

# MIT Industrial Liaison Program Faculty Knowledgebase Report

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2024 MIT Seoul Life Science Symposium

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July 10, 2024 9:00 am - 5:00 pm

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10:00 AM - 10:40 AM

Richard D. Braatz

The value of mRNA biotherapeutics was demonstrated for the mRNA-based COVID-19 vaccine that was developed for the last pandemic. The ability to quickly produce a biotherapeutic via cell-free synthesis enables the potential of greatly reducing process development speed – which was critical during the pandemic – but only the potential for reduced production and purification costs. This presentation will discuss the current status and promise for both vaccine and non-vaccine biotherapeutic applications.

Innovation in mRNA Biotherapeutics Manufacturing @ MIT

1:00 PM - 1:05 PM

Steven Palmer  
Senior Director, [MIT Corporate Relations](#)



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[MIT Corporate Relations](#)

Steve Palmer is a Senior Director within MIT's Office of Corporate Relations. Steven comes to OCR with many years of experience building relationships, advancing diplomacy, and seeking new business initiatives in both the public and private sectors. He has spent his career highlighting and translating technological issues for policy makers, engineers, analysts, and business leaders. Steven has worked in government, industry, and academia in the U.S. and abroad. He is also an Executive Coach at MIT Sloan and Harvard Business School. Steven earned his Bachelor of Science at Northeastern University, and his M.B.A. at MIT Sloan where he was in the Fellows Program for Innovation and Global Leadership.

1:05 PM - 1:15 PM

Taegyun Moon  
Program Director, [MIT Industrial Liasion Program](#)



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Program Director  
[MIT Industrial Liasion Program](#)

Dr. Taegyun Moon joined Corporation Relations in October 2021 as Program Director. Moon will be working in the Life Science group.

Dr. Moon left his current position as Chief Strategy Officer at Aspen Imaging Healthcare in Plano, TX. In his role at Aspen, he has led new business development and, among other accomplishments, launched a new product through his partnership with Samsung. With some authorized overlap with Aspen, Moon also led strategy and business development for NeuroNexus Technologies (a University of Michigan spinoff) in Ann Arbor. Before that, he spent more than five years with Samsung Economic Research institute in Seoul as a Principal Research Analyst focusing on medical devices, pharma, and the digital health industries. Other positions held include Consultant at Boston Consulting Group (Seoul), Associate at McKinsey & Company (Seoul), CEO Jingfugong Food Inc. (Qingdao, China), and Research Assistant in the Neural Engineering Lab at the University of Michigan.

Moon earned his B.S. and M.S. both in Mechanical Engineering at the Korea University in Seoul, and his Ph.D., Biomedical Engineering at the University of Michigan in Ann Arbor. He speaks Korean (native) and Chinese in addition to English.

1:15 PM - 1:55 PM

A Digital Twin for Continuous mRNA Manufacturing

Richard Braatz

This presentation describes a digital twin that is being developed for end-to-end continuous manufacturing of mRNA biotherapeutics. Mechanistic models are being constructed for all unit operations. These dynamic models are integrated with models for constraints, uncertainties, and disturbances to form a digital twin for automated, integrated continuous manufacturing. The digital twin is suitable for (1) evaluation and validation of mechanistic hypotheses to gain mechanistic understanding, (2) comparison of multiple process flowsheet options, (3) optimization of individual unit operations and their control systems, (4) the design of end-to-end operations, and (5) the real-time operation alongside plant operations. Experimentally validated results are presented for multiple unit operations.

1:55 PM - 2:30 PM

MIT Startup Exchange Lightning Talks  
Natalie Kim

Program Director, [MIT Corporate Relations](#)



Natalie Kim

Program Director, [MIT Corporate Relations](#)

Dr. Najung “Natalie” Kim is a Program Director at the MIT Industrial Liaison Program. She brings to the Office of Corporate Relations (OCR) expertise in strategic collaboration in life sciences and biotech industries, including cell and gene therapy and AI/ML analytics. Kim comes to OCR from Adjuvant Partners where she has been serving as Senior Consultant, Strategic Partnering, working to connect industry, startups, and academic leaders in the cell and gene therapy sector. Before Adjuvant, Natalie worked at Ajinomoto, where she was Manager of the Research & Innovation Center, facilitating collaborations on preclinical and clinical development of biologics, diagnostics, and cell therapy ancillary products in Asia, Europe, and North America. Prior to Ajinomoto, Kim was a business development manager at Medipost, where she led strategic partnerships in mesenchymal stem cell therapeutics in orthopedic and neurodegenerative applications. Kim also went through her postdoctoral training at the Wake Forest Institute for Regenerative Medicine as a Department of Defense Research Fellow working on translational gene therapy in tissue engineering programs.

Kim earned her B.S. Bioscience and Food Engineering at Handong Global University, her M.S. Medicine at Seoul National University in South Korea, and her Ph.D. Biomedical Engineering at the University of Iowa.

Ines Herrero  
[Biomixing](#)

Floris Engelhardt  
[Kano Therapeutics](#)

Kevin Christopher  
[Quantiscope](#)

Karl Ruping  
[Tiba Biotech](#)

2:30 PM

Closing Remarks