After more than 35 years, the Robert H. and Mary G. Flint Animal Cancer Center’s comparative oncology research program continues to flourish, thanks to both brilliant staff and investment from private philanthropy and successful grant funding. Further strengthening our impact is the addition of two new research programs led by faculty members, Dr. Dan Regan and Dr. Keara Boss.

Regan trained as a veterinarian at the University of Georgia and is a board-certified pathologist. He then completed a Ph.D. in tumor immunology at Colorado State University. He recently received a faculty position following postdoctoral research at the cancer center. Boss is a board-certified radiation oncologist and also holds a Ph.D. in radiation biology from North Carolina State University. Boss joined the Flint Animal Cancer Center in August 2016.

It typically takes a new faculty member two years to establish a research program, which includes hiring a team, ordering equipment, and writing grants to fund their programs. Both Regan and Boss are already making an impact by asking big questions in their common quest to conquer cancer in all species.

In Search of Answers to Combat Metastatic Disease

When Dr. Dan Regan talks about his work in cancer research, he boils it down to a simple analogy known as the seed and soil theory. He wants to understand how cancer cells (seeds) know where to find welcoming locations to take root (soil). In science speak, Regan studies the tumor microenvironment and metastatic disease.

His new research program at the Flint Animal Cancer Center is based on the work of Stephen Paget, an English surgeon during the late 19th century who was the first to theorize that the microenvironment played an important role in the spread of cancer.

continued on Page 2
“When a plant goes to seed, its seeds are carried in all directions; but they can only live and grow if they fall on congenial soil. ... While many researchers have been studying ‘the seeds,’ the properties of ‘the soils’ may reveal valuable insights into the metastatic peculiarities of cancer cases.”
– Stephen Paget

“During my doctoral studies in tumor immunology, I came across a paper from 2005 describing how cancer cells condition distant sites before metastasizing,” said Regan. “The paper cited the work of Stephen Paget that had been forgotten for more than 100 years. For me, it was a mind-blowing idea and quickly became my passion.”

At the same time, it also became personal when Regan’s father was diagnosed with cancer.

As Regan learned more about the tumor microenvironment, he discovered it was not well understood and a field ripe for exploration. After nearly a decade of study, Regan believes one key to combatting metastatic disease is understanding how the primary tumor conditions the soil in distant locations. In both pets and people, metastatic disease continues to puzzle scientists and challenge clinicians. Once the cancer spreads, there are few treatment options. Regan is on a mission to change that fact.

His current projects include investigations relating to two highly metastatic cancer types. The first study focuses on breast cancer, which is the most common cause of female cancer mortality, with the majority of these deaths resulting from metastatic disease. While the initial response rate to tumor treatment can be up to 90 percent, recurrence is frequent, and the tumors that eventually spread are typically resistant to anti-cancer therapies. His study aims to understand changes within the host tissues/organs of metastatic sites that support this drug resistance, in hopes of identifying treatments that can prevent or reverse these changes and restore tumor cell drug sensitivity.

In a second study, Regan is on a quest to improve outcomes for patients diagnosed with osteosarcoma. Unfortunately, the prognosis for this disease has not changed in more than 25 years, primarily due to an inability to predict and therapeutically target lung metastasis, the most common site for the cancer to spread. This project hopes to define the critical elements of non-malignant host cells that promote this lung metastasis. He believes the results of this study will provide the foundation for future investigations to evaluate new therapies and identify patients who may be prime candidates for these treatments to slow or prevent metastasis.

“More than anything, I want to give hope to patients, both pets and people, with metastatic disease,” said Regan. “I’m grateful for the opportunity and ready to make an impact.”

FORCING A NEW PATH IN RADIATION BIOLOGY

Combining a busy clinical schedule with a robust research program is no small task, but Dr. Keara Boss makes it look easy. After settling into a demanding clinic rotation, Boss has hired lab staff, purchased equipment, and received funding for her work in radiation biology research. Never one to start small, she has a variety of projects in progress. Her role as a clinician and scientist is unique in veterinary medicine.

“I’m lucky that I can tie together two different angles of my career,” said Boss. “I love the clinical aspect of my job, treating veterinary patients and working with their families. Treatment planning sparks so many interesting conversations within our team, which leads to important questions that then we can investigate through clinical studies, thanks to our strong trials program. It’s also great to step into the lab. Basic science cancer research is critical to understanding what’s happening with our patients at a deeper level. Tumor and normal tissue responses to radiation therapy, and all cancer therapies, are complex, and the work coming out of the lab helps to piece it all together.”

