

# Flu Survivors Still Immune... 90 Years Later

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## The Great Pandemic of 1918

The flu epidemic of 1918 was the worst ever seen on this planet and was responsible for the deaths of over 50 million people.

Researchers are reporting that survivors alive today are still producing antibodies to this infamous virus that attacked 90 years ago.



*A Dartmouth University gymnasium converted to an infirmary in 1918.*

Studies from Vanderbilt University, shows people who lived through the pandemic as children are still producing antibodies to the virus today, even though they are 91 to 101-years-old.

## Immune “memory” lives on

"Most people have a notion that elderly people have very weak immunity or they have lost immunity," said lead researcher Dr. James E. Crowe Jr., a professor of pediatrics, microbiology and immunology at Vanderbilt University.

"This study shows that extremely elderly people have retained memory of being infected with the 1918 flu, even 90 years later," Crowe said.

This is the first evidence that shows that people developed significant immunity to the 1918 flu virus.



*It has been estimated that 50 to 100 million people died from the worldwide Spanish Flu epidemic from 1918 to 1919.*

For the study, Crowe's team studied antibodies in the blood of 32 people in their 90s and 100s, born during or before 1915. They found that all 32 people had

antibodies to the 1918 strain of flu virus. In fact, several of these people were still producing the antibodies to the virus.

### **Flu antibodies are still active**

In experiments with mice, the researchers found that these antibodies continue to protect the mice from infection with the 1918 flu strain.

The study also shows that people have a "surprising ability" to maintain immunity to diseases they were exposed to a long time ago, Crowe said.

"Whether this long-term immunity is peculiar to the 1918 flu virus is not known," Crowe said. He believes more work needs to be done to understand the full extent of this immune response. "The elderly might be a very good donor source for finding antibodies against viruses," he said.



*Health care workers in Sydney, Australia, 1918.*

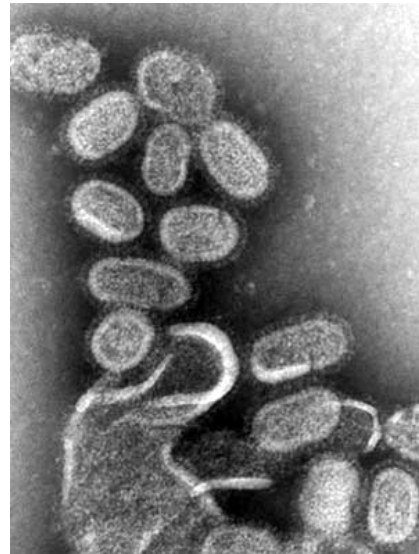
### **Long term antibody survival of interest to vaccine producers**

"This study shows that humans can develop very potent immune responses against dangerous influenza that cause pandemics," Crowe said. "It gives us hope that we can develop vaccines and

antibody treatments for any other pandemic viruses that come along," he said.

"The implication of this study is the 1918 virus was so powerful that the immunity you had to have in order to survive was so prominent that it lasted for the rest of your life," said Marc Siegel of New York University.

"So, those in certain age groups who had seen a related virus had the strongest responses," Siegel said. "Either they died, or they developed a profound immune response," he said.



*Magnified 100,000 times in a Transmission Electron Micrograph, Influenza is an infectious disease of birds and mammals caused by RNA viruses of the family Orthomyxovirida.*

SOURCES: James E. Crowe Jr., M.D., professor, pediatrics, microbiology and immunology, Vanderbilt University, Nashville, Tenn.; Marc Siegel, M.D., associate professor, medicine, New York University School of Medicine, New York City, author, *Bird Flu: Everything You Need to Know About the Next Pandemic*; Aug.17, 2008, Nature.

### Virus Revived From Alaskan Permafrost



*American and Canadian scientists have recreated the actual influenza virus of 1918. Their work, as reported in the October, 2005 issue of Science (vol 310, p 77) uses a technique called reverse genetics to re-create a living 1918 virus. First, they gathered viral DNA from the preserved tissues of people who died in 1918 and 1919 -- including a woman whose body was frozen in the Alaskan permafrost.*