

## PROGRAM

MONDAY, April 23—7:00 PM

### Welcome Remarks

**Wensheng Wei**  
Peking University

### KEYNOTE SPEAKER

**Introduction by: Jens Boch**, Leibniz Universität Hannover, Germany

#### **Strategies for precision gene editing in plants**

Jian-Kang Zhu [35'+10']

Presenter affiliation: CAS, Shanghai, China; Purdue University, West Lafayette, Indiana.

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TUESDAY, April 24—9:00 AM

#### **SESSION 2** NEW DEVELOPMENTS IN GENOME EDITING: METHODS AND TOOLS

**Chairperson: Jens Boch**, Leibniz Universität Hannover, Germany

#### **Genome-wide target specificity of CRISPR nucleases and deaminases**

Jin-Soo Kim [20'+10']

Presenter affiliation: Seoul National University, Seoul, Korea.

#### **Orthogonal Cas9-Cas9 fusions provide a versatile platform for precise genome editing in hematopoietic stem and progenitor cells**

Mehmet F. Bolukbasi, Pengpeng Liu, Benjamin P. Roscoe, Kevin Luk, Yuxuan Wu, Jing Zeng, Ankit Gupta, Nadia Amrani, Samantha Kwok, Lihua Julie Zhu, Erik J. Sontheimer, Daniel E. Bauer, Scot A. Wolfe [20'+10']

Presenter affiliation: UMass Medical School, Worcester, Massachusetts.

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**Therapeutic strategies via genome engineering—New approaches and new challenges**

Prashant Mali [20'+10']

Presenter affiliation: University of California San Diego, La Jolla, California.

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***Coffee / Tea Break***

**Genome editing using CRISPR-guided cytidine deaminase**

Xing Chang [20'+10']

Presenter affiliation: Shanghai Institutes for Biological Sciences, Shanghai, China.

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**Development of next-generation FnCpf1 for human genome editing**

Feng Gu [10'+5']

Presenter affiliation: Wenzhou Medical University, Wenzhou, China.

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**Enhanced mammalian genome editing by new Cpf1 orthologues and optimized crRNA scaffolds**

Fei Teng, Qi Zhou, Wei Li [10'+5']

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

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TUESDAY, April 24—2:00 PM

**SESSION 3** POSTER SESSION

**Spermatogenic cell-specific gene mutation in mice *via* CRISPR-Cas9**

Meizhu Bai, Dan Liang, Yinghua Wang, Qing Li, Yuxuan Wu, Jinsong Li

Presenter affiliation: Shanghai Tech University, Shanghai, China; CAS Center for Excellence in Molecular Cell Science, Institute of Biochemistry and Cell Biology, China; Shanghai Institutes for Biological Sciences, Chinese Academy of Science, Shanghai, China.

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**Bacteria-free minicircle DNA system to generate integration free CAR-T cells**

Chen Cheng, Na Tang, Haoyi Wang

Presenter affiliation: Chinese Academy of Sciences, Beijing, China; University of Science and Technology of China, Hefei, China.

