

# The Microfungi Collections Consortium:

## A Networked Approach to Digitizing Small Fungi with Large Impacts on the Function and Health of Ecosystems

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iDigBio Summit  
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# What are microfungi?

**Kingdom Amoebozoa**

**Phylum Mycetozoa**

**Class Myxogastria (5 orders, 14 families, 62 genera and 888 species)**

**Class Dictyostelia (1 order, 2 families, 4 genera, 93 species)**

~4500 genera

~56,000 species

**Kingdom Stramenipila**

**Phylum Oomycota (1 class, 13 orders, 25 families, 106 genera, 956 species)**

**Kingdom Eumycota (Fungi)**

**Phylum Ascomycota**

**Subphylum Pezizomycotina**

**Class Arthoniomycetes (1 order, 4 families, 78 genera, 1608 species)**

**Class Dothideomycetes (11 orders, 90 families, 1302 genera, 19,010 species)**

**Class Eurotiomycetes (10 orders, 27 families, 281 genera, 3401 species)**

**Class Geoglossomycetes (all macrofungi)**

**Class Laboulbeniomycetes (2 orders, 5 families, 151 genera, 2072 species)**

**Class Lecanoromycetes (all lichens)**

**Class Leotiomyces (5 orders, 19 families, 641 genera, 5587 species; ~100 species of macrofungi in Leotiales)**

**Class Lichinomycetes (all lichens)**

**Class Orbiliomycetes (1 order, 1 family, 12 genera, 288 species)**

**Class Pezizomycetes (all macrofungi)**

**Class Sordariomycetes (15 orders, 64 families, 1119 genera, 10,564 species; ~1000 species of macrofungi in Clavicipitales, Hypocreales, and Xylariales)**

