DEPARTMENT OF ANIMAL SCIENCES
ANNUAL REPORT
2016

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University of Wisconsin-Madison
Department of Animal Sciences

Leading Animal Sciences Beyond the Twenty-First Century

Mission/Vision

The Mission of the Animal Sciences Department is to lead and foster scientific discoveries in animal agriculture and biology, inspire original thinking and the art of discovery through innovative education and service, thereby enriching the lives of students, scientists, and society.

Value Statements: To fulfill its mission, the Department must:

1. Discover novel basic and applied knowledge about animal: health, nutrition, genetics, physiology, products, and humane management practices.

2. Disseminate knowledge about the many facets of animal agriculture and biology through undergraduate and graduate education and through cooperative Extension programs.

3. Prepare young scientists for careers in global animal related industries, graduate study or professional degrees including human and veterinary medicine.

4. Develop translational models for the study of human and animal health, and for the discovery of new preventive and therapeutic strategies against diseases.

5. Combine knowledge in areas of animal genetics, nutrition, biology, and welfare with food manufacturing fields (safety, processing and technology) to produce affordable animal products of high quality and reduced environmental impact.

6. Invent new tools, products and solutions to solve complex problems in animal agriculture and biology.

The Animal Sciences Department is the only department on UW-Madison's campus that provides knowledge, opportunities, and solutions to problems involving the array of species (swine, poultry, beef cattle, sheep, goats, and fish) used in agriculture for the production of food. The Department is also involved in the study and uses of horses for work and recreation and provides instruction related to companion animals. In keeping with the university mission, Animal Sciences focuses on critical issues facing state animal producers such as profitable, efficient, and humane management of animals, safe food production, and production standards that are environmentally sustainable. Animal Sciences' research and education, at both an undergraduate and graduate level, has an international scope to assure students receive a global cultural understanding of the importance of meat, and co-products to society, both locally and across the world.

Dear Animal Sciences Colleagues, Alumni and Friends,

2016 Overview of Departmental Activities

Tom Crenshaw, Professor and Chair
Department of Animal Sciences
March 8, 2017

2016 The Year of Metamorphosis

Dramatic changes have occurred in 2016 at global, national, state, and campus levels. The Department of Animal Sciences has not been excluded from the metamorphosis. Change is inevitable, what is important is how we emerge from the processes that unfold as we continue to adapt to the environment that nourishes and sustains us. We need to clearly identify factors that influence our future and develop processes that will allow our department to flourish in a new environment as we emerge from this stage of metamorphosis. The focus must be on the future. Sure, we learn from the past and must acknowledge our roots, but we cannot cling to what was! In this report I will simply describe the major changes that have transpired in our department over the past year. Over the next year, we must identify major inputs that will guide our emergence from this stage of metamorphosis.

Major Changes in 2016

Department Chair Transition. On July 1, 2016, Dan Schaefer resigned his role as department chair after serving for 17 years. Dan accepted additional teaching (AS 311, Comparative Animal Nutrition) and committee (Undergraduate Curriculum Committee Chair) assignments to relieve some of my responsibilities as I took on the department chair responsibilities. Dan continues to supervise the Arlington Beef operations and is an active contributor to department efforts in teaching, research, and outreach. He has graciously provided counsel and insights as I have undertaken the learning curve of administrative responsibilities.

Meat Lab Initiative. On Oct 14, 2016 a ground breaking ceremony for the new Meat and Muscle Biology building was a huge success. The ceremony included attendance by industry supporters, campus administrators, architectural and engineering design team personnel, department faculty, staff, and students. Hams were salted to initiate a curing process which will continue during construction. The cured hams will be ready for consumption at the Open House Ceremony, anticipated for late Fall semester, 2018. We are excited about the new opportunities the facility will bring to our department. Current updates on construction progress will be provided on the following website link: http://meatsciences.cals.wisc.edu/. Departmental oversight of the construction effort will be led by Jeff Sindelar with active collaboration of his colleagues, Jim Claus, Mark Richards, Robby Weyker, Andy Milkowski, and Ron Russell.

The capital initiative for the new facility has consumed significant amounts of time from the meat science faculty and staff group with significant input from several additional faculty in the

department, especially that of Dan Schaefer. The Meat Lab initiative has required that $22.9 million in funds be raised from non-state revenue sources. With the generous support from industry and alumni, we have raised $18.1 million. **THANK YOU!** With continued efforts, we are optimistic that the additional $4.8 million of non-state support will be achieved.

Financial Constraints

Spooner Sheep Research. While the Meat Lab initiative has been a tremendous success, the department has experienced losses in other disciplines due to reductions in financial support from campus and CALS. Likely, the most noticeable loss to alumni and state clientele is the closure of the Spooner Sheep Research Station. The dairy sheep research program at Spooner was closed and the flock sold in October, 2016. Significant and lasting contributions from the research and extension efforts will continue to be used by the industry, but future innovations for sheep programs are limited to efforts undertaken at the Arlington Research Station.

Faculty Positions. Perhaps less evident to our alumni and state clientele is the inability to replace faculty positions as a consequence of CALS and department financial constraints. Dr. Dave Thomas's retirement can directly be linked with the immediate reduction of sheep program efforts. However, the long-term trend is even more depressing. Over the past 2 decades the department has experienced an approximate 50% reduction in faculty positions. Over this same time, our undergraduate student enrollment has grown and the number of courses taught has increased. Thank you to the faculty members who have taken on more instructional efforts. The consequences of their added efforts in instruction are reduced, but less evident, impacts on research, extension, and outreach programs. Thus, as stated in the initial paragraph, we must embrace metamorphosis and identify sources of major inputs that will guide our emergence from the current restraints.

Current Status and Accomplishments

Faculty Retirements. In 2016 two faculty members, Professor Dave Thomas and Professor Dan Gianola, announced their plans to retire. Dave retired in January 2017, Dan in March, 2017. Their retirements left voids in the genetic discipline's research and teaching efforts and, in Dave's case, a void in the oversight of the sheep operations and extension outreach efforts to support the state and national sheep industry. We applaud their accomplishments and acknowledge the state, national, and international impacts that both professors have made. They have both represented the depth and breadth of expertise in our department. We do wish them the best for an enjoyable retirement and we cherish their continued contributions as Emeritus Professors.

FFA Animal Science Curriculum. Mr. Craig Kohn, Agri-science instructor at Waterford (WI) Union High School, and Dan Schaefer initiated an effort in 2015 to develop a credit-by-exam procedure that would allow in-coming freshman to gain credit equivalency for their high school animal science curriculum for our AS/DS 101 - Introduction to Animal Science course. The process has been approved and students will be allowed to take the equivalency exam starting this summer as part of their SOAR program.

Degrees, scholarships and research grants. Congratulations to our students. In 2016, 42 were granted a B.S. degree; 3 a Master's degree, and 3 a Ph.D. degree in Animal Sciences. We are also encouraged by the 58 scholarships that were awarded to our students. A special thanks to the donors that make these scholarships available. See page 5 for a list of scholarships and awardees.

Our research faculty submitted 35 proposals in 2016 with requested funds of approximately $4 million. Ten of these grants were successful, a 29% success rate, which exceeds acceptance rates typical from most funding agency reports. Keep up the efforts.

Faculty Awards – 2016. Congratulations to the following department members for recognition of their accomplishments.

Mark Cook
First vice president Poultry Science Association
Faculty of the year, Midwest Poultry Consortium 2016.
Robert G.F. and Hazel Spitze College of Agriculture and Life Sciences Land Grant Award.

Tom Crenshaw
CALS Arthur J. Maurer Extra Mile Award – 2016
ASAS Gary L. Cromwell Award for Research in Mineral Nutrition – 2016

Mark Richards
Midwest Poultry Consortium Faculty Member of the Year - 2016
Midwest Poultry Consortium Outstanding Service Award - 2016

Guilherme Rosa
2016 Rockefeller Prentice Memorial Award in Animal Breeding and Genetics, American Society of Animal Science, Salt Lake City, UT, July 2016.

