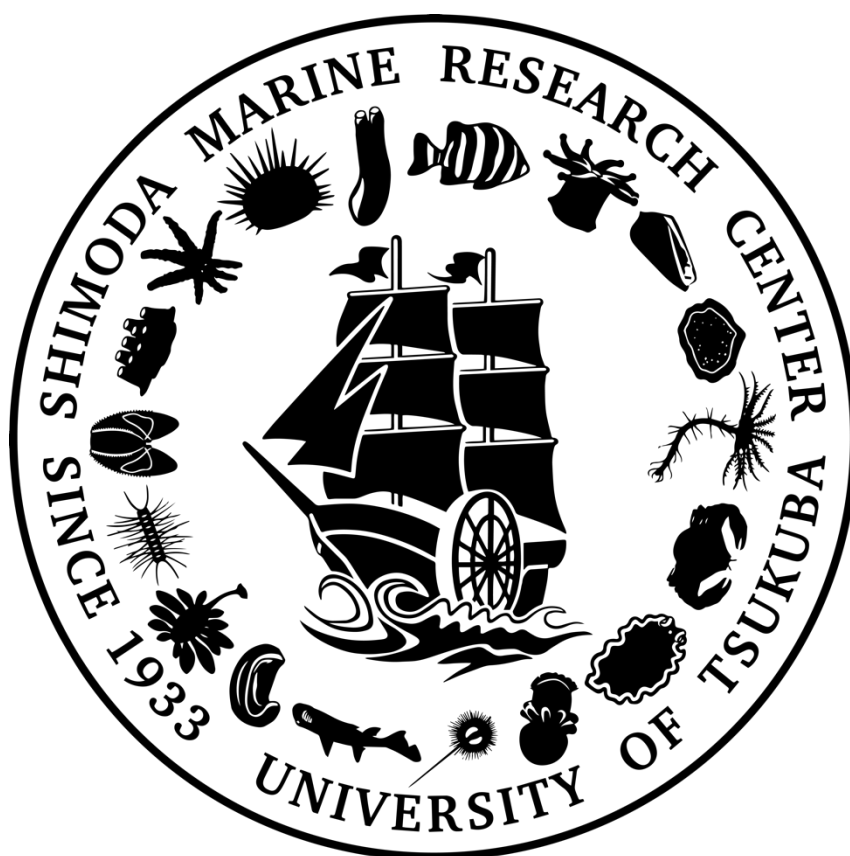


University of Tsukuba Shimoda Marine Research Center Annual Report

2023



March 2024

Overview of our activities

When we watch news reports, we notice a strong interest in the oceans. Not only those aspects directly related to our daily lives, such as fisheries, but also those introducing unusual creatures in the sea are frequently broadcasted. Groups such as arthropods and mollusks, which are often avoided by those living on land, often seem to be qualified with compliments for their marine relatives. The ocean is such an unknown space for humans that it is difficult to see what kind of landscape develops under the sea, which may in turn arouse curiosity.

In fact, it is technically difficult to study the ocean. It requires special and expensive equipment, skills in handling them, and many other things that are not found in life on land. It is also highly dangerous. Because of this difficulty, we know surprisingly little about the ocean. It is as if new and undescribed species are still lying all around us. It has happened that many new and extremely rare species have been found in the aquarium at the Center. There are also many examples of well-known species whose life cycles are still unknown.

The important mission of not only this center but also other coastal facilities is to “understand the ocean”. Each researcher has his or her own unique perspective in conducting research, such as describing as many species as possible and their distribution in the ocean, where the understanding of the biota is still limited, elucidating the molecular mechanisms that occur within marine organisms, and investigating interactions between organisms and the environment in an ecosystem. The research is conducted from the unique perspectives of each researcher. From such steady activities, the ocean will steadily be revealed little by little.

Recently, however, there has been an increase in the number of articles on changes in the marine environment. Many issues have been raised, such as the decrease and distribution change of organisms, global warming, ocean acidification, and the ocean plastic problem. We frequently hear comments that the environment has changed considerably in the oceans surrounding our center. I suspect that environmental change has caused the extinction of more than a few species that humans were unaware they even existed. Of course, the environment is in transition, but I hope that the oceans, the setting for our research, will always remain rich and abundant.

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 21st 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 8 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, Placazoa, *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, fins, and air compressor

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 3,931m²)

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 149.6m²)

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
	Associate Professor	谷口 俊介 Shunsuke YAGUCHI	Developmental Biology
	Associate Professor	中野 裕昭 Hiroaki NAKANO	Evolutionary Zoology
	Assistant Professor	柴 小菊 Kogiku SHIBA	Cell Biology
	Assistant Professor	和田 茂樹 Shigeki WADA	Marine Ecology
	Assistant Professor	Sylvain AGOSTINI	Marine Biology
	Assistant Professor	Ben HARVEY	Environmental Ecology
Technician		柴田 大輔 Daisuke SHIBATA	～2023.8.31
		大植 学 Manabu OOUE	
		高野 治朗 Jiro TAKANO	
		Wei YI	～2023.6.20
		内田 吉亮 Yoshiaki UCHIDA	2023.7.16～
		George NORTHEN	2023.9.1～
Full-time Research Fellow		谷口 順子 Junko YAGUCHI	
		北之坊 誠也 Seiya KITANOBO	
		Davide SPATAFORA	～2023.6.30
		柴田 あいか	2024.1.1～

