

FCR 15

Office of the President
December 12, 2006

Members, Board of Trustees:

PATENT ASSIGNMENT REPORT

Recommendation: that the Board of Trustees accept the patent assignment report for the period ending October 31, 2006.

Background: The March 4, 1997 meeting of the Board of Trustees authorized the University of Kentucky Research Foundation to conduct all future copyright and patent filings and prosecutions. Quarterly reports on patent and copyright applications are to be submitted to the Finance Committee of the Board.

Action taken: Approved Disapproved Other _____

PATENT ASSIGNMENT
QUARTERLY FOR THE PERIOD AUGUST 1, 2006 THROUGH OCTOBER 31, 2006

Patents

The following assignments on behalf of the Board of Trustees of the University of Kentucky Research Foundation have been executed:

- 1. U.S. Patent Application Serial Number: (to be assigned)**
Filed: June 20, 2006
Title: “Nanoscale Solar Cell with Vertical and Lateral Junctions”
Inventors: Drs. Vijay Singh and Suresh Rajaputra (Electrical and Computer Engineering)
Technical Description: Generally, the invention relates to solar cells and methods used to produce them. Particularly, it relates to nanoscale solar cells and production. In one aspect, nanoscale solar cells include both vertical lateral junctions operable for creating electron-hole mobility upon photon impact. In another, band gap energy tailoring is accomplished for various materials. Still other aspects relate to particular organic or inorganic materials.
Summary: The scientists have invented an improved solar cell that is more efficient and easier to make than conventional solar cells.
- 2. U.S. Patent Application Serial Number: (to be assigned)**
Filed: July 18, 2006
Title: “Plants Having an Enhanced Resistance to Necrotrophic Pathogens”
Inventors: Drs. Pradeep Kachroo and Aarda Kachroo (Plant Pathology)
Technical Description: The invention relates to a method of conferring to plants an enhanced resistance to pathogens.
Summary: The natural plant enzyme glycerol-3-phosphate dehydrogenase plays an important role in a plant’s defense system. The inventors have discovered that they can increase a plant’s resistance to disease by causing the plant to produce supra-natural levels of glycerol-3-phosphate dehydrogenase.
- 3. U.S. Patent Application Serial Number: (to be assigned)**
Filed: July 21, 2006
Title: “Antibodies and Unnatural Substrates of Prenylation Enzymes for Use in Detecting and Isolating Prenylated Proteins”
Inventors: Drs. Hans Peter Spielmann and Douglas Andres (Biochemistry)
Technical Description: The invention relates to detecting and isolating prenylated proteins, and screening for inhibitors of enzymes facilitating protein prenylation. More specifically, the invention relates to newly identified antibodies to detect prenylated proteins and unnatural substrates of enzymes that catalyze protein prenylation reactions.
Summary: The chemical modification of proteins known as prenylation is required for some proteins to exhibit normal biological activity, but how prenylation activates a protein is little understood. The inventors have identified

a means of identifying and locating prenylated proteins, greatly facilitating the study of prenylation.

4. U.S. Patent Application Serial Number: (to be assigned)

Filed: July 24, 2006

Title: “Ecdysone receptor-based gene expression modulation system for use in plants and method for modulating gene expression in plants”

Inventors: Drs. Venkatta Tavva, Randy Dinkins, and Glenn Collins (Plant and Soil Sciences) and Subba Palli (Entomology)

Technical Description: The present invention relates to the field of gene expression, and, more particularly, to chemically-inducible systems that activate or inactivate gene expression in host plant cells.

Summary: The function of many plant genes remains unknown. One method for studying the function of plant genes is to develop an artificial mechanism for turning the expression of the genes on or off, and observing the resulting change in plant physiology. The inventors have developed an efficient artificial method of turning plant genes on or off.

5. U.S. Patent Application Serial Number: (to be assigned)

Filed: August 9, 2006

Title: “Assay Method for Diagnosing and Treating Alzheimer’s Disease”

Inventors: Drs. Philip Landfield, Nada Porter, Kuey-Chu Chen, Eric Blaylock (Pharmacology) and James Geddes (SCoBIRC)

Technical Description: The invention relates to assays and methods for diagnosing and treating Alzheimer's disease (AD). More particularly, this invention relates to methods for detecting changes in the pattern of gene expression that correlated with AD, and, in particular, with incipient AD, and using these changes to either diagnose AD in a patient or screen compounds for treating AD.

