

OUR LATEST INFORMATION ON PROTECTION OF US SWINE HERD HEALTH

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SHIC Selects Lisa Becton as Next Associate Director

Industry veteran will assume new role in January 2024

The Swine Health Information Center Board of Directors has selected Lisa Becton, DVM, MS, DACVPM as the organization's next associate director. Becton will begin her tenure with SHIC in January 2024. Most recently, Becton served as the National Pork Board's director of swine health. "I see this as a great opportunity to continue to serve pork producers in a little different role than in the past," she remarked. "I really have enjoyed working with SHIC over the years in my position with Pork Board and am excited to accept this new opportunity to be a part of SHIC helping producers identify and manage emerging swine diseases."

Becton succeeds Megan Niederwerder, DVM, PhD, who will become SHIC's executive director in January 2024, following the December 31, 2023, retirement of founding executive director Paul Sundberg, DVM, PhD, DACVPM. "Lisa is an outstanding addition to the SHIC team who brings a wealth of knowledge from directing producer-led swine health initiatives during her tenure at the National Pork Board," Niederwerder commented. "Her vast experience will enable her to hit the ground running as the new associate director and immediately start advancing mission-focused

objectives to help lead SHIC into the future. The addition of Lisa underscores SHIC's continued commitment to serve producer needs through mitigating emerging disease threats and maximizing the value of SHIC's prevention, preparedness, and response activities."

Becton received her bachelor's degree in biology from Lenoir-Rhyne College and went on to earn her Doctor of Veterinary Medicine degree from North Carolina State University. She received a master's degree in food safety from Michigan State University as well as a public health certificate in field epidemiology from the University of North Carolina, Chapel Hill. Becton also completed the swine executive veterinary program, swine health management at the University of Illinois, Champaign-Urbana. She is a Diplomate of the American College of Veterinary Preventative Medicine. Earlier this year, Becton received the American Association of Swine Veterinarian's Technical Services/Allied Industry Veterinarian of the Year honor.

"SHIC is extremely pleased to have someone of Lisa's caliber joining our team. Her depth of knowledge of swine health research past and present is nothing short of astounding," said Russ Nugent, PhD, chair of the SHIC Board of Directors.

Becton appreciates the passion and care pork producers have for their animals, noting the pride

they take in providing a valuable food source to consumers. She values their enthusiasm for learning, adapting to new ideas, and overcoming challenges. Those qualities keep Becton motivated to continue serving the industry she was introduced to as a college student.

“I love science and identify myself as a life-long learner,” Becton explained. “I’m very interested in swine health research, the process of identifying researchable questions, and understand the need to convert research outcomes to usable information for producers.” Becton anticipates an exciting working relationship with Niederwerder as they guide SHIC into the future. “I look forward to learning from Dr. Niederwerder, understanding her perspective on SHIC priorities and projects, and know we work very well together. With our combined experiences in research and production, I know we will work together effectively to address challenges facing our industry and create workable solutions.”

Specifically, Becton will work with Niederwerder in directing overall expectations and accountability as well as ensuring quality programs and services at SHIC. This includes collaborating to provide oversight and implementation of the Center’s budget, long range planning, and strategic initiatives. Additionally, Becton will interact closely with the pork community, assisting efforts to build awareness of SHIC, establish and maintain working relationships in the pork industry, and successfully meet the Center’s mission.

“I’m really excited to be with SHIC and to maintain the close working relationships with the great teams at NPB, AASV, and National Pork Producers Council, while remaining in the industry I love,” Becton observed. “Having the opportunity as the new SHIC associate director fuels my passion to support producers as they manage herd health challenges by converting knowledge into action. We are blessed in the swine industry to work with the best people anywhere.”

Becton, and her husband, Gordon, live near Garner, North Carolina. An avid reader, Becton prefers non-scientific books for her off time. She also enjoys traveling, hiking, swimming, biking, and motorcycling. The Bectons seek out different, fun places to eat near where they live, most of the barbecue variety.

Spending time with family and the couple’s canine critters is also important.

