

Curriculum Vitae

MIKE D. TOKACH

University Distinguished Professor
Extension Specialist, Swine
Department of Animal Sciences and Industry
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OVERALL SUMMARY

	Data
Publications	
Refereed Journal Articles	403 + 11 in press
Book Chapters	10 + 1 in press
Refereed Journal Abstracts	776
Extension Publications and Nonrefereed Publications	1,097
Popular Press Articles	542
Presentations at State, National and International Meetings	335
Grants and gifts generated	\$20,975,633
Grants and fellowships	\$15,389,176
Gifts	\$4,757,752
Gifts in kind	\$828,535
Graduate students completed degrees (through Dec 2019)	
Masters	54
Doctoral	44

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PERSONAL

Married – Lisa M. Thomas, 1988; three children, Sage (1996), Rogan, (1998), Fiona, (2000);
Date and place of birth, September 29, 1964, Bismarck, North Dakota.

PROFESSIONAL EXPERIENCE

KANSAS STATE UNIVERSITY, 1991- present, University Distinguished Professor and Extension Specialist (Swine specialist from 1999 to present, Livestock Production and Management specialist from 1991 to 1999) includes transferring technology to the livestock producers in Kansas, conducting field research, and implementing producer education programs. Extension Program Leader for Department of Animal Sciences and Industry from 2006 to present.

University Distinguished Professor: 2013 to present

Professor: 2001 to present: 60% extension, 40% research.

Associate Professor: 1995 to 2001: 80% extension, 20% research.

Assistant Professor: 1991 to 1995: 100% extension.

EXTENSION

Major programs have included:

- | | |
|-------------------------------------|---|
| 1) Swine Nutrition Audits | 5) Efficiency of Feed Utilization |
| 2) KSU Lean Value Marketing Program | 6) KSU Group Marketing Program |
| 3) KSU Swine Enterprise Records | 7) On-Farm Lean Growth Assessment |
| 4) Best Cost Diet Formulation | 8) Integrated Swine Resource Management |

RESEARCH

Major research areas:

- 1) Nutrition programs for the weaned pig.
- 2) Amino acid and energy requirements of pigs in production environments.
- 3) Irradiation, pelleting, and other alternative processing of feed ingredients.
- 4) Influence of starter pig performance on subsequent growth performance.
- 5) Valine and other amino acid requirements of lactating sows.
- 6) Use of real-time ultrasound to determine protein deposition and nutrient requirements.
- 7) Improving methods and accuracy of feeding gestating sows.
- 8) Micronutrient intake during gestation and its effects on offspring growth.
- 9) Optimal use of distiller's grains and other high fiber byproducts in finishing pig diets.

TEACHING

Advanced Swine Nutrition, ASI 902: 1994 to present . I have helped develop and teach this graduate level course to train students in computerized diet formulation and discuss current concepts and practices in applied swine nutrition - approximately 10 students every third fall semester. In addition I have guest lectured in ASI 318 (Fund Nutr) ASI 320 (Prin Feed), ASI 535 (Swine Sci). ASI 921 (Prot Util Dom Anim), and provided lectures for Junior and Senior Veterinary students at KSU, CSU, and U of MN Colleges of Veterinary Medicine.

I have also developed in-depth nutritional education programs for IFAMS veterinary students and veterinarians, extension specialists, and feed industry personnel on a short-course basis. Other teaching activity includes presentations at numerous meetings for nutritionists, veterinarians, feed

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industry members, Humane Society personnel, swine producers, and 4-H and FFA members. I have hosted visiting professors, veterinarians, students, and swine producers from several countries including: Argentina, Australia, Brazil, Canada, Chile, China, Columbia, Honduras, Costa Rica, England, France, Germany, Guatemala, Ireland, Italy, Japan, Mexico, Paraguay, Poland, and USSR. I also have coached or assisted with 4-H, FFA and collegiate meats and livestock judging teams.

UNIVERSITY OF MINNESOTA, 1988-1991, Graduate Research Assistant.

Doctoral dissertation: *Influence of blood metabolites and metabolic hormones on milk production and reproduction in the sow*. This research centered on making the connection among diet, milk production and reproduction via the blood metabolites, metabolic hormones and reproductive hormones. I co-authored the two NPPC grants obtained to partially fund this project.

Other research included:

- 1) Determining the appropriate fat level for nursery pig diets.
- 2) Evaluating the effect of adding milk products and/or fat to starter pig diets on subsequent performance during the grower and finisher phase.
- 3) Examining the influence of a tyrosine dose to postweaning sows on litter size.
- 4) Assessing the acceptability of diets containing lupin meal.

KANSAS STATE UNIVERSITY, 1986-1988, Graduate Research Assistant.

Master's thesis: *The effects of the carbohydrate and protein fractions of milk products on starter pig performance*. Growth and digestibility trials were conducted to evaluate the importance of the carbohydrate and/or protein fractions of milk products on the response elicited when milk products are added to starter pig diets.

NORTH DAKOTA STATE UNIVERSITY, 1982-1986, Beef Barn Employee and Assistant Judging Team Coach. Involved in the everyday operation of the beef unit including the collection and recording of experimental data. I also served as assistant coach of the meats and livestock judging teams.

TOKACH ANGUS RANCH, 1974-1986, Farm Laborer to Management Team.

Through the years, I evolved from a farm laborer to an integral part of the management team for our family-owned diversified livestock farm. The major enterprises on the 5,000 acre grain and stock farm included a 300 head purebred angus cow herd, 80 sow farrow-to-finish unit and small grains operation.

EDUCATION

University of Minnesota

Ph. D.: Animal Science (Swine Nutrition)
Minor: Animal Physiology
(1988-1991) GPA 4.0

Kansas State University

M.S. Degree: Animal Science (Swine Nutrition)
(1986-1988) GPA 4.0

North Dakota State University

B.S. Degree: Animal and Range Science

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(1982-1986) GPA 3.61

PROFESSIONAL GROWTH AND SERVICE

Community

Abilene Parish Catholic Schools USD 435 School Board President (2003 to 2006)
- School Board Member 2002-2008
- Auction committee, Grants committee, Buildings and technology committee
St. Andrews Church
- Ecumenical minister
Abilene Parks and Recreation youth football coach
Abilene Parents as Teachers
- 5 year board member
Dickinson County 4-H project leader
Knights of Columbus
Great Plains Theater Festival volunteer
Arts Council of Dickinson County
Dickinson County 4-H Family of the Year (2014)

Professional Society Activities

American Society of Animal Science
- Board of Directors
- Journal editorial board
- Nonruminant nutrition committee
- Graduate student competition committee
American Association of Swine Practitioners
- Nutrition Committee, National Meeting Planning Committee
- Journal editorial board
Epsilon Sigma Phi
Gamma Sigma Delta
Phi Eta Sigma
Alpha Zeta, Phi Kappa Phi
Alpha Lambda Delta
University of Minnesota Alumni Association
Kansas State University Alumni Association
North Dakota State University Alumni Association
University of Minnesota Fellowship Organization
KSU Graduate Student Association
NDSU Saddle and Sirloin Club

National Service

National Pork Board (Previously National Pork Producers Council)
- Genetic Evaluation Committee, Feed Purchasing Task Force, World Pork Symposia
Committee, Lean Growth Modeling Committee, Production Standards Committee
- Grant reviewer
Peer Review Panel for USDA-NIFA Agriculture & Food Research Initiative (AFRI)

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World Pork Expo Nutrition Committee (1991 to 1999, Chairperson in 1993)
International Pig Veterinary Society (scientific program review committee)
Journal of Swine Health and Production, Reviewer
Theriogenology, Reviewer
National Research Council, Nutrient Requirements of Swine 10th Ed Review Committee
Lonza, Inc., Consortium for Dipeptide Research

University

K-State Research Foundation Board of Directors
K-State President Search Committee
K-State College of Agriculture 2025 Priority Planning Committee
K-State College of Agriculture Tenure and Promotion Committee – Two terms
K-State Dean of Agriculture Search Committee
Animal Sciences and Industry Department Head Search Committee - Chair
K-State Research and Extension Off-campus Evaluation Committee
K-State Research and Extension Local Delivery Task Force
K-State Research and Extension Marketing Advisory Committee
K-State Research and Extension Associate Director 5 year Review Committee
Cooperative Extension Delivery Review Committee
K-State Research and Extension User-Fee Task Force
Interim Dean of Agriculture Selection Committee
ASI Department Youth Livestock Coordinator Search Committee
ASI Department Beef Cow/Calf Extension Specialist Search Committee
ASI Department Business Manager Search Committee
Northeast Area 4-H Program Specialist Selection Committee, Chair (2 times)
Northeast Area Agronomist and Agricultural Economist Selection Committees
Assistant Dean of Agriculture Selection Committee
Northeast Area Director – 5 year review committee
Trainer for Area Specialist Orientation
KAES/CES Annual Conference Planning Committee
Four-State Swine Conference Committee
Chairperson Nonruminant Nutrition session National ASAS, Minneapolis, MN
4-H Discovery Days Swine Records Reviewer

Department

State Extension Leader, Department of Animal Science and Industry
Promotion and Tenure Committee
Graduate Faculty Member
KSU/Purdue University Swine Production Satellite Television Short Course Committee
Co-editor - Kansas State University Swine Industry Day Report of Progress 1992 (172 pages); 1993 (178 pages); 1994 (205 pages); 1995 (155 pages); 1996 (181 pages); 1997 (99 pages); 1998 (265 pages); 1999 (172 pages); 2000 (156 pages); 2001 (143 pages); 2002 (182 pages); 2003 (223 pages); 2004 (191 pages), 2005 (230 pages), 2006 (173 pages), 2007 (220 pages), 2008 (248 pages), 2009 (282 pages), 2010 (293 pages), 2011 (357 pages), 2012 (417 pages), 2013 (278 pages), 2014 (331 pages), 2015 (420 pages, 2016 (382 pages).

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KSU Extension Food Safety Major Program Development Team
KSU Extension Swine Major Program Development Team
KSU Swine Day Program Planning Committee
KSU Swine Profitability Program Planning Committee
KSU Artificial Insemination Workshop Committee
Animal Science and Industry - Committee on Graduate Faculty Criteria
Animal Science and Industry Agent Training - Planning Committee
Planning committee for several events in Northeast Area
SEW Complex Coordination Committee

GRADUATE STUDENT ADVISING

Graduate Student Advising – As Major Professor

Garry Keeler, M.S., 1992-1993. Co-Advised with Dr. Jim Nelssen

Thesis: KSU Lean Value Marketing Program

Entry Position after M.S.: Douglas County Agricultural Extension Agent

Current Position: Environmental Specialist, Kansas Department of Agriculture.

Manuel De La Llatta, Ph.D. 1997-2000.

Dissertation: Effect of lysine and energy levels on grow-finish pig performance

Entry Position after Ph.D.: Nutrition Alimental de Sonora S.A.

Current Position: Partner/Nutritionist. Nutrition Alimental de Sonora S.A., Mexico

Sam Hanni, M.S., 2001-2003.

Thesis: The effects of calcium and phosphorus ratio and added chicory on finishing pig growth

Entry Position after M.S.: Ph.D. Program with Dr. Allen Sutton at Purdue University.

Malachy Young, Ph.D. 2001-2004.

Dissertation: The effects of gestation feeding system and nutrient intake on sow performance.

Entry Position after Ph.D.: Nutritionist, Gowan Feed Consulting, Alberta Canada.

Niamh Lenehan, M.S., 2002-2004.

Thesis: Amino acid sources and levels for early-weaned pigs.

Entry Position after M.S.: Swine production Farm in Ireland

Brent Heid, M. Ag. Bus. 2005-2007.

Thesis: Financial feasibility of a 2500 sow weaned pig operation.

Position after degree: Swine farm owner in Missouri

Brad James, Ph.D. 2001- 2009

Dissertation: Effects of L-carnitine and Ractopamine HCl on growth performance, carcass characteristics, pork quality and response to handling in finishing pigs.

Entry Position after Ph.D.; Nutritionist, Kallenbach Feeds, Ohio.

Rommel Sulabo, Ph.D. 2006 – 2009

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Dissertation: Influence of creep feeding on individual consumption characteristics and growth performance of neonatal and weanling pigs.
Entry Position after Ph.D. Research Manager, University of Illinois

Jeremiah Nemechek, M.S. 2009 – 2011

Thesis: Amino acid requirements and optimal use for 15 to 25 lb pigs.
Position after degree: Graduate school at Kansas State University

Chad Paulk, Ph.D. 2011 – 2014

Dissertation: Predicting market pig weights and fat iodine value and effect of zinc on growth performance and immune function of finishing pigs.
Entry position after Ph.D. Assistant Professor at Texas A&M University

Jeremiah Nemechek Ph.D. 2011 - 2014

Dissertation: Effects of pelleting and dietary fat and fiber levels on pig growth and fat quality.
Entry position after Ph.D. Nutritionist with Devinish Inc.

Kyle Coble Ph.D. 2012-2015

Dissertation: Influence of dietary fiber and copper on growth performance and carcass characteristics of finishing pigs and utilizing linear programming to determine pig flow.
Entry position after Ph.D. Nutritionist with New Fashion Pork

Ethan Stephenson M.S. 2013 – 2015

Thesis: The effects of dietary fat source and feeding duration on pig growth performance and fat quality.
Entry position after degree: Nutritionist with Pillen Family Farms

Josh Flohr Ph.D. 2013-2015

Dissertation: Effects of vitamin D supplementation and floor space on pig performance.
Entry position after degree: Nutritionist with Nutriquest

Anne Clark M.S. 2015-2016

Thesis: Dose-responses to lysine, valine, and isoleucine and the effects of monosodium glutamate on nursery pigs
Position after degree: Ph.D. program at Kansas State University

Jose Soto Ph.D. 2015-2018

Dissertation: Effects of low crude protein, amino acid fortified diets, and neutral detergent fiber on finishing pig performance.
Entry position after Ph.D. Nutritionist with Vita Plus

Dwight Shawk M.S. 2016-2018.

Dissertation: Effect of sodium, chloride, and sodium metabisulfite in nursery and grow-finish pig diets.
Entry position after M.S. Researcher with Hord Livestock

Fangzhou (Arkin) Wu Ph.D. 2015-2019

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Dissertation: Dietary calcium and phosphorous requirements and feed management for nursery pigs.
Entry position after Ph.D. Nutritionist for Pipestone Systems

Henrique Cemin Ph.D. 2016-2019
Dissertation: Evaluation of soybean meal, distillers dried grains with solubles, and the interactions among branched-chain amino acids in swine diets.
Entry position after Ph.D. Nutritionist for Hubbard Feeds

Annie Lerner Ph.D. 2017-2019.
Disertation: Effects of floor space and removal of corn distillers dried grains with solubles on heavy weight pig performance.
Entry position after Ph.D. Nutritionist for Schwartz Farms

Zhong-Xing Rau M.S. 2018-2020.
Thesis: The effects of fumonisin and high protein dried distillers grain on pig growth performance.
Entry position after M.S. Ph.D. program at Kansas State University

Hadley (Bo) Williams M.S. 2019-2020.
Thesis: The influence of particle size of Engen Feed corn and conventional yellow dent corn on nursery and finishing pig performance, carcass characteristics and stomach morphology
Entry position after M.S. Ph.D. program at Kansas State University

Wade Hutchens M.S. 2019-2021.
Thesis: Effects of antibiotic administration or ZnO replacement strategies on nursery pig performance and a commercial organic acid, essential oil blend on performance of wean-to-finish pigs.
Entry position after M.S. Teaching position in Illinois.

Julia Holen Ph.D. 2019-2022

Zhong-Xing Rau Ph.D. 2020-2022

Madie Wensley Ph.D. 2020-2022

Visiting Professors and Scholars

Pau Ayemerich, PhD. 2020. University of Barcelona. I coordinated and supervised an internship that was abbreviated because of COVID-19, but continued to interact with Pau until he finished his project and PhD.

Jamil Facin, PhD. 2018-2019. University of Rio Grande De Sol in Brazil. I coordinated and supervised a 6 month internship with our swine group at Kansas State University.

Fernanda Laskoski, PhD. 2018-2019. University of Rio Grande De Sol in Brazil. I coordinated and supervised a 6 month internship with our swine group at Kansas State University.

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Lluis Faba, PhD. 2018. University of Barcelona. I coordinated and supervised a 5 month internship with our swine group at Kansas State University.

Satoshi Masumoto, M.S. 2017-2018. Feed One. Yokohama Japan. I coordinated and supervised a 11 month sabbatical Mr. Masumoto took with our swine group at Kansas State University.

John Pluske, PhD. 2014-2015. Murdoch University.

