

**2025 Academic Years**

**Graduate School of Integrated Sciences for Life  
Hiroshima University**

( )

**November 2024**

**Hiroshima University**

The Graduate School of Integrated Sciences for Life, based on its Diploma Policy and Curriculum Policy, expects to admit doctoral students as described below.

Students who:

1. Have strong volition to do research, and who wish to create new science that integrates and links different fields without being constrained by conventional frameworks of research fields in the areas of study related to biology and life science;
2. Wish to develop deep expertise and a broad and interdisciplinary perspective along with a broad general education, to acquire international communication skills, and to play an active role both in the domestic and international arenas as a member or leader of an interdisciplinary and field integration-type problem-solving team; and
3. Wish to belong to several research environments both in Japan and overseas, and to create “science that can guide sustainable development” after acquiring their original problem-searching and problem-solving abilities supported by related expertise and interdisciplinary perspective as well as practical capabilities in society by gaining experiences in the real world.

In order to admit such individuals, this Graduate School selects applicants through a multifaceted and comprehensive evaluation process based on its own Diploma Policy and Curriculum Policy, using interviews, etc.

Based on its Diploma Policy and Curriculum Policy, this program expects to admit students as described below.

Students who:

1. Have deep knowledge in their specialized fields, and who have an ambition to also acquire knowledge in fields other than their specialized fields, and to develop interdisciplinary research;
2. Are motivated to take up a challenge for a new scientific and technological field to which different fields, such as material science, are integrated based on frontier life sciences;

Based on its Diploma Policy and Curriculum Policy, this program expects to admit students as described below.

Students who:

1. Have systematically understood life phenomena related to the production and use of biological resources from the molecular level to ecosystems;
2. Have acquired broad expertise and research skills regarding the sustainable production and utilization of biological resources in both land and water zones, and who are equipped with abilities to understand and solve various problems in related fields from regional to international scope;
3. Have acquired abilities at the level of completing a graduate school's Master's Program or higher regarding their command of English;
4. Have acquired abilities at the level of completing a graduate school's Master's Program or higher regarding knowledge, attitude, and skills in the specialized fields of their choice; and
5. Have acquired common sense as a working member of society, and ethical standards as a researcher or a highly specialized engineer.

In order to admit such individuals, this program selects applicants through a multifaceted and comprehensive evaluation process based on its own Diploma Policy and Curriculum Policy, using interviews, etc.

Based on its Diploma Policy and Curriculum Policy, this program expects to admit students as described below.

Students who:

1. Have a broad interest in the life science fields from the molecular level to whole environments and ecosystems, and who wish to acquire basic research abilities, expertise and skills for a specific field, and learn the theories and methods of understanding and utilizing these abilities from a comprehensive perspective;
2. Wish to understand various problems existing in life science and environmental science, and to solve them professionally, immediately, and internationally;
3. Wish to play an active role independently as a generalist who also covers areas outside life science and environmental science without being constrained by their own expertise;
4. Have acquired abilities at the level of completing a graduate school's Master's Program or higher regarding their command of English;
5. Have acquired abilities at the level of completing a graduate school's Master's Program or higher regarding knowledge, attitude, and skills in the specialized fields of their choice; and
6. Have acquired common sense as a working member of society, and ethical standards as a researcher or a highly specialized engineer.

In order to admit such individuals, this program selects applicants through a multifaceted and comprehensive evaluation process based on its own Diploma Policy and Curriculum Policy, using interviews, etc.

Based on its Diploma Policy and Curriculum Policy, this program expects to admit students as described below.

Students who:

1. Have acquired specialized knowledge, skills, and research abilities in biology at molecular, cellular, individual, ecological, and evolutionary levels that should have been acquired in the related Master's Programs;
2. Have acquired abilities at the level of completing a graduate school's Master's Program or higher regarding their command of English; and
3. Have acquired common sense as a working member of society, and ethical standards as a researcher or a highly specialized engineer.

In order to admit such individuals, this program selects applicants through a multifaceted and comprehensive evaluation process based on its own Diploma Policy and Curriculum Policy, using interviews, etc.

Based on its Diploma Policy and Curriculum Policy, this program expects to admit students as described below.

Students who:

1. Are equipped with basic academic and application abilities in the fields of mathematics, physics, chemistry, and biology;
2. Have an ambition to open up a new research field in mathematical science, molecular science, and life science fields as well as integrated fields;
3. Have acquired abilities at the level of completing a graduate school's Master's Program or higher regarding their command of English; and
4. Have acquired common sense as a working member of society, and ethical standards as a researcher or a highly specialized engineer.

In order to admit such individuals, this program selects applicants through a multifaceted and comprehensive evaluation process based on its own Diploma Policy and Curriculum Policy.

Admissions Policy .....	1
1. Number of Students to Be Recruited and Venue for Examinations .....	5
2. Applicant Eligibility.....	6
3. Application Procedures .....	6
4. Examination Date and Time .....	10
5. Screening Methods .....	10
6. Announcement of Successful Applicants .....	10
7. Enrollment Fee and Tuition .....	10
8. Payment of Examination Fee and Enrollment Fee .....	10
9. Hiroshima University Excellent Student Scholarships .....	10
10. Personal Information .....	11
11. Examination Information Disclosure.....	11
12. Frontier Development Program for Genome Editing.....	11
13. Additional Notices.....	13
14. Other Points of Attention .....	13
Program of Biotechnology.....	14
Program of Food and AgriLife Science .....	18
Program of Bioresource Science .....	20
Program of Life and Environmental Sciences.....	22
Program of Basic Biology.....	24
Program of Mathematical and Life Sciences.....	26
Program of Biomedical Science .....	29

	Program	Number of students to be recruited	Examination Date	Examination Venue	Inquiries · Submission addresses
Department of Integrated Sciences for Life	Biotechnology	64	One day between January 14 and February 4, 2025  * Please refer to the "Note" below.	*Please refer to the "Note" below.	Support Branch Office for the fields of Science, Hiroshima University 1-3-1, Kagamiyama, Higashi-Hiroshima, 739-8530 TEL: (082) 424-7008, 7009
	Food and AgriLife Science				Support Office for the fields of Biosphere Science (Graduate Student Affairs), Hiroshima University 1-4-4, Kagamiyama, Higashi-Hiroshima, 739-8528 TEL: (082) 424-7908
	Bioresource Science				Support Office for the fields of Integrated Arts and Sciences (Graduate Student Affairs), Hiroshima University 1-7-1, Kagamiyama, Higashi-Hiroshima, 739-8521 TEL: (082) 424-6316
	Life and Environmental Sciences				Support Office for the fields of Science (Graduate Student Affairs), Hiroshima University 1-3-1, Kagamiyama, Higashi-Hiroshima, 739-8526 TEL: (082) 424-7309, 4468
	Basic Biology				
	Mathematical and Life Sciences				
	Biomedical Science				

Note : Examination date, time, and venue will be notified individually later.

