

AUSTRALIAN BULLMASTIFF HEALTH PROJECT

Faculty of Veterinary Science

2014 Research Update



THE UNIVERSITY OF
SYDNEY

On behalf of the Australian Bullmastiff Research Team and the Faculty of Veterinary Science we thank members of the bullmastiff community for your continued support. Thanks to the large number of samples sent in for use in our genetic analysis and responses to the Bullmastiff Health Survey we have been able to make promising progress in our effort to better understand the prevalence of lymphoma in the breed and identify genetic mechanisms behind lymphoma predisposition. Together we are making advances to improve the health and wellbeing of Bullmastiffs to ensure they live long and healthy lives. This report outlines the progress and outcomes achieved so far as well as promising future directions for the study.

Project Overview

The main objective of this study is to ensure Bullmastiffs live a full and healthy life. The study examines the current health status of the Australian Bullmastiff population, investigating longevity and genetic diversity within the breed, and identifying the prevalence of diseases with a focus on the occurrence of lymphoma. Studies conducted overseas have found that Bullmastiffs have an increased incidence of lymphoma, a cancer of lymphocytes and life threatening disease. Research is currently underway into the genetic mechanisms behind lymphoma predisposition and the prevalence of lymphoma in the population.

Aims of the project

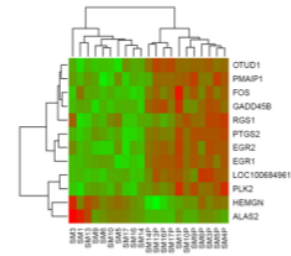
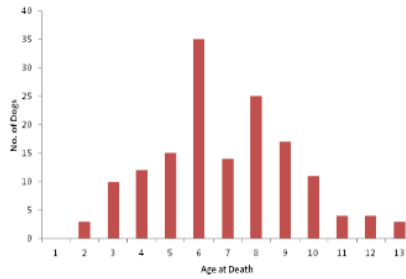
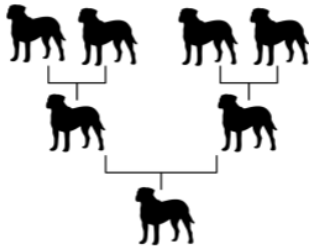
- 🐾 To identify the current health status, longevity and genetic diversity of the Australian Bullmastiff population.
- 🐾 To explore the prevalence and heritability of lymphoma in Australian Bullmastiffs and investigate the genetic mechanisms behind lymphoma predisposition.

Intended outcomes

Provide advice to Bullmastiff owners about breeding plans in relation to estimated risk values for lymphoma in their dogs.

Development of a genetic test to determine a dog's risk of developing lymphoma through identifying the presence of any found genetic aberration that predisposes the breed to lymphoma and applying this information to selective breeding strategies. This will prevent potential suffering of the progeny while avoiding potential treatment costs and loss of life.

The road so far....



Pedigree Database

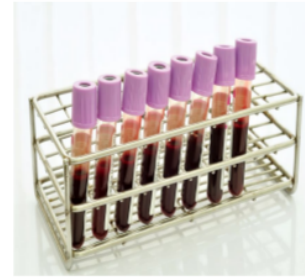
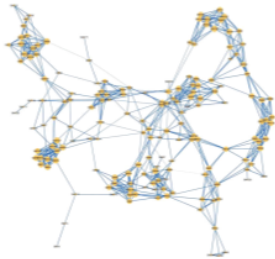
>16,000 Bullmastiffs

Bullmastiff Health Survey

269 Responses, average survival reported 6.9yrs, most common diseases reported were lymphoma and bone cancer.

Gene Expression Analysis

Identified genes highly expressed in activated T-cells involved in immune cell function with potential roles in lymphoma development



Diversity

Relationships and variation in genetic makeup between dogs has been identified. Dots in above graph represent dogs positioned relative to their genetic relationship to each other.

Genotyping

Determined the genetic makeup of 171 dogs using 170,000 locations along their DNA sequence

Blood Samples Collected

189 DNA samples



Genetic analysis

Finding and investigating regions of the genetic sequence associated with lymphoma

Publications

One research paper "T-cell activation and early gene response in dogs" is being published with more in progress

Disease Risk?

Investigating heritability of disease and disease risk



Current Research

- 🐾 We are currently using numerous approaches to identify regions of the genetic sequence that are associated with lymphoma. Genes within these regions are being thoroughly examined to identify genetic abnormalities behind lymphoma predisposition.
- 🐾 Information from the Australian Bullmastiff Health Survey and pedigree database is being used in a pedigree analyses to determine the heritability of the disease however more information regarding dogs that have lived until an old age free of the disease is required and will be sort from the bullmastiff community.

Future Targets

- 🐾 Information of the relationships and genetic variation between dogs will be used to assist our genetic analysis and to influence breeding decisions to prevent the occurrence of inherited diseases by maintaining genetic diversity within the breed.
- 🐾 Screening dogs for the presence of any found genetic abnormalities to reduce the incidence of lymphoma in the breed.
- 🐾 Applying exciting new methods of genomic prediction to determine lymphoma risk values for dogs. This will involve characterising the genetic fingerprint of dogs with lymphoma and using another dog's similarity to that fingerprint to determine its risk of disease and the risk of it producing offspring with the disease.

How you can help!!

Urgent need for information and samples from dogs 8 years or older

We really need your help to complete this research and the Bullmastiff Health Project. Thanks to all who participated in the Australian Bullmastiff Health Survey which closed last year we were able to gain some valuable information on the longevity of the breed, common diseases and lymphoma cases. However in order to advance in our research we require more information on dogs aged 8 or older. We are currently seeking pedigree information from any dogs you currently own or have owned in the past that are 8 years or older. For dogs that have passed we are also interested in their cause of death. Samples also needed see below.

Information on lymphoma cases

Any information you have on cases of lymphoma in Bullmastiff dogs such as the age of diagnosis, type and stage etc is of great value to our study.

Please contact Sally via email smor5136@uni.sydney.edu.au or the 'Australian Bullmastiff Health Project' facebook page if you have any information regarding older dogs or cases of lymphoma.

Donate a blood sample from your dog

We are also seeking blood samples from Australian Bullmastiffs that will help us characterise the genetic diversity of the breed and assist in our analysis to identify causes of lymphoma. We are especially interested in older dogs (>8yrs) free of lymphoma, any dogs with lymphoma, or any related to dogs with lymphoma. If you are interested in contributing a blood sample from your dog please see the information statement and consent form available on our project website <http://sydney.edu.au/vetscience/about/students/sally-mortlock.shtml>. Samples can be mailed to us at your convenience along with a completed consent form. We require 3-10mls of blood in an EDTA coated vacutainer that can be sent via express post to:

Attn: P. Williamson & S. Mortlock
Rm 552 RMC Gunn Building B19
The University of Sydney NSW 2006

We also accept stored semen samples as a source of genetic material. If you are interested in donating one of these please contact Sally.