

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

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# MOLECULAR MECHANISMS & PHYSIOLOGY OF UNCONVENTIONAL SECRETION

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March 10–March 14, 2025

Arranged by

Wei Guo, *University of Pennsylvania*

Min Goo Lee, *Yonsei University*

Walter Nickel, *Heidelberg University Biochemistry Center*

Yihong Ye, *National Institutes of Health (NIH)*

Min Zhang, *Tsinghua University*



Cold Spring Harbor Conferences Asia  
Cold Spring Harbor Laboratory



# MOLECULAR MECHANISMS AND PHYSIOLOGY OF UNCONVENTIONAL SECRETION

Monday, March 10 – Friday, March 14, 2025

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Monday	7:00 pm	<b>1</b> Keynote Session
Tuesday	9:00 am	<b>2</b> Mechanism of Unconventional Protein Secretion I
Tuesday	2:00 pm	<b>Poster Session</b>
Tuesday	3:00 pm	<i>Chinese Tea and Beer Tasting</i>
Tuesday	7:00 pm	<b>3</b> Mechanism of Unconventional Protein Secretion II
Wednesday	9:00 am	<b>4</b> Extracellular Vesicle Biogenesis
Wednesday	1:30 pm	<i>Visit to Old Suzhou*</i>
Wednesday	7:00 pm	<b>5</b> Autophagic and Lysosomal Secretion
Thursday	9:00 am	<b>6</b> ER/Golgi/Endosomes in Unconventional Secretion
Thursday	2:00 pm	<b>7</b> Unconventional Secretion in Cell-cell Communication
Thursday	6:00 pm	<i>Cocktails and Banquet</i>
Friday	9:00 am	<b>8</b> Physiology of Unconventional Protein Secretion

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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, March 10—7:00 PM

**OPENING REMARKS**

**SESSION 1** KEYNOTE SESSION

**The pathway of unconventional protein secretion**

Vivek Malhotra [35'+10']

Presenter affiliation: Centre for Genomic Regulation (CRG),  
Barcelona, Spain.

1

**Migrasome, from basic biology to therapeutic potentials**

Li Yu [35'+10']

Presenter affiliation: Tsinghua University, Beijing, China.

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TUESDAY, March 11—9:00 AM

**SESSION 2** MECHANISM OF UNCONVENTIONAL PROTEIN  
SECRETION I

**Chairperson:** **Walter Nickel**, Heidelberg University, Heidelberg,  
Germany

**Molecular mechanism and machinery driving unconventional  
secretion of FGF2, a potent cell survival factor mediating tumor-  
induced angiogenesis**

Walter Nickel [20'+10']

Presenter affiliation: Heidelberg University, Heidelberg, Germany.

3

**Gasdermin pore mediates unconventional cytokine secretion and  
pyroptosis**

Feng Shao [20'+10']

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

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**Molecular domino—The interplay between protein oligomerization and lipid sorting in FGF2-dependent membrane pore formation**

Alessandra Griffo, Daniel Beyer, Walter Nickel, Fabio Lolicato [10'+5']  
Presenter affiliation: Heidelberg University, Heidelberg, Germany;  
Helsinki University, Helsinki, Finland. 5

**Break**

**Late domain mediated exosome recruitment**

Ralf Jacob [20'+10']  
Presenter affiliation: Philipps-University-Marburg, Marburg, Germany. 6

**GRASP55 promotes autophagosome-lysosome fusion to facilitate unconventional secretion of neurodegenerative proteins**

Yanzhuang Wang [20'+10']  
Presenter affiliation: Shenzhen Bay Laboratory, Shenzhen, China. 7

**Protein N-glycosylation and unconventional secretion in Alzheimer's disease**

Lian Li, Qi Zhang, Lih-Shen Chin [10'+5']  
Presenter affiliation: Emory University School of Medicine, Atlanta, Georgia. 8

TUESDAY, March 11—2:00 PM

**POSTER SESSION**

**Migrion, a migrasome-mediated unit for intercellular viral transmission**

Yuxing Huang, Xiaojie Yan, Yang Chen  
Presenter affiliation: Peking University, Beijing, China. 9

**TRPML1 agonist ML-SA1 protects against uranium-induced cytotoxicity via enhancing lysosomal exocytosis and unblocking autophagic flux in human renal proximal tubular epithelial cells**