I coordinated the 6 month sabbatical for this fullbright scholar. He was the inaugural Fulbright Distinguished Chair in Agriculture and Life Sciences at Kansas State University.

Danilo Marcal, PhD. 2015. Federal University of Mato Grosso do Sul. I coordinated and supervised an 8 month internship with our swine group at Kansas State University.

Alexandre dos Santos, M.S. 2015. Federal University of Mato Grosso do Sul. I coordinated and supervised an 8 month internship with our swine group at Kansas State University.

Miriam Auyso Hernando, PhD. 2013. University of Madrid, Spain.

I coordinated and supervised a four month internship with our swine group at Kansas State University.

Georgios Papadopoulos, PhD. 2009. University of Thessalonica, Greece.

I coordinated and supervised the two month internship for Dr. Papadopoulos took with our swine group at Kansas State University.

Ryohta Shinohara, M.S., 2007. Kyoto-Shiryō Co., LTD. Fukushima, Japan.

I coordinated and supervised the four-month sabbatical Mr. Shinohara took with our swine group at Kansas State University.

Toshi Iwasawa, M.S., Ph.D., 2003. Kyoto-Shiryō Co., LTD. Fukushima, Japan.

I coordinated and supervised the six-month sabbatical Dr. Iwasawa took with our swine group at Kansas State University.

Eduardo Beltranena, M.S., Ph.D., 1994. Prairie Swine Centre, Saskatoon, Canada

I coordinated and supervised the two month sabbatical Dr. Beltranena spent with our swine group at Kansas State University

Graduate Student Advising – As Committee Member and Research Advisor

Lauren Kats	M.S.	Animal Sciences and Industry	Graduated 1994
Kim Friesen	Ph.D	Animal Sciences and Industry	Graduated 1994
Steve Dritz	Ph.D	Animal Sciences and Industry	Graduated 1995
Brian Richert	Ph.D	Animal Sciences and industry	Graduated 1995
Kevin Owen	Ph.D	Animal Sciences and Industry	Graduated 1996
Richard Tynon	M.S.	Agricultural Economics	Graduated 1995
Jon Bergstrom	M.S.	Animal Sciences and Industry	Graduated 1996
Jim Smith, II	M.S.	Animal Sciences and Industry	Graduated 1996
Kittiporn Hongtrakul	M.S.	Animal Sciences and Industry	Graduated 1996

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Ben Nessmith	M.S.	Animal Sciences and Industry	Graduated 1996
Joe Loughmiller	M.S.	Animal Sciences and Industry	Graduated 1997
Chad Kerr	M.S.	Animal Sciences and Industry	Graduated 1997
Sharlie Moser,	M.S.	Animal Sciences and Industry	Graduated 1998
Robert Musser	M.S.	Animal Sciences and Industry	Graduated 1998
Jim Smith, II	Ph.D	Animal Sciences and Industry	Graduated 1998
Grant Grinstead	M.S.	Animal Sciences and Industry	Graduated 1999
Jason Woodworth	M.S.	Animal Sciences and Industry	Graduated 1999
Patrick O'Quinn	Ph.D	Animal Sciences and Industry	Graduated 1999
Joe Loughmiller	Ph.D	Animal Sciences and Industry	Graduated 2000
Matt Steidinger	M.S.	Animal Sciences and Industry	Graduated 2000
Brad James	M.S.	Animal Sciences and Industry	Graduated 2000
Robert Musser	Ph.D.	Animal Sciences and Industry	Graduated 2001
Daryl Real,	M.S.	Animal Sciences and Industry	Graduated 2001
Joel DeRouchey	Ph.D	Animal Sciences and Industry	Graduated 2001
Mike Webster	M.S.	Animal Sciences and Industry	Graduated 2001
Chad Hastad	M.S.	Animal Sciences and Industry	Graduated 2002
Jason Woodworth,	Ph.D	Animal Sciences and Industry	Graduated 2002
Kelly Lawrence	M.S.	Animal Sciences and Industry	Graduated 2003
Tim Keegan	M.S.	Animal Sciences and Industry	Graduated 2003
Nolan Frantz	M.S.	Animal Sciences and Industry	Graduated 2004
Crystal Groesbeck	M.S.	Animal Sciences and Industry	Graduated 2004
Rodger Main	Ph.D	Department of Clinical Sci	Graduated 2005
Chad Hastad	Ph.D	Animal Sciences and Industry	Graduated 2005
Russell Gottlob	M.S.	Animal Sciences and Industry	Graduated 2005
Janeal Stephens	Ph.D.	Animal Sciences and Industry	Graduated 2005
Casey Neill	M.S.	Animal Sciences and Industry	Graduated 2005
Kelly Lawrence	Ph.D	Animal Sciences and Industry	Graduated 2006
Nolan Franz	Ph.D.	Animal Sciences and Industry	Graduated 2006
Jason Schneider	Ph.D.	Animal Sciences and Industry	Graduated 2007
Sara Linneen	M.S.	Animal Sciences and Industry	Graduated 2007
Crystal Groesbeck	Ph.D.	Animal Sciences and Industry	Graduated 2007
Justin Benz	M.S.	Animal Sciences and Industry	Graduated 2008
Jay Jacela	Ph.D.	Department of Clinical Science	Graduated 2009
Cassie Jones	M.S.	Animal Sciences and Industry	Graduated 2009
Nick Shelton	M.S.	Animal Sciences and Industry	Graduated 2009
Mohammad Al-Bataineh	Ph.D.	Department of Clinical Science	Graduated 2010
Megan Potter	Ph.D.	Department of Clinical Science	Graduated 2010
Julie Barnes	M.S.	Animal Sciences and Industry	Graduated 2011
Jon Bergstrom	Ph.D.	Animal Sciences and Industry	Graduated 2011
Amanda Myers	M.S.	Animal Sciences and Industry	Graduated 2011
Wei Ying	M.S.	Animal Sciences and Industry	Graduated 2011
Kelly Sotak	M.S.	Animal Sciences and Industry	Graduated 2012
Hyatt Frobose	M.S.	Animal Sciences and Industry	Graduated 2012
Nick Shelton	Ph.D.	Animal Sciences and Industry	Graduated 2012
Matt Asmuss	M.S.	Animal Sciences and Industry	Graduated 2012
Alan Duttlinger	M.S.	Animal Sciences and Industry	Graduated 2012
Josh Flohr	M.S.	Animal Sciences and Industry	Graduated 2013

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Jon DeJong	M.S.	Animal Sciences and Industry	Graduated 2013
Amanda Carlile Graham	M.S.	Animal Sciences and Industry	Graduated 2013
Devin Goehring	M.S.	Animal Sciences and Industry	Graduated 2013
Sureemas Nitikanchana	Ph.D.	Department of Clinical Science	Graduated 2013
Raghavendra Amachawadi	Ph.D.	Department of Clinical Science	Graduated 2014
Kyle Jordan	M.S.	Animal Sciences and Industry	Graduated 2015
Hyatt Frobose	Ph.D.	Animal Sciences and Industry	Graduated 2015
Julie Feldpausch	M.S.	Animal Sciences and Industry	Graduated 2015
Jon DeJong	Ph.D.	Animal Sciences and Industry	Graduated 2015
Marcio Goncalves	Ph.D.	Department of Clinical Science	Graduated 2015
Lori Thomas	M.S.	Animal Sciences and Industry	Graduated 2017
Kiah Gourley	M.S.	Animal Sciences and Industry	Graduated 2017
Corey Carpenter	M.S.	Animal Sciences and Industry	Graduated 2017
Hayden Williams	M.S.	Animal Sciences and Industry	Graduated 2017
Aaron Jones	Ph.D.	Animal Sciences and Industry	Graduated 2017
Ashton Yoder	M.S.	Animal Sciences and Industry	Graduated 2018
Mariana Menegat	Ph.D.	Department of Clinical Science	Graduated 2019
Carine Vier	Ph.D.	Department of Clinical Science	Graduated 2019
Leandro Del Tuffo	M.S.	Animal Sciences and Industry	Graduated 2019
Lori Thomas	Ph.D.	Animal Sciences and Industry	Graduated 2019
Jordan Gebhardt	Ph.D/DVM	Animal Sciences and Industry	Graduated 2019
Kiah Gourley	Ph.D.	Animal Sciences and Industry	Graduated 2020
Hayden Williams	Ph.D.	Animal Sciences and Industry	Graduated 2020
Madie Wensley	M.S.	Animal Sciences and Industry	Graduated 2020
Hayden Kerkeart	M.S.	Animal Sciences and Industry	Graduated 2020
Kelsey Batson	M.S.	Animal Sciences and Industry	Graduated 2020
Jared Mumm	Ph.D.	Animal Sciences and Industry	2020
Jenna Chance	M.S.	Animal Sciences and Industry	2021
Andres Tolosa	Ph.D.	Animal Sciences and Industry	2022
Larissa Becker	M.S.	Animal Sciences and Industry	2022
A.J. Warner	M.S.	Animal Sciences and Industry	2022
Rafe Royall	M.S.	Animal Sciences and Industry	2022
Ethan Stas	M.S.	Animal Sciences and Industry	2022
Jenna Bromm	M.S.	Animal Sciences and Industry	2022

PATENTS

The use of an amino acid dipeptide to improve amino acid utilization by swine. Patent filed September, 1992. Received June, 1994. U.S.P.N. 5,374,428. Blum, S.A., R.D. Goodband, J.A. Hansen, J.L. Nelssen, and **M.D. Tokach**.

A sow lactation diet containing valine. Patent filed March, 1993. Received October, 1995. U.S.P.N. 5,480,659. 1996. **Tokach, M.D.**, R.D. Goodband, and J.L. Nelssen.

Modified tall oil supplemented diet for growing-finishing pigs. Patent filed November, 1997. Received February, 2000. No. 6,020,377. O'Quinn, P.R., K.Q. Owen, J.L. Nelssen, **M.D. Tokach**, and R.D. Goodband.

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Carnitine supplemented diets for gestating and lactating sows. Patent filed October, 1995. Received June, 2001 (U.S.P.N. 6,242,487) and September, 2002 (U.S.P.N. 6,451,856). Musser, R.E., R.D. Goodband, **M.D. Tokach**, J.L. Nelssen, K.Q. Owen, S.A. Blum, and R.A. Blum.

Use of modified ingredients and feed to improve performance and/or feed utilization of swine. Patent filed November, 2000. Received March, 2003 (U.S.P.N. 09/675,465). DeRouchey, J.M., **M.D. Tokach**, J.L. Nelssen, R.D. Goodband, and S.S. Dritz.

A method for improving quality of meat by supplementing pig diets with L-Carnitine and Ractopamine in combination. Patent filed March, 2002. Serial number 60/365,071. Nelssen, J.L., K.Q. Owen, R.D. Goodband, **M.D. Tokach**, S.S. Dritz, and B.W. James. Korean patent also received; Patent number 10-0882571.

Combination of carnitine and chromium for sows. Patent filed May, 2001. Received January 30, 2007 (U.S.P.N. 7,169,770). Real, D.E., J.L. Nelssen, **M.D. Tokach**, R.D. Goodband, S.S. Dritz, J.C. Woodworth, and K.Q. Owen.

Extension and Research Awards

- 2020 Fellow of American Society of Animal Science
- 2019 Henry L. Bolley Academic Achievement Award by North Dakota State University Alumni Association
- 2019 Professorial Performance Award. Kansas State University
- 2017 Innagural Kees De Lange Memorial Lecture at London Swine Conference
- 2016 Distinguished Alumni of College of Agriculture - received from North Dakota State University
- 2016 George Foxcroft Lectureship in Swine Production - received at Banff Pork Conference
- 2016 NPPC Innovation Award - Research. Presented for outstanding abstract at Midwest section of the American Society of Animal Science. Awarded for PEDv feed sequencing abstract.
- 2015 American Society of Animal Science AFIA Non-ruminant Nutrition Research Award
- 2013 Kansas State University Univesity Distinguished Professor
- 2013 Professorial Performance Award. Kansas State University
- 2012 American Society of Animal Science Extension Award
- 2012 International Pig Veterinary Science Society (IPVS) Outstanding Production Abstract
- 2010 K-State Research and Extension Team Award (awarded to Swine Team)
- 2010 Pijoan Lecturer at Al Lemman Swine Conference
- 2010 American Society of Animal Science Animal Management Award
- 2010 Gamma Sigma Delta Excellence in Extension Award.
- 2010 Pork Master. National Hog Farmer.
- 2007 K-State Research and Extension Builder Award.
- 2007 Professorial Performance Award. Kansas State University.
- 2005 Named "One of 50 Most Influential People in the U.S. Swine Industry in the past 50 years" by National Hog Farmer at the 2005 World Pork Expo.
- 2003 National Pork Board Innovation Award - Research. Presented to the outstanding research abstract by the Midwest section of the American Society of Animal Science. Awarded for our research on the influence of weaning age on pig performance and profitability.
- 1999 Outstanding Young Animal Scientist – Midwest Section. Presented to the outstanding young

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- scientist by the Midwest section of the American Society of Animal Science.
- 1997 NPPC Innovation Award - Extension. Presented to the outstanding swine extension program by the Midwest section of the American Society of Animal Science. Awarded for our On-farm Lean Growth Evaluation Program.
- 1996 Kansas Pork Producers Council Industry Service Award. Awarded for recognition of contributions to the pork producers and swine industry of Kansas.
- 1995 NPPC Innovation Award - Extension. Presented to the outstanding swine extension program by the Midwest section of the American Society of Animal Science. Awarded for our Segregated Early Weaning Program.
- 1994 NPPC Innovation Award - Extension. Presented to the outstanding swine extension program by the Midwest section of the American Society of Animal Science. Awarded for our Environmental Program "Integrated Swine Systems".
- 1993 NPPC Innovation Award - Extension. Presented to the outstanding swine extension program by the Midwest section of the American Society of Animal Science. Awarded for our Lean Value Marketing Program.
- 1993 NPPC Innovation Award - Applied Research. Presented to the outstanding applied research abstract by the Midwest section of the American Society of Animal Science. Awarded for our research on amino acid needs of high-lean gilts.
- 1991 ASAS Mid-west Graduate Student Competition Paper (First place).

