



Western
University
OF HEALTH SCIENCES

College of
Veterinary Medicine

CANNUAL COLLEGE RESEARCH DAY

March 25, 2024



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Award Categories

Best Clinical Poster Presentation

Best Basic Science Poster Presentation

Non-DVM Trainee Poster Presentation

Schedule

2024 Annual College Research Day | March 25, 2024 | HEC Lecture Hall 2

3:00PM

Welcome Introduction by Dr. Yvonne Drechsler, WesternU CVM

3:00PM

"Triggers and Consequences of Immune-Mediated Disease."
by Keynote Speaker: Dr. Linda Kidd, University of Wisconsin

3:30PM

"Research Opportunities at San Diego Humane Society"
by Dr. Jonathan Chapman, SD Humane Society (Online)

3:45PM

"The Role of Research in Species Conservation: A Look at the Giant Panda Breeding."
by Dr. David Kersey, WesternU CVM

Raffle

4:00PM

"Mechanisms of Neurotoxicity in a Mouse Model of Prion Disease"
by Dr. Joie Lin, UCSD

4:15PM

"Raptor Research: Possibilities and Challenges"
by Dr. Miguel Saggese, WesternU CVM

4:30PM

"How Research Helped Me to Help You"
by Dr. Charli Dong, WesternU Alumni

4:45PM

"Field Livestock Welfare and Medicine Research Across Continents and Decades"
by Dr. Jim Reynolds, WesternU CVM

Raffle

5:00PM

Q & A Panel of Speakers

5:30PM

CVM Student Poster Presentations and Dinner Mingle - *HEC Recital Hall*

7:00PM

End of Program

Keynote Speaker: DR. LINDA KIDD, DVM, PhD, DACVIM

TITLE OF TALK: “Triggers and Consequences of Immune-Mediated Disease.”



Dr. Kidd received a DVM and Small Animal Internal Medicine residency training from the University of Wisconsin. She earned a PhD in Immunology from North Carolina State University College of Veterinary Medicine studying vector-borne disease, and completed a postdoctoral fellowship at The Scripps Research Institute, studying mechanisms of thrombosis. Dr. Kidd was on faculty at Western University of Health Sciences from 2007-2022 reaching the level of tenured Professor of Small Animal Internal Medicine in 2020. She worked at Zoetis Animal Health as a Veterinary Field Specialist for US Diagnostics from 2022-2023. Her research and teaching interests include vector-borne and immune-mediated diseases, mechanisms of thrombosis in proinflammatory states, and clinical reasoning.

She was the Co-Chair of the 2019 American College of Veterinary Internal Medicine’s (ACVIM) Consensus Statement on the Diagnosis of Immune-mediated Hemolytic Anemia and is currently serving as Co-Chair for the 2023 ACVIM Consensus Statement on the Diagnosis of Immune Thrombocytopenia. She has been an Associate Editor for Infectious Disease and Internal Medicine for the Journal of Veterinary Internal Medicine since 2020. Awards include the Pfizer Award for Teaching Excellence, The Monica Menard award for Pathobiological Research, The Zoetis Award for Veterinary Research Excellence and the Western University of Health Sciences College of Veterinary Medicine Dean’s Trailblazer Award.

Speaker: DR. JONATHAN CHAPMAN, DVM, MPH, CPH, DACVPM

TITLE OF TALK: “Research Opportunities at San Diego Humane Society”



Director of Veterinary Education

Dr. Chapman oversees San Diego Humane Society's DVM residency, internship, and externship programs and provides mentorship and support to the DVMs in those programs — including one to two residents, three to six interns, and 40 to 50 veterinary students annually. He also collaborates with various universities and veterinary medical programs across the country to train the next generation of veterinarians. Dr. Chapman graduated from Ross University School of Veterinary Medicine and received his master's degree in public health from the University of Minnesota. He is also among the approximately 10% or fewer veterinarians to hold specialty board certification. Dr. Chapman is board-certified in Public Health and Preventive Medicine by the American College of Veterinary Preventive Medicine. He is also a clinical associate professor of veterinary medicine in the College of Veterinary Medicine at Western University of Health Sciences.

