

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

CILIA & CENTROSOMES

November 17–November 21, 2025

Arranged by

Jingyan Fu, *China Agricultural University*

Gert Jansen, *Erasmus MC, Rotterdam*

Masahide Kikkawa, *The University of Tokyo*

Junmin Pan, *Tsinghua University*

Jeremy Reiter, *University of California, San Francisco*



Cold Spring Harbor Conferences Asia
Cold Spring Harbor Laboratory



CILIA & CENTROSOMES

Monday, November 17 – Friday, November 21, 2025

Monday	7:00 pm	1 Keynote Session
Tuesday	9:00 am	2 Cilium and Centrosome Structure
Tuesday	2:00 pm	Poster Session
Tuesday	7:00 pm	3 Cilium and Centrosome Biogenesis I
Wednesday	9:00 am	4 Cilium and Centrosome Biogenesis II
Wednesday	1:30 pm	<i>Visit to Old Suzhou*</i>
Wednesday	7:00 pm	5 Cilia and Centrosomes in Motility
Thursday	9:00 am	6 Sensory and Signaling Functions of Cilia and Centrosomes
Thursday	2:00 pm	7 Cilia and Centrosomes in Diseases
Thursday	5:30 pm	<i>Cocktails and Banquet</i>
Friday	9:00 am	8 Cilium and Centrosome in Protein Trafficking and Development

Oral presentation sessions are located in the CSHA Auditorium

Poster session is 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 6:30pm

More information will be available at CSHA office.

(Map at the end of this abstract book)

PROGRAM

MONDAY, November 17—7:00 PM

SESSION 1 KEYNOTE SESSION

Chairperson: Junmin Pan, Tsinghua University, Beijing, China

The ins and outs of microtubule regulation in centrioles and cilia

Anna Akhmanova [35'+10']

Presenter affiliation: Utrecht University, Utrecht, Netherlands.

1

Multicilia formation and tissue-wide coordination of their beat directions

Xueliang Zhu [35'+10']

Presenter affiliation: Shanghai Institute of Biochemistry and Cell Biology, Center for Excellence in Molecular Cell Science, Shanghai, China.

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TUESDAY, November 18—9:00 AM

SESSION 2 CILIUM AND CENTROSOME STRUCTURE

Chairperson: Jeremy Reiter, University of California, San Francisco, San Francisco, California, USA

Unveiling the molecular architecture of centrioles using expansion microscopy

Virginie Hamel [20'+10']

Presenter affiliation: University of Geneva, Geneva, Switzerland.

3

Ciliary appendages with distinct structures and divergent functions

Hyuk Wan Ko, Jieun Song, Sihyun Park, Su Jeong Kim [20'+10']

Presenter affiliation: Yonsei University, Seoul, South Korea.

4

Dynein-2 is tuned for the A-tubule of ciliary doublet microtubule

Haoqiang He, Shintaroh Kubo, Xuwei Chen, Qianru Lv, Azusa Kage,

Muneyoshi Ichikawa [15'+5']

Presenter affiliation: Fudan University, Shanghai, China.

5

Break

Structural basis of IFT-motor-cargo interaction and flagellar asymmetry

Masahide Kikkawa [20'+10']

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

6

Chaperonin TRiC bridges radial spokes for folding locally translated proteins to sustain mammalian sperm flagellar motilities

Xueming Meng, Luan Li, Cheng Lin, Yun Zhu, Yanyan Feng, Qun Zhao, Lihua Zhang, Fei Sun, Xiumin Yan, Xueliang Zhu, Yao Cong [20'+10']

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

7

In situ cryo-electron tomography reveals the transition zone of human respiratory cilia

Haixia Zhou, Alan Brown [15'+5']

Presenter affiliation: Harvard Medical School, Boston, Massachusetts.

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TUESDAY, November 18—2:00 PM

POSTER SESSION

Image-based insights into ciliogenesis and intracellular transport in polarized epithelial cells

Xun Cao, Mengyuan Yang, Daisuke Takao

Presenter affiliation: Huazhong Agricultural University, Wuhan, China.

