Synthetic Biology & New Materials Innovation

September 12, 2017 8:30 am - 12:00 pm

8:30 Coffee & Registration

8:45 Welcome
Karl Koster
Executive Director, MIT Corporate Relations

Karl F. Koster is the Executive Director of the MIT Office of Corporate Relations. The Office of Corporate Relations includes the MIT Industrial Liaison Program, which celebrated 67 years of service to the Institute and its corporate partners in 2015.

In that capacity, Mr. Koster and his staff work with the leadership of MIT and senior corporate executives to design and implement strategies for fostering corporate partnerships with the Institute. Mr. Koster and his team have also worked to identify and design a number of major international programs for MIT, which have been characterized by the establishment of strong, programmatic linkages among universities, industry, and governments. Most recently these efforts have been extended to engage the surrounding innovation eco-system, including its vibrant startup and small company community, into MIT’s global corporate and university networks.

Mr. Koster also serves as the Chairman of the University-Industry Demonstration Partnership (UIDP), an organization that seeks to enhance the value of collaborative partnerships between universities and corporations.

Mr. Koster graduated from Brown University with a B.A. in geology and economics in 1974, and received a M.S. from the MIT Sloan School of Management in 1980. At the Sloan School he concentrated in international business management and the management of technological innovation. Prior to returning to MIT, Mr. Koster worked as a management consultant in Europe, Latin America, and the United States on projects for private and public sector organizations.
Introductory Remarks: MIT's Innovators in Synthetic Biology, New Materials, and Beyond
Trond Undheim, PhD
Program Director, MIT Startup Exchange

Trond is an executive, serial entrepreneur, speaker, strategist, and author. Trond is a Partner at Global Seed Catalyst and the founder of Yegii.ai. Formerly, he directed the MIT Startup Exchange (STEX), connecting industry to startups, at MIT's Office of Corporate Relations.

Yegii, the insight network, is a search engine for industry professionals. Yegii provides man/machine intelligence on industry disruption. He built MIT's digital platform partnering up 250+ global multinationals with 1100+ MIT startups. He created a unique monthly event concept to showcase disruptive innovation (in aerospace, biotech, cybersecurity, education, fintech, foodtech, medtech, media tech, mobile tech, robotics, and transportation) which is now being brought around the world.

Trond assists the world's Global 1000 companies (including GE, ExxonMobil, Foxconn, Nestle, Monsanto, PepsiCo, Philips, Samsung, Saudi Aramco, etc.) with open innovation. He enables 175+ MIT Faculty who are serial co-founders of startups to efficiently cross-fertilize MIT's innovation ecosystem. He maintains unique knowledge and access to serial entrepreneurs, founders and C-levels at MIT's top startups as well as the global innovation ecosystem of investors, entrepreneurs, and thought leaders.

Formerly a Senior Lecturer at MIT Sloan School of Management, and a National Expert e-Government in the EU, Trond authored Leadership from Below (2008), was a Research Associate at UC Berkeley, and has a PhD in technology studies from the Norwegian University of Science and Technology.

Startup Lightning Talks
Ariadna Rodenstein
Program Manager, MIT Startup Exchange

Ariadna Rodenstein is a Program Manager at MIT Startup Exchange. She joined MIT Corporate Relations as an Events Leader in September 2019 and is responsible for designing and executing startup events, including content development, coaching and hosting, and logistics. Ms. Rodenstein works closely with the Industrial Liaison Program (ILP) in promoting collaboration and partnerships between MIT-connected startups and industry, as well as with other areas around the MIT innovation ecosystem and beyond.

Prior to working for MIT Corporate Relations, she worked for over a decade at Credit Suisse Group in New York and London, in a few different roles in event management and as Director of Client Strategy. Ms. Rodenstein has combined her experience in the private sector with work at non-profits as a Consultant and Development Director at New York Immigration Coalition, Immigrant Defense Project, and Americas Society/Council of the Americas. She also served as an Officer on the Board of Directors of the Riverside Clay Tennis Association in New York for several years. Additionally, she earned her B.A. in Political Science and Communications from New York University, with coursework at the Instituto Tecnologico y de Estudios Superiores de Monterrey in Mexico City, and her M.A. in Sociology from the City University of New York.
Jeffrey Wager has 23 years of senior operating experience in the life sciences, beginning his career with a unit of the Bank of Tokyo, advising Japanese pharma companies on the design and conduct of international clinical trials and strategic alliances. He then was part of Medical Science Partners, a $100 million Harvard sponsored VC fund focused on startups spinning out of the Harvard medical system, helping to create and manage a portfolio of 30 companies.

