Yoon Kong

Professor, Department of Immunobiology

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Research Field : Molecular Parasitology

LAB : Laboratory Of Tropical Medicine

Research Topics

Dr. Kong is a molecular parasitologist interested in fundamental questions of how and why parasites adapt to the sophisticated mammalian immune system and how the parasite exploit their bioactive systems to ensure their long-term survival in the unfavorable host environments. His laboratory focuses on the most complex helminths to invade the body, multicellular helminths, which cause fatal outcome in the victims. The central questions which his group addresses are (i) which molecules are invoked specific antibody responses by manipulating the host immune system.. (ii) what parasite molecules are responsible for adaptation into the hosts? Most of his major publication dealt with these issues. His group has deep interests in characterizing biological and pathophysiological roles of antioxidants and proteolytic enzymes. He is a member of National Academy of Medicine of Korea (NAMOK).

Recent Publications

1. Bae YA, Kim JG, Kong Y (2016) Phylogenetic characterization of *Clonorchis sinensis* proteins homologous to the sigma-class glutathione transferase and their differential expression profiles. *Mol Biochem Parasitol*, 206(1-2):46-55.
2. Kim JG, Ahn CS, Kim SH, Bae YA, Kwon NY, Kang I, Yang HJ, Sohn WM, Kong Y (2016) *Clonorchis sinensis* omega-class glutathione transferases play major roles in the protection of the reproductive system during maturation and the response to oxidative stress. *Parasit & Vectors*, 9:337.
3. Ahn CS, Bae YA, Kim SH, Kim JG, Yu JR, Yang HJ, Eom KS, Wang H, Kang I, Yang Y, Kong Y (2016) Spatiotemporal expression patterns and antibody reactivity of Taeniidae endophilin B1. *J Clin Microbiol,* 54(10):2553-2562.
4. Ahn CS, Kim JG, Han X, Bae YA, Park WJ, Kang I, Wang H, Kong Y (2017) Biochemical characterization of *Echinococcus multilocularis* antigen B3 reveals insight into adaptation and maintenance of parasitic homeostasis at the host-parasite interface. *J Proteome Res,* 16(2):806-823.
5. Ahn CS, Kim JG, Bae YA, Kim SH, Shin JH, Yang Y, Kang I, Kong Y. (2017) Fasciclin-calcareous corpuscle binary complex mediated protein-protein interactions in *Taenia solium* metacestode. *Parasites & Vectors* 10:438.
6. Ahn CS, Kim JG, Han X, Kang I, Kong Y. (2017) Comparison of *Echinococcus multilocularis* and *Echinococcus granulosus* hydatid fluid proteome provides molecular strategies for specialized host-parasite interactions. *Oncotarget* 8(57):97009-97024.
7. Ahn CS, Kim JG, Shin MH, Lee YA, Kong Y. (2018) Comparison of secretome profile of pathogenic and non-pathogenic *Entamoeba histolytica*. *Proteomics* 18(7):e170034.1
8. Kim JG, Ahn CS, Sripa B, Eom KS, Kang I, Sohn WM, Nawa Y, Kong Y. (2019) *Clonorchis sinensis* omega-class glutathione transferases are reliable biomarkers for serodiagnosis of clonorchiasis and opisthorchiasis. *Clin Microbiol Infect,* 25(1):109.e1-109.e6.
9. Han X, Kim JG, Wang H, Cai H, Ma X, Duong DH, Ahn CS, Kang I, Kong Y. (2019) Survey of echinococcoses in southeastern Qinghai Province, China, and serodiagnostic insights of recombinant *Echinococcus granulosus* antigen B isoforms. *Parasites & Vectors* 12(1):323.

Kwan Soo Ko

Professor, Department of Microbiology

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Research Field : Bacteriology

LAB : Antimicrobial Resistant Pathogen Research Lab

Research Topics

Acinetobacter baumannii received very little attention until the 1990s. Since its low virulence, it was not considered as a pathogenic bacteria. During the 21st century, the infection rate had been increasing for patients with weak immunity, especially in the intensive care units. This bacterium was also of great concern due to its strong antibiotics resistance. Although colistin had not been used because of its nephrotoxicity, it has been reintroduced to treat multi-drug resistant Gram-negative pathogens, including A. *baumannii*. Due to its unfamiliarity for some time, the antibiotic resistance of colistin was relatively low; however, recent reports have shown that the resistance rate has been steadily rising. The research on colistin resistance and its resistance mechanism is actively being conducted and several genes associated with the resistance have been discovered. Then, we proved the resistance gene candidates by comparing the whole transcriptome between colistin-susceptible and –resistant A. *baumannii* strains with further analyses.

Education & Career

1990-1994 National University, Seoul, Korea
1996-2000 PhD, Department BS, Department of Microbiology, Seoul National University, Seoul, Korea
1994-1996 MS, Department of Microbiology, Seoul of Biological Sciences, Seoul National University, Seoul, Korea
2000-2003 Post-doc, Seoul National University College of Medicine, Seoul, Korea
2000-2007 Chief Research Associate, Asia Pacific Foundation for Infectious Diseases (APFID), Seoul, Korea
2007~Present Professor, Sungkyunkwan University School of Medicine, Suwon, Korea

