http://med.knu.ac.kr

Develop a sence of mission
responsibility and moral code as a doctor
with respect for human life as the basis

Kyungpook National University School of Medicine

Introduction of Departments

경북대학교 의학전문대학원
KYUNGPOOK NATIONAL UNIVERSITY
SCHOOL OF MEDICINE

Kyungpook National University School of Medicine (KNUSM)

The mission of KNUSM is to educate outstanding physicians and physician scientists, to contribute to the development of medical science, and to realize humanity through dispensing medical services to the society

CONTENTS

Introduction

Kyungpook National University School of Medicine has a glorious long-standing history. In the early 20th century, Daegu College of Medicine, our predecessor, was the cradle for the modern medical education in Korea along with Kyungsung College of Medicine in Seoul, Kyungsung Imperial University School of Medicine, Severance College of Medicine, and Pyeongyang College of Medicine in Pyeongyang. Based on this heritage, our school has been leading the creation and development of modern medical science and education in the country.

As one of the leading medical schools, Kyungpook National University School of Medicine recently took the important role as a pioneer in the creation of the new medical curriculum which has been started in the early 1990s, and the reformed curriculum has now been the standard for medical education in Korea. In particular, we were one of the first medical schools in Korea to adopt Block Lecture and PBL (Problem Based Learning) in our education curriculum. Moreover, by using OSCE (Objective Structured Clinical Examination) and CPX (Clinical Performance eXamination), we have reinforced our clinical education.

With the advanced educational curriculum, we enable our students to study more efficiently. Furthermore, in order to discover and cultivate students with great potential, we are providing opportunities for students to participate in a variety of research programs during vacations. Students are encouraged to take part in the programs carried out not only here but also abroad.

A student dormitory named “Myung Eui Kwan”, which is equipped with the newest facilities and situated near the campus, welcomes students from other regions to study at our school. In addition to our own scholarship, we offer scholarships from outside sources to financially assist students in need. Moreover, the second campus, which was opened in 2013, will help us provide better environment and more opportunity for students.

Kyungpook National University Hospital, which provides students with clinical clerkship training, is truly one of the top-notch medical institutions with the latest facilities and excellent medical teams. In addition, with opening the second one in Chilgok, the hospital will be able to provide a wider range of clinical education.

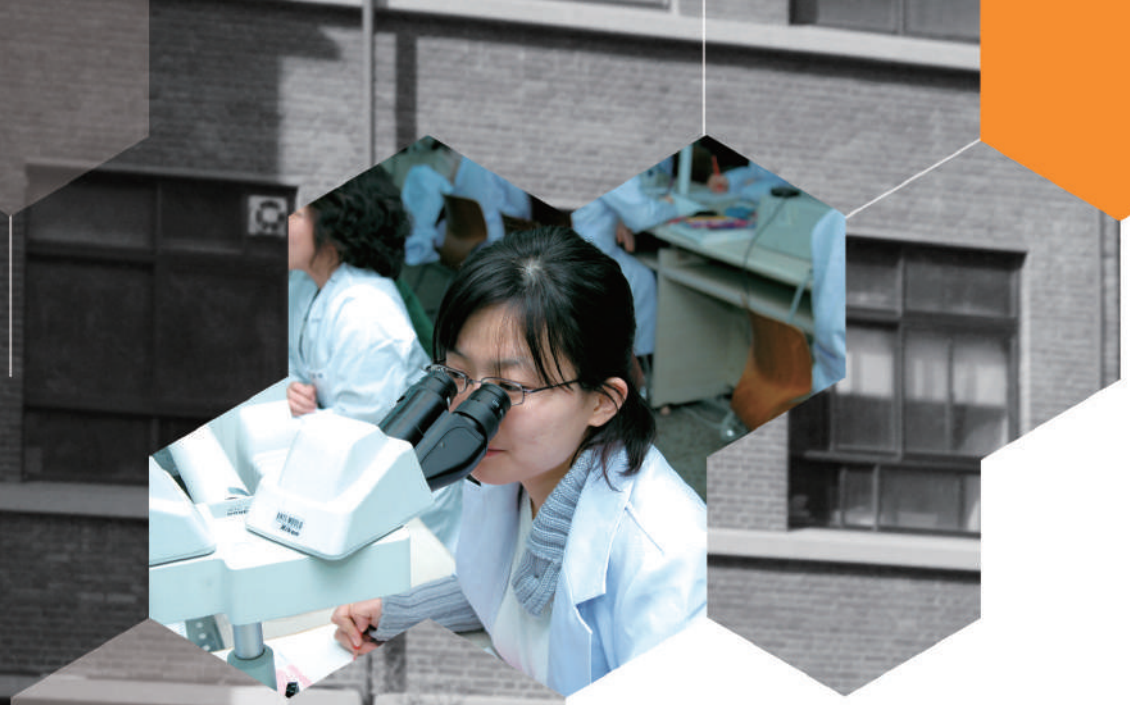
The professors and researchers of Kyungpook National University School of Medicine are continuously devoting themselves to creative researches, and we have yielded highly acclaimed research achievements at home and abroad. By attracting research funding from the Korean government, supporting human and material resources, and building the infrastructure, the school continues to provide researchers with the atmosphere where they can produce their best results. Moreover, the school will continue to ensure the recruitment of PhD students, post-docs, and research professors both within basic medical research and clinical research in order to further increase the internationally recognized products and high level of medical science carried out at school.

Kyungpook National University School of Medicine has about 7,700 graduates, and our alumni are working in diverse fields, such as medical practice, medical education, research, and public health both inside and outside Korea. Our alumni’s accomplishments have not only contributed to Korean modern medicine but are being a model for our students.

Kyungpook National University School of Medicine is not going to dwell on its proudest moments of the past. We are going to actively prepare a new blueprint to step up as a world-class medical education and research institution not only to meet the demands of highly qualified medical students within basic and clinical medical fields but also to meet the growing demands of biomedical PhDs in the biotech and pharmaceutical fields.

Our doors are open to the local students as well as to excellent students from different countries. We are always ready to provide the best environment.


VOLUME 1
NERVOUS SYSTEM
PART I
ANATOMY AND PHYSIOLOGY
FRANK H. NETTER, M.D.



Basic Science

Department of Anatomy
Department of Biochemistry and Cell Biology
Department of Biomedical Engineering
Department of Forensic Medicine
Department of Immunology
Department of Medical Education
Department of Medical Informatics
Department of Microbiology
Department of Molecular Medicine
Department of Parasitology and Tropical Medicine
Department of Pathology
Department of Pharmacology
Department of Physiology
Department of Preventive Medicine

Department of **Anatomy**

Chairman: : Prof. Kwon Moo Park, DVM, PhD
(kmpark@knu.ac.kr)

The main research areas in the Department of Anatomy are as follows:

Hee Jung Cho, MD, PhD - Pain Research Lab

Chronic pain is a common problem in the general population, but the underlying molecular mechanisms for pain development are currently unclear. To elucidate the mechanisms, we are performing experiments on an animal model of peripheral nerve injury or spinal cord injury. Opioid tolerance, which is a problem in clinics, is another research area. For this, 1) intracellular signaling transduction, 2) cytokine or chemokine, 3) acetylation and methylation of genes, 4) extracellular adhesion molecule, and 5) immume system are the targets of our research area.

1. Lee KM, Jeon SM, Cho HJ. Interleukin-6 induces microglial CX-3CR1 expression in the spinal cord after peripheral nerve injury through the activation of p38 MAPK. Eur J Pain 2010;14:682.e1-12.

2. Lee KM, Jeon SM, Cho HJ. Tumor necrosis factor receptor 1 induces interleukin-6 upregulation through NF-kappaB in a rat neuropathic pain model. Eur J Pain 2009;13:794-806.

Mae Ja Park, MD, PhD - Vertebrate development laboratory

My research objective focuses on the mechanisms of the embryonic cell fate determination during meso-endodermal differential differentiation in Xenopus laevis through understanding molecular communications based on transcriptional regulation mechanism of homeobox genes which may play an important role in meso-endoderm formation. To further understand the regulation mechanism of meso-endoderm formation, I extend my research scope to other major signaling pathways such as FGF and wnt. As a result, we could show for the first time that inhibition of FGF signaling promotes endoderm formation, whereas the presence of active FGF signaling is necessary for neurogenesis/mesoderm formation. It gives an important clue to understand the specification of cell fate during Xenopus embryogenesis.

1. Xclaudin 1 is required for the proper gastrulation in Xenopus laevis. Biochem Biophys Res Commun. 2010 Jun 18;397(1):75-81.

2. Spatiotemporal regulation of fibroblast growth factor signal blocking for endoderm formation in Xenopus laevis. Exp Mol Med. 2008 Oct 31;40(5):550-7.

Dong Sun Kim, PhD - OncoMethylome Science Lab

Lung cancer is the leading cause of cancer-related death and thus a major health problem. DNA methylation has emerged as a highly promising biomarker and is being actively studied in multiple cancers. The expression of individual miRNAs and miRNA signatures has now been linked to the diagnosis and prognosis of a number of cancers. Very little is known about the deregulation mechanism governing miRNA gene expression. Interestingly, epigenetic silencing of miRNAs with tumor suppressor features by CpG island hypermethylation is also emerging as a common hallmark of human tumors. Therefore, my laboratory would investigate the DNA methylation status of lung cancer-related miRs in lung tissue and blood samples and evaluate the relationship between their methylation pattern and clinicopathologic features. These studies will provide novel opportunities for the development of lung cancer biomarkers and the identification of new therapeutic targets in the foreseeable future.

1. Kim DS, Lee JY, Lee SM, Choi JE, Cho S, Park JY. Promoter methylation of the RGC32 gene in nonsmall cell lung cancer. Cancer 2011:117;590-596.

2. Kim DS, Kim MJ, Lee JY, Lee SM, Choi JY, Yoon GS, Na YK, Hong HS, Kim SG, Choi JE, Lee SY, Park JY. Epigenetic inactivation of Homeobox A5 gene in nonsmall cell lung cancer and its relationship with clinicopathological features. Molecular Carcinogenesis 2009;48:1109-1115.

Kwon Moo Park, DVM, PhD

The overall goal of Dr. Park's laboratory is to develop therapeutic strategies for the acute kidney injury (AKI) and chronic renal failure (CRF). AKI and CRF are significant growingproblems. Effective therapeutics and preventives, however, have not yet been successfully developed. The specific goals of Dr. Park's research are as follows: 1) Exploration of the protective mechanisms in ischemic preconditioning phenomenon; 2) Exploration of the molecular mechanism in gender dimorphism in kidney injury. Recently we found a gender dimorphism in the I/R-induced acute kidney injury, and the fact that the dimorphism depends on androgen rather than estrogen;and 3) Exploration of the recovery factor of injured renal tubular epithelial cells.

1. Kim J, Jang HS, Park KM. Reactive oxygen species generated by renal ischemia and reperfusion trigger protection against subsequent renal ischemia and reperfusion injury in mice. Am J Physiol Renal Physiol. 2010 Jan;298(1):F158-66.

2. Kim J, Seok YM, Jung KJ, Park KM. Reactive oxygen species/oxidative stress contributes to progression of kidney fibrosis following transient ischemic injury in mice. Am J Physiol Renal Physiol. 2009 Aug;297(2):F461-70.

Kyung Min Lee, MD, PhD

Our research focuses on understanding how the basal ganglia shape attention/cognition and action selection in the subcortical circuit and beyond by the application of genetic and physiological tools to allow the inducible and reversible silencing of synaptic transmission of genetically and anatomically defined subsets of neurons. The physiological recording of neuronal activity in behaving animals is an exciting tool with which we can link anatomical circuits, physiology and behavior leading to accelerating the pace of research for comprehension of psychiatric and neurological disorders.

1. Lee KM, Jeon SM, Cho HJ. Interleukin-6 induces microglial CX3CR1 expression in the spinal cord after peripheral nerve injury through the activation of p38 MAPK. Eur J Pain 2010;14:682.e1-12.

2. Li XY, Ko HG, Chen T, Descalzi G, Koga K, Wang H, Kim SS, Shang Y, Kwak C, Park SW, Shim J, Lee KM,Collingridge GL, Kaang BK, Zhuo M Alleviating neuropathic pain hypersensitivity by inhibiting PKMzeta in the anterior cingulate cortex. Science. 2010 Dec 3;330(6009):1400-4.

Department of **Biochemistry and Cell Biology**

The Department of Biochemistry and Cell Biology has taken an important role as a leader for the creation of highly motivated research environment in the Kyungpook National University School of Medicine. The professors and researchers of the department have been continuously devoting themselves to creative researches and borne fruit both at home and abroad. By securing research funds from the Korean government including NRL (national research laboratory), WCU (world class university), and R&D Cluster, the Department has continued to provide researchers with the atmosphere where they can produce their excellent results. Moreover, we continue to ensure the recruitment of PhD students, post-docs, and research professors in order to continue the internationally recognized studies. Currently the department has 5 professors, 3 adjunct professors, 6 research professors, 11 post-docs, 2 teaching assistant, 19 PhD students, 14 MSc students, 13 researchers and technicians, and two secretaries. The followings are the research interests and recent publications of each professor.

Chairman: Prof. Je-Yong Choi, DDS, PhD
(jechoi@knu.ac.kr)
Office: Ms. Kyung Son (medbio@knu.ac.kr)

Research interests & Recent publications

Prof. In-San Kim, MD, PhD (iskim@knu.ac.kr)

Engulfment of apoptotic cells and cellular responses to tumor microenvironment; Regulation of angiogenesis by balancing of pro- and anti-angiogenic factors in microenvironment; and Bio-inspired multipurpose nanocomplex using cage proteins which accommodate imaging and therapeutic molecules.

1. Lee SJ, Park SY, Jung MY, Bae SM, Kim IS. Mechanism for phosphatidylserine-dependent erythrophagocytosis in mouse liver. Blood. 2011;117:5215-23.

2. Kim HJ, Kim PK, Bae SM, Son HN, Thoudam DS, Kim JE, Lee BH, Park RW, Kim IS. Transforming growth factor-beta-induced protein (TGFBIp/beta

ig-h3) activates platelets and promotes thrombogenesis. Blood. 2009;114:5206-15.

3. Kim S, Park SY, Kim SY, Bae DJ, Pyo JH, Hong M, Kim IS. Cross Talk between Engulfment Receptors Stabilin-2 and Integrin αvβ5 Orchestrates Engulfment of Phosphatidylserine-Exposed Erythrocytes. Mol Cell Biol. 2012 Jul;32(14):2698-708.

Prof. Rang-Woon Park, MD, PhD (nwpark@knu.ac.kr)

Targeting and Regulation of angiogenesis and tumor microenvironment; Drug delivery and molecular imaging.

1. Bae SM, Kim JH, Chung SW, Byun Y, Kim SY, Lee BH, Kim IS, Park RW. An apoptosis-homing peptide-conjugated low molecular weight heparin-taurocholate conjugate with antitumor properties. Biomaterials. 2013;34(8):2077-86.

2. Jeon WB, Park BH, Wei J, Park RW. Stimulation of fibroblasts and neuroblasts on a biomimetic extracellular matrix consisting of tandem repeats of the elastic VGVPG domain and RGD motif. J Biomed Mater Res A. 2011;97(2):152-7.

3. Kim K, Kim JH, Park H, Kim YS, Park K, Nam H, Lee S, Park JH, Park RW, Kim IS, Choi K, Kim SY, Park K, Kwon IC. Tumor-homing multifunctional nanoparticles for cancer theragnosis: Simultaneous diagnosis, drug delivery, and therapeutic monitoring. J Control Release. 2010;146:219-27.

Prof. Je-Yong Choi, DDS, PhD (jechoi@knu.ac.kr)

Molecular mechanism of biomineralization in skeletal and nonskeletal tissues; Identification of biological properties of Runx2 transcription factor complex to develop novel therapeutic strategies for treating patients with bone and cartilage destructive conditions (osteoporosis and arthritis).

1. Han SW, Jung YK, Lee EJ, Park HR, Kim GW, Jeong JH, Han MS, Choi JY. DICAM inhibits angiogenesis via suppression of AKT and p38 MAP kinase signaling. Cardiovasc Res., 2013;98:73-82.

2. Jung YK, Han SW, Kim GW, Jeong JH, Kim HJ, Choi JY. DICAM inhibits osteoclast differentiation through attenuation of the integrin αVβ3 pathway. J Bone Miner Res., 2012; 27:2024-34.

3. Jeong JH, Jung YK, Kim HJ, Jin JS, Kim HN, Kang SM, Kim SY, van Wijnen AJ, Stein JL, Lain JB, Stein GS, Kato S, and Choi JY. Aromatase, a rate limiting enzyme for local estrogen biosynthesis, is a downstream target gene of Runx2 in skeletal tissues. Mol Cell Biol. 2010;30:2365-75.

Prof. Tae-Hwan Kwon, MD, PhD, dr.med. (thkwon@knu.ac.kr)

Regulation of water channel proteins and sodium transporters in physiology and pathophysiological conditions. Based on the expertise in cellular and molecular biology, physiology, and clinical nephrology, the lab concerns both expertise regarding 1) new state of art methods and instrumentation for basic research (e.g., in vitro phage display, 1H-NMR-based metabolomics, LC-MS/MS proteomics, transcriptomics, cryoelectron microscope, laser scanning confocal microscope, and in vivo siRNA delivery), as well as 2) renal physiology and pathophysiology and related clinical research areas (e.g., I/R-induced acute organ injury, chronic renal failure, and nephrogenic diabetes insipidus).

1. Lee YJ, Lee JE, Choi HJ, Lim JS, Jung HJ, Baek MC, Frøkiær J, Nielsen S, Kwon TH. E3 ubiquitin-protein ligases in rat kidney collecting duct: response to vasopressin stimulation and withdrawal. Am J Physiol Renal Physiol. 2011;301(4):F883-96.

2. Choi HJ, Yoon YJ, Kwon YK, Lee YJ, Chae S, Hwang D, Hwang GS, Kwon TH. Patterns of gene and metabolite define the effects of extracellular osmolality on kidney collecting duct. J Proteome Res.

2012;11(7):3816-28.

3. Jang KJ, Cho HS, Kang do H, Bae WG, Kwon TH, Suh KY. Fluid-shear-stress-induced translocation of aquaporin-2 and reorganization of actin cytoskeleton in renal tubular epithelial cells. Integr Biol (Camb). 2011;3(2):134-41.

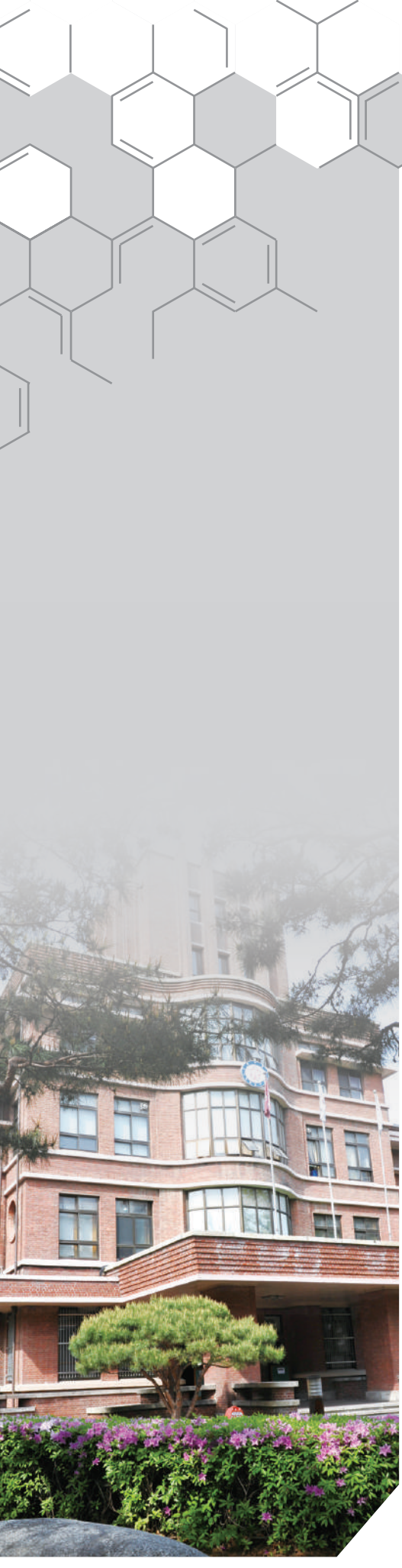
Prof. Byung-Heon Lee, MD, PhD (leebh@knu.ac.kr)

Discovery of molecular signature-recognizing peptides using phage display and the application to the molecular imaging and targeted drug delivery.

1. He X, Bonaparte N, Kim S, Acharya B, Lee JY, Chi L, Lee HJ, Paik YK, Moon PG, Baek MC, Lee EK, Kim JH, Kim IS, Lee BH. Enhanced delivery of T cells to tumor after chemotherapy using membrane-anchored, apoptosis-targeted peptide. J Control Release. 2012;162(3):521-8.

2. He X, Na MH, Kim JS, Lee GY, Park JY, Hoffman AS, Nam JO, Han SE, Sim GY, Oh YK, Kim IS, Lee BH, A Novel Peptide Probe for Imaging and Targeted Delivery of Liposomal Doxorubicin to Lung Tumor. Mol Pharm. 2011;8:430-438.

3. Wang K, Purushodam S, Lee JY, Na MH, Park H, Oh SJ, Park RW, Park JY, Lee E, Cho BC, Song MN, Baek MC, Kwak W, Yoo J, Hoffman AS, Oh YK, Kim IS, Lee BH. In Vivo Imaging of Tumor Apoptosis Using Histone H1-Targeting Peptide. J Control Release. 2010;148: 283-291.



Department of **Biomedical Engineering**

The Department of Biomedical Engineering pursues setting up one of the best laboratory in Korea for the development of advanced medical devices for human patients. We collaborate with professors and researchers from the IT field, industry and hospitals on developing the following medical devices:

1) Fully implantable middle ear system
2) Environment-independent adaptive hearing aid using wireless transceiver
3) Computer-supported diagnosis system using image processing technology
4) Communications technology for hearing aid
5) Real-time sensing technology for detecting cardiovascular diseases
6) New round window-drive implantable hearing aid

Chairman: Prof. Myoung Nam Kim, PhD
(kimmn@knu.ac.kr)

Faculty
Prof. Myoung Nam Kim, PhD: Biomedical Signal System and Medical Image Processing
Prof. Jin Ho Cho, PhD: Biomedical Electronics

Recent publications

1. Eung-Pyo Hong, Il-Yong Park, Ki-Woong Seong, Chang-Woo Lee, Myoung-Nam Kim and Jin-Ho Cho, “Application of Piezoelectric Multi-Layered Actuator to Floating Mass Transducer for Implantable Middle Ear Hearing Devices,” Journal of Electroceramics, Vol. 23, No. 2-4, pp. 335-340, Oct. 2009.

2. Hee Joon Park, Sang Hyo Woo, Zia Mohy Ud Din, Myoung Nam Kim, and Jin-Ho Cho, “Design and Implementation of Wireless Transcutaneous Electrical Nerve Stimulator(TENS) for Smart Phone,” IEICE

Electronics Express, Vol. 6, No. 22, pp. 1587-1594, Nov. 2009.

3. Sang Hyo Woo, Tae Wan Kim, and Jin Ho Cho, "Stopping Mechanism for Capsule Endoscope using Electrical Stimulus," Medical and Biological Engineering and Computing, Vol. 48, pp. 97-102, Jan. 2010.

4. Sang Hyo Woo and Jin Ho Cho, "Telemetry System for Slow Wave Measurement from the Small Bowel," Medical and Biological Engineering and Computing, Vol. 48, pp. 277-283, Mar. 2010.

5. Ki Woong Seong, Min Woo Kim, Jung Hyun Lee, Myung Nam Kim, and Jin-Ho Cho, "Design of New Vibration Transducer for Implantable Middle Ear Hearing Devices," IEEJ Transactions on Electrical and Electronic Engineering, Vol. 5, Issue 5, pp. 608-610, Sept. 2010.

6. Pil Un Kim, Yunjung Lee, Sanghyo Woo, Chulho Won, Jin Ho Cho, and Myoung Nam Kim, "Detection of Retinal Blood Vessels Based on Morphological Analysis with Multiscale Structure Elements and SVM Classification," IEICE Transactions on Information and Systems, Vol. E94-D, No. 7, pp. 1519-1522, July 2011.

7. Yunjung Lee, Pil Un Kim, Jin Ho Cho, Yongmin Chang, and Myoung Nam Kim, "Single-Channel Adaptive Noise Canceller for Heart Sound Enhancement during Auscultation," IEICE Transactions on Information and Systems, Vol. E95-D, No. 10, pp. 2593-2596, Oct. 2012.

Department of **Forensic Medicine**

Forensic medicine is concerned with the legal application of medicine, especially pathological principles to the investigation of the medicolegal aspects of death. In recent years, there has been an explosion of books, movies, and TV dramas, such as “CSI” in the U.S. and “Sign” in Korea, devoted to forensic science and crime investigation. We have performed autopsies (postmortem examinations) on those who have died suddenly, unexpectedly, or as a result of trauma or poisoning in Daegu and nearer Kyungpook province since the 1930s, although the department was re-established in 1987. In 2002, the case of “frog children” was finally proved as homicide by our efforts. It was one of the most sensational, nationwide issues in Korean crime history.

Student education and pathology residency training are the most important part of our activities. We have devoted much of our time to teaching basic principles and practical application of forensic medicine and/or pathology to the medical and dental students, students of the college of law, and students of the graduate school of forensic and investigative science. We also participate in the training programs for policemen, especially crime scene investigators and 119 fire rescue members. We are making the hopeful future of the medicolegal death investigation system in the country.

The objective of our research project is to clarify the mechanism of sudden cardiac deaths in young adults. We are trying to find any earlier morphological changes in the heart in those cases. Molecular workup or gene study is the next goal. We sincerely hope to collaborate with other laboratories for our research.

In every death, there are lessons to be learned for the living. We strongly believe that teaching those lessons and translating them into the law are the heart of our work and our mission is to search the truth to protect the community and the living. We always try to tell it like it is.

Chairman: Prof. Sang-Han Lee, MD, PhD
(sanghan1@knu.ac.kr)

Faculty

Prof. Jong-Min Chae, MD, PhD
Prof. Sang-Han Lee, MD, PhD
Prof. Jung-Sik Kwak, MD, PhD (Emeritus)

Recent publications

1. HJ Song, JS Kwak, SH Lee. Iatrogenic fatal bleeding of ruptured gastric varix mimicking submucosal mass: An autopsy case. Basic and Applied Pathology 2009; 2: 44-45.

2. MH Han, SC Nam, YS Kim, SH Lee. Spontaneous coronary artery dissection as a cause of sudden unexpected death. Basic and Applied Pathology 2008; 1: 49-51.

3. SH Lee, JM Chae, YK Cho. Causes of sudden death related to sexual activity: Results of a medicolegal postmortem study from 2001 to 2005. Journal of Korean Medical Science 2006; 21(6): 995-999.

4. JS Kwak, JM Chae, SH Lee, et al: Textbook of Forensic Medicine (in Korean). 2007, Jungmoonkak, Seoul, Korea.

Department of **Immunology**

The Department of Immunology was opened in 1988. Researches at the molecular level provided much of the revolutionary science for the past twenty years. The department has elucidated the mechanisms of various human diseases at the molecular level and applied them to human life, with an ultimate goal to contribute to the health of human beings.

Main research interests are divided into 3 sections:
First, the department has focused on making therapeutic antibodies against various cancers. Using recent technical advance and creative approach, we have set up several promising candidate.
Second, the department has researched the study of human hair. We have been focusing on the research to understand the mechanism of male-pattern baldness and trying to find a new way of treatment.
Third, the department has developed the specialized drug delivery system, especially for penetrating human skin. Using advanced techniques such as electro-stimulation, liposome and other tools related with drug delivery, we are trying to make highly efficient penetration methods for human skin and scalp.

Chairman: Prof. Moonkyu Kim, MD, PhD
(moonkim@knu.ac.kr)

Faculty

Professor Jung-Chul Kim MD, PhD
Research interests: hair transplantation, human hair follicle cycle, drug delivery penetrating into the scalp

Professor Moonkyu Kim MD, PhD
Research interests: hair transplantation, male-pattern baldness, therapeutic antibody for liver cancer

Professor Young Kwan Sung PhD
Research interests: molecular mechanism of androgenetic alopecia, human hair follicle regeneration

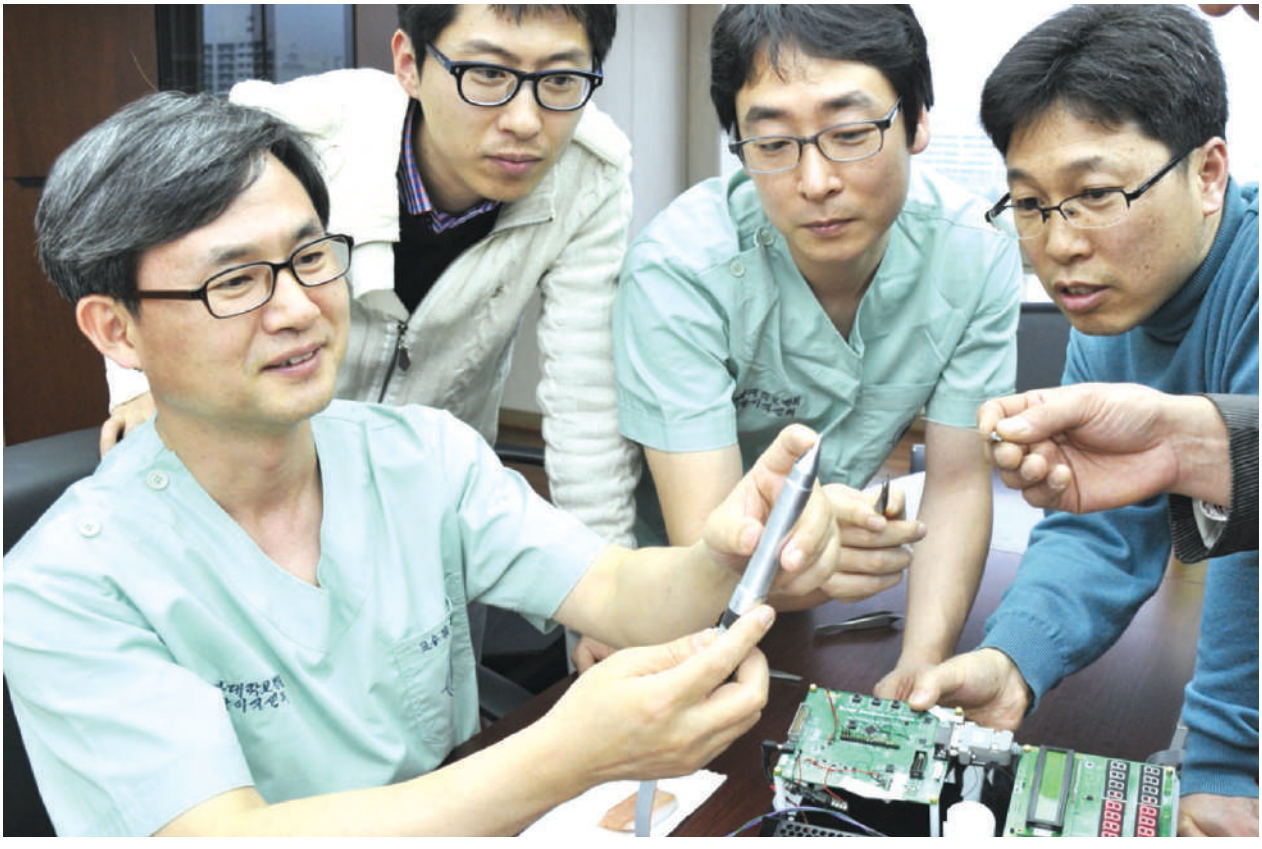
Recent Publications

1. Kwack MH, Kim MK, Kim JC, Sung YK. Dickkopf 1 promotes regression of hair follicles. J Invest Dermatol. 2012 Jun;132(6):1554-60.

2. Kwack MH, Ahn JS, Kim MK, Kim JC, Sung YK. Dihydrotestosterone-inducible IL-6 inhibits elongation of human hair shafts by suppressing matrix cell proliferation and promotes regression of hair follicles in mice. J Invest Dermatol. 2012 Jan;132(1):43-9.

3. Kwack MH, Kang BM, Kim MK, Kim JC, Sung YK. Minoxidil activates β-catenin pathway in human dermal papilla cells: a possible explanation for its anagen prolongation effect. J Dermatol Sci. 2011 Jun;62(3):154-9.

4. Shin H, Kwack MH, Shin SH, Oh JW, Kang BM, Kim AA, Kim J, Kim MK, Kim JC, Sung YK. Identification of transcriptional targets of Wnt/beta-catenin signaling in dermal papilla cells of human scalp hair follicles: EP2 is a novel transcriptional target of Wnt3a. J Dermatol Sci. 2010 May;58(2):91-6.



Department of **Medical Education**

To cope with the increasing demand for a higher level of medical education and to supply more efficient tools for medical education, the Department of Medical Education was established at March 2001. The department has put an emphasis on the development of the theory and background of medical education, making efficient teaching skills and evaluation tools for students and setting up a curriculum for higher level of medical education. Moreover, the department runs PBL (problem-based learning) and seminars on patient-doctor relationship and medical education curriculum, and participates in the national team for the evaluation of medical education systems in Korea.

