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Research Scholar: Searching the Past to Inform the Future

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Searching the past to inform the future

By Mary Lou Peter

Just call Sarah Jones a super sleuth. The senior in food science and industry is spending part of her last year at Kansas State University digging into just how long people have been concerned about the connection between human and animal health. At least 130 years, it turns out.

Jones' interests have taken her from her hometown of Riverton in southeast Kansas to Washington, D.C., in spring 2016 where she met with officials from the Food and Drug Administration, the Congressional Research Service and others; to Bethesda, Maryland and the



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National Library of Medicine archives this summer. While in Bethesda, she delved into hundreds of historical documents and photos, including a review of the One Health philosophy advocated by Dr. John Shaw Billings in 1879.

Billings' One Health approach, sparked by diseases at the time that affected both humans and animals such as trichinosis, held that human and animal health were inextricably linked. His beliefs were not well received in the late 1800s but are widely accepted today by public health, veterinary and food-system scholars, Jones said.

“I work with Randall Phebus, professor of food safety in the Food Safety and Defense Laboratory on campus and am involved with the Frontier program as well; these experiences allow me to explore food microbiology as well as regulatory issues,” she said.

The Frontier program, co-directed by Justin Kastner, associate professor of food safety and security, and his

Washington, D.C.-based colleague Jason Ackleson, is a multi-institutional collaboration designed to provide students in-depth knowledge of border security, food security, trade policy and related issues. Through experiential-learning field trips to venues across America, the Frontier program has developed a reputation as an innovative and holistic skill-development program that builds multidisciplinary breadth into students — including students studying the complexity of the global food system.

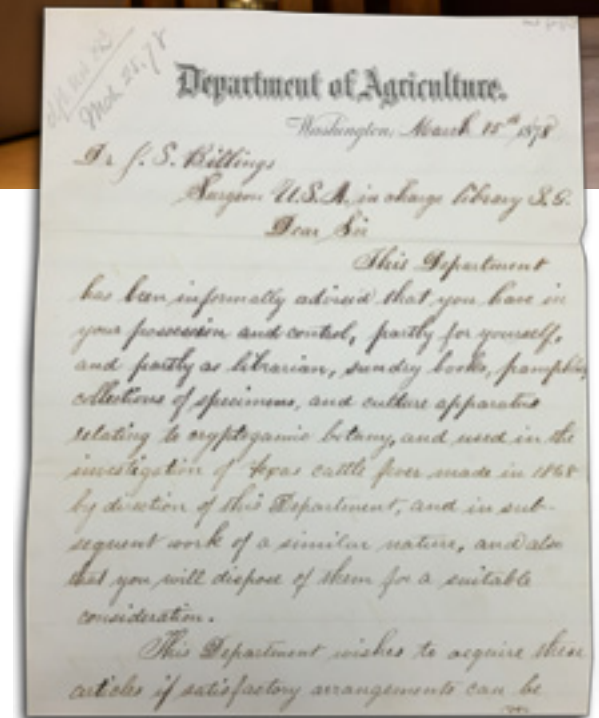
That is exactly what Jones is doing. She is focused on the current-day concern about antimicrobial resistance in animals and humans.

Antibiotics and similar drugs, together called antimicrobial agents, have been used for 70 years to treat patients who have infectious diseases, according to the Centers for Disease Control and Prevention. Since the 1940s, these drugs have greatly reduced illness and death from infectious diseases. But they now have been used so widely and for so long that the infectious organisms the antibiotics were designed to kill have adapted to them, making the drugs less effective.

Each year, at least 2 million people in the United States become infected with bacteria that are resistant to antibiotics and at least 23,000 of them die as a direct result of these infections, according to the CDC.

“Antimicrobial resistance, one of society's current public health concerns, is increasingly included in the list of problems worthy of tackling with a One Health approach,” Jones said.

To keep up with global demand for a safe, consistent food supply, livestock producers have used subtherapeutic levels of antibiotics for maintenance to maximize output. Because of concerns about antimicrobial resis-



tance, the Food and Drug Administration is implementing new regulations that provide for more direct veterinary oversight of antibiotic use in livestock production. The Veterinary Feed Directive will be fully implemented in December 2016.

“Though more research needs to be completed, treatments common in the food industry such as rapid chilling and sub-thermal heating in food preservation, in addition to acid interventions and chemical chlorines used to clean equipment, may actually be leading to a breeding ground for stronger, more resistant microorganisms,” Jones said.

Her review of the history of antimicrobial resistance led to a deeper understanding of current-day challenges and approaches, she said.

“I hope to marry my scientific background in food science to the legislative implementation of public policy as a civil servant in the federal government,” Jones said.