PROSPECTUS for DOCTORAL COURSE
Graduate School of Science, Kobe University
Round 4 2026

The list of entrance and advancement examination dates

Apr.	Oct.	Department	Mathematics	Physics	Chemistry	Biology	Planetology
–	Round 4	Examination of Qualifications for Application	Application Period June 1, 2026 Notification to Candidates June 12, 2026				
		Web application registration period and examination fee payment period:	From June 13, 2026 through July 2, 2026				
		Application Period	From June 29, 2026 through July 2, 2026				
		Date and Place of the Oral Examination	August 21, 2026	August 21, 2026	August 26, 2026	August 21, 2026	August 24, 2026
		Announcement of Successful Applicants	September 9, 2026				

PROSPECTUS for DOCTORAL COURSE
Graduate School of Science, Kobe University

Round 4 2026

(Starting in October, 2026)

The Graduate School of Science, Kobe University, has five departments offering both Master's and Doctoral Programs: Mathematics, Physics, Chemistry, Biology, and Planetology.

A Master's Degree of Science will be granted upon completion of the Master's Program, and a Doctoral Degree, either a Dr. of Science or a PhD, will be granted upon completion of the Doctoral Program.

※Important

This graduate school has introduced online applications, and it is necessary to register your application online before submitting application documents. For the web application, you will need equipment such as a computer and printer, an email address, and a photograph data. Please make sure to fully check payment methods for the examination fee, submission methods for documents, etc., and apply with plenty of time. In addition, important information regarding the entrance examination will be sent from the university to the email address registered during the web application process, so please register an email address that you check regularly. Applicants who are international students wishing to take the examination must contact the prospective supervising faculty member before applying.

The Graduate School of Science provides information regarding the entrance examination on the “Admission” page of our website (https://www.sci.kobe-u.ac.jp/). Updates on current admission details, such as postponements and change of examination contents, will be made available, depending on and possibly other factors, such as weather conditions. Please check this website and Kobe University’s official "X" account (@kobeU_sci) for updates.

1. Number of Students to Be Admitted

Department	Number of students to be admitted
Mathematics	A few persons
Physics	A few persons
Chemistry	A few persons
Biology	A few persons
Planetology	A few persons

(Note) The number of recruits includes international students and working adults.

2. Eligibility for Application

1. Those who are expected to hold a Master's degree or a professional degree on or before September 30, 2026, or already hold a Master's degree or a professional degree, awarded in Japan.
2. Those who are expected to hold an equivalent degree on or before September 30, 2026or already hold an equivalent degree, awarded from a university or college overseas.
3. Those who took classes in Japan through a correspondence course provided by a foreign school and are expected to hold an equivalent degree on or before September 30, 2026, or already hold an equivalent degree.
4. Those who have been enrolled in a graduate school in Japan of an overseas-based educational institution approved by the Minister of Education, Culture, Sports, Science and Technology, and are expected to hold a Master's degree or a professional degree studies on or before September 30, 2026, or already hold a Master's degree or professional degree.
5. Those who have held a degree equivalent to Master's degree after completing the course at United Nations University established according to the United Nations General Assembly Resolution of December 11, 1972 detailed in Article 1, paragraph 2 of the Act on Special Measures incidental to the enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Act No. 72 of 1976).
6. Those who have taken courses in an educational curriculum at an overseas school, an educational institution specified in item 4 above, or at United Nations University, have passed examinations corresponding to those provided in Article 16-2 of the Graduate School Establishment Standards (Ordinance No. 28 of the Ministry of Education of 1974), and are recognized as having academic ability equivalent to or above those holding a Master's degree.
7. Those who were qualified by the Japanese Minister of Education, Culture, Sports, Science and Technology (i.e. those who were engaged in a post-graduate research for at least two years at a university or institution after graduating from a university/college or after completing 16 years of higher education overseas, whose academic records were approved by the Graduate School to be equivalent to, or higher than, those holding a Master's degree).
8. Those who received a separate qualification screening and were approved by the Graduate School to be equivalent to, or higher than, those holding a Master's degree or a professional degree. In this case, the candidate must have reached the age of 24 at the day of September 30, 2026.

(Applicants who correspond to one of 7 and 8 should refer to Section 9.)

3. Application Period and Application Method

Both procedures ① and ② below are required. Please be careful to ensure there are no deficiencies.

