THYROID/ADDISON'S STUDY IN TOLLERS – MICHIGAN STATE UNIVERSITY

This article was written by Jane Folkman, Chair and reviewed by the Health and Genetics Committee (HCG) and MSU project researchers Dr. Markus Rick, Dr. Kent R Refsal and Dr. Sherry Seibel

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Is your breeding stock within the ages of 3-5 years? Do you have a Toller getting ready to participate in a breeding program? Have you noticed any of the following symptoms in your Toller or their relatives: weight gain, skin and hair problems including hair loss, weakness, cold intolerance or infertility? These are common signs of hypothyroidism - the most common endocrine disease in dogs. Some doctors suspect it is becoming more prevalent in Tollers. Please take a moment to read this article and learn more about a study that can help test your Toller for hypothyroidism and investigate this potential problem in our breed.

Most hypothyroidism, about 90%, is likely the result of autoimmune disease. Autoimmune disease is when the body's immune system attacks and destroys its own tissue. Lymphocytic thyroiditis is an autoimmune condition in which the thyroid gland is invaded by lymphocytes, white blood cells that function as a part of the immune process. The result is a gradual destruction of the functional thyroid cells. Outward signs of hypothyroidism will not appear until about 75% of the gland is destroyed. Research studies indicate that lymphocytic thyroiditis is the leading cause of hypothyroidism and that it is an inherited condition in numerous breeds.

Breeders ranked hypothyroidism as the #1 problem for their dogs in the 1997 AKC Parent Club Survey -- with epilepsy and hip dysplasia close behind. Interestingly, thyroid data indicate as many as 1 in 6 Tollers is diagnosed with autoimmune thyroiditis and the Toller has a higher than average risk for this condition. Please refer to Table 1. **For this reason, the Health and Genetics Committee (HCG) identified the MSU Thyroid/Addison's research study as a priority health project for all Tollers.**

Table 1: Laboratory Data	# tests	% normal	% autoimmune thyroiditis	% equivocal
OFA data	91	69.2%	8.8%	22.0%
MSU data	173	71.7%	18.5%	9.8%

How Is Autoimmune Thyroiditis Detected?

Currently the best marker for autoimmune thyroiditis is a positive Thyroglobulin Autoantibody (TgAA) test. Thyroglobulin is a very large protein within the thyroid glands and the thyroid hormones are incorporated in its structure. This protein marker is present when there is active thyroid disease. Although the mode of inheritance is unknown, right now it would be safer to assume a single gene disorder and recessive trait, much like we saw with prcd-PRA. Hence TgAA will be positive in dogs having both genes for thyroiditis and it will not be positive in carriers who have only one gene for the trait.

Michigan State University began running the TgAA test in June 1998. The OFA started a Canine Thyroid Registry and now 5 labs in the US and 2 in Canada are certified to perform the TgAA test in conjunction with the OFA thyroid certification tests. These labs are listed on the NDSTRC (USA) and OFFA websites.

An elevated TgAA result is the FIRST indicator of autoimmune thyroiditis and can be positive long before clinical signs of thyroid disease occur. This is an important fact for breeders to know because outward signs of hypothyroidism usually do not show up until ages 3 to 5. Ideally, **ALL** dogs should be thryoid tested **before breeding**. The TgAA test has been found to be 96% accurate in detecting the presence of this protein marker.

Although hypothyroidism is relatively easy and inexpensive to treat, and usually does not interfere with a dog's quality of life, breeders should strive to reduce its prevalence within the breed, much like they have done with prcd-PRA. Testing breeding animals for TgAA during their early reproductive years (2-4 year of age) and breeding appropriately will help accomplish this objective. While at this time there is no gene test available, the best available marker – TgAA - can be a beneficial tool to breeders.

Michigan State University (MSU) Nova Scotia Duck Tolling Retriever Study

The MSU study will help us understand hypothyroidism and Addison's disease in the Toller. Addison's disease is primarily a disease of the adrenal glands. The adrenals are small hormone producing glands located near each kidney. Their products are of such importance that, without them, your dog cannot survive. If the adrenals are damaged and not able to make sufficient hormones, a potentially life-threatening disease called Addison's disease arises. This disease in humans is known to be the end-stage of an immune mediated destruction of the adrenal glands, as is hypothyroidism as described above.

Dr. Markus Rick, MSU researchers and HGC project coordinator, Sherry Seibel want to see if the Toller is susceptible to polyglandular (more than one gland affected) immune disorders like thyroid and Addison's disease. They will be looking at TgAA for autoimmune thyroiditis and other markers for Addison's disease to better define lymphocytic thyroiditis and Addison's disease in Tollers. We encourage Toller owners who know their dog has Addison's disease, or is related to them, to participate in the Addison's portion of the study. Statistical analyses will be valid if 50 samples from dogs with Addison's disease are obtained.

While the MSU study will investigate protein markers for autoimmune thyroiditis and Addison's disease, please do not confuse it with the Addison's disease study underway at the University of California-Davis. The UCDavis study will be investigating a gene or gene marker test for Addison's disease similar to the Optigen test for prcd-PRA. The HGC is supporting both research studies because of the potential benefits each uniquely offers our breed. Right now, the MSU study can offer you useable thyroid results.

MSU is offering to run a complete premium thyroid panel at a discounted laboratory fee of $20 if you provide a blood serum sample, questionnaire and pedigree information about your Toller(s). The usual fee can exceed $125 when all charges are taken into consideration. This wonderful discounted price has been made possible through the generosity of Dr. Seibel who has offered to batch our Toller's samples and send them for analysis to the MSU laboratory. Submitting blood for the Addison's part of the study is free of charge.

The thyroid results will be released to you and Dr. Seibel. You should share these results with your vet. For an additional $15.00 fee and completed OFA form, normal results may be used for OFA thyroid certification. The sample must be handled according to OFA guidelines, however. The entire process can take several weeks since samples need to be batched, analyzed and results processed and sent out.

The HGC urges your participation in the MSU study, especially if you have studs or bitches in a breeding program that have not yet been thyroid tested for TgAA and thyroid disease. Ideally all breeding stock should be tested prior to breeding and every year until age 4. After which it is sufficient to test every other year until 8.

For more information about the MSU Thyroid and Addison's research study, please read the insert with "Instructions for Participating in the MSU Thyroid/Addison Study" in this issue of Quackers carefully and contact Dr. Sherry Seibel, HGC Project Coordinator at Tollerdoc@starpower.net, or HGC Chair Jane Folkman at JaneTolls@aol.com for the necessary information and supplies you will need.

For additional information about thyroid disease, the MSU study, frequently asked questions, OFA thyroid certification, recommendations for breeders and references check our club website at: http://www.nsdtrc-usa.org/h&g.htm