2025 Academic Year

TOHOKU UNIVERSITY
GRADUATE SCHOOL OF LIFE SCIENCES

Master's Degree Program (2-year course)
First, Second Term Entrance Examination
Student Application Guidelines

GENERAL SELECTION
SPECIAL SELECTION FOR WORKING STUDENTS
SPECIAL SELECTION FOR RETURNEE STUDENTS
SPECIAL SELECTION FOR INTERNATIONAL STUDENTS

Tohoku University Graduate School of Life Sciences
1-1-2 Katahira, Aoba-ku, Sendai 980-8577 JAPAN
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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 the 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 the life sciences and have a strong background in bioethics and environmental ethics. Therefore, we are looking for students who have a strong motivation to study the 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, Japanese citizens returning from overseas (those who have lived in another country for a long time and received their education outside of Japan), and international students. Applicants are selected based on their motivation to carry out research according to our educational goals and their specialized knowledge and qualifications.

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.

Applicants are expected to learn more about the specialized knowledge and research methods of the field they intend to pursue before enrolling.

Doctoral Degree Program (3-year course)

The general selection entrance examinations, special selection examinations for working students, and special selection examinations for international students take the form of an interview. In this interview, all applicants are required to present their past research and plans for their research after admission. Applicants are evaluated as to whether they have the specialized knowledge and qualifications necessary 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, applicants are expected to thoroughly investigate the research trends in the field they intend to pursue.

Contents

1. Departments and the Number of Students to be Accepted

Department	Course	Field of Study (Laboratory Name)	Number of Students	
			I term	II term
Department of Integrative Life Sciences	Brain and Nervous System	Neuroethology, Molecular Ethology, Brain Development, Systems Neuroscience	About 100 students	Few students for each field
	Cellular Network	Membrane Trafficking Mechanisms, Developmental Dynamics, Organelle Pathophysiology, Super-Network Brain Physiology		
	Developmental Regulation Network	Germ Cell Development (*), Cancer Biology		
	(Cooperative faculties)	Developmental Neuroscience (*), Molecular Oncology, Immunobiology		
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)	Systems Bioinformatics, Human Evolution		
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 Morecular Genetics, Plant Molecular and Physiological Adaptation		
	Multilevel Biomolecular Structure and Dynamics	Molecular Analysis of Biological Functions, Biofunctional Chemistry and Nanobiotechnology, Structural Biology (*), Structural Mechanism Research and Development, Dynamic structural biology		
	Genome Informatics	Omics and Informatics		
	(Cooperative faculties)	Chemical biology of Natural Product, Redox Biology, Bioorganic Medicinal Chemistry, Cellular Function, RNA Physiology		
		Total	106 students	

Notes: Notes: Underlined fields indicate fields of study for which collaborating faculty members are responsible.

(*) Germ Cell Development and Developmental Neurobiology fields from the Department of Integrative Life Sciences; Plant Development, Plant Reproductive Strategy and Conservation Biology fields from the Department of Ecological Developmental Adaptability Life Sciences as well as Biostructural Chemistry and Structural Biology fields from the Department of Molecular and Chemical Life Sciences, are not accepting applications.

* The number of applicants includes applicants for the self-recommendation entrance examination.

* Regarding the number of applicants for the second term: some fields may not accept applications depending on the results of the first term examination. Details will be announced on the Graduate School website by the end of September.

* The Graduate School encourages prospective students to apply to their second and third choice laboratories. When choosing a field of study, please consider not only your first choice, but also your second and third choices to broaden your perspective. Also, since the number of students accepted may be limited due to the number of positions available, please be sure to contact (e.g., set up a meeting with) faculty members in the laboratories of your choice, including those in your second and third choices, and have them explain the nature of their research to you before you apply.

2. Eligibility and Application Requirements

Applicants for the 2-year master's degree program must fall into one of the following (1) to (11) categories. Those who fall into the categories below are eligible to apply for the Special Selection Examination.

