

Curriculum Vitae

Patrick G. Halbur

Professor and Chair, Veterinary Diagnostic and Production Animal Medicine
Executive Director, Veterinary Diagnostic Laboratory
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PROFESSIONAL EXPERIENCE:

October 1, 2006-June 1, 2017 and October 1, 2018-Present. Professor and Chair, Department of Veterinary Diagnostic and Production Animal Medicine and Executive Director of the Veterinary Diagnostic Laboratory, Iowa State University, College of Veterinary Medicine, Ames, Iowa.

July 1, 2017-September 30, 2018. Interim Dean, Iowa State University College of Veterinary Medicine, Ames, Iowa.

June 1-June 30, 2017. Acting Dean, Iowa State University College of Veterinary Medicine, Ames, Iowa.

May 15, 2005-September 30, 2006. Professor and Interim Chair, Department of Veterinary Diagnostic and Production Animal Medicine and Executive Director of the Veterinary Diagnostic Laboratory, Iowa State University, College of Veterinary Medicine, Ames, Iowa.

October 15, 2004-June 30, 2005. Interim Associate Dean for Public Services and Outreach, College of Veterinary Medicine, Iowa State University, Ames, Iowa.

2004-present. Professor, Veterinary Diagnostic and Production Animal Medicine, Iowa State University Veterinary Diagnostic Laboratory, Ames, Iowa.

1998-2003. Associate Professor, Veterinary Diagnostic and Production Animal Medicine, Iowa State University Veterinary Diagnostic Laboratory, Ames, IA.

1999-2001. Pathology Section Leader, Iowa State University Veterinary Diagnostic Laboratory, Ames, IA.

1994-1997. Assistant Professor of Veterinary Pathology, Iowa State University Veterinary Diagnostic Laboratory, Ames, IA.

1992-1994. Post Doctoral Research Fellow, Veterinary Medical Research Institute, Iowa State University, Ames, IA.

1990-1992. Adjunct Instructor of Veterinary Pathology, Iowa State University Veterinary Diagnostic Laboratory, Ames, IA.

1986-1990. Private Veterinary Practitioner, partner/owner in the Veterinary Medical Center, a five-veterinarian mixed animal practice in Williamsburg, IA.

EDUCATION:

PhD (Veterinary Pathology), 1995, Iowa State University
MS (Veterinary Pathology), 1992, Iowa State University
DVM (Doctor of Veterinary Medicine), 1986, Iowa State University

ACADEMIC LEADERSHIP EXPERIENCE

Interim Dean, Iowa State University College of Veterinary Medicine

The dean of the College oversees operation of and provides leadership for the teaching, research and professional practice missions of the Iowa State University College of Veterinary Medicine (ISU CVM). The ISU CVM has approximately 600 professional veterinary students seeking DVM degrees, 200 graduate students seeking MS or PhD degrees, and 170 faculty.

The College has a thriving basic and clinical research program with approximately \$17 million/year in research expenditures, consistently ranking at or the near the top in USDA funding. The primary service units include the Veterinary Diagnostic Lab (VDL), the Lloyd Veterinary Medical Center (LVMC), Veterinary Pathology (VET PATH), and the Veterinary Field Service (VFS) units. In addition to serving stakeholders through provision of diagnostic and medical services, these service units provide valuable clinical learning opportunities for students and materials and ideas for research. As part of a land-grant institution, extension and outreach services are also a major responsibility and point of pride for the College. The dean of the College plays a major role in alumni and stakeholder relations and fundraising. As the oldest veterinary college at a public institution, and one of the largest of the 30 veterinary colleges in the US, the ISU CVM has one of the largest groups of living alumni (over 6300). The dean is expected to foster productive relationships with aligned government agencies and professional associations such as the National Centers for Animal Health in Ames, the Iowa Department of Agriculture and Land Stewardship, the Iowa Veterinary Medical Association and others.

Chair of the Department of Veterinary Diagnostic and Production Animal Medicine

Administration of the department of Veterinary Diagnostic and Production Animal Medicine (VDPAM) is the responsibility of the Chair in consultation with the departmental faculty and College and University administrations. VDPAM is comprised of approximately 55 faculty and 150 staff. The Chair has overall administrative responsibility for all functions of the department and serves as the Executive Director of the Veterinary Diagnostic Laboratory. The Chair provides leadership, vision, and planning in accordance with the strategic plans of the department, the College and the University. Specific duties include: supervising the teaching, research, professional practice, and Extension functions of the department; managing financial and business affairs for all departmental activities; administering the ISU Veterinary Diagnostic Laboratory consistent with AAVLD accreditation requirements and Extension in accordance with policies, procedures, and regulations of Iowa State University Extension; representing the department with the Vice-President for University Extension and Outreach, the Dean's cabinet and to various groups and organizations; evaluating faculty and staff performance including the promotion and tenure process; appointing departmental committees including the chairs, members and making charges to the committees; advising the faculty on matters related to productivity and professional development, and performing whatever other duties are assigned by the Dean of the College. The Chair is responsible for maintaining a supportive and collegial environment for integration of Extension, Food Supply Veterinary Medicine, and the Veterinary Diagnostic Laboratory into a common departmental mission that provides excellent programs in teaching, research, professional practice, and Extension.

Executive Director, Iowa State University Veterinary Diagnostic Laboratory (ISU VDL)

The Executive Director of the ISU VDL works closely with the Director of Operations of the ISU VDL to administer the VDL to assure the lab remains accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD) and provides appropriate, customer-centric services to livestock and poultry producers and pet owners in Iowa and the region. The VDL Director of Operations reports to and assists the Executive Director in providing leadership, vision, planning and management of the ISU VDL consistent with AAVLD accreditation requirements. Responsibilities assigned by the Executive Director to the Director of Operations include: managing the professional practice functions of the ISU VDL, managing the financial and business affairs of the laboratory, advising the Chair on faculty and staff evaluation and promotion and/or tenure, and advising the Chair concerning ISU VDL programmatic needs consistent with the strategic plan and the mission of the Department, College and University. The Executive Director and the Director of Operations represents the ISU VDL on the Dean's Cabinet and both interacts on a regular basis with the Iowa Veterinary Medical Association and

stakeholder groups such as the Iowa Pork Producers Association, Iowa Cattlemen's Association, Iowa Poultry Association, Iowa State Dairy Association and others.

SELECTED RECENT HONORS AND AWARDS:

2018: Iowa Veterinary Medical Association *Veterinarian of the Year*.

2018: Iowa State University College of Veterinary Medicine Alumni Association *Outstanding Service Award*

2017: Fellow of the National Academy of Inventors (Inducted in 2016)

2015: Iowa State University Award for Achievement in Intellectual Property

2014: Named to the "*Masters of the Pork Industry*" by the National Hog Farmer magazine.
<http://viewer.zmags.com/publication/32ddd069#/32ddd069/1>

2012: Iowa State University Award for Departmental Leadership

2007: Alpha Gamma Rho Agriculture Fraternity, Alumni Career Achievement Award

2004: Honorary Iowa Master Pork Producer in recognition of outstanding service to the Iowa swine industry

2004: Meritorious Service Award from the Iowa Veterinary Medical Association

2003: Pfizer Faculty Research Excellence Award

1998: Howard W. Dunne Memorial Award for "*Outstanding Service to the American Association of Swine Veterinarians and the Swine Industry*"

1996: Iowa State University Award for "*Early Achievement in Extension and Professional Practice*"

1995: Iowa State University Graduate Student Research Award

1995: Gamma Sigma Delta honor society of agriculture

1992: Phi Zeta honor society of veterinary medicine

1992: Phi Kappa Phi honor society

1991: Outstanding graduate student presentation at the American Association of Veterinary Laboratory Diagnosticians Annual Meeting

1991: Charles Louis Davis Foundation-outstanding pathology graduate student

1986: G.G. Graham Award for proficiency in large animal clinical medicine

PROFESSIONAL AND ACADEMIC ASSOCIATIONS:

American Association for the Advancement of Science (AAAS)

American Association of Veterinary Laboratory Diagnosticians (AAVLD)

AAVLD Co-Chair Government Relations Committee (2018-present)

AAVLD President (2016-2017)

AAVLD President Elect (2015-2016)

AAVLD Vice President (2014-2015)

AAVLD Executive Board for North Central Region (2011-2014)

American Association of Swine Veterinarians (AASV)

AASV Board of Directors 2004-2007

2002, 2003, 2004, 2007 AASV Annual Meeting Planning Committee

2002 and 2003 Chair of Emerging Swine Diseases Session for the Annual Meeting

2007 Chair of Research Topics Session

American Veterinary Medical Association

National Academy of Inventors

Iowa Veterinary Medical Association (IVMA)

Past President (2003-4), **President (2002-3)**, President Elect (2001-2), Vice Pres. (2000-1)

IVMA Legislative Committee (2002-Present)

IVMA Executive Board and Administrative Committee Member (2000-2004)

IVMA Swine Disease Committee (1993-2000)

IVMA Long Range Planning Committee (2002-2004)

IVMA Professional Growth and Development Committee (2001-2003)

IVMA Public Relations Committee (2001-2003)

IVMA Membership Committee (2001-2003)

IVMA Animal Welfare Committee (2001-2003)

IVMA Annual Meeting Planning Committee (2001-2003)

IVMA Budget Committee (2001-2003)

Planning Committee Chair, Nine States Veterinary Conference, August 22-24, 2003.

