



***PARTNERING
FOR PROGRESS***

Advancing non-surgical sterilants and contraceptives for cats and dogs and promoting their global accessibility.

Dear Fellow Advocates, Supporters, and Innovators,

This biennial report for 2017 and 2018 captures hard work and advances in our field. Much of this progress was shared at ACC&D's 6th International Symposium on Non-surgical Methods of Pet Population Control in July 2018, where speakers highlighted promising new technologies in development, including contraceptive approaches using gene delivery; valuable learnings from implementing existing products; and updates on our Flagship Initiatives. Armed with fresh knowledge and collaborations, attendees left energized about the field and their roles within. We'll recap highlights here but encourage you to check out the [complete conference proceedings](#) for an in-depth view.

In keeping with our commitment to be the leading source of information about the field, we wrote a chapter in the *Field Manual for Small Animal Medicine*, updated and published new Product Profile and Position Papers, and published four papers in peer-reviewed journals – also resources for you!

Our work is strengthened by many partners. Their strategic input, specialty expertise, and financial support are all essential to this work—and so appreciated!

We hope you find this biennial report on our work inspiring. Together, we can innovate to save lives!



Joyce Briggs

Joyce Briggs
ACC&D President
With Galileo



E. Hiby

Elly Hiby, PhD
Chair, ACC&D
Board of Directors
ICAM Coalition Scientific
Coordinator; Independent
Animal Welfare Consultant
With Stretch



Raising the Bar for Feline Research

ACC&D's study of a contraceptive vaccine concludes with 44 cats finding loving homes and serves as a model for studies aimed at helping free-roaming cats.

In early 2017, we wrapped up a study that evaluated the potential of the GonaCon vaccine to be the first contraceptive vaccine commercialized for female cats. Though we designed the study to last 3–5 years, we completed it at the one-year mark due to a higher rate of pregnancies than our benchmark for continuing. The scientific results were **published** in the Journal of Feline Medicine and Surgery (JFMS) in February 2018.

At the same time, the study yielded a wealth of knowledge on how to conduct a breeding study with cat welfare as the utmost priority. The facility, a two-story indoor home for the feline participants, offered ample places to sleep, play (including a fenced-in outdoor area) and be adored by student volunteers from the local university. Details of this unique study environment emulating a free-



roaming cat colony were **published** in the JFMS (July 2018), providing a model for future studies aimed at benefiting free-roaming cats.

All the cats who took part in the study came from high-risk situations; each one left the study vaccinated, spayed or neutered, and adopted into a loving home. Dr. Camille DeClementi, Vice President of the ASPCA Animal Hospital and member of ACC&D's Board of Directors, shares, "when Moon isn't resting next to her fur siblings, she is busy 'helping' her mom as a personal assistant, being sure to keep important paperwork warm and clean laundry wrinkled."

We are grateful to the Morris Animal Foundation and John T. and Jane A. Wiederhold Foundation for generously funding this progressive study.





Symposium attendees contributed to a successful event

6th International Symposium on Non-Surgical Contraceptive Methods of Pet Population Control

A global audience convenes to advance non-surgical fertility control

On July 22-24, 2018, ACC&D hosted its **6th International Symposium on Non-Surgical Contraceptive Methods of Pet Population Control** in Boston, Massachusetts. The event drew 150 delegates from 13 countries spanning five continents. Convening diverse stakeholders is a hallmark of our symposia; attendees represented animal welfare and veterinary professionals, scientists, researchers, academics, and more.

The Symposium began with general sessions, including a synopsis of nearly a decade of research funded by the Found Animals Foundation's Michelson Grants in Reproductive Biology. This research and other sources have brought about numerous discoveries and helped scientists zero in on technologies with most promise. One of these is gene transfer technology. Science journalist and PhD geneticist Dr. Ricki Lewis gave a keynote address with stories of how dogs are successfully being treated with gene therapy to treat rare genetic defects while serving as a model for similar conditions in children.

Gene delivery again took center stage in the contraceptive science track, where researchers have used different gene-based techniques to work toward safe, non-surgical contraception for dogs and cats. One treatment has been shown to suppress fertility in mice for over a year (their reproductive lifetime), and initial feline studies look promising!



Attendees and poster authors at a special Symposium poster session.



Dr. David Pepin presents on successful gene delivery contraceptive study in female cats.

The field science track covered wide-ranging topics related to "real-world" applications of non-surgical fertility control. Popular sessions offered focused discussion about intratesticular sterilants, shared lessons learned in field studies with non-surgical fertility control, and ACC&D's initiatives to test and implement new technology for the field.

