



2025 Academic Year

**TOHOKU UNIVERSITY
GRADUATE SCHOOL OF LIFE SCIENCES**

**Doctoral Degree Program (3-year course)
Student Application Guidelines
(April 2025 Admission)**

**GENERAL SELECTION
SPECIAL SELECTION FOR WORKING STUDENTS
SPECIAL SELECTION FOR INTERNATIONAL STUDENTS**

Tohoku University Graduate School of Life Sciences
1-1-2 Katahira, Aoba-ku, Sendai 980-8577 JAPAN
TEL +81-22-217-5706
FAX +81-22-217-5704
<http://www.lifesci.tohoku.ac.jp/>

Information for Prospective Students

Tohoku University Graduate School Admission Policy

Philosophy & Mission

With over 100 years of history and distinguished traditions, Tohoku University has developed excellence in education and research under its principles of "Research First," "Open Doors," and "Practice-Oriented Research and Education" since its establishment in 1907. The university will maintain these traditions while looking toward even more dramatic progress in the future. As a world-leading center of education and research, it will contribute greatly to the human race by grappling with the difficult and complex issues facing the 21st century.

Tohoku University will focus its efforts of its faculties, graduate schools, and research institutes to foster ethical international leaders who will carry humanity into the future, while expanding its globally renowned creative research for the benefit of society at large.

Characteristics

1) Three Foundational Ideals

"Research First," "Open Doors," and "Practice-Oriented Research and Education" — soon after its founding, Tohoku University established this set of unique ideals, the substance of which it is continually developing in response to our changing times.

2) Rich Educational Environment

Tohoku University has numerous research organizations and facilities, primarily comprising 10 undergraduate schools, 15 graduate schools, 3 professional graduate schools, and 6 research institutes. Research institute staff also participate in educational activities (there are approx. 3,000 instructors; enrollment limits are approx. 2,400 for undergraduates, 2,700 for graduate students).

3) Research University

Tohoku University is a school that continuously produces numerous internationally recognized research results and concertedly pushes forward with leading-edge research and education.

4) Active Regional/Industrial-Academic Ties

The university is actively working to expand its diverse regional and industrial ties.

5) Globalizing Education and Research

Among Japan's national universities, Tohoku University is one of the top schools in terms of agreements with overseas universities. It is actively expanding exchange in education and research. The university strives to foster globally active individuals through strong support for studying abroad by Japanese students, as well as recruitment of numerous international students.

Ideal Tohoku University Applicants

Tohoku University seeks students who sympathize with the university's principles and who are motivated by:

- 1) the desire to make outstanding contributions as world-class researchers by addressing the issues facing humanity in the 21st century, and
- 2) the desire to make outstanding contributions to the development of society as highly specialized professionals who possess abundant knowledge and leadership.

To realize these ambitions, students should also have strength of will, academic curiosity, a broad perspective, and an excellent foundation of specialized knowledge and abilities.

Tohoku University Admissions Process (Graduate School)

Depending on the number and type of candidates sought, Tohoku University graduate schools provide multiple categories of, and opportunities for undergoing, entrance exams to meet the needs of candidates from diverse backgrounds. Schools may evaluate the candidate's qualifications, abilities, and specialization using interviews, application documents such as research plans, proficiency exams, and external tests.

Graduate School of Life Sciences Admission Policy

The Tohoku University Graduate School of Life Sciences aims to foster leading researchers and engineers who can explore new areas of life sciences using advanced knowledge and technologies. At the same time, we also focus on educating people who can leverage knowledge and technology based on the foundations of life science, and who have a strong background in bioethics and environmental ethics. Therefore, we are looking for students who have a strong motivation to study life sciences and the necessary academic background to complete the program.

In addition to the general selection examinations, we provide special selection examinations for working students, returnee students, and international students. Students are selected based on their motivation to carry out research according to the educational goals of the Graduate School, and their specialized knowledge and skills.

Master's Degree Program (2-year course)

In the general selection entrance examinations for the first term, specialized knowledge and the sufficiency of basic academic skills in each field of the life sciences are evaluated by interview.

In the self-recommendation and second-term general selection examination, professional knowledge and qualifications are evaluated by interview. Individuals who have studied fields other than the life sciences will also be assessed based on their willingness to apply their knowledge to life sciences research.

For the special selection examinations for working students, Japanese citizens returning from overseas, and international students, an interview is conducted according to the characteristics of each type of applicant to evaluate professional knowledge and qualifications.

Regardless of which examinations are taken, proficiency in English, the common language of the academic world, is evaluated based on scores that have been attained on external certification tests.

Before enrolling in the program, students are expected to learn more about the research methods and the specialized knowledge of the field of study in which they intend to major.
or

Doctoral Degree Program (3-year course)

In the general selection examination, the special selection examination for working students, and the special selection examination for international students, applicants are required to present their past research and plans for their research after entering the university in an interview to evaluate whether they have the necessary specialized knowledge and excellent qualifications to carry out their research.

In addition, proficiency in English, the common language of the academic world, is evaluated based on scores that have been attained on external certification tests.

Before enrolling in this course, students are expected to learn more deeply about research trends in the corresponding field.

Contents

1. Departments and the Number of Students to be Accepted.....	1
2. Eligibility and Application Requirements.....	2
3. Application period.....	5
4. Application Procedures.....	5
5. Examination and Selection.....	12
6. Announcement of Results and Enrollment Procedures.....	12
7. Time of Enrollment.....	13
8. Long-Term Course Program.....	13
9. Handling of Personal Information.....	13
10. Other.....	14
11. List of Fields of Study for which Students are Accepted (including faculty members and research contents)	
Department of Integrative Life Sciences.....	15
Department of Ecological Developmental Adaptability Life Sciences.....	17
Department of Molecular and Chemical Life Sciences.....	20

1. Departments and the Number of Students to be Accepted

Department	Number of Students	Course	Field of Study (Laboratory Name)
Department of Integrative Life Sciences	30 students	Brain and Nervous System	Neuroethology, Molecular Ethology, Brain Development, Systems Neuroscience
		Cellular Network	Membrane Trafficking Mechanisms, Developmental Dynamics, Organelle Pathophysiology, Super-Network Brain Physiology
		Developmental Regulation Network	Germ Cell Development (*), Cancer Biology
		(Cooperative faculties)	<u>Developmental Neuroscience (*), Molecular Oncology</u> 、 <u>Immunobiology</u>
Department of Ecological Developmental Adaptability Life Sciences		Biological Dynamics	Plant Development (*), Histogenetic Dynamics, Organ Morphogenesis, Plant Cell Dynamics, Plant Sensory and Developmental Biology
		Ecological Dynamics	Functional Ecology, Ecological Integration, Symbiosis Genomics, Macroecology、Watershed Ecology, Plant Reproductive Strategy (*)
		Biodiversity Dynamics	Plant Diversity and Evolution, Conservation Biology (*), Marine Biodiversity
		Eco-Socio Dynamics	Ecosystem Functions
		(Cooperative faculties)	<u>Systems Bioinformatics</u> 、 <u>Human Evolution</u>
Department of Molecular and Chemical Life Sciences		Chemical Biology	Analytical Bioorganic Chemistry, Biostructural Chemistry (*), Bioactive Molecules, Molecular and Cellular Biology, Applied Biological Molecular Science
		Molecular and Network Genomics	Microbial Genetics and Evolution, Plant Reproductive System, Molecular Genetics and Physiology, Evolutionary Genomics, Plant Molecular Genetics, Plant Molecular and Physiological Adaptation(*)
		Multilevel Biomolecular Structure and Dynamics	Molecular Analysis of Biological Functions, Biofunctional Chemistry and Nanobiotechnology, Structural Mechanism Research and Development, Dynamics Structural Biology
		Genome Informatics	Omics and Imformatics
		(Cooperative faculties)	<u>Chemical biology of Natural Product, Redox Biology</u> 、 <u>Bioorganic Medicinal Chemistry, RNA Physiology</u>

Note: The underlined fields indicate the fields of study in which the cooperating teachers are in charge.

