

PROGRAM

MONDAY, September 2—7:00 PM

SESSION 1 WELCOME AND KEYNOTES

Chairperson: **Hongwei Wang**, Tsinghua University, Beijing, China

Welcome Remarks

Pushing the limits of single particle cry-EM of macromolecules

Hongwei Wang [20'+10']

Presenter affiliation: Tsinghua University, Beijing, China.

High-resolution cryo-EM of membrane protein complexes

Werner Kühlbrandt [40'+10']

Presenter affiliation: Max Planck Institute of Biophysics, Frankfurt, Germany.

Structural biology *in situ*—The promise and challenges of cryo-electron tomography

Wolfgang Baumeister [40'+10']

Presenter affiliation: Max Planck Institute of Biochemistry, Munich, Germany.

1

TUESDAY, September 3—9:00 AM

SESSION 2 MULTISCALE STRUCTURAL BIOLOGY OF BIOLOGICAL INHERITANCE

Chairperson: **Masahide Kikkawa**, University of Tokyo, Tokyo, Japan

Cryo-EM study of 30nm chromatin fiber

Ping Zhu [20'+10']

Presenter affiliation: Institute of Biophysics, CAS, Beijing, China.

2

Cryo-EM structures of chromatosomes containing human linker histone variants

Bing-Rui Zhou, Hanqiao Feng, Natalia A. De Val, Yawen Bai [15'+5']

Presenter affiliation: National Cancer Institute, Bethesda, Maryland.

3

Molecular organization of central transport channel and Nup93 sub-complex of mammalian nuclear pore complex

Kriti Chopra, Parshuram Sonawane, Bhawna Burdak, Pankaj K. Madheshiya, Shrankhla Bawaria, Jyotsna Singh, Radha Chauhan [15'+5']

Presenter affiliation: National Centre for Cell Science, Pune, India.

4

Coffee / Tea Break

Phase separation in heterochromatin organization

Pilong Li [20'+10']

Presenter affiliation: Tsinghua University, Beijing, China.

5

An easy-to-use single-molecule tool to quantify liquid-liquid phase separation beyond the optical diffraction limit

Sijia Peng, Weiping Li, Pilong Li, Chunlai Chen [15'+5']

Presenter affiliation: Tsinghua University, Beijing, China.

6

TUESDAY, September 3—11:30 AM

SESSION 3 LIGHTNING ROUND: POSTER PREVIEW

See Poster Session for List of Posters

TUESDAY, September 3—2:00 PM

SESSION 4 POSTER SESSION

WHAMM initiates autolysosome tubulation by promoting actin polymerization on autolysosomes

Anbang Dai

Presenter affiliation: Tsinghua University School of Life Science, Beijing, China.

7

Sub-3 Angstrom reconstruction of apo-ferritin using a single micrograph

Xiao Fan, Zi Yang, Bo Shen, Kelong Fan, Jianlin Lei, Hongwei Wang

Presenter affiliation: Beijing Frontier Research Center of Biological Structures, Beijing, China.

8

- Structural study on nuclear RNA cap binding complex**
Chuan Liu, Hongwei Wang
 Presenter affiliation: Tsinghua University, Beijing, China. 9
- Activation of the $\alpha 2B$ adrenergic receptor by the sedative sympatholytic dexmedetomidine**
 Daopeng Yuan, Zhongmin Liu, Jonas Kaindl, Shoji Maeda, Jiawei Zhao, Xiaou Sun, Jun Xu, TongSun Kobilka, Peter Gmeiner, Hong-Wei Wang, Brian K. Kobilka
 Presenter affiliation: Tsinghua University, Beijing, China. 10
- Capture 1-dimensional (1D) searching of protein on DNA**
Sijia Peng, Mengyi Yang, Xin Sheng Zhao, Chunlai Chen
 Presenter affiliation: Tsinghua University, Beijing, China. 11
- Atomic-level modelling of nuclease active sites of *Streptococcus pyogenes* Cas9 in DNA cleavage state**
Honghai Tang, Hui Yuan, Wenhao Du, Gan Li, Liangliang Kong, Guangyi Li, Qiang Huang
 Presenter affiliation: Fudan University, Shanghai, China. 12
- Raveling a pair of viral pathogens to freshwater prawns (*Macrobrachium rosenbergii*) at 2.9 Å with cryo-EM**
Chun-Hsiung Wang, Hsin-Hung Lin, Sam Song-Yao Lin, Steve Si-Chi Chong, Yi-min Wu, Wei-hau Chang
 Presenter affiliation: Academia Sinica, Taipei, Taiwan. 13
- Single particle reconstruction of 52 kD streptavidin by Cs-corrected-VPP coupled cryo-EM**
 Xiao Fan, Jia Wang, Jianlin Lei, Hongwei Wang
 Presenter affiliation: Tsinghua University, Bei Jing, China. 14
- Structure of the mannose transporter of the bacterial phosphotransferase system**
 Xueli Liu, Jianwei Zeng, Kai Huang, Jiawei Wang
 Presenter affiliation: Tsinghua University, Beijing, China. 15
- Conformational dynamics and cleavage sites of Cas12a are modulated by complementarity between crRNA and DNA**
Lujia Zhang, Ruirui Sun, Mengyi Yang, Sijia Peng, Yongxin Cheng, Chunlai Chen
 Presenter affiliation: Tsinghua University, Beijing, China. 16

