Doctoral Program in Biomedical Sciences

Common Subjects

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
02EW037	Initiation Seminar for Career Path	1	1.0	1, 2	FallABC	by appointment		Ookawa Keiko,Morikawa Kazuya	In this first course of the Doctoral program in Biomedical Science, the students study the aims and objectives of the program, curriculum policies, lineups and time tables of the curriculum, and possible research topics in the program. In the career path seminar, the students recognize a wide variety of possible future careers through lectures by guest lecturers, have discussions with their classmates, and then make study plans for the program.	Compulsory
02EW002	Introduction to Medical Research	1	1.0	1, 2	SprAB	by appointment		Chair and Chief of the Academic Committee of Biomedical Sciences,Fukuda Aya,Kobayashi Makoto,Kudo Takashi,Mayers Thomas David	This course provides the opportunities for the students to learn the essential knowledge of the physical- and chemical-hazard, bio-hazard, information security, research ethics, and legal requirements, and also to understand how to use the research facilities and equipments on biomedical research.	Compulsory Online(Asynchronous)
02EW003	Seminar in Medical Sciences	2	3.0	1, 2	Annual	by appointment		Chair and Chief of the Academic Committee of Biomedical Sciences	Students attend 3 or more designated 'seminars in medical sciences' and participate in discussion. In addition, students will deepen their understanding by reading original research papers in a related field, by conducting a discussion about its contents with their advising faculty, and by writing papers.	Compulsory Online(Asynchronous)
02EW004	Special Studies on Medical Sciences	2	2.0	1, 2	Annual	by appointment		Chair of Biomedical Sciences, Research supervisors	Students learn fundamental knowledges required to set their PhD research subjects and how to obtain them under the instruction of their research supervisors. Then the students determine their research subjects as well as the methods to fulfill their research questions. The students then submit necessary applications for the PhD research, and make up a prospect for completing the dissertation.	Compulsory
02EW005	Special Practice in Medical Sciences	2	5.0	1, 2	Annual	by appointment		Chair of Biomedical Sciences, Research supervisors	Students will learn how to analyze the research results and to understand the significance of the results under the supervision of professors. Students will also plan and perform the next research process and repeat this cycle.	Compulsory
02EW031	Technical English in Medical Sciences	2	2.0	1, 2	Annual	by appointment		Miyamasu Flaminia	Students will learn the basic principles of scientific writing style and composition in English.	
02EW021	Medical and Scientific Communication I	2	1.0	1, 2	SprAB	by appointment		Ho Kiong	A literature-based, seminar-type course for the students to evaluate and review the latest scientific breakthrough in Medical Sciences. The goal of this course is for students to develop the proficiency they need to effectively and energetically communicate their professional achievements within the international scientific community. Students in this course will practice scientific reading, presentation and feedback on their performance from peers and instructors.	
02EW022	Medical and Scientific Communication II	2	3.0	2, 3	Annual	by appointment		Morikawa Kazuya	In this subject, students present and discuss about their researches in conferences held overseas of international conferences in Japan when its official language is English. They also need to make questions to presentations given by other speakers, and discuss abouttheir researches.	

02EW033	Research Presentation and Discussion	2	1.0	2, 3	SprABC	Wed2		Mizuno Seiya,Mayers Thomas David	In this course, you will learn how to improve your scientific presentation, discussion and critical thinking skills in English. Each week, invited speakers will give interesting presentations about their research which will be followed by a discussion time. In the final weeks, students will present and discuss about their own research.	
02EW007	International Practical Medical Sciences	1	3.0	1 - 4	Annual	by appointment		Koganezawa Tadachika	Through presentations of research results at international academic conferences and training abroad, students will acquire language ability and learn presentation methods while experiencing internationally recognizable research by holding discussions with researchers overseas. Furthermore, students will participate actively in discussiona and educational research abroad as well as practice teaching in English.	Lecture is conducted in English.
02EW010	Training in Medical Science Education	3	1.0	2, 3	Annual	by appointment		Chair of Biomedical Sciences, Research supervisors	In this subject, students firstly need to understand i) the objectives of the student education of this Doctoral Program, and ii) the role of each course toward achieving the objectives. Then, the students will join in iii) preparing the syllabus of a certain course together with supervisors, iv) give lecture in the course, and v) evaluate participants in the course. The students will be evaluated by the participants of the course which you will join in.	