(*) In general, Germ Cell Development and Developmental Neuroscience fields from the Department of Integrative Life Sciences, as well as Plant Development, Plant Reproductive Strategy and Conservation Biology fields from the Department of Ecological Developmental Adaptability Life Sciences, and Biostructural Chemistry and Plant Molecular and Physiological Adaptation field from the Department of Molecular and Chemical Life Sciences will not accept applications. For more information, please contact the laboratory of your interest directly.

2. Eligibility and Application Requirements

General Selection, Special Selection for International Students

Applicants for the 3-year Doctoral Course applying for the General Selection and the Special Selection for International Students must fall into one of the following categories.

For the Special Selection for International Students, applicants must be non-Japanese nationals with a "Student" type of visa. Applicants with other types of visas (permanent resident, spouse or child of Japanese national, spouse or child of permanent resident, long-term resident, etc.) should apply through the general selection.

Applicants who have graduated from a six-year undergraduate course in medicine, dentistry, pharmacy, or veterinary medicine fall under (8).

- (1) Those who have received or expect to receive a master's degree or a professional degree by March 2025 from a university in Japan.
- (2) Those who have received or expect to receive a master's degree or a degree equivalent to a professional degree from a graduate school of a foreign university by March 2025.
- (3) Those who have completed in Japan a distance education program provided by a foreign school and have received or are expected to receive a master's degree or a degree equivalent to a professional degree in Japan by March 2025.
- (4) Those who have completed an education program provided by a foreign school in Japan which is designated by the Japanese Minister of Education, Culture, Sports, Science, and Technology (MEXT) as being equivalent to a graduate program in Japan and have received or are expected to receive a master's degree or a degree equivalent to a professional degree by March 2025.
- (5) Those who have completed a program at the United Nations University and have received or are expected to receive a degree equivalent to a master's degree by March 2025.
- (6) Those who have studied on the education program provided by a foreign school, an educational institution with a graduate course in a foreign country, or a United Nations University, who passed an examination and assessment equivalent to those prescribed in Article 16-2 of the Standards for the Establishment of Graduate Schools (Ordinance of the Ministry of Education, Science and Culture No. 28 of 1974), and who is recognized as having academic abilities equivalent or superior to a master's degree holders by March 2025.
- (7) Those designated by the Japanese Minister of Education, Culture, Sports, Science and Technology (MEXT)
 - a) Those who have graduated from a university and have worked for a university or research organization as a researcher for more than 2 years, and who have been recognized by this graduate school as having academic abilities equivalent or superior to a master's degree or a professional degree based on the results of the research.
 - b) Those who have completed 16 years of school education in a foreign country, or have completed 16 years of school education in a foreign country by taking a distance education program provided by a foreign school in Japan, have worked for a university or research organization as a researcher for more than 2 years, and who have been recognized by this graduate school as having academic abilities equivalent or superior to a master's degree or a professional degree based on the results of the research.
- (8) Those who have been recognized by the graduate school as having academic ability equivalent or superior to a master's degree or a professional degree through individual screening of admission qualifications, and who will reach the age of 24 by March 2025.

Note 1: All applicants should contact the faculty member whose supervision they wish to receive, confirm the research plan after admission, obtain confirmation that the faculty member will be able to supervise the applicant, and submit the application form only after informing the prospective supervisor of the intention to apply.

Note 2: Those who are expected to complete the master's course (excluding those who are expected to complete the master's course in this Graduate School) and wish to enter the doctoral course of this Graduate School should apply according to this guideline.

Note 3: Those who wish to apply according to (6) should contact the Academic Affairs Section of the Graduate School of Life Sciences to confirm the documents to be submitted, and submit these documents by Thursday, December 5, 2024.

Note 4: Those who wish to apply according to (7) or (8) should undergo the following preliminary screening and apply according to the results.

About the preliminary individual screening for admission.

Please submit the following documents to the Academic Affairs Section of the Graduate School of Life Sciences by mail (registered mail) or in person by Thursday, December 5, 2024.

Notification of the screening results will be sent by registered mail by the start of the application process.

- a. Application form for pre-application screening (Please request an application form from the Academic Affairs Section of the Graduate School of Life Sciences.)
- b. Official academic transcript (prepared by the head of the last institution attended)
- c. Abstract of the research (about two A4 sized pages) and reference materials such as academic papers
- d. Envelope for notification of screening results (standard size, with applicant's name and address written on it, and a stamp of 460 yen)
- e. Other materials that may be used as a reference for a review.

Note 5: Those who wish to apply for the Special Selection for International Students should apply to the Academic Affairs Section of the Graduate School of Life Sciences by Thursday, December 5, 2024, to confirm their eligibility.

Special Selection for Working Students

Applicants for the Doctoral Course (3-year course) applying for the Special Selection for Working Students must fall into one of the following categories.

- (1) Those who have been working at a research institution for at least two years after receiving a master's degree or a professional degree from a university in Japan.
- (2) Those who have been working at a research institution for at least two years after receiving a master's degree or a professional degree from a foreign university.
- (3) Those who have been working at a research institution for at least two years after receiving a master's degree or a professional degree from a distance education program provided by a foreign school.
- (4) Those who have been working at a research institution for at least two years after receiving a master's degree or a professional degree from an education program provided by a foreign school in Japan which is designated by the Japanese Minister of Education, Culture, Sports, Science, and Technology (MEXT) as being equivalent to a graduate program in Japan.
- (5) Those who have been working at a research institution for at least two years after receiving a master's degree or a professional degree from a program at the United Nations University.
- (6) Those who have been working at a research institution for at least two years after studying on the education program provided by a foreign school, an educational institution with a graduate course in a foreign country, or a United Nations University, who passed an examination and assessment equivalent to those prescribed in Article 16-2 of the Standards for the Establishment of Graduate Schools (Ordinance of the Ministry of Education, Science and Culture No. 28 of 1974), and who is recognized as having academic abilities equivalent or superior to a master's degree holders.

- (7) Those who have been working at a research institution for at least 4 years after graduation from a university and who has been recognized by the graduate school as having academic ability equivalent to or superior to a master's degree or a professional degree.
- (8) Those who have experience of working or researching, who have been recognized by the graduate school as having academic ability equivalent or superior to a master's degree or a professional degree through individual screening of admission qualifications, and who will reach the age of 24 by March 2025.

Note 1: Applicants should contact the faculty member whose supervision they wish to receive, prepare the following documents, confirm the research plan after admission, obtain confirmation that the faculty member will be able to supervise the applicant, and submit the application form only after informing the prospective supervisor of the intention to apply.

- a. Abstract of research such as a master's thesis (about one A4-sized page) and reference materials such as academic papers
- b. Summary of research conducted after obtaining a master's degree, etc. (about one A4-sized page)
- c. Field of research applicant wishes to enroll and research plan (about one A4-sized page)

Note 2: Those who wish to apply according to (6) should contact the Academic Affairs Section of the Graduate School of Life Sciences to confirm the documents to be submitted, and submit these documents by Thursday, December 5, 2024.

