WHAT IS CLAIMED IS:

1. A method of measuring NK cell activity, comprising:

stimulating NK cells in a blood sample thereby artificially activating the NK cells to generate NK cell-secreting cytokines; and

measuring an amount of the NK cell-secreting cytokines in the blood sample.

2. The method according to claim 1, wherein the blood sample includes whole blood, peripheral blood mononuclear cells (PBMCs) or NK cells.

3. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the blood sample with at least one stimulating cytokine selected from the group consisting of interleukin 2, interleukin 12, interleukin 15 and interleukin 18, or by incubating the blood sample with lipopolysaccharides (LPSs) or polyinosinic:polycytidylic acid (poly I:C).

4. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the blood sample with interleukin 2.

5. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the blood sample with interleukin 2 and interleukin 12.

6. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the blood sample with interleukin 12 and interleukin 15.

7. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the blood sample with interleukin 12 and interleukin 18.

8. The method according to claim 1, wherein the NK cell-secreting cytokines are selected from the group consisting of interferon-gamma (IFN-γ), tumor necrosis factor-alpha (TNF-α) and macrophage inflammatory protein-1β(MIP-1β).

9. The method according to claim 1, wherein the NK cell-secreting cytokine is interferon-gamma (IFN-γ).

10. The method according to claim 1, wherein the NK cell-secreting cytokine is tumor necrosis factor-alpha (TNF-α).

11. The method according to claim 1, wherein macrophage inflammatory protein-1β (MIP-1β) is used as control group for comparing activation of NK cells with that of normal person.

12. The method according to claim 1, wherein the measuring of the amount of the NK cell-secreting cytokines is performed by enzyme-linked immunosorbent assay (ELISA).

13. The method according to claim 3, wherein the at least one stimulating cytokine is in the form of a fusion protein with a stabilizing peptide.

14. The method according to claim 13, wherein the stabilizing peptide is a C-terminal acidic tail domain peptide of a synuclein family.

15. The method according to claim 14, wherein the stabilizing peptide comprises amino acid residues 103-115 (SEQ ID NO: 22), amino acid residues 114-126 (SEQ ID NO: 23), amino acid residues 119-140 (SEQ ID NO: 24) and amino acid residues 130-140 (SEQ ID NO: 25) of the C-terminal acidic tail domain of α-synuclein, amino acid residues 85-134 of the C-terminal acidic tail domain of β-synuclein (SEQ ID NO: 27), amino acid residues 96-127 of the C-terminal acidic tail domain of γ-synuclein (SEQ ID NO: 29), and amino acid

residues 96-127 of the C-terminal acidic tail domain of synoretin (SEQ ID NO: 29).

16. The method according to claim 1, wherein the step of stimulating NK cells in a blood sample thereby artificially activating the NK cells to generate NK cell-secreting cytokines is performed in medium containing a carrier protein.

17. The method according to any one of claims 1 to 16, wherein said method is for detecting the incidence or relapse of cancer.

18. The method according to claim 17, wherein a decrease in the amount of the NK cell-secreting cytokines in a subject, as compared to levels in normal individuals, is an indicator of cancer incidence or relapse.

19. A kit for measuring NK cell activity, comprising:

an agent for stimulating the NK cells in a blood sample thereby artificially activating the NK cells to generate NK cell-secreting cytokines.

20. The kit according to claim 19, wherein the NK cell-secreting cytokine is interferon-gamma (IFN-γ).

21. The kit according to claim 19, wherein the NK cell-secreting cytokine is tumor necrosis factor-alpha (TNF-α).

22. The kit according to claim 19, wherein the agent for stimulating the NK cells in the blood sample and artificially activating the NK cells to generate the NK cell-secreting cytokines is at least one stimulating cytokine, LPS or poly I:C, the at least one stimulating cytokine being selected from the group consisting of interleukin 2, interleukin 12, interleukin 15 and interleukin 18.

23. The kit according to claim 19, further comprising at least one antibody selected from the group of an anti-INF-γ antibody, anti- TNF-α antibody and anti-MIP-1β antibody.

24. The kit according to any one of claim 19 to 23, wherein said kit is for detecting the incidence or relapse of cancer.

25. The kit according to claim 24, further comprising instructions for comparing the amount of the NK cell-secreting cytokines in a subject to levels in normal individuals, wherein a decrease in the level of the NK cell-secreting cytokines in the subject is an indicator of cancer incidence or relapse.

26. A fusion protein comprising a cytokine bound to a C-terminal acidic tail domain peptide of a synuclein family, the cytokine being selected from the group consisting of interleukin 2, interleukin 12, interleukin 15 and interleukin 18.

