



华大生命科学研究院
BGI·Research



上海脑科学与类脑研究中心
Shanghai Center for Brain Science and
Brain-Inspired Technology

2026 INTERNATIONAL FORUM ON BRAIN MAPPING

SEP 19-20, 2026
Sanya, Hainan, China

ORGANIZERS

- Center for Excellence in Brain Science and Intelligence Technology (Institute of Neuroscience), Chinese Academy of Sciences
- Hainan University
- BGI Research
- Shanghai Center for Brain Science and Brain-Inspired Technology



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Species evolution



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STOmics Website



Conference Introduction



Brain mapping serves as the cornerstone for understanding brain structure and function and provides critical support for unraveling the mysteries of the brain. Mesoscopic whole-brain atlases can accurately delineate neuronal cell types, their spatial distribution and the organizational rules of neural circuits. They are of great significance for identifying therapeutic targets for brain disorders, advancing clinical diagnosis and treatment, and promoting the development of brain-inspired artificial intelligence technologies.

The International Consortium for Primate Brain Mapping (ICPBM) was launched in September 2025, accompanied by the official release of its white paper. This marks the formal initiation of the international major scientific program on primate brain mapping by the global scientific community and the commencement of systematic global collaboration in primate brain mapping research. The consortium aims to build a global network for open and collaborative scientific research, coordinate international efforts in technological development and brain mapping, unify technical criteria and data specifications, and facilitate the worldwide sharing of mapping technologies, core facilities and analytical tools.

As the executing organization of the international major scientific program on primate brain mapping, the ICPBM now brings together over 120 members from 27 countries and regions across the globe. These researchers are affiliated with more than 70 world-leading universities and research institutions. The consortium also incorporates multiple international synchrotron radiation facilities, such as SPring-8 in Japan, SLRI in Thailand, and SESAME in Jordan, demonstrating its strengths in integrating interdisciplinary core technologies and key infrastructure platforms. Boasting robust international collaboration potential in research resources and talent composition, the ICPBM has laid a solid foundation of talent and resources for advancing the implementation of the major scientific program on brain mapping.

The 2026 International Forum on Brain Mapping focuses on cutting-edge research achievements and state-of-the-art technologies in the field of brain mapping worldwide, inviting experts at home and abroad to share research progress and exchange ideas. Centering on four major themes — Cellular Atlases, Connectome, Interactome and Emerging Technologies for Brain Mapping — the conference adopts multiple communication formats including thematic seminars and poster sessions. It strives to further strengthen the International Consortium for Primate Brain Mapping, build an open and collaborative international platform, and boost exchanges and cooperation within the brain mapping community. We sincerely invite researchers engaged in brain mapping, neuroscience and related interdisciplinary fields at home and abroad to participate and communicate, so as to jointly drive the advancement of relevant research.

ORGANIZATIONAL STRUCTURE

Organizers

- Center for Excellence in Brain Science and Intelligence Technology (Institute of Neuroscience), Chinese Academy of Sciences
- Hainan University
- BGI Research
- Shanghai Center for Brain Science and Brain-Inspired Technology

Co-organizers

- Hainan Biomedical Engineering Society
- Hainan University School of Biomedical Engineering
- State Key Laboratory of Brain Cognition and Brain-Inspired Intelligence Technology
- State Key Laboratory of Digital Medical Engineering
- Overseas Expertise Introduction Center for Discipline Innovation of Brainsmatics and Brain-inspired Intelligence (111 Center), Hainan University
- Hainan Technology Innovation Center for Brainsmatics and Brain-Computer Interface

Organizing Committee

- Javier DeFelipe (Centro de Tecnología Biomédica, Universidad Politécnica de Madrid, Spain)
- Alan Evans (McGill University, Canada)
- Noritaka Ichinohe (National Center of Neurology and Psychiatry, Japan)
- Henry Kennedy (Stem Cell and Brain Research Institute in Lyon, France)
- Jinhyun Kim (Korea Institute of Science and Technology, Korea)
- David Kleinfeld (University of California at San Diego, USA)
- Qingming Luo (Hainan University, China)
- Jan Mulder (Karolinska Institute, Sweden)
- Nicola Palomero Gallagher (Institute of Neuroscience and Medicine, Research Centre Jülich, Germany)
- Andrew Parker (University of Oxford, United Kingdom)
- George Paxinos (Neuroscience Research Australia & The University of New South Wales, Australia)
- Mu-ming Poo (Center for Excellence in Brain Science and Intelligence Technology (Institute of Neuroscience), CAS, China)
- Marcello Rosa (Monash University, Australia)
- Yan-gang Sun (Center for Excellence in Brain Science and Intelligence Technology (Institute of Neuroscience), CAS, China)



Secretariat

- CEBSIT:
Yangang Sun, Zhiming Shen, Chao Wu, Chiyuan Yao, Weiqi Xu, Biyu Ren
- Hainan University:
Hua Shi
- Shanghai Center for Brain Science and Brain-Inspired Technology:
Yixi Gu, Yang Wang, Mengqin Zhou, Kangchun Chen
- BGI Research:
Shiping Liu, Youning Lin, Mimi Tang, Zhongcai Bi

International Consortium for Primate Brain Mapping (ICPBM)

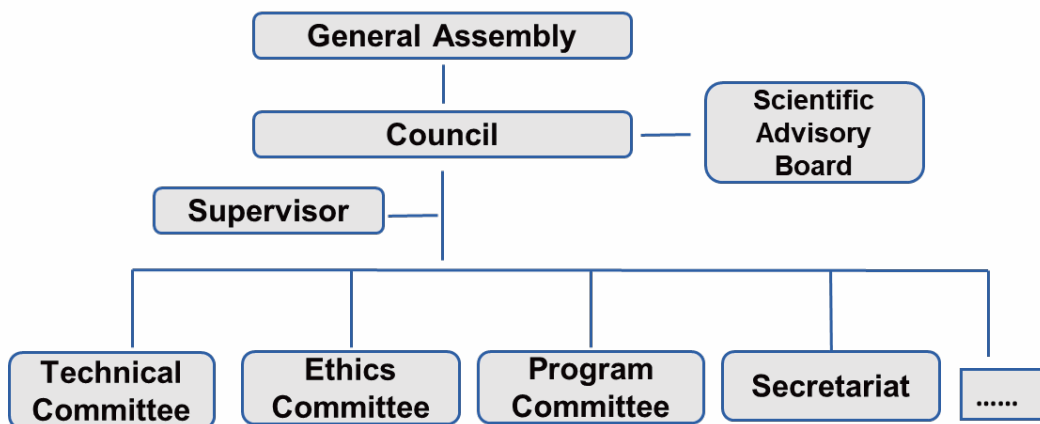
Vision

Create the world's first complete mesoscopic atlases of primate brains, establishing a new paradigm for global neuroscience collaboration

Mission

To systematically identify all cell types, map their spatial distributions and whole-brain connectivity, and identify specific molecular interactions in non-human primate and human brains through international collaboration

Organization



International Institutional Partners:

ION | HNU | BGI | BSBII | SYNAPSE | KIST | OVGU |
HUN-REN IEM | Monash | IITM | UPM | ACHUCARRO

.....

Additional institutions are welcome to participate!

Members

The consortium has secured endorsement from over 120 distinguished scientists representing over 70 institutions in about 27 nations at its inception, with global participation growing steadily (up to August , 2026)

Membership Benefits & Obligation

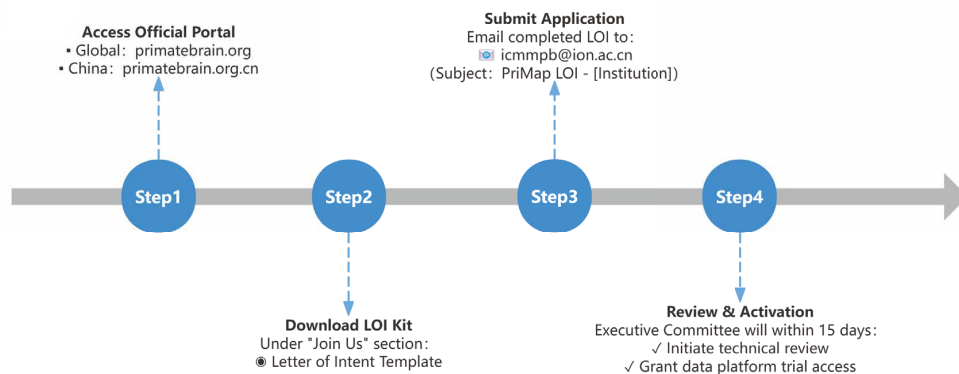
Benefits

- 1). Access to the latest technologies, core facility, and data
- 2). Access to new AI tools for brain mapping
- 3). Opportunity for international collaboration
- 4). Potential for securing funding
- 5). Impact and recognition

Obligation

- 1). Collaboration and sharing data/resources
- 2). Atlas development commitments
- 3). Ethical compliance
- 4). Knowledge dissemination and publicity

How to Join



Contact Us

Email address: icmmpb@ion.ac.cn

Website address: <https://primatebrain.org/> (Global)
[https://primatebrain.org.cn/\(China\)](https://primatebrain.org.cn/(China))

**The mesoscale is where circuits become cognition.
Join us to build the first primate brain connectome atlas!**

FORUM INFORMATION

Dates: September 19–20, 2026

Venue: School of Biomedical Engineering, Hainan University
(No. 7 Daxue Road, Yazhou Bay Science and Technology City, Sanya City, Hainan Province)

Onsite Registration and Reception :

SEP 18 Friday: 15:00–22:00 Lobby, Thousand Cranes Sanya Yazhou Bay Int'l Exchange Centre, Curio by Hilton.

SEP 19 Saturday – SEP 20 Sunday: 8:00–17:00 1st Floor, Building B, School of Biomedical Engineering, Hainan University.

Meals: Please wear your badge when coming to the restaurant

Accommodation :

It is NOT included in the registration fee, please book hotel on your own.

Invoice enquiries please contact wangqidan@hainanu.edu.cn

TRANSPORTATION

**A | Sanya Phoenix International Airport –
Thousand Cranes Sanya Yazhou Bay Int'l Exchange Centre, Curio by Hilton**

Public Transport: Walk about 10 minutes to Fenghuang Airport Railway Station, take the round-island high-speed train to Yazhou Railway Station (about 20 mins), then take a taxi for about 10 mins to the hotel. You can also take bus Yazhou Line 1 to Kejicheng Station and walk about 8 mins to the hotel.

Online Car-hailing: Approximately 32 kilometers, taking about 35 minutes with a fare of around 50–153 yuan.

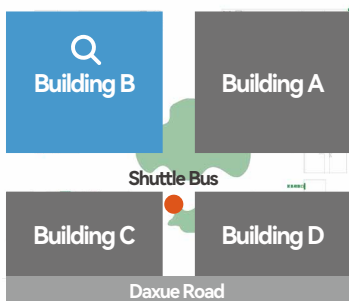
**B | Yazhou Railway Station –
Thousand Cranes Sanya Yazhou Bay Int'l Exchange Centre, Curio by Hilton**

Public Transport: Take bus Yazhou Line 1 / Yazhou Line 9 to Shenhai Kejicheng Station after getting out of the station, walk about 6 mins to the hotel; or take a taxi directly for about 8 mins

Online Car-hailing: Approximately 5 kilometers, taking about 8 minutes with a fare of around 15–20 yuan.

Shuttle buses are provided between Thousand Cranes Sanya Yazhou Bay Int'l Exchange Centre, Curio By Hilton and the Conference venue. Time is announced at the registration desk.

VENUE MAP



- B104 (Conference Room)**
- Poster**
- Lunch**
- Registration Desk**
- Exhibition**
- Tea Break**

AGENDA

SEPTEMBER 18, Friday, 2026 | REGISTRATION DAY

Lobby, Thousand Cranes Sanya Yazhou Bay (Curio by Hilton)

15:00-22:00

Registration

SEPTEMBER 19, Saturday, 2026 | DAY 1

B104, School of Biomedical Engineering, Hainan University (Yazhou Campus)

Time	Moderators (tentative)	Speaker
08:00-09:00	Registration	
09:00-09:15	Muming Poo (Center for Excellence in Brain Science and Intelligence Technology, CAS, China)	Opening Ceremony & Group Photo
09:15-09:55	Qingming Luo (Hainan University, China)	Plenary Lecture Functional Specialization and Distributed Cognition in the Neocortex Xiaoqing Wang New York University, U.S.
09:55-10:15		Break (20 min)
Symposium 1: Connectome I		
10:15-10:40	Yangang Sun (Center for Excellence in Brain Science and Intelligence Technology, CAS, China)	Alexander Fornito Geometric Constraints on Mammalian Brain Organization Monash University, Australia
10:40-11:05		Fang Xu Mesoscale Connectivity Mapping of Primate Brains Shenzhen Institutes of Advanced Technology, China
11:05-11:30		Piotr Majka Elucidating the Principles of Primate Thalamocortical Circuitry Nencki Institute of Experimental Biology, Poland
11:30-11:55		Zhenyu Gao Convergence-Divergence of Cortico-Cerebellar Pathways and Functional Considerations Erasmus MC University Medical Center, The Netherlands
11:55-13:30		Lunch & Poster Session

Symposium 2: Connectome II

13:30-13:55	Pedro Antonio Valdés-Sosa (University of Electronic Science and Technology of China, China) Guoqiang Bi (University of Science and Technology of China, China)	Jun Yan	Connectome of Circadian Clock in the Mammalian Brains Center for Excellence in Brain Science and Intelligence Technology, China
13:55-14:20		Henry Kennedy	The Spatially Embedded Brain, Global Work Space, AI and Consciousness French Institute of Health and Medical Research, France
14:20-14:45		Guoqiang Bi	Mesoscale Brain Mapping and Data Platform University of Science and Technology of China, China
14:45-15:10		Tetsuo Yamamori	High-Resolution and High-Density Tracer Mapping of the Marmoset Cerebral Cortex National Institute for Basic Biology, Japan
15:10-15:30		Break (20 min)	
15:30-15:55		Richa Verma	Mesoscale Mapping of Neurotypical and Diseased Human Brains Indian Institute of Technology Madras, India
15:55-16:20		Noritaka Ichinohe	Layered Topography of the Marmoset Auditory Connectome National Center of Neurology and Psychiatry, Japan
16:20-16:45		Javier DeFelipe	From Golgi Staining to Volume Electron Microscopy: A Personal History of Mapping Synaptic Connectivity Universidad Politécnica de Madrid, Spain
16:45-17:10		Mayank Mehta	Hippocampus as a CoMAM: Competitive Multimodal Association Machine University of California, Los Angeles, U.S.
18:00-20:00	Welcome Reception		



Scan to watch the photo livestream



Wifi: HDJK (No Password)

AGENDA

SEPTEMBER 20, Sunday, 2026 | DAY 2

B104, School of Biomedical Engineering, Hainan University (Yazhou Campus)