Recent Publications

1. Hae Suk Cheong, So Yeon Kim, Yu Mi Yi, Kyong Ran Peck, **Kwan Soo Ko***. Colistin heteroresistance in *Klebsiella pneumoniae* isolates and diverse mutations of PmrAB and PhoPQ in resistant subpopulations. Journal of Clinical Medicine. 2019; 8(9):1444.
2. Lee JY, Lee H, Park M, Cha CJ, Shin D **Ko KS***. Lytic transglycosylase contributes to the survival of lipooligosaccharide (LOS)-deficient, colistin-dependent *Acinetobacter baumannii*. Clinical Microbiology and Infection 2019; 25(9):1156.e1–1156.e7.
3. Lee H, Shin J, Chung YJ, Baek JY, Chung DR, Peck KR, Song JH, **Ko KS***. Evolution of *Klebsiella pneumoniae* with mucoid and non-mucoid type colonies within a single patient. International Journal of Medical Microbiology 2019; 309:194-198.
4. Chung ES, **Ko KS***. Eradication of persister cells of *Acinetobacter baumannii* through combination of colistin and amikacin antibiotics. Journal of Antimicrobial Chemotherapy 2019; 74(5):1277-1283.
5. Kim SY, **Ko KS*.** Effects of prophage regions in a plasmid carrying a carbapenemase gene on survival against antibiotic stress. International Journal of Antimicrobial Agents 2019; 53(1):89-94.
6. Kim SJ, **Ko KS***. Diverse genetic alterations responsible for post-exposure colistin resistance in populations of the same strain of *Klebsiella pneumoniae*. International Journal of Antimicrobial Agents 2018; 52(3):425-429.
7. Kim J, Lee JY, Lee H, Choi JY, Kim DH, Wi YM, Peck KR, **Ko KS***. Microbiological features and clinical impact of the type VI secretion system (T6SS) in *Acinetobacter baumannii* isolates causing bacteremia. Virulence 2017; 8(7):1378-1389.
8. Lee JY, Chung ES, **Ko KS***. Transition of colistin dependence into colistin resistance in *Acinetobacter baumannii*. Scientific Reports 2017; 7:14216.
9. Chung ES, Wi YM, **Ko KS***. Variations in formation of persister cells against colistin in *Acinetobacter baumannii* isolates and its relationship with treatment failure. Journal of Antimicrobial Chemotherapy 2017; 72(7):2133-2135.
10. Wi YM, Choi JY, Lee JY, Kang CI, Chung DR, Peck KR, Song JH, **Ko KS***. Emergence of colistin resistance in *Pseudomonas aeruginosa* ST235 clone in Korea. International Journal of Antimicrobial Agents 2017; 49(6):767-769.

KyeongJin Kang

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Research Field : Neuroscience
LAB : Laboratory of Behavioral Neurogenetics

Research Topics

1. Our research focuses on biological significances of genes and neurons. To this end, we utilize the advanced genetic model system, *Drosophila melanogaster,* which offer versatile genetic manipulation. Experimental approaches include behavioral and physiological evaluations of various genotypic animals in combination of molecular and biochemical analyses. We aim to reach a converging thus unambiguous conclusion with these diverse experimental techniques.
2. Chemical nociception study: Reactive chemicals are avoided as they feel noxious and painful. This sensory function is necessary, since chemical reactivities lead to adverse effects such as tissue damage. My lab at SKKU has found a molecular mechanism pivotal for detection of the chemical reactivity called nucleophilicity, and is actively pursuing its physiological implications in organisms. Recently, we demonstrated that nucleophile sensitivity is critical for detection of ultraviolet which inflicts photo-injuries, and is also important to discern phototoxins/photosensitizers among pigments.

Education & Career

1991-1997 Bachelor, Dept. of Genetic Engineering, Korea University
1997-1999 Master, Major: Molecular Biology, School of Biotechnology, Korea University
2000-2006 PhD, Medical Sciences, University of Calgary, Canada
2006-2012 Postdoctoral Training, National Behavioral Genomics Center, Brandeis University, MA, USA
2012-Present Assistant – Associate professor, Sungkyunkwan University School of Medicine.

Recent Publications

1. Du, E.J., Ahn, T.J., Sung, H., Jo, H., Kim, H.-W., Kim, S.-T., and **Kang, K**. (2019). Analysis of phototoxin taste closely correlates nucleophilicity to type 1 phototoxicity. Proc. Natl. Acad. Sci. 116 (24), 12013-12018.
2. Lee, M.J., Sung, H.Y., Jo, H., Kim, H.-W., Choi, M.S., Kwon, J.Y., and **Kang, K.** (2017). Ionotropic Receptor 76b Is Required for Gustatory Aversion to Excessive Na+ in Drosophila. Mol. Cells *40 (10)*, 787-795.
3. Du, E.J., Ahn, T.J., Wen, X., Seo, D.-W., Na, D.L., Kwon, J.Y., Choi, M., Kim, H.-W., Cho, H., and **Kang, K.** (2016). Nucleophile sensitivity of Drosophila TRPA1 underlies light-induced feeding deterrence. Elife *5*, e18425
4. Du, E.J., Ahn, T.J., Kwon, I., Lee, J.H., Park, J.-H., Park, S.H., Kang, T.M., Cho, H., Kim, T.J., Kim, H.-W., et al. … **Kang, K**.(2016). *TrpA1* Regulates Defecation of Food-Borne Pathogens under the Control of the Duox Pathway. PLoS Genet. 12, e1005773.
5. K**ang**, **K**.*, Panzano, V.*, Chang, E.C., Ni, L., Dainis, A.M., Jenkins, A.M. Regna, K., Muskavitch, M.A.T. and Garrity P.A. (2012) Modulation of TRPA1 thermal sensitivity enables sensory discrimination in Drosophila. Nature, 481, 76-80.
6. K**ang, K**., Pulver, S.R., Panzano, V.C., Chang, E.C., Griffith, L.C., Theobald, D.L. and Garrity P.A. (2010) Analysis of Drosophila TRPA1 reveals an ancient origin for human chemical nociception. Nature, 464, 597-600.

Jong-Sun Kang

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LAB : Stem cell differentiation laboratory

http://biomed.skku.edu/stemcell

Research Topics

The goal of the research in my laboratory is to understand the molecular regulatory pathways that control proliferation and differentiation of stem cells during regeneration and underlying molecular mechanisms in stem cell dysfunction related to aging or degenerative diseases. Our current research is focused on the elucidation of regulatory mechanisms and in vivo function of key stem niche signals (Sonic hedgehog and Wnt), cell adhesion molecules and protein arginine methyltransferases by utilizing knockout mice, disease animal models and stem cells as model systems. The long-term goal of this research is to identify molecular targets for the development of therapeutic tools to intervene the aging-related muscle atrophy, cardiovascular diseases or degenerative diseases.

