

# Maddie's® Shelter Medicine Program

2008-2009



Our Mission: To enhance the health and welfare of homeless animals through education, innovation, and advancement of the life-saving goals of sheltering programs

*Annual Report*



*The Pet Rescue Foundation*

## *Message from the Director*

The first year of Maddie's Shelter Medicine Program at the University of Florida has been one of new initiatives, program development, and collaboration. We adopted an ambitious agenda of new coursework for veterinary students that touches all four years of the curriculum and creates shelter medicine support services for local adoption-guarantee groups and the county shelter. Virtually every student at the College of Veterinary Medicine now gains real-life experiences in animal shelters during Dr. Natalie Isaza's shelter medicine clerkship and our externship program. Our students graduate with a strong sense of altruism and an understanding of how veterinarians are uniquely positioned to use their skills to enhance the well-being of sheltered animals.



Our program was warmly welcomed by the southeastern sheltering community, and requests for advice arrive daily by telephone, fax, and email. They opened my eyes to the critical challenges faced by shelter managers in this region and their need for expert advice from veterinarians trained in the unique demands of shelter medicine. Twelve months ago, I had been practicing as a specialist in internal medicine, caring for pets from devoted families that were referred by other veterinarians when their disease became too complex to be managed by the family veterinarian. In my 19 years of veterinary practice, I had never diagnosed a case of canine distemper. In the past year, our shelter consultation team, led by Dr. Cynda Crawford, has responded to seven distemper outbreaks affecting more than a thousand dogs. I am reminded constantly how different shelter medicine is from more traditional practice, how much shelters need our help, and how great our opportunities are.

Whether we visit shelters in response to disease outbreaks, to provide assessment services, or fine-tune best practices, we are continually faced with questions whose answers we can't provide. The optimal allocation of scarce resources to promote the health and happiness of sheltered animals and successful programs that increase live releases is not always clear. Since infectious diseases take such a high toll on sheltered animals in our region, we've developed fast-track in-shelter research programs to determine what infectious diseases are most common, what the risk factors are, and what the most effective and practical interventions are likely to be. Not only do our studies supply useful information for the entire field of shelter medicine, but the diagnosis and treatment of individual animals in shelter studies provides immediate relief of suffering and limits the spread of diseases to other animals.

In recognition that new information would not be valuable if it remained cloistered in our Ivory Tower, we've made it a priority to travel throughout the region to deliver seminars to technicians, veterinarians, and community stakeholders. Our first annual Shelter Medicine Conference provided a full day of continuing education to nearly 200 attendees. Still, there is never enough time to answer all of the questions, visit every shelter that asks for help, or to capture every opportunity. As I write this, there are more than 40 unfilled shelter veterinary positions posted on the Association of Shelter Veterinarians

website. There is a severe shortage of veterinarians with the expertise and passion to spend a career in shelter medicine. We are looking forward to welcoming our first crop of new residents in July. These are experienced veterinarians who are returning to the University environment to complete an intensive three-year advanced training program to become shelter medicine specialists. As of this writing, only six other veterinarians have completed this level of training. These experts will provide the foundation for our emerging specialty for years to come. The future is bright for shelter medicine, and we are grateful to Maddie's Fund for having confidence in our ability to be a part of it.

Sincerely,



Julie Levy, DVM, PhD, DACVIM  
Director, Maddie's Shelter Medicine Program

## **Maddie's Shelter Medicine Program Year 1: July 2008 – June 2009**

### Staff recruitment

Rachel Michaud, our Program Coordinator, was recruited in a nationwide search. Ms. Michaud is a Certified Animal Welfare Administrator with nine years experience in animal sheltering and six years experience in nonprofit management and administration. Rachel joined the program in October.

### Shelter medicine residency

- Program approved
- Three residents accepted
  - Laura Andersen, DVM
  - Catherine McManus, VMD, MPH, DACVPM
  - Brian DiGangi, DVM (third-year transfer)

A program for a three-year residency with a master's in public health was developed and accepted by the College of Veterinary Medicine. The program has also been accepted by the American Board of Veterinary Practitioners. This will allow our residents to achieve board certification in a specialty pending the development of a specialty college in shelter medicine.

Our residency was listed in the national VIRMP match program, resulting in a match with Dr. Laura Andersen. Dr. Andersen was recently a shelter veterinarian in North Carolina, and has particular interest in veterinary forensics and disaster medicine. Dr. Catherine McManus, a second applicant, is a former veterinary epidemiologist with the state of Virginia and is board certified by the American College of Veterinary Preventive Medicine. Dr. Brian DiGangi has completed two years of shelter medicine residency at Maddie's® Shelter Medicine Program at Cornell University and is transferring to UF for the third year of residency. Dr. DiGangi's salary, Master's tuition, and training support are funded by the Sweetbay Foundation, making possible the addition of the third resident.



### Website

Our program website has been developed and launched, and is available online at [www.UFShelterMedicine.com](http://www.UFShelterMedicine.com). In addition to details about our program's services and research, the site features upcoming events and educational opportunities available in our service area and news items of interest to the sheltering and shelter medicine community.

### Shelter medicine symposium

- Maddie's Shelter Medicine Symposium 2008
- Four speakers, 180 attendees

This full day of continuing education on 11/1/08 focused on two important challenges in shelter

medicine: reducing shelter admissions by developing efficient, targeted neutering programs and improving outcomes of impounded animals by controlling infectious diseases in the shelter.

