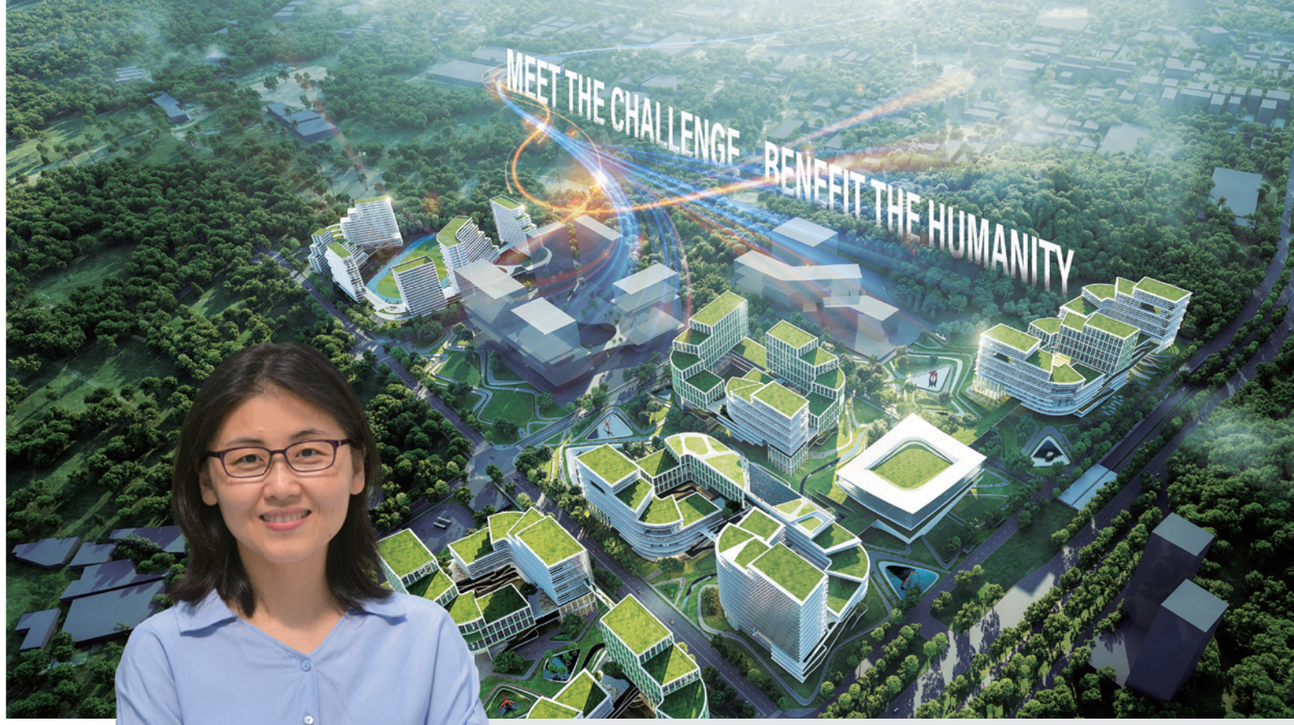
SMART

Shenzhen Medical Academy of Research and Translation

Contents



"We are committed to bridging the gap between research and application, turning knowledge into solutions that benefit our society. "

Nieng Yan, PhD

Founding President, SMART

- Director, Shenzhen Bay Laboratory
- Member, Chinese Academy of Sciences
- International Member, US National Academy of Sciences
- International Honorary Member, American Academy of Arts and Sciences

Shenzhen Medical Academy of Research and Translation (SMART), located in the Greater Bay Area in Southern China, is a leading institute dedicated to advancing medical science. Our mission is to bridge the gap between basic research, translational science, and clinical practice, creating a dynamic environment for innovation with real-world impact.

Established in 2023, SMART has united distinguished clinicians and internationally renowned scientists who have led transformative research in their respective fields. This globally collaborative environment has already led to many groundbreaking discoveries that advance our understanding of the mechanisms underlying human health and disease.

