CLAIMS AS ALLOWED

1. An isolated, synthetic double-stranded RNA molecule, wherein:
   (i) each RNA strand of said double-stranded RNA molecule independently consists of 19-23 nucleotides in length;
   (ii) at least one RNA strand forms a single-stranded 3’-overhang from 1 to 3 nucleotides;
   (iii) the 3’-overhang of said double-stranded RNA molecule comprises at least one nucleotide analogue,
wherein said RNA molecule is capable of target-specific RNA interference.

2. The double-stranded RNA molecule of claim 1, wherein one RNA strand forms the single-stranded 3’-overhang from 1 to 3 nucleotides in length.

3. The double-stranded RNA molecule of claim 1, wherein each of the RNA strands forms a single-stranded 3’-overhang from 1-3 nucleotides in length.

4. The double-stranded RNA molecule of claim 1, wherein each strand consists of 21-23 nucleotide in length.

5. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang is 2 nucleotides in length.

6. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang has been stabilized against degradation.

7. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang of the double-stranded RNA molecule comprises a nucleotide lacking a 2’-hydroxyl in a sugar.
8. The double-stranded RNA molecule of claim 1, wherein the nucleotide analogue of the 3’-overhang is selected from a sugar- or a backbone modified ribonucleotide, or a combination thereof.

9. The double-stranded RNA molecule according to claim 1, wherein the nucleotide analogue of the 3’-overhang is a sugar-modified ribonucleotide, wherein the 2’-OH group is replaced by a group selected from H, OR, R, halo, SH, SR’, NH2, NHR, N(R)2 or CN, wherein R is C1-C6 alkyl, C2-C6 alkenyl or C2-C6 alkynyl and halo is F, Cl, Br or I.

10. The double-stranded RNA molecule of claim 1, wherein the nucleotide analogue of the 3’-overhang is a backbone-modified ribonucleotide containing a phosphorothioate group.

11. The double-stranded RNA molecule of claim 1, which has a sequence having an identity of at least 70 percent in the double-stranded portion of the RNA molecule to a predetermined mRNA target molecule.

12. The double-stranded RNA molecule of claim 11, wherein the identity is at least 85 percent in the double-stranded portion of the RNA molecule.

13.-26. (Canceled)

27. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 1 and a pharmaceutical carrier.

28. The composition of claim 27 for diagnostic applications.

29. The composition of claim 27 for therapeutic applications.

30.-47. (Canceled)
48. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang of the double-stranded RNA molecule comprises a 2’-deoxythymidine.

49. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang of the double-stranded RNA molecule is chosen from NN/UG, NN/UU, NN/TdG or NN/TT, wherein N is any nucleotide.

50. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang of the double-stranded RNA molecule is TT.

51. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang of the double-stranded RNA molecule comprises a purine nucleotide.

52. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang of the double-stranded RNA molecule comprises a modified pyrimidine nucleotide.

53. The double-stranded RNA molecule of claim 1, wherein the 3’-overhang of the double-stranded RNA molecule comprises a nucleobase-modified ribonucleotide chosen from a non-naturally-occurring nucleobase modified at the 5-position; an adenosine or a guanosine modified at the 8-position; or an O- or an N-alkylated nucleotide.

54. The double-stranded RNA molecule of claim 4, wherein the 3’-overhang of the double-stranded RNA molecule comprises a 2’-deoxythymidine or a nucleotide lacking a 2’-hydroxyl in a sugar.

55. The double-stranded RNA molecule of claim 4, wherein the nucleotide analogue of the 3’-overhang is selected from a sugar- or a backbone-modified ribonucleotide, or a combination thereof.
56. The double-stranded RNA molecule of claim 4, wherein the nucleotide analogue of the 3′-overhang is a sugar-modified ribonucleotide, wherein the 2′-OH group is replaced by a group selected from H, OR, R, halo, SH, SR', NH₂, NHR, N(R)₂ or CN, wherein R is C₁-C₆ alkyl, C₂-C₆ alkenyl or C₂-C₆ alkynyl and halo is F, Cl, Br or I.

57. The double-stranded RNA molecule of claim 4, wherein the nucleotide analogue of the 3′-overhang is a backbone-modified ribonucleotide containing a phosphorothioate group.

58. The double-stranded RNA molecule of claim 4, wherein the 3′-overhang of the double-stranded RNA molecule is TT.

59. The double-stranded RNA molecule of claim 1, wherein the double-stranded portion of the RNA molecule comprises at least one nucleotide analogue.