Time	Moderators (tentative)	Speaker
09:00-9:40	Henry Kennedy (French Institute of Health and Medical Research, France)	Plenary Lecture Assembly and Operation of the Neocortex Songhai Shi Tsinghua University, China
Symposium 3: Brain Mapping Technologies		
09:40-10:05	Marcello Rosa (Monash University, Australia) Javier DeFelipe (Universidad Politecnica de Madrid, Spain)	Shengjin Xu Multimodal Imaging of Gene Expression, Morphology, and Activity of the Same Neuron Center for Excellence in Brain Science and Intelligence Technology, China
10:05-10:30		Bijan Pesaran Multiregional Imaging in the Non-Human Primate Brain University of Pennsylvania, U.S.
10:30-10:50		Break (20 min)
10:50-11:15		Xun Xu Towards a Life 5D Brain Cell Map: Integrating Spatial, Developmental, and Evolutionary Dimensions BGI Research, China
11:15-11:40		Kiryl D. Piatkevich Scalable Technologies for Functional, Structural, and Molecular Mapping of the Brain Westlake University, China
11:40-12:05		Henry Evrard Bridging Classical Primate Neuroanatomy and Next-Generation Mesoscopic Brain Mapping International Center for Primate Brain Research, China
12:05-13:00	Lunch & Poster Session	
13:00-13:40	Noritaka Ichinohe (National Center of Neurology and Psychiatry, Japan)	Plenary Lecture Brain Mapping Activities in Brain/MINDS 2.0 in Japan Shigeo Okabe RIKEN Center for Brain Science, Japan

Symposium 4: Cell Atlas			
13:40-14:05	Jan Mulder (Karolinska Institutet, Sweden) Andrew Parker (Oxford University, UK)	Jing Zhang	Progress in the China Brain Multi-omics Atlas Project Zhejiang University, China
14:05-14:30		Marcello Rosa	The Marmoset Brain Connectivity Atlas: Genesis, Past, Present and Future Monash University, Australia
14:30-14:55		Cirong Liu	Marmoset Brain Mapping Center for Excellence in Brain Science and Intelligence Technology, China
14:55-15:20		Stephen Williams	Evolutionary Refinement of the Electrical and Computational Properties of Neocortical Pyramidal Neurons Monash University, Australia
15:20-15:40		Peng Xie	Multiregional Single-Nucleus Atlas Delineates Region-Specific Perturbations in Depressive-Like Macaca fascicularis National Health Commission's Key Laboratory of Diagnosis and Treatment of Functional Brain Diseases, China
15:40-16:05		Break (20 min)	
16:05-16:30		Ying Lei	Deciphering the Regulatory Landscape of Early Primate Brain Development Hainan University, China
16:30-16:55		Jan Mulder	High Resolution Spatial Transcriptomics Analysis of the Human Pons Reveals the Molecular Signature Nor-adrenergic Neurons in the Locus Coeruleus Karolinska Institutet, Sweden
16:55-17:10	Closing Remarks		

★ The schedule is subject to on-site adjustment.

★ Meals provided by the forum: Lunch & Dinner on 19 September; Lunch on 20 September.



Plenary Speaker

Topic:

Functional Specialization and Distributed Cognition in the Neocortex



Xiaojing Wang

New York University, U.S.

Abstract

With technological advances and availability of multi-omic data, studies of whole-brain circuits have come to the fore. Recent observations of widespread information coding have questioned functional modularity in the brain. We tackled this question using connectome-based large-scale modeling of cortex for monkeys and mice. I will highlight macroscopic gradients of synaptic excitation and inhibition as well as neuromodulation, as a general principle of the cortical organization which departs from the conventional dogma of canonical local circuits. I will discuss findings ranging from a hierarchy of timescales to distributed working memory and decision-making. This line of work suggests that a new concept dubbed “bifurcation in space” can explain the emergence of functional modularity compatible with selective distributed neural representations in the neocortex.

Biography

With technological advances and availability of multi-omic data, studies of whole-brain circuits have come to the fore. Recent observations of widespread information coding have questioned functional modularity in the brain. We tackled this question using connectome-based large-scale modeling of cortex for monkeys and mice. I will highlight macroscopic gradients of synaptic excitation and inhibition as well as neuromodulation, as a general principle of the cortical organization which departs from the conventional dogma of canonical local circuits. I will discuss findings ranging from a hierarchy of timescales to distributed working memory and decision-making. This line of work suggests that a new concept dubbed “bifurcation in space” can explain the emergence of functional modularity compatible with selective distributed neural representations in the neocortex.



Plenary Speaker

Topic:

Assembly and Operation of the Neocortex



Songhai Shi

Tsinghua University, China

Abstract

The ability of the neocortex to command higher-order brain functions depends on the assembly and operation of intricate neural circuitries comprised of a vast number of diverse neurons and glia. Notwithstanding the progress made in our understanding of the initial specification and the general histology and information flow of the neocortex, the principles and mechanisms that instruct the assembly and operation of neocortical circuits remain largely elusive. The research in my laboratory has focused on searching for the common developmental commodities of neocortical circuits at both the structural and functional levels and linking them with animal behaviors under normal and disease conditions. We have analyzed the molecular and cellular mechanisms that control the production and positioning of neocortical excitatory and inhibitory neurons, as well as glia, with the premise that the origin and lineage relationship guide the formation of defined neuronal ensembles or substrates for effective functional circuit assembly. In this presentation, I will discuss our recent findings and ongoing efforts.

Biography

Song-Hai Shi is currently a professor at Tsinghua University and serves as the Dean of the School of Life Sciences and the Director of the IDG/McGovern Institute for Brain Research. His laboratory focuses on identifying common commodities of brain circuits at both the structural and functional levels, and linking them with animal behaviors under normal and disease conditions, with the goal of arriving at a circuit- and system-level understanding of brain operation and function. He has published numerous peer-reviewed research articles in scientific journals including Nature, Science, Cell, Nature Neuroscience and Neuron.





Plenary Speaker

Topic:

Brain Mapping Activities in Brain/MINDS 2.0 in Japan



Shigeo Okabe

RIKEN Center for Brain Science, Japan

Abstract

Large-scale brain mapping efforts in Japan have been continuously advanced through the Brain/MINDS program (launched in 2014), Brain/MINDS Beyond (2018), and Brain/MINDS 2.0, which was initiated in 2024 as the successor to these pioneering projects. Together, these programs have engaged more than 100 research teams, representing many of Japan's leading neuroscientists. Brain/MINDS 2.0 encompasses both basic and clinical neuroscience, with a particular emphasis on comprehensive brain mapping. A key new objective of the program is to integrate large-scale brain mapping datasets with emerging artificial intelligence technologies. The program builds upon the substantial legacy of the previous Brain/MINDS initiatives, including extensive neural circuit datasets and valuable non-human primate disease models. Brain/MINDS 2.0 aims to contribute to and collaborate with large-scale brain mapping efforts around the world. To facilitate this goal, the program is developing an open research platform, Neuro-Workflow, which will support both the utilization of Brain/MINDS 2.0 datasets and the development of new mathematical models and AI-based tools for disease prevention, diagnosis, prediction, and patient stratification. By integrating advanced brain mapping technologies, non-human primate neuroscience, and AI-driven data science, Brain/MINDS 2.0 seeks to accelerate our understanding of brain function and dysfunction and to foster international collaboration in next-generation neuroscience research.

Biography

Dr. Shigeo Okabe has served as Director of the RIKEN Center for Brain Science (CBS) since 2025. RIKEN CBS is Japan's largest neuroscience research center, with more than 300 researchers investigating the brain across scales, from genes and molecules to neural circuits, cognition, and behavior. Dr. Okabe also directs the Laboratory for Imaging Neural Dynamics, where his research focuses on the development, plasticity, and dysfunction of neural circuits in brain disorders. Dr. Okabe has played a leading role in Japan's national brain research initiatives, serving as Program Supervisor of the Brain/MINDS program (2014–2023) and currently as Program Leader of Brain/MINDS 2.0.



Speaker

Topic:

Geometric Constraints on Mammalian Brain Organization



Alexander Fornito

Monash University, Australia

Abstract

The brain is classically viewed as a complex multiscale network comprised of discrete, functionally specialized areas connected by an intricate array of axonal fibres. The interactions that occur between these areas are thought to produce complex dynamics and adaptive behaviour. In this talk, I will discuss an alternative approach to modelling the mesoscopic and macroscopic organization of the brain. This approach, informed by neural field theory, prioritizes physical properties of the brain, such as its geometry and spatial embedding, by treating neural tissue as a continuous sheet through which waves of excitation drive the spatiotemporal patterns observed in wide-field neural recordings. I will show that this approach offers a parsimonious account of multiple aspects of brain structure and function in diverse species, and that it reveals a previously underappreciated role of geometry in shaping mammalian brain organization.

Biography

Alex Fornito completed his PhD in the Departments of Psychology and Psychiatry at The University of Melbourne before undertaking Post-Doctoral training in the Department of Psychiatry at the University of Cambridge, UK. He is currently a Laureate Fellow of the Australian Research Council, Professor in the School of Psychological Sciences, and Head of the Brain Mapping and Modelling Research Program and Neural Systems and Behaviour Lab of the School of Psychological Sciences at Monash University in Melbourne, Australia. Alex's research develops new approaches to mapping and modelling the mammalian brain in health and disease, with a focus on understanding foundational principles of brain organization and their genetic basis, characterizing brain disturbances in psychiatric disorders, and understanding how individual variability in brain structure and function relates to behaviour. Alex currently serves as Editor-in-Chief of Network Neuroscience, Deputy Editor of Biological Psychiatry, Associate Editor of Science Advances, Board Reviewing Editor of eLife, and is a member of the editorial boards for Imaging Neuroscience and Biological Psychiatry: Cognitive Neuroscience and Neuroimaging.





Speaker

Topic:

Mesoscale Connectivity Mapping of Primate Brains



Fang Xu

**Shenzhen Institutes of
Advanced Technology, China**

Abstract

Constructing comprehensive brain connectivity maps is essential for understanding both neural function and dysfunction. However, fine-scale mapping of primate and human brains has long been hindered by limitations in imaging throughput, resolution, and the specific requirements for cellular and axonal labeling. To address these challenges, we developed SMART, a high-throughput whole-brain clearing and imaging platform that achieves cellular-resolution mapping of the macaque brain (Xu et al., Nature Biotechnology 2021). By integrating spatial transcriptomics, brain-wide axonal tracing, and diffusion MRI, we identified directional regularities in cellular morphology and spatial distribution. Leveraging these insights, we proposed CABLE (Zhang et al., Nature Methods 2025), a strategy that enables the precise 3D reconstruction of whole-brain nerve fiber tracts at cellular resolution. Moving forward, we studied the classic LGN-V1 circuit at single-axon resolution, uncovering fine-grained organization rules of the primary visual pathway.

Biography

Xu Fang, Ph.D., is an Associate Professor at Shenzhen University of Advanced Technology and Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences. He obtained his B.S. and Ph.D. in Neurobiology from the University of Science and Technology of China (USTC). His main research focuses on developing high-throughput, high-resolution whole-brain 3D fluorescence imaging technology, tissue clearing technology, viral labeling and data analysis technology for mesoscale mapping of brain connectivity, especially in primates, aiming to understand the structural basis of brain cognition and brain diseases. He achieved the first micrometer-resolution analysis of a macaque's whole-brain mesoscale map and published this representative work in Nature Biotechnology (2021), Nature Medicine (2025) and Nature Methods (2025).



Speaker

Topic:

Elucidating the Principles of Primate Thalamocortical Circuitry



Piotr Majka

Nencki Institute of Experimental Biology, Poland

Abstract

The non-human primate thalamocortical pathway is a core neural circuit that plays a central role in cognition and motor control. The joint Polish-Chinese project “Elucidating the principles of primate thalamocortical circuitry” aims to explain the fine structure, wiring patterns, and functional organizational principles of this loop, while exploring primate-specific features by comparing them with rodent models. By integrating single-cell resolution spatial transcriptomics, multimodal connectomics, and innovative computational methods to construct a comprehensive atlas of the marmoset thalamocortical circuit, we plan to systematically investigate the projection patterns of the loop, analyze the correlation between spatial gene expression gradients and connectivity in the thalamus and cortex, and identify structural and functional species-specific features of the primate system compared to rodents. As an initial step of the project, we will present detailed delineation criteria for the non-human primate thalamus and neocortical areas related to the thalamocortical loop. This will be accompanied by datasets on spatial transcriptomics, cortico-cortical hodology, and functional and structural magnetic resonance imaging. Ultimately, the results of this research will provide a new perspective on the complexity and uniqueness of the primate brain, offering novel insights and targets for the diagnosis and treatment of neuropathologies.

Biography

Piotr Majka is an assistant professor in the Laboratory of Neuroinformatics at the Nencki Institute of Experimental Biology in Warsaw. By integrating computational neuroanatomy, multiscale data analysis, high-throughput imaging, classical neuroanatomy, and neurophysiology, his research investigates how the intricate microscopic structure of the brain’s connectivity network translates into perception, behavior, and specific actions. With over 15 years of experience, Dr. Majka has developed multimodal 3D brain atlases, advanced multimodal image registration techniques, and neuroinformatics platforms. This interdisciplinary work has culminated in the most comprehensive cortico-cortical connectome of any non-human primate brain to date. These contributions earned him recognition from the Polish Prime Minister for excellent scientific achievements in 2024, as well as the Polish Neuroscience Society award for outstanding contributions to neuroanatomy in 2025.



Speaker

Topic:

Convergence-Divergence of Cortico-Cerebellar Pathways and Functional Considerations



Zhenyu Gao

**Erasmus MC University Medical Center,
The Netherlands**

Abstract

Sensorimotor computation depends on synergistic activity across cortical and cerebellar regions. Once thought to operate largely independently, these structures are now recognized as integral components of sophisticated, interconnected networks. A critical step toward understanding how these networks function is to precisely map the cerebro-cerebellar connections that support specific sensorimotor tasks. In this talk, I will present our recent investigations into the anatomical and functional architecture of cerebro-cerebellar circuits, with a particular focus on the input-output logic of cortico-cerebellar connections. Our findings reveal extensive convergence and divergence within this circuitry and support a framework of multiregional interactions across functional domains.

Biography

Zhenyu Gao is an Associate Professor at Erasmus Medical Center in the Netherlands. He completed his undergraduate studies in Biotechnology at Shanghai Jiaotong University. He obtained his MSc in Neuroscience from Vrije Universiteit Amsterdam and his PhD in Neuroscience from the Erasmus Medical Center, Rotterdam, The Netherlands. His doctoral research focused on the cerebellar circuits underlying motor learning and motor function. His team combines behavioral, anatomical, and physiological approaches to investigate bidirectional interactions between the cerebellum and other brain regions in rodents and humans. His research is supported by multiple ERC and national grants, and his work has been published in leading international journals, including Nature, Nature Neuroscience, and Neuron.