Chairman: Professor Bong Hyun Chang, MD
(bhchang@knu.ac.kr)

Faculty

Bong Hyun Chang, MD
Jin Ho Sohn, MD, PhD
Yong-Lim Kim, MD, PhD
Moonkyu Kim, MD, PhD
Shin Woo Kim, MD, PhD
Dong-Il Won, MD, PhD
Chang Ho Yoon, MD, PhD
Echul, Kang, PhD

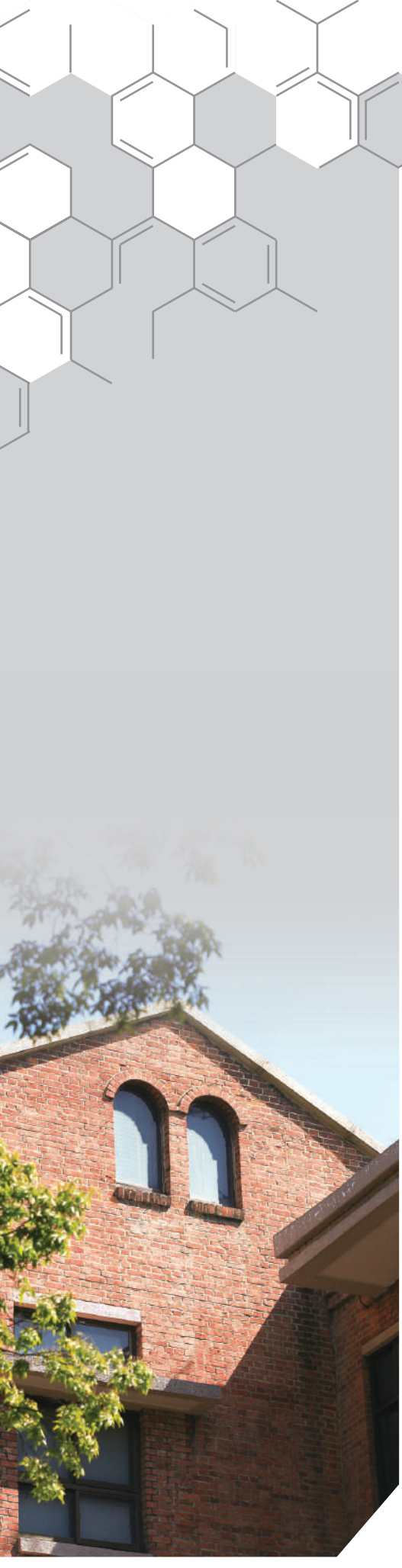
Recent Publications

1. Yoo Chul Lee, Sang Hee Yeo, Won Kee Lee, Dul Sik kang, Echeol Kang, Yun Sik Kwak, Bo Wan Kim, Jong Myung Lee, Bong Hyung Chang, Jae Myung Cung, Hee Jung Cho (2003). The Achievement of Medical Students Admitted after Baccalaureate Level. Korean Journal of Medical Education, 15(1) 1-10.

2. Sang Hee Yeo, Kyung Woo Lee, Bong Hyung Chang, Echeol Kang, Duk Sik Kang, Yun Suk Kwak, Bo Wan Kim, Yoo, Chul Lee, Jong Myung Lee, Hee Jung Cho, Jae Myung Chung (2006). Learning Styles in Medical School. Korean Journal of Medical Education, 18(1) 31-39.

3. Eun-Jung Im, Lee Won-Kee, Lee Yoo-Chul, Choe Byung-Ho, Chung Sung-Kwang, Lee Taek-Hoo, Cho Hune, Sohn Jin-Ho, Won Dong-Il, Kong Hyun-Hee, Chang Bong-Hyun (2008). Development of Computer-Based Test (CBT) and Student Recognition Survey, Korean Journal of Medical Education, 20(2) 145-154.

4. Eun-Jung Im, Lee Yoo-Chul, Chang Bong-Hyun, Chung Sung-Kwang (2010). Investigation of the Requirements of 'Good Teaching' to Improve Teaching Professionalism in Medical Education, Korean Journal of Medical Education, 22(2) 101-111.



Department of **Medical Informatics**

The Department of Medical Informatics was inaugurated in 1999 at Kyungpook National University School of Medicine. The department has been recorded as the first academic medical Informatics curriculum in Korea before the turn of the 21st century. The faculty initially consisted of Drs. Yun Sik Kwak and Hune Cho, and Dr. Ho-young Chung joined the department when Dr. Kwak retired.

The department has been committed to educating highly knowledgeable, informative physicians who will take full responsibility for the healthcare information technology (IT) in the global healthcare networking. The department offers a unique graduate program for both MS and Ph.D degrees, which seeks to enhance IT applications to all aspects of medicine. To achieve multidisciplinary objectives in health care, we must continuously be able to refine and balance between scientific discipline and art of medicine so that medical informatics stays current and up to date for clinical innovations. To accomplish these missions, the faculty and alumni should be able to pursue proactive roles to be frontiers in a broad spectrum of IT based biomedical researches - clinical and translational investigation, health policy, and industrial collaborations.

The medical informatics training program in KNU is recognized as one of the most rigorous convergence programs for informatics in the nation, which nowcasts a reference model for other medical institutes. Our faculty and graduates have granted several major national projects such as “Development and implementation of HL7 Interface Engine” and “Interoperable Electronic Health Record.” Though a few, not so many, graduates completed with degrees (MS, PhD) are found to have key positions in academia, hospitals, government, and many health related industry. The essence of medical informatics lies in a nomadic spirit that invades unprecedented territories in cyberspace per se, no one has ever been before. Because the incessant challenge is the canonical characteristics of IT and medicine, the department is looking forward to harvesting synergistic outcomes with great anticipation.

Mission Statement

1. Educate medical and health professionals, medical informatics specialists for the healthcare and public health communities in the field informations technology convergence.

2. Promote and conduct the quality of scientific research to upgrade biomedical informatics knowledge.

3. Maintain medical informatics leadership to stay active with relevant professional societies.

Chairman: Cho, Hune PhD
(hunecho@knu.ac.kr)
Tel: +82-53-420-4896 Fax: +82-53-423-1242

Faculty
Cho, Hune PhD Medical Informatics
Chung, Ho-Young MD, PhD Surgical Informatics

Recent publications

1. Mapping Tool for Semantic Interoperability of Clinical Terms. Hwa Sun Kim, Sung Jung Hong, In Keun Lee, Hune Cho, The Transactions of KIEE.

2. Processing SPARQL queries with regular expressions in RDF databases. Jin Soo Lee, inh Duc Pham, Ji Hwan Lee, Wook Shin Han, Hwan Jo Yu, Jeong Hoon Lee, Hune Cho, BMC Bioinformatics.

3. A Visualization Tool for Ranked Subsequence Matching in Time-Series Databases. Sung Jin Lee, Wook Shin Han, Hune Cho, Jin Soo Lee, Journal of KISS : Databases.

4. Design and Development of a System for Mapping of Medical Standard Terminologies, In Keun Lee, Hune Cho, Hwa Sun Kim, Journal of Korean Institute of Intelligent Systems.

5. Development of Education Courseware for Clinical Care Classification System based PC and Smartphone. Hae Sook Hong, Hwa Sun Kim, In Keun Lee, Hune Cho, Journal of Korean Society for Internet Information.

6. Development of an Electronic Claim System Based on an Integrated Electronic Health Record Platform to Guarantee Interoperability. Hwa Sun Kim, In Keun Lee, Hune Cho, Healthcare Informatics Research.

7. Design and Development of an EHR Platform Based on Medical Informatics Standards. Hwa Sun Kim, In Keun Lee, Hune Cho, Journal of Korean Institute of Intelligent Systems.

8. Development of Education Program for Nursing Process based on Mobile Application, Hune Cho, Hwa sun Kim, Hae Sook Hong, Journal of Korea Multimedia Society.

9. The Development of a Graphical User Interface Engine for the Convenient Use of the HL7 Version 2.x Interface Engine. Hwa Sun Kim, In Keun Lee, Hune Cho, Healthcare Informatics Research.

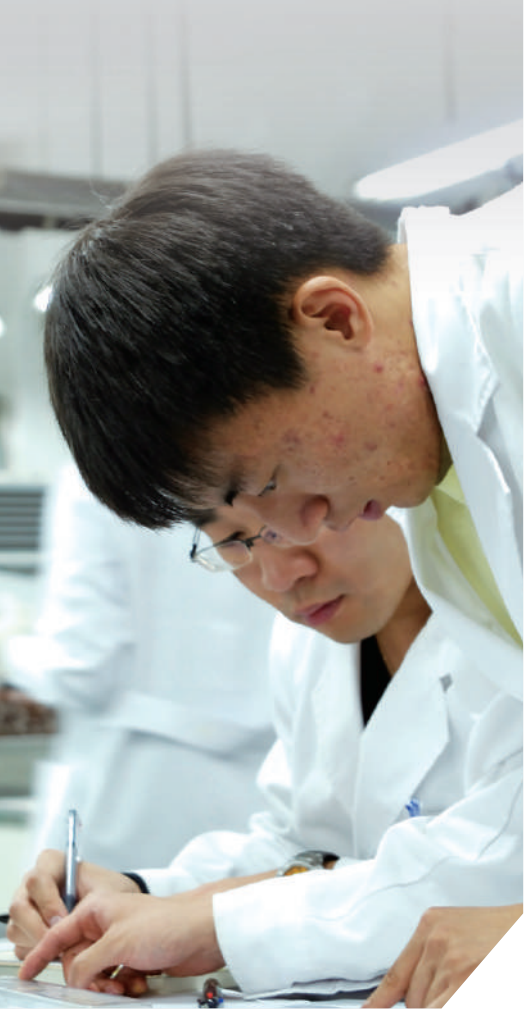
10. Impact of Low Glucose Degradation Product Bicarbonate/Lactate-Buffered Dialysis Solution on the Epithelial-Mesenchymal Transition of Peritoneum, Ho-young Chung, et. al., American Journal Of Nephrology.

11. Recent advances in chemotherapy for advanced gastric cancer. Ho-young Chung, et. al., American Journal Of Nephrology.

12. Handsewn Versus Stapled Gastroduodenostomy in Patients with Gastric Cancer: Long-Term Follow-up of a Randomized Clinical Trial. Ho-young Chung, et. al., American Journal Of Nephrology.

Department of **Microbiology**

The Department of Microbiology is proud of the contribution to the eradication of cholera, shigella, and typhoid fever in Korea. The department has continuously emphasized the importance of studies on antibiotic resistance, since antibiotics cannot overcome the bacterial infection in human patients. Therefore, the following topics have mainly been studied: 1) antibiotic resistance induced by bacteria – characteristics, underlying mechanisms, and propagation; and 2) pathogenic mechanisms for pathogens; and 3) identification and application of bacteriophage for eradication of human pathogens.



Antibiotic resistance induced by bacteria – characteristics, underlying mechanisms, and propagation

1) Multidrug resistance, genes for antibiotic resistance in *Acinetobacter baumannii* and their involvement in pathogenesis
2) Characteristics of antibiotic resistance in gram negative bacteria and genes involved in the resistance
3) Characteristics of antibiotic resistance in methicillin-resistant *Staphylococcus aureus* (MRSA) and the mechanisms for their propagation

Underlying pathogenic mechanisms for pathogenic microbials

1) Pathogenesis of biofilm-forming bacteria and development of anti-biofilm agents
2) Signaling mechanisms of *Acinetobacter baumannii* for their biofilm forming and elucidation of components in biofilm
3) Proteome and metabolome analysis of biofilm-forming bacteria having resistance to antibiotics
4) Examination of cell toxicity exploiting Acanthamoeba model
5) Identification of bacterial proteins targeted to nucleus and their involvement in host cell death
6) Development of anti-cancer vaccine using bacterial proteins and cancer markers
7) Bacteria-derived membrane vesicles and their pathogenic role

Identification and Application of bacteriophage for eradication of human pathogens

1) Identification and characterization of novel bacteriophage specific to human pathogens
2) Clinical application of bacteriophage for treating infectious diseases

Chairman: Prof. Je Chul Lee, MD, PhD
(leejc@knu.ac.kr)

Faculty
Prof. Dong-Taek Cho, MD, PhD
Prof. Yoo-Chul Lee, MD, PhD
Prof. Je-Chul Lee, MD, PhD
Prof. Jungmin Kim, MD, PhD
Emeritas Prof. Sung Yong Seol, DVM, PhD

Recent Publications

1. Jinki Yeom, Ji-Hyun Shin, Ji-Young Yang, Jungmin Kim, Geum-Sook Hwang. 1H NMR-Based Metabolite Profiling of Planktonic and Biofilm Cells in *Acinetobacter baumannii* 1656-2. PLoS One. 2013;8(3):e57730.

2. Lee JH, Jun SH, Baik SC, Kim DR, Park JY, Lee YS, Choi CH, Lee JC. Prediction and screening of nuclear targeting proteins with nuclear localization signals in *Helicobacter pylori.* J Microbiol Methods. 2012;91(3):490-496.

3. Moon DC, Choi CH, Lee SM, Lee JH, Kim SI, Kim DS, Lee JC. Nuclear translocation of *Acinetobacter baumannii* transposase induces DNA methylation of CpG regions in the promoters of E-cadherin gene. PLoS One. 2012;7(6):e38974.

4. Moon DC, Gurung M, Lee JH, Lee YS, Choi CW, Kim SI, Lee JC. Screening of nuclear targeting proteins in *Acinetobacter baumannii* based on nuclear localization signals. Res Microbiol. 2012;163(4):279-285.

5. Kim BR, Yang EK, Kim DY, Kim SH, Moon DC, Lee JH, Kim HJ, Lee JC. Generation of anti-tumour immune response using dendritic cells pulsed with carbonic anhydrase IX-*Acinetobacter baumannii* outer membrane protein A fusion proteins against renal cell carcinoma. Clin Exp Immunol. 2012;167(1):73-83.

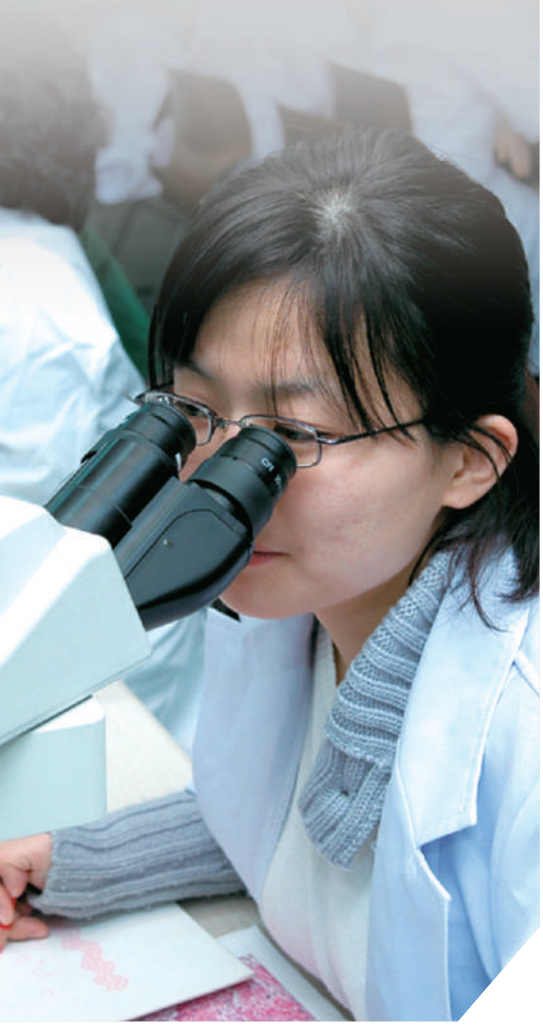
6. Shukho Kim, Marzia Rahman and Jungmin Kim. Complete Genome Sequence of *Pseudomonas aeruginosa* Lytic Bacteriophage PA1 Which Resembles Temperate Bacteriophage D3112. J Virol. 2012;86(6):3400.

7. Shukho Kim, Marzia Rahman, Sung Yong Seol, Sang Sun Yoon and Jungmin Kim. *Pseudomonas aeruginosa* Bacteriophage PA1Ø Requires Type IV Pili for Infection and Shows Broad Bactericidal and Biofilm Removal Activities. Appl Environ Microbiol. 2012;78(17):6380-6385.

8. Marzia Rahman, Shukho Kim, Sung Min Kim, Sung Yong Seol and Jungmin Kim. Characterization of induced *Staphylococcus aureus* bacteriophage SAP-26 and its anti-biofilm activity with rifampicin. Biofouling. 2011;27(10):1087-1093.

9. Jin Yeol Park, Shukho Kim, Sung-Min Kim, Sun Ho Cha, Si-Kyu Lim, Jungmin Kim. Complete Genome Sequence of Multidrug-Resistant *Acinetobacter baumannii* Strain 1656-2, Which Forms Sturdy Biofilm. J Bact,2011;193(22):6393-6394.

Department of **Molecular Medicine**



The Department of Molecular Medicine is one of the basic science departments at Kyungpook National University School of Medicine, which has dedicated itself to broadening (research) knowledge of molecular diagnosis and therapeutic targets, the essential subjects of molecular medicine. Professor Yongmin Chang is mainly interested in Molecular Imaging; specifically, his main research theme is to develop a new MRI-based molecular imaging agent. In addition, his other research field is neuro-functional imaging to understand brain function at the system level. Professor Yong Chool Boo is interested in clarifying the molecular mechanisms associated with vascular and skin aging and in identifying therapeutic targets for cardiovascular and skin disorders. In order to understand fundamental molecular basis of vascular aging, he is investigating differential gene expression in endothelial cells in response to pro-atherogenic cellular senescence and anti-atherogenic laminar shear stress. They identified several relevant genes including argininosuccinate synthetase 1 whose expression levels appeared to play a critical role in maintaining optimal endothelial function, by enhancing nitric oxide production. He is also investigating the patho-physiological changes of skin cells in response to the harmful UV radiation and the effects of natural products on those changes. For example, they have identified p-coumaric acid as a very potent and specific inhibitor of human tyrosinase that constitutes a major regulatory step of melanogenesis. The anti-melanogenic effect of p-coumaric acid formulated in cream preparations has been verified in human trials. Professor Young-Ran Yoon, a clinical pharmacologist, is specialized in early phase clinical trials (Phase 0, Phase 1, Phase 2a) for new drug development, drug metabolism, pharmacokinetics, pharmacodynamics, pharmacogenetics and pharmacometabolomics. She is using HPLC, UPLC, LC/MS/MS and GC/MS/MS, etc, in the laboratory. Professor Jeongsoo Yoo is interested in the development of hybrid multimodality imaging probes, which eable fusion of different imaging modalities such as nuclear, optical and MR imaging, and is also developing a new effective diagnostic strategy for tumors and cardiovascular diseases utilizing newly developed imaging agents. Professor Moon-Chang Baek has been studying to understand the mechanism of disease (aging related diseases and various cancers) pathogenesis through cutting-edge proteomics technology

as well as to identify biomarkers for diagnosis/treatment targets with clinic teams in the hospital. Recently he identified biomarkers from urinary exosomes, nanoparticles (or nanoAvatar) secreted from cells, to diagnose kidney diseases and further try to apply this technology to cancer diseases. In addition, he is extending his research to analyze glycan structure, which is one of core steps in the development of peptide/protein drug called biosimilar which is important in the next new drug development. He is also interested in searching new fields which are located at interfaces among multi disciplines such as biology, analytical chemistry, medical science, pharmacy, systems biology and so on. Professor Jung-Eun Kim is interested in the bone biology using genetically engineered mice to find novel mechanisms in bone growth, formation, and regeneration. With the correlation of clinical medicine, Prof. Kim is also developing the effective diagnosis and therapeutic agents for bone diseases including fractures and osteoporosis.

Chairman: Prof. Byung-Heon Lee, MD, PhD (leebh@knu.ac.kr)

Faculty

Professor Yongmin Chang, PhD
Associate Prof. Yong Chool Boo, PhD
Associate Prof. Young-Ran Yoon, MD, PhD
Associate Prof. Jeongsoo Yoo, Ph.D.
Associate Prof. Moon-Chang Baek, PhD
Associate Prof. Jung-Eun Kim, PhD

Recent Publications

1. Park JY, Baek MJ, Choi ES, Woo S, Kim JH, Kim TJ, Jung JC, Chae KS, Chang Y, Lee GH. Paramagnetic Ultrasmall Gadolinium Oxide Nanoparticles as Advanced T1 MRI Contrast Agent: Account for Large Longitudinal Relaxivity, Optimal Particle Diameter, and In Vivo T1 MR Images. ACS Nano. 2009 Nov 24;3(11):3663-9.

2. Chang Y, Lee JJ, Seo JH, Song HJ, Kim JH, Bae SJ, Ahn JH, Park SJ, Jeong KS, Kwon YJ, Kim SH, Kim Y. Altered working memory process in the manganese-exposed brain. Neuroimage. 2010 Dec;53(4):1279-85.

3. Mun GI, Kim IS, Lee BH, Boo YC. Endothelial argininosuccinate synthetase 1 regulates nitric oxide production and monocyte adhesion under static and laminar shear stress conditions. J Biol Chem. 2011 Jan 28;286(4):2536-42.

4. An SM, Lee SI, Choi SW, Moon SW, Boo YC. p-Coumaric acid, a constituent of Sasa quelpaertensis Nakai, inhibits cellular melanogenesis stimulated by alpha-melanocyte stimulating hormone. Br J Dermatol. 2008 Aug;159(2):292-9.

5. SJ Seong, MS Lim, SK Sohn, JH Moon, SJ Oh, BS Kim, HM Ryoo, JS Chung, YD Joo, SM Bang, CW Jung, DH Kim, SY Park, SS Yoon, I Kim, HG Lee, JH Won, YH Min, JW Cheong, JS Park, KS Eom, MS Hyun, MK Kim, H Kim, MR. Park, J Park, CS Kim, HJ Kim, YK Kim, EK Park, DY Zang, DY Jo, HW Lee, YR. Yoon. Influence of enzyme and transporter polymorphisms on trough imatinib concentration and clinical response in chronic myeloid leukemia patients. Annals of Oncology 2013; 24(3): 756-760.

6. MS Lim, SJ Seong, JH Park, JJ Seo, JM Lee, KS Yu, HW Lee, YR Yoon. Assessment of Pharmacokinetic proportionality of levofloxacin and cyclosporine over a 100-fold dose range in healthy human volunteers. EO-DMT 2012; 8(4): 399-405.

7. Park JC, Yu MK, An GI, Park SI, Oh J, Kim HJ, Kim JH, Wang EK, Hong IH, Ha YS, Choi TH, Jeong KS, Chang Y, Welch MJ, Jon S, Yoo J. Facile preparation of a hybrid nanoprobe for triple-modality optical/PET/MR imaging. Small. 2010 Dec 20;6(24):2863-8.

8. Choi JS, Park JC, Nah H, Woo S, Oh J, Kim KM, Cheon GJ, Chang Y, Yoo J, Cheon J. A hybrid nanoparticle probe for dual-modality positron emission tomog-

raphy and magnetic resonance imaging. Angew Chem Int Ed Engl. 2008;47(33):6259-62.

9. Moon PG, You S, Lee JE, Hwang DH, Baek MC. Urinary exosomes and proteomics. Mass Spectrom. Rev. 2011. 30(6):1185-202.

10. Moon PG. Lee JE, You S, Kim YL, Baek MC. Proteomic analysis of urinary exosomes from patients of IgA Nephropathy and Thin Basement Membrane Nephropathy. Proteomics. 2011 Jun;11(12):2459-75.

11. Baek WY, de Crombrugghe B, Kim JE. Postnatally induced inactivation of Osterix in osteoblasts results in the reduction of bone formation and maintenance. Bone. 2010 Apr;46(4):920-8.

12. Baek WY, Lee MA, Jung JW, Kim SY, Akiyama H, de Crombrugghe B, Kim JE. Positive regulation of adult bone formation by osteoblast-specific transcription factor Osterix. J Bone Miner Res. 2009 Jun;24(6):1055-65.

Department of **Parasitology and Tropical Medicine**

The Department of Parasitology and Tropical Medicine deals with the following research topics.

1. Malaria

Malaria caused by Plasmodium spp. is a deadly disease which strikes throughout the world. Because of the continuing failures of vaccines against this disease, we believe that a key toward solving this situation is to give the insight to basic biology of this parasite and to understand host-parasite interactions in aspects of immunology as well as molecular biology. In addition, we are also conducting researches to evaluate the prevalence of chloroquine resistant malaria in Korea and its association with molecular polymorphisms.

2. Amoebiasis

The projects undertaken in our laboratory are focused on the elucidation of encystation mechanism of Acanthamoeba, the causative agent of granulomatous amoebic encephalitis (GAE) and amoebic keratitis (AK). The emphasis has been placed on the encystation mechanism for the differentiation of Acanthamoeba that is targets for chemotherapy of AK patients.

3. Development of diagnostic methods of infectious parasites

In the course of pursuing this research, our laboratory has devised and validated many novel diagnostic techniques. For example, using loop-mediated isothermal amplification (LAMP) assay for rapid, highly sensitive and easy identification of infectious parasites such as Trypanosoma, Trichomonas and Acanthamoeba spp.

Chairman: Prof. Yeonchul Hong, PhD
(ychong@knu.ac.kr)

Faculty

Dong-Il Chung, MD, PhD
Yeonchul Hong, PhD
Youn-Kyoung Goo, D.V.M, PhD

Recent Publications

1. Lee JY, Song SM, Moon EK, Lee YR, Jha BK, Danne DB, Cha HJ, Yu HS, Kong HH, Chung DI, Hong Y. Cysteine Protease Inhibitor (AcStefin) Is Required for Complete Cyst Formation of Acanthamoeba. Eukaryot Cell. 2013 Apr;12(4):567-74.

2. Moon EK, Hong Y, Chung DI, Kong HH Cysteine protease involving in autophagosomal degradation of mitochondria during encystation of Acanthamoeba. Mol Biochem Parasitol. 2012 Oct;185(2):121-6.

3. Song SM, Han BI, Moon EK, Lee YR, Yu HS, Jha BK, Danne DB, Kong HH, Chung DI, Hong Y. Autophagy protein 16-mediated autophagy is required for the encystation of Acanthamoeba castellanii. Mol Biochem Parasitol. 2012 Jun;183(2):158-65.

4. Moon EK, Chung DI, Hong Y, Kong HH. Expression levels of encystation mediating factors in fresh strain of Acanthamoeba castellanii cyst ESTs. Exp Parasitol. 2011 Apr;127(4):811-6.

5. Lee JY, Song SM, Seok JW, Jha BK, Han ET, Song HO, Yu HS, Hong Y, Kong HH, Chung DI. M17 leucine aminopeptidase of the human malaria parasite Plasmodium vivax. Mol Biochem Parasitol. 2010 Mar;170(1):45-8.

6. Moon EK, Chung DI, Hong YC, Kong HH. Autophagy protein 8 mediating autophagosome in encysting Acanthamoeba. Mol Biochem Parasitol. 2009 Nov;168(1):43-8.

7. Moon EK, Chung DI, Hong YC, Kong HH. Characterization of a serine proteinase mediating encystation of Acanthamoeba. Eukaryot Cell. 2008 Sep;7(9):1513-7.

8. Moon EK, Lee ST, Chung DI, Kong HH. Intracellular localization and trafficking of serine proteinase AhSub and cysteine proteinase AhCP of Acanthamoeba healyi. Eukaryot Cell. 2006 Jan;5(1):125-31.

Department of **Pathology**

The Department of Pathology has been actively involved in the education of pathology and pathophysiology for medical students in the school of medicine and for PhD students in the graduate school, Kyungpook National University. Surgical pathology is specifically a branch of medicine to investigate the underlying pathogenesis of diseases mainly based on morphological analysis of cells and tissues. Recent advances in light microscopy, confocal laser scanning microscopy, and electron microscopy, and techniques of immunohistochemistry and molecular biology, make it possible to investigate the underlying pathogenetic mechanisms for diseases more thoroughly, even at the molecular level. This approach can shed light on the diagnosis and treatment of diseases. In the department, there are currently five professors, three teaching assistants, and several PhD students actively involved in the teaching and academic and clinical translational research activities. The followings are the major research areas in which each professor is mainly involved.

Chairman: Prof. Tae-In, Park, MD, PhD
(tipark@knu.ac.kr)

Professor Han-Ik Bae, MD, PhD
Translational research of Neoplasia; Cell and tissue preservation; and Tissue microarray and cell Chip.

Professor Tae-In Park, MD, PhD
Screening of oncogenes in the tissues of lung cancer; and screening of risk factors for malignant lymphoma.

Associate professor Ghil-Suk Yoon, MD, PhD
Telomere shortening in Prostatic adenocarcinoma; Osteopontin Expression in Focal Segmental Glomerulosclerosis; Pathogenesis of malignant melanoma; Carcinogenesis of adenocarcinoma in small intestine.

Assistant Professor Ji-Young Park, MD, PhD
Gene expression related to the metastasis of thyroid cancer; and Pathogenesis of Breast cancer metastasis.

Recent Publications

1. Jang EJ, Jang JS, Kim JH, Bae HI, Suh IS. Detection of JC Virus T-Ag in Early Gastric Cancer. Kor J Path 2010; 44: 456-61.

2. Kim JS, Kim JH, Oh HJ, Suh IS, Kim JG, Kang BW, Yu WS, Chung HY, Bae HI. An approach to Diagnosing Gastrointestinal Stromal Tumors Using Immunohistochemistry of c-kit and PDGFRA with Molecular Analysis. Kor J Path. 2010; 44: 173-8.

3. Kim YJ, Bae HI, Kwon OK, Choi MS. Three-dimensional gastric cancer cell culture using nanofiber scaffold for chemosensitivity test. Int J Biol Macromol. 2009; 45(1): 65-71.

4. Kim YS, Nam SC, Han MH, Jeong JY, Park SK, Suh IS, Bae HI. Predictive Factors of Epstein-Barr Virus Association in Gastric Adenocarcinoma. Kor J Path. 2008; 42(4): 193-7.

5. Lee SY, Kim MJ, Jin G, Yoo SS, Park JY, Choi JE, Jeon HS, Cho S, Lee EB, Cha SI, Park TI, Kim CH, Jung TH, Park JY. Somatic Mutations in Epidermal Growth Factor Receptor Signaling Pathway Genes in Non-small Cell Lung Cancers. J Thorac Oncol. 2010; 5(11): 1734-40.

6. Lee EB, Jeon HS, Yoo SS, Choi YY, Kang HG, Cho S, Cha SI, Choi JE, Park TI, Lee BH, Park RW, Kim IS, Kang YM, Kim CH, Jheon S, Jung TH, Park JY.. Polymorphisms in Apoptosis-Related Genes and Survival of Patients with Early-Stage Non-Small-Cell Lung Cancer. Ann Surg Oncol. 2010; 17(10): 2608-18.

7. Verheul HM, van Erp K, Homs MY, Yoon GS, van der Groep P, Rogers C, Hansel DE, Netto GJ, Pili R. The relationship of vascular endothelial growth factor and coagulation factor (fibrin and fibrinogen) expression in clear cell renal cell carcinoma. Urology. 2010;75(3): 608-14.

8. Yoon GS, Wang W, Osunkoya AO, Lane Z, Partin AW, Epstein JI. Residual tumor potentially left behind after local ablation therapy in prostate adenocarcinoma. J Urol. 2008; 179(6): 2203-6; discussion 2206.

9. Kim HJ, Kwak JY, Choi JW, Bae JH, Shin KM, Lee HJ, Kim GC, Jung JH, Park JY. Impact of US surveillance on detection of clinically occult locoregional recurrence after mastectomy for breast cancer. Ann Surg Oncol. 2010; 17(10): 2670-6.

10. Park JY, Lee HJ, Jang HW, Kim HK, Yi JH, Lee W, Kim SH. A proposal for a thyroid imaging reporting and data system for ultrasound features of thyroid carcinoma. Thyroid. 2009; 19(11): 1257-64.

11. Lee HY, Jeong JY, Lee KS, Kim HJ, Han J, Kim BT, Kim J, Shim YM, Kim JH, Song I. Solitary Pulmonary Nodular Lung Adenocarcinoma: Correlation of Histopathologic Scoring and Patient Survival with Imaging Biomarkers. Radiology 2012 Sep;264(3): 884-93.

12. Lee HY, Ahn HK, Jeong JY, Kwon MJ, Han JH, Sun JM, Ahn JS, Park K, Choi YL, Ahn MJ. Favorable Clinical Outcomes of Pemetrexed Treatment in Anaplastic Lymphoma Kinase Positive Non-Small-Cell Lung Cancer. Lung Cancer 2013 Jan;79(1): 40-5.

Department of **Pharmacology**

The main research fields in the Department of Pharmacology are 1) regulation of brain activity, 2) molecular pharmacology, 3) psychopharmacology, 4) neuroinflammation/immunology, and 5) immunotoxicology. Professors, researchers, and PhD students continuously devoted themselves to creative researches and produced highly acclaimed research results nationally and internationally. Accordingly, the prize of The Best Department in Medical Teaching and Research, 2011 was awarded to the department by the School of Medicine.

Chairman: Prof. Mann Gee Lee, MD, PhD
Address: Department of Pharmacology, School of Medicine, Kyungpook National University, 2-101 Dongin-dong, Jung-gu, Daegu 700-422, Republic of Korea
Telephone: +82-53-420-4830, Homepage: http://pha.knu.ac.kr/

Prof. Mann Gee Lee, MD, PhD (mglee@knu.ac.kr)
Prof. Lee's lab is studying the changes of brain activity by physicochemical stimuli, such as drugs, electrical current and magnetic field, and by belief and meditation. His ultimate research goal is to find and understand the ways of human to be happy and to be healthy by controlling the brain.

Prof. Inkyeom Kim, MD, PhD (inkim@knu.ac.kr)
Prof. Kim's lab is interested in elucidating the pathophysiology of essential hypertension. We are testing the hypothesis that vascular stresses from diverse origins predispose to hypertension through epigenetic changes. Verification of the hypothesis necessitates utilizing an integrated experimental approach such as measurements of vascular contractility, bisulfite DNA sequencing, ChIP, and biochemical approach. We are also interested in development of therapeutics such as Rho-kinase inhibitors.

Prof. Jeoung Hee Ha, MD, PhD (jhha4834@knu.ac.kr)
Prof. Ha's lab is studying psychosomatic disorders by neurobehavioral, neurochemical, and molecular biological approaches.

