



2018–2019
Outline



Kochi Medical School
Kochi Medical School Hospital

National University Corporation Kochi University

A Message from the Dean

We have been admitting students for over 40 years since the foundation of Kochi Medical University, the predecessor of Kochi Medical School, in 1976. With the establishment of the Nursing Course in 1998, Kochi Medical School has nurtured and developed over thousands of doctors, nurses, public health nurses, and midwives. By 2017, the number of student enrollment has grown to 3,374 at Medical Course and 1,153 at Nursing Course. After integrating with the former Kochi University in 2003, it became approved as an independent administrative institution the following year and is now known as Kochi Medical School, National University Corporation Kochi University.

Kochi Medical School inherited two founding philosophies from its predecessor: "Revere the Divine, Love Humanity" and "Search for Truth". Combined together, these phrases express that a medical professional should always respect the universe and seek the truth while practicing compassion towards the patient in front of them. Our school has the desire to cultivate physicians who have an authentic and conscientious attitude as both human beings and medical professionals. An ideal medical professional should incorporate both medical treatment and medical science as one, coexisting in harmony like how human beings are composed of both the mind and body as one.

Medical treatment involves a combination of both medical science and the practitioner's attitude toward the patient. William Osler once stated that "The practice of medicine is an art, based on science". At Kochi Medical School, a National University Corporation, we aim to fortify the twin pillars of modern and advanced medicine - in other words, art and science. While modern and advanced medicine may appear incongruous at first glance, the treatment we implement is based on utilizing the latest and most advanced medical knowledge and providing the utmost best service to patients. As we strive to find optimal treatments for our patients, we may encounter clinical obstacles which then become the potential seeds of medical research. Diligent execution is required for the advancement of both medical science and treatment, and our Kochi Medical School and hospital is where this takes place.

The Center for Innovative and Translational Medicine (CITM), in cooperation with researchers and medical students, has been playing a leading role in promoting creative and forward-looking research and technological development in medical science and treatment. Here, students in their second through fourth year can learn about medical research hands-on in a real lab setting in our advanced medical science courses. By immersing students in current medical research, that generates new knowledge rather than pre-prepared lab exercises, students have the opportunity to obtain valuable new discoveries. It is essential that students learn the scientific principles behind the treatments they will administer in the future. Once one graduates and enters the medical field as a doctor and encounter limitations in various medical treatments, one can always return to our graduate school program to acquire further knowledge to develop new skills for overcoming limitations. We cultivate leaders who will be instrumental in changing the future of medical treatment through our offered MD-PhD course, Master of Public Health (MPH) course, and Innovative Medicine courses where students can learn about clinical research and the tools to solve medical treatment challenges.

Our nationally renowned Family Medicine Training Program is where students can study the health of local residents and learn the variations between primary care (treatment at facilities within communities), secondary care (treatment at regional medical centers), and tertiary care (treatment at medical school hospitals). The art of medically examining patients is conducted in a wide range of treatment settings (from primary care facilities to advanced treatment centers). We foster the development of medical professionals who can provide treatment in various settings.

Marking a 40-year milestone, we are now transitioning to a period of sophistication. Kochi Medical School will continue to cultivate individuals who are well-versed in medical treatment, able to generate new treatments based on forefront medical science, and utilize modern medicine to solve medical issues occurring throughout the world.



Our Mission at Kochi Medical School

Turning out altruistic doctors and nurses
with a humanitarian outlook

Fostering an academic culture with close ties
to the local medical community



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Topics 1

Center for Photodynamic Medicine

Director **Kazuhiro Hanazaki** Vice-Director **Keiji Inoue**

Overview

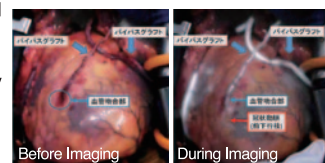
The Photodynamic Medicine Center focuses on research and education related to medical diagnosis and treatment that uses special light sources. It is an original and advanced organization founded on Japan's first full-fledged photodynamic technology. Some of its research and development projects include a navigation system for detecting lymph nodes and blood vessels, which was developed in a physiology class and is being used by departments such as breast surgery and cardiovascular surgery; and a photodynamic diagnosis (PDD) method for using fluorescence to detect cancer, which is currently undergoing clinical trials in the urology and digestive surgery departments. The Photodynamic Medicine Center continues to introduce these technologies, which could almost be seen as unique brands of Kochi Medical School, to the world. Furthermore, by conducting diagnoses and treatment that utilize photodynamic techniques, the center develops, implements, and popularizes minimally invasive techniques that meet the needs of Kochi Prefecture and its rapidly aging population.

Treatment Using Special Light Sources

Diagnosing with indocyanine green (ICG)

Lymph nodes and blood vessels are detected by exciting ICG with near-infrared light (780 nm) to produce fluorescence (830 nm)

- Perioperative localization of lymph nodes and lymph flow (sentinel lymph node); breast cancer, malignant melanoma / **covered by insurance**
- Perioperative localization of cancer; perioperative localization of brain tumors / **covered by insurance**
- Lung cancer / **not covered by insurance**
- Image-guided lung ablation via selective visualization of the target pulmonary segment and subsegment / **not covered by insurance**
- Assessing blood vessels and flow; assessing cerebral blood vessels and flow / **covered by insurance**
- Perioperative blood-flow assessment for esophageal cancer (gastric tube reconstruction) / **covered by insurance**
- Perioperative blood-flow assessment for coronary artery graft / **covered by insurance**
- Perioperative blood-flow assessment for cutaneous flaps, peripheral vessels, etc. / **covered by insurance**



Perioperative blood-flow assessment for a coronary artery graft

Treating with indocyanine green (ICG)

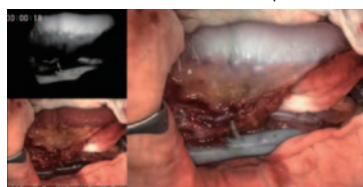
Cauterization using a low-output, near-infrared laser that heats tissue by taking advantage of the light-absorption properties of ICG

- Photoablation; lung cancer / **currently in development**

Diagnosing with near-infrared spectroscopy

Blood flow is imaged using near-infrared spectroscopy in which the absorptivity values of two wavelengths of light (730 nm and 810 nm) are measured

- Monitoring of blood vessels and flow; cerebral circulation, digestive circulation, blood flow around cutaneous and muscle flaps / **not covered by insurance**

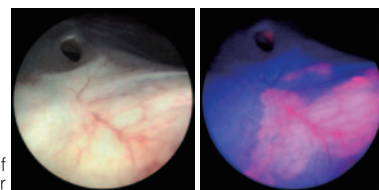


Assessing perioperative blood flow for a free jejunal graft

Photodynamic diagnosis (PDD) with 5-aminolevulinic acid (5-ALA)

Cancer is detected by exciting 5-ALA with blue visible light (375–445 nm) to produce red fluorescence (600–740 nm)

- Brain tumors (malignant glioma) / **covered by insurance**
- Bladder cancer / **covered by insurance**
- Peritoneal metastasis in gastric cancer / **currently in investigator-initiated clinical trials**
- Renal pelvis and ureter cancers / **not covered by insurance**



PDD of bladder cancer

Photodynamic therapy (PDT) with 5-aminolevulinic acid (5-ALA)

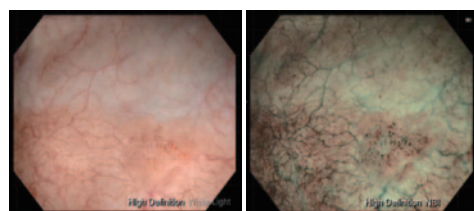
Cancer cells are eradicated by exciting 5-ALA with either red visible light (600–740 nm) or green visible light (480–580 nm) to cause a biochemical reaction

- Brain tumors, skin cancers (actinic keratosis, Bowen's disease, extramammary Paget's disease, etc.), bladder cancer, prostate cancer / **currently in development**

Narrow-band imaging (NBI)

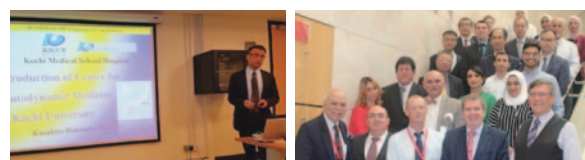
Cancer is detected using narrow bands of green light (530–550 nm) and blue light (390–445 nm)

- Gastrointestinal cancers (esophageal cancer, gastric cancer, colon cancer), bladder cancer / **covered by insurance**
- Lung cancer, bronchial mucosa dysplasia / **not covered by insurance**



NBI of bladder cancer

On October 9, 2017, the 2nd RCSI-SBI Symposium was held at the Royal College of Surgeons in Ireland - Medical University of Bahrain (RCSI Bahrain) in Manama, the capital city of the Kingdom of Bahrain. RCSI Bahrain entered into an international partnership agreement with Kochi University in 2013. This year's symposium was jointly led by Davinder Sandhu, urology professor and head of research at RCSI Bahrain, and Professor Riyadh Rehani of SBI Pharma. Director Hanazaki (Surgery I professor), Vice-Director Inoue (urology professor), Doctor Fukuhara (urology), and Doctor Namikawa (Surgery I) from Kochi Medical School Hospital's Center for Photodynamic Medicine spoke at the event. They introduced the center and the new technologies created by Kochi Medical School, such as photodynamic diagnosis and therapy, then engaged in a lively question-and-answer session. The symposium continued on October 10 with Professor Sammeer Ootom, president of RCSI Bahrain, and others holding preliminary meetings related to collaborative research and other areas of academic exchange; these activities were then summarized in a press release.



Topics 2

Center for Intractable Immune Disease

Director **Tetsuji Naka**

In Japan, rare diseases with unknown causes that negatively impact a person's daily life and for which there are no established treatment methods are known as *nanbyō* or "intractable diseases". These diseases are the subject of public policies related to providing health care, promoting research, reducing medical costs, and other areas. Many intractable diseases are caused by disorders of the immune system; we refer to these as "intractable immune diseases." The symptoms of intractable immune diseases are particularly difficult to diagnose because they are extremely diverse and can affect multiple internal organs or even the entire body. This means that diagnosing and treating them requires a multifaceted and comprehensive approach that spans several medical departments.

Recent research has clarified the role that molecules such as cytokine play in regulating the immune system, and we now know that the existence of these common molecules may be a key factor in the worsening of intractable immune diseases. For example, the cytokine TNF- α is closely connected to a number of illnesses like rheumatoid arthritis, Behcet's disease, psoriasis, inflammatory bowel disease, spondylarthritis, and juvenile idiopathic arthritis due to its ability to increase inflammation. Drugs that specifically inhibit TNF- α have now been shown to have a significant impact on patients who suffer from those diseases. In addition to TNF- α , the inflammatory cytokine IL-6 is connected to rheumatoid arthritis, juvenile idiopathic arthritis, Castleman disease, and other intractable immune diseases. IL-6 inhibitors are currently being developed in Japan and used to treat patients with those diseases. Even now, exploratory research into the key molecules of intractable immune diseases is ongoing; lately, drugs that target cytokines such as IL-23 and IL-17 as well as the T-cell activators CD80 and CD86 have been developed and applied to the treatment of intractable diseases.

As we can see, there are commonalities among the root causes of intractable immune diseases, and in many cases the same drug can be used to treat patients who exhibit differing symptoms. These drugs are not currently suitable

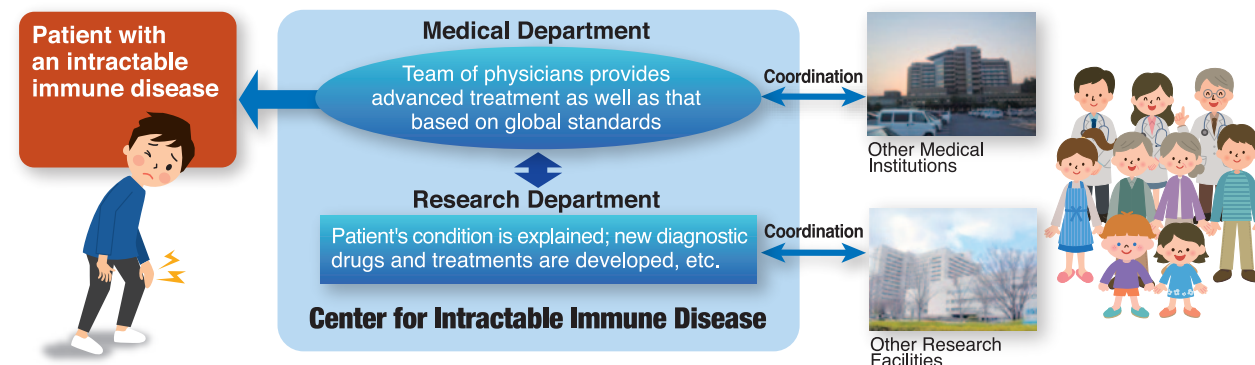
for some intractable immune diseases, like scleroderma, polymyositis, dermatomyositis, or systemic lupus erythematosus; however, we are currently in the process of identifying which of these diseases might be treatable with the same drug and developing brand-new pharmaceutical solutions for them. Until now, the task of diagnosing intractable immune diseases has fallen to a small number of doctors working individually within each department. But if we consolidate these efforts within a university center, we should be able to fully realize the diagnosis, treatment, and research of such diseases.

That's why Kochi University created a new Center for Intractable Immune Disease consisting of a team of doctors

from related departments who are involved in the diagnosis and treatment of these diseases. The goal of this team is to quickly and accurately diagnose intractable immune diseases and implement treatment using the latest medical technology by coordinating in a manner that transcends departmental boundaries. Another aim is to build a database of cases involving rare intractable diseases and to share information about the present challenges in their treatment in order to develop measures against them,

i.e., to further promote the university's clinical research into understanding patient symptoms and creating treatment methods. We would also like the Center for Intractable Immune Disease to regularly interact with intractable disease clinics located in places like Kansai and Tokyo and to exchange information about diagnosing and treating particularly rare diseases so that we can provide a level of medical care on par with that available in major metropolitan areas.

The center's outpatient clinic is open on Tuesdays and Thursdays. In addition to the existing medical departments and experimental laboratories, a new translational research department has been created within the Science Research Center as a place where comprehensive clinical research can be conducted via omics-based analysis and other techniques, with the goal of developing new and effective diagnostic and treatment methods for intractable immune diseases that are lacking in both.



Topics 3 Installation of the da Vinci® Xi surgical system

Director of the Minimally Invasive Surgery Training Center **Michiya Kobayashi**

In 2012, we introduced the robotic surgical system known as da Vinci®. The da Vinci system was modeled after a robot that was developed in the United States in the late 1980s to allow the user to perform remote surgical procedures on soldiers wounded on the battlefield. Following its approval by the FDA in the year 2000, da Vinci was used extensively throughout the US and other countries. The approval process in Japan took longer, with the Pharmaceutical Affairs and Food Sanitation Council finally green-lighting its use in 2009. Then, in April 2012, health insurance began covering total prostatectomies (robot-assisted laparoscopic radical prostatectomies) in cases of prostate cancer, which led to a large number of facilities installing da Vinci systems.

Similar to normal endoscopic procedures, da Vinci surgeries involve opening a small hole in the patient then inserting a valve tube called a trocar. A robotic arm equipped with designated forceps called endoscopes or EndoWrists then uses the trocar to insert those instruments into the patient's body. The surgeon performs the procedure remotely using a master controller.

Some features of the da Vinci system include high-resolution 3-D imaging, forceps with greater mobility than a human wrist, the ability to stabilize a shaking hand, and the ability to minimize the surgeon's hand movement while still conveying desired actions to the surgical implements. These allow the user to perform meticulous operations while maintaining good visibility, even within small spaces.

Our da Vinci system was installed in the operating room on September 8, 2012. It was used for the first time on October 29 of that year by the urology department for a prostate cancer procedure, and by March 2018 it had been used for a total of 411 cases.

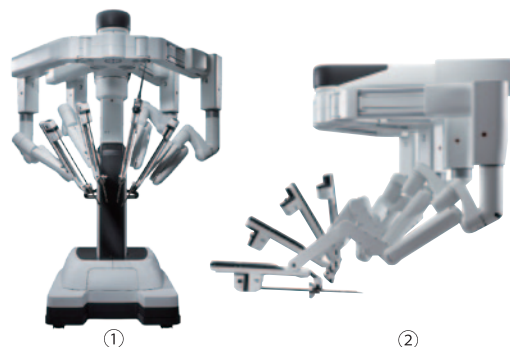
Ample training is required to perform surgeries using the da Vinci system. First, prospective users complete an online course, after which they are shown how to use the device and are given the opportunity to practice using it. Following that, they can participate in a two-day training course at the training center where they attend lectures on operating da Vinci and use it to perform surgical procedures on animals. Once this training is complete, the surgeon must be certified by the hospital's internal review committee to use the system. Upon receiving certification, the surgeon can now use da Vinci in an actual surgery for the first time. The surgeon discusses the procedure with the patient and obtains his or her consent, then sets a date for the surgery. A few days prior to the surgery, the surgeon along with the anesthesiologist, nurses, medical engineer, and other team members gather in the operating room to review the procedure and device once more. Naturally, before performing his or her first procedure the surgeon must pass a review by the Ethics Committee

(now the Review Committee for Highly Difficult New Medical Technologies) regarding the appropriateness of the surgery. The Minimally Invasive Surgery Training Center provides support in the form of various seminars and training simulators.

In the summer of 2017, we became the first facility in Shikoku to install the latest da Vinci model—the Xi System. Due to its compact body and a construction that allows it to be suspended from above (see pictures①and②), the Xi System features exceptional usage compared to previous models. Other improvements include clearer images during surgery, a new tool that allows blood vessel to be severed without hemorrhaging, and the ability to use tools needed for anastomosis of the alimentary tract and other procedures. Because the flexibility of the Xi System allows it to be used with future technology, we expect it to spur the development of new minimally invasive procedures within urology as well as the fields of digestive surgery, gynecology, and thoracic surgery. The only da Vinci surgical procedures covered by insurance were total prostatectomies for prostate cancer and partial nephrectomies; most cases of the system being used in Japan is to treat urologic disease. As of April of this year, the twelve surgical procedures listed in the table below are now covered by insurance; however, not all of them will be immediately implementable due to facility criteria and other factors. Kochi Medical School Hospital is working to introduce the system to not only the urology department but also the digestive surgery, gynecology, and thoracic surgery departments.

I am confident that surgeries using the da Vinci system will become quite commonplace in the near future. Because we don't want the Kochi region to have to rush to adopt the technology at that time, we believe that it is our university's mission to take the lead now and raise the standards for robotic surgeries in Kochi Prefecture by preparing and educating as necessary to ensure that, when the impending age of robotic surgery arrives, all of our hospitals will be able to install and operate the devices without any problems.

da Vinci Xi, the latest surgical robot model



Procedure Name

Thoracoscopic malignant mediastinal tumor removal
Thoracoscopic benign mediastinal tumor removal
Thoracoscopic malignant pulmonary tumor removal (ablation of one or more lobes)
Thoracoscopic malignant esophageal tumor removal
Thoracoscopic valvuloplasty
Laparoscopic gastrectomy
Laparoscopic cardia-side gastrectomy
Total laparoscopic gastrectomy
Laparoscopic resection / rectal resection
Laparoscopic malignant bladder tumor removal
Laparoscopic malignant uterus tumor removal (only for uterine cancer)
Total laparoscopic hysterectomy

Topics 4 Development of a vascular visualization device

Professor of Physiology (Cardiovascular Control) **Takayuki Sato**

In order to continually monitor the constantly changing vitals (circulation, breathing, etc.) of patients in operating rooms and intensive-care units, a short plastic catheter is often inserted into a patient's radial artery and used for tasks like measuring blood pressure and drawing blood. Performing this so-called "A-line placement" involves a technique in which an indwelling needle is pierced through the radial artery. While this is traditionally accomplished by feeling for the location of the radial artery's pulse then inserting the needle, we have successfully developed and brought to market a device that allows the user to see the radial artery.

advantage of these characteristics of near-infrared light, we were able to develop a device for visualizing the blood vessels in a patient's wrist. The device consists of a wrist plate and platform, a near-infrared LED light source, a near-infrared camera, and a monitor (Figure 1). When the patient lays his or her wrist on the wrist plate, the blood vessels in the wrist absorb the near-infrared light and the vascular structure is displayed on the monitor.



This vascular visualization device was developed here at Kochi University then brought to market in the form of the Mill Suss medical device by PlusMed (<http://www.plusmed.co.jp/>), a venture authorized by the university. The product won PlusMed the 31st Kochi Industrial Promotion Design Award (February 13, 2017). We hope to continue developing successful medical devices through this sort of collaboration between academia and industry.



