Prefectural University of Hiroshima

Graduate School of Comprehensive Scientific Research Program in Biological System Sciences (Doctoral Program, First Term) Student Application Requirements and Procedures

2014 Academic Year

Fall Admission

Doctoral Program, First Term Special Selection of Foreign Exchange Students (From universities that have signed an academic exchange agreement with this university)

> May 2014 Prefectural University of Hiroshima

Contents

1	Number of Persons to be Accepted	1
2	Application Requirements	1
3	Application Procedures	1
4	Prior Consultations	3
5	Prior Consultations for Physically Challenged and Similar Applicants	3
6	Selection Procedures	3
7	Announcement of the Successful Applicants	3
8	Admission and Related Procedures	3
9	Tuition and Other Fees	3
10	Scholarships, etc.	4
11	Handling of Personal Information	4
12	Table of Academic Advisors and Research Fields	5

Enclosed Forms and Other Materials

- **O** Application for Admission
- O Statement of Desired Research (Forms 1 and 2)
- O Letter of Recommendation
- O Curriculum Vitae
- O Request for Payment of Admitted Student Selection Fee
- O Contact Address Tag
- O Return Envelope

2014 Academic Year: Application/Admission Schedule

Application Group	Application Period	Announcement of the Successful Applicants	Period of Admission Procedures
Fall Admission	June 19 (Thurs.) to July 4 (Fri.)	July 23 (Wed.)	July 24 (Thurs.) to August 7 (Thurs.)

Note: Start date for students accepted for admission in the fall semester is September 24, 2014.

Prefectural University of Hiroshima - Graduate School of Comprehensive Scientific Research - Program in Biological System Sciences -<u>Doctoral Program, First Term</u> 2014 Academic Year Fall Admission Student Application Requirements and Procedures

1 Number of Persons to be Accepted

Applicants

Special Selection of Foreign Exchange Students (From universities that have signed an academic exchange agreement with this university)

Approx. five persons

Note: Start date for students accepted for admission in the fall semester is September 24, 2014.

2 Application Requirements

Applicants must meet both of the following requirements.

- (1) Applicants must have graduated from a university that has signed an academic exchange agreement with this university or be expecting to have graduated from the same by September 30, 2014, and must be 22 years of age or older by September 24, 2014.
- (2) Applicants must have completed a 16-year course of school education in countries other than Japan or be expecting to have completed it by September 30, 2014.

3 Application Procedures

(1) Application Period

June 19 (Thurs.) to July 4 (Fri.) 2014 Must be received by July 4

(2) Where to Send Application Documents

Submit documents to: Academic Affairs Sect., Administrative Affairs Dept., Shobara Campus, Prefectural University of Hiroshima ("Academic Affairs Sect." hereinafter)

Academic Affairs Sect., Administrative Affairs Dept., Shobara Campus, Prefectural University of Hiroshima
562 Nanatsuka-cho, Shobara City, Hiroshima 727-0023, Japan Tel: +81-824-74-1700 Fax: +81-824-74-0191 Email address: pusnyusi@pu-hiroshima.ac.jp
Eman audress. pusnyusi@pu-miosinnia.ac.jp

- (3) Important Points Regarding Applications
 - A Applicants must submit all application documents to the Academic Affairs Sect.
 - B If sending your application by mail, include the enclosed return envelope with your application (do not fold the enclosed envelope).

Be sure to write "Contains Graduate School Application Documents" in red ink on the front of the envelope together with your name and return address, and send the application documents by "International Express Mail (EMS)" or "Registered Express Mail".

- C Reception times if hand delivering your application directly to the office are 09:00 to noon and 13:00 to 17:00 except for Saturdays and Sundays.
- D Fill in application documents using a black ink pen or ballpoint pen.
- E Be sure to thoroughly check your application documents as deficient or inadequate documents cannot be accepted.
- F Changes to application document contents cannot be made after they have been received.
- G Admission will be revoked if the application requirement cannot be met.
- H Admission might be revoked if any contents of the application documents are discovered to contain falsehoods even after admission has been approved.
- I The application documents and admitted student selection fee cannot be returned once they have been received. However, this fee can be returned if no application documents are submitted after the admitted student selection fee has been paid. In such cases, please inquire with the Academic Affairs Sect. by email in English by March 31 (Tues.), 2015.
- J If you have any questions, please contact the Academic Affairs Sect. by email in English.

