Dean's Interview

Shifting from “Dental medicine” to “Oral medicine”

- The way to the next generation of dental professionals with a variety of capacities

Professor Motoyuki Sugai was appointed as Dean of Faculty of Dentistry, Hiroshima University on April 2012. He is also nationally recognized as one of front runners in the field Behaviorology.
Establishment of the new oral medicine and oral health science

Professors (current Dean, past Deans, executive/vice President graduated from Faculty of Dentistry, Hiroshima University) discussed honestly on the specific theme: looking at dental medicine today and in the future: What kind of dental students do the faculty intent to educate? and How should there be future dental education (oral medicine)? The discussion revealed that all professors with different perspectives have been working on various ideas to improve dental education aiming for the same goal - fostering globally active dental professionals and researchers - Stepping out of the old frame of dentistry in Japan. Faculty of Dentistry is now considered to be an international, educational, dental research base in Asia. However, this does not satisfy the professors yet. They still pursue further.

General Education ; Important in Reality

Sugai Absolutely, we need to provide them general education as well as dental knowledge.

Takata For that, I think the students should be taught in small groups. We cannot tell everything in detail to a class of 120 people.

Kurihara I think that we should take that into consideration. We should not only focus on the lecture, but also on the students.

Without having under such a system, it is impossible to get past the National Dental Practitioners’ Examination.

Okamoto We have been working on the same idea. We have been trying to change the system, but it is not easy. We have to think about how to make it work.

Kurihara This is not only a problem in the medical field. It is also a problem in the educational field.

Takata That is not only a problem. Generally, the standard of general education knowledge in college / high school students has deteriorated. It might not be a problem after students enter Hiroshima University, but we should take it seriously and need to teach them persistently about basic general education.

Our students have potentials to achieve their goals, so it is our important duty to find and develop their potentials.

Okamoto In many cases, educational policy tends to become very important. With the solid policy, we could move forward to achieve the same goal. And we all trusted Professors (current Dean, past Deans, executive/vice President graduated from Faculty of Dentistry, Hiroshima University)

In order to achieve that, we need to have a strong system. We need to have a system that can support the establishment.

Early Bed Side Learning – BSL for 3rd grade students in Dentistry School. 2nd grade students play roles of patients in order to understand what they feel, 6th grade students to play roles of doctors.

Takata As we have been trying to change the system, we have been thinking about how to make it work. We have been trying to change the system, but it is not easy. We have to think about how to make it work.

Kurihara This is not only a problem in the medical field. It is also a problem in the educational field.

Takata That is not only a problem. Generally, the standard of general education knowledge in college / high school students has deteriorated. It might not be a problem after students enter Hiroshima University, but we should take it seriously and need to teach them persistently about basic general education.

Our students have potentials to achieve their goals, so it is our important duty to find and develop their potentials.
**Oral Health Science—Uncultivated field**

**Okamoto**

At a general hospital with a dental department, a dental student started giving oral care to hospitalized patients. A hospital director realized the oral care changed patients’ look by the dental student’s visit to hospital rooms. I mean the impression of their mouth. Suddenly, the director decided to maintain the number of dental professionals. Until then, the hospital planned to reduce the number of dental doctors from 2 to 1. Because the increase of dental doctors is less than half compared to that of medical doctors, the hospital always tries to decrease the number of dental doctors first. However, he changed his mind. He found out that patients are humans who need better quality of life and oral care greatly contributes to enhance the quality of life. This is the reason why they stopped decreasing the number of dental doctors.

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**International Dental Course**

**Takata**

Faculty of Dentistry, Hiroshima University has highly evaluated over our achievements by other universities and even MEXT (Ministry of Education, Culture, Sports, Science and Technology). I really could notice this, because I had many opportunities to contact with the persons concerned. International Dental Course finally started after many discussions. Both we teachers and students have a very hard time by using two languages, English and Japanese.

**Sugi**

International Dental Course was established for the first time in national dental schools. We can’t move back anymore.

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**Excellent International Students**

**Okamoto**

There is a combined junior and senior high school newly founded in 2006 in the north of Hiroshima. Subjects except for Japanese and social studies are conducted all in English aiming to nurture international human resources in the first place. The first graduates, particularly achieved very good grades. Such an international age came at last.

**Kurihara**

I visited Ritsumeikan Asia Pacific University in Boppa, Osaka. The university’s employment rate is extremely high. They possess the ability of developing human resources suitable for social demands, the dual linguistic education system (English and Japanese), more than 500 international students, and multicultural coexistence.

**Okamoto**

When I observed one of the lectures for International Dental Course during ‘class observation period’, an assistant professor was trying very hard with use of English and Japanese. Now, young assistant professors became to be able to give lectures in English.

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**Multicultural Coexistence**

**Okamoto**

If we receive 3 students annually for 4 years, we will have 12 students in total. In addition, total 6 students (respectively each) from Indonesia and Vietnam under 6-month short stay program will join our current 2nd year students in October 2012. Besides, 3 International Dental Course students from Indonesia, Vietnam and Cambodia will arrive in October to prepare for the course starting April 2013. There are still various opinions to be considered on International Dental Course, but all Faculty members aim for the same goal.

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**Therefore we talk about a Dream and Hope**

**-Hiroshima University joined AUN (ASEAN University Network).**

(ASEAN 10 countries are aiming to realize “Globalization of human resources” in 2015, which enables to mutually recognize licenses including dental practitioners. Japan along with China and Korea is also acknowledged as ASEAN + 3.)

**Takata**

When I visited Airlangga University, Indonesia, I was asked to participate in AUN. They told me they would recommend Hiroshima University for ASEAN +3.

**Okamoto**

This affiliation becomes very important because the Japanese government also works in the network. Especially, among top class universities joined in AUN, Hiroshima University is the institution which the AUN is managed only by dental department not university as a whole.

**Takata**

Today’s discussion reminds me there are lots of works to be done such as general education, basic medicine, clinical practice, research mind, research promotion and so on...

**Sugi**

Concerning in research, I can also say this for Japan as a whole, but I realize that research quality has been declined. It is a serious problem for Japan. Our Faculty members individually do quite well in research except for the lack of mutual communication. What I feel is the necessity of being at an ideal environment, a cross-department group of young investigators beyond the department so that both investigators of clinical and basic studies can engage in the collaborative research project. Therefore, graduate and undergraduate students join the project and make casual discussions. However, it requires a dramatic change of research standards.

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**Newly launched "Dental Colloquium in the Faculty." Younger researchers, post-doctoral students and graduate students in the widely ranged fields get together and discuss various issues of the research.**
Higher expectations from Hiroshima Conference and its significant roles

“Hiroshima Conference” advocating the foundation of “International educational, research base in the fields of dental medicine and oral health science in Asia” since its start in 2006, has provided many opportunities for international collaborative works. Expectations for its critical roles are further expected.

