

# Samantha J. Werth

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## Education

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- Degree Expected Jun 2021 **Doctor of Philosophy, Animal Biology**  
*University of California, Davis – Davis, CA*  
Dissertation: An environmental and economic assessment of U.S. ground beef compared to plant-based meat alternatives  
PI: Frank Mitloehner, Ph.D.
- Sep 2012 – Mar 2016 **Master of Science, Animal Biology**  
*University of California, Davis – Davis, CA*  
Thesis: A life cycle assessment of the feed supply chain in California beef production  
PI: Frank Mitloehner, Ph.D.
- Sep 2008 – Jun 2012 **Bachelor of Science, Animal Science**  
*University of California, Davis – Davis, CA*  
Specialization: Livestock and Dairy Production

## Research Experience

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- Sep 2012 – Present **Graduate Student Researcher, Ph.D. Candidate**  
*University of California, Davis – Davis, CA*
- Utilizing computational general equilibrium modelling and life cycle assessment to determine the environmental and economic impacts of a decrease in ground beef consumption and an increase in plant based meat alternative consumption in the United States. (In progress).
  - Lead graduate student researcher in two Veterinary Good Clinical Practices (vGCP) research projects assessing the mitigation of greenhouse and other gaseous emissions from finishing beef cattle. Emissions collected through the use of individual animal head chambers as well as cattle pen enclosures simulating a feedlot environment.
  - Utilized life cycle assessment to determine the impacts associated with feed production of rations fed to feedlot cattle in California, USA.
  - Developed an extensive literature review on life cycle assessments in beef cattle, pointing out several underrepresented impact categories crucial to understanding the impacts associated with beef production and ways in which these impacts can be mitigated.
- Mar 2011 – Sep 2012 **Research Assistant, Mitloehner Lab**  
*University of California, Davis – Davis, CA*
- Utilized head chambers to analyze enteric emissions from cows fed different ionophore concentrations.
  - Performed *in vitro* research measuring changes in volatile organic compounds (VOCs) and greenhouse gas (GHG) emissions within the rumen environment when adding micronutrients to feed.
  - Measured VOC and GHG emissions from mini silos of corn and alfalfa hay.
  - Measured the effects of different housing environments on dairy calves' immune systems and welfare.

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### Professional Development

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STPA Level 2: Introduction to Public Policy Analysis, Science and Technology Policy Academy. Virtual. (Feb 2021)

Six week intensive course designed to help scientists, engineers, and health professionals learn how to conduct a public policy analysis. Course enabled me to view my doctoral research from the perspective of public policy and has aided in the development of a public policy analysis that I plan to publish in the Journal of Science Policy & Government.

FUTURE Professional Development Program, UC Davis. Davis, CA. (Sep 2020)

Ten week seminar series focused on navigating career interests that are not traditionally viewed as “science careers”. Additional focus placed on development of practical skills, effectively communicating transferrable skills, and building supportive professional relationships through networking and community building.

GTAP 101: Introduction to Computable General Equilibrium Modeling in the GTAP Framework, Center for Global Trade Analysis, Department of Agricultural Economics. Purdue University. Virtual. (May 2020)

This 8 week course provided an introduction to the GTAP computable general equilibrium (CGE) model and its use in applied economic policy analysis. Curriculum emphasized an intuitive and graphical treatment of economic theory in the CGE model, and provided structured experience in manipulating and running the GTAP Model. A certificate was awarded for successful completion of all assignments and final group project.

CCST Science Translators Showcase, California Council on Science & Technology. Sacramento, CA. (Feb 2020)

Selected to participate in the 2020 CCST Science Translators Showcase as a Science Translator, hosted as part of the CCST’s Science & Technology Week in Sacramento, CA. Prior to the showcase, participants attended four training workshops which covered strategies for effective science communication, message crafting to target audiences, and tips for effective conversation and networking.

Mentoring 101: From Introduction to Implementation, UC Davis GradPathways Institute for Professional Development. Davis, CA. (Nov 2019)

This workshop series covered topics adapted from the Entering Mentoring text and the UW ICTR that are integral in the building of successful STEM mentoring relationships. The series included five 80 minute workshops. Certificate received for successful completion.

UC Cooperative Extension Livestock Tour, UC Agriculture and Natural Resources. Fresno, CA. (Sep 2018)

Participated in UCCE advisor and specialist program team meetings. Met with members of California Beef Council, Cargill, Harris Ranch and local cattlemen’s associations to perform needs assessments and determine future extension work and projects to be done in California.

