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# Vaccines and autoimmunity

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## Abstract

Vaccines have been used for over 200 years and are the most effective way of preventing the morbidity and mortality associated with infections. Like other drugs, vaccines can cause adverse events, but unlike conventional medicines, which are prescribed to people who are ill, vaccines are administered to healthy individuals, thus increasing the concern over adverse reactions. Most side effects attributed to vaccines are mild, acute and transient; however, rare reactions such as hypersensitivity, induction of infection, and autoimmunity do occur and can be severe and even fatal. The rarity and subacute presentation of post-vaccination autoimmune phenomena means that ascertaining causality between these events can be difficult. Moreover, the latency period between vaccination and autoimmunity ranges from days to years. In this article, on the basis of published evidence and our own experience, we discuss the various aspects of the causal and temporal interactions between vaccines and autoimmune phenomena, as well as the possible mechanisms by which different components of vaccines might induce autoimmunity.

OPINION

# Vaccines and autoimmunity

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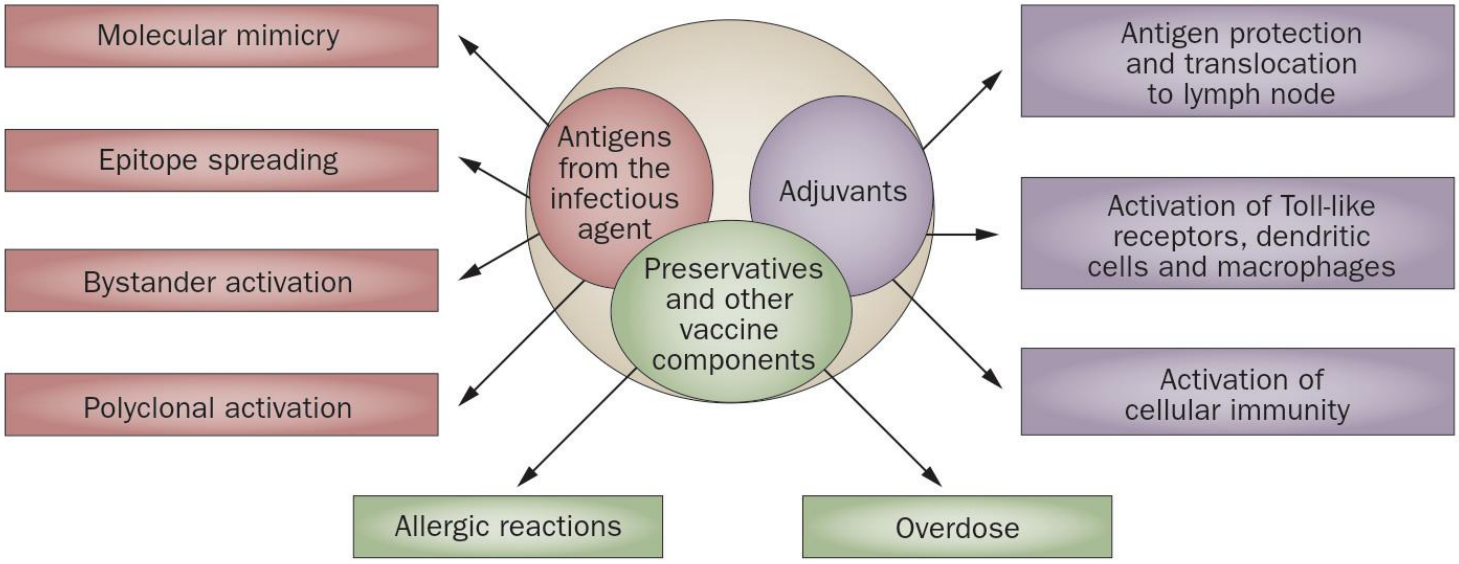


**Figure 1** | The mechanisms by which vaccine ingredients might induce autoimmunity. Vaccines are constructed from several components, such as adjuvants and preservatives, in addition to the antigens from the infectious agent. Each component of the vaccine might induce an immune response that can result in the induction or aggravation of autoimmunity. The possible mechanisms activated by each component are shown.