

Curriculum Vitae - Changhan David Lee, Ph.D.

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EDUCATION

- 2010 May University of Southern California, Keck School of Medicine, Los Angeles, CA
Ph.D. Genetics, Molecular and Cellular Biology
- 2004 August University of Washington, Seattle, WA
B.S. Microbiology

POSITIONS AND EMPLOYMENTS

- 2022 - Associate Professor (with tenure), USC Davis School of Gerontology.
2022- Director, USC-Buck Nathan Shock CenterGeroscience Technology Core
2015 - Member USC Norris Comprehensive Cancer Center
2015 - Member USC Research Center for Liver Diseases
2015 - Adjunct Professor, Ajou University Graduate School of Medicine
2014 - 2022 Assistant Professor (tenure-track), USC Davis School of Gerontology.
2012 (Aug) – 2014 (Jul) Research Assistant Professor, USC Davis School of Gerontology.
2012 (Jul-Sept) Visiting Assistant Professor, UCLA Geffen School of Medicine, Pediatric Endocrinology.
- 2010 (Jul) – 2012 (Jul) Post-doctoral Fellow, UCLA Geffen School of Medicine, Pediatric Endocrinology. (Dr. Pinchas Cohen)
- 2006-2010 (Jun) Graduate Student Researcher, Genetics, Molecular and Cellular Biology, Keck School of Medicine/USC. (Dr. Valter Longo)
- 2004 Teaching Assistant, Department of Microbiology, Molecular Genetics 411, University of Washington
- 2002-2005 Research Assistant, Department of Microbiology, University of Washington. (Dr. Kelly Hughes)
- 2001 Research Assistant, Department of Pathology, University of Washington (Dr. George Martin)

PUBLICATIONS

<Research Articles >

1. Lee C, Wozniak C, Karlinsey JE, & Hughes KT. Genomic screening for regulatory genes using the T-POP transposon. *Methods Enzymol* 421:159-67 (2007).
2. Raffaghello L*, Lee C*, Safdie FM, Wei M, Madia F, Bianchi G, & Longo VD. Starvation-dependent differential stress resistance protects normal but not cancer cells against high-dose chemotherapy. *Proc Natl Acad Sci U S A* 105:8215-20 (2008). * **Equal Contribution**
Covered: Can Fasting Blunt Chemotherapy's Debilitating Side Effects? Science 29: 1146-1147 (2008).
3. Wozniak CE, Lee C, & Hughes KT. T-POP array identifies EcnR and PefI-SrgD as novel regulators of flagellar gene expression. *J Bacteriol* 191:1498-508 (2009).
4. Safdie FM, Dorff T, Quinn D, Fontana L, Wei M, Lee C, Cohen P, Longo VD. Fasting and Cancer Treatment: Ten Case reports. *Aging* 1:988-1007 (2009).
5. Lee C, Safdie FM, Raffaghello L, Wei M, Madia F, Parrella E, Hwang D, Cohen P, Bianchi G, Longo VD. Reduced levels of IGF-I mediate differential protection of normal and cancer cells in response to fasting and improve chemotherapeutic index. *Cancer Res* 70:1564-72 (2010).
6. Lee C and Longo VD. Fasting vs. Dietary Restriction in Cellular Protection and Cancer treatment: from model systems to patients. *Oncogene* 30:3305-16 (2011).
7. Lee C, Raffaghello L, Brandhorst S, Safdie FM, Bianchi G, Martin-Montalvo A, Pistoia V, Wei M, Hwang S, Merlino A, Emionite L, de Cabo R, Longo VD. Fasting cycles retard growth of tumors and sensitize a range of cancer cell types to chemotherapy. *Science translational medicine* 4, 124ra127 (2012).
Covered: Impersonalized Medicine. Sci Transl Med 4:124ps6 (2012).
Toxicity in chemotherapy-when less is more. N Engl J Med. 366:2319-20 (2012).
8. Lee C, Raffaghello L, and Longo VD. Starvation, detoxification, and multidrug resistance in cancer therapy. *Drug Resistance Updates* 15:114-122 (2012).
9. Safdie FM, Brandhorst S, Wei M, Wang W, Lee C, Hwang S, Chen TC, and Longo VD. Fasting Enhances the Response of Glioma to Radio- and Chemotherapy. *PLoS One* 7:e44603 (2012).
10. Yen K, Lee C, Mehta H, Cohen P. The emerging role of the mitochondria-derived peptide Humanin in stress resistance. *Journal of Molecular Endocrinology* 50:1, R11-R19 (2012).
11. Lee C, Yen K, and Cohen P. Humanin: a harbinger of mitochondrion-derived peptides? *Trends in Endocrinology and Metabolism* 24: 222–228 (2013).

