

# Newsletter

School of Dentistry  
Showa University

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## Let the knowledge come from every direction

by Professor Tomohiro Okano: Director, Showa University Dental Hospital



“Let the knowledge come from every direction” is the motto of Showa University. In the last six years, around 32 foreign dentists and faculty members have participated in our exchange program and have gained useful knowledge in their respective fields of specialization by working in observing the clinical departments at Showa University Dental Hospital. They have come from countries such as China, Bangladesh, India, Nepal, Mongolia, Brazil and Bolivia, and have stayed for a minimum of 1 month to a maximum of 1 year. During their visits, they had the opportunity to closely observe the day-to-day clinical work of the department

and learn the advanced diagnostic and treatment modalities that are used for the management of patients. Moreover, they could join research projects and learn more about the Japanese culture. Finally, they had the opportunity to study the different oral disease processes that have been affecting the Japanese population. The greatest advantage for these foreign visitors is that they can participate in both basic and clinical research work that is being conducted in different areas of dentistry, such as periodontics, prosthodontics, restorative dentistry, pediatric dentistry, endodontics, orthodontics, oral surgery, radiology, anesthetics and oral rehabilitation. Even the basic science opens up new avenues for dental research, such as in the fields of biomaterials, pathology, anatomy, physiology, biochemistry, and pharmacology. This type of research and the opportunity for observation help international visitors understand the research methodology and current advancements in the dental profession. This often leads to the chance to write

research articles, and in fact, many who have visited our institution have later published their research work in prestigious national and international journals. The working environment at Showa University helps visitors develop a flair for research and acquire knowledge. Consequently, they grow in their respective specializations and then spread the knowledge they have gained here in Japan to their students and colleagues in their own countries.

We also have an exchange program for the undergraduate dental students as part of an elective study. In the last five years we have invited 15 students from the US, Australia, New Zealand, Korea, China, and Malaysia. Not only do these exchange programs help improve the dental profession by learning about and using the various advancements in the field of dentistry found throughout the world, but we also think they can contribute to a general improvement in society. All of us here at Showa University welcome you very much to our institution.

## Student Instructor Program

by Professor Mitsuko Inoue: Chair of the Educational Committee

“Student Instructor Program of Showa University” has been in practice since April 2011. The purpose of this program is to offer an opportunity for senior undergraduates to tutor underclass students; to strengthen the union between showa university and students; and to enhance underclass students’ motivation to learn. In addition, it provides a training opportunity for senior undergraduates who want to become future leaders in the fields of education, academic research and medical care.

From this year the program has been under the sponsorship of the university, although in the past senior students of each school were



traditionally given an informal opportunity to teach junior students and provide valuable information to them on many occasions. Various recruitments for the program have already been held, such as during the freshmen welcome gathering

at Fujiyoshida campus and open campus which each faculty member attends.

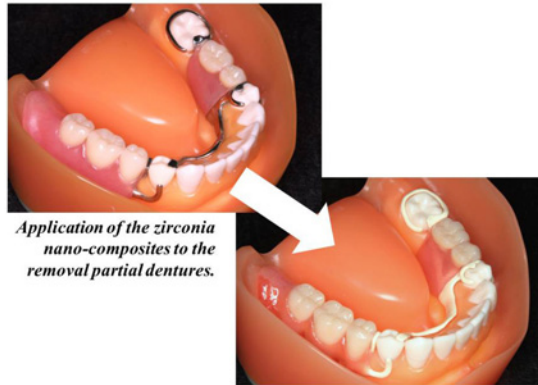
Details of the recruitment process are available by accessing our portal site. Students wishing to be a part of the program are asked to complete an application. The university will cover travel expenses and other incidental fees for participating students, and will award each of them a certificate of appreciation. Students from the school of dentistry are also encouraged to participate in this program so that they can enhance their leadership abilities while also being a part of educating their junior peers.