60. The double-stranded RNA molecule of claim 59, wherein the nucleotide analogue is selected from a sugar- or a backbone-modified ribonucleotide, or a combination thereof.

61. The double-stranded RNA molecule of claim 59, wherein the nucleotide analogue is a sugar-modified ribonucleotide, wherein the 2′-OH group is replaced by a group selected from H, OR, R, halo, SH, SR, NH₂, NHR, NR₂ or CN, wherein R is C₁-C₆ alkyl, C₂-C₆ alkenyl or C₂-C₆ alkynyl and halo is F, Cl, Br or I.

62. The double-stranded RNA molecule of claim 59, wherein the nucleotide analogue is a backbone-modified ribonucleotide containing a phosphorothioate group.

63. (Cancelled)

64. The double-stranded RNA molecule of claim 59, wherein the modified nucleotide analogue is located at the 5′-end, the 3′-end, or both, of the double stranded RNA molecule.
65. The double-stranded RNA molecule of claim 1, wherein each strand has a length from 20 to 22 nucleotides.

66. The double-stranded RNA molecule of claim 1, wherein each strand has a length of 21 or 22 nucleotides.

67. The double-stranded RNA molecule of claim 1, wherein the only single stranded regions in said double-stranded RNA molecule are the one or two 3’-overhangs.

68. The double-stranded RNA molecule of claim 3, wherein said double-stranded RNA molecule has a double-stranded region of 16-22 nucleotides in length.

69. The double-stranded RNA molecule of claim 1, which consists of a single double-stranded region and a single-stranded region of 1 to 3 nucleotides at the 3’ end of at least one of the strands of said double-stranded RNA molecule.

70. The double-stranded RNA molecule of claim 1, wherein the RNA strands of said double-stranded RNA are not covalently linked to each other.

71. The double-stranded RNA molecule of claim 1, which comprises a terminal 3’ hydroxyl group.

72. The double-stranded RNA molecule of claim 1, which is chemically synthesized.

73. The double-stranded RNA molecule of claim 1, which cleaves a target mRNA at a site within the region spanned by the double-stranded RNA molecule.

74. (Cancelled)

75. The double-stranded RNA molecule of claim 73, which cleaves a target mRNA at a single site.
76. The double-stranded RNA molecule of claim 1, which has a sequence in the double-stranded portion of the RNA molecule identical to a predetermined mRNA target molecule.

77. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 54 and a pharmaceutical carrier.

78. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 55 and a pharmaceutical carrier.

79. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 56 and a pharmaceutical carrier.

80. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 57 and a pharmaceutical carrier.

81. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 58 and a pharmaceutical carrier.

82. An isolated, synthetic double-stranded RNA molecule, wherein:
   (i) each RNA strand of said double-stranded RNA molecule independently consists of 19-25 nucleotides in length;
   (ii) at least one RNA strand forms a single-stranded 3’-overhang from 1 to 5 nucleotides;
   (iii) the 3’-overhang of said double-stranded RNA molecule comprises at least one nucleotide analogue,
wherein said RNA molecule is capable of target-specific RNA interference.

83. The double-stranded RNA molecule of claim 82, wherein one RNA strand forms the 3’-overhang from 1 to 5 nucleotides in length.

84. The double-stranded RNA molecule of claim 82, wherein each of the RNA strands forms a 3’-overhang from 1-5 nucleotides in length.
85. The double-stranded RNA molecule of claim 84, wherein the 3’-overhang is 2 nucleotides in length.

86. The double-stranded RNA molecule of claim 82, wherein the 3’-overhang of the double-stranded RNA molecule comprises a nucleotide lacking a 2’-hydroxyl in a sugar.

87. The double-stranded RNA molecule of claim 82, wherein the nucleotide analogue of the 3’-overhang is selected from a sugar- or a backbone-modified ribonucleotide, or a combination thereof.

88. The double-stranded RNA molecule according to claim 82, wherein the nucleotide analogue of the 3’-overhang is a sugar-modified ribonucleotide, wherein the 2’-OH group is replaced by a group selected from H, OR, R, halo, SH, SR’, NH2, NHR, N(R)2 or CN, wherein R is C1-C6 alkyl, C2-C6 alkenyl or C2-C6 alkynyl and halo is F, Cl, Br or I.

89. The double-stranded RNA molecule of claim 82, wherein the nucleotide analogue of the 3’-overhang is a backbone-modified ribonucleotide containing a phosphorothioate group.