Thanks to the Kevin L. Brown Memorial Scholarship, ACC&D's contest for veterinary students awarded three all-expenses-paid trips to participate in the Symposium. Winners Julie Barnes (United States), Valerio Moccia (Italy), and Liat Morgan (Israel) stood out for their accomplishments to date and outstanding potential to contribute to this field.

Survey ratings were high. Over 75% of respondents ranked the Symposium a "5" (the best possible rating); all others ranked it a "4." Dr. Margaret Slater, ASPCA Senior Director for Research and Development, shared, "[the Symposium had] so many great presentations it was difficult to choose," and "I'm really excited about some of the upcoming possibilities for non-surgical contraception now! And I have a much better understanding of what some of the more promising options are and how they will be progressing."

Thank you to our 19 Symposium sponsors, whose generosity made the event a true success! In alphabetical order: Adopets, Alley Cat Rescue, ASPCA, Best Friends Animal Society, Boehringer Ingelheim, Botstiber Institute, Coalition for Pets & Public Safety, Kenneth A. Scott Charitable Trust, Kevin L. Brown Memorial Scholarship, Michelson Found Animals, Morris Animal Foundation, MSPCA-Angell, Parsemus Foundation, Pegasus Foundation, Petco Foundation, PetNet Washington, PetSmart Charities, Red Acre Foundation, and WaterShed Animal Fund.



Dr. Thomas Conlon, Chief Scientific Officer, Michelson Found Animals Foundation, and Dr. Ricki Lewis, science journalist, PhD geneticist, and Symposium keynote speaker

Thank you to our sponsors!



Betsy Banks Saul, ACC&D Board member, honors Dr. Andrew Rowan, retired Chief Scientific Officer of The HSUS, for his contributions to the field of non-surgical fertility control.



Simulation of a microneedle ear tattoo

Marking and Identification

Partnerships with plans for implementation

Advancing non-surgical fertility control means ensuring it can be easily and effectively used in the field. A free-roaming cat or dog's sterilization status is traditionally identified by the "tip" or "notch" of an ear and/or an abdominal tattoo, both performed under anesthesia. If a non-surgical product does not require anesthesia, how will we humanely identify a treated animal? We need some type of **marker or identification**.

To answer this question, ACC&D collaborated with an interdisciplinary team from Cornell University, and with support from Cornell's Atkinson Center for a Sustainable Future designed a "21st Century" ear tag.



The tag was evaluated in three separate studies, with mixed results. A "real-world" trial in conjunction with a rabies vaccination campaign found that dogs exhibited discomfort with application even with a topical anesthetic; a study in indoor-outdoor pet cats was more promising. Tags were applied while cats were anesthetized for dental work; the tags caused minimal irritation or infection and are well retained. ACC&D is considering a second phase of the study to evaluate the tag's use in free-roaming cats given that sedation would likely be needed for application of non-surgical fertility control in unsocialized animals.

In 2018, ACC&D established a partnership with Dr. Mark Prausnitz, whose lab at the Georgia Institute of Technology is developing microneedle patches to administer the flu vaccine to humans.

Could microneedle patches be used to tattoo the inside of a dog or cat's ear to identify sterilization or vaccination status? A 2016 study administered rabies vaccine to six beagle dogs and found that dogs, like humans, tolerate the microneedle patches well --so if tattoo ink could effectively be used, this might satisfy the need for a humane, easy-to-apply, permanent marker. Our Georgia Tech partners first fashioned patches in the shape of numbers and loaded them with regular and UV-excitable ink. The resulting patches were first tested on pig cadaver ears, followed by the ears of dogs and cats euthanized for other reasons. Based on promising results, we are now designing a study to trial the patches in conscious animals.

What are microneedle patches?
Microneedle patches are very small sticky patches with even smaller needles – as many as 100 needles in a 1cm square patch. The patch is briefly pressed onto the skin, during which time the microneedles dissolve. To date, the needles have delivered vaccine, and we believe that this technology could be used to deliver tattoo ink with minimal discomfort.



ThinkTank participant Dr. Vic Spain, Senior Director of Research & Development at the ASPCA

Ethical decision-making in field projects

Creating new tools for those innovating for animal welfare.

As ACC&D designed field studies to evaluate a contraceptive vaccine in female cats and an ear tag to identify non-surgically sterilized animals, we were surprised by the dearth of resources available to help us address ethical questions and challenges. In response, we hosted a **Think Tank** on ethical decision-making in innovation for animal welfare. The February 2017 meeting at the University of Denver's Institute for Human-Animal Connection was made possible by generous funding from the ASPCA, International Cat Care, and the Animal Assistance Foundation. It convened 24 ethicists, field practitioners, veterinarians, philosophers, academic faculty members, and social workers to identify resource gaps and brainstorm ways to fill them.