REMINDER: SHIC Seeks Input for 2024 Plan of Work

The opportunity to provide input for the Swine Health Information Center’s 2024 Plan of Work remains open until November 10, 2023. Input may include topic areas, research priorities, and identified industry needs in which SHIC should focus efforts, such as an emerging swine disease or an emerging swine health issue. SHIC’s Plan of Work helps guide activities for the coming year across five strategic priorities, including improving swine health information, monitoring and mitigating risks to swine health, responding to emerging disease, surveillance and discovery of emerging disease, and swine disease matrices. Input across all five areas is welcomed and encouraged.

Suggestions for the 2024 SHIC Plan of Work may be submitted [online through the SHIC website](#) or may be submitted directly to SHIC Associate Director Dr. Megan Niederwerder at mniederwerder@swinehealth.org or SHIC Executive Director Dr. Paul Sundberg at psundberg@swinehealth.org.

Additional input and ideas are welcomed anytime throughout the year to inform newly identified needs which may necessitate adapting or adjusting the Plan of Work. Being nimble and responsive to realities in the US swine industry reflects SHIC’s mission and illustrates the Center’s strengths. The 2023 Plan of Work can be [found here](#).

Strep zooepidemicus Experiences Spur SHIC/AASV Webinar on November 29

Until September and October 2019, *Streptococcus equi* subspecies *zooepidemicus* had only been reported as causing disease in pigs in Asia. The first US cases with significant mortalities were reported in Ohio and Tennessee in 2019 with subsequent identification in Pennsylvania and Indiana. Now, with a series of very severe *S. zoo* outbreaks in Canada, the Swine Health Information Center and American Association of Swine Veterinarians will

host a webinar on *S. zoo* on November 29, 2023, from 1 to 2:30 pm CST with US and Canadian experts. Webinar registration is now open, [click here](#).

S. zoo-related topics to be covered on the webinar and speakers include:

- Clinical picture and descriptions of Canadian outbreaks – Dr. Frank Marshall, Marshall Swine and Poultry, Camrose, Alberta
- Laboratory submissions, directions to practitioners, and background – Dr. Matheus de Oliveira Costa, University of Saskatchewan
- Genetic analyses/diversity of US strains causing outbreaks – Dr. Ganwu Li, Iowa State University
- Zoonotic potential, caveats and outcomes – Dr. Gus Brihn, USDA Animal and Plant Health Inspection Service

S. zoo is a commensal bacterium found in the upper respiratory tract of horses, pigs, and other animals. As an opportunistic pathogen, it has the potential to cause infections in many species. In swine, clinical signs of *S. zoo* can include weakness, lethargy, fever, and rapidly escalating mortality. Abortion has also been reported. Splenomegaly and lymphadenopathy may be observed at necropsy, and histologically, lesions consistent with septicemia can be observed. In sows and feeder pigs experimentally infected with *S. zoo*, clinical signs begin within 24 hours post-infection, with severe depression and lethargy noted by 36 hours later. Pigs can also develop neurological disease.

Prevention efforts are aimed at eliminating stress and practicing good biosecurity. Sick pigs should receive appropriate treatment and supportive care to decrease the likelihood of secondary infection. Modes of transmission can be due to direct contact with infected animals. Indirect contact with contaminated equipment, housing, bedding, or clothing, as well as ingestion, can also serve as transmission routes. The pathogen is likely susceptible to common disinfectants like 1% bleach, quaternary ammonium compounds, chlorhexidine, and Virkon® (potassium peroxymonosulfate).

SHIC-Directed ASF Research Projects in Vietnam Successfully Closed

In 2019, the Swine Health Information Center, with support from the National Pork Producers Council, received a grant from USDA's Foreign Agricultural Service division to fund a multi-phase project including African swine fever field projects in Vietnam. Results of this now completed work help inform prevention and preparedness efforts for US pork producers and practitioners while also helping inform response and recovery efforts for the ASF epidemic in Vietnam.

Among the grant-related efforts completed were sharing disease knowledge and strengthening veterinary services capacity for mitigating ASF impact on Vietnam and China, as well as on-the-farm field projects. Also, following a request from the Vietnamese Department of Animal Health, as a result of the introduction of the ASF vaccines, efforts were focused on supporting the DAH in the design and evaluation of the vaccination program.

In response to a SHIC open, competitive call for proposals in March 2020, 10 field projects were ultimately planned, funded, and completed.