① Registration of application and payment of admission examination fee on the web application site

<Web Application Site (https://e-apply.jp/ds/kobe-u/)>

Web application registration period and examination fee payment period: Refer to the list of entrance and advancement examination dates

Please register your application and pay the admission examination fee by referring to the attached document "Flow of Web Application" before submitting your application documents. When registering your application information, complete the procedures marked as [Web] in the list of application documents on the web application site.

If you encounter any issues with communication to the web application site, please contact the inquiry address below.

② Submission of Application Documents
For the documents listed as [Paper] in the following list of application documents, please submit them either in person or by mail.
Application Period: Refer to the list of entrance/admission examination schedules.
After registering your application on the web application site and completing the payment of the entrance examination fee, please submit the documents marked as [Paper] in the list of application documents.
In Person: Please submit them to the Graduate School of Science Student Affairs Office.
Reception hours are from 9:00 to 12:00 and from 13:00 to 17:00.By Mail: Use a Letter Pack Plus (600 yen), or print the "Application Form Address Sheet" on page 3 of the entrance application displayed on your My Page on the web application site in color, attach it to a No. 2 long envelope, and send it via registered express mail.

4. Documents Required for the Application Procedure

(1) Please gather and submit the documents listed in the application document checklist.
- [Web]: Convert to PDF (for the photo only, use jpg, png, bmp, or heic format) and upload to the web application site.
- [Paper]: Submit either in person at the office or by mail.
- Documents marked with ◆ can be downloaded in the prescribed format from the Faculty of Science website.

<Graduate School of Science Website(https://www.sci.kobe-u.ac.jp/admissions/doctoral.html)>

application document checklist	Summary
① Application for Admission / Resume [Document]	Enter the information on the web application site and print it out. ※When creating, please carefully check (2) Precautions.
② Face photo data [Web]	Please follow the instructions on the web application site and upload your photo. (Upper body without a hat, facing forward, no background, clearly taken alone within 3 months before the application, in jpg, jpeg, png, bmp, or heic format.) Please note that the facial photo data will be used on the examination admission ticket and for identity verification during the examination. If the facial photo data has been altered or retouched, making it impossible to confirm it is the same person, you may not be allowed to continue with the examination.
③ Examination Fee (30,000 yen) [Web]	<Payment Method> Please make the payment procedure through the web application site. Note that any fees associated with the payment shall be borne by the payer.
④ Academic Transcript [Document]	Documents created by the dean of the graduate school or university president of the graduate school you graduated from ※Applicants whose last school attended is a university in China must, in addition to these documents, submit the following documents. All of these documents require authentication through the China Higher Education Student Information and Career Center (CHSI). Register on the CHSI website (https://www.chsi.com.cn/xlcx/bgys.jsp), obtain the relevant documents in PDF format, and print them on A4 paper. At the time of submission, the web authentication must have more than one month remaining before expiration. If the web authentication cannot be performed by the graduate school due to reasons such as the web authentication being expired, the application documents will be considered incomplete. For those who have graduated (completed) ・Online Verification Report of Higher Education Qualification Certificate (in English) ・Online Verification Report of Higher Education Degree Certificate (in

	English) For those currently enrolled in a university or graduate school and expected to graduate (complete) At the time of application ・Online Verification Report of Student Record (in English) At the time of enrollment ・Online Verification Report of Higher Education Qualification Certificate (in English) ・Online Verification Report of Education Degree Certificate (in English)
⑤ Certificate of Completion of the Master's Program or Certificate of Expected Completion [Document]	Prepared by the dean of the graduate school or the president of the university you graduated from. Those progressing from the Master's program of the Graduate School of Science at Kobe University are not required to submit this document. ※ Applicants whose last school attended is a university in China should submit a certificate from the China Higher Education Student Information and Career Center (CHSI), similar to the completion (anticipated) certificate, under item ④.
⑥ Master's thesis, etc. ◆[Document]	(a) Applicants who have completed a Master's course: i) A copy of the Master's thesis, or published manuscript(s) equivalent to the thesis. ii) A copy of the summary of the Master's thesis in English (about 1,200 words). Use A4 size paper and attach a cover sheet (Form No. 6). (b) Applicants who anticipate a Master's degree: A copy of the summary of the research program in the Master's course in English (about 1,200 words). Use A4 size paper and attach a cover sheet (Form No. 6). (c) Copies of published manuscript(s), if any. 10Research Plan: Describe your research proposal (goal, objectives, and experimental designs) in English (about 1,200 words). Use A4 size paper and attach a cover sheet (Form No.7). (d) If there are any other reference materials, please submit them.
⑦ Research Proposal ◆[Document]	One copy of approximately 2,000 characters in Japanese or approximately 1,200 words in English. Please fill it out on A4-sized paper so that it is clear what field and content you intend to research, and submit it with the designated form of this graduate school (Form No. 7 [Form No. 5 for admitted students]) as the cover sheet.
⑧ Resident card, etc. (For foreigners only) [Document]	Foreign applicants residing in Japan should submit a 'copy of the residence certificate (issued within the last 30 days)' or a 'copy of the residence card' issued by the mayor of their municipality.

