

## **SU-JEONG KIM, Ph.D.**

Research Assistant Professor  
Leonard Davis School of Gerontology  
University of Southern California  
3715 McClintock Ave. GER. B1  
Los Angeles, CA, 90089  
Email: sujkim@usc.edu

### **EDUCATION**

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2005 – 2012            Ph.D. in Systems Biology (Summa Cum Laude)  
Yonsei University, Seoul, South Korea

2001 – 2005            Bachelor of Science in Biotechnology  
Yonsei University, Seoul, South Korea

### **TRAINING**

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2013 – 2018            Postdoctoral Fellow  
Leonard Davis School of Gerontology  
University of Southern California, Los Angeles, CA

### **AREAS OF RESEARCH**

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Functional roles of mitochondrial DNA polymorphism and therapeutic potential of mitochondrial-derived peptides in age-related diseases including Parkinson's disease and Alzheimer's disease

Systemic approach – population genetics, transcriptomics, proteomics, cell culture, and mice models

### **PROFESSIONAL APPOINTMENTS**

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2019 – Present            Research Assistant Professor of Gerontology  
Leonard Davis School of Gerontology  
University of Southern California, Los Angeles, CA

2018 – 2019            Research Associate  
Leonard Davis School of Gerontology  
University of Southern California, Los Angeles, CA

### **HONORS AND AWARDS**

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2018            Dean's Postdoctoral Fellow Award, USC, Los Angeles, CA

2016            24th Annual Summer Training Course in Experimental Aging Research, National  
Institute of Aging, Oklahoma, OK

- 2012 Graduate with Honor (Summa Cum Laude), Yonsei University, Seoul, South Korea  
 2012 Best Oral Presentation Award, BK21/WCU Research Symposium, Seoul, South Korea  
 2011 Best Poster Presentation Award, KSBNS-MCCS-Asia, Seoul, South Korea  
 2005 – 2007 KBS Science & Technology Scholarship, Seoul, South Korea

## **FELLOWSHIP AND GRANT SUPPORT**

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- 2017 Principal Investigator  
 Glenn/AFAR Postdoctoral Fellowship Program for Translational Research on Aging  
 (American Federation for Aging Research)  
 Investigating the senolytic functions of mitochondrial peptides  
 The goal of this project is to assess the senolytic role of humanin and MOTS-c.
- 2016 Principal Investigator  
 USC Provost's Postdoctoral Scholar Research Grant (USC)  
 Investigating the role of mitochondrial derived peptides in the regulation of senescence  
 The goal of this project is to understand the role of mitochondria during senescence and investigate the potential role of humanin and MOTS-c in mitochondrial energetics during senescence.
- 2015 Principal Investigator  
 Ellison/AFAR Postdoctoral Fellowship in Aging Research Program (AFAR)  
 Humanin: a mitochondrial derived peptide that modulates autophagy, neurodegeneration and aging  
 The goal of this project is to assess the role of humanin as an autophagy inducer, and investigate its downstream signaling pathway.

## **MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS AND SOCIETIES**

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- 2015 – Present Gerontological Society of America  
 2014 – Present American Aging Association  
 2006 – 2012 Society for Neuroscience

## **TEACHING EXPERIENCE**

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- 2020 Co-instructor  
 Gerontology, University of Southern California, LA  
 GERO593, Research methods  
 Giving a lecture and leading a discussion session
- 2010, 2008 Teaching Assistant  
 Department of Biology, Yonsei University, Seoul, South Korea  
 General Biology and Laboratory  
 Leading undergraduate introductory biology with laboratory (basic biochemistry, genetics, cell biology)
- 2010, 2007 Teaching Assistant

Department of Biology, Yonsei University, Seoul, South Korea  
 Experiments in biology  
 Leading undergraduate neuroscience with laboratory, developing course outline and objectives

- 2009 Teaching Assistant  
 Department of Biology, Yonsei University, Seoul, South Korea  
 Advanced Biology and Laboratory  
 Leading undergraduate advanced biology with laboratory (cell biology and molecular biology), developing course outline and objectives
- 2008, 2006 Teaching Assistant  
 College of Engineering, Yonsei University, Seoul, South Korea  
 Biology and Experiments  
 Leading undergraduate introductory biology with laboratory (biochemistry, cell biology, genetics)
- 2007 Teaching Assistant  
 College of Engineering, Yonsei University, Seoul, South Korea  
 Core Biology  
 Conducting weekly review and discussion sessions
- 2005 Teaching Assistant  
 College of Engineering, Yonsei University, Seoul, South Korea  
 General Biology  
 Conducting weekly review and discussion sessions

