Agricultural Animal Bioethics Teaching Workshop

January 26-28, 2017
BWI Marriott Hotel
https://vet.purdue.edu/CAWS/bioethics/

PURDUE UNIVERSITY

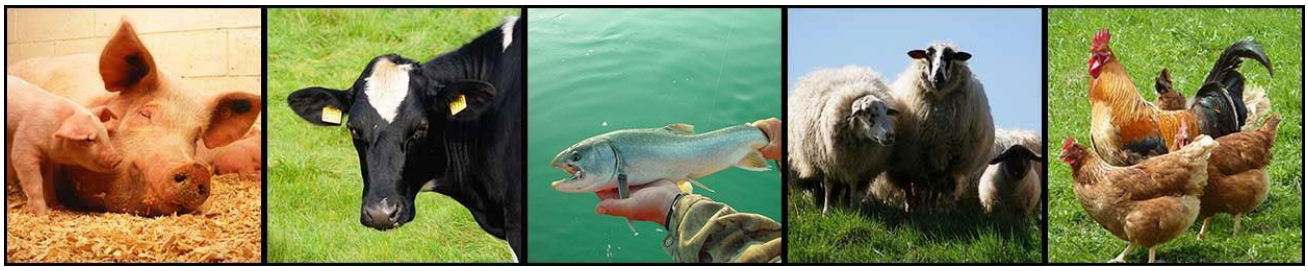
MICHIGAN STATE UNIVERSITY

UAA UNIVERSITY of ALASKA ANCHORAGE

UNIVERSITY OF MARYLAND

TEXAS A&M UNIVERSITY

USDA
United States Department of Agriculture
National Institute of Food and Agriculture



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Background

The January 2017 Agricultural Animal Bioethics Teaching workshop is one of the outcomes of a funded USDA Higher Education Challenge grant proposal. (Candace Croney (PI), Alan Beck (Co-PI), Raymond Anthony (Co-PI), Ray Stricklin (Co-PI), Janice Siegford (Co-PI), Janice Swanson (Co-PI) and Gary Varner (Co-PI). The goal to develop an integrated curriculum for teaching animal bioethics: farm animal welfare, agricultural environmental ethics, and rural societal issues based on a cross-disciplinary pedagogy.

Program Goals

- Develop a series of educational modules and case studies in Agricultural Animal Bioethics that complement and strengthen existing courses in animal welfare, contemporary issues and sustainable agriculture
- Provide educators with the pedagogical tools and support they need to effectively deliver the curriculum content.
    - Workshops will be developed to 1) show faculty how to adapt and incorporate the materials to meet specific needs, and 2) explore innovative forms of content delivery and evaluation of undergraduate students.
    - An interactive, dynamic website will be developed to provide resources and instructional support for faculty teaching agricultural animal bioethics, such as templates for course development produced by faculty during the workshops.

Agenda

Thur, Jan 26th

7:00-8:00 pm Registration and meet-and-greet with soft drinks and snacks

8:00- 9:30 pm **Program start**:
Welcome; overview of Challenge Grant Goals and goals of conference (Ray Stricklin)
Self intro of conference attendees including teaching experience and reasons for interest in bioethics (1 slide each to be submitted before start of conference)

Fri, Jan 27th

Breakfast On your own

8:30-8:45 Introduction of late arrivals

8:45-9:30 Overview of bioethics topics; importance to animal agriculture and veterinary medicine (Ray Stricklin, Candace Croney)
Challenges in teaching ag animal bioethics
Review participant themes; discussion

9:30-10:00 Addressing challenges; standardizing curriculum
Overview of lectures, modules, goals (Janice Siegford, Janice Swanson)
Tailoring curriculum to meet needs: what topics all students should learn at minimum (tie back to developed curriculum; discussion and feedback)

10:00-10:15 Break

10:15-11:30 Teaching bioethics in ag and vet sciences (mock classroom)& breakout groups (1 philosopher and 1 scientist Co-PI/group)

- A. Understanding basics of moral philosophy and translating to bioscience students (goal setting, how much detail, how do you effectively convey these and demonstrate application?) (Gary Varner, Candace Croney, Ray Stricklin)
- B. Reviewing and delivering basic concepts related to sustainability (Paul Thompson, Ray Anthony, Janice Swanson)

11:30-12:15 Teaching bioethics in ag and vet sciences: breakout groups (1 philosopher and 1 scientist Co-PI/group)

- Facilitating teaching in large groups (Gary Varner, Candace Croney, Janice Swanson)
- B. Facilitating teaching in small groups (Ray Anthony, Paul Thompson, Janice Siegford)

12:15-1:15 Working lunch; summary of morning activities

1:15-2:15 Implementing effective bioethics curriculum: deliberation vs. debate (Dane Scott)

2:15-3:15 Utilizing moral deliberation/ethics assessment; case study (Candace Croney and Ray Anthony)
Break out groups (practice using moral deliberation)

3:15-3:45 Break

3:45-5:00 Fostering and facilitating productive student discussions (Dane Scott)
Break out groups;
Participants practice fostering discussion using different developed modules; peer feedback
Participants practice curriculum delivery with modules of interest
(All PIs, Paul and Dane; each team member assigned to work with a group)

Group reporting; what worked, what didn't, Q & A, feedback

Assignment: how might curriculum & exercises be incorporated into existing or new planned courses?

6:00 Dinner on your own

Saturday, Jan 28th

8:30-10:00 Mock classroom breakout exercises (Dane Scott, Ray Anthony plus all Co-PIs)
Enviropig
Aquabounty

1000-:10:15 Break

10:15-11:00 What makes a good case study? (Gary Varner)
Break outs (identifying useful cases for participants' needs)

11:00-12:00 Evaluating students; effective assignments; (Candace Croney, Dane Scott; Paul Thompson and all Co-PIs)
Break out groups: begin syllabus planning

12:00-1:00 Working lunch; summary of morning activities

1:00- 2:15 Curriculum integration into course syllabi: peer feedback and discussion

2:15-2:30 Summation of conference (Ray Stricklin)

2:30-3:00 Feedback and evaluation of conference by attendees (completion of evaluation form)

3:00 Close and thanks to all attendee

Project PIs

Candace Croney, Purdue University, PI
Ray Anthony, University of Alaska Anchorage, Co-PI
Alan Beck, Purdue University, Co-PI
Janice Siegford, Michigan State University, Co-PI
Ray Stricklin, University of Maryland, Co-PI
Janice Swanson, Michigan State University, Co-PI
Gary Varner, Texas A & M, Co-PI

Workshop Facilitators
Dane Scott Paul Thompson

Program Evaluator
Chanda Elbert

Postdoctoral Coordinator
Amy Bauer, Purdue University

Participants

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Mark Bauer
Courtney Daigle
Lindsey Hulbert
Dawn Koltes
Jeannette Moore
Giovanna Rosenlicht
Debbie Cherney
Chris Gray
Harvey James
Martin Maquivar
Kasey Moyes
Monique Udell
Beth Ventura

Personnel

Project PI and Co-PIs

Dr. Candace Croney
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Dr. Candace Croney is director of Purdue University's Center for Animal Welfare Science and professor of animal behavior and well-being in the departments of Comparative Pathobiology and Animal Sciences. She has a PhD in animal sciences from The Pennsylvania State University, USA. Following postdoctoral training at the University of Maryland, College Park, she went on to serve as Assistant Director of Conservation Education at the American Zoo and Aquarium Association and has held faculty appointments in Animal Sciences and Preventive Medicine at Oregon State University and The Ohio State University before joining the faculty at Purdue University.