Compared with 3rd Hiroshima Conference, the number of countries/regions, universities/institutions participated in the Conference and oral presentations enrolled in “Poster Session”, enabling young investigators or students to present their own research results, greatly expanded. Especially for Asian nations, there was a strong tendency that multiple universities from a single country took part. In 4th Hiroshima Conference, there were 11 nations from 21 universities/ institutions. The number of countries/regions, universities/institutions participated in the Conference and oral presentations enrolled in “Poster Session” was 20 universities/institutions.

The number included 5 abstracts by international students. The number of countries/regions, universities/institutions participated in the Conference and oral presentations enrolled in “Poster Session” was 20 universities/institutions.

5th “Hiroshima Conference” will be held in October 2013.

Dr. Martha J. Somerman, Director of NIDCR, National Institute of Dental and Craniofacial Research (NIDCR) at the National Institutes of Health, USA, conducted a special lecture “Personalized medicine: is dentistry ready?” which highlighted the importance of preparing for the next generation dentistry globally shifting toward “personalized medicine” based on patients’ needs. Other lectures focused on educational reforms diligently tackled by university academic institution depending on demand for dental care, and the need for research standardization/collaboration in dental medicine in Asian nations.

(Regionalization in Asia)
History after 2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Chief Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>April</td>
<td>2-year system; Course for Frontier Dental Science, Course for Clinical Dental Science was introduced for the first time in Japan.</td>
</tr>
<tr>
<td>2004</td>
<td>January</td>
<td>4-year system was established at School of Oral Health Science, while 6-year educational system was founded at School of Dentistry. School of Oral Health Science of 2-year, Course for Oral Science described as Oral Health Manager and Course of Oral Engineering described as Oral Engineer. It was also the first time that 4-year educational system for School of Health Science was set up in Japan.</td>
</tr>
</tbody>
</table>
| 2006 | January | 1st Hiroshima Conference on Education and Science in Dentistry, international conference for dental education with overseas participants from universities and dental professionals. The theme was "The Future of Dental Education." It was held for the purpose of establishing "international educational research base in the fields of dental medicine and oral health science in Asia."

The 40th Anniversary of the founding of Faculty of Dentistry, Hiroshima University

3 dental students from Taipei Medical University (for a year) 3 dental students from Taipei Medical University 3 dental students from Airlangga University and 3 from University of Medicine and Pharmacy at Hochi Minh City (HCMC)

Peace Seminar for Asian Dental Students 2011, visited The Hiroshima Peace Memorial Park to learn "What Peace is." International Dental Course students from abroad get together. (The Atomic Bomb Dome in the back)

Notes: SS indicates short-term stay programs accepting overseas undergraduate students for 1-3 month while SV indicates short-term visit programs sending undergraduate students from HU to overseas universities/institutions for 1-3 month.

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
<th>Distribution</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-2007</td>
<td>October-November</td>
<td>SS</td>
<td>4 dental students from Tapfer Medical University</td>
</tr>
<tr>
<td>2007</td>
<td>January-February</td>
<td>SS</td>
<td>3 dental students from Tapfer Medical University</td>
</tr>
<tr>
<td>2007</td>
<td>August</td>
<td>SV</td>
<td>3 dental students participated in Asia Pacific Dental Students’ Association held in Taiwan</td>
</tr>
<tr>
<td>2007</td>
<td>August-September</td>
<td>SV</td>
<td>4 dental students joined &quot;International Dental Course students study abroad&quot;</td>
</tr>
<tr>
<td>2008</td>
<td>October</td>
<td>SV</td>
<td>Dental students visited Hiro in the program, &quot;Asia Pacific Dental Students’ Association&quot; also joined in &quot;2nd Hiroshima Conference&quot; with academic staff. Participating universities are as follows: 2 (University of Manila, Philippines), 2 (Chulalongkorn University, Thailand), 2 (Chon Kook University, Thailand), 2 (The University of Hong Kong, China), 2 (Taipei Medical University, Taiwan), 1 (Chau-Yen Wan University, China), 2 (Shanghai University, China), 2 (Nanyang University, Korea), 2 (Univ. of Medicine and Pharmacy at HCMC City, Vietnam), and several academic staff from other institutions</td>
</tr>
<tr>
<td>2009</td>
<td>January-February</td>
<td>SS</td>
<td>12 dental students from Tapfer Medical University</td>
</tr>
</tbody>
</table>
| 2009 | March | SV | 2 dental students from Korea
| 2009 | August-September | SV | 8 dental students joined "8th International Dental Course students study abroad" |
| 2010 | February | SS | 3 dental students from Tapfer Medical University (for a year) |
| 2010 | May | SV | 6 dental students from Tapfer Medical University |
| 2010 | October | SV | 10 dental students from Tapfer Medical University |
| 2010 | November | SS | 5 dental students joined medical/dental treatment support activities in Cambodia and also visited Univ. of Health Sciences |
| 2010 | November | SS | 2 dental students from Airlangga University |
| 2011 | February-March | SV | 3 dental students from Universities in Washington DC, USA for a week and a half |
| 2011 | April | SS | A dental student from Westgik University for a short-term stay program (1-month) |
| 2011 | September | SS | 17 dental students from Tapfer Medical University |
| 2011 | October | SV | 15 dental students visited Hiro in the program, "Asia Pacific Dental Students’ Association" also joined in "4th Hiroshima Conference". Participants: 15 graduate students, universities with academic agreements from 9 countries (IDC) |

International Exchange Agreements

- Faculty of Dentistry, University of Newcastle Upon Tyne: Uk (1994) College of Oral Medicine, Tapfer Medical University: Taiwan (2005)
- University of Malaysia: Malaysia (1998)
- Faculty of Dental Medicine, Kyushu University: Japan (2010)
- Faculty of Dentistry, University of Athens: Greece (2001)
- Dental College and Dental Hospital, Tianjin Medical University: China (2012)

Mutual International Exchanges of undergraduate students as of July 31, 2012

Notes: SS indicates short-term stay programs accepting overseas undergraduate students for 1-3 month while SV indicates short-term visit programs sending undergraduate students from HU to overseas universities/institutions for 1-3 month.

Major Events

- 6-year educational system was founded at School of Dentistry. It was also the first time that 4-year educational system for School of Oral Health Science was set up in Japan.
- The 40th Anniversary of the founding of Faculty of Dentistry, Hiroshima University
- 3 dental students from Taipei Medical University (for a year)
- 3 dental students from Taipei Medical University
- 3 dental students from Tapfer Medical University (for a year)
- 3 dental students from Tapfer Medical University
- 3 dental students participated in Asia Pacific Dental Students’ Association held in Taiwan
- 4 dental students joined "International Dental Course students study abroad"

Present status of Internationalization at Faculty of Dentistry, Hiroshima University

Present status of Internationalization at Faculty of Dentistry, Hiroshima University

Present status of Internationalization at Faculty of Dentistry, Hiroshima University

Faculty Gazette Faculty of Dentistry, Hiroshima University

Faculty Gazette Faculty of Dentistry, Hiroshima University
Biodental Education

Response to Paradigm Shift of Dental Medicine for 21st Century

Biodental education is the academic program fostering dental professionals for 21st century. At Faculty of Dentistry, Hiroshima University, 2-course system has already begun for each School: Course for Frontier Dental Science and Course for Clinical Dental Science at School of Dentistry. Course of Oral Science and Course of Oral Engineering at School of Oral Health Science. Based on the system, "Biodental Education" has started in 2010.

