



**INTERNATIONAL SYMPOSIUM
ONE HUNDRED YEARS OF IVAN DJAJA'S (JEAN GIAJA)
BELGRADE SCHOOL OF PHYSIOLOGY**

Belgrade, September 10-14, 2010.



Organized by
UNIVERSITY OF BELGRADE
FACULTY OF BIOLOGY
Institute of Physiology and Biochemistry

Under the auspices of
SERBIAN ACADEMY OF SCIENCES AND ARTS
UNIVERSITY OF BELGRADE
MINISTRY OF SCIENCE AND TECHNOLOGICAL DEVELOPMENT

SYMPOSIUM PROGRAM





Nulla dies sine experimento

INTERNATIONAL SYMPOSIUM

**ONE HUNDRED YEARS OF IVAN DŽAJA's (JEAN GIAJA)
BELGRADE SCHOOL OF PHYSIOLOGY**

(STO GODINA BEOGRADSKE ŠKOLE FIZIOLOGIJE IVANA ĐAJE)

Organized by:

UNIVERSITY OF BELGRADE
FACULTY OF BIOLOGY
Institute of Physiology and Biochemistry

Co-organizers:

Serbian Neuroscience Society
Biophysical Society of Serbia
Serbian Society for Mitochondrial and Free-Radical Physiology
Serbian Physiological Society
Serbian Laboratory Animal Science Association
EU COST (FA0602)

Under the auspices of:

SERBIAN ACADEMY OF SCIENCES AND ARTS
UNIVERSITY OF BELGRADE
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SYMPOSIUM PROGRAM

Friday, September 10.

Serbian Academy of Sciences and Arts, Central Hall, Knez Mihailova 35

15:00 REGISTRATION

17:00 Opening Ceremony

Chairs: *Gordana Cvijić, Jelena Knežević-Vukčević, Miroslav Gašić, Dragoslav Marinković, Marko Anđelković*

Welcome addresses

Miroslav Gašić, Serbian Academy of Sciences and Arts representative

Branko Kovačević, Rector of the University of Belgrade

Božidar Đelić, Minister of Science and Technological Development

Jelena Knežević-Vukčević, Dean of Faculty of Biology University of Belgrade

17:30 Centennial lecture: “Ivan Djaja (Jean Giaja)”

Pavle R. Andjus, Serbia

18:00 Opening Lecture

Ole Petersen, UK

THE DUALITY OF CALCIUM SIGNALING:

PHYSIOLOGY AND PATHOPHYSIOLOGY

19:00 Welcome Reception

Saturday, September 11.

University of Belgrade, Rectorate Palace, Studentski Trg 1

Registration at the Rectorate Palace (and every day starting one hour before the first session)

08:00 – 09:00 Poster mounting* (all posters should be positioned according to the acronyms and numbers given in the Book of abstracts). Poster dimensions are 90cm (wide) x 120cm (high), and posters can be fixed by double adhesive tape available on site.

Poster evaluation will be performed by the Symposium Awards Panel during the course of the meeting. Authors presence is required on Saturday, September 11th (17:15 – 18:15) and Sunday, September 12th (17:00 – 18:00), for questions and discussion.

*Four day poster sessions will take place in Rectorate Palace. Posters should be removed before closing ceremony on September, 14th (before 16:30).

NEUROENDOCRINE REGULATION OF PHYSIOLOGICAL PROCESSES

(Session organizer: Gordana Cvijić)

Chairs: *Daniela Jezova and Vera Popović*

09:00 – 09:30 Centennial lecture: “Vojislav M. Petrović”

Gordana Cvijić, Serbia

09:30 – 12:10 The role of neurotransmitters and hormones in the control of disturbed homeostasis — stress and adaptation

Plenary lectures:

09:30 – 10:00 *Brian Callingham, UK*

THE FOREFOOT OF THE FALLOW DEER (DAMA DAMA)
AND ITS COMMON DIGITAL ARTERY: AN *IN VITRO* MODEL
OF COLD ADAPTATION AND DRUG ACTION

10:00 – 10:30 *Radmila Kovačević, Serbia*

ENDOCRINE DISRUPTING COMPOUNDS
AND MALE REPRODUCTION

Keynote talks:

10:30 – 11:50 *Zoran Ivanović, France*

SURVIVAL OF STEM AND PROGENITOR CELLS
IN HYPOTHERMIA: ROLE OF HYPERCAPNIA AND HYPOXIA

10:50 – 11:10 *Gordana Leposavić, Serbia*

CATECHOLAMINES AS IMMUNOMODULATORS:
ROLE IN FINE TUNING OF T-CELL DEVELOPMENT

11:10 – 11.40 Coffee break

Short communications:

11:40 – 11:55 *Silvana Andrić, Serbia*

STRUCTURAL COMPLEXITY OF THE TESTIS AND PKG I/STAR
INTERACTION REGULATE THE LEYDIG CELL ADAPTIVE
RESPONSE TO REPEATED IMMOBILIZATION STRESS

11:55 – 12:10 *Nataša Spasojević, Serbia*

REGULATION OF CATECHOLAMINE-SYNTHESIZING ENZYMES
AND β -ADRENOCEPTORS GENE EXPRESSION IN VENTRICLES
OF STRESSED RATS

12:10 – 15:45 *Clinical aspects of neurotransmitter and hormone physiology*

Chairs: *Brian Callingham and Radmila Kovačević*

Plenary lectures:

12:10 – 12:40 Daniela Jezova, Slovak Republic

HORMONES AND MOOD: OLD AND NEW FACTS ON STEROIDS

12:40 – 13:10 Vera Popović, Serbia

LESSONS FROM HYPOTHALAMIC OBESITY IN HUMANS

Keynote talks:

13:10 – 13:30 Piergiorgio Strata, Italy

NON-MOTOR FUNCTIONS OF THE CEREBELLUM

13:30 – 13:50 Robert Zorec, Slovenia

EXOCYTOTIC FUSION PORE: AN EVOLUTIONARY
INVENTION OF EUKARYOTIC CELLS

13.50 – 15.00 Lunch break and poster viewing

Short communications:

15:00 – 15:15 Dragan Đurić, Serbia

HOMEOCYSTEINE AND FOLIC ACID: IS THERE A POSSIBILITY
TO PREVENT CARDIOTOXIC AND NEUROTOXIC EFFECTS?

15:15 – 15:30 Filipović Dragana, Germany

EXPRESSION OF GLUCOCORTICOID RECEPTORS
IS DEVELOPMENTAL STAGE-INDEPENDENT
IN THE REGENARTING HUMAN MUSCLE

15:30 – 15:45 Biljana Božić, Serbia

THE INFLUENCE OF SECONDARY HYPERPARATHYROIDISM
AND FUNCTIONAL HYPOPARATHYROIDISM ON SEVERITY OF
CHRONIC HEART FAILURE

15:45 – 17:15 *Endocrine control of physiological rhythms*

Chairs: *Piergiorgio Strata and Gordana Cvijić*

Plenary lectures:

15:45 – 16:15 Dragoslava Živadinović, USA

CHRONOBIOLOGICAL CHARACTERISTICS
AND MANIPULATION OF HIBERNATION RHYTHMS
IN THE EUROPEAN GROUND SQUIRREL *Spermophilus cittelus*

16:15 – 16:45 Mike Stewart UK

ELECTRON MICROSCOPE STUDIES OF THE REVERSIBLE
RETRACTION OF DENDRITIC SPINES IN HIPPOCAMPUS
OF HIBERNATING GROUND SQUIRRELS

Short communications:

16:45 – 17:00 *Predrag Vujović, Serbia*

EFFECT OF VARIOUS FASTING PERIOD DURATIONS ON SERUM,
PITUITARY AND HYPOTHALAMIC LEPTIN LEVEL IN RATS

17:00 – 17:15 *Dunja Drakulić, Serbia*

CHRONIC DEXAMETHASONE TREATMENT MODULATES PRO-
AND ANTI-APOPTOTIC MOLECULES EXPRESSION
IN RAT HIPPOCAMPUS

17.15 – 18.15 *Poster viewing with authors' presence*

18:30 *Belgrade by night sightseeing walking tour*

Sunday, September 12.

