Ki-Bum Lee

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ACADEMIC POSITION

2022 - Present Distinguished Professor
2016 - 2022 Professor
2013 - 2016 Associate Professor (with tenure)
2008 - 2013 Assistant Professor
Rutgers, The State University of New Jersey, Piscataway, NJ
Department of Chemistry and Chemical Biology

Rutgers faculty in the following Programs, Depts, and Institutes:

Biomedical Engineering Dept. Graduate Program	(2008- present)
Chemical and Biochemical Engineering, Graduate Program	(2019- present)
Graduate Program in Molecular Biosciences	(2009-present)
The Rutgers Stem Cell Research Center	(2008- present)
Human Genetics Institute of New Jersey	(2014- present)
Rutgers Brain Health Institute	(2015- present)
Center for Integrative Proteomics Research	(2016- present)
Quantitative Biomedicine Graduate Program	(2016- present)
Cancer Institute of New Jersey (Full Member)	(2018- present)
Chemical and Biochemical Engineering Dept.	(2019- present)
Rutgers Global Health Institute	(2022- present)

2017 Visiting Professor
Kyoto University, Kyoto, Japan [Japan Society for the Promotion of Science (***JSPS***) Fellowship]

2013(Summer) Visiting Professor
Princeton University (Princeton Neuroscience Institute); Biophysics and Computation in Neurons and Networks

2007 Visiting Professor
UCLA Medical School, Los Angeles, CA; Dept. of Molecular and Medical Pharmacology

EDUCATION

PostDoc Chemical Biology, (Advisor: ***Peter G. Schultz***) The Scripps Research Institute, La Jolla, CA, 2004~2007.
Ph. D. Bioinorganic/Nano Chem, (Advisor: ***Chad A. Mirkin***) Northwestern University, Evanston, IL, Aug, 2004.
M. S. Physical Chemistry, KAIST (Korea Advanced Institute of Science and Technology), Taejon, Korea, Feb. 2000.
B. S. Chemistry, Kyung Hee University, Seoul, Korea, Feb. 1998, graduated summa cum laude.

AWARDS AND HONORS

Rutgers Provost Award for Pioneering Research (2025)
NIH Nanotechnology Study Section-NANO (Standing Member, 2020-2024)
Nano Convergence Distinguished Lectureship (2025)
Nano Convergence (*Impact Factor: 13.4*), *Executive Editor* (2020- present)
Rutgers Patent Award (2023)
Grossman Innovation Prize (2021)
Alzheimer's Association Research Grant Award (AARG-NTF, 2021-2025)
Singapore National Medical Research Council (NMRC)-International Expert Review Panel (2020-2022)
New Jersey Commission on Brain Injury Research Award (2025-X2)
Burroughs Wellcome Fund Collaborative Research Award (2019- 2021)
Busch Biomedical Grant Award (2020- 2022)
Rutgers Global Health Seed Grant (2020-2022)
Rutgers TechAdvance Award (2020)
Rutgers TechAdvance Award (2019)
Rutgers Patent Award (2019)
American Chemical Society New Directions (ND) Award (2015- 2017)
Japan Society for the Promotion of Science (JSPS) Fellowship (2017)

Rutgers Global Research Grant (2018-2020)
Rutgers Brain Health Institute (BHI) Grant Awards (2017 and 2019)
Rutgers Patent Award (2017)
NSF I-Corps Award (2015- 2016)
The University City Science Center's QED Award (2016)
Burroughs Wellcome Fund Collaborative Research Award (2014- 2015)
New Jersey Spinal Cord Research Award (2009, 2013, 2016, 2017,2020, and 2022)
Busch Biomedical Grant Award (2013- 2014)
Early Career Investigator Travel Fellowship, Nanotechnologies in Cancer at Memorial Sloan-Kettering Cancer Center (2013)
Rutgers Board of Trustees Research Award for Scholarly Excellence (2013)
Faculty Research Award, Rutgers University (2012- 2013)
Johnson and Johnson Proof-of-Concept Award (2011- 2012)
NIH Director's New Innovator Award (2009- 2014)
Grant Proposal Development Award, Rutgers University (2008)
CIRM (California Institute for Regenerative Medicine) Post-doctoral Fellowship (2006- 2007)
NSEC (Nanoscale Science and Engineering Center) Outstanding Research Award, Northwestern University (2004)
MRS (Materials Research Society) Graduate Student Research Award (2003), Korean-American Scholarship (2003)
L. Carroll King Award for Excellence Chemistry Teaching, Northwestern University (2001)
University Presidential Fellowship, Northwestern University (2001)
NSEC Board of Student Advisors (2000- 2004), Honor scholarship, Kyung Hee University (1995-1997)

OTHER EXPERIENCE AND PROFESSIONAL MEMBERSHIPS

Research Scientist, SAMSUNG SDI CO., LTD (2000)
NSEC Board of Student Advisors (2000-2004), American Chemical Society (2000 – present)
Material Research Society (2002 – present), The New York Academy of Sciences (2005 – present)
International Society for Stem Cell Research (ISSCR) (2010 – present)
NSF Panel Reviewer, Biomaterials Programs (2011), reviewer, National Research Foundation of Korea (Korea) (2011)
Ad hoc reviewer, Medical Research Council (MRC, UK) (2011-2013); National Science Center (Poland) (2012)
Ad hoc reviewer, Portuguese Foundation for Science and Technology (FCT, Portugal) (2012)
NSF Panel Reviewer, NanoEHS (2013)
NSF Panel Reviewer, Stem Cell Tissue-Engineering (2013), NSF Panel Reviewer, Stem Cell Tissue-Engineering (2015)
Ad hoc reviewer, Congressionally Directed Medical Research Programs [CDMRP, X2] (2015)
NIH Panel Reviewer (X2), BMBI (2016),NIH/NIEHS Special Emphasis Panel Reviewer, NHIR, CDMRP reviewer (2016)
NIH Panel Reviewer (X3), BMBI, NANO (2017), NIH/NIBIB Panel Reviewer (2017), CDMRP Ad hoc reviewer (2017)
NIH Panel Reviewer (X4), BMBI (2018); NIH Panel Reviewer, MTE (2018); NIH Panel Reviewer, GDD, NIH/NIBIB (2018)
CDMRP Ad hoc reviewer (2019)
NIH Panel Reviewer (X4), BMBI (2019); NANO (2019); MTE (2019); GDD (2019) Director's New Innovator Award (2019)
CDMRP Ad hoc reviewer (X2, 2020), NIH Panel Reviewer (X2): MTE and SARS-CoV-2 Emergency Awards (2020)
NSF CASIS Review Panel (2020), NSF Review Panel (X2, 2021)
NIH Director's New Innovator Award Program (DP2) reviewer (X3, 2019, 2020, 2021)
Singapore National Medical Research Council (NMRC)-International Expert Review Panel (2020-2022)
NIH Nano Study Section (Standing Member) (2000-2024)

PROFESSIONAL RESEARCH EXPERIENCE

Professor, Dept. of Chem. & Chemical Biology, Rutgers, The State University of New Jersey (Jan. 2008 to present)

- **Area:** Analytical and Inorganic Chemistry, Chemical Biology, Nanotechnology, Drug/Gene Delivery, Microfluidics Biomaterials/Tissue Engineering, Regenerative Medicine, Molecular Imaging, Synthetic Biology, Functional Genomics
- **Research Topic:** *Develop and integrate nanotechnologies and chemical functional genomics to modulate signaling pathways in cells (e.g. stem cells and cancer cells) and to investigate cell behaviors (e.g. self-renewal, differentiation, apoptosis, and migration)*

Post-doctoral research with ***Prof. Peter G. Schultz***, The Scripps Research Institute (Sep. 2004 to Aug. 2007)

- Area: Chemical biology, High throughput screening, Stem cell biology, Drug discovery, Phospho- Proteomics, Synthetic Biology, Regenerative Medicine, Functional Genomics
- Research Topic: *Chemical and functional genomic approaches for regulating stem cell fate*

Graduate research with ***Prof. Chad A. Mirkin***, Northwestern University (Aug. 2000 to Aug. 2004)

- Area: Nanobiotechnology, Biomaterials, Bio-surface science, Biosensors, Synthesis of nanocomposites
- **Ph.D. Thesis: "Nanostructures for Biomolecular Assays"**

Research Scientist at SAMSUNG SDI CO., LTD, Suwon, Korea. (2000)

BIOGRAPHICAL SKETCH

KiBum Lee is a distinguished professor of chemistry and chemical biology at Rutgers University, where he has been a faculty member since 2008. He received his Ph.D. in Chemistry from Northwestern University (with *Chad. A. Mirkin*; 2004) and completed his postdoctoral training at The Scripps Research Institute (with *Peter G. Schultz*; 2007) respectively.

