

Doctoral Program in Biomedical Sciences

Specialized Sciences

Course Number	Course Name	Instru- ctional Type	Credit s	stand- ard regist- ration year	Term	Meeting Days, Per- iod etc.	Instructor	Course Overview	Remarks
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, Takahas hi Satoru, Takei Yosuke, Kobayashi Makoto, 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:  <ul style="list-style-type: none"> <li>• Molecular Biological Oncology (Molecular Cell Biology)</li> <li>• Molecular Biological Oncology (Gene Regulation)"</li> <li>• Physiological Chemistry</li> <li>• Molecular Neurobiology</li> <li>• Anatomy and Embryology</li> <li>• Anatomy and Neuroscience</li> <li>• Molecular and Developmental Biology"</li> <li>• Cell Engineering</li> <li>• Protein Metabolism</li> </ul>	Identical to OBTNE11.
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, Takahas hi Satoru, Takei Yosuke, Kobayashi Makoto, 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:  <ul style="list-style-type: none"> <li>• Molecular Biological Oncology (Molecular Cell Biology)</li> <li>• Molecular Biological Oncology (Gene Regulation)"</li> <li>• Physiological Chemistry</li> <li>• Molecular Neurobiology</li> <li>• Anatomy and Embryology</li> <li>• Anatomy and Neuroscience</li> <li>• Molecular and Developmental Biology"</li> <li>• Cell Engineering</li> <li>• Protein Metabolism</li> </ul>	Identical to OBTNE13.
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, Takahas hi Satoru, Takei Yosuke, Kobayashi Makoto, Nakamura Yukio, Hayashi Yohei	This seminar is aimed to understand the purpose, methods, and results of latest article and to discuss the significances, problems, and future directions of the study.  <ul style="list-style-type: none"> <li>• Molecular Biological Oncology (Molecular Cell Biology)</li> <li>• Molecular Biological Oncology (Gene Regulation)"</li> <li>• Physiological Chemistry</li> <li>• Molecular Neurobiology</li> <li>• Anatomy and Embryology</li> <li>• Anatomy and Neuroscience</li> <li>• Molecular and Developmental Biology"</li> <li>• Cell Engineering</li> <li>• Protein Metabolism</li> </ul>	Identical to OBTNE15.

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, Nakamura Yukio, Hayashi Yohei	This seminar is aimed to understand the purpose, methods, and results of latest article and to discuss the significances, problems, and future directions of the study.  <ul style="list-style-type: none"> <li>• Molecular Biological Oncology (Molecular Cell Biology)</li> <li>• Molecular Biological Oncology (Gene Regulation)"</li> <li>• Physiological Chemistry</li> <li>• Molecular Neurobiology</li> <li>• Anatomy and Embryology</li> <li>• Anatomy and Neuroscience</li> <li>• Molecular and Developmental Biology"</li> <li>• Cell Engineering</li> <li>• Protein Metabolism</li> </ul>	Identical to OBTNE17.
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, Nakamura Yukio, Hayashi Yohei	This course is aimed to learn the principles and methods of experiments and analysis for research on:  <ul style="list-style-type: none"> <li>• Molecular Biological Oncology (Molecular Cell Biology)</li> <li>• Molecular Biological Oncology (Gene Regulation)"</li> <li>• Physiological Chemistry</li> <li>• Molecular Neurobiology</li> <li>• Anatomy and Embryology</li> <li>• Anatomy and Neuroscience</li> <li>• Molecular and Developmental Biology"</li> <li>• Cell Engineering</li> <li>• Protein Metabolism</li> </ul>	Identical to OBTNE19.
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, Nakamura Yukio, Hayashi Yohei	This course is aimed to learn the principles and methods of experiments and analysis for research on:  <ul style="list-style-type: none"> <li>• Molecular Biological Oncology (Molecular Cell Biology)</li> <li>• Molecular Biological Oncology (Gene Regulation)"</li> <li>• Physiological Chemistry</li> <li>• Molecular Neurobiology</li> <li>• Anatomy and Embryology</li> <li>• Anatomy and Neuroscience</li> <li>• Molecular and Developmental Biology"</li> <li>• Cell Engineering</li> <li>• Protein Metabolism</li> </ul>	Identical to OBTNE1B.
02EW411	Lecture and Discussion in Human Medical Biology I	1	2.0	1, 2	SprABC	by appointment	Morikawa Kazuya, Mizuno Seiya, Kato Mitsuyasu, Matsubara Daisuke, Shibuya Kazuko, Oda Chigusa, Ohneda Osamu, Miyoshi Hirotochi, Kawaguchi Atsushi, Ho Kiong, Koganezawa Tadachika, Yamada Hiroshi, Kunimatsu Jun, Kumada Hiroaki, Sakae Takeji, Yanagisawa Hiromi, KIMURA KENICHI, Hirokawa Takatsugu, Mizutani Eiji	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:  <ul style="list-style-type: none"> <li>• Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology)</li> <li>• Laboratory Animal Science</li> <li>• Experimental Pathology</li> <li>• Diagnostic Pathology</li> <li>• Immunology</li> <li>• Regenerative Medicine and Stem Cell Biology</li> <li>• Biomedical Engineering</li> <li>• Neurophysiology</li> <li>• Cognitive and Behavioral Neuroscience</li> <li>• Neuronal Mechanisms of Adaptive Behavior</li> <li>• Medical Physics</li> <li>• Vascular Matrix Biology</li> <li>• Stem Cell Therapy</li> <li>• in silico drug design</li> </ul>	Identical to OBTNE21.