90. The double-stranded RNA molecule of claim 82, wherein the RNA strands of said double-stranded RNA are not covalently linked to each other.

91. The double-stranded RNA molecule of claim 82, wherein the 3’-overhang of the double-stranded RNA molecule comprises a 2’-deoxythymidine.

92. The double-stranded RNA molecule of claim 82, wherein the 3’-overhang of the double-stranded RNA molecule is TT.

93. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 82 and a pharmaceutical carrier.
94. An isolated, synthetic double-stranded RNA molecule, wherein:
   (i) each RNA strand of said double-stranded RNA molecule independently consists of
       19-23 nucleotides in length;
   (ii) at least one RNA strand forms a single-stranded 3’-overhang from 1 to 3
       nucleotides;
   (iii) the 3’-overhang of said double-stranded RNA molecule has been stabilized against
       degradation,
       wherein said RNA molecule is capable of target-specific RNA interference.

95. The double-stranded RNA molecule of claim 94, wherein one RNA strand forms the
    single-stranded 3’-overhang from 1 to 3 nucleotides in length.

96. The double-stranded RNA molecule of claim 94, wherein each of the RNA strands forms
    a 3’-overhang from 1-3 nucleotides in length.

97. The double-stranded RNA molecule of claim 96, wherein the 3’-overhang has been
    stabilized against degradation by incorporating a nucleotide analogue.

98. The double-stranded RNA molecule of claim 97, wherein the 3’-overhang is 2
    nucleotides in length.

99. The double-stranded RNA molecule of claim 98, wherein the 3’-overhang of the double-
    stranded RNA molecule comprises a nucleotide lacking a 2’-hydroxyl in a sugar.

100. The double-stranded RNA molecule of claim 97, wherein the nucleotide analogue of the
     3’-overhang is selected from a sugar- or a backbone modified ribonucleotide, or a combination
     thereof.
101. The double-stranded RNA molecule according to claim 97, wherein the nucleotide analogue of the 3’-overhang is a sugar-modified ribonucleotide, wherein the 2’-OH group is replaced by a group selected from H, OR, R, halo, SH, SR’, NH₂, NHR, N(R)₂ or CN, wherein R is C₁-C₆ alkyl, C₂-C₆ alkenyl or C₂-C₆ alkynyl and halo is F, Cl, Br or I.

102. The double-stranded RNA molecule of claim 97, wherein the nucleotide analogue of the 3’-overhang is a backbone-modified ribonucleotide containing a phosphorothioate group.

103. The double-stranded RNA molecule of claim 98, wherein the 3’-overhang of the double-stranded RNA molecule comprises a 2’-deoxythymidine.

104. The double-stranded RNA molecule of claim 98, wherein the 3’-overhang of the double-stranded RNA molecule is TT.

105. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 94 and a pharmaceutical carrier.

106. An isolated, synthetic double-stranded RNA molecule, wherein:
   (i) each strand independently consists of 21-23 nucleotides;
   (ii) each strand forms a single-stranded two-nucleotide 3’-overhang;
   (iii) the only single-stranded regions in said RNA molecule are the single stranded two-nucleotide 3’-overhangs; and
   (iv) each of the two-nucleotide 3’-overhangs comprises at least one nucleotide analogue to stabilize the 3’-overhang against degradation, wherein said RNA molecule is capable of target-specific RNA interference.

107. The double-stranded RNA molecule of claim 106, wherein each of the 3’-overhangs of the double-stranded RNA molecule comprises a nucleotide lacking a 2’-hydroxyl in a sugar.
108. The double-stranded RNA molecule of claim 106, wherein each of the 3’-overhangs of the double-stranded RNA molecule comprises a 2’-deoxythymidine.

109. The double-stranded RNA molecule of claim 106, wherein each of the two-nucleotide 3’-overhangs of the double-stranded RNA molecule is TT.

110. The double-stranded RNA molecule of claim 106, wherein each of the two-nucleotide 3’-overhangs has at least one backbone modified ribonucleotide containing a phosphorothioate group.

111. The double-stranded RNA molecule of claim 106, wherein each of the two-nucleotide 3’-overhangs has two backbone-modified ribonucleotides containing a phosphorothioate group.

112. The double-stranded RNA molecule of claim 106, wherein the only modified nucleotides in the double-stranded RNA molecule are in the two-nucleotide 3’-overhangs.

113. A pharmaceutical composition comprising at least one double-stranded RNA molecule of claim 106 and a pharmaceutical carrier.