

The 8th International Tunicate Meeting



July 13-17, 2015
Aomori, JAPAN

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Aomori City Cultural Hall, Aomori, Japan

Scientific Committee

Hiroki Nishida, Osaka University, Japan

Christiaan Lionel, New York University, USA

Yasunori Sasakura, University of Tsukuba, Japan

Ed Munro, University of Chicago, USA
Lucia Manni, University of Padova, Italy

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Eric Thompson, SARS International Center for Marine Molecular Biology, Norway

Alex McDougall, CNRS / Univ P et M Curie Paris6, France

Tony De Tomaso, University of California, Santa Barbara, USA

Atsuo Nishino, Hirosaki University, Japan

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Toshinori Endo, Hokkaido University

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Detailed Program

July 12th (Sunday)

19:00-21:00 Welcome Party (Dining Café はなあふ on 14th floor, ASPAM)

July 13th (Monday)

9:00-10:00 Registration

10:00-10:15 Opening Remarks

Session 1: Molecular Ecology, Population Diversity and Invasive Species

Chair: Lucia Manni and Eric Thompson

10:15-10:40 Lucia Manni

“*Ciona intestinalis* typeA is *Ciona robusta* Hoshino & Tokioka, 1967, and *Ciona intestinalis* typeB is *Ciona intestinalis* (Linnaeus, 1767)”

10:40-11:05 Frederique Viard

“Secondary contacts of an alien tunicate with an interfertile native congener: a SNP-based investigation in *Ciona* sp.”

11:05-11:30 Xavier Turon

“Utility of the metabarcoding approach for the determination of tunicate diversity in environmental DNA samples”

11:30-11:55 Gretchen Lambert

“New Ascidian Records from Singapore”

11:55-12:20 Gustavo Dias

“Predation on ascidians and larval recruitment determine the structure of sessile communities in a recreational marina from Southeastern Brazil”

12:20-14:30 Lunch

Session 2: Regeneration, Diseases and Self-non self-recognition

Chair: Anthony W. De Tomaso and Euichi Hirose

14:30-14:55 Noa Shenkar

“Gut-spilling in chordates: evisceration in the solitary ascidian *Polycarpa mytiligera*”

14:55-15:20 Tal Gordon

“Siphon and neural complex regeneration in Stolidobranch ascidians”

15:20-15:45 Stefano Tiozzo

“Advances in blastogenesis and vascular budding: co-option of germ layers specific TFs and transcriptomic analyses”

15:45-16:05 Coffee break

16:05-16:30 Anthony W. De Tomaso

“Mechanotransduction and vascular regression in *Botryllus schlosseri*”

16:30-16:55 Euichi Hirose

“Cellulose is not degraded in the tunic of *Halocynthia roretzi* contracting soft tunic syndrome caused by the infectious kinetoplastid”

16:55-17:20 Ayelet Voskoboynik

“Molecular and cellular characterization of histocompatibility reactions in *Botryllus schlosseri*”

17:20-17:40 Coffee break

Session 3: Reproduction and Cell Biology

Chair: Alex McDougall and Takefumi Negishi

17:40-18:05 Hiroki Nishida

“Oocyte maturation and establishment of the animal-vegetal axis in ascidians”

18:05-18:30 Hitoshi Sawada

“Three s/v-Themis pairs and v-Themis-like are responsible for self-incompatibility in the ascidian *Ciona intestinalis*”

18:30-18:55 Vlad Costache

“Cortical structures and asymmetric cell division during the early development of the ascidian *Phallusia mammillata*”

18:55-19:20 Takefumi Negishi

“A novel plasma membrane structure capturing centrosome determines the orientation of cell division in ascidian epidermal cells”

19:20-19:45 Jean-Philippe Chambon

“Cell fates during the tail regression at metamorphosis stage in the ascidian *Ciona intestinalis*”

July 14th (Tuesday)

Session 4: Physiology and Neurobiology

Chair: Atsuo Nishino and Ian Meinertzhagen

9:30- 9:55 Tatsuya Ueki

“Vanabins: A family of vanadium-binding proteins uniquely found in the genome of vanadium-rich ascidians”

9:55-10:20 Kotaro Shimai

“Piwi controls neuronal differentiation in the central nervous system of *Ciona intestinalis*”

10:20-10:45 Takeo Horie

“Structural and physiological analyses of a neural circuit for swimming locomotion of the *Ciona intestinalis* larva”

10:45-11:10 Kerranne Ryan

“The anatomical connectome of the larval CNS in *Ciona intestinalis* reveals the extent of peripheral integration in the motor network”

11:10-11:45 Ian Meinertzhagen

“Is the larval brain of *Ciona* vertebrate or invertebrate in character?”

