Mar 3rd, 4:00 PM - 5:00 PM

Bacterial Solutions to Challenging Problems: New Approaches to Bioenergy, Bioremediation, and Biomanufacturing

Ellen Neidle
*University of Georgia*

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The Doctoral Program in Environmental Science & Management and MSU Sustainability Seminar Series Present:

Bacterial Solutions to Challenging Problems: New Approaches to Bioenergy, Bioremediation, and Biomanufacturing

WHEN: March 3rd, 4:00 pm WHERE: CELS 120 lecture hall

Ellen Neidle
University of Georgia

After growing up in Teaneck, N.J., Ellen Neidle studied at Yale University, where she earned her B.S. and Ph.D. degrees. Science was always of interest, but it was not until working in a Microbiology lab that her career focus became clear. Since 1994, she has been a professor at the Univ. of Georgia, where she shares her enthusiasm for scientific discovery with students and researchers. Recent collaborations with colleagues at the National Renewable Energy Laboratory have reinforced her optimism that biological approaches are feasible to address difficult environmental problems.

Microbes play a critical role in Nature due to their ability to produce and degrade a vast array of diverse chemicals. This powerful metabolic versatility holds great promise for biotechnology. To harness such potential requires multidisciplinary scientific knowledge and application. This seminar will describe a novel approach to adaptive laboratory evolution in which a soil bacterium can be engineered to broaden its natural catabolic activities. The method, Evolution by Amplification and Synthetic Biology (EASy), exploits the unique genetic system of a non-pathogenic soil bacterium, *Acinetobacter baylyi* ADP1. The long-term goal of the research is to reduce our dependence on fossil fuels by using renewable biomass as a feedstock and generating bacteria that can convert this material to valuable chemicals for use in biomanufacturing. Currently, the bioprocessing of lignocellulosic material focuses on converting cellulose to biofuels, while leaving lignin as a vastly underutilized resource. To make such biofuel production economically feasible, the EASy method is being used to facilitate the bacterial conversion of lignin to valuable compounds. Additional experimental efforts are developing bacteria that can degrade plastic waste.

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