Jeff Sindelar
North American Meat Institute Harry L. Rudnick Educator's Award – 2016
Recognition as 1 of 25 Future Icons, The National Provisioner – 2016
University of Wisconsin, College of Agricultural and Life Sciences Pound Extension Award – 2016

Student	Amount	Scholarship
Bihi,J.	$1,500.00	Peter Young Student Assistance Grant
Bihi,J.	$1,000.00	John A. Spurrell Scholarship
Brown,C.	$7,000.00	Martin A. Abrahamsen Undergraduate Scholarship
Buckhaus,E.	$550.00	Wisconsin Livestock and Meat Council Award
Cole,C.	$1,000.00	M.L. Sunde Scholarship
Cole,C.	$2,000.00	WALSAA Outstanding Sophomore Award
Cole,C.	$1,000.00	John W. Renk Memorial Scholarship
Coulthurst,N.	$1,000.00	Georgia M. Hellberg Scholarship
Dallas,C.	$1,100.00	Wisconsin Livestock and Meat Council Award
Gotteiner,M.	$2,000.00	Lawrence M. Weyker Career Development Scholarship
Haas,A.	$1,500.00	Ruth & Carl Miller Academic Merit Award
Herring,S.	$2,000.00	Vicky Lee Hirsh Academic Merit Award
Hirt,E.	$1,500.00	Albert J. & Adelaide E. Riker Academic Merit Award
Ingles,A.	$2,000.00	Bradford Richmond Award
Jass,M.	$250.00	Association of Women in Agriculture Scholarship
Jass,M.	$1,750.00	Peter Young Student Assistance Grant
Jass,M.	$3,000.00	Frank Barron Morrison Scholarship
Klein,K.	$1,000.00	John A. Spurrell Scholarship
Kragness,H.	$500.00	Babcock House Alumni & Friends Scholarship
Langusch,L.	$1,000.00	Dennis R. Buege Meat Science Student Assistance Scholarship
Law,K.	$1,500.00	Albert J. & Adelaide E. Riker Scholarship
Law,K.	$1,000.00	John A. Spurrell Scholarship
Lawinger,S.	$2,000.00	Bradford Richmond Award
Li,N.	$1,000.00	Mary Heisdorf Scholarship
McCumber,M.	$2,000.00	Wisconsin Rural Youth Scholarship
McCumber,M.	$1,000.00	Fred Giesler Scholarship
Mcmiller,A.	$1,250.00	Ferdinand Plaenert Scholarship
Mcmiller,A.	$1,000.00	John A. Spurrell Scholarship
Michael,E.	$1,250.00	Dorothy Strong Scholarship
Novak,C.	$2,000.00	Jacob Scharpf Family Scholarship
Novak,C.	$1,100.00	Wisconsin Livestock and Meat Council Award
Olson,H.	$2,000.00	Jacob Scharpf Family Scholarship
Palmer,S.	$1,000.00	Oscar N. & Ethel K. Allen Memorial Internship Scholarship
Palmer,S.	$500.00	Michael C. Spitzbarth Memorial Scholarship
Piepenburg,A.	$1,500.00	Diercks Family Wisconsin Rural Youth Scholarship
Piepenburg,A.	$500.00	Olaf Larson Wisconsin Rural Youth Scholarship
Piepenburg,A.	$1,000.00	Walter C. & Mabel J. Topel Animal Sciences Scholarship
Ramuta,M.	$1,500.00	Herbert R. Bird Scholarship
Ramuta,M.	$1,000.00	John A. Spurrell Scholarship
Ramuta,M.	$1,250.00	Cora I. Jayne Academic Merit Award
Reily,A.	$2,000.00	Bradford Richmond Award
Robbins,R.	$1,000.00	Robert & Janice Walton Scholarship in Animal Genetics
Roberge,E.	$2,000.00	Ruth & Carl Miller Academic Merit Award
Sailer,K.	$1,000.00	John A. Spurrell Scholarship
Sailer,K.	$1,250.00	William F. Renk Undergraduate Excellence Scholarship
Schoenenberger,G.	$2,000.00	Bradford Richmond Award
Schoenenberger,G.	$1,100.00	Wisconsin Livestock and Meat Council Award
Schwarzbach,H.	$500.00	Babcock House Alumni & Friends Scholarship
Schwarzbach,H.	$1,000.00	W. Windsor & Isabel K. Cravens Family Scholarship
Schwarzbach,H.	$1,000.00	Walter C. & Mabel J. Topel Animal Sciences Scholarship
Simons,Z.	$1,500.00	Ellward H. Wolff Memorial Scholarship

Student	Amount	Scholarship
Thomas,E.	$1,100.00	Wisconsin Livestock and Meat Council Award
Walker,D.	$750.00	Pork Producers of Wisconsin Industry Scholarship
Wenck,A.	$2,000.00	CHS Scholars Award
Wenck,A.	$2,000.00	WALSAA Outstanding Sophomore Award
Wing,E.	$1,000.00	Daughters of Demeter Outstanding Sophomore Scholarship
Young,A.	$1,000.00	Daughters of Demeter Outstanding Sophomore Scholarship
Young,A.	$1,250.00	Dorothy Strong Scholarship

STUDENT ENROLLMENT:	SPRING 2016	FALL 2016
Undergraduate	162	162
Graduate	26	30

DEGREES CONFERRED:	SPRING 2016	SUMMER 2016	FALL 2016
B.S.	36	1	5
M.S.	1	1	1
Ph.D.	1	1	1

UNDERGRADUATE DEGREES CONFERRED

SPRING 2016 – B.S. ANIMAL SCIENCES

Alland,E
Baker,J
Bradford,A
Brummett,A
Butler,A
Cropp,C
Easley,D
Entringer,B
Harrell,M
Hickey,J
Kent,M
Klopotic,A
Kvalheim,J
Lichwa,A
Mezera,M
Miller,B
Moua,K
Palmer,K
Peacock,A
Petzel,E
Pols,R
Preston,L
Purnell,J
Rentmeester,S
Rose,A
Schneider,E
Semon,D
Shurn,T
Toth,S
Vaadeland,E
Walters,K
Wilhelms,K
Wolf,G
Yang,E
Yao,Y
Zars,E

SUMMER 2016– B.S. ANIMAL SCIENCES

Hougan,C

FALL 2016– B.S. ANIMAL SCIENCES

DeRouchey, L
Kleinhans,A
Nechuta,L
Robbins,R
Wiedl,M

GRADUATE DEGREES CONFERRED

Laura Amundson
Spring 2016
Ph.D. Animal Sciences
Tom Crenshaw
Thesis Title: Nutritionally Induced Cellular Signals Involved in the Initiation of Bone Abnormalities in the Hypovitaminosis D Kyphotic Pig Model

Megan Krautkramer
Spring 2016
MS Animal Sciences
John Parrish
Thesis Title: Utilizing Fluorescent Nuclear Image Analysis of Sperm for Fertility Assessment

Thomas Murphy
Summer 2016
PhD Animal Sciences
Dave Thomas
Thesis Title: Genetic Improvement of U.S. Dairy Sheep

Emily Weaver
Summer 2016
MS Animal Sciences
Amin Fadl
Thesis Title: Study on Salmonella enterica serovar Enteriditis (SE) gidA mnmE Mutant as a Potential Vaccine Candidate for Use in Chickens

Vera Cardoso Ferreira
Fall 2106
MS Animal Sciences
Guilherme Rosa
Thesis Title: Application of Propensity Score to Investigate Functional Relationships between Genetically Correlated Traits

Nantawat Tatiyaborwomatham
Fall 2016
PhD Animal Sciences
Mark Richards
Thesis Title: Effects of porcine pancreatic phospholipase A2 on lipid oxidation in muscle matrices

Spring 2016

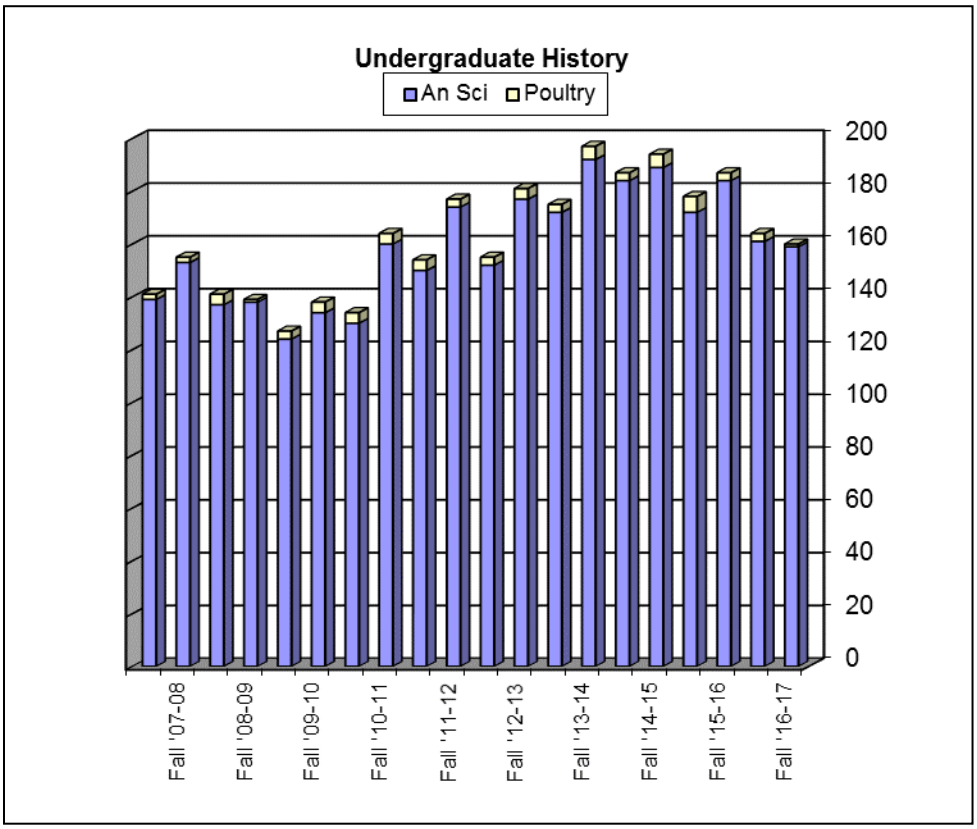
	Undergraduate			Graduate		
	Dept.[1,3]	CALS[1]	Univ.[1]	Dept.[1]	CALS[1]	Univ.[1]
Total No.	162	3489	27796	26	821	8486
Gender						
Men	19	1360	13614	10	395	4438
Women	143	2129	14182	16	426	4048
Ethnicity						
Native American	2		242			77
African American	8		789			232
Asian American	5		1947			380
Hispanic American	10		1299			402
Native Hawaiian			89			18
Caucasian	131		21145	12		4672
International	6		2209	14		2466
Unknown			76			239