- For the Special Selection for Working Students, applicants must be working as engineers, teachers, researchers, etc. (at government offices, schools, companies, etc.) at the time of application, and keep their status after admission; also, applicants must fall into one of the following (1) to (11) categories.
- For Special Selection for Returnee Students, those who have graduated from a foreign university (including those who are expected to graduate by March 2025) and have returned to Japan within two years (including those who are expected to return to Japan by March 2025) are eligible. The applicant must have Japanese nationality and fall into one of the following (1) to (11) categories.
- For the Special Selection for International Students, applicants must be non-Japanese nationals and fall into one of the following (1) to (11) categories.
  * Only international students with a "Student" visa are eligible to apply through this selection. 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 examination.

(1) Those who have graduated or are expected to graduate from a university in Japan by March 2025.

(2) Those who have been awarded or are expected to be awarded a bachelor's degree by the National Institution for Academic Degrees and Quality Enhancement of Higher Education by March 2025.

(3) Those who have completed or are expected to complete 16 years of school education in a foreign country by March 2025.

(4) Those who have completed or are expected to complete 16 years of school education in a foreign country by taking distance learning courses offered by a foreign school in Japan by March 2025.

(5) Those who have completed or are expected to complete a curriculum of a foreign university in Japan (those who have already completed a 16-year program of school education in the relevant country) at an educational facility that is ranked within the relevant country's educational system and has been designated separately by the Minister of Education, Culture, Sports, Science and Technology (hereafter, "Minister of Education") by March 2025.

(6) Those who have been awarded or are expected to be awarded a degree equivalent to a bachelor's degree by completion of a three-year or longer course at a foreign university or another foreign school(limited to institutions that are evaluated by an organization certified by the relevant foreign government or related organization for the overall status of its education and research activities, etc., or that are separately designated by the Minister of Education as equivalent to this) by March 2025. This includes completion of a course in Japan by taking distance learning courses offered by a school in a foreign country and completion of a course at an educational facility designated in the school education system of the foreign country as specified in the previous category.

(7) Those who have completed a professional training college course (limited to at least 4-year courses that meet other criteria specified by the Minister of Education) separately designated by the Minister of Education on or after the date specified by the Minister of Education, or those who are expected to complete the course by March 2025.

(8) Those who have been certified by the Minister of Education.

(9) Those who have been enrolled in a university for 3 years or more by the end of March 2025; those who have completed 15 years of school education in a foreign country; those who have completed 15 years of school education in a foreign country by taking distance learning courses offered by a foreign school in Japan; or those who have completed a foreign university course in Japan and have been recognized by the Graduate School as a person who has acquired the required credits with excellent grades. Limited to the educational institutions recognized in the school education system of the relevant foreign country, which is separately designated by the Minister of Education and whose graduates are considered to have completed 15 years of school education in the relevant foreign country.

(10) Those who have been enrolled in the graduate school of another university through the early university entrance in accordance with the School Education Act, Article 102, Item 2, and have been recognized by the Graduate School as having the academic ability sufficient to pursue education at the Graduate School.

(11) Those who have been individually screened for admission by the Graduate School and have been recognized as having the equivalent or higher academic ability than a university graduate, and who will reach the age of 22 by the end of March 2025.

Notes:

1. **Applicants should contact the faculty member from whom they intend to receive academic advising in advance to obtain their approval of the application.**
2. Applicants who fall under (6) of the application requirements are required to contact the Academic Affairs Section by May 30, 2024 (Thu) for the first term and September 12, 2024 (Thu) for the second term entrance examination.
3. Applicants who fall under (9), (10), or (11) of the application requirements are required to undergo the preliminary screening described below and apply according to the results.
4. Applicants who “have been enrolled in a university for 3 years or more" in (9) of the application requirements do not include prospective university graduates or former graduates.

Notes on the application requirements (9) regarding those, who are enrolled in a university for three years or more.

