AJOU
GREAT
TURNING
바르게 다르게 크게

COLLEGE OF **PHARMACY**

INNOVATIVE PHARMACEUTICAL SCIENCES AND TECHNOLOGY

AJOU UNIVERSITY

Ajou Vision

PRESTIGE

We provide the best industry academy co-operative graduate programs in Korea.
Most of faculties in Ajou College of Pharmacy are actively performing
industry-cooperative research projects

PIONEER

We support prospective students not only to be talented with
knowledge in science but also to be qualified with
the global ethical standard for competitive pharmaceutical scientists

PROSPECT

We provide co-operative graduate programs towards development of innovative new drugs and
innovative drug formulations by collaborating with scientists in industry performing with
a state of the art pharmaceutical research

AJOU UNIVERSITY
COLLEGE OF PHARMACY

College of Pharmacy

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Message from the Dean

Ajou College of Pharmacy (ACP) is a leading 6-year level institution of pharmacy education in Korea. ACP builds well-organized educational programs for undergraduate and graduate students and collaborates with many domestic and international academic universities. ACP is uniquely located in the geographical center of the leading pharmaceutical industry complex in Korea. To take advantage, our professional educational programs and cutting-edge researches have been utilized to educate professional undergraduate and graduate students and to contribute the innovative advancement of global pharmaceutical industries. In addition, we have excellent education programs for clinical pharmacy and clinical trials by collaborating with one of the top-ranked university hospitals for new drug discovery programs in knowledge and technical excellence in a variety of scientific fields with students who are eager to explore their academic enthusiasm and expertise in pharmacy for better future and pharmacist mission. I encourage you to join our excellent education programs that the ACP offers.

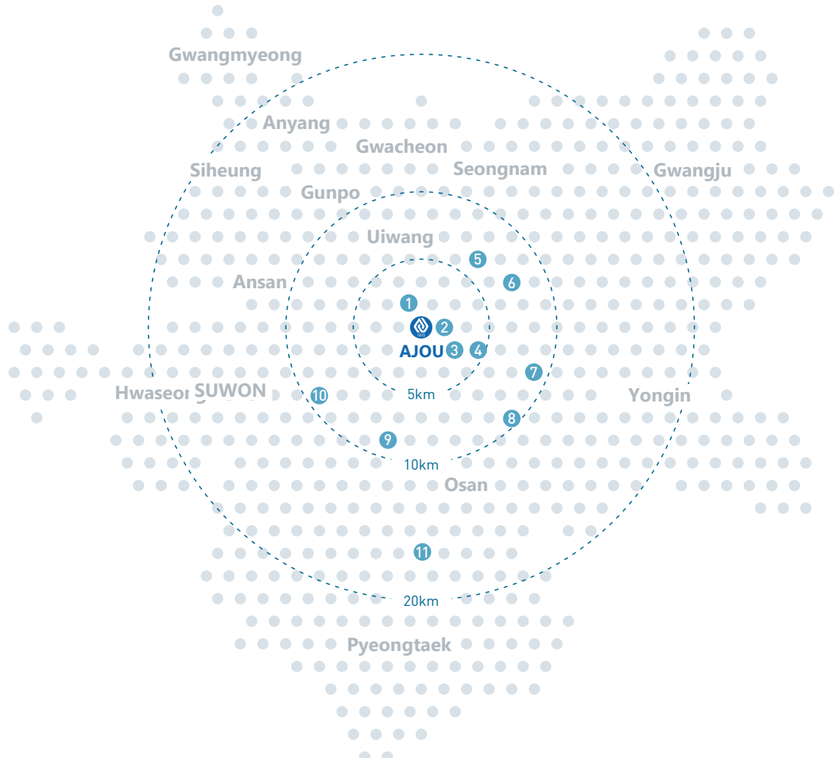
With all best wishes.

College of Pharmacy
Ajou University
Prof., Dean, Beom-Jin Lee

이 빔 진

Best Place for Research Networking

Ajou College of Pharmacy is located in the geographical center of the leading pharmaceutical industry complex in Korea to lead research collaboration. Ajou College of Pharmacy is located at the center of major Korean Pharmaceutical research & production centers



1 Gwanggyo Technovalley
2 Medical District
3 CJ CHEILJEDANG
4 DONG-A PHARM
5 Institut Pasteur Korea
6 GREEN CROSS
7 yuhan CORPORATION
8 Hanmi Pharm.
9 JW Pharmaceutical
10 ILDONG
11 Kwangdong

Ajou Research Centers

We are collaborating with well-known intramural institutes and the top-ranked university hospitals for new drug discovery and development in Korea

Ajou University

Basic Science Research institute
Center for Korea-France Cooperation
Education Research Institute
Energy and Climate Change Research Institute
Engineering Research institute
Environment Research Institute
Humanities Research Institute
Legal Research Institute
Management Research Institute
Research Center for Automotive parts Technology
Research Institute for Industry-Academy-Research Cooperation
Research Institute for Information and Communication
Research Institute for Information and Electronics Technology
Research institute for Nano & Information Fusion Technology
Social Sciences Research Institute
Suwon Development Research Center
Transportation Research Institute
Ubiquitous Convergence Research Institute
World studies Research Institute

Ajou University Medical Center

Institute for Medical Sciences
Brain Disease Research Center
Chronic Inflammatory Disease Research Center
Research Institute for Neural Science and Technology
Cell Therapy Center
Center for Injury Prevention & Community Safety Promotion
Center for Clinical Epidemiology
Genomic Research Center for Gastroenterology
Clinical Research Center
Center for Cell Death Regulating Biodrug

Ajou Brief History

1970

Mar. 1973 Ajou Engineering College opens

Mar. 1977 The Daewoo Educational Foundation is established

1980

Mar. 1981 Ajou Engineering College is promoted to a comprehensive university.
The Graduate School is established

Mar. 1988 The College of Medicine is established

1990

Sep. 1994 Ajou University Hospital opens

Sep. 1999 Ajou University is selected as a supervising university
For the BK21 Project of the Ministry of Education

2000

Sep. 2003 The Chronic Inflammatory Disease Research Center
(Medical Research Center) is established

Nov. 2006 The Emergency Medical Center for the southern Gyeonggi region opens

Mar. 2009 The School of Law opens

2010

Mar. 2011 College of Pharmacy Opens
Ajou University is selected for the ACE Project, a national project which supports leading universities in the advancement of undergraduate education (ACE)

Apr. 2012 Ajou University is selected for a national project of building educational competencies for five consecutive years

Faculty

Pharmaceutics and Drug Delivery

Lab of Bioavailability Control

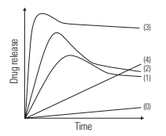
Goal and visions of our lab is to investigate versatile pharmaceutical formulations and innovative drug delivery systems to develop incrementally modified drug and knowledge-based drug products with controlled bioavailability. The bioavailability of many poorly soluble, poorly absorbable and highly metabolizable drugs can be optimized by modifying drug rwelease, absorption, p-glycoprotein efflux, metabolism and distribution. The developments of innovative and smart drug products compromise the utilization of pharmaceutical excipients and the integration of drug delivery technologies and synthesis of novel biomaterials for drug targeting, efficient drug targeting, efficient drug delivery. To fulfill the development of high standard and knowledge-based drug products, the following key research missions are categorized:

1. Controlling bioavailability of poorly soluble and poorly absorbable drugs
2. Utilizing various pharmaceutical excipients for formulations and drug delivery
3. Designing controlled release drug products via polymeric coatings and pharmaceutical engineering
4. Developing novel biomaterials via conjugation and chemical synthesis
5. Patient centric drug delivery
6. Intracellular drug delivery using biomimetic microfluidic system
7. Understanding pharmaceutical regulations and policies leading to drug development

Research Areas of Bioavailability Control Laboratory

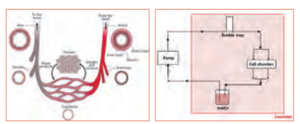
BAC Lab. *Bioavailability Control Lab.*

Pharmaceutical Formulation & Drug Design
[Controlled release system]



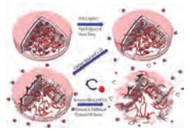
Modeling of dissolution profiles of solid dispersions.

Intracellular Drug Delivery Using Biomimetic Microfluidic System
[Micro-environmental control]
[Intracellular drug delivery & cell signaling]



Schematic diagram of human blood-circulating dynamic environment

Patient Centric Drug Delivery
[Novel dual controlled release system for reducing adverse events & once daily administration]



Schematic mechanism of dual polymeric controlled release system

Smart Drug Delivery System
[Bio-conjugate chemistry]
[Nanoparticle drug delivery system]

Illustrations of forming self-assembled gelatin-oleic nanoparticles

Publications

1. Taehee Kang, Hardik Hastibhai Amin and Beom-Jin Lee. Patient friendly strategy via chemical modification of proteins and peptides in oral delivery. p28-45. Advances and Challenges in Oral Delivery of Macromolecules. Future Science Ltd., 2016.
2. Effect of biomimetic shear stress on intracellular uptake and cell-killing efficiency of doxorubicin in a free and liposomal formulation, Int. J. Pharm., 510(1), 42-47, (2016)
3. New method and characterization of self-assembled gelatin-oleic nanoparticles using a desolvation method via carbodiimide/N-hydroxysuccinimide (EDC/NHS) reaction, European Journal of Pharmaceutics and Biopharmaceutics, 89, 365-373, (2015)
4. Biodistribution and pharmacokinetics in rats and antitumor effect in various types of tumor-bearing mice of novel self-assembled gelatin-oleic acid nanoparticles containing paclitaxel, Journal of Biomedical Nanotechnology, 10(1), (2014)
5. Enhanced solubility and modified release of poorly water-soluble drugs via self-assembled gelatin-oleic acid nanoparticles, International Journal of Pharmaceutics, 455, 235– 240, (2013)

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Education

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BS Seoul Nat'l Univ. (1984)

Professional Experiences & Social Activities

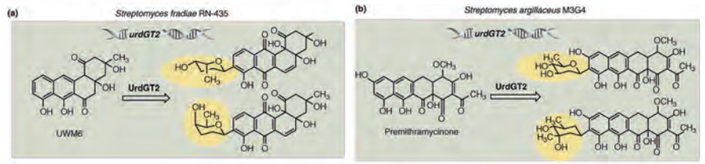
- President, KFDC Regulatory Affairs (2015-present)
- Chairman, Korean Academy of Pharmacy Education (KAPE) (2014)
- Board Member, Asian Association of School of Pharmacy (AASP) (2014-present)
- Chief Director, Korean Research Institute Against Drug Abuse (2013-present)
- Dean, College of Pharmacy, Ajou Univ. (2012-present)
- Vice President, Korean Society of Pharmaceutical Science and Technology (KSPST) (2012-present)
- Vice Chairman, Korean Association Against Drug Abuse (2011-present)
- Head, Pharmaceutical R&D Agency, Korean Pharmaceutical Manufacturers Association (2010-present)
- President, Korean American Pharmaceutical Scientists Association (KAPSA) (2006-2008)
- Board Member, International Pharmaceutical Federation (FIP) (2006-present)