**Subphylum Saccharomycotina (1 class, 1 order, 13 families, 88 genera, 906 species)**

**Subphylum Taphrinomycotina (4 classes, 4 orders, 5 families, 10 genera, 140 species)**

**Phylum Basidiomycota**

**Subphylum Agaricomycotina (all macrofungi)**

**Subphylum Pucciniomycotina (8 classes, 18 orders, 36 families, 247 genera, 8324 species)**

**Subphylum Ustilaginomycotina (1 class, 3 orders, 12 families, 62 genera, 1113 species)**

**Phylum Blastocladiomycota (1 class, 1 order, 5 families, 14 genera, 179 species)**

**Phylum Chytridiomycota (2 classes, 4 orders, 14 families, 105 genera, 706 species)**

**Phylum Glomeromycota (1 class, 4 orders, 9 families, 12 genera, 169 species)**

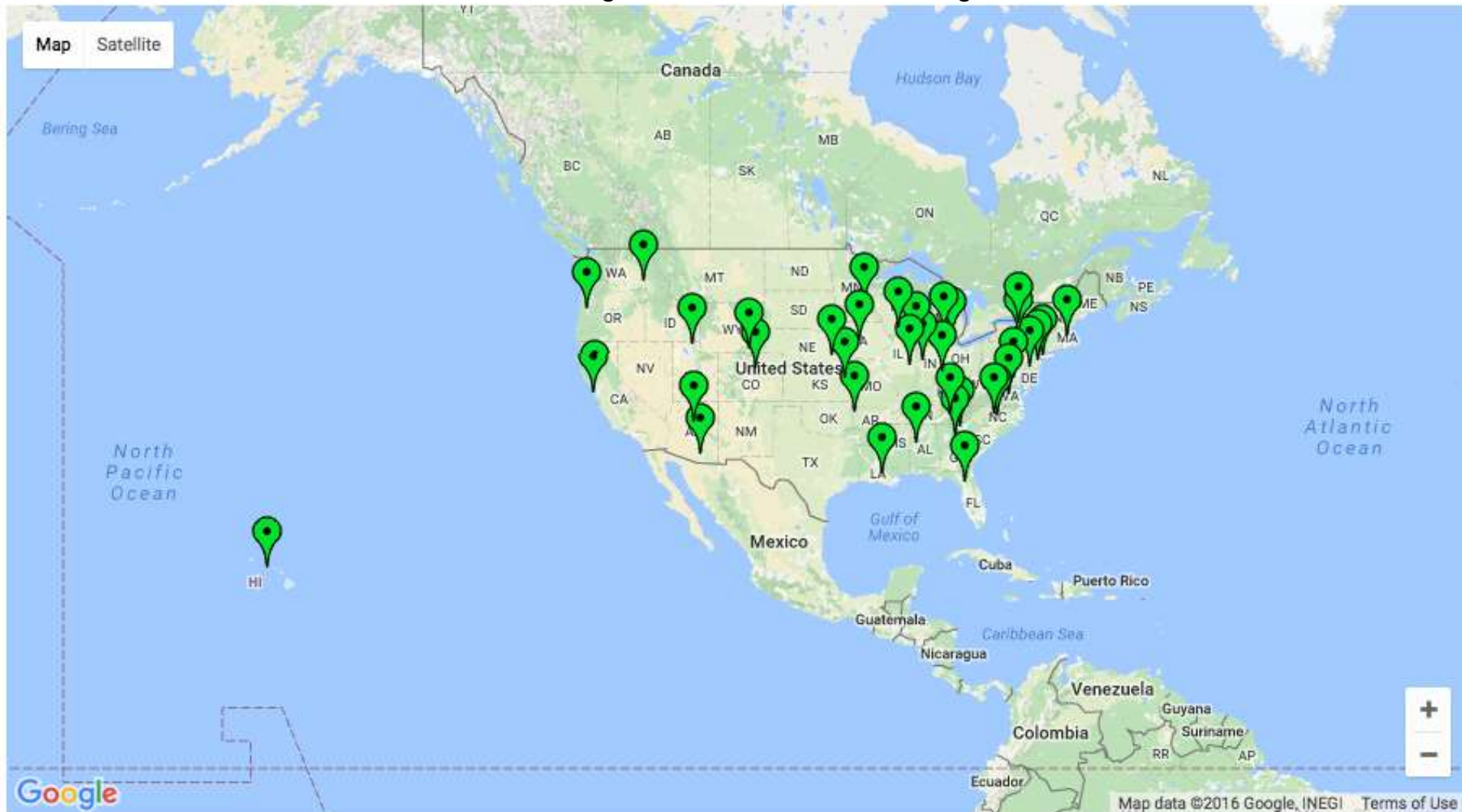
**Phylum Neocallimastigomycota (1 class, 1 order, 1 family, 6 genera, 20 species)**

