



The NLRC was organized in 1996 with the idea of creating a national club that would preserve and promote the Labrador Retriever. Everyone in the Labrador community is welcome...from pet owners to old timers.

We are a National Lab Club formed by the members, for the members, working together for the preservation and protection of the Labrador Retriever.

THE LABRADOR CONNECTION

JUNE 2019 ELECTRONIC EDITION

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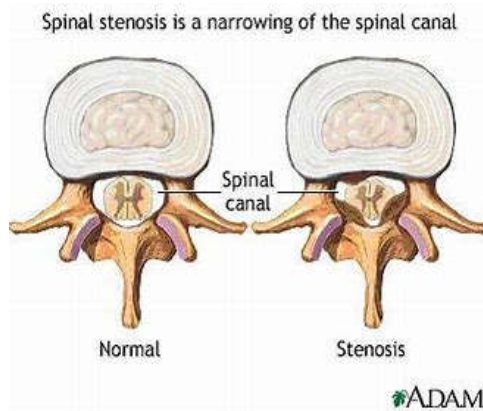
Lumbosacral Stenosis in Labrador Retriever Military Dogs

An Exomic Exploratory Study

Article submitted with permission by Margo Carter

Background: Canine lumbosacral stenosis is defined as narrowing of the caudal lumbar and/or sacral vertebral canal. A risk factor for neurologic problems in many large sized breeds, lumbosacral stenosis can also cause early retirement in Labrador retriever military working dogs. Though vital for conservative management of the condition, early detection is complicated by the ambiguous nature of clinical signs of lumbosacral stenosis in stoic and high-drive Labrador retriever military working dogs. Though clinical diagnoses of lumbosacral stenosis using CT imaging are standard, they are usually not performed unless dogs present with clinical symptoms. Understanding the underlying genomic mechanisms would be beneficial in developing early detection methods for lumbosacral stenosis, which could prevent premature retirement in working dogs. The exomes of 8 young Labrador retriever military working dogs (4 affected and 4 unaffected by lumbosacral stenosis, phenotypically selected by CT image analyses from 40 dogs with no reported clinical signs of the condition) were sequenced to identify and annotate exonic variants between dogs negative and positive for lumbosacral stenosis.

Results: Two-hundred and fifty-two variants were detected to be homozygous for the wild allele and either homozygous or heterozygous for the variant allele. Seventeen non-disruptive variants were detected that could affect protein effectiveness in 7 annotated (SCN1B, RGS9BP, ASXL3, TTR, LRRC16B, PTPRO, ZBBX) and 3 predicted genes (EEF1A1, DNAJA1, ZFX). No exonic variants were detected in any of the canine orthologues for human lumbar spinal stenosis candidate genes.



(continued page 4)

Draminski Ovulation Detector - Tried It! Loved It!



Your girl is bleeding. Is she ready to be bred? Do you have time to arrange a stud? Are you too late!? Too early? The only thing we know for sure is that it is time to get a progesterone test to determine when ovulation is going to occur, right? Well maybe not! Maybe there is a viable alternative to progesterone testing!

As early as 1994 the University in Giessen described the correlation between electrical resistance of mucus and ovulation.

In a 2009 study at the College of Veterinary Medicine, Gyeongsang National University Korea, three methods that can be used to diagnose estrus and determine ovulation were listed as:

A) Vaginal cytology used in conjunction with a physical exam, clinical history, vaginoscopy.

B) The measurement of electrical resistance in vaginal mucus.

C) Progesterone and Estrogen testing of blood plasma.

To verify that ovulation had occurred, examination by laparotomy (a surgical procedure

where an incision through the abdominal wall is made to gain visual access to the reproductive organs to view each ovary and the uterus) was done to verify and confirm ovulation of the canine participants in this Korean study.

Vaginal cytology was deemed the **least** reliable method of determining ovulation by the study.

Electrical resistance measurements, progesterone and estrogen measurements were deemed equally accurate in determining ovulation by the same study.

Numerous studies published online concur.

