Claims

1. A method for adapting an influenza virus to Vero cells, comprising:

-(i) infecting Vero cells with an influenza virus at a first infectious dose;

-(ii) cultivating infected Vero cells in a spinner flask to produce an influenza virus culture;

-(iii) harvesting the influenza virus from said influenza virus culture;

-(iv) passaging influenza virus from (iii) in Vero cells at a second infectious dose to produce a subsequent influenza virus culture, wherein said second infectious dose is greater than or equal to the previous infectious dose;

-repeating (iii) to (iv), and harvesting a Vero cell adapted culture of influenza virus, wherein at least one of said first infectious dose and said second infectious dose is expressed by MOI, and the MOI is 0.00001, 0.00005, 0.0001, 0.0005, 0.001, 0.005, 0.01, 0.05, 0.1, 0.5, 1.0, 1.5, 2.0, or any value between 0.00001 and 2.0 and the number of passages ranges from 5 to 10.

2. A method of claim 1, wherein at least one of said first infectious dose and said second infectious dose is expressed by MOI, and the MOI of influenza virus is 0.00001, 0.00004, 0.00013, 0.0002, 0.0011, 0.0013, 0.002, 0.0022, 0.0026, 0.0072, 0.008, 0.018, 0.019, 0.030, 0.033, 0.05, 0.16, 0.22, 0.25, 0.47, 0.5, 0.63, 1.0, 1.58, 1.6, or 2.0.

3. A method of claim 2, wherein said first infectious dose is 1%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, or 100% of said second infectious dose.

4. A method of claim 1 or 2, wherein each viral cell culture produces viral

activity comprising viral replication, viral production, hemagglutinin (HA) titer or neuraminidase (NA) titer.

5. A method of any one of claims 1 to 4, wherein said number of passages is 5, 6, 7, 8, 9, or 10.

6. A method of claim 5, wherein said influenza virus is acquired from embryonated chicken eggs, allantoic cavity of chicken embryo, or amniotic membrane of chicken embryo.

7. A method of claim 6, wherein said influenza virus is selected from a group including A/California/7/2009(H1N1)pdm09, A/Michigan/45/2015(H1N1)pdm09, A/Switzerland/9715293/2013(H3N2), A/Hong Kong/4801/2014(H3N2), B/Brisbane/60/2008, and B/Phuket/3073/2013.

8. A method of claim 6, comprising using said Vero cell adapted influenza viruses to produce a composition, wherein said composition comprises polyriboinosinic acid-polyribocytidylic acid (PIC), at least one antibiotic or polyamide compound, at least one positive ion, influenza viruses and/or influenza antigens.

9. A method of claim 8, wherein at least one of said influenza antigens is selected from a group including HA and NA; wherein said polyamide compound is selected from a group including spermidine sault, spermidine, N-(3-aminopropyl), N-(3-aminopropyl)-1,4-butandiamine, spermine BR, spermine, OS-dimethylphosphoramidothioate, polylysine, and aminoglycoside; and wherein said positive ion is selected from a group including calcium, cadmium, lithium,

magnesium, cerium, cesium, chromium, cobalt, deuterium, gallium, iodine, iron, and zinc.

10. A method of claim 8 or 9, wherein said composition is formulated for administration by nasal spray, intramuscular delivery, intravenous delivery, and/or oral administration.

11. A method of any one of claims 1 to 10, comprising cultivating the Vero cells in a single-use bioreactor.