(4) Application Documents

Application Documents	Description
Application for Admission	Fill in the required items on the form attached to these application requirements and procedures.
Statement of Desired Research	 Use the forms (Forms 1 and 2) attached to these application requirements and procedures. Refer to "12 Table of Academic Advisors and Research Fields" for selecting the desired research field and related items.
Letter of Recommendation	 Fill in the required items on the form attached to these application requirements and procedures. Submit a document prepared by the advising teacher, and signed by the president or department chair (dean of the graduate school).
Records of Communication Confirming Prior Consultation with Desired Academic Advisor	Submit copies of all records of communication (email and letters) showing the details of consultations regarding items such as academic advisor of the research field for which you want to receive guidance in advance and research after admission.
Graduation Certificate (Expected)	 Submit a document prepared by the president or department chair (dean of the graduate school) of your university or educational institution. Attach a Japanese translation if the document is in any language other than English. * Consult the Academic Affairs Sect. beforehand if you cannot provide an original copy of the document (refer to pg. 1). * Persons who have graduated from an institute of higher learning in China must authenticate their graduation certificate at the China Higher Education Student Information (中国高等教育学生信息網) website (http://www.chsi.com.cn/xlcx/), and provide a printout of the verification screen (中国高等教育学生信息網).
Academic Transcript	Submit a document prepared and signed (official seal affixed) by the president or department chair (dean of the graduate school) of your university or educational institution. Attach a Japanese translation if the document is in any language other than English.
Curriculum Vitae	 Use the form attached to these application requirements and procedures. Attach a 4 cm (H) x 3 cm (L) photo taken within three months before submitting the application. The photo should be of the upper half of your body taken from the front, and against a plain background.
TOEIC/TOEFL Score Certificate	Submit any of the following certificates (must be an original copy). Multiple certificates can be submitted. Only certificates with scores from tests that were taken on or after April 1, 2012 are valid for submission. Score certificates will be returned to applicants at a later date. (1) TOEIC(R) (2) TOEIC(R)-IP (3) TOEFL(R)-PBT (4) TOEFL(R)-ITP (5) TOEFL(R)-iBT
Admitted Student Selection Fee Bank Transfer Certificate (入学者選抜料 振込証明書)	 Please be aware of the following points regarding the payment of the admitted student selection fee. (1) Be sure to make the bank transfer at a teller window of your bank or financial institution. (Do not use an automatic teller machine (ATM).) A separate bank transfer fee is required when making the transfer. (2) For persons living outside of Japan: Enclose 30,000 yen in cash with the attached 'Request for Payment of Admitted Student Selection Fee' (Fill in your name and other information on each sheet, but do not separate the tag. You do not have to attach it to the back of your application.) in an envelope, and send it by insured post to the same address to which you have submitted your application documents.
Contact Address Tag	Use the form attached to these application requirements and procedures.
Copy of Passport	Submit copies of the page of your passport showing your name, date of birth, sex and nationality. Persons residing in Japan with a status of residence must submit a copy of their resident's card.

4 **Prior Consultations**

Be sure to consult by email or letter regarding items related to your application such as academic advisor of the research field for which you want to receive guidance in advance and research after admission. Save records of all communications because these are required application documents.

Refer to "12 Table of Academic Advisors and Research Fields" for research fields and teaching staff.

5 Prior Consultations with Physically Challenged and Similar Applicants

Applicants requiring special consideration in regards to their studies, such as having a physical handicap, must consult with the Academic Affairs Sect. by email in English before June 3 (Tue.), 2014.

6 Selection Procedures

(1) Selection Procedures

The selection of admitted students will be performed by an overall evaluation of the application documents.

(2) Corresponding Weight of Items

Transcript and letter of recommendation are given 30%, TOEIC/TOEFL score is 20%, and other documents such as the Statement of Desired Research are given 50%.

7 Announcement of the Successful Applicants

(1) Date/Time

Noon on July 23 (Wed.), 2014

(2) Announcement Method

A The application numbers of students accepted for admission for all programs of the Graduate School of Comprehensive Scientific Research will be posted on the following bulletin boards of the Prefectural University of Hiroshima, and students accepted for admission will also receive an acceptance letter by mail.