Applicants must satisfy one of the following qualifications or be expected to receive any one of the following qualifications by March 31, 2025. Applicants shall be residing in Japan and must make an affirmation of admission when applicants will pass the entrance examination.

- (1) Have received a master's degree or profession's degree in Japanese institutions;
- (2) Have received a master's degree or a degree equivalent to profession's degree outside Japan;
- (3) Have completed class subjects in Japan conducted by a foreign school by correspondence education and been conferred a degree equivalent to a master's degree or a professional degree;
- (4) Have completed a course in Japan at an educational facility positioned as a facility that has the curriculum of a foreign graduate school under said foreign country's school education system and designated separately by the Minister of Education, Culture, Sports, Science and Technology, and has been conferred a degree equivalent to a master's degree or a professional degree.
- (5) Have completed a course at the United Nations University, established based on the December 11, 1972 United Nations General Assembly resolution stipulated in Article 1, Paragraph 2 of the Act on Special Measures (Act No. 72 of 1976) incidental to enforcement of the agreement between the United Nations and Japan regarding the headquarters of the United Nations University (hereafter, United Nations University), and has been conferred a degree equivalent to a master's degree.
- (6) Have completed a curriculum at a foreign school, an educational facility designated in Item 4, or the United Nations University, has passed an equivalent to the examination and screening stipulated in Article 16-2 of the Standards for Establishment of Graduate Schools, and is recognized as having academic ability equal to, or greater than, a person possessing a master's degree.

Be sure to contact each support office in charge of the program before the application period, if you think you have academic achievements equivalent to or higher than those having completed a master's course at a university and have been conferred a degree equivalent to a master's degree.

Applicants are required to apply using "online application system", and send the necessary documents by post. (Partially online application hereinafter referred to as "online application")

- 1) Enter your personal information.
- 2) Pay the application fee, 30,000 yen.
- 3) All application documents must be either sent by mail or delivered in person to the aforementioned address.

Online application, entering necessary information on the website and paying the application fee, is the initial registration process, and doesn't mean the completion of the application procedure.

Be sure to send or bring in person all the necessary application documents to the support office (the aforementioned address). Application documents must arrive within the specified period at the support office. Fully paper-based application without registering online application cannot be accepted in this graduate school.

Applicants must complete all of the above procedures (from 1 to 3 in (1)) within the application period.

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## **Inquiries regarding entrance examination system and UCARO**

Helpdesk (\*Japanese speaking only)

Inquires accepted from 10:00 am to 6:00 pm (\*Except from December 30 to January 3)

TEL: 03-6634-6494

If you have any questions regarding the entrance examination, please contact the support office stated on page 5 in these guidelines. Inquiries are accepted from 9:00 to 17:00. (Except Saturday, Sunday, and national holidays)

### **<How to apply >**

#### **Step 1: Access the online application system**

Access the online application system from the Hiroshima University Admissions Information web page:

<https://www.hiroshima-u.ac.jp/en/nyugaku>

#### **Step 2: Select 'Membership Registration' on the UCARO log in screen.**

Hiroshima University uses the UCARO website for the process from the application to enrollment procedures.

UCARO is an Internet application and enrollment procedure support system.

Account registration for UCARO is required for all applicants (free of charge) and it enables applicants to use the above online application system and complete the enrollment procedures.

#### **Step 3: (If you have, otherwise, skip 3) Enter the Account**

Enter the alphanumeric code (consisting of 8 or more characters) which you received from the Graduate School.

Applicants who wish to exempt the entrance examination fee should contact the support office (page 5) before applying. Those applicants who are judged to be applicable will receive the Account.

#### **Step 4: Input your application data into the Internet application system**

Follow the instruction on the screen and enter your name, address, telephone number, email address etc.

\* Your personal information registered through the online application system will be used for the following purposes. Therefore, please enter accurate information.

1. Carry out entrance examinations and screening.
2. Notify and send the screening results.
3. Send documents for enrollment procedures to successful applicants.
4. Send information before and after admission.
5. Create statistical data on entrance examinations.
6. Create student registration data and Student ID-Cards.
7. Receive application fees.
8. Check the access status to the Service.

#### **Step 5: Confirm the necessary documents and uploaded your photo**

Confirm the necessary documents when they are shown and upload a digital photo of yourself.

The uploaded photo, which will be used for identification at the examination, will be also used for your student ID card after enrollment and will be maintained in the university's educational system until graduation.

Therefore, please upload an appropriate photo for use after enrollment as well.

Once uploaded, your photo will not be allowed to be replaced.

A fee of JPY 1,000 will be charged for changing the content of your student ID card (photo and your name) after enrollment.



### Step 6: Payment of entrance examination fee (JPY 30,000)

Select the payment method for the application fee from among the following options.

For applications from outside Japan, only credit card payments can be accepted.

Credit Card (Available both within and outside Japan)

Convenience Store, Banking institution ATM 【Pay-easy】, and Internet banking (NOT available from outside Japan)

(Note)

\*Applicants need to pay the Processing Fee (The amount of Processing Fee will be notified at the time of online application).

The examination fee, once paid, will not be refunded for any reason.