Our Missions

Biomedical Research

Education and Global Exchange

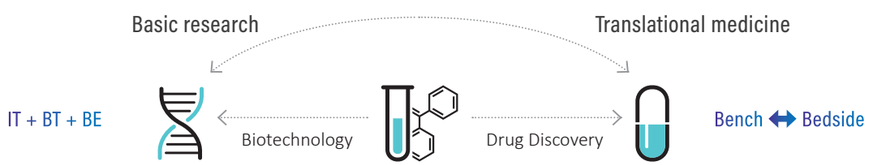
Translational Research and Technology Transfer

Coordinate Science and Technology Resources

Policy Consultation

Frontier Science

SMART & Shenzhen Bay Laboratory:
An international hub for research, education, and collaboration



Research Institutes

Institute of Bio-Architecture and Bio-Interactions (IBABI)
Institute for Brain Research Advanced Interfaces and Neurotechnologies (i-BRAIN)
Institute of Human Immunology (IHI)
Institute of Neuromodulation and Cognition (INC)
Institute of Chemical Biology (ICB)
Institute of Cancer Research (ICR)
Institute of Infectious Diseases (IID)
Institute of Molecular Physiology (IMP)
Institute of Neurological and Psychiatric Disorders (INPD)
Institute of Systems and Physical Biology (ISPB)

Research Institutes

INSTITUTE Institute of Bio-Architecture and Bio-Interactions (IBABI)

AFFILIATION SMART

SHORT INTRO The Institute of Bio-Architecture and Bio-Interactions (IBABI) is dedicated to integrating structural biology, systems biology, computational science, and artificial intelligence to elucidate the intricate architecture and dynamic interactions of living systems across multiple scales, from atoms and molecules to cells and biological networks. The institute aims to uncover the fundamental principles governing biological organization, regulation, and function, providing a structural and mechanistic foundation for innovation in life sciences and medicine.

IBABI's research spans a broad spectrum, including the structural and functional analysis of biomacromolecules, host–pathogen interactions, molecular mechanisms of antibiotic resistance, physicochemical bases of phase separation, immune receptor recognition and signaling regulation, as well as AI-driven protein design and drug discovery. Leveraging cutting-edge technologies such as cryo-electron microscopy (cryo-EM), single-molecule imaging, computational modeling, and machine learning, IBABI drives innovation from molecular discovery to translational applications.

INSTITUTE Institute for Brain Research Advanced Interfaces and Neurotechnologies (i-BRAIN)

AFFILIATION SMART

SHORT INTRO i-BRAIN: the Institute for Brain Research, Advanced Interfaces and Neurotechnologies - is a highly-interdisciplinary research institute focused on developing transformative brain-computer interfaces (BCIs) that blur the distinction between electronics and the brain. Founded by world-renowned scientist Prof. Charles Lieber, i-BRAIN will enable groundbreaking research to understand the brain and brain diseases as well as breakthrough technologies for treatment of neurological and neurodegenerative diseases for the near-term but also enable future advances and treatments that today may be considered the realm of science fiction. Additionally, i-BRAIN will instill a positive and highly interdisciplinary culture in the training of young scientists, engineers and doctors such that they are prepared to lead the development of science and engineering as well as the translation of ideas into commercial technologies that benefit present and future generations.

INSTITUTE
Institute of Human Immunology (IHI)

AFFILIATION
SMART

SHORT INTRO
The institute is dedicated to exploring the fundamental principles of the human immune system and translating these discoveries into clinical advances. Its research spans host-pathogen interactions, immune metabolism, and protein modifications, aiming to uncover how immune balance is maintained or disrupted. By validating discoveries in human systems and disease settings, the institute strives to turn basic immunology into practical insights that support the prevention and treatment of immune-related disorders.

INSTITUTE
Institute of Infectious Diseases (IID)

AFFILIATION
SZBL

SHORT INTRO
The Institute of Infectious Diseases focuses on etiologic surveillance and diagnostics, pathogenetics and genetic evolution, infection and immunity mechanisms, as well as vaccine and therapeutic development for infectious diseases, we are tackling key theoretical and technological challenges in the field. By integrating research, clinical practice, and translation, we strive to provide scientific support and strategic reserves for the prevention, diagnosis, treatment, and emergency response of major infectious diseases in China.