## New era of digital prosthodontics with the marriage of novel zirconia nano-composites and CAD/CAM technology

by Professor Takashi Miyazaki : Department of Oral Biomaterials & Technology  
Professor Kazuyoshi Baba: Department of Prosthodontics

Modern dental services, especially prosthetic services, have been supported by the development of both new materials and technology. Recently, nano-technology and digital technology are hot topics in the innovation of industry and also hold promise for the field of dentistry. Conventionally, many alloys have been applied to prosthetic devices such as the frameworks of fixed and removable partial dentures and implant superstructures. However, because of esthetic problems and concern over metal allergies, application of metal-free devices has been desired. Unfortunately, ceramic materials are brittle and are difficult to apply to load bearing devices. In addition, the traditional powder build-up and firing process of conventional dental ceramics is complicated and technically sensitive. Therefore, we need new, tougher ceramic

materials and new technology for the manufacture of ceramic devices.



Application of the zirconia nano-composites to the removal partial dentures.

Now, CAD/CAM (computer assisted design and computer assisted manufacturing) technology is available for the manufacture of fine dental ceramics. In addition, fine novel zirconia ceramics using nano-technology (zirconia nano-composites) that were originally developed in Japan are available in the clinic. Zirconia nano-composites

are the strongest dental bio-ceramics available in the world with the fracture toughness of almost  $20 \text{ MPa}\cdot\text{m}^{1/2}$ . We in Showa University's Department of Prosthodontics and Department of Oral Biomaterials and Technology have been collaborating with Panasonic Healthcare Co., Ltd to make zirconia nano-composites popular in prosthetic practice. Fit of the frameworks of fixed partial dentures that were fabricated by a CAD/CAM process was excellent. Due to its high strength and less aging degradation,

a similar design of the frameworks using conventional porcelain fused to metal restorations with a thickness of 0.3mm was available. Application of the zirconia nano-composites to replace partial dentures seems promising and is currently under preparation for clinical trial.

## Development of an innovative educational tool: A Virtual Patient

by Professor Kazuyoshi Baba: Department of Prosthodontics

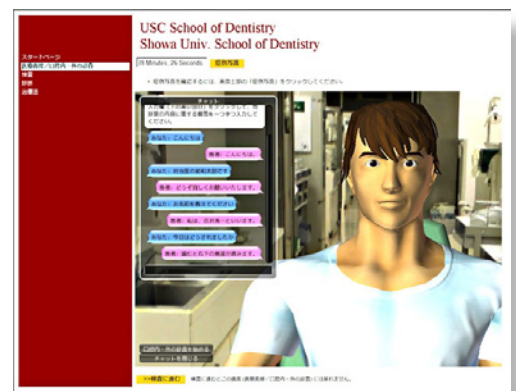
A virtual patient (VP) is an interactive computer simulation of a real-life individual or composite patient. One use of these simulations is to introduce the pre-clinical healthcare students to the process of history taking and data-gathering examination so that can become familiar with the clinical decision making process. Because the virtual patient is consistent from doctor-to-doctor, this also allows this system to be used as an objective standardized clinical examination (OSCE). We have now developed the Japanese version of the virtual patient (VP) system, which was originally developed by Prof. Glenn Clark at the University of Southern California.

Using this system, students can practice the medical interview by themselves using a personal computer.

Students can ask their own questions by entering text inputs and then the autonomous VP responds to these queries. In addition, this system allows users to conduct simulated physical examinations and to request diagnostic tests in order to make their diagnosis. After acquiring sufficient medical and dental information, students make their diagnoses and decide the treatment option.

All of these processes – from medical interview to selection of the treatment option – are recorded on a database, which are then used for the evaluation of the student's performance. This system allows novice users to practice their medical interview and examination skills, often for the first time, without risk to the patient due to incorrect

decisions. Moreover, if the system is available on the web, this practice can occur regardless of time of day or physical location of the user. We use this system for the 3rd and 4th year students before clinical clerkship and also for the 5th year students after their clinical clerkship.