(2) Notes

- The "Application Receipt Number" is not the exam number.
- After completing the web application registration, if the payment of the examination fee, etc., is not made by the payment deadline, the application process will not be considered complete.
- Changes to the information stated after the application procedure are not permitted. In addition, submitted documents and any examination fees already paid will not be refunded for any reason, except in cases where the application cannot be accepted due to incomplete application documents.
- For documents such as certificates issued in languages other than English, a Japanese translation certified by an official organization such as a Japanese government office or a foreign government overseas diplomatic mission must be attached.
- Those who provide false information in the application registration or application documents may have their admission approval revoked even after completing the admission procedures.
- There is a system to exempt the examination fee for applicants who have been affected by large-scale disasters.
  (https://www.office.kobe-u.ac.jp/stdnt-examinavi/juken/menjyotou/index.html)

(3) Only for those residing in a foreign country, the documents necessary for application, such as the admission application forms for admission, will be sent electronically, so please send a request by email to the Section of Academic Affairs of the Graduate School of Science. At that time, please use the subject line as "Request for Application Forms for Doctoral Course". Please note that we will contact you separately via email regarding how to submit your application documents.

(4) Submission address

Kyomu-gakusei-kakari (Section of Academic Affairs), Graduate School of Science, Kobe University,

1-1, Rokkodai-cho, Nada-ku, Kobe, Japan 657-8501, Japan, Tel: +81(0)78-803-5767
e-mail: sci-kyomu@office.kobe-u.ac.jp

[Notes]

(1) Applicants cannot make any changes to the documentation after submitting their application documents. The entrance examination fee is not refundable after application, except for the case that the application is not accepted.
(2) Regarding any certificates written in other foreign languages than English, applicants must attach Japanese translations, with a certification issued by such public organizations as the Japanese government or the overseas mission of a foreign government.
(3) Applicants should select a professor as a supervisor from the annexed "List of Departments and Divisions" and contact the professor in advance, when preparing the Research Plan. Application documents will not be accepted without nominating a professor. In addition, applicants should maintain close contact with their prospective supervisors and prepare a research proposal.

[Notes]

RIKEN－Kobe University International School will support foreign students who will conduct Ph.D. project under supervision of BDR (Center for Biosystems Dynamics Research) scientists who hold positions as visiting faculty at Kobe University.
RIKEN will partially provide students' living costs under the International Program Associate (IPA) program. Details will be available from the web site of BDR (https://www.bdr.riken.jp/ja/index.html) and of RIKEN (https://www.riken.jp/en/careers/programs/ipa).

5. Examination Procedures

Applicants will be selected based on the evaluation of the oral examination and the submitted documents. The oral examination is evaluated by focusing on the following points;

(1) The contents of the Master's thesis or research program: Basic knowledge and capability for taking the course will be examined.
(2) Language ability (For foreign applicants who graduated from a foreign university, ability in both the English and Japanese languages): Language ability for taking the course will be qualified.
(3) The contents of the Research Plan: It will be evaluated if the quality of the Research Plan is sufficient for granting the degree.

6. Date and Place of the Oral Examination: See the list of entrance and promotion examination schedules.

The venue, time, and important notes for each applicant's oral examination will be notified separately at a later date.

Place: Graduate School of Science, Kobe University.
*If for some reason you want the exam to be conducted remotely (online), consult with your prospective academic advisor in advance. It may be accepted depending on the reason.
*In case of emergency, please check our website (https://www.sci.kobe-u.ac.jp/en/) or our “X” account (@kobeU_sci).

Take Kobe City Bus bound for "Tsurukabuto Danchi" (Line No. 36) from "Rokko" station (Hankyu Railway), "Rokko-Michi" station (JR), or "Mikage" station (Hanshin Railway). Get off at "Shindai Bunrinogakubu Mae" and walk about 3 minutes southward.