## **MENTORING EXPERIENCE**

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- Rotating Ph.D. students Genutis, L. (2020, Ph.D. student, USC Molecular Biology program)  
 Flores, M. (2020, Ph.D. student, USC Molecular Biology program)  
 Ciotlos, S. (2018, Ph.D. candidate, USC-Buck Biology of Aging program)  
 Miller, B. (2017, Ph.D. candidate, USC Neuroscience program)  
 Hendricks, E. (2016, Ph.D. candidate, USC Neuroscience program)  
 Kuehnemann, C. (2016, Ph.D. candidate, USC-Buck Biology of Aging program)  
 Cai, X. (2015, Ph.D. Candidate, USC-Buck Biology of Aging program)  
 Uchoa, M. (2015, Ph.D. candidate, USC Neuroscience program)  
 Wilson, K. (2014, Postdoctoral researcher, Buck Institute for Research on Aging)
- Undergraduate student Lee, S.M. (2019 – Present)  
 Rosen, N. (2019)  
 Rivera-Correa, S. (2019)  
 Qaiyim, T. (2019)  
 Devgan, A. (2017 – Present)  
 Park, S. (2017)  
 Wassef, G. (2015 – 2017)
- High school student Huang, A. (2019, USC Bridge Institute BUGS Jr program)

**LEADERSHIP-RELATED EXPERIENCE**

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- 2010            Staff, International symposium on research and therapeutics development in Neurodegenerative diseases, Yonsei University
- 2008-2006      Vice President, KBS Science & Technology Society, Seoul, South Korea
- 2002-2004      Editor, Department of Biotechnology, Yonsei University

**PUBLICATIONS**

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1. Miller, B., Silverstein, A., Flores, M., Cao, K., Kumagai, H., Mehta, H., Yen, K., **Kim, S.J.**, Cohen, P. (2020) Host mitochondrial transcriptome response to SARS-CoV-2 in multiple cell models and clinical samples. *Accepted in Scientific Reports*.
2. Zempo, H.\*, **Kim, S.J.** \*, Wan, J., Yen, K., Miller, B., Vicinanza, R., Fuku, N., Nishida, Y., Higaki, Y., Kumagai, H., Naito, H., Xiao, J., Mehta, H., Lee, C., Hara, M., Tanaka, K., Cohen, P. (2020). A Kinesio-Genomic Diabetogenic Mutation in the Mitochondrial-Derived Peptide, MOTS-c. *Accepted in Aging (Albany NY)*. (\* Equal contribution).
3. **Kim, S.J.** \*, Miller, B., Kumagai, H., Silverstein, AR., Flores, M., Yen, K. (2020) Mitochondrial-derived peptides in aging and age-related diseases. *Geroscience*. Sep 10. doi: 10.1007/s11357-020-00262-5. (\*Corresponding author)
4. Miller, B., Torres, M., Jiang, X., McKean, R., Noursome, D., **Kim, S.J.**, Mehta, H., Yen, K., Varma, R., Cohen, P. (2020). The mtDNA polymorphism rs41323649 increases cataracts risk in Latinos. *translational vision science & technology*. May 23;9(6):25.
5. Yen, K., Mehta, H., **Kim, S.J.**, Lue, Y., Hoang, J., Guerrero, N., Port, J., Bi, Q., Navarrete, G., Brandhorst, S., Lewis, K.N., Wan, W., Swerdloff, R., Mattison, J.A., Buffenstein, R., Breton, C., Wang, C., Longo, V., Atzmon, G., Wallace, D., Barzilai, N., Cohen, P. (2020). The mitochondrial derived peptide humanin is a regulator of lifespan and healthspan. *Aging (Albany NY)*. Jun 23;12(12):11185-11199.
6. Mito-Omics and immune function: Applying novel mitochondrial omic techniques to the context of the aging immune system. (2020) Silverstein, A.R., Flores, M.K., Miller, B., **Kim, S.J.**, Yen, K., Mehta, H.H., Cohen, P. *Transl Med Aging*. 2020;4:132-140. doi: 10.1016/j.tma.2020.08.001. Epub 2020 Aug 21.
7. Merry T.L., Chan, A., Woodhead, J., Kumagai, H., **Kim, S.J.**, Lee, C. (2020). Mitochondrial derived peptides in metabolism, *AJP-Endo*. Oct 1;319(4):E659-E666.
8. Zhao, Y., Zhou, L., Yu, Y., Li, X., Meng, Y., Li, Y., Liu, M., Liu, S., **Kim, S.J.**, Xiao, J., Li, L., Bai, L., Zhang, S., Li, W., Cohen, P., Hoffman, A.R., Hu, J.F., Cui, J. (2020) Nuclear-encoded MALAT1 is aberrantly transported into mitochondria and controls metabolic reprogramming in hepatocellular carcinoma cells. *Molecular Therapy Nucleic Acids*. Oct. 3<sup>rd</sup>. doi:https://doi.org/10.1016/j.omtn.2020.09.040

