CLAIMS

1. A method for large-scale production of a recombinant polypeptide of interest, comprising culturing host cells expressing the recombinant polypeptide of interest in an N-1 stage, non-perfusion-based culture system, wherein the host cells are cultured in an enriched medium to obtain an N-1 stage viable cell density of at least 5×10^6 viable cells per mL; and inoculating an N production culture system at high-seed density of at least 1.5×10^6 cells per mL with host cells from the N-1 stage, non-perfusion-based culture system, wherein the enriched medium comprises an increased amount of a carbon source relative to non-enriched medium and / or an increased amount of nutrients selected from amino acids, lipids, vitamins, minerals, and polyamines relative to non-enriched medium.

2. The method of claim 1, wherein the N-1 stage, non-perfusion-based culture system is a batch culture and the host cell is cultured in an enriched medium, or wherein the N-1 stage, non-perfusion-based culture system is a fed-batch culture and the host cell is cultured in a seed medium with addition of a feed medium.

3. The method of claim 1 or 2, wherein the N-1 stage viable cell density is at least 10×10^6, at least 15×10^6, at least 20×10^6, at least 25×10^6, or at least 30×10^6 viable cells per mL.

4. The method of claim 3, wherein the cell viability on the last day of the N-1 stage is at least 80%, at least 85%, or at least 90%.

5. The method of any one of claims 1-4, wherein the medium is enriched by a feed medium at least 5% relative to non-enriched medium, at least 10% relative to non-enriched medium, at least 15% relative to non-enriched medium, or at least 20% relative to non-enriched medium.

6. The method of any one of claims 1-5, wherein the enriched medium or feed medium comprises an increased amount of a carbon source.

7. The method of any one of claims 1-6, wherein the carbon source is glucose.

8. The method of any one of claims 1-7, wherein the enriched medium or feed medium comprises an increased amount of nutrients, selected from amino acids, lipids, vitamins, minerals, and polyamines.

9. The method of any one of claims 1-8, wherein the enriched medium comprises an increased amount of a carbon source and nutrients, selected from amino acids, lipids, vitamins, minerals, and polyamines.

10. The method of any one of claims 1-9, wherein the host cell is a mammalian cell.

11. The method of claim 10, wherein the host cell is a CHO cell.

12. The method of any one of claims 1-11, wherein the N production culture system is a fed-batch bioreactor.

13. The method of any one of claims 1-12, wherein the titer of the polypeptide of interest is at least 100 mg/L, at least 1 g/L, at least 3 g/L, at least 5 g/L or at least 10 g/L.

14. The method of any one of claims 1-13, wherein the host cells are cultured in a basal medium or an enriched basal medium to obtain an N production stage viable cell density of at least 1.5×10^6, at least 5×10^6, or at least 10×10^6 viable cells per mL.

15. The method of any one of claims 1-14, further comprising the step of isolating the polypeptide of interest from the N production culture system.