Iowa Veterinary Medical Association Foundation, **President 2003-2005**.

Iowa Farm Bureau Association member

Iowa Corn Growers Association member

Iowa Cattleman's Association associate member

Iowa Pork Producers Association associate member

Iowa Poultry Association associate member

Iowa State Dairy Association associate member

Iowa Sheep and Wool Producers Association associate member

REFEREED MANUSCRIPTS PUBLISHED: (19,953 citations, h-index 74, i-10 index 167)

<https://scholar.google.com/citations?hl=en&user=TmyQSOkAAAAJ>

216. Ramirez BC, Xin H, **Halbur PG**, Beermann DH, Hansen, SL, Linhares DCL, Peschel JM, Rademacher CJ, Reecy, JM, Ross JW, Shepherd TA, Koltjes JE. At the intersection of industry, academia and government: How do we facilitate productive precision livestock farming in practice? *Animals*, 9(9), 635. doi:10.3390/ani9090635, 2019.
215. Hewitt JS, Karuppanan AK, Swan T, Gauger P, **Halbur P**, Gerber PF, De Groot AS, Moise L, Opriessnig T. A prime-boost concept using a T-cell epitope-driven DNA vaccine followed by a whole virus vaccine effectively protected pigs in the pandemic H1N1 pig challenge model. *Vaccine* 37(31), 4302-4309, 2019.
214. Opriessnig T, Castro AMMG, Karuppanan AK, Gauger P, **Halbur PG**, Matzinger SR, Meng X-J. A porcine circovirus type 2b (PCV2b)-based experimental vaccine is effective in the PCV2b-*Mycoplasma hyopneumoniae* coinfection pig model. *Vaccine* 37(44) 6688-6695, 2019.
213. Duffy MA, Chen Q, Zhang J, **Halbur PG**, Opriessnig T. Impact of dietary spray-dried bovine plasma addition on pigs infected with porcine epidemic diarrhea virus. *Translational Animal Science* 2 (4), 349-357, 2018.
212. Opriessnig T, Gauger PC, Gerber PF, Castro AMMG, Shen H, Murphy L, Digard P, **Halbur PG**, Xia M, Jiang X, Tan M. Comparison of the efficacy of a commercial inactivated A/H1N1/pdm09 virus (pH1N1) vaccine and two experimental M2e-based vaccines against pH1N1 challenge in the growing pig model. *PloS One* 13 (1), e0191739, 2018.
211. Opriessnig T, Gerber PF, Halbur PG. Refinement of a colostrum-deprived pig model for infectious disease research. *MethodsX* 5, 403-413, 2018.
210. Opriessnig T, Gerber PF, Matzinger SR, Meng XJ, **Halbur PG**. Markedly different immune responses and virus kinetics in littermates infected with porcine circovirus type 2 or porcine parvovirus type 1. *Veterinary Immunology and Immunopathology* 191:51-59, DOI: 10.1016/j.vetimm.2017.08.003, 2017.
209. Opriessnig T, Gerber P, Shen H, de Castro AMMG, Zhang J, Chen Q, **Halbur P**. Evaluation of the efficacy of a commercial inactivated genogroup 2b-based porcine epidemic diarrhea virus (PEDV) vaccine and experimental live genogroup 1b exposure against 2b challenge. *Veterinary Research* 48 (1), 69. DOI: 10.1186/s13567-017-042-z, 2017.
208. Ma Z, Yu Y, Xiao Y, Opriessnig T, Wang R, Yang L, Nan Y, Samal SK, **Halbur PG**, Zhang YJ. The middle half genome of interferon-inducing porcine reproductive and respiratory syndrome virus strain A2MC2 is essential for interferon induction. *Journal of General Virology* 98 (7): 1720-1729, DOI: 10.1099/jgv.0.000819, 2017.

207. Manne S, Kondru N, Nichols T, Lehmkuhl A, Thomsen B, Main R, **Halbur P**, Dutta S, Kanthasamy AG. Ante-mortem detection of chronic wasting disease in recto-anal mucosa-associated lymphoid tissues from elk (*Cervus elaphus nelsoni*) using real-time quaking-induced conversion (RT-QuIC) assay: A blinded collaborative study. *Prion* 11 (6):415-430 DOI: [10.1080/19336896.2017.1368936](https://doi.org/10.1080/19336896.2017.1368936), Nov 3:1-16, 2017.
206. Opriessnig T, Xiao CT, **Halbur PG**, Gerber PF, Matzinger SR, Meng XJ. A commercial porcine circovirus (PCV) type 2a-based vaccine reduces PCV2d viremia and shedding and prevents PCV2d transmission to naïve pigs under experimental conditions. *Vaccine* 5;35(2):248-254, 2017.
205. Fontanella E, Ma Z, Zhang Y, de Castro AM, Shen H, **Halbur PG**, Opriessnig T. An interferon inducing porcine reproductive and respiratory syndrome virus vaccine candidate elicits protection against challenge with the heterologous virulent type 2 strain VR-2385 in pigs. *Vaccine*. 35(1):125-131, 2017.
204. Kondru N, Manne S, Greenlee J, Greenlee HW, Anantharam V, **Halbur P**, Kanthasamy Ar, Kanthasamy A. Integrated Organotypic Slice Cultures and RT-QuIC (OSCAR) Assay: Implications for Translational Discovery in Protein Misfolding Diseases. *Sci Rep*. 2017; 7: 43155. Published online 2017 Feb 24. DOI: [10.1038/srep43155](https://doi.org/10.1038/srep43155).
- 203 Ma Z, Yu Y, Xiao Y, Opriessnig T, Wang R, Yang L, Nan Y, Samal SK, **Halbur PG**, Zhang YJ. Sustaining interferon induction by a high-passage atypical porcine reproductive and respiratory syndrome virus strain. *Scientific Reports* 2;6:36312, 2016.
202. Xiao CT, Harmon KM, **Halbur PG**, Opriessnig T. PCV2d-2 is the predominant type of PCV2 DNA in pig samples collected in the U.S. during 2014-2016. *Veterinary Microbiology* 197:72-77, 2016.
201. Evenson D, Gerber PF, Xiao CT, **Halbur PG**, Wang C, Tian D, Ni YY, Meng XJ, Opriessnig T. A porcine reproductive and respiratory syndrome virus candidate vaccine based on the synthetic attenuated virus engineering approach is attenuated and effective in protecting against homologous virus challenge. *Vaccine* 34:5546-5553, 2016.
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197. Manne S, Kondra N, Haley N, Nichols T, Thomsen B, Main R, **Halbur P**, Kanthasamy A, Kanthasamy A. An independent and blinded confirmation of real-time quaking-induced conversion (RT-QuIC) analysis of cervid rectal biopsy for detection of chronic wasting disease. *Prion* 9 S93-S93, 2015.
196. Kondra N, Greenlee J, Greenlee H, Manne S, Kong Q, **Halbur P**, Kanthasamy A, Kanthasamy A. Development and characterization of an *ex-vivo* brain slice culture model of chronic wasting disease, *Prion* 9, S68-S68, 2015.
195. Opriessnig T, Xiao CT, Gerber PF, Zhang J, **Halbur P**. Porcine epidemic diarrhea virus RNA present in commercial spray-dried porcine plasma is not infectious to naïve pigs. *PLoS One*. 2014 Aug 12;9(8):e104766. doi: [10.1371/journal.pone.0104766](https://doi.org/10.1371/journal.pone.0104766). eCollection 2014.