Speaker: DR. DAVID KERSEY, PhD

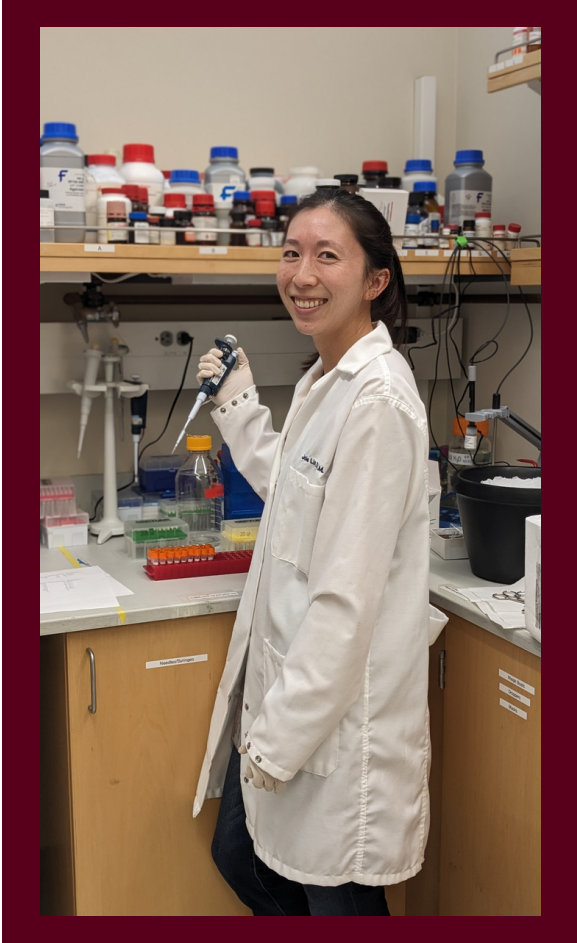
TITLE OF TALK: “The Role of Research in Species Conservation: A Look at the Giant Panda Breeding”



Dr. Kersey, a reproductive biologist, has dedicated his career to unraveling the breeding biology of the giant panda, a task that once bamboozled scientists worldwide. Now known as a hormonal panda matchmaker, his pioneering research has not only given Cupid a run for his money but also significantly bolstered the population of these charming, bamboo-munching icons. Beyond the panda scene, Dr. Kersey leverages his expertise to aid other endangered species, showcasing that science can blend humor with impactful conservation efforts.

Speaker: DR. JOIE LIN, DVM

TITLE OF TALK: “Mechanisms of Neurotoxicity in a Mouse Model of Prion Disease”



Dr. Joie Lin graduated from UC Davis SVM in 2022 under the small animal pathology track/emphasis and is currently a T32 research fellow in the Sigurdson Lab at UCSD School of Medicine's Department of Pathology. Following the conclusion of her research fellowship, she will be pursuing the combined anatomic pathology residency/PhD Program at Colorado State University. Dr. Lin's main veterinary and research interests encompass infectious diseases and neurodegenerative disorders.

Speaker: DR. MIGUEL D.SAGGESE, DVM, MS, PhD

TITLE OF TALK: "Raptor Research: Possibilities and Challenges"



Dr. Miguel Saggese, DVM, MS, PhD, is a veterinarian, microbiologist and ornithologist specializing in birds of prey. Graduated from the University of Buenos Aires as a veterinarian, he has dedicated to the study, research, and conservation of birds of prey since 1985. His postgraduate studies include training in endangered species management and conservation biology from the Durrell Preservation Trust. In 2004 he completed a master's degree in infectious diseases and a clinical residency in medicine, anesthesia, surgery and raptor rehabilitation at The Raptor Center, University of Minnesota. He completed his Ph.D. in molecular microbiology in 2007 at Texas A&M University.

He has developed numerous research projects, both in the United States and in Argentina, on biomedicine, infectious diseases, toxicology, natural history, ecology and conservation of birds of prey, which have given rise to 80 scientific publications. He is a member of the board of directors of the Association of Avian Veterinarians and has held different positions at the Raptor Research Foundation since 2007, including being its president between 2015 and 2017. Since 1985 he has given talks, courses, workshops and seminars on biomedicine, infectious diseases, ecology, rehabilitation and conservation of birds, not only in the United States and Argentina but also in Spain, Scotland, Canada, Belgium, Mexico, Colombia, Panama, Costa Rica, Peru, Chile, Ecuador and Brazil. He is particularly interested in the use of raptors for bio surveillance and monitoring of environmental pollutants, and zoonotic infectious and parasitic emerging and reemerging diseases, both in the USA and in South America.