With a variety of tumor types available to study, Boss is focusing her work on head and neck cancers, which are locally aggressive in pet patients and can behave similarly in people. She is most interested in studying the immune effects of radiation therapy. The field of radioimmunology is flourishing; however, many important questions remain.

In a new clinical trial, Boss hopes to address how treating lymph nodes with stereotactic radiation therapy affect the immune response within the tumor and throughout the body in canine patients with oral carcinoma. Canine oral carcinomas share several characteristics with advanced head and neck squamous cell carcinoma in people. Due to the highly translational value of this project, Boss is collaborating with Dr. Sana Karam, a physician-scientist specializing in human head and neck cancer radiation oncology at the University of Colorado Anschutz Medical Campus. This study is part of the Colorado Clinical and Translational Sciences Institute CO-Pilot Program.

Boss also will be investigating approaches for improving the effectiveness of radiation therapy by combining it with immunotherapy. In collaboration with Dr. Steven Dow, professor of immunology and the director of the Center for Immune and Regenerative Medicine at CSU, she will be studying the immune response of canine cancer patients following treatment with stereotactic body radiation therapy with or without immunotherapy, within tumors, lymph nodes, and throughout the body.

“In the lab and in the clinic radiation therapy, particularly SBRT, has been shown to stimulate a strong immune response against tumor cells,” said Boss. “We want to see if we can further enhance the response when we combine radiation with immunotherapy. My hope is this is the first of many opportunities to work with Dr. Dow on translational radioimmunology studies to improve outcomes for our veterinary cancer patients and, hopefully, people too.”

Thinking about her vision for the future, Boss has an eye on the past. “My mentors, Dr. Mark Dewhirst, Dr. Don Thrall, and Dr. Susan LaRue, were all trained at CSU by Dr. Ed Gillette, who pioneered the field of veterinary radiation oncology. They have each contributed so much to promoting comparative oncology in radiation biology research. I have been fortunate to learn from them and, now, I hope to make them proud through my contributions to the field.”
CATS GET CANCER TOO. IN FACT, millions of our feline friends are diagnosed with cancer each year. At the Flint Animal Cancer Center, 90 percent of our patients are canines, but that doesn’t mean all of our work is focused on dogs. Several initiatives at the FACC center on the unique needs of cats.

FELINE GI LYMPHOMA

The Feline Cancer Core, a team of scientists from Colorado State University, is studying critical questions surrounding inflammatory bowel disease and gastrointestinal lymphoma in cats. The two diseases have puzzled veterinarians for years. Both GI lymphoma and IBD present with chronic diarrhea and vomiting. While IBD is the most common reason for these symptoms, veterinarians do not have an effective method to confirm IBD or rule out GI lymphoma. A lack of research leaves open questions about the best way to treat patients.

Thanks to private philanthropy, the team is hoping to answer big questions, including: What is the best way to confidently distinguish between feline IBD and feline GI lymphoma? What genetic and environmental factors contribute to the development of IBD and lymphoma? Does chronic feline IBD progress or transform into feline GI lymphoma over time? What therapies can be developed to treat IBD and GI lymphoma?

Answers to these questions may have implications for people too.

“Cats live in the same environment as their owners, breathe the same air, drink the same water,” said Dr. Craig Webb, principal investigator. “Through our study, we may find triggers that place both cats and people at higher risk for developing disease.”

The goal is to recruit 100 owner-enrolled cats diagnosed with either IBD or GI lymphoma over the next two years. To learn more, please contact, Dr. Craig Webb, cbwebb@colostate.edu.

NEW DRUG THERAPIES FOR CATS

Cats have unique and sometimes unpredictable challenges with chemotherapy due to their metabolisms. Unfortunately, very little information about the ideal use of anti-cancer compounds is available to guide cancer therapy in cats. The purpose of the Angelo Feline Therapeutics Discovery fund is to support studies in feline pharmacology to improve clinical outcomes for cats with cancer.

The Radiation Oncology service at the Flint Animal Cancer Center is known for breaking new ground. They were the first veterinary oncology service in the U.S. to employ a linear accelerator to treat companion animals and the first in the world to offer stereotactic radiation therapy for pets.

Under the direction of Dr. Del Leary, medical physicist, they are at it again. Over the last year, Leary has worked with radiation oncologists to develop 3-D-printed molds, known as boluses, that contour to patient bodies to improve radiation dose delivery to tumors. According to Leary, this novel approach currently is used in 10-20 percent of human radiation oncology services worldwide.

One significant outcome of this program was the development of a topical formulation that is rubbed on a cat’s ear to improve appetite, which may be impacted by chemotherapy. The gel eliminates the need for “pilling,” which can be traumatic both to the animal and the owner.