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<b>Targeting PCSK9 genome editing in human, monkey and mouse embryos by CRISPR-Cas9 system</b>	
<u>Feifei Cheng</u> , Shuo Song, Xiaoqing Zhou, Jinzhou Qin, Jiankui He	
Presenter affiliation: Tsinghua University, Shenzhen, China.	9
<b>Genome editing of the intrinsic yield genes PLA1, NGAL and GA20OX2 in rice</b>	
<u>Jonas De Saeger</u> , Stan Van Praet, Lena Vlaminck, Debbie Botterman, Stephen Depuydt, Dirk Inzé	
Presenter affiliation: Universiteit Gent, Gent, Belgium; Ghent University Global Campus, Incheon, South Korea.	10
<b>Improved sgRNA design in bacteria via genome-wide activity profiling</b>	
<u>Jiahui Guo</u> , Tianmin Wang, Changge Guan, Bing Liu, Cheng Luo, Zhen Xie, Chong Zhang, Xin-Hui Xing	
Presenter affiliation: Tsinghua University, Beijing, China.	11
<b>Identification of alternative receptors for <i>Clostridium difficile</i> toxin B through high-throughput CRISPR screen</b>	
<u>Shengjie Guo</u> , Yiou Chen, Jingze Liu, Wensheng Wei	
Presenter affiliation: Peking University, Beijing, China.	12
<b>One-step and efficient generation of conditional alleles with Geno-tagging through NHEJ-mediated knock-in using CRISPR/Cas system</b>	
Wenyuan Li, Yage Zhang, <u>Bingzhou Han</u> , Xiangjun Tong, Bo Zhang	
Presenter affiliation: Peking University, Beijing, China.	13
<b>Comparison of various nuclear localization signal-fused Cas9 proteins and Cas9 mRNA for genome editing in zebrafish</b>	
<u>Peinan Hu</u> , Xueying Zhao, Qinghua Zhang, Weiming Li, Yao Zu	
Presenter affiliation: Shanghai Ocean University, Shanghai, China.	14
<b>Cationic polymer-mediated CRISPR/Cas9 plasmid delivery for genome editing</b>	
Zhen Zhang, Tao Wan, Yuan Ping, Fu-Jian Xu, <u>Junju Huang</u>	
Presenter affiliation: Sun Yat-sen University, Guangzhou, China.	15
<b>Precise A/T-to-G/C base editing in plants</b>	
<u>Beum-Chang Kang</u> , Jae-Young Yun, Je Wook Woo, Sang-Tae Kim, Su-Ji Bae, Youjin Shin, Minkyung Choi, Jahee Ryu, Jin-Soo Kim	
Presenter affiliation: Institute for Basic Science, Daejeon, South Korea; University of Science and Technology, Daejeon, South Korea.	16

**Deep mutational scanning of mammalian loci using CRISPR/Cas9 and multiplex homology-directed repair**

Martijn Kelder, Abigail Wilson, Dinesh Soares, Fiona Kilanowski, Ian Adams, Andrew Wood

Presenter affiliation: University of Edinburgh, Edinburgh, United Kingdom.

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**Arrayed CRISPR screen with image-based assay reliably uncovers host genes required for coxsackievirus infection**

Heon Seok Kim, Chonsaeng Kim, Jin-Soo Kim

Presenter affiliation: Seoul National University, Seoul, South Korea; Institute for Basic Science, Seoul, South Korea.

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**Questioning unexpected CRISPR off-target mutations in vivo**

Sang-Tae Kim, Jeongbin Park, Daesik Kim, Kyoungmi Kim, Matthias Schlesner, Jin-Soo Kim

Presenter affiliation: Institute for Basic Science, Daejeon, South Korea.

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**Application of CRISPR/Cas to increase glucoraphnin contents in broccoli**

Sanghyeob Lee, Byungho Hwang, Youngcheon Kim

Presenter affiliation: Sejong University, Seoul, South Korea.

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**Somatic correction of Phenylketonuria related gene mutation through Cas9 mediated genome editing in mice model**

Shuming Yin, Tingting Shao, Liren Wang, Mingyao Liu, Dali Li

Presenter affiliation: East China Normal University, Shanghai, China.

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**Feedback regulation between initiation and maturation networks orchestrates the chromatin dynamics of epidermal lineage commitment**

Lingjie Li, Yong Wang, Jessica L. Torkelson, Gautam Shankar, Jillian M. Pattison, Hanson H. Zhen, Zhana Duren, Fengqin Fang, Sandra P. Melo, Samantha N. Piekos, Jiang Li, Eric J. Liaw, Lang Chen, Rui Li, Marius Wernig, Wing H. Wong, Howard Y. Chang, Anthony E. Oro

Presenter affiliation: Stanford University School of Medicine, Palo Alto, California.

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**A new fusion protein enables precise editing of single bases in A/T-rich regions of the human genome**

Xiaosa Li, Ying Wang, Yajing Liu, Bei Yang, Xiao Wang, Jia Wei, Zongyang Lu, Yuxi Zhang, Jing Wu, Xingxu Huang, Li Yang, Jia Chen

Presenter affiliation: ShanghaiTech University, Shanghai, China; Chinese Academy of Sciences, Shanghai, China; University of Chinese Academy of Sciences, Beijing, China.