## An Experience of Disaster Dental Care in the Great East Japan Earthquake: Dental Care Support Activities of Showa University at Yamada-machi in Iwate

by Professor Koji Takahashi: Department of Oral Rehabilitation Medicine

On March 11, 2011, the Great East Japan Earthquake devastated the Tohoku region. On March 15, four days after the earthquake, Showa University sent its first multidisciplinary medical team to Yamada-machi in Iwate. Yamada-machi was severely damaged by the tsunami. There used to be 6101 houses in the town; however, almost 50% (2789 houses) were completely destroyed. Before, there had been one hospital, four medical clinics, and five dental clinics in Yamada-machi, but all of them were destroyed except for one medical clinic.



Up until April 16, a total of 7 Showa University medical teams had traveled to Yamada-machi. From

the dental school, volunteer dentists participated in the second to sixth medical teams from March 19 to April 10. During this three-week period, the volunteer dentists treated 232 cases, 52% of which were prosthesis related, 18% were to oral surgery, and 17% were conservative care.

I was involved in the second team of 18 medical professionals including 6 medical doctors, 1 dentist, 1 pharmacist, and 5 nurses. During my stay at Yamada-machi, there were over ten medical teams from all over Japan to provide medical support at Yamada-machi, but the Showa University medical team was the only team that had dentists involved. Visiting dental and oral care was started at four evacuation centers, and a temporary dental clinic was established at the elementary school.

During my 5-day attendance, I managed to perform dental care on 47 cases. At the evacuation centers, since there were problems such as limited



nutrition and hydration, tight living space, poor sleeping environment, poor hygiene situation, and immune compromise from fatigue and stress, we were highly concerned about exacerbation of periodontitis and development of aspiration pneumonia, especially for the elderly people. Education related to oral care and prevention of aspiration pneumonia was found to be beneficial, and I delivered one-hour presentations, including demonstration of some exercises, at six evacuation centers. This presentation gained a good reputation, and was covered in a well-known newspaper.

by Yoshiko Masuda Assistant Professor: Department of Endodontology

A medical relief team was dispatched from Showa University to Yamada-machi near Miyako City in Iwate Prefecture from March 31st to April 5th, 2011. Roughly 3 weeks had elapsed since the Great East Japan Earthquake on March 11th; however, the streets were still buried under buildings and fishing boats washed inland from the tsunami. Thanks to the efforts of the previous volunteer dentist, a dental booth was established in the nurse's office of Yamada High School, and dental examinations were performed for disaster victims. Conducted in basic facilities and poorly lit conditions, these examinations were limited to emergency procedures. Although the homes of many of the public health nurses who provided us much assistance were also washed away, they worked tirelessly for the health management of the 600

victims sheltered in the Yamada High School gymnasium. Due to the majority of the shelter population being elderly, most consultations were for denture repair. We distributed tooth and denture brushes, explained denture and oral cleaning, and discussed the link between an increase in oral bacteria and illnesses, such as pneumonia. Ten-minute lectures on hypertension awareness were delivered at three evacuation centers to the evacuees as unfamiliarity with the evacuee lifestyle and difficult conditions often cause a temporary rise in blood pressure in normally health individuals. We felt the utmost respect for these evacuees who listened attentively and applauded even in the midst of extreme heartache and hardship.

Our bodies ached upon returning to Tokyo after sleeping in sleeping



bags on thin mats on the hard floor of the classroom at Yamada Minami Elementary School; those evacuees who had spent a whole month under similar conditions in the gymnasium must have been approaching their physical limit. Our contribution was minor, but if we were even of a small assistance to the evacuees we'd be happy. We hope for their expeditious return to their previous lives.

