

APPLICATION OUTLINE (2017)
KANAZAWA UNIVERSITY GRADUATE SCHOOL OF MEDICAL SCIENCES
DOCTORATE PROGRAM
INTERNATIONAL ENVIRONMENTAL MEDICAL, PHARMACEUTICAL,
AND HEALTH SCIENCES COURSE

GRADUATE SCHOOL OF MEDICAL SCIENCES
KANAZAWA UNIVERSITY

Kanazawa University Graduate School of Medical Sciences Doctorate Program

Outline of the International Environmental Medical, Pharmaceutical, and Health Sciences Course

The Graduate School of Medical Sciences, Kanazawa University is currently accepting applications for the International Environmental Medical, Pharmaceutical and Health Sciences or related fields at the doctorate level as follows:

1. Research Field and Number of Students

(1) Research field: Environmental medical, pharmaceutical and health sciences or related research fields.

(2) Number of students: 18 students

10 privately financed international students, foreign government dispatched students (*)
Japanese government scholarship students (regular category of university recommendation or
embassy recommendation) (*)
8 Japanese students

* Regarding foreign government dispatched students and Japanese government scholarship students (regular category of university recommendation or embassy recommendation), please ask each student affairs section about the details of their application procedure.

2. Application Requirements

(1) Educational Background:

The applicant must satisfy one of the following requirements:

- ① Has successfully completed (or expects to complete) an 18-year course of school education by the end of September 2017 outside Japan, with a degree in medical, pharmaceutical, dental, or veterinary science.
- ② Has obtained a Master's degree, or expects to obtain a Master's degree by the end of September 2017.
- ③ Has spent two years or more at a university or research institution after graduating from a university or completed a 16-year course of school education.
Be deemed by the Graduate School of Medical Sciences at Kanazawa University to have academic ability equal to or higher than a Master's degree holder, based on results of research reported in submitted documents.
- ④ Be deemed by the Graduate School of Medical Sciences at Kanazawa University to have academic ability equal to or higher than a Master's degree holder, based on submitted documents.
Be 24 years old or elder as of September 30, 2017.

(2) Health:

The applicant should be certified as being healthy by a qualified and recognized physician.

(3) Language:

The applicant must have an excellent command of both practical and relevant technical English, since the thesis work will be carried out in English.

3. Tuition and Fees

- Entrance Examination Fee: 30,000 JPY
- Admission Fee: 282,000 JPY (TBD)
- Tuition: 535,800 JPY (TBD)

4. Selection and Notification

- (1) The Graduate School of Medical Sciences will establish a selection committee, which will review applications on the basis of applicants' results of university/graduate school master's course, English proficiency (by TOEFL, TOEIC, or IELTS).
- (2) Applicants will be notified of the result by the early July 2017. Successful applicants will be enrolled as full-time graduate students of the Graduate School of Medical Sciences, Kanazawa University.

5. Date of Entrance

The Applicant must arrive in Japan in the first week of October 2017.

6. Program Description

- (1) The aim of this program is (a) to develop medical professionals in the clarification and prevention of diseases caused by environmental factors, (b) to foster international communication skills through cooperative learning with international and Japanese students, and/or (c) to foster human resources who can practice and guide environmental measurement, health impact assessment, and preventive measures at the governments, local governments, international organizations, research institutions, companies, and so on.
- (2) With the cooperation of the entire faculties of the University Hospital and Cancer Research Institute, the Graduate School of Medical Sciences will make the program of this nature possible in English.
- (3) Upon acquisition of the required credits and presentation of a compilation of student's research accomplishments in the form of a thesis deemed acceptable by the faculty, the student will be granted a Ph. D. in Medical Sciences, Ph. D. in Pharmaceutical Science, or Ph. D. in Health Science.

7. Application Procedure

Applicants must submit the following application documents to the Kanazawa University Graduate School of Medical Sciences no later than June 9 (Fri.), 2017. They must submit these documents through a professor at Kanazawa University who will be asked to be their academic supervisor.

(1) Required documents for international students

- ① Application form including Field of Study and Study Program form (as per the attached form)
- ② Letter of Recommendation (as per the attached form)
- ③ A photograph (4.5×3.5cm) taken within the past 6 months; full frontal view of the head and shoulders, without a hat. The photograph must be attached to the specified place on the Application form (①) with the applicant's name and nationality written on the back.

In addition, a photo data need to be sent by e-mail.

- ④ Photo copy of the passport
- ⑤ Official academic transcripts of all applicable undergraduate and graduate courses from the institution including GPA and/or ranking in the institution.
- ⑥ Certificates of graduation or photocopies of the university diploma for both graduate and undergraduate studies, or a certified letter stating the expected date of graduation.
- ⑦ Summary thesis of bachelor degree and/or master degree in English (if any for Division of Medicine, all applicants for the other Divisions)
- ⑧ A document proving their English ability, e.g. score report of TOEFL, TOEIC, IELTS, etc. No document is required for native English speakers.
- ⑨ Research achievements in English (if any for Division of Medicine, all applicants for the other Divisions)
- ⑩ For those currently employed, a letter of release/recognition from the head of their employer, recognizing their right to apply and/or pursue further education in the doctoral program
- ⑪ Medical certificate in the prescribed form
- ⑫ Examination fee of 30,000 JPY

(2) Required documents for Japanese students

- ① Application form including Field of Study and Study Program form in English (as per the attached form)
- ② A photograph (4.5×3.5cm) taken within the past 6 months; full frontal view of the head and shoulders, without a hat. The photograph must be attached to the specified place on the Application form (①) with the applicant's name and nationality written on the back. In addition, a photo data need to be sent by e-mail.
- ③ Official academic transcripts of all applicable undergraduate and graduate courses from the institution
- ④ Certificates of graduation for both graduate and undergraduate studies, or a certified letter stating the expected date of graduation
- ⑤ Summary thesis of bachelor degree and/or master degree (if any for Division of Medicine, all applicants for the other Divisions)
- ⑥ A document proving their English ability, e.g. score report of TOEFL, TOEIC, IELTS, etc.
- ⑦ Research achievements (if any for Division of Medicine, all applicants for the other Divisions)
- ⑧ For those currently employed, a letter of release/recognition from the head of their employer, recognizing their right to apply and/or pursue further education in the doctoral program
- ⑨ Examination fee of 30,000 JPY

* Field of Study and Study Program form will be used as one of the most important references for selection. All applicants are notified that they must keep close contact with the expected supervisor or host professor at Kanazawa University in order to formulate a research plan.

- * Application papers should be prepared on A4 size papers.
- * Application papers that are incomplete, incorrectly (falsely) written, or submitted after the deadline, will not be processed.
- * Application papers and related fees will not be returned to the applicant.
- * Prospective applicants must have had an interview given at the Graduate School of Medical Sciences with an expected academic supervisor. Alternatively, the interview can be done through the internet.

8. Miscellaneous

Applicants are advised to familiarize themselves with Japanese customs, climate, and culture before arrival in Japan. Although the course and research will be conducted in English, the applicant will be required to learn basic Japanese language in order to cope with daily life.

