

Abstracts of papers presented  
at the 2025 Cold Spring Harbor Asia Conference

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# STEM CELL, AGING AND REJUVENATION

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September 15–September 19, 2025

Arranged by

Jing-Dong Jackie Han, *Peking University*

Seung-Jae Lee, *Korea Advanced Institute of Science and Technology*

Hao Li, *University of California, San Francisco*

Zhou Songyang, *Sun Yat-Sen University*

Yousin Suh, *Columbia University*



Cold Spring Harbor Conferences Asia  
Cold Spring Harbor Laboratory



**STEM CELL, AGING AND REJUVENATION**  
Monday, September 15 – Friday, September 19, 2025

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Monday	7:00 pm	• <b>Keynote Speaker I</b> 1 Quantitative Biology of Aging
Tuesday	9:00 am	2 Reproductive Aging and Diseases
Tuesday	2:00 pm	<b>Flash Talks and Poster Session</b>
Tuesday	3:00 pm	<i>Chinese Tea and Beer Tasting</i>
Tuesday	7:00 pm	3 Senescence and Rejuvenation I
Wednesday	9:00 am	• <b>Keynote Speaker II</b> 4 Mechanisms of Longevity
Wednesday	1:30 pm	<i>Visit to Old Suzhou*</i>
Wednesday	7:00 pm	5 Systems Biology of Aging
Thursday	9:00 am	6 Genome Integrity and Aging
Thursday	2:00 pm	7 Cellular Reprogramming and Stem Cell Aging
Thursday	6:00 pm	<i>Cocktails and Banquet</i>
Friday	9:00 am	8 Senescence and Rejuvenation II

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Oral presentation sessions are located in the CSHA Auditorium  
Poster session and Chinese Tea & Beer Tasting are in the Lake Front Hall.

Cocktail social hour is held outside in the Suz Garden.

Old Suzhou visits depart from the CSHA lobby

*\*optional tour requires additional fee.*

Meal locations and times are as follows:

Lunch: Main Cafeteria 12:00pm - 1:30pm

Dinner: Main Cafeteria 6:00pm - 7:30pm

Banquet: Suz Garden 7:00pm

More information will be available at CSHA office.

*(Map at the end of this abstract book)*

## PROGRAM

MONDAY, September 15—7:00 PM

### SESSION 1 QUANTITATIVE BIOLOGY OF AGING

**Chairperson:** **Hao Li**, University of California-San Francisco,  
San Francisco, California, USA

#### KEYNOTE SPEAKER

##### **Young blood for old brains**

Tony Wyss-Coray [35'+10']

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

1

##### **Mathematical principles of aging**

Uri Alon [20'+10']

Presenter affiliation: Weizmann Institute of Science, Rehovot, Israel.

##### **Compression of morbidity by interventions that steepen the survival curve**

Yifan Yang, Avi Mayo, Tomer Levy, Naveh Raz, Daniel F. Jarosz, Ben  
Shenhar, Uri Alon [10'+5']

Presenter affiliation: Weizmann Institute of Science, Rehovot, Israel;  
Westlake University, Hangzhou, China.

2

TUESDAY, September 16—9:00 AM

### SESSION 2 REPRODUCTIVE AGING AND DISEASES

**Chairpersons:** **Xue Jiao**, Shandong University, Jinan, China  
**Hwee Goon Tay**, Duke-NUS Medical School, Singapore

##### **Mechanisms of ovarian aging—A target for geroprotection in women**

Yousin Suh [20'+10']

Presenter affiliation: Columbia University, New York, New York.

