The Role of Chitosanase in Fungal Resistance. (A01-stewart161408-Oral)

Authors:

- B.Hendrix - *University of Arkansas*
- J.M.Stewart - *University of Arkansas*

Abstract:

Management of pathogenic relies on fungicides and cultural practices to minimize loss, but more economical and environmentally friendly options are needed. By utilizing a plant's own signaling and defense pathways, it may be possible to enhance the ability of plants to resist fungal attack. Chitosan is a structural element in many fungal cell walls and is an elicitor when applied exogenously to plants. Exploitation of this pathway by genetically modifying plants to over-express a chitosanase to degrade fungal cell walls could possibly enhance a plant's defense response against invading fungi. A highly active bacterial chitosanase was cloned and sequenced. An Arabidopsis thaliana chitinase transit peptide was added to the mature protein region of the sequence by primer extension, and the 35S Cauliflower Mosaic Virus promoter and nopaline synthase terminator were added to regulate in planta expression. The entire cassette was fused into a plant transformation vector, pPZP 211, that facilitated Agrobacterium tumenfaciens mediated leaf disk transformation of Nicotiana tabacum. F2 plants homozygous for the bacterial chitosanase will be selected and tested for increased resistance to selected fungal pathogens.

Corresponding Author Information:

James Stewart
University of Arkansas
CSES, PTSC 115
Fayetteville, AR, AR

phone: 479-575-5722
fax: 479-575-7465
e-mail: jstewart@uark.edu

Presentation Information:

Presentation Date: Monday, November 11, 2002
Presentation Time: 10:00 am

Keywords:

Transgenic, Chitosanase, Fungal resistance