

## SPECIAL POINTS OF INTEREST:

- More success from Resident Alums!
- NCVP at AAVP in Denver
- New BI Resident Named

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## People

### Congratulations to Dr. Alice Lee!

In June of 2018, **Alice Che Y. Lee**, DVM, PhD, DACVM-Parasitology joined the faculty at the University of Florida College of Veterinary Medicine as an Assistant Professor of Parasitology and Clinical Diagnostics. In this role she will conduct research, train veterinary students and graduate students, and lead the veterinary parasitology diagnostic service. University of Florida has a longstanding reputation for excellence in veterinary parasitology, amazing parasitology faculty, and a superb research infrastructure to support Alice's current and future research endeavors.



Alice earned her DVM from Ontario Veterinary College at the University of Guelph in 2006 and her PhD from Cornell University in 2016 working with NCVP board member and parasitologist extraordinaire Dr. Dwight Bowman, an honorary diplomate of the ACVM (Parasitology).



Alice's graduate research furthered our understanding of the immunobiology of *Toxocara cati* and *Toxoplasma gondii* in paratenic and intermediate hosts and was recognized by both the AAVP-CAPC Graduate Student Award in Zoonotic Disease and the AAVP-Merck Outstanding Graduate Student Award.

During her training, Alice served as the inaugural Novartis Resident in veterinary parasitology. She also was instrumental in developing novel methods to document and quantify helminth infections in dogs using capsule endoscopy, work she plans to continue at UF. Other interests include host-parasite immune interactions, neglected parasite infections and zoonotic diseases, and diagnostic parasitology.

**Congratulations Alice (and UF) -  
very well deserved!**

## Dr. Kathryn Duncan Named BI Resident

We are delighted to announce that **Dr. Kathryn Duncan**, DVM, was named the **BI Resident in Veterinary Parasitology** at the March 2018 Board Meeting of the NCVF.

Originally from Tennessee, Dr. Duncan joined the graduate program at Oklahoma State University in July 2018 after completing her veterinary degree at the University of Tennessee. While in veterinary college she conducted research on cestodes of wild turkeys under the direction of Drs. Rick Gerhold and John Schaeffer, both excellent veterinary parasitologists, and refined her diagnostic skills working in the clinical parasitology lab at UT.

Dr. Duncan will complete her 4-year combined PhD and clinical residency training under the direction of Dr. Susan Little, Co-Director of the NCVF. She'll also have the opportunity to learn diagnostic parasitology from Dr. Yoko Nagamori who leads the parasitology service at the Oklahoma Animal Disease Diagnostic Laboratory and will participate in all aspects of parasitology research and teaching at OSU.

**Congratulations Kathryn—and welcome!**



**Dr. Kathryn Duncan,**  
BI Resident in  
Veterinary Parasitology



**Boehringer  
Ingelheim**



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## Dr. Jeba Jesudoss Chelladurai wins AAVP-CAPC Award!

**Dr. Jesudoss Chelladurai**, NCVF Resident at Iowa State University under the direction and mentorship of Dr. Matt Brewer, was selected as the recipient of the 2018 AAVP-CAPC Graduate Student Award in Zoonotic Disease.

Jeba's dissertational research focuses on the pharmacology of ascarids, including *Toxocara canis*, the leading cause of human toxocariasis worldwide.

The award, which consists of a travel grant, plaque, and \$1,000 scholarship from CAPC, recognizes excellence in graduate course work, research, and research publications. Given Jeba's amazing research accomplishments to date we were delighted but not at all surprised that she was selected.

**Way to go, Jeba—we are so happy for you!**



**Dr. Jeba Jesudoss Chelladurai, NCVF Resident, received the 2018 AAVP-CAPC Graduate Student Award in Zoonotic Disease.**

## Events



## NCVP at AAVP 2018 in Denver

Once again, NCVP made a strong—and fun!—showing at the annual AAVP meeting. The table was prominently positioned and frequently visited as attendees enjoyed the new tattoo designs, slap bands, and pop sockets.

Also on display were tick specimen sets showing different species of ticks suspended in hand sanitizer and easily viewed through the glass vials.

After the meeting, every veterinary college in the United States and Canada was provided with a specimen set courtesy of the NCVP. The hand sanitizer keeps the ticks suspended, allowing ease of viewing while still enabling those teaching parasitology to remove the ticks from the labeled vials for closer examination or testing purposes.

A very **special thanks to AAVP** for letting us be part of the fabulous **63rd annual meeting!**



One of the popular temporary tattoos available at the NCVP table.



