DTU

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CENTER FOR MICROBIAL SECONDARY METABOLITES

Invited Talk

Genomic Sequencing of Individual Microbial Cells and Viral Particles: Unveiling the Hidden Diversity and Dynamics in Environmental Samples

Tuesday September 3rd. 2024
10.00-10.30 coffee and networking
10.30-11.30 Talk by **Dr. Ramunas Stepanauskas**
Lecture hall S09 in DTU building 101

By

Dr. Ramunas Stepanauskas

Senior Research Scientist, Director of the Single Cell Genomics Center, Bigelow Laboratory for Ocean Sciences

ABSTRACT: The advent of genomic sequencing of individual microbial cells has profoundly enhanced our comprehension of the coding potential and evolutionary trajectories of uncultured microbes. This technology has also illuminated the extent of genomic variability in natural environments and the complex interactions occurring within microbial communities. This presentation will delve into the recent breakthroughs in this field, with a special focus on the research conducted by my group. I will begin by outlining the fundamental concepts and methodologies employed in single-cell genomic sequencing and provide examples of their application in a wide array of microbiology research areas and study environments. The presentation will conclude with a glimpse into the future, with emerging techniques for integrated single-cell genome and phenome analyses and massively parallel sequencing of extracellular genetic elements.

BIO: Dr. Ramunas Stepanauskas' research has been focused on environmental single-cell genomics technology and infrastructure development, metabolisms of uncultured microorganisms, and the interplay between microbial ecology and evolution in complex microbiomes. In 2009, Stepanauskas founded Bigelow Laboratory's Single Cell Genomics Center (SCGC), world's first facility dedicated to genomic studies of individual microbial cells. Stepanauskas has authored more than 140 research publications, ten of which are in Cell, Nature, and Science. His research was featured in The Economist, The New York Times, and Scientific American. Stepanauskas holds elected fellow positions in AAAS and the American Academy of Microbiology. He is also a Simons Investigator in Life Sciences and a recipient of the Lithuanian Ministry of Science and Education Award for Achievements in Science. Before his tenure at Bigelow Laboratory, Stepanauskas was trained in biology at Vilnius University (Lithuania) and limnology at Uppsala University (Sweden), obtained his PhD degree in Limnology from Lund University (Sweden), and completed two postdoctoral fellowships in Marine Sciences and Ecology at the University of Georgia.