1. Potential of Rodents to be a Vector in the Transmission of African Swine Fever in Two Commercial Farms in Vietnam with Differing Biosecurity Levels

The two projects in this study did not provide evidence that rodents are significant factors in the transmission of ASFV between animals or farms.

2. Using Standard Laboratory PCR Testing, and Comparing Available POC Technology, to Assess the Validity of Current ASF Test and Remove Practices in Commercial Swine Farms within Vietnam.

Results showed tooth extraction did not eliminate ASFV from sow farms and discovered ASFV DNA was detected in blood from sows showing no clinical signs, as well as indicated POC tests had poor diagnostic performance.

3. and 4. ASF Research Projects in Vietnam

Examining the Use of Serum and Oral Fluid ELISAs

This unprecedented study showed there is no single best diagnostic approach for ASFV surveillance and demonstrates that the combined use of the Tetracore qPCR and indirect ELISA tests and serum/oral fluid sampling increase efficiency of ASF disease surveillance.

5. Determining the Pathways for ASF Introduction into Boar Studs and Risk of ASF Transmission via Semen Movements During an ASF Outbreak

The project used the experience with ASF in Vietnam to estimate the risk of ASF introduction into boar studs in the US. The results varied from “negligible” due to water, as long as no surface water enters the facility, to “low” from people, fomites, and other entries as long as current biosecurity practices are strictly implemented.

6. Time and Temperature Required for Complete Inactivation of African Swine Fever Virus

Heat treatment at 54oC and 63oC resulted in positive PCRs but negative viral isolation.

However, after bioassay exposing pigs to ASFV-contaminated feces held at 54oC for 10 min, viral genomic DNA was detected in their blood at 5 days post-inoculation, indicating that ASFV infectivity remained.

7. Evaluate the Diagnostic Performance of Pen-side Tests for ASF Detection

The viral DNA PCR pen-side test had better performance than the viral antigen lateral flow test as it can detect infected pigs earlier and for a longer duration after infection.

8. Field Evaluation of Oral Fluids as a Convenient, Aggregate Sample for Early Detection of African Swine Fever

Based on the overall field data, ASFV DNA can be detected in oral fluids within 0-3 days of the initial detection of viremia in the pen. If the viral load in the pen is low, it may take up to 3 days to detect in oral fluids. This is consistent with the results

from a previous study on experimentally inoculated animals under experimental conditions and further validates oral fluids as a reliable aggregate sample for screening swine herds for early detection of ASF.

9. Identifying Pathways of Entry of ASF Virus onto Farms to Enhance Information for Improving Biosecurity in Vietnam

The top 10 shared risks for the spread of ASF in Vietnam included entry of water, feed trucks, replacement breeding animals, semen, visitors, tools (both for breeding replacements and cull animals), livestock trailers (for both weaned pigs and replacement pigs) as well as pork and other food entering the premises.

10. Coordinated through the University of Minnesota’s ProgRESSVet program, building ASF response capacity in Vietnam included a series of ASF-related courses delivered in eBook format, including:

- African Swine Fever Epidemiology and Risk Assessment
- Biosecurity and ASFV Risk Management in Pig Farms
- Organization of Control Plans at the Central Level
- Introduction to Spatial Analysis
- Introduction to Epidemiological Modeling
- ASF vaccine evaluation & post-vaccination monitoring

Four on-line and in-person workshops with animal health officials of the Vietnam Department of Animal Health were conducted as well.

SHIC, NPPC, the National Pork Board, and AASV are working closely with USDA to help prevent ASF from entering the US but also to be prepared to respond should an outbreak occur. The industry continues to actively identify and prioritize critical research needs and work in collaboration with state and federal animal health officials.

Potential for JEV in US Leads to USDA Statement on Preparedness and Testing

The US swine industry, including the Swine Health Information Center, continues to prepare for the possible incursion of Japanese encephalitis virus in pigs. The threat of JEV has prompted the USDA APHIS Veterinary Services division to issue a statement regarding related testing and preparedness. The statement also addresses the diagnostic submission process and USDA plans for further preparedness activities.

