

BIG BRAIN 2023

Background, Aims, and Scope

Conference background

Belgrade **BIG BRAIN 2023 Regulation and Control in Human Body and Local Outside-world Impacts** at Serbian Academy of Sciences and Arts SASA follows on
- **BIG BRAIN 2022 Comprehensive Control for a People-centric Health and Medicine Across EurAsia** at Fudan University, Shanghai, China,
- **BIG BRAIN 2019** embedded in Lomonosov Moscow State University's **BIOKYBERNETIKA 2019 MultiScale BioMathematics - Coherent Modeling of Human Body System**, Russia,
- **BIG BRAIN 2018 Comprehensive Understanding of Human Health and Impact from Person's Life-Sphere Surroundings in Populations Across the EurAsian Landmass** at TRYP Hotel Düsseldorf Krefeld, Germany,
- **EURASIAN HEALTH & MEDICINE 2018 Molecular Health - From Cell to Population** at Southern University of Science and Technology, Shenzhen, China

Aims of Transcontinental Collaboration in EurAsia

Explore opportunities for enhanced research by collaboration in health and academic medicine "between river Rhine and Yellow Sea" about theories and models, and expansion of current regional empirical investigations to later transregional comparisons.

Scope

Integrative clinical characterizations, molecular profiling, bio-systems modeling, and mathematical dynamics in variant disorders, intervention outcomes, and exposure impacts across EurAsian populations.

Medical Focus

A better understanding of functional disorders from the control-theory viewpoint of *patho-biokybernetika* is in foreground, with special interest in slow loss of control in latent disease for an *interventional biokybernetika* - a therapeutic opportunity of intervention by influencing the body's control system instead of conventional organ-level treatment in advanced disease.

Specifically, cellular system disorders, cerebral control disorders (epilepsy, multiple sclerosis, ischemic stroke, vascular dementia, degenerative dementia, Parkinson's disease), vascular transport, endocrine and nervous systems, physical and cognitive task solving, behavioral capacity and control are addressed for clinical medicine.

To advance an integrated understanding of functional human-body system, control-theory views on the holistic principles of Traditional Chinese Medicine (TCM) and Western School Medicine (WSM) are of special interest.

Health-factor Focus

Human fitness in challenges from environmental conditions, economic limitations, social stressing - in particular, geophysical setting (climate, soil and water), vanishing financial options, human-relations crises: their metrics, dynamics, and points-of-impact on human body system, and potentials for autonomous containment of immediate impact and long-term consequences by self-regulation, functional compensation, or coping with persistent deficits.

Technology Focus

Biomedical engineering and information technology for non-invasive measurement (metrology), computational methods, imaging technology, and data-analysis methodology.

Conference Partner

The Conference is attended by De Gruyter Publishing Company Boston

BIG BRAIN 2023

Conferences for Collaboration in EurAsia
Конференции по сотрудничеству в Евразии 2023г
2023 年亚欧地区合作会议
पूर्व-पाश्चात्य जीवविज्ञानम्-2023

embedding

Lomonosov Moscow State University's

БИОКИБЕРНЕТИКА БИОКИБЕРНЕТИКА 2023

Fudan University's

GENETIC ANCESTRY & DISEASE CONTROL 2023

**"Regulation and Control in Human Body
With Local Outside-world Impacts"**

Organizers

Mathematical Institute of Serbian Academy of Sciences and Arts MI SANU, Belgrade

Andelka Hedrih Mathematical Institute of Serbian Academy of Sciences and Arts MI SANU

Institute of Chemistry, Technology and Metallurgy ICTM, University of Belgrade

Željko Čupić Institute of Chemistry, Technology and Metallurgy ICTM, Belgrade, Serbia

Lomonosov Moscow State University, Moscow, Russia

Sergey I. Mukhin Faculty of Computational Mathematics and Cybernetics

Sergey V. Bogomolov Faculty of Computational Mathematics and Cybernetics

Fudan University, Shanghai, China

Wei LIN School of Mathematical Sciences

Shuhua XU School of Life Sciences (BIG BRAIN 2022 Principal Organizer)

Jochen MAU, Initiator Medical Faculty, Heinrich Heine University Düsseldorf, Germany

04-08 December 2023

**Mathematical Institute of The Serbian
Academy of Sciences and Arts MI SANU
Belgrade, Serbia**

HYBRID CONFERENCE



Registration

In English

Academic Degrees/Titles: _____ FamilyName: _____

GivenName: _____ Middle Name: _____

In native language (as in Passport)

FamilyName: _____ GivenName: _____ Middle Name _____

Institution: _____

In English

School / Faculty: _____

Department / Section: _____

Website: _____

In native language

Institution: _____

School / Faculty: _____

Department / Section: _____

Website: _____

In English

City: _____ Province: _____

Country: _____ Postal Code _____

Address: _____

In native language

Address: _____

OfficePhone / Fax: _____ Cell/mobile Phone: _____

E-Mail: _____ Alternative E-Mail: _____

Signature: _____ **Tentative topic:** _____

I need accommodation no yes:

03-04 Sep 2023 | single double room **Special requirements** _____

04-05 Sep 2023 | single double room _____

05-06 Sep 2023 | single double room _____

06-07 Sep 2023 | single double room _____

07-08 Sep 2023 | single double room _____

08-09 Sep 2023 | single double room _____

09-10 Sep 2023 | single double room **to be communicated to hotel**

E-mail a copy / screenshot **before 31 October 2023**

to TBA

to get pro-forma invoice for your final **hotel booking**

A social dinner will be arranged..... Participation at **BIG BRAIN 2023 Social Dinner** requires a separate booking!