02EW412	Lecture and Discussion in Human Medical Biology II	1	2.0	1, 2	FallABC	by appointment	<p>Morikawa Kazuya, Mizuno Seiya, Kato Mitsuyasu, Matsubara Daisuke, Shibuya Kazuko, Oda Chigusa, Ohneda Osamu, Miyoshi Hirotochi, Kawaguchi Atsushi, Ho Kiong, Koganezawa Tadachika, Yamada Hiroshi, Kunimatsu Jun, Kumada Hiroaki, Sakae Takeji, Yanagisawa Hiromi, KIMURA KENICHI, Hirokawa Takatsugu, Mizutani Eiji</p> <p>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:</p> <ul style="list-style-type: none"> <li>• Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology)</li> <li>• Laboratory Animal Science</li> <li>• Experimental Pathology</li> <li>• Diagnostic Pathology</li> <li>• Immunology</li> <li>• Regenerative Medicine and Stem Cell Biology</li> <li>• Biomedical Engineering</li> <li>• Neurophysiology</li> <li>• Cognitive and Behavioral Neuroscience</li> <li>• Neuronal Mechanisms of Adaptive Behavior</li> <li>• Medical Physics</li> <li>• Vascular Matrix Biology</li> <li>• Stem Cell Therapy</li> <li>• in silico drug design</li> </ul>	Identical to OBTNE23.
02EW413	Seminar in Human Medical Biology I	2	2.0	1, 2	SprABC	by appointment	<p>Morikawa Kazuya, Mizuno Seiya, Kato Mitsuyasu, Matsubara Daisuke, Shibuya Kazuko, Oda Chigusa, Ohneda Osamu, Miyoshi Hirotochi, Kawaguchi Atsushi, Ho Kiong, Koganezawa Tadachika, Yamada Hiroshi, Kunimatsu Jun, Kumada Hiroaki, Sakae Takeji, Yanagisawa Hiromi, KIMURA KENICHI, Hirokawa Takatsugu, Mizutani Eiji</p> <p>This seminar is aimed to understand the purpose, methods, and results of latest articles. The research fields involved in this subject are:</p> <ul style="list-style-type: none"> <li>• Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology)</li> <li>• Laboratory Animal Science</li> <li>• Experimental Pathology</li> <li>• Diagnostic Pathology</li> <li>• Immunology</li> <li>• Regenerative Medicine and Stem Cell Biology</li> <li>• Biomedical Engineering</li> <li>• Neurophysiology</li> <li>• Cognitive and Behavioral Neuroscience</li> <li>• Neuronal Mechanisms of Adaptive Behavior</li> <li>• Medical Physics</li> <li>• Vascular Matrix Biology</li> <li>• Stem Cell Therapy</li> <li>• in silico drug design</li> </ul>	Identical to OBTNE25.

