

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF MOLECULAR AND INTEGRATIVE PHYSIOLOGY

Jun Hee Lee Ph.D., associate professor of molecular and integrative physiology, with tenure, Department of Molecular and Integrative Physiology, Medical School, is recommended for promotion to professor of molecular and integrative physiology, with tenure, Department of Molecular and Integrative Physiology, Medical School [also being promoted to research professor, Institute of Gerontology].

Academic Degrees:

Ph.D.	2006	Biological Sciences, Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea
M.S.	2002	Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea
B.S.	2000	Korea Advanced Institute of Science and Technology Daejeon, Republic of Korea

Professional Record:

2017 - present	Associate Professor of Molecular and Integrative Physiology, with tenure, University of Michigan
2017 - present	Research Associate Professor of Gerontology, University of Michigan
2011 - 2017	Assistant Professor of Molecular and Integrative Physiology, University of Michigan
2011 – 2017	Research Assistant Professor of Gerontology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Lee's teaching involves working with undergraduate, graduate, medical and post-doctoral students, and visiting scholars in the research laboratory, as well as through graduate lectures. He is the course director for Signal Transduction (PHYSIO 591) and lectures on digestive physiology for Human Physiology (PHYSIO 502) and Gastrointestinal System (DENT 640). He has also been a supervisor for the Undergraduate Research Opportunity (UROP) and Advanced Research course (MCDB 300/400). Dr. Lee has been involved in extensive mentoring in the laboratory, including 25 undergraduate students, seven graduate students, three medical students, six fellows, five visiting scholars, and one faculty member. He has also served on 11 dissertation committees.

Research: Dr. Lee's research focus is on the relationship between stress, aging and metabolism. He continues to develop cutting-edge research on the biology of sestrin proteins, fatty liver pathophysiology, autophagy and stress responses. He has published 59 peer-reviewed articles in several of the most highly regarded journals in the field, including *Cell*, *Molecular Cell*, *Nature Communications*, and *The American Journal of Physiology: Endocrinology and Metabolism*. Dr. Lee has an impressive record of funding from the National Institutes of Health, the Glenn Foundation and institutional grants. He has secured an ADVANCE award from the State of Michigan Economic Development Corporation. More notably, are his recent innovations in anti-sestrin antibodies, a new animal model for unregulated mTORC1 activation and Seq-Scope which is an innovative technology that enables microscopic examination of spatial transcriptome. Dr. Lee recently has secured a large UG3/UH3 grant from the National Cancer Institute to further develop Seq-Scope for application in studying the single cell transcriptome in cell and tissue senescence.

Five Recent Significant Publications:

Cho CS, Xi J, Si Y, Park SR, Hsu JE, Kim M, Jun G, Kang HM, Lee JH: Microscopic Examination of Spatial Transcriptome Using Seq-Scope. *Cell*: 2021. 184 (13) 3559-3572.e22, 2021. PM34115981/PMC8238917

Park SR, Namkoong S, Friesen L, Cho CS, Zhang ZZ, Chen YC, Yoon E, Kim CH, Kwak H, Kang HM, Lee JH: Single-Cell Transcriptome Analysis of Colon Cancer Cell Response to 5-Fluorouracil-Induced DNA Damage. *Cell Rep* 32(8): 108077, 2020. PM32846134/PMC7486130

Kim M, Sujkowski A, Namkoong S, Gu B, Cobb T, Kim B, Kowalsky AH, Cho CS, Semple I, Ro SH, Davis C, Brooks SV, Karin M, Wessells RJ, Lee JH: Sestrins are evolutionarily conserved mediators of exercise benefits. *Nat. Commun.* 11(1): 190, 2020. PM31929512/PMC6955242

Namkoong S, Ho A, Woo YM, Kwak H, Lee JH: Systematic Characterization of Stress-Induced RNA Granulation. *Mol. Cell*, 70(1): 175-187.e8, 2018. PM29576526/PMC6359928