12. Lee C, Wan J, Miyazaki B, Fang Y, Guevara-Aguirre J, Yen K, Longo VD, Bartke A, Cohen P. IGF-I Regulates the Age-Dependent Mitochondrial Peptide Humanin. *Aging Cell* 13: 958–961 (2014).
13. Lee C*, Zeng J, Drew BG, Martin-Montalvo A, Wan J, Kim SJ, Mehta H, Hevener AL, de Cabo R, Cohen P*. The Mitochondrial-derived peptide MOTS-c promotes metabolic homeostasis and reduces obesity and insulin resistance. *Cell Metabolism* 21:443-454 (2015). *Co-corresponding author
Covered: A Mitochondrially Encoded Hormone Ameliorates Obesity and Insulin Resistance. Cell Metabolism 21:355-356 (2015).
14. Cobb LJ, Lee C, Nakamura HK, Mehta H, Hosono H, Wan J, Gao Q, Ashur C, Muzumdar R, Hwang D, Barzilai N, Cohen P. Naturally Occurring Mitochondrial-Derived Peptides are Regulators of Physiological Processes. *AGING* 8:796-809 (2016).
15. Di Biase S*, Lee C*, Brandhorst S, Cheng CW, Buono R, Cacciottolo M, Manes B, Scafone T, Martin-Montalvo A, Wei M, Morgan T, de Cabo R, Longo VD. Fasting mimicking diet-dependent HO-1 reduction promotes T cell-mediated tumor cytotoxicity. *Cancer Cell* 30:136-146 (2016).
* Equal Contribution
Covered: Hunger Pains: Stimulating the Appetite of the Immune System for Cancer. Cancer Cell 30:13-15 (2016).
16. Di Biase S*, Shim HS*, Kim KH*, Vinciguerra M, Rappa F, Wei M, Brandhorst S, Cappello F, Lee C, Longo VD. Fasting Regulates EGR1 and Protects from Glucose-and Dexamethasone Dependent Sensitization to Chemotherapy. *PLoS Biology* 15:e2001951 (2017). * Equal Contribution
17. Lee YK, Lim JJ, Jeoun UW, Min S, Lee EB, Kwon SM, Lee C, Yoon G. Lactate-mediated mitoribosomal defects impair mitochondrial oxidative phosphorylation and promote hepatoma cell invasiveness. *J Biol Chem* 292:20208-20217 (2017).
18. Kim KH, Son JM, Benayoun BA, and Lee C. The Mitochondrial-Encoded Peptide MOTS-c Translocates to the Nucleus to Regulate Nuclear Gene Expression in Response to Metabolic Stress. *Cell Metabolism* 28:516-524 (2018).
Covered: A mitochondrial-derived peptide exercises the nuclear option. Cell Metabolism 28:330-331 (2018).
Covered: A Mitochondrial Encoded Messenger at the Nucleus. Cells 7:105 (2018).
Covered: Going nuclear with stress. Science Signaling 11:eaav4285 (2018).
19. Kim SJ, Chun M, Wan J, Lee C, Yen K, Cohen P. GRSF1 is an age-related regulator of senescence. *Scientific Reports* 9:5546 (2019).
20. Chen Y*, Bravo JI*, Son JM, Lee C, Benayoun BA. Remodeling of the H3 nucleosomal landscape during mouse aging. *Translational Medicine of Aging* 4:22-31 (2020).
21. D'Souza RF, Woodhead JST, Hedges CP, Zeng N, Humagai H, Lee C, Cohen P, Cameron-Smith D, Mitchell CJ, Merry TL. Increased expression of the mitochondrial derived peptide, MOTS-c, in

skeletal muscle of healthy aging men is associated with myofiber composition. *AGING* 12:5244-5258 (2020).