The primary research interest of his group is to develop and integrate nanotechnologies and chemical biology to modulate signaling pathways in stem cells and cancer cells towards specific cell lineages or behaviors. In particular, his group is exploring critical problems in cancer research and stem cell biology pertaining to cell-microenvironmental interactions and how to control these interactions at the subcellular and single-cell level using interdisciplinary as well as transformative approaches.

From this research effort, he has developed innovative technology platforms that may overcome the critical barriers to harnessing the full therapeutic potential of stem cells and cellular reprogramming. Over the past few years, he has maintained a group size of 25 from the interdisciplinary research programs, and the typical funding size of his research is around 1.3 million per year. He has received external grant funding mainly as a PI (~19.3 million dollars) at Rutgers since 2008.

Addressing the aforementioned issues, his group (https://kblee.rutgers.edu/) has recently focused on developing a variety of innovative technologies based upon nanobiotechnology and chemical biology to selectively control the fate of stem cells [e.g., human pluripotent stem cells (PSCs; hESCs and hiPSCs), Neural Stem Cells (NSCs), and Mesenchymal Stem Cells (MSCs)] towards specific cell lineages (e.g., neurons, oligodendrocytes, chondrocytes, muscles, osteocytes, and adipocytes) [*Chemical Reviews*, **2015;** *Nature Chemical Biology,* **2015;** *Accounts of Chemical Research*, **2016;** *Nature Communications,* **2018;** *Small,* **2021(I & II), 2022;** *Small Method,* **2021;** *Advanced Materials,* **2018, 2019, 2020 (I & II), 2021, 2022, 2023, 2024**; *Advanced Functional Materials,* **2020, 2021, 2022, 2023, 2024**]. Multi-modal magnetic core-shell nanoparticles have also been used to effectively deliver genetic materials into NSCs using a magnetic-filed-facilitated delivery method and to advance stem cell therapies (*Angewandte. Chem. Int. Ed.*, **2013;** *Biomaterials,* **2016;** *Nano Letters,* **2019, 2020**). Combinatorial hybrid nanomaterial arrays were also generated to control, detect, and investigate the NSC and MSC differentiation into neurons and the subsequent alignment of axons (*Advanced Materials*, **2014, 2015, 2019;** *ACS Nano,* **2016, 2022 (I&II);** *Nature Comm,* **2018**). With the goal of achieving an enhanced stem cell-based therapy for CNS-related injuries and diseases, his group is currently designing nanomaterial-based 3D-scaffolds and spheroids/organoids to enhance cellular viability and to modulate stem cell differentiation spatiotemporally *in vitro* and/or *in vivo* for neural repair (e.g., spinal cord injuries and Intervertebral Disc Repair) and personalized cancer treatment (*Advanced Materials*, **2014, 2020, 2021, 2023;** *Nature Comm,* **2018;** *Science Advances,* **2021;** *National Science Review,* **2022;** Biomaterials, **2016**; Bioactive Materials, **2023**; ACS Nano, **2023**;). Realizing the motivation to develop a highly robust, efficient nanoparticle-based platform to regulate gene expression and eventually stem cell reprogramming, his group has developed the ***NanoScript*** as the first nanomaterial Transcription Factor (TF) protein that can interact with endogenous DNA in nucleus and mitochondria and control stem cell differentiation to generate functional cell lineages such as cartilage, bone, muscle cells, and neuronal cells (*ACS Nano*, **2014;** *J. Am. Chem. Soc.*, **2015;** *ACS Nano*, **2015;** *Angewandte Chemie*, **2015;** *Nano Letters,* **2023**).

In recognition of his outstanding scientific achievement at Rutgers, Dr. Lee has received several awards, including NIH Director's New Innovator Awards (2009), Japan Society for the Promotion of Science (JSPS) Fellowship (2017), American Chemical Society New Directions (ND) Award (2015), The University City Science Center's QED Award (2016), Board of Trustees Research Award for Scholarly Excellence (2013), Burroughs Wellcome Fund Collaborative Research Grant Award (X2, 2014 & 2019), Grossman Innovation Prize (2021), Busch Biomedical Grant Award (X2, 2013 & 2020), New Jersey Spinal Cord Research Award (2009, 2013, 2016, 2017), Johnson and Johnson Proof-of-Concept Award (2011). He has presented this research works (invited and plenary seminars) at many conferences, institutes, universities, and symposiums (~210).

He is the first author, co-author, and corresponding author of approximately 160 articles published in high-profile journals, including Science, Cell Stem Cell, Nature Chemical Biology, Nature Communications, J. Am. Chem. Soc., Angew. Chem. Int. Ed., Nano Letters, ACS Nano, Advanced Materials, Accounts of Chemical Research, Chemical Reviews, Biomaterials, Scientific Reports, Lab Chip, Small, Biomaterials, Nanomedicine, and Cancer Research, which are highly cited (>15,500). [Total **160** publications, >**15,500** citations, h-index: ~**63**; **42** Patents/applications]

PUBLICATIONS [TOTAL PUBLICATIONS (~ # 160) AND CITATION #: ~15, 500 *UPDATED ON APR 2025*]

A BRIEF SUMMARY: (updated on Apr 2025)

a. **Total Articles in Publication List: 160**
b. **A sum of the Times Cited: ~15,500**
c. **Average Citations Per Article: >90**
d. **H-index: >63**

----------*Publications submitted or under revision* ----------

163. Chen, M.; Choi, H. K.; Coldston, L. L.; Hou, Y.; Jiang, C.; **Ki-Bum Lee†**, "Advanced Cancer Liquid Biopsy Platform for miRNA Detection in Extracellular Vesicles Using CRISPR/Cas13a and Gold Nanoarrays", *ACS Nano*, **2026**, submitted.

162. Conklin, B.; Nevins, S.; Mcloughlin, C.; Chuang. S.; Stein, J.; Hou, Y.; Arif, M.; Kamali, M.; **Ki-Bum Lee†,** "Nanoparticle-based Delivery of DNAzymes to Mitigate Inflammatory Responses in Activated Macrophages", *Bioactive Materials*, **2026**, submitted.

161. Joshua Stein, Songzi Zhang, Eun Ji Roh, Jeffrey Luo, Meizi Chen, Hyunjun Jang, Li Ling Goldston, Brandon Conklin, In-Bo Han, **KiBum Lee†,** "*Advanced Biomaterial Delivery of Hypoxia-Conditioned Extracellular Vesicles (EVs) as a Therapeutic Platform for Traumatic Brain Injury*", *Advanced Science*, **2026**, submitted.

----------*Published or Accepted* ----------

160. Xu, W.; Wang, F.; Stein, J.; Wang, S.; Jiang, P.; Yang, L.†; Cheng, L.†; **Ki-Bum Lee†**, "Engineering Topographical Cues to Enhance Neural Regeneration in Spinal Cord Injury: Overcoming Challenges and Advancing Therapies", *Advanced Functional Material*, **2025**, Accepted.

159. Yanna, H.; Chen, M.; Yang, L.; **Ki-Bum Lee†**, "Real-time Intracellular Monitoring of miRNA Dynamics During iPSC Neuronal Differentiation via Plasmon-Enhanced Nanobiosensing", *Nano Letters*, **2025**, Accepted.

158. Kim, H.; Kim, J.: Lee, E.; Conklin, B.; Hou, Y.; **Lee, K.-B.†;** Kim, J.†," Amelioration of Aging associated Hallmarks in Progeria Syndrome Mice Using a Nanoparticle based artificial transcription factor", *Advanced Functional Materials*, **2025**, *Accepted.*

157. Sungyun Kim, Da In Jeong, Mrinmoy Karmakar, Ji-Won Huh, Eun-Hye Hong, Dae-Joon Kim, Hyun-Jeong Ko, Hyun-Jong Cho†, **Ki-Bum Lee†,** "Multifunctional Bioactive Dual-Layered Nanofibrous Matrix for Effective Breast Cancer Therapy and Enhanced Wound Healing", *Small*, **2025**, Accepted.