02EW414	Seminar in Human Medical Biology II	2	2.0	1, 2	FallABC	by appointment	<p>Morikawa Kazuya, Mizuno Seiya, Kato Mitsuyasu, Matsubara Daisuke, Shibuya Kazuko, Oda Chigusa, Ohneda Osamu, Miyoshi Hirotoshi, Kawaguchi Atsushi, Ho Kiong, Koganezawa Tadachika, Yamada Hiroshi, Kunimatsu Jun, Kumada Hiroaki, Sakae Takeji, Yanagisawa Hiromi, KIMURA KENICHI, Hirokawa Takatsugu, Mizutani Eiji</p>	<p>This seminar is aimed to understand the purpose, methods, and results of latest articles. The research fields involved in this subject are:</p> <ul style="list-style-type: none"> <li>• Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology)</li> <li>• Laboratory Animal Science</li> <li>• Experimental Pathology</li> <li>• Diagnostic Pathology</li> <li>• Immunology</li> <li>• Regenerative Medicine and Stem Cell Biology</li> <li>• Biomedical Engineering</li> <li>• Neurophysiology</li> <li>• Cognitive and Behavioral Neuroscience</li> <li>• Neuronal Mechanisms of Adaptive Behavior</li> <li>• Medical Physics</li> <li>• Vascular Matrix Biology</li> <li>• Stem Cell Therapy</li> <li>• in silico drug design</li> </ul>	Identical to OBTNE27.
02EW415	Practice in Human Medical Biology I	3	2.0	1, 2	SprABC	by appointment	<p>Morikawa Kazuya, Mizuno Seiya, Kato Mitsuyasu, Matsubara Daisuke, Shibuya Kazuko, Oda Chigusa, Ohneda Osamu, Miyoshi Hirotoshi, Kawaguchi Atsushi, Ho Kiong, Koganezawa Tadachika, Yamada Hiroshi, Kunimatsu Jun, Kumada Hiroaki, Sakae Takeji, Yanagisawa Hiromi, KIMURA KENICHI, Hirokawa Takatsugu, Mizutani Eiji</p>	<p>This course is aimed to learn the principles and methods of experiments and analysis for research. The research fields involved in this subject are:</p> <ul style="list-style-type: none"> <li>• Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology)</li> <li>• Laboratory Animal Science</li> <li>• Experimental Pathology</li> <li>• Diagnostic Pathology</li> <li>• Immunology</li> <li>• Regenerative Medicine and Stem Cell Biology</li> <li>• Biomedical Engineering</li> <li>• Neurophysiology</li> <li>• Cognitive and Behavioral Neuroscience</li> <li>• Neuronal Mechanisms of Adaptive Behavior</li> <li>• Medical Physics</li> <li>• Vascular Matrix Biology</li> <li>• Stem Cell Therapy</li> <li>• in silico drug design</li> </ul>	Identical to OBTNE29.
02EW416	Practice in Human Medical Biology II	3	2.0	1, 2	FallABC	by appointment	<p>Morikawa Kazuya, Mizuno Seiya, Kato Mitsuyasu, Matsubara Daisuke, Shibuya Kazuko, Oda Chigusa, Ohneda Osamu, Miyoshi Hirotoshi, Kawaguchi Atsushi, Ho Kiong, Koganezawa Tadachika, Yamada Hiroshi, Kunimatsu Jun, Kumada Hiroaki, Sakae Takeji, Yanagisawa Hiromi, KIMURA KENICHI, Hirokawa Takatsugu, Mizutani Eiji</p>	<p>This course is aimed to learn the principles and methods of experiments and analysis for research. The research fields involved in this subject are:</p> <ul style="list-style-type: none"> <li>• Infection Biology (Bacteriology, Molecular Virology, Molecular Parasitology)</li> <li>• Laboratory Animal Science</li> <li>• Experimental Pathology</li> <li>• Diagnostic Pathology</li> <li>• Immunology</li> <li>• Regenerative Medicine and Stem Cell Biology</li> <li>• Biomedical Engineering</li> <li>• Neurophysiology</li> <li>• Cognitive and Behavioral Neuroscience</li> <li>• Neuronal Mechanisms of Adaptive Behavior</li> <li>• Medical Physics</li> <li>• Vascular Matrix Biology</li> <li>• Stem Cell Therapy</li> <li>• in silico drug design</li> </ul>	Identical to OBTNE28.