However, in cases (1) and (2) below, the examination fee is refundable after deducting the bank transfer fee. Therefore in such cases, please clearly write the “reason for demand of refund”, “name”, “postal code”, “address”, “transfer destination information” and “contact telephone number” in the prescribed format given from the university and send it to the address mentioned page 5 by postal mail by Friday, February 28, 2025. (In any case, the Online Application Processing Fee is ineligible for a refund.)

(1) If the application documents have not been submitted, or if they have not been accepted

(2) If duplicate payments of the entrance examination fee have been made in error

### Step 7: Initial registration process complete (Your application is NOT completed yet.)

You will be issued with a Registration Number (not your Examinee’s Number). Please make a note of it or to print out a copy of the computer screen showing the number. The Registration Number is needed for confirming the application details later, and for sending the application documents by post.

### Step 8: Submission of application documents

Submission Address: Each support office (see page 5)

All application documents must be either sent by registered mail or delivered in person to the support office. If you submit the application documents directly to the support office, application documents are accepted from 8:30 to 17:00 on a weekday. Please note that the office is closed on Saturday, Sunday, and national holiday.

If you send the application documents by mail, you must send them by registered mail and ensure that the documents reach the office by Friday, January 10, 2025. Should the application documents fail to reach the office by that date, however, those postmarked on or before Wednesday, January 8, 2025 can be accepted.

On the envelope, please write “Application for the Program of \_\_\_\_\_, the Graduate School of Integrated Sciences for Life, Hiroshima University” in red ink.

	Academic Transcripts	Should be prepared and signed by the president/dean of the university from which you have graduated and sealed securely.
	Certificate of (Expected) Graduation of Master's course	<p>Should be prepared and signed by the president/dean of the university from which you have graduated, or expect to graduate</p> <p>*If you are a graduate or a current student of a university in China, please obtain the following document by requesting it at “中国高等教育学 (CHSI)” (<a href="http://www.chsi.com.cn/xlcx/bgys.jsp">http://www.chsi.com.cn/xlcx/bgys.jsp</a>), and submit it to us together with “ (Certificate of Graduation” and “学士(士)学位 (Bachelor/Master's Diploma)”.</p> <ul style="list-style-type: none"> <li>• Graduates: Online Verification Report of Higher Education Qualification Certificate (教育部学历证书注册备案表)</li> <li>• Expected Graduates: Online Verification Report of Student Record (教育部学籍在案报告)</li> </ul> <p>Please note that applicants must pay the issuing fee for the Online Verification Report (2元/certificate) by themselves. Also be sure that there are 15 or more days left until the expiration date of the online verification at the time of its submission.</p>
	Curriculum vitae	<p>(Use the official form.)</p> <p>All the schools/educational institutions you have enrolled in shall be written.</p>

Summary of Master's

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Examination Date	Examination	Time
	Interview (about 60 minutes/person)	TBD*

Screening will be based on the results of an examination (interview).

Your academic transcripts, summary of master's thesis / research highlights, and research plan will be reflected in the interview.

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- (1) The Graduate School will send letters of acceptance to successful applicants. If you do not receive the letter by Friday, February 28 even if your ID number is on the list of successful applicants, please inquire at each support office (page 5).
- (2) Successful applicants' ID numbers will be released on the website of the Graduate School of Integrated Sciences for Life, Hiroshima University. Please note that the announcement of the website will be unofficial. Official announcement will be made via the letters of acceptance. The office will not accept inquiries by phone regarding the results of the examinations.

Enrollment Fee: ¥282,000

Tuition Fee: ¥535,800 per year (¥267,900 per semester)

- (1) The enrollment fee, once paid, will not be refunded for any reason.
- (2) The enrollment fee and tuition shown above were correct as of April 2024. If they are changed, students must pay the revised amount.
- (3) Details of enrollment procedures, which will be conducted in mid-March 2025, will be notified later to successful applicants.

From – To --	Examination Fee	Enrollment Fee
From Master's course To Doctoral course at Hiroshima University	×	×
From Master's course of another university To Doctoral course at Hiroshima University		
Entering the Doctoral course after completing a Master's course of the Graduate School, Hiroshima University but with a time interruption in between		

Note) : Necessary    ×: Unnecessary

To inspire students to study hard and to foster excellent human resources, Hiroshima University institutes its own scholarship system that supports students who show excellent performances at their research achievement and so on.

Applicants' personal information (name, date of birth, sex, etc.) provided for screening will be used solely for the purpose of screening, announcement of results, and enrollment procedures. After enrollment, the University will manage the information to use it for student support activities (filing applications for scholarships and for waiving/discounting tuitions, etc.), and survey and research activities (for instance, surveys and analyses of applicants in order to improve screening systems). The University shall neither appropriate the information for any other purpose nor provide it to individuals/groups other than faculty or staff members of the University.

The disclosure of examination results (considered as personal information) may be requested in the following manner:

- (1) Obtain an examination information disclosure application form:

Write to the address below, indicating on the envelope \_\_\_\_\_ or "Examination Information Disclosure Application Form Request," enclosing a self-addressed return envelope (long No. 3 type, 120 mm×235 mm) bearing the examinee's name, address and postal code and an 110 yen stamp.

- (2) Complete the examination information disclosure application form, and send by post the documents listed below between April 1 and May 31, 2025(postmarked) to the address below.

Completed examination information disclosure application form

Original Examination Card for the admission examination of the Graduate School of Integrated Sciences for Life, Hiroshima University (a copy will not be accepted; the original Card will be returned at the time of information disclosure)

Self-addressed return envelope (long No. 3 type, 120 mm × 235 mm) bearing the examinee's name, address and postal code and a 460 yen stamp.

Disclosure Applicants may be requested to correct any submitted documents found to be inappropriate.

- (3) The Graduate School of Integrated Sciences for Life will send a notice of examination information disclosure to the Disclosure Applicant by simplified registered mail within 30 days from the receipt of the application form.

Hiroshima University has launched the Frontier Development Program for Genome Editing which was selected as a WISE program by MEXT in 2018. This program includes a Life Science Course (5-year curriculum) and a Medical Course (4-year curriculum), providing students with opportunities to acquire basic and applied knowledge and learn genome editing techniques. The program enables students to master genome editing technologies and apply them directly to the industry.

