

October 2023
April 2024
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For reference

Graduate Institute for Advanced Studies, SOKENDAI
[Physiological Sciences]
Application Guidelines

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The following Application Guidelines in English are provided for the purpose of non-Japanese Applicants' convenience only. In the event of any inconsistency between the Japanese Application Guidelines and the English version, the Japanese version shall prevail.

Applicants are required to obtain a booklet of Application Guidelines to start the application procedure. Please contact the address below to ask for a booklet or any further information.

Please make sure to check the changes in application guideline due to COVID-19:
<https://www.soken.ac.jp/en/news/emargency/20221122.html>

[Contact Information]

Student Affairs Section, Academic and Student Affairs Division
The Graduate University for Advanced Studies, SOKENDAI
Shonan Village, Hayama, Miura, Kanagawa 240-0193 JAPAN
E-mail: gakusei@ml.soken.ac.jp
Telephone number +81-46-858-1525/1526

I . Outline: Graduate Institute for Advanced Studies

Admission Policy

<What SOKENDAI expect of our grad students>

The Graduate University for Advanced Studies, SOKENDAI, seeks students who have a strong interest in research, who constantly hone their abundant intellect and sensitivity with the aim of conducting research that will open up a new era, while taking a “bird's-eye view” of the entire field of study, and who have the will and enthusiasm to be active on the international stage.

<Basic policy for the selection of our grad students>

In selecting students for admission, SOKENDAI places importance on basic academic ability and logical thinking ability to actively promote research in the cutting-edge 20 research institutes affiliated to SOKENDAI.

In order to properly judge such abilities, various selections will be made according to the respective fields of specialization.

About SOKENDAI

<https://www.soken.ac.jp/en/features/>

Faculty Directory

<https://www.soken.ac.jp/en/faculty-directory/index.html>

Course

<https://www.soken.ac.jp/en/education/curriculum/course/>

Requirements for Graduation

<https://www.soken.ac.jp/en/education/curriculum/requirement/>

Degree: Apply to Doctor (Katei-Hakase)

<https://www.soken.ac.jp/en/education/degree/doctor/index.html>

II. Five-year Doctoral Program: Application Procedures and Important Notes

1 Number of Students Accepted

Program	Number of Students Accepted	
	April Admission	October Admission
Informatics	Around 8	A few
Statistical Science	Around 2	A few
Particle and Nuclear Science	Around 6	A few
Accelerator Science	Around 2	A few
Astronomical Science	Around 5	
Fusion Science	Around 3	A few
Space and Astronautical Science	Around 4	A few
Molecular Science	Around 7	
Materials structure Science	Around 2	A few
Polar Science	Around 2	
Basic Biology	Around 5	A few
Physiological Sciences	Around 3	A few
Genetics	Around 6	A few
Integrative Evolutionary Science	Around 3	A few
Total	58	

2 Qualifications for Application

Applicants must fulfill one of the following conditions

Applicants who are not required to have qualification screening;

- (1) Applicants who have graduated or are expected to graduate from a Japanese university specified in Article 83 of the School Education Law by the preceding month of enrollment.
- (2) Applicants on whom a Bachelor's degree has been conferred or is expected to be conferred by the preceding month of enrollment in accordance with Article 104, Paragraph 4 of the School Educational Law.

*1

- (3) Applicants who have completed or are expected to complete 16-year course of school education in a foreign country by the preceding month of enrollment.
- (4) Applicants who have completed or are expected to complete 16-year course of school education in a foreign country by taking the correspondence courses provided by a school in said foreign country while residing in Japan by the preceding month of enrollment.

- (5) Applicants who have completed or are expected to complete a program in an educational institute in Japan designated separately by the Minister of Education, Culture, Sports, Science and Technology, that provides courses of a foreign university within the 16-year school education of said foreign country, by the preceding month of the enrollment. This applies solely to those who have completed 16-year course of school education in said foreign country.
- (6) Applicants who have been conferred or are expected to be conferred a degree equivalent to a Bachelor's degree by the preceding month of enrollment by completing an educational course of three or more years in a foreign university or in a foreign educational institute; which shall be evaluated by an organization approved by a relevant official institution in the country for their education and research activities, or recognized as so by the Minister of Education, Culture, Sports, Science and Technology. The course shall include a correspondence course which enables students to study in Japan by a university or an educational institute which is approved by the educational system of the country and satisfy the above requirements.
- (7) Applicants who have completed or are expected to complete the specialized course of a vocational school designated separately by the Minister of Education, Culture, Sports, Science and Technology in accordance with Enforcement Regulation of the School Education Law, Article 155, paragraph 1, item 5 (limited to courses for which the term of study is four years or more, and which satisfies the standards determined by the Minister of Education, Culture, Sports, Science and Technology) on or after the date determined by the Minister of Education, Culture, Sports, Science and Technology, or by the preceding month of enrollment.
- (8) Applicants who are designated by the Minister of Education, Culture, Sports, Science and Technology in accordance with Enforcement Regulation of the School Education Law, Article 155, paragraph 1, item 6 (i.e., Ministry of Education Notification number 5, 1953) *2

Applicants who are required to have qualification screening before the general application can be submitted;

- (9) Applicants who fulfill any of the following provisions (a) to (c) below, and have been recognized by SOKENDAI as having acquired the specified credits with excellent results;
 - (a) Applicants who have completed 15-year course of school education in a foreign country by the end of preceding month of enrollment,
 - (b) Applicants who have completed 15-year course of school education in a foreign country by taking the correspondence courses provided by a school in said foreign country while residing in Japan,
 - (c) Applicants who have completed or are expected to complete a program in an educational institute in Japan designated separately by the Minister of Education, Culture, Sports, Science and Technology, that provides courses of a foreign university within the 15-year school education of said foreign country, by the preceding month of the enrollment. This applies solely to those who have completed 15-year course of school education in said foreign country.
- (10) Applicants who have been or will have been enrolled in a Japanese university specified in Article 83 of the School Education Law for at least three years by the end of preceding month of enrollment, and have been recognized by SOKENDAI as having acquired the specified credits of said university with excellent results.

- (11) Applicants who have entered a graduate school other than SOKENDAI in accordance with the Article 102, paragraph 2 of the School Education Law, and have been recognized by SOKENDAI as having the appropriate academic ability to follow the content of graduate coursework.
- (12) Applicants who have been recognized as having academic ability equivalent to a university graduate or higher by the individual screening of Admission Qualifications of SOKENDAI, and attain the age of 22 by the end of preceding month of enrollment. *3

*1 Applicants to whom the provision (2) above apply are those on whom a Bachelor's degree has been conferred or are expected to be conferred by National Institute for Academic Degrees and Quality Enhancement of Higher Education (formerly, National Institution for Academic Degrees and University Evaluation).

*2 Applicants to whom the provision (8) above apply are those who have graduated or are expected to graduate from a university under Old University Ordinances, or Daigakko under orders for organization and acts of establishment of government ministries or agencies.

*3 Applicants to whom the provision (12) above apply are those who have graduated or are expected to graduate from junior college, technical college, vocational school, other schools, Japan campus of foreign university, foreigners' school in Japan and other educational institutes, and who have been recognized by SOKENDAI as having academic ability equivalent to a university graduate or higher by individual screening.

If you have any questions regarding the qualification for admission, please contact the Student Affairs Section (E-mail: gakusei@ml.soken.ac.jp or telephone no.: +81-46-858-1525/1526) in advance.

3 Qualification Screening for Application

Applicants who intend to apply under the provisions (9) to (12) in "2 Qualifications for Application" are required to submit the following documents to the Student Affairs Section by the designated deadline. Application documents shall be withheld until the qualification screening is completed.

(1) Documents Required for Qualification Screening for Application

(a) Application for Certifying Applicant's Qualification (Attached **Form 7-1**)

(b) Application documents (as described in "5 Qualifications for Application" below)

Examination fee, however, should be paid after application qualification is approved.

(c) Other documents required by this program. For details, please refer to the program office.

(a), (b) and (c) above must be submitted all together.