194. Gerber PF, Xiao CT, Chen Q, Zhang J, **Halbur PG**, Opriessnig T. The spray-drying process is sufficient to inactivate infectious porcine epidemic diarrhea virus in plasma. *Veterinary Microbiology* 174(1):86-92, 2014.
193. Opriessnig T, Xiao CT, Gerber PF, **Halbur PG**. Identification of recently described porcine parvoviruses in archived North American samples from 1996 and association with porcine circovirus associated disease. *Veterinary Microbiology* 173(1):9-16, 2014.
192. Opriessnig T, Xiao CT, Gerber PF, **Halbur PG**, Matzinger SR, Meng XJ. Mutant USA strain of porcine circovirus type 2 (mPCV2) exhibits similar virulence to the classical PCV2a and PCV2b strains in caesarian-derived colostrums-deprived pigs. *Journal of General Virology* 95 (Pt11):2495-2503, 2014.
191. Opriessnig T, Gerber PF, Xiao CT, **Halbur PG**, Matzinger SR, Meng XJ. Commercial PCV2a-based vaccines are effective in protecting naturally PCV2b-infected finisher pigs against challenge with a 2012 mutant PCV2. *Vaccine* 32(34):4342-4348, 2014.
190. Giménez-Lirola LG, Gerber PF, Rowland RR, **Halbur PG**, Huang YW, Meng XJ, Opriessnig T. Development and validation of a 4-plex antibody assay for simultaneous detection of IgG antibodies against Torque teno sus virus 1 (TTSuV1), TTSuV2, and porcine reproductive and respiratory syndrome virus types 1 and 2. *Research in Veterinary Science* 96(3):543-550, 2014.
189. Gerber PF, Giménez-Lirola LG, **Halbur PG**, Zhou L, Meng XJ, Opriessnig T. Comparison of commercial enzyme-linked immunosorbent assays and fluorescent microbead immunoassays for detection of antibodies against porcine reproductive and respiratory syndrome virus in boars. *Journal of Virological Methods* 197:63-66, 2014.
188. Jiang YH, Xiao CT, Yin SH, Gerber PF, **Halbur PG**, Opriessnig T. High prevalence and genetic diversity of porcine bocaviruses in pigs in the USA, and identification of multiple novel porcine bocaviruses. *Journal of General Virology* 95(2):453-465, 2014.
187. Hemann M, Beach NM, Meng XJ, Wang G, **Halbur PG**, Opriessnig T. A live-attenuated and an inactivated chimeric porcine circovirus (PCV) 1-2 vaccine are both effective at inducing a humoral immune response and reducing PCV2 viremia and intrauterine infection in female swine of breeding age. *Canadian Journal of Veterinary Research* 78(1):8-16, 2014.
186. Giménez-Lirola LG, Jiang YH, Sun D, Hoang H, Yoon KJ, **Halbur PG**, Opriessnig T. Simultaneous detection of antibodies against Apx toxins ApxI, ApxII, ApxIII, and ApxIV in pigs with known and unknown *Actinobacillus pleuropneumoniae* exposure using a multiplexing liquid array platform. *Clinical and Vaccine Immunology* 21(1):85-95, 2014.
185. Opriessnig T, Gerber PF, Xiao CT, Mogler M, **Halbur PG**. A commercial vaccine based on PCV2a and an experimental vaccine based on a variant mPCV2b are both effective in protecting pigs against challenge with a 2013 U.S. variant mPCV2b strain. *Vaccine* 32(2):230-237, 2014.
184. Wang R, Xiao Y, Opriessnig T, Ding Y, Yu Y, Nan Y, Ma Z, **Halbur PG**, Zhang YJ. Enhancing neutralizing antibody production by an interferon-inducing porcine reproductive and respiratory syndrome virus strain. *Vaccine* 31:5537-5543, 2013.
183. Owolodun OA, Giménez-Lirola LG, Gerber PF, Sanford BJ, Feagins AR, Meng XJ, **Halbur PG**, Opriessnig T. Development of a fluorescent microbead-based immunoassay for the detection of hepatitis E virus IgG antibodies in pigs and comparison to an enzyme-linked immunoassay. *Journal of Virological Methods* 193(2):278-283, 2013.
182. Yin SH, Xiao CT, Gerber PF, Beach NM, Meng XJ, **Halbur PG**, Opriessnig T. Concurrent porcine circovirus type 2a (PCV2a) or PCV2b infection increases the rate of amino acid mutations of porcine reproductive and respiratory syndrome virus (PRRSV) during serial passages in pigs. *Virus Research* 178:445-451, 2013.

181. Gerber P, Johnson J, Shen H, Striegel D, Xiao C-T, **Halbur P**, Opriessnig T. Association of concurrent porcine circovirus (PCV) 2a and 2b infection with PCV associated disease in vaccinated pigs. *Research in Veterinary Science*. 95(2):775-781, 2013.
180. Xiao CT, Giménez-Lirola LG, Jiang YH, **Halbur PG**, Opriessnig T. Characterization of a novel porcine parvovirus tentatively designated PPV5. *PLoS One*. June 7:8(6):e65312.doi:10.371/journal.pone.0065312, 2013.
179. Xiao CT, **Halbur PG**, Opriessnig T. Molecular evolutionary genetic analysis of emerging parvoviruses identified in pigs. *Infection, Genetics and Evolution* 16:369-376, 2013.
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176. Opriessnig T, Xiao CT, Gerber PF, **Halbur PG**. Emergence of a novel mutant PCV2b variant associated with clinical PCVAD in two vaccinated pig farms in the U.S. concurrently infected with PPV2. *Veterinary Microbiology* 163(1-2):177-83, 2013.
175. Opriessnig T, Hemann M, Johnson JK, Heinen S, Giménez-Lirola LL, O'Neill KC, Hoang H, Yoon KJ, Gottschalk M, **Halbur PG**. Evaluation of diagnostic assays for the serological detection of *Actinobacillus pleuropneumoniae* on samples of known or unknown exposure. *Journal of Veterinary Diagnostic Investigation* 25(1):61-71, 2013.
174. Giménez-Lirola LG, Xiao CT, Zavala M, Wang C, **Halbur PG**, Opriessnig T. Improving antemortem diagnosis of *Erysipelothrix rhusiopathiae* infection by use of oral fluids for bacterial, nucleic acid, and antibody detection. *Journal of Microbiological Methods* 92(2):113-121, 2013.
173. Ni Y, Opriessnig T, Zhou L, Cao DJ, Huang YW, **Halbur PG**, Meng XJ. Attenuation of porcine reproductive and respiratory syndrome virus by molecular breeding of the virus envelope genes from genetically divergent strains. *Journal of Virology*. 87:304-313, 2013.
172. Opriessnig T, O'Neill K, Gerber PF, Gomes de Castro AM, Giménez-Lirola LG, Beach NM, Zhou L, Meng XJ, Wang C, **Halbur PG**. A PCV2 vaccine based on genotype 2b is more effective than a 2a-based vaccine to protect against PCV2b or combined PCV2a/2b viremia in pigs with concurrent PCV2, PRRSV and PPV infection. *Vaccine* 31 (3):487-494, 2013.
171. Opriessnig T, Shen HG, Bender JS, Boehm JR, **Halbur PG**. *Erysipelothrix rhusiopathiae* isolates recovered from fish, a harbor seal, and the marine environment are capable of inducing characteristic cutaneous lesions in pigs. *Journal of Comparative Pathology* 148(4):365-372, 2013.
170. Xiao CT, Giménez-Lirola L, **Halbur PG**, Opriessnig T. Identification and characterization of novel porcine astroviruses (PAstV) with high prevalence and frequent co-infection of individual pigs with multiple PAstV genotypes. *Journal of General Virology*. 94(Pt3):570-582, 2013.
169. Xiao CT, Gerber P, Giménez-Lirola LG, **Halbur PG**, Opriessnig T. Characterization of porcine parvovirus type 2 (PPV2) which is highly prevalent in the USA. *Veterinary Microbiology*. 161:325–330, 2013.
168. Giménez-Lirola LG, Xiao CT, **Halbur PG**, Opriessnig T. Development and evaluation of an enzyme-linked immunosorbent assay based on a recombinant SpaA protein (rSpaA415) for detection of anti-Erysipelothrix spp. IgG antibodies in pigs. *Journal of Microbiological Methods*. 91:191-197, 2012.
167. Giménez-Lirola LG, Xiao CT, **Halbur PG**, Opriessnig T: Development of a novel fluorescent microbead-based immunoassay and comparison with three different enzyme

- immunoassay for detection of anti-Erysipelothrix spp. IgG antibodies in pigs with known and unknown exposure. *Journal of Microbiological Methods*. 91:73-79, 2012.
166. O'Neill KC, Hemann M, Giménez-Lirola LG, Halbur PG, **Opriessnig T**: Vaccination of sows reduces the prevalence of PCV-2 viraemia in their piglets under field conditions. *Veterinary Record*. 171(17):425, 2012.
165. Xiao CT, **Halbur PG**, Opriessnig T: Complete genome sequence of a novel porcine circovirus type 2b variant present in cases of vaccine failures in the United States. *Journal of Virology*. 86(22):12469, 2012.
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163. Xiao CT, Giménez-Lirola LG, **Halbur PG**, Opriessnig T: Increasing porcine PARV4 prevalence with pig age in the U.S. pig population. *Veterinary Microbiology*. 160:290–296, 2012.
162. Opriessnig T, **Halbur PG**. Concurrent infections are important for expression of porcine circovirus associated disease. Review. *Virus Research* 164:20-32, 2012.
161. Shen HG, Loiacono CM, **Halbur PG**, Opriessnig T: Age-dependent differences in porcine circovirus type 2 infections are likely associated with declining levels of maternal antibodies. *Journal of Swine Health and Production*. 20:17-24, 2012.
160. Opriessnig T, Gauger PC, Faaberg KS, Shen H, Beach NM, Meng XJ, Wang C, **Halbur PG**. Effect of porcine circovirus type 2a or 2b on infection kinetics and pathogenicity of two genetically divergent strains of porcine reproductive and respiratory syndrome virus in the conventional pig model. *Veterinary Microbiology*. 158:69-81, 2012.
159. Xiao CT, Giménez-Lirola L, Huang YW, Meng XJ, **Halbur PG**, Opriessnig T. The prevalence of Torque teno sus virus (TTSuV) is common and increases with the age of growing pigs in the United States. *Journal of Virological Methods*. 183:40-44, 2012.
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157. Shen HG, **Halbur PG**, Opriessnig T. Prevalence and phylogenetic analysis of the current PCV2 genotypes after implementation of widespread vaccination programs in the United States. *Journal of General Virology*. 93:1345-1355, 2012.
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155. Hemann M, Beach NM, Meng XJ, **Halbur PG**, Opriessnig T. Vaccination with inactivated or live-attenuated chimeric PCV1-2 results in decreased viremia in challenge-exposed pigs and may reduce transmission of PCV2. *Veterinary Microbiology*. 158:180-186, 2012.
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Lead Reviewer, *Journal of Swine Health and Production*, 2005-2010

Regularly review manuscripts for *Animal Health Reviews*, *Journal of Virology*, *Journal of Clinical Microbiology*, *Journal of Veterinary Diagnostic Investigation*, *Journal of Swine Health and Production* and others.

