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EDUCATION

2012	Postdoc	Toxicology, Dept. Genetics and Complex Diseases, Harvard School of Public Health
2007	Postdoc	Pharmacokinetics, College of Medicine, The Ohio State University
2004	Ph.D.	Pharmaceutics, College of Pharmacy, The Ohio State University
1997	M.S.	Pharmacology, College of Pharmacy, Seoul National University
1995	B.S.	Pharmacy, College of Pharmacy, Seoul National University

POSITIONS AND EMPLOYMENT

2012–	Assistant Professor	Pharmacokinetics and Toxicology	Department of Pharmaceutical Sciences, School of Pharmacy, Bouvé College of Health Sciences, Northeastern University, Boston, MA
2010–2014	Adjunct Faculty	Pharmacology	Department of Anesthesia and Critical Care, Harvard Medical School, Boston, MA
2011–2012	Adjunct Professor	Pharmaceutical Sciences	Department of Pharmaceutical Sciences, School of Pharmacy, MCPHS University
2009–2012	Research Associate	Neuropharmacology and Neurotoxicology	Department of Genetics & Complex Diseases, Harvard School of Public Health, Boston, MA
2007–2009	Research Fellow	Nutritional Neuroscience	Department of Genetics & Complex Diseases, Harvard School of Public Health, Boston, MA

RESEARCH INTEREST

My research interests center around the characterization of absorption, distribution, and metabolism of drugs and metals, including essential metals (iron, manganese and copper) and toxic heavy metals (lead, cadmium, mercury and arsenic), and metal-induced toxicity in the context of environmental exposure and genetic susceptibility (gene-environment interactions). My laboratory elucidates the relationships between drug/metal metabolism and neurobehavioral disorders in the areas of pharmacokinetics and toxicology. Using various models of iron disorders, we further evaluate the physiological relevance of genes and molecules responsible for impaired iron metabolism in relation to drug overdose and heavy metal toxicity – important and current public health issues. The very fundamental questions about metal toxicogenetics, i.e., genetic influence on metal transport and toxicity, have applications to both pathophysiology and therapeutics in neurological, psychiatric, hematological and metabolic disorders.