Locations of Bulletin Boards Hiroshima Campus: Entrance of Educational Research Bldg. 1

Shobara Campus: South side of Bldg. 1 (outside)

- B Although the application numbers of students accepted for admission will be posted on the website of this university (http://www.pu-hiroshima.ac.jp/), be sure to check the bulletin boards at either campus or your acceptance letter.
- C No response can be given to inquiries regarding acceptance made by telephone or other means.

8 Admission and Related Procedures

- (1) Period of Admission Procedures
 - July 24 (Thurs.) to August 7 (Thurs.) 2014 <u>Must be completed by August 7</u>
 - Note 1: Accepted students who have not completed the procedures by the deadline will be considered as having declined admission.
 - Note 2: Reception times if hand delivering your fee and paperwork directly to the office are 09:00 to noon and 13:00 to 17:00 except for Saturdays, Sundays and holidays.
- (2) Admission Fee 394,800 yen

9 Tuition and Other Fees

(1) Tuition

Annual tuition is 535, 800 yen (This is the amount for students admitted for the 2014 academic year and is subject to change in the future.)

If the tuition fee is changed while you are a student, the new fee will be applied from after the time the fee is changed.

(2) Facilities Expense Fee

Facilities expense fee is 15,600 yen (This is the amount for students admitted for the 2014 academic year and is subject to change in the future.)

If the facilities expense fee is changed while you are a student, the new fee will be applied from after the time the fee is changed.

(3) Other Fees and Expenses

Students are expected to pay other fees and expenses in addition to the above such as fees for personal accident insurance for students pursuing education and research, and supplementary liability insurance, as well as for textbooks and other materials.

10 Scholarships, etc.

(1) Scholarships

Students accepted through this selection are provided with a monthly figure of 30,000 yen under this university's scholarship system. However, this shall be limited to the standard graduation period.

(2) Lodging

This university will notify successful applicants about lodging along with the acceptance notice.

11 Handling of Personal Information

Personal information related to the application will not be used for any purpose other than the selection of students for admission.

12 Table of Academic Advisors and Research Fields

Please feel free to contact the professors for more information. Applicants are requested to consult with prospective professors about future research plans before applying.

Field	Position	Name, Subject (Class) Email	Outline of Research	Research Themes
Molecular Life Science	Prof.	Hiroaki KONISHI Technology of Bio-molecular Recognition hkonishi@pu-hiroshima.ac. jp	We have identified by phosphoproteomics all the functional molecules acting downstream of the EGF receptor, in order to understand the complicated network of its intracellular signaling. We are now focusing on analyzing the functions of the newly identified proteins.	Over 15 hitherto-unknown molecules in the EGF receptor-mediated signaling pathway have been identified. Our goal in the near future is to establish the function of each molecule in this pathway by biochemical, molecular biological and cell biological methods.
	Prof.	Masaaki TATSUKA Radiation Genome Systems Biology tatsuka@pu-hiroshima.ac.j p	Our studies are aimed at identifying intracellular molecular targets for development of small-molecule drugs with beneficial effects for anticancer therapy. AIM-1, also known as Aurora-B, was originally discovered by us, and now this kinase and its family of kinases offer a rational novel therapeutic approach for the treatment of cancer. In our current study, we aim to identify further molecular targets related to AIM-1.	 We are interested in the following mitosis-related intracellular signaling molecules : Chromosome passenger proteins including Aurora-B, Survivin, INCENP, and Borealin; their related molecules such as SAKI, MOB, TopoIIa, Aurora-A, and Aurora-C; and RhoGDIbeta. We are focusing now on cancer metastasis-related subjects such as: 1) anoikis resistance – an essential part of the metastasis processes, 2) mitotic processes of stem cells under hypoxia conditions, 3) loss of cell polarity during radiation injury.
	Prof.	Toshiki YAGI Structural Biology of Supramolecule yagit@pu-hiroshima.ac.jp	To understand the molecular mechanism of ciliary and flagellar movements, we have analyzed the motility of <i>Chlamydomonas</i> mutants lacking specific axonemal components. Our research focus is dynein, a ciliary motor protein.	 Functional analysis of cilia dyneins. Regulatory mechanism of dynein motor activity in ciliary movement. Molecular mechanism of cilia assembly. X-ray structural analysis of cilia dynein.