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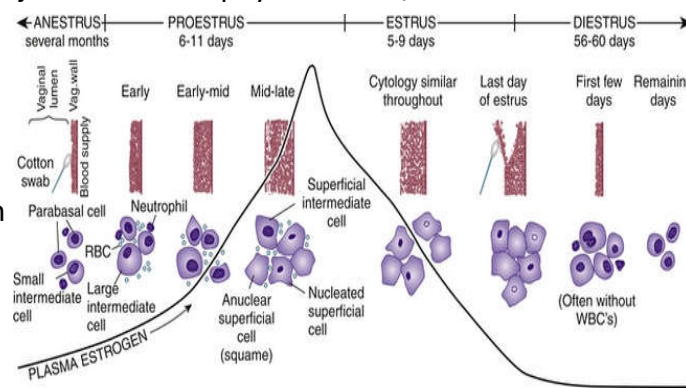


image from VeterianKey.com

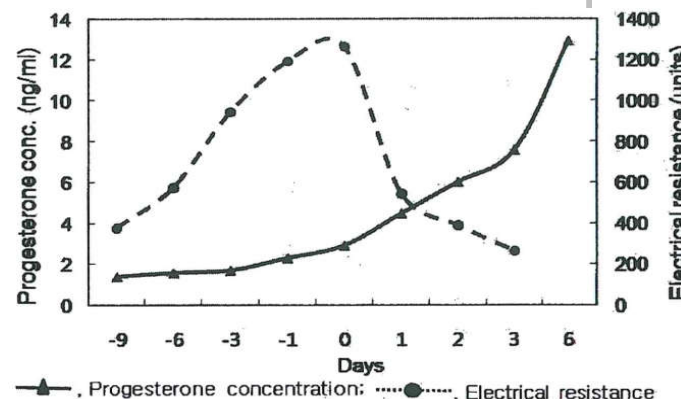


image from Gyeongsang National University

Draminski Ovulation Detector

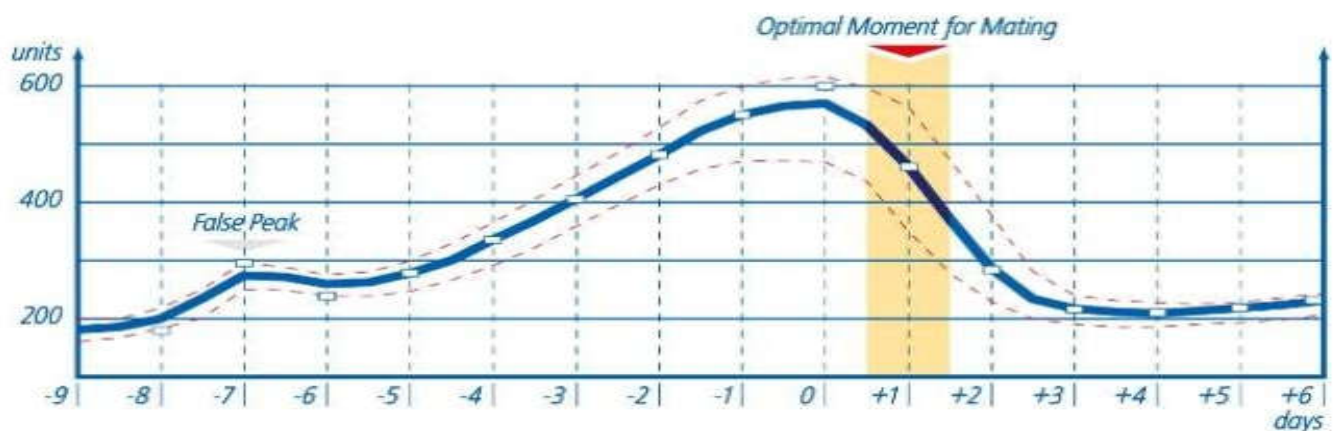
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The Draminski Ovulation detector measures the electrical resistance of vaginal mucus. It consists of a measuring probe, a digital display and the on/off switch. The unit is powered by a 9-volt battery. At the end of the measuring probe are two circular electrodes. The current flowing through these electrodes is absolutely **safe** for animals and people. The probe and unit is easily cleaned using the recommended disinfectants listed in the owner's manual. Blank charts are also included.

A genuine Draminski Ovulation Detector product is packaged as it appears in the photo to the left. Be sure to purchase only genuine Draminski products! Check with www.Draminski.com for authorized distributors.