27. The fusion protein according to claim 26, wherein the cytokine is interleukin 2.

28. The fusion protein according to claim 26, wherein the cytokine is interleukin 12.

29. The fusion protein according to claim 26, wherein the cytokine is interleukin 15.

30. The fusion protein according to claim 26, wherein the cytokine is interleukin 18.

31. The fusion protein according to any one of claims 26 to 30, wherein the C-terminal acidic tail domain peptide of the synuclein family is selected from amino acid residues 103-115 (SEQ ID NO: 22), amino acid residues 114-126 (SEQ ID NO: 23), amino acid residues 119-140 (SEQ ID NO: 24) and amino acid residues 130-140 (SEQ ID NO: 25) of the C-terminal acidic tail domain of α-synuclein, amino acid residues 85-134 of the C-terminal acidic tail domain of β-synuclein (SEQ ID NO: 27), amino acid residues 96-127 of the C-terminal acidic tail domain of γ-synuclein (SEQ ID NO: 29), and amino acid

residues 96-127 of the C-terminal acidic tail domain of synoretin (SEQ ID NO: 29).

32. A composition for activating NK cells, comprising at least one fusion protein selected from the group consisting of:

interleukin 2 bound to a C-terminal acidic tail domain peptide of a synuclein family,

interleukin 12 bound to the C-terminal acidic tail domain peptide of the synuclein family,

interleukin 15 bound to the C-terminal acidic tail domain peptide of the synuclein family, and

interleukin 18 bound to the C-terminal acidic tail domain peptide of the synuclein family.

33. The composition according to claim 32, wherein the C-terminal acidic tail domain peptide of the synuclein family is selected from amino acid residues 103-115 (SEQ ID NO: 22), amino acid residues 114-126 (SEQ ID NO: 23), amino acid residues 119-140 (SEQ ID NO: 24) and amino acid residues 130-140 (SEQ ID NO: 25) of the C-terminal acidic tail domain of α-synuclein, amino acid residues 85-134 of the C-terminal acidic tail domain of β-synuclein (SEQ ID NO: 27), amino acid residues 96-127 of the C-terminal acidic tail domain of γ-synuclein (SEQ ID NO: 29), and amino acid residues 96-127 of the C-terminal acidic tail domain of synoretin (SEQ ID NO: 29).

34. A cancer diagnosis kit comprising at least one fusion protein selected from the group consisting of:

interleukin 2 bound to a C-terminal acidic tail domain peptide of a synuclein family,

interleukin 12 bound to the C-terminal acidic tail domain peptide of the synuclein family,

interleukin 15 bound to the C-terminal acidic tail domain peptide of the synuclein family, and

interleukin 18 bound to the C-terminal acidic tail domain peptide of the synuclein family.

35. The cancer diagnosis kit according to claim 34, wherein the C-terminal acidic tail domain peptide of the synuclein family is selected from amino acid residues 103-115 (SEQ ID NO: 22), amino acid residues 114-126 (SEQ ID NO: 23), amino acid residues 119-140 (SEQ ID NO: 24) and amino acid residues 130-140 (SEQ ID NO: 25) of the C-terminal acidic tail domain of α-synuclein, amino acid residues 85-134 of the C-terminal acidic tail domain of β-synuclein (SEQ ID NO: 27), amino acid residues 96-127 of the C-terminal acidic tail domain of γ-synuclein (SEQ ID NO: 29), and amino acid residues 96-127 of the C-terminal acidic tail domain of synoretin (SEQ ID NO: 29).

36. The cancer diagnosis kit according to claim 34, further comprising at least one antibody selected from the group of an anti-INF-γ antibody, anti- TNF-α antibody and anti-MIP-1β antibody.

37. A polypeptide comprising an amino acid sequence having at least 80% identity to an amino acid sequence of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, or SEQ ID NO: 10.

38. The polypeptide of claim 37, having at least 90% identity to the amino acid sequence of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, or SEQ ID NO: 10.

39. The polypeptide of claim 37, having at least 95% identity to the amino acid sequence of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, or SEQ ID NO: 10.

40. The polypeptide of claim 37, consisting of the amino acid sequence of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8, or SEQ ID NO: 10.

41. An oligonucleotide encoding the polypeptide of any one of claims 37 to 40.

42. An oligonucleotide comprising a nucleic acid sequence having at least 80% identity to a nucleic acid sequence of SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, or SEQ ID NO: 9, or the complement thereof.