Currently, Dr. Dan Gustafson, director of basic research, Flint Animal Cancer Center, and a team of scientists are working to identify sources of variability within the domestic cat population with regards to drug metabolism. Recognizing these differences is the first step toward developing personalized medicine approaches in cats to make drug therapy safer and more effective. To support ongoing feline therapeutic research, please visit our website.

FOCUS ON FELINES

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Until recently, FACC used conventional bolus sheets made of a gel-like substance. However, the sheets are limited in their ability to contour over irregular surfaces leaving air gaps that reduce the functionality of the bolus.

To create a custom bolus, Leary uses the patient’s CT image and sends the data to the 3-D printer. The CT image provides a blueprint to create a unique mold that hugs curves and crevices.

“Using custom 3-D printed molds, we’ve found there’s a better agreement between what we have in the planning system and the dose delivered to the patient,” said Leary. “The molds minimize the air gaps so we can increase the dose to the tumor.”

Putting the new technology to the test, radiation oncology resident Dr. Tiffany Martin found significant improvement to tumor coverage when using the custom mold compared to traditional bolus for head and neck cases. She has submitted her findings for publication.

“While this is a novel approach today,” said Leary, “I think this quickly will become mainstream in both human and veterinary practice.”
Mary Lafferty will be awarded an honorary VTS in June 2019.

Flint Animal Cancer Center News Briefs

**Lafferty Honored by AIMVT**

Longtime Flint Animal Cancer Center veterinary technician, Mary Lafferty, will be recognized posthumously as an Honorary Oncology Veterinary Technician Specialist in the Academy of Internal Medicine for Veterinary Technicians. Lafferty began her career as a “bone nurse” in 1990 working alongside surgical oncologist Dr. Stephen Withrow. At the time, most of their work focused on osteosarcoma (bone cancer) treatment and research. Over the years, she served as a veterinary technician, mentor, study coordinator, and much more. She also co-authored 17 publications, a unique accomplishment for a veterinary technician.

Lafferty died in a tragic horseback accident in April 2018. AIMVT will honor Lafferty’s memory with a tribute during their pinning ceremony at the American College of Veterinary Internal Medicine Forum in Phoenix this June.

**Withrow Named Distinguished Alumnus**

Flint Animal Cancer Center founding director, Dr. Stephen Withrow, has been named a 2019 Distinguished Alumnus by the University of Minnesota, College of Veterinary Medicine. Withrow, who completed his D.V.M. at the University of Minnesota in 1972, will receive the award during the College of Veterinary Medicine’s Points of Pride Research Day in October. The award recognizes Withrow’s “outstanding accomplishments in the field of veterinary research with particular attention to work in veterinary oncology with translational applications.”

**Gustafson Chairs First of Its Kind Session at ASPET Meeting**

Dr. Dan Gustafson, professor of pharmacology and biomedical engineering and director of basic research at the Flint Animal Cancer Center, chaired a recent session at the American Society of Pharmacology and Experimental Therapeutics Annual Meeting. The session, called “Companion Animals in the Cancer Therapeutics Development Pipeline,” was the first of its kind at this prestigious scientific conference.

Gustafson designed the program to highlight research in comparative oncology with a particular emphasis on cancer drug use in companion animals. The annual meeting, in conjunction with the Experimental Biology conference, attracted 12,000 scientists from around the world and provided an extraordinary opportunity to raise the profile of comparative oncology research and the work of the Flint Animal Cancer Center.

In addition to Gustafson, session presenters included Dr. Dawn Duval, associate professor of molecular oncology at Colorado State University, and FACC staff member and former FACC trainee, Dr. David Vail and Dr. Luke Wittenburg.

**Room Dedication Honors Memory of Riley Anderson**

Friends of the Flint Animal Cancer Center, Dawn and Brett Anderson, recently dedicated two new rooms to the memory of their cherished black lab, Riley. The “4R – Riley’s Radiation Rounds Room” honors the care he received from the cancer center during treatment for a soft tissue sarcoma and a brain tumor. The naming gift will support a comparative oncology clinical trial led by radiation oncologists Dr. Keara Boss and Dr. Sue LaRue. The Andersons also paid tribute to Riley’s memory with the naming of the “RAMS – Riley’s Advocates Meaningful Support” Room. The additional gift supports the counseling work of Colorado State University’s Argus Institute. Through these gifts, the Andersons hope Riley’s memory will live on and also impact the lives of future patients.
WHERE ARE THEY NOW?

Over the last four decades, many residents and fellows have graced our halls with their intelligence, dedication, and caring, often leaving deep and lasting impressions with our clients, who ask “where is _____ now?” Here’s an update on three of our amazing “graduates.”

