

Steve Seung-Young Lee, PhD

Department of Pharmaceutical Sciences
College of Pharmacy
University of Illinois Chicago
833 South Wood St., MC 781
Chicago, IL 60612
Email: ssylee@uic.edu
Phone: (312) 413-8294

EDUCATION & TRAINING

Hongik University, Seoul, Korea B.S.E., Chemical Engineering	1997-2004
Gwangju Institute of Science and Technology, Gwangju, Korea M.S.E., Materials Science and Engineering Advisor: Giyoong Tae, PhD Thesis: "Photo-crosslinked hydrogel system based on Pluronic F127 for medical applications"	2005-2007
Purdue University, West Lafayette, IN PhD, Biomedical Engineering, Advisor: Ji-Xin Cheng, PhD (Boston University, Biomedical Engineering) Thesis: "Nanomedicines for cancer chemotherapy"	2009-2014
The University of Chicago, Chicago, IL Postdoc, Ludwig Center for Metastasis Research Advisor: Stephen J. Kron, MD-PhD	2014-2018

POSITIONS & APPOINTMENTS

Research Associate Biomedical Research Center, Korea Institute of Science and Technology, Seoul, Korea	2007-2009
Graduate Research Assistant Biomedical Engineering, Purdue University, West Lafayette, IN	2009-2014
Postdoctoral Scholar Molecular Genetics and Cell Biology, University of Chicago, Chicago, IL	2014-2018
Assistant Professor Biopharmaceutical Sciences, University of Illinois Chicago, Chicago, IL	2018-2019
Assistant Professor Pharmaceutical Sciences, University of Illinois Chicago, Chicago, IL	2019-Pres.
Full Member University of Illinois Cancer Center, Chicago, IL	2019-Pres.
Faculty Fellow Honors College, University of Illinois Chicago, Chicago, IL	2019-Pres.

RESEARCH INTERESTS

The Lee laboratory aims to develop novel imaging methods and bioengineering tools for pharmaceutical science research investigating cancer, vascular and inflammatory diseases. To better understand and

improve pharmaco-kinetics and dynamics of therapeutic agents, we currently focus on developing:

- 1) 3D multiplex tissue microscopy;
- 2) Integrated microscopy-omics '3D spatial cellomics';
- 3) Antibody modification and engineering for targeted drug and vaccine delivery;
- 4) Non-parenteral delivery of macromolecular therapeutics
- 5) Microfluidics-based drug screening for personalized therapy

RESEARCH GRANTS/FUNDING

Active

NIH/NIGMS MIRA for ESI (R35) (PI: S.S.-Y. Lee)	09/21-09/26
"Integrated three-dimensional (3D) microscopy for a spatial pharmacology atlas of macromolecular drugs in the tissue microenvironment"	
NIH/NCI R21 (PI: S.S.-Y. Lee)	12/24-11/26
"Tumor subregion and immune cell type-selective proteomic profiling"	
NIH/NHLBI R01 (PI: G.Y. Park, Co-I: S.S.-Y. Lee)	04/21-03/26
"Mechanism of CX3CR1+ macrophage-mediated resolution of eosinophilic allergic lung inflammation"	
DoD Ovarian Cancer Teal Innovator Award (PI: J.E. Burdette, Co-I: S.S.-Y. Lee)	09/22-08/25
"PAX8 as a Drug Target for High-Grade Serous Cancer"	
NIH/NHLBI R21 (PI: Z. Zhao, Co-I: S.S.-Y. Lee)	07/23-06/25
"Combinatorial cytokine-coated macrophages for targeted immunomodulation in acute lung injury"	
NIH/NCI R37 (PI: S. Sant, Co-I: S.S.-Y. Lee)	07/23-06/25
"Three-dimensional organoid models to study breast cancer progression"	
NIH/NIDDK R01 (PI: J. Sun, Co-I: S.S.-Y. Lee)	04/24-04/29
"How vitamin D receptor influences intestinal barriers"	
NIH/NCI R21 (MPIs: Z. Zhao, E.E. Er, Co-I: S.S.-Y. Lee)	06/24-05/26
"Nanoparticle-coated macrophages for targeted disruption of YAP/TEAD interactions in breast cancer brain metastasis"	

Pending

NIH/NCI R21 (MPIs: S.S.-Y. Lee (contact) , D. Eddington)	07/25-06/27
"Microfluidic immunotherapy screening on a core needle biopsy"	
NIH/NCI R61 (MPIs: S.S.-Y. Lee (contact) , A. Lippert)	05/25-04/28
"Multiplex micropatterning on tumor tissues for spatial multiomics analysis"	
NIH/NINDS R01 (MPIs: S. Lim (contact) , S.S.-Y. Lee)	07/25-06/30
"Antibody engineering strategies to prevent the occurrences of ARIA with anti-amyloid-beta therapies while retaining efficient effector functions"	
NIH/NHLBI R01 (PI: G.Y. Park, Co-I: S.S.-Y. Lee) - 7% percentile rank	09/24-08/29
"Immunoregulatory Role of Conventional Dendritic Cell Type 2 in Allergic Lung Inflammation"	
NIH/NCI R01 (PI: R Wilcox, Co-I: S.S.-Y. Lee)	12/24-11/26
"The Role of Fibroblastic Reticular Cells in T-cell Lymphomas"	

