Plant-Microbe Interactions: An Overview of Basic Research Supported by the DOE Office of Science

Symbiosis Conference:
Expanding Commercialization of Mutualistic Microbes to Increase Bioenergy Crop Production
DOE EERE BETO
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DOE Office of Science: Science with a Mission

- Advancing the Energy, Economic, and National Security of the United States

Office of Biological and Environmental Research (BER)

- Mission: Support foundational science to understand complex biological, climatic, and environmental systems across spatial and temporal scales.
Department of Energy Office of Science

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Acting Director

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- Biological and Environmental Research (BER)
  Sharlene Weatherwax, Associate Director
- High Energy Physics
- Nuclear Physics
- Fusion Energy Sciences
- Advanced Scientific Computing Research
- Biological Systems Science
  Todd Anderson, Director
- Climate and Environmental Sciences
  Gary Geernaert, Director
### Biological and Environmental Research

Understand complex biological, climatic, and environmental systems across spatial and temporal scales.

BER provides the foundational science to:

- Support the development of biofuels as major, secure, and sustainable national energy resources
- Understand the potential effects of greenhouse gas emissions on Earth’s climate and biosphere and the implications of these emissions for our energy future
- Predict the fate and transport of contaminants in the subsurface environment at DOE sites
- Develop new tools to explore the interface of biological and physical sciences
Biological and Environmental Research Approach

• Understanding complex biological and environmental systems across many spatial and temporal scales:
  – From the sub-micron to the global
  – From individual molecules to ecosystems
  – From nanoseconds to millennia

• Integrating science by tightly coupling theory, observations, experiments, models, and simulations

• Supporting interdisciplinary research to address critical national needs

• Engaging national laboratories, universities, and the private sector to generate the best possible science