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- Harms PA, Sorden SD, **Halbur PG**, Nawagitgal P, Lager K, Bolin S, Paul PS: Role of maternal immunity to PCV2 and PRRSV co-infection in the pathogenesis of PMWS. In proceedings of Annual Meeting of the American Association of Swine Veterinarians 33:307-312, Kansas City, KS, March 2002.
- Sorden SD, **Halbur PG**: How and why we diagnose PMWS and Circovirus infection. In Proceedings of PRRS and Type 2 Circovirus Workshop p33-37, Annual Meeting of the American Association of Swine Veterinarians, Kansas City, KS, March 2002.

Sorden SD, **Halbur PG**: The role of circovirus in PMWS and PRDC: Advances in understanding pathogenesis and control. In proceedings of Annual Meeting of the American Association of Swine Veterinarians 33:265-268, Kansas City, KS, March 2002.

Halbur PG, Fenaux M, Haqshenas G, Toth T, Meng X-J: Reproduction of PMWS with an infectious molecular clone of PCV2. In proceedings of the Annual Meeting of the American Association of Swine Veterinarians 33:313-314, Kansas City, KS, March 2002.

Halbur PG: Circovirus: Real disease or circus virus. Iowa Veterinary Medical Association Winter Conference, Ames, IA, February 2002.

Hoffman LJ, **Halbur PG**, Opriessnig T: Erysipelas past and present: Diamonds are not a pig's best friend. Iowa Veterinary Medical Association Winter Conference, Ames, IA, February 2002.

Halbur PG, Meister J, Grover R: Procedures for removal of trigeminal ganglia for Pseudorabies detection by PCR in swine. Eastern Iowa Veterinary Medical Association Spring Clinic, May 2001.

Halbur PG: Update on Scrapie, BSE, and FMDV. House Agriculture Committee. March, 2001.

Halbur PG: Emerging and Re-emerging Diseases of Pigs. Swine Health Committee, National Institute for Animal Agriculture. Colorado Springs, CO. April 2001.

Halbur PG, Sorden SD: Swine Gross Pathology and Histopathology Wet Lab. Student American Veterinary Medical Association Symposium, March 2001, Ames, Iowa.

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Halbur P: Swine Health Update: PMWS. Iowa Pork Congress Seminar Session, Des Moines, IA, January 2002.

Halbur P: Disease Trends and Surveillance at the ISU-VDL. Pork Research Updates. Iowa Pork Congress Seminar Session, Des Moines, IA, January 2002.

Halbur P: TriOak Foods, Producer Meeting, Ames, IA, December 27, 2001.

Halbur P: Strategies for control of respiratory disease from breeding to market. Carroll and Templeton Veterinary Clinic Producer Meeting, Carroll, IA, September 2001.

Halbur P: Update on PMWS and PRDC. Cargill Pork Group, Dewitt, IA July, 2001.

Halbur P: Diagnosis and control of respiratory disease in integrated swine production systems. Seminar to production managers and administration of Prestage Farms, Clinton, North Carolina, June 2001.

Halbur P: Porcine Respiratory Disease Complex. Producer Opportunities for Revenue and Knowledge (P.O.R.K.) Academy, Des Moines, IA, June 6, 2001.

Halbur P: Respiratory Disease: Long Term Control Strategies. North Carolina Pork Producers Forum, Wilmington, North Carolina, April 2001.

Halbur P: Update on salmonellosis, mycoplasmosis, PRRS, PRDC, and *Streptococcus suis*. Presented to veterinarians and production managers, Murphy Family Farms, Rose Hill, North Carolina, April 2001.

Halbur PG: 2001, Diagnosis and Management of porcine respiratory disease complex (PRDC). In Proceedings of Nebraska Veterinary Medical Association p80-96.

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- Halbur PG:** 2000, Update on PRRSV in Grow-Finish. In Proceedings of Swine Disease Conference for Swine Practitioners, 8:113-123. Ames, IA, November 9-10.
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- Thacker EL, **Halbur PG**, Thacker BJ: Effect of vaccination on dual infection with *Mycoplasma hyopneumoniae* and PRRSV. In proceedings of the 3rd International Symposium on PRRSV and Aujeszky's Disease, Ploufragan, France. Published in Veterinary Research 31(1):60, 2000.
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- Halbur PG.** Porcine viral respiratory diseases. In Proceedings of 15th International Pig Veterinary Society Congress, Vol 1:1-10, Birmingham, England, July, 1998. **Invited Keynote Speaker.**
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- Halbur PG**, Bruna JD, Meng X-J, Purcell RH, Emerson SU. Swine Hepatitis E Virus. In Proceedings of the American Association of Swine Practitioners 29th Annual Meeting, pp455-457, March 7-10, 1998.
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- Halbur PG**. PRRSV-related bacterial diseases in the nursery and grow-finish. In proceedings of the Pharmacia& Upjohn Pork Leadership Conference, p1-9, Cancun, Mexico, October 22-25, 1998.
- Halbur PG**. Practical diagnosis and management of PRRS in the sow herd. In Proceeding of the 1998 Congress of German Veterinary Practitioners, p15-21, Braunschweig, Germany, September 24-27, 1998.
- Halbur PG**. Cost-effective diagnosis and management of porcine respiratory disease complex. In Proceedings of the 1998 Congress of German Veterinary Practitioners, p1-14, Braunschweig, Germany, September 24-27, 1998.
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- Halbur PG**: Diagnosis of porcine viral respiratory diseases. In Proceedings of the American Association of Swine Practitioners, Workshop #2 pp19-33, March, 1996
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- Halbur PG**: PRRS in 1995: Diagnosis, Pathogenesis, and Control. In Proceedings of the 81st Annual Meeting of the Interstate Veterinary Medical Association, Inc., pp36-43, 1995
- Halbur P**, Paul P, Frey M, Morozov I, Siriniramitr T: TGE-like disease outbreak: A foreign disease or a variant? In Proceedings of the Allen D. Leman Swine Conference pp1-2, 1995
- Halbur PG**, Andrews J, Paul P, Rathje J: Strain variation of PRRS virus: Field and research experience. In Proc of Am Assoc Swine Pract pp391-394, 1995
- Lager K, **Halbur P**: Umbilical cord lesions in porcine fetuses infected with porcine reproductive and respiratory syndrome virus. In Proceedings of the North Central Conference of Veterinary Laboratory Diagnosticians p27, 1995
- Haynes JS, Huffman EL, Meng XJ, Siriniramitr T, **Halbur PG**: Development of a digoxigenin-labeled RNA probe for detection of PRRS virus by in situ hybridization. In Proceedings of the North Central Conference of Veterinary Laboratory Diagnosticians p15, 1995
- Halbur PG**: Case presentations from the ISU Veterinary Diagnostic Laboratory-Sarcocystosis, Pasteurellosis and Scrapie. In Proceedings of the Iowa Veterinary Medical Association 113th Annual Meeting, pp163-167, 1995
- Halbur PG**: PRRS: An update on clinical manifestations, diagnosis and basic steps for control. In Proc of Swine Strategies '95, ALPHARMA, pp26-30, 1995
- Halbur PG**: Swine Respiratory Viruses: PRRSV, PRCV, SIV. Solvay Animal Health/Land O'Lakes Swine Health Short course for producers. March, 1995
- Halbur PG**, Andrews JJ, Janke BH: Use of a PRRSV immunoperoxidase test on formalin-fixed tissue for diagnosis and research of PRRS. In Proceedings of North Central Conference of Veterinary Laboratory Diagnosticians, p15, 1994

- Halbur PG**, Paul PS, Vaughn EM: Virulent porcine respiratory coronavirus isolates exist in the United States. In Proceedings of International Pig Veterinary Society Congress, Bangkok, Thailand. p70, 1994
- Halbur PG**, Paul PS, Meng X-J, Hagemoser W: Marked Variability in Pathogenicity of Nine U.S. Porcine Reproductive and Respiratory Syndrome (PRRSV) Isolates in 5-week-old CDCD pigs. In Proceedings of International Pig Veterinary Society Congress, Bangkok, Thailand. p59, 1994
- Halbur PG**, Paul PS, Andrews JJ: Development of a streptavidin-biotin immunoperoxidase procedure for the detection of porcine reproductive and respiratory syndrome virus antigen in porcine tissues. In Proceedings of International Pig Veterinary Society Congress, Bangkok, Thailand. p60, 1994
- Halbur PG**, Paul PS: Diagnostic Procedures for PRRS. In Proceedings of Livestock Conservation Institute 78th Annual Meeting, Lansing, Michigan. pp119-121, 1994
- Halbur PG**, Paul PS: Swine influenza virus antigenic variants. In proceedings of the Iowa Veterinary medical Association Annual Meeting, p65-69, 1994
- Halbur PG**, Paul PS: An overview of porcine viral respiratory pathogens. In Proceedings of Iowa State University Swine Disease Conference. pp39-48, 1993
- Halbur PG**, Paul PS, Janke BH: Viral contributors to the porcine respiratory disease complex. In Proceeding of American Association of Swine Practitioners, pp 343-350, 1993
- Halbur PG**, Hoffman LJ, Andrews JJ: Retrospective review of *Actinobacillus suis* cases and experiments with reproduction of pleuropneumonia with *Actinobacillus suis*. ISU Swine Research Reports pp143-144, 1992
- Halbur PG**, Paul PS, Vaughn EM, Andrews JJ: Diagnostic notes: porcine respiratory coronavirus. In American Association of Swine Practitioners Newsletter, Vol 4, No 2, pp21-23, 1992
- Janke BH, Paul PS, **Halbur PG**, Landgraf J: Paramyxovirus infection in swine. ISU Swine Research Reports p140, 1992

