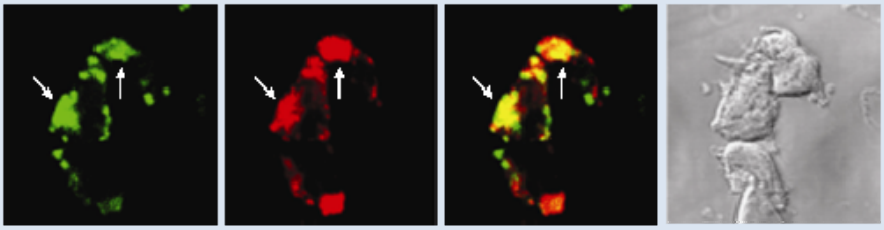
Vaccine Platform: Gp100 Chimera Construct Ensures Epitope Delivery for MHC Presentation



GFP | LAMP-1 | GFP/LAMP-1 | Phase contrast

Applications

- Vaccination: Enhanced presentation of antigens

Advantages

- Targeted antigens are presented by both MHC class I and class II molecules, resulting in the activation of both the humoral and cell-mediated immune responses
- Gp100 peptide sequences required for endosomal localization have been identified

Intellectual Property

US patent was filed February 2008

Background

Improving vaccine efficiency is the focus of one of the fastest growing branches of the pharmaceutical industry. Vaccine immunization generally induces only humoral response. Vaccines that can elicit both humoral and cell-mediated immune responses are of great interest. Antigens are presented to CD4+ helper T cells by MHC class II molecules, however, to get a robust cytotoxic response, antigens also need to be presented to cytotoxic CD8+ T cells by MHC class I molecules. There is a need for novel compounds and methods for increasing antigen presentation by both types of MHC molecules.

Technology

The present technology involves gp100, a melanoma/melanocyte shared antigen, that can be presented by both Major Histocompatibility Complex (MHC) class I and class II molecules when expressed endogenously by melanoma and non-melanoma cells.

Dr. Réjean Lapointe and his colleagues at *Université de Montréal* have identified gp100 sequences that are required for MHC class I and class II presentation. These sequences may be included in the expression cassettes for DNA vaccines in order to optimize MHC presentation of various vaccine antigens.

Results

In vitro proof of concept results demonstrated that specific gp100 sequences mobilized an endogenous protein (GFP) to the endosomal compartment. *In vivo* proof of concept is planned for an undisclosed new vaccine.

Figure on the top:

Endosomal mobilization of gp100/GFP. 293T cells were stained with anti-LAMP-1 conjugated with Alexa Fluor-568 (red) and analyzed by confocal microscopy. Yellow vesicles in the merge image represent colocalization of gp100/GFP and LAMP-1 (white arrows).

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