Pharmacognosy

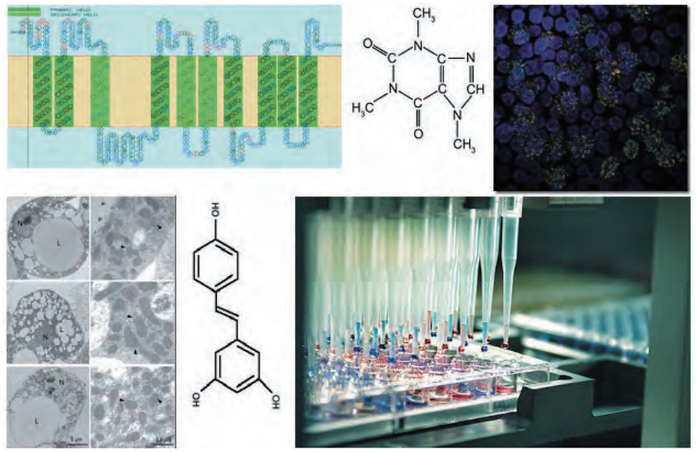
Lab of Pharmacognosy and Cell Biology

Our lab aims to develop sugar-based chemical library and elucidate their biological activity, thereby contribute for transitional medicine and therapeutics

Enzymatic glycosylation of natural products and finding their biological activities



Incorporation of newly synthesized glycochemicals into high throughput assay system



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Education

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BS Seoul Nat'l Univ. (1990)

Professional Experiences & Social Activities

- Associate Professor, College of Pharmacy, Ajou Univ. (2015-present)
- Assistant Professor, College of Pharmacy, Ajou Univ. (2012-2015)
- Assistant Professor, School of Biological Sciences, Ulsan Univ.(2010-2012)
- Instructor, Brigham and Women's Hospital, Harvard Medical School, USA (2008-2010)
- Research Assistant Professor, Univ. of Pittsburgh Medical Center, USA (2007-2008)
- Research Associate, Univ. of Pittsburgh Medical Center, USA (2002-2007)
- Research Professor, NO Radical Toxicology Research Center, Inha Univ. (2000-2002)
- BK21 Research Fellow, Liver Research Institute, Seoul Nat'l Univ.Hospital (1999-2000)
- Postdoctoral Research Fellowship, Korea NIH (1998-1999)

Publications

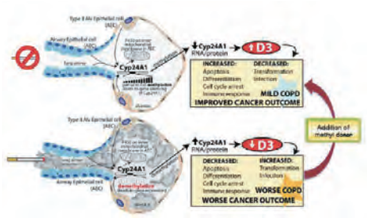
1. Profibrogenic phenotype in caveolin-1 deficiency via differential regulation of STAT-1/3 proteins. Biochem Cell Biol. 2014 Oct;92(5):370-8
2. Upregulation of both heme oxygenase-1 and ATPase inhibitory factor 1 renders tumoricidal activity by synthetic flavonoids via depleting cellular ATP. Bioorg Med Chem Lett. 2014 Oct 15;24(20):4845-9
3. Histone deacetylase 6-mediated selective autophagy regulates COPD-associated cilia dysfunction. J Clin Invest. 2013 Dec 2;123(12):5212-30.
4. Selective Apoptosis in Hepatic stellate Cells Confers Antifibrotic Effect of Phenanthrenes from Dendrobium nobile. Phytother Res (2012)
5. Autophagy proteins regulate innate immune responses by inhibiting the release of mitochondrial DNA mediated by the NALP3 inflammasome. Nat Immunol (2011)
6. Autophagy protein LC3B activates extrinsic apoptosis during cigarette-smoke induced emphysema. Proc Natl Acad Sci USA (2010)

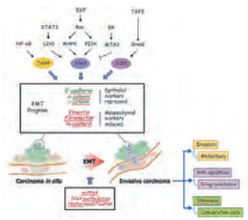
Pharmacology

Lab of Pharmacology and Pharmacokinetics

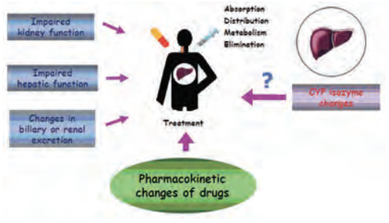
Our lab has been working on the pharmacokinetics of drugs and experimental therapeutics based on molecular mechanisms and pharmacokinetic principles to treat various diseases, especially cancer. Our major research interest is to investigate the regulation of drug metabolizing enzymes and transporters by environmental risk factors and the therapeutic effects by bioactive natural products, to define the molecular mechanism of drug resistance in epithelial-mesenchymal transition (EMT) process, and also to develop new therapeutic strategies using natural products based on the pharmacokinetic and pharmacodynamic study of new drug candidates, drug-drug interaction, animal scale-up in the new drug development.

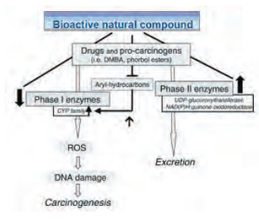
DNA methylation of drug metabolizing enzymes by environment risk factors, relationship between epithelial-mesenchymal transition and drug resistance in cancer models, and its effects on pharmacokinetics drugs





Development of new therapeutic strategies based on the pharmacokinetics/pharmacodynamics using natural products various disease models





Publications

1. Ramnath N, Nadal E, Jeon CK, Sandoval J, Colacino J, Rozek LS, Christensen PJ, Esteller M, David BG, Kim SH. Epigenetic regulation of vitamin D metabolism in human lung adenocarcinoma. J Thorac Oncol 9:473-482 (2014)
2. Chung YS, Choi YJ, Kim SH. Improved dosage form of the combined alendronate and calcitriol (Maxmarvil®) on the absorption of alendronate in Korean postmenopausal women. Arch Pharm Res 36:966-972 (2013)
3. Yang SH, Choi HG, Lim SJ, Lee MG, Kim SH. Effects of morin on the pharmacokinetics of etoposide in 7,12-dimethylbenz[a] anthracene-induced mammary tumors in female Sprague-Dawley rats. Oncol Rep 29:1215-1223 (2013)
4. Kim SH, Chen G, King AN, Jeon CK, Christensen PJ, Zhao L, Simpson RU, Thomas DG, Giordano TJ, Brenner DE, Hollis B, Beer DG, Ramnath N. Chracterization of vitamin D receptor (VDR) in lung adenocarcinoma. Lung Cancer 77:265-271 (2012)
5. Chen G*, Kim SH*, King AN, Zhao L, Simpson RU, Christensen PJ, Wang Z, Thomas DG, Giordano TJ, Lin L, Brenner DE, Beer DG, Ramnath N. CYP24A1 is an independent prognostic marker of survival in patients with lung adenocarcinoma. Clin Cancer Res 17:817-826 (2011)
6. Kim SH, Miller FR, Tait L, Zheng J, Novak RF. Proteomic and phosphoproteomic alterations in benign, premalignant and tumor human breast epithelial cells and xenograph lesions: Biomarkers of progression. Int J Cancer 124:2813-28 (2009)

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Education

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MS Seoul Nat'l Univ. (1991)

BS Seoul Nat'l Univ. (1989)

Professional Experiences & Social Activities

- Professor, College of Pharmacy, Ajou University (2012-present)
- Assistant/Associate Professor, College of Dentistry, Gangneung-Wonju National University (2001-2012)
- Research Fellow, Comprehensive Cancer Center and School of Medicine, University of Michigan, USA (2010-2011)
- Visiting Professor, Wayne State University, USA (2004-2006)
- Lecturer, College of Pharmacy, Seoul National University (1998-2001)
- Research Associate, Seoul National University (1998-2001)
- Registered Pharmacist, Seoul National University Hospital (1991-1994)
- American Association for Cancer Research (AACR) (2003-present)
- American Association of Pharmaceutical Scientists (AAPS) (1997-present)

Clinical Pharmacy

Medication Therapy Management and Outcomes Assessment

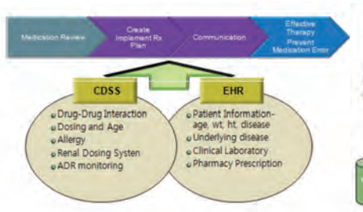
Personalized Medication Therapy Management in Pharmacy Practice is designed to improve collaboration among pharmacists, physicians, and other healthcare professionals; enhance communication between patients and their healthcare team; and optimize medication use for improved patient outcomes. The medication therapy management (MTM) services empower patients to take an active role in managing their medications and to optimize medication use in accordance with evidence based guidelines.

- Outcomes evaluation of medication therapy management provided by clinical pharmacists
- Design and evaluation of pharmaceutical care services in hospitals (e.g. Anticoagulant Services, Nephrology Services)

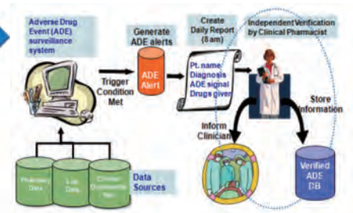
Evidence-Based Drug Therapy and Pharmaceutical Care with Clinical Decision Support System

- Chemotherapy, Transplant, Athma, Diabetes, Parkinson's disease
- Appropriate Use of Antibiotics
- Personalized medicine based on pharmacogenomic data
- Pediatrics drug use, Geriatric drug use
- Drug dosing in Renal disease
- ADE pharmacovigilance and prevention

CDSS and Electronic Health Record in MTM



Pharmacovigilance and ADE Prevention



Publications

1. Park IW, Sheen SS, Yoon D, Lee SH, Shin GT, Kim H, Park RW. Onset time of hyperkalaemia after angiotensin receptor blocker initiation: when should we start serum potassium monitoring? J Clin Pharm Ther.39(1):61-8 (2014).
2. Kang KK, Ahn GJ, Sung JH, Kim SH, Kim H, Lee SH. Ejaculatory Responses are Inhibited by a New Chemical Entity, DA-8031, in Preclinical Rodent Models of Ejaculation. Urology 920:13-18(2013)
3. Park, I.H. Sheen S.S., Lim, H-S., Yoon, D., Park, M.Y., Lee, S.H., Shin, G-T., Kim, H.S., Park, R.W.. Comparison of hyperkalemic risk among hospitalized patients with different angiotensin receptor blockers: a retrospective cohort study using a clinical research database. Am J Cardiovasc Drugs 12(4):255-262(2012).
4. Kwon, H., Lee, S.H., Kim, S-E, Lee, J-H, Jee, Y-K, Kang, H-R, Park, B-J, Park, J-W, Hong, C-S. Spontaneously Reported Hepatic Adverse Drug Events in Korea: multicenter study. J Kor Med Sci. 27(3):268-273(2012).
5. Park, M.Y., Yoon, D., Lee, K.Y., Kang, S.Y., Park, I.Y., Lee, S.H., Kim, W., Kam, H.J., Lee, Y.H., Kim, J.H., and Park, R.W. A novel algorithm for detection of adverse drug reaction signals using a hospital electronic medical record database. Pharmacoepi Drug Safety 20(6):598-607 (2011).