Speaker

Topic:

Connectome of Circadian Clock in the Mammalian Brains



Jun Yan

**Center for Excellence in Brain Science and
Intelligence Technology, China**

Abstract

Whole-brain mesoscopic connectome is crucial for uncovering the neural mechanisms of brain functions. Meanwhile, circadian clock is a basic biological process with a broad impact on our behaviors and diseases. While circadian clock is believed to be ubiquitously present in almost every cell, increasing evidence suggested that the cellular clocks in the multi-cellular organisms are assembled in a hierarchical manner to execute diverse functions. In this talk, I will demonstrate how multi-modal analysis using single-cell transcriptomics, single-neuron projectome reconstruction, neuron subtype-specific functional manipulation and cross-species comparison can provide novel insights into the structure, connectivity, and functions of circadian clock in the brains of mammals including human.

Biography

Jun Yan received his PhD in Physics from New York University in 2003. He did his post-doc in University of Alaska, Fairbanks, working on the molecular mechanism of animal hibernation between 2003–2006. He started his own group in 2006 as a Principal Investigator and a Max-Planck Group Leader at CAS-MPG Partner Institute for Computational Biology in Shanghai, working on the gene regulatory networks in circadian clock. In 2015, he joined Institute of Neuroscience, Chinese Academy of Science, as a Senior Investigator and his research interest shifted to the neural circuits of circadian clock in mammalian brains. In the recent years, Yan's lab reconstructed the single-cell transcriptomic atlas of mouse suprachiasmatic nucleus (SCN) (Wen et al. Nature Neuroscience, 2020). Based on this study, his group revealed the important role of SCN CCK neurons in the neural circuit of circadian clock (Xie et al. Neuron, 2023). His lab developed advanced single-neuron reconstruction systems (Gou et al. Nature Methods, 2024), by which the large-scale single-neuron projectomes of mouse brain (Gao et al. Nature Neuroscience, 2022, 2023; Neuron, 2026a) and macaque brains (Gou et al. Cell, 2025) have been mapped. Yan's lab has used these single-cell technologies to study human SCN (Neuron, 2026b).



Speaker

Topic:

The Spatially Embedded Brain, Global Work Space, AI and Consciousness



Henry Kennedy

**French Institute of Health and
Medical Research, France**

Abstract

Spatial-embedding of cortex predicted that connection weights of the inter-areal network are spatially determined (Markov et al., Science 2013). Spatial embedding likewise predicts that areal dimensions and layout shapes connection weights. This we confirmed by tracer injections across cortex and retinotopic subdivisions (RSD) of early visual areas. Analysis of the connectivity matrices showed: foveal-RSD connected strongly to ventral stream, far-periphery lower field-RSD to dorsal stream and far-periphery upper field-RSD to medial temporal stream. Cell-type analysis of transcriptomic data (Chen et al., Science 2023) showed that RSD's have distinct cellular and molecular machinery and constitute independent nodes in a functional network.

Analysis of the weighted interareal cortical network reveals a well-defined high-density core sharing features with the Global Workspace (GWS) cognitive architecture (Markov et al., Science 2013). Recent investigations of LLMs reveal verbalizable representations form a GWS underlying access consciousness (Pearce et al., arXiv 2026). LLM workspace operates through a single forward pass, whereas the brain's GWS relies on recurrent neural loops. Hence, although correspondence is only partial, understanding the evolutionary constraints of Spatial Embedding may be an important first step in curbing the exorbitant costs of existing AI.

Biography

Henry Kennedy is a Research Director at the French National Institute of Health and Medical Research (INSERM) and a member of the Stem Cell and Brain Research Institute at Université Claude Bernard Lyon 1. He was the Director-founder of the Inserm Institute of Brain and Vision (1992–2006), and Director-founder of the Stem Cell and Brain Research Institute (2007–2012). His current research focuses on the structural and functional organization of the primate cerebral cortex, with a focus hierarchical predictive coding, brain connectivity, connectomics, and the neuronal circuits underlying cognition.



Speaker

Topic:

Mesoscale Brain Mapping and Data Platform



Guoqiang Bi

University of Science and Technology of China, China

Abstract

Brain-wide mapping of neuronal network architecture at single cell resolution provides an essential basis for the ultimate understanding of cognition and related diseases. In the past years, we have developed VISO, an ultrafast volumetric fluorescence microscopy technique for such mesoscale brain mapping. In this talk, I will present our progress in VISO mapping of the primate brain, including the sparsely sampled thalamocortical projectome of rhesus macaque. I will also present our ongoing efforts in the development of CereVi, an integrative data platform that connects VISO imaging pipeline with data handling, reconstruction, visualization and analysis. The platform adopts OME-Zarr as the native container for reconstructed and derived image data, supports efficient remote visualization and anatomical annotation of cross-species datasets, thus providing a practical framework for turning Peta-scale datasets into globally accessible and analysis-friendly resources for comparative mesoscale brain mapping.

Biography

Guo-Qiang Bi is a Xinchuang Professor of Neurobiology and Biophysics and Changjiang Scholar at University of Science and Technology of China, and Director of Interdisciplinary Center for BrainInformation at Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences. He received his B.S. in physics at Peking University, Ph.D. in biophysics at UC Berkeley, and postdoctoral training at UCSD. Before joining USTC, he was an Associate Professor of Neurobiology at the University of Pittsburgh School of Medicine. His research interest is on the biophysics of neuronal systems, especially that related to plasticity and learning. His early work revealed computational rules and cellular mechanisms of spike-timing-dependent plasticity (STDP). In recent years, his lab has been using new imaging tool to explore the cross-scale structure and dynamics of the nervous system, including in situ molecular organization and dynamics inside synapses, and brain-wide circuit architecture from mouse to monkey.



Speaker

Topic:

High-Resolution and High-Density Tracer Mapping of the Marmoset Cerebral Cortex



Tetsuo Yamamori

National Institute for Basic Biology, Japan

Abstract

As a core member of the Japanese Brain/MINDS 1.0 project (2014–2024), I focused on high-resolution, high-density tracer mapping of the common marmoset cerebral cortex. This presentation will provide an overview of cortical tracer mapping using serial two-photon tomography (STPT). Tracers were injected into 113 marmosets, covering a broad extent of the cerebral cortex, and STPT imaging was completed in 103 animals. These included injections in the prefrontal cortex ($n = 46$), temporal cortex ($n = 20$), occipital cortex ($n = 7$), parietal cortex ($n = 15$), cingulate cortex ($n = 9$), and insular cortex ($n = 6$). The resulting datasets were processed using the axonal projection mapping pipeline developed by Skibbe et al. I will present several analyses, including intra-frontal cortical connectivity. These results clarify characteristic features of marmoset cortical connections, largely confirming previous anatomical findings while providing more quantitative and systematic data. Finally, I will briefly discuss how this tracer-based mapping can be combined with MRI, in situ hybridization, and histological analyses to further elucidate primate cortical organization.

Biography

Tetsuo Yamamori is a Research Advisor at the Central Institute for Experimental Animals, Kawasaki, Japan, a Visiting Senior Scientist at RIKEN, Wako, Japan, and Professor Emeritus at the National Institute for Basic Biology, Okazaki, Japan. His research has focused on the molecular and anatomical organization of the primate cerebral cortex, beginning with studies of area-specific gene expression in macaque monkeys. He later served as a core member of the Brain/MINDS project, where he contributed to efforts to elucidate large-scale primate brain networks using high-resolution, high-density serial two-photon tomography in common marmosets. His recent work has addressed molecular and network features of the marmoset prefrontal cortex, including findings reported in Watakabe et al., *Neuron*, 2023. He received his Ph.D. in Science from Kyoto University in 1981, served as Professor at the National Institute for Basic Biology from 1994 to 2015, and was a Team Leader at RIKEN from 2014 to 2023.



Speaker

Topic:

Mesoscopic Mapping of Neurotypical and Diseased Human Brains



Richa Verma

Indian Institute of Technology Madras, India

Abstract

Understanding the human brain across development, adulthood, and disease requires integrated, multiscale mapping that bridges neuroimaging with cellular architecture. We present a comprehensive mesoscopic mapping platform that combines postmortem MRI, blockface imaging, whole-brain histology, immunohistochemistry, and three-dimensional digital reconstruction reference maps of the human brain in health and disease. Utilizing such an integrated platform has generated two open resources: DHARANI (Developing Human Brain Resources to Advance Neuroscience Internationally), comprising serial histological sections with MRI and a neuroanatomical atlas of approximately 500 annotated structures spanning 14–24 gestational weeks, and ANCHOR (Atlas of Neurochemical Characterization of the Human Brainstem), which integrates more than 800 serial brainstem sections across fetal, pediatric, and adult stages with seven immunohistochemical markers and the online viewer provides simultaneous visualization of multimodal datasets. Current human brain maps are largely confined to neurotypical brains. We extend this framework to pathological conditions through whole-brain reconstruction of ischemic brains, enabling cellular-resolution mapping of the peri-infarct region and its spatial organization. These multimodal datasets generate cell-to-volume maps of the human brain across development, aging, and disease. It enables quantitative characterization of regional organization, comparative analyses, and the creation of foundational reference datasets for comprehensive whole-brain mapping.

Biography

Dr. Richa Verma is the Chief Scientific Officer at the Sudha Gopalakrishnan Brain Centre, Indian Institute of Technology Madras. Her research focuses on multimodal, multiscale mapping of the human brain across development, health, and disease by integrating high-resolution histology, postmortem MRI, three-dimensional reconstruction, and neuroanatomical annotation. She leads the development of open brain-mapping resources, including the DHARANI developmental human brain atlas and the ANCHOR neurochemical brainstem atlas, advancing mesoscopic human brain mapping and digital neuroanatomy. Prior to joining IIT Madras, Dr. Verma held research and academic positions at Deakin University, Monash University, and the University of Melbourne, Australia, where her work centred on visual neuroscience, retinal electrophysiology, and systems neuroscience. She is also actively engaged in higher education pedagogy and faculty development.



Speaker

Topic:

Layered Topography of the Marmoset Auditory Connectome



Noritaka Ichinohe

National Center of Neurology and Psychiatry, Japan

Abstract

Unlike many visual scenes, an acoustic event unfolds irreversibly in time: earlier portions are no longer available for resampling as later portions arrive. The auditory cortex therefore faces the computational challenge of distributing, combining, and transforming transient information across cortical fields. At the mesoscopic scale, this raises the question of how interareal terminal fields are organized jointly across tangential space and cortical depth. We reconstructed anterograde tracer signals in individual marmosets as stacked flatmaps, reparameterizing samples along reconstructed cortical columns into tangential position and depth. The native depth stack was paired with EQ6, an operational six-layer representation retaining correspondence with the original histology. Decomposed in this way, individual projection fields resolved into layer maps that differed in spatial extent, internal structure, and in how their transitions related to architectonic borders. This data-driven representation allows organizational regularities to emerge directly from mapped projection fields, treating cortical layer as a spatial coordinate of the auditory connectome. It provides a structural basis for investigating how rapidly changing auditory information is distributed and transformed across cortical fields.

Biography

Noritaka Ichinohe, MD, PhD, is Director of the Department of Ultrastructural Research at the National Institute of Neuroscience, National Center of Neurology and Psychiatry, Tokyo, and a Visiting Senior Scientist at the RIKEN Center for Brain Science. His research focuses on the mesoscale and laminar organization of the primate cerebral cortex, particularly interareal connectivity in the common marmoset. As a core member of the Brain/MINDS project, he has contributed to whole-brain tracer mapping, the Brain/MINDS Marmoset Atlas 2.0, and computational approaches linking cortical architecture with connectivity. From 2000 to 2010, he served as Deputy Team Leader in Kathy Rockland's laboratory at RIKEN, studying primate cortical connectivity. His current work addresses the layer-resolved organization of the auditory connectome and translational research using marmoset models of autism spectrum disorder. Representative publications include Gong et al. in *Scientific Data* (2026) on the Brain/MINDS Marmoset Brain Atlas 2.0, Watakabe et al. in *Neuron* (2023) on the marmoset prefrontal connectome, and Watanabe et al. in *Nature Communications* (2021) on an autism-model marmoset.



Speaker

Topic:

From Golgi Staining to Volume Electron Microscopy: A Personal History of Mapping Synaptic Connectivity



Javier DeFelipe

Universidad Politecnica de Madrid, Spain

Abstract

Understanding how neurons connect remains one of the central challenges in neuroscience. In the late nineteenth century, Camillo Golgi's metallic impregnation method provided, for the first time, a selective visualization of neuronal somata, dendrites, axons, and glial processes. In Santiago Ramón y Cajal's hands, this technique became decisive for establishing the neuron doctrine, revealing the individuality of nerve cells, the free termination of axons and dendrites, and the directional organization of neuronal signalling. However, the Golgi method could only infer putative contacts and could not demonstrate the ultrastructural basis of synaptic communication. The introduction of electron microscopy enabled the ultrastructural demonstration of synapses and led to the development of Golgi-electron microscopy methods. These approaches made it possible to identify Golgi-impregnated neurons at the ultrastructural level and to examine their synaptic relationships. Although technically demanding, Golgi-EM laid the conceptual and methodological foundations for subsequent correlative light and electron microscopy approaches. These included intracellular labeling with horseradish peroxidase, Lucifer Yellow, biocytin, neurobiotin, and other markers, often combined with electrophysiological characterization, tract-tracing, degeneration methods, or immunocytochemistry. More recently, volume electron microscopy and three-dimensional reconstruction have extended these approaches to larger tissue volumes and nanoscale quantitative analyses. Together, these methods have transformed the study of brain circuits by linking the morphology of identified neurons with their afferent and efferent synaptic connectivity across spatial scales.

Biography

Javier DeFelipe is Professor Ad Honorem at the Cajal Institute (CSIC) and the Universidad Politécnica de Madrid, Spain. He began his research career at the Cajal Institute in 1976, investigating the microorganization of the cerebral cortex using combined Golgi and electron microscopy. This work initiated his long-standing interest in the structural organization and synaptic circuitry of the cerebral cortex. From 1984 to 1985, he was a Visiting Scientist in the laboratory of Dr. Edward G. Jones at the University of California, Irvine. After his appointment as a Tenured Scientist at the Cajal Institute in 1986, he continued his cortical research and returned to Dr. Jones's laboratory between 1989 and 1991 to study the microorganization of the monkey cerebral cortex. In 1991, he established his own research group at the Cajal Institute, focusing on cortical and hippocampal microanatomy across species, particularly in humans, and on circuit alterations associated with epilepsy and Alzheimer's disease. Since 2009, he has directed the Cajal Blue Brain Project, which established the multidisciplinary Laboratorio Cajal de Circuitos Corticales (CSIC-Universidad Politécnica de Madrid). His research integrates intracellular labeling, correlative microscopy, microanatomical data analysis, and FIB/SEM volume electron microscopy to investigate the synaptome. He was the Spanish Project Leader for the NASA Neurolab project and a principal investigator in the Human Brain Project.



Speaker

Topic:

Hippocampus as a CoMAM: Competitive Multimodal Association Machine



Mayank Mehta

University of California, Los Angeles, U.S.