02EW421	Lecture and Discussion in Genome and Environmental Medicine I	1	2.0	1, 2	SprABC	by appointment	Noguchi Emiko, 川崎 綾, Muratani Masafumi, Matsuzaki Ichiyo, Ozaki Haruka, Ohniwa Ryosuke, Takahashi 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. <ul style="list-style-type: none"> <li>• Medical Genetics</li> <li>• Genome Biology</li> <li>• Bioinformatics</li> <li>• Environmental Medicine (Occupational and Aerospace Psychiatry)</li> <li>• Legal Medicine</li> <li>• International Community Care and Lifespan Development: Empowerment Sciences”</li> <li>• International Medicine</li> <li>• Medical Virology</li> </ul>	Identical to OBTNE31.
02EW422	Lecture and Discussion in Genome and Environmental Medicine II	1	2.0	1, 2	FallABC	by appointment	Noguchi Emiko, 川崎 綾, Muratani Masafumi, Matsuzaki Ichiyo, Ozaki Haruka, Ohniwa Ryosuke, Takahashi 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. <ul style="list-style-type: none"> <li>• Medical Genetics</li> <li>• Genome Biology</li> <li>• Bioinformatics</li> <li>• Environmental Medicine (Occupational and Aerospace Psychiatry)</li> <li>• Legal Medicine</li> <li>• International Community Care and Lifespan Development: Empowerment Sciences”</li> <li>• International Medicine</li> <li>• Medical Virology</li> </ul>	Identical to OBTNE33.
02EW423	Seminar in Genome and Environmental Medicine I	2	2.0	1, 2	SprABC	by appointment	Noguchi Emiko, 川崎 綾, Muratani Masafumi, Matsuzaki Ichiyo, Ozaki Haruka, Ohniwa Ryosuke, Takahashi 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. <ul style="list-style-type: none"> <li>• Medical Genetics</li> <li>• Genome Biology</li> <li>• Bioinformatics</li> <li>• Environmental Medicine (Occupational and Aerospace Psychiatry)</li> <li>• Legal Medicine</li> <li>• International Community Care and Lifespan Development: Empowerment Sciences”</li> <li>• International Medicine</li> <li>• Medical Virology</li> </ul>	Identical to OBTNE35.

02EW424	Seminar in Genome and Environmental Medicine II	2	2.0	1, 2	FallABC	by appointment	<p>Noguchi Emiko, JII  崎 綾, Muratani Masafumi, Matsuzaki Ichiyo, Ozaki Haruka, Ohniwa Ryosuke, Takahashi Yoichiro, Anme Tokie, Kano Shigeyuki, Takahashi Yoshimasa</p> <ul style="list-style-type: none"> <li>• Medical Genetics</li> <li>• Genome Biology</li> <li>• Bioinformatics</li> <li>• Environmental Medicine (Occupational and Aerospace Psychiatry)</li> <li>• Legal Medicine</li> <li>• International Community Care and Lifespan Development: Empowerment Sciences"</li> <li>• International Medicine</li> <li>• Medical Virology</li> </ul>	<p>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.</p>	Identical to OBTNE37.
02EW425	Practice in Genome and Environmental Medicine I	3	2.0	1, 2	SprABC	by appointment	<p>Noguchi Emiko, JII  崎 綾, Muratani Masafumi, Ozaki Haruka, Ohniwa Ryosuke, Takahashi Yoichiro, Kano Shigeyuki, Takahashi Yoshimasa</p> <ul style="list-style-type: none"> <li>• Medical Genetics</li> <li>• Genome Biology</li> <li>• Bioinformatics</li> <li>• Legal Medicine</li> <li>• International Medicine</li> <li>• Medical Virology</li> </ul>	<p>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.</p>	Identical to OBTNE39.
02EW426	Practice in Genome and Environmental Medicine II	3	2.0	1, 2	FallABC	by appointment	<p>Noguchi Emiko, JII  崎 綾, Muratani Masafumi, Ozaki Haruka, Ohniwa Ryosuke, Takahashi Yoichiro, Kano Shigeyuki, Takahashi Yoshimasa</p> <ul style="list-style-type: none"> <li>• Medical Genetics</li> <li>• Genome Biology</li> <li>• Bioinformatics</li> <li>• Legal Medicine</li> <li>• International Medicine</li> <li>• Medical Virology</li> </ul>	<p>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.</p>	Identical to OBTNE3B.