Her research, teaching and outreach efforts focus on the interactions between animal behavior, cognition and well-being, the effects of rearing environments and enrichment on animal behavior and welfare, the ethical implications of animal care and use decisions, and public perceptions of animal agriculture.
Her research has been featured in national and international broadcast programs by National Geographic, the BBC, and their affiliates.
She serves as scientific advisor on animal welfare to numerous groups, including the American Humane Association, Bob Evans Farms, Cargill, McDonald's, Merck, MARS Pet Care, and Target.

Dr. Ray Anthony
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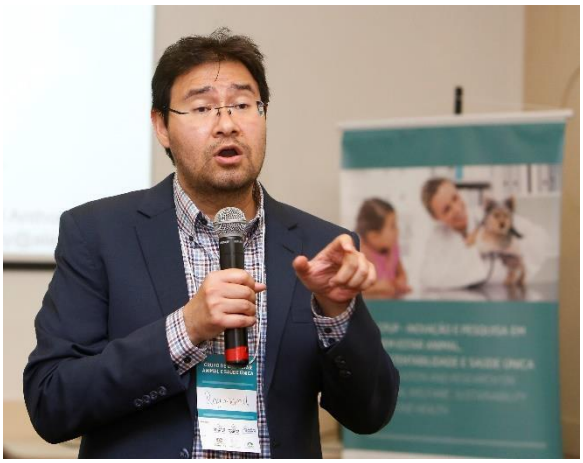

Raymond Anthony is Professor of Philosophy at the University of Alaska Anchorage and specializes in environmental, food, animal and agricultural ethics, and ethical theory and the philosophy of technology. He has been at UAA since 2005 and previously taught at Iowa University and the University of British Columbia. Currently, he is pursuing values-aware research in global food security, sustainability, animal welfare and climate ethics. He serves as Ethics Advisor for the American Veterinary Medical Association's Animal Welfare Committee and Panels on Euthanasia, Humane Slaughter and Depopulation.

You may find more information about his research, teaching and service at: https://alaska.digication.com/raymond_anthony_professor_of_philosophy/Welcome/published

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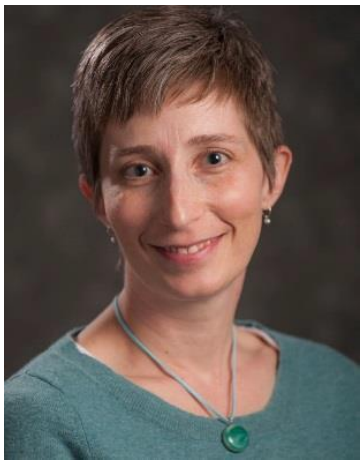

Dr. Siegford is an associate professor in the Animal Behavior and Welfare Group in Michigan State University's Department of Animal Science. Her education combines training in animal welfare (postdoc), neuroscience (PhD), and zoology (MS) with science communication (BS), which allows her to approach questions related to understanding quality of life for domestic animals from a variety of perspectives and to convey this information to students and stakeholders. Dr. Siegford's research examines the impacts of management practices and environment on the behavior and welfare of production animals. Dr. Siegford is currently working with colleagues to relate the social behavior of group-housed pigs to their genotypes in order to improve welfare through both selection and management. Another of her projects examines how laying hens adapt individually and as flocks to alternative aviary housing systems. Dr. Siegford also works to develop non-invasive, automated methods for collecting behavior and welfare data from individual animals in their home environments. In addition to her research, Dr. Siegford teaches courses in animal welfare and behavior using a learner-centered approach. She currently teaches tow undergraduate face-to-face courses (Applied Animal Behavior and Companion Animal Biology and Management) and a graduate online course on Animal Welfare Assessment. She assists with instruction and small group facilitation for the Ethical and Animal Welfare course in MSU's College of Veterinary Medicine and is an organizer for the annual Intercollegiate Animal Welfare Judging and Assessment Competition.

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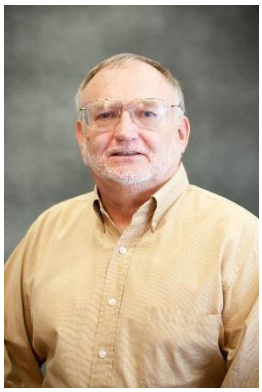
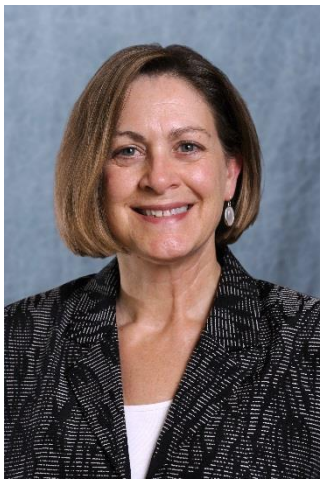


W. Ray Stricklin has been involved in animal welfare-related teaching, research, and policy activities for over 25 years. His past research focused primarily on social and spacing behavior of animals. More recent research involved the study of pain in cattle as monitored by electroencephalogram (EEG). The research of his graduate students has spanned outside domestic food animals and included wild animals in natural settings as well as captive wild animals. He helped write the "Guide for the Care and Use of Agricultural Animals in Agricultural Teaching and Research," and he contributed a section to the PHS-NIH "Institutional Animal Care and Use Committee Guidebook." He has served on the boards of the Scientists Center for Animal Welfare, the International Society of Applied Ethology and the American Society of Animal Science. He has served on over 30 animal care program assessment teams at university, government and industry institutions in service to the "Association for the Assessment and Accreditation of Laboratory Animal Care, International." He has lived and served on faculty of universities in Canada and Sweden. The NE-American Society of Animal Science recognized him as the 1985 "Outstanding Young Researcher" and the 2005 recipient of the "Distinguished Service Award." He has served as assistant dean in the College of Agriculture and Natural Resources and chair of the university animal care and use committee. The University of Maryland Center for Teaching Excellence has recognized him with a Certificate of Teaching Excellence (1997), as a Lilly Fellow for Teaching Excellence (2002), and as a Phillip Morrill Presidential Scholars Faculty Mentor (2005). His recent teaching activities have focused on a senior-level course entitled "Animal Welfare and Bioethics" and a University Honors course entitled "Applied and Cognitive Ethology: From Animal Thinking to Animal Feelings".