Abstract

In rodents, the majority of dorsal hippocampal cells are place cells, and the entorhinal cortex contains several types of self-motion based neural selectivity, including grid cells. Hence, the entorhinal-hippocampal system is considered the GPS system of the brain. However, spatial selectivity in the primate hippocampus is quite weak and grid cells are elusive. Instead, classic studies show that hippocampal damage causes episodic memory deficits and the primate and human neurons in this system encode specific audio-visual stimuli, e.g. Jennifer Aniston cells. However, the number of such episodic or non-spatial cells are quite small compared to the abundance of place and grid cells in rodents. These long-standing puzzles are not only a fundamental scientific puzzle but they could be a major factor in the colossal failure of translation of memory therapies from rodents to humans. Our attempts provide a potential resolution of these puzzles and a unified, biophysical theory of the entorhinal-hippocampal system. Namely, it is a competitive, multimodal association machine which, depending on stimuli, manifests as either spatial or episodic responses, but does many other things too.

Disclosures: Patent pending “Virtual and augmented reality devices to diagnose and treat cognitive and neuroplasticity disorders”.

Biography

Mayank Mehta is a professor in the department of Physics and Neurology, and the director of Keck center for Neurophysics at UCLA. He is a member of the board of reviewing editors at Science.

During PhD in quantum physics he solved a major problem that Feynman claimed was unsolvable, and discovered a novel theory of space-time. However, like all modern quantum theories, it was not experimentally testable. Hence, he focused subsequent research on understanding how the brain creates abstract ideas, e.g. space-time and events, basic hallmarks of intelligence. His lab not only develops biophysical theories of learning in neuronal networks, but does experiments to test the theories, i.e. Neurophysics. To do so they have developed novel technologies, including an immersive, zero-lag VR for rodents that also works in humans, and a ‘Dendrode’ that can measure the membrane potential of dendrites in freely behaving animals for many days. Significant discoveries include: Neural oscillations combined with STDP result in large and rapid changes in place cells, including predictive coding; Dendrites generate ten times as many sodium spikes as the soma; Vision and locomotion generate hippocampal direction selectivity, but not spatial selectivity, which requires other multisensory cues; The novel VR experience doubles theta rhythmicity and halves hippocampal hyperactivity. Hence, it can be used for diagnosis, translation and prevention of hippocampal pathologies such as Alzheimer’s.



Speaker

Topic:

Multimodal Imaging of Gene Expression, Morphology, and Activity of the Same Neuron



Shengjin Xu

**Center for Excellence in Brain Science
and Intelligence Technology, China**

Abstract

Brain atlas efforts have generated large-scale single-modality datasets of neuronal gene expression, morphology, and activity, transforming our understanding of neuronal diversity and brain-wide organization; yet these properties are typically measured in different neurons from different brains, leaving their cross-modal relationships unresolved. Here, we present an imaging-based multimodal characterization (IMC) platform that captures all three modalities in the same neurons by combining in vivo Ca^{2+} imaging, single-neuron morphological reconstruction in cleared whole brains, and post hoc in situ transcriptomic profiling of thick brain sections. Applying IMC to the mouse primary visual cortex (VISp), we obtained trimodal profiles of 141 intratelencephalic and pyramidal tract neurons. Regional axonal arborization, soma location, transcriptomic signatures, and subcellular RNA localization each proved informative for distinguishing neurons preferring different visual stimuli; morphological and transcriptomic features were complementary, and their integration better predicted neuronal function. Trimodal profiling further resolved a $\text{Vglut1+}/\text{Vip+}$ pyramidal tract subtype in medial VISp with distinct response properties. This same-neuron dataset provides a ground-truth benchmark for computationally integrating single-modality atlases and a generalizable framework for multimodal brain mapping.

Biography

Dr. Shengjin Xu is a Principal Investigator at the Institute of Neuroscience, Center for Excellence in Brain Science and Intelligence Technology (CEBSIT), Chinese Academy of Sciences, Shanghai. He received his Ph.D. in neurobiology from the Chinese Academy of Sciences and conducted postdoctoral research at HHMI's Jane-Lia Research Campus before establishing his laboratory at CEBSIT. His research focuses on developing multimodal approaches to understand how molecular identity, neuronal connectivity, activity, and physiological state are integrated to support brain function. His earlier work established CaRNA imaging, a method that links in vivo neuronal activity to molecular identity. More recently, his team, in collaboration with Kai Wang's group, developed the imaging-based multimodal characterization (IMC) platform, which integrates in vivo activity, whole-brain single-neuron morphology, and spatial gene expression in the same neurons. His group also studies hypothalamic peptidergic circuits and extends multimodal single-cell profiling to human brain disease. Together, these efforts aim to build experimentally grounded, cross-scale, and multimodal brain maps that connect cell identity with circuit organization and function.



Speaker

Topic:

Multiregional Imaging in the Non-Human Primate Brain



Bijan Pesaran

University of Pennsylvania, U.S.

Abstract

Studying distributed neural computation in the primate cortex requires imaging and recording across widely separated regions, but centimeter-scale cortical windows vastly exceed the mm-field of view of two-photon microscopy, creating a navigation problem across space, depth, and time. We present a multimodal imaging platform that integrates chronic optical access, depth-resolved two-photon calcium imaging, cross-modal localization, rapid multi-region repositioning, and simultaneous surface electrophysiology in awake, behaving macaques. Using a hexapod-mounted, six-degree-of-freedom configuration we demonstrate reproducible depth-dependent imaging, cross-session localization of cellular fields within a shared cortical reference map, and rapid transitions between distant regions that recover usable cellular signals within one to two imaging frames. Simultaneous calcium imaging and ECoG capture stimulation-evoked and task-related activity. Together, these methods establish a practical observatory-style approach for multiregional, multimodal recording in the primate brain.

Biography

Bijan Pesaran, PhD, is the Robert A. Groff Professor of Research and Teaching in Neurosurgery II and Professor of Neuroscience and Bioengineering at the Perelman School of Medicine. Dr. Pesaran completed his undergraduate degree in Physics and Theoretical Physics at the University of Cambridge, England. After a year in the Theoretical Physics Department at Bell Labs Murray Hill, he went on to earn his PhD in Physics at the California Institute of Technology. Dr. Pesaran then completed a postdoctoral fellowship in neuroscience, also at Caltech. Before coming to Penn in 2022, Dr. Pesaran rose through the ranks to become Professor of Neural Science at the Center for Neural Science at New York University. Dr. Pesaran's research investigates how perception, action, and cognition result from the activity of populations of neurons by developing devices and algorithms to monitor and manipulate neurons in different regions of the brain. His research spans preclinical studies in the non-human primate animal model and first-in-human clinical trials. The work is engineering new generations of brain-machine interfaces that map and manipulate brain networks during cognition and behavior to help patients suffering neurological and neuropsychiatric disorders.



Speaker

Topic:

Towards a Life 5D Brain Cell Map: Integrating Spatial, Developmental, and Evolutionary Dimensions



Xun Xu

BGI Research, China

Abstract

Spatially resolved single-cell transcriptomics have enabled the systematic mapping of cellular organization across tissues at unprecedented resolution. Using Stereo-seq, we have reconstructed three-dimensional (3D) single-cell atlases of the brain across multiple species, including lamprey, mouse and macaque. These atlases reveal the fine-grained spatial architecture of neural cell types and their organizational principles in three dimensions. Beyond static anatomy, we extended these atlases into the temporal dimension by profiling the brain across key developmental stages in both mouse and human. These four-dimensional (4D) spatial developmental atlases illuminate the spatiotemporal programs governing cell-type specification, migration, and circuit assembly. To further investigate how evolution shapes brain architecture, we performed systematic cross-species comparisons of 3D brain atlases spanning over 500 million years of vertebrate evolution. This Evo-Devo approach at the spatial level reveals how novel genetic elements drove the emergence of new cell types, their three-dimensional organization, and their integration into higher-order circuits. Collectively, these advances suggest that a future five-dimensional (5D) brain cell map, integrating spatial (3D), developmental (4D), and evolutionary (5D) dimensions, could provide transformative insights into the fundamental principles that govern brain organization, from genome-encoded cellular programs to evolutionary innovation.

Biography

Xu Xun, PhD, BGI Chief Scientist, Director of State Key Laboratory of Genome and Multi-omics Technologies, PhD Supervisor of UCAS and Wuhan University. He serves as the convenor of WG6 for Biotechnology Committee (ISO/TC276), and convenor of SAC SWG40. His research interests focus on developing sequencing, single-cell and stereo omics technologies. He designed and developed the first BGI sequencers, as well as the DNBelab C4, stereo-seq and stereo-cell technologies. He also made his efforts in applying these technologies to understand biodiversity and applications in agriculture and disease research. Dr. Xu published 200+ scientific peer-reviewed papers with 80,000+ citations in last five years and selected ten times as the "Clarivate Highly Cited Scientist".





Speaker

Topic:

Scalable Technologies for Functional, Structural, and Molecular Mapping of the Brain



Kiryl D. Piatkevich

Westlake University, China

Abstract

The brain computes on millisecond timescales yet spans years of a lifetime, and is organized at the nanoscale yet spans meters in size. A holistic understanding requires scalable, integrated technologies that simultaneously map neuronal computations at the functional, structural, and molecular levels within intact circuits. In this talk, Kiryl Piatkevich will present the development of novel scalable molecular and imaging technologies, including highly stable and bright fluorescent proteins such as mBaoJin, mScarlet3-H, and LSSmScarlet4. These proteins serve as foundations for genetically encoded voltage and calcium indicators, such as mBaoJin2 and mScarlet3-H-based probes, that achieve ultrahigh temporal resolution, exceptional photostability, and hours-long recording. He will also describe optimized expansion microscopy protocols compatible with these probes, enabling nanoscale structural mapping of the same neurons. Furthermore, he will present ProteomEx and iPEX, approaches that couple expansion microscopy with mass spectrometry to map the proteome. Finally, he will discuss recent applications to brain function in health and disease, and provide perspectives on advancing these technologies toward solving the brain. All plasmids presented are freely available from WeKwikGene (<https://wekwikgene.wllsb.edu.cn/>).

Biography

Dr. Kiryl Piatkevich is an Associate Professor in the School of Life Sciences at Westlake University, where he leads the Molecular BioEngineering Group. He received his Ph.D. in Chemistry from the Albert Einstein College of Medicine and Lomonosov Moscow State University through a joint program in 2011, and completed his postdoctoral training at MIT under the mentorship of optogenetics pioneer Dr. Edward Boyden. Since joining Westlake University in 2019, Dr. Piatkevich has established a research program dedicated to developing innovative molecular tools—including fluorescent probes, expansion microscopy techniques, and AI-driven analytical platforms—for imaging and manipulating complex biological systems. His work spans synthetic biology, chemical biology, and bioengineering. Dr. Piatkevich has received numerous honors, including the Brain & Behavior Research Foundation Young Investigator Award, the National Natural Science Foundation of China's Excellent Young Scientist Fund (Overseas), and the Zhejiang Provincial "Westlake Friendship Award." He founded WeKwikGene, China's first open-source plasmid sharing platform, and actively promotes open-science practices. His group collaborates with hundreds of laboratories worldwide, applying novel biotechnologies to neuroscience, spatial multi-omics, cancer research, and super-resolution imaging.



Speaker

Topic:

Bridging Classical Primate Neuroanatomy and Next-Generation Mesoscopic Brain Mapping



Henry Evrard

International Center for Primate Brain Research, China

Abstract

This presentation will emphasize the opportunities offered by integrating large-scale legacy primate neuro-anatomical datasets—particularly classical anterograde and retrograde tracer material acquired over decades—with emerging digital mesoscopic mapping approaches. Based on a proposal recently initiated by a group of classical non-human primate neuroanatomists involved across multiple international projects, I will discuss how such datasets, often accompanied by detailed histological, electrophysiological, lesion, architectonic and, more recently, fMRI annotations, can be systematically curated, 3D reconstructed, re-annotated and made interoperable within common macaque brain templates in modern infrastructures such as ICPBM and MEBRAINS. A central focus will be the benefit of establishing a bridge between classical microscopy-based tracing and recent high-throughput volumetric approaches such as fMOST and related whole-brain imaging pipelines. I will highlight how these complementary modalities can jointly contribute to improved mesoscopic connectome reconstruction, particularly in non-human primates, where data scarcity and heterogeneity remain major constraints. Finally, I will introduce ongoing work within the Brain Mapping Observatory (BrainObs) –a collection of roughly 300 tract-tracing macaque brains– on curating, digitizing, and structuring legacy macaque datasets into analyzable, shareable resources compatible with modern digital multimodal atlases and connectome platforms.

Biography

Henry C. Evrard is a functional and comparative neuroanatomist specializing in the primate brain. He leads the Dynamic Embodied Brain (DEB) Laboratory at the International Center for Primate Brain Research (ICPBR), Institute of Neuroscience, Chinese Academy of Sciences, Shanghai. His research integrates neuroanatomical tract tracing, electrophysiology, ultra-high-field fMRI, causal circuit manipulation, and transcriptomics to investigate the organization of the insular cortex, interoception, autonomic control, and the evolution of the primate brain. Before joining ICPBR, Dr. Evrard held research positions at the Center for Integrative Neuroscience and the Max Planck Institute for Biological Cybernetics in Tübingen, Germany, and at the Nathan Kline Institute for Psychiatric Research in New York, USA. He also founded the Brain Mapping Observatory, a non-profit organization dedicated to preserving, digitizing, and integrating legacy and contemporary primate brain mapping collections.



Speaker

Topic:

Progress in the China Brain Multi-Omics Atlas Project



Jing Zhang

Zhejiang University, China

Abstract

The China Brain Multi-omics Atlas Project is a nationwide collaborative initiative to construct a comprehensive molecular reference map of the human brain through integrated multi-omics profiling. Built upon high-quality human brain tissue resources and advanced spatial multi-omics technologies, the project seeks to define the cellular architecture, molecular landscape, and regulatory networks underlying brain function in health and disease. This presentation will introduce the project's overall framework and recent advances, highlighting the establishment of standardized brain biobanking, digital pathology pipelines, spatial multi-omics platforms, and artificial intelligence-enabled data integration. Representative findings will illustrate how these approaches are uncovering cellular heterogeneity, molecular circuitry, and disease-associated alterations in neurodegenerative disorders at unprecedented resolution. Finally, the presentation will discuss the development of the atlas as an open scientific resource designed to facilitate mechanistic discovery, biomarker identification, and therapeutic innovation. By integrating pathology, multi-omics, and artificial intelligence within a national collaborative framework, the China Brain Multi-omics Atlas Project aims to establish a foundational resource for precision neuroscience and to accelerate translational brain research.

Biography

Professor Jing Zhang is a Qishi Distinguished Professor at Zhejiang University, Director of the Zhejiang University Pathology Center and the Department of Pathology at the First Affiliated Hospital, Director of the National Health and Disease Human Brain Tissue Resource Center, and Vice President of the hospital's Yuhang Campus. His research focuses on the early diagnosis of neurodegenerative diseases, including Alzheimer's and Parkinson's diseases, through molecular biomarkers and translational medicine. A pioneer in AI-powered pathology, he has led the development of OmniPT, one of the first clinically validated multimodal pathology foundation models, significantly improving the accuracy and efficiency of cancer diagnosis. Professor Zhang has published approximately 300 peer-reviewed papers, with over 28,000 citations and an h-index of 91.