Speaker: DR.CHARLI DONG, DMV, DACVD

TITLE OF TALK: “How Research Helped Me to Help You”



Dr. Charli Dong earned her degree in veterinary medicine from Western University of Health Sciences. She completed her residency at Animal Dermatology Clinic and became a boarded dermatologist in 2016.

She was the recipient of the Resident Research Award in Clinical Science, so you can ask her all about ringworm! Her special interests include atopic dermatitis, dermoscopy, video-otoscopy, hyperbaric oxygen therapy, and clinical research. Her goal is always to strive to improve the lives of our beloved companions. She has authored and contributed to many publications.

Dr. Dong lectures nationally and internationally, sharing her passion in dermatology with veterinarians. She trains residents and veterinary students which she loves because learning goes both ways!

Speaker: DR. JIM REYNOLDS, DVM, MPVM, DACAW

TITLE OF TALK: “Field Livestock Welfare and Medicine Research Across Continents and Decades”



Dr. Reynolds graduated from UC Davis Veterinary School in 1982. He was in private dairy and beef practice in California for 14 years, with one year in mixed practice, and then completed a Residency program in Public Health with the California Department of Health Services. He was the Chief of Clinical Services for Production Medicine at UC Davis for 12 years. He has been Vice President of Consulting for Praedium, a company that provided animal welfare programs, management and training for dairies and other farms. He is a Professor of Large Animal Medicine/Welfare at Western University, College of Veterinary Medicine in Pomona, CA.

Dr. Reynolds has worked extensively in on-farm clinical bovine practice in California, other states and in several countries. He has consulted on dairy management, animal welfare, and environmental sustainability in the US and other countries. Dr. Reynolds has served as chair of both the American Veterinary Medical Association and the American Association of Bovine Practitioners Animal Welfare Committees. He is currently a member of the California Veterinary Medical Association Animal Welfare Committee. He was a founding board member of the Professional Animal Auditor Certification Organization (PAACO). Dr. Reynolds is a member of the scientific committees for Validus, the American Humane Society, other organizations, and conducts welfare assessments and audits for Validus, LLC. He has been course leader for the American Association of Bovine Practitioner's pre-convention seminar on Cattle Welfare. He was Chair of the Consumer Affairs Committee for the Dairy Cattle Welfare Council. Dr. Reynolds received the AVMA Animal Welfare Award for 2007, the American Association of Bovine Veterinarians Award of Excellence for 2010, and the Humane Society Veterinary Medical Association Humane Achievement Award in 2022. Dr. Reynolds is a founding member of the Veterinary Association for Food Animal Welfare. He is a Diplomate of the American College of Animal Welfare (ACAW).

POSTER PRESENTATIONS

Abstract Title: RNA-Interference: Role of Ig-like Receptor B in Chicken Macrophage Response to AIV and Salmonella Typhimurium

Presenting Author: Anaid A. Carlo-Allende

Email: anaid.carloallende@westernu.edu

DVM Class: DVM 2026

Research advisor: Dr. Yvonne Drechsler

Authors: Anaid A. Carlo-Allende, Brandi Sparling, Yvonne Drechsler

Affiliations: Department of Immunology and Immunogenetics (Drechsler, Sparling), College of Veterinary Medicine, Western University of Health Sciences, Pomona, CA.

