

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 represent 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 a myriad of practical challenges to agricultural systems and play diverse and critical roles in understanding plant resistance to diseases. These public and privately held resources are a critical link between past and present disease epidemics and facilitate identification of emerging diseases, provide data essential for forensic investigations, and are useful in developing strategies to control plant diseases that impact the vitality of U.S. agriculture. 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** because the U.S. 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. As a consequence, many of these collections have been lost, and more are at risk. A long-term management plan, as discussed at the USDA, Agricultural Research Service customer stakeholder workshop in November 2011, is essential to ensure maintenance of collections and provide long term availability for plant associated microbes. During that workshop key stakeholders identified a critical need for microbial databases that integrate information into a global network.
- ▶ **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 repositories linked through a searchable common cyber-database with a central biobank to preserve collections. 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-Global (GRIN-Global).
- ▶ **Specific Request:** Provide resources to adapt GRIN-Global to include specialty fields and identifiers for plant-associated microbes. APS requests that training be provided for support positions (database specialist and curator/nomenclature scientist) at the USDA-ARS National Center for Genetic Resources Preservation (NCGRP) at Fort Collins, CO with increased hardware and software, to preserve/curate and ensure safe storage of the microbial genetic resources. ARS scientists should be directed to back-up microbial collections at the NCGRP as a central location to ensure that reference strains are preserved and accessible in a secure location.
- ▶ **Justification:** Consistent with the policy on scientific collections recently addressed in the October 6, 2010 memorandum to the heads of executive departments and agencies from the President's Science Advisor, Dr. John Holdren, the USDA should "manage, document, fund, share..." ARS collections according to the policy.
- ▶ **Contacts:** APS PPB members **Jan Leach** (jan.leach@colostate.edu) and **Rick Bennett** (rbennett@uark.edu) are available to answer any additional questions.