Speaker

Topic:

The Marmoset Brain Connectivity Atlas: Genesis, Past, Present and Future



Marcello Rosa

Monash University, Australia

Abstract

2026 represents the 10th Anniversary of the Marmoset Brain Connectivity Atlas, the first attempt to use neuroinformatic approaches to organise and share cellular-resolution data on neuronal connectivity in primate brains. This presentation will provide an update on the progress of this Project. The original project has been significantly expanded in scope, in part due to new, and independently funded initiatives which are currently underway. As we reach a better understanding of the organisation of the cortical connections in the healthy adult brain, it is now the time to start exploring hypotheses related to disease conditions, in particular those which are characteristic of primate brains. For example, the unique and specialised nature of our visual system requires studies using non-human primate animal models in order to obtain mechanistic insights on the causes of disease and pathways to recovery.

Biography

Marcello was born in Rio de Janeiro, Brazil, where he completed a PhD in 1992 under the supervision of Prof. Ricardo Gattass. He moved to Australia for a post-doctoral position in the University of Queensland, where I worked on aspects of comparative neuroscience, neural plasticity and neuroethology with Profs. Jack Pettigrew and Mike Calford. He became a Research Fellow of the National Health and Medical Research Council in 1996. In 2000 he was appointed to the teaching staff of the Department of Physiology at Monash University, where he is currently Head of Department. He is also the program leader for Neuroscience in the Biomedicine Research Institute.

His research addresses the organisation of the cerebral cortex, with special emphasis on the primate visual system. The main topics include mapping the location of the different areas of the cortex, defining how these areas connect to each other to form a complex cellular circuit, understanding how the electrical activity in these areas generates our perception, and investigating how the brain changes in response to injury and disease. The main animal model in his laboratory is the marmoset monkey, for which he has developed many techniques which are currently being used in various countries.



Speaker

Topic:

Marmoset Brain Mapping



Cirong Liu

**Center for Excellence in Brain Science
and Intelligence Technology, China**

Abstract

The marmoset, one of the smallest non-human primates, is a powerful model for developing brain mapping methods and investigating primate brain organization. Over the past ten years, the Marmoset Brain Mapping project has systematically mapped the marmoset brain across spatial scales and modalities. We began by pushing the resolution limits of MRI, achieving unprecedented spatial resolution for primate brain imaging and building a series of widely adopted brain atlases. Because MRI alone cannot capture the brain's full complexity, we developed a multimodal integration framework that combines MRI with mesoscale optical imaging and spatial transcriptomics. This framework enabled several methodological advances: a cell-based tractography approach that reveals fiber pathways invisible to diffusion MRI, and a cross-scale registration system that aligns functional connectivity with single-cell gene expression. Applying these tools to the marmoset cortex, we discovered two opposing molecular gradients, one anchored at primary sensory areas and the other at the allocortex, that together form the principal organizational axes of the primate cortex. This dual-gradient axis explains the complexity in cortical parcellation, cortical-subcortical relationships, functional network hierarchy, and cross-species evolutionary patterns. Beyond revealing complexity, the ultimate goal of brain mapping is to see through it and uncover simple organizing principles of the primate brain.

Biography

Dr. LIU Cirong is the head of the Laboratory of Translational Brain Imaging at the Institute of Neuroscience (ION), Chinese Academy of Sciences. He acquired his PhD degree from Queensland Brain Institute, The University of Queensland in 2016. From 2016 to 2019, he studied as a Postdoctoral Fellow at the National Institute of Health. Between 2019 and 2020, he worked as a Research Assistant Professor at the University of Pittsburgh. He joined ION in 2020 as the Principal Investigator of the Laboratory of Translational Brain Imaging. His lab focuses on developing cross-scale imaging technologies and computational frameworks to decipher the fundamental principles of brain organization, with related work published in Science (2024, 2026), Nature Methods, Nature Neuroscience and Nature Communications.



Speaker

Topic:

Evolutionary Refinement of the Electrical and Computational Properties of Neocortical Pyramidal Neurons

Stephen Williams

Monash University, Australia



Abstract

It is one of the greatest challenges of the 21st century to mechanistically determine how cognitive processes are implemented by neocortical neuronal and neuronal circuit computations. The neocortex is the most evolved part of the mammalian brain, exhibiting massive expansion of neuronal number in humans and non-human primates (NHPs) when compared to lower mammals. Are the enhanced cognitive abilities of humans and NHPs formed by the simple numerical complexification of neocortical neuronal networks, which operate with evolutionary conserved principles, or have evolutionary forces shaped the fundamental computational properties of neocortical neurons to enhance function? To directly address this, we investigated the electrical excitability and computational properties of supra-granular pyramidal neurons (PNs) recorded from sites across the neocortical mantle of rodents, NHPs (marmoset and macaque) and humans. We define evolutionary, area-specific, gradients of the sub- and supra-threshold electrical properties of PNs and demonstrate the emergence of neocortical area-specific computational functions in human PNs. Together, these findings reveal that evolution has refined the fundamental computations which underlie neocortical function.

Biography

Stephen Richard Williams is a Senior Principal Investigator at Oujian Laboratory, Wenzhou, China and is a professor of neuroscience at Monash University, Australia. He previously served as a professor at the University of Queensland, Australia, Director of the Australasian Course in Advanced Neuroscience, and tenured program leader in the Neurobiology Division of the MRC Laboratory of Molecular Biology, UK. He has long been engaged in research on neuronal circuit function and synaptic integration. By developing multi-site patch-clamp electrophysiology and two-photon optical recording techniques, he has achieved groundbreaking progress in understanding the computations of individual neurons and circuits in the neocortex and retina. His research findings have been published in top-tier academic journals such as Science, Nature, Neuron, Nature Neuroscience, and Nature Communications. He has received multiple project grants from the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) of Australia. In 2024, he was selected for the Zhejiang Provincial Top-tier Talent Program, and in 2025, he was selected for the Chinese National Leading Talent Program.



Speaker

Topic:

Multiregional Single-Nucleus Atlas Delineates Region-Specific Perturbations in Depressive-Like *Macaca Fascicularis*



Peng Xie

National Health Commission's Key Laboratory of Diagnosis and Treatment of Functional Brain Diseases, China

Abstract

Major depressive disorder involves distributed brain-circuit dysfunction, but a cell-resolved, multiregional framework in a primate model remains lacking. We generated a single-nucleus transcriptomic atlas of 18 brain regions from 15 female cynomolgus macaques, including high-rank controls and low-rank depressive-like and resilient groups. After quality control, 1.68 million nuclei were classified into 10 major cell classes and 86 transcriptional subtypes, revealing region-dependent cellular organization, particularly across subcortical, limbic and midbrain regions. Depression-associated changes were widespread yet strongly region- and cell-type-specific, with inhibitory neurons carrying the greatest transcriptional burden and prominent alterations in the ACC and NAc. Behavior-anchored gene modules implicated neuronal projection, synaptic organization, and chromatin regulation, whereas cross-regional cell modules identified coordinated neuronal-glial changes associated with depression-related behaviors and enriched for synaptic plasticity and myelination. Integration with human MDD genetic data revealed cross-species convergence of depression-associated perturbations in striatal inhibitory subtypes, particularly MSNs. In the NAc, snATAC-seq identified MSN DRD2/GPC5 as the most epigenomically vulnerable state, and spatial transcriptomics localized this state and associated projection programs mainly to the ventral core and lateral shell. This primate atlas defines region- and cell-type-specific molecular programs underlying depression-associated circuit dysfunction and provides spatially anchored targets for mechanistic investigation

Biography

Peng Xie is Professor at the First Affiliated Hospital of Chongqing Medical University and Director of the National Health Commission Key Laboratory for the Diagnosis and Treatment of Functional Brain Disorders. He served as Chief Scientist of a project under “973 Program” and as President of the Neurologists Branch of the Chinese Medical Doctor Association for two consecutive terms. He received the Second National Innovation Excellence Award, was named a Clarivate Highly Cited Researcher in 2025, and was recognized as an Elsevier Highly Cited Chinese Researcher from 2019 to 2025.

Professor Xie focuses on the pathogenesis, diagnosis, and treatment of depression. His team pioneered a nonhuman primate assessment system for depression and first identified and validated the gut microbiota as a novel causal factor in depression. These findings were included in the Chinese Academy of Sciences’ 2019 Science Development Report.

As corresponding author, Professor Xie has published 466 SCI-indexed papers, including articles in NEJM, Lancet, and Nat. Neurosci. His work has received over 22,000 citations, with an H-index of 72. His team has established depression-related metabolomic, transcriptomic, proteomic, and microbiome databases, contributing approximately 10% of the raw data in the metabolomics and 20% in the proteomics database.



Speaker

Topic:

Deciphering the Regulatory Landscape of Early Primate Brain Development



Ying Lei

Hainan University, China

Abstract

The regulatory principles governing early primate brain development remain largely unexplored, despite their importance for understanding brain evolution and developmental disorders. Here, we deciphered the regulatory landscape of early non-human primate brain development by integrating single-cell transcriptomic and chromatin accessibility profiles across a unique continuous developmental window spanning early to late organogenesis. This atlas captures the emergence of neural progenitor diversity, regional patterning, and neuronal lineage specification in the embryonic macaque brain. Reconstruction of gene regulatory networks revealed key transcriptional programs controlling radial glia development and neuronal maturation, uncovering conserved and primate-enriched regulatory features during early corticogenesis. Cross-species analyses further identified evolutionary signatures of primate developmental programs. By integrating cell-type-resolved regulatory landscapes with human genetic datasets, we identified embryonic cell populations and regulatory elements associated with neurodevelopmental disorder risk. Together, this work provides a developmental framework for understanding how early regulatory programs shape primate brain complexity and disease vulnerability.

Biography

Prof. Ying Lei is a Professor and PhD supervisor at the School of Biomedical Engineering, Hainan University. She received her bachelor's degree and PhD degree in Pharmacology from Xi'an Jiaotong University, with joint doctoral training at Lund University, Sweden. She subsequently conducted postdoctoral research at Karolinska Institutet, Sweden. From 2017 to 2025, she served as Principal Scientist in brain research at BGI Research. Prof. Lei's research focuses on constructing multi-scale molecular maps of the primate brain and elucidating the cellular, regulatory, and evolutionary principles underlying brain development, spatial organization, and disease vulnerability. By integrating single-cell omics, spatial transcriptomics, and multi-omics computational approaches, her research has revealed key regulatory networks governing primate brain development and disease-associated cellular mechanisms. Her work has been published in leading journals including Cell, Nature, and Science. She has led multiple research projects, including grants from the National Key Research and Development Program of China and the National Natural Science Foundation of China.



Speaker

Topic:

High Resolution Spatial Transcriptomics Analysis of the Human Pons Reveals the Molecular Signature Nor-Adrenergic Neurons in the Locus Coeruleus



Jan Mulder

Karolinska Institutet, Sweden

Abstract

Identifying the molecular signature of human nor-adrenergic neurons using single cell transcriptomics approaches is complicated due to the cellular complexity of the human pons and the relative low number of nor-adrenergic neurons. By using a high-resolution spatial transcriptomics approach (stereo-seq) the full molecular complexity of the pons can be captured at sub-micrometer resolution. This data provides opportunities to map the molecular and cellular organization of the pons. By exploring the distribution of transcripts in the 2-dimensional space we identified gene-clusters containing genes with a shared distribution across pontine cell niches including the locus coeruleus (LC). These clusters represent 'housekeeping' gene-modules expressed in most cell-types, pan-neuronal gene-modules containing genes expressed in most neuron-types and cell type specific gene-modules containing sets of genes enriched in specific subtypes of cells. Using this approach several gene-communities of 50 to 100 genes specific for nor-adrenergic neurons could be identified. This cell-segmentation-free approach can be used to 1) segment tissue samples at a sub-cellular resolution, 2) provides gene to gene association strength that can be used to impute 'missing' gene counts, and 3) can be used to investigate differential gene expression linked to conditions (sex, age, disease).

Biography

Jan Mulder is a principal investigator at the department of neuroscience of the Karolinska Institute in Stockholm, Sweden. Jan is a member of the Human Protein Atlas management team since 2010. The overall aim of the human protein atlas is to map protein expression and distribution in all major organs and tissues, and Jan's research group is providing data on brain, brain diseases and mammalian species comparisons. He has been involved in spatial transcriptomics and applications in neuroscience since these methods were developed at Science for Life Laboratory in Sweden around 2015. The development of stereo-seq and other high-resolution spatial transcriptomics methods provide unique opportunities to map the brain and its molecular and cellular complexity, and his research group is now utilizing high resolution spatial technologies and data for the Human Protein Atlas project and research on neurodegenerative disorders.

Poster Presentations

- **Poster Exhibition:** All posters will be displayed throughout the forum.
- **Author Presentations & Discussion:**

Day 1 (Sep 19, Lunch Break): Main poster session (All authors present at their posters).

Day 2 (Sep 20, Lunch Break): Informal / Free discussion.