PUBLICATIONS

1. Sukumaran A, Chang J, Han M, Mintri S, Khaw BA, **Kim J**. Iron overload exacerbates age-associated cardiac hypertrophy in a mouse model of hemochromatosis. *Sci Rep* 2017; 7(1):5756. PMID: 28720890; PMCID: PMC5516030
2. Lee G, Lee J, Kim J, Choi HS, **Kim J**, Lee S, Lee HY. Single Microfluidic Electrochemical Sensor System for Simultaneous Multi-Pulmonary Hypertension Biomarker Analyses. *Sci Rep* 2017; 7(1):7545; PMID 28790334
3. Grillo AS, SantaMaria AM, Kafina MD, Huston NC, Cioffi AG, Huston NC, Han M, Seo YA, Yien YY, Nardone C, Menon AV, Fan J, Svoboda DC, Anderson JB, Hong JD, Nicolau BG, Subedi K, Gewirth AA, Wessling-Resnick M, **Kim J**, Paw BH, Burke MD. Restored iron transport by a small molecule promotes absorption and hemoglobinization in animals. *Science* 2017; 356(6338):608-616. PMID: 28495746; PMCID: PMC5470741
4. Ye Q, Park JE, Gugnani K, Betharia S, Pino-Figueroa A, **Kim J**. Influence of iron metabolism on manganese transport and toxicity. *Metallomics* 2017; doi: 10.1039/c7mt00079k; In Press. PMID: 28620665
5. Attarwala H, Han M, **Kim J**, Amiji M. Oral Nucleic Acid Therapy using Multicompartmental Delivery System. *Wires: Nanomed Nanobiotech* 2017; e1478. PMID: 28544521
6. Mates JM, Yao Z, Cheplowitz AM, Suer O, Phillips GS, Kwiek J, Rajaram MVS, **Kim J**, Robinson JM, Ganesan LP, Anderson CL. Mouse liver sinusoidal endothelium eliminates HIV-like particles from blood at a rate of 100 million per minute by a second-order kinetic process. *Front Immunol* 2017; 8:35. PMID: 28167948; PMCID: PMC5256111
7. Han M, Chang J, **Kim J**. Loss of divalent metal transporter 1 (DMT1) function promotes brain copper accumulation and increases impulsivity. *J Neurochem* 2016; 138:918-928. PMID: 27331785; PMCID: PMC5017907
8. Alsulimani HH, **Kim J**, Sani SN. Microdialysis-directed Intra-tumor Pharmacokinetic Modeling of Methotrexate in Mice and Humans. *J Pharm Pharm Sci* 2016; 19(2):239-251. PMID: 27518173
9. Ye Q, **Kim J**. Mutation in HFE gene decreases manganese accumulation and oxidative stress in the brain after olfactory manganese exposure. *Metallomics* 2016; 8: 618-627. PMID: 27295312; PMCID: PMC4917014
10. Chang J, Lee C-W, Alsulimani HH, Choi JE, Lee J-K, Kim AY, Park BH, **Kim J**, Lee HY. Role of fatty acid composites in the toxicity of titanium dioxide (TiO_2) nanoparticles used in cosmetic products. *J Toxicol Sci* 2016; 41(4):533-542. PMID: 27432239
11. Saputra D, Chang J, Lee BJ, Yoon JH, **Kim J**, Lee K. Short-term manganese inhalation decreases brain dopamine transporter levels without disrupting motor skills in rats. *J Toxicol Sci* 2016; 41(3): 391-402. PMID: 27193731
12. Menon AV, Chang J, **Kim J**. Mechanisms of divalent metal toxicity in affective disorders. *Toxicology* 2016; 339:58-72. PMID: 26551072; PMCID: PMC4724313
13. Alsulimani HH, Ye Q, **Kim J**. Effect of Hfe deficiency on memory capacity and motor coordination after manganese exposure by drinking water in mice. *Toxicol Res* 2015; 31(4): 347-354. PMID: 26877837; PMCID: PMC4751444
14. Ye Q, **Kim J**. Effect of olfactory manganese exposure on anxiety-related behavior in a mouse model of hemochromatosis. *Environ Toxicol Pharmacol* 2015; 40(1):333-341. PMID: 26189056; PMCID: PMC4522346
15. Alkhateeb A, Buckett PD, Gardeck A, **Kim J**, Byrne SL, Fraenkel P, Wessling-Resnick M. The small molecule ferristatin II induces hepatic hepcidin expression in vivo and in vitro. *Am J Physiol GI* 2015; 308(12):G1019-26. PMID: 25907691; PMCID: PMC4469869.
16. Ye Q, **Kim J**. Loss of Hfe function reverses impaired recognition memory caused by olfactory manganese exposure in mice. *Toxicol Res* 2015; 31(1):17-23. PMID: 25874029; PMCID: PMC4395651.
17. Kang H, Mintri S, Menon AV, Lee HY, Choi HS, **Kim J**. Pharmacokinetics, Pharmacodynamics and Toxicology of Theranostic Nanoparticles. *Nanoscale* 2015; 7:18848-18862. PMID: 26528835; PMCID: PMC4648690

