2024 17th GCCW(11.5-11.6) Day 1 Session 'Global Commercialization Strategies for Advanced Biotechnology' and 'AI Driven Drug Discovery'

The Global Commercialization Conference & Workshop(GCCW) will be held on November 5-6, 2024, at the Seo Nam-pyo Fusion Hall, KI Building (E4), KAIST Headquarters, and will feature presentations and discussions on the topics of "Global Commercialization Strategies for Advanced Biotechnology" in the morning and "AI Driven Drug Discovery" in the afternoon.

Program Overview

[Morning Session – Global Commercialization Strategies for Advanced Biotechnology]

The program introduces the Global Industrial Technology Cooperation Center project and international collaborative research support programs of the Ministry of Trade, Industry and Energy, introduces the current status of KAIST's GCC bio field, which has been selected as an NCC, introduces the research activities of Yale University, Georgia Institute of Technology, and Johns Hopkins University related to the bio field among the Global Industrial Technology Cooperation Centers (GITCC), and explains how to identify, plan, and propose projects between domestic and foreign research teams for joint R&D.

Following a keynote speech on the government's industrial technology R&D projects and support policies in the bio sector and an introduction to the technologies selected as international joint R&D projects, the panel discussion will discuss the need for international joint research in the bio sector and ways to cooperate with global research institutions.

We have prepared presentations on topics suitable for domestic and international business professionals, industry experts, researchers, venture capitalists, university and graduate students in the bio field, and provide simultaneous Korean and English support for online and offline attendees.

[Afternoon Session – AI Driven Drug Discovery]

Collaborations between big pharmaceutical companies and AI drug discovery companies are dramatically reducing the enormous cost and time involved in the drug discovery process, and research and industrialization are progressing in parallel. In September of this year, Google DeepMind open-sourced Alphafold3, an AI model for protein generation, which can predict the interactions of proteins with biomolecules in the human body, and is expected to dramatically accelerate the development of new drugs and therapies.

This year, three co-winners of the Nobel Prize in Chemistry (including Professor David Baker at the University of Washington) were awarded for their contributions to the discovery of new proteins and the development of AlphaFold2, a tool for predicting the three-dimensional structure of proteins using AI, and in the United States, one of leading countries in AI drug discovery, more than 1,000 AI drug discovery startups are created every year, and investment from venture capita firms is also strong.

In the afternoon session, we will look at the current status of AI drug discovery and development in Korea, including the government's advanced biotechnology initiatives, the current status of AI drug discovery and development at home and abroad, and strategies to support AI drug discovery and development. We will also look at the information needed to attract VC from specialized companies and prospective founders, and the legal issues of training data in the process of AI drug discovery and development. In the panel discussion that follows, we will gather experts from industry and academia to discuss advanced AI drug discovery and development R&D and global expansion.

After the conference, there will be a separate 30-minute meeting between the speakers and attendees to network with bio and AI drug discovery companies for investment and legal advice, and to discuss research topics in research institutes and universities.

This conference is sponsored by the Korea Pharmaceutical and Bio-Pharma Manufacturers Association(KPBMA) Convergence AI Institute for Drug Discovery(CAIID), and registration fee is free. If you would like to participate, please apply using the following link. Thank you.

Application for Participation

==> (English) https://gcc.kaist.ac.kr/english/sub0403/form

17th GCCW(Global Commercialization Conference & Workshops)
Program of Day 1 Morning Session

- **Time : 2024.11.5.(Tue) 09:30~13:30**
- **Location : KAIST(Main campus) KI(E4) 1F, Seo Nam-Pyo FUSION HALL**

Session	**Global Commercialization Strategies for Advanced Biotechnology**		
Time	**Title**	**Speaker (Position)**	**Affiliation**
09:30~09:35 (5′)	**Opening Addrfess**	Mun-Kee Choi (Director)	KAIST GCC
09:35~09:40 (5′)	International Research Collaboration as KAIST NCC	Byung-Hwa Hyun (Principal researcher)	KAIST GCC
09:40~09:50 (10′)	KIAT Global Industrial Technology Cooperation Center	Jaehong Kim (Professor)	Yale University GITCC
09:50~10:00 (10′)	Ongoing Research Collaboration at Georgia Tech and International Partnership with Korea	W. Hong Yeo (Harris Saunders Jr. Professor)	Georgia Institute of Technology GITCC
10:00~10:10 (10′)	Johns Hopkins Global Biotechnology Innovation Center (JBIC)	Deok-Ho Kim (Professor)	ohns Hopkins University GITCC
10:10~10:40 (30′)	**(Keynote Speech)** K-BIO, Move to the World Market	Yoonjong Cun (Chairman and President)	Korea Planning & Evaluation Institute of Industrial Technology
10:40~11:00 (20′)	Holotomography and Artificial intelligence for 3D histopathology	YongKeun Park (CEO)	Tomocube
11:00~12:00 (60′)	**(패널토의)** The Collaboration between NCC and GITCC in Life Sciences	Yooduk Jun (Moderator) Executive Director, International Cooperation Center, Korea Institute for Advancement of Technology	Kwang Rok Kim, Director, Therapeutics & Biotechnology Division, Korea Research Institute of Chemical Technology Deok-Ho Kim, Professor, Johns Hopkins University GITCC Jaehong Kim, Professor, Yale University GITCC Hyung-Chul Kim, Biotechnology PD, Korea Planning & Evaluation Institute of Industrial Technology W. Hong Yeo, Harris Saunders, Jr. Professor, Georgia Institute of Technology GITCC Byung-Hwa Hyun, Principal Researcher, KAIST Global Commercialization Center
12:00~13:30 (90′)	Lunch		