【Outline of the Course】

| | |
|-------------------|--|
| ① C o u r s e | The International Environmental Medical, Pharmaceutical, and Health Sciences Course in English |
| ② D e g r e e | Doctoral Course (4 Years or 3 Years) |
| ③ Graduate Course | Graduate School of Medical Sciences |
| | Address: 13-1 Takara-machi, Kanazawa, Ishikawa 920-8640, Japan (To see the NOTE below) |
| ④ D i v i s i o n | Division of Medicine (4-year course) ※1 |
| | Division of Pharmacy (4-year course) ※2 |
| | Division of Pharmaceutical Sciences (3-year course) ※2 |
| | Division of Health Sciences (3-year course) ※3 |

(NOTE) Inquiries regarding this program should be directed to the address below ※1 or ※2 or ※3.

※1 : Medical Student Affairs Section, Kanazawa University

13-1 Takara-machi, Kanazawa, Ishikawa 920-8640, Japan

Fax: +81-(0)76-234-4208

E-mail: t-igaku1@adm.kanazawa-u.ac.jp

URL: <http://www.med.kanazawa-u.ac.jp/EN/admission/education.html>

※2 : Pharmacy Student Affairs Section, Kanazawa University

Kakuma-machi, Kanazawa, Ishikawa 920-1192, Japan

Fax: +81-(0)76-234-6844

E-mail: y-gakumu@adm.kanazawa-u.ac.jp

URL: <http://www.p.kanazawa-u.ac.jp/e/>

※3 : Health Sciences Student Affairs Section, Kanazawa University

5-11-80 Kodatsuno, Kanazawa, Ishikawa 920-0942, Japan

Fax: +81-(0)76-234-4351

E-mail: t-igaku2@adm.kanazawa-u.ac.jp

URL: <http://mhs3.mp.kanazawa-u.ac.jp/eng/>

金沢大学大学院医薬保健学総合研究科博士課程・博士後期課程
環境要因による疾病の解明と防止を担う国際医療人育成コース募集要項
(私費外国人留学生, 日本人学生用)

金沢大学大学院医薬保健学総合研究科博士課程・博士後期課程において、環境医科学, 薬学, 保健学及び関連する諸科学に関する研究を行う外国人留学生及び日本人学生を, 下記のとおり募集する。

1. 研究分野及び募集人員

(1) 研究分野 環境医科学, 薬学, 保健学及び関連する諸科学

(2) 募集人員 18名程度

(私費留学生・外国政府派遣留学生(※)・大学推薦国費留学生(一般枠)(※)・大使館推薦国費留学生(※)計10名, 日本人学生8名)

※外国政府派遣留学生, 大学推薦国費留学生(一般枠), 大使館推薦国費留学生の出願手続きについては, 担当する学務係に問い合わせること。

2. 出願資格及び条件

(1) 学歴

- ①外国において, 学校教育における18年の課程(最終の課程が医学, 歯学, 薬学(6年制)又は獣医学に限る)を修了した者及び平成29年9月末日までに修了見込みの者
- ②修士の学位を有する者及び平成29年9月末日までに取得見込みの者
- ③大学を卒業した後, 又は外国において, 学校教育における16年の課程を修了した後, 大学, 研究所, 研究機関, 企業等において, 平成29年9月までに2年以上研究に従事した者で, 本学大学院において, 当該研究の成果等により大学の医学, 歯学, 薬学(6年制)及び獣医学を履修する課程を卒業した者と同等以上の学力があると認めた者
- ④その他本学大学院において修士の学位を有する者と同等以上の学力があると認めた者で, 平成29年9月30日までに24歳に達する者

(2) 健康: 心身共に健全な者

(3) 語学: 英語能力が十分な者

3. 入学料, 授業料等

入学検定料 30, 000円

入学料 282, 000円 (予定)

授業料 535, 800円(年額)(予定)

4. 選考及び入学許可通知

- (1) 本学大学院医薬保健学総合研究科に選考委員会を設置し, 提出された書類(入学申請書, 推薦書, 成績証明書, 英語能力等)に基づいて選考する。
- (2) 選考結果は2017年7月初旬までに通知する。合格した者は金沢大学大学院医薬保健学総合研究科博士課程・博士後期課程の正規学生とする。

5. 入学の時期 2017年10月最初の週

6. 特別コースの特色

- (1) 本プログラムは, (a)疾病を誘発する環境要因を明らかにし, 疾病予防に結びつけるための高度な研究力を育成し, (b)日本人学生も含めた協同学習で国際コミュニケーション能力を涵養し, (c)国際機関や各国政府・自治体, 研究機関, 企業等で環境計測, 健康影響評価, 予防施策を実践・指導できる人材を養成する。
- (2) がん進展制御研究所及び附属病院を含む本研究科の全専攻が参加し, 医薬保健学総合研

究科において英語による全分野での教育・研究を可能とする。

- (3) 所定の単位を修得し、研究の成果を学位申請論文としてまとめ、本研究科に提出して学位論文として認められれば、博士(医学)、博士(薬学)、博士(創薬科学)、博士(保健学)、博士(学術)の学位が授与される。

7. 応募手続

応募者は、下記の書類を2017年6月9日(金)(必着)までに、金沢大学大学院医薬保健学総合研究科の受入れ予定教員を通じて本研究科へ提出すること。

(1) 私費外国人留学生の提出書類

- ① 入学申請書(研究及び研究計画書を含む)〔所定の用紙〕
- ② 推薦書〔所定の用紙〕
- ③ 写真(最近6ヵ月以内に撮影したもの4.5×3.5 cm, 上半身, 正面, 脱帽とし裏面に国籍及び氏名を記入したものを申請書の所定の箇所に貼付のこと。また、Eメールで写真の電子データも送付すること。)
- ④ パスポートの写し
- ⑤ GPAを含む出身大学及び出身大学院の成績証明書
- ⑥ 出身大学の卒業(見込み)証明書, 出身大学院の修了(見込み)証明書(又は学位記の写し)
- ⑦ 学士又は修士論文(英文)(医学専攻においては、該当者のみ, 他専攻においては全応募者必須)
- ⑧ 英語能力を証明する書類(添付可能な書類のみ提出)* TOEFL, TOEIC, IELTS 等。
ただし、英語を母国語とするものは提出不要。
- ⑨ 研究業績(英語)(医学専攻においては、該当者のみ, 他専攻においては全応募者必須)
- ⑩ 有職者の場合は、勤務先の長の承諾書
- ⑪ 健康診断書〔所定の用紙〕
- ⑫ 入学検定料: 30, 000円

(2) 日本人学生の提出書類

- ① 入学申請書(研究及び研究計画書を含む)〔所定の用紙〕(英文)
- ② 写真(最近6ヵ月以内に撮影したもの4.5×3.5 cm, 上半身, 正面, 脱帽とし裏面に国籍及び氏名を記入したものを申請書の所定の箇所に貼付のこと。また、Eメールで写真の電子データも送付すること。)
- ③ 出身大学及び出身大学院の成績証明書
- ④ 出身大学の卒業(見込み)証明書, 出身大学院の修了(見込み)証明書
- ⑤ 学士又は修士論文(医学専攻においては、該当者のみ, 他専攻においては全応募者必須)
- ⑥ 英語能力を証明する書類(添付可能な書類のみ提出)* TOEFL, TOEIC, IELTS 等。
- ⑦ 研究業績(医学専攻においては、該当者のみ, 他専攻においては全応募者必須)
- ⑧ 有職者の場合は、勤務先の長の承諾書
- ⑨ 入学検定料: 30, 000円