Note 3: Those who wish to apply according to (7) should undergo the preliminary screening and apply according to the results. Please submit the following documents to the Academic Affairs Section of the Graduate School of Life Sciences by mail (registered mail) or in person by Thursday, December 5, 2024. Notification of the screening results will be sent by registered mail by the start of the application process.

- a. Application form for pre-application screening (Please request an application form from the Academic Affairs Section of the Graduate School of Life Sciences.)
- b. Official academic transcript issued by the university attended.
- c. Abstract of the research (about two A4-sized pages) and reference materials such as academic papers
- d. Envelope for notification of screening results (standard size, with applicant's name and address written on it, and a stamp of 460 yen)
- e. Other materials that may be used as a reference for the review.

Note 4: Those who wish to apply according to (8) should undergo the preliminary screening and apply according to the results. Please submit the following documents to the Academic Affairs Section of the Graduate School of Life Sciences by mail (registered mail) or in person by Thursday, December 5, 2024. Notification of the screening results will be sent by registered mail by the start of the application process.

- a. Application form for pre-application screening (Please request an application form from the Academic Affairs Section of the Graduate School of Life Sciences.)
- b. Official academic transcript (prepared by the head of the last institution attended)
- c. Abstract of the research (about two A4 sized pages) and reference materials such as academic papers
- d. Envelope for notification of screening results (standard size, with applicant's name and address written on it, and a stamp of 460 yen)
- e. Other materials that may be used as a reference for the review.

Note 5: Those who are employed in private or other companies may enroll while still employed as long as it does not affect their research or take a leave of absence from their current position.

3. Application Period

- (1) Applicants are required to carefully read this application guide and upload the application documents to the TAO application registration site (hereinafter referred to as "TAO").
- (2) In addition, documents that must be submitted in paper form must be sent or submitted during the following period.

Upload period to TAO

From Monday, January 6, 2025, to Friday, January 17, 2025, by 17:00 (JST)

Deadline for submission of application documents (for those documents that must also be submitted in original (hard) paper form)

From Monday, January 6, 2025, to Friday, January 17, 2025 (must arrive no later than Friday, January 17, 2025).

The office hours are from 9:00 to 11:50 and from 13:00 to 17:00 on weekdays.

1-1-2 Katahira, Aoba-ku, Sendai 980-8577
Academic Affairs Section, Graduate School of Life Sciences, Tohoku University
TEL: 022-217-5706 Email: lif-kyom@grp.tohoku.ac.jp

4. Application Procedures

(1) Application Procedure

Please follow the steps below to submit your application via the TAO. Please note that some documents must be submitted in paper (hard) form.

The application process is completed by paying the application fee, registering the application information online, and sending the required application materials to the university by express or registered mail (must arrive by the application deadline) within the application deadline.

Please note that paying the application fee and registering your application information on the Internet are not the only steps to complete the application process.

- 1) Confirmation of Application Procedures and Advance Preparation (Preparing Application Materials, Obtaining Application Approval from Prospective Academic Advisor)

First, please read this application guide carefully, confirm that you are eligible to apply, and prepare the necessary application materials.

- Please note that some application materials, such as official TOEFL scores, may take more than a month to be delivered, so be sure to prepare them well in advance.
- Please obtain approval for your application from your academic advisor in the field you wish to study. (For details, please refer to notes 1 and 2 on (2) Application documents and Application materials No. 7.

- 2) Examination Fee Transfer (to be made within the application period)

Transfer the examination fee of 30,000 yen and obtain documents (such as bank statements) to verify the transfer. (For details, see (2) Application Materials No. 8 "Examination fee").

If you are applying from overseas, please contact the Academic Affairs Section of the Graduate School of Life Sciences by email or other means to receive information on how to pay the examination fee from abroad.

- 3) Application registration through TAO

- a) To use TAO, please create an applicant account on the TAO website below.
TAO website: <https://admissions-office.net/en/portal>

- b) Next, on the Graduate School of Life Sciences Admissions Information Website, please enter the required information and upload the designated documents through the **TAO Application URL** for the entrance exam you wish to apply for, and complete your application registration.

Graduate School of Life Sciences Admission Examination Information Website:

<https://www.lifesci.tohoku.ac.jp/en/admission/schedule/>

- The "TAO Application URL" on the Admission Examination Information website is different for each type of entrance examination. Please make sure that it is the entrance examination you are applying for before registering your application.
- Please be careful not to make any mistakes in selecting the university, department, or entrance exam you are applying for.
- Please convert certificates and other documents to PDF format and upload them.
- A temporary save option is available, so please use this function to make a final confirmation before submitting your application.
- After completing the application submission, please make sure that the status in TAO is "Application Completed".

4) Submission of original English score

For English scores, in addition to uploading them to TAO, some specified scores also require the submission of the original paper document. Please ensure that the relevant English scores are arranged to arrive within the application period.

For details on the required scores and how to send them, please refer to No. 12 of (2) Application Materials.

5) Complete the Graduate School of Life Sciences Application Confirmation Form.

Please fill out the form on the Graduate School of Life Sciences Admission Information website (see below) according to the application period and answer the questions about your web environment at the time of the examination. Please note that some of the questions on the form overlap with those on the TAO form.

Graduate School of Life Sciences Entrance Examination Information Page:

<https://www.lifesci.tohoku.ac.jp/en/admission/schedule/>

(2) Application documents

Notes:

1) Please contact your prospective supervisor in the field of your interest in advance to fully confirm and mutually understand the research activities and research content that can be conducted in that laboratory and obtain his/her approval before applying.

2) As there is a deadline for applications, please contact your academic advisor well in advance.

No.	Documents	Notes
1	Application form	Please fill in the information in each section of the "Application for Admission" on the TAO.
2	Photo data	Upload the applicant's own photo at TAO. - The photo must be taken within 3 months before the application. - The data format must be PNG, JPEG, or JPG.

3	Research plan	<p>Prepare a research plan for your post-enrollment studies and upload it to the TAO in PDF format.</p> <p><u>Precautions for Preparation</u></p> <ul style="list-style-type: none"> - Please write horizontally on the two-page, A4-size document. - Please write the applicant's name and field of interest on the first line. - The standard font size is 11-12 pt. and the standard number of words in the main text is 2,000 characters in Japanese (1000 words in English).
4	Research papers	<p>Upload both (1) and (2) below in PDF format to the TAO.</p> <p>(1) List of research papers, etc. (A4 size)</p> <p>(2) Master's thesis or other representative research papers</p> <p>*The maximum upload size is 20 MB. If you exceed this limit, please contact the Academic Affairs Section of the Graduate School of Life Sciences.</p> <p>*Those who are currently enrolled in a 2-year Master's course and cannot submit their Master's thesis at the time of application should upload the information regarding the possible date of submission and expected title of the thesis to be submitted to the TAO.</p> <p>*If the possible submission date is after Friday, January 24, please contact your prospective supervisor to obtain his/her approval, and then upload the information regarding possible submission date, expected title of the thesis and the document stating that you have obtained the professor's approval in PDF format to the TAO.</p>
5	<p>Transcript of academic records</p> <p>(both from the undergraduate and graduate courses)</p>	<p>Please upload both (1) and (2) in PDF format to the TAO.</p> <p>The original hard copy of the certificate (in paper form) must be submitted during the enrollment procedures (in March 2025).</p> <p>(1) Transcripts from the university (undergraduate school) you graduated from (For non-university transcripts, please upload the transcripts prepared by the head of your institution.)</p> <p>(2) Transcript from the graduate school (2-year master's program or professional degree program)</p>
6	<p>Certificate of (expected) graduation</p> <p>(From the last institution attended)</p>	<p>Depending on the final educational background, upload the appropriate certificate from (1) to (4) below in PDF format to the TAO.</p> <p>The original hard copy of the certificate (in paper form) must be submitted during the enrollment procedures (in March 2025).</p> <p>(1) Certificate of (expected) graduation for those who have completed (or are expected to complete) the master's course or professional degree course.</p> <p>(2) Certificate of graduation from a university for those who have graduated from an undergraduate course.</p> <p>(3) Certificate of acceptance of an application for a bachelor's (master's) degree from the National Institution for Academic Degrees and University Evaluation or a "Certificate of Expected Degree Award Application" from the head of the technical college. Those who have already been awarded a bachelor's (master's) degree must submit a "Degree Award Certificate".</p> <p>(4) For others, a certificate of (expected) graduation or a certificate of (expected) completion of studies from the last institution attended.</p>