Prof. Kyoungho Suk, PhD (ksuk@knu.ac.kr)
Prof. Suk's lab has an expertise in glia, neuroinflammation and neuroimmu-

nology. The main research topics include "what is the role of glial cells in the process of neuroinflammation and how they are regulated?" and "clinical application of the results obtained from the studies of glial cells for the early diagnosis, treatment or prevention of acute brain injury, and chronic neurodegenerative conditions such as Alzheimer's disease and Parkinson's disease.

Associate Prof. Sang Hyun Kim, PhD (shkim72@knu.ac.kr)

Prof. Kim's lab is mainly interested in the study of immune reaction to toxic materials focusing atopic dermatitis, allergy, and hypersensitivity. By elucidating the immune responses to toxic materials and their underlying mechanisms, new treatment modalities could be possible to reduce the toxicity and enhance immunity.

Recent publications

1. Lee HA, Lee DY, Cho HM, Kim SY, Iwasaki Y, Kim IK. Histone Deacetylase Inhibition Attenuates Transcriptional Activity of Mineralocorticoid Receptor through its Acetylation and Prevents Development of Hypertension. Circulation Research. 2013;112(7):1004-12.

2. Choi JK, Oh HM, Lee S, Park JW, Khang D, Lee SW, Lee WS, Rho MC, Kim SH. Oleanolic acid acetate inhibits atopic dermatitis and allergic contact dermatitis in a mouse model. Toxicol Appl Pharmacol. 2013;269(1):72-80.

3. Won SH, Jang HS, Lee HW, Jang IS, Lee MG. Evaluation of brain functional states based on projections of electroencephalographic spectral parameters on 2-dimensional canonical space. J Neurosci Methods. 2012 Oct;211(1):40-48.

4. Lee HA, Cho HM, Lee DY, Kim KC, Han HS, Kim IK. Tissue-Specific Upregulation of Angiotensin Converting Enzyme 1 in Spontaneously Hypertensive Rats through Histone Code Modifications. Hypertension.2012;59(3):621-626.

5. Singh TSK, Lee S, Kim HH, Choi JK, Kim SH. Perfluorooctanoic acid induces mast cell-mediated allergic inflammation by the release of histamine and inflammatory mediators. Toxicol Lett. 2012;210(1):64-70.

6. Lee S, Jang E, Kim JH, Kim JH, Lee WH, Suk K. Lipocalin-type prostaglandin D2 synthase protein regulates glial cell migration and morphology through myristoylated alanine-rich C-kinase substrate: prostaglandin D2-independent effects. J Biol Chem. 2012 Mar 16;287(12):9414-9428.

7. Suk K, Ock J. Chemical genetics of neuroinflammation: natural and synthetic compounds as microglial inhibitors. Inflammopharmacology. 2012 Jun;20(3):151-8.

8. Kim JH, Lee HW, Hwang J, Kim J, Lee MJ, Han HS, Lee WH, Suk K. Microglia-inhibiting activity of Parkinson's disease drug amantadine. Neurobiol Aging. 2012 Sep;33(9):2145-2159.

9. Lee S, Yun HS, Kim SH. The comparative effects of mesoporous silica nanoparticles and colloidal silica on inflammation and apoptosis. Biomaterials. 2011;32(35):9434-9443.

10. Lee S, Choi J, Shin S, Im YM, Song J, Kang SS, Nam TH, Webster TJ, Kim SH. Analysis on migration and activation of live macrophages on transparent flat and nano structured titanium. Acta Biomater. 2011;7(5):2337-2344.

11. Lee MG, Jun G, Choi HS, Jang HS, Bae YC, Suk K, Jang IS, Choi BJ. Operant conditioning of rat navigation using electrical stimulation for directional cues and rewards. Behav Processes. 2010 Jul;84(3):715-720.

12. Suk K. Combined analysis of the glia secretome and the CSF proteome: neuroinflammation and novel biomarkers. Expert Rev Proteomics. 2010 Apr;7(2):263-274. Review.

13. Seo M, Lee WH, Suk K. Identification of novel cell migration-promoting genes by a functional genetic screen. FASEB J. 2010 Feb;24(2):464-478.

14. Lee HA, Baek I, Seok YM, Yang E, Cho HM, Lee DY, Hong SH, Kim IK. Promoter hypomethylation upregulates Na+-K+-2Cl- cotransporter 1 in spontaneously hypertensive rats. Biochem Biophys Res Commun. 2010; 396(2):252-257.

15. Lee SW, Lee JT, Lee MG, Lee HW, Ahn SJ, Lee YJ, Lee YL, Yoo J, Ahn BC, Ha JH. In vitro antiproliferative characteristics of flavonoids and diazepam on SNU-C4 colorectal adenocarcinoma cells. J Nat Med. 2009; 63:124–129.

Department of **Physiology**

The major research topic of the Department of Physiology is “neuroscience and clinical application of physiology.” Especially, we focus on the research dealing with brain diseases and its application in diagnosis, therapeutics and health care system. As the heir of our former department, department of physiology, we continue to work on physiology in the field of clinical medicine and related fields. In the future, we wish to expand our scope further. Currently we are working on the following fields:

1. Diagnosis of Brain Injury
   - Molecular imaging: research on molecular imaging probes for acute and chronic brain injury such as stroke, vascular dementia, and other forms of dementia
   - Molecular diagnosis: research on molecular imaging probes for acute and chronic brain injury such as stroke, vascular dementia, and other forms of dementia

2. Therapeutics of Brain Injury
   - Therapeutic hypothermia: basic study on hypothermic protection mechanism, clinical application in acute brain injury such as stroke, traumatic brain injury and other brain injury conditions
   - Cooling device development

3. Stem cell & Neurodegenerative diseases
   - Research on stem cell differentiation and characterization to develop stem cell therapy for neurodegenerative diseases
   - Study on endogenous stem cell activation and regulation of in vivo stem cells to develop stem cell therapy for neurodegenerative diseases
   - Study on patient derived induced pluripotent stem cell to discover the pathogenesis of diseases and develop therapeutics

4. Healthcare system
   - U-healthcare system: research to develop a system consisting of molecular diagnosis based point of care health device, monitoring

system for physiologic or vital signs, mobile medical network, artificial intelligence medical system to take care of brain injury patients
- Health promoting or aid system for disabled people

5. Cell on a chip
- Lab on a chip based on cell culture system and semiconductor system

Chairman: Prof. Hyung Soo Han, MD, PhD (hshan@knu.ac.kr)

Faculty

Prof. Won Jung Lee, PhD
Prof. Jae Sik Park, MD, PhD
Prof. Eun Kyung Yang, MD, PhD
Prof. Hyung Soo Han, MD, PhD
Associate prof. Jae-Sung Bae, DVM, PhD

Recent Publications

1. MJ Lee, K Wang, IS Kim, BH Lee, Han HS. Molecular Imaging of Cell Death in an Experimental Model of Parkinson's Disease with a Novel Apoptosis-Targeting Peptide. Mol Imaging Biol. 2012 Apr;14(2):147-55.

2. Yenari MA, Colbourne F, Hemmen TM, Han HS, Krieger D. Therapeutic hypothermia in stroke. Stroke Res Treat. 2011.

3. Kim JH, Nam YP, Jeon SM, Han HS, Suk K. Amyloid neurotoxicity is attenuated by metallothionein: dual mechanisms at work. J Neurochem. 2012;121(5):751-62.

4. Kim H, Kim SY, Nam S, Ronnett GV, Han HS, Moon C, Kim Y. Direct measurement of extracellular electrical signals from mammalian olfactory sensory neurons in planar triode devices. Analyst. 2012;137(9):2047-53.

5. Park YH, Lee YM, Kim DS, Park J, Suk K, Kim JK, Han HS. Hypothermia enhances induction of protective protein metallothionein under ischemia. J Neuroinflammation. 2013;10:21.

6. Han HS. Perspectives on the Future of U-healthcare. Communications of KIISE. 2013;31:17-22.

7. Yenari MA, Han HS. Neuroprotective mechanisms of hypothermia in brain ischaemia. Nat Rev Neurosci. 2012;13(4):267-78.

8. JW Shin, JK Lee, JE Lee, EH Schuchman, HK Jin, J. S. Bae. Combined Effects of Hematopoietic Progenitor Cell Mobilization from Bone Marrow by G-CSF and AMD3100, and Chemotaxis into the Brain Using SDF-1α in an Alzheimer`s Disease Mouse Model. Stem Cells. In Press. 2011.

9. HJ Lee, JK Lee, H Lee, JW Shin, JW Chang, W Oh, YS Yang, JG Suh, BH Lee, EH Schuchman, HK Jin, J. S. Bae. Human umbilical cord blood-derived mesenchymal stem cells improve neuropathology and cognitive impairment in an Alzheimer's disease mouse model through modulation of neuroinflammation. Neurobiology of Aging. In Press. 2011.

10. JK Lee, HK Jin, J. S. Bae. Bone marrow-derived mesenchymal stem cells attenuate Ab-induced memory impairment and apoptosis by inhibiting neuronal cell death. Current Alzheimer Research. 2010;7(6):540-548.

11. H Lee, JK Lee, WK Min, JH Bae, X He, EH Schuchman, J. S. Bae, HK Jin. Bone marrow-derived mesenchymal stem cells prevent the loss of Niemann-Pick type C mouse Purkinje neurons by correcting abnormal sphingolipid metabolism and increasing sphingosine-1-phosphate. Stem Cells. 2010;28(4):821-831.

12. JK Lee, HK Jin, S Endo, EH Schuchman, JE Carter, J. S. Bae. Intracerebral transplantation of bone marrow-derived mesenchymal stem cells reduces amyloid-beta deposition and rescues memory deficits in Alzheimer's disease mice by modulation of immune responses. Stem Cells. 2010;28(2):329-343.

Department of **Preventive Medicine**

The Department of preventive medicine and public health deals with important medical subjects for health promotion and disease prevention through the studies based on all aspects of biological, social, and environmental factors. Our department is comprised of three divisions: 1) epidemiology, 2) environmental & occupational health, and 3) health policy and management.

A number of approaches from basic sciences to clinical applications and community settings have been undertaken to promote health and prevent diseases. We believe that the study area for health promotion and disease prevention attracts a lot of attention as the number of elderly population increases and the desire to improve the quality of life is getting higher.

More specifically, the major research areas are for establishing the linkage between environmental exposure to POPS (persistent organic pollutants) and the development of obesity, metabolic syndrome, type II diabetes mellitus, cardiovascular diseases, autoimmune diseases, or malignancy. The epidemiological study on the elderly population is also an important area. Moreover, both research and practice are pursuing together better health policy and management, such as surveys for examining health status in the community population and hospital-based programs for cardiovascular diseases or cancer. Furthermore, the designs for healthy cities and FMTP (Field Management Training Program) for health professionals have been undertaken.

Chairman: Prof. Duk-Hee Lee, MD, PhD
(lee_dh@knu.ac.kr)

Faculty

Prof. Sung-Kook Lee, PhD
Prof. Jae-Yong Park, PhD
Prof. Sin Kam, MD, PhD
Prof. Duk-Hee Lee, MD, PhD
Associate Prof. Keon-Yeop Kim, MD, PhD
Assistant Prof. Nam-Soo Hong, MD

Recent Publications

1. Park H, Lee SK. Association of obesity with osteoarthritis in elderly Korean women. Maturitas. 2011 Sep;70(1):65-8.

2. Park SK, Son HK, Lee SK, Kang JH, Chang YS, Jacobs DR, Lee DH. Relationship between serum concentrations of organochlorine pesticides and metabolic syndrome among non-diabetic adults. J Prev Med Public Health. 2010 Jan;43(1):1-8.

3. Oh NS, Park JY, Han CH. Health-promoting Behaviors and Related Factors for College Students by Type of Residence. Korean Journal of Health Education and Promotion. 2011 Jun; 28(2):27-40.

4. Park KA, Kim JG, Kim BW, Kam S, Kim KY, Ha SW, Hyun ST. Factors that Affect Medication Adherence in Elderly Patients with Diabetes Mellitus. Korean Diabetes J. 2010 Feb;34(1):55-65.

5. Levy DT, Cho SI, Kim YM, Park S, Suh MK, Kam S. SimSmoke model evaluation of the effect of tobacco control policies in Korea: the unknown success story. . Am J Public Health. 2010 Jul;100(7):1267-73.

6. Lee DH, Lee IK, Song K, Steffes M, Toscano W, Baker BA, Jacobs DR Jr.A strong dose-response relation between serum concentrations of persistent organic pollutants and diabetes: results from the National Health and Examination Survey 1999-2002. Diabetes Care. 2006 Jul;29(7):1638-44.

7. Kim KY, Kim DS, Lee SK, Lee IK, Kang JH, Chang YS, Jacobs DR, Steffes M, Lee DH. Association of low-dose exposure to persistent organic pollutants with global DNA hypomethylation in healthy Koreans. Environ Health Perspect. 2010 Mar;118(3):370-4.

8. Lim JS, Son HK, Park SK, Jacobs DR Jr, Lee DH. Inverse associations between long-term weight change and serum concentrations of persistent organic pollutants. Int J Obes (Lond). 2011 May;35(5):744-7

9. Hong NS, Kim KY, Park SW, Kim JY, Bae J, Lee WK, Kim KS. Trends in cigarette use behaviors among adolescents by region in Korea. J Prev Med Public Health. 2011 Jul;44(4):176-84.

10. Kweon SS, Choi JS, Lim HS, Kim JR, Kim KY, Ryu SY, Yoo HS, Park O. Rapid increase of scrub typhus, South Korea, 2001-2006. Emerg Infect Dis. 2009 Jul;15(7):1127-9.

Clinical Medicine

- Department of Anesthesiology and Pain Medicine
- Department of Clinical Pathology
- Department of Dermatology
- Department of Emergency Medicine
- Department of Family Medicine
- Department of Internal Medicine
  - Division of Cardiology
  - Division of Pulmonary and Critical Care Medicine
  - Division of Gastroenterology and Hepatology
  - Division of Nephrology
  - Division of Endocrinology
  - Division of Hemato-oncology
  - Division of Allergy and Infectious Diseases
  - Division of Rheumatology
- Department of Neurology
- Department of Neurosurgery
- Department of Nuclear Medicine
- Department of Obstetrics and Gynecology
- Department of Ophthalmology
- Department of Orthopedic Surgery
- Department of Otorhinolaryngology
- Department of Pediatrics (8 Divisions)
  - Hematology-Oncology,
  - Neonatology, Endocrinology,
  - Cardiology, Neurology,
  - Gastroenterology and Nutrition,
  - Nephrology, Allergy & Pulmonology
- Department of Plastic Surgery
- Department of Psychiatry
- Department of Radiation Oncology
- Department of Radiology
- Department of Rehabilitation
- Department of Surgery
  - Gastrointestinal Surgery
  - Colorectal Surgery
  - liver, biliary, and pancreatic surgery
  - Transplantation and Vascular Surgery
  - Breast and Thyroid Surgery
  - Pediatric Surgery
- Department of Thoracic and Cardiovascular Surgery
- Department of Urology

Department of **Anesthesiology and Pain Medicine**

Basic research

1. Monitoring of the depth of anesthesia: Through EEG monitoring, the anesthetic effects on the changes of spectrum of brain waves were conducted.

2. Biomedical engineering and drug delivery system: The department is interested in the cell transplantation, which could provide analgesic effects. The analgesic effects of transplantation of chromaffin cells into the central nervous system (CNS) have been investigated using neuropathic pain model.

3. Pain mechanism: We revealed that superoxide, nitric oxide (NO), and their interactive metabolite, peroxynitrite are important reactive oxygen species (ROS) to develop ipsilateral and contralateral allodynia. Moreover, these ROS enhance phosphorylation of NMDA receptor in the spinal cord to induce central sensitization in the chronic post-ischemia pain (CPIP) model. Also, our current research is directed to establishing the role of mitogen activated protein kinase (MAPK)-, PKA-, or PKC-dependent intracellular signaling in controlling central sensitization in the CPIP model. Hopefully, our ongoing research will increase the knowledge about the pathophysiology of CRPS and the development of novel therapeutic regimens.

4. Cardiovascular research: The effects of remifentanil on the extent of acute myocardial infacrtion are studied.

Clinical research

1. Pain
   1) Stellate ganglion blockage (SGB) is a selective sympathetic block that influences ipsilateral head, neck, and upper extremity. Recently, SGB increases sleep time and decreases night awakenings in breast cancer patients. Thus, the sedative effect on SGB has been evaluated

using bispectral index (BIS).

2) Vitamin C: Herpes zoster (HZ) is characterized by vesicular eruptions in a dermatome distribution followed by painful neuralgia. The effects of intravenous administration of 4 grams of vitamin C, an antioxidant, will be studied to reduce the pain in patients with herpes zoster or idiopathic sudden sensorineural hearing loss (ISSHL).

2. Postoperative nausea and vomiting

1) Midazolam (a short acting benzodiazephine): Postoperative nausea and vomiting (PONV) is one of the most undesirable complications after anesthesia and surgery. The anti-emetic effects of midazolam for the management of PONV are to be examined.

3. Cardiovascular-hemodynamics research

1) Ischemic pre-conditioning and post-conditioning: Cardiopulmonary bypass and mechanical ventilation could increase the risk of lung injury during anesthesia. In particular, pulmonary interventional treatment is important during the cardiac surgery using cardiopulmonary bypass in high-risk patients of lung injury. However, in spite of many studies, there are no reliable methods of prevention and treatment. The department examines the effects of ischemic preconditioning and post-conditioning to reduce lung injury in high risk group during anesthesia.

4. Anesthetic pharmacology

1) To provide safer and better anesthesia, the personalized medicine including the differences in metabolism of anesthetic drugs should be considered. Also, drug pharmacokinetics and interactions between drugs should be considered.

Chairman: Prof. Dong Gun Lim, MD, PhD
(dglim@knu.ac.kr)

Faculty
Jung Gil Hong, MD
Woon Yi Baek, MD, PhD
Si Oh Kim, MD, PhD
Dong Gun Lim, MD, PhD
Sung Sik Park, MD, PhD
Younghoon Jeon, MD, PhD
Kyung Hwa Kwak, MD, PhD
Jin Seok Yeo, MD
Jong Chan Kim, MD, PhD
Seong Wook Hong, MD, PhD

Recent Publications

1. Kim SO, Seo JY, Jeon YH. Antiemetic effect of midazolam added to fentanyl-ropivacaine patient-controlled epidural analgesia after subtotal gastrectomy: a prospective, randomized, double-blind, controlled trial. Current Therapeutic Research 2010 Oct; 71: 298-308.

2. Huh BK, Jung S, White W, et al. Antiemetic effect of midazolam added to morphine patient-controlled analgesia after total abdominal hysterectomy. Anaesthesia and Intensive Care. 2010 May; 38: 481-5.

3. Jeon Y, Kim HJ, Kwak KH. Comparison of ramosetron, dexamethasone, and a combination of ramosetron and dexamethasone for the prevention of postoperative nausea and vomiting in Korean women undergoing thyroidectomy: A double-blind, randomized, controlled study. Current therapeutic research 2010; 71: 78-88.

4. Yeo J, Jung J, Ryu T, et al. Antiemetic efficacy of dexamethasone combined with midazolam after middle ear surgery. American Academy of Otolaryngology-Head and Neck Surgery 2009 December; 141: 684-8.

5. Yeo J, Jeon Y, Kim Y, et al. Comparison of effect of premixed lidocaine in propofol with or without ketorolac pretreatment with placebo on reducing pain on injection of propofol:a prospective, randomized, double-blind, placebo-controlled study in adult korean surgical patients. Current Therapeutic Research 2009 Oct; 70: 351-8.

6. Kim YM, Kwak KH, Lim JO, et al. Reduction of allodynia by intrathecal transplantation of microencapsulated porcine chromaffin cells. Artif Organs 2009; 33: 240-9.

7. Kwak KH, Han CG, Lee SH, et al. Reactive oxygen species in rats with chronic post-ischemia pain. Acta Anaesthesiol Scand. 2009; 53: 648-56.

8. Kwak KH, Ha J, Kim Y, et al. Efficacy of combination intravenous lidocaine and dexamethasone on propofol injection pain: a randomized, double-blind, prospective study in adult Korean surgical patients. Clin Ther 2008; 30: 1113-9.

9. Jung JS, Park JS, Kim SO, et al. Prophylactic antiemetic effect of midazolam after middle ear surgery. Otolaryngol Head Neck Surg. 2007; 137: 753-6.

10. Kwak K, Kim J, Park S, et al. Reduction of pain on injection of propofol: combination of pretreatment of remifentanil and premixture of lidocaine with propofol. Eur J of Anaesthesiol. 2007; 24: 746-50.

Department of **Clinical Pathology**

TThe Department of Clinical Pathology was established more than 70 years ago and has a longstanding history to educate and train many doctors as specialists. The department has tried to set the automation and computerization of laboratory, and hence the department was inspected by a team consisting of CAP (College of American Pathologists) inspectors on October 26, 2000 and acquired a certificate of CAP for the first time among a number of national university hospitals. Since that the department has been inspected every other year by the CAP team and has renewed the certificate. The certificate of CAP covers the sections of hematology, clinical chemistry, microbiology, immunology, blood bank, molecular genetics, and the overall management of laboratory. This indicates our laboratories are very well organized and our test results are wholly reliable for the clinical diagnosis and management of patients. In addition, from 2008 the department started to run KNUH-NCCP (national culture collection for pathogens) to keep bacterial species from patients and supply these bacteria to researchers for the purpose of basic and clinical research.

Chairman: Prof. Dong Il Won MD, PhD
(wondi@knu.ac.kr)

Faculty
Won Kil Lee MD, PhD
Jang Soo Suh MD, PhD
Kyung Eun Song MD, PhD
Dong Il Won MD, PhD

Recent publications

1. Seo KY, Won DI, Cho MH. Flow cytometric measurement of cold agglutinins for diagnosing Mycoplasma pneumoniae pneumonia. Lab Med 2012;43:68-73.

2. Won DI, Kim BC. Optimized flow cytometry to measure anti-ABO immunoglobulin G. Lab Med 2012;43:281-90.

3. Won DI. Flow cytometry PRA using pooled lymphocytes for both HLA

class I and II antibodies. Lab Med 2011;42:17-24.

4. HC Lee, YK Kim, JH Song, KE Song. Proposal of Laboratory Test Panel Based on Patients Chief Complaints in Emergency Department. Korean J Lab Med 2010;30:444-50.

5. KY Seo, HC Lee, YK Kim, WK Lee, KE Song. Novel Influenza A (H1N1) Infection in Immunocompromised Patients. Korean J Lab Med 2010;30:388-93.

6. Won DI, Park JR. Flow cytometric measurements of TB-specific T cells comparing with QuantiFERON-TB gold. Cytometry B Clin Cytom 2010;78:71-80.

7. Won DI, Jung OJ, Lee YS, Kim SG, Suh JS. Flow cytometry antibody screening using pooled red cells. Cytometry B Clin Cytom 2010;78:96-104.

8. YK Kim, DI Won, HO Kim, SH Shin, JS Suh. Usefulness of frozen-thawed-deglycerolized red blood cells as quality control materials for red blood cell deformability test. Korean J Lab Med 2010;30:697-701.

9. Kim YK, Song KE, Lee WK. Reducing patient waiting time for the outpatient phlebotomy service using six sigma. Korean J Lab Med. 2009;29:171-7.

10. Shin S, Nam JH, Hou JX, Suh JS. A transient, microfluidic approach to the investigation of erythrocyte aggregation: the threshold shear-stress for erythrocyte disaggregation. Clin Hemorheol Microcirc 2009;42:117-25.

11. Won DI, Suh JS. Flow cytometric detection of erythrocyte osmotic fragility. Cytometry B Clin Cytom 2009;76:135-41.

12. S Shin, Y Yang, JS Suh. Measurement of erythrocyte aggregation in a microchip stirring system by light transmission. Clin Hemorheol Microcirc 2009;41:197-207.

Department of **Dermatology**

The Department of Dermatology was established in 1933, when the Medical School started. And then under the leadership of Prof. Soonbong Seo, the first chairman of the department, more than 70 specialists were educated and they all became one of the leaders in the dermatology field around the country. The department has performed a variety of activities for the education, research and treatment of patients with atopic dermatitis, alopecia, psoriasis, dermatitis, hemangioma, vascular anomaly, skin cancer, acne, fungal infection, and skin pigmentation. Prof. Do Won Kim is actively involved in the eczematous diseases such as atopic dermatitis and hair diseases. Prof. Seok-Jong Lee's expertise is in the skin tumors, including the diagnosis and treatment of melanoma and hemangioma. Prof. Weon Ju Lee is mainly involved in acne and skin pigmentation such as vitiligo. Prof. Yong Hyun Jang has expertise the psoriasis, atopic dermatitis, hair disorders and hyperpigmentary skin diseases. Through these activities, the department has a critical role in curing patients with these diseases in the country. As to the research, the department has a longstanding collaboration with the departments of immunology pharmacology and microbiology and produced remarkable outcome.

Chairman: Prof. Seok-Jong Lee MD, PhD
(seokjong@knu.ac.kr)

Faculty
Kim Do Won, MD, PhD
Lee Seok-Jong, MD, PhD
Lee WeonJu, MD, PhD
Jang Yong Hyun, MD, PhD

Recent Publications

1. Clarifying the transmission route of *Staphylococcus aureus* colonizing the skin in early childhood atopic dermatitis. Ann Allergy Asthma Immunol 2012;109:448-453.

2. Quality of life and disease severity are correlated in patients with atopic

dermatitis. J Korean Med Sci 2012;27:1327-1332.

3. Colonizing features of *Staphylococcus aureus* in early childhood atopic dermatitis and in mothers: a cross-sectional comparative study done at four kindergartens in Daegu, South Korea. Ann Allergy Asthma Immunol 2011;106:323-329.

4. Are there predominant strains and toxins of *Staphylococcus aureus* in atopic dermatitis patients? Genotypic characterization and toxin determination of *S. aureus* isolated in adolescent and adult patients with atopic dermatitis. J Dermatol 2009;36:75-81.

5. Capillary malformation of port-wine stain: differentiation from early arteriovenous malformation by histopathological clues. Am J Dermatopathol 2012;34:523-528.

6. The critical role of mast cell-derived hypoxia-inducible factor-1α in human and mice melanoma growth. Int J Cancer 2013;132:2492-2501.

7. Is the distance enough to eradicate in situ or early invasive subungual melanoma by wide local excision? From the point of view of matrix-to-bone distance for safe inferior surgical margin in Koreans. Dermatology 2011;223:122-123.

8. Low-Level Light Therapy for Androgenetic Alopecia: A 24-Week, Randomized, Double-Blind, Sham Device-Controlled Multicenter Trial. Dermatol Surg 2013 Apr 3. [E-pub]

9. The effect of sebocytes cultured from nevus sebaceus on hair growth. Exp Dermatol 2012;21:796-798.

10. Vitamin D increases expression of cathelicidin in cultured sebocytes. Arch Dermatol Res 2012;304:627-632.

11. Decreasing prevalence of *Microsporum canis* infection in Korea: through analysis of 944 cases (1993-2009) and review of our previous data (1975-1992). Mycopathologia 2012;173:235-239.

12. Serial sections of atrophic acne scars help in the interpretation of microscopic findings and the selection of good therapeutic modalities. J Eur Acad Dermatol Venereol 2013;27:643-646.

13. Prolonged Activation of ERK Contributes to the Photorejuvenation Effect in Photodynamic Therapy In Human Dermal Fibroblasts. J Invest Dermatol 2013 Jan 21.[E-pub]

14. The histopathological characteristics of male melasma: comparison with female melasma and lentigo. J Am Acad Dermatol 2012;66:642-649.

15. Immunohistochemical expression of matrix metalloproteinases in the granulomatous rosacea compared with the non-granulomatous rosacea. J Eur Acad Dermatol Venereol 2011;25:544-548.

16. Oestrogen and progesterone receptor expression in melasma: an immunohistochemical analysis. J Eur Acad Dermatol Venereol 2010;24:1312-1316.

Department of **Emergency Medicine**

The Department of Emergency Medicine has been established for the main purpose of providing a quick and proper treatment to emergency patients. Emergency cases, categorized as cardiopulmonary resuscitation, cardiac diseases, pediatric emergency, trauma, natural disasters, environmental emergency, exposure to toxic materials, medical emergencies, etc, are covered by the department. Currently Six professors, two specialists, and eleven residents are working in the department, and they are all actively involved in the programs run by the local emergency center (such as education programs for paramedics and cardiopulmonary resuscitation program for public) as well as the treatment of emergency patients.

The department has taken an active part in the national survey program to examine the occurrence rate and risk factors of patients with cardio-cerebrovascular diseases for the purpose of prevention and adequate treatment of the diseases. Moreover, the department was recently involved in the survey of the patients with eye trauma to develop the Korean guideline for the prevention of eye trauma.

Chairman: Prof. Kang Suk Seo, MD, PhD
(kssuh@knu.ac.kr)

Faculty

Chung, Jae Myung, MD, PhD
Seo, Kang Suk, MD, PhD
Park, Jung Bae, MD, PhD
Kim, Jong Kun, MD, PhD
Lee, Mi Jin, MD, PhD
Ryoo, Hyun Wook, MD, PhD

Recent Publications

1. Lee BC, Lee MJ, Shin SJ, Ryoo HW, Kim JK, Park JB, Seo KS. The Current Status of Cardiopulmonary Resuscitation Training for School. J Korean Soc Emerg Med. 2012 Aug;23(4):470-478.

2. Cho JK, Ryoo HW, Shin SJ, Kim JK, Park JB, Seo KS, Chung JM. Clinical Study of Pediatric Ocular Injury Patients Visiting an Emergency Medical Center. J Korean Soc Emerg Med. 2011 Dec;22(6):751-759.

3. Mun YH, Kim YJ, Shin SJ, Park DC, Park SR, Ryoo HW, Seo KS, Park JB, Chung JM, Bae JH. Necessity for a Whole-body CT Scan in Alert Blunt Multiple Trauma Patients. J Korean Soc Traumatol. 2010 Dec;23(2):89-95.

4. Shin SJ, Ryoo HW, Park JB, Seo KS, Jung JM, Park DC, Moon YH. Characteristics and Risk Factors of Bicycle Injury. J Korean Soc Emerg Med. 2010 Jun;21(3):328-334.

5. Kim JK, Kim YJ, Seo KS, Ryoo HW, Kam S, Park JY, Lee SK, Lee WK, Kang YS, Park KS. Job Stress, Job Satisfaction and Occupational Commitment Among Korean Emergency Physicians. J Korean Soc Emerg Med. 2010 Apr;21(2):246-258.

6. Park DC, Park JB, Kim YJ, Shin SJ, Mun YH, Park SR, Ryoo HW, Seo KS, Chung JM. The Factors that Predict Using Mechanical Ventilation for Patients with Organophosphate Intoxication. J Korean Soc Clin Toxicol. 2010 Dec;8(2):106-112.

7. Shin SD, Ong ME, Tanaka H, Ma MH, Nishiuchi T, Alsakaf O, Karim SA, Khunkhlai N, Lin CH, Song KJ, Ryoo HW, Ryu HH, Tham LP, Cone DC. Comparison of emergency medical services systems across Pan-Asian countries: a Web-based survey. Prehosp Emerg Care. 2012 Oct-Dec;16(4):477-96.

8. Park SH, Lee MJ, Jo KH, Kim YG. Immunoresuscitation Effect on Hemorrhagic Shock-Induced Acute Lung Injury in Rats. J Korean Soc Emerg Med. 2012 Apr;23(2):270-278.

9. Lee MJ. Incidence and Outcome of Cardiac Arrest in Korea. J Korean Soc Emerg Med. 2012 Apr;23(2):168-180.

10. Nho WY, Kim JK. Emergency Physician Turnover in Private Clinics. J Korean Soc Emerg Med. 2011 Dec;22(6):716-727.

Department of **Family Medicine**

The Department of Family Medicine, which aims to train medical students to be family doctors, has produced 42 medical specialists and trained 15 residents as of 2012 since it was first introduced at Kyungpook National University in 1996. It plays an important role especially in educating residents and medical students. It takes charge of diseases from beginning to end clinically; research on all phases of diseases is also actively being implemented. Furthermore, the department is studying senile diseases, a recent growing issue.

Chairman: Chang-Ho Youn, MD, PhD
(ychfm@knu.ac.kr)

Faculty
Chang-Ho Youn, MD, PhD

Recent Publications

1. Hae-Jin Ko, Chang-Ho Youn. Determination of the beginning age for colonoscopic screening among colonoscopy-naïve individuals. Clin ResHepatol-Gastroenterol. 2012;36(4):384-90.

2. Yun-Ryung Jung, Chang-Ho Youn, Hae-Jin Ko. Effects of Passive Smoking on Pulmonary Function in Adults. Korean J Health Promot. 2011;11(3): 115-121.

3. Eun Kyung Son, Chang Ho Youn, Hae Jin Ko, Hyo Min Kim, Kyung Min Moon. Relationship between Changes in Body Mass Index and Pulmonary Function in Adults. Korean J Health Promot.2011;11(3): 154-159.

4. Hae-Jin Ko, Chang-Ho Youn. Effects of laughter therapy on depression, cognition and sleep among the community-dwelling elderly. GeriatrGerontol Int.2011;11(3):267–274.

5. HweeSooJeong, Dong Wook Lee, Chang Ho Youn, Mi Kyung Lee, Seung Jun Lee, Young Sung Suh, and Dae Hyun Kim. Perception and Performance of Preventive Behaviors for the Pandemic Influenza in Hospital Employees

and Outpatients. Yonsei Med J. 2011;52(1):181–187.

6. Hyo-Min Kim, Chang-Ho Youn, Hae-Jin Ko. Quality Indicators of End-of-Life Cancer Care from theFamily Members' Perspective in Korea. Korean J HospPalliat Care. 2011;14:101-109.

7. Ji-Soo Lee, Chang-Ho Youn, Hae-Jin Ko, Mi-Kyung Lee, Gang-SeokSeo, Hyun-WookRyu. Characteristics of Patients Who Visit Emergency Department in Tertiary Hospital for Care of Mild Illness and Regcognition about the Family Doctor Registration Program. Korean J Fam Pract.2011;1:32-39.

