CSU PHYSICS COLLOQUIUM

"Enabling Pathways Toward Sustainable Life on Earth with Synthetic Biology: Essential needs from Physics, Math, Engineering, and Biology"

June Medford

Colorado State University

Monday, March 6th at 4:00 PM

120 Engineering (Hammond Auditorium)

Abstract

Synthetic biology is a relatively new field with its origin traced to the year 2000 when scientists at MIT and Caltech recognized that life (biology) could be programmed in a manner similar to that of electronics, IF we remember to use the principles of mathematics and physics. This has led to a rapid proliferation of research and applications that are heavily dependent on concepts from physics, math, computer science and engineering. Moreover, development of an area called the "BioEconomy" is thought to be as impactful to the world's economic development as computers in the 1970s were for today. I will describe the origin of synthetic biology, how it enables us to program life, and provide examples from the synthetic biology community of how this has been done and its implications. In addition, I will describe our synthetic biology work on plants where these platforms are able to desalinate and "pump" freshwater. Synthetic biology provides a focus for both Research and Teaching in physics, math, chemistry and biology as such it could form a CORE means of interaction for the future of the College of Natural Sciences.

Biography

June Medford is a Professor in the Biology Department at Colorado State University, where she has been on the faculty since 1996.. She earned a B.S. in Botany from the University of Maryland, a Ph.D. in Biology from Yale University, and was a postdoc with Monsanto's Plant Molecular Biology Group. Dr. Medford is at the forefront in developing methodologies and applications for synthetic biology implemented in plants. She has founded several companies in the area of plant synthetic biology, and she is active in promoting the potential of plant synthetic biology to a wide audience of scientists and policy makers.