Near-infrared light with a wavelength between 700 and 900 nanometers passes through the skin, hypodermis, and bone of the subject's arm. However, this light is absorbed by hemoglobin contained in the blood. By taking



Figure 1 — Vascular visualization device



Figure 2 — Image of radial artery (indicated by the arrow)

Topics 5 Hybrid operating room

professor of Surgery (2) **Kazumasa Orihashi** professor of Neurosurgery **Tetsuya Ueba**

In April 2017, our hospital started a hybrid operating room (also called as "intelligent operative room"), which is an operating room equipped with a vascular imaging system for surgeries. Although it is the third hybrid operating room in Kochi, the current system has boasted an intraoperative MRI system and functions as an intelligent operating room first in Kochi prefecture.

Intelligent operating room

Neurosurgeons can now view a real-time MRI images when removing a tumor during a craniotomy. This allows them to remove the tumor without damaging adjacent nerve tissues as well as ensure complete resection of the tumor. The features of the intelligent operating room will allow complicated neurosurgical procedures to be performed with a higher level of safety and precision.

Hybrid operating room

By using the vascular imaging system, surgeons can manipulate the catheters in the body under the fluoroscopic guidance and perform intravascular treatments and surgical procedures while recognizing the situations in the body at real time. Although we introduced the hybrid operating room later than other institutes, we were able to benefit from the more advanced functionality afforded by recent technological developments. A biplane fluoroscopy allows imaging from two directions simultaneously, reducing both the time and the amount of contrast agent required, while a cone beam CT device lets surgeons generate CT images right there in the operating room. In

addition, a inclinable operating table (the first in Japan) enables surgeons to perform procedures with the same feel as normal surgeries. Neurosurgeons can utilize the vascular imaging system to perform cerebrovascular treatments in the operating room while viewing high definition images, instead of in the catheter room as is conventionally done. The system also allows surgeons to quickly perform emergency craniotomies if necessary. In cardiovascular surgery, performance of vascular imaging system is enforced by incorporating the features like near-infrared imaging and transesophageal echocardiography to ensure safer and more reliable cardiovascular surgeries than ever before. A combination of radiation, light, and ultrasound makes this facility function as a super-hybrid operating room.

An operating room usable by multiple departments

Hybrid operating room is commonly recognized as a facility exclusively for cardiovascular surgeries. However, this operating room is more efficiently used by a number of departments due to the advanced features described above.



The completion of our hybrid operating room adds two rooms to our existing ten rooms, giving us a total of twelve rooms and increasing the number of surgeries that can be performed at our hospital.

Cardiovascular Surgery

The hybrid operating room will make existing procedures such as stent graft treatments for aortic aneurysms and aortic dissections as well as intravascular treatments for peripheral vascular disease safer and more reliable through its high definition imaging. Also, since the hybrid operating room is a criterion for performing transcatheter aortic valve replacement (TAVR) procedures, we are now preparing for receiving an approval for TAVR.

Cardiovascular Medicine

Implantable devices such as pacemakers and implantable defibrillators (devices that prevent sudden death) and biventricular pacemakers (devices that treat heart failure), previously implanted in the catheterization room, can now be implanted in the environment of an operating room.

Respiratory Surgery

In surgical resection of minute lung cancers, it had been marked in the CT room before the surgery then conveyed to the operating room; however, the marking can now be done in the hybrid operating room and the surgery can proceed right away.

Neurosurgery

The hybrid operating room can handle much more than the removal of brain tumors—it can cope with a wide range of surgeries such as aneurysm procedures involving catheters (including those for subarachnoid hemorrhages), stent insertion for carotid stenosis, and clot retrieval in cases of acute ischemic stroke.

Topics 6 Development of a next generation peptide immunotherapy for malignant tumors

Professor of Immunology **Keiko Udaka**

With the introduction of immune checkpoint inhibitors (ICI), immunotherapy has become a therapeutic option for cancer patients. Unfortunately, however, their effectiveness relies heavily on the patients' immune status, i.e. cytotoxic T lymphocytes (CTLs) had been expanded naturally against tumors. In addition, the antigen non-specific deregulation of immune arsenals by ICI could induce autoimmune diseases in some patients.

Tumor cells develop from self-tissues, thus are the most challenging targets for self/non-self-discrimination by the

immune system. We have been developing a peptide immunotherapy to expand tumor-specific CTLs. The induced CTLs circulate the body and kill tumor cells, while causing no damage to normal tissues. We found that tumor specific helper T cells (Ths) act as a pathfinder and locate tumor sites while circulating in the blood. These Ths then recruit CTLs into tumor tissues. A next generation immunotherapy is under development based on above findings.

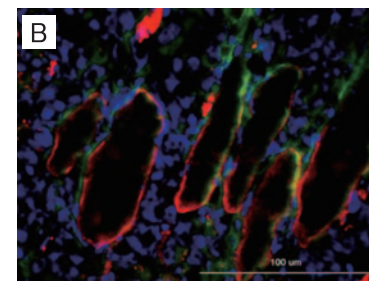
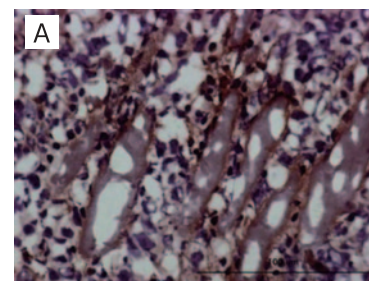
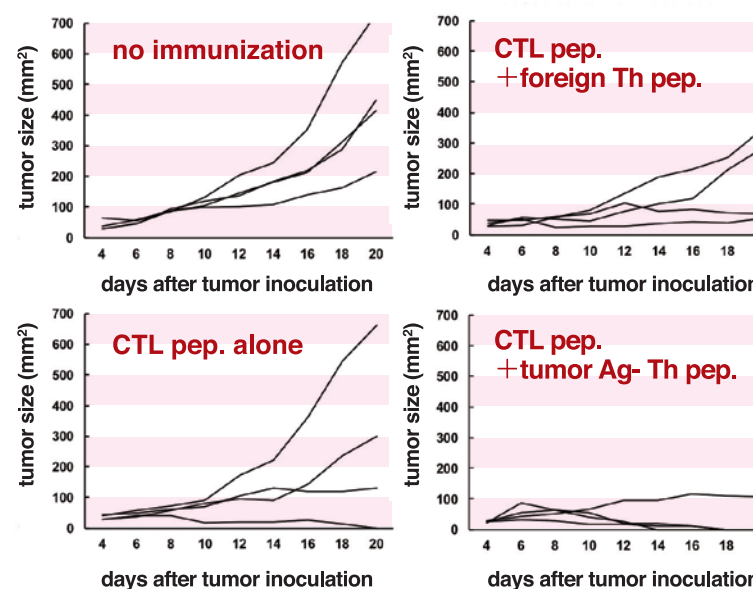
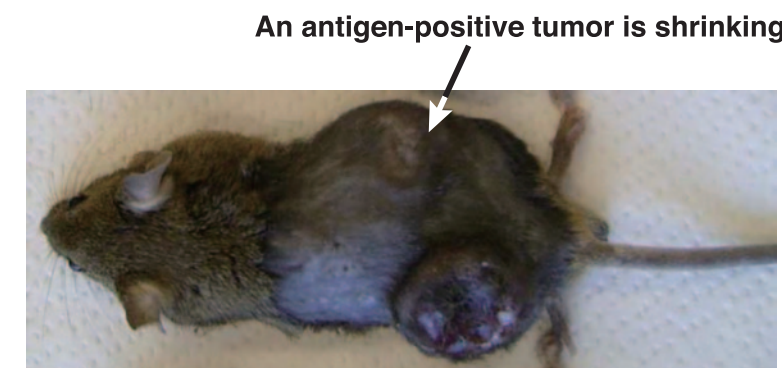


Fig. 1 A better *in vivo* tumor regulation by inducing tumor specific Ths along with CTLs. Endothelial cells of tumor blood vessels (red in B) express MHC class II molecules (green in B). Tumor regulatory activity is much higher if tumor-specific Th cells were induced along with CTLs (graphs and a photo of the tumor inoculated mouse).



History

1970s

- 1974 August.16** ▶ The preparatory section for an institution for national medical education was established in Kochi University.
- 1976 May.10** ▶ According to the Education Minister, the preparatory section was renamed the preparatory section for foundation of Kochi Medical School.
- October. 1** ▶ Kochi Medical School was founded. The Administration Office was established in Kochi University, Asakura, Kochi-shi.
Kochi Prefectural Central Hospital became an affiliated teaching hospital.
- 1978 April. 5** ▶ The administration office was transferred from Kochi University in Asakura, Kochi-shi, to the new school building in Kohasu, Oko-cho, Nankoku-shi.
- April.17** ▶ The first entrance ceremony was performed. **1**
- May.16** ▶ The foundation ceremony was performed.
- 1979 April. 1** ▶ The preparatory section for the Medical School Hospital was established.



1980s

- 1981 April. 1** ▶ The Medical School Hospital was established.
- October.12** ▶ The opening ceremony for the Medical School Hospital was performed. **2**
- October.19** ▶ Clinical services started.
- 1983 April. 1** ▶ The institute for Laboratory Animals was established.
- 1984 March.16** ▶ The first graduation ceremony was held.
- April.11** ▶ The Medical Research Center was established.
- April.12** ▶ The Medical Graduate School was founded. **3**
- April.27** ▶ The first entrance ceremony of the Medical Graduate School was held.
- 1985 March.17** ▶ Center of Medical Information Science was established. **4**
- 1986 April.22** ▶ Emergency Department was established in the Medical School Hospital.
- 1987 April. 1** ▶ The program in Oral and Maxillofacial Surgery started.
- 1988 March.25** ▶ The first commencement ceremony of the Medical Graduate School was held.
- May.25** ▶ Blood Transfusion Department was established in the Medical School Hospital.
- 1989 June.28** ▶ The program in Laboratory Medicine started.



1990s

- 1990 April. 1** ▶ Enrollment limit of medical undergraduate students was changed from 100 to 95.
- April.24** ▶ Nutritional Management Section was established in Hospital Division.
- June. 8** ▶ Intensive Care Unit was established in the Medical School Hospital.
- 1991 October.12** ▶ The tenth anniversary celebration for foundation of the Medical School Hospital was held. **5**
- 1993 April. 1** ▶ Student Health Center was established.
Perinatal Intensive Care Center was established in the Medical School Hospital.
- 1994 March.25** ▶ International Residence Hall was completed. **6**



- 1995 April. 1** ▶ Rehabilitation Department was established in the Medical School Hospital.
- 1997 April. 1** ▶ Department of General Medicine was established in the Medical School Hospital.
- 1998 April. 1** ▶ Nursing Course, Medical School was established.
A branch of Kochi Enokuchi Yogo Gakko (a Kochi prefectural school for physically challenged children) was established in the Medical School Hospital (as an intra-hospital class). **7**
- April.24** ▶ The first entrance ceremony of the Nursing Course.
- June.12** ▶ The opening ceremony for foundation of Nursing Course was performed.
- October.23** ▶ The 20th anniversary celebration for foundation of Medical School was performed.
- 1999 April. 1** ▶ Enrollment limit of medical undergraduate students was changed from 95 to 90. The number of students admitted into the third year class of Medical Course was changed to 5.



2000s



- 2000 April. 1** ▶ The number of students admitted into the third year class of Nursing Course was changed to 10.
- 2001 May.30** ▶ The ceremony for completion of Science of Nursing Building was held. **8**
- 2002 March.25** ▶ The first graduation ceremony of Nursing Course was held.
- April. 1** ▶ Kochi Medical Graduate School changed its Japanese formal name from "daigakuin igaku kenkyuka" to "daigakuin igakukei kenkyuka". **9**
"Nursing Course (Master's Course)" was established in the Medical Graduate School.
Postgraduate Clinical Training Center was established in the Medical School Hospital.
Admission Center was established in the Medical School.
Endoscopic and Photodynamic Medicine Department was established in the Medical School Hospital.
- 2003 April. 1** ▶ Medical Science Course (Master's Course) was established in the Medical Graduate School.
Surgery I and Surgery II in the Medical School Hospital were integrated into Surgery.
- October. 1** ▶ Former Kochi University and former Kochi Medical School were integrated into Kochi University. **10**
- 2004 April. 1** ▶ National University Corporation Kochi University was founded.
- June.16** ▶ Center to Promote Creativity in medical education was established.
- 2005 March.16** ▶ Agreements for collaboration were concluded with Kohasu, a neighboring area to the Medical School, in Oko-cho, Nankoku-shi.
- March.28** ▶ Kochi Medical School Hospital was authorized again as a Japan Council for Quality Health Care.
- April. 1** ▶ Community Healthcare Network Office was established in the Medical School Hospital.
- 2006 March.20** ▶ EBM Research Center for medical services for the elderly was established.
- April. 1** ▶ PET Center and Intra-Hospital Day-care Center were established. **11**
Eight school facilities for education and research and 3 facilities affiliated with the Medical School were reorganized into four centers: General Education Center, Science Research Center, Center for Regional and international Collaboration, and Integrated Information Center.
- May.16** ▶ Diagnostic Pathology Department was established in the Medical School Hospital.
- May.23** ▶ The memorandum of collaboration was concluded with Nankoku-shi.
- July.18** ▶ Cancer Treatment Center was established in the Medical School hospital. **12**
- November. 1** ▶ Hospital Administration Section was established.
- 2007 April. 1** ▶ Internal Medicine I, II, III and Geriatric Medicine were integrated into Internal Medicine.
- July. 1** ▶ Department of Family Medicine was established.
- October. 2** ▶ Kochi System Glycobiology Center(KSGC) was established.
- November.13** ▶ Child Mental Health and Development Department was established in the Medical School Hospital.



- 2008** April. 1 ▶ Six courses (Graduate School of Humanities and Social Sciences, Graduate School of Education, Graduate School of Science, Medical Graduate School, Graduate School of Agriculture, Graduate School of Kuroshio Science) were integrated into Graduate School of Integrated Arts and Sciences.
- June.20 ▶ Pelvic Floor Center was established in the Medical School Hospital.
- July. 1 ▶ The Medical School was designated as the administrator of a clinic in Tosayama,Kochi-shi, located in a remote rural area.

- 2009** February.10 ▶ Minimally Invasive Surgery Education and Training Center was established in the Medical School Hospital.¹³
- April. 1 ▶ Clinical Research Center was established in the Medical School Hospital.
- August.26 ▶ Enrollment limit of medical undergraduate students was changed from 90 to 100 and the number of students admitted into the second year class of Medical Course was changed to 5.
- September. 1 ▶ Center for Innovative and Translational Medicine (CITM) was established.
- October. 1 ▶ Smoking was prohibited on the premises of the Medical School Hospital.
- October.10 ▶ Advanced Medical Personnel Training Support Office was established in the Medical School Hospital.



2010s



- 2010** March. 5 ▶ Kochi Medical School Hospital was authorized again as a Japan Council for Quality Health Care.
- April. 1 ▶ Enrollment limit of medical undergraduate students was changed from 100 to 107. Information Medical Science Course was added to Medical Science (Master's Course) of the Medical Graduate School.
- April.12 ▶ Authorized as a unit center for nationwide investigation of children's health and environment. (Japan Environment & Children's Study)¹⁴
- May. 6 ▶ Designated as a main hospital for medical services in remote rural areas.

- 2011** April. 1 ▶ Nutrition Management Department was established in the Medical School Hospital.
- Infection Control Department was established in the Medical School Hospital.
- Enrollment limit of medical undergraduate students was changed from 107 to 110.
- Midwifery Education Course was added to Nursing Science (Master's Course) of the Graduate School.
- October. 1 ▶ Department of Disaster and Emergency Medicine, which is sponsored by Kochi Prefecture, was established.
- Clinical Genetics Department was established in the Medical School Hospital.
- October.15 ▶ The ceremony for the 30th anniversary of the foundation of the Medical School Hospital was held.¹⁵
- December. 1 ▶ Kochi Community Medical Support Center was established in Medical School.



- 2012** March.28 ▶ Resident House "Minakaze" was established in the Medical School Hospital.¹⁶
- April. 1 ▶ Clinical Engineering Department was established in the Medical School Hospital.
- Department of Anesthesiology and Critical Care Medicine was changed to Department of Anesthesiology and Intensive Care Medicine.
- Anesthesiology & Resuscitology was changed to Anesthesiology in the Medical School Hospital.
- Clinical Oncology and Minimally Invasive were added to Department of Surgery.
- Clinical Oncology and Endoscopic Surgery were established in Department of Surgery of the Medical School Hospital.
- June. 1 ▶ Neuro-Psychiatry was changed to Psychiatry in the Medical School Hospital.
- October. 1 ▶ Kochi Medical School Promotion Fund was established.



- 2013** March. 1 ▶ Integrated Center for Advanced Medical Technologies (ICAM-Tech) was established in the Medical School Hospital.
- April. 1 ▶ Environmental Health Course was added to Medical Science (Master's Course) of the Medical Graduate School.
- Neurology/Psychiatry in Child and Adolescence Course was added to Medicine (Doctoral Course) of the Medical Graduate School.
- June. 1 ▶ Geriatrics, Cardiovascular Medicine and Neurology were established in Department of Internal Medicine of the Medical School Hospital.
- July. 8 ▶ A project team was set up to develop the areas around the Oko campus.

- 2013** December. 1 ▶ Plastic Surgery Section in Department of Surgery was upgraded to Department of Plastic Surgery in the Medical School Hospital.
- December.25 ▶ Agreements with Kochi prefecture on the implementation of Community Mental Health Support Project were concluded.



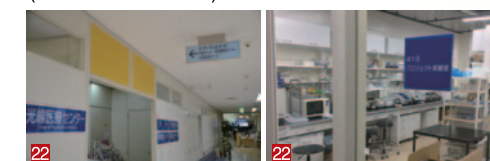
- 2014** February. 1 ▶ Kochi Prefectural Dementia-Related Disease Medical Center was established in the Medical School Hospital.¹⁷
- 2015** March.28 ▶ Hospital Ward Building 2 began offering medical services.¹⁸
- April. 1 ▶ Advanced Research building went into operation.¹⁹
- October. 1 ▶ Breast Center, Spine Center and Stroke Center were established in the Medical School Hospital.



- 2016** February. 1 ▶ Blood Transfusion Department was changed Transfusion Medicine and Cell Therapy Department in Kochi Medical School Hospital.
- April. 1 ▶ A course for the Department of Neurology was established.
- Diabetes Center, Rheumatoid Arthritis Center, Interventional Radiology Center and Diagnostic Pathology were established in the Medical School Hospital.
- The Infection Control Department was changed the Infection Control and Prevention Department in Kochi Medical School Hospital.
- Postgraduate Clinical Training Center and Advanced Medical Personnel Training Support Office were reorganized into Center for the Support and Development of Medical Professionals in Kochi Medical School Hospital.
- Kochi Medical School Hospital was authorized again as a Japan Council for Quality Health Care.²⁰
- June. 1 ▶ Inpatient Registration was established in Kochi Medical School Hospital.²¹
- October. 1 ▶ Otorhinolaryngology was changed Otolaryngology, Head and Neck Surgery in Kochi Medical School Hospital.
- Office for the Strategic Promotion of Hospital Functions was established in Kochi Medical School Hospital.



- 2017** April. 1 ▶ Endoscopic and Photodynamic Medicine Department was changed Department of Endoscopy in Kochi Medical School Hospital.
- Center for Photodynamic Medicine, Center for Intractable Immune Disease Were established in Kochi Medical School Hospital.²²
- Master of Public Health Course was added to Medical Science (Master's Course) of the Medical Graduate School.