8. Hyun Wook Jung, Chang Ho Youn, Nu Ri Cho, Mi Kyung Lee, Jung Bum Lee. The Effect of Laughter Therapy on Sleep in the Community-dwelling Elderly. Korean J Fam Med. 2009;30:511-518.

9. KeunSoo Lee,JuRyung Lee, Chang Ho Youn, Jung Bum Lee. Relationship between Bone Mineral Density and Pulmonary Function in Adult Females. Korean J Fam Med. 2006;27:607-611.

10. KyuChul Lee,Chang Hoo Yoon, Jung BumLee. Comparison of Body Weight and Body Mass Index as Predictors for Osteoporosis among Postmenopausal Korean Women. Korean J Fam Med.2005;26:609-613.

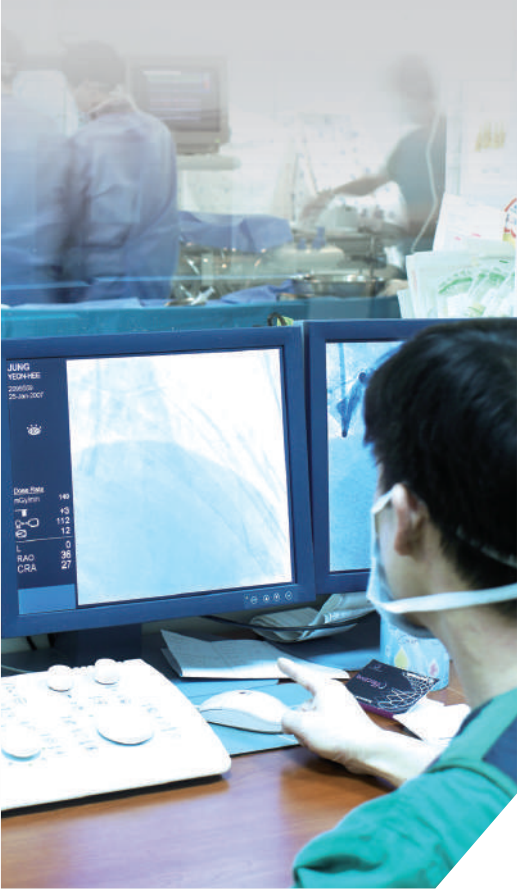
11. Hyun Sik Choi, Nan Young Lee, Dong Il Won, Jung Bum Lee, Jung Hup Song, Kyung Eun Song. Effects of Estrogen Receptor Polymorphisms on Bone Markers and Serum Lipid Levels. Korean J Lab Med. 2003;23:234-241.

Department of **Internal Medicine**

Chairman: Prof. Jong-Myung Lee, MD, PhD
(jomlee@knu.ac.kr)

The Department of Internal Medicine takes the main part of medical education at Kyungpook National University. The faculty members are involved in many preclinical courses during the 2nd year of the curriculum of the medical school and clinical clerkships during the 3rd and the 4th year. The department is comprised of eight divisions: Cardiology, Gastroenterology, Pulmonology, Endocrinology, Nephrology, Hemato-oncology, Allergy and Infectious disease, and Rheumatology.

Division of Cardiology



The Division of Cardiology has been one of the representative divisions of Internal Medicine in Kyungpook National University from the beginning. With a growing number of people suffering from cardiovascular diseases and thus increasing demand for cardiology, we are trying hard to live up to the growing demands.

Our division was remarkably upgraded and expanded in 2008 as it was appointed as "Regional Cardiocerebrovascular Center" by Ministry of Health & Welfare. Coronary Care Unit (CCU) is equipped with individual monitors which provide real-time information on patients' vital signs. In addition, portable fluoroscopy machine, emergency bypass system, and intra-aortic balloon pumps are always available for patients in critical states, such as those in cardiogenic shock. As a government-funded center, we are doing our best to provide comprehensive medical services to the community. We have developed and facilitated several programs including critical pathway for ST segment elevation acute myocardial infarction (AMI), rehabilitation program for post-MI patients, and educational program for in- and out-patients. These programs have enhanced our systems and therefore improved the clinical outcome.

We are actively involved in Korean AMI Registry, a nation-wide government-funded registry of AMI patients, and KorHF registry, a nation-wide government-funded registry of heart failure. We have also been participating in research activities and various international clinical trials in the field of coronary artery disease, interventional cardiology, heart failure, myocarditis and

arrhythmias. Several of our papers were published in the international peer-reviewed journals every year. Our faculty members have served as presidents/chairmen and board members of many national academic cardiology societies and reviewers in many international peer-reviewed journals.

Chief: Hun Sik Park, MD
(E-mail: hspark@knu.ac.kr)

Faculty
Prof. Shung Chull Chae, MD
Prof. Yongkeun Cho, MD
Prof. Hun Sik Park, MD
Prof. Dong Heon Yang, MD
Assistant Prof. Jang Hoon Lee, MD
Assistant Prof. Myung Hwan Bae, MD

Recent publications

1. Bae MH, Choi WS, Kim KH, Park SH, Kim HW, Lee JH, Lee SW, Yang DH, Park HS, Cho Y, Chae SC, Jun JE. The implications of a fragmented QRS complex and newly reclassified revised cardiac risk index including fragmented QRS in patients undergoing non-cardiac vascular surgery. Int J Cardiol. 2012 May 31;157(2):276-8. Epub 2012 Mar 28.

2. Bae MH, Kang JK, Kim NY, Choi WS, Kim KH, Park SH, Lee JH, Yang DH, Park HS, Cho Y, Chae SC, Jun JE. Clinical characteristics of defecation and micturition syncope compared with common vasovagal syncope. Pacing Clin Electrophysiol. 2012 Mar;35(3):341-7.

3. Lee JH, Park SH, Yang DH, Park HS, Cho Y, Lee WK, Jeong MH, Kim YJ, Jun JE, Chae SC; Korea Acute Myocardial Infarction Registry Investigators. Threshold level of low-density lipoprotein cholesterol for the short-term benefit of statin therapy in the acute phase of myocardial infarction. Clin Cardiol. 2012 Apr;35(4):211-8.

4. Lee JH, Yang DH, Park HS, Cho Y, Jun JE, Park WH, Chun BY, Shin JY, Shin DH, Lee KS, Kim KS, Kim KB, Kim YJ, Chae SC; HYpertension-Diabetes Daegu Initiative Study Investigators. Incidence of hypertension in Korea: 5-year follow-up study. J Korean Med Sci. 2011 Oct;26(10):1286-92.

5. Bae MH, Lee JH, Lee SH, Park SH, Yang DH, Park HS, Cho Y, Jun JE, Chae SC. Serum uric acid as an independent and incremental prognostic marker in addition to N-terminal pro-B-type natriuretic peptide in patients with acute myocardial infarction. Circ J. 2011;75(6):1440-7.

6. Kim KH, Choi WS, Lee JH, Lee H, Yang DH, Chae SC. Relationship between dietary vitamin K intake and the stability of anticoagulation effect in patients taking long-term warfarin. Thromb Haemost. 2010 Oct;104(4):755-9.

7. Lee JH, Yang DH, Park HS, Cho Y, Jeong MH, Kim YJ, Kim KS, Hur SH, Seong IW, Hong TJ, Cho MC, Kim CJ, Jun JE, Park WH, Chae SC; Korea Acute Myocardial Infarction Registry Investigators. Suboptimal use of evidence-based medical therapy in patients with acute myocardial infarction from the Korea Acute Myocardial Infarction Registry: prescription rate, predictors, and prognostic value. Am Heart J. 2010 Jun;159(6):1012-9.

8. Lee JH, Park HS, Chae SC, Cho Y, Yang DH, Jeong MH, Kim YJ, Kim KS, Hur SH, Seong IW, Hong TJ, Cho MC, Kim CJ, Jun JE, Park WH; Korea Acute Myocardial Infarction Registry Investigators. Predictors of six-month major adverse cardiac events in 30-day survivors after acute myocardial infarction (from the Korea Acute Myocardial Infarction Registry). Am J Cardiol. 2009 Jul 15;104(2):182-9.

9. Lee JH, Chae SC, Yang DH, Park HS, Cho Y, Jun JE, Park WH, Kam S, Lee WK, Kim YJ, Kim KS, Hur SH, Jeong MH; Korea Acute Myocardial Infarction Registry Investigators. Influence of weather on daily hospital ad-

missions for acute myocardial infarction (from the Korea Acute Myocardial Infarction Registry). Int J Cardiol. 2010 Sep 24;144(1):16-21.

Division of Pulmonary and Critical Care Medicine

The Division of Pulmonary and Critical Care Medicine at the Kyungpook National University School of Medicine provides comprehensive medical care for a full range of pulmonary conditions and diseases in the community. We also try to elucidate the underlying mechanisms and clinical aspects of respiratory diseases and develop a training environment for the next generation of academic physician scientists. In addition to respiratory diseases, the division is deeply involved in critical care medicine and plays a major role in taking care of patients in the intensive care unit of the Kyungpook National University Hospital. It is comprised of two hospital sites, each of which emphasizes different aspects of care for patients with lung diseases.

In the Chilgok branch of the Kyungpook National University Hospital, we focus on thoracic oncology including lung cancer. Since 1998, Dr. Park and his colleagues have been interested in the genetics of lung cancer, especially genetic polymorphism in Koreans. Their main topics of investigation into lung cancer are as follows: 1) clinical diagnosis and treatment; 2) development of biomarkers for personalized diagnosis and therapy; 3) research on the molecular biology of lung cancer pathogenesis; 4) development of target agents; and 5) research on the lung cancer genome. They acquired a patent for polymorphisms of DNA repair gene, such as XPA and XPG, and DNA methylation gene, such as DNMT3B, MBD1 related to risk of lung cancer in Koreans. They have also been doing research about the role of microRNA in the development of chronic obstructive pulmonary disease and lung cancer.

In the Samdukdong campus, our pulmonary specialists conduct clinical research in the overall area of respiratory diseases including airway diseases, interstitial lung disease, pulmonary embolism, tuberculosis, pneumonia, and other related diseases. Dr. Chang-Ho Kim and his colleagues are interested in early diagnosis of tuberculosis. Recently they have been doing research regarding the comparison of new diagnostic techniques such as flow cytometry and conventional methods for tuberculosis. Main research interests of Dr. Seung-Ick Cha are pulmonary embolism and interstitial lung diseases such as idiopathic pulmonary fibrosis. Dr. Cha and his colleagues have done several clinical studies of pulmonary embolism and research on biomarkers of interstitial lung diseases.

Chief: Seung-Ick Cha, MD, PhD
(sicha@knu.ac.kr)

Faculty

Jae-Yong Park, MD, PhD
Chang-Ho Kim, MD, PhD
Seung-Ick Cha, MD, PhD
Shin-Yup Lee, MD, PhD
Jaehee Lee, MD, PhD
Seung Soo Yoo, MD, PhD

Recent publications

1. Polymorphisms in the CASPASE genes and survival in patients with early-stage non-small-cell lung cancer. Yoo SS, Choi JE, Lee WK, Choi YY, Kam S, Kim MJ, JeonHS, Lee EB, Kim DS, Lee MH, Kim IS, Jheon S, Park JY. J Clin Oncol. 2009;27:5823-9.

2. Polymorphisms in the FAS and FASL Genes and Survival of Early Stage Non–small Cell Lung Cancer. Park JY, Lee WK, Jung DK, Choi JE, Park TI, Lee EB, Cho S, Park JY, Cha SI, Kim CH, Kam S, Jung TH, Jheon S. Clin Cancer Res 2009;15:1794-1800.

3. The clinical course of respiratory tuberculosis in

lung cancer patients. Cha SI, Shin KM, Lee JW, Lee SY, Kim CH, Park JY, Jung TH. Int J Tuberc Lung Dis 2009;13:1002–7.

4. Polymorphisms in matrix metalloproteinase-1, -9 and -12 genes and the risk of chronic obstructive pulmonary disease in a Korean population. Lee SY, Kim MJ, Kang HG, Yoo SS, Choi YY, Lee WK, Cha SI, Kim CH, Jung TH, Park JY. Respiration. 2010;80:133-8.

5. Performance of whole-blood interferon-gamma release assay in patients admitted to the emergency department with pulmonary infiltrates. Lee YJ, Lee J, Kim YY, Won DI, Cha SI, Park JY, Jung TH, Kim CH. BMC Infect Dis. 2011;11:107.

6. Polymorphisms in the caspase genes and the risk of lung cancer. Lee SY, Choi YY, Choi JE, Kim MJ, Kim JS, Jung DK, Kang HG, Jeon HS, Lee WK, Jin G, Cha SI, Kim CH, Jung TH, Park JY. J Thorac Oncol. 2010;5:1152-8.

7. Bacterial pneumonia following cytotoxic chemotherapy for lung cancer: Clinical features, treatment outcome and prognostic factors.Yoo SS, Cha SI, Shin KM, Lee SY, Kim CH, Park JY, Jung TH. Scand J Infect Dis. 2010;42:734-40.

8. Associations between polymorphisms in DNA repair genes and TP53 mutations in non-small cell lung cancer. Cho S, Kim MJ, Choi YY, Yoo SS, Lee WK, Lee EJ, Jang EJ, Bae EY, Jin G, Jeon HS, Lee SY, Cha SI, Park TI, Kim CH, Park JY. Lung Cancer. 2011;73:25-31.

9. Dual roles of a variable number of tandem repeat polymorphism in the TERT gene in lung cancer. Jin G, Yoo SS, Cho S, Jeon HS, Lee WK, Kang HG, Choi YY, Choi JE, Cha SI, Lee EB, Kim CH, Jung TH, Kim YT, Park JY. Cancer Sci. 2011;102:144-9.

10. Adjunctive effects of cyclosporine and macrolide in rapidly progressive cryptogenic organizing pneumonia with no prompt response to steroid. Lee J, Cha SI, Park TI, Park JY, Jung TH, Kim CH. Intern Med. 2011;50:475-9.

Division of Gastroenterology and Hepatology

The Division of Gastroenterology and Hepatology operates at each of Kyungpook National University Hospital and Kyungpook National University Medical Center. We provide leading edge care for disorders of digestive system, liver, pancreas and biliary tree. Clinical care from group of specialists ensures comprehensive and innovative care to the patients in the region. Our missions are to provide best care to patients with GI and liver diseases and facilitate the development of patient care, education, and research programs in digestive, liver and pancreatobiliary disorders.

GI specialists are national and international leaders in the diagnosis and therapy of digestive tract (esophagus, stomach, small intestine, and colon) and motility disorders. We provides state-of-art diagnostic and therapeutic endoscopic services including upper and lower GI endoscopy, endoscopic mucosal resection and dissection, endoscopic esophageal dilation and stent placement, and endoscopic gastrostomy. In addition, faculties in the division of gastroenterology are committed to scientific research and clinical trials in the fields producing numerous literatures in distinguished journals.

Liver center is distinguished as one of the top liver centers in the nation. With close and mutual cooperative relationships with the division of surgery, radiology, and radiation oncology, we successfully provides best level of care to patients with viral hepatitis, alcoholic hepatitis, non-alcoholic fatty liver disease, liver cirrhosis and hepatocellular carcinoma. We participate in many national research consortia, clinical trials, and advisory committees with enormous activities in the field of hepatology. We produce numbers of publications balancing clinical practice and research.

The clinical field of pancreas and biliary tree has been widening dramatically over past decades with development of imaging technology and interventional endoscopies. We perform hundreds of up-to-date procedures each year including endoscopic ultrasound (EUS), EUS-guided fine-needle aspiration (EUS-FNA), EUS-guided biopsy, ERCP, and stent replacement. We investigate new technologies in therapeutic endoscopy and proudly present scientific discoveries in international meetings each year.
The division of Gastroenterology and Hepatology offers chances of training program in trainees hoping to advanced experts in the fields. The fellowship program is a two-year training course designed to provide both clinical experience and researches to become a leading gastroenterologists and hepatologists.

Chief: Chang Min Cho, MD
(E-mail: cmcho@knu.ac.kr)

Faculty
Prof. Sung Kook Kim, MD
Prof. Young Oh Kweon, MD
Prof. Won Young Tak, MD
Associate Prof. Chang Min Cho, MD
Associate Prof. Seong Woo Jeon, MD
Assistant Prof. Min Kyu Jung, MD
Assistant Prof. Soo Young Park, MD
Assistant Prof. Hyun Seok Lee, MD

Recent publications

1. Sustained remission over 36 months of advanced hepatocellular carcinoma after short-term sorafenib therapy. Ahn SY, Lee HS, Kweon YO, Tak WY, Park SY. Dig Dis Sci. 2013 May;58(5):1428-32.

2. Bispectral index monitoring as an adjunct to nurse-administered combined sedation during endoscopic retrograde cholangiopancreatography. Jang SY, Park HG, Jung MK, Cho CM, Park SY, Jeon SW, Tak WY, Kweon YO, Kim SK, Jeon YH. World J Gastroenterol. 2012 Nov 21;18(43):6284-9.

3. Erythropoietin decreases carbon tetrachloride-induced hepatic fibrosis by inhibiting transforming growth factor-beta. Park SY, Lee JY, Tak WY, Kweon YO, Lee MS. Chin Med J (Engl). 2012 Sep;125(17):3098-103.

4. Influence of obesity on the severity and clinical outcome of acute pancreatitis. Shin KY, Lee WS, Chung DW, Heo J, Jung MK, Tak WY, Kweon YO, Cho CM. Gut Liver. 2011 Sep;5(3):335-9.

5. Factors predictive of risk for complications in patients with oesophageal foreign bodies. Sung SH, Jeon SW, Son HS, Kim SK, Jung MK, Cho CM, Tak WY, Kweon YO. Dig Liver Dis. 2011 Aug;43(8):632-5.

6. Symptomatic-enlarging hepatic hemangiomas are effectively treated by percutaneous ultrasonography-guided radiofrequency ablation. Park SY, Tak WY, Jung MK, Jeon SW, Cho CM, Kweon YO, Kim KC. J Hepatol. 2011 Mar;54(3):559-65.

7. Clinical, biochemical, and pathological characteristics of clevudine-associated myopathy. Tak WY, Park SY, Cho CM, Jung MK, Jeon SW, Kweon YO, Park JY, Sohn YK. J Hepatol. 2010 Aug;53(2):261-6 Factors associated with the long-term outcome of a self-expandable colon stent used for palliation of malignant colorectal obstruction. Jung MK, Park SY, Jeon SW, Cho CM, Tak WY, Kweon YO, Kim SK, Choi YH, Kim GC, Ryeom HK. Surg Endosc. 2010 Mar;24(3):525-30.

8. The efficacy of intraperitoneal saline infusion for percutaneous radiofrequency ablation for hepatocellular carcinoma. Park SY, Tak WY, Jeon SW, Cho CM, Kweon YO, Kim SK, Choi YH. Eur J Radiol. 2010 Jun;74(3):536-40.

9. The cap-assisted technique enhances colonoscopy training: prospective randomized study of six trainees. Park SM, Lee SH, Shin KY, Heo J, Sung SH, Park SH, Choi SY, Lee DW, Park HG, Lee HS, Jeon SW, Kim SK, Jung MK. Surg Endosc. 2012 Oct;26(10):2939-43.

10. A switch to endoscopic mucosal resection after precutting following gastric perforation during endoscopic submucosal dissection: a simple and useful technique. Lee DW, Lee HS, Jung MK, Kim SK, Jeon SW. Endoscopy. 2012 Mar;44(3):293-6.

11. Factors predictive of risk for complications in patients with oesophageal foreign bodies. Sung SH, Jeon SW, Son HS, Kim SK, Jung MK, Cho CM, Tak WY, Kweon YO. Dig Liver Dis. 2011 Aug;43(8):632-5.

12. The feasibility of endoscopic submucosal dissection for rectal carcinoid tumors: comparison with endoscopic mucosal resection. Lee DS, Jeon SW, Park SY, Jung MK, Cho CM, Tak WY, Kweon YO, Kim SK. Endoscopy. 2010 Aug;42(8):647-51.

Division of Nephrology

The Division of Nephrology, (Department of Internal Medicine, Kyungpook National University School of Medicine,) is one of the leading groups in the Korean Society of Nephrology. The first kidney biopsy in the country, for instance, was performed in 1960 and the first case of kidney transplantation in Korea except in Seoul area was recorded in 1981 by the division of nephrology. Since 1984, when the department of internal medicine was reorganized into seven subdivisions, the division of nephrology has been remarkably upgraded and expanded. There are currently six professors and three clinical fellows. In the clinical aspect, the division is doing its best in the treatment of patients with end stage renal disease (ESRD). In the hemodialysis room, fourty-four hemodialysis machines are now equipped to treat patients with ESRD. In addition, approximately 200 ESRD patients are treated by peritoneal dialysis. The division is also very active in kidney transplantation. Outcomes of kidney transplantation are excellent, since remarkable advances in the development of immunosuppressive agents, diagnostic tools for detecting acute rejection after transplantation, and better control of opportunistic infection have been introduced. The division has taken an active part in research as well. It has published seven to eight papers per year in the international peer-reviewed journals like J Am Soc Nephrology, Am J Kidney Dis, and Transplantation. It should be emphasized that the division of nephrology is the leader of Clinical Research Center for ESRD supported by Ministry of Health & Welfare, Korea and Prof. Yong-Lim Kim is the director. They prospectively collect and analyze the whole clinical data of Korean ESRD patients registered from more than thirty centers in Korea. Moreover, the division was selected as the Center of Excellence by the International Society for Peritoneal Dialysis (ISPD), which is qualified to educate doctors and nurses working in peritoneal dialysis rooms for patients from all over the world.

Chief: Chan-Duck Kim, MD, PhD
(E-mail: drcdkim@knu.ac.kr)

Faculty

Prof. Yong-Lim Kim, MD
Associate Prof. Chan-Duck Kim, MD
Associate Prof. Sun-Hee Park, MD
Assistant Prof. Jang-Hee Cho, MD

Recent publications

1. Yu MA, Shin KS, Kim JH, Kim YI, Chung SS, Park SH, Kim YL, Kang DH. HGF and BMP-7 ameliorate high glucose-induced epithelial-to-mesenchymal transition of peritoneal mesothelium. J Am Soc Nephrol. 2009 Mar;20(3):567-81.

2. Park SH, Choi MJ, Song IK, Choi SY, Nam JO, Kim CD, Lee BH, Park RW, Park KM, Kim YJ, Kim IS, Kwon TH, Kim YL. Erythropoietin decreases renal fibrosis in mice with ureteral obstruction: role of inhibiting TGF-beta-induced epithelial-to-mesenchymal transition. J Am Soc Nephrol. 2007 May;18(5):1497-507.

3. Kim BS, Kim YS, Kim SI, Kim MS, Lee HY, Kim YL, Kim CD, Yang CW, Choi BS, Han DJ, Kim YS, Kim SJ, Oh HY, Kim DJ. Outcome of multipair donor kidney exchange by a web-based algorithm. J Am Soc Nephrol. 2007 Mar;18(3):1000-6.

4. Phapale PB, Kim SD, Lee HW, Lim M, Kale DD, Kim YL, Cho JH, Hwang D, Yoon YR. An integrative approach for identifying a metabolic phenotype predictive of individualized pharmacokinetics of tacrolimus. Clin Pharmacol Ther. 2010 Apr;87(4):426-36.

5. Kim CD, Lee HJ, Kim DJ, Kim BS, Shin SK, Do JY, Jang MH, Park SH, Kim YS, Kim YL. High prevalence of leukoaraiosis in cerebral magnetic resonance images of patients on peritoneal dialysis. Am J Kidney Dis. 2007 Jul;50(1):98-107.

6. Kim YL, Cho YJ, Park SH, Jeon K, Bae K, Cho DK. Peritoneal-mediastinal leakage complication of peritoneal dialysis. Am J Kidney Dis. 2003 Aug;42(2):E17-9.

7. Ryu HM, Oh EJ, Park SH, Kim CD, Choi JY, Cho JH, Kim IS, Kwon TH, Chung HY, Yoo M, Kim YL. Aquaporin 3 expression is up-regulated by TGF-β1 in rat peritoneal mesothelial cells and plays a role in wound healing. Am J Pathol. 2012 Dec;181(6):2047-57.

8. Yoon SH, Cho JH, Kwon O, Choi JY, Park SH, Kim YL, Yoon YR, Won DI, Kim CD. CYP3A and ABCB1 genetic polymorphisms on the pharmacokinetics and pharmacodynamics of tacrolimus and its metabolites (M-I and M-III). Transplantation. 2013 Mar 27;95(6):828-34.

9. Kim CD, Kim EY, Yoo H, Lee JW, Ryu do H, Noh DW, Park SH, Kim YL, Hwang GS, Kwon TH. Metabonomic analysis of serum metabolites in kidney transplant recipients with cyclosporine A- or tacrolimusbased immunosuppression. Transplantation. 2010 Oct 15;90(7):748-56.

10. Kim CD, Ryu HM, Choi JY, Choi HJ, Choi HJ, Cho JH, Park SH, Won DI, Kim YL. Association of G-137C IL-18 promoter polymorphism with acute allograft rejection in renal transplant recipients. Transplantation. 2008 Dec 15;86(11):1610-4.

11. Choi JY, Yoon YJ, Choi HJ, Park SH, Kim CD, Kim IS, Kwon TH, Do JY, Kim SH, Ryu do H, Hwang GS, Kim YL. Dialysis modality-dependent changes in serum metabolites: accumulation of inosine and hypoxanthine in patients on haemodialysis. Nephrol Dial Transplant. 2011 Apr;26(4):1304-13.

12. Cho JH, Kim CD, Kim MS, Kang ES, Kim YH, Kim JI, Oh CK, Kim YS, Won DI, Park SH, Kim YL. The impact of A(H1N1)pdm09 infection on renal transplant recipients: a multicenter cohort study.
J Infect. 2012 Jul;65(1):88-90.

Division of Endocrinology

The Division of Endocrinology provides comprehensive medical services for the local medical community diagnosing and treating a number of endocrine disorders, such as diabetes, dyslipidemia, obesity, metabolic disorders, thyroid disease, osteoporosis, and adrenal gland diseases. In particular, an institute for the research of metabolic disorders and anti-aging was established for the development of new diagnostics and innovative treatment modalities. The institute has been led by Prof. In-Kyu Lee, who is actively involved in a number of studies on diabetic complications and metabolic disorders affecting blood vessels, liver, kidney, and fat tissue in the body.

Currently Professor In-Kyu Lee, Professor Jung-Guk Kim, and Professor Keun-Gyu Park are leading the research team composed of a total of 20 members including three specialists, two foreign visiting professors, two research professors, three post-docs, and PhD students. The laboratory is running on the slogan ‘From Bedside to Bench and Back Again’, where clinicians and PhD researchers collaborate very closely in solving

important clinical issues.

The research team has been fully supported by the Ministry of Health and Ministry of Education, Science, and Technology, Korea, including World Class University (WCU) program and National Research Lab (NRL) program. Recent major research projects are as follows:

Diabetes and Metabolic Syndrome: To identify novel therapeutic targets, a number of animal models are exploited, such as pyruvate dehydrogenase kinase (PDK) knockout mice, GM3 ganglioside knockout mice. In addition, we are investigating the possibility of therapeutic targets of CREBH and AMP-activated protein kinase (AMPK) in diabetes and metabolic syndrome, both of which are the potential targets for the treatment of dysregulation of glucose and lipid metabolism.

Atherosclerosis and restenosis: To overcome the serious diabetic complications such as atherosclerosis and restenosis, we have investigated how to control the function of vascular smooth muscle. The effects of mitochondrial dysfunstion and ER stress on the proliferation of vascular smooth muscle cells, inflammation and calcification have been studied. In particular, we demonstrated that AMPK and NQO1 activity can be regulated by β-lapachone, and neovascularization after balloon dilatation could be inhibited by β-lapachone, indicating that this could be a new drug for treatment or prevention of atherosclerosis.

Chief: Jung Guk Kim, MD, PhD
(jugkim@knu.ac.kr)

Faculty

Prof. In-Kyu Lee, MD, PhD
Prof. Jung Guk Kim, MD, PhD
Prof. Keun-Gyu Park, MD, PhD
Research Professors: Han Jong Kim, PhD, Joon Young Kim, PhD
Foreign Visiting Professors: Robert A.Harris, PhD, Tadashi Yamasita, PhD

Recent Publications

1. Kim HJ, Kim JY, Lee SJ, Kim HJ, Oh CJ, Choi YK, Lee HJ, Do JY, Kim SY, Kwon TK, Choi HS, Lee MO, Park IS, Park KG, Lee KU, Lee IK. {alpha}-Lipoic Acid Prevents Neointimal Hyperplasia Via Induction of p38 Mitogen-Activated Protein Kinase/Nur77-Mediated Apoptosis of Vascular Smooth Muscle Cells and Accelerates Postinjury Reendothelialization. Arterioscler Thromb Vasc Biol. 2010 Nov;30(11):2164-72. Epub 2010 Sep 9.

2. Seo HY, Kim MK, Min AK, Kim HS, Ryu SY, Kim NK, Lee KM, Kim HJ, Choi HS, Lee KU, Park KG, Lee IK. Endoplasmic Reticulum Stress-Induced Activation of Activating Transcription Factor 6 Decreases cAMP-Stimulated Hepatic Gluconeogenesis via Inhibition of CREB. Endocrinology. 2010 Feb;151(2):561-8. Epub 2009 Dec 18.

3. Kim HJ, Yoo EK, Kim JY, Choi YK, Lee HJ, Kim JK, Jeoung NH, Lee KU, Park IS, Min BH, Park KG, Lee CH, Aronow BJ, Sata M, Lee IK. Protective role of clusterin/apolipoprotein J against neointimal hyperplasia via antiproliferative effect on vascular smooth muscle cells and cytoprotective effect on endothelial cells. Arterioscler Thromb Vasc Biol. 2009 Oct 29(10):1558-1564.

4. Jung GS, Kim MK, Choe MS, Lee KM, Kim HS, Park YJ, Choi HS, Lee KU, Park KG, Lee IK. The orphan nuclear receptor SHP attenuates renal fibrosis. J Am Soc Nephrol. 2009 Oct 20(10):2162-2170.

5. Lee KM, Lee HJ, Kim MK, Kim HS, Jung GS, Hur SH, Kim HT, Cho WH, Kim JG, Kim BW, Lim JO, Choi HS, Lee KU, Park KG, Lee IK. Cilostazol inhibits high glucose- and angiotensin II-induced type 1 plasminogen activator inhibitor expression in artery wall and neointimal region after vascular injury. Atherosclerosis. 2009 Dec 207(2):391-398.

6. Kim SY, Jeoung NH, Oh CJ, Choi YK, Lee HJ, Kim HJ, Kim JY, Hwang JH, Tadi S, Yim YH, Lee KU, Park KG, Huh S, Min KN, Jeong KH, Park MG, Kwak TH,

Kweon GR, Inukai K, Shong M, Lee IK. Activation of NAD(P)H:quinone oxidoreductase 1 prevents arterial restenosis by suppressing vascular smooth muscle cell proliferation. Circ Res. 2009 Apr 10;104(7):842-50. Epub 2009 Feb 19.

7. Park KG, Min AK, Koh EH, Kim HS, Kim MO, Park HS, Kim YD, Yoon TS, Jang BK, Hwang JS, Kim JB, Choi HS, Park JY, Lee IK, Lee KU. Alpha-Lipoic Acid Decreases Hepatic Lipogenesis Through Adenosine Monophosphate-Activated Protein Kinase (AMPK)-Dependent and AMPK-Independent Pathways. Hepatology. 2008 Nov; 48(5):1477-1486.

8. Seo HY, Kim YD, Lee KM, Min AK, Kim MK, Kim HS, Won KC, Park JY, Lee KU, Choi HS, Park KG, Lee IK. Endoplasmic reticulum stress-induced activation of activating transcription factor 6 decreases insulin gene expression via up-regulation of orphan nuclear receptor small heterodimer partner. Endocrinology. 2008 Aug; 149(8):3832-3841.

9. Park KG, Lee KM, Seo HY, Suh JH, Kim HS, Wang L, Won KC, Lee HW, Park JY, Lee KU, Kim JG, Kim BW, Choi HS, Lee IK. Glucotoxicity in the INS-1 rat insulinoma cell line is mediated by the orphan nuclear receptor small heterodimer partner. Diabetes. 2007 Feb 56(2):431-437.

10. Lee KM, Park KG, Kim YD, Lee HJ, Kim HT, Cho WH, Koh GY, Park JY, Lee KU, Kim JG, Lee IK. Alpha-lipoic acid inhibits fractalkine expression and prevents neointimal hyperplasia after balloon injury in rat carotid artery. Atherosclerosis. 2006 Nov 189(1):104-114.

Division of Hemato-oncology

The Division of Hemato-oncology is the first medical center in Korea established in the late 1950s primarily to treat blood-related malignant diseases. Thereafter, medical staff and researchers in the division have aimed at providing accurate diagnosis and the newest treatment for patients with malignant diseases. Through an elaborate clinical approach and remarkable academic achievements since 1958, when professor Ki-Seok Hwang established the hematology clinics and blood bank in the Kyungpook National University Hospital, they have been working at the cutting edge of modern medicine. At present in the hospital, sterile wards are perfectly running, and transplantation of bone marrow-derived hematopoietic stem cells or peripheral blood stem cells has been successfully carried out.

In particular, in the early 1990s the division of hematology introduced the peripheral blood stem cell transplantation, which is presently acknowledged as a standard treatment for hematologic malignancy. Moreover, their studies on genetic polymorphism for hematologic malignancy including leukemia and lymphoma were published in the international peer-reviewed journals including Blood. Now they are actively involved in the studies of gene analysis for chronic myelogenous leukemia, new drug screening for bone marrow transplantation, and measurement of drug concentration of Gleevec used for the treatment of chronic myelogenous leukemia. Oncology section has also been recognized in the study fields of genetic polymorphism associated with the angiogenesis factor in colon and stomach cancer. Well-organized cooperative systems with the surgical teams in both research and clinical practice stimulate their activities significantly. Extensive basic and clinical research is now under way regarding discovery and functional study of colorectal cancer specific poly-miRTS. The main purpose of the research is to identify the novel biomarkers which could indicate the treatment efficacy of colon cancer. Recently several broadcast media introduced the Division of Hemato-oncology as a prestigious cancer center for the treatment and research in the country, indicating that the division has put enormous amount of efforts into the studies of malignant diseases. The division has played a leading role in this area by publishing more than fifty papers in international peer-reviewed journals.