Nearly 200 attendees participated, including veterinarians and technicians from private practices and shelters (66 DVMs, or 37%), shelter managers and staff, and representatives from adoption guarantee rescue organizations. Veterinarians and veterinary technicians received Continuing Education credit. We partnered with Operation Catnip to offer attendees the opportunity to participate in and tour a mass feral cat clinic the following day.



### Shelter technician continuing education

- Presented 11 lectures at six different conferences
- Reached an audience of more than 1,300

Focused primarily on our service area in the Southeast, our program teaches shelter technicians about life saving research and protocols for their shelters. We have presented lectures including such topics as veterinary disaster response, cleaning and disinfection, managing infectious diseases, feline upper respiratory infections, parvovirus infections, and vaccination protocols. Dr. Isaza also presented cleaning and disinfection to technicians at the Southern European Veterinary Conference in Barcelona, Spain and advised attendees from across the US on providing care for treatable dogs and cats in the shelter at Maddie's® Track at HSUS Expo 2009.



### Veterinary student shelter medicine elective courses

- Shelter Medicine was taught to 62 students in fall and spring semesters
- Introduction to Veterinary Disaster Response was taught to 67 students in fall and spring semesters; 81 faculty, staff, and students became credentialed through FEMA

The Shelter Medicine course, coordinated by Dr. Isaza, introduced veterinary students to a range of key issues in shelter medicine. Guest lecturers this year included Dr. Lila Miller of the ASPCA (animal cruelty and abuse), Dr. Phil Bushby of Mississippi State University (high-quality, high-volume sterilization), Dr. Brenda Griffin of Cornell University (pediatric spay-neuter, behavior/enrichment, management of shelter animal stress), and Alachua County Animal Services cruelty investigators. Those successfully completing Introduction to Veterinary Disaster are FEMA credentialed to respond in a disaster.

### Veterinary student required shelter medicine lectures

- Submitted and taught five lectures in required courses, reaching all freshman and sophomore students

- Career opportunities in shelter medicine
- Infection control in veterinary hospitals and animal shelters
- Case studies in canine and equine influenza
- Pet homelessness and the role of the veterinarian
- Community cats: problems and solutions

Freshmen and sophomore veterinary students were introduced to shelter medicine in three of their courses this year. Dr. Crawford, together with Dr. Randy Caligiuri of Alachua County Animal Services, presented a lecture to freshmen veterinary students in the required course Career Opportunities in Veterinary Medicine this fall, while Dr. Levy presented two lectures in the Ethics and Welfare course this spring. Spring sophomore students in Veterinary Epidemiology and Public Health were instructed by Dr. Crawford.



### Advanced shelter clerkship

We are in the process of planning an advanced clerkship in which students will receive training in animal shelters. These clerkships will allow approximately five students at a time to accompany shelter medicine faculty and residents to multi-day on-site consultations. Students will record their observations and contribute to written recommendations. They will also be provided with follow-up information to observe how their recommendations were implemented.

### Shelter medicine externships

- First three Maddie's® externs accepted and began externships
- Additional two Maddie's® externs accepted

We developed a concept of a multi-institutional externship that will provide students with hands-on experience across a breadth of sheltering systems. The four-week program will provide two weeks each in a no-kill shelter and an open-admission shelter. We have recruited nine additional facilities to participate in the multi-institutional externship program. The first three Maddie's® Externs began their externships at sheltering agencies: the Pennsylvania SPCA and Best Friends Animal Society. Two more students have been accepted into the externship program and begin their shelter work after July 2009. We have also received UF approval for an externship in Community Cat Management, partnering with Operation Catnip.

### Shelter medicine summer student research

- Five student researchers enrolled
  - Lauren Unger: Cats and collars, Microchip use in the Southeast
  - Kathleen Colby: Canine heartworm protocols in shelters
  - Kiri Dunn: Feline heartworm protocols in shelters

- Stephanie Sabshin: Enteropathogens in shelter cats
- Tiffany Tupler: Enteropathogens in shelter dogs

One student researcher was enrolled for summer 2008 (Unger), and four student researchers were enrolled for summer 2009. All four 2009 students will present posters at the Merck-Merial NIH National Veterinary Scholars Symposium in August. Their research projects are detailed below.

### Shelter health assessment service

- Two comprehensive assessments of agencies caring for 38,000 animals annually
- Three targeted assessments of agencies sheltering 20,000 animals annually

*Duval County, Florida; 9/08.* For this, our first comprehensive shelter assessment, we invited faculty and residents from UC Davis and Cornell University to join us. This collaborative project contributed to enhanced camaraderie among the faculty and residents of the different shelter medicine programs and allowed us to share assessment tactics and interpretations. Veterinarians from the shelter initiated the assessment due to severe crowding, high infectious disease rates, and low live-release rates. This shelter admitted approximately 13,000 cats and 12,000 dogs in 2007. The live-release rate was 7% for cats and 29% for dogs in 2007. Crowding, lack of isolation facilities, and lack of a population management plan resulted in substantial incidence of disease in both dogs and cats.

The assessment team spent three days on site. Recommendations to reduce shelter crowding by increasing transfers to outside agencies and by implementing outcome decisions promptly led to decreased shelter crowding, decreased feline URI, decreased in-shelter deaths, and increased live-release rate. Live-release rate three months after our visit was 45% for dogs and 72% for cats.

