

## *Hannah's Hope ~ A Tribute to Mary and Dick Allen*

*Since their granddaughter, Hannah, was diagnosed with type 1 diabetes on January 1, 2001, Mary and Dick Allen have worked tirelessly on behalf of JDRF's critical mission: to find a cure for type 1 diabetes and its complications. Mary says JDRF's greatest strength is that it offers 'hope' that a cure will be found.*

Thanks to the dedication of people like the Allens, research has dramatically accelerated and new discoveries are being translated into real treatments.

To honor Mary and Dick's unwavering work to help people living with diabetes and find a cure for type 1 diabetes, to keep the pace of research going strong, and to recognize Mary and Dick as Orange County's "Philanthropists of the Year," JDRF Orange County chapter has launched

### **Hannah's Hope Research Initiative**

This tribute supports JDRF's research in the area of immune therapies, by funding the work of Hans Dooms, Ph.D., at The Regents of the University of California, San Francisco\*\*.

JDRF's aggressive new approach pushes us to clear the obstacles in our path in the relentless quest to deliver a cure. It gives unprecedented hope to our loved ones and the millions of others who struggle with diabetes.

*Mary and Dick have made a commitment to match outright gifts and pledges of \$10,000 or more, up to a total of \$250,000, in order to fund the entire \$500,000 project. Our shared goal is to raise these funds by June 2011.*



Please join us in saluting Mary and Dick – and help strengthen JDRF's effort to find a cure for diabetes, with your gift.

*Hannah and millions of other children are counting on you to add your voice and your support to this pioneering program.*

\*\*To view the abstract for Dr. Dooms' project, please [click here](#) (set up link). For any additional questions, please contact Linda Riley – [liriley@jdrf.org](mailto:liriley@jdrf.org) or 949-885-5020.

## Hannah's Hope Project Abstract

**Investigator:** Hans Doms, Ph.D.  
**Location:** The Regents of the University of California, San Francisco  
**Project Name:** Targeting Autoreactive Memory T cells in Type 1 Diabetes  
**Research Area:** Immune Therapies/Immune Memory  
**Funding Amount:** \$500,000

### OBJECTIVE

The recent history of type 1 diabetes (T1D) research encompasses major efforts to characterize the immunological basis of the disease, advances related to disease prediction and several coordinated intervention trials aimed at preventing the disease. While successes were seen in each of those efforts, the major challenge to prevent and/or reverse T1D in humans remains.

***We believe that understanding the fundamental immunological defects which underlie T1D will ultimately provide the basis for successful therapy.*** T cells reactive with proteins expressed by the body (self antigens) play a crucial role in destroying the beta cells in the pancreas, but we don't know which particular type of T cells is causing the disease and how.

***Memory T cells are attractive candidates to play a major role in T1D.*** Memory T cells are generated naturally during infection or artificially by vaccination, and can presumably also be generated in response to self antigens. Memory T cells are long-lived and can mount a faster and more powerful attack against cellular targets than other immune cells. ***These qualities endow memory cells with a superior capacity to protect the organism against infection. However, these same properties become extremely harmful when memory cells are reacting against self antigens, such as islet antigens in the pancreas.***

**We hypothesize that self-reactive memory cells are responsible for the perpetuation of anti-islet responses and eliminating these cells is the key to successful therapy. Thus, we propose to develop ways to specifically eliminate or suppress islet-reactive memory T cells.**

### PROCESS

We will use novel mouse models, in which memory cells can be distinguished from other T cells with fluorescent markers, to specifically follow when and where diabetogenic memory cells develop. *We will isolate these cells from the immune organs and the pancreas and test the idea that memory cells are particularly dangerous because they escape control mechanisms executed by regulatory T cells (Tregs).* Tregs protect the body against self-destructive auto-immune responses and attempts to use these cells for therapy are underway. *We will try to increase the sensitivity of memory cells to Tregs as a way to control memory responses.*

Also, memory cell numbers will be reduced by inhibiting the molecules they use for their survival with antibodies. We will specifically target Interleukin-7, a growth factor we and others have identified as essential for memory cell survival. Interleukin-2 (IL-2) is another interesting candidate but more complicated to target since both memory cells and Tregs depend on it. *Defining the precise mode of action of IL-2 on both cell populations may allow us to target IL-2 to reduce memory cells without affecting Tregs.*

***We hope the dual strategy of targeting the survival pathways of disease-causing memory cells and reinforcing their sensitivity to Tregs will tip the balance in favor of protection and reverse diabetes development.***