The Think Tank resulted in **two projects**. The first is a workshop designed to address the moral stress and distress that can result from ethical dilemmas faced in field contexts (defined broadly to include animal shelters, veterinary medicine, spay/neuter and vaccine clinics, etc.) with dogs and cats. Patterned largely on resources developed in human medicine, the workshop was designed to enhance ethical literacy in animal welfare. In December 2017, the workshop was piloted at the Denver Dumb Friends League with facilitators Lisa Moses, DVM (MSPCA-Angell Pain and Palliative Care Service; Bioethicist with appointments at Harvard Medical School and Yale University) and Jesse Winters (former Senior Director, Shelter Outreach, ASPCA; former ACC&D Board of Directors).

THE WILLIAM AND CHARLOTTE PARKS FOUNDATION

The second project is a guidance document and interactive e-learning portal designed to support and advance ethical decision-making when conducting innovative work involving dogs and cats. Initially, ACC&D staff collaborated with project consultant Dr. Lou Tasker to **publish an article**, "Exploring the Gaps in Practical Ethical Guidance for Animal Welfare Considerations of Field Interventions and Innovation Targeting Dogs and Cats," documenting the need in the journal *Animals* in January 2018.

The tools currently being developed aim to ensure that ethical considerations are prioritized when designing projects; topics include ethical review, conflicts of interest, permission for an animal's participation, and engaging communities and owners in projects. We are presently adapting these resources into an e-learning format for broad access and use and seeking a partner to "adopt" and expand on this work. The William and Charlotte Parks Foundation has been a much-appreciated two-year funder of this work.



Think Tank attendees

How do you save the most free-roaming cats?

Using computer modeling to improve real-world outcomes in humane population management.

In partnership with staff from the Conservation Planning Specialist Group and USDA's National Wildlife Research Center, plus expert volunteers, ACC&D has continued to advance our computer modeling of free-roaming cat (FRC) populations. The model allows us to manipulate variables and generate data with profound real-world applications for managing outdoor cats.

Over the past two years, we integrated economic analysis with demographic models to evaluate the efficiency and cost-effectiveness of different approaches to manage FRCs, looking at both surgical and non-surgical options. We also stepped back to take a broad view of "lifesaving" and how to most effectively minimize "preventable" deaths. While trap-neuter-return (TNR) is often undertaken as a lifesaving alternative to lethal removal, the longer-term cumulative lifesaving consequences of different management approaches have not been systematically explored and compared.

Among presently available fertility control options, our results strongly support TNR, with the caveat that to have the most desirable long-term outcomes, TNR must be performed intensively and ideally "front-loaded," putting maximum resources into trapping and sterilizing cats at the start of the intervention.

We will publish one article on these topics in a special issue of *Frontiers in Veterinary Science* devoted to "Sustaining Innovation in Compassionate Free-Roaming Cat Management Across the Globe: A Decadal Reappraisal of the Practice and Promise of TNVR." We are also working on additional manuscripts for publication in 2019. And, of course, we'll translate our findings into user-friendly lessons and share on the ACC&D website!

Our team of expert volunteers brought this modeling work to life through presentations at conferences, including our 6th International Symposium. ACC&D Board members Drs. John Boone and Kevin Morris were additionally instrumental in the development of the "DC Cat Count," an initiative to estimate the outdoor cat population of Washington, D.C., which like our work aims to serve as a model for objective data collection based on the adaptation of tools used by wildlife scientists.

The ACC&D Free-Roaming Cat Model Development Team:

Aaron Anderson, PhD, National Wildlife Research Center, USDA APHIS

Valerie Benka, MS, MPP, Alliance for Contraception in Cats & Dogs

John Boone, PhD, Great Basin Bird Observatory

Joyce Briggs, MS, Alliance for Contraception in Cats & Dogs

Dennis Lawler, DVM, FNAP, Illinois State Museum, Pacific Marine Mammal Center Laguna Beach

Julie Levy, DVM, PhD, DACVIM, University of Florida College of Veterinary Medicine

Philip Miller, PhD, IUCN/SSC Conservation Breeding Specialist Group

Felicia Nutter, DVM, PhD, DACZM, Tufts University

Margaret Slater, DVM, PhD, ASPCA

Chris Sloomaker, PhD candidate, National Wildlife Research Center, USDA APHIS

Steve Zawistowski, PhD, CAAB, ASPCA



Dr. John Boone, Research Director, Great Basin Bird Observatory/Board Vice Chair, ACC&D, presents on population modeling.



