

Hansang Cho
Curriculum Vitae

Associate Professor at Sungkyunkwan University

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CAREER SUMMARY

A dynamic entrepreneur exploring interdisciplinary areas: nano/biosciences and bioengineering and a seasoned independent researcher utilizing engineering technologies and biological/medical knowledge with 20+ yrs of research experience in academy, government institutes, and companies.

RESEARCH INTERESTS

- Brain-on-chips for studying neurological disorders
- Organ-on-chips for studying systematic biology and cancer
- Healthcare diagnostic and environment-monitoring platforms and sensors

EDUCATION

- Ph.D.** Bioengineering University of California, Berkeley (2010)
UCSF/UCB Joint Graduate Group in Bioengineering
Advisor: Prof. Luke P. Lee, PhD
Thesis: “*Biologically Inspired Microfluidics and Nanobiosensor*”
- M.S.** Mechanical Design & Production Engineering Seoul National University (1998)
Advisor: Prof. Jongwon Kim, PhD
Thesis: “*Dynamic Modeling of 6 DOF Parallel Mechanisms for Machine Tool*”
- B.S.** Mechanical Design & Production Engineering Seoul National University (1996)

EXPERIENCE

- Sep. 2019 – present: *Associate Professor*, Dep. Biophysics, Sungkyunkwan University, Republic of Korea
- July 2017 – June 2018: *Visiting Research Scientist* for Biomedical Institute for Global Health Research & Technology, National University of Singapore
- April 2016 – June 2020: *Graduate Faculty* for Ph.D. program of The Nanoscale Science Program, University of North Carolina at Charlotte
- June 2015 – June 2020: *Graduate Faculty* for Ph.D. program in Biological Sciences, University of North Carolina at Charlotte
- Aug. 2014 – June 2020: *Assistant Professor*, Mechanical Engineering and Engineering Science, University of North Carolina at Charlotte, Center for Biomedical Engineering and Science

Aug. 2014 – May 2017: *Visiting Scientist*, Harvard Medical School, Massachusetts General Hospital
Sep. 2010 – Aug. 2014: *Postdoctoral Research Fellow*, Harvard Medical School, Massachusetts General Hospital, and Shriners Hospital
Field of Study: *Neurodegeneration, Inflammation*
Mar. 2007 – Aug. 2010: *Student Researcher*, Lawrence Livermore National Laboratory
Field of Study: *Spectroscopy for Bimolecular Detection*
Mar. 2007 – Aug. 2010: *Student Researcher*, Center for Biophotonics, Science and Technology at University of California, Davis (Field of Study: *Raman Spectroscopy*)
Jan. 2003 – Aug. 2005: *Research Scientist*, Korea Institute of Science and Technology
Field of Study: *BioMEMS*, Supervisor: Tae Song Kim, Ph.D.
Jan. 2000 – Jan. 2003: *Team Manager*, Biomedlab Co.
Field of Study: *Artificial Heart Division*
Mar. 1999 – Jan. 2000: *Researcher*, Biomedlab Co.
Field of Study: *Artificial Heart Division*
May 1998 – Mar. 1999: *Design Engineer*, Hyundai Motors Company
Mar. 1996 – Feb. 1997: *Research Staff*, Engineering Research Center for Advanced Control and Instrumentation, Seoul National University

HONORS and AWARDS

1. Junior Faculty Award by Association of Korean Neuroscientists (2018)
2. Seed grant by Center for Biomedical Engineering and Science (2016, 2017)
3. Targeted Research Internal Seed Program by Charlotte Research Institute (2017)
4. Mentorship for Summer Program: CRS (2015, 2016, 2017), CCS (2016), SREU (2016)
5. Cure Alzheimer's Fund awards (2015, 2016, 2017, 2018)
6. Duke Energy Special Initiatives Funding awards by Charlotte Research Institute (2014)
7. US-Korea conference 2012 young generation fellow (August 2012)
8. MGH-ORCD research fellow's poster celebration award of 'Poster of Distinction' (May 2012)
9. Korean-American professional community in biotechnology and pharmaceuticals (KASBP)-Green Cross Fellowship, invited talk (Oct. 2011)
10. The first place in the Bears Breaking Boundaries competition under the category of Neglected Diseases (2008)
11. Lawrence scholar program fellowship (former SEGREF) from Lawrence Livermore National Laboratory (Mar. 2007)
12. Fellowship supported by Intel Inc. (Sep. 2005)
13. Scholarship supported by the Korea research foundation grant funded by the Korea government (MOEHRD) (April 2005)
14. Graduation with cum laude from Seoul National University (1996)

PUBLICATIONS

Journal articles

1. Y.J. Kang, Y.N. Diep, M. Tran, V.T.A Tran, G. Ambrin, H. Ngo, **H. Cho***, “3D Human Mini-Brains Recapitulating Neuroinflammation and Neurodegeneration,” *Nature Protocols* **2023**, accepted
2. H. Ngo, S. Amartumur, V.T.A. Tran, M. Tran, Y. Diep, **H. Cho***, L.P. Lee* (*:co-corresponding), “In Vitro Tumor Models on Chip and Integrated Microphysiological Analysis Platform (MAP) for Life Sciences and High-Throughput Drug Screening,” *Biosensors* **2023**, 13:231
3. Y.J. Kang, Y. Xue, J.H. Shin, **H. Cho**, “Human mini-brains for reconstituting CNS disorders,” *Lab on a Chip* **2023**, 23:964
4. M. Tran, C. Heo, L.P. Lee, **H. Cho**, “Human mini-blood-brain barrier models for biomedical neuroscience research: a review,” *Biomaterials Research* **2022**, 26:82
5. M.-H. Hwang, Y.-J. Kang, H.-G. Son, **H. Cho***, Hyuk Choi* (*:co-corresponding), “Engineered Human Intervertebral Disc Model Inducing Degenerative,” *International Journal of Molecular Science* **2022**, 23:12216
6. Y.N. Diep, T.J. Kim*, **H. Cho***, L.P. Lee* (*:co-corresponding), “Nanomedicine for Advanced Cancer Immunotherapy,” *Journal of Controlled Release* **2022**, 351:1017
7. Y.G. Lee, **H. Cho**, S.S. Park “High-throughput screening of anti-cancer drugs using a microfluidic spheroid culture device with a concentration gradient generator,” *Current Protocols* **2022**, 2:e529
8. V.T.A. Tran, L.P. Lee, **H. Cho**, “Neuroinflammation in neurodegeneration via microbial infections,” *Frontiers in Immunology* **2022**, 13:907804
9. J.H. Shin, S. Park, **H. Cho**, J.H. Kim, H. Choi “Adipokine human Resistin promotes obesity-associated inflammatory intervertebral disc degeneration via pro-inflammatory cytokine cascade activation,” *Scientific Reports* **2022**, 12:8936
10. V.A. Jairaman, A. McQuade, A. Granzotto, Y.J. Kang, J.P. Chadarevian, S. Gandhi, I. Parker, I. Smith, **H. Cho**, S.L. Sensi, S. Othy, M. Blurton-Jones, M.D. Cahalan “TREM2 regulates purinergic receptor-mediated calcium signaling and motility in human iPSC-derived microglia,” *eLife* **2022**, 11:e73021
11. Y. Lee, S. Ahn, **H. Cho**, V. Ogunro, S. Bae “Solventless solid-phase extraction using Zn ion-imprinted polymer detected by colorimetric method,” *Bulletin of the Korean Chemical Society* **2022**, 43:429
12. Y.J. Kang, H.-Y. Tan, C.Y. Lee, **H. Cho** “An Air Particulate Pollutant Induces Neuroinflammation and Neurodegeneration in Human Brain Models,” *Advanced Science* **2021**, 8:2101251 (*frontispiece cover imaged*)
13. V.T.A. Tran, Y.J. Kang, H-K Kim, H-R Kim, **H. Cho** “Oral Pathogenic Bacteria-Inducing Neurodegenerative Microgliosis in Human Neural Cell Platform,” *International Journal of Molecular Science* **2021**, 22:6925
14. Y.J. Kang, **H. Cho** “Human brain organoids in Alzheimer’s Disease,” *Journal of Organoid* **2021**, 1:1e5
15. A. Bittner, F. Gosselet, E. Sévin, L. Dehouck, A. Ducray, V. Gaschen, M.H. Stoffel, **H. Cho**, M. Mevissen “Time-dependent internalization of polymer-coated nanoparticles in brain endothelial cells and morphological and functional effects on the blood-brain barrier,” *International Journal of Molecular Science* **2021**, 22:1657
16. H.-Y. Tan, **H. Cho***, Luke P. Lee* (*:co-corresponding), “Human mini-brain models,” *Nature Biomedical Engineering* **2021**, 4:11
17. Y.J. Kang, Y.N. Diep, M. Tran, **H. Cho** “Therapeutic Targeting Strategies for Early-To Late-Stage Alzheimer’s