Abstract Content:

Members of the immunoglobulin-like receptor family interact with the major histocompatibility class 1 (MHC-I) molecules on immune cells to recognize antigenic peptides. Our lab characterized a new subset called Cluster Homolog of Immunoglobulin-like Receptor-B (CHIR-B) in chicken that may suppress the innate immune response. We conducted a phylogenetic analysis to explore the interrelationships of CHIRs with other Ig-like receptors in other species. Investigating CHIRs in breeding programs aims to enhance food security and poultry health during disease outbreaks. Based on data from mammalian studies, we hypothesized that using small interfering RNAs (siRNAs) to silence CHIR-B expression will improve macrophage defense against infectious agents. Our previous research demonstrated that CHIR-B silencing increased nitrate production and enhanced redox cascades in chicken macrophages after viral infection. To further understand the response in different MHC-I types and reduce biological variability, we cultured an HD11 chicken macrophage cell line and transfected them with siRNAs. We stimulated them with Salmonella typhimurium lipopolysaccharides (LPS) or infected them with Influenza A virus. We measured nitrate production at 24 and 48 hours after siRNA transfection. We detected the highest amount of nitric oxide 48 hours post-transfection with non-targeting siRNAs and stimulated with LPS. The macrophages exposed to the Influenza A virus with CHIR-B siRNAs showed no production of nitric oxide at any time point, and the possible reasons for this absent response are to be determined. Future research will explore the impact of blocking immunoglobulin-like receptor B and MHC-I, deepening our understanding of CHIR's immune role.

Student support: Boehringer Ingelheim

Abstract Title: An Intra-Abdominal Endodermal Congenital Cyst in Boxer Puppy

Presenting Author: Beatrice Melara

Email: Beatrice.melara@westernu.edu

DVM Class: DVM 2026

Research advisor: Ana Alcaraz, DVM PhD

Authors: Beatrice Melara 1 , Emely Castelo1 , Maria Gonzalez1 , Ana Alcaraz 1

Affiliations: 1 College of Veterinary Medicine, Western University of Health Sciences, Pomona, CA

Abstract Content:

A 6-month-old, cryptorchid male, Boxer presented for a 3-month history of abdominal distention, weight loss, and no vomiting. Abdominocentesis was performed where 1 liter of fluid was extracted and submitted for analysis with nonconclusive results. Two weeks following abdominocentesis, the animal returned with recurrence of abdominal distention. At this time, exploratory surgery was performed, and a large fluid-filled cyst was found in the abdominal cavity attached to the viscera. Punch biopsy of the fluid filled cystic cavity was taken and sent out for histopathology. Histopathology results concluded that the cystic mass was lined by simple cuboidal to columnar epithelium with some goblet cell differentiation, but the origin was not elucidated. Two months later, a second exploratory surgery was scheduled, and a larger cystic mass, approximately 3 liters, was found. The mass was deemed inoperable, and consequently euthanasia was elected. A postmortem examination revealed a large fluid-filled cyst was found to be 27cm x 35cm and occupying most of the abdominal cavity. The cyst was softly attached to the small intestines and the liver without invasion of the organs. The cyst wall was from 1cm to 3cm thick, with bosselated, intraluminal projections. Histopathology revealed a smooth muscle wall lined by simple cuboidal epithelium with occasional nests of glandular differentiation. The macroscopic and histopathological findings support the interpretation of congenital intraabdominal endodermal cyst. This is a rare mesenteric developmental lesion that needs to be included in a differential when young animals present with a distended abdomen and fluid accumulation.

Abstract Title: Turkey Vulture (*Cathartes Aura*) from Southern California are Exposed to Anticoagulant Rodenticides Shortly After a Recent Ban

Presenting Author: Grace Kinyon

Email: Grace.kinyon@westernu.edu

DVM Class: DVM 2026

Research advisor: Miguel D. Saggese

Authors: Miguel D. Saggese^{1*}, Peter H. Bloom², Andrea Bonisoli-Alquati³, Grace Kinyon¹, Nicolle Overby², Alexandra Eagleton³, Alexandria Koedel³, Emmalee Blumhagen¹, Jesse Maestas¹, Laura Casalins⁴, Valeria Ojeda⁴, Robert H. Poppenga⁵.

Affiliations:

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⁵California Animal Health and Food Safety Laboratory System, Davis Branch, School of Veterinary Medicine, University of California Davis, Davis, CA, USA.

