

# Dr. Yoichi Kamagata

National Institute of Advanced Industrial Science and Technology (AIST)  
Tsukuba, Ibaraki 305-8560, Japan  
y.kamagata@aist.go.jp

**Biography:** *Yoichi Kamagata* is a senior researcher and Deputy Director-General of the Life Science and Biotechnology Department, National Institute of Advanced Industrial Science and Technology (AIST). He was a Director of Bio-production Research Institute at AIST from 2006 to 2014. He was a Professor of the IFO-endowed laboratory of microbiology, Hokkaido University from 2009 to 2015. He was the Editor-in-Chief of *Microbes and Environments* between 2011 and 2016. He is currently the President of Japanese Society of Microbial Ecology, the board of International Society of Microbial Ecology (ISME), the board of International Union of Microbiological Society (IUMS) and a Fellow of American Academy of Microbiology. He received his B.S. in 1981 and Ph.D. in 1986 from Hokkaido University. His main research themes are how microbes interact together based on syntrophic or synergistic associations and how yet-to-be cultured microbes could be cultivated.



## Why do microbes dislike growing on agar?

In microbiology, there is a historical question that remains unanswered: why do most of microbes elude cultivation on agar media? A disparity between total cell counts and cultivable cell counts on plates often referred to as “great plate count anomaly” has long been a central issue in cultivation of microbes. We have found that a common practice that microbiologists have employed to prepare solidifying medium has an unrecognized pitfall: when phosphate is autoclaved together with agar to prepare solid growth media, total colony counts become remarkably lower than those grown on agar plates in which phosphate and agar are separately autoclaved and mixed before solidification. Chemical analysis revealed that reactive oxygen species and some unknown inhibitory products are responsible for growth inhibition of environmental microbes. I will overview the importance of cultivation of organisms and how we can cultivate yet-to-be cultured microorganisms from natural environments.