*Lee County, Florida; 2/09.* This comprehensive assessment was initiated by shelter management, which had previously worked with Dr. Crawford in response to canine distemper in 2008. The management team at the shelter has been proactive in attending shelter medicine educational events and testing innovative programs to provide alternatives to shelter admissions and serve the animals and community. This shelter admitted approximately 6,000 dogs and 7,000 cats in 2008. The live-release rate was 14% for cats and 52% for dogs in 2008.

The assessment team, including Dr. Michael Moyer from the University of Pennsylvania, spent three days on site. Preliminary recommendations have been presented, and the final report is in preparation. The assessment team made community involvement a key component of the site visit, including a community stakeholder survey and meeting, presentations on community cat management and a follow-up presentation on saving lives through public-private partnerships.



*Merced County, California; 5/09.* UF consultants joined this shelter consultation led by the Koret Shelter Medicine Program and attended by consultants from University of Florida, Cornell



University, and Colorado State University. This shelter serves nearly 10,000 animals per year. It recently moved from an outdated facility to a new shelter, but was already experiencing crowding and disease outbreaks. Live release rate was 13% for cats and 66% for dogs. Recommendations included improved population management, accurate record keeping, appropriate cleaning and disinfection, improved relations with rescue groups, and institution of a feral cat TNR program.

*Hendry County, Florida; 2/09.* This targeted assessment was of a limited-admission cat sanctuary (approximately 700 cats in residence) with history of respiratory and gastrointestinal diseases and periodic clusters of fatalities. We recommended a course of action to include treatment of cats with respiratory infections with 4 weeks of doxycycline pending further assessment and a more global remediation plan. We also recommended that no new cats be accepted into the sanctuary and that all new construction should be carried out with the intent to improve housing for existing cats rather than to expand the cat population.

*North Central Florida; 5/09.* This targeted assessment was of a cat sanctuary housing approximately 250 cats. Dr. Levy attended a site visit as an expert member of an assessment team organized by the local animal control director, state's attorney, sheriff's office, and HSUS in response to public complaints about the welfare of cats at the sanctuary.

Based on the cats that were observed, it appeared that only approximately 25% of cats were in outwardly healthy condition. More than half of cats had upper respiratory infections, approximately a quarter of cats were underweight, and approximately a quarter of cats had substantial hair loss. Diagnostic testing revealed widespread transmission of multiple respiratory and intestinal infectious diseases among the cats.



The state's attorney developed an "Order to Show Care" outlining remediation steps to be carried out within 30 days, including veterinary care for emaciated and critically ill cats, examination and permanent identification of all cats, creation of records for each cat, retroviral testing, preventive health care, permanent identification of cats, and to cease admitting additional cats. Local veterinarians were brought in to help administer the care program and have been on site several times.

At a repeat visit on June 11 there were some structural improvements but the overall health of the cats was not visibly improved. Most cats had temporary ID collars on and had received a dose of Revolution for parasite control. Other aspects of the Order to Show Care were not consistently followed. Additional diagnostic testing revealed a decrease in hookworms and round worms, but persistence of other infections. The sanctuary website describes the

continued importation of additional cats from out-of-state. The next steps in this assessment await direction from legal authorities.

*Hillsborough County, Florida; 6/09.* This targeted assessment was requested to review protocols for management of panleukopenia infections in a large open-admission municipal shelter with high cat intake (19,000 cats) and low cat live-release rate. This shelter recently suffered substantial budget cuts that further reduced its ability to provide optimal preventive health care in a community with high risk for fatal infectious diseases. A walk-through of the facility and protocol review found that the all-in all-out population management by day of week appeared to provide adequate biosecurity to prevent panleukopenia outbreaks, even in the absence of vaccination at intake. A small subset of cats selected at intake for the adoption path were vaccinated and housed separately, but all cats in the shelter were available for viewing and adoption, even those not pre-selected for adoption. It appears the shelter is making the best use of its available resources.

Since the shelter is unlikely to markedly increase adoptions in the near future, we suggested increased focus on transfers to rescue partners and shelter intake diversion via TNR, scheduled relinquishments with intervention counseling, and increased targeted spay/neuter in the community.



#### Disease diagnostic, control, and prevention service

- Provided assistance to 14 agencies serving over 125,000 animals annually

Shelters across the state of Florida received assistance from our program in outbreak response, diagnostic service, and disease prevention. Led by Dr. Crawford, we worked with agencies of all types, from open admission municipal agencies to no-kill shelters to foster groups. These shelters battled canine infectious respiratory disease, particularly distemper, feline upper respiratory disease, and gastrointestinal infections. Consultants performed interviews, observations, protocol reviews, examination, diagnostic testing, and antibody titer measurements. Agencies received recommendations including outbreak intervention strategies designed to control outbreaks while avoiding mass depopulation. Other recommendations focused on isolation and segregation, humane housing, public awareness, and cleaning and disinfection.



Dr. Levy coordinated the investigation of unexplained neonatal kitten deaths at a Nevada shelter, including necropsy and infectious disease diagnostic evaluations, revealing coinfections with *Giardia*, calicivirus, herpesvirus, and astrovirus. A research project is currently underway in which respiratory and gastrointestinal infectious disease prevalence in cats kept in different shelter conditions is being evaluated. We have already visited 1 foster rescue group, 2 open admission shelters, 2 adoption guarantee shelters, and 2 feral cat TNR programs to collect samples. Each agency receives a report of its results with recommendations for control.

