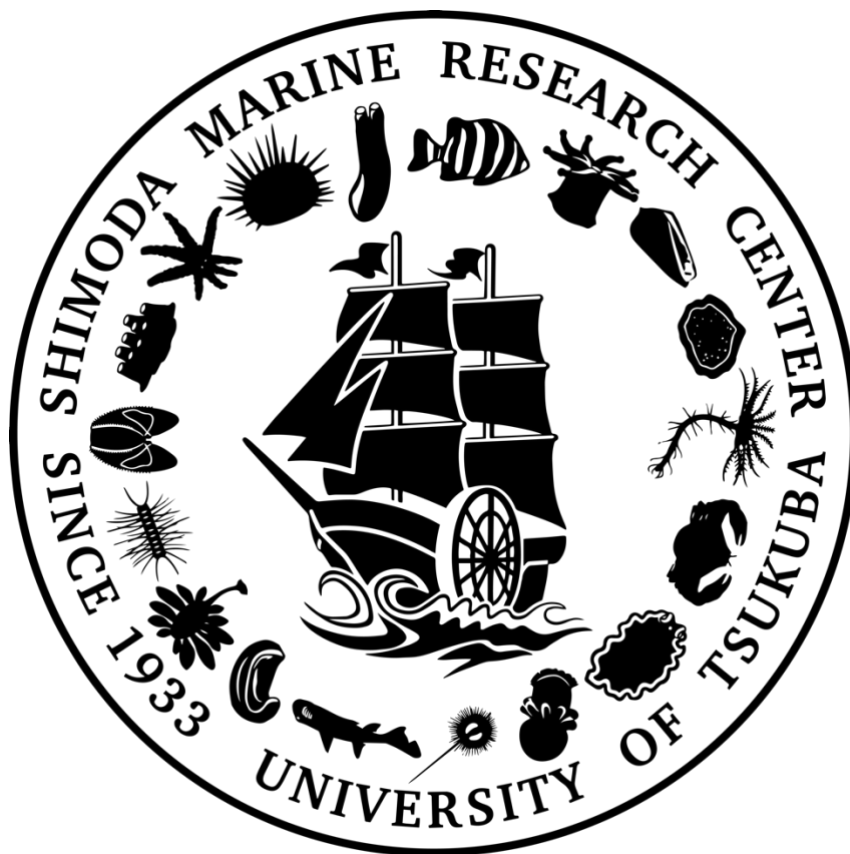


**University of Tsukuba  
Shimoda Marine Research Center  
Annual Report**

2021



March 2022

# Overview of our activities

2021 was a year in which the general public were routinely exposed to various biology-related technical terms, such as vaccination against novel coronaviruses, the development of RNA vaccines, antibodies, antigens, booster inoculations, and viral mutations. In 2021, many of these technical terms were so commonly used that in some cases they have become general everyday terms. These discoveries have come about as a result of scientists' continual basic research and clarification of the underlying mechanisms. It has been recognized once again that science is something that greatly supports human society as a whole.

For our work, we are now in a position to sense that society has been adapting to this issue. Last year, we were initially hesitant to use online conference and lecture systems, but after a year, we can now use them as if they were commonplace tools. These systems existed before COVID-19, but they had yet to reach such widespread usage. The speed of change that has occurred in the past two years is somewhat surprising, but the need for reform and flexibility is still an extremely important factor.

We are now in the third year of this issue, and yet our external activities are still restricted. At the end of this year, the emergence of a new mutant strain called the Omicron strain caused a rapid increase in the number of infected people. On the other hand, as of this writing, various measures are being taken to resume activities back to 'normal' in 2022. Despite these restraints on our external activities, the Center has been developing its international ocean acidification research program in earnest through a project adopted in FY2021. We will continue to do what we can under the circumstances, while waiting for the day when mankind will be able to solve this problem.

**Yasunori Sasakura, Director, Shimoda Marine Research Center**

# Summary

## Overview of the Center

The University of Tsukuba's Shimoda Marine Research Center is a research and education facility for marine biology surrounded by the rich marine environment of the southern Izu Peninsula. The ocean is the source of life on earth and has given birth to biological diversity. The 21<sup>st</sup> century is the era of life science and the environment. The Shimoda Marine Research Center conducts research and education in basic and advanced sciences related to marine life in order to deepen our understanding of the basic principles of life and the interactions between organisms.

The center has 10 faculty members who conduct research on marine organisms from various perspectives ranging from molecular to ecological, including molecular biology, cell biology, physiology, developmental biology, taxonomy, animal behavior, and ecology. In addition, many researchers from universities and research institutes in Japan and abroad visit and develop collaborative research projects. Marine biology is important not only for those who wish to pursue biology, but also for the development of human resources in a wide range of fields. At the center, students from the University of Tsukuba's Biology Department and Life and Earth Sciences Research Group, as well as other universities in Japan and abroad, participate in fieldcourses on a variety of marine-related topics.

## Location and Environmental Conditions

The center is located at the end of Oura Bay, a branch of Shimoda Bay, to the south of Shimoda City center. The bay is immediately surrounded by the Kuroshio Current, but within the bay there is a small portion of an inner bay environment. Because of its location at the interface between the temperate and subtropical zones, kelp forests, which represent the temperate zone, coexist with reef-building corals that inhabit the tropics. In the future, this ecosystem is expected to change drastically due to climate change and other factors.

Marine organisms used at the center include: the tunicates *Ciona intestinalis* and *Styela* sp., the

solitary ascidian *Herdmania momus*, the urchins *Hemicentrotus pulcherrimus*, *Temnopleurus reevesii*, *Heliocidaris crassispina*, *Pseudocentrotus depressus*, and *Diadema setosum*, Comatulida crinoids, nudibranchs, Placozoa, *Xenoturbella* sp., Acoelomorpha, Brachiopoda, flatworms, the comb jelly *Bolinopsis mikado*, corals, the flatfish *Pseudopleuronectes yokohamae*, sole, and *Paralichthys olivaceus*, the wrasse *Thalassoma cupido*, the spiny lobster *Panulirus japonicus*, the conch *Strombus luhuanus*, the kelp *Ecklonia cava*, the brown algae *Mutimo cylindricus*, *Sargassum fusiforme*, and *Petalonia binghamiae*.

## **Facilities and Equipment**

The center contains three research and experimental buildings, a fieldcourse building with aquarium and breeding facilities, a workshop, and an accommodation building. The center is equipped with a range of instruments and equipment for diving and sampling for field research and experiments, various water tanks for conducting indoor experiments, filtered seawater facilities, and equipment for research in molecular biology, biochemistry, and cell biology. Other facilities include a recombinant DNA laboratory, a laboratory for breeding laboratory animals (mice), a transgenic animal breeding room, a seminar room, and a library. Seawater is constantly pumped into tanks from a depth of 3 m to supply the breeding facilities and laboratories. Vessels are available for biological surveys and collections using a range of methods, including dredges, trawls, and plankton nets. Shikine-jima Station, a research facility for the Ocean Acidification Project, is located on Shikine-jima Island (Nii-jima, Tokyo), about 45 km southeast of the Center, where many researchers from Japan and abroad stay to conduct research and analysis.