7	Email confirmation of application approval from prospective supervisor (see note)	<p>Submit (upload) <u>an email</u> in A4-sized PDF format to the TAO confirming that you have received approval for your application from your prospective supervisor.</p> <ul style="list-style-type: none"> - The email must include the following information: Sender's email address and date of sending, Recipient's email address and date of receipt, Applicant's name, Name of entrance exam, Type of selection (general selection, special selection for international students/working students) Field of study (lab. name), and name of prospective supervisor - Please refer to the example of the email below. <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>--Sample email sent by a candidate to a potential supervisor--</p> <p>Subject: Regarding application for Doctoral Degree Program (April admission) entrance examinations for the Graduate School of Life Sciences at Tohoku University</p> <p>Professor <professor's name></p> <p>My name is <applicant's name> from the graduate school of ○○, ○○ University. (Reason for application, etc.) I would like to apply to your laboratory for the Doctoral course entrance examination, April admission, through the <Type of selection> as follows:</p> <p style="padding-left: 40px;">Field of study: ○○ Expected supervisor: ○○Professor (or Associate Professor)</p> <p>-----</p> <p>Applicant's email signature (name, affiliation, contact information, etc.)</p> </div> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>--Sample of a reply email from a prospective supervisor to an applicant--</p> <p><input type="checkbox"/> (Note)</p> <p>Dear Mr. <applicant's name></p> <p>I, <professor's name>, hereby give my approval to take Doctoral course entrance examination, April admission.</p> <p>Prospective Academic Advisor: ○○ Field of study: ○○</p> <p>-----</p> <p>Email signature of prospective academic advisor (name, affiliation, contact information, etc.)</p> </div> <p>Note: The reply email from your prospective advisor is a response to your request for application <u>and does not guarantee enrollment to the Graduate School of Life Sciences of Tohoku University.</u></p>
---	---	--

		Please contact the faculty members (Associate Professor or higher) you wish to be your advisor one by one, rather than sending emails to several faculty members at the same time.												
8	Examination Fee and Confirmation of Examination Fee Payment	<p>(1) Transfer the application fee of 30,000 yen to the bank account below via bank counter, ATM, or Internet banking during the application period. (Applicants are responsible for any handling charges incurred at the time of transfer.)</p> <p>Please be careful not to make any mistakes in the information below.</p> <p>Payment details:</p> <table><tr><td>銀行名 / Bank Name</td><td>みつびし ぎんこう 三菱 UFJ 銀行 / MUFG Bank, Ltd. (金融機関/ Bank Code: 0005)</td></tr><tr><td>支店名 / Branch Name</td><td>わかたけ支店/Wakatake Shiten (支店コード/ Branch Code: 809)</td></tr><tr><td>預金種別/ Account Type</td><td>普通 / Ordinary Savings</td></tr><tr><td>口座番号/ Account Number</td><td>2259411</td></tr><tr><td>カナ名義/ Account-holder Name in Kana</td><td>ダイ) トウホクダイガク/ DAI) TOUHOKUDAIGAKU</td></tr><tr><td>口座名義/ Account-holder Name</td><td>国立大学法人東北大学/ National University Corporation Tohoku University</td></tr></table> <p>The above information is only for payment within Japan. For applicants who wish to make the payment from overseas, the payment method will be different, so please contact the Academic Affairs Section for details.</p> <p>Notes</p> <ul style="list-style-type: none">- When making a bank transfer, please enter the name of the person who will be taking the examination. Other information (telephone number, etc.) may be entered by the person making the transfer (e.g., a relative).- When transferring money from an account in the name of a person other than the applicant, be sure to change the name of the payee to the name of the person taking the examination before transferring the money.- If you are applying for an exemption from the application fee for disaster victims, please do not transfer the application fee. Please refer to the following website for details: https://www.tnc.tohoku.ac.jp/exempt.php- Those who are expected to complete a master's or professional degree program at Tohoku University in March 2025 are not required to pay the examination fee.- MEXT scholarship students do not have to pay the examination fee. <p>(2) After the transfer, please obtain proof of the transfer, such as a copy of your bank transfer request document, ATM statement, or a copy of your net banking transfer completion screen (please make sure that the transfer procedure has been completed) and upload it to the TAO. (The file format should be PNG, JPEG or JPG.)</p>	銀行名 / Bank Name	みつびし ぎんこう 三菱 UFJ 銀行 / MUFG Bank, Ltd. (金融機関/ Bank Code: 0005)	支店名 / Branch Name	わかたけ支店/Wakatake Shiten (支店コード/ Branch Code: 809)	預金種別/ Account Type	普通 / Ordinary Savings	口座番号/ Account Number	2259411	カナ名義/ Account-holder Name in Kana	ダイ) トウホクダイガク/ DAI) TOUHOKUDAIGAKU	口座名義/ Account-holder Name	国立大学法人東北大学/ National University Corporation Tohoku University
銀行名 / Bank Name	みつびし ぎんこう 三菱 UFJ 銀行 / MUFG Bank, Ltd. (金融機関/ Bank Code: 0005)													
支店名 / Branch Name	わかたけ支店/Wakatake Shiten (支店コード/ Branch Code: 809)													
預金種別/ Account Type	普通 / Ordinary Savings													
口座番号/ Account Number	2259411													
カナ名義/ Account-holder Name in Kana	ダイ) トウホクダイガク/ DAI) TOUHOKUDAIGAKU													
口座名義/ Account-holder Name	国立大学法人東北大学/ National University Corporation Tohoku University													
9	Certificate of residence (Jūminhyō)	<p>Only foreigners residing in Japan (staying more than 90 days) are required to submit this certificate.</p> <ul style="list-style-type: none">- Upload the certificate in PDF format from the TAO.- The certificate must be issued within 3 months prior to the date of application.												