Stockmanship and Stewardship Training, National Cattlemen’s Beef Association. Davis, CA. (Sep 2017)

Training through the NCBA on low stress cattle handling, Beef Quality Assurance, and facility design to optimize animal and worker safety.

Youth Ag Summit “Feeding a Hungry Planet”, Bayer Crop Science. Calgary, Alberta, CA. (Aug 2013)

International delegate at the inaugural Youth Ag Summit. Attended farm tours and multiple workshops on how to advance agriculture internationally while addressing the 2050 Challenge of feeding 9 billion people by 2050.

### Oral and Poster Presentations

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To Eat Meat or Not to Eat Meat: What’s really at Steak?

UC Davis Grad Slam 2021, virtual. *Oral*. (Feb 2021)

The Ins and Outs of Meat Alternatives.

California Women in Agriculture Annual Convention, virtual. *Oral*. (Jan 2021)

Economic and Environmental Impacts of Ground Beef Compared to Plant Based Meat Alternatives.

Lallemand Animal Nutrition Scholarship Awardee Meeting, virtual. *Oral*. (Nov 2020)

CA ARPAS Continuing Education Conference, virtual. *Oral*. (Oct 2020)

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### Beef Cattle Production and Environmental Sustainability.

2020 UC Davis VMTH Winter Conference – FARM Club/Beef Producer Symposium, Davis, CA. *Oral.* (Feb 2020)

### Are Cattle the Culprits?

Hosted by the CA Cattlewomen's Association at the 2020 World Agricultural Expo, Tulare, CA. *Oral.* (Feb 2020)

### Where's the Beef? Impacts of meat alternatives and their livestock counterparts.

California Cattlemen's Association Annual Meeting, Sparks, NV. *Oral.* (Nov 2018)

CA ARPAS Continuing Education Conference, Coalinga, CA. *Oral.* (Oct 2018)

### Effects of co-supplementing 3-nitrooxypropanol and nitrate on emissions from finishing beef cattle.

Animal Biology Graduate Group Fall Colloquium, Davis, CA. *Oral.* (Oct 2017)

### Greenhouse Gas Emissions and the Livestock Industry.

California Grain and Feed Industry Conference, Monterey, CA. *Oral.* (Jan 2017)

California Cattlemen's Association Annual Meeting, Sparks, NV. *Oral.* (Dec 2016)

### A life cycle assessment of a beef feedlot finishing ration supply chain in California.

Animal Biology Graduate Group Fall Colloquium, Davis, CA. *Poster.* (Oct 2016)

ADSA-ASAS-CSAS Joint Annual Meeting, Salt Lake City, UT. *Oral.* (Jul 2016)

California Animal Nutrition Conference, Fresno, CA. *Poster.* (May 2016)

### Effect of dietary nitrate and organic copper supplementation on dairy enteric emissions.

ADSA-ASAS-CSAS Joint Annual Meeting, Kansas City, KA. *Oral.* (Jul 2014)

California Animal Nutrition Conference, Fresno, CA. *Poster.* (May 2014)

### Effects of a next generation B-agonist on methane, ammonia, and hydrogen sulfide emission in beef cattle.

Animal Biology Graduate Group Fall Colloquium, Davis, CA. *Poster.* (Jan 2013)

### Housing strategies to improve calf well-being.

California Grain and Feed Industry Conference, Monterey, CA. *Oral.* (Jan 2013)

### Performance, health, and behavior of individual versus group housed calves during weaning.

California Animal Nutrition Conference, Fresno, CA. *Poster.* (May 2013)

## Publications

**Werth, S.J.**, K. Almutairi, G. Thoma and F.M. Mitloehner. An environmental assessment of U.S. ground beef in response to the introduction of plant-based meat alternatives. (Manuscript in Preparation).

**Werth, S.J.**, K. Almutairi, G. Thoma and F.M. Mitloehner. An economic assessment of U.S. ground beef in response to the introduction of plant-based meat alternatives. (Manuscript in Preparation).

**Werth, S.J.**, A.S. Rocha, J.W. Oltjen, E. Kebreab and F.M. Mitloehner. A life cycle assessment of the environmental impacts of cattle feedlot finishing rations. (Manuscript in Preparation).

Ross, E.G., J.J. Ball, **S.J. Werth**, Y.J. Zhao, Y. Pan, P.C. Taube, T.R. Meinert and F.M. Mitloehner. Effect of ractopamine hydrochloride on environmental gas emissions, growth performance, and carcass characteristics in feedlot steers. (Manuscript Submitted).