43. The oligonucleotide of claim 42, having at least 90% identity to the nucleic acid sequence of SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, or SEQ ID NO: 9, or the complement thereof.

44. The oligonucleotide of claim 42, having at least 95% identity to the nucleic acid sequence of SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, or SEQ ID NO: 9, or the complement thereof.

45. The oligonucleotide of claim 42, consisting of the nucleic acid sequence of SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 7, or SEQ ID NO: 9, or the complement thereof.

46. A vector comprising the oligonucleotide of any one of claims 41 to 45.

47. A host cell comprising the vector of claim 46.

WHAT IS CLAIMED IS:

1. A method of measuring NK cell activity, comprising:

stimulating NK cells in a whole blood sample thereby artificially activating the NK cells to generate NK cell-secreting cytokines; and

measuring an amount of the NK cell-secreting cytokines in the whole blood sample.

2. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the whole blood sample with a stimulating.

3. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the whole blood sample with at least one stimulating cytokine selected from the group consisting of interleukin 2, interleukin 12, interleukin 15 and interleukin 18, or by incubating the whole blood sample with lipopolysaccharides (LPSs) or polyinosinic:polycytidylic acid (poly I:C).

4. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the whole blood sample with interleukin 2.

5. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the whole blood sample with interleukin 2 and interleukin 12.

6. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the whole blood sample with interleukin 12 and interleukin 15.

7. The method according to claim 1, wherein the stimulation of the NK cells is performed by incubating the whole blood sample with interleukin 12 and interleukin 18.

8. The method according to claim 1, wherein the NK cell-secreting cytokines are selected from the group consisting of interferon-gamma (IFN-γ), tumor necrosis factor-alpha (TNF-a) and macrophage inflammatory protein- 1β(MIP-β).

9. The method according to claim 1, wherein the NK cell-secreting cytokine is interferon-gamma (IFN-γ).

10. The method according to claim 1, wherein the NK cell-secreting cytokine is tumor necrosis factor-alpha (TNF-a).

11. The method according to claim 1, wherein macrophage inflammatory protein- 1β (MΓP-1 β) is used as control group for comparing activation of NK cells with that of normal person.

12. The method according to claim 1, wherein the measuring of the amount of the NK cell-secreting cytokines is performed by enzyme-linked immunosorbent assay (ELISA).

13. The method according to claim 3, wherein the at least one stimulating cytokine is in the form of a fusion protein with a stabilizing peptide.

14. The method according to claim 13, wherein the stabilizing peptide is a C-terminal acidic tail domain peptide of a synuclein family.

15. The method according to claim 14, wherein the stabilizing peptide comprises amino acid residues 103-115 (SEQ ID NO: 22), amino acid residues 114-126 (SEQ ID NO: 23), amino acid residues 119-140 (SEQ ID NO: 24) and amino acid residues 130-140 (SEQ ID NO: 25) of the C-terminal acidic tail domain of a-synuclein, amino acid residues 85-134 of the C-terminal acidic tail domain of β-synuclein (SEQ ID NO: 27), amino acid residues 96-127 of the C- terminal acidic tail domain of γ-synuclein (SEQ ID NO: 29), and amino acid residues 96-127 of the C-terminal acidic tail domain of synoretin (SliQ ID NO: 29).

16. The method according to claim 1 , wherein the step of stimulating NK cells in a whole blood sample thereby artificially activating the NK cells to generate NK cell- secreting cytokines is performed in medium containing a carrier protein.

17. A kit for measuring NK cell activity, comprising:

an agent for stimulating the NK cells in a whole blood sample thereby artificially activating the NK cells to generate NK cell-secreting cytokines.

18. The kit according to claim 17, wherein the NK cell-secreting cytokine is interferon-gamma (IFN-γ).

19. The kit according to claim 17, wherein the NK cell-secreting cytokine is tumor necrosis factor-alpha (TNF-a).

20. The kit according to claim 17, wherein the agent for stimulating the NK cells in the whole blood sample and artificially activating the NK cells to generate the NK cell-secreting cytokines is at least one stimulating cytokine, LPS or poly I:C, the at least one stimulating cytokine being selected from the group consisting of interleukin 2, interleukin 12, interleukin 15 and interleukin 18.

21. The kit according to claim 17, further comprising at least one antibody selected from the group of an anti-INF-γ antibody, anti- TNF-α antibody and anti-MIP- 1 β antibody.

22. The kit according to claim 17, further comprising instructions for comparing the amount of the NK cell-secreting cytokines in a subject to levels in normal individuals.