[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.

Transmission-Blocking Malaria Vaccine

Description of Technology: There is no vaccine for malaria, and there is growing resistance to existing anti-malarial drugs. Sexual stage-specific antigens are of interest as vaccine candidates because disruption of these antigens would reduce the fertility and, thus, the infectivity of the parasite.

This invention claims methods and compositions for delivering a *Plasmodium* P47 vaccine or antibody to P47 to prevent *Plasmodium falciparum* or *Plasmodium vivax* malaria. P47 and other antigens have been mentioned as potential transmission-blocking vaccines due to their surface location on gametes. The gene for P47 antigens is also well characterized. Recent discoveries have noted that P47 allows the parasite to suppress or evade the immune system, thereby ensuring the mosquitoes' survival. Recent discoveries have also shown the mechanism by which P47 enables survival of the parasite by manipulation of the mosquito immune system. Based on the critical role of P47 antigens in transmission, the disruption of the function of P47 by various means can be an innovative and forceful means to control and/or reduce the prevalence of malaria.

Potential Commercial Applications: Malaria vaccine, diagnostic and therapeutic.

Competitive Advantages:

• Single protein malaria transmission-blocking vaccine.

• Cost-effective, simple manufacturing process for vaccine.

• Potentially lower-cost malarial vaccine for developing/developed countries.

Development Stage:

• Pre-clinical

• In vitro data available

• In vivo data available (animal)

Inventors: Carolina Barillas-Mury and Alvaro Molina-Cruz (NIAID)

Publication: Molina-Cruz A, et al. Some strains of Plasmodium falciparum, a human malaria parasite, evade the complement-like system of Anopheles gambiae mosquitoes. Proc Natl Acad Sci U S A. 2012 Jul 10;109(28):E1957-62. [PMID 22623529]

Intellectual Property: HHS Reference No. E-222-2012/0 — US Application No. 61/684,333 filed 17 Aug 2012

Licensing Contact: Peter A. Soukas; 301-435-4646; soukasp@mail.nih.gov

Collaborative Research Opportunity: The National Institute of Allergy and Infectious Diseases (NIAID) is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize malaria vaccines, diagnostics and therapeutics. For collaboration opportunities, please contact Tristan J. Mahyera at tristan.mahyera@nih.gov or 301-827-0251.

Methods and Composition for Identification of Variants of JC Virus DNA; An Etiologic Agent for Progressive Multifocal Leukoencephalopathy (PML)

Description of Technology: JC Virus causes a fatal disease in the brain called progressive multifocal leukoencephalopathy (PML) that occurs in many patients with immunocompromised conditions. The finding of JCV DNA in the patients with neurological symptoms of PML is a diagnostic criterion and is needed to confirm the diagnosis of PML to rule out other neurological conditions. Certain JC virus variants are

known to have a greater association with PML. For example, "Prototype" JC virus is far more pathogenic than "Archetype" JC virus.

This invention claims novel assays for identifying Archetype and/or Prototype JC virus by detecting the presence or absence of the unique Archetype nucleic acid sequence in the non-coding regulatory region of JC virus. While the sequences of Archetype and Prototype JC virus are known, these are the first assays that allow discrimination between Prototype and Archetype JC virus in a simple assay without the need for DNA sequencing. The identification of a JC virus as a prototype can lead to early treatment of infected individuals.

Potential Commercial Applications:

• JCV diagnostic kits.

• JCV diagnostics.

Competitive Advantages:

• DNA sequencing not required.

• Single assay format using same template to identify prototype and archetype with 10c/ml sensitivity.

Development Stage:

• Clinical

• In vitro data available

• In vivo data available (human)

Inventors: Eugene O. Major and Caroline F. Ryschkewitsch (NINDS)

Publication: Perkins MR, et al. Changes in JC Virus-Specific T Cell Responses during Natalizumab Treatment and in Natalizumab-Associated Progressive Multifocal Leukoencephalopathy. PLoS Pathog. 2012 Nov;8(11):e1003014. [PMID 23144619]

Intellectual Property: HHS Reference No. E-088-2012 — US Application No. 61/661,289 filed 18 Jun 2012

Related Technology: HHS Reference No. E-152-2009/0 — Research Material. Patent protection is not being pursued for this technology.

Licensing Contact: Peter A. Soukas; 301-435-4646; soukasp@mail.nih.gov

Collaborative Research Opportunity: The National Institute of Neurological Disorders and Stroke is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize assays for the detection of JC Virus. For collaboration opportunities, please contact Melissa Maderia at maderiam@mail.nih.gov or 301-451-3943.