**Life Science Course (3-year curriculum \*Transfer admission to 3rd year)**

Although the Life Science Course is a 5-year integrated PhD program for graduate students, there is also a 3-year curriculum starting in the third year of the program.

In the first year, students will learn basic and advanced genome editing techniques. From the second year, they will conduct research utilizing the knowledge they have acquired. Through basic courses on social implementation of technologies and internships, they will be trained to become experts able to work at the cutting edge of genome editing technology.

## Admissions

URL : <https://genome.hiroshima-u.ac.jp/recruitment/index.html>

The Life Science Course (3-year curriculum) of the Frontier Development Program for Genome Editing is open to students who will be admitted to the Doctoral Course of the Graduate School of Integrated Sciences for Life in April 2025. (Transfer admission to 3rd year)

Those who wish to enroll in this program must apply for this program in addition to applying to the Graduate School. For details, please visit the website at the following URL.

The prospective advisor of the applicant must be someone from the list of faculty members of the Frontier Development Program for Genome Editing.

Students in this program must fulfill the requirements for both their major in the Graduate School and this program simultaneously.

Candidates and successful candidates of the Early Completion Course of the Doctoral Program for working people (社会人特別入試短期修了コース) of the Graduate School of Integrated Sciences for Life are not eligible to apply for this program.

URL : <https://genome.hiroshima-u.ac.jp/en/recruitment/index.html>



### Financial Support for Students \*see Note 1

We currently offer financial support to students in the program as described in (1), (2), (3), and (4) below. This support is provided only during the standard course period.

- (1) 50,000 yen per month for six months will be provided to up to three students who are recognized as having excellent academic performance and outstanding achievements in academic activities after enrollment. (Details of the application procedure will be announced after admission.) \*see Note 2
- (2) Free tuition will be provided for the third and later years of the Life Science Course and for all years of the Medical Course. (Some students may not be eligible due to their academic performance.) \*see Note 2
- (3) Ikenoue Student Dormitory is available with priority for two years after enrollment in the program. (Boarding fee, common expenses, and utility fee will be charged.) \*see Note 2
- (4) Travel grants (transportation and accommodation expenses) will be provided up to the amount specified by the program for students' educational and research activities. (Details will be announced after admission.) \*see Note 3

\*Note 1: Financial support is as of April 1, 2024 and is subject to change.

\*Note 2: Financial support for (1), (2), and (3) will end on March 31, 2028. Financial support after April 1, 2028 is not yet confirmed.

\*Note 3: Financial support for (4) will end on March 31, 2025.

In addition to the support mentioned above, you can find more information about the university/graduate school-wide support on the student information system "MOMLJI" and the Graduate School website.

### Contact for the Frontier Development Program for Genome Editing

Collaboration Office, Education Office, Hiroshima University

3F Student Plaza, 1-7-1 Kagamiyama, Higashi-Hiroshima City, Hiroshima 739-8514 JAPAN

TEL : 082-424-6819 Email : [leading-program@office.hiroshima-u.ac.jp](mailto:leading-program@office.hiroshima-u.ac.jp)

(<https://www.hiroshima-u.ac.jp/en/ilife/research>)

- (2) Hiroshima University has established the university's Rules on Security Export Control in accordance with the Foreign Exchange and Foreign Trade Act, and conducts strict examinations for acceptance of international students, etc. Therefore, please be advised that International applicants may be unable to receive their desired education or conduct their desired research due to the restriction by the above regulations.
- (3) The certificates to be submitted must be the originals or certified photocopies. Uncertified photocopies would not be recognized as official certificates.
- (4) No changes are permitted in the content of documents after their submission.  
The examination fee will not be returned for any reason.
- (5) Any forgery or falsification of the documents and/or academic fraud would result in cancellation of acceptance even after passing examination or admission.
- (6) If an applicant could not graduate from the university before the admission date, he/she would lose the eligibility to enter our graduate school in this session.
- (7) Application Guidelines and other related documents can be downloaded from the website of the Graduate School of Integrated Sciences for Life, Hiroshima University.
- (8) If the program of an academic supervisor under whom you wish to study is changed due to program reorganization, the program you belong to may change.
- (9) For further information, please contact the following each support office in charge of the program(s) (page 5).

Smoking is prohibited entirely in All Hiroshima University campuses from January, 2020.

大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生物工学プログラム Program of Biotechnology ( 1/4 )

Academic Staff		Research Fields	Keywords
Professor	Tsunehiro AKI	Genomic breeding of oleaginous microorganisms for provision of new health foods, pharmaceuticals, chemicals and sustainable bioenergy.	Lipid engineering, Microbial biotechnology, Biorefinery
Professor	Kenji ARAKAWA	We aim to characterize the mechanism for the biosynthesis of bioactive compounds and their regulatory system in Streptomyces species. Isolation of new metabolites and characterization of biosynthetic enzymes are also studied in our laboratory.	Bioactive compounds Biosynthesis Secondary metabolism
Professor	Yoshiko OKAMURA	Marine Biotechnology: Development of new technologies using marine bacterial metagenome to produce useful materials. Biomining: Recovery of heavy and minor metals and rare earth elements, and nanoparticle formation.	Marine biotechnology, Biomining, Biofuel production
Professor	Seiji KAWAMOTO	We are interested in the molecular mechanisms underlying the pathogenesis of allergic disorders. We are also searching for anti-inflammatory foodstuffs, which are useful to prevent atopic and proinflammatory disorders. Another ongoing project is to elucidate mechanisms involved in the establishment of immune tolerance, and its application to the development of novel immunosuppressants and anti-inflammatory drugs.	Allergy/Immunology, Animal cell technology, Functional foods
Professor	Akio KURODA	Creation of new proteins/peptides by evolutionary molecular engineering. For example, we created an asbestos-binding protein in order to analyze asbestos. We also created a membrane-binding peptide in order to isolate extracellular membrane vesicle (exosome, microvesicle) that have great potential as diagnostic tools and biomarkers for many kinds of diseases such as cancers.	Protein engineering Evolution engineering Biosensing
Professor	Yutaka NAKASHIMADA	The subject of research in a field of energy metabolic engineering for production of bio-fuels such as methane, hydrogen and alcohols, and bio-materials from renewable feedstocks such as biomass based on fermentation technology and genetic engineering of microorganisms.	Fermentation technology, Biochemical engineering Metabolic engineering

