CLAIMS

We claim:

1. An isolated influenza virus that is capable of infecting a canid animal, wherein the canid animal belongs to the group comprising type A strains A/canine/Florida/43/04, A/canine/Florida/242/2003, canine/Miami/05 and canine/Jax/05.

2. The influenza virus according to claim 1, wherein said influenza virus has an HA serotype of H3.

3. The influenza virus according to claim 1, wherein said influenza virus has the serotype H3N8.

4. The influenza virus according to claim 1, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78.

5. The influenza virus according to claim 1, wherein said influenza virus comprises a polynucleotide having the nucleotide sequence shown in any of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, or 77, or said polynucleotide has 98% or greater sequence identity with the nucleotide sequence shown in any of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, or 77.

6. An isolated polynucleotide that comprises all or part of a genomic segment or gene of an influenza virus of any of claims 1 to 5, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78.

7. The polynucleotide according to claim 6, wherein said polynucleotide comprises all or part of an influenza gene selected from the group consisting of a neuraminidase gene, a nucleoprotein gene, a matrix protein gene, a polymerase basic protein gene, a polymerase acidic protein gene, a non-structural protein gene, and a hemagglutinin gene.

8. The polynucleotide according to claim 6, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78.

9. The polynucleotide according to claim 6, wherein said influenza virus comprises a polynucleotide having the nucleotide sequence shown in any of SEQ ID NOs: 1, 3, 5, 7, 9,11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, or 77, or said polynucleotide has 98% or greater sequence identity with the nucleotide sequence shown in any of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13,

15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, or 77.

10. A polynucleotide expression construct comprising a polynucleotide of any of claims 6 to 9.

11. The oligonucleotide that can hybridize to a coding or non-coding sequence of a polynucleotide of any of claims 6 to 9, wherein said oligonucleotide comprises a nucleotide sequence shown in any of SEQ ID NOs: 35, 36, 37, 38, 39, 40, 41, 42,43, 44, 45, 46, 79, 80, 81, 82, 83, 84, 85, 86, 87, or 88.

12. An isolated polypeptide encoded by a polynucleotide of any of claims 6 to 9.

13. The polypeptide according to claim 12, wherein said polypeptide is selected from the group consisting of a hemagglutinin protein, a neuraminidase protein, a nucleoprotein, a matrix protein, a polymerase basic protein, a polymerase acidic protein, and a non-structural protein.

14. A composition comprising an immunogen of an influenza virus of any of claims 1 to 5:

wherein said immunogen is capable of inducing an immune response against an influenza virus that is capable of infecting a canid animal;

wherein said immunogen comprises cell-free whole virus, or a portion thereof; a viral polynucleotide; a viral protein; a viral polypeptide or peptide; a virus infected cell; a recombinant viral vector based construct; a reassortant virus; or naked nucleic acid of said virus; and

wherein said viral protein, polypeptide, or peptide comprises an amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78.

15. The composition according to claim 14, wherein said viral polynucleotide encodes a polypeptide comprising an amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof.

16. Use of a composition according to any of claims 14 or 15 for the manufacture of a medicament for inducing an immune response in an animal against an influenza virus of any of claims 1 to 5.

17. The use according to claim 16, wherein said composition comprises a viral protein, polypeptide, or peptide comprising an amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof.

18. The use according to claim 16, wherein said immune response is a protective immune response that prevents or inhibits infection of said animal by an influenza virus.

19. The use according to claim 16, wherein said influenza virus has an HA serotype selected from H3.

20. The use according to claim 16, wherein said influenza virus has the serotype H3N8.

21. The use according to claim 16, wherein said composition further comprises an adjuvant.

22. The use according to claim 16, wherein said animal is a canid.

23. The use according to claim 22, wherein said canid animal is a domesticated dog.

24. The use according to claim 16, wherein said composition is administered parenterally.

25. The use according to claim 24, wherein said composition is administered subcutaneously, intraperitoneally, or intramuscularly.