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Education

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BS Seoul Nat'l Univ.(1984)

Professional Experiences & Social Activities

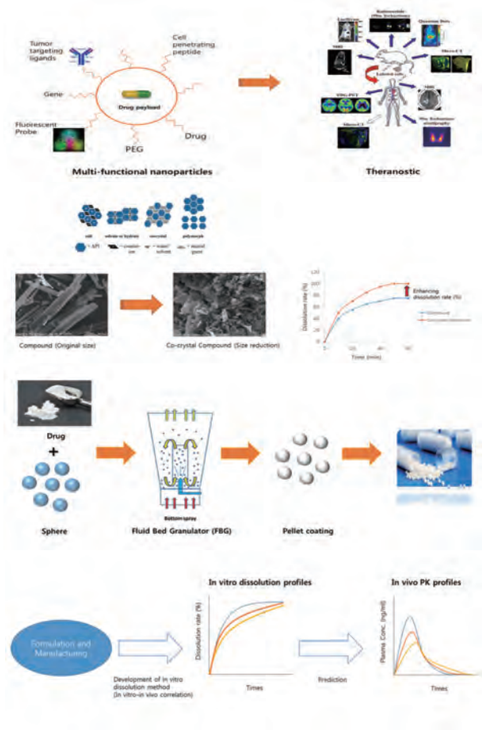
- Professor, Ajou Univ. (2010 -present)
- Professor, Sookmyung Women's Univ. (1996-2010)
- Director of Clinical Pharmacy Practice Education, Ajou University Hospital (2014.2-present)
- Board member of Korean Accreditation Council for Pharmacy Education (KACPE)(2012- present)
- Committee member of Pharmacy Experience, Korean Association of Pharmacy Education (2011-present)
- Education Committee Chair, Korean College of Clinical Pharmacy (2010-present)
- Associate Editor, Archives of Pharmacal Research (2008-present)
- Committee member of Central Pharmaceutical Affairs Council, KFDA (1998-present)
- Consultant Professor, Dept. of Pharmacy, Seoul St. Mary Hospital, Catholic University (2004-2007)
- Consultant Professor, Dept. of Pharmacy, Samsung Medical Center (1996-2004)
- Research Fellow, College of Pharmacy, Univ. of Iowa, USA (1995-1996)

Industrial Pharmacy

Drug Delivery Lab.

Our research in the laboratory has major activity to evaluate the physicochemical characteristics of the drug through the preformulation studies in the new drug development stage (NCE, protein, monoclonal antibody, etc.) and to design optimal formulation in order to maximize the therapeutic efficiency of the drug.

Our Laboratory is focusing on researches such as solubilisation of poorly soluble drug (nanococrystal, solid dispersion, nanoemulsion), oral absorption improvement, nanoparticle & nanohybride, controlled released delivery, peptide & protein delivery using innovative drug delivery technologies.



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Education

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Professional Experiences & Social Activities

- Senior Manager, Research Institute, Yuhan Corporation. (1991-2007)
- Executive Managing Director, Research Center, Samil Pharmaceutics. LTD (2007-2010)
- Executive Managing Director, Pharmaceutical Research Inst., CJ Jeiljedang. (2010-2014)
- Vice President., Korea Drug Research Association of Natural Medicines Research (2011-present)
- Assistant administrator, The Pharmaceutical Society of Korea (PSK) (2008-present)
- Editorial board, The Korean Society of Pharmaceutical Science and Technology (2008-present)
- Member of Health Care R & D Strategic Planning Advisory Committee (2012-Present)

Publications

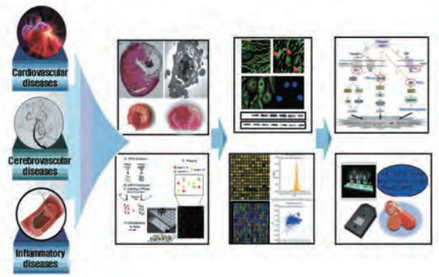
1. In vitro and in vivo evaluation of a self-microemulsifying drug delivery system for the poorly soluble drug fenofibrate, Archives of Pharmacal Research, 37, 193-203 (2014)
2. Development of direct compression entecavir 0.5 mg-loaded tablet exhibiting enhanced content uniformity, Powder Technology, 267, 302–308 (2014)
3. Comparison of a solid SMEDDS and solid dispersion for enhancedstability and bioavailability of clopidogrel napadisilate, Carbohydrate Polymers, 114, 365-374 (2014)
4. Docetaxel-loaded Thermosensitive and Bioadhesive Nanomicelles as a Rectal Drug Delivery System for Enhanced Chemotherapeutic Effect. Pharmaceutical Research, V.30, 1860-1870 (2013)
5. Physicochemical characterization and in vivo evaluation of flurbiprofen-loaded solid dispersion without crystalline change. Drug Delivery, V.18, No.1, 46–53, 2011163–168 (2013)

Pathophysiology

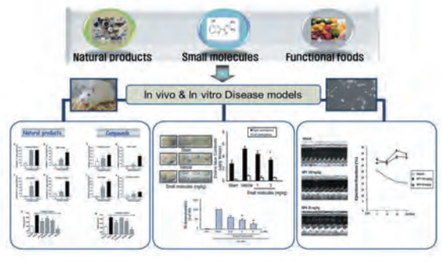
Lab of Pathophysiology

Cardiovascular and cerebrovascular disease, which is induced by blood clot or inflammation, are the leading cause of deaths in the world and lead to various ischemic disease such as myocardial infarction, heart failure and stroke. Despite of the substantial efforts for the development of therapeutics, few agents have been reached clinical trial. Therefore, the study in this lab has been focused on the development of novel therapeutics from small molecules, natural products and functional foods for cardiovascular, cerebrovascular diseases. We are using both in vitro cell culture systems (cardiomyoctes, neurons, vascular cells) for molecular signaling study and in vivo animal disease models (ischemic heart disease, artherosclerosis, stroke) for functional validation study.

Discovery of novel therapeutic targets for cardiovascular, cerebrovascular and inflammatory diseases



Development of therapeutics from natural product, small molecules, and functional foods through investigation for cardiovascular diseases and various inflammatory diseases



Publications

Kim TH, Lee KM, Hong ND, Jung YS, Anti-platelet and anti-thrombotic effect of a traditional herbal medicine Kyung-Ok-Ko, J Ethnopharmacol, 178: 172-179 (2016)

Yu HY, Ahn JH, Park SW, Jung YS. Preventive effect of yuzu and hesperidin on left ventricular remodeling and dysfunction in rat permanent left anterior descending coronary artery occlusion model. Plos One. 10(1):e110596 (2015)

Hyun SW, Jung YS. Hypoxia induces FoxO3a-mediated dysfunction of blood-brain barrier. Biochem Biophys Res. Commun. 8;450(4):1638-42 (2014)

Lee BK, Yoon JS, Lee MG, Jung YS. Protein kinase C-β mediates neuronal activation of Na+/H+ exchanger-1 during glutamate excitotoxicity. Cell Signal. 26(4):697-704 (2014)

Kim YA, Kim MY, Yu HY, Mishra SK, Lee JH, Choi KS, Kim JH, Xiang YK, Jung YS. Gadd45β is transcriptionally activated by p53 via p38α-mediated phosphorylation during myocardial ischemic injury. J Mol Med. 91(11):1303-1313 (2013)

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Professional Experiences & Social Activities

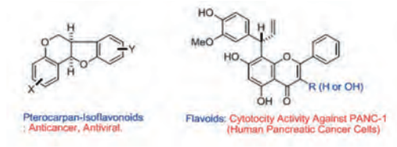
- Professor, College of Pharmacy, Ajou University (2011-present)
- Professor, Associate, Assistant professor, Research fellow, Ajou University School of Medicine (1996-2011)
- Research Scientist, KRICT, Korea (1988-1996)
- Visiting professor, University of Illinois, Urbana-Champaign, USA (2006-2007)
- Committee chairs, Pharmaceutical Society of Korea (2010. 10-present)
- Committee Chairs, Korean Society of Applied Pharmacology (2006. 10-present)
- Regular member, American Heart Association (2006. 05-present)

Pharmaceutical Manufacturing Chemistry

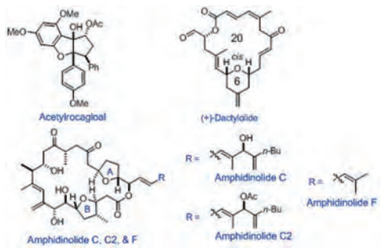
Lab of Pharmaceutical Organic Chemistry

Research in the our group focuses on development of lead compounds for new drug discovery based in the total synthesis of biologically active natural products. We will synthesize biologically interesting natural products and screen small molecule libraries to identify more potent analogues. In addition, we design and develop unique and efficient synthetic strategies that will allow rapid access to molecular complexity and structural diversity. Compounds employed in these studies could also advance the development of novel therapeutics for the treatment of human diseases.

Synthesis of Biologically Active Natural Products as New Drug Candidates



Synthesis of Structurally Interesting Natural Products



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Education

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BS Seoul Nat'l Univ. (1998)

Professional Experiences & Social Activities

- Associate professor, college of pharmacy, Ajou Univ. (2015-present)
- Assistant Professor, College of Pharmacy, Ajou Univ. (2011-2015)
- Research Associate, Department of Chemistry, Duke Univ., USA (2006-2011)
- Senior Scientist, Research Institute of Pharmaceutical Science, Seoul Nat'l Univ. (2005-2006)

Publications

1. Hongjun Jang, Iljin Shin, Dongjoo Lee, Hyoungsu Kim,* Deukjoon Kim, Stereoselective Substrate-Controlled Asymmetric Syntheses of both 2,5-cis- and 2,5-transTetrahydrofuranoid Oxylipids: Stereodivergent Intramolecular Amide Enolate Alkylation, Angew. Chem., Int. Ed. (2016).
2. Iljin Shin, Dongjoo Lee,* Hyoungsu Kim,* Substrate-Controlled Asymmetric Total Synthesis and Structure Revision of (–)-Bisezakyne A, Org. Lett. (2016)
3. Kiyoun Lee, Hyoungsu Kim* and Jiyong Hong*, HYPERLINK N-Heterocyclic Carbene Catalyzed Oxidative Macrolactonization: Total Synthesis of (+)-Dactylolide. Angew. Chem., Int. Ed. (2012)
4. Hyoungsu Kim, Yongho Park, Jiyong Hong*, Stereoselective Synthesis of 2,6-cis-Tetrahydropytans through a Tandem Allylic Oxidation/Oxa-Michael Reaction promoted by the gem-Disubstituent Effect: Synthesis of (+)-Neopeltolide Macrolactone. Angew. Chem., Int. Ed. (2009)
5. Hyoungsu Kim, Joseph B. Baker, Su-Ui Lee, Yongho Park, Kyle L. Bolduc, Hyung-Bae Park, Marina G. Dickens, DongSup Lee, Yongchul Kim, Seong Hwan Kim* and Jiyong Hong*, Stereoselective Synthesis and Osteogenic Activity of Subglutinols A and B, J. Am. Chem. Soc. (2009)

Pharmaceutical Biochemistry

Laboratory for Tracing of Gene Function

Function Hunting of Med28

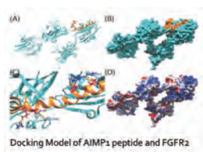
Med28 was recently identified as a mediator of transcription complex, which might be involved in tumorigenesis including breast cancer, prostate cancer. However, its molecular mechanism is not understood. So we isolated binding candidates of med28, and are trying to unveil the molecular mechanism. Many candidates are shown to be associated with cancer progression such as DNA repair, chromosome segregation, suppressor of tumor suppressor, cell-cell signaling. Thus we are studying about the novel regulatory mechanism in cancer onset and progression.

