

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

# FUNCTIONS AND REGULATION OF SLEEP

December 8–December 12, 2025

Arranged by

Antoine Adamantidis, *University of Bern*

Yang Dan, *Shenzhen Medical Academy of Research and Translation*

Zhili Huang, *Fudan University*

Amita Sehgal, *University of Pennsylvania*

Min Xu, *Chinese Academy of Sciences*



Cold Spring Harbor Conferences Asia  
Cold Spring Harbor Laboratory



## **FUNCTIONS AND REGULATION OF SLEEP**

Monday, December 8 – Friday, December 12, 2025

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|           |          |   |
|-----------|----------|---|
| Monday    | 7:00 pm  | <b>1</b> Keynote Session                |
| Tuesday   | 9:00 am  | <b>2</b> Sleep Regulation I: Molecules  |
| Tuesday   | 2:00 pm  | <b>Poster Session</b>                   |
| Tuesday   | 7:00 pm  | <b>3</b> Sleep Regulation II: Circuits  |
| Wednesday | 9:00 am  | <b>4</b> Consciousness States           |
| Wednesday | 10:45 am | <b>5</b> New Tools for Optical Imaging  |
| Wednesday | 1:30 pm  | <i>Visit to Old Suzhou*</i>             |
| Wednesday | 7:00 pm  | <b>6</b> Memory Processing During Sleep |
| Thursday  | 9:00 am  | <b>7</b> Circadian Rhythm               |
| Thursday  | 2:00 pm  | <b>8</b> Sleep Regulation III: REM      |
| Thursday  | 5:30 pm  | <i>Cocktails and Banquet</i>            |
| Friday    | 9:00 am  | <b>9</b> Sleep Regulation IV            |

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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, December 8—7:00 PM

### SESSION 1 KEYNOTE SESSION

**Introduction by: Min Xu**, Chinese Academy of Sciences, Shanghai, China

#### **The electron leak hypothesis of sleep**

Gero Miesenböck [35'+10']

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

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**Introduction by: Yang Dan**, Shenzhen Medical Academy of Research and Translation (SMART), Shenzhen, China

#### **Unlocking the metabolic mysteries of sleep—Metabolism as a driver and effector of sleep**

Amita Sehgal [35'+10']

Presenter affiliation: University of Pennsylvania, Philadelphia, Pennsylvania.

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TUESDAY, December 9—9:00 AM

### SESSION 2 SLEEP REGULATION I: MOLECULES

**Chairpersons: Amita Sehgal**, University of Pennsylvania, Philadelphia, USA

**Qinghua Liu**, National Institute of Biological Sciences, Beijing, China

#### **Toward systems biology of sleep/wake cycles—The role of calcium and phosphorylation in sleep homeostasis**

Hiroki R. Ueda [20'+10']

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

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**Presynaptic release probability determines the need for sleep**

Sha Liu [20'+10']

Presenter affiliation: VIB, Leuven, Belgium; KU Leuven, Leuven, Belgium.

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**An active Unc13A is reboundless in sleep homeostasis**

Sheng Huang, Marc Escher, Niraja Ramesh, David Toppe, Zhiying Zhao, Yifan Wu, Sha Liu, Alexander M. Walter, Stephan J. Sigrist, Chengji Piao [10'+5']

Presenter affiliation: Freie Universität Berlin, Berlin, Germany.

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**Active zone–shaker potassium channel coupling supports brain resilience and sleep regulation**

Chengji Piao, Sheng Huang, Marc Escher, David Toppe, Niraja Ramesh, Stephan J. Sigrist [10'+5']

Presenter affiliation: Freie Universität Berlin, Berlin, Germany; Charité Universitätsmedizin, Berlin, Germany.

6

**Break**

**A causal link between synaptic transmission and sleep amount in mice**

Qinghua Liu [20'+10']

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

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**Sleep and DNA breaks across evolution**

Lior Appelbaum [20'+10']

Presenter affiliation: Bar Ilan University, Ramat Gan, Israel.

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**Night sleep—A gateway to a better understanding of the thalamus and its relations with the basal ganglia and the cortex**

Xiaowei Liu, Jing Guang, Zvi Israel, Denise Wajnsztajn, Aeyal Raz, Hagai Bergman [20'+10']

Presenter affiliation: The Hebrew University, Jerusalem, Israel; Hadassah University Hospital, Jerusalem, Israel.