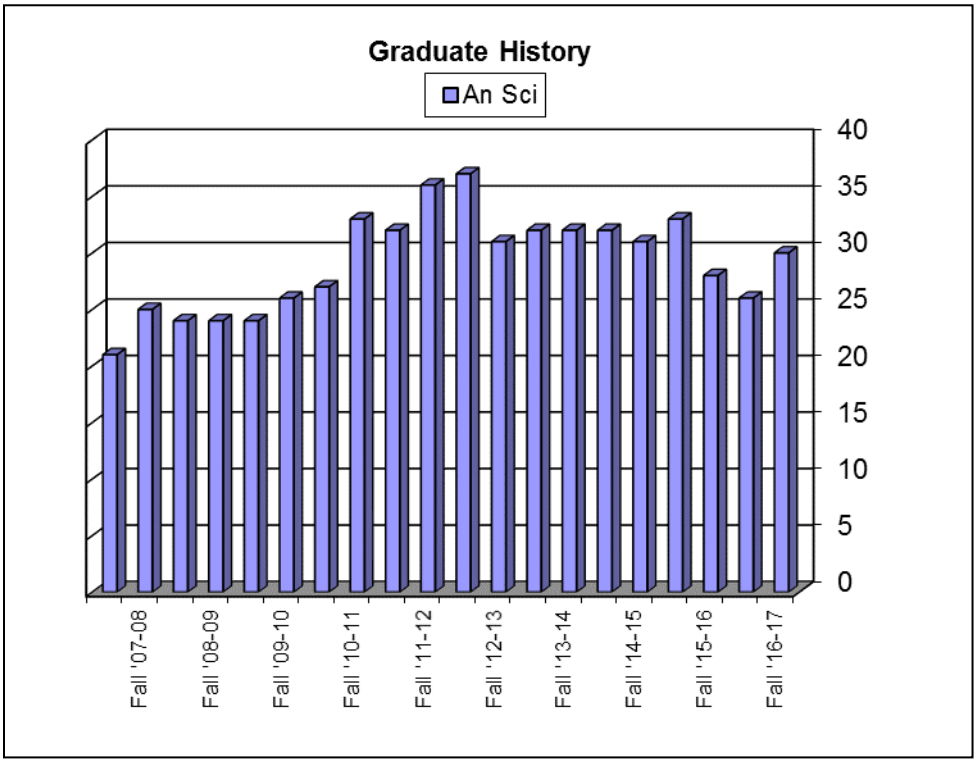
Fall 2016

	Undergraduate			Graduate		
	Dept.[2,3]	CALS[2]	Univ.[2]	Dept.[2]	CALS[2]	Univ.[2]
Total No.	162	3384	29536	30	829	8901
Gender						
Men	24	1320	14503	12	390	4603
Women	138	2064	15033	18	439	4298
Ethnicity						
Native American			278			90
African American	6		866			245
Asian American	7		2187			413
Hispanic American	14		1437			442
Native Hawaiian	4		87			22
Caucasian	126		22138	14		4846
International	4		2460	16		2615
Other	1		83			228

[1] Spring 2015-16, http://registrar.wisc.edu/documents/Stats_all_2015-2016Spring.pdf, all figures as of the end of the sixth week of instruction.
[2] Fall 2016-17, https://registrar.wisc.edu/documents/Stats_all_2016-2017Fall.pdf, all figures as of the end of the sixth week of instruction.
[3] Combined Animal Science and Poultry Science figures.

Enrollment Trends in Animal Sciences and Poultry Science





Animal Sciences PHD 02/04/16

Enrollment Data

Enrollment Headcounts by Racial/Ethnic Category*

	Fall, 2006	Fall, 2007	Fall, 2008	Fall, 2009	Fall, 2010	Fall, 2011	Fall, 2012	Fall, 2013	Fall, 2014	Fall, 2015
Hispanic/Latino				1	1	1	2	2		
Black/African American										
American Indian/Alaska Native										
Asian										
Native Hawaiian/Oth Pac Island										
White	7	6	6	6	6	9	9	11	11	10
Two or More Races										
Unknown	2	1	1	1	1	1				
International	8	7	6	8	10	10	10	9	12	12
Total	17	14	13	16	18	21	21	22	23	22
Domestic Targeted Minorities**				1	1	1	2	2		
Domestic Minorities**				1	1	1	2	2		

Enrollment Percentages by Diversity Category

	Fall, 2006	Fall, 2007	Fall, 2008	Fall, 2009	Fall, 2010	Fall, 2011	Fall, 2012	Fall, 2013	Fall, 2014	Fall, 2015
Domestic Non-Targeted**	53%	50%	54%	44%	39%	48%	43%	50%	48%	45%
Domestic Targeted Minorities**				6%	6%	5%	10%	9%		
International**	47%	50%	46%	50%	56%	48%	48%	41%	52%	55%

Enrollment Percentages of All Domestic Graduate Students by Racial/Ethnic Category*

	Fall, 2006	Fall, 2007	Fall, 2008	Fall, 2009	Fall, 2010	Fall, 2011	Fall, 2012	Fall, 2013	Fall, 2014	Fall, 2015
Hispanic/Latino				13%	13%	9%	18%	15%		
Black/African American										
American Indian/Alaska Native										
Asian										
Native Hawaiian/Oth Pac Island										
White	78%	86%	86%	75%	75%	82%	82%	85%	100%	100%
Two or More Races										
Unknown	22%	14%	14%	13%	13%	9%				

Enrollment Percentages by Gender

	Fall, 2006	Fall, 2007	Fall, 2008	Fall, 2009	Fall, 2010	Fall, 2011	Fall, 2012	Fall, 2013	Fall, 2014	Fall, 2015
Female	29%	29%	31%	31%	28%	24%	24%	32%	39%	50%
Male	71%	71%	69%	69%	72%	76%	76%	68%	61%	50%

Enrollment Headcount by Academic Load***

	Fall, 2006	Fall, 2007	Fall, 2008	Fall, 2009	Fall, 2010	Fall, 2011	Fall, 2012	Fall, 2013	Fall, 2014	Fall, 2015
Full-Time	15	13	12	15	18	20	18	19	21	19
Part-Time	2	1	1	1		1	3	3	2	3
Total	17	14	13	16	18	21	21	22	23	22

*Race/ethnicity categories and reporting methodology represent federal reporting categories and methodology. A major change in both data collection and reporting occurred in 2008. Data before and after are not directly comparable. Prior to 2008, students were only able to indicate a single race/ethnic category and that is the category that is reported. Starting in 2008, revised federal guidelines allowed students to indicate multiple race/ethnic identities. These guidelines stipulate that all domestic (non-international) students who indicate Hispanic ethnicity should be reported as Hispanic, regardless of other racial information provided. Non-Hispanic, domestic students who indicate more than one race are reported in the, "Two or More Races," category. All other non-Hispanic, domestic students who indicated a single race are reported in that category.

**Targeted minority and minority counts are provided because they cannot be derived from the race/ethnic categories alone. Targeted Minorities are domestic students who are African-American, Native American, Hispanic American, and Southeast Asian (Cambodians, Laotians, Vietnamese, and Hmong) students. Non-targeted students include White, Other Asians, Native Hawaiians (new category in 2008), and Unknown students. Minority includes all the targeted categories as well as students who are other Asians (non Southeast Asian) and Native Hawaiian. International students are assigned to the separate International category regardless of their ethnicity.

***For definitions of full-time status, please consult the Enrollment Requirements section of the Graduate School's academic policies and procedures at https://gradwisc.edu/acadpolicy/.