**Phylum Zygomycota (4 subphyla, 10 orders, 27 families, 168 genera, 1065 species)**

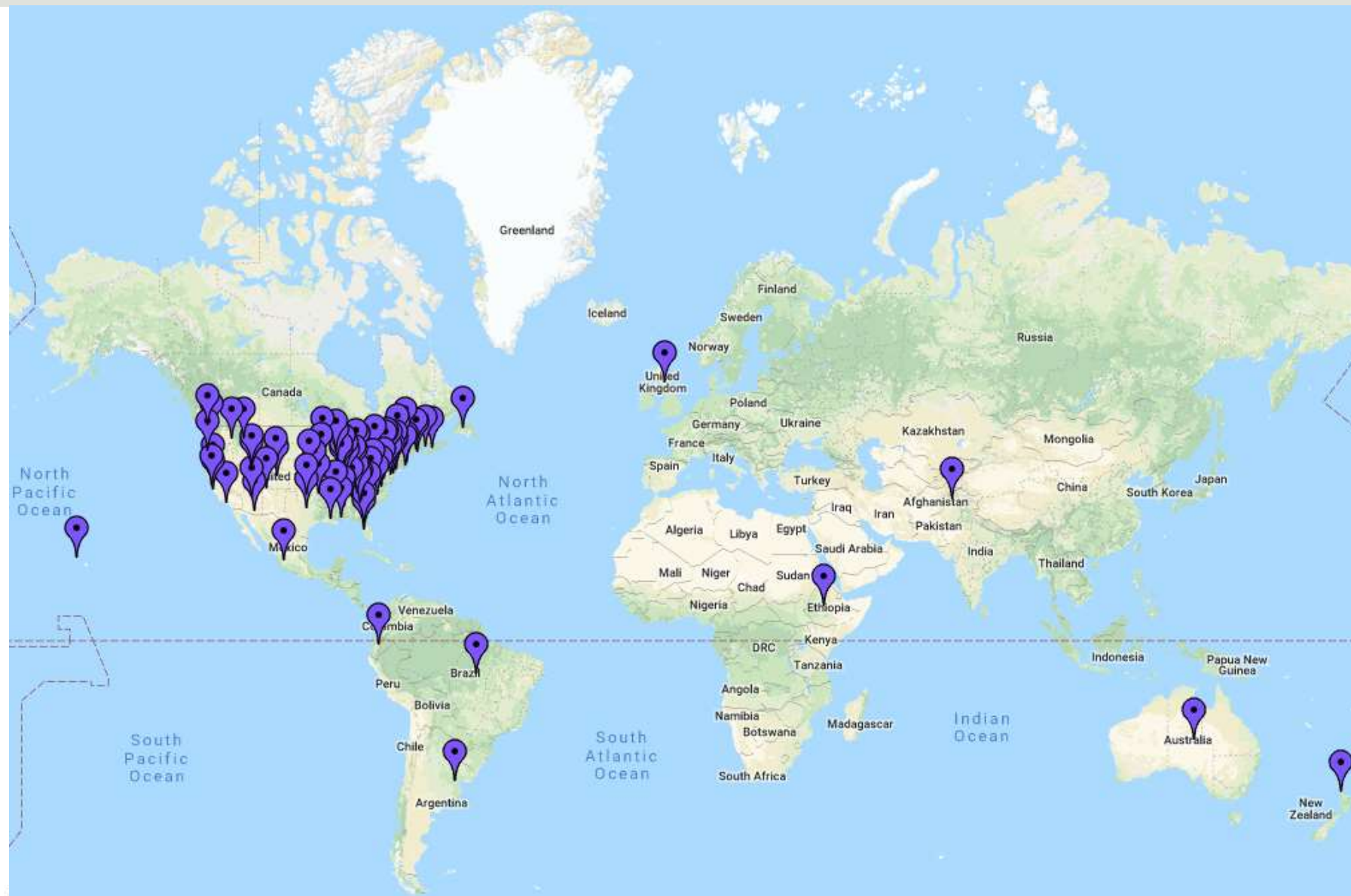
# Participants (38 institutions)

162 people, including 27 PIs, 18 Project Managers, 21 paid staff, 8 graduate students, 78 undergraduate students, and 10 volunteers

**MiCC Participants Map**



# Collections (90 institutions; 59 Live, 31 Snapshot)





## INHS Team

### INHS MiCC Team



Andrew Miller  
PI



Diego Barroso  
Project Manager



Phil Anders  
Biological  
Informatician



Scott Bates  
Project  
Consultant



Lee Crane  
Exsiccata and Nomenclature  
Expert



Ashley Maras  
Transcriber



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**Microfungi** comprise a loosely defined artificial group of Fungi and fungal-like organisms that include such things as bread molds, plant pathogens, powdery mildews, rusts, slime molds, and water molds. In general, these fungi are difficult or impossible to see with the unaided eye. A **taxonomical classification of microfungi** suggests the group contains 4468 genera and 55,989 species.

Microfungi are ubiquitous throughout the world and some cause major economic impacts as pathogens of animals, plants, and other fungi. Many **microfungi** are harmless saprobes, breaking down large complex chemical structures such as lignin found in wood into usable simple compounds. Despite their importance, little is known about the diversity, distribution, ecology, or host relationships of microfungi throughout the United States.

