Caring for our best friends: Bayer Animal Health develops solutions for healthy pets

Since 1919, Bayer Animal Health has been a global leader in promoting the health and well-being of animals, as well as supporting the farmers, veterinarians and pet owners who care for them, through innovative research, therapies and solutions. Today, with more than 100 different animal health and care products in more than 120 countries, Bayer Animal Health is among the world’s largest suppliers of veterinary medicines. To further expand our knowledge, we invest about 10% of our sales into research and development related activities.

Our research and development efforts focus on the development of new products for livestock and companion animals. In particular, we concentrate on parasiticides, medicines for the treatment of non-infectious diseases, antibiotics and non-antibiotic treatment alternatives. We are committed to finding solutions for current challenges as well as anticipating future problems in the area of animal health. Our products are an expression of our dedication to, and respect for, animals, people and environmental sustainability.

People and pets: partners for better lives

There is one thing that can improve health, increase relaxation and reduce overall medical costs. It can even rewire the human brain for the better. Inside the home, this same thing also provides protection and emotional assistance, and it can detect dangerous, sudden body conditions like hypoglycemia. In a laboratory, it can detect tumors growing inside the human body. Out in the world, it can detect weapons, including land mines that have been buried deep in the ground for half a century.

This miracle item is a household cat or dog. Perhaps we take them for granted, or we judge them solely based on their fur coats, wagging tails or soft purrs, but these friendly creatures are capable of truly changing their owners’ lives, and our world. Therefore, the importance of caring for our animals should not be underestimated. Bayer Animal Health conducts research to support animal well-being, particularly protection from parasites. Animals can only be the companions we want them to be if we take good care of them.

And what type of companions are our pets? In our busy, multi-tasking, digital world, pets such as dogs and cats are the here-and-now heartbeats that provide everyone, no matter their age or health, unconditional affection – except, perhaps, when they are hungry. But that’s okay. We understand our pets. In turn, scientists have discovered how much they understand us.

Studies show that a pet’s personality tends to be similar to its owner. A dog, for example, is more likely to yawn if its owner does. In a 2011 study in which dogs had to select a method – using their head or paws – to open a door, the results suggested that dogs preferred to use the manner demonstrated by their owners, even if the dogs were offered a treat to encourage them to make the opposite choice. Based on this study, researchers found that dogs possess an “automatic imitation” instinct that is more significant than both natural animal behavior and the pet’s self-interest.

In other words, these pets put their owners’ actions ahead of their own instincts and needs. Today, throughout the world, a growing number of people and pets share this special bond. A 2016 survey asked 27,000 people living in 22 countries about pet ownership. An analysis of these responses showed that 70% of American households were pet owners. Russia’s pet ownership rate was even higher, with 73% of homes owning a pet, and Latin Americans were the pet kings,
with 80% of households owning a dog, cat, fish or bird (see Table 2). Even countries with traditionally lower pet-ownership rates – including the Middle East, India and China – are quickly catching up.

More than a hound dog: how pets help people

While an Elvis Presley song once famously joked about how useless dogs are, times have changed – and so has our understanding of how pets can improve their owners’ lives. In general, scientists conclude that pet owners have measurably lower levels of stress, as well as lower levels of blood pressure. One study suggested that dogs may also help people manage pain from fibromyalgia more successfully, with some patients who spent time with dogs requiring lower overall levels of medication. Dog owners can receive cardiovascular benefits by taking their dogs for walks. Studies suggest that cat ownership has potential health benefits for people at high risk of cardiovascular disease. According to these studies, cat ownership can help to reduce feelings of stress, which could help to decrease their risk of mortality from conditions such as heart attack and stroke.

Children with dogs or cats may also receive health benefits. As one example, children who grow up with a cat or dog in their first years of life have a lower incidence of hay fever and asthma and are less likely to develop animal-related allergies. Other studies show that the immune systems of children – particularly between ages five and eight – in pet-owning families can be stronger than those of children in non-pet owning families. Overall, pet-owning children may be better at fighting general illnesses.

Pets can also provide good emotional support for children. A United Kingdom survey of 100 child cat owners aged 13 years and under found that 80% of the children said their cat helped them get along better with family and friends, and 81% said their cat was their favorite “person” to talk to. Of these respondents, 87% called their cat a “close friend”.