University of Belgrade, Rectorate Palace, Studentski Trg 1

**PHYSIOLOGY OF THERMOGENESIS, MITOCHONDRIA
AND REDOX REGULATION**

Organized by COST action FA0602

(Session organizer: Bato Korac)

***09:00 – 11:00 New aspects of thermogenic physiology:
more than fat storage and heat production***

Chairs: *Mihajlo B. Spasić and Jaap Keijer*

Plenary lectures:

09:00 – 09:30 *Barbara Cannon, Sweden*

BROWN FAT IN MICE AND MEN

09:30 – 10:00 *Susanne Klaus, Germany*

EFFECTS OF SKELETAL MUSCLE MITOCHONDRIAL UNCOU-
PLING ON ENERGY METABOLISM AND AGEING IN MICE

Keynote talks:

10:00 – 10:20 *Nataša Petrović, Sweden*

“BRITE” ADIPOCYTES — THERMOGENICALLY COMPETENT,
UCP1-CONTAINING ADIPOCYTES IN WHITE FAT

10:20 – 10:40 *Vesna Otašević, Serbia*

(Recipient of the “Academician R.K. Andjus” Fund award)

REDOX-DEPENDENT HYPERPLASTIC RESPONSE OF BROWN
ADIPOSE TISSUE: FROM RESPIRATION TO THERMOGENESIS
AND VICE VERSA

10:40 – 11:00 *Marija Vlaški, France*

MAINTENANCE OF THE FUNCTIONAL CORD BLOOD CD34⁺
CELLS AT 4°C UNDER HYPOXIA AND HYPERCAPNIA

11:00 – 11:30 Coffee break

11:30 – 13:30 Mitochondrial physiology: challenge in biomedicine

Chairs: *Barbara Cannon and Jelena Marković*

Plenary lectures:

11:30 – 12:00 Aleksandra Trifunović, Sweden

MITOCHONDRIAL THEORY OF AGEING: DEAD OR ALIVE

12:00 – 12:30 Jaap Keijer, Netherlands

GENOMIC ANALYSIS OF EFFECTS OF β -CAROTENE
IN THE LUNG

Keynote talk:

12:30 – 12:50 Melita Vidaković, Serbia

NUCLEAR AND MITOCHONDRIAL CONVERSATIONS IN CELL
DEATH AND SURVIVAL: PARP-1 AND CXCL12 SIGNALING

Short communications:

12:50 – 13:05 Miomir Jović, Serbia

CARDIPROTECTION BY PROPOFOL AND SEVOFLURANE
DURING AORTIC VALVE REPLACEMENT
WITH CARDIOPULMONARY BYPASS

13:05 – 13:20 Milica Markelić, Serbia

THE MITOCHONDRIAL ORIGIN OF LIPOFUSCIN IN BROWN ADI-
POCYTES OF HYPERINSULINAEMIC RATS: THE ROLE OF LIPID
PEROXIDATION AND IRON

13:20 – 13:35 Ana Stančić, Serbia

DEPLETION OF BROWN ADIPOSE TISSUE GLUTATHIONE IS AC-
COMPANIED BY IMPAIRED MITOCHONDRIAL STRUCTURE

13:35 – 15:00 Lunch break and poster viewing

15:00 – 17:00 Redox regulation as a part of molecular physiology

Chairs: *Susanne Klaus and Aleksandra Trifunović*

Plenary lecture:

15:00 – 15:30 Mihajlo B. Spasić, Serbia

MITOCHONDRIAL REDOX REGULATION: MANGANESE SUPER-
OXIDE DISMUTASE AND ALDEHYDE DEHYDROGENASE 2

Keynote talks:

15:30 – 15:50 Miloš Filipović, Germany

REDOX MODULATION OF NO-SIGNALING BY MnSOD MIMICS:
A NEW CHALLENGE FOR THERAPEUTIC APPROACHES

15:50 – 16:10 Đorđe Miljković, Serbia

NITRIC OXIDE IN CNS AUTOIMMUNITY

16:10 – 16:30 Jelena Marković, Spain

NUCLEAR COMPARTIMENTATION OF GLUTATHIONE
AND ITS EFFECT ON CELL PROLIFERATION

Short communications:

16:30 – 16:45 *Voja Pavlović, Serbia*

p38MAPK AND Myd88 ACTIVITY IS ASSOCIATED WITH IFN-GAMMA PRODUCTION IN HUMAN NK CELLS STIMULATED WITH *Helicobacter pylori*

16:45 – 17:00 *Marija Mojić, Serbia*

DIFFERENT OUTCOME OF APPLIED NITRIC OXIDE (NO) MODIFICATION ON ANTICANCER DRUGS ACTION

17:00 – 18:00 *Poster viewing with author's presence*

Monday, September 13.

