

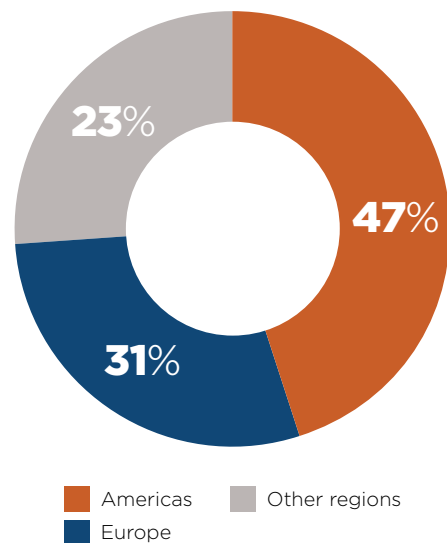
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Florida's Growing Foothold in Animal Health

Florida has a large and growing presence in the booming market for animal health products and services. And it's well positioned to take on an even bigger role in this exciting industry. Florida, after all, has a long history in agriculture and an expanding selection of veterinary clinics serving pet owners statewide. Add to that the University of Florida's reputation as a highly regarded source of both veterinary training and research, and it's no surprise that the state has become a prime destination for animal health product developers and service providers.

The global animal health market is worth around \$23.9 billion per year and has been growing at an annual rate of 4%. Almost half of that value is in the Americas, with just under a third in Europe (see Figure 1). About 62% of those dollars are spent on pharmaceuticals, 26% on biotechnology products and 12% on medicinal food additives¹. Three-fifths of the global animal health spend is on food animals, but as the popularity of pet ownership increases around the world, the companion animal health sector is projected to grow significantly (see Figures 2 and 3).

FIGURE 1: ANIMAL HEALTH SALES IN 2014



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Source: *Health for Animals*¹

Florida maintains a strong presence in both the food-production and companion-animal sides of animal health. In 2014, Florida ranked 10th of all the U.S. states in beef cattle (916,000 head), 14th in egg production (2.4 billion eggs), 19th in milk production (2.5 billion pounds) and 20th in overall cash receipts, at \$8.21 billion. The total value of Florida's livestock and dairy products in 2014 was \$2.4 billion³. That's one reason the southeastern United States has the highest number of veterinary clinics per capita and Florida places third among all the states for veterinary services (see Figure 4)⁴.

Florida is home to more than 50 animal health companies developing a range of products, from medical devices to pharmaceuticals to veterinary

dentistry tools. Florida's key academic and research institutes provide access to cutting-edge research and a highly educated workforce. The University of Florida College of Veterinary Medicine, which admits about 100 students per year and celebrated its 40th anniversary in 2016, is located in the university's Health Science Center. The university is also home to the Institute of Food and Agricultural Sciences (IFAS), a federal-state-county partnership that focuses on improving quality of life through agriculture, human and natural resources and the life sciences.

"The University of Florida has one of the best veterinary colleges in the country, and there are world-class veterinary oncologists throughout the state," says Patricia Lawman,

