Holly Arnold Curriculum Vitae Last Edit: 7/31/2024

Holly K. Arnold, DVM Assistant Professor, Senior Research Department of Biomedical Oregon State University

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Holly K. Arnold, MS, DVM, PhD

A. PERSNOAL DATA

Title Dr.
First Name Holly K.
Name Arnold

Current Position Assistant Professor (Senior Research)

Current Institution Biomedical Sciences, Oregon State University

Date Hired January 1, 2024

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Website https://arnold-lab.org

B. EDUCATION

Indicators: Research positions are **bolded**, and clinical positions are *italicized*.

2022	Specialty Intern*	Oregon State University, Corvallis, Oregon, USA Carlson College of Veterinary Medicine
	THICTH	Emergency and Critical Care Specialty Intern
		Emergency and errical care specialty intern
2021	PhD	Oregon State University, Corvallis, Oregon, USA
		Comparative Health Sciences
		Department of Microbiology
		Advisor: Thomas Sharpton
		Thesis: "Using the tree of life to describe mammalian health and disease."
2020 – 2022	Clinical Fellow*	Oregon State University, Corvallis, Oregon, USA
		Carlson College of Veterinary Medicine
		Small Animal Rotating Internship
2020	DVM	Oregon State University, Corvallis, Oregon, USA
		Carlson College of Veterinary Medicine
		Class rank 5/56

2013 MS University of Oregon, Eugene, Oregon, USA

Bioinformatics & Microbial Ecology

Advisors: Jessica Lee Green | John Connery

Thesis: "Machine learning methods for mining host microbial interactions."

2011 BA University of Colorado at Boulder, Boulder, Colorado, USA

Molecular, Cellular & Developmental Biology Major | Biochemistry Major |

Chemistry Minor

^{*}Note due to non-congruency between clinical and research timelines, and breaks from normality during the COVID-19 pandemic, the PhD/postdoctoral training was completed congruently with the clinical rotating/specialty internship. Because of this, the postdoctoral training was completed at the same institution as the graduate training, but in different departments.

C. EMPLOYMENT HISTORY

1/1/2024 – Present	Assistant Professor, Senior Research. Department of Biomedical Sciences, Oregon State University, Corvallis, Oregon, USA.
9/16/2021 – 12/31/2023	Postdoctoral Scholar. Advised by Drs. Brianna Beechler and Anna Jolles, Department of Biomedical Sciences, Oregon State University, Corvallis, Oregon, USA.
7/1/2022 — 12/31/2022	Clinical Fellow; Critical Care Specialty Internship. Carlson College of Veterinary Medicine, Oregon State University, Corvallis, Oregon, USA.
7/16/2021 – 6/30/2022	Clinical Fellow; Small Animal Rotating Internship. Carlson College of Veterinary Medicine, Oregon State University, Corvallis, Oregon, USA.
8/10/2020 - 7/15/2021	Intern; Small Animal Rotating Internship. Carlson College of Veterinary Medicine, Oregon State University, Corvallis, Oregon, USA.
6/16/2016 — 9/15/2021	Graduate Research Assistant, Comparative Health Sciences. Advised by Dr. Thomas Sharpton. Department of Microbiology, Oregon State University, Corvallis, Oregon, USA.
4/1/2016 — 6/15/2016	Student Worker Volunteer, Sharpton Lab. Department of Microbiology, Oregon State University, Corvallis, Oregon, USA.
6/1/2015 — 8/1/2015	Veterinary Nurse, Willamette Emergency Veterinary Hospital. Employment hours used to fill requirements for veterinary school applications. Corvallis, Oregon, USA.
6/1/2014 - 6/1/2016	Animal Care Technician, Heartland Humane Society. Employment hours used to fill requirements for veterinary school applications. Corvallis, Oregon, USA.
1/6/2014 — 6/15/2014	Faculty Research Assistant. Advised by Dr. Steven Ramsey. Oregon State University, Corvallis, OR, USA.
9/1/2010 - 12/1/2013	Graduate Research Assistant. Advised by Drs. Jessica Green and John Conery. Institute of Ecology and Evolution, University of Oregon, Eugene, Oregon, USA.
6/2010 — 8/2010	Summer Honors Undergraduate Research Program. Advised by Dr. Jon Beckwith. Department of Microbiology and Immunobiology, Harvard Medical School, Boston, Massachusetts, USA.
6/2009 — 8/2009	AMGEN Scholar. Advised by Dr. Karen Christman. Department of Bioengineering, University of California, San Diego, La Jolla, California, USA
6/2008 — 8/2008	Independent Research Scholar. Advised by Pat Burns. School of Biological Sciences. University of Northern Colorado, Greely, Colorado, USA
1/2007 – 5/2008	Research Assistant. Advised by Jennifer Martin. Department of Molecular, Cellular, and Developmental Biology. University of Colorado at Boulder, Boulder, Colorado, USA.