		Aika SHIBATA	
		山本 千愛 Chiaki YAMAMOTO	～2023.6.30
Part-time Research Fellow		笹倉 暁子	
Specialist		羽子田 誠	
Administration	Administrative assistant	土屋 理恵	～2023.6.30, 2024.1.1 ～
		土屋 富士子	
Part-time	Administrative assistant	小関 裕子	
		George NORTHEN	～2023.8.31
		NORTHEN 真結花	2023.10.1～2024.1.31
Part-time	Cleaning Staff	山田 順子	
		田中 文子	
		渡邊 恵	
Part-time	Research Technician	大畑 雅江	
		田子内 加代	
		田中 佐貴子	～2023.9.30
		金守 美里	
		浅野 美世	
		中尾 菜穂	
		中野 亜子	
		加納 穂澄	
		木村 智美	
		古屋 こさと	
		武富 晋一郎	～2023.12.15
		土屋 絵里	～2023.8.31
		NORTHEN 真結花	2024.2.1～
		小宮 万智子	2024.2.1～
JSPS	Postdoctoral Fellow	寺内 菜々	
		香川 理	

Enrolled between 2023.4.1-2024.3.31

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

Marine Ecology Division

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. There are many dangers beyond climate change and ocean acidification. Due to the lack of data on microplastic pollution, which has been attracting attention in recent years, it is not yet possible to assess what kind of impact it has on marine ecosystems and corals. We also study the impact of other anthropogenic stressors on marine ecosystems in general and thrive 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
- Evaluation of the impact of microplastic pollution

2) Research Supervision of Students at the Center

University of Tsukuba, Life and Environmental Sciences, Biology

Undergraduate, 4 th Year	二酸化炭素によるニホンウナギ精子の運動停止反応
Undergraduate, 4 th Year	サンゴの共生・白化に関連する褐虫藻の運動調節の研究
Undergraduate, 4 th Year	棘皮動物クローニングの再現
Undergraduate, 4 th Year	伊豆半島沖の砂泥底におけるメイオベントス群集の研究
Undergraduate, 4 th Year	無腸類と <i>Amphidinium</i> 属渦鞭毛藻の共生関係の進化
Undergraduate, 4 th Year	ブダイによるカジメ場における食圧の測定法
Undergraduate, 4 th Year	Impacts of future ocean acidification on the ecology of two sea urchin species

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

Research Student	ホヤの変態の分子メカニズム
Masters, 1 st Year	クシクラゲ櫛板を用いた繊毛運動の分子機構に関する研究
Masters, 1 st Year	マガキガイ異型精子の遊泳方向と顆粒体の分泌
Masters, 1 st Year	カラクシンによる精子鞭毛運動の分子調節機構
Masters, 1 st Year	Effects of ocean acidification to physiological traits of hermatypic corals under different light environments
Masters, 2 nd Year	カブトクラゲ櫛板の隔小板関連タンパク質の探索
Masters, 2 nd Year	ホヤの変態開始におけるカルシウムイオン調節機構
Masters, 2 nd Year	海藻群集からの溶存態有機物の生産量の測定
PhD, 1 st Year	Distribution and fluxes of microplastics in Japanese coastal areas
PhD, 2 nd Year	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
PhD, 3 rd Year	ウミウシの体色多様性進化と系統学的研究
PhD, 3 rd Year	マリンスノーの物理的強度の測定と生物ポンプにおける意義
PhD, 3 rd Year	Coral-algae interactions under ocean acidification and warming

3) Publications

Marine Molecular Biology Division

Genetics

- Iguchi, R., K. Usui, S. Nakayama, Y. Sasakura, T. Sekiguchi, and M. Ogasawara. 2023b. Multi-regional expression of pancreas-related digestive enzyme genes in the intestinal chamber of the ascidian *Ciona intestinalis* type A. **Cell and Tissue Research** 394:423–430.
- Iguchi, R., S. Nakayama, Y. Sasakura, T. Sekiguchi, and M. Ogasawara. 2023a. Repetitive and zonal expression profiles of absorption-related genes in the gastrointestinal tract of ascidian *Ciona intestinalis* type A. **Cell and Tissue Research** 394:343–360.
- Kijima, T., D. Kurokawa, Y. Sasakura, M. Ogasawara, S. Aratake, K. Yoshida, and M. Yoshida. 2023. CatSper mediates not only chemotactic behavior but also the motility of ascidian sperm. **Frontiers in Cell and Developmental Biology** 11:1136537.
- Krasovec, G., C. Renaud, É. Quéinnec, Y. Sasakura, and J.-P. Chambon. 2024. Extrinsic apoptosis participates to tail regression during the metamorphosis of the chordate *Ciona*. **Scientific Reports** 14:5729.
- Sakai, T., T. Yamamoto, T. Watanabe, A. Hozumi, A. Shiraishi, T. Osugi, S. Matsubara, T. Kawada, Y. Sasakura, T. Takahashi, and H. Satake. 2023. Characterization of a novel species-specific 51-amino acid peptide, PEP51, as a caspase-3/7 activator in ovarian follicles of the ascidian, *Ciona intestinalis* Type A. **Frontiers in Endocrinology** 14:1260600.
- Satake, H., and Y. Sasakura. 2024. The neuroendocrine system of *Ciona intestinalis* Type A, a deuterostome invertebrate and the closest relative of vertebrates. **Molecular and Cellular Endocrinology** 582:112122.
- Taniguchi, S., S. Nakayama, R. Iguchi, Y. Sasakura, H. Satake, S. Wada, N. Suzuki, M. Ogasawara, and T. Sekiguchi. 2024. Distribution of cionin, a cholecystokinin/gastrin family peptide, and its receptor in the central nervous system of *Ciona intestinalis* type A. **Scientific Reports** 14:6277.
- Totsuka, N. M., S. Kuwana, S. Sawai, K. Oka, Y. Sasakura, and K. Hotta. 2023. Distribution changes of non-self-test cells and self-tunic cells surrounding the outer body during *Ciona* metamorphosis. **Developmental Dynamics** 252:1363–1374.
- Treen, N., S. Konishi, H. Nishida, T. A. Onuma, and Y. Sasakura. 2023. Zic-r.b controls cell numbers in *Ciona* embryos by activating CDKN1B. **Developmental Biology** 498:26–34.