02EW034	International Discussion on Medical Sciences I	2	2.0	1	SprABC	Fri1-3		Irie Kenji,Ohniwa Ryosuke	Focusing on molecular biology of the cell, International discussion on medical sciences I provides the opportunities for the students to have interactive online distance learning with the National Taiwan University and the Kyoto University, and to be engaged in thesis presentation and discussion conducted in English. In this course, the students should be able to understand basic knowledge of life sciences and acquire scientific communication skills in English.	
02EW035	International Discussion on Medical Sciences II	2	2.0	1	FallABC	Wed1-3		Irie Kenji,Ohniwa Ryosuke	Focusing on molecular cell biology and cancer biology, International discussion on medical sciences II provides the opportunities for the students to have interactive online distance learning with the National Taiwan University and the Kyoto University, and to be engaged in thesis presentation and discussion conducted in English. In this course, the students should be able to understand basic knowledge of life sciences and acquire scientific communication skills in English.	
02EW008	Advanced Seminar in Medical Sciences	1	3.0	1, 2	Annual	by appointment		生命システム医学専攻全教員	While attending seminars that elucidate the necessary knowledge and special skills in medical science and biology and participating in subsequent discussions, students will deepen their understanding by reading research papers related to the content of the seminars and writing papers. By doing so, students will gain insight into scientific writing and endeavor to improve their skills in such writing, while discussing in detail other fields of medical science and undergoing training to improve their knowledge application. Presentations in poster presentation of faculty of medicine are also acceptable. Reports for the poster presentations require more than a question and its answer to the presenter.	Lectures are conducted in Japanese
02EW009	Lecture on Critical Path Research Management	1	2.0	1, 2	FallABC	Mon6,7	4F204	Hashimoto Koichi,Muratani Masafumi,Negoro Hiromitsu	This course aims to equip students with an understanding of the process of critical path research and translational research, so as to translate basic research findings more quickly and efficiently into medical practice.	Lecture is conducted in English.
02EW036	Internship I	0	1.0	1 - 4	Annual	by appointment		Morikawa Kazuya	The goal of this course for students is to bulid up work conciousness and business ability, and to understand future roles expected for PhD students in Medical field.	

02EW038	Internship II	0	1.0	1 - 4	Annual	by appointment		Morikawa Kazuya	The goal of this course for students is to bulid up work conciousness and business ability, and to understand future roles expected for PhD students in Medical field.	
02EW039	English Topics in Science I	2	1.0	1 - 4	SprAB	by appointment		Mathis Bryan James,Chair of Biomedical Sciences	To reinforce English vocabulary and fluency in discussing scientific concepts in a diverse array of research fields while introducing cutting edge technologies. Students will develop critical thinking and questioning skills for use in conferences, presentations and daily scientific work.	TBA Lecture is conducted in English.
02EW040	English Topics in Science II	2	1.0	1 - 4	FallAB	by appointment		Mathis Bryan James,Chair of Biomedical Sciences	To reinforce English vocabulary and fluency in discussing scientific concepts in a diverse array of research fields while introducing cutting edge technologies. Students will develop critical thinking and questioning skills for use in conferences, presentations and daily scientific work.	TBA Lecture is conducted in English.