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**POSTER SESSION**

- Spectral and spatial characteristics of hyperarousal during sleep–wake transition in chronic insomnia**  
Ananya Dwivedi, Pratap Sharan, Nasreen Akhtar  
Presenter affiliation: All India Institute of Medical Sciences, New Delhi, India. 10
- Internal-external circadian alignment from wearables links to future disease risk and genetic determinants**  
Han Chen, Zhi Cao, Xiao Tan  
Presenter affiliation: Zhejiang University, Hangzhou, China. 11
- Large-scale proteomic analyses of sleep-related traits reveal new pathophysiological insights and potential biomarkers**  
Han Chen, Zhi Cao, Xiao Tan  
Presenter affiliation: Zhejiang University, Hangzhou, China. 12
- Exploring the neural mechanisms to erase memory during REM sleep by MCH neurons**  
Jiaqi Cheng, Yue Chen, Tatsuo Okubo, Yu Ohmura, Akihiro Yamanaka  
Presenter affiliation: Chinese Institute for Brain Research, Beijing, China. 13
- Chronotherapy as a potential strategy to reduce ifosfamide-induced encephalopathy—A preclinical study in a murine model**  
Mylène Malek Chennoufi, Dorra Dridi, Khaled Lasram, Nouha Ben Abdeljalil, Asma Omezzine, Benoît Mauvieux, Yvan Toutou, Ahmed Sleheddine Masmoudi, Naceur A. Boughattas  
Presenter affiliation: University of Monastir, Monastir, Tunisia. 14
- The secret clock records and passes on the time messages in circadian rhythms**  
Jingya Cui  
Presenter affiliation: Shanghai Jiaotong University, Shanghai, China. 15
- A sleep-active hippocampal interneuron for memory consolidation**  
Wanling Peng, Yili Feng, Min Xu  
Presenter affiliation: Chinese Academy of Sciences, Shanghai, China. 16

**Characterization of modified O-GlcNAcylation cycling regulates circadian rhythms and sleep patterns in *Drosophila***

Qipei Gu, Huanhuan Du, Jianghui Xu, Hongrui Meng

Presenter affiliation: Institute of Neuroscience, Soochow University, Suzhou, China.

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**Exploring shared mechanisms and therapeutic targets for insomnia and inflammatory bowel disease using multiple data sets**

Han Guo

Presenter affiliation: Huadong Hospital, Shanghai, China.

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**Model predictive control targeting sleep in Parkinson's disease**

Yingtian Liu, Yu Fan, Yuxuan Wu, Haiyu Tian, Huiling Yu

Presenter affiliation: National Engineering Research Center of Neuromodulation, Beijing, China.

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**The role of violet light and OPN5 in the regulation of sleep/wakefulness**

Jiali Ma, Sheikh M. Rahaman, Yu Ohmura, Akihiro Yamanaka

Presenter affiliation: Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing, China; Peking University, Beijing, China; Chinese Institute for Brain Research, Beijing (CIBR), Beijing, China.

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**Sleep enhance glymphatic flow and brain clearance through REM-associated activation of MCH neurons**

Chenyao Wang, Yacong Zhao, Weiwei Meng, Na Guan, Chunxiao Huang, Jianren Song

Presenter affiliation: Tongji University School of Medicine, Shanghai, China.

21

**Wake consolidates event memories, sleep binds them with context**

Xiu Miao, Jessica Dahmen, Amelie S. Thoma, Anna L. Weber, Jan Born, Karsten Rauss

Presenter affiliation: University of Tuebingen, Tuebingen, Germany.

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**Neuromodulator dynamics during yawning behavior**

Yasutaka Mukai, Riho Kobayashi, Jumpei Kuroda, Ren Y. Sato, Hiroaki Nishimura, Yumin Zhang, Yulong Li, Hiroaki Norimoto

Presenter affiliation: Nagoya University, Nagoya, Japan.