This program aims to cultivate global leaders in dental fields through Problem-Based Learning Seminar for 1st year students of both Schools Start-Up Coursework for 3rd year students of School of Dentistry and 2nd year students of School of Oral Health Science, Advanced Coursework for 4th year students of School of Dentistry and 3rd year students of School of Oral Health Science, and Practical English Training given by professional instructors to develop the skills for oral presentation and writing papers in English.

Start-Up Coursework

for 3rd year students (Dentistry) and 2nd year students (Oral Health Science)

Basic practices of cell culture
Cell culture currently attracting many attentions is widely used in regenerative medicine, basic medicine and clinical research. Students obtain fundamental techniques such as learning history and future prospects necessary to conduct cell culture. Practices divided into a group of 10 students and exercised at Tissue Culture Practice Room, help students develop basic skills.

CAD System Engineering-Medical Equipment (ME) Practice

CAD-CAM techniques making considerable progress in the last few days will become more widely used for general dental practice in the near future. Students learn advantages or current problems with use of CAD-CAM for clinical purposes through experiencing realities of consuming time and precision until the prosthesis completes; taking the information of dental casts in a computer by optical scanner, designing the prosthesis on a computer and automatically sharpening the designed one by machine.

Advanced Coursework

for 4th year students (Dentistry) and 3rd year students (Oral Health Science)

Advanced Coursework had 4-course, "Oral Infection"-"Dental Diagnosis"-"Regenerative Dentistry"-"Oral Function Evaluation". Students are divided in each course and obtain the recent knowledge on life sciences and the relationship between basic medical research and clinical dentistry by carrying out experiments in laboratories.

Practical English Training

for 4th year students (Dentistry) and 3rd year students (Oral Health Science)

Practical English Training offers students to promote basic English skills coping with future globalization; casual conversation, medical English, giving presentation and writing papers in English.

Biodental Education Brief History of the Faculty

1965 April 1
The Faculty of Dentistry was established.

The administrative Faculty Committee started functioning. The yearly quota was 40 students.

1966 April 1
Four departments (1st Department of Oral Anatomy, Department of Oral Physiology, Department of Oral Biochemistry and Department of Oral Pathology) were founded.

1967 April 1
Six departments (2nd Department of Oral Anatomy, Department of Oral Microbiology, Department of Biomedical Sciences, Department of Operative Dentistry, Department of Removable Prosthodontics and Department of Oral Surgery) were founded.

May 9
The administrative Faculty Committee was abolished. Faculty meeting in the Faculty of Dentistry started functioning.

1968 April 1
Three departments (Department of Dental Pharmacology, Department of Preventive Dentistry and Department of Orthodontics) were founded.

1969 April 1
Two departments (Department of Endodontics and Periodontology, Department of Fixed Prosthodontics) were founded.

1972 April 1
The Graduate School of Dental Science (Ph. D. Degree Course) was established.

April 28
The entrance ceremony for the first batch in the Graduate School of the Dental Science was held.

1973 April 12
The 2nd Department of Oral Surgery was added. The already existing Department of Oral Surgery was renamed the 1st Department of Oral Surgery.

1978 April 1
The Department of Oral Radiology was founded.

A quota per year was expanded to 80 students.

1986 April 1
Administrations of the Faculty of Dentistry and University Dental Hospital were merged and divided into two sections (General Affairs Section and Operative Affairs Section).

1987 April 1
A quota per year was changed to 60 students.

2000 April 1
A quota per year was changed to 55 students.

The Department of Dental Anesthesiology was founded.

Two programs of the Graduate School of Dental Science were changed to one special study.

Two courses (Course for Frontier Dental Science and Course for Clinical Dental Science) were set up in the Faculty of Dentistry.

The number of transfer students admitted in the 3rd year is limited to 5 per year.

Accepting transfer admission applications for April 2002 began.

2001 April 1
Nineteen departments were reorganized into five departments.

2002 April 1
The Graduate Schools of Medical Sciences and Dental Science were reorganized into the Graduate School of Biomedical Sciences.

2003 October 1
Administrations of the Faculty of Medicine, the Faculty of Dentistry and the Research Institute for Radiation Biology and Medicine were reorganized into two: administrations of the University Hospital and administrations of the Graduate School of Biomedical Sciences.

2004 April 1
Hiroshima University was renamed Hiroshima University National University Corporation under the National University Corporation Law.

2005 April 1
The School of Oral Health Science was established.

October 1
Establishment of Attached Medical Practitioner Education Development Center (affiliated with the Medical and Dental Departments) Transfer admission into 3rd year was changed to 2nd year (latter term).

2006 April 1
The Attached Medical Practitioner Education Development Center was renamed the Attached Medical Practitioner Education Development (affiliated with Faculties of Medicine, Dentistry, and Pharmacy, after the establishment of the Pharmacology Department).

2007 February 9
The Graduate School of Dental Science (Ph. D. Degree Course) was abolished.

2007 March 26
The anti-secismic reinforcement for the Dental Building A and University Dental Hospital was completed.

2008 March 7
The anti-secismic reinforcement for the Dental Building B was completed.

2009 April 1
M aster’s Program for Oral Health Sciences was established.

School of Oral Health Science was renamed (only Japanese).

2010 October 1
BiDental Curriculum Center was founded.

2011 April 1
Doctor’s Program for Oral Health Sciences was established.

Transfer admission into 2nd year (the quota) was abolished.

The number of students admitted for School of Dentistry per year was changed to 53.

2011 October 1
International Dental Course was established in School of Dentistry.

2012 March 31
The Attached Medical Practitioner Education Development (affiliated with Faculties of Medicine, Dentistry, and Pharmacy) was abolished.

2012 April 1
Graduate School of Biomedical Sciences and Graduate School of Health Sciences were reorganized into Graduate School of Biomedical & Health Sciences.

