

FCR 13

Office of the President
March 9, 2005

Members, Board of Trustees:

PATENT ASSIGNMENT REPORT

Recommendation: that the Board of Trustees accept the patent assignment report for the three-month period ending January 31, 2005.

Background: FCR 5 of 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 and authorized the Vice President for Research and Graduate Studies or designee to execute any needed documents to obtain appropriate patent or copyright protection. 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
NOVEMBER 1, 2004 THROUGH JANUARY 31, 2005

Patents

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

1. **U.S. Patent Application Serial Number:** (to be assigned)
Filed: November 24, 2004
Title: “Stimuli-sensitive Hydrogel Microspots Integrated with Genetically Engineered Proteins for High-Throughput Drug Screening”
Inventors: Dr. Sylvia Daunert, Dr. Sapna K. Deo, Mr. Jason D. Ehrick, Mr. Tyler W. Browning, and Dr. Leonidas G. Bachas.
Technical Description: The present invention provides a hydrogel microdome that can swell in response to a stimuli or target molecule. The hydrogel microdome is formed by polymerizing a mixture comprising a monomer capable of forming a hydrogel with a biopolymer. An array of hydrogel microdomes can be formed on a substrate by microspotting the mixture and polymerizing. The array can be used for high-throughput screening of analytes as well as for use as an actuator and biosensor using the swelling property of the hydrogel.
Summary: Science and medicine rely on the ability to detect substances within a sample. Most detection kits currently available use agents that change color when the target substance is detected. Drs. Daunert, Deo, and Bachas, Mr. Ehrick, and Mr. Browning have invented an alternative method that uses a hydrogel that swells in the presence of the substance to be detected.

2. **U.S. Patent Application Serial Number:** (to be assigned)
Filed: December 8, 2004
Title: “Integration of Microarray Data Analysis Applications for Drug Target Identification”
Inventors: Ms. Tina H. Gao and Dr. Jane H. Hayes.
Technical Description: The present invention provides a system for analyzing microarray experiment data showing the arrangement of a gene to identify targets in drug discovery. Remotely located service providers are each configured for analyzing the microarray experiment data in a predetermined sequential manner. Analysis information, including at least the type of analysis each service provider can perform, is stored in the system. At least one of the service providers that performs a desired analysis on the microarray experiment data is selected, based on the analysis information. Then, the selected service provider is requested to analyze the microarray experiment data for identifying targets in drug discovery.

Summary: Microarray experiments are one way of providing information about gene arrangement, which is important to drug discovery. But data from microarray experiments are difficult to analyze. There are a number of unrelated

service providers that assist in analysis of microarray data, each providing unique services. Using multiple unrelated service providers requires that data from the experiment must be in a different format for each service provider. Ms. Gao and Dr. Hayes have invented a computer interface that allows the user to access multiple service providers using one data format.

3. **U.S. Patent Application Serial Number:** (to be assigned)
Filed: December 8, 2004
Title: “Methods and Devices for Cryopreservation of Biological Cells and Tissues”
Inventors: Dr. Dayong Gao, Dr. Gary Van Zant, and Dr. Xiang Dong Cui.
Technical Description: The present invention provides novel methods and devices for achieving optimal cooling of cells during cryopreservation. In one aspect, the method comprises gradually cooling the cell to a predetermined temperature, followed by rapidly cooling the cell to a second predetermined temperature. In another aspect, a device is described for achieving a desired cooling rate for a cell, comprising a first container for holding a cell, and a second container for holding the first container whereby an insulating space is preserved between the first and second container. The method of the invention comprises placing cells into the first container, placing the first container in the second container, and sealing the second container. The first container, second container, and insulating space are dimensioned and fabricated of materials selected whereby an optimal cooling rate in accordance with a predetermined optimal cooling rate for the cell is achieved by simply placing the second container holding the first container and cells into a suitable cooling device.
Summary: Drs. Gao, Van Zant, and Cui have invented methods and devices for optimal cryopreservation (preservation by freezing) of biological cells and tissues, and to cryoprotectant compositions. The invention also allows controlled cooling of various cell types during cryopreservation and maintaining optimal cooling rates according to the particular needs of specific cell types.

4. **U.S. Patent Application Serial Number:** (to be assigned)
Filed: December 21, 2004
Title: “Vectors and Methods for Enhanced Cell Longevity and Protein Expression”
Inventors: Dr. Bruce A. Webb and Mr. Jeremy Kroemer.
Technical Description: The present invention provides methods and compositions relating to the expression of vankyrin proteins in cell lines to increase their viability, longevity, and capacity for protein production. The inventors have discovered that the expression of P-ank-1 and I²-ank-3 proteins in cell culture has increased the cells' longevity and capacity for endogenous and/or heterologous target protein production. Specifically, the present invention relates to the enhanced expression of endogenous and/or heterologous target proteins/polypeptides in recombinant cells that are also expressing P-ank-1 and/or I²-ank-3 protein compared to expression host cells that are not expressing P-ank-1 and/or I²-ank-3 protein.

Summary: Dr. Webb and Mr. Kroemer have identified a class of proteins whose increased presence increases longevity of and protein production in cells. Specifically, they provide methods of increasing the levels of the identified proteins in cells to take advantage of the increased longevity and protein production.

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

Filed: January 3, 2005

Title: “Bis-Pyridino Containing Compounds for Use in the Treatment of CNS Pathologies”

Inventors: Dr. Peter A. Crooks, Mr. Joshua T. Ayers, Dr. Vladimir Grinevich, and Dr. Sageetha P. Sumithran.

Technical Description: The present invention provides N-n-Alkylation of nicotine which converts nicotine from an agonist into an antagonist specifically for neuronal nicotinic acetylcholine receptor subtypes mediating nicotine-evoked dopamine release. Conformationally restricted analogs exhibit both high affinity and selectivity at this site, and are able to access the brain due to their ability to act as substrates for the blood-brain barrier choline transporter.

Summary: Drs. Crooks, Grinevich, and Sumithran and Mr. Ayers have chemically altered nicotine. This altered form of nicotine can pass into the brain, blocking the effect of nicotine and natural nicotine-like compounds on a subset of neurons. These compounds can be used to study diseases such as myasthenia gravis, Parkinson’s disease, Alzheimer’s disease, schizophrenia, eating disorders, and drug addiction.

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

Filed: January 12, 2005

Titled: “Method for Protecting Against Neurological Damage Following Acute Neurological Insult”

Inventor: Dr. William F. Maragos.

Technical Description: The present invention provides a method for protecting against neuronal damage following an acute neurological insult and comprises identifying a patient who has been subjected to the acute neurological insult; providing a mitochondrial uncoupler; and administering a neuroprotective dose of the mitochondrial uncoupler to the patient during a therapeutic window, which extends from immediately following the acute neurological insult, wherein a neuroprotective effect is produced.

Summary: Dr. Maragos has invented a method for treating some forms of brain injury, such as stroke. The method represents a new use for a drug that is not currently used therapeutically. That drug belongs to a class of drugs known as “mitochondrial uncouplers” that promote cell survival.

Patent Activities - Fiscal year as of January 31, 2005

Number of Patent Applications	13
Number of Patents Issued	3
Patent Income	\$330,130