OTHER SELECTED INVITED PRESENTATIONS, EXTENSION, AND PRODUCER MEETINGS

- Halbur P.** Evolving opportunities for diagnostic medicine in progressive, precision animal agriculture. Dr. William and Catie Sipple Lecture Series. TVMDL College Station, Texas, May 3, 2017.
- Halbur P.** Providing precision diagnostic medicine services for the most progressive animal agriculture industry in the world. Taiwan National Symposium on Swine Medicine. March 26, 2018. National Chung Hsing University, Taichung, Taiwan.
- Halbur P.** Executing the land grant mission in a U.S. college of veterinary medicine focused on food supply veterinary medicine. The School of Veterinary Medicine, National Taiwan University, Taipei, Taiwan. March 27, 2018.
- Halbur P.** The powerful partnership of a land grant institution and the National Centers for Animal Health. NADC stakeholder Meeting. April 3, 2018.
- Halbur P.** Successes and opportunities to advance animal agriculture through investments in veterinary medicine at Iowa State University. Grow Iowa Agriculture dinner and meeting. December 11, 2017.
- Halbur P.** Evolving opportunities in diagnostic medicine in progressive, precision animal agriculture. Dr. William and Katie Sippel Endowed Lecture. Texas A&M University, College of Veterinary Medicine. May 3, 2017.
- Halbur P**, R. Main, L. Nolan. Grow Iowa Ag day at the Capital. March 28, 2017.
- Halbur P.** Impact of ISU VDL on Iowa Animal Agriculture. Presentations to Iowa legislative leadership at IVMA Legislative Day. February 22, 2017.

Halbur P, R. Main, L. Nolan. Overview of ISU CVM and VDL Impact on Animal Health. ISU Day at the Capital, February 20, 2017.

Halbur P, R. Main, L. Nolan. Overview of ISU VDL Impact on Animal Health. Presentation to Agriculture and Natural Resources Joint Appropriations Committee. Iowa State Capital. February 1, 2017.

Halbur P: Critical need for a new VDL at ISU. Iowa Pork Congress House of Delegates Annual Meeting. Des Moines, IA. January 24, 2017.

Halbur P: Welcome and Importance of growing training programs in toxicology. Toxicology Inaugural weekend Workshop for the NIH Grant. Ames, IA. January 14, 2017.

Halbur P: Presentation to Iowa Egg Council on VDL Building Project. Des Moines, IA. December 14, 2016.

Halbur P: Hosted U.S. Senator Joni Ernst and staffer Devin Mogler for a tour of the ISU VDL and CVM. August 19, 2016.

Halbur P: ISU CVM Update. IVMA Meeting, April 21, 2016. Ames, IA.

Halbur P: ISU CVM Update. IVMA Executive Board Update. April 20, 2016.

Halbur P: Grow Iowa Ag Day at the State Capital. Poster/Booth focused on role and impact of ISU VDL and ILHAC. April 12, 2016.

Halbur P. Impact of ISU VDL and ILHAC on Iowa Animal Agriculture. Presentations to Iowa legislative leadership at IVMA Legislative Day. February 24, 2016.

Halbur P: ISU CVM Update. IVMA Winter Meeting, February 10, 2016. Altoona, IA.

Halbur P. Overview of ISU VDL and our role in Iowa Animal Agriculture. Board of Regent's members Patricia Cownie, Sherry Bates, Milt Dakovich and Rachael Johnson. December 2, 2015.

Halbur P. Overview of ISU VDL and our role in Iowa Animal Agriculture. Iowa Legislative Fiscal Committee. November 20, 2015.

Halbur P. Overview of ISU VDL and our role in response to HPAI. Iowa Senate Legislative Staff. October 29, 2015.

Halbur P: Veterinary School...State of the Industry. BIVI Mediafest. October 13-14, 2015.

Halbur P. College Update and Tribute to Dr. Darrell Trampel. Iowa Egg Industry Symposium. November 5, 2015.

Halbur P. Overview of ISU VDL and our role in response to HPAI. State Senator Janet Petersen and State Senator Chaz Allen. September 18, 2015.

Halbur P. Overview of ISU VDL and our role in response to HPAI. Board of Regents (Vermeer Andringa) and staff. July 16, 2015.

Halbur P. Overview of ISU VDL and our role in response to HPAI. Board of regents (Cownie, Johnson) and staff. June 19, 2015.

Halbur P. Overview of ISU VDL and our role in response to HPAI. State Representative Todd Pritchard and staff visit to ISU VDL. June 9, 2015.

Halbur P. Overview of ISU VDL and our role in response to HPAI. State Representative Chuck Isenhardt visit to ISU VDL. May 28, 2015.

Halbur P. Overview of ISU VDL and our role in response to HPAI. U.S. Congressman Steve King visit to ISU VDL. May 29, 2015.

Halbur P. Welcome and overview for the ISU College of Veterinary Medicine. Fullbright Association. April 12, 2015.

Halbur P. Impact of ISU VDL on Iowa Animal Agriculture. Presentations to Iowa legislative leadership at IVMA Legislative Day. February 25, 2015.

Halbur P, R. Main. Overview of ISU VDL Impact on Animal Health. Presentation to Agriculture and Natural Resources Joint Appropriations Committee. Iowa State Capital. February 19, 2015.

Halbur P. CVM Update. IVMA Executive Board. January 22, 2015.

Halbur P. ISU CVM Update. Southwest Iowa Veterinary Medical Association, Osceola, Iowa. April 2, 2014.

Halbur P. Impact of ISU VDL on Iowa Animal Agriculture. Presentations to legislative leadership at IVMA Legislative Day. February 26, 2014.

Halbur P., R. Main, L. Nolan. Impact of ISU VDL on Iowa Animal Agriculture. Presentations to Agriculture and Natural Resources Joint Appropriations Committee. Iowa State Capital. February 12, 2014.

Halbur P. ISU CVM and VDPAM Update. Iowa Beef Industry Center. October 30, 2013.

Halbur P. VDL Update. ISU CVM Dean's Fundraising Advisory Council Meeting. October 3, 2013.

Halbur P. Iowa Pork Industry Center. VDPAM and ISU CVM Update. June 28, 2013. Ames, Iowa.

Halbur P. Iowa Pork Industry Center. Professional Development and Extension Program Planning. April 12, 2013. Ames, Iowa.

Halbur P. ISU CVM Update. Southwest Iowa Veterinary Medical association. April 3, 2013. Osceola, IA.

Halbur P. Update on ISU VDL direct appropriation and its impact. IVMA Legislative Day. February 20, 2013. Iowa State Capital. Des Moines, Iowa.

Halbur P. Hosted Iowa Legislative Staff to inform them about the role and impact of the Food Animal Hospital and the ISU VDL. September 20, 2012.

Halbur P. Using Epidemiology and Research at ISU to Assure Healthy Pigs and Healthy People. Osher Course on Viral and Bacterial disease in People and Animals. September 26, 2012. Ames, Iowa.

Halbur P. ISU College of Veterinary Medicine Update. ISU Beef Extension Professional Development. April 25, 2012. Ames, IA.

Halbur P. ISU CVM Update. Southwest Iowa Veterinary Medical association. April 3, 2013. Osceola, IA.

Halbur P. Iowa Pork Industry Center. Professional Development and Extension Program Planning. April 12, 2013. Ames, Iowa.

Halbur P. Update on ISU VDL direct appropriation and its impact. IVMA Legislative Day. Iowa State Capital, Des Moines, IA. February 22, 2012.

Halbur P. Update on the impact and needs of the ISU VDL. Iowa Senate Agriculture Committee. January 2011. State Capital, Des Moines, Iowa.

Halbur P. ISU College of Veterinary Medicine Update. ISU Extension Professional Development and Strategic Planning Meeting. March 23, 2011. Ames, IA.

Halbur P. ISU College of Veterinary Medicine Update. ISU Swine Extension Professional Development. March 29, 2011. Ames, IA.

Halbur P. Porcine circovirus type 2 today. Pfizer Animal Health Swine Health Symposium. August 30, 2011. Lincoln, NE.

Halbur P. ISU College of Veterinary Medicine Update. ISU Beef Extension Professional Development. October 12, 2011. Ames, IA.

Halbur P. ISU College of Veterinary Medicine Update. ISU Dairy Extension Professional Development. October 13, 2011. Ames, IA.

Halbur P. Educating the next generation of food supply veterinarians that will address the industry and consumer needs in animal welfare. American College of Animal Welfare Organization Meeting. October 14, 2011. Ames, IA.

Halbur P. The Future of Food Supply Veterinary Medical Education. Academy of Veterinary Consultants. Denver, Colorado, December 3, 2011.

Halbur P. Shaping the future of food supply veterinary medicine. ISU Midwest Pre-Vet Symposium. Ames, Iowa. October 29, 2008.