## Interdisciplinary Hospital Practicum

by Professor Ryuta Kataoka: Department of Dental Education

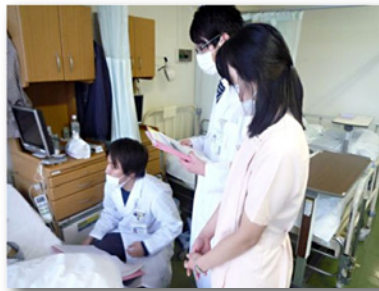
During this academic year every 5th year dental student had an opportunity to attend to a patient in each hospital ward for a week with students from other schools such as the school of medicine, pharmacy and nursing and rehabilitation. This practicum is compulsory for all 600 students and is a final goal of the team medical care education for undergraduate students.

As part of the team medical care education in their first year, all students live in a dormitory located at the base of Mt. Fuji and share it with four students from the different schools. In small groups students from the different schools attend on inter-disciplinary PBL and share on-site learning experiences at the hospital and welfare facilities together. In their third year, they attend on inter-disciplinary PBL using scenarios which main theme is related to clinical topics such as cerebral infarction, chronic rheumatism and Parkinson's disease.

In their fourth year, they attend another interdisciplinary PBL using simulated medical, dental charts and nursing records. Finally, in their fifth year, they complete their interdisciplinary hospital practicum.

Seven University hospitals, 120 wards in total, participate in the practical team medical education. As a group, students perform a vital check, oral care and drug administration guidance for the patient; and attend a walking conference and another conference related to the patient. Each student group also observes surgery and examinations of the patient. Students

come to understand the patient's problems as a group and develop a treatment and care plan for the patient together. Each student group then presents a case report at the end of the week and is questioned by other doctors and staff during the practicum. This provides a good opportunity for the dental students to understand that oral health is an integral part of total health and that oral health care is an integral part of comprehensive health care. The results of students' questionnaire show that 80% of the students feel this practicum helps them join medical team care actively after graduation.



## Participating in the Nepal Cleft Lip and Palate Surgery Project

by Rikuo Masuda Assistant Professor: Department of Dental Anesthesiology

From November 27 to December 05, 2010, I participated in the Nepal Cleft Lip and Palate Surgery Project (sponsored by ADRA Japan). This annual project was first launched in 1995. The aim of this project is to provide surgical treatment to patients who are unable to receive treatment at a hospital because of lack of opportunity and poverty. In total, approximately 800 patients have been treated so far, and 45 patients were treated last year. The oldest patient was 30 yrs-old, and the youngest was eleven months old.

The project members consisted of doctors, nurses, a pharmacist, a medical engineer, a dietitian and volunteer staffs; in total, 38 staff members. Nineteen Nepal staff members

also joined this project. I participated as the only dental anesthetist and also as a dentist, when necessary. I gave the patients general anesthesia, but there was not enough medicine, properly-functioning monitors or well-maintained anesthesia machines like I am usually accustomed to in Japan! I was very nervous, but I managed to take care of the patients safely by relying on my five senses and past experience. A very primitive stethoscope also helped me a lot.

Afterwards, nurses managed the oral hygiene of the patients to prevent postoperative infection in the ward. Some patients had never used a toothbrush, and instead had the habit of brushing their teeth with a stick of wood. If I could

participate this project again, I would like to contribute to this project not only as an anesthesia provider but also as an oral physician to provide oral health care.

Through my first volunteer activity, I felt like I came to understand the meaning of the words "Love saves people".



## International Exchange Center

Table 1. Achievements of international guest scholars supported by our international exchange program from 2008 - 2010

Year	Country	Published Papers	Conference Presentations
2008	Bangladesh, China, Nepal	3	4
2009	China, India, Mongolia, Korea	4	9
2010	China, India,	3	7

Table 2. Number of international guest scholars at the School of Dentistry in 2011.

