

Biology, Biotechnology & Health 1

Dedicated to advancing human health and life sciences, this cluster covers cutting-edge research in biotechnology, biomedical sciences, medical technologies, and translational medicine shaping the future of healthcare.

The Biology, Biotechnology & Health Technical Symposium will feature four podium sessions and a poster session. We invite scientists, engineers, and professionals from academia, industry, and government to share their work, foster collaboration, and address critical challenges in life sciences and healthcare, while engaging researchers from related fields—including information science, nanotechnology, advanced materials, and robotics—to advance interdisciplinary innovation in health and biotechnology.

This symposium is jointly organized by three Technical Groups (TGs) of KSEA and their affiliated professional societies (APS): Health Sciences; Biological and Biomedical Sciences; and Bioengineering and Biomedical Engineering.

The Health Sciences TG (B-1 MPS) brings together members working in medical science, veterinary medicine, pharmaceutical science, public health, nursing, and related fields, with shared interests in improving human and animal health, advancing clinical and translational research, and addressing emerging challenges in healthcare systems and biomedical practice.

The Biological and Biomedical Sciences TG (B-3 BME) is a community of members working in biology, molecular biology, cognitive science, botany, zoology, biomechanics, and related fields, with shared interests in understanding living systems across scales, advancing fundamental and translational bioscience, and addressing emerging challenges at the intersection of biology, health, and technology.

The Bioengineering and Biomedical Engineering TG (C-1 BME) includes members working in bioengineering, biomedical engineering, and related fields, with shared interests in applying engineering principles to biological systems, advancing medical technologies and devices, and addressing emerging challenges in healthcare, diagnostics, and human performance.

Chair



Bong-Ihn Koh (B3)

Yale University

Co-chairs



Soo Jin Yoo (B1)

The University of
Texas Rio Grande
Valley



Hungoo Lee (B1)

Johns Hopkins
University

Invited Speakers



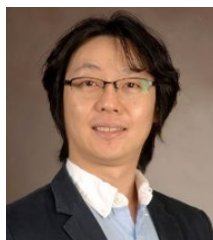
Jong Yun Park

Moffitt Cancer
Center



Do-Gyoon Kim

Ohio State University



Sungha Hong

University of
Rochester Medical
Center



Mi Ho Jeong

Mass General
Brigham



Hanjoong Jo

Emory University/
Georgia Institute
of Technology



Dongsu Park

Baylor College of
Medicine

B-1 Symposium: Medical, Pharmaceutical, and Physical Education Sciences (MPS)

From Discovery to Practice in Health Sciences

The Medical, Pharmaceutical, and Physical Education Sciences Symposium brings together scholars, clinicians, and practitioners from diverse disciplines—including medical science, veterinary medicine, pharmaceutical science, public health, nursing, and related fields—who share a common commitment to advancing health and well-being for both humans and animals. This interdisciplinary forum fosters collaboration and knowledge exchange aimed at strengthening clinical and translational research, promoting innovative therapeutic and preventive strategies, and addressing emerging challenges in healthcare systems and biomedical practice. By integrating expertise across sectors, the symposium highlights the critical importance of cross-disciplinary approaches in tackling complex health issues, improving patient outcomes, and shaping the future of global health.

B-3 Symposium: Biological and Biomedical Sciences (BME)

Reading the Niche: How Cells Sense and Respond Across Tissues

How do cells read their environment – and how do those responses scale into tissue function, organ physiology, and disease? This question sits at the heart of the most exciting work in modern biomedicine, cutting across vascular biology, neuroscience, and stem cell biology. In this session, featured talks illuminate how hemodynamic forces reprogram endothelial identity in atherosclerosis, how ultrasound mobilizes mechanosensory responses in immune cells, how skeletal stem cell heterogeneity is regulated within the perivascular niche during aging, how synaptic connectivity encodes neurotransmitter identity in whole-brain connectomes, how translational kinetics shape proteome integrity in the aging brain, and how human organoids recapitulate the developmental program of the amygdala. Together, they reveal that cell fate is not intrinsic but relational, shaped continuously by the mechanical, molecular, and architectural context of the niche.

