



**SPECIAL POINTS OF INTEREST:**

- New people join NCVP
- NCVP funded research is published
- Spring in-person NCVP meeting
- Outreach efforts

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## People

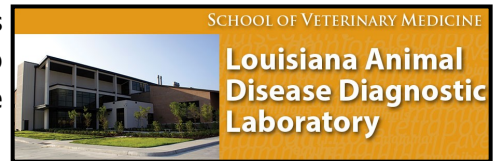
### NCVP Names Merck Resident in Veterinary Parasitology



The **NCVP** is **delighted** to announce that

**Dr. Cassan**

**Pulaski** (pictured left), currently a PhD student with Dr. Jack Malone at Louisiana State University, has been named the **Merck Resident** in Veterinary Parasitology. Cassan received both her BS (Biology) and BA (Psychology) degrees from the University of Mississippi in 2008 and went on to earn, concurrently, her MPH and DVM from Louisiana State University's School of Public Health and School of Veterinary Medicine in 2012 and 2013, respectively. Cassan is passionate about veterinary parasitology and plans to develop a career that will allow her to pursue her interests in veterinary parasitology with an international scope and one health perspective. Her dissertational research focuses on **macrocyclic lactone resistance in *Dirofilaria immitis***. She is also actively engaged in diagnostic parasitology at the **Louisiana Animal Disease Diagnostic Laboratory**, experience which will help prepare her to become board certified in veterinary parasitology through the ACVM. **Congratulations Cassan!**



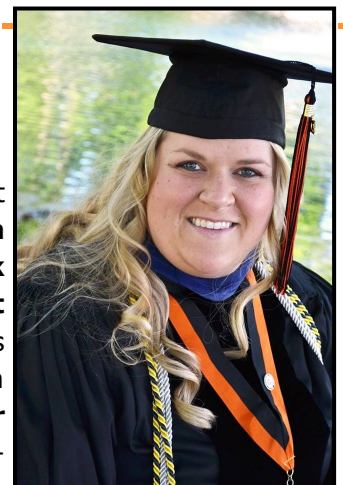
SCHOOL OF VETERINARY MEDICINE

**Louisiana Animal Disease Diagnostic Laboratory**

### Bayer Resident Dr. Starkey Graduates

On April 13, 2015, **Dr. Lindsay Starkey**, Bayer Resident in Veterinary Parasitology, **defended her dissertation** during a seminar entitled "***Ehrlichia* spp. of dogs: Risk of infection, persistence of rickettsemia, and impact on reinfection.**" Her presentation was fantastic (as usual) and her research generated many questions from the audience. **Dr. Sidney Ewing**, the researcher for whom ***Ehrlichia ewingii*** is named, was in attendance—so cool!

*(article continued on the following page)*



**Congratulations, Lindsay Starkey, DVM, PhD!**

## Bayer Resident Dr. Lindsay Starkey Graduates



Dr. Starkey (left) with her PhD mentor, Dr. Susan Little (right) during graduation on May 8, 2015. Congratulations, Dr. Starkey!

Dr. Starkey conducted her PhD research under the mentorship of **Dr. Susan Little**, Regents Professor and Endowed Chair in the Department of Veterinary Pathobiology at **Oklahoma State University**. Lindsay, a Kansas native, earned a Bachelor's Degree in Animal Science from the University of Arkansas and a veterinary degree from Oklahoma State University in 2011. After completing her DVM, she became one of the pioneer residents of the NCVP as the Bayer Resident in Veterinary Parasitology. **Lindsay graduated May 8, 2015 with her PhD. Congratulations Lindsay!** The NCVP is tremendously proud of you. **Best of luck in your future endeavors!**



Larva, nymph, adult male, and adult female of *Amblyomma americanum*, the lone star tick. The lone star tick is the vector of *Ehrlichia ewingii* and a major focus of Dr. Starkey's PhD research.

