



2023 Academic Year

Application and Admission Guidelines

# **Dentistry**

Doctoral Course (Dentistry Program)

(For students enrolling in October 2023)

**Tohoku University**  
**Graduate School of Dentistry**

# Applicant Guidelines

## 1. Admissions policy

The Tohoku University Graduate School of Dentistry strives to foster researchers and sophisticated professionals who: possess advanced knowledge and skills in dentistry, oral care, and oral health, as well as the sensibilities and fundamental human qualities that support that expertise; are closely attuned to the needs of society; and can identify problems on their own and develop concrete solutions for various challenges of dentistry.

Specifically, we seek applicants who aspire to become sophisticated professionals capable of contributing to society with their specialized knowledge and skills backed by sensibilities and fundamental human qualities, or to become researchers able to contribute to new advances in dentistry.

To attract such candidates we offer three admissions tracks: general admissions, special admissions for Working-adults, and special admissions for international students. We use these admissions processes to assess and select applicants, placing emphasis on whether each candidate has the high-level competencies and qualities needed to engage in research aligned with our educational principles and goals.

### Doctoral Course

The doctoral course seeks students who are highly motivated to study dental science, possess outstanding competencies, a broad perspective, and flexibility, and are able to pursue original, advanced, transdisciplinary, and exploratory research founded on bench founded on unity in specialization and academics.

The general admissions track evaluates applicants through four exams: a written exam of basic knowledge and understanding of specialized disciplines, an externally administered certification exam of English reading comprehension, an interview, statement of purpose and transcript review for comprehensively assessing whether the applicants possess strong motivation to study dental science, outstanding competencies, a broad perspective, and flexible sensibilities. These exams are given approximately equal weight in the selection process.

Special admissions for Working-adults evaluates applicants through four exams: a written exam of knowledge and understanding of specialized disciplines, an externally administered certification exam of English reading comprehension, and an interview and a review of transcripts and statement of purpose for comprehensively assessing whether the applicants possess strong motivation to study dental science, a broad perspective, and flexible sensibilities. These exams are given approximately equal weight in the selection process.

Special admissions for international students evaluates applicants through four exams: a written exam of basic knowledge and understanding of specialized disciplines, an English certificate to measure reading comprehension, an interview, statement of purpose and transcript review for comprehensively assessing whether the applicants possess strong motivation to study dental science, and outstanding competencies. These exams are given approximately equal weight in the selection process.

Those who are not native speakers of English are expected to acquire sufficient ability in English comprehension and communication before enrolling.

## 2. Major, course, major field etc. and enrollment quota

Major	Course etc.	Major Field	Quota
Dentistry	Ecological Dentistry	Oral Ecology and Biochemistry	<b><u>Limited Number</u></b>
		Oral Microbiology	
		Oral Molecular Bioregulation	
		Periodontology and Endodontology	
		Operative dentistry	
	Community Social Dentistry	International Oral Health	
		Dental and Digital Forensics	
		Preventive Dentistry	
		Pediatric Dentistry	
		Craniofacial Anomalies	
		Orthodontics and Dentofacial Orthopedics	
	Disease Management Dentistry	Oral Physiology	
		Dental Pharmacology	
		Oral Pathology	
		Dental Informatics and Radiology	
		Oral and Maxillofacial Reconstructive Surgery	
		Oral and Maxillofacial Oncology and Surgical Sciences	
		Dento-oral Anesthesiology	
		Comprehensive Dentistry	
	Rehabilitation Dentistry	Oral and Craniofacial Anatomy	
		Craniofacial Development and Tissue Biology	
		Dental Biomaterials	
		Craniofacial Function Engineering	
		Advanced Prosthetic Dentistry	
		Molecular and Regenerative Prosthodontics	
		Aging and Geriatric Dentistry	
	Innovative Liaison Dentistry	International Collaborative and Innovative Dentistry	
		Co-Creative Dentistry	

### 3. Application Qualifications

Persons who meet any one of the following requirements are qualified to apply.