3

- The genetics of reproductive ageing**  
Anna Murray [20'+10']  
 Presenter affiliation: University of Exeter, Exeter, United Kingdom. 4
- Developing therapeutic strategies targeting ovarian fibrosis to extend female reproductive longevity**  
Francesca E. Duncan [20'+10']  
 Presenter affiliation: Northwestern University, Chicago, Illinois. 5
- Break**
- Rejuvenating aged oocytes for female reproductive longevity**  
HaiYang Wang [20'+10']  
 Presenter affiliation: Nanjing University, Nanjing, China. 6
- Sex disparities impacts atherosclerotic cardiovascular risk burden on cognitive health**  
Yanhong Dong, Zaylea Kua, Lijun Zuo [10'+5']  
 Presenter affiliation: National University of Singapore, Singapore. 7
- Stress granule clearance mediated by V-ATPase-interacting protein NCOA7 mitigates ovarian aging**  
 Nianyu Li, Ting Dong, Hanbing Zhu, Yingying Qin, Xue Jiao [10'+5']  
 Presenter affiliation: Shandong University, Jinan, China. 8
- Or10j5 increases muscle protein synthesis and skeletal muscle performance in age-related sarcopenia**  
 Ji-Sun Kim, Subin Choi, Yena Lee, Sungwon Shin, Ye Eun Yoon, Jiping Yang, Indra Heckenbach, Morten Scheibye-Knudsen, Yousin Suh, Sung-Joon Lee [10'+5']  
 Presenter affiliation: Korea University, Seoul, South Korea; Korea University, BK21 FOUR Institute of Precision Public Health, Interdisciplinary Program in Precision Public Health, South Korea. 9
- A chemically defined, laminin-based stem cell protocol for deriving photoreceptor and ganglion progenitors to address age-related macular degeneration and glaucoma**  
Hwee Goon Tay, Wei Sheng Tan, Jing Guo, Swarnaseetha Adusumalli, Hua Huang, Yingying Chung, Yixin Lai, Ming Yue Yeong, Bo Bo Sai [10'+5']  
 Presenter affiliation: Duke-NUS Medical School, Singapore; Singapore Eye Research Institute, Singapore; National University of Singapore, Singapore. 10

**FLASH TALKS and POSTER SESSION**

**Targeting endothelial cell senescence with small-molecule compounds attenuates atherosclerosis**

Xiaolu Bao, Yinglong Zhao, Alian Zhang, Xin Wan, Honghui Wang, Changqian Wang, Junfeng Zhang, Alex Chia Yu Chang

Presenter affiliation: Shanghai Jiao Tong University School of Medicine - Ninth People's Hospital, Shanghai, China.

11

**Glibenclamide targets MDH2 to relieve aging phenotypes through metabolism-regulated epigenetic modification**

Zhifan Mao, Wenwen Liu, Rong Zou, Baoli Li, Zelan Hu, Jian Li

Presenter affiliation: East China University of Science and Technology, Shanghai, China.

12

**Long intergenic noncoding RNA linc-8 contributes to longevity via sequestering translation initiation factor 3 subunit B**

Hyunwoo C. Kwon, JiSoo Park, Seokjin Ham, Hanseul Lee, Sieun S. Kim, Hae-Eun H. Park, Jooyeon Sohn, Eun Ji E. Kim, Dae-Eun Jeong, Sujeong Kwon, Yoonji Jung, Sangsoon Park, Jongsun Lee, Yujin Lee, Seon Woo A. An, Seung-Jae V. Lee

Presenter affiliation: Korea Advanced Institute of Science and Technology, Daejeon, South Korea.

13

**Distinct spatial-temporal regulation of paralogous genes in aging**

Gee-Yoon Lee, Hanseul Lee, Hyemin Min, Seung-Jae V. Lee

Presenter affiliation: Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea.

14

**Cytosolic m<sup>6</sup>A modification by METT-10/METTL16 limits maximal anti-aging benefits of dietary restriction in *Caenorhabditis elegans***

Hanseul Lee, Murat Artan, Sieun S. Kim, Seokjin Ham, Jooyeon Sohn, Eunseok Kang, Sungmin Lee, Ki-Jun Yoon, Seung-Jae V. Lee

Presenter affiliation: Korea Advanced Institute of Science and Technology, Daejeon, South Korea.

15

**Transiently formed nucleus-to-cilium microtubule arrays mediate senescence initiation in a KIFC3-dependent manner**

Jieluc H. Robichaud, Yingyi Zhang, Chuan Chen, Kai He, Yan Huang, Xu Zhang, Xiaobo Sun, Xiaoyu Ma, Yuan Li, Zheng Dong, Nathan K. LeBrasseur, Kun Ling, Jinghua Hu

Presenter affiliation: Mayo Clinic, Rochester, Minnesota.