- Disease,” *International Journal of Molecular Science* **2020**, 21:9591
18. H. Chun, H. Im, Y.J. Kang, Y. Kim, J.H. Shin, W. Won, J. Lim, Y. Ju, Y.M. Park, S. Kim, S.E. Lee, J. Lee, J. Woo, Y. Hwang, H. Cho, S. Jo, J.-H. Park, D. Kim, D.Y. Kim, J.-S. Seo, B.J. Gwag, Y.S. Kim, K.D. Park, B.-K. Kaang, **H. Cho**, H. Ryu*, C.J. Lee*, “Severe reactive astrocytes precipitate the hallmarks of Alzheimer’s disease via H₂O₂,” *Nature Neuroscience* **2020**, 23:9
 19. A. McQuade, Y.J. Kang, J. Hasselmann, A. Jairaman, A. Sotelo, S.K. Shabestari, M. Coburn, J.P. Chadarevian, G. Fote, C.H. Tu, E. Danhash, J. Silva, E. Martinez, C. Cotman, G.A. Prieto, L.M. Thompson, J.S. Steffan, I. Smith, H. Davtyan, M. Cahalan, **H. Cho**, M. Blurton-Jones, “Gene expression and functional deficits underlie TREM2-knockout microglia responses in human models of Alzheimer’s disease,” *Nature Communications* **2020**, 11:5320
 20. J. Park, S. H. Baik, I. Mook-Jung, D. Irimia, **H. Cho**, “Mimicry of Central-Peripheral Immunity in Alzheimer’s Disease and Discovery of Neurodegenerative Roles in Neutrophil,” *Frontiers in Immunology* **2019**, 10:2231
 21. J. Shin, M.H. Hwang, S. Back, H.G. Nam, C.M. Yoo, J.H. Park, H.G. Son, J.W. Lee, H. Lim, K.H. Lee, H. Moon, J. Kim, **H. Cho**, H. Choi “Electrical impulse effects on degenerative human annulus fibrosus model to reduce disc pain using micro-electrical impulse-on-a-chip,” *Scientific Reports* **2019**, 9:5827
 22. Y.J. Kang, E.G. Cutler, **H. Cho**, “Therapeutic Nanoplatfoms and Delivery Strategies for Neurological Disorders,” *Nano Convergence* **2018**, 5:35
 23. L.H. Chong, H. Li, I. Wetzel, **H. Cho**, Y.C. Toh, “A liver-immune coculture array for predicting systemic drug-induced skin sensitization,” *Lab on a Chip* **2018**, 21:3239-3250
 24. H. Chun, I. Marriott, C.J. Lee, **H. Cho**, “Elucidating the Interactive Roles of Glia in Alzheimer’s Disease Using Established and Newly Developed Experimental Models,” *Frontiers in Neurology* **2018**, 9:797
 25. J. Park, I. Wetzel, I. Marriott, D. Dréau, C. D’Avanzo, D.Y. Kim, R.E. Tanzi, **H. Cho**, “A 3D human triculture system modeling neurodegeneration and neuroinflammation in Alzheimer’s disease,” *Nature Neuroscience* **2018**, 21:941-951
 26. X. Du, W. Li, G. Du, **H. Cho**, M. Yu, Q. Fang, L.P. Lee, J. Fang, “Droplet Array-Based 3D Coculture System for High-Throughput Tumor Angiogenesis Assay,” *Analytical Chemistry* **2018**, 90 (5):3253–3261
 27. J. Park, I. Wetzel, D. Dréau, **H. Cho**, “3D Miniaturization of Human Organs for Drug Discovery,” *Advanced Healthcare Materials* **2018**, 7:1700551 (front cover imaged)
 28. M.H. Hwang, D.H. Cho, S.M. Baek, J.W. Lee, J.H. Park, C. M. Yoo, J.H. Shin, H.G. Nam, H.G. Son, H.J. Lim, **H. Cho**, H.J. Moon, J.H. Kim, J. K. Lee, H. Choi, “Spine-on-a-chip: Human annulus fibrosus degeneration model for simulating the severity of intervertebral disc degeneration,” *Biomicrofluidics* **2017**, 11:064107
 29. E. Reátegui, A. Khankel, B. Jalali, E. Wong, **H. Cho**, C. N. Serhan, J. Dalli, H. Elliot, D. Irimia, “Microscale arrays for the profiling of start and stop signals coordinating human-neutrophil swarming,” *Nature Biomedical Engineering* **2017**, 1:0094 (cover imaged)
 30. K.W. Bong, J.J. Kim, **H. Cho**, E. Lim, P. Doyle, D. Irimia, “Synthesis of Cell-Adhesive Anisotropic Multifunctional Particles by Stop Flow Lithography and Streptavidin-Biotin Interactions,” *Langmuir* **2015**, 8:13165-13171
 31. **H. Cho**, J.H. Seo, K.H.K. Wong, Y. Terasaki, J. Park, K. Bong, K. Arai, E.H. Lo, D. Irimia, “Three-Dimensional