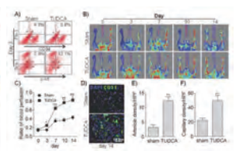
p43/AIMP1 & Stem Cell

p43/AIMP1, a cofactor of aminoacyl-tRNA synthetase complex, has been known as a multi-functional protein, which takes part in immune cell activation, angiogenesis, blood glucose regulation, and wound healing as a cytokine. In addition, p43/AIMP1 regulates TGFβ signaling and autoimmune disease in cytoplasm. Interestingly, whole body knock-out of p43/AIMP1 in mouse shows multiple phenotypes including defect of uterus development, petite, ataxia and so on...Thus we are studying the role of AIMP1 in stem cell including stem cell mobilization from bone marrow, self-renewal, and differentiation of bone marrow-derived mesenchymal stem cell or hematopoietic stem cell. Furthermore, we are studying if the p43/AIMP1 would clinically applicable.

Development of Stem Cell Mobilizer

Many clinicians are trying to treat diseases using stem cell. In some case, stem cells should be isolated from peripheral blood and manipulated in vitro to enrich stem cells. Big problem of in vitro manipulation of stem cell is genetic instability. If the stem cell mobilizer would be available, there could be a large amount of stem cell in peripheral blood. if so, we could minimize the genetic instability in vitro. Thus we are screening chemicals to induce stem cell mobilization.





Publications

1. Functional regulation of adipose-derived stem cells by PDGF-D. Stem Cells (2014)
2. The role of tauroursodeoxhycholic Acid on Adipogenesis of Human Adipose-derived Stem Cells by modulation of ER Stress. Biomaterials (2014)
3. Herpesvirus-Associated Ubiquitin-Specific Protease (HAUSP) modulates peroxisome proliferator-activated receptor gamma (PPARγ) stability through its deubiquitinating activity. Journal of Biological Chemistry (2013)
4. AIMP1 Induces Proliferation of Human Bone Marrow derived Mesenchymal Stem Cells by Accumulation of β-catenin via FGFR2-mediated Activation of Akt. Stem Cells and Development (2013)
5. Tauroursodeoxycholate (TUDCA) inhibits neointimal hyperplasia by suppression of ERK via PKCa-mediated MKP-1 induction. Cardiovascular Research (2012)

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Education

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MS Sung Kyun Kwan Univ. (1999)
BS Sung Kyun Kwan Univ. (1997)

Professional Experiences & Social Activities

- Associate Professor, College of Pharmacy, Ajou Univ. (2014-present)
- Assistant/Associate Professor, Dept. of Biomedical Science, CHA Univ. (2009-2014)
- Adjunctive Assistant Professor, Graduate School of Convergence Science and Technology, Seoul Nat'l Univ. (2009-2012)
- Clinical Assistant Professor, Clinical Research Institute, Seoul Nat'l Univ. Hospital. (2007-2009)
- Postdoctoral Associate, College of Pharmacy, Seoul Nat'l Univ. (2005-2007)

Pharmaceutical Analysis

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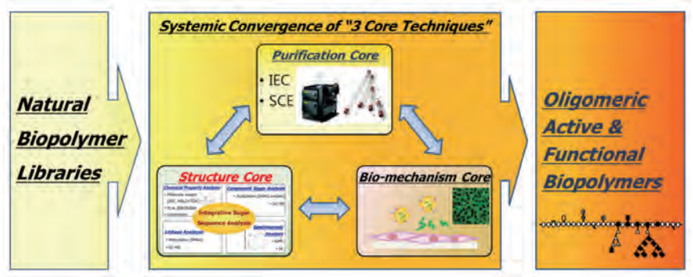
Professional Experiences & Social Activities

- Associate Professor, College of Pharmacy, Ajou Univ. (2015-present)
- Assistance Professor, College of Pharmacy, Ajou Univ. (2011-2015)
- Post-doctoral Fellow, Brain Science Institute/Center for Neuro-Medicine, Korea Institute of Science & Technology (2011)
- Post-doctoral Fellow, Department of Neurology and Ophthalmology, Michigan State Univ., USA (2007-2011)
- Instructor, College of Pharmacy, Dongduk Women's Univ. (2007)
- Post-doctoral Fellow, Research Institute of Pharmaceutical Sciences, Seoul Nat'l Univ. (2007)

Lab of Pharmaceutical Analysis & Natural-Drug Discovery

Natural medicines, clinically-proven medicinal resources through long history, have been traditionally used in many folk remedies for a long time. Research in our lab is focused on discovery of bioactive compounds from small to macromolecules in natural medicines like Panax ginseng. Most of all, we are interested in bioactive natural polymers including polysaccharides, oligosaccharides, and glycoproteins. Ultimate goal of this project is to elicit oligomeric functional biopolymers and understand their mechanism of action. And also, we are intensively studying macro/small molecular metabolite of polysaccharides by intestinal/colonic microflora including the structure, mechanism of metabolism, and beneficial effects of metabolites and by-products. To achieve this goal, we established convergence system consisted of three core techniques; purification, structure, and bio-mechanism core. Our research will provide the insight into the new value of natural biopolymers for improving human health.

Discovery of bioactive biopolymers from natural resources.



Publications

1. Baek SH, Shin B, Kim NJ, Chang SY, Park JH, Protective effect of ginsenosides Rk3 and Rh4 on cisplatin-induced acute kidney injury in vitro and in vivo. J Ginseng Res. In press (2016)
2. Kim SE, Park HJ, Jeong HK, Kim MJ, Kim M, Bae ON, Baek SH*. Autophagy sustains the survival of human pancreatic cancer PANC-1 cells under extreme nutrient deprivation conditions. *Biochem Biophys Res Commun*. 463(3): 205-210. (2015)
3. Baek SH, Jang H, Kim H, Synthesis and Biological Evaluation of Acetylcholinesterase Inhibitor Macakurzin C and Its Derivatives. *Synlett* 26:1131-1134. (2015)
4. Baek SH, Noh AR, Kim KA, Akram M, Shin YJ, Kim ES, Yu SW, Majid A, and Bae ON, Modulation of mitochondrial function and autophagy mediates carnosine neuroprotection against ischemic brain damage. *Stroke* 45(8):2438-2443. (2014)
5. Baek SH, Lee JG, Park SY, Bae ON, Kim DH, and Park JH, Pectic Polysaccharides from Panax ginseng as the Antirotavirus Principals in Ginseng. *Biomacromolecules*, 11(8):2044-2052. (2010)

Physical Pharmacy

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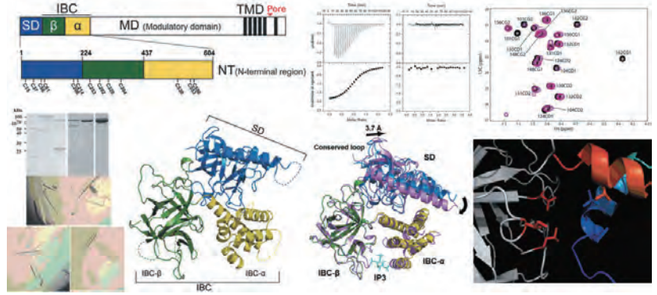
Professional Experiences & Social Activities

- Associate Professor, College of Pharmacy, Ajou Univ. (2015-present)
- Assistant Professor, College of Pharmacy, Ajou Univ. (2011-2015)
- Postdoctoral research fellow, Ontario Cancer Institute, Univ. of Toronto, Canada (2009-2011)
- Postdoctoral Associate, Research Institute of Pharmaceutical Sciences, Seoul Nat'l Univ. (2008-2009)

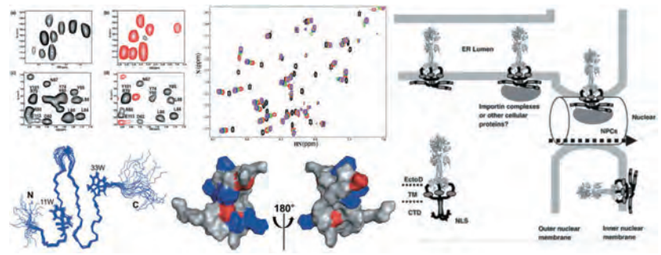
Lab of Physical Pharmacy and Structural Biology

Our lab is interested in the structures of biological macromolecules (protein/peptide) in order to elucidate structure-function relationships. Our major tools are high-resolution NMR techniques and X-ray crystallography. The target proteins of our research are as follows.

Structural insights into the regulatory mechanism of Ca2+-release channel (inositol 1,4,5-trisphosphate receptor, IP3R)



Structure-functional studies of the disease-related viral membrane proteins (EBV LMP2A and EBV gp110)



Publications

1. Lee, S.Y., Yoo, H.S., Choi, H.S., Chung, K.Y., and Seo, M.D.. Structural and dynamic insights into the subtype-specific IP3-binding mechanism of the IP3 receptor. Biochem. J. In press (2016)
2. Lee, K.Y., Choi, H.S., Cho, H.S., Chung, K.Y., Lee, B.J., Maeng, H.J., and Seo, M.D.. Quercetin directly interacts with vitamin D receptor (VDR): Structural implication of VDR activation by quercetin. Biomol. Ther. 24(2):191-198 (2016)
3. Kim, H.N., Seok, S.H., Chung, K.Y., Son, W.S., and Seo, M.D.. Expression, purification and structural characterization of the type 1-specific ATP binding site of IP3 receptor (IP3R1-ATPA). Process Biochemistry 50:1600-1606 (2015)
4. Li, C.*, Enomoto, M.*, Rossi, A.M.*, Seo, M.D.*, Rahman, T., Stathopulos, P.B., Taylor, C.W., Ikura, M., and Ames, J.B.. CaBP1, a neuronal Ca2+ sensor protein, inhibits inositol trisphosphate receptors by clamping intersubunit interactions. Proc. Natl. Acad. Sci. USA 110(21):8507-8512 (2013) (* : equal contribution)
5. Seo, M.D.*, Velamakanni, S.*, Ishiyama, N., Stathopulos, P.B., Rossi, A.M., Khan, S.A., Dale, P., Li, C., Ames, J.B., Ikura, M., and Taylor, C.W.. Structural and functional conservation of key domains in InsP3 and ryanodine receptors. Nature 483:108-112 (2012)

Nano-Pharmacy

Lab. of NanoBio Materials Chemistry

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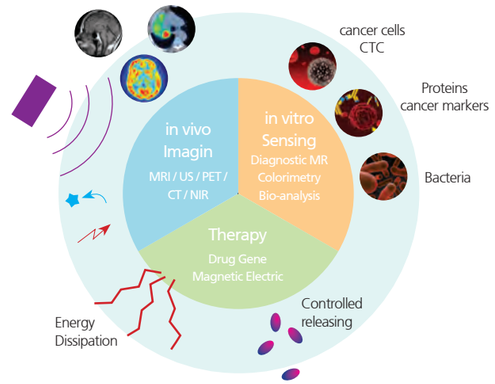
Delivering therapeutic compound (drug or gene) to the target site is a major problem in treatment of many diseases. A conventional application of drug or gene is characterized by limited effectiveness, poor biodistribution, and lack of selectivity. This modern form of therapy is especially important when there is a discrepancy between a dose and concentration of a drug and its therapeutic results or toxic effects. We are focused in developing of novel delivery carrier systems, those are particularly composed nano-meter size and modified with various bio-originated materials in order to increase bio-compatibility. Our nano-carrier systems with optimized physicochemical and biological properties are taken up by specific cells or tissues more easily than other larger materials, so they can be successfully used as delivery tools for current available bioactive compounds. In addition, one of the major advantages of our nanobiomaterials is their ability to simultaneously perform multiple functions. A single particle can be used to diagnose a disease and to image cells, which is named 'Theranostics' nanoparticle. To date, we are interested in the organic, inorganic and theranostic agents developed containe polymer particle, magnetic nanoparticles and fluorescent nanomaterials with relative low toxicology events. Furthermore, we will establish nano platform for non-toxic theranostics materials that could be readily extended to disease treatment as a clinical applications.



