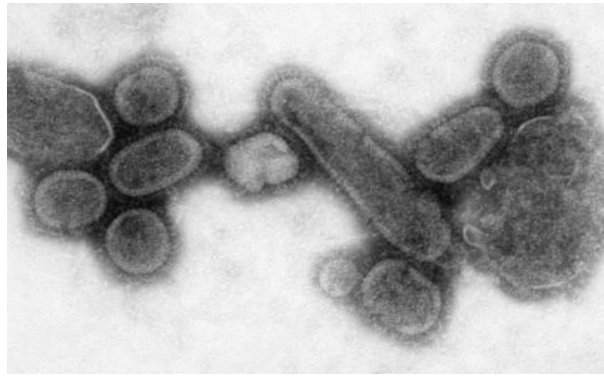




0. THE DEAD PROVIDE ANSWERS - Story Preface

1. WAS IT LIKE SARS?

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9. SWINE FLU (Influenza A H1N1) OUTBREAK of 2009

After Dr. Johan Hultin removed the lungs of an Inuit woman who died of Spanish Flu, 80 years after her death, scientists were able to recreate the virus which caused the world's worst pandemic. When they tested the recreated virus on monkeys, it was as lethal as it had been during the 1918-19 outbreak. This image depicts the recreated virus. Photo by Cynthia Goldsmith. Online, courtesy Centers for Disease Control.

Since 1862, while Americans were fighting each other during the U.S. Civil War, the United States military establishment has kept autopsy tissue samples of dead soldiers.

Preserved in paraffin, these remains, together with surgical tissue samples, fill many warehouses near Walter Reed Hospital and are controlled by the Armed Forces Institute of Pathology. (Some folks refer to this Institute as the "Library of Congress of the dead.")

Worried that another pandemic of Spanish Flu could develop, Dr. Jeffrey Taubenberger (Chief of Molecular Pathology at the Armed Forces Institute of Pathology) wanted to find tissue samples from WWI soldiers who died of the flu. And ... he wanted to track down the mass killer-virus which had escaped detection for eighty years.

Believing pneumonia-afflicted lung tissue, analyzed with modern knowledge and equipment, could provide 21st-century answers, Taubenberger searched for the best samples. Perhaps he recalled the observations of Isaac Starr, a third-year medical student from the University of Pennsylvania, who gave first-hand reports (this is a PDF link) on the epidemic:

As their lungs filled ... the patients became short of breath and increasingly cyanotic. After gasping for several hours they became delirious and incontinent, and many died struggling to clear their airways of a blood-tinged froth that sometimes gushed from their nose and mouth. It was a dreadful business.

When Dr. Taubenberger found the best tissue samples however, he did not have enough material to process his work. He and his research team, headed by molecular biologist Ann H. Reid, wanted to recover fragments of the virus' RNA genome so they could understand its genetic code.

If that were possible, perhaps the medical industry could be ready if Spanish Influenza were ever to strike again. But Taubenberger's team ran into a serious problem: Relevant tissue samples were depleted before their code-recovery work was finished.

How (and where) does one recover "evidence" from people who have been dead eighty years? Learning of Taubenberger's need for more reliable samples, Dr. Kirsty Duncan (a Canadian scientist) looked to the frozen ground on a Norwegian island where flu victims had been buried.

Her team's search at Longyearbyen (look just south of the North Pole on this map) produced no new evidence. Flu victims there had been buried in, or over, the permafrost. But a retired Swedish pathologist living in San Francisco, who had tried to isolate the Spanish flu virus among the Alaskan Eskimos nearly fifty years before, was about to make an amazing contribution.

Native elders had given Dr. Johan Hultin permission to open a mass grave of Inuit (Eskimos) at Brevig Mission on the Seward Peninsula in 1951. (Nome, Alaska is also on the Seward Peninsula, at roughly 164 degrees longitude, 64 degrees latitude.) His search, back then, did not produce his hoped-for results: to develop a Spanish Flu vaccine.

But what if Hultin resumed what he had started in the 50s? If he received permission again, what if he could find a still-preserved flu victim? What if that victim had tissue samples which Dr. Taubenberger's team could use?