Chief: Jong Gwang Kim, MD, PhD
(jkk21c@knu.ac.kr)

Faculty
Sang Kyun Sohn, MD, PhD
Jong Gwang Kim, MD, PhD
Yee Soo Chae, MD, PhD
Joon Ho Moon, MD, PhD
Byung Woog Kang, MD

Recent Publications

1. Kang BW, Moon JH, Chae YS, Kim JG, Jung JS, Cho GJ, et al. Comparative analysis of outcomes of allogeneic peripheral blood stem cell transplantation from related and unrelated donors. Ann Hematol. 2010;89(8):813-20.

2. Moon JH, Kim SN, Kang BW, Chae YS, Kim JG, Baek JH, et al. Predictive value of pretreatment risk group and baseline LDH levels in MDS patients receiving azacitidine treatment. Ann Hematol. 2010;89(7):681-9.

3. Kim JG, Chae YS, Sohn SK, Moon JH, Kang BW, Park JY, et al. IVS10+12A>G polymorphism in hMSH2 gene associated with prognosis for patients with colorectal cancer. Ann Oncol. 2010;21(3):525-9.

4. Kim DH, Lee NY, Lee MH, Sohn SK. Vascular endothelial growth factor gene polymorphisms may predict the risk of acute graft-versus-host disease following allogeneic transplantation: preventive effect of vascular endothelial growth factor gene on acute graft-versus-host disease. Biol Blood Marrow Transplant. 2008;14(12):1408-16.

5. Moon JH, Kim SN, Kang BW, Chae YS, Kim JG, Ahn JS, et al. Early onset of acute GVHD indicates worse outcome in terms of severity of chronic GVHD compared with late onset. Bone Marrow Transplant. 2010;45(10):1540-5.

6. Lee SJ, Kim JG, Sohn SK, Chae YS, Moon JH, Kim SN, et al. No association of vascular endothelial growth factor-A (VEGF-A) and VEGF-C expression with survival in patients with gastric cancer. Cancer Res Treat. 2009;41(4):218-23.

7. Kim JG, Chae YS, Sohn SK, Cho YY, Moon JH, Park JY, et al. Vascular endothelial growth factor gene polymorphisms associated with prognosis for patients with colorectal cancer. Clin Cancer Res. 2008;14(1):62-6.

8. Moon JH, Sohn SK, Lee MH, Jang JH, Kim K, Jung CW, et al. BCL2 gene polymorphism could predict the treatment outcomes in acute myeloid leukemia patients. Leuk Res. 2010;34(2):166-72.

9. Moon JH, Lee SJ, Kim JG, Chae YS, Kim SN, Kang BW, et al. Clinical significance of autoantibody expression in allogeneic stem-cell recipients. Transplantation. 2009;88(2):242-50.

Division of Allergy and Infectious Diseases

The Division of Allergy and Infectious Diseases is in charge of the treatment, education and research pertaining to allergic diseases and infectious diseases. The subdivision of allergic diseases researches the diseases that result from excessive or abnormal immunologic reaction towards foreign antigens. The subdivision covers both common allergic diseases such as bronchial asthma, allergic rhinitis and urticaria, and less common ones such as anaphylaxis. The allergy clinic performs allergic skin test, bronchial provocation test, pulmonary function test and allergen-specific immunotherapy.

The subdivision of infectious diseases treats infectious diseases of various organs, such as urinary tract, central nerve system, skin and bone, and fever of unknown origin, and has the largest number of HIV (human immunodeficiency virus) patients in the region. Moreover,

it provides consultation services for other departments with regard to hospital acquired infections and infections in immunocompromised patients. It also supports hospital infection control to prevent nosoconmial infection. Cooperating with the infection control team, it is involved in the investigation of hospital infection outbreak, the result of which facilitates the management and prevention of infectious diseases. Other responsibilities include the surveillance of antibiotic usage, the treatment of legal infectious diseases and the operation of travel medicine clinic. The Division of Allergy and Infectious Diseases performs national research projects, including Community Acquired Pneumonia Study and Korean HIV/AIDS Cohort Study, and operates the counseling system for HIV patients and Regional Pharmacovigilance Center. It also contributes to the accumulation of national resources by participating in National Pathogen Resource Bank research. Moreover, it takes part in many international phase 3 clinical trials.

Chief: Shin-Woo Kim, MD, PhD
(ksw2kms@knu.ac.kr)

Faculty
Jong Myung Lee, MD, PhD
Shin-Woo Kim, MD, PhD
Hyun-Ha Chang, MD, PhD

Recent publications

1. Clinical Experience of Tigecycline Treatment in Infections Caused by Extensively Drug-Resistant Acinetobacter spp. Microb Drug Resist, 2012 Epub 2012/07/11.

2. Causes and Treatment Outcomes of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis in 82 Adult Patients Korean J Intern Med 27:203-210, 2012.

3. The Causes and Treatment Outcomes of 91 Patients with Adult Nosocomial Meningitis. Korean J Intern Med 27:171-179, 2012.

4. Impact of First-line Antifungal Agents on the Outcomes and Costs of Candidemia. Antimicrob Agents Chemother 2012. Epub 2012/04/25.

5. Causes and Risk Factors of Mortality in Adult Patients with Hemophagocytic Syndrome Infect Chemother 2012;44; 51-55.

6. Klebsiella pneumoniae as the Most Frequent Pathogen of Endogenous Endophthalmitis Korean J Med 82:200-207, 2012.

7. Antibiotic Resistance and Treatment Update of Community-Acquired Pneumonia. Korean J Med 81:690-698, 2011.

8. Management of Community-Acquired Pneumonia in Outpatient Clinic. Korean J Med 81:586-591, 2011.

9. Bacterial Upper Respiratory Infections. Infect Chemother 43: 383-389, 2011.

10. Liver cirrhosis as a risk factor for mortality in a national cohort of patients with bacteremia. J Infect 63:336-43, 2011.

11. Spread of methicillin-resistant Staphylococcus aureus between the community and the hospitals in Asian countries: an ANSORP study. J Antimicrob Chemother 66:1061-1069, 2011.

12. Risk factors and pathogenic significance of severe sepsis and septic shock in 2286 patients with gram-negative bacteremia. J Infect, 62: 26-33, 2011.

13. Clinical impact of methicillin resistance on outcome of patients with Staphylococcus aureus infection: A stratified analysis according to underlying diseases and sites of infection in a large prospective cohort. J Infect. 61: 299-306, 2010.

14. Risk factors and treatment outcomes of community-onset bacteraemia caused by extended-spectrum beta-

lactamase-producing Escherichia coli. Int J Antimicrob Agents. 36:284-7, 2010.

15. Diagnosis and Treatment of Allergic Rhinitis. The Korean J Inter Med 76:268-73. 2009.

16. Skills in Handling Turbuhaler, Diskus, and Pressureized Metered-Dose Inhaler in Korean Asthmatic Patients. Allergy Asthma Immunol Res 3:46-52, 2011.

17. Practice Patterns of Allergen Immunotherapy in korea: Where Are We? Allergy Asthma Immunol Res 5:249-50, 2013.

Division of Rheumatology

The Division of Rheumatology, Department of Internal Medicine, Kyungpook National University School of Medicine, has provided world-class healthcare services for the diagnosis and treatment of rheumatic diseases, such as rheumatoid arthritis, systemic lupus erythematosus, ankylosing spondyloarthritis, osteoarthritis, gout, Sjogren's syndrome, and fibromyalgia since 1997. The faculty members in the division, of which Professor Young Mo Kang is the acting chief, are the specialist in clinical practice and also involved in clinical and basic science researches. In particular, the Korean Atherosclerosis Risk for Rheumatoid Arthritis (KARRA) cohort study, of which purpose is to elucidate the risk factors of atherosclerosis in Korean patients with rheumatoid arthritis, has been conducted in our division since 2009, and the high-quality data provided by this prospective cohort study have been reported in many scientific societies including American College of Rheumatology.
The Autoimmunity and Immunoregulation Research Laboratory in our division, which is composed of postdocs, PhD students and foreign visiting professors, has established ties with many research institutes including Korea Institute of Science and Technology, Pohang University of Science and Technology, Mediplex, D&P Biotech and Harvard University, and accomplished the state-of-the-art basic researches on underlying mechanisms of rheumatoid arthritis. Our research projects have been supported by the Ministry of Health and Ministry of Education, Science and Technology, Korea. Especially, Professor Young Mo Kang devised a scheme for the research society of arthritis and was the first and second president of the Synovitis Research Society.

Chief: Young Mo Kang, MD, PhD
(E-mail: ymkang@knu.ac.kr)

Faculty
Prof. Young Mo Kang, MD, PhD
Associate Prof. Eon Jeong Nam, MD, PhD

Recent publications

1. Nam EJ, Sa KH, You DW, Cho JH, Seo JS, Han SW, Park JY, Kim SI, Kyung HS, Kim IS, Kang YM. Upregulated βig-h3 in rheumatoid arthritis mediates adhesion and migration of synoviocyte through αvβ3 integrin: Regulation by cytokines. Upregulated βig-h3 in rheumatoid arthritis. Arthritis Rheum 2006 Aug 31;54(9):2734-44.

2. Kang YM, Kim SY, Kang JH, Han SW, Nam EJ, Kyung HS, Park JY, Kim IS. LIGHT up-regulated on B lymphocytes and monocytes in rheumatoid arthritis mediates cellular adhesion and metalloproteinase production by synoviocytes. Arthritis Rheum. 2007 Apr;56(4):1106-17.

3. Lee SS, Park YW, Park JJ, Kang YM, Nam EJ, Kim SI, Lee JH, Yoo WH, Lee SI. Combination treatment with leflunomide and methotrexate for patients with active rheumatoid arthritis. Scand J Rheumatol. 2009 Jan-Feb;38(1):11-4.

4. Nam EJ, Kim KH, Han SW, Cho CM, Lee J, Park JY, Kang YM. The -283C/T polymorphism of the DNMT3B gene influences the progression of joint de-

struction in rheumatoid arthritis. Rheumatol Int. 2010 Aug;30(10):1299-303.

5. Kim M, Kang HG, Lee SY, Lee HC, Lee EB, Choi YY, Lee WK, Cho S, Jin G, Jheon HS, Son JW, Lee MH, Jung DK, Cha SI, Kim CH, Kang YM, Kam S, Jung TH, Jheon S, Park JY. Comprehensive analysis of DNA repair gene polymorphisms and survival in patients with early stage non-small-cell lung cancer. Cancer Sci. 2010 Nov;101(11):2436-42.

6. Shin YJ, Han SH, Kim DS, Lee GH, Yoo WH, Kang YM, Choi JY, Lee YC, Park SJ, Jeong SK, Kim HT, Chae SW, Jeong HJ, Kim HR, Chae HJ. Autophagy induction and CHOP under-expression promotes survival of fibroblasts from rheumatoid arthritis patients under endoplasmic reticulum stress. Arthritis Res Ther. 2010;12(1):R19.

7. Kim SH, Chang Y, Kim JH, Song HJ, Seo J, Kim SH, Han SW, Nam EJ, Choi TY, Lee SJ, Kim SK. Insular cortex is a trait marker for pain processing in fibromyalgia syndrome--blood oxygenation level-dependent functional magnetic resonance imaging study in Korea. Clin Exp Rheumatol. 2011 Nov-Dec;29(6 Suppl 69):S19-27.

8. Freudenberg J, Lee HS, Han BG, Shin HD, Kang YM, Sung YK, Shim SC, Choi CB, Lee AT, Gregersen PK, Bae S.C. Genome-Wide Association Study of Rheumatoid Arthritis in Korea: Population-Specific Loci as well as Overlap with European Susceptibility Loci. Arthritis Rheum. 2011 Apr;63(4):884-93.

9. Han SY, Han HS, Lee SC, Kang YM, and Park JY. Mineralized Hyaluronic Acid Nanoparticles as a Robust Drug Carrier. Journal of Materials 2011: 21: 7996.

10. Kim K, Park SY, Kim T, Kang YM, Shim SC, Suh CH, Park YB, Kim CS, Kang C, Bae SC. Replicated association of a regulatory polymorphism in interferon-gamma gene with susceptibility to systemic lupus erythematosus. Ann Rheum Dis. 2011 Oct;70(10):1878-9.

11. Choi KY, Yoon HY, Kim JH, Bae SM, Park RW, Kang YM, Kim IS, Kwon IC, Choi K, Jeong SY, Kim K, Park JH. Smart Nanocarrier Based on PEGylated Hyaluronic Acid for Cancer Therapy. ACS Nano. 2011 Nov 22;5(11):8591-9.

12. Han SW, Sa KH, Kim SI, Lee SI, Park YW, Lee SS, Yoo WH, Kang JY, Soe JS, Nam EJ, Lee J, Park JY, Kang YM. FCRL3 gene polymorphisms contribute to the radiographic severity rather than susceptibility of rheumatoid arthritis. Hum Immunol. 2012 May;73(5):537-42.

13. Seo J, Kim SH, Kim YT, Song HJ, Lee JJ, Kim SH, Han SW, Nam EJ, Kim SK, Lee HJ, Lee SJ, Chang Y. Working memory impairment in fibromyalgia patients associated with altered frontoparietal memory network. PLoS One. 2012;7(6):e37808.

14. Kim SH, Kim SH, Kim SK, Nam EJ, Han SW, Lee SJ. Spatial versus verbal memory impairments in patients with fibromyalgia. Rheumatol Int. 2012 May;32(5):1135-42.

15. Nam EJ, Park PW. Shedding of cell membrane-bound proteoglycans. Methods Mol Biol. 2012;836:291-305.

Department of **Neurology**

Prof. Sung-Pa Park is studying about the changes of cognitive functions, psychiatric symptoms, drug side effects, and the changes of quality of life in patients with epilepsy, which is induced by hyperexcitability of brain cells. Prof. Park is also involved in multicenter studies about anti-epileptic drugs. Moreover, he examines the changes of cognitive functions, psychiatric symptoms, and quality of life in patients with migraine headache.

Prof. Ho-Won Lee: The primary goal of his research has been the establishment of a scientific basis for the rational early diagnosis and treatment of Alzheimer's disease (AD) and Parkinson's disease (PD). Accordingly, his interests range from the mechanisms of pathophysiology of AD/PD and surrogate bio/imaging marker for early diagnosis and progression of AD/PD. He has established a network of collaborative Lab which has focused on Bio-fluid such as CSF and blood, MRI and EEG. The second goal of his research has been the establishment of a scientific basis for the rational treatment and complication of sleep apnea and for the effect of sleep on neurodegenerative diseases such as AD and PD. Accordingly, he has established a network of collaborative Lab, including cardiology, ENT, oral medicine, and pharmacology. He is involved in the study of early diagnosis and treatment of neurodegenerative diseases such as dementia and Parkinson's disease. Furthermore, Prof. Lee is interested in the understanding of underlying mechanisms of insomnia and sleep apnea through polysomnography.

Prof. Yang-Ha Hwang performs the studies regarding the treatment and secondary prevention of ischemic stroke. Particularly, Prof. Hwang is interested in the treatment of ischemic stroke, such as thrombolysis and intervention. In addition, studies as to neuroprotection using hypothermia and albumin co-treatment for lacunar infarction are in progress.

Prof. Hyun Seok Song has main interest in the fields of neuroophthalmology and neurootology. Prof. Song is also interested in the clinical research of neuromuscular diseases such as Guillain-Barre syndrome and myasthenia gravis.

Chairman: Prof. Sung-Pa Park, MD, PhD
(sppark@knu.ac.kr)

Faculty
Sung-Pa Park MD, PhD
Ho-Won Lee, MD, PhD
Yang-Ha Hwang, MD
Hyun Seok Song, MD

Recent publications

1. Park SP. Psychiatric comorbidity in patients with epilepsy. Neurology Asia 2013;18(Suppl 1):35-7.

2. Kwon OY, Park SP. Frequency of affective symptoms and their psychosocial impact in Korean people with epilepsy: A survey at two tertiary care hospitals. Epilepsy Behav 2013;26:51-6.

3. Cho YW, Hong SB, Kim do H, Lee HW, Joo EY, Kim JH, Shin WC, Park KH, Han SJ, Lee HW. The effect of ropinirole on the quality of life in patients with restless legs syndrome in Korea: an 8-week, multicenter, prospective study. J Clin Neurol 2013;9:51-6.

4. Hwang YH, Kang DH, Kim YW, Kim YS, Park SP, Suh CK. Outcome of forced-suction thrombectomy in acute intracranial internal carotid occlusion. J Neurointerv Surg 2013;5 Suppl 1:i81–4.

5. Kim YW, Seo JH, Park SP, Hwang YH. Teaching NeuroImages: Anoxic brain injury with unilateral hemispheric cortical involvement. Neurology 2013;80:e160–0.

6. Kang DH, Hwang YH, Kim YS, Bae GY, Lee SJ. Cognitive outcome and clinically silent thromboembolic events after coiling of asymptomatic unruptured intracranial aneurysms. Neurosurgery 2013;72:638–45.

7. Cho J, Lee KK, Yun WS, Kim HK, Hwang YH, Huh S. Selective shunt during carotid endarterectomy using routine awake test with respect to a lower shunt rate. J Korean SurgSoc 2013;84:238–44.

8. Ko PW, Hwang J, Lim HW, Park SP. Reliability and validity of the Korean version of the Neurological Disorders Depression Inventory for Epilepsy (K-NDDI-E). Epilepsy Behav 2012;25:539-42.

9. Heo K, Lee BI, Yi SD, Cho YW, Shin DJ, Song HK, et al. Short-term efficacy and safety of zonisamide as adjunctive treatment for refractory partial seizures: a multicenter open-label single-arm trial in Korean patients. Seizure 2012:21:188-93.

10. Kang K, Park KS, Kim JE, Kim SW, Kim YT, Kim JS, Lee HW. Usefulness of the Berlin Questionnaire to identify patients at high risk for obstructive sleep apnea: a population-based door-to-door study. Sleep Breath 2012 Sep 29. [Epub ahead of print]

11. Jung JY, Roh M, Ko KK, Jang HS, Lee SR, Ha JH, Jang IS, Lee HW, Lee MG. Effects of single treatment of anti-dementia drugs on sleep-wake patterns in rats. Korean J Physiol Pharmacol 2012;16:231-6.

12. Kim JH, Lee HW, Hwang J, Kim J, Lee MJ, Han HS, Lee WH, Suk K. Microglia-inhibiting activity of Parkinson's disease drug amantadine. Neurobiol Aging 2012;33:2145-59.

13. Park J, Kim JG, Park SP, Lee HW. Asymmetric chorea as presenting symptom in Graves' disease. Neurol Sci 2012;33:343-5.

14. Kang DW, Sohn SI, Hong KS, Yu KH, Hwang YH, Han MK, Lee J, Park JM, Cho AH, Kim HJ, Kim DE, Cho YJ, Koo J, Yun SC, Kwon SU, Bae HJ, Kim JS. Reperfusion Therapy in Unclear-Onset Stroke Based on MRI Evaluation (RESTORE): A Prospective Multicenter Study. Stroke 2012;43:3278–83.

15. Kim YW, Kang DH, Hwang YH, Park SP. Unusual MRI findings of duralarteriovenous fistula: Isolated perfusion lesions mimicking TIA. BMC Neurol 2012;12:77.

Department of **Neurosurgery**

Since the Department of Neurosurgery was separated as an independent department in medical school from the Department of Surgery in 1960, the department has been able to educate medical students about neuroscience and treat patients with neurological diseases in Kyungpook National University School of Medicine and hospital. The department is currently well developed and divided into five divisions: neurovascular center, neurological tumor center, spine center, pediatric neurosurgery, and gamma knife center.

1. In the neurovascular center, various surgical technologies to treat brain aneurysm have been studied and applied, and in particular a superciliary keyhole approach, which is a minimally invasive surgical technology, has been applied to treat unruptured brain aneurysm. Moreover, to remove intravascular thrombus in patients with acute stroke, an interventional radiologic approach was extensively applied along with a minimally invasive surgical technology. The brain cooling device has been studied experimentally for the purpose of minimizing brain injury and decreasing intracranial pressure after brain stroke and trauma. This study has been funded by the Korean government.

2. In the neurological tumor center, studies on the treatment of malignant neuroglioma and gliomatosis are in progress. Currently, the treatment of the migration of meningioma cells to cerebrospinal fluid, the tumors originated from the transitional zones between skull and cervical spine, and new treatment modality for glioblastoma multiforme are underway.

3. In the spine center, extensive studies on trauma and upper cervical spine have been conducted. Further studies on the recurrent lumbar spine diseases and the dynamics of spine have been recently underway. Several new drugs including valproic acid have been tested for protection of spinal cord injury. Moreover, an osteoporosis model was made to study the dynamics of spine bones.

4. In the pediatric neurosurgery center, many clinical studies on premature skull closure and Moyamoya Disease have been carried out. The

role of a shunt valve has been evaluated in the center for the treatment of hydrocephalus. To clarify the pathogenesis of hydrocephalus, animal models are studied. In addition, brain inflammation and cell injury have been investigated to understand the pathophysiology of neonatal brain injury.

5. In the gamma knife center, several prognostic factors of metastatic brain tumors have been studied. Research on the identification of specific molecular biomarkers for recurrent brain tumors and arteriovenous malformation is also underway. In addition, for the better treatment for trigeminal neuralgia, new modalities of gamma knife treatment are to be developed.

Chairman: Jeong-Hyun Hwang, MD, PhD
(jhwang@knu.ac.kr)

Faculty

Prof. Sung-Kyoo Hwang, MD, PhD
Prof. Joo-Kyung Sung, MD, PhD
Prof. Jeong-Hyun Hwang, MD, PhD
Associate Prof. Jae-chan Park, MD
Assistant Prof. Seong-Hyun Park, MD
Assistant Prof. Dae-Chul Cho, MD
Assistant Prof. Dong-Hun Kang, MD
Assistant Prof. Kyung-Tae Kim, MD

Recent Publications

1. Jaechan Park; Saccular aneurysm with basal rupture angiographically depicted as an aneurysm with stalk-like narrow neck. Journal of Neurosurgery, Vol 114, No 4, April, p 1065-1068, 2011.

2. Jaechan Park, Hyun-Jin Woo, Dong-Hun Kang, Joo-Kyung Sung, Yong-Sun Kim: Superciliary Keyhole Approach for Small Unruptured Aneurysms in Anterior Cerebral Circulation. Neurosurgery. 2011 Feb 22. [Epub ahead of print]

3. Dae-Chul Cho, Joo-Kyung Sung; Analysis of Risk Factors Associated with Fusion Failure After Anterior Odontoid Screw Fixation. Spine. 2011 Jan 11. [Epub ahead of print].

4. Dong-Hun Kang, Jaechan Park, Seong-Hyun Park, Yong-Sun Kim, Sung-Kyoo Hwang, In-Suk Hamm: Early Ventriculoperitoneal Shunt Placement After Severe Aneurysmal Subarachnoid Hemorrhage: Role of Intraventricular Hemorrhage and Shunt Function. Neurosurgery, Vol 66, No 5, May, p 904- 909, 2010.

5. Dong-Hun Kang, Yong-Sun Kim, Seung-Kug Baik, Seong-Hyun Park, Jaechan Park, In-Suk Hamm; Acute serious rebleeding after angiographically successful coil embolization of ruptured cerebral aneurysms.. Acta Neurochirurgica, Vol 152, No 5, May p 771-781, 2010.

6. Seong-Hyun Park, Sung-Kyoo Hwang, Dong-Hun Kang, Jaechan Park, Jeong-Hyun Hwang, Joo-Kyung Sung: The retrogasserian zone versus dorsal root entry zone: comparison of two targeting techniques of gamma knife radiosurgery for trigeminal neuralgia. Acta Neurochirurgica, Vol 152, No 7, July, p 1165-1170, 2010.

7. Hyun-Jin Woo, Sung-Kyoo Hwang, Seong-Hyun Park, Jeong-Hyun Hwang, In-Suk Hamm; Factors related to the local treatment failure of gamma knife surgery for metastatic brain tumors. Acta Neurochirurgica, Vol 152, No 11, November, p 1909-1914, 2010.

8. Hyun-Jin Woo, Seong-Hyun Park, Sung-Kyoo Hwang; A Unique Pattern of Intracranial Pressure in a Patient with Traumatic Paroxysmal Sympathetic Storm. Pediatric Neurosurgery, Vol 46, No 4, December, p 299-302, 2010.

Department of **Nuclear Medicine**

Nuclear medicine is one branch of medicine that uses radionuclides for the diagnosis and treatment of diseases. In addition to practicing clinical works, we are working on basic biological research using radionuclides as well. Clinical nuclear medicine was introduced in Kyungpook National University Hospital in 1961 and the Department of Nuclear Medicine in the Kyungook National University School of Medicine in 1964. The major research topics in the clinical medical science cover the clinical application of PET/CT to the oncologic diseases and the advancement of diagnostic and therapeutic nuclear thyroidology including high-dose radioiodine treatment. The major basic research interests are expanding to the fields of molecular imaging, gene therapy strategies and high-throughput screening system for new drug discovery.

The department has novel techniques for the studies of cell trafficking using nuclear/optical probes or reporter genes, patented theragnostic strategies using reporter genes, and molecular imaging methodologies for cell differentiation or dedifferentiation. On top of that, advanced technologies to develop brand new radiopharmaceuticals for clinical and basic researches are pursued. The department has a facility having a full set of instrumentation needed for radiopharmaceutical works. It has three medical cyclotrons producing positron-emitting radioisotopes, several automatic modules synthesizing radiopharmaceuticals, HPLC for analyzing and purifying, and microPET for cutting-edge molecular imaging. Also, biological research facility for gene handling, cell, bacteria and yeast cultures, and *in vivo* animal imaging instruments are fully equipped. The department has begun several National Research Projects which are conducted by four professors, well-trained researchers, and devoted students.

Chairman: Byeong-Cheol Ahn, MD, PhD
(abc2000@knu.ac.kr)

Faculty

Jaetae Lee, MD, PhD

Byeong-Cheol Ahn, MD, PhD

Sang-Woo Lee, MD, PhD
Shin Young Jeong, MD, PhD

Recent publications

Basic research papers

1. Combined E7-dendritic cell-based immunotherapy and human sodium/iodide symporter radioiodine gene therapy with monitoring of antitumor effects by bioluminescent imaging in a mouse model of uterine cervical cancer. Jeon YH, Lee HW, Lee YL, Kim JE, Hwang MH, Jeong SY, Lee SW, Ahn BC, Ha JH, Lee J. Cancer Biother Radiopharm. 2011 Dec;26(6):671-9.

2. Combined RNAi of hexokinase II and I-131 sodium iodide symporter gene therapy for anaplastic thyroid carcinoma. Kim JE, Ahn BC, Hwang MH, Lee HW, Jeon YH, Jeong SY, Lee SW, Lee J. J Nucl Med. 2011 Nov;52(11):1756-63.

3. Targeting of hepatocellular carcinoma with glypican-3 targeting peptide ligand, Lee YL, Ahn BC, Lee YJ, Lee SW, Cho JY, Lee J. J Pept Sci. 2011 Nov;17(11):763-9.

4. Combined Cerenkov luminescence and nuclear imaging of radioiodine in the thyroid gland and thyroid cancer cells expressing sodium iodide symporter: Initial feasibility study. Jeong SY, Hwang MH, Kim JE, Kang S, Park JC, Yoo J, Ha JH, Lee SW, Ahn BC, Lee J. Endocr J. 2011;58(7):575-83.

5. Applications of molecular imaging in drug discovery and development process. Ahn BC. Curr Pharm Biotechnol. 2011 Apr 1;12(4):459-68.

Clinical research papers

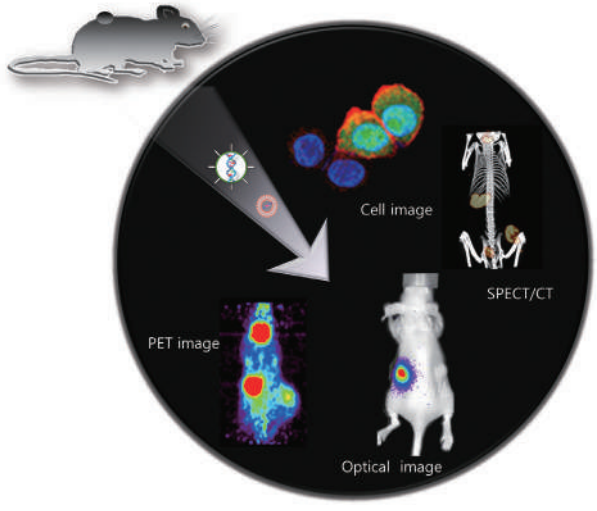
1. Prognostic value of whole body metabolic tumor volume and total lesion glycolysis measured on F-18 FDG PET/CT in patients with extranodal NK/T-cell lymphoma. Kim CY, Hong CM, Kim DH, Son SH, Jeong SY, Lee SW, Lee J, Ahn BC. Eur J Nucl Med Mol Imaging 2013 Sep;40(9):1321-9.

2. Estimation of true serum thyroglobulin concentration using simultaneous measurement of serum antithyroglobulin antibody. Ahn BC, Lee WK, Jeong SY, Lee SW, Lee J. Int J Endocrinol. 2013 Mar;210639.

3. Salivary gland function 5 years after radioactive iodine ablation in patients with differentiated thyroid cancer: direct comparison of pre- and postablation scintigraphies and their relation to xerostomia symptoms. Jeong SY, Kim HW, Lee SW, Ahn BC, Lee J. Thyroid. 2013 May;23(5):609-16.

4. ^{18}F-FDG uptake by metastatic axillary lymph nodes on pretreatment PET/CT as a prognostic factor for recurrence in patients with invasive ductal breast cancer. Song BI, Lee SW, Jeong SY, Chae YS, Lee WK, Ahn BC, Lee J. J Nucl Med. 2012 Sep;53(9):1337-44.

5. Effect of parotid gland massage on parotid gland Tc-99m pertechnetate uptake. Kim HW, Ahn BC, Lee SW, Lee J. Thyroid. 2012 Jun;22(6):611-6.



Department of
Obstetrics and Gynecology

After Korean liberation in 1945, associate professor Ki-Mok Lee, the first Dean of the Kyungpook National University School of Medicine, opened the Department of Obstetrics and Gynecology and became the first chairman of the department. At present, there are five full-time professors and three assistant professors actively involved in the research and clinical works.

The Department of Obstetrics and Gynecology, School of Medicine, Kyungpook National University is mainly divided into three fields: gynecologic oncology, reproductive endocrinology, and maternal fetal medicine.

The subdivision of gynecologic oncology involves the study of daVinci robot surgery for surgical treatment of uterine cervical cancer, particularly for the purpose of keeping pelvic autonomic nervous system, uterine artery and uterus intact. The efficacy of da Vinci robot surgery has also been studied for the treatment of endometrial cancer and early-stage ovarian cancer. Moreover, surgical resection of uterine adenomyoma exploiting robot surgery instead of conventional total hysterectomy has been evaluated.

The subdivision of reproductive endocrinology involves the study of infertility and assisted reproductive techniques. Basic research has been extensively performed for better understanding of the pathogenesis of polycystic ovarian syndrome, uterine endometriosis, and uterine myoma.

The subdivision of maternal and fetal medicine currently involves the clinical study of proBNP for investigating the cardiovascular dysfunction observed in patients with pre-eclampsia. This study has also been extended to the pregnancy with preterm labor or to the fetus with growth retardation. Amniotic fluid from pregnant women with preterm labor has also been evaluated to study the relationship between inflammation or infection and preterm labor.

Chairman: Taek Hoo Lee, MD, PhD
(thlee@knu.ac.kr)

Faculty

Professor IL Soo Park (Gynecological oncology)
Professor Sang Sik Chun (Infertility)
Professor Young Lae Cho (Gynecological oncology)
Professor Yoon Soon Lee (Gynecological oncology and Endoscopic surgery)
Professor Taek Hoo Lee (Reproductive endocrinology)
Assistant Professor Won Joon Seong (Maternal fetal medicine)
Assistant Professor Dae Gi Hong (Gynecological oncology)
Assistant Professor Hyun-Hwa Cha (Maternal fetal medicine)

Recent Publications

1. Lee YS, Chong GO, Lee YH, Hong DG, Cho YL, Park IS. Robot-assisted total preservation of the pelvic autonomic nerve with extended systematic lymphadenectomy as part of nerve-sparing radical hysterectomy for cervical cancer. Int J Gynecol Cancer. 2013;23(6):1133-8.

2. Kim MJ, Bae JY, Seong WJ, Lee YS. Sonographic diagnosis of a viable abdominal pregnancy with planned delivery after fetal lung maturation. J Clin Ultrasound. 2012 Nov 1. [Epub ahead of print]

3. Han AR, Park CW, Lee HS, Yang KM, Song IO, Koong MK. Blastocyst transfer in frozen-thawed cycles. Clin Exp Reprod Med. 2012;39(3):114-7.

4. Wang T, Chong GO, Park NY, Hong DG, Lee YS. Comparison study of single-port (Octoport™) and four-port total laparoscopic hysterectomy. Eur J Obstet Gynecol Reprod Biol. 2012;161(2):215-8.

5. Bae JY, Seong WJ, Lee TH, Park IS. Prenatal diagnosis of scalp cyst with spontaneous regression. J Clin Ultrasound. 2011;39(8):484-6.

6. Chun SS, Hong DG, Seong WJ, Choi MH, Lee TH. Juvenile cystic adenomyoma in a 19-year-old woman: a case report with a proposal for new diagnostic criteria. J Laparoendosc Adv Surg Tech A. 2011;21(8):771-4.

