BIOGRAPHICAL SKETCH

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NAME: Jung Han Kim

eRA COMMONS USER NAME (credential, e.g., agency login): JUNGHANKIM

POSITION TITLE: Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Dongduk Women's University, Seoul, Korea	B.S.	02/85	Food and Nutrition
Dongduk Women's University, Seoul, Korea	M.S.	02/87	Food Science
The University of Tennessee, Knoxville, TN	Ph.D.	08/96	Nutritional Sciences
The Jackson Laboratory, Bar Harbor, ME	Postdoc	09/01	Genetics

A. Personal Statement

My experience and qualifications make me well suited for serving as a mentor in the project. Over the several years, I supervised more than one hundred undergraduate and twenty graduate students. I served as a Member in twenty graduate student thesis committees and served as Advisor/Chair for six M.S. and Ph.D. students. I have mentored three postdoctoral fellows who became a successful independent scientist. With my mentees I have produced multiple peer-reviewed publications. In addition, I have a solid background in genetics, nutritional sciences and physiology, with specific training and expertise in gene mapping, positional cloning, and physiological analysis. My research includes identifying genetic factors underlying obesity and type 2 diabetes and the related pathophysiological pathways. With my research endeavors I have developed useful animal models for obesity and type 2 diabetes including TALLYHO mice that are well served in the project. As PI on several Foundation- and NIH-funded grants, I have built a strong research program and have a track record of accomplished and productive research projects.

1. **Kim JH**, Stewart TP, Zhang W, Kim HY, Nishina PM, Naggert JK. The Type 2 diabetes mouse model TallyHo carries an obesity gene on chromosome 6 that exaggerates dietary obesity. *Physiol Genomics* 2005, 22 (2): 171-181.
2. Stewart TP, Kim HY, Saxton AM, **Kim JH**. Genetic and genomic analysis of hyperlipidemia, obesity and diabetes using (TALLYHO/JngJ x C57BL/6J) F2 mice. *BMC Genomics* 2010, 11: 713.
3. Stewart TP, Mao X, Aqqad MN, Uffort D, Dillon KD, Saxton AM, **Kim JH**. Subcongenic analysis of *tabw2* obesity QTL on mouse chromosome 6. *BMC Genet* 2012, 13(1): 81.
4. Mao X, Dillon KD, McEntee MF, Saxton AM, **Kim JH**. Islet insulin secretion, β-cell mass, and energy balance in a polygenic mouse model of Type 2 diabetes with obesity. *JIEMS* 2014: 1-6.

B. Positions and Honors

Positions and Employment

1985–1987 Graduate Teaching Assistant, Dongduk Women's University, Seoul, Korea
1987 Research Assistant, Bioengineering, Korea Advanced Institute of Science and Technology, Seoul, Korea
1987–1989 Part-time Lecturer, Sang-Ji Junior College, Andong, Korea
1988–1991 Part-time Lecturer, Dongduk Women's University, Seoul, Korea
1992–1996 Graduate Research Assistant, The University of Tennessee, Knoxville, TN

1996–2001 Postdoctoral Associate, The Jackson Laboratory, Bar Harbor, ME
2001–2007 Assistant Professor
Department of Nutrition, The University of Tennessee, Knoxville, TN
Adjunct: Center of Excellence for Genomics and Bioinformatics
Genome Science and Technology Graduate School
2007–2009 Associate Professor
Department of Nutrition, The University of Tennessee, Knoxville, TN
Adjunct: Center of Excellence for Genomics and Bioinformatics
Genome Science and Technology Graduate School
2009-2013 Associate Professor
Department of Pharmacology, Physiology and Toxicology
School of Medicine, Marshall University, Huntington, WV
2013- Professor
Department of Pharmacology, Physiology and Toxicology
School of Medicine, Marshall University, Huntington, WV