### Directory of shelters and rescue groups in the Southeast

- 1,500 animal welfare agencies
- 3,200 veterinary clinics

We have developed an extensive directory of shelters and rescue organizations throughout Florida, Georgia, Alabama, and Mississippi. We have utilized the directory to communicate opportunities to participate in research, shelter medicine training, and to solicit externship program participants. Updating and adding directory listings is an ongoing process.

### National/international veterinary continuing education

- Lectured in five meetings
- Hosted one wet lab

Our program's faculty members are recognized across the country for their expertise in the field. Dr. Levy gave a presentation on community cat and rabies control to the American Public Health Association, while Dr. Isaza presented lectures on infectious diseases and shelter wellness programs at the Southern European Veterinary Conference in October 2008. Dr. Isaza also participated in Maddie's® daylong seminar at HSUS Expo 2009, advising shelters on saving lives by treating their treatable pets. Dr. Crawford presented lectures on canine influenza to veterinarians in New York City and Dallas.



In January of this year we hosted a pediatric spay/neuter wet lab for the North American Veterinary Conference, where 12 veterinarians received hands-on instruction while spaying and neutering rescue animals. Additional instructors from Humane Alliance and Cornell University participated in this program, with attendees including private practice and spay/neuter clinic vets.

## Media Coverage

- Featured or quoted in nearly three dozen publications
- Local newspapers, television news, national veterinary industry magazines

### *Selected articles*

- UF veterinarians receive grant to expand shelter medicine program, *Gainesville Sun* 7/14/08, <http://www.gainesville.com/article/20080714/NEWS/807140316>.
- Disease outbreak at shelter had roots in community, *Ocala Star-Banner*, 8/3/08, [www.ocala.com/article/20080803/OPINION/952115530/1016/entertainment](http://www.ocala.com/article/20080803/OPINION/952115530/1016/entertainment)
- Global warming or warning? *DVM Magazine*, 9/8/08, <http://veterinarynews.dvm360.com/dvm/Veterinary+news/Global-warming-or-warning/ArticleStandard/Article/detail/548388>
- Shelter, UF team up to give free rabies shots, *Gainesville Sun*, 9/12/08, <http://www.gainesville.com/article/20080912/NEWS/809130283>
- Feral Freedom Leads the Way for Community Cats, *Best Friends Network*, 11/20/08, <http://network.bestfriends.org/jacksonville/news/30528.html>
- City of Jacksonville Announces "Feral Freedom" Program, *News4Jax*, 11/20/08, <http://www.news4jax.com/seenon4/18021760/detail.html>
- Canine distemper outbreak reported in Pasco County, *ABC Action News*, 12/18/08, <http://www.abcactionnews.com/news/local/story/Canine-distemper-outbreak-reported-in-Pasco-County/IAaa8G-CNUa48jeMloutBw.csp>
- Gainesville Shelter Medicine Program Takes a Bite Out of Rabies, *One Health Newsletter*, Jan 09, [http://www.doh.state.fl.us/Environment/medicine/One\\_Health/OHNLwinter09.pdf](http://www.doh.state.fl.us/Environment/medicine/One_Health/OHNLwinter09.pdf)
- New forensics program to investigate crimes against animals, *The Florida Veterinarian*, Winter 2009; [http://www.vetmed.ufl.edu/college/pr/documents/Winter2009FVFinal\\_000.pdf](http://www.vetmed.ufl.edu/college/pr/documents/Winter2009FVFinal_000.pdf)
- New surgery program saves pup, *HSVMA Advocacy*, 1/15/09; [http://www.hsus.org/hsvma/advocacy/new\\_surgery\\_program\\_saves\\_pup.html](http://www.hsus.org/hsvma/advocacy/new_surgery_program_saves_pup.html)
- Animal Services urges trap-neuter-release, *The News-Press*, 2/26/09; <http://www.news-press.com/article/20090226/NEWS01/902260373/1002>
- Lee County Animal Services Pet Placement Partnership Program sets 'kickoff meeting', *Cape Coral Daily Breeze*, 3/16/09; <http://www.cape-coral-daily-breeze.com/page/content.detail/id/504178.html?nav=5069>
- UF veterinary faculty members honored by feline journal, *The Veterinary Page*, April 2009, [http://www.vetmed.ufl.edu/college/pr/documents/April09\\_000.pdf](http://www.vetmed.ufl.edu/college/pr/documents/April09_000.pdf)
- Stray cats to be rounded up, sterilized and let go, *Lehigh Acres Citizen*, 4/18/09, <http://www.lehighacrescitizen.com/page/content.detail/id/500986/Stray-cats-to-be-rounded-up--sterilized-and-let-go.html>
- Shelter reduces kitten adoption fees, *The Independent Florida Alligator*, 6/9/09, [http://www.alligator.org/articles/2009/06/09/news/local/090609\\_kittens.txt](http://www.alligator.org/articles/2009/06/09/news/local/090609_kittens.txt)
- New flu vaccine approved – for dogs, *The New York Times*, 6/30/09, <http://www.nytimes.com/2009/06/30/health/30flu.html>

## Ongoing Projects in Core Strategy Areas

### Shelter evaluation and extension services

*Phone and email consultation.* On a daily basis, we respond to phone and email questions from shelter veterinarians, private practitioners, and shelter staff. These queries span the scope of shelter medicine topics: FeLV and FIV testing, parasite control, feral cat sterilization, CIRDC, and parvovirus. Although many questions are from the Southeast region we primarily serve, we've assisted with cleaning and disinfection protocols in light of a calicivirus outbreak in Sydney, Australia, and discussed vaccination timing of kittens for an organization in Ontario, Canada. Consultants have also assisted with parvovirus infection in a Chicago shelter and new facility design with a local Maddie's® Pet Rescue Project partner.