		<p>- Should include the status of residence and the number of the residence card, but do not need to include the personal number "My Number". The original hard copy of the certificate (in paper form) must be submitted during the enrollment procedures (in March 2025).</p>
10	Certificate of research period	<p>Applicants applying for the “Special Selection for Working Students” should upload this document to TAO in PDF format.</p> <p>The certificate must be certified by the head of the company where the applicant is working and must indicate the period of research (the period during which the applicant was engaged in research at the research institution, etc.) as specified in the application requirements. (Free format.)</p>
11	Permission to take an examination	<p>Applicants who are working and wish to enroll without a leave of absence from work should submit this document in the PDF format to the TAO. (Free format)</p>
12	<p>TOEFL®TEST(*) TOEIC®TEST(**) IELTS or Duolingo English Test score (Note1)</p> <p>(Note 1) Grades for Foreign Language (English) will be based on the grades on this score sheet.</p> <p>*TOEFL is a registered trademark of Educational Testing Service (ETS). This material has not been reviewed or approved by ETS. ** The “TOEFL® Test” is referred as the “TOEFL iBT” in these guidelines.</p>	<p>All applicants are required to submit a score from one of the following tests: TOEFL®, TOEIC®, IELTS, or Duolingo English Test. Tests taken within the two years prior to the first day of the entrance examination are considered valid.</p> <p>Note that it takes time for scores from each test to be delivered. Please take the tests well in advance of your application to ensure that your scores are received in time.</p> <p>Multiple score submissions are allowed. (e.g. one from TOEIC® L&R, one from TOEFL iBT®, etc.)</p> <p>(1) Eligible Scores</p> <p>➤ TOEIC® L&R Group TOEIC IP test score will not be accepted. For tests taken after April 2023, the "Digital Official Score Certificate" will be accepted as the original certificate, and for tests taken before April 2023, the "Official Score Certificate" will be accepted as the original certificate. If you submit the "Digital Official Score Certificate" in PDF format, there is no need to submit the original paper document.</p> <p>➤ TOEFL iBT® (including Home Edition) Group TOEIC ITP® test score will not be accepted. Official Score Report must be submitted. Official Score Report will automatically include two types of scores: the test result for each test date (Test Date score) and the MyBest™ score. The Graduate School will use the Test Date score.</p> <p>➤ IELTS (Academic Module only) Test Report Form must be submitted.</p> <p>➤ Duolingo English Score The certificate will be issued only on the Internet. Therefore, you do not need to submit the original paper copy, but it is necessary to complete the required procedures at the time of taking the examination (please refer to (3) below).</p> <p>(2) Uploading English Scores to TAO</p> <p>Please upload your eligible official score sheet to TAO. (File format: PDF, PNG, JPEG or JPG)</p>

		<ul style="list-style-type: none"> If you have difficulty submitting the official score within the application period, please refer to (Note 2) below. <p>(3) Submission and Mailing of Original English Scores</p> <p>Please prepare and arrange for delivery of the official score sheet by application deadline, as follows.</p> <p>➤ TOEIC® L&R</p> <p>The "Official Score Certificate" will be mailed directly to you, so please submit the original hard copy to the Graduate School of Life Sciences.</p> <p>The "Digital Official Score Certificate" will be available on the TOEIC application site in PDF format, so please upload this PDF file to TAO.</p> <p>➤ TOEFL iBT®</p> <p>Please complete the Official Score Report mailing procedures at ETS.</p> <p>The DI code for ETS is B430 (Graduate School of Life Sciences, Tohoku University).</p> <p>Please note that it takes approximately two months from the time the ETS is sent to the time it is delivered, so be sure to take the necessary steps well in advance.</p> <p>➤ IETS</p> <p>Please send the original Test Report Form (official transcript) by mail.</p> <p>➤ Duolingo English Test</p> <p>After taking the Duolingo English Test, you will be asked to select the school to which you wish to apply, so please select the Graduate School of Life Sciences to complete the issuance process.</p> <p>Please take the test well in advance, as it may take some time for the score to be evaluated and in some cases the test may not be approved.</p> <p>(Note 2) If you have difficulty submitting the designated score by the application deadline</p> <p>(1) If you have difficulty submitting the eligible official score by the application deadline, please upload the "Score for Test Takers (personal verification)" or "Screenshot of the Internet Confirmation Screen for Test Takers" when you register your application on TAO.</p> <p>(2) If the original eligible score is not submitted by 17:00 on January 31 (Fri), the applicant will not be allowed to take the examination. The examination fee will not be refunded.</p> <p>(3) The original score to be submitted must be the same test score (same type of test, same test administration date, same score and rating) as the test taker's score (personal verification) uploaded to the TAO at the time of application. Submission of scores from a different test (e.g., higher test scores) will not be accepted.</p>
13	Filling out the "Application Confirmation Form" for the Graduate School of Life Sciences	<p>Applicants are required to complete the Application Confirmation Form. The form will be available on the Graduate School of Life Sciences Admission Information Website during the application submission period. Admissions information website</p> <p>https://www.lifesci.tohoku.ac.jp/en/admission/schedule/</p>

(3) Notes

1) Please note that applications will not be accepted if there are any omissions or other deficiencies in the information to be entered or registered.

2) If false information is provided in the application documents or if the original documents cannot be verified at the time of admission, the acceptance of the application may be canceled, or the admission permit may be withdrawn even after the applicant has already been enrolled.

3) In the event of serious misbehavior prior to enrollment, the school reserves the right to cancel acceptance or revoke admission even after the student has been permitted to enter the graduate school.

4) The examination fee is non-refundable for any reason.

5) Once an application has been received, no withdrawals or changes to the information on the application form will be accepted.

5. Examination and Selection

(1) Date Tuesday, February 18, 2025 (time will be announced after application)

(2) Place The examination will be conducted as an online interview. Please arrange a private room with internet access. Make sure that no one is allowed in the room during the examination.

(3) Selection method Applicants will be evaluated based on a review of application materials, an interview, and English proficiency using external test scores.

Applicants are required to access the URL of the online conference system designated by the Graduate School of Life Sciences and give a 25-minute oral presentation of their master's thesis (or equivalent; for applicants applying for the Special Selection for Working Students, it will be related to their previous research), in Japanese or English, using presentation slides. The presentation will be followed by a 30-minute question-and-answer session.

Applicants who have completed (or will complete) a 6-year undergraduate program in medicine, dentistry, pharmacy, or veterinary medicine are also required to take the same examination.

In order to proceed smoothly on the day of the entrance examination, a preliminary connection test for devices (that will be used during the entrance examination) will be conducted on Saturday, February 1. Please be sure to attend this test as well. Details will be notified separately after the application is submitted.

The English test score sheet submitted with the application will be converted to a foreign language proficiency score using the general method. If multiple scores are submitted, the highest score after conversion will be used.

6. Announcement of Results and Enrollment Procedures

(1) The announcement of successful applicants is expected to be posted on the Japanese version of the Graduate School of Life Sciences website on Thursday, March 6, 2025, at 9:30. A notice of acceptance will be sent to successful applicants by registered mail. The Graduate School of Life Sciences will not respond to any inquiries regarding the results.

Graduate School of Life Sciences website: <https://www.lifesci.tohoku.ac.jp/>

(2) Successful applicants will be required to pay the following fees by the specified date. Details will be announced separately around late February 2025.

a. Admission fee: 282,000 yen (estimated amount)

b. First semester (April - September) tuition: 267,900 yen (535,800 yen per year) (estimated amount)

Note 1: The amounts shown above are expected amounts. In the event of a revision of the entrance and tuition fees, the new amounts will be used from the time of the revision.