Cell Biology

- Hasegawa, M., K. Inaba, Y. Nagakura, H. Noda, and N. Kawai. 2023. Development of an extender solution for short-term sperm storage to promote seed production in alfonsino *Beryx splendens*. **NIPPON SUISAN GAKKAISHI**:22–00062.
- Kinoshita-Terauchi, N., K. Shiba, T. Umezawa, and K. Inaba. 2024. Distinct regulation of two flagella by calcium during chemotaxis of male gametes in the brown alga *Mutimo cylindricus* (Cutleriaceae, Tilopteridales). **Journal of Phycology**, 60, 409–417.
- Morita, M., S. Kitanobo, S. Ohki, K. Shiba, and K. Inaba. 2023. Positive selection on ADAM10 builds species recognition in the synchronous spawning coral *Acropora*. **Frontiers in Cell and Developmental Biology** 11:1171495.
- Shiba, K. 2023. Regulatory mechanisms for sperm chemotaxis and flagellar motility. **Genesis** 61:e23549.
- Shiba, K., and K. Inaba. 2023. The role of soluble adenylyl cyclase in the regulation of flagellar motility in ascidian sperm. **Biomolecules** 13:1594.

Developmental Biology

- Kamata M, Taniguchi Y, Yaguchi J, Tanaka H, Yaguchi S. Nonmuscular Troponin-I is required for gastrulation in sea urchin embryos. **Developmental Dynamics**. 2023; 1-5. doi:10.1002/dvdy.680
- Yaguchi, J., and S. Yaguchi. 2023a. Rx and its downstream factor, Musashi1, is required for establishment of the apical organ in sea urchin larvae. **Frontiers in Cell and Developmental Biology** 11:1240767.
- Yaguchi, S., and J. Yaguchi. 2023b. Development and function of nervous systems of sea urchin larvae. **Hikaku seiri seikagaku(Comparative Physiology and Biochemistry)** 40:137–148.

Marine Ecology Division

Environmental Ecology

Cornwall, C., S. Comeau, and B. P. Harvey. 2024 (Accepted). Are physiological and ecosystem -level tipping points caused by ocean acidification? A critical evaluation. **Earth System Dynamics Discussions**. <https://doi.org/10.5194/esd-2023-24>.

Hemraj, D. A., J. J. Minuti, B. P. Harvey, and B. D. Russell. 2024. 4.19 - Marine Heatwaves: Impact on Physiology, Populations, and Communities of Coastal Marine Invertebrates. Pages 518–531 in D. Baird and M. Elliott, editors. **Treatise on Estuarine and Coastal Science** (Second Edition). Academic Press, Oxford.

Reimer, J. D., S. Agostini, Y. Golbuu, B. P. Harvey, M. Izumiyama, E. A. Jamodiong, E. Kawai, H. Kayanne, H. Kurihara, T. Ravasi, S. Wada, and R. Rodolfo-Metalpa. 2023. High abundances of zooxanthellate zoantharians (Palythoa and Zoanthus) at multiple natural analogues: potential model anthozoans? **Coral Reefs** 42:707–715.

Zhao, L., B. P. Harvey, T. Higuchi, S. Agostini, K. Tanaka, N. Murakami-Sugihara, H. Morgan, P. Baker, J. M. Hall-Spencer, and K. Shirai. 2023. Ocean acidification stunts molluscan growth at CO₂ seeps. **Science of The Total Environment** 873:162293.

Materials Cycling

Hayashi, Y., S. Wada, M. Seto, and Y. Adachi. 2023. Cohesive bond strength of marine aggregates and its role in fragmentation. **Frontiers in Marine Science** 10:1167169.

Reimer, J. D., S. Agostini, Y. Golbuu, B. P. Harvey, M. Izumiyama, E. A. Jamodiong, E. Kawai, H. Kayanne, H. Kurihara, T. Ravasi, S. Wada, and R. Rodolfo-Metalpa. 2023. High abundances of zooxanthellate zoantharians (Palythoa and Zoanthus) at multiple natural analogues: potential model anthozoans? **Coral Reefs** 42:707–715.

Marine Complex Biology Division

Environmental Ecophysiology

Heitzman, J. M., G. Mitushasi, D. Spatafora, and S. Agostini. 2023. Seasonal coral-algae interactions drive White Mat Syndrome coral disease outbreaks. **Science of The Total Environment** 900:166379.

Hochart, C., L. Paoli, H.-J. Ruscheweyh, G. Salazar, E. Boissin, S. Romac, J. Poulain, G. Bourdin, G. Iwankow, C. Moulin, M. Ziegler, B. Porro, E. J. Armstrong, B. C. C. Hume, J.-M. Aury, C. Pogoreutz, D. A. Paz-García, M. M. Nugues, S. Agostini, B. Banaigs, E. Boss, C. Bowler, C. De Vargas, E. Douville, M. Flores, D. Forcioli, P. Furla, E. Gilson, F. Lombard, S. Pesant, S. Reynaud, O. P. Thomas, R. Troublé, P. Wincker, D. Zoccola, D.

- Allemand, S. Planes, R. V. Thurber, C. R. Voolstra, S. Sunagawa, and P. E. Galand. 2023. Ecology of Endozoicomonadaceae in three coral genera across the Pacific Ocean. **Nature Communications** 14:3037.
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D. Forcioli, P. Furla, P. E. Galand, E. Gilson, F. Lombard, S. Pesant, S. Reynaud, S. Sunagawa, O. P. Thomas, R. Troublé, D. Zoccola, A. M. S. Correa, and R. L. Vega Thurber. 2023. Endogenous viral elements reveal associations between a non-retroviral RNA virus and symbiotic dinoflagellate genomes. **Communications Biology** 6:566.

