MIT Industrial Liaison Program Faculty Knowledgebase Report

2026 MIT Health Science Technology Forum

May 11, 2026 12:00 pm - 5:00 pm

12:00 PM	Registration and Light Lunch
1:00 PM	Welcome and Opening Remarks
1:15 PM	Mammalian Synthetic Biology Therapies and Neuromorphic Computing Georg Wachter Synthetic biology is revolutionizing how we conceptualize and engineer biological systems. Recent advances are enabling researchers to move beyond constructing and analyzing small gene networks toward implementing complex multicellular systems with diverse applications. In this talk, Georg Wachter will describe his and his team's integrated computational and experimental approach to engineering complex behaviors in various cell types, with a focus on mammalian cells. Their research draws on design principles from electrical engineering and other established fields, including abstraction, standardization, modularity, and computer-aided design. At the same time, they devote considerable effort to understanding what distinguishes synthetic biology from other engineering disciplines and to discovering new design and construction rules effective for this unique field. Georg will briefly describe the implementation of genetic circuits and modules exhibiting finely tuned digital, analog, and multicellular behaviors. The first system he will present is a multi-input genetic circuit capable of detecting and eliminating specific cancer cells based on the presence or absence of particular biomarkers. He will also discuss generating complex tissue from human induced pluripotent stem cells that recapitulates early developmental processes, exhibits a liver bud–like phenotype with integrated vasculature, and can be used for drug development and potentially for tissue transplantation. Finally, Georg will present a mechanism for creating artificial neural networks within cells using translational regulation. This approach provides a finely tuned means of achieving non-binary, non-monotonic behaviors, paving the way for cells that can be trained and autonomously learn to perform specific behavioral tasks.
1:45 PM	Colonization & Competition in the Human Skin Microbiome Tami Lieberman Microbiome-based therapies for the skin and other body sites are a promising modality for treating disease and promoting wellness. However, a major challenge to realizing this potential is that most applied bacteria—even those taken from the same body site in healthy humans—do not remain or 'engraft' after application. In this talk, I will discuss how tracking evolution and ecology, along with the appropriate genomic and spatial resolutions, can help us design therapies with a higher chance of engraftment. I will present insights from *Cutibacterium acnes* and *Staphylococcus epidermidis*, which together comprise over 75% of the healthy facial skin microbiome and are both being actively explored as probiotics by industry.

2:15 PM

Multisensory AI for Health and Wellbeing

Paul Liang

Building multisensory AI systems that learn from multiple sensory inputs such as text, speech, video, real-world sensors, wearable devices, and medical data holds great promise for impact in supporting human health and well-being. This talk will cover our recent work on large-scale multimodal clinical benchmarks, with a million patient samples distributed across imaging, 3D/video, temporal sensing, graphs, and multimodal data. Using CLIMB, we trained QoQ-Med, the first and most powerful open-source foundation model for clinical reasoning across medical images, time-series signals, and text reports. These models enable strong reasoning and diagnosis capabilities to assist clinicians in their workflows.

2:45 PM

Networking Break

3:15 PM

Redesigning Vaccine Delivery: Scalable Technologies for Global Impact

Ana Jaklenec

Engineering translatable technologies for vaccine delivery remains a critical challenge, particularly in the context of infrastructure limitations, patient access, and cold-chain dependence across both developing regions and rural or remote settings. In this talk, I will discuss how polymer-based design and engineering can be leveraged to develop scalable solutions that bridge the gap between innovation and real-world implementation.I will highlight the development of SEAL (StampEd Assembly of polymer Layers), a platform that enables controlled, pulsatile release of biologics over days to months following a single administration. This approach supports single-injection, self-boosting vaccines and has broader implications for cancer immunotherapy. I will also present a microneedle-based vaccine printing platform designed for decentralized manufacturing of thermostable mRNA vaccines, enabling more flexible and distributed production models. Together, these technologies illustrate how advances in materials science and engineering can reshape vaccine delivery by reducing logistical constraints and enabling new paradigms for manufacturing and deployment at scale.

3:45 PM

RareNet: Using AI and Disease Models to Decode Rare Brain Disorders

Guoping Feng

RareNet is built around a global, collaborative consortium of neuroscientists, clinicians, patient advocates, and industry partners that connects fragmented research efforts, expands access to patient data and samples, and fosters trust and shared goals. Central to its mission is a therapeutic pipeline accelerator that reduces early research risk, strengthens safety and reliability, and speeds translation from discovery to clinical and commercial readiness. Led by faculty director Guoping Feng, RareNet integrates MIT expertise with advanced tools such as disease modeling and artificial intelligence to extract insights from biological and clinical datasets, enabling a deeper understanding of complex and rare brain conditions and generating insights with broad relevance across uncommon neurological disorders.

4:15 PM

MIT Startup Exchange Lightning Talks

5:00 PM

Networking Reception