D. HONORS, AWARDS, CERTIFICATIONS

- 2024 OSU Research Advancement Academy Fellow Professional development opportunity for leadership skills targeted toward leading large transdisciplinary teams.
- 2020 American College of Veterinary Pathology, OSU Recognizes a student for outstanding achievement, proficiency, and interest in veterinary pathology.
- 2020 Royal Canin Excellence in Nutrition Award, OSU

 Recognizes two year four students with a strong commitment to and notable aptitude for pet nutrition.
- 2020 Paul O. and Maka Kahlbaum Education Fund, OSU *Awarded to a veterinary student in good academic standing.*
- 2020 Camden Scholarship, OSU

 Awarded to assist with educational expenses.
- 2020 Benedict Veterinary Medicine Education Fund, OSU Awarded to assist students with their educational expenses.
- 2020 Dean's List Winter, Spring, Summer, OSU *Academic achievement*.
- 2019 Deans List Winter, Spring, Fall, OSU *Academic achievement*.
- 2019 Pet Memorial Academic Excellence Award, OSU

 Awarded to the four students academically ranked at the top of the class
- 2019 Ron and Marlene Izatt Scholarship, OSU Awarded to support students during the fourth year of study.
- 2019- The Society of Phi Zeta Honor Society Member, OSU

 The top ten percent of the third-year class are invited to become members of the Phi Zeta National Honor Society.
- 2019 American Kennel Club Veterinary Outreach Scholarship, OSU

 Provided in recognition of the commitment to the study of veterinary medicine, and activities with purebred dogs.
- 2018 Graduate Student Research Award, OSU *Awarded to recognize a graduate student demonstrating the pursuit of excellence in research.*
- 2018 Deans List Winter, Spring, Fall, OSU *Academic achievement.*
- 2018 Semifinalists, The IDEAS Challenge, Season 2

 An Innovation Challenge Exclusive for Veterinary Students, Vet Prep.
- 2018 Pet Memorial Program Academic Excellence Award, OSU

 Awarded to the four students academically ranked at the top of the class.
- 2018 Zoetis Veterinary Student Scholarship, OSU

 Awarded based on the criteria of academic excellence, leadership, financial need.
- 2018 Biomedical Sciences Summer Research Program, OSU

 To provide an opportunity for students in year 2 with a faculty guided positive research experience.
- 2017 Biomedical Sciences Summer Research Program, OSU

 To provide an opportunity for students in year 1 with a faculty guided positive research experience.
- 2017 Financial Award Scholarship, OSU

 Awarded to provide financial assistance to a veterinary student.
- 2017 Pet Memorial Program Academic Excellence Award, OSU

 Awarded to the four students academically ranked at the top of the class
- 2017 Veterinary Student Travel Award, 2017 Animal Health Association Meeting A competitive travel award to promote student interest in careers in public health.
- 2017 Dean's List Winter, Spring, Fall, OSU *Academic achievement.*
- 2017 Travel Award for Student Veterinarian Day, Center for Disease Control *A competitive travel award to attend the CDC's student vet day.*
- 2016 Dean's List Fall *Academic achievement.*
- 2013 Gary E. Smith Professional Development Award, University of Oregon

- Awarded to support outstanding graduate students pursuing professional development.
- 2013 Graduate Evolutionary Biology and Ecology Students Travel Scholarship A *travel scholarship to attend Ecological Society of America Conference*.
- 2013 Complex Systems Summer School (CSSS), Santa Fe Institute

 A competitive application for a four week introduction to complex behavior at the SFI think tank.
- 2012 Technology Entrepreneurship Program, University of Oregon, Summer 2012. A competitive summer opportunity to learn commercialization skills
- 2012 Clarence and Lucille Dunbar Scholarship, University of Oregon Recognizes high achieving graduate students in the areas of biology, chemistry, computer and information science.
- 2011 Dean's List
- 2010 Summer Honors Undergraduate Research Program, Harvard Medical School. Jon Beckwith Laboratory
- 2010 Dean's List
- 2009 AMGEN Scholar, University of California, San Diego, 2009. *Karen Christman Laboratory*
- 2009 Dean's List
- 2008 Undergraduate Research Assistantship Program, University of Northern Colorado *Patrick Burns Laboratory*.
- 2008 Dean's List
- 2007 Molecular, Cellular, & Developmental Biology Mentors Grant Jennifer Martin Laboratory
- 2007 Dean's List, 2007
- 2006 Poudre High School International Baccalaureate Program

E. RESEARCH, SCHOLARSHIP AND TECHNOLOGICAL DEVELOPMENT

E1. PUBLICATIONS

Indicators: Co-first authorship.