Abstract Content:

Worldwide, anticoagulant rodenticide (AR) use has led to extensive secondary poisoning of non-target wildlife, particularly raptors, which ingest prey in which ARs accumulate. In 2020, the California State Legislature passed the California Ecosystems Protection Act, which prohibited most uses of second-generation ARs in the state as a follow-up to the California Department of Pesticide Regulation ban of SGARs in 2014. Yet, exposure to ARs remains prevalent in several raptor species in North-central California. To assess the new legislation's effectiveness in Southern California, we investigated the prevalence of exposure to eight different ARs in 27 Turkey Vultures using blood sampled before and after the 2020 ban. We also investigated the distribution of 20 wing-tagged Turkey Vultures included in the study to assess where exposure might occur. Of 27 Turkey Vultures tested, two out of 16 (12.5%) sampled in 2021 had detectable levels of diphacinone (one had 8 ppb, another indicated as positive without quantification). One Turkey Vulture out of 11 sampled in 2017 had detectable (trace) but not quantifiable levels of difethialone. Overall, the prevalence of exposure to ARs was 11.1 %, 7.4% for diphacinone and 3.7% for difethialone. Based on 93 visual encounters of 20 wing-tagged Turkey Vultures all but one remained within Los Angeles, San Bernardino, Orange, Riverside and San Diego counties of southern California. Although based on small sample size and with the limitations of testing blood in live versus liver in deceased vultures, our study suggests that the exposure risk of Turkey Vultures to AR persisted after recent restrictions were implemented. For effective future monitoring of AR prevalence in TVs, we propose both free-ranging (blood samples) and deceased (liver biopsy samples) to continue to investigate compliance to current and future AR regulations.

Abstract Title: Targeted RNA *in situ* Hybridization to Determine the Spatial Expression of the Cluster Homolog of Immunoglobulin-like Receptors (CHIR) in the Chicken Intestine after Coccidia Vaccine Challenge

Presenting Author: Hoangvi Le, MSc

Email: hoangvi.le@westernu.edu

Research Advisor: Theros T. Ng, MSc, PhD

Authors: Hoangvi Le, Brandi Sparling, Yvonne Drechsler, Theros T. Ng

Affiliations:

College of Veterinary Medicine, Western University of Health Sciences, Pomona, CA 91766, USA

Abstract Content:

Modern chickens are bred for growth, negating the need to adequately support immune health. As a result, some commercial chickens are extremely susceptible to even the lowest dose of coccidiosis challenge. The chicken intestine hosts an array of sentinel and migrating immune cells that are targets of economically devastating poultry pathogens, such as the coccidiosis parasite. Notwithstanding the importance of the intestinal tissue in chicken growth, further characterizing cell sub-populations is critical to understanding disease susceptibility, pathophysiological processes, and even immune tolerogenic responses. To build on our previous study, we hypothesize that the CHIR-B2 recruitment of SHP-1 and SHP-2 is key to the susceptibility to coccidiosis in chickens. Identifying the localization of CHIRs (chicken immunoglobulin-like receptors) in the jejunum is essential in determining factors that influence the immune response in deadly intestinal infections such as coccidiosis. After reanalyzing previous data of interferon- γ -stimulated macrophages of B2 and B19 chickens, we discovered that several CHIR-B genes are differentially expressed between B2 and B19 chickens. In B19 chickens, CHIR-B2 is of particular interest due to its involvement in recruiting SHP-1 and SHP-2 in immune cells. Furthermore, B19 chickens demonstrated the most severe coccidiosis outcomes compared to other chicken lines, especially the coccidiosis resistant BQ line. Thus, we aim to explore whether CHIR-B2 and the downstream signaling molecules can explain the differences between the BQ and B19 phenotypes, especially coccidiosis susceptibility. The goal of this study is to pinpoint the cluster homolog of CHIRs localization with signaling molecules (SHP-1 & SHP-2) in the intestine by leveraging single cell-RNA sequencing (scRNA-seq) and multiplex spatial profiling in a coccidiosis disease model. In the context of immunity, properly annotating these genes, characterizing their expression in cellular subpopulations, and defining MHC-I signaling within the jejunum tissue provide the poultry industry with useful markers for selectively breeding healthier chickens.

Abstract Title: Elucidate The Missing CHIR Genes On Chromosome 31 in Line-P Disease Susceptible Chicken Line

Presenting Author: Shelby Ferrier

Email: Shelby.ferrier@westernu.edu

DVM class: DVM 2027

Research Advisor: Theros Ng, Ph.D.

