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Research Keywords

Peptide assembly, PPI mimic, Supramolecular chemistry

Academic Career

B.S., 2000, Yonsei University; Ph.D., 2006, Yonsei University; Postdoctoral Training, 2007-2011, University of Massachusetts Amherst (advisor: S. Thayumanavan); Assistant Professor, 2012-2016, Ulsan National Institute of Science and Technology (UNIST) ; Associate Professor (Tenured), 2016-2021, UNIST; Professor, 2021-present, UNIST

Selected Publications

D. Kim, G. Yang, C. Lim, G. Park, J. Lee, Y. Sim, J.-H. Ryu* "Cancer Specific CAIX-Targeting Supramolecular Lysosome-Targeting Chimeras (Supra-LYTAC) for Targeted Protein Degradation" *Adv. Sci.* 2025, 2503134

J. Y. Oh, B. Jana, J. Seong, E.K. An, E. M. Go, S. Jin, H. W. Ok, M.-S. Seu, J.-h. Bae, C. Lee, S. Lee, T.-K. Kwon, J. K. Seo, E. Choi, S. K. Kwak,* M. S. Lah,* J.-H. Ryu* "Unveiling the Power of Cloaking Metal-organic Framework Platforms via Supramolecular Antibody Conjugation" *ACS Nano*, 2024, 18, 15790–15801

S. Kim‡, J.-B. Chae‡, D. Kim‡, C.-W. Park, Y. Sim, J. Kim, H. Lee, G. Park, J. Lee, S. Hong, B. Jana, C. Kim, H. Chung,* J.-H. Ryu* "Supramolecular Senolytics via Intracellular Oligomerization of Peptides in Response to Elevated Reactive Oxygen Species Levels in Aging Cells" *J. Am. Chem. Soc.* 2023, 145, 21991-22008

B. Jana‡, S. Jin‡, E. M. Go, Y. Cho, D. Kim, S. Kim, S. K. Kwak,* J.-H. Ryu* "Intra-Lysosomal Peptides Assembly for the High Selectivity Index against Cancer", *J. Am. Soc. Chem.* 2023, 145, 18414-18431

E. S. Choi‡, S. Kim‡, D. Kim, E. Choi*, J.-H. Ryu* "Drug-Loaded Nanogel for Efficient Orchestration of Cell Death Pathways by Intramitochondrial Disulfide Polymerization" *Small* 2023, 2308872

M. T. Jeena†, S. Jint†, K. Jeong, Y.i Cho, J. C. Kim, J. Lee, S. Lee, S.-W. Hwang, S. K. Kwak,* S. Kim,* J.-H. Ryu,* "Cancer-Selective Supramolecular Chemotherapy by Disassembly-Assembly Approach" *Adv. Funct. Mater.*, 2022, 32, 2208098

H. Choi†, G. Park†, E. Shin, S. W. Shin, B. Jana, S. Jin, S. Kim, H. Wang, S. K. Kwak*, B. Xu*, J.-H. Ryu* "Intramitochondrial Co-assembly between ATP and Nucleopeptide Induces Cancer Cell Apoptosis" *Chem. Sci.* 2022, 13, 6197

Y. Jeong,* S. Jin, L. Palanikumar, H. Choi, E. Shin, E. M. Go, C. Keum, S. Bang, D. Kim, S. Lee, M. Kim, H. Kim, K. H. Lee, B. Jana, M.-H. Park, S. K. Kwak,* C. Kim,* J.-H. Ryu* "Stimuli-Responsive Adaptive Nanotoxin to Directly Penetrate the Cellular Membrane by Molecular Folding and Unfolding" *J. Am. Chem. Soc.* 2022 144, 5503.

Why My Lab?

My lab can offer...

Peptide synthesis, assembly characterization, drug delivery system