(1) To be eligible to apply under this category, the applicants must be within the top 5% of their academic performance in their home department or faculty, have completed all specialized courses or equivalent required for graduate study, and have passed the following pre-application screening to be held by the Graduate School.

Submit the following documents to the Academic Affairs Section of the Graduate School of Life Sciences by registered mail or in-person.

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 up to the third year and certificate of enrollment or certificate of completion from the current university or foreign educational institution of higher education
c. Courses taken in the third year of university or courses taken at a higher education institution in a foreign country (e.g., a copy of the course list, free format)
d. Envelope for notification of screening results (standard size, with applicant's name and address written on it, and a stamp of 460 yen)

(2) Those who successfully pass the screening and wish to enroll in the Graduate School must promptly notify their home university of their intention to withdraw from the university at the end of March 2025 and submit a certificate of withdrawal, issued by their home university, at the time of enrollment procedures.

Notes on the application requirements (10) regarding those who have been enrolled in the graduate school of another university in accordance with the School Education Act, Article 102, Item 2.

(1) To be eligible to apply under this category, the applicants must have been admitted to the graduate school of another university through the early university entrance and have passed the following pre-application screening to be held by the Graduate School.

Submit the following documents to the Academic Affairs Section of the Graduate School of Life Sciences by registered mail or in-person.

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 from the university (undergraduate course)
c. Courses taken at the graduate school (e.g., a copy of the course list, free format) and certificate of enrollment
d. Envelope for notification of screening results (standard size, with applicant's name and address written on it, and a stamp of 460 yen)

(2) Those who successfully pass the screening and wish to enroll in the Graduate School must promptly notify their home university of their intention to withdraw from the university at the end of March 2025 and submit a certificate of withdrawal, issued by their home university, at the time of enrollment procedures.

Notes on the application requirements (11) regarding those who have not graduated from a university.

To be eligible to apply under this category, the applicants must be graduates of junior colleges, colleges of technology, special training colleges, or other educational institutions without a bachelor's degree, and have passed the following pre-application screening to be held by the Graduate School.

Submit the following documents to the Academic Affairs Section of the Graduate School of Life Sciences by registered mail or in-person.

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 (from the head of the institution applicant graduated from)
c. Other materials that may be used as a reference for the review (e.g., academic thesis or other equivalent materials)
d. Envelope for notification of screening results (standard size, with applicant's name and address written on it, and a stamp of 460 yen)

- The deadline for submission of the above-mentioned documents is May 30, 2024 (Thu) for the first term and September 12, 2024 (Thu) for the second term entrance examination. * Must be received by the Academic Affairs Section of the Graduate School by the deadline.
- The screening results will be sent by registered mail by June 14, 2024 (Fri) for the first term and September 27, 2024 (Fri) for the second term entrance examination. Please note that the delivery date may be changed due to postal conditions.

3. Application Period

(1) Applicants are required to carefully read this application guide and upload the application documents to the TAO application registration website (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
First Term: From Monday, June 24, 2024 to Friday, July 5, 2024 at 17:00 (JST)
Second Term: From Monday, October 7, 2024 to Thursday, October 17, 2024 at 17:00 (JST)

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

First Term: From Monday, June 24, 2024 to Friday, July 5, 2024 (If mailed, must arrive no later than Friday, July 5).

Second Term: From Monday, October 7, 2024 to Thursday, October 17, 2024 (If mailed, must arrive no later than Thursday, October 17).

(*) In case of submission directly at the office of the Academic Affairs Section, documents can be accepted 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 Documents and 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 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. 6.)

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. 7 "Examination fee").

If you are applying from overseas, please contact the Academic Affairs Section of the Graduate School of Life Sciences by email.

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, check the **"TAO Application URL"** for the entrance examination you wish to apply for on the Graduate School of Life Sciences Entrance Examination Information website, and register your application by entering information and uploading the designated documents at the **TAO Application URL**.
Graduate School of Life Sciences Entrance Examination Information Website:
https://www.lifesci.tohoku.ac.jp/admission/

・The "TAO Application URL" on the Admission 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.