E1a. Refereed Publications

- 1. Singleton, Sebastian L., Edward W. Davis, **Holly K. Arnold**, An Mei Y. Daniels, Susanne M. Brander, Rachel J. Parsons, Thomas J. Sharpton, and Stephen J. Giovannoni. "Identification of rare microbial colonizers of plastic materials incubated in a coral reef environment." *Frontiers in Microbiology* 14 (2023): 1259014.
- 2. **Arnold, Holly K.,** Sharpton, Thomas J., and Brianna Beechler. Comparison of Upper Respiratory Microbiome Structure and Function in Cohabitating Cats With and Without Feline Upper Respiratory Tract Disease. *Plos one* 17.12 (2022): e0268730.
- 3. Leigh Combrink, Ian Humphreys, Quinn Washburn, **Holly K Arnold**, Keaton Stagaman, Kristin D. Kasschau, Anna E. Jolles, Brianna R. Beechler and Thomas J Sharpton. Microbiome analyses for wildlife ecologists a comprehensive review of methodology for 16S rRNA investigations. *Frontiers in Microbiology* 14 (2023).
- 4. Davis, Ed W. II., Carmen Wong, Kristin Kasschau, **Holly K. Arnold,** Christopher Gaulke, Thomas J. Sharpton, and Emily Ho. Aging Overwhelms the Effects of Dietary Micronutrient status on the composition of the gut microbiome in a mouse model of zinc depletion and supplementation. *Plos one* 17.12 (2022): e0275352.
- 5. Sharpton, Thomas J., Keaton Stagaman, Michael J. Sieler, **Holly K. Arnold**, and Edward W. Davis. "Phylogenetic Integration Reveals the Zebrafish Core Microbiome and Its Sensitivity to Environmental Exposures." *Toxics* 9, no. 1 (2021): 10.
- 6. Sharpton, Thomas J., Combrink, Leigh, **Arnold, Holly K.**, Gaulke, Christopher A., and Kent, Michael. Harnessing the Gut Microbiome in the Fight Against Anthelminthic Drug Resistance. *Current Opinion in Microbiology*. 53 (2020): 26 34.

- 7. **Arnold, Holly K.**°, Couch, Claire E.°, Crowhurst, Rachel S., Jolles, Anna E., Sharpton, Thomas J., Epps, Clinton W., Beechler, Brianna R. Metapopulation-scale variation in the bighorn sheep gut microbiome: environment, genetic diversity, and spatial structure associate with microbiome variation across populations. *Scientific reports* 10.1 (2020): 1-10.
- 8. Gaulke, Christopher, **Arnold, Holly K.**, Kembel, Steven W., and Thomas Sharpton. Ecophylogenetics Clarifies the Evolutionary Association between Mammals and Their Gut Microbiota. *mBio* 9.5 (2018): e01348-18.
- 9. Landeta, C., Blazyk, J. L., Hatahet, F., Meehan, B., M., Eser, M., Myrick, A., Bronstain, L., Minami, S., **Arnold, H.,** Ke, N., Rubin, E., J., Furie, B., C., Furie, B., Beckwith, J., Dutton, R., Boyd, D. Compounds targeting disulfide bond forming enzyme DsbB of Gram-negative bacteria. Nature Chemical Biology 11.4 (2015): 292-298.
- 10. **Arnold, Holly K.***, Masad, D., Pagani, G. A., Schmidt, J., & Stepanova, E. Network Disruption and Recovery: Co-Evolution of Defender and Attacker in a Dynamic Game. Complex Networks V. Springer International Publishing, 2014. 141-155.
- 11. Kembel, Steven W., Timothy K. O'Connor, **Holly K. Arnold**, Stephen P. Hubbell, S. Joseph Wright, and Jessica L. Green. Relationships between phyllosphere bacterial communities and plant functional traits in a neotropical forest. Proceedings of the National Academy of Sciences 111, no. 38 (2014): 13715-13720.