156. Pongkulapa, T.; Yum, J. H.; McLoughlin C. D.; Conklin. B.; Kumagai T.; Sugiyama, H.; Park, S.; **Lee, K.-B.†,** "*NIR-Induced Photoswitching Hybrid DNA Nanoconstruct-based Drug Delivery System for Spatiotemporal Control of Stem Cell Fate*", *Small*, **2025**, 2409530. doi.org/10.1002/smll.202409530

155. Chowdary, R.; Suter, R. K; D'Antuono, M.; Comes, C.; Stein, J.; **Lee, K.-B.**; Lee, J. K.; Ayad, N. G.**,** "*OrthologAL: A Shiny application for quality-aware humanization of non-human pre-clinical high-dimensional gene expression data*", *Bioinformatics*, **2025**, *18, 37,* 25465-25477. *doi.org/10.1021/acsnano.4c04406*

154. Yanna. H.; Conklin, B.; Choi, H. K.; Yang, L.; **Lee, K.-B.†,** "Probing Nanotopography-mediated Macrophage Polarization via Integrated Machine Learning and Combinatorial Biophysical Cue Mapping", *ACS Nano*, **2024**, *18, 37,* 25465-25477. *doi.org/10.1021/acsnano.4c04406*

153. Choi, J.-H.; Yoon, J.; Chen, M. Shin, M.; Coldston, L. L.; **Lee, K.-B.†;** Choi, J.-W**,** "CRISPR/Cas-Based Nanobiosensor Using Plasmonic Nanomaterials to Detect Disease Biomarkers", *BIOCHIP JOURNAL*, **2025**, *Accepted.*

152. Bektaş, C. K.; Luo, J.; Conley, B.; Le, K. N.; **Lee, K.-B.†;** Choi, J.-W**,** "3D bioprinting approaches for enhancing stem cell-based neural tissue regeneration", *Acta Biomaterialia*, **2025**, *Accepted.*

151. McLoughlin C. D.; Nervins, S.; Stein J.; Khakbiz, M.; **Lee, K.-B.†,** "Overcoming the Blood-Brain Barrier: Multi-functional Nanomaterial-Based Strategies for Targeted Drug Delivery in Neurological Disorders", *Small Science*, **2024**, *4: 2400232.* *doi.org/10.1002/smsc.202400232* *Highlighted and selected as (the Cover in Small Science)*

150. Yang, L.; Rathnman, C.; Yanna. H.; Patel, M.; Cai, L.; **Lee, K.-B.†,** " Rapid and Programmable 3D Cell Sheet Assembly by Biodegradable Nanochannel Membrane", *Advanced Functional Materials*, **2024**, *35,* 2403367. *doi.org/10.1002/adfm.202403367*

149. Chuang, S. T.; Joshua, B. S.; Nevins, S.; Bekta, C. K.; Cho, H.K.; Ko, W.; Jang, H.; Ha, J.; **Lee, K.-B.†**, "Enhancing CAR Macrophage Efferocytosis via Surface Engineered Lipid Nanoparticles Targeting LXR Signaling", *Advanced Materials*, **2024,** 2308377. doi.org/10.1002/adma.202308377

148. Khakbiz, M.; Chagani, M.; Sheibani, S.; Amiri, E.; Moazzeni, S.; Shkibania, S.; Hou, Y.; **Lee, K.-B.**, " Enhancement of corrosion, biocompatibility and drug delivery properties of nitinol implants surface by Al-Zn-LDH nanohybrids", *Colloids and Surfaces A*, **2025,***70. https://doi.org/10.1016/j.colsurfa.2024.135524*

147. Sang, A. Y.; Pongkulapa, T.; Nervins, S.; Goldston, L. L.; Chen, M.; **Lee, K.-B.†,** " Developing miR-133a Zipper Nanoparticles for Targeted Enhancement of Thermogenic Adipocyte Generation", *Advanced Healthcare Material*, **2024**, 13, 2400654. *https://doi.org/10.1002/adhm.202400654*

146. Choi, H. K.; Chen, M.; Goldston, L. L.; **Lee, K.-B.†,** "Extracellular Vesicles as Nanotheranostic Platforms for Targeted Neurological Disorder Interventions", *Nano Convergence*, **2024**, *11.* 19. *doi.org/10.1186/s40580-024-00426-5*

145. Biswas, R.; Manley, B. J.; Xiao, L.; Siringan, M. J.; Crichton, R.; Stein B. J.; Bawar, A.; **Lee, K.-B.**; Jin, L.; Li, Z. Zhang, J., "ROS Scavenging Capacity of Functional Fullerenes in Solution and in Macrophage Cells", *ACS Applied Nano Materials*, **2024**, 2024 7 (15), 18036-18044. *DOI: 10.1021/acsanm.4c03467*.

144. Cho, H.-Y; Yoo, M.; Pongkulapa, T.; Rabie, H.; Tuotri, A. R.; Yin, P. T.; Choi, J.-W.; **Lee, K.-B.†**, "Magnetic Nanoparticle-Assisted Non-Viral CRISPR-Cas9 for Enhanced Genome Editing to Treat Rett Syndrome ", *Advanced Science*, **2024**, *11*, 2306432.

143. Lee, E.; Choi, Choi, H.K.; Kwon, Y.†; **Lee, K.-B.†**, "Real-Time, Non-Invasive Monitoring of Neuronal Differentiation Using Intein-Enabled Fluorescence Signal Translocation in Genetically Encoded Stem Cell-Based Biosensors",", *Advanced Functional Materials*, **2024,** *2400394.* doi.org/10.1002/adfm.202400394

142. Lee, Y.; *et. al.;* **Lee, K.-B.**; Kim, S.†; Kang, H†, "Photonic control of ligand nanospacing in self-assembly regulates stem cell fate", *Bioactive Materials,* **2024**, 34, 164-180.

141. Conley, B. M.; Yang, L.; Bhujel, B.; Luo, J.; Han, I.†; **Lee, K.-B.†**, "Enhanced Intervertebral Disc Repair and Regeneration Using a Nano-Hybrid Peptide Hydrogel", *ACS Nano*, **2023,** *17, 4,* 3750-3764. *doi.org/10.1021/acsnano.2c11441*

140. Choi, J.-H.; Choi, H.K.; **Lee, K.-B.†**, " In Situ Detection of Neuroinflammation using Multi-cellular 3D Neurovascular Unit-on-a-Chip", *Advanced Functional Materials*, **2023,** *33,* 2304382.

139. Yang, L.; Bhujel, B.; Hou, Y.; Luo, J.; An, S. B.; Han, I.†; **Lee, K.-B.†**, " Effective Modulation of Inflammation and Oxidative Stress for Enhanced Regeneration of Intervertebral Discs Using 3D Porous Hybrid Protein Nanoscaffold", *Advanced Materials*, **2023,** *2303021,* DOI: doi.org/10.1002/adma.202303021

138. Nevins, S.; McLoughlin, C. D.; Oliveros, A.; Stein, J. B.; Rashid, M. A.; Hou, Y.; Jang, M.-H.†; **Lee, K.-B.†**, "Nanotechnology Approaches to Investigate Chemotherapy-Induced Neurotoxicity, Neuropathy, and Cardiomyopathy in Breast and Ovarian Cancer Survivors", *Small*, **2023,** 2300744. DOI:doi.org/10.1002/smll.202300744

137. Luo, J.; Stein, J. B.; **Lee, K.-B.†**, "Commentary on Different Ways to Die: Cell Death Mechanisms and Their Association With Spinal Cord Injury", *Neurospine*, **2023**, 20, 2, 449-450.

137. Lee, Y.; *et. al.;* **Lee, K.-B.**; Kim, S.†; Kang, H†, "In Situ Photoswitchable Cation-π Interactions in Ligand Self-Assembly for Stem Cell Regulation In Vivo", *Bioactive Materials,* **2023**, Accepted.