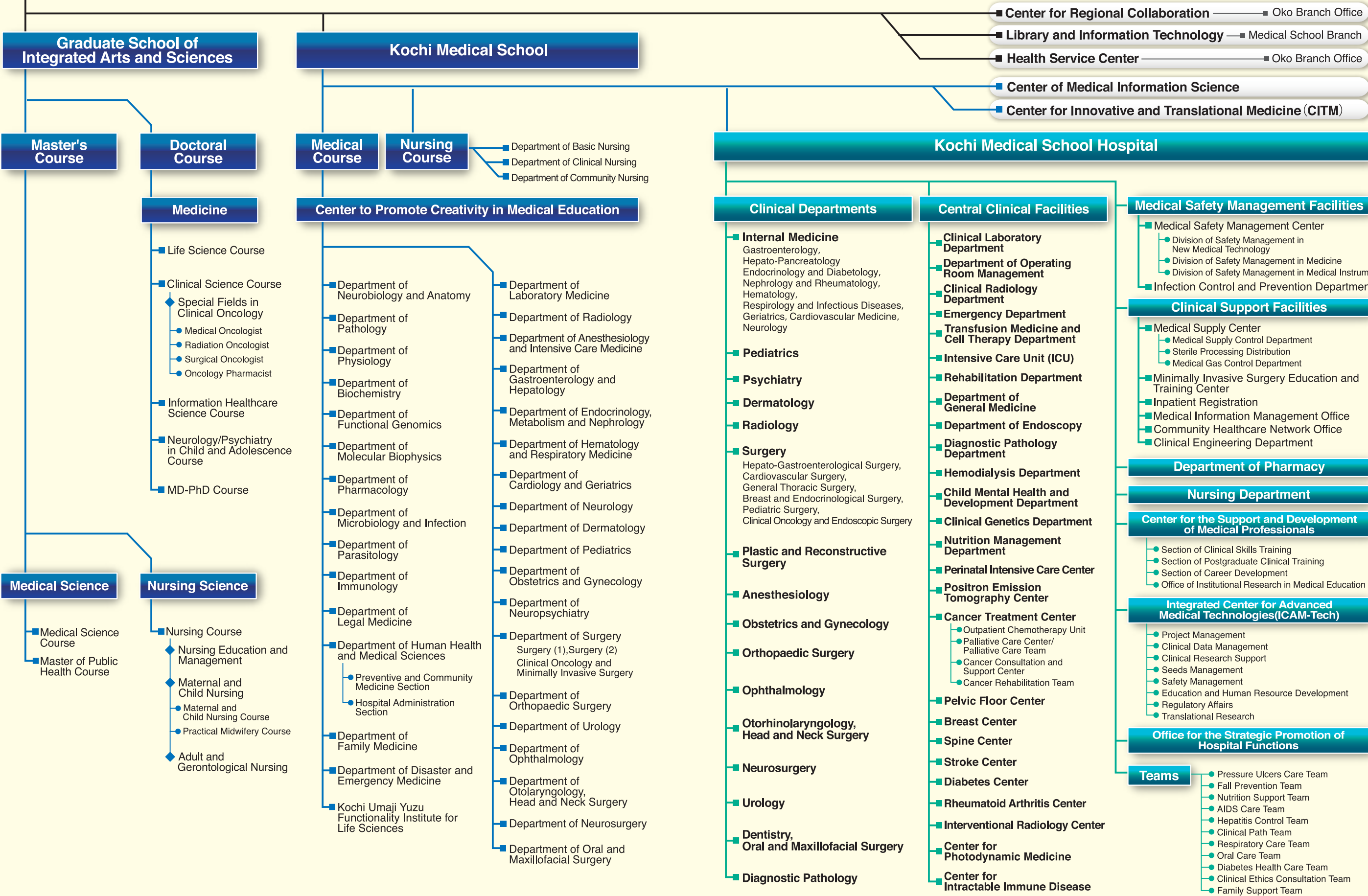


- May. 9 ▶ Office of Institutional Research in Medical Education was established in Center for the Support and Development of Medical Professionals.
- August.31 ▶ Shikoku Hospital Management Program was adopted.²³

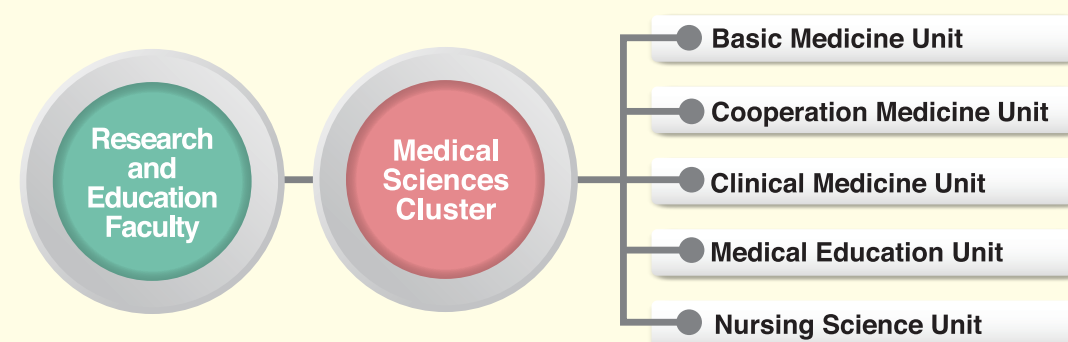
- 2018** March.20 ▶ The Consortium of Immune-inflammatory Intractable Drugs was started.²⁴
- April. 1 ▶ Kochi Umaji Yuzu Functionality Institute for Life Sciences was established in Kochi Medical School.
- June. 1 ▶ Department of Neurology(Shinkeinaika) was changed Department of Neurology(Noshinkeinaika).
- Neurology(Shinkeinaika) was changed Neurology(Noshinkeinaika) in Department of Internal Medicine of Medical School Hospital.



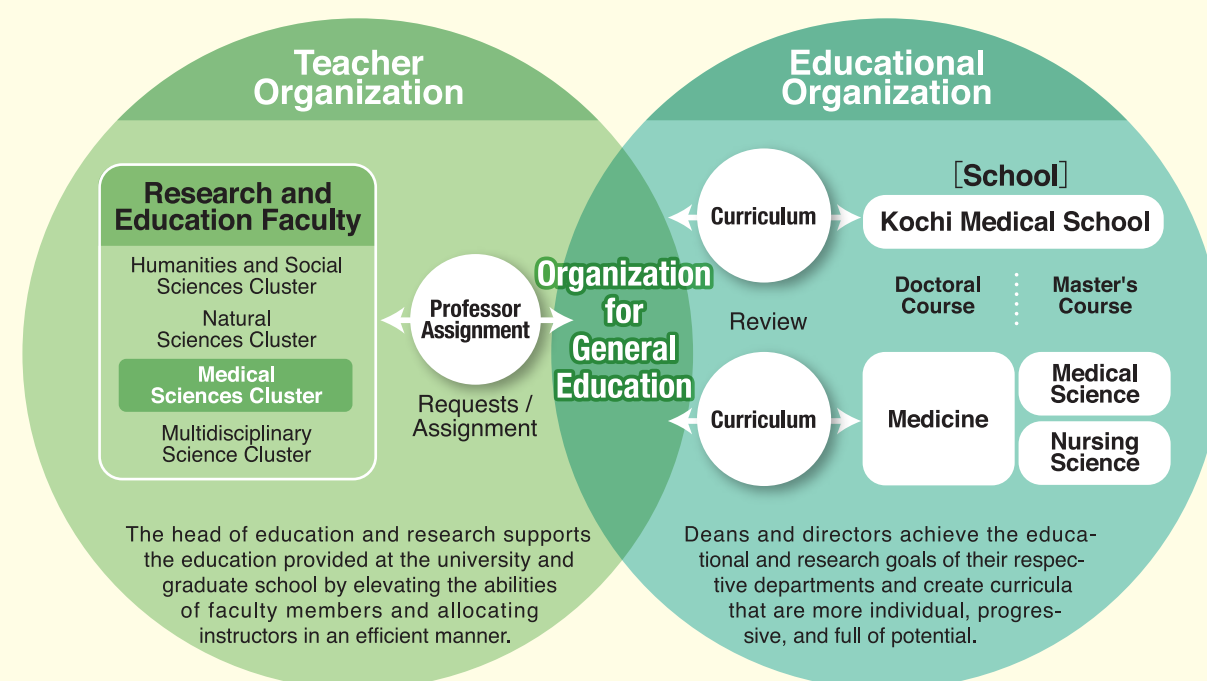
Kochi University



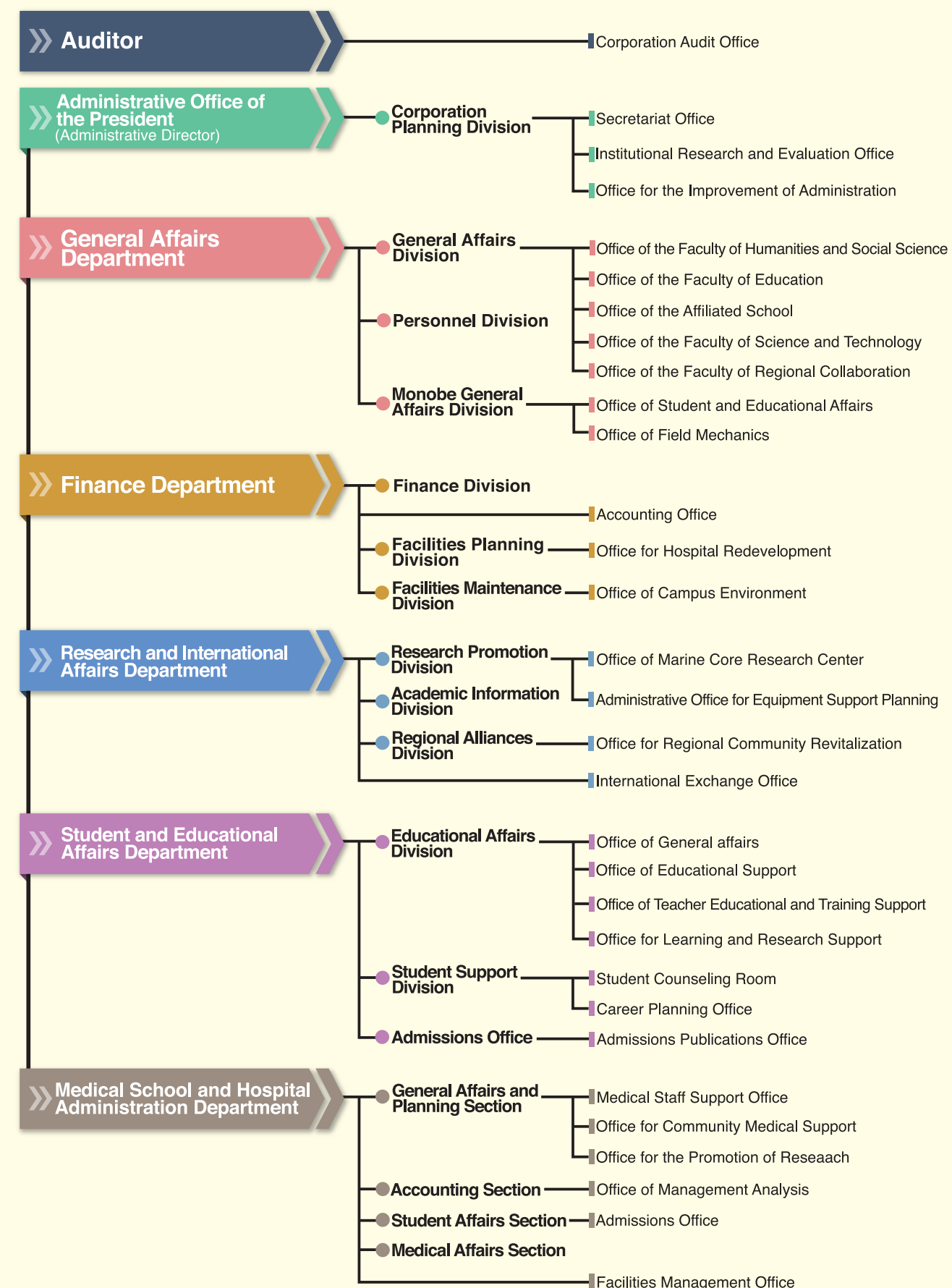
Faculty Organizational Chart



Concept Chart



Administrative Bureau Organization



Executives, Specialties

As of May 1,2018

Research and Education Faculty, Medical Sciences Cluster	Head, Medical Sciences Cluster	Hiroaki Kitaoka
	Head, Basic Medicine Unit	Motoaki Saito
	Head, Cooperative Medicine Unit	Ichiro Murakami
	Head, Clinical Medicine Unit	Yoshio Terada
	Head, Medical Education Unit	Yasutaka Seki
	Head, Nursing Science Unit	Kazuyo Ikeuchi
Kochi Medical School	Dean, Medical School	Narufumi Suganuma
	Dean, Medical Course	Jun Takata
	Dean, Nursing Course	Yukio Kurihara
Graduate School of Integrated Art and Sciences	Head, Medical Science	Narufumi Suganuma
	Head, Nursing Science	Yukio Kurihara
	Head, Medicine	Narufumi Suganuma
University Facilities	Head, Center for Regional Collaboration, Oko Branch Office	Tetsuya Yamamoto
	Library and Information Technology, Medical School Branch	Shigetoshi Sano
	Head, Health Service Center, Medical School Branch	Hiroaki Kazui
〈Specialty〉		
Medical Course	Department of Neurobiology and Anatomy	Anatomy, Neurobiology, Neuroendocrinology Professor Kazunari Yuri
	Department of Pathology	Clinical Pathology, Anatomical Pathology Professor Ichiro Murakami
		Tumor Pathology Professor Mutsuo Furihata
	Department of Physiology	[Physiology] Neuroscience Professor Masahiro Yamaguchi
		[Cardiovascular Control] Bionic Cardiology, Medical Engineering Professor Takayuki Sato
	Department of Biochemistry	Biochemistry, Glycobiology, Chromosome, Proteomics Assistant Professor Shinya Ohta
	Department of Functional Genomics	Molecular Biology, Development of novel therapeutics for Alzheimer's disease Professor Teijiro Aso
	Department of Molecular Biophysics	Molecular Biophysics Professor Yasutaka Seki
	Department of Pharmacology	Pharmacology Professor Motoaki Saito
	Department of Microbiology and Infection	Virology, Infectious Diseases, Hematology, Oncology Professor Masanori Daibata
	Department of Parasitology	Parasitology, Tropical Medicine, Mucosal Immunology Associate Professor Masataka Korenaga
	Department of Immunology	T cell Recognition, Tumor Immunology Professor Keiko Udaka
	Department of Legal Medicine	Forensic Medicine Professor Junichi Furumiya
	Department of Human Health and Medical Sciences, Preventive and Community Medicine Section	[Environmental Medicine] Occupational lung disease, Occupational medicine, Environmental medicine Professor Narufumi Suganuma
		[Public Health] Epidemiology of aging, Community health, Cancer registry Professor Nobufumi Yasuda

Medical Course	〈Specialty〉	
	Department of Human Health and Medical Sciences, Hospital Administration Section	Risk Management, Gastrointestinal Surgery, Endoscopic Surgery, Cancer Chemotherapy Professor Michiya Kobayashi
	Department of Laboratory Medicine	Laboratory Medicine, Echocardiography Professor Yoshihisa Matsumura
	Department of Radiology	Dignostic Radiology, Interventional Radiology Professor Takuji Yamagami
	Department of Anesthesiology and Intensive Care Medicine	Anesthesiology, Intesive Care Medicine, Pain Clinic Professor Masataka Yokoyama
	Department of Gastroenterology and Hepatology	Gastroenterology, Hepatology Professor Toshiji Saibara
		Nephrology, Hypertension,Endocrinology, Rheumatology Professor Yoshio Terada
	Department of Hematology and Respiratory Medicine	Diabetes, Clinical Nutrition Professor Shimpei Fujimoto
		Respiratory Medicine Professor Akihito Yokoyama
	Department of Cardiology and Geriatrics	Cardiology, Geriatrics Professor Hiroaki Kitaoka
	Department of Neurology	Clinical Neurology Professor Hirokazu Furuya
	Department of Dermatology	Psoriasis, Skin Allergy and Atopic Dermatitis, Keratinocyte Biology Professor Shigetoshi Sano
	Department of Pediatrics	Pediatric Nephrology, Infectious Disease, Pediatric Rheumatolgy Professor Mikiya Fujieda
	Department of Obstetrics and Gynecology	Reproductive Immunology, Cancer Immunology, Regeneratcive Medicine Professor Nagamasa Maeda
	Department of Neuropsychiatry	Psychiatry, Geriatric psychiatry, Dementia Professor Hiroaki Kazui
	Department of Surgery	[Surgery 1] Hepato-biliary-pancreatic Surgery Professor Kazuhiro Hanazaki
		[Surgery 2] Cardiovascular Surgery, Thoracic Surgery Professor Kazumasa Orihashi
		[Clinical Oncology and Minimally Invasive Surgery] Gastrointestinal Surgery, Endoscopic Surgery, Cancer Chemotherapy, Risk Management Professor (Michiya Kobayashi)
	Department of Orthopaedic Surgery	Joint Surgery, Sports Medicine, Musculoskeletal pain Professor Masahiko Ikeuchi
	Department of Urology	Urology, Oncology Professor Keiji Inoue
	Department of Ophthalmology	Uveitis, Allergic Conjunctivitis Professor Atsuki Fukushima
	Department of Otolaryngology, Head and Neck Surgery	Voice Disorders, Dysphagia, Head and Neck Cancer Professor Masamitsu Hyodo
	Department of Neurosurgery	Neurosurgery, Cerebrovascular Disease, Brain Tumor Professor Tetsuya Ueba
	Department of Oral and Maxillofacial Surgery	Oral and Maxillofacial Surgery Professor Tetsuya Yamamoto
	Department of General Medicine	General Medicine, Medical Education Professor Hiromi Seo
	Department of Pharmacy	Clinical Pharmacology and Therapeutics, Natural Product Chemistry Professor Mitsuhiko Miyamura
	Department of Family Medicine	Primary care, General medicine Professor Toshihide Awatani
	Department of Disaster and Emergency Medicine	Disaster Medicine, Emergency Medicine Professor Osamu Nagano
	Kochi Umaji Yuzu Functionality Institute for Life Sciences	Clinical Nutrition, Functional Food Professor (Shunji Mizobuchi)

Executives, Specialties

As of May 1, 2018

Nursing Course			
Department of Basic Nursing	〈Specialty〉		
	Health Informatics	Professor	Yukio Kurihara
	Midwifery Education, Maternity Nursing, Nursing Management	Professor	Kazuyo Ikeuchi
	Basic Nursing, Nursing Management	Professor	Taeko Moriki
Department of Clinical Nursing	Gastroenterological Surgery, Clinical Nutriton	Professor	Shunji Mizobuchi
	Adult Nursing, Nursing Education	Professor	Kyoko Yamawaki
Department of Community Nursing	Otolaryngology, Occupational Health, Neuroscience	Professor	Fumino Okutani

The Science Research Center			
Center to Promote Creativity in Medical Education	Medical Education, Cardiology		
	Director Jun Takata		
Medical School Hospital			Director Taro Shuin
Center of Medical Information Science	Medical Informatics	Director	Yoshiyasu Okuhara
Center for Innovative and Translational Medicine (CITM)			Director Koichi Honke

Health Service Center		
	Endocrinology and metabolism, Thyroid diseases, Diabetes, Obesity	Head Yasumasa Iwasaki
	Psychiatry, Geriatric psychiatry, Dementia	Head, Oko Branch Office Hiroaki Kazui

Administrative Staff		
	Manager, Medical School and Hospital Administration Department	Toyohide Nishimura
	Head, General Affairs and Planning Section	Hiroyuki Onimura
	Head, Accounting Section	Ryoichi Umebara
	Head, Student Affairs Section	Hiroe Tachibana
	Head, Medical Affairs Section	Akihiko Wake

Employees

Classification	Medical School		Medical School Hospital	Total
	Medical Course (including hospital facilities)	Nursing Course		
Professor	39 (1) 〈1〉	6	5 (2)	50 (3) 〈1〉
Associate Professor	29 (0) [1]	3	9 (3)	41 (3) [1]
Assistant Professor	9	7	32 (5)	48 (5)
Assistant Lecturer	69 (6)	5	70 (12)	144 (18)
Senior Resident and Junior Resident	–	–	[182]	[182]
Subtotal	146 (7) 〈1〉 [1]	21	116 (22)	283 (29) 〈1〉 [1]
Clerk Technician	53		64	117
Assistant Clerk	1		16	17
Medical Technologist			134	134
Nurse			566	566
Subtotal	54		780	834
Total	221 (7) 〈1〉 [1]		896 (22)	1,117 (29) 〈1〉 [1]

As of May 1, 2018
[] indicates part-time staff (excluded number) () indicates specially appointed faculty members(included number)
〈 〉 indicates contributing lecturers (included number) [] indicates the Tosayama Hekichi Clinic (included number)
Employees on administrative or maternity leave are not included.