Dr. Jolle Kirpensteijn
Surgical Oncology Fellow
1992-1993

After my time at the Flint Animal Cancer Center, I was appointed assistant professor of the Veterinary Medicine department at Utrecht University in the Netherlands. Before leaving CSU, Dr. Steve Withrow inspired me to follow his footsteps in Europe and set up a surgical oncology service at Utrecht University and spread the love for surgical oncology all over the world. I went through the academic ranks and became a professor in surgery at the University of Copenhagen in 2005, and then a full professor in surgery at Utrecht University in 2008. After 20 years of a fantastic academic career, I switched alliances in 2013 to the corporate world and am now the chief professional veterinary officer at Hill’s Pet Nutrition in the United States.

I loved the awesome team I worked with during my time at CSU. The experiences I had while working at the James L. Voss Veterinary Teaching Hospital instilled in me a balance of enjoying the beauty around you while working passionately for things you love and admire. I have never forgotten this lesson; it has shaped both my personal and professional career, and Colorado State University will always have a special place in my heart.

Dr. Robert Rebhun
Medical Oncology Resident
2006-2008

I took a little different track and completed a Ph.D. in cancer biology after veterinary school. My goal was to be a clinician-scientist, and the Flint Animal Cancer Center had a long-standing history of training and mentoring clinician-scientists. I didn’t have the same amount of clinical experience as most of my resident peers, and I will always be grateful to the FACC for taking a chance on me and giving me a clinical residency following my Ph.D.

After my residency, I joined the faculty of the University of California – Davis, School of Veterinary Medicine, and I’ve been there ever since. I currently serve as professor and Maxine Adler Endowed Chair in Oncology. I enjoy the balance between research, clinics, and teaching.

My favorite FACC memory involves Dr. Steve Withrow pulling me out of morning rounds to ask me to see a new case. The client and patient were flying into the Fort Collins airport around 10 a.m. He wanted me to admit the patient, complete bloodwork and a CT scan, and have the patient in the operating room by 1 p.m. because that was the only window of time he could “cut it.” No pressure!

Dr. Luke Wittenburg
Graduate Student & Postdoc
2005-2016

During my first clinical oncology rotation as a vet student at CSU, I decided to make veterinary oncology my career. After completing my D.V.M. and an internship, I interviewed for an oncology residency at the Flint Animal Cancer Center. At the interview, Dr. Steve Withrow mentioned a new cancer biology Ph.D. program. Up to that point, I thought a clinical position was my next step, but the opportunity to be involved in research excited me.

In 2005, I became the first veterinarian enrolled in the cancer biology Ph.D. program at CSU. After completing my Ph.D. in 2010, I became a postdoctoral researcher and resident in veterinary clinical pharmacology. Following residency, I spent time as a research associate and then became a special appointment assistant professor. I think, in all, I had five offices in my time at the FACC!

After 11 years at CSU, I joined the faculty at the University of California – Davis. I am currently an assistant professor and work in the Center for Companion Animal Health. My current position allows me to use all aspects of the broad training that I received at the FACC. What’s more, I get to work with some great people, some of whom I first met while working at the FACC.
The Flint Animal Cancer Center has a long history of pioneering innovations in veterinary cancer treatment. In particular, founding director, Dr. Steve Withrow, was instrumental in the development of the surgical limb spare and several oral/facial reconstruction procedures. Today, these techniques are common practice around the world.

Withrow set the stage for FACC faculty to think outside the box in the pursuit of advancing patient care. Today, the FACC surgical oncology team is harnessing technology to tackle a variety of challenges that impact patient well-being and outcomes.

3-D PRINTING TECHNOLOGY TO PERSONALIZE IMPLANTS

One of the most common cancers in dogs is osteosarcoma (bone cancer). Typical treatment includes amputation, but for some patients, amputation is not an option due to neurologic or orthopedic issues. The limb-spare technique developed by Withrow provided a solution for those patients (and human patients too). While a saving grace for many, it also comes with complications. Common challenges include infection, biomechanical failure, and local recurrence. Of these, implant failures – plate breaks, screws pulling out – occur in up to 60 percent of cases in pets.

FACC-trained surgical oncologist and associate professor, Dr. Bernard Séguin is hoping to use 3-D printing technology to overcome one or more of these challenges.

“This project came along as I was trying to think of a novel way to reduce the complication rates with traditional limb-spare surgery,” said Séguin.

Conventional implants are straight, which limits how well they fit and consequently increases the stress on the implant and bones when a patient places weight on the treated limb. Séguin hypothesized that implant failure would be reduced if the implant was designed to fit the shape of the bones of each dog. In his pilot study, Séguin worked with engineers at the Department of Mechanical Engineering at École de Technologie Supérieure in Montreal to 3-D print personalized implants using the patient’s CT scan images.