Education & Career

1981-1985 Pusan National University, Biology, BS
1985-1994 Albert-Ludwigs University Freiburg, Germany, Molecular Biology, Diproma and PhD
1994-2007 Mount Sinai School of Medicine, New York, USA Biochemistry & Molecular Biology, Postdoc, Instructor, Assistant Professor
2007~present Sungkyunkwan University School of Medicine, Associate Professor, Professor

Recent Publications

1. Lee et al., **2019**. Protein arginine methyltransferase 7 regulates the leak channel NALCN activity in hippocampal dentate granule cells. ***Exp. Mol. Med.***, *in press.*
2. Jeong et al., **2019**. Prmt7 promotes myoblast differentiation via methylation of p38MAPK on arginine residue 70. ***Cell death & differentiation***, *in press.*
3. Voung et al., **2019**. PRMT7 methylates and suppresses GLI2 binding to SUFU thereby promoting its activation. ***Cell death & differentiation***, *in press.*
4. Choi et al., **2019**. Skeletal muscle-specific PRMT1 deletion causes muscle atrophy via deregulation of PRMT6/FOXO3 axis. ***Autophagy***. *In press.*
5. Voung et al., **2019**. SGTb regulates the surface localization of a guidance receptor BOC to promote neurite outgrowth. ***Cellular Signaling***, 55, 100-108.
6. Pyun *et al.*, **2018**. Cardiac specific PRMT1 ablation causes heart failure through CaMKII dysregulation. ***Nature Communications***, 9(1), 5107
7. Jeong et al., **2017**. Cdon deficiency causes cardiac remodeling through hyperactivation of WNT/b-catenin signaling. ***PNAS***, 114(8), E1345-1354.
8. Tuan et al., **2016**. A sonic hedgehog coreceptor, BOC regulates neuronal differentiation and neurite outgrowth via interaction with ABL and JNK activation. ***Cellular Signaling***, 30, 30-40.
9. Lee et al., **2016**. PKN2 and Cdo interact to activate AKT and promote myoblast differentiation. ***Cell death & Diseases***. *7.*
10. Jeong et al., **2016**. Prmt7 deficiency causes reduced skeletal muscle oxidative metabolism and age-related obesity. ***Diabetes***, 65:1868-82.

Kyeong Kyu Kim

Professor, Department of Precision Medicine

TEL/FAX: 031-299-6136 / 031-299-6159

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Research Field : Development of patient specific therapeutics

LAB : Structure and Chemical Biology http://scbl.skku.edu/

Research Topics

Out research goal is to understand the causes of diseases at the molecular level and to develop patient or customized precision therapeutics. We are investigating the biological phenomena or cause of diseases via the interaction of biological molecules such as DNA, protein and metabolites by applying the structural and chemical biology approaches, which allow us to observe the molecules in detail and control their functions. Our main topics are following (1) research on the ubiquitin-dependent protein stability control of cancer related proteins and development of cancer therapeutics targeting ubiquitin pathway; (2) understanding the structural and functional roles of the noncanonical DNAs in the genome and their regulation in cancers; (3) development of novel antibacterial therapeutics to overcome antibiotic resistance; and (4) regenerative medicine research using the patient-specific cell therapies.

Education & Career

1985-1993 Bachelor, Master and PhD Seoul National University (Biochemistry)
1993-1998 UC Berkeley Post-Doc
1998-2000 Assistance professor, Gyeongsang National University
2007~Present Professor, Sungkyunkwan University School of Medicine

Recent Publications

1. Targeting mannitol metabolism as an alternative antimicrobial strategy based on the structure-function studies of mannitol-1-phosphate dehydrogenase in *Staphylococcus aureus.* Nguyen T, Kim T, Ta HM, Yeo WS, Choi J, Mizar P, Lee SS, Bae T, Chaurasia AK, Kim KK. MBio. 2019 Jul 9;10(4). pii: e02660-18. doi: 10.1128/mBio.02660-18 (IF 6.747)
2. Structural Basis for the Enantioselectivity of Esterase Est-Y29 toward (*S*)-Ketoprofen Ngo TD, Oh C, Mizar P, Baek M, Park Ks, Nguyen L, Byeon H, Yoon S, Ryu Y, Ryu BH, Kim TD, Yang JW, Seok C, Lee SS, Kim KK. ACS catalysis 2019 Jan 4;9(1):755-767. (IF 12.221)
3. Chemical induced conversion of mouse fibroblasts and human adipose-derived stem cells into skeletal muscle-like cells. Bansal V, De D, An J, Kang TM, Jeong HJ, Kang JS, Kim KK. Biomaterials. 2019 Feb;193:30-46. (IF 10.273)
4. Genome-wide analysis of regulatory G-quadruplexes affecting gene expression in human cytomegalovirus. Ravichandran S, Kim YE, Bansal V, Ghosh A, Hur J, Subramani VK, Pradhan S, Lee MK, Kim KK, Ahn JH. PLoS Pathog. 2018 Sep 28;14(9):e1007334. (IF 6.158)
5. Sequence preference and structural heterogeneity of BZ junctions. Kim D, Hur J, Han JH, Ha SC, Shin D, Lee S, Park S, Sugiyama H, Kim KK. Nucleic Acids Res. 2018 Nov 2;46(19):10504-10513. doi: 10.1093/nar/gky784. (IF 11.147)
6. Small molecule-induced cellular conversion. De D, Halder D, Shin I, Kim KK. Chem Soc Rev. 2017 Oct 16;46(20):6241-6254. (IF 40.443)

Dongryeol Ryu

Assistant Professor, Department of Molecular & Cell Biology (MCB)

TEL/FAX: 031-299-6138 / 031-299-6159

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Research Field : MCB and Metabolic diseases

LAB : Molecular and Integrative Biology lab (MIB)

Research Topics

The Ryu Lab is a multidisciplinary research group, exploring to find (1) a cellular sensor or regulator answering to energy stress, (2) a retrograde signaling pathway relaying from a stressed organelle to nucleus (e.g. mitonuclear mitochondrial stress signaling), (3) a gut-metabolic organ axis reshaping on our whole-body energy metabolism, and (4) a drug enhancing mitochondria and protein homeostasis. Our challenges will support to identify and develop translational treatment strategies for metabolic and age-associated diseases. Our lab prefers to practice a combinational approach of the wet-labs (traditional biochemical & molecular cell biology techniques) and the dry-labs (Bioinformatics).

