

CLAIMS

What is claimed is:

1. A nucleic acid sequence having at least 95% identity with SEQ ID NO: 1, excluding SEQ ID NO: 3.
2. An expression vector for production of a protein comprising SEQ ID NO: 6, the expression vector comprising a nucleic acid sequence comprising at least 95% identity with SEQ ID NO: 1, excluding SEQ ID NO: 3.
3. The expression vector of claim 2, further comprising a nucleic acid sequence having at least 95% identity with SEQ ID NO: 2, excluding SEQ ID NO: 4.
4. A protein comprising SEQ ID NO: 6, prepared using the expression vector of claim 2.
5. A method for preparing a protein comprising SEQ ID NO: 6, the method comprising:
transforming into an enterobacterial host cell an expression vector comprising a nucleic acid sequence comprising at least 95% identity with SEQ ID NO: 1, excluding SEQ ID NO: 3;
culturing the enterobacterial host cell under conditions effective to produce the protein; and
obtaining the protein from the enterobacterial host cell.
6. The method of claim 5, wherein the expression vector further comprises a nucleic acid sequence having at least 95% identity with SEQ ID NO: 2, excluding SEQ ID NO: 4.

7. The method of claim 5, wherein the enterobacteria comprises *Escherichia Coli*.
8. The method of claim 5, wherein the obtaining comprises lysing the transformed cell using a microfluidizer.
9. The method of claim 8, wherein the lysing produces a cell lysate, and the method further comprises:
 - (i) clarifying the cell lysate; and
 - (ii) contacting the clarified lysate with a synthetic adsorbent of crystalline calcium silicate hydrate.
10. The method of claim 8, wherein the lysing produces a cell lysate, and the method further comprises:
 - (i) clarifying the cell lysate; and
 - (ii) titrating the clarified lysate with acid to a pH of about 3.5 or less.
11. The method of claim 8, wherein the lysing produces a cell lysate, and the method further comprises:
 - (i) clarifying the cell lysate;
 - (ii) titrating the clarified lysate with acid to a pH of about 2 or less; and
 - (iii) adding lipopolysaccharide.
12. The method of claim 11, further comprising, prior to adding the lipopolysaccharide:
 - (i) neutralizing the acidified lysate;
 - (ii) filtering the neutralized lysate;

- (iii) subjecting the filtered lysate to chromatography to yield the protein;
- (iv) filtering the protein;
- (v) dialyzing the filtered protein; and
- (vi) filtering the dialyzed protein.

13. The method of claim 12, further comprising filtering the dialyzed, filtered protein at least a second time.

14. The method of claim 8, wherein the lysing produces a cell lysate, and the method further comprises:

- (i) clarifying the cell lysate;
- (ii) titrating the clarified lysate with acid to a pH of about 3.5 to produce a first acidified lysate;
- (iii) clarifying the first acidified lysate; and
- (iv) acidifying the clarified, first acidified lysate to a pH of less than about 2 to produce a second acidified lysate.

15. The method of claim 14, further comprising:

- (i) clarifying the second acidified lysate;
- (ii) filtering the second acidified lysate;
- (iii) neutralizing the filtered, second acidified lysate;
- (iv) filtering the neutralized lysate;
- (v) subjecting the filtered, neutralized lysate to chromatography to yield the protein;
- (vi) filtering the protein;
- (vii) dialyzing the filtered protein; and

- (viii) filtering the dialyzed protein.