Summary: Early symptoms of AD resemble the early symptoms of many other diseases. The development of new treatments for AD would be greatly facilitated by distinguishing early AD from these other diseases. The inventors have developed a means of distinguishing AD from other diseases by inspecting the pattern of gene expression in patients.

6. U.S. Patent Application Serial Number: (to be assigned)

Filed: August 18, 2006

Title: “Transition Metal-Free Coupling of Highly Fluorinated and Non-Fluorinated Pi-Electron Systems”

Inventor: Dr. Mark Watson (Chemistry)

Technical Description: This invention relates generally to organic conjugated materials and, more particularly, to novel compounds, methods for their production and electronic devices made with these compounds.

Summary: It is anticipated that organic polymers will be used to make the next generation of electronic components. One technical hurdle in using these polymers in electronics is the ability to produce sufficiently pure polymers. The

inventor has provided a means of producing pure organic polymers for future use in electronics.

- 7. U.S. Patent Application Serial Number: (to be assigned)**
Filed: August 25, 2006
Title: “Compositions and Methods for Oral Cancer Chemoprevention Using Berry Preparations and Extracts”
Inventor: Dr. Russell Mumper (Pharmaceutical Sciences)
Technical Description: This invention relates to compositions and methods for chemoprevention of oral cancer and precancerous lesions, and for methods for preparing the compositions. Specifically, the invention relates to bioadhesive gels containing an isolated berry extract, formulated for local delivery for the chemoprevention of oral cancer and precancerous lesions. The invention relates also to methods for stabilizing and enhancing the efficacy of chemopreventive components of the compositions.
Summary: Oral cancer affects approximately 29,000 people in the United States annually. The inventor has discovered that berries have cancer preventing properties, and has developed formulations for delivering the cancer preventing properties of berries orally in the form of a gel derived from berries.
- 8. U.S. Patent Application Serial Number: (to be assigned)**
Filed: September 12, 2006
Title: “Epoxyketone-Based Immunoproteasome Inhibitors”
Inventors: Drs. Kyung Bo Kim and Yik Khuan Ho (Pharmaceutical Sciences)
Technical Description: This method relates to epoxyketone-based immunoproteasome inhibitors and, in particular, to the synthesis of the inhibitors, their intermediaries, and treatment of disease using the inhibitors.
Summary: The activity of immunoproteasomes has been implicated in a wide variety of diseases, including hematological cancers, autoimmune disorders, and neurodegenerative diseases. Inhibiting immunoproteasome activity may provide a treatment for these diseases. The inventors have developed a means of synthesizing inhibitors that may have therapeutic value.
- 9. U.S. Patent Application Serial Number: (to be assigned)**
Filed: September 12, 2006
Title: “Method and System for In-Situ Spectroscopic Evaluation of an Object”
Inventors: Dr. Robert Lodder (Electrical and Computer Engineering)
Technical Description: The invention relates to the spectroscopic evaluation of analytes and objects, and, more specifically, to a spectroscopic method and system for quickly determining the presence or absence of an analyte of interest or the presence or absence of desired characteristics of an object.
Summary: Pharmaceuticals must be evaluated for the absence of impurities before they can be sold. The inventor has created a method for the detection of impurities by reflecting light off the compound of interest, and determining the purity of the compound from information contained in the light reflected back from the compound.