To obtain a measurement, insert the probe as directed and record your daily measurements obtained on the enclosed blank chart forms.



Your chart should look something like the example provided below:

After over a full year of using the Draminski Ovulation Detector I can attest that it is easy to use; the results are understandable and some of my charts exactly mirrored the sample chart. When my chart varied from the norm, I shared it with support staff at www.Draminski.com who helped me understand my findings. After-purchase support is exemplary! I confess I did do continued comparative progesterone testing which agreed with the Draminski Ovulation Detector results every time.

The Draminski Ovulation Detector works! It's easy, too! *Article submitted by: Sandra Underhill*

Lumbosacral Stenosis

(continued from page 1)

Conclusions: TTR (transthyretin) gene could be a possible candidate for lumbosacral stenosis in Labrador retrievers based on previous human studies that have reported an association between human lumbar spinal stenosis and transthyretin protein amyloidosis. Other genes identified with exonic variants in this study but with no known published association with lumbosacral stenosis and/or lumbar spinal stenosis could also be candidate genes for future canine lumbosacral stenosis studies but their roles remain currently unknown. Human lumbar spinal stenosis candidate genes also cannot be ruled out as lumbosacral stenosis candidate genes. More definitive genetic investigations of this condition are needed before any genetic test for lumbosacral stenosis in Labrador retriever can be developed.

Plain English Summary: Labrador retrievers are popular for use as companion and working dogs worldwide. Like other large sized breeds; this breed is also prone to lower back diseases like lumbosacral stenosis. In this dog version of human lumbar spinal stenosis (leading cause of spinal surgery in Americans over 60), abnormal narrowing of the spinal canal in the lower back region

causes several neurologic complications. Symptoms of lumbosacral stenosis are not always obvious and/or externally visible making detection difficult. If detected early, the condition is manageable by therapy, but by the time symptoms usually appear therapy becomes less effective. The problem is even more pronounced in working dogs that can get retired early – a major concern for military and police organizations that invest a lot of resources in recruiting and training working dogs.

Expensive imaging methods such as computed tomography (CT) can confirm the diagnosis, but are not routinely performed without obvious symptoms. Diagnostic methods capable of detecting lumbosacral stenosis early are needed, preferably ones that are inexpensive, accurate and rapid (like blood/saliva tests). (continued next page)



Lumbosacral Stenosis

(continued from page 4)

However it is important to understand the genetics of a disease to design such tests. Since we could not find any genetic studies of lumbosacral stenosis in Labrador retrievers, we explored said genetics in this preliminary study. We randomly selected 40 young Labrador retriever military working dogs with no outward signs of lumbosacral stenosis and assessed them for presence or absence of lumbosacral stenosis based on CT image analyses. We identified 4 dogs affected and 4 dogs unaffected by lumbosacral stenosis and sequenced their DNA to identify genetic differences between normal and diseased dogs. One mutation was identified in a gene that could be associated with lumbosacral stenosis – transthyretin (protein associated with human lumbar spinal stenosis). Other genes identified with mutations could also be important but we could not find evidence of this in the published literature, so more research is needed before they can be ruled out definitively. Once we can identify gene/s responsible for this condition, we will be that much closer to designing improved early detection methods for early detection of lumbosacral stenosis.

Background: Working dogs are high-performance athletes that assist human team-members in supporting public service, national security and military missions in the U.S. and around the world . Working dogs perform a variety of tasks such as sentry-and-patrol; search and rescue; mobility support for disabled persons; and detection of explosives, arson accelerants, and illegal drugs. Labrador retrievers are one of the most popular working dog breeds . As of 2016, the



U.S. Military had an estimated 2300–2500 military working dogs (MWDs) across all branches of the Armed Forces. Each year the U.S. Military invests major financial and personnel resources in procuring, training and maintaining these MWDs in peak physical condition. According to a 2011 U.S. Government Pentagon memo, typical purchasing and training costs for a high quality MWD can go as high as \$40,000 U.S. dollars. Since 2001, the U.S. Department of Defense has spent more than \$941,000 U.S. dollars towards this objective. The demand for high quality working dogs (especially detection dogs) has been increasing in recent years. But the demand often exceeds the supply, especially due to the high cost of breeding, raising and subsequent training of MWDs. Ideally these trained working dogs are expected to maintain functionality for at least 10–12 years. Early retirement of such trained MWDs means both a functional loss in the productivity of the team that depends on the trained dog as well as a financial loss for the Military.