With no technical or financial support, Hultin went to Brevig, Alaska. With him he took his wife's pruning shears. Again receiving permission from the Native Elders, Dr. Hultin reopened the mass grave and found what the Washington research team needed. An Inuit woman, whom Dr. Hultin called "Lucy," had died in the flu epidemic. She was preserved in the Alaskan permafrost and her lungs were still in tact. Hultin removed Lucy's lungs and sent them to Taubenberger.

Thanks to cooperation between Drs. Hultin and Taubenberger, tests revealed very positive results. With that 80-year-old tissue, the Armed Forces Institute of Pathology team continued their genetic-code quest and published their findings. Dr. Reid was even able to map out the hemagglutinin gene which is key to understanding the flu virus.

Although much more is now known about the killer virus, Reid acknowledges a significant problem. The more scientists learn, the deeper the mystery surrounding the Spanish Flu Pandemic.

The main question, however—what was the source of Spanish Flu?—was finally answered. Researchers are fairly certain the killer virus came from "avian influenza."

In other words, experts think that Spanish Flu was a kind of "bird flu."

See [Alignments to State and Common Core standards for this story online at:](#)

<http://www.awesomestories.com/asset/AcademicAlignment/THE-DEAD-PROVIDE-ANSWERS-Spanish-Flu-Pandemic>

See [Learning Tasks for this story online at:](#)

<http://www.awesomestories.com/asset/AcademicActivities/THE-DEAD-PROVIDE-ANSWERS-Spanish-Flu-Pandemic>

Questions 2 Ponder

How Did the Inuit People Help to Explain Spanish Flu?

During the Spanish-Flu pandemic, an Inuit woman whom Dr. Johan Hultin calls "Lucy," died of the illness. Eighty years later, her preserved body answered the question: What was the source of Spanish Flu?

Hultin had attempted to answer the question decades before, but he was not able to recover enough tissue from the Inuit bodies he had examined. Lucy, whose remains were preserved in the Alaskan permafrost, had lungs which were still in tact.

Removing Lucy's lungs, Dr. Hultin sent them to a pathologist at the Armed Forces Institute of Pathology. There, Dr. Jeffrey Taubenberger and his team discovered that the killer virus, which caused Spanish Flu, was most likely an "avian influenza." In other words, the virus originated in birds.

Do you think that it is acceptable to disinter human remains to look for answers the way Dr. Hultin did? Why, or why not?

Before he began his quest to find useable tissue from Spanish-Flu victims, Dr. Hultin received permission from Inuit tribal elders. Does that change your answer to the prior question? Why, or why not?

Do you think it is important that we now have more answers about the virus which caused the Spanish-Flu pandemic? Why, or why not?

Do you think it is dangerous for scientists to work with a virus as lethal as the one which caused Spanish Flu? Explain your answer.

What Is the Library of Congress of the Dead?

Since 1862, the U.S. military has kept autopsy-tissue samples of soldiers at a place called the Armed Forces Institute of Pathology. Preserved in paraffin, these remains—which reached 3 million specimen in 2006—are stored in warehouses referred to as the "Library of Congress of the Dead."

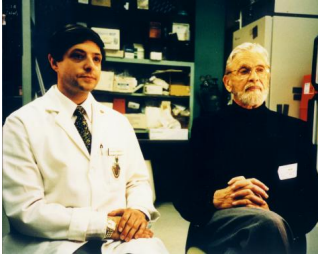
In addition to autopsy samples, the warehouses comprising this Library of Congress of the Dead also store surgical-tissue samples. Preserved in paraffin, they fill many warehouses near Walter Reed Hospital in Washington, D.C.

The tissue samples allow scientists to examine items from the past to understand illnesses of the present (and to use contemporary tools to determine the cause of past diseases).

Do you think having a kind of "Library of Congress of the Dead" is a good idea? Why, or why not?

Do you think 21st-century scientists should have access to tissue samples of 19th-century people as they attempt to troubleshoot issues of today? Explain your answer.

Should soldiers, who served their country, have the right to agree (or not agree) that their tissue samples may be preserved for any use to which the U.S. federal government wishes to put them? Why, or why not?