Ruiyun Wang, Yifei Wang, Hongjing Zhang, Xuxia Zhang, Zhaolu Kong, Honghong Chen  
Presenter affiliation: Shanghai Medical College, Fudan University, Shanghai, China. 10

**ER mediated membrane contact sites in migrasomes—Novel lipid and calcium transfer sites**

Peiyao Fan, Yang Chen  
Presenter affiliation: Peking University, Beijing, China. 11

- Zika virus protein-regulated unconventional protein secretion**  
Xinyan Hao, Yaping Han, Min Zhang  
Presenter affiliation: Tsinghua University, Beijing, China. 12
- Novel cargos of secretory autophagy**  
Yanfei He, Yanru Yue, Huaqing Lu, Yanyan Liang, Yuting Zhao  
Presenter affiliation: Northwest A&F University, Yangling, China. 13
- Single-cell RNA sequencing and function analyses reveal the Rab37-mediated membrane trafficking of GPNMB in tumor-associated macrophages to foster an immunosuppressive lung tumor microenvironment**  
You-En Yang, Hung-Chia Hsieh, Yi-Ching Wang  
Presenter affiliation: National Cheng Kung University, Tainan, Taiwan, China. 14
- Plasma membrane transbilayer asymmetry of PI(4,5)P<sub>2</sub> facilitates FGF2 membrane translocation into the extracellular space**  
Manpreet Kaur, Fabio Lolicato, Walter Nickel  
Presenter affiliation: Heidelberg University, Heidelberg, Germany. 15
- Rab37 regulates osteopontin secretion via conventional exocytosis and secretory autophagy pathways in tumor-associated macrophages**  
Lun-Ling Ling, You-En Yang, Yu-An Lin, Wan-Ting Kuo, Yi-Ching Wang  
Presenter affiliation: National Cheng Kung University, Tainan, Taiwan, China. 16
- Cisplatin induces NRF2-mediated transcription and autophagic secretion of IL-33 in esophageal squamous cell carcinoma**  
Hsun Liu, Meng-Ting Ho, Chih-Hsiung Hsieh, Wei-Lun Chang, Yi-Ching Wang  
Presenter affiliation: National Cheng Kung University, Tainan, Taiwan, China. 17
- Structural insights into the functional conservation and evolution of the exocyst subunit Sec3**  
Huifang Xiong, Mingtao Li, Zhenfeng Mao, Kunrong Mei  
Presenter affiliation: Tianjin University, Tianjin, China. 18

**The retromer complex and sorting nexins are involved in the unconventional secretion of CFTR**

Shin Hye Noh, Ye jin Kim, Soo Kyoung Seo, Min Goo Lee

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

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**ER structural changes associated with unconventional secretion of transmembrane proteins**

Hun Ju Sim, Min Seok Song, Shin Hye Noh, Min Goo Lee

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

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**ERGIC-localized Rab GTPases regulate TMED10-mediated unconventional secretion**

Yuxin Sun, Liang Ge, Min Zhang

Presenter affiliation: State Key Laboratory of Membrane Biology, School of Life Sciences, Beijing, China.

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**TMED10-mediated secretion of IL-1 $\beta$  regulates obesity-induced chronic inflammation and metabolic disorders**

Chunling Xu, Zhuo Wang, Min Zhang, Liang Ge

Presenter affiliation: Tsinghua University, Beijing, China.

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**Mono-UFMylation promotes misfolding-associated secretion of  $\alpha$ -synuclein**

Lihui Wang, Yue Xu, Tetsunari Fukushige, Layla Saidi, Xiaorong

Wang, Clinton Yu, Jin-Gu Lee, Michael Krause, Lan Huang, Yihong Ye

Presenter affiliation: National Institute of Diabetes, Digestive, and Kidney Diseases, National Institutes of Health, Bethesda, Maryland.

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**Sphingomyelin-enhanced assembly of channel-like machineries for versatile cargo transport in unconventional secretion**

Jianfei Zheng, Haodong Wang, Yi Wang, Xubo Lin, Yun Zhai, Pei

Chang, Xing Deng, Xiaochun Zhang, Lijingyao Zhang, Lin Zhu,

Kangling Zhu, Haiteng Deng, Boxue Tian, Bingqing Xia, Min Zhang, Zhaobing Gao, Liang Ge

Presenter affiliation: Tsinghua University, Beijing, China.