*Community outreach and education.* Knowing that the best shelter is a humane community, we raise awareness of shelter medicine issues and Maddie's® Shelter Medicine Program across our region. We hosted a vaccine clinic for World Rabies Day (Gainesville), participated in an inaugural cat mass



sterilization day (with Humane Society of Greater Miami, Miami-Dade Animal Services, and the Cat Network), gave presentations on community cat management to stakeholders and policymakers (Fort Myers, Largo, Palm Beach, University of Georgia), and spoke on community collaboration and public-private partnerships (Fort Myers). We also introduced Maddie's® Shelter Medicine Program at the Southeast Florida Animal Welfare Summit and the Florida Animal Control Association Conference and we regularly visit shelters across the state.

### Training of shelter medicine professionals and general practitioners

- Our faculty gave 11 presentations to veterinary medical associations and shelter medicine professionals, reaching 350 practitioners

Outreach to veterinary medical associations helps bridge the gap between private practitioners and the sheltering community, and Drs. Crawford and Isaza have given continuing education presentations focusing on shelter medicine issues such as distemper outbreaks and shelter wellness to associations in Duval, Miami-Dade, Leon, Pasco-Hernando, Brevard, and Pinellas counties. Drs. Levy and Crawford spoke at a Respiratory Infection Conference at the Humane Society of Greater Miami, providing recommendations on the control of canine and feline diseases in the shelter. In addition, Dr. Levy presented a webinar on FIV detection and the newly available FIV PCR test.

### Training of veterinary students

- Merial Shelter Medicine Clerkship
  - 93 students participated in the clinical rotation, performing nearly 800 surgeries each semester

The two-week shelter medicine elective clerkship is one of the most popular rotations in the college and almost all students elect to participate in this rotation. The Merial clerkship, led by Dr. Isaza and assisted by her intern Dr. Nirit Tzipory, focuses on spay/neuter surgery, shelter animal care, and well-care for pets of indigent community members. Approximately 95% of

spay/neuter surgeries are for Maddie's® Pet Rescue Project partner organizations. Dr. Levy and the students visit the Alachua County Animal Services shelter weekly, where the students regularly assist with both routine and unusual shelter cases. Treatments include health exams, cruelty exams, diagnostics, wound care, rabies vaccinations, and other treatments as necessary. Under Dr. Isaza veterinary students have performed limb amputations, eyelid surgeries, mass removals, gastropexies, and bladder stone removals, providing lifesaving surgeries to animals who otherwise may not be adopted. Students also participated in a successful parvovirus outbreak intervention with local adoption guarantee rescue group.



- Partnership with Operation Catnip
  - 97 student surgeons spayed and neutered 2,013 homeless catsWorking with Operation Catnip engages veterinary students in issues of pet homelessness, and non-lethal management of free-roaming cats, while providing invaluable surgical sterilization experience.
- Student Chapter of the Association of Shelter Veterinarians
  - 65 students participated in wet lab activitiesWe taught techniques in feline castration to freshman and sophomore veterinary students, sterilizing 40 community cats, and trained other students in the proper implantation and detection of microchip identification. Students also attended lectures in shelter topics including enrichment of shelter environments for confined cats and behavior assessment for cats.

### Research and the development of new knowledge

#### *Distemper*

A paper based on the 2007 Alachua County distemper outbreak has been accepted for publication in JAVMA. The paper is entitled "Prevalence of protective antibody titers for distemper virus and parvovirus in dogs entering a Florida animal shelter." Internal Medicine Resident Dr. Elizabeth Lechner presented the abstract at ACVIM in June 2009. The paper describes the high proportion of dogs entering a shelter with less than protective antibody titers against distemper and parvovirus and emphasizes the need to vaccinate all dogs at admission.

#### *GnRH*

A 5-year study on efficacy of a single-dose GnRH vaccine for contraception in cats was concluded in June 2009. The vaccine prevented pregnancy in 75% of cats for 1 year, 50% of cats for 3 years, and 25% of cats for 5 years. The development of a long-acting single-dose contraceptive for cats could have an important impact on the humane management of free-roaming cats, particularly where surgical services are not available.



#### *Cats and Collars*

Our first summer research fellow, Lauren Unger, served as the coordinator for the UF team in this multi-institutional research project to determine how well cats tolerated identification collars and what proportion of microchips were still functional 6 months after implantation. The study

found that non-safety collars were more successful and that most cats tolerated collars better than owners expected them to. However, a few cats had significant adverse events such as getting their jaw or forelimb through the collar. A manuscript has been accepted for publication in JAVMA.

#### *Microchip Use in the Southeast*

Surveys were collected from 800 shelters and 1000 veterinary clinics regarding the use of microchips and scanners in the southeast. We found that there was a high level of confusion and inconsistency in the use of microchips and scanners that puts many pets at risk of not being saved if they become lost. Data analysis by our summer research fellow Lauren Unger is underway.

