

Blood Tells All

A Conversation with W. Jean Dodds, DVM
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W. Jean Dodds, DVM and Elizabeth M. Jarrell, Esq.

[Ed.note: W. Jean Dodds is a world-renowned practicing veterinarian, geneticist, and scientist. From her early studies of animals with inherited and acquired bleeding diseases, to the establishment of Hemopet, the first nonprofit national blood bank program for animals and its diagnostic division, Hemolife, which provides the most advanced comprehensive diagnostic profiles for identifying canine thyroid disease, and performs titer testing, as well as a wide range of other diagnostic services, Dr. Dodds has long been at the forefront in her various fields of expertise. In 2011, Dr. Dodds released NutriScan, a food sensitivity and intolerance diagnostic test for dogs, which tests for 24 of the most commonly ingested foods. Dr. Dodds graciously agreed to be interviewed for Aussie Times by our own award-winning columnist Elizabeth M. Jarrell. In Part One, we learn more about Dr. Dodds' remarkable life and career; in Part Two, Dr. Dodds answers some specific questions about health-related issues in Australian Shepherds.]

Part One

W Jean Dodds, DVM, never stops being a pioneer. "I strongly identify with both careers, veterinary medicine as well as comparative pathophysiology and genetics," said Dodds. But all of her storied accomplishments almost never came to be.

She has published over 150 research articles. She holds over 25 veterinary diagnostic patents. She has served on too many national and international committees to count and is an active member of even more. The same is true of her prestigious honors and awards, which even include one from the Dog Writers Association of America for her 2011 book, coauthored with Diana Laverdure, *The Canine Thyroid Epidemic: Answers You Need for Your Dog*. In 1986, Dodds moved to Garden Grove, California, to found and continue her work at Hemopet, the first non-profit national animal blood bank and Hemolife Diagnostics, which specializes in dianosine thyroid disorders and vaccine titers (<http://www.hemopet.org/>).

Not surprisingly, her early life was anything but ordinary.

Dodds describes her childhood as something out of Bernardo Bertolucci's 1987 movie *The Last Emperor*. She was born in Shanghai to Canadian parents whose families lived in the International Quarter. Her father, Dr. John Stanley Willis, was a much-respected public health doctor who came from a family of doctors and nurses.

Dodds and her parents got the last berth on the last boat to leave Shanghai in early 1941 before the war closed the International



Dr. W. Jean Dodds, DVM. Photo by Nancy Kearns

Quarter. They obtained the berth because an elderly couple decided at the last minute that they could not bear to leave and gave up their place.

Her paternal grandmother, who was congenitally deaf, and her grandfather were sent to an internment camp. By the time her grandmother was released, she was bed-ridden and spent her days weaving rugs on a giant wooden loom in their home in Halifax, Nova Scotia. Dr. Dodds is named after her. She describes her grandmother as "a sweet, gentle soul."

Dodds and her parents first went to the United States by boat and then took a train to Montreal and finally to Ottawa where her father became the Director of Indian and Eskimo Affairs for Canada.

When she was in eleventh grade, she decided that she would apply to the five-year veterinary program in Guelph, Ontario. She was partly influenced by her Great Aunt Dorothy and Great Uncle Harold who lived in the Orient, kept pet monkeys, and painted watercolors.

Her father, however, thought that veterinary school was "not good enough for his brilliant, eldest daughter."

To be admitted to the veterinary college at that time, she first had to gain farm experience. She worked on a farm in Quebec for two summers driving tractors, milking cows by hand, and threshing wheat.

“I just thought animals were more interesting than people,” said Dodds. “Instead of dissuading me, it persuaded me.”

She needed perfect grades to be admitted to veterinary school. “It didn’t occur to me that I wouldn’t get in,” said Dodds. Only twenty total women were allowed in all five years. Hers was a class of six – which soon became five when one woman became pregnant and had to leave.

Her father quizzed her every time she came home. She always answered his questions perfectly. She amazed him with answers about every species. Dodds notes that now there are more women than men in veterinary school, which she finds equally unbalanced for the profession.

Dodds put herself through Ontario Veterinary College, University of Toronto, through a combination of a bursary, grooming dogs and drawing medical illustrations. The only time she used nepotism to get a job was when she asked her father to contact his former colleague in the physiology department. “He thought all women were somewhat nutty,” said Dodds. She worked her second through fifth and final year at the physiology department’s research farm, graduating with honors fifty years ago in 1964.

At that research center, she first encountered dogs with the inherited bleeding disease hemophilia, like that seen in people, and then helped identify German Shepherd Dogs with von Willebrand disease, another inherited bleeding disease. When she left in 1965 for a position as a research scientist at Griffin Laboratory of the New York State Department of Health in Albany, she was only allowed to take half of the dog colony that were born with or carried these genetic disorders. “I knew which ones to take, so I took the ones I needed and left the rest,” said Dodds. She did clinical research there for the next twenty-seven years. During that period, she also taught at Tufts University, the University of Pennsylvania and Cornell University. She eventually became the Chief of the Laboratory of Hematology.