The pilot project included five patients. Séguin completed the first surgery in September 2017 and the final surgery in late December of that year. Before drawing any conclusions on his
In limb-spare patients, using stem cells to promote bone growth has applications. With these advances, a variety of possibilities for stem cell procedures that remove cancerous sections of bone or muscle.

Ehrhart has dedicated the last two decades to investigating the use of stem cells to enhance patient healing following limb-spare surgery and other procedures that remove cancerous sections of bone or muscle.

Along the way, advances in the field of nanotechnology have opened a variety of possibilities for stem cell applications. With these advances, Ehrhart has demonstrated success in using stem cells to promote bone growth in limb-spare patients.

More recently, Ehrhart has turned her focus to muscle-derived stem cells. The goal of her work is to address muscle damage following trauma such as the removal of a large tumor. Currently, there is no medical solution to aid in replacing lost muscle – it heals as scar tissue, which reduces function.

In a pilot study funded by the Limb Preservation Foundation, Ehrhart used donated muscle, removed the muscle stem cells, and placed the muscle in rats. In her study, she found the rats with the “new muscle” recovered 97 percent of their muscle function, while those rats with only scar tissue lost 40 percent of muscle function.

Excited by the initial results, Ehrhart wanted to learn more about muscle stem cells and how they work. To advance her study, she recently completed a six-month sabbatical working with Johnny Huard, Ph.D., director, and chief scientific officer at the Steadman Philippon Research Institute in Vail, Colo. Huard happens to be the researcher who discovered muscle stem cells.

“One of the great things about being immersed in other institutions,” said Ehrhart, “is that you have the opportunity to absorb and be a sponge. Out of that comes a lot of creativity. When you put great minds together, sparks fly.”

Energized by her experience, Ehrhart is pursuing answers to new questions relating to muscle stem cells and their applications for cancer patients. She’s also in the middle of a second study to validate the result of the pilot study that led to her sabbatical.

“I feel like this is just the beginning,” said Ehrhart. “I can’t wait to harness these discoveries to benefit our pet patients and people too.”

**STATE-OF-THE-ART OPERATING ROOM OFFERS NONINVASIVE SURGICAL ALTERNATIVE**

Nearly one year ago, the James L. Voss Veterinary Teaching Hospital at Colorado State University opened a new state-of-the-art hybrid operating room, the first of its kind in veterinary medicine. Since then, Flint Animal Cancer Center surgeons have collaborated with veterinary cardiologist and hybrid OR specialist, Dr. Brian Scansen, to employ the operating suite’s advanced technological capabilities to benefit a variety of oncology patients.

The surgical suite offers the opportunity to conduct noninvasive surgery guided by advanced real-time imaging.

“As we get to know all of the capabilities, we’re thoughtfully selecting cases that we think benefit the most,” said Dr. Deanna Worley, associate professor and surgical oncologist.

To date, the most common application for the hybrid OR has been in the treatment of liver and heart tumors – tumor types that have the most vascular involvement. According to Worley, the operating room allows surgeons to visualize blood flow to a tumor in a variety of ways through high-definition fluoroscopy, ultrasound, and CT. Using the vascular system to guide the way, surgeons can see what they need to see without opening the body cavity, which is less invasive and reduces complications.

“Sometimes, cutting off blood flow to the tumor will shrink it enough to reduce surgical complications when removing the tumor or helps support other treatment options, such as selective radiation or chemotherapy delivery to the tumor,” said Worley. “Seeing where the tumor gets its blood and slowing down the flow or delivering a targeted treatment is a big advantage.”

As FACC surgeons become more familiar with the hybrid OR’s capabilities, applications are evolving.

“This gives us a new set of tools and the opportunity to explore better ways to treat patients,” said Worley. “It’s pretty amazing to have yet another state-of-the-art option for the care of our patients. I look forward to exploring its potential.”
Hemangiosarcoma clinical trial extends Gimpy’s lucky streak

SOME CALL IT LUCK; OTHERS CALL IT FATE. WHATEVER it is, Gimpy’s life has featured a series of fortunate events, starting at birth.

In 2010, a woman brought her dog into a local veterinarian to help deliver a litter. After delivery, it was immediately apparent that something was wrong with the hind legs of one of the puppies. When the owner learned of the puppy’s condition, she believed euthanasia would be the best option. Fatefully, Kelly, a veterinary technician at the clinic, stepped in and said she would take the pup if the owner would keep him with his mother until he was 8 weeks old. She agreed.