#### *Heartworm Protocols in Shelters*

Two summer research fellows, veterinary sophomores Kiri Dunn and Kathleen Colby, surveyed southeastern animal shelters regarding protocols used for the diagnosis, treatment, and prevention of heartworm infection in dogs and cats. Their results showed that few shelters comply with recommendations of the American Heartworm Society and that the primary reasons shelters cited for this was the lack of sufficient financial and staff resources. The survey also revealed that many policies were based on incorrect understanding of heartworm pathobiology, emphasizing the need for veterinarians to be involved with the development of shelter health protocols.



#### *Enteropathogens in the shelter*

Two Merck-Merial summer scholars, veterinary sophomores Stephanie Sabshin and Tiffany Tupler, collected fecal samples from dogs and cats within 24 hours of admission to Alachua County Animal Services for diagnosis of enteropathogens. They discovered that a majority of animals had at least one pathogen, many of which were of animal or zoonotic concern. There is a need for enteropathogen management guidelines that are practical for use in shelters. Manuscript preparation is underway. Tiffany and Stephanie spent many hours at the shelter and developed a desire to help save more animals. Stephanie fostered several litters of kittens and the two of them worked with the Alachua County Humane Society to establish a “speed-fostering” program in which veterinary students and staff will foster underaged kittens and puppies for the humane society.

#### *Uterine abnormalities*

Veterinary junior Robin McIntyre conducted a survey of spay/neuter clinics regarding the frequency and type of uterine abnormalities encountered during elective ovariohysterectomy. She performed histopathological evaluations of the abnormal tissues to determine probable embryological origins of the anomalies. She discovered that unilateral aplastic horns were often accompanied by agenesis of the ipsilateral kidney. A manuscript has been accepted for publication in JAVMA.



#### *DIVA test strategy for Canine Influenza Virus*

Dogs in shelters, boarding/training kennels, and day care centers are at highest risk for infection with CIV. Although a vaccine would greatly benefit the health and welfare of dogs at risk by providing protection from infection, vaccination will interfere with the

antibody testing for diagnostic confirmation of infected dogs. The objective of this study is to develop a diagnostic test that can differentiate dogs naturally infected with canine influenza virus (CIV) from those that have been vaccinated (to Differentiate Infected from Vaccinated Animals, or DIVA). The development of a diagnostic test strategy that can differentiate infected from vaccinated dogs will not only solve the diagnostic dilemma created by vaccination, but will also be useful for future studies on the epidemiology of canine influenza. The basis of this strategy is that CIV infected dogs produce antibodies to the viral H3 and NS1 proteins, while vaccinated dogs produce antibodies to H3 but not NS1. To date we have cloned the CIV NS1 gene and have expressed and purified the NS1 protein for use in an assay to detect antibodies to NS1.

#### *Canine Respiratory Pathogens in the Shelter*

The objectives of this study are to determine the prevalence of CIV as a causative agent of respiratory infections in dogs in Florida shelters, its relationship with other respiratory pathogens such as canine distemper virus, canine adenovirus, canine parainfluenza virus, *Bordetella bronchiseptica*, and *Mycoplasma*, and host and facility factors associated with occurrence of CIV infections. In contrast to the commonly held belief that dogs with “kennel cough” were infected by *Bordetella bronchiseptica* bacteria, this study has determined that viruses cause most respiratory infections in shelter dogs. The study results will benefit shelter management staff and veterinarians by providing information on the most common causes of respiratory infections in shelters, risk factors associated with their occurrence, and best diagnostic approaches. This information will be invaluable for development of effective strategies for management and control of respiratory infections of dogs in shelters, thereby reducing euthanasia of adoptable dogs, reducing allocation of shelter resources to treat sick dogs, and reducing stress on both dogs and shelter staff.



## **Publications, Service and Leadership in the Field**

### **Publications**

Dr. Levy's paper 'Prevalence of infectious diseases in feral cats in Northern Florida' received the Star Award from the *Journal of Feline Medicine and Surgery*, as the most cited paper in the 10 years of the publication's existence.

Crawford PC, Spindel M. Canine influenza. In: Hurley KF, Miller L, eds., Infectious Diseases in Animal Shelters, in press.

Crawford PC. Progress on Diagnosis of Retroviral Infections. In, August J, ed. Consultations in Feline Medicine Six. In press.

Crawford PC, Sellon RK. Canine Viral Diseases. In, Ettinger SJ, Feldman EC, eds. Textbook of Veterinary Internal Medicine, 7<sup>th</sup> ed., Philadelphia:WB Saunders Co., in press.

Levy JK, Crawford PC. Feline leukemia virus. In, Ettinger SJ, Feldman EC, eds. Textbook of Veterinary Internal Medicine, 7<sup>th</sup> ed. Philadelphia:WB Saunders Co., in press.

Levy JK, Crawford PC. Feline immunodeficiency virus. In, Ettinger SJ, Feldman EC, eds. Textbook of Veterinary Internal Medicine, 7<sup>th</sup> ed. Philadelphia:WB Saunders Co., in press

Levy JK. Feline leukemia virus and feline immunodeficiency virus. In: Hurley KF, Miller L, eds., Infectious Diseases in Animal Shelters, in press.

Looney AL, Bohling MW, Bushby PA, Howe LM, Griffin B, Levy JK, Eddlestone SM, Weedon JR, Appel LD, Rigdon-Brestle YK, Ferguson NJ, Sweeney DJ, Tyson KA, Voors AH, White SC, Wilford CL, Farrell KA, Jefferson EP, Moyer MR, Newberry SP, Saxton MA. The Association of Shelter Veterinarians veterinary medical care guidelines for spay-neuter programs. J Am Vet Med Assoc 2008;233:74-86.