## **Diving Equipment and Facilities**

Wetsuits, diving cylinders, masks, snorkels, gloves, boots, and fins

## **Biological Sampling Equipment**

Plankton net, Neuston net, Ekman barge and Smith McIntyre sediment grabs, dredges, sled net, trawl net, and Niskin bottles.

## **Research Equipment**

Mass spectrometer TOF-MS, elemental analysis-isotope ratio mass spectrometer, light sheet microscope, super resolution microscope LatticeSIM, DNA sequencer, PCR equipment (including quantitative PCR), microplate reader, various optical microscopes, confocal laser microscope, electron microscope (TEM, SEM), soft x-ray imaging systems, calcium imaging systems, high-speed video cameras, HPLC, CTD sensors, and ultra-low temperature chambers.

## **Accommodation**

For interns, resident graduate students, and visitors, there are two accommodation buildings, the two-story W building and the three-story E building, which can accommodate a total of 85 people. A cafeteria, bathrooms, and lounge are provided, and on weekdays three meals are served (upon request).

## List of Buildings and Facilities

### **Shimoda Marine Research Center** Building (Total 3,931m<sup>2</sup>)

Research Building 1	3-story reinforced concrete building (10 laboratories, 9 experimental rooms, 2 observation and measurement rooms, 2 electron microscope rooms, 1 specimen room, 1 library, 1 seminar room, 1 low-temperature room, 3 dark rooms, 1 printing room, and 5 other rooms).
Research Building 2	2-story reinforced concrete building (3 laboratories, 5 experimental rooms, 1 lecture room, 1 archive storage room, 1 analysis room, 1 dark room)
Research Building 3	2-story reinforced concrete building (4 laboratories, 1 experimental room, 1 collaborative analysis room, 1 collaborative research space, 1 conference/seminar room, 1 measuring equipment room, and 3 other rooms)
Fieldcourse Building	1-story reinforced concrete building (1 large fieldcourse room, 1 indoor mesocosm facility, and 1 indoor breeding room)
Workshop	1-story reinforced concrete building (1 workshop, 1 storage room, 1 workroom, and 1 shower room)
Accommodation	3-story reinforced concrete building (24 Western-style rooms, 3 Japanese-Style rooms, 1 cafeteria, 2 bathrooms, and 1 lounge)
Vessels	Tsukuba II (19t, 612 HP×2, 40-person capacity) Karetta (0.5t, 9.9 HP, 6-person capacity) SMRC (Inflatable boat, 8 HP, 4-person capacity) Oberia (Rowing boat, 2-person capacity)
Seawater facilities	Fresh seawater is constantly pumped from a depth of 3 m to a 56-ton tank located approximately 13 m above sea level, and is supplied non-stop to the indoor and outdoor breeding facilities and laboratories in each research building.

### **Shikine-jima Station** Building (total 149.6m<sup>2</sup>)

Experimental facilities	1-story building of wood and stone, with a galvanized steel sheet roof. Building The facilities are equipped with a fridge, freezer, drying oven, a microscope, a workbench, a sink, and various other laboratory equipment.
Accommodation	Wooden one-story building with galvanized steel plate roof (2 Western-style rooms, 2 Japanese-style rooms, 1 dining room, and 1 bathroom).
Vessels	Akane (0.5t, 20hp, 7-person capacity).

## Staff Members in the Center

Faculty	Director, Professor	笹倉 靖徳 Yasunori SASAKURA	Developmental Genetics
	Professor	稲葉 一男 Kazuo INABA	Cell Biology
	Professor	Jason HALL-SPENCER	Environmental Ecology
	Associate Professor	谷口 俊介 Shunsuke YAGUCHI	Developmental Biology
	Associate Professor	中野 裕昭 Hiroaki NAKANO	Evolutionary embryology
	Assistant Professor	柴 小菊 Kogiku SHIBA	Cell Biology
	Assistant Professor	堀江 健生 Takeo HORIE	Neurophysiology
	Assistant Professor	和田 茂樹 Shigeki WADA	Marine Ecology
	Assistant Professor	Sylvain AGOSTINI	Marine Biology
	Assistant Professor	Ben HARVEY	Environmental Ecology
	Assistant Professor	Lucia PORZIO	Environmental Ecology
Technician		柴田 大輔 Daisuke SHIBATA	
		大植 学 Manabu OOUE	
		小高 友実 Tomomi KODAKA	
		高野 治朗 Jiro TAKANO	
		中村 千華 Chika NAKAMURA	
Researcher		谷口 順子 Junko YAGUCHI	

Part-time	Researcher	笹倉 暁子	
		柴田 珠杉	
		磯和 幸延	
		杉本 久賀子	
		佐藤 友	
		北之坊 誠也	
Administration	Administrative assistant	土屋 理恵	
		土屋 富士子	
Part-time	Administrative assistant	鈴木 敦子	
		中野 亜子	
		George Northen	
		清水 直子	
Part-time	Cleaning Staff	山田 順子	
		田中 文子	
		秋山 佳子	
Part-time	Research Technician	土屋 泰孝	
		佐藤 壽彦	
		大畑 雅江	
		田子内 加代	
		田中 佐貴子	
		金守 美里	
		土屋 絵里	
		浅野 美世	
		中尾 菜穂	
		江村 真帆	
		森下 秀子	
		加納 穂澄	
		北之坊 仁美	

Enrolled between 2021.4.1-2022.3.31



# Research Activities

## 1) Research Introduction

### Marine Molecular Biology Division

#### **Genetics (Sasakura)**

Ascidians are closest living relatives of vertebrates. *Ciona intestinalis* is the model ascidian because of its well-annotated genome information and established methodologies for manipulating genes. Using *Ciona*, our group studies genetic mechanisms underlying development of ascidians. Particularly, we are interested in the mechanisms of metamorphosis, in which *Ciona* dramatically converts its body structure from swimming tadpole larva into sessile, vase-like adult. We developed the methods to modify genomes of *Ciona* by means of transgenic and genome editing technologies. The transgenic and mutant lines established by the methods are useful tools to observe cellular and molecular phenomena during development. We are engaged in the National BioResource Project of *Ciona*, which is purposed to collect, store and provide these useful lines to researchers all over the world. A constructs for providing them to researchers upon request.

#### **Research Themes:**

- Developmental genetics of ascidians
- Neurodevelopmental and physiological studies on ascidian metamorphosis mechanisms

#### **Cell Biology (Inaba · Shiba)**

Cilia and flagella are important cellular organelles for locomotion and fluid flow in body. The structure of cilia and flagella is well conserved in the process of evolution. We study the structure, function and evolution of cilia and flagella by using marine organisms such as ascidian, sea urchin, fish, and comb jelly. Our research topics cover a wide range of subjects, including fertilization, morphogenesis, locomotion, evolution and ecology of marine unicellular and multicellular organisms.