7. Hong DG, Park NY, Chong GO, Cho YL, Park IS, Lee YS. Laparoscopic second look operation for ovarian cancer: single center experiences. Minim Invasive Ther Allied Technol. 2011;20(6):346-51.

8. Hong DG, Lee YS, Park NY, Chong GO, Park IS, Cho YL. Robotic Uterine Artery Preservation and Nerve-Sparing Radical Trachelectomy with Bilateral Pelvic Lymphadenectomy in Early-Stage Cervical Cancer. Int J Gynecol Cancer 2011;21:391-396.

9. Seong WJ, Kim SC, Hong DG, Koo TB, Park IS. Amino-terminal pro-brain natriuretic peptide levels in hypertensive disorders complicating pregnancy. Hypertens Pregnancy. 2011;30(3):287-94.

10. Park NY, Chong GO, Hong DG, Cho YL, Park IS, Lee YS. Oncologic Results and Surgical Morbidity of Laparoscopic Nerve-Sparing Radical Hysterectomy in the Treatment of FIGO Stage IB Cervical Cancer: Long-Term Follow-Up. Int J Gynecol Cancer 2011;21:355-362.

Department of **Ophthalmology**

The Department of Ophthalmology provides consulting, diagnostic and treatment services for all conditions affecting the eye using the finest and most current equipment for diagnosis, laser procedures, and surgeries. The ophthalmology unit includes professional doctors in all ophthalmological fields such as cataract, retina, uvea, glaucoma, cornea, oculoplasty, neuro-ophthalmology, and pediatric ophthalmology. The unit is one of the pioneering medical service providers to put into use cutting-edge medical and surgical technologies for diagnosis and treatment. Innovative medical procedures and surgeries are performed such as keratoplasties (PKP, DSEK, and DALK), glaucoma surgery, and complex retina surgery. This department is a major center for retina surgeries and one of the leading ophthalmology centers in Korea.

Chairman: Prof. Jae Pil Shin, MD, PhD
(shinjp@knu.ac.kr)

Faculty
Prof. In Taek Kim
Prof. Jae Pil Shin
Prof. Hong Kyun Kim
Prof. Bo Young Chun
Prof. Dong Ho Park

Recent publications

1. Chun BY, Kim HK, Kwon JY. Comparison of magnitude of astigmatism induced by lateral rectus recession. Optom Vis Sci. 2010 Jan;87(1):61-5.

2. Park DH, Shin JP, Kim HK, Kim JH, Kim SY. Hydrophilic acrylic intraocular lens (Akreos AO MI60) optic opacification in patients with diabetic retinopathy. Br J Ophthalmol. 2010 Dec;94(12):1688-9.

3. Park DH, Shin JP, Kim SY. Comparison of clinical outcomes between

23-gauge and 20-gauge vitrectomy in patients with proliferative diabetic retinopathy. Retina. 2010 Nov-Dec;30(10):1662-70.

4. Park DH, Shin JP, Kim SY. Intravitreal injection of bevacizumab and triamcinolone acetonide at the end of vitrectomy for diabetic vitreous hemorrhage: a comparative study. Graefes Arch Clin Exp Ophthalmol. 2010 May;248(5):641-50.

5. Park DH, Shin JP, Kim SY. Combined 23-gauge microincisonal vitrectomy surgery and phacoemulsification with AcrySof toric intraocular lens implantation: a comparative study. Eye (Lond). 2011 Oct;25(10):1327-32.

6. Park DH, Kim IT. LOC387715/HTRA1 variants and the response to combined photodynamic therapy with intravitreal bevacizumab for polypoidal choroidal vasculopathy. Retina. 2012 Feb;32(2):299-307.

7. Park DH, Kim IT. Association of ARMS2/HTRA1 variants with polypoidal choroidal vasculopathy phenotype in a Korean population. Jpn J Ophthalmol. 2012 Jan;56(1):60-7.

8. Park DH, Kim IT. Polymorphisms in the VEGF-A in polypoidal choroidal vasculopathy in a Korean population. Jpn J Ophthalmol. 2012 Mar;56(2):145-51.

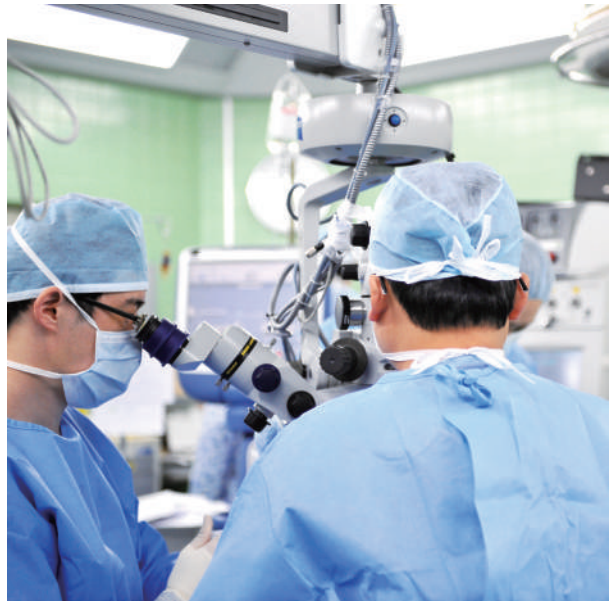
9. Kwon SJ, Park DH, Shin JP Bilateral transient myopia, angle-closure glaucoma, and choroidal detachment induced by methazolamide. Jpn J Ophthalmol. 2012 Sep;56(5): 515-7.

10. Hosono K, Ishigami C, Takahashi M, Park DH, Hirami Y, Nakanishi H, Ueno S, Yokoi T, Hikoya A, Fujita T, Zhao Y, Nishina S, Shin JP, Kim IT, Yamamoto S, Azuma N, Terasaki H, Sato M, Kondo M, Minoshima S, Hotta Y. Two novel mutations in the EYS gene are possible major causes of autosomal recessive retinitis pigmentosa in the Japanese population. PLoS One. 2012;7(2):e31036. doi: 10.1371/journal.pone.0031036. Epub 2012 Feb 17.

11. Lee JY, Kang KM, Shin JP, Kim IT, Kim SY, Park DH. Two-year results of AcrySof toric intraocular lens implantation in patients with combined microincision vitrectomy surgery and phacoemulsification. Br J Ophthalmol. 2013 Apr;97(4):444-9.

12. Park JH, Lee JH, Shin JP, Kim IT, Park DH. Intraocular Foreign Body Removal by Viscoelastic Capture Using DisCoVisc During 23-Gauge Microincision Vitrectomy Surgery. Retina. 2013 May;33(5):1070-2.

13. Lee WJ, Cho HY, Lee YJ, Lee BR, Shin JP. Intravitreal bevacizumab for severe vaso-occlusive retinopathy in systemic lupus erythematosus. Rheumatol Int. 2013 Jan;33(1):247-51.



Department of **Orthopedic Surgery**

Chairman: Prof. Hee-Soo Kyung
(hskyung@knu.ac.kr)

INTRODUCTION

After the establishment of the Korean Orthopedic Association in 1956, Dr. Sung-Gu Choi who served at the department of general surgery studied orthopedic surgery at Michigan University Hospital, USA and returned, then, with Dr. Joo-Chul Seo, medical treatment and education of orthopaedics started in the boundary of general surgery from 1959. From 1960, residency training in the department of orthopedic surgery was started. In 1961, orthopedic surgery was separated from the general surgery and started independent care of in- and out- patients. In 1964, with official authorization by Ministry of Education, the department of orthopedic surgery in Kyungpook National University School of Medicine became independent of general surgery and the department of orthopedic surgery was inaugurated producing orthopedic specialists who trained in our own department for the first time. In 1971, Dr. Ik-Dong Kim, who completed residency under the supervision of Prof. Ferguson at the department of orthopedic surgery at University of Pittsburgh Medical Center and fellowship at Cornell University Hospital, was returned. He served as the dean of the school of medicine, the president of Kyungpook national University, and the president of the Korean Orthopedic Association. A number of internationally outstanding scholars visit our department every year, having an academic tie-up with us through lectures and live surgery. At present, there are 8 full-time faculty members, 2 clinical faculties. 4 clinical fellows and 16 residents in our department who treat patients and do researches actively.

PERFORMANCE IN CLINICAL CARE

In terms of quantity, the number of in-patient care was 31,231, and that of out-patient was 38,946. The total number of operations was 3,436 (2012).

PERFORMANCE IN EDUCATION

Trained Orthopedic Specialists (Until 2011) : 143

Trained Masters (Until 2012) : 106
Trained Doctors (Until 2012) : 40

EMERITUS PROFESSORS

Ik-Dong Kim (1971. 5. 15 ~ 1995. 8. 31)
Joo-Chul Ihn (1971. 9. 16 ~ 1983. 3. 1,
1991. 4. 6 ~ 2005. 2. 28)
Poong-Taek Kim (1983. 3. 30 ~ 2010. 8. 31)
Byung-Chul Park (1981.12.1 ~ 2013. 2. 28)

EX FACULTY MEMBERS

Sung-Ku Choi (1946 - 1960)
Hong-Kun Lee (1961 - 1967)
Joo-Chul Seo (1956 - 1970)
Yong-Gook Jung (1969 - 1971)
Soo-Young Lee (1970 - 1988)
Koing-Woo Kweon (1977 - 1982)
Young-Wook Choi (1986 - 1990)
Young-Goo Lyu (1989 - 1992)
In-Ho Jeon (2005 - 2010)
Hwan-Seong Cho (2009 - 2011)

CURRENT FACULTY MEMBERS

Professor Il-Hyung Park

Specialty: Oncology, Osteoporosis
Training abroad: September, 1993 ~ August, 1994.
University of Washington Medical Center, Seattle, U.S.A
Chief director of KNU medical robot center
Head of Clinical Trial Center, Medical Device, KNUH
Editor of Journal of Korean Medical Science

Published article

1. A Study of Unicameral Bone cysts of the calcaneus: Open Chip Allogeneic Bone Graft versus Percutaneous Injection of Bone Powder with Autogenous Bone Marrow Foot Ankle Int. 2008 Feb;29(2):164-70

2. Analysis of Osteoporosis Risk-factor for Women after menopause; Through the Free Medical- examination Campaign Osteoporosis. 2011 Apr;9(1):28-36

Professor Shin-Yoon Kim

Specialty: Artificial joint replacement, Medical and surgical management of osteoporosis and related fracture, Adult hip joint reconstruction especially for osteonecrosis
Training abroad: September, 1996 ~ February, 1998
Clinical fellow of adult reconstruction, Research fellow of musculoskeletal research at department of orthopedic surgery, University of Pittsburgh Medical Center, U.S.A
Member of International Hip Society, AAHKS, ORS, ASBMR
Editorial board of Journal of Orthopedic Science
Editor in chief, Clinics in Orthopedic Surgery

Published article

1. Midterm results of primary total hip arthroplasty using highly cross-linked polyethylene minimum 7-year follow-up study The Journal of Arthroplasty 26(7), October 2011, 1014–1019, 2011.

2. Association of the OSCAR promoter polymorphism with BMD in postmenopausal women. Journal of Bone and Mineral Research. 20(8): 1342-1348, 2005.

3. Vascularized versus Nonvascularized Fibular Grafting for the Treatment of Large Osteonecrotic Lesions of the Femoral Head. J Bone Joint Surg. 87-A: 2012-2018, 2005.

Research field : Genetic study of osteporosis, osteoneorosis, Bone regeneration, Periprosthetic bone resorption.

Professor Hee-Soo Kyung

Specialty: Knee disease, Sports medicine, Arthroscopic surgery
Training abroad: September, 1999 ~ February, 2001
University of Pittsburgh, U.S.A
Chairman, department of orthopedic surgery, KNU Hospital
Member of International Society of Arthroscopy, Knee surgery and Orthopedic sports medicine

Published article

1. The Correlation of Postoperative Femoral Component Rotation Angle and Patella Tilt Angle with Clinical Results in Total Knee Arthroplasty. J Korean Knee Soc, Vol. 23, No. 2, June 2011.

2. Clinical Evaluation of Anterior Cruciate Ligament Reconstruction with Remnant-preserving Technique: Method Using Single Four-strand Semitendinosus Tendon. J Korean Orthop Assoc. 2011 Feb;46(1):60-67.

Professor Chang-Wug Oh

Specialty: Pediatric orthopedics, Limb deformity correction, Orthopedic traumatology

Training abroad: January, 2002 ~ June, 2003 Thomas Jefferson University Dupont children's hospital, Delaware, U.S.A

Trustee of the Korean Society of Traumatology

Chairperson of research committee in AO Trauma Asia-Pacific

Published article

1. A biomechanical analysis of locking plate fixation with minimally invasive plate osteosynthesis in a subtrochanteric fracture model. J Trauma. 2011 Jan;70(1):E19-23.

2. Limb lengthening with a submuscular locking plate. J Bone Joint Surg Br 2009 Oct, 91- B(10); 1394-9.

Associate professor Woo-Kie Min

Specialty: Spine disease, Spine Deformity, Spine trauma, Spine tumor

Training abroad: August, 2010 ~ August, 2011 St. Louis Washington university Barnes-Jewish hospital, U.S.A

Member of Korean Society of Spine Surgery, North American Spine Society, ASBMR, ECTS

Editorial board member of Clinics in Orthopedic Surgery, Journal of Spine and Neurosurgery

Published article

1. Proliferation and Osteoblastic Differentiation of Bone Marrow Stem Cells: Comparison of Vertebral Body and Iliac Crest Eur Spine J. 2010 Oct;19(10):1753-60.

2. Association between matrilin-1 gene polymorphisms and adolescent idiopathic scoliosis curve patterns in a Korean population. Mol Biol Rep. 2012 May;39(5):5561-7.

Research field: Bone marrow stem cell and niche, Osteoporosis, Spinal cord injury, Genetic studies of adolescent idiopathic scoliosis.

Assistant professor Seung-Hoon Baek

Specialty: Hip disease, Hip Trauma, Arthroscopic Surgery of Hip

Training abroad: September, 2012 ~ February, 2013 Harvard University and Massachusetts General Hospital, USA

Member of Korean Hip Society and International affiliate member of American Academy of Orthopedic Surgeons

Editorial board member of World Journal of Orthopedics

Published article

1. Cementless total hip arthroplasty with alumina bearings in patients younger than fifty with femoral head osteonecrosis. J Bone Joint Surgery, Am. 2008;90(6):1314-20.

2. Miliary tuberculosis and necrotizing tuberculous fasciitis - An unusual coexistence in a rheumatoid arthritis patient. Int J Rheum Dis. 2010;13:171-174.

Research field: Tissue engineering for bone regeneration, Osteoporosis and related research, Biomechanics of Hip joint.

Assistant professor Jong-Pil Yoon

Specialty: Shoulder and elbow disease, Sports medicine
Training abroad: Centre Hospitalier Régional Universitaire de Tours-Université, France
Board of Specialist, Department of Sports Medicine
Certified Physician Investigator of KONECT (Korean National Enterprise of Clinical Trials)

Published article

1. Isokinetic muscle performance test can predict the status of rotator cuff muscle. Clin Orthop Relat Res. 2010 Jun;468(6):1506-13

2. The level of vitamin D in the serum correlates with fatty degeneration of the muscles of the rotator cuff. J Bone Joint Surg Br.2009 91-12:1587-93

Research field: Muscle biology, Tendon and ligament injury

Assistant professorr Won-Ju Jeong

Specialty: Oncology, Spine disease, Osteoporosis, musculoskeletal infection.
Member of ISCD (The International Society For Clinical Densitometry)
Certified Clinical Densitometrist
Medical staff of MDRIP (medical device & robot institute of Park)

Published article

1. Prognostic value of computed tomography for monitoring pulmonary metastases in soft tissue sarcoma patients after surgical management: a retrospective cohort study. Ann Surg Oncol. 2011 Nov;18(12):3392-8

2. Minimally invasive plate osteosynthesis for open fractures of the proximal tibia. Clin Orthop Surg.2012 Dec;4(4):313-20

Research field: Bone marrow and adipose tissue stem cell, Osteoporosis, Mechanical research of tumor prosthesis and instrument, Tendon and ligament reconstruction.

Department of **Otorhinolaryngology**

The Department of Otorhinolaryngology is committed to diagnosing and treating diseases in areas ranging from the base of the skull to the upper chest. It is divided into the three main sections: head and neck, otology, and rhinology.

The Division of Head and Neck Surgery provides comprehensive treatment for benign and malignant tumors of the head and neck, including nasal cavity cancer, oral cancer, laryngeal cancer, thyroid cancer, and salivary gland tumor. It also offers medical treatment for diseases of the head and neck, such as logopathy, respiratory stenosis, and gastroesophageal reflux disease. It conducts endoscopic and laser operations to minimize scars as well as conventional palliative surgical approach. As for treating cervical metastasis of thyroid cancer, the division is making a comparative study between traditional palliative and conservative cervical resection. It is also carrying out studies of genetic factors to predict prognosis of thyroid cancer and a new treatment method that has fewer side effects than conventional cancer chemotherapy and makes outpatient treatment possible in curing head and neck epithelial cell carcinoma.

The Division of Otology provides diagnosis and treatment of ear-related diseases, such as hearing defect, vertigo, facial nerve, and inflammation or tumor of the base of the skull including the temporal bone. The division, which is running the cochlear implant clinic for patients with profound hearing loss, performed a cochlear implant surgery for the third time in the country; while developing a totally implantable middle ear implant for the treatment of presbycusis or moderate-severe hearing loss, it is conducting both studies and clinical practices of treatment, surgery, and rehabilitation for patients with hearing loss. It is also performing canaloplasty, which is a procedure to reconstruct external auditory meatus aesthetically as well as functionally for patients with congenital aural atresia. Tinnitus, an intractable disease, is now being treated and studied in the ways of molecular biology and image analysis; in addition, studied on the pathophysiological cause of otitis media is under way. Running one of the best hereditary deafness clinics in the country, the division is carrying out research in hereditary deafness, a major cause of hearing loss, and also conducting many studies with genetically modified animals to identify the cause of deafness.

The Division of Rhinology deals with a wide range of nasal diseases. It diagnoses and treats general medical conditions such as allergic rhinitis, deviated nasal septum, and empyema; furthermore, using endoscope, it performs surgery on benign and malignant tumors in not only the nose but the base of the skull. While running the sleep apnea clinic for patients with snoring and sleep apnea, it is carrying out a survey of a Korean version of the Sleep Apnea Quality of Life Index and is recently developing diverse surgical techniques to correct the nose for cosmetic as well as functional purposes. Gene expression analysis of nasal polyps using microarrays, analysis of cytokine in nasal lavage fluid of patients with allergic rhinitis and those with nonallergic rhinitis, and other studies are now in progress.

Chairman: Professor Jung Soo Kim MD, PhD
(sookim@knu.ac.kr)

Faculty

Sang Heun Lee, MD, PhD
Jin Ho Sohn, MD, PhD
Jung Soo Kim, MD, PhD
Kyu Yup Lee, MD, PhD
Jeong Hun Jang, MD
Dong Bin Ahn, MD, PhD

Recent Publications

1. Jun-Young Heo and Jung-Soo Kim. Correlation between severity of sleep apnea and upper airway morphology: cephalometry and MD-CT study during awake and sleep states. Acta Otolaryngol. 2011 Jan;131(1):84-90. Epub 2010 Oct 20.

2. Soo-Young Choi, Hong-Joon Park, Kyu Yup Lee, Emilie Hoang Dinh, Qing Chang, Shoab Ahmad, Sang Heun Lee, Jinwoong Bok, Xi Lin and Un-Kyung Kim. Different functional consequences of two missense mutations in the GJB2 gene associated with non-syndromic hearing loss. HUMAN MUTATION 30:E716-E727 (2009).

3. Sang Heun Lee, Kyu Yup Lee, Myung-Jin Huh and Hee-Sang Jang. Effect of bimodal hearing in Korean children with profound hearing loss. Acta Oto-Laryngologica, 2008; 128:1227-1232.

4. Jung-Soo Kim and Bruce K. Rubin. Nasal and sinus involvement in chronic obstructive pulmonary disease. Current Opinion in Pulmonary Medicine 2008, 14:101-104.

5. Dongbin Ahn, Sung Jae Heo, Ji Hyun Park, Jae Hyug Kim, Jin Ho Sohn, Ji Young Park, Sun Kyune Park, Junesik Park. Clinical relationship between Hashimoto's thyroiditis and papillary thyroid cancer. Acta Oncol.2011 Nov;50(8):1228-34.

6. Dongbin Ahn, June Sik Park, Jin Ho Sohn, Jae Hyug Kim, Sun-Kyun Park, An Na Seo, Ji Young Park. BRAFV600E mutation does not serve as a prognostic factor in Korean patients with papillary thyroid carcinoma. Auris Nasus Larynx.2012 Apr;39(2):198-203.

7. Kyu-Yup Lee, Takayuki Nakagawa, Takayuki Okano, Ryusuke Hori, Kazuya Ono, Yasuhiko Tabata, Sang-Heun Lee, and Juichi Ito. Novel Therapy for Hearing Loss; Delivery of Insulin-Like Growth Factor 1 to the Cochlea Using Gelatin Hydrogel. Otology & Neurotology 2007 Oct;28(7):976-81.

8. June Sik Park, Jin Ho Sohn, Jeong Kyu Kim. Factors influencing intraoral removal of submandibular caculi. Otolaryngology-Head and Neck Surgery. 2006 Nov;135(5):704-9.

9. Jung Soo Kim, MD, PhD, Kosuke Okamoto, MD, PhD, and Bruce K Rubin, MEngr, MD, Pulmonary Function Is Negatively Correlated With Sputum Inflammatory Markers and Cough Clearability in Subjects With Cystic Fibrosis But Not Those with Chronic Bronchitis*. CHEST 2006 May;129(5):1148-54.

10. Byung-chae Cho, Sang-Heun Lee. Surgical Results of Two-Stage Reconstruction of the Auricle in Con-

genital Microtia Using an Autogenous Costal Cartilage Alone or Combined with Canaloplasty. Plastic and Reconstructive Surgery. 2006 Mar;117(3):936-47.

11. Kim JS, Okamoto K, Arima S, Rubin BK. Vasoactive intestinal peptide stimulates mucus secretion, but nitric oxide has no effect on mucus secretion in the ferret trachea. J appl physiol 2006;101(2):486-91.

Department of **Pediatrics**

Kyungpook National University Children's Hospital
Division of Pediatric Hematology-Oncology
Division of Neonatology
Division of Pediatric Endocrinology
Division of Pediatric Cardiology
Division of Pediatric Neurology
Division of Pediatric Gastroenterology and Nutrition
Division of Pediatric Nephrology
Division of Pediatric Allergy & Pulmonology

The Department of Pediatrics is one of the top notch health care units in the country, which has been playing a key role in medical education, biomedical research, and patient care over the past decades. Newly opened children's hospital is expected to serve as the referral center for a wide variety of rare, complicated conditions in children. Faculty members have been assuming a leading role in developing a comprehensive, multidisciplinary team approach to care for children. Lectures, tutorials and bedside teaching sessions are utilized to introduce and illustrate pediatric medicine. In addition, the curriculum is a partnership between full-time faculty, inner-city and community voluntary faculty and academic resources. Throughout the two years of clinical clerkship, medical students gain comprehensive knowledge of both acute and chronic illnesses that affect the sequence of childhood growth and development. They complete a four-week clerkship rotation through inpatient and outpatient pediatric services with supplemental conferences and seminars which present contemporary patient cases at Kyungpook National University Hospital, KNU Children's Hospital and affiliated hospitals. Upperclassmen may choose electives acting as sub-interns within the general ward services or within the various pediatric subspecialties including nephrology, cardiology, hematology-oncology, neonatology, neurology, gastroenterology, medical genetics, infectious diseases, allergy, Pulmonology or endocrinology. They are encouraged to participate in continuing research projects conducted by the department.

Chairman: Professor Byung-Ho Choe, MD, PhD
(bhchoe@knu.ac.kr)

Faculty

Lee, Kun Soo, MD, PhD (Hematology-Oncology and Medical Genetics)
Kim, Heng Mi, MD, PhD (Neonatology)
Ko, Cheol Woo, MD, PhD (Pediatric Nephrology and Endocrinology)
Hyun, Myung Chul, MD, PhD (Pediatric Cardiology and Allergy)
Kwon, Soonhak, MD (Pediatric Neurology, Editor in Chief, Journal of Korean Child Neurology Society)
Choe, Byung Ho, MD, PhD (Pediatric Gastroenterology and Nutrition, Editor in Chief, Pediatric Gastroenterology, Hepatology & Nutrition)

Cho, Min Hyun, MD (Pediatric Nephrology)
Choi, Bong Seok, MD (Pediatric Allergy & Pulmonology)

Recent Publications

Division of Pediatric Cardiology

1. Park HM, Lee DW, Hyun MC, Lee SB. Predictors of nonresponse to intravenous immunoglobulin therapy in Kawasaki disease. Korean J Pediatr. 2013;56:75-9.

2. Hong SJ, Choi HJ, Kim YH, Hyun MC, Lee SB, Cho JY. Clinical features and surgical outcomes of complete transposition of the great arteries. Korean J Pediatr. 2012;55:377-82.

3. Kim JO, Kim YH, Hyun MC. Electrocardiography Recordings jn Higher Intercostal space for Children With Right Ventricular Outlet Obstruction Reconstruction Operation. Korean Circulation Journal 2012;42(6): 414 – 418.

4. Oh JH, Hong YM, Choi JY, Kim SJ, Jung JW, Sohn S, Hyun MC, Noh CI, Lee JW, Park IS. Idiopathic cardiomyopathies in Korean children. - 9-Year Korean Multicenter Study-. Circ J. 2011;75:2228-34.

5. Park YW, Han JW, Hong YM, Ma JS, Cha SH, Kwon TC, Lee SB, Kim CH, Lee JS, Kim CH. Epidemiological features of Kawasaki disease in Korea, 2006-2008. Pediatrics International. 2011;53:36-9.

6. Jung HJ, Ju HY, Hyun MC, Lee SB, Kim YH. Wolff-Parkinson-White syndrome in young people, from childhood to young adulthood: relationships between age and clinical and electrophysiological findings. Korean J Pediatr. 2011;54:507-11.

Division of Pediatric Hematology-Oncology and Medical Genetics

1. Rhim JW, Kim KH, Kim DS, Kim BS, Kim JS, Kim CH, Kim HM, Park HJ, Pai KS, Son BK, Shin KS, Oh MY, Woo YJ, Yoo Y, Lee KS, Lee KY, Lee CG, Lee JS, Chung EH, Choi EH, Hahn YS, Park HY, Kim JG. Prevalence of primary immunodeficiency in Korea. J Korean Med Sci. 2012 Jul;27(7):788-93.

2. Shim YJ, Kim HJ, Suh JS, Lee KS. Novel ELANE Gene Mutation in a Korean Girl with Severe Congenital Neutropenia. J Korean Med Sci 2011; 26: 1646-1649.

3. Sung KW, Ahn HS, Cho B, Choi YM, Chung NG, Hwang TJ, Im HJ, Jeong DC, Kang HJ, Koo HH, Kook H, Kim HK, Lyu CJ, Seo JJ, Shin HY, Yoo KH, Won SC, Lee KS. Efficacy of Tandem High-Dose Chemotherapy and Autologous Stem Cell Rescue in Patients Over 1 Year of Age with Stage 4 Neuroblastoma: The Korean Society of Pediatric Hematology-Oncology Experience Over 6 Years (2000-2005). J Korean Med Sci 2010; 25: 691-7.

4. Choe BH, Kim JY, Lee JH, Kim JM, Chu MA, Cho SM, Lee KS. Upper gastrointestinal bleeding in children with haemophilia: a clinical significance of Helicobacter pylori infection. Haemophilia. 2010;16(2):277-80.

5. Moon JH, Lee SJ, Kim JG, Chae YS, Kim SN, Kang BW, Suh JS, Lee KS, Sohn SK. Clinical significance of autoantibody expression in allogeneic stem-cell recipients. Transplantation. 2009 Jul 27;88(2):242-50.

Division of Neonatology

1. Ryeom HK, Choe BH, Kim JY, Kwon S, Ko CW, Kim HM, Lee SB, Kang DS. Biliary atresia: feasibility of mangafodipir trisodium-enhanced MR cholangiography for evaluation. Radiology. 2005;235(1):250-8.

2. Heng-mi Kim. Neuroprotective strategies in neonatal hypoxic ischemic brain injury. J of Japan Society for Premature and Newborn Medicine. 2004: 16: 123-133.

Division of Pediatric Endocrinology

1. Lee KH, Lee BC, Ko CW, Jin DK, Yang SW, Yoo HW, Chung WY, Kim DH, Suh BK. A Single-Arm, Phase III Study to Assess Efficacy and Safety after 6-Month-Treatment of Eutropin(TM) Inj. (Recombinant Human Growth Hormone) in Prepubertal Children with Short Stature due to Small for Gestational Age. J Korean Soc Pediatr Endocrinol. 2011;16:157-164.

2. Hong EH, Park JS, Lee HS, Cho MH, Ko CW. Clinical Characteristics and Laboratory Findings of Children who were Newly Diagnosed with Diabetes Mellitus (From 2001 to 2008). J Korean Soc Pediatr Endocrinol. 2009;14:110-115.

3. Ko CW, Koo JH. Recombinant human growth hormone and Gitelman's syndrome. Am J Kidney Dis. 1999;33:778-81.

Division of Pediatric Allergy and Pulmonology

1. Park HH, Lee S, Son HY, Park SB, Kim MS, Choi EJ, Singh TS, Ha JH, Lee MG, Kim JE, Hyun MC, Kwon TK, Kim YH, Kim SH. Flavonoids inhibit histamine release and expression of proinflammatory cytokines in mast cells. Arch Pharm Res. 2008;31:1303-11.

2. Kim YH, Kim JE, Hyun MC. Cytokine response in pediatric patients with pandemic influenza H1N1 2009 virus infection and pneumonia: comparison with pediatric pneumonia without H1N1 2009 infection. Pediatr Pulmonol. 2011;46:1233-9.

3. Choi BS, Kim KW, Lee YJ, Baek J, Park HB, Kim YH, Sohn MH, Kim KE. Exhaled nitric oxide is associated with allergic inflammation in children. J Korean Med Sci. 2011;26:1265-9.

4. Choi BS,Lee YJ, Baek JY, Kim KW, Sohn MH, Kim KE. Prevalence of Sensitization to Tyrophagus putrescentiae in Children with Allegic Diseases. Pediatr Allergy Respir Dis. 2010;20:107-113.

5. Choi BS, Jee HM, Park YH, Kim KW, Sohn MH, Kim KE. Relationship between exhaled nitric oxide concentration and pulmonary function/airway hyperresponsiveness in asthmatic children. Pediatr Allergy Respir Dis. 2009;19:291-299.

Division of Pediatric Neurology

1. SH Kwon, JM Kim, BH Choe, CW Ko, SP Park. Electrophysiologic assessment of central auditory brainstem responses in children with autism spectrum disorders. J of Korean Medical Sciences 2007; 22:656-659.

2. SP Park, YH Hwang, HW Lee, CK Suh, SH Kwon, BI Lee. Long-term cognitive and mood effects of zonisamide monotherapy in epilepsy patients. Epilepsy and Behavior 2008; 12: 102-108.

3. JM Kim, SH Kwon, HE Seo, et al. Long-term effectiveness and tolerability of topiramate in children with epilepsy under the age of 2 years: 4 year follow-up. J of Korean Medical Sciences 2009; 24:1078-1082.

4. HE Seo, SK Hwang, SH Kwon, et al. Clinical spectrum and prognostic factors of acute necrotizing encephalopathy in children. J of Korean Medical Sciences 2010; 25:449-453.

5. SP Park, HS song, YH Hwang, SH Kwon, et al. Differential effects of seizure control and affective symptoms on quality of life in people with epilepsy. Epilepsy and Behavior 2010; 18: 455-459.

Division of Pediatric Gastroenterology and Nutrition

1. Chu M, Cho SM, Choe BH, Cho MH, Kwon S, Lee WK. Virologic responses to add-on adefovir dipivoxil treatment versus entecavir monotherapy in children with lamivudine-resistant chronic hepatitis B. J Pediatr Gastroenterol Nutr. 2012;55(6):648-52.

2. Lee SY, Kim GC, Choe BH, Ryeom HK, Jang YJ,

Kim HJ, Park JY, Cho SM. Efficacy of US-guided percutaneous cholecystocholangiography for the early exclusion and type determination of biliary atresia.Radiology. 2011;261(3):916-22.

3. Choe BH, Kim JY, Lee JH, Kim JM, Chu MA, Cho SM, Lee KS. Upper gastrointestinal bleeding in children with haemophilia: a clinical significance of Helicobacter pylori infection. Haemophilia. 2010;16(2):277-80.

4. Choe BH, Lee JH, Jang YC, Jang CH, Oh KW, Kwon S, Hyun MC, Ko CW, Lee KS, Lee WK. Long-term therapeutic efficacy of lamivudine compared with interferon-alpha in children with chronic hepatitis B: the younger the better. J Pediatr Gastroenterol Nutr. 2007 Jan;44(1):92-8.

5. Ryeom HK, Choe BH, Kim JY, Kwon S, Ko CW, Kim HM, Lee SB, Kang DS. Biliary atresia: feasibility of mangafodipir trisodium-enhanced MR cholangiography for evaluation. Radiology. 2005;235(1):250-8.

6. Choe BH, Bezzera J, Balisteri WF. Transplantation for Cholestatic Liver Disease in the Pediatric Patient. In: Busuttil RW, Klintmalm GB, eds.Transplantation of the Liver. 2nd ed. Elsevier Saunders, 2005: 303-21.

Division of Pediatric Nephrology

1. Park KS, Hwang YJ, Cho MH, Ko CW, Ha IS, Kang HG, Cheong HI, Park YS, Lee YJ, Lee JH, Cho HY. Quality of life in children with end-stage renal disease based on a PedsQL ESRD module. Pediatr Nephrol. 2012 Dec;27(12):2293-300.

