Therapeutics & Vaccines

MODIFIED GENE VACCINES AGAINST AVIAN CORONAVIRUSES AND METHODS OF USING THE SAME

View U.S. Patent Application Publication No. US-2023-0158138 in PDF format.

WARF: P210169US02

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The Invention

The present invention relates to novel IBV vaccines containing novel modified S and N antigens from avian coronaviruses. The modifications include:

1. S has a modified transmembrane domain for better secretion and better humoral immunity
2. S has a modified furin cleavage site to lock S1 and S2 domains to stabilize S antigen and derive better immunity
3. S has a foldon trimerization domain for better protein assembly and better immune responses.
4. Codon optimization of all sequences for better expression in poultry tissues
5. Added HRV 3C site, 8X His tag and Strep II tag for easy protein purification and subsequent tag removal

In this and the previously disclosed SARS-CoV-2 invention (P210042), the inventors have generated and tested DNA and vector vaccine constructs encoding analogously-modified S and N sequences against human and avian coronaviruses, and found significant protection in murine and poultry models. These protective vaccine constructs also generated robust cellular and humoral immune responses, a strong rationale behind their protection. Finally, they have demonstrated that mucosal immunization serves as a robust approach to deliver these vaccine candidates via intranasal spray or oral routes, which represent very practical approaches for mass vaccination against avian coronavirus. Further, the new vaccine constructs can be used individually or in tandem with other constructs for country-specific or global vaccine applications against avian coronaviruses.

Additional Information

For More Information About the Inventors

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Tech Fields

- Animals, Agriculture & Food : Animal health
- Therapeutics & Vaccines : Vaccines

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842