23

- Multimodal neuroimaging evidence for accelerated brain ageing in sleep disturbance**  
Shan-Shan Qu, Chun-Lin Chen, Miao-Yu Zhang, Xin-Ying Liu, Zhi-Lin Wang, Lin Lu, Le Shi  
 Presenter affiliation: Peking University Sixth Hospital, Beijing, China. 24
- Activation of GABAergic neurons in the midbrain induces unconsciousness resembling light general anesthesia**  
Yujin Shao, Jinrong Liu, Peili Cen, Bingying Zhou, Kelei Cao, Huiying Zhao, Xiang Feng, Shumin Duan, Yanqin Yu  
 Presenter affiliation: Zhejiang University School of Medicine, Hangzhou, China; Nanhu Brain-Computer Interface Institute, Hangzhou, China; MOE Frontier Science Center for Brain Science and Brain-Machine Integration, Zhejiang University, Hangzhou, China 25
- Effects of differential NREM sleep oscillatory patterns on memory recognition in young and older adults**  
Zhi-Lin Wang, Qian-Wen Wang, Shan-Shan Qu, Miao-Yu Zhang, Chun-Lin Chen, Xin-Ying Liu, Jia-Hui Deng, Le Shi, Lin Lu  
 Presenter affiliation: Peking University Sixth Hospital, Peking University Institute of Mental Health, NHC Key Laboratory of Mental Health, Beijing, China. 26
- Microglia-mediated attenuation of pyramidal neuron hyperactivity in the anterior cingulate cortex underlies the efficacy of electroacupuncture on comorbid depression and sleep disorder**  
Zhennan Wu, Yuqing Fan, Yuenming Yau, Yutong Su, Chang Liu, Yingjia Li, Xiaorong Tang, Wenhao Liu, Zining Guo, Lanfeng Lai, Wenhui Di, Nenggui Xu, Lulu Yao  
 Presenter affiliation: Guangzhou University of Chinese Medicine, Guangzhou, China. 27
- GABA transaminase-mediated tau neurotoxicity triggers sleep disorders during aging**  
Zhongyun Xie, Jianping Huang, Zhian Zeng, Yong Cao, Guanglin Li, Keqiang Ye  
 Presenter affiliation: Shenzhen University of Advanced Technology (SUAT), Shenzhen, China. 28
- The role of mitochondrial dysfunction in vascular endothelial damage induced by sleep apnea**  
YaRu Yan, Liu Zhang, Yi Wang, Qingyun Li  
 Presenter affiliation: Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China. 29

**Paraventricular oxytocin (PVN<sup>OXT</sup>) neuron activity across the sleep–wake cycle and social experience in mice**

Yudong Yan

Presenter affiliation: Inselspital University Hospital Bern, University of Bern, Bern, Switzerland.

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**Modeling and predicting sleep dynamics with joint representation–prediction learning**

Guokun Zhang, Lingxiao Guan, Huiling Yu, Luming Li

Presenter affiliation: National Engineering Research Center of Neuromodulation, Beijing, China.

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**Two-stage sleep cycles in bobtail squid (*Euprymna berryi*)**

Sipeng Zhang, Xitong Liang

Presenter affiliation: Peking University, Beijing, China.

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TUESDAY, December 9—7:00 PM

**SESSION 3** SLEEP REGULATION II: CIRCUITS

**Chairperson:** **Antoine Adamantidis**, University of Bern, Bern, Switzerland

**What is sleep for?**

Yang Dan [20'+10']

Presenter affiliation: Shenzhen Medical Academy of Research and Translation (SMART), Shenzhen, China.

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**The neural mechanism of rhythmic rocking in sleep regulation—Insights into the somatosensory barrel cortex and striatal pathways**

Zhi-Li Huang, Ling-Xi Kong [20'+10']

Presenter affiliation: State Key Laboratory of Medical Neurobiology, Institutes of Brain Science, Fudan University School of Basic Medical Sciences, Shanghai, China.

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**Break**

**Circuits regulating sleep homeostasis**

William Wisden [20'+10']

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

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**Homeostatic NREM sleep regulation by an orexin/Hcrt-locus  
coeruleus–preoptic circuit**

Can Liu, Peng Zuo, Fanxi Meng, Zhi Cai, Qinghua Liu [10'+5']

Presenter affiliation: National Institute of Biological Sciences, Beijing, China; International Institute for Integrative Sleep Medicine, Tsukuba, Japan.