Note 2: The details of the payment of the entrance fee and tuition fee will be announced in the documents related to the entrance procedures to be sent in mid-February. For information about the waiver, deferment, etc., please contact the Financial Support Section, Student Support Division, Education and Student Support Department, Tohoku University (Kawauchi-Kita Campus Education and Student Support Center, 1st floor, Counter 4, Tel: 022-795-7816, Office Open Hours: 8 : 30~17 : 15).

For more information, please visit the Tohoku University website: <https://www2.he.tohoku.ac.jp/menjo/>

7. Time of Enrollment

The date of enrollment of successful applicants is April 1, 2025.

8. Long-Term Course Program

Those who wish to obtain a Doctoral degree in life science by systematically completing the educational program over a certain period, exceeding the standard course length of three years in the Doctoral Degree Program, due to special reasons ((1) full-time employees of companies or those who run their businesses, (2) those who need to take care of childbirth, childcare, or nursing care, etc., (3) other students who have been approved by the Graduate School) may be permitted to enroll as a long-term course student by submitting the required application at the time of enrollment procedures based on the notice of enrollment procedures that will be sent to successful applicants. The duration of study cannot exceed six years, but students may request to shorten the approved period of study midway through their studies.

Education and research guidance will be provided using the regular curriculum and class schedule.

The annual tuition fee for long-term course students is the amount obtained by multiplying the annual tuition fee for general students by the number of years of the standard course of study (3 years) and dividing it by the number of years of study permitted for long-term course students.

For reference, the annual tuition fee for students enrolled in the 2024 academic year is as follows.

- Annual tuition for general students with a standard term of study of 3 years: 535,800 yen
- Annual tuition fee for students with 4 years of study permitted: 401,850 yen
- Annual tuition fee for students with 5 years of study permitted: 321,480 yen
- Annual tuition fee for students with 6 years of study permitted: 267,900 yen

9. Handling of Personal Information

(1) Personal information collected by Tohoku University is strictly protected in accordance with the "Act on the Protection of Personal Information (Act No. 57 of 2003)" and other laws and regulations. It is managed in compliance with the "Personal Information Protection Regulations of Tohoku University National University Corporation" and related university policies.

(2) Personal information, such as exam results used in the selection process for admission, will be used for the following purposes: selection of applicants, admission procedures, pre-admission education, follow-up surveys, post-admission student support (including scholarships, tuition waiver, and health care), educational guidance, and tuition related matters. It will also be used for research and analysis (including improvements to entrance examinations and surveys on applicant trends). For admitted students, this includes the analysis of personal information after admission.

(3) In some cases, work related to admissions and academic affairs may be performed by companies contracted by the University (hereinafter referred to as "trustee"). In the event that all or part of personal information is provided to a trustee company for outsourcing, necessary measures will be taken to ensure that

the information is handled appropriately in accordance with the "Personal Information Protection Regulations of Tohoku University National University Corporation" and other relevant regulations of Tohoku University

(4) By applying to the Graduate School, applicants are considered to have agreed to the above statement.

10. Other

(1) Application documents and examination fees cannot be returned.

(2) Consultations are available for those who require special consideration for entrance examinations and academic study, so please contact the Academic Affairs Section of the Graduate School of Life Sciences by Thursday, December 5, 2024, if needed.

(3) For inquiries regarding student applications, please contact the following

1-1-2 Katahira, Aoba-ku, Sendai 980-8577, Japan Academic Affairs Section, Graduate School of Life Sciences, Tohoku University TEL +81-22-217-5706 E-mail lif-kyom@grp.tohoku.ac.jp
--

(4) Below you will find the Graduate School of Life Sciences website regarding the admissions process. Please check this page from time to time for the latest information. (Q&A and other information is also available.)

<https://www.lifesci.tohoku.ac.jp/admission/>

November 2024
Graduate School of Life Sciences,
Tohoku University

11. List of Fields of Study for which Students are Accepted (including faculty members and research contents)

1) Department of Integrative Life Sciences

Course	Field of Study and Faculty Members	Research Content
Brain and Nervous System	Neuroethology Professor TANIMOTO Hiromu Associate Professor KOGANEZAWA Masayuki Assistant Professor HUANG Tzu Ting	We investigate neural mechanisms underlying a wide array of behavior using genetic manipulation of targeted neurons. Our favorite model animals are fruit flies and jellyfish. Behaviors of our interest include associative learning, feeding, sexual behavior, and alcohol preference.
	Molecular Ethology Professor TAKEUCHI Hideaki Assistant Professor KAJIYAMA Towako	Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=45410 Visit the lab's website. https://sites.google.com/view/molecular-ethology-laboratory/english
	Brain Development Professor ABE Kentaro Assistant Professor AOKI Sho	We study the mechanisms underlying the plastic change of the brain according to a variety of postnatal experiences such as social interaction, lifestyles, or diseases. To investigate, we apply the techniques of molecular biology, behavioral analysis, in vivo live imaging on mouse, songbird, and cell culture as model systems.
	Systems Neuroscience Professor TSUTSUI Ken-Ichiro Associate Professor OHARA Shinya	We investigate sensory, reward, memory, and executive functions and their underlying neural mechanisms by combining various state-of-the-art techniques, such as electrophysiology, molecular biology, and computational analytics and modeling. As experimental subjects, we use human and non-human primates as well as rodents.
Cellular Network	Membrane Trafficking Mechanisms Professor FUKUDA Mitsunori Assistant Professor KASAHARA Atsuko	Our lab mainly focuses on the Rab protein, which acts as a traffic controller, to understand the molecular mechanisms of membrane traffic that underlies various cellular events such as epithelial polarity formation, exosome secretion, neurotransmission, melanosome transport, and autophagy.
	Developmental Dynamics Professor SUGIMOTO Asako Associate Professor NIWA Shinsuke (C) Assistant Professor HARUTA Nami	Our goal is to elucidate the principles of regulation of cellular dynamics during development and its evolutionary processes. Using several nematode species as model systems, we take an integrated approach that combines molecular genetics, cell biology, biochemistry, and functional genomics. Current research topics include 1) tissue-specific regulation of microtubule dynamics, 2) evolution of the reproductive system, and 3) development of novel chromosome engineering technologies.

Cellular Network	Organelle Pathophysiology Professor TAGUCHI Tomohiko Assistant Professor KUCHITSU Yoshihiko	Intracellular organelles cooperatively regulate cellular homeostasis, proliferation, and differentiation, through a continuous exchange of soluble and membrane-bound molecules via membrane trafficking and/or membrane contact transfer. A failure in organelle cooperation often results in various human diseases. Our laboratory uses methods in biochemistry, cell biology, and molecular biology to identify novel organellar proteins and lipids. With these methods, we aim to unveil novel functions of organelles and the molecular mechanisms that regulate organelle cooperation.
	Super-Network Brain Physiology Professor MATSUI Ko Assistant Professor IKOMA Yoko	The local brain environment affects how the neuronal circuit operates. Glial cells in the brain may have a pivotal role in controlling the neuronal information properties. Using in vivo fiber photometry, optogenetics, and acute patch-clamp electrophysiological techniques, we explore the realm of mind-body interface. Interactions between neurons, glia, vascular, and other cellular network of networks constitute the function of our mind.
Developmental Regulation Network	Cancer Biology Professor CHIBA Natsuko Assistant Professor YOSHINO Yuki FANG Zhenzhou	Accumulation of gene mutations in oncogenes and tumor suppressor genes causes cancer. We elucidate the regulatory mechanism of cell division and DNA damage response by cancer-related molecules. Furthermore, we are trying to develop methods to diagnose and treat cancer by elucidating the carcinogenic mechanism caused by the functional failure of cancer-related molecules.
Cooperative faculties	Molecular Oncology Professor TANAKA Kozo	Chromosomal instability, a condition in which chromosome missegregation occurs at high rates, underlies age-related diseases such as cancer and neurological disorders. Our goal is to reveal how chromosomal instability occurs and how it is related to the pathophysiology of these diseases, in order to contribute to their prevention and treatment. Using culture cells and mice and various techniques such as live-cell imaging, biochemical analysis, genetic and epigenetic analysis, we aim to understand these mechanisms from molecular to organismal level.
	Immunobiology Professor OGASAWARA Koetsu	Many diseases, such as cancer, allergies, infectious diseases, and autoimmune diseases, are related to the immune system. The immune response is analyzed using the latest instruments such as flow cytometry and next-generation sequencers, and the target molecule is analyzed by creating experimental animals using reverse genetics methods to understand from the molecular level to the individual level. In addition, we aim to develop artificial antibodies and hybrid antibodies to develop new therapeutic agents.