In 2000, he formed Apeiron Partners LLC, focusing on corporate spin-outs and VC funds, where he was intimately involved in the design, launch and investment of Z-Cube (€60 million fund created by the Zambon Group in Italy) and the design/execution of six corporate spin-outs - including Targacept, Inc. (NASDAQ:TRGT) and Artisan Pharma, Inc., the latter also as its founding CEO between 2006-2010, raising $50 million, building the entire team and implementing a 750 patient, 17 country Phase 2b/3 study ultimately leading to Artisan's acquisition by Asahi in 2011.

Dr. Wager is a co-founder and chairman of Proterris, Inc., a therapeutic medical gases company, and an observer to the board of Biotoscana, SL, the largest private equity-backed specialty pharma company in Latin America (2014 revenues - $200 million), which he was instrumental in forming by advising United Medical, Ltda. of Sao Paulo, Brazil on its sale to Biotoscana.

Narendra Maheshri, PhD
Senior Biological Engineer, Ginkgo Bioworks

Narendra Maheshri, PhD, raised in the Houston area, has a BS in Chemical Engineering and Biology from MIT and a PhD in Chemical Engineering from the University of California, Berkeley. In his postdoctoral studies at UC San Francisco and Harvard, he became interested in systems biology and gene regulation. He was an Assistant Professor of Chemical Engineering at MIT, and currently is a Visiting Assistant Professor at MIT, where his research focuses on dynamics and variability in gene regulation and function. Ginkgo Bioworks, located in Boston, was founded in 2008. Its mission is to make biology easy to engineer: "Only when biological engineering is fast and predictable will we fulfill the potential of biological technologies to revolutionize the provision of food, medicine, energy, and materials." The company is currently working on a project with DARPA to treat antibiotic-resistant germs.

Christine Santos, PhD
CTO, Manus Bio

Christine Santos, PhD, raised in the Houston area, has a BS in Chemical Engineering and Biology from MIT and a PhD in Chemical Engineering from the University of California, Berkeley. In his postdoctoral studies at UC San Francisco and Harvard, he became interested in systems biology and gene regulation. He was an Assistant Professor of Chemical Engineering at MIT, and currently is a Visiting Assistant Professor at MIT, where his research focuses on dynamics and variability in gene regulation and function. Ginkgo Bioworks, located in Boston, was founded in 2008. Its mission is to make biology easy to engineer: "Only when biological engineering is fast and predictable will we fulfill the potential of biological technologies to revolutionize the provision of food, medicine, energy, and materials." The company is currently working on a project with DARPA to treat antibiotic-resistant germs.

Andrew Warren, PhD
Founding Scientist & Product Development Lead, Glympse Bio

Dr. Andrew Warren is a Founding Scientist & Product Development Lead at Glympse Bio, a seed-stage startup developing a diagnostic drug platform originally invented in Professor Sangeeta Bhatia’s lab at MIT.
Natalie Artzi, PhD
Principal Research Scientist, IMES, MIT
Cofounder, BioDevek

Natalie Artzi is an Assistant Professor at Brigham and Women's Hospital, Harvard Medical School. She is a principal Research Scientist at the Institute for Medical Engineering and Science at MIT, and is an Associate member of the Broad Institute of Harvard and MIT. Leveraging material science, chemistry, imaging and biology, Dr. Artzi’s group is dedicated to designing smart material platforms and medical devices to improve human health. Dr. Artzi pioneered basic understanding of tissue:biomaterial interactions and concepts learned have changed the way we view materials. Materials and devices are now being “personalized” by considering specific tissue microenvironments that are altered in the face of disease. Her multidisciplinary team works on developing materials for diagnosis and therapy, and exploit the toolkit available for material scientists to create multifaceted medical devices. Dr. Artzi’s graduate thesis work at the Israel Institute of Technology (Technion)—under the direction of Prof. Moshe Narkis—defined how polymer: nano-filler interactions dictate structure:function relationships. Her postdoctoral training with Prof. Elazer Edelman at MIT focused on studying tissue:biomaterial interactions to rationally design materials with optimal therapeutic outcome. She served as part of the scientific advisory board of Science Translational Medicine, and as a dedicated mentor she initiated student exchange program between Or Braude College in Israel and MIT that provides undergraduate students with the opportunity to perform a year of internship under her supervision.

