

Hope for Treating Skin Allergies in Dogs

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Skin allergies in dogs, officially known as atopic dermatitis or atopy, are a common and frustrating problem. Intense itching, scratching, rubbing, and skin redness or thickening result from an overreaction by the immune system in response to otherwise harmless environmental substances such as dust mites, plant pollen, or mold spores. The ideal treatment is to avoid the offending allergens. However, since this is often not possible, additional treatments such as medicated baths, antihistamines, steroids, and/or immunosuppressive drugs to combat the itch are usually needed. Immunotherapy (allergy injections) is also available and is based on the premise that providing constant, low-level exposure to allergens will decrease the body's response when they are encountered in the environment.



Recurrent skin and ear infections are common in dogs with atopic dermatitis and are believed to be related to abnormal skin defense mechanisms. Antibiotics may be needed to treat these secondary infections. However, bacterial resistance has become a real threat in dogs and humans worldwide. Therefore, the AKC Canine Health Foundation (CHF) and its donors have invested almost \$1.5 million in research to better understand these altered defense mechanisms in the skin of atopic dogs. Results will provide critical information to more accurately diagnosis atopy, monitor response to treatment, and enhance skin defense mechanisms thereby reducing the need for antibiotic therapy.

CHF-funded investigators from the University of Florida recently published their findings in *Comparative Immunology, Microbiology and Infectious Diseases*.¹ They found defective secretion and increased adhesion of antimicrobial proteins by atopic skin cells. This could explain why this defense mechanism is ineffective in dogs with atopy. Ongoing studies are exploring additional skin defense mechanisms such as how signaling proteins interact with bacteria, which genes are activated in skin cells and invading bacteria in the early stages of atopy, and how changes in the lipid or fat composition of the skin influence inflammation. To combat antibiotic resistance, investigators are studying a novel treatment strategy involving the use of naturally occurring viruses to infect and kill bacteria.

Results from this research may lead to treatments that boost skin defense mechanisms and decrease the need for antibiotic therapy in dogs with atopic dermatitis. Since atopic dermatitis in humans has many of the same characteristics as canine atopy, the knowledge gained will help both dogs and people affected by this common disease.

CHF and its donors remain committed to developing these new strategies to improve quality of life for atopic dogs and their owners and to decrease the risk of antibiotic resistance. *continued...*

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CALENDAR OF EVENTS

Stay tuned for our 2021 webinar schedule.

Learn more and register at akcchf.org/vetvine

2021 Research Grants Portfolio

The 2021 edition of CHF's Research Grants Portfolio, detailing active research projects funded through CHF, is now available at akcchf.org/portfolio.



Hope for Treating Skin Allergies in Dogs

continued

Learn more about our dermatology and allergic disease research at akcchf.org/dermatologyRPA. 🐾

1. Santoro D, Archer L, Kelley K. (2019) A defective release of host defense peptides is present in canine atopic skin. *Comp Immunol Microbiol Infect Dis.* 65:65-69.

Learn about canine enteric coronavirus and Babesia from CHF's latest infectious disease fact sheets at akcchf.org/tophealthconcerns.



Study Evaluates Modified TPLO Surgical Procedure

By Barbara Fawver

Manager of Pet Influential Communications, Purina

New Technique May Help Dogs Return to Normal Sooner

The debilitating pain and lameness associated with cranial cruciate ligament (CCL) rupture in dogs, particularly in large breeds, have pushed research of this disease, the most common orthopedic problem seen by veterinarians, to the front line. Sixty percent of parent clubs report CCL disease as a health concern in their breeds.



Befittingly, the AKC Canine Health Foundation (CHF) has funded several studies over the past 10 years aimed at learning more about diagnosing, preventing and managing CCL disease. A study (Grant O2682-A) underway at Virginia-Maryland College of Veterinary Medicine is investigating whether a modified approach to the tibial plateau leveling osteotomy (TPLO) procedure allows dogs to recover sooner than the traditional surgical method. TPLO surgery is a technique used to stabilize the stifle, or knee joint, following CCL rupture and to prevent compromised movement and painful arthritis.