11:45-12:05 Group Photo

12:05-14:15 Lunch

Session 5: Developmental and Evolutionary Genomics

Chair: Lionel Christiaen and Tatsuya Ueki

14:15-14:40 Lionel Christiaen

“Regulation of cardiopharyngeal fate specification in a simple chordate”

- 14:40-15:05 Emma Farley
“Enhancer sequence to tissue specificity during development”
- 15:05-15:30 Mark Kowarsky
“Insights from the *Botryllus schlosseri* transcriptome”
- 15:30-15:50 Coffee break
- 15:50-16:15 Kai Wang
“Maternal and zygotic transcriptomes in the appendicularian, *Oikopleura dioica*:
Novel protein-encoding genes, intra-species sequence variations, and trans-spliced
RNA leader”
- 16:15-16:40 Lemaire Patrick
“Tunicate Genome evolution”
- 16:40-17:05 Delphine Dauga
“The Aniseed Curator: How To Use It To Enter Published And Individual Lab Data”
- 17:30-19:30 Poster session I

July 16th (Thursday)

- 9:30-10:30 Plenary Lecture
Mike Levine
Chair: Nori Satoh

- 10:30-10:50 Coffee break

Session 6: Cell Fate Specification

Chair: Hiroki Nishida and Brad Davidson

- 10:50-11:15 Kari Willi
“Atypical transcriptional switching via TCF/s-catenin for germ layer segregation”
- 11:15-11:40 Hitoyoshi Yasuo
“FoxA/FoxD/Egf9 Define the Transient Regulatory State of Mesendoderm”
- 11:40-12:05 Naohito Takatori
“Mechanism that determines the direction of nuclear migration and separates
mesoderm and endoderm fates”

12:05-12:30 Clare Hudson

“Patterning of the Ascidian Central Nervous System”

12:30-12:55 Brad Davidson

“Mitotic membrane turnover coordinates differential induction of the heart progenitor lineage”

12:55-15:00 Lunch

Session 7: Morphogenesis

Chair: Patrick Lemaire and Hitoyoshi Yasuo

15:00-15:25 Patrick Lemaire

“Nodal and Eph signalling control the second step of endoderm invagination during ascidian gastrulation”

15:25-15:50 Ignacio A. Navarrete

“Multiple signaling events coordinate ascidian posterior neural tube morphogenesis”

15:50-16:15 Hidehiko Hashimoto

“Spatiotemporal control of actomyosin contractility during zippering and neural tube closure in a simple chordate”

16:15-16:35 Coffee break

16:35-17:00 Gaku Kumano

“Mechanism of the “KUBIRE” formation in the neurula embryo of the ascidian, *Halocynthia roretzi*”

17:00-17:25 Michael Veeman

“Shaping the *Ciona* notochord”

17:25-17:50 Bo Dong

“Self-reinforcing contractility antagonizes PCP signaling to position the actomyosin rings at the equator in notochord cells”

18:10-20:10 Poster session II

July 17th (Friday)

Session 8: Imaging Analysis

Chair: Thomas Stach and Naohito Takatori

9:30- 9:55 Kanae Kishi

“Morphogenesis and patterning of the trunk epidermis of the appendicularian, *Oikopleura dioica*”

9:55-10:20 Yelena Y. Bernadskaya

“RTKs regulate collective cell migration and cell-cell interactions of TVCs during *Ciona* development”

10:20-10:45 Thomas Stach

“High-precision morphology: comparing tunicate cell lineages using bifocal 4D-microscopy

10:45-11:10 Patrick Lemaire

“Systematic reconstruction and tracking of ascidian embryonic cells bridges embryo geometry and the genetic programme”