Abstract Content:

The study focuses on the Cluster Homolog of Immunoglobulin-like Receptors (CHIRs), which are major immune receptors that have a significant role in modulating immune responses in chickens. These genes are located on chicken chromosome 31. The research is based on two distinct chicken lines maintained by the USDA Avian Disease and Oncology Laboratory, known as Lines-N and -P. These lines are bred specifically for examining the genetic information that may relate to the immunity to diseases. Notably, Line-P chickens exhibit susceptibility to Marek's Disease Virus, in contrast to Line-N chickens, which show resistance. Our recent bioinformatic analyses have uncovered that CHIR genes are absent in the Line-P chicken genome on chromosome 31. This absence may be accredited to sequencing inaccuracies or limitations in the previous sequencing attempts, particularly in detecting sequences within the compact chicken microchromosomes. The primary aim of this research is to verify the absence of CHIR genes in the Line-P chicken genome. To achieve this, the study will employ advanced molecular techniques and the latest sequencing technologies to attempt to map the chicken genome's structure. The main aim is to deepen our understanding of the genetic mechanisms underlying disease immunity in chickens, which could offer insights that could extend to other animal species.

Abstract Title: Effect of Land Use and Climate on Distribution of Ticks and Tick-Borne Pathogens in an Oregon Watershed.

Presenting Author: Simonne Sequeira

Email: Simonne.sequeira@westernu.edu

DVM Class: DVM 2026

Research Advisor: Dr. Rhea Hanselmann

Authors: Simonne Sequeira, Lukas Haffner, Kimblery Gerstner, Brianna Beechler, Michelle Steinauer, Justin Sanders, Rhea Hanselmann

Affiliations:

Western University of Health Sciences, College of Veterinary Medicine, Pomona, CA (Sequeira, Hanselmann), University of Veterinary Medicine, Hanover, Germany (Haffner), Oregon State University, Carlson College of Veterinary Medicine, Corvallis, OR (Beechler, Sanders), Western University of Health Sciences, College of Osteopathic Medicine of the Pacific Northwest, Lebanon, OR (Steinauer)

Abstract Content:

Ticks are significant disease carriers, posing a growing global public health concern. Yet, there is a vast knowledge gap regarding the geographic distribution of ticks and tick-borne pathogens. With the planet being affected by climate change, there are anticipated alterations in tick distributions calling for sustained monitoring efforts. Our project investigated tick presence and abundance in Oregon's high desert region, specifically the White River Watershed near Tygh Valley, OR. Employing CO₂ bait traps and drag-cloths, ticks were systematically collected from 16 sites across three land-use types (low disturbance, medium disturbance, high disturbance) representing increasing human disturbance: pristine mountain habitats, agricultural lands, and rural settlements. At each site, ambient temperature at the time of collection was recorded. To assess the impact of human land use and temperature on tick distribution and associated pathogen exposure risk, we compared tick presence and abundance across sites. To examine changes in tick distribution over time, we compared 2023 results to data collected from the same sites in 2022. During the 2023 sampling period, 23 *Dermacentor andersoni* ticks were collected from 16 sites compared to 13 ticks from 16 sites in 2022. During both years, most ticks were collected from medium disturbance sites which reflected the agricultural environments conducive to *Dermacentor andersoni* habitation as there were livestock and human interfaces. Average ambient temperatures at the study sites were slightly higher in 2023 than in 2022, but this difference was not statistically significant, and we found no association between ambient temperature and tick distribution at the study sites. In 2023, 0/23 ticks tested positive for tick-borne pathogens via PCR (Oregon State Veterinary Diagnostic Laboratory) compared to 1/13 in 2022 (Colorado Tick Fever). Future studies should intensify tick collection in Eastern Oregon starting earlier in the tick season to enhancing our understanding of tick ecology in different landscapes.

Research Grant: Western University of Health Sciences Intramural Team Grant to Hanselmann and Steinauer; Oregon State University Department of Biomedical Sciences Intramural support to Beechler

Student Stipend: Boehringer Ingelheim Veterinary Scholars Program