

**The Last Plague - The Immune System at Work**

*During the Program*

1. What groups of people are at risk of death from the ‘flu’?
2. How is a pandemic different from an epidemic?
3. How quickly did the victims of the 1918 ‘flu’ die?
4. Where did the Spanish 'Flu’ originate?
5. How many people died in the first year of the Spanish 'Flu’ pandemic?
6. Describe the major structural features of the influenza virus.
7. What are neuramidase and haemoglutenin?
8. How do virions (virus particles) spread between individuals?
9. Describe how the influenza virus attaches to cells and enters a cell.
10. What happens once the virus is inside the cell?
11. Describe how virions leave a cell.
12. How long does the virus reproduction cycle take? And how many new virions can be produced from one parent virus particle?
13. What are the components of the first line of body defence against pathogens?
14. What do **macrophages** do?
15. What are substances that are **non-self**? Give three examples.
16. Where do all **lymphocytes** originate?
17. How are cells detected as being ‘foreign’?
18. What are **antigens**?
19. ‘Flu antibodies seem to attach to haemagglutinin. How does this help to break the virus’ life cycle?
20. **T-lymphocytes** mature in the Thymus gland. Name the two important types of T cells.
21. What are **B-memory** cells?
22. What is **acquired immunity**?
23. Why do people not become immune to the ‘flu virus after they have recovered from a bout of the ‘flu? Explain your answer.
24. Type A influenza is the most deadly. It exists in several different subtypes based on the haemagglutinin and neuraminidase spikes. When did the following strains cause pandemics?

H1N1

H2N2

1. **What is the difference between Antigenic drift** and antigenic shift?
2. Here’s the name of a **strain** of flu virus: A/Beijing/50/98 (H3N2) What does each part of the name mean?

A

Beijing

50

98

H3N2

1. Antigenic shift has been found to be due to mixing of influenza virus between species. What two animal types seem to mix the flu virus with human flu virus?
2. What was the reason that the Hong Kong chicken ‘flu did not cause a human ‘flu pandemic?
3. Where are the four major ‘flu data collecting centres?
4. Is it likely that scientists are close to defeating the ‘flu virus? Explain your answer.