## NCVP Welcomes New Board Member Dr. Edmonds



Dr. Jenifer Edmonds

The NCVP is thrilled to announce **Jenifer Edmonds, DVM, PhD**, as the **newest academic member of the NCVP Board**. Dr. Craig Reinemeyer of East Tennessee Clinical Research stepped down from the position in 2014 after serving on the NCVP Board since its inception. Extensive discussion of potential candidates that would best complement current members' expertise led the Board to invite Dr. Edmonds. **Dr. Edmonds** is a native of Idaho and a 1998 graduate of Washington State University, College of Veterinary Medicine. After earning her DVM, Dr. Edmonds obtained her PhD from *(article continued on next page)*



**Anterior end of an adult *Strongylus vulgaris*. Note characteristic leaf crown and two “teeth” within the buccal cavity.**

Louisiana State University under the supervision of Dr. Tom Klei. Her research focused on the characterization and regulation of the equine humoral cellular response to ***Strongylus vulgaris***, which further delineated the Th1/Th2 paradigm in horses.

Since 2002, Dr. Edmonds has served as **Investigator/Parasitologist at Johnson Research**, a family-owned independent contract research organization that has been in operation for more than 40 years. She is involved in the development, conduct, and monitoring of target animal safety, pharmacokinetic, and product efficacy studies in beef and dairy cattle and horses. NCVP is excited to have her on board!

## Dr. Chris Adolph, Veterinary Specialist with Zoetis



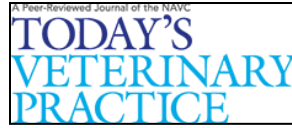
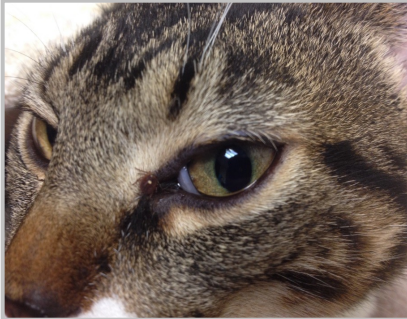
**Dr. Chris Adolph** (left) was enormously successful as veterinarian and owner of Southpark Veterinary Hospital in Broken Arrow, Oklahoma for many years. He earned his DVM from Oklahoma State University in 1996 and immediately went into practice where he developed a particular interest in parasitology, which led him to pursue a Master’s Degree evaluating the prevalence of helminths and vector-borne disease agents in cats and comparing fecal parasite egg

recovery techniques under the mentorship of NCVP Co-Director **Dr. Susan Little**, Regents Professor and Krull-Ewing Endowed Chair, at Oklahoma State University. After completing his graduate work in 2013, Chris continued in private practice and as a regular speaker at parasitology-focused continuing education seminars. Chris decided that he wanted to have a “larger voice” in the field of parasitology and so after much thought, decided to sell his veterinary practice and take on the role of **Parasitology Specialist** on the Veterinary Specialty Team at **Zoetis** where he collaborates with veterinary medical research and development to address the need for novel veterinary parasite control strategies. Dr. Adolph will continue to speak at continuing education meetings and now serves as the Zoetis representative to the National Center for Veterinary Parasitology. Congratulations on the new position, Chris!



**Drs. Chris Adolph and Lisette Wigton examine a slide at Southpark Veterinary Hospital.**

## NCVP Partners with Journal for Parasitology Series



We are happy to announce that the NVCP is partnering with [Today's Veterinary Practice](http://todaysveterinarypractice.navc.com/) to publish a Parasitology series covering topics important to the veterinary health of domestic animals. This series will be written by NCVP residents under the guidance of their faculty mentors. The premiere article of the NCVP resident series, authored by **Drs. Yoko Nagamori** and **Mason Reichard**, appears in the May/June 2015 issue of *Today's Veterinary Practice* and is entitled "**Feline Tick-Borne Disease.**" This article contains updated information about ticks and associated tick-borne diseases of cats in the United States. [Today's Veterinary Practice](http://todaysveterinarypractice.navc.com/) can be found online at <http://todaysveterinarypractice.navc.com/>.