(注1)「研究及び研究計画書」は、選考の際に最も重視される書類の1つとなる。事前に受入れ予定教員とよく連絡を取り、研究の打合せをしておくこと

(注2) 提出書類は、A4版のサイズに統一して作成すること

(注3) 提出書類が完全に揃っていない場合、完全かつ正確に記載されていない場合
また、提出期限が過ぎたものについては、受理しない

(注4) 提出書類の返却及び入学検定料の払戻しはしない

(注5) 志願者は、事前に受け入れ予定教員の面接を受けていなければならない。
面接は、インターネットを通じたものでも構わない。

8. 注意事項

私費留学生については、渡日に先立ち、日本及び金沢の風土・習慣・気候・大学の状況等について、あらかじめ研究しておくことが望ましい。教育・研究は英語により行うが、日常生活では最低限の日本語が必要な状況になるので、日本語についてある程度の用意しておくことが望まれる。

【コースの概要】

| | |
|-------|------------------------------|
| ① コース | 環境要因による疾病の解明と防止を担う国際医療人育成コース |
| ② 学位 | 博士課程（4年）・博士後期課程（3年） |
| ③ 大学院 | 金沢大学大学院医薬保健学総合研究科 |
| | （住所）〒920-8640 金沢市宝町13番1号(注) |
| ④ 専攻 | 医学専攻（4年制課程） ※1 |
| | 薬学専攻（4年制課程） ※2 |
| | 創薬科学専攻(3年制課程) ※2 |
| | 保健学専攻（3年制課程） ※3 |

(注) この募集に関する問い合わせは、下記の※1、※2、※3の各担当係宛てに行うこと。

※1： 〒920-8640 金沢市宝町13番1号
金沢大学 医学学務係
Fax: +81-76-234-4208
E-mail: t-igaku1@adm.kanazawa-u.ac.jp
URL: <http://www.m.kanazawa-u.ac.jp/eng/idc.html>

※2： 〒920-1192 金沢市角間町
金沢大学 薬学学務係
Fax: +81-76-234-6844
E-mail: y-gakumu@adm.kanazawa-u.ac.jp
URL: <http://www.p.kanazawa-u.ac.jp/e/>

※3： 〒920-0942 金沢市小立野5-11-80
金沢大学 保健学務係
Fax: +81-76-234-4351
E-mail: t-igaku2@adm.kanazawa-u.ac.jp
URL: <http://mhs3.mp.kanazawa-u.ac.jp/eng/>

DIVISION OF MEDICINE

The Division of Medicine structures a curriculum to encourage acquirement of interdisciplinary and academic sophistication, knowledge and skills, and develops a basis for world-class research for the purpose of nurturing medical specialists and researchers who are also global leaders and can contribute to the each field of biomedical sciences with insight and global point-of-view. The Division trains individuals who are equipped with a wide range of medical knowledge, who has been educated to have the essential ability to clarify disease mechanisms and pathology, and who can make quick and appropriate diagnosis and develop effective and quality treatment with minimal burden for the patients.

Department of Neuroscience

Medical Neuroscience

Hiroshi KAWASAKI, M.D. & Ph.D., Professor

1. Molecular mechanisms underlying neuronal circuit formation in the mammalian brain
2. Molecular mechanisms of brain formation in higher mammals
3. Pathophysiology of developmental brain disorders

Functional Anatomy

Noriyuki OZAKI, M.D. & Ph.D., Professor

1. Mechanisms of pain sensation associated with inflammation, nerve injury, tissue injury and cancer, in skin, viscera, circulatory system, bone, muscle and joints
2. Development of novel animal model of functional pain disorders such as Functional dyspepsia and myofascial pain syndrome
3. Neuroanatomy and physiology of somatic and visceral pain systems
4. Visualization of myofascial pain syndrome by ultrasound imaging technique
5. Food intake, adipocyte progenitor cells, and anti-obesity

Molecular Neuroscience & Integrative Physiology

Michihiro MIEDA, Ph.D., Professor

1. Neural mechanisms underlying the sleep/wakefulness
2. Neural mechanisms underlying the circadian rhythms
3. Roles of the circadian system in the adaptive responses of physiology and behavior, and its maladaptation as a potential risk factor of many diseases

Neuroanatomy

Osamu HORI, M.D. & Ph.D., Professor

1. Stress response (gene expression) in the central nervous system
2. Neuronal cell death in the brain ischemia and in the neurodegeneration
3. Gene transfer targeted to neurons
4. Neuroprotective compounds

Developmental Neurobiology

Makoto SATO, Ph.D., Professor

1. Formation of neuronal circuits in the visual system
2. Functional analysis of visual processing circuits
3. Molecular mechanisms of neuronal migration disorders

Neurology and Neurobiology of Aging

Masahito YAMADA, M.D. & Ph.D., Professor

1. Molecular mechanisms of brain aging, dementias, and other aging-related neurological disorders
2. Molecular immunology of immune-mediated neuromuscular disorders
3. Molecular genetic analyses of neurological disorders
4. Studies of infections of the nervous system including prion diseases
5. Studies of cerebrovascular disorders

Psychiatry & Behavioral Science

Yoshio MINABE, M.D. & Ph.D., Professor

1. Psychopharmacological studies of anxiety disorders
2. Clinical, biological and pharmacotherapeutic studies of schizophrenic disorder
3. Electrophysiological studies of sleep disorders particularly of sleep apnea and sleep-wake schedule disorders
4. Clinical studies of child and adolescence mental disorders

Clinical Cognitive Neuroscience

Mie MATSUI, Ph.D., Professor

1. Neuropsychological studies in patients with higher brain dysfunction
2. Lifelong development of brain structure/function and neuropsychological function
3. Cognitive remediation and neuroplasticity in schizophrenia

Department of Cancer Medicine

Molecular and Cellular Pathology

Akishi OOI, M.D. & Ph.D., Professor

1. Genetic heterogeneity and gene mutations in gastrointestinal tumors
2. Over-expression and gene amplification of receptor tyrosine kinases
3. Gene-target cancer therapy

Stem Cell Biology

Takashi YOKOTA, Ph.D., Professor

1. Molecular mechanism of self-renewal in ES cells
2. Switching mechanism from the undifferentiated state to the differentiated state
3. Mechanism of ES cell differentiation into a certain lineage cells
4. Comparison of characteristics between ES and cancer stem cells

Histology and Cell Biology

N/A due to absence of a professor

1. Expression and localization of bioactive proteins in the adult and developing tissues
2. Mechanisms of cell differentiation in the mouse salivary glands
3. Mechanisms of regulation of spermatogenesis in the mouse testis
4. Histological and histochemical research techniques