Poster List

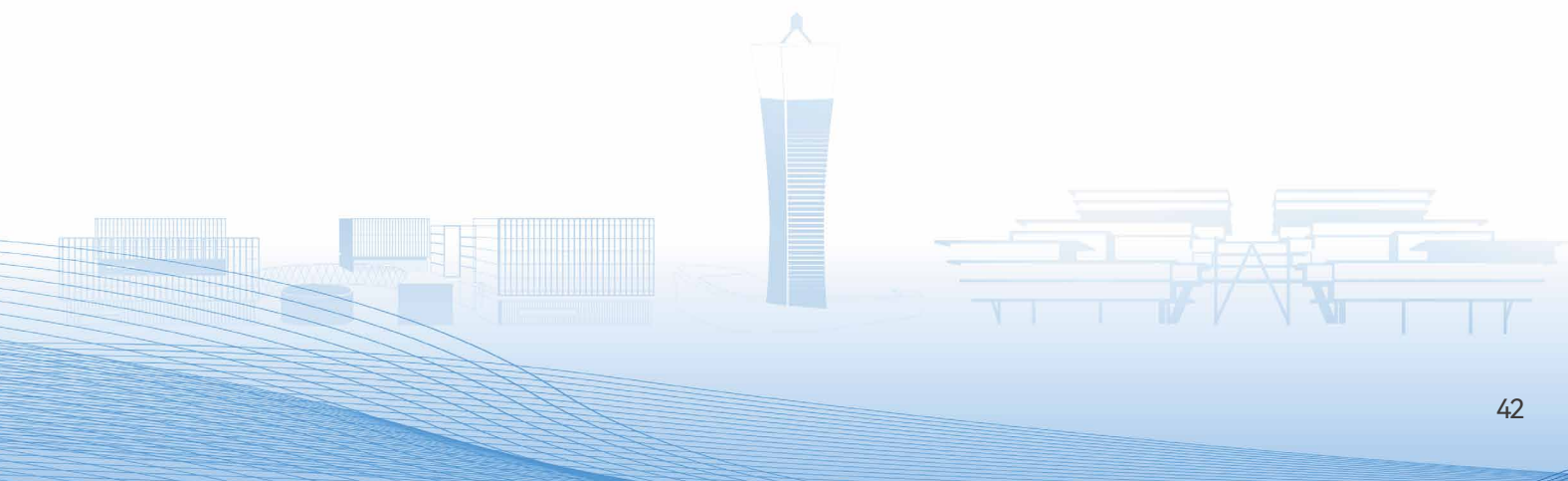
NO.	Title & Authors
1	Mesosopic Connectome-Constrained Foundation Model Supports Virtual Optogenetics in Zebrafish Yijie Sun, Qihao Zheng, Mianxin Liu
2	How representation of visual space shapes the structural and molecular substrate of information flow across macaque cortex Yujie Hou, Zhaoke Luo, Xiaoyun Shen, Mingli Wang, Kenneth Knoblauch, David Van Essen, Takuya Hayashi, Zoltan Toroczkai, Szabolc Horvát, Maria Ercsey-Ravasz, Julien Vezoli, Zhiming Shen, Yidi Sun, Henry Kennedy
3	Spatial transcriptomic programs relate to spectrolaminar rhythms across macaque cortex Ronald Garcia-Reyes, Julien Vezoli, Pedro A. Valdes-Sosa
4	Near-Mesosopic Circuit Changes Underlying Visual Selective Attention Mitchell Valdes-Sosa
5	From Whole-Brain Physics to Neural Mechanisms: A Delayed Neural-Mass Framework for EEG-fMRI and NeuroAI Pedro A. VALDÉS-SOSA
6	Overcoming the Severe Limitations of Diffusion MRI Tractography for Deciphering the Cortical Connectome Yujie Hou, Nathalie Richard, Zhaoke Luo, Ana R. Ribeiro Gomes, Joonas A. Autio, Pierre Misery, Camille Lamy, Loïc Magrou, Colette Dehay, Takuya Hayashi, Matthew Glasser, Julien Vezoli, David Van Essen, Kenneth Knoblauch, Henry Kennedy, Bassem Hiba
7	Multiscale modeling of the mouse barrel cortex constrained by high-resolution anatomical data Jiandong Zhou , Hongyang Zhou , Anan Li

NO.	Title & Authors
8	Automated Vectorization and Quantitative Analysis of Whole-Brain Neuronal Projection Pathways from fMOST Imaging Data Jinhong Jiang, Mengting Zhao
9	Multimodal Mesoscopic Dissection of Motor Coordination Mechanisms in PPTg-Mediated Circuit Yu-xiao LI, Xiang-ning LI, Qing-ming LUO, Jia-xi HU
10	Whole-Brain Mapping of Cholinergic Circuits in Orofacial Motor Nuclei Revealing Ascending and Descending Dichotomy Zhaoyang MENG, Hui GONG, Xiangning LI
11	Toward Mesoscale Connectome-Inspired Modeling and Simulation of the Barrel Cortex Hongyang Zhou,Tianfang Zhu, Jiandong Zhou, Anan Li
12	mRV-Empowered Brain-Wide Single-Neuron Mapping of Target-Specific and Intersectionally Defined Neuronal Circuits Xinyu Yuan, Jianchao Zhang, Yunmiao Liu, Lin Jin, Lin Song , Yuxing Lan, Chi Xiao, Hui Gong, Qingming Luo, and Xiaojun Wang
13	3D X-Ray reconstruction of neuronal microstructure networks in mouse brain hemisphere LU WANG, JIE ZHANG, TIJIAN DENG, RUI SUN, ZHIMAO WANG, YANPING WANG1, GANG LI
14	STAM: A 3D Stereotaxic Topographic Atlas for Mesoscopic Mouse Brain Research Zhao FENG , Xiang-ning LI , An-an LI , Hui GONG , Qing-ming LUO
15	Anatomical and Functional Organization of Ventral Tegmental Area Dopaminergic Subtypes Hairong Xu, Xiaowen Zeng, Yuxuan Zhang, Xuanzi Cao, Mengni Chen, Langjian Zhu, Yingjie An, Hongxiang Chen, Le Gao, Taosha Gao, Jing Liu, Xiaoxue Shi, Biyu Ren, Xin Shen, Xinglan Liu, Can Huang, Yaping Li, Yanli Zhang, Yuting Xu, Peijun Ju, Jianhua Chen, Tao Jiang, Anan Li, Xiaofei Wang, Zhiming Shen, Shenjin Xu, Shuai Liu, Ji Hu, Hui Gong, Haishan Yao, Lei Han, Wen Zhang, Yongyong Shi
16	Characterization of degenerative alterations in forelimb motor neurons of Parkinson's disease model mice Shi-Qi LI, Hui GONG , Xiang-Ning LI

Poster List

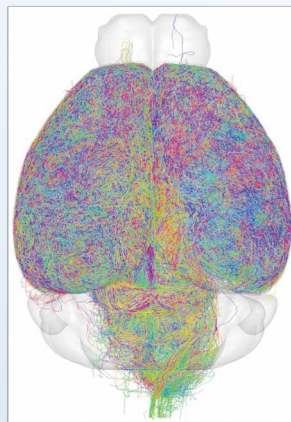
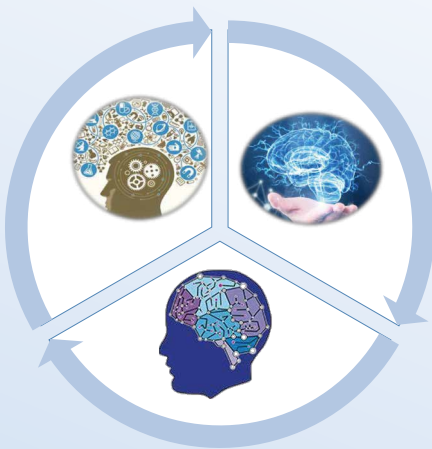
NO.	Title & Authors
17	Towards bidirectional optical brain interfaces Lingjie Kong
18	A Scalable Platform for Content-Aware Cleaning and Fast 3D Hyper-Compression of Petabyte-Scale Primate Brain Images Shukang Bi, Jiang Huang, Zeyu Lin, Anan Li, Chi Xiao
19	Evolutionary Origins of Molecular Programs Underlying Brain Circuitry Zhi HUANG, Sheng-Long LI, Shi-Jie HAO
20	Spatial-Viz: a scalable three-dimensional visualization and open data resource for cross-species brain spatial transcriptomics Yi-Lian CHEN, Zhi HUANG, Xiao-Feng WU, Lang-Chao LIANG, and Shi-Jie HAO
21	CortexJEPA: a self-supervised foundation model for decoding primate cortical spatial transcriptomic organization Jiang-Shuan PANG, You-Zhe HE, Zhi HUANG, Luo-Jing ZHANGLI , Wang-Yang TANG, Shi-Ping LIU, Lei HAN1, Shi-Jie HAO
22	Thalamic neurogenesis after lesions of the primary visual cortex in marmoset monkeys Nafiseh Atapour, Emmanuel K. L. Cho, Melissa H. Y. Chong, Gaoyuan Ma, Thuy Vy Nguyen and Marcello G. P. Rosa
23	Evolutionary reshaping of the brainstem–thalamus arousal axis in cetaceans Youning Lin, Hui Kang, Jingfang Pan, Inge Seim , Ruilin Li , Duoyuan Chen, Muqing Xia, Longqi Liu, Xun Xu, Han Lei, Zhenkun Zhuang, Shiping Liu, Songhai Li
24	Cross-species atlases reveal localized primate specialization in the ancient hypothalamus Zhenhua Chen, Jianyun Ma, Xinglan Liu, Jing Yang, Liqin Gu, Chao Li, Zihan Wu, Chao Chen, Zhuolei Jiao, Nini Yuan, Huanhuan Li, Xinxian Song, Yingjie An, Ruiyi Zhang, Qinwen Chai, Hean Liu, Cirong Liu, Chengyu T Li, Yan-Gang Sun, Chun Xu, Huatai Xu, Xiaohong Xu, Mu-Ming Poo, Zhen Liu, Jianhua Yao#, Longqi Liu, Zhiming Shen, Wu Wei, Ying Lei, Qing-Feng Wu, Shengjin Xu

NO.	Title & Authors
25	A Single-cell Spatial Atlas of the Cetacean Cortex Reveals Novel Neuronal Subtypes Associated with Cortical Plasticity and Neuroresilience Muqing Xia, Zhenkun Zhuang, Luning Gao, Youning Lin, Ruilin Li, Jingfang Pan, Songhai Li, Shiping Liu
26	Cognitively Inspired Brain Image Registration via Unified Anatomical-Spatial Representation Learning Pan-Hang ZHANG, Xin LIU, Zhao FENG, An-An LI
27	PGRMamba: Geometry-Guided State Space Models for 3D Soma Detection in Large-Scale Whole-Brain Images Zibin Cai, Rou Li, Yan Jiang, Jiamin Lin, Mengting Zhao, Anan Li, and Chi Xiao
28	Learning Tissue-Scale 3D Representations for Spatial Transcriptomics Tao ZHOU, Shi-Ping LIU
29	Tissue processing strategy for whole-head vascular networks Qiu Tingting, Liu Xiaonian, Ren Miao, Li Xiangning





As part of a major drive for excellence in basic research in the new millennium, the Chinese Academy of Sciences (CAS) founded the Institute of Neuroscience (ION) on November 27, 1999. The institute is devoted to research in all areas of basic neuroscience, including molecular, cellular and developmental neurobiology, and systems and cognitive neuroscience. At its inception, the Institute aims to establish the infrastructure of a modern research institute that provides an environment for rigorous scientific pursuit and fruitful interactions, a merit-based system for promotion and funding, and a high-quality training program for graduate students and postdoctoral fellows. In 2014, within the framework of institutional restructuring, ION became the core unit of CAS Center for Excellence in Brain Science and Intelligence Technology. The goal of the new Center is to help integrating research activity within and outside CAS and to promote team work and interdisciplinary collaboration, in order to address major problems in the frontier of brain science and brain-inspired intelligence technology.



State Key Laboratory of Brain Cognition and Brain-inspired Intelligence Technology



INTRODUCTION

The **State Key Laboratory of Brain Cognition and Brain-inspired Intelligence Technology** is a national research center designated by the Ministry of Science and Technology of China focusing on neural mechanism of brain cognition and development of brain-inspired artificial intelligence. In January 2025, the Ministry of Science and Technology (MOST) approved the establishment of the State Key Laboratory of Brain Cognition and Brain-inspired Intelligence Technology.

MISSION

- Decode neural mechanisms for high-order cognition
- Develop general-purpose brain-inspired intelligence system

RESEARCH FOCUS

BIOLOGICAL
INTELLIGENCE

INSPIRED

ARTIFICIAL
INTELLIGENCE

① The neural mechanism of multidimensional integration in temporal and spatial cognition

② The neural mechanism of reasoning and decision-making

③ Artificial intelligence inspired by the principle of brain cognition

CORE OBJECTIVES

The neural mechanism of multidimensional integration in temporal and spatial cognition

- The neural mechanism underlying objective and individual concepts
- The neural mechanism of temporal perception
- The neural mechanism of spatial navigation and cognitive maps

The neural mechanism of reasoning and decision-making

- The neural mechanism of prior knowledge-based reasoning
- The neural mechanism of conception and the rule generalization
- Neural and computational mechanisms for flexible decision-making

Artificial intelligence inspired by the principle of brain cognition

- Brain-inspired general cognitive intelligence theory and models
- Biologically plausible yet computationally efficient brain-Inspired computing architectures
- Brain-machine Integration theories and methods for cognitive Intelligence

CROSS-INSTITUTIONAL RESEARCH FACILITIES

- CAS Brain Science Data Center
- Cognition and Behaviour Research Platform
- Ultra-High Field Animal Magnetic Resonance Platform
- Electrical/Magnetic Individualized Precision Closed-Loop Regulation Platform
- The Transdisciplinary Platform of Brain Functional Connectome and Brain-inspired Intelligence
- Nanofabrication Core Facility for Advanced Brain Science at CEBISIT



◀ Shenzhen Brain Science Infrastructure



◀ CAS Brain Science Data Center



◀ Brain Imaging Center

Supporting Institute:
Center for Excellence in Brain Science and Intelligence Technology,
Chinese Academy of Sciences

Jointly established by:
Institute of Automation, Chinese Academy of Sciences
Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences



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🌐 <http://www.cebsit.cas.cn/nrzymnzdsys/sysjj/>

The Center for Data and Computing in Brain Science

The Center for Data and Computing in Brain Science serves as the technical support platform established by the Center for Excellence in Brain Science and Intelligence Technology. By pioneering new approaches in data and computational technologies, it supports breakthroughs in neuroscience and brain-inspired intelligence. It establishes an integrated brain science data platform encompassing data collection, standardization, visualization, computation, application and sharing, empowering researchers to unlock new insights into the brain.

■ Our Capability >>>>>>>

01
Open Sharing and Standardization Processing of Data Resources

03
Novel Algorithm and Model Research for Application Empowerment

05
Construction of Brain-Inspired Intelligence Frameworks

02
Data-Driven Application Product Research and Development

04
Data Integration for AI-Powered Digital Twins Systems

06
High-Performance Compute and Storage Support

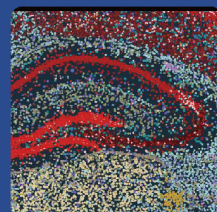
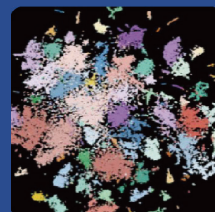
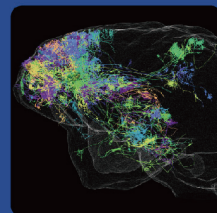
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Brain Atlas Database



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**Brain Science Data Center,
Chinese Academy of Sciences**

The data resources at the Brain Science Data Center of the Chinese Academy of Sciences cover various aspects of neuroscience research, from macroscopic to microscopic and multi-scale data. These data types include morphological and behaviors data of different species, brain structure and functional imaging, electrophysiology, optical imaging, electron microscopy, neuroelectrophysiology and neural genomics.

- Data Submission
- Data Storage
- Data Sharing
- DOI Registration Service

<https://www.braindatacenter.cn>

About Hainan University

Hainan University (HNU) was a merger with the former South China University of Tropical Agriculture in August 2007. It is a comprehensive key university jointly constructed by the Ministry of Education (MOE) and the Hainan Provincial People's Government.

The campuses of the University cover an area of 6.25 million square meters. HNU has 46,328 full-time students, 37 secondary schools, 17 residential colleges, 16 first-level discipline doctorate programs, 2 professional doctorate programs, 37 first-level discipline master's programs, 28 professional master's degree programs, 78 undergraduate programs, 10 centers for post-doctoral studies, 45 state-level first-class undergraduate programs, 17 state-level first-class undergraduate courses, 2 state-level excellent courses, 1 state-level excellent online open course, and 2 designated as exemplary ideological and political education courses by the MOE. The disciplines offered by the University cover major fields such as philosophy, economics, law, humanities, science, medicine, agriculture, engineering, management, and art. Crop Science has been selected as a world-class discipline for two consecutive rounds, and 11 disciplines, Plant & Animal Science, Materials Sciences, Chemistry, Engineering, Environment/Ecology, Biology & Biochemistry, Social Sciences (General), Computer Science, Microbiology, Agricultural Sciences, as well as Pharmacology & Toxicology are ranked among the top 1% worldwide according to ESI (Essential Science Indicators). The University employs more than 3300 full-time teachers.