2) Ecological Developmental Adaptability Life Sciences

Faculty members marked with ** are scheduled to retire in March 2028.

Course	Field of Study and Faculty Members	Research Content
Biological Dynamics	Histogenetic Dynamics Professor KURANAGA Erina Assistant Professor NINOMIYA Komaki UECHI Hiroyuki (C)	Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=2525
	Organ Morphogenesis Professor TAMURA Koji Assistant Professor UESAKA Masahiro	We investigate the mechanisms underlying morphogenesis in the vertebrate limb/fin development and regeneration as model systems. Also, we endeavor to elucidate the evolution of developmental programs that diversify the vertebrate morphology through comparative developmental experiments, as well as genomic, transcriptomic, and epigenomic comparisons.
	Plant Cell Dynamics Professor UEDA Minako Assistant Professor KIMATA Yusuke MATSUMOTO Hikari	We aim to understand what happen in the plant cell and how they lead to the plant development. In particular, we are focusing on the cells that play a central role in the plant body formation, such as the zygote, and performing high-resolution live imaging to reveal the intracellular dynamics and genetic analysis to identify the regulatory mechanisms.
	Plant Sensory and Developmental Biology Associate Professor FUJII Nobuharu.	Our research is aimed at understanding the relationship between plant growth and environmental cues such as water and gravity. Important findings include that plant roots show hydrotropism in response to moisture gradients, which, together with gravitropism, plays an important role in regulating root growth orientation in order to efficiently obtain water. We use physiological and genetical analyses to understand regulatory mechanisms of those.
Ecological Dynamics	Functional Ecology Professor HIKOSAKA Kouki Assistant Professor TOMIMATSU Hajime	We study ecology of plants mainly by analyses of plant functions such as photosynthesis, resource acquisition and use, and stress responses. Recent our interests are (1) adaptation to various environmental factors with focusing on natural variations, (2) remote sensing of plant functions, (3) modeling of plant functions, and (4) field ecology for moorlands and forests.
	Ecological Integration Professor KONDOH Michio Assistant Professor KAWATSU Kazutaka OTA Hiroshi (C)	Using mathematical and statistical models, we aim to understand the complexity of ecological systems, as well as to develop a field of “practical ecology” that enables prediction, control, and design of ecosystems. (Kondo Lab.)
Ecological Dynamics	Symbiosis Genomics Professor SATO Shusei Associate Professor MITSUI Hisayuki Assistant Professor BAMBA Masaru	The research targets are plant-microbe interaction, based on “symbiosis” in the narrow sense, and environmental interaction, based on “symbiosis” in the broad sense. We are aiming to explore complex interrelated network of organisms and the surrounding environments by using genomics approaches, such as population genomics and comparative genomics.

	Macroecology Associate Professor KASS, Jamie M. Assistant Professor MIRANDA Everton	We conduct research using big data and large-scale analyses to answer pressing questions about biodiversity, which is declining due to human-driven global change. To do this, we employ geospatial analysis and statistical modeling to predict and map species' ranges and biodiversity over space and time. Research applications include range movement due to climate change, alien species invasion risk, ecosystem service provisions, and conservation prioritization. We also develop programming tools to advance macroecological analyses.
	Watershed Ecology Associate Professor UNO Hiromi Assistant Professor FAULKS, Leanne Kay MAKINO Wataru	The nature consists of various landscape elements including forest, river, ponds, wetlands and the ocean. They are interconnected by movements of water, animals, and other materials. We study ecosystem processes and how animals live in watershed ecosystems by field observations, surveys, and experiments etc. By studying how biota live and interact with each other in natural ecosystems, we aim to better understand nature and provide essential foundational information for humans to coexist with nature.
Biodiversity Dynamics	Plant Diversity and Evolution Professor MAKI Masayuki** Assistant Professor OHYAMA Motonari ITO Takuro	Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=2552
	Marine Biodiversity Professor KUMANO Gaku KONDO Michio (C) Associate Professor MINOKAWA Takuya Assistant Professor IWASAKI Aiko MORITA Shumpei	We are studying using various kinds of marine animal inhabitants around Asamushi on animal development such as germline development, tissue/organ morphogenesis and cell differentiation, on animal diversity and evolution, and on morphologies of rarely studied animals at their critical developmental stages. We are also studying using marine organisms, such as benthos, on determining their distributions, community structures and diversities through their biological interactions and abiotic factors.
Eco-Socio Dynamics	Ecosystem Functions Visiting Professor TAYASU Ichiro Visiting Associate Professor ISHII Reichiro	We study the ecosystem functions, the evaluation of ecosystem services, and the response mechanisms of ecosystems to global environmental change from the analysis of the structure and dynamics of biological communities using stable isotope approaches and modeling techniques.
Cooperative faculties	Systems Bioinformatics Professor KINOSHITA Kengo	As in the case of the data from next generation sequencer, the experimental data are increasing year by year. The data contribute to the elucidation of life science only when it is analyzed in the correct form and made into information. In this laboratory, we will conduct research on data-driven bioinformatics that analyzes vast amounts of life science-related data, including genome omics, by making full use of data science methods such as machine learning and statistical analysis.

	Human Evolution Professor SANO Katsuhiko	We study human evolution based on analyses on macroscopic and microscopic traces on Palaeolithic artifacts remained by <i>Homo erectus</i> , Neanderthals, Denisovans, and <i>Homo sapiens</i> . Our laboratory is represented by laboratory works based on experimental traceology and field works, including excavation and survey. The experimental traceology allows us to reconstruct past human behaviors, such as hunting, butchering, hide-working, and processing of organic materials, which eventually leads to better understand how and when humans developed their cognition and technologies through time.
--	---	---

3) Molecular and Chemical Life Science

Faculty members marked with ** are scheduled to retire in March 2028.