#### **Research Themes:**

- Studies on the structure, function and evolution of eukaryotic flagella and cilia
- Research on sperm motility regulation and adaptation to the fertilization environment
- Genomics and proteomics in marine invertebrates

## **Developmental Biology (Yaguchi)**

The main research goal of our laboratory is understanding the molecular mechanisms of body axis formation and neurogenesis in sea urchin embryos/larvae. We also focus on the function of nervous system in sea urchin larvae.

### **Research Themes:**

- Analysis of the mechanisms of body-axis formation and neurogenesis in early embryos
- Analysis of neural function during early development
- Analysis of the effects of external environmental stimuli such as light and temperature on development

## **Evolutionary Embryology (Nakano)**

There are many extant animals, such as xenacoelomorphs and placozoans, that are evolutionarily important but have not been extensively studied. In our group, we perform morphological, ecological, and developmental research on these 'non-model organisms' with the aim of gaining new insights on the origins, evolution, and diversity of bilaterians and metazoans.

### **Research Themes:**

- Studies on evolution and diversity of metazoans using flatworms, xenacoelomorphs and placozoans
- Zoological and natural history research on marine invertebrates
- Evolutionary and phylogenetic studies of body color diversity in sea slugs
- Evolutionary developmental studies on brachiopods, including analysis of their shell proteins

## **Neurophysiology (Horie)**

The central nervous system (CNS) of the ascidian larva has a basic feature of the vertebrate CNS, while the CNS of the ascidian is remarkably simple, consisting of 177 neurons. We are studying the simple CNS of the ascidian larva as a model system to understand the neural circuit development and function at the single-cell resolution.

### **Research Themes:**

- Research on the development and physiological functions of the brain, neural circuits, and sensory organs
- Analysis of regulatory function of gene expression in the brain and nervous system

## **Marine Ecology Division**

### **Environmental Ecology (Hall-Spencer and Porzio)**

As well as warming the oceans, CO<sub>2</sub> released due to human activities is also causing ocean acidification, which alters the fundamental chemical balance of surface waters (e.g. reducing the amount of carbonate). Our laboratory uses natural analogues of ocean acidification (CO<sub>2</sub> seep) in Japan and Europe alongside manipulative experiments to understand the eco-physiological processes involved in the response of winner and loser species to ocean acidification and warming in Japan and on coastal ecosystems worldwide. We mostly focus on marine macrophytes as they are key organisms for the structure and functioning of coastal ecosystems. The aim will be to improve the knowledge on the impacts of combined ocean acidification and global warming on the fate of their distribution and the associated ecosystem services.

#### **Research Themes:**

- Diversity of macrophytes in coastal systems
- Community structure and functioning under ocean acidification
- Eco-physiological and biological response of macroalgae to global warming and acidification

### **Environmental Ecology (Harvey)**

We seek to understand how changes in environmental conditions (focussing on ocean acidification, ocean warming, and marine heatwaves) will change our oceans. Our research is multidisciplinary, combining field-based (subtidal and intertidal surveys and experiments), aquarium-based manipulative experiments, and desk-based (environmental modelling, statistical modelling, meta-analyses) approaches. Our research covers a wide range of subjects within the context of climate change, including species ecophysiology, biomineralisation, population genetics, biodiversity and community meta-barcoding, community-level structuring processes and interactions, regime shifts and stability, and ecosystem functioning, goods and services. Taken together, this will allow us to better understand the impacts of global climate change on coastal ecosystems worldwide.

#### **Research Themes:**

- Role of ocean acidification and warming on biodiversity, community structuring, and stability
- Impacts of ocean acidification and warming on calcification, physiology, and functioning
- Impacts of marine heatwaves on biogeographic distribution, range shifts, and aquaculture

## **Material Cycling (Wada)**

Marine organisms and their ambient environments have various interactions. Analysis of the interactions will allow us to understand the principle of mechanisms of marine ecosystems. In addition, we can contribute to predict the progress of global climate change such as ocean acidification.

### **Research Themes:**

- Assessment of Blue Carbon in Seagrass beds
- Impacts of ocean acidification on coastal ecosystems
- Analysis of marine snow dynamics

## **Marine Complex Biology Division**

### **Environmental Ecophysiology (Agostini)**

We study the ecophysiology of marine organisms with a special focus on corals and the impact of anthropogenic stressors on their community. Ocean warming is driving the degradation of coral reefs in the tropic and could allow the increase of coral abundance in warm-temperate areas. However, ocean warming comes in combination with ocean acidification which is limiting the growth of corals on a global scale. We also study the impact of other anthropogenic stressors on marine ecosystems in general and strive to understand the ecology and future trajectories of these ecosystems through the study of the physiology and ecology combining field and laboratory studies. To increase awareness of the different environmental problems that threatens marine ecosystems we also conduct various social outreach activities.

### **Research Themes:**

- The effects of anthropogenic stressors on marine ecosystems
- Eco-physiology of scleractinian corals and marine organisms
- Tropicalization of marine ecosystems under ocean acidification and warming

## 2) Research Supervision of Students at the Center

University of Tsukuba, Life and Environmental Sciences, Biology

- |                                     |   |
|-------------------------------------|---|
| Undergraduate, 4 <sup>th</sup> Year | ホヤの変態制御機構に関する研究   |
| Undergraduate, 4 <sup>th</sup> Year | ホヤ幼生の光受容細胞を起点とする神経回路の解析   |
| Undergraduate, 4 <sup>th</sup> Year | ホヤ幼生の重力感知神経回路の解析  |
| Undergraduate, 4 <sup>th</sup> Year | 亜熱帯魚類の藻食が引き起こす暖温帯海域における藻場の損失<br>Overgrazing by warm water fishes drives the loss of kelp forest in a temperate reef |

University of Tsukuba, Faculty of Science and Technology, School of Science and Technology, Information and Life Sciences, Life and Earth Sciences, Biology Degree Program

- |                               |  |
|-------------------------------|--|
| Masters, 1 <sup>st</sup> Year | ウニ胚原腸形成を司る新規メカニズムの解析   |
| Masters, 1 <sup>st</sup> Year | 海藻類の微生物分解過程の化学的指標の探索   |
| Masters, 1 <sup>st</sup> Year | 高温ストレス下における造礁サンゴの光合成日周リズムと光阻害：<br>保護機構としての光阻害<br>Diurnal cycle of photosynthesis and photoinhibition of hermatypic corals under heat stress: photoinhibition as a protective mechanism |
| Masters, 1 <sup>st</sup> Year | 沿岸域堆積物におけるマイクロプラスチックの流入と分布<br>Flux and Distribution of Microplastic in coastal sediments   |
| Masters, 2 <sup>nd</sup> Year | ホヤの Hox 遺伝子の機能に関する研究   |
| Masters, 2 <sup>nd</sup> Year | ホヤのモーターニューロンの分化機構の解析   |
| Masters, 2 <sup>nd</sup> Year | 海洋酸性化がカサガイ類に及ぼす直接的・間接的影響と生態系機能<br>における意義   |
| Masters, 2 <sup>nd</sup> Year | 海洋酸性化がクモハゼの行動と餌生物群集に与える影響<br>Effects of Ocean Acidification on Dusky Frill Goby behavior and its prey community  |

