

CLAIMS

1. A method of eliciting an immune response to group A streptococcal bacteria in a mammal, said method including the step of administering to the
5 mammal: an M protein fragment, variant or derivative thereof; and an agent that facilitates restoring or enhancing neutrophil activity; to thereby elicit an immune response to group A streptococcal bacteria in the mammal.
2. A method of immunizing a mammal against group A streptococcal bacteria, said method including the step of administering to the mammal: an M
10 protein fragment, variant or derivative thereof; and an agent that facilitates restoring or enhancing neutrophil activity; to thereby immunize the mammal against group A streptococcal bacteria.
3. A method of treating or preventing a group A streptococcal bacterial infection in a mammal, said method including the step of administering to the
15 mammal: an M protein, fragment, variant or derivative thereof, or an antibody or antibody fragment thereto; and an agent that facilitates restoring or enhancing neutrophil activity; to thereby treat or prevent the group A streptococcal bacterial infection in the mammal.
4. The method of any one of Claims 1 to 3, which includes administration of
20 one or more isolated nucleic acids encoding, the M protein fragment, variant or derivative thereof and encoding the agent that facilitates restoring or enhancing neutrophil activity or a composition comprising same.
5. A composition suitable for administration to a mammal, said composition comprising an M protein fragment, variant or derivative thereof, or an antibody or
25 antibody fragment thereto; and an agent that facilitates restoring or enhancing neutrophil activity.
6. The composition of Claim 5, which comprises one or more isolated nucleic acids encoding the M protein fragment, variant or derivative thereof and the agent that facilitates restoring or enhancing neutrophil activity or a
30 composition comprising same.
7. The method of any one of Claims 1 to 4 or the composition of Claim 5 or Claim 6, wherein the agent that facilitates restoring or enhancing neutrophil activity is a protein, or a fragment thereof, normally directly or indirectly inhibits or suppresses neutrophils or neutrophil activity.

8. The method of any one of Claims 1 to 4 or the composition of Claim 5 or Claim 6, wherein the agent that facilitates restoring or enhancing neutrophil activity is an antibody or antibody fragment which binds a protein, or a fragment thereof, that normally directly or indirectly inhibits or suppresses neutrophils or neutrophil activity.
9. The method or composition of Claim 7 or Claim 8, wherein the neutrophil activity is neutrophil chemotaxis.
10. The method or composition of Claim 9, wherein the protein is a protease, or a fragment thereof, that proteolytically inactivates interleukin 8.
11. The method or composition of Claim 10, wherein the protease is SpyCEP.
12. The method or composition of Claim 11, wherein the fragment of SpyCEP comprises, consists essentially of or consists of the amino acid sequence NSDNIKENQFEDFDEDWENF (SEQ ID NO:18) or a variant having at least 80% sequence identity to the amino acid sequence of SEQ ID NO:18.
13. The method or composition of any preceding claim wherein the M protein fragment is of a conserved C-terminal region of the M protein.
14. The method or composition of Claim 13, wherein the M protein fragment is, comprises or is contained within, a p145 amino acid sequence.
15. The method or composition of Claim 14, wherein the M protein fragment is present in an amino acid sequence of a J8 peptide.
16. The method or composition of Claim 13, wherein the M protein fragment is, or comprises or is contained within a J8 variant peptides.
17. The method or composition of Claim 16, wherein the J8 variant peptide comprises, consists essentially of or consists of an amino acid sequence selected from the group consisting of: SREAKKQSREAKKQVEKALKQVEKALC (SEQ ID NO:59); SREAKKQSREAKKQVEKALKQSREAKC (SEQ ID NO:60); SREAKKQVEKALKQSREAKKQVEKALC (SEQ ID NO:61); and SREAKKQVEKALDASREAKKQVEKALC (SEQ ID NO:62).
18. The method of any one of Claims 1-4 or 7-17 or the composition of any one of Claims 5-17, wherein the variant or derivative comprises one or a plurality of lysine residues at an N and/or C-terminus thereof.
19. The method or composition of any preceding claim wherein the mammal is a human.

20. An isolated peptide comprising, consisting essentially of, or consisting of an amino acid sequence selected from the group consisting of: NSDNIKENQFEDFDEDWENF (SEQ ID NO:18); SREAKKQSREAKKQVEKALKQVEKALC (SEQ ID NO:59);
- 5 SREAKKQSREAKKQVEKALKQSREAKC (SEQ ID NO:60); SREAKKQVEKALKQSREAKKQVEKALC (SEQ ID NO:61); SREAKKQVEKALDASREAKKQVEKALC (SEQ ID NO:62); and a fragment, variant or derivative of any one of SEQ ID NOS:18, 59, 60, 61 or 62.
21. The isolated peptide of Claim 20, wherein the variant or derivative
- 10 comprises one or a plurality of lysine residues at an N and/or C-terminus thereof.
22. An antibody or antibody fragment that binds or is raised against the isolated peptide of Claim 20 or Claim 21.
23. An isolated nucleic acid encoding the isolated peptide, fragment, variant or derivative of Claim 20 or Claim 21.
- 15 24. A genetic construct comprising the isolated nucleic acid of Claim 23.
25. A host cell comprising the genetic construct of Claim 24.
26. A composition comprising one or a plurality of the isolated peptides, fragments, variants or derivatives of Claim 20 or Claim 21; or one or a plurality of the antibodies or antibody fragments of Claim 22; the isolated nucleic acid of
- 20 Claim 23; the genetic construct of Claim 24; and/or the host cell of Claim 25.