Spcialized Sciences

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
02EW101	Lectures in Biomedical Research	1	1.0	1, 2	FallABC	by appointment		Chair of Biomedical Sciences, Research supervisors	To decide their future research direction and to finally prepare for publication of their research in a biomedical journal, students will study through practical discussion on the background, purpose, methods, results, discussion, and conclusions of ongoing research in each group.	Compulsory Online(Asynchronous)
02EW401	Lecture and Discussion in Molecular Medical Sciences I	1	2.0	1, 2	SprABC	by appointment		Irie Kenji,Hisatake Koji,Nishimura Ken,Ohbayashi Norihiko,Masu Masayuki,Takahashi Satoru,Takei Yosuke,Kobayashi Makoto,Ishii Shunsuke,Nakamura Yukio,Hayashi Yohei	To conduct research on development of prevention, diagnoses and treatments for human diseases, students should understand regulatory mechanisms of vital phenomena and pathogenic mechanisms at the individual and/or cellular levels based on concept of molecular biology. This lecture is aimed to take comprehensive knowledge through a presentation and discussion of the latest research results obtained in the affiliated laboratories, for research on: ・Molecular Biological Oncology (Molecular Cell Biology) ・Molecular Biological Oncology (Gene Regulation)" ・Physiological Chemistry ・Molecular Neurobiology ・Anatomy and Embryology ・Anatomy and Neuroscience ・Molecular and Developmental Biology" ・Cell Engineering ・Protein Metabolism	
02EW402	Lecture and Discussion in Molecular Medical Sciences II	1	2.0	1, 2	FallABC	by appointment		Irie Kenji,Hisatake Koji,Nishimura Ken,Ohbayashi Norihiko,Masu Masayuki,Takahashi Satoru,Takei Yosuke,Kobayashi Makoto,Ishii Shunsuke,Nakamura Yukio,Hayashi Yohei	To conduct research on development of prevention, diagnoses and treatments for human diseases, students should understand regulatory mechanisms of vital phenomena and pathogenic mechanisms at the individual and/or cellular levels based on concept of molecular biology. This lecture is aimed to take comprehensive knowledge through a presentation and discussion of the latest research results obtained in the affiliated laboratories, for research on: ・Molecular Biological Oncology (Molecular Cell Biology) ・Molecular Biological Oncology (Gene Regulation)" ・Physiological Chemistry ・Molecular Neurobiology ・Anatomy and Embryology ・Anatomy and Neuroscience ・Molecular and Developmental Biology" ・Cell Engineering ・Protein Metabolism	

02EW403	Seminar in Molecular Medical Sciences I	2	2.0	1, 2	SprABC	by appointment		Irie Kenji,Hisatake Koji,Nishimura Ken,Ohbayashi Norihiko,Masu Masayuki,Takahashi Satoru,Takei Yosuke,Kobayashi Makoto,Ishii Shunsuke,Nakamura Yukio,Hayashi Yohei	This seminar is aimed to understand the purpose, methods, and results of latest articlem and to discuss the significances, problems, and future directions of the study. ・Molecular Biological Oncology (Molecular Cell Biology) ・Molecular Biological Oncology (Gene Regulation)" ・Physiological Chemistry ・Molecular Neurobiology ・Anatomy and Embryology ・Anatomy and Neuroscience ・Molecular and Developmental Biology" ・Cell Engineering ・Protein Metabolism	
02EW404	Seminar in Molecular Medical Sciences II	2	2.0	1, 2	FallABC	by appointment		Irie Kenji,Hisatake Koji,Nishimura Ken,Ohbayashi Norihiko,Masu Masayuki,Takahashi Satoru,Takei Yosuke,Kobayashi Makoto,Ishii Shunsuke,Nakamura Yukio,Hayashi Yohei	This seminar is aimed to understand the purpose, methods, and results of latest articlem and to discuss the significances, problems, and future directions of the study. ・Molecular Biological Oncology (Molecular Cell Biology) ・Molecular Biological Oncology (Gene Regulation)" ・Physiological Chemistry ・Molecular Neurobiology ・Anatomy and Embryology ・Anatomy and Neuroscience ・Molecular and Developmental Biology" ・Cell Engineering ・Protein Metabolism	
