

5 CLAIMS

1. A method for producing a recombinant polypeptide in a cell, comprising:
 - i) providing a eukaryotic cell comprising:
 - a first exogenous nucleic acid encoding a first lipid metabolism modulator (LMM)
 - 10 comprising stearoyl CoA desaturase-1 (SCD1) or a functional fragment or isoform thereof; and
 - an exogenous nucleic acid encoding the recombinant polypeptide, and
 - (ii) culturing the cell under conditions where the first LMM and the recombinant polypeptide are expressed,
 - 15 thereby producing the recombinant polypeptide and wherein the recombinant polypeptide is:
 - a) a therapeutic polypeptide,
 - b) an antibody or fragment thereof, a monoclonal antibody, or a bispecific molecule, and/or
 - c) selected from a hormone, a blood clotting or coagulation factor, a cytokine or growth
 - 20 factor, a fusion protein and a protein vaccine.
2. The method of claim 1, wherein the first LMM provides increased yield or rate of production of the recombinant polypeptide as compared to a cell not having the first LMM.
- 25 3. The method of claim 1, wherein the first LMM provides an increased ratio of properly folded product to misfolded or unfolded recombinant polypeptide as compared to a cell not having the first LMM.
4. The method of any one of the preceding claims, wherein the first LMM has at least 80%
30 identity with the amino acid sequence of SEQ ID NO: 3, or a functional fragment thereof; or differs by 1 or more amino acid residues but no more than 50 amino acid residues from the amino acid sequence of SEQ ID NO: 3, or a functional fragment thereof.
5. The method of any one of the preceding claims, wherein the cell further comprises a
35 second exogenous nucleic acid encoding a second LMM comprising Sterol Regulatory Element-

- 5 Binding Transcription Factor 1 (SREBF1) or a functional fragment or isoform thereof, and in step (ii) the cell is cultured under conditions where the second LMM is expressed.
6. The method of claim 5, wherein the second LMM comprises an amino acid sequence with at least 80% identity with the amino acid sequence of SREBF1 corresponding to SEQ ID
10 NOs: 1 or 34, or a functional fragment thereof, corresponding to SEQ ID NOs: 26, 27, or 36; or differs by 1 or more amino acid residues but no more than 50 amino acid residues from the amino acid sequence of SREBF1, corresponding to SEQ ID NOs: 1 or 34, or a functional fragment thereof corresponding to SEQ ID NOs: 26, 27, or 36.
- 15 7. The method of claim 5 or claim 6, wherein the second LMM provides increased yield of rate of production of the recombinant polypeptide as compared to a cell not having the second LMM.
8. The method of any one of the preceding claims, wherein production of the recombinant
20 polypeptide is increased by 2-fold, 5-fold, 10-fold, 20-fold, 50-fold, or 100-fold as compared to the level or quantity of recombinant polypeptide produced by a cell without the first LMM.
9. The method of any one of the preceding claims, wherein the nucleic acid encoding the first LMM is integrated into the chromosomal genome of the cell and the LMM is stably
25 expressed.
10. The method of any one of the preceding claims, wherein the cell is a mammalian cell.
11. The method of any one of the preceding claims, further comprising separating the
30 recombinant polypeptide from at least one cellular or medium component.
12. The method of any one of the preceding claims, wherein the exogenous nucleic acid encoding a recombinant polypeptide has been introduced after introducing the first exogenous nucleic acid encoding the first LMM.
- 35 13. A eukaryotic cell comprising:

- 5 a first exogenous nucleic acid encoding a first lipid metabolism modulator (LMM),
wherein the first LMM comprises stearoyl CoA desaturase-1 (SCD1) or a functional fragment or
isoform thereof; and
- an exogenous nucleic acid encoding a recombinant polypeptide,
 wherein the first exogenous nucleic acid is integrated into the chromosomal genome of
10 the cell and wherein the recombinant polypeptide is:
- i) a therapeutic polypeptide,
 ii) an antibody or fragment thereof, a monoclonal antibody, or a bispecific molecule,
and/or
 iii) selected from a hormone, a blood clotting or coagulation factor, a cytokine or growth
15 factor, an antibody molecule, a fusion protein and a protein vaccine.
14. The cell of claim 13, wherein the cell is a mammalian cell.
15. The cell of claim 14, which is a CHO cell.
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16. The cell of any one of claims 13 to 15, wherein the first LMM provides increased yield of
rate of production of the recombinant polypeptide as compared to a cell not having the first
LMM.
- 25 17. The cell of any one of claims 13 to 15, wherein the first LMM provides an increased ratio
of properly folded product to misfolded or unfolded recombinant polypeptide as compared to a
cell not having the first LMM.
18. Use of the cell of any one of claims 13 to 17 in the production of a therapeutic
30 recombinant polypeptide of interest.