



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 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 publicly and privately held resources are critical in developing strategies to control plant diseases that impact the vitality of U.S. agriculture, represent an important link between past and present disease epidemics, facilitate identification of emerging diseases, and provide data essential for forensic investigations. Microbes are used in a variety of applications such as production of pharmaceuticals and industrial enzymes and in crop breeding applications. Validated microbe samples are also 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 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. In 2012, a consortium of scientists formed the U.S. Culture Collections Network (USCCN) funded by a NSF Research Coordination Network grant. The USCCN is developing a framework to promote maintenance of collections and provide long term availability of plant associated microbes with active participation by USDA and NSF supported research collections.

- ▶ **Solution:** APS encourages the ARS to expand efforts to establish a sustainable long-term national culture collection network and adapt Germplasm Resources Information Network-Global (GRIN-Global) with supporting information on plant-associated microbial collections as an element of the overall national program for culture collection preservation. As the intramural research arm of the USDA-REE, the ARS is well positioned to engage in the USCCN and increase national efforts for the long-term storage of publicly held microbial resources including conservation and expanded utilization of critical plant pathogen collections.
- ▶ **Specific Request:** Sustained support is needed from the USDA-ARS National Center for Genetic Resources Preservation at Fort Collins, CO and from the USDA-ARS National Center for Agricultural Utilization Research at Peoria, IL, to acquire and conserve priority microbial genetic resources and expand their utilization. By active participation of these centers of excellence, both in the USCCN and in the overall effort to establish a national culture collection framework, technologies generated will connect to existing federal, academic and industry research programs. The resulting microbial database information will be available through the newly formed GRIN-Global.
- ▶ **Justification:** In the words of Secretary Vilsack “agricultural research has a multitude of benefits...it strengthens our economy and lays the groundwork to create jobs...it helps farmers and ranchers conserve the natural resources we all hold dear*”. Microbial diversity is the foundation of the coming bio-economy and the U.S. requires a robust system to preserve and characterize existing genetic materials for research.
*Research Strengthening Agriculture's Resilience September 7, 2012
<http://audioarchives.oc.usda.gov/radnewsdetail.asp?ID=18825>
- ▶ **Contacts:** APS PPB members Jan Leach (jan.leach@colostate.edu), Kevin McCluskey (mclluskeyk@umkc.edu) and Rick Bennett (rbennett@uark.edu) are available to answer any additional questions.