Sereda NC, Towl S, Maisenbacher HW 3rd, Bleweis MS, Levy JK, Byrne BJ, Ellison GW, Shih A, Coomer AR, Estrada AH. Intracardiac foreign body in a dog. J Vet Cardiol 2009;11:53-58. Epub 2009 May 7

Meeks C, Levy JK, Crawford PC, Farina LL, Origgi F, Alleman R, Seddon OM, Salcedo A, Hirsch BJ, Hirsch SG. Chronic disseminated *Mycobacterium xenopi* infection in a cat with idiopathic CD4+ T-lymphocytopenia. J Vet Intern Med 2008;22:1043-1047.

Levy JK, Crawford PC, Hartmann K, Hofmann-Lehmann R, Little S, Sundahl E, Thayer V. 2008 American Association of Feline Practitioners feline retrovirus management guidelines. J Fel Med Surg 2008;10:300-316.

Reese MJ, Patterson EV, Tucker SJ, Dubovi EJ, Davis RD, Crawford PC, Levy, JK. Effects of anesthesia and surgery on serologic responses to vaccination in kittens. J Am Vet Med Assoc 2008;233:116-121.

## Service and Leadership in the Field

Dr. Julie Levy

Found Animal Foundation, Scientific Advisory Committee  
American Association of Feline Practitioners Guidelines Committee.  
Chair of the Feline Retrovirus Management Guidelines Committee  
National Task Force for Spay-Neuter  
Shelter Medicine Residency Task Force  
American Heartworm Society, Board of Directors  
Winn Feline Foundation, Scientific Advisory Committee  
No More Homeless Pets, President  
Operation Catnip, President

Dr. Cynda Crawford

Operation Catnip, Vice President and Clinic Supervisor  
UF Veterinary Emergency Treatment Services, State Agricultural Response Team,  
Team Leader

Dr. Natalie Isaza

Association of Shelter Veterinarians, Board of Directors  
Shelter Standards Committee



**We at Maddie's® Shelter Medicine Program at the University of Florida have been honored to work on behalf of homeless animals over the past year. We thank Maddie's Fund® for the generous support that makes this work possible.**

## Our Team

### Faculty



**Julie K. Levy, DVM, PhD, Diplomate ACVIM**

Maddie's Professor of Shelter Medicine

Director, Maddie's Shelter Medicine Program at the University of Florida

[levyj@vetmed.ufl.edu](mailto:levyj@vetmed.ufl.edu)

Dr. Levy's clinical interests center on feline infectious diseases, neonatal kitten health, humane alternatives for cat population control, and immunocontraceptive vaccines for cats. She is the founder of two university-based feral cat spay/neuter programs which have sterilized more than 40,000 cats since 1994 (Operation Catnip). Dr. Levy's accomplishments include publication of more than 100 journal articles and textbook chapters.



**Cynda Crawford, DVM, PhD**

Maddie's Clinical Assistant Professor of Shelter Medicine

Maddie's Shelter Medicine Program at the University of Florida

[crawfordc@vetmed.ufl.edu](mailto:crawfordc@vetmed.ufl.edu)

Dr. Crawford's interests include diagnosis, treatment, management, and prevention of infectious diseases in dogs and cats in sheltering facilities. Her current focus is the diagnosis of viruses and bacteria that cause acute respiratory infections in dogs in shelters. Dr. Crawford's accomplishments include discovery of canine influenza virus and evaluation of diagnostic assays for feline immunodeficiency virus.



**Natalie Isaza, DVM**

Merrial Clinical Assistant Professor of Shelter Medicine

Department of Small Animal Clinical Sciences

[isazan@vetmed.ufl.edu](mailto:isazan@vetmed.ufl.edu)

Dr. Isaza's interests include high volume, high quality spay/neuter, pediatric spay and neuter, prevention of animal cruelty and neglect, and community-based programs to curtail animal relinquishment to shelters and strengthen the human-animal bond. She is currently involved in instructing junior and senior veterinary students in their shelter medicine clinical elective rotation, in which her students have spayed and neutered more than 6000 animals since 2004.

## Intern



### **Nirit Tzipory, DVM**

Intern in Shelter Medicine  
Department of Small Animal Clinical Sciences  
[tziporyn@vetmed.ufl.edu](mailto:tziporyn@vetmed.ufl.edu)

After graduating from veterinary school in Budapest, Dr. Tzipory returned to Israel to practice small animal medicine. In her spare time, she volunteered to spay and neuter homeless animals at the Tel- Aviv SPCA. Dr. Tzipory came to the United States in 2008 to receive specialty training in shelter medicine. She is especially interested in animal welfare, preventive medicine, infectious disease control, and high-volume spay and neuter.

## Staff



### **Rachel Michaud, BA, CAWA**

Maddie's Shelter Medicine Program Coordinator  
Maddie's Shelter Medicine Program at the University of Florida  
[rmichaud@vetmed.ufl.edu](mailto:rmichaud@vetmed.ufl.edu)

Ms. Michaud manages the business and outreach components of Maddie's Shelter Medicine Program, including fiscal administration, course and consultation logistics, electronic newsletters, website development, and coordination of special events. With a background in nonprofit administration, Ms. Michaud is committed to mission-based management and has directed the development of shelter programs including adoption, foster care, volunteer services, and low-cost spay and neuter. She is particularly interested in progressive management in sheltering agencies and innovative, replicable lifesaving programs.



