Claims

1. A non-naturally occurring, post-translationally modified lantibiotic comprising an amino acid sequence of MU1140 (SEQ ID NO:1156) and further comprising two mutations including:
   (a) phenylalanine at position 1 changed to alanine in combination with arginine at position 13 changed to:
      (i) alanine (F1A R13A);
      (ii) valine (F1A R13V);
      (iii) asparagine (F1A R13N); or
      (iv) serine (F1A R13S);
   (b) phenylalanine at position 1 changed to glycine in combination with arginine at position 13 changed to glycine (F1G R13G);
   (c) phenylalanine a position 1 changed to histidine in combination with arginine at position 13 changed to asparagine (F1H R13N);
   (d) phenylalanine at position 1 changed to isoleucine in combination with arginine at position 13 changed to:
      (i) alanine (F1I R13A);
      (ii) glycine (F1I R13G);
      (iii) isoleucine (F1I R13I);
      (iv) asparagine (F1I R13N);
      (v) proline (F1I R13P);
      (vi) glutamine (F1I R13Q);
      (vii) glutamic acid (F1I R13E);
      (viii) serine (F1I R13S); or
      (ix) valine (F1I R13V);
   (e) phenylalanine at position 1 changed to leucine in combination with arginine at position 13 changed to:
      (i) alanine (F1L R13A);
      (ii) aspartic acid (F1L R13D);
      (iii) glycine (F1L R13G);
      (iv) asparagine (F1L R13N);
      (v) proline (F1L R13P); or
      (vi) glutamine (F1L R13Q);

(f) phenylalanine at position 1 changed to threonine in combination with arginine at position 13 changed to:
    (i) alanine (F1T R13A);
    (ii) asparagine (F1T R13N); or
    (iii) valine (F1T R13V);
(g) phenylalanine at position 1 changed to valine in combination with arginine at position 13 changed to:
    (i) alanine (F1V R13A);
    (ii) asparagine (F1V R13N);
    (iii) glutamine (F1V R13Q);
    (iv) aspartic acid (F1V R13D);
    (v) valine (F1V R13V); or
    (vi) proline (F1V R13P); or
(h) phenylalanine at position 1 changed to tyrosine in combination with arginine at position 13 changed to:
    (i) aspartic acid (F1Y R13D); or
    (ii) glycine (F1Y R13G).

2. A non-naturally occurring lantibiotic comprising an amino acid sequence of SEQ ID NO. 550.

3. The non-naturally occurring lantibiotic of claim 2, wherein the lantibiotic is post-translationally modified.

4. The non-naturally occurring lantibiotic of claim 1 or claim 3, wherein the post-translation modification comprises Dha at position 5, Abu at position 8, and Dhb at position 14.

5. The non-naturally occurring lantibiotic of claim 1, claim 3 or claim 4, wherein the post-translationally modified MU1140 variant comprises Ring A, Ring B, Ring C and Ring D, wherein:
(a) two of these rings are formed by lanthionine (Ala-S-Ala) residues, including one in Ring A (Ala_3-S-Ala_7) and one in Ring C (Ala_{16}-S-Ala_{21});

(b) a methyl-lanthionine residue (Abu-S-Ala) forms Ring B comprising the alpha-aminobutyrate residue in position 8 and the Ala in position 11 (Abu_8-S-Ala_{11}); and

(c) the fourth ring, D, is comprised of the Ala in position 19 linked to an aminovinyl group by a thioether linkage (Ala_{19}-S-CH=CH-NH-),

and wherein the amino acid at position 5 is modified to Dha, the amino acid at position 8 is modified to Abu, and the amino acid at position 14 is modified to Dhb.

6. A post-translationally modified, non-naturally occurring lantibiotic comprising an amino acid sequence of SEQ ID NO. 1157.

7. An antimicrobial composition comprising a non-naturally occurring lantibiotic of any one of claims 1 to 6 and a pharmaceutically acceptable carrier, pharmaceutically acceptable diluent, other diluent or excipient.

8. The antimicrobial composition of claim 7, further comprising an antifungal agent, an additional antimicrobial agent, a membrane disrupting agent, or a combination thereof.

9. The antimicrobial composition of claim 7 or claim 8 for use in reducing reproduction of bacteria or reducing numbers of bacteria present in or on a subject.

10. The antimicrobial composition for use according to claim 9, wherein the bacteria are Gram-positive bacteria.

11. A polynucleotide encoding for SEQ ID NO. 1161.

12. A host cell comprising a polynucleotide of claim 11.

13. A host cell comprising a polynucleotide of SEQ ID NO: 1163.

14. An isolated recombinant *Streptococcus mutans* strain comprising a polynucleotide of SEQ ID NO: 758.

15. An isolated recombinant *Streptococcus mutans* strain comprising a polynucleotide of SEQ ID NO: 1163.

16. A non-naturally occurring polypeptide comprising an amino acid sequence of SEQ ID NO. 1161.

17. An isolated recombinant *Streptococcus mutans* strain comprising:
    (a) a mutation in a polynucleotide involved in lactic acid synthesis such that expression of lactic acid is diminished by about 80% or more as compared to a wildtype *S. mutans* strain;
    (b) a recombinant alcohol dehydrogenase polynucleotide; and
    (c) a recombinant polynucleotide encoding the non-naturally occurring lantibiotic of any one of claims 1 to 6.