Dr. Janice Swanson
Professor
Department of Animal Science Michigan State University
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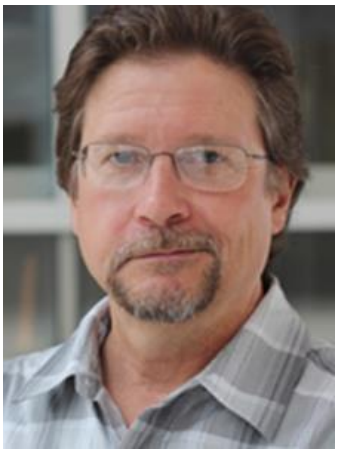
Janice Swanson is professor and chair of the Department of Animal Science at Michigan State University. She received a PhD from the University of Maryland in Applied Ethology in 1988, and MS and BS in animal science from the University of Connecticut. Swanson's career includes five years as a technical information specialist in the U.S.D.A. Animal Welfare Information Center and 15 years as a faculty in the Department of Animal Science and Industry at Kansas State University. At KSU, she taught courses in animal behavior and welfare, conducted outreach, served as director of the department's international program, and as interim department head. In 2007 Janice assumed the position of professor and Director of Animal Welfare at MSU to coordinate outreach, teaching and research in the area of animal welfare with a focus on social responsibility in the food system. She is a member of the MSU Animal Behavior and Welfare Group and has been serving as the chair of the Department of Animal Science since 2010. In addition to her administrative and academic responsibilities in teaching, research and extension, Janice has provided scientific service to government, industry and scientific animal welfare advisory committees including: the United Egg Producers, McDonalds, Food Marketing Institute, Bob Evans, Darden, Leprino Foods and Tysons. She was co-chair of the scientific committee leading to the third edition of the FASS Guide for the Care and Use of Agricultural Animals in Research and Teaching, chairs the taskforce for the annual review and revision of the Michigan Generally Accepted Agricultural and Management Practices for the Care of Farm Animals administered under the Michigan Right to Farm Act, and served as the scientific co-director of the Coalition for Sustainable Egg Supply Project. Email contact: swansoj@msu.edu.



Dr. Gary Varner
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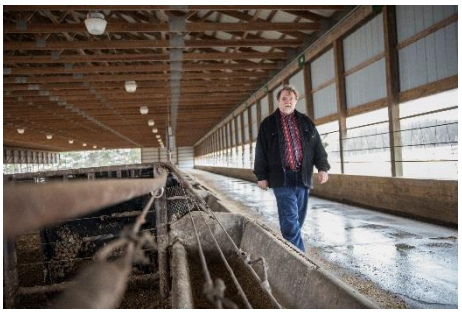
Gary Varner wrote one of the first dissertations on environmental ethics and has since published three books and over 50 shorter pieces on related topics, including hunting, animal agriculture and human nutrition, medical research, cloning, and pet ownership, as well as philosophical issues associated with the National Environmental Policy Act, the Endangered Species Act, and the property takings debate. His 2012 book, *Personhood, Ethics, and Animal Cognition* (Oxford University Press) develops an approach to animal ethics grounded in the two-level (or "Kantian") utilitarianism of R.M. Hare. His current book project, *Sustaining Animals: Envisioning Humane, Sustainable Communities* (forthcoming from Oxford) will apply the approach to various issue areas, including animal agriculture, pets and working animals, medical research on animals, and wildlife and ecosystem management.

Workshop Facilitators

Dr. Paul Thompson
Michigan State University



Paul B. Thompson holds the W.K. Kellogg Chair in Agricultural, Food and Community Ethics at Michigan State University. He received a Ph.D. in philosophy from Stony Brook University in 1980, and has held faculty appointments at Texas A&M University (1981-1997) and Purdue University (1997-2003) before joining the Departments of Philosophy, Community Sustainability and Agricultural Food and Resource Economics at MSU in 2003. Thompson is the author of over 200 journal articles and book chapters, mostly focused on ethical issues and environmental impacts in global, regional and local food systems, along with risk analysis and the foundations of sustainability science. He is a two-time winner of the Agricultural and Applied Economics Association Award for Excellence in Communication and his book *From Field to Fork: Food Ethics for Everyone* (Oxford University Press) was selected as the Book of the Year for 2015 by North American Society for Social Philosophy.

Dane Scott
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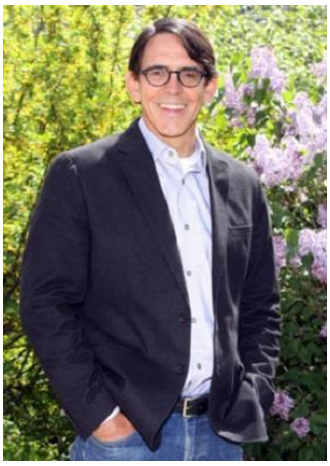
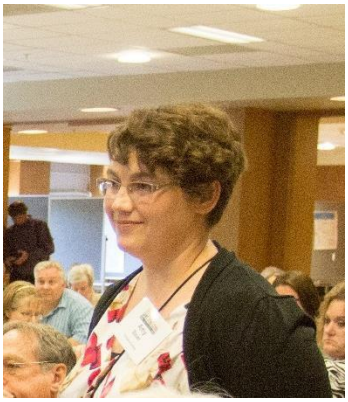


Dane Scott is Director of Mansfield Program in Ethics and Public Affairs and Associate Professor of Ethics in the Department of Society and Conservation in the College of Forestry and Conservation, at The University of Montana. He received his Ph.D. in philosophy from Vanderbilt University and has a BS in soil science from the University of California-Riverside. Scott has been at UM since 2006. Scott's research focuses conservation ethics and ethical issues arising from the use of emerging technologies to address environmental problems, particularly biotechnology and climate engineering. Scott has been the principle investigator on two successfully completed National Science Foundation projects: "The Ethics of Geoengineering: Investigating the Moral Challenges of Solar Radiation Management," and "Debating Science: A New Model for Ethics Education for Graduate Students in Science and Engineering."

Postdoctoral Coordinator

Dr. Amy Bauer



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Amy Bauer received her Bachelor of Science degree in Zoology from Michigan State University in 1995 and her DVM from Michigan State University in 1999. During veterinary school she completed externships at Brookfield Zoo/the Chicago Zoological Society, the Duke University Primate Center (now Duke Lemur Center) and Midwest Bird and Exotic Animal Hospital. She carried her interest in exotic animal medicine into practice at Roseland Animal Hospital in South Bend, Indiana from 1999 to 2011. While in practice, she developed interests in zoonoses in the context of the human-animal bond, infectious disease ecology, and conservation biology. During this time she also volunteered in the lab of Dr. Jessica Hellmann at the University of Notre Dame assisting in research utilizing butterflies as models of genetic response to climate change. After serving a semester as an adjunct faculty member in a training program for veterinary technicians, she came to Purdue University to pursue a PhD in comparative epidemiology and public health.

