

# JGI Fungal Genomics Program

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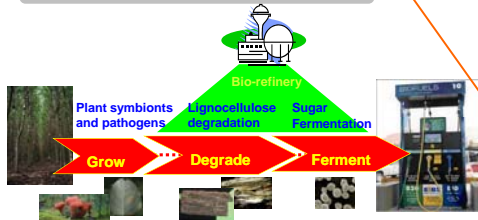
## Abstract

Genomes of energy and environment fungi are in focus of the Fungal Genomic Program at the US Department of Energy Joint Genome Institute (JGI). Its key project, the Genomics Encyclopedia of Fungi, targets fungi related to plant health (symbionts, pathogens, and biocontrol agents) and biorefinery processes (cellulose degradation, sugar fermentation, industrial hosts), and explores fungal diversity by means of genome sequencing and analysis. Over 50 fungal genomes have been sequenced by JGI to date and released through MycoCosm ([www.jgi.doe.gov/fungi](http://www.jgi.doe.gov/fungi)), a fungal web-portal, which integrates sequence and functional data with genome analysis tools for user community. Sequence analysis supported by functional genomics leads to developing parts list for complex systems ranging from ecosystems of biofuel crops to biorefineries. Recent examples of such 'parts' suggested by comparative genomics and functional analysis in these areas are presented here.

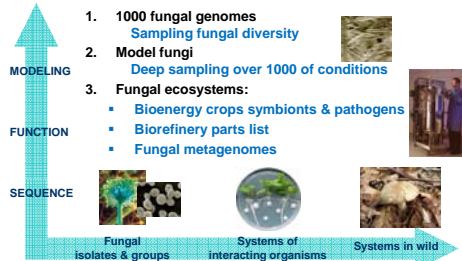
## Genomic Encyclopedia of Fungi

- Plant Feedstock Health
- Biorefinery
- Fungal Diversity

## Energy & Environment Fungi



## Future Grand Challenges



## Plant Health

### Symbionts

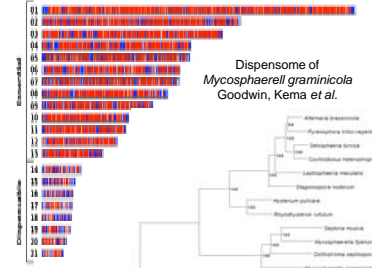


**Laccaria bicolor:**  
Ectomycorrhizal symbiont of poplar.  
Martin et al, Nature 2008

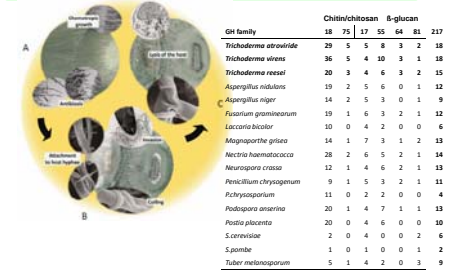


**Xanthoria parietina:**  
lichen fungus  
(PI: Paul Dyer)

### Plant Pathogens

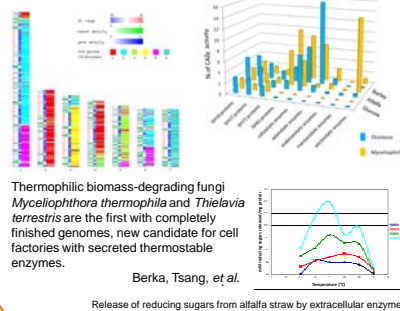


### Biocontrol

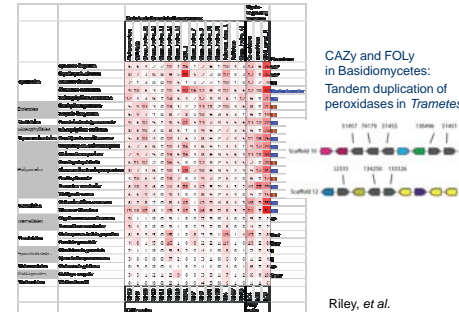


## Biorefinery

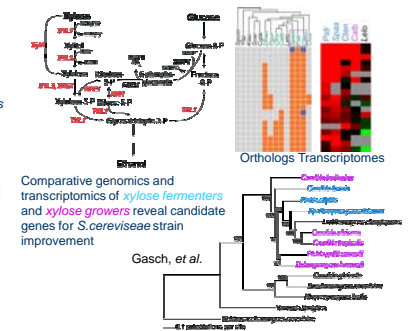
### Thermophiles



### Lignocellulose Degradation

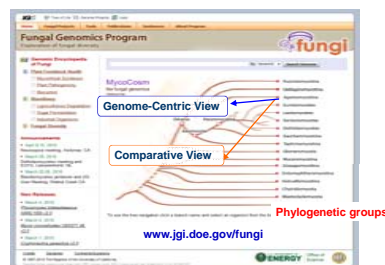


### Xylose Fermenters



## Fungal Diversity

### MycoCosm: 60+ fungal genomes



### Genome-centric View



### Comparative View