Student Capacity and Current Capacity / Graduate Students / Student Recruitment and Enrollment / Scholarship Students

Student Capacity and Current Capacity								
As of May 1,2018								
Classification		1st	2nd	3rd	4th	5th	6th	Total
Medical Course	Admission Capacity	110	110 (5)	110 (5)	110 (5)	110 (5)	110 (5)	660 (25)
	Present Number	111 (52)	124 (42)	127 (35)	128 (31)	103 (28)	118 (42)	711 (230)
Nursing Course	Admission Capacity	60	60	60 [10]	60 [10]			240 [20]
	Present Number	62 (55)	60 (57)	71 (59)	66 (63)			259 (234)

() : Female Students Included . [] : Number of transferred students to the 3rd grade.
< > : Number of transferred students to the 2nd grade.

Social Medicine

Graduate Students				
◆Doctoral Course				
As of May 1,2018				
	Biomedical science	Neuro science	Social Medicine	Total
1st	—	—	—	—
2nd	—	—	—	—
3rd	—	—	—	—
4th	0	0	1	1
Total	0	0	1	1

◆Kochi University Graduate School of Integrated Arts and Sciences					
Doctoral Course	Medicine	Master's Course	Medical Course	Nursing Course	Total
1st	20(5) [2]	1st	11 (5) [1]	12 (12) [0]	23 (17) [1]
2nd	17(6) [0]	2nd	19 (10) [0]	26 (26) [0]	45 (36) [0]
3rd	25(6) [3]	Total	30 (15) [1]	38 (38) [0]	68 (53) [1]
4th	67(21) [1]				
Total	129(38) [6]				

() : Female Students Included. [] : Foreign Students Included.

Student Recruitment and Enrollment							
◆Medical School							
As of May 1,2018							
	Capacity	Student Applicants			Registerde Students		
		Men	Women	Subtotal	Men	Women	Subtotal
Medical Course	110 (25)	347(0) (74)	266(1) (50)	613(1) (124)	58(0) (12)	52(0) (11)	110(0) (23)
Nursing Course	60	25	220	245	7	53(0)	60(0)
Total	170	372(0)	486(1)	858(1)	65(0)	105(0)	170(0)

() : The number in parentheses indicates the number of foreign students, not included in the total.
The number of foreign students provided with government support is not included in under the applicants but in the number of registered students.

< > : The number of students selected for Medically Underserved Areas.

◆Student Enrollment by Medical School												2018
	Shikoku				Hokkaido Tohoku	Kanto	Chubu	Kinki	Chugoku	Kyushu	Others Qualified to take Entrance Examination	Total
	Tokushima	Kagawa	Ehime	Kochi								
Medical Course	3 (1)	2 (2)	3 (1)	32 (13)	0 (0)	13 (1)	12 (0)	28 (0)	17 (5)	0 (0)	0	110 (23)
Nursing Course	4	2	6	23	1	1	3	11	3	5	1	60
Total	7	4	9	55	1	14	15	39	20	5	1	170

< > : The number of students selected for Medically Underserved Areas.

Graduate School of Integrated Arts and Sciences		Capacity	Student Applicants			Registerde Students		
Master's Course	Medical Science	15	Men	Women	Subtotal	Men	Women	Subtotal
	Nursing Science	12	0	19	19	0	12	12
Doctoral Course	Medicine	30	15	5	20	15	5	20
Total		57	21	29	50	21	22	43

Scholarship Students								
◆Undergraduate Student								As of May 1, 2018
Classification		1st	2nd	3rd	4th	5th	6th	Total
Japan Student Services Organization JASSO	First Loan	6	30	26	28	19	21	130
	Second Loan	5	25	25	26	19	22	122
	Scholarship	1						1
	Subtotal	12	55	51	54	38	43	253
Kochi Prefecture Physician Development Loan System		1	31	35	33	26	32	158
Total		13	86	86	87	64	75	411

◆Graduate Student		1st	2nd	3rd	4th	Total
Classification						
Japan Student Services Organization M. D. Degree Program	First Loan	0	1	1	0	2
	Second Loan	0	0	0	1	1
	Subtotal	0	1	1	1	3
Japan Student Services Organization Mastar Degree Program	First Loan	1	2	—	—	3
	Second Loan	0	1	—	—	1
	Subtotal	1	3	—	—	4
Total		1	4	1	1	7

Grant-in-Aid for Scientific Research / Available External Funds Received

Grant-in-Aid for Scientific Research

2017		
Subjects for Research	Adopted Number	Amount (yen)
Grant-in-Aid for Scientific Research on Innovative Areas	2	26,650,000
Scientific Research (A)	0	0
Scientific Research (B)	6	31,070,000
Scientific Research (C)	81	106,470,000
Challenging Exploratory Research	8	91,000,000
Challenging Research (Exploratory)	2	4,810,000
Young Scientists (A)	0	0
Young Scientists (B)	37	48,750,000
Research Activity Start Up	1	1,430,000
JSPS Fellows	1	1,430,000
Encouragement of Scientists	4	1,960,000
Total	142	231,670,000

Available External Funds Received

2017		
Subjects for Research	Adopted Number	Amount (yen)
Collaborative Research with Private Sectors	65	121,575,119
Sponsored Research	33	216,289,769
Clinical Trial	39	34,001,471
Post Marketing Clinical Trials	2	5,899,011
Post Marketing Surveillance Trials	185	13,544,388
Clinical Research	47	11,825,148
Contribution Money	602	456,563,186
Total	973	859,698,092

Special Facilities Affiliated with Faculties

Library and Information Technology, Medical School Branch



Medical School Branch aims to help to promote, develop and activate our learning, educational, research and clinical activities by providing academic information on medical sciences for the people concerned. Furthermore, it aims not only to play a significant role as a core institution for offering medical information in collaboration with other universities' libraries, but also to make social and regional contributions through the cooperation of public libraries and giving people outside the school the use of it.

Library Holdings for the 2017 Academic Year

Medical School Branch			
Books	Japanese	Foreign	Total
	75,357	58,219	133,576
Periodicals	Japanese	Foreign	Total
	1,682	1,764	3,446

Center of Medical Information Science

Center of Medical Information Science has been doing a lot to improve medical services in the School Hospital since it began operating IMIS (Integrated Medical Information System) for the first time in Japan which was developed independently by Kochi Medical School in 1981, when the School Hospital opened. The IMIS of Kochi Medical School, which became the model case of its kinds in Japan, is now regarded as the forerunner of medical information systems which have been widely used in universities and hospitals throughout Japan. This achievement brought Kochi Medical School "the Ishikawa Prize" in 1983 from Union of Japanese Scientists and Engineers. In 1985, the Center was approved by the Ministry of Education. Since it was completely improved in 2002, the IMIS has developed into a new IMIS with the functions of an electronic medical record system and a medical process management system, which leads the medical world in Japan. In addition, the IMIS has accumulated a mass of medical data which have come from daily medical treatment. These precious data, which have been piled up for over 37 years and are so substantial as to be unequalled anywhere in the world, have been applied to various researches. The Center not only has been actively doing research on the application to medicine and medical treatment through an information-theoretical approach, but also it has been working on the nurturing of human resources who can do such research.

To make it come true, we have started a new course in the Graduate School.



Center for Innovative and Translational Medicine (CITM)



In the Center for Innovative and Translational Medicine (CITM), specialists in basic and clinical medicine collaborate to promote investigations aimed at innovative medicine. In addition, CITM nurtures in medical doctors and scientists spirit of inquiry promoting the development of originality.

URL: <http://www.kochi-ms.ac.jp/~citm/index.htm>

Center for Innovative and Translational Medicine

 Director **Koichi Honke**

 For more information, please visit our website (<http://www.kochi-ms.ac.jp/~citm/index.htm>).

Developing the cutting-edge medicine of Kochi University at the Center for Innovative and Translational Medicine!

In the aftermath of recent events, including Kochi University's transition to a national university corporation, the standardization of education in the medical school, and the introduction of the clinical training system, the Kochi Medical School has become something of a technical school for medicine while its hospital has pursued medical practice with higher profitability. This has led to the medical school neglecting its original mission—conducting research. If this continues, the school's research into basic medical science will fade away, followed by a decline in clinical research then finally a breakdown in the medical education. To stem this tide, the Center for Innovative and Translational Medicine was established in September 2009 as a base for Kochi Medical School's research activities. The center's three founding principles are 1) to search for truth in a medical academic environment brimming with intellectual curiosity and vitality, 2) to conduct cutting-edge medical research that unites basic principles and clinical fields, and 3) to cultivate independent and research-minded physicians and medical scientists. Keeping these concepts in mind, we utilize the original basic research conducted at Kochi University to develop translational research and generate

results that contribute in tangible ways to local communities and the world at large. We also engender a top-notch learning and research environment that produces the individuals who will carry us into the next era.

At its start, the Center for Innovative and Translational Medicine contained five groups: the Innovative Medicine Group, the Regenerative Medicine Group, the Information Healthcare Science Group, the Social Cooperation Group, and the Research Support Group; in late 2011, the Innovative Medical Engineering Group was created as the sixth group. This new group was added because developing medical devices is just as essential as developing pharmaceutical products. Each group consists of research teams that act as the units for projects, and these teams change dynamically to match trends in research progress and social requirements. At the center, clinicians and basic researchers coordinate across departmental boundaries while manpower and research funding are concentrated to further research projects. The Center for Innovative and Translational Medicine is also planned to participate in the redevelopment of the hospital and its own research lab will be established in the new hospital.

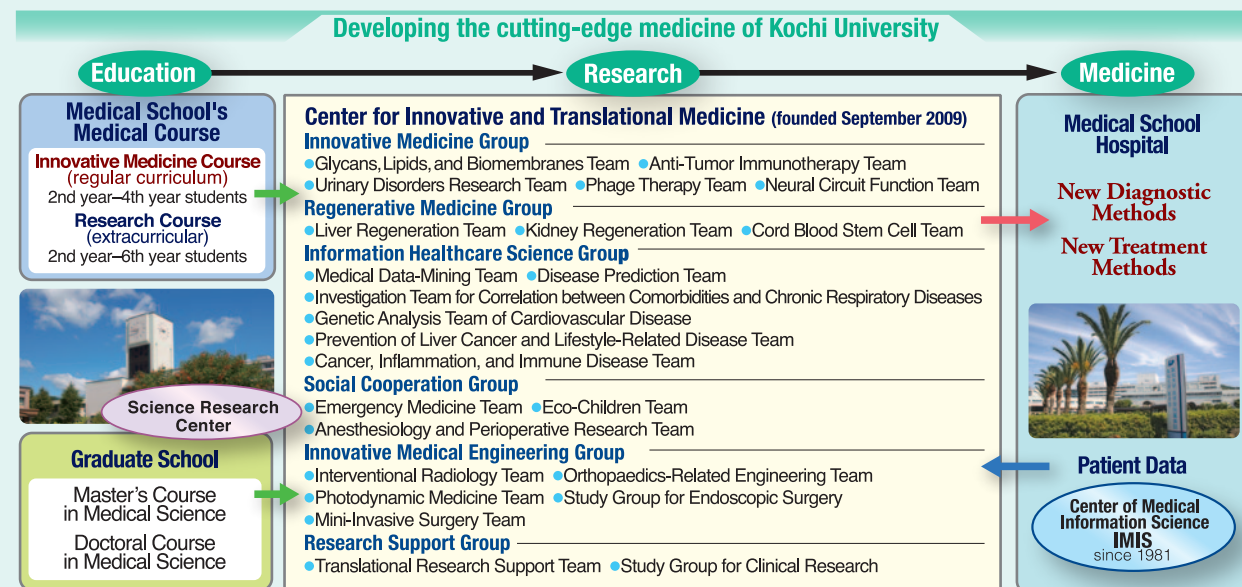
Students beginning their second year in the medical course must select either the Project-Based Learning (PBL) Course or the Innovative Medicine Course as their subject for exploration. Those who enroll in the Innovative Medicine Course will join one of the center's research teams and conduct research on specific topics during the three-year period between their 2nd and 4th school years (those interested can take an extracurricular class called the Research Course to extend this period) with the goal of acquiring the same level of research skills as those who complete the master's course in our graduate school. Since the Center for Innovative and Translational Medicine has teams researching a wide range of topics, specific research methods vary according to specialty; however, all of them involve an active-learning process that takes place within a research environment where advanced medicine is actually developed. Students in different school years work together as they conduct research. The normal curriculum allots two days per week to these pursuits; but because this is insufficient for the purposes of research, students may be required to conduct experiments during after school hours and on holidays as well. While this increases the workload for students, it also gives them a sense of achievement beyond that which is acquired from their visible research results and provides them with a confidence that can only be obtained from experiencing the research firsthand.



Students Receiving Sagara Awards at the Center

The Innovative Medicine Course was introduced in 2011, so it has been available for seven years so far. Each school year, over 20 students have resolutely challenged themselves in the course. Some of these individuals made presentations and received awards at national academic conferences, while others coauthored papers

that were published in English-language journals. The Innovative Medicine Course is an incredible chance for students to hone their creativity and develop their individuality. It is also the perfect opportunity to develop the ability to think scientifically, something that is indispensable even for students pursuing future careers in community-based health care. Exceptional students are honored with the Sagara Award, a prize which bears the name of Yūsuke Sagara, former university president and founder of the Center for Innovative and Translational Medicine. Gold and silver awards are available. The gold award is presented to students who have achieved extraordinary research results over the three-year period as they complete their fourth year of school. The silver award is presented to students in each year who have achieved remarkable research results over the course of a single school year. Award recipients are selected via an impartial judging process that consists of a report review and presentation.



Innovative Medicine Course

In recent years, rapid progress has been made in advanced medical treatments such as biopharmaceuticals and personalized medicine that utilize genome information. That is why it is important for students in medical school to acquire skills that will let them handle the advanced treatments of the future rather than simply having their heads crammed with existing knowledge. The Center for Innovative and Translational Medicine offers an education program called the Innovative Medicine Course for students enrolled in the medical course. In the Innovative Medicine Course, students become independent and research-minded individuals as they learn the scientific principles needed in medical

research and hone their ability to explore challenges through practical research in settings where leading medical treatments are developed. Our open research environment unites teachers and students, creating a synergy that boosts the level of research and overall productivity. Students who are exposed to this sort of dynamic research environment will develop more flexible perspectives and approaches to medicine as they learn to ignore the boundaries between basic and clinical medical science as well as the walls that separate different scholastic spheres and medical departments.

Academic Conference Awards

Year	Conference	Award	School Year	Team	Research Topic
2011	54th Annual Meeting of the Japanese Society of Nephrology	Excellence of Topic Award	3rd	Kidney Regeneration Team	The introduction of BNIP3 can regulate autophagy and apoptosis of proximal tubule cells in cases of acute kidney injury
2012	55th Annual Meeting of the Japanese Society of Nephrology	Excellence of Topic Award	3rd	Kidney Regeneration Team	The important role that Six2-GDNF (glial cell-derived neurotrophic growth factor) plays in the regeneration and formation of renal tubules after acute kidney injury
2012	32nd Joint Conference on Medical Informatics	Young Researcher Award	4th	Medical Data-Mining Team	A comprehensive search of examination data to detect borderline diabetes in its early stages
2013	56th Annual Meeting of the Japanese Society of Nephrology	Excellence of Topic Award	4th	Medical Data-Mining Team	Determining the risk of acute kidney injury (AKI) through a comprehensive analysis of the hospital information system database
2013	12th Shikoku Immunology Forum	Encouragement Award	4th	Anti-Tumor Immunotherapy Team	Analytical detection of MHC class II molecules in the vascular endothelial cells of normal mouse tissue
2013	75th Annual Congress of Japan Surgical Association	Medical Student Award	4th	Liver Regeneration Team	A treatment strategy for liver cancer that uses aurora B kinase inhibitor and cisplatin
2013	33rd Joint Conference on Medical Informatics	Encouragement Award	4th	Disease Prediction Team	Using medical databases to analyze diseases related to antibacterial treatments for and fluctuations in the elimination rate of helicobacter pylori
2014	61st Annual Meeting of the Japanese Society of Anesthesiologists	Best Topic Award	4th	Interdisciplinary Pain Treatment Team	Effectiveness of pregabalin on postoperative cognitive impairment — an aged rat model study
2014	2014 Japan-China Symposium on Clinical Anesthesiology	Top Award (Arai Tatsuru Award)	3rd	Interdisciplinary Pain Treatment Team	Effectiveness of dexmedetomidine on serotonin syndrome
2015	2nd Annual Meeting of the Japanese Society of Regional Anesthesia	Best Topic Award	3rd	Interdisciplinary Pain Treatment Team	Hyperalgesic effect of endotoxins that impact acute postoperative pain
2015	58th Annual Meeting of the Japanese Society of Nephrology	Excellence of Topic Award	3rd	Kidney Regeneration Team	Introducing AMBRA1 regulates ULK1 and causes autophagy in renal tubules in cases of acute kidney injury
2015	22nd Meeting of the Japanese Society for Intravenous Anesthesia	JSIVA Award (Best Topic Award)	4th	Interdisciplinary Pain Treatment Team	Effectiveness of dexmedetomidine on cognitive impairment connected to systematic inflammation
2016	71st General Meeting of the Japanese Society of Gastroenterological Surgery	Excellence of Topic Award	4th	Liver Regeneration Team	Effectiveness of nafamostat mesylate and imatinib mesylate as a combination therapy for pancreatic cancer
2017	60th Annual Meeting of the Japanese Society of Nephrology	Excellence of Topic Award	3rd	Kidney Regeneration Team	Mice deficient in IL-36 receptors improve faster after acute kidney injury; IL-36 in urine could be a new biomarker

Family Medicine Training Program

Professor of Family Medicine **Toshihide Awatani**

The Family Medicine Training Program is an extracurricular activity that students in either the medical course or the nursing course can participate in. Its goal is to have students learn about local communities by traveling to them and interacting with their residents as they acquire the knowledge, techniques, and communication skills needed to work in family medicine.

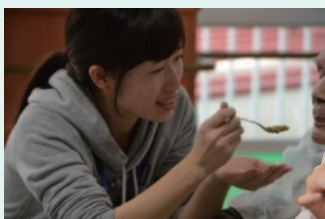
Twice a year, 30 to 40 applicants are invited to spend two days and one night together in the mountainous regions of Kochi prefecture. Each of these events is such a success that students nearly have to be turned away due to the number of applicants.

A diverse schedule is prepared for each excursion, including workshops on community-based medical care, fieldwork that allows students interact with local residents,



and lectures by physicians, hospital nurses, and public health nurses who work in the area. These preparations are made primarily by several members of the student executive committee, who create an environment where students can learn proactively. And the harder the students work, the more they fall in love with the local communities.

Another big draw of the Family Medicine Training Program is that students from different school years study side by side, which is very motivational for all of them. Students who were nervous on the bus ride on the way there, are lively and smiling by the end of the trip. The trips are an opportunity for students to learn things that aren't written in any textbook.



22nd Department of Family Medicine — 2017 Yusuhara Schedule

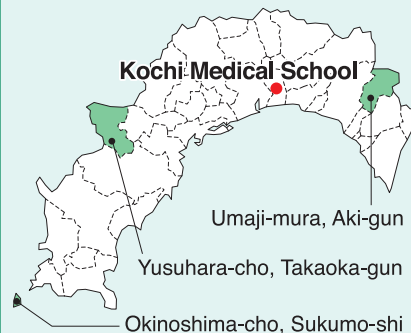
11/25(Sat.)

07:20 Depart Kochi Medical School
09:00 Arrive at Yusuhara Hospital and tour
10:00 Opening lecture
10:20 Lecture (Representative from Geragera Kazokukai for dementia caregivers)
10:40 Care-providing experience
Workshop at a home, hospital, or facility
Nursing experience in a physical therapy room
15:00 Group work
17:00 Bathing at the Kumo-no-ue Onsen
18:30 Roundtable discussion

11/26(Sun.)

07:30 Wake up / Breakfast
09:00 Lectures
(Physician at Yusuhara Hospital)
(Chief outpatient nurse at Yusuhara Hospital)
(Care manager at home-nursing support office)
10:15 Group discussion around the lecturers
11:15 Group work
12:30 Closing lecture
13:00 Fieldwork
14:00 Depart Yusuhara
16:00 Arrive at Kochi Medical School and disperse

Department of Family Medicine Areas



Family medicine shares a deep connection with future community-based treatment

Kochi Medical School's family medicine course was created with the goal of producing excellent family doctors (primary-care physicians). While remarkable advances are being made in medical science, the field is also becoming more and more specialized; this has made it difficult for patients to know which department handles their particular symptoms and whether they require special testing or treatment. As the number of medical lawsuits has grown of late, there are also increasing calls for better relationships between patients and their doctors.

