[Billing Code 4140-01-P]

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government-Owned Inventions; Availability for Licensing

AGENCY: National Institutes of Health, Public Health Service, HHS

ACTION: Notice

SUMMARY: The inventions listed below are owned by an agency of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally-funded research and development. Foreign patent applications are filed on selected inventions to extend market coverage for companies and may also be available for licensing.

FOR FURTHER INFORMATION: Licensing information and copies of the U.S. patent applications listed below may be obtained by writing to the indicated licensing contact at the Office of Technology Transfer, National Institutes of Health, 6011 Executive Boulevard, Suite 325, Rockville, Maryland 20852-3804; telephone: 301-496-7057; fax: 301-402-0220. A signed Confidential Disclosure Agreement will be required to receive copies of the patent applications.

Infectious Hepatitis E Virus Genotype 3 Recombinants – Prospective Vaccine Candidates and Vector System

Description of Technology: This technology is a recombinant, infectious genotype 3 Hepatitis E virus (HEV) that has been adapted to grow in cell culture and can potentially be used to develop vaccines against HEV or as a vector system to insert exogenous sequences into HEV. The virus (strain Kernow-C1, genotype 3) originated from a chronically infected human subject and was adapted to grow in human hepatoma cells. The adapted virus is unique in that it contains an insertion of a portion of a human ribosomal protein in Open Reading Frame 1 of the virus. Desired exogenous sequences can potentially be placed in lieu of the insert without inactivating the virus.

Infection by HEV is a relevant health issue in a number of developing countries and is also an emerging food-borne disease of industrialized countries. Genotype 1 and 2 infections are found exclusively in humans while genotype 3 and 4 viruses have been found not only in humans, but also swine, deer, mongoose, cattle, and rabbits. In particular, genotype 3 and 4 viruses are ubiquitously found in swine and undercooked pork is thought to be one of the sources of infection for cases of human infections in industrialized countries.

Potential Commercial Applications:

• An infectious, recombinant HEV genotype 3 cDNA clone that could potentially be developed into a vaccine candidate.

• HEV Vector Platform – Desired exogenous sequences can be inserted into the viral genome without inactivating the virus.

Competitive Advantages:

• Most of the HEV vaccines under development are subunit based while the subject technology could potentially be developed into a live, attenuated virus based vaccine.

• Ability to insert exogenous sequences into the viral genome without inactivating the virus makes this subject technology a potential HEV based vector platform.

Development Stage:

• Early stage

• Pre-clinical

• In vitro data available

Inventors: Suzanne U. Emerson, Priyanka Shukla, Hanh T. Nguyen, and Robert H. Purcell (NIAID)

Publication: Shukla P, et al. Cross-species infections of cultured cells by hepatitis E virus and discovery of an infectious virus-host recombinant. Proc Natl Acad Sci U S A. 2011 Feb 8;108(6):2438-2443. [PMID 21262830]

Intellectual Property: HHS Reference No. E-074-2011/2 – PCT Application PCT/US2012/020830 filed 10 Jan 2012

Licensing Contact: Kevin W. Chang, Ph.D.; 301-435-5018; changke@mail.nih.gov

Collaborative Research Opportunity: The National Institute of Allergy and Infectious Diseases is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize hepatitis E virus vaccines. For collaboration opportunities, please contact Maryann Puglielli, Ph.D., J.D. at 301-451-6863 or maryann.puglielli@nih.gov.

Composite Probes and Use Thereof in Super Resolution Microscopy

Description of Technology: The technology is in the field of fluorescence microscopy. More specifically, the invention describes and claims the composite probes for super resolution optical techniques using super resolution via transiently activated quenchers (STAQ). The composite probes include a donor moiety and an acceptor moiety joined by a linker. The acceptor moiety, when excited by incident radiation, is excited to a state which, for example, absorbs in the donor emission region, such that the acceptor moiety in its excited state quenches at least a portion of the donor moiety emission. Other transiently activated quenching mechanisms and moieties could accomplish the same task by reducing donor population. Also disclosed are methods for irradiating a selected region of a target material including the composite probe, wherein the composite probe enables improved resolution by point spread function modification.

Potential Commercial Applications:

• Ultrafine imaging for biomolecules, vesicles and organelles, particularly of living biological samples, in biomedical research.

• Potential applications in clinical diagnostics.

• Nanoscopic Lithography - STAQ composites could, in principle, control polymerization of photoresist masks to make feature sizes below 20nm.

Competitive Advantages: Improved ultrafine imaging –

• Imaging objects as small as 10 nm.

• Narrow the point spread function.

• STAQ uses less power, making live cell study practical at theoretically high resolution.

Development Stage:

• The invention is fully developed.

• Need to build multicolor palette that can be integrated into a commercial microscope.

• May need to make certain protein chimeras and photoinitiators for validation.

Inventors: Jay R Knutson and Gary L. Griffiths (NHLBI)

Publications:

1. Doose S, et al. Probing polyproline structure and dynamics by photoinduced electron transfer provides evidence for deviations from a regular polyproline type II helix. Proc Natl Acad Sci USA. 2007 Oct 30;104(44):17400-5. [PMID 17956989]

2. Schuler B, et al. Polyproline and the "spectroscopic ruler" revisited with single-molecule fluorescence. Proc Natl Acad Sci USA. 2005 Feb 22;102(8):2754-9. [PMID 15699337]

3. Best RB, et al. Effect of flexibility and cis residues in single-molecule FRET studies of polyproline. Proc Natl Acad Sci USA. 2007 Nov 27;104(48):18964-9. [PMID 18029448]

4. Sahoo H, et al. A 10-A spectroscopic ruler applied to short polyprolines. J Am Chem Soc. 2007 Aug 8;129(31):9762-72. [PMID 17629273]

5. Li L, et al. Achieving lambda/20 resolution by one-color initiation and deactivation of polymerization. Science. 2009 May 15;324(5929):892-3. [PMID 19359543]

6. Hell SW. Far-field optical nanoscopy. Science. 2007 May 25;316(5828):1153-8. [PMID 19525330]

7. Masia F, et al. Resonant four-wave mixing of gold nanoparticles for three-dimensional cell microscopy. Opt Lett. 2009 Jun 15;34(12):1816-8. [PMID 19529713]

8. Schmidt R, et al. Mitochondrial cristae revealed with focused light. Nano Lett. 2009 Jun;9(6):2508-10. [PMID 19459703]

Intellectual Property: HHS Reference No. E-253-2009/0 – U.S. Patent Application No. 13/519,737 filed 28 Jun 2012

Licensing Contact: Michael A. Shmilovich, Esq., CLP; 301-435-5019; shmilovm@mail.nih.gov

Collaborative Research Opportunity: The National Heart, Lung and Blood Institute, Laboratory of Molecular Biophysics, is also seeking statements of capability or interest from parties interested in collaborative partnerships to further develop, evaluate, or commercialize this technology. Please contact Brian Bailey, Ph.D. at bbailey@mail.nih.gov for more information.

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Date

Richard U. Rodriguez,
Director
Division of Technology Development and Transfer
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