・The upload of certificates and other documents is also required at the time of application registration. Please be sure to convert your documents to PDF or another designated format before uploading.

・A temporary save option is available, so please use this function, for example, to make a final confirmation before submitting your application.

4) Submission of original English test scores

For English scores, in addition to uploading the scores to TAO, "original hard copies of designated scores" must also be submitted. Please make arrangements in advance to have them delivered by the end of the application period.

For details on the required scores and how to send them, please refer to No. 11 of (2) Application Materials.

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

The form will be available on the Graduate School of Life Sciences website at the Admissions Information page (see below) depending on the application period, so please complete the form. 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/admission/

(2) Application documents

Notes:

1) Please contact your prospective supervisor in the field of your interest in advance to let them know that you plan to apply by self-recommendation. Be sure to speak with the professor enough to fully confirm and mutually understand the research activities and research content that can be conducted in that laboratory. Obtain his/her approval before applying (see Application Form No. 6).

2) There is a deadline for application. 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	Statement of reasons for your application	Please prepare a personal statement with your reasons for applying, future goals, and self-promotion, and upload it in pdf format to the TAO. Precautions for Preparation - Please write horizontally on a one-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 1,000 (500 words in English). Example Name: John Smith Desired Field of Study: XXX I am XXXX (write about a reason for applying, etc.) XXXX (Font size should be 11-12 pt, approximately 1,000 Japanese characters (or 500 words in English))
4	Transcript of academic records	Upload the academic transcripts in PDF format prepared by the head of your current university (department) to the TAO application registration site. (For non-university transcripts, please upload the transcripts prepared by the head of your institution.) The original hard copy of the latest version of this certificate (in paper form) must be submitted during the enrollment process (in March 2025).
5	Certificate of expected graduation	Upload the appropriate certificate from the following from the TAO according to your most recent education. (Upload in PDF format) (1) Certificate of expected graduation for applicants who are expected to graduate from a university undergraduate program. (2) Certificate of acceptance of application for a bachelor's degree or a certificate of application for a bachelor's degree from the principal of the college of technology if the applicant is expected to receive a bachelor's degree from the National Institution for Academic Degrees and University Evaluation. The original hard copy of the latest version of this certificate (in paper form) must be submitted during the enrollment process (in March 2025).
6	Email confirmation of application approval from prospective supervisor (see note)	Upload **an email** in A4 PDF format to the TAO confirming that you have received approval for your application from your prospective supervisor(s). - 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 (First or Second Term), Field of study, and name of prospective supervisor

- Please refer to the example of the email below.

--Sample email sent by a candidate to a potential supervisor—for the first term of the entrance examination

Subject: Regarding application for the first term of the entrance examinations for the Graduate School of Life Sciences at Tohoku University

Professor <professor's name>

My name is <applicant's name> from the Faculty of ○○, ○○ University.
(Reason for application, etc.)
I would like to apply to your laboratory for the first term entrance examination as follows.

Field of study: ○○
Expected supervisor: ○○Professor (or Associate Professor)

Applicant's email signature (name, affiliation, contact information, etc.)

--Sample of a reply email from a prospective supervisor to an applicant -- (Note)

Dear Mr. <applicant's name>

I, <professor's name>, hereby give my approval to take the first term entrance examination.

Prospective Academic Advisor: ○○
Field of study: ○○

Email signature of prospective academic advisor (name, affiliation, contact information, etc.)

Note: The reply email from your prospective advisor is a response to your application and does not guarantee admission to the Graduate School of Life Sciences of Tohoku University.

Please contact the faculty members (Associate Professor or higher) you wish to be your advisor one by one, do not send emails to several faculty members at the same time.

<table>
<tr>
<td>7</td>
<td>Examination Fee and Confirmation of Examination Fee Payment</td>
<td>(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.)
Please be careful not to make any mistakes in the information below.

