Typhoid-Plague Bivalent Vaccine

Technology Summary

Yersinia pestis (Y. pestis) bacteria is the causative agent of plague, typically transmitted from animals to humans by the bite of an infected flea. Y. pestis infection of the lungs leads to pneumonic plague, which is highly contagious and generally fatal. Y. pestis can be a potential biological weapon because no method of prevention or treatment exists.

Available to license, FDA inventors developed a candidate oral vaccine against plague. The vaccine consists of a synthetic gene construct that expresses a Y. pestis F1-V fusion antigen linked to a secretion signal, resulting in the production of large amounts of the F1-V antigen. The F1-V synthetic gene fusion is cloned within Ty21a, an attenuated typhoid fever strain that is licensed for human use as a live oral bacterial vaccine. Ty21a serves as a carrier to deliver the F1-V fusion antigens of the plague bacteria. The combined F1-V fusion in the Ty21a carrier stimulates a robust immune response in mice. The potential to combine the oral plague vaccine of this invention with FDA's candidate oral anthrax vaccine exists, and would result in an easy-to-administer oral delivery system to streamline administration of the vaccine to large numbers of recipients in emergency situations.

Potential Commercial Applications

- Plague vaccines
- Plague therapeutics, & diagnostics

Competitive Advantages

- Vector is well-characterized
- Simple manufacturing process
- Potential low-cost vaccine

Inventors: Dennis Kopecko, Manuel Osorio, Monica Foote

Intellectual Property:

United States Patent No. 9,409,956, issued 08.09.2016

Product Area: Plague vaccines, plague therapeutic, plague diagnostic

FDA Reference No: E-2011-007

Licensing Contact:
Ken Millburne, J.D.
FDA Technology Transfer Program
Email: FDAInventionlicensing@fda.hhs.gov
Phone:301-346-3964