(2) Application Period for Qualification Screening

(Only for the applicants who intend to apply under the provisions (9) to (12) in "2 Qualifications for Application")

Application Period		
First round	October 2023 Admission April 2024 Admission	June 5 (Monday) to June 8 (Thursday), 2023
Second round	April 2024 Admission October 2024 Admission	November 6 (Monday) to November 9 (Thursday), 2023

The application must arrive no later than the last day of the application period without fail.

It must be received during 09:00~12:00, 13:00~17:00 on weekdays of the application period.

(3) Procedure for Qualification Screening

The complete set of application documents should be sent by postal mail in a commercially available envelope (33cm x 24cm) with the prescribed label in the booklet pasted. Please be sure to send it by registered express mail. Applicants should write "Application Documents and Application for Certifying Applicant's Qualification Enclosed" in red ink on the face of the envelope. The application must reach SOKENDAI no later than the last day of the application period.

(4) Result of Qualification Screening for Application

The result of Qualification Screening for Application shall be notified prior to the application period. Applicants who have been approved by the screening should send in the payment for the examination fee in accordance with **Form 8**. After remittance is completed, **Form 8** on which the remittance receipt is attached should be submitted.

4 Application Procedure

Applicants who intend to apply under the provisions (1) to (8) in "2 Qualifications for Application" are required to submit the following documents to the Student Affairs Section by the designated deadline.

(1) Application Period

Application Period		
First round	October 2023 Admission April 2024 Admission	June 29 (Thursday) to July 5 (Wednesday), 2023
Second round	April 2024 Admission October 2024 Admission	November 30 (Thursday) to December 6 (Wednesday), 2023

The application must arrive no later than the last day of the application period without fail.

It must be received during 09:00~12:00, 13:00~17:00 on weekdays of the application period.

(2) Application Method

In principle, the complete set of application documents should be sent by postal mail in a commercially available envelope (33cm x 24cm) with the prescribed label in the booklet pasted. Please be sure to send it by registered express mail. The application must reach SOKENDAI no later than the last day of the application period. Please note that application documents will NOT be accepted by any parent institute or program office.

(Note)

Before submitting, please be sure to fill in and enclose all the necessary documents.

Please allow enough time to send the application documents, giving consideration to mail delivery conditions and the case of insufficient documents.

Mailing address:

Student Affairs Section, Academic and Student Affairs Division
The Graduate University for Advanced Studies, SOKENDAI
Shonan Village, Hayama, Miura, Kanagawa 240-0193 JAPAN
Telephone number +81-46-858-1525/1526

5 Application Documents

Please read through the “Important Notes for Applicants” beforehand. Also, application forms must be completed with a black or blue pen or ballpoint pen (erasable pens are not acceptable).

(1) Application form and admission ticket for the examination (**Form 1-A**)

Please attach two identical photographs (4.5cm by 3.5cm taken within the past three months, upper body, full-faced with no hat) on **Form 1-A**. Please read through the application guidelines and sign your name in agreement with the contents.

(2) Academic transcripts (original)

(a) Applicants who intend to apply under the provision (1) in “2 Qualifications for Application” should submit academic transcripts from the undergraduate school. In case any of the credits was approved after transferred to the undergraduate school, academic transcripts from the technical college or other college are also required.

(b) Applicants who intend to apply under the provision (2) in “2 Qualifications for Application” should submit all the academic transcripts concerning the Bachelor’s degree.

(c) Applicants who intend to apply under the provisions (3) to (9) in “2 Qualifications for Application” should submit the academic transcripts from the foreign undergraduate school.

(d) Applicants who intend to apply under the provisions (10) to (12) in “2 Qualifications for Application” should submit the academic transcript from their final academic background.

(3) Certificate of (expected) graduation (original)

(a) Applicants who intend to apply under the provision (1) in “2 Qualifications for Application”, should submit the certificate of graduation from the university which a Bachelor’s degree has been conferred from.

(b) Applicants who intend to apply under the provision (2) in “2 Qualifications for Application”, should submit the certificate from National Institute for Academic Degrees and Quality Enhancement of Higher Education (formerly, National Institute for Academic Degrees and University Evaluation).

(c) Applicants who intend to apply under the provisions (3) to (9) in “2 Qualifications for Application”, should submit the certificate of (expected) graduation from the foreign undergraduate school.

(d) Applicants who intend to apply under the provision (10) in “2 Qualifications for Application”, should submit the school-certificate, and applicants who intend to apply under the provisions (11) and (12) in “2 Qualifications for Application”, should submit the certificate of graduation of their final academic background.

(4) Statement of Purpose (**Form 2**)

Applicants who apply to a second-choice program should copy and prepare the form for the second-choice program separately.

(5) Examination fee of 30,000 yen

For payment details, please refer to **Form 8**. MEXT scholarship students do not have to bear the examination fee, however, they need to submit a certificate of MEXT scholarship student status.

(6) Recipient’s address labels (**Form 9**)

(7) TOEFL/TOEIC/IELTS score

Please select how to submit your English scores on **Form 13-1**. Refer to “Important Notes for Applicants”.

(8) Request for “Hakase (IGAKU)”

Please select whether you are willing to request for the doctoral degree “Hakase (IGAKU)” or not on **Form 18**.

(9) Envelope for Admission ticket for the examination

Applicant's name, address and zip code (postal code) should be written on the prescribed envelope (attached to the Application Guidelines), and 674 yen of postage stamp should be affixed.

(10) Curriculum Vitae (**Form 1-2**, only for international applicants and Japanese applicants who have received their education outside Japan)

(11) Documents certifying the applicant's research abilities, such as thesis, research report and other materials in which research capabilities are indicated.

Applicants who apply to a second-choice program should submit another set of copy of the documents for the second-choice program separately.

(12) Letter of Recommendation

Applicants intend to apply under the provision (1) to (8) in “2 Qualifications for Application” are not required the Letter of Recommendation, and who intend to apply under the provision (9) to (12) in “2 Qualifications for Application” shall refer to “Important Notes for Applicants”.

(13) Permission for Studying While in Employment (**Form 6**)

Applicants who are currently employed full-time are required to submit Permission for Studying While in Employment (**Form 6**). In case the permission cannot be obtained or the applicant intends to resign before enrollment, s/he may instead submit a statement of reason with her/his signature.

(14) Confirmation Letter regarding the Applicability of the Specific Categories for Compliance with Article 25(1) and (2) of the Foreign Exchange and Foreign Trade Act (**Form 10**)

Applicants residing in Japan (including international applicants who have been in Japan for 6 months or who have been employed in Japan) are required to submit **Form 10**. Please refer to the simple check flow chart (*) to complete the form. For details, please contact the Research Coordination Section. [E-mail: kenkyo@ml.soken.ac.jp]

* <https://www.soken.ac.jp/en/admission/file/tokuteiruikei-E.pdf>

(15) A copy of Residence Card (international applicants residing in Japan) or

A copy of passport (international applicants residing outside Japan at the time of application)

Notes:

- i. Incomplete documents shall not be accepted. No documents shall be returned.
- ii. In case the applicant's name has changed after marriage, etc., a copy of family register should be attached.
- iii. **Form 2** is also downloadable at our website.

https://www.soken.ac.jp/en/admission/application_info/ps/index.html

- iv. Application documents should be written in Japanese or English. If you submit the certificate neither in Japanese nor English, please also attach the certificate in Japanese or English.

6 Screening Procedures

Screening will be conducted based on submitted application documents and results of academic tests. For the details of the screening methods for this program, please refer to “Important Notes for Applicants”.

If you apply to more than two programs, please note that screening is conducted individually, and the date or venue may differ depending on the screening.

