

AnimalNEWS 19.1

A DEADLY VIRUS MAKES A COMEBACK

Fur Seals Help Researchers
Understand Ocean Life

Cancer Research:
Looking Back, Moving Forward

2019 Dog & Cat Studies



YOUR GIFTS IN ACTION

For more than 70 years, Morris Animal Foundation has been a global leader in funding studies to advance animal health. With the help of generous donors like you, we are improving the health and well-being of dogs, cats, horses and wildlife worldwide.



Heart Drug's Variability

Between 6 and 17 percent of cats with cardiac diseases develop potentially life-threatening blood clots. The anticlotting drug clopidogrel, also known as Plavix, is often prescribed to prevent clots from forming. However, veterinarians have been perplexed why some cats respond to treatment and others do not. Washington State University researchers recently shed light on this issue by identifying a genetic mutation that might explain this variable drug response, a step closer to help tailor medications for cats with heart disease. (*Journal of Veterinary Pharmacology and Therapeutics, September 2018*)

Surgical Cure for Rare Heart Disease

Arrhythmias caused by abnormal electrical conduction pathways in the heart, known as atrioventricular accessory pathways (AP), can be fatal if left untreated. MedVet Cincinnati researchers adapted a catheter-based procedure used in human medicine to successfully eliminate AP conduction long-term in about 95 percent of dogs treated. This procedure is essentially a cure for AP problems in most dogs, eliminating the need for continued, lifelong monitoring and drug therapy. (*Journal of Veterinary Internal Medicine, September 2018*)

Updated Genome Paves Way for More Discoveries

Thanks to recent work on the horse genome by researchers at the University of Louisville, University of Kentucky and University of California, Santa Cruz, there are now an additional 300 genes to study that scientists couldn't study before. This more complete map of the horse's genetic code will help advance the discovery of genetic links and causes of diseases and other serious health problems in all breeds of horses. (*Communications Biology, November 2018*)

Lead Exposure Linked to Aggression

Urban mockingbirds eat a broad range of food items, from bugs to berries, making them an invaluable model to study environmental lead exposure in urban wildlife and pets. Tulane University researchers found a strong association between lead exposure and hyper-aggressive behavior in mockingbirds living in New Orleans neighborhoods with elevated soil lead. Ongoing research looks at how this behavior impacts health, reproduction and survival of these birds. Findings may have important implications for other wildlife species, pets and even people living in affected areas. (*Science of the Total Environment, November 2018*)

American German Shepherd Dog Charitable Foundation

PARTNERS IN RESEARCH AND EDUCATION

In 2007, the American German Shepherd Dog Charitable Foundation Inc. (AGSDCF) made its first gift to support canine health studies at Morris Animal Foundation. Since then, the organization has continued its investment in research, particularly in health concerns for the German shepherd.

Over the years, they have funded research projects in hip dysplasia, genetics of bloat, canine epilepsy, musculoskeletal conditions and, more recently, hemangiosarcoma, an almost universally fatal cancer in dogs.

While they continue to actively fund research, the organization wanted to expand their giving to support educational programs as well.

"We're getting a little long in the tooth and need to invest in the next generation," said Hokkanen. "For our donors, this means not only continuing to support research into health conditions that affect German shepherds, but also making sure we do our part to support the veterinary professionals who care for our dogs every day."

Hokkanen noted that for AGSDCF donors, giving back to the breed they are passionate about is simply a matter of love and appreciation.

"We are grateful for these special dogs who have given their hearts and souls to make our daily lives happier. We give to the health of the breed, and in thanks for their gracing us every day with their wonderful presence."

But this year, they decided to invest in veterinary students, too, and made a gift of \$100,000 to support Morris Animal Foundation's Veterinary Student Scholars program. The program provides grants to current veterinary students with an interest in animal health research, and who have submitted an approved proposal for a summer research project.

"We are thrilled to be supporting the up-and-coming great minds in veterinary medicine who will be helping our dogs,"

said AGSDCF President Deb Hokkanen. "It's exciting for our organization to be working together with Morris Animal Foundation to improve the health of all breeds and every dog."