Alec Nielsen, PhD
Cofounder, Asimov

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Asimov

Alec’s objective function is to transition the biological tinkering of present-day to a fully-fledged engineering discipline. He received his PhD in Biological Engineering from MIT, where he focused on genetic circuit design.

Natalie Kuldell, PhD
Founder & Executive Director, BioBuilder
Instructor, MIT Department of Biological Engineering

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Dr. Natalie Kuldell teaches in the Department of Biological Engineering at the Massachusetts Institute of Technology. She develops discovery-based curricula drawn from the current literature to engage undergraduate students in structured, reasonably authentic laboratory and project-based experiences. She completed her doctoral and post-doctoral work at Harvard Medical School, and taught at Wellesley College before joining the faculty at MIT.

Dr. Kuldell is the director of a web-based resource called BioBuilder to teach synthetic biology, as well as the president of an educational non-profit organization called the BioBuilder Educational Foundation that aims to convert current research into teachable form. She runs BioBuilder summer workshops to train teachers in the engineering of biology and ways to teach it.

Outside of her BioBuilder work, she is also a scientific adviser for two web-projects to teach
the nature and process of science, namely Understanding Science and VisionLearning, and a regional hub coordinator and core member of COPUS, a grassroots organization to promote the public understanding of science. Her research examines gene expression in eukaryotic cells, focusing most recently on synthetic biology and redesign of the yeast mitochondria.

9:45
Networking Break

10:00
Academic Keynote: Innovations in Synthetic Biology
James Collins, PhD
Termeer Professor of Bioengineering, Department of Biological Engineering, IMES, MIT
Cofounder, Enbiotix
Cofounder, Synlogic

James Collins is Termeer Professor of Bioengineering in the Department of Biological Engineering and Institute for Medical Engineering & Science. He is also affiliated with the Broad Institute and the Wyss Institute. His research group works in synthetic biology and systems biology, with a particular focus on using network biology approaches to study antibiotic action, bacterial defense mechanisms, and the emergence of resistance. Professor Collins’ patented technologies have been licensed by over 25 biotech, pharma and medical devices companies, and he has helped to launched a number of companies, including Sample6 Technologies, Synlogic and EnBiotix. He has received numerous awards and honors, including a Rhodes Scholarship, a MacArthur “Genius” Award, an NIH Director’s Pioneer Award, a Sanofi-Institut Pasteur Award, as well as several teaching awards. Professor Collins is an elected member of the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the American Academy of Arts & Sciences, and a charter fellow of the National Academy of Inventors.

10:15
Industry View: Why We Care About New Materials
Vincent Ling, PhD
Senior Director, Materials and Innovation, Takeda

Vincent Ling is a biotechnology innovator with a diverse background in protein engineering, cell line production, molecular immunology, stem cell differentiation, antibody/alternate scaffold technologies, and cell based therapy. Currently Dr. Ling is a Senior Director at Takeda leading bioactive materials-centric therapeutic efforts within Pharmaceutical Sciences - Materials and Innovation Group. Prior to joining Takeda, Dr. Ling was Head of Biological Sciences developing Encapsulated Cell Therapies at Neurotech. He has also held positions as Vice President at Dragonfly Sciences and Director of Molecular Genetics at Adnexus (Compound Therapeutics). He has also held various scientific roles in Discovery Research at Genetics Institute / Wyeth Pharmaceuticals. Dr. Ling graduated from UC Berkeley, awarded an M.S. and Ph.D. from University of Illinois, and received post-doctoral training at the Harvard University Biological Laboratories.
Market Keynote: Trends in Synthetic Biology Investments: Taking Synlogic to NASDAQ, Supercharging probiotic bacteria producing immunomedicine