26. The use according to claim 16, wherein said composition is administered nasally or orally.

27. A cell comprising an influenza virus of any of claims 1 to 5 or a polynucleotide of claim 6.

28. The cell according to claim 27, wherein said cell is a canid animal cell.

29. A method for detection of an influenza virus of that is capable of infecting a canid animal, said method comprising obtaining a biological sample from an animal and screening said sample for the presence of an antibody that binds to a protein, polypeptide, or peptide of an influenza virus of any of claims 1 to 5.

30. A method for detection of an influenza virus that is capable of infecting a canid animal, said method comprising obtaining a nucleic acid sample from an animal, and contacting said nucleic acid sample with an oligonucleotide according to claim 11, and determining if said oligonucleotide hybridizes under stringent conditions to said nucleic acid.

31. A method for screening for a compound that possesses antiviral activity against an influenza virus that is capable of infecting a canid animal, said method comprising contacting a cell infected with or comprising a virus of any of claims 1 to 5 with a test compound and determining whether said test compound inhibits activity of said virus in said cell.

32. A reassortant virus comprising at least one gene, genomic segment, or a polynucleotide of an influenza virus of claim 1.

33. An isolated virus that comprises one or more polynucleotides wherein said one or more polynucleotides encode a canine influenza virus protein selected from the group consisting of HA, NA, NP, MA, PBl, PB2, PA, and NS_5 or a functional or immunogenic fragment thereof.

34. The virus according to claim 33, wherein said one or more polynucleotides comprise a nucleotide sequence selected from the group consisting of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, and 77.

35. The virus according to claim 33, wherein said HA protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 16, 32, 62, and 78.

36. The virus according to claim 33, wherein said NA protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 12, 28, 58, and 74.

37. The virus according to claim 33, wherein said NP protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 10, 26, 56, and 72.

38. The virus according to claim 33, wherein said MA protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 14, 30, 60, and 76.

39. The virus according to claim 33, wherein said PBl protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 4, 20, 50, and 66.

40. The virus according to claim 33, wherein said PB2 protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 2, 18, 48, and 64.

41. The virus according to claim 33, wherein said PA protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 6, 22, 52, and 68.

42. The virus according to claim 33, wherein said NS protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 8, 24, 54, and 70.

43. A method for detection of an influenza virus that is capable of infecting a canid animal, said method comprising obtaining a sample containing nucleic acid from an animal, and contacting said nucleic acid sample with a forward and reverse oligonucleotide primer that binds specifically to a polynucleotide or gene sequence of said virus under conditions sufficient for generation of an amplification product if the nucleic acid contains a sequence to which said primers bind; and detecting said amplification product.

44. The method according to claim 43, wherein said oligonucleotide primer is an oligonucleotide according to claim 11.

45. An isolated polynucleotide that comprises all or part of a genomic segment or gene of an influenza virus of any of claims 1 to 5, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in SEQ ID NO: 12, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in SEQ ID NO: 12.

46. The polynucleotide according to claim 6, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in SEQ ID NO: 12, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in SEQ ID NO: 12.

47. A composition comprising an immunogen of an influenza virus of any of claims 1 to 5:

wherein said immunogen is capable of inducing an immune response against an influenza virus that is capable of infecting a canid animal;

wherein said immunogen comprises cell-free whole virus, or a portion thereof; a viral polynucleotide; a viral protein; a viral polypeptide or peptide; a virus infected cell; a recombinant viral sector based construct; a reassortant virus; or naked nucleic acid of said virus; and

wherein said viral protein, polypeptide, or peptide comprises an amino acid sequence shown in SEQ ID NO: 12, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in SEQ ID NO: 12.

48. The composition according to claim 47, wherein said viral polynucleotide encodes a polypeptide comprising an amino acid sequence shown in SEQ ID NO: 12.

CLAIMS

We claim:

1. An isolated influenza virus that is capable of infecting a canid animal, wherein the canid animal belongs to the group comprising type A strains A/canine/Florida/43/04, A/canine/Florida/242/2003, canine/Miami/05 and canine/Jax/05.

