

KOREA-US Frontiers in Health and Life Sciences

2025. 11. 6^(Thu) - 7^(Fri)
Four Seasons Hotel, Grandballroom(3F)



Curriculum Vitae

Name	First Name	Hyun-Woo	Last Name	Rhee
Country	Republic of Korea			
Affiliation	Department of Chemistry, Seoul National University, Korea			

Educational Background

2000-2004 B.S. Biology and Chemistry (Double Major), Seoul National University, Korea.
2004-2009 Ph.D. Organic Chemistry (Advisor: Prof. Jong-In Hong), Seoul National University, Korea.
2010-2012 Postdoc, Chemical Biology (Advisor: Prof. Alice Y. Ting), MIT, USA

Professional Career

2025-current Professor, SNU Chemistry, Korea
2018-2025 Associate Professor, SNU Chemistry, Korea
2013-2018 Assistant/Associate Professor, UNIST Chemistry, Korea

Research Field

Chemical Biology, Protein Modification, Mitochondrial Biology

Papers, Books, etc. presented or published by your name

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21. **Kang MG**[†], Shin S[†], Jang DG, Kwon O, **Lee SY**, **Mishra PK**, Jung M, Mun JY, Kee JM*, Kim JS*, **Rhee HW*** [Intracristal space proteome mapping using super-resolution proximity labeling with isotope-coded probes](#). *Nat Commun.* **2025**, 16, 7757. (†equally contributed)
20. **Cho Y**[†], **Jeong I**[†], **Kim KE***, **Rhee HW***, [Painting Cell-Cell Interactions by Horseradish Peroxidase and Endogenously Generated Hydrogen Peroxide](#), *ACS Chem. Biol.* **2025**, 20, 86-93
19. **Kang MG**[†], Kim HR[†], **Lee HY**[†], **Kwak C**, **Koh H**, Kang BH, Roe JS*, **Rhee HW***, [Mitochondrial thermogenesis can trigger heat-shock response in the nucleus](#), *ACS Cent. Sci.* **2024**, 10, 1231-1241 (†equally contributed)
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17. **Sharma N**[†], Jung M[†], **Mishra PK**, Mun JY*, **Rhee HW*** [FLEX: genetically encodable enzymatic fluorescence signal amplification using engineered peroxidase](#), *Cell Chem. Biol.* **2024**, 3, 502-513 (†equally contributed)
16. **Park I**[†], **Kim KE**[†], Kim J[†], AK Kim, Bae S, Jung M, Choi J, **Mishra PK**, TM Kim, **Kwak C**, **Kang MG**, **Yoo CM**, Mun JY, Liu KH, Lee KS*, Kim JS*, Suh JM*, **Rhee HW*** [Mitochondrial matrix RTN4IP1/OPA10 is an oxidoreductase for coenzyme Q synthesis](#), *Nat. Chem. Biol.* **2024**, 20, 221–233 (†equally contributed)
15. **Mishra PK***, **Sharma N**, Kim H, Lee C, **Rhee HW*** [GEN-Click: Genetically Encodable Click Reactions for Spatially Restricted Metabolite Labeling](#), *ACS Cent. Sci.* **2023**, 9, 1650–1657
14. **Lee YB**, Jung M, Kim J, Charles A, Christ W, **Kang J**, **Kang MG**, **Kwak C**, Klingström J, Smed-Sörensen A, **Kim JS***, **Mun JY***, **Rhee HW*** [Super-resolution proximity labeling reveals antiviral protein network and its structural changes against SARS-CoV-2 viral proteins](#). *Cell Rep.* **2023**, 42, 112835
13. **Kwak C**[†], **Park C**[†], Im CY, Moon H, Park YH, Kim SY, Lee S, **Kang MG**, Kwon HJ*, Hong E*, Seo JK*, **Rhee HW***, [Identification of compound-binding target proteins in live cells by proximity labeling \(PROCID\)](#), *Cell Chem. Biol.* **2022**, 29, 1739-1753 (†equally contributed)
12. **Mishra PK**[†], **Park I**[†], **Sharma N**, **Yoo CM**, **Lee HY**, **Rhee HW*** [Enzymatic recording of local hydrogen peroxide generation using genetically encodable enzyme](#). *Anal. Chem.* **2022**, 94, 14869-14877 (†equally contributed)
11. **Mishra PK**[†], **Kang MG**[†], Lee H, Kim S, Choi S, **Sharma N**, Park CM, Ko J, Lee C*, Seo JK*, **Rhee HW*** [A Chemical Tool for Blue Light-Inducible Proximity Photo-crosslinking in Live Cells](#). *Chem. Sci.* **2022**, 13, 955-966 (†equally contributed)
10. **Kang MG**, **Rhee HW***, [Molecular Spatiomics by Proximity Labeling](#), *Acc. Chem. Res.* **2022**, 55, 1411-1422 (Invited review article)
9. **Choi CR**, **Rhee HW***, [Proximity labeling: An Enzymatic Tool for Spatial Biology](#), *Trends Biotechnol.* **2022**, 40, 145-148.
8. Kim KE[†], **Park I**[†], Kim J, **Kang MG**, Choi WG, Shin H, Kim JS*, **Rhee HW***, Suh JM* [Dynamic tracking and identification of tissue-specific secretory proteins in the circulation of live mice](#), *Nat. Commun.* **2021**, 12, 5204 (†equally contributed)
7. **Kwak C**[†], Shin S[†], **Park JS**[†], Jung M, Nhung TTM, **Kang MG**, Lee C, Kwon TH, Park SK*, Mun JY*, Kim JS*, **Rhee HW*** [Contact-ID, a tool for profiling organelle contact site, reveals regulatory proteins of mitochondrial-associated membrane formation](#), *PNAS*, **2020**, 117, 12109-12120 (†equally contributed).

