

VeA, a Global Regulator of Secondary Metabolism, Can Increase Production of Secondary Metabolites

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing methods of using VeA, a newly identified global regulator of secondary metabolism, to increase or decrease production of secondary metabolites in fungi.

OVERVIEW

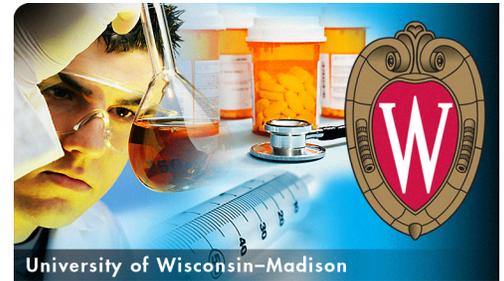
Microorganisms, such as fungi, produce a variety of secondary metabolites. These secondary metabolites display a broad range of activities, including antibiotic, immunosuppressant, phytotoxic and mycotoxic activities, and are useful for drug or technological development. For example, the antibiotic penicillin and the cholesterol-lowering drug lovastatin are secondary metabolites.

However, producing large amounts of secondary metabolites is difficult, and available techniques often provide unpredictable results. Because they are formed from a relatively small number of metabolic pathways, identifying the genes that control these pathways may provide an alternative method of generating secondary metabolites.

The inventors previously identified a global regulator of secondary metabolism, called *LaeA*, in fungi (see WARF reference number P02379US). Overexpression of the *laeA* gene upregulates production of secondary metabolites, greatly increasing penicillin production in *Aspergillus nidulans* and lovastatin production in *A. terreus*. On the other hand, deletion of *laeA* in *A. fumigatus* eliminates the production of gliotoxin and other secondary metabolites, decreasing the virulence of this human pathogen.

THE INVENTION

UW-Madison researchers now have identified another global regulator of secondary metabolism, called VeA. VeA is a conserved protein that interacts with *LaeA* in an as yet unknown mechanism. Overexpression of *veA* upregulates secondary metabolism in *A. flavus* to a greater degree than overexpression of *laeA*. This gene could be used to increase the production of important natural products, including novel products with medicinal value.



THE WARF ADVANTAGE

Since its founding in 1925 as the patenting and licensing organization for the University of Wisconsin-Madison, WARF has been working with business and industry to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.



APPLICATIONS

- Increasing production of useful secondary metabolites, such as penicillin or lovastatin
- Decreasing production of toxic secondary metabolites, such as aflatoxin

KEY BENEFITS

- Provides a simple method of increasing or decreasing secondary metabolite production
- Upregulates secondary metabolism to a greater degree than LaeA
- May enable new treatments for fungal infections
- May be used to identify new secondary metabolite biosynthesis gene clusters

ADDITIONAL INFORMATION

Related Technologies

[See WARF reference number P02379US for more information on LaeA, another global regulator of secondary metabolism.](#)

Publications

Bayram O., Krappmann S., Ni M., Bok J.W., Helmstaedt K., Valerius O., Braus-Stromeyer S., Kwon N.J., Keller N.P., Yu J.H. & Braus G.H. 2008. VeIB/VeA/LaeA Coordinated Light Information, Fungal Development and Secondary Metabolism. *Science* 320, 1504-1506.

Amaike S. & Keller N.P. 2009. Distinct Roles for VeA and LaeA in Development and Pathogenesis of *Aspergillus flavus*. *Eukary. Cell* 8, 1051-1060.

Tech Fields

Drug Discovery - Drug production & design

CONTACT INFORMATION

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