Cross-Reactive Dengue Fully Human Monoclonal Antibodies

Description of Technology: Among the arthropod-borne flaviviruses, the four dengue virus serotypes, dengue type 1 virus (DENV-1), dengue type 2 virus (DENV-2), dengue type 3 virus (DENV-3), and dengue type 4 virus (DENV-4) are most important in terms of human morbidity and geographic distribution. Dengue viruses cause dengue outbreaks and major epidemics in most tropical and subtropical areas where *Aedes albopictus* and *Aedes aegypti* mosquitoes are abundant.

A safe and effective vaccine against dengue is currently not available. Passive immunization with monoclonal antibodies from non-human primates or humans

represents a possible alternative to vaccines for prevention of illness caused by dengue virus. This invention claims fully human monoclonal antibodies that bind and neutralize dengue type 1, 2, 3 and 4 viruses. It also claims fragments of such antibodies and nucleic acids encoding the antibodies of the invention as well as prophylactic, therapeutic and diagnostic methods employing the antibodies and nucleic acids of the invention.

Potential Commercial Applications:

• Prophylaxis/therapy against dengue serotypes 1, 2, 3, and 4.

• Dengue diagnostics.

Competitive Advantages:

• Antibodies are cross-reactive with all four serotypes of dengue.

• Antibodies are fully human.

Development Stage:

• Pre-clinical

• In vitro data

Inventors: Dimiter S. Dimitrov and Zhongyu Zhu (NCI)

Intellectual Property: HHS Reference No. E-273-2011/0 — US Application No. 61/646,638 filed 14 May 2012

Related Technologies: HHS Reference No. E-066-2003/5 — US Patent 7,622,133 issued 24 Nov 2009; US Application No. 12/607,035 filed 27 Oct 2009

Licensing Contact: Peter A. Soukas; 301-435-4646; soukasp@mail.nih.gov

Collaborative Research Opportunity: The NCI/CCR/NP is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize Cross-Reactive Dengue Fully Human Monoclonal A.

For collaboration opportunities, please contact John Hewes, Ph.D. at hewesj@mail.nih.gov.

Typhoid-Plague Bivalent Vaccine

Description of Technology: *Yersinia pestis* (*Y. pestis*) bacteria is the causative agent of plague, typically transmitted from animals to humans by the bite of an infected flea. *Y. pestis* infection of the lungs leads to pneumonic plague, which is highly contagious and generally fatal. *Y. pestis* is a potential bioterrorist threat agent for which no vaccine yet exists.

This invention claims the generation and development of a candidate oral vaccine against plague. The vaccine consists of a synthetic gene construct that expresses a *Y. pestis* F1-V fusion antigen linked to a secretion signal, resulting in the production of large amounts of the F1-V antigen. The F1-V synthetic gene fusion is housed within Ty21a, an attenuated typhoid fever strain that is licensed for human use as a live oral bacterial vaccine. Ty21a serves as a carrier to deliver the F1-V fusion antigens of the plague bacteria; the combined F1-V fusion in the Ty21a carrier has been shown to stimulate a robust immune response in mice. The possibility of combining the oral plague vaccine of this invention with FDA's candidate oral anthrax vaccine exists and would result in an easy-to-administer oral delivery system to streamline administration of the vaccine to large numbers of recipients in emergency situations.

Potential Commercial Applications: Plague vaccines, therapeutics and diagnostics.

Competitive Advantages:

• Vector is well-characterized.

• Simple manufacturing process.

• Potential low-cost vaccine.

Development Stage:

• Pre-clinical

• In vitro data available

• In vivo data available (animal)

Inventors: Dennis J. Kopecko, Manuel A. Osorio, Monica R. Foote (FDA/CBER)

Intellectual Property: HHS Reference No. E-105-2011/0 — US Application No. 61/650,676 filed 23 May 2012

Related Technologies: HHS Reference No. E-344-2003/1 —US Patent 7,758,855 issued 20 Jul 2010; US Patent 8,247,225 issued 21 Aug 2012

Licensing Contact: Peter A. Soukas; 301-435-4616; soukasp@mail.nih.gov

Collaborative Research Opportunity: The FDA Center for Biologics Evaluation and Research, Lab of Enteric and Sexually Transmitted Diseases, is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize oral plague vaccine. For collaboration opportunities, please contact Dennis Kopecko at dennis.kopecko@fda.hhs.gov.

January 10, 2013
Date

Richard U. Rodriguez,
Director
Division of Technology Development and Transfer
Office of Technology Transfer
National Institutes of Health

[FR Doc. 2013-00737 Filed 01/15/2013 at 8:45 am; Publication Date: 01/16/2013]