Speaker bios and summaries

Time	2024.11.5.(Tue) 09:35~09:40		
Speaker	Byung-Hwa Hyun		Affiliation: KAIST Global Technology Commercialization Center Career: Director of the Osong Chumbok Foundation, Director of the National Primate Center, Vice President of the World Association for Laboratory Animals, President of the Korean Society of Laboratory Animal Society of Korea Expertise: Commercialization of Bio-technology, Laboratory animal science
[Title]	**International Research Collaboration as KAIST NCC**		
[Abstract]	The session will briefly introduce the National Collaboration Center (NCC) and Global Industrial Technology Cooperation Center (GITCC) of the Ministry of Trade, Industry and Energy, along with the intention of planning the session, and briefly introduce KAIST's role as the NCC in discovering, planning, and supporting international collaborative research in the biohealth field through international collaboration with overseas GITCCs in the biofield.		

Time	2024.11.5.(Tue) 09:40~09:50		
Speaker	Jaehong Kim		Affiliation: Yale University GITCC Career: Director, Yale Water Innovation Center Deputy Director, NIEHS Superfund Research Center, Former Chair of Department of Chemical and Environmental Engineering Expertise: Environmental Eng., Water treatment
[Title]	**KIAT Global Industrial Technology Cooperation Center**		
[Abstract]	Introduction to Yale University GITCC, KCITY (Korea-Center for Industrial Technology-Yale) (purpose, project planning process, support), and Yale professors who are currently involved in collaborative research or planning to be involved in the future.		

Time	2024.11.5.(Tue) 09:50~10:00		
Speaker	W. Hong Yeo		Affiliation: GIT GITCC Carerr: Distinguished professor, NSF SUSMED Center Director, KIAT-GT Director, WISH Director, WIS Medical Co-founder
[Title]	**Ongoing Research Collaboration at Georgia Tech and International Partnership with Korea**		
[Abstract]	In this talk, I will share the details of the recently established center, named Korea KIAT-Georgia Tech Semiconductor Electronics Center at Georgia Tech, focusing on promoting and supporting collaboration b/w Korean companies and Georgia Tech researchers. In addition, I will also share a few successful examples of ongoing projects with Korea and Georgia Tech's institutional support on new R&D projects with Korean partners		

Time	2024.11.5.(Tue) 10:00~10:10		
Speaker	김덕호 교수		Affiliation: Johns Hopkins University GITCC
[Title]	**Johns Hopkins Global Biotechnology Innovation Center (JBIC): Pioneering Biotechnology and Healthcare Through Academic-Industry Partnerships Across US-Korea Borders**		
[Abstract]	An introduction to the Johns Hopkins Global Biotechnology Innovation Center (JBIC) and the research teams currently participating or planning to participate in international collaborations.		

Time	2024.11.5.(Tue) 10:10~10:40		
Speaker	Yoonjong Chun		Affiliation: Korea Institute of Industrial Technology Planning and Evaluation Member of Biohealth Innovation Committee Career: Minister of Trade, Industry and Energy, Integrated Negotiation Office, KAIST Research Professor, KOTRA Center Director, Counsellor, Embassy of the Republic of Korea in the European Union, Belgium Specialty: Science and Technology Policy, Industrial Policy Education
[Title]	**K-BIO, Move to the World Market**		
[Abstract]	Countries around the world are recognizing the bio industry as a future growth engine and security asset and announcing comprehensive measures before entering the bioeconomy era. The Korean government has also announced the 'Bioeconomy 2.0 Promotion Direction' and 'Biomanufacturing Innovation Strategy'. We will review the industrial technology R&D projects and major policies to enhance the global technological competitiveness of Korean companies and propose policies for K-BIO to enter the global market.		

