

## SPECIAL POINTS OF INTEREST:

- 3 new industry sponsors join NCVP
- Research funds for veterinary parasitology
- Spring in-person NCVP meeting
- Awards and accolades

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## Events

### Three New Industry Sponsors Partner with the NCVP!

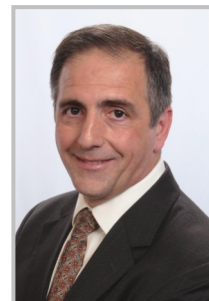
The NCVP is thrilled to announce that three new industry sponsors have joined our efforts to meet global challenges in veterinary parasitology in the coming years. **Elanco**, **Merck**, and **Zoetis** have partnered with the NCVP, and together with our foundational sponsors, **Novartis**, **Bayer**, and **Merial**, provide support that allows us to create opportunities for clinical parasitology training, research, and service worldwide. NCVP now has a strong base of animal health industry partners, each of which funds a residency training position, as well as the many other programs that the NCVP facilitates. We are very grateful for their collaboration and support!



**Dr. Joyce Login**, NCVP industry sponsor representative, **Zoetis**.



**Dr. Daniel Snyder**, NCVP industry sponsor representative, **Elanco**.



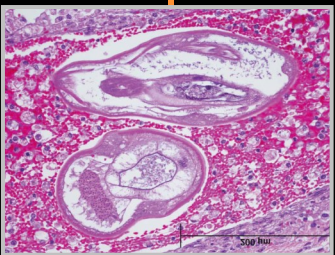
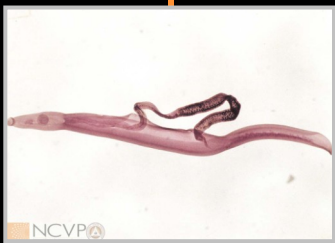
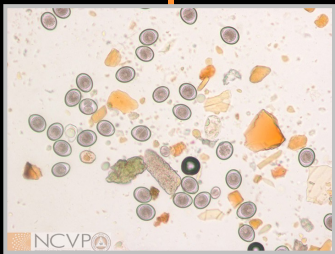
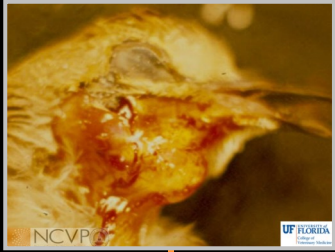
**Dr. Frank Guerino**, NCVP industry sponsor representative, **Merck**.

## Spring 2014 Advisory Board Meeting



The Spring meeting of the NCVP Advisory Board was held at Oklahoma State University's Center for Veterinary Health Sciences in Stillwater, OK on **April 23–24, 2014**. All of our industry sponsor representatives and academic board members were in attendance and are now busy at work planning next steps for the Center, including new resident recruitment. Exciting times!

Advisory board members include (standing, left to right) **Drs. Dwight Bowman** (Cornell University), **Joe Hostetler** (Bayer Animal Health), **Doug Carithers** (Merial), **Mason Reichard** (Oklahoma State University), **Craig Reinemeyer** (East Tennessee Clinical Research, Inc.), **Frank Guerino** (Merck Animal Health), **Dan Snyder** (Elanco), **Kelly Allen** (OSU), **Blaine Godley** (Novartis Animal Health), **Jean Sander** (Dean, OSU); (seated, left to right) **Joyce Login** (Zoetis), **Eileen Johnson** (OSU), **Anne Zajac** (Virginia Tech), and **Susan Little** (OSU); (by phone) **Mike Dryden** (Kansas State University) and **Byron Blagburn** (Auburn University).



## NCVP Research Grants Awarded

In 2013, the NCVP was delighted to provide funding for five clinically relevant veterinary parasitology research projects. The NCVP request for research proposals (RFP) was circulated among AAVP members in May of 2013. All proposals submitted from AAVP members were reviewed by the NCVP Board during the November 2013 advisory board meeting in Stillwater, OK. Funding decisions were difficult, with selections based on a number of criteria including relevance to NCVP goals of fostering clinical parasitology and relative availability of funding from other sources. Grant funds were disbursed in November 2013. Congratulations are in order for the 2013 NCVP grant awardees, who are listed below with their academic institutions and research proposal titles. Be on the lookout for presentations of these NCVP-funded research projects at upcoming annual AAVP meetings. Well done!

