antiandrogens, the new small molecules induce androgen receptor degradation and cell death in prostate cancer cells. Further, these compounds and methods can also induce degradation of other steroid hormone receptors demonstrating the possibility of treating a wider range of cancers.

**Potential Commercial Applications:**
- Series of steroid receptor compounds that cause cancer cell death
- Method of using the compounds in cancer treatment

**Competitive Advantages:**
- First small molecule antiandrogen treatment
- Causes cell death, not just loss of function
- Potential to treat other cancers through degradation of other steroid hormone receptors

**Development Stage:** In vitro data available

**Inventors:** Jane B. Trepel, Yeong Sang Kim, Sunmin Lee, Vineet Kumar, and Sanjay V. Malhotra (NCI)


**Licensing Contact:** Whitney Hastings; (301) 451–7337; hastingsw@mail.nih.gov

**Collaborative Research Opportunity:**

The National Cancer Institute is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize B. anthracis vaccines, B. anthracis protein production. For collaboration opportunities, please contact Charles Rainwater at (301) 435–8617.

**Protease Deficient Bacillus anthracis With Improved Recombinant Protein Yield Capabilities**

**Description of Technology:** Species of Bacillus, such as Bacillus anthracis, Bacillus cereus, and Bacillus subtilis, are attractive microorganisms for recombinant protein production in view of their fast growth rate, high yield, and ability to secrete produced products directly into the medium. *Bacillus anthracis* is also attractive in view of its ability to produce anthrax toxin and ability to fold proteins correctly. This application claims a *B. anthracis* strain in which more than one secreted protease is inactivated by genetic modification. Such a protease-deficient *B. anthracis* has an improved ability to produce recombinant secreted proteins compared to other bacteria, particularly other *Bacillus*. Improvements include production of intact (i.e., mature full-length) proteins, often at high yield.

**Potential Commercial Applications:**
- Vaccine production
- Recombinant protein production
- *B. anthracis* vaccine production

**Competitive Advantages:**
- Highly efficient production of recombinant proteins
- Low cost production of recombinant proteins

**Development Stage:**
- Early-stage
- *In vitro* data available

**Inventors:** Andrei Pomerantsev and Stephen Leppla (NIAID)


**Intellectual Property:**

**Advantages:**

**Licensing Contact:** Peter Soukas, J.D.; (301) 435–4646; soukasp@mail.nih.gov

**Collaborative Research Opportunity:**

The NIAID is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize B. anthracis vaccines, B. anthracis protein production. For collaboration opportunities, please contact Charles Rainwater at (301) 435–8617.

**Parvovirus B19 Codon Optimized Structural Proteins for Vaccine and Diagnostic Applications**

**Description of Technology:** Parvovirus B19 (B19V) is the only known pathogenic human parvovirus. Infection by this viral pathogen can cause transient aplastic crisis in individuals with high red cell turnover, pure red cell aplasia in immunosuppressed patients, and hydrops fetalis during pregnancy. In children, B19V most commonly causes erythema infectiosum, or fifth’s disease. Infection can also cause arthropathy and arthralgia. The virus is very erythrophilic, targeting human erythroid (red blood) progenitors found in the bone, bone marrow, and fetal liver. Currently, there are no approved vaccines or antiviral drugs for the treatment or prevention of B19V infection.

The subject technology is a series of plasmid constructs with codon optimized B19 viral capsid genes (VP1 and VP2) that can be expressed in mammalian cells. Transfection of vectors encoding these optimized VP1 and VP2 genes into different mammalian cell lines, including 293, Cos7, and HeLa cells produce virus-like particles (VLPs). The vectors include bicistronic plasmids expressing the VP1 and VP2 proteins at different ratios to produce B19V VLPs with optimal antigenicity for vaccine applications. This technology can also be used for diagnostic applications and development of a viral packaging system for producing infectious B19V virus.

**Applications:**
- VLPs based vaccines for the prevention and/or treatment of B19V infection
- DNA based vaccines for the prevention and/or treatment of B19V infection
- B19V diagnostics
- Viral packaging system

**Advantages:**
• Codon optimized VP1 and VP2 genes for better expression in mammalian cell lines
• Expression of B19V VLPs from “nonpermissive” cell lines

Development Stage: In vitro data available.

Inventors: Ning Zhi, Sachiko Kajigaya, and Neal S. Young (NHBLI).


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

Collaborative Research Opportunity: The National Heart Lung and Blood Institute, Hematology Branch, is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize the subject technology. Please contact Cecilia Pazman, Ph.D., at pazmance@mail.nih.gov for more information.

Dated: October 21, 2011.

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

[FR Doc. 2011–27857 Filed 10–26–11; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government-Owned Inventions; Licensing and Collaborative Research Opportunities for PANVAC—Cancer Vaccine for the Prevention and Treatment of Colorectal Cancer

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.

ADDRESSES: Licensing information and copies of the U.S. patent applications listed below may be obtained by contacting Sabarni Chatterjee at the Office of Technology Transfer, National Institutes of Health, 6011 Executive Boulevard, Suite 325, Rockville, Maryland 20852; telephone: (301) 435–5587; email chatterjeesa@mail.nih.gov.

An effective T-cell immune response to antigens requires two signals. The first one is antigen-specific via the peptide/major histocompatibility complex and the second or “costimulatory” signal is required for cytokine production, proliferation, and other aspects of T-cell activation.

The PANVAC technology employs avirulent poxviruses to present a combination of tumor-associated antigens (TAAs) and costimulatory molecules to activate T-cells and break the immune systems tolerance towards cancer cells. This is performed using recombinant poxvirus DNA vectors that encode both T-cell costimulatory molecules and TAAs. The combination of the costimulatory molecules B7.1, ICAM–1 and LFA–3, is known as TRICOM. Recombinant poxviral vaccines (vaccinia (V) and fowlpox (F) containing TRICOM have been evaluated in prime (V)/boost (F) regimens in preclinical models and in several clinical trials in patients with metastatic colorectal cancer. Additionally, PANVAC has shown promising survival results in treating patients with metastatic colorectal cancer.

Furthermore, recombinant poxviral TRICOM based vaccines can also be employed for the prevention and/or therapy of colorectal cancer containing a range of other TAAs such as the T-box transcription factor Brachyury.

Market

With the identification of molecular targets associated with cancer, the focus of drug development has shifted from broadly acting cytotoxic drugs to targeted therapeutics in the hope of finding drugs that selectively kill cancer cells and do not harm normal cells. Historically, because the expertise of pharmaceutical companies has been in the domain of small molecule therapeutics, several compounds have been developed that inhibit the abnormal biochemical activity of cancer cells. This approach has been successful to an extent as illustrated by the kinase inhibitors and EGFR inhibitors. However, as for chemotherapeutics, cancer cells frequently acquire drug resistance to targeted small-molecule therapeutics rendering them ineffective in the long run. In addition, these small-molecules produce adverse side effects which can prevent the administration of the maximum effective dose. An alternative approach to overcome these problems relies on the use of biologics such as antibodies and vaccines.