NCVP provided teaching specimens to veterinary parasitology instructors across North America.

## NCVP Resident Clicker Session another Smashing Success!

So long as there are parasites, there will be clicker cases! The residents again put together a wonderfully diverse selection of cases. From *Haemaphysalis* to *Babesia*, bears with mange, birds with flies, boars with worms, and horses with verminous arteritis, there was something for everyone to enjoy (ok, not the horse so much.)



Dr. Kelsey Paras, Elanco Resident, shares the parasites of a very NOT boring boar with attendees at the 2018 NCVP clicker session.

With Dr. Dwight Bowman, NCVP Board Member and emcee of excellence fearlessly leading the way, the entire session was a true delight for the parasitology senses. We are already looking forward to taking the show international—

**WAAVP 2019, here we come!**



Left to right, Drs. Grace Van Hoy, Kathryn Duncan, Dwight Bowman, Kelsey Paras, Jeba Jesudoss Cheladurai, Ashley Steuer, and Ruth Scimeca.





**NCVP Grant  
Applications  
are accepted  
September 1st  
of each year.  
Be sure to look  
for the Request  
for Proposals on  
the AAVP  
ListServ**

## NCVP Funded Research Presented at AAVP 2018

The NCVP is delighted to help support research efforts of AAVP members through the annual NCVP small grants program. Funding is competitive and awarded based on scientific merit, relevance to clinical or basic veterinary parasitology, and student involvement. A wide variety of research topics have been investigated with NCVP support, and the American Heartworm Society graciously provides additional funding for research focusing on *Dirofilaria immitis*. Below are examples of some of the projects presented at AAVP 2018. Many thanks to the investigators for the excellent work and for sharing their findings!

- Dr. Mostafa Zamanian presented the findings from his research team at the University of Wisconsin from an NCVP grant "Discovery and exploitation of *Dirofilaria immitis* chemosensory receptors for anthelmintic discovery." (Abstract 4)
- Dr. Scott Bowdridge's team from West Virginia University presented their recent findings regarding immune responses to *Haemonchus contortus*, work that was funded in part by an NCVP grant entitled "Identification of cuticular antigenic components found in third stage *H. contortus* larvae and immune responses they elicit." (Abstracts 10-13)
- Dr. Sarah Sapp from the University of Georgia presented her work with Dr. Michael Yabsley showing dogs are inferior hosts of *Baylisascaris procyonis*, research funded in part by an NCVP grant for "Experimental investigation into the significance of domestic dogs as hosts for the raccoon roundworm." (Abstract 42)
- The findings from an NCVP grant to Dr. Emily Jenkins at University of Saskatchewan to research "*Echinococcus* species and genotypes in North America" was presented by Dr. Emilie Bouchard (Abstract 41).
- Dr. Jeba Jesudoss Chelladurai, NCVP Resident at Iowa State University, presented findings from a grant awarded to Dr. Matt Brewer entitled "Development of a rapid field diagnostic test for *Trichostrongylus axei*." (Abstract 111)
- Dr. Julie Sanchez from University of Georgia presented the findings of a grant awarded to Dr. Ray Kaplan to study "Using population genetics to explore origins of macrocyclic lactone resistance in *Dirofilaria immitis*." (Abstract 33)
- Dr. Miguel Suderman presented findings on novel approaches to culturing *Dirofilaria immitis* from his funded proposal "Developmental and biochemical investigations of *Dirofilaria immitis* from infective (L3) larvae to patency in an in vitro three-dimensional (3D) primary canine dermal cell microenvironment." (Abstract 141).



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## Fall 2018 Annual NCVP Meeting in Stillwater, OK

From October 9-11, the NCVP Advisory Board and Residents gathered in Stillwater to celebrate another year of success and plan for the next. The NCVP Residents enjoyed the chance to share their clinical parasitology training and research advances with the board; residents also participated in additional targeted training while in Stillwater. Looks like we are all headed for another great year of parasites!



**Above: Group photo of NCVP Residents, Board Members, and OSU veterinary students after dinner during the Fall 2018 NCVP annual meeting. NCVP Residents were the featured presenters and managed to summarize their many amazing advances into short, 15-minute presentations for all to enjoy. Great job, Residents!**





## 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).



NCVP Residents and Board Members. October 2018.



Center for Veterinary Health Sciences  
Healthy Animals - Healthy People



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## 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.

