

FCR 6

Office of the President
December 1, 2009

Members, Board of Trustees:

PATENT ASSIGNMENT REPORT

Recommendation: that the Board of Trustees accept the patent assignment report for the period July 1 through September 30, 2009.

Background: At its March 1997 meeting, 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 THROUGH SEPTEMBER 30, 2009

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 3, 2009
Title: “Non-Contact Method for Quantifying Changes in the Dynamics of Microbial Populations”
Inventors: Dr. Ahmad Salaimah, Martin Evans, and Jeffrey Campion (Internal Medicine), and Belal Gharaibeh and Kozo Saito (Mechanical Engineering)
Technical Description: This invention relates to methods for quantifying changes in viable microbial populations. In particular, the invention relates to real-time methods for quantifying such alterations in microbial populations and for rapid quantification of viable microorganisms *in situ*. The invention finds use in a variety of applications where living organisms, suspended in a liquid medium, are quantified, including evaluation of antimicrobial agents and/or microbial growth enhancers.
Summary: Measurement of microorganisms is important in many settings, such as the evaluation of processes for destroying or limiting the growth of microorganisms; wastewater treatment; and food safety. Current methods of measurement are slow, requiring the prolonged incubation of samples. The inventors have developed a faster method which involves measuring the amount of heat produced by microorganisms in a sample.
- 2. U.S. Patent Application Serial Number: (to be assigned)**
Filed: June 12, 2009
Title: “Methods and Compositions for Genetic Transformation of Chloroplasts”
Inventors: Dr. Indu Maiti (Kentucky Tobacco Research and Development Center)
Technical Description: This invention relates to transformation of plant cells for expression of desired proteins or peptides, including expression in multi-cellular plants. In particular, the invention relates to novel methods and compositions for plastid transformation of plant cells, and for expression of foreign DNA of interest in plant cells, including in multi-cellular plants.
Summary: Advances in biotechnology have provided the ability to utilize plants as factories for efficiently producing commercially and pharmaceutically important proteins. While chloroplasts are naturally highly efficient protein factories, scientists have, until now, failed to harness this efficiency to produce commercially and pharmaceutically important proteins. The inventor has developed a method of using the chloroplast to develop these proteins; a method which should increase the efficiency of plants as protein factories.

- 3. U.S. Patent Application Serial Number: (to be assigned)**
Filed: July 24, 2009
Title: “Amidated Dopamine Neuron Stimulating Peptides for CNS Dopaminergic Upregulation”
Inventors: Drs. Luke Bradley, Don M. Gash, and Greg A. Gerhardt (Anatomy and Neurobiology), and John D. Glass (outside inventor)
Technical Description: This invention relates to novel proteins, derived from glial cell-line-derived neurotrophic factor (GDNF), which are useful for treating brain diseases and injuries that result in dopaminergic deficiencies.
Summary: Several diseases of the brain, including Parkinson’s, are related to a harmful reduction in the activity of the neurotransmitter dopamine. GDNF, a growth factor present in the brain, is known to increase the activity of dopamine in the brain. However, GDNF is unstable, being rapidly broken down in the brain. Consequently, the resulting increase in dopamine activity is transient. The inventors have developed a stable compound derived from GDNF that maintains the ability to stimulate dopamine activity. This compound may be useful in treating diseases such as Parkinson’s.
- 4. U.S. Patent Application Serial Number: (to be assigned)**
Filed: August 3, 2009
Title: “Cascaded Photovoltaic and Thermophotovoltaic Energy Conversion Apparatus with Near-Field Radiation Transfer Enhancement at Nanoscale Gaps”
Inventors: Drs. Mathieu Francoeur, Rodolphe Vaillon and M. Pinar Menguc (Mechanical Engineering)
Technical Description: This invention relates to photovoltaic and thermophotovoltaic devices. More specifically, the invention provides an energy conversion apparatus with a cascaded arrangement of photovoltaic and thermophotovoltaic devices that use near-field radiation enhancement. The invention also provides a method for forming the cascaded arrangements.
Summary: Photovoltaic devices, such as solar panels, convert light energy to electrical energy. However, some of the energy contained in light is lost in the conversion to electrical energy, and is instead converted to heat energy. The inventors have devised a means of increasing the efficiency of photovoltaic devices by coupling them with thermophotovoltaic devices, which capture heat energy from the photovoltaic devices and convert it to electrical energy. The electrical energy recovered from heat can be added to the electrical energy converted from light energy, increasing the output over that of an uncoupled photovoltaic device.
- 5. U.S. Patent Application Serial Number: (to be assigned)**
Filed: August 28, 2009
Title: “Methodology and Technology for the Production of Improved Coal-Derived Fly Ash for the Production of Metal Matrix Composites”

Inventors: Drs. Thomas Robl, John Wiseman and Brock Marrs (Center for Applied Energy Research)

Technical Description: This invention relates to metal matrix composite materials, and in particular to such composite materials incorporating ash-derived ceramic particles from coal combustion.

Summary: Fly ash is collected as a waste product of coal burning. Some of the fly ash is subsequently used in products such as cement, but much is also discarded in landfill. The inventors have discovered methods of treating fly ash and mixing it with metals to form useful composite materials, thus reducing the waste from burning coal.

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

Filed: September 16, 2009

Title: “Plants and Plant Products Useful for Biofuel Manufacture and Feedstock, and Methods of Producing Same”

Inventors: Drs. Seth Debolt, Darby Harris and Jozsef Stork (Horticulture)

Technical Description: This invention relates to methods of selecting and/or producing plants that have beneficial saccharification properties. Plant cellulose or biomass obtained from plants with beneficial saccharification properties can more easily be converted to biofuel, and can be a more digestible feedstock.

Summary: Cellulose, the fibrous material in plants, is a potential source of biofuels such as ethanol. However, converting cellulose to ethanol involves expensive chemical pretreatment. The inventors have discovered a method of genetically modifying a plant whose cellulose is more easily converted to ethanol, lowering the cost of deriving ethanol from plants. The cellulose produced also is more digestible for livestock.

Patent Activities

Fiscal Year to date as of September 30, 2009

Number of Patent Applications	6
Number of Patents Issued	0
Patent Income	\$391,930.78