Field	Position	Name, Subject (Class) Email	Outline of Research	Research Themes
	Prof.	Toshitaka HORIUCHI Germ Cell Biotechnology toshi@pu-hiroshima.ac.jp	Fertilization by intracytoplasmic sperm injection (ICSI), and development of the resulting embryos. Production of transgenic animals by ICSI. Effect of light on development of mammalian zygotes. Establishment and maintenance of mouse and hamster ES-cells.	 Intracytoplasmic sperm injection (ICSI) of freeze-dried bovine, hamster and mouse spermatozoa. Production of transgenic embryos or animals by ICSI of bovine, mouse and hamster spermatozoa. Establishment of mouse ES cells in a chemical defined medium and in vitro culture of germ stem cells.
B	Prof.	Yukinori SATO Physical Chemistry of Food and Technology yukisato@pu-hiroshima.ac. jp	Molecular interaction in foods from a physicochemical point of view, and the relationship between the physical structure and functional expression of food molecules Especially focusing on sol-gel transition.	 Analysis of molecular interaction among food molecules in aqueous solutions, using physicochemical techniques Hydration and solution structure in aqueous foods Food drying and properties of dried foods Development of simple measurements of interaction among food molecules Control of functional expressions in local food materials
Biofunctional Science and Technology	Assoc. Prof.	Yasukazu SAITOH Bioscience and Biotechnology for Cell Function Control ysaito@pu-hiroshima.ac.jp	Studies on control of aging, cancer and various disorders through the development of controllable methods/ biomaterials to suppress stress-induced cell injuries/cell death.	 Development of controllable methods/ biomaterials to suppress stress-induced cell injuries/cell death. Anti-aging through suppression of intracellular reactive oxygen species. Development via intracellular redox control of selective anti-cancer biomaterials that select cancer cells over normal cells. Elucidation of vitamin C transport system and its regulation mechanisms in human cells.
chnology	Assoc. Prof.	Futoshi YAZAMA Anatomical Physiology fyzma@pu-hiroshima.ac.jp	We analyze various disease mechanisms morphologically using electron microscopes. Additionally, through biochemical analyses by two-dimensional electrophoresis, we search for proteins that cause sickness. Further, we aim at establishing treatment methods for diseases of uncertain cause.	 Testis proteomics in cryptorchid mice Abnormal spermatogenesis in mice unable to synthesize ascorbic acid
	Assoc. Prof.	Yasuhisa YAMASHITA Anatomical Physiology yamayasu@pu-hiroshima.a c.jp	We conduct our research to elucidate the basic mechanisms of oocyte maturation during follicular development and ovulation. Furthermore, we also study to apply the fundamental insights from that to prevention of reproductive disorders in animals, establishment of novel methods of <i>in vitro</i> maturation for domestic animals, and assisted reproductive techniques for humans.	 Analysis of secretory mechanisms of EGF-like factor in granolosa/cumulus cells during follicular development and ovulation process. Analysis of biosynthesis of steroid hormone in granulosa/cumulus cells during follicular development and ovulation process. Searching for novel factors to induce oocyte maturation during follicular development and ovulation process. Kinetic change of maturation inducing maker of oocyte inovulation process using ovarian pick-up (OPU) technique.