Masters, 2 <sup>nd</sup> Year	<p>群体形態に基づく造礁サンゴ <i>Porites</i> spp., <i>Pocillopora</i> spp., <i>Millepora</i> spp. の遺伝的系統予測</p> <p>Predicting Genetic Lineages of the Reef-Building Corals <i>Porites</i> spp., <i>Pocillopora</i> spp. and <i>Millepora</i> spp. Based on Colony Morphology</p>
PhD, 1 <sup>st</sup> Year	ウミウシの体色多様性進化と系統学的研究
PhD, 1 <sup>st</sup> Year	マリンスノーの強度と生物ポンプの解析
PhD, 1 <sup>st</sup> Year	<p>海洋温暖化・酸性化がサンゴ・藻類の相互作用に及ぼす影響</p> <p>Coral-Algae interactions under ocean warming and acidification</p>

University of Tsukuba, Graduate School of Life and Environmental Sciences, Department of Biological Sciences

PhD, 3 <sup>rd</sup> Year	ウニ胚体軸形成の仕組み
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### 3) Publications

#### Marine Molecular Biology Division

##### Genetics

Kawada T, Shiraishi A, Matsubara S, Hozumi A, Horie T, Sasakura Y, & Satake H. Vasopressin Promoter Transgenic and Vasopressin Gene-Edited Ascidian, *Ciona intestinalis* Type A (*Ciona robusta*): Innervation, Gene Expression Profiles, and Phenotypes. **Frontiers in Endocrinology**, 12: 668564. May 2021.

Sasakura Y, & Harvey B P. Institute Profile: Shimoda Marine Research Center, University of Tsukuba. **Limnology and Oceanography Bulletin**, 30(3): 116–118. August 2021.

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Chacha P P, Horie R, Kusakabe T G, Sasakura Y, Singh M, Horie T, & Levine M. Neuronal identities derived by misexpression of the POU IV sensory determinant in a protovertebrate. **Proceedings of the National Academy of Sciences**, 119(4): e2118817119. January 2022.

Krasovec G, Hozumi A, Yoshida T, Obita T, Hamada M, Shiraishi A, Satake H, Horie T, Mori H, & Sasakura Y. d-Serine controls epidermal vesicle release via NMDA receptor, allowing tissue migration during the metamorphosis of the chordate *Ciona*. **Science Advances**, 8(10): eabn3264. March 2022.

##### Cell Biology

稲葉一男『毛 生命と進化の立役者』(光文社新書)ISBN 978-4-334-04574-6, 2021.11.18.

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## Developmental Biology

Kiyozumi D, Yaguchi S, Yaguchi J, Yamazaki A, & Sekiguchi K. Human disease-associated extracellular matrix orthologs ECM3 and QBRICK regulate primary mesenchymal cell migration in sea urchin embryos. *Experimental Animals*, 70(3): 378–386. 2021.

Kinjo S, Kiyomoto M, Yamamoto T, Ikeo K, & Yaguchi S. Usage of the Sea Urchin *Hemicentrotus pulcherrimus* Database, HpBase. In Carroll D J, & Stricker S A, editor(s), *Developmental Biology of the Sea Urchin and Other Marine Invertebrates*, volume 2219, pages 267–275. Springer US, New York, NY, 2021. Series Title: *Methods in Molecular Biology*

Yaguchi J, Yaguchi S. Sea urchin larvae utilize light for regulating the pyloric opening. *BMC Biology*, 19:64. 2021.

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Yaguchi S. Echinoderms: *Temnopleurus reevesii*. In Boutet A, & Schierwater B, editor(s), *Handbook of Marine Model Organisms in Experimental Biology: Established and Emerging*. CRC Press, Boca Raton, 1 edition, October 2021.

Yaguchi S, Taniguchi Y, Suzuki H, Kamata M, Yaguchi J. Planktonic sea urchin larvae change their swimming direction in response to strong photoirradiation. *PLoS Genet*, 18(2): e1010033. 2022.

Suzuki H, & Yaguchi S. Direct TGF- $\beta$  signaling via alk4/5/7 pathway is involved in gut bending in sea urchin embryos. *Developmental Dynamics*, 251(1): 226–234. January 2022.

Yaguchi S, & Yaguchi J. *Temnopleurus reevesii* as a new sea urchin model in genetics. *Development, Growth & Differentiation*.12768. January 2022.

## Evolutionary Embryology

Nakano H. Xenoturbellida. In Schierwater B, & DeSalle R, editor(s), *Invertebrate Zoology: A Tree of Life Approach*, pages 521–530. CRC Press, Boca Raton, 2021.

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taxonomic studies on marine invertebrates in Japan inferred from the number of new species published between the years 2003 and 2020. **Zoological Science**, 39(1): 7-15. October 2021.

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Nakano H, Isowa Y, & Inaba K. JAMBIO and its coastal organism joint surveys: Network of marine stations explores Japanese coastal biota. **Zoological Science**, 39(1): 1-6. February 2022.

## Neurophysiology

Oonuma K, Yamamoto M, Moritsugu N, Okawa N, Mukai M, Sotani M, Tsunemi S, Sugimoto H, Nakagome E, Hasegawa Y, Shimai K, Horie T, & Kusakabe, T. G. Evolution of Developmental Programs for the Midline Structures in Chordates: Insights From Gene Regulation in the Floor Plate and Hypochord Homologues of *Ciona* Embryos. **Frontiers in Cell and Developmental Biology**, 9: 704367. June 2021.

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## **Marine Ecology Division**

### **Environmental Ecology**

Harvey B P, Kon K, Agostini S, Wada S, & Hall-Spencer J M. Ocean acidification locks algal communities in a species-poor early successional stage. *Global Change Biology*, 27(10): 2174–2187. May 2021.

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## Marine Complex Biology Division

### Environmental Ecophysiology

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### Technical Staff

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柴田 大輔, 高野 治朗, 大植 学, 小高 友実, 佐藤 壽彦, 中村 千華, 非常用発電機の更新, *臨海・臨湖*, 38: 37-41. November 2021.