NIH/NCI R01 (PI: R Wilcox, Co-I: S.S.-Y. Lee)	12/24-11/26
“The role of transcriptionally polarized and CDK9 dependent macrophages in T-cell lymphomas”	
NIH/NCI R21 (MPIs: Z. Wang, Z. Zhao, Co-I: S.S.-Y. Lee)	04/25-03/27
“Targeting GBM glycolysis with a monocyte-based nanoparticle delivery system”	
NIH/NHS R21 (MPIs: Z. Zhao, J. Sun, Co-I: S.S.-Y. Lee)	04/25-03/27
“Engineered macrophages for targeted immunomodulation in amyotrophic lateral sclerosis”	
DoD ALS Pilot Study (MPIs: J. Sun, Z. Zhao, Co-I: S.S.-Y. Lee)	04/25-03/27
“Immunomodulation of macrophages/microglia to aid ALS therapy”	
NIH/NIGMS MIRA Renewal as an EI (R35) (PI: S.S.-Y. Lee)	09/26-08/31
“The Organ-to-Molecule Atlas: Mapping Multiscale Biological Systems”	
NIH/NIGMS MIRA (R35) Administrative Supplement (PI: S.S.-Y. Lee)	05/25-04/26
“Integrated three-dimensional (3D) microscopy for a spatial pharmacology atlas of macromolecular drugs in the tissue microenvironment”	

Completed

Susan G. Komen for the Cure Postdoctoral Fellowship, PDF15333618 (PI: S.S.-Y. Lee)	08/15-07/18
“Radiation-enhanced immunotherapy for recurrent and metastatic breast cancer”	
NIH Pathway to Independence Award (K99/R00), K99 (PI: S.S.-Y. Lee)	04/17-10/18
“Transparent Tumor Tomography (T3): Multi-parameter 3D imaging for tumor immunotherapy”	
UI Cancer Center Pilot Study (MPIs: S.S.-Y. Lee (contact) , Y. Gao, A. Naba, J.E. Burdette)	09/20-08/21
“Single-cell spatial proteomics for geographic profiling of protein expression in ovarian tumors”	
NIH/NIBIB Pathway to Independence Award (K99/R00), R00 (PI: S.S.-Y. Lee)	03/19-04/22
“Transparent Tumor Tomography (T3): Multi-parameter 3D imaging for tumor immunotherapy”	
NIH/NIGMS Diversity supplements (PI: S.S.-Y. Lee)	03/22-08/23
“Diversity Supplement_Integrated three-dimensional (3D) microscopy for a spatial pharmacology atlas of macromolecular drugs in the tissue microenvironment”	
NIH/NIGMS Administrative supplements (PI: S.S.-Y. Lee)	09/22
“Administrative Supplement_Integrated three-dimensional (3D) microscopy for a spatial pharmacology atlas of macromolecular drugs in the tissue microenvironment”	
UI Cancer Center Pilot Study Grant (MPIs: S. Jun, S.S.-Y. Lee, K. Hoskins)	05/23-04/24
“Microbiome-tumor-axis and multi-omics to identify molecular mechanisms of breast cancer disparities	

HONORS, FELLOWSHIPS & AWARDS

Honors Scholarship, Hongik University, Seoul, Korea	2002-2004
Korea National Graduate Fellowship, Gwangju Institute of Science and Technology	2005-2007
1 st Place in Research Symposium, Illinois Chapter of Controlled Release Society	08/2011
Outstanding Pharmaceutical Paper Award, Controlled Release Society	07/2014
Susan G. Komen Postdoctoral Fellowship, Susan G. Komen for the Cure	08/2015
*DOD Prostate Cancer Research Program Postdoctoral Fellowship (*relinquished, due to simultaneous awards)	08/2015
Images selected for the 2016 NCI Cancer Close Up, National Cancer Institute	04/2016

Jon Shevell Young Scientist Travel Scholarship, Susan G. Komen for the Cure	05/2016
NIH NIBIB Pathway to Independence Award (K99/R00)	04/2017
SITC Abstract Travel Award, Society for Immunotherapy of Cancer	11/2017
AACR Scholar-in-Training Award, American Association for Cancer Research	04/2018
2019 UKC Best Poster Award, Korean-American Scientists and Engineers Association	08/2019
NIH NIGMS Maximizing Investigators' Research Award (R35)	09/2021

PROFESSIONAL ACTIVITIES

Invited Journal Reviews: <i>Nat. Biomed. Eng.</i> , <i>ACS Nano</i> , <i>Mol. Pharm.</i> , <i>J. Control Release</i> , <i>Theranostics</i> , <i>Lab. Invest.</i> , <i>J. Transl. Med.</i> , <i>Skin Pharmacol. Physiol.</i> , <i>Biomaterials</i> , <i>Chem. Eng. J.</i> , <i>J. Mater. Chem. B</i> , <i>J. Biomater. Sci. Polym. Ed.</i> , <i>Eur. Polym. J.</i> , <i>Nat. Comm. Bio</i> , <i>J. Cell & Molecular Medicine</i> , <i>JoVE</i> .	
Transnostics LLC, Co-founder, President and COO	2016-Pres.
Korean/Korean-American Scientists Association at the University of Chicago, President	2015-2017
UChicago NSF I-Corps Program	2017
NIH Early Career Reviewer, Gene and Drug Delivery (GDD) study section	06/2021
NIH Review Panel, IMST-U70 Human BioMolecular Atlas Program	03/2022
NIH/CSR ZRG1 MBBC-D (55) study section panel for the NIGMS MIRA R35 ESI	03/2023
NIH Molecular Cancer Diagnosis and Classification (MCDC) Study Section	10/2024

SERVICES

Review Panel of UIC DPI Seed Program Cycle 2	04/2019
Judge for Gary Kruh Research Symposium in UI Cancer Center	04/2019
Judge for Clinic and Research Day in UIC Dentistry	03/2020
Department Seminar, Co-coordinator	2019-2020
Faculty Fellow of UIC Honors College	2019-Pres.
Committee Member of SURF Program in PSCI Department	2020-Pres.
Committee Member of PSCI Graduate Admission	2020-Pres.
Committee Member of PSCI Faculty Search	2020-2022
Committee Member of PSCI Department Chair Search	2021
Advisor of PhLAMES Family in UIC College of Pharmacy	2020-Pres.
Advisor of High School Student's Summer Research Program in UI Cancer Center	2022-Pres.
Committee Member of Graduate College Award	2022-2023
Member of the Educational Policy Committee in the UIC College of Pharmacy	2023-Pres.