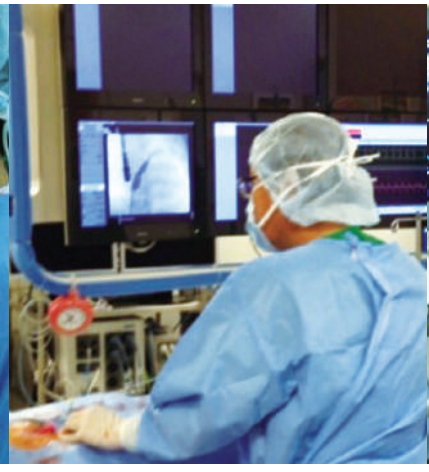
2. Jang HS, Kim J, Kim KY, Kim JI, Cho MH, Park KM. Previous ischemia and reperfusion injury results in resistance of the kidney against subsequent ischemia and reperfusion insult in mice; a role for the Akt signal pathway. Nephrol Dial Transplant. 2012 Oct;27(10):3762-70.

3. Park KS, Cho MH, Ha IS, Kang HG, Cheong HI, Park YS, Lee YJ, Lee JH, Cho HY. Validity and reliability of the Korean version of the pediatric quality of life ESRD module. Health Qual Life Outcomes. 2012 Jun 6;10:59.

4. Cho MH, Jung KJ, Jang HS, Kim JI, Park KM. Orchiectomy attenuates kidney fibrosis after ureteral obstruction by reduction of oxidative stress in mice. Am J Nephrol. 2012;35(1):7-16.

5. Hwang HH, Cho MH, Ko CW. The necessity of voiding cystourethrography in children with prenatally diagnosed hydronephrosis. J Int Med Res. 2011;39(2):603-8.

6. Cho MH, Hwang HH, Shim YJ, Ko CW, Kim YL, Kim GC. Evaluation of peritoneal capacity for peritoneal dialysis after abdominal surgery. Pediatr Nephrol. 2010 Jun;25(6):1195-6.


Department of **Plastic Surgery**

As one of the most advanced medicines in the 21st century, department of plastic surgery keeps developing to match endless demands of changing environment. The plastic surgery that encompasses reconstructive as well as cosmetic surgery manages all parts of human body. Moreover, it is covering wider fields than ever before. It is certain that the plastic surgery is attractive study for students with creative idea and integrity.

The history of plastic surgery in Kyungpook National University Hospital is always striving to develop hitherto since professor Bong Soo Baek had been appointed to the department in March, 1978. Annually more than 2000 cases of operations are performed in our department of plastic surgery. Furthermore, our department has carved a position firmly in this country through more than 100 papers including SCI grade and dominant activity in the Korean Plastic Surgery Society. An international relationship is getting closer with foreign hospitals in the world through visiting program. In particular, a clinical practice as well as a lecture for medical student, resident and graduate school student is pursued importantly following active educational policy for attaining patient care experience. Besides medical treatment and education, our department gives attention to basic medical science. All these efforts make the department of plastic surgery in Kyungpook National University Hospital plays a leading role in the international activity of plastic surgery as well as in Korea.

Chairman: Professor Ho Yun Chung, MD, PhD
(E-mail: hy-chung@knu.ac.kr)
Tel: 82-53-200-5692
Fax: 82-53-425-3879

Faculty

Byung Chae Cho, MD, PhD
(Specialty in Congenital anomaly surgery)
Ho Yun Chung, MD, PhD
(Specialty in Vascular anomaly surgery, Skin cancer surgery & Microsurgery)
Jung Dug Yang, MD, PhD
(Specialty in Breast reconstruction & Cosmetic surgery)

Kang Young Choi, MD, DMD, PhD
(Specialty in Orthognathic surgery & Facial contouring surgery)

Recent Publications

1. Feasibility of 4-point fixation using the preauricular approach in a zygomaticomaxillary complex fracture. Choi KY, Ryu DW, Yang JD, Chung HY, Cho BC. J Craniofac Surg. 2013 Mar;24(2):557-62.

2. Surgical techniques for personalized oncoplastic surgery in breast cancer patients with small- to moderate-sized breasts (part 2): volume replacement. Yang JD, Lee JW, Cho YK, Kim WW, Hwang SO, Jung JH, Park HY. J Breast Cancer. 2012 Mar;15(1):7-14.

3. New technique for the fabrication of a stable cartilage framework. Cho BC, Lee JH. PlastReconstr Surg. 2012 Jan;129(1):183-184.

4. The usefulness of oncoplastic volume displacement techniques in the superiorly located breast cancers for Korean patients with small to moderate-sized breasts. Yang JD, Bae SG, Chung HY, Cho BC, Park HY, Jung JH. Ann Plast Surg. 2011 Nov;67(5):474-80.

5. Biologic filler using human fibroblasts and placenta extracts. Oh EJ, Kim TK, Shin JH, Choi JH, Chung HY. J Craniofac Surg. 2011 Sep;22(5):1557-60.

6. Refined new technique for correction of the minor-form, microform cleft lip and minor-form bilateral cleft lip through the intraoral incision and long-term results. Cho BC. PlastReconstr Surg. 2011 Feb;127(2):781-3.

7. New technique combined with suture and incision method for creating a more physiologically natural double-eyelid. Cho BC, Byun JS. PlastReconstr Surg. 2010 Jan;125(1):324-31.

8. The effects of botulinum toxin A on the survival of a random cutaneous flap. Kim TK, Oh EJ, Chung JY, Park JW, Cho BC, Chung HY. J PlastReconstrAesthetSurg 2009 Jul;62(7):906-13.

9. Surgical treatment of aplasia cutis congenita with acellular dermal graft and cultured epithelial autograft. Chung KH, Kim TK, Cho BC, Jeon SW, Chung HY. Dermatol Surg. 2009 Mar;35(3):546-9.

10. Periareolar reduction mammoplasty using an inferior dermal pedicle or a central pedicle.
Cho BC, Yang JD, Baik BS. J PlastReconstrAesthet Surg. 2008;61(3):275-81.

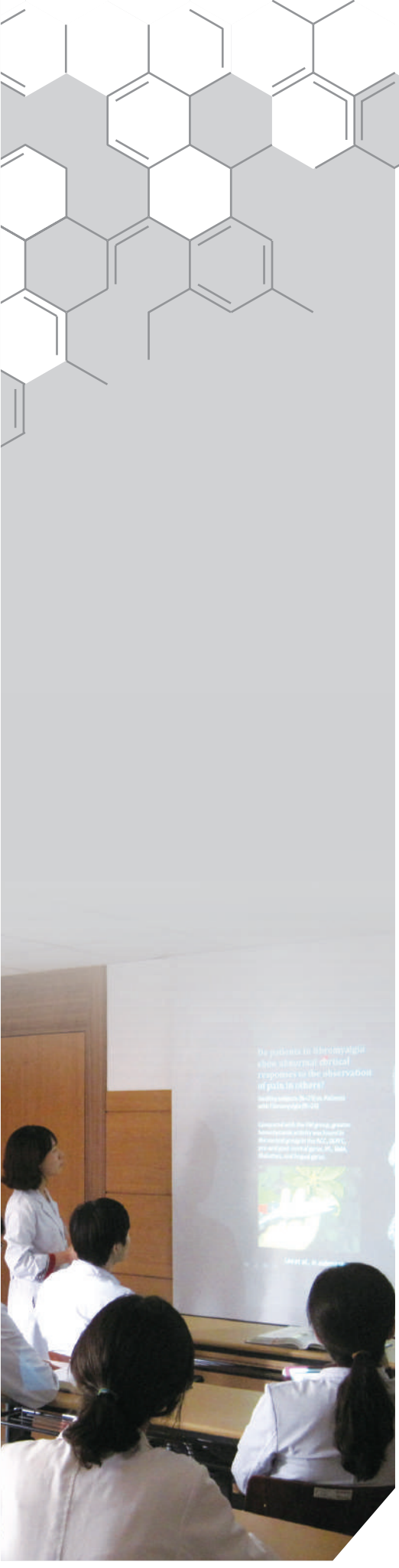
11. Effect of calcium sulfate pellets on early bone mineralization in distraction osteogenesis for craniofacial microsomia in adults. Kim JY, Cho BC. J Craniofac Surg. 2007 Nov;18(6):1309-21.

12. Different effects of PLGA and chitosan scaffolds on human cartilage tissue engineering.
Jeon YH, Choi JH, Sung JK, Kim TK, Cho BC, Chung HY. J Craniofac Surg. 2007 Nov;18(6):1249-58.

13. Usefulness of Oncoplastic Volume Replacement Techniques after Breast Conserving Surgery in Small to Moderate-sized Breasts. Yang JD, Kim MC, Lee JW, Cho YK, Choi KY, Chung HY, Cho BC, Park HY. Arch Plast Surg. 2012 Sep;39(5):489-96.

14. Current Concepts in the Mandibular Condyle Fracture Management Part I, II: Open Reduction Versus Closed Reduction. Choi KY, Yang JD, Chung HY, Cho BC. Arch Plast Surg. 2012 Jul;39(4):301-8.

15. The Correction of a Secondary Bilateral Cleft Lip Nasal Deformity Using Refined Open Rhinoplasty with Reverse-U Incision, V-Y Plasty, and Selective Combination with Composite Grafting: Long-term Results. Cho BC, Choi KY, Lee JH, Yang JD, Chung HY. Arch Plast Surg. 2012 May;39(3):190-7.



Department of **Psychiatry**

The Department of Psychiatry of Kyungpook National University School of Medicine was established in 1957, beginning the nation's first studies in epidemiology and enlightening the public about psychiatric illnesses. For over 50 years, it has had a full range of clinical programs for patients with psychiatric disorders and run an independent psychiatric consultation team to take care of patients with medical illnesses. In the area of training and education, it provides both didactic and clinical learning experience for all medical school students, programs for general psychiatry residency training, child fellowship training and post-residency fellowships.

The department is involved in four key research areas, as listed below.
(1) In biological psychiatry and psychopharmacology, the biological etiology of psychiatric disturbances, and clinical as well as pharmacological aspects of new drugs are studied. With the help of the Clinical Trail Center in the hospital, studies of pharmacodynamics, pharmacokinetics, and pharmacogenomics are carried out. We currently investigate the steady-state plasma levels of risperidone and 9-OH-risperidone and assess clinical response and extrapyramidal side effects while switching from oral risperidone to paliperidone ER tablets in schizophrenia. Various aspects of empathy using multiple neuroimaging technologies in healthy participants and psychiatric subjects are being tested to find out the neural correlates of empathic ability. We recently reported a multi-level cortical dysfunction that underlies a deficit in each subcomponent of empathy in schizophrenia.

(2) Major efforts have also been made to study the biological basis of mood disorders. Our main research interests are disturbances in neurocognition and hierarchical emotional process. To lessen the country's suicide rate, which is the highest among OECD nations, is the imminent task of all Korean psychiatrists. We have established a research network of four medical university hospitals and have studied to understand suicidal behavior in the perspective of the stress vulnerability model.

(3) In Psychosomatic Medicine, we enthusiastically participate in the Mental Health Assessment and Support Team (MHAST) for breast cancer patients. To date, approximately 400 patients have been provided with psychosocial intervention through the MHAST. Recent research has focused on the demographic

and psychosocial factors associated with the diagnosis, treatment outcome, and prognosis in breast cancer patients.

(4) The division of child and adolescent psychiatry is to provide leadership in the field of child and adolescent mental health by integrating research, clinical practice, and education. Research in this division explores psychopathology in children and adolescents, psychotherapy process and outcomes, early childhood stress/trauma, psychological adjustment for children with medical disorders, clinical psychopharmacology trials, and juvenile justice issues. The division has run an official fellowship training program for child and adolescent psychiatrists since 2010. We have also run the Sunflower Center since 2005, supported by the Ministry of Gender Equality and Family. Our research interests include, amongst others, evaluating and treating posttraumatic stress disorder, autism spectrum disorder, and attention deficit hyperactivity disorder.

(5) Geriatric psychiatry is a subspecialty of psychiatry dealing with the study, prevention, and treatment of mental disorders in elderly people. A psychiatrist can complete one-year fellowship and receive a certificate of completion officially awarded by the Korean Society for Geriatric Psychiatry. We have been also running the Daegu Metropolitan Center for Dementia since 2012, supported by the Ministry of Health and Welfare.

Chairman: Prof. Seung Hee Won, MD, PhD
(wonsh864@knu.ac.kr)

Faculty

Hyo Deog Rim, MD, PhD
Sung Hoon Jeong, MD, PhD
Sung Man Chang, MD, PhD
Seung Jae Lee, MD, PhD
Seung Hee Won, MD, PhD
Un Sun Chung, MD, PhD
Byung Soo Kim, MD, PhD

Recent Publications

Biological Psychiatry and psychopharmacology

1. SH Won, HS Jang, HW Lee, IS Jang, MG Lee. Evaluation of brain functional states based on projections of electroencephalographic spectral parameters on 2-dimentional canonical space. J Neurosci Methods. 2012;211:40-48.

2. HJ Jeon, JY Lee, YM Lee, JP Hong, SH Won, SJ Cho, JY Kim, SM Chang, D Lee, HW Lee, MJ Cho. Lifetime prevalence and correlates of suicidal ideation, plan, and single and multiple attempts in a Korean nationwide study. J Nerv Ment Dis. 2010;198(9):643-646.

3. SH Joe, JS Chang, SH Won, HD Rim, TH Ha, K Ha. Feasibility of a slower lamotrigine titration schedule for bipolar depression: a naturalistic study. Int Clin Psychopharmacol. 2009;l24:105-110.

4. Lee SJ, Song HJ, Decety J, Seo JH, Kim SH, Kim SH, Nam EJ, Kim SK, Han SW, Lee, HJ, Chang YM. Do patients with fibromyalgia show abnormal neural responses to the observation of pain in others? Neurosci Res. 2013;75(4):305-315.

5. Lee SJ, Kang DH, Kim CW, Gu BM, Park JY, Choi CH, Shin NY, Lee JM, Kwon JS. Multi-level comparison of empathy in schizophrenia: an fMRI study of a cartoon task. Psychiatry Res. 2010;181(2):121-129.

6. Lee SJ, Choi EJ, Kwon JS. A naturalistic multicenter trial of a 12-week weight management program for overweight and obese patients with schizophrenia or schizoaffective disorder. J Clin Psychiatry. 2008;69(4):555-562.

Psychosomatic Medicine

1. Khang D, Rim HD, Woo J. The Korean version of the body image scale-reliability and validity in a sample of breast cancer patients. Psychiatry Investig. 2013;10(1):26-33.

2. Son SH, Jo H, Rim HD, Kim JH, Kim HW, Bae GY, Lee SJ. A Comparative Study on Alexithymia in Depressive, Somatoform, Anxiety, and Psychotic Disorders among Koreans. Psychiatry Investig. 2012;9(4):325-331.

Child and Adolescent Psychiatry

1. Seo SS, Chung US, Rim HD, Jeong SH. Reliability and Validity of the 20-Item Toronto Alexithymia Scale in Korean Adolescents. Psychiatry Investig. 2009;6:173-179.

2. Shin JU, Jeong SH, Chung US. The Korean Version of the Adolescent Dissociative Experience Scale: Psychometric Properties and the Connection to Trauma Among Korean Adolescents. Psychiatry Investig. 2009;6:163-172.

Geriatric psychiatry

1. Chang SM, Hong JP, Cho MJ. Economic burden of depression in South Korea. Soc Psychiatry Psychiatr Epidemiol. 2012;47(5):683-689.

2. Kim BS, Lee DH, Lee DW, Bae JN, Chang SM, Kim S, Cho MJ. The role of vascular risk factors in the development of DED syndrome among an elderly community sample. Am J Geriatr Psychiatry. 2011;19(2):104-14.

3. Kim BS, Bae JN, Cho MJ. Depressive symptoms in elderly adults with hypotension: different associations with positive and negative affect. J Affect Disord. 2010;127(1-3):359-364.

4. Kim WH, Kim BS, Kim SK, Chang SM, Lee DW, Cho MJ, Bae JN. Prevalence of insomnia and associated factors in a community sample of elderly individuals in South Korea. Int Psychogeriatr. 2013;25(10):1729-37.

5. Kim BS, Jeon HJ, Hong JP, Bae JN, Lee JY, Chang SM, Lee YM, Son J, Cho MJ. DSM-IV psychiatric comorbidity according to symptoms of insomnia: a nationwide sample of Korean adults. Soc Psychiatry Psychiatr Epidemiol. 2012;47(12):2019-2033.

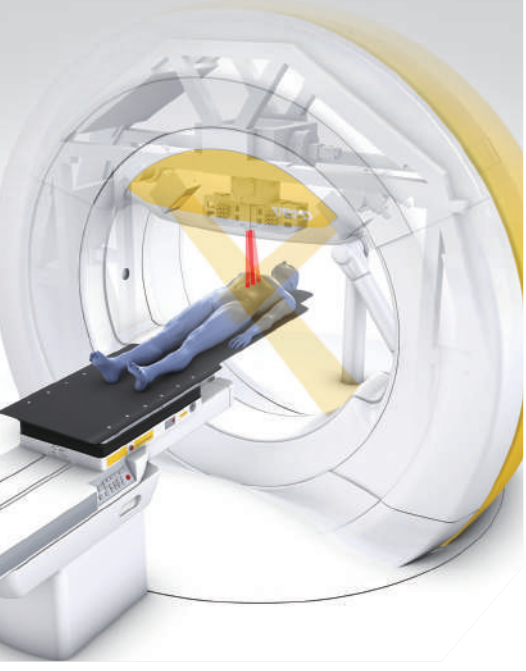
6. Kim WH, Kim BS, Kim SK, Chang SM, Lee DW, Cho MJ, Bae JN. Restless legs syndrome in older people: a community-based study on its prevalence and association with major depressive disorder in older Korean adults. Int J Geriatr Psychiatry. 2012;27(6):565-72.

Department of **Radiation Oncology**

The topics that we are concerned with include the fundamental principles of basic science of oncology, radiation physics, radiation biology and radiation therapy. We are conducting basic researches on experimental therapeutics to improve the efficacy of radiation therapy. Regarding radiation biology, we have done basic research on the sensitizing effect of several targeting agents for ionizing radiation in terms of in vitro and in vivo. As to radiation physics, our main concern is IMRT (intensity modulated radiation therapy) and IGRT (Image guided radiation therapy). To find and improve new techniques for IMRT and IGRT, we are conducting various phantom studies and dosimetry. Regarding clinical radiation oncology, we are carrying out several randomized clinical trials, analyzing registration techniques of various imaging modalities (CT, MR, and PET), and searching new clinical techniques imported from biology and physics to improve the results of our clinical data.

Chairman: Jae Chul Kim, MD, PhD
(jckim@knu.ac.kr)

Faculty
In Kyu Park, MD, PhD
Jae Chul Kim, MD, PhD
Jeong Eun Lee, MD, PhD



Recent Publications

1. Shin JW, Lee JK, Lee JE, Min WK, Schuchman EH, Jin HK, Bae JS. Combined Effects of Hematopoietic Progenitor Cell Mobilization from Bone Marrow by Granulocyte Colony Stimulating Factor and AMD3100 and Chemotaxis into the Brain Using Stromal Cell-Derived Factor-1 in an Alzheimer`s Disease Mouse Model. Stem cells 2011;29(7):1075-1089.

2. Lee SJ, Ahn BM, Kim JG, Sohn SK, Chae YS, Moon JH, Lee EB, Kim JC, Park IK, Jeon SW. Definitive Chemoradiotherapy with Capecitabine and Cisplatin in Patients with Esophageal Cancer: A Pilot Study. J Korean Med Sci 2009;24(1):120-125.

3. Lee JE, Han Y, Huh SJ, Park W, Kang MG, Ahn YC, Lim do H. Interfractional variation of uterine position during radical RT: weekly CT evaluation. Gynecol Oncol. 2007 ;104(1):145-151.

4. Kim JC, Ali MA, Nandi A, Mukhopadhyay P, Choy H, Cao C, Saha D. Correlation of HER1/EGFR expression and the degree of radiosensitizing effect of the HER1/EGFR-tyrosine kinase inhibitor erlotinib. Indian J Biochem Biophys. 2005;42(6):358-365.

5. Kim JG, Sohn SK, Kim DH, Baek JH, Jeon SB, Chae YS, Lee KB, Park JS, Sohn JH, Kim JC, Park IK. Phase II study of concurrent chemoradiotherapy with capecitabine and cisplatin in patients with locally advanced squamous cell carcinoma of the head and neck. British Journal of Cancer 2005;93(10):1117-1121.

6. Kim JC, Saha D, Cao Q, Choy H. Enhancement of radiation effects by combined docetaxel and flavopiridol treatment in lung cancer cells. Radiother Oncol. 2004;71(2):213-221.

7. Kim JC, Kim JS, Saha D, Cao Q, Shyr Y, Choy H. Potential radiation sensitizing effect of semisynthetic epothilone B in human lung cancer cells. Radiother Oncol. 2003;68(3):305-313.

Department of **Radiology**

Established in 1954, the Department of Radiology succeeded in Korea's first cardiac angiography in 1959 and studied gastric emptying and motility in the 1960s and achieving animal experiments for radiation hazard in 1970's. With the introduction of CT, ultrasonography, and angiography machines in the early 1980s, the department has devoted to interventional radiology as well as images and put emphasis on CT-guided fine-needle biopsy (Korea's first also), biliary and vascular intervention, and developed into interventional neuroradiology (endovascular neurosurgery) in 1990's. As installing PACS (digital image process and display) in the early 1990's the department completely equipped with sole digital machines.

Continuously expanded, the department now possesses four MR units (three 3 tesla machines), six CTs, four angiographic units, and more than ten ultrasound machines. Now it has fourteen faculty members and around 120 radiographers studying 651,749 cases of 325,711 patients in the year 2012.

Chairman: Professor Yong Sun Kim, MD, PhD
(yongkim@knu.ac.kr)
Office: +82/53-420-5395, Secretary: +82/53-420-5390,
Fax: +82/53-422-2677

Faculty

Professor Tae Hun Kim, MD, genitourinary system
Professor Yong Sun Kim, MD, PhD, neuroradiology & interventional neuroradiology
Professor Hun Kyu Ryeom, MD, PhD, abdominal imaging & intervention radiology
Professor Jong min Lee, MD, PhD, cardiovascular imaging & intervention radiology
Associate Professor Gab Chul Kim, MD, abdominal imaging & intervention radiology
Associate Professor Hui Joong Lee, MD, PhD, head & neck and neuroradiology
Assistant Professor Hye Jung Kim, MD, breast imaging
Assistant Professor Yun Jin Jang, MD, abdominal imaging

Assistant Professor Dong Hun Kang, MD, interventional neuroradiology
Assistant Professor Jae HyuckYi, MD, musculoskeletal imaging
Assistant Professor Kyung Min Shin, MD, thoracic imaging
Assistant Professor Seung Hyun Cho, MD, abdominal imaging & interventional radiology
Assistant Professor Ji Hyea Bae, MD, abdominal imaging

Clinical Centers

Regional Cardiocerebrovascular Disease Center
This government-funded regional center for emergency cardiac and cerebrovascular disease is directed by Professor Yong Sun Kim, an expert in neurointerventional treatment of ischemic stroke, cerebral aneurysm, and vascular malformation. The center comprise of over 90 personnel including cardiologists, neurosurgeons, neurologists, thoracic surgeons, and radiologists.

Laser and Vascular Malformation Clinic
This clinic is for treating patients suffering from diverse vascular malformation. Two professors Jong Min Lee and Dong Hun Kang of our department take a roll of diagnosis and embolo-sclerotherapy. This clinic is one of two representative multi-disciplinary vascular malformation centers in Korea.

Research Laboratories

Lab MH&C
The laboratory is led by professor Jong Min Lee. The main theme is image-based analysis of hemodynamics. Ten postgraduate students of Biomedical engineering and radiology departments perform the research as staff members of the laboratory.

NRBM Laboratory
The laboratory is led by Dr. Hui-Joong Lee. The main theme is MRI-based analysis of signal conduction in central nervous system. The research carries out in collaboration with Lab MH&C and BMR laboratory led by professorYongmin Chang of molecular medicine department.

Recent Publications

1. Lee HJ, Yoo SJ, Lee S, Song HJ, Huh MI, Jin SU, Lee KY, Lee J, Cho JH, Chang Y. Functional activity mapping of rat auditory pathway after intratympanicmanganess administration. Neuroimage 2012;60:1046-1054.

2. Kim I, Yi JH, Lee J, Bae JH, Lim JK, Yoon JP, Jeon IH. Limited subacromial gliding of the supraspinatus tendon during dynamic ultrasonography can predict a decrease in capacity and MR arthrographic features of the shoulder joint. EurRadiol 2012;22(11): DOI 10.1007/s00330-012-2513-3.

3. Lee HJ, Lee JM, Chang Y, Woo ST. Ultrasmall superparamagnetic iron oxides enhanced MR imaging in rats with experimentally induced endometriosis. Magnetic Resonance Imaging 2012; doi:10.1016/j.mri.2012.02.020.

4. Kim I, Jang YJ, Ryeom HK, Lee SM, Lee HJ, Kim GC, Kim HJ. Variation in Hepatic Segmental Volume Distribution According to Different Causes of Liver Cirrhosis: CT Volumetric Evaluation. J Compt Assist Tomog 2012;36(2):220-225.

5. Kang EJ, Lee KN, Kim I, Chae JM, Kim GJ, Yang DH, Lee J. Spontaneously Developed Pulmonary Arterial Intramural Hematoma That Mimicked Thromboembolism. Korean J Radiol 2012;13(4):496-499.

6. Kang EJ, Lee J, Lee KN, Kwon H, Ha DH, Kim RB. An initial randomised study assessing free-breathing CCTA using 320-detector CT. EurRadiol 2012; DOI 10.1007/s00330-012-2703-z.

7. Kang DH, Hwang YH, Kim YS, Park J, Kwon O, Jung

C. Direct thrombus retrieval using the reperfusion catheter of the penumbra system: forced-suction thrombectomy in acute ischemic stroke. AJNR 2011;32:283-287.

8. Gwak YJ, Kim HJ, Kwak JY, Lee SK, Shin KM, Lee HJ, Kim GC, Jang YJ, Ham MH, Park JY, Jung JH. Ultrasonographic detection and characterization of asymptomatic ductal carcinoma in situ with histopathologic correlation. ActaRadiologica 2011;52:364-371.

9. Lee SY, Kim GC, Choe BH, Ryeom HK, Jang YJ, Kim HJ, Park JY, Cho SM. Efficacy of US-guided Percutaneous Cholecysto-cholangiography for the Early Exclusion and Type Determination of Biliary Atresia. Radiology 2011;261(3):916-922.

10. Lee J. Coronary artery calcium scoring and its impact on the clinical practice in the era of multidetector CT. Int J Cardiovasc Imaging 2011;27:9-25.

11. Bae JH, Kim GC, Ryeom HK, Jang YJ. Percutaneous Embolization of Persistent Biliary and Enteric Fistulas with Histoacryl. JVIR 2011;22(6):879-883.

12. Kang DH, Kim YS, Baik SK, Park SH, Park J, Hamm IS. Acute serious rebleeding after angiographically successful coil embolization of ruptured cerebral aneurysms. ActaNeurochirurgica 2010;152:771-781.

13. Lim JK, Jang YJ, Jung MK, Ryeom HK, Kim GC, Bae J. Ménétrier disease manifested by polyposis in the gastric antrum and coexisting with gastritis cysticaprofunda. Gastrointestinal Endoscopy 2010;72(5):1098-1100.

14. Lee J, Chang Y. Validation of the use of fractional quantitative computed tomography based on the mechanical properties of trabecular bone. Int J Modern Physics B 2010;24(Nos. 15 & 16):2670-2675.

15. Kim T, Seo J, Bang S, Choi H, Chang Y, Lee J. Optimization of MR phase-contrast-based flow velocimetry and shear stress measurements. Int J Cardiovasc Imaging 2010; 26:133-142.

Department of **Rehabilitation**

The aim of the Department of Rehabilitation is to restore the motion and function of the body in individuals with disabilities. The department supplies the following services to patients:

Brain rehabilitation
Spinal cord rehabilitation
Pediatric rehabilitation
Musculoskeletal and sports rehabilitation
Spine rehabilitation
Cardiac rehabilitation
Geriatric rehabilitation
Lymphedema treatment
Electrodiagnosis
Musculoskeletal ultrasound diagnosis
Interventional therapy

Chairman : Prof. Yang-Soo Lee MD, PhD
(leeyangsoo@knu.ac.kr)

Faculty

Prof. Yang-Soo Lee: Rehabilitation for patients with brain stroke, Neuromuscular rehabilitation

Prof. Chul-Hyun Kim: Spinal cord rehabilitation, Pain rehabilitation, Electromyography

Assistant Prof. Tae-Du Jung: Rehabilitation for patients with brain stroke, Pediatric rehabilitation, Neuromuscular rehabilitation, Cardiac rehabilitation

Recent Publications

1. Jung TD, Kim JY, Lee YS, Kim DH, Lee JJ, Seo JH, Lee HJ, Chang Y. Effect of repetitive transcranial magnetic stimulation in a patient with chronic crossed aphasia: fMRI study. J Rehabil Med. 2010 Nov;42(10):973-8.

2. Chang Y, Jung TD, Yoo DS, Hyun JK. Diffusion tensor imaging and fiber

tractography of patients with cervical spinal cord injury. J Neurotrauma. 2010 Nov;27(11):2033-40.

3. Byun SD, Jung TD, Kim CH, Lee YS. Effects of the sliding rehabilitation machine on balance and gait in chronic stroke patients - a controlled clinical trial. Clin Rehabil. 2011 May;25(5):408-15.

4. Byun SD, Kim CH, Jeon IH. Ulnar neuropathy caused by an anconeus epitrochlearis: clinical and electrophysiological findings. J Hand Surg Eur Vol. 2011 Sep;36(7):607-8.

5. Kim CH, Luedtke CA, Vincent A, Thompson JM, Oh TH. Association between body mass index and response to a brief interdisciplinary treatment program in fibromyalgia. Am J Phys Med Rehabil. 2012 Jul;91(7):574-83.

6. Oh TH, Hoskin TL, Luedtke CA, Weingarten TN, Vincent A, Kim CH, Thompson JM. A Predictors of clinical outcome in fibromyalgia after a brief interdisciplinary fibromyalgia treatment program: single center experience. PM R. 2012 Apr;4(4):257-63.

7. Kim CH, Luedtke CA, Vincent A, Thompson JM, Oh TH. Association of body mass index with symptom severity and quality of life in patients with fibromyalgia. Arthritis Care Res (Hoboken). 2012 Feb;64(2):222-8.

8. Seo J, Kim YT, Song HJ, Lee HJ, Lee J, Jung TD, Lee G, Kwon E, Kim JG, Chang YStronger activation and deactivation in archery experts for differential cognitive strategy in visuospatial working memory processing. Behav Brain Res. 2012 Apr 1;229(1):185-93.

9. Lee SH, Min YS, Park HY, Jung TD. Health-related quality of life in breast cancer patients with lymphedema who survived more than one year after surgery. J Breast Cancer. 2012 Dec;15(4):449-53.

10. Kim CH, Vincent A, Clauw DJ, Luedtke CA, Thompson JM, Schneekloth TD, Oh TH. Association between alcohol consumption and symptom severity and quality of life in patients with fibromyalgia.Arthritis Res Ther. 2013 Mar 15;15(2):R42.

11. Park J, Jung TD, Kang DH, Lee SH. Preoperative percutaneous mapping of the frontal branch of the facial nerve to assess the risk of frontalis muscle palsy after a supraorbital keyhole approach. J Neurosurg. 2013 May;118(5):1114-9.

Department of **Surgery**

Chairman: Prof. Seung Huh, MD, PhD
(Shuh@knu.ac.kr)

Gastrointestinal Surgery

The Division of Gastrointestinal Surgery has performed 7,000 operations of stomach cancer between 1985 and 2010 and approximately 500 operations annually for the last several years. The division has introduced and invented new surgical technologies for the treatment of stomach cancer. Lymph nodes around lesions, for example, were examined and removed. Electrocauterization was introduced to minimize bleeding and migration of cancer cells to the operation sites. Intraperitoneal chemotherapy was introduced in 1990. Recurrence of cancer in the peritoneum is a problem and intraperitoneal chemotherapy provided immediately after surgery was introduced and they showed better outcome. To improve the quality of life of patients, the preservation of vagus nerve or pylorus was introduced and close follow-up of nutritional status of patients has been performed. The division reevaluated the value of decompression of gastrointestinal tract after an operation and found that it was not necessary. Laparoscopic and robotic operations were introduced. And recently the division demonstrated that the conventional splenectomy routinely performed during the operation of upper gastrointestinal tract operation was unnecessary. This tremendous finding was cited by the NCCN Clinical Practice Guidelines in Oncology.

Faculty

Prof. Wansik Yu, MD, PhD, FACS
Prof. Ho Young Chung, MD, PhD
Assistant Prof. Oh Kyoung Kwon, MD

Recent Publications

1. Kim T, Chung HY, Yu W, Kim JY, Kim GC, Choi J. Localization of gastric cancer by CT gastrography: A prospective study. Hepatogastroenterology 2009;56:1580-1584.

2. Bozzetti F, Yu W, Baratti D, Kusamura S, Deraco M. Locoregional treatment of peritoneal carcinomatosis from gastric cancer. J Surg Oncol 2008;98:273-276.

3. Yu W, Choi GS, Chung HY. Randomized clinical trial of splenectomy versus splenic preservation in patients with proximal gastric cancer. Br J Surg 2006;93:559-563.

4. Chung HY, Yu W. Reevaluation of routine gastrointestinal decompression after gastrectomy for gastric cancer. Hepato-Gastroenterology 2003;50:1190-1192.