**Dr. Lora Ballweber**, Colorado State University—Individual animals versus the dung pile: Which sampling strategy is best for herd-based fecal egg count surveillance programs?

**Dr. Rick Gerhold**, University of Tennessee—Persistence and decontamination of *Trichomonas gallinae* in artificial feeders and waterers and retrospective PCR testing for the parasite in wild birds.

**Dr. David Lindsay**, Virginia Tech—Sequencing the genome of *Cystoisospora canis* for insights into tissue cyst formation and reactivation of *Cystoisospora* species, *Neospora caninum*, and *Toxoplasma gondii*.

**Dr. Karen Snowden**, Texas A&M—Improved diagnostic testing for *Heterobilharzia americana* in dogs using a commercial immunodiagnostic test compared to parasitologic and molecular methods.

**Dr. Heather Stockdale-Walden**, University of Florida—*Angiostrongylus cantonensis* in Florida.

NCVP grants provide financial support for up to one year; some level of student involvement in the proposed research is expected, as well as a final report including project results, discussions, and outcomes (e.g., publications, presentations, and external grants submitted). **The NCVP will again offer funding in 2014**, so watch for an invitation to submit research proposals distributed via the AAVP members listserv in the coming weeks. Questions regarding the RFP should be addressed to Dr. Mason Reichard, [mason.reichard@okstate.edu](mailto:mason.reichard@okstate.edu).

**Photos featured** on the left, from top to bottom: **Trichostrongyle egg** in fecal flotation, canker in a parakeet caused by *Trichomonas gallinae* (photo courtesy of Dr. Ellis Greiner, University of Florida), canine *Cystoisospora* spp. in a fecal flotation, *Heterobilharzia americana* male and female in copula, cross-sections of *Angiostrongylus cantonensis* in a histologic brainstem preparation (Emerson, Stockdale, Peters et al., 2013).



## Dr. Craig Reinemeyer Delivers Keynote Speech



On April 23, Craig Reinemeyer, DVM, PhD, shared a presentation entitled **"Equine Parasitology—Broad Thoughts for a Narrow Field"** with NCVP Board members and veterinary student members of the Oklahoma State University student chapter of the AAVP. The event was held at Brooklyn's Restaurant in downtown Stillwater. Dr. Reinemeyer is an internationally acclaimed equine parasitologist, past president of the AAVP, and President of East Tennessee Clinical Research, Inc., a contract research organization working with the animal health industry. The NCVP was tremendously honored and excited to host his talk, which was an all around success. To view his talk on **OStateTV**, [click here](#). Thank you, Dr. Reinemeyer!



**Dr. Craig Reinemeyer**, 2014 NCVP Keynote Speaker, joined by NCVP Advisory Board members and Oklahoma State University veterinary student members of the AAVP student chapter.

## NCVP Members Visit OSU's World-Famous Tick Lab

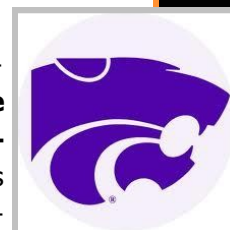
Several NCVP Board members were very excited to tour Oklahoma State University's **Tick Rearing Facility** in Stillwater, OK prior to the commencement of the NCVP Spring in-person meeting. The Facility, managed by **Lisa Coburn**, is a resource operated by OSU's Department of Entomology and Plant Pathology, and provides ticks to institutions *all over the world*. Many thanks to Lisa (front, center) for giving the tour!