Examination Date		
First round	October 2023 Admission April 2024 Admission	August 17 (Tuesday) and August 18 (Friday), 2023
Second round	April 2024 Admission October 2024 Admission	January 16 (Tuesday) and January 17 (Wednesday), 2024

(Note) Detailed information about the time and venue of the examination will be provided with the admission ticket for the exam. In case the ticket shall not be delivered one week prior to the date of examination, please contact the Student Affairs Section. Please see the following website for the delivery schedule of admission ticket.

https://www.soken.ac.jp/en/admission/application_info/ps/index.html

Venue of the examination

Program	Location and Directions
Physiological Sciences	<p>• The entrance examination will be conducted through the Internet remotely.</p> <p>National Institute for Physiological Sciences 38 Nishigonaka, Myodaiji, Okazaki, 444-8585 Seven-minute walk from Higashi-Okazaki Station (Nagoya Railway, Meitetsu).</p>

7 Announcement of Results

Notification		
First round	October 2023 Admission April 2024 Admission	Early September 2023
Second round	April 2024 Admission October 2024 Admission	Early February 2024

Further details will be sent to applicants.

Results will be mailed to the successful applicants. Announcement of results will be made on the SOKENDAI website (https://www.soken.ac.jp/en/admission/general_admission/result/index.html), however, results shall be confirmed by mailed notification. Inquiries regarding the results by telephone or other means will not be responded to.

8 Admission Procedures

(1) Admission period is scheduled as below:

Late September 2023 for the enrollment of October 2023

Early to mid-March 2024 for the enrollment of April 2024

Late September 2024 for the enrollment of October 2024

Successful applicants must complete the admission procedures during the prescribed period. Further details will be notified to successful applicants separately.

(2) Fees required for admission are as follows.

Entrance Fee: JPY282, 000

Tuition Fee for six months: JPY267, 900

Student Insurance Fee for five years: JPY5,750

(Personal Accident Insurance for Students Pursuing Education and Research)

Note:

(a) In case the entrance or tuition fees are revised at the time of or during enrollment, the revised fees shall be applied from the date of revision.

(b) Entrance fees shall not be refunded under any circumstances once the payment is made. Premium for the student insurance, however, may be refunded only if applicants decline the admission by the cut-off dates as blow:

September 30, 2023 for the enrollment of October 2023

March 31, 2024 for the enrollment of April 2024

September 30, 2024 for the enrollment of October 2024

(3) Applicants who are currently employed full-time must submit the “Letter of Approval” issued by the employer that acknowledges the enrollment while employed. Resignation certificate must be submitted if you resign before you enroll at SOKENDAI.

(4) Applicants who are enrolled at a school other than SOKENDAI at the time of application (not including applicants who will have graduated/completed the school before you enroll at SOKENDAI) must submit the certificate of withdrawal from said school.

(5) Foreign nationals are strongly advised to obtain a student visa unless a particular reason would prohibit them from doing so. Detailed information on how to obtain this type of visa is available on the SOKENDAI's website: <http://www.soken.ac.jp/en/campuslife/international/immigration/>

9 Long-term course system

Long-term course system is a planned course of study for a certain period of time beyond the standard period of study upon request from the student, who has an occupation or other circumstances. For further information, please contact the Educational Affairs Section.

E-mail: kyomu@ml.soken.ac.jp, or Fax: +81-46-858-1632

10 General Notes

(1) Before applying and taking the entrance examination, applicants should read through “Important Notes for Applicants”.

(2) Submitted documents shall not be returned. No changes or alternations to the submitted documents shall be accepted after filing.

(3) Admission might be revoked in case of any false entry or act of dishonesty on application documents and

other documents.

- (4) Applicants who wish to transfer to SOKENDAI from other graduate school must contact Student Affairs Section before the last day of the application period.
- (5) Applicants with disabilities who require special consideration at the examination and after enrollment are advised to inform SOKENDAI three months prior to the application period.
- (6) Applicants should inform the Student Affairs Section if they wish to withdraw their application.
- (7) In case the applicant has changed the mailing address after submitting the application documents, please inform the Student Affairs Section of the change.

E-mail: gakusei@ml.soken.ac.jp, or Fax: +81-46-858-1632

- (8) Students are not allowed to simultaneously register at other universities while studying at SOKENDAI.
- (9) If there is any change for SOKENDAI admissions, we will announce on SOKENDAI website. Please make sure SOKENDAI website.

11 Security Export Control

Based on the Foreign Exchange and Foreign Trade Act (*), SOKENDAI has established regulations and conducts examinations for the provision of technology and the acceptance of researchers and students. For this reason, if it is deemed that there is a risk of falling under regulations, you may be required to change your desired education or research content. Security Export Control regulations has nothing to do with passing or failing the entrance examination. Please consult the program office for further details.

* <https://www.meti.go.jp/policy/anpo/englishpage.html>

12 Privacy Policy

- (1) Any personal information including applicant's name and address submitted to SOKENDAI as part of the application documents shall be used during the application process such as applicant/examination procedures, notification of results and admission procedures. After enrollment, personal information shall also be used for student affairs (school register and course registration), student services (health care, tuition exemption and scholarship application, and career support) and administrative purposes of processing payments for entrance and tuition fees.
- (2) Personal information obtained in the screening process such as examination results, shall be used for aggregate analyses of examination results and research for use in the screening process.

Important Notes for Applicants to Physiological Sciences Program (Five-year Doctoral Program)

- (1) Applicants are advised to have a close discussion with a prospective professor regarding the contents of their research before submitting their application documents.

Applicants can apply to the second-choice program from Astronomical Science, Fusion Science, Space and Astronautical Science, Molecular Science, Materials structure Science, Polar Science, Basic Biology, Genetics or Integrative Evolutionary Science, if the application period, the doctoral program, and the enrollment period are the same. Please note that screening is conducted individually, and the date or venue may differ depending on the screening.

- (2) Applicants should fill in the name of their desired professor in the “1st-choice of supervisor” column of the Application Form (**Form 1-A**). Only a first-choice professor may be selected for Physiological Sciences Program. (Filling in a second-choice professor is invalid).

- (3) Applicants may include information on the content of their research to date in the “Statement of Purpose” (**Form 2**).

- (4) For applicants who intend to apply under (9), (10), (11), and (12) of section II -2, “Qualifications for application” on pages 3-5:

(a) Those who intend to apply under (10) are advised to submit a letter of recommendation from their current or most recent supervising professor or the head of their department.

(b) Those intend to apply under (9), (11), or (12) are advised to submit a letter of recommendation from persons who can give an appropriate opinion on applicants’ research capabilities, if possible. Applicants who intend to apply under (1) through (8) do not need to submit a letter of recommendation.

- (5) Those who have graduated from a Japanese university program in Medicine, Dentistry, Pharmaceutical Sciences, Veterinary medicine (limited to those whose minimum duration of study is 6 years) or those who have a master’s degree in medical science at a Japanese university can request for the doctoral degree “Hakase (IGAKU)”, if they completed the prescribed credits in SOKENDAI. (In this case, the standard program term is 4 years.)

- (6) Selection Method:

- (a) Document screening
- (b) Written examination (refer to (8) on the next page)
- (c) Interview (refer to (9) on the next page)
- (d) English ability

*Written examination and the interview will be conducted through the Internet remotely.

- (7) English ability will be assessed as follows:

- (a) Japanese applicants

When you apply to Physiological Sciences Program, enclose the original of their TOEIC Official Score Certificate or TOEIC Institutional Program (IP) Score Report. Please note that the tests must be taken within two years before the date of the examination. If it is impossible for you to obtain the score

record by the application period, you should submit the score record to Student Affairs Section, Academic and Student Affairs Division, SOKENDAI by the deadline (first round: Friday, August 4, 2023, second round: Tuesday, January 9, 2024). (Not e-mail)

(b) Non-Japanese applicants

Applicants are required to have obtained the following score(s) by the time of application. If it is impossible for you to obtain the score record by the application period, you should submit the score record to Student Affairs Section, Academic and Student Affairs Division, SOKENDAI by the deadline (first round: Friday, August 4, 2023, second round: Tuesday, January 9, 2024). (Not e-mail)

- TOEFL PBT: 550 or higher
- TOEFL iBT: 80 or higher
- TOEIC: 730 or higher
- IELTS: 6.0 or higher

English test scores are not necessary for applicants who have graduated from universities in the countries where English is a native language and education is conducted in English.