## NCVP Affiliate Resident Dr. Brian Herrin Wins 3MT Competition



On March 12, 2015, the same day that NCVP affiliate resident **Dr. Brian Herrin** (pictured left—in the bow tie) took his oral qualifying examinations (and passed!), he competed in the Oklahoma State University Center for Veterinary Health Sciences **3-Minute Thesis Competition...and WON!** What a day! Brian's presentation, entitled "**Lyme Disease: An Expanding Threat,**" explained the use of mapping in-clinic canine vector-borne disease (VBD) positive test results at the



county level in assessing the spread of VBD into new geographic areas. Dr. Herrin is originally from Lindsay, Oklahoma. He earned his Bachelor's in Biochemistry and Molecular Biology in 2009 from **Oklahoma State University** and then entered the combined **DVM-PhD program**. He completed his DVM in 2014 and then entered the PhD program full-time, working under **Dr. Susan Little** at **Oklahoma State University** to investigate the utility of canine serosurvey data and field tick collection in more accurately determining the distribution of **Lyme borreliosis** in North America. Although Brian originally considered specializing in pathology, he realized that his passion for parasitology was greater and now plans to pursue ACVM board certification in parasitology.

Male and female *Ixodes scapularis*, commonly known as the black-legged or deer tick. This tick is the vector of *Borrelia burgdorferi*, the causative agent of Lyme borreliosis, in the northeastern and upper midwestern regions of the United States. Dr. Brian Herrin, affiliate resident with the NCVP, is conducting field and epidemiologic research to better understand the changing distribution of this disease in eastern North America. Click [here](#) to watch Brian's 3MT.



## 2013/2014 NCVP Funded Research Published!

Since 2013 the NCVP has been funding research on relevant parasite issues for members of the **American Association of Veterinary Parasitologists (AAVP)**. The first round of funding occurred in 2013/2014. Those projects are coming to fruition and results are beginning to be published!

A manuscript entitled, "**Angiostrongylus cantonensis in introduced gastropods in southern Florida**" by **Dr. Heather Stockdale-Walden** of the University of Florida was recently accepted for publication in the *Journal of Parasitology*. Dr. Stockdale-Walden's research demonstrated that two additional terrestrial snails, *Bradybaena similaris* and *Alcadia striata* around Miami, Florida, can serve as intermediate hosts for *A. cantonensis*.

**Dr. Rick Gerhold** at the University of Tennessee also has a manuscript, "**Trichomonas gallinae persistence in four water treatments,**" accepted for publication in the *Journal of Wildlife Diseases*. Dr. Gerhold's team tested the persistence of *T. gallinae* in various communal water sources including distilled water, quarry water, bird bath water, and rain barrel water. Their findings indicated that *T. gallinae* can persist for up to 60 minutes in the various water sources, thus providing a source of infection to naïve birds. Please look for each of these articles in upcoming issues of the respective journals.

We are proud to announce that the **NCVP will fund a third round of grants in 2015/2016**. The upcoming request for proposals will be distributed to AAVP members in **May 2015**. Grants awarded by the NCVP thus far are listed below and on the following page.



### 2014/2015:

- **Dr. Roberto Cortinas**, University of Nebraska-Lincoln — Assessment of various essential oils and their constituents for activity versus northern fowl mites.
- **Dr. Timothy Geary**, McGill University — *Dirofilaria immitis* microRNAs influence the expression of canine immune system genes.

## Events continued...



Top: First-stage larvae of *Angiostrongylus cantonensis* from a rat fecal sedimentation.

Bottom: *Bradybaena similaris* snails, an intermediate host of *Angiostrongylus cantonensis*.

Above photos from Dr. Stockdale-Walden, University of Florida.



Stained trophozoite of *Trichomonas gallinae*.



Characteristic caseous esophageal lesions caused by *Trichomonas gallinae* in a columbiforme.

(continued from the previous page)

