



## GRANT PROGRESS REPORT SUMMARY

**Grant:** 01827: *High-throughput (metagenomic) sequencing for identification of bacteria associated with canine periodontitis and oral health.*

**Principal Investigator:** Dr. Marcello Pasquale Riggio, PhD

**Research Institution:** University of Glasgow

**Grant Amount:** \$31,000.00

**Start Date:** 1/1/2013                      **End Date:** 12/31/2013

**Progress Report:** Mid-Year 1

**Report Due:** 6/30/2013                      **Report Received:** 7/5/2013

**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. The below Report to Grant Sponsors from Investigator can be used in communications with your club members.)*

### Original Project Description:

Our knowledge of the causes of gum disease in dogs is poor, even though this is one of the most common diseases of dogs and causes severe pain and tooth loss. However, it is widely thought that certain bacteria may cause the disease, as is the case in the human form. Most of the research carried out so far into the causes of gum disease in dogs has focussed on growing specific bacteria from clinical samples. However, since many types of bacteria in the mouth cannot be grown in the laboratory, we have an incomplete understanding of the bacteria linked to health and disease of the mouth. To overcome this problem, we shall use the most modern, cutting edge laboratory technology available (known as 'high-throughput sequencing') to provide an in-depth understanding of the types of bacteria that cause gum disease in some dogs but not others. This method detects the DNA of bacteria rather than live bacteria and allows bacteria to be identified and quantitated without the need to grow them from clinical samples. The biggest advantage of this method is that, as well as detecting known types of bacteria, we can also identify bacteria that cannot be grown in the laboratory as well as new types which have not been discovered previously and which may help to cause the disease. This study will give us the most up to date knowledge on gum disease in dogs and will help in the development of vaccines and improved treatment methods for this disease.



### **Grant Objectives:**

1. Identify the bacteria associated with a healthy oral cavity and periodontitis in dogs.
2. Determine which uncultivable and novel species, in addition to known cultivable species, are present in oral health and periodontitis.
3. Assess the differences in bacterial populations between the healthy and periodontitis groups.

### **Publications:**

None at this time.

### **Report to Grant Sponsor from Investigator:**

This study will identify the bacteria that cause periodontal disease (gum disease) in dogs of all ages and breeds, and covers laboratory costs and salary for a part-time research technician. In April 2013 we appointed part-time research technician to assist with the laboratory work and data analysis for the study. We are currently coming to the end of the sample collection phase, during which clinicians have been collecting a plaque sample from the gums of 20 dogs with a healthy mouth and plaque from 20 dogs with an advanced form of periodontal disease (periodontitis). Once all of the samples have been collected we can begin to identify the types of bacteria present using the modern method known as 'high throughput sequencing'. This will commence during August 2013.