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- Identification of a stress granule formation pathway using yeast imaging-based phenomic screening approaches**  
Beidong Liu  
 Presenter affiliation: University of Gothenburg, Gothenburg, Sweden. 24
- Precise modulation of genome functions and live tracking of genome regions in CRISPR/dCas9 knockin mice**  
Guangqing Lu, Jinzhi Duan, Yu Hong  
 Presenter affiliation: National Institute of Biological Sciences, Beijing, China. 25
- Efficient CRISPR/Cas9-mediated gene targeting in Arabidopsis using sequential transformation**  
Daisuke Miki, Wenxin Zhang, Wenjie Zeng, Zhengyan Feng, Jian-Kang Zhu  
 Presenter affiliation: Chinese Academy of Sciences, Shanghai , China. 26
- Adenine base editing in mice and human cells with extended guide RNAs**  
Seuk-Min Ryu, Kyoungmi Kim, Kayeong Lim, Gayoung Baek, Heon Seok Kim, Da-eun Kim, Hyunji Lee, Eugene Chung, Jin-Soo Kim  
 Presenter affiliation: Institute for Basic Science, Seoul, South Korea; Seoul National University, Seoul, South Korea. 27
- Specific detection of herbicide-resistant gene, mEPSPS derived from maize in commercialized biotech crops**  
Kongsik Shin, Myungho Lim, Dohwon Yun, Hyunsuk Cho  
 Presenter affiliation: National Institute of Agricultural Sciences, Jeonju, South Korea. 28
- Pooled CRISPR interference screening enables genome-scale functional genomics study in bacteria with superior performance**  
Tianmin Wang, Changge Guan, Jiahui Guo, Bing Liu, Yanan Wu, Zhen Xie, Chong Zhang, Xin-Hui Xing  
 Presenter affiliation: Tsinghua University , Beijing, China. 29
- Mapping functional elements at single amino acid resolution in human cells by CRISPR-Cas9 screening**  
Yinan Wang, Yuexin Zhou, Xinyi Zhang, Di Yue, Yeting Qiu, Wensheng Wei  
 Presenter affiliation: Peking University, Beijing , China. 30
- Targeted gene activation in vivo via AG-haESCs**  
Yinghua Wang, Jinsong Li  
 Presenter affiliation: Chinese Academy of Sciences, Shanghai, China. 31

<b>Synthetic gene circuits regulated CAR-T cell therapy in curation of human cancer</b>	
<u>Zhikai Wang</u> , Yuchen Liu, Wei Chen, Weiren Huang, Zhiming Cai	
Presenter affiliation: Shenzhen Second People's Hospital, The First Affiliated Hospital of Shenzhen University, Shenzhen, China.	32
<b>DNA repair regulates the temporal coding of immediate early gene expression required for the fear memory consolidation</b>	
<u>Wei Wei</u> , Xiang Li, Paul R. Marshall, Laura J. Leighton, Esmi L. Zajaczkowski, Timothy W. Bredy	
Presenter affiliation: Queensland Brain Institute, Brisbane, Australia.	33
<b>Enhanced base editing by co-expression of free uracil DNA glycosylase inhibitor</b>	
Lijie Wang, Wei Xue, Lei Yan, Xiaosa Li, Jia Wei, Miaomiao Chen, Jing Wu, <u>Bei Yang</u> , Li Yang, Jia Chen	
Presenter affiliation: ShanghaiTech University, Shanghai, China.	34
<b>Pre-editing screening for engineered nucleases by primer extension-mediated sequencing</b>	
<u>Jianhang Yin</u> , Mengzhu Liu, Yang Liu, Tingting Gan, Weiwei Zhang, Jiazhi Hu	
Presenter affiliation: Peking-Tsinghua Center for Life Sciences, Peking University, Beijing, China.	35
<b>Drought-tolerant transgenic rice—Its biosafety assessment and molecular biological characteristics</b>	
<u>Dohwon Yun</u> , Sooin Sohn, Ancheol Chang, Kongsik Shin, Sungdug Oh	
Presenter affiliation: National Institute of Agricultural Sciences, Jeonju, South Korea.	36
<b>Identification of TRIM26 as a novel host factor involved in HCV nucleocapsid uncoating by genome-wide CRISPR screens</b>	
<u>Guigen Zhang</u> , Qiheng Li, Yu Guo, Zhuo Zhou, Linqi Zhang, Wensheng Wei	
Presenter affiliation: Peking University, Beijing, China.	37
<b>High efficient double strand DNA knock-in with homology direct repair and recombinase-mediated cassette exchange</b>	
<u>Yang Zhao</u> , Ji-Hyun Bae, Yoo-Jin Chang, Jeong-Pil Han, Yoon-Hoo Lee, Ok-Jae Goo, Su-Cheong Yeom	
Presenter affiliation: Seoul National University, Pyeongchang, South Korea.	38

