Transformation of Weak or Non-Immunogenic Antigens to Produce an Immune Response and Therapeutic Polypeptides for the Treatment and Prevention of Cancer

Summary (1024-character limit)
Researchers at the National Institute on Aging (NIA) have developed a novel strategy for rendering weakly or non-immunogenic, shared (between self and tumor) antigens immunogenic, or able to produce an immune response. Further, they have created therapeutic polypeptides comprising tumor-associated embryonic antigens and chemoattractant ligands. Cancers targeted by these developments include breast, renal, lung, ovarian, and hematological cancers.

NIH Reference Number
E-271-2006

Product Type
- Therapeutics

Keywords
- Cancer Vaccine, Chemokine, Antigen, National Institute on Aging, NIA, Biragyn

Collaboration Opportunity
This invention is available for licensing and co-development.

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Description of Technology
A significant challenge in developing therapies for the treatment and prevention of cancer has been the discovery, selection, and exploitation of antigens.

Researchers at the National Institute on Aging (NIA) have partially circumvented this issue in their development of novel strategies for rendering weakly or non-immunogenic, shared antigens immunogenic, or able to produce an immune response. These strategies use proinflammatory chemokines to deliver antigens to immature dendritic cells (DCs) by targeting chemokine receptors differentially expressed on antigen presenting cells (APCs). Their work builds upon the discovery that tumor-associated, embryonic antigens (e.g., OFA-iLRP) – though non-antigenic alone – are effective for the treatment and/or prevention of cancer when linked to a chemoattractant ligand. Examples of such
ligands include proinflammatory chemokines such as MIP3α/CCL20 or β-defensin mDF2β. Multiple vaccines may be developed based upon individualized treatments for patients facing, or at risk of developing, the most aggressive forms of cancer.

The NIA is seeking statements of capability or interest from parties interested in licensing or collaborative research and development that can be applied to many cancer types. Such co-development opportunities would aim to further develop, evaluate, or commercialize simple and potent vaccines targeting embryonic and other antigens expressed in tumors.

**Potential Commercial Applications**
- Treatment and prevention of solid tumors
- Treatment and prevention of blood-borne tumors

**Competitive Advantages**
- Potential development of a prophylactic vaccine
- Simple and less invasive approach; easily deliverable to the skin, muscle, and other tissues

**Inventor(s)**
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**Development Stage**
- Pre-clinical (in vivo)

**Publications**
Biragyn A, et al. Genetic fusion of chemokines to a self tumor antigen induces protective, T-cell dependent antitumor immunity [PMID 10096292]

Schiavo, R, et al. Chemokine receptor targeting efficiently cross presents antigens to MHC class I and elicit CD8+ T cell responses both in vitro and in vivo [PMID 1895803]


**Patent Status**
- **U.S. Patent Issued**: U.S. Patent Number 8,258,278, Issued 04 Sep 2012

**Therapeutic Area**
- Cancer/Neoplasm