Serbian Academy of Sciences and Arts, Central Hall, Knez Mihajlova 35

NEUROPHYSIOLOGY IN HEALTH AND DISEASE

(Session organizers: Nadežda Nedeljković and Selma Kanazir)

Chairs: *Ljubisav Rakić and Nadežda Nedeljković*

09:00 – 09:30 *Centennial lecture “Radoslav K. Andjus”*

Stanko Stojilković, USA

9:30 – 11:05 **Development, learning and plasticity**

Plenary lectures:

09:30 – 10:00 *Enrico Cherubini, Italy*

CORRELATED NETWORK ACTIVITY IN THE DEVELOPING HIPPOCAMPUS: ROLE IN SYNAPTOGENESIS

10:00 – 10:30 *Lars Klimaschewski, Austria*

AXOTOMY-INDUCED NEURONAL PLASTICITY AND REGENERATION IN THE PERIPHERAL NERVOUS SYSTEM

Keynote talk:

10:30 – 10:50 *Gordana Nikčević, Serbia*

REGULATION OF THE SOX3 GENE EXPRESSION DURING EARLY PHASES OF NEURAL INDUCTION OF HUMAN EMBRYONAL CARCINOMA CELLS

Short communication:

10:50 – 11.05 *Tihomir Ilić, Serbia*

STARTLE STIMULI EXERT OPPOSITE EFFECTS ON HUMAN CORTICAL AND SPINAL MOTOR SYSTEM EXCITABILITY IN LEG MUSCLE

11:05 – 11:30 Coffee break

11:30 - 16:45 Cellular, molecular and genetic basis of neurological disorders

Chairs: *Lars Klimaschewski and Tihomir Ilić*

Plenary lecture:

11:30 - 12:00 *Olivera Nešić, USA*

NEUROPATHIC PAIN AND ION/WATER HOMEOSTASIS

Keynote talks:

12:00–12:20 *Galyna Skibo, Ukraine*

SYNAPTIC PLASTICITY IN ISCHEMIC BRAIN

12:20 – 12:40 *Ryszard Pluta, Poland*

ONE YEAR FOLLOW UP IN ISCHEMIC BRAIN INJURY AND THE
ROLE OF ALZHEIMER FACTORS

Short communications:

12:40 – 12:55 *Lidija Radenović, Serbia*

NEUROPROTECTION IN EXPERIMENTAL CEREBRAL ISCHEMIA

13:00 – 15:00 Lunch break

Chairs: *Stanko Stojilković and Lidija Radenović*

Plenary lectures:

15:00 - 15:30 *Maja Bresjanac, Slovenia*

DETECTING PRION PATHOLOGY IN THE LIVING HUMAN BRAIN

15:30-16:00 *Markus Kipp, Germany*

IMPORTANCE OF INFLAMMATION FOR CNS
TISSUE REPAIR IN MULTIPLE SCLEROSIS

Short communications:

16:00 – 16:15 *Tim Clarner, Germany*

GLUCOCORTICOIDS ACCELERATE OLIGODENDROCYTE DIFFERENTIATION *IN VITRO* BUT DO NOT INTERFERE WITH ENDOGENOUS REMYELINATION

16:15 - 16:30 *Dinko Mitrečić, Croatia*

BRAIN AND SPINAL CORD AFFECTED BY AMYOTROPHIC LATERAL SCLEROSIS INDUCE DIFFERENT GROWTH FACTORS EXPRESSION PATTERNS IN NEURONAL AND MESENCHYMAL RAT STEM CELLS

16:30–16:45 *Sonja Misirlić-Denčić, Serbia*

TRANSPORT OF PYRIMIDINE NUCLEOSIDES ACROSS THE SHEEP CHOROID PLEXUS EPITHELIUM AS A MONOLAYER IN PRIMARY CULTURE

16:45 Session closing address — *Ljubisav Rakić, Vice president of SASA*

20:00 Garden party (Faculty of Biology, Institute of Botany and Botanical Gardens), Takovska 43.

