The 19th International Symposium on Molecular and Neural Mechanisms of Taste and Olfactory Perception (ISMNTOP/YRUF/AISCRIB 2022/23)

第19回国際シンポジウム“味覚嗅覚の分子神経機構”

（併催：うま味若手フォーラム2022/23,
アジア国際シンポジウム“化学受容と摂食行動”2022/23）

Organizer：Yuzo Ninomiya
Okayama University, Japan
Kyushu University, Japan
Monell Chemical Senses Center, USA

Co-organizer: Ryusuke Yoshida
Okayama University, Japan

PROGRAM & ABSTRACTS

March 18-19, 2023
Okayama University Shikata Auditorium
2-5-1, Shikata-cho, Kita-ku, Okayama, 700-8525, Japan

Hosted by

Department of Oral Physiology,
Graduate School of Medicine, Dentistry and
Pharmaceutical Sciences, Okayama University

岡山大学大学院医歯薬学総合研究科口腔生理学分野

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Yuzo Ninomiya (Okayama University/Kyushu University, Japan/ Monell Chemical Senses Center, USA)
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The 19th International Symposium on Molecular and Neural Mechanisms of Taste and Olfactory Perception (ISMNTOP2022/23, YRUF2022/23, AISCRIB2022/23)

March 18th, Saturday ----------

■ Opening remarks 12:50 - 13:00

Yuzo Ninomiya (*Okayama Univ, Kyushu Univ, Monell Chemical Senses Center, USA*)

■ Special lecture 1 13:00 - 13:40

[Chair: Ken Iwatsuki (*Tokyo Univ Agriculture*)]

Sweet taste mechanisms for caloric and non-caloric sweeteners
Robert F. Margolskee
Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104, USA

▶ Break **13:40 - 13:50**

■ Session 1 13:50 - 17:05

Taste

[Chair: Yoshiro Ishimaru (*Meiji Univ*), Kengo Nomura (*Kyoto Pref Univ Med*)]

IS1-1 13:50 – 14:15
Chloride ion-binding to the extracellular ligand-binding domain of sweet/umami taste receptors evokes taste sensation
Atsuko Yamashita[1], Nanako Atsumi[1], Keiko Yasumatsu[1, 3, 4], Yuriko Takashina[2], Chiaki Ito[1], Norihisa Yasui[1], Robert F. Margolskee[4]
[1]Graduate School of Medicine, Dentistry and Pharmaceutical Sciences and [2]School of Pharmaceutical Sciences, Okayama University, Japan, [3]Tokyo Dental Junior College, Tokyo, Japan, [4]Monell Chemical Senses Center, Philadelphia, PA, USA

IS1-2 14:15 – 14:40
Evolution of the T1R receptors in vertebrates
Yasuka Toda, Yoshiro Ishimaru
Department of Agricultural Chemistry, School of Agriculture, Meiji University, Japan

IS1-3 14:40 – 15:05
Roles of CaSR in the gum feeding behavior of common marmosets
Hiroo Imai
Center for the Evolutionary Origins of Human Behavior, Kyoto University, Japan

IS1-4 15:05 – 15:30
Generation and characterization of tuft cells using pancreatic duct organoid culture system
Ken Iwatsuki, Kousuke Sakaguchi
Department of Nutritional Science and Food Safety, Faculty of Applied Biosciences, Tokyo University of Agriculture, Japan

▶ Break **15:30 - 15:50**

IS1-5 15:50 – 16:15

CNP-NPRB signaling modulates the peripheral salt taste sensitivity in mice

Yuka Sugawara[1], **Shingo Takai**[2], Syusuke Iwata[2,3], Yuko Kawabata[4], Keisuke Sanematsu[2,3,5], Noriatsu Shigemura[2,3]

[1]Ajinomoto co., Inc., [2]Section of Oral Neuroscience, Graduate School of Dental Science, Kyushu University, [3]Research and Development Center for Five-Sense Devices Taste and Odor Sensing, Kyushu University, [4]Department of Cell Biology, Aging Science, and Pharmacology, Division of Oral Biological Sciences, Faculty of Dental Science, Kyushu University, [5]OBT Research Center, Graduate School of Dental Sciences, Kyushu University

IS1-6 16:15 – 16:40

Neural and behavioral analysis of fatty acid receptors expressed in mouse posterior tongue