TUESDAY, April 24—4:30 PM

## Chinese Tea and Beer Tasting

TUESDAY, April 24—7:00 PM

### SESSION 4 MECHANISTIC STUDIES RELATED TO GENOME EDITING

**Chairperson:** Wensheng Wei, Peking University, Beijing, China

#### **The mechanisms of precise genome editing using oligonucleotide donors**

Yinan Kan, Eric A. Hendrickson [20'+10']

Presenter affiliation: University of Minnesota Medical School, Minneapolis, Minnesota. 39

#### **The mechanism of SpyCas9 inhibition by an anti-CRISPR protein**

Zhiwei Huang [20'+10']

Presenter affiliation: Harbin Institute of Technology, Harbin, China. 40

#### **Precise and predictable CRISPR DNA-fragment engineering reveals principles of Cas9-mediated nucleotide insertion**

Jia Shou, Jinhuan Li, Yingbin Liu, Qiang Wu [10'+5']

Presenter affiliation: Shanghai Jiao Tong University, Shanghai, China. 41

#### **Molecular mechanism of CRISPR and structure-based development of genome editing tool towards medical applications**

Osamu Nureki [20'+10']

Presenter affiliation: The University of Tokyo, Tokyo, Japan. 42

#### **The molecular architecture for RNA-guided RNA cleavage by Cas13a**

Liang Liu, Xueyan Li, Jun Ma, Lilan You, Jiuyu Wang, Min Wang,

Xinzheng Zhang, Yanli Wang [20'+10']

Presenter affiliation: Institute of Biophysics, Chinese Academy of Sciences, Beijing, China; University of Chinese Academy of Sciences, Beijing, China; Collaborative Innovation Center of Genetics and Development, Shanghai China. 43

**SESSION 5** HIGH-THROUGHPUT SCREENING

**Chairperson:** **Jin-Soo Kim**, Seoul National University, Seoul, Korea

**Development of new CRISPR/Cas9-based tools to study drug interactions through knockout and directed evolution**

Michael Bassik [20'+10']

Presenter affiliation: Stanford University, Stanford, California.

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**Mapping functional elements at single amino acid resolution in human cells by CRISPR-Cas9 screening**

Yinan Wang, Yuexin Zhou, Xinyi Zhang, Di Yue, Yeting Qiu,

Wensheng Wei [20'+10']

Presenter affiliation: Peking University, Beijing, China.

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**Base-editing-mediated screening in mice through androgenetic haploid embryonic stem cells identify critical amino acids for protein function**

Qing Li, Yangjing Li, Suming Yang, Shuo Huang, Wei Tang, Xiwen

Lou, Qi Yin, Lei Lu, Huijuan Shi, Hongyang Wang, Yong Chen,

Jinsong Li [10'+5']

Presenter affiliation: CAS Center for Excellence in Molecular Cell Science, Chinese Academy of Sciences, Shanghai, China.

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**Splicing-targeting empowers genome-scale screen of functional long noncoding RNAs in human cells**

Ying Liu, Zhongzheng Cao, Yinan Wang, Yu Guo, Ping Xu, Pengfei

Yuan, Zhiheng Liu, Yuan He, Wensheng Wei [10'+5']

Presenter affiliation: Peking University, Beijing, China.