In 2018, a new system will be established to train medical specialists. Nineteenth on that list of specialists is the general practitioner. "Thinking from the perspective of treating the community" is paramount for a general practitioner. Our goal is to coordinate with treatment facilities within the prefecture as we train the general practitioners that will form the nucleus of the comprehensive local care systems of the future— individuals who have thorough knowledge of the general status of their patients; who maintain social contact with all members of their patients' families; who are easy to approach with questions about routine health issues; and who coordinate with local health and welfare personnel as well as specialized treatment facilities.

Preparing for Nankai megathrust earthquakes: Training drills for wide-area medical transport and treatment after major earthquakes

Specially-Appointed Professor of Disaster and Emergency Medicine **Osamu Nagano**

Wide-area medical transport is an unavoidable necessity for providing medical treatment during a widespread disaster such as a Nankai megathrust earthquake. Disaster medicine is defined as a supply-and-demand balance in which large increases in demand for treatment exceed its supply. After a major earthquake or other large-scale event, demand for medical treatment within the disaster area increases rapidly while the supply of treatment declines because medical facilities and personnel fall victim to the disaster. As a result, adequate medical treatment can no longer be provided within the disaster area. To counteract this, disaster medical assistance teams (DMATs) enter the disaster area and provide support to disaster base hospitals and other medical facilities. At the same time, severely wounded individuals who cannot be treated within the disaster area are transported out of it to receive treatment, with the goal of saving as many lives as possible. During this transporting of critically injured people, which is known as wide-area medical transport, patients are carried on cargo aircraft or large helicopters operated by the Japan Self-Defense Forces (JSDF) while DMAT members provide medical treatment.

While over 6,400 people died during the Kobe earthquake, with a further 44,000 people sustaining injuries, there was no large-scale medical transport out of the disaster area (a single individual was transported by helicopter the day of the earthquake). This ultimately resulted in around 500 people perishing from preventable disaster-related deaths. Seventy percent of these deaths were due to crush syndrome, followed in order of frequency by chest and abdominal injuries, head injuries, and extensive burns. Wide-area medical transport was conducted for the first time in the aftermath of the Tōhoku earthquake in March of 2011, with C-1 cargo planes carrying 19 individuals over the course of five flights from Fukushima Airport or Hanamaki Airport to Chitose Airport, Akita Airport, or Haneda Airport. Since the majority of the damage from that earthquake was caused by a tsunami, there wasn't significant demand for wide-area medical transport. Although many helicopters made transport flights out of the prefecture during the Kumamoto earthquakes in April 2016, wide-area medical transport using JSDF aircraft was not conducted. We believe, however, that substantial wide-

area medical transport will be needed in response to the next Nankai megathrust earthquake.

When conducting wide-area medical transport, transport bases containing Staging Care Units (SCUs) are established both inside and outside the disaster area. There are three such locations planned for Kochi Prefecture: the Kochi Medical School grounds, Sukumoshi Sogoundo Park, and Akishi Sogoundo Park. Cooperating hospitals include Kochi Medical School Hospital, Hata Kenmin Hospital, and Aki General Hospital. Takamatsu Airport and Matsuyama Airport are two other prospective sites in Shikoku. SCUs set up within the transport bases are managed primarily by the DMATs arriving from outside the disaster area. It is here that patients are stabilized for air transport. Each year, government-sponsored training drills are held for wide-area medical transport and other activities. On Saturday, August 4th of this year, a large-scale drill will be held under the premise that a major disaster spanning multiple prefectures (including Kochi) has occurred.

In 2007, the Central Disaster Management Council formulated a wide-area medical transport plan for an L1 (about 8.6 magnitude) earthquake; the plan predicted that a total of 584 people would require transport, with 131 of them in Kochi Prefecture. These numbers were estimated to be at least several times higher in the event of an L2 (magnitude 9) earthquake, however, and preliminary calculations revealed that there would be a shortage of DMATs and aircraft. For those reasons, an L2 plan has not yet been finalized. With wide-area medical transport, the injured must first be carried to transport bases within the disaster area. Known as "local medical transport," this process creates its own set of problems. Kochi Prefecture contains many isolated areas, for example, and a major earthquake is expected to decimate the road infrastructure. The only solution in such cases is air transport, but there is a real possibility that there won't be sufficient resources to meet that demand. There are doubts as to whether a sizable wide-area medical transport system will be ready in time for such a disaster. That is precisely why we must truly recognize the importance of not being injured ourselves and prepare for that while also being ready to assist with rescue efforts if we escape unharmed.

Wide-area medical transport drills at Kochi Medical School



Education Program to Foster a Nurse with Practical Skills Needed at Local Communities

Director of Nursing Course **Yukio kurihara**

Shifting from a Mandatory System to an Elective System

In accordance with revisions to the regulations of required curriculum at an educational institution set forth by law for public health nurses, midwives, and nurses in 2012, the nursing course at Kochi Medical School no longer requires students to train as both nurses and public health nurses, instead adopting a system in which prospective nurses are free to choose their paths. Under the new system, students can select the course needed to become public health nurses, course needed to become school nurses or teachers of nursing science at high school, or course that enhances their practical nursing skills, depending on their individual needs.

Setting the New Practical Nursing Skills Course

As one of its new initiatives, the medical school created the Practical Nursing Skills Course to provide fourth-year students who are seeking to obtain only their nursing qualification with the training they need to develop advanced and specialized nursing skills (Figure 1). Although eight students took the course in its inaugural year of 2014, this number had nearly doubled to fifteen students by 2018.

The Practical Nursing Skills Course was introduced to enable students to acquire the nursing skills at higher level than the requirements by the Ministry of Health,

Labor, and Welfare. Especially in this course students can learn the critical care nursing and community nursing (areas which are little included in common clinical training) and they can acquire the skills to support residents (Table 1). The system was changed in 2017 to allow students to choose the path that best suits their needs. In 2018, there are seven students studying critical care nursing, four studying community nursing, and four studying both.

Students in the Practical Nursing Skills Course review the clinical training experiences at their third year and they define their learning subjects in an independent manner.

In the critical-care nursing program students study nursing managements of patients in life-threatening status in the process from arrival at the ER center to admission in ICU. These studies are not included in clinical training during their third years. The students who finish the basic life support seminar will receive the Red Cross emergency first-aid certification.

In the community nursing program, students learn about the respective roles of university hospitals, regional hospitals and community clinics as well as how patients transition among them in regions where depopulation is occurring. In particular, they visit local community and living places, and understand the lives of local residents, the area's characteristics and nursing needs.

In the Practical Nursing Skills course, a large portion of its instructional time is assigned to practice at various locations, in order to enhance the practical nursing skills.

Outcomes and Improvements

The places of healthcare service are shifting from healthcare institutions to the places where patients daily live. Therefore, our society needs nurses who can practice nursing care for patients suffering from chronic disease or multiple medical problems and their family, focusing on those patients' daily lives. Of the seventeen students who completed the Practical Nursing Skills Course in March 2018, nine work at our

medical school hospital and one does at another hospital in Kochi Prefecture at present. They must greatly contribute to the medical care of Kochi. Another six students got jobs at hospitals in other prefectures and one student admitted to a midwifery school. We believe them to successfully work, using nursing skills that they acquired in this course. We will successively review and improve the course based on feedback from its graduates and attending students to make it more attractive.



Field Training

Figure 1 – Status of the Practical Nursing Skills Course in Curriculum of Nursing Course

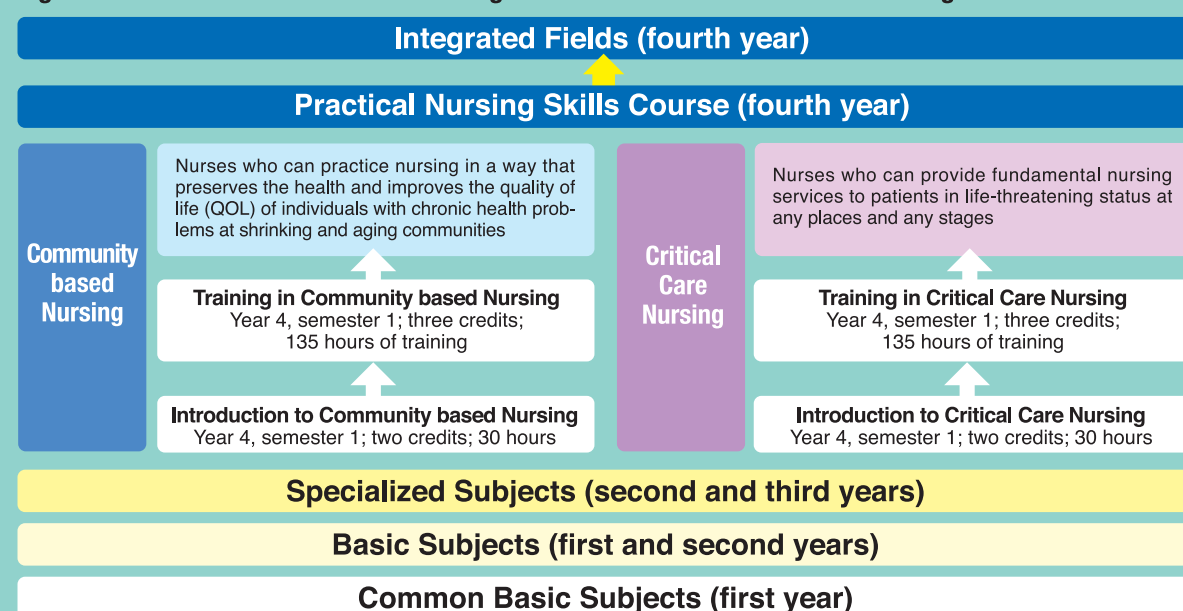


Table 1 – Subjects of Practical Nursing Skills Course

Critical Care Nursing	
Introduction to Critical Care Nursing	Students learn basic nursing care to save live and to improve QOL of patients who are suddenly in a life-threatening status, even if they suffer from any illness and at any location.
Training in Critical Care Nursing	Students practice basic nursing care on patients in emergency rooms, operating rooms, and intensive-care units for their life saving and improvement of QOL.
Community based Nursing	
Introduction to Community based Nursing	Students learn and apply nursing knowledge and skills that preserve the health and improve the QOL of individuals suffering from chronic health problems at shrinking and aging communities.
Training in Community based Nursing	Nurses practice nursing care that preserve the health and improve the QOL of individuals suffering from chronic health problems within shrinking and aging communities.



Critical Care Training

The Japan Environment and Children's Study (JECS)

Professor of Environmental Medicine and Head of the Social Cooperation Group
at the Center for Innovative and Translational Medicine **Narufumi Suganuma**

1. From Kochi to Japan, and to the World —For the Children of Future Generations—

L launched by the Ministry of the Environment (MoE) in January 2011, JECS is one of the few largest national birth cohort studies to aim at identifying the impact of environmental exposures during pregnancy through childhood on children's health.

The Cohort consists of 100,000 mother-child pairs that are followed until the children reach 13 years of age. An additional 5 years are planned for further analyses after the children reach this age; totaling a 21-year

long prospective study. Fifteen Regional Centers across Japan have been authorized by the MoE to coordinate with municipalities and cooperating medical institutions.

As the only Regional Center in Shikoku Island, the Childhood Health and Environmental Medicine Research Center at Kochi University recruited pregnant women in eleven municipalities (Kōchi, Nankoku, Kōnan, Kami, Shimanto, Sukumo, Tosashimizu, Yusuhara, Kuroshio, Ōtsuki, and Mihara). The recruitment successfully ended with over 7,000 mother-child pairs, and are followed through an ongoing survey until the children reach 13 years of age.

Starting in October 2014, a sub-cohort study covering three areas (home visits, medical examinations, and developmental/cognitive tests) has been conducted on 5% of the JECS participants (5,000 people nationwide and about 350 people in Kochi Prefecture). During the home visits, indoor/outdoor air pollutants, including housedust (indoor only), particulate matters (PM_{2.5} and PM_{10-2.5}), volatile organic compounds, and aldehydes, are measured (home visits at ages 1.5 and 3 years old are completed; one or two more visits will be conducted by the age of 13).



A structured interview is also conducted regarding the usage of indoor chemicals. The medical examination consists of a physical examination by a pediatrician and a blood test. The developmental/cognitive test is conducted by clinical psychologists and trained nurses. The medical and developmental tests are currently underway for 4 year olds and will be conducted every two years

after. Examinations such as physical measurements, urinalysis, and developmental tests will be conducted on second graders from the main Cohort in July 2019. Preparation including collaboration with the local governments

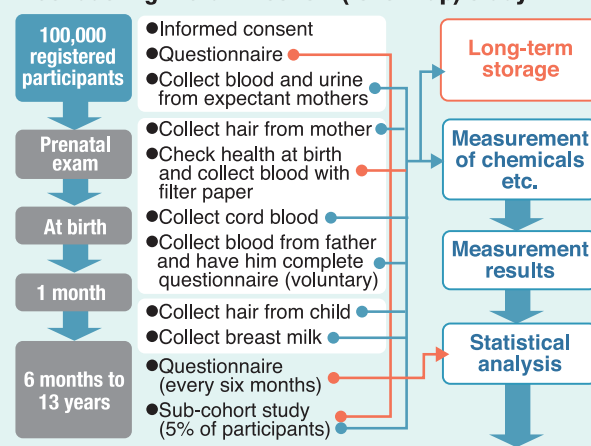
and medical institutes are in progress.

2. What is happening to our children now? —The Significance of JECS—

E nvironmental factors, such as chemical exposures and lifestyle habits, that cause illnesses are on the rise in Japan. The prevalence of asthma tripled in the last 20 years, while child obesity increased by 1.5 times over the past three decades. JECS' outcomes covers six areas: 1) physical development, 2) congenital anomalies, 3) sexual differentiation disorders, 4) neurodevelopmental disorders, 5) immune system deficiencies, and 6) metabolism and endocrine system disorders.

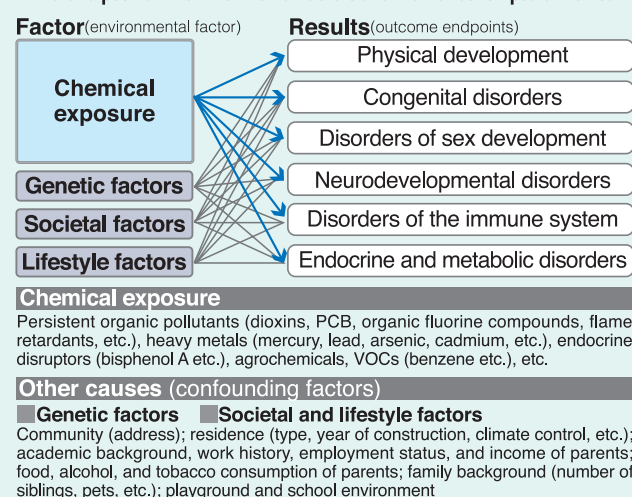
Environmental exposures are intertwined with many factors, such as chemical, genetic, social, and lifestyle factors, and must be investigated in an interdisciplinary manner, requiring the collaboration with various departments, medical and research institutes nationally and internationally. Through conducting the JECS, we aim to produce specialists in pediatric environmental medicine and provide a healthy environment for future generations.

■ Conducting the birth cohort (follow-up) study



(Note) What is a cohort? ... The word cohort originally referred to the basic tactical unit of a Roman legion. In cohort research, a group of people who share a defining characteristic such as region or social group are studied over a long period of time to investigate the relationship between their health and various factors such as lifestyle and environment.

■ Pre- and post-birth environmental factors and their effect on pediatric health



Integrated Center for Advanced Medical Technologies

Director **Masamitsu Hyodo**

The Integrated Center for Advanced Medical Technologies was founded in March 2013 to support and promote medical research conducted by members of the Kochi Medical School Hospital. It provides an infrastructure that supports the recent development of evidence-based medicine, the promotion of translational research, and other activities.

Rapid advances are being made in medical research, and it leads to the creation of new medical technologies. Japan has produced a substantial basic medical research, and the new medical treatments created by translational research benefit patients. Translational research includes many diverse fields—medical science, pharmacology, statistics, data management, economics, ethics, project management, regulatory guidelines, intellectual property, etc.—and researchers need to develop a vision, road map, and innovation strategy for implementing their discoveries to the medical practice.

The Integrated Center for Advanced Medical Technologies contains the following departments: Project Management, Clinical Data Management, Clinical Research Support, Seeds Management, Safety Management, Education and Human Resource Development, Regulatory Affairs, and Translational Research. In order to plan and conduct clinical research that is both scientific and ethical,

a team of experts with knowledge of regulatory guidelines, statistics, and medical research (physicians, pharmacists, clinical laboratory technician, clinical research coordinators, data managers, biostatisticians, etc.) draft research programs, draft protocols and case report forms, set-up and manage databases, analyze data, help submit applications to review committees for clinical trials, interact with research subjects, and provide other types of management and support. We also plan and administer training courses, offer consultation on biostatistics and research ethics, conduct research on the optimal ways to implement clinical studies, and facilitate cooperation between industry and academia for the purpose of medical research.

As large-scale multicenter collaboration research projects via global networks continue to flourish, the center protects the rights of collaborating individuals and support developments of safe and beneficial medical technologies. We advocate the elevation of Japan's international competitiveness in terms of the development of

medical technology; national universities have an obligation to build an infrastructure for clinical research by providing technical education and training. The Integrated Center for Advanced Medical Technologies will continue to work with patients, health care providers, and medical researchers for the development of medical science.



Integrated Center for Advanced Medical Technologies “From bench to bedside”

Our department promotes clinical trials that lead to the practical use of medical research



Treating cerebral palsy in humans by transplanting stem cells via cord-blood transfusion

Professor of Obstetrics/Gynecology and Leader of the Cord Blood Stem Cell Team in the Center for Innovative and Translational Medicine's Regenerative Medicine Group **Nagamasa Maeda**

On November 9, 2011, research into using stem cells from a child's own umbilical-cord blood to treat his or her cerebral palsy was approved by Kochi University—a first for Japan. Now, laws have been revised and approval has been granted for research on the safety of using an individual's own mononuclear cord-blood stem cells (stored in a cell bank) to treat infantile cerebral palsy and other disorders via blood transfusions. This clinical research using a subject's own cord blood from a cell bank (the first of its kind in Japan) and its underlying basic research are currently being developed by the pediatric department, the obstetrics and gynecology department, and the Center for Innovative and Translational Medicine.

This clinical research is based on results substantiated by a large body of basic research and has been advanced to create treatments for infantile cerebral palsy. Cord blood is contained in the umbilical cord immediately after birth and is the first peripheral blood which circulated through the fetus. Because this blood contains highly versatile stem cells, it has attracted a great deal of attention in the field of regenerative medicine.

Using cerebral-palsy mouse models, we verified that transplanted stem cells will accumulate in areas with neurological damage and cause them to regenerate by activating the nerve stem cells located there. Additionally, in our behavioral testing, mice that received cord-blood stem cell transplants

exhibited notable improvements in mobility. The new clinical trials in which cord-blood stem cells are administered as a treatment for infantile cerebral palsy are based on all of our basic research conducted thus far.

While clinical research has provided evidence of the future safety and effectiveness of such treatments, we still don't understand the mechanisms behind them. Why do they work, and just how effective are they? These are questions that we are working daily to answer. If we can identify these treatment mechanisms, we can:

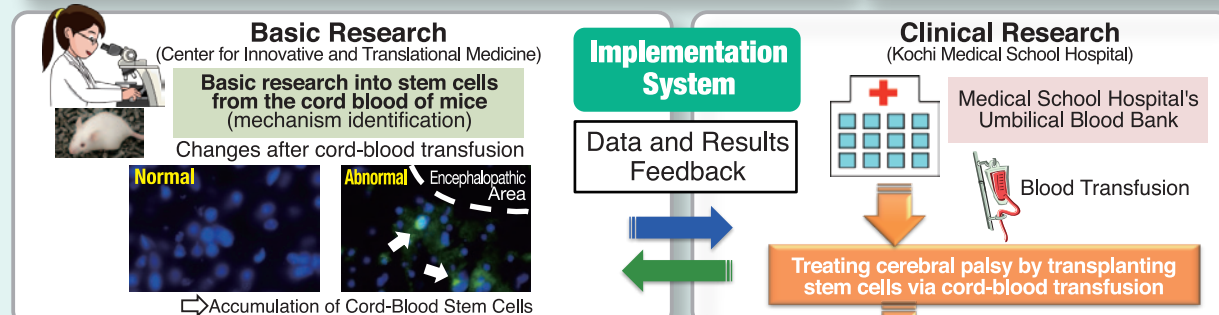
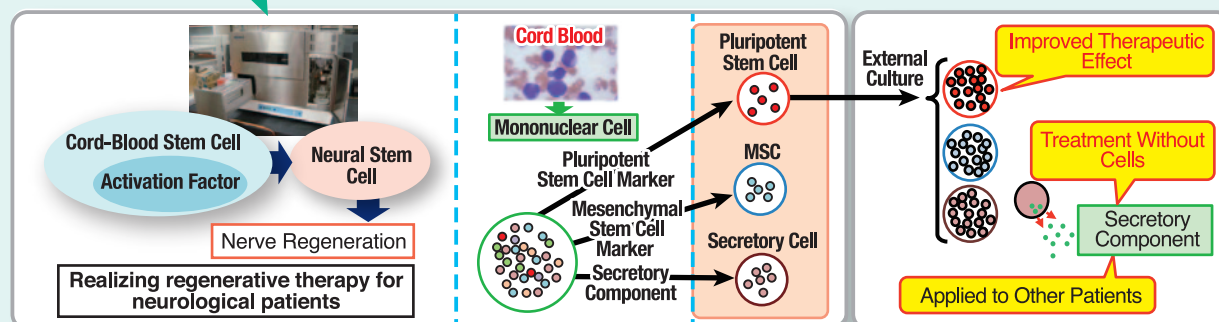
- (1) open the door to higher-quality treatments for cerebral palsy;
- (2) expand the treatment to other neurological disorders; and
- (3) establish umbilical-cord blood as an extremely safe and effective source of stem cells for regenerative medicine.