- 10. U.S. Patent Application Serial Number: (to be assigned)**
Filed: September 15, 2006
Title: “An Organic Cation Transporter Preferentially Expressed in Hematopoietic Cells and Leukemias and Uses Thereof”
Inventor: Dr. Jeffrey Moscow (Pediatrics Hematology)
Technical Description: The invention relates to a gene encoding an organic cation transporter, OCT6, and its use as a target for the treatment of hematological malignancies and, in particular, leukemia. The invention further relates to screening methods for identifying agonists and antagonists binding partners of OCT6 transport activity.
Summary: The inventor has identified a gene important for the development of drug resistance in leukemia cells. The gene can be targeted to improve the treatment outcome of leukemia.
- 11. U.S. Patent Application Serial Number: (to be assigned)**
Filed: September 26, 2006
Title: “Berry Preparations and Extracts”
Inventor: Dr. Russell Mumper (Pharmaceutical Sciences)
Technical Description: The invention relates to compositions derived from a berry that have antioxidant and anti-inflammatory activity. In particular, the invention relates to a method for deriving an extract having antioxidant and anti-inflammatory activity from a berry, and to formulated compositions derived by the method for oral and topical administration. Still further, the invention provides methods and compositions for treatment of inflammation, oxidative stress, or cancer by administering an effective amount of the composition.
Summary: The inventor has discovered that berries have cancer preventing properties and has developed methods for extracting the cancer preventing compounds from berries in a stable form.
- 12. U.S. Patent Application Serial Number: (to be assigned)**
Filed: October 2, 2006
Title: “Watermelon Hydroperoxide Lyase and Uses Thereof”
Inventors: Drs. David Hildebrand and Hirotada Fukushige (Plant and Soil Sciences)
Technical Description: This invention relates to the production of a hydroperoxide lyase (HL) protein in host cells via recombinant expression of the protein, Recombinant HL protein, DNA sequences encoding the protein, vectors containing these DNA sequences, and hosts containing the vectors are provided, together with methods for recombinantly producing such protein, DNA sequences, vectors, and hosts.
Summary: So-called “green note” compounds are laboriously isolated from plant materials for their use as odorants and flavorants. The inventors have produced an artificial, high-yield method of synthesizing the compounds without plants by causing host cells to express the hydroperoxide lyase (HL) protein.

- 13. U.S. Patent Application Serial Number: (to be assigned)**
Filed: October 3, 2006
Title: “Crystallization and Structure of a Plant Peptide Deformylase”
Inventors: Drs. Robert Houtz, and Lynette Dirk (Horticulture) and David Rodgers (Biochemistry)
Technical Description: This invention relates to the crystallization and structure of plant peptide deformylase and methods of using the structure.
Summary: To develop a new herbicide one must identify a chemical that interrupts the function of a protein that is critical to plant life. Plant peptide deformylase has already been identified as such a protein. It is likely that new herbicides can be developed by identifying chemicals that interrupt the function of plant peptide deformylase. Because randomly trying chemicals is impractical, the inventors have discovered information that narrows the number of candidate chemicals that may interfere with the function of plant peptide deformylase. Specifically, the inventors have described the structure of the plant peptide deformylase protein, which provides useful clues about the structure of chemicals that interfere with the proteins function.
- 14. U.S. Patent Application Serial Number: (to be assigned)**
Filed: October 13, 2006
Title: “Alteration of Tobacco Alkylloid Content Through Modification of Specific Cytochrome P450 Genes”
Inventors: Drs. Balasz Siminszky and Lily Gavilano (Plant and Soil Sciences)
Technical Description: This invention relates compositions and methods for reducing the level of nornicotine and its metabolite, N'-nitrosornicotine, in a plant that is a member of the genus Nicotiana, particularly compositions and methods for inhibiting expression of a cytochrome P450 polypeptide involved in the metabolic conversion of nicotine to nornicotine.
Summary: Nornicotine is a precursor of nitrosamines, carcinogenic chemicals found in tobacco. Nornicotine is formed from nicotine during the curing of tobacco. The inventors have discovered how to inhibit the formation of nornicotine from nicotine, reducing the amount of carcinogens in tobacco.
- 15. U.S. Patent Application Serial Number: (to be assigned)**
Filed: October 17, 2006
Title: “Plasma Synthetic Jet Actuator”
Inventor: Dr. Jamey Jacob (Mechanical Engineering)
Technical Description: This invention relates to a fluid actuator and, more particularly, to a plasma actuator for manipulating, controlling and/or modifying a fluid flow.
Summary: Fluid actuators are useful for controlling the flow of fluids. Current fluid actuators typically utilize moving parts, making them prone to wear. The inventor has developed a novel fluid actuator with no moving parts.

Patent Activities
Fiscal year to date as of October 31, 2006

Number of Patent Applications	16
Number of Patents Issued	8
Patent Income	\$297,539