WHAT IS CLAIMED IS:

1. A method of producing Dupilumab, comprising culturing cells with an initial viable cell density (VCD) in a seed train adjusted to be at least 2.5 $x10^5$ cells/mL.
2. The method of claim 1, wherein said seed train includes cell cultures in N-5 to N-1 vessels or bioreactors, wherein the initial VCD is adjusted between 3.5 $x10^5$ to 5.43$x10^5$ cells/mL in each vessel or bioreactor.
3. The method of claim 2, wherein a final Dupilumab titer is about 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 1%, 17%, 18%, 19%, or 20% greater than a titer produced from a cell culture where the initial VCD in said N-5 to N-1 vessel or bioreactor is below 2.5 $x10^5$ cells/mL.
4. The method of claim 1, wherein the initial VCD is about 1.3x, 1.4x, 1.5x, 1.6., 1.7x, 1.8x, 1.9x, 2.0x, 2.1x, 2.2x, 2.3x, 2.4x, 2.5x, 2.6x, 2.7x, 2.8x, 2.9x, or 3.0x greater than an alternative initial VCD in a standard seed train.
5. The method of claim 3, wherein an increased final Dupilumab titer is not dependent on the final VCD in the N-1 seed train vessels or bioreactors.
6. The method of claim 2, wherein there is no substantial difference in peak lactate observed in a final production vessel compared to a final production vessel where the initial VCD vessels or bioreactors of the seed train is below 2.5 $x10^5$ cells/mL.
7. The method of claim 6, wherein the seed train resulted in a 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 1%, 17%, 18%, 19%, 20% increase in final titer (g/L).
8. The method of claim 7, wherein the initial VCD in a seed train is adjusted between 3.5$x10^5$ to 5.43$x10^5$ cells/mL.
9. A method of culturing a cell, the method comprising:

   a) using at least one on-line capacitance probe to measure a first capacitance value of a first cell culture;

   b) using at least one off-line assay to measure a first viable cell density value of the said first cell culture;

   c) correlating said first capacitance value with the said first viable cell density value to determine a correlation equation;

d) using an on-line capacitance probe to determine a second capacitance value of a second cell culture;

e) using said second capacitance value and said correlation equation to predict at least one second viable cell density value of said second cell culture; and

f) adjusting a working volume or viable cell density (VCD) based on said second viable cell density value to culture the cell.

10. The method of claim 9, wherein said cell is from a cell line that is the same as a cell line used to derive said correlation equation.

11. The method of claim 9, wherein said correlation equation is generated using multivariate data analysis or a linear regression.

12. A method of producing Dupilumab comprising the steps of:

(a) culturing cells wherein an initial viable cell density (VCD) in a seed train in vessels or bioreactors is adjusted to at least 2.5 $x10^5$ cells/mL;

(b) measuring viable cell density by

(i) applying an electric field to said cells cultured in a vessel or bioreactor; and

(ii) measuring capacitance; and

(iii) correlating capacitance to viable cell density;

(c) adjusting initial VCD in each seed train vessel or bioreactor; and

(d) producing Dupilumab.

13. The method of claim 12, wherein the initial VCD in each vessel or bioreactor of an N-5 to N-1 seed train is adjusted between $3.5x10^5$ to $5.43x10^5$ cells/mL.

14. The method of claim 12, wherein a final Dupilumab titer is about 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 1%, 17%, 18%, 19%, or 20% greater than a titer produced from a cell culture where the initial VCD in said seed train is below $2.5x10^5$ cells/mL.

15. The method of claim 13, wherein the initial VCD is about 1.3x, 1.4x, 1.5x, 1.6., 1.7x, 1.8x, 1.9x, 2.0x, 2.1x, 2.2x, 2.3x, 2.4x, 2.5x, 2.6x, 2.7x, 2.8x, 2.9x, or 3.0x greater than an alternative initial VCD in a standard seed train.

16. The method of claim 15, wherein an increased final Dupilumab titer is not dependent on a final VCD in N-5 to N-1 vessels or bioreactors.

17. The method of claim 12, wherein there is no substantial difference in peak lactate observed in a final production vessel compared to a final production vessel or bioreactor

where the initial VCD in each N-5 to N-1 vessel or bioreactor is below 2.5 x10^5 cells/mL.

18. The method of claim 17, wherein the seed train resulted in a 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 1%, 17%, 18%, 19%, 20% increase in final titer (g/L).

19. A method of producing an anti-IL-4Rα antibody or antigen-binding fragment thereof, the method comprising:

a) culturing cells capable of expressing an anti-IL-4Rα antibody or antigen-binding fragment thereof in a vessel or bioreactor;

b) adjusting an initial viable cell density (VCD) to be 2.5x10^5 cells/mL or greater;

c) using at least one on-line sensor to measure a first property of a first cell culture;

d) using at least one off-line assay to measure a second property of the first cell culture;

e) correlating the measure of the first property of the first cell culture with the measure of the second property of the first cell culture to determine a correlation equation;

f) using an on-line sensor to measure the first property of a second cell culture;

g) using the measure of the first property of the second cell culture and the correlation equation to predict at least one measure of the second property of the second cell culture;

h) transferring said cells to another vessel or bioreactor based on the at least one predicted measure of the second property of the second cell culture; and

i) repeating steps b)-h) along a seed train.

20. The method of claim 19, wherein said cells are from a cell culture that is the same as the first cell culture.

21. The method of claim 19, wherein said cells are from a cell culture that is different from the first cell culture.

22. The method of claim 19, wherein said correlation equation is derived using more than one cell line.

23. The method of claim 19, wherein more than one measure of said first property of said first cell culture is taken.

24. The method of claim 19, wherein more than one measure of said second property of said first cell culture is taken.

25. The method of claim 19, wherein at least about 50 percent of variability in said measure

of said second property of said first cell culture is due to variance in said measure of said first property of said first cell culture.

26. The method of claim 19, wherein said correlation equation is generated using multivariate data analysis or a linear regression.

27. The method of claim 19, wherein the initial VCD is about 1.3x, 1.4x, 1.5x, 1.6., 1.7x, 1.8x, 1.9x, 2.0x, 2.1x, 2.2x, 2.3x, 2.4x, 2.5x, 2.6x, 2.7x, 2.8x, 2.9x, or 3.0x greater than an alternative initial VCD in a standard seed train.

28. The method of claim 19, wherein there is no substantial difference in peak lactate observed in the final production vessel or bioreactor compared to a final production vessel where the initial VCD in N-5 to N-1 vessels is below $2.5x10^5$ cells/mL.

29. The method of claim 28, wherein the seed train resulted in a 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 16%, 17%, 18%, 19%, 20% increase in final titer (g/L).

30. The method of claim 28, wherein the initial VCD is about 1.3x, 1.4x, 1.5x, 1.6x, 1.7x, 1.8x, 1.9x, 2.0x, 2.1x, 2.2x, 2.3x, 2.4x, 2.5x, 2.6x, 2.7x, 2.8x, 2.9x, or 3.0x greater than an alternative initial VCD in a standard seed train.

31. The method of claim 19, wherein said cells are CHO cells.

32. The method of claim 19, wherein said anti-IL-4Rα antibody is Dupilumab.