INSTITUTE
Institute of Neuromodulation and Cognition (INC)

AFFILIATION
SMART

SHORT INTRO
Founded in 2025, the Institute of Neuromodulation and Cognition (INC) addresses fundamental and clinical challenges in neuroscience through internationally impactful research. We focus on the neural and molecular mechanisms underlying physiological functions such as sleep, anesthesia, and consciousness, as well as their dysfunctions. Our work systematically examines the interactions between neural regulatory deficits, cognitive impairments, and associated major comorbidities. Leveraging these insights, we aim to identify novel therapeutic targets and advance the development of innovative interventions for neural regulation disorders.

INSTITUTE
Institute of Molecular Physiology (IMP)

AFFILIATION
SZBL

SHORT INTRO
The Institute of Molecular Physiology is dedicated to deciphering the underlying mechanisms of critical physiological processes at the molecular level. The institute focuses on fundamental life activities including sleep, metabolism, immunity, sensation, and respiration, aiming to elucidate their governing principles and roles in disease pathogenesis.

INSTITUTE
Institute of Chemical Biology (ICB)

AFFILIATION
SZBL

SHORT INTRO
Committed to integrating principles and methodologies from chemistry, biology, and related disciplines, The Institute of Chemical Biology seeks to understand and manipulate biological systems at the molecular level, thereby pioneering novel approaches for the diagnosis and treatment of major diseases.

INSTITUTE
Institute of Neurological and Psychiatric Disorders (INPD)

AFFILIATION
SZBL

SHORT INTRO
The Institute of Neurological and Psychiatric Disorders aims to understand pathogenic mechanisms of brain disorders including Alzheimer's disease, autism, chronic pain, depression, sleep disorder, schizophrenia, and stroke.

INSTITUTE
Institute of Cancer Research (ICR)

AFFILIATION
SZBL

SHORT INTRO
Guided by the principle of "Clinical Orientation, Translational Priority, Technology Drive, and Theoretical Innovation," the Institute of Cancer Research aspires to achieve world-leading status in fundamental, translational, and clinical cancer research. By vigorously supporting national and regional scientific priorities in oncology translation and diagnostic-therapeutic innovation, we aim to contribute to the advancement of the "Healthy China" initiative.

INSTITUTE
Institute of Systems and Physical Biology (ISPB)

AFFILIATION
SZBL

SHORT INTRO
Integrating biological and information technologies, the Institute of Systems and Physical Biology develops methodology dually driven by physical principles and big data, aiming to construct a multi-scale understanding of biological systems spanning from molecules and cells to tissues

