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DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government-Owned Inventions; Licensing and Collaborative Research Opportunity: Chemotoxins for Targeted Treatment of Diseased Cells

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 CONTACT: Licensing information and copies of the U.S. patents and patent applications listed below may be obtained by contacting Patrick McCue, Ph.D. at the Office of Technology Transfer, National Institutes of Health, 6011 Executive Boulevard, Suite 325, Rockville, MD 20852; telephone: 301-496-7057; e-mail: McCuepat@mail.nih.gov. A signed Confidential Disclosure Agreement will be required to receive copies of the patent applications.

Inquiries related to Collaborative Research Opportunities may be directed to Nikki Guyton, Ph.D. at the Technology Transfer Center, National Cancer Institute, 6120 Executive Boulevard, Suite 450, Rockville, MD 20852; telephone: 301-435-3101; e-mail: darackn@mail.nih.gov.

SUPPLEMENTARY INFORMATION

Technology

Researchers at the National Institute on Aging (NIA) have developed a straightforward method to elicit immune responses to specific cancers and AIDS by using a chemoattractant-based antigen delivery strategy. The strategy uses formulations composed of chemokines fused to toxic moieties (aka "chemotoxins") to preferentially and specifically eliminate chemokine receptor-expressing cells. The method uses the natural ability of the chemokines to stimulate measurable and improved humoral and immune responses.

• Chemokines can be of viral or microbial (B-Defensin) origin.

• This method can also be used to cause inflammation to specifically target immune cells to increase immunogenicity for malignant tumors using SPANX-B and Laminin tumor antigens.

Potential Commercial Applications

• A potential immunotherapeutic antigen for the treatment of several malignancies including lymphoma, breast, lung, and ovarian.

• Use as a monoclonal antibody

• Antigens, such as SPANX-B and Laminin, can also be used as prognostic and diagnostic agents for the monitoring of disease.

Competitive Advantages

• In contrast to recombinant proteins, these small peptides can be more easily manufactured.

• They help to facilitate the activation of cells in a more specific and therapeutically effective way.

• Active immune system will do a better job attacking cancer cells.

• Simple and less invasive.

Collaborative Research Opportunity

The National Institute on Aging (NIA) is seeking parties interested in collaborative research to further evaluate or commercialize effective vaccines that target bacterial, viral, or tumor antigens. Any or all of the inventions in this announcement are available for co-development and collaboration.

Intellectual Property and Developmental Status

• Viral Chemokine Antigen Fusion Proteins (E-194-2000)

Patent Status: US Patent No. 6,562,347 issued 13 May 2003

Developmental Status: Proof of concept and pre-clinical development ongoing.

• Anti-Tumor Immunity Elicited by Defensin Tumor Antigen Fusion Proteins (E-196-2000)

Patent Status: US Patent No. 7,754,676 issued 13 Jul 2010; US Patent No. 7,915,040 issued 29 Mar 2011; US Patent Application No. 13/019,160 filed 01 Feb 2011

Developmental Status: Clinical Trials Pending.

• Vaccine for the Treatment of Malignancies Expressing Immature Laminin Receptor Protein (OFA-iLRP) (E-271-2006)

Patent Status: US Patent Application No. 11/899,165 filed 03 Sep 2007; US Provisional Application No. 60/841,927 filed 01 Sep 2006

Developmental Status: Pre-clinical with ongoing clinical tests in patients with NSCLC.

• Tumor Associated Antigen SPANX-B for Cancer Immunotherapy (E-089-2009)

Patent Status: US Provisional Application No. 61/156,435 filed 27 Feb 2009

Developmental Status: Ongoing In vitro pre-clinical studies on human tumor cells.

References

1. A Biragyn et al. Genetic fusion of chemokines to a self tumor antigen induces protective, T-cell dependent antitumor immunity. Nat Biotechnol. 1999 Mar;17(3):253-258. [PMID 10096292]

2. A Biragyn et al. Mediators of innate immunity that target immature, but not mature, dendritic cells induce antitumor immunity when genetically fused with nonimmunogenic tumor antigens. J Immunol. 2001 Dec 1;167(11):6644-6653. [PMID 11714836]

3. G Almanzar et al. Sperm-derived SPANX-B is a clinically relevant tumor antigen that is expressed in human tumors and readily recognized by human CD4+ and CD8+ T cells. Clin Cancer Res. 2009 Mar 15;15(6):1954-1963. [PMID 19276289]

For information on the Immunotherapeutics Unit, Laboratory of Molecular Biology and Immunology of the National Institute on Aging (NIA), please visit: http://www.grc.nia.nih.gov/branches/lmbi/cis_itu.htm.

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