Frequently Asked Questions

What is cardiomyopathy?

Cardiomyopathy is a disease of the heart muscle. There are several forms of cardiomyopathy: hypertrophic (HCM), where the walls of the heart are too thick; restrictive (RCM), where the walls of the heart are too stiff; dilated (DCM), where the walls of the heart are too thin and pump function is reduced and arrhythmogenic right ventricular (ARVC), where the right side of the heart may be replaced by fat and scar tissue.

What causes cardiomyopathy?

It is thought that cardiomyopathy in cats is a genetically inherited disease caused by a genetic mutation. There are over 1500 genetic mutations that are known to cause cardiomyopathy in humans. It is currently not clear whether HCM, RCM, DCM and ARVC represent different diseases with different causes, or whether these cardiomyopathies are part of the spectrum of one disease with one genetic cause.

Does cardiomyopathy only affect certain breeds?

Some breeds are reportedly predisposed to HCM, such as the Maine Coon, Ragdoll, Norwegian Forest Cat, Birman, Bengal, Persian, Sphynx, British Shorthair and American Shorthair. However, HCM is also common in non-pedigree cats.

Siamese and oriental breed cats may be predisposed to a form of RCM.

My cat has a heart murmur, does this mean it has cardiomyopathy?

A heart murmur is the sound caused by a turbulence of blood flow within the heart. Heart murmurs are common in cats, found in approximately 15-40% of the healthy feline population. Of the cats with a heart murmur, approximately half of them will have a murmur as a result of heart disease, and the other half will have a normal heart and the murmur is ‘innocent’ or ‘physiological’. It is also worthy of note that cats can have cardiomyopathy and not have a murmur. Therefore a heart murmur is not a reliable indicator of heart disease in cats.

Heart murmurs in cats may also be dynamic in nature, meaning they can be heard at one vet visit and not at the next (this is not a case of one vet being better at detecting murmurs than the other, or whether or not your vet spent all night at a heavy metal concert the night before – they really can come and go!).

If your vet hears a ‘gallop sound’ or abnormal heart rhythm, these are much more indicative of heart disease.

Are cardiac biomarkers a blood test for HCM?

Biomarkers are hormones released by the heart into the blood. NT-proBNP is released in response to heart stretch and stress. Troponin I is released by heart muscle cells when they are damaged. This means that we can take a blood sample and measure the level of these biomarkers to get some idea

of how much stress the heart is under, and whether the heart muscle cells are being damaged. It will not give you a definite diagnosis of cardiomyopathy, but a cat with high results would be one which you would want to scan.

It should be remembered that biomarkers are not a test for breeding soundness, nor are they a test for HCM. In cats with suspicious findings on examination, such as a murmur, 'gallop sound' or abnormal heart rhythm, they can be a relatively cheap test to give an indication of the likelihood of clinically significant heart disease.

What is the youngest age I can bring a cat for screening?

We usually recommend a minimum of 12 months, unless they are related (within two generations) to a cat with fatal cardiomyopathy at a young age.

Does a normal scan guarantee freedom from HCM?

The age of onset for cardiomyopathy is variable, so a single normal echocardiogram does not guarantee that the cat will not develop the disease in the future, or that it will not pass the disease on to its offspring.

How frequently should I screen my breeding cats?

Annual screening is recommended.

Why is it important to screen old cats?

A complicating factor in HCM is age-dependent penetrance. This means that even though the mutation or 'bad' gene is inherited and present from birth, the disease that we see develops over time and cats do not usually show detectable disease until they are an adult. We don't yet know what is the latest age cardiomyopathy can develop. We think it usually develops at less than 10 years old if it is going to.

- If your old cat is screened normal, it is much more likely to be truly normal.
- Screening older generations related to your current breeding stock will tell you much more about cardiomyopathy risk than screening young breeding cats, especially cats less than 3 years old.

Can anything else cause the heart walls to become thick apart from HCM?

Left ventricular walls may also become thick as a result of other diseases. It is important to rule out other disease that can mimic HCM.

High blood pressure (hypertension) is common in older cats, particularly those that have been diagnosed with chronic kidney disease (CKD). We measure blood pressure in every cat that has a thick left ventricle on a heart scan, in order to rule out high blood pressure as a cause.

Hyperthyroidism (overactive thyroid gland): This is a common condition of older cats, the most common clinical signs of which include: weight loss despite an increased (often ravenous) appetite,

behavioural changes and possibly vomiting & diarrhoea. Hyperthyroidism can be easily diagnosed with a simple blood test and there are different treatment options available.

Acromegaly (hypersomatotropism): This is caused by excess growth hormone production by a benign tumour of the pituitary gland in the brain. It is usually only seen in diabetic cats, especially if their diabetes is difficult to control with insulin.

Although these diseases cause the walls of the left ventricle to look thick, they are **not HCM** and are all very simple to rule out as causes of a thick left ventricle in older cats.

Why do you take blood for biomarkers?

Biomarkers can be useful for monitoring a cat that has been diagnosed with cardiomyopathy on a heart scan. If biomarkers are measured at the time of a heart scan, this means that a baseline can be established regarding biomarker levels compared with what the heart looks like on a scan. Rather than having to travel to a specialist cardiologist for heart scans every 6 months, you could have biomarkers routinely tested at your local vet practice. If there is an upward trend in biomarker measurements, or a sudden increase, this would indicate the need for a re-check heart scan.

We are currently looking at whether these tests are able to detect mild heart disease earlier than we can see changes on a heart scan. This would be particularly important in cats with RCM, where we don't see changes on a scan until late in the disease course.

Why do you store residual blood?

We store left-over blood for DNA to be used in ongoing genetic research to find the mutations responsible for cardiomyopathy.