Accordingly, Institute of Biomedical & Health Sciences was established as academic organization: Basic Life Sciences, Applied Life Sciences, and Integrated Health Sciences.
# Innovation of Educational System in Hiroshima University Faculty of Dentistry

## Faculty

<table>
<thead>
<tr>
<th>School of Dentistry</th>
<th>Graduate School of Biomedical Sciences</th>
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<tr>
<td>School of Dentistry: Introduction of 2-Course system</td>
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<tr>
<td>Course for Frontier Dental Science</td>
<td></td>
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<tr>
<td>Course for Clinical Dental Science</td>
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<tr>
<td>The School for Dental Hygienists - The Dental Technicians School (2-year system)</td>
<td></td>
</tr>
<tr>
<td>School of Oral Health Science (4-year)</td>
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<tr>
<td>· Course of Oral Health Science</td>
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<tr>
<td>· Course of Oral Engineering</td>
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<td>School of Oral Health Science (4-year)</td>
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<tr>
<td>· Course of Oral Science</td>
<td></td>
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<tr>
<td>· Course of Oral Engineering</td>
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</tbody>
</table>

*Graduate School of Dentistry was designated as the Education and Research Center for Graduate School in 2001*

## Graduate School

- **Graduate School of Dentistry**
  - Medical fields
  - Pharmaceutical fields
  - Graduate School of Medicine

- **Graduate School of Biomedical Sciences**
  - Programs for Enhancing Systematic Education in Graduate Schools
  - Biodental Education Program for Next Generation (MEXT)
  - Twinning Program for Advanced Dental Medicine Promotion in Southeast Asia
  - International Research Experience for Students and Young Researchers

- **School of Oral Health Science (4-year)**
  - Master’s Program for Oral Health Sciences
  - Doctor’s Program for Oral Health Sciences

- **School of Oral Health Science (4-year)**
  - Course of Oral Science
  - Course of Oral Engineering

- **School of Oral Health Science (4-year)**
  - Course of Oral Science
  - Course of Oral Engineering

- **International Research Experience for Students and Young Researchers**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2002</td>
<td>1st Hiroshima Conference</td>
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<tr>
<td>2004</td>
<td>2nd Hiroshima Conference</td>
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<tr>
<td>2008</td>
<td>3rd Hiroshima Conference</td>
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<tr>
<td>2009</td>
<td>4th Hiroshima Conference</td>
</tr>
<tr>
<td>2013</td>
<td>5th Hiroshima Conference</td>
</tr>
</tbody>
</table>

- The achievement of 100% pass rate on National Examination for Dental Practitioners in 2011

- International Dental Course

- Graduation Program for Biomedical Education

- Brain Circulation Program
School of Dentistry, Faculty of Dentistry, Hiroshima University is the only one with a course system education among dental universities in Japan. We have 2-course system, Course for Frontier Dental Science and Course for Clinical Dental Science. The aim of the course system education is to foster dental professionals, researchers, and educators to be leaders in dental medicine while developing students’ individual abilities. However, the establishment of the system does not only indicate to promote personal emphasis on research or clinical practice. We intend to raise dental professionals who display an enthusiastic spirit to explore a new field by recognizing the importance of collaborative work for both frontier dental science and clinical dental science in each course.

Moreover, responding to globalization, International Dental Course was newly established as the purpose of confirming our position as a global leader in education/research of dental medicine and oral health science in Asia. The course enables us to train personnel engaged in dental care in their home countries by accepting overseas students.

Integration of research and clinical practice

Results of frontier research should be reflected to medical workplace, and problems encountered in medical workplace should be solved by frontier research methods. Research and clinical practice work like wheels of a car for dental practitioners. At the places where both were merged, dental professionals with the high level medical technology and knowledge will be fostered. School of Dentistry, Faculty of Dentistry, Hiroshima University enforces the education which research and clinical practice are well integrated.

Internationalization strategies

As the world today is becoming increasingly borderless, internationalization strategies are essential to raise highly-qualified dental professionals who are able to rapidly respond to the globalization. Faculty of Dentistry hosted 4th Hiroshima Conference on Education and Science in Dentistry (October 2015), continued after the Conferences of 2006, 2007, and 2009. We had many participants from sister universities with international agreements (please refer JTI) and discussed on the development of dental care for 21st century. Concurrently, we held “Hiroshima Peace Seminar for Asian Dental Students 2011” enabling both Asian dental students and our students to experience practical knowledge of clinical dental practice. In addition, the International Dental Course in October 2011, we offer 2 Indonesian students and a Vietnamese student admitted for 2012 specialized education together with Japanese students so that they can become professionals in dental medicine in their home countries. These reveal that Hiroshima University aims to be a hub university for dental educational research in major universities in Pacific Rim countries through the promotion of internationalization strategies leading the forefront of other universities.

Fostering high-quality personnel

Dental practitioners are required to possess a high intellectuality and an enriched humanity along with advanced medical techniques and knowledge. The highly-trained professionals will be able to play a leading role in respective dental field such as dental research and medicine. At the 6-year education at School of Dentistry, it is our aim to raise such high-level dental practitioners for example, concerning specialized core subjects, students will master knowledge/skills extending from life sciences to clinical dentistry through substantial lectures given by excellent professors. Furthermore, we provide students clinical subjects conducted by different viewpoints such as Somatognathic Research, Dental Radiography, Periodontal Disease, Cancer, Forensic Science, Diagnosis and Oral Implantology. We also offer students in earlier years to experience the observation of clinical practice which will lead to their flexible thinking at their clinical performance.

Department of Calcified Tissue Biology

Education

We provide two courses, histology and oral anatomy. The former studies microscopic anatomy in normal states with a certain amount of knowledge about the underlying cellular and molecular biology. This will be processed in parallel with the practice course which improves the acquisition of the knowledge by promoting a better understanding of the lecture. The latter seeks mainly to understand dental anatomy, including comparative tooth anatomy, structures of the oral cavity and tooth caries. We also offer craniofacial development with an introduction to embryology in the anatomy and embryology class.

Research

Bone and other organs affect each other in both physiological and pathological processes. Our goal is to discover new insights into the inter-cellular/organ relations, which may contribute to development, aging, or certain diseases. Our current projects include:

1. Osteogenesis and adipogenesis via the FGF-Klotho axis.
2. A coupling factor for osteoblasts and osteoclasts.
3. Crosstalk between bone and other organs.
4. Posttranslational modifications of proteins involved in bone formation.
5. Molecular bases for bone mineralization.
6. Developing a new technology capable of analyzing undefined biological molecules in bone.

Recent highlights

- Our International Patent Application (PCT) concerning bone-derived biological peptides is processed.
- One of our paper (PLoS One, 2010) was listed as the top 20 articles published on the same topic.

Key words

Osteogenesis, Adipogenesis, Crosstalk between bone and other organs, Coupling factor, Mass imaging

Department of Oral Biology

Education

We are mainly involved in gross anatomy and neural anatomy. Although these fields except for oral and maxillofacial region tend to be looked down in dentistry, it is very important to know all-over the human anatomy for dental clinicians as well as dental researchers who will become a leader in these fields. We provide education putting more emphasis on practice rather than lectures.

Research

We are mainly involved in gross anatomy and neural anatomy. Although these fields except for oral and maxillofacial region tend to be looked down in dentistry, it is very important to know all-over the human anatomy for dental clinicians as well as dental researchers who will become a leader in these fields. We provide education putting more emphasis on practice rather than lectures.