While collecting blood, milk, reproductive, and fecal samples from 654 goats to complete her doctoral project Dr. Bauer was a teaching assistant in veterinary comparative anatomy, served as a tutor in Purdue College of Veterinary Medicine's case-based learning course, and taught her research to 8th grade science students through the Purdue GK-12 program. She completed her doctoral studies in December of 2015. Dr. Bauer has remained at Purdue as a post-doctoral researcher in the lab of Dr. Candace Croney where she applies her epidemiological training to the welfare of dogs in commercial breeding facilities. Dr. Bauer enjoys travel, reading, music, coffee, and chocolate. A comic book geek, she can name the main members of the Justice League as well as the seven Endless. She participates in NaNoWriMo every November, though she has yet to finish a novel within the time limit.

Participants

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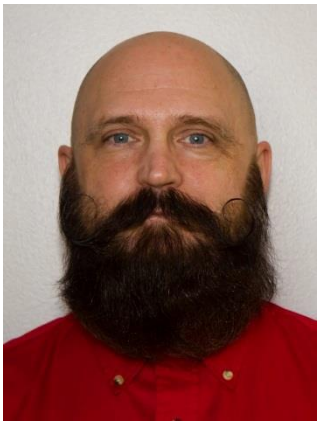

Charlie joined the faculty of the Department of Animal and Avian Sciences at University of Maryland College Park in August 2012 as Livestock Lecturer. He received a BS from Clemson University and a PhD in Animal Science (Equine) from Texas A&M University, after which he taught for 11 years in NE Missouri at Truman State University where he managed a 45-head university-owned horse herd. He was then named Director of Agriculture at Northeast Texas Community College in Mount Pleasant, TX, where he worked for five years before joining the faculty at University of Maryland. He has spent much of the last 20 years teaching animal science and equine-related coursework, and most of his teaching has focused on the basic science of animals including anatomy, physiology, reproduction, nutrition, and behavior, and the practical implications of animal science for the management of horses, cattle and other livestock. His teaching assignment at UMD includes a mix of equine, livestock, and animal science courses.

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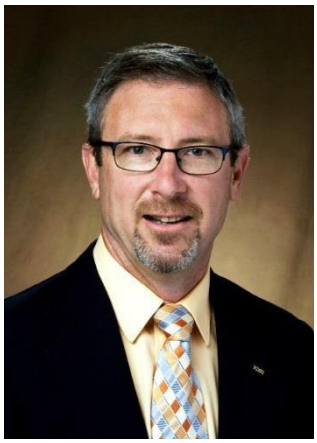

My training was in ruminant nutritional physiology from the University of Nebraska (MS) and University of Kentucky (PhD). I have been at North Dakota State University for 20 years in a research and teaching position. My research has been in the area of growing and finishing cattle nutrition and nutrition of pregnant beef cows. My current teaching assignments are Applied Animal Nutrition (ANSC 324), Growing and Finishing Cattle Management (ANSC 487/687), Research and Issues in Animal Agriculture (ANSC 478), and Digestive Physiology (ANSC 776). I also coordinate the undergraduate teaching program and advise many undergraduate students.

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Debbie Cherney is an Associate Professor in the Department of Animal Science, CALS, Cornell University. She received her B.S. in Animal Science at the University of Florida, her M.S. in Agronomy at Louisiana State University, and Ph.D. in Animal Nutrition at the University of Florida. Debbie had a
Post-Doctoral Fellowship at Purdue University for two years, studying Rumen Microbiology. More recently Debbie received an MA in Medical Bioethics from the Medical College of Wisconsin. Her 60% teaching appointment includes teaching three courses: Introduction to Animal Science; Introduction to Animal Welfare; Ethics and Animal Science. She has taught the Dairy Science Welfare Issues and Transportation Issues for the College of Veterinary Medicine's Ethics Class for the last four years. Debbie's initial training in agricultural bioethics was at the Iowa State Bioethics Institute under the tutelage of Dr. Gary Comstock.

Dr. Robert M. Chiles
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Broadly, my scholarship examines ethical and epistemic controversies about food and agriculture, particularly as concerns sustainability, political economy, nutrition, technology, animals, and everyday consumer culture.

My dissertation work explored how the social acceptability of meat has been disrupted and re-negotiated in the aftermath of numerous controversies (e.g. meat safety recalls and undercover videos). I'm currently studying the practical, historical, and ethical obstacles which appear to inhibit the universalization of ethical obligations to animals, particularly in subsistence and pastoral societies. Addressing these questions can provide further insight into how ethical obligations towards animals can be integrated into a broader commitment to development ethics. I'm also interested in the ethics and cultural politics of *in vitro* meat (a nascent technology that attempts to produce meat from stem cells) and the measurement and governance of agricultural greenhouse gas emissions with respect to climate justice considerations.

I received a PhD in sociology at the University of Wisconsin-Madison and a BA in philosophy and political science from Stanford University.

Dr. Courtney Daigle
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Undergraduate Education
B.S. in Zoology, Oklahoma State University

Graduate Education
M.S. in Zoo & Aquarium Management, Michigan State University Ph.D. in Animal Science, Michigan State University
Postdoctoral training, Center for Animal Welfare Science, Purdue University

Awards
American Society of Animal Science Young Scholars Award, 2014
Junior Fellowship, Wageningen Institute of Animal Science, Wageningen University, 2011
Dr. Courtney Daigle is an Assistant Professor in the Nutrition section of the Department of Animal Science. She received a Bachelor of Science in Zoology in 2004 from Oklahoma State University. She worked in the zoo industry for several years before continuing her education at Michigan State University where she received a Master of Science in Zoo & Aquarium Management (2008) and a Doctor of Philosophy in Animal Science (2013). During her graduate training she worked as an intern with the Smithsonian's Conservation Biology Institute (2008), was a Junior research fellow at Wageningen University (2011), and was the technician for the Animal Behavior and Welfare Laboratory at Michigan State University (2008-2014). She worked as a Postdoctoral Research Associate in the Center for Animal Welfare Science at Purdue University (2015).

Dr. Daigle specializes in evaluating management and husbandry practices to optimize animal health, productivity, and welfare. The Daigle Lab quantifies behavior to develop and validate technologies designed to measure species-specific behaviors important to health, welfare, and productivity.

Dr. Christopher Gray, VetMB, MA, MBA, MRCVS

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I graduated from the University of Cambridge in 1992, having done an intercalated degree in Biological Anthropology. Following 6 years in mixed practice in The Lake District I moved to the North East of England to work in small animal practice joining Vets Now as an Emergency Physician in 2004. I moved to a regional training and coaching role in 2008, before becoming national Head of Clinical Operations in 2010, and then General Manager for New Business in December 2011.
In January 2014 I joined Michigan State University as Director of the Veterinary Medical Center.
I am an elected council member of the Royal College of Veterinary Surgeons in the United Kingdom.
I completed a part time executive MBA programme at Durham University between January 2010 and January 2012, with my dissertation research title being 'Does the introduction of veterinary clinical performance measures lead to an improvement in commercial outcome?'
In my spare time I enjoy cycling, particularly taking part in long distance day events from 60 – 120 miles. This fall I hope to complete my first triathlon.