Dataview Sources: UW_RETENTION_STUDENT, UW_RETENTION_PLAN_HISTORY, UW_RETENTION_SEM_HISTORY, UW_STDNT_MULTITERM, UW_STDNT_PLAN_MULTITERM, UW_UA_OCTOBER_PAYROLL Page 2

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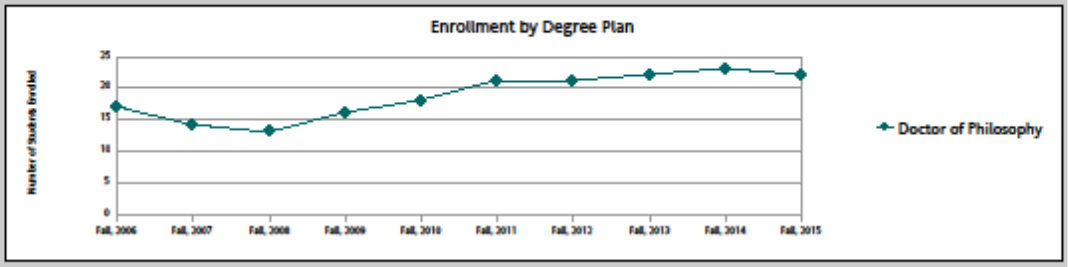
Enrollment Headcounts by Degree Plan

	Fall, 2006	Fall, 2007	Fall, 2008	Fall, 2009	Fall, 2010	Fall, 2011	Fall, 2012	Fall, 2013	Fall, 2014	Fall, 2015
Doctor of Philosophy	17	14	13	16	18	21	21	22	23	22



Funding Data

Headcount of Students with an Appointment of 33% or Higher*

	Fall, 2006	Fall, 2007	Fall, 2008	Fall, 2009	Fall, 2010	Fall, 2011	Fall, 2012	Fall, 2013	Fall, 2014	Fall, 2015
Fellows			1		1	1	1	2		2
Trainees										
Research Assistants	12	11	6	12	8	10	11	11	13	10
Teaching Assistants**			1	1	4	4	2	2	3	2
Project Assistants					1	1	1	1		
No/Low/Other Funding*	5	3	5	3	4	5	6	6	7	8
Total	17	14	13	16	18	21	21	22	23	22

Percentage of Students with an Appointment of 33% or Higher*

	Fall, 2006	Fall, 2007	Fall, 2008	Fall, 2009	Fall, 2010	Fall, 2011	Fall, 2012	Fall, 2013	Fall, 2014	Fall, 2015
Fellows			8%		6%	5%	5%	9%		9%
Trainees										
Research Assistants	71%	79%	46%	75%	44%	48%	52%	50%	57%	45%
Teaching Assistants**			8%	6%	22%	19%	10%	9%	13%	9%
Project Assistants					6%	5%	5%	5%		
No/Low/Other Funding*	29%	21%	38%	19%	22%	24%	29%	27%	30%	36%

Percent of Full-Time Doctoral Students with First 4 Years Funded Through the University***:	83%

*A graduate student fellowship, traineeship, or assistantship of at least 33% full-time equivalent (FTE) carries with it tuition remission benefits and eligibility for heath insurance. These counts include students whose appointment(s) have a combined FTE of 33% or higher. Students who have multiple appointments were counted once in the appointment with the higher FTE or in the order above for those with multiple appointments with the same FTE. Students with funding outside of the university and students with appointments that are less than 33% are included in the No/Low/Other Funding category.

**Lecturer (SA) appointments are included in the TA category.

***The first years of funding is based on entering cohorts between Summer, 2006 and Fall, 2015 that were full time for their first 2 years (for masters students) or their first 4 years (for doctoral students) and were fully funded through the university during that time. Years of support are based on funding in the fall semesters. Students enrolled in less than 2 or 4 years are included if they were funded for each year.

Dataview Sources: UW_UA_OCTOBER_PAYROLL, UW_RETENTION_PLAN_HISTORY

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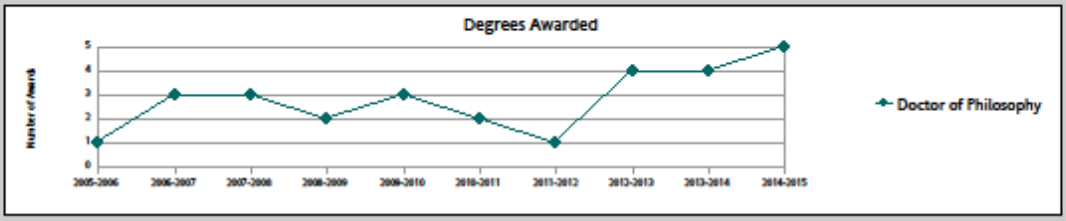
Degree Data

Degrees Awarded by Year*

	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Doctor of Philosophy	1	3	3	2	3	2	1	4	4	5



*Years are grouped by fiscal year graduations (Summer, Fall, Spring), the standard measure used in the campus Data Digest. Data includes degrees recorded as of October 1, 2015. Students who earned multiple degrees in a year are counted twice.

Enrolled Terms to Degree*

	Average Fall and Spring Term Count	Median Fall and Spring Term Count	Average Summer Term Count	Median Summer Term Count
Doctor of Philosophy	10.4	10	4.1	4

*Terms to degree information is based on degrees awarded from the summer of 2005 through spring of 2015 and is a count of all terms enrolled in the degree-granting program prior to the degree. Doctoral time to degree will include time spent on a masters degree if that masters was in the same program.

Dataview Sources: UW_RETENTION_AWARDS_MAIN, UW_RETENTION_AWARDS_PLAN, UW_RETENTION_PLAN_HISTORY, UW_STDNT_ACAD_PLAN_ATTRIBUTES

Doctoral Program Years to Degree*

Graduate Level	Doctoral Level	Final Academic Program	Final PhD Program	Candidacy in Final PhD Program
6.0	4.3	6.0	4.3	1.7

Peer Comparison

Graduate Level (All AAUs)	Final PhD Program (All AAUs)
5.3	4.6

Time to Degree Markers:
Graduate Level = Time as a graduate student at UW in any program
Doctoral Level = Time as a doctoral student at UW in any program
Final Academic Program = Time as a graduate student at UW in the degree-granting program
Final PhD Program = Time as a doctoral student at UW in the degree-granting program
Candidacy in Final PhD Program = Time as a dissertator at UW in the degree-granting program
Graduate Level (All AAUs) = Weighted average of years to degree at the graduate level of all Association of American Universities schools that reported doctoral time to degrees for the same field

*The data are measures of elapsed time to degree from various markers for degrees earned between fall of 2010 and spring of 2013. The numbers shown represent the median values.

Source: Academic Planning & Institutional Research, Office of the Provost

10-Year Doctoral Completions Rates*

Cohort Size	% PhD Completed	% Master's Completed (No PhD)	% Total Degrees Completed
16	69%	19%	88%

Peer Comparison

% PhD Completed (All AAUs)
64%

*Doctoral completions are based on entrance cohorts, determined by the first term that a student is in a PhD plan in a given program, even if they earn a Master's degree after that term or are enrolled in a Master's program in previous terms. The cohort represented consists of students whose first term in a doctoral program was in or between Summer, 2000 and Spring, 2004.

Source: Academic Planning & Institutional Research, Office of the Provost

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Spring Semester 2016

Course	Title	Enrollment	Instructor
110	Animal Handling	12	Jobsis
150	Career Orientation: Animal Sciences/Poultry Sci.	18	O'Rourke
200	Bio. & Appreciation of Companion Animals	130	Kean
221	Advanced Meat Animal Evaluation Lab	6	Russell
299	Independent Study	13	
305	Intro-Meat Science & Technology	39	Claus
311	Comparative Animal Nutrition	55	Crenshaw/White
313	Animal Feeds and Diet Formulation	19	Combs
320	Animal Health & Disease Management	46	Lankau
321	Food Laws and Regulations	71	Theis
361	Intro. to Animal and Veterinary Genetics	72	Khatib/Rosa Kirkpatrick/Thomas
362	Veterinary Genetics	30	Khatib/Kirkpatrick
363	Principles of Animal Breeding	36	Rosa/Thomas
373	Animal Physiology	44	Hernandez/Wiltbank
375	Equine Reproduction	22	Parrish
375	Exploring Poultry	13	Kean
375	Integrative Animal Physiology Lab	4	Shanmuganayaga
399	Coordinative Internship/Cooperative Education	2	
430	Sheep Production	33	Thomas
432	Swine Production	15	Crenshaw
433	Equine Business Management	13	Sandberg
520	Ornithology	72	Pidgeon
521	Birds of Southern Wisconsin	72	Pidgeon
699	Special Problems	17	
799	Practicum in Animal Sciences Teaching	3	
875	Selected Topics in Reproductive Physiology	4	Bird
875	Special Topics in Quantitative Genetics	10	Rosa
931	Seminar in Animal Nutrition	7	Crenshaw
951	Seminar in Animal Breeding	9	Gianola/Rosa
954	Seminar in Endocrinology-Reproductive Physiology	27	Bird
990	Research	24	

Summer Semester 2016

Course	Title	Enrollment	Instructor
314	Poultry Nutrition	12	Lilburn
315	Poultry Enterprise Management	11	Koelkebeck
399	Coord. Internship/Cooperative Education	5	
444	Lab Tech in Mammalian Gamete & Embryo Biology	14	Monson
503	Avian Physiology	16	Parrish
508	Poultry Products Technology	17	Richards
511	Breeder Flock and Hatchery Management	16	Kean
512	Management for Avian Health	12	Cook
681	Senior Honor Thesis	1	
799	Practicum in Animal Sciences Teaching	1	
990	Research	18	

Fall Semester 2016

Course	Title	Enrollment	Instructor
101	Livestock Production	111	Cook
200	Bio. & Appreciation of Companion Animals	123	Kean
220	Growth, Composition & Evaluation of Meat Animals	25	Russell
299	Independent Study	7	
370	Livestock Production and Health in Ag. Dev.	29	Reed
375	Animal Welfare and Behavior	20	Cook/Jobsis
399	Coordinative Internship/Cooperative Education	8	
414	Ruminant Nutrition	28	Wattiaux
415	Application of Monogastric Nutrition Principles	6	Crenshaw
431	Beef Cattle Production	9	Schaefer/ Kirkpatrick
434	Reproductive Physiology	68	Parrish
435	Animal Sciences Proseminar	32	Albrecht/Reed
515	Commercial Meat Processing	17	Claus/Milkowski
682	Senior Honors Thesis	1	
699	Special Problems	27	
799	Practicum in Animal Sciences Teaching	1	
875	Endocrine Physiology	7	Patankar
875	Ruminant Nutritional Physiology	17	Shaver, Combs, White, Reed
875	Animal Sciences Seminar	10	Kirkpatrick
951	Seminar in Animal Breeding	10	Gianola
954	Seminar in Endocrinology-Reproductive Physiology	31	Bird
990	Research	24	

