Cancer Immunotherapies That Harness Pre-Existing Antiviral Immunity

Summary (1024-character limit)

The National Cancer Institute (NCI) is seeking licensing and/or co-development of a cancer immunotherapy based on harnessing the pre-existing immune response to a chronic viral pathogen such as human cytomegalovirus (HCMV) to target solid tumors.

NIH Reference Number

E-167-2017

Product Type

- Therapeutics

Keywords

- Immunotherapy, Solid Tumor, Epitope Spreading, human cytomegalovirus, HCMV Antigens, Antiviral Cellular Immunity, Schiller

Collaboration Opportunity

This invention is available for licensing and co-development.

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Description of Technology

The treatment of cancer using immunotherapies has garnered substantial attention and excitement following clinical benefit observed in patient populations previously refractory to treatment. New approaches continue to be developed to increase the subset of cancer patients responding to treatment – and to address the issue that highly personalized treatments may have manufacturing challenges. Furthermore, the field is open to new approaches with more promising toxicity profiles. This technology recognizes that the induction of anti-tumor T cell responses is a critical element in the development of effective immunotherapies against cancer.

This novel technology developed by researchers at the National Cancer Institute (NCI) is a cancer immunotherapy that harnesses the potent pre-existing cellular immunity against a commonly acquired virus, human cytomegalovirus (HCMV) that causes well controlled chronic infection in immunocompetent people. Using tumor tropic human papillomavirus pseudovirions, that contain

plasmids expressing HCMV peptides or direct intra-tumoral injection of HCMV peptides, this methodology directs the pre-existing anti-HCMV immunity against those peptides to the tumors. In the presence of an immune response modifier, such as poly-IC, the anti-HCMV cellular immunity is re-directed to kill the cancerous tumors and induce antigen spreading to tumor-associated antigens.

The NCI seeks licensing and/or co-development of a cancer immunotherapy based on harnessing the pre-existing immune response to a chronic viral pathogen such as human cytomegalovirus (HCMV) to target solid tumors.

Potential Commercial Applications

- Therapeutic for the treatment of cancer
- Immunotherapy

Competitive Advantages

- Does not require the laborious process of clonal T-cell expansion seen with CAR-T cell-based immunotherapies
- More patients potentially treated in shorter amount of time from diagnosis to treatment
- Not reliant on the identification of specific tumor-associated antigens, so it can be used as an immunotherapy for many different cancer indications
- “Off the shelf” capabilities provide easier scale-up manufacturing and cost-of-goods

Inventor(s)

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Development Stage

- Pre-clinical (in vivo)

Patent Status

- **U.S. Provisional:** U.S. Provisional Patent Application Number 62/582,097 , Filed 06 Nov 2017
- **PCT:** PCT Application Number PCT/US2018/059384 , Filed 06 Nov 2018

Therapeutic Area

- Cancer/Neoplasm