

# FCR 13

Office of the President  
June 22, 2018

Members, Board of Trustees:

## PATENT ASSIGNMENT REPORT

Recommendation: that the Board of Trustees accept the patent assignment report for the period January 1, 2018 to March 31, 2018.

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.

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Action taken:     Approved     Disapproved     Other \_\_\_\_\_

PATENT ASSIGNMENTS  
FOR THE PERIOD January 1, 2018 TO March 31, 2018

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:** 15/875,398  
**Filed:** January 19, 2018  
**Title:** ELECTRICAL DOUBLE LAYER IN NANOPORES FOR DETECTION AND IDENTIFICATION OF MOLECULES AND SUBMOLECULAR UNITS  
**Inventors:** Guigen Zhan and Samuel Bearden (College of Engineering)  
**Technical Description:** This application provides methods to detect and characterize molecules in solution through measurement of several signals emitted when a molecule interacts with an electric double layer.  
**Summary:** Nanopore systems are promising tools for sequencing DNA and RNA. This invention describes methods for utilizing an electrical double layer in nanopores to characterize analytes.  
**Application:** DNA sequencing
- 2. U.S. Patent Application Serial Number:** 15/908,500  
**Filed:** February 28, 2018  
**Title:** BIOMARKERS OF BREAST AND LUNG CANCER  
**Inventors:** Andrew Lane, Teresa Fan, Richard Higashi (College of Medicine)  
**Technical Description:** This application provides methods for measuring lipid amounts in humans suspected of having cancer and using those amounts to determine the probability that the person has cancer.  
**Summary:** Exosomes, which transport proteins and lipids throughout the body, contain various lipids depending on factors such as health and disease state. The lipid compositions in exosomes are different between persons with and without certain cancers. This invention provides methods for measuring lipids in exosomes from human bodily fluid and determining the risk of certain cancer based on the lipid levels.  
**Application:** Detection of breast and lung cancer
- 3. U.S. Patent Application Serial Number:** 15/940,544  
**Filed:** March 29, 2018  
**Title:** IDENTIFICATION OF EBSULFER ANALOGUES WITH BROAD-SPECTRUM ANTIFUNGAL ACTIVITY  
**Inventors:** Sylvie Garneau-Tsodikova, Huy Ngo, Sanjib Shrestha (College of Pharmacy)  
**Technical Description:** This application provides small molecule compounds and compositions that can be used as antifungal agents in patients or crops.  
**Summary:** Drug-resistant fungal strains are becoming increasingly common. The present invention describes novel analogues of the organic compounds, ebselen and ebsulfer (and pharmaceutical compositions thereof), which have antifungal properties. The application also describes novel methods of treating fungal infections.

**Application:** Treatment of fungal infections

4. **U.S. Patent Application Serial Number:** 15/940,727

**Filed:** March 29, 2018

**Title:** GLUCAN KINASES AND METHODS FOR PROCESSING STARCH USING THE SAME

**Inventors:** Matthew Gentry, Craig Vander Kooi (College of Medicine)

**Technical Description:** This application provides a novel glucan kinase and methods for processing starch using a glucan dikinase. Starch is used for many applications, such as food sources, energy sources like biofuels, feedstock and plastics.

**Summary:** Processing starch is a relatively time-consuming and expensive process. This technology identifies kinases necessary for starch processing and a method of doing so that may be less expensive than current methods.

**Application:** Processing starch

Patent Activities  
Fiscal year to date as of March 31, 2018

	Q1	Q2	Q3	Q4	Total
Full Patent Applications	14	5	4		23
Provisional Patent Applications	5	14	6		25
Patents Issued	5	3	8		16
License Income	\$906,686	\$211,168	\$713,137.81		\$1,830,992.54

**Patent Summary Table**

Inventors	College(s)	Title	Brief description
<b>Biomedical</b>			
Sylvie Garneau-Tsodikova, Huy Ngo, Sanjib Shrestha	Pharmacy	Antifungal Compounds	New compounds and compositions for treating fungal infections
Andrew Lane, Teresa Fan, Richard Higashi	Medicine	Biomarkers of Breast and Lung Cancer	New method for detection of breast and lung cancer
Matthew Gentry, Craig Vander Kooi	Medicine	Glucan Kinases and Methods for	New method of processing starch

		Processing Starch Using the Same	
<b>Engineering</b>			
Guigen Zhan, Samuel Bearden	Engineering	Electrical Double Layer in Nanopores for Detection and Identification of Molecules and Submolecular Units	New device for DNA sequencing