



## GRANT PROGRESS REPORT REVIEW

**Grant:** 01240-A: *Development of a Diagnostic Method for Canine Atopic Dermatitis*  
**Principal Investigator:** Dr. Daniel A. Gingerich, D.V.M.  
**Research Institution:** Imulan Bio Therapeutics, LLC  
**Grant Amount:** \$11,880.00  
**Start Date:** 5/1/2009      **End Date:** 4/30/2010

**Progress Report:** 12 month

**Report Due:** 4/30/2010

**Report Received:** 4/27/2010

**Recommended for Approval:** Approved

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*(Content of this report is not confidential. A grant sponsor's CHF Health Liaison may request the confidential scientific report submitted by the investigator by contacting the CHF office.)*

### **Original Project Description:**

Background: Atopic dermatitis, an autoimmune disease in which dogs develop hypersensitivity to environmental or food allergens, is a common and frustrating canine skin condition. There are few effective therapies and many dogs require prolonged administration of steroids or other immunosuppressive drugs. The only specific cure is skin testing and desensitization treatments over prolonged periods of time, managed by skilled veterinarians. Palliative treatments, including newer immunosuppressive drugs such as cyclosporine are only partially effective. It is now known that dogs with atopic dermatitis have specific immunological imbalances compared to normal dogs. A new vaccine has been developed that may correct the underlying immunological imbalance, and is showing encouraging results in ongoing clinical trials. Unfortunately, there is at present no convenient, cost-effective way of determining whether or not a particular dog has that immunological imbalance or whether the dog would likely respond to the new vaccine. Fortunately, research has shown that animals and humans with autoimmune disease have serum antibodies against their own T-cell receptors (TCR). This hyper-reactivity can be detected with simple blood tests. However, the tests must be specifically designed for each species (dog, human, etc).

Objective: This project aims to develop simple blood tests to detect whether or not a particular dog is hyper-reactive to its own immune cells, which is characteristic of atopic dermatitis. The researchers will also develop screening tests for dogs and use these tests to determine response to treatment.

**Original Grant Objectives:**

The purpose of this project is to develop simple blood tests to detect whether or not a particular dog is hyper-reactive to its own immune cells, which is characteristic of atopic dermatitis.

Objective 1: Develop and validate enzyme-linked immunosorbent assays (ELISAs) to detect autoreactivity to dog T-cell receptors (TCR VB1) in serum, as a diagnostic test for the underlying immunological status in canine atopic dermatitis (CAD).

Objective 2: Test serum samples from dogs with CAD and compare the results with normal dogs, using the ELISA

Objective 3: Test serum samples from dogs with CAD before and after treatment with TCR VB1, using the ELISA

**Publications:**

- 4/30/10 None to date. Additional verification will be performed before publication.

**Report to Grant Sponsor from Investigator:**

Atopic dermatitis is an inflammatory, chronically relapsing skin disease that causes intense itching in dogs. The skin of atopic dogs reacts abnormally to environmental allergens. Confirmation of atopy in dogs is often a clinical challenge which involves ruling out other causes such as fleas, food allergies, etc.

The purpose of this project was to develop simple blood tests to determine whether or not a dog is likely to have atopic dermatitis. This was done by developing an enzyme linked immunosorbent assay (ELISA) for blood serum to determine if the dog is hyper-reactive to its own immune cells.

Serum samples from a total of 58 dogs, 29 with atopic dermatitis and 29 non-atopic dogs were analyzed for reactivity using the newly developed ELISA. Dogs with atopic dermatitis had significantly higher anti-immune cell reactivity compared to non atopic dogs (median 6,400 vs. 400 respectively). These results suggest that immune cell reactivity as measured by this new assay may serve as a biomarker for atopic dermatitis in dogs.

The ability to distinguish atopic dermatitis in dogs from other skin conditions with similar symptoms would be a substantial advantage for treatment. Next steps include determining whether immune cell hyper-reactivity is specific to atopic dermatitis or whether other autoimmune diseases in dogs react similarly.