With pets providing physical, social and emotional benefits to adults and children, it may be hard to imagine how else they could be helpful. In fact, pets can provide very special skills. As one example, children with autism have strongly benefitted from having a dog in the household. In a 2014 study reported in the Journal of Pediatric Nursing, 94% of families surveyed said their autistic child had a close emotional bond with their family dog. Even in families without dogs, seven out of ten families said their autistic child enjoyed dog interaction. In another study, cats provided similar enjoyment as well as social skills for autistic children.

One child on the autism spectrum who has been helped by a pet is six-year-old Iris Grace Halmshaw. Iris, who lives in Leicester, England, is a young artist whose paintings have been compared to those of Monet and Renoir. When she was two years old, Iris was diagnosed as being on the autism spectrum. Her life transformed after she met her therapy cat, Thula. Iris’s family credits Thula with the breakthrough in Iris’s ability to master basic tasks like bathing, as well as improving Iris’s communication skills and confidence. It was shortly after Thula’s arrival that Iris began painting in earnest – with Thula always at her side.

Far beyond our homes, pets are also capable of the extraordinary. Dogs, for example, have a sense of smell that can be more than one thousand times more sensitive than humans. While dogs are well-known for being able to detect everything from illegal drugs and agricultural products to road-side bombs, they are now also being used to “sniff” for diseases, including prostate, bladder and liver cancer, as well as Parkinson’s disease. Dogs can also be trained to diagnose and support people with type 1 diabetes, a dangerous metabolic disease in which the body cannot produce insulin. This results in potentially dangerous spikes and dips in blood glucose levels, which can lead to accidents like fainting (and resulting injuries) as well as coma and even death. In this situation, day or night, trained dogs can sniff diabetes to detect when an episode of hypo- or hyperglycemia may occur. These dogs can then alert the diabetics themselves, other caregivers or even use a monitor to alert medical professionals.

The skills that can be provided by trained animals go beyond detecting medical conditions. Guide dogs have assisted the visually impaired since the First World War, when a doctor in Germany realized that dogs could provide aid to wounded soldiers. Since then, dogs have been supporting others, including veterans suffering from post-traumatic stress disorder (PTSD) and other anxiety disorders. Biologically-speaking,
veterans whose PTSD therapy includes companion dogs show improved levels of the hormone oxytocin, a neurotransmitter that causes relaxation and pleasure\(^1\). In short, these companion dogs literally heal the brain chemistry of wounded veterans.

**Taking care of our caretakers**

Our animals do so much for us. In turn, animal owners have a responsibility to look after their pets’ health. Dogs and cats can be vulnerable to a number of diseases, but the good news is that some diseases are preventable and treatable. The key for everyone – whether owning a pet, playing with a pet or encountering animals in general – is to be aware of major animal illnesses.

One important source of many animal illnesses is specific insects such as mosquitoes, sandflies and fleas; another major source are ticks, which are a type of arachnid. This range of pests can infest dogs and cats almost everywhere in the world. Apart from distress, these insects and ticks can cause serious diseases, such as dermatitis, including the extremely itchy flea allergy. In some areas of the world, ticks can even cause life-threatening paralysis in dogs.

More importantly, these specific insects and ticks in general can carry dangerous infectious pathogens such as bacteria or viruses. As they bite or sting our pets, such insects or ticks may also become a vector that transmits infectious diseases. The infectious diseases these insects and ticks transmit are called “companion vector-borne diseases,” which are abbreviated as CVBDs. CVBDs (see Table 3) include illnesses like leishmaniosis, which can affect almost all organs of the animal; Lyme borreliosis, which can cause weakness or even paralysis and severe fever; or the blood diseases anaplasmosis, ehrlichiosis and babesiosis, illnesses that can lead to anemia\(^2\).

These parasite-borne animal illnesses were first found in southern regions of the world, including the European Mediterranean. Today, they are spreading globally and represent a growing challenge to veterinarians and pet owners. A further problem is that in many cases, the symptoms of these diseases may be non-specific; their symptoms may not even be noticed by an animal’s owner. However, an early diagnosis by a veterinarian can detect disease and provide treatment, and even cures.