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## 4) Conference Presentations and Invited Lectures

### Marine Molecular Biology Division

#### Genetics

【Invited Lecture】 笹倉靖徳, ホヤの変態を駆動する組織・細胞・分子の相互作用, 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.3

【Poster Presentation】 ○長谷川達也, 堀江良子, 笹倉靖徳, 堀江健生, カタユウレイボヤにおける NK6 遺伝子の転写調節領域の解析, 第 92 回日本動物学会オンライン米子大会, Online(Gather. Town), 2021.9.2-4

【Poster Presentation】 ○堀江良子, 日下部岳広, 笹倉靖徳, 堀江健生, 単一細胞トランスクリプトーム解析によるホヤ幼生の尾部に存在する双極型感覚神経細胞の分化機構の解析, 第 92 回日本動物学会オンライン米子大会, Online(Gather. Town), 2021.9.2-4

【Poster Presentation】 ○小沼健, 中西梨奈, 笹倉靖徳, 小笠原道生, オタマボヤ内柱における分泌関連および甲状腺関連形質の領域化, 第 92 回日本動物学会オンライン米子大会, Online(Gather. Town), 2021.9.2-4

【Poster Presentation】 ○山岸雅幸, 小沼健, 笹倉靖徳, 小笠原道生, カタユウレイボヤ幼若体における内柱の領域化と細胞分化, 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】 ○板山紘典, 山岸雅幸, 小沼健, 笹倉靖徳, 小笠原道生, 原索動物の内柱における vWF 様遺伝子群の収斂的発現, 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】 ○一寸木明日香, 堀江良子, 笹倉靖徳, 堀江健生 ホヤ幼生の重力を感知する神経回路の構造と機能, 第 44 回日本分子生物学会, 横浜市, 2021.12.01-3

【Poster Presentation】 ○堀江良子, 日下部岳広, 笹倉靖徳, 堀江健生, 単一細胞トランスクリプトーム解析によるホヤ幼生尾部の双極型感覚神経細胞の分化機構の解析, 第 44 回日本分子生物学会, 横浜市, 2021.12.01-3

## Cell Biology

【Invited Lecture】柴小菊, 海の中のミクロの世界－鞭毛と繊毛, 第 11 回女子中高生のための先端科学セミナー「海にいこうよーサイエンスの宝庫へー」, Online (Zoom), 2021.5.15

【Invited Lecture】稲葉一男, 生命進化と細胞の毛, RIMS Tutorial Seminar 「生物の創るパターンとダイナミクス:基礎からの展開」 Lectures on patterns and dynamics in biology: From basics to recent advances RIMS as part of RIMS Research Project “Biofluids 2021”, Online (Zoom), June 15-18, 2021

【Invited Lecture】Kazuo Inaba, Structure, motility regulation and evolution of eukaryotic cilia and flagella, Biofluid Symposium as part of RIMS Research Project Biofluids 2021, Online (Zoom), June 21-24, 2021

【Invited Lecture】Kogiku Shiba, The role of Ca<sup>2+</sup> in the regulation of flagellar movement during sperm chemotaxis, RIMS Workshop “Biofluid Mechanics of Reproduction” in Biofluids 2021, Online (Zoom), July 29-30, 2021

【Poster Presentation】柴小菊, 稲葉一男, ホヤ精子の鞭毛運動調節における CNG チャネルの役割 (The role of CNG channel in the regulation of flagellar motility in the ascidian sperm), 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】城倉圭, 佐藤友, 柴小菊, 稲葉一男, クシクラゲ櫛板の構築とその繊毛運動における CTENO189 の役割 (The role of CTENO189 in the structure and ciliary motility of ctenophore comb plate), 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】佐藤友, 城倉圭, 柴小菊, 稲葉一男, クシクラゲ櫛板を構成する新規タンパク質 BmBTBD19 および CTENO78 により示された繊毛間リンクの 2 段階構造 (Two-stage structure of the interciliary linkage indicated by the novel proteins BmBTBD19 and CTENO78 in the comb plate of the Ctenophore), 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】杉浦健太, 柴小菊, 稲葉一男, 松本緑, 緩歩動物クマムシの精子における動態と形態の関係に迫る (Morphological differences in tardigrade spermatozoa induce variation in gamete motility), 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】Kogiku Shiba, Kazuo Inaba, The role of CNG channel in the regulation of flagellar motility in the ascidian sperm, The virtual Dynein 2021 International Workshop, online (Gather. Town), September 8-9, 2021

【Poster Presentation】Kei Jokura, Yu Sato, Kogiku Shiba, Kazuo Inaba, A novel protein CTENO189

is involved in the maintenance of asymmetric ciliary movements in the comb plates of ctenophores,

The virtual Dynein 2021 International Workshop, online (Gather. Town), September 8-9, 2021

【Oral Presentation】柴小菊, 稲葉一男, 3D 遊泳トラッキングシステムを用いたホヤ精子走化性の解析, 2022 年生体運動研究合同班会議, 名古屋大学・野依記念学術交流館, 2022.1.7-9

【Invited Lecture】稲葉一男, 海洋生物の細胞イメージングを支援する, ABiS Symposium イメージングデータ解析が拓く生命科学の新時代, Online(Zoom ウェビナー), 2022.3.1

【Invited Lecture】柴小菊, ジオラマ環境下での精子走化性の応答計測に向けて, 科学研究費助成事業 学術変革領域研究(A)「ジオラマ環境で覚醒する原生知能を定式化する細胞行動力学」シンポジウム, Online(Zoom ウェビナー), 2022.3.10

【Invited Lecture】柴小菊, 精子が卵に近づく運動メカニズム, 第 45 回エアロ・アクアバイオメカニズム学会講演会, Online (Zoom), 2022.3.22

## Developmental Biology

【Invited Lecture】Shunsuke Yaguchi. Development and function of serotonergic neurons in sea urchin embryos/larvae. EchinoClub, Online (Zoom), 2021.5.28

【Poster Presentation】谷口順子, 谷口俊介, ウニ幼生の光による幽門の開口, 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】鎌田真衣, 谷口友梨, 谷口俊介, ウニ胚原腸陥入におけるトロポニン I の機能解析, 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】鈴木智佳, 谷口順子, 谷口俊介, 調節発生の分子メカニズムを探る 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

## Evolutionary Embryology

【Poster Presentation】○中野裕昭, 宮澤秀幸, 日本における珍渦虫の採集記録 (Records of *Xenoturbella* from Japanese waters), 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】○宮澤秀幸, 中野裕昭, 平板動物の系統間での季節変動の違い (The differences of seasonal variation in occurrence among placozoan haplotypes), 第 92 回日本動物学会



オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】○林牧子、中野裕昭、着底後の成長過程に着目したイロウミウシ科ウミウシの個体発生過程の解明 (Development of Chromodorididae nudibranchs with emphasis on juvenile stages), 第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】○磯和幸延、紀藤圭治、大島健志朗、服部正平、川島武士、藤江学、佐藤矩行、澤田均、中野裕昭、遠藤一佳、腕足動物 *Coptothyris grayi* の殻体タンパク質 (Shell matrix proteins of the brachiopod *Coptothyris grayi*), 日本動物学会関東支部第 74 回大会, Online (Linc Biz), 2022.3.5

## Neurophysiology

【Poster Presentation】○長谷川達也、堀江良子、笹倉靖徳、堀江健生、カタユウレイボヤにおける NK6 遺伝子の転写調節領域の解析、第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】○堀江良子、笹倉靖徳、堀江健生、単一細胞トランスクリプトーム解析によるホヤ幼生の尾部に存在する双極型感覚神経細胞の分化機構の解析、第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Poster Presentation】○一寸木明日香、堀江良子、笹倉靖徳、堀江健生、ホヤ幼生の重力を感知する神経回路の構造と機能、第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.9.2-4