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@International
Ballroom II

Thursday, Aug 6 5:00 – 7:00pm

B-1 Session I: Innovative Diagnostic and Molecular Approaches to Cancer and Disease Detection

Chair: Jihyun Song (University of Utah)

Time	Title and Speaker
5:00	Differentially methylated genes in aggressive prostate cancer Jong Yun Park (Moffitt Cancer Center & Research Institute Invited)
5:25	Artificial Intelligence for Comparative Oncology: Modeling Rare Cancers Using Naturally Occurring Canine Cancers Jong Hyuk Kim (University of Florida)
5:50	Plasma-based single extracellular vesicle analysis for diagnosis of cholangiocarcinoma Mi Ho Jeong (Mass General Brigham) Invited
6:15	VASP, a F-actin polymerization factor, is a novel YAP-TEAD target gene in MDA-MB-231 cells Tae-Hyung Kim (University of New Mexico Health Sciences Center)
6:40	Activated Transient Receptor Potential Vanilloid Type 1 (TRPV1) endures global hypoperfusion following subarachnoid Hemorrhage (SAH) Sung Ha Hong (University of Rochester Medical Center) Invited

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@International
Ballroom II

Thursday, Aug 6 5:00 – 7:00pm

B-3 Session I: Reading the Niche: How Cells Sense and Respond Across Tissues

Chair: Bong Ihn Koh (Yale School of Medicine)

Time	Title and Speaker
5:00	Ultrasound-induced Macrophage Mechanotransduction via Actin Reorganization and Ca²⁺ Responses Myeong Ryeol Choi (Pohang University of Science and Technology)
5:30	Flow-Induced Reprogramming of Endothelial Cells (FIRE) in Atherosclerosis Hanjoong Jo (Emory University/Georgia Institute of Technology)
6:00	Skeletal Stem Cell Heterogeneity and Regulatory Mechanism in Aging Dongsu Park (Baylor College of Medicine)
6:30	Human Amygdala-like Telencephalic Organoids Capture Developmental Program of Human Amygdala In-Hyun Park (Yale University)

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@Colonial B

Friday, Aug 7 3:15 – 5:00pm

B-1 Session II: Innovative Diagnostic and Regenerative Therapies for Musculoskeletal and Cardiac Disease

Chair: Whasil Lee (University of Rochester, NY)

Time	Title and Speaker
3:15	Can Cone Beam Computed Tomography Assess Oral Bone Density? Do-Gyoon Kim (Ohio State University) Invited
3:40	Cytoprotective Effect of Kartogenin-Loaded Nanosomes on Arthritic Chondrocytes Hongsik Jake Cho (University of Tennessee Health Science Center)
4:00	Engineered 3D Microphysiological Systems for Identification of Therapeutic Myokines Young Charles Jang (Emory University)
4:20	Development of Antibody-Immobilized Electrodes to Detect Osteocalcin for Racehorse Bone Health Monitoring Daniel Sim (University of Tennessee)

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@Colonial B

Saturday, Aug 8 8:00 – 10:00pm

MPS/BME Joint Session: Multiscale Perspectives on Neural Function, Aging, and Human Health

Chair: Bong Ihn Koh (Yale School of Medicine); Soojin Yoo (U Texas Rio Grande Valley)

Time	Title and Speaker
8:00	Altered translation elongation contributes to key hallmarks of aging Jae Ho Lee (Stony Brook University)
8:30	Predicting Neurotransmitter Identity from Synaptic Connectivity in Drosophila Connectomes Hyunju Kim (Georgia Institute of Technology)
9:00	Nociceptive Nerve Remodeling in Osteoarthritic Mouse Knee Joints Whasil Lee (University of Rochester)
9:20	Effect of Aymara Enriched NFKB1 SNP on Acute Mountain Sickness in Austrians Exposed to Acute Hypoxia Grace Min (University of Utah)
9:40	Academic Engagement in Children with Autism Brandon Yoo (University of Puget Sound)