Recent highlights

- Our main concern is hard tissue (tooth and bone) and nervous system (brain and spinal cord). Tooth enamel is mostly composed of inorganic substance. However, a group of protein, called enamel protein is very important for the enamel development. We have revealed that each kind of various enamel proteins has its specific role and it is impossible to produce normal enamal if one of the protein lacks. As for bone, we study on various functions of genes involved in bone formation and resorption. Concerning brain and spinal cord, we examine causes of allodynia and hyperalgesia and aim to develop its method of treatment.
Department of Physiology and Oral Physiology

Education
Students can learn how the different molecules, cells, tissues, and organs of the human body work together to maintain life. Aims are to help understand their abnormal function in disease. Students also deeply learn the sensory and motor systems in the oral and maxillofacial regions.

Research
Specific aims are to clarify the neuronal mechanisms underlying taste perception and the taste-evoked behavioral and emotional responses, to study the physiological function of ion channels and transporters in salivary secretion, and to understand the role of cell communication in proliferation and differentiation of the oral tissue.

Recent highlights
We have visualized the taste neuronal circuits by genetic tracing to gain insight into how taste recognition is accomplished in the brain. We have established the method for real-time measurement of anion secretion to clarify the regulatory mechanism of fluid transport in salivary glands.

Key words
Taste, Salivary secretion, Cystic fibrosis

Department of Dental and Medical Biochemistry

Education
Our department provides students with a comprehensive understanding of the basic principles of biochemistry and molecular biology.

Research
We are aiming at the elucidation of the molecular and cellular mechanisms underlying the formation and regeneration of cartilage, bone, teeth, tendon, and ligament. We also analyze roles of a clock protein DEC in the metabolic regulation.

We are currently involved in the following research projects:
1. Molecular mechanisms of tendon/ligament formation
2. Molecular mechanisms of endochondral bone formation
3. Molecular mechanisms regulating the formation and maintenance of periodontal ligaments
4. Molecular mechanisms regulating differentiation of dental pulp stem cells
5. Research on the metabolic regulation by a clock protein DEC

Recent highlights
We have characterized the progenitor population that is involved in the establishment of the junction between cartilage and tendon/ligament. We have also found that the molecular clock system regulates energy metabolism.

Key words
tendon, ligament, cartilage, bone, teeth, dental pulp stem cells, periodontal ligament, synovial joint, differentiation, regeneration, clock genes, Tenomodulin, Chondromodulin-1, Scleraxis, Sox9, DEC1, DEC2

Department of Oral and Maxillofacial Pathology

Education
Pathology, which is a precise study on cause and mechanism of disease, aims to set the standard for diagnosis and to support the development of novel therapy. Our lectures provide the knowledge not only on oral diseases but also on general diseases and their relationship with clinical application, which permit students with solid basis to be qualified for the leaders in the field of dentistry.

Research
We aim to make social contribution through our research activity as follows.
1. By genetic analysis of abnormal proliferation and metastasis of oral cancer, we focus on developing genetic diagnosis and therapy.
2. By experimental study of the mechanism of destruction and regeneration of periodontal tissues, we focus on developing novel periodontal diagnosis and therapy.
3. By clarifying cellular differentiation of odontogenic tumors and salivary gland tumors, we focus on setting criteria of pathological diagnosis of the tumors.

Recent highlights
• We clarified anadrollin, which is a director in enamel formation during tooth development, is related to bone formation and inhibition of proliferation and differentiation of osteosarcoma.

Key words
Oral cancer, molecular pathology, periodontal disease, tissue regeneration, salivary gland tumor, odontogenic tumor and histopathological diagnosis

Department of Bacteriology

Education
We are mainly engaged in lectures and practices of Microbiology and Oral Microbiology. As for Microbiology, we provide a wide range of basic education on medical microbiology including bacteriology, virology and mycology. In the process of its study, students understand how microorganisms exert their pathogenicity by infecting human and their skillful infection strategy. Furthermore, students learn on antimicrobial chemotherapy in the position of treating infectious diseases along with fundamental knowledge of sterilization and necessity for medical professionals. The two major illnesses in the dental field are dental caries and periodontal disease which are infectious diseases caused by bacteria inhabited in oral cavity. Students learn on these infectious diseases, especially its infection mechanisms and realize the importance of maintaining sound oral environment.

Research
We are conducting research on two major topics, pathogenicity of bacteria and mechanisms of antimicrobial drug resistance. For the study of bacterial pathogenicity, we have established national collection of clinically isolated Staphylococcus aureus and are using these organisms as model bacterial pathogens. For the study of antimicrobial drug resistance, we have organized a project research center for nosocomial infectious diseases. We constantly accept drug resistant isolates from regional hospitals and analyze detail mechanism of the drug resistance. The uniqueness of our research is to approach subjects by using extensively wide variety of methods such as genomics, molecular biology, genetics, protein engineering, and molecular epidemiology.

Recent highlights
We have established microscopy system for analysis of DNA and RNA of S. aureus. By using this system, we can measure presence or absence of thousands of genes and/or expression level of thousands of genes with a piece of slide glass.

Key words
Toxin, biofilm, cell adhesion, genome analysis, molecular epidemiology, drug resistance
Department of Cellular and Molecular Pharmacology

**Education**
Pharmacology is the study of how drugs exert their effects on living systems. Dental students have to learn the interactions between tissues that mediate resistance to infections is called the immune system, and the coordinated reaction of these molecules and cells to drugs for generalized disease and its treatment, and medical therapy useful to clinical cases.

**Research**
We intend students to feel “exciting” and “interesting” by experiencing the mystery of life sciences during the conduction of research. We elucidated molecular mechanisms on inhibitory neurotransmission via a new signaling molecule, PLC-related catalytically inactive protein (PRIP), which we discovered. We conduct new drug development targeting PRIP.

1. Studies on the regulatory mechanisms of food intake and obesity via PRIP
2. Studies on abnormal insulin secretion exhibited in PRIP gene knockout mice
3. Studies on autophagy and protection from bacterial infection
4. Studies on pain control via PRIP and the molecular basis of the incidence of neuropathic pain
5. Studies on developing new drugs for pain relief

**Message**
Let’s share a sense of joy when we challenge something new and solve it.

**Key words**
Autophagy, GABA, receptor signaling, insulin secretion, obesity (leptogenesis and lipolysis), pain relief, protection from bacterial infection

![Picture of confocal laser microscope showing that cultured nerve cells are stained with antibodies of inhibitory neurotransmitter (GABA) receptor and the new molecule](image)

Department of Mucosal Immunology

**Education**
Immunity is defined as resistance to disease, specifically infectious or inflammatory disease. The collection of molecules, cells, and tissues that mediate resistance to infections is called the immune system, and the coordinated reaction of these molecules and cells to infectious microorganisms is the immune response. Mucosal Immunology is the study of the immune system and its responses to invading pathogens which enter via the mucosal surfaces. The physiologic function of the mucosal immune system is to prevent infections and to eradicate established infections.

**Research**
The following questions are addressed in our department:
1. What types of immune responses protect individuals from mucosal infections?
2. What are the important characteristics of mucosal immunity, and what mechanisms are responsible for these characteristics?
3. How are the cells and tissues of the immune system organized to find microbes and respond to them in ways that lead to their elimination?