- (1) Students who have graduated from a university program in Medicine, Dentistry, Pharmacy, or Veterinary Science, or will do so by September 2023.
- (2) Students who have completed an 18-year school education program overseas, or will do so by September 2023.
- (3) Students who have completed an 18-year school education program in Japan by taking classes through distance learning offered by a school overseas, or will do so by September 2023.
- (4) Students who have completed a course of study at an educational facility situated in Japan within a foreign nation's educational system as possessing the nation's university education program (whose graduates are limited to those who have completed 18 years of school and university education in the nation) and designated separately by the Ministry of Education, or will do so by September 2023.
- (5) Students who have completed a Master course, the first two years of a Doctoral course, a professional degree curriculum, or will do so by September 2023 and have been certified through individual entrance qualification screening at this graduate school to possess academic abilities either equal to or exceeding those who have graduated from a university program in Medicine, Dentistry, Pharmacy, or Veterinary Science; or those designated by MEXT proclamation 39 of April 8, 1955.
- (6) Students who have been conferred a degree equivalent to a bachelor's degree (including those who are expected to be granted such a degree by September 2023) upon completion of a curriculum that has a course term of five years or longer at a university or other school (limited to schools whose overall educational and research activities have been evaluated by the relevant country's government or a government-approved individual, or are designated separately as having met this requirement by the Minister of Education) in a foreign country (including cases in which the student completed the curriculum by taking subjects conducted by said school via distance learning while the student resided in Japan, and cases in which the student has completed a curriculum at an educational facility that is positioned within that country's educational system as per the previous item).
- (7) Students who were enrolled in a university medical, dentistry, pharmacy or veterinary science program for four or more years, students who have completed a 16-year program of school education overseas (restricted to those that include curricula providing instruction in Medicine, Dentistry, Pharmacy or Veterinary Science; the same shall apply for below items), students who have completed a 16-year school education program by taking classes in Japan through distance learning offered by a school overseas, students in Japan that have completed a course (only those students who have completed a 16-year-program of school education in the nation in question) at an educational facility that is positioned within that nation's educational system and is separately designated by the Ministry of Education; and those who will be enrolled in such a program until, or will complete such a program by, September 2023 having obtained the prescribed credits and achieved outstanding results.
- (8) Students who have enrolled in the graduate school of another university (restricted to those that include curricula providing instruction in Medicine, Dentistry, Pharmacy or Veterinary Science) in accordance with the stipulations of the School Education Law, Article 102, Item 2 (Law 26, 1947) and who have been acknowledged to possess sufficient academic abilities to receive an education at this graduate school.
- (9) Students who have been certified through individual entrance qualification screening at this graduate school to possess academic abilities either equal to or exceeding those of a university graduate, and who will have reached the age of 24 years by September 2023.

[Notes]

A university mentioned in items (1), (5), (7) and (9) above refers to a six-year university in Japan.

Applicants must undergo an advanced qualification screening for application.

Please submit the following required documents to the " Graduate School of Dentistry Educational Records and Programs Section " within an application screening application period.

**-Qualification Screening Period: May 22 (Mon.)-26 (Fri.), 2023**

Document	Comments
Application Form	Form provided by this graduate school.
Certificate of Graduation (or expected graduation)	Certificate of graduation or withdrawal from school or student registration certificate issued by the school (a university or later). Or undergraduate degree certificate issued by the National Institution for Academic Degrees and University Evaluation.
Academic Transcript	The academic transcript of the school (a university or later) which entered a school until now.
English ability certificate	Score sheet certified by an English ability examination TOEFL-iBT, IELTS, TOEIC Listening & Reading Test, Duolingo English Test etc.
Research-activities report	about 500 word of English.
In addition, documents to specify	Health Certificate (please include X-ray examinations of chest, X-ray taken more than 6 months prior to the certification is NOT valid)

#### **4. Application Procedures**

Obtain the following necessary documents and submit them to the Educational Records and Programs Section of this graduate school during the Application Period. If sending materials by postal mail, applicants must use registered mail and print "University Doctoral Course Application Enclosed" on the front of the envelope.