22. Kwon SM, Min SK, Jeoun UW, Sim MS, Jung GH, Jee BA, Woo HG, **Lee C**, Yoon GS. Global spliceosome activity regulates entry into cellular senescence. *FASEB J* 35:e21204 (2021)
23. Zempo H, Kim SJ, Fuku N, Nishida Y, Higaki Y, Wan J, Yen K, Miller B, Vicinanza R, Miyamoto-Mikami E, Kumagai H, Naito H, Xiao J, Mehta HH, **Lee C**, Hara M, Patel YM, Setiawan VW, Moore TM, Hevener AL, Sutoh Y, Shimizu A, Kojima K, Kinoshita K, Arai Y, Hirose N, Maeda S, Tanaka K, Cohen P. A pro-diabetogenic mtDNA polymorphism in the mitochondrial-derived peptide, MOTS-c. *AGING* 13:1692-1717 (2021).
24. Reynolds JC, Lai RL, Woodhead J, Joly J, Mitchell CJ, Cameron-Smith D, Cohen P, Lu R, Graham N, Benayoun BA, Merry T, **Lee C**. Reversal of Age-Dependent Physical Decline by the Exercise-Induced Mitochondrial-Encoded Peptide MOTS-c. *Nature Communications* 12:470 (2021).
<<Ranked 1st of articles of a similar age in Nature Communications (Altmetrics)>>
25. Kang GM[#], Min SH[#], Lee CH[#], Kim JY, Lim HS, Jung SB, Park JW, Kim SJ, Park CB, Hong D, Choi JH, Jang WH, Park SE, Cho YM, Kim JG, Kim KG, Choi CS, Kim YB, **Lee C**^{*}, Shong MH^{*}, Kim MS^{*}. Mitohormesis in hypothalamic POMC neurons mediates regular exercise-induced high-turnover metabolism. *Cell Metabolism* 33:334-349 (2021). [#]Equal Contribution, ^{*}Co-corresponding author
26. Kong BS, Min SH, **Lee C**^{*}, Cho YM^{*}. The mitochondrial-encoded peptide MOTS-c regulates T cell metabolism to prevent autoimmune diabetes. *Cell Reports* 36(4):109447 (2021). ^{*}Co-corresponding authors
27. Ko S, Yeom E, Chun YL, Mun H, Howard-McGuire M, Millison NT, Jung J, Lee KP, **Lee C**, Lee KS, Delaney JR, Yoon JH. Profiling of RNA-binding Proteins Interacting with Glucagon and Adipokinetic Hormone mRNAs. *Journal of Lipid and Atherosclerosis* 10:e28 (2021).
28. Kong BS, **Lee C**^{*}, Cho YM^{*}. Protocol for the assessment of T cell activation by real-time metabolic flux analysis. *STAR Protocols (Cell Press) In Press* (2022). ^{*}Co-corresponding authors
29. Rice MC, Kim JS, Imun M, Jung SW, Park CY, Lai RW, Barr CR, Son JM, Tor K, Kim E, Lu RJ, Cohen I, Benayoun BA^{*}, and **Lee C**^{*}. The Human Mitochondrial Genome Encodes for an Interferon-Responsive Host Defense Peptide. *eLife*, <https://doi.org/10.7554/eLife.87615.1> (2023) ^{*}Co-corresponding authors

<Review Articles>

30. **Lee C** and Longo VD. Dietary restriction with and without caloric restriction for healthy aging. *F1000 Research Review* (2015).
31. **Lee C**, Kim KH, Cohen P. MOTS-c: A novel mitochondrial-derived peptide regulating muscle and fat metabolism. *Free Radical Biology and Medicine* 100:182-187 (2016).

32. Choi IY, **Lee C**, Longo VD. Nutrition and fasting mimicking diets in the prevention and treatment of autoimmune diseases and immunosenescence. *Mol Cell Endocrinol* 455:4-12 (2017).
33. Son JM and **Lee C**. Mitochondria: multifaceted regulators of aging. *BMB Reports* 52:13-23 (2019).
34. **Lee C**. Nuclear Transcriptional Regulation by Mitochondrial-Encoded MOTS-c. *Molecular & Cellular Oncology* 6:1549464 (2019).
35. Benayoun BA and **Lee C**. MOTS-c: A Mitochondrial-Encoded Regulator of the Nucleus. *Bioessays* 41(9):e1900046 (2019).
36. Reynold JR, Bwiza CP, **Lee C**. Dual Genomic Coordination of Metabolic Homeostasis. *Human Genetics*. *Invited* (2019).
Recommended *F1000Prime*: Osiewacz H, 10.3410/f.737293312.793571684 (2020).
37. English J, Son JM, Cardamone MD, **Lee C***, Perissi V*. Decoding the rosetta stone of mitonuclear communication. *Pharmacological Research* 161:105161 (2020). *Co-corresponding author
38. Merry TL, Woodhead JST, Reynolds JR, Zempo H, Kim SJ, **Lee C**. Mitochondrial-derived peptides in muscle and metabolism. *AJP-Endocrinology and Metabolism* 319:E659-E666 (2020).
39. Son JM and **Lee C**. Aging: all roads lead to mitochondria. *Seminars in Cell and Developmental Biology* 116:160-168 (2021).
40. Kong BS, **Lee C**, Cho YM. Mitochondrial-Encoded Peptide MOTS-c, Diabetes, and Aging-Related Diseases. *Diabetes Metabolism Journal* *In Press* (2023).

