polypeptide, and (iv) an assignment of putative function. ORFs 1-53 listed in FIG. 8 encode the amino acid sequences of SEQ ID NO:507-559, respectively.

[0057] FIG. 9: Schematic of the organization of the F44/10 genome, comprising the nucleic acid sequence of SEQ ID NO:560. The open reading frames ("ORFs") predicted in the approximately 137kb genome are represented by arrows and numbered in black. The direction of an arrow indicates the direction of transcription. Color coding: Black – ORFs for which products a functional assignment could be made based on the known functions of homologous proteins; Gray - ORFs coding for products that are similar to proteins of unknown function; Empty – ORFs coding for proteins that share no significant homology with proteins in available databases. Functionally assigned ORFs are also listed in the figure. The information in the figure is also included in tabular form in FIG. 10.

[0058] FIGS. 10A-10QQ: Features of the bacteriophage F44/10 genome, including gene products and assignment of putative functions. The figure includes a listing of the ORFs of the genome and provides for each ORF (i) its position within the genome, (ii) the encoded amino acid sequence, (iii) a listing of homologous proteins and conserved domains within its encoded polypeptide and (iv) an assignment of putative function. ORFs 1-216, including ORFs 1a, 1b, 82a, 82b, 82c, 114a, and 114b, listed in FIG. 10 encode the amino acid sequences of SEQ ID NO:561-780, respectively.

[0059] FIG. 11: Schematic of the organization of the F387/08 genome, comprising the nucleic acid sequence of SEQ ID NO:781. The open reading frames ("ORFs") predicted in the approximately 167 kb genome are represented by arrows and numbered in black. The direction of an arrow indicates the direction of transcription. Color coding: Black – ORFs for which products a functional assignment could be made based on the known functions of homologous proteins; Gray - ORFs coding for products that are similar to proteins of unknown function; Empty – ORFs coding for proteins that share no significant homology with proteins in available databases. Functionally assigned ORFs are also listed in the figure. The information in the figure is also included in tabular form in FIG. 12.

[0060] FIGS. 12A-12UUU: Features of the bacteriophage F387/08 genome, including gene products and assignment of putative functions. The figure includes a listing of the ORFs of the genome and provides for each ORF (i) its position within the genome, (ii) the encoded amino acid sequence, (iii) a listing of homologous proteins and conserved domains within its encoded

CLAIMS

1. An isolated bacteriophage having a genome which comprises at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:1, and having antibacterial activity against *Klebsiella pneumoniae.*

2. A pharmaceutical composition comprising the bacteriophage of claim 1 and a pharmaceutically acceptable carrier.

3. The pharmaceutical composition of claim 2, further comprising one or more additional strains of bacteriophage effective against *Klebsiella pneumoniae.*

4. An isolated protein from bacteriophage F391/08 having a genome comprising at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:1, and having antibacterial activity against *Klebsiella pneumoniae*, or a fragment of said protein having antibacterial activity against *Klebsiella pneumoniae*; wherein said protein is a lysin protein or a tail protein.

5. The isolated protein of claim 4, wherein said protein is a lysin protein having the amino acid sequence of SEQ ID NO: 20, SEQ ID NO: 80, or a fragment thereof, which fragment has antibacterial activity against *Klebsiella pneumoniae,* or wherein said protein is a tail protein having the amino acid sequence of SEQ ID NO: 15, SEQ ID NO: 26, SEQ ID NO: 27, SEQ ID NO: 30, SEQ ID NOs: 32-35, or a fragment thereof, which fragment has antibacterial activity against *Klebsiella pneumoniae*.

6. An isolated first protein having at least 85% or at least 95% sequence identity to a second protein of the same size, wherein said first protein has antibacterial activity against *Klebsiella pneumoniae,*

and said second protein has the amino acid sequence of SEQ ID NO: 20, SEQ ID NO: 80, or a fragment thereof, or the amino acid sequence of SEQ ID NO: 15, SEQ ID NO: 26, SEQ ID NO: 27, SEQ ID NO: 30, SEQ ID NOs: 32-35, or a fragment thereof.

7. The fragment of claim 4, 5 or 6, wherein said fragment comprises a cysteine histidine-dependent amidohydrolases/peptidase domain (CHAP domain) of the amino acid sequence of SEQ ID NO: 20 or SEQ ID NO: 80.

8. A pharmaceutical composition comprising the isolated protein or fragment of any one of claims 4, 5 or 6, or the fragment of claim 7 and a pharmaceutically acceptable carrier.

