

**Theobald Smith Society Meeting  
ASM Branch Lecture**

**Thursday, February 23, 2012**

**5.30 pm**

**Alampi Room, Institute of Marine and Coastal Sciences,  
71 Dudley Road, Cook Campus, New Brunswick, NJ**

**Microbial Synthesis of Hydrocarbons: Mechanisms and Applications**

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Research is being conducted to elucidate and exploit the microbial enzymes and metabolic pathways involved in hydrocarbon biosynthesis. Biohydrocarbons are of interest as renewable sources of fuels and specialty chemicals. One class of hydrocarbons arise from the head-to-head condensation of fatty acids, metabolism that is encoded by the *ole* gene cluster. We have demonstrated that the genes *oleA*, *oleC* and *oleD* are required for hydrocarbon biosynthesis. The *ole* genes are found in 70 phylogenetically-divergent, bacterial species. The Ole proteins have been purified and characterized. Their specific roles, mechanisms and structures will be discussed. We have explored possible routes for the inexpensive synthesis of biohydrocarbons from readily available precursors.

**Dr. Lawrence Wackett** is Distinguished McKnight University Professor in the Department of Biochemistry, Molecular Biology and Biophysics at the University of Minnesota. He holds joint appointments in the Biotechnology Institute and the Department of Microbiology. He is co-director of the University of Minnesota Biocatalysis/ Biodegradation Database (UM-BBD) <http://umbbd.msi.umn.edu/>. Professor Wackett studies microbial biodegradation and biocatalysis in his research.

Wackett obtained his B.S. degree in Biology & Chemistry from SUNY at Brockport. He was employed as an analytical chemist prior to his graduate work. He obtained his M.S. degree in Microbiology at Louisiana State University in Baton Rouge and his Ph.D. in Microbiology at the University of Texas at Austin with David Gibson. Wackett was an NIH Postdoctoral Fellow with Christopher Walsh in the Chemistry Department at MIT from 1984-7. Dr. Wackett started as an Assistant Professor at the University of Minnesota in 1987. He became the Distinguished McKnight Professor of Biochemistry at Minnesota in 2001.

He is a Fellow of the American Association for the Advancement of Science, the American Academy of Microbiology, and is an ASM Foundation Lecturer. Wackett co-authored the textbook *Biocatalysis and Biodegradation*, sold by ASM Press. The book has been translated into Chinese and is now also available from Chemical Industry Press in Beijing.