Faculty	2016 Appointment Extension	Teaching	Research
Ralph Albrecht, Professor		30%	70%
Jim Claus, Professor		40%	60%
Mark Cook, Professor		34%	66%
Tom Crenshaw, Professor		50%	50%
Dan Gianola, Professor		12%	48%
Hasan Khatib, Professor		35%	65%
Brian Kirkpatrick, Professor		40%	60%
John Parrish, Professor		40%	60%
Jess Reed, Professor		25%	50%
Mark Richards, Professor		30%	70%
Guilherme Rosa, Professor		35%	65%
Dan Schaefer, Professor		50%	50%
Dhanu Shanmuganayagam, Assistant Professor		40%	60%
Jeff Sindelar, Associate Professor	80%		20%
Dave Thomas, Professor		25%	75%
Staff			
Terry Barry			30%
Dan Butz			100%
Alissa Grenawalt	88%	12%	
Terry Jobsis		20%	80%
Ron Kean	70%	30%	
Chris Krueger			100%
Ricky Monson			100%
Jennifer Meudt			100%
Bernadette O'Rourke	90%	10%	
Joan Parrish			40%
Madi Potratz		100%	
Jamie Reichert		15%	85%
Ron Russell	10%	54%	36%
Liv Sandberg	80%	20%	
Deb Schneider			100%
Todd Taylor	10%	20%	70%
Robert Weyker		46%	54%

Departmental Administrative and Support Staff

Kathy Monson, University Services Program Associate B
Michele Myers, Financial Specialist
Minh Ngo, IS Tech. Srv. Prof.
Joan Parrish, Assoc. Admin. Program Specialist
Shelia Pink, Academic Department Manager
Dianne Raschka, Financial Specialist Senior
Deb Schneider, Sr. Research Specialist 3
Steve Switzer, IS Sys. Dev. Srv. Senior
Laura Trumble, University Services Associate 1

Staff at On- and Off-Campus Research Centers

Dennis Anderson (Arlington Beef Unit)
Angel Gutierrez-Velin (Small Animal Lab)
Dawn Irish (Poultry Research Lab)
Terry Jobsis (Campus Operations)
John Kemper (Campus Operations)
Anna Cece Escobar Lopez (Arlington Swine Unit)
Morgan McQue (Arlington Swine Unit)
Jamie Reichert, (Arlington Swine Unit)
Derald Stronach (Arlington Sheep Unit)
Todd Taylor, (Arlington Sheep Unit)
Sam Trace (Arlingtong Swine Unit)

Adjunct Faculty

Andy Milkowski
Larry Borchert
Mark Wilson
Steve Lorton

Animal Biology, Immunity and Toxicology

El Guweidi, Abir	MS	Albrecht
Javadi, Sahar	PhD	Albrecht
Zuehlke, Andrew	PhD	Albrecht

Beef Cattle

Karls, Caleb	MS	Schaefer
Nieman, Christine	PhD	Schaefer
Nolden, Cherrie	PhD	Schaefer

Comparative Biosciences

Arendt, Maria	MS	Cook

Genetics-Animal Breeding

Cardoso, Vera	PhD	Rosa
Fernandes, Arthur	PhD	Rosa
Gross, Nicole	PhD	Khatib
Lett, Beth	MS	Kirkpatrick
Li, Hao	MS	Rosa
Los Santos, Jorge	PhD	Khatib
Moreira, Ligia	PhD	Rosa
Namous, Hadjer	MS	Khatib
Passafaro, Tiago	PhD	Rosa
Tang, Weijing	PhD	Kirkpatrick
Tekin, Cansu	MS	Rosa

Meat Science Muscle Biology

Dogan, Mehmet	PhD	Sindelar
Li, Na	PhD	Richards
Kopp, Elizabeth	MS	Sindelar
McMinn, Russ	PhD	Sindelar
Mickelson, Maggie	MS	Claus
Sawyer, Chris	MS	Claus

Molecular & Environmental Tocixology

Mulhenbeck, Jessica	PhD	Cook

Nutrition

Alfaro Viquez, Emilia	PhD	Reed
Arowolo, Folagbayi	PhD	Shanmuganayagam
Chesmore, Nathan	PhD	Shanmuganayagam
Esquivel, Daniel	PhD	Reed
Grez, Mariola	PhD	Crenshaw
McCue, Morgan	MS	Crenshaw
Schomberg, Dominic	PhD	Shanmuganayagam

Reproductive Physiology

Berndtson, Jodi	MS	Parrish

Mark Cook

First vice president Poultry Science Association

Faculty of the year, Midwest Poultry Consortium 2016.

Robert G.F. and Hazel Spitze College of Agriculture and Life Sciences Land Grant Award.

Tom Crenshaw

CALS Arthur J. Maurer Extra Mile Award – 2016

ASAS Gary L. Cromwell Award for Research in Mineral Nutrition – 2016

Mark Richards

Midwest Poultry Consortium Faculty Member of the Year - 2016

Midwest Poultry Consortium Outstanding Service Award - 2016

Guilherme Rosa

2016 Rockefeller Prentice Memorial Award in Animal Breeding and Genetics, American Society of Animal Science, Salt Lake City, UT, July 2016.

Jeff Sindelar

North American Meat Institute Harry L. Rudnick Educator's Award – 2016

Recognition as 1 of 25 Future Icons, The National Provisioner – 2016

University of Wisconsin, College of Agricultural and Life Sciences Pound Extension Award – 2016

Albrecht, Ralph

TetFund (Olorundare PI, Albrecht Co I, Mukhtar CoI), 12/1/14 – 11/3016, Cancer prevention and therapy using phytochemicals. $300,000

Claus, James

Claus, J. R., 2016. Impact of sow carcass rinse and chill application on hot-boned prerigor meat color stability. MPSC Inc., a Wisconsin-based company ($14,743). To undertake this project I was able to secure a donation of 13 sows (~$3000) from Johnsonville Sausage. ($17,743).

Cook, Mark

Funded Proposals:

Schaefer, D, and ME Cook. 2016. Use of interleukin-10 antibodies to control respiratory disease in growing livestock. WARF Accelerator. $124,000 total.

Cook (PI). Dietary levels of methionine required promoting immunity against Eimeria spp. infection Evonik Industries AG. Sept 1, 2015-Feb 28, 2016. 168,565. To Begin Jan 2017

Schaefer, D. T Barry and ME Cook. 2016. Effects of dietary preen oil on the performance of key aquaculture fish species. $50,000.

Cook, ME, T. Barry, and J. Olson. 2016. Cosajaba oil as a growth promoting, survival-enhancing feed ingredient in high value fish species. WARF Accelerator. $130,310.

Kuhn, D., ME Cook, MH Schwarz, B. Blakistone. 2016 Enhancing seafood quality and safety by reducing reliance on antibiotics: Applying a novel antibody to tilapia. Fish research Institute. $40,000. (Research applied 2015, study start 2016).

Arendt, MA. (Cook, ME mentor) Role of mucosal interleukin-10 in Eimeria infection. Merck Graduate Fellowship. $100,000 3 years.

Atkins, M. (PI), ME Cook, and D. Schaefer. 2016 (start 2017). Evaluation of feeding oral antibody to interleukin-10 to newly housed dairy heifers on growth, efficiency, and disease incidence, and subsequent growth and lactation. Hatch (TA plus $15,000 supplies/yr).

Cook M.E. Oral antibodies to interleukin 10 receptor-2 as a replacement for poultry antibiotics. Food Research Institute. $35,000

TAship in animal sciences 101. One semester 50%.

Current Support in Addition to Above:

Cook (PI) Trans-vaccenate: An anti-inflammatory in dairy fat. Hatch Act Formula Fund. Oct 1, 2014-Sept 30, 2018. $123,376

Cook (PI) A new point of care breath monitor to detect infection in critically ill patients. Isomark, NIH, DHHS, PHS, SBIR. Sept 1, 2015- Aug 31, 2016. $84,888.

Cook (PI). Inventor share of department royalty from WARF. Wisconsin Alumni Research Foundation. 1995-ongoing. Variable, but approximately $30,000/year direct.

Pending Proposals:

A proposal to Smithfield on new developments. $303,129

Crenshaw, Thomas

Cardiovascular Research Foundation, Krueger, Crenshaw, Shanmuganayagam, FH Swine, $358,787, 2014 – 2017.

Multiple Donors/Zinpro, Crenshaw, $56,000, 2016.