AGSDCF was founded in 1984 and is devoted to funding research projects that improve the health of the German shepherd dog.

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OUR MISSION

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Guafo Island's Fur Seals

Help Researchers

UNDERSTAND OCEAN LIFE

Though they live on a small isle off the coast of Chile, the South American fur seals of Guafo Island are proving to be immensely informative. The island is home to the Pacific Ocean's largest fur seal rookery, which for more than a decade has been studied by scientists to learn more about ocean life.

"We're always trying to understand how an ecosystem works, the health of it and what factors we're causing to potentially impact it,"

said Dr. Mauricio Seguel, a research fellow at the University of Georgia and member of the Guafo Island Research Group.

"The idea is to keep long-term studies going because we learn the most when we're able to combine information, year after year, and start seeing trends that are important."

The team has been prolific in their publishing, with three papers published in 2018 alone from Morris Animal Foundation-funded research. The first paper focused on previously unknown factors contributing to a die-off of fur seal pups, including mites, pneumonia and sea surface temperature. A second paper focused on research that found hookworms exploit a live fast/die young strategy in their fur seal pup hosts, which could eventually pose a species survival risk to critically endangered populations of fur seals.

The third paper shared the discovery of plastic microfibers in the seals' feces. This finding suggests that scat from pinnipeds may be an efficient way to monitor levels of microfibers and microplastics in the environment.

Guafo Island and its surrounding waters are home to a wide variety of animals, from penguins to whales. So why does the team focus so much attention on fur seals? Because they provide a good snapshot of ocean life while still spending a significant amount of time on land.

Compared to other pinnipeds, fur seals not only live closer to open ocean waters, they tend to forage far deeper into the ocean as well. But unlike fully aquatic animals, such as dolphins or whales, researchers have much greater access to the seals when they return to their rocky beaches. Dr. Seguel and his team can follow, mark, capture or simply observe them to analyze any number of factors in their lives.

"Most people think we study fur seals because they're charismatic or the way they look, but it's actually because they're very important pieces of marine ecosystems, as predators," said Dr. Seguel. "Anything that happens in the marine ecosystem affects them somehow and we can still understand processes in the ocean that would affect other top ocean predators."

More insight from the seal studies is yet to come. Dr. Seguel said his team will publish at least three more manuscripts in the near future about the fur seals of Guafo Island, one of which will deal with climate change and its effect on the seals' immune systems.





IT'S MORE FUN WITH GOLDENS



Ellie, Hero #2349 and Tate, Hero #2460

For Julie Cuenod and her husband, Marc, summer road trips to Colorado Springs, Colorado, are always a doggone adventure. Packed in a car with their two golden retrievers, Ellie and Tate, the couple sets out on a 1,000-mile journey to a retreat full of mountain scenery and relaxation.

It's become an annual tradition that began almost 10 years ago with Teddie, their first golden retriever. Teddie joined the trek every year up until she passed away at 12 years old from hemangiosarcoma, one of the most common types of cancer in golden retrievers.

"After we found out Teddie had cancer, I ended up finding more about how goldens were really having more cancer," said Julie. "At the time, we didn't realize that it was actually a blessing for her to reach 12."

Through her research, Julie also discovered the Morris Animal Foundation Golden Retriever Lifetime Study, one of the largest and most comprehensive canine health studies in the country.

Gathering information on more than 3,000 golden retrievers throughout their lives, the Study hopes to identify the nutritional, environmental, lifestyle and genetic risk factors for cancer and other diseases in dogs.

After losing Teddie, Julie and Marc's love of golden retrievers led them to welcoming Ellie and Tate into their family. And, with Teddie in mind, they decided to enroll the two in the Study with the hope of contributing to the research that could help all dogs have healthier, longer lives. For the couple, Teddie was more than a beloved pet and vacation companion, she was an inspiration.

**"It's all for the golden cause
and we just want to help,"**

said Julie. "The Study is already making great strides which is really neat to see; and even though I don't want to think of myself as a crazy dog lady, I guess I am!"