## New Resident Training Opportunities



NCVP residents are delighted to be invited to attend the renowned **Wildcat Parasitology** summer class led by **Drs. Mike Dryden** (shown left) and **Pat Payne** at **Kansas State University**. This unique short course occurs over 4.5 days, and entails hands-on training in laboratory diagnostic techniques and identification of parasite life cycle stages, field work, roundtable discussions, seminars, and interactive clinical case discussions. **EMAW!**



## PARASITOLOGY ROUNDS—"THREE COOL THINGS"



In order to provide consistent clinical parasitology training to NCVP residents, Oklahoma State University is hosting monthly parasitology rounds—in a session series entitled "**Three Cool Things**"—on the first Friday of each month. During NCVP rounds, an academic board member presents information, photographs, or videos pertaining to the three most interesting clinical parasitology cases they have encountered in the last month. Residents are expected to think through the presented clinical scenarios and discuss diagnostic and management implications. The rounds are intended to be interesting, informative, and to reinforce clinical parasitology skills, and are cast via WebEx in order to allow full participation of graduate residents and board members from other academic institutions. Please contact us for more details regarding "Three Cool Things."

## NCVP Outreach during AAVP

## NCVP PRESENCE AT AAVP 2014

The NCVP will again host our popular promotional table at AAVP 2014 in Denver. While learning more about the NCVP, attendees will be able to pick up the original **NCVP temporary parasite tattoos**, including a wrapping *Taenia* strobilus, *Dracunculus* sp. extraction from a skin ulceration with a match stick, an engorging tick surrounded by a "bull's-eye" rash, and *Dermatobia* sp. protruding out of the



Wrapping *Taenia* sp. tattoo with NCVP logo

skin. All very gross, but greatly appreciated!

Also back by popular demand will be **NCVP-branded USB flash drives** pre-loaded with videos of parasites "choreographed" to music, as well as the original interactive learning game "Parasitology Jeopardy," which includes celebrity veterinary parasitologists providing video answers to "Celebrity Daily Double" questions.

Be sure to stop by the table to visit, pick up your tattoos, browse the brochures, and learn more about partnering with the NCVP.



## Other NCVP Outreach Efforts



## DR. LITTLE TALKS NCVP AT SEVERAL VETERINARY SCHOOLS

This year, Dr. Susan Little, NCVP Co-Director, visited both **Auburn** University's and **Cornell** University's Colleges of Veterinary Medicine in January, and **Ontario** Veterinary College, (article continued on following page)

# NCVP Events continued...

University of Guelph, Ontario, Canada in February to raise awareness about the NCVP, the training and service opportunities it provides, and our academic, industry, and other organizational partnerships. Along the way, Dr. Little spoke with several veterinary students who are considering the NCVP residency training program after graduation.

**Thanks for helping to spread the word about the NCVP, Dr. Little!**



## NCVP MEMBERS TO PRESENT AT OSU'S VETERINARY SUMMER SEMINAR

Three Oklahoma State University researchers and members of the NCVP will present on current topics in veterinary parasitology during the OSU Center for Veterinary Health Sciences 2014 Summer Seminar in June. **Drs. Kelly Allen** (left), **Eileen Johnson** (middle), and **Jennifer Thomas** (right) will participate in the companion animal ("Heartworm resistance, fact not fiction"), food animal ("Purposes, limitations, and interpretations of fecal egg count tests"), and equine ("Horse ectoparasites and methods for control") sessions, respectively.



## Gates Foundation Funding for NCVP Members/OSU Researchers



**Drs. Mason Reichard** (NCVP Co-Director, left) and **Jennifer Thomas** (NCVP affiliate resident, right) are working with Oklahoma State University Chemical Engineering department professors Drs. Gary Foutch, Jim Smay, and AJ Johannes and graduate students M. Waliul Islam and Jagdeep Podichetty on Phase II of a global health research project evaluating methods to destroy *Ascaris* sp. eggs in solid waste. Excitingly, the project, entitled "Shear Extrusion to Treat Fecal Waste," received funding through the Bill and Melinda Gates initiative "Grand Challenges Explorations" in December 2013.

In Phase I of the project, a small-scale device that disinfects and dewateres feces and other solid wastes that results in less surface and ground-water contamination was developed. The aims of Phase II are to develop a stand-alone extruder that can sanitize different types of solid waste in the field that can also recover water via evaporation, and to construct a sanitation module from the extruder that can be incorporated into a modular system that combines sanitation with waste removal and transportation.