Teeter, J.S., S.L. Gruber, J.C. Kube, J.A. Hagenmaier, J.B. Allen, C.T. Herr, **S.J. Werth**, and F.M. Mitloehner. Effects of lubabegron on gaseous emissions, growth performance, and carcass characteristics of beef cattle during the last 91 days of the feeding period. (Manuscript Submitted).

Ross, E.G., C.B. Peterson, A.V. Carrazco, **S.J. Werth**, Y. Zhao, Y. Pann, E.J. DePeters, J.G. Fadel, M.E. Chiodini, L. Poggianella and F.M. Mitloehner. 2020. Effects of SOP "STAR COW" on enteric gaseous emissions and dairy cattle performance. *Sustainability*, 12(24), 10250.

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**Werth, S.J.**, J.W. Oltjen, E. Kebreab and F.M. Mitloehner. 2016. A life cycle assessment of a beef feedlot finishing ration supply chain in California. *Journal of Animal Science*, 94(E-Suppl. 5):568.

**Werth, S.J.**, Schusterman E.G., Peterson C.B., and Mitloehner F.M. 2014. Chapter 90. Air: Confined Animal Facilities and Air Quality Issues. *Encyclopedia of Agriculture and Food Systems*, 2nd Edition, 1:283-292.

### Grants

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#### An environmental and economic assessment of U.S. ground beef compared to plant based meat alternatives

Sponsor: National Cattlemen's Beef Association (Centennial, Colorado)

Amount: \$200,000

Team: S.J. Werth, J.W. Oltjen, G. Thoma, K. Almutairi, and F.M. Mitloehner

Period: Aug 2019 – May 2021

#### Literature Review of Beef Life Cycle Assessments

Sponsor: National Cattlemen's Beef Association (Centennial, Colorado)

Amount: \$10,000

Team: S.J. Werth, F.M. Mitloehner

Period: Oct 2012 – Oct 2013

### Scholarships and Awards

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#### UC Davis Grad Slam 2021 Top Ten Finalist, UC Davis Graduate Studies (2021)

Recognized as a top ten finalist for UC Davis Grad Slam, an annual competition where master's and doctoral students are challenged to share their research story, concisely and compellingly, in three minutes or less.

#### Livestock Memorial Research Fund Award, California Cattlemen's Association (2020)

Recognized as an outstanding graduate student studying beef cattle production, demonstrating a continuing interest in the beef cattle industry. \$5,000.

#### Memorial Scholarship, American Registry of Professional Animal Scientists – CA Chapter (2020)

Recognized as an outstanding graduate student pursuing a career in the animal sciences. \$2,000.

#### Lallemand Forward PhD Scholarship, Lallemand Animal Nutrition (2020)

Recognized as an outstanding doctoral candidate focusing on animal sciences dedicated to a career in animal agriculture. \$3,000.

#### Colvin Scholarship, Certified Angus Beef® (2020)

Recognized as an outstanding graduate student involved in local communities and committed to the continued success and progression of the beef industry. \$3,000.

#### Livestock Memorial Research Fund Award, California Cattlemen's Association (2019)

Recognized as an outstanding graduate student studying beef cattle production, demonstrating a continuing interest in the beef cattle industry. \$5,000.

#### Henry A. Jastro Graduate Research Award, UC Davis Animal Biology Graduate Group (2018)

Recognized as an outstanding graduate student with the potential to carry out research projects related to the missions of the College of Agricultural and Environmental Sciences as outlined in written proposals. \$2,500

#### Memorial Scholarship, American Registry of Professional Animal Scientists – CA Chapter (2018)

Recognized as an outstanding graduate student pursuing a career in the animal sciences. \$2,000.

#### Frank G. Rue Memorial Scholarship, UC Davis Department of Animal Science (2015)

Recognized for having demonstrated an interest in livestock and leadership in extracurricular activities. \$7,000.

#### California Cattlewomen Memorial Scholarship, California Cattlewomen, Inc. (2015)

Awarded for commitment to pursue a career in an agricultural field. \$1,000.

