

# Graduate School of Dentistry

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Graduate programs at the Department of Dentistry lead to an advanced academic degree, either the master of science (MSD) or the doctor of philosophy (Ph.D.) in basic and clinical dental fields. These programs have a strong research orientation and require a thesis. MSD and Ph.D. programs in basic dental sciences permit the students to focus on one of the following tracks: dental materials, community dentistry, craniofacial morphology and function, oral molecular, cellular and systems biology, and oral diseases including infectious diseases. Programs are also available for those who wish to pursue a graduate degree in the clinical dental sciences concurrently with or without clinical special education of operative dentistry, prosthodontics, oral and maxillofacial surgery, pediatric dentistry, periodontology, orthodontics, oral and maxillofacial radiology, and oral medicine. Welcoming the challenges of the 21st century, the College of Dentistry is preparing for its transformation into a system of professional school similar to that of American dental schools in which candidates are required to obtain a bachelor's degree before application. The Dental College employing the new system began in 2003 and the new system has been in full operation since 2005. Eventually, graduate studies in dentistry will also adopt a new curricular system and academic degree to meet the need of higher professional expertise in clinical fields and advanced studies in basic dental sciences.

## Courses

Biostatistics, Thesis Writing, Research Methodology, Dental Caries Research, Bone and Bone Metabolism, Oral Health Administration and Education, Protein Chemistry, Pain, and Current Topics in Anatomy, Pathology, Physiology, Microbiology, Biochemistry, Pharmacology, Preventive Dentistry, Dental Materials, Operative Dentistry, Prosthodontics, Oral and Maxillofacial Surgery, Periodontology, Orthodontics, Pediatric Dentistry, Oral and Maxillofacial Radiology, and Oral Medicine.

## Faculty

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## Laboratories

### ■ Testing & Development Center for Dental Materials

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Director : Professor Ho-Nam Lim ([lhonam@khu.ac.kr](mailto:lhonam@khu.ac.kr))

The Testing & Development Center for Dental Materials was founded in January 17, 2000 to perform the laboratory testing of dental materials defined in medical devices established by national laws in May of 2005, and the research and development of dental materials for domestic manufacture systems. The Center is registered at KFDA as one of the representative facilities of testing dental materials with accepted quality assurance, and was designated by the Korean Agency for Technology and Standards (KATS), Ministry of Trade, Industry and Energy (MOTIE) as a managing organization representing Korea in world business related in ISO TC 106 (International Standardization Organization, Technical Committee 106 for Dental Materials) from 1999 until 2004. The Center is divided into the administrative department, the testing department, and the developmental department, and is equipped with approximately 50 testing instruments and 18 specialized staff.

The Center has a partnership system implemented with other testing facilities for high-priced testing equipment with equivalent quality manual.

The Center conducts testing & evaluation, research & development, and the standardization of all dental materials including dental equipment. The Center's additional responsibilities include research financing, training of specialized researchers, publication of journals, international academic communications, linked research between basic & applied sciences, partnerships for testing facilities, venture business, internet homepage management, seminars, etc.

The Center strives to become a world-renowned testing center through the accumulation of fine and standardized technology for experiments, and the development of manufacturing procedures for dental materials through systematic research. The Center has a goal of becoming globalized via academic and scientific services for society, in accordance with the University's vision of global eminence.

### ■ Laboratories in Association with the Institute of Oral Biology

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Director: Professor Hyeon-Woo Lee ([hyeonwoo@khu.ac.kr](mailto:hyeonwoo@khu.ac.kr))

As industrial development progresses, the need for better oral health increases. The Institute of Oral Biology was established to meet the needs of the public. The function of the institute is to support inter-departmental research teamwork, design a new research system, and to plan and conduct institutional projects. The institute contributes to the development of dental science and the dental industry. The Institute of Oral Biology is composed of 16 departmental laboratories of the School of Dentistry. Research objectives of the laboratories include craniofacial development and regeneration of oral tissue, bone and bone metabolic disease, oral cancer and carcinogenesis, biologic effect of irradiation, neuroscience and biology of pain, stress, electrophysiology, food-based vaccine against infectious diseases, implant biology, evaluation and the development of dental materials and oral hygienic aids.

## ■ Research Center for Tooth and Periodontal Tissue Regeneration

Director : Eun-Cheol Kim, D.D.S., Ph.D. (eckim@khu.ac.kr)

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### Specific Aim of the Center Research Project

The goal of the research center is to search the mechanism of damage and destruction of tooth and periodontal tissue, to secure a fundamental technology for tooth and periodontal tissue regeneration via the discovery and evaluation of regenerative lead-compounds and materials using target genes, natural compounds, and tissue engineering. Furthermore, our research center is designed to nurture basic research scientists with training in dentistry, contributing to the globalization of dental medicine.

### Major Research Areas

- 1) Research for dental and periodontal tissue injury control: basic study for tooth and periodontal tissue injury and destruction, and the development of technique on blocking of dental and periodontal tissue injury
  - a. Pathophysiologic mechanism for injury and destruction of dental and periodontal tissue
  - b. Screening and development of natural products and gene targeting for blocking dental and periodontal tissue injury and destruction
  - c. Preclinical study of leading materials and target molecules for blocking dental and periodontal tissue injury
  - d. Establishment of mechanisms and development of immune vaccine for tooth and periodontal pathogen derived antigen proteins
- 2) Research for dental and periodontal tissue regeneration: securement of advanced bone regenerative technology by development of technique on promotion of tooth and periodontal tissue regeneration
  - a. Screening of new factors for regeneration mechanism in tooth & periodontal tissue
  - b. Development of new periodontal tissue regeneration materials
  - c. Development of nano-complex containing bone regenerative factors