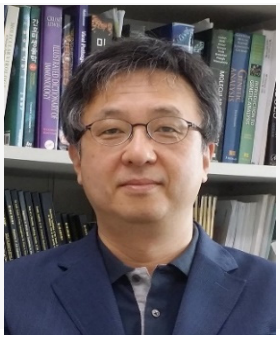
Education & Career

2001-2004 B.S. in Mol Biology, Pusan National University
2004-2006 M.S. in Mol Biology, Pusan National University
2006-2010 Ph.D. in MCB, SKKU School of Medicine
2010-2017 Post-doc fellow, EPFL, Switzerland
2017-2019 Assistant Professor, Pusan National University
2019~ Assistant Professor, SKKU School of Medicine

Recent Publications

1. Vannini N, et al., The NAD-Booster Nicotinamide Riboside Potently Stimulates Hematopoiesis through Increased Mitochondrial Clearance. ***Cell Stem Cell***. **2019** Mar 7;24(3):405-418.e7.
2. Katsyuba E, et al., De novo NAD(+) synthesis enhances mitochondrial function and improves health. ***Nature***. **2018** Nov;563(7731):354-359.
3. Jung SB, et al., Reduced oxidative capacity in macrophages results in systemic insulin resistance. ***Nat Commun***. **2018** Apr 19;9(1):1551.
4. Kim K, et al., Degradation of PHLPP2 by KCTD17, via a Glucagon-Dependent Pathway, Promotes Hepatic Steatosis. ***Gastroenterology***. **2017** Dec;153(6):1568-1580.e10.
5. Ryu D, et al., NAD+ repletion improves muscle function in muscular dystrophy and counters global PARylation. ***Sci Transl Med***. **2016** Oct 19;8(361):361ra139. .
6. Ryu D, et al., Urolithin A induces mitophagy and prolongs lifespan in C. elegans and increases muscle function in rodents. ***Nat Med***. **2016** Aug;22(8):879-88. .
7. Zhang H, et al., NAD⁺ repletion improves mitochondrial and stem cell function and enhances life span in mice. ***Science***. **2016** Jun 17;352(6292):1436-43.
8. Jo YS*, Ryu D*, et al., Phosphorylation of the nuclear receptor corepressor 1 by protein kinase B switches its corepressor targets in the liver in mice. ***Hepatology***. **2015** Nov;62(5):1606-18.
9. Ryu D, et al., A SIRT7-dependent acetylation switch of GABPβ1 controls mitochondrial function. ***Cell Metab***. **2014** Nov 4;20(5):856-869.

Jin-Hyun Ahn



Professor, Department of Microbiology

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Research Field : Molecular Virology

LAB : Molecular Virology Lab http://biomed.skku.edu/virology

Research Topics

In molecular virology lab, we study the gene function and interaction with host of human cytomegalovirus (HCMV) that causes several diseases in patients with congenital infections and impaired immune function, and Varicella-Zoster virus (VZV) that causes chickenpox and Zoster. The functions of viral immediate-early regulatory proteins, DNA replication proteins, and tegument proteins are studied using molecular biology, cell biology, and genetic analysis methods. Through studies on the defense mechanisms of cells responding to viral infections and on the functions of viral genes that regulate them, we investigate the interaction between viruses and hosts. We also study how to effectively control the infection of these viruses. Recently, we have been actively conducting research on viral regulation of the host innate immunity, on the mechanisms of virus entry and virion maturation, and on the interaction between viral infection and the cellular ubiquitin and ubiquitin-like modification systems.

Education & Career

1986 Dept. of Microbiology, Seoul National University, BS
1994 Dept. of Microbiology, Seoul National University, Ph.D.
2000 Johns Hopkins Medicine, Post-doc Fellow/ Research Associate
2001 – present. Dept. of Molecular Cell Biology, Sungkyunkwan University School of Medicine, Assistant Prof./Associate Prof./Prof.

Recent Publications

(Selected)

1. Ravichandran S, Kim YE, Bansal V, Ghosh A, Hur J, Subramani VK, Pradhan S, Lee MK, Kim KK, Ahn JH. 2018. Genome-wide analysis of regulatory G-quadruplexes affecting gene expression in human cytomegalovirus. PLoS Pathog. 14(9):e1007334.
2. Lee MK, Kim YJ, Kim YE, Han TH, Milbradt J, Marschall M, Ahn JH. 2018. Transmembrane protein pUL50 of human cytomegalovirus inhibits ISGylation by downregulating UBE1L. J. Virol. 92(15):e00462-18.
3. Kwon KM, Oh SE, Kim YE, Han TH, Ahn JH. 2017. Cooperative inhibition of RIP1-mediated NF-κB signaling by cytomegalovirus-encoded deubiquitinase and inactive homolog of cellular ribonucleotide reductase large subunit. PLoS Pathog 13(6): e1006423
4. Kim YJ, Kim ET, Kim YE, Lee MK, Kwon KM, Kim KI, Stamminger T, Ahn JH. 2016. Consecutive inhibition of ISG15 expression and ISGylation by cytomegalovirus regulators. PLoS Pathog. 12(8):e1005850.
5. Kim YE, Oh SE, Kwon KM, Lee CH, Ahn JH. 2016. Involvement of the N-terminal DUB domain of human cytomegalovirus UL48 tegument protein in auto-ubiquitination, virion stability and virus entry. J. Virol. 90(6):3229-3242.
6. Kim YE. Ahn JH. 2015. Positive role of promyelocytic leukemia protein in type I interferon response and its regulation by cytomegalovirus. PLoS Pathog. 11(3):e1004785.

Sung Hee Um

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Research Field : Metabolism and Endocrinology
Metabolic Diseases Lab http://biomed.skku.edu/shum

Research Interest

The main pathological features common to obesity and diabetes are the deregulation of nutrient and energy homeostasis. Studying the signaling pathways involved in nutrient and energy homeostasis could lead to better understanding of pathophysiology of metabolic disorders. We are interested in understanding how cells sense and integrate signals from growth factors and from nutrients to mediate metabolic responses, and how such signaling pathway is deregulated in pathological conditions. Integrating the use of biochemistry, molecular biology, mouse model and patient samples, we aim to define deregulation of signaling pathway that may lead to impairment of nutrient and energy homeostasis. This body of work will provide a physiological basis to identify molecular targets with great potential value in the development of therapeutic strategies to treat metabolic disorders. Sung Hee Um was awarded TJ Park Science Fellowship from POSCO TJ Park foundation, and a grant from Samsung science & technology Foundation.