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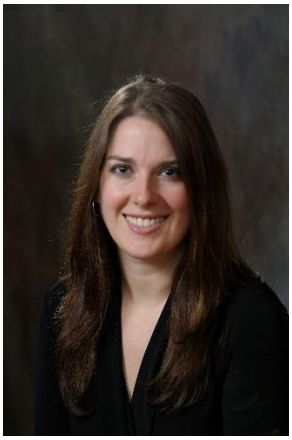

Angela Green's professional interests include decision support for animal management, animal welfare, understanding animal-environment interactions, and animal production sustainability issues. She joined the Agricultural and Biological Engineering department at the University of Illinois in 2008, with a teaching and research appointment. She currently teaches three formal courses and periodic special courses, including TSM 311 Humanity in the Food Web, ABE 100 Introduction to Agricultural and Biological Engineering, and ABE 474 Indoor Environmental Control. She completed her doctoral degree ('08) in Agricultural and Biosystems Engineering at Iowa State University, where she was supported as a National Science Foundation PhD Graduate Fellow, with research emphasis on systematic assessment of laying hen housing for improved hen welfare. She earned her BS ('02) and MS ('04) in Biosystems and Agricultural Engineering from the University of Kentucky, with an emphasis on controlled environments and physiological responses of transported horses. She studied animal behavior assessment methods in 2005 at Silsoe Research Institute in Bedfordshire, England, assessing tolerance of atmospheric ammonia in laboratory mice. She currently leads the Animal Welfare and Environmental Systems Laboratory at the University of Illinois (awesome.illinois.edu).

Dr. Lindsey Hulbert
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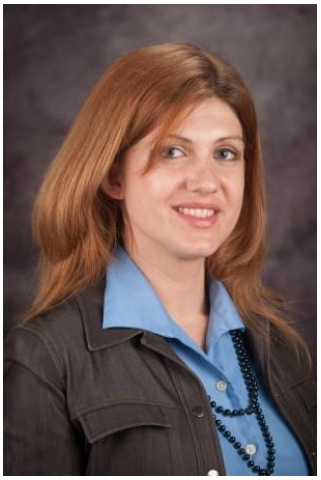
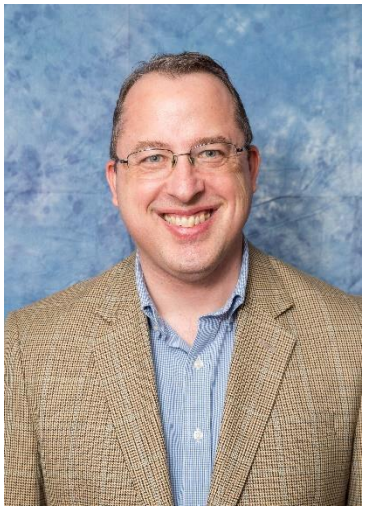


Dr. Lindsey Hulbert grew up in the southwest (AZ, NM) then began her career in animal physiology and behavior in Lubbock, TX through an undergraduate research program at Texas Tech University. Her first research projects involved understanding how housing and management conditions affect the behavior and stress responses in swine. Her research evolved into how stress affects the health and immune systems in other species, including laboratory rodents, beef and dairy calves, and poultry. She also worked for the USDA-Agriculture Research Services, Livestock Issues Research Unit in Lubbock, TX. Dr. Hulbert was a post-doctoral at the University of California, Davis before joining the department of Animal Sciences and Industry at Kansas State University in January of 2013. Dr. Hulbert's research team studies: 1) Development and validation of automated technologies to monitor health and welfare of domestic animals; 2) Understanding the effects of early-life stressors on nutritive and non-nutritive oral behaviors; 3) Improving resilience to stressors and immunocompetence through housing, management, and feeding strategies, and; 4) Determining biomarkers of stress and inflammation for predicting and identifying disease. Dr. Hulbert teaches: A) ASI 595-Contemporary Issues in Animal Agriculture; 2) ASI 655 Domestic Animal Behavior, and; 3) ASI 825 Stress Physiology.



Dr. Harvey James
Professor of Applied Economics University of Missouri
146 Mumford Hall Columbia, Missouri

Harvey James is Professor of Applied Economics, Chair of the Department of Agricultural and Applied Economics, and the Department's Director of Graduate Studies, at the University of Missouri, in Columbia, Missouri. Dr. James is also editor-in-chief of the journal *Agriculture and Human Values* and a member of the editorial board at *Business Ethics Quarterly*. Dr. James has a BA in economics and an MS in sociology from Brigham Young University, and an MA and PhD in economics from Washington University in St. Louis.
Dr. James teaches courses in microeconomics and agricultural ethics for undergraduates and research methodology for graduate students.
Dr. James' research focuses on applied ethics and the economic foundations of trust and ethical behavior. He is currently conducting research on how ethical behavior affects economic growth and entrepreneurial activity and how the structure of business networks relates to principles of fairness.
Dr. James has produced two edited books: *The Ethics and Economics of Agrifood Competition* examines the question of whether there is adequate competition in the agrifood industry; *New Ideas in Contracting and Organizational Economics Research* explores emerging research on business organization. He also co-authored the book, *When Businesses Cross International Borders: Strategic Alliances and Their Alternatives* (with the late Murray Weidenbaum, former chairman of the Council of Economic Advisors under U.S. President Ronald Reagan). Dr. James has published more than 100 academic articles and book chapters.
Dr. James is a member of the American Economic Association; the Agricultural and Applied Economics Association; the Association for Social Economics; the Agriculture, Food and Human Values Society; and the Society for Business Ethics.
His interests include spending time with his family, reading, genealogy, composing music, and running (best half marathon time is 1 hour, 25 minutes).

Marlon Knights, PhD

Associate Professor Reproductive Physiology
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I am an Associate Professor of Reproductive Physiology at West Virginia University. At WVU I teach Principles of Animal Science, Beef, Pork and Small Ruminant Production. I also teach a Study Abroad course- Tropical Animal Production and Health, and contribute to teaching in Reproductive Physiology related courses. My research focuses on increasing lifetime productivity of the breeding herd/flock and the role of Anti-Mullerian Hormone on reproductive outcome in cattle, water buffaloes and sheep. I have and continue to work with various governments in the Caribbean region on approaches to increase productivity of livestock operations and on Good Agriculture Practices for the livestock sector.

Dr. Dawn Koltes
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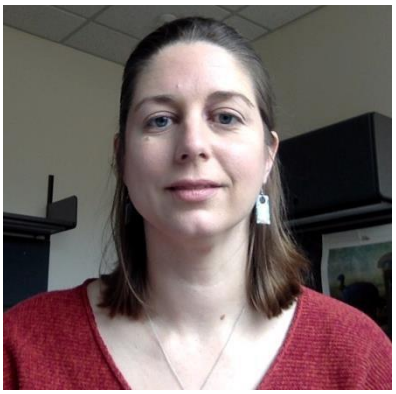

I grew up in rural Arkansas on a rice farm. Upon high school graduation, I wanted to become a veterinarian. I enrolled in Animal Science department at the University of Arkansas. This is where I discovered another side to animal agriculture, agricultural animal research. Upon completing a Bachelor's degree in Animal Science at the University of Arkansas (2006), I went on to complete a Master's degree in Animal Breeding and Genetics at the Iowa State University (2008), and Doctorate in Philosophy in Genetics at Iowa State University (2013). While my graduate studies focused on genetics, my graduate research focused on understanding the mechanisms that control lipid breakdown in adipose tissue in dairy cattle. In my pursuit to advance agricultural animal health, I am studying gastrointestinal health in swine and chicken. Additionally, I teach a graduate level endocrine physiology of domestic animals class, guest lecture a graduate level advanced analytical methods in animal science laboratory, and undergraduate level livestock improvement through animal breeding and domestic animal physiology.