<Book Chapters >

1. **Lee C** and Longo VD. The Impact of Cancer Treatments on Aging. In: *Advances in Geroscience* (Editor: Felipe Sierra and Ronald Kohanski). 2015. National Institute on Aging (Springer).
2. **Lee C** and Longo VD. Growth Hormones and Aging. In: *Principles of endocrinology and hormone action* (Springer, 2016).
3. Bwiza CP, Son JM, **Lee C**. The theories of biological aging. In: *Oxford Research Encyclopedia of Psychology and Aging* (Oxford University Press, 2018).
4. Reynolds JR and **Lee C**. Assessment of mouse fitness as determined through treadmill running and walking. In: *Methods in Molecular Biology: Aging* 2144:57-65 (Springer, 2020).

PROFESSIONAL ACTIVITIES

Talks

- 2023 Speaker at Seoul National University School of Medicine (*Seoul, S. Korea*)
- 2023 Speaker at the Seoul Intl. Congress of Endocrinology and Metabolism (*Seoul, S. Korea*)
- 2023 Speaker at the Intl. Conference Korean Society of Molecular and Cellular Biol. (*Jeju, S. Korea*)
- 2022 Speaker at the Ajou Inflammaging Conference (*Seoul, S. Korea*)
- 2022 Speaker at the Gerontological Society of America Annual Scientific Meeting (*Indianapolis, USA*)
- 2022 Speaker at the Society for Redox Biology and Medicine Annual Conference (*Miami, USA*)
- 2022 Speaker at the Society on Sarcopenia, Cachexia and Wasting Disorders (SCWD) Annual Meeting (*Lisbon, Portugal*)
- 2022 Speaker at the American Diabetes Association Annual Meeting (*New Orleans, CA, USA*)
- 2022 Speaker at the 18th International Biochemistry of Exercise Conference (*Toronto, Canada*)
- 2021 Speaker at the Systems Immunology in Aging and Complex Diseases Meeting (*Jackson Laboratory, Virtual*)
- 2021 Speaker at Molecular Mechanisms of Exercise and Healthspan (Editors at *Cells*) (*Virtual*)
- 2021 Speaker at Korean Physiological Society General Meeting (*Seoul, S. Korea*)
- 2021 Speaker at University of South Carolina (*Virtual*)
- 2021 Speaker at Molecular Mechanisms of Exercise and Healthspan (*Virtual*)
- 2019 Speaker at the National Advisory Council on Aging Meeting (NIA) (*Baltimore, MD, USA*)
- 2019 Speaker at Columbia University (New York, NY, *USA*)
- 2019 Speaker at Georgia Tech (*Atlanta, GA, USA*)
- 2019 Speaker at Boston University (*Boston, MA, USA*)
- 2019 Speaker at the Fusion Meeting on Mitochondria (*Nassau, Bahamas*)
- 2019 Speaker at the American Diabetes Association Annual Meeting (*San Francisco, CA, USA*)
- 2019 Speaker at the Keystone Symposium on Mitochondria in Aging and Age-Related Disease (*Keystone, CO, USA*)
- 2019 Speaker at the Twilight Club (*Los Angeles, CA, USA*)
- 2018 Speaker at the Gerontological Society of America Annual Meeting (*Boston, MA, USA*)
- 2018 Speaker at the Asian Society for Mitochondrial Research Meeting (*Busan, S. Korea*)
- 2018 Speaker at the University of Coimbra (*Coimbra, Portugal*)
- 2018 Speaker at the Barshop Annual Symposium on Aging (*San Antonio, TX, USA*)
- 2018 Speaker at Ajou University Medical School (*Suwon, S. Korea*)
- 2018 Speaker at International Symposium of the Yonsei University Wonju (*Wonju, S. Korea*)
- 2017 Speaker at the Korean Diabetes Association (*Seoul, S. Korea*)
- 2017 Speaker at the American Physiological Society - Cardiovascular Aging, (*Boulder, CO, USA*)
- 2017 Speaker at the Fusion Interventions in Aging Conference (*Cancun, Mexico*)
- 2016 Speaker at the Ajou Biomedical International Symposium (*Suwon, S. Korea*)
- 2016 Speaker at Yonsei University (*Seoul, S. Korea*)
- 2016 Speaker at the Korean Mitochondrial Research Association Meeting (*Gangwon-do, S. Korea*)
- 2016 Speaker at Seoul National University School of Medicine (*Seoul, S. Korea*)