- **Dr. John Gilleard**, University of Calgary — Population genomic analysis of invasion pathways and transmission dynamics of *Dicrocoelium dentriticum*.
- **Dr. Sarah Hamer**, Texas A&M — Culture-based detection and next generation sequence analysis of *Trypanosoma cruzi* from vectors and domestic dogs along the US-Mexico border.
- **Dr. Jennifer Ketzis**, Ross University — Evaluation of two praziquantel treatment methods for *Platynosomum* spp. infections and cholecystocentesis as a diagnostic tool in cats.
- **Dr. Charles Mackenzie**, Michigan State University — Characterizing new molecular approaches to the diagnosis of heartworm infection in dogs and cats.
- **Dr. Michael Suderman**, Cell Systems-3D — Developmental and biochemical investigations of *Dirofilaria immitis* from infective (L3) larvae to patency in an in vitro three-dimensional primary canine dermal cell microenvironment.
- **Dr. Adrian Wolstenholme**, University of Georgia — Microfluidic electrophysiological recordings from *Haemonchus contortus* as a new tool for anthelmintic research.
- **Dr. Michael Yabsley**, University of Georgia — Mange in black bears (*Ursus americanus*) in Pennsylvania: etiologic agent(s), diagnostic assays, and environmental persistence of mites.

2013/2014:

- **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*, *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.

## Keynote Talk by NCVP Board Member Dr. Byron Blagburn



The NCVP held its **Annual Spring 2015 meeting of the Board in Oklahoma City**, Oklahoma on April 16–17. On the evening of April 16, over dinner at Red Prime Steakhouse in downtown OKC, world renowned parasitologist **Dr. Byron Blagburn** of Auburn University delivered the keynote presentation **“Academic Collaboration with Industry: Mission Oriented or Mission Impossible”** to NCVP Board members and residents and Oklahoma State University veterinary and graduate students interested in parasitology. The talk, which described dynamics between academia and industry when the entities partner, was met with tremendous interest from the students. **Thank you so much, Dr. Blagburn!**

The NCVP Board meeting was extremely productive, covering topics including **NCVP collaborations, the small grants program, plans for AAVP 2015, and NCVP resident training, updates on progress, and strategies to ensure professional development.** A brainstorming session was held to gather input from Board members on essential professional and parasitology expertise that NCVP residents should acquire during their training.



Left: Dr. Zajac leads a discussion during the NCVP Board Meeting as Drs. Little, Adolph, Guerino, and Edmonds listen. Right: Drs. Guerino, Edmonds, and Zajac make notes.



Left: Drs. Carithers, and Reichard organize ideas from the brainstorming session as Dr. Hostetler listens. Right: Drs. Blagburn and Snyder consider the desired resident skills compiled.



## Events continued...

Below: NCVP Board members present for the annual Spring 2015 in-person meeting. Front row, from left to right: Drs. Susan Little (NCVP Co-Director, Oklahoma State University), Dan Snyder



(Elanco Animal Health), Joe Hostetler (Bayer), Doug Carithers (Merial), Chris Adolph (Zoetis), and Kelly Allen (NCVP Project Leader, Oklahoma State University). Back row, from left to right: Drs. Anne Zajac (Virginia Tech), Frank Guerino (Merck Animal Health), Jenifer Edmonds (Johnson Research), Mason Reichard (NCVP Co-Director, Oklahoma State University), and Byron Blagburn (Auburn University). Dr. Dwight Bowman not pictured) of Cornell University was also in attendance.

## NCVP Residents/Project Leader at Spring 2015 CAPC Meeting

NCVP residents **Drs. Alice Lee** (Novartis, Cornell University) and **Lindsay Starkey** (Bayer, Oklahoma State University) and NCVP Project Leader **Dr. Kelly Allen** (Oklahoma State University) were invited to attend the 2015 Companion Animal Parasite Council (CAPC) Annual Spring meeting, which was held in Atlanta, Georgia on March 6–8. NCVP Co-Director **Dr. Susan Little**, **CAPC Emeritus Member and Current President**, and **CAPC Executive Director Dr. Chris Carpenter** chaired the meeting. Other NCVP Board Members in attendance were CAPC Emeritus Members and Past Presidents **Drs. Byron Blagburn** (Auburn University) and **Dwight Bowman** (Cornell University), and NCVP industry sponsor representatives **Drs. Jason Drake** (Elanco) and **Joyce Login** (Zoetis). Discussed during the meeting was the **tremendous progress** that CAPC has made since its inception in reaching veterinarians and pet owners to provide contemporary information regarding parasite prevalence, diagnosis, treatment, and prevention. Also addressed was the need for the construction of **new prevalence maps and recommendations**. The CAPC 2015 Spring Annual Meeting was energetic, productive, and positive. Alice, Lindsay, and Kelly were very excited to be part of it.