Serotonin Regulates Ca, USDA NIFA AFRI, Hernandez, Crenshaw, $500,000, 2016 – 2020

Hatch, Crenshaw, Vitamin D and Immunity, 2016 – 2019

USDA/TCRGP, Pastured Raised Pigs, $13,298, Marlow, Crenshaw, 2015 – 2017

Gianola, Daniel

Gianola, D (PI), Hatch Act Formula funds (WIS01642), 10/1/12 – 9/30/16 $173,586, Statistical Methods for Prediction of Across-population Performance in Livestock Breeding

Weigel, K (PI), Gianola, D, Hatch Act Formula funds (WIS01876), 10/1/15 – 9/30/19 $111,441, Enhancing the Utility of Genomic Selection in Dairy Cattle with Candidate-Specific Reliability, Bagged Predictions, and Knowledge of the Genetic Background of Prospective Mates

Khatib, Hasan

CALS-Bridge Funding, Atlas of imprinting genes in cattle: A tool to elucidate the role of epigenetics in animal health and production. $36,000 - 6/2015 -6/2017

HATCH-CALS PI-Khatib, The Identification of Epigenomic and Transcriptomic Signatures Associated With Male Fertility and Embryo Development in Cattle. $124,000 - 10/2014-09/2018

GENHOME/ITALY PI-Khatib, Effects of maternal nutrition during pregnancy on offspring traits in sheep. 50,000 Euro - 08/2014-7/2016

Kirkpatrick, Brian

HATCH Multi-State Research Formula Fund, Doubling down: further analysis of a major gene for bovine ovulation rate and development of a system to exploit it. (WIS01932), 10/1/16 – 9/30/20

Parrish, John

Grants Awarded and Funding for Research in 2016 and ongoing grants:

Hatch, Heat stress and male fertility in swine, 2015-2018, $150,000.

Department of Agriculture Philippine Agriculture and Fisheries Biotechnology Program, Improving artificial insemination efficiencies using fertility indexed bulls selected by Fourier Harmonic Analysis, 2014 – 2018 (Co-PI with Danilday Hufana-Duran), $122,000

Research semen, Alta Genetics 150 doses/bulls, 2016, $3,000

Semex USA, Fee for service, semen analysis, 2016 $1,500

Sexing Technologies Inc., initiated Fee for Service agreement for embryo evaluation, ($600 in 2016, additional $4,400 to be paid in 2017).

Funding for Teaching in 2015:

UW-MIU-TA, $6,000, TA for fall semester in AS434

Sexing Technologies, $1500, donation of sow reproductive tracts.

Reed, Jess

Cardiovascular Research Foundation, Refinement and Further Characterization of the Rapacz Familial Hypercholesterolemic (FHS) Swine Model for Cardiovascular Research, $358,778, 06/01/2014 - 05/31/2017

US High Bush Blueberry Council, Blueberry polyphenols and gut barrier function, $125,116, 11/2016 – 11/2017

Cranberry Institute, Urinary proteome and fecal microbiome markers of gut barrier dysfunction, $148,665, 5/2016 – 7/2017

State Economic Engagement and Development, Polyphenol fingerprinting for authentication of functional foods, dietary supplements and botanicals, $110,931, 7/2016 – 7/2017

UroPharma Ltd., Stability and efficacy of tannin-containing gynaecological and urological therapeutic formulations, $176,383, 9/2016 – 8/2017

Johnsonville Sausage, LLC, Phase III: In ovo injection of swine lysozyme as a replacement for antibiotics, $248,825, 12/2016 – 6/2018

NIH RO1, Detection an characterization of TCFA using combined HD-IVUS & IVPA imaging, $225,000, 7/2016 – 7/2019

Richards, Mark

NIFA Foundational Program - Investigating a novel antioxidant mechanism in muscle foods. ($498,000), Dec. 2013 – Nov. 2017

Hatch Grant – Improving oxidative stability in muscle foods by phospholipid hydrolysis and examination of the mechanisms involved. ($129,000), Sept. 2014 – Aug. 2018

Bioiberica – Continued research on pancreas extract. ($75,699), 2014 – 2017

Kraft-Oscar Mayer – Continued research on color stabilization of roast beef. ($42,000), Feb. – March 2016

TIF-Draper – Stabilizing color and lipids in meat at lower oxygen. ($50,000), June 2015 – June 2016

WARF Accelerator Program – Use of phospholipase A2 to inhibit oxidative rancidity in mechanically separated turkey. ($68,406), July 2013 – December 2016

WARF Accelerator Program – Stabilizing Color in a Meat Substitute containing plant hemoglobin. ($98,000), January 2017 – December 2017

Johnsonville Sausage Research Agreement & Fee-for-service – Heme, hemoglobin, myoglobin, and color analysis in pork sausage. ($27,490), August 2016 – April 2017

Chr Hansen – Lipid oxidation products in packaged salami (MAP and vacuum). ($10,080) – June 2016 – January 2017

Rosa, Guilherme

USDA AFRI Conference Grant - Training The Next Generation of Animal Breeders: 5th International Conference on Quantitative Genetics, $10,000, 01-12/2016

USDA AFRI Conference Grant - Training The Next Generation of Plant Breeders: 5th International Conference on Quantitative Genetics, $30,000, 01-12/2016

USDA-NIFA Investigating Casual Phenotype Networks Underlying Carcass and Meat Quality Traits in Pigs, $125,433, 10/2017 - 9/2021

GeneSeek – Unrestricted gift, $28,000, 01-12/2016

Schaefer, Dan

Hatch Act Formula Fund – Applied research and network building to advance Silvopasture in Wisconsin. $127,170, 2015 – 2019

USDA SARE, University of MN – Climate resilient forages for the Upper Midwest. $9,997, 2015 – 2017

CALS Hatch – Climate Resilient Pasture Systems to Sustain High Quality Forage and Season Long Pasture Carrying Capacity. $176,036, 2015 - 2017

WARF – IL-10 Antibodies for Feedlot Cattle. $50,000, 2016 – 2017

Shanmuganayagam, Dhanu

NF Network – Genetic swine models of NF1 for translational research. $50,000.

NIH R01 – Microbubble-mediated ultrasonic therapy for coronary microvascular obstruction. Subaward $196,544 2015-2020

USDA Formula Project, National Institute of Food and Agriculture – Effects of lipid oxidation products in swine diets on animal growth, adiposity and meat quality. $96,075, 2016-2019

UW-Madison (Graduate School Fall Research Competition) – Fast-growing yellow perch for Wisconsin aquaculture by CRISPR/Cas9-mediated gene editing. $81,853, 2017 - 2018

Sindelar, Jeff

Literature Review: Efficacy of Interventions on Pathogens in Processed Meats. Principal Investigators: Wendy Bedale, Kathleen Glass (Food Research Institute) and Jeffrey J. Sindelar. Funding Source: Foundation for Meat and Poultry Research and Education Funding Period: 4/1/16 to 3/31/17 Amount: $12,200 Status: Funded; Research in Progress

Validation of lethality and stabilization processes for products with slow come up time: bacon and bone-in ham. Principal Investigators: James Dickson (Iowa State University), Joseph Sebranek (Iowa State University), Joseph Cordray (Iowa State University), Jeffrey J. Sindelar, Kathleen Glass (Food Research Institute) and Robert Hanson (Hanson Tech) Funding Source: American Meat Institute Foundation Funding Period: 6/1/15 to 4/1/17 Amount: $150,000 ($74,995 subcontract to UW) Status: Funded; Research in Progress

Investigating Food Safety Implications of Extended Cooling in Ready-to-Eat Meat and Poultry Products. Principal Investigators: Jeffrey J. Sindelar (PI) and Kathleen A. Glass (Co-PI, UW Food Research Institute). Funding Source: Food Research Institute Research Program Funding Period: 11/2/16- Amount $35,000 Status: Funded; research in progress.

Sindelar, Jeff (con't)

Creating Science-Based Thermal Processing Food Safety Standards for Meat and Poultry Products. Principal Investigators: Jeffrey J. Sindelar (PI) and Kathleen A. Glass (Co-PI, UW Food Research Institute). Funding Source: USDA/HATCH Funding Period: 10/1/15 to 9/30/17 Amount $107,350 Status: Funded; Research in Progress

Beef Sources and Consumer Deliverables. Principal Investigators: Jeffrey J. Sindelar (PI) Funding Source: Wisconsin Beef Council Funding Period: 1/31/15 to 1/31/16 Amount $2,490 Status: Funded; Research Completed

Thomas, Dave

Exploring causal relationships underlying economically important traits in dairy sheep. CALS, UW Madison, Hatch project. 2013-2017. 2013-2014= $38,917, 2014-2015 = $56,394, 2015-2016 =$56,175, 2016-2017=$46,561 Guilherme Rosa (PI) and David Thomas (Co-PI).

Genetic improvement of U.S. dairy sheep. CALS, UW-Madison, Hatch project. 2015-2017. 2015-2016=$51,089, 2016-2017=$46,561 (PI).

2016 CALS-ARS Summer Internship for Spooner Ag Research Station. Hatch $5,000. (PI)

Summary. Faculty publications, presentations and graduate students currently enrolled – 2016.