Field	Position	Name, Subject (Class) Email	Outline of Research	Research Themes
	Prof.	Kouhei IRIFUNE Genetic Improvement of Plant Function kirifune@pu-hiroshima.ac.j p	Molecular mechanisms of plant gene expression and regulation in flowering. Production of useful crops via transformation technology and molecular breeding.	 Molecular analysis of genes related to plant flowering and flower organ formation. Modification of the flower organ based on transgenic techniques for useful crop production. Plant transformation mechanisms and development of novel gene transfer techniques
	Prof.	Takashi OKU Molecular Plant Pathology toku@pu-hiroshima.ac.jp	We focus on clarifying the molecular mechanisms of virulence in <i>Xanthomonas oryzae</i> pv. <i>oryzae</i> and the resistance of rice plants to this pathogen. We are also working to establish an integrated pest management (IPM) system to decrease the severity of clubroot disease in crucifers caused by <i>Plasmodiophora brassicae</i> .	 Analysis of Type III secretion proteins involved in virulence of <i>Xanthomonas</i> <i>oryzae</i> pv. <i>oryzae</i>. Molecular biology of rice plant resistance to <i>X. oryzae</i> pv. <i>oryzae</i>. Physiologic races <i>in X. oryzae</i> pv. <i>oryzae</i>. Physiologic races in <i>Plasmodiophora</i> <i>brassicae</i>. Integrated pest management for clubroot disease in crucifers.
Bioreso	Prof.	Tadashi GOMI Ecology of Insects gomi@pu-hiroshim <u>a</u> .ac.jp	We study adaptation of insects to environmental change, especially global warming. We investigate patterns and mechanisms of the shift in insect life cycles in response to climate change.	 Effects of climate change on life-history traits of insects, such as photoperiodic responses for diapause induction, and developmental rates. Seasonal adaptation of insects and evolution of their life cycles.
Bioresource Development	Assoc. Prof.	Kenji FUKUNAGA Genetic Improvement of Plant Function fukunaga@pu-hiroshima.ac .jp	Conservation,evaluationandutilizationofplantgeneticresources.1)Evaluationofgeneticdiversityoflandracesandwildrelativesbasedonagronomictraitsand DNAmarkers.2)Isolationanalysis2)Isolationand analysisofmechanismsfordiversificationofuversificationofcultivatedplants.basedof	 Analysis of genetic diversity of Japanese landraces of foxtail millet based on agronomic traits and DNA markers. Comparison of mechanisms causing waxy variants among cereal species. Isolation and analysis of rice gene homologs from foxtail millet. Mapping and isolation of morphogenesis genes in cereals.
	Assoc. Prof.	Taizo MASUDA Physiology and Biochemistry of Plant Nutrition taizo@pu-hiroshima.ac.jp	Physiological and biochemical analysis of plant nutritional mechanisms, effective use of nutrients, and environmental conservation based on the nutrient cycle.	 Analysis of leafy vegetable growth promotion by oyster shell application Investigation of effective use of organic waste on agricultural lands Material flow analysis of heavy metals in bio-energy plant production with sludge fertilizer application on abandoned farmlands
	Assoc. Prof.	Tomoyuki YOSHINO Food Process Engineering yoshino@pu-hiroshima.ac.j p	Study of food processing with regard to functional ingredients and preservation. Development of biodegradable materials made from food byproducts. Microscopic study of interactions between cells and biomaterials.	 Development of functional foods made from agricultural products. Development of low-cost biodegradable materials from corn protein. Study of interaction between LDL and receptors in cell membranes by scanning probe microscopy (SPM). Imaging of the chromosome surface by SPM.

Field	Position	Name, Subject (Class) Email	Outline of Research	Research Themes
Biological and Environmental Science	Prof.	Kazuo KATO Radiological and Environmental Sciences kkato@pu-hiroshima.ac.jp	The radioactivities in environmental materials such as soil and well water are precisely measured for the purpose of elucidating how they affect our health. The cumulative doses incurred from the environmental radiations are estimated. The residual radioactivities induced by the atomic bomb neutrons are measured to estimate the atomic bomb radiation doses.	 Measurements of trace natural and artificial radioactivities in the environmental materials. Development of methodology to measure both neutron and gamma rays using thermoluminescence dosimeters. Experimental evaluations of the Hiroshima and Nagasaki atomic bomb neutron doses.
	Assoc. Prof.	Mitsuru AOYAGI Methods for Analysis of Solid Materials aoyagi@pu-hiroshima.a c.jp	Structural analysis and characterization of polymeric materials derived from components of lignocellulosics. Applications of these materials are also studied based on their properties at the molecular level.	 Photochemical analysis of variations in condensed structures of several lignin derivatives. Investigation on properties of lignin-based polymeric materials. Investigation and application of structural changes in lignin derivatives under irradiation.
	Assoc. Prof.	Toshifumi SAKAGUCHI Bioremediation sakaguchi@pu-hiroshima.a c.jp	Development and creation of biomaterials and biofunctions based on biotechnology and genetic engineering by using microbes for bioremediation and eco-monitoring. Fundamental researches on environmental microorganisms, extremophiles and biomineralization toward technological application.	 Development of biomaterials and biofunctions for bioremediation. Development of ecomonitoring systems, biodevices, biosensors by microfabrication techniques. Synthesis of bionanoparticles based on biomineralization. Fundamental researches on biomineralization of metalloids and metals. Identification and isolation of functional microbes and extremophiles toward technological applications.
	Assoc. Prof.	Kanako NAITO Hydrospheric Environmental Chemistry naito@pu-hiroshima.ac.jp	We study the role of trace metals, especially iron, on phytoplankton in hydrospheres. We investigate the mechanisms of red tide outbreaks in coastal areas, and develop effective strategies to combat the theat of harmful algal blooms through management and mitigation.	 Elucidation of the mechanisms of iron uptake by eukaryotic phytoplankton Elucidation of the physiological and ecological specificity of microalgae causing red tides Study on the seasonal dynamics of microalgae and trace metals in hydrospheric environments Development of a chemically defined artificial medium for harmful algae