11:10-11:35 Yannick L. Kergoslen

“Visualizing and graphically modeling ascidian time lapse imaging data”

11:35-13:35 Lunch

Session 9: Metamorphosis, Evo-Devo, Epigenetics

Chair: Takeshi A. Onuma and Sebastien Darras

13:35-14:00 Shohei Matsunobu

“Glutamatergic-GABAergic neuronal circuit is necessary to induce tail regression during ascidian metamorphosis”

14:00-14:25 Keita Yoshida

“Hox1 establishes the anterior-posterior character of the pharyngeal endoderm”

14:25-14:50 Takeshi A. Onuma

“Internal and external morphology of adults of the appendicularian, *Oikopleura dioica*: A SEM study”

14:50-15:10 Coffee break

15:10-15:35 Sebastien Darras

“Comparative development of the tail epidermis midlines in ascidians”

15:35-16:00 Robert W. Zeller

“Evolutionary similarities between the peripheral nervous system of the ascidian larva and vertebrate sensory hair cells”

16:00-16:25 Emilie Le Goff

“Enhancer of zeste acts as a major developmental regulator of *Ciona intestinalis* embryogenesis”

16:25-16:45 Coffee break

16:45-18:15 Round Tables

Round Table 1: Community-wide efforts on Functional Genomics

Coordinator: Lionel Christiaen

Round Table 2: Taxonomy of *Ciona* sp.

Coordinator: Lucia Manni

18:15-18:20 Closing Remarks

19:30-22:00 Farewell party (Uto room 善知鳥の間 on 3rd floor, Hotel Aomori)

List of posters

- P01 Tissue-specific functional genomics using CRISPR/Cas9 in *Ciona intestinalis*
Shashank Gandhi, Alberto Stolfi, Lionel Christiaen
- P02 Single cell transcriptome analysis in *Ciona intestinalis*
Garth Ilsley, Nicholas M. Luscome, Takeshi Noda, Nori Satoh, Ritsuko Suyama
- P03 Fractionation and transcriptomic profiles of developmental stages of *Ciona* ovarian follicles
Shin Matsubara, Honoo Satake
- P04 A novel microtubule structure on the posterior-vegetal egg cortex during the cytoplasmic and cortical reorganizations
Toshiyuki Goto, Hirokazu Ishii, Tomomi Tani, Takahito Nishikata
- P05 Metalloproteases are necessary for sperm binding to or penetration through the vitelline coat in *Ciona intestinalis*
Shiori Nakazawa, Kei Otsuka, Maki Shirae-Kurabayashi, Hitoshi Sawada
- P06 Regulation of germline gene expression during ascidian embryogenesis
Kaori Miyaoku, Ayaki Nakamoto, Hiroki Nishida, Gaku Kumano
- P07 The role of soluble adenylyl cyclase in the regulation of flagellar motility in *Ciona* sperm
Kogiku Shiba, Kazuo Inaba
- P08 Two novel subunits of axonemal dyneins from *Ciona intestinalis*, as potentially key regulators for ciliary motility
Kazuo Inaba, Osamu Kutomi, Katsutoshi Mizuno, Kogiku Shiba, Keiko Hirose

- P09 Cell shape at metaphase drives the invariant cleavage pattern of ascidian embryos
Rémi Dumollard, Gregory Salez, Sameh Ben Aicha, Nicolas Minc, Céline Hebras,
Lydia Besnardeau, Alex McDougall
- P10 Cell lineage of *Halocynthia* epidermal sensory neurons
Yukio Ohtsuka
- P11 Analysis of genetic pathways of the peripheral nervous system
Kana Waki, Kaoru S. Imai, Yutaka Satou
- P12 Transcriptional regulation of the retinoic acid-synthesizing and degrading enzymes
in the *Ciona intestinalis* embryo.
Yudai Hatakeyama, Ayaka Tagashira, Yuna Moriyama, Masashi Nabeshima,
Shigeki Fujiwara
- P13 Mechanical properties of early ascidian embryos
Benoit G. Godard, Mateusz Sikora, Kohji Hotta, Carl-Philipp Heisenberg
- P14 Formation of the digestive tract in *Ciona intestinalis* includes distinct morphogenic
processes between its anterior and posterior parts
Keiichi Nakazawa, Takumi Yamazawa, Yuuta Moriyama, Yosuke Ogura, Narudo
Kawai, Yasunori Sasakura, Hidetoshi Saiga
- P15 Hox gene cluster structure in *Halocynthia roretzi* genome
Yuka Sekigami, Asao Fujiyama, Nori Satoh, Hidetoshi Saiga
- P16 Characterization of a planar cell polarity global signal in the *Ciona* notochord
Matthew Kourakis, Erin Newman-Smith, William Smith
- P17 Usp, a universal stress protein family gene, is required for tissue differentiation
during embryogenesis of the ascidian *Ciona intesitinalis*
Shuichi Wada