REFEREED JOURNAL ARTICLES AND BOOK CHAPTERS

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Efficacy of Commercial FUM Detoxifying Products on Phase Three Nursery Pigs Fed High FUM Diet. J. Woodworth, R. Goodband, M. Tokach, J. DeRouchey, and S. Dritz. 2019. Kemin Industries	\$10,000
Efficacy of Commercial FUM Detoxifying Products on Phase Three Nursery Pigs Fed High FUM Diet. J. Woodworth, R. Goodband, M. Tokach, J. DeRouchey, and S. Dritz. 2019. Biomin America	\$10,000
Efficacy of Commercial FUM Detoxifying Products on Phase Three Nursery Pigs Fed High FUM Diet. J. Woodworth, R. Goodband, M. Tokach, J. DeRouchey, and S. Dritz. 2019. Nutriquest	\$10,000
Comparing the Effects of Different Phytase Sources on the Growth Performance and Bone Mineralization of Nursery Pigs. J. DeRouchey, J. Woodworth, M. Tokach, R. Goodband, and S. Dritz. 2019. Origination, Inc.	\$60,000
Evaluation of High-Protein Distillers Dried Grains on Growth Performance and Carcass Characteristics of Growing-Finishing Pigs. R. Goodband, M. Tokach, J. DeRouchey, J. Woodworth, and S. Dritz. 2019. ICM, Inc.	\$80,000
KSU Applied Swine Nutrition Fellowship. 2019. J. DeRouchey, J. Woodworth, M. Tokach, R. Goodband, and S. Dritz. New Fashion Pork	\$32,000
Tryptophan Requirement of Finishing Pigs Fed Ractopamine HCl. M. Tokach, J. Woodworth, R. Goodband, J. DeRouchey, and S. Dritz. 2019. Ajinomoto Heartland Inc.	\$40,000
PIC Student Fellowship. J. Woodworth, R. Goodband, M. Tokach, J. DeRouchey, and S. Dritz. 2019. PIC North America	\$60,000
Purco Project. S. Dritz, R. Goodband, J. Woodworth, J. DeRouchey, and M. Tokach. 2019. Purco	\$27,000
Influence of particle size of high amylase and conventional corn on grinding cost, diet flowability, and productivity of lactating sows, nursery, and grow-finish pigs. M. Tokach, C. Paulk, J. Woodworth, R. Goodband, J. DeRouchey, S. Dritz, and C. Stark. 2019. Enogen.	\$150,000
Developing an automated, real-time counting technology for pigs. M. Tokach, J. Woodworth, A. Lerner, K. Coble, S. Blazevich, J. DeRouchey, S. Dritz, B. Goodband, and K. Duggal. 2019. National Pork Board.	\$428,324
Evaluation of pelleting of high amylase corn on starch gelatinization. C. Paulk, M. Tokach, C. Stark. 2019. Enogen.	\$18,000

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Improving performance of finishing pigs with supplemental Val, Ile, and Trp: Validating a meta-analysis model. J. Woodworth, K.D. Haydon, C.W. Hastad, H.S. Cemin, M.D. Tokach, J.M. DeRouchey, S.S. Dritz, and R.D. Goodband. 2019. CJ Bio.	\$30,000
Effect of Gleptoforte injection timing on sucking, nursery, and finishing pig performance, hematological criteria, and fecal microbiome characteristics. J. DeRouchey, J. Woodworth, M. Tokach, R. Goodband, and S Dritz. 2019. Biomune.	\$125,284
Determining how the pelleting process influences amino acid digestibility and availability for growth and carcass characteristics when feeding varying diets with increased levels of synthetic AA. C. Paulk, C. Stark, C. Jones, J.Woodworth, Y.Li, M. Tokach, and H. Stein. 2019. National Pork Board.	\$80,062
Improving performance of finishing pigs with supplemental Val, Ile, and Trp: Validating a meta-analysis model. J. Woodworth, K.D. Haydon, C.W. Hastad, H.S. Cemin, M.D. Tokach, J.M. DeRouchey, S.S. Dritz, and R.D. Goodband. 2019. National Pork Board	\$73,604
Metagenomics approach to delineate the impact of antibiotic administration route on gut microbial changes and antimicrobial resistome in nursery piglets. R. Amachawadi, T.G. Nagaraja, M.D. Apley, M.D. Tokach, S.S. Dritz, J. Scaria, J. Gangiredla, and I Patel. 2019. National Pork Board.	\$142,868
An Integrated Approach to Improve Whole Herd Pig Survivability. J. DeRouchey, M. Tokach, and J. Woodworth. 2019. National Pork Board with Iowa State University.	\$118,444
KSU Applied Swine Nutrition Fellowship. M. Tokach, J. Woodworth, J. DeRouchey, B. Goodband, and S. Dritz. 2019. Iowa Select Farms.	\$30,000
KSU Applied Swine Nutrition Fellowship. M. Tokach, J. Woodworth, J. DeRouchey, B. Goodband, and S. Dritz. 2019. SVC Research.	\$40,000
KSU Applied Swine Nutrition Fellowship. M. Tokach, J. Woodworth, J. DeRouchey, B. Goodband, and S. Dritz. 2019. Micronutrients	\$30,000
KSU Applied Swine Nutrition Fellowship. J. Woodworth, M. Tokach, J. DeRouchey, B. Goodband, and S. Dritz. 2018. Iowa Select Farms.	\$30,000
Determining the effects of Xylanase on Growth Performance, Carcass Characteristics, and Economics of Growing-Finishing Pigs. S. Dritz, J. Woodworth, B. Goodband, M. Tokach, and J. DeRouchey. 2018. JEFO Nutrition Inc.	\$45,000
KSU Applied Swine Nutrition Fellowship. J. Woodworth, M. Tokach, J. DeRouchey, B. Goodband, and S. Dritz. 2018. Micronutrients.	\$30,000
KSU Applied Swine Nutrition Fellowship. M. Tokach, J. Woodworth, J. DeRouchey, B. Goodband, and S. Dritz. 2018. SVC Research.	\$40,000
Determining the Effects of Tryptophan Biomass on Growth Performance of 25- to 50-lb Nursery Pigs. J. Woodworth, R. Goodband, M. Tokach, J. DeRouchey, and S. Dritz. 2018. CJ America, Inc.	\$25,000
An Integrated Approach to Improve Whole Herd Pig Survivability. J. DeRouchey, M. Tokach, and J. Woodworth. 2018. National Pork Board with Iowa State University	\$100,666
Evaluation of High Amylase Corn on Growth Performance and Carcass Characteristics of Grow-Finish Pigs. M. Tokach, J. Lattimer, J. Woodworth, R. Goodband, and J. DeRouchey. 2018. Syngenta Seeds	\$40,000

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Effects of Feeding Intellibond CII throughout Finishing or Via A Withdrawal Strategy on Finishing Pig Growth Performance, Carcass Characteristics, and Economic Return. J. Woodworth, R. Goodband, M. Tokach, J. DeRouche, and S. Dritz. 2018. Micronutrients.	\$40,000
Shiga toxin-producing Escherichia coli in swine feces in commercial production systems and assessment of public health implications ¹ . R. G. Amachawadi, J. Bai, M. D. Tokach, S. S. Dritz, J. M. DeRouche, R. D. Goodband, and J. C. Woodworth. 2018. National Pork Board.	\$93,893
Purco Project. S. Dritz, R. Goodband, J. Woodworth, J. DeRouche, and M. Tokach. 2018. Purco	\$27,000
Benefit of High Levels of Soybean Meal in Diets Fed on Commercial Swine Farms. 2018. SmithBucklin Corp.	\$88,682
Determining the Productive Energy Content of Soybean Meal. 2018. SmithBucklin Corp.	\$48,494
Pipestone Grow-Finish Graduate Student Fellowship. 2018. Pipestone Applied Research.	\$60,000
Determination of Efficacy of a Novel Phytase Source in Nursery Pigs. 2018. Origination Inc.	\$60,000
Effect of Supplementation of Monomix and/or ZnO on Growth Performance of Nursery Pigs. 2018. Sustainable Nutrition.	\$25,000
Effects of Diet Formulation and Supplementation of an Algae-derived Feed Additive in Grow-Finish Diets on Growth Performance and Carcass Characteristics. 2018. Olmix Corp.	\$30,000
Evaluating the Productive Energy Content of High-Protein Dried Distillers Grains in Swine Diets. 2018. ICM Inc.	\$25,000
Determining the Effects of High Phytase Levels and Phytase Withdrawal on Growth Performance, Carcass Characteristics, and Economics of Growing-Finishing Pigs. 2018. DSM	\$30,000
Effects of Increasing Levels of Zn from Zinc Sulfate or Intellibondz on Finishing Pig Growth Performance, Carcass Characteristics and Economic Return. 2018. Micronutrients	\$25,000
Supplying Increased Sid Lys and Energy During Transition to Improve Piglet Survivability, Sow Productivity and Litter Performance. 2018. Minnesota Pork Board.	\$68,656
Effect of Gleptoforte FE Injection Dosage in Newborn Piglets. 2018. Biomune Company	\$105,964
JBS Live Pork Applied Swine Nutrition Fellowship. 2018. JBS USA.	\$60,000
Evaluation of Oceanfeed Swine: Effects on Sow and Offspring Performance, Carcass Characteristics and Meat Quality. 2018. Ocean Harvest Technology Limited.	\$98,250
Evaluation of a Medium Chain Fatty Acid (MCFA) Based Ingredient in Nursery Pig Diets. 2018. Kemin Industries.	\$25,000
Determining the Effects of Different Ca:P Ratios on Growth Performance, Carcass Characteristics, Bone Mineralization, and Economics of Growing-Finishing Pigs. 2018. PIC North America.	\$28,000
PMI Nutritional Additives: Assessing the Effects of MCFA on PEDV Quantity and Infectivity. 2018. Purina Animal Health.	\$10,800

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Projecting Changes in Pork Quality, Eating Experience, and Muscle Physiology Due to Increasing Carcass Weights. 2018. University of Illinois.	\$104,193
Effects of High Protein DDGS on Growth Performance of Nursery Pigs. 2018. Lincolnway Energy LLC	\$40,000
Synthesis of high-value feed additives through fermentation of biofuels co-products. J. Drouillard, M. Tokach , J. Woodworth, J. Lattimer, and S. Dritz. Kansas Corn Commission.	\$42,000
Histidine: Lysine Requirement for 15 to 25 lb pigs. M. Tokach , J. Woodworth, J. DeRouchev, R. Goodband, and S. Dritz. 2018. Ajinomoto Heartland Inc.	\$20,000
Influence of Fermentation By-product on Urine pH. M. Tokach , J. Woodworth, J. DeRouchev, R. Goodband, and S. Dritz. 2018. Ajinomoto Heartland Inc.	\$20,000
Center for Sorghum Improvement Program Agreement. R. Goodband, J. Woodworth, M. Tokach , J. DeRouchev, and S. Dritz. 2018. United Sorghum Checkoff Program Board.	\$23,495
Projecting Changes in Pig Growth, Pork Quality, Eating Experience, and Muscle Physiology due to Increasing Live and Carcass Weights. J. Woodworth, T. O'Quinn, M. Tokach , R. Goodband, J. DeRouchev, and S. Dritz. 2017. University of Illinois sub-award for National Pork Board Grant.	\$155,474
Effect of CASLPORIN on Sow Fecal Microflora and Piglet Growth Performance, Fecal Consistency, and Fecal Microflora until the Nursery Phase. J. DeRouchev, J. Woodworth, M. Tokach , R. Goodband, and S. Dritz. 2017. Quality Technology International, Inc.	\$50,000
Impact of copper supplementation, alone or in combination with chlortetracycline, on antimicrobial resistance fo fecal enterococci of weaned piglets. R. Amachawadi, J. Woodworth, M. Tokach , J. DeRouchev, R. Goodband, S. Dritz, and T. Nagaraja. 2017. Swine Health Information Center. Micronutrients Inc.	\$100,995
Studies to Evaluate the Effects of Phytase in Swine Diets or Premix. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchev, and S. Dritz. 2017. DSM Nutritional Products	\$89,000
Effect of Gleptoforte FE Injection Dosage in Newborn Piglets. J. DeRouchev, J. Woodworth, R. Goodband, M. Tokach , and S. Dritz. 2017. CEVA Animal Health.	\$131,152
Improved Pig Health and Nutrition: The major Drivers of Profitability and Sustainability for Smallholder Farms in Cambodia. 2017. M. Tokach , L. Tokach, and J. Vipham. University of Florida	\$150,000
Effects of Increasing Standardized Ileal Digestible Lysine During Gestation on Sow Reproductive Performance of Gilts and Sows Under Commercial Conditions. R. Goodband, J. Woodworth, M. Tokach , J. DeRouchev, and S. Dritz. 2017. Archers Daniels Midland Company (ADM)	\$10,000
ASI KSU Applied Swine Nutrition Fellowship. J. Woodworth, M. Tokach , J. DeRouchev, R. Goodband, and S. Dritz. 2017. PIC North America	\$30,000
Effect of high Trp:Lys ratio for late finishing pigs. M. Tokach , R. Goodband, J. Woodworth, J. DeRouchev, and S. Dritz. 2017. Ajinomoto Heartland, Inc.	\$30,000
Effects of feeding increasing levels of Cu from either Intellibond C or Mintrex Cu on growth performance of nusery pigs. J. Woodworth, M. Tokach , J. DeRouchev, R. Goodband, and S. Dritz. 2017. Micronutrients, iNc.	\$17,000

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KSU Applied Swine Nutrition Fellowship. J. DeRouchey, M. Tokach , J. Woodworth, R. Goodband, and S. Dritz. 2017. New Fashion Pork.	\$16,000
Applied Swine Nutrition Research. M. Tokach , J. Woodworth, J. DeRouchey, R. Goodband, and S. Dritz. 2017. Feed One Company	\$30,000
Assessing tools for the mitigation of foreign animal disease introduction and transmission in feed. M. Niederwerder, C. Jones, J. Woodworth, M. Tokach , S. Dritz, and R. Rowland. 2017. \$177,378 from Swine Health Information Center.	\$367,867
Effects of feeding increasing levels of iron from either iron sulfate or a new source of dietary iron on growth performance and iron status of nursery pigs. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, and S. Dritz. 2017. Micronutrients, Inc.	\$69,000
Assessing the risk of African swine fever virus (ASFV) transmission in feed. M. Niederwerder, C. Jones, J. Woodworth, M. Tokach , S. Dritz, and R. Rowland. 2017. Grant total with match was \$442,248 with \$145,476 from National Pork Board	\$290,952
Purco Project. S. Dritz, R. Goodband, J. Woodworth, J. DeRouchey, and M. Tokach . 2017. Purco	\$54,000
Histidine:Lysine ratios in diets for 15 to 25 lb pigs. M. Tokach , J. Woodworth, B. Goodband, J. DeRouchey, and S. Dritz. 2017. Ajinomoto Heartland, Inc.	\$40,000
Evaluation of High SID Tryptophan:Lysine ratios with ractopamine HCl on growth performance and carcass characteristics. M. Tokach , J. Woodworth, J. DeRouchey, B. Goodband, and S. Dritz. 2017. Ajinomoto Heartland, Inc.	\$30,000
Feed One Company, Ltd. Fellowship. M. Tokach , J. Woodworth, J. DeRouchey, B. Goodband, and S. Dritz. 2017. Feed One Co., Ltd.	\$30,000
Iowa Select Farm Fellowship. J. Woodworth, M. Tokach , J. DeRouchey, B. Goodband, and S. Dritz. 2017. Iowa Select Farms	\$60,000
Evaluation of Solu-E inclusion level on nursery pig performance protocol. J. DeRouchey, J. Woodworth, M. Tokach , B. Goodband, and S. Dritz. 2017. International Ingredient Corporation	\$13,000
Effects of Biowish Multibio 3P in diets for finishing pigs. J. DeRouchey, J. Woodworth, M. Tokach , B. Goodband, and S. Dritz. 2017. Biowish Technologies.	\$25,000
KSU Applied Swine Nutrition Fellowship. M. Tokach , J. Woodworth, J. DeRouchey, B. Goodband, and S. Dritz. 2017. SVC Research.	\$30,000
Assessing the risk of African swine fever virus (ASFV) transmission in feed. M. Niederwerder, C. Jones, J. Woodworth, M. Tokach , B. Rowland, and S. Dritz. 2017. National Pork Board.	\$94,508
Determining the effects of increasing the cup waterer: pig ratio on growth performance of growing/finishing pigs. S. Dritz, J. Woodworth, J. DeRouchey, R. Goodband, and M. Tokach . 2017. Genus PLC	\$20,000
Evaluation of the risk of transboundary movement of ASFV via contaminated feed ingredients. S. Dee, D. Diel, E. Nelson, M. Niederwerder, B. Rowland, M. Tokach , J. Woodworth, S. Dritz, and C. Jones. 2017. Swine Health Information Center	\$139,170
Effect of Increasing Levels of Zn from Intellibond Z on growth performance, carcass composition and economic return of pigs housed in a commercial	\$50,000

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environment. J. Woodworth, B. Goodband, **M. Tokach**, J. DeRouchey, and S. Dritz. 2016. Micronutrients.