Center for Veterinary Health Sciences  
Healthy Animals - Healthy People





## Dr. Reichard Receives Zoetis Award for Research Excellence



In April 2013, NCVP Co-Director **Dr. Mason Reichard** received the esteemed **Zoetis Award for Research Excellence** in recognition of his extensive, groundbreaking work on *Cytauxzoon felis*, the deadly tick-borne parasite of domestic cats. Dr. Reichard has a strong interest in wildlife parasitology, particularly parasitic infections that spill over from wildlife to domestic animal populations. In addition to his research endeavors and serving on the NCVP Advisory Board, Dr. Reichard presents on current topics in parasitology at veterinary symposia throughout North America and teaches veterinary parasitology to first-year students at Oklahoma State University. Congratulations, Dr. Reichard!

## Three Minute Thesis (3MT) Award to Dr. Starkey

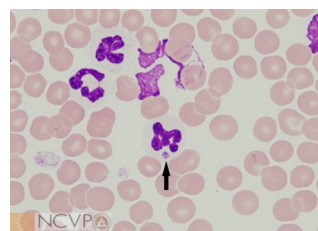


**Dr. Lindsay Starkey** (left), the Bayer Resident in Veterinary Parasitology, recently received the **3MT award** from the Center for Veterinary Health Sciences for her summary presentation of her dissertational research entitled "**Tick-borne infection: what's the risk?**"

You can watch a video of Dr. Starkey's presentation [here](#) on **OStateTV**. Congratulations Lindsay!



*Amblyomma americanum*  
male and female



*Ehrlichia ewingii*  
(arrow) in a granulocyte

## NCVP Vet Student Receives Phi Zeta Award for Presentation

Congratulations to **Heather Rhoden**, 4th year veterinary student at Oklahoma State University, who won first place in the case report competition at the Center for Veterinary Health Sciences' annual Phi Zeta Day for her presentation entitled "**Mesocestoides sp. infection in a cat.**" Heather completed a Master's degree in parasitology under Dr. Matt Bolek prior to enrolling in veterinary school. During vet school she worked with the NCVP on a number of different parasitology projects and served as president of the OSU student chapter of the AAVP. Well



Heather Rhoden (left) is congratulated by Dr. Tamara Gull (right) current president of Phi Zeta, Oklahoma State University.



# Services Offered by the NCVP

## CASE OF THE MONTH SERIES



In addition to general information about the National Center and application materials for grants and residency positions, the NCVP website supports a featured **"case of the month,"** where photos of an interesting parasite and the associated clinical scenario is posted. Cases are provided from around North America and are sure to entertain. Cases featured here, from left to right: Abomasal contents of a dead calf (*Haemonchus* sp. males and females), *Demodex gato* in a cat fecal flotation, *Dracunculus insignis* female in conjunctiva of a dog, and *Otobius megnini* nymph collected from ear of a horse with head shaking.

The NCVP website also links to an updated **parasite image database**, where quality images of a variety of parasites are shared for public use in lectures, presentations, and discussions of parasites and parasitic diseases. If you don't see an image you would like, please send us a request at [ncvp@okstate.edu](mailto:ncvp@okstate.edu).

## SPECIMEN, TEACHING/RESEARCH MATERIAL, & IMAGE PROVISION

Need particular parasitology specimens, materials for teaching or research, or captured images? The NCVP is happy to provide these to you, or will strive to place you in contact with someone who can. Request forms are available on the website under the "Resources" tab.

## About the National Center for Veterinary Parasitology

Veterinary parasites impact human health and society in many ways. With the generous support of our sponsors, the National Center for Veterinary Parasitology works to promote greater understanding and control of parasitic diseases in animals through innovative partnerships between academia and industry. Housed in the Center for Veterinary Health Sciences at Oklahoma State University, the center strives to create future generations of veterinary parasitologists, conduct targeted research, and provide diagnostic and consulting services worldwide.





**NCVP**  
National Center for Veterinary Parasitology

## Selected Publications from NCVP Members

Our residents, faculty, and board members are a busy group. Below is a very abridged list of just a few of the recent publications from NCVP members (names of board members and residents are bolded). To request the full list or individual reprints, please send an email to [ncvp@okstate.edu](mailto:ncvp@okstate.edu). Most importantly if you have suggestions for future continuing education articles, review papers, or topics you think would be of interest to veterinarians and others interested in parasitology, please send us your suggestions.