Location: to be announced

Social Dinner [___ Pers] Price p.P. to be announced

Send separate e-mail with screenshot of your Dinner Booking to the Event Manager

Special requirements: _____

to receive separate pro-forma invoice for your dinner booking

Organization

Main Local Organizer and Venue for Conference **BIG BRAIN 2023** **Mathematical Institute of Serbian Academy of Sciences and Arts,**

Address: Kneza Mihaila 36, Beograd 11000, Serbia

20 Invitees for Program Committee (Chair: Jochen MAU, BIG BRAIN Initiator)

Ferdinand BINKOFSKI	Clinical Neuroscience
Sergey BOGOMOLOV	Stochastic Micro-Macro Modeling
Zeljko CUPIC	Physical Chemistry
Johannes W. DIETRICH	Systems Endocrinology
Yi FENG	Traditional Chinese Medicine
Andjelka HEDRIH	Biomechanics
Juergen HESCHELER	Stem Cell Research
Natalia LEVASHOVA	Biophysical Modeling
Wei LIN	Intelligent Complex Systems
Qi MEI	Clinical Cancer Research
Sergey MUKHIN	Vascular Flow Models
Rainer SIBBEL	Health Systems Modeling
Ramakrishnan SWAMINATHAN	Applied Mechanics
Wenhua TIAN	Health Service Management
Nadezda VASILYEVA	Soil Science Modeling
Vitali VOLPERT	Immune System Modeling
Vladana VUKOJEVIC	Imaging Technology
Guanyu WANG	Mathematical Biology
Shuhua XU	Human Population Omics
Jianhua ZHANG	Artificial Intelligence

Daily Time Frames in December 2023

China	16:00	18:00	20:00	22:00	01:00+
Astana	14:00	16:00	18:00	20:00	23:00
India	13:30	15:30	17:30	19:30	22:30
Samara	12:00	14:00	16:00	18:00	21:00
Moscow	11:00	13:00	15:00	17:00	20:00
Central European Winter Time	09:00	11:00	13:00	15:00	18:00

Sessions Structure (subject to change)

Speaker's Time Windows:	min. 20 minutes, max. 30 minutes
Max number of Presentations / Reports per day:	18
Duration of Conference:	5 days
Participation:	by personal invitation
Fees for Conference:	none
Online Conference Tool:	to be announced

Address comments, suggestions and enquiries to:

Scientific Sessions	: Jochen Mau	e-mail: j.mau(at)hhu.de
Local organizers	: Andjelka Hedrih	e-mail: handjelka(at)turing.mi.sanu.ac.rs
	: Zeljko Cupic	e-mail: zcupic(at)ihtm.bg.ac.rs

Currently Prepared Topics and Sessions - arrangement subject to change!

Part I. Theories

Mathematics in Dynamic Systems

Session on Stochastic Modeling

Session Organizer: Sergey Bogomolov, Fac Computational Mathematics and Cybernetics, Lomonosov Moscow State University, Russia

Systems Theory in Mathematics and Physics

Session on Intelligent Complex Systems

Organizer: Wei LIN, Research Institute of Intelligent Complex Systems, Fudan University, Shanghai, China

Systems Theory in Biology and Medicine

Session on Traditional Chinese Medicine

Organizer: Yi FENG, School of Basic Medical Sciences, Fudan University, Shanghai, China

Part II. Applications / Parts Models

Person's Biosphere (Cellular System)

Session on Cellular System

Organizers:

Session on Biophysical Models of Living Systems

Organizer: Natalia Levashova, Faculty of Physics, Lomonosov Moscow State University, Russia

Person's Biosphere (Functional Body: A. Vital Functions for Energy Supply)

Session on Vascular Flow Models

Organizer: Sergey Mukhin, Faculty of Computational Mathematics and Cybernetics, Lomonosov Moscow State University, Russia

Session on Physical Chemistry

Organizers: Željko Čupić, Ana Ivanović-Šašić, Institute of Chemistry, Technology and Metallurgy ICTM, University of Belgrade, Serbia

- Immune System Control

Person's Biosphere (Functional Body: B. Functions for Physical Task-solving)

- Brain Motor Functions, Physical Activity

Person's Biosphere (Functional Body: C. Functions for Operational Task-solving)

- Cognition and Behavior

Person's Ecosphere (Environmental Factors, Soil, Pathogens, ...)

Session on TBA

Organizer: Nadezda VASILYEVA, Dokuchaev Soil Research Institute, Moscow, Russia.

Person's Socio-Sphere

Session on Human Population Omics / Genetic Ancestry

Organizer: Shuhua XU, Center for Evolutionary Biology, Fudan University, Shanghai, China

Part III: Technologies and Methodologies

Engineering Sciences

Session on Digital Twins in Cardiovascular Systems

Organizer: Nenad Filipović, Faculty of Engineering, University of Kragujevac, Serbia

Session on Biomechanics

Organizer: Andjelka Hedrih, Mathematical Institute of Serbian Academz of Sciences and Arts, Belgrade, Serbia

Session on Artificial Intelligence in Biomedicine

Organizer: Alexei Shishkin, Faculty of Computational Mathematics and Cybernetics, Lomonosov Moscow State University, Russia

Session on TBA

Organizer: Ramakrishnan SWAMINATHAN, Department of Applied Mechanics, Indian Institute of Technology Madras, Chennai, India

Information Sciences (Computational Methods, Imaging Methodology, ...)

Empirical Research Methods (Data Analysis, Design of Empirical Investigations, ...)

Part IV: Impaired Control, Clinical Medicine

Impaired Cerebral Control

Session Organizers:

Session on The Challenge of Individualized Medicine in Cancer Diagnosis and Treatment

Organizer: Qi MEI, Shanxi Bethune Hospital, Taiyuan, China