Relaxivity control of magnetic nanoclusters for efficient magnetic relaxation switching assay

Ultrasound-mediated gene and drug delivery using a microbubble-liposome particle system

Educatiotn

Ph.D. Seoul Nat'l Univ. (2006)

MS Seoul Nat'l Univ. (2001)

BS Chungnam Nat'l Univ. (1999)

Professional Experiences & Social Activities

- Associate Professor, College of Pharmacy, Ajou Univ. (2015-present)
- Associate Professor, Dept. of Applied Biosciences, CHA Univ. (2013 ~ 2015)
- Assistant Professor, Dept. of Applied Biosciences, CHA Univ. (2009 ~ 2013)
- Postdoctoral Research Fellow, Radiology, MGH, Harvard Medical School (2007 ~ 2009)

Publications

1. Y.I. Yoon, K.Y. Ju, H.S. Cho, K.N. Yu, G.J. Ahn, S.H. Lee, M.H. Cho, H.J. Lee, J.K. Lee, T.-J. Yoon* "Enhancement of cancer specific delivery using ultrasound active bio-originated particles" Chem. Commun., 2015, 51, 9455-9458.
2. Y.I. Yoon, Y.S. Kwon, H.S. Cho, S.H. Heo, K. S. Park, S. G. Park, S.-H. Lee, S. I. Hwang, Y. I. Kim, H. W. Jae, G. J. Ahn, Y. S. Cho, H. Lee, H. J. Lee, T.-J. Yoon*, "Ultrasound-mediated gene and drug delivery using a microbuble-liposome particle system" Theranostics, 2014, 4, 1133-1144.
3. J. Cha, Y Kwon, T.-J. Yoon*, J.K. Lee*, "Relaxivity control of magnetic nanoclusters for eifficient magnetic relaxation switching assay" Chem. Commun., 2013, 49, 457-459 Featured in cover image.
4. T.-J. Yoon, H. Lee, H. Shao, SA Hilderbrand, R. Weissleder, "Multicore assemblies potentiate magnetic properties of biomagnetic nanoparticles" Adv. Mater., 2011, 23, 4793-4797.
5. T.-J. Yoon, H. Lee, H Shao, R. Weissleder, "Highly magnetic core-shell nanoparticles with a unique magnetization mechanism" Angew. Chem. Int. Ed., 2011, 50, 4663-4666.
6. H. Lee*, T.-J. Yoon*, J. Figueiredo, F. K. Swirski, R. Weissleder, "Rapid detection and profiling of cancer cells in fine needle aspirates" Proc. Natl. Acad. Sci. USA, 2009, 106, 12459-12464.
7. H. Lee*, T.-J. Yoon*, R. Weissleder, "Ultrasensitive detection of bacteria using core-shell nanoparticles and a NMR-filter system" Angew. Chem. Int. Ed., 2009, 48, 5657-5660.

Pharmaceutical Microbiology

Lab of Microbiology

Associate Professor

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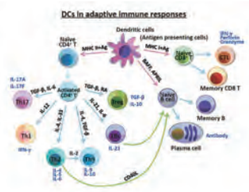
General interests: "Mucosal Immunology and Host Defense"

We are interested in the immune regulation mechanism observed in the mucosal tissues which is called mucosal immunology. Mucosal tissues including gastrointestinal tract, respiratory tract and urogenital tract were exposed to external environment, colonized commensal microbes and serve as an infection and elegant immune system to regulate immunity via immune tolerance to commensal microbes versus to induce strong protective immunity against invading pathogen. Therefore, mucosal immune system is distinct with sterile systemic immune system and developed their unique system. To reveal the puzzling immunological network in these tissues, We are focused on the study for the function of antigen presenting cell group, especially dendritic cell (DCs). In addition, we also have interests about the cross-talk between sterile systemic and mucosal system under disease condition, dendritic cell conditioning under specialized microenvironments, interaction between commensal microbes and immune system and infectious disease including development of vaccines.

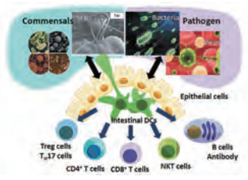
Immune Regulation via Mucosal Dendritic Cells

- Immune tolerance to oral or circular antigen via intestinal DCs
- Shaping of adaptive immune responses via mucosal DCs
- Direct induction mechanism of immunoglobulin class-switching by DCs
- Function of C-Type lectin receptors on DC



Cross-talk between mucosal immune system and microbes

- Immune tolerance mechanism by commensal microbes
- Immune shaping by commensal microbes
- Host defense to microbial infection and vaccines



Therapeutic Strategy to Immunologic Disorder

- Underlying mechanism and therapeutic strategy to inflammatory bowel disease
- Underlying mechanism and therapeutic strategy to food allergy
- Vaccine development to infectious diseases and adjuvants Publications

Education

Ph.D. Seoul Nat'l Univ. (2004)

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Professional Experiences & Social Activities

- Associate Professor, College of Pharmacy, Ajou Univ. (2016-present)
- Assistant Professor, College of Pharmacy, Ajou Univ. (2012-2016)
- Research Scientist, International Vaccine Institute, Korea (2010-2012)
- Post-doctoral fellow, Harvard Medical School, USA (2009-2010)
- Research fellow, Harvard Medical School, USA (2008-2009)
- Post-doctoral fellow, International Vaccine Institute, Korea (2004-2008)
- Research Scientist, Seoul Nat'l Univ. (2004)

Publications

1. Compensatory roles of CD8+ T cells and plasmacytoid dendritic cells in gut immune regulation for reduced function of CD4+ Tregs. Oncotarget (2016)
2. Pros and cons of VP1-specific maternal IgG for the protection of Enterovirus 71 infection. Vaccine (2015)
3. Elevated endoplasmic reticulum stress reinforced immunosuppression in the tumor microenvironment via myeloid-derived suppressor cells. Oncotarget (2014)
4. Autophagy controls an intrinsic host defense to bacteria by promoting epithelial cell survival: a murine model. PLoS One (2013)
5. Intestinal dendritic cells surveying circulatory antigens prior to induction of CD8+ T cells. Immunity (2013)

Clinical Pharmacy

Pharmaceutical Care and Outcomes Research

Pharmaceutical care and outcomes research team seeks to provide evidence about benefits, risks and results of pharmaceutical care practices and interventions: key areas of interest are oncology, hematologic disorders and infectious diseases. It includes not only studying the end results of the structure and process of the pharmaceutical care services on the health and well-being of patients, but also identifying variations in pharmacotherapy and associated health outcomes. By using population-level health databases or other available databases (hospital records, pharmacy claims databases, and genotype/phenotype databases, etc), we generate important clinical questions from clinical observation with a testable hypothesis, and perform outcomes analysis. Results of clinical outcomes research can guide health care decision makers in selecting the most effective treatment and procedural strategy or to improve upon current treatments and medical interventions.

Research Interests

- Prevention and treatment of thromboembolism in specialized patient population
- Drug therapy management for infectious disorders and clinical/economic outcomes
- Pharmaceutical care cost, utilization and outcome in patients with cancer

Teaching Interests

- Pharmacotherapy of cancer, infectious disease and gastrointestinal disorder
- Nonprescription medications and self-care
- Drug information on online/electronic references and databases

Publications

1. Lee KE, Kim JH, Chung JE, Lee, GY, Cho, YJ, Chang BC, Gwak HS. Impact of inflammatory gene polymorphisms on mechanical heart valve reoperation. SpringerPlus. 2016 Jun 30;5(1):937
2. Chung JE, Chang BC, Lee KE, Kim JH, Gwak HS. Effects of NAD (P) H quinone oxidoreductase 1 polymorphisms on stable warfarin doses in Korean patients with mechanical cardiac valves. Eur J Clin Pharmacol. 2015 Oct;71(10):1229-1236
3. Park JH, Kim JY, Lee BK, Kim JH, Gwak HS. Comparative Effectiveness between Dipeptidylpeptidase-4 Inhibitors and Sulfonylureas in Combination with Metformin in Type 2 Diabetes Mellitus Patients. Korean J Clin Pharm. 2015 Jun;25(2):74-79

Assistant Professor

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Education

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BS Ewha Womans Univ. (1994)

Professional Experiences & Social Activities

- Assistant professor, College of Pharmacy, Ajou Univ. (2016-present)
- Professor of clinical pharmacy, College of Pharmacy, Ewha Womans Univ. (2014-2016)
- Principal Engineer, Smart Healthcare Solution Part, Samsung SDS CO., LTD (2010-2014)
- Clinical Pharmacist, Kaiser Permanente, USA (2007-2010)

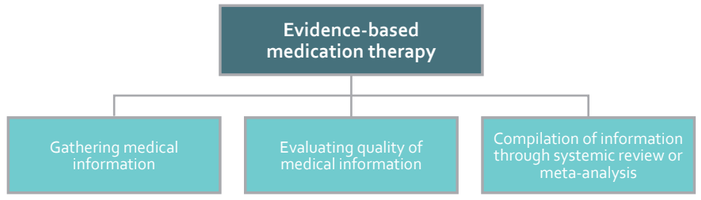
Clinical Pharmacy

Evidence-based, Patient-centered Medication Therapy

Advanced clinical pharmacy education prepares students to retrieve, evaluate, and manage professional information in literature; use clinical data to optimize therapeutic drug regimens; identify, assess, and solve medication related problems, and apply knowledge of drugs and drug therapy to solve the problems and provide clinical judgment as to the continuing effectiveness of individualized therapeutic plans and intended therapeutic outcomes; educate, communicate, and collaborate with patients and other health professionals; design, implement, monitor, evaluate, and modify or recommend modifications in drug therapy to insure effective, safe, and economical patient care.