TEACHING

Department Seminar (BPS 595), Co-coordinator	2019-2020
Pharmaceutics I (PHAR 431, PharmD), Instructor	2019-Pres.
Biopharmaceutical Sciences I (BPS 501, Grad), Instructor	2019

Drug Discovery, Design, and Development (PSCI 501, Grad), Instructor	2020-Pres.
Principles of Pharmaceutics and Drug Delivery (PSCI 510, Grad), Instructor and Co-coordinator	2022-Pres.
Cancer and Immuno-Engineering (BME6230, Grad, Cornell University), Instructor	2022-Pres.
Foundations of Cancer Biology (GEMS 551, Grad, Medical Science), Instructor	2022

RESEARCH TRAINING

Dr. Evan H. Phillips	Postdoctoral scholar	2018-2023
Mr. Jingtian Zheng	BPS PhD student	2019-Pres.
Ms. Jessica Mo	PharmD student	2019
Ms. Yi-Chien Wu	PSCI PhD student	2020-Pres.
Ms. Samantha Emery	PSCI PhD student	2020-Pres.
Dr. Xu Wang	Postdoctoral scholar	2020-2022
Ms. Dahee Jung	PSCI PhD student	2021-Pres.
Mr. Chirstopher Korfiatis	PharmD student	2022-2023
Ms. Kennedy Bray	High school student	2022
Ms. Margaret Afolabi	PharmD student	2022-Pres.
Mr. Jimmy Bui	Undergraduate student	2022-2023
Mr. Elie Abi Khalil	PSCI PhD student	2023-Pres.
Ms. Francine Chuy	PharmD student	2023
Ms. Laila Atieh	BSPS student	2023
Mr. Ruthwik Bhadrachalam	High school student	2023
Ms. Xiaoying Cai	PSCI PhD student	2023-Pres.
Ms. Zuhur Almalki	PSCI PhD student	2023
Ms. Luyu Zhang	PSCI PhD student	2023
Mr. Abel Woldesenbete	PSCI PhD student	2023
Mr. Jeonghun Yoo	PharmD student	2024-Pres.
Ms. Gabriela Ramirez	High school student	2024
Ms. Noori Yim	BSPS student	2024
Ms. Yeunbin Park	PharmD student	2025-Pres.

GRADUATE STUDENT EXAM COMMITTEES

Mr. Karol Sokolowski, Mr. Ziwei Zhang	2019
Ms. Giokdjen Ilktach, Mr. Xinhao Shao, Ms. Catherine Dial, Ms. Raghd Nowar	2020
Mr. Xiao Guo, Mr. Jingtian Zheng, Ms. Yi-Chien Wu, Ms. Samantha Emery, Mr. Tim Langridge	2021
Ms. Dahee Jung, Ms. Angeliki Andrianopoulou, Mr. Xiao Guo, Mr. Karol Sokolowski, Ms. Catherine Dial	2022
Ms. Raghd Nowar, Ms. Chih-Jia Chao, Ms. Hanan Algarni, Ms. Philana Phan, Ms. Shruthi Selvaraji, Ms. Monica Chen, Mr. Ziwei Zhang, Ms. Sonia Alavi	2023
Ms. Kate Alexander, Ms. Edidiong Udofa, Mr. Jay Teamer, Mr. Jingtian Zheng, Mr. Elie Abi Khalil	2024

RESEARCH PAPERS (* indicates co-first author and the senior corresponding author is underlined)

Publications of research in M.S., Ph.D., and Postdoctoral training

1. Chung, Y.-I.; Lee, S.-Y.; Tae, G., "The effect of heparin on the gelation of Pluronic F-127 hydrogel", *Colloids Surf. A* 2006; 284; 480.