- Blood-Brain Barrier Model for *in vitro* Studies of Neurovascular Pathology,” *Scientific Reports* **2015**, 5:15222
32. S. Takedaa, S. Wegmanna, **H. Cho**, S.L. DeVosa, C. Commins, A.D. Roeca, S.B. Nichollsa, G.A. Carlsons, R. Pitstickc, C.K. Nobuharaa, I. Costantinao, M.P. Froscha, D.J. Müllerd, D. Irimia, B.T. Hyman, “Neuronal uptake and propagation of a rare phosphorylated high-molecular-weight tau species derived from tau-transgenic mouse and human Alzheimer's disease brain,” *Nature Communications* **2015**, 6:4890
 33. Y. Hori, S. Takeda, **H. Cho**, S. Wegmann, T. M. Shoup, K. Takahashi, D. Irimia, D.R. Elmaleh, B.T. Hyman, E. Hudry, “A Food and Drug Administration-approved Asthma Therapeutic Agent Impacts Amyloid β in the Brain in a Transgenic Model of Alzheimer Disease” *Journal of Biological Chemistry* **2015**, 290:1966-1978
 34. **H. Cho***, B. Hamza* (*equal contribution), E.A. Wong, D. Irimia, “On-demand, Competing Gradient Arrays for Neutrophil Chemotaxis,” *Lab on a Chip* **2014**, 14:972-978
 35. S.H. Baik, M.-Y. Cha, Y.-M. Hyun, **H. Cho**, B. Hamza, D.K. Kim, S.-H. Han, H. Choi, K.H. Kim, M. Moon, J. Lee, M. Kim, D. Irimia, I. M.-J., “Migration of Neutrophils Targeting Amyloid Plaques in Alzheimer’s Disease Mouse Model,” *Neurobiology of Aging* **2014**, 35: 1286-1292
 36. B. Hamza, S. Patel, E. Wong, **H. Cho**, J. Martel, D. Irimia, “Retrotaxis of Human Neutrophils during Mechanical Confinement inside Microfluidic Channels,” *Integrative Biology* **2014**, 6:175-183
 37. **H. Cho**, T. Hashimoto, E.A. Wong, L. Zhao, Y. Hori, L.B. Wood, K.M. Haigis, B.T. Hyman, D. Irimia, “Microfluidic Chemotaxis Platform for Differentiating the Distinct Roles of Soluble and Bound Amyloid- β on Microglial Accumulation,” *Scientific Reports* **2013**; 3:1823
 38. **H. Cho**, E. -C. Yeh, R. Sinha, T.A. Laurence, J.P. Beringer, L.P. Lee, “Single-Step Nanoplasmonic VEGF₁₆₅ Aptasensor for Cancer Diagnosis,” *ACS Nano* **2012**; 6:7607-7614
 39. C.V. Pagba, S.M. Lane, **H. Cho**, S. Wachsmann-Hogiu, “Direct Detection of Aptamer-Thrombin Binding via Surface-Enhanced Raman Spectroscopy,” *Journal of Biomedical Optics* **2010**; 15:0470061-0470068
 40. T. Kokalj*, **H. Cho*** (*equal contribution), M. Jenko, L.P. Lee, “Biologically-Inspired Porous Cooling Membrane Using Arrayed-Droplets Evaporation,” *Applied Physics Letters* **2010**; 96:163703-163705
 41. **H. Cho**, B. Lee, G.L. Liu, A. Agarwal, L.P. Lee, “Label Free and Highly Sensitive Biomolecular Detection Using SERS and Electrokinetic Preconcentration,” *Lab on a Chip* **2009**; 9:3360-3363
 42. D. Choi, T. Kang, **H. Cho**, Y. Choi, L.P. Lee, “Additional Amplifications of SERS via Optofluidic CD-Based Platform,” *Lab on a Chip* **2009**; 9:239-243
 43. **H. Cho**, B.R. Baker, S. Wachsmann-Hogiu, C.V. Pagba, T.A. Laurence, S.M. Lane, L.P. Lee, J.B.H. Tok, “Aptamer-Based SERRS Sensor for Thrombin Detection,” *Nano Letters* **2008**; 8:4386–4390
 44. B.C. Chang, S.H. Lim, **H. Cho**, S. Lee, J.H. Lee, Y.S. Hong, Y.N. Youn, Y.H. Park, “Preclinical Test of an Electro-Mechanical Implantable Left Ventricular Assist System,” *Korean Circulation Journal* **2008**; 38:7-11
 45. **H. Cho**, H.Y. Kim, J.Y. Kang, T.S. Kim, “How the Capillary Burst Microvalve Works,” *Journal of Colloid and Interface Science* **2007**; 306:379-385
 46. J.H. Kim, H.J. Shin, H.J. Cho, S.M. Kwak, **H. Cho**, T.S. Kim, J.Y. Kang, E.G. Yang, “A Microfluidic Protease Activity Assay Based on the Detection of Fluorescence Polarization,” *Analytica Chimica Acta* **2006**; 577:171-177
 47. J.H. Lee, J.M. Jang, **H. Cho**, K.C. Han, T.S. Kim, J.Y. Kang, E.G. Yang, “Design and Characterization of

- Microfluidic Analysis System for RNA-Aminoglycoside Interactions,” *Key Engineering Materials* **2005**; 277-279:90-95
48. **H. Cho**, H.-Y. Kim, J.-Y. Kang, S.-M. Kwak, T.-S. Kim, “Analysis and Evaluation of Capillary Passive Valves in Microfluidic Systems Using a Centrifugal Force,” *KIEE Int. Transact. EA* **2004**; 4:155-159
 49. W.G. Kim, W.Y. Lee, B.H. Lee, **H. Cho**, “A Simplified Cardiopulmonary Bypass Technique for Animal Experiments on Implantable Ventricular Assist Devices,” *International Journal of Artificial Organs* **2002**; 25:147-50
 50. **H. Cho**, W.G. Kim, W.Y. Lee, S.M. Kwak, S.S. Kim, J.K. Kim, J.T. Kim, M.H. Ryu, E.S. Ryu, K.C. Moon, B.S. Su, H.J. Yu, G.J. Yoon, H.J. Jeong, J.S. Choi, S.J. Hwang, J.W. Kim, B.G. Min, “Development and Evaluation of a Novel Electro-Mechanical Implantable Ventricular Assist System,” *Journal of Biomedical Engineering Research* **2001**; 22:349-358

Conference Proceedings (17 oral presentations)

