Vaccine for Bordatella infections

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Technology description

Technology Summary

Despite an extensive vaccination regimen and continued high levels of vaccine coverage, the prevalence of pertussis infection has drastically increased throughout the industrial world in recent years, leading to epidemics in the United States and other countries. In fact, in 2015, the National Institute for Allergy and Infectious Diseases addedBordetella pertussisto the list of priority Emerging Infectious Diseases/Pathogens due to both increasing rates of whooping cough in adults and the significant increase in infant deaths. The cause of this re-emergence is not well understood. However, it is important to note that limiting disease in adolescents and adults will limit disease in infants for which the disease is more likely to be fatal. Current whooping cough vaccines are on the market, but they are generally regarded as effective but not long lasting. Bordatella is also an important pathogen for animals as it is the causative agent of kennel cough in dogs and can also infect cats and other pets. The current invention describes a vaccine with an engineered mutation in a factor implicated in infection that confers sterilizing immunity to pertussis infection in mice.

Problems Addressed

A whole cell pertussis vaccine was introduced in the mid 20 th century to protect against whooping cough, but due to undesirable secondary effects an acellular vaccine replaced in in the mid-1990’ s. It has been shown that the current acellular vaccine protects against symptoms of pertussis but not colonization or transmission, creating a great need for a more efficient vaccine, characterized by long-lasting sterilizing immunity that prevents both colonization and transmission. UGA investigators are developing a vaccine to address these unmet needs. Specifically this engineered vaccine candidate:

· confers long lasting protection and sterilizing immunity against diverseBordetella spp.; no other vaccine in development has successfully protected against this diverse of a range of species

· generates an earlier and more robust immune response than current vaccine

Application area

Vaccine for whooping cough in humans

Vaccine for kennel cough in dogs and bronchopneumonia in cats

Engineered vaccine for other pathogens

Institution

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