Cho CS, Park HW, Ho A, Semple IA, Kim B, Jang I, Park H, Reilly S, Saltiel AR, Lee JH: Lipotoxicity induces hepatic protein inclusions through TANK binding kinase 1-mediated p62/sequestosome 1 phosphorylation. *Hepatology*, 68(4): 1331-1346, 2018. PM29251796/PMC6005718

Service: Dr. Lee provides excellent service to the department and university. He is an organizer for the Annual Geriatrics Center Symposium and recently was appointed as the chair of the Molecular and Integrative Physiology Seminar Series Committee, for a two-year term. Dr. Lee serves on the steering committee for the Biology of Aging T32 program and is a co-director for the Molecular Biology Core at the University of Michigan Center for Gastrointestinal Research. He also provides international service as an advisory group member of the Flybase Community, has served as a reviewer for the Israel Science Foundation, the Royal Society of the United Kingdom and the Wellcome Trust/DBT India Alliance. Nationally, Dr. Lee has served on four NIH study sections, a National Science Foundation Career Award Review Panel, and is an editorial board member for *Biomolecules* and *Hepatology*.

External Reviewers:

Reviewer A: “Overall Dr. Lee has a strong track record of conducting novel research which has been published in very high-profile journals including the big three of *Cell*, *Science* and *Nature*. His research output places him at the very top of his peers in terms of productivity and impact...I can say without a doubt that Dr. Lee would be promoted Professor, with tenure at [my institution]. He clearly meets the criteria for promotion at your institution for which I give him my highest level of support.”

Reviewer B: “Most remarkably, Dr. Lee’s group has developed a novel spatial transcriptomics approach that dramatically increased the resolution and throughput of in situ RNA sequencing. This highly impactful work was recently published in the journal of *Cell*. Along with the high-profile publication, he has also filed two US patents regarding this novel technological development. There is no doubt that this new platform will facilitate biomedical research in various fields. In my opinion, Dr. Lee has become a leader in this new era of high-definition spatial transcriptomics.”

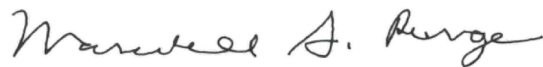
Reviewer C: “My impression from Dr. Lee’s CV is that he is putting more focus on the application of Seq-Scope to several areas of science including the topic of aging and senescence. I think this is wise and his paper in *Cell* places Dr. Lee as a leader in this new and powerful approach. This will serve Dr. Lee well for his grant applications as well as for potential collaborative projects with colleagues.”

Reviewer D: “He has expanded his scientific horizons to spatial transcriptomics, an emerging technology that has the potential to transform many fields and which will position Dr. Lee at the forefront of this exciting technology...Dr. Lee has mentored undergraduates, grad students, postdoctoral fellows, visiting scholars, and junior faculty; from the generous numbers I would infer that he is sought after as a mentor...His publication track record and evidence of national and international recognition would earn him promotion to full professor at many institutions, including [my prior institution] and [my current institution]. I feel that his work is meritorious and impactful in the field, and I am strongly supportive of his promotion.”

Reviewer E: “Jun Hee’s high impact research has been recognized substantially with research awards, funding support and invited seminars. He currently has 3 R01 grants as PI and other funding sources. This is exceptional for someone at his level especially with the current funding climate. This is truly impressive as I have served in several study sections and have not encountered principal investigators at his level with this amount of funding (usually they would be established full Professors). This is also very impressive as it is usually very difficult to obtain an outstanding score at the fundable range, thus indicating that his research is generating much excitement from the panel.”

Summary of Recommendation:

Dr. Lee has established an international reputation as an innovative researcher exploring and creating new techniques in aging and metabolism research. His independent career is well-established, and he has consistently obtained external funding. His work is highly cited, and he continues to be a vital addition to the department and the university. I am pleased to recommend Jun Hee Lee, Ph.D. for promotion to professor of molecular and integrative physiology, with tenure, Department of Molecular and Integrative Physiology, Medical School.



Marschall S. Runge, M.D., Ph.D.
Executive Vice President of Medical Affairs
Dean, Medical School

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