- Halbur P.** Delivering the preeminent education in food supply veterinary medicine. Four States Regional Veterinary Medical Education Planning Conference, Iowa State University College of Veterinary Medicine, Ames, Iowa. April 25-26, 2007.
- Halbur P.** What we know about porcine circovirus associated diseases. Ohio Pork Producers Association Profession Pork Producers Symposium. Columbus, Ohio, February 7, 2007.
- Halbur P.** Understanding and controlling porcine circovirus associated diseases. Plymouth County Pork Producers. Le Mars, Iowa, March 20, 2007.
- Halbur P.** Intervention strategies for porcine circovirus associated diseases. Two hour webcast to Sheridan/Heuser Veterinary Clinic and Producers. November 16, 2006.
- Halbur P.** Controlling porcine circovirus associated diseases today and in the future. Ontario Association of Swine Veterinarians. London, Ontario, Canada. October 18, 2006.
- Halbur P, Opriessnig T.** Update on Circovirus. 92nd Annual Meeting of the Interstate Veterinary Medical Association. South Sioux City Nebraska. October 6, 2006.
- Halbur P, Opriessnig T.** Pathogenic features of porcine circovirus associated diseases. Virology Committee Meeting. Annual Meeting of the American Association of Veterinary Laboratory Diagnosticians. October 12-18, 2006.
- Halbur P.** PCV2, PRRSV, SIV and other current health challenges to the midwest pig industry. The Mobley Producer Group. Ames, Iowa. September 19, 2006.
- Halbur P.** Porcine circovirus associated disease-A double bogey. Carthage Veterinary Services 16th Annual Swine Conference. Western Illinois University in Macomb, Illinois. August 29, 2006.
- Halbur P.** Swine research focus on PRRSV, PCV2, SIV and new viruses at ISU. Sleezer Fertility Center Producer Education and Appreciation Meeting. Aurelia, Iowa. August 22, 2006.
- Halbur P.** Circovirus associated disease update. Hanor Production Leadership and Directors Meeting. Ames, Iowa. August 7-10, 2006.
- Halbur P.** What you need to know about porcine circovirus type 2. 1 hour webcast and teleconference to New Vet Network of swine practitioners. August 3, 2006.
- Halbur P.** Effect of *Mycoplasma hyopneumoniae* vaccination in swine experimentally co-infected with *M. hyo.* and PCV2. Pfizer Animal Health's 11th Annual Galena Swine Veterinary Seminar. June 20, 2006.
- Halbur P.** Current disease trends and antibiotic sensitivities at the ISU VDL. Pfizer Animal Health's 11th Annual Galena Swine Veterinary Seminar. June 20, 2006.
- Halbur P.** Porcine circovirus related diseases. Pfizer Animal Health's 11th Annual Galena Swine Veterinary Seminar. June 20, 2006.
- Halbur P, Opriessnig T.** Pathogenesis of PCV2-associated diseases. World Pork Expo. Des Moines, Iowa, June 8, 2006.
- Halbur P.** Understanding the building blocks of PCV2 associated disease and testing effective control strategies in experimental models. Indianapolis, Indiana. May 31, 2006.
- Halbur P.** Understanding the experimental models of PCV2 associated disease and adapting them to the field situation. Fort Dodge Animal Health PCV Training Workshop. Ames, Iowa. May 16-17, 2006.
- Halbur P.** Update on case trends and understanding the building blocks and control of PCV2-associated diseases. Producer meeting sponsored by Alpharma Animal Health and Land-O-Lakes. Sioux City, Iowa. May 4, 2006.
- Halbur P.** Update on case trends and understanding the building blocks and control of PCV2-associated diseases. Producer meeting sponsored by Alpharma Animal Health and Land-O-Lakes. Clear Lake, Iowa. May 2, 2006.

- Halbur P.** Clinical signs, pathogenesis, and impact of PCV2 associated diseases in the U.S. Presented to the Policy, Staff and Licensing Section of the Center for Biologics, USDA. Ames, Iowa. April 26, 2006.
- Halbur P,** Opriessnig T. "Understanding the pathogenesis and control of PCV2-associated diseases. Presented as an invited lecture at the Boehringer Ingelheim Vetmedica Liaison Meeting. Des Moines, Iowa. April 11, 2006.
- Halbur P.** Grow-finish health perspectives from the Iowa State University Veterinary Diagnostic Laboratory. Pipestone Veterinary Clinic Producer Meeting. March 23, 2006.
- Halbur P,** Karriker L, Ramirez. Design of breeding herd buildings and pig flow to minimize introduction and manifestation of infectious diseases. Tri-Oak Foods Producer Meeting, February 9, 2006, Oakville, Iowa.
- Halbur P.** Porcine Circovirus. Pork University Seminar at the Iowa Pork Congress. Des Moines, Iowa. January 25, 2006.
- Halbur P.** Ask the Expert. Interacted one-on-one with producers at the Iowa State University Booth at the Iowa Pork Congress. January 26, 2006.
- Halbur P.** Diagnostic update on grow-finish pig diseases and a focus on understanding and controlling PCV2-associated diseases. In Proceedings of the AlphaMidwest Technical Meeting on Swine Disease p14-28. Okoboji, Iowa. November 17, 2005.
- Halbur P.** Circovirus Roundtable Presenter. Post-convention meeting for Spanish and Danish veterinarians at the Allen D. Lemman Conference. September 19, 2005.
- Halbur P.** Circovirus Roundtable Presenter. Pre-convention meeting for French and Canadian Veterinarians at the Allen D. Lemman Conference. September, 17, 2005. St. Paul, MN.
- Jordan D, Loiacono C, **Halbur P.** Pathology Wetlab for the American Pre-Veterinary Medical Association. March 18-20, 2005. Ames, Iowa.
- Halbur P,** Opriessnig T. Evidence from the lab and the field on strategies to control PCV2-associated diseases. Wyeth Animal Health producer meeting. St. Hyacinth, Quebec, Canada. August 29-30, 2005.
- Halbur P.** Moderator for session and panel discussion on "Control strategies for PRRS in pig dense regions". Iowa Veterinary Medical Association Winter Conference, February 9-10, 2005. Ames, Iowa.
- Halbur P.** Basic Herd Health Guide for Alternative Pork Producers. Presented at the Practical Farmers of Iowa Annual Conference and 20th Anniversary Celebration, January 14-15, 2005. Des Moines, IA.
- Halbur P.** Update on porcine circovirus type 2 associated diseases. 2005 Iowa Pork Congress. January 27, 2005 Des Moines, IA.
- Halbur P.** Diagnosis and control of grow-finish disease complexes. Cumming County Pork Producer Meeting. February 25, 2005. West Point, Nebraska.
- Halbur P.** Invited speaker/panelist on AgCall conference calls on Postweaning multisystemic wasting syndrome. November 15 and November 16, 2005.
- Halbur P.** Invited speaker on "Diagnosis and Control of Porcine Circovirus-Associated Diseases". XIII DIA Del Porcicultor 2004, Navojoa, Sonora, Mexico. December 2-4, 2004.
- Halbur P.** Invited presentation on "Swine Respiratory Disease Complex and Grow-Finish Enteric Diseases" at Eastern Iowa Pork Producers Meeting co-sponsored by Elkader Veterinary Clinic, Ottumwa Veterinary Clinic, and Williamsburg Veterinary Clinics. September 8, 2004. Dike, Iowa.
- Halbur P.** Presented a research update to the Mobley Swine Producer Group from Northwest Iowa, September 28, 2004.
- Halbur P.** Invited Speaker 2004 Pork Quality and Safety Summit. Epidemiology & Zoonotic Aspects of Swine Hepatitis E Virus. August 17-18, 2004. Des Moines, Iowa.