4) Conference Presentations and Invited Lectures

Marine Molecular Biology Division

Genetics

【Oral Presentation】○笹倉 靖徳, 保住 暁子, 小野寺 新, 濱田 麻友子, CJ Pickett, Bradley Davidson, 吉田 知之, 白石 慧, 川田 剛士, 佐竹 炎, 堀江 健生 尾索動物の変態と固着生活の進化を促した、系統特異的タンパク質 DRESS の発見, 日本動物学会第 94 回山形大会 2023, 山形大学, 山形県山形市, 2023. 9.7-9

【Oral Presentation】笹倉 靖徳, ホヤの変態開始に掛かるシグナル伝達経路, 第 6 回ホヤ研究会, 鹿児島大学, 鹿児島県鹿児島市, 2023. 11.3-4

【Oral Presentation】○笹倉 靖徳, 佐藤 ゆたか, 吉田 学, 第 5 期ナショナルバイオリソース事業とその将来, 第 6 回ホヤ研究会, 鹿児島大学, 鹿児島県鹿児島市, 2023. 11.3-4

【Invited Lecture】Yasunori Sasakura, Ascidians, our primitive chordate cousins in the sea, teach us about heart formation, the dopaminergic system, and more, CMS Seminar Club, Fujita Health University, 2023.6.23.

【Invited Lecture】笹倉 靖徳, 下田臨海実験センター紹介と海産動物ホヤを使った研究成果, 2023 年度 ERATO 深津共生進化機構プロジェクト全体会議, 筑波大学下田臨海実験センター, 静岡県下田市, 2023.11.22

【Poster Presentation】○笹倉 靖徳, 佐藤 ゆたか, 吉田 学, 「カタユウレイボヤ」脊索動物の特徴を備えた単純な体制をもつ動物の研究支援, BioJapan2023, パシフィコ横浜, 神奈川県横浜市, 2023. 10.11-13

Cell Biology

【Invited Lecture】Kazuo Inaba, Structural and functional diversification of cilia in evolutionary adaptation to aquatic environments, Michael Sars Symposium 2023: Cells, organisms and their environment, Michael Sars Centre, Bergen, Norway, 2023.June 1st, 2023.6.1.

【Invited Lecture】柴小菊, 精子走化性の運動制御機構, 2023 年度日本数理生物学会年会企画シンポジウム S3: Experiments and mathematics of morphogenesis and cell migration, 奈良女子大学, 奈良県奈良市, 2023.9.4

【Oral Presentation】○横屋 稜, 柴 小菊, 稲葉 一男, マガキガイ異型精子における顆粒体放出と遊泳方向の関連性, 日本動物学会第 94 回山形大会 2023, 山形大学, 山形県山形市, 2023. 9.7-9

【Oral Presentation】○小坂 実央, 柴 小菊, 稲葉 一男, クシクラゲの櫛板隔小板を構成する新規タンパク質成分の同定, 日本動物学会第 94 回山形大会 2023, 山形大学, 山形県山形市, 2023. 9.7-9

【Oral Presentation】稲葉 一男, 高速の繊毛非対称波の起源について, 第 13 回繊毛研究会, 一橋講堂 中会議場, 東京都千代田区, 2023.10.23-24.

【Invited Lecture】Kogiku Shiba, Regulatory mechanism for sperm chemotaxis and flagellar motility, INI-RIMS joint seminar, Online/京都大学数理解析研究所, 京都府京都市, 2023.10.26.

【Invited Lecture】Kazuo Inaba, Diversification of ciliary structures and function during eukaryotic evolution, SMBE Satellite Meeting on Mechanisms of Cellular Evolution and Second Annual Symposium of the NSF Biological Integration Institute of Mechanisms of Cellular Evolution, Arizona, USA, 2023.11.8-11.

【Poster Presentation】○Seiya Kitanobo, Ke Hu, John M Murray, Kogiku Shiba, Kazuo Inaba, Identification of proteins associated with coral-dinoflagellate symbiosis and insights into coral bleaching mechanisms, SMBE Satellite Meeting on Mechanisms of Cellular Evolution and Second Annual Symposium of the NSF Biological Integration Institute of Mechanisms of Cellular Evolution, Arizona, USA, 2023.11.8-11.

【Poster Presentation】○Aika Shibata, Ryuji Yanase, Kogiku Shiba, Yu Sato, Akinori Yabuki, Kazuo Inaba, Photo-avoiding reaction and cell motility of the apusomonad *Podomonas kaiyoe*, SMBE Satellite Meeting on Mechanisms of Cellular Evolution and Second Annual Symposium of the NSF Biological Integration Institute of Mechanisms of Cellular Evolution, Arizona, USA, 2023.11.8-11.

【Poster Presentation】○岩本 裕之, 小坂 実央, 横屋 稜, 城倉 圭, 大岩 和弘, 稲葉 一男, 繊毛打中のクシクラゲ櫛板の軸糸からのミリ秒時間分解 X 線回折像記録/Millisecond time-resolved recordings of X-ray diffraction patterns from axonemes in beating comb plates of ctenophore, 第 61 回日本生物物理学会年会, 名古屋国際会議場, 愛知県名古屋市, 2023.11.14-16.

【Invited Lecture】Kazuo Inaba, Ciliary Diversification in Animals - Have the hairy structures played a driving force for animal evolution?, Seminar at Hopkins Marine Station (Agassiz), Hosted by Prof. Chris Lowe, Nov 14th 2023.