5. Yu W, Seo BY, Chung HY. Postoperative body-weight loss and survival after curative resection for gastric cancer. Br J Surg 2002;89:467-470.

6. Yu W, Whang I, Chung HY, Averbach A, Sugarbaker PH. Indications for early postoperative intraperitoneal chemotherapy of advanced gastric cancer: results of a prospective randomized trial. World J Surg 2001;25:985-990.

7. Yu W, Kim HS, Choi GS, Suh IS. Perigastric lymph node with metastasis in gastric cancer. Hepato-gastroenterology 1999;46:2658-2661.

8. Yu W, Whang I, Suh I, Averbach A, Chang D, Sugarbaker PH. Prospective randomized trial of early postoperative intraperitoneal chemotherapy as an adjuvant to resectable gastric cancer. Ann Surg 1998;228:347-354.

9. Yu W, Choi GS, Whang I, Suh IS. Comparison of five systems for staging lymph node metastasis in gastric cancer. Br J Surg 1997;84:1305-1309.

Colorectal Surgery

Colorectal Cancer Center at the Kyungpook National University is a center-of-excellence to provide multidisciplinary program of diagnostic tests and multispecilaty consultation services for patients with cancer. The colorectal cancer unit primarily treats patients with cancer of the large bowel as well as those at high risk of developing cancer of the colon and rectum. Top-notch professionals from the departments of surgical, medical and radiation oncology, and diagnostic radiology, pathology, along with a team of specialized nurses, social workers, and genetic counselors, are dedicated to the management and cure of colorectal cancer. Especially, colorectal cancer center has been pioneering minimally invasive surgery such as laparoscopic and robotic surgery for colorectal patients which bring less pain, earlier recovery, shortened hospital stay and better cosmesis after surgery. We are contributing our efforts to education of local and international doctors by running regular training programs and conferences. Also, in association with many world-renowned centers, we have been leading many clinical trials. Besides clinical activities, basic research has been carried out in pursuit of identification of carcinogenesis, metastasis and chemo-radiosensitivity and so forth. Our ultimate goal is the cure for patients with colorectal diseases.

Faculty

Prof. Gyu-Seog Choi, MD, PhD
Assistant Prof. Jun Seok Park, MD
Assistant Prof. Soo Yeun Park, MD

Recent Publications

1. Park IJ, Choi GS, Kang BM, Lim KH, Jun SH. Metastasis to the sigmoid or sigmoid mesenteric lymph nodes from rectal cancer. Ann Surg 2009 Jun;249(6):960-4.

2. Park IJ, Choi GS, Lim KH, Kang BM, Jun SH. Serum Carcinoembryonic Antigen Monitoring After Curative Resection for Colorectal Cancer: Clinical Significance of the Preoperative Level. Ann Surg Oncol 2009 Nov;16(11):3087-93.

3. Kim JG, Chae YS, Sohn SK, Moon JH, Kang BW,

Park JY, Jeon SW, Lee MH, Lim KH, Choi GS, Jun SH. IVS10+12A>G polymorphism in hMSH2 gene associated with prognosis for patients with colorectal cancer. Ann Oncol. 2010 Mar;21(3):525-9. Epub 2009. Sep 16.

4. Park JS, Choi GS, Lim KH, Jang YS, Jun SH. Robotic-assisted versus laparoscopic surgery for low rectal cancer: Case-matched analysis of short-term outcomes. Ann Surg Oncol 2010(in press).

5. Park JS, Choi GS, Lim KH, Jang YS, Jun SH. a comparison of robot-assisted, laparoscopic and open surgery in the treatment of rectal cancer. Surg Endosc 2010 (epub ahead).

6. Choi GS. To the letter to the editor: "new technologies-based innovation changes surgical practice and research direction in solid cancers" (Reply to SEND-08-0644.R1). Surg Endosc. 2010 Aug 25. [Epub ahead of print] PubMed PMID: 20737173.

7. Park JS, Choi GS, Lim KH, Jang YS, Jun SH. Robotic-Assisted versus Laparoscopic Surgery for Low Rectal Cancer: Case-Matched Analysis of Short-Term Outcomes. Ann Surg Oncol. 2010 Jun 30. [Epub ahead of print] PubMed PMID:20589436.

8. Park JS, Choi GS, Jun SH, Hasegawa S, Sakai Y. Laparoscopic versus open intersphincteric resection and coloanal anastomosis for low rectal cancer:intermediate-term oncologic outcomes. Ann Surg. 2011 Dec;254(6):941-6. doi:10.1097/SLA.0b013e318236c448. PubMed PMID: 22076066.

9. Park JS, Choi GS, Lim KH, Jang YS, Kim HJ, Park SY, Jun SH. Laparoscopic extended lateral pelvic node dissection following total mesorectal excision for advanced rectal cancer: initial clinical experience. Surg Endosc. 2011 Oct;25(10):3322-9. doi: 10.1007/s00464-011-1719-9. Epub 2011 May 10. PubMed PMID:21556996.

10. Park JS, Choi GS, Kim HJ, Park SY, Jun SH. Natural orifice specimen extraction versus conventional laparoscopically assisted right hemicolectomy. Br J Surg. 2011 May;98(5):710-5. doi: 10.1002/bjs.7419. Epub 2011 Feb 8. PubMed PMID: 21305535.

11. Park JS, Choi GS, Park SY, Kim HJ, Ryuk JP. Randomized clinical trial of robot-assisted versus standard laparoscopic right colectomy. Br J Surg. 2012 Sep;99(9):1219-26. doi: 10.1002/bjs.8841. PubMed PMID: 22864881.

12. Park JS, Choi GS, Hasegawa S, Sakai Y, Huh JW, Kim HR, Kwak SG. Validation of the seventh edition of the American Joint Committee on cancer tumor node-staging system in patients with colorectal carcinoma in comparison with sixth classification. J Surg Oncol. 2012 Nov;106(6):674-9. doi: 10.1002/jso.23117. Epub 2012 Apr 18. PubMed PMID: 22514036.

Liver, biliary, and pancreatic surgery

The Division of Liver, Biliary, and Pancreatic Surgery is specifically involved in the surgical treatment of benign and malignant diseases occurring in the liver, bile duct, and pancreas. These organs are one of the most complicated anatomical structures in the body where a variety of benign and malignant tumors occurs. The organs are essential and play a key role in exocrine and endocrine functions. Due to the complexity of the organs, the process of treatment is extremely complicated and the duration of the treatment last long. This is why the division requires highly experienced doctors and professional facilities. Specifically, a number of surgeries have been performed by the division: cholecystectomy, pancreaticoduodenectomy, hepatectomy, partial resection of the liver, and liver transplantation. The division performed a successful living-related liver transplantation in 1988 for the first time in the local medical community.

Faculty
Prof. Yoon Jin Hwang, MD, PhD
Prof. Sang Geol Kim, MD, PhD

Recent Publications

1. Prognostic Factors After Early Recurrence in Patients who Underwent Curative Resection for Hepatocellular Carcinoma. Journal of Surgical Oncology 2011;103:148–151.

2. Prognostic factors for pulmonary metastasectomy in the treatment of hepatocellular carcinoma. J Thorac Oncol. 2010 Aug;5(8):1251-4.

3. Chronic myeloid leukemia patient manifesting fatal hepatitis B virus reactivation during treatment with imatinib rescued by liver transplantation: case report and literature review. Int J Hematol. 2009 Oct;90(3):383-7. Epub 2009 Jul 30.

4. Successful intermittent application of the Pringle maneuver for 30 minutes during human hepatectomy: a clinical randomized study with use of a protease inhibitor. Hepatogastroenterology. 2007 Oct-Nov;54(79):2055-60.

5. Hypomethylation of the protein gene product 9.5 promoter region in gallbladder cancer and its relationship with clinicopathological features. Cancer Sci. 2006 Nov;97(11):1205-10.

6. Lethal hypercytokinemia following hepatic resection under pringle maneuver: a case report. Hepatogastroenterology. 2004 Sep-Oct;51(59):1473-5.

7. Epigenetic and genetic alterations in duodenal carcinomas are distinct from biliary and ampullary carcinomas. Gastroenterology. 2003 May;124(5):1300-10.

8. Comparison of Epigenetic and Genetic Alterations in Mucinous Cystic Neoplasm and Serous Microcystic Adenoma of Pancreas submitted to Modern pathology 2003.

9. CpG island methylation in carcinoid and pancreatic endocrine tumors. Oncogene. 2003 Feb 13;22(6):924-34.

10. Frequent CpG island methylation in serrated adenomas of the colorectum. Am J Pathol. 2003 Mar;162(3):815-22.

Transplantation and Vascular Surgery

The Division of Transplantation and Vascular Surgery involves the treatment of aortic disease, arterial occlusive disease, venous disease, lymphedema, congenital vascular anomaly, vascular trauma and making the artificial arteriovenous fistula for hemodialysis. Moreover, the division is actively involved in the transplantation of kidney and liver. The division is a leading group in the treatment of aortic aneurysm, arterial occlusive disease, mesenteric ischemia, venous thromboembolism, varicose vein, etc. The division has performed over 1,000 vascular procedures annualy including endovascular treatment. Recently vascular surgeon-based endovascular surgery with various hybrid techniques has been increasing according to the high prevalence of aged and diabetic patients in vascular surgery. The division has well-developed vascular laboratory for the screening and assessment of vascular disease. In our vascular laboratory, registered vascular technologists (RVTs) have performed over 3,500 cases of duplex scan and plethysmography annually. The main research topics of the division are progression of aortic aneurysm, clinical manifestations based on the extent and morphology of atheroma, pathophysiology of venous thrombosis, hemodynamic change of artificial arteriovenous fistula, and pathogenic mechanism of varicose vein.

Faculty

Prof. Seung Huh, MD, PhD

Assistant Prof. Hyung-Kee Kim, MD

Recent Publications

1. Kim HK, Chun JM, Huh S. Anticoagulation and delayed bowel resection in the management of mesenteric venous thrombosis. World J Gastroenterol. 2013;19(30):5025-5028.

2. Kim HK, Jung H, Cho J, Chun JM, Huh S. Treatment of Giant Celiac Artery Aneurysm by Conjoined Splenic-Hepatic Trunk Transposition. Korean J Vasc Endovasc Surg. 2013;29(2):67-70.

3. Cho J, Lee KK, Yun WS, Kim HK, Hwang YH, Huh S. Selective shunt during carotid endarterectomy using routine awake test with respect to a lower shunt rate. J Korean Surg Soc. 2013;84(4):238-44.

4. Yun WS, Lee KK, Cho J, Kim HK, Huh S. Treatment outcome in patients with acute superior mesenteric artery embolism. Ann Vasc Surg. 2013;27(5):613-20.

5. Kim HK, Cho J, Huh S, Oh CW, Chung HY, Roh YN, Kim YW. Upper Extremity Replantation for Patients with Major Amputation Injury: Follow-up Results of 11 Patients. Korean J Vasc Endovasc Surg. 2013;29(1):10-16.

6. Kim HK, Choi HH, Huh S. Cystic adventitial disease of the popliteal artery: a recurrent case after cyst wall excision. Int Angiol. 2012;31(2):198-201.

7. Woo IT, Yun WS, Cho J, Lee KK, Kim HK, Kim J, Huh S. Change of Common Iliac Artery after Abdominal Aortic Aneurysm Repair Using a Tube Graft. Korean J Vasc Endovasc Surg. 2012;28(1):19-23.

8. Yun WS, Lee KK, Cho J, Kim HK, Kyung HS, Huh S. Early treatment outcome of isolated calf vein thrombosis after total knee arthroplasty. J Korean Surg Soc. 2012;82(6):374-379.

9. Huh S, Choi HH, Kim HK, Kim SJ. The Expression of Matrix Metalloproteinases and Tissue Inhibitors of Metalloproteinases in the Wall of Great Saphenous Vein in Patients with Varicose Veins. J Korean Surg Soc 2010;79:S16-25.

10. Huh S, Choi HH, Kim HK. The Matrix Metalloproteinase Expression in Early Arterialized Saphenous Vein Grafts. J Korean Soc Vasc Surg 2010;26(2):118-123.

11. Choi HH, Kim HK, Kim GJ, Lee JT, Huh S. Separate Visceral Revascularization in Thoracoabdominal Aortic Aneurysm Repair: Report of 3 Cases. J Korean Soc Vasc Surg 2010;26(1):48-52.

12. Song IC, Kim HK, Hwang YH, Choi HH, Huh S. Early Results of Eversion Carotid Endarterectomy. J Korean Soc Vasc Surg 2010;26(1):30-35.

13. Kim HK, Choi HH, Huh S. Ruptured Iliac Artery Stump Aneurysm Combined with Aortic Pseudoaneurysm in a Patient with Behcet's Disease. Ann Vasc Surg 2010;24(2):255.e5-e8.

14. Huh S, Kim HK, Choi HH. The Expression of Matrix Metalloproteinase according to Hydrostatic Pressure in Varicose Veins. J Korean Surg Soc 2009;77(5):344-352.

15. Kim HK, Choi HH, Lee JM, Huh S. Acute renal vein thrombosis, oral contraceptives, and protein S deficiency: a successful catheter-directed thrombolysis. Ann Vasc Surg 2009;23(5):687.e1-4.

16. Kim HK, Ryuk JP, Choi HH, Kwon SH, Huh S. Abdominal Aortic Aneurysm Repair in Patient with a Renal Allograft: A Case Report. Korean Med Sci 2009;24(1):166-169.

17. Kim HK, Choi HH, Huh S. Spontaneous Isolated Dissection of the Celiac Artery: a Case Report. J Korean

Soc Vasc Surg 2009;25(1):53-56.

18. Kim HK, Choi HH, Huh S. Primary Aortocaval Fistula Associated with Abdominal Aortic Aneurysm. J Korean Surg Soc 2009;76(1):66-71.

19. Choi HH, Kim HK, Huh S. Brachial-ulnar Artery Bypass for Treating Ischemic Steal Syndrome: Report of A Case. Korean. J Korean Soc Vasc Surg 2008;24(2):144-147.

20. Kim HK, Jo MJ, Choi HH, Huh S, Kim YW. The Long-term Results and Causes of Death after Abdominal Aortic Aneurysm Repair. J Korean Surg Soc 2008;74(1):54-59.

Breast and Thyroid Surgery

The Division of Breast and Thyroid Surgery has performed operations for more than 4,000 cases of breast cancer and 8,000 cases of thyroid disease. To improve the outcome of breast cancer patients, the division has a close cooperation with other departments in the hospital, such as radiology, pathology, nuclear medicine, plastic surgery, hemato-oncology, rehabilitation, and psychiatry. Moreover, the division introduced the robotic surgery for a thyroid operation for the first time in the Daegu-Kyungpook area. In fact, the robotic surgery had a result comparable to that of the conventional surgery in the surgical treatment of thyroid cancer, but it reduced the cosmetic problems significantly. It can also be applied to the surgery for benign thyroid tumors and parathyroid glands. The division is active in the basic research as well. It has an extensive international collaborative network of researchers from Italy (Prof. Petit), USA (Prof. Chang, MD Andersen), Germany (Prof. Audretsch), and Japan (Prof. Nohira) and hold international meetings in 2010 and 2011. The main research topic is the development of new drugs for the treatment of breast cancer, which is pursued in close collaboration with the Cell and Matrix Research Institute at KNU, Seoul National University, and Dongguk University. Laser treatment-based local therapy for the cancers of breast and thyroid glands has also been pursued.

Faculty

Prof. Hoyong Park, MD, PhD
Assistant Prof. Jin Hyang Jung, MD, PhD
Assistant Prof. Wan Wook Kim, MD

Recent publications

1. Park HY, Choi HH, Lee JJ, Hwang SO, Jung JH, Sohn IB, Lee H, Kim WW. Comparidon of Laser Ablation Using Multiditectional and Forwsrd-Firing Fiber in Human Thyroid Gland: Experimental Study. Otolaryngol Head Neck Surg. 2013 Aug7.[Epub ahead of print]

2. Kim WW, Jung JH, Park HY, New technique using the snake retractor for complete lymph node dissctipn in robotic thyroid surgery: initial experiences. Surg Laparosc Endosc Percutan Tech. 2013 Feb:23(1):e1-4.

3. Kim WW, HY Park, JH Jung. Suegical exetent of central lymph node dissection in clinically nodenegative papillary thyroid cancer. Head Neck. 2013 Jan 16. doi:10.1002/hed.23197.

4. Yang JD, Lee JW, Cho YK, Kim WW, Hwang SO, Jung JH, Park HY, Surgical Techniques for Personalized Oncoplastic Surgery in Breast Cancer Patients with Small-to Moderate-Sized Breasts(Part 1): Volume Displacement, J Breast Cancer 2012 March;15(1):1-6.

5. Yang JD, Lee JW, Cho YK, Kim WW, Hwang SO, Jung JH, Park HY, Surgical Techniques for Personalized Oncoplastic Surgery in Breast Cancer Patients with Small-to Moderate-Sized Breasts(Part 2): Volume Displacement, J Breast Cancer 2012 March;15(1):7-14.

6. Yang JD, Lee JW, Kim WW, Hwang SO, Jung JH, Park HY. Oncoplastic Surgical Techniques for Personalized Breast Conserving Surgery in Breast Cancer Patients with Small-to Moderate-Sized Breasts. J Breast Cancer 2011 December;14(4):253-261.

7. Chae YS, Kim JG, Jung HJ, Yang JD, Kung JH, Aiyar SE, Kim S, Park HY, Anticancer effect of (E)-2-hhycroxy-30,4,50-trimethoxystilbene on breast cancer cells by mitochondrial depolarization Cancer Chemother Pharmacol(2011) 68:349-358.

8. Chae YS, Lee SJ, Koon JH, Kang BW, Kim JG, Sohn DG, Jung JH, Park HY,Park JY, Kim HJ, Lee SW.VARS2 V552V variant as prognostic marker in patients with early breast cancer. Med Oncol(2011)28:1273-1280.

9. Gwak YJ, Kim HJ, Kwak JY, Lee SK, Shin KM, Lee HJ, Kim GC, Jang YJ, Han MH, Park JY, Jung JH. Ultrasonographic drtection and charactxrization of asymptomatic suctal carcinoma in situ with histopathologic correlation. Acta Radiol. 2011 May 1;52(4):364-71.

10. Yang JD, Bae SG, Chung HY, Cho BC, Park HY, Jung JH. The Usefulness of Oncoplastic Volume Displacement Techniques in the Superiorly Located Breast Canaers for Korean Patients With Small-to Moderate-Sized Breast. Ann Plast Surg. 2011 Nov;67(5):474-80.

11. Lee SJ, Lim HJ, Kim HY, Song CH, Kim BS, Lee WJ, Kim do W, Jung JH, Kim SG, Yoon GS, Lee JT, The feasiblity of sentinel Iymph node biopsy with a multidisciplinary cooperative team approach for the management of Koreans with cutaneous Malignant melanoma. Ann Dermtol. 2010 Feb;22(1):26-34. EPub 2010 Feb 28.

12. Kim HJ, Kwak JY, Choi JW, Bae JH, Shin KM, Lee HJ, Kim GC, Jung JH, Park JY. Impact of US surveillance on detection of clinically occult Iocoregional recurrence after masrectomy for brest cancer. Ann Surg Oncol. 2010 Oct;17(10):2670-6.

13. Jung JH, Chae YS, Moon JH, Kang BW, Kim JG, Dohn SK, Park JY, Lee MH, Park HY. TNF superfamily gene polymorphism as propnostic factor in early breast cancer. J Cancer Res Clin Oncol. 2010 May;136(5):685-94.

14. Jung JH, Park JY, Kim HJ. Accuracy of preoperative ultrasound and ultrasound-guided fine needle aspiration cytology for axillary staging in breasr cancer. ANZ J Surg 80 (2010)271-275.

15. Jung JH, Shinya Uchino, Lee TH, Park HY. A Korean family of Familial Medullary Thyroid Cencer with Cys6185er RET Germline Mutation, J Korean Med Sci 2010;25:226-9.

16. Jeong JY, Jang JS, Sohn YK, Jung JH, Vhun YK, Park JY. Availability of Immunohistochemistry in the Diagnosis of Follicular Variant of Papillary Thyroid Carcinoma. The Korean Journal of Pathollgy 2010;44:48-55.

17. Lee HJ, Hwang DO, Jung JH, Park HY, Park JY. The predictors of Tumor Invasion for Patients with an Initial Diagnosis of Ductal Carcinoma in situ and the Indications for Performing Sentinel Lymph Node Biopsy. J Korean Surg Soc 2010;79:436-441.

18. Lee KK, Kim JY, Jung JH, Park JY, Park HY. Clinicopathological Feature and Recurrence Pattern

of Triple Negative Breast Cancer. J Korean Surg Soc 2010;79:14-19.

Pediatric Surgery

The Division of Pediatric Surgery at Kyungpook National University Hospital carries a long tradition of leadership and innovation that dates back nearly 30 years. Pediatric surgeons devote their expertise to providing preoperative, operative and postoperative management for all problems affecting neonates, infants, children, and adolescents with congenital and acquired disease. We are specialized in a wide range of general surgical care for children up to 15 years of age. We also help counsel parents who are expecting a baby with a birth defect that may require surgery. We are proud of our experience as educators and clinicians who are dedicated to providing the best training to our medical students and surgical residents and the highest quality, compassionate and family-centered care for neonates, infants, children, and adolescents. Additionally, we also remain committed to the ongoing development of a new surgical technique to treat diseases in children, particularly minimally invasive approaches to replace more invasive open procedure. At Kyungpook National University Hospital, we strive to make every patient and their family members feel comfortable and contented.

Faculty
Prof. Jin Young Park, MD, PhD

Recent publications

1. Enterogenesis by mechanical lengthening: Morphology and function of the lengthened small intestine. J Pediatr Surg 2004.

2. Management of children with pancreatic head mass. J Pediatr Surg 2006.

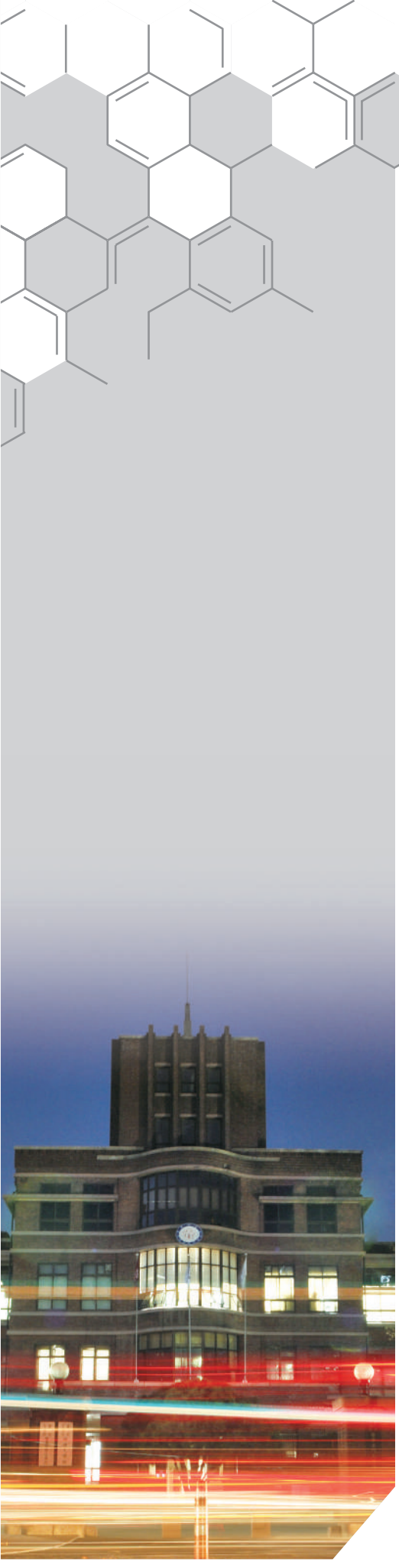
3. Solid pseudopapillary tumor of the pancreas: a multicenter study of 23 pediatric cases. J Pediatr Surg 2006.

4. Sustainability of mechanically lengthened bowel in rats. J Pediatr Surg 2006.

5. Mesenteric plexiform neurofibroma in an 11-year-old boy with von Recklinghausen disease. J Pediatr Surg 2007.

6. Heterotopic pancreas of the esophagus and stomach associated with pure esophageal atresia. J Pediatr Surg 2010.

7. Use of an endorectal mucosal advancement flap to treat H-type rectovesitbular fistula in patients with a normal anus. J Pediatr Surg 2013.



Department of **Thoracic and Cardiovascular Surgery**

The Department of Thoracic and Cardiovascular Surgery, since Sung Haeng Lee, PhD, successfully performed an operation on a patient with interatrial septal defect for the first time in Korea in 1959, has played a leading role in cardiac surgical procedures and possessed the highest quality of surgical technique on the basis of professional experience, knowledge, know-how, and medical practice.

As for the adult human heart, the department is conducting mitral valve and tricuspid valve surgery using endoscope and not a single case of operative death has been recorded until now. And as for pediatric cardiac surgery, almost all cases of pediatric patients with complex congenital heart disease (CHD) are operable and the results of surgery are excellent compared with any other hospitals in the country. Pediatric patients with simple CHD have minimal incision surgery and not a single case of operative death has been recorded in recent years.

General thoracic surgery deals with the following disorders: lung diseases, esophagopathy, mediastinal diseases, pneumothorax, pleura diseases, chest wall deformity, and hyperhidrosis. And more than 70 to 80 percent of the operations are using thoracoscope and the surgical consequences are great.

Furthermore, the severe trauma center, where thoracic surgery specialists will be available around the clock, is now being constructed and will be expected to contribute to the survival rate of severe trauma patients, whose mortality rate is high at present.

The department has six staff members, two clinical fellows, four residents, and two advanced practice nurses; it boasts high-quality procedures and perioperative care, intensive care after surgery, and top-notch medical student and resident education.

Chairman: Professor Joon Yong, Cho, MD
(jycho@knu.ac.kr)

Faculty

Lee, Jong Tae, MD, PhD (Adult Cardiac Surgery)
Lee, Eung Bae, MD, PhD (Lung Surgery)

Cho, Joon Yong, MD (Cardiac and General Thoracic Surgery)
kim, Gun Jik, MD (Adult Cardrac Surgery)
Lee, Young Ok, MD, PhD (Pediatric Cardiac Surgery)

Recent Publications

1. Endoscopic Radial Artery Harvesting may be the Procedure of Choice for Coronary Artery Bypass Grafting. Circulation J. 2007.

2. Placement of Endovascular Stent Graft in Acute Malperfusion Syndrome After Acute Type II Aortic Dissection. Korean Circulation J. 2012.

3. Comparison of the Outcomes between Axillary and Femoral Artery Cannulation for Acute Type A Aortic Dssection. The Korean J of Thorac and Cardiovasc Surg. 2012.

4. Direct Axillary Arterial Cannulation Using Sheldingers Technique in Aortic Dissection. The Korean J of Thorac and Cardiovasc Surg. 2011.

5. HMCO5 Atteuates Vascular Contraction through Inhibition of RhoA/Rho-kinase. J of Ethnopharmacology. 2011.

6. Calcium Sensitization Induced by Sodium fluoride in Permeabilized Rat Mesenteric Arteries. Korean J of Physiology and Pharmacology. 2010.

7. Identification of Differentially Expressed Genes After Heat Shock in Isolated Rat Aorta. Clinical and Experimental Pharmacology and Physiology. 2007.

8. Complete Repair of Coarctation of the Aorta and a Ventricular Septal Defect in a 1,480g Low Birth Weight Neonate. The Korean J of Thorac and Cardiovasc Surg. 2011.

9. Surgical Repair of Giant Right Atrial Aneurysm in a Neonate. Korean Circulation J. 2011.

10. Early Results of Open Heart Surgery in a Neonate. The Korean J of Thorac and Cardiovasc Surg. 2009.

Department of **Urology**

Since the establishment of the Department of Urology in 1962, the department has played a pivotal role in the education, research, and treatment of urological diseases, such as renal and urological tumors, urolithiasis, pediatric urology, voiding dysfunction, and kidney transplantation in the country. The department is the best regional center for surgery of urological cancer and treatment of urolithiasis. Specifically, we are performing the followings for the treatment of patients with urological problems: 1) robotic surgery and laparoscopic surgery for prostate, kidney and bladder tumors; 2) endoscopic surgery for urolithiasis; 3) minimally invasive surgery for pediatric urology and voiding dysfunction; and 4) kidney transplantation. Moreover, researches on 1) clinical trial for of prostate, kidney and bladder cancer and 2) novel operative skills for minimal invasive surgery are underway. Furthermore, basic researches on oncology (tumorigenesis and cancer biology for urological tumor) and regenerative medicine for urological tissue reconstruction (tissue engineering and cell therapy for urological tissue regeneration) are actively performed.

Chairman: Professor Tae Gyun Kwon, MD, PhD
(tgkwon@knu.ac.kr)

Faculty

1) Yoon Kyu Park, MD, PhD
2) Bup Wan Kim, MD, PhD
3) Sung Kwang Chung, MD, PhD
4) James J Yoo, MD, PhD
5) Tae Gyun Kwon, MD, PhD
6) Eun Sang Yoo, MD, PhD
7) Tae Hwan Kim, MD, PhD
8) Hyun Tae Kim, MD, PhD

Recent publications

1. Cell-free microRNAs in urine as diagnostic and prognostic biomarkers of bladder cancer. Yun SJ, Jeong P, Kim WT, Kim TH, Lee YS, Song PH, Choi YH, Kim IY, Moon SK, Kim WJ. Int J Oncol. 2012 Nov;41(5):1871-8.

2. Human amniotic fluid stem cell-derived muscle progenitor cell therapy for stress urinary incontinence. Chun SY, Cho DH, Chae SY, Choi KH, Lim HJ, Yoon GS, Kim BS, Kim BW, Yoo JJ, Kwon TG. J Korean Med Sci. 2012 Nov;27(11):1300-7.

3. Pdx1 and controlled culture conditions induced differentiation of human amniotic fluid-derived stem cells to insulin-producing clusters. Chun SY, Mack DL, Moorefield E, Oh SH, Kwon TG, Pettenati MJ, Yoo JJ, Coppi PD, Atala A, Soker S. J Tissue Eng Regen Med. 2012 Nov 13.

4. Human amniotic fluid stem cell injection therapy for urethral sphincter regeneration in an animal model. Kim BS, Chun SY, Lee JK, Lim HJ, Bae JS, Chung HY, Atala A, Soker S, Yoo JJ, Kwon TG. BMC Med. 2012 Aug 21;10:94.

5. Active potassium supplementation might be mandatory during laparoscopic adrenalectomy for primary hyperaldosteronism. Choi SH, Kwon TG, Kim TH. J Endourol. 2012 Jun;26(6):666-9.

6. Novel combination markers for predicting progression of nonmuscle invasive bladder cancer. Ha YS, Kim JS, Yoon HY, Jeong P, Kim TH, Yun SJ, Lee SC, Kim GY, Choi YH, Moon SK, Yi Kim I, Kim WJ. Int J Cancer. 2012 Aug 15;131(4):E501-7.

7. Comparison of pelvic phased-array versus endorectal coil magnetic resonance imaging at 3 Tesla for local staging of prostate cancer. Kim BS, Kim TH, Kwon TG, Yoo ES. Yonsei Med J. 2012 May;53(3):550-6.

8. Characterization of urine-derived cells from upper urinary tract in patients with bladder cancer. Chun SY, Kim HT, Lee JS, Kim MJ, Kim BS, Kim BW, Kwon TG. Urology. 2012 May;79(5):1186.e1-7.

9. Apoptotic effects of genistein, biochanin-A and apigenin on LNCaP and PC-3 cells by p21 through transcriptional inhibition of polo-like kinase-1. Seo YJ, Kim BS, Chun SY, Park YK, Kang KS, Kwon TG. J Korean Med Sci. 2011 Nov;26(11):1489-94.

10. Clinical significance of a large difference (≥ 2 points) between biopsy and post-prostatectomy pathological Gleason scores in patients with prostate cancer. Yoo C, Oh CY, Cho JS, Song C, Seo SI, Ahn H, Hwang TK, Cheon J, Lee KH, Kwon TG, Jung TY, Chung MK, Lee SE, Lee HM, Lee ES, Choi YD, Chung BH, Kim HJ, Kim WJ, Byun SS, Choi HY. J Korean Med Sci. 2011 Apr;26(4):507-12.

11. Comparison of laparoscopic versus open radical nephrectomy for large renal tumors: a retrospective analysis of multi-center results. Jeon SH, Kwon TG, Rha KH, Sung GT, Lee W, Lim JS, Jeong YB, Hong SH, Kim HH, Byun SS. BJU Int. 2011 Mar;107(5):817-21.

12. Identification of C16orf74 as a marker of progression in primary non-muscle invasive bladder cancer. Kim WT, Yun SJ, Park C, Kim IY, Moon SK, Kwon TG, Choi YH, Kim WJ. PLoS One. 2010 Dec 21;5(12):e15260.

13. Characteristics and prognosis of chromophobe nonmetastatic renal cell carcinoma: a multicenter study. Lee WK, Byun SS, Kim HH, Rha KH, Hwang TK, Sung GT, Lee W, Lim JS, Jeong YB, Kwon TG. Int J Urol. 2010 Nov;17(11):898-904.

14. Robot-assisted radical cystectomy and pelvic lymph node dissection: a multi-institutional study from Korea. Kang SG, Kang SH, Lee YG, Rha KH, Jeong BC, Ko YH, Lee HM, Seo SI, Kwon TG, Park SC, Jung SI, Sung GT, Kim HH. J Endourol. 2010 Sep;24(9):1435-40.

15. Comparison of Laparoscopic Radical Nephrectomy and Open Radical Nephrectomy for Pathologic Stage T1 and T2 Renal Cell Carcinoma With Clear Cell Histologic Features: A Multi-institutional Study. Jeong W, Rha KH, Kim HH, Byun SS, Kwon TG, Seo IY, Sung GT, Jeon SH, Jeong YB, Hong SH. Urology. 2011 Apr;77(4):819-24.