18. Han M, **Kim J**. Effect of dietary iron loading on recognition memory in growing rats. *PLoS One* 2015; 10:e0120609. PMID: 25746420; PMCID: PMC4352024.
19. Chang J, Kueon C, **Kim J**. Influence of lead on repetitive behavior and dopamine metabolism in a mouse model of iron overload. *Toxicol Res* 2014; 30(4):267-276. PMID: 25584146; PMCID: PMC4289927.
20. Phattanarudee S, Han M, **Kim J**. Effect of olfactory manganese dose on motor coordination in iron-deficient rats. *MO J Toxicol* 2014; 1(1): 00001.
21. Lee JK, Busnaina A, Lee HY, Cho SH, Park JG, Lim SH, **Kim J**. An impedimetric nanosensor based on large-scale nanowell array electrode for single nucleotide polymorphism of leptin. *IJEERT* 2014; 2:283-287.
22. Sundling K, Craciun G, Schultz IR, Hook SE, Nagler JJ, Cavileer TD, Verducci JS, Liu Y, **Kim J**, Hayton WL. Modeling the endocrine control of vitellogenin production in female rainbow trout. *Math Biosci Eng* 2014; 11:621-639. PMID: 24506554.
23. **Kim J**, Wessling-Resnick M. Iron and Mechanisms of Emotional Behavior. *J Nutr Biochem* 2014; 25:1101-1107. PMID: 25154570; PMCID: PMC4253901
24. Sani SN, **Kim J**. Microdialysis: A real-time sampling technique for more effective pharmacokinetic-pharmacodynamic studies in drug research and development. *J Clin Pharm* 2014; 1:1003.
25. Mohanty S, **Kim J**, Ganesan LP, Phillips GS, Robinson JM, Anderson CL. Abundant intracellular IgG in enterocytes and endoderm lacking FcRn. *PLoS One* 2013; 8:e70863. PMID: 23923029; PMCID: PMC3726603.
26. Byrne SL, Buckett PD, **Kim J**, Luo F, Sanford J, Chen J, Enns C, Wessling-Resnick M. Ferristatin II promotes degradation of transferrin receptor-1 in vitro and in vivo. *PLoS One* 2013; 8:e70199. PMID: 23894616; PMCID: PMC3720890.
27. Jia X, **Kim J**, Veuthey T, Lee C-H, Wessling-Resnick M. Glucose metabolism in the Belgrade rat, a model of iron-loading anemia. *Am J Physiol: GI Liver Physiol* 2013; 304:G1095-G1102. PMID: 23599042; PMCID: PMC3680718.
28. **Kim J**, Buckett PD, Wessling-Resnick M. Absorption of manganese and iron in a mouse model of hemochromatosis. *PLoS One* 2013; 8:e64944. PMID: 23705020; PMCID: PMC3660331.
29. **Kim J**, Jia X, Buckett PD, Liu S, Lee C-H, Wessling-Resnick M. Iron loading impairs lipoprotein lipase activity and promotes hypertriglyceridemia. *FASEB J* 2013; 27:1657-1663. PMID: 23241313; PMCID: PMC3606537.
30. Anderson CL, **Kim J**. Surmounting an impasse of FcRn. *Structure* 2013; 21:1907-1908. PMID: 24210225
31. **Kim J**, Wessling-Resnick M. The role of iron metabolism in lung inflammation and injury. *J Aller Ther* 2012; S4:004.
32. Ganesan LP, **Kim J**, Wu Y, Mohanty S, Philips GS, Birmingham DJ, Robinson JM, Anderson CL. FcγRIIb on liver sinusoidal endothelium clears small immune complexes. *J Immunol* 2012; 189:4981-4988. PMID: 23053513.
33. **Kim J**, Li Y, Buckett PD, Böhlke M, Thompson KJ, Takahashi M, Maher TJ, Wessling-Resnick M. Iron-responsive olfactory uptake of manganese improves motor function deficits associated with iron deficiency. *PLoS One* 2012; 7:e33533. PMID: 22479410; PMCID: PMC3316579.
34. Li Y, **Kim J**, Buckett PD, Böhlke M, Maher TJ, Wessling-Resnick M. Severe post-natal iron deficiency alters emotional behavior and dopamine levels in the prefrontal cortex of young male rats. *J Nutr* 2011; 141:2133-2138. PMID: 22013197; PMCID: PMC3223871.
35. Claus Henn BG, **Kim J**, Wessling-Resnick M, Téllez-Rojo MM, Jayawardene I, Ettinger AS, Hernandez-Avila M, Schwartz J, Christiani DC, Hu H, Wright RO. Associations of iron metabolism genes with blood manganese levels: a population-based study with validation data from animal models. *Environ Health* 2011; 10:97. PMID: 22074419; PMCID: PMC3248860.
36. Ganesan LP, Mohanty S, **Kim J**, Clark KR, Robinson JM, Anderson CL. Rapid and efficient clearance of blood-borne virus by liver sinusoidal endothelium. *PLoS Pathog* 2011; 7: e1002281. PMID: 21980295; PMCID: PMC3182912.
37. Molina RM, Phattanarudee S, **Kim J**, Thompson KJ, Wessling-Resnick M, Maher TJ, Brain JD. Ingestion of Mn and Pb by rats during and after pregnancy alters iron metabolism and behavior in offspring. *Neurotoxicology* 2011; 32:413-422. PMID: 21458486; PMCID: PMC3109129.