Senior Principal Investigators

Yang Dan, PhD
Sleep and Brain Function

Wei Lu, PhD
Addiction, Depression and Anxiety

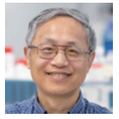
Jing Wang, PhD
Sensory Neural Circuit

Yanzhuang Wang, PhD
Golgi Apparatus in Diseases

Zhoufeng Chen, PhD
Mechanism underlying Itch and Pain

Wenbiao Gan, PhD
Learning and Memory

Jian Yang, PhD
Ion Channel and Neurological Diseases



Yaoqi Zhou, PhD
AI for Science

Zhiping Xu, PhD
Nanomaterials and Drug Delivery

Gensheng Feng, PhD
Liver Cancer and Immunotherapy

Liang Shan, PhD
Infection Immunity and Tumor Immunity

Bo Zheng, PhD
Microfluid and Synthetic Biology

SMART Investigator Program

SMART-funded external investigators

Charles Lieber, PhD
Nanomaterials and Brain Science

Shuyang Zhang, MD
Diagnosis and Treatment of Rare Diseases

Ying Mao, MD
Neurosurgery and Brain Tumors

Yongjun Wang, MD
Ischemic Cerebrovascular Diseases

Xiangbin Pan, MD
Interventional Technology for Heart Diseases

Lin Shen, MD
Gastrointestinal Oncology and immunotherapy

Jin Liu, MD
Anesthesiology

Zheng Ouyang, PhD
Mass Spectrometry Instrumentation

Zheng Zhang, MD
Pathogen Infections

Shang Cai, PhD
Breast Cancer Microenvironment

Bing Zhang, PhD
Skin and Hair Follicle Regeneration

Ya Zhang, PhD
Machine Learning and Healthcare

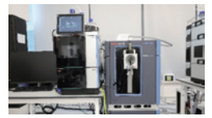
Xueming Li, PhD
CryoEM and CryoET

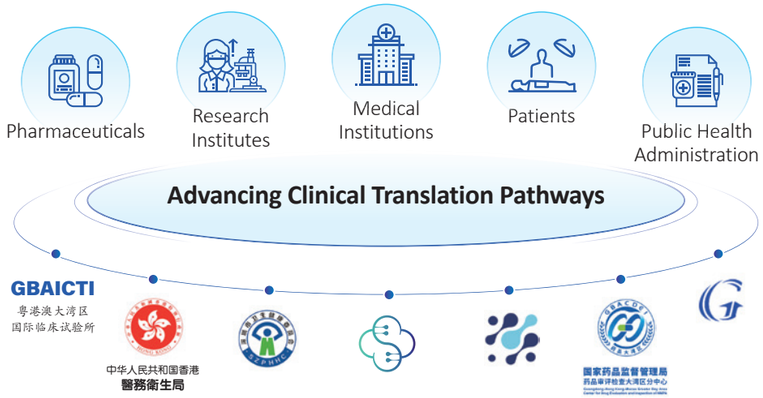
- Inspired by Howard Hughes Medical Institute (HHMI)'s philosophy of "**funding people, not projects**"
- SMART provides **clinical experts** and **outstanding scientists** with long-term support
- Key areas funded: disease diagnosis and treatment, translational medicine, and breakthrough technologies

Translational and Clinical Research

A Globally Influential Clinical Trials Hub

Core facility & Bio-Incubator
Empowering pharma industry



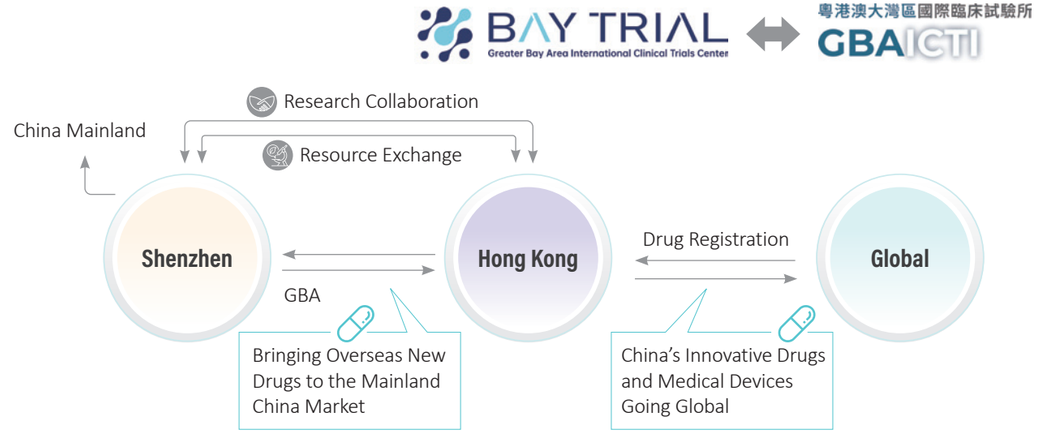


Gateway to Global Clinical Trial

Greater Bay Area International Clinical Trials Center (BAY TRIAL)

November 21, 2024, the Greater Bay Area International Clinical Trials Center (BAY TRIAL) of SMART was officially inaugurated at the Hetao Shenzhen-Hong Kong Science and Technology Innovation Cooperation Zone.

By connecting clinical trials innovation resources from across the Greater Bay Area and fostering deeper collaboration between Shenzhen and Hong Kong, the center will establish a one-stop platform for clinical trials. This platform will provide top-tier technical support, operational management and registration services to both national and international pharmaceutical and medical device development institutions.



SMART Symposia

The SMART Symposia are international academic conferences organized by the Shenzhen Medical Academy of Research and Translation (SMART). Our symposia, held during Shenzhen's most favorable seasons, provide a platform to foster cross-disciplinary collaboration and communication among biomedical researchers around the world.

We have organized more than **15** symposia so far:

- Immunology, Deconstruction and Reconstruction of Lymphocytes for Precision Medicine
- AI-Driven Computational Biology and Medicine
- Vector-borne and Tropical Infectious Diseases
- Molecular Physiology
- Early Diagnosis and Intervention of Alzheimer's Disease
- Illuminating the Brain
- Targeted Protein Degradation: From Basic Science to Therapeutic Application
- Bio-Architecture & Bio-Interactions
- Microbiota in Health and Disease
- Structural Lipidomics

More is coming soon...
Choose your favorite area — and grow with us!