16

**Safely targeting uPAR-positive senescent cells using highly selective reengineered anthrax toxins**

Jie Liu, Shihui Liu

Presenter affiliation: University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.

17

**Targeting RhoA activity reprograms aged hematopoietic stem cells**

Sara Montserrat-Vazquez, Eva Mejía-Ramírez, Pablo Iañez Picazo, Barbara Walter, Verena Ruprecht, Yi Zheng, Paula Petrone, M. Carolina Florian

18

Presenter affiliation: Bellvitge Institute for Biomedical Research (IDIBELL), L'Hospitalet de Llobregat, Spain.

**ELO-6 expression predicts longevity in isogenic populations of *Caenorhabditis elegans***

Weilin Kong, Guoli Gu, Tong Dai, Beibei Chen, Yanli Wang, Zheng Zeng, Mintie Pu

Presenter affiliation: Yunnan University, Kunming, China.

19

**Natural senotherapeutics—Screening of Korean food code-approved extracts for senolytic activity in senescent myoblasts**

Ye Eun Yoon, Daehyeon Sim, Yebean Kim, Ji-Sun Kim, Morten Scheibye-Knudson, Yousin Suh, Sung-Joon Lee

Presenter affiliation: Korea University, Seoul, South Korea.

20

**CDK8 inhibition for rejuvenating aged hematopoietic stem cells**

Laia Solé Castilla, Rebecca Andersson, Sara Montserrat-Vazquez, Javier Lozano, Eva Mejía-Ramírez, Carolina M. Florian

Presenter affiliation: The Bellvitge Institute for Biomedical Research (IDIBELL), L'Hospitalet de Llobregat, Barcelona, Spain.

21

**Germline-specific inhibition of mRNA translation delays aging via repressing a conserved chitinase gene in *C. elegans***

Yiyan Zhang, Di Chen

Presenter affiliation: Nanjing University, Nanjing, China; Zhejiang University, Haining, China.

22

**Multiomeric single-cell perturbation screens reveal critical regulatory lncRNAs of senescence**

Shouxuan Zhu, Sunyang Ying, Jing-Dong Jackie Han

Presenter affiliation: Peking University, Beijing, China.

23

TUESDAY, September 16—3:00 PM

### Chinese Tea and Beer Tasting

TUESDAY, September 16—7:00 PM

#### SESSION 3 SENESCENCE AND REJUVENATION I

**Chairpersons:** **Chanhee Kang**, Seoul National University, Seoul, Korea  
**Gyun Jee Song**, Catholic Kwandong University, Seo-gu, Korea

##### **Blood-based approaches to rejuvenating the aging brain**

Saul A. Villeda [20'+10']

Presenter affiliation: University of California, San Francisco, San Francisco, California.

24

##### **Systematic identification of single transcription factor perturbations that drive cellular and tissue rejuvenation**

Hao Li [20'+10']

Presenter affiliation: University of California San Francisco, San Francisco, California.

25

##### **Metabolic alterations in senescence—Mechanisms and opportunities for intervention**

Chanhee Kang [20'+10']

Presenter affiliation: Seoul National University, Seoul, South Korea.

26

##### **Synthetic and interaction proteomics for systems aging biology**

Tao Chen [10'+5']

Presenter affiliation: Absea Group, Berlin, Germany.

27

##### **Functional rejuvenation of senescent microglia—Unraveling the link to aging-related neurodegeneration in Alzheimer's disease**

Deepak Prasad Gupta, Young-Sun Lee Lee, Kyoung Sang Cho, Yong Kyoung Yoo, Gyun Jee Song [10'+5']

Presenter affiliation: International St. Mary's Hospital, Catholic Kwandong University, Incheon, South Korea.

28

**Dissecting mechanisms of age assimilation in heterochronic parabiosis**

Bohan Zhang, Alexander Tyshkovskiy, Jesse R. Poganik, Vadim N. Gladyshev [10'+5']

Presenter affiliation: Harvard Medical School/ Brigham and Women's Hospital, Boston, Massachusetts.