【Oral Presentation】○小坂 実央, 柴 小菊, 稲葉 一男, カプトクラゲ櫛板を構成する ODF3 様タンパク質の局在と機能, 生体運動研究合同班会議 2024, 理化学研究所・生命機能科学研究センター, 兵庫県神戸市, 2024. 1.5-7

【Oral Presentation】○横屋 稜, 柴 小菊, 稲葉 一男, マガキガイ異型精子の遊泳方向と顆粒体放出, 生体運動研究合同班会議 2024, 理化学研究所・生命機能科学研究センター, 兵庫県神戸市, 2024. 1.5-7

【Oral Presentation】○岩本裕之 1, 小坂実央 2, 横屋稜 2, 城倉圭 2, 大岩和弘 3, 稲葉一男 2 (1SPring-8・JASRI、2 筑波大・下田臨海、3 情報通信・未来 ICT), 運動中のクシクラゲ櫛板の有効打・回復打における X 線回折像の違い, 生体運動研究合同班会議 2024, 理化学研究所・生命機能科学研究センター, 兵庫県神戸市, 2024. 1.5-7

Developmental Biology

【Invited Lecture】Sea urchin larvae utilize light for regulating the activity of digestive tract. Junko Yaguchi, Shunsuke Yaguchi. The International Conference for the Developmental Biology of the Sea Urchin and Other Marine Invertebrates XVII. Woods Hole, MA, USA 2023-10-17--2023-10-20

【Invited Lecture】ウニ幼生の光応答が教えてくれる新規の生命現象 谷口順子、谷口 俊介 日本動物学会 第 94 回山形大会/2023-09-07--2023-09-09

【Oral Presentation】ウニ胚では調節発生の過程で前 後軸が再編成される 鈴木 智佳、谷口順子、露崎弘毅、谷口 俊介 日本動物学会 第 94 回山形大会/2023-09-07--2023-09-09

【Oral Presentation】A muscle component, Troponin-I, is required for gastrulation in sea urchin embryos Mai Kamata, Yuri Taniguchi, Junko Yaguchi, Hiroyuki Tanaka, Shunsuke Yaguchi The 56th Annual Meeting of JSDB/2023-07-22--2023-07-25

Evolutionary Embryology

【Oral Presentation】○林 牧子, 中野 裕昭, アオウミウシ *Hypselodoris festiva* の幼若体の成長過程とステージ分け, 日本貝類学会令和 5 年度 (創立 95 周年記念) 大会. 東邦大学習志野キャンパス, 千葉県船橋市, 2023.6.24-25

【Poster Presentation】 【国際会議】○Makiko Hayashi, Hiroaki Nakano, Development of *Hypselodoris festiva* (Nudibranchia: Chromodorididae) with Emphasis on Juvenile Stages, EMBO/The Company of Biologists Workshop 'Trans-Scale Biology' using exotic non-model organisms, Okazaki Conference Center, Okazaki, Aichi, 2023.7.25-27

【Oral Presentation】○中野裕昭, 中野亜子, 前野哲輝, Michael Thorndyke, 珍渦虫の人工的な誘起による体の破れからの放卵放精, 日本動物学会第 94 回山形大会 2023, 山形大学小白川キャンパス, 山形県山形市, 2023. 9.7-9

【Poster Presentation】 【国際会議】○Makiko Hayashi, Hiroaki Nakano, Post-settlement growth and staging of the sea slug *Hypselodoris festiva*, 2024 Society for Integrative and Comparative Biology Annual Meeting, Seattle Convention Center, Washington, USA, 2024.1.2-6

【Poster Presentation】○川上瞭, 林牧子, 中野裕昭, 無腸類と *Amphidinium* 属渦鞭毛藻の共生関係の進化, 日本動物学会関東支部第 76 回大会, 東京大学伊藤国際学術研究センター, 東京都文京区, 2024.3.16

Marine Ecology Division

Environmental Ecology

【Oral Presentation】○Ben P. Harvey, The simplification of marine ecosystems under ocean acidification – insights from CO₂ seep. 2023 ESSAS Annual Science Meeting: “Ecological, social and economic dynamics of high-latitude coastal systems”, Bergen, Norway, 2023.6.21

Materials Cycling

【Poster Presentation】○和田茂樹, 黒澤伸吾, 藤村弘行, 海洋酸性化が沿岸藻場生態系の光合成生産量に及ぼす影響-水塊移動に基づく解析, 日本地球惑星科学連合2023年大会, 幕張メッセ, 千葉県, 2023.5.23

【Oral Presentation】○Shigeki Wada, Community photosynthesis in coastal ecosystem under high CO₂ world. Ocean Acidification Week 2023, Online, 2023.10.30-11.3

【Oral Presentation】○和田茂樹, 藻場のブルーカーボンの実態と将来予測, 第5回環境研究機関連絡会研究交流セミナー, オンライン, 2024.1.24

Marine Complex Biology Division

Environmental Ecophysiology

【Oral Presentation】○A. Hirata, R. Terayama, T. Higuchi, I. Yuyama, T. Nakamura, H. Fujimura, & S. Agostini. Diurnal cycle of hermatypic coral gross photosynthesis and photo inhibition under thermal stress. 26th Japanese Coral Reef Symposium, Sendai, Japan. 2023.11.24

【Oral Presentation】○Guinther Mitusashi, Yuko F. Kitano, Eric Armstrong, Barbara Porro, Emilie Boissin, Quentin Carradec, Eric Rottinger, Serge Planes, David A. Paz-Garcia, Christian R Voolstra, Didier Forcioli, & Sylvain Agostini. Using morphological annotations for genetic lineage prediction of two reef building coral species. 26th Japanese Coral Reef Symposium, Sendai, Japan. 2023.11.24

【Oral Presentation】○Joshua Heitzman, Guinther Hiromu Mitushasi, Davide Spatafora, Shigeki Wada, Ben P. Harvey, Haruko Kurihara, & Sylvain Agostini. Coral skeleton dissolution is accelerated by turf algal settlement under ocean acidification. 26th Japanese Coral Reef Symposium, Sendai, Japan. 2023.11.24

【Oral Presentation】○Sylvain Agostini, Ben P. Harvey, Lucia Porzio, Jason M. Hall-Spencer, Carlo Cattano, Fanny Houlbrèque, Timothy Ravasi, Haruko Kurihara, Bayden D. Russell, James D. Reimer,

ICONA participants, Marco Milazzo, Riccardo Rodolfo-Metalpa, & Shigeki Wada. Using natural analogues for the study of ecosystems effects of Ocean Acidification: the Shikine CO₂ seep and the ICONA network. 5th Asia-Pacific Coral Reef Symposium, Singapore. 2023.6.20

