iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

8 p.m. CDT, 9 p.m. EDT, Wednesday, Oct. 15, 2025
1 a.m. GMT, 9 a.m. China, Thursday, Oct. 16, 2025

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Dr. Jack A Gilbert works at University of California San Diego as a professor in Pediatrics and Scripps Institution of Oceanography, the associate vice chancellor for marine science, and director of both the Microbiome and Metagenomics Center and the Center for Soil Health. Dr. Gilbert uses molecular analysis to test fundamental hypotheses in microbial ecology. He has authored more than 450 peer-reviewed publications on microbial ecology, and co-authored "Dirt is Good," a popular science guide to the microbiome and children's health. He cofounded the Earth Microbiome Project and the American Gut Project, and is the founding editor-in-chief of mSystems journal. He founded BiomeSense Inc. to produce automated microbiome sensors. He is the UCSD PI for the National Institute of Health's $175 million Nutrition for Precision Medicine program. He is also the president of Applied Microbiology International, won the 2023 IFF Microbiome Science Prize, and in 2025 was elected to the American Academy of Microbiology.

Saving the world one microbe at a time

Abstract If we are to make a meaningful impact on inflecting the Keeling Curve and preventing the potential climate catastrophe for our species, we must deploy all of the appropriate technologies at our command. Microbial life provides a cornucopia of potential solutions, derived from the vast genetic experience acquired over 4 billion years of natural selection in the face of innumerable, diverse environmental drivers. To make the most of this opportunity, we must organize our scientific culture towards aggressive action, advocacy and assessment. We propose organizing around the UN sustainable development goals, and identifying microbial technologies that can be developed, tested and deployed at scale within the next five years. Our main aim should be to drive conservation and preservation of microbial metabolic potential, and development of these technologies to reduce climate gas emissions, and to capture climate active gasses from the atmosphere. We will use an example of leveraging enhanced plant-microbial interactions in agricultural systems to sequester >1.2 Gt CO2 per year – 7 times more than all current CO2 offset market offerings. We must engage all our scientific disciplines, especially the social sciences, to ensure that we don't just develop new tools that won't be used, but that we create a frame-shift in the sociopolitical zeitgeist to ensure that global communities see the benefit, both financially and culturally, of using these technologies to drive real change.

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Zoom webinar ID: 934 8142 2012 (zoom.us/j/93481422012)

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