Human Pathology

Kenichi HARADA, M.D. & Ph.D., Professor

1. Studies on hepatobiliary neoplasms
2. Studies on etiopathogenesis of primary biliary cirrhosis
3. Studies on hepatolithiasis

Global Cancer Therapy and Research

Seiji YANO, M.D. & Ph.D., Professor

1. Studies on International Advanced Cancer Therapeutics
2. Studies on Developed Surgical Medicine for Cancer Therapy
3. Studies on Molecular Diagnostics for Neoplasm
4. Studies on Advanced Photonic Therapeutics for Cancer
5. Studies on Spiritual Care in Cancer

Molecular Virology & Oncology

N/A due to absence of a professor

1. Molecular mechanism of tumor invasion and metastasis
2. Screening of genes associated with tumor invasion and metastasis
3. Extracellular matrix metabolism
4. Epstein-Barr virus-associated tumors

Cancer Cell Biology

Noriko GOTOH, M.D. & Ph.D., Professor

1. Tyrosine kinase signal transduction for tumorigenesis
2. Growth factor signaling
3. Cancer stem cells of solid tumors
4. Biomarkers and molecular targets for cancer treatment

Translational and Clinical Oncology

Toshinari MINAMOTO, M.D. & Ph.D., Professor

1. Oncogenic molecular pathways
 - (1) Deregulated Wnt/ β -catenin pathway
 - (2) Glycogen synthase kinase 3 β (GSK3 β)-mediated pathway
2. Human cancer metabolism
3. Molecular basis of gastrointestinal and refractory cancers for clinical translation
4. Establishment of tissue material resources of human gastrointestinal cancer

Immunology and Molecular Biology

Takashi SUDA, Ph.D., Professor

1. Study of the molecular mechanisms of the immune system
2. Study of the molecular mechanisms of the cell death
3. Development of therapy models by controlling the immune system and cell death

Oncology and Molecular Biology

Chiaki TAKAHASHI, M.D. & Ph.D., Professor

1. Human oncogenes and tumor suppressor genes
2. Molecular mechanism of tumorigenesis, progression, invasion and metastasis
3. Understanding of stem cells and cancer stem cells
4. Mouse model of tumor progression and cancer stem cells
5. Extracellular matrix remodeling and development

Molecular Bioregulation

Naofumi MUKAIDA, M.D. & Ph.D., Professor

1. Molecular Pathophysiology of Bioregulation
 - Molecular pathophysiology of host response to tumor-associated conditions
 - Molecular immunopharmacology including gene therapy
2. Molecular pathophysiology of inflammation
 - Molecular pathophysiology of gene expression and functions of pro-inflammatory cytokine

Molecular Cell Signaling

Katsuji YOSHIOKA, Ph.D., Professor

1. Regulation of cell cycle by intracellular signaling pathways
2. Regulation of apoptosis by intracellular signaling pathways
3. Transcriptional regulation by intracellular signaling pathways
4. Studies on scaffold proteins in MAP kinase signaling pathways

Functional Genomics

Takeshi SUZUKI, Ph.D., Professor

1. Retroviral insertional mutagenesis in mice
2. High-throughput identification of cancer genes by retroviral tagging
3. Validation of cancer genes by an integrative oncogenomic approach
4. Exploration of novel molecular targets for cancer treatment

Genetics

Masanobu OSHIMA, D.V.M. & Ph.D., Professor

1. Cancer genetics
2. Molecular pathology of gastrointestinal cancers
3. Cancer stem cell and Wnt signaling
4. Transgenic mouse model for gastrointestinal cancer development

Tumor Dynamics

Kunio MATSUMOTO, Ph.D., Professor

1. Role of HGF (hepatocyte growth factor) and the Met/HGF receptor in tumor invasion-metastasis and tumor-stromal interactions
2. Therapeutic approach with NK4, bifunctional anti-cancer molecule acting as HGF-antagonist and angiogenesis inhibitor
3. Molecular mechanisms of tissue regeneration and morphogenesis mediated by HGF

Molecular Genetics

Atsushi HIRAO, M.D. & Ph.D., Professor

1. Molecular mechanisms of stem cell self-renewal
2. Molecular mechanisms of tumor suppression regulated by cell cycle check point system
3. Identification of cancer stem cells

Medical Oncology

Seiji YANO, M.D. & Ph.D., Professor

1. Molecular pathogenesis of lung cancer metastasis
2. Molecular pathogenesis of malignant mesothelioma
3. Molecular targeted therapy for brain metastasis
4. Molecular targeted therapy for bone metastasis
5. Molecular diagnosis of pancreas cancer

Department of Cardiovascular Medicine

Molecular Vascular Physiology

Yoh TAKUWA, M.D. & Ph.D., Professor

1. Cellular and molecular signaling in the vasculature
2. Exploration of novel cell-cell communication mechanisms
3. Molecular mechanisms of angiogenesis, vascular barrier regulation, and vascular tone regulation
4. Molecular mechanisms of the pathogenesis of vascular diseases including atherosclerosis, inflammation and hypertension

Pharmacology

Kazuhiro OGAWA, M.D. & Ph.D., Associate Professor

1. Heme metabolic pathway as a therapeutic target
2. Oxidative stress in health and disease
3. Drug discovery
4. Effective and safe drug therapy
5. Basic and clinical pharmacology

Department of Cellular and Molecular Function Analysis

Hitoshi ANDO, M.D. & Ph.D., Professor

1. Circadian rhythm, clock genes, and lifestyle-related diseases
2. Chronopharmacology
3. Obesity and metabolic diseases
4. Basic pharmacology
5. Clinical pharmacology and therapeutics

Biochemistry and Molecular Vascular Biology

Yasuhiko YAMAMOTO, M.D. & Ph.D., Professor

1. Vascular biology - the molecular basis of vascular homeostasis
2. Vascular medicine - the mechanisms for diabetic vasculopathy, angiogenesis diseases, hypertension and their preventions
3. Functional genomics - the development and applications of Antisense Display, a novel method of functional gene screen

Cardiovascular and Internal Medicine

Masakazu YAMAGISHI, M.D. & Ph.D., Professor

1. Clinical and molecular cardiology
2. Interventional cardiovascular medicine
3. Molecular genetics of metabolic disorders
4. Molecular mechanisms of hyperlipidemia
5. Clinical and molecular endocrinology and hypertension

Circulatory Emergency and Resuscitation Science

Hideo INABA, M.D. & Ph.D., Professor

1. Studies of correctable factors associated with survival from out-of-hospital cardiac arrests
2. Effects of modulation of emergency medical service system on survival from out-of-hospital cardiac arrests
3. Effects of modulation of mediator signals on the pathophysiology of acute diseases
4. Intensive Care Medicine
5. Emergency and Critical Care Medicine

Clinical Development

Toshinori MURAYAMA, M.D. & Ph.D., Professor

1. Systematic solution for clinical development in academia
2. investigator-initiated clinical trial management
3. Research ethics
4. No-fault compensation for health damage due to research participation

Clinical Pharmacokinetics

Yoshimichi SAI, Ph.D., Professor

1. Clinical pharmacology for individualized pharmacotherapy
2. Pharmacokinetic study on monitoring and avoidance of adverse effect of drugs
3. Molecular biopharmaceutical study on transporters and metabolic enzymes
4. Research on ensuring subject safety in clinical trials

Department of Social and Environmental Medicine

Molecular Genetics

Masamichi MURAMATSU, M.D. & Ph.D., Professor

1. Molecular immunology and biology
2. Mechanism of virus associated tumorigenesis
3. Molecular mechanism of antiviral factors
4. Physiological and pathological role of deaminase super family

Immunology

Rikinari HANAYAMA, M.D. & Ph.D., Professor

1. Mechanisms of exosome secretion and physiological functions of exosomes.
2. Inflammation caused by the secretion of lysosomal enzymes from macrophages.
3. Molecular mechanisms underlying hemophagocytosis.
4. Axon pruning and synapse elimination by microglia in CNS.