02EW405	Practice in Molecular Medical Sciences I	3	2.0	1, 2	SprABC	by appointment		Irie Kenji,Hisatake Koji,Nishimura Ken,Ohbayashi Norihiko,Masu Masayuki,Takahashi Satoru,Takei Yosuke,Kobayashi Makoto,Ishii Shunsuke,Nakamura Yukio,Hayashi Yohei	This course is aimed to learn the principles and methods of experiments and analysis for research on; ・Molecular Biological Oncology (Molecular Cell Biology) ・Molecular Biological Oncology (Gene Regulation)" ・Physiological Chemistry ・Molecular Neurobiology ・Anatomy and Embryology ・Anatomy and Neuroscience ・Molecular and Developmental Biology" ・Cell Engineering ・Protein Metabolism	
02EW406	Practice in Molecular Medical Sciences II	3	2.0	1, 2	FallABC	by appointment		Irie Kenji,Hisatake Koji,Nishimura Ken,Ohbayashi Norihiko,Masu Masayuki,Takahashi Satoru,Takei Yosuke,Kobayashi Makoto,Ishii Shunsuke,Nakamura Yukio,Hayashi Yohei	This course is aimed to learn the principles and methods of experiments and analysis for research on; ・Molecular Biological Oncology (Molecular Cell Biology) ・Molecular Biological Oncology (Gene Regulation)" ・Physiological Chemistry ・Molecular Neurobiology ・Anatomy and Embryology ・Anatomy and Neuroscience ・Molecular and Developmental Biology" ・Cell Engineering ・Protein Metabolism	

02EW411	Lecture and Discussion in Human Medical Biology I	1	2.0	1, 2	SprABC	by appointment		Morikawa Kazuya,Kato Mitsuyasu,Sugiyama Fumihiro,Mizuno Seiya,Shibuya Kazuko,Ohneda Osamu,Miyoshi Hirotoshi,Kawaguchi Atsushi,Ho Kiong,Koganezawa Tadachika,Sakae Takeji,Kumada Hiroaki,Yanagisawa Hiromi,KIMURA KENICHI,Matsumoto Masayuki,Yamazaki Satoshi,Hirokawa Takatsugu	Students conduct molecular biological and biotechnological research approach to understand regulatory mechanisms of biological phenomena and pathogenic processes of human being at the individual and/or cellular levels. In this subject, students give presentations on their own research and have discussion on research achievement and future plan. Students are required to attend the classes organized by multiple faculties including their own research supervisor. The research fields involved in this subject are; ・Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology) ・Laboratory Animal Science ・Experimental Pathology ・Diagnostic Pathology ・Immunology ・Regenerative Medicine and Stem Cell Biology ・Biomedical Engineering ・Neurophysiology ・Medical Physics ・Vascular Matrix Biology ・Stem Cell Therapy ・in silico drug design	
02EW412	Lecture and Discussion in Human Medical Biology II	1	2.0	1, 2	FallABC	by appointment		Morikawa Kazuya,Kato Mitsuyasu,Sugiyama Fumihiro,Mizuno Seiya,Shibuya Kazuko,Ohneda Osamu,Miyoshi Hirotoshi,Kawaguchi Atsushi,Ho Kiong,Koganezawa Tadachika,Sakae Takeji,Kumada Hiroaki,Yanagisawa Hiromi,KIMURA KENICHI,Matsumoto Masayuki,Yamazaki Satoshi,Hirokawa Takatsugu	Students conduct molecular biological and biotechnological research approach to understand regulatory mechanisms of biological phenomena and pathogenic processes of human being at the individual and/or cellular levels. In this subject, students give presentations on their own research and have discussion on research achievement and future plan. Students are required to attend the classes organized by multiple faculties including their own research supervisor. The research fields involved in this subject are; ・Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology) ・Laboratory Animal Science ・Experimental Pathology ・Diagnostic Pathology ・Immunology ・Regenerative Medicine and Stem Cell Biology ・Biomedical Engineering ・Neurophysiology ・Medical Physics ・Vascular Matrix Biology ・Stem Cell Therapy ・in silico drug design	
02EW413	Seminar in Human Medical Biology I	2	2.0	1, 2	SprABC	by appointment		Morikawa Kazuya,Kato Mitsuyasu,Sugiyama Fumihiro,Mizuno Seiya,Shibuya Kazuko,Ohneda Osamu,Miyoshi Hirotoshi,Kawaguchi Atsushi,Ho Kiong,Koganezawa Tadachika,Sakae Takeji,Kumada Hiroaki,Yanagisawa Hiromi,KIMURA KENICHI,Matsumoto Masayuki,Yamazaki Satoshi,Hirokawa Takatsugu	This seminar is aimed to understand the purpose, methods, and results of latest articles. The research fields involved in this subject are; ・Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology) ・Laboratory Animal Science ・Experimental Pathology ・Diagnostic Pathology ・Immunology ・Regenerative Medicine and Stem Cell Biology ・Biomedical Engineering ・Neurophysiology ・Medical Physics ・Vascular Matrix Biology ・Stem Cell Therapy ・in silico drug design	