# 大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生物学プログラム Program of Biotechnology ( 2/4 )

Research Fields

Keywords

Professor Ryuichi HIROTA

Studies on the phosphorus cycling in the environment and the phosphorus metabolism of bacteria. We analyze the molecular mechanisms of the phosphorus metabolic system on



大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生物工学プログラム Program of Biotechnology (3/4)

Academic Staff		Research Fields	Keywords
Associate Professor	Takeshi IKEDA	Si Our research focuses on the interaction between inorganic silicon (Si) materials and bacteria (and their biomolecules). We are developing biointegrated devices/materials using Si-associated biomolecules as an interface. We also investigate the contribution of Si-utilizing bacteria to the global Si cycle.	Biom mineralization Biointegrated devices/materials Silicon cycle
Associate Professor	Masaru UENO	DNA Study on molecular mechanisms of telomere maintenance and DNA repair and their applications for development of anti-cancer and anti-ageing agents.	Telomere, Cancer, Aging
Associate Professor	Setsu KATO	1 We analyze how microbial cells adapt and survive under various conditions using the single cell quantitative method. We are also interested in the process of cell death to identify the weakness of cellular homeostasis. These analyses will help us to find the principles of life and to create useful host cells for bioprocess.	1 Cellular homeostasis, Life and death, Single cell analysis
Associate Professor	Kenji KITAMURA	( ) ( ) Studies on modulation of cellular physiology in yeast by nutrients via regulation of peptide transporters. Searching for their non-peptide substrates, and exploration of novel bioactivities of dipeptides. Development of high-functioning yeast strains.	Yeast, Transporter, Amino acid/dipeptide
Associate Professor	Kazunori KUME	We would like to understand mechanisms of global cellular systems which are fundamental to cellular growth, development and reproduction of eukaryotic cells. Especially we are interested in cell polarity and organelle size and shape. For this research, we use the genetically amenable model organism yeasts.	Cell structure, Organelle, Cell polarity
Associate Professor	Takahisa TAJIMA	Development of biocatalysts for efficient bioconversion processes using psychrophilic bacteria and mesophilic conversion enzymes. Construction of anaerobic microbial consortia tolerant to high concentrations of ammonia and salts and analysis of their tolerance mechanism	Bioproduction, biocatalysis, Bacterial consortium Anaerobic digestion

大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生物工学プログラム Program of Biotechnology (4/4)

Academic Staff		Research Fields	Keywords
Associate Professor	Miyako NAKANO	1 Glycosylation, which is one of the posttranslational modifications of proteins, is involved in infection by pathogens such as bacteria and viruses, cancer and acquisition of drug-resistance. We investigate these biological mechanisms with detailed analysis of glycan structures by mass spectrometry.	Glycan, Mass spectrometry, Biomarker
Associate Professor	Makoto FUJIE	We focus on the interaction between microorganisms and higher plants. We also study biomass production using photosynthetic microorganism by molecular biological methods, such as genome editing	Plant- microbe interaction, Biomass production, Genome editing
Associate Professor	Hisakage FUNABASHI	Our research focuses on using biomolecules and living cells as functional materials. We are developing novel functional molecules such as biosensing molecules with proteins and nucleic acids. We are also exploring new methods to create, evaluate, and manipulate functional living cells.	Biofunctional materials, Biodevices, Biosensing

## 大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

食品生命科学プログラム Program of Food and AgriLife Science ( 1/2 )

Academic Staff		Research Fields	Keywords
Professor	Satoru UENO	Characterization of Physical properties and Clarification of kinetics for edible lipids.	Lipid, Crystallization, Polymorphic transformation
Professor	Kiyoshi KAWAI	Food processing, preservation, and texture analysis.	Food processing, Preservation, Texture analysis
Professor	Masayuki SHIMADA	The study for understanding molecular and endocrine mechanisms of reproductive functions and developing novel reproductive technologies.	Reproductive biology, Molecular endocrinology, Reproductive technology
Professor	Tadashi SHIMAMOTO	Analysis of pathogenicity- related genes and drug resistance genes of foodborne pathogenic bacteria and development of norovirus inactivation method.	Foodborne pathogenic bacteria, Drug- resistant bacteria, Norovirus
Professor	Takuya SUZUKI	Physiological functions of nutrients and food factors.	Functional foods, Nutrition, Human health
Professor	Susumu NAKAE	Studies of pathogenesis of allergic and autoimmune disorders.	chronic inflammation, cytokines, mouse models for human diseases
Professor	Tatsuya NAKAYAMA	Studies on the pathogenicity of foodborne bacteria and the spread and prevention of antibiotic- resistant bacteria.	Foodborne bacteria, Pathogenicity, Antibiotic- resistant bacteria
Professor	Masahide NISHIBORI	Studies on Mammalian and Avian Molecular Evolution, Phylogenetics and Geography using Their Information of Animal Genome, and Their Application to Agricultural Sciences.	Animal genetics, Molecular evolution, Molecular phylogenetic study
Professor	Shinichi NISHIMURA	Chemical biology using bioactive natural products	natural products chemistry, bioactive metabolites, chemical biology
Professor	Yoshio HAGURA	Analysis of mechanical and electrical properties of the food, and development of food processing and measurement techniques using those properties.	Mechanical properties, Electrical properties, Food processing
Professor	Kouichi FUNATO	Molecular genetic studies of lipid dynamics and functions.	Lipid, Yeast, Molecular genetics
Professor	Kenji HOSONO	Socio- economic Agricultural Study about Sustainable Food Resource and Supply Chain.	Food production management, Food market, Sustainable development
Professor	Hiroyuki HORIUCHI	Basic and applied study using avian stem cells and genome editing technology in the agriculture field.	Avian, Stem cells, Genome editing

## 大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

食品生命科学プログラム Program of Food and AgriLife Science ( 2/2 )

