Fudan University, Shanghai, China

BIG BRAIN 2022

Conference for Collaboration in EurAsia

Конференция по сотрудничеству в Евразии

2022 年亚欧地区合作会议

पूर्व-पाश्चात्य जीवविज्ञानम्-2022

embedding

Lomonosov Moscow State University's

BIOKYBERNETIKA БИОКИБЕРНЕТИКА

Comprehensive Control for a People-centric Health and Medicine Across EurAsia

跨亚欧地区以人为本的健康和医疗的全面控制论

Organizers

Fudan University, Shanghai, People's Republic of China
Shuhua XU Center for Evolutionary Biology, School of Life Sciences
Wenhua TIAN School of Public Policy and Social Development
Wei LIN Research Institute of Intelligent Complex Systems
Lomonosov Moscow State University
Faculty of Computational Mathematics and Cybernetics
Sergey I. MUKHIN , Sergey V. BOGOMOLOV
Heinrich Heine University Düsseldorf, Germany Medical Faculty
Jochen MAU
Scientific Team Yan LU , Lian DENG , Jing PU School of Life Sciences

VIRTUAL CONFERENCE
ACROSS SIX EURASIAN TIME ZONES

05-09 December 2022

BIG BRAIN 2022

Aims, Scope, and Goal

Conference background

Fudan's BIG BRAIN 2022 follows on BIG BRAIN 2019 at Lomonosov Moscow State University, the first successor to BIG BRAIN 2018 in Krefeld/Duesseldorf which had emerged from EURASIAN HEALTH & MEDICINE 2018 inspired by *One Continent, One Mission - Health in EurAsia* and realized with Guangdong Province at SUSTech.

Aims

Advance scientific collaboration of long term to unleash this outstanding potential,

BIG BRAIN "EurAsia's Young Science - Talented & Ambitious",

on challenging research topics for lasting academic careers to benefit their own people.

Scope

Integration of system sciences for comprehensive research on human-body physiology and person's behavior across variant EurAsian settings from a viewpoint of multi-scale control of internal dynamics under permanent exchange with and impact from its surroundings.

Simpler language

That people's life-sphere settings vary in many aspects across EurAsia's regions is common knowledge, but this is falsely seen as inconvenient, a nuisance, by some. Systematic variation is a valuable source of insight in experimental work, and so is variation of life-sphere exposures a most valuable pathway to study physiological processes and person's behavioral decision in people from different regions.

Goal

Model the dynamics of internal processes and their controls for targeted medical interventions and optimal health preservation.

With BIG BRAIN conferences, we are trying to find more scientists who can share this aspiration and wish to contribute their research.

BIG BRAIN 2022

Scientific Advisors

acad CAS Guoping ZHAO	Shanghai	Cell Biology
acad CAS Li JIN	Shanghai	Human Genetics
acad CAS Zhiming MA	Beijing	Mathematics

Program Committee

Ferdinand BINKOFSKI	Aachen	Clinical Neuroscience
Sergey BOGOMOLOV	Moscow	Stochastic Micro-Macro Modeling
Juergen HESCHELER	Cologne	Stem Cell Research
Ljiljana KOLAR-ANIĆ	Belgrade	Physical Chemistry
Wei LIN	Shanghai	Intelligent Complex Systems
Sergey MUKHIN	Moscow	Multi-Scale Bio-Mathematics
Ramakrishnan SWAMINATHAN	Chennai	Bio-medical Engineering
Wenhua TIAN	Shanghai	Health Service Management
Guanyu WANG	Shenzhen	Mathematical Biology
Shuhua XU	Shanghai	Population Genetics
Jianhua ZHANG	Oslo	Artificial Intelligence

Daily Time Frames in December 2022 (only for orientation)

China	12:00	14:00	16:00	18:00	20:00
Astana	10:00	12:00	14:00	16:00	18:00
India	09:30	11:30	13:30	15:30	17:30
Samara	08:00	10:00	12:00	14:00	16:00
Moscow	07:00	09:00	11:00	13:00	15:00
Central European Winter Time		07:00	09:00	11:00	13:00