Dodds was always interested in the genetics of human disease through studying comparative medicine. In 1965, she approached the National Heart, Lung and Blood Institute of the National Institutes of Health in Bethesda, Maryland, for funding for these studies of naturally occurring animal models of human disease.

“I wanted to study what God had created in their blood,” said Dodds. To get the study funded, she continued studying the genetic defect at the molecular genetic level.

“Scientists at that time were trying to perfect safe, highly purified clotting factor concentrates to treat human hemophiliacs. They sent someone to our facility who looked like Tom Selleck to test some material in a dog with hemophilia. My veterinary assistant, Dottie, let him watch nearby. We picked the gentlest dog for the study, a hemophilic boxer named Blue. We were convinced that the clotting factor wouldn’t harm him. We only had a tiny amount of the factor. Dottie held Blue in her arms. We cut one toenail just short enough to make it bleed onto a gauze pad. Four large drops of red blood came out of the toenail. Then



Dr. Dodds' father, John Stanley Willis, 1938 (at Dalhousie University Medical School)



W. Jean Dodds, 1975 at Griffin Lab, NYS Dept of Health – with vet assistant, Joanne Kull and three hemophilic dogs.

we applied Kwik Stop. After that, we gave Blue the infusion very, very slowly. All the while, “Tom Selleck” watched. Suddenly, Blue stopped breathing. We immediately got the epinephrine, but he started breathing again on his own. The factor was very highly purified, so it may have had a vasoconstrictor in it. We waited a full circulation cycle, 15 minutes, and then cut another toe nail too short. We only got one drop of blood and maybe three drops of clear serum. “Tom Selleck” took the gauze back to show his scientific advisors. And that’s how we convinced them to become the first company to invest millions of dollars in the technology to produce this recombinant antihemophilic factor for human hemophiliacs, which is now available worldwide,” said Dodds.

Next, she focused on the importance of the blood’s relationship to the immune system. “The more I learned, the more I realized what I didn’t know,” said Dodds. She also began suspecting that the thyroid was the key regulatory master gland.

“Forty-five years ago, Ron Schultz [currently Principal Investigator for The Rabies Challenge Fund and Charitable Trust and Professor and Chair, Department of Pathobiological Sciences, University of Wisconsin-Madison School of Veterinary Medicine] and I were the only two people saying we were overvaccinating. I was called irresponsible in public at a large conference because others were so turned off by the idea that vaccines might not be safe. People aren’t shooting arrows at us now because our backs are full. Despite the criticism, I was determined to continue my life’s mission to help animals,” said Dodds.

Even today, Dodds estimates that only 40% of veterinarians are following the national vaccine policy guidelines (<http://drjeandoddspehealthresource.tumblr.com/post/66693331640/dodds-dog-vaccination-protocol-2013-2014#.U-wI4GND2sM>).

“There is no such thing as ‘up to date’ or ‘due’ for vaccinations,” said Dodds. “Enlightened veterinarians will offer a package of separated vaccine components, when available, rather than give them all together, since the published data show more adverse reactions when multiple vaccines are administered at the same time.”

When she was younger, Dodds won Best In Show with three different breeds, a Hungarian vizsla, an English pointer and an English setter, one of her all-time favorites. After she lost her English setter to intractable inflammatory bowel disease, Dodds became interested in nutrition and developed NutriScan, a unique, patented, saliva-based test for dogs and cats to determine food sensitivities and intolerance.

Part Two

Today, Dodds travels too much for speaking and teaching engagements to have any personal dogs at home. However, every day at work she visits her Hemopet colony of about 200 greyhounds, who supply critically needed blood for dogs in need of transfusions. After about 12 months, these dogs enter Pet Life-Line Greyhound Adoption and are then placed in permanent homes as family companions.

In 1986, Dodds married her “soul partner,” Charles Berman, a patent attorney formerly from South Africa. He has four adult children and five grandchildren. She and her husband have been vegetarians for over forty years and have been strictly gluten-free for nearly six months.

The Dodds’ pioneering continues. Her next project, to begin in early 2015, will be extending NutriScan to horses.

“Optimum health begins with optimum nutrition. Nutrigenomics is the study of the effect of nutrition on the expression of the genes in the body’s ‘genomic map.’ While we cannot change our genetic predisposition to certain diseases, we can choose to eat food that helps prevent and mitigate against the expression of these diseases in animals as well as in people,” said Dodds.

She is about to release her second book, also coauthored with Diana Laverdure, titled *Canine Nutrigenomics: The New Science of Feeding Your Dog for Optimum Health*.