Directors, Scientific Advisors, and staff gather at ACC&D's 6th International Symposium

Thank you to these individuals who provided leadership as volunteers in 2017 and/or 2018

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Founder, Petfinder.com; Founder, HEAL House Call

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Jesse Winters
Senior Director, Community Outreach, ASPCA®

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Professor of Animal Behavior and Conservation,
Hunter College

Thank you, volunteers!

As a small organization, ACC&D relies on the generosity of volunteers to accomplish our goals. We are truly grateful to the following individuals for volunteering their time and expertise in myriad capacities:

- | | | |
|------------------------|----------------------------------|---------------------|
| Laura Appleton | Sheri Gustafson | Dr. Mark Prausnitz |
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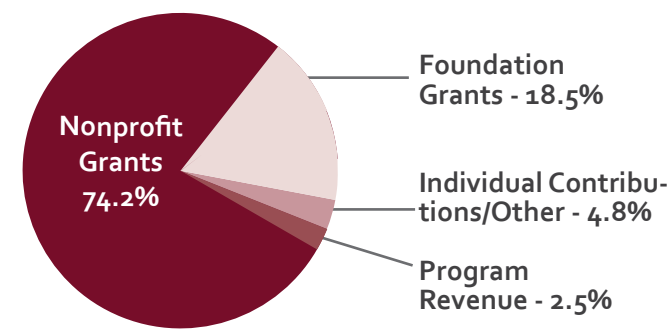
Financials

During the two-year period of 2017-2018 ACC&D had \$647,080 in donations and \$170,000 in pledges for 2019 and 2020* totaling \$817,080 in contribution revenue. Expenditures for 2017-2018 were \$748,462. Net assets as of December 31, 2018 were \$757,275.

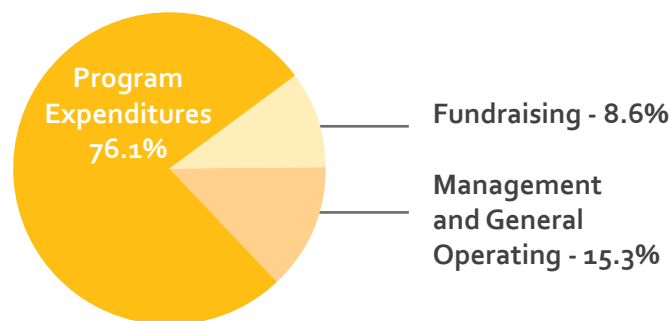
An independent CPA has not yet conducted an Annual Review of the 2018 financials.

*The Council of Stakeholder model involves a 3-year grant commitment. That financial commitment is acknowledged in the year when it is pledged. For detailed financial information, including our voluntary audit history, we invite you to contact us at info@acc-d.org.

Total Revenue in 2017-18: \$817,080



Total Expenses in 2017-18: \$748,462



2017-18 Council of Stakeholders

The Council of Stakeholders includes foundations and organizations that share our goal to advance non-surgical fertility control options for cats and dogs. Each Stakeholder commits to three years of funding, allowing our small organization to focus on our mission and impact. Our Council members have committed to multi-year pledges of between \$10,000 and \$50,000 per year. We are grateful to our long-term Stakeholders!



Thank you, Donors!

ACC&D extends our sincere gratitude to the foundations, organizations, companies and individuals that provided \$500 or more in financial support during 2017-2018:

Individual Donors:

\$1,000-10,000

Joyce Briggs and Ed de la Fuente | Gregory Castle | Dorothy Denne | Amy Fischer | Marianne & Terry Hammerschmidt | Thomas Miller | Cheryl Mothes | Linda Rhodes | Betsy Banks Saul | G. Robert Weedon | Laura and Brett Wilson

\$500-999

John Boone | Camille DeClementi | Paige Garnett | Elly Hiby | Lea Anne Leatherwood | Kevin Morris

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The American Society for the Prevention of Cruelty to Animals | Best Friends Animal Society | The Elinor Patterson Baker Foundation | The Humane Society of the United States | International Cat Care | Maddie's Fund | Petco Foundation

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Kenneth A. Scott Charitable Trust | MSPCA-Angell | Parsemus Foundation

\$1,000-4,999

Alley Cat Rescue | Boehringer Ingelheim | The Boeing Company | Botstiber Institute for Wildlife Fertility Control | Intel | John T. and Jane A. Wiederhold Foundation | The Pegasus Foundation | Pet Net Washington | Red Acre Foundation

\$500-999

Adopets



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in CATS & DOGS

Photographs in this report were taken by Valerie Benka, Glen Dimock/Dimock Images, Phoenix de la Fuente, Amy Fischer, Kayla Myers, and Rebecca Rodriguez/Rebecca Rodriguez Photography

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