7. Announcement of Successful Applicants: See the list of entrance and advancement examination schedules.

8.Enrollment Procedures : See the list of enrollment/advancement examination schedules

The enrollment (advancement) procedure period is scheduled for mid-September, 2026. Detailed information will be notified (by mail) in early September 2026, together with the documents required for the enrollment (advancement) procedure.

Category	Amount	Abstract
Entrance fee (as planned)	282,000 yen	Regarding the admission fee, please pay it during the enrollment procedure period. Those who are expected to complete the Master's program, the professional

			degree program, or the first half of the doctoral program at Kobe University Graduate School in September 30, 2027 are not required to pay it.
Tuition fee (As planned)	first semester	267,900 yen	Please confirm how to pay the tuition for the first semester by the documents which will be sent at the mid-September 2026. If the tuition fee is revised during enrollment, the revised tuition fee will apply.
	per year	535,800 yen	

[Notes]

(1) The entrance fee is not refundable.

(2) An applicant will be deprived of entrance under the following cases:

(A) False statements on the documents.

(B) Failure to complete the enrollment procedures.

(C) Failure to obtain a Master's degree by September 30, 2026.

(3) Foreign students with a Japanese Government scholarship are exempted from paying the entrance and tuition fees.

9.Examination of Qualifications for Application

Those who are qualified under items 7 and 8 in the Section 2 will be examined for their qualifications in applying.

(1) Application Documents

① Application Form for Examination of Qualification (Form No. 9)

② A copy of a Bachelor's degree diploma, or a letter that certifies the anticipated graduation. : The record must be certified by the dean or the president of the applicant's university.

③ Curriculum Vitae (Form No. 2)

④ History or Research (Form No. 10): History of research needs to be certified by the deans or the directors of the institutions where the applicant has worked and work. The history of research written by the applicant may be accepted, if it can not be certified at the corresponding institution(s).

⑤ Research Experience (Form No. 11): A copy of the summary of the thesis equivalent to the Master's thesis (about 1,200 words). Use A4 size paper and attach a cover sheet (Form No. 11).

⑥ Publication: Submit the list and reprints (copies) of significant publications. If an applicant is a co-author or one of several co-authors for any significant publication(s), specify your role and work.

⑦ Research Plan: Describe your research proposal (goal, objectives, and experimental designs) in English (about 1,200 words). Use A4 size paper and attach a cover sheet (Form No. 7). Submissions of 4, 5 and 6 are not obligatory, if an applicant graduated or expected to graduate by September 30, 2026 from the Medical school, Dental school, Pharmaceutical school, or the 6-year course of Veterinary Medical school.

(2) Application Period and Place : See the list of enrollment/advancement examination schedules
Application documents will be accepted at Kyomu-gakusei-kakari (Section of Academic Affairs), Graduate School of Science. (Office hours: 9:00-12:00 and 13:00-17:00 JST, Monday-Friday). When application forms are sent by mail, they must arrive within this prescribed period. When submitting the forms by mail, be sure to send them by registered special delivery, and do not forget to indicate "Application Forms for Examination for Qualification" in red on the envelope.

(3) Notification to Candidates: See the list of enrollment/advancement examination schedules
Each candidate will be notified.

10. Others

(1)Exemption of Payment of Entrance Fee

Those who meet one of the following special requirements and have remarkable difficulties to pay the entrance fee, based on application and through a selection process, may receive a full or half exemption of entrance fee.

①The person who was to pay for the applicant's school expenses died, or was involved in natural disasters such as wind and flood damage within a year of the applicant's enrollment.

②Financial reason as well as having achieved excellent academic performance.

(2) Exemption from admission fees, deferral of collection, and exemption from tuition fees
Information about Exemption from admission fees, deferral of collection, and exemption from

tuition fees is posted on the Kobe University website under → 'Campus life' → ' Tuition and Fees

(3)Scholarship

Information about scholarships is posted on the Kobe University website under 'Student Life & Student Support' → 'Financial Support' → 'Scholarship System'.
(https://www.kobe-u.ac.jp/en/campus-life/scholarships/about/)

(4)Research Assistant Program

Our graduate school offers a Research Assistant Program for newly entering students (for those who paid the entrance fee only). Accepted applicants for this program can work as research assistants and receive an allowance (a maximum amount: approximately 282,000 yen). The program aims to support the students financially within 1 year after the enrollment and promote the research and study for Doctoral degree.

