

1.

IDENTIFYING EPIGENETIC CHANGES THAT INDICATE CANCER

Cancer develops when there is either abnormal or uncontrolled cell growth. But it's now believed epigenetic changes are as important as genetics (DNA) in causing cancer. Therefore, it's not just the DNA but the full chromosome that is key.

Epigenetics are instructions that tell cells which genes to activate or deactivate without changes to the underlying genetic code, meaning that our bodies can make different cell types from the same DNA. There are several signals that tell a cell which genes to activate and by how much – nucleosomes are one such epigenetic signal.

Nu.Q® Test is a proprietary epigenetic immunoassay platform that determine levels of circulating nucleosomes.

2.

HOW DOES THE NU.Q® CANCER TEST WORK?

DNA is compacted within a cell's nucleus in the form of nucleosomes which are bead like structures comprised of DNA coiling around a histone protein core.

When a patient (human or canine) has cancer, nucleosomes from those cancer cells are released into the blood and can be measured using antibodies that are specific to nucleosomes.

By measuring and analyzing nucleosomes, our Nu.Q® Vet Cancer Test can identify patients who may have a cancer. This must then be confirmed by follow up procedures – for example, a biopsy or scan.

FUTURE PRODUCTS IN DEVELOPMENT

POINT-OF-CARE TEST

By providing **results within 10 minutes**, point-of-care testing will expedite the clinical decision-making process. A future where veterinarians can detect, treat, and monitor in-clinic using **Element i+** with the Nu.Q® Vet Cancer Test is what we work towards. To potentially save lives through early cancer screening is why we work.

- Volition Veterinary has entered a licensing agreement with Heska-scil to offer the Nu.Q® Vet Cancer Test in clinic, at the point-of-care, Element i+ of Heska-scil.
- We are in the process of developing the point-of-care test, and anticipate a launch in the first half of 2023.



DISEASE PROGRESSION AND TREATMENT MONITORING

- Abstracts presented at the 2022 European Society of Veterinary Oncology (ESVONC) Congress and 2021 Veterinary Cancer Society Meeting show nucleosome concentrations i.e., "Nu.Q® Vet results", during treatment in Lymphoma patients changed week to week, and appeared to mirror disease state.
- Most patients achieving clinical remission showed healthy plasma nucleosome levels in the low, healthy dog range.
- The Nu.Q® Vet Cancer Test may therefore be a useful tool to monitor disease response to treatment. Circulating nucleosome levels, i.e., "Nu.Q® Vet results" may serve as a more sensitive measurement of both residual disease and of clinical progression out remission.

CATS

- Volition Veterinary is committed to the saving the lives of all your furry family members through early detection and have begun research on a Nu.Q® Vet Cancer Test for our feline friends. We hope to report data in the coming months.

Nu.Q® Vet Cancer Test

PRODUCT BROCHURE



CANCER TEST





TOGETHER, WE CAN GIVE YOUR PETS THE BEST CHANCE FOR SUCCESSFUL TREATMENT.



“Cancer is the most common cause of death in dogs over the age of 2 years.”

The Nu.Q® Vet Cancer Test was developed with the goal of providing an accessible and affordable screening test to aid in early detection.

Up to 50% of all dogs over the age of 10 will develop cancer in their lifetimes. With approximately 93 million pet dogs in Europe, there are an estimated 6 million pet dogs diagnosed with cancer each year.

Many diseases can be detected and treated before they become serious, cancer is one of them. Cancer screening tests (mammogram, colonoscopy, HPV DNA test) have become commonplace in human medicine as part of our annual physical exams. However, in the veterinary market there are few cancer screening tests available.

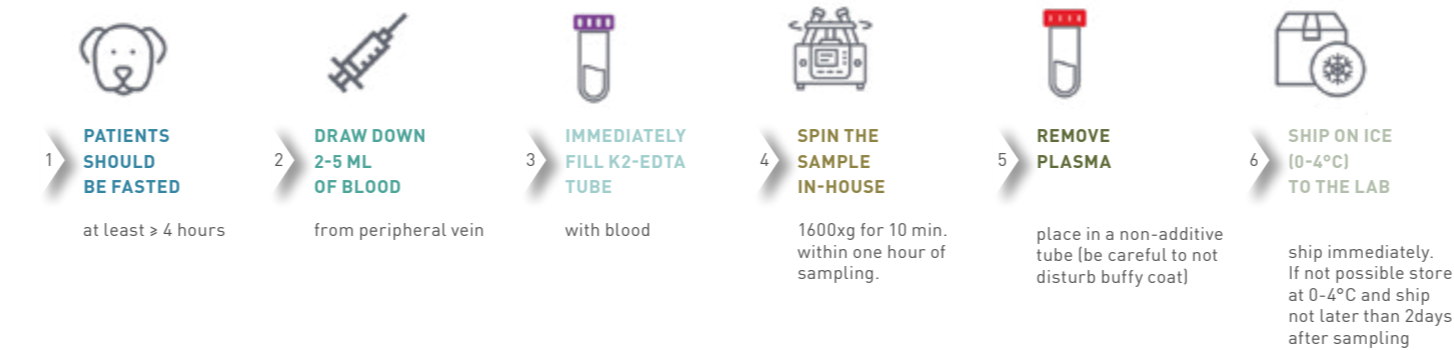
Earlier detection of cancer can not only help save lives, it can also improve the quality of life of the dog and more quality time with its owner. Currently, many dogs are typically diagnosed when they are unwell and there is a suspicion of cancer. Even then dogs suspected of having cancer are often required to undergo a variety of tests that may be expensive, time consuming and/or painful for the animal.

