The Untapped Potential of ATCC's Fungal Collection

Shahin S. Ali, PhD, and Victoria Knight-Connoni, PhD
ATCC, Gaithersburg, MD 20877
Email: sali@atcc.org

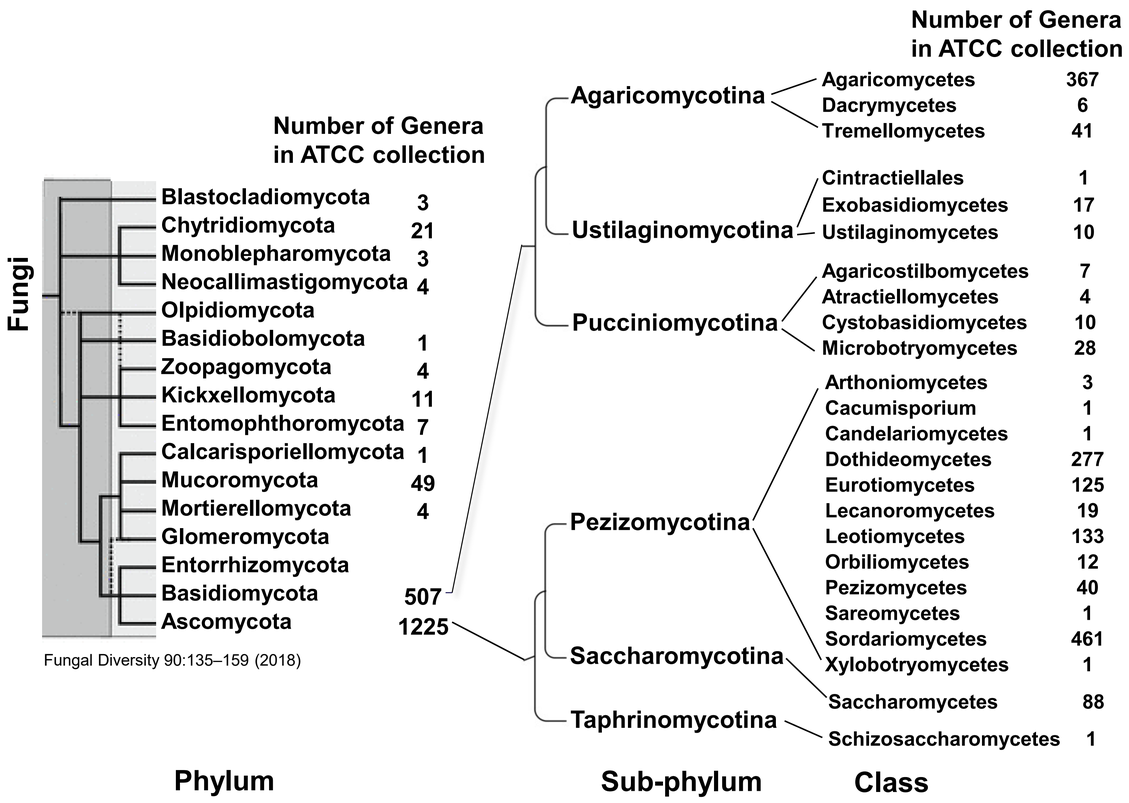
ATCC®
Credible leads to Incredible ®

Background

As a leading developer and supplier of authenticated biological materials, ATCC provides the scientific community with access to an expansive collection of credible microbial strains needed to support research and development applications. ATCC has more than 30,000 fungal strains encompassing more than 1,850 different genera that can be utilized in various industrial applications. We have recently initiated a project to further characterize the utility of our mycology collection, including providing in-depth genome sequencing data. We have more than 1,400 species of plant pathogens encompassing 340 genera, many of which are reference strains that can be used as a standard in pathogenicity research. We also have fungi with reported activities across a wide range of commercially important areas such as biocontrol, bioremediation, biofuel production, biocatalysis, and natural colorants. This poster highlights the diversity and importance of ATCC's fungal collection with special emphasis on biocontrol and provides examples of the utilization of this collection as a valuable resource for the present and future generations of scientists.

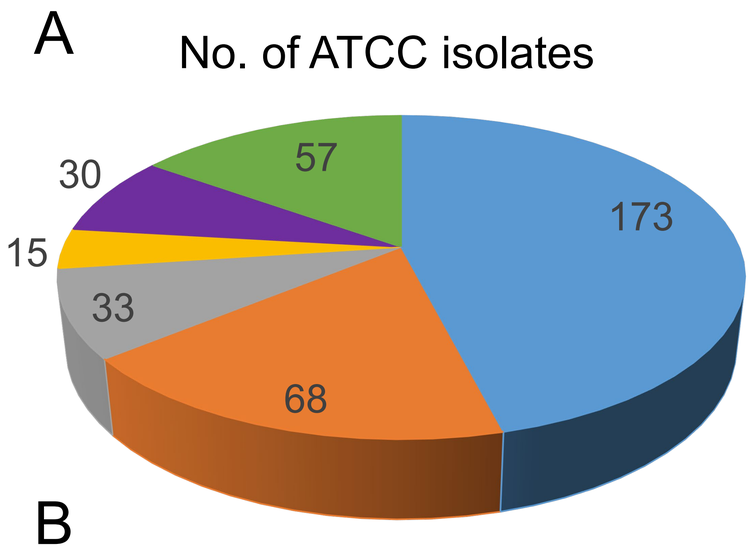
Every year, up to 40% of global crop production is lost to various pests, diseases, and weeds. To combat the crop loss, chemical pesticides and fungicides have become an integral part of agriculture. Global trends are shifting toward reducing the use of chemicals pesticides due to environmental and human health issues as well as the emergence of resistant pathogens. In response to these concerns, biocontrol is becoming an important alternative form of pest management. Based on a comprehensive literature search, ATCC's diverse collection of fungi encompasses over 350 strains with potential biocontrol ability against various plant pathogens.

