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2015 United States Patents Issued

- **Stefan H. Bossmann, Deryl L. Troyer, Matthew T. Basel:** *Protease Assay* - a diagnostic reagent or assay for assessing the protease activity that can be used to detect the presence of a cancerous or precancerous cell. This technology uses nanoparticles coated with amino acids and a fluorescent dye. The amino acids and dye interact with enzymes in a blood sample to fluoresce when enzymes related to cancer are present making it possible to provide an early diagnosis of cancer type.

- **Govindsamy Vediyappan, Duy H. Hua:** *Sesquiterpenes for Antifungal Applications* - this patent covers a simple chemical compound that kills several major fungi that affect human health. The compound also may have applications for fungal diseases that affect wheat and rice plants. The antifungal composition can be formulated to include one or more pharmaceutically acceptable carriers for the sesquiterpene compound(s). The composition can also be administered to animals and humans through various means, such as topically, in the treatment of pathogenic fungal infections.

- **Xiuzhi Susan Sun, Jihong Li, Pavinee Chinachoti, Luis J. Montelongo:** *Animal Feed Compositions and Processes for Producing* - a method of producing animal feed products, that includes the steps of mixing a binding agent with feed meal at a temperature of between about 10^0 C and about 70^0 C to produce a mash, passing the mash through an extruder to form an animal feed product, and drying the animal feed product. The moisture content of the mash is between 5% and 70% (w/w) of the total ingredients. In certain embodiments, the temperature of the meal, mash and final product is kept at 70^0 C or below.

- **Michael R. Seacrist, Vikas Berry, Phong Tuan Nguyen:** *Direct and Sequential Formation of Monolayers of Boron Nitride and Graphene on Substrates* - a patent directed to a method for preparing a layer of graphene directly on the surface of a semiconductor substrate. The layer of graphene may be formed in direct contact of an intervening layer of boron nitride between the substrate surface and the graphene layer.

- **Steven L. Bellinger, Anthony N. Caruso, Brian Cooper, William L. Dunn, Ryan G. Fronk, Douglas S. McGregor, William H. Miller, Eliot R. Myers, Thomas M. Oakes, Philip B. Ugorowski, John K. Shultis. Timothy J. Sobering, Cory B. Hoshor:** *Apparatus and Method for Determination of One or More Free Neutron Characteristics* - this patent covers an apparatus for neutron detection that allows for more efficient detection of neutrons. The device is made up of two or more neutron detectors with neutron moderating elements placed between these detectors. The neutron detectors are coupled to a control system that determines the characteristics of neutrons that are being emanated.

- **Wolfgang G. Rudolph, Amarin Ratanavis, Vasudevan Nampoothiri, Kristan L. Corwin, Andrew M. Jones, Brian R. Washburn, Rajesh Kadel, John M. Zavada:** *Gas Filled Hollow Fiber Laser* - an apparatus and method that uses a gas filled hollow optical fiber in conjunction with pump laser. The use of optically pumped gas lasers (OPGL) with molecular gases offer a variety of mid-IR wavelengths specifically in the eye-safe wavelengths, that can be used in remote sensing and imaging through the atmosphere.

- **Stefan H. Bossmann, Deryl L. Troyer, Matthew T. Basel, Tej B. Shrestha, Hongwang Wang:** *Protease Selective Supramolecular Assemblies* - a patent that covers supramolecular assemblies for delivering active agents to cancerous or precancerous tissues in a subject. These supramolecular assemblies are also useful in assays for detecting and imaging of cancerous and precancerous cells. The assemblies are protease-sensitive and comprise a peptide linkage containing a protease consensus sequence. The assemblies can be selectively targeted to cancerous tissue where the protease enzymes degrade the peptide linkage thereby releasing the active agents which were physically or mechanically contained in or retained by the supramolecular assembly.

Stipend Supplement for Innovation Excellence Program

The Kansas State University Research Foundation Stipend Supplement for Innovation Excellence was initiated in 2012 as a way to recruit top candidates to K-State graduate programs.

The Research Foundation is pleased to recognize Yulia Burakova (*Chemical Engineering*), Miao Li (*Biochemistry & Molecular Biophysics*), Ziyi Linghu and Daniel Unruh (*Food Science*) for the 2015-2016 academic year.

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