136. Yang, L.; Rathnam, C.; Takuya, H.; Conklin, B.; Ganeshi, P.; Sugiyama, H.; **Lee, K.-B.**†, "MitoScript: A Nanoparticle-based Effective Mitochondrial DNA Transcription Regulator", *Nano Letters*, **2023,** DOI:*10.1021/acs.nanolett.2c03958* *Highlighted and selected as (the Cover in Nano Letters)*

135. Luo, J.; Darai, A.; Pongkulapa, T.; Conley, B. M.; Yoon, J.; Yang, L.; Han, I.†; **Lee, K.-B.**†, " Injectable BIOorthogonal HydroGEL (BIOGEL) Accelerates Tissue Regeneration in Degenerated Intervertebral Discs", *Bioactive Materials,* **2023,** *23,* 562.

134. Conklin, B.*; Conley, B. M.*; Yannan, H.; Chen, M.; **Lee, K.-B.**†, "Advanced Theragnostics for the Central Nervous System (CNS) and Neurological Disorders Using Functional Inorganic Nanomaterials", *Advanced Drug Delivery Reviews*, **2023,** *192,* 114636.

133. Amoabediny, G.; Khakbiz, M.; Jafarkhani, S.; Mohammadi, J.; Shervin, I.; Khajouei, H.; Lotfi, L.; Rabbani, H.; Ravasjani, S. A.; Rahimi, F.; **Lee, K.-B.**†, "The effect of Nano- liposomal sodium nitrite on smooth muscle cell growth in a tissue-engineered small- diameter vascular graft", *Artificial Organs*, **2023,** *47*, 1104.

132. Luo, J.; Yang, L.; Chueng, S.-T.; Conley, B.; Rathnam, C.; **Lee, K.-B.**†, "Advanced Drug Delivery Via Hybrid Nanofibers Enhance Stem Cell Differentiation", *ACS Applied Materials & Interfaces*, **2022**, *14*, 34488-34501.

131. Yang, L.; Conley, B. M.; Yoon, J.; Rathnam, C.; Ponkulapa, T.; Conklin, B.; Yannan, H.; **Lee, K.-B.**†, "High-Content Screening And Analysis of Stem Cell-Derived Neural Interfaces Using Combinatorial Nanotechnology Approach and An Integrated Machine Learning", *Research*, **2022**:1-15, DOI:10.34133/2022/9784273

130. Yang, L.; Conley, B. M.; Rathnam, C.; Cho, H.-Y.; Ponkulapa, T.; Conklin, B.; **Lee, K.-B.**†, "Predictive Biophysical Cue Mapping for Cellular Differentiation and Reprogramming Using Combinatorial Nanoarrays", *ACS Nano*, **2022**, *18*, 5577-5586.

129. Yoon, J.; Conley, B.; Shin, M.; Choi, J.-H.; Choi, J.-W.†; **Lee, K.-B.**†, "Ultrasensitive Electrochemical Detection of Mutated Viral RNAs with Single Nucleotide Resolution Using a Nanoporous Electrode Array (NPEA)", *ACS Nano*, **2022,** *16*, 5764-5777.

128. Yang, L.; Patel, K. D.; Rathnam, C.; Thangam, R.; Hou, Y.; Kang, H†; **Lee, K.-B.**†, "Harnessing the Therapeutic Potential of Extracellular Vesicles for Biomedical Applications using Multifunctional Magnetic Nanomaterials", *Small*, **2022**, *18*, 2104783. *Highlighted and selected as (the Cover in Small)*

127. Wang, S.; Yang, L.; Cai, B.; Liu, F.; Hou, Y.; Zahng, H.; Kong, L.; **Lee, K.-B.**†; Zhang, Q.†, "Injectable hybrid inorganic nanoscaffold as rapid stem cell assembly template for cartilage repair", *National Science Review*, **2022**, *9: nwac037, https://doi.org/10.1093/nsr/nwac037*

126. Chuang, S.T.; Conklin, B.; Stein, J.B.; Pan, J.; **Lee, K.-B.**†, "Nanotechnology-enabled immunoengineering approaches to advance therapeutic applications", *Nanoconvergence*, **2022**, *9, 19.*

125. Hackl,M.;Contrada, E. V.; Ash, J. E.; Kulkarni, A.; Yoon, J.; Cho, H.; **Lee, K.-B.**; Yarbrough, J. M.; Chundawat, S. P.S.†, "Acoustic Force Spectroscopy Reveals Subtle Differences in Cellulose Unbinding Behavior of Carbohydrate-Binding Modules", *Proc. Natl. Acad. Sci.,* **2022**, *119 (42) e2117467119. https://doi.org/10.1073/pnas.2117467119*

124. Yanbang Li, Y.; Biswas, R.; Kopcha, W. P.; *et. al;* **Lee, K.-B.**; Hill, S.; Zhang, J.*, "Structurally Defined Water-Soluble Metallofullerene Derivatives towards Biomedical Applications", *Angew. Chem. Int. Ed.*, **2022,** *https://doi.org/10.1002/anie.202211704*

123. Kim, Y.; *et. al.* **Lee, K.-B.**; Kim, Y. K.†; Kang, H†, "Photoswitchable Microgel for Dynamic Macrophage Modulation", *Advanced Materials,* **2022**, *2205498, DOI: 10.1002/adma.202205498*

122. Derhambakhsh S.; *et. al.;* **Lee, K.-B.**; Khakbiz, M., "Investigation of Electrical Stimulation on Phenotypic Vascular Smooth Muscle Cells Differentiation in Tissue-Engineered Small-Diameter Vascular Graft", *Tissue and Cell*, **2022**, *81,* 101996.

121. Jafarkhani S.; Khakbiz, M†.; Amoabediny, G..; Mohammadi, J.; Tahmasebipour, M.; Rabbani, H.; **Lee, K.-B.**, " A novel coculture assay to evaluate the effects of sympathetic innervation on vascular smooth muscle differentiation", *Bioorganic Chemistry*, **2022**, *133*, 106233.

120. Kim, Y.*et. al.*; **Lee, K.-B.;** Hyeon, T.; Kim, D.; Kang, H†, "Manipulating Nanoparticle Aggregates Regulates Receptor-Ligand Binding in Macrophages", *J. Am. Chem. Soc.,* **2022**, *144,* 5769-5783.

119. Kim, Y.*et. al.*; **Lee, K.-B.**; Kim, Y. K.†; Kang, H†, "Submolecular Tuning of Ligand Size and Spacing for Dynamic Macrophage Modulation", *Advanced Materials,* **2022**, *34*, 2110340.

118. Dadkan, S.; Khakbiz, M†.; Ghazanfari, L.; Chen, M.; **Lee, K.-B.†**, "Evaluation of Antibacterial and Mechanical Features of Dental Adhesives Containing Colloidal Gold Nanoparticles", *Journal of Molecular Liquids*, **2022**, *365,* 119824.

117. Shakibania, S.; Khakbiz, M†.; Bektas, C. K.; Ghazanfari, L.; Banizi, M. T. ; **Lee, K.-B.†**, " A Review of 3D Printing Technology for Rapid Medical Diagnostic Tools", *Molecular Systems Design & Engineering*, **2022**, *7,* 315-324.

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PATENTS AND APPLICATIONS (*~42 PATENTS* have been applied or issued so far)

A Brief Summary Of Technology Development and Commercialization Effort: (updated on Aug 2021)

- ***a. Total Patents Issued and Applied: >36 (After Independent Position at Rutgers: ~33)***
- ***b. Rutgers Patent Awards (2017, 2019) and several patents/inventions have been licensed out.***
- ***b. Companies to work over the last 14 yrs: Johnson & Johnson, Colgate-Palmolive, American CryoStem Corporation, Science Center (QED), Melanis Co., Vitale Biotechnology Inc.***
- ***c. Federal/Foundation/Rutgers Commercialization Grants and Corporate contract Grants: ~$800K (so far)***