Education and Experience

1994: B.S. Department of Pharmacy, Sungkyunkwan University
1996: M.S. School of Pharmacy, Sungkyunkwan University
2004 Ph.D. Friedrich Miescher Institute for Biomedical Research, University of Basel, Switzerland
2004 - 2009: Postdoctoral Fellow, College of Medicine, University of Cincinnati, U.S.A
2009 - present: Assistant/Associate Professor, Department of Molecular Cell Biology, Sungkyunkwan University, School of Medicine, Korea

Recent Research Papers

1. Son SW, Chau GC, Kim ST, Um SH*. Vacuolar H+-ATPase Subunit V0C Regulates Aerobic Glycolysis of Esophageal Cancer Cells via PKM2 Signaling. **Cells**. 2019, 8(10): 1137-1152
2. Seo DS, Chau GC, Baek KH, Um SH*. A single extra copy of Down syndrome critical region 1-4 results in impaired hepatic glucose homeostasis. **Mol Metab**., 2019, 21: 82-89
3. Chau GC,[1] Im DU,[1] Kang TM, Bae JM, Won Kim, Pyo SN, Moon EY, and Um SH * ([1]equally contribution), mTOR controls ChREBP transcriptional activity and pancreatic β cell survival under diabetic stress. **J. Cell Biol**., 2017, 216(7):2091-2105
4. Song M, Lee H, Jin B, Um SH* Kim DH*. Depot-specific differences in angiogenic capacity of adipose tissue in differential susceptibility to diet-induced obesity. **Mol Metab**, 2016, 5(11), 1113–1120
5. Um SH*, Sticker JM, Chau GC, Vintersten K, Mueller M, Gangliff YG, Adams RH, Spetz JF, Elghazi L, Tschöp MH, Thomas G and Kozma SC*. S6K1-mediated pancreatic b-cell size is independent of intrauterine growth restriction. **J Clin Invest.** 2015, 125(7):2736-47
6. Kim SH, Jang YH, Chau GC, Pyo S and Um SH*, Prognostic significance and function of phosphorylated ribosomal protein S6 in esophageal squamous cell carcinoma. **Modern Pathol** 2013, 26(3):327-35
7. Kim KJ, Pyo S, Um SH*, S6K2 deficiency enhances ketone body production and increases PPARα activity in the liver. **Hepatology** 2012, 55(6):1727-37

* corresponding author

Yunjong Lee

Associate Professor

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Research Field : Pharmacology

LAB : Molecular Neuropharmacology

Research Topics

Parkinson's disease (PD) is the most common neurodegenerative movement disorder. Although L-DOPA treatment is applied to alleviate motor deficit in PD patients, there is no cure which can halt or slow the progressive and rather selective loss of dopaminergic neurons.
Our lab has focused on understanding molecular mechanisms of cell death execution in PD pathogenesis. We are particularly interested in poly (ADP-ribose) dependent cell death pathways and its interaction with PD-associated disease proteins. Advanced genetic tools are used to invent PD mouse and cell models to study underlying molecular mechanisms of dopaminergic cell loss. For example, conditional toxic protein expression are temporally and spatially controlled by using Tet-Off conditional genetic switch. In case of genetic ablation study, CRISPR-cas9 system has been applied to intervene specific genetic component in the pathway of cell degeneration.
Another research topic includes identification of a-synuclein membrane receptors which can mediate pathology propagation. a-synuclein pathology oftentimes spreads from one brain region to another, therefore identification of a-synuclein receptors holds important therapeutic value in preventing progression of PD pathogenesis.

Education & Career

1997-2004 Seoul National University, College of Pharmacy (Pharmacy, BS)
2004-2006 Seoul National University, College of Pharmacy (Pathophysiology, MS)
2006-2011 Johns Hopkins University, SOM (Molecular & Cellular Physiology, PhD)
2011-2015 Johns Hopkins University, SOM (Neurobiology, Postdoctoral fellow)
2015-Sungkyunkwan University, SOM (Molecular Cell Biology-Pharmacology, Associate professor)

Recent Publications

1. Kim H et al. Quantitative analysis of nasal transcripts reveals potential biomarkers for Parkinson's disease. Sci Rep. 2019 Jul 31;9(1) (Corresponding)
2. Ham S et al. Cell-Based Screen Using Amyloid Mimic β23 Expression Identifies Peucedanocoumarin III as a Novel Inhibitor of α-Synuclein and Huntingtin Aggregates. Mol Cells. 2019 Jun 30;42(6):480-494 (Corresponding)
3. Kim H et al. Rhododendrin-Induced RNF146 Expression via Estrogen Receptor β Activation is Cytoprotective Against 6-OHDA-Induced Oxidative Stress. Int J Mol Sci. 2019 Apr 10;20(7). (Corresponding)
4. Yun SP et al. α-Synuclein accumulation and GBA deficiency due to L444P GBA mutation contributes to MPTP-induced parkinsonism. Mol Neurodegener. 2018 Jan 8;13(1) (Corresponding)
5. Kim H et al. Estrogen receptor activation contributes to RNF146 expression and neuroprotection in Parkinson's disease models. Oncotarget. 2017 Oct 11;8(63) (Corresponding)
6. Kang H et al. PARIS reprograms glucose metabolism by HIF-1α induction in dopaminergic neurodegeneration..Biochem Biophys Res Commun. 2018 Jan 22;495(4) (Corresponding)
7. Kim H et al. CRISPR-Cas9 Mediated Telomere Removal Leads to Mitochondrial Stress and Protein Aggregation. Int J Mol Sci. 2017 Oct 3;18(10) (Corresponding)
8. Kang H et al. Activation of the ATF2/CREB-PGC-1α pathway by metformin leads to dopaminergic neuroprotection. Oncotarget. 2017 Jul 25;8(30):48603-48618.(Corresponding)
9. Yun SP et al. VPS35 regulates parkin substrate AIMP2 toxicity by facilitating lysosomal clearance of AIMP2. Cell Death Dis. 2017 Apr 6;8(4) (Corresponding)
10. Ham S et al. Hydrocortisone-induced parkin prevents dopaminergic cell death via CREB pathway in Parkinson's disease model. Sci Rep. 2017 Apr 3;7(1) (Corresponding)
11. Lee Y et al. PINK1 Primes Parkin-Mediated Ubiquitination of PARIS in Dopaminergic Neuronal Survival. Cell Rep. 2017 Jan 24;18(4):918-932 (First author)

Joo-Ho Shin

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Research Field : Pharmacology

LAB : Lab of NeuroRegeneration http://biomed.skku.edu/jhshin

Research Topics

- Selective mechanism of dopaminergic neuronal death
- Cellular and physiological roles of KRAB-zinc finger (K-ZNF) proteins in neurons
- Relationship between neurodegeneration and liquid-liquid phase separation
- Functional studies of protein lipidation