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WEDNESDAY, December 10—9:00 AM

**SESSION 4 CONSCIOUSNESS STATES**

**Chairperson:** **Yang Dan**, Shenzhen Medical Academy of Research and Translation (SMART), Shenzhen, China

**Profound unconsciousness induced by activation of brainstem  
GABAergic neurons**

Yu-jin Shao, Jinrong Liu, Yan-qin Yu, Shumin Duan [20'+10']

Presenter affiliation: Zhejiang University, Hangzhou, China.

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**Sleepwalking and related parasomnias as a window into the  
neurobiology of dreaming**

Francesca Siclari [20'+10']

Presenter affiliation: Netherlands Institute for Neuroscience, Amsterdam, the Netherlands.

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**Detecting cortical index of arousal in sleeping patients with  
unresponsive wakefulness syndrome**

Man Li, Jiahui Pan, Yanbin He, Pengmin Qin, Yuanqing Li [10'+5']

Presenter affiliation: South China Normal University, Guangzhou, China.

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**Neural substrates underlying hypercapnia-induced sleep  
disruption**

Chen Yang, Wen-Xuan Tang, Wen-Xu Wang, Jia-Hui Guo, Xin-Yi Wang, Shi-Bin Li [10'+5']

Presenter affiliation: Fudan University, Shanghai, China.

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WEDNESDAY, December 10—10:45 AM

**SESSION 5**      NEW TOOLS FOR OPTICAL IMAGING

**Chairperson:**    **Min Xu**, Chinese Academy of Sciences, Shanghai, China

**Dissecting monoamine neurotransmitter dynamics with GRAB sensors *in vivo***

Jinxia Wan [10'+5']

Presenter affiliation: School of Life Sciences, Beijing, China; PKU-IDG/McGovern Institute for Brain Research, Beijing, China.

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**An expanded palette of GRAB sensors for multiplex imaging purinergic dynamics *in vivo***

Bohan Li, Yumo Li, Jing Wang, Peiyao He, Yulong Li, Zhaofa Wu [10'+5']

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

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**High-performance genetically encoded fluorescent indicators for *in vivo* cAMP imaging**

Jun Chu [10'+5']

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

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**Spatiotemporal mapping of multidimensional chemokine dynamics by genetically-encoded fluorescent sensors**

Fengxue Xi, Chenyu Wang, Yuanxia Wang, Miao Jing [10'+5']

Presenter affiliation: Chinese Institute for Brain Research, Beijing, China; Capital Medical University, Beijing, China.

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**Miniature two-photon microscopy for freely moving animals**

Runlong Wu [10'+5']

Presenter affiliation: Beijing Information Science & Technology University, Beijing, China.

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**Regional and state-dependent astrocytic control of extracellular adenosine dynamics**

Wanling Peng [10'+5']

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

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WEDNESDAY, December 10—1:30 PM

**Visit to Old Suzhou**

**SESSION 6**      **MEMORY PROCESSING DURING SLEEP**

**Chairperson:**    **Zhili Huang**, Fudan University, Shanghai, China

**Memory editing during sleep**

Xiaoqing Hu [20'+10']

Presenter affiliation: The University of Hong Kong, Hong Kong, China.      47

**Motor manifold consolidation requires cortico-cortical communication during NREM sleep**

Jaekyung Kim, Linmeng He, Karunesh Ganguly [10'+5']

Presenter affiliation: Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea; San Francisco Veterans Affairs Medical Center, San Francisco, California; University of California-San Francisco, San Francisco, California.      48

**A time window for memory consolidation during NREM sleep revealed by cAMP oscillation**

Ziru Deng, Xiang Fei, Siyu Zhang, Xu Min [10'+5']

Presenter affiliation: University of Chinese Academy of Sciences, Shanghai, China.      49

**Decreased wakefulness induces memory and emotion deficits in Alzheimer's disease**

Ya-Dong Li [10'+5']

Presenter affiliation: Shanghai Jiao Tong University School of Medicine, Shanghai, China.      50

**Hippocampo-cortical mechanisms and functions of memory replay**

Antonio Fernandez-Ruiz [20'+10']

Presenter affiliation: Cornell University, Ithaca, New York.      51

**SESSION 7** CIRCADIAN RHYTHM

**Chairpersons:** **Amita Sehgal**, University of Pennsylvania, Philadelphia, USA  
**Fang Guo**, Zhejiang University, Hangzhou, China

**A shared cellular substrate governs circadian arousal and thermoregulatory rhythms**

Y. Wu, R. De Luca, J. Campbell, E. Arrigoni, P.M Fuller [20'+10']  
Presenter affiliation: University of California, Davis School of Medicine, Sacramento, California; BIDMC/Harvard Medical School, Boston, Massachusetts.

