Increasing Secondary Metabolite Production in Fungus for Drug Development

WARF: P130203US01

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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

For More Information About the Inventors

- Nancy Keller

Related Technologies

- WARF reference number P09056US02 describes methods of using another global regulator, LaeA, to increase or decrease production of secondary metabolites in fungi.

Tech Fields

- Drug Discovery & Development : Compound libraries
- Drug Discovery & Development : Drug production & design
- Research Tools : Other research tools

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or 608-960-9847