Journal of Tropical Diseases & Public Health
ISSN: 2329-891X
2020
Vol.8 No.6

Novel approaches for the development of live attenuated influenza vaccines

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Abstract

Influenza virus still represents a considerable threat to global public health, despite the advances in the development and wide use of influenza vaccines. Vaccination with traditional inactivate influenza vaccines (IIV) or live-attenuated influenza vaccines (LAIV) remains the main strategy in the control of annual seasonal epidemics, but it does not offer protection against new influenza viruses with pandemic potential, those that have shifted. Moreover, the continual antigenic drift of seasonal circulating influenza viruses, requiring yearly reformulation of seasonal influenza vaccines, seriously compromises vaccine efficacy. Therefore, the quick optimization of vaccine production for seasonal influenza and the development of new vaccine approaches for pandemic viruses is still a challenge for the prevention of influenza infections have not yet been elucidated, researchers are encouraged to develop new vaccines that overcome the limitations that are associated with the current LAIV. The discovery and implementation of plasmid-based reverse genetics has been a key in this review, we provide an update regarding the progress and the innovative ways that are being explored as alternatives to the currently licensed LAIV. The safety, immunogenicity, and protection efficacy profile of these new LAIVs reveal their possibility in combating influenza infections.

Biography:

Huan Xu has her expertise in discovery of new biotechnology drugs, including recombinant long-lasting protein, bi-specific antibody and vaccines. She received her Bachelor and Doctoral Degree both from Peking University. After graduation, she joined the North China Pharmaceutical Company as a Senior Scientist. The methods presented here utilize expansion of the genetic code (lei wang, 2001) of influenza a virus. It may become a general approach for generating live virus vaccines.

Speaker Publications:

1. "Generation of influenza a viruses as live but replication-incompetent virus vaccines"; Science/ Vol 354, 2016, 1170-1173.
2. "Re-exploration of the codon context effect on amber codon-guided incorporation of non-canonical amino acids in *E. coli* by the blue-white screening assay"; ChemBioChem/ Vol 17, 2016, 1250-1256.
3. "Development of next generation of therapeutic IFN-alpha2b via genetic code expansion"; Acta Biomater/ Vol 19, 2015, 100-111.
4. "Construction of an inducible stable cell line for efficient incorporation of unnatural amino acids in mammalian cells"; BBRC/ Vol 489, 2017, 490-496.
5. "Broaden the versatility of lentiviral vector as a tool in nucleic acid research via genetic code expansion"; Nucleic Acids Res/ Vol 43, 2015, e.73.

9th International Conference on Tropical Medicine and Infectious Diseases; Berlin, Germany- February 24-25, 2020.

Abstract Citation:

Huan Xu, Novel approaches for the development of live attenuated influenza vaccines, Tropical Diseases 2020, 9th International Conference on Tropical Medicine and Infectious Diseases; Berlin, Germany- February 24-25, 2020 (https://tropicalmedicine.annualcongress.com/abstract/2020/novel-approaches-for-the-development-of-live-attenuated-influenza-vaccines)