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**A PER2 phospho-variant retunes SCN ensemble dynamics to advance sleep phase through a privileged SCN→PVN pathway**

Ying Xu [20'+10']  
Presenter affiliation: Cambridge-Su Genomic Resource Center, Suzhou, China.

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**Cell-type specific gene expression and sleep regulation in Drosophila**

Dingbang Ma [10'+5']  
Presenter affiliation: Chinese Academy of Sciences, Shanghai, China.

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**Short light/dark cycles—A trigger for acute insomnia-like sleep**

Chang Liu [10'+5']  
Presenter affiliation: Shenzhen Institute of Advanced Technology, CAS, Shenzhen, China.

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**Break**

**Circadian rhythms of metabolic flux through the blood-brain border**

Mari Kim, Fernanda Medina Flores, Meera Montgomery, Shirley Zhang [20'+10']  
Presenter affiliation: Emory University, Atlanta, Georgia.

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**A molecular switch linking sleep and circadian rhythm**

Staci J. Kim, Hiromasa Funato, Masashi Yanagisawa [10'+5']  
Presenter affiliation: KAIST, Daejeon, South Korea; University of Tsukuba, Tsukuba, Japan.

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### **Mitochondrial control of sleep**

Zelie Britton, Quinton Lee, Simone Ota, John-Paul Moszynski, Haram Park, Gero Miesenböck [10'+5']

Presenter affiliation: University of Oxford, Oxford, United Kingdom. 58

### **Stuxnet balances mitochondria homeostasis by regulating *uhg5* and *parkin***

Xianguo Zhao, Xingzhuo Yang, Yuansheng Huang, Yifan Zhang, Xiangzhou Cui, Junzheng Zhang, Juan Du [10'+5']

Presenter affiliation: China Agricultural University, Beijing, China. 59

### **Regulation of peripheral glucose levels during human sleep**

Xuefeng Yang, Fernando T. Fedumentì, Niels Niethard, Manfred Hallschmid, Jan Born, Karsten Rauss [10'+5']

Presenter affiliation: University of Tübingen, Tübingen, Germany; International Max Planck Research School, Tübingen, Germany. 60

THURSDAY, December 11—2:00 PM

## **SESSION 8 SLEEP REGULATION III: REM**

**Chairpersons:** **Zhilia Huang**, Fudan University, Shanghai, China  
**Shumin Duan**, Zhejiang University, Hangzhou, China

### **The neuronal networks activated during paradoxical (REM) sleep and their functions**

Pierre-Hervé Luppi [20'+10']

Presenter affiliation: UMR 5292 CNRS/U1028 INSERM, Lyon, France. 61

### **Novel approaches to unravel the molecular and neuronal mechanisms of REM sleep**

Yu Hayashi [20'+10']

Presenter affiliation: The University of Tokyo, Tokyo, Japan. 62

### **Impaired adrenergic regulation of Kv channels underlies LC hyperactivity and early-onset sleep disruption in AD-like amyloidogenic mice**

Yi-Ci Zhang, Xue-Ting Zhang, Peng-Yue Chen, Zi-Yue Zhou, Mao-Qing Huang, Kai-Wen He [10'+5']

Presenter affiliation: Shanghai Institute of Organic Chemistry, Chinese Academy of Science, Shanghai, China; University of Chinese Academy of Sciences, Beijing, China; Shanghai Key Laboratory of Aging Studies, Shanghai, China. 63

**Restoration of locus coeruleus noradrenergic transmission during sleep**

Jiao Sima, Nate Dolensek, Yuchen Zhang, Declan Farriday, Andy Y. Ahn, Eduardo R. Lopez, Chennan Jin, Jade Harrell, Dana Darmohray, Emma Bi, Changwan Chen, Daniel Silverman, Yang Dan [10'+5']  
Presenter affiliation: University of California Berkeley, Berkeley, California.