【Oral Presentation】○Sylvain Agostini, Riccardo Rodolfo-Metalpa, Fanny Houlbreque, Shigeki Wada, James Reimer, Fabian Goesser, Ben P Harvey, Bayden Russell, Haruko Kurihara. "What natural analogues can teach us about the future of coral communities and their understudied biodiversity" PICRC, Koror, Palau. (口頭), (2023.4.28)

Technical Staff

【Oral Presentation】○大植学, 潜水業務の安全管理について, 臨海・臨湖実験所・センター技術職員研修会議, 名古屋大学大学院理学研究科附属 菅島臨海実験所, 2023.11.7-9

5) Press Releases

2023.5.8

キンメダイ種苗生産のための精子の冷蔵保存技術を開発 (稲葉一男)

<https://www.tsukuba.ac.jp/journal/biology-environment/20230509140000.html>

2023.6.8

タラ号太平洋プロジェクト サンゴ礁のマイクロバイオームの圧倒的な多様性が明らかに

<https://www.atpress.ne.jp/news/358187> (Sylvain Agostini)

6) Awards and Prizes

林牧子, 日本貝類学会令和5年度(創立95周年記念)大会, 日本貝類学会学生最優秀発表賞, 東邦大学習志野キャンパス, 千葉県船橋市, 2023.6.24-25

稲葉一男, 日本動物学会賞, 「繊毛の構造・運動調節・進化に関する研究」, 山形大学小白川キャンパス, 山形県山形市, 2023.9.8

7) Newspaper articles and TV coverage

稲葉一男, 生命科学 DOKIDOKI 研究室「これから研究の話をしよう」第20回 細胞に毛が生えているってホント!? 生命誕生と進化の鍵を握るミクロの毛, 2023.9.16

<https://www.terumozaidan.or.jp/labo/future/20/index.html>

稲葉一男, 『子供の科学』2023.12.号「実はすごい! 生きものたちの 毛! 毛!! 毛!!!」2023.11.14

<https://www.kodomonokagaku.com/kokademia-articles/67373/>

稲葉一男, 谷口俊介, NHK E テレ「生きもの・どアップ! 超ミクロハンター〜命を支える「毛」の秘密〜」 2024.3.29

谷口俊介, ABEMA NEWS 「週間 BUZZ 動画」全速力で動くウニと動かないウニ 2023.7.

谷口俊介, 和田茂樹 NHK 静岡【海の異変】ウニ研究の海から ウニと海藻が消えた 2023.11.

林牧子, 『海のソーラーパワー・ウミウシの「光合成」を観察する 200 時間研究-究極の SDGs-@基礎生物学研究所 ニコニコ超会議 2023』, 2023.4.27

中野裕昭, 筑波大学ポッドキャスト No. 033 卵が体を突き破る! 「ちんうずむし」の単純で壮絶な生殖行動, 2023.5.8

中野裕昭, 筑波大学学生物学類サイト, 独自スタイルな珍渦虫ライフー未知の生き物の生き様に迫るー, 2024.1.26

Sylvain Agostini ポッドキャスト Fondation Thalie (フランス): « la biodiversité des habitats marins » (Fondation Thalie) (<https://www.fondationthalie.org/fr/podcasts/parole-de-createurs-face-a-lurgence-ecologique-nicolas-floch-sylvain-agostini/>) 2023.3.20

8) International Collaborative Research

USA・University of Connecticut Stephen M. King PhD

「絨毛鞭毛タンパク質の構造、機能に関する研究」(稲葉)

Czech Republic・South Bohemian University Otomar Linhart PhD,

「チョウザメ精子のタンパク質の解析」(稲葉)

Mexico・Universidad Nacional Autónoma de México (UNAM) 西垣卓也 PhD,

「後生動物における精子鞭毛運動制御の共通性と多様性」(稲葉・柴)

USA・Howard Hughes Medical Institute Janelia Teng-Leong Chew PhD,

「ハプト藻運動装置の微細構造に関する研究」(稲葉)

Switzerland・Paul Scherrer Institute Takashi Ishikawa PhD,

「軸系ダイニンの分子構造に関する研究」 (稲葉)

Australia・Deakin University Alecia Bellgrove PhD,

「褐藻配偶子の運動に関する研究」 (稲葉・柴)

USA・Arizona State University Hu Ke PhD,

「サンゴと褐虫藻の共生関係に関する研究」 (稲葉)

Ireland・University of Galway Gabriel Krasovec PhD,

「ホヤの変態とアポトーシスに関する研究」 (笹倉)

USA・Swarthmore 大学 Bradley Davidson PhD、Hannah Gruner PhD、CJ Pickett PhD,

「ホヤの変態と成体組織構築に関する研究」 (笹倉)

Sweden・Gothenburg Museum of Natural History Kennet Lundin PhD 等

「珍無腸動物門の系統学的位置に関する研究」 (中野)

France・Marseille Institute for Developmental Biology Andrea Pasini PhD

「平板動物の細胞の機能に関する研究」 (中野)

USA・University of Colorado Boulder Kenneth Krauter PhD

「珍渦虫のゲノムの進化過程に関する研究」 (中野)

USA・Brown University Gary M. Wessel PhD,

「棘皮動物におけるゲノム編集に関する研究」 (谷口)

France・Sorbonne University Jenifer Croce PhD,

「ウニ幼生の神経形成に関する研究」 (谷口)

France, Tara Pacific Consortium (Sylvain Agostini)

Italy, France, ICONA Network (和田茂樹、Ben Harvey, Sylvain Agostini)

New Zealand・Victoria University of Wellington Chris Cornwall PhD

「Carbonate production and coralline algae responses to climate change」 (Ben Harvey)

Hong Kong・University of Hong Kong Bayden Russell PhD

「Temperature tolerance and impacts of marine heatwaves on marine organisms」 (Ben Harvey)

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」 (谷口)

10) Organized Conferences, Symposiums, and Research Meetings

開催：稲葉一男、柴小菊，ジオラマ若手勉強会「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」，筑波大学下田臨海実験センター, 2023.10.7-8.