Website: https://symposia.smart.org.cn/sym
Contact Us: symposium@smart.org.cn; yysxiang@smart.org.cn

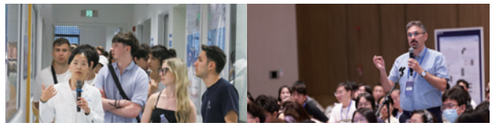
SMART PhD Program

The SMART PhD Program is a collaborative doctoral training initiative between the Shenzhen Medical Academy of Research and Translation (SMART) under its partnerships with top-tier universities in China. The Program aims to explore new paradigms for the training of the next generation of biomedical talents by fostering education-research-translation collaboration.

In 2024, the SMART PhD Program was formally launched, with its initial cohort of doctoral candidates being jointly recruited with Tsinghua University and Westlake University. Distinguished by its high standards of admission, global outlook, cross-disciplinary approach, and pioneering feature, the Program is designed to nurture talented individuals with creativity and the ability to explore profound scientific questions about life and disease. These individuals are prepared to excel in life sciences and medical research.

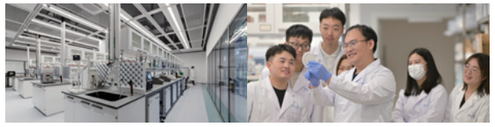
Joint Training with Top Universities

All English Courses and International Scientific Community



Tuition Scholarships + Generous Stipend and Attractive Accommodation

Cross-Disciplinary & **Bedside-Bench-Bedside** Rotation across labs of **70+** world-class faculty



Research Areas

- Neurological and Psychiatric Disorders
- Bioinformatics and Computational Biology
- Bio-Architecture and Biomimetics
- Infectious Diseases and Immunity
- Cancer and Metabolism
- Rare Diseases
- Chemical Biology

Application

September	December	January	January-May	August
Application Opens	1st Round of Admission Interview	1st Round of Admission Decisions Release	Application Considered on Rolling Basis	Orientation and Enrollment

SMART PhD Program

Apply for the SMART International PhD Program
Application Period: Now - 31 May
Website: https://smart.org.cn/en
Application Website: https://yzbm.tsinghua.edu.cn/intlLogin

Research Labs at SMART and Shenzhen Bay Laboratory

Biophysics and Structural Biology

Xiao Fan, PhD	CryoEM method development; Structural perspectives into the evolution of chemosensory receptors
Long Gui, PhD	Structural insights into human rare disease; Host-parasite interaction
Shangguo Hou, PhD	AI-assisted biological dynamics imaging; Quantitative study of biomolecular dynamics
Mingxu Hu, PhD	Cryo-EM/CryoET; High-throughput CryoEM development; AI for structural biology
Jian Huang, PhD	Mechanistic insights into disease-associated membrane proteins and targeted drug design
Kai Huang, PhD	Physical and AI modeling of genome folding and biological phase separation
Meijing Li, PhD	CryoET method development; Host-pathogen interaction
Yangyi Lu, PhD	Molecular mechanisms of photo-enzymes and photo-receptors
Xiaojing Pan, PhD	Membrane protein related diseases and drug design
Qin Peng, PhD	Decoding nuclear mechanics and epigenetics in aging and diseases by live-cell probes
Qiang Su, PhD	Immunoreceptor engineering and drug discovery
Jian Yang, PhD	Ion channel structure, function, disease mechanisms; TCM-based drug discovery
Wei Yang, PhD	Computational design of de novo proteins with advanced functions for therapeutic applications
Yandong Yin, PhD	Developing computational- and physical-based super-resolution imaging technology
Haoyue Zhang, PhD	Principles of genome folding, and transcription, aging