(8) Important notes for the written examination:

- The written examination (essay) will last up to 90 minutes.
- The written examination will be conducted remotely via Zoom web and e-mail. The applicant will receive a password-locked question sheet file and an answer sheet file by e-mail by the day before the examination. The applicant will receive the password for the sheets by e-mail or Zoom when the examination starts.
- At the end of written examination, the answer sheets should be submitted via email within 20 min.

(9) Important notes for the interview:

- The interview will last up to 20 minutes.
- The interview will be conducted remotely via Zoom web. For 10 minutes, the applicant will explain the content of previous research (or, for applicants with no previous research experience, the content of his or her program(s) of study), reason for applying, and research ambitions. The applicant will use his or her own computer and software such as PowerPoint for the presentation. Note that applicant will not be allowed to use devices other than his or her own computer or to distribute supplemental materials for presentations.
- In the remaining time, the committee members will ask questions about the content of the applicant's submitted documents and of his or her presentation.

(10) Other notes:

- The applicant can take the examination at home or in some other place as long as the space is isolated, and the contents of the examination are not leaked to a third party.
- The examiner record during the examination, and video recording will not be used for any purpose other than the examination.
- The applicant and examiner will make a Zoom test on the day before the examination.

(11) Criteria for grading, evaluation and admission decision:

<Criteria for grading and evaluation>

Applicants will be graded on a scale of A to C on their overall performance, which will be determined on the basis of the content of their submitted documents, written-test results, and interviews.

<Criteria for admission decision>

Acceptance will be determined in terms of overall performance, which will be determined on the basis on the each letter-graded content of the submitted documents, written tests, and interviews.

(12) Financial support for newly enrolled students:

(a) Japanese students

Physiological Sciences Program has been employing all Japanese graduate students (except for those receiving Research Fellowship for Doctoral Course Students (DC) provided by Japan Society for the Promotion Science) as Research Assistants (RAs) (at an annual salary of 1 million yen). Physiological Sciences Program has been employing an extremely high-score student as RA at an annual salary of 1.7 million yen, and a high-score student at an annual salary of 1.4 million yen. Additionally, for new students (except those who have received an enrollment-fee waiver), funds equivalent to the amount of their enrollment fees will be paid by the Scholarship Fund of National Institute for Physiological Sciences.

(b) Non-Japanese students

Excellent students who wish to enter the 5-year Doctoral Program at National Institute for Physiological Sciences (NIPS) are eligible to apply for two types of NIPS Scholarship. The first type covers the same as described for MEXT scholarship.

The second one covers the following:

- Admission fee (282,000 yen, only once at the time of admission)
- A half of annual tuition fee
- Salary for Research Assistant job (1,400,000 yen per year, about 116,600 yen per month)

All other students are supported as follows.

- Admission fee (282,000 yen, only once at the time of admission)
- Salary for Research Assistant job (1,000,000 to 1,400,000 yen per year, about 83,300 to 116,000 yen per month)

(13) Questions regarding the items in this section may be addressed to:

Graduate Student Affairs Section

International Relations & Research Cooperation Division

National Institutes of Natural Sciences (NINS)

Nishigonaka 38, Myodaiji, Okazaki 444-8585

Phone: +81 564 55 7139

Fax: +81 564 55 7119

Web site: <http://www.nips.ac.jp/eng/graduate/>

III. Three-year Doctoral Program: Application Procedures and Important Notes

1 Number of Students Accepted

Program	Number of Students Accepted	
	April Admission	October Admission
Anthropological Studies	Around 4	
Japanese Studies	Around 3	
Japanese History	Around 3	
Japanese Literature	Around 2	
Japanese Language Science	Around 3	
Informatics	Around 12	A few
Statistical Science	Around 6	A few
Particle and Nuclear Science	Around 1	A few
Accelerator Science	Around 1	A few
Astronomical Science	Around 1	A few
Fusion Science	Around 2	A few
Space and Astronautical Science	Around 3	A few
Molecular Science	Around 5	A few
Materials structure Science	Around 1	A few
Global Environmental Studies	Around 2	
Polar Science	Around 1	A few
Basic Biology	Around 3	A few
Physiological Sciences	Around 6	A few
Genetics	Around 2	A few
Integrative Evolutionary Science	Around 1	A few
Total	62	

2 Qualifications for Application

Applicants must fulfill one of the following conditions

Applicants who are not required to have qualification screening;

- (1) Applicants who hold or are expected to take a Master's degree or a Professional degree by the preceding month of enrollment.
- (2) Applicants on whom a Master's degree or a degree equivalent to a Professional degree has been

conferred or is expected to be conferred in a foreign country by the preceding month of enrollment.

- (3) Applicants who have completed the correspondence courses provided by a school in a foreign country while residing in Japan, and have been conferred or are expected to be conferred a Master's degree or a degree equivalent to a Professional degree by the preceding month of enrollment.
- (4) Applicants who have completed or are expected to complete a program in an educational institute in Japan that provides courses from a foreign graduate school within the school education system of said foreign country, and that is designated separately by the Minister of Education, Culture, Sports, Science and Technology, and have been conferred or are expected to be conferred a Master's degree or a degree equivalent to a Professional degree by the preceding month of enrollment.
- (5) Applicants who have completed a course at the United Nations University and have been conferred or are expected to be conferred a degree equivalent to a Master's degree by the preceding month of enrollment, in accordance with the Enforcement Regulation of the School Education Law, Article 156, Item 4.

Applicants who are required to have qualification screening before the general application can be submitted;

- (6) Applicants who have completed a course of study at a school in a foreign country or an educational institute that has graduate school in a foreign country or the United Nations University, and have passed or will have passed the examinations and screening equivalent to those specified in Article 16-2 of the Standards for Establishment of Graduate Schools (1974 Ministry of Education, Science and Culture Ordinance Number 28), and who have been or will have been recognized by SOKENDAI as having academic abilities equivalent to those who have a Master's degree. *1
- (7) Applicants who have graduated from a university and have been or will have been engaged in research at a university or a research institute for at least two years by the preceding month of the enrollment, and have been recognized by SOKENDAI as having academic ability equivalent to or superior to those who have a Master's degree or a Professional degree based on said research achievement.
- (8) Applicants who have completed 16-year course of school education in a foreign country or 16-year course of school education by taking the correspondence courses provided by a school in a foreign country while residing in Japan, and thereafter, have been or will have been engaged in research at a university or a research institute for at least two years by the preceding month of the enrollment, and have been recognized by SOKENDAI as having academic ability equivalent to or superior to those who have a Master's degree or a Professional degree based on said research achievement.
- (9) Applicants who have been recognized by SOKENDAI as having academic ability equivalent to or superior to those who have a Master's degree or a Professional degree by the individual screening of Admission Qualifications of SOKENDAI, and attain the age of 24 by the end of preceding month of enrollment.

If you have any question regarding the qualification for admission, please contact the Student Affairs Section (E-mail: gakusei@ml.soken.ac.jp or telephone no.: +81-46-858-1525/1526) in advance.

3 Qualification Screening for Application

- (1) Applicants who intend to apply under the provisions (6) to (9) in “2 Qualifications for Application” are required to submit the following documents to Student Affairs Section by the designated deadline. Application documents shall be withheld until the qualification screening is completed.
- (2) Applicants who wish to apply under the provisions (6) to (8) in “2 Qualifications for Application” are required to submit the following documents for screening to be recognized as “having academic ability equivalent to those who have a Master’s degree or a Professional degree”. An interview will also be conducted, if necessary.
- (3) Applicants who wish to apply under the provision (9) in “2 Qualifications for Application” above shall be screened as follows:

Program	Procedure
Physiological Sciences	Screening will be conducted based on the submitted documents. An interview and written examination (English) may be added, if necessary.

(a) Documents Required for Qualification Screening for Application

- i. Application for Certifying Applicant’s Qualification (**Form 7-2**)
- ii. Application Documents as specified in “5 Qualifications for Application”

Examination fee, however, should be paid after the application is approved.

(i.) and (ii.) above should be submitted all together. Please note that applicants might be asked to submit other documents by the program.