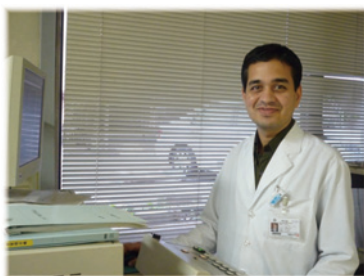
Country	Number
China	1
Mongolia	1
India	3
Bangladesh	1



## Introduction of Foreign Research Fellow

### “AN UNFORGETTABLE EXPERIENCE IN THE LAND OF RISING SUN”

by Dr. Vajendra Joshi MDS (Navodaya Dental College and Hospital, Raichur, India)



I am a most fortunate person to step into the “Land of Rising Sun” and was happy to present a paper at the 18th International Congress of Dento-Maxillofacial Radiology which was held in Hiroshima, Japan on

May 25th-29th 2011. Out of more than 200 participants 9 were from India. The Congress was inaugurated at 9 am on May 26th which was followed by a special lecture from former city mayor Takashi Hiraoka. My presentation was on the first day and it went pretty well.

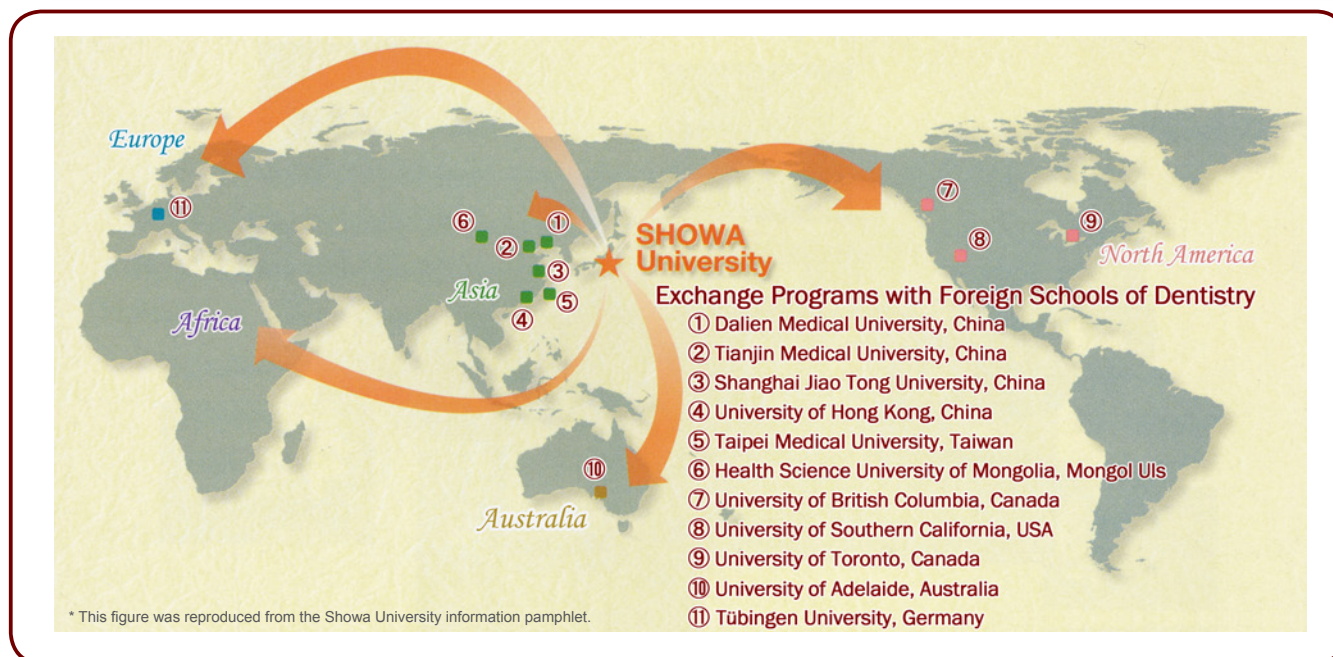
Since childhood I had read about Hiroshima and I was thrilled to visit it. Many only know it for the horrifying event on August 6, 1945, when it became the site of the world’s first atomic bomb attack. However, it is now a modern, cosmopolitan city with excellent cuisine and a bustling nightlife. Later, in the evening we had a warm welcome party at Hiroshima-City Bunka Koryu

Kaikan. We had an opportunity to taste a variety of Japanese dishes in the party.

