

Robert V. Knox, Ph.D.

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EDUCATION

1982 B.S. Agriculture, University of Delaware, Newark
1983-86 (School of Continuing Studies), The Johns Hopkins Univ., Baltimore, MD
1989 M.S. Animal Science, University of Nebraska, Lincoln
1992 Ph.D. Animal Science, University of Nebraska, Lincoln

PROFESSIONAL EMPLOYMENT

1982-86 Research Technician, Department of Physiological Chemistry, and Department of Immunology, The Johns Hopkins University School of Medicine, Baltimore, MD
1992-94 Post-Doctoral Research Associate, Animal Sciences, University of Missouri, Columbia and, Department of Physiology, Colorado State University, Fort Collins
1995-99 Assistant Professor, Department of Agriculture, Illinois State University, Normal
1999-2004 Assistant Professor, Department of Animal Sciences, University of Illinois, Urbana
2005-2015 Associate Professor, Department of Animal Sciences, University of Illinois, Urbana
2015-present Professor, Department of Animal Sciences, University of Illinois, Urbana

HONORS, RECOGNITIONS, AND OUTSTANDING ACHIEVEMENTS (*SELECTED*)

2005 Dept. of Animal Science, Carlisle Award for Excellence in Extension Education.
2006 IPPA Pork Information Partner Award: swine educational programming.
2006 National Pork Board Swine Educators Executive Board
2007 Award of Excellence in Individual Extension Programming.
2012 A.D. Leman Science in Practice Award for outstanding research
2014 College of ACES Senior Award for Excellence in Extension

EDITORSHIPS

1. Domain editor, Pig Reproduction. Pork Information Gateway (2005-2012)
2. Guest editor, Theriogenology 70:2008.
3. Guest Editor, Reprod. Dom. Anim. 50:2015

REVIEW PANELS

USDA NIFA Panel, AFRI Food Security FY2012 Global Food Security Translational genomics for disease resistance, fertility, extension

PUBLIC ENGAGEMENT (*SELECTED*)

Extension Workshops/Conferences/Web-based Distance Education

1. Illinois Pork Producers. Educational Seminars, Chair, organizing committee, 2010-present
2. Animal systems team. Chair, 2007-present.
3. Pork Quality Assurance Advisor Trainer 2010-present.
4. International Boar Semen Preservation Conference VIII. Organizing committee, chair.
5. Export market Conference: Exploring opportunities for international gene transfer in pigs: Using new technologies to improve productivity and control disease. Manila, Philippines. Oct., 2011.
6. Sow Bridge Committee. 2012-present.

INVITED CONFERENCE PRESENTATIONS (*SELECTED SINCE 2005*)

