









European Union's HORIZON-2020 research and innovation the Marie Sklodowska-Curie programme

Staff Exchange (SE) Call:HORIZON-MSCA-SE-2021 Marie Curie Actions



INSTITUTE OF GENERAL PATHOLOGY AND PATHOPHYSIOLOGY

## **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 Sklodowska-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 form Republic of Kazakhstan and other research Institutions in the field of genetic models of Alzheimers'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) <i>in person</i> 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) <i>in person</i> Dr Farkhad Olzhayev (Nazarbayev University, Astana, Kazakhstan) <i>in person</i>				

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

March 31 <sup>st</sup> , Friday  WORKSHOP ON THE METHODS OF COGNITIVE FUNCTIONS AND  BEHAVIOURAL MONITORING IN MICE			
	April 1st, Sa	nturday	
WORKSHOP-PRACTICUM ON THE METHODS OF COGNITIVE FUNCTIONS			
12.00-16.00	Neuroplast BV, Netherlands (to be signed up for)	<ul> <li>Barnes maze and its modifications</li> <li>Marble test and its modifications</li> </ul>	
	April 2 <sup>d</sup> , S	unday	
WORKSHOP-PRACTICUM ON METHODS OF EMOTIONALITY IN MICE AND STRATEGIES OF CNS DRUG DESIGN			
10.00-16.00	Neuroplast BV, Netherlands (to be signed up for)	<ul> <li>Elevated O maze and elevated Plus maze in mice</li> <li>Open field</li> </ul>	

		<ul><li>Object recognition test</li><li>Dark light box</li></ul>
16.00-16.30	Dr. Nurbol Appazov, Kyzylorda University (business centre of Hilton Astana /zoom)	Integrated Green Chemical Approach to the Medicinal Plants Processing and synthesis of new antioxidants, (on line)

April 3 <sup>d</sup> , Monday  WORKSHOP-PRACTICUM ON METHODS OF SURGERY AND CENTRAL  ADMINISTRATION IN MICE			
	April 4 <sup>th</sup> ,	Гuesday	
WORKSHOP-PRACTICUM ON METHODS OF SURGERY AND CENTRAL  ADMINISTRATION IN MICE			
10.00-13.00	Prof. Daniel C. Anthony University of Oxford, UK  (to be signed up for)	<ul> <li>intracerebroventricular drug administration;</li> <li>drug administration in Cysterna magnus.</li> <li>intravenous drug administration;</li> <li>brain and liver perfusion;</li> </ul>	
13.00-14:00	Lunch break	- brain and liver dissection in mice.	

#### INTERNATIONAL SYMPOSIUM

"Translational research in neurodegenerative disorders"

FROM COGNITIVE ASPECTS TO SYSTEM METABOLOME ASSAY			
Chairs: Prof. Sholpan Askarova and Prof. Tatyana Strekalova			
14.00-14:15	Prof. Dos Sarbassov, Prof. Tatyana Strekalova	Opening remarks	
14.15 – 14.45	Prof. Daniel C. Anthony Department of Pharmacology, University of Oxford, UK	Metabolomics a new experimental and clinical tool in understanding neurodegenerative disorders	
14.45 - 15.05	Prof. Tatyana Strekalova  Maastricht University and Neuroplast BV, Netherlands	Mouse models of learning and memory and their use in drug research and development. Recent advances	
15.05 -15.25	Dr. Evgenii Svirin  Sechenov University and Neuroplast BV, Netherlands	APP/PS1 mice as a model of Alzheimer's disease and effects of new treatments with phytochemicals	
15.25 -15.45	Dr. Alexander Trofimov University of Coimbra, Portugal	Lipopolysaccharide triggers exacerbated neuroinflammation and behavioural disturbances in mice with truncated Fused-in-Sarcoma Protein (FUS) ( <i>online</i> )	
15.45 -16.30	Social get-together drinks & s.	nacks	
	April 5 <sup>th</sup> , We	ednesday	
WORKSHOP ON INTRAVENOUS INTERVENTION AND DRUG ADMINISTRATION			
09.00 – 12.00	Prof. Daniel C. Anthony  University of Oxford, UK  (to be signed up for)	<ul> <li>drug administration in cysterna magnus</li> <li>monitoring of animals' well-being post-surgery</li> </ul>	

Section I: UPDATE IN TRANSLATIONAL RESEARCH ON NEURODEGENERATION:

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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. Kur	eysh Khamchiev and Prof. Tatyar	ia Strekalova	
13.00 - 13.30	Prof. Vyacheslav Ogay	The therapeutic potential of mesenchymal stem cells in the treatment of atherosclerosis	
	Deputy Director for Research, National Center for Biotechnology, Astana, Kazakhstan		
13.30 - 13.50	Dr. Johannes de Munter  CEO Neuroplast BV,	Stem cell therapy in models of traumatic spinal cord injury and neurodegeneration: advantages over standard therapies	
	Netherlands		
13.50 - 14.05	Prof. Manarbek Askarov and Dr. Anastassia Ganina	Stem cell therapy of Systemic lupus erythematosus	
	National Scientific Medical Center, Astana, Kazakhstan		
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. Alex	cey Lyundup and Tatyana Strekal	ova	
14.50 -15.10	Prof. Boris Kramer  Neuroplast BV, Netherlands  and University of Western  Australia, Australia	Stem Cell therapy, the way we like it: a perspective from neonatologist ( <i>online</i> )	
15.10 -15.25	Dr. Yuliya Safarova  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  Department of	Understanding the inflammation in the brain and neurodegenerative disorders	
	Pharmacology, University of Oxford, UK		

Prof. Eugene D. Ponomarev  Biology Department, School of Sciences and Humanities, Nazarbayev University, Kazakhstan	Role of platelets and complement in the pathogenesis of epilepsy
Special session for PhD students  To learn how to learn: the ecology of the brain (special lecture for PhD students  Dr. Ekaterina Kikteva	

### April 6<sup>th</sup>, Thursday

# Section III: ANIMAL MODELS OF NEURODEGENERATIVE DISORDERS AND COMORBID CONDITIONS: NEW MECHANISMS AND TREATMENT STRATEGIES

Prof. Tursonjan Tokay  Biology Department, School of Sciences and Humanities, Nazarbayev University, Kazakhstan	New mechanisms of amyotrophic lateral sclerosis
Dr. Kirill Chaprov  University of Cardiff, UK	Loss of the Synuclein Family Members Differentially Affects Baseline- and Apomorphine-Associated EEG Determinants in Single-, Double- and Triple-Knockout Mice
Dr. Farkhad Olzhayev  National Scientific Medical Center, Astana, Kazakhstan	Experimental model of a focal ischemic brain damage by occlusion of the middle cerebral artery
Prof. Raymond Cespuglio  C.Bernard University in Lyon, France and Sechenov University, Russia	Free radicals in neurodegenerative processes (online)
Lunch break	
	Biology Department, School of Sciences and Humanities, Nazarbayev University, Kazakhstan  Dr. Kirill Chaprov University of Cardiff, UK  Dr. Farkhad Olzhayev National Scientific Medical Center, Astana, Kazakhstan  Prof. Raymond Cespuglio C.Bernard University in Lyon, France and Sechenov University, Russia

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

### End of the event