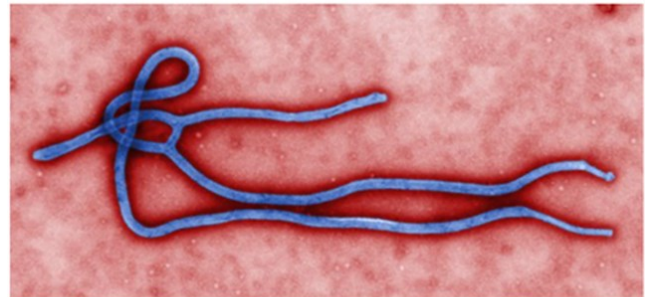




# SCIENTISTS DISCOVER NEW SPECIES OF EBOLA IN SIERRA LEONE

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Ebola, also known as Ebola Virus Disease (EVD), is a rare viral hemorrhagic fever of humans and other mammals caused by an infection with one of the Ebola virus species. Four species of Ebola virus are known to cause disease in humans, these include: *Tai Forest ebolavirus*, *Sudan ebolavirus*, *Bundibugyo ebolavirus*, and *Zaire ebolavirus*. The *Reston ebolavirus* has been observed in animals in Asia (non-human primates), but not as a cause of human disease.<sup>2</sup>



Research continues to better understand the Ebola virus<sup>1</sup>

Ebola virus interferes with the clotting mechanisms of blood leading to severe internal and external bleeding. The virus is introduced into the human population via direct contact with bodily fluids, secretions, or organs of infected animals (e.g. bats and primates). It spreads throughout the human population by direct contact with bodily fluids (e.g. blood, semen, and saliva) of infected people. Surfaces and materials contaminated with bodily fluids of an infected person can also be a source of transmission. At present, there is no cure or antiviral drug licensed by the U.S. Food and Drug Administration (FDA) to treat EVD in people.<sup>3</sup>

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# SCIENTISTS DISCOVER NEW SPECIES OF EBOLA IN SIERRA LEONE (CONTINUED)



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On July 26, 2018, government officials from Sierra Leone announced that researchers with the PREDICT Ebola Host Project identified a new strain of Ebola virus in bats. The discovery was made by scientists at the University of California Davis' One Health Institute and Columbia University's Center for Infection and Immunity working with the government of Sierra Leone and the University of Makeni and Metabiota.<sup>4</sup>

The work is part of the PREDICT Ebola Host Project, funded by the United States Agency for International Development. The Predict Research is designed to monitor wildlife specimens for known pathogens in the wake of the West African outbreak.



The District of Bombali and the outskirts of the cities of Kamakwie and Makeni.<sup>5</sup>

The new strain, named “*Bombali*,” after the region in which it was found, is the sixth known species of Ebola virus. Prior to this discovery, the most recent strain discovered was *Bundibugyo ebolavirus* in 2008. This announcement comes following a new Ebola outbreak in the Democratic Republic of Congo (DRC) and two years after the end of the worst Ebola outbreak in West Africa that killed over 11,000 people. The Zaire virus has struck DRC nine times with the latest outbreak having been declared over on Tuesday July 24, 2018, by the World Health Organization (WHO) after a 10-week reemergence that claimed 33 lives.<sup>6</sup>

The PREDICT team sampled more than 6,000 animals in Sierra Leone and performed laboratory tests to look for both known and unknown Ebola viruses.

The *Bombali ebolavirus* was found in five individual bats belonging to two different species of insectivorous bats, the Angolan free-tailed bat and the Little free-tailed bat.<sup>5</sup> These two species roost together and are commonly found across Sub-Saharan Africa. According to the researchers, the infected bats were found nesting in people’s homes. Infected bats are not known to show signs of illness but can shed the virus in their saliva and feces. As a result, other animals and people may be exposed if they touch live or dead bats, ingest food or water on



The Angolan free-tailed bat (*Mops condylurus*). Credit: Jakob Fahr<sup>9</sup>

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## SCIENTISTS DISCOVER NEW SPECIES OF EBOLA IN SIERRA LEONE (CONTINUED)



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which bats have fed or if they come into contact with the urine or feces of infected bats.<sup>7</sup>

The natural reservoir for Ebola virus is still unknown, but these new findings are consistent with existing evidence that points to bats as the most likely source.