Throughout her remarkable career, Dodds’ research has produced results far beyond veterinary medicine. The universal questions she asks about the genetics and physiology of human diseases in multiple animal species, and the answers she finds through clinical studies and research with them, benefit across species and, on the broader level, people, too.

Elizabeth M. Jarrell (EMJ): *What is one of the most common problems you see in Australian Shepherds or Aussies?*

W. Jean Dodds, DVM (WJD): I would say that a common problem in Aussies is hypothyroidism, usually seen as chronic skin and coat problems and/or allergies.

We have thyroid statistics in our Hemopet database for 907 Australian Shepherds for the period 2011 through August 11, 2014.

The breakdown of the data table below indicates that 14.8% (134 of 907) of the Aussies tested were hypothyroid, whereas 1.5% (14 of 907) had heritable autoimmune thyroiditis and another 2.5% (23 of 907) had equivocal (unclear) status for thyroiditis. These data show that Australian Shepherds rank similarly to the other herding breeds with respect to thyroid dysfunction and thyroiditis

Australian Shepherds in Data Base	TOTAL TESTED	2014 (thru 8.11)	2013	2012	2011
TOTAL TESTED	907	168	291	151	183
Total Hypothyroid	134	26	25	24	29
Total Thyroiditis Positive	14	2	3	5	4
Total Thyroiditis Equivocal	23	4	5	9	5



Every day Dr. Dodds visits her Hemopet colony of about 200 greyhounds, who supply critically needed blood for dogs in need of transfusions.

EMJ: Why do you refer to the thyroid gland as a “master gland”?

WJD: The body has two master glands that control or regulate what the rest of the body does. These are the pituitary gland in the head and the thyroid gland in the neck. The thyroid gland gets its “orders” from the pituitary gland, and, in turn, regulates what the rest of the body does.

EMJ: At Hemopet, you developed several thyroid function diagnostic tests. Can you please describe them?

WJD: We developed and patented a series of unique, non-radioisotope-based (non-RIA) thyroid tests for all animal species. These include complete thyroid profiles for assessing basal thyroid function; for detecting autoimmune thyroiditis, the heritable form of canine thyroid disease akin to Hashimoto’s thyroiditis in people; and for monitoring the effects of thyroid therapy.

EMJ: Can you please explain what each of these conditions means? What are the signs, physical and behavioral, for each that would indicate that an Aussie should be tested?

WJD: The chart at right shows the clinical signs of canine hypothyroidism as evidenced by alterations in cellular metabolism, neuromuscular problems, dermatologic diseases, reproductive disorders, cardiac abnormalities, gastrointestinal disorders, hematologic disorders, ocular diseases, and other associated disorders:

EMJ: How do you manage these conditions?

WJD: These conditions are all basically treated with twice-daily thyroxine therapy. I prefer the brand name product over the generic. Thyroxine should always be given at least an hour before or three hours after foods or treats containing calcium or soy as these foods bind thyroxine and delay its absorption.

EMJ: What do the Hemopet statistics reveal for thyroid problems in the Aussies tested?

WJD: These statistics show that the Australian Shepherd breed has documented thyroid disorders that need to be screened for to identify and treat. The results of these screenings should be applied to breeding programs as well.

EMJ: What are the normal ranges for overall thyroid function? Are the ranges independent of breed?

WJD: Normal ranges depend upon the assay method and lab used. Each breed type category has its own expected age and breed norms. However, Hemopet is the only veterinary diagnostic lab that provides age and breed type norms on the lab reports along with professional interpretive comments. All other labs typically have one range for all dogs regardless of age or breed type.

EMJ: Do you recommend that an Aussie be tested or baselined for overall thyroid function? If so, at what age would you baseline?

Clinical Signs Of Canine Hypothyroidism

Alterations in Cellular Metabolism

lethargy	weight gain
mental dullness	cold intolerance
exercise intolerance	mood swings; aggression
neurologic signs	hyperexcitability
polyneuropathy	stunted growth
seizures	chronic infections

Neuromuscular Problems

weakness	knuckling or dragging feet
stiffness	muscle wasting
laryngeal paralysis	megaesophagus
facial paralysis	head tilt
“tragic” expression	drooping eyelids
incontinence	ruptured cruciate ligament

Dermatologic Diseases

dry, scaly skin and dandruff	chronic offensive skin odor
coarse, dull coat	bilaterally symmetrical hair loss
“rat tail”; “puppy coat”	seborrhea with greasy skin
hyperpigmentation	seborrhea with dry skin
pyoderma or skin infections	myxedema

Reproductive Disorders

infertility	prolonged interestrus interval
lack of libido	absence of heat cycles
testicular atrophy	silent heats
hypospermia	pseudopregnancy
aspermia	weak, dying or stillborn pups