Dr. Martin Maquivar
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Biography

Martin Maquivar was born in Mexico City where he grew up. He obtained a Doctor of Veterinary Medicine and Zootechniques in 2001, a Master's degree in Animal Production and Medicine in 2003, and a specialization in Cattle Production Medicine in 2005 at the National Autonomous University of Mexico. He moved to Columbus, Ohio to pursue his PhD at The Ohio State University, completing it in
2011 in Animal Sciences, specifically studying the link between nutrition and reproduction on the onset of puberty in beef cattle. Then he started a postdoctoral fellowship at the Preventive Veterinary Medicine at The Ohio State University Veterinary medicine School in 2012 working with reproduction and welfare of dairy cattle. After that he worked briefly as reproductive specialist at Aurora Organic Dairy before he moved to Washington State University Department of Animal Sciences in 2013 where he currently works. At WSU, he teaches introductory to animal sciences, physiology of reproduction and animal rights and animal welfare. In addition to his teaching commitment he conducts undergraduate research focusing in expression of estrus in dairy and beef cattle, animal welfare, puberty, and teaching research.

Dr. Melissa Merrill
Professor and Undergraduate Teaching Coordinator North Carolina State University
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I have been at NC State for 13 years, with a teaching and research appointment. My research program has focused on swine genomics with a dual benefit for animal and human health with an emphasis on using commercial swine as models for osteoarthritis and pharmacogenomics studies. With respect to teaching, every Fall semester I teach a sophomore-level "Agricultural Genetics" course to ~140 undergraduate students majoring mostly in Animal Science, Poultry Science, and Horticultural Science. Topics in that course include Mendelian genetics, pedigree analysis, genomics, and one lecture on ethics. Since 2010 I have also taught a 4-week freshman-level "Introduction to Plant Molecular Biology" summer course to ~20 high school students and a senior- and graduate-level biotechnology course
"PCR and DNA Fingerprinting" to 16 students. In the summer course we discuss molecular biology, genomics and one lecture on ethics. Since 2013, I have served as the Undergraduate Programs Coordinator in the Department of Animal Science, and am responsible for curriculum and course development in the department as well as coordinating academic advising, course scheduling, and student recruitment.

Dr. Jeannette Moore
Professor
North Carolina State University 226A Polk Hall
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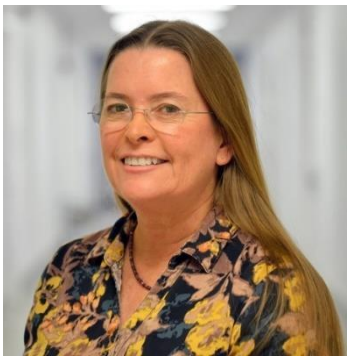
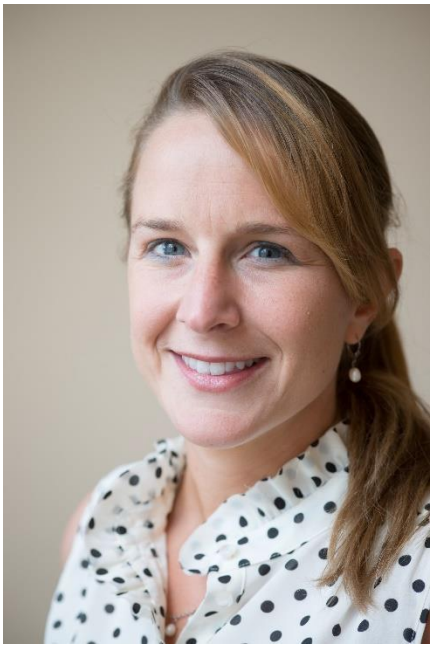


Dr. Jeannette Moore teaches and mentors undergraduate and graduate students while serving as Chair of the NC State University Faculty (2015 to 2017) and as the departmental Undergraduate Coordinator for Transfer Students and Study Abroad. Dr. Moore received her Ph.D. (1987) and M.S. (1983) degrees in Animal Nutrition from the University of Arizona, Tucson and her B.S. degree in Animal Science from California State Polytechnic University, Pomona (1980).

After a post-doc position at North Carolina State University (1990), Dr. Moore joined the Animal Science faculty in a 100% teaching appointment (Visiting Assistant Professor, 1992) and later became Assistant Professor and Undergraduate Teaching Coordinator for the Department of Animal Science (1998); she was promoted to Associate Professor in 2004 and Full Professor in 2011.

Dr. Moore's professional affiliations include Alpha Zeta, the American Society of Animal Science (has served on the Undergraduate Education Committee), Gamma Sigma Delta (Past President of NCSU chapter), North American Colleges and Teachers of Agriculture (current Membership Director; past President; past Southern Region Director and past chair of the Teacher Recognition Committee), National Block & Bridle (past President), and Phi Kappa Phi.

Her professional accomplishments include receiving the North American Colleges and Teachers of Agriculture (NACTA) Murray Brown Leadership Award (2015), the CALS at NCSU Board of Governors Award for Excellence in Teaching (2013), the NACTA Southern Regional Outstanding Teacher Award (2011), the NACTA Teacher Fellow Award (2001), being inducted into the Academy of Outstanding Teachers at N.C. State University (2001), receiving the CALS Outstanding Faculty Advisor Award in 1998, and being named the Outstanding Faculty Member in Animal Science by the students in 1994, 1997, and 2000. She was honored to receive the Alumni Distinguished Undergraduate Professor award and title in 2008 from North Carolina State University.



Dr. Kasey Moyes
Assistant Professor
University of Maryland, Bldg 142 Department of Animal and Avian Sciences College Park, MD 20742
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Dr. Kasey received her BS from Michigan State University in animal science in 2001. She her MS degree in animal science at the University of Connecticut under the direction of Dr. Sheila Andrew in 2004. She received her PhD in animal science from the University of Illinois in animal science under the direction of Drs. James K Drackley, Juan J Loor
and Klaus L Ingvartsen in 2008. She completed her postdoctoral research training at Arhus University in Denmark are the direction of Dr. Klaus L Ingvartsen in 2012. In 2012, she joined the Department of animal and avian sciences at the University of Maryland, where she instructs the introductory course
ANSC 101 titled 'principles of animal science' and ANSC 443 'physiology of lactation'.

