

Pathogenic Effects of *Magnaporthe oryzae* Pectin Lyase 1 on Resistant Rice

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Magnaporthe oryzae is the causal agent of Rice Blast, one of the most destructive diseases affecting worldwide rice production. Nearly 60% of the rice grown every year is lost to this disease. In previous studies, it has been shown that overexpression of *M. oryzae* pectin lyase 1 (*Mopln1*) allowed the fungus to overcome the resistance gene in the Pi-2 rice line. Very few lines of rice are resistant to Rice Blast, however, these lines may not be resistant to all *M. oryzae* isolates. The main objective of this study is to investigate if the overexpression of *Mopln1* affects the ability of the fungus to cause disease in various other rice lines. Wild-type *M. oryzae*, KJ201, has been transformed to express *Mopln1* either with its native promoter or with constitutive ribosomal promoter 27 (RP27). Spores from these transformants and wild-type lines were sprayed individually on five sets of ten different rice lines grown separately on MS media in sterile test tubes. Still a work in progress, preliminary findings suggest that overexpression of *Mopln1* causes normally resistant rice lines to become more susceptible to Rice Blast. Based on these findings, *Mopln1* may be critical to the pathogenicity of *M. oryzae* and its ability to overcome resistance. Mutations can occur quickly in fungi and *M. oryzae* is no exception. This gene could mutate quickly in the wild and a staple food crop would be lost, leaving millions to starve. In order to complete this project, two more lines of rice must be tested against all five isolates, which will be completed before March 25, 2015.