- P18 Regulation of cardiopharyngeal progenitors' collective polarity by asymmetric BMP activity
Stephanie Gline, Wei Wang, Lionel Christiaen
- P19 Dual Mechanism for Germ Cell Formation in the Solitary Ascidian, *Ciona intestinalis*.
Maki Shirae-Kurabayashi, Tetsushi Sakuma, Yasunori Sasakura, Akira Nakamura, Takashi Yamamoto, Hitoshi Sawada
- P20 Analyses of the mechanisms of epithelial morphogenesis during the tail formation in the embryos of ascidian *Halocynthia roretzi*
Ayaki Nakamoto, Gaku Kumano
- P21 Regional homology of the central nervous system between ascidians and vertebrates: insights from Pax2/5/8 paralogs
Yuichi Hasegawa, Kotaro Shimai, Megumi Mukai, Yutaka Daido, Koki Nishitsuji, Takehiro G. Kusakabe
- P22 Regulation of a hedgehog gene in the central nervous system of *Ciona intestinalis*
Megumi Mukai, Yuichi Hasegawa, Haruka Sugimoto, Kotaro Shimai,
Takehiro G. Kusakabe
- P23 Quantitative analysis of *phallusia mammillata* development based on nuclei recognition and lineage reconstruction from time lapse imaging data
Adeline Rausch, Yannick L. Kergosien, Nadine Peyri ras
- P24 Use of Binary Heterologous Gene Expression Systems to Characterize the A7.6 Lineage in *Ciona intestinalis*
Theadora Tolkin, Anthony Filipovic, Lionel Christiaen

- P25 Experimental verification of the linkage logic using the gene regulatory networks in the ascidian embryo
Kenji Kobayashi, Miki Tokuoka-Kobayashi, Kazuki Maeda, Atsushi Mochizuki, Yutaka Satou
- P26 Maternal control for the initial zygotic gene expression in *Ciona intestinalis* embryos
Izumi Oda-Ishii, Atsushi Kubo, Nobuhiro Suzuki, Yutaka Satou
- P27 Chromatin accessibility and cis-regulatory dynamics underlying heart vs pharyngeal muscle specification in *Ciona intestinalis*
Claudia Racioppi, Emily Miraldi, Richard Bonneau, Lionel A. Christiaen
- P28 Gastrulation-like in non-embryonic development: co-option of key TFs in *Botryllus schlosseri* blastogenesis and vascular budding
Lorenzo Ricci, Fabien Cabrera, Sonia Lotito, Stefano Tiozzo
- P29 Guardians of the oocyte: the role of follicle cells in ascidian dispersal
Yaniv Shmuel, Thomas Stach, Noa Shenkar
- P30 RNA-Seq analysis of *Botryllus schlosseri* asexual development and whole body regeneration
Ankita Chaurasia, Lorenzo Ricci, Pascal Lapebie, Richard Copley, Philippe Dru, Stefano Tiozzo
- P31 Acetylcholine (ACh) and Gamma Amino Butyric Acid (GABA) Play Critical Role in the Locomotion Behavior of *Oikopleura dioica*
Yana Mikhaleva, Orsolya Kreneisz, Lisbeth C. Olsen, Joel C. Glover, Daniel Chourrout
- P32 Stainings with antiserotonin antibody reveal a characteristic pattern along the branchial basket in four ascidian species
Katrin Braun, Thomas Stach