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**Coffee / Tea Break**

**Primate gene editing and human complex disease study**

Weizhi Ji [20'+10']

Presenter affiliation: The Institute of Primate Translational Medicine, Kunming University of Science and Technology, Kunming, China.

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**CRISPR/Cas9-based double knockout screening reveals genetic interactions involved in drug resistance in melanoma cells**

Yu Yu, Minzhen Tao, Wei Li, Bing Liu, Xiaohua Lian, Zhen Xie [10'+5']

Presenter affiliation: Tsinghua University, Beijing, China.

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**Guide RNAs with embedded barcodes boosts CRISPR-pooled screens**

Shiyou Zhu, Zhongzheng Cao, Zhiheng Liu, Yuan He, Yinan Wang, Pengfei Yuan, Wei Li, Wensheng Wei [10'+5']

Presenter affiliation: Peking University, Beijing, China.

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WEDNESDAY, April 25—1:30 PM

**Visit to Old Suzhou**

WEDNESDAY, April 25—7:00 PM

**SESSION 6**      REPURPOSING OF GENOME EDITING

**Chairperson:**      **Scot A. Wolfe**, UMass Medical School, Worcester, Massachusetts, USA

**ADAR-mediated RNA editing**

Jin Billy Li [20'+10']

Presenter affiliation: Stanford University, Stanford, California.

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**Base editing from bacteria to plants**

Keiji Nishida, Akihiko Kondo [20'+10']

Presenter affiliation: Kobe University, Kobe, Japan.

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**Developing genome editing and genomic analysis technology for interrogating human diseases**

Le Cong [20'+10']

Presenter affiliation: Broad Institute of MIT & Harvard, Cambridge, Massachusetts.

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**CRISPR application in animals and gene therapies**

Hui Yang [10'+5']

Presenter affiliation: Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China.

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**Allele-specific genome editing of imprinting genes by preferentially targeting non-methylated loci using *Staphylococcus aureus* Cas9 (SaCas9)**

YaJing Liu, JiaNan Li, ChangYang Zhou, YunBo Qiao, Hui Yang, XingXu Huang [10'+5']

Presenter affiliation: ShanghaiTech University, ShangHai, China.

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THURSDAY, April 26—9:00 AM

**SESSION 7 GENOME EDITING IN ANIMALS AND PLANTS**

**Chairperson:** **Jian-kang Zhu**, Chinese Academy of Sciences, Shanghai, China; Purdue University, West Lafayette, Indiana, USA

**Editing plant genomes for pathogen resistance**

Stefanie Mücke, Sebastian Becker, Jens Boch [20'+10']

Presenter affiliation: Leibniz Universität Hannover, Hannover, Germany.

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**Genome editing with programmable nucleases in crop plants**

Caixia Gao [20'+10']

Presenter affiliation: Chinese Academy of Sciences, Beijing, China.

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**“Artificial sperm”-mediated gene editing**

Jinsong Li [20'+10']

Presenter affiliation: Institute of Biochemistry and Cell Biology, CAS, Shanghai, China.

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**Coffee / Tea Break**

**Manipulating plant RNA silencing pathways to improve the gene editing efficiency of CRISPR/Cas9 systems**

Yanfei Mao, Xiaoxuan Yang, Zhengjing Zhang, Yiting Zhou, Jian-kang Zhu [10'+5']

Presenter affiliation: Chinese Academy of Sciences, Shanghai, China.

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**Highly efficient A•T to G•C conversion in mouse and rat embryos via adenine base editors**

Lei Yang, Xiaohui Zhang, Liren Wang, Shuming Yin, Mingyao Liu, Dali Li [10'+5']

Presenter affiliation: East China Normal University, Shanghai, China.