Research Interests

- Clinical pharmacotherapy of ischemic cardiovascular and renal diseases
- Advanced pharmacotherapy in adult hematology and oncology
- Development and application of clinical decision support system
- Disease state management (diabetes, hyperlipidemia, hypertension, and anticoagulation)
- Drug-induced adverse effects and clinical application of evidence-based medication therapy
- Medication use evaluation (therapeutic duplication; drug-disease contraindication; adverse drug interactions; drug-allergy interactions; duration of treatment; clinical abuse/misuse; high use, high risk, high cost, problem-prone medications and processes)



Publications

1. Shin S, Kim H. The effect of sitagliptin on cardiovascular risk profile in Korean patients with type 2 diabetes mellitus: a retrospective cohort study. Ther Clin Risk Manag. 2016;12:435-44.
2. Shin S, Harthan EF. Safety and efficacy of the use of institutional unfractionated heparin protocols for therapeutic anticoagulation in obese patients: a retrospective chart review. Blood Coagul Fibrinolysis. 2015;26(6):655-60.
3. Shin S. Evaluation of costs accrued through inadvertent continuation of hospital-initiated proton pump inhibitor therapy for stress ulcer prophylaxis beyond hospital discharge: a retrospective chart review. Ther Clin Risk Manag. 2015;11:649-57.
4. Shin S, Lee S. Niacin as a drug repositioning candidate for hyperphosphatemia management in dialysis patients. Ther Clin Risk Manag. 2014;10:875-83.
5. Shin S. Lee S. Evaluation of pharmacy students' attitudes toward pharmaceutical care and career choices following interdisciplinary inpatient clerkships. Kor J Clin Pharm 2014;24(2):80-89.

Assistant Professor

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Education

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Professional Experiences & Social Activities

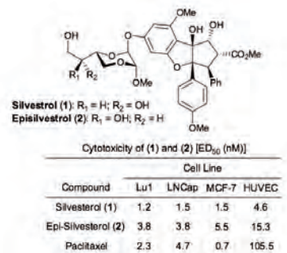
- Assistant Professor, College of Pharmacy, Ajou Univ. (2013-present)
- Adjunct Clinical Instructor, College of Pharmacy, Southern Illinois Univ. Edwardsville, USA (2012-2013)
- Pharmacy Practice Resident, OSF Saint Francis Medical Center, USA (2012-2013)
- Research Fellowships and Internships, Purdue Univ., USA (2007-2011)
- Intern Pharmacist, CVS/Pharmacy, USA (2009)

Medicinal Chemistry

Lab of Medicinal Chemistry

Our laboratory have a program directed towards the creative chemical synthesis of complex or biologically active natural products and the development of powerful synthetic transformations, which would be expected not only for the intellectual and experimental development of synthetic organic chemistry, but also for the discovery of novel biological probes and therapeutics.

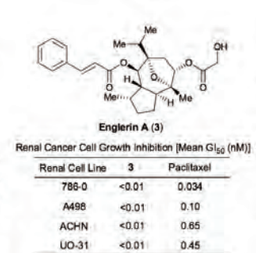
Goal of our laboratory is to (A) develop a concise and efficient enantioselective total syntheses of the potent novel anti-tumor natural products, to (B) define the molecular site(s) responsible for biological profile of the target natural products, and to (C) prepare their synthetic analogues in sufficient quantities that will be evaluated for anti-cancer activity against a wide panel of human cancer cell lines. A unified strategy to prepare structurally related analogues will aid in the elucidation of the key structure-activity profiles leading to potent anti-cancer activity, and serve as a tool for the discovery of more potent anti-cancer therapeutics.



Silvestrol (1): R_1 = H; R_2 = OH
Episilvestrol (2): R_1 = OH; R_2 = H

Cytotoxicity of (1) and (2) [ED_{50} (nM)]

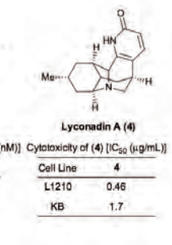
Compound	Cell Line			
	Lu1	LNCap	MCF-7	HUVEC
Silvestrol (1)	1.2	1.5	1.5	4.6
Epi-Silvestrol (2)	3.8	3.8	5.5	15.3
Paclitaxel	2.3	4.7	0.7	105.5
Camptothecin	28.7	28.7	28.7	258.6



Englerin A (3)

Renal Cancer Cell Growth Inhibition [Mean GI_{50} (nM)]

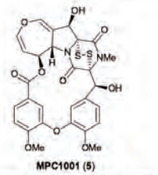
Renal Cell Line	3	Paclitaxel
786-0	<0.01	0.034
A498	<0.01	0.10
ACHN	<0.01	0.65
UO-31	<0.01	0.45



Lyconadin A (4)

Cytotoxicity of (4) [IC_{50} (μg/mL)]

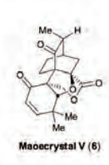
Cell Line	4
L1210	0.46
KB	1.7



MPC1001 (5)

Antiproliferative Activity of (5) [IC_{50} (nM)]

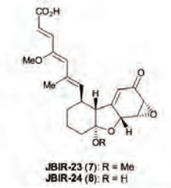
	DU145
MPC1001 (5)	9.3
Adriamycin	20
Mitomycin C	25
Etoposide	400



Maoecrystal V (6)

Cytotoxicity of (6) [IC_{50} (μg/mL)]

	Cell Line			
	K562	A549	BGC-823	HeLa
6	$6.43X10^4$	$2.63X10^5$	$1.47X10^4$	0.02
cis-Platin	0.38	1.81	0.25	0.99



JBIR-23 (7): R = Me
JBIR-24 (8): R = H

Cytotoxicity of (7) and (8) [IC_{50} (μM)]

MPM Cell Line	7	8
ACC-MESO-1	25	190
MSTO-211H	50	<200
NCI-H290	10	75
NCI-H2052	20	150

Publications

1. A Concise Total Synthesis of 2-epi-(-)-Pachastrissamine via a Three-Component Tandem Cross-Metathesis/ Intramolecular SN2' Substitution/Cross-Metathesis Sequence. Synlett (2012)
2. A Stereoselective Total Synthesis of (±)-Tormesol. Tetrahedron (2011)
3. A Cascade Resulting in the Reductive Ethynylation of Aldehydes: Dissection of its Components. J Am Chem Soc (2010)
4. Total Synthesis of (+)-Tedanolide. J Am Chem Soc (2007)
5. SmI2-Promoted Oxidation of Aldehydes in the Presence of Electron-Rich Heteroatoms. Org. Lett. (2002)

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Education

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- Assistant Professor, College of Pharmacy, Ajou Univ. (2013-present)
- Assistant Professor, College of Pharmacy, Dankook Univ. (2011-2013)
- Research Fellow, Memorial Sloan-Kettering Cancer Center, USA (2007-2010)

Preventive Pharmacy

Lab of Integrative Cancer Signaling & Metabolism Network

The international cancer genome project has provided comprehensive repertoire of novel oncogenic mutations at the genomic, epigenomic and transcriptomic levels in many tumor types. In the post-cancer genomics era, cancer research is now focused on defining the functional roles of these numerous novel oncogenes and tumor suppressor genes as well as exploiting them for targeted cancer therapy. However, given that these oncogenic mutations are numerous and even heterogeneous in many tumors, targeting each individual gene should not be an ideal or promising therapeutic strategy. Thus, understanding the most critical convergent downstream of these diverse oncogenic signaling should be indispensable to warrant successful cancer therapy. Recently, a growing body of evidence has convincingly shown that diverse oncogenic signaling pathways converge on the regulation of cell metabolism to support energetic demand for deregulated cancer cell growth, proliferation and survival. In this aspect, cancer metabolism research has become emerging hallmark of cancer and one of the hottest fields in cancer research. In this view, our lab is interested in studying complex network between oncogenic mutations, signaling and metabolic pathways. We now focus on resolving fundamental and important questions to understand this network by employing metabolomics, proteomics, bioinformatics as well as in vitro & in vivo genetics tools.

1. Which metabolites/metabolic pathways and oncogenic signaling are regulated by diverse genetic & epigenetic mutations in each tumor type?
2. How these mutations regulate signal transduction and metabolic pathways?
3. How these altered metabolism or metabolic pathways contribute to cancer genesis or maintenance. For this question, we are now investigating interesting possibility that a number of metabolites would have previously unappreciated important roles as signaling mediators which enable crosstalk and feedback regulation between epigenetic pathway, oncogenic signaling, and metabolic pathways.
4. Validate identified metabolites or metabolic pathways as potential therapeutic targets as well as diagnostic markers for cancer.

Finally, our long-term goal is to establish diet-metabolism-cancer connection, which enables us to develop promising strategies for chemoprevention as well as cancer therapy.

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Professional Experiences & Social Activities

- Assistance Professor, College of Pharmacy, Ajou Univ. (2013-)
- Post-doctoral Fellow, Research Oncology, Genentech, Inc. USA (2012-2013)
- Post-doctoral Fellow, Department of Biochemistry and Molecular Genetics, College of Medicine, Univ. of Illinois, USA (2011)
- Technical Research Personnel, Center for Molecular Medicine, Samsung Biomedical Research Institute (2001-2005)

Publications

1. Jeon SM. Regulation and Function of AMPK in Physiology and Diseases. Exp Mol Med. 2016 Jul 15;48(7):e245. doi: 10.1038/emm.2016.81.
2. Wang Q, Yu WN, Chen X, Peng XD, Jeon SM, Birnbaum M, Guzman G, Hay N. Spontaneous Hepatocellular Carcinoma after the Combined Deletion of Akt Isoforms. Cancer Cell. 2016, Apr 11; 29:523-535.
3. Jeon SM*, Hay N. The double-edged sword of AMPK signaling in cancer and its therapeutic implications. Arch Pharm Res. 2015 Mar;38(3):346-57. (* corresponding author)
4. Jeon SM*, Hay N. The dark face of AMPK as an essential tumor promoter. Cell Logist. 2012 Oct 1;2(4):197-202. (* corresponding author)
5. Jeon SM, Chandel N, Hay N. AMPK regulates NADPH homeostasis to promote tumor cell survival during energy stress. Nature. 2012 May 31; 485, 661–665.
6. Xu PZ, Chen ML, Jeon SM, Peng XD, Hay N. The effect of Akt2 deletion on tumor development in Pten+/- mice. Oncogene. 2012 Jan 26;31(4):518-26.
7. Chen CC, Jeon SM, Bhaskar PT, Nogueira V, Sundararajan D, Tonic I, Park Y, Hay N. FoxOs inhibit mTORC1 and activate Akt by inducing the expression of Sestrin3 and Rictor. Dev Cell. 2010 Apr 20;18(4):592-604.

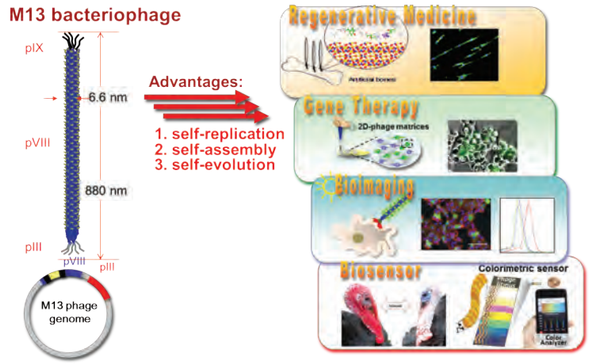
Biopharmaceuticals

Biopharmaceuticals Laboratory

Welcome to Biopharmaceuticals Laboratory, at Ajou University.