02EW414	Seminar in Human Medical Biology II	2	2.0	1, 2	FallABC	by appointment		Morikawa Kazuya,Kato Mitsuyasu,Sugiyama Fumihiro,Mizuno Seiya,Shibuya Kazuko,Ohneda Osamu,Miyoshi Hirotoshi,Kawaguchi Atsushi,Ho Kiong,Koganezawa Tadachika,Sakae Takeji,Kumada Hiroaki,Yanagisawa Hiromi,KIMURA KENICHI,Matsumoto Masayuki,Yamazaki Satoshi,Hirokawa Takatsugu	This seminar is aimed to understand the purpose, methods, and results of latest articles. The research fields involved in this subject are; ・Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology) ・Laboratory Animal Science ・Experimental Pathology ・Diagnostic Pathology ・Immunology ・Regenerative Medicine and Stem Cell Biology ・Biomedical Engineering ・Neurophysiology ・Medical Physics ・Vascular Matrix Biology ・Stem Cell Therapy ・in silico drug design	
02EW415	Practice in Human Medical Biology I	3	2.0	1, 2	SprABC	by appointment		Morikawa Kazuya,Kato Mitsuyasu,Sugiyama Fumihiro,Mizuno Seiya,Shibuya Kazuko,Ohneda Osamu,Miyoshi Hirotoshi,Kawaguchi Atsushi,Ho Kiong,Koganezawa Tadachika,Sakae Takeji,Kumada Hiroaki,Yanagisawa Hiromi,KIMURA KENICHI,Matsumoto Masayuki,Yamazaki Satoshi,Hirokawa Takatsugu	This course is aimed to learn the principles and methods of experiments and analysis for research. The research fields involved in this subject are; ・Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology) ・Laboratory Animal Science ・Experimental Pathology ・Diagnostic Pathology ・Immunology ・Regenerative Medicine and Stem Cell Biology ・Biomedical Engineering ・Neurophysiology ・Medical Physics ・Vascular Matrix Biology ・Stem Cell Therapy ・in silico drug design	
02EW416	Practice in Human Medical Biology II	3	2.0	1, 2	FallABC	by appointment		Morikawa Kazuya,Kato Mitsuyasu,Sugiyama Fumihiro,Mizuno Seiya,Shibuya Kazuko,Ohneda Osamu,Miyoshi Hirotoshi,Kawaguchi Atsushi,Ho Kiong,Koganezawa Tadachika,Sakae Takeji,Kumada Hiroaki,Yanagisawa Hiromi,KIMURA KENICHI,Matsumoto Masayuki,Yamazaki Satoshi,Hirokawa Takatsugu	This course is aimed to learn the principles and methods of experiments and analysis for research. The research fields involved in this subject are; ・Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology) ・Laboratory Animal Science ・Experimental Pathology ・Diagnostic Pathology ・Immunology ・Regenerative Medicine and Stem Cell Biology ・Biomedical Engineering ・Neurophysiology ・Medical Physics ・Vascular Matrix Biology ・Stem Cell Therapy ・in silico drug design	

02EW421	Lecture and Discussion in Genome and Environmental Medicine I	1	2.0	1, 2	SprABC	by appointment		Tsuchiya Naoyuki, Noguchi Emiko, Muratani Masafumi, Matsuzaki Ichiyo, Ozaki Haruka, Ohniwa Ryosuke, Takahasi Yoichiro, Anme Tokie, Kano Shigeyuki, Takahashi Yoshimasa	Students acquire knowledges necessary to understand the role of genomic factors, environmental factors and their interactions involved in diseases as well as human adaptation to environment, and its medical significance. Students also learn skills of presentations and discussion on their own research and the abilities to design, conduct, and evaluate the research independently. Each student is encouraged to attend the classes given by his/her research supervisor, as well as at least one series of classes given by other laboratories belonging to the Doctoral Program in Medical Sciences. ・Medical Genetics ・Genome Biology ・Bioinformatics ・Environmental Medicine (Occupational and Aerospace Phychiatry) ・Legal Medicine ・International Community Care and Lifespan Development: Empowerment Sciences" ・International Medicine ・Medical Virology	