9. Miller, B., **Kim, S.J.**, Kumagai, H., Mehta, H.H, Xiang W., Liu, J., Yen, K., Cohen, P. (2020). Peptides derived from small mitochondrial open reading frames: Genomic, biological, and therapeutic implications. *Exp Cell Res.* 112056. doi: 10.1016/j.yexcr.2020.112056.
10. Ko, Y.U.\*, **Kim, S.J.\***, Lee, J., Song, M.Y., Park, K.S., Park, J.B., Cho, H.S., Oh, Y.J. (2019). PKA-induced phosphorylation at the Thr154 affects stability of DJ-1. *Parkinsonism & Related Disorders* 66, 143-150. (\* Equal contribution)
11. **Kim, S.J.**, Miller, B., Mehta, H.H., Xiao, J., Wan, J., Arpawong, T.E., Yen, K., Cohen, P. (2019). The Mitochondrial-derived Peptide MOTS-c is a regulator of plasma Metabolites and enhances insulin sensitivity. *Physiological Reports* 7(13), e14171.
12. Mehta, H.H., Xiao, J., Ramirez, R., Miller, B., **Kim, S.J.**, Cohen, P., Yen, K. (2019). Metabolomic profile of diet-induced obesity mice in response to humanin and small humanin-like peptide 2 treatment. *Metabolomics* 15(6), 88.
13. Miller, B., Arpawong, T.E., Jiao, H., **Kim, S.J.**, Yen, K., Mehta, H.H., Wan, J., Carpten, J.C., Cohen, P. (2019). Comparing the Utility of Mitochondrial and Nuclear DNA to Adjust for Genetic Ancestry in Association Studies. *Cells* 8(4), 306.
14. Breton, C.V., Song, S.Y., Xiao, J., **Kim, S.J.**, Mehta, H.H., Wan, J., Yen, K., Morgan, T., Xue, S., Zhang, J., Cohen, P. (2019). Effects of air pollution on mitochondrial function, mitochondrial DNA methylation, and mitochondrial peptide expression. *Mitochondrion* 46, 22–29.
15. **Kim, S.J.**, Chun, M., Wan, J., Lee, C., Yen, K., Cohen, P. (2019). GRSF1 is an age-related regulator of senescence. *Scientific Reports* 9(1), 5546.
16. **Kim, S.J.**, Miller, B., Kumagai, H., Yen, K., Cohen, P. (2019). MOTS-c: an equal opportunity insulin sensitizer. *Journal of Molecular Medicine* 97(4), 487–490.
17. Yen, K., Wan, J., Mehta, H.H., Miller, B., Christensen, A., Levine, M.E., Salomon, M.P., Brandhorst, S., Xiao, J., **Kim, S.J.**, Navarrete, G., Campo, D., Harry, G.J., Longo, V., Pike, C.J., Mack, W.J., Hodis, H.N., Crimmins, E.M., Cohen, P. (2018). Humanin Prevents Age-Related Cognitive Decline in Mice and is Associated with Improved Cognitive Age in Humans. *Scientific Reports* 8(1), 14212.
18. **Kim, S.J.**, Mehta, H., Wan, J., Kuehnemann, C., Chen, J., Hu, J.F., Hoffman, A.R., Cohen, P. (2018). Mitochondrial Peptides Modulate Mitochondrial Function During Cellular Senescence. *Aging (Albany NY)* 10(6), 1239–1256.
19. **Kim, S.J.**, Xiao, J., Cohen, P., Yen, K. (2017). Subcellular fractionation for ERK activation upon mitochondrial-derived peptide treatment. *The Journal of Visualized Experiments* 127.
20. Yu, D., Du, Z., Pian, L., Li, T., Wen, X., Li, W., **Kim, S.J.**, Xiao, J., Cohen, P., Cui, J., Hoffman, A.R., Hu, J.F. (2017). Mitochondrial DNA Hypomethylation Is a Biomarker Associated with Induced Senescence in Human Fetal Heart Mesenchymal Stem Cells. *Stem Cells International* Article ID 1764549–12.
21. **Kim, S.J.**, Xiao, J., Wan, J., Cohen, P., Yen, K. (2017). Mitochondrial derived peptides as novel regulators of metabolism. *The Journal of Physiology* 595(21), 6613–6621.