29

WEDNESDAY, September 17—9:00 AM

**SESSION 4** MECHANISMS OF LONGEVITY

**Chairpersons:** **Jackie Jing-Dong Han**, Peking University, Beijing, China  
**Di Chen**, Zhejiang University, Haining, China

**KEYNOTE SPEAKER**

**Targeting aging, longevity and rejuvenation**

Vadim N. Gladyshev [35'+10']

Presenter affiliation: Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts.

30

**The role of RNA homeostasis in aging and longevity**

Seung-Jae V. Lee [20'+10']

Presenter affiliation: Korea Advanced Institute of Science and Technology, Daejeon, South Korea.

31

**Extending healthspan in humans—Applying knowledge from longevity research**

Brian Kennedy [20'+10']

Presenter affiliation: National University of Singapore, Singapore.

32

**Break**

**Neuronal modulation of aging via an mRNA alternative splicing regulator**

Di Chen, Rui Li, Yiyang Zhang [10'+5']

Presenter affiliation: Zhejiang University, Haining, China.

33

**Ribonuclease DIS-3 promotes longevity by generating tRNA halves that interfere with translation**

Seokjun G. Ha, Jisoo Park, Hanseul Lee, Donghun Lee, Gee-Yoon Lee, Seokjin Ham, Sujeong Kwon, Sangsoon Park, Sieun S. Kim, Yoonji Jung, Jongsun Lee, Jooyeon Sohn, Seon Woo A. An, Heehwa G. Son, Wooseon Hwang, Yoon Ki Kim, Gwangrog Lee, Seung-Jae V. Lee [10'+5']

Presenter affiliation: Korea Advanced Institute of Science and Technology, Daejeon, South Korea. 34

**Phenylalanyl tRNA synthetase delays aging by preventing age-dependent accumulation of double-stranded RNAs**

Jooyeon Sohn, Moonhyeon Jeon, Seokjin Ham, Hanseul Lee, JinA Lim, JiSoo Park, Jongsun Lee, Yoonji Jung, Gee-Yoon Lee, Eunseok Kang, Dajeong Bong, Yoosik Kim, Seung-Jae V. Lee [10'+5']

Presenter affiliation: Korea Advanced Institute of Science and Technology, Daejeon, South Korea. 35

**Supplements and drugs reduce biological age in a cohort of exceptionally healthy individuals**

Kamil Pabis, Weilan Wang, Kumar Selvarajoo, Vincenzo Sorrentino, Jan Gruber, Yelena Budovskaya, Brian Kennedy [10'+5']

Presenter affiliation: Yong Loo Lin School of Medicine, Singapore; National University Health System, Singapore. 36

WEDNESDAY, September 17—1:30 PM

**Visit to Old Suzhou**

WEDNESDAY, September 17—7:00 PM

**SESSION 5 SYSTEMS BIOLOGY OF AGING**

**Chairpersons:** **Weiqi Zhang**, Chinese Academy of Sciences, Beijing, China  
**Zhengwei Xie**, PKU International Cancer Institute, Beijing, China

**Measure and intervene aging with AI**

Jing-Dong J. Han [20'+10']

Presenter affiliation: Peking University, Peking-Tsinghua Center for Life Sciences, Beijing, China. 37

**Single cell multi-omics landscape of development and ageing**  
Wolf U. Reik [20'+10']  
Presenter affiliation: Altos Labs UK, Cambridge, United Kingdom. 38

**Deciphering aging mechanisms and developing interventions based on aging clocks**  
Weiqi Zhang [20'+10']  
Presenter affiliation: China National Center for Bioinformation, Beijing, China; Beijing Institute of Genomics, Chinese Academy of Sciences, Beijing, China. 39

**Deep-learning-based cell morphological aging clocks reveal single-cell aging heterogeneity and decelerators**  
Dawei Meng, Shupeng Han, Jing-Dong J. Han [10'+5']  
Presenter affiliation: Peking University, Beijing, China. 40

