

EpiVax Press Release November 1, 2012



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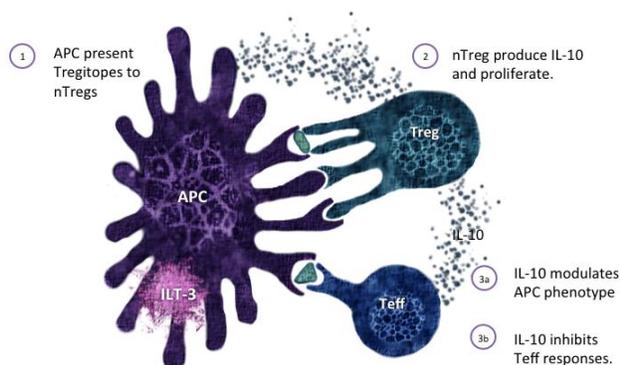
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Providence, Rhode Island

Additional Tregitope Funding for Orphan Disease Indication Will Compare Tregitope with IVIG

Providence, RI - Providence-based biotech company EpiVax, Inc. was awarded a new **\$55,000 grant** from the GBS-CIDP Foundation International, to explore using **Tregitopes as a novel immuno-modulator therapy for a nerve disease that is currently treated with intravenous immunoglobulin G (IVIG)**. This award and the recent addition of an SBIR grant for **\$600,000** to explore the use of Tregitope for **Pompe disease (August 2012)** will bring the total amount of funding awarded to EpiVax for research and development of Tregitopes to **more than \$3.4M this year**. The **surge in funding** will result in new hires at the Providence-based biotech company, which is considering spinning off the Tregitope technology should angel or venture funding be made available. Interested applicants should visit the EpiVax.com website and send in their CV.

The new research funds will be devoted to developing a replacement for **IVIG** in the treatment of individuals who have CIDP, also known as **Chronic Inflammatory Demyelinating Polyneuropathy**. Patients develop a debilitating and painful nerve condition that requires treatment with IVIG, among other medications. **A single dose of IVIG costs \$8,000, and patients often spend tens of thousands of dollars obtaining treatment for their condition per year**. Alternative treatments that might redirect the immune response toward antigen-specific tolerance without immunosuppressive agents are needed. With funding from the NIH SBIR program, Tregitopes (**T regulatory epitopes**) will be tested, in animal models, for the future treatment of CIDP. Other diseases that can be treated with IVIG include Guillain-Barre syndrome, and IVIG therapy is **now under study for the treatment of Alzheimer's**. Scientists at EpiVax believe that the mechanism of action of IVIG and Tregitopes are very similar, if not identical in some cases.



Based on funding received by EpiVax this year, it is clear that Tregitopes may have broad applications in **autoimmune diseases** such as **Multiple**

Sclerosis (MS). EpiVax is also working with **Samia Khoury M.D.**, an internationally recognized MS researcher based at Harvard Brigham and Women's hospital, to develop a Tregitope-based treatment for MS. Dr. Khoury has said

that that pre-clinical studies of Tregitope being carried out in her laboratory by researcher **Wassim Elyaman, Ph.D.**, are “promising”.

About Tregitopes

Tregitopes are linear sequences of peptides contained within the framework of monoclonal antibodies and **immunoglobulin G (also known as gamma globulin) that activate natural regulatory T cells. The Tregitopes act as a natural ‘off switch’ and have been shown in standard preclinical models, and by collaborating laboratories, to suppress and treat autoimmune disease, allergies, and to effectively suppress the immunogenicity of co-administered proteins.** This type of immune system function is a natural mechanism for suppressing tissue-destroying immune cells that are the root cause of ‘organ-specific autoimmune diseases’, and in addition, modify immune responses to biotherapeutics (such as FVIII and other biologics).

Tregitopes were discovered in 2008 by the team of Anne S. **De Groot** and Bill **Martin** at EpiVax and the program is currently managed by Scientific Director, **Leslie Cousens, PhD**. The original discovery was published in the journal [Blood](#) in 2008¹, more recent papers include a comparison to IVIG that was recently published online at [Autoimmunity Reviews](#). In recognition of the importance of the discovery for biologics, the American Association of Pharmacologists awarded Tregitope an “Innovation Award” in 2010: <http://tinyurl.com/EpiVax-AAPS-Award>. NIH and Foundation funding for Tregitope research at EpiVax amounts to more than \$6 M over the past 4 years.

Anticipated uses of Tregitope include induction of **tolerance to co-administered protein drugs**, a market worth more than **\$100B globally**. Also known as **biotherapeutics**, drugs such as Campath, Rituximab, enzyme replacement therapies such as Myozyme, and blood factors such as FVIII often induce antibodies, rendering the drugs less effective or ineffective.

According to **Dr. Srinivasa Kaveri a well-known expert on IVIG (INSERM)** in Paris,

"It is most likely that some of the well established and successfully practiced therapeutic strategies such as intravenous immunoglobulins to treat several serious autoimmune and inflammatory diseases in order to induce tolerance, may actually be harnessing the potential of Tregitopes".

