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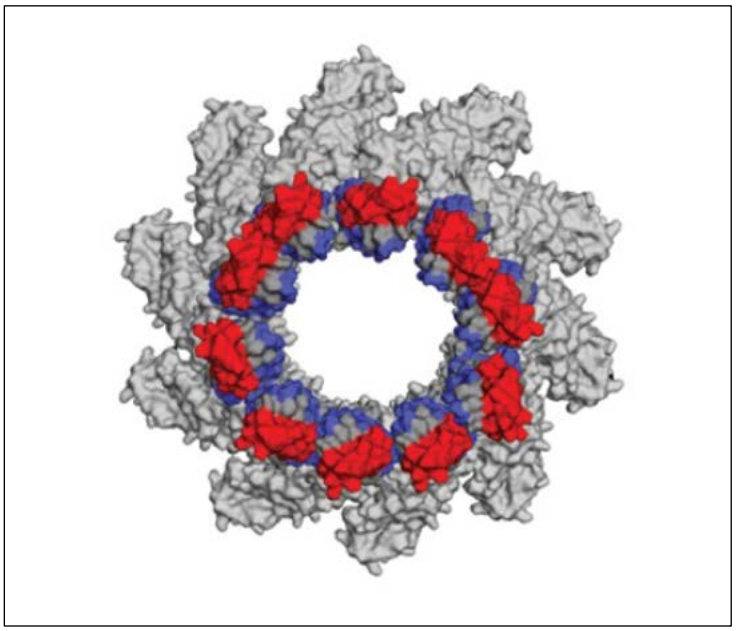
Licensing Opportunity

TTO – Technology Transfer Office

Computationally designed epitope-focused immunogen enhancing subdominant neutralizing antibody responses



RSV-based nanoparticle displaying a site II epitope–focused immunogen.

Ref. Nr

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Keywords

Anti-RSV Vaccine
Computational protein design
Subdominant antibody responses
Neutralizing Abs
RSV site II epitope
Synthetic immunogen

Intellectual Property

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Publications

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Description

Natural infection by RSV does not induce a potent and long-lasting immune response, likely due to the subdominance of neutralizing antibodies. Currently the only prophylactic intervention FDA approved is the treatment with the monoclonal antibody (Palivizumab). Therefore, there is still a need for developing efficient prophylactic therapies against RSV-induced severe lower tract infections. We propose a way to steer antibody responses toward a specific and well-characterized neutralization epitope. Our computationally designed synthetic polypeptide is an optimized and resurfaced version of the RSV site II epitope and can efficiently boost subdominant neutralizing antibody responses in vivo, in the presence of preexisting immunity due to prior priming with an RSV-derived glycoprotein. Further studies should reveal that natural exposure to RSV is a sufficient priming route.

Advantages

The synthetic immunogen has a higher affinity with several tested neutralizing Abs when compared to prefusion RSVF, the original antigen presenting the site II epitope and targeted by Palivizumab. In mice, it elicits a 100-fold increased site II specific response, and a 15-fold increased site II mediated neutralization when used as a heterologous boost.

Applications

- Component of an efficient vaccine composition against RSV infections.
- The same design approach can be considered for other pathogens such as influenza virus, HCV, dengue, HIV, etc.