- P33 Possible involvement of an alpha7-class nicotinic acetylcholine receptor in the ciliary arrest response in *Ciona stigmatal* cells
Kei Jokura, Junko Nishino, Michio Ogasawara, Atsuo Nishino
- P34 Electron microscopic visualization of neural circuits in the ascidian nervous system using molecular markers and genetically encoded tags
Erika Hosokawa, Hiroki Kashiwagi, Kotaro Shimai, Daisuke Honda, Takehiro G. Kusakabe
- P35 Is the spiral swimming trajectories of the larva based on the spiral configuration of myofibrils in the tail muscle cells?
Sho Watanabe, Atsuo Nishino
- P36 Analysis of Amphioxus Brachyury Cis-elements functions by using *Ciona intestinalis* for understanding chordate body plan evolution.
Hitoshi Tominaga, Naoto Ueno, Hiroki Takahashi
- P37 A new COI amplification strategy for species discrimination and phylogenetic reconstructions in Botryllinae
Carmela Gissi, Francesca Griggio, Francesco Mastrototaro
- P38 State of knowledge of ascidian diversity in South China Sea and surrounding regions
Serina Siew Chen Lee, Janlin Ying Hui Chan, Serena Lay Ming Teo, Gretchen Lambert
- P39 DNA interference: new gene silencing method in the appendicularian *Oikopleura dioica*
Tatsuya Omotezako, Takeshi Onuma, Hiroki Nishida
- P40 An update on ANISEED and its content
Matija Brozovic, Cyril Martin, Delphine Dauga, Christelle Dantec Patrick Lemaire

- P41 View, share and analyze biological microscopy data with OMERO-based databases
Faisal Bekkouche, Rémi Dumollard, Hitoyoshi Yasuo, Stefano Tiozzo, Christian Rouvière, Philippe Dru, Alex McDougall
- P42 Efficient and easy knockout of *Ciona* genes with TALE nuclease
Nicholas Treen, Tetsushi Sakuma, Takashi Yamamoto, Keita Yoshida, Yasunori Sasakura
- P43 Towards quantitative in situ detection of transcripts in *Ciona* embryos: RNAscope technology
Cathy Sirour, Florian Razy-Krajka, Christian Rouvière, Hitoyoshi Yasuo, Lionel Christiaen
- P44 Comparative study on the ultrastructure of tail epidermis in the three families of appendicularians
Haruyuki Otsuka, Atsuo Nishino, Euichi Hirose
- P45 Mechanisms of tunic softening in *Halocynthia roretzi* affected with soft tunic syndrome ~ detection of extracellular proteases from the pathogenic parasite and proteomic analyses in soft tunic ~
Yuma Koyama, , Akino Nozawa, , Lixy Yamada, Kei Nakayama, , Euichi Hirose, Ayako Hirao, Yasunori Murakami, Tomoyuki Odaka, Shin-Ichi Kitamura
- P46 Evaluation of drug toxicity profile using *Ciona intestinalis*
Yuji Mizotani, Shun Itoh, Kohji Hotta, Etsu Tashiro, Kotaro Oka, Masaya Imoto
- P47 Functional Properties of the *Ciona intestinalis* Myogenic Regulatory Factor
Thomas H. Meedel, Emmanuel Asiedu, Megan Warburton, Taylor Ferrare, Lindsay Racliffe, CJ Pickett

- P48 Dysidene a novel metabolite from the ascidian, *phallusia mammillata* (cuvier, 1815)
collected at south andaman, andaman and nicobar islands
Antonyraj Selva Prabhu, Gnanakkan Ananthan
- P49 Invasive species from a tropical rocky reef from southeastern brazilian coast
Luciana V. Granthom Costa, Gustavo M. Dias
- P50 Insight into the autophagic process: Ambra1 in the asexual cycle of *Botryllus schlosseri* and phylogenetic analysis of the protein group
Fabio Gasparini, Tatjana Skobo, Francesca Benato, Giorgia Gioacchini, Ayelet Voskoboynik, Oliana Carnevali, Lucia Manni, Luisa Dalla Valle
- P51 Alicia Madgwick, Jacques Piette, Mathieu Gineste, Patrick Lemaire
“Conservation of regulatory states between *Ciona intestinalis* and *Phallusia mammillata*”