PREDICT's Ebola Host Project team processes samples collected safely and humanely from bats in the field. EHP is active in Sierra Leone, Guinea, and Liberia where teams are sampling wildlife and domestic animals to learn more about potential host species for ebolaviruses. Credit: Jaber Belkhiria/UC Davis<sup>8</sup>

The methodology used to identify the new virus involved sequencing viral fragments that were detected in the infected bats. Researchers stated, that although they did not attempt to isolate live virus from the bats, they were able to sequence an almost complete genome from the viral fragments. There was enough variation within the genomic sequence for the *Bombali ebolavirus* to be considered a new species of Ebola virus.

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Using the genomic sequence, the scientists working on the project made a copy of the main protein on the exterior of the virus. Using the genetic code as the recipe, they put that protein on what's called a pseudovirus, which is a benign synthetic virus-like entity that is used in research. The pseudovirus bearing the surface protein displayed evidence that it could invade human cells.<sup>5</sup> Further research is needed to determine if Bombali is indeed pathogenic and harmful to humans. The Centers for Disease Control and Prevention (CDC) has received oral and rectal swabs taken from infected bats. Their goal is to extract whole infectious virus from the samples.<sup>9</sup>

The scientists credited with the discovery are currently in the process of publishing a scientific paper with the details of their findings in a yet to be named journal. The *Bombali* virus has the potential to infect human cells, but it is unknown if the virus has already caused human infections or if it is harmful to humans.<sup>1</sup> As a precautionary measure, they have recommended that locals in the Bombali region limit their contact with bats.

*Editor's note:* Since the submission of this article, the discovery of the Bombali virus in bats in Sierra Leone and the sequencing of the complete genome was officially published on August 27, 2018 in the journal *Nature Microbiology*.<sup>8</sup>

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## FLU SEASON IS HERE, WILL YOU GET VACCINATED?



How can you protect yourself and your loved ones from influenza? The flu vaccine is the first and most important step in protecting against this serious disease. The CDC recommends a yearly flu vaccine for everyone six months of age and older. While there are many different influenza viruses, the seasonal flu vaccine is designed to protect against the main viruses that research suggests will cause the most illness during the upcoming flu season. People should begin getting vaccinated as soon as the flu vaccine becomes available, ideally by October, to ensure that as many people as possible are protected before flu season begins. Remember, health care workers and laboratory personnel who work with flu specimens are at a higher risk of contracting the virus and should be vaccinated as early as possible.



For the most current information about influenza in Florida, please see Florida's weekly surveillance report, the Florida Flu Review, which can be found at: <http://www.floridahealth.gov/diseases-and-conditions/influenza/florida-influenza-weekly-surveillance.html>



The CT laboratory coordinators continue to reach out to the health and medical community by offering training for CT preparedness at hospitals and county health departments (CHDs). This training covers chemical terrorism awareness and the collection of clinical specimens after a chemical terrorism event. Hospital and CHD staff play an important role in the response to a chemical exposure event when clinical specimens are collected for analysis. For your convenience and to increase participation, this training can be presented at your facility. Each course lasts approximately one hour with one 15-minute break between courses. Training manuals, "hands-on" exercise materials, and CT preparedness kits will be provided. This training is recommended for physicians, nurses, epidemiologists, emergency department personnel, phlebotomists, hospital and health department laboratory personnel and others who may collect clinical specimens. Contact the CT laboratory coordinators in your region for more information (see the Bureau of Public Health Laboratories Directory for contact information).

## LABORATORY RESPONSE NETWORK (LRN) TRAINING—BIOLOGICAL DEFENSE

The Bureau of Public Health Laboratories is currently offering an LRN sentinel laboratory training course at no cost at your facility. This training follows the American Society for Microbiology (ASM) Sentinel Level Clinical Laboratory Protocols for Suspected Biological Threat Agents and Emerging Infectious Diseases. Scheduling the training at your facility is a relatively easy process. Determine when you would like to have the training and how many people will be attending. A time will be set up that is convenient for all. The training materials are provided as well as the biodefense reference manuals for your laboratory.

The training syllabus includes: an overview of the LRN; biosafety risk assessment and biosafety for the clinical laboratory; the ASM protocols for ruling out potential bioterrorism agents and how to refer a sample to the state LRN Public Health Reference Laboratory when a bioterrorism agent cannot be ruled out; and an introduction to the CDC Select Agent Program.

Please contact Betty Wheeler at 904-791-1568 (Betty.Wheeler@FLhealth.gov) to schedule a class for your facility.

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**Editor - Betty Wheeler**

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