Result



Fungal Diversity 90:135–159 (2018)

Figure 1: Diversity of the mycology collection at ATCC. Taxonomic classifications of every isolate were obtained from MycoBank (https://www.mycobank.org/) and number of Genera was counted manually using Excel.



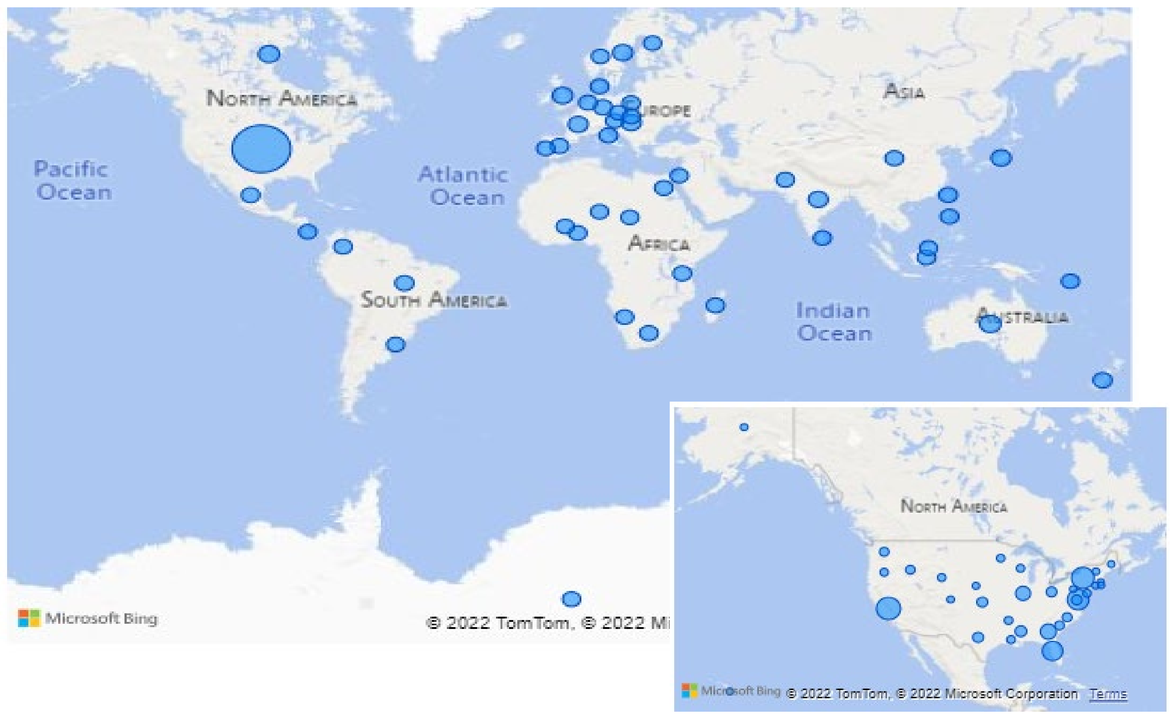


Figure 2: Different biocontrol activity and geographical distribution of potential biocontrol agents from ATCC fungal collection. Using a comprehensive (automated and manual) literature search, fungal strains from ATCC collection were selected as potential biocontrol agents and categorized based on their biocontrol activity (**A**). Blue circle indicates country of origin for all biocontrol agents and state of origin for all biocontrol agents from USA (**B**). Figures were generated using Power BI Desktop.

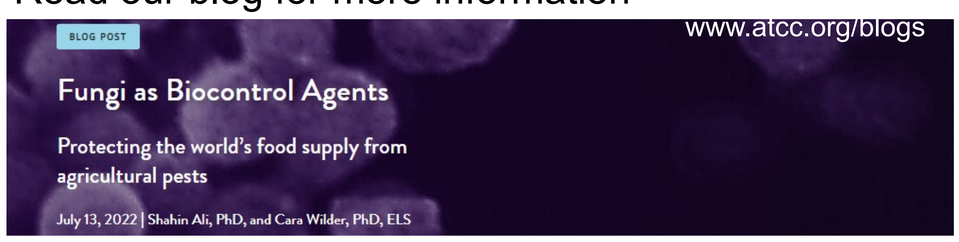
Example:

- *Beauveria bassiana* (ATCC® 74040™) controls white flies and other insect pets. [Bull. Insectology 62: 245-252, 2009]
- *Aspergillus niger* (ATCC® 9642™) shows antifungal activity against post-harvest disease of citrus fruits. [Appl. Biochem. Microbiol. 52, 413–420, 2016]

Conclusions

- Numerous scientific advances and commercial applications have come from the ATCC fungal collection. ATCC has been acquiring, authenticating, producing, preserving, and providing such credible materials since 1925.
- ATCC provides access to our collection of fungi to support biocontrol research and opportunities for commercialization.

Read our blog for more information



SCAN ME