbra,<br/>Portugal</i>                               | Lipopolysaccharide triggers exacerbated<br>neuroinflammation and behavioural<br>disturbances in mice with truncated<br>Fused-in-Sarcoma Protein (FUS) ( <i>online</i> ) |
| 15.45 -16.30                                                 | <i>Social get-together drinks &amp; snacks</i>                                                     |                                                                                                                                                                         |
| April 5 <sup>th</sup> , Wednesday                            |                                                                                                    |                                                                                                                                                                         |
| WORKSHOP ON INTRAVENOUS INTERVENTION AND DRUG ADMINISTRATION |                                                                                                    |                                                                                                                                                                         |
| 09.00 – 12.00                                                | Prof. Daniel C. Anthony<br><br><i>University of Oxford, UK</i><br><br><i>(to be signed up for)</i> | <ul style="list-style-type: none"><li>- drug administration in cisterna<br/>magnus</li><li>- monitoring of animals’ well-being<br/>post-surgery</li></ul>               |

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| 12.00 – 13.00                                                                              | Lunch break                                                                                                               |                                                                                                                       |
| Section II: STEM CELL THERAPY IN CLINICAL APPLICATION: CURRENT STATUS AND NEW PERSPECTIVES |                                                                                                                           |                                                                                                                       |
| Chairs: Prof. Kureysh Khamchiev and Prof. Tatyana Strekalova                               |                                                                                                                           |                                                                                                                       |
| 13.00 - 13.30                                                                              | Prof. Vyacheslav Ogay<br><br>Deputy Director for Research, National Center for Biotechnology, Astana, Kazakhstan          | The therapeutic potential of mesenchymal stem cells in the treatment of atherosclerosis                               |
| 13.30 - 13.50                                                                              | Dr. Johannes de Munter<br><br>CEO Neuroplast BV, Netherlands                                                              | Stem cell therapy in models of traumatic spinal cord injury and neurodegeneration: advantages over standard therapies |
| 13.50 - 14.05                                                                              | Prof. Manarbek Askarov and Dr. Anastassia Ganina<br><br>National Scientific Medical Center, Astana, Kazakhstan            | Stem cell therapy of Systemic lupus erythematosus                                                                     |
| 14.05 - 14.30                                                                              | Dr. Alexey Lyundup, Research and Education Resourse Center of People’s Friendship University, Moscow, Russia              | “Legal regulation of cell preparations in the Eurasian Economic Union”.                                               |
| 14.30 -14.50                                                                               | Coffee break                                                                                                              |                                                                                                                       |
| Chairs: Prof. Alexey Lyundup and Tatyana Strekalova                                        |                                                                                                                           |                                                                                                                       |
| 14.50 -15.10                                                                               | Prof. Boris Kramer<br><br>Neuroplast BV, Netherlands and University of Western Australia, Australia                       | Stem Cell therapy, the way we like it: a perspective from neonatologist (online)                                      |
| 15.10 -15.25                                                                               | Dr. Yuliya Safarova<br><br>Laboratory of Bioengineering and Regenerative Medicine, National Laboratory Astana, Kazakhstan | Stem cell therapy for bone fracture regeneration in a small animal model                                              |
| 15.25 – 15.35                                                                              | Optional break                                                                                                            |                                                                                                                       |
| 15.40 – 16.10                                                                              | Prof. Daniel C. Anthony<br><br>Department of Pharmacology, University of Oxford, UK                                       | Understanding the inflammation in the brain and neurodegenerative disorders                                           |

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| 16.10 – 16.40                                                                                                              | Prof. Eugene D. Ponomarev<br><i>Biology Department, School of Sciences and Humanities, Nazarbayev University, Kazakhstan</i>                                                                                 | Role of platelets and complement in the pathogenesis of epilepsy                                                                                               |
| 16.50 – 17.20                                                                                                              | <b>Special session for PhD students</b><br><br>To learn how to learn: the ecology of the brain ( <i>special lecture for PhD students</i> )<br><br>Dr. Ekaterina Kikteva<br><br><i>Thaisse, Paris, France</i> |                                                                                                                                                                |
| April 6 <sup>th</sup> , Thursday                                                                                           |                                                                                                                                                                                                              |                                                                                                                                                                |
| Section III: ANIMAL MODELS OF NEURODEGENERATIVE DISORDERS AND COMORBID CONDITIONS: NEW MECHANISMS AND TREATMENT STRATEGIES |                                                                                                                                                                                                              |                                                                                                                                                                |
| Chairs: Dr. de Munter and Dr. Evgenii Svirin                                                                               |                                                                                                                                                                                                              |                                                                                                                                                                |
| 11.00- 11.20                                                                                                               | Prof. Tursonjan Tokay<br><i>Biology Department, School of Sciences and Humanities, Nazarbayev University, Kazakhstan</i>                                                                                     | New mechanisms of amyotrophic lateral sclerosis                                                                                                                |
| 11.20 -11.40                                                                                                               | Dr. Kirill Chaprov<br><i>University of Cardiff, UK</i>                                                                                                                                                       | Loss of the Synuclein Family Members Differentially Affects Baseline- and Apomorphine-Associated EEG Determinants in Single-, Double- and Triple-Knockout Mice |
| 11.40 -12.00                                                                                                               | Dr. Farkhad Olzhayev<br><i>National Scientific Medical Center, Astana, Kazakhstan</i>                                                                                                                        | Experimental model of a focal ischemic brain damage by occlusion of the middle cerebral artery                                                                 |
| 12.00-12.20                                                                                                                | Prof. Raymond Cespuglio<br><i>C.Bernard University in Lyon, France and Sechenov University, Russia</i>                                                                                                       | Free radicals in neurodegenerative processes ( <i>online</i> )                                                                                                 |
| 12.20-13.20                                                                                                                | Lunch break                                                                                                                                                                                                  |                                                                                                                                                                |
| Section IV: AQUA-SYNAPSE ENVIRONMENTAL SESSION                                                                             |                                                                                                                                                                                                              |                                                                                                                                                                |

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| <i>Chairs: Prof. D. Anthony and Dr. Yuliya Safarova</i> |                                                                                                           |                                                                                                          |
| <b>13.20 – 13.40</b>                                    | Dr. Gábor Somlyai<br><i>HYD LLC, Budapest,<br/>Hungary</i>                                                | Deuterium in drinking water and human health: a global view” <i>(online)</i>                             |
| <b>13.40 – 14.00</b>                                    | Prof. Tatyana Strekalova<br><i>University of Maastricht,<br/>NIOPP and Neuroplast BV,<br/>Netherlands</i> | The role of deuterium content in drinking water in the human and experimental rodent                     |
| <b>14.00– 14.20</b>                                     | Dr. Careen Schröter<br><i>Kastanienhof Clinic,<br/>Cologne, Germany</i>                                   | Understanding the impact of environmental factors and human health: current state of art <i>(online)</i> |
| <b>14.20 – 14.40</b>                                    | Prof. S. Lyubchik<br><i>Lusofona &amp; NOVA Lisbon<br/>University, Portugal</i>                           | Green chemistry and innovative water-soluble nanoparticles in medicine and prevention <i>(on line)</i>   |
| <b>14.40 – 15.15</b>                                    | Dr. Ekaterina Kikteva<br><i>Thaisse, Paris, France</i>                                                    | <b>Special session for PhD students:</b><br>“Thinking ecologically”                                      |
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**End of the event**