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19. "Biodegradable hybrid inorganic nanoscaffolding materials and methods of use and manufacture thereof", *PCT International Application No. PCT/US18/61301*, **2018**. (Rutgers University)
20. "Pharmaceutical composition for treating of preventing ischemic cardiovascular disease", *PCT/KR2018/013278*, **2018**. (Rutgers University-YonSei University)
21. "A novel biodegradable hybrid inorganic nanoscaffold for drug delivery and tissue engineering (ff)", *PCT/US18/61301*, **2017**. (Rutgers University)
22. "Spatial dopant separation using core-shell architecture for upconversion luminescent enhancement in the erbium-doped system", *PCT/US2019/040387*, **2018**. (Rutgers University)
23. "Nanoscript-based non-viral transient repression of PTEN for axonal regeneration in the CNS", *U.S. Patent Provisional Application* No. 62/847,596, **2019**. (Rutgers University)
24. "Direct reprogramming to endothelial cells with nanoparticle-base TF and miRNAs (ff)", *PCT/KR18/13278*, **2019**. (Rutgers University)
25. "A biodegradable porous membrane for generating scaffold-free biological assemblies (ff)", *U.S. Patent Provisional Application* No. 62/850,217, **2019**. (Rutgers University)
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27. "Nondestructive characterization of stem cell neurogenesis by a magneto-plasmonic nanomaterial-based exosomal miRNA detection (ff)", *U.S. Patent Provisional Application* No. 62/958,166, **2020**. (Rutgers University)
28. "3D-porous hybrid anti-inflammatory nanoscaffold for drug delivery and tissue engineering", merged with *PCT/US18/61301*, **2020**. (Rutgers University)
29. "Dual-enhanced Raman scattering-based biosensing using graphene oxide-plasmonic hybrid nanoarray (ff)", *U.S. Patent Provisional Application* No. 63/037,725, **2020**. (Rutgers University)
30. "Synthetic Matrix Assembles and Rapidly Templated (SMART) spheroids, organoids, and 3D-cell culture: biodegradable nanomaterial-templated 3D stem cell assembly for advanced", *U.S. Patent Provisional Application* No. 63/066,440, **2020**. (Rutgers University)
31. "MAGNETIC-ASSISTED NANOPARTICLE DELIVERY AND GENE EDITING SYSTEMS AND METHODS OF USE", *U.S. Patent Provisional Application No.* 63/213,820, **2021**. (Rutgers University)
32. "BIODEGRADABLE POROUS MEMBRANE FOR GENERATING SCAFFOLD-FREE BIOLOGICAL ASSEMBLIES", *U.S. Patent Provisional Application No.* 63/192,124, **2021**. (Rutgers University)
33. "SYSTEMS AND METHODS FOR COMBINATORIAL ARRAYS USING DYNAMIC INTERFERENCE LITHOGRAPHY", *U.S. Patent Provisional Application No.* 63/156,548, **2021**. (Rutgers University)

34. “MAGNETO-PLASMONIC NANOMATERIALS AND METHODS OF USE”, *U.S. Patent Application* No. 17/142,950, **2021**. (Rutgers University)

35. “A LUMINESCENT LAYERED COMPOSITION AND A METHOD FOR USING THE COMPOSITION”, *U.S. Patent Application* No. 17/137,813, **2021**. (Rutgers University)

36. “SYNTHETIC MATRIX ASSEMBLED AND RAPIDLY TEMPLATED SPHEROIDS, ORGANOIDS AND 3D CELL CULTURES”, *U.S. Patent Application* No. 17/404,030, **2021**. (Rutgers University)

37. “BIOLOGICALLY ACTIVE SYNTHETIC NANOPARTICLE CONSTRUCTS AND METHODS OF USE THEREOF”, *U.S. Patent* 11.306,326 B2, **2022**. (Rutgers University)

38. “MAGNETO-PLASMONIC NANOMATERIALS AND METHODS OF USE”, *U.S. Patent Application* No. 63/366,977, **2022**. (Rutgers University)

39. “NANOSHEET-HYDROGEL COMPOSITES AND METHODS OF USE”, *U.S. Provisional Patent Application* No. 63/480,256, **2023**. (Rutgers University jointly owned with Sung Kwang Medical Foundation)

40. “BIOGEL, COMPOSITIONS AND METHODS OF USE THE SAME”, *PCT Patent Application* No. PCT/US23/83411, **2023**. (Rutgers University jointly owned with Sung Kwang Medical Foundation)

41. “NANOPARTICLES FOR DIRECT REGULATION OF MITOCHONDRIAL GENE EXPRESSION”, *U.S. Patent Provisional Application No.* 63/588,864, **2023**. (Rutgers University)

42. “COMPOSITIONS AND METHODS COMPRISING MODIFIED CHIMERIC ANTIGEN RECEPTOR (CAR) MACROPHAGES”, *U.S. Patent Provisional Application No.* 63/613,559, **2023**. (Rutgers University)

SELECTED INVITED PRESENTATIONS [TOTAL INVITED SEMINAR (~ # 250)]

1. The 6th AKN Annual Symposium, Apr 2025 (Miami, FL)
2. Invited Speaker, The Korean Spinal Neurosurgery Society, May 2025 (Seoul, Korea)
3. Invited Speaker, Interdisciplinary Society of Genetic/Genomic Medicine (ISGM), Feb 2025 (Piscataway, NJ)
4. Purdue Institute for Cancer Research, Purdue University, Oct 2024 (West Lafayette, IN)
5. Invited Speaker, International Association of Neurorestoratology, Nov 2024 (Shanghai, China)
6. Invited Speaker, 2024 KSBB Fall Meeting and International Symposium, Nov 2024 (Jeju, Korea)
7. Seoul National University, Dept. of Chemistry, Sep 2024 (Seoul, Korea)
8. Ewha Women's University, Dept. of Chemistry, Sep 2024 (Seoul, Korea)
9. Korea University, Dept. of Chemistry, Sep 2024 (Seoul, Korea)
10. Invited Speaker, The Korean Spinal Neurosurgery Society/ NSC (Neuro Spine Congress), Sep 2024 (Seoul, Korea)
11. Invited Speaker, 12th World Biomaterials Congress (WBC), May 2024 (Daegu, Korea)
12. DongKuk University, Dept. of Biomedical Engineering, May 2024 (Seoul, Korea)
13. Gwangju Institute of Science and Technology (GIST), Dept. of Materials Science & Eng., May 2025 (Gwangju, Korea)
14. Kyung Hee University, Pharmacy School, May 2024 (Seoul, Korea)
15. Seoul National University, Pharmacy School, May 2024 (Seoul, Korea)
16. Korea Brain Research Institute, May 2024 (Daegu, Korea)
17. Invited Speaker, *2024 Bundang Cha Hospital Research-Oriented Hospital Symposium*, May 2024 (Bundang, Korea)
18. Department of Pharmaceutical Sciences, University at Buffalo, Apr 2024 (Buffalo, NY)
19. The 5th AKN Annual Symposium, Apr 2024 (Houston, TX)
20. Department of Chemistry, Montclair State University, Apr 2024 (Montclair, NJ)
21. The University of Oklahoma Health Sciences Center, Apr 2024 (Oklahoma City, OK)
22. NIH-Training Course in Neurotherapeutics Discovery and Development for Academic Scientists, Mar 2024 (Bethesda, ML)
23. Department of Biological Sciences, Rutgers University-Newark, Nov 2023 (Newark, NJ)
24. Cancer Pharmacology Seminar, Cancer Institute of New Jersey (CINJ), Oct 2023 (Piscataway, USA)
25. Department of Molecular Pharmacology and Experimental Therapeutics, Sep 2023 Mayo Clinic (Rochester, MN)
26. Sogang University, Chemical & Biological Engineering School, Sep 2023 (Seoul, Korea)
27. Dept. of Bio & Fermentation Convergence Technology, Kookmin University, Sep 2023 (Seoul, Korea)
28. (Plenary Speaker) Korea Spinal Cord Research Society, Sep 2023 (Seoul, Korea)
29. International Association of Neurorestoratology, Sep 2023 (Seoul, Korea)
30. UKC 2023 (US-Korea Conference), Chemistry/BME Symposium, Aug 2023 (Dallas, TX)
31. Invited Speaker, The 1st Word Congress of Korean Scientists and Engineers, July 2023 (Seoul, Korea)
32. Invited Speaker, Nano Korea 2023, Nanodevice: Evolving into Intelligent Semiconductors, July 2023 (Seoul, Korea)
33. Sogang University, Dept. of Mechanical Engineering, July 2023 (Seoul, Korea)
34. Gwangju Institute of Science and Technology (GIST), Dept. of Materials Science & Eng., July 2023 (Seoul, Korea)
35. DongKuk University, Dept of Chemistry, July 2023 (Seoul, Korea)
36. KookMin University, Dept. of Bio & Fermentation Convergence Technology, July 2023 (Seoul, Korea)
37. NIBIB's Training Grantees Meeting, June 2023 (DC, USA)
38. CHA Medical School, May 2023 (Bundang, Korea)
39. Keynote Speaker, 15th NYKB Annual Conference, May 2023 (NY, USA)
40. Boston Research Center Hospital Symposium, Apr 2023 (Boston, USA)