**-Application Period: June 5 (Mon.)-9 (Fri.), 2023**

Document	Comments
Examination Ticket Photo Sheet	Form provided by this graduate school (attach photo to Photo Sheet, taken within 3 months showing head/upper body, with head uncovered, 5cm high x 4cm wide)
Application Fee	JPY 30,000 (Regarding the payment method, we will contact each of you individually)

#### Notes

- (1) It is recommended to contact the professor of your major field about your research plan before turning in an application.
- (2) Incomplete or otherwise inadequate application documents may not be accepted.
- (3) If application documents are found to have been falsified, the applicant's acceptance will be revoked, even if the applicant has already enrolled.
- (4) Application documents and test fees cannot be returned for any reason whatsoever.
- (5) Application documents sent by mail will only be accepted if they arrive during the Application Period.

### 5. Selection Process

Comprehensive screening will be conducted based on a written examination to be completed in English (specialized subject), an interview, English ability certificate, Research-activities report and the applicant's academic transcript.

\*Applicants should take one specialized subject examination for each desired major field.

### 6. Date/Time of Examination

**-Date: July 7 (Fri.), 2023**

**-Time**

Description	Examination Subject	Time
Written Examination	Specialized Subjects	10:00—11:00
Interview		13:30— (tentative)

## 7. Examination Venue

Tohoku University School/Graduate School of Dentistry

4-1, Seiryō-machi, Aoba-ku, Sendai, 980-8575, Japan

(Details will be provided when exam admission tickets are issued.)

## 8. Announcement of Successful Applicants

**July 20 (Thu.), 2023 10:00 AM (tentative)**

The examination numbers of successful applicants will be posted on the Graduate School's website (<http://www.dent.tohoku.ac.jp/>).

Successful applicants will also receive a letter of acceptance.

## 9. Notes

### (1) Handling of Personal Information

1. All personal information gathered by Tohoku University shall be treated with due care in compliance with the relevant university regulations, such as the Act on the Protection of Personal Information (2003, Act No. 57), and the National University Corporation Tohoku University Policy on the Protection of Personal Information, and security measures will be taken to protect it.
2. Personal information, such as examination scores, used to screen applicants will be used exclusively for educational purposes, such as selecting applicants, enrollment procedures, pre-enrollment instruction, follow-up surveys, post-enrollment student support (scholarships, tuition waivers and health management etc.) and academic advising, or in connection with tuition collection etc., or surveys/research (surveys/analysis related to entrance examination improvements and reasons for applying; including analysis using the enrollees' personal information after enrollment).
3. Tasks related to entrance examinations and academic affairs may be outsourced by Tohoku University to third-party contractors (hereafter, "contractors"). If personal information is provided in whole or in part to contractors, necessary measures will be taken to ensure it is handled appropriately in accordance with the relevant university regulations, such as the National University Corporation Tohoku University Policy on the Protection of Personal Information.

### (2) Educational Data Usage

Data, including personal information, that Tohoku University collects through its education/learning activities and stores on its information systems (hereafter, Educational Data) is analyzed with the latest analytical and A.I. technology and is considered vital to our implementation of evidence-based education.

Consequently, the university strives to use Educational Data effectively and appropriately in compliance with our "Statement on Educational Data Usage," "Policy on Educational Data Usage," and "Tohoku University's 8 Principles of Educational Data Acquisition."

After being admitted to the university, students' personal information, such as entrance exam scores etc., is merged with the university's Educational Data.

URL : <https://www.tohoku.ac.jp/japanese/studentinfo/education/08/education0801/>

(3) Inquiries about Special Considerations related to Examinations and Education

Applicants requiring special provisions in connection with the examination, or who have special educational needs, are asked to inquire in writing, making note of the following (no official form required).

Making such inquiries will not put the applicant at any disadvantage with respect to this graduate school's entrance examination.

A. Timing of inquiries: In general, inquiries are accepted during the advanced application qualification screening period.