The Microfungi Collections Consortium (MiCC) is a collaborative effort among **38 US institutions** to digitize specimen label data from 2.3 million North American microfungi specimens and make these data available online to the broader community through the **MyCoPortal** website. A proposal submitted in October 2014 to the National Science Foundation's **Advancing Digitization of Biodiversity Collections** program was **granted in July 2015**. **Dr. Andrew N. Miller** of the **Illinois Natural History Survey** serves as the Project Leader.



**Microfungi Community**  
Create Call to Action

Timeline About Photos Likes More

212 likes +7 this week  
Scott T. Bates and 50 other friends

88 post reach this week

View Pages Feed  
See posts from other Pages

Invite friends to like this Page

**Find New Customers**  
Connect with more of the people who matter to you  
[Promote Page](#)

**ABOUT**

- Microfungi comprise a loosely defined artificial group including bread molds, plant pathogens, powdery mildews, rusts, slime molds, and water molds.
- <http://www.microfungi.org/> [Promote Website](#)

**PHOTOS**

**Microfungi**  
Published by Elizabeth Miao (1) · Yesterday at 7:25am · [🌐](#)

**Mycorrhizal fungi at work!**

**Fungi can help monarchs self-medicate**  
By changing milkweed chemistry, soil microbes alter the spread of a crippling monarch parasite  
[NEWS.SCIENCEDIARY.ORG](#)

64 people reached [Boost Post](#)

[Like](#) [Comment](#) [Share](#)

Christina Lab likes this.

**Microfungi**  
Published by Elizabeth Miao (1) · September 30 at 4:51pm · [🌐](#)

"We propose that the current rapid warming in the maritime Antarctic...will facilitate the colonization of soil by a wider diversity of fungi than at present,



# MYCOLOGY COLLECTIONS PORTAL

Home Explore Crowdsourcing Checklist Projects Other Resources Acknowledgements

Welcome Andrew! My Profile Logout Sitemap

## Welcome to the Mycology Collections data Portal

The Mycology Collections data Portal (MyCoPortal) is more than just a web site - it is a suite of user-friendly, web-based data access technologies to aid taxonomists, field biologists, ecologists, educators, and citizen scientists in the study of fungal diversity. The data are derived from a network of universities, botanical gardens, museums, and agencies that provide taxonomic, environmental, and specimen-based information. Using the Symbiota (<http://symbiota.org>) system of virtual online floras, these data are directly accessible to dynamically generate geo-referenced species checklists, distribution maps, and interactive identification keys, all linked with a rich collection of digital imagery documenting fungal diversity of North America.

### Fungus of the Day



What is this fungus?

[Click here to test your knowledge](#)



Please join the Mycology Collections Portal as collaborators or regular visitors, and send your feedback to [mycoportal.contact@gmail.com](mailto:mycoportal.contact@gmail.com).

### News and Events

- **NSF Press Release (#15-092)** - NSF awards fifth round of grants to enhance America's biodiversity collections
- **NSF Press Release (#12-082)** - US National Science Foundation awards support for The Macrofungi Collection Consortium, a collaboration of 35 institutions in 24 states for the purpose of databasing some 1.4 million dried scientific specimens of macrofungi (NSF ADBC 1206197).
- **December 2013** - 1,546,358 occurrence records supplied by 31 different data providers have been integrated into MyCoPortal.
- **NEW** - MaCC records are now part of the Zooniverse project *Notes from Nature*. Please help us by transcribing specimen labels ([link](#)).
- Image provided by New York Botanical Garden.