1. Y.N. Diep, H.J. Park, J.-H. Kwon, M. Tran, H.Y. Ko, H. Jo, J. Kim, J.-I. Chung, T.Y. Kim, M. Yun, C.J. Lee, and **H. Cho**, “Astrocytic Scar Restricting Glioblastoma via Glutamate–MAO-B Activity in Glioblastoma-Microglia Assembloid,” Keystone Symposia, British Columbia, CA, May 15-19, 2023
2. M. Tran, Y.J. Kang, Y.N. Diep, K.V. Do, **H. Cho**, “Hyperammonemia-induced autophagy impairment and tauopathy mediated with MAO-A in 3D human edema mini-brain,” Keystone Symposia, British Columbia, CA, May 15-19, 2023
3. H. Ngo, Y. Diep, **H. Cho**, “SARS-COV2 spike protein triggers neuroinflammation and antiviral responses mediated by Toll-like receptors 2/4 in a human mini-brain,” International Conference on Alzheimer’s and Parkinson’s Diseases and related neurological disorders (AD/PD 2023), Gothenburg, Sweden, March 28- April 1, 2023
4. **H. Cho**, “Human Mini-Brains for Neurological Disorders,” Asian Congress for Alternatives to Animal Experiments 2022 (ACAAE 2022), Jeju, Korea, Dec. 15, 2022
5. Y.J. Kang, S.J. Hyeon, A. McQuade, J. Lim, S.H. Baek, D.-G. Jo, C.J. Lee, M. Blurton-Jones, H. Ryu, **H. Cho**, “IFN γ -driven Nrf2 downregulation in microglia exacerbates Alzheimer’s disease,” the Society for Neuroscience’s 50th annual meeting (Neuroscience 2022), San Diego, CA, USA, Nov. 12-16, 2022
6. J.H. Shin, **H. Cho**, “Resistin and glucose stimulation promotes proinflammatory astro-microgliosis in human obesity hyperglycemia,” the Society for Neuroscience’s 50th annual meeting (Neuroscience 2022), San Diego, CA, USA, Nov. 12-16, 2022
7. M. Tran, Y.J. Kang, **H. Cho**, “Hyperammonemia-derived glutamine storm promoting MAO-A mediated tauopathy in human edema mini-brain,” the Society for Neuroscience’s 50th annual meeting (Neuroscience 2022), San Diego, CA, USA, Nov. 12-16, 2022
8. V.T.A. Tran, **H. Cho**, “Helicobacter pylori’s cell-free supernatant (HPCFS) induces neurodegenerative neuroinflammation in human mini-brain,” the Society for Neuroscience’s 50th annual meeting (Neuroscience 2022), San Diego, CA, USA, Nov. 12-16, 2022
9. H. Ngo, M. Bae, Y.J. Kang, J. Jang, D.-W. Cho, **H. Cho**, “Construction of Physiological Cerebral Environment

- Augmented with a Brain Decellularized Extracellular Matrix – Matrigel Hybrid,” the Society for Neuroscience’s 50th annual meeting (Neuroscience 2022), San Diego, CA, USA, Nov. 12-16, 2022
10. Y.N. Diep, H.Y. Ko, T.Y. Kim, C.J. Lee, M. Yun, **H. Cho**, “Glutamate-inducing MAO-B as a Critical Modulator for the Astrocytic Scar in a Human Glioblastoma Microenvironment Organoid and Xenograft Mouse Model,” Tissue Engineering and Regenerative Medicine-Asia Pacific 2022 (TERMIS-AP 2022), Jeju, Korea, Oct. 5-8, 2022 (Best Poster Presentation Award)
 11. Y.J. Kang, H.-Y. Tan, C.Y. Lee, **H. Cho**, “Fine particulate matter in air pollutants promotes neuroinflammation and exacerbates tauopathy in human minibrain,” 2022 International Conference on Alzheimer’s and Parkinson’s Diseases and related neurological disorders (AD/PD 2022), Barcelona, Spain, March 15-20, 2022 (oral presentation)
 12. **H. Cho**, “Air particulate pollutant inducing neurodegenerative inflammation,” 3rd International Webinar on Dementia and Alzheimer Rehabilitation, Feb. 26, 2022 (oral presentation, plenary talk)
 13. Y.N. Diep, H.Y. Ko, W. Lim, S. Park, M.J. Yun, **H. Cho**, “Glial Scar Causing Drug Resistance and Inhibiting Glioblastoma Growth in a 3D Human Glioblastoma Microenvironment,” the Society for Neuroscience’s annual meeting 2021 (Neuroscience 2021), Chicago, IL, USA, Nov. 11, 2021
 14. V.T.A. Tran, Y.J. Kang, H-K Kim, H-R Kim, **H. Cho**, “Oral Pathogenic Bacteria-Inducing Neurodegenerative Microgliosis in Human Neural Cell Platform,” The 5th International Webinar on Global Advanced Nursing, Scientific Meditech, Nov. 19-20, 2021 (oral presentation)
 15. V.T.A. Tran, Y.J. Kang, H-R Kim, **H. Cho**, “Assessment of neurodegenerative microgliosis induced by oral pathogenic bacteria,” Cold Spring Harbor Lab, Neurodegenerative Diseases: Biology & Therapeutics, Dec. 2-4, 2020
 16. M. Bae, Y.J. Kang, H-G Yi, T-H Ngo, T-M Tran, J.J. Kim, J. Jang, D-W Cho, **H. Cho**, “Provision of Physiological Cerebral Environment by Using Brain Decellularized Extracellular Matrix,” the Biomedical Engineering Society Virtual Annual Meeting (BMES2020), Oct. 14-17, 2020
 17. W. Groves, K. Rubio, I. Wetzel, **H. Cho**, “Co-axial extrusion of multicellular blood-brain barrier,” TERMIS-AM Annual Conference, Orlando, FL, USA, Dec. 2-5, 2019
 18. W. Groves, M. Bae, Y.J. Kang, J. Jang, H-G Yi, D-W Cho, **H. Cho**, “Development of Physiologically relevant Human Brain Models by Using Brain Decellularized Extracellular Matrix,” the Biomedical Engineering Society Annual Meeting (BMES2019), Philadelphia, PA, USA, Oct. 16-19, 2019
 19. Y.J. Kang, H. Chun, C.J. Lee, **H. Cho**, “Neurodegenerative microglial activation exacerbated by astrocytes-driven oxidative stress and proinflammation in a human Alzheimer’s disease brain model,” the Society for Neuroscience’s 47th annual meeting (Neuroscience 2019), Chicago, IL, USA, Oct. 19-23, 2019
 20. G. Ambrin, B.R. Singh, **H. Cho**, “Assessment of Adverse Neurotoxicity of BoNT/A by Using an Engineered Human Brain Model,” the Society for Neuroscience’s 47th annual meeting (Neuroscience 2019), Chicago, IL, USA, Oct. 19-23, 2019, (oral presentation, HOT 100s out of 14,000 abstracts)
 21. H. Chun, Y. Kim, Y.J. Kang, H. Im, J.H. Shin, Y. Ju, W. Won, Y.M. Park, J. Lim, J.A. Lee, J.W. Oo, Y. Hwang, S. Jo, I.W. Etzel, J-H Park, D. Kim, D.Y. Kim, B.J. Gwag, Y. Kim, K.D. Park, B-K Kaag, **H. Cho**, H. Ryu, C.J. Lee, “Severe reactive astrocytes precipitate pathological hallmarks of Alzheimer’s disease via excessive H₂O₂-