FELINE PANLEUKOPENIA A DEADLY VIRUS MAKES A COMEBACK

A kitten just brought home from the shelter won't eat her breakfast. A few hours later, vomiting and diarrhea begin. She's rushed to an emergency veterinary clinic and diagnosed with feline panleukopenia (FPV). With support care, the kitten survives, but her owners are left wondering about this illness that seemed to come out of nowhere and threaten their kitten's life.

Feline panleukopenia infection – also known as feline parvo or feline distemper – was first described 100 years ago. FPV is highly contagious and can spread quickly among cats in multi-cat households, shelters and boarding facilities. Young cats and poorly vaccinated cats are at highest risk for infection, and mortality rates are high.

A vaccine against FPV was developed in the late 1960s and, shortly afterward, case numbers sharply declined. FPV seemed to be on a path toward eradication – but that proved too good to be true. In the last 15 years, FPV has roared back and researchers are on the hunt to discover why.

Morris Animal Foundation-funded scientist, Dr. Vanessa Barrs from the University of Sydney, is tackling the disease's rebound by studying the intestinal virome of FPV-infected cats. Dr. Barrs and her colleagues are trying to learn if FPV-infected cats are impacted by alterations in the community of intestinal viruses. Normal

and even protective inhabitants of the intestinal tract might become co-conspirators in the disease process.

"By analyzing fecal samples and comparing infected and uninfected cats, we should be able to characterize every single virus present in the gastrointestinal tract of infected cats," said Dr. Barrs. "By comparing FPV-infected cats to healthy cats from the same shelter environment, we should get a good idea about which viruses are causing disease."

Given the finding that the current outbreak doesn't seem to be caused by a new type of FPV, Dr. Barrs said the best defense against the disease is keeping all cats in a household current on their vaccinations, especially kittens and young cats. Any sick kitten needs immediate medical attention.

We still have a lot to learn about why this virus has made a comeback, but with researchers like Dr. Barrs on the case we expect a brighter future for all cats affected by this deadly virus.





CANCER RESEARCH

LOOKING BACK, MOVING FORWARD

Over the last nearly 60 years, Morris Animal Foundation has funded more than 300 animal cancer studies, investing nearly \$40 million.

Cancer is a disease that impacts animals everywhere, from the pets in our homes to marsupials half a world away. With approximately 12 million diagnoses every year in dogs and cats, cancer remains a leading cause of death in our companion animals.

We're dedicated to continuing the search for answers as we begin our sixth annual Stop Cancer Furever (formerly Unite to Fight Animal Cancer) campaign on May 1. The two-month campaign, which ends June 30, raises funds for research leading to new understandings in how to prevent, diagnose and treat animal cancers.

In 1962, the Foundation funded its first animal cancer study, "Phase One: A Study of Enzymes in Canine Neoplasia." The investigation, out of The Ohio State University, was one of the first to try to gain a basic understanding about the formation of tumors in dogs. Subsequent studies continued to narrow in on specific types and aspects of cancer among dogs and cats.

"For many, many years, the focus on cancer funding was for feline and canine research, at the urging of donors who realized cancer was probably the leading cause of death for their pets," said Dr. Rod Page, Principal Investigator on the Foundation's Golden Retriever Lifetime Study.

That focus was rewarded with significant progress. For example, the Foundation supported key research to develop the first vaccine for feline leukemia, an important cause of cancer in cats. Since the vaccine was created in 1986, the number of associated cancers has dropped significantly.

These types of successes are important – they show we can make progress and save lives. They encourage us to continue to fight against cancers that still need to be conquered, such as oral squamous cell carcinoma, which accounts for 75 percent of all feline oral cancers. Morris Animal Foundation has funded several studies in this cancer.

The Foundation's cancer fight doesn't stop with dogs and cats, though. In horses, we are funding studies looking at squamous cell carcinoma, the most common eye-related cancer in horses, and equine melanoma. In wildlife, we are fighting cancers that are potentially threatening species' existence, including contagious cancers in Tasmanian devils, causing drastic population declines.

Looking ahead, Dr. Page believes new cancer research will examine the genetic basis for cancers to better diagnose and handle them, and will focus on the development of immunotherapies – where attributes of the body's immune system are used to fight cancer. In dogs, he said, hemangiosarcoma will continue to draw special attention.