2. Chung, Y.-I.; Ahn, K.-M.; Jeon, S.-H.; **Lee, S.-Y.**; Lee, J.-H.; Tae, G., “Enhanced bone regeneration with BMP-2 loaded functional nanoparticle-hydrogel complex”, *J. Controlled Release* 2007; 121; 91.
3. **Lee, S.-Y.**; Tae, G.; Kim, Y.-H., “Thermal gelation and photo-polymerization of di-acrylated Pluronic F 127”, *J. Biomater. Sci. Polym. Ed.* 2007; 18; 1335.
4. **Lee, S.-Y.**; Tae, G., “Formulation and in vitro characterization of an *in situ* gelable, photo-polymerizable Pluronic hydrogel suitable for injection”, *J. Controlled Release* 2007; 119; 313.
5. Lee, S.; Cha, E.-J.; Park, K.; **Lee, S.-Y.**; Hong, J.-K.; Sun, I.-C.; Kim, S. Y.; Choi, K.; Kwon, I. C.; Kim, K.; Ahn, C.-H., “A near-infrared-fluorescence-quenched gold-nanoparticle imaging probe for *in vivo* drug screening and protease activity determination”, *Angew. Chem. Int. Ed.* 2008; 47; 2804
6. Lee, S.; Park, K.; **Lee, S.-Y.**; Ryu, J. H.; Park, J. W.; Ahn, H. J.; Kwon, I. C.; Youn, I.-C.; Kim, K.; Choi, K., “Dark quenched matrix metalloproteinase fluorogenic probe for imaging osteoarthritis development *in vivo*”, *Bioconjugate Chem.* 2008; 19; 1743 (cover).
7. Nam, H. Y.; Kwon, S. M.; Chung, H.; **Lee, S.-Y.**; Jeon, H.; Kwon, S.-H.; Her, S.; Park, J. H.; Kim, J.; Oh, Y.-K.; Kim, K.; Kwon, I. C.; Kim, K.; Jeong, S. Y., “Cellular uptake mechanism and intracellular fate of hydrophobically modified glycol chitosan nanoparticles”, *J. Controlled Release* 2009; 135; 259.
8. **Lee, S.-Y.**; Tae, G.; Kim, Y.-H., “Accelerated micellization and aggregation of Pluronic micelles by the interaction with heparin”, *J. Biomater. Sci. Polym. Ed.* 2010; 21; 727.
9. **Lee, S.-Y.**; Lee, S.; Youn, I.-C.; Yi, D. K.; Lim, Y. T.; Chung, B. H.; Leary, J. F.; Kwon, I. C.; Kim, K.; Choi, K., “A near-infrared fluorescence-based optical thermosensor”, *Chem. Eur. J.* 2009; 15; 6103.
10. **Lee, S.-Y.**; Huh, M. S.; Lee, S. J.; Chung, H.; Park, J. H.; Oh, Y.-K.; Choi, K.; Kim, K.; Kwon, I. C., “Stability and cellular uptake of polymerized siRNA (poly-siRNA)/polyethylenimine (PEI) complexes for efficient gene silencing”, *J. Controlled Release* 2010; 141; 339.
11. Lee, S.; Ryu, J. H.; Park, K.; Lee, A.; **Lee, S.-Y.**; Youn, I.-C.; Ahn, C.-H.; Yoon, S. M.; Myung, S.-J.; Moon, D. H.; Chen, X.; Choi, K.; Kwon, I. C.; Kim, K., “Polymeric nanoparticle-based activatable near-infrared nanosensor for protease determination *in vivo*”, *Nano Lett.* 2009; 9; 4412.
12. Chung, Y.-I.; Kim, J. C.; Kim, Y. H.; Tae, G.; **Lee, S.-Y.**; Kim, K.; Kwon, I. C., “The effect of surface functionalization of PLGA nanoparticles by heparin- or chitosan-conjugated Pluronic on tumor targeting”, *J. Controlled Release* 2010; 143; 374.
13. Huh, M. S.*; **Lee, S.-Y.***; Park, S.; Lee, S.; Chung, H.; Lee, S.; Choi, Y.; Oh, Y.-K.; Park, J. H.; Jeong, S. Y.; Choi, K.; Kim, K.; Kwon, I. C., “Tumor-homing glycol chitosan/polyethylenimine nanoparticles for the systemic delivery of siRNA in tumor-bearing mice”, *J. Controlled Release* 2010; 144; 134.
14. Nam, T.; Park, S.; **Lee, S.-Y.**; Park, K.; Choi, K.; Song, I. C.; Han, M. H.; Leary, J. J.; Yuk, S. A.; Kwon, I. C.; Kim, K.; Jeong, S. Y., “Tumor targeting chitosan nanoparticles for dual-modality optical/MR cancer imaging”, *Bioconjugate Chem.* 2010; 21; 578.
15. Kim, J.Y.; Choi, W.I.; Kim, Y.-H.; Tae, G.; **Lee, S.-Y.**; Kim, K.; Kwon, I.C., “*In-vivo* tumor targeting of Pluronic-based nano-carriers”, *J. Controlled Release* 2010; 147; 109.
16. Lee, S.; **Lee, S.-Y.**; Park, S.; Rye, J.H.; Na, J.H.; Koo, H.; Lee, K.E.; Jeon, H.; Kwon, I.C.; Kim, K.; Jeong, S.Y., “*In vivo* NIRF imaging of tumor targetability of nanosized liposomes in tumor-bearing mice”, *Macromol. Biosci.* 2012; 12; 849.