E1b. Abstracts

1. Burns, P.D., N. Wong, **H. Arnold**, N. Sirs, R. Romero, L. Herickhoff. 2009. 61 plant extracts reduce DNA fragmentation in frozen-thawed stallion sperm. Reproduction, Fertility, and Development 21(1): 131.

E2. GRANT AND CONTRACT SUPPORT

E2a. Current grant and contract support

NSF DEB EEID 1911994 (PI: Jolles)

1/9/2019 - 8/31/24

\$2,320,186

US-UK Collab: Eco-evolutionary dynamics of infectious diseases in host population networks

The goal of this project is to understand how microbiota associate with bighorn sheep population social and genetic networks and to determine ecological genetic, social, and physiologic processes that associate with host associated microbiomes. This award currently supplements a portion of my salary in a data scientist role.

Arnold's Role: Postdoctoral scientist. Note that Arnold didn't contribute to writing this grant but is still receiving salary support to complete grant objectives.

2024 – 2025 Margaret Lenhard scholarship OSU (PI: Arnold) 6/17/24 – 6/15/25

\$74,557

Lenhard Fellowship, Assistantship and Scholarship Application (E. Little)

This fellowship provides a graduate student stipend as well as a stipend (\$39,400) as well as a tuition waiver for fall, winter, spring, and 3 graduate credits during summer term 2025.

Arnold's Role: Co-Principal Investigator

SURF, CCVM, OSU (PI: Arnold)

7/17/24 - 8/29/24

\$3,000

CCVM SURF Application: Assessing the oral microbiome's role in neurodegenerative disease (A. Alavi)

This internal fellowship provides a small stipend plus supplies for a student to conduct summer research. *Arnold's Role: Principal Investigator*

moia s Roie. I rincipai investigator

2024 OSU Research Advancement Academy (PI: Arnold)

6/1/24 - 6/1/25

\$37,323

One Digital Health Coalition for the Fight Against Non-Communicable Diseases

This pilot project will seek to identify microbiome signatures of conservation of healthy and diseased individuals by looking across disease and host type.

[°] Co-first authorship

^{*} Authors listed alphabetically

E2b. Pending grant and contract support

NSF DMS – NIGMS 22-600 #2348012 (PI: Jiang)

7/1/2024 - 6/30/2027

\$599,575

Flexible and Scalable Cluster Analysis of Longitudinal Microbiome Data to Define Functional Groups

This project seeks to identify putative microbial functional guilds by identifying common patterns which manifest across taxa over time.

Arnold's Role: Co-Principal Investigator

2024 CCVM Internal Grant Proposal

8/1/2024 - 7/31/25

\$15,000

Can the microbiome modulate stress maladaptation to somatic pain?

The goal of this grant is to understand how the microbiome is modulated in animals with somatic pain.

Arnold's Role: Principal Investigator

2024 Prostate Cancer Foundation Challenge Award

10/1/2024 - 9/30/2026

\$244,382

Are the microbiome, APOE genotype, and treatment history associated with cognition in Hispanic men with metastatic prostate cancer?

This project will assess whether the gut microbiome is associated with cognition in men with metastatic prostate cancer treated with androgen deprivation therapy, APOE genotype and salivary testosterone.

Arnold's Role: Co-Principal Investigator

E2c. Completed Grant and Contract Support

NIH Loan Repayment Program; NIAID (PI: Arnold)

8/1/20 - 7/21/22

\$100,000

Mining the Gut Microbiome for Novel Antiparasitic Drug Candidates and Probiotics

The NIH Loan Repayment programs are designed to recruit and retain highly qualified professionals into biomedical careers. The goal of work during this time was to identify microbes which associate with low parasitic burdens.

Arnold's Role: Principle Investigator

2024 URSA Engage Program (PI: Arnold / Beechler)

1/1/24 - 6/14/24

\$1,000

Assessing the oral microbiome's role in neurodegenerative disease (A. Alavi)

This internal fellowship provides an opportunity for an undergraduate research opportunity.

Arnold's Role: Principal Investigator

E3. PATENTS

Arnold, Holly K., Sharpton, Thomas J., and Oregon State University. *Ecophylogenetic microbiome screening test for gut health*. Patent application in progress.

E4. OPEN SOURCE SOFTWARE, DATABASES, OR TUTORIALS

• Cladal Taxonomic Unit (ClaaTU) Analysis Tutorial (https://github.com/HollyKArnold/ClaaTU). Tutorial for performing analysis to identify microbial clades which are statistically overrepresented among groups.