		Research Fields	Keywords
Professor	Noriyuki YANAKA	Molecular mechanisms of lifestyle- related diseases and nutritional science.	Lifestyle- related diseases, Food factor, Molecular nutrition
Visiting Professor	Masaki OKUDA	Research for production and utilization of high quality rice for sake making	Alcoholic beverage, Sake rice, Properties of rice used for sake
Visiting Professor	MASAKI	Development of microorganisms for the brewing and enzymatic research for its applications.	Enzyme, Brewing Microorganism
Associate Professor	Hisashi OMURA	Studies on chemical interactions between plants and insects.	Chemical ecology, Semiochemical, Pheromone
Associate Professor	Yasushi OKINAKA	Studies on the interactions between aquatic organisms and their pathogens.	Pathogen, Fish, Infection mechanism
	Professor		

## 大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生物資源科学プログラム Program of Bioresource Science ( 1/2 )

		Research Fields	Keywords
Professor	Naoki ISOBE	Immunology and endocrinology in mammary gland of ruminants.	Mastitis, Antimicrobial peptide, Innate immunity
Professor	Akihiro UEDA	Improvement of environmental stress tolerance in higher plants and development of utilization technologies of plant growth promoting microbes.	Plant nutrition, Environmental stress, Plant growth promoting microbes
Professor	Tetsuya UMINO	Stock enhancement and conservation resources of aquatic animal.	Aquaculture, Stock enhancement, Aquatic animal
Professor	Taketo OBITSU	Nutrition and feed utilization in ruminants.	Digestion, Protein metabolism, Energy metabolism
Professor	Kazuhiko KOIKE	Coastal biological processes of Seto- Inland Sea, coral reefs and mangrove swamps based on primary producers (various microalgae).	Microalgae, Phytoplankton, Photosynthesis
Professor	Yoichi SAKAI	Behavioral ecology of fish reproduction.	Social structure, Mating tactics, Field survey
Professor	Masayuki SHIMADA	The study for understanding molecular and endocrine mechanisms of reproductive functions and developing novel reproductive technologies.	Reproductive biology, Molecular endocrinology, Reproductive technology
Professor	Toshihisa SUGINO	Effects of Feeding management on dairy cattle health and performance.	Dairy cattle, Nutrition and feeding, Metabolism
Professor	Ruri TOMINAGA	Studies on cell differentiation and development in plants.	Epidermal cell, Root hair, Transcription factor
Professor	Takeshi TOMIYAMA	Fish life history and stock dynamics.	Fisheries ecology, Early life history, Estuaries and coastal
Professor	Takahiro YONEZAWA	Evolutionary genomics on the domestic and wild animals	phylogeny, demogd

Professor

## 大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生物資源科学プログラム Program of Bioresource Science ( 2/2 )

Academic Staff		Research Fields	Keywords
Associate Professor	Takashi UMEHARA	The study for developing novel reproductive technology via understanding reproductive mechanism focusing on metabolism immunology and endocrinology.	Reproductive Biology, Reproductive technology, Germ cells
Associate Professor	Aki KATO	Aquaculture and conservation of algal resources.	Coralline algae, Edible seaweeds, Climate change
Associate Professor	Shin-ichi KAWAKAMI	Research of the brain mechanisms of feeding drinking and aggressive behavior in avians.	Animal behavior, Hypothalamus, Chicken
Associate Professor	Yuzo KUROKAWA	Research on healthy life cycle of dairy cows.	Dairy cow Life cycle, Antioxidant capacity, Milk production
Associate Professor	Hidetoshi SAITOU	Researches on population ecology of macrobenthos in freshwater and shallow seawater zones.	Ecology, Benthos, Alien species
Associate Professor	Naoki SUZUKI	Control of intramammary infection in dairy animals.	mastitis, infection control, foodborne zoonoses
Associate Professor	Toshinori NAGAOKA	Studies on soil functions in plant production.	Soil, Nutrient dynamics, Organic matter
Associate Professor	Yoshiaki NAKAMURA	Preservation of mammalian and avian genetic resources on the basis of germ cell manipulation.	Germ cells, Cryopreservation, Genetic modification
Associate Professor	Takahiro NII	Enhancement of immune function and productivity to focused on intestinal environment in chickens.	Chicken, Intestinal environment, Egg production
Associate Professor	Toshiya HASHIMOTO	Understanding of the marine environment using the field observation and numerical simulation model.	Marine environment, Data analysis, Ecosystem model
Associate Professor	Masayuki YOSHIDA	Biological basis of emotion, learning and mind in animals.	Animal psychology, Emotion, Neuroscience
Associate Professor	Kaori WAKABAYASHI	Reproduction and growth of marine invertebrates.	Seed production, Larval development, Embryology

# 大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生命環境総合科学プログラム Program of Life and Environmental Sciences ( 1/2 )

		Research Fields	Keywords
Professor	Atsuhiko ISHIDA	Biochemistry on enzymes and proteins which mediate protein phosphorylation and dephosphorylation.	Enzyme, Neuron
Professor	Yasuhiro ISHIHARA	Glial function in health and disease.	Neuropharmacology, Glia, Model animals
Professor	Kazuyoshi UKENA	Study on the physiological functions of neuronal substances regulating appetite and energy homeostasis.	Neuroendocrinology, Neuropeptide, Appetite
Professor	Yukari KUGA	Plant and microbe symbioses in soil ecosystem	Mycorrhiza, Soil-borne disease, Cellular-ecological functions
Professor	Akiko SATOH	The mechanism of the polarized vesicle trafficking in neurons.	Golgi units, Photoreceptors, Drosophila melanogaster
Professor	Kazuhiko TAKEDA	Environmental dynamics and analysis of trace compounds and reactive oxygen species in the atmosphere and hydrosphere.	Environmental Analytical Chemistry, Reactive Oxygen Species, Trace Pollutants
Professor	Takayuki NAKATSUBO	Roles of plants, animals and microorganisms in terrestrial ecosystems.	Ecosystem ecology, Plant ecology, geococcolanogaster
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## 大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生命環境総合科学プログラム Program of Life and Environmental Sciences (2/2)