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6. Kwon J†, **Park JS†**, Kang M, Choi S, Park J, Kim KT, Lee C, Cha S, **Rhee HW***, Shim SH*, [Bright ligand-activatable fluorescent protein for high-quality multicolor live-cell super-resolution microscopy](#), *Nat. Commun.* **2020**, 11, 273 (†equally contributed).
5. Seo JK, Jun Y, Myung K, **Rhee HW***, Lee C* [The structure of human EXD2 reveals a chimeric 3' to 5' exonuclease domain that discriminates substrates via metal coordination](#), *Nucleic Acid Res.* **2019**, 47, 7078-7093 (†equally contributed).
4. **Lee SY**, **Kang MG**, Shin S, **Kwak C**, Kwon T, Seo JK*, Kim JS*, **Rhee HW***, [Architecture Mapping of the Inner Mitochondrial Membrane Proteome by Chemical Tools in Live Cells](#), *J. Am. Chem. Soc.* **2017**, 139, 3651-3662.
3. Nam JS†, **Kang MG†**, Kang J†, Park SY†, Lee SJ, Kim HT, Seo JK, Kwon OH, Lim MH*, **Rhee HW***, Kwon TH* [Endoplasmic Reticulum-Localized Iridium\(III\) Complexes as Efficient Photodynamic Therapy Agents via Protein Modifications](#), *J. Am. Chem. Soc.* **2016**, 138, 10968-10977. (†equally contributed)
2. **Lee SY†**, Lee H†, **Lee HK**, **Lee SW**, Ha SC, Kwon T, Seo JK*, Lee C*, **Rhee HW*** [Proximity-Directed Labeling Reveals a New Rapamycin-Induced Heterodimer of FKBP25 and FRB in Live Cells](#), *ACS Cent. Sci.* **2016**, 2, 506-516. (†equally contributed)_
1. **Lee SY**, **Kang MG**, **Park JS**, Lee G, Ting AY*, **Rhee HW*** [APEX fingerprinting reveals the subcellular localization of proteins of interest](#), *Cell Rep.* **2016**, 15, 1837-1847.