When the puppy eventually joined Kelly’s home, he wasn’t able to use his hind limbs. To honor his not-quite-right legs, Kelly named him Gimpy.

“I wasn’t sure if he would ever be able to walk,” said Kelly.

But as luck would have it, Gimpy was soon chasing his new fur siblings around the house.

“It was pretty incredible to see Gimpy running around,” said Kelly. “I really didn’t think it would be possible without surgery or some type of intervention.”

Gimpy settled into life with Kelly and his four-legged siblings, which included a dog and two cats.

“He’s a super-sweet dog,” said Kelly. “Not the smartest, bless his heart, but his main goals in life are to cuddle and please.”

April 2018 marked another significant time in Gimpy’s life. After he swallowed a rock that would not pass, Kelly brought Gimpy in for X-rays to examine the blockage. That’s when his veterinarian discovered a small splenic mass. The good news; it was caught early and wasn’t yet causing any internal bleeding. Gimpy had surgery the next day. The bad news came when they learned that Gimpy had a type of cancer called splenic hemangiosarcoma. With her veterinary experience, Kelly knew the prognosis was poor, so she set out to find treatment options.

As luck would have it, Kelly found a clinical trial for patients with splenic hemangiosarcoma nearby at Colorado State University’s Flint Animal Cancer Center.

After their first visit to the Flint Animal Cancer Cen-
ter, Kelly learned Gimpy would be eligible to participate in the study. “I have to admit, I was a little nervous. I was trying to manage my expectations and not be too hopeful; I know this is an aggressive cancer,” said Kelly. “I was second-guessing my decision to pursue further treatment when my son, Daniel, convinced me it was the best thing to do. He said, ‘wouldn’t it be so great if Gimpy could be part of something that helped other animals?’”

Encouraged by Daniel’s words, Kelly enrolled Gimpy in the VDC-597 for Treatment of Canine Splenic Hemangiosarcoma trial. VDC-597 is an oral medication that has antitumor and antimetastatic activities in human and mouse cancer models. The goal of the study is to evaluate the effectiveness of VDC-597 in canine patients.

“Canine splenic hemangiosarcoma is an aggressive disease with extremely short survival times when treated with surgery alone,” said Dr. Kristen Weishaar, clinical trials director, Flint Animal Cancer Center. “Our hope is this protocol will give patients like Gimpy more quality time with their families.”

Following the study protocol, Gimpy receives regular doses of VDC-597 at home and visits the cancer center for frequent checkups. “Gimpy loves going to CSU, probably because the clinical trials staff are always excited to see him,” said Kelly.

A year after diagnosis, Gimpy lives life just like before with daily walks, regular hikes, and frequent peanut butter treats. “Given the typical prognosis with this disease, I wasn’t expecting to celebrate Gimpy’s 9th birthday, but here he is,” said Kelly.

It’s safe to say; Gimpy is one lucky dog.

ONE CANCER. ONE CURE.

Cancer is the leading cause of death in dogs. In the U.S. alone, millions of dogs will be diagnosed this year. And in 2019, despite declining rates, 1.7 million people in the U.S. also will be diagnosed with cancer. Scientists recognized long ago that our cancers are the same. It doesn’t matter if you have two legs or four; cancer looks the same under the microscope, grows and spreads the same, and responds to treatment in the same way. Today, we’re using that information to our advantage to help both pets and people with cancer.

The answer to cancer may be walking right beside us.

Companion animals, specifically dogs, are the best models to study cancer because they get cancer naturally, just like people. They also share 85 percent of our genetic makeup, and they share our environment – live in the same places, breathe the same air, and drink the same water.

Naturally occurring cancers in dogs and humans share many features, including:

- Appearance under a microscope.
- Tumor growth and spread.
- Response to conventional treatment (chemotherapy, surgery, or radiation) and novel therapies.

The Flint Animal Cancer Center’s One Cure Clinical Trials program enrolls companion animals, typically dogs, to evaluate the effectiveness of new drugs, find novel uses for old drugs, or investigate new approaches to surgery and radiation therapy to treat cancer. We learn valuable information from every patient, and we use this information to improve their care as well as the care of future patients, both pets and people. Maybe the most significant benefit of our clinical trials program is that we see results in half the time; one to three years for our pet patients instead of five to ten years for people and at a fraction of the cost.

In 2018, our clinical trials program opened or completed 31 studies. The team manages approximately 20 trials at any given time and sees about 70 patient visits per month. Studies included novel therapies for a variety of cancer types including brain tumors, osteosarcoma, lymphoma, hemangiosarcoma, soft tissue sarcoma, and oral tumors. For more information or to support One Cure in our quest to conquer cancer in all species, please visit www.onecure.com.
The Petco Foundation, in partnership with Blue Buffalo, recently awarded a $150,000 grant investment to the Flint Animal Cancer Center to support patient care over the next two years.