Academic Staff		Research Fields	Keywords
Associate Professor	Akio TSUCHIYA	Climate change caused by deforestation of rainforests in Amazonia.	Small climatology, Biometeorology, Dendro-climatology
Associate Professor	Miyabi NAKABAYASHI	Behavior and ecology of wildlife	Tropical rainforest, Ecology, Mammalogy
Associate Professor	Tatsuo NEHIRA	Research of structural organic chemistry in life science.	Analytical organic chemistry, Natural product chemistry, Circular dichroism
Associate Professor	Akira HIKOSAKA	Genomic, symbiotic and embryonic studies on metazoan evolution.	Evolutionary Zoology, Acoelomorpha, Metazoa
Associate Professor	Chiho WATANABE	<i>in vitro</i> Material science studies for life phenomena based on <i>in vitro</i> cell models	lipid membrane, polymer solution, soft matter science
Lecturer	Motomu TODA	Energy, water and carbon exchange between atmosphere and forest ecosystems.	Flux, Modelling, Climate change



# 大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

## 基礎生物学プログラム Program of Basic Biology ( 1/2 )

		Research Fields	Keywords
Professor	Takuya IMAMURA	Understanding epigenomic mechanisms that underlie the development of primate brain.	RNA, primate, brain, non- coding RNA
Professor	Hajime OGINO	Genomic and epigenetic regulation of development and regeneration (sensory organs and central nervous system) in vertebrates. Molecular mechanisms of genome evolution and environmental adaptation in amphibians.	Development, Regeneration, Evolution
Professor	Yutaka KIKUCHI	Studies on tumor microenvironment network. Analysis of Chromatin 3D Structure.	RNA, Tumor microenvironment, Chromatin, long non- coding RNA
Professor	Makoto KUSABA	Molecular mechanism of leaf senescence, Molecular genetics in the genus Chrysanthemum, Genetic resources of chrysanthemum and cycad.	Molecular genetics, Leaf senescence, Chrysanthemum
Professor	Takahiro CHIHARA	Molecular mechanism underlying neural network formation, maturation and maintenance. Genetic studies to reveal molecular mechanism for the interaction between environment (nutrition, odor and various stress etc.) and individual condition (longevity and behavior etc.).	Neural network, Olfaction, Longevity
Professor	Toshinori HAYASHI	Study of organ regeneration and development using urodele amphibian. Regulatory mechanism of cell proliferation in organ regeneration.	Iberian ribbed newt, Organ regeneration, Development
Professor	Yuki HIRAKAWA	Development and evolution of meristems in land plants. Cell signaling mediated by plant peptide hormones.	Meristem, Stem cell dynamics, Plant peptide hormones, Marchantia
Associate Professor	Takeshi IGAWA	Genome evolution underlying speciation and environmental adaptation of amphibians.	Amphibians, Adaptive evolution, Genomics
Associate Professor	Tatsuya UEKI	Mechanism of metal ion accumulation and reduction by marine invertebrate animals and their physiological	Physiology, Metal ion, Redox
Associate Professor			

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大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

基礎生物学プログラム Program of Basic Biology ( 2/2 )

Academic Staff		Research Fields	Keywords
Associate Professor	Kunifumi TAGAWA	Study to elucidate the origin and evolution of Deuterostomia and Bilateria by analysing molecular developmental biology and comparative genomics of marine organisms such as Enteropneust hemichordate and Acoel flatworms.	Marine Organisms, EvoDevo, Comparative genomics
Associate Professor	Hironi TSUBOTA	Studies of plants and vegetation focusing on the ecology, evolutionary biology, biogeography, phytosociology, and conservation of biotas on islands surrounded by ocean and its related area.	Biodiversity, Phytogeography, Molecular phylogeny
Associate Professor	Kozue HAMAOKA	Molecular mechanisms of cytoskeletal regulation and cell division in animal cells.	Cytoskeleton, Mitosis, Cytokinesis
Associate Professor	Jutarou FUKAZAWA	Molecular mechanisms of plant growth and development via plant hormone Molecular mechanisms of plant hormone biosynthesis, signaling and crosstalk.	Plant hormone, Transcriptional regulation, Signal transduction
Lecturer	Kazuki MORIGUCHI	Molecular mechanisms of bacteria-eukaryotes interactions. Molecular mechanisms at horizontal gene transfer, and the spread and diversity of genes caused by it.	Bacteria, Horizontal gene transfer, Interaction, Gene introduction

大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

数理生命科学プログラム Program of Mathematical and Life Sciences ( 1/3 )

Academic Staff		Research Fields	Keywords
Professor	Makoto IIMA	Theoretical and experimental study of complex flows and models such as swimming/flying problems based on mathematical science.	Fluid mechanics, Swimming/Flying Vortex dynamics
Professor	Shunsuke IZUMI	MALDI SALDI-IMS Development of MALDI matrix for protein analysis and search for chemical repellents using SALDI-IMS method.	, SALDI-IMS MALDI matrix, Proteomics, SALDI-IMS method
Professor	Yoshihiro OMORI	Understanding molecular mechanisms of vertebrate morphogenesis, evolution, and pathogenesis of ophthalmology disease using teleost fish models based on genome science	GWAS Genome science, Teleost fish models, Neurodegenerative diseases, Vertebrate evolution, Genome wide association study
Professor	Atsushi SAKAMOTO	(1) ; (2) ; (3) (1) Molecular mechanisms for stress responses and adaptation in plants; (2) Metabolic plasticity- based strategies for plant growth and survival; (3) Basic and applied research on plant function towards its agricultural and industrial applications (improved performance under stress; algal bioenergy innovation, etc.).	Plant molecular function, Stress response, Metabolism and molecular physiology
Professor	Satoshi NAKATA	Research on phenomena which exhibit spatio- temporal development under nonequilibrium conditions, e.g., chemical oscillation, rhythm and pattern formation, self- organization, nonlinear phenomena (synchronization, bifurcation, hysteresis), and self- propulsion.	Self- organization, Pattern formation, Oscillation
Professor	Koichi Fujimoto	Theoretical study (mathematical modeling and data analysis) of evolving multi- level dynamics (gene expression, shape, and behaviors) in plants, animals, and microbes.	Theoretical Biology, Complex systems, Biophysics, Evolution, Diversity, Multi- scales
Specially Appointed Professor	Naoki HONDA	Data- driven mathematical modeling of various biological phenomena. Development of data analysis methods based on machine learning (statistical learning theory). Gene expression, cytoskeleton, immune systems, embryonic development, neural circuits, decision making emotion/conflict.	Data- driven biology, Theoretical biology, Mathematical modeling, Machine learning
Professor	Takashi YAMAMOTO	Development of genome editing technology for various organisms. Generation of disease model cells and animals. Development of biofuel using microalgae. Analysis of molecular mechanisms during animal development.	Genome editing, Disease model, Animal development
Professor	Hidemasa BONO	Development of database technologies for genome editing and functional genomics by bioinformatic approach.	Genome editing, Bioinformatics, Functional genomics