Of course, this doesn’t mean that pet owners should let their guards down. Of CVBDs, leishmaniosis is one of the most serious. The first cases of leishmaniosis occurred 4,000 years ago, and were found in the mummies of Ancient Egypt. Leishmaniosis is spread by infected sandflies, and dogs as well as humans can become infected. The disease is particularly insidious because its incubation period is several months to several years. More than half of all infected dogs show no visible symptoms, and the disease is potentially undetectable unless owners take their animals to a veterinarian. If symptoms occur, dogs typically show skin lesions, which can be severe, as well as fever and bone infections. Untreated, the disease often leads to death, and even treated animals remain infected for life and risk relapses\(^3\).

Today, leishmaniosis is prevalent in southern Europe. In Sicily, for example, there is an 80% infection rate among the total dog population, while in Andalusia about 40% of all dogs are infected. In Europe, this pathogen had not crossed the Alps for many centuries. However, in 2013, biologists detected an infected sandfly near Giessen, Germany, a town an hour north of Frankfurt\(^4\). Never before had this species been observed so far north. Experts suspect warming climates and high levels of travel among animal owners as a cause for the spread.

The fight against illnesses like leishmaniosis will become increasingly important in the future. But it’s important to remember that international experts have long been monitoring this and other illnesses, and they’re working actively toward treatments and solutions. Global experts from the European Scientific Counsel Companion Animal Parasites, the Companion Animal Parasite Council™ and the World Association for the Advancement of Veterinary Parasitology urge the worldwide protection of animals from parasites. Multiple international companies, researchers and scientists have also been investigating solutions. As one example, Bayer conducts regular clinical trials, as well as research and field studies, particularly in the field of parasitology (the study of parasitic organisms). In 2006, Bayer Animal Health brought together leading researchers at the CVBD World Forum to discuss and further develop current findings and research. There has been a CVBD Forum every year since then, which Bayer Animal Health has been proud to support.

Animal Health professionals, including scientists at Bayer, specialize in fighting these disease-causing parasites. One approach focuses primarily on developing and promoting preventative medicines. These medicines have a repellent effect and also kill insects and ticks on contact, which stops pests from biting in the first place. In doing so, these medicines reduce the risk of transmission of potentially serious diseases. A combined approach to repel and kill parasites follows veterinary recommendations, proven in multiple independent studies, as a well-tolerated and highly effective means of pet protection\(^5\).

At the moment only a few active ingredients have a reliable repellent effect, such as a group of substances known as pyrethroids; these substances include active ingredients such as permethrin, deltamethrin and flumethrin. When applied topically to the skin surface as a spot-on, the active ingredients enter the natural protective external lipid layer on the animal’s skin and spread over the surface of its body. A high-quality medicinal collar is available that provides the same effect but with an additional
benefit: Its enclosed, active ingredients provide long-lasting protection, remaining active for an entire season. The collar steadily releases a small amount of active ingredients, so that the animal's skin is continuously protected. Should the level of active ingredients on the skin become depleted, the collar will automatically replenish it.

There are a variety of products against parasitic vectors available on the global veterinary market, with the majority fighting fleas and ticks. Some products are additionally active against mites or flying insects such as sandflies and mosquitoes. However, the way these products work can differ. In addition to the above-mentioned products that act topically on the pet's skin surface, there are other products that act systemically, which means through the pet's entire organism. Oral formulations are available in which the active ingredient is administered as a pill. The product enters the dog's bloodstream, so that ticks and biting insects are exposed to it when they bite the animal to take a ‘blood meal’. The disadvantage: Such products do not prevent bites and thus may not prevent the transfer of diseases, such as zoonoses. However, with the right preventative measures and regular check-ups by veterinarians, owners can readily protect their pets. Parasites, the illnesses they transmit and the fear of both of them should never separate people from animals. To control parasites, Bayer Animal Health constantly conducts research for the benefit of pets and their owners. Every year, Bayer Animal Health makes significant investments in time and resources, so that products with proven efficacy and safety are available: On average, the creation of one of our new medicines requires 57 million Euros (approximately 60 million US dollars) and takes about twelve years of development and rigorous testing before a product receives regulatory approval.

**Supporting the animals who help our world**

Cats and dogs have become superheroes in the modern world, aiding people in need and organizations globally. In turn, Bayer Animal Health is a proud supporter of these animals through a number of worldwide organizations.

**Companions for aging societies**

At the Merton Place Nursing Home in Conwy, Wales19, a superstar regularly comes to visit. That superstar is Bodie, a lively Jack Russell Terrier that lights up the faces of the residents. One 88-year-old, who is bed-ridden after a stroke, says that Bodie gives her something to look forward to.