Effect of feeding increasing levels of Cu from either Intellibond-C or Mintrex-Cu on growth performance of nursery pigs. J. Woodworth, B. Goodband, M. Tokach , J. DeRouchey, and S. Dritz. 2016. Micronutrients.	\$35,000
Effect of Calsporin on nursing piglet intestinal microflora and growth experiment. J. DeRouchey, J. Woodworth, M. Tokach , B. Goodband, and S. Dritz. 2016. Quality Technology International.	\$25,000
KSU Applied Swine Nutrition Fellowship. M. Tokach . 2016. SVC Research.	\$30,000
Evaluation of different probiotic products for the nursery pig. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, and S. Dritz. 2016. DSM Nutritional Products, LLC.	\$70,000
Determining the dietary phosphorus requirement of growing-finishing pigs. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, and S. Dritz. 2016. PIC North America.	\$35,000
Evaluation of Elarom-F Plus in nursery diets with the inclusion of varying levels of Intellibond C. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, and S. Dritz. 2016. Trouw Nutrition USA.	\$22,000
Influence of antibiotic administration routes on the development of antimicrobial resistance in gut bacteria of swine. T. Nagaraja, M. Tokach , R. Goodband, R. Amachawadi, and S. Dritz. 2016. National Pork Board.	\$99,793
VDM Alternatives to Antibiotics in Animal Agriculture: Impacts on Antimicrobial Resistance of Enteric Bacteria. H. Scott, R. Amachawadi, T. Nagaraja, M. Tokach , J. Drouillard, and M. Chengappa. 2016. NIFA USDA.	\$154,898
KSU Applied Swine Nutrition Fellowship. M. Tokach . 2016. Ajinomoto Corporation Inc.	\$30,000
Determining the Influence of Kemtrace Cr and/or Micro-Aid on Growth Performance and Carcass Composition of Finishing Pigs Housed in a Commercial Environment #4378. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, and S. Dritz. 2016. Distributors Processing, Inc.	\$25,000
Determining the Influence of Kemtrace Cr and/or Micro-Aid on Growth Performance and Carcass Composition of Finishing Pigs Housed in a Commercial Environment. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, and S. Dritz. 2016. Kemin Industries.	\$25,000
Effects of Increasing Astaxanthin on Finishing Pig Growth Performance, Carcass Characteristics and Pork Quality. J. Woodworth, M. Tokach , J. DeRouchey, T. O'Quinn, R. Goodband, J. Gonzalez, and S. Dritz. 2016. Heliae Development LLC	\$79,500
Effect of Feeding Increasing Levels of HP 300 on Growth Performance of Nursery Pigs. J. DeRouchey, M. Tokach , R. Goodband, J. Woodworth, and S. Dritz. 2016. Hamlet Protein, Inc.	\$30,000
Effect of High Trp:Lys Ratio for Late Finishing Pigs. M. Tokach , R. Goodband, J. Woodworth, J. DeRouchey, and S. Dritz. 2016. Ajinomoto Heartland, Inc.	\$30,000
Effects of Feeding Increasing Levels of Cu from either Intellibond C or Mintrex Cu on Growth Performance of Nursery Pigs. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, and S. Dritz. 2016. Micronutrients, Inc.	\$17,000

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Effect of Monosodium Glutamate on Nursery Pig Performance. M. Tokach , J. Woodworth, R. Goodband, J. DeRouchey, and S. Dritz. 2016. Ajinomoto Heartland, Inc.	\$60,000
Evaluating the effects of Chemical Treatments to reduce the Likelihood of PEDV transmission by feed manufacturing Equipment. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, C. Jones, C. Stark, A. Huss, and S. Dritz. 2016. National Pork Board.	\$99,414
A Review of Heavy Weight Market Pigs: Status of Knowledge and Future Needs Assessment. J. DeRouchey, T. O'Quinn, M. Tokach , R. Goodband, J. Woodworth, and S. Dritz. 2016. National Pork Board.	\$24,265
Determining the Influence of Evosure feeding duration on Growth Performance of Nursery Pigs. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, and S. Dritz. 2016. Nutriquest	\$28,000
Comparing the Influence of Butipearl Source and Inclusion Level on Growth Performance of Nursery Pigs. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, and S. Dritz. 2016. Kemin Industries	\$25,000
KSU Applied Swine Nutrition Fellowship. J. DeRouchey, M. Tokach , J. Woodworth, R. Goodband, and S. Dritz. 2016. New Fashion Pork	\$16,000
Purco Project. S. Dritz, J. Woodworth, R. Goodband, J. DeRouchey, and M. Tokach . 2016. Purco	\$81,000
Evaluation of Elarom-F Plus in Nursery Diets with or without the Inclusion of High Zinc Oxide Levels and/or Antibiotics. S. Dritz, J. Woodworth, M. Tokach , J. DeRouchey, and R. Goodband. 2016. Trouw Nutrition USA.	\$22,000
Effects of feeding increasing levels of Cu from either Intellibond C or Mintrex Cu on growth performance of nursery pigs. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, S. Dritz. 2016. Micronutrients Inc.	\$27,000
Effects of feeding increasing levels of Cu from either Intellibond C or Mintrex Cu on growth performance of nursery pigs. Study 2. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, S. Dritz. 2016. Micronutrients Inc.	\$20,000
Effects of increasing levels of Zn from Zinc Sulfate or Intellibond Z on finishing pig growth performance, carcass characteristics, and economic return. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, S. Dritz. 2016. Micronutrients Inc.	\$15,000
Comparing the influence of Butipearl source and inclusion level on growth performance of nursery pigs. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, and S. Dritz. Kemin Industries Inc.	\$25,000
New Fashion Pork fellowship. J. DeRouchey, M. Tokach , J. Woodworth, R. Goodband, and S. Dritz. 2015. New Fashion Pork	\$16,000
The effects of increasing levels of Cu from combinations of available Cu and CuSO4 alone on growth performance, carcass characteristics, and economics of finishing pigs. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband and S. Dritz. 2015. Zinpro Corporation	\$25,000
Efficacy of new BASF phytase in swine. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, S. Dritz. 2015. BASF Corporation	\$99,300
Effect of NF8 and/or Lactoplan on nursery pig performance. J. DeRouchey, M. Tokach , J. Woodworth, R. Goodband, and S. Dritz. 2015. Nutraferma, Inc.	\$25,000

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Assessing the effects of medium chain fatty acids and fat sources on PEDV infectivity. C. Jones, J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, S. Dritz, et al. 2015. National Pork Board.	\$82,353
Evaluating the effects of chemical treatments to reduce the likelihood of PEDV transmission by feed manufacturing equipment. J. Woodworth, R. Goodband, M. Tokach , J. DeRouchey, S. Dritz et al. 2015. National Pork Board.	\$99,414
Determining the influence of Evosure feeding duration on growth performance of nursery pigs. J. Woodworth, M. Tokach , J. DeRouchey, R. Goodband, S. Dritz. 2015. Nutriquest.	\$28,000
Determining the effects of gluco-oligosaccharide on growth performance of nursery pigs. M. Tokach , J. DeRouchey, J. Woodworth, B. Goodband, and S. Dritz. 2015. Midori USA Inc.	\$50,000
Determine the effects of phytogenic feed additives on growth performance and carcass characteristics of growing-finishing pigs. M. Tokach , J. Woodworth, J. DeRouchey, S. Dritz, and B. Goodband. Biomin.	\$40,000
Effect of monosodium glutamate on nursery pig performance. M. Tokach , J. Woodworth, J. DeRouchey, S. Dritz, and B. Goodband. 2015. Ajinomoto Inc.	\$60,000
Amino acid ratios for 15 to 25 lb pigs. M. Tokach , J. Woodworth, J. DeRouchey, S. Dritz, and B. Goodband. 2015. Ajinomoto Inc.	\$60,000
Ajinomoto fellowship. M. Tokach , J. Woodworth, J. DeRouchey, S. Dritz, and B. Goodband. 2015. Ajinomoto Inc.	\$30,000
Micronutrient fellowship. J. Woodworth, J. DeRouchey, S. Dritz, M. Tokach , and B. Goodband. 2015. Micronutrients, Inc.	\$30,000
Determining the influence of KemTRACE® Cr and/or Micro-Aid on growth performance, carcass composition and economic return of pigs housed in a commercial environment. J. Woodworth, J. DeRouchey, S. Dritz, M. Tokach , and B. Goodband. 2015. Kemin Industries.	\$25,000
Influence of chromium dose and feeding regimen on growth performance, carcass composition, and economic return of pigs housed in a commercial environment. J. Woodworth, J. DeRouchey, S. Dritz, M. Tokach , and B. Goodband. 2015. Kemin Industries.	\$25,000
Do probiotics, an antibiotic alternative, mitigate or contribute to emergence and persistence of antimicrobial resistance in gut bacteria? T.G. Nagaraja, R.G. Amachawadi, S.K. Narayanan, M.D. Tokach , S.S. Dritz, and J.R. Pluske. 2015. National Pork Board.	\$93,393
Effect of HP300 and HP800 soy protein sources on nursery pig performance. J. DeRouchey, M. Tokach , J. Woodworth, R. Goodband, and S. Dritz. 2015. Hamlet Protein, Inc.	\$25,000
Novel feed processing methods of cold pelleting and fine ground corn segregation to maximize feed efficiency, nutrient utilization and economic return. C. Stark, C. Jones, J. DeRouchey, J. Woodworth, M. Tokach , A. Huss, and K. Ambrose. 2015. National Pork Board.	\$50,028

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Evaluating alternative chemical mitigants to prevent PEDv recontamination of swine feed and ingredients. C. Jones, J. Woodworth, M. Tokach , C. Stark, A. Huss, R. Main, P. Gauger, J. Zhang, and S. Dritz. 2015. National Pork Board.	\$77,119
Effect of soy protein sources on nursery pig performance. M. Tokach , R. Goodband, J. DeRouchey, J. Woodworth, and S. Dritz. 2015. Hamlet Protein, Inc.	\$25,000
Purco Project. S. Dritz, J. Woodworth, M. Tokach , R. Goodband, and J. DeRouchey. 2015. Purco Cooperative.	\$28,000
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Alternatives To Antibiotics In Animal Agriculture: Impacts On Antimicrobial Resistance Of Enteric Bacteria. H.M. Scott, P. Boerlin, J.S. Drouillard, T.G. Nagaraja, and M.D. Tokach . 2013-2017. USDA-NIFA (2015 portion)	\$220,328
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Evaluation of De-oiled DDGS for swine. J.M. DeRouchey, M.D. Tokach , R.D. Goodband, J.L. Nelssen, S.S. Dritz. 2007. Verasun Energy Corporation	\$12,953
An evaluation of astaxanthin as a nutraceutical growth promoter in starter diets for weanling pigs. J. Bergstrom, J.L. Nelssen, M.D. Tokach , R.D. Goodband, S.S. Dritz, J.M. DeRouchey. 2007. Aquasta	\$11,200
EPA Educational programs. J.L. Nelssen, M.D. Tokach , J.D. DeRouchey, R.D. Goodband and S.S. Dritz. 2006. Kansas Pork Association	\$20,000
Effect of Biomin PEP on nursery pig performance. M.D. Tokach , S.S. Dritz, J.L. Nelssen, R.D. Goodband, and J.M. DeRouchey. Biomin Corp.	\$10,000
Determination of Particle Size and Chemical Variation of DDGS Sources for Swine. J.M. DeRouchey, R.D. Goodband, M.D. Tokach , J.L. Nelssen, S.S. Dritz, L. McKinney and S. Linneen. Kansas State University Agricultural Experiment Station. 2006	\$22,500

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Purco Project. S.S. Dritz, M.D. Tokach , R.D. Goodband, and J. L. Nelssen. 2004, 2005. Purco, Inc. (\$14,400 each year)	\$28,800
Protein Source Evaluation for Nursery Pigs. J. DeRouchey, M. Tokach, R. Goodband, J. Nelssen, and S. Dritz. Concept Nutrition Ltd. 2006	\$4,344
Effects of Butyrobetaine and L-Carnitine on L-Carnitine Levels in Various Muscle Tissues of Finishing Pigs. M.D. Tokach , J.L. Nelssen, R.D. Goodband, S.S. Dritz, J.M. DeRouchey, and J. Benz. Lonza. 2005	\$18,890
Evaluating the replacement of organic acid blends Activate WD, DA, Starter L, Multimax L and the combination of Activate DA plus Mintrex P to an water medication and in-feed antibiotic program. M.D. Tokach , R. Gottlob, S.S. Dritz, J.M. DeRouchey, R.D. Goodband, J.L. Nelssen. 2005. Novus.	\$15,000
Joint health in finishing pigs. J.L. Nelssen, M.D. Tokach , R.D. Goodband, S.S. Dritz and J.M. DeRouchey. Hills Science Diet. 2005	\$44,000
Influence of Pulmotil, Tylan, and Paylean on Pig Growth and Variation. M.D. Tokach , R.D. Goodband, S.S. Dritz, J.M. DeRouchey, and J.L. Nelssen. Eli Lilly. 2005	\$44,100
Tokach, M.D. , J.D. Schneider, S.S. Dritz, J.L. Nelssen, R.D. Goodband, and J.M. DeRouchey. The effects of feeding schedule on body condition, aggressiveness, and reproductive failure in group-housed gestating sows. National Pork Board. 2005	\$66,684
Chromium impact on NEFA levels in finishing swine. J.L. Nelssen, M.D. Tokach , R.D. Goodband, S.S. Dritz, and J.M. DeRouchey. 2004. Kemin	\$7,000
Ingredient quality. J.M. DeRouchey, M.D. Tokach , R.D. Goodband, J.L. Nelssen, and S.S. Dritz. 2004. Quality Ingredients, Inc	\$12,410
Effect of nursery diet on growth and comfort: Second experiment. J.L. Nelssen and M.D. Tokach . 2003. Hills Pet Nutrition	\$28,000
Effect of nutrient enhanced diets on bone criteria second experiment. J.L. Nelssen and M.D. Tokach . 2003. Hills Pet Nutrition.	\$56,000
Effect of nursery diet on growth and comfort. J.L. Nelssen and M.D. Tokach . 2003. Hills Pet Nutrition.	\$28,000
Influence of chicory on swine odor and waste characteristics. J.M. DeRouchey, M.D. Tokach , S. Hanni, R.D. Goodband, J.L. Nelssen, and S.S. Dritz. K-Care	\$10,000
Interactive effects between carnitine and lysine on growth performance of commercial finishing pigs. 2003. M.D. Tokach , R.D. Goodband, S.S. Dritz, and B.W. James. Lonza, Inc.	\$19,152
Pipestone Agreement. M.D. Tokach , R.D. Goodband, J.L. Nelssen, S.S. Dritz, and J.M. DeRouchey. 2003. Pipestone Veterinary Clinic.	\$16,000
Effect of nutrient enhanced diets on bone criteria. J.L. Nelssen and M.D. Tokach . 2003. Hills Pet Nutrition	\$56,000
Purco Project. S.S. Dritz, M.D. Tokach , R.D. Goodband, and J. L. Nelssen. 2002, 2003. Purco, Inc.	\$28,800
Meta analysis of carbadox feeding studies in multi-site production systems. J.M. DeRouchey, M.D. Tokach , S.S. Dritz, R.D. Goodband, and J.L. Nelssen. 2002. Phibro Animal Health	\$10,800
Influence of Carnichrome on the energetics of gestating swine. M Young, M. Tokach , S.S. Dritz, J. L. Nelssen, R.D. Goodband, and J.M. DeRouchey. 2002. Lonza, Inc	\$50,750

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Evaluating meat proteins for egg protein in starter pig diets. J.L. Nelssen, M.D. Tokach , J.M. DeRouchey, R.D. Goodband, and S.S. Dritz. 2002. Hills Pet Food, Inc.	\$28,500
Corn particle size and pelleting influence on fecal shedding and enteric colonization of Salmonella typhimurium. S.S. Dritz, M.D. Tokach , R.D. Goodband, and J.L. Nelssen. 2002. National Pork Board.	\$25,000
Soybean meal source and quality for starter pig diets. J.L. Nelssen, M.D. Tokach , R.D. Goodband, and S.S. Dritz. 2001. Hills Pet Food, Inc.	\$28,500
Hydrolyzed liver protein as a protein source for starter pigs. J.L. Nelssen, M.D. Tokach , R.D. Goodband, and S.S. Dritz. 2001. Hills Pet Food, Inc.	\$28,500
Validation of sow weight gain models using data from the NPPC maternal line genetic evaluation project. 2001. J.W. Woodworth, M.D. Tokach , and R. Johnson. National Pork Board.	\$ 6,500
Evaluation of nutridense corn hybrids for nursery pigs. 2001. M.D. Tokach , C. Hastad, J.L. Nelssen, R.D. Goodband, and S.S. Dritz. Exseed Genetics.	\$14,550
Effect of protein size on delayed type hypersensitivity in early weaned pigs. 2001. J.L. Nelssen, M.D. Tokach , and R.D. Goodband. Hills Pet Nutrition, Inc.	\$28,500
Interaction between lysine and Paylean dosage on carcass traits and growth performance of finishing pigs. 2000. R.D. Goodband, M.J. Webster, M.D. Tokach , S.S. Dritz, and J.L. Nelssen. Elanco.	\$80,000
Effect of dietary niacin level on performance and meat quality of finishing pigs reared under commercial conditions. 2000. D.E. Real, J.L. Nelssen, R.D. Goodband, M.D. Tokach , and S.S. Dritz. Lonza, Inc.	\$29,650
Influence of niacin level on starter pig performance. 2000. D.E. Real, J.L. Nelssen, R.D. Goodband, M.D. Tokach , and S.S. Dritz. Lonza, Inc	\$ 9,000
New processing technologies for swine diets. 1999. J.L. Nelssen, R.D. Goodband, M.D. Tokach , and S.S. Dritz. Advance Manufacturing Institute.	\$ 5,400
Effect of modified tall oil and creatine monohydrate on growth performance and carcass characteristics of finishing pigs. 1999. J.L. Nelssen, P.R. O'Quinn, M.D. Tokach , and R.D. Goodband. Lonza, Inc.	\$ 3,212
Nutrient composition of waste in Kansas swine lagoons. R.D. Goodband, M.D. Tokach , and J.L. Nelssen. KCARE. 1999.	\$17,400
Swine portion of Farmland Research Alliance. 1997 to 2002 \$60,000 per year for 5 years	\$300,000
Comparison of dry extruded, expelled soybean meal with conventionally processed soybean meal for swine diets. M.D. Tokach , S.S. Dritz, R.D. Goodband, and J.L. Nelssen. Insta-Pro International.	\$30,980
Influence of feeding duration and pelleting on the response to spirulina platensis in starter pig diets. 1998. M.D. Tokach , S.S. Dritz, J.L. Nelssen, and R.D. Goodband. Earthrise Animal Health.	\$19,444
Effects of increasing pantothenic acid on growth performance of high-health, segregated early weaned pigs. 1998. R.D. Goodband, M.D. Tokach , J.L. Nelssen, and S.S. Dritz. Daiichi Fine Chemicals Co. LTD.	\$10,302
Influence of spirulina platensis on starter pig performance. 1998. M.D. Tokach , J.L. Nelssen, R.D. Goodband, and S.S. Dritz. Earthrise Animal Health.	\$13,007
Evaluation of flash-dried poultry protein as a protein source for phase II starter pig diets. 1998. M.D. Tokach , J.L. Nelssen, R.D. Goodband, and S.S. Dritz. Griffin Industries.	\$10,058