Structural study of Arp2/3 complex activation By Cryo-EM
Xing Zhang, Xiaoyu Fu, Anbang Dai, Hongwei Wang
Presenter affiliation: Tsinghua University, Beijing, China. 17

The pigment-protein network of a diatom photosystem II-light harvesting antenna supercomplex
Songhao Zhao, Xiong Pi, Wenda Wang, Desheng Liu, Tingyun Kuang, Sen-Fang Sui, Jian-Ren Shen
Presenter affiliation: the Chinese Academy of Sciences, Beijing, China. 18

Cryo-EM study of structural intermediates in microtubule assembly
Ju Zhou, Yinlong Song, Xin Liang, Hongwei Wang
Presenter affiliation: Tsinghua University, Beijing, China. 19

TUESDAY, September 3—4:30 PM

Chinese Tea and Beer Tasting

TUESDAY, September 3—7:00 PM

SESSION 5 MULTISCALE STRUCTURE AT BIOLOGICAL MEMBRANES

Chairperson: **Zhongmin Liu**, Tsinghua University, Beijing, China

Single particle cryo-EM of membrane proteins
Yifan Cheng [20'+10']
Presenter affiliation: HHMI/UCSF, San Francisco, California. 20

A ceramide-regulated element in the late endosomal protein LAPT4B controls amino acid transporter interaction
Kecheng Zhou [15'+5']
Presenter affiliation: University of Helsinki, Helsinki, Finland. 21

Cryo-EM structures capturing the entire transport cycle of the P4-ATPase flippase
Masahiro Hiraizumi, Keitaro Yamashita, Tomohiro Nishizawa, Osamu Nureki [15'+5']
Presenter affiliation: The University of Tokyo, Bunkyo-ku, Japan; Mitsubishi Tanabe Pharma Corporation, Aoba-ku, Japan. 22

Structural insights into tetraspanin function

Tomohiro Nishizawa, Rie Umeda, Yuhkoh Satoh, Mizuki Takemoto,
Masahito Ikawa, Osamu Nureki [15'+5']

Presenter affiliation: The University of Tokyo, Tokyo, Japan. 23

Structural biology and the molecular mechanics of cell guidance signaling

Yvonne E. Jones [20'+10']

Presenter affiliation: University of Oxford, Oxford, United Kingdom. 24

WEDNESDAY, September 4—9:00 AM

SESSION 6 STRUCTURAL BIOLOGY OF SPECIALIZED CELLULAR APPENDAGES

Chairperson: **Peijun Zhang**, University of Oxford,
Oxford, United Kingdom

Common mechanisms by skeletal muscle actomyosin and bacterial flagellar motor revealed by electron cryomicroscopy and optical nanophotometry

Keiichi Namba [20'+10']

Presenter affiliation: RIKEN, Suita, Japan; RIKEN, Suita, Japan;
Osaka University, Suita, Japan. 25

Combination of cryo-EM and genetics to study epithelial cells

Masahide Kikkawa [20'+10']

Presenter affiliation: The University of Tokyo, Tokyo, Japan. 26

Cryo-electron tomography of *C. elegans* uncovered the structure Langyabang on microvilli

Guangshuo Ou [20'+10']

Presenter affiliation: Tsinghua University, Beijing, China. 27

Coffee / Tea Break

Ultrastructural organization of the mechanoreceptive organelle in fly campaniform mechanoreceptor

Xin Liang [20'+10']

Presenter affiliation: Tsinghua-Peking Joint Center for Life Sciences,
Beijing, China; Max-Planck Partner Group, Beijing, China. 28

Cross-scale integrated bioimaging of supramolecular complexes in their native organelle, cell and tissue context—Inner ear hearing machinery and cancer disease progression

Manfred Auer [20'+10']

Presenter affiliation: Lawrence Berkeley National Laboratory, Berkeley, California.

29

WEDNESDAY, September 4—1:30 PM

Visit to Old Suzhou

WEDNESDAY, September 4—7:00 PM

SESSION 7 MULTISCALE ANALYSIS: CHALLENGES,
CORRELATION, INTEGRATION

Chairperson: **Guangshuo Ou**, Tsinghua University, Beijing, China

Multi-scale light and electron microscopic imaging in biomedical applications from molecules to microtissues

Abraham J. Koster [20'+10']

Presenter affiliation: Leiden University Medical Center, Leiden, Netherlands.