41. Invited Speaker, Pittcon 2023, Mar 2023 (Philadelphia, USA)
42. China-Frontiers in Materials Chemistry, Nov 2022 (Virtual-Xian, China)
43. Invited Speaker, ENGE 2022, Nov 2022 (Jeju Island, Korea)
44. Invited Speaker, TERMIS-AP 2022, Oct 2022 (Jeju Island, Korea)
45. CHA Research Institute, May 2022 (Bundang, Korea)
46. Gwangju Institute of Science and Technology (GIST), Dept. of Materials Science & Eng., May 2022 (Seoul, Korea)
47. Dongguk University, Dept of Chemistry, May 2022 (Seoul, Korea)
48. Seoul National University, Mechanical Eng. Dept, May 2022 (Seoul, Korea)
49. Sogang University, Chemical & Biological Engineering School, May 2022 (Seoul, Korea)
50. Cha university School of Medicine, May 2022 (Seoul, Korea)
51. Invited Speaker, NIDCD/NIA, “Alzheimer’s Disease and Related Dementias”, Apr 2022 (eTalk)
52. (Keynote Speaker) Neurosurgery Basic Science Development Symposium, the Korean Neurosurgical Society, Jan 2022 [Seoul, Korea-(eTalk)]
53. Rutgers University, Dept of Biomedical Engineering, Dec 2021 (Piscataway, USA)
54. Invited Speaker [CDMRP-NIDCD Joint Workshop, “*Improving Ex Vivo Models to Accelerate Therapies to Treat Hearing Loss*”], Nov 2021 (Virtual, USA)
55. Rutgers University, Dept of Chemistry and Chemical Biology, Sep 2021 (Piscataway, USA)
56. (Keynote Speaker) Biosensors 2020/2021, July 2021 (Busan, Korea)
57. Invited Speaker, International Conference on "Materials for Humanity (MH 21), Singapore (MRS-S)
58. Sogang University, Engineering School, June 2021 (Seoul, Korea)
59. Invited Speaker, K-BioX, May 2021 (eTalk)
60. Invited Speaker, Association of Korean Neuroscientists, May 2021 (eTalk)
61. Clarkson University, Department of Chemistry, Mar 2021 (Potsdam, New York)
62. University of Rhode, Department of Chemistry, Feb 2021 Island (Kingston, RI)
63. Seoul National University, Medical School, Jan 2021 (Seoul, Korea)
64. (Keynote Speaker) Korean Biospine Society, Dec 2020 (Seoul, Korea)
65. (Keynote Speaker) 2020 KSBB Fall Meeting and International Symposium, Oct 2020 (Seoul, Korea)
66. IBE (The Institute for Biomedical Entrepreneurship), Nov 2019 (Boston, MA)
67. Sungkyunkwan University, School of Medicine, Nov 2019 (Suwon, Korea)
68. Sungkyunkwan University, Dep. Biophysics, Nov 2019 (Suwon, Korea)
69. KangWon National University of Medicine, Nov 2019 (CHUNCHEON, Korea)
70. The Fifth Annual BHI (Brain Health Institute) Symposium, Nov 2019 (Murray Hill, NJ)
71. (Keynote Speaker) 2019 KSBB Fall Meeting and International Symposium, Oct 2019 (DaeGu, Korea)
72. (Plenary Speaker) Korea Spinal Cord Research Society, Sep 2019 (Seoul, Korea)
73. (Plenary Speaker) Bundang CHA Medical center CGbio Regenerative Medicine Symposium, Sep 2019 (Bundang, Korea)
74. KIST Gangneung, Institute of Advanced Composite Materials, July 2019 (Gangeung, Korea)
75. Hanyang University, Department of Bioengineering, May 2019 (Seoul Korea)
76. UNC Charlotte, Dept of Chemistry, Apr 2019 (Charlotte, USA)
77. (Plenary Speaker) 45th Annual Northeast Bioengineering Conference 2019, Mar 2019 (New Brunswick, USA)
78. Kyoto Univ-Spirits International Symposium, Jan 2019 (Kyoto, Japan)
79. CHA University, CHA Bundang Medical Center, Department of Neurosurgery, Nov 2018 (Seoul, Korea)
80. Kyung Hee University, College of Pharmacy, BK program (Nanomedicine) Nov 2018 (Seoul, Korea)
81. Univ. of Ulsan College of Medicine (ASAN Medical Center), Dept of Neurological Surgery, Nov 2018 (Seoul Korea)

82. Seoul National University, College of Pharmacy, Nov 2018 (Seoul Korea)
83. Ajou University School of Medicine, Departments of Brain Science and Neurology, Nov 2018 (Seoul, Korea)
84. Cancer Pharmacology Seminar, Cancer Institute of New Jersey (CINJ), Nov 2018 (Piscataway, USA)
85. Neuroscience 2018, Society of Neuroscience Annual Meeting, Nov 2018 (San Diego, USA)
86. Rutgers University, Materials Science and Engineering Dept, Oct 2018 (Piscataway, USA)
87. (Plenary Speaker) The International Association of Neurorestoratology (IANR), Oct 2018 (Piscataway, USA)
88. UKC 2018 (US-Korea Conference), Chemistry Symposium, Aug 2018 (Queens, NY)
89. (Invited Speaker) ACS, Fall National Meeting, Aug 2018 (Boston, NY)
90. UKC 2018 (US-Korea Conference), Biomedical Research Symposium, Aug 2018 (Queens, NY)
91. Dongguk University, Dept of Biomedical Engineering, July 2018 (Seoul, Korea)
92. NanoKorea 2017, Nano Convergence Special Session: Frontiers in Nanotechnology, July 2018 (Seoul, Korea)
93. Gwangju Institute of Science and Technology (GIST), Dept. of Materials Science & Eng., July 2018 (Gwangju, Korea)
94. The 10th US-Japan Workshop on Advances in organic-inorganic Hybrid Materials, June 2018 (Newark, NJ)
95. Kyung Hee University, Department of Chemistry, May 2018 (Seoul, Korea)
96. Sogang University, Department of Mechanical Engineering, May 2018 (Seoul, Korea)
97. Kyung Hee University, College of Pharmacy, May 2018 (Seoul, Korea)
98. The Gail F. Beach Memorial Visiting Lectureship- The Miami Project to Cure Paralysis (Miami Medical School), Mar 2018 (Miami, FL)
99. (Plenary Speaker) [KSEA] Northeast Regional Conference, Mar 2018 (Montclair, NJ)
100. Emory University, Chemistry Department, Mar 2018 (Atlanta, GA)
101. Kyoto Univ-Spirits Symposium, Mar 2018 (Kyoto, Japan)
102. Access Bio Inc, Feb 2018 (NJ, USA)
103. (Keynote Speaker) The 11th International Symposium on Nanomedicine, Dec 2017 (Sendai, Japan)
104. (Keynote Speaker) The Scripps-Japan Symposium, Dec 2017 (Osaka, Japan)
105. The 10th Institute for Integrated Cell-Material Sciences (iCeMS)-Kyoto Univ. Symposium, Oct 2017 (Kyoto, Japan)
106. The 3rd Japan Stem Cell/Cell Differentiation Conference, Awaji-Shima, Aug 2017 (Awaji-Shima, Japan)
107. Yonsei Stem cell and Cardiovascular Regeneration Symposium (YSCR) Yonsei University, Medical School, May 2017(Seoul, Korea)
108. (Keynote Speaker) 2017 KSBB Fall Meeting and International Symposium, Mar 2017 (KyungJu, Korea)
109. Drug Discovery Symposium, Kyoto University, Feb 2017 (Kyoto, Japan)
110. International Symposium for the Drug-Discovery of the Pyrrole-Imidazole Polyamides as Novel Biomedicines, Feb 2017 (Tokyo, Japan)
111. Seminars in Endocrinology and Animal Biosciences, Rutgers School of Environmental and Biological Sciences, Jan 2017 (Piscataway, USA)
112. The Second International Conference on Materials Chemistry Frontiers, Jan 2017 (Xian, China)
113. Yale University, Medical School (Department of Genetics), Dec 2016 (New Haven, USA)
114. Rutgers University, Proteomics, Institute for Quantitative Biomedicine and CABM, Nov 2016 (Piscataway, USA)
115. Duke University, Department of Chemistry, Nov 2016 (Durham, USA)
116. (Keynote Speaker) 2016 KSBB Fall Meeting and International Symposium, Oct 2016 (Gwangju, Korea)
117. Annual Meeting of Korean Society for Stem Cell Research, Aug 2016 (Seoul, Korea)
118. Sogang University, Department of Biology, Aug 2016 (Seoul, Korea)
119. CHA University Department of Biomedical Science, Aug 2016 (Bundang, Korea)
120. UKC 2016 (US-Korea Conference), Convergence Technology Symposium, Aug 2016 (Dallas, TX)
121. Nano Korea 2016, Nano Convergence Special Session: Frontiers in Nanotechnology, July 2016 (Seoul, Korea)
122. Chung-Ang University, School of Pharmacy, July 2016 (Seoul, Korea)

