

# Viruses, Plagues, and History

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Oxford University Press

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## A GENERAL INTRODUCTION

Individual viruses have evolved interesting and unique lifestyles. One consequence is that battles have been won or lost when a particular virus infected one army but not its adversaries. Viruses have depopulated the native populations of several continents. Entire countries have been changed geographically, economically, and religiously as a result of sweeping virus infections that were impervious to known cures.

Smallpox alone, in the twentieth century, has killed an estimated 300 million individuals, about threefold as many persons as all the wars of this century (1). In the sixteenth and seventeenth centuries, smallpox killed emperors of Japan and Burma, as well as kings and queens of Europe, thereby altering dynasties, control of countries, and alliances (2). Earlier, the successful conquest of Mexican Aztec and Peruvian Inca empires by a handful of Spanish conquistadors led by Hernando Cortes and Francisco Pizarro, respectively, resulted in large part from epidemics of smallpox and measles virus infection that decimated the native defenders. Most of the conquistadors had been exposed to these viruses in Europe, so were immune to (protected from) their effects, but those of the New World were completely vulnerable. In fact, neither the obvious technical superiority of the Spaniards and the superstitions that Quetzalcoatl or other gods would destroy the natives, nor the Spaniards' alliances with tribes subjugated by the Aztecs or Incas accounts for the Spanish victory. History asserts that the Aztecs, once incited to fight, savagely attacked and defeated the Spanish. However, on the very evening that the Aztecs drove the conquistadors out of what is now Mexico City, killing many while routing the rest, a smallpox epidemic began. As it raged in the city (3), not only did the susceptible Aztec forces die in droves, but the psychological aspect of seeing Spaniards, who fought under a Christian god, resist this new malady while warriors of the Aztec gods were dying of infection demoralized the natives even further. The Aztecs could not have known that smallpox was endemic in Europe at this time and that many in Spain exposed to smallpox earlier were resistant or immune to subsequent infection by this virus. The stricken Aztecs interpreted the death of their people while the Spaniards went untouched as a clear indication that the Christian god held dominance over native gods.

v. Therefore, one direct consequence of mass smallpox infection was the subjugation and subsequent exploitation of native Americans and Mexicans by the Spaniards. A second and more lasting effect was destruction of the native culture; as the Spaniard culture assumed sovereignty, millions of Indians were converted to the Christian faith. During the time of the Spanish conquest in the New World it is estimated that more than one-third of the total native population had been killed by smallpox viruses.