

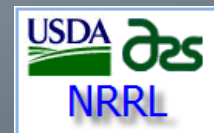
# Are We Closer to Establishing a National Plant Microbial Germplasm System?

## Status and Future Prospects

Rick Bennett  
Department of Plant Pathology  
University of Arkansas  
NPDRS April 15, 2013

# Major Collections in the US

- While the US has numerous collections, there is no uniform system for supporting microbial germplasm repositories

The logo for the ARS Collection of Entomopathogenic Fungal Cultures, featuring a stylized orange and blue branching structure above the text "Fungi and Bacteria".

**ARS Collection of Entomopathogenic Fungal Cultures**  
By Richard A. Humber

**Location** U.S. Department of Agriculture, Agricultural Research Service, U.S. Plant, Soil, and Nutrition Laboratory, Tower Road, Ithaca, NY 14853-2901

**Loans** Cultures are distributed to recognized institutions and scientists

**Associated Libraries** 2,000 books, journals, and reprints; across the street from the E.A. Steinhaus collection of more than 10,000 reprints on invertebrate pathogens and pathology

**Number of accessions** 5,500 isolates; ca. 375 fungal species from 900 hosts

The logo for INVAM, featuring a stylized tree and a globe above the text "INVAM".

**INVAM**  
International Culture Collection of  
(Vesicular) Arbuscular Mycorrhizal Fungi

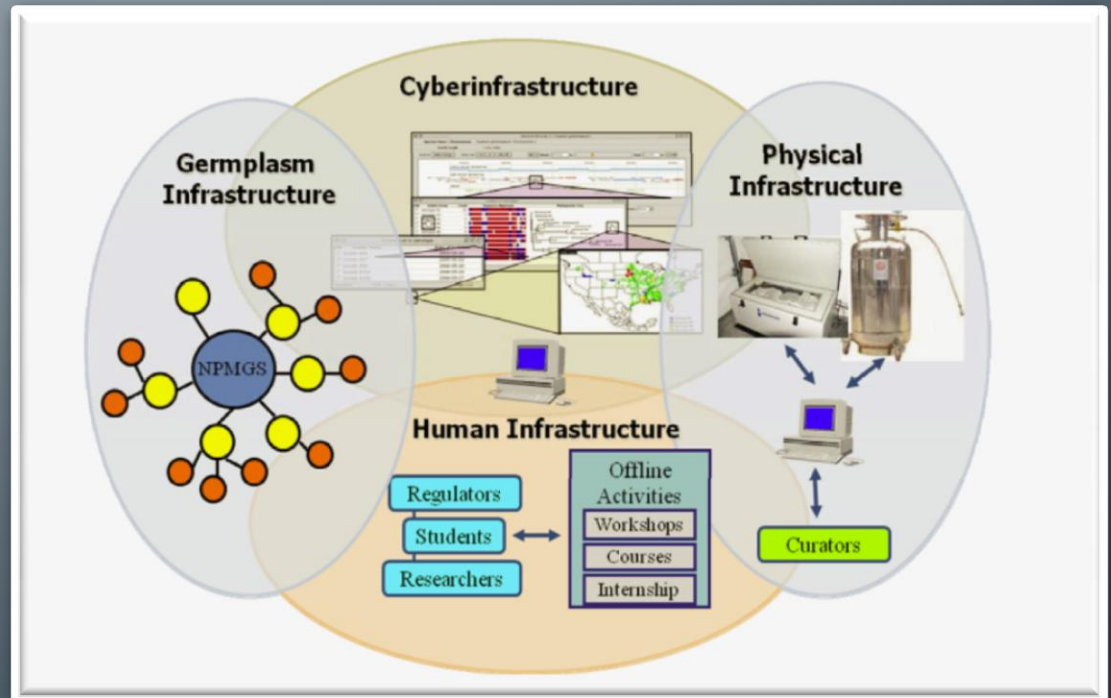
The logo for E. coli Genetic Resources at Yale, featuring the text "E. coli Genetic Resources at Yale" above "CGSC, The Coli Genetic Stock Center".

**E. coli Genetic Resources at Yale**  
**CGSC, The Coli Genetic Stock Center**

# Proposed U.S. System

## National Plant Microbial Germplasm System

- USDA
- Parallel to National Plant Germplasm System (NPGS)
- GRIN-Global



# Overview of Plan for NPMGS

## Establishment of a system of plant-associated microbial resources

- Composed of multiple elements:
  - Traditional ex situ culture collections
  - Libraries of molecular components
  - Centralized searchable database and supporting IT tools
  - Centralized back up facility

## Centralized Strain Information Database

- Searchable database for plant-associated microbes in USDA-ARS National Plant Germplasm System (NPGS), Global Germplasm Resources Information Network (GRIN-Global)
- Data on acquisition and characteristics
- Includes support for nomenclature scientists to update accuracy of scientific names
- Data to include identifiers such as; plant hosts, differentials, symptoms, toxin production, epidemiological data, etc.

Research Coordination Network:  
**A community of *ex situ* microbial  
germplasm collections**



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# Plans for the RCN

- Formation of the U.S. Culture Collection Network (USCCN)
  - framework to implement a long-term management plan for the NPMGS. [www.usccn.org](http://www.usccn.org)
- Workshops and Exchanges
  - held at active collections
- Cyber-infrastructure
  - cloud computing
- Backup planning
  - at NCGRP
- Engagement
  - international partners
- Institutionalize long term support



# U.S. Culture Collection Network

- 1<sup>st</sup> USCCN meeting- Sept. 5-7, 2012 @ UMKC
  - 28 participants: best practices for preservation, biosecurity/regulatory issues,
  - Communication/Coordination





# U.S. Culture Collection Network Cont.

- USCCN workshop – May 30-31, 2013
  - @ ARS, National Center for Agri. Utilization Research (NCAUR), Peoria
  - implementation of preservation practices, strain validation, data management
- 2nd USCCN meeting – Sept. 2013, Boothbay, ME

# Culture Collections Backed-Up NCGRP-Ft. Collins

- >30% of microbe collections at NCAUR-Peoria
  - including 1,600 isolates of *Listeria*
- >2,000 isolates of yeasts from Phaff collection-Davis, CA
- Bacillus Genetic Stock Center, OSU
  - 1,871 isolates of *B. subtilis*.
- 542 isolates of *Fusarium* – FGSC, UMKC



# Culture Collections Backed-Up

## NCGRP-Ft. Collins

- 2,000 isolates of fungal pathos-insect/nema-ARS, Ithaca
- Smut pathogens - ARS, Aberdeen, ID
- Misc. fungi, viruses – Syngenta
- *Penicillium* isolates - ARS, Pullman
- *Rhizobium* isolates - ARS, Beltsville
- *Rhizoctonia* isolates – ARS, Ft. Collins

# Culture Collections-Pending

- *E. coli* – Genetic Stock Center, Yale Univer.
- Antigonistic bacteria & yeast –ARS, AFRS.
- Misc. fungi – H.L. Barnett collection, WVU
- Bacillus Genetic Stock Center, OSU
- ARS, Ames collection
- *Geosmithia* spp. - CSU
- Other “at risk” collections



# Thank You!

- Latest info available on [www.usccn.org](http://www.usccn.org)
- Questions and answers – I'll take either...