International Conferences

1. 5th Annual London Swine Conference. Apr. 2005. Ontario, Canada. “Get to 30 Pigs/Sow/Year” and “Making Changes toward 30 Pigs/Sow/Year.”
2. AgroPecuario Expo de las Americas. Mar. 2005. Leon, Guanajuato, Mexico. “Maximizing semen fertility for use with AI in pigs” and “Getting to 30 Pigs/Sow/Year.”
3. China Animal Husbandry Expo. Nov. 2006. Dalian, China. “The impact of an artificial insemination program on herd productivity” and “Applying swine AI knowledge to create opportunities to capture higher fertility.”
4. University of Alberta Swine Breeding Management Workshop. Apr. 2006. Edmonton, Alberta, Canada. “Real time ultrasound use for reproductive assessment” and “Workshop practicum.”
5. VIth International Conference on Boar Semen Preservation. Aug. 2007. Guelph, ON, Canada. “An update on AI use in North America.”
6. International Conference on Pig Reproduction. June 2009. Banff, Alberta, Canada. “Variation in follicle development in weaned sows.”
7. International Pig Veterinary Society Meeting. July 2010. Vancouver, BC Canada. “Use of PG600 in replacement gilts with unknown reproductive status: Ovarian, estrual and fertility responses.”
8. United States Livestock Genetic Export Emerging Markets Program. Sept. 2010. Manila, Philippines. “Use of frozen swine semen.”
9. Intervet-Schering Plough Partners in Reproduction Workshop. 2010. Canada. “Successes and failures in detection of estrus in the breeding herd” and “Induction and synchronization of estrus in prepubertal gilts.” Montreal, Oct. 4; Toronto, Oct. 6; Manitoba, Oct. 8.
10. Hypor, Inc., Producer Education Conference. Jan. 2011. Winnipeg, Ontario, Canada. “How production practices influence reproductive performance.”
11. CEVA Trends in Sow Reproduction. Apr. 2011. Madrid, Spain. “Reproductive management in large swine breeding farms in North America.”
12. Bayer Symposium, Reproduccion Porcina, XLVI Congreso AMVEC. July 2011. Puerta Vallarta, Jalisco, Mexico. “The physiology of reproduction in female swine.”
13. International Boar Semen Preservation Conference VII. Bonn, Germany. Aug. 2011. “The current value of frozen boar semen for commercial companies” and “The effect of prostaglandin addition to low numbers of frozen thawed boar sperm.”
14. Wageningen University Departmental Seminar. Sept. 2011. Wageningen, Netherlands. “Fertility and well-being concerns of North American pig breeding herds and its relation to management in stalls or pens.”
15. United States Livestock Genetics Export Association and USDA FAS Meeting, Exploring Opportunities for International Gene Transfer in Pigs. Oct. 2011. Manila, Philippines. “An update and overview of the US swine industry” and “An update on technology for use of frozen thawed boar semen.”
16. V Congresso da Sociedade Cientifica de Suinicultura Reproducao, Estacao Zootechnica Nacional. Nov. 2011. Lisbon, Portugal. “The physiology of sperm production and the reproductive management of boars for fertility.”
17. University of Alberta-University of Minnesota Reproduction Workshop, Allen D. Lemman Swine Conference. Sept. 2012. St. Paul, MN. “Gilt development and induction management for fertility and longevity.”
18. Thailand Swine Seminar, Approaches to Improving Pig Unit. Oct. 2012. Ratchiburi, Thailand. “Approaches to improve litter size and farrowing rate in swine breeding herds” and “Improving swine herd genetics with AI and gilt replacement.”
19. VIII SINSUI. Aug. 2013. Porto Alegre, Brazil. “Current status of sow housing in the USA.”
20. Lemman China Swine Conference. Oct. 2013. Xi’an, China. “Advanced AI technologies” and “The physiology of the weaned sow and management for estrus induction and fertility.”

21. University of Alberta Swine Breeding Management Workshop. May 2013. Edmonton, Alberta, Canada. "Effect of timing of mixing gilts and sows on reproductive performance and welfare."
22. Seminario Manejo Porcino. Jan. 2014. Santiago, Republica Dominicana. "Manejo fertilidad semental porcino" and "Inmunocascion en cerdos."

National Conferences

1. World Pork Expo Reproductive Seminar. June 2005. Des Moines, IA. "Programmed induction of estrus".
2. Advanced Swine Reproduction Management Seminar. 2005. 1) "AI skills and practices for success", and 2) "Using real-time ultrasound for pregnancy diagnosis and reproductive assessment". Waverly, IA Mar. 3, Sheldon, IA March 4.
3. National Pork Board Professional Swine Managers Conference. 2005. "Troubleshooting farrowing rate and litter size". Dayton, Ohio, Nov. 8, Clinton, NC, Nov. 9, Guymon, OK, Nov. 11, Marshall, MO, Nov. 12, Lansing., MI, Nov. 15, Springfield, IL, Nov. 16, Cedar Rapids, IA, Nov. 17, Mankato, MN, Nov. 18, Omaha, NE, Nov. 19.
4. Swine Reproduction Workshop. Dec 2006. Iowa City, IA. 1) "Reproductive anatomy and physiology" and 2) "Boar libido and sow synchronization".
5. Midwest American Society of Animal Sciences, Billy Day Symposium. Mar. 2007. Des Moines, IA. "Control of ovulation in swine."
6. Annual Meeting of the American Association of Swine Veterinarians. Orlando, FL. Mar. 2007. "Identifying the sources of variation in estrus and ovulation in weaned sows for AI timing and application of fixed time AI."
7. American Association of Swine Veterinarians Summer Conference. June 2007. Ames, IA. "Advanced techniques for swine veterinarians" and "Advanced ultrasound techniques."
8. Annual Meeting of the American Association of Swine Veterinarians. Mar. 2010. Omaha, NE. "Estrus and ovarian responses following PG600 administration to cyclic gilts."
9. Iowa State University Summer Swine Short Course. June 2010. Ames, IA. "Dealing with hot weather and the breeding herd."
10. SowBridge. August, 2010. Online. "Pregnancy detection technology for troubleshooting reproductive failure".
11. University of Minnesota College of Veterinary Medicine, Allen D. Leman Swine Conference. Sept. 2011. Minneapolis, MN. "Effect of day of mixing gestating sows on measures of reproduction and animal well-being."
12. Annual meeting of the American Association of Swine Veterinarians. Mar. 2013. San Diego, CA. "Association of gilt vulval score with follicle development and expression of estrus."
13. Midwest ASAS Physiology Symposium. Mar. 2013. Des Moines, IA. "Follicle development and insemination technology and its impact on fertility in swine."
14. Merck Animal Health Producer Seminars. 2013. "Understanding replacement gilt physiology for improved induction of puberty and synchronization of estrus" and "The reproductive physiology of the weaned sow and management for estrus induction and fertility following AI." Quad Cities, IL, March; Ames, IA, May.
15. University of Alberta-University of Minnesota. Reproduction Workshop, Allen D. Leman Swine Conference. Sept. 2013. St. Paul, MN. "Forming gilt and sow groups."
16. American Association of Swine Veterinarians Annual Pre-conference Workshop. Mar. 2014. Dallas, TX. "The physiology behind technologies for control of reproduction in swine."
17. Swine Vet Center Reproduction Meeting. May 2014. Mankato, MN. "Update and review on proper gilt development on the farm."

