History of Vaccine Research
Lesson Questions

• What are the key discoveries in the history of vaccine research?

• Who are the leading scientists in the history of vaccine research?

• What are the main ethical considerations of vaccine research?
Lesson Objectives

• Describe key discoveries in the history of vaccine research.

• Identify leading scientists in the history of vaccine research.

• Analyze ethical considerations of vaccine research.
Unique Lesson Features

• Readings from *Vaccinated: One Man’s Quest to Defeat the World’s Deadliest Diseases*

• Create a timeline of the history of vaccine research
Lesson FAQs

• What’s in the lesson?
  • Students explore the history of vaccines.
  • Students create a timeline showing key discoveries and leading scientists in the history of vaccine research.
  • Students read from Dr. Paul Offit’s book, *Vaccinated: One Man’s Quest to Defeat the World’s Deadliest Diseases*, to analyze how vaccine research is based on prior discoveries.
  • Students investigate the roles of recombinant technology and viral attenuation in the manufacture of modern vaccines.
  • Students write an essay on the methods and ethics of using recombinant technology to manufacture vaccines.
Lesson FAQs (cont.)

• What interactives are there?
  • Students watch the animations *Attenuation: How Scientists Make Live Vaccines* and *Using Genetic Engineering to Make Vaccines.*
  • What other activities are there?
  • Students view sections of the documentary, *Hilleman,* related to the development of the mumps and Hepatitis B vaccines.
  • Students work in groups to compare Hepatitis B vaccine derived from blood with Hepatitis B vaccine made using genetic engineering.
  • Groups present their findings to the class.
  • The class debates the science and ethics of blood derived vaccines versus vaccines made using genetic engineering.
Lesson FAQs (cont.)

• How long is the lesson?
  • Two to three 45-minute sessions

• What are the lesson prerequisites?
  • Students should have:
    • Passed high school biology and chemistry
    • Completed all lessons in Unit 1 and Lessons 1, 2 and 3 in Unit 2.

• Who is the lesson designed for?
  • College prep students
  • Honors students
  • Advanced placement students
  • GED students (lesson may need adapting)
Lesson Content and Timing

- **Engage** (10 mins)
  - Write prior knowledge about vaccination
  - Explore history of vaccines
  - Create timeline
  - View movie section and animation
  - Read book chapter

- **Explore** (50 mins)
  - Complete worksheet on vaccine scientific discoveries

- **Explain** (15 mins)
  - View movie section and animation
  - Read book chapter
  - Complete worksheet on hepatitis B vaccine
  - Discuss ethics of hepatitis B vaccine manufacture

- **Elaborate** (45 mins)
  - View movie section and animation
  - Read book chapter
  - Complete worksheet on hepatitis B vaccine manufacture

- **Evaluate** (15 mins)
  - Assess students based on completion of worksheets and writing assignment

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- www.VaccineMakers.org