2. The influenza virus according to claim 1, wherein said influenza virus has an HA serotype of H3.

3. The influenza virus according to claim 1, wherein said influenza virus has the serotype H3N8.

4. The influenza virus according to claim 1, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78.

5. The influenza virus according to claim 1, wherein said influenza virus comprises a polynucleotide having the nucleotide sequence shown in any of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, or 77, or said polynucleotide has 98% or greater sequence identity with the nucleotide sequence shown in any of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, or 77.

6. An isolated polynucleotide that comprises all or part of a genomic segment or gene of an influenza virus of any of claims 1 to 5, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78.

7. The polynucleotide according to claim 6, wherein said polynucleotide comprises all or part of an influenza gene selected from the group consisting of a neuraminidase gene, a nucleoprotein gene, a matrix protein gene, a polymerase basic protein gene, a polymerase acidic protein gene, a non-structural protein gene, and a hemagglutinin gene.

8. The polynucleotide according to claim 6, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78.

9. The polynucleotide according to claim 6, wherein said influenza virus comprises a polynucleotide having the nucleotide sequence shown in any of SEQ ID NOs: 1, 3, 5, 7, 9,11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, or 77, or said polynucleotide has 98% or greater sequence identity with the nucleotide sequence shown in any of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13,

15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, or 77.

10. A polynucleotide expression construct comprising a polynucleotide of any of claims 6 to 9.

11. The oligonucleotide that can hybridize to a coding or non-coding sequence of a polynucleotide of any of claims 6 to 9, wherein said oligonucleotide comprises a nucleotide sequence shown in any of SEQ ID NOs: 35, 36, 37, 38, 39, 40, 41, 42,43, 44, 45, 46, 79, 80, 81, 82, 83, 84, 85, 86, 87, or 88.

12. An isolated polypeptide encoded by a polynucleotide of any of claims 6 to 9.

13. The polypeptide according to claim 12, wherein said polypeptide is selected from the group consisting of a hemagglutinin protein, a neuraminidase protein, a nucleoprotein, a matrix protein, a polymerase basic protein, a polymerase acidic protein, and a non-structural protein.

14. A composition comprising an immunogen of an influenza virus of any of claims 1 to 5:

wherein said immunogen is capable of inducing an immune response against an influenza virus that is capable of infecting a canid animal;

wherein said immunogen comprises cell-free whole virus, or a portion thereof; a viral polynucleotide; a viral protein; a viral polypeptide or peptide; a virus infected cell; a recombinant viral vector based construct; a reassortant virus; or naked nucleic acid of said virus; and

wherein said viral protein, polypeptide, or peptide comprises an amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78.

15. The composition according to claim 14, wherein said viral polynucleotide encodes a polypeptide comprising an amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof.

16. Use of a composition according to any of claims 14 or 15 for the manufacture of a medicament for inducing an immune response in an animal against an influenza virus of any of claims 1 to 5.

17. The use according to claim 16, wherein said composition comprises a viral protein, polypeptide, or peptide comprising an amino acid sequence shown in any of SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or a functional and/or immunogenic fragment thereof.

18. The use according to claim 16, wherein said immune response is a protective immune response that prevents or inhibits infection of said animal by an influenza virus.

19. The use according to claim 16, wherein said influenza virus has an HA serotype selected from H3.

20. The use according to claim 16, wherein said influenza virus has the serotype H3N8.

21. The use according to claim 16, wherein said composition further comprises an adjuvant.

22. The use according to claim 16, wherein said animal is a canid.

23. The use according to claim 22, wherein said canid animal is a domesticated dog.

24. The use according to claim 16, wherein said composition is administered parenterally.

25. The use according to claim 24, wherein said composition is administered subcutaneously, intraperitoneally, or intramuscularly.

26. The use according to claim 16, wherein said composition is administered nasally or orally.

27. A cell comprising an influenza virus of any of claims 1 to 5 or a polynucleotide of claim 6.

28. The cell according to claim 27, wherein said cell is a canid animal cell.

29. A method for detection of an influenza virus of that is capable of infecting a canid animal, said method comprising obtaining a biological sample from an animal and screening said sample for the presence of an antibody that binds to a protein, polypeptide, or peptide of an influenza virus of any of claims 1 to 5.