"The wish list for every veterinary oncologist starts with trying to find some way to deal with hemangiosarcoma. It's a tumor that's relatively unique to dogs and has completely evaded all attempts to understand what's going on in a way that's able to be modified in the patient," said Dr. Page. "It's a rapidly fatal cancer and one that desperately needs better diagnostic tools and treatments."

But just as the level of understanding of cancer has increased, so too has the cost for the average cancer grant. It's 25 times more expensive now than in 1962 to fund the average cancer study, increasing from \$8,000 to \$197,255. That is why donor support is so crucial. From prevention to treatment, each gift we receive to support cancer research means more years for the animals we hold dear.

CAT & DOG HEALTH STUDIES 2019



URINARY TRACT CANCER

Determine if a new diagnostic test is useful for the early detection of urothelial carcinoma, also known as transitional cell carcinoma.



GENOME BUILDING

Expand the cat genome assembly to improve our ability to identify genetic mutations for diseases, from eye diseases to heart health.



MITRAL VALVE DISEASE

Examine process of lesion formation associated with this common canine heart disease and find ways to slow mitral valve degeneration.



NOVEL CANCER THERAPY

Study effectiveness of radiation therapy combined with an immune-stimulating agent to help slow the spread of osteosarcoma, the most common bone cancer in dogs.



MICROBIOME

Explore the impact of acute diarrhea on microbes that reside in the gut of dogs and its link to gut health and chronic intestinal diseases, such as inflammatory bowel disease.



DEGENERATIVE MYELOPATHY THERAPY

Clinically test a novel treatment aimed at silencing a genetic mutation associated with this incurable, progressive spinal cord disease.



UPPER RESPIRATORY DISEASE

Study the bacteria living in the upper respiratory tract to help find new ways to manage this complex infection.



OSTEOARTHRITIS

Discover what drives chronic pain to help identify new, effective and safe pain relief solutions.



OSTEOSARCOMA

Examine the role of cancer metabolism in disease progression, chemotherapy resistance and cancer spread.

FOUNDATION ROUNDS OUT LEADERSHIP TEAM WITH NEW CSO AND CDO

Morris Animal Foundation is excited to welcome Dr. Janet Patterson-Kane and Ryan Welch as our new Chief Scientific Officer and Chief Development Officer. Both joined the Foundation in February, and fill roles critical to the Foundation's continuing growth and success.

"We are thrilled to welcome Janet and Ryan to the Foundation," said President/CEO Tiffany Grunert. "Janet is a seasoned leader in veterinary research with a lifelong commitment to animals. She brings a combination of broad-based research experience, organizational knowledge, passion and a demonstrated motivation to advance the Foundation's mission."

Ryan has a proven track record of securing significant gifts, and skill in designing and implementing successful philanthropic programs. We know he will be an effective leader in our efforts to raise funds to support studies giving animals everywhere longer, healthier lives."

Dr. Patterson-Kane has more than 25 years of research and clinical experience in the fields of equine, canine, feline and wildlife disease. She was a researcher and professor at the United Kingdom's Royal Veterinary College, the University of Queensland in Australia,

and the University of Glasgow, where she was the first woman to hold the prestigious Chair of Veterinary Pathology.

"As a researcher, I want to make a difference in the lives of animals, and this opportunity continues to make that possible, but on a larger scale," said Dr. Patterson-Kane. "Morris Animal Foundation is genuinely accelerating the advancement of animal health and I'm proud to take that further."

Ryan brings 16 years of fundraising and relationship management experience to his new role. He comes to the Foundation from Rocky Mountain Public Media, where he built and maintained relationships with foundations, stakeholders and community partners with excellent levels of retention and loyalty.

"Animals are members of our family and I've always had a strong passion for the care and treatment of them," said Ryan. "I love knowing that, now, my daily work supports the education, research and knowledge to unlock new discoveries and bring revolutionary treatments into practice."

**Please join us in
welcoming Janet and Ryan
to our Morris Animal
Foundation family.**



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