Education & Career

1998 B.S., Seoul National University (Animal Sci. & Tech)
2003 M.S., Seoul National University (Medicine, Cancer Research)
2005 Ph.D., University of Vienna (Chemistry, Proteomics)
2005-2006, Postdoctoral Researcher, Medical University of Vienna
2006-2012, Postdoctoral fellow, Johns Hopkins University
2018-2019, Visiting Assistant professor, Johns Hopkins University
2016-present, Assistant/Associate professor, Sungkyunkwan University SOM, MCB (Pharmacology)

Recent Publications

1. Hojin Kang, Areum Jo, Hyein Kim, Rin Khang, Ji-Yeong Lee, Hanna Kim, Chi-Hu Park, Jeong-Yun Choi, Yunjong Lee, Joo-Ho Shin* (2018) PARIS reprograms glucose metabolism by HIF-1α induction in dopaminergic neurodegeneration. *Biochemical and Biophysical Research Communications*, 495(4), 2498-2504.
2. Hyein Kim, Hojin Kang, Yunjong Lee, Chi-Hu Park, Areum Jo, Rin Khang, Joo-Ho Shin* (2017) Identification of transketolase as a target of PARIS in substantia nigra. *Biochemical and Biophysical Research Communications*, 493(2), 1050-1056.
3. Hojin Kang, Rin Khang, Sangwoo Ham, Ga Ram Jeong, Hyojung Kim, Minkyung Jo, Byoung Dae Lee, Yun Il Lee, Areum Jo, ChiHu Park, Hyein Kim, Jeongkon Seo, Sun Ha Paek, Yun-Song Lee, Jeong-Yun Choi, Yunjong Lee* and Joo-Ho Shin* (2017) Activation of the ATF2/CREB-PGC-1α pathway by metformin leads to dopaminergic neuroprotection. *Oncotarget*, 8(30), 48603-48618.
4. Y Lee, DA. Stevens, S-U Kang, H Jiang, Y-I Lee, HS Ko, LA. Scarffe, GE. Umanah, H Kang, S Ham, T-I Kam, K Allen, S Brahmachari, JW Kim, S Neifert, SP Yun, FC. Fiesel, W Springer, VL. Dawson*, J-H Shin*, TM. Dawson* (2017) PINK1 Primes Parkin-Mediated Ubiquitination of PARIS in Dopaminergic Neuronal Survival. *Cell Report*, 18(4), 918-932.
5. Yun-Il Lee, Hojin Kang, Young Wan Ha, Ki-Young Chang, Sung-Chun Cho, Sang Ok Song, Hyein Kim, Areum Jo, Rin Khang, Jeong-Yun Choi, Yunjong Lee, Sang Chul Park, Joo-Ho Shin* (2016) Diaminodiphenyl sulfone–induced parkin ameliorates age-dependent dopaminergic neuronal loss. *Neurobiology of Aging*, 41, 1-10.
6. Daniel A. Stevens, Yunjong Lee, Ho Chul Kang, Byoung Dae Lee, Yun-Il Lee, Aaron Bower, Haisong Jiang, Sung-Ung Kang, Shaida A. Andrabi, Valina L. Dawson, Joo-Ho Shin* and Ted M. Dawson* (2015) Parkin loss leads to PARIS-dependent declines in mitochondrial mass and respiration. *Proceedings of the National Academy of Sciences of the United States of America*, 112(37), 11696-11701 **Corresponding author*

Hae-Kwan Cheong

Professor, Department of Social and Preventive Medicine

TEL/FAX: 031-299-6300 / 031-299-6299

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Research Field : Preventive Medicine

LAB : Laboratory of Environmental Epidemiology

Research Topics

He is an environmental epidemiologist and his main area of research encompasses effect of local and global environment on human health including climate change and health, especially on infectious diseases; air pollution and health; epidemiology of neurodegenerative disorders; and various issues on environmental and occupational health, including humidifier disinfectants and oil spill and health. His main area of research is as below.

1. Health effect of air pollution
2. Health effect of climate change
3. Prediction of infectious diseases from climate variability and other environmental factors
4. Epidemiology of neurodegenerative disorders (currently not active)

Education & Career

1976-1982 M.D., Seoul National University College of Medicine
1983-1989 Master (M.P.H.), Seoul National University School of Public Health
1991-1995 Dr. P.H., Seoul National University School of Public Health
1998-1999 Visiting scholar, Harvard School of Public Health
2009-2021 Roaster of list of experts on environmental health emergency, IHR 2005, WHO
2010-2011 Co-Chair, Korean Society of Environmental Health and Toxicology
2013-2013 Visiting Scholar, WHO European Center for Environmental Health
2005-현재 Professor, Sungkyunkwan University School of Medicine
2015-2017 Co-Chair, Korean Forum for Climate Change and Health
2016-2018 Chair, Korean Society of Epidemiology
2017~ Member, National Academy of Medicine, Korea

Recent Publications

1. Kim JH, Lim AY, **Cheong HK**. Malaria incidence of the regions adjacent to the demilitarized zone in the Democratic People's Republic of Korea, 2004-2016. JKMS 2019 Sep 16;34(36):e227
2. Noh SR, Kim JS, Jeon BH, Kim EH, Kim JH, Kim YM, Kim JH, Han YS, Ahn KM, **Cheong HK**. Spectrum of susceptibility to air quality and weather in individual children with atopic dermatitis. Pediatr Allergy Immunol. 2019:30:179-187. Nov 14 2018.
3. Kim JH, Oh IH, Park JH, **Cheong HK**. Premature deaths attributable to long-term exposure to ambient fine particulate matter in the Republic of Korea. JKMS 2018 Sep 10;33(37):e251.
4. Kim J, Kim JH, **Cheong HK**, Honda Y, Ha M, Kim H. Effect of Climate Factors on the Childhood Pneumonia in Papua New Guinea: a Time-series Analysis. IJERPH 2016;13:13(2); pii. E213
5. Kim YM, Park JW, **Cheong HK**. Estimated effect of climate variables on the transmission of Plasmodium vivax malaria in the Republic of Korea. Environ Health Perspect 2012;120:1314–1319
6. Chung SE, **Cheong HK** et al. Effects of maternal blood manganese level on early neurodevelopment: the Mothers and Children's Environmental Health (MOCEH) study. Environ Health Perspect 2015;123(7):717-722
7. Kim EH, **Cheong HK**, Kim S, Kim YM, Lee JH, Kim KB, Jung K, Ahn KM, Lee SI. Indoor Air Pollution Aggravates Symptoms of Atopic Dermatitis in Children. PLoS One
8. Kim HJ, Lee MS, Hong SB, Huh JW, Do KH, Jang SE, et al. A cluster of lung injury cases associated with home humidifier use: an epidemiological investigation. Thorax doi: 10.1136/thoraxjnl-2013-204132