Lead investigator Dominique Sawyere, BVSc, MS, DACVS-SA, Clinical Assistant Professor of Small Animal Surgery, explains, “The traditional approach to TPLO involves making a cut through the medial fascia, connective tissue that attaches three important muscles to the tibia, or shinbone -- the caudal belly of the sartorius, which is important for flexing the hip and knee joints; the gracilis, found on the inner surface of the thigh that is key to a dog’s locomotion; and the semitendinosus, one of three hamstring muscles at the back of the thigh.”

Alternatively, the modified TPLO approach does not involve cutting the medial fascia – or the muscles attached to the tibia. “We hope that the preservation of the attachment for these muscles will allow faster and more complete recovery from surgery,” Dr. Sawyere says. “We know that when tendons are cut in dogs, as in humans, they never heal back completely. Dogs typically regain 50 to 80 percent of their original strength at one year following reconstruction.”

The comparative study involves randomly assigning dogs with unilateral CCL rupture to undergo traditional or modified surgery. Eligible dogs must be over 1 year of age and weigh between 30 and 100 pounds. To assess dogs’ return to normal weight-bearing and resolution of lameness, the study team walks dogs across a pressure-sensor walkway before surgery and throughout recovery to determine how much pressure they put on each limb.

Meanwhile, owners are queried about how comfortable their dogs are at home and asked to look for signs indicating lameness is improving, such as increasing thigh muscle circumference, reflecting greater leg use, and better joint range of motion.

“If we confirm the modified approach allows for earlier weight-bearing over the traditional approach, this will mean dogs undergoing a modified approach will have a faster recovery from TPLO surgery and potentially earlier return to normal activity,” says Dr. Sawyere. “The results from this study may change how TPLO surgery is performed and provide patients with improved short- and long-term outcomes.”

Support for CHF-funded musculoskeletal disease research comes from many breed clubs, including the Golden Retriever Foundation®, Labrador Retriever Club, Inc., Samoyed Club of America Education & Research Foundation, and the Newfoundland Club of America Charitable Trust. Some of the clubs are using their Donor Advised Funds, which include Purina Parent Club Partnership funding, to help fund the study of diseases like CCL rupture.

In other CCL research, a genome-wide association study (Grant O2624) is focusing on estimating the heritability of cruciate ligament rupture in Labrador Retrievers, a breed in which 5.79 percent of dogs are affected.¹ Peter Muir, BVSc, DACVS, DECVS, professor of small animal orthopedics at the University of Wisconsin-Madison, notes in the study abstract that CCL disease is a moderately heritable, complex disease with genetic and environmental risks.

Among the advances from earlier CCL studies funded by the AKC Canine Health Foundation are the development of a conformation score to determine risk for CCL disease in dogs, a 3-D computer model to evaluate the biomechanics of surgical procedures, and regenerative medicine as an alternative therapy. Helping dogs heal sooner and return to a normal lifestyle – free of pain – is the desired outcome of these research efforts. 🐾

1. Witsberger TH, Villamil JA, Schultz LG, et al. Prevalence of and Risk Factors for Hip Dysplasia and Cranial Cruciate Ligament Deficiency in Dogs. *Journal of the American Veterinary Medical Association*. 2008(June 15);232(12):1818-1824.

