

The 2nd International Symposium for Biology of the Non-Visual Opsins

President

Toshihide Kurihara

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Date: **July 26-27, 2024**

Venue: **Kanda Myoujin, Tokyo, Japan**

Symposium Secretariat: Mediproduce, Inc
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The 2nd International Symposium for Biology of
the Non-Visual Opsins

Report

September, 2024

Outline

The 2nd International Symposium for Biology of the Non-Visual Opsins

Organizer: The Organizing Committee of the 2nd International Symposium for Biology of the Non-Visual Opsins

Supported by: Japan Agency for Medical Research and Development (AMED)

Dates: July 26 & 27, 2024

Venue: Kanda Myoujin Hall, Tokyo, Japan

Chair: Dr. Toshihide Kurihara, Department of Ophthalmology, Keio University

Language: English

Number of participants: 105 from Japan, USA, China, and Sweden

Program: 15 invited lectures (including 2 plenary lectures), 2 oral presentations, and 8 poster presentations

History:

2022 1st Symposium Seattle, USA

2024 2nd Symposium Tokyo, Japan

Program

[Day 1] Friday, July 26

12:50-13:00 Opening Remarks

13:00-14:00 Plenary Session 1

The Non-Visual Opsins in Developmental, Homeostasis, and Disease

Dr. Richard Lang,
Division of Pediatric Ophthalmology, Visual Systems Group, Science of Light Center,
Cincinnati Children's Hospital Medical Center, USA

14:00-15:20 Session 1: Physiology of Non-Visual Opsins 1

Hypothalamic Opsin 3 Suppresses Melanocortin 4 Receptor Signaling and Potentiates Kir7.1 the Potassium Channel to Promote Food Consumption

Dr. Elena Oancea
Department of Neuroscience, Brown University, USA

Molecular Physiology of a Pineal Bistable Opsin and Its Optogenetic Potential

Dr. Akihisa Terakita
Department of Biology, Graduate School of Science, Osaka Metropolitan University,
Japan

15:50-16:00 Oral Presentation 1

16:00-18:00 Session 2: Circadian Rhythm/ Moderator: Kazuo Tsubota

OPN5 Signal and Sleep/Wakefulness

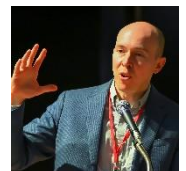
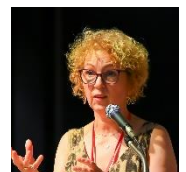
Dr. Akihiro Yamanaka
Chinese Institute for Brain Research, Beijing (CIBR), China

Interactions of Non-Visual Opsins and the Circadian Clock

Dr. Ethan Buhr
Department of Ophthalmology, University of Washington, USA

Network Connectivity of the Melanopsin-Expressing Retinal Ganglion Cells

Dr. Satchidananda Panda
Salk Institute for Biological Studies, USA



[Day 2] Saturday, July 27

9:00-11:00 Session 3: Physiology of Non-Visual Opsins 2

Non-Image-Forming Photoreceptors Improve Visual Orientation Selectivity and Image Perception

Dr. Tian Xue*

School of Life Sciences, University of Science and Technology of China, China

Influence of the Blue-Light Sensitive Non-Visual Opsins on Refractive Development and Myopia

Dr. Reece Mazade

Department of Ophthalmology, Emory University School of Medicine, USA

Melanopsin Properties and Their Downstream Influences

Dr. Michael Tri H. Do

Harvard Medical School, Boston Children's Hospital, USA

11:00-12:00 Plenary Session 2

The Broad Roles of Non-Visual Opsins

Dr. Russell N. Van Gelder

Department of Ophthalmology, University of Washington, USA

13:00-14:30 AMED Joint Session: Multi-Sensing

Optogenetics in Non-Neuronal Cells

Dr. Kenji Tanaka

Division of Brain Sciences, Institute for Advanced Medical Research, Keio University School of Medicine, Japan

Design of Photocyclic Visual and Non-Visual Opsins as Optogenetic Tools

Dr. Takahiro Yamashita

Department of Biophysics, Graduate School of Science, Kyoto University, Japan

Myopia Development and Control by Non-Visual Opsins

Dr. Toshihide Kurihara

Department of Ophthalmology, Keio University School of Medicine, Japan

15:00-15:10 Oral Presentation

15:10-16:30 Session 4: Future of the Studies of Non-Visual Opsins

Clinical Application of OPN5

Dr. Kazuo Tsubota

Tsubota Laboratory, Inc., Japan

Is the Retina Part of the Pacemaker?

Dr. Samer Hattar

National Institute of Mental Health, National Institutes of Health, USA

16:30-16:50 Closing Session

16:50-17:00 Closing Remarks

*Dr. Tian Xue made a video presentation.



Summary

This summary captures the two-day program of presentations and plenary lectures, which took place on July 26 and 27, 2024, in Tokyo. The event brought together some 100 plus researchers and students worldwide to discuss the recent advances in related research fields. The first day started with opening remarks by Dr. Toshihide Kurihara, Chair of the symposium and Associate Professor of Keio University. The two-day conference comprised 15 invited lectures, 2 oral presentations and 8 poster presentations. Each session had a Chair, who was an expert in the field. Each speaker was given 20 or 25 minutes for their presentation, followed by a 5-minute question-and-answer session. The program was structured to foster lively and beneficial discussion between participants. The symposium concluded with a summary session to forge a clearer and more common understanding of the outcomes among all attendees.



In the closing session, Dr. Richard Lang of Cincinnati Children's Hospital summarized the event as follows: This symposium addressed the analysis of the molecular and physiological mechanisms of nonvisual opsins. For the physiological mechanisms, the symposium covered the development of the eye, the biological clock, and sleep, as well as the unexpected functions of opsin, such as vascular development and energy metabolism, and diseases, such as myopia, which all covered the current state of nonvisual opsin research. Dr. Lang also stated that the existence of diseases caused by lack of light, such as myopia, is becoming clear, and that overcoming these diseases is a goal we must achieve. The audience also commented on this summary, saying that it is our duty to make the public aware of the health effects of light.

The outline of the 3rd Nonvisual Opsin Symposium was also discussed, and it was confirmed that the participants will spend the next few weeks discussing and deciding whether to hold the symposium in Cincinnati in 2026, two years from now, with Dr. Lang as symposium chair, or in San Diego with Dr. Panda of Salk Institute for Biological Studies as symposium chair. It was also suggested to utilize some SNS tools such as a mailing list among the symposium attendees to serve as a platform for discussion.

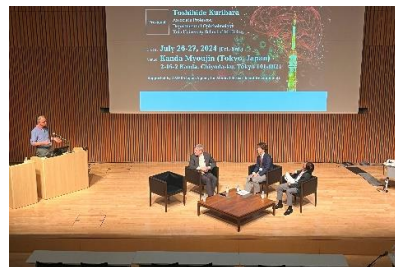
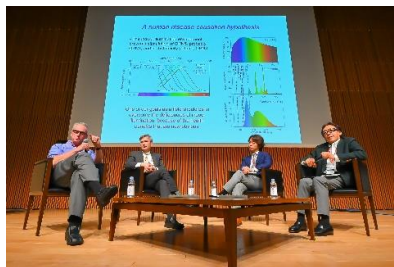


Photo Gallery

