Agent based model

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Experimental Model

We use in vitro PAO1, C elegans model and mouse model of surgical stress.

Techniques / Methodology

More details here.

Literature

Mechanistic research holds promise for bacterial vaccines and phage therapies for Pseudomonas aeruginosa.

Related Articles

Mechanistic research holds promise for bacterial vaccines and phage therapies for Pseudomonas aeruginosa.


Authors: Hoggarth A, Weaver A, Pu Q, Huang T, Schettler J, Chen F, Yuan X, Wu M

Abstract

Vaccines for Pseudomonas aeruginosa have been of longstanding interest to immunologists, bacteriologists, and clinicians, due to the widespread prevalence of hospital-acquired infection. As P. aeruginosa becomes increasingly antibiotic resistant, there is a dire need for novel treatments and preventive vaccines. Despite intense efforts, there currently remains no vaccine on the market to combat this dangerous pathogen. This article summarizes current and past vaccines under development that target various constituents of P. aeruginosa. Targeting lipopolysaccharides and O-antigens have shown some promise in preventing infection. Recombinant flagella and pili that target TLR5 have been utilized to combat P. aeruginosa by blocking its motility and adhesion. The type 3 secretion system components, such as needle-like structure PcrV or exotoxin PopB, are also potential vaccine targets. Outer membrane proteins including OprF and Oprl are newer representatives of vaccine candidates. Live attenuated vaccines are a focal point in this review, and are also considered for novel vaccines. In addition, phage therapy is revived as an effective option for treating refractory infections after failure with antibiotic treatment. Many of the aforementioned vaccines act on a single target, thus lacking a broad range of protection. Recent studies have shown that mixtures of vaccines and combination approaches may significantly augment immunogenicity, thereby increasing their preventive and therapeutic potential.

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