### 2018 TO DATE...

- Carithers D**, Everett WR, Gross S, Crawford J. Jan 2018. Comparative efficacy of Fipronil/(S)-Methoprene/Pyriproxyfen (FRONTLINE® Gold) and sarolaner (Simparica®) against induced infestations of *Ixodes scapularis* on dogs. *Intern J Appl Res Vet Med*. 16(1):7-12.
- Carithers D**, Everett WR, Gross S, Crawford J. Jan 2018. Efficacy of FRONTLINE® Plus (Fipronil/(S)-Methoprene) and FRONTLINE® Gold (Fipronil/(S)-Methoprene/Pyriproxyfen) against *Ixodes scapularis* at twenty-four hours following weekly tick infestations on dogs. *Intern J Appl Res Vet Med*. 16(1):39-43.
- Carithers D, Dryden M**, Everett WR, Gross S, Crawford J. Jan 2018. Assessment of FRONTLINE® Plus efficacy at 24-counts against Tampa 2014 isolate *Ctenocephalides felis* flea infestations on cats and dogs on days 1, 7, 14, 21, and 28. *Intern J Appl Res Vet Med*. 16(1):52-58.
- Lebon W, Franc M, Bouhsira E, Lienard E, Murray M, **Carithers D**, Beugnet F. Jan 2018. Prevention of flea egg development in a simulated home environment by Frontline® Gold (fipronil, (S)-methoprene, pyriproxyfen) applied topically to cats. *Intern J Appl Res Vet Med*. 16(1):67-73.
- Vercruyse J, Charlier J, Van Dijk J, Morgan ER, **Geary T**, von Samson-Himmelftjerna G, Claerebout E. Feb 2018. Control of helminth ruminant infections by 2030. *Parasitology*. 8:1-10.
- Thomas JE, Ohmes CM, Payton ME, **Hostetler JA, Reichard MV**. Feb 2018. Minimum transmission time of *Cytauxzoon felis* by *Amblyomma americanum* to domestic cats in relation to duration of infestation, and investigation of ingestion of infected ticks as a potential route of transmission. *J Feline Med Surg*. 20(2):67-72.
- O'Neill M, Njouendou JA, Dzimiński M, Burkman E, Ndongmo PC, Kengne-Ouafo JA, Wanji S, Moorhead A, Mackenzie CD, **Geary TG**. Jan 2018. Potential role for flubendazole in limiting filariasis transmission: observations of microfilarial sensitivity. *Am J Trop Med Hyg*. 98(1):21-26.
- Medeiros KL, Lucio-Forster A, **Bowman DD**. Jan/Feb 2018. Evaluation of parasite egg and cyst recovery using devices designed for centrifugal or stationary flotation. *J Am Anim Hosp Assoc*. 54(1):36-45.
- Bader C, **Jesudoss Chelladurai J**, Starling DE, Jones DE, Brewer MT. Feb 2018. Efficacy of injectable praziquantel for elimination of trematode metacercariae in bluegills (*Lepomis macrochirus*) and quantification of parasite death by propidium iodide staining. *Parasitol Res*. 117(2):365-370.
- Savadelis MD, Roveto JL, Ohmes CM, **Hostetler JA**, Settje TL, Dzimiński MT, Moorhead AR. Feb 2018. Evaluation of heat-treating heartworm-positive canine serum samples during treatment with Advantage Multi® for Dogs and doxycycline. *Parasit Vectors*. 11(1):98.
- Little S**, Saleh M, Wohltjen M, **Nagamori Y**. Mar 2018. Prime detection of *Dirofilaria immitis*: understanding the influence of blocked antigen on heartworm test performance. *Parasit Vectors*. 11(1):186.
- Edmonds MD, Vatta AF, Marchiondo AA, Vanimisetti HB, **Edmonds JD**. Mar 2018. Concurrent treatment with a macrocyclic lactone and benzimidazole provides season long performance advantages in grazing cattle harboring macrocyclic lactone resistant nematodes. *Vet Parasitol*. 252:157-162.
- Herrin BH**, Beall MJ, Feng X, Papeş M, **Little SE**. Mar 2018. Canine and human infection with *Borrelia burgdorferi* in the New York City metropolitan area. *Parasit Vectors*. 11(1):187.
- Bowman DD**. Mar 2018. Unsticking from time to create a parasitologic amalgamation. *Vet Parasitol*. 252:98-100.