Diagnostic testing for any animals with clinical signs suggesting of Japanese encephalitis virus (JEV) is available at no cost to animal owners and producers at the National Veterinary Services Laboratories (NVSL) in Ames, Iowa. Veterinarians and producers must first notify their State or Federal Animal health officials if JEV is on a differential list, and these officials will assist in the submission and sampling as needed. NVSL uses both PCR and sequencing to identify and confirm the virus. While serology has proven useful in the surveillance and diagnosis of JEV in endemic countries, it is of limited use in JEV free countries and will not be offered as an on-demand diagnostic test at NVSL at this time. USDA scientists are actively collaborating with partners to develop and characterize additional diagnostics, and in the future USDA will expand their active JEV research program to the National Bio and Agro-Defense Facility, once the facility is fully operational, to better understand the pathogenesis, evolution and epidemiology of JEV.

USDA APHIS Veterinary Services
October 2023

Contact information for the diagnostic virology laboratory at the National Veterinary Services Laboratory is 515-337-7551 or NVSL.DVL.TeamLeads@usda.gov.

The US is considered a geographic region at risk for the introduction of Japanese encephalitis, a disease capable of affecting humans as well as pigs. JE is transmitted primarily by Culex mosquitoes infected with the virus. Environmental conditions similar to JEV endemic countries, as well as the availability of susceptible hosts and vectors, create concern for the US pork industry and public health officials. Clinical signs of JEV in the breeding herd includes reproductive failure, delayed farrowing, stillbirths, mummified fetuses, abortions, and weak or shaker piglets.

One of SHIC's JEV preparedness efforts was the implementation of a [systematic literature review](#) led by researchers at Kansas State University to increase understanding of the virus's biology, components and dynamics of transmission, and environmental factors necessary for incursion and establishment. The same team at KSU is also re-assessing potential [pathways of JEV introduction](#) into the US via a risk assessment with funding provided by SHIC. Along with the [Center for the Ecology of Infectious Disease](#) at the University of Georgia, researchers at KSU, and the USDA National Bio and Agro-Defense Facility, Foreign Arthropod-Borne Animal Diseases Research Unit are studying the spread of JEV in Australia (2022) to help inform and model the potential spread in the US, should there be a JEV incursion.

Following SHIC's October 2022 symposium, "[Japanese Encephalitis Virus: Emerging Global Threat to Humans & Livestock](#)," hosted by the Center for the Ecology of Infectious Diseases at UGA, development of a Japanese encephalitis informational website was identified as a priority action item. The site, developed by CEID and sponsored by SHIC, went live in October 2023 and can be found at JEVISN.org.

Emerging Global Swine Disease Threats: SHIC Offers Industry Actionables and Support

Emerging infectious diseases are a constant threat to the swine industry. Pathogens are generally considered emerging if they are new or if they have recently changed characteristics, such as an expanded geographic range, a difference in primary production phase affected, or an increase in clinical pathogenicity to the herd (USDA, 2017). Considering emerging disease threats to the swine industry, the Swine Health Information Center's activities and actions – directed by the Center's [mission statement](#) - help protect and mitigate emerging disease risks to the North American swine population.

Monitoring domestic and global swine diseases
Reviewing swine disease monitoring reports, such as SHIC's monthly [domestic and global](#) versions, is important to maintain an acute awareness of emerging swine diseases throughout the world. The

Canadian Community for Emerging and Zoonotic Diseases also publishes a [weekly intelligence report](#) covering all species (CEZD, 2023). Japanese encephalitis virus, an example of an emerging disease, has been identified through global disease monitoring as a priority for North American prevention and preparedness activities. The US and Canada are currently negative for this mosquito-borne virus capable of infecting pigs and humans. In 2022, an outbreak of [JEV genotype IV](#) spread rapidly across new regions of Australia, affecting breeding swine herds and causing reproductive failure, stillbirths, mummified fetuses, and abortions (Australian Government, 2023).

Obtaining a definitive diagnosis

SHIC offers support for diagnostic fees designed to identify newly introduced or emerging swine diseases. This support is available for cases where an etiology is not readily detected, or the presumed etiology is negative on routine testing. Diligently pursuing a definitive diagnosis is critical for early and rapid identification of newly emerging diseases, swift implementation of control strategies, and reducing production impacts and risk of spread. With SHIC's diagnostic fee assistance, porcine sapovirus was identified as an emerging cause of diarrhea and enteritis in nursing piglets after routine diagnostics for porcine epidemic diarrhea virus, porcine deltacoronavirus, transmissible gastroenteritis virus, and rotaviruses were negative (Shen et al., 2022). This experience revealed the risks of narrowly focusing on a single pathogen during a diagnostic investigation, which may result in missed detections of emerging or less common pathogens ([SHIC/AASV Webinar, 2023](#)).