Biotechnology, disease diagnosis and therapy

Guiwei He, PhD	Construction and applications of human organoids
Andrew Lee, MD/PhD	First in human clinical trials for cell/gene therapy to treat rare genetic disease, ischemic injury, cancer, and anti-aging
Charles Lieber, PhD	Brain and brain diseases; Brain-computer interfaces
Changzheng Lu, PhD	Tumor immunotherapy; Vaccine; CAR-cell therapy; Antibody engineering; Chemo-/radiotherapy
Lang Rao, PhD	Engineering extracellular vesicles for immunotherapy
Kun Sun, PhD	Cancer diagnosis; Pathways in tumor metastasis and inhibition drugs
Wanbo Tai, PhD	Viral infection mechanism; Novel antigen design; mRNA vaccine
Yu-Hsuan Tsai, PhD	Tools for protein regulation and labeling in precision diagnosis and therapy
Zhiping Xu, PhD	Developing oral delivery system of enzymes; Normalization of tumor microenvironment
Chengqian Yin, PhD	Investigation of metabolic regulation and therapeutic target discovery in cancer
Lei Zhang, PhD	Identifying immunotherapy mechanisms and targets by single-cell analysis
Bo Zheng, PhD	Organoid-on-chip; Cell-free synthetic biology; Single cell analysis; Droplet microfluidics

Cell Biology

Meixin Chen, PhD	Interaction of host and microbes
Nanpeng Chen, PhD	Interplay between cell cycle and cell adhesion machineries; Mechanobiology in development and diseases
Lin Deng, PhD	Developing novel anti-cancer drugs based on new mechanism of cancer genome evolution (www.deng-lab.net)
Chao Wang, PhD	Proteostasis regulation; AI for precision drug design
Yanzhuang Wang, PhD	Golgi biogenesis, function, and defects in diseases

Chemical Biology

Yun Ge, PhD	Chemical biology for functional analysis and application of biomolecular glycosylation
Jian Huang, PhD	Mechanistic insights into disease-associated membrane proteins and targeted drug design
Gang Li, PhD	Mass spectrometry-based protein interaction profiling, amino acid labeling, and covalent inhibitor development
Mao Li, PhD	Innovative lipid nanoparticle system for RNA delivery and cancer therapy; Discovery of peptide-based functional materials
Xin Li, PhD	Interrogating histone modifications; Characterizing and targeting protein-protein interactions
Yu-Hsuan Tsai, PhD	Tools for protein regulation and labeling in precision diagnosis and therapy
Yi Yang, PhD	Develop AI-based algorithms, models, and software for molecular modelling and simulation

Computational Biology and Bioinformatics

Kai Huang, PhD	Physical and AI modeling of genome folding and biological phase separation
Lei Li, PhD	Bioinformatics/AI-driven approaches to decipher the regulatory mechanisms of emerging disease non-coding regions
Yangyi Lu, PhD	Molecular mechanisms of photo-enzymes and photo-receptors
Lili Niu, PhD	Population-based proteomics to discover diagnostic, prognostic, and therapeutic targets
Chao Wang, PhD	Proteostasis regulation; AI for precision drug design
Leyao Wang, PhD	Human microbiomes, genomics, and host-pathogen interactions
Wei Yang, PhD	Computational design of de novo proteins with advanced functions for therapeutic applications
Yi Yang, PhD	Develop AI-based algorithms, models, and software for molecular modelling and simulation
Yandong Yin, PhD	Developing computational- and physical-based super-resolution imaging technology
Yaoqi Zhou, PhD	AI-guided protein/RNA structure/function prediction, design and delivery

Immunology and Microbiology

Meixin Chen, PhD	Interaction of host and microbes
Xinhai Chen, PhD	Mechanisms behind bacterial adaptability and effective antibody function
Tingting Chu, PhD	Molecular mechanisms of innate immune pathways and their role in neurodegenerative diseases; Metabolism and tumor immunity
Shibin Hu, PhD	Study RNA-mediated innate immune responses in health and disease
Meijing Li, PhD	CryoET method development; Host-pathogen interaction
Yang Liu, PhD	Mechanisms of viral infection and transmission; Virus-host interactions; Viral vector tools
Changzheng Lu, PhD	Tumor immunotherapy; Vaccine; CAR-cell therapy; Antibody engineering; Chemo-/radiotherapy
Chenyan Ma, PhD	Deciphering the mechanisms of sleep regulation and sleep function from a neuroimmune perspective
Shixin Ma, PhD	Nutrient-driven epigenetic codes in regulating immune function in cancer and autoimmunity
Xinlei Sheng, PhD	Characterization of post-translational modifications in innate immunity
Qiang Su, PhD	Immunoreceptor engineering and drug discovery
Wanbo Tai, PhD	Viral infection mechanism; Novel antigen design; mRNA vaccine
Xiaoyu Tang, PhD	Microbial metabolite-mediated "microbe-microbe" and "microbe-host" interactions
Guoxun Wang, PhD	The pathogenesis of entric viruses and host antiviral immune response
Leyao Wang, PhD	Human microbiomes, genomics, and host-pathogen interactions
Qiankun Wang, PhD	Innate immune sensing of viral infection; Immunotherapy for HIV/AIDS
Chao Wu, PhD	Viral replication mechanism; Gene delivery and neutrotracing
Lin Wu, PhD	Metabolic regulation in tumor immunology, neuroimmunology, and autoimmunity; and the interplay between immunity and neuronal activity
Hao Xu, PhD	Dynamics of Treg and thymus under pathological and physiological conditions
Lei Zhang, PhD	Identifying immunotherapy mechanisms and targets by single-cell analysis
Yang Zhang, PhD	Transmembrane signaling in reproduction and immunity
Min Zheng, PhD	Mechanisms of tissue damages during infection and auto-immune diseases; identifying molecules to inhibit tissue damages
Liang Shan, PhD	Viral infection and immunity