A biopharmaceutical is any pharmaceutical drug product manufactured in, extracted from, or semi-synthesized from biological sources. Different from chemically synthesized pharmaceuticals, they include vaccines, blood, or blood components, somatic cells, gene therapies, tissues, recombinant therapeutic protein, and living cells used in cell therapy. Our laboratory is utilizing basic building block of our bodies, DNA, proteins, and cells, for medical applications. We engineer proteins or nucleic acids to synthesize biopharmaceuticals for cancer therapeutics, diagnostics, and other critical disease that the mankind faces. We utilize the recombinant DNA technology to design a novel biopharmaceuticals to target specific cancer tissues, to intercept metabolism of the cell cycles, to formulate effective drugs as final products. We also develop novel bionanomaterials to detect important metabolites related to disease and help early diagnose of cancers and diseases. Through the development of the biopharmaceuticals, we also explore important factors to regulate a stem cell for proliferation, differentiation, and apoptosis aiming for the discovery of novel drugs.

Phage engineering as a novel tool to develop nanomedicine



Publications

1. Yoo SY†, Jin HE†, Choi DS, Kobayashi M, Farouz Y, Wang S, Lee SW. M13 bacteriophage and adeno-associated virus hybrid for novel tissue engineering material with gene delivery functions. Advanced Healthcare Materials 5(1):88-93 (2016)
2. Jin HE, Zueger C, Chung WJ, Wong W, Lee BY, and Lee SW. Selective and sensitive sensing of flame retardant chemicals through phage display discovered recognition peptide. Nano Letters 15(11):7697-703 (2015)
3. Jin HE †, Jang J†, Chung J, Lee HJ, Wang E, Lee SW, Chung WJ. Biomimetic self-templated hierarchical structures of collagen-like peptide amphiphiles. Nano Letters 15(10):7138-45 (2015)
4. J. H. Lee†, Jin HE †, Desai M, Ren S, Kim S and Lee SW. Biomimetic sensor design. Nanoscale 28;7(44):18379-91 (2015)
5. Jin HE, Farr R, and Lee SW. Collagen mimetic peptide engineered M13 bacteriophage for collagen targeting and imaging in cancer. Biomaterials 35:9236-9245 (2014)
6. Oh JW, Chung WJ, Heo K, Jin HE, Lee BY, Wang E, Zueger C, Wong W, Meyer J, Kim C, Lee SY, Kim WG, Zemla M, Auer M, Hexemer A, and Lee SW. Biomimetic virus-based colourimetric sensors. Nature Communications 5, Article number: 3043 (2014)
7. Choi DS†, Jin HE†, Yoo SY, and Lee SW. Cyclic RGD peptide incorporation on phage major coat proteins for improved internalization by HeLa cells. Bioconjugate Chem. 25(2):216–223 (2014)

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Professional Experiences & Social Activities

- Assistant Professor, College of Pharmacy, Ajou Univ. (2016 – Present)
- Scientist, Bioengineering, Univ. of California, Berkeley & Biological Systems and Engineering, Lawrence Berkeley National Laboratory, USA (2015 – 2016)
- Postdoctoral Fellow, Univ. of California, Berkeley & Lawrence Berkeley National Laboratory, USA (2012 – 2015)
- Senior Scientist, Research Institute of Pharmaceutical Sciences, Seoul Nat'l Univ. (2009 – 2011)
- Lecturer, College of Pharmacy, Duksung Women's Univ. (2011)
- Lecturer, College of Health Science, Korea Univ. (2009)

Admission of Foreign Students

Graduate School of Ajou University

Admission of Foreign Students

Recruiting Schedule

Classification	1st Session	2nd Session
Reception of application	Oct. 12th(Wed) ~ Oct. 31st(Mon), 2016	Dec. 1st(Thu) ~ Dec. 22nd(Thu), 2016
Interview	Nov. 7th(Mon) ~ Nov. 16th(Wed), 2016	Dec. 29th(Thu), 2016 ~ Jan. 11th(Wed), 2017
Announcement of successful applicants	Dec. 1st(Thu), 2016	Jan. 25th(Wed), 2017
Registration	Jan. 11th(Wed) ~ Jan. 13th(Fri), 2017	Feb. 6th(Mon) ~ Feb. 8th(Wed), 2017

Application Procedure

Procedure	Details
Check the Degree Program and Recruiting Department	• Check the information about the degree program, recruiting department and whether English classes can be offered or not from the graduate school website (http://grad-e.ajou.ac.kr) • Pre-contact with a professor at Ajou University is recommended, not mandatory, except for the applicants for Department of Medical Sciences, Biomedical Sciences, Pharmacy, Digital Media and Life Media • Inquiries into educational programs of recruiting departments and majors: e-mail to the Chief of Department or Head Professor (refer to the email address stated next page) • Inquiries on admission procedure and administration : grad@ajou.ac.kr, klove@ajou.ac.kr
Online Application and Submission of Required Documents	• Online application is through the banner of the pop-up window (http://grad-e.ajou.ac.kr). It will only be accessible during the application period • After completing the online application, you can print out the application form for admission. The signature of a financial supporter is necessary on the application form • Submit the required documents to the Graduate School office (Yulgok Hall #305) in person or by post before the deadline for submission
Screening, Interview and Evaluation by the Department	• Students are selected by the evaluation of their documents and interview • After examination of documents, each department will decide on the type of interview (telephone, e-mail or in person) and contact the applicants individually • Each department will conduct interviews. For inquiries about interviews, contact each department office directly • The evaluation is conducted by the screening committee of each department and the Board of the Graduate School
Announcement of Successful Applicants	• The list of successful candidates and notification of admitted students will be posted on the graduate school website on the date of announcement. Check the admission notice menu on that day
Submission of Health Checkup and Issuance of Certificate of Admission	• The Graduate School will send an e-mail to successful applicants to check their address and notify them to submit their medical examination results including TB (tuberculosis) test • Successful candidates are required to submit the health checkup results (especially including TB test) that were issued from the hospital in their country to the Graduate School office by e-mail • Non-submission of health checkup results or a serious problem on the medical examination can be a reason for rejecting entrance to graduate school • The Graduate School will send the admission package including certificate of admission and notice for successful candidates through e-mail to the admitted students, individually
Registration	• Pay tuition fees and insurance fees within the registration period (only available duringbanking hours within the designated period [Standard Chartered bank, 09:30~16:30]) • If the admitted students does not pay the tuition fees during the designated period, the admission will be cancelled • Only admitted students who live in foreign countries can postpone the payment of tuition fees because we don't accept remittance from other countries. In that case, students must submit the application form for postponing payment to the Graduate School office by email. If they do not submit the form, the admission will be cancelled
Application for Visa issuance	• Applicants who are in Korea and required to extend or change the visa type to D2: get the original admission documents from the Graduate School office (Yulgok Hall #305). Apply for extension or change of visa by visiting the Immigration office in a residential district. For more detailed information about visas, refer to the e-government homepage for Foreigners (www.hikorea.go.kr) or call the immigration office call center (Tel: 1345) • Applicants who are abroad and required to get a new visa for studying in Korea: submit the application form for postponing payment. The Graduate School will send the original admission package to their countries by post. Applicants can apply for issuance of a D2 student visa at the Korean Embassy in their countries. To get the information on issuance of visa, contact and get confirmation from the Korean Embassy in your country • After getting the student visa, enter Korea on the schedule of dormitory opening
Course Registration and Preparation for Semester	• Dormitory Application is through the dormitory website (http://edorm.ajou.ac.kr) during the designated period • Student ID numbers will be posted on the graduate school website at the beginning of February • Make a web ID at the AIMS portal website (http://portal.ajou.ac.kr) and apply for student ID card with the consent to the use of personal information • Course Registration is through the AIMS portal website • After entering Korea, applicants for postponing payment should pay tuition fees within the designated period at Standard Chartered Bank • Get your student ID card from the department office at the end of the February, 2017 • Attend the orientation for newcoming foreign students • Alien Registration: after another health check-up at Suwon Yeongtong Health Center, apply for alien registration by visiting Suwon Immigration Center in person or participating in the on-campus immigration service. Admitted students from one of the 16 designated countries below should get a health checkup once again at Suwon Yeongtong Health Center even though they already submitted the health checkup results before entering Korea. A health checkup result from Suwon Yeongtong Health Center is a required document for alien registrationDesignated 16 CountriesChina, Sri Lanka, Russia, Uzbekistan, Thailand, Vietnam, India, Nepal, Indonesia, Pakistan, Mongolia, Bangladesh, the Philippines, Myanmar, Cambodia, and Malaysia

Submission

1. Submission Method In person or by post
   Required documents sent by post must be received before the deadline [1st : Nov. 1st(Tue), 2nd : Dec. 23rd(Fri)]
   (16499 Ajou Graduate School, No.305 ,Yulgok Hall 3th floor, 206, World cup-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do)

2. Application fee Exempt

Qualifications for Application

For foreigners with foreign parents or those who completed an entire curriculum of 16 years or more in a foreign country equivalent to elementary, junior and high school as well as a university in Korea, those possessing linguistic (Korean or English) proficiency at a certain level will be able to attend lectures of the relevant department

1. Language Ability Requirement

   a. Certificate of level 3 or above in the Test of Proficiency in Korean(TOPIK)
      (however, those who entered the school with level 3 are required to obtain level 4 or above before the graduation.)

   b. Above 550 in TOEFL PBT, 210 in TOEFL CBT, 80 in TOEFL iBT, 5.5 in IELTS, 550 in TEPS or other state-authorized English proficiency test scores commensurate with the requirement

   * The Korean or English language ability requirement can be eased for KGSP(Korean Government Scholarship Program) students, Foreign Government Scholarship students, applicants for natural sciences and engineering departments, students from foreign universities which concluded the exchange agreement with Ajou University and students who are granted the special admission into Ajou university through the deliberation of the Graduate School Committee

2. Master's Programs Those who graduated or expect to graduate from a 4-year college (university) in Korea or abroad

3. Doctoral Programs Those who obtained or expect to obtain a master's degree from a graduate school in Korea or abroad

4. Master's / Doctoral Integrated Programs Those who graduated or expect to graduate from a 4-year college(university) in Korea or abroad

Program and Department

1. Program Master's Programs, Doctoral Programs, Master's / Doctoral Integrated Programs

2. Recruiting department Recruitment of foreign students can be varied on educational conditions by departments.
   Therefore before applying you need to receive consultation from the Chief of Department or Head