- production,” the 10th World Congress of Neuroscience by International Brain Research Organization (IBRO 2019), Daegu, Korea, Sept. 21-25, 2019
22. Y. Kang, H. Chun, C.J. Lee, **H. Cho**, “Neurodegenerative Astrogliosis Mediated by Oxidative Stress in Alzheimer’s Diseased Human Model,” the 10th World Congress of Neuroscience by International Brain Research Organization (IBRO 2019), Daegu, Korea, Sept. 21-25, 2019
 23. L.H. Chong, H. Li, I. Wetzel, **H. Cho**, Y.-C. Toh, “Liver-Immune co-culture array predicts drug-metabolism induced skin sensitization” 22nd International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2018), Kaohsiung, Taiwan, Nov. 11-15, 2018, (oral presentation)
 24. J. Park, I. Wetzel, I. Marriott, D. Dréau, D.Y. Kim, R.E. Tanzi, **H. Cho**, “Reconstructed neurotoxic microglial activation triggered by reactive astrocytes in a 3d organotypic human Alzheimer’s disease brain model,” the Society for Neuroscience’s 46th annual meeting (Neuroscience 2018), San Diego, CA, USA, Nov. 3-7, 2018 (oral presentation, selected as a Neuroscience 2018 Hot Topic)
 25. I. Wetzel, **H. Cho** “Single-Step Co-Axial Extrusion (SS-CAE) for Construction of Human Blood-Brain Barrier Model in 3D,” the Biomedical Engineering Society Annual Meeting (BMES2018), Atlanta, GA, USA, Oct. 17-20, 2018
 26. G. Ambrin, S. Cai, B.R. Singh, **H. Cho** “Engineering Multicellular Human Brain Model and Assessing Adverse Toxicity of BoNT/A Leading to Synaptic Impairment in Alzheimer’s Disease,” the Biomedical Engineering Society Annual Meeting (BMES2018), Atlanta, GA, USA, Oct. 17-20, 2018
 27. J. Park, I. Wetzel, S. H. Baik, I. Mook-Jung, D. Irimia, **H. Cho**, “The roles of neutrophils in the CNS mediated by reactive microglia in AD,” Gordon Research Conference: Barriers of the CNS Gordon Research Conference, New London, NH, USA, June 17-22, 2018
 28. J. Park, I. Wetzel, **H. Cho**, “Mimicry of Neuroinflammatory Environment in Alzheimer’s Disease and Discovery of Microglial Modulation in Neutrophil Recruitment to Central Nervous System,” TERMIS-AM annual conference, Charlotte, NC, USA, Dec. 3-6, 2017 (oral presentation)
 29. J. Park, Ram Ganapathi, **H. Cho**, “Cooperative role of glioma and microglia migration in tumor mimicking microenvironment through the paracrine PAI-1/IL6 signaling,” Annual Symposium: Charlotte Biomedical Science and Engineering, Charlotte, NC, USA, May 5, 2017 (oral presentation)
 30. J. Park, D. Dréau, D. Y. Kim, R. E. Tanzi, **H. Cho**, “Neuron-Glia Interactions in 3D Organotypic Human Alzheimer’s Disease Brain Model,” Gordon Research Conference: Glial Biology: Functional Interactions Among Glia & Neurons, Ventura, CA, USA, Mar. 5-10, 2017
 31. J. Park, D.Y. Kim, R.E. Tanzi, **H. Cho**, “Microglial Activation and Neuronal Loss on Recapitulated 3D Human 3D Alzheimer’s Disease Brain Model,” the Society for Neuroscience’s 44th annual meeting (Neuroscience 2016), San Diego, CA, USA, Nov. 12-16, 2016
 32. E. Reátegui, A. Khankel, B. Jalali, E. Wong, **H. Cho**, C. N. Serhan, J. Dalli, H. Elliot, D. Irimia “Inter-Cellular Signals during Human Neutrophil Swarming,” the Biomedical Engineering Society Annual Meeting (BMES2016), Minneapolis, WA, USA, Oct. 5-8, 2016
 33. **H. Cho**, S. H. Baik, I. Mook-Jung, D. Irimia, “Neutrophil Recruitment is Mediated by Soluble Factors from Microglia during Alzheimer’s Disease,” Gordon Research Conference: Glial Cells in Health and Disease,

Ventura, CA, USA, Mar. 1-6, 2015

34. **H. Cho**, S. H. Baik, I. Mook-Jung, D. Irimia, "Neutrophil Recruitment is Mediated by Soluble Factors from Microglia during Alzheimer's Disease," the Society for Neuroscience's 44th annual meeting (Neuroscience 2014), Washington, DC, USA, Nov. 15-19, 2014
35. **H. Cho**, J. H. Seo, K. Wong, K. Bong, Yasukazu Terasaki, K. Arai, E. H. Lo, D. Irimia, "A Tube-shaped *in vitro* Blood-Brain-Barrier Model in Planar Microfluidics," the Society for Neuroscience's 43rd annual meeting (Neuroscience 2013), San Diego, CA, USA, Nov. 9-13, 2013
36. **H. Cho**, J. H. Seo, K. Wong, K. Bong, K. Arai, E. H. Lo, D. Irimia, "A Tube-shaped *in vitro* Blood-Brain-Barrier Model in Planar Microfluidics," the Biomedical Engineering Society Annual Meeting (BMES2013), Seattle, WA, USA, Sep. 25-28, 2013 (oral presentation)
37. **H. Cho**, B. Hamza, E. Wong, D. Irimia, "Microfluidic Platform for On-Demand, Competitive, Large-Scale Chemotaxis Assays of Neutrophils," the Biomedical Engineering Society Annual Meeting (BMES2013), Seattle, WA, USA, Sep. 25-28, 2013 (oral presentation)
38. **H. Cho**, T. Hashimoto, E. Wong, B.T. Hyman, D. Irimia, "Distinct Roles of Amyloid Beta on Microglial Accumulation in Alzheimer's Disease," the Biomedical Engineering Society Annual Meeting (BMES2012), Atlanta, GA, USA, Oct. 24-27, 2012 (oral presentation)
39. **H. Cho**, T. Hashimoto, E. Wong, B.T. Hyman, D. Irimia, "*Ex vivo* Alzheimer's Disease Model Characterizing Accumulation of Microglia Cells Recruited by Soluble Amyloid Beta and Localized by Surface-Bound Amyloid Beta Fibrils," the Society for Neuroscience's 42nd annual meeting (Neuroscience 2012), New Orleans, LA, USA, Oct. 13-17, 2012
40. **H. Cho**, E. Hudrey, M. Toner, B.T. Hyman, D. Irimia, "Migration of Microglia Is Modulated by Amyloid Beta during the Progression of Alzheimer Disease," the Biomedical Engineering Society Annual Meeting, (BMES2011), Hartford, MA, USA, Oct. 12-15, 2011 (oral presentation)
41. **H. Cho**, E.C. Yeh, R. Sinha, L.P. Lee, "Aptamer-Based Nanoplasmonic VEGF₁₆₅ Sensor for Breast Cancer Diagnostics," the Biomedical Engineering Society Annual Meeting, (BMES2010), Austin, TX, USA, Oct. 6-9, 2010 (oral presentation)
42. **H. Cho**, A. Kimteng, L.P. Lee, "Bidirectional Fluidic Diode," 14th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2010) Groningen, the Netherlands, Oct. 3-7, 2010, (oral presentation)
43. T. Kokalj, **H. Cho**, M. Jenko, L.P. Lee, "Skin-Inspired Cooling Surface," Lab-on-a-chip European Congress, Dublin, Ireland, May 25-26, 2010
44. **H. Cho**, R. Sinha, L.P. Lee, "Real-Time and Label-Free Aptasensor of VEGF for Cancer Diagnostics," AACR 101st Annual Meeting, Washington, DC, USA, April 17-21, 2010, AACR highlighted
45. C.V. Pagba, **H. Cho**, S. Lane, S. Wachsmann-Hogiu, "Aptamer-based label-free direct detection of thrombin using SERS," The 238th ACS National Meeting, Washington, DC, USA, August 16 – 20, 2009; 237:491-491
46. **H. Cho**, Y. Zhang, B. Lee, A. Kimteng, J.P. Beringer, B.R. Baker, T.A. Laurence, S.M. Lane, L.P. Lee, "Integrated Microfluidic Platform with Nanoplasmonic Aptasensor for On-Chip Label-Free VEGF Detection in Dynamic Tumor Microenvironment," 13th International Conference on Miniaturized Systems for Chemistry and Life