Metabolism

Tingting Chu, PhD	Molecular mechanisms of innate immune pathways and their role in neurodegenerative diseases; Metabolism and tumor immunity
Shixin Ma, PhD	Nutrient-driven epigenetic codes in regulating immune function in cancer and autoimmunity
Zixi Wang, PhD	Metabolic disorders; Fatty liver disease, liver fibrosis, liver regeneration
Lin Wu, PhD	Metabolic regulation in tumor immunology, neuroimmunology, and autoimmunity; and the interplay between immunity and neuronal activity
Chengqian Yin, PhD	Investigation of metabolic regulation and therapeutic target discovery in cancer

Molecular Biology

W.S. Sho Goh, PhD	Impact of RNA Modifications in Precision Medicine
Shibin Hu, PhD	Study RNA-mediated innate immune responses in health and disease
Feng Liu, PhD	Mosquito chemosensory physiology; Gene drive; Evolution of insect olfactory system
Haizhen Long, PhD	Epigenetic regulation of genome replication and its roles in disease and development
Qin Peng, PhD	Decoding nuclear mechanics and epigenetics in aging and diseases by live-cell probes
Haoyue Zhang, PhD	Principles of genome folding, and transcription, aging
Yang Zhang, PhD	Transmembrane signaling in reproduction and immunity
Yaoqi Zhou, PhD	AI-guided protein/RNA structure/function prediction, design and delivery

Neurobiology

Zhoufeng Chen, PhD	Molecular and circuit basis of animal behavior and brain disorder
Tingting Chu, PhD	Molecular mechanisms of innate immune pathways and their role in neurodegenerative diseases; Metabolism and tumor immunity
Yang Dan, PhD	Research on the neuronal mechanism of sleep and consciousness in both rodents and primates
Tengfei Guo, PhD	Mechanism, Diagnostic and therapeutic targets of Alzheimer's disease
Xian Jiang, PhD	Molecular and cellular mechanisms of memory and pathogenesis of Alzheimer's disease
Charles Lieber, PhD	Brain and brain diseases; Brain-computer interfaces
Wei Lu, PhD	Molecular and circuit mechanisms regulating animal behavior and brain disorder
Chenyan Ma, PhD	Deciphering the mechanisms of sleep regulation and sleep function from a neuroimmune perspective
Jing Wang, PhD	Exploring the sensory information processing methods and behavioral regulation logic of neural circuits
Yanzhuang Wang, PhD	Golgi biogenesis, function, and defects in diseases
Jian Yang, PhD	Ion channel structure, function, disease mechanisms; TCM-based drug discovery
Yuanyuan Yao, PhD	How is sleep and cardiovascular activity regulated physiologically and pathologically
Wen Yuan, PhD	The mechanisms of neurological disorders
Bo Zhang, PhD	Synapse under physiological and pathological conditions (www.bozhanglab.org)
Ke Zhang, PhD	Pathomechanism of amyotrophic lateral sclerosis, frontotemporal dementia, and neurodevelopmental disorders

SMART
Shenzhen Medical Academy of Research and Translation

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Public Relations: pr@smart.org.cn
SMART Foundation: foundation@smart.org.cn
Technology Licensing: otl@smart.org.cn

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