Parasitology

Masaharu TOKORO, M.D. & Ph.D., Associate Professor

1. Development of a novel chemotherapy against *Entamoeba* and *Cryptosporidium*
2. Development of a simple and rapid genotyping method for *Cryptosporidium spp.* and *Giardia spp.*
3. Molecular epidemiology of amebiasis, cryptosporidiosis, and giardiasis
4. Evaluation of protozoan infections in a seasonal diarrhea of tropical region

Bacteriology

Yukako FUJINAGA, Ph.D., Professor

1. Molecular pathogenesis and epidemiology of medically important bacteria
2. Molecular pathogenesis of *Clostridium botulinum*
3. Molecular mechanisms of interaction of bacterial pathogens with epithelial barrier system
4. Development of monoclonal antibody-based drugs against infectious diseases

Environmental and Preventive Medicine

Hiroyuki NAKAMURA, M.D. & Ph.D., Professor

1. Determination of candidate genes for allergic diseases and interaction of genes and environments in allergic diseases
2. Development of biological monitoring system for chemical substances which deteriorates human health, especially regarding allergy
3. Effects of electromagnetic fields on neuroendocrine-immune systems
4. Assessment of work stress
5. Development of preventive method for dementia in elderly in lights of biological pathogenesis and social systems
6. Prevention for lifestyle-related disease in children

Viral Infections and International Health

Hiroshi ICHIMURA, M.D. & Ph.D., Professor

1. Molecular epidemiology of viral (HIV, HBV, HCV, HPV, etc.) infections
2. Host and viral factors associated with disease progression in HIV-1 infected children
3. HIV pathogenesis and recombination
4. Viral latency and reactivation
5. Effects of probiotics on HIV-infected children

Forensic Medicine and Pathology

Masahiko ZUKA, M.D. & Ph.D., Professor

1. Evaluation of the causes of sudden unexpected death by medico-legal examination
2. Study on the involvement of proteolytic activity such as matrix metalloproteinases in blood vessels and its application to forensic medicine
3. Forensic toxicological screening and development of analytical methods for illicit drugs and poisons

Hygiene

Kiyofumi SAIJOH, M.D. & Ph.D., Professor

1. Studies on molecular mechanisms underlying adaptation to environment
2. Studies on gene regulation according to cell differentiation, carcinogenesis, etc.
3. Studies on molecular mechanisms of intoxication/detoxication against environmental pollutants
4. Studies on molecular mechanisms developing tolerance and addiction
5. Molecular mechanisms for regulating the Renin-Angiotensin-Aldosterone system in the pathophysiology of cardiovascular disease
6. Studies on risk assessment of environmental pollutants on human health

Physiology and Metabolism

Hiroshi INOUE, M.D. & Ph.D., Professor

1. Molecular mechanisms of glucose and lipid metabolism
2. Analyses of the role of food, nutrition, and environment in the glucose and lipid metabolism
3. Molecular and physiological mechanisms of organ-crosstalk in the glucose and lipid metabolism

Cell Metabolism and Nutrition

Tsuguhito OTA, M.D. & Ph.D., Associate Professor

1. Inflammation, stress and metabolic diseases
2. Diabetes and the immune system
3. Lipoprotein metabolism and NAFLD
4. Nutrition, nutrigenomics and nutraceuticals

Bioinformatics and Genomics

Atsushi TAJIMA, Ph.D., Professor

1. Genetics and genomics of complex human diseases
2. Epigenomics of health and disease in human populations and model organisms
3. Bioinformatics for integrative genomics and epigenomics analyses

Molecular Pathology of Skin

Kazuhiko TAKEHARA, M.D. & Ph.D., Professor

1. Animal model for fibrosis of the skin
2. Involvement of adhesion molecules and chemokines in the pathogenesis of systemic sclerosis, atopic dermatitis and psoriasis
3. Identification of oncogene associated with skin cancer
4. Pathogenesis of autoimmune disease -CD19 transgenic mouse and CD22-deficient mouse as animal model for autoimmunity
5. Dendritic cell immunotherapy for malignant melanoma

Healthcare Management and Medical Informatics

Keisuke NAGASE, M.D. & Ph.D., Professor

1. Management studies on healthcare organizations
2. Healthcare Marketing
3. Application of artificial intelligence in healthcare services and its management
4. Studies on Healthcare policy
5. Studies on Healthcare human resources

Global Health

Munehito MACHIDA, M.D. & Ph.D., Professor

1. Health care administration
2. Health system strengthening
3. Research and practical activities through overseas technical cooperation projects

Department of Internal Medicine

Gastroenterology

Shuichi KANEKO, M.D. & Ph.D., Professor

1. Clinical and basic gastroenterology
2. Development of diagnosis and treatment for gastroenterological diseases
3. Prevention of gastroenterological diseases

Endocrinology and Metabolism

Toshinari TAKAMURA, M.D. & Ph.D., Professor

1. Molecular pathology and clinical research in diabetes/obesity and its complications
2. Cross-talks among glucose-, protein-, and lipid-metabolism pathways to keep energy homeostasis
3. Hepatokine-mediated networks among insulin-targeting organs to make pathophysiology of diabetes/obesity and its complications

Nephrology and Laboratory Medicine

Takashi WADA, M.D. & Ph.D., Professor

1. Clinical and molecular nephrology
2. Clinical immunology and inflammation
3. Advanced treatment of kidney diseases
4. Clinical and molecular infectious diseases

Hematology

Shinji NAKAO, M.D. & Ph.D., Professor

1. Analysis of molecular mechanisms of bone marrow failure syndromes
2. Optimization of allogeneic stem cell transplantation using alternative donors
3. Studies of acquired coagulation disorders such as disseminated intravascular coagulation (DIC) and antiphospholipid syndrome

Respiratory Medicine

Kazuo KASAHARA M.D. & Ph.D., Associate Professor

1. Targeted therapy and biomarker for lung cancer
2. Biomarkers for immune-oncology
3. Clinical application of biomarkers in bronchial asthma and COPD
4. Molecular mechanisms of interstitial lung disease

Radiology

Toshifumi GABATA, M.D. & Ph.D., Professor

1. Imaging diagnosis, especially in hepatobiliary and pancreatic diseases
2. Correlation between imaging findings and hemodynamics
3. Analysis of the nature of the disease by imaging diagnosis (CT, MRI)
4. Interventional angiography, especially in the treatment of vascular diseases and malignant tumors
5. Diagnosis and treatment of hepatocellular carcinoma and pancreatic carcinoma