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- 2016 Speaker at the American Diabetes Association Annual Meeting (*New Orleans, LA, USA*)
- 2016 Speaker at the American College of Sports Medicine Annual Meeting (*Boston, MA, USA*)
- 2016 USC Davis School of Gerontology ‘What’s Hot in Aging Research at USC’ (*LA, CA, USA*)
- 2015 Speaker at the Cell Symposia on Exercise Metabolism (*Amsterdam, Netherlands*)
- 2015 Speaker at the Cell Symposia on Multifaceted Mitochondria (*Chicago, IL, USA*)
- 2015 Speaker at Ajou University Healthy Aging Symposia (*Suwon, S. Korea*)
- 2015 Speaker at the American Physiological Society meeting on Bioenergetics (*Tampa, FL, USA*)
- 2015 Speaker at the USC Vibrant Living Retreat (*Rancho Santa Fe, CA, USA*)
- 2015 Speaker at the USC Free Radical Institute (*LA, CA, USA*)
- 2015 Speaker at the Metabolon Conference on Metabolomics (*San Francisco, CA, USA*)
- 2014 Speaker at the CSHL Molecular Genetics of Aging Meeting (*Cold Spring Harbor, NY, USA*)
- 2014 Speaker at the Harbor-UCLA Grand Rounds (*LA, CA, USA*)
- 2014 Speaker at the USC-Buck Institute Symposium (*Novato, CA, USA*)
- 2014 Speaker at the 43rd American Aging Association General Meeting (*San Antonio, TX, USA*)
- 2014 Speaker at the Metabolon Conference on Metabolomics (*Seattle, WA, USA*)
- 2014 Speaker at the Metabolon Conference on Metabolomics (*Chapel Hill, NC, USA*)
- 2014 Speaker at the University of Alabama at Birmingham (*Birmingham, AL, USA*)
- 2014 Speaker at the Barshop Institute-UTHSC (*San Antonio, TX, USA*)
- 2013 Speaker at the Cold Spring Harbor Asia Molecular Basis of Aging and Disease (*Suzhou, China*)
- 2013 Speaker at the 42nd Annual Meeting of the American Aging Association (*Baltimore, MD, USA*)
- 2013 Speaker at the Seahorse Bioscience Inc. Workshop (*San Francisco, CA, USA*)
- 2013 Speaker at the USC ‘What’s Hot in Aging Research at USC’ (*LA, CA, USA*)
- 2013 Speaker at the International Association of Gerontology and Geriatrics (IAGG) 20th World Congress (*Seoul, S. Korea*)
- 2013 Speaker at the Metabolon Conference on metabolomics (*San Francisco, CA, USA*)
- 2012 Speaker at the Seahorse Bioscience Inc. Workshop (*San Francisco, CA, USA*)
- 2012 Speaker at the Congress of the GRS and IGF society (*Munich, Germany*)
- 2012 Speaker at the Society of Toxicology Annual Meeting (*San Francisco, CA, USA*)
- 2012 Speaker at the Gordon Research Conference on the Biology of Aging (*Ventura, CA, USA*)
- 2011 Speaker at the Endocrine Society Early Investigator Meeting (*San Francisco, CA, USA*)
- 2010 Speaker at the Congress of the GRS and IGF Society (*NYC, NY, USA*)
- 2010 Society for Neuroscience Annual Meeting poster presentation (*San Diego, CA, USA*)
- 2010 AACR Annual Meeting poster presentation (*Washington, DC, USA*)
- 2009 Speaker at the AACR Annual Meeting oral presentation (*Denver, CO, USA*)
- 2008 USC Norris Cancer Center poster presentation (*LA, CA, USA*)
- 2004 American Society of Microbiology Annual Meeting poster presentation (*New Orleans, LA, USA*)

Editorial Board

- 2020-present Associate Editor, *Frontiers in Aging*.
- 2021-present Review Editor, *Frontiers in Genetics*.