**Recent highlights**

Department of Periodontal Medicine

**Education**
Study on Periodontology and Endodontology (Graduate School)
Lecture about Periodontology and Endodontology (School of Dentistry)

**Research**
1. Studies on therapies for periodontal tissue regeneration
   We evaluate the effect of mesenchymal stem cells or neurotrophic factors on periodontal tissue regeneration.
2. Study on the susceptibility to periodontal disease
   Some host factors are thought to be causes of special periodontal diseases. We examine the pathogenic mechanism of the periodontal disease using DNA, sera or neutrophils isolated from patients.
3. Study on diverse risk factors involved in periodontal disease
   We examine the mechanism how various risk factors including an autoantibody, are involved in progression of periodontal disease.
4. Study on diagnosis for periodontal disease
   We examine the periodontal disease-related biomarkers in saliva in order to make use of clinical diagnosis for periodontal disease.
5. Study on the prevention of periodontal disease
   We develop the preventive therapy, particularly focusing on interaction between host cells and periodontopathogenic bacteria.
6. Study on the therapy for periodontal periodontitis
   We aim at the establishment of a new treatment for periodical periodontitis by regulation of host cell function and removal of bacteria.

**Recent highlights**
Periodontal tissue regenerative therapy with mesenchymal stem cells and neurotrophic factors has recently attracted the attention of people throughout Japan and is expected to be used as a new treatment for periodontal disease.
Department of Molecular Oral Medicine & Maxillofacial Surgery

**Education**
We are engaged in fields of Molecular Oral Medicine and Maxillofacial Surgery at the graduate school level. At Faculty of Dentistry, we take in charge of oral surgery, maxillofacial surgery, applied oral medicine, and these practical courses. We also teach methods of diagnosis and therapy for deformity, growth abnormality, inflammations, trauma, and tumor (benign/malignancy) in oral & maxillofacial regions.

**Research**
We conduct follow-up research in order to develop new methods of diagnosis and therapy for diseases described above.
1. Genomemolecular diagnosis and therapy for oral cancer and salivary gland tumors (cancer stem cells, growth factors, growth factor receptors, invasion and metastasis, tumor angiogenesis, molecular/mutation therapy).
2. Study on molecular/epigenetic diagnosis and therapy for cranio-maxillofacial deformities.
3. Development and characterization of human induced pluripotent stem (iPS) cells derived from human pulp cells in serum-free cell culture.
4. Generation of human induced pluripotent stem (iPS) cells derived from a patient with oral-maxillofacial dysplasia, and clarifies the molecular mechanism involved in the disease.
5. Functional study on biological active factors purified from marine products.
6. Study on photodynamic therapy for oral cancer.
7. Study on jaw and tooth regeneration in vivo. We have already succeeded in regenerating a jaw, eye and tooth through using undifferentiated pluripotent cells derived from Xenopus and mice. We have successfully treated oral cancer patients with xenotransplantation of killer/NK cell therapy and photodynamic therapy. In addition, we are developing a novel therapeutic and diagnostic modality targeted to newly identified Cancer Stem cells from oral squamous cell carcinoma (Fig. 1). We have successfully established iPS cell lines from patients with genetic disorders in oral and cranio-maxillofacial region in serum-free and feeder-free culture (Fig. 2).

**Recent highlights**
From 2000 to 2005, we have carried out a molecular-epidemiological study on oral-maxillofacial disease of the resident in Semipalatinsk Nuclear Test Site (SNTS) area in Kazakhstan, former Soviet Union, and revealed that low-dose radiation exposure severely affects oral and maxillofacial development of the resident living around SNTS. We have already succeeded to regenerate a jaw, eye and tooth through using undifferentiated pluripotent cells derived from Xenopus and mice. We have successfully treated oral cancer patients with xenotransplantation of killer/NK cell therapy and photodynamic therapy. In addition, we are developing a novel therapeutic and diagnostic modality targeted to newly identified Cancer Stem cells from oral squamous cell carcinoma (Fig. 1). We have successfully established iPS cell lines from patients with genetic disorders in oral and cranio-maxillofacial region in serum-free and feeder-free culture (Fig. 2).

Department of Oral and Maxillofacial Surgery

**Education**
We provide lectures on various fundamental knowledge for disease, diagnostics and therapeutics in the fields of oral and maxillofacial surgery. We carry out basic oral surgery such as several kinds of blood tests, physiological examination and its technique, blood sampling, injection, counter-measures for infection / cleaning operation, and Basic I & II (BLS). We conduct model practices through using actual appliances for tooth extraction, cyst exirpation, incision / suture, and tooth ligation. We also give students opportunities to learn individually about diagnostic methods or therapeutic policies in response to a variety of cases, to have tutorial classes discussing in a small group, and to perform reporting practices which students prepare slides and manuscripts for presentations and have question / answer sessions after presenting by an academic meeting style. Furthermore, as for the clinical course, we are engaged in emergency operation by real implant, as well as creating splits for temporomandibular arthritis. And in clinical practice, students learn medical interviews, various examinations, medication, peroperative management and operation for patients having several diseases at outpatient area, hospital ward or operation room.

**Research**
We conduct research on the genomic study of oral disease, biological characteristics and therapies for various oral tumors, molecular biology relating invasion and metastasis of oral cancer and cell biology regarding intracellular mucous membrane of teeth. We are also involved in developing new biomaterials for the purpose of tissue engineering of jaw bone and the best implant treatment applying ceramics with many lanoma and absorbent materials in vivo as scaffolds of osteoblast.

**Recent highlights**
We have succeeded in finding the gene causing hereditary bone dysplasia of jaw, and we carry out cellular biological studies on the function and therapy of the gene.

Department of Advanced Prosthodontics

**Education**
Department of Advanced Prosthodontics was integrated with former Department of Prosthetic Dentistry at April 1, 2000.

**Research**
1. Development and clinical application of new biomaterials for dental implant.
2. Biomchanical analysis on dental implants.
5. Effect of prosthodontic treatment on quality of life of the elderly people.
6. Radiographic and stomatognathic research on relation between aging and using.
7. Relationship between prosthetic treatment and general condition in elderly with dementia.
8. Relationship between oral habits and psychosomatic stress measured by salivary chromogranin A.

**Recent highlights**
The latest highlights is that, application of the interconnected porous hydroxyapatite (IP-CHA) as bone substitute in dentistry has been approved to use by our clinical trial data. Therefore, we can use IP-CHA as bone substitute in case of the treatment after cyst extraction or bone regeneration around fenestrated implant. We are always endeavoring in various fields to become the Japan’s leading position in the field of education, research and clinic of Prosthodontics.

Department of Orthodontics and Craniofacial Development for Dentistry

**Education**
After learning the basic dental sciences regarding orthodontics, clinical orthodontics, and junior courses including orthodontic treatment, cranio-maxillofacial orthopedics, and surgical orthodontics is provided thoroughly to master orthodontic diagnosis, treatment and treatment protocol. In addition, the Course for Clinical Dental Science provides a practical training on oral and maxillofacial prosthetics and orthodontics to experience real orthodontic and prosthetic treatment cases under the supervision of experienced orthodontists in order to acquire the certification of orthodontic specialist as an advanced professional.

