

Yelee Kim, Ph.D.

Contact: yeleekim@uga.edu, whyj8007@gmail.com, [Google scholar](#)

EDUCATION

- 2026.2 – present **Postdoctoral Fellow, University of Georgia**
(Advisor: Xiaorong Lin)
- 2025.3 – 2026.1 **Postdoctoral Fellow, Biomedical Research Division, KIST**
(Advisor: Sun Hwa Kim)
- 2021.9 – 2025.2 **Ph.D., Molecular Medical Sciences, Korea University (Seoul, South Korea)**
Cooperative PhD Program in Biomedical Research Division, KIST
(Advisor: Yoosoo Yang and Sung-Gil Chi)
- 2019.3 – 2021.2 **M.S., Biomedical Sciences, Seoul National University (Seoul, South Korea)**
(Advisor: Yang Sook Chun)
- 2015.3 – 2019.2 **B.S., Stem Cell and Regenerative Biotechnology, Konkuk University (Seoul, South Korea)**

AWARDS & HONORS

- 2025 **Humantech Paper Award, SAMSUNG (Gold Prize)**
- 2025 **Humantech Paper Award, SAMSUNG (Encouragement Prize)**
- 2024 **KIST Student Excellence Scholarship, KIST**
- 2024 **2024 Best Paper Award, Pharmaceuticals**
- 2021 **Excellence Paper Award, Seoul National University Biomedical Science Program**
- 2018 **Academic Excellence Scholarship (First Place), Konkuk University**
- 2018 **Academic Excellence Scholarship (Second Place), Konkuk University**
- 2017 **Academic Excellence Scholarship (Second Place), Konkuk University**

PUBLICATIONS

- 2026 1. **Y. Kim**†, W. Park†, Y. Yang*, D.H. Kweon* “Dual-Targeting mRNA Cancer Vaccines for Simultaneous Antigen Presentation in Dendritic and Tumor Cells” *ACS Nano* (2026)
<https://doi.org/10.1021/acsnano.5c2053>
- 2025 2. B. Park†, J. Choi†, J. Lee†, **Y. Kim**, W. Lee, A. Lee, I.C. Sun, H.Y. Yoon, Y. Kim, S.H. Kim, Y. Yang, K. Kim, J. Park*, M.K. Shim*, “Reprogramming of cancer metabolism via photoresponsive nano-PROTAC enhances pyroptosis-mediated immunotherapy” *Signal Transduction and Targeted Therapy* 10, 310 (2025)
<https://doi.org/10.1038/s41392-025-02405-6>
3. Y. Ryu, E.H. Kim, **Y. Kim**, H. Jang, B. Park, J. Choi, S.G. Chi, H.Y. Yoon*, Y. Yang* “Targeted Delivery of miR-34a via Anti-CD47 Antibody Conjugates for Enhanced Cancer Immunotherapy in Triple Negative Breast Cancer” *Small* 21, 36, e04468 (2025)

<https://doi.org/10.1002/sml.202504468>

4. B. Park, E.H. Kim, H. Jang, **Y. Kim**, Y. Ryu, J. Choi, D. Shin, M.C. Lee, Y. Yang, K. Kim, S. Lee, S.H. Kim, M.K. Shim*, “Drug repositioning of mesalamine via supramolecular nanoassembly for the treatment of drug-induced acute liver failure” *Theranostics* 1;15(3):1122–1134 (2025)

<https://doi.org/10.7150/thno.101358>

5. W. Park†, J. Choi†, J. Hwang, S. Kim, **Y. Kim**, M.K. Shim, W. Park, S. Yu, S. Jung, Y. Yang*, D.H. Kweon*, “Apolipoprotein Fusion Enables Spontaneous Functionalization of mRNA Lipid Nanoparticles with Antibody for Targeted Cancer Therapy” *ACS Nano* (2025)