Faculty	2016 Publications				Invited Presentations		Grad Students	
	Peer-Reviewed and Book Chapters	Accepted/In Press	Submitted/Under Review	Abstr	Domestic	Int'l	Advisor	Cmtte
Albrecht					1	1	3	14
Claus	2		2	4			3	
Cook	9	1	1	7	6		3	11
Crenshaw	6	1	3	7	3	2	3	12
Gianola	7	2			2	5		
Khatib		1	2		1	3	3	4
Kirkpatrick	1	1		1			2	6
Parrish				2	5			
Reed	5		2				2	1
Richards	4			2	1		2	9
Rosa	12	3		21	4	1	5	8
Schaefer			1	3			3	2
Shanmuganayagam	2	3		2			3	4
44indelar	6				2		3	1
Thomas	4				1		1	4
Total	**58**	**12**	**11**	**49**	**26**	**12**	**36**	**76**

Publication List for each Faculty

Albrecht, Ralph

Refereed publications:

Oliver, JA, DA Meyer, RM Albrecht. Simultaneous labeling of four surface receptors expressed on activated platelets and detection by conventional and energy filtering transmission electron microscopy. In preparation.

Claus, Jim

Peer-Reviewed Manuscripts and Book Chapters:

Kılıç, B., Şimşek, A., Claus, J. R., Atilgan, E., & Bilecen, D. 2016. Impact of added encapsulated phosphate level on lipid oxidation inhibition during the storage of cooked ground meat.J Food Sci, 81(2), C359-368. doi: 10.1111/1750-3841.13205

Kılıç, B., Şimşek, A., Claus, J. R., & Atılgan, E. 2016. Melting release point of encapsulated phosphates and heating rate effects on control of lipid oxidation in cooked ground meat. LWT - Food Science and Technology, Food Science and Technology 66, 398-405

Refereed journal articles submitted:

Claus, Jim (con't)

Claus, J.R. and Jeong, J.Y. 2016. Processing conditions and endpoint temperature effects on development of pink defect without pink generating ligands in cooked ground turkey breast. Submitted to Poultry Science.

Kılıç, B., Şimşek, A. Claus, J.R., Karaca E. Bilecen, D.2016. Effect of a combination of encapsulated and unencapsulated phosphates on lipid oxidation inhibition in cooked ground meat during storage. Submitted to JFS: Food Chemistry.

Contributed Papers and/or Abstracts, Other Presentations:

Kılıç, B. Bimşek, A., Claus, J.R., Karaca, E. and Bilecen, D. 2016. Inhibition of lipid oxidation by using a combination of encapsulated and unencapsulated polyphosphates in cooked ground meat during storage. 69th Reciprocal Meat Conference, AMSA Conference, Angelo State University. Texas. June 19-22. Abstract and E-poster.

Mickelson, M.A. and Claus, J.R. 2016. Carcass chilling method effects on instrumental color and tenderness in bison. 69th Reciprocal Meat Conference, AMSA Conference, Angelo State University. Texas. June 19-22. Abstract and E-poster.

Mickelson, M. A. and Claus, J. R. 2016. Carcass chilling method effects on color and tenderness of bison meat. 62nd International Congress of Meat Science and Technology. August 14-19. Bangkok, Thailand. Short paper; abstract and poster (P04-11).

Kılıç, B., Şimşek, A. and Claus, J.R. 2016. Impact of encapsulated polyphosphates on lipid oxidation during the storage of cooked ground meat. 62nd International Congress of Meat Science and Technology. August 14-19. Bangkok, Thailand. Short paper; abstract and poster (P04-11).

Technical Reports and Other Publications:

Claus, J.R. 2016. Application of hydrodynamic shock wave processing associated with meat and processed meat products. Chapter 6, (33 textbook pages). In "Emerging Technologies in Meat Processing". Wiley-Blackwell Publishers. http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118350685.html (accessed 11/16/16).

Cook, Mark

Research Publications:

Bobeck, EA, EM Hellestad, JM Sand, ML Piccione, JW Bishop, C. Helvig, M. Petkovich, and ME Cook. 2016. Oral antibodies to human intestinal alkaline phosphatase reduce dietary phytate phosphate bioavailability in the presence of dietary 1α-hydroxycholecalciferol Poultry Sci. 95:570-580

Sand, JM, MK Arendt, A. Repasy, G. Deniz, and ME Cook. 2016. Oral antibody to interleukin-10 reduces growth rate depression due to Eimeria spp. Infection in broiler chicks. Poultry Sci. 95:439-346.

Arendt, M.K., J.M. Sand, T.M. Marcone, and M.E. Cook. 2016. Interleukin-10 neutralizing antibody for detection of intestine luminal levels and as a dietary additive in Eimeria challenged broiler chicks. Poultry Sci. 95:430-438.

Huebner, S.M., J.M. Olson, J.P. Campbell, J.W. Bishop, P.M. Crump, and M. E. Cook. 2016. Low dietary c9t11-conjugated linoleic acid intake from dairy fat or supplements reduces inflammation in collagen-induced arthritis. Lipids 51:807-819. DOI 10.1007/s11745-016-4163-8

Cook, M.E., D.E. Butz, M. Yang, and J.M. Sand. 2016. Host targeted approaches to managing animal health: Old problems and new tools. Dom. An. Endo. 56:S11-S22.

Ren Z., D.E. Butz, J.M. Sand, and M.E. Cook. 2016. Maternally-derived anti-fibroblast growth factor-23 antibody as new tool to reduce phosphorus requirement of chicks. Poultry Sci. PMID: 27647928.

Ren, Z., D.E. Butz, A.N. Wahhab, A.J. Piepenburg, and M.E. Cook. 2016. Additive effects of fibroblast growth factor 23 neutralization and dietary phytase on chick calcium and phosphorus metabolism. Poultry Sci. PMID:27665015.

Weaver, SR, JC Boher, AS Prichard, PK Perez, LJ Strechenbach, JM Olson, ME Cook, and LL Hernandez. 2016. Serotonin deficiency rescues lactation on day 1 in mice fed a high fat diet. PLos One 11(9):e0162432. PMID:27603698.

Cook, Mark (con't)

Manuscripts submitted and under review:

Muhlenbeck, JA, DE Butz, JM Olson, D. Uribe-Cano, and ME Cook. 2016. Dietary exposure to conjugated linoleic acid cis-9, trans-11 prevent collagen-induced arthritis. Lipids. Submitted. Have not heard back from first review.

Abstracts:

Schaefer, MR, ME Cook, and DM Schaefer. 2016. Feeding antibodies against interleukin-10 improved gain efficiency in beer steers. Joint ADSA-ASAS meeting. Salt Lake City, UT 94:E supplement 5.

Cook, ME JM Sand, MR Schaefer, MK Arendt, and DM Schaefer. Intraluminal targeting of intestinal interleukin-10. A new strategy for controlling helminthic and protozoan diseases. Monogastric Nutrition Symposia. Joint ADSA-ASAS meeting. Salt Lake City, UT 94:E supplement 5.

Butz, DE, SL Morello, J. Sand, JP Boriosi, GN Holland, and ME Cook 2016. Continuous exhaled breath carbon isotope analysis for early detection of sepsis. Ex. Biology Meeting. San Diego, CA. April 2-6.

Ren, Z, DE Butz, M. Ebrahimi, T.R. James, J.M. Sand, ME Cook. The effects of anti-fibroblast growth factor 23-peptide antibodies on excreta phosphate of chicks. Ex. Biology Meeting. San Diego, CA. April 2-6.

Arendt, MK, JM Sand, MA Mezera, and ME. Cook. 2016. In silico procedures, based on amino acid sequence and crystallography, to generate an egg yolk antibody for quantification of avian cytokines. Oct 4-6, Campinas, San Paulo, Brazil.

Ren, Z, DE Butz, JM Sand, and ME Cook. 2016. USE of anti-FGF-23 antibody to reduce phosphorus requirements of chicks. Poultry Sci Annual meeting New Orleans, LA. July 11. Poultry Sci supplement 1.

Olson, JM, AW Haas, J. Lor, HS McKee, and ME Cook. 2016. A comparison of anti-inflammatory effects of rumenic acid in the collagen induced arthritis model. Am Oil Chem Soc Annual meeting, May 1-4, Salt Lake City, UT.

Crenshaw, Thomas

Peer-Reviewed Manuscripts:

Bromage, T.G., Y. Idaghdour, R. S. Lacruz, T. D. Crenshaw, O. Ovsiy, B. Rotter, K. Hoffmeier, F. Schrenk. 2016. The Swine Metabolome Chronicles "Many Days" Biological Timing and Functions Linked to Growth. PLOS One. 11:1-19. (doi:10.1371/journal.pone.0145919).

Weaver, Samantha R., Austin P Prichard, Elizabeth L Endres, Stefanie A Newhouse,Tonia L Peters, Peter M Crump, Matthew S Akins, Thomas D Crenshaw, Rupert M Bruckmaier, and Laura L Hernandez. 2016. Elevation of circulating serotonin improves calcium dynamics in the peripartum dairy cow. J Endocrinology 230:105–123.

Amundson, L. A., L. L. Hernandez, J. Laporta, and T. D. Crenshaw. 2016. Maternal dietary vitamin D carryover alters offspring growth, skeletal mineralization, and tissue mRNA expression of genes related to vitamin D, calcium, and phosphorus homeostasis in swine. Br J Nutr. 116:774-787. doi:10.1017/S0007114516002658

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Gianola, Daniel

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Khatib, Hasan

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Jenna Kropp, Jose Carrillo, Hadjer Namous, Alyssa Daniels, Sana M. Salih, Jiuzhou Song and Hasan Khatib. Male Fertility Status is Associated with DNA Methylation Signatures in Sperm and Transcriptomic Profiles of Bovine Preimplantation Embryos. BMC Genomics (under review).