### A FEW TO WATCH FOR...

Velasquez L, **Blagburn BL**, Duncan-Decoq R, **Johnson EM**, **Allen KE**, Meinkoth JH, Gruntmeir J, **Little SE**. 2014. Increased prevalence of *Dirofilaria immitis* antigen in canine samples after heat treatment. Vet Parasitol.

Elsemore DA, Geng J, Flynn L, Cruthers L, Lucio-Forster A, **Bowman DD**. 2014. Enzyme-linked immunosorbent assay for coproantigen detection of *Trichuris vulpis* in dogs. J Vet Diagn Invest.

Carmichael RC, Duell JR, Holbrook TC, Herrin BH, Leutenegger CM, O'Connor TP, **Little SE**. 2014. Antibodies reactive to *Ehrlichia* spp. are common in horses in the southern United States. VBZD.

**Rodriguez JY**, Lewis BC, Snowden KF. Distribution and characterization of *Heterobilharzia americana* in dogs in Texas. Vet Parasitol.

**Starkey LA**, Barrett AW, Chandrashekar R, Stillman BA, Tyrrell P, Thatcher B, Beall MJ, Gruntmeir JM, Meinkoth JH, **Little SE**. 2014. Development of antibodies to and PCR detection of *Ehrlichia* spp. in dogs following natural tick exposure. Vet Microbiol. In review.

Lucas AS, Swecker WS Jr, Lindsay DS, Scaglia G, Neel JP, Elvinger FC, **Zajac AM**. 2014. A study of the level and dynamics of *Eimeria* populations in naturally infected, grazing beef cattle at various stages of production in the Mid-Atlantic USA. Vet Parasitol.

### 2014 TO DATE...

**Adolph CA**, Downie K, Snider T, **Little SE**. 2014. High prevalence of covert infection with gastrointestinal helminths in cats. JAAHA. In press.

Prullage JB, Knaus M, **Bowman DD**, Chester ST, Visser M, Rehbein S, Rosentel J. 2014. Anthelmintic effect of plant extracts containing condensed and hydrolyzable tannins on *Caenorhabditis elegans*, and their antioxidant capacity. Vet Parasitol. 202(1-2):30-3.

Coles TB, **Dryden MW**. 2014. Insecticide/acaricide resistance in fleas and ticks infesting dogs and cats. Parasit Vectors. 7:8.

Wood J, **Johnson EM**, **Allen KE**, Campbell GA, Rezabek G, Bradway DS, Pittman LL, **Little SE**, Panciera RJ. 2014. J Vet Diagn Invest. 25(5): 662-5.

**Little SE**, Munzing C, Heise SR, **Allen KE**, **Starkey LA**, **Johnson EM**, Meinkoth JH, **Reichard MV**. 2014. Pre-treatment with heat facilitates detection of antigen of *Dirofilaria immitis* in canine samples. Vet Parasitol. Epub available Jan 18.

Mowlavi G, Farzad F, Kheirkhah A, Mobedi I, **Bowman DD**, Naddaf SR. 2014. Human ocular onchocerciasis caused by *Onchocerca lupi* (Spirurida, Onchocercidae) in Iran. J Helminthol. 88(2):250-5.

**Little SE**. Stillman BA, Monn M, Liu J, Thatcher B, Foster P, Andrews B, Little S, Eberts M, Breitschwerdt E, Beall M, Chandrashekar R. 2014. Performance of a new commercially available in-clinic ELISA for the detection of antibodies to *Ehrlichia ewingii* (granulocytic ehrlichiosis) and *Anaplasma platys* (thrombocytopenic anaplasmosis) in dogs. JAVMA. In press.

Lucio-Forster A, Eberhard ML, Cama VA, Jenks MH, Jones C, Sanders SY, Pongratz JP, **Bowman DD**. 2014. First report of *Dracunculus insignis* in two naturally infected cats from the northeastern USA. J Feline Med Surg. 16(2):194-7.