Contacts

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OPENING ADDRESSES

acad CAS **Li JIN**
President of Fudan University

acad RAS **Igor A. SOKOLOV**
Dean of Faculty of Computational Mathematics and Cybernetics,
Lomonosov Moscow State University

Xinhua LIN
Dean of School of Life Sciences,
Fudan University

Structured List of Scientific Talks

PART I: THEORIES

1. Stochastic Modeling of Hierarchical Models S. V. Bogomolov (Lomonosov Moscow State University)
2. Simplification of High-dimensional Multi-tempo Dynamic Models LJ. Zhang (Shandong University of Science and Technology), E. Shchepakina, V. Sobolev (Samara National Research University)
3. Allostasis and Allostatic Load: Emerging Paradigms at the Verge between Health and Disease J. W. Dietrich (Ruhr University Bochum)

PART II: PERSON'S LIFE-SPHERE
Person's Body Biosphere

Cellular System

4. Pluripotent Stem Cells for Basic Research and Regenerative Medicine: What Can We Learn About Embryonic Development? J. Hescheler (University of Cologne)
5. Systems Approach and Control Science Explain the Origin of Aging and its Possible Reversibility A. Khalyavkin (Emanuel Institute of Biochemical Physics of RAS; Federal Research Center "Computer Science and Control" of RAS)
6. Mathematical Model of Oscillatory Motion of Chromosomes During Meta- and Anaphase A. Hedrih (Serbian Academy of Sciences and Arts)
7. Cross-Talk Between Haematopoietic Cells and Fibroblast Subsets Drives Inflammation and Remodelling of the Bone Marrow Microenvironment in Myeloproliferative Neoplasms GL Wang (Fudan University)
8. Mutations as Activators of Biological Evolution Processes at Genomic and Population Levels A. Sidorova, N. Levashova, A. Garaeva, V. Tverdislov (Lomonosov Moscow State University)

Operational Brain Functions

Brain Function Development

22. Data driven exploration of human brain development XM Zhao (Fudan University)

Motor Brain Functions

23. Dynamic Excitatory-Inhibitary Homeostasis and Energy Supply in the Primary Motor Cortex H. J. Patel, CH. Choi, F. Binkofski (RWTH Aachen University; Research Center Juelich GmbH)

Sensory System

24. A Geometric Approach to Visual Perception - An Overview V.N. Kozlov (Lomonosov Moscow State University)

Mental Workload

25. EEG-based Prediction of Operator Functional State Using Evolutionary Fuzzy Rule-based Models J. Zhang (Oslo Metropolitain University)

26. Cross-task Cognitive Workload Recognition Based on Spatial-Frequency Feature Abstractions of the EEG Signals Z. Yin (University of Shanghai for Science and Technology)

Emotions

27. Emotion Recognition in Highly Source-localized EEG Signals Using Motif Patterns with Imbalanced Data N. Ganapathy (Indian Institute of Technology Hyderabad), H. Kumar, R. Swaminathan (Indian Institute of Technology Madras)

28. EEG based Emotion Recognition Using Entropy Features and Bayesian Optimized Random Forest H. Kumar, N. Ganapathy (Indian Institute of Technology Hyderabad), R. Swaminathan (Indian Institute of Technology Madras)

Functional Impairment

29. Non-coding Regulatory Element: Multiomics Analysis and Association with Brain Disorders YC Yang (Fudan University)

30. Investigations on the Brain Sub-anatomic Patterns for Early Diagnosis of Mild Cognitive Impairment R. Palanisamy, R. Swaminathan (Indian Institute of Technology Madras)

31. Uncovering the Missing Genetic Links of Neuropsychiatric Disorders JQ Chen (Fudan University)

Person's Eco-Sphere Exposures

Living-nature Cohabitation

32. Soil and Human Health: A Review of Modeling Approaches N. Vasilyeva (Dokuchaev Soil Science Institute)

Information Sciences

Computing Methods

Cellular Level Methods

Imaging

Data-Analytic Sciences

PART IV: FUTURE RESEARCH AND HEALTH POLICY DESIGN

Control of Internal Dynamics of Physiological Processes

Control of External Dynamics in Local Conditions

Late additions