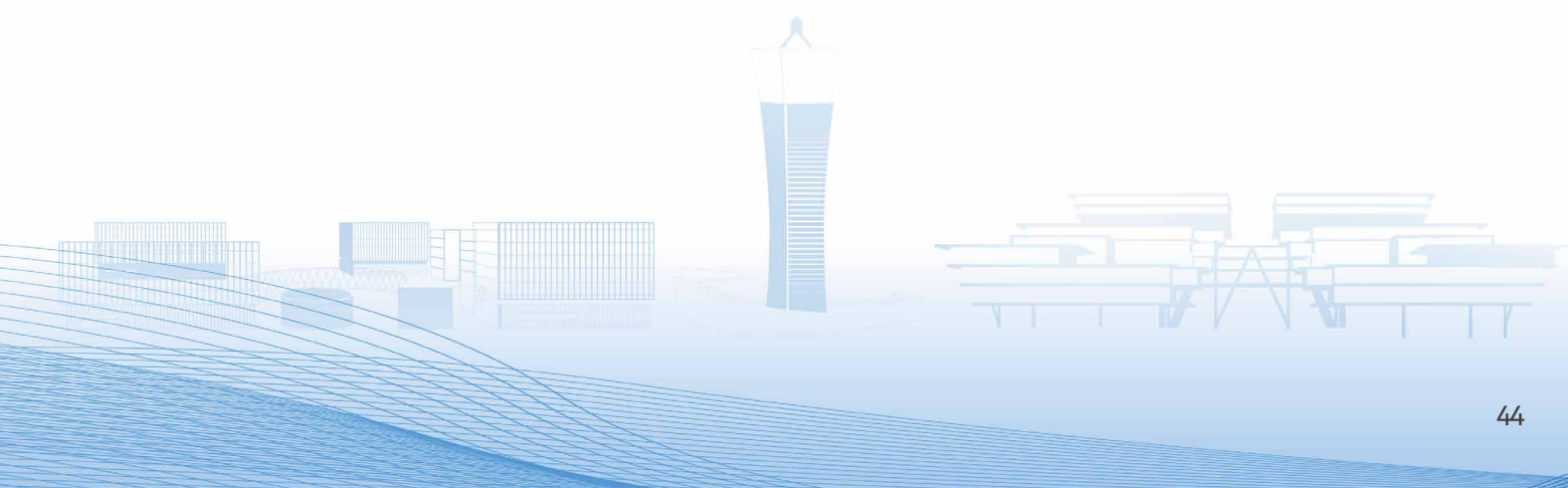
In terms of research platforms, the University has established the State Key Laboratory of Tropical Crops Breeding, the State Key Laboratory of Digital Medical Engineering, the State Key Laboratory of Marine Resource Utilization in the South China Sea (co-sponsored by Hainan Province and the MOE), the Cultivation Base of the State Key Laboratory for Sustainable Utilization of Tropical Bioresources (co-sponsored by Hainan Province and the Ministry of Science and Technology), and the National Center of Technology Innovation for Saline-Alkali Tolerant Rice. Moreover, it has four Higher Education Discipline Innovation Projects funded by the Ministry of Science and Technology, three collaborative innovation centers jointly sponsored by Hainan Province and the MOE, 26 provincial/ministerial level key laboratories, 32 provincial/ministerial level engineering research centers, 15 academician workstations, two MOE International and Regional Study Centers, two provincial-level key think tanks, and 11 provincial-level key research bases in humanities, philosophy, and social sciences. Additionally, the University has built Hainan Research and Communication Center for Dongpo Culture to contribute to the cultural development of the Hainan Free Trade Port (FTP). Notably, the HNU Belt and Road Research Institute was included in the 2022 "Chinese Think Tank Index (CTTI) Top 100 University List" and rated as an A-level think tank.

HNU is committed to openness in education. Leveraging the advantages of Hainan FTP's opening-up to the outside world, the University has realized the rapid development of international cooperation and exchanges and gradually formed a pattern of open education that focuses on serving the BRI's educational cooperation and exchanges, and features education cooperation with tropical countries and regions. The University launched the "One HNU School, One Global University" Initiative and has established partnerships with 299 overseas universities or institutions from 59 countries and regions. HNU also launched the League of Tropical

Universities (LTU) along with seven other renowned universities and research institutes in tropical regions, with a common commitment to advancing higher education and socio-economic development in tropical regions. The LTU has been joined by a total of 121 universities and research institutes from 50 countries and regions, including Malaysia, Brazil, Papua New Guinea, and Ethiopia. The number of student enrollments for China-foreign cooperative educational programs approved by the MOE has reached 4,030. Through arduous efforts, HNU was listed in the second batch of model universities for studying in China by the MOE, offering a complete range of higher education programs (from bachelor's to doctoral degrees) to international students.

The University is committed to pursuing national development strategies and meeting the needs of Hainan Province's economic and social development. Adopting the approach to "solving real problems and providing effective solutions," the University establishes seven collaborative innovation centers, focusing on key research fields including free trade port development and institutional innovation, ecological civilization, culture and tourism, seed breeding and tropical high-efficiency agriculture, marine technology, one health, and information technology. Such an endeavor would support and guide the University's relevant fields or disciplines to "meet the urgent development needs of Hainan Province and become top-rated national-level ones", and render strong support for achieving great self-reliance and strength in science and technology.

The School of Biomedical Engineering of HNU was established in January 2020. Located in Sanya Yazhou Bay Science and Technology City, the school has established State Key Laboratory of Digital Medical Engineering, Key Laboratory of Biomedical Engineering of Hainan Province, and several university-industry joint laboratories. The school fully leverages its strength in interdisciplinary integration to cultivate biomedical engineering professionals in five key areas: Brainsmatics and Digital Life, Molecular Diagnostics and Health Medical Engineering, Medical Theranostic Technology and Instrumentation, Brain-Computer Interface and Rehabilitation Medical Engineering, and Medical Information Engineering. It currently has established facilities including Bioimaging Platform, Digital Life and Biomedical Health Data Center, Biosensing and Wearable Medical Device Platform, Organoid Research Platform, Teaching and Training Center, Technology Transfer Platform, and Non-Human Primate Research Base, based on a total building area of 55,000 square meters. Dedicated to establishing a world-class discipline in Biomedical Engineering, the school contributes to both the development of HNU into a world-class university and the construction of the Hainan FTP.



Whole -brain Neuron Projection

Mesoscopic Connectome of
the Whole Brain Neurons

Whole Organ Functional
Structure 3D Reconstruction

MOST

Micro-Optical Sectioning Tomography

fMOST

fluorescence Micro -Optical Sectioning Tomography

Single -cell
Morphological
Analysis

3D
Quantitative
Analysis

Macromolecules
Spatial Localization

Multi -scale
Vascular Network

Primate Brain

Whole Body

Mouse Brain

2000 *mouse brains*
per year

Imaging Capability



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Hainan University School of Biomedical Engineering
Sanya Yazhou Bay Science and Technology City
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Brains HUST-Suzhou Institute
For Brainmatics
华中科技大学苏州脑空间信息研究院

Suzhou Industrial Park
Suzhou, Jiangsu, China



Shanghai Center for Brain Science and Brain-inspired Technology



上海脑科学与类脑研究中心

Shanghai Center for Brain Science and Brain-Inspired Technology

Shanghai Center for Brain Science and Brain-Inspired Technology (Shanghai Brain) was established in August 2018 as a strategic scientific initiative of Shanghai. Focusing on national strategic needs in fundamental principle of brain, brain disease and brain-inspired technology, Shanghai Brain builds R&D public service platform, innovates management system and mechanism. Shanghai Brain aims to,

1. Establishes groups of brain science and brain-inspired technology, and organizes major research tasks of Shanghai, the nation and international science project.
2. Gathers and cultivates outstanding talents, promotes interdisciplinary collaborative innovation in brain science and brain-inspired field.
3. Achieves breakthroughs of major frontier scientific issues and key technologies, promotes the development industry in the brain science and brain-inspired field, and contributes to the construction of the Shanghai Science and Technology Innovation Center.



华大生命科学研究院 BGI·Research

BGI-Research is the core research institution of BGI, dedicated to **advancing life science through genomics, multi-omics technologies and big data and AI foundation model.**

With genomics as its foundation, **BGI-Research focuses on several key directions:** frontier omics technology development, including gene and cell reading, writing and storage; biological big data mining and intelligent analysis; genomic foundation models and AI for life sciences; disease multi-omics and precision health; agricultural genomics and biodiversity research; microbiome and synthetic biology; marine biology, comparative genomics and evolutionary research.

BGI-Research is also expanding its work in brain science, applying high-throughput sequencing, single-cell omics, spatiotemporal omics and AI-driven analysis to support studies such as mesoscopic brain mapping, primate brain atlases and neural development. Recent advances include Genos, a large human-centric genomic foundation model, as part of BGI's broader effort to build intelligent research platforms for decoding biological systems and accelerating biomedical discovery.

In the 2026 **Nature Index Research Leaders rankings, BGI ranked No. 1 globally and No. 1 in the Asia-Pacific region among corporate institutions in biological sciences.** As of June 5, 2026, BGI had published 6,124 papers, including 930 CNNS papers and 194 papers in flagship journals.



全澜科技

致力于闭环神经调控终端研发，提供脑功能检测产品与服务，覆盖临床、动物和居家研究平台，助力脑疾病疗法从实验室走向临床，推动物理药创新，守护脑健康。

神经调控
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多场景
解决方案

高精度
高可靠性

专业团队
创新驱动

ARS-LSE 光声电刺激器



- 光声电刺激
- 多模态刺激
- 同步交替
- 跨模态实验

ARS-spike32R 无线spike记录系统



- 无线记录
- Spike采集
- 自由移动
- 行为同步
- 环路研究

RSC-64RS 便携式闭环电刺激器



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- 64通道采集
- 采集刺激一体
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- 时间对齐



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生物大样本三维成像解决方案

fluorescence Micro-optical Sectioning Tomography

荧光显微光学切片断层成像

显微光学切片断层成像(MOST)和荧光显微光学切片断层成像(fMOST)系列设备能对生物大样本进行亚微米水平三维成像,不仅可以获得单细胞分辨的全脑神经连接图谱、定位神经环路、追踪单神经元长程投射、构筑血管网络三维拓扑结构;还可用于细胞空间定量分析、单细胞形态学分析、全器官蛋白质及基因表达空间定位。



成像模式

高速线性扫描荧光成像



连续切片厚度

1-4 μ m



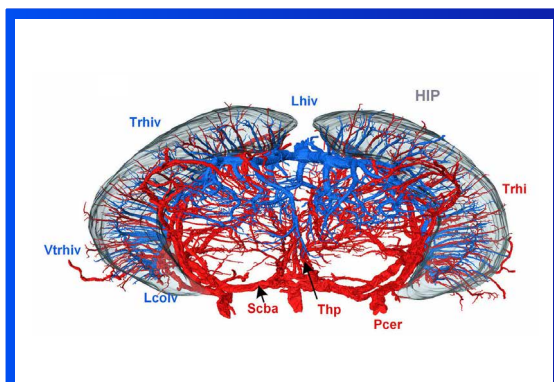
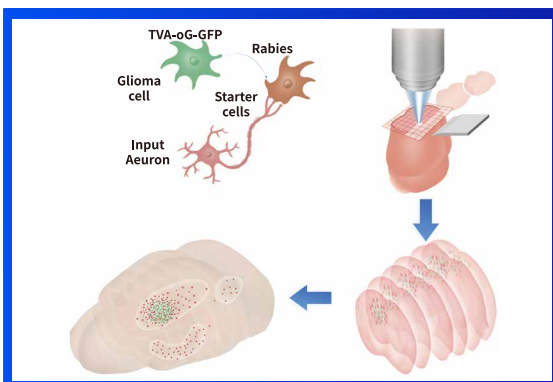
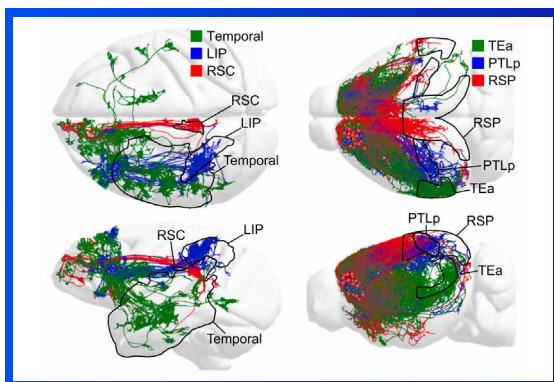
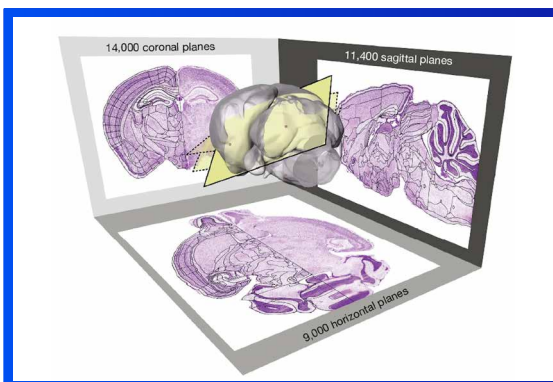
体素分辨率

0.35 μ m $\times$ 0.35 μ m $\times$ 1 μ m



最大样本体积

5cm $\times$ 5cm $\times$ 2cm



武汉沃亿生物有限公司
WUHAN OE·BIO CO., LTD.

☎ 027-81812488

✉ support@oebio.com

🌐 www.oebio.com

📍 武汉东湖高新开发区高科园三路9号武汉
光谷精准医疗产业基地2.1期13栋12层



BRAIN MAPPING AT EVERY SCALE

从切片到突触

全尺度脑图谱成像方案

From whole-brain sections
to synapses and live circuits
— one Nikon imaging workflow
for brain mapping.



ECLIPSE Ni-E
全景玻片扫描系统

Whole-Slide Mapping
高通量全脑片扫描



AX/AXR NSPARC
超分辨点扫描共聚焦显微镜



AXR MP NSPARC
双光子显微镜

Deep In-Vivo Two-Photon Imaging
活体深脑双光子成像



CSU-W1 SoRa
超分辨双转盘共聚焦显微镜

Synapse-Level Resolution
突触级超分辨成像



ECLIPSE Ji with AX
箱体式全场景显微镜(可搭载共聚焦模块)

Nikon



尼康精机(上海)有限公司 | Nikon Precision (Shanghai) Co., Ltd.

