CLAIMS

1. A method for producing a recombinant polypeptide of interest in an *Escherichia coli* (*E. coli)* cell, comprising the steps of
   (a) introducing a polynucleotide encoding the polypeptide of interest into an *E. coli* cell comprising a recombinant polynucleotide encoding a polypeptide having an enzymatic activity selected from the group consisting of ketol-acid reductoisomerase (NADP(+)) activity (EC 1.1.1.86), acetohydroxyacid synthase isoform II or isoform III activity (EC 2.2.1.6), aspartate kinase activity (EC 2.7.2.4), homoserine dehydrogenase activity (EC 1.1.1.3), and L-threonine dehydratase (EC 4.3.1.19), wherein said enzymatic activity is increased in said *E. coli* cell as compared to the enzymatic activity in an unmodified *E. coli* cell, and
   (b) expressing said polypeptide of interest in said *E. coli* cell.

2. The method of claim 1, wherein the produced polypeptide of interest shows lower misincorporation of non-canonical branched-chain amino acids as compared to the same polypeptide of interest which has been produced by expression in an unmodified *E. coli* cell.

3. The method of claim 1 or 2, wherein the method further comprises the isolation of the polypeptide of interest from the cell, and the purification of the polypeptide of interest.

4. The method of claim 3, wherein the purification comprises the enrichment of polypeptides of interest which do not comprise non-canonical branched-chain amino acids.

5. The method of any one of claims 1 to 4, wherein said *E. coli* cell does not express an endogenous polypeptide having said enzymatic activity.

6. The method of any one of claims 1 to 5, wherein the polypeptide of interest is a therapeutic peptide or polypeptide.

7. The method of any one of claims 1 to 6, wherein the polynucleotide encoding the polypeptide of interest and/or the polynucleotide encoding the polypeptide having said enzymatic activity is operably linked to an inducible promoter.

8. A method for reducing misincorporation of at least one non-canonical branched-chain amino acid into a recombinant polypeptide of interest expressed in an *E. coli* cell, said method comprising
    (a) Introducing a recombinant polynucleotide expressing a polypeptide having an enzymatic activity selected from the group consisting of ketol-acid reductoisomerase (NADP(+)) activity (EC 1.1.1.86), acetohydroxyacid synthase isoform II or isoform III activity (EC 2.2.1.6), aspartate kinase activity (EC 2.7.2.4), homoserine dehydrogenase activity (EC 1.1.1.3), and L-threonine dehydratase (EC 4.3.1.19) in the *E. coli* cell,
    (b) introducing a polynucleotide encoding the polypeptide of interest into said *E. coli* cell, and
    (a) expressing said polypeptide of interest in said *E. coli* cell.

9. The method of claim 8, wherein the at least one non-canonical branched-chain amino acid is selected from norvaline, norleucine and beta-methylnorleucine.

10. Use of a polypeptide having an enzymatic activity selected from the group consisting of ketol-acid reductoisomerase (NADP(+)) activity (EC 1.1.1.86), acetohydroxyacid synthase isoform II or isoform III activity (EC 2.2.1.6), aspartate kinase activity (EC 2.7.2.4), homoserine dehydrogenase activity (EC 1.1.1.3), and L-threonine dehydratase (EC 4.3.1.19), or of a polynucleotide encoding said polypeptide for reducing misincorporation of at least one non-canonical branched-chain amino acid into a recombinant polypeptide of interest produced in an *E. coli* cell.

11. Use of a *E. coli* cell for producing a recombinant polypeptide of interest, wherein the *E. coli* cell has been modified such that an enzymatic activity selected from the group consisting of ketol-acid reductoisomerase (NADP(+)) activity (EC 1.1.1.86), acetohydroxyacid synthase isoform II or isoform III activity (EC 2.2.1.6), aspartate kinase activity (EC 2.7.2.4), homoserine dehydrogenase activity (EC 1.1.1.3), and L-threonine dehydratase (EC 4.3.1.19) is increased in said *E. coli* cell as compared to the enzymatic activity in an unmodified *E. coli* cell.

12. The method of any one of claims 1 to 9, or the use of claim 10 or 11, wherein the polypeptide of interest is a proinsulin.

13. An *E. coli* cell comprising

(a) a recombinant polynucleotide encoding a polypeptide of interest, and

(b) a recombinant polynucleotide encoding a polypeptide having an enzymatic activity selected from the group consisting of ketol-acid reductoisomerase (NADP(+)) activity (EC 1.1.1.86), acetohydroxyacid synthase isoform II or isoform III activity (EC 2.2.1.6), aspartate kinase activity (EC 2.7.2.4), homoserine dehydrogenase activity (EC 1.1.1.3), and L-threonine dehydratase (EC 4.3.1.19).

14. A bioreactor comprising the *E. coli* cell of claim 13.

15. The bioreactor of claim 14, wherein the bioreactor has a volume of at least 10 L.