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**In vivo simultaneous transcriptional activation of multiple genes in the brain using CRISPR-dCas9-activator transgenic mice**

Haibo Zhou, Junlai Liu, Changyang Zhou, Ni Gao, Zhiping Rao, He Li, Xinde Hu, Changlin Li, Xuan Yao, Xiaowen Shen, Yidi Sun, Yu Wei, Fei Liu, Wenqin Ying, Junming Zhang, Cheng Tang, Pengyu Huang, Hui Yang [10'+5']

Presenter affiliation: Chinese Academy of Sciences, Shanghai, China. 61

THURSDAY, April 26—2:00 PM

**SESSION 8** ALL THINGS CONSIDERED I

**Chairperson:** **Billy Jin Li**, Stanford University School of Medicine, Stanford, California, USA

**Highly accurate prediction of CRISPR-Cpf1 activity**

Hui Kwon Kim, Seonwoo Min, Myungjae Song, Sungroh Yoon, Hyongbum (Henry) Kim [20'+10']

Presenter affiliation: Yonsei University College of Medicine, Seoul, South Korea. 62

**CRISPR/Cas-assisted genetics in intestinal organoids**

Bon-Kyoung Koo [20'+10']

Presenter affiliation: The Austrian Academy of Sciences, Vienna, Austria. 63

**APOBEC—From mutator to editor**

Jia Chen [20'+10']

Presenter affiliation: ShanghaiTech University, Shanghai, China. 64

**Evaluating the safety of germline genome editing in human, monkey, and mouse embryos**

Jiankui He [10'+5']

Presenter affiliation: South University of Science and Technology, Shenzhen, China. 65

**APOBEC3 induces mutations during repair of CRISPR–Cas9-generated DNA breaks**

Liqun Lei, Hongquan Chen, Wei Xue, Bei Yang, Bian Hu, Jia Wei, Lijie Wang, Yiqiang Cui, Wei Li, Jianying Wang, Lei Yan, Wanjing Shang, Jimin Gao, Min Zhuang, Xingxu Huang, Bin Shen, Li Yang, Jia Chen [10'+5']

Presenter affiliation: ShanghaiTech University, Shanghai, China; Chinese Academy of Sciences, Shanghai, China; University of Chinese Academy of Sciences, Beijing, China.

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THURSDAY, April 26—6:00 PM

**COCKTAILS and BANQUET**

FRIDAY, April 27—9:00 AM

**SESSION 9** ALL THINGS CONSIDERED II

**Chairpersons:** **Zhiwei Huang**, Harbin Institute of Technology, Harbin, China  
**Zhuobin Liang**, Yale University, New Haven, Connecticut, USA

**Beyond editing—Exploring and engineering a living genome using a dead molecule**

Stanley Qi [20'+10']

Presenter affiliation: Stanford University, Stanford, California.

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**Precise editing at DNA replication forks enables nuclease-independent multiplex genome engineering in eukaryotes**

Zhuobin Liang, Edward M. Barbieri, Paul Muir, Benjamin O. Akhuetie-Oni, Christopher Yellman, Farren J. Isaacs [10'+5']

Presenter affiliation: Yale University, New Haven, Connecticut.

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**Recombinase-mediated site-specific integration in rice**

Ruyu Li, Zhiguo Han, Mingyong Zhang, Meiru Li, Zhenzhen Li, Ping Wang, Qian Yin, David W. Ow [10'+5']

Presenter affiliation: South China Botanical Garden, CAS, Guangzhou, China.

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**Focal base editing tool and its application in antibody affinity maturation**

Liu Liu, Min Huang, Feilong Meng [10'+5']

Presenter affiliation: Institute of Biochemistry and Cell Biology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, China.

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**Coffee / Tea Break**

**Enhanced specificity and efficiency of CRISPR/Cas9 for precise genome editing**

Qingzhou Ji [20'+10']

Presenter affiliation: MilliporeSigma, St. Louis, Missouri.

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**Generation of *aldh1a2* conditional knockout zebrafish**

Chun Gu, Zhaojunjie Zhang, Nan Li, Zhangji Dong, Qingshun Zhao [10'+5']

Presenter affiliation: Nanjing University, Nanjing, China.

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**Study the mechanistic factors regulating telomere dynamics *in vivo* by CRISPRs**

Deqiang Han, Guangqing Lu, Jinzhi Duan, Yu Hong, Qingtao Hu, Xueying Mai, Yu Zhang [10'+5']

Presenter affiliation: National Institute of Biological Sciences, Beijing, China.

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