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TUESDAY, March 11—3:00 PM

**Chinese Tea and Beer Tasting**

**SESSION 3**      **MECHANISM OF UNCONVENTIONAL PROTEIN SECRETION II**

**Chairperson:**      **Liang Ge**, Tsinghua University, Beijing, China

**Protein translocation in unconventional release of leaderless secretory proteins**

Liang Ge [20'+10']

Presenter affiliation: Tsinghua University, Beijing, China.

25

**Mechanisms governing the unconventional secretion of tau and alpha-synuclein in neurodegenerative diseases**

Eloise Néel, Morgane Denus, William Fargues, Marie-Laure Parmentier, Julien Villeneuve [20'+10']

Presenter affiliation: Institute of Functional Genomics (IGF), CNRS, Montpellier, France.

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**Tunneling nanotubes in myeloid cell fusion in physiological and pathological context**

Ophélie Dufrançaïs, Marianna Plozza, Sarah C. Monard, Zoï Vahlas, Arnaud Métais, Frederic Lagarrigue, Brigitte Raynaud-Messina, Olivier Neyrolles, Geanncarlo Lugo, Renaud Poincloux, Christel Verollet [20'+10']

Presenter affiliation: Institut de Pharmacologie et Biologie Structurale, Toulouse, France.

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**Dynamics and regulation of clathrin-mediated endocytosis and recycling**

Kangmin He [10'+5']

Presenter affiliation: State Key Laboratory of Molecular Developmental Biology, Beijing, China; College of Advanced Agricultural Sciences, Beijing, China.

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**Coronavirus envelope protein activates TMED10-mediated unconventional secretion of inflammatory factors**

Lei Liu, Lijingyao Zhang, Min Zhang [10'+5']

Presenter affiliation: Xi'an Jiaotong University, Xi'an, China.

29

**Investigating collagen export from the endoplasmic reticulum through an in vitro vesicle formation assay**

Yang Liu, Qinyu Jia, Xiao Wang, Peizhi Zhou, Xiao-Wei Chen, Zhong-Ping Yao, Yusong Guo [10'+5']

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

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WEDNESDAY, March 12—9:00 AM

**SESSION 4**      **EXTRACELLULAR VESICLE BIOGENESIS**

**Chairperson:**    **Hang Yin**, Tsinghua University, Beijing, China

**Exploring the frontiers of EV research by bridging basic science and biomedical applications**

Hang Hubert Yin [20'+10']

Presenter affiliation: Tsinghua University, Beijing, China.

31

**Mechanisms and functions of atypical secretion of macrophage colony-stimulating factor (CSF1) associated to extracellular vesicles in anti-tumor immune responses**

Shima Ghoroghi, Alain Joliot, Clotilde Thery [20'+10']

Presenter affiliation: Institut Curie Research Center, INSERM U932, PSL Research University, Paris, France.

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**Rab11a-exosomes—An exosome population originating from recycling endosomes with specialised physiological and pathological functions**

Deborah C. Goberdhan [20'+10']

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

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***Break***

**What goes in, sometimes comes out—Developing molecular toolboxes to study the loading, maturation and fate of multivesicular bodies**

Anna George, Misko Bobeldijk, Jelle Van Den Bor, Frederik J. Verweij [20'+10']

Presenter affiliation: Utrecht University, Utrecht, Netherlands; Center for Living Technology, Utrecht, Netherlands.

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**The assembly of RAB22A/TMEM33/RTN4 initiates a secretory ER-phagy pathway**

Xueping Zheng, Ying Gao, Tiebang Kang [20'+10']

Presenter affiliation: Sun Yat-sen University Cancer Center, Guangzhou, China.

35

**Bro1 proteins govern a multivesicular bodies fate switch to regulate exosome secretion, metastasis and tumor immune evasion**

Ruey-Hwa Chen, Nai Yang Yeat, Li-Heng Liu, Yu-Hsuan Chang, Charles Pin-Kuang Lai [10'+5']

Presenter affiliation: Academia Sinica, Taipei, Taiwan, China.

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**The selective sorting of mRNA into extracellular vesicles**

Kaixiang Zhang, Gaoce Sun, Hang H. Yin, Ying Zhang [10'+5']

Presenter affiliation: Tsinghua University, Beijing, China.