Poster Session
Bio 1

@ International
Ballroom II

Friday, Aug 7 5:00 – 6:45pm

B-1 Poster Session

Chair: Soojin Yoo (U Texas Rio Grande Valley); Hungoo Lee (Johns Hopkins University)

P1	Intra-Articular Oxygen Dynamics in Post-Traumatic Osteoarthritis After ACL Rupture Jinha Kwon (University of Michigan)
P2	Algorithmic Fairness in Machine Learning Prediction for Long-Term Adjuvant Endocrine Therapy Adherence among Breast Cancer Survivors Yeijin Kim (University of Texas at Austin)
P3	Effects of Long-Term Episodic Heat Therapy on Skeletal Muscle Morphology and Capillarization in Aged Obese Mice Bohyun Ro (Purdue University)
P4	Asian–White Racial Disparities in Severe Maternal Morbidity within the State of Georgia, 2016–2022 Katherine Cho (Emory University)
P5	Clonal Convergence Between Mucosal and Systemic Human IgA Repertoires Following Norovirus Challenge Dae Sung Kim (University of Texas at Austin)
P6	Qualitative Insights from a Pilot Randomized Trial of a Decisional Intervention for Older Adults with Acute Myeloid Leukemia (UR-GOAL 2) Emily Oh (University of Rochester Medical Center)
P7	A Bayesian Cross-Classified Multilevel Analysis of Healthcare Access Effects on SPD by Occupation and Industry for Workplace CDSS Dayeon Heo (Purdue University)
P8	Aberrant Progesterone Receptor (PGR) Expression is Associated with Estrogen Receptor 1 (ESR1) Expression in the Endometrium from Infertile Women with Endometriosis Soo Lim Kim (Texas A&M Health Science Center Institute of Biosciences & Technology)
P9	Integrating PharmD-Informed Medication Literacy into Diabetes Self-Management Education and Support (DSMES) Programs to Address Polypharmacy in Type II Diabetes Lucy Lee (UTHealth School of Public Health)
P10	The Relationship Between Depression and Inflammatory Markers in Head and Neck Cancer Patients Undergoing Radiation Therapy Hyein Kim (Emory University)
P11	Predictors of 3-Month Anxiety Among Intimate Partners of ICD Recipients Following a P+P Intervention Jinseon Hwang (University of Washington)
P12	Targeting NUA2 to Suppress Fibroblast Activation and Pathologic Tissue Remodeling Jiyeon Kim (University of Arkansas for Medical Sciences)

Poster Session
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Friday, Aug 7 5:00 – 6:45pm

B-1 Poster Session

Chair: Soojin Yoo (U Texas Rio Grande Valley); Hungoo Lee (Johns Hopkins University)

P13	Exogenous mitochondrial transplantation improves tendon regeneration via modulating apoptosis signaling Jimin Lee (Colorado State University)
P14	Functional Connectome Alterations Underlying Posttraumatic Stress Disorder Eun Namgung (Texas A&M University Health Science Center)
P15	Household Living Arrangement, Obesity, and Psychosocial Risk Across the U.S. Ilsoo Park (Azusa Pacific University)
P16	Associations Between Greenspace Exposure and Cancer Outcomes in the U.S. Jeonggyo Yoon (University of Arizona)
P17	Early-Life Adversity Alters the Neuro-Immune Axis and Limits Anti-PD-1 Therapy Yea In Park (George Washington University)
P18	Electrochemical Detection of Respiratory Viruses Using a Nanowell Biosensor Platform Youngtae Seo (MARA Nanotech New York Inc.)
P19	Mass-produced Nanowell Biosensor for Clinical COVID-19 Diagnosis Youngtae Seo (MARA Nanotech New York Inc.)
P20	Comparative Evaluation of Cryogen Spray Cooling (R134a vs HFO-1234ze) Yurie Jeong (UC Irvine / Johns Hopkins University)
P21	Identifying the Epigenetic Mechanisms of Fragile X syndrome and Inducing the Contraction of CGG repeats and FMR1 reactivation Hungoo Lee (Johns Hopkins University)
P22	BMI Masks Significant Differences in Metabolic Risk Indicators Soojin Yoo (U Texas Rio Grande Valley)
P23	Scalable Microelectrode for Assessing Drug-Induced Cardiotoxicity in Cardiac Organoids Youngtae Seo (Mara Nanotech New York INC.)