INTRODUCING THE Nu.Q® VET CANCER TEST

We hope to change this with the introduction of the Nu.Q® Vet Cancer Screening Test – a simple, accessible, easy to use screening blood test to be used with the annual wellness check becoming as routine as heartworm or fecal tests.

We recommend using the **test for older dogs** (7 years and older) **or with a family history of cancer**. But it may also be a complementary test for **younger dogs** (4 years and older) of breeds **with an increased risk** for developing cancer in their lifetimes such as, Golden Retrievers, Labrador Retrievers, French Bulldogs, Boxers, Beagles, German Shepherds, Bernese Mountain dogs, Siberian Huskies, Rottweilers, Great Danes, Irish Wolfhounds, Scottish Deerhounds, Mastiffs and Flat Coated Retrievers.

HOW TO SUBMIT A SAMPLE



HOW TO INTERPRET THE RESULTS

GREEN LEVEL	YELLOW LEVEL	ORANGE LEVEL
<p>Low Suspicion result <50 ng/ml</p> <p>Nu.Q® Vet Cancer Test results at the green level indicate that this patient has low risk for active neoplasia in the classes of tumors screened for by the Nu.Q® test.</p> <p>Continue routine annual or bi-annual screening.</p>	<p>Moderate Suspicion result 51-80 ng/ml</p> <p>These results are in the “gray zone” of moderate suspicion and further testing should be considered.</p> <p>Patient may have low-levels of circulating nucleosomes due to certain early-stage neoplasia.</p> <p>Repeat testing with a fasted sample after 2 – 4 weeks or when convenient to evaluate trends in results if patient is otherwise healthy.*</p>	<p>High Suspicion result >81 ng/ml</p> <p>This patient has risk for active neoplasia in the classes of tumors screened for by the Nu.Q® test, warranting further screening for the presence of neoplasia. This may include additional laboratory testing such as repeating the Nu.Q® test in 2 weeks, radiographs, ultrasound, fine needle aspirates and/or biopsies, depending on the clinical presentation and physical examination findings for this patient.*</p> <p>*Other considerations result >81 ng/ml</p> <p>Inflammatory diseases such as immune mediated disease, systemic inflammation, sepsis, and trauma can also cause elevated nucleosome levels. This test will not differentiate between patients sick with systemic inflammatory mediated illness from those sick with cancer.</p>

Nu.Q® Vet Pathway

The Nu.Q® Vet Cancer Test identifies patients who may have cancer, however, confirmatory diagnostics should be used to confirm the suspicion of cancer.

THE PATHWAY TO DIAGNOSIS AND STAGING MAY INCLUDE SOME OF THE FOLLOWING:

The Nu.Q® Vet Cancer Test identifies patients who may have cancer, however, not all neoplastic conditions are detectable using elevated plasma nucleosomes.

Localized tumors are least likely to cause elevated plasma nucleosomes, and this test is not able to differentiate severe/systemic inflammation from cancer.

If there is a suspicion of cancer, we recommend that you perform confirmatory diagnostics to confirm the suspicion of cancer.



Exam	Laboratory Tests	Pathology	Diagnostic Imaging
<ul style="list-style-type: none"> Gathering information about the pet's history Physical exam to discover abnormalities <ul style="list-style-type: none"> Masses or lesions Lymph nodes Oral and rectal exam 	<ul style="list-style-type: none"> Biochemistry Panel CBC Urinalysis Coagulation Test* Immunophenotyping <p><small>*If liver values are elevated</small></p>	<ul style="list-style-type: none"> Fine Needle Aspiration (FNA) Biopsy 	<ul style="list-style-type: none"> 3-view thoracic radiograph Abdominal ultrasonography

Advanced imaging (such as MRI or CT scan) may be utilized in some cases.

