

Cat Welfare Trust Annual Report

Rosemary Fisher - Secretary

In 2016, the Trust was approached by Veterinary Cardiologist David Connolly, Senior Lecturer in Cardiology at the Royal Veterinary College. Their Cardiology group has a particular interest in hypertrophic cardiomyopathy (HCM) and has published widely on this subject. The Trust was asked for funding to help with an exciting project: To identify the genetic architecture promoting the development of hypertrophic cardiomyopathy in British Short Hair Cats to enable assessment of a novel therapeutic agent.

Background:

HCM has an exceedingly high prevalence in cats: it affects up to 1 in 7 cats and is the most commonly diagnosed feline myocardial disease. The prognosis for cats with HCM is very variable, with average survival reported as being between 596 and 1,297 days. Affected cats with severe HCM frequently present with congestive heart failure (CHF), thromboembolic disease or may experience sudden cardiac death (SCD). Therefore, in many cats HCM is a devastating and distressing disease which results in significant morbidity and mortality.

HCM is also diagnosed in about 1 in 500 people. It is the leading cause of sudden death in young adults and results in significant disability in survivors. In both cats and humans, HCM is inherited as an autosomal dominant trait with variable penetrance. In humans, alterations in two genes, β -myosin heavy chain and myosin-binding protein C (MYBPC) account for approximately 75% of cases where an underlying mutation has been identified. In Maine Coon and Ragdoll cats the HCM causing mutations were also found in the MYBPC gene reflecting the close similarity of the disease between the two species.

Update from David Connolly July 2022

As of July 2022 progress has been made towards the above objectives for both aim 1 – using genome wide approaches on DNA from case and control cats to map and evaluate genomic regions affecting HCM susceptibility and 2 – using RNA-sequencing of RNA extracted from myocardial samples from case and control cats.

Aim 1 Progress;

We have DNA extracted from 118 BSH cats, 81 HCM and 37 control with quality control checks performed using a Nanodrop summarised here;

Table 1: Descriptive Statistics of Extracted DNA from BSH cats			
	Concentration (ng/ul)	260/280	260/230
MEAN	51.41	1.79	2.11
MIN Value	11.49	1.60	1.45
MAX Value	185.12	2.23	4.63
Standard Deviation	29.16	0.09	0.46

These samples are majority blood, however we have also had success in recruiting and extracting samples from buccal swabs. We have been able to recruit samples from BSH breeders based in the

UK, Austria and New Zealand and continue the sampling efforts. Currently we are in the final stages of preparing these samples to be shipped for sequencing with Neogen. The samples collected from these breeders are of particular interest as we have samples from various family groups along with their pedigree information.



Image of the nanodrop instrument

We currently have 11 BSH myocardial samples that have been confirmed suitable for this study in addition to 30 DSH samples and 4 Birman samples. These samples are extremely difficult to collect however we have managed to establish a relationship with a UK-based BSH breeder who has kindly allowed us to collect 1 myocardial sample so far and is keen to aid further with our study in the future. The protocol for RNA extraction from this tissue has been prepared and optimised and these extractions are now underway with the aim to send these samples for sequencing before the end of the summer.

This will mean we will have both data sets and will be beginning analysis in the coming months.

Additional Progress;

In addition to the initially stated aims, we have also begun collecting RNA-stabilised blood samples to further our transcriptomic analyses. We currently have 8 BSH samples (6 control, 2 HCM) and continue to collect both EDTA blood (for the DNA work) in addition to these new samples. This aspect of the study is of particular interest as if there are circulating transcriptomic markers of HCM that can be detected, this could be a very interesting avenue with regard to a diagnostic test for BSHs.



UKRAINE APPEAL

Following the launch of this appeal in April 2022, an Enthuse website donation page was set up by Carrie Lamb (Office Manager). To date (mid July 2022), this has raised almost £15,000, thanks to the splendid efforts of GCCF clubs, and many individuals who have generously donated.

Sandra Woodley has been leading the project, and made contact with the chosen charity, Nowzad <https://www.nowzad.com/news/article/nowzad-ukraine>

The GCCF Board of Directors agreed to match fund donations, up to an amount of £25,000, with a first donation of £5,000 being made direct to Poland at the start of hostilities in February.

An amount of £26,492.64 has now been made to Nowzad, to support their work with cats providing care and treatment of animals in Ukraine by rebuilding local shelter facilities and supporting local rescue groups.

The Appeal will continue, and we hope to reach our final target of £25,000.