17. Lee, S.J.; Huh, M.S.; **Lee, S.-Y.**; Min, S.; Lee, S.; Koo, H.; Jeon, H.; Choi, Y.; Choi, K.; Byun, Y.; Jeong, S.Y.; Park, K.; Kim, K.; Kwon, I.C., "Tumor-homing poly-siRNA/glycol chitosan self-cross-linked nanoparticles for systemic siRNA delivery in cancer treatment", *Angew. Chem. Int. Ed.* 2012; 51; 7203.
18. Na, J.H.*; **Lee, S.-Y.***; Lee, S.; Koo, H.; Min, K.H.; Jeong, S.Y.; Yuk, S.H.; Kim, K.; Kwon, I.C., "Effect of the stability and deformability of self-assembled glycol chitosan nanoparticles on tumor-targeting efficiency", *J. Controlled Release* 2012; 163; 2.
19. **Lee, S.-Y.**; Kim, S.; Jacqueline, J.T.; Park, K.; Cheng, J.-X., "Blood-stable, tumor-adaptable disulfide bonded mPEG-(Cys)(4)-PDLLA micelles for chemotherapy", *Biomaterials* 2013; 34; 552.
20. **Lee, S.-Y.**; Jacqueline, J.T.; Kim, S.; Park, K.; Cheng, J.-X., "FRET imaging reveals different entry routes of self-assembled and disulfide bonded polymeric micelles", *Mol. Pharm.* 2013; 10; 3497.
21. Wu, W.*; **Lee, S.-Y.***; Wu, X.; Tyler, Y.J.; Wang, H.; Ouyang, Z.; Park, K.; Xu, X.-M.; Cheng, J.-X., "Neuroprotective ferulic acid (FA)-glycol chitosan (GC) nanoparticles for functional restoration of traumatically injured spinal cord", *Biomaterials* 2014; 35; 2355.
22. Yue, S.; Li, J.; **Lee, S.-Y.**; Lee, H.J.; Shao, T.; Song, B.; Masterson, T.A.; Liu, X.; Ratliff, T.L.; Cheng, J.-X., "Cholesteryl ester accumulation induced by PTEN loss and PI3K/AKT activation underlies human prostate cancer aggressiveness", *Cell Metab.* 2014; 19; 393.
23. Ping, X.; Jiang, K.; **Lee, S.-Y.**; Cheng, J.-X.; Jin, X., "PEG-PDLLA micelles improve the function of myelinated axons following traumatic brain injury", *J. Neurotrauma* 2014; 31; 1172.
24. Liao, C.-S.; Slipchenko, M.N.; Wang, P.; Li, J.; **Lee, S.-Y.**; Oglesbee, R.A.; Cheng, J.-X., "Microsecond time-scale vibrational spectral imaging by parallel detection of stimulated Raman scattering", *Light: Science & Applications* 2015; 4; e265.
25. **Lee, S. S.-Y.***; Li, J.*; Tai, J. N.; Ratliff, T.L.; Park, K.; Cheng, J.-X., "Avasimibe encapsulated in human serum albumin blocks cholesterol esterification for selective cancer treatment", *ACS Nano* 2015; 9; 2420.
26. Li, J.; Gu, D.; **Lee, S. S.-Y.**; Song, B.; Bandyopadhyay, S.; Chen, S.; Konieczny, S.F.; Ratliff, T.L.; Xie, J.; Cheng, J.-X., "Abrogating cholesterol esterification suppresses growth and metastasis of pancreatic cancer", *Oncogene* 2016; 35; 6378.
27. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., "Multiplex three-dimensional optical mapping of tumor immune microenvironment", *Scientific Reports* 2017; 7; 17031.
28. Fowler, J.L.; **Lee, S. S.-Y.**; Wesner, Z.C.; Olehnik, S.K.; Kron, S.J.; Hara, M., "Three-dimensional analysis of the human pancreas", *Endocrinology* 2018; 159; 1393.
29. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., "Multiplex three-dimensional mapping of macromolecular drug distribution in the tumor microenvironment", *Molecular Cancer Therapeutics* 2018; 18; 213.
30. **Lee, S. S.-Y.**; Bindokas, V.; Lingen, M.; Kron, S.J., "Non-destructive, multiplex three-dimensional mapping of immune infiltrates in core needle biopsy", *Laboratory Investigation* 2018; 99; 1400.
31. Xu, J.; **Lee, S. S.-Y.**; Seo, H.; Pang, L.; Jun, Y.; Zhang, R.-Y.; Zhang, Z.-Y.; Kim, P.; Lee, W.; Kron, S.J.; Yeo, Y., "Quinic Acid-Conjugated Nanoparticles Enhance Drug Delivery to Solid Tumors via Interactions with Endothelial Selectins", *Small* 2018; 14; e1803601.
32. Karginova, O.; Weekley, C.M.; Raoul, A.; Alsayed, A.; Wu, T.; **Lee, S. S.-Y.**; He, C.; Olopade, I.O., "Inhibition of copper transport induces apoptosis in triple negative breast cancer cells and suppresses tumor angiogenesis", *Molecular Cancer Therapeutics* 2019; 18; 873.
33. Ishihara, J.; Ishihara, A.; Sasaki, K.; **Lee, S. S.-Y.**; Yasui, M.; Abe, H.; Potin, L.; Hosseinchi, P;

Fukunaga, K.; Raczy M.M.; Gray, L.T.; Williford, J.-M.; Fukayama, M.; Kron, S.J.; Swartz, M.A.; Hubbell, J.A., “Targeted antibody and cytokine cancer immunotherapies through collagen affinity”, *Science Translational Medicine* 2019; 11(487); pii: eaau3259.

34. Efimova, E.V.; Appelbe, O.K.; Ricco, N.; **Lee, S. S.-Y.**; Liu, Y.; Wolfgeher D.J.; Collins, T.; Flor, A.C.; Ramamurthy, A.; Warrington S.; Bindokas, V.P.; Kron, S.J., “O-GlcNAcylation enhances double strand break repair, promotes cancer cell proliferation and prevents therapy-induced senescence in irradiated tumors”, *Molecular Cancer Research* 2019; 17; 1338.

Publications of research conducted at UIC (The corresponding author is underlined)

35. Qiao, G.; Kone, L.; Phillips, E.H.; **Lee, S. S.-Y.**; Brown, G.; Khetani, S.; Thakur, A.; Lum, L.G.; Prabhakar, B.S.; Maker, A.V., “LIGHT enhanced bispecific antibody armed T-cells to treat immunotherapy resistant colon cancer”, *Oncogene* 2022; 41; 2054.
36. Wang, X.; Emery, S.C.; Iyer, M.A.; Szmeler, A.H.; Eddington, D.T.; **Lee, S. S.-Y.**, “Spatially selective cell treatment and collection for integrative drug testing using hydrodynamic flow focusing and shifting”, *PLOS ONE* 2023; 18(1); e0279102.
37. Moon, H.-G.; Kim, S.-J.; Kim, Y.-M.; Rehman, J.; Lee, H.; Wu, Y.-C.; **Lee, S. S.-Y.**; Christman, J.W.; Ackerman, S.J.; Kim, M.; You, S.; Park, G.Y., “CX₃CR₁+ macrophage facilitates the resolution of allergic lung inflammation via interacting CCL26”, *American Journal of Respiratory and Critical Care Medicine* 2023; 207(11); 1451-1463.
38. Wu, Y.; Moon, H.-G.; Bindokas, V.P.; Park, G.Y.; **Lee, S. S.-Y.**, “Multi-resolution 3D microscopy of asthma mouse lung”, *American Journal of Respiratory Cell and Molecular Biology* (Cover) 2023, 69 (1), 13-21.
39. Phillips, E.H.; Bindokas, V.P.; Jung, D.; Teamer, J.; Kitajewski, J.; Solaro, R.J.; Wolska, B.M.; **Lee, S. S.-Y.**, “Three-dimensional spatial quantitative analysis of cardiac lymphatics in the mouse heart”, *Microcirculation* 2023; 30(7); e12826.
40. Zheng, J.; Wu, Y.; Phillips, E.H.; Wang, X.; Cai, X.; **Lee, S. S.-Y.**, “Increased multiplexity in optical tissue clearing-based 3D immunofluorescence microscopy of the tumor microenvironment by LED photobleaching”, *Laboratory Investigation* 2024; 104(6); 102072.
41. Zheng, J.; Wu, Y.; Cai, X.; Phan, P.; Gill, M.; Er, E.E.; Zhao, Z.; Wang, J.Z.; **Lee, S. S.-Y.**, “Correlative multiscale 3D imaging of mouse primary and metastatic tumors by sequential light sheet and confocal fluorescence microscopy”, Accepted by *iScience and bioRxiv* 2024; doi: <https://doi.org/10.1101/2024.05.14.594162>
42. Kim, Y.-M.; Sanborn, M.A.; Wang, X.; Mancinelli, G.; Chakraborty, S.; Vijeth, S.; Gajwani, P.; Grippo, P.; **Lee, S. S.-Y.**; Valyi-Nagy, T.; Toth, P.T.; Valyi-Nagy, K.; Rehman, J., “Impaired Barrier Integrity of the Skeletal Muscle Vascular Endothelium Drives Progression of Cancer Cachexia”, Accepted by *Nature Cancer and bioRxiv* 2022; doi: <https://doi.org/10.1101/2022.12.12.520118>
43. **Lee, S. S.-Y.**; Pagacz, J.; Averbek, S.; Scholten, D.; Liu, Y.; Kron, S.J., “Timing Anti-PD-L1 Checkpoint Blockade Immunotherapy to Enhance Tumor Irradiation”, *MDPI Cancers* 2025; 17 (3); 391.