【Invited Lecture】堀江健生、シングルセルトランスクリプトーム解析を応用した神経細胞の分化を制御する転写因子カクテルの同定、大阪大学大学院医学系研究科主催第 2 回バイオインフォマティクスセミナー, Online (Zoom), 2021.10.19

【Invited Lecture】堀江健生、シングルセルトランスクリプトーム解析から切り込む視床下部相同器官の分化機構、第 41 回日本内分泌学会大会及びシンポジウム, Online (Zoom), 2021.11.14

【Poster Presentation】○堀江良子、笹倉靖徳、堀江健生、単一細胞トランスクリプトーム解析によるホヤ幼生の尾部に存在する双極型感覚神経細胞の分化機構の解析、第 92 回日本動物学会オンライン米子大会, Online (Gather. Town), 2021.12.1-3

## **Marine Ecology Division**

### **Environmental Ecology**

【International Conference】 Ben Harvey, Degraded turf algal systems are 'locked-in' by ocean acidification, JPGU, Online(Zoom), 2022.6.3

【Oral Presentation】 Ben Harvey, Simplification of marine ecosystems under ocean acidification: a case study of the Shikine Island CO<sub>2</sub> seep, TGSW, Online (Zoom), 2022.9.7

【Invited Lecture】 Ben Harvey, Simplification of marine ecosystems under ocean acidification, GOA-ON – Ocean Acidification Week, Online (Zoom), 2022.9.16

【Invited Lecture】 Ben Harvey, Rise of the turfs: the simplification of marine ecosystems under ocean acidification, Okinawa Institute of Science and Technology (OIST), 2022.12.9

### **Materials Cycling**

【International Conference】 Yasuhito Hayashi, Shigeki Wada, Yasuhisa Adachi, Cohesive strength of marine organic aggregates, ASLO 2021 Aquatic Science Meeting, Online (Zoom), June 23, 2021

【 International Conference 】 Nanako Kawakami, Shigeki Wada, Assessment of bacterial decomposition of macroalgal organic matter based on thermal degradation, ASLO 2021 Aquatic Science Meeting, Online (Zoom), June 25, 2021

【Oral Presentation】 Yasuhito Hayashi, Shigeki Wada, Yasuhisa Adachi, A size restriction of marine flocs by the fluid shear stress, TGSW2021 Session 4-4 on Colloid in Civil and Environmental Engineering, Online (Zoom), September 9, 2021

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## **Marine Complex Biology Division**

### **Environmental Ecophysiology**

【International Conference】 Guinther Hiromu Mitushasi, Yuko Kitano, Emilie Boissin, Serge Planes, Denis Allemand, Tara Pacific Consortium, Sylvain Agostini, Skeleton Microstructures and in Situ Colony Morphometry Analysis of the Corals Collected during Tara Pacific Expedition, Japan Geoscience Union Meeting 2021, Online (Zoom), June 3 2021.

【Poster Presentation】 Ikuko Yuyama, Naoko Yasudo, Sayak Higa, Sung-Ying Yang, Sylvain Agostini, Tomhiko Higuchi, Toshihiro Miyajima, Takashi Nakamura, and Hiroyuki Fujimura, Coral Bleaching Countermeasures by Supplying Metal-Containing Feed ~evaluation the Effect at Gene Expression Levels~, Japan Geoscience Union Meeting 2021, Online (Zoom), June 3 2021.

【Oral Presentation】 Joshua M Heitzman, Nicole Caputo, Sung-Ying Yang, Ben P Harvey, Sylvain Agostini, Epizootiology of a Temperate Coral Disease Driven by Thermal Stress and Macroalgal Interactions, Japan Geoscience Union Meeting 2021, Online, June 3 2021.

【Oral Presentation】 Reimi Terayama, Sylvain Agostini, Takashi Nakamura, Tomhiko Higuchi, Ikuko Yuyama, Sung-Ying Yang, Toshihiro Miyajima, Hiroyuki Fujimura, Photoinhibition as a Strategy for Corals to Mitigate Heat Stress and Resulting ROS Production, Japan Geoscience Union Meeting 2021, Online (Zoom), 3 June 2021.

【Oral Presentation】 Kugako Sugimoto, JAMBIO COntortium, Tara Japan Fondation, Sylvain Agostini, TARA-JAMBIO Microplastic Mission : Distributions of Microplastics in Water Surface and Sediment of Japanese Coastal Waters, Japan Geoscience Union Meeting 2021, Online (Zoom), June 5 2021.

【International Conference】 Guinther Hiromu Mitushasi, Yuko Kitano, Ryan McMinds, Emilie Boissin, Serge Planes, Denis Allemand, Tara Pacific Consortium, Taxonomical Identification of the Corals Collected during Tara Pacific Expedition Using in Situ Photos and Skeleton Morphometry, 14th International Coral Reef Symposium, Bremen, GE, Online (Zoom), July 19 2021.

【International Conference】 Joshua M Heitzman, Nicole Caputo, Sun Ying Yang, Ben P Harvey, Sylvain Agostini, Recurrent Disease Outbreak in a Warm Temperate Marginal Coral Community, 14th International Coral Reef Symposium, Bremen, GE, Online (Zoom), July 19 2021.

【Invited Lecture】 Sylvain Agostini, Tara-Jambio Mission Microplastique: Science, Education, Art et

Partage, Transformer notre société face à une mer en mutation. Sur le problème des microplastiques marins., Tokyo, Japan, Online (Zoom), October 23 2021.

## **Technical Staff**

【Oral Presentation】○柴田 大輔, 小高友実, ハリサンショウウニの継代飼育法の確立, 第4回筑波大学技術職員交流会, Online (Zoom), 2022.3.9

【Oral Presentation】○柴田 大輔, 小川 祐生, 大植 学, 小高 友実, 高野 治朗, 佐藤 壽彦, 中村 千華, 特別仕様ドレッジの開発・製作, 第4回筑波大学技術職員交流会, Online (Zoom), 2022.3.9

## 5) Press Releases

<https://www.atpress.ne.jp/news/288846> (**Agostini**)

<https://www.city.mitoyo.lg.jp/material/images/group/12/tara11.jpg> (**Agostini**)

<https://www.tsukuba.ac.jp/journal/biology-environment/20220312040000.html>

(**Sasakura**)<https://www.tsukuba.ac.jp/journal/biology-environment/20220118050000.html> (**Horie**)

<https://www.plymouth.ac.uk/news/paris-agreement-will-not-be-reached-without-urgent-ocean-action-study-says> (**Hall-Spencer**)

<https://www.plymouth.ac.uk/news/university-unveils-creative-projects-communicating-climate-emergency> (**Hall-Spencer**)

<https://www.plymouth.ac.uk/news/targeted-removals-and-enhanced-monitoring-can-help-manage-lionfish-in-the-mediterranean> (**Hall-Spencer**)

