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An Improved Vaccine Vector: Bacteria Having a Regulated rfaH Nucleic Acid

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Inventors

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Invention Description

Bacterial strains designed for immunization frequently have mutations that eliminate lipopolysaccharide O-antigen. These mutants are less immunogenic, however they also have a lowered ability to colonize the intestinal tract and invade intestinal mucosal cells. There is a need then, for a bacterium that has a mutation allowing O-antigen synthesis, but that still reduces the host immune response against the bacterium itself.

Researchers at the Biodesign Institute of Arizona State University have developed a recombinant bacterium with a regulated *rfaH* nucleic acid. Regulation of the expression of this gene can down regulate O-antigen synthesis after an initial period of growth of the bacterium in a host. This permits increased host immune responses to the exogenous antigen being carried by the immunizing bacteria.

By combining attenuating mutations, one can produce a *Salmonella* vaccine capable of delivering a heterologous antigen to induce protective immunity. This feature may also enable the use of a *Salmonella* vaccine vector for multiple vaccines to provide immunization against multiple infectious diseases.

Potential Applications

- Vaccines
- Anti-infectives

Intellectual Property Status:

Patent Pending

Benefits and Advantages

- Excellent attenuation and safety with long-lasting protective immunity

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