<https://doi.org/10.1021/acsnano.4c16562>

2024 6. **Y. Kim**, J. Choi, E.H. Kim, W. Park, H. Jang, Y. Jang, S.G. Chi, D.H. Kweon, S.H. Kim*, Y. Yang*, “Design of PD-L1-Targeted Lipid Nanoparticles to Turn on PTEN for Efficient Cancer Therapy” *Advanced Science* 11, 2309917 (2024)

<https://doi.org/10.1002/advs.202309917>

7. E.H. Kim, J. Choi, H. Jang, **Y. Kim**, J.W. Lee, Y. Ryu, J. Choi, Y. Choi, S.G. Chi, I.C. Kwon, Y. Yang*, S.H. Kim*, “Targeted Delivery of Anti-miRNA21 Sensitizes PD-L1 High Tumor to Immunotherapy by Promoting Immunogenic Cell Death” *Theranostics* 14(10):3777-3792 (2024)

<https://doi.org/10.7150/thno.97755>

8. B. Park, E.H. Kim, H. Jang, **Y. Kim**, Y. Ryu, J. Choi, D. Shin, M.C. Lee, Y. Yang, K. Kim, S. Lee, S.H. Kim*, M.K. Shim*, “Drug Repositioning of Mesalamine via Supramolecular Nanoassembly for the Treatment of Drug-Induced Acute Liver Failure” *Theranostics* 15(3):1122–1134 (2024)

<https://doi.org/10.7150/thno.101358>

2023 9. H. Jang, H. Kim, E.H. Kim, G. Han, Y. Jang, **Y. Kim**, J.W. Lee, S.C. Shin, E.EK. Kim, S.H. Kim*, Y. Yang* “Post-insertion technique to introduce targeting moieties in milk exosomes for targeted drug delivery” *Biomaterials Research* 27:124 (2023)

<https://doi.org/10.1186/s40824-023-00456-w>

10. D.W. Jeong, J.W. Park, K.S. Kim, J. Kim, J. Huh, J. Seo, **Y. Kim**, J.Y. Cho, K.W. Lee, J. Fukuda, Y.S. Chun*, “Palmitoylation-driven PHF2 ubiquitination remodels lipid metabolism through the SREBP1c axis in hepatocellular carcinoma” *Nature Communications* 14, 6370 (2023)

<https://doi.org/10.1038/s41467-023-42170-0>

11. B. Kong†, **Y. Kim**†, E.H. Kim, J.S. Suk*, Y. Yang*, “mRNA: A promising platform for cancer immunotherapy” *Advanced Drug Delivery Reviews* 199, 114993 (2023)

<https://doi.org/10.1016/j.addr.2023.114993>

2022 12. **Y. Kim**, H. Kim, E.H. Kim, H. Jang, Y. Jang, S.G. Chi, Y. Yang*, S.H. Kim*, “The potential of cell-penetrating peptides for mRNA delivery to cancer cells” *Pharmaceutics* 14(6), 1271 (2022)

<https://doi.org/10.3390/pharmaceutics14061271>

2021 13. **Y. Kim**, J.B. Park, J. Fukuda, M. Watanabe, Y.S. Chun*, “The effect of neddylation blockade on slug-dependent cancer cell migration is regulated by p53 mutation status” *Cancers* 13(3), 531 (2021)

<https://doi.org/10.3390/cancers13030531>

14. Y.G. Kim, M.S. Bak, A. Kim, Y. Kim, Y.C. Chae, **Y. Kim**, Y.S. Chun, J.Y. An, S.B. Seo, S.J. Kim*, Y.S. Lee*, “Kdm3b haploinsufficiency impairs the consolidation of cerebellum-dependent motor memory in mice” *Molecular Brain* 14, 106 (2021)