Poster Session
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Friday, Aug 7 5:00 – 6:45pm

B-3 Poster Session

Chair: In-Hyun Park (Yale University)

P1	Hippocampal α-Synuclein PFF mouse model recapitulates key pathological and cognitive features of Lewy Body Dementia Jung Ha Byun (University of Georgia)
P2	Multi-Omic Characterization of the Senescent Niche in Aging Skin Yeaen Han (Mayo Clinic)
P3	A Novel PKD1–mTOR–DRP1 Signaling Axis Mediates Compensatory Responses to Mitochondrial Oxidative Stress in Dopaminergic Neurons Ahyoung Jang (University of Georgia)
P4	Biomimetic Intrafibrillar Mineralization of Collagen Hoyeon Jang (The Ohio State University)
P5	Electrical Transduction Assay for Diagnostic Applications Hyouarm Joung (Kompass Diagnostics Inc.)
P6	Causal interrogation of bipolar disorder GWAS risk genes: cell- and circuit-targeted in vivo CRISPR editing at single and multiple loci Yeonha Ju (University of Texas at Austin)
P7	Bridging Functional Annotation and Molecular Interactions: Trustworthy Deep Learning for Enzyme and Protein-Compound Prediction Mingon Kang (University of Nevada Las Vegas)
P8	Endothelial tmTNFα as a Regulator of Immune-Related Networks and Schizophrenia-Relevant Phenotypes Sanghyeon Kim (SMRI)
P9	Gene–Diet Interactions in Alzheimer’s Disease: APOE4 Rewires Astrocytic Ketone Metabolism to Drive Amyloid Pathology Youbin Kim (Icahn School of Medicine at Mount Sinai)
P10	Probing the paradoxical relationship between marine diazotrophs and oxygen through controlled hypoxia Michael Kim (Johns Hopkins University, University of Southern California)
P11	Functional Specialization of Craniofacial Bone Marrow Vasculature Bong Ihn Koh (Yale School of Medicine)
P12	Therapeutic Potential of Graphene Quantum Dots on Pterygium Donghoon Koo (Seoul National University)
P13	A Counterfactual Framework for Estimating Infectious Disease Prevalence under Repeated Testing with Symptomatic and Contact-Tracing Components Jeongjin Lee (The Ohio State University)

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B-3 Poster Session

Chair: In-Hyun Park (Yale University)

P14	Mitochondrial Dysfunction Induces Asparaginase Resistance in R-Spondin Fusion Colorectal Cancer Su Hyun Lee (St. Jude Children's Research Hospital)
P15	The role of KAZN in osteoclastogenesis Sun Young Lee (Sookmyung Women's University)
P16	Remote Ischemic Conditioning Rescues Delayed Transneuronal Degeneration and Promotes Long-Term Stroke Recovery Keun Woo Park (Bergen Community College)
P17	Epigenetic Memory Drives Fetal-like Revival Stem Cell Identity During Small Intestine Regeneration Onyu Shin (Center for Genome Engineering, Institute for Basic Science (IBS), Korea)
P18	Foot Placement as a Mediolateral Balance Control Strategy in an Avian Bipedal Animal Model During Sloped Perturbations Junhyuck Woo (University of California, Irvine)
P19	The Effects of Exercise Training on Anxiety and Insular-Centered Functional Connectivity in Healthy Older Adults Kihoon Yuk (Program in Neuroscience and Cognitive Science, University of Maryland)