



# WINN FELINE FOUNDATION

For the Health and Well-being of All Cats

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## CARDIOMYOPATHY IN BIRMAN CATS

**PROJECT STUDY:** Phenotypic characterization of cardiomyopathy in Birman cats

Principal Investigator: Professor Virginia Luis Fuentes; Royal Veterinary College, University of London

*Interim report summary, W15-044*

Over the past 9 months Dr. Fuentes' research group has screened 62 Birmans for heart disease. Heart murmurs appear to be more common in Birmans with cardiomyopathy (heart muscle disease) than in healthy cats, suggesting that any Birman cat with a heart murmur should be investigated further for heart disease with echocardiography. Heart murmurs are not always a reliable indication of heart disease in cats: murmurs are uncommon in Norwegian Forest cats even when they are affected with cardiomyopathy and murmurs are common in non-pedigree cats even when they are normal.

Six Birmans that have died of heart disease have been submitted for pathological analysis, and the research group has found evidence of different forms of cardiomyopathy. These include hypertrophic (HCM), restrictive (RCM); and arrhythmogenic (ARVC). In humans, these types of cardiomyopathy are usually associated with different genetic mutations, but occasionally one genetic mutation can cause multiple types of disease. They have identified families of Birmans that include cats with HCM and RCM, and cats with HCM and ARVC. It is possible that there is more than one mutation in these families, but it is also possible that one mutation in a Birman family can result in different types of cardiomyopathy.

The research group has also investigated blood tests that can help identify cats with heart disease (cardiac 'biomarkers'). Levels of these cardiac biomarkers are increased in the bloodstream when the heart chamber walls are under strain (shown by the biomarker 'NT-proBNP') or when heart muscle cells are damaged (shown by the biomarker 'troponin-I'). These biomarkers do not appear to be helpful in all breeds when screening for cardiomyopathy, but they do appear to be helpful in Birmans. As there is an overlap in biomarker levels between healthy and affected cats, biomarkers will not be reliable enough to act as the sole test in screening breeding cats. Biomarkers may be useful however in determining which cats should be investigated further with echocardiography. Early diagnosis of more severely affected cats will allow cats to be started on treatment to reduce the risk of blood clots ('aortic thromboembolism'), which is a devastating and often fatal complication of cardiomyopathy.

They are already building up a bank of stored samples for DNA from screened Birmans and Birmans with severe heart disease. This will allow them to proceed to the next stage of their studies, where they look for genetic differences in Birmans with cardiomyopathy compared with healthy Birmans. Their hope is that by identifying genetic differences it may be possible to produce a gene test for cardiomyopathy in Birmans.

*Summary prepared for Winn Feline Foundation © 2016*

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