



Norm
Pace

Norman Pace Lecture

Tue., Feb. 2, 2021 • 4 to 5 pm • On Zoom

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Genomic perspectives on microbial ecology and evolution in the sea: A rising tide lifts all boats



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The past 30 years of microbial biology have witnessed many remarkable and transformative advances across its many diverse sub-disciplines. Perspectives that have particularly advanced and matured in the context of microbial biology in the past three decades include:

Evolutionary perspectives—The flowering of molecular phylogenetics allowed quantitative inference of the evolutionary relationships amongst all cellular life, and set the stage for genomic evolutionary biology.

Ecological perspectives—Community structure and variability in natural microbial communities can now be quantitatively assessed in relatively unbiased ways, ushering in a new era in microbial ecology and microbiome science.

Population biology perspectives—Culture-based and naturally occurring population genetics are now providing new mechanistic insight into the origins of genomic variability, microheterogeneity and gene exchange in microbial populations.

Systems biology perspectives—That the whole (organelle, cell, multicellular organism, population, community, ecosystem) is more than the sum of its parts has long been appreciated. Contemporary studies are now more fully exploring the interdependencies of complex, multispecies biological systems at a variety of organizational levels, that inform new understanding of emergent system function.

Taking a historical approach, this seminar will explore how perspectives in microbial biology have advanced over the past three decades, via the logical extension and application of Norman Pace's molecular-phylogenetic survey approaches. Focus will be directed towards new insights and discoveries on the evolution, ecology, population biology and systems biology of microbial assemblages in marine environments, in the context of all the above perspectives.

The **Pace lecture series** (established in 2018) honors IU alumnus (BA '64 Bacteriology, with honors) and former Professor and Distinguished Professor of Biology (1984 to 1996) Norman R. Pace, one of the world's most influential biologists. Pace revolutionized microbial ecology in ways that allowed the "unseen 99 percent" to be revealed. He is known for his groundbreaking research in biochemistry and in microbial ecology and evolution. He has been a pioneer and leader in two very different fields: (1) he co-discovered catalytic RNAs, and (2) he was a pioneer in developing the methods and philosophy of sequence-based studies of microbes in their natural environments, ushering in the age of metagenomics and microbiome research.