大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

数理生命科学プログラム Program of Mathematical and Life Sciences ( 2/3 )

Research Fields

Keywords

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大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

数理生命科学プログラム Program of Mathematical and Life Sciences ( 3/3 )

Academic Staff		Research Fields	Keywords
Associate Professor	Takuma SUGI	Behavioral systems biology and neural network aging	Behavior, Imaging Neural network aging
Associate Professor	Yoshihisa FUJIWARA	Effects of environmental factors of light, magnetic field, and gravity (microgravity and hypergravity) on biological phenomena and reactions of micro-organisms such as <i>Aspergillus oryzae</i> . Influence of their factors on reactions, micro-structure, and function of chemical functional nano- materials.	Effects of light, Magnetic field and gravity Photochemistry <i>Aspergillus oryzae</i>

大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生命医科学プログラム Program of Biomedical Science ( 1/2 )

Academic Staff		Research Fields	Keywords
Professor	Atsuhiko ISHIDA	Biochemistry on enzymes and proteins which mediate protein phosphorylation and dephosphorylation.	Enzyme, Neuron
Professor	Yasuhiro ISHIHARA	PM2.5 DHA Neuropharmacology and neurotoxicology on glial cells: Modulation of neurological disorders by chemical exposure (i.e. environmental chemicals and PM2.5) and neuroprotective action of unsaturated fatty acid such as DHA.	Glia, Harmful chemicals, Neuroprotection
Professor	Takuya IMAMURA	Understanding epigenomic mechanisms that underlie the development of primate brain.	RNA primate, brain, non-coding RNA
Professor	Kazuyoshi UKENA	Study on the physiological functions of neuronal substances regulating appetite and energy homeostasis.	Appetite, Obesity, Metabolic disease
Professor	Hajime OGINO	Genomic and epigenetic regulation of development and regeneration in vertebrates. Molecular mechanisms of genome evolution and environmental adaptation in amphibians.	Development, Regeneration, Evolution
Professor	Yoshihiro OMORI	Understanding molecular mechanisms of vertebrate morphogenesis, evolution, and pathogenesis of ophthalmology disease using teleost fish models based on genome science	Genome science, Teleost fish models, Neurodegenerative diseases, Vertebrate evolution, Genome wide association study
Professor	Yutaka KIKUCHI	Construction of musculoskeletal systems and molecular mechanisms of their breakdown.	Musculoskeletal systems
Professor	Takahiro CHIHARA	Molecular mechanism underlying neural network formation, maturation and maintenance. Genetic studies to reveal molecular mechanism for the interaction between environment (nutrition, odor and various stresses etc.) and physiological condition (longevity and behavior etc.).	Neural network, Olfaction, Longevity
Professor	Toshinori HAYASHI	Study of organ regeneration and development using urodele amphibian. Regulatory mechanism of cell proliferation in organ regeneration.	Iberian ribbed newt, Organ regeneration, Development
Professor	Takashi YAMAMOTO	Development of genome editing technology and generation of disease model cells and animals.	Genome editing, Disease model
Professor	Hidemasa BONO	Development of database technologies for genome editing and functional genomics by bioinformatic approach.	Genome editing, Bioinformatics, Functional genomics

大学院統合生命科学研究科主指導教員一覧表 List of Academic Supervisors

生命医科学プログラム Program of Biomedical Science ( 2/2 )

Academic Staff		Research Fields	Keywords
Visiting Professor	Keiichi HATAKEYAMA	Cancer genome analysis to integrate of clinical information and genome data. Improving the accuracy of cancer genome analysis using tumor cell enrichment and its application in clinical practice.	Cancer genome, mutation, somatic/germline alteration, clinical application
Visiting Professor	Tomonobu M WATANABE	Stem cell researches with development of optical measurement technologies to quantify biological phenomena, and medical/industrial applications of them	Optical spectroscopy, quantitative biology, biophysics, stem cell
Associate Professor	Takeshi IGAWA	Genome evolution underlying speciation and environmental adaptation of amphibians.	Amphibians, Adaptive evolution, Genomics
Associate Professor	Masaru UENO	DNA Study on molecular mechanisms of telomere maintenance and DNA repair and their applications for development of anti-cancer and anti-ageing agents.	Telomere, Cancer, Aging
Associate Professor	Misako OKUMURA	Molecular mechanism of phototransduction. Molecular mechanism of phenotypic plasticity.	Nematode, Photoreceptor, Phenotypic plasticity
Associate Professor	Kazunori KUME	Study on the control mechanisms of cell structure (organelles and cell polarity etc.) which ensures cellular functions.	Cell structure, Organelle, Cell polarity
Associate Professor	Naoaki SAKAMOTO	Research for transcriptional regulation of morphogenetic genes, nuclear dynamics of gene, chromatin and chromosome during development, and mechanism of insulator activity, using the sea urchin development as a model.	Sea urchin development, Transcription, Nuclear dynamics
Associate Professor	Takuma SUGI	Behavioral systems biology and neural network aging	Behavior, Imaging, Neural network aging
Associate Professor	Kozue HAMAO	Molecular mechanisms of cytoskeletal regulation and cell division in animal cells.	Cytoskeleton, Mitosis, Cytokinesis
Associate Professor	Masayuki YOSHIDA	Biological basis of emotion, learning and mind in animals.	Animal psychology, Emotion, Neuroscience