<https://www.plymouth.ac.uk/news/coastal-ecosystems-being-burned-by-double-whammy-of-rising-temperatures-and-ocean-acidification> (**Hall-Spencer**)

<https://www.plymouth.ac.uk/news/ocean-organ-aims-to-highlight-the-damaging-effects-of-climate-change> (**Hall-Spencer**)

<https://www.plymouth.ac.uk/news/pr-opinion/seven-asks-for-the-g7> (**Hall-Spencer**)

<https://www.plymouth.ac.uk/news/global-experts-identify-key-options-to-tackle-biodiversity-and-climate-crises> (**Hall-Spencer**)

<https://www.plymouth.ac.uk/news/message-in-a-bottle-project-launches-with-new-scientific-trackers> (**Hall-Spencer**)

<https://www.theguardian.com/environment/2021/jul/22/lionfish-threatens-ecosystems-in-the-med> (**Hall-Spencer**)

<https://www.tsukuba.ac.jp/journal/biology-environment/20220119021500.html> (**Nakano**)

<https://www.tsukuba.ac.jp/journal/biology-environment/20220211040000.html> (**Yaguchi**)

<https://www.tsukuba.ac.jp/journal/biology-environment/20210406090000.html> (**Yaguchi**)

## 6) Awards and Prizes

INABA Kazuo, University of Tsukuba 2021 BEST FACULTY MEMBER, 2022.2.7

## 7) Newspaper articles and TV coverage

**Yaguchi**, 日本経済新聞「筑波大と JST、ウニは光の刺激で胃から腸へのゲートを開くことを発見」

[https://www.nikkei.com/article/DGXLRSP607998\\_W1A400C2000000/](https://www.nikkei.com/article/DGXLRSP607998_W1A400C2000000/), 2021.4.6

**Agostini**, Web グリーン・パワー, 「海の酸性化 もう一つの CO2 問題 式根島(下) 魚の種類にも変化が」 <https://www.shinrinbunka.com/wgp/uminosanseika/24022.html>

**Wada**, Web グリーン・パワー, 「海の酸性化 もう一つの CO2 問題 式根島(上) 天然の実験場」

<https://www.shinrinbunka.com/wgp/uminosanseika/23703.html>

**Wada**, Web グリーン・パワー, 「海の酸性化 もう一つの CO2 問題 式根島(中) 未来の海底の風景」 <https://www.shinrinbunka.com/wgp/uminosanseika/23876.html>

**Sasakura**, サイエンス NOW エフエムみしま, 2021.5.16-23

**Harvey**, Zeroing In, NHK World, 2021.6.18

近森基, **Wada, Agostini**, つくばメディアアートフェスティバル 2021, 「海のクロニクル」, 2021.7.30-2021.8.9

**Horie**, 日経バイオテク 「ここまできたシングルセル解析」 2022.3.14

**Nakano**, 中部経済新聞 「背中に角を持つ新種発見」, 2022.3.21

**Inaba**, LOVE OUR BAY, BAY FM78, 2022.3.21-24

**Nakano**, 中国新聞 「背中に突起 新種の無腸類」, 2022.3.27

**Nakano**, 高知新聞 「背中に突起 新種の無腸類」, 2022.3.27

**Nakano**, 愛媛新聞 「背中に角? 新種発見」, 2022.3.30

**Wada, Agostini**, 朝日中高生新聞 「海の酸性化が進行中」, 2021.4.18

## 8) International Collaborative Research

Tara Pacific Consortium, Dr. Serge Planes、 Dr. Denis Allemand、 et al.(**Agostini**)

Hong Kong SAR・Hong Kong University, Dr. Bayden Russell,

「Transcriptomics of sea urchins in response to warming」 (**Harvey**)

Canada・University of British Columbia, Dr. Chris Harley & Dr. Katie Marshall,

「Role of marine heatwaves in determining species biogeographic distribution」 (**Harvey**)

China・Guangdong Ocean University, Dr. 赵力强, 「Shell geochemistry of mussels」 (**Harvey**)

Korea・Keimyung University, Dr. Dorsaf Kerfahi,

「Role of ocean acidification on biofilm settlement dynamics on plastic substrates」 (**Harvey and Hall-Spencer**)

New Zealand・Victoria University of Wellington, Dr. Chris Cornwall,

「Role of ocean acidification on coralline algae responses」 (**Harvey, Porzio and Hall-Spencer**)

USA・Princeton University, Dr. Mike Levine,

「ホヤ幼生の脳神経系の発生と進化に関する研究(**Horie**)

USA・University of California, Santa Barbara, Dr. William Smith, France・Montpellier Cell Biology Research Center, Dr. Patrick Lemaire, 「ホヤの神経機能に関する研究」 (**Horie・Sasakura**)

USA・University of Connecticut Health, Dr. Stephen M. King,

「繊毛鞭毛タンパク質の構造、機能に関する研究」 (**Inaba**)

Czech Republic・University of South Bohemia, Dr. Otomar Linhart,

「チョウザメ精子のタンパク質の解析」 (**Inaba**)

Mexico・National Autonomous University of Mexico(UNAM)Dr. 西垣卓也,

「後生動物における精子鞭毛運動制御の共通性と多様性」 (**Inaba・Shiba**)

USA・Howard Hughes Medical Institute Janelia Research Campus, Dr. Teng-Leong Chew,

「ハプト藻運動装置の微細構造に関する研究」 (**Inaba**)

Switzerland・Paul Scherrer Institute, Dr. Takashi Ishikawa,

「軸糸ダイニンの分子構造に関する研究」 (**Inaba**)

Australia・Deakin University, Dr. Alecia Bellgrove,

「褐藻配偶子の運動に関する研究」 (**Inaba・Shiba**)

USA・Arizona State University, Dr. Hu Ke, 「サンゴと褐虫藻の共生関係に関する研究」 (**Inaba**)

Ireland · Galway University, Dr. Gabriel Krasovec,

「ホヤの変態と D-セリンに関する研究」 (**Sasakura · Horie**)

Sweden · Royal Swedish Academy of Sciences, Dr. Michael C. Thorndyke,

「珍渦虫の発生学的研究」 (**Nakano**)

USA · Brown University, Dr. Gary M. Wessel, 「棘皮動物におけるゲノム編集に関する研究」 (**Yaguchi**)

## 9) Joint Research with Companies

リージョナルフィッシュ株式会社 「日本市場に受け入れられやすいゲノム編集育手法の開発」  
(**Yaguchi**)

