OKLAHOMA STATE UNIVERSITY CENTER FOR VETERINARY HEALTH SCIENCES — OKLAHOMA ANIMAL DISEASE DIAGNOSTIC LABORATORY

# OADDL E-News

Summer 2019 • Volume 22

## In this Issue



## Faculty



## Multicentric Lymphoma in a Cow

Lymphoma in adult cattle is most commonly associated with infection by bovine leukemia virus (BLV), a retrovirus that causes a disease known as enzootic bovine leukosis. Antibody to BLV can be detected in many cattle by serologic screening; however, only a small number of infected animals develop persistent lymphocytosis and even fewer develop lymphoma.

Most cattle with BLV-associated lymphoma are 4 to 8 years of age. Tumors most commonly involve the heart, abomasum, uterus, lymph nodes and spinal cord (acronym: HAULS).

Clinical signs in affected cattle depend largely on the primary organ(s) involved. Abomasal lymphoma may cause anorexia, weight loss, vagal indigestion and diarrhea. Cattle with cardiac lymphoma may progress to congestive heart failure and death. Lymphoma involving the spinal cord may result in hindlimb weakness, paraparesis to paraplegia. Reproductive failure can also occur in cows with advanced uterine lymphoma (Figure 1).

*– Dr. R. Chien*

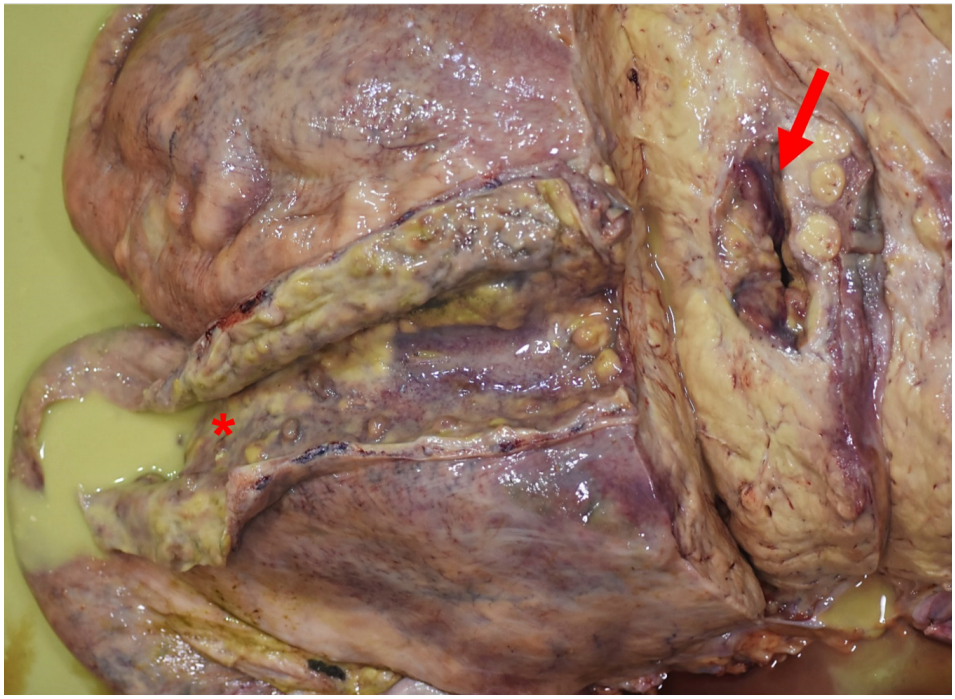


***Figure 1. Uterus from a cow with lymphoma. Note the markedly thickened uterine wall and narrowed lumen (arrow) due to the advanced stage of lymphoma. The opened uterine horn (asterisk) is filled with yellow-green purulent exudate, indicating secondary pyometra.***