Sungkwon Chung

Professor, Department of Physiology
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Research Field : Electrophysiology
LAB : Neuropathophysiology

Research Topics

Alzheimer's Disease (AD) is a typical neurodegenerative disease caused by increased amyloid b-protein (Ab) production. One of main genetic cause of AD is mutations in presenilin protein, which increases the production of Ab. We previously reported for the first time that presenilin mutation induces calcium signaling dysfunction (Yoo et al., Neuron, 2000). We also reported that presenilin mutation decreases one of major lipid component in plasma membrane (PIP2), which resulted in the decreased TRPM7 channel activity (Landman et al., PNAS, 2006). Currently, we study the molecular mechanism for the regulation of Ab production in relation to calcium signaling. Based on our research results, we also try to find a new target for therapeutic drugs for AD.

Recent Publications

1. Cho YY, Kwon OH, Park MK, Kim T-W*, Chung S* (2019) Elevated cellular cholesterol in Familial Alzheimer's presenilin 1 mutation is associated with lipid raft localization of β-amyloid precursor protein. PLOS One 14:e0210535. *co-corresponding authors
2. Kwon OH, Cho YY, Kim TW, Chung SO-GlcNAcylation of amyloid-b protein precursor by insulin signaling reduces amyloid–b production. (2019). J. Alzheimer's Disease 69:1195.
3. Chun YS, Zhang L, Li H, Park Y , Chung S*, Yang HO* (2018) 7-Deoxy-trans-dihydronarciclasine Reduces β-Amyloid and Ameliorates Memory Impairment in a Transgenic Model of Alzheimer's Disease. Mol. Neurobiol. 55:8953. *co-corresponding authors
4. Chun YS, Kwon OH, Oh HG, Cho YY Chung S*, Yang HO* (2018) Justicidin A Reduces β-Amyloid via Inhibiting Endocytosis of β-Amyloid Precursor Protein. Biomol. Therapeu. 27:276. *co-corresponding authors
5. Chun YS, Park Y, Oh HG, Kim T-W, Yang H, Park M, Chung S (2015) O-GlcNAcylation promotes non-amyloidogenic processing of amyloid-b protein precursor via inhibition of endocytosis from the plasma membrane. J. Alzheimer's Disease 44:261.
6. Kim J, Park Y, Chun Y, Cha JW, Kwon HC, Oh MS, Chung S*, Yang HO* (2015) Effect of Lycoris chejuensis and Its Active Components on Experimental Models of Alzheimer's Disease. J Agric. Food Chem. 63:6979. *co-corresponding authors
7. Oh HG, Chun YS, Park C-S, Kim T-W, Park MK, Chung S (2015) Regulation of basal autophagy by transient receptor potential melastatin 7 (TRPM7) channel. Biochem Biophys Res Commun. 463:7.
8. Kang MS, Baek S-H, Chun YS, Moore Z, Landman N, Bergman D, Yang HO, Morishima-Kawashima M, Osawa S, Funamoto S, Ihara Y, Di Paolo G, Park JH, Chung S*, Kim T-W* (2013) Modulation of lipid kinase PI4KIIa activity and lipid raft association of presenilin 1 underlies g-secretase inhibition by ginsenoside (20S)Rg3. J. Biol. Chem. 288:20868. *co-corresponding authors
9. Landman N, Serban G, Shin SY, Kang MS, Chung S*, Kim T-W* (2006) An essential role for phosphatidylinositol-4,5-bisphosphate in familial Alzheimer¡¯s disease-linked presenilin mutations. PNAS 103: 19524. *co-corresponding authors

Jae-Hyun Park

Professor, Department of Social and Preventive Medicine
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EMAIL : pjaehyun@skku.edu
Research Field : Preventive medicine
LAB : Health Policy Research Center

Research Topics

1) Researches about health policy and management
We conduct researches about public health status, policy, and management, payment system design, health care quality assessment, primary health care, global health issues.
2) Researches about medical humanities and medical student education
We develop strategies, teaching skill, assessment methods about medical humanities and medical student education.

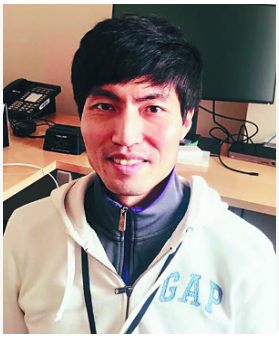
Education & Career

2000 Bachelor, Seoul National University College of Medicine, medical science
2004 Master, Graduate School of Public Health Seoul National University, public health
2006 PhD, Seoul National University College of Medicine, health policy and management
Resident, Seoul National University College of Medicine
2006 Fellow, National Cancer Center
2006-2009 Researcher. National Cancer Center
2009-Now Professor, Sungkyunkwan University School of Medicine

Recent Publications

1. Kim HS, Suh Y, Kim MS, Yoo BA, Lee EJ, Lee EW, Park JH, Effects of Community-Based Primary Care Management on Patients With Hypertension and Diabetes. Asia Pacific Journal of Public Health. 2019.
2. Zahra A, Park JH. Burden of disease due to secondhand smoke among Korean adults at sub-national level, J Korean Med Sci. 2018 Oct 1;33(40):e25.
3. Sun LY, Park JH. Second-hand smoke prevalence in 252 regions of South Korea in three exposure locations. Jpn J Nurs Sci. 2018 Jul;15(3):210-217.
4. Lee HK, Kim JH, Fava M, Mischoulon D, Park JH, Shim EJ, Lee EH, Lee JH, Jeon HJ. Development and validation study of the Smartphone Overuse Screening Questionnaire. Psychiatry Res. 2017 Nov;257:352-357.
5. Chung SE, Cheong HK, Park JH, Kim JH, Han H. Current and Projected Burden of Disease From High Ambient Temperature in Korea. Epidemiology. 2017 Oct;28 Suppl 1:S98-S105.
6. Zahra A, Cheong HK, Park JH. Burden of Disease Attributable to Smoking in Korea. Asia-Pac J Public Health. 2017 Jan;29(1):47-59.
7. Zahra A, Cheong HK, Lee EW, Park JH. Burden of Disease Attributable to Secondhand Smoking in Korea. Asia-Pac J Public Health. 2016 Nov;28(8):737-750.
8. Sun LY, Cheong HK, Lee EW, Kang KJ, Park JH. Affecting Factors of Secondhand Smoke Exposure in Korea: Focused on Different Exposure Locations. J Korean Med Sci. 2016 Sep;31(9):1362-72.
9. Zahra A, Lee EW, Sun LY, Park JH. Perception of Lay People Regarding Determinants of Health and Factors Affecting It: An Aggregated Analysis from 29 Countries. Iran J Public Health. 2015; 44(12):1620-1631.
10. Sun LY, Lee EW, Zahra A, Park JH. Should non-citizens have access to publicly funded health care?: A study of public attitudes and their affecting factors. Public Health. 2015 Sep;129(9):1157-65.

