Increasing Secondary Metabolite Production in Fungus for Drug Development

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Assigned to WARF as biological material.

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing Aspergillus nidulans strains that overexpress heterologous secondary metabolite genes.

OVERVIEW

Fungi produce a variety of chemical compounds called secondary metabolites. These compounds display a broad range of activities, including fighting off other fungi and bacteria. They also are useful for drug development. For example, the antibiotic penicillin and the cholesterol-lowering drug lovastatin are types of secondary metabolites.

However, exploiting fungi to produce large amounts of secondary metabolites has been difficult and unpredictable.

UW–Madison researchers previously identified two global regulator genes involved in secondary metabolite production in fungus (see WARF reference numbers P02379US and P09056US02). These global regulators could be utilized to genetically enhance certain fungal strains to produce larger quantities of secondary metabolites.

THE INVENTION

The researchers now have developed a set of genetically modified Aspergillus nidulans strains with increased secondary metabolite production. The strains overexpress one or both of the global regulators previously implicated in secondary metabolite production. Moreover, naturally occurring gene clusters in the strains are deleted to reduce competition for the desired genes.

APPLICATIONS

• Production of clinically relevant secondary metabolites
• Creating libraries of secondary metabolite analogs that could yield new therapeutic molecules
KEY BENEFITS

- *A. nidulans* can be modified to produce large quantities of secondary metabolites.
- Addresses the need for advanced lines of fungi that can express entire heterologous secondary metabolite gene clusters

ADDITIONAL INFORMATION

Related Technologies

WARF reference number P02379US describes a global regulator of secondary metabolism in fungi called LaeA.
WARF reference number P09056US02 describes methods of using another global regulator, called VeA, to increase or decrease production of secondary metabolites in fungi.

Tech Fields

Drug Discovery - Drug production & design
Drug Discovery - Libraries
Research Tools - Gene expression

CONTACT INFORMATION

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