30. A method for detection of an influenza virus that is capable of infecting a canid animal, said method comprising obtaining a nucleic acid sample from an animal, and contacting said nucleic acid sample with an oligonucleotide according to claim 11, and determining if said oligonucleotide hybridizes under stringent conditions to said nucleic acid.

31. A method for screening for a compound that possesses antiviral activity against an influenza virus that is capable of infecting a canid animal, said method comprising contacting a cell infected with or comprising a virus of any of claims 1 to 5 with a test compound and determining whether said test compound inhibits activity of said virus in said cell.

32. A reassortant virus comprising at least one gene, genomic segment, or a polynucleotide of an influenza virus of claim 1.

33. An isolated virus that comprises one or more polynucleotides wherein said one or more polynucleotides encode a canid animal protein selected from the group consisting of HA, NA, NP, MA, PBl, PB2, PA, and NS_5 or a functional or immunogenic fragment thereof, wherein the canid animal belongs to the group comprising type A strains A/canine/Florida/43/04, A/canine/Florida/242/2003, canine/Miami/05 and canine/Jax/05.

34. The virus according to claim 33, wherein said one or more polynucleotides comprise a nucleotide sequence selected from the group consisting of SEQ ID NOs: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, and 77.

35. The virus according to claim 33, wherein said HA protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 16, 32, 62, and 78.

36. The virus according to claim 33, wherein said NA protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 12, 28, 58, and 74.

37. The virus according to claim 33, wherein said NP protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 10, 26, 56, and 72.

38. The virus according to claim 33, wherein said MA protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 14, 30, 60, and 76.

39. The virus according to claim 33, wherein said PBl protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 4, 20, 50, and 66.

40. The virus according to claim 33, wherein said PB2 protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 2, 18, 48, and 64.

41. The virus according to claim 33, wherein said PA protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 6, 22, 52, and 68.

42. The virus according to claim 33, wherein said NS protein has an amino acid sequence selected from the group consisting of SEQ ID NOs: 8, 24, 54, and 70.

43. A method for detection of an influenza virus that is capable of infecting a canid animal, said method comprising obtaining a sample containing nucleic acid from an animal, and contacting said nucleic acid sample with a forward and reverse oligonucleotide primer that binds specifically to a polynucleotide or gene sequence of said virus under conditions sufficient for generation of an amplification product if the nucleic acid contains a sequence to which said primers bind; and detecting said amplification product, wherein the canid animal belongs to the group comprising type A strains A/canine/Florida/43/04, A/canine/Florida/242/2003, canine/Miami/05 and canine/Jax/05.

44. The method according to claim 43, wherein said oligonucleotide primer is an oligonucleotide according to claim 11.

45. An isolated polynucleotide that comprises all or part of a genomic segment or gene of an influenza virus of any of claims 1 to 5, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in SEQ ID NO: 12, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in SEQ ID NO: 12.

46. The polynucleotide according to claim 6, wherein said influenza virus comprises a polynucleotide which encodes a polypeptide having the amino acid sequence shown in SEQ ID NO: 12, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in SEQ ID NO: 12.

47. A composition comprising an immunogen of an influenza virus of any of claims 1 to 5:

wherein said immunogen is capable of inducing an immune response against an influenza virus that is capable of infecting a canid animal;

wherein said immunogen comprises cell-free whole virus, or a portion thereof; a viral polynucleotide; a viral protein; a viral polypeptide or peptide; a virus infected cell; a recombinant viral sector based construct; a reassortant virus; or naked nucleic acid of said virus; and

wherein said viral protein, polypeptide, or peptide comprises an amino acid sequence shown in SEQ ID NO: 12, or said polynucleotide encodes a polypeptide having 99% or greater sequence identity with the amino acid sequence shown in SEQ ID NO: 12.

48. The composition according to claim 47, wherein said viral polynucleotide encodes a polypeptide comprising an amino acid sequence shown in SEQ ID NO: 12.