9

Biomolecular condensates of TRIM proteins control ciliogenesis

Qi Chen, Peiguo Yang

Presenter affiliation: Westlake University, Hangzhou, China; Zhejiang University, Hangzhou, China.

10

Precise control of intracellular trafficking and receptor-mediated endocytosis in living cells and behaving animals

Shiau-Chi Chen, Neng-Jie Zeng, Grace Y. Liu, Hsien-Chu Wang, Tzu-Ying Lin, Yi-Ling Tai, Yin Fang, Yi-Chien Chuang, Hsuan Cheng, Bing-Huang Wu, Lily H. Wang, Po-Han Chiang, Chun-Hao Chen, Oliver I. Wagner, Yi-Ching Wang, Yu-Chun Lin

Presenter affiliation: National Tsing Hua University, Hsinchu City, Taiwan, China.

11

Metabolite-mediated reversal of motor hyperactivity restores ciliary function

Zhe Chen, Zhengyang Guo, Keyu Lu, Yang Wang, Zeynep Ökten, Shanshan Xie, Tianhua Zhou, Wei Li, Guangshuo Ou

Presenter affiliation: Tsinghua University, Beijing, China.

12

Glutamylation of centrosomes ensures their function by recruiting microtubule nucleation factors

Shi-Rong Hong, Yi-Chien Chuang, Wen-Ting Yang, Chiou-Shian Song, Hung-Wei Yeh, Bing-Huan Wu, I-Hsuan Lin, Po-Chun Chou, Shiao-Chi Chen, Lohitaksh Sharma, Jui-Chen Lu, Rou-Ying Li, Ya-Chu Chang, Kuan-Ju Liao, Hui-Chun Cheng, Won-Jing Wang, Hui-Ching Wang, Yu-Chun Lin

Presenter affiliation: National Tsing Hua University, Hsinchu City, Taiwan, China.

13

Receptor-type guanylyl cyclase 1 functions as a salt sensor activating cGMP–PKG signaling for ciliary disassembly in *Chlamydomonas*

Yue He, Jingxuan Dai, Junmin Pan

Presenter affiliation: Tsinghua University, Beijing, China.

14

Revisiting microtubules using optogenetic tools

Yin Fang, Neng-Jie Zeng, I-Hsuan Lin, Tien-Po Tsai, Tzu-Ying Lin, Won-Jing Wang, Yu-Chun Lin

Presenter affiliation: National Tsing Hua University, HsinChu, Taiwan, China.

15

Centrosomal protein CBAP regulates spermatogenesis in *Drosophila*

Tianling Li, Guanglian Jiang, Jingyan Fu

Presenter affiliation: China Agricultural University, Beijing, China.

16

***In situ* cryo-electron tomography reveals the progressive biogenesis of basal bodies and cilia in mouse ependymal cells**

Shanshan Ma, Luan Li, Zhixun Li, Shenjia Luo, Qi Liu, Wenjing Du, Benhua Qiu, Miao Gui, Xueliang Zhu, Qiang Guo

Presenter affiliation: State Key Laboratory of Multi-Cell Systems, Shanghai Institute of Biochemistry and Cell Biology, Shanghai, China.

17

Structural analysis of the ciliary axonemes from PCD patients by cryo-EM

Shuo Yang, Chunxiao Huo, Luo Ting, Yuan Jiang, Ruofan Li, Tianhua Zhou, Shanshan Xie, Gui Miao

Presenter affiliation: Zhejiang University School of Medicine, Hangzhou, China.

18

SGT1, a cytoplasmic eukaryote-conserved co-chaperone, is required for basal body homeostasis and assembly of ciliary nexin-dynein regulatory complex

Xuecheng Li, Huadong Li, Long Gui, Junmin Pan

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

19

Tubulin isotypes guide intracellular trafficking

Tzu-Ying Lin, Pei-Yun Chan, Shiau-Chi Chen, Wan-Jiun Ho, Hsin Chang, Yen-Ling Lian, Yi-Ling Tai, Yu-Chun Lin

Presenter affiliation: National Tsing Hua University, HsinChu, Taiwan, China.