Dr. Meghann Pierdon
Researcher and Assistant Director Swine Teaching and Research Center Department of Clinical Studies University of Pennsylvania
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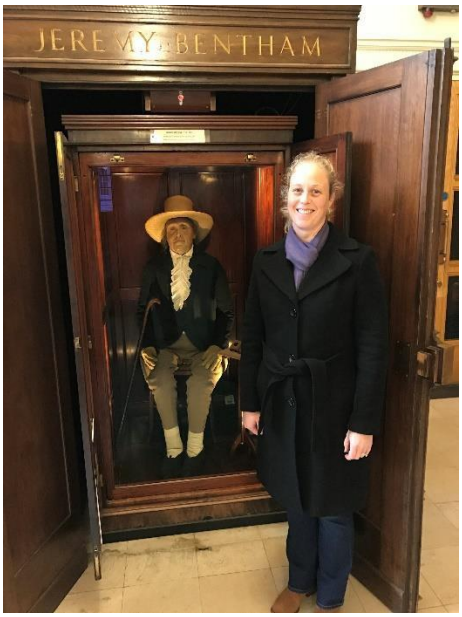

Dr. Pierdon earned her B.A. degree in Biology from Wellesley College and her V.M.D. from the University of Pennsylvania in Philadelphia. She has been the staff veterinarian for Country View Family Farms, LL and was the sole veterinarian responsible for a vertically integrated swine production company overseeing 45,000 sows, 125 finishing sites and 36 nurseries, as well as a swine technical consultant for Elanco Animal Health. Currently, a Researcher and Assistant Director of the Swine Teaching and Research Facility at the University of Pennsylvania School of Veterinary Medicine, she has taught food animal pharmacology, swine production courses, and large animal medicine labs. She created, developed curriculum and managed a new course "Introduction to Animal Welfare" and teaches as well as teaching animal welfare history, concepts and ethics as part of the core veterinary curriculum. In addition, Dr. Pierdon was involved with the "Principles of Ethics in relation to Animal Use" course in Catharines College, Cambridge, UK as well as the Ethics of Animal Welfare, Utrecht University online course.

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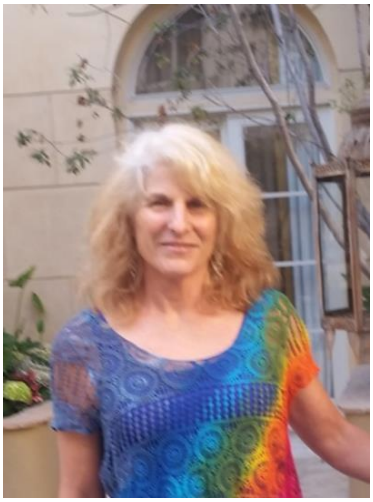

Giovanna Rosenlicht is a companion animal veterinarian, and an instructor in the Department of Animal and Rangeland Sciences at Oregon State University. She received her DMV (Dottoressa di Medicina Veterinaria) from the Facolta' di Medicina Veterinaria, at the University of Perugia in Italy. After graduating she returned to the US and spent a year at Iowa State University College of Veterinary Medicine, after which she accepted an associate veterinarian position in WA, where she worked with a wide variety of companion animals. She quickly found that as a veterinarian, she enjoyed concentrating on specific species rather than a large range, and now her veterinary focus is primarily dogs and cats.

Before accepting a position at OSU, Giovanna's employment history included working in general practice, being the medical director of a shelter, and working in emergency clinics. While she has a full time instructor position at OSU, she continues to work as a veterinarian whenever possible. In addition to her instructor duties, she is a member to the Human-Animal Interaction Lab at OSU where she studies, the effect of oxytocin genotype on affiliative behavior in dogs, and is a co-advisor for Pre-Veterinary Medicine Club at OSU.

Specific areas of professional and personal interest are behavior, animal welfare, shelter medicine, and the human animal bond. In addition to her professional activities, Giovanna also spends time with her family (a son, two dogs, two cats and some backyard chickens). She is also on the Board of Directors of Heartland Humane Society, and is a member of the OSU Triathlon Club.

Dr. Monique Udell

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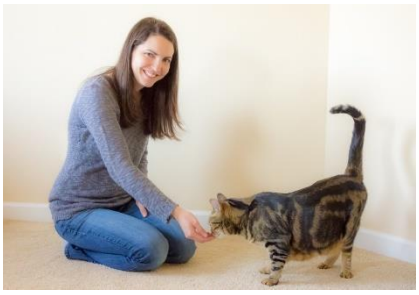

Dr. Monique Udell, PhD is an Assistant Professor of Animal & Rangeland Sciences at Oregon State University where she conducts research and teaches courses on animal behavior and cognition, animal learning, behavior modification and animal enrichment. As director of the OSU Human-Animal Interactions Lab, her research has primarily focused on applied animal behavior, human-animal attachment bonds, and the study of evolutionary and lifetime variables contributing to the social cognition and problem solving behavior of dogs, cats, human-socialized wolves and livestock.

Lab website: https://thehumananimalbond.com/

Dr. Kimberly Ange van-Heugten
Assistant Professor of Animal Sciences North Carolina State University Riddick Hall 466A

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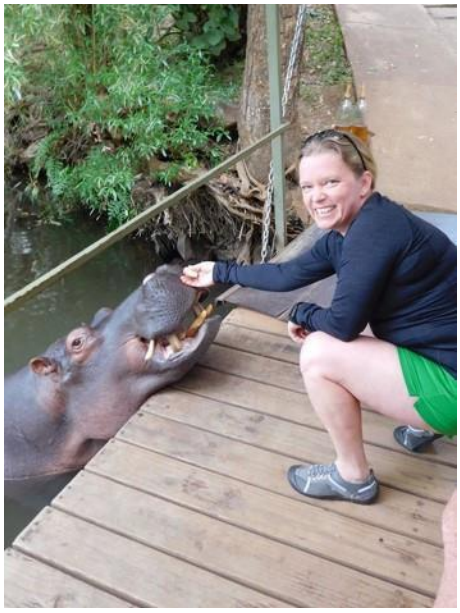

Dr. Ange-van Heugten grew up in North Carolina working on her family's swine operation. Therefore, NCSU was a natural fit to earn her BS in Animal Science with a minor in nutrition. She continued her education at NCSU to complete a MS in nutrition with a minor in physiology.

After her MS, she spent two years as a nutritionist at the Brookfield Zoo in Illinois. She left the zoo to teach in the Animal Science department at NCSU. While working at NCSU, she completed a PhD in animal science working with exotic animal conservation via Wageningen University, The Netherlands.

She has consulted and conducted research at aquarium, circus, livestock and zoological facilities and presented seminars in the US and internationally. Her position at NCSU for the last 16+ years has been 100% teaching with the focus being companion animal education and nutrition. She has been able to acquire significant grant funding and has actively participated in the training of nine MS students. She teaches between four and seven courses per year with an average annual enrollment of over 425 students (6,500+ in 16 years).