CENTER FOR VETERINARY HEALTH SCIENCES

# A Survey of Intestinal Parasites in Client-Owned Dogs from 2007-2018 (7,408 Cases)

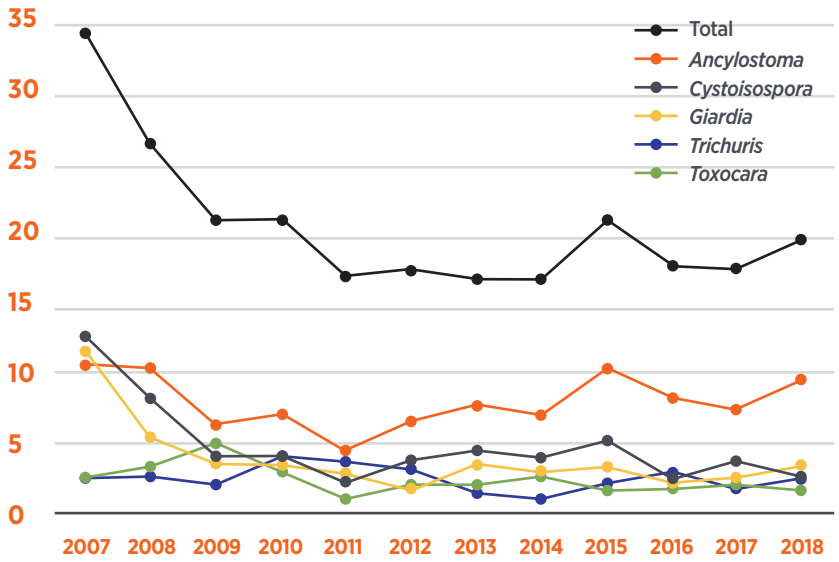
The objective of this survey was to determine the prevalence and trend of intestinal parasitic infections in client-owned dogs over the past 12 years (2007-2018). A total of 7,408 cases were included in this study.

No intestinal parasites, eggs, oocysts or cysts were identified in the majority (79.5%) of the cases. The five most common parasite stages observed were *Ancylostoma* eggs (8.2%), *Cystoisospora* oocysts (5.0%), *Giardia* cysts (4.1%), *Trichuris vulpis* eggs (2.7%), and *Toxocara canis* eggs (2.5%).

While the overall prevalance of intestinal parasites decreased during the 12-year period evaluated, the number of *Ancylostoma* cases has increased since 2011.

*– Dr. Y. Nagamori*

Prevalence (%) and Trend of Intestinal Parasitic Infection in Client-Owned Dogs over a 12-Year Period from 2007-2018 (7,408)




# Anatomic Pathologist, Dr. Anthony Confer Retires

Anatomic Pathologist, Dr. Anthony Confer, retired July 1, 2019 completing 38 years of service to Oklahoma State. Dr. Confer was a true "triple threat," making outstanding contributions in teaching, research and diagnostic pathology.

Dr. Confer put Oklahoma State on the map as the leader in bovine respiratory disease research. He is author or co-author of 226 refereed publications, 131 published abstracts, 14 book chapters, 20 continuing education publications, and four veterinary medical education manuscripts. As Principal Investigator, Dr. Confer obtained more than $8 million in extramural research funding and, along with his colleague, Dr. Sahlu Ayalew, holds two US Patents. Dr. Confer has been an invited speaker 60 times to animal health companies and scientific meetings in various states and countries.

Dr. Confer is an outstanding pathologist with expertise in respiratory, urinary and central nervous systems. Included in the publication count above are numerous publications in diagnostic pathology and book chapters on the urinary system. Dr. Confer has co-authored the urinary chapter in Pathologic Basis for Veterinary Disease, which serves as the "bible" for pathology training.

Most importantly to many, Dr. Confer is a highly valued teacher and mentor. Because of Dr. Confer, thousands of veterinarians across the globe have a better understanding of pathology and disease and dozens (at least 50) have made pathology a career because of Dr. Confer's character, professionalism and excitement over the discipline of pathology.