[www.mycportal.org](http://www.mycportal.org)




## MYCOLOGY COLLECTIONS PORTAL

### Selected Collection Statistics

#### Display List of Collections Analyzed

- 4,005,792 occurrence records
  - 1,689,603 (42%) georeferenced
  - 1,898,191 (47%) imaged
  - 3,279,348 (82%) identified to species
  - 1,675 families
  - 8,277 genera
  - 112,399 species
  - 118,668 total taxa (including subsp. and var.)
- MiCC**
- 1.1M digitized records (1.2M)
  - 1.4M existing records (1.1M)
- 2.5M records total**

Show Statistics per Collection 

**\*including 117,066 type specimens  
and 2301 records linked to/from GenBank**

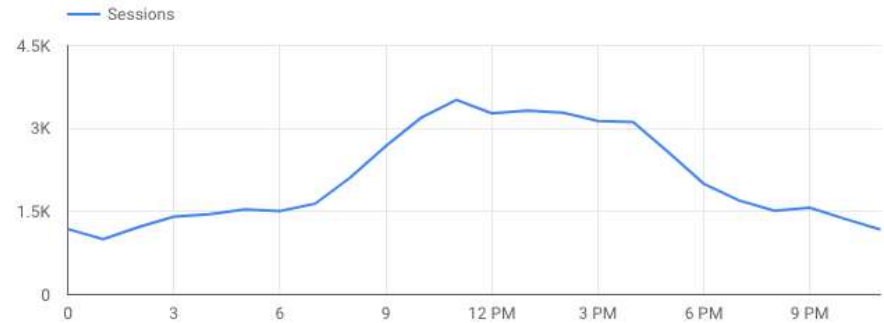
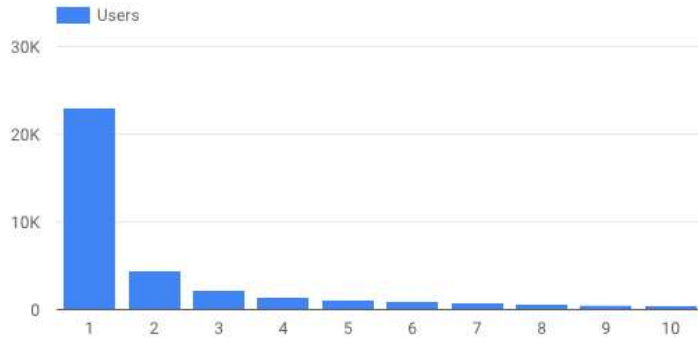
## MyCoPortal Data Portal Statistics

www.mycportal.org

Data from Google Analytics

Users	New Users	Sessions	Number of Sessions per User	Pageviews	Pages / Session	Avg. Session Duration	Bounce Rate
24,220	23,106	50,508	2.09	152,171	3.01	00:03:23	55.49%

## MYCOLOGY COLLECTIONS PORTAL



	Country	Sessions ▾
1.	United States	22,283
2.	Spain	2,557
3.	France	2,046
4.	Canada	1,931
5.	Italy	1,697
6.	Germany	1,349
7.	Mexico	885
8.	India	866
9.	Brazil	824
10.	Japan	772
11.	Russia	771