Pictured Above: NCVP residents, Project Leader and Co-Director with several CAPC Board Members at the Annual Spring CAPC meeting. Front row, from left to right: Drs. Lindsay Starkey, Alice Lee, Chris Carpenter, Susan Little, Karen Fling, and Jay Stewart. Back row, from left to right: Drs. Rick Marrinson, Kelly Allen, Michael Yabsley, Craig Prior, and Emilio DeBess.





During the Spring 2015 Companion Animal Parasite (CAPC) meeting Board, members and attendees were periodically surveyed using clickers. In the photo to the left, NCVP members Drs. Dwight Bowman, Alice Lee, Lindsay Starkey, and Kelly Allen select their answers to one of the questions posed.

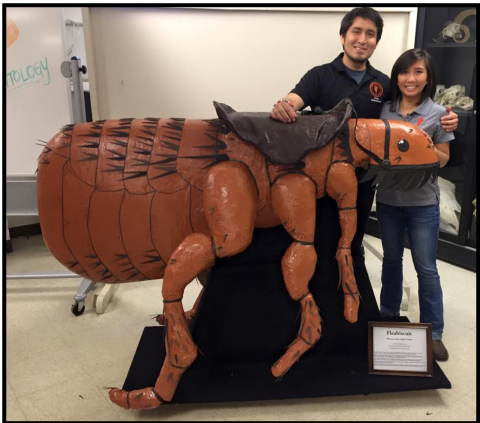
## Parasites for the People!

### Continuing Efforts to Promote the NCVP

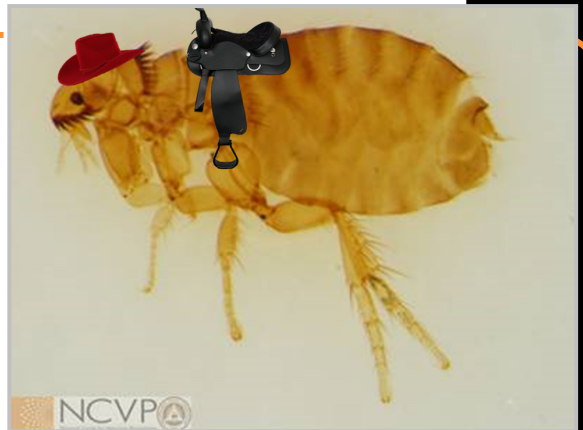
**Dr. Susan Little**, Co-Director of the National Center for Veterinary Parasitology, continues to spread the NCVP message throughout North America. In the past few months she has shared information about NCVP resources and opportunities for careers in parasitology with faculty, graduate, and veterinary students at **Purdue** and **Virginia Tech**, and even through a **TEDX presentation** here in Stillwater at Oklahoma State. The TEDX talk focused on **how parasite control in pets supports the human-animal bond** but also addressed how the **NCVP supports the discipline of veterinary parasitology**.



## A GIANT Flea...Seriously!



Hold on to your hats, everyone – creative parasitology outreach concepts just jumped to the next level! **Jose Oyola** and **Debra Nguyen** (Oklahoma State, DVM 2017),



AAVP student chapter members and parasite enthusiasts, designed and built a giant flea to use as part of the veterinary parasitology exhibit at

**Oklahoma State University's Center for Veterinary Health Sciences Open House** event this spring. *(article continued on the following page)*

# Parasites for the People! continued

The project was funded through a **Price Scholarship**, a program that supports educational efforts by veterinary students that involve a creative aspect. Made of a durable polymer and adorned with anatomically correct combs and setae, the flea sports a saddle suitable for riding and a cowboy hat (Go Pokes!). **"Fleabiscuit"** (what else could one name it?!?) was a huge hit with all the children (and more than a few of the adults) in attendance. **Pictured below are snapshots of the GIANT flea in the making. Enjoy!**



## 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. To learn more, please visit [www.ncvetp.org](http://www.ncvetp.org).