30

High-vacuum optical platform for cryo-CLEM (HOPE)—A new solution for non-integrated multiscale correlative light and electron microscopy

Shuoguo Li, Gang Ji, Yang Shi, Lasse H. Klausen, Tongxin Niu, Fei Sun [15'+5']

Presenter affiliation: Institute of Biophysics, CAS, Beijing, China; University of Chinese Academy of Sciences, Beijing, China.

31

Computational methods for modeling protein structures against cryo-EM maps

Jianpeng Ma [20'+10']

Presenter affiliation: Fudan University, Shanghai, China.

Statistical deep learning for automatic 2D and 3D cytotyping of tumor tissue

Chandrajit L. Bajaj [20'+10']

Presenter affiliation: University of Texas at Austin, Austin, Texas.

32

SESSION 8 STRUCTURAL BIOLOGY OF THE CELL INTERIOR

Chairperson: **Nieng Yan**, Princeton University, Princeton, New Jersey, USA

The E3 ligase STUB1 regulates peroxisome homeostasis *in vivo*

Li Bing Lin, Tz-yi Ho, Meng-Ting Tsai, Bo-Hua Chen, Wei Yuan Yang, Shu Yuan Yang [15'+5']

Presenter affiliation: Chang Gung University, Taoyuan, Taiwan; Linkou Chang Gung Memorial Hospital, Taoyuan, Taiwan. 33

Dissecting molecular mechanisms by optical microscopy in living cells and *in vitro*

Yasushi Okada [20'+10']

Presenter affiliation: RIKEN, Osaka, Japan; University of Tokyo, Tokyo, Japan. 34

High-speed super-resolution live imaging of intracellular organelle interactions

Dong Li [20'+10']

Presenter affiliation: Institute of Biophysics, Beijing, China. 35

Coffee / Tea Break

CryoEM of virus infections in human cells

Peijun Zhang [20'+10']

Presenter affiliation: University of Oxford, Oxford, United Kingdom; Diamond Light Sources, Didcot, United Kingdom; University of Pittsburgh, Pittsburgh, Pennsylvania. 36

Quantifying macromolecules and cells via nonlinear and inelastic light scattering

Taro Ichimura, Junichi Kaneshiro, Arno Germond, Tomonobu M. Watanabe [20'+10']

Presenter affiliation: Osaka University, Suita, Osaka, Japan; RIKEN, Suita, Osaka, Japan; JST, Kawaguchi, Saitama, Japan. 37

THURSDAY, September 5—2:00 PM

SESSION 9 PANEL DISCUSSION

Moderator: **Hongwei Wang**, Tsinghua University, Beijing, China

MULTI-SCALE, MULTI-MODAL, CORRELATIVE, INTEGRATED:
THE PATH FORWARD

Panel 1: Integration—How to integrate multiscale worlds

Panel 2: Innovation needed—Sample prep, instrumentation, workflows

Panel 3: Innovation needed—Applied math/CS, role of industry

THURSDAY, September 5—6:00 PM

COCKTAILS and BANQUET

FRIDAY, September 6—9:00 AM

SESSION 10 THE NERVOUS SYSTEM: FROM CHANNELS TO BRAINS

Chairperson: **Manfred Auer**, Lawrence Berkeley National Laboratory, Berkeley, California, USA

To unveil the choreography of Na_v channels

Nieng Yan [20'+10']

Presenter affiliation: Princeton University, Princeton, New Jersey. 38

Organizations of neuronal synaptic signal machineries—From atomic structures to mesoscale assemblies

Mingjie Zhang [20'+10']

Presenter affiliation: Hong Kong University of Science and Technology, Hong Kong, Hong Kong. 39

Coffee / Tea Break

Cryo-EM and the nano-world of Parkinson's disease

Henning Stahlberg [20'+10']

Presenter affiliation: University of Basel, Basel, Switzerland.

40

High-resolution biological imaging across scales using lattice light sheet microscopy

Srigokul Upadhyayula [20'+10']

Presenter affiliation: University of California, Berkeley, Berkeley, California.

41

Brain-wide positioning system for Brainsmatics with cytoarchitectonic landmarks at the cellular level

Qingming Luo, Hui Gong, Anan Li, Jing Yuan, Xiangning Li [20'+10']

Presenter affiliation: Hainan University, Haikou, China; Huazhong University of Science and Technology-Wuhan National Lab for Optoelectronics, Wuhan, China; HUST-Suzhou Institute for Brainsmatics, Suzhou, China.

42

Closing Remarks

Peijun Zhang

University of Oxford