Nuclear Medicine

Seigo KINUYA, M.D. & Ph.D., Professor

1. Experimental research on targeted radiotherapy and its clinical application
2. Clinical targeted radiotherapy of neuroendocrine tumors with ^{131}I -MIBG
3. Pharmacokinetic modeling for the analysis of nuclear images
4. Development of nuclear images for the pre-therapeutic prediction of therapeutic outcomes in cancer patients
5. Development of molecular images
6. Experimental and clinical studies on cardiovascular diseases
7. Experimental and clinical studies on nuclear neurology

Department of Surgery

Thoracic, Cardiovascular and General Surgery

Hirofumi TAKEMURA, M.D. & Ph.D., Professor

1. Cardiovascular surgery
2. Thoracic surgery
3. General surgery
4. Endocrine surgery
5. Less invasive surgery including endoscopic surgery
6. Oncological research for general and thoracic surgery
7. Transplantation of thoracic organs

Gastroenterological Surgery

Sachio FUSHIDA, M.D. & Ph.D., Associate Professor

1. Surgical treatment for gastrointestinal and pediatric diseases including malignant tumor
2. Oncological research for malignant tumor of gastrointestinal tract
3. Innovation for gastrointestinal nutrition support and infection control

Hepato-Biliary-Pancreatic Surgery

Tetsuo OHTA, M.D. & Ph.D., Professor

1. Surgical treatment for breast, liver, biliary tract and pancreatic diseases including malignant tumor
2. Oncological research for malignant tumor of breast, liver, biliary tract and pancreas
3. Deceased donor and living donor liver transplantation for end stage liver diseases
4. Innovation for organ ischemic reperfusion injury

Orthopaedic Surgery

Hiroyuki TSUCHIYA, M.D. & Ph.D., Professor

1. Musculoskeletal Tumor Surgery and Tissue-Engineering
2. Spine Surgery and Neurosurgery (Spinal Cord to Peripheral Nerve)
3. Adult Reconstruction (Joint) and Traumatology
4. Sports and Rehabilitation Medicine
5. Plastic Surgery and Hand & Foot Surgery
6. Pediatric & Geriatric Orthopedics and Bone Metabolism

Physical and Rehabilitation Medicine

Tetsutaro YAHATA, M.D. & Ph.D., Associate Professor

1. Spasticity control by nerve blocking agents
2. Physical deconditioning and reconditioning
3. Disuse-induced muscle dysfunction and sarcopenia
4. Studies on daily essential behaviors such as stand, walk, and balance
5. Swallowing evaluation

Integrative Cancer Therapy and Urology

Atsushi MIZOKAMI, M.D. & Ph.D., Professor

1. Studies on integrative cancer therapy
2. Studies on cancer chemotherapy
3. Studies on cancer radiotherapy
4. Studies on urology
5. Studies on Molecular Biology of Prostate cancer

Ophthalmology

Kazuhisa SUGIYAMA, M.D. & Ph.D., Professor

1. Molecular mechanisms of glaucomatous optic neuropathy
2. Development of neuroprotective therapy for normal-tension glaucoma
3. Development of new surgical techniques for corneal disease and glaucoma
4. Basic research for retinal ganglion cell transplantation
5. Development of artificial cornea and artificial retina

Otolaryngology-Head and Neck Surgery

Tomokazu YOSHIKAWA, M.D. & Ph.D., Professor

1. Molecular mechanism of metastasis
2. Clinical and experimental studies on nasopharyngeal carcinoma
3. Clinical and experimental studies on head and neck cancer
4. Clinical and experimental studies on olfaction
5. Clinical and experimental studies on neural network for hearing and facial movement

Anesthesiology and Intensive Care Medicine

Takumi TANIGUCHI M.D. & Ph.D., Professor

1. Clinical and mechanism of systemic effects of intravenous anesthetics
2. Clinical and mechanism of systemic effects of local anesthetics
3. Studies of sepsis and multiple organ failure
4. Intensive Care Medicine

Neurosurgery

Mitsutoshi NAKADA, M.D. & Ph.D., Professor

1. Treatment strategy for brain tumors
2. Molecular mechanism of brain tumors
3. Treatment strategy for stroke
4. Pathophysiology of stroke
5. Development of advanced neuroendoscopy

Oral and Maxillofacial Surgery

Shuichi KAWASHIRI, D.D.S. & Ph.D., Professor

1. Clinical and experimental studies on the mechanisms of invasion and metastasis of oral squamous cancer
2. Orthognathic surgery for jaw deformity patients and their postoperative functions
3. Evaluation of surgical procedure for internal derangement of temporomandibular joint (TMJ)
4. Analysis of bacteria isolated from orofacial odontogenic infections

Department of Reproductive and Developmental Medicine

Transgenic Animal Science

Takiko DAIKOKU, Ph.D., Professor

1. Analysis of the molecular and genetic signaling pathways involved in endometrial and ovarian cancer
2. Identification of the molecular and genetic signaling pathways involved in implantation/pregnancy
3. Collaborative research to generate gene-manipulated mice

Pediatrics

Akihiro YACHIE, M.D. & Ph.D., Professor

1. Clinical and molecular analysis of hereditary disorders and human genetics
2. Pathogenesis of primary immunodeficiency and immune-mediated illnesses
3. Stem cell transplantation for hematological malignancy and immunodeficiency
4. Vascular development and endothelial function
5. Integrative research on childhood development and behavioral abnormality

Obstetrics and Gynecology

Hiroshi FUJIWARA, M.D. & Ph.D., Professor

1. Studies of molecular and clinical gynecologic oncology
2. Studies of intracellular communication and signal transduction in reproductive endocrinology
3. Studies of molecular and clinical perinatology

DIVISION OF PHARMACY

The Division of Pharmacy aims to foster the latest knowledge in the medical academic discipline, to conduct practical research as a medical professional and also to develop a strong sense of ethics and global vision, centered on pharmacy and the capability. In an interdisciplinary environment unique to the graduate school that coordinates across the three medical disciplines of pharmaceutical, medical and health sciences, the School aims to develop highly professional leaders of pharmaceutical education and research, as well as medical experts who combine the discipline of natural science and excellent research abilities through education covering various fields from the basics of pharmacy to clinical pharmacy. Specifically, the school accepts those who are engaged in highly technical practice and aim to be active on the front lines, such as pharmacists who play a leading role in clinical practice; pharmaceutical faculty members who are in a position to lead the medical pharmaceutical education and research; public administrators engaged in the fields of medical, public welfare, pharmaceutical affairs and the environment; and researchers of new drug development and clinical testing.