2019-present International Member, Diabetes and Metabolism Journal (DMJ)

Grant Reviews

NIH: *CMAD study section* (2016, 2020), *Special Emphasis Panels* (2020, 2020, 2022).

SC-CTSI, SC-EHSC, USC-Zumberge Funds, USC-ACS, USC-Rose Hill, USC-Stevens Student Innovator Showcase, USC-Stevens Innovation grant, USC-Stevens Technology Advancement Grants, Marsden Fund (Royal Society of New Zealand), Barth Foundation, and Polish National Science Center (panel NZ4).

Journal Reviews

Cell Metabolism, Nature Metabolism, Nature Communications, Science Translational Medicine, Cell Reports, Cell Systems, eBioMedicine, Scientific Reports, Aging Cell, Aging, Experimental Gerontology, Mechanisms of Ageing and Development, Rejuvenation Research, Free Radical Biology and Medicine, Mitochondrion, Molecular Metabolism, International Journal of Cancer, Journal of Cellular Physiology, Biochimica et Biophysica Acta (BBA) Bioenergetics, Aging Clinical and Experimental Research, Biodemography and Social Biology, Physiological Reports, BMC Medicine, JoVE, Pharmacological Research, Ann NY Acad Sci, Nutrients, Growth Hormone & IGF Research, Frontiers in Genetics, Genomics, Journal of Gerontology: Biological Sciences, Advances in Therapy, Integrated Cancer Therapies, PLoS ONE, PLoS Genetics, eLife.

TEACHING EXPERIENCE

- 2016-present Gero 510 – Physiology of Development and Aging
- 2014-present Gero 602 – Seminar on Discoveries in Biogerontology
- 2014-present Gero 600 – Topics in the Cellular and Molecular Biology of Aging
- 2014 Gero 790 – Seminars on Aging Biology
- 2015-2019 Gero 490 – Directed Research
- 2015-present Gero 518 – Current Topics in Clinical Nutrition (Guest Lecturer)
- 2013-2017 Co-director of the USC Davis School of Gerontology F.A.C.E time (Friday Afternoon Collegiate Encounters) meetings.
- 2012-present Research mentor for undergraduate research. School of Gerontology, USC.
(USC provost awards for undergraduate research and URAP (2014-2020), SOAR 2014-2019, Rose Hills Research Fellowship 2015-2019, 1st (2013, 2017), 2nd (2021) and 3rd (2016) prize and APS award (2017, 2019, 2021) USC undergraduate research symposium, 1st prize USC Discovery Scholar 2014 and 2015, 1st prize USC Renaissance Scholar)
- 2012-2014 Metabolism Journal Club at USC Davis School of Gerontology.
- 2012 Grand Rounds and Journal Club Curriculum at the UCLA Dept. of Pediatric Endocrinology.

- 2012 Leader and Speaker of the monthly Technology Seminars at the UCLA Dept. of Pediatric Endocrinology.
- 2010 Training and supervision of undergraduates and fellows in research at the UCLA Dept. of Pediatric Endocrinology.
- 2009 Guest lecturer on “Cancer and Aging” – Gerontology 416 at the USC School of Gerontology.
- 2004 Teaching Assistant, Department of Microbiology, Molecular Genetics 411, University of Washington

AWARDS AND HONORS

- 2016 American Federation for Aging Research (AFAR) Junior Faculty Award
- 2016 STOP Cancer Junior Faculty Award
- 2014 Damon Runyon Innovation Award Finalist
- 2014 Hanson Thorell Family Research Award
- 2013 Ellison Medical Foundation New Scholar in Aging Award
- 2012 GRS-IGF Society Travel Grant
- 2011 Ruth L. Kirschstein Post-doctoral Fellowship - NIEHS
- 2010 GRS-IGF Society Travel Grant
- 2009 AACR Scholar-In-Training Award (Aflac, Inc.)
- 2008 Distinguished Merit Award, USC Norris Cancer Center

PATENTS and INVENTIONS

- 2019 U.S. Patent #10391143: The Mitochondrial-Derived Peptide MOTS-c (A.K.A. MOTS3) Regulates Metabolism and Cell Survival (UCLA).
- 2018 U.S. Patent #10064914: The Mitochondrial-Derived Peptide MOTS-c (A.K.A. MOTS3) Regulates Metabolism and Cell Survival (UCLA).
- 2017 USC Invention (provisional patent preparation): A Novel Immune System Encoded in the Human Mitochondrial Genome to Target Bacterial Resistance (USC).
- 2011 Methods and Nutritional Formulations to Increase the Efficacy and Reduce the Side Effects of Cancer Treatment (USC) – US pending; Active - EU (EP2490684B1), CA (CA2779282C), AU (AU2010310515B2).

