CLAIMS

We claim:

1. A method of producing a pharmaceutical composition from an avian cell culture infected with MVA or recombinant MVA, the method being performed using collected material produced by harvesting said cell culture comprising avian cells infected with MVA or recombinant MVA, the method comprising the steps of:

(a) treating the collected material with a protease having trypsin activity;

(b) adjusting pH and/or salt content of the material and treating the material with a nuclease;

(c) lysing cells in the material;

(d) filtering the material to remove cell debris and remaining cells;

(e) continuing incubation with nuclease for a period of time; and

(f) concentrating the product using tangential flow filtration.

2. The method of claim 1, further comprising after step (f) the steps of:

(g) treating the material with a nuclease; and

(h) concentrating the product using tangential flow filtration.

3. The method of claim 1 or 2 wherein said nuclease in claim 1 step (b) and/or claim 2 step (g) is Denarase® endonuclease.

4. The method of claim 3, further comprising the addition of NaCl to a final concentration of at least 0.5M or about 1 M during step (b).

5. The method of claim 1 or 2, further comprising the use of diafiltration to exchange the buffer in which the product is suspended following said tangential flow filtration.

6. The method of claim 1, wherein said avian cell culture is a quail cell culture and said avian cells are quail cells.

7. The method of claim 6, wherein said quail cells are CCX.E10 cells.

8. The method of claim 1 or 7, wherein said MVA is MVA-BN® virus.

9. The method of claim 1 or 7, wherein said recombinant MVA is MVA-BN-RSV.

10. The method of claim 1, wherein said avian cell culture infected with MVA or recombinant MVA is prepared by a method comprising the steps of:

(i) culturing quail cells in suspension in culture medium comprising FS/YIE or SCGM-ac medium until the cell density is from 1 x 10^6 cells/mL to 5 x 10^6 cells/mL, producing a cell culture comprising from 1 x 10^6 cells/mL to 5 x 10^6 cells/mL;

(ii) modifying said culture medium to comprise FS/YIE or SCGM-ac medium and OptiPRO™ medium in a ratio from 40:60 to 60:40 (v/v) and continuing to culture said quail cells;

(iii) adding MVA or recombinant MVA to said cell culture to allow infection of the cells by the MVA or the recombinant MVA;

(iv) continuing to culture said cells for about one to four days so that the amount of MVA or recombinant MVA is increased.

11. The method of claim 10, wherein step (ii) comprises modifying the culture medium to comprise FS/YIE or SCGM-ac medium with OptiPRO™ medium in a ratio of 50:50 (v/v).

12. The method of claim 10, wherein step (ii) is continued until about 50% to 70% of the cells are aggregated.

13. A pharmaceutical composition comprising MVA-BN® virus or MVA-BN-RSV made by the method of any of claims 1-12.

14. A vaccine comprising the pharmaceutical composition of claim 13, wherein the amount of host cell DNA per vaccine dose is less than 100 ng.