Spinal diseases are a leading cause for early retirement in MWDs. Lumbosacral stenosis (LS) is a common pathological condition

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Lumbosacral Stenosis

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Canine LS is defined as an abnormal narrowing of the lumbosacral canal, vertebral canal, and/or the intervertebral foramina. This morphologic problem can be a risk factor for disability, often due to compression of the underlying neural and/or vascular tissues leading to clinical conditions like cauda equina syndrome (CES). Low back pain (LBP) on palpation of the lumbosacral spine is considered to be the primary clinical sign of LS.. However, there are drawbacks of using LBP status alone in diagnosis of LS in dogs: (i) symptoms can be intermittent with appearance only after hard physical exertion; (ii) symptoms can mimic those of other spinal diseases like intervertebral disc degeneration, degenerative sacroiliac joint disease, foraminal stenosis, and Schmorl's nodes; (iii) stoic dogs may not consistently vocalize pain; and (iv) dogs are specifically bred to have high-drive (desirable in MWDs, but can delay the detection of sub-clinical conditions like LS). A dog can be structurally LS positive, while remaining clinically asymptomatic until the condition worsens to such an extent that therapeutic and surgical options become unviable, and the only remaining course of action is



Retirement (in some cases, even euthanasia). Therefore, improved methods for early detection of LS is critical for minimizing the risk of early retirement in these valuable canines. Similar to human lumbar spinal stenosis (LSS), canine LS has two distinct etiologies: congenital (idiopathic and developmental) or the more common acquired (degenerative and post-traumatic).

Studies have reported association between genetic polymorphisms and degenerative LSS. Developmental LSS is usually observed in individuals with achondroplasia and has known genetic causes.

Studies have also suggested that genetic factors could be influencing early manifestation of canine LS. This genetic predisposition of canine LS has been predominantly accounted for by lumbosacral transitional vertebra (LTV) – a congenital structural anomaly where the vertebra forms abnormally, usually between the last lumbar and first sacral vertebra. Presence of LTV can in turn cause CES due to abnormally narrow spinal canal (i.e. LS). An improved understanding of the currently unknown genomic mechanisms underlying LS in Labrador retrievers would be beneficial in designing improved diagnostic tests.

If you are interested in the full study report which includes detailed comprehensive testing methods followed by their respective results on the Labradors that participated in testing, email me for a copy of the 29 page report.



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Please feel
free to forward
our
newsletter to
interested
family and
friends

*We Support Studies and
Grants that benefit the
Labrador Retriever*

NLRC Membership -- Open Enrollment

Membership in the National Labrador Retriever Club, Inc. is open to all Labrador enthusiasts; however, to join you must be in good standing with the American Kennel Club, Inc. and should consider the guidelines set forth in the [NLRC Code of Ethics](#) when engaged in any activities involving the breeding, exhibiting and selling of Labrador Retrievers.

Two types of annual individual memberships are offered:

Full (voting member)	\$30
Associate (non-voting)	\$20

Click the below links for NLRC Membership forms:

[NLRC Membership Application Form \(that can be printed and mailed in with your membership fee\)](#)

Or to both apply and pay online

[NLRC Membership Application](#)

Are you listed in our [NLRC Breeders Directory](#)?

NLRC Members with full

membership rights can apply to participate on the NLRC website Breeder Directory by completing the applicable section on the PDF membership application and submitting a \$10 fee.

Any questions? Contact our Interim Membership Chair:
Sandra Underhill
Sandy@LabsToLove.com

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The National Labrador Retriever Club, Inc. exists for the preservation and protection of the breed, to encourage education of the general public who may want to add a Labrador to their family and to meet a social responsibility to its members, the general public, and the Labrador world in particular. To this end, we adopted a [Code of Ethics](#) to serve as a guide.

Our Newsletter, The Labrador Connection, is published by the club periodically when sufficient material is received. The Labrador Connection's newest electronic issue is emailed to members when it is published and all issues may be viewed online at any time.

Visit our website online at www.NationalLabradorRetrieverClub.com