FIGURE 2: TOTAL U.S. COMPANION ANIMAL INDUSTRY EXPENDITURE - 1994-2016

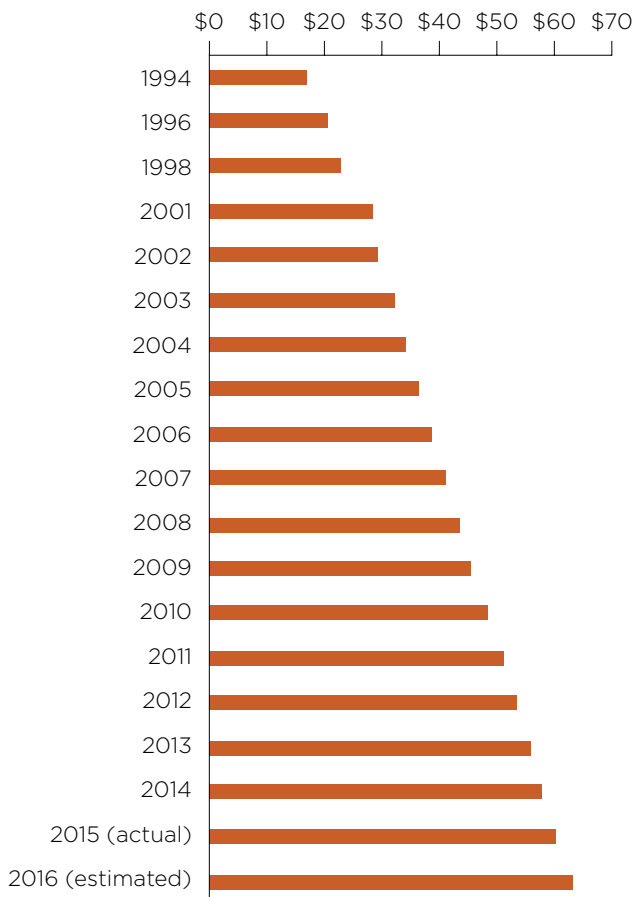


FIGURE 3: SPENDING IN THE U.S. ON COMPANION ANIMALS - 2015-2016

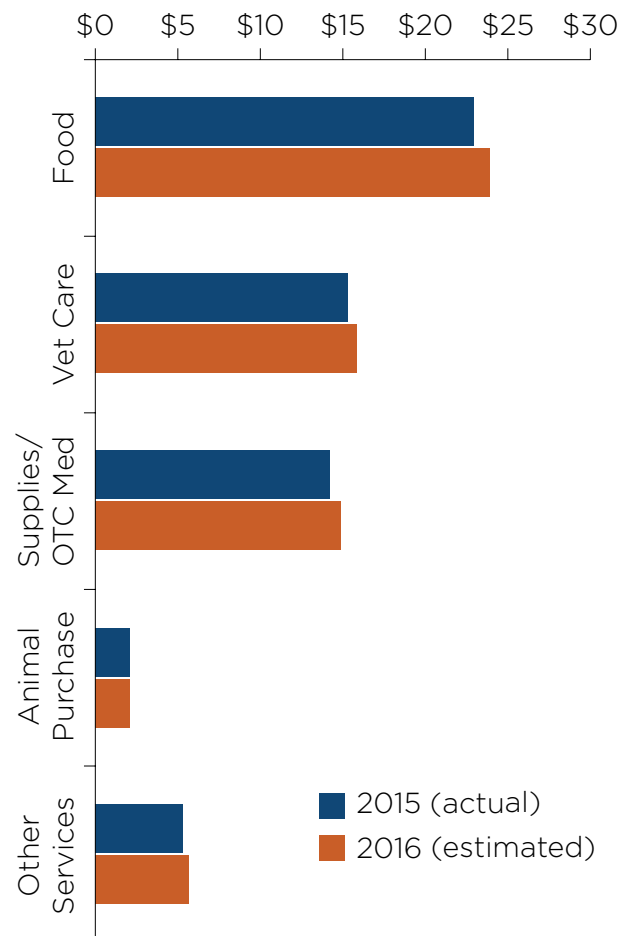
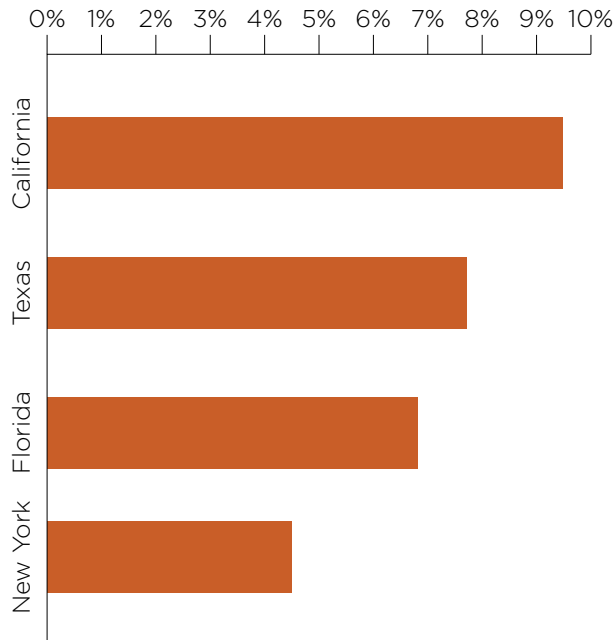


FIGURE 4: DISTRIBUTION OF VETERINARY ESTABLISHMENTS VS. POPULATION – TOP FOUR US STATES



chief executive officer of Morphogenesis, a Tampa-based company that's developing cancer immunotherapeutics for both animals and people.

Florida's location also provides companies with easy access to the growing Latin American markets. Countries like Brazil are becoming increasingly important in animal health, due to their stature in the worldwide meat market and increasing love of companion animals. Beef exports from South America as a percentage of the worldwide total increased from 18% to 25% in the three years ending in 2012, and the companion animal market in Latin America is expected to grow at a compound annual rate of 6% through 2025, according to Wall Street analysis firm Trefis⁸.

