

WHAT IS CLAIMED IS:

1. A peptide of 16 to 26 amino acid residues in length comprising the following amino acid sequence: $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S, G or A; X_2 is S or G; X_3 is V or I, X_4 is W or L; X_5 is W, K, A or L; and X_6 is W, K, L or A (SEQ ID NO:12).

2. A peptide of 16 to 26 amino acid residues in length, which comprises the following amino acid sequence: SGSWLRDVWTWLQSKL (SEQ ID NO:1), GSSWLRDVWTWLQSKL (SEQ ID NO:2), GSSWLRDVWTWLQSAL (SEQ ID NO:3), GSSWLRDVWTKLQSWL (SEQ ID NO:4), GSSWLRDIWTKLQSWL (SEQ ID NO:5), GSSWLRDIWTALQSWL (SEQ ID NO:6), GSSWLRDILTALQSL (SEQ ID NO:7), AGSWLRDIWTWLQSAL (SEQ ID NO:8), or AGSWLRDILTLLQSAL (SEQ ID NO:9).

3. The peptide of claim 1, which comprises the following amino acid sequence:

a. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V; X_4 is W; X_5 is W or K; and X_6 is W, K or A (SEQ ID NO:13);

b. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V, X_4 is W; X_5 is W; and X_6 is K or A (SEQ ID NO:14);

c. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V or I, X_4 is W; X_5 is W or A; and X_6 is W or K (SEQ ID NO:15);

d. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V or I, X_4 is W; X_5 is W, K or A; and X_6 is W, K or A (SEQ ID NO:16);

e. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V or I, X_4 is W; X_5 is W or A; and X_6 is W, K or A (SEQ ID NO:17); or

f. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V or I, X_4 is W; X_5 is W, K or A; and X_6 is W or K (SEQ ID NO:19).

4. The peptide of claim 2, wherein the peptide comprises the amino acid sequence of SGSWLRDVWTWLQSKL (SEQ ID NO:1).

5. The peptide of claim 2, wherein the peptide consists of the amino acid sequence SGSWLRDVWTWLQSKL (SEQ ID NO:1), GSSWLRDVWTWLQSKL (SEQ ID NO:2), GSSWLRDVWTWLQSAL (SEQ ID NO:3), GSSWLRDVWTKLQSWL (SEQ ID NO:4), GSSWLRDIWTKLQSWL (SEQ ID NO:5), GSSWLRDIWTALQSWL (SEQ ID NO:6), GSSWLRDILTALQSLL (SEQ ID NO:7), AGSWLRDIWTWLQSAL (SEQ ID NO:8), or AGSWLRDILTLLQSAL (SEQ ID NO:9).

6. A pegylated peptide comprising a peptide of any one of claims 1 to 5 linked to one, two or more polyethylene glycol (PEG) polymers.

7. A pegylated peptide comprising the following structure: NH₂-PEG12-Amide-PEG12-peptide, wherein the peptide is 16 to 26 amino acid residues in length and comprises the amino acid sequence: X₁X₂SWLRDX₃X₄TX₅LQX₆L, wherein X₁ is S, G or A; X₂ is S or G; X₃ is V or I, X₄ is W or L; X₅ is W, K, A or L; and X₆ is W, K, L or A (SEQ ID NO:12).

8. A pegylated peptide comprising the following structure: NH₂-PEG12-Amide-PEG12-peptide, wherein the peptide comprises the following amino acid sequence: SGSWLRDVWTWLQSKL (SEQ ID NO:1), GSSWLRDVWTWLQSKL (SEQ ID NO:2), GSSWLRDVWTWLQSAL (SEQ ID NO:3), GSSWLRDVWTKLQSWL (SEQ ID NO:4), GSSWLRDIWTKLQSWL (SEQ ID NO:5), GSSWLRDIWTALQSWL (SEQ ID NO:6), GSSWLRDILTALQSLL (SEQ ID NO:7), AGSWLRDIWTWLQSAL (SEQ ID NO:8), or AGSWLRDILTLLQSAL (SEQ ID NO:9).