Payment details:
<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>
Notes
- When making a bank transfer, please enter the <u>name of the person who will be taking the examination</u>. Other information (telephone number, etc.) may be entered by the person actually 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 <u>name of the person taking the examination</u> 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.lifesci.tohoku.ac.jp/admission/schedule/
- Japanese Government Scholarship (MEXT) students are not required to pay this fee.

(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.)</td>
</tr>
</table>

8	Certificate of residence (Jūminhyō)	Only for foreigners residing in Japan (whose stay exceeds 90 days), - Upload the certificate in PDF format from the TAO. - The certificate must be issued within 3 months prior to the date of application. - 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) issued in March 2025 must be submitted during the enrollment procedures (in March 2025).
9	Certificate of research period	Applicants applying for the “Special Selection for Working Students” should upload this document to TAO in PDF format. 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.)
10	Permission to take an examination	Applicants who are working and wish to enroll without a leave of absence from work should this document in the PDF format to the TAO. (Free format)
11	TOEFL®TEST(*) TOEIC®TEST(**) IELTS or Duolingo English Test score (Note 1) (Note 1) Grades for Foreign Language (English) will be based on the grades	All applicants are required to submit TOEFL®, TOEIC®, IELTS or Duolingo English Test score. Tests taken within the two years prior to the first day of the entrance examination are considered valid. Please 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. Multiple score submissions are allowed. (e.g. one TOEIC® L&R score, one TOEFL iBT® score) **(1) Eligible Scores** ➢ **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. ➢ **TOEFL iBT®** (including Home Edition) Group TOEIC ITP® test score will not be accepted. Official Score Report must be submitted. The 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. ➢ **IELTS** (Academic Module only) Test Report Form must be submitted.

	on this score sheet. *TOEFL is a registered trademark of Educational Testing Service (ETS). This material has not been reviewed or approved by ETS. ** The "TOEFL iBT® Test" is referred as the "TOEFL iBT®" in these guidelines.	➢ **Duolingo English Test Score** The certificate will be issued only on the Internet. Please complete the necessary procedures at the time of taking the examination (refer to (3) below). **(2) Uploading English Scores to TAO** - If you have the official score sheet in hand, upload (submit) it to TAO. (File format: PDF, PNG, JPEG or JPG) - If you do not have the official score sheet For TOEFL iBT® and Duolingo English Tests, upload your personal copy of the score (or a screenshot of the Internet confirmation screen for test takers, etc.) as a PDF or image file to TAO. If you have difficulty submitting the official score within the application period, refer to (Note 2) below. **(3) Submission and Mailing of Original English Scores (Note 2)** Please prepare and arrange for delivery of the official score sheet by the application deadline, as follows. ➢ **TOEIC® L&R** The "Official Score Certificate" will be mailed directly to you, so please mail the original hard copy to the Graduate School of Life Sciences. The "Digital Official Score Certificate" will be available on the TOEIC application site in PDF format, so please upload this PDF file to TAO. ➢ **TOEFL iBT®** Please complete the Official Score Report mailing procedures at ETS. The DI code for ETS is **B430** (Graduate School of Life Sciences, Tohoku University). 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. ➢ **IETS** Please send the original Test Report Form (official transcript) by mail. ➢ **Duolingo English Test** After taking the Duolingo English Test, you will be asked to select the school to which you wish to apply. Please select the Graduate School of Life Sciences to complete the issuance process. 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.

		(Note 2) If you have difficulty submitting the designated score by the application deadline (1) If you have difficulty submitting the official score by the application deadline, please upload the examinee's score (personal verification) when submitting the application through TAO. In addition, please submit a printed copy of this score by mail. (Must be delivered during the application period) (2) If the original eligible official score (in paper form) is not submitted by the below deadline, the applicant will not be allowed to take the examination. The examination fee will not be refunded. First Term: Must arrive no later than at 17:00 on July 23 (Tue) Second Term: Must arrive no later than at 17:00 on November 1 (Fri) (3) The original official score (in paper form) to be submitted must be the same test score (same type of test, same test administration date, same score and rating) as the examinee'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.
12	Filling out the "Application Confirmation Form" for the Graduate School of Life Sciences	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 https://www.lifesci.tohoku.ac.jp/admission/

(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. Application documents will not be returned.