オーガナイザー: 鹿毛 あずさ（学習院大学）、野村 真未（山形大学）、柴 小菊（筑波大学），第61回日本生物物理学会年会「シンポジウム微小環境で行動する単細胞生物の生存戦略/ The survival strategies of unicellular organisms on a microscale」，名古屋国際会議場，愛知県名古屋市，2023.11.14-16.

Educational Activities

1) Lectures and fieldcourses

University Fieldcourse

Period	University Department	Subject Area	#
2023.6.12-15	山梨大学	環境生物学実習	21
2023.7.10-14	筑波大学生物学類	動物発生学臨海実習	14
2023.7.17-21	筑波大学生物学類	動物分類学臨海実習	14
2023.8.9-11		生物公開臨海実習（海山連携）	8
2023.8.28-9.1	筑波大学	水圏生態学臨海実習	15
2023.9.11-15	筑波大学生物学類	生殖生物学臨海実習	10
2023.9.19-22	山梨大学教育学部	野外生物学実習	10
2023.9.25-29	筑波大学自然保護寄附講座 筑波大学理工情報生命 学術院生命地球環境学 研究群	海域フィールド実習 マリン生態環境科学	12
2023.10.11-13	筑波大学大学院共通	海洋生物の世界と海洋環境講座	10
2024.1.22-25	健康科学大学健康科学 部理学療法学科	海洋生物臨海実習	11
2024.3.11-15	筑波大学生物学類	水圏生物学実習	14
2024.3.18-20	筑波大学大学院共通	地球規模課題と国際社会:海洋環境変動と生命	6
2024.3.25-29	筑波大学生物学類	植物分類学臨海実習	16

Lectures and Seminars オンライン科目について教員に確認

期 間	大 学 等 名	実 習 等 名	人数
2023.7.3-7	筑波大学	生物科学専攻集中科目サイエンスプレゼンテーション	5
2023.8.21-25	筑波大学	夏季集中授業 マリンスポーツ	13

2023.8.6-8	筑波大学生物学類	生物寺子屋	5
通年不定期開催 (オンライン)	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	4
2022.11.10-11 (オンライン)	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	2

2) Demonstrations and workshops

下田市立下田中学校 探求学習

3) Academic Activities and Social Contributions

Zoological Science (Associate Editor) (稲葉一男)

Zoological Letters (Associate Editor) (稲葉一男)

Invertebrate Reproduction and Development (Editorial Board) (稲葉一男)

Japanese Association for Marine Biology (JAMBIO, President) (稲葉一男)

Journal of Experimental Zoology Part A (Editorial Board) (稲葉一男)

日本動物学会男女共同参画委員 (柴小菊)

Development Growth and Differentiation (Editorial Board) (笹倉靖徳)

日本動物学会関東支部 支部代表委員 (中野裕昭)

日本動物学会関東支部 書記 (中野裕昭)

日本動物学会 ZDW (ZooDiversity Web) 委員 (中野裕昭)

白浜水族館 企画展 (企画運営) (中野裕昭)

JAMBIO 沿岸生物合同調査 (担当) (中野裕昭)

Scientific Reports (Editorial Board) (中野裕昭)

理科年表 生物部 (監修) (中野裕昭)

国立科学博物館企画展「知られざる海生無脊椎動物の世界」(標本提供) (中野裕昭)

「筑波大学キッズ・ユニバーシティ」海の生き物展示、筑波大学、茨城県つくば市、2023.4.23

(柴小菊, 柴田大輔, 大植学)

生物科学学会連合地球生物プロジェクト委員 (谷口俊介)

日本動物学会理事 (谷口俊介)

日本動物学会国際交流委員（谷口俊介）

Scientific Reports (Editorial Board)（谷口俊介）

Development Growth and Differentiation (Guest Editor)（谷口俊介）

幼魚水族館バフンウニ展示（谷口俊介・谷口順子）

4) Provision of Research Materials

櫻井 裕真 北海道大学理学研究院生物科学部門, アオリイカ (卵塊)

塙 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

柴田 大輔 神奈川工科大学応用バイオ科学部, アカウニ 3 個体、ヒトデ 3 個体、クモヒト
デ 3 個体、ウミウシ 3 個体

ホヤ研究者コミュニティ, カタユウレイボヤ遺伝子組換え系統

5) Public Outreach

Open Lectures

令和 5 年度筑波大学公開講座「海洋生物学入門」（高校生対象）, 2023.7.31-8.3, 筑波大学下臨海実験センター

筑波大学下田臨海実験センター 一般公開, 2024.1.20

笹倉靖徳, 「ホヤの研究からわかったこと」, 下田市水産・海洋学講座。2024.3.21, 下田市民文化会館

Events

「海洋生物を究める！ —JAMBIO 沿岸生物合同調査の紹介—」, JAMBIO 沿岸生物合同調査の成果を展示する企画展, 2023.2.1-2023.5.14, 京都大学白浜水族館. 期間中の入館者数：29,074 人

JAMBIO-TARA microplastics outreach activities

Date	Event type	Event Description	Number of Attendant
2023-03-25	Expo	TARA JAMBIO ART PROJECT Exhibition	345
2023-04-17	Presentation	EU-Japan Seminar Series on Green Transition @ EU Delegation to Japan - Europa House	100
2023-04-18	Presentation	Tara Presentation for educational planners	2
2023-04-21	Expo	Tara booth at Frigate Prairial in Yokosuka	80
2023-04-29	Expo	Microplastic educational tarpaulin exhibition in Setoda	N/A
2023-05-22	Event	Shimoda MP Sampling event for Veolia etc	9
2023-05-23	Event	Shimoda MP Sampling event for Crowdfunding return etc	12
2023-05-24	Event	Shimoda MP Sampling event for photographer etc	6
2023-06-04	Event	Tara JAMBIO Microplastic Educational Event in the school and on the beach@Okinawa	21
2023-06-07	Presentation	Seminar for students at OIST	35
2023-06-10	Expo	Microplastic educational panel exhibition in Tokushima	N/A
2023-07-21	Event	Microplastic Educational Event inside the room and on the beach@Tateyama highschool	18
2023-09-29	Presentation	Conference Art and Science @Maison franco-japonaise	85
2023-12-08	Presentation	Sustainable training for staff @agnes b. Japan Office	12
2024-01-11	Presentation	Conference about Tara Ocean, Microplastic, Ocean @ Keio Univ. SFC	150