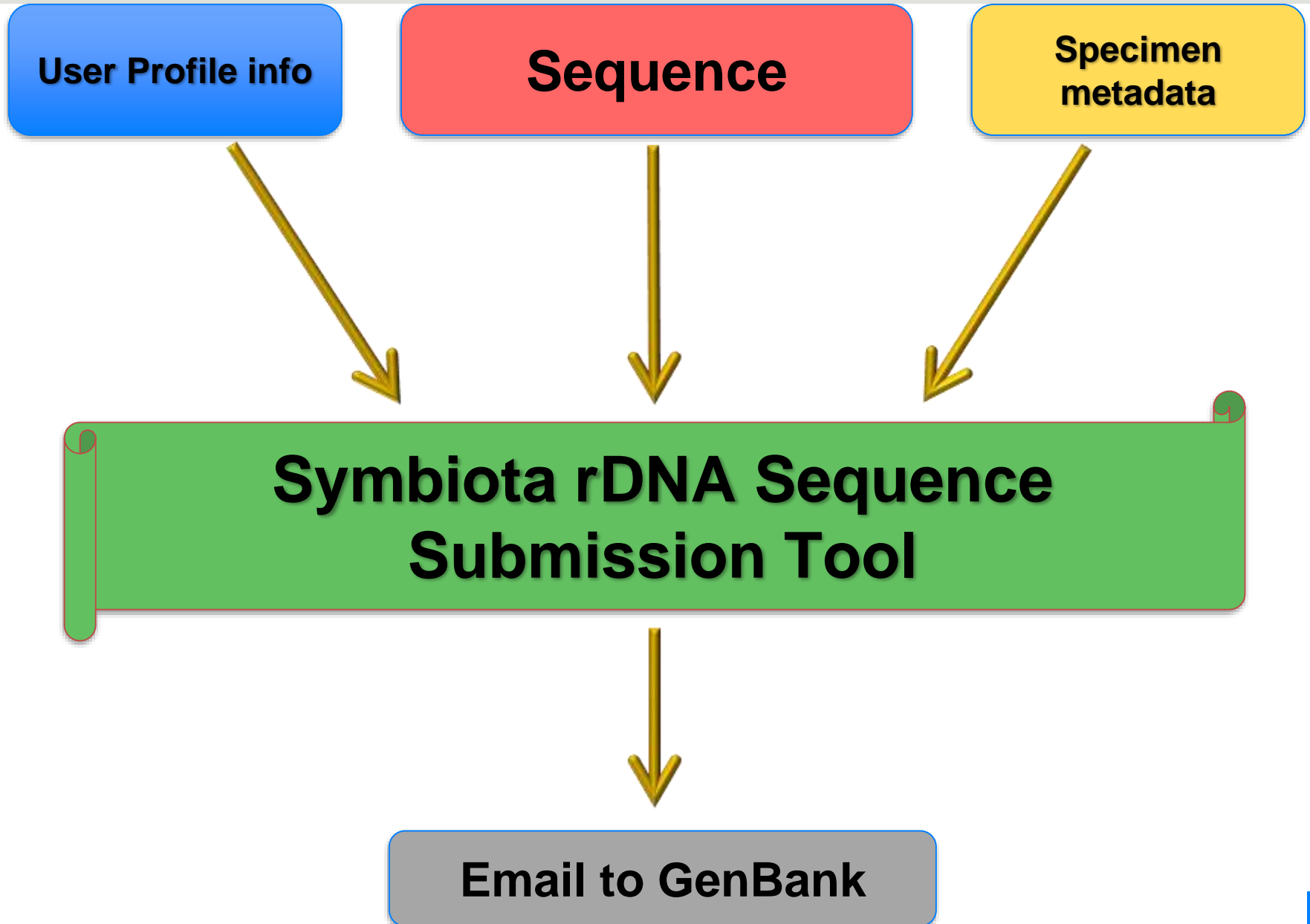
1 - 100 / 161 < >

Google Scholar

MyCoPortal.org cited 82 times  
– 20 peer-reviewed publications

Jan 1, 2018 - Sep 30, 2018 ▾

# Highlight





## MSU Advanced Mycology course - Fall 2018 (MSC)

PLP 847 Advanced Mycology: Systematics, identification, physiology, genetics, and molecular biology of plant pathogenic fungi.

**Contact:** Gregory Bonito (bonito@mail.msu.edu)

**Collection Type:** Observations

**Management:** Live Data managed directly within data portal

**Global Unique Identifier:** 018acd90-d7ec-4516-979f-433f62b98459

**Live Data Download:** DwC-Archive File

**Digital Metadata:** EML File

**Usage Rights:** CC0 1.0 (Public-domain)



## Purdue University Northwest Mycology (PNW)

**Contact:** (stbates@purdue.edu)

**Collection Type:** General Observations

**Management:** Live Data managed directly within data portal

**Global Unique Identifier:** b052ed6d-6ae3-44c7-8863-941ee45fe941

**Live Data Download:** DwC-Archive File

**Digital Metadata:** EML File

**Usage Rights:** CC0 1.0 (Public-domain)



## Fungal Biology and Biodiversity STEM Educational Module Development Workshop



MyCoPortal helps save life!