Keiko Yasumatsu

Tokyo Dental Junior College, Monell Chemical Senses Center

IS1-7 16:40 – 17:05

Neural circuit of salt and umami seeking behavior

Takaaki Ozawa[1,2], Tomohiro Shibata[1,2], Yoshinobu Oyama[1,2], Mayuka Abe[1,2], Kentaro Goto[1,2], Hinano Yonemaru[1,2], Yuma Matsumoto[1,2], Ryotaro Iwamoto[1,2], Koki Sakurai[1,2], Macpherson Tom[1,2], Takatoshi Hikida[1,2]

[1]Institute for Protein Research, Osaka University. Osaka, JAPAN, [2]Graduate School of Science, Osaka University, Osaka, JAPAN

■ Poster session 1 17:05 - 18:15

■ Bus transportation 18:30 -

■ Short Talk Session & Social Gathering 19:00 – 21:00

@ REST&EVENT HALL FORTY

2nd basement, Central building, 6-36, Honmachi, Kita-Ku, Okayama

March 19th, Sunday ----------

■ Session II 9:00 - 10:40

Olfaction

[Chair: Masahiro Yamaguchi *(Kochi Univ*), Takeshi Imai (*Kyushu Univ*)]

IS2-1 9:00 – 9:25
Context-dependent and cell-type specific modulation in the olfactory bulb
Sander Lindeman, Xiaochen Fu, Janine Reinert, **Izumi Fukunaga**
Sensory and Behavioural Neuroscience Unit, OIST Graduate University

IS2-2 9:25 – 9:50
Representation of opposing innate values tied to distinct circuit motifs in the secondary olfactory center of *Drosophila*
Makoto Someya[1], Ka-Yuet Liu[1,2], Hokto Kazama[1,3]
[1]*RIKEN Center for Brain Science*, [2]*Department of Sociology, University of California, Los Angeles*, [3]*Graduate School of Arts and Sciences, The University of Tokyo*

IS2-3 9:50 – 10:15
Life-protective state induced by artificial innate fear-evoking odorants
Tomohiko Matsuo, Ko Kobayakawa, Reiko Kobayakawa
Department of Functional Neuroscience, Institute of Biomedical Science, Kansai Medical University

IS2-4 10:15 – 10:40
Role of feeding-related neuromodulatory molecules in the mouse olfactory cortical regions
Md Monjurul Ahasan, Yoshihiro Murata, Mutsuo Taniguchi, Masahiro Yamaguchi
Department of Physiology, Kochi Medical School, Kochi University

▶ Break **10:40 - 11:00**

■ Special lecture 2 11:00 - 11:40

[Chair: Masahiro Yamaguchi *(Kochi Univ*), Takeshi Imai (*Kyushu Univ*)]

Encoding and acting upon odor-driven information
Daniel W. Wesson
University of Florida

■ Lunch & Poster session 2 11:40 - 12:40

■ Session III 12:40 - 14:30

Asian International Symposium on Chemo-Reception and Ingestive Behavior 2022/23 (AISCRIB2022/23)

[Chair: Seok Jun Moon *(Yonsei Univ*), Kumiko Sugimoto (*Tokyo Med. Dent. Univ.*)]

IS3-1 12:40 – 13:10 (invited talk)
HCN tunes receptor coupling to encode sensitivity-preserved taste dominance in *Drosophila*
MinHyuk Lee[1,3,4], Sun Young Kim[1,2], Kyuhyung Kim[2], **KyeongJin Kang**[1,2]
[1]*Neurovascular unit research group, Korea Brain Research Institute, Daegu 41062,* [2]*Department of Brain and Cognitive Sciences, DGIST, Daegu, Republic of Korea*

IS3-2 13:10 – 13:40 (invited talk)
On the origin of appetite: GLWamide in jellyfish represents an ancestral satiety neuropeptide
Vladimiros Thoma[1,2], Shuhei Sakai[1], Koki Nagata[1], Yuu Ishii[2,3], Shinichiro Maruyama[3,4], Ayako Abe[1], Shu Kondo[5,6], Masakado Kawata[3], Shun Hamada[7], Ryusaku Deguchi[2], **Hiromu Tanimoto**[1]
[1]Graduate School of Life Sciences, Tohoku University, Japan, [2]Department of Biology, Miyagi University of Education, Japan, [3]Laboratory of Evolutionary Biology, Graduate School of Life Sciences, Tohoku University, Japan, [4]Graduate School of Humanities and Sciences, Ochanomizu University, Japan, [5]Department of Biological Science and Technology, Faculty of Advanced Engineering, Tokyo University of Science, Japan, [6]Invertebrate Genetics Laboratory, National Institute of Genetics, Japan, [7]Department of Food and Health Sciences, International College of Arts and Sciences, Fukuoka Women's University, Japan

IS3-3 13:40 – 14:05
Neural mechanism of contact olfactory communication for nestmate recognition in ant
Mamiko Ozaki
Department of Biology, Graduate School of Science, Kobe University, Kobe, Japan; KYOUSEI Science Center for Life and Nature, Nara Women's University, Nara, Japan; Department of Chemical Science and Engineering, Graduate School of Engineering, Kobe University, Kobe, Japan; Morphogenetic Signaling Team, RIKEN Center for Biosystems Dynamics Research, Kobe, Japan.

