

TECHNOLOGY TRANSFER OFFICE

UNIVERSITY OF COLORADO

Vaccine for Prevention and Treatment of Autoimmune Diseases

Background

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IP Status: Patent pending; available for exclusive or non-exclusive licensing

Case Manager: David Poticha david.poticha@cu.edu <u>Ref.# CU2295H</u> Today 23.5 million Americans suffer from autoimmune diseases; such diseases are among the top ten leading causes of death among all ages of women up to 65 years old. Auto-immune diseases are caused by the body inadvertently producing an immune response that attacks its own cells, tissue, and organs. The two distinct types are organ-specific (examples include Insulin -dependent Type I diabetes affecting the pancreas) and non-organ-specific (examples include Lupus and Multiple Sclerosis) and both types are often life-threatening and debilitating. There are approximately 100 identified autoimmune diseases while up to 40 additional diseases have an autoimmune basis, most of these diseases cannot be treated directly. Current treatments often have devastating side effects, leaving a need in the industry for safer, direct, and more effective methods for treatment and prevention.

Technology

A research team at the University of Colorado led by Dr. George Eisenbarth has identified and tested a novel antigen-specific strategy for the prevention or treatment of autoimmune diseases. In this new approach, a compound (consisting of a natural immune-system molecule tethered to an autoantigenic peptide that is implicated in the development of a particular auto-immune disease) is administered as a vaccine, causing the patient to produce an antibody which acts to inhibit or prevent autoimmune activity. Although the research group's data relates to Type-I diabetes (see below), this method can be used in the treatment of any autoimmune disease that involves a T cell response, including Hashimoto's thyroiditis, Graves' disease, pernicious anemia, Addison's disease, chronic active hepatitis, myasthenia gravis, rheumatoid arthritis, multiple sclerosis and lupus.

Current data from experiments with NOD (non-obese diabetic) mice: this life table illustrates that the mice that did not develop antibodies following immunization by the above method developed diabetes, as did the NOD non-immunized mice; however, all the anti-I-A^{g7} positive mice were prevented from developing diabetes.



Further data available under CDA.

Key Documents

<u>Therapeutic Compositions and Methods for the Prevention of Autoimmune</u> <u>Diseases</u>. Patent application filed Jun. 9, 2009.

Diabetogenic T cells recognize insulin bound to IAg7 in an unexpected, weakly binding register. Proc Natl Acad Sci U S A. 2010 Jun 15;107(24):10978-83.