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

First Term

Selection is based on a review of application materials and an online interview.

1) Date, type, and place of the examination

Date	Time	Examination type	Place	Other
August 1 (Thu) – August 3 (Sat)	From 9:00 (Applicants will be notified about the time of their exam after the application)	Online Interview (Presentation using presentation software, and Q&A session that includes evaluation of basic academic skills and academic performance)	A private room with internet access must be arranged by the applicant	Before the start of the examination, you will be asked to use a camera to show the room and your surroundings. Please be sure to have nothing (e.g., dictionaries and notes) except the designated items close to you. No one is allowed to enter your room during the exam.

Applicants are required to make a 7-minute presentation (in Japanese or English) about their academic (work) activities up to the time of application and about their research plans after entering the Graduate School, using a computer or other device connected to the online video conference system via a URL designated by the Graduate School of Life Sciences. The presentation will be followed by a question-and-answer session. In the question-and-answer session, in addition to several questions on basic academic skills, specialized knowledge will be evaluated through a discussion of the content of the presentation. Details will be announced separately after the application.

In order to be sure that the examination will be conducted without problems on the actual day of the examination, a preliminary connection test will be held on July 20 (Sat). Details will be provided separately after application.

2) Basic academic skills examination

In the first term entrance examination applicants are required to pass an online examination on basic academic skills. Please select one subject from the following list and enter it in the designated box on the application form with the permission of your academic advisor in the field of your first choice. Applicants will be asked several questions on fundamental knowledge at the undergraduate level from the subject they have selected.

Subject	Topics for Questions
Organic chemistry	Structures, reactions, and synthesis of organic compounds
Biochemistry (Including biophysical chemistry)	Structures and properties of biomolecules, proteins and enzymes, metabolism and bioenergy production and enzyme reaction kinetics
Molecular and cell biology	Regulation of gene replication and expression, genetic engineering, cell division, cell cycle, cell structures, membrane transport and traffic, signaling

Animal developmental biology	Germ cells and fertilization, body axis formation, developmental fate determination, morphogenesis, cell differentiation and tissue maintenance mechanisms, comparative and evolutionary developmental biology
Plant development and physiology	Development, growth and differentiation, propagation of plant, plant hormones, environmental responses
Brain and neuroscience	Neurotransmission and neurointegration, sensory acceptance and motor expression, development and plasticity of nervous system, higher brain function and cognitive science
Evolutionary biology	Genetic variation within/between population, change of gene frequency within population, natural selection and genetic drift, adaptiogenesis by natural selection, molecular phylogeny, speciation and crossbreeding
Ecology	Ecosystem, crowd, population dynamics, interaction between organisms, substance production, substance circulation, resource utilization, environmental change, material production and cycling
Microbiology	Structures, classification, inheritance, genome, metabolism, ecology, and application of microorganisms

3) Regarding Foreign Language (English) Grades

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.

Second Term

Selection is based on a review of application materials and an online interview.

1) Date, type, and place of the examination

Date	Time	Examination type	Place	Other
November 4 (Mon, national holiday) – November 5 (Tue)	From 9:00 (Applicants will be notified about the time of their exam after the application)	Online Interview (Presentation using presentation software, and Q&A session that includes evaluation of academic performance)	A private room with internet access must be arranged by the applicant	Before the start of the examination, you will be asked to use a camera to show the room and your surroundings. Please be sure to have nothing (e.g., dictionaries and notes) except the designated items close to you. No one is allowed to enter your room during the exam.

Applicants are required to make a 10-minute presentation (in Japanese or English) about their academic (work) activities up to the time of application and about their research plans after

entering the Graduate School, using a computer or other device connected to the online video conference system via a URL designated by the Graduate School of Life Sciences. The presentation will be followed by a 10-minute question-and-answer session.