B. Inquiries should include the information specified below:

1. Applicants name and address (including telephone number)
2. Name of university etc. last attended
3. Any special provisions desired in connection with the examination
4. Any special educational needs
5. Any special provisions made at the university etc. last attended
6. Any circumstances related to the applicant's day-to-day lifestyle
7. Any other reference material (applicants currently undergoing medical treatment are asked to include a doctor's diagnosis)

(4) Disclosure of Examination Score

If an applicant wishes that the applicant's examination score be disclosed, then the applicant should submit the designated application form and the applicant's examination ticket (a copy is not acceptable) within one month from the announcement of successful applicants to the Educational Affairs Section of the Graduate School of Dentistry.

(5) If you have any questions, please inquire with this graduate school's Educational Affairs Section.

Tohoku University School/Graduate School of Dentistry  
Liaison Center for Innovative Dentistry, International Cooperation Section

4-1, Seiryō-machi, Aoba-ku,  
Sendai, 980-8575, Japan  
e-mail: [international@dent.tohoku.ac.jp](mailto:international@dent.tohoku.ac.jp)

The Application and Admission Guidelines can also be viewed at the below website.

URL: <http://www.dent.tohoku.ac.jp/english/admission/guide/>



# Tohoku University, Graduate School of Dentistry (Doctoral Course) Admissions Guide

## 1. Curriculum policy

The Graduate School of Dentistry formulates and implements the curriculum based on the following policy in order to enable students to achieve the aims of the Diploma Policy.

- (1) Facilitate the acquisition of sophisticated knowledge and skills in specialized fields and transdisciplinary domains by providing specialized and transdisciplinary courses necessary for dental science research, and having students develop abundant expertise in dental science, dental care, and oral health, and write a dissertation based on that expertise.
- (2) Provide opportunities to develop the high ethical standards and leadership necessary for engaging in research, and opportunities in Japan and abroad to learn about and report the latest findings in cutting-edge research.
- (3) Achievement is evaluated by determining, using tests and reports, whether the student has reached the objectives described in the syllabus.

The Doctoral dissertation is evaluated by determining whether it contributes to advanced research from an original perspective, and whether the student, as an independent researcher, has advanced research capabilities and extensive knowledge necessary for research activities and highly professional duties, and by evaluating final exams.

## 2. Diploma policy

The Graduate School of Dentistry awards a Doctoral degree to students who has studied the required subjects set according to the school's educational philosophy and objectives, has completed the credits required by the school, has acquired the knowledge and skills as described below, and has passed the Doctoral dissertation review and the final examination.

- (1) Be able to complete independent, original, and transdisciplinary research in dentistry using one's abundant expertise and high-level specialized knowledge and skills.
- (2) Be able to contribute to the advancement of society and scholarship by carrying out next-generation research as a leader in dentistry who tackles societal and scholarly challenges with original ideas, high ethical standards, and a firm sense of responsibility.
- (3) Be able to lead dental research in Japan and abroad by utilizing one's international perspective and communication skills, and by disseminating world-class research findings.

## 3. Long-term Student System

In cases where a student makes a request to take a curriculum and complete the program in a systematic manner over a certain period exceeding the applicable standard duration of study (four years for the doctoral course) because of such circumstances as being in employment or other status (Note 1), such systematic manner of studying (Note 2) might be permitted by the Graduate School of Dentistry. Those who apply for this system are called "Long-Term Course Students." The total amount of tuition fees paid by such students will be the same as that for students who complete the course in the standard course of study.

(Note 1) This includes students who need to take care of childbirth, childcare, nursing care, etc., and

who are recognized as appropriate by the Graduate School.

(Note 2) The period of study cannot exceed four years for a master's degree or eight years for a doctoral degree. However, students may apply to shorten the permitted period of study.

#### **4. Enrollment Procedures**

Enrollment Procedures are scheduled for end of September 2023.

Details will be provided in writing along with acceptance notices.

#### **5. Required Fees**

Admission Fee            JPY 282,000 (est.)

Tuition (Annual sum)   JPY 535,800 (est.)

The date and method of payment of the admission fee and tuition fee will be notified in writing when the selection results are sent.

Please note that the payment amount above is a tentative amount. If the payment amount is revised, then the new amount will be applied from the time of revision.

Those who complete the master's course, the first two years of the doctoral course, or the professional degree course at Tohoku University in September 2023 need not pay the admission fee.