Researchers using the Center

1) Main Research Topics of those Researchers

Research Subject	PI affiliation	#	Host
恵比須島における藻類の調査	東京海洋大学	6	笹倉・和田
分子系統解析用ウミグモ採集	新潟大学大学院自然科学研究科	1	笹倉・中野
海中ロボットの動作試験	東京大学	21	笹倉・柴田
鰻精子の運動調節	水産研究・教育機構 水産技術研究所	2	稲葉
原生生物光応答に関する共同研究	University of Oxford	2	稲葉
魚類精子運動制御に関する共同研究	University of South Bohemia	1	稲葉
原生生物の運動・形態観察	アリゾナ州立大学	1	稲葉
ストロボ光付きの暗視野顕微鏡による、クラミドモナス変異株の波形撮影	大阪大学大学院理学研究科	3	稲葉・柴
外洋性プランクトンである珪藻共生性有孔虫およびシアノバクテリア共生性渦鞭毛藻を採集し、共生藻の光学・蛍光顕微鏡観察を行う	山形大学	8	稲葉・柴
下田沖、および鍋田湾近辺での微細藻採集および実験室、顕微鏡の利用	筑波大学	16	柴
超解像度顕微鏡によるアカガイ鰓構造タンパク質の解析	東京工業高等専門学校	2	柴
緑藻クラミドモナスの運動変異株の繊毛運動解析	京都産業大学	3	柴
クラゲ放精時に精巣周辺で発生する水流と、精巣上皮繊毛の動きの相関について解析	広島大学	1	柴
ホヤ自家不和合性の高速カメラ撮影とカルシウムイメージングを行う	静岡大学	1	柴
クシクラゲの平衡器官形成の共同研究	日本大学医学部	1	柴
ウニ胚イメージングに関する共同研究	LBDV/CNRS	1	谷口
ウニ胚発生能力解明の共同研究（バフンウニ体軸形成遺伝子の機能解析）	Brown University	1	谷口
ウニ体軸形成に関する研究（ウニ体軸形成遺伝子の機能解析）	筑波大学	1	谷口
水中音響通信および測位実験	筑波大学	11	谷口
ウニ遺伝情報解析の共同研究	千葉大学	1	谷口

ウニの性成熟ホルモン探索	基礎生物学研究所	1	谷口
ゲノム編集を利用したノックインに関する研究	筑波大学	1	谷口
ウニの放射線耐性研究	北里大学	3	谷口
養殖昆布の利用法	NPOアジア環境整備機構	1	谷口
ディスクッション	沖縄科学技術大学院大学	1	谷口・中野
海産無脊椎動物を用いた進化系統学的研究	筑波大学	1	中野
修士研究のためのフィールド調査	早稲田大学	2	中野
平板動物採集用カゴの設置	山梨大学医学部	1	中野
伊豆大島の海産無脊椎動物の今後の研究に関する打ち合わせ	伊豆大島 チャップ	1	中野
大陸棚におけるsedentary speciesについて意見交換	筑波大学	2	和田
褐藻アラメの採集	お茶の水女子大学	2	和田
Isotope Analysis using Mass Spectrometer	筑波大学	1	和田
元素分析計-質量分析計の利用	筑波大学	1	和田
多波長励起蛍光カメラの試験	海洋研究開発機構	2	和田
環境省モニタリングサイト1000（沿岸域調査）に関する藻場調査	三重大学	9	和田
同位体比質量分析計を用いた試料分析および情報交換	獨協大学経済学部	1	和田
和田助教の研究室と合同でセミナーを実施し、また今後の研究内容について打ち合わせを実施	筑波大学	7	和田
ウトウの血液・羽サンプル・虫サンプル・植物サンプル・魚サンプルについて、炭素および窒素の安定同位体比の分析を行う(自然同位体比測定)	筑波大学	3	和田
観測測器（海中グライダー）の試験・投入のため	気象研究所	4	和田
海洋酸性化の実態と将来予測について情報を交換	N T T宇宙環境エネルギー研究所	3	和田
光学カメラによる海底観測試験	(株)ウインディーネットワーク	3	和田
センサー設置試験に関する打ち合わせ	産業技術総合研究所	2	和田
鍋田湾の海洋表層水およびマイクロレイヤー層の採取を行う	筑波大学	1	和田
ブルーカーボンに関する意見交換	下田市議会	2	和田
マイクロプラスチックサンプル処理の研修	筑波大学	2	Agostini
2023度以降のTara-Jambio研究活動について打ち合わせ	アニエスベー ギャラリー ブティック	1	Agostini

？ ？ ？	琉球大学	11	Agostini
サンゴの海中調査	新江ノ島水族館	4	Agostini
Tara JAMBIO ブルーカーボンプロジェクト 打ち合わせ	一般社団法人タラオセアンジャパン	2	Agostini
海洋酸性化によるウニへの影響を評価する実験	沖縄科学技術大学院大学	1	Harvey
海洋酸性化による魚への影響を評価する飼育実験	University of Adelaide	1	Harvey
海洋酸性化による魚類の食事生活への影響を評価する	University of Adelaide	4	Harvey

2) Research Output from Researchers using the Center

Tsuyuki A, Okuno J. *Nymphozoon cinderella* sp. nov. (Platyhelminthes: Polycladida: Pseudocerotidae), a new species of marine flatworm from Japan. **Bulletin of Marine Science**. 100(1):81-94. January 2024.

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