Tuesday, September 14.

University of Belgrade, Rectorate Palace, Studentski Trg 1

BIOPHYSICS IN PHYSIOLOGY

(Session organizer: Pavle Andjus)

9:00 – 10:40 Ions and intracellular signaling

Chairs: *Vadim Maximov and Ivan Milenković*

Plenary lecture :

9:00 – 9:30 *Stanko Stojilković, USA*

P2X7 RECEPTOR CHANNEL GATING: EXPERIMENTAL
CHARACTERIZATION AND MATEMATICAL MODELING

Keynote talk:

9:30 – 9:50 *Marjan Rupnik, Slovenia*

CALCIUM DEPENDENCE OF EXOCYTOSIS
IN PANCREATIC BETA-CELLS

Short communications

9:50 – 10:10 *Marko Jović, USA*

ROLE OF MEMBRANE TUBULATION
IN EFFICIENT ENDOCYTIC RECYCLING

10:10 – 10:25 *Sofija Andjelić, Slovenia*

HUMAN ANTERIOR LENS CAPSULE EPITHELIAL
CELL CONTRACTION AND CALCIUM.

10:25 – 10:40 *Aleksandar Bajić, Serbia*

PROTECTIVE ROLE OF FRUCTOSE IN THE
HYDROGEN PEROXIDE MODEL OF OXIDATIVE STRESS

10:40 – 11:10 *Coffee break*

11:10 – 13:10 Sensory physiology

Chairs: *Dejan Zečević and Zoran Gačić*

Plenary lectures:

11:10 – 11:40 *Vadim Maximov, Russia*

NEUROPHYSIOLOGICAL BASIS OF SPATIAL RESOLUTION
IN THE FISH VISUAL SYSTEM

11:40 – 12:10 *Vladimir Bastakov, Russia*

NEUROETHOLOGICAL AND NEUROPHYSIOLOGICAL
MECHANISMS OF DISTANCE ESTIMATION IN ANURA

Short communications

12:10 – 12:30 *Ivan Milenković, Germany*

PURINERGIC SIGNALING DURING DEVELOPMENT
OF CENTRAL AUDITORY NEURONS

12:30 – 12:45 *Anna Kasperson, Russia*

DOGS CONSIDERED COLOUR TO BE MORE INFORMATIVE
THAN BRIGHTNESS.

12:45 – 15:00 Lunch break and poster viewing

Chairs: *Marjan Rupnik and Pavle Andjus*

15:00 – 15:50 Neurobiophysics of synapses

Plenary lecture:

15:00 – 15:30 *Dejan Zečević, USA*

100 YEARS OF SINGLE NEURON PHYSIOLOGY —
FROM ELECTRONS TO PHOTONS

Keynote talks:

15:30 – 15:50 *Srđan Antić, USA*

GLUTAMATE-EVOKED DENDRITIC POTENTIALS
IN NEOCORTICAL PYRAMIDAL NEURONS

15:50 – 16:30 Advanced biophysical techniques

15:50 – 16:10 *Lina Machtoub, Austria*

MONITORING *USPIO* UPTAKE IN NEURODEGENERATIVE
DISORDER SYSTEMS WITH SECARS MICROSCOPY

16:10-16:30 *Aleksandra Ristić-Fira, Serbia*

CELLULAR RESPONSE TO THERAPEUTIC HADRONS

16:30 – 17:00 Coffee break

Closing Ceremony

Chairs: *Gordana Cvijić and Pavle Andjus*

17:00 Closing lecture:

Rajko Igić, USA

GREAT SCIENTISTS FROM A SMALL COUNTRY IN WAR AND PEACE

Presenting the young scientist awards “Ivan Djaja (Jean Giaja)” and “Academician Radoslav K. Andjus” Fund