Preprints and manuscripts under review and in preparation

44. Chao, C.; Zhang, E.; Trinh, D.; Udofa, E.; He, S.; Zheng, J.; Bao, Q.; Phan, P.; Elgendy, S.; Shi, X.; Burdette, J.; **Lee, S. S.-Y.**; Yu, G.; Zhao, Z., “Antigen capturing nanoparticle boosted cDC1 therapy for in situ cancer immunization”, under review in *Nature Communications*.
45. Choi, J.; Park, G.; **Lee, S. S.-Y.**; Dominici, E.; Becker, L.; Macleod, K.; Kron, S.J.; Hwang, S., “Context-dependent role for autophagy in myeloid cells in tumor progression”, *bioRxiv* 2024; doi:

<https://doi.org/10.1101/2024.07.12.603292>

46. Wu, Y.-C.; Khalil, E.A.; Zheng, J.; Upadhye, A.; Rehman, J.; **Lee, S. S.-Y.**, “Tissue niche and cell type-selective proteomics”, in preparation.
47. Jung, D.; Cai, X.; Oh, W.; Lim, S.-O.; **Lee, S. S.-Y.**, “Engineered anti-CD40 agonist antibody as a novel cancer neoantigen vaccine delivery system”, in preparation.
48. Khalil, E.A.; Wu, Y.-C.; Zheng, J.; Plank, J.T.; Lippert, A.; **Lee, S. S.-Y.**, “Tissue region-selective multiomics: A novel cellular and molecular analysis method of the tumor immune landscape” in preparation.
49. Khalil, E.A.; Yoo, J.; Sikligar, A.; Eddington, D.T.; **Lee, S. S.-Y.**, “Microfluidic-based immunotherapy screening on core needle biopsy”, in preparation.

BOOK CHAPTERS (The corresponding author is underlined)

1. **Lee, S.-Y.**, **Cheng, J.-X.**, “Nanoparticulate drug delivery: clearance of nanoparticles during circulation” John Wiley & Sons, Inc. (2013), ISBN: 978-1-118-57051-7, pp209-239.
2. Phillips, E. H.; Scholten, D.; **Kron, S. J.**; **Lee, S. S.-Y.**, “Multiplexed tissue tomography” Springer Science Business Media, LLC, (2021), ISBN: 978-1-0716-1592-8, pp77-93.
3. Wu, Y.-C.; Pagacz, J.; Emery, S.C.; **Kron, S.J.**; **Lee, S. S.-Y.**, “Spatial mapping of the tumor immune microenvironment” Academic Press, (2021), ISBN: 978-0-323-90949-5, pp293-329.

PATENTS

1. Tae, G.; **Lee, S.-Y.**, “Injectable photo-crosslinked hydrogels, biodegradable implant and drug delivery system using the same, and the preparation method thereof”, KR 10-20070776297B1.
2. Kim, K.; Kwon, I. C.; Choi, K.; Huh, M. S.; **Lee, S.-Y.**; Lee, S. J., “Polymeric nano-particles for siRNA delivery using charge interaction and covalent bonding” KR2010-0089081, US 2012/0065242.
3. **Lee, S.-Y.**; Kwon, I. C.; Kim, K.; Choi, K.; Lee, S., “SiRNA delivery system using self-assembled polymeric nanoparticles” WO2010/131907, PCT/KR2010/003013.
4. Kim, K.; Kwon, I. C.; Choi, K.; **Lee, S.-Y.**; Youn, I.; Huh, M. S.; Lee, S. J., “Method for polymerizing a small oligonucleotide, and use of a high-molecular oligonucleotide prepared by the polymerization method”, KR10-2010-0123195A, CN102361882A, US2011/0274930A1, WO2010/131835A2, EP2431378A2.
5. Cheng, J.-X.; **Lee, S.-Y.**, “Cholesteryl ester-depleting nanomedicine for non-toxic cancer chemotherapy”, US20160199497 A1.

ORAL PRESENTATIONS

1. **Lee, S.-Y.**; Tae, G., “New method of injectable hydrogels by novel photo-polymerization”, Polymer Society of Korea Annual Fall Scientific Meeting, 10-13 Oct. (2006), Busan, Korea.
2. **Lee, S.-Y.**, “Nanomedicine-based synergistic therapy for early repair of traumatically injured spinal cord”, BMEGSA Summer Seminar, 19 July (2011), West Lafayette, IN.
3. **Lee, S.-Y.**; Kim, S.; Park, K.; Cheng, J.-X., “FRET-based subcellular visualization of S-S bond cleavage in micellar drug delivery by glutathione”, BMEGSA Research Symposium, 28 July (2011), West Lafayette, IN.
4. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “Transparent tumor tomography (T3): Multi-parameter 3D

tumor imaging”, KSAUC seminar, 23 Oct. (2015), Chicago, IL.

5. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “Transparent tumor tomography (T3): A tissue clearing-based 3D tumor imaging method”, CBC workshop, 4 Feb. (2016), Chicago, IL.
6. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “3D tumor immunofluorescence imaging method for tumor immunology and immunotherapy”, UCCC Metastasis Working Group Meeting, 14 Feb. (2017), Chicago, IL.
7. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “Multiplex 3D optical mapping of tumor immune microenvironment”, 32nd SITC Annual Meeting, 9-12 Nov. (2017), Maryland, MD.
8. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “Multiplex three-dimensional imaging cytometry for mapping tumor immune microenvironment”, AACR-KCA Joint Conference, 15-17 Nov. (2018), Seoul, Korea.
9. **Lee, S. S.-Y.**, “3D multiplex fluorescence microscopy for the tumor microenvironment”, 2022 Midwest Tumor Microenvironment Meeting, 23-25 May (2022), Kansas City, KS.

INVITED SEMINAR TALKS

- | | | |
|-----|---|---------|
| 1. | UIC Center for Biomolecular Sciences | 11/2019 |
| 2. | UIC BPS Departmental Seminar | 01/2019 |
| 3. | Translational Oncology Seminar, UI Cancer Center | 02/2019 |
| 4. | Translational Oncology Program Retreat, UI Cancer Center | 06/2019 |
| 5. | UIC College of Pharmacy Colloquium Seminar Series (BPS 425) at Rockford | 09/2019 |
| 6. | UIC Prostate Cancer Research Group | 11/2019 |
| 7. | UIC Tumor Microenvironment Group | 03/2020 |
| 8. | UIC E+W Mixer | 01/2021 |
| 9. | Cancer Biology Program, UI Cancer Center | 04/2021 |
| 10. | Cancer Biology Program Retreat, UI Cancer Center | 07/2021 |
| 11. | Medical Scientist Training Program, UIC Medicine | 09/2021 |
| 12. | Cancer Center Seminar, Purdue University | 11/2021 |
| 13. | Department of Biochemistry and Molecular Medicine, George Washington University | 12/2021 |
| 14. | Department of Pathology, UIC Medicine | 09/2022 |
| 15. | Department of Pharmaceutical Sciences, University of Kentucky | 11/2022 |
| 16. | Department of Chemistry, Southern Methodist University | 10/2023 |
| 17. | UIC College of Pharmacy Colloquium Seminar Series (BPS 425) at Chicago | 11/2023 |
| 18. | UIC College of Pharmacy Colloquium Seminar Series (BPS 425) at Rockford | 10/2024 |

POSTER PRESENTATIONS

1. **Lee, S.-Y.**; Tae, G., “Novel photo-polymerization method to make injectable hydrogels”, The 5th Asian International Symposium on Biomaterials, 15-28 Nov, (2006), Xiamen, China.
2. **Lee, S.-Y.**; Kim, S.; Park, K.; Cheng, J.-X., “A reversibly crosslinked micelle for intravenous delivery of paclitaxel”, 38th Annual meeting of the Controlled Release Society, 30-3 July-Aug, (2011), National Harbor, MD.
3. **Lee, S.-Y.**; Kim, S.; Park, K.; Cheng, J.-X., “FRET-based subcellular visualization of S-S bond

cleavage in micellar drug delivery by glutathione”, The 3rd Controlled Release Society Illinois Student Chapter Symposium, 12 Aug, (2011), Chicago, IL.

4. **Lee, S.-Y.**; Kim, S.; Park, K.; Cheng, J.-X., “Prevention of pre-mature drug release from polymer micelles through a disulfide bond shell”, Sigma XI Graduate student research competition, 15 Feb, (2012), West Lafayette, IN.
5. **Lee, S.-Y.**; Kim, S.; Park, K.; Cheng, J.-X., “FRET-based subcellular visualization of S-S bond cleavage in micellar drug delivery by glutathione”, 3rd Annual Workshop for Spectroscopic Imaging, 23-24 May, (2013), West Lafayette, IN.
6. **Lee, S.-Y.**; Li, J.; Tai, J. N.; Ratliff, T.L.; Park, K.; Cheng, J.-X., “Cholesteryl ester-depleting nanomedicine for cancer selective chemotherapy”, The Indiana University Cancer Center’s Cancer Research Day, 29 May (2014), Indianapolis, IN.
7. **Lee, S.-Y.**; Li, J.; Tai, J. N.; Ratliff, T.L.; Park, K.; Cheng, J.-X., “Cholesterol esterification-blocking nanoparticles for targeted aggressive cancer therapy”, 41st Annual meeting of the Controlled Release Society, 13-16 July, (2014), Chicago, IL.
8. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “Transparent tumor tomography (T3): Spatial 3D mapping of immune responses in a whole tumor after immunotherapy”, CRI-CIMT-EATI-AACR 1st Cancer Immunotherapy Conference, 16-19 Sept. (2015), Manhattan, NY.
9. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “Transparent tumor tomography (T3): Spatial analysis for PD-L1 checkpoint blockade immunotherapy”, CRI-CIMT-EATI-AACR 2nd Cancer Immunotherapy Conference, 25-28 Sept. (2016), Manhattan, NY.
10. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “Transparent tumor tomography (T3): 3D spatial immunoanalysis for PD-L1 immune checkpoint blockade therapy”, 2017 AACR Annual Meeting, 1-5 April (2017), Washington, DC.
11. **Lee, S. S.-Y.**, Bindokas, V.; Kron, S.J., “Multiplex three-dimensional optical mapping of tumor immune microenvironment”, 2017 CRI-CIMT-EATI-AACR 3rd Cancer Immunotherapy Conference, 6-9 Sept. (2017), Mainz, Germany.
12. **Lee, S. S.-Y.**, Bindokas, V.; Kron, S.J., “Multiplex three-dimensional optical mapping of tumor immune microenvironment”, An AACR Special Conference on Tumor Immunology and Immunotherapy, 1-4 Oct. (2017), Boston, MA.
13. **Lee, S. S.-Y.**; Bindokas, V.; Kron, S.J., “Quantitative three-dimensional cytometry of tumor microenvironment”, 2018 AACR Annual Meeting, 13-18 April (2018), Chicago, IL.
14. **Lee, S. S.-Y.**; Scholten, D.G.; Bindokas, V.; Kron, S.J., “Multiplex three-dimensional mapping of mRNA and protein in the tumor microenvironment”, 2018 CRI-CIMT-EATI-AACR 4th Cancer Immunotherapy Conference, 30 Sept.-3 Oct. (2018), Manhattan, NY.
15. **Lee, S. S.-Y.**; Scholten, D.G.; Bindokas, V.; Kron, S.J., “Multiplexed Three-Dimensional Imaging Cytometry for Mapping Tumor Immune”, 2019 KSEA UKC, 15-17 Aug. (2019), Chicago, IL.
16. Phillips, E.; Mo, J.; Gill, M.; Guo, X.; Wang, Z.; Kron, S.; **Lee, S. S.-Y.**, “Multiplex 3D microscopy for analysis of the tissue microenvironment”, 2020 Chicago Neurovascular Meeting, 13 Feb. (2020), Chicago, IL.
17. Phillips, E.; Mo, J.; Gill, M.; Guo, X.; Wang, Z.; Kron, S.; **Lee, S. S.-Y.**, “Multiplex three-dimensional microscopy of vasculature in the tissue microenvironment”, 2020 Gordon Research Symposium and Conference (Lymphatics), 1-6 March (2020), Ventura, CA.
18. Mo, J.; Lyer, M.; Eddington, D.; **Lee, S. S.-Y.**, “Development of Electrophoresis-Assisted

