

## National Plant Microbial Germplasm System: A National Initiative to Ensure Essential Resources for Research, Education, and Economic Competitiveness

- ▶ **Background:** Culture collections of plant-associated microbes are an essential resource foundation for U.S. science. Microbial collections contribute to improving health, enhancing national security, protecting commerce and trade, studying climate and ecosystems, and understanding our environment. They are also used to solve practical challenges to agricultural systems and play diverse and critical roles in understanding plant resistance to diseases. These public and privately held resources link past and present disease epidemics and they facilitate identification of emerging diseases, provide data essential for forensic investigations, and are useful in developing strategies to control plant diseases that impact U.S. agriculture and the nation's economy. Industry and academia use the resources to produce valuable pharmaceuticals, industrial enzymes for food safety applications, and as a foundation for crop breeding. They also are essential to understand microbial global diversity and dynamics. **Our microbial culture collections are at risk** as the United States lacks a coordinated national system to protect, preserve, and enhance these resources. Instead, plant associated microbes are largely maintained in geographically dispersed public and private laboratories with uncertain funding. A long-term management plan is essential to ensure maintenance of collections. This plan should be coordinated with international efforts, including the World Federation of Culture Collections and the Global Biological Resource Center Network. While the United States has world-class systems to preserve genetic and human-associated micro-organisms, there is no mechanism to provide long-term availability to plant-associated microbes.
- ▶ **Solution:** Federal funding is needed for a National Plant Microbial Germplasm System (NPMGS) to preserve these irreplaceable and valuable resources. The NPMGS will consist of distributed, expert-curated, taxon-specific repositories linked through a searchable common cyber-database with a central biobank to preserve collections. This cost-effective network of linked collections will ensure that reference strains are preserved and accessible to the broader scientific community, as well as law enforcement and homeland security officials. The infrastructure for this national system will be connected to active, existing research programs through a network of federal, academic, and industry partners, including the U.S. National Center for Genetic Resources Preservation and its Germplasm Resources Information Network (GRIN).
- ▶ **Specific Request:** Provide resources to support two positions (a database specialist and a curator/nomenclature scientist) at the USDA-ARS National Center for Genetic Resources Preservation (NCGRP) at Fort Collins, CO. These positions as well as increased hardware and software are needed to preserve/curate and ensure safe storage of the microbial resources.
- ▶ **Specific Request:** Consistent with the policy on scientific collections recently addressed in the October 6, 2010, memorandum to heads of executive departments and agencies from the President's science advisor, Dr. John Holdren, APS requests, as a first step, that the USDA manage, document, fund, share, and ARS collections by directing ARS scientists to back-up microbial collections at NCGRP.
- ▶ **Contacts:** APS Public Policy Board (PPB) members **Jan Leach** (jan.leach@colostate.edu) and **Rick Bennett** (rbennett@uark.edu) are available to answer any additional questions.