IS3-4 14:05 – 14:30
Unconventional roles of rhodopsins in temperature and sweet taste sensation
Takaaki Sokabe[1,2], Qiaoran Li[3], Craig Montell[3]
[1]Thermal Biology Group, Exploratory Research Center on Life and Living Systems, National Institutes of Natural Sciences, Japan, [2]Division of Cell Signaling, National Institute for Physiological Sciences, National Institutes of Natural Sciences, Japan, [3]Department of Molecular, Cellular, and Developmental Biology, University of California, Santa Barbara, CA, USA

▶ Break **14:30 – 14:50**

■ Session IV 14:50 – 16:35
Transporters, ion channels and GPCRs involved in chemosensory signaling
[Chair: Hiroo Imai (*Kyoto Univ*), Junji Hirota (*Tokyo Inst. Tech.*)]

IS4-1 14:50 – 15:20 (invited talk)
Interaction of TRPV3 with ANO1 or TMEM79
Makoto Tominaga[1,2,3]
[1]Division of Cell Signaling, National Institute for Physiological Sciences (NIPS), Japan, [2]Thermal Biology Group, Exploratory Research Center on Life and Living Systems (ExCELLS), Japan, [3]Department of Physiological Sciences, Graduate University for Advanced Studies (SOKENDAI), Japan

IS4-2 15:20 – 15:45
Molecular mechanism of class I odorant receptor gene expression
Tetsuo Iwata, Sirapop Nithiuthai, Satoshi Tomeoka, **Junji Hirota**
Department of Life Science and Technology, Tokyo Institute of Technology, Japan

IS4-3 15:45 – 16:10
Analysis of neural responses to salt stimuli in experimental animal model of taste disorder caused by dietary-induced zinc deficiency
Chizuko Inui-Yamamoto[1], Akiyo Kawano,[1,2], Yousuke Inoue[1], Shinsuke Ohba[1], Satoshi Wakisaka[1,3]
[1]Oral Anatomy & Developmental Biology, Osaka University Graduate School of Dentistry, Osaka, Japan, [2]Oral Health Sciences, Otemae College, Hyogo, Japan, [3]Kansai Women's College, Osaka, Japan.

IS4-4 16:10 – 16:35
Sweet taste perception via SGLT1 in chickens
Fuminori Kawabata[1], Yu Nishimura[1], Yuki Matsui[2], Shoji Tabata[2]
[1]Physiology of Domestic Animals, Faculty of Agriculture and Life Science, Hirosaki University, Hirosaki, Japan.
[2]Laboratory of Functional Anatomy, Faculty of Agriculture, Kyushu University, Fukuoka, Japan.

■ **Closing remarks 16:35 -** Kumiko Sugimoto (*Tokyo Med. Dent. Univ.*)

[Discussants]
Robert F. Margolskee (Monell Chem Senses Center), Daniel W. Wesson (Univ Florida), KyeongJin Kang (Korean Brain Res Inst), Moon SJ(Yonsei Univ), Jung HS(Yonsei Univ), Kim KN (Gangneung-Wonju National Univ), Koo JH (DGIST), Kwon JY (Sungkyunkwan Univ), Kim JS (Sungkyunkwan Univ), Sugimoto K (Tokyo Med Dent Univ), Tominaga M (NIPS), Tanimoto H (Tohoku Univ), Wakisaka S (Kansai Women's College), Yamashita A (Okayama Univ), Toda Y (Meiji Univ), Ishimaru Y (Meiji Univ), Imai H (Kyoto Univ), Iwatsuki K (Tokyo Univ Agri), Takai S (Kyushu Univ), Yasumatsu K (Tokyo Dent Jr College), Ozawa T (Osaka Univ), Yamaaguchi M (Kochi Univ), Imai T (Kyushu Univ), Fukunaga I (OIST), Someya M (RIKEN), Matsuo T (Kansai Med Univ), Ahasan MM (Kochi Univ), Ozaki M (Kobe Univ), Sokabe T (NINS), Hirota J (Tokyo Inst Tech), Inui-Yamamoto C (Osaka Univ), Kawabata F (Hirosaki Univ), Kondoh T (Kindai Univ), Yasuo T (Asahi Univ), Masuzawa Y (Ajinomoto Co Inc), Kohmura M (Ajinomoto Co Inc), Maruyama Y (Ajinomoto Co Inc), Takumi A (Ajinomoto Co Inc)