(5)Privacy Statement

①With regard to personal data possessed by this University, laws including the Law Concerning the Protection of Personal Information by Independent Administrative Institutions are observed, and every possible measure is taken to protect it based on the Personal Data Management Rules of Kobe University.

②Personal data provided to this University for application are used for the selection of students, the announcement of accepted applicants, admission procedures, research into selection methods of students.

③The personal data of accepted applicants provided to this University for application is used after admission for student support (health management, scholarship application, etc.), educational purposes (student registration, academic guidance, etc.), and services related to tuition.

④With regard to the use of personal data for various services, some of the services may be entrusted by this University to outside operators (hereinafter referred to as "entrusted operators"). In such cases, all or part of the personal data provided to this University may be provided to the operators imposing the confidentiality of data, to the extent necessary to implement the entrusted services.

For inquiries, please contact:

Kyomu-gakusei-kakari (Section of Academic Affairs)
Graduate School of Science, Kobe University, 1-1, Rokkodai-cho, Nada-ku, Kobe 657-8501
Tel: +81(0)78-803-5767 e-mail: sci-kyomu@office.kobe-u.ac.jp

Department of Mathematics

I. Division of Analysis

This subject is aimed at the mathematical structures of changes occurring in phenomena. Included are the fields of functional equations, functional analysis, complex analysis, harmonic analysis, algebraic analysis and differential equations.

(1) Functional Equations

Mathematical analysis of nonlinear partial differential equations; methods of functional and harmonic analysis. (Y. Ohta*, A. Honda, M. Higaki)

(2) Functional Analysis

Fourier analysis; Functional analytic methods for partial differential equations. (H. Takaoka, K. Ito)

(3) Complex Analysis

Complex analytic functions and special functions, such as elliptic functions and solutions of differential equations; Riemann surfaces; use of analytic and algebraic and geometric methods. ~~(Y. Yamada*)~~ (Note: This field is currently unavailable for selection due to having no faculty members in this field.)

II. Division of Algebra and Geometry

This subject is aimed at elucidating the essential properties behind the continuity and symmetry in structures related to equations and spaces. Included are the fields of number theory, automorphic forms, algebraic geometry, differential geometry and topology.

(1) Algebra

Structure and theory of algebraic manifolds, moduli theory, automorphic forms, automorphic representations, number theory. (K. Yoshioka, T. Taniguchi, K. Morimoto, T. Sano)

(2) Geometry

Differential geometry and topology; differentiable manifolds; theory of knots and links; minimal and constant mean curvature surfaces; singularities on Riemannian manifolds; hyperbolic space and low dimensional topology. (W. Rossman, S. Satoh, K. Saji, K. Wada)

III. Division of Applied Mathematics

This subject is aimed at the fields of probability, combinatorics, automorphic forms, number theory, computational mathematics, information science and mathematical physics, with applications to such things as science, engineering, computer science and economics in mind.

(1) Probability

Applications of probability theory to random motions, fluctuations and random phenomena of mathematical objects. (K. Fukuyama**)

(2) Computational Mathematics

Computational methods in the mathematical sciences; efficient implementation on computers and development of computer algebra systems; applications to algebra, algebraic analysis and mathematical physics. (N. Shutoh, H. Fuji)

Those staff members indicated by * are scheduled to retire at the end of March 2027.
Those staff members indicated by ** are scheduled to retire at the end of March 2028

Department of Physics

I. Division of Theoretical Physics

The aim of this division is to study theoretically on elementary particles, the most fundamental constituents of the universe, and various physical properties of condensed matter systems.

(1) Elementary Particle Physics and Cosmology
The properties of elementary particles and physics beyond the standard model and quantum gravity are studied theoretically. The origin of the spacetime and matter in the universe is investigated. (J. Soda***, R. Jinno)

(2) Condensed Matter Theory
Mechanisms of superconductivity and magnetism in various systems are studied using analytical and numerical methods with emphasis on the view point of spontaneous symmetry breaking and quantum information. (~~K. Kuboki*~~, T. Nishino)

(3) Quantum Solid State Physics
A theoretical study that explores diverse physical properties of matter, such as quantum transport, superconductivity, and nonequilibrium phenomena, based on quantum theory, aiming to transcend the conventional boundaries of physics and pioneer a new frontier in materials science. (Y. Fuseya)

II. Division of Particle Physics

The aim of this division is to experimentally study the properties of elementary particles and the interactions between them, and to answer questions about the early universe.