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Effect of conjugated linoleic acid on growth performance and carcass characteristics of finishing pigs. 1997. J.L. Nelssen, P.R. O'Quinn, M.D. Tokach , and R.D. Goodband. Lonza, Inc.	\$ 4,580
Effect of L-carnitine and chromium nicotinate on the ovulation and fertilization rate of gilts. 1997. D.L. Davis, R.D. Goodband, J.L. Nelssen, M.D. Tokach , and R.E. Musser. Lonza, Inc.	\$ 5,840
Can feed intake during critical stages of gestation improve grow-finish performance and carcass composition? 1997. M.D. Tokach , R.E. Musser, D.D. Davis, R.D. Goodband, S.S. Dritz, and M.E. Hunt. National Pork Producers Council	\$16,473
Influence of poultry fat on swine growth performance and pork quality. 1996. R.D. Goodband, M.D. Tokach , S.S. Dritz, and J.L. Nelssen. Southeastern Poultry & Egg Association.	\$34,077
Supplemental carnitine during lactation for the high producing sow. 1996. R.D. Goodband, M.D. Tokach , and J.L. Nelssen. Lonza Inc.	\$ 5,840
Effects of choline and betaine on finisher pig growth performance and carcass characteristics. 1996. J.L. Nelssen, M.D. Tokach , and R.D. Goodband. Kansas Pork Producers Council.	\$32,413
NPPC Feed Purchasing Task Force - Nutritional Standards and Guidelines. 1995. M.D. Tokach , S.S. Dritz, R.D. Goodband, J.L. Nelssen, and K.C. Dhuyvetter. National Pork Producers Council.	\$40,000
Adapting lean growth assessment technology to make farm-specific management & nutritional recommendations. 1995. S.S. Dritz, M.D. Tokach , R.D. Goodband, and J.L. Nelssen. National Pork Producers Council.	\$16,810
Evaluation of experimental starter diets for swine. 1995. M.D. Tokach , R.D. Goodband, and J.L. Nelssen. Zen-Noh, Inc.	\$20,300
Evaluation of experimental potato protein in starter diets for swine. 1995. R.D. Goodband, M.D. Tokach , and J.L. Nelssen. Avebe, Inc.	\$31,515
Integrated resource management - the animal component. 1993. M.D. Tokach , R.D. Goodband, and J.L. Nelssen. United States Department of Agriculture.	\$50,000
Influence of Norwegian Herring Meal on starter pig performance. 1993. M.D. Tokach , R.D. Goodband, and J.L. Nelssen. H.J. Baker and Bro	\$ 7,500
Influence of β -glucan on nonspecific immunity in pigs. 1993. F. Blecha, R.D. Goodband, J.L. Nelssen, M.D. Tokach , and M.M. Chengappa., Provesta Corporation.	\$45,120
Effects of chelated trace minerals on starter pig performance. 1993. R.D. Goodband, J.L. Nelssen, and M.D. Tokach . Albion Laboratories, Inc.	\$8,250
Cooperative Extension Program with Colorado State University. J.L. Nelssen, R.D. Goodband, and M.D. Tokach . Colorado State University (\$6,000/year) and Colorado Pork Producers Council (\$2,000/year). 1991-92, 1992-93, 1993-94. 1994-95 (\$9,000), 1995-96 (10,000), 1996-97 (11,000), 1997-98 (11,000). 1998-99 (\$8,000).	\$74,000
A case study of group marketing in Kansas. 1993. J. Mintert, M.D. Tokach , and R. Tynon. Kansas State Board of Agriculture.	\$11,420
Lysine requirement of high lean growth gilts from 160 to 300 lb. 1993. R.D. Goodband, J.L. Nelssen, and M.D. Tokach . Biokyowa.	\$10,000
Influence of a Manganese Chelate in the Finishing Diet on Carcass Composition. 1993. R.D. Goodband, J.L. Nelssen, and M.D. Tokach . Albion Labs.	\$10,000
Influence of three lysine levels and four litter sizes on sow productivity. 1992.	\$10,000

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Nelssen, J.L., R.D. Goodband, and M.D. Tokach . Biokyowa, Inc. Lysine Requirement of High Lean Growth Gilts from 80 to 160 lb. 1992. R.D. Goodband, J.L. Nelssen, and M.D. Tokach . Biokyowa.	\$10,000
Impact of carnitine level on finishing pig performance. 1991. J.L. Nelssen, R.D. Goodband, and M.D. Tokach . Lonza, Inc.	\$10,000
KSU Swine Enterprise Records, Swine Extension Assistant. Cooperative Extension Service. R.D. Goodband, J.L. Nelssen, and M.D. Tokach . 1991 (\$13,000) & 1992 (\$14,000).	\$27,000
Influence of three lysine levels and four litter sizes on sow productivity. 1991. Nelssen, J.L., R.D. Goodband and M.D. Tokach . Biokyowa, Inc	\$10,000

In addition to the **\$15,402,509** in grants listed above, Dr. Tokach has been a member of an aggressive swine extension group with Drs. Robert D. Goodband, Steve Dritz, Joel DeRouchey, and Jason Woodworth that have generated an additional **\$4,837,127** in financial gifts to Kansas State University. Donation of feed ingredients and products for field demonstrations and research projects resulted in an additional **\$828,535** in gifts-in-kind. Listed below are some of the results of these gifts.

- 1) Funding for construction of the segregated early weaning facilities at KSU
- 2) Funding for construction of the metabolism facility and gestation barn at KSU
- 3) Funding for construction of the finishing research facility at KSU
- 4) Financial support for Extension Assistants
- Arkin Wu, Jose Soto, Josh Flohr, Jim Smith, Steve Dritz, Brian Richert, Jeff Hansen
- 5) Over 650 swine field trials and demonstrations since 1991
- 6) Funding for invited speakers for swine extension meetings
- 7) Equipment for KSU Swine Farm (pressure washer, sheds, manure spreader, metabolism crates, etc.)
- 8) Chemical reagents and equipment for the swine laboratory
- 9) Leadership and media training for graduate students
- 10) Enabled graduate students to present research results at national meetings

Dr. Tokach authored grants generating **\$85,500** for his doctoral research at the University of Minnesota.

SELECTED SYMPOSIA - INVITED ORAL PRESENTATIONS

In addition to the **335** presentations listed below, I have been a coauthor and preparer for over **750** presentations by graduate students at the national meetings of the American Society of Animal Science or American Association of Swine Veterinarians.

- 335 Agroceres Pork Seminar. Compensatory growth in pigs. Via distance in Brazil. October 8, 2020.
- 334 Wakefield Pork Production Meeting. "Production trends and research update." Gaylord, MN. October 2, 2020
- 333 American Society of Animal Science National Meeting. Opportunities to enhance wean-to-finish pig survival. Via distance. July 21, 2020.

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- 332 Purco Swine meeting. Opportunities to reduce feed cost. March 25, 2020.
- 331 Midwest Meeting of American Society of Animal Science. Challenges and implications of feeding diets with excess concentrations of leucine to growing-finishing pigs. Omaha, NE. February 28, 2020.
- 330 Banff Pork Conference. Feeding the grow-finish pig and managing their increasing carcass weight. Banff, Canada. January 8, 2020.
- 329 Agro Super Swine Meeting. "Nutrition breakthroughs and opportunities". Rancagua, Chile. January 23, 2020.
- 328 17th Biennial Australasian Pig Science Association Conference. Nutrient requirements of the modern high producing sow, with an emphasis on amino acid requirements. November 18, 2019.
- 327 Farm Faes Technical Meeting. Removing zinc oxide from nursery diets. Madrid, Spain. October 24, 2019.
- 326 Grupo de Intercambio Tecnológico de Explotaciones Porcinas. Energy in grow-finish pig nutrition. Rosario, Argentina. October 10, 2019.
- 325 Grupo de Intercambio Tecnológico de Explotaciones Porcinas. Main considerations to increase weight to 130/140 kg. Rosario, Argentina. October 10, 2019
- 324 Wakefield Pork Production Meeting. "Production trends and research update." Gaylord, MN. September 19, 2019
- 323 Minnesota Nutrition Conference. Phytase and phosphorus nutrition in swine". Mankato, MN. September 18, 2019.
- 322 Global Agenda for Sustainable Livestock. "Designing and conducting livestock field research and demonstrations". Manhattan, KS September 9, 2019.
- 321 U.S. Soy Animal Nutrition Working Group and Export Council. "Additional benefits to SBM that may not have been fully considered". Manhattan, KS May 29, 2019.
- 320 Farm Faes "Nutrition and immunological intestinal modulation in pigs". Madrid, Spain. May, 14 2019.
- 319 USAID Cambodia Research Conference. "Effective Research Design (idea generation, designing for impact, guaranteeing uptake)". Phnom Penh, Cambodia. May 1, 2019.
- 318 North Dakota State University Distinguished Alumni Event. "How new technologies changed swine nutrition in the last 20 years". Fargo, ND. April 11, 2019.
- 317 Agro Super Swine Meeting. "Nutrition breakthroughs and opportunities". Rancagua, Chile. January 17, 2019.
- 316 International Swine Industry Symposium. "Practical diet formulation considerations for growing-finishing pigs. Shanghai, China. October 25, 2018.
- 315 American Association of Swine Veterinarians Annual Meeting. "Formulation and feed additive considerations for nursery diets without antibiotics. San Diego, CA. March 6, 2018.
- 314 XXXIII FEDNA Nutrition Symposium. "Feeding programs and use of additives in growing-finishing pigs". Madrid, Spain. November 7, 2017.
- 313 LSIL Feed the Future Conference. "Improved pig health and nutrition: the major drivers of profitability and sustainability for smallholder farmers in Cambodia" Phnom Pehn, Cambodia. September 2, 2017
- 313 Sinsui Swine Conference. "Swine nutrition opportunities during the nursery period". Porto Alegre, Brazil. May 17, 2017
- 311 London Swine Conference. "C.F.M. de Lange Lecture: How have new technologies changed our views of swine nutrition in the last 20 years". London, Ontario, Canada. March 29, 2017.

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- 310 London Swine Conference. "Feed efficiency in swine – a review of recent research". London, Ontario, Canada. March 29, 2017.
- 309 American Association of Swine Veterinarians Annual Meeting. "Reducing antibiotic use: Educational materials for swine veterinarians and producers." Denver, CO. March 3, 2017.
- 308 Feed One Seminar Series. "U.S. Swine Industry Update" and "Managing sows with large litters". Tokyo and Kumamoto, Japan. October 26 and 27, 2016.
- 307 Wakefield Pork Production Meeting. "Production trends and research update." Gaylord, MN. September 19, 2016.
- 306 Tecno-Vit Veterinarian Seminar. "Swine Nutrition and Management breakthroughs." Alforja, Spain. June, 2016.
- 305 Distinguished Alumni Lecture at North Dakota State University. "Swine Industry" and "Building High Functioning Teams in an Academic Setting". Fargo, ND. February 10, 2016.
- 304 Purco Swine Meeting. "Update on Swine Nutrition Research". Sioux City, SD February 4, 2016.
- 303 Agro Super Swine Meeting. "Improving your nutrition program". January 28, 2016.
- 302 KSU Swine Day. "Latest update on K-State Applied Swine Nutrition Research". Manhattan, KS. November 19, 2015.
- 301 Fundacion Espanola para el Desarrollo de la Nutricion Animal (FEDNA) Recent advances in sow nutrition." Madrid, Spain. November 11, 2015.
- 300 Wakefield Pork Production Meeting. "Production trends and research update." Gaylord, MN. October 29, 2015.
- 299 International Feed Efficiency Conference. "Key Extension Accomplishments: Extending the Feed Efficiency Message." Omaha, NE. October 21, 2015.
- 298 Executive Veterinary Program. "What veterinarians need to know about nutrition?". Champaign, IL. October 8 and 9, 2015.
- 297 National Pork Board Animal Science Meeting. "NIFA feed efficiency project". Omaha, NE. July 22, 2015.
- 296 National Pork Board Animal Care Handbook meeting. "Meeting feed and water needs". Chicago, IL. April 1, 2015.
- 295 FeedOne Research Meeting. Swine nutrition research update. Fukushima, Japan, January 28, 2015.
- 294 FeedOne Sales Training. 3 presentations on swine production and management. Yokohama, Japan, January 26 and 27, 2015.
- 293 AgroSuper Swine Meeting. "Recent advances in swine nutrition". Rancagua, Chile. January 16, 2015.
- 292 KSU Swine Day. "Keeping up with diet formulation with rapidly changing ingredient prices". Manhattan, KS. November 20, 2014.
- 291 Brazil Pork Expo. "Impact of nutrition and other production factors on carcass quality of pigs. Foz de Iguazu, Brazil. October 28, 2014.
- 290 Wakefield Pork Production Meeting. "Production trends and research update." Gaylord, MN. October 2, 2014.
- 289 Lemans Swine Conference. "At the end of the day, the pigs still need to be fed". St. Paul, MN. September 14, 2014.
- 288 ProVimi Producer Seminars. "PEDv on the U.S. Swine Industry". Obregon, Navajoa, Tepatitlan, La Piedad, and Tehuacan, Mexico. August 25 to 28, 2014.
- 287 Porc Meeting. "Recent KSU research and application in the field. Kansas City, MO. July

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- 9, 2014.
- 286 Purina – Land O’Lakes Webinar Series. “KSU Research Update”. May 5, 2014.
- 285 KSU Swine Day. “Latest Research to Improve Producer Profitability”. Manhattan, KS. November 21, 2013.
- 284 Korean Swine Producer Webinar. “Grow-finish pig management.” November 7, 2013.
- 283 Cargill China Sorghum seminars. “Use of sorghum in swine diets.” October 15, 2013.
- 282 National Pork Board Webinar. “Pelleting and complete diet grinding for high byproduct diets.” August 27, 2013.
- 281 PorkBridge Seminars. “Effect of optimizing feed withdrawal length and fiber levels prior to marketing on net return.” August 1, 2013.
- 280 US Grains Council Japan Sorghum Tour. “Use of sorghum for swine.” Wichita, KS July 25, 2013.
- 279 WTK Producer Meeting. “Interpreting closout data”. Wood Lake, MN. March 27, 2013.
- 278 Allee Symposium at Midwest meeting of American Society of Animal Sciences. “What factors need to be considered when doing fat quality research - Perspective of a nutritionist.” March 11, 2013.
- 277 Kansas Farm Bureau Annual Meeting. “Swine Industry Update.” Manhattan, KS. February 6, 2013.
- 276 Pfizer Improvest Conference. “Lysine and energy requirements.” Miami, FL. December 13, 2012.
- 275 KSU Swine Day. “Latest Research to Improve Producer Profitability”. Manhattan, KS. November 15, 2012.
- 274 Chilean Pork Congress. “Influence of high fiber, low energy ingredients on performance and carcass characteristics”. Chillan, Chile. November 9, 2012.
- 273 Chilean Pork Congress. “Feed processing and other technologies to improve feed efficiency.” Chillan, Chile. November 9, 2012.
- 272 Improvest Swine Nutrition Conference. “Improvest and DDGS”. Chicago, IL. October 30, 2012.
- 271 Pfizer Swine Nutrition Conference. “Improvest and DDGS”. Kansas City, MO. September 14, 2012.
- 270 Walcott Veterinary Clinic Swine Conference. “Considrations in managing high feed costs. Walcott, IA. August 31, 2012.
- 269 Wakefield Pork Meeting. “Lowering cost of production.” Gaylord, MN. August 29, 2012.
- 268 Reciprocal Meats Conference. “Influence of DDGS on pork fat/bacon quality”. Fargo, ND. June 19, 2012.
- 267 Reciprocal Meats Conference. “Swine nutrition and management systems that alter productivity and carcass traits”. Fargo, ND. June 18, 2012.
- 266 Eastern Nutrition Conference. “Starter Pig Amino Acid Requirements in Relation to Gut Health Concerns”. Kitchner, Ontario. May 9, 2012.
- 265 NutriFarms Technical Meetings. “Sow nutrition for maximum productivity. Brazil. April 26, 2012.
- 264 Swine Health Alliance Swine Education Event. “Vitamin D and DDGS research update”. North Carolina and Indiana. April 12, 2012.
- 263 Agroceres/PIC Update. “Sow nutrition”. Manhattan, KS. March 26, 2012.
- 262 Land O’Lakes Research Update Series. “Vitamin D research.” St. Louis, MO. February 5, 2012.
- 261 Banff Pork Seminar. “Diet formulation using lower energy feeds.” Banff, AB, Canada. January 17, 2012.

