

Staphylococcus aureus (*S. aureus*) vaccine



Researchers at the University of Oxford have identified two key proteins that could offer an alternative vaccine against *S. aureus*.

Staphylococcus aureus - A resistant threat

The evolution of multi-drug resistant strains of *S. aureus* brings with it new challenges in treating the infections caused by these pathogens. It is likely that strains of *S. aureus*, which display resistance to our most potent antibiotics, will become more prevalent in the coming years. As *S. aureus* infections contracted during clinical procedures start to bypass our last line of defence, the clinicians will need to turn to alternative measures to halt the spread of these potentially deadly diseases.

Prevention is the best cure

A viable option in the fight against drug resistant pathogens is prophylaxis. Although vaccines against *S. aureus* infections have entered clinical trials, they have resulted in high profile failures as late as stage III. Researchers at the University of Oxford have identified two antigens as new candidates for *S. aureus* vaccine development. The two Eap proteins in question are highly conserved homologues that are present in nearly all *S. aureus* studied.

REap the benefits

All members of the Eap protein family interact with the innate immune response of the host to ensure the safety of the growing bacteria. Work at Oxford has shown immune neutralisation of the Eap protein family through vaccination could protect the host from *S. aureus* pathogenesis upon infection, and even prevent the organism establishing colonisation, a key step in *S. aureus* transmission. By generating vaccine antigens from Eap proteins, then delivering them using a non-replicating viral vector the immune system can be trained to attack these parts of the *S. aureus* pathogen.

We believe the benefits of this approach include:

- Vaccination offers a route to bypass drug resistance in pathogens
- Eap proteins are promising new vaccine candidates
- Early results indicate effectiveness in animal models
- Could be used in combination with other antigens
- Uniquely, suppresses establishment of colonisation

Commercialisation

The technology discussed is covered by an International patent application PCT/GB2017/053301 (2 November 2017). Oxford University Innovation Ltd. is seeking a partner who could help take this promising vaccine lead to a clinical setting.



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Technology Transfer from the University of Oxford

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