CLAIMS

What is claimed is:

1. A nanostructure, comprising:

a high density lipoprotein nanoparticle (HDL-NP) comprising a core, an apolipoprotein, a lipid shell attached to the core, wherein the lipid shell comprises a phospholipid and an RNA molecule that is associated with the phospholipid, wherein the RNA molecule is a microRNA (miRNA).

2. An anionic nanostructure comprising:

an aggregate of cationic lipid-RNA complexes and a templated lipoprotein particle (TLP) wherein the TLP comprises an anionic TLP which is a synthetic HDL having an inert core, a lipid shell surrounding the inert core, and an apolipoprotein functionalized to the inert core, wherein the RNA molecule is a microRNA (miRNA) and wherein the aggregate of cationic lipid-nucleic acid complexes and TLPs forms the anionic nanostructure aggregate.

3. The nanostructure of any one of claims 1-2, wherein the apolipoprotein is apolipoprotein A-I.

4. The nanostructure of any one of claims 1-3, further comprising a cholesterol.

5. The nanostructure of any one of claims 2-4, wherein the cationic lipid-nucleic acid complex is comprised of single stranded miRNA complexed with the cationic lipid.

6. The nanostructure of any one of claims 1-5, wherein the miRNA is miR-205 or miR-146a.

7. The nanostructure of any one of claims 2-6, wherein the aggregate of cationic lipid-nucleic acid complexes and TLPs has a negative ζ-potential.

8. The nanostructure of claim 5, wherein the aggregate of cationic lipid-RNA comprises a mixture of cationic lipid-sense strand RNA and cationic lipid-antisense strand RNA.

9. The nanostructure of any one of claims 1-8, wherein the RNA is not chemically modified.

10. The nanostructure of any one of claims 1-8, wherein the RNA is chemically modified.

11. The nanostructure of any one of claims 1-8, wherein the phospholipids are selected from 1,2-dioleoyl-sn-glycero-3-phophocholine (DOPC) and 1,2-dipalmitoyl-sn-glycero-3-phosphoethanolamine-N-[3-(2-pyridyldithio)propionate] (PDP-PE).

12. The nanostructure of any one of claims 2-8, wherein the nanostructure comprises alternating layers of 1,2-dioleoyl-3-trimethylammonium-propane (DOTAP) and miRNA.

13. A pharmaceutical composition comprising the nanostructure of any one of claims 1-12 and a pharmaceutically acceptable excipient.

14. Use of the nanostructure of any one of claims 1-12 in the manufacture of a medicament for the treatment of an ocular disorder in a subject, wherein the medicament is to be administered to the subject in an effective amount, to treat the ocular disorder.

15. Use of the nanostructure of any one of claims 1-12 in the manufacture of a medicament for the treatment of an ocular injury or ocular infection in a subject, wherein the medicament is to be administered to the subject in an effective amount, to treat the ocular injury or infection.

16. The use of any one of claims 14-15, wherein the ocular disorder, ocular injury or ocular infection is a corneal disorder, corneal injury, or corneal infection, respectively.

17. Use of the nanostructure of any one of claims 1-12 in the manufacture of a medicament for the treatment of an ocular inflammation in a subject, wherein the medicament is to be administered to the subject in an effective amount, to treat the ocular inflammation.

18. Use of the nanostructure of any one of claims 1-2 in the manufacture of a medicament for inhibiting NF_KB signaling in a subject wherein the medicament is to be administered to the subject in an effective amount, wherein the RNA is miRNA and wherein the miRNA is miR-146a.

19. The use of any one of the claims 14-15, wherein the ocular disorder is diabetic keratopathy.

20. The use of any one of claims 14-19, wherein the administration is to be topical.

21. The use of any one of claims 14-20, wherein the subject is a mammal.

22. The use of any one of claims 8-21, wherein the subject is human.

23. The nanostructure of any one of claims 1-12 for use as a medicament.