

Kristina CERES

DVM/PhD Candidate | Cornell University

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I am pursuing combined DVM-PhD training because I want to develop multidisciplinary skills in epidemiology, computational biology, statistics and veterinary medicine so that I can drive impactful research in ecological health. I want to be a leader in quantitative epidemiology research aimed at understanding infectious disease transmission and creating ecological interventions to prevent infectious disease transmission or modify pathogenicity using data driven, computational approaches. I plan to use each part of my diverse training in epidemiology, statistics, genomics and veterinary medicine, and bridge these experiences together to create my own niche : comparative computational infectious disease epidemiology.

EDUCATION

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| 2015-Present | DVM-PhD Candidate , Grohn Lab, Cornell University
PhD Concentration : Population medicine and Epidemiology, minors in statistics and genomics
DVM Concentration : Production medicine and Zoo and Wildlife medicine |
| 2011-2015 | BS Animal Science , Cornell University, Distinction in Research |

RESEARCH EXPERIENCE

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| June 2020
June 2022 | NIFA Predoctoral Fellow, GRÖHN LAB, Cornell University <ul style="list-style-type: none">> <i>de novo</i> assembled 2000+ <i>Mycobacterium bovis</i> genomes> Characterized <i>M. bovis</i> pangenome.> Studied geospatial evolution and local adaptation.> Developing convolutional neural network model to characterize <i>M. bovis</i> outbreaks.> Studying gene flow and the evolution of antimicrobial resistance in the <i>Mycobacterium tuberculosis</i> complex.> Developed methodologies for pangenome clustering and visualization. <p>panaroo scoary bash IQTree R python SLiM vcftools SPAdes quast checkm fastGEAR perl</p> |
| June 2017
June 2022 | Graduate Research Assistant, GRÖHN LAB, Cornell University <ul style="list-style-type: none">> 5 semesters worth of coursework in epidemiology and statistics> Developed hidden Markov model for classifying disease state and progression patterns based on fecal shedding data. <p>Python R</p> |
| January 2017
May 2017 | Rotation Student, IVANEK LAB, Cornell University <ul style="list-style-type: none">> co-authored a scoping review on <i>Listeria monocytogenes</i> monitoring programs in food processing environments.> Developed interview questions for dairy and feedlot farmers and conducted a pilot interview with a dairy veterinarian to better understand decision making processes surrounding antimicrobial use on dairy farms. <p>Rayyan R</p> |
| June 2016
August 2016 | Veterinary Leadership Program, GRÖHN LAB, Cornell University <ul style="list-style-type: none">> Translated infectious disease modeling workshop into a graphical program for use in workshops.> I created an agent-based model of environmental transmission of <i>Mycobacterium avium subsp. paratuberculosis</i> (MAP), the causative agent of Johne's disease, on a dairy farm.> I also learned from experienced academic researchers about different research-oriented careers, leadership skills and graduate training opportunities for veterinarians. <p>Berkeley Madonna Netlogo</p> |
| June 2015
August 2015 | Veterinary Investigator Program, BEHLING-KELLY LAB, Cornell University <ul style="list-style-type: none">> Continued undergraduate research project studying the relationship between lipoprotein receptor staining and disease phenotypes> Presented the project to program colleagues, and faculty members and at the 2015 NIH-Merial Symposium at UC Davis.> Learned how to write scientific manuscripts and published first, first-author manuscript in <i>Front. Vet Sci.</i> <p>R</p> |

- January 2014
May 2015
- Undergraduate Research Assistant, BEHLING-KELLY LAB, Cornell University**
- > Developed an immunohistochemistry protocol to label lipoprotein receptors in canine lymphoma tissue
 - > Completed an undergraduate thesis in the Animal Science Honors Program to earn a degree with distinction in research.
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TEACHING EXPERIENCE

- Spring 2019
- Teaching Assistant, HISTOLOGY, Cornell University**
- > lead teaching assistant for an undergraduate histology course.
 - > prepared and gave three lectures on digestive system histology.
 - > helped lead 2, 3 hour labs per week
 - > helped develop and grade exams
- Fall 2018
- Teaching assistant, BIostatISTICS, Cornell University**
- > teaching assistant for an introductory biostatistics course for Masters in Public Health students
 - > helped grade homework and answered student questions
 - > gave a 75 minute interactive lecture on confidence interval calculations and interpretation.
- April 2018
- Workshop leader, EXPANDING YOUR HORIZONS, Cornell University**
- > I co-lead a one day virology workshop for 7-9 grade girls to help generate interest in STEM careers.
- May 2018
- Workshop developer and leader, MODELING MYCOBACTERIAL INFECTIONS SYMPOSIUM, Wageningen University, Netherlands**
- > I designed and lead two three-hour workshop on using agent based models for studying Johnne's disease transmission, control and economics as part of a three-day workshop.
- January 2011
December 2017
- Climbing Instructor, CORNELL OUTDOOR EDUCATION, Cornell University**
- > taught more than 10 rock and ice climbing courses, including five courses where I was lead instructor.
 - > helped lead instructor training in indoor and outdoor rock climbing
 - > lead 6 day pre-orientation trips for incoming undergraduate students.
- Fall 2015
Spring 2013
- Undergraduate Teaching Assistant, ANIMAL PHYSIOLOGY, ANIMAL REPRODUCTION, Cornell University**
- > I was a teaching assistant for two laboratory based courses : Animal Reproduction (2012) and Animal Physiology Experimentation (2013).
 - > For both courses I facilitated laboratories and helped develop and grade exams.
 - > I also occasionally gave pre-laboratory lectures describing the core physiology concepts we would cover during the lab.