9. The pharmaceutical composition of claim 8, comprising the isolated protein having the amino acid sequence of SEQ ID NO: 15, SEQ ID NO: 20, SEQ ID NO: 26, SEQ ID NO: 27, SEQ ID NO: 30, SEQ ID NO: 32-35, SEQ ID NO: 80, or a fragment thereof having antibacterial activity against *Klebsiella pneumoniae.*

10. The pharmaceutical composition of claim 9, further comprising one or more bacteriophage or additional bacteriophage proteins effective against *Klebsiella pneumoniae.*

11. The pharmaceutical composition of claim 2 or 3, further comprising at least three additional phage selected from the group consisting of F394/08, having a genome comprising at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:2; F488/08, having a genome comprising at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:3; F510/08, having a genome comprising at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:4; F44/10, having a genome comprising at least 99% sequence identity to

the nucleotide sequence of SEQ ID NO:560; F387/08, having a genome comprising at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:781; F125/10, having a genome comprising at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:1074; F170/08, having a genome comprising at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:2 of WO 2010/090542; F168/08, having a genome comprising at least 99% sequence identity to the nucleotide sequence of SEQ ID NO:1 of WO 2010/090542; F770/05, having deposit number NCIMB 41864; and F1245/05, having deposit number NCIMB 41865; preferably at least three additional phage selected from the group consisting of F44/10, F387/08, F488/08, F510/08 and/or F770/05; preferably comprising F44/10; and/or wherein said composition is formulated for topical application.

12. An isolated nucleic acid comprising a nucleotide sequence encoding the protein or fragment of claim 4, 5, or 6 or fragment of claim 7.

13. Use of a therapeutically effective amount of the pharmaceutical composition of any of claims 2-3 or 8-11 in the manufacture of a medicament for treating or preventing a bacterial infection in a subject in need thereof; wherein said bacterial infection is an infection by *Klebsiella pneumoniae*

preferably wherein the infection is a nosocomial infection and/or wherein the subject is a mammal, preferably a human.

14. A method for diagnosing the causative agent of a bacterial infection comprising

(i) culturing a sample from a patient;

(ii) contacting the culture of step (i) with the bacteriophage from claim 1, the protein or fragment of claim 4, 5, or 6, or the fragment of claim 7; and

(iii) monitoring for evidence of growth or lysis of the culture

wherein evidence of lysis of the culture indicates that the culture comprises *Klebsiella pneumoniae*;

preferably wherein the sample is a sample of blood, urine, tissue biopsy, sputum, nasal mucosa, or swab collected from said patient.

15. A method for reducing or inhibiting colonization or growth of *Klebsiella pneumoniae* bacteria on a solid surface comprising contacting said surface with the bacteriophage of claim 1, the polypeptide or fragment of claim 4, 5, or 6, or the fragment of claim 7; preferably wherein said surface is the surface of a hospital apparatus or a piece of hospital equipment, preferably a surgical apparatus or piece of surgical equipment.

16. Use of the bacteriophage of claim 1, the polypeptide or fragment of claim 4, 5, or 6, or the fragment of claim 7 in the manufacture of a medicament for reducing or inhibiting colonization or growth of *Klebsiella pneumoniae* bacteria on a biological surface contacted therewith; preferably wherein said surface is the skin or a mucus membrane of a mammal, the skin or a mucus membrane of a human, or a mucus membrane of the respiratory tract of a mammal or human.

17. The use according to claim 13, wherein the infection is an infection of the skin.

18. The use according to claim 17, wherein the skin infection is associated with diabetic foot ulcer.

19. The use according to claim 17 or 18, wherein the composition is to be administered topically.

20. The use according to any one of claims 13 or 17-19, wherein the subject has a weakened immune system, preferably wherein the weakened immune system is a result of alcoholism or diabetes.

21. The use according to claim 13, wherein the infection is an infection associated with chronic pulmonary disease, nasal mucosa atrophy, or rhinoscleroma.

22. The use according to claim 21, wherein the pharmaceutical composition is to be administered by inhalation.

23. The use according to claim 22, wherein administration by inhalation uses a pump, a spray, or a nebulizer; and/or wherein the pharmaceutical composition for administration by inhalation comprises a dry powder or an aerosol spray.

24. The use according to claim 13, wherein the infection is an infection associated with enteric pathogenicity.

25. The use according to claim 24, wherein the pharmaceutical composition is to be administered orally or parenterally.

26. The use according to claim 13, wherein the pharmaceutical composition further comprises an antibiotic for treating said bacterial infection.