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Research strategies to generate economically viable biofuels from cellulosic biomass: Approaches and results from the BioEnergy Science Center (BESC)

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The challenge of producing and converting sustainable cellulosic biomass into fuels presents the opportunity for science and technology to make an appreciable national and indeed global impact in the next 20 years. However, overcoming the inability to easily access the sugars and other monomers from cellulosic sources in order to make fuels or other products, or recalcitrance, is one of the major challenges to cost-effective biofuel production. This is a central theme of the US DOE-funded BioEnergy Science Center. Transformative advances to understand biomass recalcitrance require detailed scientific knowledge of (1) the chemical and physical properties of biomass that influence recalcitrance, (2) how these properties can be altered by engineering plant biosynthetic pathways, and (3) how such changes affect biomass-biocatalyst interactions during deconstruction by enzymes and microorganisms. This talk will illustrate how the BESC Team is applying the knowledge gained from these activities to develop a set of approaches on both the plant and microbial components to improve generation of fuels from biomass resources.

Biography

Paul Gilna is currently serving as the Director of BioEnergy Science Center, Oak Ridge National Laboratory USA. Previously he held a position at the California Institute for Telecommunications and Information Technology and the Center for Research in Biological Systems, both located at the University of California, San Diego. At San Diego he served as Executive Director for the Community Cyber infrastructure for Advanced Marine Microbial Ecology Research and Analysis project. Previously, he was Director of the Joint Genome Institute at Los Alamos National Laboratory and has worked at the National Science Foundation. His research interests range from molecular biology to microbiology to computational biology.

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