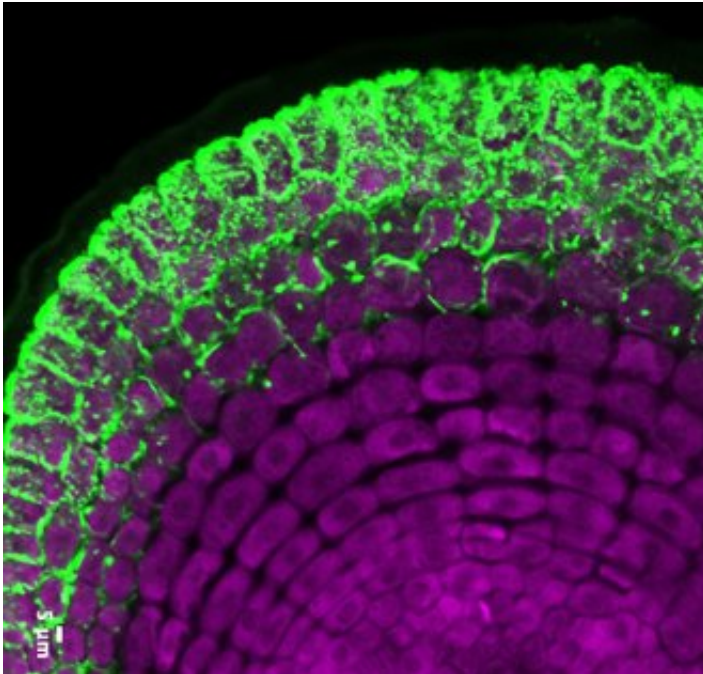


Team engineers bioenergy-friendly fungi

October 4 2021, by Karen Dunlap



The ectomycorrhizal fungus *Laccaria bicolor*, shown in green, envelops the roots of a transgenic switchgrass plant. Switchgrass is not known to interact with this type of fungi naturally; the added *PtLecRLK1* gene tells the plant to engage the fungus. Credit: ORNL, U.S. Dept. of Energy

An Oak Ridge National Laboratory team has successfully introduced a poplar gene into switchgrass, an important biofuel source, that allows switchgrass to interact with a beneficial fungus, ultimately boosting the grass's growth and viability in changing environments.

Scientists observed the ectomycorrhizal fungus *Laccaria bicolor* as it

enveloped the plant's roots. This [behavior](#), not known to occur naturally between these fungi and switchgrass, helps the plant to efficiently take up nutrients and water. This symbiotic relationship results in switchgrass that is more disease- and drought-resistant.

"We've engineered switchgrass to grow where it would typically struggle, that is, marginal land that is unsuitable for [food crops](#)," said ORNL's Jay Chen. "The fungus allows the switchgrass to absorb minerals from the soil."

In a previous study, the team identified the receptor gene that looks out for friendly fungi. Next the team will validate the laboratory findings with a [field study](#).

More information: Zhenzhen Qiao et al, Towards engineering ectomycorrhization into switchgrass bioenergy crops via a lectin receptor-like kinase, *Plant Biotechnology Journal* (2021). [DOI: 10.1111/pbi.13671](#)

Provided by Oak Ridge National Laboratory

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