**Massive mining of age-modifying interventions using autonomous AI agent**  
Kejun Ying, Alexander Tyshkovskiy, Alibek Moldakozhayev, Hanchen Wang, Tony Wyss-Coray, Vadim N. Gladyshev [10'+5']  
Presenter affiliation: Stanford University, Stanford, California; University of Washington, Seattle, Washington; Harvard Medical School and Brigham and Women's Hospital, Boston, Massachusetts. 41

**Efficacy and target prediction using artificial intelligence in aging**  
Zhengwei Xie [10'+5']  
Presenter affiliation: PKU International Cancer Institute, Beijing, China. 42

THURSDAY, September 18—9:00 AM

**SESSION 6** GENOME INTEGRITY AND AGING

**Chairpersons:** **Jing Yang**, University of Electronic Science and Technology of China, Chengdu, China  
**Alex Chang**, Shanghai Jiao Tong University School of Medicine - Ninth People's Hospital, Shanghai, China

**Somatic mutations and aging—From germline to stem cells and soma**  
Jan Vijg [20'+10']  
Presenter affiliation: Albert Einstein College of Medicine, New York, New York. 43

**Regulation of DNA damage repair in human cells**

Zhou Songyang [20'+10']

Presenter affiliation: Sun-Yat Sen University, Guangzhou, China.

44

**Mechanisms of longevity, lessons from long-lived mammals**

Vera Gorbunova [20'+10']

Presenter affiliation: University of Rochester, Rochester, New York.

45

***Break***

**Single-cell analysis of the somatic mutational landscape in human chondrocytes during aging and in osteoarthritis**

Peijun Ren, Chen Zheng, Yidan Pang, Yu Qiang, Shixiang Sun, Qiyang Wang, Wanxing Xu, Moonsook Lee, Zhenzhen Lu, Min Zhou, Jian He, Ningning Liu, Alexander Y. Maslov, Xiao Dong, Changqing Zhang, Junjie Gao, Jan Vijg [10'+5']

Presenter affiliation: Shanghai Jiao Tong University School of Medicine, Shanghai, China.

46

**Reduction of DNA topoisomerase Top2 reprograms the epigenetic landscape and extends health and life span across species**

Man Zhu, Bo Xian, Yi Zheng, Hao Li, Jing Yang [10'+5']

Presenter affiliation: University of Electronic Science and Technology of China, Chengdu, China.

47

**Ribosomal chaperone DNAJC2 alleviates the burden of co-translational quality control to balance nucleolar homeostasis and cellular senescence**

Jongmin Park, Youngim Yu, Heeju Park, Dongkeun Park, Hyunwoo Bang, Eunhee Kim, Jongbin Lee, Chunghun Lim [10'+5']

Presenter affiliation: Ulsan National Institute of Science and Technology, Ulsan, South Korea.

48

**RNA N6-methyladenosine eraser ALKBH5 drives stemness and chemoresistance of colorectal cancer through a m6A-FAM84A- $\beta$ -catenin axis**

Heming Zhou, Chichun Wong, Huarong Chen, Jun Yu [10'+5']

Presenter affiliation: The Chinese University of Hong Kong, Hong Kong, China.

49

**Endothelial dysfunction drives myocardial telomere attrition in heart failure with preserved ejection fraction**

Xin Wan, Hongmei Li, Shuying Huang, Xiaolu Bao, Suhui He, Yangyang Liu, Alian Zhang, Huili Zhang, Wei Han, Alex C. Chang [10'+5']

Presenter affiliation: Shanghai Jiao Tong University School of Medicine - Ninth People's Hospital, Shanghai, China.

50

THURSDAY, September 18—2:00 PM

**SESSION 7** CELLULAR REPROGRAMMING AND STEM CELL AGING

**Chairpersons:** **Vincenzo Sorrentino**, Yong Loo Lin School of Medicine, National University of Singapore, Singapore  
**Yu Ye**, Imperial College London, London, United Kingdom

**Reprogramming of cellular aging—Cell-intrinsic and cell-extrinsic effects**

Thomas Rando [20'+10']

Presenter affiliation: University of California, Los Angeles, Los Angeles, California.