Florida's contributions to animal health **Joint Health**

Companion animals are living longer as a result of overall improvements in veterinary health. But at the same time, increasing levels of obesity in companion animals⁶ has led to wear and tear on joints. This has fueled an interest in orthopedic surgery, joint replacement and pain relief to improve animal welfare and

avoid cutting short otherwise healthy lives. Florida is a leader in this booming industry.

"Companion animals are family members, and so animal health is all about maintaining wellness and keeping pets part of the family, through treatment and prevention of diseases and parasites," says Matthew Winter, executive vice president of veterinary education for the North American Veterinary Community (NAVC) and clinical associate professor at the University of Florida College of Veterinary Medicine. "Aging animals get joint and other diseases in the same way as humans do."

Arthrex Vet Systems, a division of the Southwest Florida-based global medical device company Arthrex, has developed a variety of products for use in orthopedic surgery in animals. These include sutures, implants and other materials, surgical tools and platforms for joint, ligament and soft tissue surgery and repairs. The company also offers technology for bone-graft surgery and for using plasma to promote healing.



Dermatology

As veterinarians become better at extending animals' lives, other areas of health become a focus. Take dermatology, for example. Diseases that cause itchiness account for as many as one in 6 visits to a

veterinarian's office⁵. So several pharma companies are investigating the biological pathways of these diseases, and developing therapies that can be used long term to control them. VetBiotek, based in Largo, Florida, has developed Ceramide III as an ingredient for therapeutic shampoos and other products. Ceramide III is a molecule that reduces transdermal moisture loss, repairing and protecting dry and damaged skin in allergic and older animals. The company also uses MicroSilver BG, an antibacterial derived from pure silver, in many of its dermatology products.

The need for new veterinary products is also growing in agriculture, and innovations are aimed not only at improving animal welfare, but also at protecting biosecurity and food safety. Studying diseases in animals can also benefit human health. According to the U.S. Centers for Disease Control and Prevention, more than six in 10 infectious diseases seen in people originate from animals⁷. These include emerging diseases such as Ebola virus.

Cancer Treatment

Research aimed at developing new treatments for cancer in pets is also benefiting people with the disease. That's the primary mission of Morphogenesis, which was founded on technology developed at the University of Florida and the Walt Disney Memorial Cancer Institute.



"We made a strategic move into animal health based on the unmet need of companion animals with cancer. We wanted to provide a leading technology that had no side effects, since so many families are looking for new therapies and are willing to go to great lengths for their pets," says Lawman.

"There is a good support system for small companies in Florida, and a growing community in animal and human health."

Patricia Lawman, Chief Executive Officer, Morphogenesis

Morphogenesis got its start at the University of Florida's Sid Martin Biotechnology Incubator, and benefited greatly from its proximity to world-class institutes and services, says Lawman. "There is a good support system for small companies in Florida, and a growing community in animal and human health," she says. "We also have strong connections with the Southeast Veterinary Oncology and Internal Medicine group, which has participated in several of our canine studies."

The company has created a strong academic and research network. It retains ties with the University of Florida and the University of South Florida, and is collaborating with the Tampa-based Moffitt Cancer Center to develop a therapeutic DNA vaccine for melanoma in people that's based on the company's work showing the vaccine's safety and efficacy in horses with the same disease.

Lawman is committed to the company's work in companion and service animals, but sees practical and pragmatic links between animal and human work. "We believe that looking at the effects of therapy in naturally occurring disease in higher species such as dogs, cats and horses provides an effective platform for translating a technology from bench to bedside for humans," she says. "So many preclinical studies are carried out in highly-inbred mouse models that have little relevance to human disease and treatment response. Companion

animals are more likely to be outbred. They also live in the same environment as we do and therefore are exposed to all the same elements that can influence the development of malignancies.”

Morphogenesis has developed immunotherapy approaches for 34 different types of cancer in 94 different breeds of mice, dogs, cats, horses and now one goat. The company’s work in canine lymphoma has led to an FDA-endorsed plan to develop a similar therapy in humans. “We believe that there will be a direct correlation between what we have seen with our immunotherapy in multiple cancers and species, and in humans,” says Lawman.

Moving into a future in Florida

[Enterprise Florida, Inc. \(EFI\)](#) is a public-private partnership between Florida’s businesses and government leaders and is the principal economic development organization for Florida. EFI facilitates

job growth for Florida through business recruitment and retention, international trade and export assistance, and more. Enterprise Florida staff can provide confidential assistance to companies making location, relocation, or expansion decisions.

EFI services include:

- Confidential site selection
- Property search assistance
- Industry sector expertise
- Incentives coordination
- Demographic and Workforce information
- State agency liaison

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