(1) Particle Physics
We work on experiments, using the most advanced experimental facilities, such as high-energy hadron collider experiment (LHC・ATLAS), neutrino experiments (Super-Kamiokande, Hyper-Kamiokande, T2K), and direct dark matter search experiments (XENON, NEWAGE). (~~H. Kurashige*~~, Y. Takeuchi, Y. Yamazaki, K. Miuchi, J. Maeda)

III. Division of Condensed Matter Physics

The aim of this division is to experimentally study on the magnetic, electric, and thermal properties of condensed matter systems such as magnetic material, superconductor, and semiconductor.

(1) Extreme Condition Condensed Matter Physics
Quantum phenomena are studied by electron spin resonance and nano-scale magnetometry under extreme conditions, such as low temperature, high magnetic field, and high pressure. (E. Ohmichi, S. Okubo)

(2) Low Temperature Condensed Matter Physics
Quantum phenomena, such as superconductivity, magnetism, and multipole order, are studied by nuclear magnetic resonance and macroscopic measurements under complex conditions such as low-temperature, high-magnetic field and high pressure.
(H. Tou, H. Kotegawa)

(3) Correlated Electron Physics
Our study is focused on the crystal growth and low temperature measurements in highly correlated electron systems to explore new quantum phenomena, such as unconventional superconductivity and magnetism. (H. Sugawara, E. Matsuoka)

Those staff members indicated by *** are scheduled to retire at the end of March 2029

Department of Chemistry

I. Division of Physical Chemistry

Research and education are directed toward understanding structures and dynamics of molecules, clusters, and solid surfaces using various laser spectroscopic and quantum chemical methods. The structures are investigated by high-resolution spectroscopy, resonant enhanced multi-photon spectroscopy, and scanning micro probe. The excited states and reaction dynamics are studied by time-resolved nonlinear spectroscopy, scanning micro probe, and pulse shaping method. Physicochemical understanding of chemical reaction mechanism is leaned through the experimental studies.

(1) Molecular Structure and Dynamics

Research and education are aimed to understand molecular structure and control dynamics and chemical reaction on the basis of laser spectroscopy and quantum theory.
(A. Wada*, S. Kasahara)

(2) Material Physical Chemistry

Chemistry at buried interfaces is studied with advanced scanning probe microscopy and optical spectroscopy. Brand-new methods for characterizing nanometer-sized materials are being developed. New solid compounds are synthesized. (H. Onishi**, K. Kimura)

(3) Chemical Reaction Dynamics

Research and education focus on structure and electronic interaction of intermediate species in photoactive proteins and in solar cells by using time resolved electron paramagnetic resonance spectroscopy. Our main scope is elucidations of molecular function for novel light-energy conversion processes. (Y. Kobori, T. Tachikawa)

II. Division of Inorganic Chemistry

Research and education focus on coordination chemistry, inorganic materials chemistry, analytical chemistry, electrochemistry, and reaction chemistry: development of functional materials including organometallic compounds, metal oxides, and polyoxometalate compounds, and analysis of electrochemical reactions, electron transfer reactions, and chemical dynamics in condensed matter.

(1) Solid State Chemistry

Research and education focus on synthesis and characterization of functional inorganic materials including coordination compounds and metal oxides in crystalline or non-crystalline forms. (T. Mochida, T. Uchino**, K. Takahashi)

(2) Solution Chemistry

Development of novel spectroscopic methods using ultrashort pulsed lasers and their application to the study of intermolecular interactions and dynamical structure and reaction dynamics in condensed phases (molecular crystals, solutions/liquids, polymers, etc.).
(K. Tominaga**)

(3) Physical Inorganic Chemistry

Excitation dynamics of biomolecules, including their relaxation, energy transfer, and electron transfer, are studied in solutions and in photosynthetic pigment–protein complexes.
(S. Akimoto)

III. Division Organic Chemistry

Fundamental researches on organic chemistry and biochemistry, in particular, investigations of new synthetic methodologies and molecular design based on supramolecular chemistry and protein science are executed.