Other Experience and Professional Memberships

Grant reviewing:
2004 Panelist, USDA Improving Human Nutrition for Optimal Health grant review panel
2011 Ad-hoc reviewer, Veni programme of The Netherlands Organisation for Health Research and Development (ZonMw)
2012 Ad-hoc reviewer, The Israel Science Foundation
2012-14 Member, American Heart Association Lipids BSc2 Study Session
2013 Ad-hoc reviewer, NIDDK DDK-C Subcommittee
Journal refereeing:
1998- Peer reviewed 36 articles for 24 journals
Editorship:
2013- Associate Editor, BMC Genetics
Professional Memberships:
2001- Member, American Society for Nutrition
2004- Member, American Diabetes Association
2011- Member, The Obesity Society
2012- Member, American Heart Association

Honors

1995 Outstanding Graduate Research Award, The University of Tennessee, Knoxville, TN
1995 Graduate Student Research Award, The American Institute of Nutrition Sponsored by the Procter and Gamble Company
1996 Outstanding Graduate Research Award, The University of Tennessee, Knoxville, TN
1996 Graduate Student Research Award, The American Institute of Nutrition Sponsored by the Procter and Gamble Company
1996 Chancellor's Citation for Extraordinary Professional Promise, The University of Tennessee, Knoxville, TN
1998 Finalist for Postdoctoral Fellowship Award, Life Sciences Research Foundation
1998-2000 Postdoctoral Fellowship Award, American Heart Association, Northeast Affiliate
2003 Faculty Achievement Award for Research/Creative Endeavor
College of Education, Health and Human Science, The University of Tennessee, Knoxville, TN

C. Contribution to Science

1. My early publications addressed cellular mechanisms of obesity and type 2 diabetes developed in the *agouti* yellow mouse. In wild type mice, the *agouti* gene is transiently expressed during hair growth and encodes a signaling molecule that creates a subapical yellow band on each hair. The *agouti* yellow mouse has a dominant mutation in the *agouti* gene that results in constitutive *agouti* expression, leading to the expression of yellow fur and metabolic syndrome of obesity and type 2 diabetes. Our

work elucidated the role of intracellular calcium in the *agouti* action that antagonizes the melanocortin receptors. I was a major graduate student in all of these studies.

a. Zemel MB, **Kim JH**, Woychik RP, Michaud EJ, Kadwell SH, Patel IR, Wilkison WO. Agouti regulation of intracellular calcium: Role in the insulin resistance of viable yellow mice. *Proc Natl Acad Sci USA* 1995, 92: 4733-4737.
b. **Kim JH**, Mynatt R, Moore JW, Woychik RP, Moustaid N, Zemel MB. The effect of Ca^{2+}-channel blockade on agouti-induced obesity. *FASEB J* 1996, 10: 1646-1652.
c. **Kim JH**, Kiefer LL, Woychik RP, Wilkison WO, Truesdale A, Ittoop O, Willard D, Nichols J, Zemel MB. Agouti regulation of intracellular calcium: Role of melanocortin receptors. *Am J Physiol* 1997, 272: E379-E384.

2. In continuation of studying obesity and type 2 diabetes biology described above, I focused on genetics of these diseases. I worked on developing a new genetic mouse model for obesity and type 2 diabetes, TALLYHO, and documented multiple quantitative trait loci (QTL) linked to the disease phenotypes in this model. Further, using congenic and subcongenic strategy I have fine mapped one of the obesity QTL derived from TALLYHO for positional cloning. These studies generated new animal models in the field and help shed light on the genetic architecture of these complex diseases. I served as the first or senior authors in all of these studies.