## 10) Organized Conferences, Symposiums, and Research Meetings

**Harvey, Wada, Agostini, Porzio**, 「ICONA Kick-off Symposium at TGSW」, Online(Zoom), 2022.9.7

稲葉一男, JAMBIO フォーラム, Online(Zoom), 2022.2.7



# Educational Activities

## 1) Lectures and fieldcourses

### University Fieldcourse

Period	University Department	Subject Area
2021.3.29-4.2	筑波大学生物学類	植物分類学臨海実習 9 名
2021.7.5-9	筑波大学生物学類	動物発生学臨海実習 9 名
2021.7.12-16	筑波大学生物学類	動物分類学臨海実習 10 名
2021.10.20-22	筑波大学大学院共通	海洋生物の世界と海洋環境講座 7 名
2022.3.28-4.1	筑波大学生物学類	水圏生物学臨海実習 7 名
2022.1.25-29 (Online)	筑波大学生物学類	生殖生物学臨海実習 7 名
2022.2.21-25 (Hybrid)	筑波大学自然保護寄附講座	海域フィールド実習 6 名
2022.2.21-25 (Hybrid)	筑波大学理工情報生命学術院 生命地球環境学研究群	マリン生態環境科学 4 名
2022.2.21-25 (Hybrid)	筑波大学生物学類	水圏生態学実習 10 名
2022.3.14-3.18 (Tsukuba)	筑波大学生物学類	植物分類学臨海実習 10 名

## Lectures and Seminars

期 間	University Department	Subject Area
通年不定期開催 (Online)	筑波大学理工情報生命学術院 生命地球環境学研究群	マリンバイオロジー特論 3名
2021.11.11-12 (Online)	筑波大学理工情報生命学術院 生命地球環境学研究群	マリン分子生命科学Ⅰ 5名
2021.9.27-29	筑波大学生物学類	生物寺子屋 2名
2022.3.14-16	筑波大学理工情報生命学術院 生命地球環境学研究群	マリン分子生命科学Ⅱ 3名
2022.3.28-30	筑波大学生物学類	生物寺子屋 3名

## 2) Demonstrations and workshops

下田市立下田中学校 地域学習

下田市立下田東中学校 職場体験実習(実習)

下田高校 理数科大学出張講義

## 3) Academic Activities and Social Contributions

Tara Ocean Japan (理事) (**Agostini**)

Zoological Science (Associate Editor) (**Inaba**)

Zoological Letters (Associate Editor)(**Inaba**)

Invertebrate Reproduction and Development (Editorial Board) (**Inaba**)

Japanese Association for Marine Biology (JAMBIO, President)(**Inaba**)

Journal of Experimental Zoology Part A (Editorial Board)(**Inaba**)

日本動物学会理事・会長(**Inaba**)

Zoological Science (Guest Associate Editor)(**Nakano**)

日本動物学会 ZDW (ZooDiversity Web) 委員(**Nakano**)

観音崎自然博物館 企画展(企画運営)(Nakano、磯和幸延)

JAMBIO 沿岸生物合同調査(担当)(Nakano)

理科年表 生物部(監修)(Nakano)

下田市立下田小学校(ゲストティーチャー)(Nakano)

日本動物学会理事(Shiba)

日本動物学会男女共同参画委員(Shiba)

Development Growth and Differentiation (Editorial Board) (Sasakura)

日本動物学会関東支部委員(Yaguchi)

日本動物学会教育委員(Yaguchi)

日本動物学会国際交流委員(Yaguchi)

Scientific Reports (Editorial Board) (Yaguchi)

Development Growth and Differentiation (Guest Editor)(Yaguchi)

## 4) Provision of Research Materials

黒川 信 東京都立大学理学部生命科学科, オニヤドカリ 8 個体

野田 直紀 日本大学医学部一般教育系生物学分野, ムラサキウニ 30 個体

田中 克彦 東海大学海洋学部海洋生物学科, バフンウニ 30 個体

埴 宗継 山梨大学大学院総合研究部医学域 アカヒトデ 10 個体、ムラサキウニ 10 個体、ボウ  
シュウボラ 3 個体、ナマコ 3 個体、ウミシダ 3 個体

## 5) Public Outreach

### Open Lectures

March 2022(Uploaded to Youtube) 下田市教育委員会 「水産・海洋学講座」 下田市民対象

# Researchers using the Center

## 1) Main Research Topics of those Researchers

Research Subject	PI affiliation	#	Host
ウミホタルおよびその近縁種の採取	産業技術総合研究所	2	Sasakura
実験室の見学と実験生物(カタユウレイボヤ)の飼育相談	名古屋大学	1	Sasakura
海中ロボットの動作試験	東京大学生産技術研究所	7	Sasakura
ホヤ実験		1	Sasakura
海藻(Padina 属)の採集	静岡大学	4	Inaba
キンメダイの精子保存に係る技術開発	静岡県水産・海洋技術研究所 伊豆分場	2	Inaba
サンゴと褐虫藻の共生関係に関する研究打ち合わせ	琉球大学	1	Inaba
クラミドモナス変異株の繊毛波形解析	大阪大学	1	Inaba
海産生物を用いた繊毛運動に関する実験と解析	筑波大学	1	Inaba
研究打ち合わせと研究室見学	愛知教育大学	4	Inaba
平板動物の飼育実験、分子実験	国立遺伝学研究所	1	Nakano
クロイソカイメンとそれに内在するシカツノウミクワガタ、シカツノウミクワガタの寄主である潮間帯魚類の採集	東海大学	4	Nakano
研究材料(フタツメイソウミグモ)の採集	新潟大学	1	Nakano
浮遊性貝類のサンプリング調査	東京大学総合研究博物館	1	Nakano
屋外水槽およびソリネット採集物中の棘皮動物の採集	浜松医科大学	1	Shiba
透過型電子顕微鏡観察	琉球大学	2	Shiba
黒潮流路付近(石廊崎沖を想定)でのプランクトンネット採集および表層水採集	筑波大学	3	Shiba
海底下環境音響計測システムの実証	東京大学	7	Wada

海産緑藻類の分布調査	千葉大学	1	Wada
環境省モニタリングサイト 1000(沿岸域調査)	三重大学	8	Wada
微生物のメンブレンベシクルの分析	筑波大学	1	Wada
植物の窒素取り込み機構の評価	筑波大学	3	Wada
沿岸域の藻場における海水と海藻の解析	日本大学	1	Wada
浅海域における水中無線通信法の確立	筑波大学	4	Wada
測器(海中グライダー)の試験・操作習熟のため	気象研究所	5	Agostini
Tara-Jambio Microplastic 調査における芸術家との活動	東京藝術大学	8	Agostini
式根島 CO2 シープにおける魚類の脳での遺伝子発現	OIST	8	Agostini
単一細胞トランスクリプトーム解析に関する共同研究の打ち合わせ	東京医科歯科大学	1	Horie

## 2) Research Output from Researchers using the Center

Sentoku A, Tokuda Y. New Records of Azooxanthellate Scleractinian Corals (Cnidaria: Anthozoa) from Sagami Bay and Suruga Bay, Japan. *Zool Sci*, 39:52–61, 2022

Hirose M. New Species of Lower-Shelf to Upper-Slope Ctenostome Bryozoans from Pacific Japan, with a Family Range Extension. *Zool Sci*, 39:87–98, 2022

Jimi N, Hookabe N, Tani K, Yoshida R, Imura S. The Phylogenetic Position of Branchamphinome (Annelida, Amphinomidae) with a Description of a New Species from the North Pacific Ocean. *Zool Sci*, 39:99–105, 2022

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