- Barone CD, **Zajac AM**, Manzi-Smith LA, Howell AB, Reed JD, Krueger CG, Petersson KH. Apr 2018. Anthelmintic efficacy of cranberry vine extracts on ovine *Haemonchus contortus*. *Vet Parasitol*. 253:122-129.
- Njouendou AJ, Fombad FF, O'Neill M, Zofou D, Nutting C, Ndongmo PC, Kengne-Ouafo AJ, **Geary TG**, Mackenzie CD, Wanji S. Apr 2018. Heterogeneity in the in vitro susceptibility of *Loa loa* microfilariae to drugs commonly used in parasitological infections. *Parasit Vectors*. 11(1):223.
- Bortoluzzi C, **Paras KL**, Applegate TJ, Verocai GG. Apr 2018. Comparison between McMaster and Mini-FLOTAC methods for the enumeration of *Eimeria maxima* oocysts in poultry excreta. *Vet Parasitol*. 254:21-25.
- Steuer AE**, Loynachan AT, Nielsen MK. May 2018. Evaluation of the mucosal inflammatory responses to equine cyathostomins in response to anthelmintic treatment. *Vet Immunol Immunopathol*. 199:1-7.
- Fisara P, **Guerino F**, Sun F. Jun 2018. Investigation of the efficacy of fluralaner spot-on (Bravecto®) against infestations of *Ixodes holocyclus* on cats. *Parasit Vectors*. 11(1):366.
- Paras KL**, George MM, Vidyashankar AN, Kaplan RM. Jun 2018. Comparison of fecal egg counting methods in four livestock species. *Vet Parasitol*. 257:21-27.
- Little SE**, Barrett AW, **Nagamori Y**, **Herrin BH**, Normile D, Heaney K, Armstrong R. Jun 2018. Ticks from cats in the United States: patterns of infestation and infection with pathogens. *Vet Parasitol*. 257:15-20.
- Dryden MW**, Canfield MS, Bocon C, Phan L, Niedfeldt E, Kinnon A, Warcholek SA, Smith V, Bress TS, Smith N, Heaney K, Royal C, Normile D, Armstrong R, Sun F. Jul 2018. In-home assessment of either topical fluralaner or topical selamectin for flea control in naturally infested cats in West Central Florida, USA. *Parasit Vectors*. 11(1):422.
- Ballesteros C, **Pulaski CN**, Bourguinat C, Keller K, Prichard RK, **Geary TG**. Jul 2018. Clinical validation of molecular markers of macrocyclic lactone resistance in *Dirofilaria immitis*. *Int J Parasitol Drugs Drug Resist*. pii: S2211-3207(18)30066-6.
- Reiling SJ, Krohne G, Friedrich O, **Geary TG**, Rohrbach P. Jul 2018. Chloroquine exposure triggers distinct cellular responses in sensitive versus resistant *Plasmodium falciparum* parasites. *Sci Rep*. 8(1):11137.
- Barbecho JM, **Bowman DD**, Liotta JL. Aug 2018. Comparative performance of reference laboratory tests and in-clinic tests for *Giardia* in canine feces. *Parasit Vectors*. 11(1):444.
- Hu Y, Nguyen TT, Lee ACY, Urban JF Jr, Miller MM, Zhan B, Koch DJ, Noon JB, Abraham A, Fujiwara RT, **Bowman DD**, Ostroff GR, Aroian RV. Aug 2018. *Bacillus thuringiensis* Cry5B protein as a new pan-hookworm cure. *Int J Parasitol Drugs Drug Resist*. 8(2):287-294.
- Rust MK, **Blagburn BL**, Denholm I, **Dryden MW**, Payne P, Hinkle NC, Kopp S, Williamson M. Aug 2018. International program to monitor cat flea populations for susceptibility to imidacloprid. *J Med Entomol*. 55(5):1245-1253.
- Norris JK, **Steuer AE**, Gravatte HS, Slusarewicz P, Bellaw JL, Scare JA, Nielsen MK. Aug 2018. Determination of the specific gravity of eggs of equine strongylids, *Parascaris spp.*, and *Anoplocephala perfoliata*. *Vet Parasitol*. 260:45-48.
- Tritten L, **Geary TG**. Aug 2018. Helminth extracellular vesicles in host-parasite interactions. *Curr Opin Microbiol*. 46:73-79.
- Ballesteros C, Geary JF, Mackenzie CD, **Geary TG**. Aug 2018. Characterization of divalent metal transporter 1 (DMT1) in *Brugia malayi* suggests an intestinal-associated pathway for iron absorption. *Int J Parasitol Drugs Drug Resist*. 8(2):341-349.