02EW431	Lecture and Discussion in Medical Sciences of Sleep I	1	2.0	1, 2	SprABC	by appointment	<p>Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Soya Shingo, Kutsumura Noriki, Saito Tsuyoshi, Sakaguchi Masanori, Lazarus Michael, Oishi Yo, Vogt Kaspar, Honjoh Sakiko, Sakurai Katsuyasu, Toda Hirofumi, Shoi Shi, Abe Takashi</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• Molecular mechanism of sleep regulation</li> <li>• Design and synthesis of pharmaceutical compounds</li> <li>• Brain plasticity during sleep and its application</li> <li>• Glia/neuron interactions in sleep</li> <li>• Sleep/wake neuronal circuits</li> <li>• Brain circuit organization and sleep function</li> <li>• Neural circuits controlling sleep and hibernation</li> <li>• Neural activity dynamics across sleep-wake cycles</li> <li>• Neural basis of sensory system and innate behavior</li> <li>• Molecular genetics using Drosophila to understand the mechanism of sleep regulation</li> <li>• Comparative neuroscience untangles the Conservation and Diversity of Sleep</li> <li>• Identification and Mitigation of Reduced Alertness etc.</li> </ul>	Identical to OBTNE41.
02EW432	Lecture and Discussion in Medical Sciences of Sleep II	1	2.0	1, 2	FallABC	by appointment	<p>Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Soya Shingo, Kutsumura Noriki, Saito Tsuyoshi, Sakaguchi Masanori, Lazarus Michael, Oishi Yo, Vogt Kaspar, Honjoh Sakiko, Sakurai Katsuyasu, Toda Hirofumi, Shoi Shi, Abe Takashi</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• Molecular mechanism of sleep regulation</li> <li>• Design and synthesis of pharmaceutical compounds</li> <li>• Brain plasticity during sleep and its application</li> <li>• Glia/neuron interactions in sleep</li> <li>• Sleep/wake neuronal circuits</li> <li>• Brain circuit organization and sleep function</li> <li>• Neural circuits controlling sleep and hibernation</li> <li>• Neural activity dynamics across sleep-wake cycles</li> <li>• Neural basis of sensory system and innate behavior</li> <li>• Molecular genetics using Drosophila to understand the mechanism of sleep regulation</li> <li>• Comparative neuroscience untangles the Conservation and Diversity of Sleep</li> <li>• Identification and Mitigation of Reduced Alertness etc.</li> </ul>	Identical to OBTNE43.

