CLAIMS

1. A cell-penetrating conjugate comprising:

(i) a non-cell penetrating protein;

(ii) a phosphorothioate nucleic acid; and

(iii) a non-covalent linker attaching said phosphorothioate nucleic acid to said non-cell penetrating protein, said non-covalent linker comprising a biotin-binding domain non-covalently attached to a biotin domain; and

wherein said phosphorothioate nucleic acid enhances intracellular delivery of said non-cell penetrating protein.

2. The cell-penetrating conjugate of claim 1, wherein said biotin-binding domain is a streptavidin domain.

3. The cell-penetrating conjugate of claim 1, wherein a plurality of biotin-binding domains are attached to said non-cell penetrating protein.

4. The cell-penetrating conjugate of claim 1, wherein said biotin domain is attached to said phosphorothioate nucleic acid.

5. The cell-penetrating conjugate of claim 4, wherein a plurality of phosphorothioate nucleic acids are attached to said biotin domain.

6. The cell-penetrating conjugate of claim 1, wherein said phosphorothioate nucleic acid is from about 10 to about 30 nucleic acid residues in length.

7. The cell-penetrating conjugate of claim 1, wherein said phosphorothioate nucleic acid is about 20 nucleic acid residues in length.

8. The cell penetrating conjugate of claim 1, wherein said non-cell penetrating protein has a molecular weight of more than 25 kD.

9. The cell penetrating conjugate of claim 1, wherein said non-cell penetrating protein is an antibody.

10. The cell penetrating conjugate of claim 1, wherein said non-cell penetrating protein binds an intracellular target.

11. The cell penetrating conjugate of claim 10, wherein said intracellular target is a target of a disease selected from the group consisting of autoimmune disease, inflammatory disease, metabolic disorder, developmental disorder, cardiovascular disease, liver disease, intestinal disease, infectious disease, endocrine disease, neurological disorder, and cancer.

12. A cell comprising the cell penetrating conjugate of claim 1.

13. A pharmaceutical composition comprising the cell penetrating conjugate of claim 1 and a pharmaceutically acceptable carrier.

14. The pharmaceutical composition of claim 13, further comprising a second non-cell penetrating protein comprising a second non-covalent linker attaching one or more phosphorothioate nucleic acids to said second non-cell penetrating protein.

15. The pharmaceutical composition of claim 14, wherein said second non-cell penetrating protein is an antibody.

16. An effective amount of the cell penetrating conjugate of claim 1 for use in the treatment of a disease in the subject.

17. Use of an effective amount of the cell penetrating conjugate of claim 1, together with a second non-cell penetrating protein comprising a second non-covalent linker attaching one or more phosphorothioate nucleic acids to said second non-cell penetrating protein in the manufacture of a medicament for the therapeutic treatment of a disease selected from the group consisting of autoimmune disease, developmental disorder, inflammatory disease, metabolic disorder, cardiovascular disease, liver disease, intestinal disease, infectious disease, endocrine disease, neurological disorder, and cancer.

18. Use of an effective amount of the cell penetrating conjugate of claim 1 in the manufacture of a medicament for the therapeutic treatment of a disease selected from the group consisting of autoimmune disease, developmental disorder, inflammatory disease, metabolic disorder, cardiovascular disease, liver disease, intestinal disease, infectious disease, endocrine disease, neurological disorder, and cancer, when used in conjunction with a second

non-cell penetrating protein comprising a second non-covalent linker attaching one or more phosphorothioate nucleic acids to said second non-cell penetrating protein which is to be administered to the subject, in addition to the medicament.

19. The use of claim 17 or 18, wherein the non-cell penetrating protein of the conjugate binds an intracellular target and the intracellular target is STAT3 or Src.

20. The use of claim 17 or 18, wherein the non-cell penetrating protein of the conjugate is an antibody that specifically binds STAT3 and the second non-cell penetrating protein is an antibody that specifically binds another epitope of STAT3.

21. A method of delivering a non-cell penetrating protein into a cell comprising contacting the cell with said cell penetrating conjugate of claim 1.