(b) Application Period regarding Qualification Screening

(Only for the applicants who intend to apply under the provisions (6) to (9) in “2 Qualification for Application”)

Application Period		
First round	October 2023 Admission April 2024 Admission	June 5 (Monday) to June 8 (Thursday), 2023
Second round	April 2024 Admission October 2024 Admission	November 6 (Monday) to November 9 (Thursday), 2023

Application must arrive no later than the last day of the application period without fail.

It must be received during 09:00~12:00, 13:00~17:00 on weekdays of the application period.

(c) Procedure for Qualification Screening

The complete set of application documents should be sent by postal mail in a commercially available envelope (33cm x 24cm) with the prescribed label in the booklet pasted. Please be sure to send it by registered express mail. Applicants should write “Application Documents and Application for Certifying Applicant’s Qualification Enclosed” in red ink on the face of the envelope. If the application documents do not fit in an envelope, they may be sent in a box. However, even in this case, please send the documents by traceable mail. The application must reach SOKENDAI no later than the last day of the application period.

(d) Result of Qualification Screening for Application

The result of Qualification Screening for Application shall be notified prior to the application period. Applicants who have been approved by the screening should complete payment for the examination fee accordance with **Form 8**. After the remittance is completed, **Form 8** on which the remittance receipt is attached should be submitted to Student Affairs Section.

4 Application Procedure

Applicants who intend to apply under the provisions (1) to (5) in “2 Qualifications for Application” are required to submit the following documents to the Student Affairs Section by the designated deadline.

(1) Application Period

Application Period		
First round	October 2023 Admission April 2024 Admission	June 29 (Thursday) to July 5 (Wednesday), 2023
Second round	April 2024 Admission October 2024 Admission	November 30 (Thursday) to December 6 (Wednesday), 2023

The application must arrive no later than the last day of the application period without fail.

It must be received during 09:00~12:00, 13:00~17:00 on weekdays of the application period.

(2) Application Method

In principle, the complete set of application documents should be sent by postal mail in a commercially available envelope (33cm x 24cm) with the prescribed label in the booklet pasted. Please be sure to send it by registered express mail. If the application documents do not fit in an envelope, they may be sent in a box. However, even in this case, please send the documents by traceable mail. The application must reach SOKENDAI no later than the last day of the application period. Please note that application documents will not be accepted by any parent institute or program office.

(Note)

Before submitting, please be sure to fill in and enclose all the necessary documents.

Please allow enough time to send the application documents, giving consideration to mail delivery conditions and the case of insufficient documents.

Mailing address:

Student Affairs Section, Academic and Student Affairs Division
The Graduate University for Advanced Studies, SOKENDAI
Shonan Village, Hayama, Miura, Kanagawa 240-0193 JAPAN
Telephone number +81-46-858-1525/1526

5 Application Documents

Prior contact with the prospective supervisor of your choice is required in order to apply.

Please read through the “Important Notes for Applicants” beforehand. Also, application forms must be completed with a black or blue pen or ballpoint pen (erasable pens are not acceptable).

(1) Application form and admission ticket for the examination (**Form 1-B**)

Please attach two identical photographs (4.5cm by 3.5cm taken within the past three months, upper-body,

full-faced with no hat) on **Form 1-B**. Please read through the application guidelines and sign your name in agreement with the contents.

(2) Academic transcripts (original)

- (a) Applicants who intend to apply under the provision (1) in “2 Qualifications for Application” should submit the academic transcript from the graduate school or the Professional graduate school, and that from the undergraduate school. In case any of the credits was approved after transferred to the undergraduate school, academic transcripts from the technical college or other college are also required.
- (b) Applicants who intend to apply under the provisions (2) to (6) in “2 Qualifications for Application” should submit the academic transcript from the graduate school in said foreign country (a Master’s degree or a Professional degree) and that from the undergraduate school concerning the Bachelor’s degree.
- (c) Applicants who intend to apply under the provisions (7) to (9) in “2 Qualifications for Application” should submit the academic transcript from their final academic background.

(3) Certificate of (expected) graduation (original)

The certificate should state conferment of the Master’s degree or the Professional degree.

- (a) Applicants who intend to apply under the provision (1) in “2 Qualifications for Application” should submit a certificate of (expected) graduation from the graduate school which a Master’s degree or a Professional degree has been conferred from.
- (b) Applicants who intend to apply under the provision (2) to (5) in “2 Qualifications for Application” should submit the certificate of (expected) graduation from the foreign graduate school.
- (c) Applicants who intend to apply under the provisions (6) to (9) in “2 Qualifications for Application” should submit a certificate of graduation of their final academic background.

(4) Summary of Previous Research Experience (**Form 3**)

(5) List of Research Presentations and Publications (**Form 4**)

Applicants who do not have any, please specify “None” on **Form 4** and submit the form.

(6) Research Proposal (**Form 5**)

Applicants who apply to a second-choice program should copy and prepare the form for the second-choice program separately.

(7) Examination fee of 30,000yen

For payment details, please refer to **Form 8**. MEXT scholarship students do not have to bear the examination fee, however, they need to submit a certificate of MEXT scholarship student status.

(8) Recipient’s address label (**Form 9**)

(9) TOEFL/TOEIC/IELTS score

Please select how to submit your English scores on **Form 13-2**. Refer to “Important Notes for Applicants”.

(10) Envelope for Admission ticket for the examination

Applicant’s name, address and zip code (postal code) should be written on the prescribed envelope (attached to the application guidelines), and 674 yen of postage stamp should be affixed.

(11) Curriculum Vitae (**Form 1-2**, only for international applicants and Japanese applicants who have received their education outside Japan)

(12) Applicants who have a Master's degree or who have submitted the Master's thesis should submit two copies of Master's thesis. Please specify "Master's thesis" on the upper-right corner of the front page in red ink.

Applicants who apply to a second-choice program should submit another set of copy of the Master's thesis for the second-choice program separately.

(13) Applicants who have any publication of scientific paper or treatise should submit two copies of the publication.

Applicants who apply to a second-choice program should submit another set of copy of the publication for the second-choice program separately.

(14) Letter of Recommendation

Applicants may submit the Letter of Recommendation from persons who are appropriate to evaluate the applicant's academic ability. The letter must be sealed up by the writer.

(15) Permission for Studying While in Employment (**Form 6**)

Applicants who are currently employed full-time are required to submit Permission for Taking the Entrance Examination (**Form 6**). In case the permission cannot be obtained or the applicant intends to resign before enrollment, s/he may instead submit a statement of reason sealed by her/himself. In this case, "Letter of Permission to be enrolled while employed" or "Certificate of Resign" must be submitted at the time of admission.

(16) Confirmation Letter regarding the Applicability of the Specific Categories for Compliance with Article 25(1) and (2) of the Foreign Exchange and Foreign Trade Act (**Form 10**)

Applicants residing in Japan (including international applicants who have been in Japan for 6 months or who have been employed in Japan) are required to submit **Form 10**. Please refer to the simple check flow chart (*) to complete the form. For details, please contact the Research Coordination Section. [E-mail: kenkyo@ml.soken.ac.jp]

* <https://www.soken.ac.jp/en/admission/file/tokuteiruikei-E.pdf>

(17) A copy of Residence Card (International applicants residing in Japan) or
a copy of passport (international applicants residing outside Japan at the time of application)

(Notes)

- i. Incomplete documents shall not be accepted. No documents shall be returned.
- ii. In case the applicant's name has changed after marriage, etc., a copy of family register should be attached.
- iii. **Form 3, 4 and 5** are also downloadable at our website.
https://www.soken.ac.jp/en/admission/application_info/ps/index.html
- iv. Application documents should be written in Japanese or English. If you submit the certificate neither in Japanese nor English, please also attach the certificate in Japanese or English.

6 Screening Procedures

Screening will be conducted based on submitted application documents and results of academic tests. For details of the screening methods for this program, please refer to "Important Notes for Applicants".

If you apply to more than two programs, please note that screening is conducted individually, and the date or venue may differ depending on the screening.