Immunofluorescence Staining of Macrosectioned Tumor Tissue”, 2020 Research Day of UIC College of Pharmacy, 6 Nov. (2020), Chicago, IL.

19. Wu, Y.-C.; Hoskins, K.; **Lee, S. S.-Y.**, “Multiplex Three-Dimensional (3D) Microscopy for the Breast Tumor Microenvironment”, 2020 Susan G Komen Metastatic Breast Cancer Conference, 21-22 Aug. (2020), Chicago, IL.
20. Phillips, E.; Bindokas, V.; Solaro, R.J.; Wolska, B.; Kitajewski, J.; **Lee, S. S.-Y.**, “3D Spatial Quantitative Analysis of the Cardiac Lymphatics in a Mouse Model of Hypertrophic Cardiomyopathy”, UIC College of Pharmacy Research Day, 12 Nov (2021), Chicago, IL
21. Wu, Y.-C.; **Lee, S. S.-Y.**, “Single-cell 3D spatial omics for tumor hypoxia”, UIC College of Pharmacy Research Day, 12 Nov (2021), Chicago, IL
22. Jung, D.; **Lee, S. S.-Y.**, “Toward understanding IgG transcytosis”, UIC College of Pharmacy Research Day, 12 Nov (2021), Chicago, IL
23. Wang, X.; Emery, S.C.; Lyer, M.A.; Szmelter, A.H.; Eddington, D.T; **Lee, S. S.-Y.**, “A spatially controlled in vitro cell study system using hydrodynamic focusing”, UIC College of Pharmacy Research Day, 12 Nov (2021), Chicago, IL
24. Emery, S.C.; **Lee, S. S.-Y.**, “Single-Cell 3D Spatial Transcriptomics for the Deconvolution of Tumor-Associated Vasculature”, UIC College of Pharmacy Research Day, 12 Nov (2021), Chicago, IL
25. Zheng, J.; **Lee, S. S.-Y.**, “Development of anti-immune checkpoint Fab fragment for improving cancer immunotherapy”, UIC College of Pharmacy Research Day, 12 Nov (2021), Chicago, IL
26. Wu, Y.-C.; **Lee, S. S.-Y.**, “Single-cell 3D spatial omics for tumor hypoxia”, 2022 Annual AACR conference, 15 June (2022), Philadelphia, PA
27. Zheng, J.; Phillips, E., Wu, Y.-C., Bindokas, V.; **Lee, S. S.-Y.**, “LED photobleaching-based multiplex 3D microscopy of the tumor microenvironment”, 2023 Annual AACR conference, 19 April (2023), Orlando, FL
28. **Lee, S. S.-Y.**; Wu, Y.-C.; Zheng, J.; Khalil, E.A.; Wang, S.; Plank, J.; Lippert, A., “3D Correlative Multi-Scale Cellular and Molecular Architectures of Solid Tumors and Other Tissues”, 2024 Annual AACR conference, 8 April (2024), San Diego, CA
29. Khalil, E.A.; Wu, Y.-C.; Zheng, J.; Plank, J.T.; Lippert, A.; **Lee, S. S.-Y.**, “Tissue region-selective multiomics: A novel cellular and molecular analysis method of the tumor immune landscape,” 2024 UI Cancer Center Dr. Gary Kruh Cancer Research Symposium, 19 April (2024), Chicago, IL
30. Jung, D.; Oh, W.; Lim, S.-O.; **Lee, S. S.-Y.**, “Engineered anti-CD40 agonist antibody as a novel cancer neoantigen vaccine delivery system,” 2024 UI Cancer Center Dr. Gary Kruh Cancer Research Symposium, 19 April (2024), Chicago, IL
31. Wu, Y.-C.; Khalil, E.A.; Weng, S.; **Lee, S. S.-Y.**, “Tissue-niche-based and cell-type-selective in-depth proteomics,” 2024 UI Cancer Center Dr. Gary Kruh Cancer Research Symposium, 19 April (2024), Chicago, IL