

Shanghai Center for Systems Biomedicine

<http://scsb.sjtu.edu.cn/xtswyx/homeen.do?method=getHomeList>

I . An Introduction to Disciplines and Main Research Fields

The Shanghai Center for Systems Biomedicine (SCSB Center) was founded to meet the contemporary needs of the state. The SCSB is dedicated to apply the systems biology approach to resolve important scientific problems arising in clinical medicine, to find new strategies for curing cancer, diabetes, hypertension, and other complex diseases, as well as to improve the overall condition of human health. Following a philosophy of considering human body and environment as a complete system and guided by the principle of reverse engineering, the center employs a combination of “top down” and “bottom-up” research strategies that focus on studying a number of fundamental biomedical issues in clinical research.

With the goal of personalized treatment and drug innovation, the center integrates knowledge from multiple disciplines to utilize high throughput technologies, and combines other methods of modern biology to establish theoretical and biological systems and innovative technology-based platforms to explore the mechanism of occurrence as well as the development and outcome of diseases. The center also aims to establish a premier research team that can make significant contributions to predictive, preventive, personalized, and participatory (4P) medicine in the post human genome era.

Disciplines and Main Research Fields

Disciplines	Research Fields
Genomics	Systemic Biomedical Research: leukemia, solid tumours (cancer of the liver, stomach cancer, etc)
Proteomics	Systemic Biomedical Research: metabolic diseases/ neurodegenerative disease
Metabonomics	Mechanism Research of TCM and Collaborative Targeted Therapy Based on Biomedicine
Bioinformatics	Innovation research of Systematic Biology Theory and Technology

II . Faculty

1. Overview of Faculty

The center has carried out fundamental studies of system biomedicine in human health and diseases, and developed systematic research programs that range from the level of single cells to whole organisms. In particular, the center has set up 14 unique and interdisciplinary full-time research groups and three adjunct groups, which form an open and multidisciplinary cooperative research unit. The center has now 49 full-time teachers consisting of 15 professors, 14 associate professors, and nine assistant researchers. The center has recruited and fostered many outstanding scientists including an academician Chinese Academy of Sciences, an academician Chinese Academy of Engineering, a member of the Thousand Talents Plan (youth), one winner of the National Science Fund for Distinguished Young Scholars, two Chang Jiang Scholars, one scholar of the New Century Talents Project, one scholar of the New Century Talents Program of Ministry of Education, two Outstanding Academic Leaders of Shanghai, two Outstanding Science and Technology Leaders, two experts of the Thousand Talents Plan of Shanghai, one Leading Talent in Shanghai, four scholars of the Pujiang Talents Program of Shanghai, and one member of Shanghai Phosphorus of Science and Technology Talent Program.

2. Renowned Professors

Number	Name	Position	Research Fields
1	CHEN Zhu	Academician of Chinese Academy of Sciences	Research on cellular and molecular mechanism of leukemia therapy
2	CHEN Saijuan	Academician of Chinese Academy of Engineering	Exploration into the new type of diagnosis and treatment of leukemia
3	HAN Zeguang	Chang Jiang Scholar; winner of the National Science Fund for Distinguished Young Scholars; chief scientist of the Major National Basic Research Program (973); Shanghai Outstanding Academic Leader	Tumor Genetics and Epigenetics Mechanism; Research on the function of human genes
4	AO Ping	Distinguished professor of Chang jiang Scholar; chief scientist of the Major National Basic Research Program (973); Shanghai Leading Talent; member of the Thousand Talents Plan of Shanghai	Origin and development of cancer; Metabolic Network Dynamics

(continued)

Number	Name	Position	Research Fields
5	WU Qiang	Distinguished professor of SJTU; chief scientist of the Major National Basic Research Program (973); member of the Hundred Talents Plan of the Chinese Academy of Sciences; Shanghai Outstanding Academic Leader; scholars of the Pujiang Talents Program of Shanghai	Molecular Biology; Cell Development
6	SHI Qihui	Member of the Thousand Talents Plan supported by the Central Organization Department; scholar of the Pujiang Talents Program of Shanghai	Analysis of rare cells in the peripheral blood; Microfluidics-based single-cell technology
7	YAN Wei	Member of the Thousand Talents Plan of Shanghai	Proteomics; Clinical Protein Molecular Diagnosis
8	SHEN Yumei	Member of the Hundred Talents Plan of the Chinese Academy of Sciences	Chemical Biology
9	ZHANG Yan	Scholar of the Pujiang Talents Program of Shanghai	Glycobiology and Glycoproteomics
10	TAO Shengce	Winner of the New Century Talents Program supported by the Ministry of Education; member of Shanghai Phosphorus of Science and Technology Talent Program	Proteomics; Systems Biology
11	JIAN Huang	Outstanding Science and Technology Leader	Medical Genetics; Tumor Genomics
12	WU Fang	Scholar of the Pujiang Talents Program of Shanghai	Research on drug discovery and mechanism; Research on transmembrane signal transduction pathway of disease
13	GUO Fang		Molecular mechanism and targeted drug development of Tumor Metastasis
14	ZHANG Bing		Gene Transcription; Cardiovascular Biology
15	LIU Bingya		Early diagnosis of gastrointestinal cancer

(continued)

Number	Name	Position	Research Fields
16	ZHAO Liping	Distinguished professor of SJTU	Interactions between nutrition and gut microbiota
17	JIA Wei		The technology and application in the field of translational medicine research of Metabonomics

III. Achievements

In the past five years, the center has obtained 99 research grants including 40 of the National Natural Science Foundation of China, many of Major National Basic Research Programs (973) or sub-projects, “863” sub-projects and the Supporting Program of the Eleventh Five-year Plan for Scientific and Technical Research of China. The center, as the institute of the first authors or corresponding authors, has published 91 articles in international journals, including *PNAS*, *Blood*, *Chemical communication*, *Embo Molecular Medicine*, *Journal of Proteome Research*, *Current drug metabolism*, *Hepatology*, *Cell Research*, and others journals with international influence .

IV. International Collaboration

SCSB Center is approved as a National Center for International Research by the Ministry of Science and Technology and Foreign Experts Bureau in 2007. Additionally, the center has established a strong collaboration with the Systems Biology Institute (USA), Imperial College London (UK), the National Institute of Advanced Industrial Science and Technology (AIST, Japan), and other international institutions. Further, the center has hosted or co-sponsored many international conferences and seminars, and signed partnership agreements with international universities or institutes.

In order to encourage independent research and innovation, the center has established Anthony James Leggett and Haruko Kinase-Leggett Graduate Awards. Professor Anthony James Leggett is one of the most influential theoretical physicists in the world, who won the Nobel Prize in physics in 2003. Professor Leggett donated the initial fund for the awards to cite those graduate students for making great achievements in their researches. This award is therefore named after him.

V. Platforms for Scientific Innovation

- Key Laboratory of Systems Biomedicine, Ministry of Education
- High performance computing studio of System Biology