Sciences (μ TAS2009), Jeju, Korea, November 1-5, 2009; 1482-1484

47. **H. Cho**, Y. Zhang, B.R. Baker, L.P. Lee, "Integrated Microfluidic Platform with Surface-Plasmonic Aptasensor for On-chip Label-free Detection of Cancer Markers from Cells," 10th Annual UC Systemwide Bioengineering Symposium, Merced, CA, USA, June 19-21, 2009 (oral presentation)
48. **H. Cho**, B.R. Baker, S. Wachsmann-Hogiu, C. Pagba, T. Laurence, S.M. Lane, L.P. Lee, J.B.H. Tok, "Detection of Thrombin by Aptamer-Based Surface Enhanced Resonance Raman Spectroscopy," 12th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2008), San Diego, CA, USA, October 12-16, 2008:290-292
49. D. Choi, T. Kang, **H. Cho**, Y. Choi, L.P. Lee, "SERS Signal Amplification via Biofluidic-Adsorption Preconcentration in Optofluidic CD Platform," 12th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2008), San Diego, CA, USA, October 12-16, 2008:964-966
50. **H. Cho**, Y.T. Long, B. Lee, L.P. Lee, "Electrokinetic SERS Signal Amplification for Label-free Biomolecular Detection," 11th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2007), Paris, France, October 7-11, 2007; 2:1182-1184 (oral presentation)
51. **H. Cho**, Y.T. Long, L.P. Lee, "Study on Biomolecules by Electrokinetic Concentration-Based SERS Amplification," Biophysical Society's 51st Annual Meeting, Baltimore, Maryland, USA, March 3-7, 2007
52. **H. Cho**, L.P. Lee, "A Novel Integrated Microfluidic SERS-CD with High-Throughput Centrifugal Cell Trapping Array for Quantitative Biomedicine," 10th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2006), Tokyo, Japan, Nov. 5 - 9, 2006; 1:642
53. **H. Cho**, J. See, L.P. Lee, "A Novel Integrated Centrifugal Cell Trapping SERS-CD Platform for Quantitative Cell Analysis," the Biomedical Engineering Society Annual Meeting (BMES2006), Chicago, IL, USA, Oct. 11-14, 2006
54. **H. Cho**, B. Kim, L.P. Lee, "Tunable Surface-Enhanced Raman Scattering Probes for Single Biomolecular Detections," Biophysical Society's 50th Annual Meeting, Salt Lake City, UT, USA, February 18-22, 2006
55. **H. Cho**, H.Y. Kim, J.Y. Kang, S.M. Park, T.S. Kim, "Modeling of Capillary Passive Valve and Fabrication Using SU-8," the 6th Conference of HARMST, Gyeongju, Korea, June 6-13, 2005; 1: PD07
56. **H. Cho**, J.Y. Kang, S.M. Kwak, K. Hwang, J. Min, J. Lee, D. Yoon, T.S. Kim, "Integration of PDMS Microfluidic Channel with Silicon-Based Electromechanical Cantilever Sensor on a CD Chip," IEEE 18th Int. Conf. on MEMS, Miami, FL, USA, March 2005; 18:698-701
57. J.Y. Kang, **H. Cho**, S.M. Kwak, D.S. Yoon, T.S. Kim, "Novel Particle Separation Using Spiral Channel and Centrifugal Force for Plasma Preparation from Whole Blood," the 8th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μ TAS2004), Malmo, Sweden, Sep. 26-30, 2004; 8:614-616
58. **H. Cho**, H.Y. Kim, J.Y. Kang, T.S. Kim, "Capillary Passive Valve in Microfluidic System," the 7th Conference on Nanotech, Boston, MA, USA, March 7-11, 2004; 7:263-266
59. J.H. Lee, J.M. Jang, **H. Cho**, T. Kim, E.G. Yang, "Development of High-Throughput Screening Systems for RNA Targets Using Microfluidic Chips," International women's conference on BIEN-technology, Daejeon, Korea, Nov. 13-16, 2003:218
60. **H. Cho**, B.C. Chang, S. Kim, D. Min, G.J. Yoon, J. Kim, "Further Development of the Cylindrical Cam Type

- IVAD as a Clinical Model," ASAIO (American Society of Artificial Organs) J. 2002; 48:2:162
61. S.S. Cheon, **H. Cho**, M.H. Ryu, J. Kim, "Development of a Pump Output Estimation Algorithm Using Motor Current for a Pulsatile Implantable IVAD," ASAIO J 2002; 48:2:161
 62. S.H. Lim, B.C. Chang, Y.S. Hong, **H. Cho**, "Preliminary Result of Thrombosis and Hemolysis in Biomedlab Implantable Ventricular Assist Device", ASAIO J 2002; 48:2:140
 63. **H. Cho**, W.G. Kim, J.S. Choi, B.S. Soo, E.S. Ryu, G.J. Yoon, M.H. Ryu, J. Kim, B.G. Min, "Development of Implantable Ventricular Assist System with a Cylindrical Cam," ASAIO J 2001; 47:2:145
 64. M.H. Ryu, J.S. Choi, **H. Cho**, G.J. Yoon, J. Kim, B.G. Min, "An Automatic Driving Method for a Pulsatile Implantable Ventricular Assist Device", ASAIO J 2001; 47:2:142
 65. **H. Cho**, W. Kim, G.J. Yoon, M.H. Ryu, B.S. Soo, J. Kim, "Development of an implantable ventricular assist system with a double cylindrical cam," Int. J. Artificial Organs 2001; 25:2:790
 66. **H. Cho**, W.W. Choi, B.S. Soo, G.J. Yoon, H.J. Yu, J.K. Kim, M.S. Kim, M.S. Park, S.M. Kwak, J. Kim, B.G. Min, "Development of a New Implantable Ventricular Assist Device," ASAIO J 2000; 46:2:204
 67. **H. Cho**, K.S. Om, H.S. Lee, J.H. Chung, B.G. Min, "Flow Modeling Around Prosthetic Heart Valve Using Pressure Difference," the 4th Asia-pacific Conference on medical & biological conference, Seoul, Korea, Sep. 12-15, 1999; 4:251 (oral presentation)
 68. K.S. Om, J.M. Ahn, C.Y. Park, G.J. Yun, **H. Cho**, J. Kim, Y.H. Jo, W.E. Kim, Y.N. Park, J.S. Choi, J.W. Park, S.W. Choi, W.K. Kim, and B.G. Min, "The Automatic Control of the Moving-Actuator Type Totally-Implantable Artificial Heart Using the Motor Current," the 4th Asia-pacific Conference on medical & biological engineering, Seoul, Korea, Sep. 12-15, 1999; 4:239

