

## **Assignment Discovery – An Inside Look at the Flu.**

**BEFORE WATCHING, discuss and write your prior knowledge on these questions:**

1. What causes the flu?
2. How can you prevent the flu?
3. Why doesn't everyone get the flu during an epidemic?
4. Why doesn't every die of the flu once they have it?

**AS YOU WATCH, write answers to these questions:**

5. What is the 'flu pathogen?
6. How is the pathogen TRANSMITTED (spread)?
7. What can stop the flu pathogen from getting into your body?

8. Which cells does the flu attack?

9. How does the virus attack the cells?

10. What are the first symptoms of the seasonal flu

11. What are the later symptoms of this flu? Star the most dangerous:

12. What does the cell do once viruses get in?

13. What does your immune system do FIRST? (The generalized immune response.)

14. What does the immune system do next? The specific immune response.

15. How does some of the flu symptoms actually help fight the flu?

16. Why won't Holly get sick from the same virus again?

17. Why can she get sick from flu next year?

18. How could a flu vaccine work? (Not covered in the movie. Make an educated guess.)

# Assignment Discovery – An Inside Look at the Flu. (ANSWER KEY)

**BEFORE WATCHING**, discuss and write your prior knowledge on these questions:

1. What causes the flu?

**Viruses. This year, it's the H1N1 virus. Many different types of flu virus, some come from birds (avian flu), some come from pigs (this year's 'swine flu')**

2. How can you prevent the flu?

**\*\*\*1. Vaccination (you are eligible if you are under 24).**

**2. Washing hands often.**

**3. Wash dishes well.**

**4. Sneeze and cough in your sleeve.**

**5. Stay home when sick.**

3. Why doesn't everyone get the flu during an epidemic?

**Not everyone gets exposed.**

**Not everyone is genetically susceptible.**

**Some have immunity because they've been vaccinated.**

**Some have immunity from already having this (or similar) flu virus.**

**Stronger immune systems because of better overall health.**

4. Why doesn't every die of the flu once they have it?

**Immune system fights it off.... Sometimes.**

**AS YOU WATCH**, write answers to these questions:

5. What is the 'flu pathogen'?

**A virus**

2. How is the pathogen TRANSMITTED (spread)?

**Droplets in the air, saliva exchange such as hand-to-mouth, dirty 'common surfaces'.**

7. What can stop the flu pathogen from getting into your body?

**Your skin! Nose hairs and mucus act like fly paper. Covering coughs and sneezes. Wiping down common surfaces.**

8. Which cells does the flu attack?

**Throat cells. H1N1 attacks cells deep in your lungs.**

9. How does the virus attack the cells?

**Spikes on virus impersonate a cell protein. It docks with a surface receptor on the cell. The cell lets the virus in. This works like a lock and key mechanism. The spike is the 'key', the cell surface proteins are the 'lock'.**

**Cell machinery is forced to produce around 10,000 viruses! Each can infect another cell.**

10. What are the first symptoms of the seasonal flu

**Sore throat, headache, tired and weak, achy, chills and fever. H1N1 can include vomiting, diarrhea 😊.**

11. What are the later symptoms of this flu? Star the most dangerous:

**Coughing, extreme fatigue and misery,**

**\*\*\*\* breathlessness from lung damage. Bluish lips are a serious sign.**

12. What does the cell do once viruses get in?

**Makes more viruses.**

13. What does your immune system do FIRST? (The generalized immune response.)

**The natural killer cells patrol. They spray a poison to destroy virus pieces. They also destroy her throat cells.**

**Macrophages clean up cell debris.**

14. What does the immune system do next? The specific immune response.

**The dendritic cells pick up virus spikes and search for the one T and one B immune cells that are the exact match. There are a trillion different T and B cells to search through (1,000,000,000,000)!**

**The T cells divide quickly and kill infected cells. They target only the cells infected with the flu.**

**B cells produce antibodies that bond with the virus spikes and stop them infecting more cells.**

15. How do some of the flu symptoms actually help fight the flu?

**Achiness makes her stay home and rest. Fever reduces the virus cloning and increases cell division so she can make more immune cells to fight the infection.**

**Headache caused by swollen blood vessels.**

16. Why won't Holly get sick from the same virus again?

**Memory cells circulate for the rest of her life. If the same virus gets in again, they ramp up production of the right T and B cells so the infection will be quickly wiped out.**

17. Why can she get sick from flu next year?

**Because the flu virus is an RNA virus that mutates quickly. Over a year, it changes enough that it's not recognized by the flu virus memory cells anymore.**

18. How could a flu vaccine work? (Not covered in the movie. Make an educated guess.)

**It gives the body a taste of the virus – maybe some spikes, maybe a weakened virus. The immune system is stimulated to find the specific T and B cells. Once found, they then make memory cells. Next time the real virus gets in, the body can attack it very fast.**