a. **Kim JH**, Sen S, Avery CS, Simpson E, Chandler P, Churchill G, Nishina PM, Naggert JK. Genetic analysis of a new mouse model for non-insulin dependent diabetes*. Genomics* 2001, 74 (3): 273-286.
b. **Kim JH**, Stewart TP, Zhang W, Kim HY, Nishina PM, Naggert JK. The Type 2 diabetes mouse model TallyHo carries an obesity gene on chromosome 6 that exaggerates dietary obesity. *Physiol Genomics* 2005, 22 (2): 171-181.
c. Stewart TP, Kim HY, Saxton AM, **Kim JH**. Genetic and genomic analysis of hyperlipidemia, obesity and diabetes using (TALLYHO/JngJ x C57BL/6J) F2 mice. *BMC Genomics* 2010, 11: 713.
d. Stewart TP, Mao X, Aqqad MN, Uffort D, Dillon KD, Saxton AM, **Kim JH**. Subcongenic analysis of *tabw2* obesity QTL on mouse chromosome 6. *BMC Genet* 2012, 13(1): 81.

3. The pathogenesis of type 2 diabetes is complex and largely involves a combination of insulin resistance in the target tissues and failure of insulin secretion from pancreatic β-cells. In most cases in humans, prior to eventual failure, the β-cells compensate for the insulin resistance for long period of time via two primary mechanisms; increasing insulin secretion capacity and increasing β-cell mass. We have documented that TALLYHO mice are characterized by impaired glucose tolerance and uptake in the skeletal muscle (basal and insulin stimulated), which is accompanied by enlarged islets, increased glucose-stimulated insulin secretion from islets, and increased β-cell mass. These studies elucidate a pathogenic mechanism of type 2 diabetes developed in TALLYHO mice and offer a valuable animal model that accurately represents human type 2 diabetes. I served as the primary investigator in all of these studies.

a. **Kim JH**, Stewart TP, Soltani-Bejnood M, Wang L, Fortuna JM, Mostafa OA, Moustaid-Moussa N, Shoieb AM, McEntee MF, Wang Y, Bechtel L, Naggert JK. Phenotypic Characterization of Polygenic Type 2 Diabetes in TALLYHO/JngJ Mice. *J Endocrinol* 2006, 191(2): 437-446.
b. Mao X, Dillon KD, McEntee MF, Saxton AM, **Kim JH**. Islet insulin secretion, β-cell mass, and energy balance in a polygenic mouse model of Type 2 diabetes with obesity. *JIEMS* 2014: 1-6.

Complete List of Published Work in My Bibliography:
http://www.ncbi.nlm.nih.gov/sites/myncbi/jung
han.kim.1/bibliography/47838499/public/?sort=date&direction=ascending

D. Research Support

R01DK077202 Kim (PI) 07/01/08 - 06/30/13 (no cost extension through 06/30/15)
National Institutes of Health/ National Institute of Diabetes and Digestive and Kidney Diseases
Genetics of diet-induced obesity in a new mouse model.
The goal of this study is to elucidate energy balance in diet-induced obesity under low- and high-fat diets and identify the underlying genetic factors in mice.
Role: Principal Investigator

AHA 0855300E Kim (PI) 07/01/08 - 06/30/10
American Heart Association, Grant-in-Aid, the Greater Southeast Affiliate
Diet-Wnt signaling interactions in a novel congenic mouse model of obesity.
The goal of this study is to understand the role of Wnt signaling related to dietary obesity and energy homeostasis.
Role: Principal Investigator

ADA 7-04-RA-52 Kim (PI) 07/01/04 - 06/30/07
American Diabetes Association, Research Award
Metabolic and Genomic Characterization of Early-Onset Hypertriglyceridemia in a New Mouse Model of NIDDM, TallyHo.
The goal of this project is to study genetic and pathophysiologic characterizations of dyslipidemia in TALLYHO mice.
Role: Principal Investigator.

AHA 0235345N Kim (PI) 07/01/02 - 06/30/06
American Heart Association, Scientist Development Grant
Molecular basis of genetic susceptibility to diet induced obesity in tabw2 (TallyHo associated body weight 2) mice.
The goal of this study is to identify a mutation of the obesity susceptibility gene.
Role: Principal Investigator