60% to 75% of the phosphate backbone linkages are P-ethoxy backbone linkages and wherein 25% to 40% of the phosphate backbone linkages are phosphodiester backbone linkages, wherein the composition further comprises phospholipids and a surfactant.

[0007b] In another aspect, the present disclosure refers to a*n in vitro* method for reducing the expression level of STAT3 protein in a cell comprising contacting the cell with a composition as disclosed herein, wherein the oligonucleotides of the population comprise a sequence according to SEQ ID NO: 4.

[0007c] In another aspect, the present disclosure refers to a pharmaceutical composition comprising a composition as disclosed herein and a pharmaceutically acceptable carrier.

[0007d] In another aspect, the present disclosure refers to a use of a therapeutically effective amount of a pharmaceutical composition as disclosed herein in the manufacture of a medicament for treating a subject with a cancer or an autoimmune disease, wherein the oligonucleotides of the population comprise a sequence according to SEQ ID NO: 4.

[0008] In one example, compositions are provided comprising a population of oligonucleotides that hybridize to a *STAT3* polynucleotide gene product. In some examples, the oligonucleotides of the population are composed of nucleoside molecules linked together through phosphate backbone linkages, wherein at least one of the phosphate backbone

WHAT IS CLAIMED IS:

1. A composition comprising a population of oligonucleotides, wherein the oligonucleotides hybridize to a *STAT3* polynucleotide gene product, wherein oligonucleotides of the population are composed of nucleoside molecules linked together through phosphate backbone linkages, wherein 60% to 75% of the phosphate backbone linkages are P-ethoxy backbone linkages and wherein 25% to 40% of the phosphate backbone linkages are phosphodiester backbone linkages, wherein the composition further comprises phospholipids and a surfactant.

2. The composition of claim 1, wherein oligonucleotides of the population comprise a sequence according to SEQ ID NO: 4.

3. The composition of claim 1, wherein the phosphodiester backbone linkages are distributed throughout each oligonucleotide.

4. The composition of claim 1, wherein the phosphodiester backbone linkages are not clustered within a portion of each oligonucleotide.

5. The composition of claim 1, wherein the population of oligonucleotides is heterogeneous as to the number of P-ethoxy backbone linkages and phosphodiester backbone linkages present in the oligonucleotides of the population.

6. The composition of claim 1, wherein the oligonucleotides of the population have a size ranging from 18 to 30 nucleotides.

7. The composition of claim 1, wherein the population of oligonucleotides comprises a single species of oligonucleotides.

8. The composition of claim 1, wherein the population of oligonucleotides comprises at least two species of oligonucleotides.

9. The composition of claim 1, wherein the population of oligonucleotides is heterogeneous as to the distribution of phosphodiester backbone linkages among the oligonucleotides of the population.

10. The composition of claim 1, wherein the oligonucleotides of the population inhibit the expression of STAT3 protein.

11. The composition of claim 1, wherein the surfactant is polysorbate 20.

12. The composition of claim 1, wherein the oligonucleotides and phospholipids form an oligonucleotide–lipid complex.

13. The composition of claim 12, wherein the phospholipids are uncharged or have a neutral charge at physiologic pH.

14. The composition of claim 13, wherein the phospholipids are neutral phospholipids.

15. The composition of claim 14, wherein the neutral phospholipids are phosphatidylcholines.

16. The composition of claim 14, wherein the neutral phospholipids are dioleoylphosphatidyl choline.

17. The composition of claim 12, wherein the phospholipids are essentially free of cholesterol.

18. The composition of claim 12, wherein the phospholipids and oligonucleotides are present at a molar ratio of from 5:1 to 100:1.

19. The composition of claim 12, wherein the oligonucleotide–lipid complex is further defined as a population of liposomes.

20. The composition of claim 19, wherein at least 90% of the liposomes are less than 5 microns in diameter.

21. The composition of claim 19, wherein the population of oligonucleotides is incorporated in the population of liposomes.

22. The composition of claim 1, wherein the composition is lyophilized.

23. An in vitro method for reducing the expression level of STAT3 protein in a cell comprising contacting the cell with a composition of claim 1, wherein the oligonucleotides of the population comprise a sequence according to SEQ ID NO: 4.

24. A pharmaceutical composition comprising a composition according to claim 1 and a pharmaceutically acceptable carrier.

25. The composition of claim 24, further comprising a chemotherapeutic agent.

26. Use of a therapeutically effective amount of a pharmaceutical composition of claim 24 in the manufacture of a medicament for treating a subject with a cancer or an autoimmune disease, wherein oligonucleotides in the pharmaceutical composition comprise a sequence according to SEQ ID NO: 4.

27. The use of claim 26, wherein the subject is a human.

28. The use of claim 26, wherein the cancer is a non-small cell lung cancer, pancreatic adenocarcinoma, breast cancer, prostate cancer, melanoma, colon cancer, leukemia, lymphoma, glioblastoma, osteosarcoma, oral cavity cancer, ovarian cancer, uterine cancer, bone cancer, brain cancer, prostate cancer, kidney cancer, stomach cancer, esophageal cancer, rectal cancer, bladder cancer, testicular cancer, or liver cancer.

29. The use of claim 26, wherein the autoimmune disease is Lupus erythematosus, Spondyloarthropathy, Sjogren's disease, Crohn's disease, diabetes mellitus, multiple sclerosis, or rheumatoid arthritis.

30. The use of claim 26, wherein the composition is to be administered subcutaneously, intravenously, or intraperitoneally.

31. The use of claim 26, further comprising that at least a second anticancer therapy is to be administered to the subject.

32. The use of claim 31, wherein the second anticancer therapy is a surgical therapy, chemotherapy, radiation therapy, cryotherapy, hormone therapy, immunotherapy, anti-viral therapy, immune suppression therapy, anti-bacterial therapy, anti-parasite therapy, anti-fungal therapy, or cytokine therapy.

33. The use of claim 26, wherein the composition reduces expression of STAT3 protein in the patient.