PROFESSIONAL AFFILIATIONS

- 2015-present Gerontological Association of America (GSA)
- 2012-present American Aging Association (AGE)

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2010-2014	The International Society for IGF Research Member
2009-2012	American Association for Cancer Research (AACR)
2012-2014	Society of Toxicology
2004-2005	American Society of Microbiology

RESEARCH SUPPORT

Current

1. **AGE-007 – R01 Converted (PI: Lee)** 1/15/2023 - 1/14/2028
Hevolution
“Mitochondrial-encoded immunity and aging”
2. **R56AG069955 (PI: Lee)** 9/30/2022 - 8/31/2024
NIH/NIA
“Mitochondrial-encoded immunity and aging”
3. **1R01GM136837-01(PI: Lee)** 9/1/2020 - 8/31/2024
NIH/NIGMS
“Regulation of Cellular Proliferation by Novel Mitochondrial-Encoded Tumor Suppressors”
4. **1R21AG065884-01A1 (PI: Lee)** 6/1/2022 - 5/31/2024
NIH/NIA
“Mitochondrial-Encoded Regulators of the Nucleus and Cellular Homeostasis”
5. **1R01CA220012 (PI: Shen, co-I: Lee)** 9/1/2019-8/31/2024
NIH/NCI
“Microenvironmental Regulation of Mitochondrial Heterogeneity in Cancer Metastasis”
6. **1P30AG068345 (MPI, co-I: Lee)** 9/1/2020-8/31/2025
NIH/NIA
“The University of Southern California and Buck Institute Nathan Shock Center”

Pending

1. **1R01AG082804 (PI: Lee)** 7/1/2024 - 6/30/2029
NIH/NIA
“Mitochondrial-Encoded Peptides as Novel Adaptive Inter-Organelle Coordinators of Aging Hallmarks and Cellular Homeostasis”
2. **1R01AG084214 (MPI: Lee and Pike)** 7/1/2024 - 6/30/2029
NIH/NIA
“Mitochondrial-Encoded Peptides as Novel Adaptive Inter-Organelle Coordinators of Aging Hallmarks and Cellular Homeostasis”

Completed

1. **1R01AG052558-01 (PI: Lee)** 6/1/2016 - 5/31/2022
NIH/NIA
“Novel Regulators of Aging Metabolism Encoded in the Mitochondrial Genome”
2. **STOP CANCER Foundation (PI: Lee)** 2/1/2017 - 1/31/2019
“A novel mitochondrial-encoded tumor suppressor”
3. **Ellison Medical Foundation New Scholar Award (PI: Lee)** 7/31/2013 - 7/30/2017
“Investigating the role of a novel mitochondria-encoded peptide in the regulation of metabolic aging and lifespan”
4. **American Federation for Aging Reserch (AFAR) Award (PI: Lee)** 7/1/2016 – 6/30/2017
“A Novel Mitochondrial-Encoded Regulator of Aging Metabolism”
5. **American Cancer Society (IRS) (PI: Lee)** 10/1/2015 - 9/30/2016
“A novel mitochondrial-encoded tumor suppressor”
6. **Hanson Thorell Family Research Award (PI: Lee)** 7/1/2014 - 6/30/2015
“A Novel Mitochondrial-encoded Peptide and Type 2 Diabetes”
7. **CohBar Contract (PI: Lee)** 10/23/2014 -10/01/2015
“A Novel Mitochondrial-encoded Peptide and Type 2 Diabetes”
8. **SC CTSI Research Award (PI: Lee)** 3/1/2013 - 6/30/2014
“Evaluation of the novel mitochondria-derived peptide MOTS 3 for type 2 diabetes treatment”
9. **Zumberge Fund Individual Grant (PI: Lee)** 7/1/2013 - 6/30/2014
“Targeting Obesity and Type 2 Diabetes by a Novel Mitochondria-encoded Peptide”