#### **6. Exemption from Entrance and Tuition Fees**

Persons recognized as having special difficulties paying admission or tuition fees because of economic reasons and who are deemed to have excellent academic records might be exempted from paying one-third, half, two-thirds or the full amount of their admission and tuition fees upon application. Students wishing to have admission and tuition fees waived or deferred should reference the following:

[The application for entrance admission or tuition waiver, etc.]

<http://www2.he.tohoku.ac.jp/menjo/>

#### **7. Scholarship System**

Scholarships provided by various organizations and the regional government will be announced as information becomes available.

#### **8. Personal Accident Insurance for Students Pursuing Education and Research (Gakkensai), and Personal Liability Insurance for Students Pursuing Medical Education and Research (Igakubai)**

This insurance scheme has imposed a requirement of subscription by all students of Tohoku University. Grants of the cost of medical treatment related to injury during training, lectures, attending school, and extracurricular activities. It provides security and prevents burdening of others because of injury or destruction of equipment.

The insurance premium is JPY 5,370 for four years.

#### **9. Inbound Futaigakusou (Comprehensive Insurance for Students Lives Coupled with "Gakkensai" for International Students)**

Inbound Futaigakusou is an insurance system that provides round-the-clock, enhanced coverage for injuries, illnesses, rescue fees, and liability in everyday life, enabling international students to live in Japan with a greater sense of security. To enroll in Inbound Futaigakusou, you must be enrolled in Gakkensai (Personal Accident Insurance).

All international students entering Tohoku University are asked to enroll in insurance.

Premiums (Examples) (Single payment that covers the entire enrolled period):

four years JPY 37,410

## Major Field/Professor/Main Research Topics

\*Applicants are advised to contact their academic advisor before applying.

Course etc.	Major Field/Professor	Main Research Topics
Ecological Dentistry	Oral Ecology and Biochemistry Nobuhiro Takahashi	<ul style="list-style-type: none"> <li>• Genomics, proteomics and metabolomics of oral microbial ecosystem (oral microbiome)</li> <li>• Biochemical and molecular biological studies on metabolism of oral microorganisms using an anaerobic experimental system and the association with systemic / oral health and diseases</li> <li>• Biochemical studies on caries / periodontitis preventive properties of fluorides, sugar alcohols and tea catechins</li> <li>• Evaluation of cariogenic potential of food products and sweeteners by pH-telemetry using miniature transistor pH electrode</li> <li>• Biochemical studies on oral microbiome-induced deterioration of dental biomaterials</li> <li>• Metabolism of host cells including oral cancer cells</li> </ul>
	Oral Microbiology	
	Oral Molecular Bioregulation Shunji Sugawara	<ul style="list-style-type: none"> <li>• Immune regulations in oral mucosal cells</li> <li>• Mechanisms of metal allergy development</li> <li>• Molecular mechanism of salivary gland diseases</li> <li>• Regulation of inflammation by biotin</li> <li>• Histamine in immunology and physiology</li> <li>• Role of chronic allergic inflammation in oral infectious diseases</li> <li>• Role of epithelial barrier dysfunction in oral infectious diseases</li> <li>• Regulation of oral mucosal homeostasis by oral commensal bacteria</li> <li>• Innate immune responses of bacterial cellular components</li> </ul>
	Periodontology and Endodontology Satoru Yamada	<ul style="list-style-type: none"> <li>• Study on an onset-mechanism of endodontic/periodontal diseases using molecular biological approach</li> <li>• Development of objective diagnosis of disease conditions in endodontic/periodontal disease</li> <li>• Development of endodontic/periodontal therapy with use of bioactive molecules and growth factors</li> <li>• Study on an interaction between endodontic/periodontal diseases and general status</li> <li>• Study on an endodontic/periodontal therapy with use of laser</li> <li>• development of a novel biomaterial scaffold for periodontal regeneration</li> </ul>
	Operative dentistry Masahiro Saito	<ul style="list-style-type: none"> <li>• Development of tooth regeneration therapy</li> <li>• Investigation of molecular mechanisms that regulate periodontal ligament regeneration</li> <li>• Conservative dentistry for cardiovascular disease</li> <li>• Cell transplantation therapy for periodontal disease</li> <li>• Development of novel dental material that possesses anti-inflammatory ability</li> </ul>