20

The ciliary tip compartment maintained by Cep104 is important for signal transduction and development

Xiaoyu Liu, Benhua Qiu, Xueliang Zhu

Presenter affiliation: Center for Excellence in Molecular Cell Science, Shanghai, China; ShanghaiTech University, Shanghai, China.

21

Developing the platform to dissect centriole-specific functions by selective disruption of mother or daughter centrioles

Jui-Chen Lu, Pin-Yu Chen, Chih-Jou Zhang, Yun-Di Lai, Wong-Jing Wang, Yu-Chun Lin

Presenter affiliation: National Tsing Hua University, Hsinchu, Taiwan, China.

22

Generation and control of microtubule superstructures inspired by cellular microtubule architecture

Soei Watari, Hiroshi Inaba, Qianru H. Lv, Muneyoshi Ichikawa, Takashi Iwasaki, Bingxun Wang, Hisashi Tadakuma, Akira Kakugo, Kazunori Matsuura

Presenter affiliation: Fudan University, Shanghai, China.

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Developing the platform to dissect centriole-specific functions by selective disruption of mother or daughter centrioles

Umut Sahin

Presenter affiliation: Sabanci University, Istanbul, Turkey.

24

Fantastic LCs and what do they do?

Darren Teo, Cynthia Y. He

Presenter affiliation: National University of Singapore, Singapore.

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Ciliopathies caused by centriole localized myotubularin defects <u>Qian Wang</u> , John B. Wallingford, Sharon Dell, Zhen LIU Presenter affiliation: Hong Kong University of Science and Technology, Hong Kong, China.	26
Joubert syndrome 26 protein enforces compartmentalized motility of a ciliary kinesin <u>Shimin Wang</u> , Ming Li, Guanghan Chen, Chen Zhe, Kexin Lei, Zeynep Ökten, Shanshan Xie, Tianhua Zhou, Wei Li, Guangshuo Ou Presenter affiliation: Tsinghua University, Beijing, China.	27
RPGR regulates motile cilia by interfering with actin dynamics <u>Yang Wu</u> , Erika Tavares, Binrun Liang, Wallace Wee, Vito Mennella, Hanchao Feng, Jiaying Cao, Jiayi Zheng, Mu He, Sharon D Dell, Elise Heon, Zhen Liu Presenter affiliation: The Hong Kong University of Science and Technology, Hong Kong SAR, China.	28
Temporal cell morphological analysis reveals the role of ciliary structural dynamics in muscle cell differentiation <u>Zhichao Wu</u> , Daisuke Takao Presenter affiliation: Huazhong Agricultural University, Wuhan, China.	29
The roles of ciliary proteins in zebrafish spinal development <u>Haibo Xie</u> , Mengfan Wu, Yunsu Kang, Chengtian Zhao Presenter affiliation: Ocean University of China, Qingdao, China; Ocean University of China, Qingdao, China.	30
Cryo-ET of vertebrate axoneme reveals asymmetric structures of nine doublet microtubules <u>Hiroshi Yamaguchi</u> , Masahide Kikkawa Presenter affiliation: The University of Tokyo, Bunkyo, Tokyo, Japan.	31
A NompC–Stum–microtubule complex defines the structural core of the mechanotransduction apparatus in Drosophila <u>Jingru Yang</u> , Xin Liang Presenter affiliation: Tsinghua University, Beijing, China.	32
Different requirements of dynein protein in flagella and cilia development <u>Menglei Yang</u> , Hafiz Muhammad Jafar Hussain, Manan Khan, Hui Ma, Qinghua Shi, Baolu Shi Presenter affiliation: University of Science and Technology of China, Hefei, China.	33

Optogenetic modulation of microtubule structure and intracellular trafficking in behaving animals

Neng-Jie Zeng, Tzu-Ying Lin, Yin Fang, Yun-Yu Chen, Shiao-Chi Chen, Yu-Chun Lin

Presenter affiliation: National Tsing Hua University, Hsinchu, Taiwan, China.