Division	Department	E-mail of Chief of Department
College of Engineering	Mechanical Engineering*	hyunkim@ajou.ac.kr
	Environmental Engineering	msh@ajou.ac.kr
	Industrial Engineering*	kiejin@ajou.ac.kr
	Chemical Engineering	edpark@ajou.ac.kr
	Architecture	dshin@ajou.ac.kr
	Architecture Engineering	
	System Engineering	gnwang@ajou.ac.kr
	Civil &Transportation Engineering (Civil Engineering)*	myhan@ajou.ac.kr
	Urban Development	dshin@ajou.ac.kr
	Applied Bio Technology*	sybyun@ajou.ac.kr
	Molecular Science and Technology*	bunyeoul@ajou.ac.kr
	Systems Biomedical Informatics*	ppark@ajou.ac.kr
	Biomedical Engineering	ykkim@ajou.ac.kr
College of Information Technology	Electrical and Computer Engineering*	cwlee@ajou.ac.kr
	Computer Engineering*	tschung@ajou.ac.kr
	Digital Media*	joony@ajou.ac.kr
	Space Electronics and Information Engineering*	jkim@ajou.ac.kr
	Life Media*	drghoh@ajou.ac.kr
College of Natural Sciences	Mathematics*	youngwoo@ajou.ac.kr
	Physics*	ahny@ajou.ac.kr
	Chemistry*	hyjang2@ajou.ac.kr
	Biological Science*	sido@ajou.ac.kr
School of Business	Business Administration*	sungmj@ajou.ac.kr
	Management Information System*	mckang@ajou.ac.kr
	Financial Engineering*	gshim@ajou.ac.kr
School of Humanities	Korean Language and Literature	cittern@ajou.ac.kr
	English Language and Literature*	jihaekang@ajou.ac.kr
	Culture and Contents	min2kimp@ajou.ac.kr
School of Social Sciences	Economics	kimdongg@ajou.ac.kr
	Applied Sociology	mwnho@ajou.ac.kr
	Political Science and Diplomacy	wjmoon@ajou.ac.kr
College of Law	Law	pinepath@ajou.ac.kr
School of Medicine	Medical Sciences*	kimbg@ajou.ac.kr
	Biomedical Sciences*	
College of Nursing	Nursing Science	mhyun@ajou.ac.kr
School of Pharmacy	Pharmacy*	ghim@ajou.ac.kr
-	Energy System Research*	khkim@ajou.ac.kr

* In the '*' marked departments, they provide at least 2 classes in English. You can get detailed information of majors of the department in the website of graduate school (http://grad-e.ajou.ac.kr)
* International students who can speak both Korean and English can apply for Translation Major in the department of English language and Literature.

Required Documents

1. Application Form for Admission

Download available at http://grad-e.ajou.ac.kr

a. A written pledge of guarantee for overseas study expenses by a financial supporter.
(It may be replaced with an application form for admission and the signature of a guarantor is necessary)

b. Every applicants have to register on-line application through the web-site also. Detailed information will be noticed in the application period.
(http://grad-e.ajou.ac.kr)

2. Color Photo 3.5cm×4.5cm

3. Official Transcript

Applicants to Master's Programs : Undergraduate transcripts / Applicants to Doctoral Programs : Undergraduate and Graduate transcripts

4. Original Diploma

Applicants to Master's Programs : Undergraduate diploma / Applicants to Doctoral Programs : Undergraduate and Graduate diplomas

5. Self-Introduction

6. Study Plan

7. Letter of Recommendation from the research advisor of Ajou University to be attended

Download available at http://grad-e.ajou.ac.kr

Only for applicants for department of Medical Sciences, Biomedical Sciences, Digital Media, Life Media and Pharmacy

8. Letter of Recommendation from the academic advisor(or Chief of department or dean of college) of the university graduated

9. Financial Certifications

Required Documents determined by the Ministry of Justice and Ministry of Education and Human Resources Development

a. Regular Students :

- A Financial guarantor's bank statement (from the applicant's own country or a resident of Korea with a record of continuous deposits for 1 month or more) worth US$15,000 or more, or a certificate of remittance or foreign exchange worth US$15,000 or more If the living cost in the certificate of admission is over US$15,000, then you have to prove that amount
- Financial supporter's ① certificate of employment or business registration certificate, ② certificate of property tax payment, ③ written pledge to bear overseas study expenses (An application form for admission should be signed and sealed by the financial guarantor.)
  * If the financial guarantor is a faculty member of the said university, a bank statement, certificate of employment and a certificate of property tax payment are exempted. But even in that case, other documents like certificate of living fee, certificate of enrollment, and certificate of research projects can be asked additionally depending on the countries

b. Students on Scholarships

- Certificate of a scholarship payment schedule (Download is available at http://grad-e.ajou.ac.kr)

c. Exchange Students Between Universities

- University president's letter of invitation and written confirmation of exemption from educational expenses

10. Photocopy of Applicant's Passport

11. Photocopy of Certificate of Alien Registration Confined to foreign residents in Korea.

12. Linguistic(English or Korean) proficiency rating report card- TOPIK or TOEFL, IELTS, TEPS

13. Certificate for foreign nationality

a. Foreigners with Foreign Parents

- Each parent's certificate of foreign nationality (certificate of naturalization or passport)
- Photocopy of Certificate of Alien Registration

b. Overseas Koreans and foreigners who completed an entire curriculum for a period of 16 years or more in foreign countries

- Diplomas from elementary, junior high and high schools and official transcripts of all grades
  * Not applicable to foreigners with foreign parents

14. Certificate of completion of 4 semesters' Korean Language Study

Only for the applicants who completed 4 semesters of Korean Language study in Language Institute of Ajou University

15. Additional documents to the applicants graduated from overseas university

a. Chinese Students

- English degree certification issued by China Academic Degree & Graduate Education Development Center (http://www.cdgdc.edu.cn)
- Diploma approved by the Korean Embassy in China
- Diploma approved by the Chinese Embassy in Korea

b. International students, except Chinese

- Diploma accredited by Apostille
- Diploma approved by the Korean Embassy in students'country
- Diploma approved by the Embassy of students'country in Korea

Screening Method

Students are selected by evaluation of their documents and interviews; the examination of applicants' documents includes their financial ability. For overseas applicants, the interview screening committee of a departmental may conduct the evaluation based on a phone interview and the submitted documents in place of a personal interview depending on the recruiting plans of each department

1. Examination of Documents The evaluation is conducted by the department based on undergraduate or graduate level grades

2. Interview The evaluation is conducted on ability in a major, linguistic proficiency, aptitude, and personality. Language proficiency (Korean or English) is evaluated to confirm whether or not it is at an appropriate level to take classes in the respective languages

Scholarships

* Scholarship A , B do not waiver admission fee.

1. Scholarship A for Foreigners 100% of the tuition fee (excluding admission fee)

a. Qualification : Selected by the University's scholarship assessment committee upon departmental recommendation

b. Requirements to be recommended for Scholarship A : Beneficiary should satisfy any one of the following requirements

- Advanced Standing in English or Korean Proficiency Test (TOPIK, TOEFL, IELTS, TEPS)

Department	Regions(Countries)	TOEFL(PBT)	TOEFL(CBT)	TOEFL(iBT)	TEPS	IELTS	TOPIK
Humanities, Social Sciences	English Speaking	600	250	100	819	7.5	Level 5
	Non-English	580	230	88	747	7.0	
Engineering, Natural Sciences	English Speaking	570	230	88	715	6.5	
	Non-English	560	220	85	640	6.5	

2. Scholarship B for Foreigners: 80% of the tuition fee(excluding admission fee)

a. Qualification : Selected by the University's scholarship assessment committee upon departmental recommendation

b. Requirement to be recommended for Scholarship B: Beneficiary should satisfy the following requirements

- Advanced Standing in English or Korean Proficiency Test (TOPIK, TOEFL, IELTS, TEPS)

Department	Regions(Countries)	TOEFL(PBT)	TOEFL(CBT)	TOEFL(iBT)	TEPS	IELTS	TOPIK
Humanities, Social Sciences	English Speaking	560	220	85	640	7.5	Level 4
	Non-English	550	210	80	600	7.0	
Engineering, Natural Sciences	English Speaking	560	220	85	640	6.5	
	Non-English	550	210	80	600	6.5	

3. Scholarship of admission fee for foreigners : 75% ~ 100% of the admission fee

a. Qualification

- Scholars should meet the all of the following requirements

① Selected by the University's scholarship assessment committee upon departmental recommendation

② Applicants who have completed over 4 semesters of Korean Language Institute in Ajou university

③ Applicants who have over 4 level of TOPIK

b. Benefit

- Level 5, 6 of TOPIK : 100% waiver of admission fee
- Level 4 of TOPIK : 75% waiver of admission fee

4. To be granted Scholarship continuously, students should take at least 4 credits and maintain a GPA of 3.5 or higher without F in each semester (Masters : up to 4 semesters, Doctoral: up to 6 semesters , Integrated Program : up to 8 semesters)

Scholarship will be available only for the students before completion of credits, Scholarship will be cancelled if the students applied for the leave of absence

5. Students that are granted a scholarship in integrated programs are treated as being on a special scholarship for the master's program for 1~4 semesters and as being on a research scholarship for the doctoral program for 5~8 semesters

6. Students of Medical Sciences and Nursing Sciences are excluded from the above scholarship
(These students follow the scholarship system of the respective departments)

7. Scholarship will be decided in the graduate school committee. There is no additional process and document for application for scholarship.

Application for Issuance of Visa

1. Qualification for Stay D-2 Study Visa

2. Agency of Application Korean missions abroad

* A certificate for recognition of visa issuance should be applied to the director general of the district immigration bureau in Korea

3. Application Applicant himself / herself or his / her representative

4. Required Documents for Application

a. Certificate from last school attended (diploma)

b. Certificate of Admission : Issued only to those among passing applicants who completed registration by the graduate school (Includes financial certifications) * You can get more detailed information about visa by visiting http://www.hikorea.go.kr

Matters to be Noted

1. All documents necessary for application for admission must be submitted with the original and documents in Korean or English.

If the certificate issued only once then notarized copy of certificate can be submitted.(Documents notarized by the institutions which originally issued the certificates or by overseas embassies of Korea or by embassy of each country in Korea can be acceptable.) If the documents are in languages other than English or Korean must be submitted after being translated in Korean or English and get notarized or submitted with confirmation form of translation (http://grad-e.ajou.ac.kr)

2. Admission will be denied when the information on the required documents is proven to be false or other facts concerning admission though dishonest methods are revealed

3. When foreigners enter and stay in Korea for more than 90 days for the purpose of study, they must get their alien registration card at a district immigration bureau within 90 days after entry

4. Various matters after admission should be complied with the regulations and by laws of the said university's graduate school

Education Fee

Major	Engineering	Natural Science	Financial Engineering	Humanity& Social Science	Medical Science	Pharmacy
Tuition Fee	5,647,000	4,879,000	5,323,000	4,245,000	6,579,000	6,203,000
Admission fee	900,000	900,000	900,000	900,000	900,000	900,000
Sum	6,547,000	5,779,000	6,223,000	5,145,000	7,479,000	7,103,000

* Every student has to pay admission fee. (except students who get admission fee scholarship)
* Education fee above is of 2015 academic year, so education fee of 2016 will be noticed around January, 2016.

COLLEGE OF PHARMACY

Innovative Pharmaceutical Sciences and Technology

AJOU UNIVERSITY COLLEGE OF PHARMACY

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