She has also directed 150+ teaching assistants to help in course development and research projects. She has authored or co-authored at least 31 peer reviewed publications, 58 proceedings and abstracts, 15 invited presentations, three published course manuals, and a book chapter. Her current interests include canine, elephant, rhino and chelonian nutritional research and the development of the first NCSU graduate level canine and feline nutrition course. Dr. Ange-van Heugten stays active at NCSU via advising clubs and being a member of the faculty senate. She is also the proud mother of four and volunteers within the public school system.

Dr. Beth Ventura
Assistant Professor University of Minnesota 2250 Haecker Hall
1364 Eckles Ave
St. Paul, MN 55108

Email: bventura@umn.edu

Dr. Beth Ventura is the Assistant Professor of Teaching for Companion Animal and Equine Behavior and Welfare at the University of Minnesota. Originally from California, Beth holds a BS in Animal Science from Michigan State University and an MS in Animal and Avian Sciences from the University of Maryland, College Park. Beth earned her PhD in animal welfare from the University of British Columbia in Vancouver, Canada in 2015. Her research sought to understand stakeholder priorities and concerns in the dairy industry, with the goal of identifying policy solutions that work for both farmers and animals. Broadly, her research interests center on bridging the gap between diverse stakeholder expectations for animal welfare in food production.

With the University of Minnesota since Summer 2016, Beth is developing an undergraduate teaching program to equip animal science students with the foundational skills to navigate issues facing animal production in a rapidly changing society. Her focus is on helping students interpret and balance the science and values affecting food, companion, research and entertainment animals. She brings new courses to the department in animal welfare science and ethics of animal use, applied animal behavior, and advanced animal welfare assessment. She is also in the process of redeveloping a course around animals and society, to be deployed online in Fall 2017. Finally, she co-instructs a debate-style class around contentious issues with animal use.

Case Studies

Case studies (see **https://vet.purdue.edu/discovery/croney/bioethics/workshops.php**)

AquAdvantage

Ledford, Heidi. "Salmon is first transgenic animal to win US approval for food", *Nature International Weekly Journal of Science.*

Enviropig

Minard, Anne. "Gene-Altered 'Enviropig' to Reduce Dead Zones?", *National Geographic*

Discussion points
What is the central issue?
Are there competing ethical principles?
Are there legitimate concerns?
What else do you want or need to know?
Is there a common ground from which to work?
Who does the decision impact?
What will be the best course of action?

Ray Anthony
Dane Scott Can Frankenfish and Frankenpigs Help Save the Planet?

No genetically engineered (GE) animals are currently available to consumers. The public seems to accept at least a limited number of genetically engineered crops, for example, in the United States genetically engineered corn, soybean, cotton, and papaya dominate the acres planted in these crops. However, the public remains skeptical of GE animals. Two GE production animals have been widely discussed and debated in the press, AquAdvantage Salmon and Enviropig. It is likely that the GE salmon will make it to some supermarket shelves, while efforts to bring the GE pig to market have been shelved.

Should it be so difficult to bring GE production animals into the market place?

AquaBounty Technologies, the company that developed the genetically engineered salmon, first approached the Food and Drug Administration (FDA) for approval in the late 1990s. In November of 2016 the FDA finally certified AquAdvantage Salmon as safe to eat. The GE salmon is engineered to be fast growing and they require less feed. These salmon will be raised in land-based, closed containment systems. It is advertised as a technological solution for declining wild fish stocks, an alternative to environmentally problematic open-net cage farming, and a way to meet the rapidly growing demand for salmon, more generally protein. Supporter of GE fish argue that this technology can make a significant contribution to sustainably feeding a growing world population. Many consumer and environmental groups disagree, and have forcefully opposed GE fish as a potential threat to human health and biodiversity. Nonetheless, after years of effort this GE salmon is likely to make it to the supermarket. Advocates for GE fish are keeping their fingers crossed that it will be a success, as its success could open the gates for other GE fish and animals. Opponents are keeping their fingers crossed that it will fail, as its success could open the gates for other GE fish and animals.

In 2012 researchers at the University of Guelph who developed Enviropigs announced that they were halting research on this GE pig. At the time they were still waiting for the FDA to certify the pork safe for consumption. The researchers lost their funding and no company was willing to invest. Public resistance to GE animals is the most commonly cited reason for the failure, at least for a time, of Enviropig. Consumer and environmental groups opposed to agricultural biotechnology celebrated. The Enviropig is a technological fix. It is designed to mitigate the environmental impacts of phosphorus (P) pollution from industrial pig farms. Phosphorus pollution is a major global concern as it causes algae blooms and can lead to dead zones in aquatic systems. The cereals and grains that are fed to pigs are high in phytate, a P containing compound. Pigs need P as a nutrient but lack the enzyme, phytase, to digest the phytate in feed. The result is P passes through the pigs system and is concentrated in their manure. Farmers either add digestible P to feed for as a supplement or add the phytase enzyme, often from a GE fungus, to cereals and grains at extra costs. In 1998 scientists at the University of Guelph engineered the Enviropig to synthesize phytase in its salivary gland. Depending on the pig's age and diet the manure of an Enviropig can contain up to seventy-five-percent less P than non-GE pigs. Groups opposed Enviropig argue that these efforts are misguided. Their position is that this attempt to "fix" industrial pig farms with biotechnology should be abandoned due to larger environmental and animal welfare concerns. They argue that more sustainable and humane farming practice should be found.

Resources

Team Building

http://info.catme.org

Departments/Organizations

NYU School of Medicine, NYU Langone Medical Center High School Bioethics
www.med.nyu.edu/highschoolbioethics/briefs/ethics-animals

National Institute of Health Department of Bioethics. https://www.bioethics.nih.gov

Presidential Commission for the Study of Bioethical Issues www.bioethics.gov
University of Washington Department of Bioethics & Humanities. https://depts.washington.edu/bhdept/

The Department of Medical Ethics and Health Policy, Perelman School of Medicine, University of Pennsylvania
www.bioethics.upenn.edu

Animals Used in Reseearch-Latest Government Facts and Figures www.navs.org/animal-testing/latest-facts

University of Alaska Anchorage. Philosophy Department. Ethics Center.
https://www.uaa.alaska.edu/academics/college-of-arts-and-sciences/departments/philosophy/ethics-center/faculty-publications.cshtml

Books

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ChristiansenSB, Sandoe P: 2000. Animal Reproduction Science. 60-61:15-29.
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Publications

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Anthony R:2014. Dairy Cattle Welfare from an Ethicists's Perspective. Progressove Dairyman. http://www.progressivedairy.com/topics/management/dairy-cattle-welfare-from-an-ethicists-perspective

Anthony R. "Food Ethics as More than Food Security: Asia's Critical Role in discourses around Animal Welfare and Climate Change:, in K Thompson and PB Thompson (eds) Agricultural Ethics in East Asian Perspective. Springer: The Netherlands – in process

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Ethics and Animal Farming. A Web-based interactive exercise for students using the Ethical Matrix. Students' Guide. Written and produced by Professor Ben Mepham and Sandra Tomkins

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