02EW422	Lecture and Discussion in Genome and Environmental Medicine II	1	2.0	1, 2	FallABC	by appointment		Tsuchiya Naoyuki, Noguchi Emiko, Muratani Masafumi, Matsuzaki Ichiyo, Ozaki Haruka, Ohniwa Ryosuke, Takahasi Yoichiro, Anme Tokie, Kano Shigeyuki, Takahashi Yoshimasa	Students acquire knowledges necessary to understand the role of genomic factors, environmental factors and their interactions involved in diseases as well as human adaptation to environment, and its medical significance. Students also learn skills of presentations and discussion on their own research and the abilities to design, conduct, and evaluate the research independently. Each student is encouraged to attend the classes given by his/her research supervisor, as well as at least one series of classes given by other laboratories belonging to the Doctoral Program in Medical Sciences. ・Medical Genetics ・Genome Biology ・Bioinformatics ・Environmental Medicine (Occupational and Aerospace Phychiatry) ・Legal Medicine ・International Community Care and Lifespan Development: Empowerment Sciences" ・International Medicine ・Medical Virology	
02EW423	Seminar in Genome and Environmental Medicine I	2	2.0	1, 2	SprABC	by appointment		Tsuchiya Naoyuki, Noguchi Emiko, Muratani Masafumi, Matsuzaki Ichiyo, Ozaki Haruka, Ohniwa Ryosuke, Takahasi Yoichiro, Anme Tokie, Kano Shigeyuki, Takahashi Yoshimasa	Students participate in the journal club held by each laboratory. By discussing the significance and weaknesses of papers, students develop the skills to critical read and to write their own scientific papers in the fields such as the role of genomic factors, environmental factors and their interactions involved in diseases, as well as human adaptation to environment and its medical significance. Each student is encouraged to attend the classes given by his/her research supervisor, as well as at least one series of classes given by other laboratories belonging to the Doctoral Program in Medical Sciences. ・Medical Genetics ・Genome Biology ・Bioinformatics ・Environmental Medicine (Occupational and Aerospace Phychiatry) ・Legal Medicine ・International Community Care and Lifespan Development: Empowerment Sciences" ・International Medicine ・Medical Virology	

02EW424	Seminar in Genome and Environmental Medicine II	2	2.0	1, 2	FallABC	by appointment		Tsuchiya Naoyuki, Noguchi Emiko, Muratani Masafumi, Matsuzaki Ichiyo, Ozaki Haruka, Ohniwa Ryosuke, Takahasi Yoichiro, Anme Tokie, Kano Shigeyuki, Takahashi Yoshimasa	Students participate in the journal club held by each laboratory. By discussing the significance and weaknesses of papers, students develop the skills to critical read and to write their own scientific papers in the fields such as the role of genomic factors, environmental factors and their interactions involved in diseases, as well as human adaptation to environment and its medical significance. Each student is encouraged to attend the classes given by his/her research supervisor, as well as at least one series of classes given by other laboratories belonging to the Doctoral Program in Medical Sciences. ・Molecular and Genetic Epidemiology ・Medical Genetics ・Genome Biology ・Bioinformatics ・Environmental Medicine (Environmental Biology) ・Environmental Medicine (Occupational and Aerospace Phychiatry) ・Legal Medicine ・International Community Care and Lifespan Development: Empowerment Sciences″ ・International Medicine ・Medical Virology	
02EW425	Practice in Genome and Environmental Medicine I	3	2.0	1, 2	SprABC	by appointment		Tsuchiya Naoyuki, Noguchi Emiko, Muratani Masafumi, Ozaki Haruka, Ohniwa Ryosuke, Takahasi Yoichiro, Takahashi Yoshimasa, Kano Shigeyuki	Students acquire laboratory skills necessary to conduct researches on the role of genomic factors, environmental factors and their interactions involved in diseases as well as human adaptation to environment, and its medical significance. Check the separate sheet or each lab on the home page. ・Medical Genetics ・Genome Biology ・Bioinformatics ・Legal Medicine ・International Medicine ・Medical Virology	
02EW426	Practice in Genome and Environmental Medicine II	3	2.0	1, 2	FallABC	by appointment		Tsuchiya Naoyuki, Noguchi Emiko, Muratani Masafumi, Ozaki Haruka, Ohniwa Ryosuke, Takahasi Yoichiro, Takahashi Yoshimasa, Kano Shigeyuki	Students acquire laboratory skills necessary to conduct researches on the role of genomic factors, environmental factors and their interactions involved in diseases as well as human adaptation to environment, and its medical significance. Check the separate sheet or each lab on the home page. ・Medical Genetics ・Genome Biology ・Bioinformatics ・Legal Medicine ・International Medicine ・Medical Virology	