SERVICE

- January 2018
May 2021
- Cornell Representative, NATIONAL ASSOCIATION OF VETERINARY SCIENTISTS,**
- > created and maintain website for national organization of combined DVM-PhD students
 - > Managed communication between students, board members and program directors
 - > Created and maintain slack channel for current students and alumni
 - > Initiating and leading a project do survey current students and alumni to evaluate trends in careers in program alumni.
- June 2018
May 2021
- DVM-PhD representative, BBS GRADUATE STUDENT SOCIETY,**
- > Work with a group of Biological and Biomedical Sciences (BBS) graduate students to develop social activities for our PhD program.
 - > facilitate the transition for combined DVM-PhD students from the DVM to the PhD portion of the program.

Fall 2016 | **Member of CVM club Executive Boards, CORNELL UNIVERSITY,**

May 2020

- > Treasurer of the Cornell Veterinary Sustainability Club
- > Treasurer of Association of Veterinary Scientists.
- > Vice president Veterinary Education Club
- > Member Zoo and Wildlife Society.
- > Peer mentor for 5 first year DVM students.
- > Each position was held for 1 year.

January 2014 | **Mentor, COLLEGE DISCOVERY PROGRAM, Ithaca Youth Bureau**

June 2018

- > I met with an Ithaca middle school-high school student weekly to hike, draw, bake and generally have fun together as part of the College Discovery Program, which aims to increase college enrollment among low-income or at risk students in our community.

Spring 2017 | **Coordinator, SPECIAL SPECIES SYMPOSIUM, Cornell University**

- > Lead of a team of students that organized a three day symposium consisting of 15 lectures, 10 wetlabs and a banquet and silent auction focusing on wildlife and exotic veterinary medicine.
- > Raised funds and acquired material donations from various companies in the veterinary industry
- > Invited and coordinated the travel for external speakers

★ AWARDS

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| 2020-2022 | USDA NIFA Predoctoral Fellowship , 2 years, \$120,000 |
| 2019 | Scholarship recipient , AVMF-Harold Wetterberg Foundation Scholarship |
| 2018 | First place poster , Conference for Research Workers in Animal Diseases, Chicago, IL |
| 2014 | Moriah Leadership Award , Cornell Outdoor Education |

☰ SKILLS

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| Data science | Linear models, hidden Markov models, neural nets, agent based modeling |
| Prokaryotic evolution | pangenome analysis, ML and Bayesian phylogenetics, forward genetic simulation |
| Epidemiology | molecular epi analysis, study design, logistic regression |

📄 PROGRAMMING

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| Python | ● ● ● ● ○ |
| R | ● ● ● ● ● |
| bash | ● ● ● ○ ○ |
| eidos (SLiM) | ● ● ● ○ ○ |
| Mac OS | ● ● ● ● ● |
| Linux | ● ● ● ● ○ |

+ INTERESTS

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- > Ecological Health
 - > Microbial evolution
 - > Wildlife and natural resource conservation

💬 PRESENTATIONS

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| December 2020 | Conference for Research Workers in Animal Disease, Chicago IL
Virtual oral presentation : Exploring mechanisms of accessory genome evolution the clonally evolving <i>Mycobacterium tuberculosis</i> complex |
| November 2019 | Conference for Research Workers in Animal Disease, Chicago IL
Oral presentation : Characterizing infection trajectories of slowly progressing infectious disease using hidden Markov models |
| November 2018 | International symposium for Veterinary Epidemiology and Economics, Chiang Mai, Thailand |
| November 2018 | Poster : Environmental transmission of <i>Mycobacterium avium paratuberculosis</i> : an Individual based model |
| December 2018 | Conference for Research Workers in Animal Diseases, Chicago, IL
Poster title: Environmental persistence of <i>Mycobacterium avium ssp. paratuberculosis</i> as a barrier to John's disease elimination |
| 2015, 2017-2019 | National Veterinary Scholars Symposium
Posters presented in Davis CA (2015), College Station TX (2017), Bethesda MD (2018), Worcester, MA (2019) |

“ PUBLICATIONS

Ceres, K. M., Schukken, Y. H., & Gröhn, Y. T. (2020). Characterizing infectious disease progression through discrete states using hidden Markov models. *PloS one*, 15(11), e0242683. [↗](#)

Wemette, M., Safi, A. G., Beauvais, W., **Ceres, K.**, Shapiro, M., Moroni, P., ... & Ivanek, R. (2020). New York State dairy farmers' perceptions of antibiotic use and resistance : A qualitative interview study. *PloS one*, 15(5), e0232937. [↗](#)

Zoellner, C., **Ceres, K.**, Ghezzi-Kopel, K., Wiedmann, M., & Ivanek, R. (2018). Design elements of Listeria environmental monitoring programs in food processing facilities : A scoping review of research and guidance materials. *Comprehensive Reviews in Food Science and Food Safety*, 17(5), 1156-1171. [↗](#)

Ceres, K., Fitzgerald, H., Quiznon, K. S., McDonough, S., & Behling-Kelly, E. (2019). Immunohistochemical labeling of low-density lipoprotein receptor and scavenger receptor Class B type 1 are increased in Canine lymphoma. *Frontiers in veterinary science*, 5, 340. [↗](#)