PUBLICATIONS

Chapters in Books

1. Knox, R.V. and W. Wilson. 2006. Induction of estrus and control of the estrous cycle in swine. In: Current Therapy In Large Animal Theriogenology, 2nd ed. R. Youngquist and W. Threlfall (eds), Saunders Elsevier; St. Louis, MO. pp. 757-764.
2. Knox, R.V. 2014. Impact of swine reproductive technologies on pig and global food production. In: Adv. Exp. Med. Biol. 752:131-60. Current and Future Reproductive Technologies and World Food Production. G. C. Lamb and N. DiLorenzo (eds), Springer, NY.

Related Journal Articles (selected of 42)

1. Knox, R.V., and G.C. Althouse. 1999. Visualizing the reproductive tract of the female pig using real-time ultrasonography. *J. Swine Health Prod.* 7:207-215.
2. Knox, R.V., and S.L. Rodriguez-Zas. 2001. Factors influencing estrus and ovulation in weaned sows as determined by transrectal ultrasound. *J. Anim. Sci.* 79:2957-2963.
3. Knox, R.V., S.M. Breen, K.L. Willenburg, S. Roth, G.M. Miller, K.M. Ruggiero, and S.L. Rodriguez-Zas. 2004. Effect of housing system and boar exposure on estrous expression in weaned sows. *J. Anim. Sci.* 82:3088-3093.
4. Breen, S.M., K.L. Farris, S.L. Rodriguez-Zas, and R.V. Knox. 2005. Effect of age and physical or fence-line boar exposure on estrus and ovulation response in prepubertal gilts administered PG600. *J. Anim. Sci.* 83: 460-465.
5. Breen, S.M., K.L. Farris, S.L. Rodriguez-Zas, and R.V. Knox. 2005. Effect of age and physical or fence-line boar exposure on estrus and ovulation response in prepubertal gilts administered PG600. *J. Anim. Sci.* 83: 460-465.
6. Scolari, S., S. Clark, M. Tomassia, and R. Knox. 2011. Vulvar skin temperature changes significantly during estrus in swine as determined by digital infrared thermography. *J. Swine Health and Prod.* 19:151-55.
7. Knox RV, Rodriguez Zas SL, Slotter NL, McNamara KA, Gall TJ, Levis DG, Safranski TJ, Singleton WL. 2013. An analysis of survey data by size of the breeding herd for the reproductive management practices of North American sow farms. *J. Anim. Sci.* 91:433-45.
8. Canaday DC, Salak-Johnson JL, Visconti AM, Wang X, Bhalerao K, Knox RV. 2013. Effect of variability in lighting and temperature environments for mature gilts housed in gestation crates on measures of reproduction and animal well-being. *J. Anim. Sci.* 91:1225-1236.
9. Knox, R., J. Salak-Johnson, M. Hopgood, L. Greiner, and J. Connor. 2014. Effect of day of mixing gestating sows on measures of reproductive performance and animal welfare. *J. Anim. Sci.* 92:1698-707.
10. Knox, R.V. J. N. Taibl S. M. Breen, M. E. Swanson, S. K. Webel. 2014. Effects of altering the dose and timing of triptorelin when given as an intravaginal gel for advancing and synchronizing ovulation in weaned sows. *Theriogenology* 82:379-386.
11. Knox RV. Recent advancements in the hormonal stimulation of ovulation in swine. *Vet. Med.: Research and Reports.* 2015;6:309-320.
12. Knox RV. Artificial insemination in pigs today. *Theriogenology.* 2015.

