

2019 Tsinghua-Science Symposium on Novel Proteins and Structures

(November 9-11, 2019)

Day 1 Saturday, November 9, Auditorium, Tsinghua University

- 08:50 – 09:00 **Opening Remarks by Prof. Hongwei Wang & Dr. Valda Vinson**
[Protein design and engineering](#)
Session Chair: Ting Zhu
- 09:00 – 09:30 **David Baker** (University of Washington, USA)
The coming of age of *de novo* protein design
- 09:30 – 10:00 **Philipp Holliger** (MRC Laboratory of Molecular Biology, UK)
Synthetic genetics: beyond DNA and RNA
- 10:00 – 10:30 **Stephen B.H. Kent** (University of Chicago, USA)
Through the Looking Glass – a New World of Proteins Enabled by Chemistry
- 10:30 – 11:00 **Group Photo and Break**
[Protein design and engineering \(Cont'd\)](#)
Session Chair: David Baker
- 11:00 – 11:30 **Tom W. Muir** (Princeton University, USA)
Painting Chromatin with Synthetic Protein Chemistry
- 11:30 – 12:00 **Nadrian C. Seeman** (New York University, USA)
DNA is Not Merely the Secret of Life: Semantomorphic Science
- 12:00 – 14:00 **Lunch and Break**
[Protein design and engineering \(Cont'd\)](#)
Session Chair: Tom W. Muir
- 14:00 – 14:30 **Dieter Söll** (Yale University, USA)
Novel enzymes and tRNAs for genetic code expansion
- 14:30 – 15:00 **James A. Wells** (University of California, USA)
Attacking the cancer surfaceome
- 15:00 – 15:30 **Ting Zhu** (Tsinghua University, China)
Building mirror-image biology systems
- 15:30 – 16:00 **Break**
[Emerging techniques in structural biology](#)
Session Chair: Wolfgang Baumeister
- 16:00 – 16:30 **Jiangfeng Du** (University of Science and Technology of China, China)
Magnetic Resonance Spectroscopy of A Single Molecule
- 16:30 – 17:00 **Sunney Xie** (Peking University, China)
Decoding the Human Functional Genome
- 17:00 – 17:30 **Hongwei Wang** (Tsinghua University, China)
Pushing the edge of single particle cryo-EM
- 17:30 – 18:00 **Xiao-Chen Bai** (UT Southwestern Medical Center, USA)
Activation mechanism of the insulin receptor (IR) and type 1 insulin-like growth factor receptor (IGF1R) revealed by cryo-EM
- 18:30 – **Dinner**

Day 2 Sunday, November 10, Auditorium, Tsinghua University

Emerging techniques in structural biology (Cont'd)

Session Chair: Hongwei Wang

- 09:00 – 09:30 **Wolfgang Baumeister** (Max Planck Institute of Biochemistry, Germany)
Structural Biology *in situ*: The Promise and Challenges of Cryo-Electron Tomography
- 09:30 – 10:00 **Robert Glaeser** (University of California, Berkeley, USA)
Developing 2nd generation methods to prepare grids for Cryo-EM
- 10:00 – 10:30 **Christopher Russo** (MRC Laboratory of Molecular Biology, UK)
What is the best energy for Cryo-EM?
- 10:30 – 11:00 **Break**

New protein structures

Session Chair: Haitao Li

- 11:00 – 11:30 **Dinshaw Patel** (Memorial Sloan Kettering Cancer Center, USA)
Structural Biology of CRISPR-Cas Surveillance Complexes
- 11:30 – 12:00 **Liang Tong** (Columbia University, USA)
Cryo-EM studies of the human pre-mRNA 3' - end processing machinery
- 12:00 – 14:00 **Lunch and Break**

New protein structures (Cont'd)

Session Chair: Zhucheng Chen

- 14:00 – 14:30 **Zihe Rao** (Tsinghua University, China)
Architecture of ASFV and implications for viral assembly and vaccine design
- 14:30 – 15:00 **Peijun Zhang** (University of Oxford, UK)
Structural basis of curved asymmetric HIV-1 capsid assembly
- 15:00 – 15:30 **Liz Carpenter** (University of Oxford, UK)
Using Structural biology of human membrane proteins to understand the causes of genetic diseases
- 15:30 – 16:00 **Break**

New protein structures (Cont'd)

Session Chair: Dinshaw Patel

- 16:00 – 16:30 **Wei Yang** (National Institutes of Health, USA)
Structural assembly and reaction chemistry of DNA replication
- 16:30 – 17:00 **Dale B. Wigley** (Imperial College London, UK)
Structural and Mechanistic Studies of the SWR1 Histone Exchange Complex
- 17:00 – 17:30 **Zhucheng Chen** (Tsinghua University, China)
“DNA wave”, a unified mechanism of ATP-dependent chromatin remodeling
- 17:30 – 18:00 **Haitao Li** (Tsinghua University, China)
Mammalian ALKBH1 serves as an *N*⁶-mA Eraser of Unpairing DNA
- 18:30 – **Dinner**

Day 3 Monday, November 11, Auditorium, Tsinghua University**Functional mechanism – splicing****Session Chair: Xiang-Dong Fu**

08:30 – 09:00 **Phillip A. Sharp** (Massachusetts Institute of Technology, USA)

Condensates are Critical for Transcription and RNA Splicing

09:00 – 09:30 **Yigong Shi** (Tsinghua University, China)

Title:

09:30 – 10:00 **Juan Valcárcel Juárez** (ICREA and Center for Genomic Regulation, Spain)

The core spliceosome self-regulatory network

10:00 – 10:30 **Zefeng Wang** (Chinese Academy of Sciences, China)

Increasing the coding complexity of human genome at RNA level

10:30 – 11:00 **Break**

Functional mechanism – splicing (Cont'd)**Session Chair: Yigong Shi**

11:00 – 11:30 **Xiaohua Shen** (Tsinghua University, China)

U1 snRNP regulates chromatin retention of noncoding RNAs

11:30 – 12:00 **Xiang-Dong Fu** (University of California, San Diego, USA)

Co-Transcriptional RNA Processing: New Regulatory Paradigms and Mechanisms

12:00 – 12:30 **Jonathan P. Staley** (University of Chicago, USA)

Nascent lariat intermediate profiling reveals intricate features of human co-transcriptional splicing

12:30 – 12:40 **Closing Remarks by Prof. Yigong Shi**