In order to be sure that the examination will be conducted without problems on the actual day of the examination, a preliminary connection test will be held on October 26 (Sat). Details will be provided separately after application.

3) Regarding Foreign Language (English) Grades

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

The announcement of successful applicants will be posted on the Japanese version of the Graduate School of Life Sciences website. The results will also be sent to the applicant by registered mail. The Graduate School of Life Sciences will not respond to any inquiries regarding the results.

Scheduled date of announcement

First Term: Thursday, August 9, 2024, around 17:00

Second Term: Thursday, November 14, 2024, around 9:30

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

7. Time of Enrollment

The date of enrollment for the successful applicants will be April 1, 2025.

8. Expenses Required at the Time of Enrollment

The expenses required for admission are as follows.

(1) Entrance fee: 282,000 yen (expected)

(2) Tuition for the first semester 267,900 yen (535,800 yen per year) (expected)

Note 1: The amounts shown above are estimated 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 2025 (scheduled). The information about the application for waiver and deferment is available at the Financial Support Section, Student Support Division, Education and Student Support Department, Tohoku University.

(Kawauchi-Kita Campus, Education, and Student Support Center, 1F, Window 4, Tel: 022-795-7816, Open from 8:30 to 17:15)

For more information, please visit the Tohoku University website.

Tohoku University website (Entrance and tuition fee waivers and other information):

https://www2.he.tohoku.ac.jp/menjo/

9. Long-Term Course Program

Those who wish to obtain a master's degree in life science by systematically completing the educational program over a certain period, exceeding the standard course length of two years in the Master's 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 four 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 (2 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. In the event of a revision of the tuition, the new tuition will be used from the time of revision.

- Annual tuition for general students with a standard term of study of 2 years: 535,800 yen
- Annual tuition fee for students with 3 years of study permitted: 357,200 yen
- Annual tuition fee for students with 4 years of study permitted: 267,900 yen

10. 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, and is handled in accordance with the "Personal Information Protection Regulations of Tohoku University National University Corporation" and other related regulations of Tohoku University for the protection of personal information.

(2) Personal information such as exam results used for admission selection will be used for the following purposes: selection of applicants, admission procedures, pre-admission education, follow-up surveys, student support after admission (scholarships, tuition waiver, health care, etc.), educational purposes such as academic guidance, and tuition related matters, as well as for surveys (improvement of entrance examinations, research, analysis of application trends, etc.) and research. (For admitted students, this includes post-admission analysis of personal information.)

(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.

11. Other

(1) Application documents and examination fee 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 May 30, 2024 (Thu) for the first term, and by August 28, 2024 (Wed) for the second term of examination 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/

May 2024

Graduate School of Life Sciences,

Tohoku University

12. 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 technics 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

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.)

	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 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 Katsuhiro	We study human evolution based on analyses on macroscopic and microscopic traces on Palaeolithic artifacts remained by Homo erectus, Neanderthals, Denisovans, and Homo sapiens. 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

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 Caenorhabditis elegans, and the plant Oryza sativa.
	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 Associate Professor HIDEMA Jun 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	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. Visit the lab's website. https://www2.tagen.tohoku.ac.jp/lab/nango/html/en/index.html
Genome Informatics	**Omics and Imformatics** Visiting Professor IKEDA Kazutaka Visiting Associate Professor YAMAKAWA Hisashi	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. Laboratories in Graduate School of Life Sciences website https://www.lifesci.tohoku.ac.jp/en/research/fields/laboratory.html?id=2549 Visit the lab's website. https://www.kazusa.or.jp/en/
Cooperative faculties	**Chemical biology of Natural Product** Professor UEDA Minoru	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.
	Redox Biology Professor MOTOHASHI Hozumi	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.
	Bioorganic Medicinal Chemistry Professor DOI Takayuki	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.

	RNA Physiology Professor WEI Fan-Yan	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.

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.