Jose Carlos 'JC' Gutiérrez-Ramos
President & CEO, Synlogic

JC Gutiérrez-Ramos joined Synlogic in April 2015 from Pfizer, where he served as group senior vice president and global head of biotherapeutics research. In that role, he held responsibility for more than 25 novel programs across the full spectrum of clinical development, re-launched efforts in rare disease discovery and development and founded the Centers for Therapeutic Innovation. He oversaw and enhanced the biologics platform for the company from early discovery to entry in manufacturing. JC previously held the position of senior vice president and head of the Immuno-inflammation Center for Drug Discovery (iCEDD) at GSK, where he founded entrepreneurial units such as Epinova and Tempero, focused in translational novel areas of science (Epigenetics, Tregs, etc) into therapeutics. Prior to his work in the pharmaceutical industry, JC held senior leadership positions at several biotech companies; He was senior vice president and head of R&D at Avidia Inc. and Pepitimmune Inc., where he led a significant efforts focused on the discovery of novel protein therapeutics and peptides for autoimmune disease, including multiple sclerosis and diabetes. He began his career in the drug industry at Millennium Pharmaceuticals serving as vice president of inflammation drug discovery. In that capacity he was responsible for advancing preclinical candidates in inflammation and immunology into human clinical trials and advancing compounds (small molecules and antibodies) from discovery through clinical development. JC began his career in academia as part of the faculty at the genetics department of Harvard Medical School. He was member of the Basel Institute for Immunology in Basel, Switzerland and a fellow at the Max-Plank Institute in Freiburg, Germany. He has co-authored more than 150 peer-reviewed publications. JC holds a Ph.D. in immunochemistry from the Autonoma University in Madrid, Spain.

Panel Discussion

How will synthetic biology and new materials change the way we manufacture key products such as pharmaceuticals, food, electronics and consumer goods?

Trond Undheim, PhD
Program Director, MIT Startup Exchange

Trond is an executive, serial entrepreneur, speaker, strategist, and author. Trond is a Partner at Global Seed Catalyst and the founder of Yegii.ai. Formerly, he directed the MIT Startup Exchange (STEX), connecting industry to startups, at MIT's Office of Corporate Relations. Yegii, the insight network, is a search engine for industry professionals. Yegii provides man/machine intelligence on industry disruption. He built MIT's digital platform partnering up 230+ global multinationals with 1100+ MIT startups. He created a unique monthly event concept to showcase disruptive innovation (in aerospace, biotech, cybersecurity, education, fintech, foodtech, medtech, media tech, mobile tech, robotics, and transportation) which is now being brought around the world.

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- What new (technology) tools are now available?
- What new applications are opening up? What are the investment opportunities?
- How should corporations deploy this technology to stay ahead?
- What role is synthetic technology already playing in our lives?
- What advances will we see over the next few years?

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Christine Santos, PhD
CTO, Manus Bio

Christine Santos is the Chief Technology Officer of Manus Bio, a company that specializes in the production of complex natural ingredients through advanced fermentation. She has more than fifteen years of industrial experience in biotechnology, metabolic engineering, and synthetic biology, is an inventor on 9 issued and pending patents, and has published her work in several elite journals, including Science, Nature, and PNAS. Prior to joining Manus Bio, Christine served as an early Senior Scientist at Bio Architecture Lab where she led efforts in developing both bacterial and yeast platforms for macroalgae utilization and renewable chemical production. Christine obtained her BS and MS in Chemical Engineering from Stanford and her PhD in Chemical Engineering from MIT.

Maulik Thaker, PhD, MBA
Lab Head, Synthetic Biology Group, Novartis Institutes for Biomedical Research
Meredith Fisher, PhD, MBA
Partner, Partners Innovation Fund
Meredith Fisher, PhD, MBA currently serves as Partner for the Partners Innovation Fund. Previously, she was in the private/family office at Bracebridge Capital serving as Director of Private Investments and focusing on investments in early stage life science companies. Prior to that role she led business development for Ginkgo BioWorks- an MIT spin out- and was Senior Director of Technology and Business Development of Enlight Biosciences- a venture creation company founded by PureTech Ventures. She spent several years working as a scientist in drug discovery and assay development for Idenix Pharmaceuticals and Anadys Pharmaceuticals (formerly, Scriptgen). Meredith received her undergraduate degree from Mount Holyoke College, her MBA from the MIT Sloan School of Management and her PhD from Harvard University. While at Harvard, she co-founded Harvard Graduate Women in Science and Engineering (HGWISE). Meredith is a BOD Observer for the Innovation Fund portfolio companies: ImmuneXcite and Raze Therapeutics.

11:30
Networking Opportunity

12:00
Adjournment