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WEDNESDAY, March 12—1:30 PM

**Visit to Old Suzhou**

WEDNESDAY, March 12—7:00 PM

**SESSION 5**      AUTOPHAGIC AND LYSOSOMAL SECRETION

**Chairperson:**      **Jayanta Debnath**, University of California San Francisco, San Francisco, California, USA

**Secretory autophagy via extracellular vesicles and particles (EVPs)**

Jayanta Debnath [20'+10']

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

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**Exploring the role of LC3-dependent extracellular vesicles in muscle atrophy**

Hong-Wen Tang [20'+10']

Presenter affiliation: Duke-NUS Medical School, Singapore; National Cancer Centre Singapore, Singapore.

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**Secretary autophagic vesicles shape the neuronal surface and contribute to intercellular communication**  
Vassiliki Nikolettou [20'+10']  
Presenter affiliation: University of Lausanne, Lausanne, Switzerland. 40

**Negative autophagy regulator GLIPR2 as a novel cargo of autophagic secretion**  
Yanfei He, Yanru Yue, Huaqing Lu, Yanyan Liang, Yuting Zhao [10'+5']  
Presenter affiliation: Northwest A&F University, Yangling, China. 41

**Autophagosome-lysosome fusion dependent secretion in Alzheimer's disease**  
Yueguang Rong [10'+5']  
Presenter affiliation: Huazhong University of Science and Technology, Wuhan, China. 42

**ATG9A vesicles as carriers for unconventional secretion**  
Wenting Zhang, Cuicui Ji, Xianghua Li, Tianlong He, Haolin Zhang, Juan Wang [10'+5']  
Presenter affiliation: Beijing University of Technology, Beijing, China. 43

THURSDAY, March 13—9:00 AM

**SESSION 6** ER / GOLGI / ENDOSOMES IN UNCONVENTIONAL SECRETION

**Chairperson:** **Min Goo Lee**, Yonsei University College of Medicine, Seoul, South Korea

**ER-phagy receptors and unconventional secretion of transmembrane proteins**  
Min Goo Lee [20'+10']  
Presenter affiliation: Yonsei University College of Medicine, Seoul, South Korea. 44

**Role of late endosomal autophagy-dependent secretion of ER and mitochondrial components in cell fitness and communication**  
Somya Vats, Pedro Dionisio, Raphaël Pineau, Eric Chevet, Nuno Raimundo, Thierry Galli [20'+10']  
Presenter affiliation: Université Paris Cité, Institute of Psychiatry and Neuroscience of Paris, Paris, France. 45

- Biomolecular condensates as a common player in protein secretion and Golgi organization—Insights from GRASP proteins**  
Antonio J. Costa-Filho [10'+5']  
 Presenter affiliation: University of Sao Paulo, Ribeirao Preto, Brazil. 46
- Distinct trafficking routes of polarized and non-polarized membrane cargoes in *Aspergillus nidulans***  
Georgia Maria Sagia, Xenia Georgiou, George Chamilos, George Diallinas, Sofia Dimou [10'+5']  
 Presenter affiliation: National and Kapodistrian University of Athens, Panepistimioupolis, Athens, Greece. 47
- Break**
- Unconventional secretion involves a unique endosome-tethering mechanism**  
Anbing Shi [20'+10']  
 Presenter affiliation: Huazhong University of Science and Technology, Wuhan, China. 48
- A novel Golgiphagy receptor and its implications in breast cancer**  
Yixian Cui, Jiejie Yang [10'+5']  
 Presenter affiliation: Wuhan University, Wuhan, China. 49
- Nonaspanin NSP-3 promotes sorting of GABA<sub>A</sub>R via unconventional pathway to maintain sub-synaptic receptor content**  
Xin Zhou, Chun-Lei Hou, Marine Gueydan, Maelle Jospin, Li Zhang, Jean-Louis Bessereau [10'+5']  
 Presenter affiliation: Harbin Medical University, Harbin, China; Université Claude Bernard Lyon 1, Lyon, France. 50
- AP-1 coordinates cargo sorting with dynein-mediated transport during unconventional protein secretion**  
 Bowen Liu, Yuchen Jin, Shuzhen Zeng, Long Lin [10'+5']  
 Presenter affiliation: Huazhong University of Science and Technology, Wuhan, China. 51

**SESSION 7** UNCONVENTIONAL SECRETION IN CELL-CELL COMMUNICATION

**Chairperson:** Chiara Zurzolo, Pasteur Institute, Paris, France

**Tunneling nanotubes—Reshaping connectivity in vivo and roles in the progression of neurodegenerative diseases**

Chiara Zurzolo [20'+10']

Presenter affiliation: Pasteur Institute, Paris, France.