Field	Position	Name, Subject (Class) Email	Outline of Research	Research Themes
En	Prof.	Kazuyuki NISHIMURA Advanced Material Cycles and Waste Management nishimura@pu-hiroshima.a c.jp	We develop and assess treatment technology and recycling systems for wastes. We also research risk management for recycled products.	 Developing waste treatment technologies for minimizing environmental impact. Study of material recycling technologies and systems. Research on techniques for assessing health risks.
vironmental Co	Prof.	Hiroyuki HARADA Advanced Material Cycles and Waste Management ho-harada@pu-hiroshima.a c.jp	We research techniques for combining key technologies to construct optimally eco-friendly systems for environmental maintenance and restoration.	 Recovery of exhaustible resources by utilizing untapped waste biomass Adsorption of hydrogen sulfide by utilizing natural minerals Environmental conservation of tideland
Environmental Conservation and Remediation	Assoc. Prof.	Shogo SAKITA Advanced Material Cycles and Waste Management sakita@pu-hiroshima.ac.jp	We investigate long-term behaviors of hazardous substances –particularly heavy metals – in final landfill sites, via on-site surveys, experiments, and numerical modeling and simulation. In addition, we develop technology for recycling municipal solid waste incineration (MSWI) residues.	 Utilization of MSWI residues as construction material Biochemical and mineralogical stabilization of landfilled MSWI residues Long-term prediction of leachate quality in a MSWI landfill
iation	Assoc. Prof.	Yoshiharu MITOMA Instrumental Analysis of the Environment mitomay@pu-hiroshima.ac .jp	Applied research on proper disposal of waste materials aimed at creation and promotion of a recycling-oriented society, with basic studies of green processes via heterogeneous catalysis.	 Energy-saving detoxification systems for endocrine-disrupting chemicals. Biomass conversion into useful materials using environmentally-friendly chemical reactions. Synthetic organic reactions in water and their mechanisms.

Field	Position	Name, Subject (Class) Email	Outline of Research	Research Themes
Bioresource Management	Prof.	Eiji KUROKI Food Business kuroki@pu-hiroshima.ac.jp	Theoretical and empirical food business research for locality-oriented contributions, based on locally unique bioresources and cutting-edge technology	Local bioresource-based research for business seeding, product development and marketing
	Assoc. Prof.	Manabu HORITA Marketing and Supply Chains for Vegetables and Fruits horita@pu-hiroshima.ac.jp	Theoretical and empirical economic research for constructing efficient marketing systems.	 Changes in wholesalers' market environment and deregulation policy for their trading of fruits and vegetables under the Wholesale Market Act Economic functions of agricultural co-operatives
nent	Assoc. Prof.	Wakayo MURATA Farming Systems murataw@pu-hiroshima.ac .jp	We study the differences in food production around the world from the perspectives of technology, policy and social conditions.	 Comparative farming systems and agricultural policy Analysis of food trade and management Women and development

Inquiries related to the application and admission procedures

◊ Program in Biological System Sciences
 Academic Affairs Sect., Administrative Affairs Dept.,
 Shobara Campus, Prefectural University of Hiroshima

562 Nanatsuka-cho, Shobara City, Hiroshima 727-0023, Japan Tel: +81-824-74-1700 Fax: +81-824-74-0191 Email address: pusnyusi@pu-hiroshima.ac.jp