What is claimed:

1. A method of determining or comparing potency of a test interferon relative to rSIFN-co or a rSIFN-co substitute comprising:

(1) providing the test interferon and rSIFN-co or rSIFN-co substitute; and

(2) determining any one or more of the following activities on the test interferon and rSIFN-co or rSIFN-co substitute under same specified conditions, respectively:

(a) Inhibition of *in vivo* cancer cell growth in any one or more tumor-bearing animal models;

(b) Reduction in cancer cell viability;

(c) Inhibition of cancer cell migration;

(d) Inhibition of beta-catenin/TCF transcriptional activity in cancer cells;

(e) Down-regulation of expression of LRP6 and/or FZD6 in cancer cells;

(f) Inhibition of expression of any one or more of: Axin2, CD24, Survivin and ID2 in cancer cells;

(g) Inhibition of pseudopod formation in cancer cells;

(h) Inhibition of beta-catenin expression in cancer cells; and

(i) Up-regulation of expression of any one or more of: DKK-3, KLF-4, and BATF2 in cancer cells;

whereby the presence in the test interferon of activities specified in (e) and/or (f) in a statistically significant manner, alone or in combination with any 1, or 2, or 3, or 4 of the activities specified in (a), (b), (c), and (d), in a statistically significant manner, and/or the presence in the test interferon of any one or more of the activities specified in (g), (h) and (i), signifies that the test interferon and rSIFN-co or rSIFN-co substitute have substantially the same potency.

2. A method of establishing substantial equivalence between a test interferon and rSIFN-co or a rSIFN-co substitute comprising:

(1) providing the test interferon and rSIFN-co or rSIFN-co substitute; and

(2) determining any one or more of the following activities on the test interferon and rSIFN-co or rSIFN-co substitute under same specified conditions, respectively:

(a) Inhibition of *in vivo* cancer cell growth in any one or more tumor-bearing animal models;

(b) Reduction in cancer cell viability;

(c) Inhibition of cancer cell migration;

(d) Inhibition of beta-catenin/TCF transcriptional activity in cancer cells;

(e) Down-regulation of expression of LRP6 and/or FZD6 in cancer cells;

(f) Inhibition of expression of any one or more of: Axin2, CD24, Survivin and ID2 in cancer cells;

(g) Inhibition of pseudopod formation in cancer cells;

(h) Inhibition of beta-catenin expression in cancer cells; and

(i) Up-regulation of expression of any one or more of: DKK-3, KLF-4, and BATF2 in cancer cells;

whereby the presence in the test interferon of activities specified in (e) and/or (f) in a statistically significant manner, alone or in combination with any 1, or 2, or 3, or 4 of the activities specified in (a), (b), (c), and (d), in a statistically significant manner, and/or the presence in the test interferon of any one or more of the activities specified in (g), (h) and (i), signifies that the test interferon and rSIFN-co or rSIFN-co substitute are substantial equivalence.

3. The method of claim 1 or 2, wherein the cancer cells employed in determining one or more activities comprise any one or more of: lung cancer cells, colon cancer cells, cervical cancer cells, liver cancer cells, breast cancer cells, and pancreatic cancer cells.

4. The method of any of claims 1 – 3, wherein the cancer cells employed in determining one or more activities comprise any one or more of: A549 cells, Hela cells, CL-1 cells, Huh-7 cells, SW480 cells, MDA-MB-231 cells, Calu-1 cells, SMMC-7721 cells, PANC-1 cells, SW620 cells, SPC-A4 cells, H1299 cells, H460 cells, and HT-29 cells.

5. The method of any one or claims 1 – 4, wherein the cancer cells employed in determining activity (e), down-regulation of expression of LRP6 and/or FZD6 in cancer cells, comprise any one or more of: lung cancer cells, and colon cancer cells.

6. The method of any one or claims 1 – 5, wherein the cancer cells employed in determining activity (e) comprise any one or more of: A549 cells, H460 cells, SW620 cells, and HT-29 cells; optionally, comprise any one or more of: A549 cells, SW620 cells, and HT-29 cells; more optionally, comprise HT-29 cells.

7. The method of any one or claims 1 – 6, wherein the cancer cells employed in determining activity (e) are treated by the test interferon and/or rSIFN-co or rSIFN-co substitute for at least about 20 hours; optionally, at least about 24 hours.

