



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
2014 Volume VI: Microbes Rule!

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## **Microbes as a Driving Force of Change**

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Often in AP Biology, there are few connections made between topics so students are unable to understand the big picture. This unit, which is suitable for biology and history classes, connects two infamous microbes, bubonic plague bacteria and smallpox virus, to their effects on human history. The bubonic plague is traced from one of its earliest mentions in 1347 in Kaffa, a port city on the Black Sea, along the trade routes of the day through the end of the Black Death in Europe in 1352. The mode of transmission and the disease process are discussed as well as the impacts on society after the plague. Impacts mentioned include changes in the university system, approaches to medicine, farming methods, and changes in religious beliefs. The history of the smallpox virus is also traced from its first interactions with humans to its impact on native populations in the New World and later on Europeans in the 17<sup>th</sup> and 18<sup>th</sup> centuries. The developments of variolation by 18<sup>th</sup> century doctors and the work of vaccine pioneer Edward Jenner in the 1800s are also discussed. This compact unit takes into consideration the evaluation requirements used in an International Baccalaureate Program and includes the use of a Socratic seminar to guide students to solve problems proposed by the instructor.

(Developed for AP Biology, grades 11-12; recommended for Biology, grade 9; World History, grades 10-12; and U. S. History, grades 9-12)

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