123. Wake Forest Institute for Regenerative Medicine Annual RME Course, July 2016 (Winston-Salem, NC)
124. Pan Pacific Symposium on Stem Cells and Cancer Research (PPSSC), May 2016 (Taichung, Taiwan)
125. Seoul National University, Department of Chemical and Biochemical Engineering, Dec 2015 (Seoul, Korea)
126. IEEE-Nanomedicine, Nov 2015 (Waikiki, Hawaii), Session Chair
127. Indiana University, Department of Chemistry, Nov 2015 (Bloomington, IN)
128. Yonsei University, Department of Biotechnology, Oct 2015 (Seoul, Korea)
129. Sungyunkwan University School of Medicine, Department of Molecular Cell Biology (Suwon, Korea)
130. Chung-Ang University, School of Integrative Engineering (Seoul, Korea)
131. Sogang University, Department of Mechanical Engineering (Seoul, Korea)
132. (Keynote Speaker)2015 KSBB Fall Meeting and International Symposium, Oct 2015 (Songdo, Korea)
133. Rutgers University, Materials Science and Engineering, Sep 2015 (Piscataway, NJ)
134. ACS Workshop, Polymers in Medicine and Biology, Sep 2015 (Santa Rosa, CA)
135. UKC 2015 (US-Korea Conference), Convergence Technology Symposium, July/Aug 2015(Atlanta, GA)
136. UKC 2015 (US-Korea Conference), GIST Symposium, July/Aug 2015(Atlanta, GA)
137. Kyoto University, Department of Chemistry, July 2015 (Kyoto, Japan)
138. Institute for Integrated Cell-Material Sciences (iCeMS), Kyoto University, July 2015 (Kyoto, Japan)
139. Duke University, NICHOLAS SCHOOL OF THE ENVIRONMENT, Ramnuc Workshop, May 2016 (Durham, NC)
140. Purdue University, School of Biomedical Engineering, Apr 2015 (West Lafayette, IN)
141. NSF I-Corps Workshop, Apr 2015 (Reston, VA)
142. Army Research Lab (ARL) Open House, Dec 2014 (DC, DC)
143. The 8th Tripartite Workshop for Sustainable Technology Innovations, Nov 2014 (NewBrunswick, NJ)
144. NSF Center for Sensory Sciences and Innovation Planning Workshop, Nov 2014 (Piscataway, NJ)
145. Gwangju Institute of Science and Technolgy, School of Materials Science and Engineering, July 2014 (Gwangju, Korea)
146. Hanyang University, Department of Bionano Engineering, July 2014 (Ansan, Korea)
147. Yonsei University, Department of Chemistry, July 2014 (Seoul, Korea)
148. The Chinese University of Hong, Biomedical Engineering Department, July 2014 (HongKong, HongKong)
149. The 15th International Conference on Organized Molecular Films (ICOMF15-LB15), July 2014 (Jeju, Korea)
150. Korean American Society in Biotech and Pharmaceuticals (KASBP) Spring Symposium, June 2014 (Edison, NJ)
151. Cancer Institute of New Jersey Center for Cancer Prevention Research, Ernest Mario School of Pharmacy at Rutgers, May 2014 (Piscataway, NJ)
152. American Society for Nanomedicine meeting, Universities at Shady Grove campus, Mar 2014 (Rockville, MD)
153. School of Medicine, Sungkyungkwan University, Samsung Medical Center, Mar 2014 (Seoul, Korea)
154. Ulsan National Institute of Science and Technology (UNIST), School of Nano-Bioscience, Mar 2014 (Ulsan, Korea)
155. Korea Research Institute of Bioscience & Biotechnology, Stem Cell Center, Mar 2014 (Daejeon, Korea)
156. Gifu University, Department of Applied Bioorganic Chemistry, Feb 2014 (Gifu, Japan)
157. Institute for Integrated Cell-Material Sciences (iCeMS), Kyoto University, Feb 2014 (Kyoto, Japan)
158. Kyoto University, Department of Chemistry, Feb 2014 (Kyoto, Japan)
159. Seoul National University, Department of Chemistry, Feb 2014 (Seoul, Korea)
160. International Symposium of Molecular Medicine and Biopharmaceutical Science on "Biomedical Applications of Graphene", Winter International Symposium of Korean Society for Nanomedicine, Feb 2014 (Seoul, Korea)
161. Rutgers University at Newark, Department of Chemistry, Oct 2013 (Newark, NY)
162. University of Texas at Dallas, Department of Chemistry, Sep 2013 (Dallas, TX)
163. University of Missouri at Columbia, Department of Chemistry, Aug 2013 (Columbia, MO)

164. Ataturk University, Department of Chemistry and Biochemistry, Aug 2013 (Erzurum, Turkey)
165. Yeditepe University, Department of Genetics and Bioengineering, Aug 2013 (Istanbul, Turkey)
166. Biology Technical Symposium “Neuroscience, Stem Cells, Immunology and Developmental Biology” at the 2013 US-Korea Conferences, Aug 2013 (East Rutherford, NJ)
167. Chemistry Symposium “Frontiers of Interdisciplinary Sciences” at the 2013 US-Korea Conferences, Aug 2013 (East Rutherford, NJ)
168. BioTronics, International Conference on Biosensors, Biochips and Bioelectronic Devices, July 2013 (Seoul, Korea)
169. The New York Academy of Sciences Conference (Nanotechnologies in Cancer Diagnosis, Therapy, and Prevention) at Memorial Sloan-Kettering Cancer Center 2013, (New York, NY)
170. International Biotechnology Symposium (IBS) 2012, Oct 2012 (Daegu, Korea)
171. Gwangju Institute of Science and Technolgy, BK21 program, Aug 2012 (Gwangju, Korea)
172. Sogang University, Center for Bioelectronic Device, Aug 2012 (Seoul, Korea)
173. Hanyang University, BK21 program, Aug 2012 (Ansan, Korea)
174. Annual Spring Meeting of The Korean BioChip Society, May 2012 (Hanyang University, Korea)
175. Jilin University, Department of Chemistry, State Key Lab of Supramolecular Structure and Materials, May 2012 (Changchun, China)
176. University of Pennsylvania, Department of Chemistry, May 2012 (Philadelphia, PA)
177. University of Illinois at Urbana-Champaign, Biotechnology Seminar Series of CCM/IGERT/M-CNT, Apr 2012 (Urbana-Champaign, IL)
178. University of California at Los Angeles (UCLA), NanoSystems Institute, Apr 2012 (Los Angeles, CA)
179. University of California at San Diego (UCSD), Department of Chemistry, Apr 2012 (San Diego, CA)
180. Rutgers Cancer Diagnostics and Therapeutic Symposium, Mar 2012 (Piscataway, NJ)
181. University of Central Florida, College of Medicine, Mar 2012 (Orlando, FL)
182. Florida State University, Department of Biological Science and Integrative NanoScience Institute, Mar 2012 (Tallahassee, FL)
183. University of Washington, Center of NanoTechnology, Feb 2012 (Seattle, WA)
184. University of Florida, Department of Chemistry, Feb 2012 (Gainesville, FL)
185. University of Maryland, Department of Chemistry and Biochemistry, Feb 2012 (College Park, MD)
186. SU International Symposium 2011, Shizuoka University, Nov 2011 (Shizuoka, Japan)
187. ACS, Fall Meeting (Three Invited Talks), Aug 2011 (Denver, CO)
188. MIRKUNITE (Invited talk at “a 20-year celebration of the Mirkin Research Group), Aug 2011 (Northwestern Univ., IL)
189. Gordon Research Conferences (Cancer Nanotechnology), July 2011 (Colby College, Waterville, ME)
190. Kyoto University, Institute for Integrated Cell-Material Sciences (iCeMS), July 2011(Kyoto, Japan)
191. Kang Dong KyungHee Medical Center, June 2011 (Seoul, Korea)
192. National University of Singapore, Department of Chemistry, June 2011 (Singapore)
193. Nanyang Technological University, School of Chemical and Biomedical Engineering, June 2011 (Singapore)
194. ICMAT (International Conference on Materials for Advanced Technologies) (Two Invited Talks), June 2011 (Suntec, Singapore)
195. Scripps Korea Antibody Institute, June 2011 (Seoul, Korea)
196. Cha University, Medical School and Stem Cell Center, June 2011 (Seoul, Korea)
197. SoGang University, Department of Chemical and Biological Engineering, June 2011 (Seoul, Korea)
198. KunKuk University, Medical School and Stem Cell Center, June 2011 (Seoul, Korea)
199. Kyung Hee University, Medical School, June 2011 (Seoul, Korea)
200. ISSCR (International Society for Stem Cell Research) 9th Annual Meeting, June 2011 (Toronto, Canada)
201. Institute Pasteur Korea, 3rd International Collaborative Symposium on Stem Cell Research, Apr 2011 (Seoul, Korea)

