Increasing Secondary Metabolite Production in Fungus for Drug Development

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WARF: P130203US01
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

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The University of Wisconsin and WARF – A Single Location to Accelerate Translational Development of New Drugs
UW–Madison has the integrative capabilities to complete many key components of the drug development cycle, from discovery through clinical trials. As one of the top research universities in the world, and one of the two best-funded universities for research in the country, UW–Madison offers state-of-the-art facilities unmatched by most public universities.

These include the Small Molecule Screening Facility at the UW Comprehensive Cancer Center; the Zeeh Pharmaceutical Experiment Station, which provides consulting and laboratory services for developing formulations and studying solubility, stability and more; the Waisman Clinical Biomanufacturing Facility; the Wisconsin Institute for Medical Research, which provides UW–Madison with a complete translational research facility; and the innovative, interdisciplinary Wisconsin Institutes for Discovery, home to the private, nonprofit Morgridge Institute for Research and its public twin, WID, part of the university’s graduate school. The highly qualified experts at these facilities are ready to work with you to create a library of candidates for drug development.
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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