Examination Date		
First round	October 2023 Admission April 2024 Admission	August 17 (Thursday) and August 18 (Friday), 2023
Second round	April 2024 Admission October 2024 Admission	January 16 (Tuesday) and January 17 (Wednesday), 2024

(Note) Detailed information about the time and place of the examination will be provided with the admission ticket for the exam. In case the ticket shall not be delivered one week prior to the date of examination, please contact the Student Affairs Section. Please see the following website for the delivery schedule of admission ticket.

https://www.soken.ac.jp/en/admission/application_info/ps/index.html

Venue of the examination

Program	Location and Directions
Physiological Sciences	<p>• The entrance examination will be conducted through the Internet remotely.</p> <p>National Institute for Physiological Sciences 38 Nishigonaka, Myodaiji, Okazaki, Aichi 444-8585 Seven-minute walk from Higashi-Okazaki Station (Nagoya Railway, Meitetsu).</p>

7 Announcement of Results

Notification		
First round	October 2023 Admission April 2024 Admission	Early September 2023
Second round	April 2024 Admission October 2024 Admission	Early February 2024

Further details will be sent to applicants.

Results will be mailed to the successful applicants. Announcement of results will be made on the SOKENDAI website (https://www.soken.ac.jp/en/admission/general_admission/result/index.html), however, results shall be confirmed by mailed notification. Inquiries regarding the results by telephone or other means will not be responded.

8 Admission Procedures

(1) Admission period is scheduled as below:

Late September 2023 for the enrollment of October 2023

Early to mid-March 2024 for the enrollment of April 2024

Late September 2024 for the enrollment of October 2024

Successful applicants must complete the admission procedures during the prescribed period. Further details will be notified to successful applicants separately.

(2) Fees required for admission are as follows.

Entrance Fee: JPY 282,000

Tuition Fee for six months: JPY 267,900

Student Insurance Fee for three years: JPY 3,620

(Personal Accident Insurance for Students Pursuing Education and Research)

Note:

- (a) In case the entrance or tuition fees are revised at the time of or during enrollment, the revised fees shall be applied from the date of revision.
- (b) Entrance fees shall not be refunded under any circumstances once the payment is made. Premium for the student insurance, however, may be refunded only if applicants decline the admission by the cut-off dates as blow:

September 30, 2023 for the enrollment of October 2023

March 31, 2024 for the enrollment of April 2024

September 30, 2024 for the enrollment of October 2024

- (3) Applicants who are currently employed full-time should submit the "Letter of Approval" issued by the employer that acknowledges the enrollment while employed. Resignation certificate must be submitted if you resign before you enroll at SOKENDAI.
- (4) Applicants who are enrolled at a school other than SOKENDAI at the time of application (not including those who will have graduated from/completed the school before you enroll at SOKENDAI) must submit the certificate of withdrawal from said school.
- (5) Foreign nationals are strongly advised to obtain a student visa unless a particular reason would prohibit them from doing so. Detailed information on how to obtain this type of visa is available on the SOKENDAI's website: <http://www.soken.ac.jp/en/campuslife/international/immigration/>

9 Long-term course system

Long-term course system is a planned course of study for a certain period of time beyond the standard period of study upon request from the student, who has an occupation or other circumstances. For further information, please contact the Educational Affairs Section.

E-mail: kyomu@ml.soken.ac.jp, or Fax: +81-46-858-1632

10 General Notes

- (1) Before applying and taking the entrance examination, applicants should read through "Important Notes for Applicants for Applicants".
- (2) Submitted documents shall not be returned. No changes or alternations to the submitted documents will be accepted after filing.
- (3) Admission might be revoked in case of any false entry or act of dishonesty on application documents and other documents.
- (4) Applicants who wish to transfer to SOKENDAI from other graduate school must contact Student Affairs Section before the last day of the application period.
- (5) Applicants with disabilities who require special consideration at the examination and after enrollment are advised to inform SOKENDAI three months prior to the application period.
- (6) Applicants should inform the Student Affairs Section if they wish to withdraw their application.

- (7) In case the applicant has changed the mailing address after submitting the application documents, please inform the Student Affairs Section of the change.

E-mail: gakusei@ml.soken.ac.jp, or Fax: +81-46-858-1632

- (8) Students are not allowed to simultaneously register at other universities while studying at SOKENDAI.
- (9) If there is any change for SOKENDAI admissions, we will announce on SOKENDAI website. Please make sure SOKENDAI website.

11 Security Export Controls

Based on the Foreign Exchange and Foreign Trade Act (*), SOKENDAI has established regulations and conducts examinations for the provision of technology and the acceptance of researchers and students. For this reason, if it is deemed that there is a risk of falling under regulations, you may be required to change your desired education or research content. Security Export Control regulations has nothing to do with passing or failing the entrance examination. Please consult the program office for further details.

* <https://www.meti.go.jp/policy/anpo/englishpage.html>

12 Privacy Policy

- (1) Any personal information including applicant's name and address submitted to SOKENDAI as part of the application documents shall be used during the application process such as applicant/examination procedures, notification of results and admission procedures. After enrollment, personal information shall also be used for student affairs (school register and course registration), student services (health care, tuition exemption and scholarship application, and career support) and administrative purposes of processing payments for entrance and tuition fees.
- (2) Personal information obtained in the screening process such as examination results, shall be used for aggregate analyses of examination results and research for use in the screening process.

Important Notes for Applicants to Physiological Sciences Program (Three-year Doctoral Program)

- (1) Applicants are advised to have a close discussion with their desired professor regarding the contents of their research before submitting their application documents.

Applicants can apply to the second-choice program from Astronomical Science, Fusion Science, Space and Astronautical Science, Molecular Science, Materials structure Science, Global Environmental Studies, Polar Science, Basic Biology, Genetics or Integrative Evolutionary Science, if the application period, doctoral program, and enrollment period are the same. Please note that screening is conducted individually, and the date or venue may differ depending on the screening.

- (2) A letter of recommendation is not necessarily required in applying for this program. Applicants may submit a letter of recommendation if a person can give an appropriate opinion on their research capabilities.

- (3) Selection Method:

- (a) Document screening: Screening will be conducted regarding the content of each applicant's transcript and associated materials.
- (b) Interview: A 30 minutes interview will be conducted, mainly regarding the research performed by the applicant to date and the content of his or her anticipated future research.

*The interview will be conducted through the Internet.

- (c) English ability

- (4) English ability will be assessed as follows:

- (a) Japanese applicants

When you apply to Physiological Sciences Program, enclose the original of their TOEIC Official Score Certificate or TOEIC Institutional Program (IP) Score Report. Please note that the tests must be taken within two years before the date of the examination. If it is impossible for you to obtain the score record by the application period, you should submit the score record to Student Affairs Section, Academic and Student Affairs Division, SOKENDAI by the deadline (first round: Friday, August 4, 2023, second round: Tuesday, January 9, 2024). (Not e-mail)

- (b) Non-Japanese applicants

Applicants are required to have obtained the following score(s) by the time of application. The original score sheet must be submitted when you apply to the Department of Physiological Sciences. If it is impossible for you to obtain the score record by the application period, you should submit the score record to Student Affairs Section, Academic and Student Affairs Division, SOKENDAI by the deadline (first round: Friday, August 4, 2023, second round: Tuesday, January 9, 2024). (Not email)

- TOEFL PBT: 550 or higher
- TOEFL iBT: 80 or higher
- TOEIC: 730 or higher
- IELTS: 6.0 or higher

English test scores are not necessary for applicants who have graduated from universities in the

countries where English is a native language and education is conducted in English.

(5) Important notes for the interview:

- (a) An interview will last up to 30 minutes.
- (b) The interview will be conducted remotely via Zoom web. For 15 minutes, the applicant will explain the content of previous research (or, for applicants with no previous research experience, the content of his or her program(s) of study), reason for applying, and research ambitions. The applicant will use his or her own computer and software such as PowerPoint for the presentation. Note that the applicant will not be allowed to use devices other than his or her own computer or to distribute supplemental materials for presentations.
- (c) In the remaining 15 minutes, the committee members will ask questions about the content of the applicant's submitted documents and of his or her presentation.

