

Genetic analysis of the new H1N1 virus reveals that three of its genes, including the hemagglutinin gene (the H in H1N1), originally came from the 1918 Spanish influenza virus and have been present in pigs ever since. The genes have not changed much, likely because pigs do not live long enough to get reinfected with the same virus,

TVNL Comment: This is a man made flu. Where do you think those genes came from? Here is where:

US scientists who resurrected the 1918 Spanish flu virus that killed as many as 50 million people say they are beginning to understand why it caused such a deadly pandemic and say it could happen again.

They have begun comparing the genetic mutations in the 1918 flu to those being seen in the H5N1 avian flu virus, which is killing tens of millions of poultry and some people in Asia, in the hope of being able to predict and perhaps even prevent a similar pandemic.

“We felt we had to recreate the virus and run these experiments to understand the biological properties that made the 1918 virus so exceptionally deadly,” Terrence Tumpey of the US Centres for Disease Control and Prevention in Atlanta, who helped write the reports published jointly this week in the journals *Nature* and *Science*.

The experiment, in which the virus was recreated employing a process called reverse genetics using preserved samples of the 1918 virus, allowed the researchers to test it in the laboratory and in several animals.

It will help answer important questions, Dr Jeffery Taubenberger of the Armed Forces Institute of Pathology in Rockville, Maryland, said.

“How did the virus get into humans and how did the pandemic start? Second is to understand how this particular virus was so virulent,” Dr Taubenberger said.

“What can we learn from the lessons of 1918 to prepare for and mitigate against a future influenza pandemic?”

Drugs and vaccines could be designed to target the mutations found in the research, Dr Taubenberger said.

His team used pieces of virus taken from preserved samples from 1918 victims, as well as from the corpse of a victim dug up from a frozen grave in Alaska in 1998.

They used these pieces to make a replica of the 1918 virus and brought it back to "life" - viruses are not truly alive like other microbes - by combining it with modern influenza virus pieces and growing it in bacteria.

"We now think that the best interpretation of the data available to us is that the 1918 virus was an entirely avian-like virus that adapted to humans," Dr Taubenberger said.

This, he said, was different from the two other 20th century flu pandemics, in 1958 and 1967, in which different flu viruses actually swapped genes to become especially virulent.

"It suggests that pandemics can form in more than one way," Dr Taubenberger said.

There were several changes in each gene of the 1918 flu, Dr Taubenberger said. The H5N1 flu is beginning to show some of the same changes, he said, but appears to be early on in the process.

The findings reinforce the fears of health officials about H5N1 avian flu, which now does not easily infect humans but which has killed more than 60 people in four Asian nations.

It will take only a few mutations for a virus that has killed tens of millions of birds to become just as infectious and deadly in people.

But now the scientists are beginning to understand what the mutations are and perhaps start work on drugs and vaccines that can fight them.

"We identified a number of virus proteins that were essential for the development of severe pulmonary [lung] disease," Mr Tumpey said.

In particular, he said, a protein called hemagglutinin - the 'H' in flu names - was key. When the 1918 hemagglutinin was replaced with a modern influenza hemagglutinin, the resulting virus was not very deadly at all.

Also, another protein called neuraminidase was mutated in the 1918 virus in such a way that it could replicate itself under unusual conditions, perhaps deeper in the lung than other flu viruses. Neuraminidase is another key flu gene that makes up the 'N' in flu designations.

The 1918 flu was an H1N1 flu and very different from H5N1, the researchers stress.

They also said there was no danger to the public from their experiments, which are conducted in biosafety level three labs designed to contain the virus.

-Reuters