9. The pegylated peptide of claim 7, which peptide comprises the following amino acid sequence:

a. X₁X₂SWLRDX₃X₄TX₅LQX₆L, wherein X₁ is S or G; X₂ is S or G; X₃ is V; X₄ is W; X₅ is W or K; and X₆ is W, K or A (SEQ ID NO:13);

b. X₁X₂SWLRDX₃X₄TX₅LQX₆L, wherein X₁ is S or G; X₂ is S or G; X₃ is V, X₄ is W; X₅ is W; and X₆ is K or A (SEQ ID NO:14);

c. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V or I, X_4 is W; X_5 is W or A; and X_6 is W or K (SEQ ID NO:15);

d. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V or I, X_4 is W; X_5 is W, K or A; and X_6 is W, K or A (SEQ ID NO:16);

e. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V or I, X_4 is W; X_5 is W or A; and X_6 is W, K or A (SEQ ID NO:17); or

f. $X_1X_2SWLRDX_3X_4TX_5LQSX_6L$, wherein X_1 is S or G; X_2 is S or G; X_3 is V or I, X_4 is W; X_5 is W, K or A; and X_6 is W or K (SEQ ID NO:19).

10. A composition comprising the peptide of any one of claims 1 to 9 and a carrier.

11. A pharmaceutical composition comprising an effective amount of peptide of any one of claims 1 to 9 and a pharmaceutically acceptable carrier.

12. A vial containing: (1) a lyophilized composition comprising 200 mg to 300 mg of the peptide of any one of claims 1 to 9; or (2) a pharmaceutical composition, wherein the pharmaceutical composition comprises 200 mg to 300 mg of the peptide of any one of claims 1 to 9 in a 1 ml aqueous solution.

13. A disinfecting solution comprising the peptide of any one of claims 1 to 9.

14. An *in vitro* or *ex vivo* method for inhibiting growth, replication, or infectivity of a microorganism, wherein the method comprises contacting the microorganism with an effective amount of the peptide of any one of claims 1 to 9.

15. Use of the pharmaceutical composition of claim 11 in the preparation of a medicament for treating a microorganism infection in a subject or preventing a disease in a subject caused by or associated with a microorganism infection.

16. Use of a pharmaceutical composition comprising an effective amount of the peptide of any one of claims 1 to 9 in the preparation of a medicament for treating or

preventing a disease in a subject which disease is caused by or associated with a bacterial infection or a viral infection.

17. The use of claim 16, wherein the bacterial infection is a Gram-negative infection.

18. The use of claim 17, wherein the Gram-negative infection is a *Pseudomonas aeruginosa*, *Moraxella catarrhalis*, or *Haemophilus influenzae* infection.

19. The use of claim 16, wherein the bacterial infection is a Methicillin-sensitive *Staphylococcus aureus*, Methicillin-resistant *Staphylococcus aureus*, Vancomycin-sensitive *enterococci*, Vancomycin-resistant *enterococci*, penicillin-sensitive *Streptococcus pneumoniae*, penicillin-resistant *Streptococcus pneumoniae*, ciprofloxacin-resistant or clindamycin-resistant infection.

20. The use of claim 16, wherein the viral infection is an infection by a virus belonging to the *flaviviridae*, *togaviridae*, *filoviridae*, *poxviridae*, *arenaviridae*, *bunyaviridae*, or *retroviridae* family.

21. The use of claim 16, wherein the viral infection is an infection by a dengue virus, Chikungunya virus, Ebola virus, HIV, or influenza virus.

22. Use of a composition of claim 10 in an *in vitro* or *ex vivo* method for disinfecting an inanimate object or biological material.

23. The use according to claim 22, wherein the biological material is a biological fluid, a blood component, a tissue, an organ, or cell culture.

24. Use of a wipe containing a peptide of any one of claims 1 to 9 in an *in vitro* or *ex vivo* method for disinfecting an inanimate object or biological material.

25. The use according to claim 24, wherein the biological material is a biological fluid, a blood component, a tissue, an organ, or cell culture.

26. An inanimate surface or biological surface, which comprises a linkage to or a coating with the anti-infective peptide of any one of claims 1 to 9.