

FCR 17

Office of the President
September 15, 2009

Members, Board of Trustees:

PATENT ASSIGNMENT REPORT

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

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 THROUGH JUNE 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: March 27, 2009
Title: “Opioid Nornicotine CoDrug Combinations for Pain Management”
Inventors: Drs. Joseph R. Holtman (Anesthesiology), Peter Crooks and Ujjwal Chakraborty (Pharmaceutical Sciences)
Technical Description: This invention relates to the field of pain management, and more particularly to synergistic codrugs comprising an opioid and nornicotine that have been combined to form a single chemical codrug entity. When the codrug is administered, it produces a synergistic analgesic response to pain.
Summary: The most common treatment for pain, opioids, can have undesirable side effects, such as addiction. The inventors have discovered that the drug nornicotine, when combined chemically with opioids, enhances the opioid effects. This enhancement allows a reduction in the amount of opioids administered, decreasing the likelihood of adverse side effects.

- 2. U.S. Patent Application Serial Number: (to be assigned)**
Filed: March 27, 2009
Title: “Opioid Norketamine CoDrug Combinations for Pain Management”
Inventors: Drs. Joseph R. Holtman (Anesthesiology), Peter Crooks and Ujjwal Chakraborty (Pharmaceutical Sciences)
Technical Description: This invention relates to the field of pain management, and more particularly to synergistic codrugs comprising an opioid and norketamine that have been combined to form a single chemical codrug entity. When the codrug is administered, it produces a synergistic analgesic response to pain.
Summary: The most common treatment for pain, opioids, can have undesirable side effects, such as addiction. The inventors have discovered that the drug norketamine, when combined chemically with opioids, enhances the opioid effects. This enhancement allows a reduction in the amount of opioids administered, decreasing the likelihood of adverse side effects.

- 3. U.S. Patent Application Serial Number: (to be assigned)**
Filed: April 7, 2009
Title: “Methods and Compositions for Treating Acute Trauma Pain Using Hydromorphone”

Inventors: Drs. Anita C. Rudy and Daniel Wermeling (Pharmacy Practice and Science)

Technical Description: This invention relates to opioid compositions and methods for treating pain. More specifically, the invention relates to a method of treating acute trauma pain by the intranasal administration of hydromorphone in a pharmaceutically acceptable salt form, and a pharmaceutical composition for intranasal administration of hydromorphone in a pharmaceutically acceptable salt form.

Summary: Opioids administered for the pain of acute trauma are commonly delivered intravenously or intramuscularly. However, the onset of pain relief delivered by these routes of administration is slow. The inventors have developed a new formulation for hydromorphone, an opioid, which is suited for nasal delivery. The onset of pain relief is quicker for nasally-delivered hydromorphone.

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

Filed: April 9, 2009

Title: “Source and Output Device-Independent Pixel Compositor Device Adapted to Incorporate the Digital Visual Interface (DVI)”

Inventors: Drs. Ruigang Yang (Computer Science) and Anselmo Lastra (Outside Faculty)

Technical Description: This invention relates to computer-implemented systems and techniques for interconnecting one or more video or motion-picture source devices with a multitude of projectors and running graphics applications that produce three-dimensional displays onto a variety of surfaces.

Summary: Many computer-based training and simulation applications require very large displays to produce a visual experience that is similar to real-life visual experiences. Typically, these large computer displays are built by combining multiple projected smaller images into one large image. The inventors have developed a computationally efficient device and method for combining multiple projected images into a larger image.

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

Filed: April 15, 2009

Title: “Electromechanical Tourniquet for Battlefield Application”

Inventors: Drs. Ruigang Yang (Computer Science) and Anselmo Lastra (Outside Faculty)

Technical Description: This invention relates to the emergency medical equipment field and, more particularly, to a new and improved electromechanical tourniquet and to a method of confirming that a tourniquet is providing desired occlusive pressure to a limb of a person to which it is applied.

Summary: When an individual sustains an injury to an artery or blood vessel, a tourniquet often is applied to prevent life-threatening blood loss while the individual awaits medical treatment. However, the pressure applied to the tourniquet often is not optimal, and is subjectively determined by the person applying the tourniquet. The inventors have developed a tourniquet that includes a pressure sensor, so an optimal pressure can be applied to an injury. In addition,

the tourniquet of this invention records the time when the tourniquet is applied and/or removed.

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

Filed: May 15, 2009

Title: “Nornicotine for the treatment of pain”

Inventors: Drs. Joseph Holtman and Elzbieta Wala (Anesthesiology), Drs. Peter Crooks and Linda Dwoskin (Pharmaceutical Sciences)

Technical Description: This invention relates to the use of nornicotine for the treatment of pain.

Summary: The most common treatment for pain, opioids, can have undesirable side effects, such as addiction. The inventors have discovered that nornicotine, a known compound, is useful in the treatment of pain, but is not highly addictive.

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

Filed: May 6, 2009

Title: “An Infectious cDNA Clone of the Modified Live Virus Vaccine Strain of *Equine Arteritis Virus*”

Inventors: Dr. Udeni B.R. Balasuriya (Veterinary Science)

Technical Description: This invention relates to an infectious clone of the modified liver virus vaccine strain of *Equine Arteritis Virus*. In particular, the invention relates to an infectious cDNA clone of the modified liver virus vaccine strain allowing generation of full-length, infectious transcripts of the virus. Use of the functional, infectious recombinant virion of the virus derived from an attenuated vaccine strain in marker vaccines, companion diagnostic tests, and the like is contemplated.

Summary: *Equine Arteritis Virus* is a major cause of illness in horses. The current vaccine is comprised of a modified live strain of the virus, but the vaccine cannot be used in pregnant mares. The inventor has determined the DNA sequence encoding the modified strain used in the vaccine. This DNA sequence can be used to develop new vaccine strains that can be used in pregnant mares.

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

Filed: June 10, 2009

Title: “Synergistic Effects of Combinations of Nornicotine and Opioids for the Treatment of Pain”

Inventors: Drs. Joseph R. Holtman (Anesthesiology), Peter Crooks (Pharmaceutical Sciences)

Technical Description: This invention relates to pharmaceutical compositions and methods wherein an opioid analgesic in combination with nornicotine are administered in amounts to provide a synergistic analgesic response to pain.

Summary: The most common treatment for pain, opioids, can have undesirable side effects, such as addiction. The inventors have discovered that the drug nornicotine, when given in conjunction with opioids, enhances the analgesic effect of opioids. This enhancement allows a reduction in the amount of opioids administered, decreasing the likelihood of adverse side effects.

Patent Activities
Fiscal year to date as of June 30, 2009

Number of Patent Applications	37
Number of Patents Issued	19
Patent Income	\$1,659,296