Course etc.	Major Field/Professor	Main Research Topics
Community Social Dentistry	International Oral Health Ken Osaka	<ul style="list-style-type: none"> <li>•Our department is involved in real-world data analysis from various sources, such as large health surveys, electronic healthcare databases, and administrative health data.</li> <li>•Research on the effectiveness of the Japanese universal health insurance system in mitigating the burden of oral diseases and inequalities in oral health.</li> <li>•Developing strategies and human resources for international initiatives to improve oral health.</li> </ul>
	Dental and Digital Forensics Ken Osaka (collateral office)	<ul style="list-style-type: none"> <li>•Morphological studies on the human skeletal remains</li> <li>•Application of dental information in identification</li> <li>•Mass fatality incident management and assistance</li> <li>•Morphological studies on the teeth of Japanese</li> <li>•Comparative odontology on the mammals</li> </ul>
	Preventive Dentistry Takeyoshi Koseki	<ul style="list-style-type: none"> <li>•Prevention and treatment of cancer therapy-induced oral adverse events/oral mucositis</li> <li>• Patient survey of consciousness on perioperative oral management and care</li> <li>• Research on protective devices in tongue brachytherapy</li> <li>• Association of breath and oral environment with bone metastases and skeletal related events of breast cancer</li> <li>• Impact of COVID-19 on oral cavity</li> <li>• Study of diagnosis and prevention of early caries of enamel and root surfaces</li> <li>• Development of evaluation methods and recording systems of dental clinical</li> </ul>
	Pediatric Dentistry Satoshi Fukumoto	<ul style="list-style-type: none"> <li>•Identification of novel gene associated with tooth development</li> <li>•Study of enamel formation</li> <li>•Analysis of affected gene in oral disease</li> <li>•Study of tooth germ and salivary gland using organ culture</li> <li>•Study of genetic oral disease and stem cell research</li> <li>•Development and evaluation of new materials for the prevention of dental caries</li> </ul>
	Craniofacial Anomalies Kaoru Igarashi	<ul style="list-style-type: none"> <li>•Research on the diagnosis and treatment of craniofacial anomalies, including cleft lip and palate</li> <li>•Research on the role of immune cells in osteoclastogenesis</li> <li>•Research on growth and development of children with cleft lip and palate</li> <li>•Objective evaluation of oral sensation with somatosensory evoked magnetic fields</li> <li>•Development of a new anti-inflammatory bisphosphonate that also promote bone formation</li> </ul>
	Orthodontics and Dentofacial Orthopedics Itaru Mizoguchi	<ul style="list-style-type: none"> <li>•Development of temporary anchorage devices for orthodontic treatment</li> <li>•Evaluation on outcomes of orthodontic treatment</li> <li>•Study on the relationship between malocclusion and orofacial function</li> <li>•3D simulation of surgical orthodontic treatment</li> <li>•Clarification of biomolecular mechanism of orthodontic tooth movement</li> <li>•Clarification of biomolecular mechanism of craniofacial development</li> <li>•Clarification of responses of osteocytes, periodontal tissue cells and chondrocytes against mechanical stress</li> <li>•Development of orthodontic materials</li> <li>•Clarification of regulatory mechanism in endochondral ossification</li> <li>•Development of acceleration techniques of orthodontic tooth movement with physical stimulation</li> <li>•Study on effects of joint loading on extracellular matrix (ECM) expression of temporomandibular joint</li> </ul>