(1) Organic Reaction Chemistry
Research and education are conducted on development of new methodologies for selective organic synthesis, investigation of general and highly efficient catalytic routes yielding useful compounds for life science and material science. (~~M. Hayashi*~~, R. Matsubara, H. Mitsunuma)

(2) Organic Molecular Structure and Function
Research and education focus on molecular structure and functions based on organic chemistry and material science; design, synthesis, and structural analysis of supramolecular architectures composed of π -conjugated macrocycles and cage compounds. (A. Tsuda)

(3) Biomolecular Science
Research and education focusing on folding and structural formation of proteins and enzymes, their dynamical functions in solutions and in biomembranes, and conversion of their functions by biotechnological methods. (E. Chatani, A. Tamura***, T. Kimura)

IV. Visiting Academic Staff for Cooperative Division (Japan Synchrotron Radiation Research Institute)

(1) Materials Structure Science
Research and education are conducted with a focus on the structural analysis of crystalline materials with synchrotron radiation, dynamic structural analysis, and the use of diffraction techniques and biological macromolecules using X-ray scattering techniques and fluid structure analysis. (T. Koganezawa, K. Uesugi, O. Sekizawa)

Ⅴ. Visiting Academic Staff for Cooperative Division (RIKEN)

(1) Theoretical Biochemistry
We aim to understand chemical reactions, properties, and functions of large molecular systems such as biomolecules and biodegradable polymers by quantum chemical calculations using supercomputers. (T. Nakajima)

Those staff members indicated by * are scheduled to retire at the end of March 2027.
Those staff members indicated by ** are scheduled to retire at the end of March 2028
Those staff members indicated by *** are scheduled to retire at the end of March 2029

Department of Biology

I. Division of Biomolecular Organization

This division conducts education and research on the cell structure and functions in levels of molecules, cells, tissues, and individuals.

(1) Molecular Physiology

Animals receive various external signals as stimuli through their sensory organs. The sensory information is integrated and processed in the brain to express adaptive behavior according to the circumstance. Our education and research focus on functioning of molecular mechanisms within cells at various levels, such as intercellular communication and interactions between individuals, to understand the mechanisms underlying the expression of adaptive behavior. (H. Aonuma, M. Sakura)

(2) Cell Function

Plants do not have to move from where they live by conducting photosynthesis. Instead, they have abilities to change their cell function, organ growth, and developmental program in response to environmental changes. We educate and research on the mechanisms and their evolution of various plant physiological/morphological responses to environment based on the molecular and cell biology. (H. Fukaki, K. Ishizaki)

(3) Bioinformation

Aiming to explore information processing in biological systems, our education and research focus on signal transductions underlying "brain function" and "membrane traffic and cellular morphology in model organisms". (M. Miyamoto*, M. Morita, H. Tsukamoto)

II. Division of Biosignal Transduction

This division conducts education and research on the mechanisms of gene expression and the regulation of biological responses through the intracellular signal transduction.

(1) Gene Expression

We educate and research on the mechanisms of gene expression and the related developmental processes; germ cell formation and pigment cell differentiation in zebrafish, gene regulatory mechanism of cell fate specification in cardiac neural crest of chicken embryo, and the regulatory mechanisms of gene expression and their evolutionary dynamics in tissue regeneration using amphibians and zebrafish. (K. Inoue, H. Ochi, S. Matsuhana)

(2) Genetic Information

We educate and research on the molecular mechanisms underlying maintenance and diversification of genetic information, and also on the intracellular signal transduction pathways by the post-translational modifications of proteins that regulate biological responses to genotoxic stresses caused by various endogenous as well as environmental agents. (K. Sugasawa*, M. Yokoi)

(3) Gene Function

We educate and research on the functions of genes involved in the regulation of cellular transformation, apoptosis, and senescence, and also in the processes of morphogenesis. Studies are focused on the molecular mechanisms of cell fate decision between apoptosis and senescence induced by cellular stresses, and the functions of long noncoding RNA and small peptide genes in *Drosophila* development. (Y. Kageyama)

III. Division of Biodiversity

This division conducts research and educational program on ecology and systematic biology for elucidating origin and sustenance mechanism of biodiversity of various biota inhabiting both terrestrial and marine environments.

(1) Ecology and speciation

This course covers studies on ecological aspects of biodiversity and its conservation, with particular interests in revealing mechanisms of species interactions, evolutionary change, speciation and diversity of aquatic plants and animals. (N. Okuda, K. Suetsugu, K. Tsuji)

(2) Evolution and phylogeny

We focus on the researches and education of the evolutionary aspects of biodiversity, systematics, metabolic physiology, cell structures and ecology of diverse algae, and apply the results for the conservation and improvement of the aquatic ecosystems.
(S. Uwai, H. Sakayama, R. Onuma)

IV. Division of Developmental Biology

This program provides basic knowledge on mammalian developmental biology, tissue regeneration and active hypometabolism such as hibernation.