Performing outbreak investigations

SHIC funded the development of the [Standardized Outbreak Investigation Program](#) to enable consistent epidemiological investigations of newly emerging swine diseases and identify biosecurity hazards after field outbreaks. Through deliberate data collection post-disease incursion, entry events most frequently associated with outbreaks are identified as the highest biosecurity hazards on the farm. In one case, the outbreak investigations of *Actinobacillus pleuropneumoniae* serotype 15 cases in central Iowa from November 2021 to January 2022 revealed mortality removal through rendering transport as a significant hazard. Identification of

entry events at high risk for domestic disease entry enables biosecurity practices to target specific vulnerabilities and close biosecurity gaps for foreign and emerging swine disease incursion.

Enhancing biosecurity across all phases of swine production

SHIC's [Wean-to-Harvest Biosecurity Research Program](#) was launched in September 2022, along with the Foundation for Food & Agriculture Research and the Pork Checkoff, in response to an identified biosecurity gap. Considering the interconnectedness of the swine industry, biosecurity vulnerabilities and higher endemic disease prevalence in pigs post-weaning serve as a risk of emerging disease introduction and spread for all phases of swine production. To achieve a comprehensive biosecurity approach, new tools and technologies are currently being investigated through this program across three areas, including 1) site bioexclusion to prevent disease introduction, 2) site biocontainment to prevent disease spread, and 3) transport biosecurity to prevent disease movement from markets and first points of concentration back to the farm (SHIC/FFAR/Pork Checkoff, 2022). Research projects funded and underway investigate innovative biosecurity solutions such as self-vaccination technology to reduce the need for vaccine crews, novel biosecurity entrance systems as a replacement to shower-in, alternative cost-effective methodologies for livestock trailer and truck cabin disinfection and understanding motivators for increasing biosecurity protocol compliance of personnel.

Report adapted from presentation and proceedings paper for the Western Canadian Association of Swine Veterinarians conference on October 19, 2023. See original report with references authored by SHIC's Dr. Megan Niederwerder and Dr. Paul Sundberg [here](#).

SWINE DISEASE MONITORING REPORTS

As the world deals with the COVID-19 pandemic, SHIC continues to focus efforts on prevention, preparedness, and response to novel and emerging swine disease for the benefit of US swine health.

DOMESTIC

This month's Domestic Swine Disease Monitoring Report brings Porcine Circovirus type 3 PCR data to the SDRS. The addition will help stakeholders to better understand the trends of PCV3 detection, such as the higher positivity of this virus in the adult/sow farm age category. Also, the report brings information about the second consecutive month of increased PRRSV-positivity in the wean-to-market category, raising an alert for sow farms around these positive sites. The PRRSV L1C variant (L1C.5) detection also supports the increased activity in wean-to-market since 62.5% of these sequences were detected in wean-to-market sites in October. For enteric coronaviruses, PEDV positivity in adult/sow farms is above the wean-to-market category for the third consecutive month (August, September, and October). A similar PEDV trend had been seen in 2016 and 2017. For the Influenza A virus, the overall positivity had a moderate increase driven by submissions from adult/sow farms and unknown age categories. In the confirmed tissue diagnosis database, there were alarms for an increased number of PRRSV, *Glaesserella parasuis*, *Streptococcus suis*, and *Pasteurella multocida* between September and October. In the podcast, SDRS hosts talk with Dr. William (Bill) Hollis, AASV president and president of Professional Swine Management from Carthage Veterinary Service, about endemic disease outbreak preparedness, disease management, and elimination.

[VIEW REPORT](#)

GLOBAL

The November Global Swine Disease Monitoring Report shares news from Sardinia, where a historic result has been achieved as African swine fever virus genotype I has been eradicated throughout the entire region. Read about foot-and-mouth disease in the Americas where the bordering states of Colombia and Venezuela launched coordination efforts for the eradication and prevention of the disease. News from the World Organisation for Animal Health alerts veterinary authorities, and the pig industry, about the dangers of using substandard ASF vaccines.

[VIEW REPORT](#)