Busan South Korea IUPHAR Mentoring Center

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Affiliations
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- Pharmacogenomics Research Center, Inje University
- Biomarker Research Center for Personalized Therapy
- Inje University Busan Paik Hospital, Global Center of Excellence in Clinical Trials

Introduction
Department of Pharmacology and Department of Clinical Pharmacology are involved in the research and practice of optimum drug use in the University and affiliated Paik hospital as a leading organization in several pharmacology related fields, such as drug metabolism/drug transporters/drug interaction, Pharmacokinetic and pharmacodynamics and its analysis, pharmacogenomics and quantitative pharmacology, and many other area of xenobiotics science from molecular to clinical implementation.

The Pharmacogenomics Research Center (PGRC), Korea's only designated pharmacogenomics research institute, and is widely recognised as frontier research institute in the field of PGx and personalized pharmacotherapy in the global community. With cutting edge technology platforms and strong government support, we are running many projects related biomarker researches for the personalized precision medicine, sponsored clinical trials for drug development sponsored by various Korean government and pharmaceutical industry in Korea.

Key individuals (and expertise)
Prof. Jae-Gook Shin MD PhD, Pharmacogenomics/Biomarker Research for Personalized Pharmacotherapy, Drug Metabolism/Drug Transporters/Drug Interaction, PK/PD, Clinical Trial in Drug Development and other Clinical Pharmacology Programs.
Prof. Dong-Hyun Kim PhD, Drug Metabolism/ Pharmacokinetics, Drug interactions, Metabolomics
Prof. Eun-Young Kim MD PhD, Biomedical Informatics, TDM, Molecular Diagnosis in Pharmacogenomics
Prof. Jin Ah Jung, MD PhD, Clinical Pharmacology, Quantitative pharmacology
Prof. Su-Jun Lee, PhD., Functional Genomics, Pharmacogenomics, Biochemical Toxicology

Prof. Ho-Sook Kim, PhD, General Clinical Pharmacology,
Prof. Min-Kyong Oh, PhD, Bio-statistics, Clinical trial design, Clinical Trial statistical Methodology
Dr. Min-Jong Kim, PhD, DMPK/ Metabolism
Dr. Shin-Ho Jong, PhD, DMPK/ Transporters
Dr. Hye-Eun Jong, PhD, Pharmacogenomics and method development

Research Interest and Service in Hospital

- Pharmacogenomics for Personalized Precision Medicine/ Pharmacotherapy
- Ethnic Translation of Pharmacogenomics: International Collaboration
- Pharmacometabolomics in drug induced organ toxicity
- Drug Metabolism/ Transporters and Pharmacokinetics
- Drug Interaction: Drug-Drug, Herb-Drug etc. in vitro to in vivo
- Quantitative Pharmacology: PK/PD modelling and simulation
- Discovery of candidate compounds with pharmacological actions
- Phase I Clinical Trials and regulatory science in drug development
- Discovery and development of genotyping tools for the personalized medicine
- Personalised prescription of anti-tuberculosis drug – regional and international collaboration project

Technology platform and facilities

Genomics Laboratory Pharmacogenomics Core Lab	ABI 7900HT Real-time PCR, Pyrosequencer, ABI 3130 Genetic Analyser, Teccan auto prep, Phosphoimager, Ultracentrifuge, Gel Doc. etc.
Metabolomics Lab. DMPK Core Lab.	API 3000, 4000 LC/MS/MS **(x9):** 5500 LC/MS/MS Q-TOF, Qtrap 4000, Agilent 1100 UV/FLD, Agilent 6410, 6530 TOF/MS, HPLC, UPLC, etc.
Biomedical Resource Bank	Deep freezer, Nano drop, 2D bar-code reader
Biomedical Informatics Team	DB Server, UPS

Opportunities on offer

- Email/Skype advice on clinical research study design
- Email/Skype advice on research in our areas of expertise
- Email/Skype advice on educational/curricular plans

- Email/Skype advice on safe prescribing
- Potential relevant collaborations in areas of mutual interest
- Willingness to host visitors/fellowships in areas of mutual interest
- Full scholarship for appropriate international PhD candidates