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Kirkpatrick, Brian

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Parrish, John

Publications:

Parrish JJ. 2016. Pipetting Techniques. 26th Meeting of the National Association of Animal Breeders, Columbia MO. In Press.

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Richards, Mark

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Jie Yin, Craig A. Bingman, Nantawat Tatiyaborworntham, Wenjing Zhang, and Mark P. Richards. Crystallization of quinone adducted to turkey hemoglobin and its role in inhibiting lipid oxidation. 162nd International Congress of Meat Science and Technology, 14-19th August 2016, Bangkok, Thailand. (1st prize in research competition)

Invited scientific presentations and proceedings during current reporting year:

Mark P. Richards. Assessing oxidative capacity of different heme proteins using x-ray crystallography. X-ray Superuser Group Seminar; Madison, WI (February 1, 2016)

Rosa, Guilherme

Book Chapters:

Rosa, G. J. M., Felipe, V. P. S. and Peñagaricano, F. Applications of Graphical Models in Quantitative Genetics and Genomics. In: Systems Biology in Animal Production and Health, Volume 1. Kadarmideen, H. (Ed.) Springer, 2016.

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Rosa, Guilherme (con't)

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Rosa, Guilherme (con't)

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Schaefer, Dan

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Schaefer, D. M., H. Chester-Jones, and B. Boetel. 2017. Beef production from the dairy herd. Large Dairy Herd Management, 3rd ed., (in press).

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Shanmuganayagam, Dhanu

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Shanmuganayagam, Dhanu (con't)

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Schomberg DT, Meudt JJ, Krentz KJ, Rubinstein CD, Zhang A, Shanmuganayagam D. Optimization of CRISPR/Cas9 platform-mediated gene editing of swine embryos for the creation of novel biomedical swine models. Presented at Experimental Biology 2016 Meeting, April 2–6, San Diego, CA.

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Sindelar, Jeff

Refereed Journals:

Bedale, W., J.J. Sindelar, A.L. Milkowski. 2016. Dietary Nitrate and Nitrite: Benefits, Risks, and Evolving Perceptions. Meat Science 120: 85-92.

Weyker, R.E., K.G. Glass, A.L. Milkowski, D.L. Seman, and J.J. Sindelar. 2016. Controlling Listeria monocytogenes and Leuconostoc mesenteroides in uncured deli-style turkey breast using a clean label antimicrobial. Journal of Food Science 81(3): 672-683.

King, A.M., K.A. Glass, A.L. Milkowski, D.L. Seman, and J.J. Sindelar. 2016. Modeling the impact of ingoing sodium nitrite, sodium ascorbate, and residual nitrite concentrations on growth parameters of Listeria monocytogenes in cooked, cured pork sausage. Journal of Food Protection 79(2):184-193.

Sindelar, Jeff (con't)

Contributed Papers and Abstracts:

McMinn, R.P., J.J. Sindelar, K. A. Glass, and R. Hanson 2016. Thermal Inactivation of Salmonella and Listeria monocytogenes in Beef Patties, Chicken Patties, Chicken Tenders, and High-fat Frankfurters. Poster presentation at the Food Research Institute Annual Spring Meeting; Madison, WI.

Kopp, E., R. McMinn, and J. Sindelar. 2016. Evaluation of Quality Characteristics for Beef Cuts Following Different Production and Branding Approaches. Reciprocal Meat Conference; San Angelo, TX (June 2016).

McMinn, R.P., J.J. Sindelar, K. A. Glass, and R. Hanson 2016. Thermal Inactivation of Salmonella and Listeria monocytogenes in Beef Patties, Chicken Patties, Chicken Tenders, and High-fat Frankfurters. Reciprocal Meat Conference; San Angelo, TX (June 2016).

Thomas, Dave

Papers Published in, or Accepted by, Refereed Journals:

Murphy, T. W., D. L. Thomas, and T. L. Montgomery. 2016. Linear and nonlinear mixed model analyses of growth performance of commercial U.S. dairy buck kids. Small Ruminant Res. 136:151-155.

Murphy, T. W., Y. M. Berger, P. W. Holman, M. Baldin, R. L. Burgett, and D. L. Thomas. 2016. Factors affecting lamb and ewe performance in a crossbred dairy sheep research flock in the U.S. J. Anim. Sci. Accepted and In Revision.

Invited Published Papers:

Murphy, T. W. and D. L. Thomas. 2016. Estimating breeding values for sheep: Estimates of genetic parameters and trends in a crossbred population of dairy sheep. Proc. 22nd Dairy Sheep Association of North America Symp., Ithaca, NY, Cornell University, Dept. of Animal Science. pp. 10-22.

Chapters in Books:

Thomas, D. L. 2016. Production of Sheep Milk. In: Handbook of Milk of Non-Bovine Mammals (second edition), W. L. Wendorff, Y. W. Park and G. F. W. Haenlein (Eds.). Wiley, Oxford, U.K. (In Press).

Thomas, Dave (con't)

Thomas, D. L. 2016. Dairy Sheep. In: Dairy Production & Processing: The Science of Milk and Milk Products, J. R. Campbell and R. T. Marshall (Eds.). Waveland Press, Inc., Long Grove, Illinois. pp. 247-262.

Proceedings Edited:

Proceedings of the 64th Annual Spooner Sheep Day, UW-Madison Spooner Agricultural Research Station, Spooner, WI, 2016

Technical Reports (Research Results):

Roscizewski, A., D. L. Thomas, and P. Holman. 2016. Effects of once daily milking in late lactation. Proc. 64th Annual Spooner Sheep Day, Dept. Animal Sci., Univ. of Wisconsin-Madison. pp.28-32.

Albrecht, Ralph

UW/WARF PO4401US, “Colloidal Magnetic Nanoparticles for Cytotoxicity and Drug Delivery” (Albrecht and Kandela) patent. Patient is published; waiting information from the Patent Office.

Cook, Mark

Sand JM, and ME Cook. 2016. Secretory IgA compositions, methods, of making and methods of use thereof. US Patent 9,458.230.

Cook, ME, JM Sand, LA Krugner-Higby, and JM Ntambi. 2016. Methods of use of secretory IgA. US Patent. 9,468,674.

Sand JM, ME Cook. Interleukin-10 peptide antibodies thereof for inhibiting adverse effects of protozoan infection. US Patent 9,505,836

PIs from the Department of Animal Science have submitted 35 subgrants, grants/contracts in the FY16 for a total of $3,979,986. Ten grants (29%) have been funded for a total of $778,638 (Indirect costs recovered: $209,122; 16%).

In FY 17, PIs continue to be sought after as Co-PI on grants from other departments (6 grants) and universities (1 grant).

7/01/14-6/30/15 Animal Science Grant submissions

Source	Submitted	Pending	Funded	% Funded	$ Funded
UW System[1]	12	0	6	50	$324,503
Federal/State[2]	23	0	7	30	$610,875
Private[3]	16	0	6	38	$374,983
Total	51	0	19	37	$1,310,343

[1] Includes TIF, Accelerator, SEED, WARF Fall competition
[2] USDA (including HATCH), NIH (subgrants), DOD, US-AID, SARE

7/01/15-6/30/16 Animal Science Grant submissions

Source	Submitted	Pending	Funded	% Funded	$ Funded
UW System[1]	7	0	4	57	$292,857
Federal/State[2]	19	1	3	16	$324,329
Private[3]	9	0	3	33	$161,452
Total	35	0	10	29	$778,638

[1] TIF*, SEED*, UW2020, Accelerator*, UW-Milwaukee*
[2] USDA (including HATCH), NIH (including 6 subgrants), US-AID, NSF
[3] Morris Animal Foundation, Cranberry Institute, AQHF, National Fisheries, Pork Board, Johnsonville, Beef checkoff

7/01/16-3/2/17 Animal Science Grant submissions

Source	Submitted	Pending	Funded	% Funded	$ Funded
UW System[1]	8	4	1	13	$ 62,217
Federal/State[2]	14	4	4	29	$297,597
Private[3]	9	0	4	44	$192,558
Total	31	0	9	29	$552,372

[1] TIF, SEED, Fall Competition*
[2] USDA (including HATCH), NIH, NCRAC, US-AID, NSF, (includes subgrants)
[3] Agri-Processing, Evoniks, MPSC Inc., Uropharma, Johnsonville

	Instruction		Research		Extension	
2700 (Academic Programs)	101-2	%	101-4	%	104/143-5	%
Faculty Salary & Academic Staff salary	686,507	80.71	1,134,965	62.27	309,761	74.59
University Staff salary	82,172	9.66	102,528	5.63	102,962	24.79
Hourly - Student & LTE	23,043	2.71	32,473	1.78	2,564	.62
2710 (Animal Operations)						
Academic Staff salary	39,475	4.64	257,091	14.10		
University Staff salary	16,979	2.00	264,042	14.49		
Hourly - Student & LTE& Supplies	2,400	.28	31,541	1.73		
Total	850,576	100%	1,822,640	100%	415,287	100%