PRACTICAL INFORMATION FOR THE VETERINARIAN

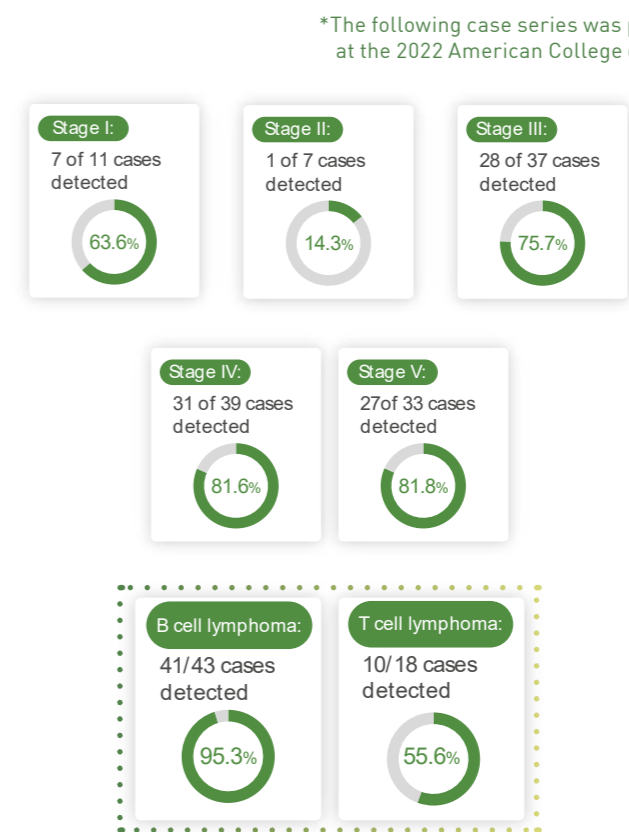
CLINICAL EVIDENCE

“AT 97% SPECIFICITY THE NU.Q® VET CANCER TEST WAS ABLE TO DETECT APPROXIMATELY 50% OF ALL CANCERS RESEARCHED, AND 76% OF SYSTEMIC CANCER (LYMPHOMA, HEMANGIOSARCOMA, AND HISTIOCYTIC SARCOMA).”

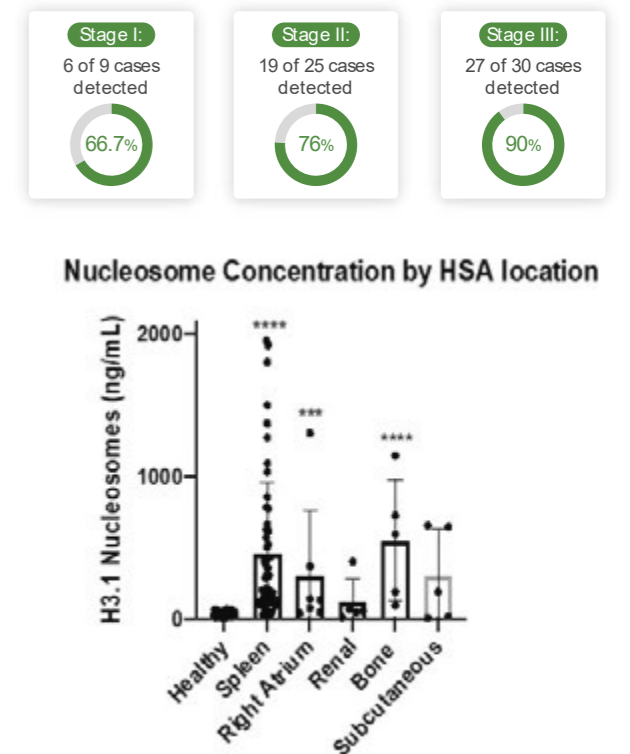
*At 97% specificity, the Nu.Q® Vet Cancer Test was able to detect 77% of lymphoma

*At 97% specificity, the Nu.Q® Vet Cancer Test was able to detect 82% of hemangiosarcoma

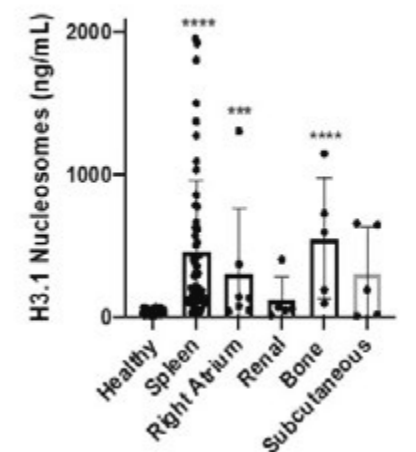
Diagnosis by Disease Type/Stage: Lymphoma



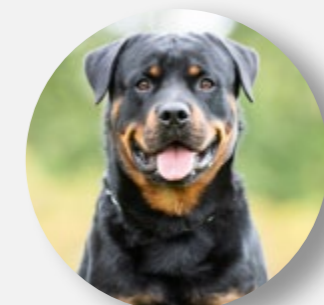
Diagnosis by Disease Type/Stage: Hemangiosarcoma



Nucleosome Concentration by HSA location



CASE STUDIES



If you want to know in detail the case study of Roxy or other clinical cases, access through the QR code