Proceedings (selected since 2005)

1. Knox, R.V. 2005. Getting to 30 Pigs Weaned/Sow/Year. Proc. of the London Swine Conference. pp 47-60.
2. Knox, R., D. Levis, T. Safranski, and W. Singleton. 2008. North American Boar Stud Survey Summary. Proc. of the Midwest Boar Stud Managers Conference III. pp 1-9.
3. Purdy, P., R. Knox, W. Singleton, K. Spencer, S.F. Spiller, T. Stewart, N. Tharp, C.S. Welsh, H.D. Blackburn. 2008. Perspectives on cryopreservation, quality control, and artificial insemination of frozen

thawed boar sperm in a national repository. Proc. of the Midwest Boar Stud Managers Conference III. pp 1-9.

4. Knox, R. and M. Bojko. 2013. Association of gilt vulval score with follicle development and expression of estrus. Proceedings of the 44th Annual Meeting of the American Association of Swine Veterinarians. pp 43-44.
5. Knox, R. 2013. North American view on new housing systems for sows. Proceedings of the VIII SINSUI. pp 11-30.
6. Knox, R. 2014. The physiology behind technologies for control of reproduction in swine. Pre-conference workshop. Proceedings of the 45th Annual Meeting of the American Association of Swine Veterinarians. pp 1-13.
7. R.V. Knox, S. K. Weibel, M. E. Johnston, M. Swanson and R. R. Kraeling. 2015. The timing of estrus and ovulation in gilts synchronized using Matrix® and the effects of synchronizing ovulation using OvuGel® on fertility. AASV.
8. J. Shen, L. Greiner¹, J. Connor, and R. Knox. 2015. Effect of timing of gilt relocation from group pens to individual stalls on measures of fertility and well-being. AASV.

Refereed Conference Papers and Presentations (selected since 2005)

1. Knox, R.V. and W.L. Flowers. 2006. Real time ultrasound for pregnancy diagnosis in swine. Pork Information Gateway. PIG 08-04-01 pp 1-8.
2. Knox, R. 2008. How to evaluate boar semen for quality. Pork Information Gateway. <http://www.porkgateway.org>. pp 1-2.
3. Knox, R. 2008. How to manage replacement gilts for breeding. Pork Information Gateway <http://www.porkgateway.org>. pp 1-2.
4. Knox, R. and M. Estienne. 2013. Group housing systems: Forming gilt and sow groups. NPB #03644-3/13 pp 1-11. www.pork.org/resources.

Popular Press Publications (selected since 2005)

1. Knox, R. 2005. Bigger is better when litter size is the measure. Illinois Agrinews D. July 2005.
2. Knox, R. 2005. Pregnancy diagnosis: Seven testers evaluated. Pig International, Oct 35:10-12.
3. Knox, R. 2006. Farrowing time tips. Illinois Agrinews. Jan 6, D-6.
4. Knox, R. 2007. Troubleshooting reproductive failure in the breeding herd requires careful detective work. Illinois Agrinews, Jan.
5. Knox, R. 2007. On International Pork Production. Illinois Agrinews. July 6.
6. Knox, R. 2008. The keys to success with Matrix use in gilts. Pork Magazine. Fall.
7. Knox, R. 2008. Methodology for Lower Numbers of Sperm for Swine AI. SUI 52:10-12
8. Knox, R. 2008. Survey highlights semen collection practices. Pig International. Nov.
9. Spencer, K. and R. Knox. 2008. Frozen boar semen shows promise. National Hog Farmer. Dec.
10. Knox, R. 2009. Preparing for summer breeding. Illinois Agrinews. June.
11. Knox, R. 2010. Swine breeders are encouraged to review all management areas of their operation. Illinois Agrinews. Feb 05.
12. Knox, R. 2010. Considering alternative methods to castration in pigs. Illinois Agrinews. Nov.
13. Knox, R. 2011. Mycotoxins in swine feeds and impact on reproduction. Illinois Agrinews. Feb.
14. McNamara, K. A. and R.V. Knox. 2011. Thawing Step is Critical to Frozen Boar Semen Fertility. National Hog Farmer. December: 17.
15. Knox, R. 2012. Stalls or groups: It's a complex issue. Pork Magazine Oct. pp. 24-25.