## 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 in parasitology, please send us your suggestions.

### 2015 TO DATE...

Hayes B, Schnitzler B, Wiseman S, **Snyder DE**. 2015. Field evaluation of the efficacy and safety of a combination of spinosad and milbemycin oxime in the treatment and prevention of naturally acquired flea infestations and treatment of intestinal nematode infections in dogs in Europe. *Vet Parasitol.* 207(1-2):99-106.

**Reichard MV**, Criffield M, **Thomas JE**, Paritte JM, Cunningham M, Onorato D, Logan K, Interisano M, Marucci G, Pozio E. 2015. High prevalence of *Trichinella pseudospiralis* in Florida panthers (*Puma concolor coryi*). *Parasit Vectors.* 8:67.

Rizzi TE, **Reichard MV**, Cohn LA, Birkenheuer AJ, Taylor JD, Meinkoth JH. 2015. Prevalence of *Cytauxzoon felis* infection in healthy cats from enzootic areas in Arkansas, Missouri, and Oklahoma. *Parasit Vectors.* 8(1):13.

Varloud M, Fourie JJ, **Blagburn BL**, Deflandre A. 2015. Expellency, anti-feeding and speed of kill of a dinotefuran-permethrin-pyriproxyfen spot-on in dogs weekly challenged with adult fleas (*Ctenocephalides felis*) for 1 month-comparison to a spinosad tablet. *Parasitol Res.* 2015 Apr 15.

Rosypal AC, Houk AE, **Zajac AM**, Lindsay DS. 2015. Prevalence of IgG antibodies to *Toxoplasma gondii* in veterinary and undergraduate students at Virginia Tech, Blacksburg, Virginia. *Zoonoses Public Health.* 2015 Mar 6.

Bowdridge SA, **Zajac AM**, Notter DR. 2015. St. Croix sheep produce a rapid and greater cellular immune response contributing to reduced establishment of *Haemonchus contortus*. *Vet Parasitol.* 208(3-4):204-10.

Bourguinat C, **Lee AC**, Lizundia R, **Blagburn BL**, Liotta JL, Kraus MS, Keller K, Epe C, Letourneau L, Kleinman CL, Paterson T, Gomez EC, Montoya-Alonso JA, Smith H, Bhan A, Peregrine AS, Carmichael J, **Drake J**, Schenker R, Kaminsky R, **Bowman DD**, Geary TG, Prichard RK. 2015. Macrocytic lactone resistance in *Dirofilaria immitis*: Failure of heartworm preventives and investigation of genetic markers for resistance. *Vet Parasitol.* Apr 13.

Otranto D, Giannelli A, Latrofa MS, Dantas-Torres F, Trumble NS, Chavkin M, Kennard G, Eberhard ML, **Bowman DD**. 2015. Canine Infections with *Onchocerca lupi* Nematodes, United States, 2011-2014. *Emerg Infect Dis.* 21(5):868-71.

Herd HR, Sula MM, **Starkey LA**, Panciera RJ, **Johnson EM**, Snider TA, Holbrook TC. 2015. *Sarcosystis fayeri*-induced granulomatous and eosinophilic myositis in two related horses. *Vet Pathol.* In press.

Paddock CD, Dension AM, **Dryden MW**, Noden BH, Lash RR, Abdelghani SS, Evans A, Ganta RR, **Little SE**. 2015. High prevalence of "*Candidatus Rickettsia andeanae*" and apparent exclusion of *Rickettsia parkeri* in adult *Amblyomma maculatum* (Acari: Ixodidae) from Kansas and Oklahoma. *J Med Entomol.* 6(3):297-302.

**Little SE**, **Hostetler JA**, **Thomas JE**, Bailey KL, Barrett AW, Gruntmeir K, Gruntmeir J, **Starkey LA**, **Blagburn BL**. 2015. Moxidectin steady state prior to inoculation protects cats from subsequent, repeated infection with *Dirofilaria immitis*. *Parasit Vectors.* 8:107.

**Starkey LA**, Barrett AW, Beall MJ, Chandrashekar R, Thatcher B, Tyrrell P, **Little SE**. 2015. Persistent *Ehrlichia ewingii* infection in dogs. *JVIM.* In press.