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**Migrasomes, new structures and new cargoes for intercellular communications**

Yong Li, Yiling Wen, Yang Chen [10'+5']

Presenter affiliation: Center for Precision Medicine Multi-Omics Research, Beijing, China.

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**Endoplasmic reticulum-derived extracellular vesicles preserve neural endoplasmic reticulum homeostasis**

Ting-Yi Lu, Jian-Liang Chen, Hsi-Chien Shi, Ping-Yen Hsiao, Tsai-Fan Lee, Chi-Kuang Yao [10'+5']

Presenter affiliation: Institute of Biochemical Sciences, Taipei, Taiwan, China; Institute of Biological Chemistry, Taipei, Taiwan, China.

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**Sonic hedgehog coreceptors induce cytoneme formation**

Christina Daly, Stacey K. Ogden [20'+10']

Presenter affiliation: St. Jude Children's Research Hospital, Memphis, Tennessee.

55

**LC3-dependent extracellular vesicles disrupts muscle proteostasis in cancer cachexia**

Kah Yong Goh, Wen Xing Lee, Andrew M. Leidal, Sze Mun Choy, Gopal Krishnan Priyadarshini, Huaxin Wang, Sara Haghani, Glenda Kai Zhi Chin, Shang Li, Jun Nishiyama, Kenon Chua, Nathan Harmston, Jayanta Deb Nath, Hong-Wen Tang [10'+5']

Presenter affiliation: Duke-NUS Medical School, Singapore.

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**Palmitoylation of Tspan4 is essential for migrasome formation**

Jiamei Qiao, Weisi Wang, Sadiq Ali, Zheng Jiang, Dong Jiang, Yuwei Huang [10'+5']

Presenter affiliation: Xi'an Jiaotong University, Xi'an, China.

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**Intermediate filaments protein vimentin secreted from tumor-associated macrophages to direct cancer progression**

Chenglin Miao, Xuedi Gao, Yaming Jiu [10'+5']

Presenter affiliation: Shanghai Institute of Immunity and Infection, Shanghai, China.

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THURSDAY, March 13—6:00 PM

**COCKTAILS and BANQUET**

FRIDAY, March 14—9:00 AM

**SESSION 8**      **PHYSIOLOGY OF UNCONVENTIONAL PROTEIN SECRETION**

**Chairperson:**      **Min Zhang**, Tsinghua University, Beijing, China

**Protein translocation in unconventional secretion and pathological involvement**

Min Zhang [20'+10']

Presenter affiliation: Tsinghua University, Beijing, China.

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**The deubiquitinase USP45 regulates autophagy and lysosomal function**

Guang-Chao Chen, Yuchieh J. Lin [10'+5']

Presenter affiliation: Academia Sinica, Taipei, Taiwan, China.

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**Cell surface RNAs in neutrophils**

Jun Lu [20'+10']

Presenter affiliation: Yale University, New Haven, Connecticut.

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**HRS regulates cholesterol secretion in small extracellular vesicles**

Bolin Xiao, Wei Zhang, Gang Chen [10'+5']

Presenter affiliation: State Key Laboratory of Oral & Maxillofacial Reconstruction and Regeneration, Wuhan University, Wuhan, China.

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**Unconventional secretion of alpha-synuclein in Parkinson's disease**

Shenjie Wu, Richard N. Nathan, Nancy C. Villegas, Randy Schekman [10'+5']

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

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**Neuronal morphology is maintained via regulation of extracellular vesicles**

Andrew D. Chisholm [10'+5']

Presenter affiliation: UC San Diego, La Jolla, California.

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**The role of unconventional protein secretion in protein and organelle homeostasis control**

Juhyung Lee, Yihong Ye [20'+10']

Presenter affiliation: NIH, Bethesda, Maryland.

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**CLOSING REMARKS**