Cardiac Abnormalities

slow heart rate (bradycardia)
cardiac arrhythmias
cardiomyopathy

Gastrointestinal Disorders

constipation
diarrhea
vomiting

Hematologic Disorders

bleeding
bone marrow failure
low red blood cells (anemia), white blood cells, platelets

Ocular Diseases

corneal lipid deposits	corneal ulceration
uveitis	keratoconjunctivitis sicca or “dry eye”
infections of eyelid glands (Meibomian gland)	Vogt-Koyanagi-Harada syndrome

Other Associated Disorders

IgA deficiency	loss of smell (dysosmia)
loss of taste	glycosuria
other endocrinopathies	chronic active hepatitis
adrenal	
pancreatic	
parathyroid	

WJD: Absolutely, as should all dogs of breeds known to be at risk for thyroid disorders as well as those being used for breeding. The first screening should be done at puberty. For females, this means 12-16 weeks after the maiden heat; for males it should be between 10-14 months of age. Dogs should be tested annually until they are about age eight and then tested every two years afterwards.

EMJ: *If a dog's thyroid needs supplementation, how long is the initial period of determining the proper amount of supplementation?*

WJD: At about 6-8 weeks, we retest the entire thyroid profile, not just the total T4. Testing of the thyroid profile is done 4-6 hours after the morning pill. An overnight fast is optional.

EMJ: *How long before a supplemented dog returns to normal clinical and other behaviors?*

WJD: It varies with the individual case, but we usually see improvement by four weeks, sometimes sooner.

EMJ: *What happens to a dog with undiagnosed thyroid disease?*

WJD: They usually get progressively more ill, gain weight, and can even become aggressive or exhibit seizures and other strange behaviors.

EMJ: *Can thyroid disease be cured at this point in time?*

WJD: Therapy does not cure the disease; however, therapy can effectively manage the disease.

EMJ: *What are some of the genetic components of thyroid disease?*

WJD: Inheritance, like in people, lies within the major histocompatibility complex (MHC) genes, as it does for other autoimmune conditions like diabetes or Addison's disease, which is caused by the immunological destruction of the adrenal glands.

EMJ: *Do you suggest not breeding a dog with thyroid disease?*

WJD: I definitely do not recommend breeding dogs with the autoimmune form of thyroid disease. Dogs that have familial hypothyroidism that are thyroid autoantibody normal (negative) should only be used for breeding if of exceptional quality and temperament, and should only be bred to thyroid normal mates.

EMJ: *Could there also be environmental causes of thyroid disease?*

WJD: Thyroid dysfunction can be affected by environmental circumstances (nutrition, including excess or insufficient iodine) and drugs such as long-term corticosteroid use, anticonvulsants (phenobarbital or zonisamide), behavior modifying drugs and sulfonamide antibiotics.

EMJ: *Based on your studies in nutrition, would you suggest that dogs be fed a strictly gluten-free diet? Are there any other dietary modifications you would suggest?*

WJD: I recommend a grain-free diet, meaning no wheat, corn or soy. I also advocate a gluten-free diet, meaning no glutes like barley, rye, kamut or oats (unless specified as gluten-free and not contaminated with other glutes like wheat).

EMJ: *Would you expect to see behavioral improvement in a thyroid-compromised Aussie after switching the dog to a strictly gluten-free diet? If so, how soon might the behavioral improvements be seen?*

WJD: Possibly, but we won't see behavioral improvements unless the thyroid dysfunction has been treated appropriately as well.

EMJ: *In addition to a gluten-free diet, do you have an opinion about feeding raw versus kibble?*

WJD: Raw diets properly put together and fed after freezing or freeze drying are very nutritious and safe. However, some animals cannot eat or thrive on them, especially if they have digestive disorders that affect the motility of the bowel loops which can delay the transit time of the food.

EMJ: *Are there any supplements you would recommend?*

WJD: It depends upon the circumstances. A general vitamin-mineral supplement is a good idea. Older pets also need support for their joints as well as natural preventives and therapies for arthritis control. I always prefer holistic, natural supplements to pharmaceuticals, when available.

EMJ: *There are many environmental causes of behavioral and physical problems such as exposure to aerosols and pesticides. Given the global distribution of these toxins, is there any way to minimize their impact?*

WJD: If we provide the dog wholesome nutrition and avoid pesticides, herbicides and other chemicals around the home, then the dog's immune system will be healthier and the dog will be more resistant to disease.

EMJ: *Do you see any other common health issues in Aussies?*

WJD: I've seen some temperament issues, especially fearfulness, and also digestive upsets including burping, lip smacking, intermittent gas, constipation and diarrhea. I've also seen some who are just overweight.

EMJ: *Is there anything else you would like to add?*

WJD: Yes, I think that the Aussie is a lovely breed and makes a good family companion and performance dog.

EMJ: *Thank you very much for your time and patience!*