E. PRESENTATIONS

E1a. Invited and Institutional Presentations

- 1. **Arnold HK** (2024, Invited Speaker). "Microbial conservation in health and disease." Invited by Dr. Skip Bohm, Oregon National Primate Research Center. Oregon Health Science University, Portland, Oregon. June 17th, 2024.
- 2. **Arnold HK** (2024, Invited Seminar). "Linking microbial conservation to digital health." Invited by Dr. Elaine Fu, Chemical, Biological, and Environmental Engineering Seminar Series, Oregon State University, May 31st, 2024
- 3. **Arnold HK** (2024 Panelist). "Oregon State University on Integrated Health and Biotechnology". Invited by Dr. Irem Tumer, Foundation Board Meeting Presentation, Oregon State University, May 16th, 2024.
- 4. **Arnold HK** (2024). "Using the Tree of Life to Describe Mammalian Health and Disease." Dissertation Defense, Oregon State University, September 13th, 2021.
- 5. **Arnold HK** (2021). "Eco-functional-phylogenetics; A novel non-invasive diagnostic test for Inflammatory Bowel Disease." Preliminary Exam, Oregon State University.
- 6. **Arnold HK** (2020). "Phylogenetic Diagnostics; Development and Application of Ecophylogenetics to Improve Inference in Microbiome Studies." Senior Paper Presentation, Oregon State University.
- 7. **Arnold HK** (2018) "Phylogenetic Diagnostics; Characterizing Potential Pathobiotic and Protective clades of the Mammalian Gut Microbiome." Biomedical Sciences Summer Research Program Presentation, Oregon State University.
- 8. **Arnold HK** (2017). "Mammals and their Gut Microbiota." Biomedical Sciences Summer Research Program Presentation, Oregon State University.

E1b. Conference Presentations

- 1. Christopher A. Gaulke, **Holly K. Arnold**, Steven W. Kembel, James P. O'Dwyer, and Thomas J. Sharpton. (2016). "Have Animals Co-Diversified with their Gut Microbiome? Exploring the evolutionary history of mammalian gut microbiome with ecophylogenetics." Poster Presentation, Microbial Ecology and Theory of Animals Conference, University of Oregon, Eugene, USA
- 2. **Arnold HK** (2009). "Amgen Scholars Symposium: Cardiac Tissue Engineering", AMGEN Summer Research Program.
- 3. **Arnold HK** (2010). "Leadership Alliance Presentation", Poster Presentation, Harvard Medical School, Boston, Massachusetts, USA.

F. TEACHING

F1. University Courses

• VMB 659/759 | Veterinary Bacteriology and Mycology | 5 credits I am responsible for 50% of this course. Offered annually.

F1a. Other Graduate / Professional Level Teaching		
1/27/2023	Guest Lecturer. "Case / control design."	
	Epidemiology and Public Health (VMB 766), Oregon State University, USA	
10/3/2023	Guest Lecturer. "Microbiome as a diagnostic or therapeutic target in veterinary medicine."	
	Veterinary Bacteriology (VMB 659/759), Oregon State University, USA.	
5/19/2022	Guest Lecturer. "Case / control design."	
	Epidemiology and Public Health (VMB 766), Oregon State University, USA	
10/4/2022	Guest Lecturer. "Microbiome as a diagnostic or therapeutic target in veterinary medicine."	
	Veterinary Bacteriology (VMB 659/759), Oregon State University, USA	
10/4-6/2021	Clinical Teaching Assistant. Assisted primary clinicians with spay / neuter lab.	
	Small Animal Surgery (VMC 785), Oregon State University, USA	
11/9-13/2020	Clinical Teaching Assistant. Assisted primary clinicians with spay / neuter lab.	

F1b. Other Undergraduate Level Teaching

5/23/2023 Guest Lecturer. "Microbiome as a diagnostic or therapeutic target".

The Human Microbiome. (MB 436), Oregon State University, USA

2011 Graduate Teaching Assistant. Lead two laboratory sections per week for a 13 week quarter.

General Biology (BI 211), University of Oregon, USA

2012 Graduate Teaching Assistant. Lead two laboratory sections per week for a 13 week quarter.

General Biology (BI 211), University of Oregon, USA

2012 Graduate Teaching Assistant. Lead two discussion group per week for a 13 quarter.

Biological Diversity (BI 375), University of Oregon, USA

F1c. Workshops

6/20-21/2024 Invited Speaker, "Taxon Level Analyses"

SHARP Columbia Microbiome Data Analytics Camp: Planning generating, and analyzing 16SrRNA gene

sequencing surveys. Virtual Workshop.