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### Teaching Experience

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#### Domestic Animal Production (ANS 41) Guest Lecturer, University of California, Davis

Delivered guest lecture on dairy cattle nutrition.	Fall 2019
Delivered guest lecture on beef cattle reproduction.	Fall 2018
Delivered guest lecture on beef cattle production.	Fall 2017
Delivered guest lecture on swine nutrition and reproduction.	Fall 2016

#### Teaching Assistant, Department of Animal Science, University of California, Davis

Nutrition 122: Ruminant Nutrition	Spring 2018
Nutrition 115: Animal Nutrition	Winter 2018
Animal Science 41/41L: Domestic Animal Production	Fall 2016
Animal Science 146: Dairy Production	Spring 2016
Animal Science 124: Lactation	Winter 2016
Animal Biochemistry and Metabolism 102	Fall 2013
Animal Biochemistry and Metabolism 103	Winter 2013
Animal Biochemistry and Metabolism 102	Fall 2012

### University Service and Outreach

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#### Volunteer Presenter, Fred T. Korematsu Elementary School (Oct 2020)

Invited to present to Belinda Kesser's 3<sup>rd</sup> grade class on the topic of "Cows and Climate Change!" after the class had read a Scholastic article on the impact of cows on the environment.

#### Graduate Student Panel Member, UC Davis Department of Animal Science (2019)

Participated in the panel to review candidates for the Assistant Specialist in Cooperative Extension – Feedlot Management Specialist position.

#### Graduate Student Panel Member, UC Davis Department of Animal Science (2019)

Participated in the panel to review candidates for the CIRE faculty position.

#### 50<sup>th</sup> CA Net Energy Symposium Student Assistant, UC Davis Department of Animal Science (2018)

Assisted in symposium set-up, speaker transportation, and symposium clean-up.

#### Picnic Day Beef Cattle Exhibit Coordinator, UC Davis Department of Animal Science (2017)

Coordinated and ran the Beef Cattle Exhibit at the UC Davis Picnic Day, a campus wide event gathering more than 75,000+ visitors. Engaged with attendees, educating them on beef production at UC Davis and related research performed at the University.

#### Picnic Day Cow Milking Exhibit Coordinator, UC Davis Department of Animal Science (2016)

Coordinated and ran the Cow Milking Exhibit at the UC Davis Picnic Day. Engaged with attendees, educating them on milk production in California and the science behind dairy cattle production.

#### Graduate Student Panel Member, UC Davis Department of Animal Science (2015)

Participated in the panel to review candidates for non-ruminant faculty position.

#### Picnic Day Petting Zoo Coordinator, UC Davis Department of Animal Science (2013, 2014, 2015)

Coordinated and ran the Petting Zoo at the UC Davis Picnic Day. Engaged with young attendees, educating them on goats and sheep and their importance in agriculture.

### Community Service

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#### Team Chico Workout, Performance 22. Davis, CA. (2019)

Organized a fundraising workout event to raise funds for the Performance 22 "gym dog", Chico who was in need of extensive surgery.

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Natalie Corona Memorial Workout, Performance 22. Davis, CA. (2019)

Organized a fundraising workout event in honor of Davis Police Officer Natalie Corona, who was killed in the line of duty on January 10, 2019. Funds raised went to support memorial services for Officer Corona.

Kilos for a Cure, Performance 22. Davis, CA. (2018)

Organized a fundraising workout event in conjunction with USA Weightlifting's national fundraising event to support the American Cancer Society and its mission of creating a world with less cancer and more birthdays.

Lift Up Autism, Performance 22. Davis, CA. (2015, 2016, 2017)

Organized a fundraising workout event in conjunction with TrainHeroic's national fundraising event. This "competition for a cause" specifically sought to support early diagnosis and treatment of Autism, raise funds for Autism.

Mercer Animal Clinic for the Homeless Undergraduate Coordinator, Mercer Clinic. Davis, CA. (2011-2012)

Assisted UC Davis veterinary students by organizing undergraduate volunteers to assist at monthly animal care clinics for the homeless in Sacramento, CA.

Mercer Animal Clinic Undergraduate Fundraiser Coordinator, Mercer Clinic. Davis, CA. (2009-2012)

Organized undergraduate student volunteers for weekly baking of dog cookies. Also organized volunteers to help fundraise by selling dog cookies at the local Davis, CA farmers market.

Mercer Animal Clinic for the Homeless Volunteer, Mercer Clinic. Sacramento, CA. (2009-2012)

Assisted UC Davis veterinary students and doctors at the monthly clinic with intake and treatment of animal patients including restraining, mixing and administering vaccinations, and educating clients on animal care.

### Professional Affiliations

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<u>American Association for the Advancement of Science</u> , member	2020 – present
<u>National Science Policy Network</u> , member	2020 – present
<u>Capitol Science Communicators</u> , member	2020 – present
<u>California Cattlemen's Association</u> , member	2016 – present
<u>Yolo County Cattlemen's Association</u> , member	2016 – present
<u>National Cattlemen's Beef Association</u> , member	2015 – present
<u>American Society of Animal Science</u> , member	2012 – present