Funds were provided by the Petco Foundation’s annual Pet Cancer Awareness campaign, which aims to create a better world for animals and the people who love and need them by investing wisely in organizations with the most lifesaving impact in the fight against pet cancer. The Flint Animal Cancer Center at Colorado State University was fortunate to receive a previous grant investment of $350,000.

“We are grateful to the Petco Foundation and Blue Buffalo for their continued commitment to providing financial assistance to our qualified clients so that they can pursue advanced treatments for their pets,” said Dr. Rod Page, director, Flint Animal Cancer Center.

When awarded the original grant investment three years ago, the FACC clinical team decided to focus on patients with specific diagnoses that could be controlled for extended periods, but only with advanced diagnostics and treatments that cost $5,000-$10,000 or more per case, making them unattainable for many families.

“The initial investment from the Petco Foundation was twofold,” said Page. “First, we wanted to provide patients with the best care available without regard to cost. Second, by strategically focusing on cases that would benefit the most from innovative treatment, our purpose was to add to our body of knowledge.”

In the first three years, the fund assisted 73 patients, including Teddy Bear, a Westie who received high-dose radiation to treat a nasal tumor; Lily, an Italian greyhound, diagnosed with a type of brain tumor called a meningioma, which was treated using both surgery and radiation; and Baba Ganoush, a friendly feline with a soft tissue sarcoma.

All of the cases provided an opportunity for the Flint Animal Cancer Center team to learn more about the therapeutic benefits of the treatments that would potentially benefit future patients.

After a review of the patients’ cases supported by the previous award, the clinical team decided to hone the focus of the next two years to assist with the cost of treatment for patients diagnosed with brain tumors, nasal tumors, and those who would benefit from interventional radiology and surgery techniques.

“With the new funding, our goal is to continue to provide advanced treatments to patients to improve their quality of life,” said Page. “We’re also hoping to see enough cases in each of the areas we have identified to draw conclusions about the efficacy of these therapies.”

“With their investment, the Petco Foundation and Blue Buffalo will continue to provide meaningful support for every patient and family while also advancing our knowledge to advance treatment options for future patients.”

ABOUT THE PET CANCER AWARENESS CAMPAIGN

For 10 years, the Petco Foundation and Blue Buffalo have teamed up to raise funds to help with the costs of pet cancer treatment, provide lifesaving surgeries, continue groundbreaking research for a cure, and fund clinical trials for new treatments. The campaign runs during the month of May in Petco Stores nationwide and online.

For more information, visit www.petcofoundation.org/PCA.
HONOR ROLL, SPRING 2019

Generous giving from the private sector has become increasingly important over the years. The following individuals (in alphabetical order) are especially noteworthy in that they have given once, or in a sustained way, more than $25,000 to support our work. Our heartfelt appreciation goes out to them.

We are grateful to the following individuals for honoring the Flint Animal Cancer Center in their estate planning.

Allen & Company Inc.
Herbert A. Allen
Dawn and Brett Anderson
Anschutz Foundation
Libby Anschutz
Philip Anschutz
John* and Raia* Bell
Bow Wow Buddies Foundation
Timothy T. Brown
Don* and Katy Callender
CanineKids Outfitters
C. H. Robinson Worldwide Foundation
Charles Engelhard Foundation
Charles Shipley, Jr. Foundation Inc.
Colorado State University
Research Foundation
Community Foundation of Northern Colorado
Steve and Kitty Cooper
Sophie and Derek Craighead
Crystal Waters Foundation Inc.
David Cummings and Shelley Kerr
Dani’s Foundation
Dr. William and Sara DeHoff
Paul Dunbar and Mindy
Richards-Dunbar
Elbridge and Debra Stuart Family Foundation
Walter* and Jaynn* Emery
Gene* and Marylynn* Fischer
Robert H.* and Mary G. Flint*
Matthew Frank
Mari Hulman George
Golden Retriever Endowment Fund
Richard and Linda Habitzreiter
Haddington Ventures LLC
Ed and Marilyn Hansen
Jeffery Harbers*
Renee Harbers-Liddell
June Harper*
Kathleen Henry
Alan* and Berte Hirschfeld
Jewish Communal Fund
John H. Bell Charitable Remainder Trust
Lawrence Jones III*
Dr. Norman and Ann Jorgensen
Gretchen* and Taylor Joyner
Elizabeth Keen
Sam* and Margaret Kelly