**Little SE**. Stillman BA, Monn M, Liu J, Thatcher B, Foster P, Andrews B, Little S, Eberts M, Breitschwerdt E, Beall M, Chandrashekar R. 2014. Performance of a new commercially available in-clinic ELISA for the detection of antibodies to *Ehrlichia ewingii* (granulocytic ehrlichiosis) and *Anaplasma platys* (thrombocytopenic anaplasmosis) in dogs. JAVMA. In press.

Knaus M, Baker CF, **Reinemeyer CR**, Chester ST, Rosentel J, Rehbein S. 2014. Efficacy of a novel topical combination of fipronil, (S)-methoprene, eprinomectin and praziquantel against adult and larval stages of *Toxocara cati* in cats. Vet Parasitol. 202(1-2):34-9.

**Little SE**, Raymond MR, **Thomas JE**, Gruntmeir J, **Hostetler JA**, Meinkoth JH, **Blagburn BL**. 2014. Heat treatment prior to testing allows detection of antigen of *Dirofilaria immitis* in feline serum. Parasites and Vectors. 7(1):1.

### HIGHLIGHTS FROM 2013...

Kopp S, **Blagburn B**, Coleman G, Davis W, Denholm I, Field C, **Hostetler J**, Mencke N, Rees R, Rust M, Schroeder I, Tetzner K, Williamson M. 2013. Monitoring field susceptibility to imidacloprid in the cat flea: a world-first initiative twelve years on. Parasitol Res. 112 Suppl 1:47-56.

Davis LL, Puozzo A, Vitalo DC, Ghazala Z, Zhuo SY, Robinson L, Jeong E, Mohammed HO, Liotta JL, Jacquet P, **Bowman DD**. 2013. Enzyme-linked immunosorbent assay using a crude antigen extract to measure *Cuterebra*-specific immunoglobulin G in sera of cats with systemic infections. J Vet Diagn Invest. 25(3):395-401.

**Dryden MW**, Payne PA, Smith V, Heaney K, Sun F. 2013. Efficacy of indoxacarb applied to cats against the adult cat flea, *Ctenocephalides felis*, flea eggs and adult flea emergence. Parasit Vectors. 6:126.

McArthur MJ, **Reinemeyer CR**. 2013. Herding the U.S. cattle industry toward a paradigm shift in parasite control. Vet Parasitol. Dec 31

**Reichard MV**, **Thomas JE**, Arther RG, **Hostetler JA**, Raetz KL, Meinkoth JH, **Little SE**. 2013. Efficacy of an imidacloprid 10%/flumethrin 4.4% collar (Seresto®, Bayer) for Preventing the Transmission of *Cytauxzoon felis* to Domestic Cats by *Amblyomma americanum*. Parasitol Res. 112 Suppl 1: 11-20.

Cleeland LM, **Reichard MV**, Tito RY, Reinhard KJ, Lewis CM Jr. 2013. Clarifying prehistoric parasitism from a complementary morphological and molecular approach. J Archaeol Sci. 40(7):3060-3066.

**Lee AC**, Epe C, **Bowman DD**. 2013. Comparison of *Ancylostoma caninum* worm counts acquired by endoscopy and necropsy. Vet Parasitol. 196(3-4):538-40.

**Little SE**. 2013. Future challenges for parasitology: vector control and one health in the Americas. Vet Parasitol. 195 (3-4); 249-55.

**Starkey LA**, Panciera RJ, Paras K, **Allen KE**, Reiskind M, **Reichard MV**, **Johnson EM**, **Little SE**. 2013. Diversity of *Hepatozoon* spp. in coyotes from the southcentral United States. J Parasitol. 99(2):375-8.

Whitney TR, Wildeus S, **Zajac AM**. 2013. The use of redberry juniper (*Juniperus pinchotii*) to reduce *Haemonchus contortus* fecal egg counts and increase ivermectin efficacy. Vet Parasitol. 197(1-2):182-8.

Marchiondo AA, Holdsworth PA, Fourie LJ, Rugg D, Hellmann K, **Snyder DE**, **Dryden MW**. 2013. WAAVP guidelines for evaluating the efficacy of parasitocides for the treatment, prevention and control of flea and tick infestations on dogs and cats. Vet Parasitol. 194(1):84-97.