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TUESDAY, November 18—7:00 PM

SESSION 3 CILIUM AND CENTROSOME BIOGENESIS I

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

Mechanisms governing the initiation of centriole assembly in human cells

Daiju Kitagawa [20'+10']

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

35

Centriole and polo activity collectively mediate the organization of pericentriolar material.

Xiaomin Fang, Chenxi Wei, Jingyan Fu [20'+10']

Presenter affiliation: State Key Laboratory of Animal Biotech Breeding, Beijing, China.

36

Axonemal microtubule assembly is regulated by a member of the RCK kinase family

Yi Zhang, Xinjia Yang, Junmin Pan [20'+10']

Presenter affiliation: School of Life Sciences, Tsinghua University, Beijing, China; Qingdao Marine Science and Technology Center, Qingdao, China.

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***Drosophila* as a model for dissecting ciliary central pair microtubule formation**

Zhimao Wu, Yingying Zhang, Qing Wei [15'+5']

Presenter affiliation: Shanxi University, Taiyuan, China.

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SESSION 4 **CILIUM AND CENTROSOME BIOGENESIS II**

Chairperson: **Gert Jansen**, Erasmus MC, Rotterdam, the Netherlands

Primary cilia deconstruction in cerebellum granule cell neurons

Saikat Mukhopadhyay, Carolyn Ott, Sandi Constable, Yu Sun

[20'+10']

Presenter affiliation: University of Texas Southwestern Medical Center, Dallas, Texas.

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Regulation of cilia homeostasis in multiciliated cells

Maneesha Pandey, Jiehong Pan, Shelei Pan, Tao Huang, Tao Cheng, Amjad Horani, Jennifer Alexander-Brett, Susan Dutcher, Jennifer Strahle, Steven Brody, Moe Mahjoub [20'+10']

Presenter affiliation: Washington University in St Louis, St Louis, Missouri.

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Image-based profiling of organelle dynamics identifies a potential role for Golgi morphology in ciliary disassembly

Mengyuan Yang, Xun Cao, Yiming Peng, Mengling Gang, Di Zhang, Shiyue Zhou, Daisuke Takao [15'+5']

Presenter affiliation: Huazhong Agricultural University, Wuhan, China; Hubei Hongshan Laboratory, Wuhan, China.

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Break

CEP290 structure-function relationships at the *C. elegans* ciliary transition zone

Karen I. Lange, Sofia Tsiropoulou, Oliver E. Blacque [20'+10']

Presenter affiliation: University College Dublin, Dublin, Ireland.

42

The assembly and function of the ciliary necklace in *Chlamydomonas* requires the transition zone and intraflagellar transport

Susan K. Dutcher, Ursula Goodenough, Robyn Roth [20'+10']

Presenter affiliation: Washington University, St Louis, Missouri.

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The conserved Spd-2/CEP192 domain adopts a unique protein fold to promote centrosome scaffold assembly

Zhe Feng [15'+5']

Presenter affiliation: Fudan University, Shanghai, China.

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WEDNESDAY, November 19—1:30 PM

Visit to Old Suzhou

WEDNESDAY, November 19—7:00 PM

SESSION 5 CILIA AND CENTROSOMES IN MOTILITY

Chairperson: **Xuecai Ge**, University of California, Riverside,
Riverside, California, USA

Doublet microtubule-associated tektins and enzymes differentially regulate sperm flagellar integrity and motility

Qi Liu, Lunni Zhou, Jianping Wu, Miao Gui [20'+10']

Presenter affiliation: Zhejiang University School of Medicine,
Hangzhou, China.

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Redox-sensitive heme protein CrCYB5D1 couples intraflagellar redox dynamics to calcium signaling for coordinated flagellar beating in *Chlamydomonas*

YiWen Lin, Lijuan Zhao, Gai Liu, Xuan Deng, Stephen King, Kaiyao Huang [20'+10']

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

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Cilia-driven urotensin signaling regulates body axis straightening

Chengtian Zhao [20'+10']

Presenter affiliation: Ocean University of China, Qingdao, China.

