

FCR 16

Office of the President
March 7, 2006

Members, Board of Trustees:

PATENT ASSIGNMENT REPORT

Recommendation: that the Board of Trustees accept the patent assignment report for the period ending December 31, 2005.

Background: At its March 4, 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 OCTOBER 1, 2005 THROUGH DECEMBER 31,
2005

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: October, 2005
Title: "HIGH-ACTIVITY MUTANTS OF BUTYLCHOLINESTERASE FOR COCAINE HYDROLYSIS AND METHOD OF GENERATING THE SAME"
Inventors: Drs. Chang-Guo Zhan, Hoon Cho, and Hsin-Hsiung Tai (Department of Pharmaceutical Sciences).
Technical Description: The present invention relates to butylcholinesterase variant polypeptides and, in particular, butylcholinesterase mutants having amino acid substitutions.
Summary: Drugs such as cocaine are resistant to metabolic breakdown and are therefore more addictive than drugs readily broken down. The inventors have enhanced the ability of a specific protein (butylcholinesterase enzyme) to metabolize cocaine by causing specific mutations in the natural enzyme. The inventors anticipate this enhanced enzyme can be used to treat cocaine addiction.

2. **U.S. Patent Application Serial Number: (to be assigned)**
Filed: October 31, 2005
Title: "DELIVERY SYSTEM FOR A COMPOSITION"
Inventors: Drs. Bruce Hinds (Department of Chemical and Materials Engineering) and Audra Stinchcomb (Department of Pharmaceutical Sciences).
Technical Description: This invention relates to devices and methods for cutaneous delivery of a composition using ordered nanoporous membranes comprising aligned nanotubes embedded in a polymer matrix. The membranes of the present invention can be functionalized for selective transport of the composition.
Summary: The inventors describe a new method of making skin patches to deliver pharmaceuticals (much like the nicotine patch). The proposed patches are made by embedding a patch with small hollow tubes that span the patch. Pharmaceuticals coat one side of the patch, and the other side is uncoated. When the uncoated side of the patch comes into contact with the skin, the pharmaceuticals pass from the coated side, through the pores of the tubes, and into the skin. The inventors anticipate the new patches will provide improved control over the flow of pharmaceuticals.

3. **U.S. Patent Application Serial Number: (to be assigned)**
Filed: November 8, 2005
Title: “METHODS FOR DETECTION OF CANCER”
Inventors: Drs. Kimberly Anderson and Kimberly May (Department of Chemical and Materials Engineering) and Leonidas Bachas (Department of Chemistry).
Technical Description: This invention relates to methods for early detection of cancer and for monitoring progression, metastasis, and/or treatment efficacy of cancer. In particular, the invention provides a method for detection of analytes indicative of cancer or a metastatic disease using a biosensor.
Summary: The presence of cancer can be detected indirectly by measuring the level within body fluids of substances produced by cancer cells. Current methods of detecting these substances are frequently slow and insensitive. The inventors have developed a quick method of detecting even small amounts of substances produced by cancer cells. The method can be adapted easily to detect a wide variety of relevant substances in body fluids.

4. **U.S. Patent Application Serial Number: (to be assigned)**
Filed: December 15, 2005
Title: “UTILITY OF PHYLLOPLANINS AS ANTIBIOTICS, SELECTIVE FUNGICIDES AND FOR ENHANCING MICROBIAL RESISTANCE IN CROP PLANTS”
Inventors: Drs. George J. Wagner and Ryan Shepherd (Department of Plant and Soil Sciences).
Technical Description: This invention relates to methods producing and using compositions useful as antimicrobial agents. More particularly, this invention relates to the use of phylloplanin proteins.
Summary: The inventors have identified and isolated phylloplanins, a substance found on the surface of plant leaves. Phylloplanins have remarkable antimicrobial and antifungal properties. The inventors contemplate that phylloplanins will form the basis of a new category of antimicrobial and antifungal products.

5. **U.S. Patent Application Serial Number: (to be assigned)**
Filed: December 29, 2005
Title: “USE OF BORON COMPOUNDS TO PRECIPITATE URANIUM FROM WATER”
Inventors: Dr. David Atwood (Department of Chemistry).
Technical Description: This invention relates to the remediation of aqueous uranium contamination and, more particularly, to a method for precipitating uranium from water contaminate with the uranyl dication $[\text{UO}_2]^{2+}$.
Summary: Nuclear contamination is a byproduct of nuclear energy and nuclear research. The most common type of nuclear contamination is water soluble uranyl dication $[\text{UO}_2]^{2+}$, for which there is no simple method of decontamination. The inventor has discovered that borax (hydrated sodium borate) will precipitate $[\text{UO}_2]^{2+}$ from water under certain conditions. The uranium precipitate can be

easily isolated for disposal. The inventor anticipates his discovery will provide a simple method of remediation of uranium contamination.

Patent Activities
Fiscal year 2005-06 as of December 31, 2005

Number of Patent Applications	7
Number of Patents Issued	9
Patent Income	\$346,341