The role for pets as companions for seniors is growing rapidly. Statistics show that every second, two people in the world turn 60. With an ageing global population, there is a need for companionship. The International Federation on Aging (IFA) suggests that mental, physical and emotional well-being is stronger among pet owners, including the 60+ population. In fact, pet companionship has been associated with lower blood pressure levels among this population. Studies also suggest that older pet owners are more likely to survive serious illnesses, such as heart attacks, than non-pet owners of the same age.

Emotional, psychological and physical well-being result in another benefit: reduced financial costs for medical procedures and products. Through public outreach, conferences and publications, Bayer Animal Science's Pets for Ageing initiative supports the IFA in raising awareness of the invaluable role pets can play in healthier ageing.

**Supporting veterans at home, our lands and law enforcement**

After a tour of duty, there are some soldiers who return home in body but not in spirit. Anxiety, depression, hyper-vigilance and an overall inability to resume normal activities are signs of a debilitating condition known as post-traumatic stress disorder (PTSD). This condition is extremely serious. While it’s difficult to obtain exact statistics, the United States Department of Veterans Affairs suggests that the suicide rate among male and female veterans suffering from PTSD is double that of the general public20.

And this is where dogs, literally, can save lives. K9s for Warriors, a non-profit organization based in Jacksonville, Florida, USA, pairs specially trained dogs with war veterans suffering from PTSD and/or traumatic brain injury (TBI) in order to ease the transition back to civilian life at no cost for the veterans. And the canines used in the program are carefully selected from rescued dogs. Supported by Bayer Animal Health’s US Division, these special dogs provide unconditional and invaluable companionship for veterans as they undergo therapy.

Dogs not only serve veterans – in fact, they serve nations and law enforcement, providing invaluable support in dangerous operations. During the Vietnam War, for example, the nation of Cambodia was bombed more than any other country. Today, more than forty years after the war’s end, there remains an estimated three to five million bombs, particularly in
natural reserves. Since 2001, mine detection dogs have sniffed out and cleared 78 million square meters of land, which is the equivalent of more than 7,000 football fields. Uncountable lives have been saved and protected from injury as a result.

Among the international agencies and NGOs involved in clearing land mines is the non-profit agency, Norwegian People’s Aid (NPA). In the 17 years of the program, there have been no accidents. In fact, the NPA says the dogs are much safer and efficient than humans at land mine detection. A healthy trained dog is able to sniff a landmine buried six meters (almost 20 feet) below the surface. They can also detect mines and explosives that have been buried for over 50 years. As if that were not remarkable enough, a mine dog can free 800 square meters (over 8,000 square feet) in a single day: This is up to four times as much as a human with a metal detector could achieve, and it’s 20 times faster.

To support the NPA – and the heroic dogs that carry out this dangerous work – Bayer colleagues in Norway provide flea and tick collars to protect the dogs’ health. Since Cambodia lacks veterinary care, these flea and tick collars provide tremendous support against parasites and infections. Mine dogs in good health and with a clear sense of smell may be able to serve up to two years longer, thus rescuing even more people.

Service dogs not only help people; they also protect other animals. In the case of Kruger National Park in South Africa, dogs are on the front line to save endangered rhinoceros from poaching. Hunted for their horns, the rhinoceros population has been decimated. Over the past decade in South Africa, more than 6,000 white rhinoceroses have been killed by poachers. Alongside park rangers and law enforcement, specially trained service dogs sniff out human intruders, explosives and, sadly, injured or dead rhinoceroses.

For almost three years, Bayer South Africa has stood alongside these efforts. Beginning with a partnership with South African National Parks and the Anti-Rhino Poaching Unit, Bayer now supports the health of the Table Mountain National Park’s Dog Unit, including the service dogs as well as their handlers. To help protect these invaluable animals working in a high-risk environment where CVBDs are ever-present, Bayer supports these dogs by treating them for internal and external parasite infestations, as well as covering the costs of their yearly vaccines. Their handlers are also provided with insect repellent for clothing, vitamin and mineral supplements, as well as insecticide-treated bed nets to repel mosquitoes while they work in Kruger National Park.

Animals can help people in many different ways

Animals provide companionship, healing and support. They can safeguard their human companions. They can even protect the world. Whether on a field or in a home, animals contribute to all of our lives. People and pets are partners in better living. Bayer’s Animal Health Division, worldwide, is proud to do everything possible to support these friends.