地址:上海市浦东新区平家桥路36号 晶耀前滩T5 11-12楼
(11-12F, Tower 5, Crystal Plaza, No.36 Pingjiaqiao Rd, Pudong, Shanghai 200126)

总机:021-5899-0266

官网:www.nikon-precision.com.cn

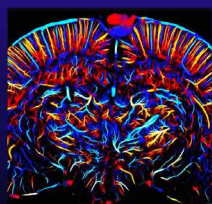
显微镜/脑图谱方案咨询转生命科学



尼康微信公众号

礼智生物持续专注于以下神经科学新技术

全脑实时功能成像+多器官高分辨血流成像

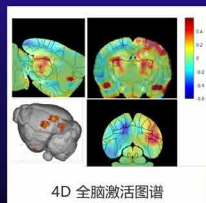


技术优势

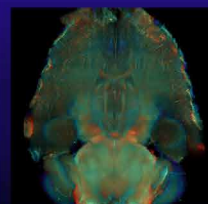
- 无需标记、非侵入性、深部穿透
- 高时空分辨率、高敏感度、高易用性
- 实时成像、支持清醒活动动物

应用场景

- 大尺度观察大脑工作的机制
- 替代c-fos，活体快速发现脑区的激活
- 活体连续观察各类型器官的毛细血管精度的全器官血流变化
- 非侵入式脑机接口的优选方案



全脑及多器官3D结构成像

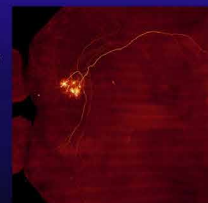


技术优势

- 专业试剂盒，有效保护荧光，制备高透亮的透明化组织
- 超高性价比的光片显微镜，快速无损拍摄各类组织的3D影像
- 替代手动切片、封片繁杂工作，打造高效、高质量的成像平台

应用场景

- 观察各类组织中的细胞分布和蛋白表达
- 神经元三维重构，大规模脑图谱研究
- 立体观察c-fos脑区的激活及组织结构变化
- 高效开展组织样本的药理及病理检测



全球最高分辨率在体电生理

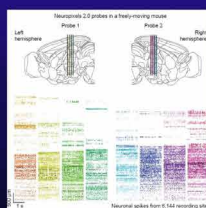


技术优势

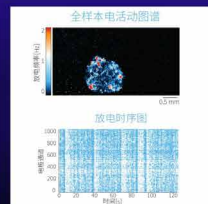
- 轻松获取超高通量、高分辨率、高信噪比的小动物电生理数据
- 脑图谱介导的自动化电极植入方案，开展电生理实验障碍减半

应用场景

- 获取行为学状态下小动物多脑区的大规模神经电生理数据
- 为神经解码、脑机接口等前沿应用提供高质量数据



全球最高分辨率离体电生理

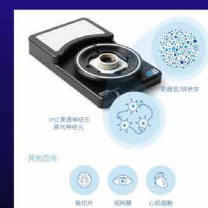


技术优势

- 轻松获取离体样本上千通道的单细胞分辨率电生理数据
- 相比膜片钳等技术，操作简便、数据量大、所需样本少、支持连续观察

应用场景

- iPSC、类器官、脑片、视网膜等多种样本的电生理功能检验
- “芯上脑”、“器官芯片”等神经计算、人工智能技术的可靠平台



多模态无线技术

无线光遗传



无线光纤记录



无线电生理



无线生理监测



自研国产化高性价比设备、耗材

- 高性价比定位仪
- 多轴手动微操
- 小动物隔音箱
- 多轴小鼠跑步机
- 易编程的刺激器
- 基因鉴定手电筒
- 高性价比硅电极
- 高通量灵长类电极

礼智生物科技有限公司

Leads Bio-technology Limited

上海、北京、南京、沈阳、广州、深圳



礼智小客服



礼智公众号

网址: www.leads-tech.com
邮箱: info@leads-tech.com
电话: 182-6009-9904



VX504 超大组织玻片扫描仪

VX504 在功能适配性与扫描通量方面树立全新标杆。

设备支持多款物镜及多种成像模式，可无缝适配各类工作场景，涵盖常规组织学、细胞学、血液学检测，以及超大尺寸全切片样本扫描。

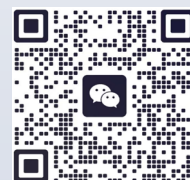


200片/小时

中国区总代理

上海亚晶生物科技有限公司
上海市闵行区吴中路1780号洋广场5楼510室
服务热线:400-999-0365
邮箱: info@asiagene.com.cn

预定DEMO机





公司简介

ABOUT HUIZHONG TIANZHI

成都市汇众天智科技有限责任公司致力于**生物医学图像的自动化分析研究**，组建跨学科专家团队，利用人工与AI结合将数TB级神经科学实验数据转化为定量结果。我们革命性地采用基于AI驱动的生物标志物成像技术，将深度学习强大功能应用于生物医学影像研究。

Chengdu Huizhong Tianzhi Technology Co., Ltd. is dedicated to **automated analysis of biomedical images**. Our interdisciplinary expert team combines human expertise with AI to transform terabyte-scale neuroscience experimental data into quantitative results. We revolutionarily employ AI-driven biomarker imaging technology, applying the power of deep learning to biomedical imaging research.

我们创新服务模式：**提供端到端的图像分析服务**，客户只需提供原始数据，我们负责从数据预处理、AI分析到人工校对的全流程，无需客户采购专业分析软件。公司拥有 70 人专业团队，具备 L3 级数据安全保密资质，服务覆盖神经元重构、全脑分割配准、空间组学分析等核心领域。

Our innovative service model provides **end-to-end image analysis services**. Clients only need to provide raw data; we handle the entire workflow from data preprocessing, AI analysis to manual verification - no need for clients to purchase specialized analysis software. With a 70-member professional team and L3-level data security confidentiality qualification, our services cover core areas including neuron reconstruction, whole-brain segmentation & registration, and spatial omics analysis.



AI 驱动自动化 AI-DRIVEN AUTOMATION

基于深度学习算法对成像数据进行全覆盖式自动重构，极大节省人力成本，提升处理效率。

Full-coverage automated reconstruction of imaging data based on deep learning algorithms, significantly reducing labor costs and improving processing efficiency.



人工校对保精度 MANUAL VERIFICATION

自动化重构中产生的错误，由专业标注人员进行校对和纠正，确保数据准确可靠。

Errors generated during automated reconstruction are reviewed and corrected by professional annotators, ensuring data accuracy and reliability.



全流程解决方案 END-TO-END SOLUTIONS

从制样、成像到数据分析的完整流程服务，满足客户一站式需求，提高研究效率。

Complete workflow services from sample preparation, imaging to data analysis, meeting one-stop client needs and improving research efficiency.



**亚微米级
重构精度**
Reconstruction Precision



**2000+
细胞/小时**
Cells / Hour



**99.8%
全脑分割准确率**
Segmentation Accuracy



**≥0.85
标注一致性**
Annotation Consistency (kappa)



**70人
专业团队**
Professional Team



**L3
数据安全保密资质**
Data Security Cert



**4篇
顶刊论文参与**
Top Journal Papers



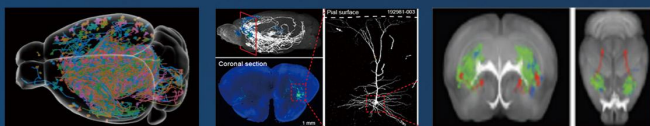
**TB级
数据处理能力**
TB-Scale Processing

案例展示 CASE STUDIES

案例一 小鼠多脑区神经元整体重构

从原始图像信号中识别出神经元的轴突结构和连接关系，可极大程度节省人力。而自动化重构中产生的错误，可继续由人工进行校对和纠正。

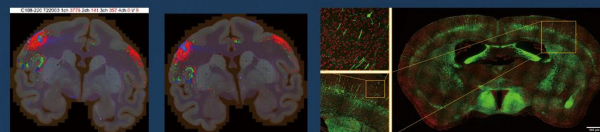
Identifying neuronal axon structures and connections from raw image signals greatly reduces manual effort, while errors from automated reconstruction can be manually proofread and corrected.



案例二 空间组学

支持蛋白质组学、转录组学、代谢组学，进行精确的细胞分割，详细的形态测量分析。

Supports proteomics, transcriptomics and metabolomics for precise cell segmentation and detailed morphological measurement analysis.



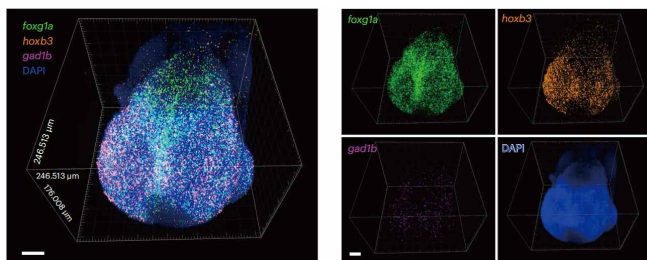
鯨羽生物 | 靶向空间组+RNA FISH领航者

G 更清晰 | G 更经济 | G 更灵敏 | G 更灵活 | G 更全面

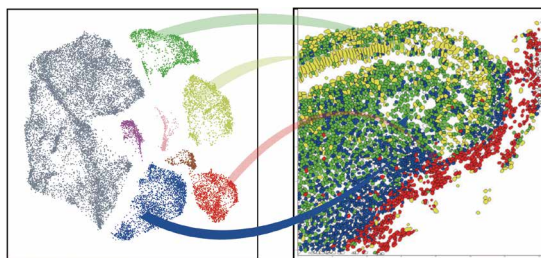
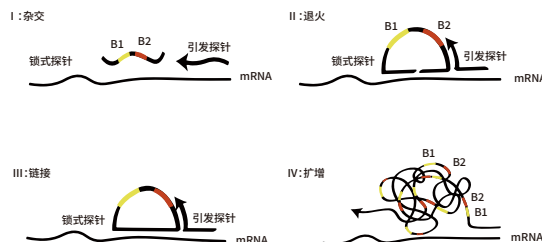
SMART-Panel “5G” 靶向空间组技术服务

基于自主研发的新型靶向空间组学技术 (MiP-seq) 具有高灵敏度、高特异性以及高分辨率等特性, 可实现单碱基和亚细胞分辨率的基因定性与定量检测。

技术服务目前包含低通量基因的组织细胞精准定位; 单细胞空间图谱绘制; 三维空间图谱构筑; RNA/蛋白共检; 宿主微生物双重空间组分析等等。该技术将空间组学与单细胞测序联合应用, 可实现高分辨的单细胞空间图谱构建, 是单细胞测序、空间组下游验证必备工具。广泛适用于临床和科研领域, 助力生命科学研究与临床精准诊断。



斑马鱼端脑三维空间图谱解析

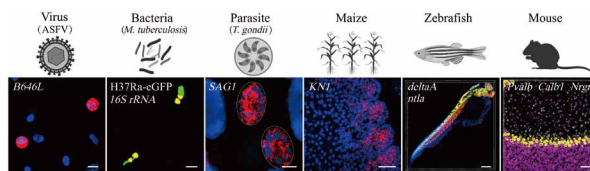


单细胞测序结果在空间中的映射

π-FISH Rainbow™ RNA原位检测试剂盒



自主开发的π-FISH Rainbow™ 技术, 凭借独特的杂交探针设计和信号放大系统, 可实现高特异性、高灵敏度、单分子单细胞精度的RNA原位检测。助力“2023年国内国际十大科学新闻”研究。



- 独特的探针设计, 检测更灵敏、更特异、信号更强;
- 覆盖多种物种类型(动物、植物、微生物等);
- 兼容多种样品类型(细胞样品、冰冻组织、石蜡组织等);
- 依托多对探针的覆盖设计, 有一定的RNA降解抵抗能力;
- 针对任意已知序列RNA(mRNA、miRNA、lncRNA等);
- 三种发光成像方式, 可兼容荧光直标、化学荧光和化学显场。

鯨羽生物科技有限公司

Spatial-FISH Biotechnology Company Limited

邮箱: spatialfish@spatialfish.com

联系方式: 13147040718

公司官网: <https://www.spatialfish.com/>

公司地址: 广东省深圳市脑科学技术产业创新中心

扫一扫获取更多服务支持



订阅号



技术支持

百创空间多组学测序技术



扫码，得DEMO

百创空间转录组测序

数据量: 312G
饱和度: 56.43%
中位基因数 (CELL) :997

百创空间ATAC测序技术

数据量: 341G
饱和度: 64.47%
中位基因数 (CELL) :1,046

百创空间转录组 (FF&FFPE)
+ 空间全长免疫组库
+ 空间ATAC

青岛百创智能制造技术有限公司

地址:中国 (山东) 自由贸易试验区青岛片区前湾保税港区上海路20号三号楼

邮箱:tech@biomarker.com.cn

网址:www.bmkmanu.com/

苏州猴皇动物实验设备科技有限公司

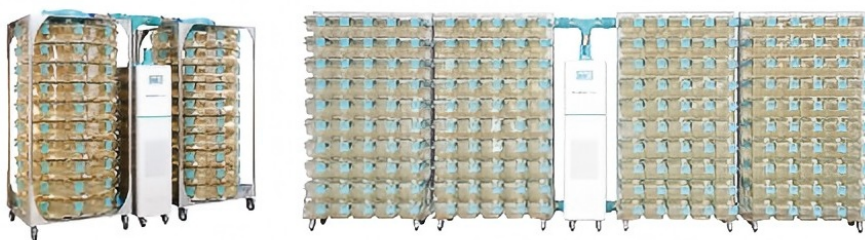
创设于2007年,总部位于长三角区域枢纽中心、新时代开放创新高地、世界一流高科技园区、苏州城市新中心,专业从事小鼠饲养动物笼具、大动物笼具及实验辅助设备的研发制造。拥有完整的进口原材料供应链和现代自动化生产设备,具有年产2500套饲养设备的生产能力。公司以董事长、高级工程师王树新先生为首的科技研发团队,坚持每年投入销售额的6%用于技术研发,DeepSkill、Deep R&D、DeepService,走出了一条属于自己的“3D”道路;小鼠独立通风笼具IVC产品历经三次迭代,实现了从“科学技术上书架,到技术成果上笼架”的工程转化,书写“换气相对0误差,生物样本一致”金标准,为实验动物提供了更舒适的家园,为科研实验和评价提供了科学依据。

树智赋能,新以致远。我们以广大用户“想的到的在猴皇;想不到的,还在猴皇”推崇评价为引擎,再绘实验动物新篇章,赋能生物医药大发展。

科学技术上书架·技术成果上笼架

第三代
“恒温、恒湿、恒通风”
更美好的家园,
正迎着更多的
鼠宝们的“乔迁入住”

第三代·静压式独立通风IVC——生物样本一致在猴皇

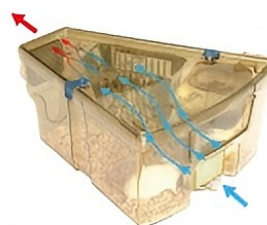


- 优势:
- ◎ 换气次数均匀一致,相对0误差;
 - ◎ 同架笼盒内温湿度一致,微生物环境一致,垫料更换周期长节省成本,时间统一便于集约化管理。
 - ◎ 生物样本一致有利于科研实验和评价。

好多鼠宝们已经在
猴皇的第二代家园中
“安居乐业”啦



第二代·中央排气独立通风EVC



当大部分鼠宝们
还在第一代IVC家园
中“徜徉”的时候



第一代·传统独立通风笼IVC