Barrett AW, Noden BH, Gruntmeir JM, Holland T, Mitcham JR, Martin JW, **Johnson EM**, **Little SE**. 2015. County scale distribution of *Amblyomma americanum* in Oklahoma: addressing local deficits in tick maps based on passive reporting. *J Med Entomol.* In press.

**Drake J**, Gruntmeir J, Merritt H, **Allen L**, **Little SE**. 2015. False negative antigen tests in dogs infected with heartworm and placed on macrocyclic lactone preventives. *Parasit Vectors.* 8:68.

### HIGHLIGHTS FROM 2014...

**Rodriguez JY**, Lewis BC, Snowden KF. Distribution and characterization of *Heterobilharzia americana* in dogs in Texas. *Vet Parasitol.* 203(1-2):35-42.

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.* 202(3-4):201-6.

**Bowman DD**, **Reinemeyer CR**, Wiseman S, **Snyder DE**. 2014. Efficacy of milbemycin oxime in combination with spinosad in the treatment of larval and immature adult stages of *Ancylostoma caninum* and *Toxocara canis* in experimentally infected dogs. *Vet Parasitol.* 205(1-2):134-9.

Meadows C, **Guerino F**, Sun F. 2014. A randomized, blinded, controlled USA field study to assess the use of fluralaner tablets in controlling canine flea infestations. *Parasit Vectors.* 7:375.

Driver JH, Ross JH, **Guerino F**, Wrzesinski C. 2014. Measurement of the temporal transferability of indoxacarb to cotton gloves from spot-on treated dogs. *J Toxicol Environ Health A.* 77(12):696-704.

Baker CF, Tielemans E, Pollmeier MG, McCall JW, McCall SD, Irwin J, Chester ST, **Carithers DS**, Rosental JK. 2014. Efficacy of a single dose of a novel topical combination product containing eprinomectin to prevent heartworm infection in cats. *Vet Parasitol.* 202(1-2):49-53.

Stich RW, **Blagburn BL**, **Bowman DD**, Carpenter C, Cortinas MR, Ewing SA, Foley D, Foley JE, Gaff H, Hickling GJ, Lash RR, **Little SE**, et al. 2014. Quantitative factors proposed to influence the prevalence of canine tick-borne disease agents in the United States. *Parasit Vectors.* 7:417.

**Pulaski CN**, Malone JB, Bourguinat C, et al. 2014. Establishment of macrocyclic lactone resistant *Dirofilaria immitis* isolates in experimentally infected laboratory dogs. *Parasit Vectors.* 7:494.

Dubey JP, Casey SJ, **Zajac AM**, Wildeus SA, Lindsay DS, Verma SK, Oliveira S, Kwok OC, Su C. 2014. Isolation and genetic characterization of *Toxoplasma gondii* from alpaca (*Vicugna pacos*) and sheep (*Ovis aries*). *Trop Anim Health Prod.* 46(8):1503-7.

De Wolf BM, **Zajac AM**, Hoffer KA, et al. 2014. The effect of vitamin E supplementation on an experimental *Haemonchus contortus* infection in lambs. *Vet Parasitol.* 205(1-2):140-9.

**Lee AC**, **Hostetler JA**, **Bowman DD**. 2014. Assessing the speed of kill of hookworms, *Ancylostoma caninum*, by Advantage Multi® for Dogs using endoscopic methods. *Vet Parasitol.* 204(3-4):402-6.

Elsmore 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. *JVDI.* 26(3):404-411.

**Little SE**, Beall MJ, **Bowman DD**, Chandrashekar R, Stamaris J. 2014. Canine infection with *Dirofilaria immitis*, *Borrelia burgdorferi*, *Anaplasma* spp., and *Ehrlichia* spp. in the United States, 2010-2012. *Parasit Vectors.* 7:257.

**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.* 173(3-4):379-84.

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. Merogonic stages of *Theileria cervi* in mule deer (*Odocoileus hemionus*). *JVDI.* 25(5): 662-5.

**Herrin BH**, **Zajac AM**, **Little SE**. 2014. Confirmation of *Borrelia burgdorferi* sensu stricto and *Anaplasma phagocytophilum* in *Ixodes scapularis*, southwestern Virginia. *VBZD.* 14:821-823.