Books

1. S.-J. Ryu, J. W. Kim, J. C. Hwang, C. Park, **H. Cho**, K. Lee, Y. Lee, U. Cornel, F. C. Park, J. Kim, "Eclipse: an Overactuated Parallel Mechanism for Rapid Machining," Parallel Kinematic Machines, Part of the series Advanced Manufacturing pp 441-455, 1999, Springer London
2. (reviewer) K. J. L. Burg, D. Dréau, T. Burg, "Engineering 3D Tissue Test System," 2017 by CRC Press

INVITED TALKS (75+)

- 2023(1): Keimyung Univ; Yonsei Medical School, May 29 (scheduled)
- 2022(8): KSBNS neuroglia conference, Feb. 24-25 (invited speaker); 3rd International Webinar on Dementia and Alzheimer Rehabilitation, London, Feb. 25-26, 2022 (keynote speaker); 35th Korean Diabetes Associate conference, Gyeongju, May 12-14 (invited speaker); KAIST; Metromedia seminar, Seoul, Oct. 26 (invited speaker); Korea Dementia Research Center, Seoul, Nov. 30 (invited speaker); 3rd Asia Congress for Alternatives to Animal Experiments, Dec 14-16 (invited speaker); Ajou Univ (Dec 19);
- 2021(9): Organoid-Thermo Fisher Symposium, Seoul, Mar. 25; GIST Dept. Chemistry, Kwangju; Seoul Nat'l Univ.; Dongkook Univ, Seoul; IBS brain tumor symposium, Daejeon, Sep. 30 (invited speaker); Sunchun Univ.; GIST School of Medicine, Kwangju; Korea Dementia Research Center, Seoul, Oct. 19 (invited speaker); KIST Seoul;
- 2020(9): Georgia Tech, GA; Rutgers Univ; JeonBuk Univ; SNU Hospital; Cha Univ; Hallym Univ; Korea Brain

Research Institute, Korea; Korean Society of Biomaterials, Nov. 5-6 (invited speaker); Biofusion Seminar, Seoul, Nov. 17 (invited speaker);

2019(12): Indiana Univ., Indianapolis, IN, USA; Wake Forest School of Medicine, Winston-Salem, NC, USA; UC Berkeley, CA, USA; 2nd NO-Age Symposium, University of Oslo, Lørenskog, Norway, June 12, 2019; UK-Korea Neuroscience Symposium, London, UK, August 12-13, 2019 (invited speaker); Univ. Manchester, Manchester, UK; Yonsei Univ; Bio-Chip Bi-annual Conference, Jeju, Korea, Nov. 11-13 (invited speaker); Neuroscience and Technology Symposium, Nat'l Univ. Singapore, Nov. 25 (invited speaker); Samsung Medical Center; Dankook Univ; POSTECH, Pohang, Korea;

2018(10): Purdue Univ., West Lafayette, IN, USA; Sogang Univ., Seoul; Korea Institute of Science and Technology, Seoul; Seoul Nat'l Univ., Seoul; POSTECH, Pohang; Kookmin Univ., Seoul; Korea Univ., Seoul; Gachon Univ., Incheon, Korea; Johns Hopkins Univ., MD, USA; IEEE Nanomedicine, Waikiki, HI, Dec. 2-5, 2018 (invited speaker);

2017(11): KSBB Fall Meeting and International Symposium, Busan, Korea, Oct. 12-13, 2017 (invited speaker); 3rd Organ-on-a-Chip World Congress & 3D-Culture, Boston, MA, USA, July 10-11, 2017 (invited speaker); Wake Forest Institute for Regenerative Medicine, NC, USA; NCSU, NC, USA; Virginia Tech, VA, USA; Duke-NUS, Singapore; NUS, Singapore; Seoul Nat'l Univ. Hospital, Korea; Korean Institute of Industrial Technology, Korea; Sungkyunkwan Univ., Korea; UNC, NC, USA;

2016(6): National University of Singapore, Singapore; Hongik University, Seoul, Korea; Sogang University, Seoul, Korea; POSTECH, Seoul, Korea; Korea Institute of Machinery and Materials, Daejeon, Korea; KAIST, Daejeon, Korea;

2015(2): Draper Lab, Boston, MA, USA; Friday Seminar Series for Biological Sciences, UNCC, Charlotte, NC, USA;

2014(2): The Joint School of Nanoscience and Nanoengineering, Greensboro, NC, USA; Korean Institute of Industrial Technology;

2013(2): Seoul Nat'l Univ.; MIND seminar at Harvard Medical School;

2012(1): Hanyang Univ., Korea;

2011(2): Korean-American professional community in biotechnology and pharmaceuticals Symposium (invited speaker); Seoul Nat'l Univ. Hospital;

2009(1): Seoul Nat'l Univ.;

PATENTS (22)

1. Composition for culturing brain immune cells having Matrigel, and preparation method thereof, KOREA, Pat. No. 10-2022-0029550, Registration date: 2022.03.08
2. Composition for differentiating human neural progenitor cell and culturing neuron having porcine-brain derived extracellular matrix, and Preparation method thereof, KOREA, Pat. No. 10-2022-0029549, Registration date: 2022.03.08
3. 3D high aspect-ratio, ultra-fine tissue chips and manufacturing method thereof, KOREA, Pat. No. 10-2021-0103730, Registration date: 2021.08.06
4. Mimicry of neuroinflammatory microenvironments and methods of use and manufacturing thereof, USA, APP.