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- 260 KSU Swine Day. "Latest Research to Improve Producer Profitability". Manhattan, KS. November 17, 2011.
- 259 International Feed Efficiency Conference. "Feeding and barn management strategies that maximize feed efficiency." Omaha, NE. November 8, 2011.
- 258 Chinese Swine Producer Seminars. "Feeding weaned pigs and sows." Manhattan, KS. September 16, 2011.
- 257 U.S. Feed Grains Council Seminar. "Feeding weaned pigs from d 1 to 77" Seoul, South Korea. July 7, 2011.
- 256 Tecno-Vit Veterinary Advisory Seminars. "Breakthroughs in Swine Nutrition". Les Sorts, Spain. June 30, 2011.
- 255 U.S. Feed Grains Council Seminar. "Sow nutrition webinar" Soeul South Korea. May 5, 2011.
- 254 Univeristy of Vicoso Swine Seminar. "Amino acid requirements of growing pigs." Vicoso, Brazil. March 31, 2011.
- 253 Land O'Lakes Webiner. "Amino acid use in nursery diets." March 7, 2011
- 252 Agro Super Meeting. "Swine Research and Technology Update". Rancagua, Chile. December 2, 2010.
- 251 KSU Swine Day. "Latest Research to Improve Producer Profitability". Manhattan, KS. November 18, 2010.
- 250 Standard Nutrition Conference. "Impact of nutrition on carcass lean". November 27, 2010. Omaha, NE
- 249 Heartland Lysine Meetings. "Amino acid use of nursery pigs". October and November, 2010. 14 locations.
- 248 Lemam Conference. "Where has all the research gone.". September 21, 2010.
- 247 VMC Producer Meetings. "Finisher nutrition. Washington, IA. August, 2010.
- 246 Pfizer Nutrition Symposium. "Lysine requirement of finishing pigs". Toronto, CA.
- 245 NASSA Swine Meetings. "Common sow problems and improving feed conversion". Merida, Yucatan, Mexico. April 20, 2010.
- 244 WTK Producer Meeting. "Optimal market weight and closout data". Wood Lake, MN. April 5-6, 2010.
- 243 Kansas Swine Profitability Conference. "Reducing cost and increasing margin over feed". Manhattan, KS. February 2, 2010.
- 242 Kansas Farm Bureau State Meeting. "PQA+". Manhattan, KS. January 27, 2010.
- 241 KSU Swine Day. "Latest Research to Improve Producer Profitability". Manhattan, KS. November 19, 2009.
- 240 BASF Advisory Meeting. "NutriDense Corn". St. Lous, MO. September 2, 2009.
- 239 VMC Producer Meetings. "Optimal Market weight and finisher nutrition. Washington and Manchester, IA. August 26 and 27, 2009.
- 238 NASSA Swine Meetings. "Imrpoving feed conversion". Three locations in Mexico. Tepatitlan, LaPiudad, and Tehuacan, Mexico. August 17, 18, and 20, 2009.
- 237 AASV Summer Conference. "Late finishing nutrition and optimal market weight". Ames, IA. June 23, 2009.
- 236 WTK Producer Meeting. "Understanding closeout information and marketing". Wood Lake, MN. March 25-26, 2009.
- 235 Danbred Technical Meeting. "PCV vaccine impacts on performance". Lincoln, NE. March 13, 2009.
- 234 PIC Management for Surviving in Today's Industry Meeting. "Marketing strategies". Seneca, KS. March 11, 2009.

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- 233 American Association of Swine Veterinarians Annual Meeting. "Antimicrobials for nursery diets". Dallas, TX. March 8, 2009.
- 232 American Association of Swine Veterinarians Annual Meeting. "Boar Nutrition". Dallas, TX. March 8, 2009.
- 231 PigGroup Meeting. "Feed, fuel, and feed efficiency". Copper Mountain, CO. February 20, 2009.
- 230 Purco Swine Meeting. "Controlling feed cost". Edgerton, MN. February 27, 2009.
- 229 Kansas Farm Bureau State Meeting. "Managing feed cost". Manhattan, KS. February 10, 2009.
- 228 Executive Veterinarian Program. "Applied Swine Nutrition". University of Illinois, Champaign, IL. December 4-5, 2008
- 227 KSU Swine Day. "Latest Research to Improve Producer Profitability". Manhattan, KS. November 20, 2008.
- 226 Association of Swine Production Specialists Meeting. Latest Topics in Swine Nutrition: Gestation and Lactation. Obregon, Sonora, Mexico. May 2, 2008.
- 225 NASSA Swine Seminar. "What employees can do to help owners with high feed cost". Cuautla City, Morelos, Mexico. April 30, 2008.
- 224 NASSA Swine Producer Seminar. "Challenges of feed cost" Tehuacan, Mexico. April 29, 2008.
- 223 WTK Producer Meeting. "Production costs and closeout data". Wood Lake, MN. March 6, 2008.
- 222 American Association of Swine Veterinarians annual meeting. "Impact of changing ingredient economics on diets and pig performance". San Diego, CA. March 5, 2008.
- 221 Purco Swine Meeting. "Optimal market weights". Pipestone, MN. February 29, 2008.
- 220 Holden Farms Grower Meeting. "Influence of feed cost on cost of production." Owatonna, MN. February 28, 2008.
- 219 KSU Swine Profitability Conference. When, Where and Why: Marketing Decisions Based on Packer Matrixes and Pig Flow. Manhattan, KS. February 5, 2008.
- 218 Form-A-Feed Advanced Strategies Conference. "Prewaning oportunities" and "Alternative ingredients". Morton, MN. December 5, 2007.
- 217 KSU Swine Day. "Amino acid research in finishing pigs." Manhattan, KS. November 15, 2007.
- 216 Kyodo Shiryo Swine Seminars. "Managing feed efficiency." Tokyo and Kumamoto, Japan. November 5 and 6, 2007.
- 215 Kyodo Shiryo Swine Seminars. "Conducting farm visits" Tokyo and Kumamoto, Japan. November 5 and 6, 2007.
- 214 ADSA Discovery Conference. "Sow productive lifetime: Gestation and lactation nutrition." Nashville, IN. September 11, 2007.
- 213 NDSU Pork Producer Seminars. "Dealing with high feed cost". Casselton, ND. August 8, 2007
- 212 NDSU Pork Producer Seminars. "Porcine Circovirus Associated Disease". Casselton, ND. August 8, 2007.
- 211 NASSA Swine Seminar. "Gestation feeding and reducing feed cost". Guadalajara, Mexico. May 11, 2007.
- 210 NASSA Swine Producer Seminar. "Lactation length and impact of high grain prices" Tepetitlan, Mexico. May, 10, 2007.
- 209 London Swine Conference. "Key measures of performance in the growing-finishing barn

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- for informed decision making". London, Ontario, April 5, 2007.
- 208 London Swine Conference. "New tools to manage variability throughout the pork production chain". London, Ontario, April 5, 2007.
- 207 American Association of Swine Veterinarians annual meeting. "Strategies for feeding boars". March 3, 2007.
- 206 Purco Swine Meeting. "Challenges of high corn price". Pipestone, MN. February 18, 2007.
- 205 Holden Farms Grower Meeting. "Impact of field nutrition research on profitability." Owatonna, MN. February 17, 2007.
- 204 Form-A-Feed Advanced Strategies Conference. "Nutritional strategies to meet the weaning challenge" and "Feeding pigs with \$3.00 corn". Morton, MN. December 6, 2006.
- 203 Kyodo Shiryo Swine Seminars. "Ventilation management." Tokyo and Kumamoto, Japan. October 31 and November 1, 2006.
- 202 Kyodo Shiryo Swine Seminars. "Nutrition for fetal development" Tokyo and Kumamoto, Japan. October 31 and November 1, 2006.
- 201 World Pork Expo. Nutrition and the environment". Des Moines, IA. June 8, 2006.
- 200 Norson Swine Meeting. "Sow feeding and management". Hermosillo, Mexico. May 20, 2006
- 199 NASSA Swine Producer Seminar. "Update on swine nutrition" Tepetitlan, Mexico. May, 18, 2006.
- 198 American Association of Swine Practitioners Annual Meeting. "Grow-finish update – Take home recommendations. Kansas City, MO. March 5, 2006.
- 197 Centralia Swine Conference. "The latest in gestation sow feeding". Kirkton, Ontario, Canada. January 25, 2006.
- 196 Centralia Swine Conference. "Water-based growth promotion." Kirkton, Ontario, Canada. January 25, 2006.
- 195 KSU Swine Day. "KSU Swine Research Update." Manhattan, KS. November 17, 2005.
- 194 Kyodo Shiryo Swine Seminars. "Sow feeding management" Tokyo and Kumamoto, Japan. October 25 and 26, 2005.
- 193 Kansas Beef Stocker Conference. "Dealing with weight variation: The swine industry perspective". Manhattan, KS, September 15, 2005.
- 192 Asociacion Mexicana Veterinarios de Cerdos. "Latest information on nutrition of the pig". Leon, Mexico, July 14, 2005.
- 191 Asociacion Mexicana Veterinarios de Cerdos. "Feeding programs for gestating sows". Leon, Mexico, July 13, 2005.
- 190 Ontario Pork Congress. "New nutrition Ideas." London, Ontario. June 21, 2005
- 189 Alberta Swine Breeding Management Workshop. "Nutritional Strategies for Optimizing Sow Reproductive Performance." Edmonton, Alberta, Canada. May 4, 2005.
- 188 University of Illinois Dept. of Anim. Sci. "Impacting the Illinois Pork Industry through Research and Extension". Champaign, IL. April 14, 2005.
- 187 Holden Farms Grower Meeting. "Applying the Latest Nutrition Research." Owatonna, MN. March 17, 2005
- 186 PigGroup Seminar. "Nutrition Ideas from Around the World." Keystone, CO. February 26, 2005.
- 185 Equity Swine Seminar. "Interpreting Your Swine Records." Wood Lake, MN. February 10, 2005.
- 184 Purco Swine Meeting. "Update on KSU Nutrition Research. "Marshall, MN. February 10,

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2005.

- 183 KSU Swine Day. "KSU Swine Research Update." Manhattan, KS. November 18, 2004.
- 182 Kyodo Shiryo Swine Seminars. "Case studies from problem solving of farm management." Tokyo and Kagoshima, Japan. November 10 and 11, 2004.
- 181 NASSA Swine Conference. "Using good times to prepare for the future." Tepatitlan, Mexico. October, 2004.
- 180 Alimental Swine Conference. "Optimal feeding program for gestating sows." Argentina. July, 2004.
- 179 Ajinomoto Nutrition Conference. "Evidence of net energy release in swine diets." Des Moines, IA. March, 2004.
- 178 Holden Swine Conference. "Reducing stress during marketing." Owatonna, MN. March, 2004.
- 177 Banff Swine Conference. "Managing grow-finish variation." Banff, Canada. January, 2004.
- 176 KSU Swine Day. "International swine production." Manhattan, KS. November 20, 2003.
- 175 Pfizer Swine School. "Controlling variability in swine production systems." London, Ontario. November 18, 2003.
- 174 American Society of Animal Science Meetings. "Practical aspects: Dietary energy density and finishing pig performance and profits. Phoenix, AZ. June 26, 2003
- 173 Wakefield Production Meeting. "Feeders, Diets, and Records." Gaylord, MN. May 22, 2003.
- 172 Holden Swine Conference. "Production Advances in last 10 years." Owatonna, MN. February 27, 2003.
- 171 Pig Group Seminar. "KSU Nutrition update." Copper Mountain, CO. February 22, 2003.
- 170 Equity Swine Seminar. "Sow Nutrition Review." Wood Lake, MN. February 7, 2003.
- 169 Pipestone Vet Clinic Appreciation Day. "Nutrition program update." Pipestone, MN. February 6, 2003.
- 168 KSU Swine Day. "Nutrition for optimal profitability." Manhattan, KS. November 21, 2002.
- 167 Saskatchewan Pork Industry Symposium. "New approaches to feeding gestating sows". Saskatoon, Canada. November 30, 2002.
- 166 Saskatchewan Pork Industry Symposium. "Weaning weight variation". Saskatoon, Canada. November 30, 2002.
- 165 Carthage Swine Conference. "Nutrition innovations." Carthage, IL. August 28, 2002.
- 164 South Central Vet Conference. "Feeding lactating sows." Wells, MN. July 29, 2002.
- 163 NASSA-Lonza Swine Conference. "Carnitine use in swine diets." Tepatitlan, Mexico. July 18, 2002.
- 162 Holden Swine Conference. "Reducing nutrient levels in waste." Owatonna, MN. March 21, 2002.
- 161 AASV National Meeting. "Swine Nutrition Audits." Orlando, FL. March 5, 2002.
- 160 Pig Group Seminar. "KSU Nutrition Update." Copper Mountain, CO. February 23, 2002.
- 159 Equity Swine Seminar. "Feeding programs for lean pork production." Wood Lake, MN. January 24, 2002.
- 158 NASSA Swine Seminars. "Feeding and management of the SEW pig." Ciudad Obregon, Mexico. December 5 and 6, 2001.
- 157 KSU Swine Day. "Nutrition for optimal profitability." Manhattan, KS. November 15, 2001.
- 156 Elanco Swine Team Meeting. "Paylean influence on lysine requirement." Kansas City, MO. August 22, 2001.
- 155 London Swine Conference. "Top 10 drivers in U.S. pork production." London, Ontario.