Time	2024.11.5.(Tue) 10:40~11:00		
Speaker	YongKeun Park		Affiliation: Tomocube, KAIST Career: (2010~present) Distinguished Professor (2015~present) Tomocube co-founder, CEO Specialty: Holography, Bio-imaging, AI
[Title]	**Holotomography and Artificial intelligence for 3D histopathology**		
[Abstract]	Introduces the principles and representative cases of 3D image analysis technology using holography technology that realizes X-ray CT with light and artificial intelligence, and the development of 3D organoid and histopathology analysis products based on it.		

17th GCCW(Global Commercialization Conference & Workshops)
Program of Day 1 Afternoon Session

- **Time : 2024.11.5.(Tue) 13:30~18:00**
- **Location : KAIST(Main campus) KI(E4) 1F, Seo Nam-Pyo FUSION HALL**

Session	AI Driven Drug Discovery		
Time	**Title**	**Speaker (Position)**	**Affiliation**
13:30~13:35	Welcome Address	Pan-Sik Hwang (Deputy Minister)	Office of R&D Policy, Ministry of Science & ICT
13:35~14:00	Progress on Korea's Advanced Bio Initiatives	Hyouk-Mo Nam (Chief)	Advanced Biotechnology Division, Office of R&D Policy, Ministry of Science & ICT
14:00~14:30	Introduction to AI driven drug discovery use case and K-Melloddy	Junhee Pyo (Vice Chief)	Convergence AI Institute for Drug Discovery(CAIID), Korea Pharmaceutical and Bio-Pharma Manufacturers Association
14:30~15:00	Advanced Bio-Converged Digital Preclinical Strategies for Next Pandemic Preparedness	Kyong-Cheol Ko (Director)	Korea Preclinical Evaluation Center, Korea Research Institute of Bioscience and Biotechnology
15:00~15:30	Using AI to Develop Gene Therapy Drug Candidates	Kiwon Lee (CEO)	Spidercore
15:30~15:40	Break		
15:40~16:10	AI for drug design and delivery: the time is now!	Alan Aspuru-Guzik (Professor)	University of Toronto
16:10~16:40	Domestic and International AI Drug Discovery Market Forecast and Investment Trends	Hankil Son (Director)	Korea Investment Partners
16:40~17:10	Legal Issues on the AI Machine Learning Data in The Area of the Medical Purposes	Sung Jae Choi (Professor)	Sejong University
17:10~17:15	Break		
17:15~18:00	(Panel Discussion) Assisting R&D Collaboration and Global Commercialization in Advanced AI Driven Drug Discovery and Development	Shinyoung Lim (Moderator) (Principal researcher KAIST GCC)	• Hankil Son, Director, Korea Investment Partners • Kiwon Lee, CEO, Spidercore • Sung Jae Choi, Professor, Sejong University • Junhee Pyo, Vice Chief, Convergence AI Institute for Drug Discovery(CAIID), KPBMA • Yongjun Hwang, Deputy Director, Office of R&D Policy, Advanced Biotechnology Division, Ministry of Science & ICT

Speaker bios and summaries

Time	2024.11.5.(Tue) 13:30~14:00		
Speaker	Hyouk-Mo Nam		Worked in the Advanced Biotechnology Division of the Ministry of Science and ICT to organize and support bio sector councils to implement the government's advanced bio initiatives, and to support the establishment of institutional collaborative systems to utilize R&D outputs from schools and research institutes
[Title]	**Progress on Korea's Advanced Bio Initiatives**		
[Abstract]	Introduces support measures for bio data, AI platforms, synthetic biology, bio foundry, bio small business, and bio healthcare innovation-based technologies and platform technologies based on strategic approaches to secure domestic bio capabilities based on advanced technologies through analysis of bio sector technology, industry, and support policies in major countries.		

Time	2024.11.5.(Tue) 14:00~14:30		
Speaker	Junhee Pyo		Affiliation: Convergence AI Institute for Drug Discovery(CAIID), Korea Pharmaceutical and Bio-Pharma Manufacturers Association(KPBMA) Career: Tuft Medical Center, IQVIA, Roche, d5tx, College of Pharmacy, Adjunt professor at Chungbuk National University Specialty: AI driven drug discovery
[Title]	**Introduction to AI driven drug discovery use case and K-Melloddy**		
[Abstract]	Provides a background on AI drug discovery as one of the key areas of focus in advanced bio, including typical applications in target discovery, affinity prediction, drug design, biomarker search, translational research, and clinical trials. Challenges of AI drug discovery and how to overcome them are discussed and considered. In addition, we briefly introduced the K-Melloddy project that is being promoted from this year, which is focused on building a platform based on federated learning and developing AI models to accelerate AI drug discovery.		