And by conducting both basic and clinical research while constantly sharing our data, we can:

- (1) develop better and more reliable treatments for cerebral palsy;
- (2) expand the treatment to neurological disorders other than cerebral palsy;
- (3) develop treatments for non-neurological disorders such as metabolic disease, degenerative disorders, and cancers; and
- (4) establish umbilical-cord blood as an extremely safe and effective source of stem cells that will be put to great use in future regenerative therapies within Japan.

Those are the goals that we strive to achieve every day.

Basic Research What sort of cells are cord-blood stem cells? By what mechanism do they regenerate nerve tissue?



Applications in regenerative therapies for various diseases

Hematopoietic Function	Vascular	Nerves	Organs	Muscles	Other
<ul style="list-style-type: none"> Leukemia Malignancy Anemia 	<ul style="list-style-type: none"> Myocardial Infarction Arteriosclerosis Cutaneous Ulcer Artery Occlusion 	<ul style="list-style-type: none"> Cerebral Palsy Spinal Cord Injury Parkinson's Disease Alzheimer's Disease 	<ul style="list-style-type: none"> Renal Disease Liver Disease 	<ul style="list-style-type: none"> Muscular Dystrophy Amyotrophic Lateral Sclerosis 	<ul style="list-style-type: none"> Bone Disease Type-1 Diabetes Retinitis Pigmentosa

Information Medical Care Science

Professor at the Center of Medical Information Science and Leader of the Center for Innovative and Translational Medicine's Information Healthcare Science Group **Yoshiyasu Okuhara**



Since 1981, over a period of more than 37 years, the Integrated Medical Information System (IMIS) at Kochi Medical School has accumulated the medical data of over 330,000 patients. This massive set of data is stored in an anonymized database that makes full use of computer science, mathematical statistics, and data mining technology. The Medical Data-Mining Team contributes to areas like preventative medicine and clinical diagnostics by searching the database for things such as pathophysiological factors and disease risk factors. The Disease Prediction Team uses the data to create dynamic models that describe pathophysiological changes in lifestyle related diseases and other illnesses, which allow them to predict such changes in individual patients. For example, large data sets that include the results of complete blood count tests have been used to develop methods for detecting various diseases in their early stages; the results of comprehensively analyzing the relationship between disease names and tests have been used to create a knowledge base and applied to medical education; and the past and current HbA1c and HDL values of an individual have been used to develop a method for

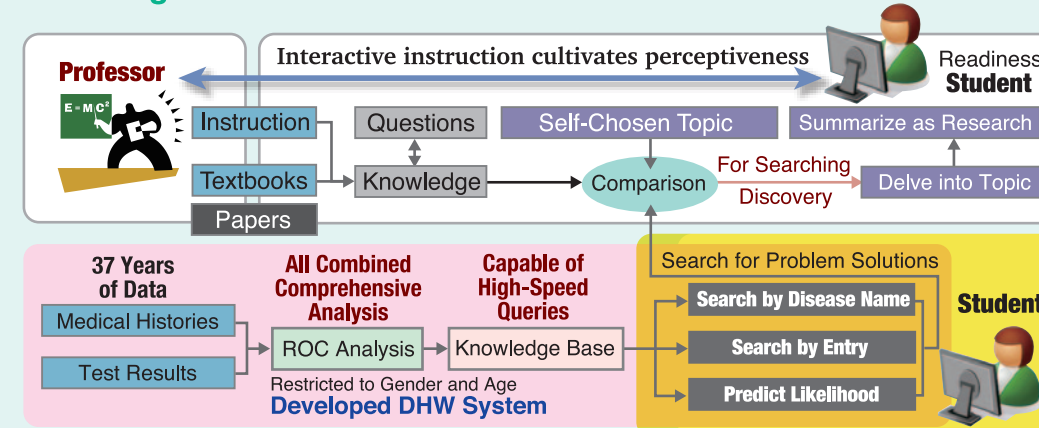
predicting that person's future HbA1c levels in the form of a probability.

In April 2010, our graduate school began offering a Healthcare Informatics (doctoral) course and Medical Informatics (master's) course to train people with the expertise to utilize data in these ways and to establish the new field of healthcare informatics that will use data to contribute to medical science and treatment. Because these courses aren't available elsewhere, more and more part-time students from other prefectures are traveling a great distance to take them here. In addition, our Innovative Medicine Course accepts second-year through fourth-year students in the medical course and provides them with educational and research guidance.

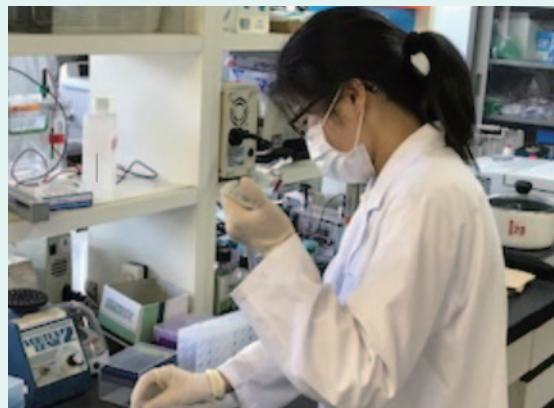
Eleven of our students have given presentations at national academic conferences in Japan, with four of them receiving awards.

Our seven students this year are also pursuing their own topics with the goal of making contributions to medical science and treatment.

Learning Healthcare Informatics in the Innovative Medicine Course



Research in Urologic Pharmacology

Professor of Pharmacology **Motoaki Saito**

What is your impression of the academic field of pharmacology? I think many people vaguely imagine a laboratory where some sort of difficult medicine-based research is taking place. Our pharmacology laboratory is the only one in Japan that conducts basic research with the goal of developing drugs primarily for the field of urology. While urological disorders have a low mortality rate, they do have a high incidence rate and cause considerable harm to quality of life. Two main topics in this area are (1) the mechanism by which the central nervous system controls micturition in response to stress and (2) understanding and developing drug treatments for the mechanisms that cause symptoms to appear in the lower urinary tract when pelvic blood flow decreases.

Regarding this first topic, even healthy people are known to temporarily experience frequent urination in times of stress, but there have also been cases where psychogenic frequent urination (pollakiuria) has caused considerable problems in people's lives and driven them to seek help from medical institutions. Current treatments involve psychotherapy or the use of psychopharmaceuticals, but the success rate of these methods is not very high. However, there is currently little evidence from anywhere suggesting that the mechanism by which stress induces pollakiuria is connected to the stress response that occurs at the central nervous system level. When we administered several stress-related neurotransmitters (bombesin and angiotensin II) to the cerebral ventricles of rats, we discovered that their micturition patterns closely resembled pollakiuria in humans. Since this experimental model clarified the molecular

mechanisms that induce frequent urination, we believe that similar experiments can be used to gain a better understanding of the micturition control mechanism and the various neurotransmitters that fluctuate in response to stress; that research is currently underway.

Regarding the second topic, there have been reports that the ventral prostate of spontaneously hypertensive rats (SHRs) begins to swell and experience reduce blood flow once the specimens reach 15 weeks of age. When we chronically administered oral doses of nicorandil (a K⁺ATP channel agonist) and silodosin (an α 1-adrenoceptor antagonist) to SHRs as vasodilators, we discovered that their prostate blood flow had increased and their oxidative stress, inflammatory cytokine, and growth factor levels had decreased; furthermore, excess formation of glandular epithelial tissue was suppressed. This suggests that vasodilators may be useful in treating benign prostatic hyperplasia. We are now conducting research to better understand and develop treatments for the molecular mechanisms by which reduced blood flow in the prostate induces excess formation of glandular tissue.

Our first research results to be published in quite some time received praise both at home and abroad, winning the grand prize in the 2016 Diokno-Lapides Essay Contest (an international authority on urology) and second prize in the same contest the following year. I encourage anyone with an interest in urologic pharmacology or in conducting basic research that seeks the seeds of new drug development to visit our classroom.

Dementia and Chienowa-net

Professor of Neuropsychiatry **Hiroaki Kazui**

On February 1, 2014, the Kochi Prefecture Medical Center for Dementia-Related Diseases was established at the Kochi Medical School Hospital to provide specialized treatment and promote regional cooperation.

Kochi Prefecture is facing one of the most rapid pace of aging in Japan. Since the most important risk factor of dementia is aging, the number of persons with dementia has been sharply increasing in Kochi Prefecture. Various diseases cause dementia. As some causing diseases are treatable, some patients could get back to normal with adequate treatment. In many cases, however, there is no definitive therapy. Dementia could be identified as having some distinguishing symptoms such as forgetfulness, unawareness of their current location or time, an inability to understand words, or a tendency to get lost. In addition, patients may exhibit behavioral and psychological symptoms of dementia (BPSD). BPSD includes delusions (fixed false belief such as a strong conviction that a family member has stolen the patient's wallet or other valuables), a short temper (angry and violent outbursts at the slightest provocation), and anxiety (an overpowering apprehension that forces them to check on something repeatedly or to search incessantly for someone if he or she isn't nearby). BPSD, rather than cognitive impairment, negatively impact the prognosis of dementia patients and increase caregiver distress, and accelerate the need for institutionalization. However, fortunately, BPSD can be treated and even prevented if those around the dementia patients fully understand dementia and how to cope with the BPSD.

I believe that the people who care for people suffering from dementia struggle daily with questions of how they should best handle the BPSD. Some textbooks and websites have proposed numerous management skills about how to communicate with persons who have BPSD. However, whether or not the management skills can reduce BPSD has not been clarified. That's why we developed a website "circle of wisdom about dementia care net" called "Ninchisho Chienowa net" in Japanese. On our website, caregivers are requested to provide three kinds of information: caregiver information, dementia patient information, and care experiences with patients with dementia. Care experiences include what happened, a managing method that the caregiver conducted, and whether the method improved the symptom, effective or ineffective. The aim of our web site was to calculate success rates of different management methods based on actual care experiences. We would like to provide information to allow caregivers to take appropriate care.

One of the roles of the Medical Center for Dementia-Related Diseases is to make a differential diagnosis for patients whose diagnosis remain uncertain at other local medical centers in the prefecture. After a definitive diagnosis is confirmed, most patients are supposed to have follow-up visits at the local center. Therefore, utilizing the chienowa-net website could solve regional gaps of medical care service for dementia, work as a kind of "guard" against isolation for caregivers.



Search for Chienowa-net online!

Identifying the mechanisms by which odors affect our minds

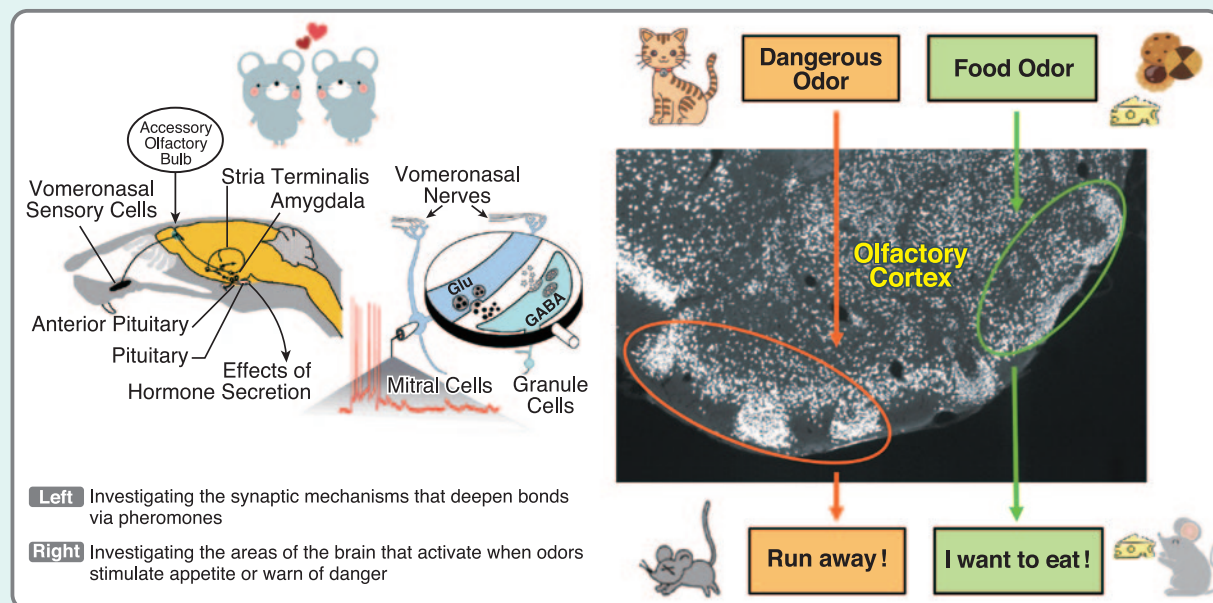
Professor of Integrative Physiology **Masahiro Yamaguchi**

It is often said that health stems from a sound body and mind. As we go about our daily lives, we experience a variety of emotions like joy and sadness. Our routine behavior is encouraged by our motivations and wishes, such as the desire to see, eat, and know things. Health and happiness is achieved when the mind is able to actively and soundly express these emotions, motivations, and desires.

But many people live their lives under a great deal of stress nowadays, and within our fully developed societies it has become difficult for us to properly display the workings of our minds and bodies, which we naturally possess as living creatures. Viewing the mind as a function of the brain that originally evolved so living beings could live better and more prosperous lives, I believe that we must try to understand its mechanisms and develop its health.

In the Integrative Physiology course, we use mice and other specimens to examine the olfactory system for clues about the workings of the mind. Odors appeal to our instincts and directly influence the functions of our mind. For example, pheromones are odors

that affect the social behavior of animals. Interest in the workings of pheromones led to our discovery that they alter the efficiency of the synapses between nerve cells in a region of the brain known as the accessory olfactory bulb, which in turn allows for recognition of specific members of the opposite sex and deepens the bonds between those creatures. We have also determined that regions within the cerebral cortex's olfactory cortex, specifically the few areas that are affected by dopamine (a chemical which is strongly connected to our sense of reward), are activated when the aroma of food stimulates our desire to eat. In recent years, conditions related to improper appetite (overeating, anorexia, imbalanced diets, etc.) have become a significant problem, so we can expect the development of treatments that target the mechanisms of appetite. This is how we have gradually come to understand the mechanisms by which odors affect the minds of living creatures and influence their behavior. We are now commencing joint research with other universities and private corporations to identify these mechanisms in the brains of humans as well. I hope to use a scientific understanding of odors and proper application of that knowledge to improve the health of our minds in the near future.



Evaluation and accreditation of medical education programs

Professor of General Medicine and Chair of the Self-Evaluation Committee for Medical Education **Hiromi Seo**

Medical education programs are evaluated through a special accreditation system. The purpose of that system is to verify, through a neutral assessment, whether the education provided by a medical school is implemented in accordance with the World Federation for the Medical Education (WFME) Global Standard for Quality Improvement of Medical Education as well as to ensure the quality of such education and encourage its continuous renewal. In Japan, trial evaluations began in the form of the Ministry of Education, Culture, Sports, Science and Technology's GP Project in 2013; by January 2017, a total of eighteen schools had been evaluated. Then in March 2017, the Japan Accreditation Council for Medical Education (JACME) was certified as an official accrediting organization by the World Federation for Medical Education.

JACME drafts the Japanese version of evaluation standards for medical education based on WFME Global Standard. These standards cover nine areas: (1) Mission and Outcomes, (2) Educational Programme, (3) Assessment for Students, (4) Students, (5) Academic Staff/Faculty, (6) Educational Resources, (7) Program Evaluation, (8) Governance and Administration, and (9) Continuous Renewal. Within these are 106 basic standards and 90 standards for quality improvement.

The university being evaluated conducts a self-evaluation of the institution and its programme based on these standards then submits a report along with relevant documentation to JACME. A questionnaire is then returned to the university and preparations are made for a site visit. Excluding briefing and debriefing,

the site visit takes about three days. While the bulk of the site visit consists of discussions on the different areas covered by the standards, it is a multipronged assessment that also includes facility inspections, the observation of lectures and practical learning sessions, and interviews with medical students, residents, junior faculty members, and other individuals. The evaluating organization then drafts a final report and sends it to the medical school for confirmation. Once that verification takes place, the report is published. The university works to continually improve its medical education programs based on the contents of the final report.

The most important thing in terms of this evaluation is the implementation of an outcome-based curriculum. Focus has shifted from the traditional curricula based on how much the student studies in a given time period to ones designed around whether the student has acquired the necessary skills by the time he or she graduates. For this to work, students must be allowed to learn and develop skills organically, which is why an active learning method is recommended over a didactic lecture system which merely facilitates the transmission of knowledge (view Figure). Clinical training in which students participate as members of a treatment team is intended to help them achieve high levels of clinical proficiency. To prepare them for that, the use of training simulations is recommended. It is also a good idea to establish an institutional research (IR) department that can provide the framework for gathering and analyzing evidence that will be used in the self-evaluation and to further improve educational programs.



Figure: Active Learning
Kochi Medical School has implemented Japan's first Team-Based Learning (TBL) system as it promotes active learning.

Kochi Medical School Hospital

Hospital Data

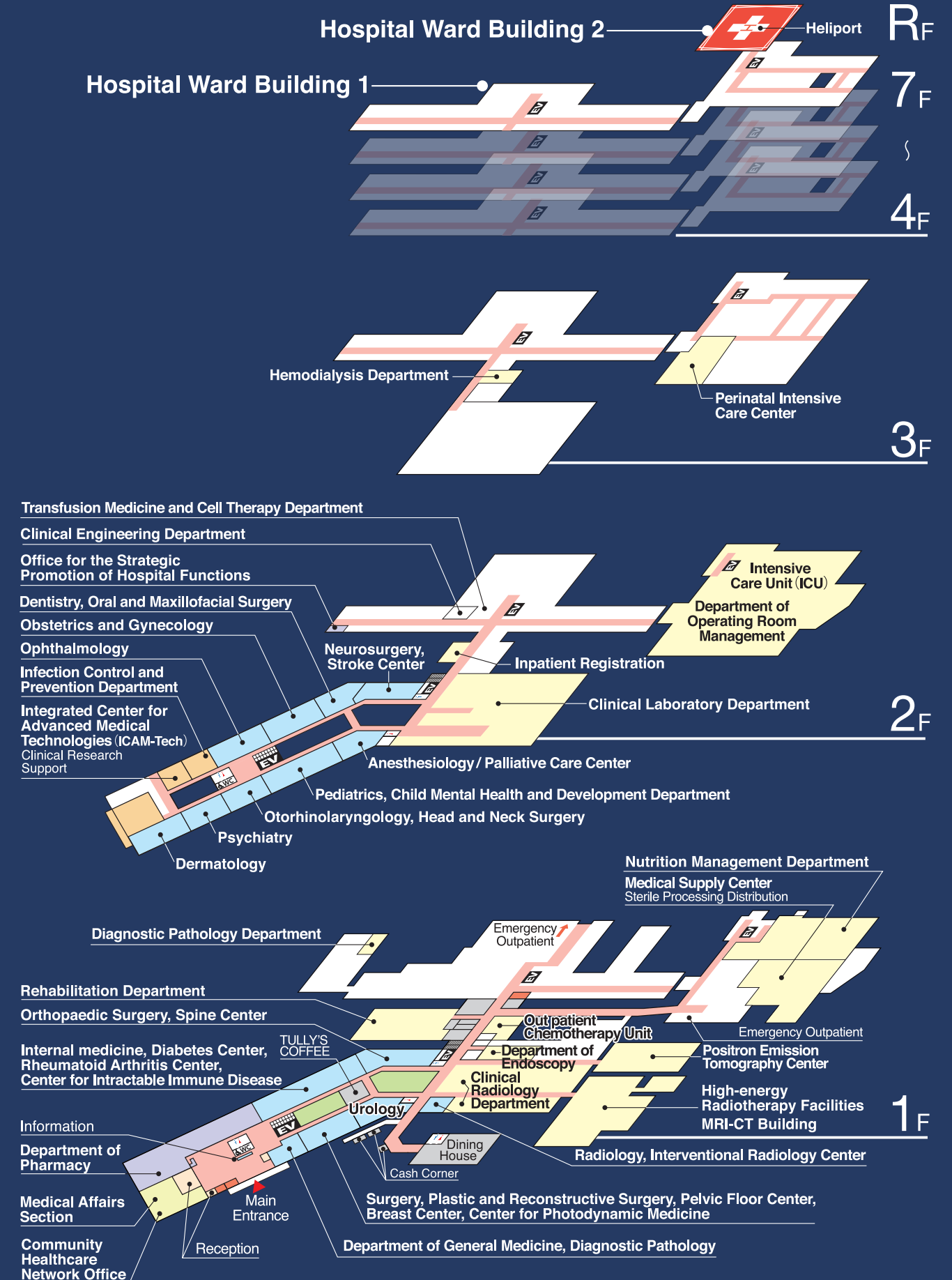
Name	Kochi Medical School Hospital
Clinical services started	October 19, 1981
Address	Kohasu, Ogo-cho, Nankoku-shi, Kochi-ken 783-8505 Japan
Establishment person	National University Corporation Kochi University
Number of Beds	613 Beds, [583 Beds(General beds) / 30 Beds(Psychiatric beds)]
Intensive Care Unit	12 Beds
High Care Unit	4 Beds
Stroke Care Unit	3 Beds
Neonatal Intensive Care Unit	9 Beds
Growing Care Unit	12 Beds
Aseptic Unit	6 Beds

Medical Diagnostic X-Ray Apparatus etc.