<https://doi.org/10.1186/s13041-021-00815-5>

PATENTS

- 2023**
1. S.H. Kim, Y. Yang, **Y. Kim**, J. Choi, “Composite nanoparticle for delivering nucleic acid, method for preparing the same, and composition comprising the same” Korea – Registration No. 10-2023-0139508
 2. **Y. Kim**, S.H. Kim, Y. Yang, Y. Jang, “Lipid nanoparticle containing tumor targeting ligand, method for producing the same, and pharmaceutical composition containing the same” Korea – Registration No. 10-2023-0125377

CONFERENCES & PRESENTATIONS

International

1. *World Biomaterials Congress (WBC)*
 - May 2024, Daegu, South Korea
 - Poster presentation
2. *Controlled Release Society (CRS)*
 - July 2025, Philadelphia, USA
 - Poster presentation

Domestic

1. *The Korean Physiology Society*
 - October 2019, Daegu, South Korea
 - Poster presentation
2. *Department of Physiology, Seoul National University College of Medicine*
 - October 2020, Seoul, South Korea
 - Invited Speaker on “The effect of MLN4924 on ovarian cancer migration depends on p53 status”
3. *The Korean Society for Biomaterials (KSBM)*
 - October 2022, Jeju, South Korea
 - Poster presentation
4. *The Korean Society for Biotechnology and Bioengineering (KSBB)*
 - October 2023, Jeju, South Korea
 - Oral & Poster presentation

SKILLS & TECHNIQUES

1. Formulation of drug delivery systems

- **Lipid nanoparticles**
 - Functionalization with peptides or antibodies
- **Drug-loaded liposomes**
- **Peptide-based delivery systems**
 - Cell-penetrating peptide-mRNA complex
 - Peptide-ASO conjugate
- **Protein-based delivery systems**
 - Protein engineering and expression (recombinant antibodies and novel proteins)
 - Chemical modification of protein (e.g., albumin)
- **Antibody-oligonucleotide conjugates**
- **Milk-derived extracellular vesicle extraction**

2. Analytical techniques

- **Equipment that can be handled**

- Flow cytometer; Dynamic light scattering; Nanoparticle tracking analysis (NTA); UV/Vis and Fluorescent spectrometer; Microplate reader; Thermal cycler; ChemiDoc and GelDoc; Confocal laser scanning microscope; Fluorescence microscope; In vivo imaging system (IVIS)

3. In vitro techniques

- **Molecular work**

- Protein expression and purification using ExpiCHO-S cell; Western blot; Immunoprecipitation; RNA extraction; Quantitative RT-PCR; In vitro transcription (IVT); Codon optimization; Gene cloning; Site-directed mutagenesis; Gel electrophoresis; Ubiquitination assay; Ribogreen assay; Luciferase reporter assay; Fluorescent and confocal microscope imaging

- **Basic cell work**

- Transfection and transduction; 3D cell culture, Proliferation test (CCK assay; MTT assay; Colony formation assay); Migration test (Transwell assay; Wound healing assay; Scattering phenotype test by 3D culture)

- **Advanced cell work**

- Bone marrow-derived cell (BMDC) extraction and differentiation; Mouse T cell isolation, activation, and expansion; Cancer cell & T cell / dendritic cell & T cell co-culture assays; Cytotoxic T cell assay

4. In vivo techniques

- **Mouse models**

- C57BL/6; BALB/c; BALB/c nude; NOD-SCID

- **Administration techniques**

- Subcutaneous; Intramuscular; Intraperitoneal; Intravenous; Oral

- **Disease models**

- Cancer: Orthotopic hepatocellular carcinoma model; Orthotopic breast cancer model; Lung metastatic model; Subcutaneous tumor model
- Acute liver failure
- Inflammatory bowel disease
- Psoriasis model
- Chronic kidney disease

- **Assays**

- Biodistribution assays (in vivo/ex vivo fluorescence and luminescence imaging); Tumor growth assays; Survival analysis; Ex vivo tumor, lymph nodes, and spleen flow cytometry; Blood chemistry assays