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- April 6, 2001.
- 154 London Swine Conference. "A lunch bucket approach to feeding grow-finish pigs."
London, Ontario. April 5, 2001.
- 153 Holden Swine Conference. "Nutrition innovations." Albert Lea, MN. March 29, 2001.
- 152 Kerber Swine Conference. "Paylean nutrition." Emmetsburg, IA. March 28, 2001.
- 151 Pig Group Seminar. "Paylean and irradiation of feed ingredients." Breckenridge, CO.
February 10, 2001.
- 150 Iowa Vet Medical Association. "Practical swine nutrition." February 7, 2001.
- 149 KSU Swine Day. "Nutrition for optimal profitability." Manhattan, KS. November 16, 2000.
- 148 NASSA Swine Seminars. "Feeding and management of the SEW pig." October 5 and 6,
2000.
- 147 Lemans Swine Conference. "Sow longevity: The role of nutrition and the feeding program."
August 14, 2000.
- 146 American Society of Animal Science National Meeting. Baltimore, MD. July 26, 2000.
- 145 Earl Mobley Swine Seminar Group. "Optimal nutrition programs." Holstein, IA. June 15,
2000.
- 144 Pork Academy. "Nutritional economics." Indianapolis, IN. June 7, 2000.
- 143 Pig Group Seminar. "Nutritional economics." Steamboat, CO. February 26, 2000.
- 142 Western States Veterinary Conference. "Advances in starter pig nutrition". Las Vegas,
NV. February 21, 2000.
- 141 Western States Veterinary Conference. "Optimal nutrition program for sows". Las Vegas,
NV. February 21, 2000.
- 140 Western States Veterinary Conference. "Nutrition for the finishing pig". Las Vegas, NV.
February 21, 2000.
- 139 Western States Veterinary Conference. "Nutrition problems on swine farms". Las Vegas,
NV. February 21, 2000.
- 138 Manitoba Swine Seminar. "Nursery pig nutrition and management – Latest development
and practical application. Winnipeg, Manitoba. January 27, 2000.
- 137 KSU Swine Day. "Nutrition for optimal profitability." Manhattan, KS. November 18, 1999.
- 136 NPPC Quality Lean Growth Modeling Project Symposia II. "Economic lessons from the
lean growth project". Des Moines, IA. November 17, 1999.
- 135 Ireland Pig Farmers Conferences. "Nutrition for optimal performance of the female pig."
Longford, Kilkenny, and Macroom, Ireland. October 18, 19, and 20, 1999.
- 134 Ireland Pig Farmers Conferences. "Phase feeding of finishing pigs." Longford, Kilkenny,
and Macroom, Ireland. October 18, 19, and 20, 1999.
- 133 American Society of Animal Science. "Nutrition influence on lean growth." Indianapolis,
IN. July 21, 1999.
- 132 Pork Academy. "Application of NPPC lean growth trial results." Des Moines, IA. June 8,
1999.
- 131 Kerber Swine Conference. "Grow-finish nutrition." Emmetsburg, IA. April 20, 1999.
- 130 Taipei Swine Seminars. "Starter diets." Taipei, Taiwan. March 8, 1999.
- 129 Pig Group Seminar. "Practical sow feeding programs." Breckenridge, CO. February 22,
1999.
- 128 Swine Profitability Conference. "Maintaining competitiveness during consolidation".
Manhattan, KS. February 2, 1999.
- 127 Swine Reproductive Conference. "Nutrition for optimal performance of the female pig."
Manhattan, KS. January 23, 1999.
- 126 KSU Swine Day. "Swine Nutrition Audits: A complete assessment of your nutrition

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- program." Manhattan, KS. November 19, 1998.
- 125 NPPC Quality Lean Growth Modeling Project Symposia. "Application of lean growth results". Des. Moines, IA. November 18, 1998.
- 124 Nuticion y Alimentos de Sonora Nutrition Conference. "Practical use of growth and protein accretion curves. Ciudad Obregon, Mexico. November 14, 1998.
- 123 Lemans Conference. "Managing variation on the way in." Minneapolis, MN. September 21, 1998.
- 122 International Pig Veterinary Society. "Nutritional disorders." Birmingham, UK. July 8, 1998
- 121 Pig Group Seminar. "Practical sow feeding programs." Breckenridge, CO. February 21, 1998.
- 120 KSU Swine Day. "Most common nutritional problems we find on swine operations." Manhattan, KS. November 20, 1997.
- 119 LC Co-op Swine Seminar. "Swine nutrition update." August 18, 1997.
- 118 Midwest Co-op Swine Seminar. "Latest nutritional information." July 8, 1997.
- 117 Pork Academy. "Application of lean growth modeling." Indianapolis, IN. June 4, 1997.
- 116 World Pork Symposium. "Application of lean growth modeling." Indianapolis, IN. June 3, 1997.
- 115 Inphilco Swine Conference. "Phase feeding for starter pigs." Manila, Philippines. May 15, 1997.
- 114 Pig Group Seminar. "Practical application of growth curves." Keystone, CO. February 22, 1997.
- 113 Colorado Swine Day. "Nutrition update." Yuma, CO. December 12, 1996.
- 112 Colorado Swine Day. "Nutrition update." Lamar, CO. December 11, 1996.
- 111 KSU Swine Day. "Influence of gestation feeding on subsequent lactation and grow-finish performance." Manhattan, KS. November 21, 1996.
- 110 Super Pollo Swine Meeting. "Review of Chilean swine nutrition program." Rancagua, Chile. October 17 & 18, 1996.
- 109 Lemans Conference. "Use of simple models to formulate diets." Minneapolis, MN. September 21, 1996.
- 108 American College of Theriogenology. "Review of sow nutrition." Kansas City, MO. August 14, 1996.
- 107 American College of Theriogenology. "Boar nutrition." Kansas City, MO. August 14, 1996.
- 106 Gold Kist Producer Conference. "Sow nutrition update." Athens, Georgia, August 8, 1996.
- 105 Merida Swine Seminar. "Latest developments in starter diets." Merida, Mexico. April 25, 1996.
- 104 La Piudad Swine Seminar. "Latest developments in starter diets." La Piudad, Mexico. April 24, 1996.
- 103 Premium Standard Farms. "Nutrition program overview." Princeton, MO. April 17, 1996.
- 102 Keoshung Swine Seminar. "Spray-dried blood meal in swine diets." Keoshung, Taiwan. April 10, 1996.
- 101 Taipei Swine Seminars. "Spray-dried blood meal in swine diets." Taipei, Taiwan. April 11, 1996.
- 100 Amer. Assoc. Swine Practitioners 27th Annual Meeting. "Genetic decisions as influenced by feed utilization." Nashville, TN, March 4, 1996
- 99 Pig Group Seminar. "New technology for swine diets." Winter Park, CO. February 23, 1996.
- 98 North American Veterinary Medicine Conference. "Feeding for lean growth: cost vs value." Orlando, FL, January 15, 1996.

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- 97 North American Veterinary Medicine Conference. "Sow and pig nutrition in an early-weaning program." Orlando, FL, January 15, 1996.
- 96 North American Veterinary Medicine Conference. "How I trouble-shoot feed cost problems." Orlando, FL, January 15, 1996.
- 95 Equity Producer Meeting. "Nutrition update." Wood Lake, MN. December 1, 1995.
- 94 NPPC Pork Profitability Summit. "Impact of nutrition on genetics." Des Moines, IA. November 29, 1995.
- 93 Buchheit Swine Industry Updates. "Network opportunities for swine producers." Drummonville, MO. November 21, 1995.
- 92 KSU Swine Day. "Recent Advances in Sow Nutrition." Manhattan, KS. November 16, 1995.
- 91 University of Missouri Swine Summit. "Feeding high producing sows. Columbia, MO. November 15, 1995.
- 90 Colloque de Production Porcine. "La Nutrition des porcelets serves hativement: aspects pratiques." Drummondville, Quebec, Canada. November 1, 1995.
- 89 Tsukuba Research Institute. "Latest Developments in USA." Tsukuba, Japan. October 20, 1995.
- 88 Zen-Noh Technical Seminar. "United States Swine Industry." Sendai, Japan. October 19, 1995.
- 87 Zen-Noh Technical Seminar. "Segregated early weaning." Miyasaka, Japan. October 17 & 18, 1995.
- 86 PigWorld Masters Seminar. "Feeding the weanling pig." Grand Rapids, MN. July 17, 1995.
- 85 World Pork Expo. "Diets for segregated early weaned pigs." Des Moines, IA. June 9 & 10, 1995.
- 84 NPPC Pork Academy. "SEW nutrition." Des Moines, IA. June 8, 1995.
- 83 NPPC Genetics Symposia. "Genetic evaluation project: Nutrition." Des Moines, IA. May 23, 1995.
- 82 Buchheit Swine Seminar. "SEW diets." St. Louis, MO. March 9, 1995.
- 81 American Association of Swine Practitioner Annual Meeting. "Feed Budgeting to Determine feed intake." Omaha, NE. March 4, 1995.
- 80 PigWorld Seminar. "Feed Budgeting." Copper Mountain, CO. February 24, 1995.
- 79 PigWorld Seminar. "Relative cost of micro-nutrients in swine diets." Copper Mountain, CO. February 25, 1995.
- 78 Feed Specialties Swine Seminar. "Amino acid nutrition for the lactating sow." Ames, IA. February 23, 1995.
- 77 Centralia (Ontario) Swine Research Update. "Practical considerations in Nutrition for the SEW Pig." Kitchener, Ontario, Canada. February 1, 1995.
- 76 Centralia (Ontario) Swine Research Update. "Practical considerations in Nutrition for the SEW Pig." Kitchener, Ontario, Canada. February 1, 1995.
- 75 Tennessee Pork Producer Annual Meeting. "Starter pig nutrition." Murphreesborough, Tennessee. January, 19, 1995.
- 74 Colorado Swine Day. "Applying the latest technology to your operation." Greeley, CO. December 8, 1994.
- 73 KSU Swine Day. "Practical nutritional programs for the SEW pig." Manhattan, KS. November 17, 1994.
- 72 Western Canadian Veterinary Conference. "Grow-Finish Nutrition - New trends and ideas." Saskatoon, Saskatchewan, Canada. October 15, 1994.

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- 71 Western Canadian Veterinary Conference. "Nutrition of the sow - What's new?"
Saskatoon, Saskatchewan, Canada. October 14, 1994.
- 70 Western Canadian Veterinary Conference. "Nutrition of the weaned pig - Current
thinking." Saskatoon, Saskatchewan, Canada. October 14, 1994.
- 69 Mid-West Co-op Swine Seminars. "Nutrition for the early weaned pig." Springfield and
Bloomington, IL. August 30, 1994.
- 68 Kerber Milling Swine Seminar. "Zinc oxide for starter diets." Emmetsburg, IA. August 5,
1994.
- 67 World Pork Expo. "Influence of starter diets on subsequent performance." Indianapolis,
IN. June 10, 1994.
- 66 Keoshung Swine Seminar. "Nutrition in hot environments." Keoshung, Taiwan. April 19,
1994.
- 65 Taipei Swine Seminars. "Spray-dried blood products in starter pig diets." Taipei, Taiwan.
April 18, 1994.
- 64 Seoul Swine Seminars. "Nutrition for the lactating sow." Seoul, Korea. April 14, 1994.
- 63 Seoul Swine Seminars. "Recent advances in starter pig nutrition." Seoul, Korea. April 14,
1994.
- 62 Tokyo Swine Meeting. "Segregated early weaning." Tokyo, Japan. April 11, 1994.
- 61 Tokyo Swine Meeting. "Starter pig nutrition." Tokyo, Japan. April 11, 1994.
- 60 Colorado PQA Meeting. "Putting quality assurance into action." Brush, CO. March 26,
1994.
- 59 FILM Coop Swine Seminar. "KSU starter diets." Sibley, IL. March, 1994.
- 58 Pig Group Swine Seminar. "Nutrition for the lactating sow." Copper Mountain, CO.
February 25, 1994.
- 57 Pig Group Swine Seminar. "Feeding the segregated early weaned pig." Copper
Mountain, CO. February 24, 1994.
- 56 F. Menard Swine Seminar. "Metabolic connections between feed intake and
reproduction. L'Ange Gardien, Quebec, Canada. February 3, 1994.
- 55 Banff Nutrition Conference. "Lactational and metabolic effects on fertility and weaning."
Banff, Alberta, Canada. January 20, 1994.
- 54 Banff Nutrition Conference. "Record Based Analysis of key factors affecting breeding
herd performance." Banff, Alberta, Canada. January 19, 1994.
- 53 Kerber Milling Swine Seminar. "Feeding high producing sows." Emmetsburg, IA.
December 4, 1993.
- 52 Kerber Milling Swine Seminar. "Optimal starter diet formulations." St. Peter, MN.
December 3, 1993.
- 51 KSU Swine Day. "Valine: a limiting amino acid for high producing sows." Manhattan, KS.
November 16, 1993
- 50 Kansas Pork Congress. "Lean value marketing." Manhattan, KS. November 15, 1993.
- 49 El Grupo Alpro Swine Seminar. "Maximizing lean production through nutrition."
Hermosillo, Sonora, Mexico. November 8, 1994.
- 48 Tepitlan Swine Conference. "Recent advances in starter pig nutrition." Tepetlan, Mexico.
November 4, 1993.
- 47 Dynamics of Nutrition. "Swine nutrition update." Clay Center, NE. October 8, 1993.
- 46 University of Minnesota Swine Vet Seminars. "Swine diet economics." St. Paul, MN.
August 18, 1993.
- 45 Navajoa Swine Conference. "Feeding the lactating sow." Navajoa, Sonora, Mexico. July
13, 1993.

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- 44 Navajoa Swine Conference. "New recommendations for starter diets." Navajoa, Sonora, Mexico. July 13, 1993.
- 43 El Grupo Alpro Swine Conference. "Nutrition for hot climates." Hermosillo, Sonora, Mexico. July 12, 1993.
- 42 El Grupo Alpro Swine Conference. "Recent advances in starter pig nutrition." Hermosillo, Sonora, Mexico. July 12, 1993.
- 41 Vita Plus Technical Conference. "Ideal protein swine diets." Rockford, IL. July 6, 1993.
- 40 World Pork Expo. "Swine nutrition for the year 2000." Des Moines, IA. June 6, 1993.
- 39 Fourth International Conference on pig reproduction. "Relationship of IGF-1 and β -hydroxy Butyrate to LH secretion and return-to-estrus interval in primiparous lactating sows" Dublin, Ireland. May 25, 1993. (Presented by J.E. Pettigrew since I could not attend).
- 38 Midwest ASAS Meeting. "Valine - A deficient amino acid in high lysine diets for the lactating Sow. March 23, 1993.
- 37 Worthington Vet Clinic Producer Day. "Swine nutrition - Latest breakthroughs." Worthington, MN. March 15, 1993.
- 36 AASP National Meeting. "KSU Lean Value Test Marketing Program." Kansas City, MO. March 6, 1993.
- 35 Northeast Nebraska Swine Producers. "New developments in sow lactation diets." Concord, NE. January 30, 1993.
- 34 Worthington Veterinary Clinic Seminars. "Nutrition for optimal economics." Worthington, MN. January 15, 1993.
- 33 Rensselaer Vet Clinic Producer Day. "Starter pig nutrition." Rensselaer, IN. December 5, 1992.
- 32 Colorado Swine Day. "Techniques to improve your competitive advantage." Greeley, CO. December 3, 1992
- 31 KSU Swine Day. "Spray-drying is causing a revolutionary in starter diets." Manhattan, KS. November 15, 1992.
- 30 University of Missouri Vet Nutrition Conference. "Swine nutrition update." Columbia, MO. November 6, 1992.
- 29 University of Minnesota Swine Vet Seminars. "Starter pig diets." St. Paul, MN. October 12, 1992.
- 28 Carthage Vet Clinic Producer Day. "Nutrition for economical lean growth." Carthage, IL. August 12, 1992.
- 27 George Young Swine Conference. "Genetic assessment and lean value marketing." Lincoln, NE. August 3, 1992.
- 26 Professionally Balanced Nutrition Seminars. "Evaluation of SEW diets." Morris, MN. July 15, 1992.
- 25 Audobon Veterinary Clinic Seminars. "Grow-finish diets." Audobon, IA. June 6, 1992.
- 24 Audobon Veterinary Clinic Seminars. "Nutrition for high producing sows." Audobon, IA. June 6, 1992.
- 23 Audobon Veterinary Clinic Seminars. "Starter diet economics." Audobon, IA. June 6, 1992.
- 22 Midwest ASAS Meeting. "The effects of an ideal protein lactation diet on sow and litter performance. Des Moines, IA. March, 25 1992.
- 21 Midwest ASAS Meeting. "Comparison of protein sources in the phase II diet. Des Moines, IA. March 24, 1992.
- 20 Mid-West Co-ops Producer Meeting. "Starter pig diets." Springfield, IL. March 12, 1992.

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- 19 AASP National Meeting. "Influence of weaning weight and growth during the first week postweaning on subsequent pig performance. Nashville, TN. March 2, 1992.
- 18 Four-State Swine Conference. "Lean value marketing. Seneca, KS; Red Oak, IA; St. Joseph, MO; Beatrice NE. February 17 & 18, 1992.
- 17 Miller Chemical Nutrition Update. "KSU Lean Gain Assessment Program." Omaha, NE. January 6, 1992.
- 16 Swine Health Center Seminars. "Update on latest nutrition technology." Morris, MN. December 15, 1991.
- 15 Swine Vet Center Seminars. "Economics of swine diets." St. Peter, MN. December, 14 1991.
- 14 Vita-Plus Producer Meeting. "Baby pig diets." Madison, WI. December 13, 1991.
- 13 Colorado Swine Day. Reducing input costs during low market prices. December 4, 1991
- 12 KSU Swine Day. "Lean Gain Assessment." November 13, 1991.
- 11 ASAS National Meeting. "Characterization of LH secretion in the lactating primiparous sow: relation to return-to-estrus interval and blood metabolites." Laramie, WY. August 7, 1991.
- 10 ASAS National Meeting. "Influence of glucose infusion on LH secretion in the energy-restricted lactating sow." Laramie, WY. August 6, 1991.
- 9 Midwest ASAS Meeting. "Quantitative influence of lysine and energy intake on yield of milk components in the energy-restricted lactating sow. March 25, 1991.
- 8 AASP National Meeting. "Recent developments in starter pig nutrition." Minneapolis, MN. March 4, 1991.
- 7 University of Minnesota Swine Day. "Nutrition for the starter pig." January 25, 1991
- 6 Minnesota Swine Conf for Veterinarians. "Metabolic and reproductive function in the lactating sow." St. Paul, MN. September 8, 1990.
- 5 ASAS National Meeting. "Fat levels and sources for weanling pigs." Ames, IA. August, 1990.
- 4 Midwest ASAS Meeting. "Overall pig performance to market weight is improved by adding milk products, but not fat to the starter pig diet." Des Moines, IA. March 26, 1990.
- 3 Minnesota Swine Conf for Veterinarians. "Fat sources and levels for the young pig. St. Paul, MN. September 7, 1989.
- 2 ASAS National Meeting. The appropriate level of fat addition to high milk product diets for the early weaned pig. Lexington, KY. August 3, 1989.
- 1 ASAS National Meeting. "Effect of protein and/or carbohydrate fractions of dried whey on starter pig performance. August 1, 1987.