No. 15/670354, Pub. Date: 2017.08.07

5. Microfluidic platform and related methods and systems, USA, Pub. No. 2010/0136551, Pub. date: 2010.06.03
6. Aptamer based sensors and related methods and systems, USA, Pub. No. 2010/0105053, Pub. date: 2010.04.29
7. Method and apparatus for measuring fluorescence polarization in lab-on-a-chip, USA, Pat. No. 7427509, Registration date: 2008.09.23
8. Implantable left ventricular assist device with cylindrical cam, USA, Pat. No. 7105022, Registration date: 2006.09.12
9. Parallel mechanism for multi-machining type machining center, USA, Pat. No. 6135683, Registration date: 2000.10.24
10. Composite process type machining center and parallel mechanism structure thereof, Japan, Pub. No. 11-207549, Pub. date: 1999.03.08
11. Fluorescence polarization measurement method and apparatus for lab-on-a-chip, KOREA, Pat. No. 10-0822810-0000, Registration date: 2008.04.10
12. RNA conjugated medicines search method using micro fluid control fluorescence detection system, KOREA, Pat. No. 10-0782046-0000, Registration date: 2007.11.28
13. Cell dispersion micro fluidics chip and patch clamping lab on a chip using the same, KOREA, Pat. No. 10-0749908-0000, Registration date: 2007.08.09
14. An implantable ventricular assist device with cylindrical cam, KOREA, Pat. No. 10-0693392-0000, Registration date: 2007.03.05
15. Microfluidic chip for high-throughput distributing a cell and patch clamping lab-on-a-chip using the same, KOREA, Pat. No. 10-0644862-0000, Registration date: 2006.11.03
16. Minute particle separation method and apparatus using the centrifugal force and microfluidic channel, KOREA, Pat. No. 10-0618121-0000, Registration date: 2006.08.23
17. The micro fluidics supply oil the design method and biomaterial measuring device using the same, KOREA, Pat. No. 10-0608999-0000, Registration date: 2006.07.27
18. Implantable pulse type left ventricular assist device, KOREA, Pat. No. 10-0339822-0000, Registration date: 2002.05.24
19. Overdriving complex process type machining center, KOREA, Pat. No. 10-0266904-0000, Registration date: 2000.06.28
20. Complex process type machining center, KOREA, Pat. No. 10-0241701-0000, Registration date: 1999.11.04
21. The parallel mechanism structure for controlling the position and posture on 3D, KOREA, Pat. No. 10-0237553-0000, Registration date: 1999.10.08
22. The parallel mechanism structure for controlling the position and posture on 3D, KOREA, Pat. No. 10-0237552-0000, Registration date: 1999.10.08

PROFESSIONAL ACTIVITIES & PUBLIC SERVICES

- | | |
|------|------------------------------------------------------------------------------|
| 2021 | Chair of Organoid-Merck BTB Symposium, Seoul, Korea, May 27, 2021 |
| 2019 | Session chair of Charlotte Biomedical Symposium, Charlotte, NC, May 10, 2019 |

2018 Session chair of IEEE Nanomedicine, Waikiki, HI, Dec. 2-5, 2018

2018 Session chair of Charlotte Biomedical Symposium, Charlotte, NC, May 4, 2018

2016 – 2020 Judge for the Charlotte Biomedical Symposium

2016 Chair of the Micro and Nano technologies track of the BMES 2016 annual meeting

2016 Judge for the 16th annual Graduate Research Symposium

2016 Organizer of 1st brain-on-chips workshop, Blowing Rock, NC, Jan. 2-8, 2016

2015 – 2020 Review committee member of a tenure-tracked faculty, MEES, UNC Charlotte

2015 – 2017 Committee member of Int'l conference of Bioceramics 2016

2014 – 2020 Thermodynamics FAIT committee member, MEES, UNC Charlotte

2014 – 2016 Committee member of Korean Association of Charlotte Scholarship Award

2013 Review committee member of MGH-ORCD research fellow's poster competition

JOURNAL EDITOR

2016 – present Review Editor for the Frontiers in Neural Technology

2016 Editorial board member for Current Research in Nanotechnology

2016 Editorial board member for Journal of Engineering and Science

2016 Associate editor of American Journal of Nanotechnology

2016 Guest editor a Special Issue for the Stem Cells International

JOURNAL PEER REVIEW (45 manuscripts for 24 journals)

Nature Biotechnology; Nature Neuroscience; Nature Communications; Chemical Science; Advanced Materials ; Advanced Science; Advanced Functional Materials; ACS Applied Materials & Interfaces; ACS Biomaterials Science & Engineering; Applied Physics Letter; Frontiers Neuroscience; Biomaterials Science; Beilstein Journal of Nanotechnology; Lab on a Chip; Biomedical Microdevices; Biomicrofluidics; iScience; Micromachines; Nanomaterials; PLOS ONE; Review of Scientific Instruments; Sensors; Theranostics; Experimental Neurobiology;

GRANT PEER REVIEW

2021 - Grant Review for KU Leuven in Belgium

2019 – The Netherlands Organization for Scientific Research (NOW)

2019 – Scientific Review for BNVT, National Institutes of Health

2017 – External reviewer for the 'Diagnostics, Therapies, Applied Medical Technology and Public Health' panel of the ERC Starting Grant 2017 call, EU

2016 – Scientific Reviewer Officers (SRO) in the Early Career Reviewer (ECR) program at the Center for Scientific Review (CSR), National Institutes of Health

2016 – Grant peer review for National Centre for Replacement, Reduction and Refinement of Animals in Research (NC3R), UK

MEMBERSHIP

A member of the Society for Neuroscience in 2012 to present

A member of the Biomedical Engineering Society in 2006, 2011 to present

A member of Korean American Society in Biotech and Pharmaceuticals from 2011 to present

A member of Korean-American Scientists and Engineers Association from 2010 to present

An associate member of American Association for Cancer Research in 2010

A member of New England Bioscience Society from 2010 to 2014

A regular member of AAAS/Science Program for Excellence in Science from 2005 to 2009

A regular member of Biophysical Society in 2006

A regular member of Korean Life Scientists in the bay area from 2005 to 2010

A regular member of American Society of Artificial Organs in 2001

A regular member of Korean Society of Medical Biochemistry and Molecular Biology in 2001

A councilor of Korea Society of Medical Biological Engineering from 1999 to 2002

A regular member of IEEE Engineering in Medicine and Biology Society from 1999 to 2003, 2005

A regular member of American Society of Mechanical Engineering from 1996 to 2000

Jan. 2009 – Dec. 2009: A representative of Korean life scientists in the bay area at UC Berkeley

Mar. 1995 – Feb. 1996: A student representative of Department of Mechanical Design and Production Engineering at Seoul National University

PUBLIC ANNOUNCEMENT: NEWSLETTER ARTICLE

- Colleague of Engineering, UNCC, June 2016
- <http://enr.uncc.edu/newsletters/2016-spring-review/brain-chip-research-mimicks-brain-function>
- <https://www.nature.com/articles/s41593-018-0177-2> (News & View in *Nature Neuroscience*)
- <https://www.nature.com/articles/s41590-018-0171-6> (Research Highlight in *Nature Immunology*)
- <https://www.nature.com/articles/s41592-018-0191-z> (Technology Feature in *Nature Methods*)
- <https://www.alzforum.org/news/research-news/invading-microglia-unleash-neurodegeneration-3d-ad-culture>
- https://eurekaalert.org/pub_releases/2018-07/mgh-msi073018.php
- https://www.massgeneral.org/News/pressrelease.aspx?id=2276#.W19Z_FyUuu4.twitter
- <https://www.sciencedaily.com/releases/2018/07/180730145418.htm>
- <http://bpod.mrc.ac.uk/archive/2018/8/14>

TEACHING EXPERIENCES

- Thermodynamics-I: from Spring 2015 to 2019
- Microfluidics and Biomedical Applications: Spring 2016, Fall 2016/2017/2018
- Biomedical Manufacturing: 3D-Bioprinted Tissues: Spring 2017/2018/2019
- One semester as a teaching assistant for BioE121P (Introduction to Micro and Nanobiotechnology: BioMEMS-Bioengineering)
- Three semesters as a guest lecturer for BioE190A (Advanced Topics in Computational Bioengineering-Bioengineering: Plasmonics)