Joo Sang Lee



Assistant Professor, Department of Precision Medicine

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LAB : Cancer Data Science Lab

Research Topics

1. Cancer Data Science Lab aims to identify a better way to treat cancer patients by making sense of large scale cancer data.
2. We aim to advance precision cancer medicine by analyzing multiple layers of molecular and functional profiles from the perspective of genetic interactions.
3. We have particular interest in making progress in cancer immunotherapy by selecting the right patients for a given therapy and identifying the resistance mechanism for the treatment.

Education & Career

1997-2005 KAIST BS in Physics
2006-2012 Northwestern University PhD in Physics
2012-2014 Northwestern Physical Sciences-Oncology Center (Postdoc Fellow)
2014-2018 University of Maryland (Research Associate)
2018-2019 Cancer Data Science Lab, NCI/NIH (Staff Scientist)
2019-present School of Medicine, Sungkyunkwan University (Assistant Professor)

Recent Publications

1. **Lee JS**#, Ruppin E#. Multiomics prediction of response rates to therapies to inhibit programmed cell death 1 and programmed cell death 1 ligand 1. ***JAMA Oncology*** **5**, 1-5 (2019).
2. Das A*, **Lee JS***, Zhang G, Wang Z, Tian T, et al. Genome-wide prediction of synthetic rescue mediators of resistance to targeted and immunotherapy ***Molecular Systems Biology*** **15**: e8323 (2019).
3. Feng X, Arang N, Rigiracciolo DC, **Lee JS**#, et al. A Platform of Synthetic Lethal Gene Interaction Networks Reveals that the GNAQ Uveal Melanoma Oncogene Controls the Hippo Pathway through FAK. ***Cancer Cell*** **35**, 457-472 (2019).
4. **Lee JS***, Adler L*, Karathia H, Carmel N, Rabinovich S, et al. Urea Cycle Dysregulation Generates Clinically Relevant Genomic and Biochemical Signatures. ***Cell*** **174**, 1559-1570 (2018).
5. **Lee JS***, Das A*, Jerby-Arnon, L, Davidson M, Atias D, et al. Harnessing synthetic lethality to predict clinical outcomes of cancer patients ***Nature Communications*** **9**, 2546 (2018).

Ara Koh

Department of Molecular Cell Biology and Biochemistry
EMAIL : arakoh@g.skku.edu
Research Field : Molecular cell biology, Biochemistry
LAB : MIcrobial MEtabolite Signal Transduction lab (MIME-ST lab)

Research Topics

It is becoming evident that **microbiota** can directly **signal to the host** by generating bioactive **metabolites**, which would contibute to the development (i.e., imidazole propionate) or amelioration of metabolic diseases (i.e., short-chain fatty acids). In our lab, we aim to identify **therapeutics for metabolic diseases** including diabetes and cancer based on **mechanistic understanding** of the role of microbial metabolites. In addition, we will investiagte **inter-individual variations** or failure in drug response in the context of microbial metabolite milieu by using **organoids** as a model system.

Education & Career

2000-2005 Department of Life Science, Department of Chemistry, Sogang University (B.S.)
2005-2013 Division of Molecular and Life Science, POSTECH (M.S. And Ph.D.)
2006-2007 Stanford University School of Medicine (Visiting researcher)
2014-2014 Department of Life Science (PostDoc)
2014-2019 University of Gothenburg and Sahlgrenska Hospital (PostDoc)
2020~Present Sungkyunkwan University School of Medicine

Recent Publications

1. **Koh A**, Molinaro A, Stahlman M, Khan MT, Schmidt C, Manneras-Holm L, Wu H, Carreras A, Jeong H, Olofsson L, Bergh PO, Gerdes V, Hartstra A, Brauw M, Perkins R, Nieuwdorp M, Bergstrom G, Backhed F. Microbially produced imidazole propionate impairs insulin signaling through mTORC1. **Cell**. 2018 Nov; 175 (4): 947-961.
2. Jeong H, **Koh A**, Lee J, Park D, Lee JO, Lee MN, Jo KJ, Tran HNK, Kim E, Min BS, Kim HS, Berggren PO, Ryu SH. Inhibition of C1-Ten PTPase activity reduces insulin resistance through IRS-1 and AMPK pathways. **Sci Rep**. 2017 Dec; 7 (1): 177777.
3. Lee J, **Koh A**, Jeong H, Kim E, Ha TS, Saleem MA, Ryu SH. C1-Ten is a PTPase of nephrin, regulating podocyte hypertrophy through mTORC1 activation. **Sci Rep**. 2017 Sep; 7(1): 12346.
4. **Koh A**, Vadder DF, Kovatcheva-Datchary P, Bäckhed F. From dietary fiber to host physiology: Short-chain fatty acids as key bacterial metabolites. **Cell**. 2016 Jun; 165 (2): 1332-1345.
5. Yunn NO, **Koh A**, Han S, Lim JH, Park S, Lee J, Kim E, Jang SK, Berggren PO, Ryu SH. Agonistic aptamer to the insulin receptor leads to biased signaling and functional selectivity through allosteric modulation. **Nucleic Acids Res**. 2015 Aug.
6. **Koh A**, Lee MN, Yang YR, Jeong H, Ghim J, Noh J, Kim J, Ryu D, Park S, Song P, Koo SH, Leslie NR, Berggren PO, Choi JH, Suh PG, Ryu SH. C1-Ten is a protein tyrosine phosphatase of IRS-1, regulating IRS-1 stability and muscle atrophy. **Mol. Cell. Biol**. 2013 Apr; 33(8): 1608-1620.