Course etc.	Major Field/Professor	Main Research Topics
Disease Management Dentistry	Oral Physiology Junichi Nakai	<ul style="list-style-type: none"> <li>•Neural mechanisms of sensory and motor system</li> <li>•Psychophysical studies on gustatory function and oral fat sensitivity</li> <li>•Molecular mechanisms of differentiation, regeneration, and apoptosis in osteoblasts and neurons</li> </ul>
	Dental Pharmacology Minoru Wakamori	<ul style="list-style-type: none"> <li>•Functional analysis of Ca<sup>2+</sup>-permeable cation channels</li> <li>•Molecular and neurobiological studies of taste, pain and mechanical stress sensations</li> <li>•Developmental biology and morphogenesis of bone and teeth</li> <li>•Chemical and pharmacological approach to stem-cell biology and regenerative</li> </ul>
	Oral Pathology Hiroyuki Kumamoto	<ul style="list-style-type: none"> <li>•Molecular investigation on lesions of the jawbones</li> <li>•Clinicopathological and genetic investigation on tooth development anomaly</li> <li>•Clinicopathological and immunohistochemical investigation on oral immune diseases and cancer</li> <li>•Investigation on regeneration therapy using biomaterials</li> </ul>
	Dental Informatics and Radiology Masahiro Iikubo	<ul style="list-style-type: none"> <li>• Development of new medical devices.</li> <li>• Imaging diagnosis of oral and maxilla-facial lesion.</li> <li>• Stuffy on the relationship between systemic diseases and oral conditions.</li> </ul>
	Oral and Maxillofacial Reconstructive Surgery Kensuke Yamauchi	<ul style="list-style-type: none"> <li>•Molecular biological analysis of bone morphogenetic mechanisms and bone morphological repair processes</li> <li>•Development of bone regenerative method by applying the fracture healing process</li> <li>•Development of new medical technology applying advanced medical equipment in the treatment of jaw deformities</li> <li>•Molecular biological analysis of trauma and temporomandibular joint diseases to minimally invasive surgical therapy</li> <li>•Development of futuristic oral surgical treatment by telemedicine and computer-</li> </ul>
	Oral and Maxillofacial Oncology and Surgical Sciences Tsuyoshi Sugiura	<ul style="list-style-type: none"> <li>•Development of early detection methods and biomarkers for oral cancer</li> <li>•Development of oral cancer diagnostic method using AI</li> <li>•Research on control of oral cancer</li> <li>•Study of oral cancer circulating tumor cells(CTC)</li> <li>•Analysis of genetic abnormalities in oral cancer</li> <li>•Research on oral microbiota that triggers oral cancer</li> <li>•Study of oral microbiota that triggers cancer in other organ</li> <li>•Development of new treatments for oral cancer</li> <li>•Research on surgical reconstruction treatment for oral cancer</li> </ul>
	Dento-oral Anesthesiology Kentaro Mizuta	<ul style="list-style-type: none"> <li>•Exploring novel therapeutic targets for asthma and COPD.</li> <li>•Exploring pathogenesis of orofacial pain by in vivo multiscale brain imaging.</li> <li>•Development of artificial intelligence-assisted robotic system for anesthesia.</li> <li>•Research on AI-based perioperative management</li> <li>•Development of new strategies to expand regulatory T cells for the therapy of allergic and autoimmune diseases.</li> <li>•Exploring the effects of anesthetics on cell metabolism.</li> </ul>
	Comprehensive Dentistry Masahiko Kikuchi	<ul style="list-style-type: none"> <li>•Research on periodontal tissue regeneration by applying periodontal ligament cells</li> <li>•Research on the relationship between deficit of teeth, periodontal disease and systemic illness</li> <li>•Research on circadian rhythm of toothache</li> <li>•Oral hygiene and oral microorganisms common in senior citizens</li> <li>•Development of effective treatment methods in primary care</li> </ul>