PET-CT	2 units
SPECT-CT	2 units
MRI	4 units
CT	6 units
Angiography Apparatus	4 units
General Radiography Apparatus	5 units
Mammography Apparatus	2 units
Bone Mineral Density Measuring Apparatus	1 units
Dental Imaging Apparatus (Panorama, Dental)	2 units
Mobile X-Ray Imaging Apparatus (Including Fluoroscope Apparatus)	10 units
X-Ray Fluoroscope Apparatus	2 units
X-Ray Fluoroscope Apparatus (for Urology and Gynecology)	1 units



Floor Section



Basic Principles / Basic Policy / We value "the Rights of Patients" / We would appreciate it if our patients would

Basic Principles

of Kochi Medical School Hospital

- ◆ Providing high quality specialized medical treatment and fostering healthcare professionals who have an extensive knowledge and a deep insight
- ◆ Promoting advanced medical technology and taking every opportunity to achieve a medical innovation

Basic Policy

of Kochi Medical School Hospital

- ◆ Providing high quality specialized medical treatment with careful consideration of safety and security
- ◆ Promoting advanced medical technology and contributing to the development of medicine
- ◆ Fostering medical professionals with a deep affection for human beings and reliable medical techniques, who are highly motivated to work for healthcare for the local people

We value "the Rights of Patients"

We value "the Rights of Patients"

- ◆ Patients' right to receive the best medical care without discrimination
- ◆ Patients' right to ask for a second opinion from doctors at other medical institutions
- ◆ Patients' right to ask for a full explanation from the physicians and medical staff in charge
- ◆ Patients' right to decide what medical treatment to take of their own free will
- ◆ Patients' right to obtain all the information about the medical treatment
- ◆ Patients' right to have their personal information about the treatment and their privacy protected
- ◆ Patients' right to have their personality and values respected as human beings

We would appreciate it if our patients would

- ◆ Keep us well-informed of your health conditions.
- ◆ Try to get a better understanding of the medical treatment you're going to take and fight the disease, going hand in hand with us.
- ◆ Observe the rules of the hospital so that other patients can take medical treatment in a better healthcare environment.

Professional Ethics Policy / Clinical Ethics Policy

Professional Ethics Policy

The mission of medical science and health care is not only to cure diseases but also to maintain and promote the health of the people; and based on an awareness of the importance of this mission, we fulfill our professional duties.

1. We respect human life, human dignity and human rights.
2. We respect and advocate the right of patients to self-determination and the right to know their medical condition.
3. We provide impartial medical services to all patients.
4. We maintain confidentiality and endeavor to protect personal information.
5. We conduct proper risk management to provide safe medical treatment to all patients.
6. We are ware of our own duties and capabilities and take responsibility for our actions.
7. We coordinate with other professionals to provide quality medical services.
8. We understand our responsibility to maintain and develop our individual abilities through continuous educational efforts.
9. We respect the spirit of public service that characterizes health care and contribute to the development of society.

Clinical Ethics Policy

Hospital employees must respect the patients they treat, sufficiently consider their human rights, and provide highest-quality of care in accordance with this policy.

1. We respect the right of self-determination and human rights of patients and act in their best interests.
2. We comply with laws related to health and welfare and ethics and perform practice in accordance with relevant clinical guidelines
3. If an problem arises due to the religious beliefs or sanctity of life of a patient, we determine the proper treatment approach after the Clinical Ethics Committee has sufficiently deliberated the issue.
4. We verify the quality and the validity of our practice.
5. We conduct the clinical research needed for the development of treatment in accordance with the ethics of medicine.

Kochi Medical School Hospital
Executive Officers

As of May 1,2018

Kochi Medical School Hospital	Director	Taro Shuin
	Vice-Director	Masamitsu Hyodo
	Vice-Director	Hiroaki Kitaoka
	Vice-Director	Kuniko Tada
	Vice-Director	Tetsuya Ueba

Clinical Departments		Director	Vice-Director
		Internal Medicine	
	Gastroenterology, Hepato-Pancreatology	Toshiji Saibara	Shinji Iwasaki
	Endocrinology and Diabetology, Nephrology and Rheumatology	Yoshio Terada	Shimpei Fujimoto
	Hematology, Respirology and Infectious Diseases	Akihito Yokoyama	Tetsuya Kubota
	Geriatrics, Cardiovascular Medicine	Hiroaki Kitaoka	Naohito Yamasaki
	Neurology	Hirokazu Furuya	
	Pediatrics	Mikiya Fujieda	Hiroaki Hisakawa
	Psychiatry	Hiroaki Kazui	
	Dermatology	Shigetoshi Sano	Kimiko Nakajima
	Radiology	Takuji Yamagami	Shinji Kariya
	Surgery [1]	Kazuhiro Hanazaki	Takeki Sugimoto
	Surgery [2]	Kazumasa Orihashi	Takashi Anayama
	Plastic and Reconstructive Surgery	Yukitaka Yoshida	Akiko Yano
	Anesthesiology	Masataka Yokoyama	Takashi Kawano
	Obstetrics and Gynecology	Nagamasa Maeda	Nobuo Ikenoue
	Orthopaedic Surgery	Masahiko Ikeuchi	Ryuichi Takemasa
	Ophthalmology	Atsuki Fukushima	Ken Fukuda
	Otorhinolaryngology, Head and Neck Surgery	Masamitsu Hyodo	Taisuke Kobayashi
	Neurosurgery	Tetsuya Ueba	Naoki Fukui
	Urology	Keiji Inoue	Nao Karashima
	Dentistry, Oral and Maxillofacial Surgery	Tetsuya Yamamoto	Naoya Kitamura
	Diagnostic Pathology	Ichiro Murakami	
Central Clinical Facilities	Clinical Laboratory Department	Yoshihisa Matsumura	Mikio Kamioka Shigeo Yamanaka
	Department of Operating Room Management	Kazuhiro Hanazaki	Masaki Yamamoto
	Clinical Radiology Department	Takuji Yamagami	Hiroki Minamiguchi Kenji Ito
	Emergency Department	Osamu Nagano	Hideo Yamanouchi
	Department of Transfusion Medicine and Cell Therapy	Yoshihisa Matsumura	Jun Imamura
	Intensive Care Unit (ICU)	Masataka Yokoyama	Tomoaki Yatabe
	Rehabilitation Department	Masahiko Ikeuchi	Masamitsu Hyodo Kenji Ishida Rina Hosoda
	Department of General Medicine	Hiromi Seo	Seisho Takeuchi
	Department of Endoscopy	Toshiji Saibara	Masafumi Ono
	Diagnostic Pathology Department	Ichiro Murakami	Makoto Toi

Central Clinical Facilities		Director	Vice-Director
		Hemodialysis Department	Keiji Inoue Kosuke Inoue Shingo Ashida
	Child Mental Health and Development Department	Hiroaki Kazui	
	Clinical Genetics Department	Takeki Sugimoto	Toru Kubo
	Nutrition Management Department	Yoshio Terada	Miho Iyoki
	Perinatal Intensive Care Center	Mikiya Fujieda	Nobuo Ikenoue Kenshi Matsushita
	Positron Emission Tomography Center	Yoriko Murata	Hitomi Iwasa Naoki Akagi
	Cancer Treatment Center	Michiya Kobayashi	Ken Okamoto Noriko Kitaoka
	Pelvic Floor Center	Keiji Inoue	Ken Dabanaka
	Breast Center	Takeki Sugimoto	
	Spine Center	Ryuichi Takemasa	Katsuhito Kiyasu
	Stroke Center	Hirokazu Furuya	Tetsuya Ueba
	Diabetes Center	Shimpei Fujimoto	Atsuki Fukushima Yoshio Terada
	Rheumatoid Arthritis Center	Yoshio Terada	Masahiko Ikeuchi
	Intervental Radiology Center	Takuji Yamagami	Hiroki Minamiguchi
	Center for Photodynamic Medicine	Kazuhiro Hanazaki	Keiji Inoue
	Center for Intractable Immune Disease	Tetsuji Naka	Minoru Fujimoto Shigetoshi Sano Yoshinori Taniguchi
Medical Safety Management Facilities	Medical Safety Management Center	Hiroaki Kitaoka	Mikiya Fujieda Kazuhiro Hanazaki
	Infection Control and Prevention Department	Seisho Takeuchi	Kazumi Arise
Clinical Support Facilities	Medical Supply Center	Masataka Yokoyama	
	Minimally Invasive Surgery Education and Training Center	Michiya Kobayashi	Ken Okamoto
	Inpatient Registration	Masahiko Ikeuchi	Kuniko Tada
	Medical Information Management Office	Masamitsu Hyodo	Hiromi Ioki
	Community Healthcare Network Office	Masahiko Ikeuchi	Ichiro Miyano Mayumi Chiya
	Clinical Engineering Department	Tetsuya Ueba	Takeshi Murakami
Department of Pharmacy		Mitsuhiko Miyamura	Yasuyo Morita
Nursing Department		Kuniko Tada	Chie Harada Masami Hirosue Miwa Sakamoto
Center for the Support and Development of Medical Professionals		Kazumasa Orihashi	Hiromi Seo Akihito Yokoyama
Integrated Center for Advanced Medical Technologies(ICAM-Tech)		Masamitsu Hyodo	Masahiko Ikeuchi Yumi Wakabayashi
Office for the Strategic Promotion of Hospital Functions		Taro Shuin	Masataka Yokoyama Hiromi Yamaguchi

Hospital Overview (1)

Number of Patients -1

Outpatients				Examination Day	Classification	Inpatients				Work Rate (%)
New	Old	Total	No.Per day			Admitted	Discharged	Total	No.Per day	
1,099	18,700	19,799	990	20	April, 2016	885	915	14,986	500	83.3
1,237	19,251	20,488	1,024	20	May, 2016	954	884	15,512	500	83.4
1,217	20,538	21,755	989	22	June, 2016	950	978	15,549	518	86.4
1,137	20,207	21,344	1,067	20	July, 2016	997	985	16,122	520	86.7
1,210	21,059	22,269	1,012	22	August, 2016	986	1,026	15,852	511	85.2
1,133	19,756	20,889	1,044	20	September, 2016	890	872	14,931	498	83.0
1,141	20,724	21,865	1,041	21	October, 2016	934	926	15,963	515	85.8
1,102	20,107	21,209	1,060	20	November, 2016	959	929	15,449	515	85.8
1,080	20,598	21,678	1,084	20	December, 2016	896	1,066	16,296	526	87.6
1,109	19,524	20,633	1,086	19	January, 2017	998	818	15,708	507	84.5
1,067	18,690	19,757	1,040	19	February, 2017	889	892	14,858	531	88.4
1,177	21,551	22,728	1,082	21	March, 2017	963	1,052	16,071	518	86.4
13,709	240,705	254,414	1,043	244	Total	11,301	11,343	187,297	513	85.5

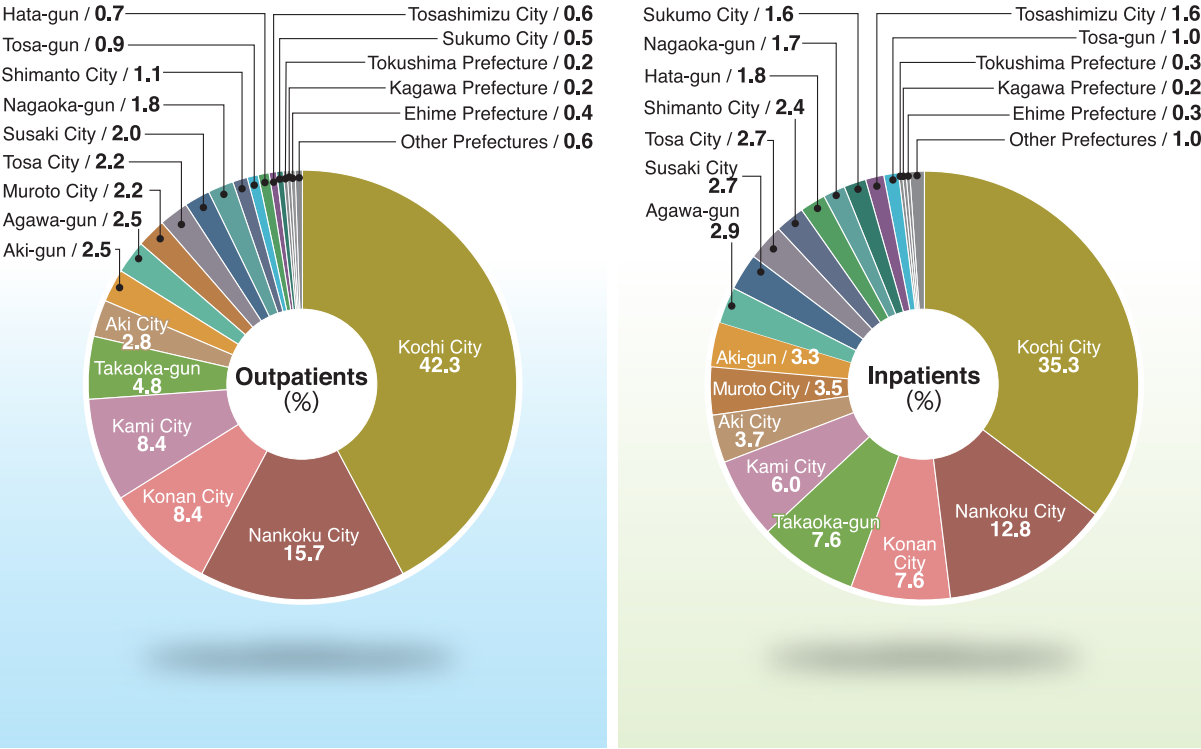
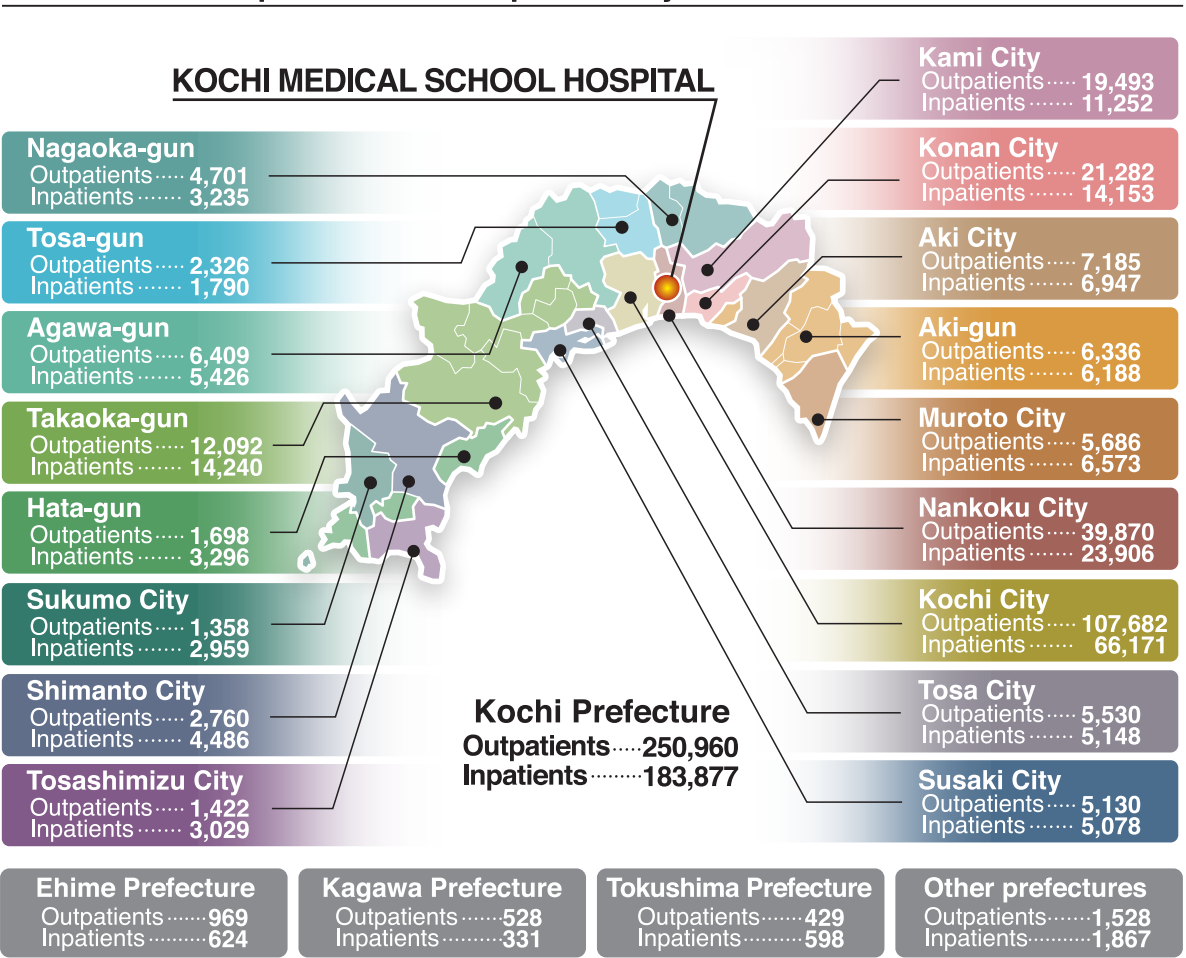
Number of Patients -2

※Diagnostic Pathology and Nursing Outpatient numbers are added to the Department of General Medicine total (46 individuals for the year)