2021 AKC Canine Health Foundation Clinician-Scientist Fellows

Established in 2013, the AKC Canine Health Foundation’s Clinician-Scientist Fellowship Program encourages and supports the next generation of canine health researchers to sustain future advancements in canine health. Visit akcchf.org/clinsci for more information. The 2021 fellows are:



Dr. Skylar Sylvester is a medical oncology resident at Cornell University College of Veterinary Medicine. Under the mentorship of Drs. Cheryl Balkman and Kelly Hume, she will lead a clinical trial to evaluate the efficacy of temozolomide in addition to standard doxorubicin therapy in dogs with splenic hemangiosarcoma. *This fellowship is generously sponsored by the Orthopedic Foundation for Animals (OFA).*



Dr. Josephine Dornbusch is a small animal surgery resident at the Ohio State University College of Veterinary Medicine. She is this year’s AKC Canine Health Foundation GCHP Hill Country’s Let’s Get Ready To Rumble “Rumble” Clinician-Scientist Fellow (akcchf.org/rumble). Under the mentorship of Dr. Laura Selmic, she will evaluate the clinical efficacy of a novel technique for urethral catheterization of female dogs weighing less than 22 pounds (toy breeds and puppies). *This fellowship is generously sponsored by Rumble’s owners, Carolyn and Gary Koch, and breeders Kristy and Kevin Ratliff.*



Dr. Lopamudra Kher is a doctoral candidate in the Small Animal Clinical Sciences Department of the University of Florida College of Veterinary Medicine. Under the mentorship of Dr. Domenico Santoro, she will study the effect of signaling molecules associated with canine atopic dermatitis on *S. pseudointermedius* bacteria. *This fellowship is generously sponsored in part by the Westie Foundation of America.*



MISSION: The mission of the American Kennel Club Canine Health Foundation, Inc. is to advance the health of all dogs and their owners by funding scientific research and supporting the dissemination of health information to prevent, treat and cure canine disease.

2020 AKC Canine Health Foundation Awards



The AKC Canine Health Foundation (CHF) presents the President's Award annually to a person or organization that has made an exceptional contribution to advancing canine health. The 2020 President's Award recipient is long-time CHF Board member and Treasurer, **Cindy Vogels**. An accomplished international conformation judge, Mrs. Vogels' dedication to canine form, function, and health is demonstrated in her life-long involvement in the fancy and 16 dedicated years with CHF.

CHF also presents the Distinguished Research Partner Award annually to clubs or organizations for their ongoing and outstanding commitment to support canine health research. The 2020 Distinguished Research Partners are **the Gordon Setter Club of America, Inc., the Irish Setter Club of America Inc./Irish Setter Club of America Foundation, Inc., and the Labrador Retriever Club, Inc.**

For more information on award recipients, visit akcchf.org/awards.

Recent CHF Grant Highlights

Grant 02837: Duration of Antibiotic Therapy for Canine Superficial Pyoderma: Is the One-Week Post Resolution of Clinical Signs a Valid Rule-of-Thumb?

Principal Investigator: Clarissa P. Souza, DVM, MS, PhD; University of Illinois

Investigators are examining the resolution and recurrence of bacterial skin infections in dogs to establish evidence-based recommendations for treatment of this common condition.

Grant 02831: Mechanisms of NK(T) Cell Mediated Inflammation During Canine Lyme Disease

Principal Investigator: Christine A Petersen, DVM, PhD; University of Iowa

Investigators are studying immune system function in dogs with clinical Lyme disease compared to those with subclinical infection. Results may identify treatment targets to alter the course of Lyme disease in dogs.

Grant 02809: Microbial and Cytokine Signatures of Periodontitis in Dogs

Principal Investigator: Santiago Peralta, DVM; Cornell University

Investigators are examining the bacterial populations present under the gumline of dogs with varying degrees of periodontal disease and how these communities relate to the inflammation and tissue destruction present. Results could inform more effective diagnostic, treatment, and prevention measures.

See our full research grants portfolio at akcchf.org/research.

How You Can Help:

Join the Heritage Society

The AKC Canine Health Foundation Heritage Society honors donors who have made a commitment to the Foundation through a planned gift. Heritage Society members secure the future health of their beloved breeds and advance the mission of the Foundation so that all dogs live longer, healthier lives. If you are thinking of updating or creating your estate plans, be sure your legacy honors your best friend.

Visit akcchf.org/heritagesociety or contact us to learn more.



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