The Next day, after the presentations, we had a chance to visit the scenic beauty and serenity of Miyajima, renowned for being a world cultural heritage site today. I felt Miyajima is an island where people and gods dwell together. The group photograph in the rain and dinner at the Grand Prince Hotel were all memorable. Next day during lunch hours, we visited the Peace memorial park and the museum. It was very touching and I was almost in tears. I thought that if only people would love each other and not have war, there could be heaven on earth. On the last day, there was a poster discussion and a farewell party. On the whole, it was an experience which will be engraved in my heart forever.



## Exchange Agreements with Foreign School of Dentistry



### Ph.D. Program: Application Information

Showa University Graduate School of Dentistry offers interdisciplinary training programs in basic and clinical dental sciences, leading to a Ph.D. degree. Our Ph.D. program, for enrollment in either September 2012 or April 2013, accepts applications from international students. For further information, please contact Showa University International Exchange Center (e-mail: [int-exc@ofc.showa-u.ac.jp](mailto:int-exc@ofc.showa-u.ac.jp)).

## Scientific Grants Awarded to Showa University School of Dentistry in FY2011

by Professor Ryutaro Kamijo: Chair of the Research-Activities Committee

The Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT) and Japan Society for Promotion of Science have awarded Grants-in-Aid for Scientific Research to researchers and research groups in Showa University School of Dentistry. The summary of Grants-in-Aid for Scientific Research they received in FY2011 is provided below.

MEXT awarded a five-year, 175 million yen grant to Showa University Graduate School of Dentistry to establish a multi-disciplinary research center for anti-aging, in 2010. This project, done in collaboration with researchers at National Center for Geriatrics and Gerontology,

The University of Tokyo Faculty for Engineering, and Showa University School of Medicine, is in the end of its second year. The principal investigator, Dr. Takashi Miyazaki, Dean of School of Dentistry, has stated that the goal is to create a worldwide multi-disciplinary network of scientists and clinicians who have been carrying out advanced research on anti-aging. Another MEXT-

funded 5-year project by Dr. Tetsuhiko Tachikawa, Professor Emeritus of Showa University, entitled "Innovative research of oral cancer based on molecular evidence—from elucidation of the pathogenic mechanisms to improvement of quality of life through comprehensive rehabilitation" is in the end of its fourth year.

Categories	Number of Grants
Grant-in- Aid for Scientific Research (B)	5
Grant-in- Aid for Scientific Research (C)	39
Grant-in- Aid for Challenging Exploratory Research	5
Grant-in- Aid for Young Scientist (B)	39
Grant-in- Aid for Research Activity Start-up	12

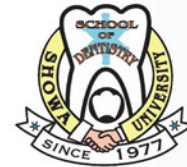
Summary of Grants-in-Aid for Scientific Research that School of Dentistry awarded in FY2011

## Invitation for contributions of articles and presentations to Showa University Dental Society

by Executive Director: Masanori Nakamura

Showa University Dental Society organizes a meeting of researchers twice a year (in July and December). Showa University Dental Society has also renewed publication of the journal of Dental Medicine Research (DMR) from volume 28. DMR is a peer-reviewed scientific journal dedicated to the dissemination of new knowledge and information on all sciences relevant to dentistry (including the oral cavity and associated structures) on topics related to health and disease. In addition to the original emphasis on basic and clinical research, the journal is also accepting papers on technical advances, which report original and new research on clinical tools and techniques.

Showa University Dental Society welcomes contributions of articles to DMR and also participation in our meeting from domestic and foreign researchers who are working this scientific field.



Cover Photograph: "TOKYO SKY TREE", The tower is the tallest radio and television broadcasting tower in the world (634m).

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