Selected Publications

1. Parvez MM, Jung JA, Shin HJ, Kim DH, Shin JG. Characterization of 22 anti-tuberculosis drugs for the inhibitory interaction potential on organic anionic transporter polypeptides (OATPs) mediated uptake. Antimicrobial Agents and Chemotherapy. 2016.03;Epub
2. Kim HS, Lim Y, Oh M, Ghim JL, Kim EY, Kim DH, Shin JG. The pharmacokinetic and pharmacodynamic interaction of clopidogrel and cilostazol in relation to CYP2C19 and CYP3A5 genotypes. Br J Clin Pharmacol. 2016.02;81(2):301-12
3. Kim SW, Hasanuzzaman M, Cho M, Heo YR, Ryu MJ, Ha NY, Park HJ, Park HY, Shin JG. CK2-mediated phosphorylation of Hsp90beta as a novel mechanism of rifampin-induced MDR1 expression. J. Biol. Chem. 2015.07;290(27):17029-40
4. Jarrar YB, Cha EY, Seo KA, Ghim JL, Kim DH, Lee SJ, Shin JG. Determination of major UDP-glucuronosyltransferase enzymes and their genotypes responsible for 20-HETE glucuronidation. J Lipid Research. 2014.11;55(11):2334-42
5. Shon JH, Kim N, Park SJ, Oh MK, Kim EY, Lee SH, Kim YH, Shin JG. Effect of Renal Impairment and Hemodialysis on the Pharmacokinetics of Gemigliptin (LC15-0444). Diabetes Obes Metab. 2014.10.;16(10):1028-31
6. Kim HS, Chang K, Koh YS, Park MW, Choi YS, Park CS, Oh M, Kim EY, Shon JH, Shin JG, Seung KB.(co-correspond) CYP2C19 poor metabolizer is associated with clinical outcome of clopidogrel therapy in acute myocardial infarction but not stable angina, CircCardiovascGenet., 2013;6(5)514-521
7. Jiang F, Yeo CW, Lee SS, Oh MK, Ghim JL, Shon JH, Kim HS, Kim EY, Kim DH, Shin JG, Effect of HNF4α Genetic Polymorphism G60D on the Pharmacokinetics of CYP2D6 Substrate Tolterodine in Healthy Korean Subjects, Pharmacogenet Genomics, 2013; 23(3):175-9
8. Yeo CW, Lee SJ, Lee SS, Bae SK, Kim EY, Shon JH, Rhee BD, Shin JG, Discovery of a novel allelic variant of CYP2C8, CYP2C8*11, in Asian populations and its clinical effect on the rosiglitazone disposition in vivo, Drug Metab Dispos, 2011; 39(4):711-6
9. Seo KA, Bae SK, Choi YK, Choi CS, Liu KH, Shin JG, Metabolism of 1'- and 4-hydroxymidazolam by glucuronide conjugation is largely mediated by UDP-glucuronosyl transferases 1A4, 2B4, and 2B7, Drug Metab Dispos, 2010; 38(11):2007-13
10. Limdi NA,et al.; International Warfarin Pharmacogenetics Consortium, Warfarin pharmacogenetics: a single VKORC1 polymorphism is predictive of dose across 3 racial groups, Blood, 2010; 115(18):3827-34
11. The International Warfarin Pharmacogenetics Consortium, (equal co-contributor), Estimation of the Warfarin Dose with Clinical and Pharmacogenetic Data, The New England Journal of Medicine. 2009, 360(8):753-64
12. Lee SS, Cha EY, Jung HJ, Shon JH, Kim EY, Yeo CW, Shin JG, Genetic Polymorphism of Hepatocyte Nuclear Factor-4 Influences Human Cytochrome P450 2D6 Activity, Hepatology, 2008, 48:635-645
13. Ryu JY, Song IS, Sunwoo YE, Shon JH, Liu KH, Cha IJ, Shin JG, Development of the 'Inje

Cocktail' for High-throughput Evaluation of Five Human Cytochrome P450 Isoforms in vivo, Clinical Pharmacology & Therapeutics, 2007, 82(5), 531-540