22. **Kim, S.J.**, Guerrero, N., Wassef, G., Xiao, J., Mehta, H., Cohen, P., Yen, K. (2016). The mitochondrial-derived peptide humanin activates the ERK1/2, AKT, and STAT3 signaling pathways and has age-dependent signaling differences in the hippocampus. *Oncotarget* 7(30), 46899–46912.
23. Xiao, J., **Kim, S.J.**, Cohen, P., Yen, K. (2016). Humanin: Functional Interfaces with IGF-I. *Growth Hormone & IGF Research* 29, 21–27.
24. Lee, C., Zeng, J., Drew, B.G., Martin-Montalvo, A., Wan, J., **Kim, S.J.**, Mehta, H., Hevener, A.L., de Cabo, R., Cohen, P. (2015). A Novel Small Open Reading Frame within the Mitochondrial Genome Encodes a Peptide that Regulates Metabolic Homeostasis and Prevents Obesity. *Cell Metabolism* 21(3), 443–454.
25. **Kim, S.J.**, Park, Y.J., Hwang, I.Y., Youdim, M.B., Park, K.S., Oh, Y.J. (2012). Nuclear translocation of DJ-1 during oxidative stress-induced neuronal cell death. *Free Radical Biology & Medicine* 53, 936–950.
26. **Kim, S.J.**, Park, Y.J., Oh, Y.J. (2012). Proteomic analysis reveals a protective role of DJ-1 during 6-hydroxydopamine-induced cell death. *Biochemical and Biophysical Research Communications* 422, 8–14.
27. Kang, H.\* , Han, B.S.\* , **Kim, S.J.\***, Oh, Y.J. (2012). Mechanisms to prevent caspase activation in rotenone-induced dopaminergic neurodegeneration: Role of ATP depletion and procaspase-9 degradation. *Apoptosis* 17(15), 449–462. (\* These authors contributed equally to this work).

#### *Manuscripts in Submission*

1. Kumagai, H., Coelho, A.R., Wan, W., Mehta, H., Yen, K., Huang, A., Zempo, H., Fuku, N., Maeda, S., Oliveira, P.J., Cohen, P., **Kim, S.J.\*** MOTS-c ameliorates sarcopenia by reducing myostatin expression. (\*Corresponding author) *revised and resubmitted*

#### **INVITED AND/OR PEER-SELECTED ORAL PRESENTATIONS**

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1. **Kim, S.J.**, Devgan, A., Cohen, P. (2019). Mitochondrial-derived peptide, SHLP2 is a protective factor for Parkinson's disease. Finch AD Symposium, Los Angeles, CA
2. **Kim, S.J.**, Mehta, H., Yen, K., Cohen, P. (2019). Mitochondrial-derived peptides and aging. State of the Science Symposium, Bethesda, MD
3. **Kim, S.J.**, Yen, K., Kumagai, H., Mehta, H., Cohen, P. (2019). A Kinesio-Genomic Pro-Diabetogenic mtDNA Polymorphism in the Mitochondrial-Derived Peptide, MOTS-c. Diabetes & Obesity Research Institute Annual Research Symposium, Los Angeles, CA
4. **Kim, S.J.** and Oh, Y.J. (2012). Nuclear translocation of DJ-1 during oxidative stress-induced neuronal cell death. Keystone symposium on Molecular and Cellular Biology, Banff, Alberta, Canada
5. **Kim, S.J.** and Oh, Y.J. (2010). Nuclear translocation of DJ-1/PARK7 during neurotoxin-induced cell death regulates transcription and cell viability. Kyung Hee Brain Conference (KBC), Hongcheon, South Korea

