

Plants and Fungi Offer a Model for Innovative Pharmaceuticals



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CURRENT RESEARCH

Unlocking nature's treasure trough for the discovery of novel pharmaceuticals

Microbes and plants are able to synthesize an unmatched number of natural products. It is challenging to replicate this synthesis due to the structural complexity of the molecules. However, with the sophistication of genetic methods for the manipulation of microbial cells and with increasing knowledge about biosynthetic processes on a molecular level, it is feasible to manipulate biosynthetic pathways for increased production levels in the natural producers and also to combine genes encoding enzyme catalysts from different organisms into new routes for the production of novel compounds by engineered organisms. Dr. Claudia Schmidt-Dannert, of the University of Minnesota, is interested in exploring and utilizing the metabolic machineries of plants and microorganisms to enable the discovery and synthesis of valuable compounds in engineered microbial cells. Dr. Schmidt-Dannert and her team combine enzyme functions encoded by genes obtained from different sources into new biosynthetic pathways in engineered cells for the production of desired compounds.

At present, she and her team study and engineer the biosynthesis of isoprenoid compounds which represent the largest class of natural products with over 20,000 compounds described. These compounds have a wide range of biological functions and are receiving industrial and pharmaceutical interest as pharmaceuticals, antioxidants, colorants, vitamins, and aroma compounds. Dr. Schmidt-Dannert's current investigation on the biosynthesis of one group of pharmaceutically important isoprenoids - the sesquiterpenes is particularly important for the discovery of new pharmaceuticals. Well-known examples of current sesquiterpene-derived drugs are the anticancer and...

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AFFILIATION

 University of Minnesota

EDUCATION

- Postdoc, in Molecular Biotechnology, 1995 . University of Stuttgart, Germany
- Ph.D., in Biochemistry, 1994 . Carolo Wilhelmina University Braunschweig, Germany
- M.Sc., in Biochemistry, 1991 . Carolo Wilhelmina University Braunschweig, Germany
- B.Sc., in Biology, 1988 . Carolo Wilhelmina University Braunschweig, Germany

AWARDS

- Profile in US News & World Report on "Innovators 2001 in Science", 2001
- DuPont Science and Engineering Award, 2000-2003
- University of Minnesota McKnight Land-Grant Professorship, 2001-2003
- Howard Hughes Medical Investigator Nominee University of Minnesota, 2004
- David and Lucile Packard Fellowship, 2001-2006

RESEARCH AREAS

Life Science, Health IT

FUNDING REQUEST

Your contributions will support the continued research of Dr. Schmidt-Dannert as she uses plants and microorganisms as a model to enable the discovery and synthesis of valuable compounds in engineered microbial cells. Donations will support the necessary \$80K required for personnel, supplies, and facility costs. In choosing to support her research, you will be a part of developing incredible drugs can impact the lives of patients and their families!