202. Johns Hopkins University, BLSA (Baltimore Life Scientists Association), Stem Cell: Past, Present, and Future, Nov 2010 (Baltimore, MD)
203. Boston University, Department of Chemistry, Oct 2010 (Boston, MA)
204. MRS Workshop, Functionalized Nanobiomaterials for Medical Applications, Oct 2010 (Denver, CO)
205. The Sixth Annual NIH Director's Pioneer Award Symposium, Sep, 2010 (Washington, DC)
206. RAMNUC Meeting, Sep, 2010 (Imperial College, London, UK)
207. Kyoto University, Institute for Integrated Cell-Material Sciences (iCeMS), Aug 2010 (Kyoto, Japan)
208. IEEE NANO 2010, Nano-Bio Fusion, Nano-Biology and Nanomedicine, Aug 2010 (Seoul, Korea)
209. Gordon Research Conferences (Signal Transduction by Engineered Extracellular Matrices), Jul 2010 (University of New England, Biddeford, ME)
210. Columbia University, NYKB (New York Korean Biologists) Symposium, Mar 2010 (New York, NY)
211. University of Connecticut, Department of Chemistry, Mar 2010 (Storrs, CT)
212. Rutgers Energy Institute/Princeton University, Solar Energy Seminar, Apr 2010 (Princeton, NJ)
213. Gwangju Institute of Science and Technology (GIST), Department of Materials Science and Engineering, Jan 2010 (Gwangju, Korea)
214. Korea Advanced Inst. of Science and Technology (KAIST), Medical Science and Engineering, Jan 2010 (Taejon, Korea)
215. Fudan University, Department of Chemistry, Jan 2010 (Shanghai, China)
216. Zhejiang University, Department of Chemistry, Jan 2010 (Hangzhou, China)
217. USTC, Department of Chemistry, Jan 2010 (Hefei, China)
218. Nanjing University, School of Chemistry & Chemical Engineering, Jan 2010 (Nanjing, China)
219. Nankai University, College of Chemistry, Jan 2010 (Tianjin, China)
220. Peking University, College of Chemistry and Molecular Engineering, Jan 2010 (Peking, China)
221. MRS 2009 Fall Meeting, Dec 2010 (Boston, MA)
222. The Laboratory Robotics Interest Group Mid-Atlantic Chapter (LRIG), Nov 2009 (New Brunswick, NJ)
223. NIH Workshop for Junior Faculty in Organic Chemistry and Chemical Biology, Oct 2009 (Irvine, CA)
224. Ajou University, Department of Molecular Science and Technology, Oct 2009 (Suwon, Korea)
225. BIOCHIP 2009, "Recent Trends in Nanomedicine", Oct 2009 (Seoul, Korea)
226. BioTronics, International Conference on Biosensors, Biochips and Bioelectronic Devices, Oct 2009 (Seoul, Korea)
227. The Fifth Annual NIH Director's Pioneer Award Symposium, Sep, 2009 (Washington, DC)
228. ACS, IACIS International Conference and ACS Colloid & Surface Science Symposium (Three Talks), Jun 2009 (New York, NY)
229. Universidade de São Paulo (Brazil), Departamento de Bioquímica Instituto de Química, May 2009
230. Naval Research Laboratory, Surface Nanoscience and Sensor Technology, Apr 2009
231. Rutgers University, IAMDN(Inst. of Adv. Mat. Dev. and Nanotech.)/LSM, Apr 2009
232. Seoul National University, NANO System Institute, May 2009 (Seoul, Korea)
233. Gwangju Institute of Science and Technology, Department of Life Science, Mar 2009
234. Sogang University, Department of biochemical engineering, Mar 2009 (Seoul, Korea)
235. Korea Research Institute of Bioscience and Biotechnology, Bio-Monitoring Res. Center, Mar 2009
236. KAIST, Department of Bio and Brain Engineering, Mar 2009
237. Korea Research Institute of Chemical Technology, Bio-Organic Science Division, Mar 2009
238. POSTECH, Department of Chemistry, Mar 2009
239. Kyung Hee University, College of Science, Mar 2009 (Seoul, Korea)
240. Brookhaven National Lab, The Center for Functional Nanomaterials, Jan 2009

241. Rutgers University, BioMaPS Institute for Quantitative Biology, May 2008
242. The Cancer Institute of New Jersey, New Jersey stem cell conference, Apr 2008
243. Rutgers University, LSM (Laboratory for Surface Modification), Feb 2008
244. Kyung Hee University, Department of Chemistry, Sep 2007 (Seoul, Korea)
245. University of California at Los Angeles, Department of Molecular & Medical Pharmacology, Aug 2007
246. University of Illinois at Urbana-Champaign, Department of Bioengineering, Apr 2007
247. University of California at San Francisco, Departments of Pharmaceutical Chemistry, Mar 2007
248. Duke University, Biomedical Engineering, Mar 2007
249. Purdue University, Department of Chemistry, Feb 2007
250. Rutgers, The State University of New Jersey, Chemistry & Chemical Biology, Feb 2007
251. University of Wisconsin at Madison, School of Pharmacy, Feb 2007
252. University of North Carolina at Chapel Hill, School of Pharmacy, Feb 2007
253. University of Texas at Austin, Nano Science and Technology & Dept. of Chemistry, Feb 2007
254. University of California at Riverside, Department of Bioengineering, Feb 2007
255. University of California at Berkeley, Nanoscience & Nanoengineering Institute, Feb 2007
256. University of Michigan at Ann Arbor, Department of Chemistry & LSI, Feb 2007
257. University of Southern California, Department of Chemistry, Jan 2007
258. KAIST, Department of Biological Sciences, Dec 2006
259. POSTECH, Interdisciplinary Bioscience and Bioengineering, Dec 2006
260. University of Massachusetts at Amherst, Department of Chemistry, Dec 2006
261. University of Texas Southwestern Medical Center, Simmons Comprehensive Cancer Center, Nov 2006
262. University of California at San Diego, Department of Bioengineering, Oct 2006
263. BWF Career Awards at the Scientific Interface (finalist, award competition talk), Oct 2006
264. **Lee, K. -B.**; Park, S. H.; Mirkin, C. A., "Nanostructures for Detection and Separation of Biomolecules" Joint Regional Meeting of the Northwest and Rocky Mountain sections of ACS, Logan, Utah, United States, June 6-9, 2004.
265. **Lee, K. -B.**; Mirkin, C. A.; Smith, J. C.; Mrksich, M., "Biomolecular Arrays Formed by Dip-Pen Nanolithography (DPN) " Presentation, MRS meeting, Spring 2003, San Francisco, CA, April 22-25, 2003. (Award Talk)
266. **Lee, K. -B.**; Park, S. -J.; Mirkin, C. A., "Protein nanoarrays generated by Dip-Pen Nanolithography" Presentation, 223rd ACS National Meeting, Orlando, FL, United States, April 7-11, 2002.