02EW431	Lecture and Discussion in Medical Science of Sleep I	1	2.0	1, 2	SprABC	by appointment		Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Kutsumura Noriki, Sakaguchi Masanori, Lazarus Michael, Hayashi Yu, Honjoh Sakiko, Vogt Kaspar, Saito Tsuyoshi, Soya Shingo, Oishi Yo	This lecture is aimed to conduct research on development of prevention, diagnoses and treatments for human diseases, students should understand regulatory mechanisms of vital phenomena and pathogenic mechanisms at the individual and/or cellular levels based on concept of molecular biology. Attendance to other groups is recommended. ・Molecular mechanism of sleep regulation ・Design and synthesis of pharmaceutical compounds ・Brain plasticity during sleep and its application ・Glia/neuron interactions in sleep ・Sleep/wake neuronal circuits ・Brain circuit organization and sleep function ・Neural circuits controlling sleep and hibernation ・Neural activity dynamics across sleep-wake cycles ・Neural basis of sensory system and innate behavior ・Molecular genetics using Drosophila to understand the mechanism of sleep regulation ・Comparative neuroscience untangles the Conservation and Diversity of Sleep ・Neurobehavioral consequences of sleep loss etc.	
02EW432	Lecture and Discussion in Medical Science of Sleep II	1	2.0	1, 2	FallABC	by appointment		Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Kutsumura Noriki, Sakaguchi Masanori, Lazarus Michael, Hayashi Yu, Honjoh Sakiko, Vogt Kaspar, Saito Tsuyoshi, Soya Shingo, Oishi Yo	This lecture is aimed to conduct research on development of prevention, diagnoses and treatments for human diseases, students should understand regulatory mechanisms of vital phenomena and pathogenic mechanisms at the individual and/or cellular levels based on concept of molecular biology. Attendance to other groups is recommended. ・Molecular mechanism of sleep regulation ・Design and synthesis of pharmaceutical compounds ・Brain plasticity during sleep and its application ・Glia/neuron interactions in sleep ・Sleep/wake neuronal circuits ・Brain circuit organization and sleep function ・Neural circuits controlling sleep and hibernation ・Neural activity dynamics across sleep-wake cycles ・Neural basis of sensory system and innate behavior ・Molecular genetics using Drosophila to understand the mechanism of sleep regulation ・Comparative neuroscience untangles the Conservation and Diversity of Sleep ・Neurobehavioral consequences of sleep loss etc.	

02EW433	Seminar in Medical Science of Sleep I	2	2.0	1, 2	SprABC	by appointment		Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Kutsumura Noriki, Sakaguchi Masanori, Hayashi Yu, Lazarus Michael, Honjoh Sakiko, Vogt Kaspar, Saito Tsuyoshi, Oishi Yo, Soya Shingo	This seminar is aimed to understand the purpose, methods, and results of latest articles related to Molecular Pharmacology, Functional neuroanatomy, Medicinal Chemistry, Organic Chemistry, Biochemistry /Chemical Biology /Genetics, Sleep and Memory, Systems Pharmacology, Molecular sleep biology. They also discuss the significances, problems, and future directions of the study. Attendance to other groups is recommended. ・Molecular mechanism of sleep regulation ・Design and synthesis of pharmaceutical compounds ・Brain plasticity during sleep and its application ・Glia/neuron interactions in sleep ・Sleep/wake neuronal circuits ・Brain circuit organization and sleep function ・Neural circuits controlling sleep and hibernation ・Neural activity dynamics across sleep-wake cycles ・Neural basis of sensory system and innate behavior ・Molecular genetics using Drosophila to understand the mechanism of sleep regulation ・Comparative neuroscience untangles the Conservation and Diversity of Sleep ・Neurobehavioral consequences of sleep loss etc.	