- Halbur P.** Invited presentation on “Update of hot topics in pig health” at the Sleezer Fertility Center Client Appreciation and Continuing Education Day. August 31, 2004.
- Halbur P.** Invited presentation at the Farrowing in Alternative Systems: Herd Health: Producer seminar at the ISU Allee Experimental Farm in Newell, Iowa. “Working to manage the health of the suckling pig in alternative pork production systems”. July 30, 2004.
- Halbur P.** Invited speaker on the “Impacto Economico de la presencia de circovirus porcino” presented at the Annual de Produccion Porcine Cajeme June, 2004 in Ciudad Obregon, Sonora, Mexico.
- Halbur P.** Invited speaker in the “International Swine Pathology Round Table” at the 18th International Pig Veterinary Society Congress, in Hamburg, Germany in June 2004.
- Halbur P.** Invited to present a research update at the Spring 2004 Swine Extension Field Specialist In-Service Day, April 5-7, 2004.
- Halbur P.** Invited speaker and participant in the ICN program “Stockmanship in Pork Production”. I covered diagnosis and control of the top 10 respiratory pathogens in pigs. This was cosponsored by the Iowa Pork Industry Center and the Iowa Pork Producers Association, April, 2004.
- Halbur P.** Invited speaker in the 2004 American Association of Swine Veterinarians Pre-Conference Seminar #7 Skills and Tools for Practitioners. Presentation entitled “Application and Interpretation of New Diagnostic Tools”. Sunday March 7, 2004 in Des Moines, IA.
- Halbur P.** Invited speaker in the 2004 American Association of Swine Veterinarians Pre-Conference Seminar #3 Emerging Diseases. Presentation entitled “PCV2-Associated Diseases”. Saturday March 6, 2004 in Des Moines, IA.
- Halbur P.** Invited speaker at the North Carolina Pig Veterinary Group in Kenansville, NC for a presentation on “Understanding and controlling PCV2-associated diseases”. March, 2004.
- Halbur P.** Featured speaker on Audio tape entitled “Understanding PMWS” for At the Meeting with the Morrison Group. Produced January 2004. Distributed to all members of the American Association of Swine Veterinarians.
- Halbur PG:** Invited participant in recorded round table discussion on Swine Influenza. November 7, 2003 Ames, Iowa. Sponsored by Schering Plough Animal Health, Inc.
- Halbur PG:** Update on hepatitis E virus, porcine circovirus-associated diseases, and control of porcine reproductive and respiratory syndrome virus. Moblely swine producer group from northeast Iowa, Ames, IA, September 16, 2003.
- Halbur PG:** Circovirus and associated diseases: Diagnosis, control, and prevention. Iowa Pork Regional Conferences on Improving Swine Health
February 17, 2003 Carroll, IA
February 18, 2003 Cherokee, IA
February 19, 2003 Iowa Falls, IA
February 20, 2003 Oelwein, IA
February 21, 2003 Iowa City, IA
- Halbur PG:** Managing PRRS and PRDC. Iowa Pork Regional Conferences on Improving Swine Health
February 17, 2003 Carroll, IA
February 18, 2003 Cherokee, IA
February 19, 2003 Iowa Falls, IA
February 20, 2003 Oelwein, IA
February 21, 2003 Iowa City, IA
- Halbur PG:** Understanding the etiology and control of circovirus-associated diseases in pigs. Iowa Pork Congress Producer Seminar Series, January 23, 2003.
- Halbur PG:** Understanding the trends in cases and recommendations for control of erysipelas. Iowa Pork Congress Producer Seminar Series, January 23, 2003

Halbur PG, Harding J: PMWS or a group of PCV2-associated diseases: Ever growing concerns. Merial Corporate Symposium: PMWS and PCV Diseases-Beyond the debate. Ames, IA, June 2, 2002.

Halbur PG: Control of circovirus-associated diseases. Southwestern Iowa Veterinary Medical Association. April 3, 2002.

Halbur PG: Disease trends and surveillance at the ISU Veterinary Diagnostic Laboratory. Iowa Pork Congress, Des Moines, IA, January 23, 2002.

Halbur PG: Swine Health Update-PMWS. Iowa Pork Congress, Des Moines, IA, January 23, 2002.

Halbur PG: Emerging and recurring diseases in growing pigs. Annual Meeting of National Institute for Animal Agriculture, Colorado Springs, Colorado, April 3, 2001.

Desrosiers R, **Halbur PG**, Frank R, Diaz E: Disease diagnosis and discussion: Cases Studies. American Association of Swine Practitioners, Preconvention workshop #12.

Halbur PG: Grow-finish respiratory disease complex: prioritizing the pathogens and control strategies. Iowa Veterinary Medical Association Winter Conference, February 2-3, Ames, IA, 2000.

Quam D, **Halbur PG**: Case Report: H3N2 SIV reproductive and respiratory disease outbreak. Iowa Veterinary Medical Association Winter Conference, February 2-3, Ames, IA, 2000.

Johnson J, **Halbur PG**: Case Report: Diagnosis and intervention strategies for endemic PRRS in the breeding herd. Iowa Veterinary Medical Association Winter Conference, February 2-3, Ames, IA, 2000.

Halbur PG: Effective necropsy and diagnostic laboratory submission techniques. Presentation at the Eastern Iowa Veterinary Association Spring Clinic. May 2, 2000.

Halbur PG: PRRS and H3N2 SIV update. Southwestern Iowa Veterinary Medical Association Spring Meeting, April 7, Council Bluffs, IA, 1999.

Halbur PG: Circovirus, PRRSV, H3N2 SIV, and *M. hyopneumoniae* update. North Carolina Veterinary Conference, November 6, Raleigh, NC, 1999

Halbur PG: January 20, 1999. Presented an educational seminar on "PRRS and PRDC" at the Iowa Pork Congress, Des Moines, IA.

Halbur PG: January 20, 1999. Participant in "Ask a specialist booth" at Iowa Pork Congress

Halbur PG: February 8, 1999. Presented an educational seminar for producers entitled "PRRS: management of the breeding herd, acclimatization of gilts, use of vaccines". Templeton Veterinary Clinic, Templeton, IA.

Halbur PG: March 7, 1999. Presented two educational seminars for producers entitled "Control of respiratory disease in modern production systems" and "PRRS and sow productivity". Western Iowa Tech Community College, Cherokee, IA.

Halbur PG: June 23, 1999. Producer meeting educational seminar on "New viral challenges in pig production: H3N2 SIV and type 2 porcine circovirus". Veterinary Medical Center, Worthington, MN.

Halbur PG: September 1, 1999. Presented a seminar on "New information on diagnosis and control of circovirus, H3N2 SIV, and PRRSV" for Earl Mobley Swine Interest Group, Kildee Hall, Ames, IA.

Halbur PG: January 20, 2000. Solving respiratory disease problems-Cases of PRRS, PRDC, mycoplasma, and the new swine influenza. Iowa Pork Congress, January 20, Des Moines, IA...

Halbur PG: Diagnosis and management of porcine respiratory disease complex. In Proceedings of the Annual Meeting of the Iowa Veterinary Medical Association, September 16-18, Ames, IA, p23-39, 1999.

- Halbur PG**, Schmitt CS, Royer RL: PRRSV coinfections: research summaries and their practical implications. In Proceedings of Swine Disease Conference for Swine Practitioners, November 11-12, Ames, IA, 7:56-64, 1999.
- Halbur PG**. Diagnosis and control of PRRS in the sow herd. Carroll Veterinary Clinic Producer Education Meeting, Carroll, Iowa, April 16, 1998.
- Halbur PG**. Diagnosis and control of porcine respiratory disease complex. Carroll Veterinary Clinic Producer Education Meeting, Carroll, Iowa, April 16, 1998.
- Halbur PG**. Porcine respiratory disease complex. ELANCO Animal Health Swine Diagnostic Training Session, Iowa State University, Ames, IA January 22, 1998
- Benson J, Carson T, Ensley S, **Halbur P**, Harms P, Hoffman L, Janke B, Kinker D, Larson D, Libal M, Meister J, Osweiler G, Rotto H, Schwartz K, Sorden S, Yaeger M, Yoon K-J. Diagnostic Pathology Wet Lab Preconvention Workshop #2, American Association of Swine Practitioners 29th Annual Meeting, March 7, 1998, Iowa State University College of Veterinary Medicine, Ames, IA
- Halbur PG**. Hepatitis E virus update. USDA/AAVLD-Transmissible Disease of Swine Committee Meeting, Minneapolis, MN, October 5, 1998.
- Halbur PG**: Diagnosis and management of porcine respiratory disease complex. North Carolina Healthy Hogs Seminar, Greenville and Fayetteville, North Carolina, November 5-7, 1997.
- Halbur PG**: What's new in respiratory diseases of the weaned pig? North Carolina Healthy Hogs Seminar, Greenville and Fayetteville, North Carolina, November 5-7, 1997.
- Halbur PG**: Update on PRRS/SAMS. North Carolina Healthy Hogs Seminar, Greenville and Fayetteville, North Carolina, November 5-7, 1997.
- Halbur PG**: PRRS Roundtable Discussion, special broadcast presented on Iowa Communications Network for veterinarians, producers, and allied industry involved in an ongoing severe acute PRRS outbreak in eastern Iowa. November, 26, 1997.
- Halbur PG**: Emerging diseases in nursery pigs. North Carolina Healthy Hogs Seminar, Greenville and Fayetteville, North Carolina, November 5-7, 1997.
- Halbur PG**: Acute PRRS from a Diagnostician's Perspective. Swine Disease Conference for Swine Practitioners, Iowa State University, Ames, IA, October 31, 1997
- Halbur PG**, Sorden SD: Diagnostic Pathology of Emerging and Recurring Swine Disease Problems. Allen D. Leman Swine Conference, September 21, 1997
- Halbur PG**: Components of Porcine Respiratory Disease Complex. Sponsored by Pharmacia and Upjohn, presented on Iowa Communications Network and Satellite Transmission, as part of "Hear from the Experts The Role of Mycoplasmal Pneumonia in PRDC". Broadcast in 18 states and Canada live on August 12, 1997
- Halbur PG**: Prevention and management of PRRS. Palo Alto County Pork Producers Board, Emmetsburg, IA, June 12, 1997
- Halbur PG**: Porcine Respiratory Disease Complex (PRDC) update. Presented at the IVMA and ISU College of Veterinary Medicine Summer Seminar, June 19, 1997
- Halbur PG**: PRRS and SAMS update. Presentation to Iowa Pork Council, June 19, 1997
- Halbur PG**: PRRS: Recent severe outbreaks and missing pieces to the puzzle? Presented at P.O.R.K. Academy at the World Pork Expo, Sponsored by Pfizer Animal Health, Indianapolis, IN, June 4, 1997
- Halbur PG**: PRDC and SAMS Update. Swine Veterinary Symposium, Sponsored by Pfizer Animal Health, Galena, ILL, May 20, 1997
- Halbur PG**: Mycoplasma hyopneumoniae: Making the diagnosis with serology, antigen detection and PCR. Sponsored by Pharmacia and Upjohn, presented on Iowa Communications Network as part of "Mycoplasma Pneumonia in Modern Production Units" seminar. Broadcast live on April 22, 1997

