



PD1 Biotoools

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Background

The T cells response to infections is a result of a delicate balance between their effector functions, necessary to eliminate the pathogen, and their potential to cause tissue damage. Within this context, regulatory molecules are crucial in maintaining an effective response. Among these molecules, PD-1 predominately mediates inhibitory signals towards T cells in order to avoid excessive activation of the immune response. However, under conditions of persistent antigen (chronic infection), PD-1 expression levels remain high and this constitute a major challenge to fight infection. During HIV infection, the interaction of PD-1 (elevated on HIV-specific T cells) with its ligand PD-L1 (elevated on antigen presenting cells) leads to T cell exhaustion and dysfunction. Therefore it has become an important target and indicator of HIV infection. Given the role of PD-1 activity in immune function and its important role in HIV infection, there is a need for the development of a method to follow the state of PD-1 during clinical treatments.

Technology

Dr. Rafick-Pierre Sekaly's research group has defined the PD-1 gene signature needed for immunomonitoring.

This invention provides a list of genes/proteins/signal transduction pathways which can be used to predict PD-1 function. These lists are valuable tools to evaluate the exact immunological status of patients with cancer, autoimmune diseases or HIV and HCV infections. More specifically, T cells are analyzed to determine their PD-1 gene signature which is then compared to the baseline gene signature, making it possible to quickly determine the state of an immune dysfunction.

Results

The gene signatures of T cells obtained from patients are compared with the baseline PD-1 signature through a pattern recognition process. The resulting analysis then indicates whether there is an increase, decrease or lack of change in PD-1 expression.

Applications

This product can meet 2 commercial needs:

1. Primarily, for immunomonitoring during clinical assays for therapeutic vaccines against HIV, HCV, cancers or autoimmune diseases;
2. As a diagnostic and prognostic tool for patients with any immune dysfunctions implicating PD-1.

Competitive Advantages

This is the first method to be able to determine the state of PD-1 by simply analyzing T cells collected from a patient.

In addition, no previous or current method exists which allows the monitoring of therapeutic vaccine immunological efficacy.

Patent Status

PCT application filed in (Q4/2008)

Business Opportunity

Univalor is seeking a license agreement with a commercial partner.

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