(1) Developmental Biology****

Research and education in this division cover fundamental problems in developmental biology and tissue regeneration in respiratory/circulatory system in mouse, and active hypometabolism such as hibernation. We also provide research opportunities using cutting edge technologies in bioimaging, stem cell biology, gene expression and organ regeneration.
(M. Morimoto, W. Kimura)

V. Division of Bioregulatory Science

This division reviews the discovery research for bioactive compounds and the study of their mode of action, translocation and metabolism in organisms such as insects, fungi and plants.

(1) Bioregulatory Science****

Research and education in this division are conducted to clarify the interaction between the organisms and bioactive compounds integrating a variety of technologies.
(F. Iwahashi)

Those staff members indicated by * are scheduled to retire at the end of March 2027.
For retirement schedule of the staff members in the research fields indicated by ****, please directly contact each staff member.
If you wish to apply for the research fields indicated by ****, you need permission from the staff members in advance.

Department of Planetology

Why is this planet to be the Earth? In order to answer this fundamental question, we are aiming at comprehensive understanding of the evolution of the earth, planetary and solar systems by analyzing various processes occurring at spaces from the center of the Earth to the edge of the solar system with multidisciplinary approaches.

I. Division of Fundamental Planetology

This division aims at cultivating discerning persons leading society and/or academic communities by logical analyses and considerations of variable phenomena in planetary and Earth systems.

(1) Geology

We examine surficial materials and geologic structures of the Earth. Our main targets include the various geologic phenomena associated with plate subduction characterizing "planet Earth", environments and life evolution, and tectonics. (Y. Yamamoto, K. Yamasaki)

(2) Petrology and Mineralogy

We examine various kinds of Earth and planetary materials to elucidate their origin and evolution by using various methods such as electron microscopy, chemical analyses, synchrotron radiation, experimental reproductions, field works, and so on. (K. Kaneko)

(3) Solid Geophysics

We study source processes of large earthquakes and slow earthquakes, seismic wave propagation, tsunami generation and propagation processes, and dynamics associated with subduction of oceanic plates such as slab deformation, temperature and flow fields. (S. Yoshioka**)

(4) Fluid Geophysics

We investigate the structures and the evolutions of atmospheres and surface environments of the planets in our solar and exosolar systems, mainly by theoretical and numerical methods. (G. L. Hashimoto, H. Kashimura)

(5) Planetary Astrophysics

The major goal of our group is to advance our understanding of the origin and evolution of ring-satellite systems, small solar system bodies, and planetary systems including those outside our solar system, mainly by theoretical research and analysis of data obtained by ~~telescopes and~~ spacecraft observations. (K. Ohtsuki**, N. Hirata)

II. Division of Frontier Planetology

This division aims at cultivating aspirational persons pioneering frontier researches in planetology in collaboration with national institutes of planetary and earth sciences.

(1) Marine Geodynamics

We conduct researches on the structure and evolution of the solid Earth using marine geophysical methods. (~~N. Seama*~~, H. Sugioka, H. Hirose, T. Minami)

(2) Computational Planetology

We mainly study the formation and evolution of astronomical objects from the large scale structure of the universe for planets by means of theoretical and computational approaches. We also work on the research and development of numerical algorithms, software, and hardware. (J. Makino**, T. R. Saitoh)

(3) Primitive Body Science

We experimentally investigate the physical properties of small bodies, meteorites, and cosmic dust, as well as impact processes and the dynamics of icy bodies, to understand the

origin and evolution of asteroids, comets, and planetary satellites.
(A. M. Nakamura, M. Yasui)

III. Cooperative Division

(1) Evolutionary History of the Planets and the Earth****
We carry out observational studies on cosmology and galaxy formation (NAOJ), and study the history of the Japanese Islands related to global evolution of the Earth (JAMSTEC).
(M. Obayashi, S. Miyazaki)

(2) Applied Planetology****
Japan has experienced natural disaster conditions brought by torrential rain, typhoons, and so on. The global warming is also an urgent issue. Thus, meteorology is an increasingly important branch of the planetary science. By making use of various facilities of the Meteorological Research Institute, we study the atmosphere close to the earth's surface and the data assimilation and predictions of local heavy rainfalls. (S. Yoshida, ~~T. Kawabata~~)

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If you wish to apply for the research fields indicated by ****, please consult with the head of the department (see the website of the Department of Planetology) before submitting the application for admission.