Lillian M. Key*
Kneller Family Foundation
Robert* and Eva Knight
Kate Koogler Canine Cancer Fund Inc.
Susan LeFebvre
Limb Preservation Foundation
William C. L.ukes, AIA*
Maddie’s Fund
ZaZa and Donald Manocharian
Steven J. McCarthy
Robert and Evelyn McKee Foundation
Ana Mendez and Rajeev Jayavant
David Merin Foundation
Jay and Sandra Mesinger
Milheim Foundation Cancer Research
Kenneth and Myra Monfort
Charitable Foundation
Thelma C. Morici
Mark and Bette Morris Family Foundation
National Institutes of Health
Jeffrey Neu
Robert Neu
Gary and Alice* Nordlo
Norman Hirschfield Foundation
Meg and Andy O’Neil
Ann E. Osborn
Terry and Linda Owen
Dr. Rodney L. Page
Susan C. Page
Petcio Foundation
Landon Phillips and Susan Maltby
David and Maxine Pierce
Maj. Glen and Rose Porter
Joe and Kay Pyland
Graham Rahal Foundation
Reiman Charitable Foundation
Roy and Roberta Reiman
Scott and Virginia Reiman
Erik and Terrin Riemer
Dr. Ronald R. and Sara Ringen
River Terminal Development Company
Robert E. Knight Trust
Richard and Nancy Rogers
Harold and Cathy M. Roozen
Donita Rotherham
James Rotherham
Albert and Nancy Sarnoff
Charles R. Jr.* and Lucia H. Shipley*
Kraig and Suzanne Smiegowski
Michael and Iris Smith
David and Peggy Sokol
Frederick W. Stelle
Dr. Ralph and Peggy Starkey
Jennie and Bob Strayer
Brett F. Stuart
E. Hadley Stuart Jr.* and Family
Nam M. Stuart
Stuart Foundation
The Estate of Barbara Cox Anthony
The Estate of Maria Bristol
The Estate of Lionel Edmonds
The Estate of Jaynn Emery
The Estate of Patricia Hall
The Estate of June Harper
The Estate of Fern A. Howard
The Estate of Elisabeth Kellie
The Estate of Lillian M. Key
The Estate of Laura Katherine Krebill
The Estate of Carolyn Larson
The Estate of William Lukes
The Estate of Lois Maurer
The Estate of Carol E. McCandless
The Estate of Julia Holt Merkle
The Estate of Nancy A. Oyster
The Estate of Constance C. Ricci
The Estate of Patricia Shay
The Estate of Jacquelyn Ann Smith
The Hadley and Marion Stuart Foundation
William V. Taylor*
Allison Topham
Trailsend Foundation
Dr. Cleve Trimble
Deborah Van Dyke
Lori Venners
Theodore Venners
Bruce Weber and Nan Bush
Melissa Westerman
Rick Westerman
Richard and Nancy White
Robert and Susan Wilson
Dr. Stephen and Susan Withrow
Willard L. and Ruth P. Eccles Foundation
William Wrigley Jr. Trust
Rosamond R. Zetterholm* *Deceased

We are grateful to the following individuals for honoring the Flint Animal Cancer Center in their estate planning:

Vikki and Arthur Anderson
Dr. Allen D. and Kathy Brandon
Susan Butler
Susan Coit
Steve and Kitty Cooper
Edward and Karen Franceschina
Virginia Garland
Angelica Harcharik
Elizabeth Keen
Teresa and Robin Koogler
Adrian and Karen Lakin
Michele Lier
Robert and Elizabeth Merrill
Connie Miller
Janet Morgan
Jerry and Karen Moore
Deanna and Daniel Mueller
Alan and Robyn Pauley
Landon Phillips and Susan Maltby
David and Maxine Pierce
Sharon Powers
B. Gregory Russell
Nancy and Carl Schramm
Joe and Nancy Sisinyak
Kraig and Suzanne Smiegowski
Robyne Taylor
Clint Teegardin and Martha Baxter
Patrick and Kim Thomsen
Allison Topham
Julie Tyger
Jacqui and Russell Widener

THANK YOU FOR MAKING OUR WORK POSSIBLE!

2018 Impact

6,139 PATIENT VISITS

428 SURGERIES

1,356 ONLINE CONSULTS

31 CLINICAL TRIALS

2,595 RADIATION THERAPY TREATMENTS

*Deceased
Cancer is cancer. At the Flint Animal Cancer Center, we believe the answer to curing cancer lies in comparative oncology. Our One Cure initiative works to advance cancer research through comparative oncology clinical trials. Every day, our researchers look for new treatment options that benefit our pet patients—and people too. Your support is critical to our continued work. Please visit www.onecure.com to learn more.