1796 – 1955

Put the Events in Order

Name _____ Date _____

These 9 events from the Germ Theory & Vaccines timeline are out of order. Write a number from 1 to 9 in each box, from the earliest event (1) to the latest (9).

☐ **Semmelweis and Hand-Washing**

Hungarian doctor Ignaz Semmelweis discovers that doctors who wash their hands with a chlorinated solution before delivering babies cut maternal death rates from childbed fever by more than 90% — but is ridiculed and ignored by the medical establishment.

☐ **Pasteur Proves Germ Theory**

French chemist Louis Pasteur publishes a series of experiments proving that microorganisms — not spontaneous generation or bad air — cause fermentation and disease; his 'swan-neck flask' experiment demonstrates that sterilized broth stays sterile unless exposed to airborne microbes.

☐ **Discovery of Viruses**

Russian biologist Dmitri Ivanovsky (1892) and Dutch scientist Martinus Beijerinck (1898) discover that tobacco mosaic disease is caused by something smaller than any known bacterium — too small to be filtered out — establishing the existence of a new category of infectious agent: viruses.

☐ **Salk Polio Vaccine**

American physician Jonas Salk announces a successful vaccine against polio — a disease that paralyzed tens of thousands of children every year, including Franklin D. Roosevelt; mass vaccination campaigns eliminate polio from the United States within a decade.

Snow Maps the Cholera Outbreak

London physician John Snow traces a cholera epidemic in Soho to a single contaminated water pump on Broad Street — by mapping where victims lived, he proves cholera spreads through contaminated water, not bad air, and convinces authorities to disable the pump.

Lister Introduces Antiseptic Surgery

Scottish surgeon Joseph Lister, inspired by Pasteur's germ theory, begins using carbolic acid to sterilize surgical instruments, clean wounds, and spray the operating room — cutting post-surgical infection deaths from roughly 50% to under 15%.

Koch Identifies Disease-Causing Bacteria

German physician Robert Koch proves that a specific bacterium (Bacillus anthracis) causes anthrax (1876); he later identifies the bacteria causing tuberculosis (1882) and cholera (1883), establishing 'Koch's postulates' — the rules for proving a microbe causes a disease.

Fleming Discovers Penicillin

Scottish bacteriologist Alexander Fleming notices that a mold (Penicillium notatum) contaminating a petri dish has killed the surrounding bacteria; he identifies the mold's antibacterial substance as penicillin — though it takes over a decade for others to turn it into a usable drug.

Jenner Invents Vaccination

English physician Edward Jenner discovers that people inoculated with cowpox — a mild cattle disease — become immune to smallpox, one of history's most lethal killers; he calls the procedure vaccination (from vacca, Latin for cow).

1796 – 1955

Put the Events in Order: Answer Key

1796 — 1. Jenner Invents Vaccination

1847 — 2. Semmelweis and Hand-Washing

1854 — 3. Snow Maps the Cholera Outbreak

1859–61 — 4. Pasteur Proves Germ Theory

1867 — 5. Lister Introduces Antiseptic Surgery

1876–84 — 6. Koch Identifies Disease-Causing Bacteria

1892–98 — 7. Discovery of Viruses

1928 — 8. Fleming Discovers Penicillin

1955 — 9. Salk Polio Vaccine