Host Defense and Responses

○ indicates a teacher planning to retire in March 31, 2019
● indicates a teacher planning to retire in March 31, 2020
◎ indicates a teacher planning to retire in March 31, 2021

○Yoshinobu NAKANISHI, Professor

Akiko SHIRATSUCHI-HIRAYAMA, Associate Professor

Takayuki KURAIISHI, Associate Professor

Saori NONAKA, Assistant Professor

1. Mechanism and significance of the phagocytic removal of altered own cells
2. Mechanism of the induction of innate immune reactions
3. Study on the interaction between microbes and hosts

Clinical Drug Informatics

●Kunizo ARAI, Professor

Ryo MATSUSHITA, Professor

Junko ISHIZAKI, Associate Professor

Yukio SUGA, Assistant Professor

Natsuko ISHIDA, Assistant Professor

1. Support for the practice of pharmaceutical care at the medical front in pharmaceutical approaches
2. Pharmacokinetic and clinical pharmacological research of pharmacotherapy and side effect monitoring
3. Establishment and application of scientific evidence for pharmacists contributing to pharmacotherapy

Membrane Transport and Pharmacokinetics

Ikumi TAMAI, Professor

Takeo NAKANISHI, Associate Professor

Hisakazu KOMORI, Assistant Professor

1. To elucidate membrane transport mechanism for biologically active substances and therapeutic drugs
2. To establish transporter-targeted drug delivery for improvement of intestinal absorption and cancer-selective distribution
3. To develop methodology to visualize pharmacokinetics in vitro and in vivo utilizing and/or regulating expression of functional membrane transporters

Molecular Pharmacotherapeutics

Yukio KATO, Professor

Noritaka NAKAMICHI, Associate Professor

Yusuke MASUO, Assistant Professor

1. Quantitative kinetic research that integrates drugs' effectiveness and side effects with molecular recognition of drugs
2. Research related to the cell specificity of biomembrane drug penetration mechanism and effects on pharmatherapy
3. Research related to molecular discrimination of nutrients and foreign substances by the mutual interaction among protein substances=

Drug Metabolism and Toxicology

Miki NAKAJIMA, Professor

Tatsuki FUKAMI, Associate Professor

1. Research on drug-metabolizing enzymes for drug development and appropriate use of medicine
2. Research on non-coding RNAs to maximize the value of medicine
3. Research on mechanisms of drug toxicity to predict and prevent adverse reactions

Drug Management and Policy

Hirohito TSUBOI, Associate Professor

Naoko YOSHIDA, Assistant Professor

1. Research related to internet pharmacies and falsified medicines
2. Socioeconomic determinants and related psychosocial factors on oxidative and inflammatory biomarkers, Comparison of International Health Outcomes
3. Research related to the access, quality and rational use of pharmaceutical products

Pharmaceutical and Organic Chemistry

Hirohisa OHMIYA, Professor

Fuyuhiko INAGAKI, Associate Professor

Shigeo YASUDA, Assistant Professor

○Chisato MUKAI, Professor

1. Development of Catalysis
2. Development of Acid-Base Coexisting Reagent and Its Reaction Field
3. New Entries to Ring Construction Based on Allene Chemistry

Human Molecular Genetics

Tsukasa MATSUNAGA, Professor

Manabu INOBE, Associate Professor

Mitsuo WAKASUGI, Associate Professor

1. Research related to the molecular mechanism of defense response to DNA damage in human cells
2. Research related to cancer prevention and treatment using newly developed DNA-repair analysis system
3. Study of the regulatory mechanism in T cell activation and proliferation

Bioorganic Chemistry

Munetaka KUNISHIMA, Professor

Masanori KITAMURA, Associate Professor

Kohei YAMADA, Assistant Professor

Kenji MISHIRO, Assistant Professor

1. Development of organic catalyst and organic synthesis using vital functions
2. Development of chemical modification methods intended for the identification of functions of biomolecules
3. Development of new reactions and functional materials toward the application in the life science

Clinical and Analytical Sciences

○Akira ODANI, Professor

Kazuma OGAWA, Associate Professor

Tatsuto KIWADA, Assistant Professor

1. Development of platinum antitumor agents
2. Thermodynamic study of drug-protein interactions and its application to drug development
3. Development and research of molecular imaging agents for the purpose of diagnosing cancer and other diseases

Vaccinology and Applied Immunology

Shigeto YOSHIDA, Professor

Mitsuhiro IYORI, Associate Professor

Takahiko TAMURA, Assistant Professor

1. Development and research of the next-generation malaria vaccines that activate innate immunity
2. Development of liver-directed gene delivery system
3. Development of biomarkers of mosquito exposure for evaluating malaria vector control

Synthetic Organic Chemistry

Junichi MATSUO, Professor

Tomoyuki YOSHIMURA, Associate Professor

Tsuyoshi TANIGUCHI, Assistant Professor

1. Development of new organic reactions with small ring cleavage
2. Total synthesis of bioactive molecules
3. Research related to new reactive organic intermediates

Molecular Pharmacology

Katsuyuki KANEDA, Professor

Eiichi HINOI, Associate Professor

Satoshi DEYAMA, Assistant Professor

1. Behavioral and electrophysiological studies for clarifying the development of drug addiction and psychiatric disorders
2. Research related to neural and non-neuronal intracellular signal transduction molecular
3. Research related to the molecular pathogenesis clarification and treatment strategies of neural and bone and joint disorders

Molecular Pharmacognosy (Medicinal Plant Garden)

Kyoko NAKAGAWA-GOTO, Associate Professor

Yohei SASAKI, Associate Professor

Yohei SAITO, Assistant Professor

Hirokazu ANDO, Assistant Professor

1. Discovery and development of drug candidates through synthetic modifications of bioactive natural products and the study of mechanisms of action
2. Identification of novel bioactive natural molecules from rainforest plants
3. Quality evaluation and natural resources of traditional herbal medicines

Hygienic Chemistry

Ryo SUZUKI, Professor

Akira TORIBA, Associate Professor

Ning TANG, Associate Professor

1. Research on molecular and cellular mechanisms of allergic diseases.
2. Study of intra- and extra-cellular factors regulating allergic inflammation.
3. Research related to environmental behaviors and exposure evaluation of environmental pollutants.

Yamashita Research Group

◎Katsumi YAMASHITA, Associate Professor

1. Cell cycle regulation by protein kinases and phosphatases
2. Stability control of cell cycle controlling factors

Uchiyama Research Group

Masahiko UCHIYAMA, Associate Professor

1. Development of environmentally benign synthetic reactions
2. Research related to the synthesis of bioactive natural products

DIVISION OF PHARMACEUTICAL SCIENCES

This program aims to foster the latest knowledge and skills, as well as superior research abilities in the academic disciplines, including pharmaceutical sciences, medical and health sciences, centered on pharmaceutical sciences. Through advanced and developmental education and research approaches of the pharmaceutical sciences, the school trains independent and genuine researchers equipped with superior creativity, deep insight, great research planning abilities, strong leadership and global competitiveness. Specifically, the school cultivates human resources who play an active role as professionals engaged in the development and planning of new drugs in the pharmaceutical industry, faculty members at universities, researchers of public institutions, administrative officers in the area of medical care, public welfare, pharmaceutical affairs and the environmental sciences. The Division of Pharmaceutical Sciences accepts any students regardless of previous experience in an academic discipline if they strive to succeed in these types of jobs in the future.