### **Sylvia Tucker, BS**

Biological Scientist  
Maddie's Shelter Medicine Program at the University of Florida  
[tuckers@vetmed.ufl.edu](mailto:tuckers@vetmed.ufl.edu)

Ms. Tucker coordinates the research programs of Maddie's Shelter Medicine Program to develop new knowledge in areas where insufficient information exists today. The program is currently testing a GnRH vaccine that may provide an alternative to surgical sterilization in cats, developing improved tests for canine influenza virus, determining the most common causes of respiratory disease outbreaks in shelter dogs, investigating usage patterns of identification microchips by shelters and veterinarians, testing identification collars for cats, and determining infectious disease rates in shelter animals.

## Students



**Tara Anderson, DVM, MPH**  
Morris Animal Foundation Fellow  
University of Florida College of Veterinary Medicine  
[andersont@vetmed.ufl.edu](mailto:andersont@vetmed.ufl.edu)

Dr. Anderson's interests include emerging and zoonotic viral diseases, epidemiology, and public health. She is currently studying canine influenza virus under the mentorship of Dr. Cynda Crawford and Dr. Paul Gibbs. Through generous support from the Morris Animal Foundation, Dr. Anderson is developing a diagnostic test for canine influenza virus that will differentiate infected from vaccinated dogs. Dr. Anderson was involved in the establishment of the joint DVM/MPH program at the University of Florida and looks forward to a career in infectious disease research that will hopefully benefit animal and human health.



**Kathleen Colby, BS**  
Maddie's Shelter Medicine Research Fellow  
Maddie's Shelter Medicine Program at the University of Florida  
[colbyk@vetmed.ufl.edu](mailto:colbyk@vetmed.ufl.edu)

Kathleen is a sophomore veterinary student interested in small animal medicine. Kathleen is involved in a research study surveying heartworm testing and treatment policies in Southeastern animal shelters. Her interests also include pursuing work in pathology and wildlife rehabilitation.



**Kiri Dunn, MA, BS**  
Maddie's Shelter Medicine Research Fellow  
Maddie's Shelter Medicine Program at the University of Florida  
[dunnk@vetmed.ufl.edu](mailto:dunnk@vetmed.ufl.edu)

Kiri is an enthusiastic sophomore veterinary student with an open attitude to all aspects of Veterinary medicine. Kiri is collecting data on shelter protocols for diagnosis, treatment, and prevention of heartworm disease in shelter animals in the southeastern states. This information will determine the strengths and weaknesses of current practices and provide groundwork for the development of guidelines to help shelters cope with the problem of heartworm infection in dogs and cats.



**Patricia Dingman, BS**  
Master's Student  
Department of Small Animal Clinical Sciences  
[dingmanp@vetmed.ufl.edu](mailto:dingmanp@vetmed.ufl.edu)

Patty is a master's student under the supervision of Dr. Julie Levy and is studying how natural heartworm infections affect the lungs of cats. Her main focuses are feline infectious disease diagnosis and pathology, including the epidemiology of diseases in cats and dogs following the 2005 Gulf Coast hurricane disaster. Patty

has interests in animal behavior involving enrichment in zoo and shelter settings and plans to continue her education in public health.



**Stephanie Sabshin, BA**

Merck-Merial Research Scholar  
Maddie's Shelter Medicine Program at the University of Florida  
[sabshins@vetmed.ufl.edu](mailto:sabshins@vetmed.ufl.edu)

Stephanie's research will determine the correlation of gastrointestinal infections and diarrhea in shelter cats with risk factors including age, sex, body condition, FIV/FelV infection, and source. This project will help shelters focus their limited resources when testing and treating cats incoming cats for intestinal infections. Stephanie has particular interest in big cats and maintaining them in their native

habitat by balancing human and animal needs.



**Tiffany Tupler, BA, RVT**

Merck-Merial Research Scholar  
Maddie's Shelter Medicine Program at the University of Florida  
[tuplert@vetmed.ufl.edu](mailto:tuplert@vetmed.ufl.edu)

Tiffany is a registered veterinary technician who has worked in veterinary care facilities including emergency, shelter, specialty, and wildlife rehabilitation. Her primary interest is surgery, especially orthopedics, anesthesia, and shelter cases. Her research project will determine the prevalence of gastrointestinal

viruses, protozoa, and parasites in dogs entering and animal shelter and will correlate the presence of these infectious diseases with host risk factors and diarrheal disease.



**Lauren Unger, BS**

Maddie's Shelter Medicine Research Fellow  
Maddie's Shelter Medicine Program at the University of Florida  
[ungerl@vetmed.ufl.edu](mailto:ungerl@vetmed.ufl.edu)

Lauren has fostered more than 50 kittens in Fort Pierce and Gainesville, and trapped more than 100 feral cats for the Operation Catnip trap-neuter-return program. She is the Shelter Medicine Program's first research fellow. Her research project is a survey of animal shelters and veterinary clinics regarding their microchipping practices to determine if there are functional microchipping

networks that form local safety nets for lost pets in southern communities. She has also worked on a study of intensive TNR, trapping, vaccinating, and sterilizing feral cats in a single zip code and another study of cat identification collars.