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Live Attenuated Viral Vaccines

IP Status: Issued US Patent; **Application #:** 15/274,491

MicroRNA-based Platform Generates Live Attenuated Viruses

A microRNA-based platform that generates live attenuated viruses could lead to safe and effective vaccines across species. Up until now it has been challenging to produce microRNA targeted influenza virus vaccines that are simultaneously attenuated in both mammalian and avian species. However, this method engineers a cell line with cells deficient in microRNAs abundantly expressed in both species. This cell line can then make influenza virus vaccines targeted by microRNA expressed in both species.

Cross-species Vaccines

Since this technology is based on universally expressed microRNAs, it allows live attenuated vaccines to be used in domestic poultry and mitigates any previous safety concerns for humans.Previous attempts to generate live attenuated vaccines targeted by microRNAs used microRNAs naturally absent in production systems but present in the desired vaccinated population. By using cell lines deficient in universally expressed microRNAs, this unique method creates microRNA attenuated vaccines safe for use in both mammalian as well as avian species without the risk of spread into zoonotic hosts.

Outperforms Current Vaccines

Live attenuated vaccines offer greater protection than killed vaccines, do not require booster vaccinations and are potentially easier to deliver to domesticated birds. Furthermore, this new method targets multiple segments of the virus, thereby reducing the risk for reassortment of potentially pathogenic influenza segments with circulating strains, a critical risk of current live attenuated vaccines.

BENEFITS AND FEATURES OF MATERIALS AND METHODS FOR GENERATING LIVE ATTENUATED VIRAL VACCINES:

- Produces effective vaccines, safe across species
- Live attenuated vaccines offer greater protection
- Lessens risk of virus spread into zoonotic hosts
- Reduces reassortment risk
- Avian vaccines safe for humans

Phase of Development In vitro assessment

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