■ Poster Session

ISP01
Allosteric modulations in odor mixture responses
Kohei Fukata, Shigenori Inagaki, Takeshi Imai
Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

ISP02
Non-synaptic mechanisms mediate global desensitization of olfactory sensory neurons *in vivo*
Shigenori Inagaki, Takeshi Imai
Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan

ISP03
Repellent effect of a native ant's odor on invasive species: chemical identification of an active component and putative neural mechanism
Tatsuya Uebi[1 2], Tomoya Sakita[1], Ryo Ikeda[1], Keita Sakanishi[1], Tomoaki Tsutsumi[3], Zijian Zhang[3], Huiying Ma[3], Ryosuke Matsubara[3], Shigeru Matsuyama[4], Satoko Nakajima[5], Rong-Nan Huang[6], Shunya Habe[1], Abraham Hefetz[7], Mamiko Ozaki[1 2 8 9]
[1]Department of Biology, Graduate School of Science, Kobe University, Kobe, Japan. [2]KYOUSEI Science Center for Life and Nature, Nara Women's University, Nara, Japan. [3]Department of Chemistry, Graduate School of Science, Kobe University, Kobe, Japan. [4]Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Japan. [5]Graduate School of Life and Environmental Sciences, Kyoto Prefectural University, Kyoto, Japan. [6]Department of Entomology, National Taiwan University, Taipei, Taiwan. [7]School of Zoology, Tel Aviv University, Tel Aviv, Israel. [8]Department of Chemical Science and Engineering, Graduate School of Engineering, Kobe University, Kobe, Japan. [9]Morphogenetic Signaling Team, RIKEN Center for Biosystems Dynamics Research, Kobe, Japan.

ISP04
Molecular Characterization of the Intestinal Tuft Cells Using the Intestinal Organoids Derived from Non-Human Primates
Akihiko Inaba[1, 2, 3], Ayane Arinaga[4], Keisuke Tanaka[5], Ken Iwatsuki[4], Hiroo Imai[2]
[1]Graduate School. of Science, Kyoto University, Kyoto, [2]Center for the Evolutionary Origins of Human Behavior, Kyoto University, Aichi, [3]JSPS Research Fellow, Tokyo, [4]Faculty of Applied Bioscience, Tokyo University of Agriculture, Tokyo, [5]Genome Research Center, Tokyo University of Agriculture, Tokyo, Japan

ISP05
Difference in the Sensitivity to Bitter Compounds in Coffee based on the TAS2R Genetic Polymorphism
Rena Numabe[1,2], Hiroo Imai[2]
[1]Division of Biology, Graduate School of Science, Kyoto University, Japan, [2]Center for the Evolutionary Origins of Human Behavior, Kyoto University, Japan

ISP06
X-ray crystallography and computational molecular modeling of human bitter taste receptors
Yamato Sugiura[1], Kimihiko Mizutani[2], Bunzo Mikami[3], Yukako Hayashi[2]
[1]Faculty of Agriculture Science, University of Kyoto, [2]Graduate School of Agriculture Science, University of Kyoto, [3]Research Institute for Sustainable Humanosphere, University of Kyoto

ISP07
Discrimination of the components of binary taste mixture containing taste substances with same taste quality in rats
Shinpei Takahashi, Fumihiko Nakamura, Toshiaki Yasuo, Takeshi Suwabe, Noritaka Sako
Department of Oral Physiology, Asahi University School of Dentistry, Gifu, Japan.

ISP08
Intake of the flavor previously presented with ascorbic acid in ascorbic acid-deficient rats
Toshiaki Yasuo, Fumihiko Nakamura, Takeshi Suwabe, Shinpei Takahashi, Noritaka Sako
Department of Oral Physiology, Asahi University School of Dentistry, Mizuho 501-0296, Japan

ISP09
Inosine 5'-monophosphate (IMP) enhances preference for dried bonito *dashi* by prior exposure in mice
Takashi Kondoh
Department of Food Science and Nutrition, Faculty of Agriculture, Kindai University, Japan