Course	Field of Study and Faculty Members	Research Content
Chemical Biology	Analytical Bioorganic Chemistry Professor ARIMOTO Hirokazu Assistant Professor TAKAHASHI Daiki	The Arimoto Group studies small molecules that contribute to human health care. We developed AUTAC degraders that selectively degrade cytoplasmic materials via autophagy; the removal of "dysfunctional mitochondria, protein aggregates, and pathogens" utilizing AUTAC technology will contribute to the control of disease and aging. We are also developing antimicrobial agents against vancomycin-resistant strains. We utilize a variety of chemical and biological techniques, including eukaryotic and bacterial cell culture, biochemistry, molecular biology, and organic synthesis.
	Bioactive Molecules Professor ISHIKAWA Minoru Associate Professor SATO Shinichi (C) Assistant Professor TOMOSHIGE Shusuke	We study novel strategies that employ methods of organic chemistry, and molecular and cellular biology to regulate disease related proteins. An example is PROTAC (proteolysis targeting chimera) which induces degradation of a target protein through hijacking ubiquitin-proteasome system. Our research focuses on PROTAC for the treatment of neurodegenerative diseases.
	Molecular and Cellular Biology Professor OHASHI Kazumasa Associate Professor YASUMOTO Ken-ichi Assistant Professor CHIBA Shuhei	Our research focuses on the phenomenon that cells sense and respond to the external environment. We aim to elucidate the molecular mechanisms that regulate cell morphology, motility, growth, differentiation, and ordering of cell populations in mammalian cells by sensing mechanical stresses such as stiffness and force subjected to the external environment. We will also elucidate the molecular mechanisms of the cellular stress response.
	Applied Biological Molecular Science Professor TANAKA Yoshikazu Assistant Professor YOKOYAMA Takeshi	Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=2518
Molecular and Network Genomics	Microbial Genetics and Evolution Professor NAGATA Yuji Associate Professor OTSUBO Yoshiyuki Assistant Professor KISHIDA Kouhei	Some bacteria can degrade anthropogenic pollutants. We aim to comprehensively understand how such bacteria adapt and/or evolve quickly toward environmental changes by using microbiological, molecular genetic, molecular biological, protein engineering, cell biological, genomic, and ecological approaches, as well as to develop new technologies to effectively utilize unexplored microbial functions.
Molecular and Network Genomics	Plant Reproductive System Professor WATANABE Masao Assistant Professor HAYASHI Maki	During the evolutionary process, plants have established several reproductive systems suited to their environment by adjusting the balance between selfing and outcrossing in "hermaphrodites". Focusing on self-incompatibility, one of the plant reproductive systems, in our laboratory, we will elucidate the molecular mechanisms controlling selfing and outcrossing in plants with genetic and physiological methods.

	Molecular Genetics and Physiology Professor HIGASHITANI Atsushi**	We conduct molecular genetic and physiological research to elucidate gene function across various biological responses including aging, drugs, and temperature disturbances using model organisms such as cultured cells, the nematode <i>Caenorhabditis elegans</i> , and the plant <i>Oryza sativa</i> .
	Evolutionary Genomics Professor MAKINO Takashi Associate Professor ICHINOSE Toshiharu(C) Lecturer YOKOYAMA Ryusuke Assistant Professor IWASAKI Watal BESSHO Kanako BESSHO Manabu(C)	Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=45408 Visit the lab's website. https://www.lifesci.tohoku.ac.jp/evolgenomics/home-en/
	Plant Molecular Genetics Associate Professor KANNO Akira	We investigate the expression and function of the genes related to floral development and elucidate the evolutionary mechanism of floral diversity. Main research topics are "Molecular mechanism of floral architecture in orchid plant" and "Molecular mechanism and evolution of sex determination in asparagus and related species. "
	Plant Molecular and Physiological Adaptation Professor HIGASHITANI Atsushi(C) Assistant Professor TERANISHI Mika	We aim to unravel the intricate mechanisms underlying adaptive responses and resilience to environmental stress through a multidisciplinary approach, specializing in molecular cell biology and physiological analysis, to investigate the combined effects of UV-B radiation and other environmental factors such as solar visible light, temperature, and gravity, etc.
Multilevel Biomolecular Structure and Dynamics	Molecular Analysis of Biological Functions Professor TAKAHASHI Satoshi Associate Professor KAMAGATA Kiyoto OKUMURA Masaki(C) Assistant Professor ITOH Yuji	Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=2519
	Biofunctional Chemistry and Nanobiotechnology Professor MIZUKAMI Shin Associate Professor KOWADA Toshiyuki	Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=2526 Visit the lab's website. http://www2.tagen.tohoku.ac.jp/lab/mizukami/html/index.html
	Structural Mechanism Research and Development Professor YONEKURA Koji TAKAHASHI Satoshi(C) Associate Professor HAMAGUCHI Tasuku	Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory---id-45416.html

	Dynamic Structural Biology Professor NANGO Eriko Assistant Professor TAGUCHI Masahiko FUJIWARA Takaaki	<p>Targeting light-sensitive proteins and unique enzymes, we will elucidate the dynamic structures of proteins at work using the latest measurement techniques with X-ray-free electron lasers and synchrotron radiations. Furthermore, we aim to create a new protein molecule by the rational design based on the obtained dynamic structural information.</p> <p>Visit the lab's website. https://www2.tagen.tohoku.ac.jp/lab/nango/html/en/index.html </p>
Genome Informatics	Omics and Informatics Visiting Professor IKEDA Kazutaka Visiting Associate Professor YAMAKAWA Hisashi	<p>To elucidate various biological phenomena in plants and animals, we are developing technologies for the omics analysis from the genomic information to metabolites produced through the processes of transcription and translation. Furthermore, we aim to understand advanced biological phenomena at the ecosystem level by analyzing the commensal bacteria and environmental DNA.</p> <p>Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=2549 </p> <p>Visit the lab's website: https://www.kazusa.or.jp/en/</p>
Cooperative faculties	Chemical biology of Natural Product Professor UEDA Minoru	<p>Research on natural products possessing biological activity is carried out. Particular attention will be paid to the receptors and signalling, biosynthesis and metabolism of phytohormone-related compounds that exert potent effects on plants, aiming at the chemical biological control of biological systems.</p>
	Redox Biology Professor MOTOHASHI Hozumi	<p>Redox reactions play central roles in energy metabolism, signal transduction, and proteostasis. Our goal is to understand pathogenesis of age-related diseases, such as cancers and chronic inflammation, from the view point of redox regulation using biochemical and molecular biological approaches.</p>
	Bioorganic Medicinal Chemistry Professor DOI Takayuki	<p>Synthetic methods for biologically active natural products and application to the rapid synthesis of their analogues are studied to elucidate the structure-activity relationship and their target molecules. We aim to clarify the structural features necessary for the expression of activities and to discover new potent compounds.</p>
	RNA Physiology Professor WEI Fan-Yan	<p>The primary interest of our laboratory is the post-transcriptional modification of RNA in mammalian cells. We aim to elucidate the biological functions of RNA modification in the regulation of energy metabolism, protein translation, and cell signaling, and to understand how RNA modification is involved in the regulation of physiological functions in vivo and in the development of disease. We hope to apply RNA modification technology to establish new disease biomarkers and contribute to drug discovery.</p>

Notes: - Information about research in each laboratory of the Graduate School of Life Sciences, Tohoku University: <https://www.lifesci.tohoku.ac.jp/en/research/fields/>

- The campuses of the Graduate School are located in Sendai City, Aomori City (Aomori Prefecture), Kyoto City (Kyoto Prefecture), and Kisarazu City (Chiba Prefecture). The Marine Biodiversity Field is located at the Asamushi Research Center for Marine Biology belonging to the Graduate School in Asamushi, Aomori City, Aomori Prefecture. The Ecosystem Functions Field is located at the Research Institute for Humanity and

Nature, Kyoto, Japan. The Omics and Informatics Field is located at the Kazusa DNA Research Institute in Kisarazu, Chiba, Japan.