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Scientists from Scotland to Sweden Arrive in Knoxville to Help Eradicate Bovine TB

KNOXVILLE, Tenn. – In 2008, the U.S. Department of Agriculture spent \$31 million to depopulate herds of cattle affected by bovine tuberculosis (TB), even though the risk of the disease has been significantly reduced in the U.S. over the past several decades. Worldwide, especially in developing countries, the disease persists, which could threaten the U.S. cattle industry in terms of international trade.

The development of new tools to better understand bovine TB and to help disease eradication efforts by the USDA is the focus of a workshop to be held at [the National Institute for Mathematical and Biological Synthesis \(NIMBioS\)](#), July 7-9, on the University of Tennessee, Knoxville, campus.

The workshop brings together experts from around the world to share ideas about how mathematical modeling approaches for cattle movements in the United States may influence disease transmission models as well as inform policies and programs for reducing the spread of bovine TB. Scientists attending the workshop include those with expertise in mathematical network and disease spread models, as well as scientists with expertise in cattle movements, livestock industry practices, and the bovine TB agent.

"NIMBioS is uniquely situated to foster such collaborations because one of its specific priorities is bringing together mathematics and biology researchers to address problems that are important to the animal industry," said Agricola Odoi, workshop co-organizer and an assistant professor in the Department of Comparative Medicine at the University of Tennessee School of Veterinary Medicine.

One of the primary goals of the workshop is to assist the USDA in identifying new and novel methods for evaluating control options for bovine TB.

"There is a lot we don't know or understand about cattle movement across the U.S.," said USDA veterinarian Katie Portacci. "I think the expertise that NIMBioS is bringing to the workshop will help us better understand bovine TB transmission dynamics through cattle movement."

In terms of controlling the spread of the disease, one of the goals of the USDA is to move away from the use of depopulation as a management tool, Portacci said.

“I think the NIMBioS meeting will help us come up with alternative ways of dealing with the problem of bovine TB.”

Bovine TB is a slow, progressive bacterial disease and is difficult to diagnose in the early stages. As the disease progresses, animals may exhibit emaciation, lethargy, weakness, anorexia, low-grade fever, and pneumonia with a chronic, moist cough. It usually is transmitted through contact with respiratory secretions from an infected animal.

Mostly found in cattle, bovine TB can also infect other domesticated and wild animals. The U.S. State and Federal Cooperative Bovine TB Eradication program, which began in 1917, has made significant progress in decreasing the prevalence of the disease in humans and cattle. However, small pockets of the *M. bovis* infection still exist in cattle and wildlife in the United States.

[Modeling the Impact of Cattle Movements on Transmission Dynamics of Bovine Tuberculosis](#) will be a NIMBioS Investigative Workshop. Colleen Webb, associate professor of biology at Colorado State University, joins Odoi as co-organizer.

NIMBioS Investigative Workshops involve 30-40 participants, of which about half are invited. Individuals with a strong interest in the topic can also apply to attend.

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The National Institute for Mathematical and Biological Synthesis (NIMBioS) brings together researchers from around the world to collaborate across disciplinary boundaries to investigate solutions to basic and applied problems in the life sciences. NIMBioS is funded by the National Science Foundation in collaboration with the U.S. Department of Homeland Security and the U.S. Department of Agriculture, with additional support from The University of Tennessee, Knoxville.

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