Dr. Confer served as a department head from 1986-1999 and again from 2004-2008 and as Associate Dean for Research from 1999-2001. He received the Norden Distinguished Teacher Award in 1987 & 2002, Pfizer Award for Research Excellence in 1988 & 2011, OSU Regents Distinguished Teaching Award in 2008, and the Oklahoma State University Eminent Faculty Award in 2003. Additionally, in 2009 the OSU Center for Veterinary Health Sciences recognized him as a Distinguished Alumnus. He was inducted into the Oklahoma Higher Education Hall of Fame in 2015 and received the OSU mentoring award in 2016.

*– Dr. J. Ritchey*

# OSU-CVHS, OADDL and Aviagen Team Up to Create a Poultry Necropsy Wet Lab for Students

*Figure 1. Veterinary students participating in a Poultry Necropsy Wet Lab sponsored by Aviagen.*

On April 17, OADDL hosted a Poultry Necropsy Wet Lab. Approximately 30 veterinary students from clubs including the American College of Veterinary Pathologists (ACVP) and the Production Animal Medicine Society (PAMS) participated in the exercise (Figure 1). The wet lab provided veterinary students with hands-on necropsy techniques and an opportunity to identify gross lesions in chickens of various ages.

Dr. Ken Powell, a board-certified poultry veterinarian, sponsored the exercise and shared his expertise in poultry medicine (Figure 2). Dr. Powell is responsible for the health, biosecurity, and animal welfare programs of Aviagen in Oklahoma. Dr. Powell also currently serves on the OADDL Board of Advisors.

*– K. Larrabee*

*Figure 2. Dr. Ken Powell (right) instructs veterinary students on poultry necropsy techniques.*

# Salmonella Update

Infections with *Salmonella* sp. are common in domestic animals. Recently, the Centers for Disease Control and Prevention (CDC) issued an Investigation Notice on a multi-state outbreak of multidrug-resistant *Salmonella* serotype 4,[5],12:i:- infections in humans that was attributed to contact with contaminated pig-ear dog treats. (https://www.cdc.gov/salmonella/pet-treats-07-19/index.html)


The most recent detections of this particular *Salmonella* serotype at OADDL were from a grower pig in 2018 and a calf in 2017.

Over a 5-year period from 2014-2019, OADDL isolated *Salmonella* sp. from 114 horse (59) and cattle (55) samples; these cases account for most of the positive *Salmonella* cases at OADDL during this time. Common *Salmonella* serotypes detected at OADDL include Braenderup, Newport and Typhimurium in horses; and Uganda, Typhimurium and Heidelberg in cattle.

*– N. Allen, S. Talent, C. Holcomb & Dr. A. Ramachandran*

**Percent of *Salmonella* Isolates Susceptible to Antibiotic: January 2014 to January 2019**

| Antibiotic | Equine | Antibiotic | Bovine |
|---|---|---|---|
| Amikacin | 100% (adult) | Centiofur | 71% |
| Centiofur | 96% | Danofloxacin | 87% |
| Gentamicin | 96% | Enrofloxacin | 85% |
| | | Florfenicol | 70% |
| | | Tulathromycin | 96% |

***Antimicrobial resistance (AMR) profile***

*Interpretations are based on Clinical & Laboratory Standards Institute (CLSI), Performance Standards for Antimicrobial Disk and Dilution Susceptibility Tests for Bacteria Isolated From Animals. 4th ed. CLSI supplement VET08. Wayne, PA: Clinical and Laboratory Standards Institute; 2018.*

*When specific information was unavailable, interpretations were based on data for other organisms or body sites. For treatment purposes, legal allowances for the extralabel use of antibiotics should be considered.*

# Goat Abortion Due to Listeriosis

An aborted, near-term goat fetus was submitted to OADDL for diagnostic testing. The farm of origin had experienced 2-3 abortions in the previous two weeks and reported a Campylobacter outbreak 5-6 years earlier.

Necropsy of the fetus revealed numerous pale tan to white spots in the liver that ranged in size from pinpoint to 5 mm diameter (Figure 1).