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Tatsuki FUKAMI, Associate Professor

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3. Research on mechanisms of drug toxicity to predict and prevent adverse reactions

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Naoko YOSHIDA, Assistant Professor

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2. Socioeconomic determinants and related psychosocial factors on oxidative and inflammatory biomarkers, Comparison of International Health Outcomes
3. Research related to the access, quality and rational use of pharmaceutical products

Division of Health Sciences

The Ideas and Goals Underlying the Division of Health Sciences

The Doctoral program in the Health Sciences works to deepen basic research in the fields of nursing science, healthcare-related sciences and rehabilitation science and to facilitate comprehensive and multi-disciplinary research in the health sciences, with a goal of establishing knowledge that can lead the health sciences in the 21st century as well as to cultivate new academic fields. A basic idea underlying this division is to contribute to advancing the health sciences and improving human health and welfare by developing high-level professionals who have qualities of leadership, deep and extensive expert knowledge, and keen analytic ability that leads to the resolution of problems, as well as being internationally oriented researchers and educators with strong research capabilities.

The goals of the Doctoral program, in more concrete terms, are: (1) to develop high-level health science researchers with deep and extensive knowledge and high research capabilities, (2) to facilitate flexible and multi-faceted education and research on important issues in the increasingly complex healthcare and welfare services through cooperation among the fields of nursing science, healthcare-related sciences and rehabilitation science, (3) to develop educators and researchers capable of conducting education and research on new fields (not belonging to any of conventional fields of health sciences or technology) and important topics in borderline areas, (4) to develop educators and researchers who can contribute to the countries around the Sea of Japan and the global community at large, and (5) to personnel who can lead the society through high problem-resolving and research capabilities so that the social needs to advances in sophistication of healthcare and welfare services can be satisfied.

Graduate Course of Nursing Science

Field of Chronic Care and Wound Management Nursing

Junko SUGAMA, Professor

1. Prevention and nursing management for pressure ulcers
2. Basic research on pressure ischemic wounds

Toshio NAKATANI, Professor

1. Process of skin wound healing
2. Lymphatics stomata in the diaphragm: their function and formation factor
3. A study on variations in the gross anatomy

Mayumi OKUWA, Professor

1. Development of wound care in nursing
2. Lower-leg ulcers and elements of nursing care

Field of Gerontological, Rehabilitation and Mental Health Nursing

Mayumi KATO, Professor

1. Development of a computed simulation program to train clinical judgement for fall prevention
2. A collaborative approach for the prevention of falls in stroke patients
3. Development of a fall prevention program adapted to the individual risks of elderly persons in facilities
4. Fall prevention for the elderly in a long-term care institution: Development of an exercise program based on EBN
5. Attempt to describe subjective phenomena related to falls of elderly persons with dementia in a long-term care facility

Field of Women's Health and Environmental Child Development

Noriko TABUCHI, Professor

1. Study on maternal care of infant cries
2. Study on practice ability of student midwives
3. Development of a scale for sense of hardship with regard to the crying of an infant

Yoshiko Maida, Professor

1. Molecular biology of gynecologic malignancies

Field of Public Health and Home Care Nursing

Keiko TSUKASAKI, Professor

1. A study on home health care for patients and their care givers

Shizuko OMOTE, Professor

1. Programs to prevent long term care for elderly in snowy regions
2. Evaluation of community health-care project
3. Post earthquake health support and disease prevention
4. Prevention of elder abuse

Graduate Course of Medical Science and Technology

Field of Processing and Analysis for Biofunctional Imaging

Keiichi KAWAI, Professor

1. Radioprobe-based molecular imaging for diagnosis of metabolic function
2. Regulation of pharmacokinetics
3. Evaluation of radiopharmaceutical for cancer detection and image-guided planning treatments

Tosiaki MIYATI, Professor

1. Development of pulse sequences in magnetic resonance imaging
2. Assess of magnetic resonance (MR) image quality
3. Development of functional magnetic resonance (MR) imaging and analysis methods

Katsuhiko ICHIKAWA, Professor

1. Development of new technologies for medical display
2. Image analysis for computed tomography (CT)
3. New measurement method of resolution property for digital radiography

Field of Clinical Quantitative Technology

Masahisa ONOGUCHI, Professor

1. The construction of database criteria using a novel phantom toward the standardization of the myocardial SPECT image
2. Development of cardiac anthropomorphic phantom
3. Development of a new functional analysis using gated SPECT
4. Quantitative analysis of organ perfusion using rats on nuclear medicine

Hiroko KAWASHIMA, Professor

1. Diagnostic imaging of breast cancer

Satoshi KOBAYASHI, Professor

1. Study of hepatic microcirculation
2. Diagnostic imaging of the liver
3. Research of New embolic material
4. Non-invasive haemodynamic analysis of Visceral organ
5. Analysis of therapeutic effect of molecular targeting therapy
6. Fundamental research of Functional MR contrast agent

Akihiro TAKEMURA, Professor

1. Effects of setup errors obtained in image guided radiation therapy to dose distribution
2. Research of medical image processing and image registration method
3. Research related to radiotherapy

Field of Molecular Biology for Laboratory Medicine

Akihiro INAZU, Professor

1. Anti-atherogenicity in CETP deficiency
2. Molecular genetics of hyperalphalipoproteinemia
3. Lipid lowering, HDL elevating therapy

Shigefumi OKAMOTO, Professor

1. Pathogenicity of Streptococcus pyogenes
2. Study of host defense against influenza virus infection
3. Pathogenic mechanism of severe bacterial-viral superinfection

Field of Laboratory Oncology

Masao HONDA, Professor

1. Study on viral hepatitis
2. Molecular biology of hepatocellular carcinoma

Hiroshi SAKURAI, Professor

1. Transcriptional regulation by yeast transcription factor GAL11
2. Studies on mechanisms of stress response

Eriko MORISHITA, Professor

1. Mechanism of thrombosis in arteriovascular disease
2. Genetic analysis and expression studies in congenital coagulation factor deficiencies and coagulation inhibitor deficiencies

Graduate Course of Rehabilitation Science

Field of Impairment Analysis

Masahiro HOSO, Professor

1. Pathological study of the musculoskeletal disorder
2. Relationship between body balance and social and cultural factors.
3. Human Pathology

Takao NAKAGAWA, Professor

1. Biology of reactive astrocytes and malignant glioma cells
2. Rehabilitation medicine
3. Neurosurgery

Hitoshi ASAI, Professor

1. Functional role of pressure sensation from the sole on standing postural control
2. Perception of standing position and somatosensory

Toshiaki YAMAZAKI, Professor

1. Prevention of disuse muscle atrophy

Field of Human Ability and Recovery Science

Fujiko SOMEYA, Professor

1. Effect of exercise on cardiorespiratory disease
2. Effects of fatigue on physical properties

Takako SHOSAKU, Professor

1. Modulations of the synaptic transmission

Katsuyuki SHIBATA, Professor

1. Kinematics and motion analysis during activities of daily living
2. Study on splinting for the upper extremity and finger disability

Seiji NISHIMURA, Professor

1. Rehabilitation and Biomechanics of the Hand
2. Development of the orthosis and training instrument of the hand
3. The evaluation of the upper limbs and the trunk function in the activities of daily living, and development of the welfare instrument