02EW434	Seminar in Medical Science of Sleep II	2	2.0	1, 2	FallABC	by appointment		Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Kutsumura Noriki, Sakaguchi Masanori, Lazarus Michael, Hayashi Yu, Honjoh Sakiko, Vogt Kaspar, Saito Tsuyoshi, Soya Shingo, Oishi Yo	This seminar is aimed to understand the purpose, methods, and results of latest articles related to Molecular Pharmacology, Functional neuroanatomy, Medicinal Chemistry, Organic Chemistry, Biochemistry /Chemical Biology /Genetics, Sleep and Memory, Systems Pharmacology, Molecular sleep biology. They also discuss the significances, problems, and future directions of the study. Attendance to other groups is recommended. ・Molecular mechanism of sleep regulation ・Design and synthesis of pharmaceutical compounds ・Brain plasticity during sleep and its application ・Glia/neuron interactions in sleep ・Sleep/wake neuronal circuits ・Brain circuit organization and sleep function ・Neural circuits controlling sleep and hibernation ・Neural activity dynamics across sleep-wake cycles ・Neural basis of sensory system and innate behavior ・Molecular genetics using Drosophila to understand the mechanism of sleep regulation ・Comparative neuroscience untangles the Conservation and Diversity of Sleep ・Neurobehavioral consequences of sleep loss etc.	

02EW435	Practice in Medical Science of Sleep I	3	2.0	1, 2	SprABC	by appointment		Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Kutsumura Noriki, Sakaguchi Masanori, Lazarus Michael, Hayashi Yu, Honjoh Sakiko, Vogt Kaspar, Saito Tsuyoshi, Soya Shingo, Oishi Yo	This practice is aimed to learn the principles and methods of experiments and analysis for research on Molecular Pharmacology, Functional neuroanatomy, Medicinal Chemistry, Organic Chemistry, Biochemistry /Chemical Biology /Genetics, Sleep and Memory, Systems Pharmacology and Molecular sleep biology. ・Molecular mechanism of sleep regulation ・Design and synthesis of pharmaceutical compounds ・Brain plasticity during sleep and its application ・Glia/neuron interactions in sleep ・Sleep/wake neuronal circuits ・Brain circuit organization and sleep function ・Neural circuits controlling sleep and hibernation ・Neural activity dynamics across sleep-wake cycles ・Neural basis of sensory system and innate behavior ・Molecular genetics using Drosophila to understand the mechanism of sleep regulation ・Comparative neuroscience untangles the Conservation and Diversity of Sleep ・Neurobehavioral consequences of sleep loss etc.	
02EW436	Practice in Medical Science of Sleep II	3	2.0	1, 2	FallABC	by appointment		Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Kutsumura Noriki, Honjoh Sakiko, Sakaguchi Masanori, Lazarus Michael, Vogt Kaspar, Hayashi Yu, Saito Tsuyoshi, Soya Shingo, Oishi Yo	This practice is aimed to learn the principles and methods of experiments and analysis for research on Molecular Pharmacology, Functional neuroanatomy, Medicinal Chemistry, Organic Chemistry, Biochemistry /Chemical Biology /Genetics, Sleep and Memory, Systems Pharmacology and Molecular sleep biology. ・Molecular mechanism of sleep regulation ・Design and synthesis of pharmaceutical compounds ・Brain plasticity during sleep and its application ・Glia/neuron interactions in sleep ・Sleep/wake neuronal circuits ・Brain circuit organization and sleep function ・Neural circuits controlling sleep and hibernation ・Neural activity dynamics across sleep-wake cycles ・Neural basis of sensory system and innate behavior ・Molecular genetics using Drosophila to understand the mechanism of sleep regulation ・Comparative neuroscience untangles the Conservation and Diversity of Sleep ・Neurobehavioral consequences of sleep loss etc.	