CLAIMS

1. A method for producing double stranded RNA comprising (a) purifying from a bacterial lysate:

-a first composition comprising a virus-like particle (VLP) comprising protease resistant capsid proteins enclosing a heterologous cargo molecule, wherein the heterologous cargo molecule comprises a long single stranded sense RNA having more than 30 nucleotides, the cargo molecule further comprising a capsid specific packing sequence, and

-a second composition comprising a VLP comprising protease resistant capsid proteins enclosing a heterologous cargo molecule, wherein the heterologous cargo molecule comprises a long single stranded antisense RNA complementary to the sense strand RNA of the first composition, said single stranded antisense RNA having more than 30 nucleotides, the cargo molecule further comprising a capsid specific packing sequence;

(b) mixing equal amounts of each composition;

(c) isolating the heterologous cargo molecules thereof;

(d) annealing the heterologous cargo molecules to form a double stranded RNA molecule;

(e) isolating the double stranded RNA molecule.

2. A method for producing siRNA, shRNA, sshRNA, lshRNA and miRNA comprising (a) purifying from a bacterial lysate:

-a first composition comprising a virus-like particle (VLP) comprising protease resistant capsid proteins enclosing a heterologous cargo molecule, wherein the heterologous cargo molecule comprises a long single stranded sense RNA, the cargo molecule further comprising a capsid specific packing sequence, and

-a second composition comprising a VLP comprising protease resistant capsid proteins enclosing a heterologous cargo molecule, wherein the heterologous cargo molecule comprises a long single stranded antisense RNA homologous to the sense strand RNA of the first composition, the cargo molecule further comprising a capsid specific packing sequence;

(b) mixing equal amounts of each composition;

(c) isolating the heterologous cargo molecules thereof;

(d) annealing the heterologous cargo molecules to form a double stranded RNA molecule;

(e) isolating the double stranded RNA molecule; and

(f) transforming a target cell with the double stranded RNA of step (e).