**Research**
1. Evaluation of a new orthodontic treatment based on the image and biochemical diagnosis of temporomandibular disorders (TMD).
2. Evaluation of the effects of mechanical stress on degradation and regeneration of mandibular condylar cartilage.
3. Evaluation of pathological amelogenins expression and the restoration of tooth enamel by application of biomaterialization process.
4. Bone regeneration by use of mesenchymal stem cells and the development of regeneration medicine for closure of jaw cleft.
5. Pharmacological activation and downregulation of the sex hormone in craniofacial growth and development.
6. Clarification of the root mechanism of root resorption due to mechanical force and development of the therapeutic discipline.
7. Evaluation of the effects of various oral functions on the onset of malocclusion and metabolism of the whole body.

**Recent highlights**
Many postgraduate students have been sent to overseas research institutions to experience advanced research. At the same time, we accept foreign students from various countries to accomplish active international exchange. As for the research, we developed a new modality optimized to bone regeneration of jaw cleft using bone marrow-derived mesenchymal stem cells and novel scaffold, immobilized hydroxyapatite granules. We are trying to apply this method to clinical practice.

**Key words**
Orthodontic force, craniofacial growth, temporomandibular disorders (TMD), amelogenesis imperfecta, genetic diagnosis, regeneration medicine.

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*Figures and captions are not translated in this document.*
Department of Oral and Maxillofacial Radiology

**Education**
You will study the core principles of image production, including advance imaging, basic science of radiation and radiotherapy, and how to interpret the medical imaging findings.

**Research**
The following themes are studied: Radiation effect to the bone, Imaging study for dysphagia, Early detection of osteoporosis using panoramic radiography, Diagnostic study of dento-maxillo-facial radiology, Physiological study of swallowing using magnetic encephalography.

**Recent highlights**
A project study of oral read with Hiroshima prefectural technology research institute and Hiroshima prefectural hospital using the Freeze-infusion technique.

Department of Pediatric Dentistry

**Education**
Treatment and prevention of oral diseases in children are concerned. Lecture contains systemic and oral growth and development, the reality and causes of oral disease in the general statement. In another lecture at the detailed statement prevention and treatments of dental caries and periodontal disease, surgical treatments, including teeth extraction and dento-maxillo-facial radiology, occlusal guidance, oral health promotion education in children, correspondence against children with developmental disorders and systemic diseases.

**Research**
1. Sociocultural study on dental caries pathogenesis and prevention in children
2. Molecular biological research of oral bacteria in children
3. Clinical study of oral care of children with systemic diseases
4. Evaluation of the stress of dental treatment against children
5. Three-dimensional analysis on the growth of the dentition in children
6. Clinical approach on dysphagia in children
7. Research on the relationship between periodontal disease and systemic disease in pregnant woman

**Recent highlights**
Many staff in our department have visited to Cambodia to support the oral health promotion every year since 2009. This project is one of the missions of our dental school. Would you like to join with us?

In Japan, much of care and care by Pediatric Dental Specialist are needed for abroad children, children with developmental disabilities or dysphagia, and school dentists or teachers. We are working hard every day to be able to contribute to society through a variety of actions in cooperation with various institutions.

**Key words**
Dental caries in child, earlychildhood caries, mutants streptococci, intrafamilial transmission, dental traumatology, periodontal disease in children, child health.

Department of Dental Science for Health Promotion

**Education**
This Department covers the area called Operative Dentistry which aims to preserve teeth by developing prevention, diagnosis and treatment against hard tissue disease such as caries etc.

**Research**
1. Studies on host factors associated with caries susceptibility
2. Studies on relationship between dental disease and systemic disease (especially between periodontal disease and obesity/diabetes)
3. Studies on association between nutrients and dental disease
4. Development of new laboratory tests for diagnosis of dental disease
5. Development of new preventive therapies against dental diseases based on new laboratory examinations
6. Development of bioincompatible materials and their clinical application
7. Elucidation of dissolved teeth pathogenesis and development of new therapy
8. Development of new host-nonnevasive therapies using lasers
9. Studies on biological regeneration of dentin-pulp complex

**Recent highlights**
In September, 2006, Professor Nishimura succeeded former Professor. At the same time the name of the Department has been changed to “Dental Science for Health Promotion” in which the main research area of the Department is to pursue how dental treatment contributes to the general health.

**Research themes are shown as below.**

- In the future, they will be active as a leader of pediatric dentistry in dental education and research institutions or universities, not only in Japan but all over the world.

**Doctor course student would study in order to obtain the Ph.D. degree for four years and afterward to qualify for pediatric dentistry.**

**Recent highlights**
Contribution of Dental treatment to Healthy long-life!

The purpose of the Department is to elucidate the mechanisms between dental disease and systemic disease at epidemiological and molecular basis so that the concept of “dental treatment contributes to a healthy long life” is firmly established and the value of dental treatment will be further enhanced.

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Department of International Collaboration Development for Dentistry

**Department of International Collaboration Development for Dentistry (ICDD)** was established in Hiroshima University, Faculty of Dentistry on April 2011. Our mission is to develop Asia-based global collaboration in dental education and researches. To achieve the mission we develop International Dental Course that provides studies of dental medicine to both Japanese students and international students.

In addition, we performed Short Visit study program to give our students an opportunity to join the academic activities in overseas universities with academic exchange agreements. By joining these programs the students can understand the importance of mutual understanding, cultural diversity, and internationalization.

**Research**

We do research related to development of the educational program or an exchange program, its assignment and evaluation:

1. Development and evaluation of dental education program cooperated with Asian countries
2. Development and evaluation of Japanese-English dual linguistic education system
3. Study on international exchange programs
4. Study on contribution to international community through dentistry

**Recent highlights**

- Three of international students passed their first grade in international dental course.
- The International Dental Course is now entering the second year. For this year we accepted 3 new international students from Indonesia, Cambodia, and Vietnam.
- We have 6 international students from 6-month short stay program and 12 international students from 10 days short stay program.
- We sent our students to Canada, Cambodia, Indonesia, South Korea, and Taiwan for joined academic and cultural activities.

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Department of Advanced General Dentistry

**Education**

Students learn general dentistry as well as health communication training from senior undergraduate level at Faculty of Dentistry to postgraduate education after acquiring a license for a dental practitioner, with the aim of forming career as a future dental practitioner.

Students also study on 1) differences between communication and “reception” through the education of self-leading type and role playing, 2) methods of communicating with a patient, his/her family and medical staff, and 3) what is dental treatment based on “patient centered” “problem centered” “story of patient’s illness” including prevention, therapy and rehabilitation.

We demonstrated that patients with mental retardation as well as schoolchildren harboring both Streptococcus mutans and S. sobrinus have a significant higher dental caries incidence as compared to those with S. mutans alone.