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Investigating ciliary motility mechanisms in *Chlamydomonas reinhardtii* via CRISPR/Cas9 gene editing

Yanxun Li, Leo Luo, Alexander Leitner, Takashi Ishikawa [15'+5']

Presenter affiliation: Paul Scherrer Institute, Villigen, Switzerland;
Eidgenössische Technische Hochschule (ETH) Zürich, Zürich,
Switzerland.

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SESSION 6 **SENSORY AND SIGNALING FUNCTIONS OF CILIA AND CENTROSOMES**

Chairperson: **Susan Dutcher**, Washington University School of Medicine, St. Louis, Missouri, USA

The role of ciliary signaling in adult uterus remodeling and regeneration

Elizabeth Ung, LeCaine Barker, Ashlyn Stahly, Ryan Finnerty, Natalia Weinzierl, Elle Roberson [20'+10']

Presenter affiliation: University of Colorado Anschutz Medical Campus, Aurora, Colorado.

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Proteomic profiling of primary cilia in the developing brain reveals new regulators of cortical development

Xuecai Ge, Xiaoliang Liu, Oscar Torres Gutierrez, Gurleen Kaur, Yazan Al-Issa, Eva Cai [20'+10']

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

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Transcription factors SP5 and SP8 drive primary cilia formation in mammalian embryos

Yinwen Liang, Richard Koche, Ravindra B. Chalamalasetty, Daniel N. Stephen, Mark W. Kennedy, Zhimin Lao, Yunong Pang, Ying-Yi Kuo, Moonsup Lee, Francisco Lobo, Xiaofeng Huang, Anna-Katerina Hadjantonakis, Terry P. Yamaguchi, Kathryn V. Anderson, Alexandra L. Joyner [15'+5']

Presenter affiliation: Memorial Sloan Kettering Cancer Center, New York, New York.

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Break

Endosulfan, an organochlorine pesticide, suppresses GLI processing and downregulates Hedgehog signalling

Swapnil R. Shinde, Ravikant Piyush, Sathees C. Raghavan, Prasenjit Bhaumik, Satyanarayan Rao, Bibha Choudhary

Presenter affiliation: Indian Institute of Technology Bombay, Mumbai, India.

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Putting your heart in the right place—Cilia and Pkd111 as mechanotransducers that shape cardiac left-right asymmetry
 Lydia Djenoune, Amelie Brugger, Mohammed S. Mahamdeh, Gabriel Luna-Arvizu, Katherine H. Fisher, Daniel T. Grimes, Shiaulou Yuan [20'+10']

Presenter affiliation: Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts. 53

Primary cilia-mediated hedgehog signaling regulates cell fate during ER stress-induced life or death decisions

Jia Xu, Yongli Zhang, Junmin Pan [15'+5']
 Presenter affiliation: Tsinghua University, Beijing, China. 54

Microtubule regulation during motile cilia regeneration

Muyang Ren, Raman Dhaliwal, Alan Wainman, Kate Heesom, Charlotte Melia, Girish R. Mali [15'+5']
 Presenter affiliation: Sir William Dunn School of Pathology, Oxford, United Kingdom. 55

THURSDAY, November 20—2:00 PM

SESSION 7 CILIA AND CENTROSOMES IN DISEASES

Chairperson: Ying Cao, Tongji University, Shanghai, China

Molecular mechanisms of Alström syndrome

Thao P. Phan, Jeremy F. Reiter [20'+10']
 Presenter affiliation: University of California San Francisco, San Francisco, California; Chan Zuckerberg Biohub, San Francisco, California. 56

Age-related alteration of hypothalamic neuronal primary cilia (neurocilia) and susceptibility to obesity

Kazuhiro Nakamura [20'+10']
 Presenter affiliation: Nagoya University Graduate School of Medicine, Nagoya, Japan. 57