Halbur PG: Case histories and diagnostic investigation of recent sow abortion and mortality syndrome (SAMS) outbreaks in Iowa, Minnesota, North Carolina, and Illinois. Veterinary Medical Center Annual Swine Seminar, Worthington, MN, April 15, 1997

Halbur PG: Porcine respiratory disease complex. Veterinary Medical Center Annual Swine Seminar, Worthington, MN, April 15, 1997

Halbur PG: Mycoplasma bovis: Update on pathogenesis and diagnosis. Presented on Iowa Communications Network as a part of continuing education to practitioners, April 10th, 1997

Halbur PG: Case reports and preliminary research results from severe PRRS/SAMS outbreaks. Special Iowa Communication Network Session, Ames, IA origination, March 12, 1997

Halbur PG: Management and vaccination for PRRS and mycoplasma. Producer meeting for Templeton Veterinary Clinic, Templeton, IA, March, 1997

Halbur PG: Management of PRRS and related diseases. Producer meeting for Sheldon Veterinary Clinic, Sheldon, IA, February, 1997

Halbur PG: Invited participant in a special meeting called by the National Pork Producers Council to discuss research needs to address the current severe acute PRRS outbreaks, NPPC Headquarters, West Des Moines, IA, January, 1997

Halbur PG: Sow Abortion and Mortality Syndrome (SAMS) a southeast Iowa swine disease problem. Southeast Iowa Swine Conference, Mt. Pleasant, IA, January, 1997

Halbur PG: Update and progress report on swine abortion and mortality syndrome. Presented at the Iowa Pork Congress, Des Moines, IA, January, 1997

Halbur PG: PRRS: What are the missing pieces? Swine Health Summit sponsored by the National Pork Producers Council, West Des Moines, IA, December, 1996

Halbur PG: Porcine respiratory disease complex in nursery pigs. Swine Health Summit sponsored by the National Pork Producers Council, West Des Moines, IA, December, 1996

Halbur PG: Porcine blood collection and necropsy techniques wet lab. Presented at the Eastern Iowa Veterinary Medical Association Spring Clinic, Cedar Rapids, IA, May 1996

Halbur PG: Concurrent infections with PRRS: Case Experiences. Presented at IVMA and ISU College of Veterinary Medicine Summer Seminars, Ames, IA, June 1996

Halbur PG: Complicated pneumonias in grow-finish pigs. Presented at IVMA and ISU College of Veterinary Medicine Summer Seminars, Ames, IA, June 1996

Halbur PG: Neosporosis. Presented at IVMA and ISU College of Veterinary Medicine Summer Seminars, Ames, IA, June 1996

Halbur PG, Pijoan C, Rowles C, Seehusen D, Zimmerman JJ: PRRS roundtable discussion. Swine Disease Conference for Swine Practitioners, Ames, IA, November, 1996

Glock B, Halbur P, Schwartz K, Stevenson G, Zeman D: Swine Pathology Wet Lab. Presented as an 8 hour wet lab at the Am. Assoc. of Swine Pract., Nashville, TN, March, 1996

Halbur PG: PRRS and PRDC. Producer meeting for Worth County Veterinary Clinic, Northwood, IA, August, 1996

Halbur PG, Hill HT, Dee S: Roundtable discussion and questions on PRRS associated problems. 96 PORK Summit sponsored by ALPHARMA Animal Health Division, Tempe, AZ, May, 1996

Halbur PG: Management of the porcine respiratory disease complex. Producer Meeting, Osage, Iowa, September, 1995

Halbur PG: Management of swine respiratory disease. Producer Meeting, Algona, Iowa, November, 1995

Halbur PG: PRRS: History, clinical disease, pathogenesis, diagnosis, and control. ELANCO World Pork Expo International Swine Technical Seminar, June, 1995

Halbur PG: Viral respiratory diseases of pigs. Presented at the Executive Veterinary Program, Swine Health Module, 1995

Halbur PG: PRRS and the challenge it presents. Presented at the Illinois Pork Producers Association, remaining competitive in tomorrow's swine industry conference. February, 1995

Halbur PG, Thacker B: Necropsy and blood collection techniques for pigs. Wet Lab at the Iowa Veterinary Medical Association Summer Seminar, 1995

Halbur PG, Andrews JJ, Paul PS, Rathje J: Strain Variation of PRRS virus: Field and Research Experience. Presented at Am. Assoc. Swine Pract. Annual Meeting, March, 1995

Halbur PG, Paul PS: Swine influenza virus antigenic variants. Presented at the Iowa Veterinary Medical Association Annual Meeting, January, 1994

Halbur PG, Paul PS: Diagnostic procedures for PRRS. Presented at the Livestock Conservation Institute 78th Annual Meeting, Lansing, Michigan, April, 1994

Halbur PG: PRRS epidemiology update. Presented at the Iowa Veterinary Medical Association Swine Seminar. June, 1994

Halbur, PG: PRRS and PRCV update. Presented at the Eastern Iowa Veterinary Medical Association Annual meeting, October, 1994

Halbur PG, Paul PS: Update on respiratory viruses: PRRSV may be a major profit robber in your herd. Four-States Swine Conference in Nebraska (Hebron), Iowa (Clarinda), Kansas (Seneca), and Missouri (St. Joseph). February, 1994

Halbur PG: PRRS: Diagnosis, Pathogenesis, and Control. Producer Meeting, Sioux Center, Iowa, February, 1994

Halbur PG: PRRS: Diagnosis, Pathogenesis, and Control. Producer Meeting, Postville, Iowa, March, 1994

Halbur PG: PRRS: Diagnosis, Pathogenesis, and Control. Producer Meeting, Walcott, Iowa, October, 1994

Halbur PG: PRRS: Diagnosis, Pathogenesis, and Control. Producer Meeting, Hubbard, Iowa, December, 1994

Halbur PG: PRRS: Diagnosis, Pathogenesis, and Control. Producer Meeting, Williamsburg, Iowa, December, 1994

Halbur PG: PRRS: Diagnosis, Pathogenesis, and Control. Producer Meeting, Washington, Iowa, December, 1994

GRADUATE STUDENT COMMITTEES

Major Professor

| <u>Name</u> | <u>Degree (Year)</u> | <u>Major</u> | <u>Advisor Status</u> |
|-----------------------|----------------------|--------------|-----------------------|
| Pete Thomas | MS (2007) | VDPAM | Major Prof. |
| Tanja Opriessnig | PhD (2006) | Vet Path | Major Prof. |
| Marlin Hoogland | Vet Micro (2005) | VMPM | Co-Major Prof. |
| Chaiyan Kasorndorkbua | PhD (2004) | Vet Path | Major Prof. |
| Chaiyan Kasorndorkbua | MS (2000) | Vet Path | Major Prof. |
| R. Thanawongnuwech | PhD (1998) | Vet Path | Co-Major Prof. |
| Hans Rotto | MS (1999) | Vet Path | Major Prof. |

Graduate Committee Member

| <u>Name</u> | <u>Degree (Year)</u> | <u>Major</u> | <u>Advisor Status</u> |
|----------------|----------------------|--------------|-----------------------|
| Sireesha Manne | PhD (2019) | Biomed Sci | Committee Member |
| Kevin O'Neill | MS (2013) | Vet Micro | Committee Member |
| Abby Patterson | PhD (2010) | Vet Micro | Committee Member |
| Darin Madson | PhD (2009) | Vet Path | Committee Member |

| | | | |
|------------------------|------------|----------------|-------------------------|
| Erin Strait | PhD (2008) | IMBIO | Committee Member |
| Shan Yu | PhD (2007) | Vet Micro | Committee Member |
| Kate Hipple | MS (2007) | Vet Micro | Committee Member |
| Guo Baoqing | PhD (2007) | Vet Micro | Committee Member |
| Pravina Kitikoon | PhD (2007) | VMPM | Committee Member |
| Amy Helgerson | MS (2006) | MIPM | Committee Member |
| Jason Hocker | MS (2006) | Vet Micro | Committee Member |
| Wasin Charentantanakul | PhD (2006) | Vet Micro | Committee Member |
| Dachrit Nilubol | PhD (2005) | Vet Micro | Committee Member |
| Martin Fenaux | PhD (2005) | Vet Med | Ext. Reviewer (V. Tech) |
| Amy Vincent | PhD (2004) | MIPM/MCBD | Committee Member |
| Perry Harms | MS (2000) | Vet Path | Committee Member |
| Dachrit Nilubol | MS (2001) | Vet Micro | Committee Member |
| Jim Benson | PhD (2000) | Vet Path | Committee Member |
| Sue Schommer | PhD (2000) | MIPM/MCBD | Committee Member |
| Steve Just | MS (2000) | Vet Micro | Committee Member |
| Cameron Schmitt | MS (2001) | Vet Micro | Committee Member |
| Peter Akoto | MS (1999) | MIPM | Committee Member |
| Butch Baker | MS (1999) | Swine Prod Med | Committee Member |
| Nawagitgul Porntippa | MS (1998) | MIPM | Committee Member |