Drs. Taubenberger and Hultin - Search for Spanish Flu Virus

Armed Forces Institute of Pathology.

View this asset at:

<http://www.awesomestories.com/asset/view/Drs.-Taubenberger-and-Hultin-Search-for-Spanish-Flu-Virus>

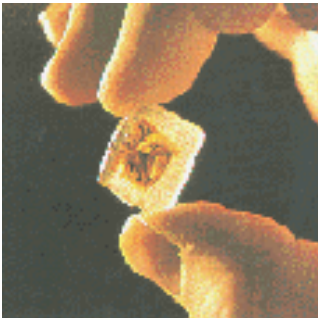


Ann H. Reid - Searching for Answers to Spanish Flu

Image online, courtesy Armed Forces Institute of Pathology.

View this asset at:

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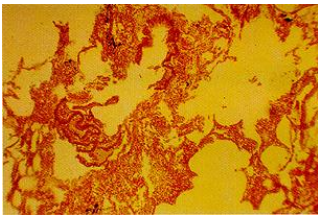


Tissue Samples of WWI Spanish-Flu Victims

Image online, courtesy Armed Forces Institute of Pathology.

View this asset at:

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Lung Tissue Infected with Spanish Flu

Image online, courtesy Armed Forces Institute of Pathology.

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View this asset at: <http://www.awesomestories.com/asset/view/Lung-Tissue-Infected-with-Spanish-Flu>



Dr. Kirsty Duncan - Searching for Answers in Norwegian Bodies

Image online, courtesy [Access Excellence](#).

View this asset at:

<http://www.awesomestories.com/asset/view/Dr.-Kirsty-Duncan-Searching-for-Answers-in-Norwegian-Bodies>



Longyearbyen, Norway

Image of 19 September 2006 photo by Bjørn Christian Tørrissen, online via Wikimedia Commons.

The photographer describes the picture as follows: "A view of 'downtown' Longyearbyen, Adventfjorden (sea) and Adventdalen (valley), seen from Platåberget (the Plateau Mountain) in September, the day after the first snowfall of the season."

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Map of Arctic Region

Map online, courtesy the Perry-Castañeda Library Map Collection, University of Texas at Austin.

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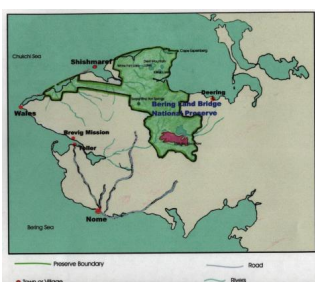


Mass Grave at Brevig Mission - Evidence of Spanish-Flu Virus

Image online, courtesy U.S. National Library of Medicine, online via the National Institutes of Health.

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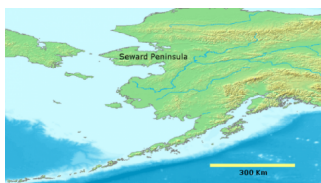


Location of Brevig Mission on the Seward Peninsula

Map, courtesy National Park Service.

View this asset at:

<http://www.awesomestories.com/asset/view/Location-of-Brevig-Mission-on-the-Seward-Peninsula>



Seward Peninsula - Map Locator

Image online, courtesy Wikimedia Commons.

View this asset at: <http://www.awesomestories.com/asset/view/Seward-Peninsula-Map-Locator>

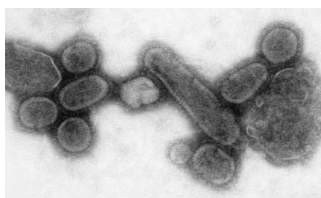


Searching for Spanish-Flu Answers at Brevig Mission, 1951

Image, National Park Service.

View this asset at:

<http://www.awesomestories.com/asset/view/Searching-for-Spanish-Flu-Answers-at-Brevig-Mission-1951>



THE DEAD PROVIDE ANSWERS

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Virus Killers: Spanish Flu and H5N1 ("Bird Flu")

Clip from *The Flu Bomb*, produced by Beth Murphy of Principle Pictures. Copyright, Principle Pictures, all rights reserved. Clip provided here as fair use for educational purposes and to acquaint new viewers with the production.

Online, courtesy Factual TV Channel at YouTube.

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