Groundbreaking Veterinary Discoveries That Revolutionized 2011

BY ARDEN MOORE | DECEMBER 30, 2011

Courtesy of Dr. Julie Ryan Johnson
Beau the thoroughbred with Dr. Johnson.

Although dismal economic forecasts dominated the headlines this year, companion animals reaped the benefits of innovative veterinary discoveries.

Advances in stem-cell regenerative research saved the life of a horse with a serious leg injury and opened up new pathways to treat orthopedic and internal diseases in dogs and cats. A novel prescription food now gives cats with hyperthyroidism a dietary treatment option. And thanks to the creation of a synthetic peptide by a determined veterinary research team in the Midwest, dogs may be armed with new ways to combat bacteria, fungi and viruses in the future.

Here's a closer look at how these three major breakthroughs reshaped veterinary medicine in 2011:

A Thoroughbred Named Beau

When Beau, a 21-year-old thoroughbred, ripped 27 centimeters of tendon in his left front leg in early 2011, the preliminary diagnosis called for euthanizing him immediately. But his former owner, Dr. Julie Ryan Johnson, DVM, successfully convinced the attending veterinarian to trailer Beau to a specialist for a more thorough evaluation. She also agreed to be responsible for his medical expenses.

Five years earlier, Dr. Johnson had collected and banked stem cells from Beau when she served as vice president of sales and marketing for Vet-Stem, a regenerative veterinary medicine center in Poway, Calif.

ñWe had extracted fat cells from him and isolated and stored his stem cells, just in case he ever needed them, and I am so grateful that we did,òsays Dr. Johnson, co-owner of Dana Niguel Veterinary Hospital with her husband, Gary Johnson, DVM. ñWe were able to inject his stem cells at his injury site to regenerate tissue, so Beau could walk and trot again.ò

Today, Beau enjoys life on a farm in Wisconsin, where he serves as the favorite horse at a pony club for young girls who are eager to hone their riding skills. ñBeau is super trustworthy and super sweet ð the perfect riding horse for beginners,òsays Dr. Johnson. ñStem-cell therapy truly saved his life.ò

Since 2002, Vet-Stem has worked with more than 3,500 veterinarians who've treated more than 8,000 dogs, cats and horses with tendon, ligament and joint injuries, as well as osteoarthritis. ñStem cell is high science but it is also holistic medicine, because we use the animalôs own cells in this assisted-healing technique,òsays Bob Harman, DVM, MPVM, the founder and CEO of Vet-Stem whose personal pets have even benefited from the treatment. ñThis is a real game changer in human and veterinary medicine,òhe says.

Stem cells have the potential to reduce pain and inflammation, restore range of motion and regenerate tendon, ligament and joint tissues. The cost varies by location and type of procedure, but the average price tag is about $2,500. The good news: Most pet insurance companies offer policies that cover the majority of expenses.

Food Fit for Felines With Hyperthyroidism

Until this year, veterinarians had three options when it came to treating overactive thyroids in cats: radioactive iodine therapy, daily doses of methimazole and, to a lesser degree, surgery. In October, Hillôs® added a fourth option by launching its y/dÊ Feline Thyroid Health prescription food, a low-iodine nutritional solution meant to manage the condition.

Hyperthyroidism, a common disease that affects middle-aged and senior cats, is characterized by the excess production of thyroid hormones, which can lead to weight loss, heart issues, vomiting, heightened activity, vocalization and increased thirst and urination.

The cause remains unknown, but veterinarians suspect that potential risk factors include genetics, diet and the environment. Studies have shown that there may be a link to rising levels of iodine in commercial pet foods, and one study showed that cats with elevated levels of polybrominated diphenyl ethers (PBDEs), fire-retardant chemicals found in furniture and carpeting, were more likely to develop hyperthyroidism.

Radioactive iodine therapy can costs up to $1,500, and it requires the cat to stay hospitalized for several days. The second option involves diligently giving the feline daily doses of methimazole in a pill or cream form for the rest of the pet's life; some cats have not been able to tolerate this medication. Surgery, which has had limited success, remains a distant-third treatment option.

Courtesy of Hillôs®
A view of the feline thyroid.

ñOwners need to give the methimazole consistently for it to be effective, but it can be challenging to pill a cat,òsays Dr. David Bruyette, DVM, DACVIM, a board-certified internal medicine specialist at VCA West Los Angeles Animal Hospital. Dr. Bruyette has successfully restored normal thyroid levels in about 20 cats diagnosed with hyperthyroidism using the Hillôs® y/dÊ food, which is available in dry and canned formulations.

Among his ñsuccessòstories: Dr. Bruyette's middle-aged orange tabby, Sir. ñHe has been on the y/d diet since August, and his thyroxine (a hormone) levels are now back to normal,òsays Dr. Bruyette. ñThis is an iodine-restricted diet, but it is important to clarify that it is not an iodine-deficient diet,òhe says.

Dr. Bruyette emphasizes that although none of these treatments cure hyperthyroidism, he welcomes the new food as another viable option to manage the disease.

A Powerhouse Antimicrobial Canine Ally

Just like us, dogs are not invincible to germs and need to rely on healthy immune systems. They have a determined proponent in Dr. Tonatiuh Melgarejo, DVM, Ph.D., who left a private veterinary practice to become a research scientist at Kansas State University.

In 2011 Dr. Melgarejo led a team of scientists in successfully creating and patenting a synthetic canine antimicrobial peptide that may give dogs a new weapon when it comes to fighting pathogens. The researchers isolated a natural peptide in the white blood cells called K9Cath (short of cathelicidin) and then perfected it through chemical synthesis.

Courtesy of Kansas State University
Dr. Melgarejo of Kansas State University.

ñAntimicrobial peptides represent the bodyôs first line of defense against pathogens,òexplains Dr. Melgarejo. ñEvery living thing ð plants, insects, people, pets ð have these molecules inside of them to fight pathogens. This synthetic peptide has performed quite well against viruses, yeast, fungi and more during our in-vitro testing,òhe says.

The progress made in 2011 has attracted keen interest in Dr. Melgarejoôs work from pharmaceutical companies interested in marketing natural antibiotics that can more effectively treat such chronic canine conditions as ear otitis, dermatitis and urinary tract infections.

ñIn the short term, we can use this synthetic peptide to help dogs fight chronic infectious disorders, particularly among dogs who donôt respond well to conventional medications,òsays Dr. Melgarejo. ñWe suspect that we have something that can really improve animal health, and maybe eventually human health," he says.

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