**Reducing nuclear stretching rejuvenates aged hematopoietic stem cells**

Eva Mejia-Ramirez, Pablo Ianez-Picazo, Barbara Walter, Sara Montserrat-Vazquez, Francesca Matteini, Francesco Affuso, Stefan Wieser, Loïc Reymond, Jorge Castillo-Robles, Angel Raya, Verena Ruprecht, Yi Zheng, Paula Petrone, M. Carolina Florian [20'+10']

Presenter affiliation: Stem Cell Aging Group, Barcelona, Spain; Program for advancing the Clinical Translation of Regenerative Medicine of Catalonia, P-CMR[C], Barcelona, Spain; The Catalan Institution for Research and Advanced Studies (ICREA), Barcelona, Spain.

51

**Persistent ER stress in macrophages fuels age-related inflammation and vulnerability to infection**

Ying Liu [20'+10']

Presenter affiliation: Peking University, Beijing, China.

52

**Break**

**Modeling post-implantation development using stem cell-derived embryos in mouse and human**

Shaorong Gao [20'+10']

Presenter affiliation: Tongji University, Shanghai, China.

53

**NAD<sup>+</sup> metabolism for aging and disease—“Old” pathways as new targets for healthy longevity**

Vincenzo Sorrentino, Mathieu Membrez, Lucie Chanvillard, Sonia Karaz, Jerome Feige, Alessandra Tammaro [10'+5']

Presenter affiliation: Healthy Longevity Translational Research Programme, Yong Loo Lin School of Medicine, National University of Singapore, Singapore; Amsterdam UMC, University of Amsterdam, Amsterdam, the Netherlands.

54

**A novel type of gel-like proteasome condensate in healthy ageing and neurodegenerative conditions**

Yu Ye [10'+5']

Presenter affiliation: Imperial College London, London, United Kingdom.

55

**Single-cell methylome atlases of human and mouse kidneys identified epithelial cells as primary drivers of epigenetic aging**

Kun Zhang [10'+5']

Presenter affiliation: Altos Labs, San Diego, California.

56

**Unlocking organ-specific aging—The MOLE clock and its role in precision anti-aging solutions**

Guangyu Zhou, Chuan Ouyang, Yiding Zhang, Di Zhu [10'+5']

Presenter affiliation: Regenerative Bio, Hangzhou, China; Zhejiang University, Hangzhou, China.

57

THURSDAY, September 18—6:00 PM

**COCKTAILS and BANQUET**

**SESSION 8**      **SENESCENCE AND REJUVENATION II**

**Chairperson:**      **Yuhui Jiang**, East China University of Science and Technology, Shanghai, China

**TBI as a model of accelerated aging—Insights from myeloid cell dynamics**

Susanna Rosi [20'+10']

Presenter affiliation: University of California, San Francisco, San Francisco, California.

58

**New tricks of an old player—Senescence induced-cellular plasticity in health and disease**

Han Li [20'+10']

Presenter affiliation: Institut Pasteur, Paris, France.

59

**Genetically encoded probes elucidate NAD<sup>+</sup> regulation in metabolic signaling and cell growth**

Yuhui Jiang, Yuzheng Zhao [20'+10']

Presenter affiliation: School of Pharmacy, East China University of Science and Technology, Shanghai, China.

60

**Break**

**Role of the integrated stress response (ISR) in cellular senescence**

Alexander Kalinin, Ekaterina Zubkova, Mikhail Menshikov, Yelena Parfyonova [10'+5']

Presenter affiliation: National Medical Research Centre of Cardiology Named after Academician E.I. Chazov, Moscow, Russia; Lomonosov Moscow State University, Moscow, Russia.

61

**STING induced myocardial senescence and mitochondrial hyperfusion in ischemia/reperfusion injury**

Bin Li, Weiyao Xiong, Honghui Wang, Yunfeng Hua, Alex C. Chang [10'+5']

Presenter affiliation: Shanghai Jiao Tong University School of Medicine - Ninth People's Hospital, Shanghai, China.

62