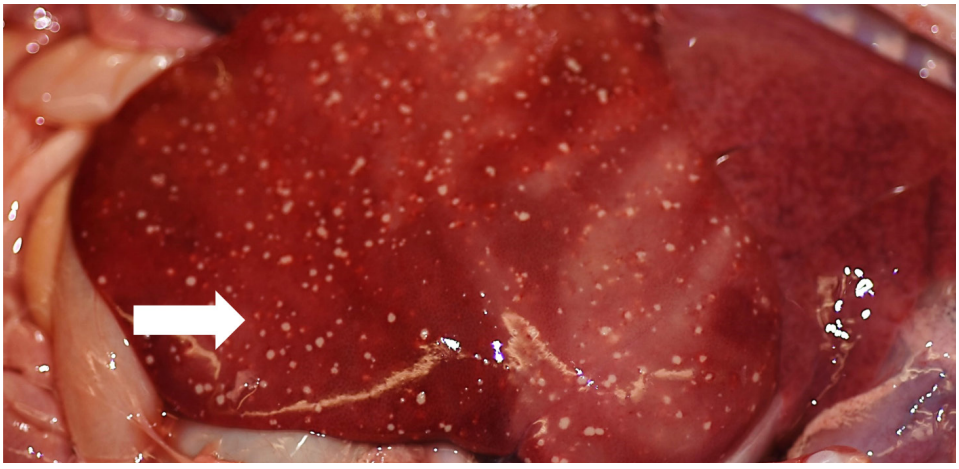


***Figure 1. Septicemic listeriosis in an aborted goat fetus. Note the prominent necrotic foci scattered randomly throughout the fetal liver (arrow).***

Histologically, these foci correlated with liver necrosis and microabscess formation. Inflammation in the fetal liver and placenta were accompanied by intralesional and intracellular bacteria.

Bacterial culture of the fetal liver yielded a heavy growth of *Listeria ivanovii*. The fetal tissues, fluids and placenta were negative for *Salmonella, Campylobacter, Brucella, Chlamydia, Coxiella*, Bluetongue virus, and bovine viral diarrhea (BVD) virus.

Necrotic liver foci in aborted goat fetuses are often an indicator of bacterial sepsis (e.g. *Listeria, Salmonella, Campylobacter* or less likely *Brucella*), but may also be associated with infections by *Chlamydia, Coxiella* or *Toxoplasma*.

*– Drs. K. Bailey, R. Chien & A. Ramachandran*

## Letter from the Director

This edition of our e-Newsletter marks the 5th anniversary of our quarterly publication. Our primary goal has been to share information and updates of OADDL activities.

By all accounts, the e-Newsletter has been a very successful effort. We are extremely grateful for client input and feedback.

This edition contains brief articles that highlight the intersection of animal and human health – so-called One Health. Animal and human health will forever be inextricably linked. It is our obligation to explore these relationships and improve One Health for all.

We are also excited to share results from Dr. Nagamori's large survey of intestinal parasites in client-owned dogs. Last week she presented fecal survey data on 2,323 client-owned cats at the World Association for the Advancement of Veterinary Parasitology (WAAVP) meeting in Madison, WI. A summary of the cat data will be presented in the Fall edition of our e-Newsletter.

Your team at OADDL strives to exceed your needs and expectations. We resist the easy path of simply trying to be 'good enough.' To put it in the vernacular of the late-great Yogi Berra – Good enough is just enough if you only want to be good enough.

I encourage all our clients to expect more from us, but also continue to be willing to join our team and help us achieve more. Together we can!

*– Dr. K. Bailey*


## Ideas/Suggestions for Future Content

We want to hear from you. Send us your ideas and suggestions to oaddl@okstate.edu.

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## Getting to Know Us

Katie Gaffney is originally from New Braunfels TX. She graduated in 2015 with a B.S. in Animal Science from Texas State University, where she met her husband Chris. They moved to Stillwater in 2016 for her husband to pursue his graduate degree in Molecular Genetics at OSU. Katie worked at a food science lab before joining the Molecular team at OADDL in August 2018. In her free time, she enjoys horseback riding, swimming and spending time with family, friends and her two dogs Cowboy and Roux.