(6) Other notes:

- The applicant can take the examination at home or in some other place as long as the space is isolated, and the contents of the examination are not leaked to a third party.
- The examiner record during the examination, and video recording will not be used for any purpose other than the examination.
- The applicant and examiner will make a Zoom test on the day before the examination.

(7) Criteria for grading, evaluation and admission decision:

Criteria for grading and evaluation: Applicants will be graded on a scale of A to C on their overall performance, which will be determined on the basis of the content of their submitted documents and interviews.

Criteria for admission decision: Acceptance will be determined by overall performance, which will be assessed based on the contents of their research to date, the submitted documents, and interview.

Financial support for newly enrolled students:

(a) Japanese students

Physiological Sciences Program has been employing all Japanese graduate students (except for those receiving Research Fellowship for Doctoral Course Students (DC) provided by Japan Society for the Promotion Science) as Research Assistants (RAs) (at an annual salary of 1,000,000 yen). Physiological Sciences Program has been employing an extremely high-score student as RA at an annual salary of 1.7 million yen, and a high-score student at an annual salary of 1.4 million yen. Additionally, for new students (except those who have received an enrollment-fee waiver), funds equivalent to the amount of their enrollment fees will be paid by the Scholarship Fund of National Institute for Physiological Sciences.

(b) Non-Japanese students

Excellent students who wish to enter the 3-year Doctoral Course at NIPS are eligible to apply for two types of NIPS Scholarship. The first type covers the same as described for MEXT scholarship.

The second one covers the following:

- Admission fee (282,000 yen, only once at the time of admission)

- A half of annual tuition fee
- Salary for Research Assistant job (1,400,000 yen per year, about 116,600 yen per month)

All other students are supported as follows.

- Admission fee (282,000 yen, only once at the time of admission)
- Salary for Research Assistant job (1,000,000 to 1,400,000 yen per year, about 83,300 to 116,000 yen per month)

(8) Questions regarding the items in this section may be addressed to:

Graduate Student Affairs Section

International Relations & Research Cooperation Division

National Institutes of Natural Sciences (NINS)

Nishigonaka 38, Myodaiji, Okazaki 444-8585

Phone: +81 564 55 7139

Fax: +81 564 55 7119

Web site: <http://www.nips.ac.jp/eng/graduate/>

IV. The course subjects and the faculty members

Physiological Sciences Program

*Regarding E-mail, please replace (at) with @.

Division of Biophysics and Neurobiology

【Assoc. Prof. TATEYAMA, Michihiro】 Dynamic aspects of structure-function relationship and regulation mechanisms of ion channels and receptors

Membrane proteins such as ion channels and receptors are sophisticated elements which play critical roles in the brain function. To elucidate the functioning mechanisms we approach their dynamic structural rearrangements and the regulation mechanisms by combined techniques of molecular biology, electrophysiology and optophysiology. We also conduct research using genetically modified mice towards the functional significance of ion channels and receptors in the brain function.

TATEYAMA, Michihiro TEL : +81-564-55-7832 / E-mail : tateyama(at)nips.ac.jp

Division of Membrane Physiology

【Assoc. Prof. FUKATA, Yuko】 Mechanisms for synaptic transmission and synaptic disorders

We will elucidate the regulatory mechanisms for synaptic transmission and clarify the etiology of neuropsychiatric disorders such as epilepsy and dementia. Our final goal is to address the fundamental question "How does our brain physiologically function and how is the system disrupted in brain diseases?"

1. Identification and functional analysis of synaptic protein network

Synaptic membrane proteins, such as neurotransmitter receptors, ion channels and adhesion molecules, form protein complexes and thereby performing their physiological functions. Using our highly original biochemical techniques, we are purifying and identifying novel synaptic protein complexes from brain tissues and clarifying their synaptic functions by integrative approaches.

2. Molecular mechanisms for protein palmitoylation

Many synaptic proteins undergo protein palmitoylation, and the localization on those synaptic proteins is dynamically regulated by protein palmitoylation upon neuronal activity. Taking advantage of palmitoylating enzymes we discovered, we are elucidating the molecular mechanism for controlling synaptic transmission.

FUKATA, Yuko TEL : +81-564-59-5873 / E-mail : yfukata(at)nips.ac.jp

Division of Structural Biology (Exploratory Research Center on Life and Living Systems)

【Prof. MURATA, Kazuyoshi】 Three-dimensional structural analysis of biological macromolecules using cryo-electron microscopy

We investigate three-dimensional (3D) structure of biological macromolecules, such as large protein complexes, membrane proteins, and virus particles, by using cryo-electron microscopy and single particle analysis. We also elucidate the 3D structure of bacteria and organelles by using cryo-electron tomography. Our research goal is to understand biological functions from molecular structure. URL: www.nips.ac.jp/struct

MURATA, Kazuyoshi TEL: +81-564-55-7893 / E-mail:kazum(at)nips.ac.jp

Division of Cell Structure

【Prof. FURUSE, Mikio】 【Assoc. Prof. IZUMI, Yasushi】 Molecular mechanism of epithelial barrier function and paracellular transport

We seek to clarify the molecular basis of epithelial barrier function and paracellular epithelial transport, both of which are required for homeostasis of the body fluid compartments. Our research focuses on tight junctions and their related structures. We characterize the function of the cell-cell junction-associated proteins that we identified by a combination of morphological, molecular biological and physiological techniques using cultured epithelial cells, mice and fruit flies.

FURUSE, Mikio TEL : +81-564-59-5277 / E-mail : furuse(at)nips.ac.jp

IZUMI, Yasushi TEL : +81-564-59-5279 / E-mail : yizumi(at)nips.ac.jp

Division of Cell Signaling (Exploratory Research Center on Life and Living Systems)

【Assoc.Prof. SOKABE, Takaaki】 【Assoc.Prof. MARUYAMA, Kenta】 Molecular mechanisms of sensing

We are clarifying molecular mechanisms of sensing such as thermosensation, nociception and taste sensation by focusing on TRP channels mainly with electrophysiological and molecular biological techniques. We are also doing analyses at a whole animal level using genetically-modified mice. We are investigating fruit flies to seek novel mechanisms of temperature and mechanical sensations, and developing new strategies of insect pest management. In addition, we are analyzing functional evolution of thermosensitive TRP channels since animals are expected to have changed their thermosensitivity dynamically depending on the changes in ambient temperature in the evolutionary process.

SOKABE, Takaaki TEL : +81-564-59-5287 / E-mail : sokabe(at)nips.ac.jp
MARUYAMA, Kenta TEL : +81-564-59-5296 / E-mail : maruken(at)nips.ac.jp

Division of Cardiocirculatory Signaling (Exploratory Research Center on Life and Living Systems)

【Prof. NISHIDA, Motohiro】 【Assoc.Prof. NISHIMURA, Akiyuki】 Elucidation of the molecular mechanism underlying maintenance and transfiguration of cardiovascular homeostasis

We are studying the mechanism underlying adaptation and maladaptation of the cardiovascular system against hemodynamic load through focusing on TRP Ca²⁺-permeable channels as a regulator of excitation-transcription coupling and GTP-binding proteins as senescence-inducible redox sensors, using *in vivo* and *ex vivo* cardiovascular analyzing systems and chemical principles-based biological techniques.