"The endorsement, and more so the continued funding, by the National Institutes of Health of EpiVax's Tregitope program, is further validation of the promising research pioneered by Dr. De Groot and her colleagues and collaborators," stated **Richard G. Horan, managing director at the Slater Technology Fund**. *"Rhode Islanders have been well-served by the support provided EpiVax from the Slater Fund in the company's early years. In addition to generating a return on the fund's investment, the company has generated over a decade of high value, high wage jobs funded by steadily-increasing grants and contracts with pharmaceutical and biotech companies. It's a great example of academic innovation translating into robust economic development in biotechnology."*

About Chronic Inflammatory Demyelinating Polyneuropathy

GBS, Guillian-Barré Syndrome, is an inflammatory disorder of the peripheral nerves also called Acute Inflammatory Demyelinating Polyneuropathy. CIDP is the chronic form of GBS. According to Wikipedia, [“Chronic inflammatory demyelinating polyneuropathy](#) is believed to be due to immune cells, cells which normally protect the body from foreign infection, but here begin incorrectly attacking the nerves in the body instead. As a result, the affected nerves fail to respond, or respond only weakly, to stimuli causing numbing, tingling, pain, progressive muscle weakness, loss of deep tendon reflexes (areflexia), fatigue, and abnormal sensations. The likelihood of progression

¹ De Groot A.S., L. Moise, J.A. McMurry, Erik Wambre, Laurence Van Overvelt, Philippe Moingeon, W. Scott, W. Martin, Activation of Natural Regulatory T cells by IgG Fc-derived Peptide “Tregitopes”. *Blood*, 2008,112: 3303. <http://tinyurl.com/ASDeGroot-Blood-2008>

of the disease is high.” Teaching the immune system to tolerate nerve cells by co-delivering the target antigen with Tregitope peptides might dramatically improve the lives of individuals living with CIDP and could be applied to conditions in which nerves are attacked by the immune system, such as Multiple Sclerosis (MS).

About CBS-CIDP Foundation International

[GBS-CIDP Foundation International](#) started in 1980 as a support group and has grown to an international organization of 30,000 members with 182 chapters in 33 countries, all of them dedicated to providing support and assistance to GBS/CIDP patients and their families. The Foundation continues to be funded by contributions from individuals who have been personally touched by GBS as well as by corporate donors. It has been acclaimed as one of the few organizations in which 100% of donations are used for the purpose for which they are collected, and acknowledged by the Voluntary Health Agency Community as being among the top charities in the field.

GBS-CIDP Foundation International has awarded EpiVax a \$55,000 grant to explore using Tregitopes as a novel immuno-modulator therapy for CIDP. **The current treatment for GBS-CIDP is intravenous IVIG. IVIG is a human blood product that is not only in high demand, but also is expensive to manufacture, is administered in large volumes, and requires a frequent dosing regimen. This plasma product requires antibodies harvested from 1,000 or more donors, mixing them together to form an infusion, then processing to remove unwanted material. The costs are up to thousands of dollars per dose.** EpiVax has identified the abovementioned Tregitope as a possible replacement to the current IVIG treatment, as Tregitopes has similar effects to IVIG in non-clinical studies. EpiVax intends to study Tregitope treatment in an animal model replicating pathogenesis of disease. The proposed treatment is a synthetic material not requiring human donors and readily manufactured at low cost compared to current treatment options. Tregitopes may be an improved tolerance-inducing therapy for CBS and CIDP, providing a safer, more effective therapy in this disease.

The SBIR Program

The **Small Business Innovation Research (SBIR) program** enables small businesses to explore their technological potential and provides the incentive to profit from its commercialization. The mission of the SBIR program is to support scientific excellence and technological innovation through the investment of Federal research funds in critical American priorities to build a strong national economy. The program’s goals are to stimulate technological innovation, meet Federal research and development needs, foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons, and to increase private-sector commercialization of innovations derived from Federal research and development funding. By including small businesses in federally funded R&D, the program fosters entrepreneurial spirit while bolstering specific research and development needs.

The **SBIR program was established under the Small Business Innovation Development Act of 1982**, and through 2009, over 112,500 awards have been made totaling more than \$26.9 billion. Congress has continued to support the program with numerous extensions, the most recent of which extends the SBIR program through 2017.

About EpiVax

[EpiVax, Inc.](#) is a Providence, Rhode Island biotechnology company focused on the development of vaccines and immunotherapeutics. EpiVax is one of the world’s leading innovators in the field of “Immunogenicity Screening”. The company uses immunoinformatics tools to screen protein therapeutics and to deimmunize these drugs so as to reduce adverse effects in the clinic. The Tregitope technology adds to the EpiVax Immunogenicity Toolbox, as it is expected to improve tolerance of protein drugs such as replacement enzymes, blood factors, and monoclonal antibodies.

The company was spun out of Brown University in 1998 with start-up funding from Slater Biotechnology (a state-backed investment fund). Led by Dr. Anne S. De Groot, M.D., Immunoinformatics and vaccine design thought leader, EpiVax has enjoyed success in the fields of immunology and bioinformatics, and has developed proprietary immunoinformatics tools for the development and improvement of biotherapeutic drug candidates. Through the application and utilization of these computational tools, EpiVax is helping to engineer safe, more effective therapeutic proteins and to rapidly design protective and efficacious new vaccines.

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