6/22-23/2023 Invited Speaker, "Taxon Level Analyses"

SHARP Columbia Microbiome Data Analytics Camp: Planning generating, and analyzing 16SrRNA gene

sequencing surveys. Virtual Workshop.

9/13/2018 Invited Speaker, "Cladal Taxonomic Unit Discovery". Designed and presented a half day bioinformatics

workshop designed to teach participants how to incorporate microbial phylogeny into microbial

community analyses. Université du Québec à Montréal, Québec, Canada

F2. Individual Student Mentoring

F2a. Postdoctoral Trainees

Name Training Period Current Position

F2b. Graduate Students Advised

<u>Name</u>	<u>Level</u>	Graduation Date	<u>Program</u>	Current Position	<u>Publications</u>
Emma Little*	PhD	2029 (expected)	CHS	NA	
Amanda Majchrzak*	DVM/PhD	2031 (expected)	CHS	NA	

^{*}Denotes co-advised trainees

CHS = Comparative Health Sciences

F3c. Undergraduate Trainees

Name Program Training Period Publications

Arman Alavi Bioengineering 2024 (URSA, CCVM Undergrad Research)

URSA = Undergraduate Research and Scholarly Achievement; CCVM = Carlson College of Veterinary Medicine

F4d. Additional students advised as a committee member

Name	Level	Program	Graduation Date
Lauran Schreck	PhD	CHS	2029 (expected)
Isaac Schuman	PhD	CHS	2028 (expected)
Brittany Bowling	MS	IB	2026 (expected)

CHS = Comparative Health Sciences; IB = Integrative Biology

G. SERVICE

G1. University Service G1a. Department/unit

2024 -	Faculty Advisory Committee, Carlson College of Veterinary Medicine
2020	Class Gift Committee Lead
2019	Inclusion, Diversity, Equity Awareness (IDEAs) Committee, Member
2019 - 2019	Crawl the Heart of the Valley Committee Member, Oregon State University
2018	Pet Day Donations Committee Head
2018 - 2019	Hill's Senior Student Representative
2018 - 2019	Treasurer, Veterinary Students as One In Culture and Ethnicity (VOICE) Student Chapter
2017 - 2018	Hill's Student Junior Representative
2017 - 2018	Secretary, Public Health & Policy Student Chapter at Oregon State University
2016 - 2018	Vice President and Cofounder, Student Chapter of the World Aquatic Veterinary Medical Association
2013	Secretary for Graduate Evolutionary Biology and Ecology Students

G1b. University

2024 Carlson College of Veterinary Medicine Strategic Plan Working Group Leader - Research

G2. Service to the Profession

2024 - Ad hock Reviewer: mSystems (1 article, 2024), Frontiers in Veterinary Science (1 article, 2024)

G3. Professional Societies

2024	Association of Veterinary Informatics, Member
2020 – Current	American Veterinary Medical Association Member
2020 - 2021	Corvallis Women's Entrepreneurship Group, TWIST, May 2020 – 2021.
2019 -	Phi Zeta Honor Society Member
2018 - 2020	Association for Veterinary Informatics, Member
2016 - 2017	Member, Veterinary Business Management Association
2014 - 2015	Hospital Volunteer, Center for Women and Families
2014	Heartland Humane Volunteer
2012	Ecological Society of America Member
2009 -	Phi Beta Kappa
2007 -	National Society of Collegiate Scholars

G3. Selected Science Communication

- Unlocking secrets of the microbiome as a veterinary clinician scientist. Febuary 28th, 2024.
 https://vetmed.oregonstate.edu/feature-story/unlocking-secrets-microbiome-veterinary-clinician-scientist. Accessed July 3rd, 2024.
- Morris Animal Foundation. Could Good Bacteria Hold a Key to Fighting Upper Respiratory Disease in Cats? October 29, 2019. https://www.morrisanimalfoundation.org/article/upper-respiratory-disease-cats. Accessed July 9th, 2020.
- Lundeberg, Steve. Understanding gut microbes' role in mammalian evolution. iMPACT; Transformational Experiences in the College of Science. September 27th, 2018. http://impact.oregonstate.edu/2018/09/understanding-gut-microbes-

 $\frac{role-in-mammals-evolution/?fbclid=IwAR0zMDhXaemBpZT29gbHMIEQ-0S6maEIfILf6W-9ghq0MZ8b5pbP0aDW-To}{21}. Accessed February 21st, 2020.$

G4. Outreach

F. CONTINUING EDUCATION