Time	2024.11.5.(Tue) 14:30~15:00		
Speaker	Kyong-Cheol Ko		Affiliation: Korea Research Institute of Bioscience and Biotechnology(KRIBB) Experience: KRIBB(preclinical testing), COVID-19 Response R&D Support Council, Ministry of Science & ICT, UNESCO Specialty: Preclinical support, Infectious disease response, AI drug development
[Title]	**Advanced Bio-Converged Digital Preclinical Strategies for Next Pandemic Preparedness**		
[Abstract]	As the inability to develop, produce, and supply effective vaccines and therapeutics during COVID-19 ultimately led to a surge in casualties in each country, this paper explains the characteristics of related policies, technologies, infrastructure, and related legislation that must be comprehensively built to wisely solve these problems, and introduces the establishment of a national platform for digital preclinical support linked to advanced biotechnology as an essential requirement for rapid vaccine development, production, and supply in the event of a new virus outbreak in order to preemptively respond to the next expected pandemic.		

Time	2024.11.5.(Tue) 15:00~15:30		
Speaker	Kiwon Lee		Affiliation: Spidercore KAIST Startup(2020~) Specialty: AI driven drug discovery
[Title]	**Using AI to Develop Gene Therapy Drug Candidates**		
[Abstract]	Since 2020, strategic collaborations between pharmaceutical companies and AI companies have been surging as AI-powered drug discovery has been in full swing. However, AI drug discovery is currently focused on small molecules, and there are still challenges in the field of gene therapies, which are being touted as the next big thing. One of the biggest challenges in gene therapy development is the chemical modification of candidates to optimize their efficacy and cytotoxicity, and the traditional trial-and-error approach is costly and time-consuming, but the introduction of AI technology is opening up new possibilities to overcome these limitations. Some of the major innovations in AI-based gene therapy development include chemical modification optimization using polymer-specific graph AI technology and deep learning-based mRNA secondary and tertiary structure prediction systems. These technologies are helping to dramatically improve the efficiency of the gene therapy development process and increase the success rate of development.		

Time	2024.11.5.(Tue) 15:40~16:10		
Speaker	Alan Aspuru-Guzik		Affiliation : University of Toronto (Director of the Vector Institute, Director of the Acceleration Consortium) Career : Harvard University Education : B.S., UNAM / Berkeley, Harvard Specialty : AI drug discovery
[Title]	**AI for drug design and delivery: the time is now!**		
[Abstract]	Introducing various research contents and field applications of the three 2024 Nobel Prize winners in Chemistry on protein analysis and how quantum computing and AI technologies can be used to increase the chances of success in drug design (candidate discovery, digital preclinical testing, etc.). Research and field applications of AI for drug design and drug delivery are beginning in earnest, providing insights for the Korean research and pharmaceutical industries on how they can collaborate on this trend.		

Time	2024.11.5.(Tue) 16:10~16:40		
Speaker	Hankil Son		Affiliation : Korea Investment Partners Majored in biotechnology, chemoinformatics, and clinical pharmacology and applied his professional experience in pharmaceutical companies to investing Specialty : Bio, Healthcare
[Title]	**Domestic and International AI Drug Discovery Market Forecast and Investment Trends**		
[Abstract]	AI-based drug design and collaborative models based on associative learning are emerging as technological methods to overcome the costly and time-consuming constraints of the traditional drug development process of drug discovery, preclinical testing, clinical trials, and licensing. By introducing the current status of investment in AI drug discovery companies in Korea and abroad and key perspectives on investment, this book provides insights for AI drug discovery startups and prospective founders.		

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<tr><td>Time</td><td colspan="3">2024.11.5.(Tue) 16:40~17:10</td></tr>
<tr><td>Speaker</td><td>Sung Jaee Choi</td><td>  </td><td>Affiliation : Sejong University, Law Firm Class Hanbaeul
Practiced law at MS Korea, Samsung SDI, and Kim & Chang in the areas of AI, copyright, capital market financial investment, patent, copyright, and unfair trade.
Chairman of the Committee to Amend the Unfair Competition Act of the Korean Intellectual Property Office</td></tr>
<tr><td>[Title]</td><td colspan="3">Legal Issues on the AI Machine Learning Data in The Area of the Medical Purposes</td></tr>
<tr><td>[Abstract]</td><td colspan="3">Introduces the development and key characteristics of artificial intelligence and its application to digital healthcare and healthcare. Introduce the legal characteristics of data for the collection and utilization of medical learning data that must be used when applying AI in the medical fields.
By introducing the legal concepts of anticipated legal issues related to data for medical AI training and related laws such as the Unfair Competition Act, the Personal Information Protection Act, and the Civil Code, as well as examples of legal disputes in major countries, this course provides insights into the legal implications of collecting and utilizing training data in the process of AI drug development and how to prevent legal disputes in advance.</td></tr>
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