## CONFERENCE PRESENTATIONS (POSTERS)

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1. **Kim, S.J.**, Devgan, A., Mehta, H., Cohen, P. (2019). Mitochondrial-derived peptide, SHLP2, a novel protective factor in Parkinson's disease. Gerontological Society of America Annual Scientific Meeting, Austin, TX
2. Miller, B., **Kim, S.J.**, Wan, J., Mehta, H., Yen, K., Cohen, P. (2019). Mitochondrial DNA Variant C2639T is an APOE4 Resilience Factor. Gerontological Society of America Annual Scientific Meeting, Austin, TX
3. **Kim, S.J.**, Zempo, H., Wan, J., Yen, K., Miller, B., Vicinanza, R., Fuku, N., Nishida, Y., Higaki, Y., Kumagai, H., Naito, H., Xiao, J., Mehta, H., Lee, C., Hara, M., Tanaka, K., Cohen, P. (2018). A Kinesio-Genomic Pro-Diabetogenic mtDNA Polymorphism in the Mitochondrial-Derived Peptide, MOTS-c. American Aging Association Annual Meeting, Philadelphia, PA
4. **Kim, S.J.**, Cohen, P. (2018). Mitochondrial RNA binding protein is an age-related regulator of senescence. Cell Symposia - Multifaceted Mitochondria, San Diego, CA
5. **Kim, S.J.**, Zempo, H., Wan, J., Yen, K., Miller, B., Vicinanza, R., Fuku, N., Nishida, Y., Higaki, Y., Kumagai, H., Naito, H., Xiao, J., Mehta, H., Lee, C., Hara, M., Tanaka, K., Cohen, P. (2018). A Kinesio-Genomic Pro-Diabetogenic mtDNA Polymorphism in the Mitochondrial-Derived Peptide, MOTS-c. Keystone Symposium on Drivers of Type 2 Diabetes: From Genes to Environment, Seoul, South Korea
6. **Kim, S.J.**, Guerrero, N., Wassef, G., Xiao, J., Mehta, H.H., Yen, K., Cohen, P. (2016). The mitochondrial-derived peptide, humanin, activates ERK 1/2, Akt, and Stat-3 signaling pathway in an age-dependent manner. American Aging Association Annual Meeting, Seattle, WA
7. **Kim, S.J.**, Guerrero, N., Wassef, G., Xiao, J., Mehta, H.H., Yen, K., Cohen, P. (2016). Mitochondria-derived peptide, humanin activates ERK 1/2, Akt, and Stat-3 signaling pathway. NHLBI/NIDDK Mitochondrial Biology Symposium- Novel Roles of Mitochondria in Health and disease, Bethesda, MD
8. **Kim, S.J.** and Oh, Y.J. (2011). Nuclear translocation of PARK7/DJ-1 during oxidative stress-induced neuronal cell death. KSBNS-MCCS-Asia, Seoul, South Korea
9. **Kim, S.J.** and Oh, Y.J. (2011). Mechanism of nuclear translocation of DJ-1 during 6-hydroxydopamine-induced neuronal cell death. Gordon Research Conference, Ventura, CA
10. **Kim, S.J.** and Oh, Y.J. (2010). Nuclear translocation of DJ-1 regulates transcription and viability following 6-hydroxydopamine-induced cell death. Society for Neuroscience 40th annual meetings, San Diego, CA
11. **Kim, S.J.** and Oh, Y.J. (2009). Nuclear translocation of DJ-1 during 6-hydroxydopamine-induced neuronal death: its potential role in transcriptional regulation. Society for Neuroscience 39th annual meetings, Chicago, IL
12. **Kim, S.J.** and Oh, Y.J. (2009). Mechanism of nuclear translocation of DJ-1 during 6-hydroxydopamine-induced apoptosis. ISN/ASPN, Pusan, South Korea

13. **Kim, S.J.**, Park, Y., Oh, Y.J. (2008). Mechanism of nuclear translocation of DJ-1 during 6-hydroxydopamine-mediated apoptosis: its potential role in transcriptional regulation. Keystone symposium on Molecular and Cellular Biology, Breckenridge, CO
14. **Kim, S.J.**, Park, Y., Oh, Y.J. (2006). Nuclear translocation of DJ-1 has a potential role in transcriptional regulation during oxidative stress-mediated apoptosis. Society for Neuroscience 36th annual meetings, Atlanta, GA

#### **AD HOC MANUSCRIPT REVIEWS**

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Int. J. Mol. Sci.	2 Research Article (2020)
Peptides	1 Research Article (2019)
Pharmacological Research	1 Research Article (2019)