Cultivar Specificity Gene from the Rice Pathogen *Magnaporthe grisea*

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a novel avirulence gene from the rice blast fungus.

**OVERVIEW**

Rice blast is a devastating fungal disease that can cause significant crop losses in rice, a worldwide staple food. The rice blast fungus *Magnaporthe grisea* has emerged as a model system for understanding fungal-plant interactions.

**THE INVENTION**

UW-Madison researchers have cloned a novel avirulence gene from *M. grisea*, termed *AVR1-CO39*. This gene encodes a signal that triggers a strong defense response in rice cultivar CO39, which carries the corresponding resistance gene. Open reading frame 3 (ORF 3) of the *AVR1-CO39* avirulence gene appears to play a key role in inducing cultivar-specific defense against the pathogen.

Transforming or treating rice cultivar CO39 with the *AVR1-CO39* gene or its products may broaden the scope of the cultivar’s resistance to additional *M. grisea* races/pathotypes and to pathogens other than *M. grisea*. Also, the resistance gene from cultivar CO39, which must be present in a plant for induction of disease resistance using *AVR1-CO39*, can be introduced into other susceptible rice cultivars.

**APPLICATIONS**

- Rice blast resistance

**KEY BENEFITS**

- As a pre-treatment, co-treatment or transgene, may confer broad-spectrum pathogen resistance on rice cultivars carrying the CO39 resistance gene
- Offers several, potential methods for inducing plant resistance, including:
Treatment with epiphytic or endophytic bacteria expressing a portion of the AVR1-CO39 gene (e.g. ORF 3) or with an AVR1-CO39 protein extract

Creation of transgenic plants carrying the AVR1-CO39 expressed from a pathogen-inducible plant promoter

- **AVR1-CO39 nucleic acids or gene products** may be used to identify homologs in other *Magnaporthe* isolates and to produce large quantities of substantially pure AVR1-CO39 protein.
- **AVR1-CO39 DNA** may be inserted into vectors suitable for expression in a number of hosts, including bacteria, fungi, insects and plants.

ADDITIONAL INFORMATION

**Tech Fields**
Agriculture - Plant biotech

CONTACT INFORMATION

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842.