38. **Kim J**, Molina RM, Donaghey TC, Buckett PD, Brain JD, Wessling-Resnick M. Influence of DMT1 and iron status on inflammatory responses in the lung. *Am J Physiol Lung Mol Physiol* 2011; 300:L659-L665. PMID: 21278260; PMCID: PMC3075097.
39. Sani SN, Henry K, Böhlke M, **Kim J**, Stricker-Krongrad A, Maher TJ. The effects of drug transporter inhibitors on the pharmacokinetics and tissue distribution of methotrexate in normal and tumor-bearing mice: a microdialysis study. *Cancer Chemother Pharmacol* 2010; 66:159-169. PMID: 19816684.
40. Mohanty S[#], **Kim J[#]**, Ganesan LP, Phillips GS, Hua K, Jarjoura D, Hayton WL, Robinson JM, Anderson CL. IgG is transported across the mouse yolk sac independently of FcγRIIb. *J Reprod Immunol* 2010; 84:133-144. PMID: 20015554; PMCID: PMC3050502. [#]Contributed equally.
41. **Kim J**, Mohanty S, Ganesan LP, Hua K, Jarjoura D, Hayton WL, Robinson JM, Anderson CL. FcRn in the yolk sac endoderm of mouse is required for IgG transport to fetus. *J Immunol* 2009; 182:2583-2589. PMID: 19234152; PMCID: PMC2676880.
42. **Kim J**, Bronson CL, Wani MA, Oberyszyn TM, Mohanty S, Chaudhury C, Hayton WL, Robinson JM, Anderson CL. β2-microglobulin deficient mice catabolize IgG more rapidly than FcRn-α-chain deficient mice. *Exp Biol Med* 2008; 233:603-609. PMID: 18375831.
43. **Kim J**, Hayton WL, Robinson JM, Anderson CL. Kinetics of FcRn-mediated recycling of IgG and albumin in human: Pathophysiology and therapeutic implications using a simplified mechanism-based model. *Clin Immunol* 2007; 122:146-155. PMID: 17046328; PMCID: PMC2791364.
44. Chaudhury C[#], **Kim J[#]**, Mehnaz S, Wani MA, Oberyszyn TM, Bronson CL, Mohanty S, Hayton WL, Robinson JM, Anderson CL. Accelerated transferrin degradation in HFE-deficient mice is associated with increased transferrin saturation. *J Nutr* 2006; 136:2993-2998. PMID: 17116709. [#]Contributed equally.
45. **Kim J**, Hayton WL, Schultz IR. Modeling the brain-pituitary-gonad axis in salmon. *Mar Environ Res* 2006; 62:S426-S432. PMID: 16716390.
46. Anderson CL, Chaudhury C, **Kim J**, Bronson CL, Wani MA, Mohanty S. Perspective – FcRn transports albumin: relevance to immunology and medicine. *Trends Immunol* 2006; 27:343-348. PMID: 16731041.
47. Wani MA, Haynes L, **Kim J**, Bronson CL, Chaudhury C, Mohanty S, Waldmann TA, Robinson JM, Anderson CL. Familial hypercatabolic hypoproteinemia caused by deficiency of the neonatal Fc receptor, FcRn, due to a mutant β_2-microglobulin gene. *Proc Natl Acad Sci U S A* 2006; 103:5084-5089. PMID: 16549777; PMCID: PMC1458798.
48. **Kim J**, Bronson CL, Hayton WL, Radmacher MD, Roopenian DC, Robinson JM, Anderson CL. Albumin turnover: FcRn-mediated recycling saves as much albumin from degradation as the liver produces. *Am J Physiol: GI Liver Physiol* 2006; 290:G352-G360. PMID: 16210471.
49. Li D, Jang SH, **Kim J**, Wientjes MG, Au JL. Enhanced drug-induced apoptosis associated with P-glycoprotein overexpression is specific to antimicrotubule agents. *Pharm Res* 2003; 20:45-50. PMID: 12608535.
50. **Kim J**, Kim EJ, Han KS, Chang MS, Lee MG. Gastrointestinal first-pass effect of YJA-20379-8, a new reversible proton pump inhibitor, in rats. *J Pharm Pharmacol* 1999; 51:1031-1036. PMID: 10528986.
51. Chung SY, Han KS, Kim HJ, **Kim J**, Chang MS, Lee MG. Gastrointestinal absorption of a new reversible proton pump inhibitor, YJA-20379-8, and its pharmacokinetics after oral administration in acetic acid-induced gastric ulcer in rats. *J Pharm Pharmacol* 1999; 51:1025-1030. PMID: 10528985.
52. **Kim J**, Han KS, Lee JW, Lee MG. Hepatic and intestinal first-pass effects of a new hepatoprotective agent, YH439, in rats. *Res Commun Mol Pathol Pharmacol* 1998; 102:125-136. PMID: 10100504.
53. **Kim J**, Kim SH, Lee MG. Liver and gastrointestinal first-pass effects of azosemide in rats. *J Pharm Pharmacol* 1997; 49:878-883. PMID: 9306255.