Course etc.	Major Field/Professor	Main Research Topics
Rehabilitation Dentistry	Oral and Craniofacial Anatomy Ken Osaka (collateral office)	<ul style="list-style-type: none"> <li>•Gross anatomical studies on human oro-facial structures</li> <li>•Nociceptive transduction from oro-facial regions</li> <li>•Innervation of pharynx and its adjacent regions for swallowing</li> </ul>
	Craniofacial Development and Tissue Biology Yasuyuki Sasano	<ul style="list-style-type: none"> <li>•Development, regeneration and healing of bones and teeth</li> <li>•Regulatory mechanisms of calcification</li> <li>•Remodeling of extracellular matrices in calcified tissues</li> <li>•Regulatory mechanisms of extracellular matrices on cell differentiation in calcified tissues</li> </ul>
	Dental Biomaterials Osamu Suzuki (collateral office)	<ul style="list-style-type: none"> <li>•Development of new dental titanium alloys and their clinical application</li> <li>•Research on mild antimicrobial or bacteriostatic dental alloys</li> <li>•Research on functional devices and dental applications using magnets</li> <li>•Research on new cutting-free dental materials suited to the CAD/CAM system</li> <li>•Research on deterioration and safety of dental materials in an oral cavity</li> </ul>
	Craniofacial Function Engineering Osamu Suzuki	<ul style="list-style-type: none"> <li>•Synthetic biomaterials used for hard tissue regeneration, including bone, tooth and the related tissues</li> <li>•Bone regeneration by octacalcium phosphate (OCP) originally synthesized</li> <li>•Biom mineralization of OCP and other calcium phosphates to form hydroxyapatite (HA)</li> <li>•Drug delivery systems for bone regeneration</li> <li>•Biomaterial surface and protein adsorption</li> </ul>
	Advanced Prosthetic Dentistry Hiroshi Egusa (collateral office)	<ul style="list-style-type: none"> <li>•Biomechanics and mechanobiology for stomatognathic morphology and function based on in vivo measurements and evaluation</li> <li>•Studies on transplantation, regeneration and construction for prosthodontics, implantology and maxillofacial rehabilitation</li> <li>•Studies on development and clinical application of novel biomaterials and creation of novel interfaces for prosthodontics, implantology and maxillofacial rehabilitation</li> <li>•Developmental and translational research for novel dental treatment technology and dental equipment based upon multi-disciplinary research and academia-industrial collaboration</li> <li>•Studies on clinical outcome of prosthodontics, implantology and maxillofacial rehabilitation</li> </ul>
	Molecular and Regenerative Prosthodontics Hiroshi Egusa	<ul style="list-style-type: none"> <li>•iPS cell-based oral tissue engineering</li> <li>•Biomimetic materials for bone regeneration/dental implant</li> <li>•Osteo-immunology in alveolar bone resorption</li> <li>•Bone organoid fabrication focusing on clock genes</li> <li>•Development of therapeutic protein drugs for periodontal tissue regeneration</li> <li>•Development of genome-based diagnostics for prosthetic/implant treatments</li> <li>•Basic and clinical research on CAD/CAM-generated dental restorations</li> <li>•Basic/Clinical research for dental metal allergy</li> <li>•Development of AI evaluation system for tooth preparation</li> </ul>
	Aging and Geriatric Dentistry Yoshinori Hattori	<ul style="list-style-type: none"> <li>•Analysis of causal relationship of oral and systemic health through large-scale cohort study</li> <li>•Development of evaluation methods of oral functions by applying and combining diverse modalities</li> <li>•Research on characteristics of oral functions and their change with age</li> <li>•Development of evaluation methods and criteria for determining the indication of dental treatment for the elderly</li> <li>•Study on the delivering system of multidisciplinary dental care for the elderly</li> </ul>
	International Collaborative and Innovative Dentistry Guang Hong	<ul style="list-style-type: none"> <li>•Development of functional biomaterials</li> <li>•Rheology of biopolymer materials</li> <li>•Development of metal free dental implant materials</li> <li>•Establishment of the International Standard of dental materials</li> <li>•Research and development on digital transformation in healthcare and educational settings</li> </ul>

Innovative Liaison Dentistry	Co-Creative Dentistry  Hiroyasu Kanetaka	<ul style="list-style-type: none"><li>•Translational research on medical device / material development</li><li>•Regulatory science through industry-government-academia collaboration</li><li>•Formulation of international and domestic guidelines for various medical devices and materials</li><li>•Development of advanced medical device / material through interdisciplinary research</li><li>•Development of medical system applying the latest AI technology</li><li>•Development of new functional food through industry-academia-government collaboration</li><li>•Brain function analysis for oral functions</li><li>•Application of next-generation synchrotron radiation to the dental field</li></ul>
---------------------------------	--	---