Consulting Agreements

As a result of the success and visibility of my programs, I have been able to conduct University approved consulting with the following groups:

- Agroceres, a feed company in Brazil.
- Ajinomoto-Heartland Inc, an amino acid company.
- Alimental S.A. a swine feed company in Argentina.
- Buchheit Feeds, a regional feed company in Perryville, MO.
- Brinker Farms, a swine production company in Auxvasse, MO.
- California Spray-Dry, a large spray-dryer of agricultural products including feed ingredients.

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- Carthage Veterinary Service, a swine veterinary clinic in Carthage, IL
- Danbred, a swine genetic company based in Columbus, NE.
- F. Menard, an integrated poultry and swine operation in Quebec, Canada.
- Feed One, a feed company in Japan.
- Genetiporc, a swine genetic company in Alexandria, MN and Quebec, Canada.
- Gold Kist, Inc, an integrated poultry and swine operation in Athens, GA.
- Holden Farms, a swine production company in Northfield, MN.
- Kerber Milling, a regional feed company in Emmetsburg, IA.
- Kyodo Shiryō, a feed company in Japan.
- Lonza, Inc, an international chemical company that manufactures feed ingredients.
- Maschhoff Farms, Inc, a swine operation in Carlyle, IL.
- Merck Animal Health, an animal health company.
- Monsanto, Inc. a crops and swine genetic company in St. Louis, MO.
- NASSA, a swine feed company in Sonora, Mexico
- Newsham Hybrid, Inc, a swine genetic company in Colorado Springs, CO
- PIC, Inc., a swine genetic company in Franklyn, Kentucky.
- Pfizer, Inc., an animal health company.
- Pioneer Hybrid International, seed corn company based in Des Moines, IA.
- Premium Standard Farms, an integrated swine operation in Princeton, MO.
- Seaboard Farms, Inc, an integrated swine operation in Guymon, OK
- Super Pollo, Inc, an integrated swine operation in Chile.
- Swine Vet Center, a Swine specific veterinary clinic in St. Peter, MN.
- Technovit, a feed company in Spain.
- Wakefield Pork, a swine production company in Gaylord, MN.
- Zoetis, an animal health company.

I also have consulted with producers in Alabama, California, Colorado, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Minnesota, Missouri, Nebraska, Nevada, North Carolina, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, Utah, Wisconsin, Mexico (Sonora, Michoacan, Yucatan, and Jalisco), Argentina, Brazil, Canada (Quebec, Manitoba, Ontario, Saskatchewan, and Alberta), Cambodia, Chile, China, England, Ireland, Italy, Japan, Korea, Philippines, Spain, Taiwan, and Australia.

MAJOR PROFESSIONAL DEVELOPMENT - SUBJECT MATTER

- Lemna Swine Conference. St. Paul, MN. Virtual, September, 2020.
- American Society of Animal Science National Meeting. Virtual, July, 2020.
- Annual Meeting of Midwest Section, ASAS. Omaha, NE, February, 2020.
- Banff Pork Conference. Banff, Canada, January, 2020.
- Austr-Asian Pig Science Association Biannual Meeting. Adelaide, Australia. November, 2019.
- Global Agenda for Sustainable Livestock. Manhattan, KS. September, 2019.
- Lemna Swine Conference. St. Paul, MN. September, 2019.
- American Society of Animal Science National Meeting. Austin, TX. July, 2019.
- Annual Meeting of Midwest Section, ASAS. Omaha, NE, March, 2019.
- International Swine Symposia. Shanghai, China. October, 2018.
- American Society of Animal Science National Meeting. Vancouver BC Canada. July, 2018.
- Annual Meeting of Midwest Section, ASAS. Omaha, NE, March, 2018.
- American Association of Swine Veterinarians National Meeting, San Diego, CA, March, 2018.

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- American Society of Animal Science National Meeting. Baltimore, MD. July, 2017.
- Spain and Germany swine production company tours. June, 2017.
- Annual Meeting of Midwest Section, ASAS. Omaha, NE, March, 2017.
- London Swine Conference. London, ON. March, 2017.
- American Association of Swine Veterinarian National Meeting. Denver, CO. March, 2017.
- American Society of Animal Science National Meeting. Salt Lake City, UT. July, 2016
- American Association of Swine Veterinarian National Meeting. New Orleans, LA. March, 2016.
- Banff Pork Conference. Banff, Canada. January, 2016.
- Lemman Swine Conference. St. Paul, MN. September, 2015.
- American Society of Animal Science National Meeting. Orlando, FL. July, 2015.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2015.
- Brazil Pork Expo. Foz de Iguazu, Brazil. October, 2014.
- Lemman Swine Conference. St. Paul, MN. September, 2014.
- American Society of Animal Science National Meeting. Kansas City, MO. July, 2014.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2014.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2013.
- American Society of Animal Science National Meeting. Phoenix, AZ. July, 2012.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2012.
- Reciprocal Meats Conference. Fargo, ND. June 18, 2012.
- Eastern Nutrition Conference. Kitchner, Ontario. May 9, 2012.
- American Association of Swine Veterinarian National Meeting. Denver, CO. March, 2012.
- International Feed Efficiency Conference. Omaha, NE. November 8, 2011.
- National Pork Board Educators Conference. Sioux Falls, SD. September, 2011.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2011.
- Lemman Swine Conference. St. Paul, MN. September, 2010.
- Ajinomoto-PIC Seminars. Owatonna, MN. August, 2010.
- American Society of Animal Science National Meeting. Denver, CO. July, 2010.
- Danbred Technical Meeting. Lincoln, NE. March, 2010.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2010.
- National Pork Board PQA+ Train the Trainer Session. March, 2010.
- American Association of Swine Veterinarian National Meeting. Omaha, NE. March, 2010.
- National Swine Nutrition Guide Training. Kansas City, MO. February, 2010.
- National Pork Board Educators Conference. Council Bluff, IA. January, 2010.
- BASF Advisory Meeting. September, 2009.
- KSU Swine Trip to Nebraska. August, 2009.
- AASV Summer Conference. Ames, IA. June, 2009.
- Danbred Technical Meeting. Lincoln, NE. March, 2009.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2009.
- American Association of Swine Veterinarian National Meeting. Dallas, TX. March, 2009.
- Pig Group Swine Seminar. Copper Mountain, CO. February, 2009.
- National Pork Board Educators Conference. Bettendorf, IA. January, 2009.
- ADSA DDGS Conference. Webinar. November, 2008.
- KSU Swine Trip to NE Kansas. August, 2008.
- National Pork Board Producer Service Conference. July, 2008.
- World Pork Expo. Des Moines, IA, June, 2008.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2008.
- American Association of Swine Veterinarian National Meeting. San Diego, CA. March, 2008.
- Pig Group Swine Seminar. Copper Mountain, CO. February, 2008.

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- National Pork Board Educators Conference. Kansas City, MO. January, 2008.
- Quality Counts training. Emporia, KS. October, 2007.
- Nutrition Services Mycotoxin Conference. Des Moines, IA. October, 2007.
- ADSA Sow Discovery Conference. Nashville, IN. September, 2007.
- KSU Swine Trip to Indiana. August, 2007.
- World Pork Expo. Des Moines, IA, June, 2007.
- London Swine Conference. London, Ontario. April, 2007.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2007.
- American Association of Swine Veterinarian National Meeting. Orlando, FL. March, 2007.
- Pig Group Swine Seminar. Keystone, CO. February, 2007.
- National Pork Board PQA+ Training. Des Moines, IA. February, 2007.
- National Pork Board Educators Conference. Kansas City, MO. January, 2007
- National Pork Board DDGS Conference. Des Moines, IA. November, 2006.
- World Pork Expo. Des Moines, IA, June, 2006.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2006.
- Pig Group Swine Seminar. Keystone, CO. February, 2006.
- Employee Management in Agriculture. Kansas City, MO. December, 2005.
- Association of Mexican Veterinarian National Meeting. Leon, Mexico. July, 2005.
- Alberta Swine Breeding Management Workshop. Edmonton, Alberta, Canada. May, 2005.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2005.
- Pig Group Swine Seminar. Keystone, CO. February, 2005.
- American Society of Animal Science National Meeting. St. Louis, MO. July, 2004.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2004.
- Ajinimoto Swine Nutrition Conference. Des Moines, IA, March 2004.
- Pig Group Swine Seminar. Copper Mountain, CO. February, 2004.
- Banff Pork Conference. Banff, Canada. January, 2004.
- American Society of Animal Science National Meeting. Phoenix, AZ. June, 2003.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2003.
- American Association of Swine Practitioners National Convention. Orlando, FL. March, 2003.
- Pig Group Swine Seminar. Copper Mountain, CO. February, 2003.
- Saskatchewan Pork Congress. Saskatoon, Sask. November, 2002.
- Lemna Swine Conference. Minneapolis, MN. September, 2002.
- Carthage Swine Conference. McComb, IL. August, 2002.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2002.
- American Association of Swine Practitioners National Convention. Kansas City, Mo. March, 2002.
- Pig Group Swine Seminar. Copper Mountain, CO. February, 2002.
- Employee Management in Agriculture. Kansas City, MO, August, 2001.
- American Society of Animal Science National Meeting. Indianapolis, IN, July, 2001.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2001.
- Pig Group Swine Seminar. Breckenridge, CO. March, 2001.
- American Association of Swine Practitioners National Convention. Nashville, TN. February, 2001.
- Lemna Swine Conference. Minneapolis, MN. August, 2000.
- American Society of Animal Science National Meeting. Baltimore, MD, July, 2000.
- Aventis Vitamin Premix Clinic, Manhattan, KS June, 2000.
- Pork Academy. Indianapolis, IN. June, 2000.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA, March, 2000.
- Pig Group Swine Seminar. Steamboat, CO. February, 2000.
- Lemna Swine Conference. Minneapolis, MN. September, 1999.

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- National Meeting of American Society of Animal Science. Indianapolis, IN. July, 1999.
- Farmland Industries University Advisory Board Meeting. Lake Ozark, MO, June 1999.
- Pork Academy. Des Moines, IA. June, 1999.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1999.
- American Association of Swine Practitioners National Convention. St. Louis, MO. March, 1999.
- Pig Group Swine Seminar. Breckenridge, CO. February, 1999.
- Lemman Swine Conference. Minneapolis, MN. September, 1998.
- National Meeting of American Society of Animal Science. Denver, CO. July, 1998.
- Pfizer Research Conference. Dallas, TX. May, 1998.
- Nutrient Requirement of Swine Satellite Downlink. Manhattan, KS. April, 1998.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1998.
- American Association of Swine Practitioners National Convention. Des Moines, IA. March, 1998.
- NRC Train the Trainer. Ames, IA. February, 1998.
- Pig Group Swine Seminar. Breckenridge, CO. February, 1998.
- Lemman Swine Conference. Minneapolis, MN. September, 1997.
- Pork Academy. Indianapolis, IN. June, 1997.
- Pfizer Alliance with Nutritionists. Orlando, FL. April, 1997.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1997.
- American Association of Swine Practitioners National Convention. Quebec, CA. March, 1997.
- Pig Group Swine Seminar. Keystone, CO. February, 1997.
- Lemman Swine Conference. Minneapolis, MN. September, 1996.
- NPPC Educators Conference. Des Moines, IA. August, 1996.
- USDA Swine Modeling Training. Clay Center, NE. August, 1996.
- American Theriogenology Conference. Kansas City, MO. August, 1996.
- American Society of Animal Science National Meeting. Rapid City, SD. July, 1996.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1996.
- American Association of Swine Practitioners National Convention. Nashville, TN. March, 1996.
- Pig Group Swine Seminar. Winter Park, CO. February, 1996.
- Pork Profitability Summit. Des Moines, IA. November, 1995.
- NPPC Educators Conference. Des Moines, IA. September, 1995.
- Lemman Swine Conference. St. Paul, MN. September, 1995.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1995.
- American Association of Swine Practitioners National Convention. Omaha, NE. March, 1995.
- PigWorld Swine Seminar. Copper Mountain, CO. February, 1995.
- Western Canadian Association of Swine Practitioners Annual Meeting. Saskatoon, Sask. Canada. October, 1994.
- Lemman Swine Conference. St. Paul, MN. September, 1994.
- American Society of Animal Science National Meeting. Minneapolis, MN. July, 1994.
- World Pork Expo Swine Seminars. Indianapolis, IN. June, 1994.
- Pfizer Swine Conference. Indianapolis, IN. June, 1994.
- National Extension Animal Science Conference. Columbia, MO. May, 1994.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1994.
- American Association of Swine Practitioners National Convention. Chicago, IL. March, 1994.
- Pig Group Swine Seminar. Copper Mountain, CO. February, 1994.
- Banff Pork Seminar. Banff, Alberta, Canada. January, 1994.
- Networking - Competitive Positioning for Pork Producers. West Des Moines, IA. December, 1993.
- Lemman Swine Conference. St. Paul, MN. September, 1993.
- World Pork Expo Swine Seminars. Des Moines, IA. June, 1993.

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- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1993.
- American Association of Swine Practitioners National Convention. Kansas City, MO. March, 1993.
- Pig Group Swine Seminar. Keystone, CO. February, 1993.
- Minnesota Swine Conference for Veterinarians. St. Paul, MN. September, 1992.
- George Young Swine Conference. Lincoln, NE. August, 1992.
- American Society of Animal Science National Meeting. Ames, IA. July, 1992.
- Pfizer Research Conference. Washington DC. May, 1992.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1992.
- American Association of Swine Practitioners National Convention. Nashville, TN. March, 1992.
- American Society of Animal Science National Meeting. Laramie, WY. July, 1991.
- American Association of Swine Practitioners National Convention. Minneapolis, MN. March, 1991.
- Annual Meeting of Midwest Section, ASAS. Des Moines, IA. March, 1991.

PROFESSIONAL DEVELOPMENT - NON-SUBJECT MATTER

- Time management – communicating expectations. October, 2009
- New classified employee evaluation system. April, 2009.
- Personal accountability. October, 2008.
- Financial accountability. July, 2008.
- Different views of the world. October, 2007.
- The question behind the question. August, 2006.
- Seeing whats right with the world. August, 2006
- Web management systems. August, 2006
- Using Myers-Briggs Type Indicator at work. November, 2005.
- Myers-Briggs Type Indicator training. July, 2002.
- Time management and mission statements. January, 2002.
- Extension programs in forestry. October, 2001.
- Using the logic model framework in planning programs. November, 2000.
- EzWeb Update: Maintain your own web page without programming. November, 2000.
- Consulting guidelines and training. August, 2000.
- Myers-Briggs Type Indicator training. June, 2000.
- World wide web training. November, 1997.
- Personality profiling (Elanco). December, 1996.
- Zig Ziglar - Getting started (Tape course). November, 1996.
- Zig Ziglar - Goal setting (Tape course). November, 1996.
- Success 1996. October, 1996.
- Working as a Team. Denny McKilligan. August, 1996.
- PictureTel Training. March, 1996.
- Principle-Centered Leadership (video conference). December, 1995.
- Putting First Things First (Tape Course). September, 1995.
- Pegasus Mail Training. Manhattan, KS. October, 1994.
- Understanding Perspectives of Others. Manhattan, KS. October, 1994.
- Media Training by Carol Guacaro Industries. Manhattan, KS. July, 1994.
- Understanding the Mentoring Process. Manhattan, KS. May, 1994.
- Interpersonal Skills Development Seminars by Denny McKilligan. Manhattan, KS. May, 1994.
- Annual CAES/AES Conference Workshops. Manhattan, KS. 1991, 1992, 1993, 1994, 1996.
- Myers-Briggs Personality Profiling. Manhattan, KS. October, 1993.
- True Colors Personality Training. Manhattan, KS. October, 1993.

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- Time Management (Day-Timer Tape Course). June, 1993.
- Time Management by Denny McKilligan. May, 1993.
- Seeking, Finding and Keeping Good Employees. Keystone, CO. February, 1993.
- Servant Leadership. Manhattan, KS. October, 1992.
- New Agent/Specialist Training. Manhattan, KS.