8. The method of any one or claims 1 – 7, wherein the cancer cells employed in determining activity (e) are treated by the test interferon and/or rSIFN-co or rSIFN-co substitute in a range of about 5 mcg/ml to about 20 mcg/ml; optionally, about 10 mcg/ml.

9. The method of any one of claims 1 – 8, wherein in determining activity (e) the expression of LRP6 and/or FZD6 is determined by determining mRNA level of LRP6 and/or FZD6.

10. The method of any one of claims 1 – 9, wherein the cancer cells employed in determining activity (f), inhibition of expression of any one or more of: Axin2, CD24, Survivin and ID2, comprise lung cancer cells; optionally, comprise A549 cells.

11. The method of any one of claims 1 – 10, wherein the cancer cells employed in determining activity (f) are treated by the test interferon and/or rSIFN-co or rSIFN-co substitute for at least about 20 hours; optionally, at least about 24 hours.

12. The method of any one of claims 1 – 11, wherein the cancer cells employed in

determining activity (f) are treated by the test interferon and/or rSIFN-co or rSIFN-co substitute in a range of about 5 mcg/ml to about 20 mcg/ml; optionally, about 10 mcg/ml.

13. The method of any one of claims 1 – 12, wherein in determining activity (f) the expression of Axin2, CD24, Survivin and/or ID2 is determined by determining its corresponding mRNA level.

14. The method of any one of claims 1 – 13, wherein in determining activity (f), when the test interferon decreases at least about 30%; optionally, at least about 40%; more optionally, at least about 50%; still more optionally, at least about 60% in expression of any one or more of: Axin2, CD24, Survivin and ID2 in the cancer cells as compared to control, the test interferon and/or rSIFN-co or rSIFN-co substitute are considered to have substantially the same potency or substantial equivalence.

15. The method of any one of claims 1 – 14, wherein statistical significance means a p value of less than or equal to 0.05, or less than or equal to 0.01, or less than or equal to 0.005, or less than or equal to 0.001, or less than or equal to 0.0005, or less than or equal to 0.0001, when compared to a control.

16. The method of any one of claims 1 – 15, wherein the control is not treated with the test interferon or rSIFN-co or rSIFN-co substitute, or is treated with normal saline or PBS, or is treated with IFNα-2b, or the control is untreated control (Mock).

17. A method of down-regulating expression of LRP6 and/or FZD6 in cancer cells comprising:

(a) Providing a plurality of cancer cells; and

(b) Exposing the cancer cells to rSIFN-co;

whereby the expression of LRP6 and/or FZD6 in the cancer cells is down-regulated.

18. The method of claim 17, wherein the expression of LRP6 and/or FZD6 is determined by determining mRNA level of LRP6 and/or FZD6.

19. A method of inhibiting the expression of at least one a Wnt-related target gene in cancer cells, comprising:

(a) providing a plurality of cancer cells; and

(b) exposing the cancer cells to rSIFN-co;

whereby the expression of at least one a Wnt-related target gene in the cells is inhibited.

20. The method of claim 19, wherein the Wnt-related target gene comprises Axin2, CD24, Survivin and/or ID2.

21. The method of claim 19, wherein the cells are exposed to rSIFN-co for at least about 20 hours; optionally, at least about 24 hours.

22. The method of any one of claims 1-16, wherein the amino acid sequence of the test interferon is at least 90%, optionally, at least 95%, 96%, 97%, 98%, 99%, 100% identical to that of rSIFN-co (SEQ ID NO: 1).

23. The method of any one of claims 1-16 and 22, wherein the nucleotide sequence encoding the test interferon is at least 90%, optionally, at least 95%, 96%, 97%, 98%, 99%, 100% identical to that encoding rSIFN-co (SEQ ID NO: 2).

24. The method of any one of claims 1-16 and 22-23, wherein the test interferon and rSIFN-co have same amino acid sequence (SEQ ID NO: 1) and are encoding by same nucleotide sequence (SEQ ID NO: 2).

25. The method of any one of claims 1-16 and 22-24, wherein the test interferon and rSIFN-co have substantially the same specific activity.

26. The method of claim 25, wherein the specific activity is in the range between about 4 x 10^8 IU/mg to about 1 x 10^9 IU/mg.