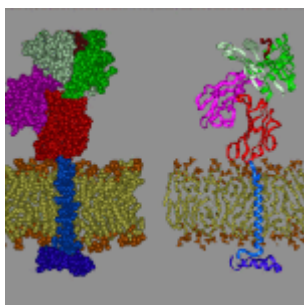


# Extracellular vesicles as a vaccine candidate against *Staphylococcus aureus* infections



*Staphylococcus aureus* (*S. aureus*) is the major cause of pneumonia, osteomyelitis and sepsis and is also one of the main causative bacteria of nosocomial infections. Currently, antibiotics are administered to those infected; however there is a growing increase of drug resistance and methicillin-resistant *S. aureus* (MRSA) is quite prominent in hospitals. There is need for a vaccine candidate, which will serve as a cost-effective alternative for control and prevention of infections. A study recently published in the PLoS One journal, evaluated the potential of *S. aureus* extracellular vesicles (SEV), which are derived from the bacteria and contain bacterial proteins, nucleic acids, and lipids, as a vaccine for the prevention of infection.

The findings demonstrate the immunization with SEVs induced both antibody and T cell responses. The SEVs also induced protective immunity such as the up-regulation of co-stimulatory molecules and the expression of T cell polarizing cytokines in antigen-presenting cells. These immune responses were sufficient to protect against both lethal and non-lethal *S. aureus* pathogenic challenges in the mice. This study demonstrates an innovative strategy in vaccine development against *S. aureus* infections. SEVs induce both cellular and

antibody responses, which confer protection against infections.

[Choi, S. et al. 2015. Active Immunization with Extracellular Vesicles Derived from Staphylococcus aureus Effectively Protects against Staphylococcal Lung Infections, Mainly via Th1 Cell-Mediated Immunity. PLOS.](#)