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**Break**

**Decoding the neural circuitry of NREM-REM transitions**

Min Xu [20'+10']  
Presenter affiliation: Chinese Academy of Sciences, Shanghai, California.

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**Neural circuits underlying the impact of stress on sleep**

Shinjae Chung [20'+10']  
Presenter affiliation: University of Pennsylvania, Philadelphia, Pennsylvania.

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**The immune-neuron axis for REM sleep-mediated stress susceptibility**

Yu-Ting Tseng, Binghao Zhao, Liping Wang [10'+5']  
Presenter affiliation: The Brain Cognition and Brain Disease Institute, Shenzhen, China; Shenzhen-Hong Kong Institute of Brain Science, Shenzhen, China.

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**A systematic search for neuropathology of narcolepsy with cataplexy from autoimmune to potential treatment**

Ling Shan, Milo Fonville, Mabel Hoekstra, Joost Smolders, Dick Swaab [10'+5']  
Presenter affiliation: Netherlands Institute for Neuroscience, Amsterdam, the Netherlands.

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THURSDAY, December 11—5:30 PM

**COCKTAILS and BANQUET**

**SESSION 9** SLEEP REGULATION IV

**Chairpersons:** **Yang Dan**, Shenzhen Medical Academy of Research and Translation (SMART), Shenzhen, China  
**Min Xu**, Chinese Academy of Sciences, Shanghai, China

**role for the thalamus in danger evoked awakening during sleep**

Antoine R. Adamantidis [20'+10']

Presenter affiliation: University of Bern, Bern, Switzerland.

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**The mechanism and function of slow wave**

Shoji Shi [20'+10']

Presenter affiliation: University of Tsukuba, Tsukuba, Japan.

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**A body-brain circuit links energy expenditure to deep sleep in *Drosophila***

Wenjing Ye, Lili Sun, Yue Tian, Xin Yuan, Hailiang Li, Fang Guo [10'+5']

Presenter affiliation: Zhejiang University, Hangzhou, China.

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**The parafacial zone nucleus regulates anxiety-like behavior through slow-wave sleep**

Li Sun [10'+5']

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

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**Astrocytic interferon signaling in the dorsal vagal complex promotes infection-induced sleep**

Junjie Xu, Zimeng Yu, Changxin Xiang, Pengwei Luan, Qi Li, Qinghua Liu [10'+5']

Presenter affiliation: National Institute of Biological Sciences, Beijing, China; Tsinghua Institute of Multidisciplinary Biomedical Research, Beijing, China.

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**Break**

**40Hz flickering---Adenosine-based non-invasive treatment for insomnia**

Jiang-Fan Chen [10'+5']

Presenter affiliation: Wenzhou Medical University, Wenzhou, China.

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**Cortical mechanisms of sensorimotor disconnection across sleep stages and more**

Rong Mao, Matias Cavelli, Graham Findlay, Kort Driessen, Michael Peterson, William Marshall, Sian Wilcox, Vladyslav Vyazovskiy, Giulio Tononi, Chiara Cirelli [10'+5']

Presenter affiliation: University of Wisconsin-Madison, Madison, Wisconsin; University of Oxford, Oxford, United Kingdom.

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**Brain-wide neuronal representation of sleep-wake state transitions**

Siwen Pan, Huateng Cao, Peng Yuan, Zhe Zhang [10'+5']

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

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**Enhancement of astrocytic Ca<sup>2+</sup> influx through 40-Hz Auditory stimulation improves amyloidopathy and sleep in an Alzheimer's disease model**

Mincheol Park, Mridul Bhalla, Chanyoung Cheong, Euisuk Yoon, C. Justin Lee, Tae Kim [10'+5']

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

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**40 Hz HD-tACS for managing sleep disturbances and cognitive impairments in preclinical Alzheimer's disease—A double-blind, placebo-controlled randomized controlled trial**

Hanna Lu, Natalie Shu Yang, Xi Ni, Yuk Shan Yuen, Suk Ling Ma, Linda Chiu Wa Lam [10'+5']

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

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