**Recent highlights**

1. A study on dental caries risk of patients with disabled
2. A study on prevention of dental caries of patients with disabled by probiotic replacement therapy
3. A study on risk of periodontal disease of patients with disabled
4. A study on dental cooperation of patients with autism spectrum disorder
5. A study on PBL task for dental problem of patients with mental retardation

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Special Care Dentistry

**Department of Oral Health and Development**

**Hiroshima University Hospital**

**Education**

Undergraduate students learn various basic knowledge of Special Care Dentistry. Senior undergraduate students in clinical training learn basic clinical skills to provide patients dental treatments with safe and secure. In addition, doctoral course students continue training to become a certified physician for Special Care Dentistry. We also aim at human resource development for study on Special Care Dentistry and cultivating practical clinical ability in community oral health care.

**Research**

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2. A study on prevention of dental caries of patients with disabled by probiotic replacement therapy
3. A study on risk of periodontal disease of patients with disabled
4. A study on dental cooperation of patients with autism spectrum disorder
5. A study on PBL task for dental problem of patients with mental retardation

**Recent highlights**

We demonstrated that patients with mental retardation as well as schoolchildren harboring both Streptococcus mutans and S. sobrinus have a significant higher dental caries incidence as compared to those with S. mutans alone.

Now, probiotic replacement therapy for prevention of dental caries is in progress.
**Department of Public Oral Health**

**Education**

This department consists of social dentistry, health care and nursing science. In social dentistry, we provide students for Schools of Oral Health Science and Dentistry the education on “public health”, “oral health” “law and system for health” “social welfare” “medical statistics”. In the study of “nursing care”, students learn on health maintenance and promotion for a person on every health level from child to adult and nursing as the basis of medical occupations. In the course of Yogo teacher (optional), students study on specialized knowledge and technique concerning school health activity.

**Research**

Theme on oral health

“Study on the relationship between oral microorganism infection and oral mucosal lesion and condition”

“Study on the relationship between oral sensitivity and function”

Theme on health activity and education

“Study on what school health activity should be like”

“Educational effect of oral health education”

Through these studies, we put efforts on solving several problems on the study of health care and fostering medical professionals, educators and researchers who are able to have scientific and logical thinking.

**Recent highlights**

Research Associate Akemi Naitou who had worked for 37 years as a yogo-teacher, joined us last year. We are actively developing health and research activities with other hospitals, schools and areas as well as medical and research activities in our university.

**Department of Maxillofacial Functional Development**

**Promising courses with various possibilities**

Promising courses with various possibilities are opened up for students after the graduation of the 4-year course as follows:

- Course for Oral Science
  - Highly specialized dental hygienists in major hospitals
  - Dental hygienists in public centers
  - Yogo teachers in schools
  - Researchers in universities or research institutions
  - Researchers in affiliated manufacturers

- Course for Oral Engineering
  - Researchers in the fields of tissue engineering, cell therapy and IT in universities or research institutions
  - Researchers in pharmaceutical companies or companies collaborated with dental engineering Technicians for maxillofacial prosthodontics (medical artists)

**Course for Oral Science acquiring the qualification of Dental hygienists and Yogo teachers**

It is the course to foster dental hygienists with the 4-year course system which is still few in Japan. We focus on mixing highly advanced hygienists to be a leader in each field. As a future demand for enhanced social roles as dental hygienists, in addition to the qualification to take the national examination for dental hygienists, students are also able to obtain the 1st class license for Yogo teachers (optional) at graduation.

**Course for Oral Engineering as a pioneer in Japanese universities**

It is known as Japan’s first university to establish the 4-year course cultivating dental technicians. Besides conventional studies for dental technicians, our goal is to train dental technicians - business person/researchers who can take leading roles, possess knowledge/skills to apply the system engineering -CT/ MRI data by use of computers, and a wide range of medical knowledge and general education. At graduation, students can acquire the qualification to take the national examination for dental technicians. As a special practice, we offer practical trainings for cell/tissue culture by the Japanese Tissue Culture Association, the only course which the qualifications of facial therapists - the degree in cell engineering are acknowledged in Japan.
**Department of Oral Health Management**

**Education**
Oral health maintenance is necessary in various occasions such as nursing care and health promotion. Preventive dentistry and dental health education aim for the maintenance and management of oral health. In response to the aging society, a role of oral health management by a dental hygienist has become more important.

The members of this department are Prof. Takeshi Murayama and Mitsuhiro Tamamoto. We provide many lectures and practices necessary for oral health management such as the outline of oral health science, dental education, practice of dental health management, practice of team care for oral health, and practice of oral health counseling etc.

**Research**
1. Dental hygiene education
2. Research about dental hygiene's occupation
3. Career formation of students
4. Oral education method
5. Relation between saliva flow and emotion
6. Education about counseling
7. Infection control in dentistry
8. Research about halitosis

**Recent highlights**
A graduate from our department has received the 6th Encouragement Award of Scientific Paper in Japan Society for Dental Hygiene in 2011. (Changes in the hand-washing skill and attitudes according to infection control training program in dental hygiene education) (Y. Ishikawa, T. Takemoto, K. Kubo, Y. Niitani, Y. Matsumoto, A. Hara, K. Sugiyama M, The Journal of Japan Society for Dental Hygiene, 51(1), 57-66, 2010. This educational research work was done as a graduation thesis in our department.

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**Department of Medical System and Biomaterial Engineering**

**Education**
Theoretical and practical Prosthetic Dentistry, including crown & bridge works, denture works, esthetic dentistry, TMI, and Medical Design Engineering were provided as lectures, practices and practical trainings. We also provide practical trainings for the artificial body, cell and tissue culture (only one in Japan), and Rehabilitation Make Up Techniques supported by Reiko Kazki (only in National University).

**Research**
We develop the varied researches, such as, i) Development of immobilizing antimicrobial agents, ii) Application of probiotics for oral cavity, iii) Design and application of antimicrobial peptides, iv) Diamond-like-carbon and its effects on differentiation of osteoblasts and osteoclasts, and v) Construction of finite elemental analysis model from DICOM data of CT and MRI.

**Research Club ‘Bio-Tech’**
The aims of my department and research club ‘Bio-Tech’ are i) to carry out the biological, and molecular biological studies based upon engineering, and ii) to promote the translational researches in the oral health engineering, in addition to the conventional dental technology. The curriculum encourages the students to open out the new fields and rustle in the whole world.

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**Department of Anatomy and Functional Restoration**

**Academic Staffs**
Professor Takahiro Satoda
Assistant Professor: Satji Shimoe

**Education**
Theoretical and practical Prosthetic Dentistry, including crown & bridge works, denture works, esthetic dentistry, TMI, and Medical Design Engineering were provided as lectures, practices and practical trainings. We also provide practical trainings for the artificial body, cell and tissue culture (only one in Japan), and Rehabilitation Make Up Techniques supported by Reiko Kazki (only in National University).

**Research**
We developed Functional Model of the Forearm (photograph).

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**Faculty Gazette**
Faculty of Dentistry, Hiroshima University