02EW433	Seminar in Medical Sciences of Sleep I	2	2.0	1, 2	SprABC	by appointment	<p>Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Soya Shingo, Kutsumura Noriki, Saito Tsuyoshi, Sakaguchi Masanori, Lazarus Michael, Oishi Yo, Vogt Kaspar, Honjoh Sakiko, Sakurai Katsuyasu, Toda Hirofumi, Shoi Shi, Abe Takashi</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• Molecular mechanism of sleep regulation</li> <li>• Design and synthesis of pharmaceutical compounds</li> <li>• Brain plasticity during sleep and its application</li> <li>• Glia/neuron interactions in sleep</li> <li>• Sleep/wake neuronal circuits</li> <li>• Brain circuit organization and sleep function</li> <li>• Neural circuits controlling sleep and hibernation</li> <li>• Neural activity dynamics across sleep-wake cycles</li> <li>• Neural basis of sensory system and innate behavior</li> <li>• Molecular genetics using Drosophila to understand the mechanism of sleep regulation</li> <li>• Comparative neuroscience untangles the Conservation and Diversity of Sleep</li> <li>• Identification and Mitigation of Reduced Alertness etc.</li> </ul>	Identical to OBTNE45.
02EW434	Seminar in Medical Sciences of Sleep II	2	2.0	1, 2	FallABC	by appointment	<p>Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Soya Shingo, Kutsumura Noriki, Saito Tsuyoshi, Sakaguchi Masanori, Lazarus Michael, Oishi Yo, Vogt Kaspar, Honjoh Sakiko, Sakurai Katsuyasu, Toda Hirofumi, Shoi Shi, Abe Takashi</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• Molecular mechanism of sleep regulation</li> <li>• Design and synthesis of pharmaceutical compounds</li> <li>• Brain plasticity during sleep and its application</li> <li>• Glia/neuron interactions in sleep</li> <li>• Sleep/wake neuronal circuits</li> <li>• Brain circuit organization and sleep function</li> <li>• Neural circuits controlling sleep and hibernation</li> <li>• Neural activity dynamics across sleep-wake cycles</li> <li>• Neural basis of sensory system and innate behavior</li> <li>• Molecular genetics using Drosophila to understand the mechanism of sleep regulation</li> <li>• Comparative neuroscience untangles the Conservation and Diversity of Sleep</li> <li>• Identification and Mitigation of Reduced Alertness etc.</li> </ul>	Identical to OBTNE47.



02EW435	Practice in Medical Sciences of Sleep I	3	2.0	1, 2	SprABC	by appointment	<p>Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Soya Shingo, Kutsumura Noriki, Saito Tsuyoshi, Sakaguchi Masanori, Lazarus Michael, Vogt Kaspar, Oishi Yo, Honjoh Sakiko, Sakurai Katsuyasu, Toda Hirofumi, Shoi Shi, Abe Takashi</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• Molecular mechanism of sleep regulation</li> <li>• Design and synthesis of pharmaceutical compounds</li> <li>• Brain plasticity during sleep and its application</li> <li>• Glia/neuron interactions in sleep</li> <li>• Sleep/wake neuronal circuits</li> <li>• Brain circuit organization and sleep function</li> <li>• Neural circuits controlling sleep and hibernation</li> <li>• Neural activity dynamics across sleep-wake cycles</li> <li>• Neural basis of sensory system and innate behavior</li> <li>• Molecular genetics using Drosophila to understand the mechanism of sleep regulation</li> <li>• Comparative neuroscience untangles the Conservation and Diversity of Sleep</li> <li>• Identification and Mitigation of Reduced Alertness etc.</li> </ul>	Identical to OBTNE49.
02EW436	Practice in Medical Sciences of Sleep II	3	2.0	1, 2	FallABC	by appointment	<p>Yanagisawa Masashi, Sakurai Takeshi, Hirano Arisa, Soya Shingo, Kutsumura Noriki, Saito Tsuyoshi, Sakaguchi Masanori, Lazarus Michael, Vogt Kaspar, Oishi Yo, Honjoh Sakiko, Sakurai Katsuyasu, Toda Hirofumi, Shoi Shi, Abe Takashi</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• Molecular mechanism of sleep regulation</li> <li>• Design and synthesis of pharmaceutical compounds</li> <li>• Brain plasticity during sleep and its application</li> <li>• Glia/neuron interactions in sleep</li> <li>• Sleep/wake neuronal circuits</li> <li>• Brain circuit organization and sleep function</li> <li>• Neural circuits controlling sleep and hibernation</li> <li>• Neural activity dynamics across sleep-wake cycles</li> <li>• Neural basis of sensory system and innate behavior</li> <li>• Molecular genetics using Drosophila to understand the mechanism of sleep regulation</li> <li>• Comparative neuroscience untangles the Conservation and Diversity of Sleep</li> <li>• Identification and Mitigation of Reduced Alertness etc.</li> </ul>	Identical to OBTNE4B.