Classification	Outpatients		Inpatients					
	Total Number	No.Per day	Total Number	Deaths	Beds	No.Per day	Av. length of stay	Work Rate (%)
Gastroenterology, Hepato-Pancreatology	11,881	49	14,319	25	42	39.2	14.4	93.4
Endocrinology and Diabetology, Nephrology and Rheumatology	22,701	93	11,270	3	35	30.9	14.8	88.2
Hematology, Respiriology and Infectious Diseases	12,301	50	17,048	31	38	46.7	24.0	122.9
Geriatrics, Cardiovascular Medicine	14,312	59	14,853	24	42	40.7	13.1	96.9
Neurology	5,880	24	2,274	4	8	6.2	21.2	77.9
Pediatrics	13,809	57	14,076	3	54	38.6	17.5	71.4
Psychiatry	11,578	47	7,785	0	30	21.3	54.0	71.1
Dermatology	22,746	93	5,551	4	15	15.2	13.4	101.4
Radiology	8,112	33	3,022	0	10	8.3	14.3	82.8
Surgery [1]	7,841	32	11,125	15	26	30.5	17.7	121.9
Breast Center	8,317	34	2,635	6	8	7.2	10.3	80.2
Surgery [2]	3,539	15	9,552	12	27	26.2	20.2	96.9
Plastic and Reconstructive Surgery	1,527	6	1,834	0	7	5.0	15.2	71.8
Anesthesiology	649	3	8	0	0	0.0	7.0	4.4
Obstetrics and Gynecology	19,200	79	15,663	4	46	42.9	13.1	93.3
Orthopaedic Surgery	21,587	88	15,093	2	42	41.4	16.8	98.5
Ophthalmology	19,286	79	7,201	0	22	19.7	9.9	89.7
Otorhinolaryngology, Head and Neck Surgery	10,870	45	9,272	0	25	25.4	17.3	101.6
Neurosurgery	5,769	24	11,915	7	30	32.6	19.4	108.8
Urology	12,175	50	9,213	3	21	25.2	14.7	120.2
Dentistry, Oral and Maxillofacial Surgery	15,519	64	3,399	2	11	9.3	22.6	84.7
Deperment of General Medicine	4,217	17	0	0	0	0.0	1.3	0.0
Emergency Deperment	598	2	189	6	0	0.5	0.5	0.0
Common Ward					61			
Total	254,414	1,043	187,297	151	600	513.1	16.3	85.5

※Bed number reflects the value at the end of 2017

Distribution of Inpatients and Outpatients by Area



Hospital Overview (2)

Number of Surgical Procedures

2017

Clinical	Outpatients	Inpatients	Total
Gastroenterology, Hepato-Pancreatology	0	0	0
Endocrinology and Diabetology, Nephrology and Rheumatology	0	0	0
Hematology, Respirology and Infectious Diseases	0	0	0
Geriatrics, Cardiovascular Medicine	0	35	35
Neurology	0	0	0
Pediatrics	0	0	0
Psychiatry	0	0	0
Dermatology	166	233	399
Radiology	0	0	0
Surgery [1]	5	577	582
Breast Center	1	195	196
Surgery [2]	5	364	369
Plastic and Reconstructive Surgery	42	206	248
Anesthesiology	0	0	0
Obstetrics and Gynecology	0	462	462
Orthopaedic Surgery	52	799	851
Ophthalmology	42	1,089	1,131
Otorhinolaryngology, Head and Neck Surgery	17	604	621
Neurosurgery	0	241	241
Urology	0	353	353
Dentistry, Oral and Maxillofacial Surgery	1	321	322
Department of General Medicine	0	0	0
Emergency Department	0	0	0
Total	331	5,479	5,810

Number of Clinical Laboratory Tests

2017

Classification		Outpatients	Inpatients	Total
Urinalysis, Stool Test		315,660	135,396	451,056
Hematology		671,910	462,944	1,134,854
Clinical Chemistry		1,562,623	854,358	2,416,981
Serology		40,997	13,017	54,014
Microbiology		13,567	30,926	44,493
Physiological Function Test	Cardiovascular Physiology	8,106	6,495	14,601
	Electroencephalography	2,186	2,425	4,611
	Pulmonary Function	6,421	2,620	9,041
	Echocardiography	2,245	3,162	5,407
	Ultrasonography Abdominal, Others	5,883	5,704	11,587
	Others	737	94	831
	Subtotal	25,578	20,500	46,078
Blood Sampling, etc.		62,788	2,848	65,636
Transfusion		8,110	9,787	17,897
Others		108,254	32,065	140,319
Total		2,809,487	1,561,841	4,371,328

Number of Delivery Cases

2017

Classification	Mature Infant	Low Birth Weight in fant	Total
Normal Delivery	187	15	202
Abnormal Delivery	73	54	127
Total	260	69	329

Number of Autopsies

2017

Dead Patients	151
Autopsies	16
Autopsy Rate (%)	10.6
Commissioned Autopsy	1

Number of Pathology

2017

Classification	Outpatients	Inpatients	Total
Histologic	2,027	3,380	5,407
Cytologic	5,749	1,364	7,113
Immunohistochemistry	650	1,281	1,868
HER-2 (FISH)	10	4	14
Frozen section	32	479	511
Total	8,468	6,445	14,913

Number of Rehabilitation (unit)

2017

Classification	Outpatients	Inpatients	Total
Physical Therapy	3,150	37,452	40,602
Occupational Therapy	1,572	14,153	15,725
Speech and Language Therapy	295	7,469	7,764
Psycho Occupational Therapy	351	2,515	2,866
Total	5,368	61,589	66,957

[Dispensation] Number of Prescriptions, Cases, Doses

2017

Classification		Prescriptions	Cases	Doses
Inpatients		111,802	220,239	1,398,926
Outpatients	In-house prescription	13,431	38,294	823,422
	External prescription	120,507	340,270	10,255,258
	Sub Total	133,938	378,564	11,078,680
Total		245,740	598,803	12,477,606

[Injections] Number of Prescriptions, Cases, Doses

2017

Classification		Prescriptions	Cases	Doses
Medicinen claim	Outpatients	5,871	14,503	58,730
	Inpatients	6,605	30,411	295,183
	Sub Total	12,476	44,914	353,913
Injection prescription	Outpatients	36,329	52,990	88,888
	Inpatients	324,500	458,536	540,187
	Sub Total	360,829	511,526	629,075
Total		373,305	556,440	982,988

[Aseptic Preparation] Number of Prescriptions, Cases, Doses

2017

Classification	Prescriptions	Cases	Doses
Intravenous Hyperalimentation	207	914	1,262
Antineoplastic medicine	12,678	26,458	45,847

Number of Dialysis

2017

Hemodialysis	1,355
Apheresis	64
ell-free and Concentrated Ascites Reinfusion Therapy	38

Number of Pharmaceutical Care

2017

9,538

Hospital Overview (3)

Number of Radiological Examination

2017

Classification		April	May	June	July	August	September	October	November	December	January	February	March	Total
General Radiography	Inpatients	2,130	2,250	2,223	2,239	2,198	2,159	2,346	2,294	2,180	2,422	2,130	2,325	26,896
	Outpatients	1,894	1,963	2,082	2,103	2,122	1,968	2,078	2,052	2,025	1,938	1,815	2,226	24,266
	SubTotal	4,024	4,213	4,305	4,342	4,320	4,127	4,424	4,346	4,205	4,360	3,945	4,551	51,162
General Radiography (Contrast Enhancement)	Inpatients	107	135	158	142	135	122	114	120	149	132	118	138	1,570
	Outpatients	48	38	49	53	64	42	55	48	59	46	64	56	622
	SubTotal	155	173	207	195	199	164	169	168	208	178	182	194	2,192
Angiography	Inpatients	268	239	264	209	179	206	222	240	267	197	201	244	2,736
	Outpatients	3	13	14	2	1	1	11	5	8	4	5	5	72
	SubTotal	271	252	278	211	180	207	233	245	275	201	206	249	2,808
X-ray CT	Inpatients	340	348	375	404	385	378	375	336	333	341	269	306	4,190
	Outpatients	667	728	704	712	686	647	693	659	667	644	583	692	8,082
	SubTotal	1,007	1,076	1,079	1,116	1,071	1,025	1,068	995	1,000	985	852	998	12,272
MR	Inpatients	198	244	241	236	241	228	233	243	240	236	243	243	2,826
	Outpatients	521	534	562	577	586	520	540	518	532	518	529	569	6,506
	SubTotal	719	778	803	813	827	748	773	761	775	758	765	812	9,332
Nuclear Medicine	Inpatients	59	56	72	75	69	88	77	68	64	58	67	78	831
	Outpatients	63	76	77	63	85	65	75	68	58	55	72	74	831
	SubTotal	122	132	149	138	154	153	152	136	122	113	139	152	1,662
SubTotal	Inpatients	3,102	3,272	3,333	3,305	3,207	3,181	3,367	3,301	3,236	3,390	3,021	3,334	39,049
	Outpatients	3,196	3,352	3,488	3,510	3,544	3,243	3,452	3,350	3,349	3,205	3,068	3,622	40,379
	SubTotal	6,298	6,624	6,821	6,815	6,751	6,424	6,819	6,651	6,585	6,595	6,089	6,956	79,428
Radiotherapy (External Irradiation (Linac))	Inpatients	388	380	371	353	375	445	308	242	393	339	392	352	4,338
	Outpatients	236	182	168	146	210	138	186	308	138	130	173	237	2,252
	SubTotal	624	562	539	499	585	583	494	550	531	469	565	589	6,590
Radiotherapy (Intracavitary Irradiation)	Inpatients	3	10	9	14	5	11	7	3	3	2	12	14	93
	Outpatients	3	1	0	3	0	0	0	0	0	0	0	0	7
	SubTotal	6	11	9	17	5	11	7	3	3	2	12	14	100
SubTotal	Inpatients	391	390	380	367	380	456	315	245	396	341	404	366	4,431
	Outpatients	239	183	168	149	210	138	186	308	138	130	173	237	2,259
	SubTotal	630	573	548	516	590	594	501	553	534	471	577	603	6,690
Hybrid System (Angiography)	Inpatients	18	23	18	17	11	15	16	14	21	19	21	22	215
	Outpatients	0	0	0	0	0	0	0	0	0	0	0	0	0
	SubTotal	18	23	18	17	11	15	16	14	21	19	21	22	215
Hybrid System (MRI)	Inpatients	0	1	1	0	0	2	3	0	0	2	0	1	10
	Outpatients	0	0	0	0	0	0	0	0	0	0	0	0	0
	SubTotal	0	1	1	0	0	2	3	0	0	2	0	1	10
SubTotal	Inpatients	18	24	19	17	11	17	19	14	21	21	21	23	225
	Outpatients	0	0	0	0	0	0	0	0	0	0	0	0	0
	SubTotal	18	24	19	17	11	17	19	14	21	21	21	23	225
Total	Inpatients	3,511	3,686	3,732	3,689	3,598	3,654	3,701	3,560	3,653	3,752	3,446	3,723	43,705
	Outpatients	3,435	3,535	3,656	3,659	3,754	3,381	3,638	3,658	3,487	3,335	3,241	3,859	42,638
	Total	6,946	7,221	7,388	7,348	7,352	7,035	7,339	7,218	7,140	7,087	6,687	7,582	86,343

Number of Positron Emission Tomography Center

2017

Classification	April	May	June	July	August	September	October	November	December	January	February	March	Total
Insurance	301	293	282	215	295	306	279	289	285	229	285	314	3,373
Medical Exams	22	25	26	18	35	17	14	28	17	8	22	16	248
Total	323	318	308	233	330	323	293	317	302	237	307	330	3,621

Profit from the Medical School Hospital

2016

Operating Revenues	Operating Budget Subsidy	2,210,519
	Facility Fees	200
	Hospital Revenue	16,518,176
	External Capital	Commissioned Research/Projects; Subsidies; Donations 288,536
	Other	Reversal of Asset Encumbrance; Misc. Gains 593,156
Total		19,610,588
Operating Expenses	Operating Costs	19,616,187
	General Administrative Costs	175,075
	Financial Expenses	127,016
	Other	Miscellaneous losses 322
Total Expenses		19,918,602
Total Profit		△ 308,013

※From hospital financial statements ※Totals may not match due to the truncation of amounts less than ¥1,000.

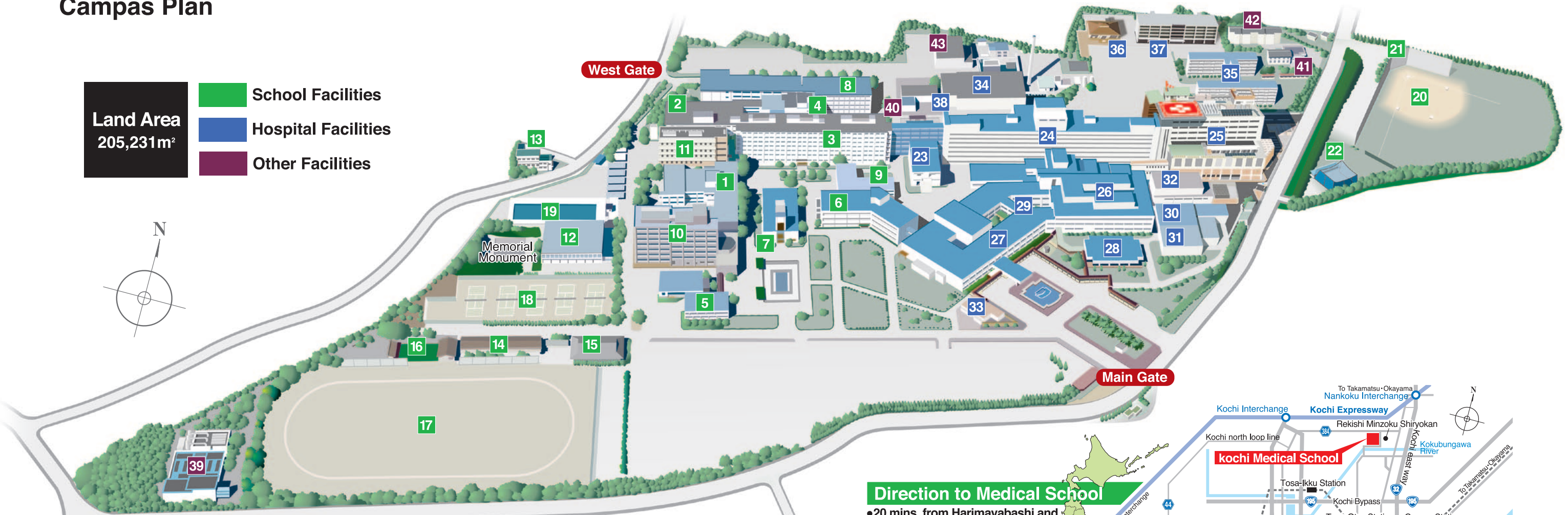
Profit from the Medical School Hospital

2017

Operating Revenues	Operating Budget Subsidy	2,175,367
	Facility Fees	2,996
	Hospital Revenue	17,678,252
	External Capital	Commissioned Research/Projects; Subsidies; Donations 285,641
Other	Reversal of Asset Encumbrance; Misc. Gains 542,729	
	20,684,988	
Total		20,684,988
Operating Expenses	Operating Costs	20,698,718
	General Administrative Costs	233,794
	Financial Expenses	105,225
	Other	Miscellaneous losses 0
Total Expenses		21,037,738
Total Profit		△ 352,750

※From hospital financial statements ※Totals may not match due to the truncation of amounts less than ¥1,000.

Campas Plan



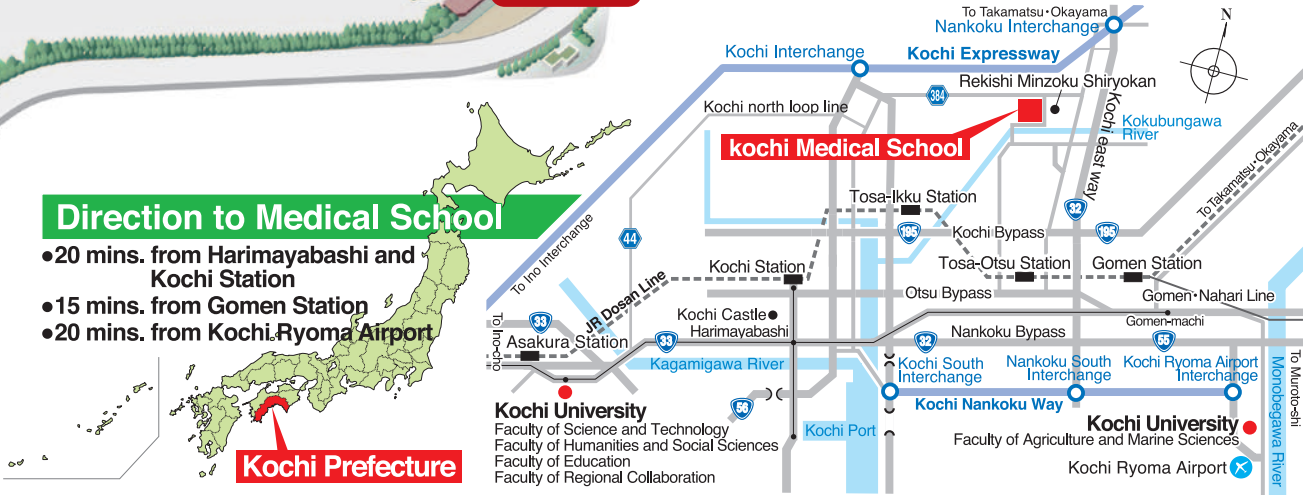
Land and Building

SR : Steel Encased Reinforced Concrete R : Reinforced Concrete Construction S : Steel Structure W : Wooden Structure

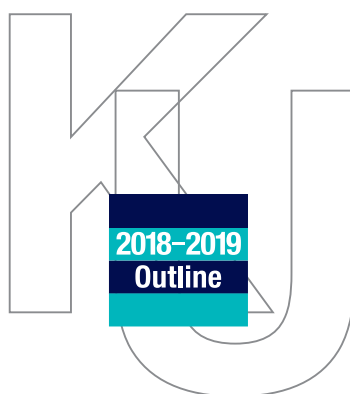
Number	Name of Building	Building Area (m ²)	Total Building Area (m ²)	Construction	Date of Completion
1	Lecture Building	1,901	3,710	R2	Dec.1977
2	Practical Training Building	1,301	3,172	SR3	Mar. 1978
3	Basic & Clinical Research Building	2,007	13,336	SR7	Mar. 1979, Mar. 1991
4	RI Research Center & Institute for Laboratory Animals	1,863	4,406	R3	Dec. 1979, Feb. 1983, Oct. 1988, Jul. 1993
5	Student Hall	371	717	R2	Mar. 1980
6	Administration Office Building	1,001	3,010	R3	Mar. 1979, Jan. 1983
7	School Library	888	1,744	R2	Mar. 1980
8	Graduate School Building	794	3,763	R5	Feb. 1984
9	Medical Information Center	635	1,146	R2	Jul. 1981, Mar. 1990
10	Science of Nursing Building	1,117	6,260	SR7	Mar.2000, Mar. 2001
11	Advanced Research Building	828	3,073	R4	Jan. 2015
12	Gymnasium	1,163	1,080	R1	Feb. 1979
13	Guest House	268	405	R2	Feb. 1982, Mar. 1986
14	Club House	359	600	R2	Aug. 1981
15	Judo & Kendo Gymnasium	474	363	R1	Feb. 1983
16	Kyudo Ground	138	133	S1	Feb. 1986
17	Athletic Ground				
18	Tennis Courts				
19	Swimming Pool				
20	Baseball Ground				
21	Baseball Cabin				
22	Golf Driving Range				

Direction to Medical School

- 20 mins. from Harimayabashi and Kochi Station
- 15 mins. from Gomen Station
- 20 mins. from Kochi Ryoma Airport



Number	Name of Building	Building Area (m ²)	Total Building Area (m ²)	Construction	Date of Completion
23	Clinical Lecture Building			SR2	Nov. 1980
24	Hospital Ward Building 1				
25	Hospital Ward Building 2			SR7	Nov. 1980, Oct. 1982 Mar. 1995, Nov. 2014, Mar. 2017
26	Central Clinics	19,648	59,940	R3	Nov. 1980, Mar. 1997
27	Outpatient Clinics			R2	Nov. 1980, Mar. 1990
28	Dining House			R1	Jan. 1980
29	TULLY'S COFFEE				Jul. 2007
30	High-energy Radiotherapy Facilities	631	631	R1	Feb. 1982, Sep. 2010
31	MRI-CT Building	700	700	R1	Mar. 1989, Mar. 1996
32	Positron Emission Tomography Center	639	1,623	R3	Jan. 2006
33	Hospital LAWSON	236	236	S1	Apr. 2007
34	Energy Center	1,533	1,796	R2	Mar. 1979
35	Nurses Housing	934	3,986	R5	May. 1981, Mar. 1982
36	Hospital Day Care Center For Children "Kohasu Kids"	348	328	W1	Jan. 2012
37	Resident House Minakaze	805	2,700	R5	Mar. 2012
38	Disaster Emergency Storage	252	721	S3	Mar. 2015
39	Drainage Treatment Facilities	191	373	R2	May. 1978
40	Garage	370	370	R1	Mar. 1979, Mar. 1985
41	International Residence Hall (Hall and for Singles)	228	305	R2	Mar. 1994
42	International Residence Hall (for Families)	226	633	R3	Mar. 1994
43	Power Generating Station	509	509	R3	Jan. 2003



**Kochi Medical School
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