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

Status and Future Prospects

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Major Collections in the US

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

phaff collection UCDAVIS

addgene
A better way to share plasmids

Fungal Genetics Stock Center

Bacillus Genetic Stock Center

ATCC

Fusarium Research Center

USDA ARS NRRL

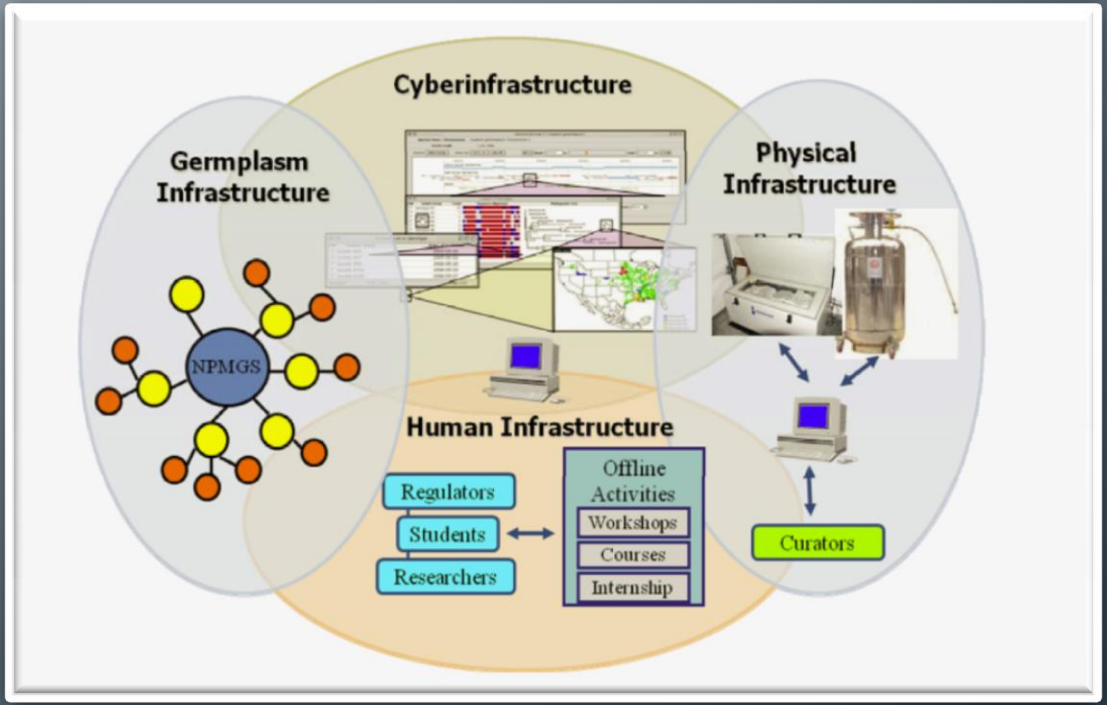
INVAM
International Culture Collection of (Vesicular) Arbuscular Mycorrhizal Fungi

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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May 2012-April 2017

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
- 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

- 1st 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. subtillis.*
- 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
- *Penicillum* 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
- Questions and answers – I'll take either…