Role of primary cilia in the neurodevelopmental phenotype of Lowe syndrome

Ron George Philip, Husayn Ahmed Pallikonda, Shubhra Acharya, Priyanka Bhatia, Juwariah Fazal, Raghu Padinjat [15'+5']
 Presenter affiliation: National Centre for Biological Sciences-TIFR, Bangalore, India. 58

RPGR regulates motile cilia by interfering with actin dynamics
Zhen Liu, Yang Wu, Sharon Dell, Elise Heon [15'+5']
 Presenter affiliation: The Hong Kong University of Science and
 Technology, Sai Kung, Hong Kong, China. 59

Break

Revisiting microtubule using chemogenetic and optogenetic tools
Yu-Chun Lin [20'+10']
 Presenter affiliation: National Tsing Hua University, HsinChu, Taiwan,
 China. 60

**From cells to tissues—Reconstituting a complex respiratory
 mucosal barrier**
Mu He [20'+10']
 Presenter affiliation: The University of Hong Kong, Hong Kong, China. 61

**Advanced imaging and multi-omics analysis of CRISPR-Cas9
 generated PCD models reveal dysmorphic hybrid cilium tip
 architecture and impaired defence to environmental challenges.**
Chris Godbehere, Nefeli Ithakisiou, Bahar Yetkin-Arik, Jeffrey
 Beekman, Nobuhiro Morone, Jemima Burdon, Vito Mennella [15'+5']
 Presenter affiliation: University of Cambridge, Cambridge, United
 Kingdom. 62

**Tmem138 deficiency induces sperm flagellar disassembly with
 subsequent pathological centriole duplication**
Dianlei Guo, Xiaoyu Zhang, Mingzhu Guo, Chunqiao Liu [15'+5']
 Presenter affiliation: Sun Yat-sen University, Guangzhou, China. 63

THURSDAY, November 20—5:30 PM

COCKTAILS and BANQUET

SESSION 8 **CILIUM AND CENTROSOMES IN PROTEIN
TRAFFICKING AND DEVELOPMENT**

Chairperson: **Jingyan Fu**, China Agricultural University, Beijing, China

**Heterodimerization is important for trafficking and cilium tip
localization of receptor-type guanylate cyclases**

Suzanne Rademakers, Gert Jansen [20'+10']

Presenter affiliation: Erasmus MC, Rotterdam, The Netherlands. 64

**Epigenetic regulation of cilia stability and kidney development by
the chromatin remodeling SWI/SNF complexes**

Xiaoyu Cheng, Qianshu Zhu, Shilin Ma, Xiaoyu Peng, Guifen Liu, Ying
Cao [20'+10']

Presenter affiliation: Tongji University, Shanghai, China; Shanghai
East Hospital, Shanghai, China. 65

Primary cilium regulates human muscle stem cell differentiation

Ana Šaric, Olivier Conscience, Lola Albertella, Baptiste Periou, Sarah
Souvannanorath, Edoardo Malfatti, Frédéric Relaix, François Jérôme
Authier, Ludovic Martin [15'+5']

Presenter affiliation: Univ Paris-Est Créteil, Créteil, France. 66

Break

**Localized active transport shapes the nanoscopic features at the
tip of mechanosensory cilia**

Xin Liang [20'+10']

Presenter affiliation: School of Life Sciences, Tsinghua University,
Beijing, China. 67

Kinesin-2's tailgate party—Where cargo gets onboard

Xuguang Jiang, Radostin Danev, Baichun Niu, Sumio Ohtsuki, Haruaki
Yanagisawa, Nobutaka Hirokawa, Masahide Kikkawa [15'+5']

Presenter affiliation: The University of Tokyo, Tokyo, Japan. 68

**Characterization of the primary cilium in human skeletal muscle
tissue and cells**

Lola Albertella, Ana Šaric, Baptiste Périou, Olivier Conscience,
Meriem Garfa-Traoré, François Jérôme Authier, Ludovic Martin
[15'+5']

Presenter affiliation: Université Paris-Est Créteil, Créteil, France. 69