NISHIDA, Motohiro TEL : +81-564-59-5560 / E-mail : nishida(at)nips.ac.jp
NISHIMURA, Akiyuki TEL : +81-564-59-5563 / E-mail : aki(at)nips.ac.jp

Division of Molecular Neuroimmunology

【Prof. MURAKAMI, Masaaki*】 【Assoc.Prof. HASEBE, Rie】 Molecular mechanism of the development of autoimmune diseases regulated by gateway reflex

Prof. MURAKAMI and Assoc. Prof. HASEBE found a novel concept for neuro-immune interaction, "The Gateway Reflex", by studying the mechanism of how IL-6 and autoreactive CD4+ T cells induce the tissue-specific autoreactive immune diseases (Cell 148, 447-, 2012, JEM 219, e20212019, 2022 etc). Six Gateway Reflexes have been found so far. In the Gateway Reflex, environmental stimulations such as gravity, pain, stress, light, and microinflammation activate the specific neural pathways, which induces accumulation of autoreactive CD4+T cells to induce inflammation around the specific blood vessels of the tissue possessing blood barrier (e.g. the central nervous system or retina). The mechanism of how the Gateway Reflex increases vascular permeability has been addressed by the concept of "IL-6 amplifier" (Immunity, 50, 812, 2019, Immunity, 29, 628-, 2008). The research goals of Division of Molecular Neuroimmunology are, 1. to discover novel Gateway Reflexes, 2. to elucidate molecular mechanism including the details of neural pathway related to the Gateway Reflexes, 3. to elucidate molecular mechanism of inflammation induced by IL-6 amplifier.

HASEBE, Rie TEL : +81-564-55-7729/ E-mail: hasebe(at)nips.ac.jp

*Prof. MURAKAMI, Masaaki cannot accept students as a supervisor. Assoc.Prof. HASEBE, Rie accepts them instead and discusses the research with Prof. MURAKAMI, Masaaki as well.

Division of Homeostatic Development

【Assoc.Prof. NARUSHIMA, Madoka】 Reorganization of neural circuits in development and recovery after neural injury

Neuronal networks are dynamically reshaped by experiences during early postnatal life. The similar neural reorganization is observed after neural injury. What happens at the level of neural networks including synaptic formation and function during postnatal development and recovery after neurological damage? To address these questions, we study the rodent central nervous system with especially focusing on glial functions. Major research techniques applied in our laboratory include *in vivo* two-photon microscopy, slice patch clamp electrophysiology, immunohistochemistry and molecular biological techniques. In order to explore the possibility that immature features of neural circuits reemerge during the recovery period following neural injury, we study on the mechanisms underlying the reorganization of neural circuits using various animal models.

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Division of Visual Information Processing

【Prof. YOSHIMURA, Yumiko】 Circuit mechanisms underlying information processing and functional development in visual cortex

We are studying the properties of neuronal circuits underlying visual information processing in visual cortex, and the development of the circuits based on experience-dependent and synaptic target recognition mechanisms. To this end, we

are conducting electrophysiological analyses combined with optogenetics and laser photolysis of caged glutamate in rodent slice preparations and morphological analyses using transsynaptic viral tracers. In order to relate the properties of neuronal circuits to visual functions, we are also investigating the visual responses of cortical neurons in rodents with electrophysiological techniques and 2-photon Ca^{2+} imaging.

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Division of Biophotonics (Exploratory Research Center on Life and Living Systems)

【Prof. NEMOTO, Tomomi】 【Assoc. Prof. ENOKI, Ryosuke】 Quantitative analysis of neural functions and biological rhythm by cutting-edge optical technologies

We aim to explore new principles of physiological functions by developing innovative optical bioimaging. Utilizing the latest laser, optical, and material technologies, our goal is to observe and manipulate living specimens with high speed and super-high resolution without causing damage. Through quantitative visualization analyses, we aim to uncover the molecular and cellular mechanisms responsible for the functions of the central nervous system and organs, such as signal transmission, biological rhythms, and hibernation. We also promote the development of various models using cells, organs, and animals for disorders such as cancers, diabetes, and plants.

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Division of Multicellular Circuit Dynamics

【Prof. WAKE, Hiroaki】 Physiological function measurement and manipulation of multicellular circuits in the central nervous system

The Multicellular Circuit Dynamics Division aims to elucidate the physiological functions of the multicellular circuit dynamics, which consists of neurons and glial cells in the central nervous system, that contribute to higher brain functions. We aim to examine the physiological functions of glial cells that modify the neural circuits activity that ultimately lead to behavior output for mice and to link this to pathological conditions. In addition to the visualization technique using two-photon microscopy, we will further apply our holographic microscopy to biological applications, focusing on the functional connectivity of neurons and extracting the transcriptomes, and evaluating local neural circuits by using holographic stimulation and measurement. In addition to those applications, we are stimulating neurons and glial cells to control higher-order brain functions.

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Division of Behavioral Development

【Prof. ISODA, Masaki】 Neural mechanisms of social cognition and behavior

The goal of this laboratory is to clarify the neural mechanisms underlying social cognition and behavior using macaques. In particular, we focus on self-other distinction, monitoring of others' actions, observational learning, and self-other comparison. For this purpose, we employ various experimental approaches, such as behavioral testing, electrophysiological recording, neuropharmacological intervention, pathway-selective blockade of neural activity using viral vectors, and cognitive genomics.

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Division of Neural Dynamics

【Prof. KITAJO, Keiichi】 The functional role of neural dynamics

The neural activities of humans and other animals show a variety of nonlinear dynamics. We deal with EEG, ECoG, MEG, and fMRI data in humans. We promote computational studies by data analysis and mathematical modeling based on the nonlinear dynamical systems theory, information theory, complex network analysis, and statistical machine learning theory thereby trying to understand the functional role of neural dynamics in perception, cognition, motor, and social functions in relation to individual differences and pathological conditions. We also develop novel techniques for brain-machine interfaces and AI based on neural dynamics.

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Division of Sensory and Cognitive Brain Mapping

【Prof. TAKEMURA, Hiromasa】 Structural and functional brain mapping of sensory and cognitive system

We investigate structure-function relationship of the brain based on structural and functional neuroimaging using magnetic resonance facility. While our primary focus is to study and understand healthy human brains, we also perform neuroimaging

studies on animal models as well as and clinical neuroimaging studies on retinal disorders.

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Center for Animal Resources and Collaborative Study

【Prof. NISHIJIMA, Kazutoshi】 Establishment and characterization of experimental animal models.

Knowledge about animal characteristics and optimization of the breeding environment are indispensable for conducting scientifically meaningful animal experiments. Center for Animal Resources and Collaborative Study conducts the establishment of experimental animal models and analysis of their characteristics, development of methods of strain preservation and breeding management suitable for each animal species (especially rabbits), from the viewpoint of veterinary and experimental animal sciences.

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SUPPORTIVE CENTER FOR BRAIN RESEARCH, Section of Multiphoton Neuroimaging

【Assoc. Prof. MURAKOSHI, Hideji】 Imaging signal transduction in subcellular structures of living cells by 2-photon fluorescence microscopy.

We are working on imaging signal transduction in subcellular structure such as dendritic spine of hippocampal neurons using 2-photon fluorescence microscopy and fluorescence resonance energy transfer (FRET) techniques. By combining these techniques with optical manipulation techniques such as caged-compound uncaging and optogenetic tools, we are trying to understand the mechanism of physiological system such as memory system of brain at the level of single synapse.

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SUPPORTIVE CENTER FOR BRAIN RESEARCH, Section of Brain Function Information

【Prof. FUKUNAGA, Masaki】 Imaging structure and function relationship of human brain by ultra- high field MRI

Magnetic resonance (MR) is an excellent technique for noninvasively observing living organisms' structure, function, metabolism, and molecular dynamics. In this section, we investigate the structure-function relationship of the human brain using 3 and 7-tesla ultra-high-field MR imaging and spectroscopy, and develop new imaging techniques to measure biological parameters. In addition, to understand the diseases through advanced brain imaging, we are participating in multi-center clinical research collaboration projects and promoting the exploration of endophenotypes and biomarkers of psychiatric disorders based on the analysis of big MR imaging data.

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CENTER FOR GENETIC ANALYSIS OF BEHAVIOR, Section of Viral Vector Development

【Assoc. Prof. KOBAYASHI, Kenta】 Analysis of brain function using newly developed gene transfer system.

To understand the mechanisms underlying higher brain functions, we need to analyze the roles of specific neuronal pathways forming the complex neural networks. We succeeded in developing a new gene transfer system to induce transgene expression in the specific neural pathway by using an adeno-associated viral vector and a novel type of lentiviral vector. We analyze the physiological functions of specific neural pathways forming cortico-basal ganglia circuits by using our newly developed gene transfer approach.

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