CLAIMS

1. An RNA molecule comprising a first RNA component, a second RNA component which is covalently linked to the first RNA component and, optionally, one or more or all of (i) a linking ribonucleotide sequence which covalently links the first and second RNA components, (ii) a 5' leader sequence and (iii) a 3' trailer sequence,

_____wherein the first RNA component consists of, in 5' to 3' order, a first 5' ribonucleotide, a first RNA sequence and a first 3' ribonucleotide, wherein the first 5' and 3' ribonucleotides basepair with each other in the first RNA component, wherein the first RNA sequence comprises a first sense ribonucleotide sequence of at least 20 contiguous ribonucleotides, a first loop sequence of at least 4 ribonucleotides and a first antisense ribonucleotide sequence of at least 20 contiguous ribonucleotides, wherein the first antisense ribonucleotide sequence hybridises with the first sense ribonucleotide sequence in the RNA molecule, wherein the first antisense ribonucleotide sequence is capable of hybridising to a first region of a target RNA molecule,

_____wherein the second RNA component is covalently linked, via the linking ribonucleotide sequence if present or directly if the linking ribonucleotide sequence is not present, to the first 5' ribonucleotide or the first 3' ribonucleotide,

_____wherein the second RNA component consists of, in 5' to 3' order, a second 5' ribonucleotide, a second RNA sequence and a second 3' ribonucleotide, wherein the second 5' and 3' ribonucleotides basepair to each other in the RNA molecule, wherein the second RNA sequence comprises a second sense ribonucleotide sequence, a second loop sequence of at least 4 ribonucleotides and a second antisense ribonucleotide sequence, wherein the second sense ribonucleotide sequence hybridises with the second antisense ribonucleotide sequence in the RNA molecule,

_____wherein the 5' leader sequence, if present, consists of a sequence of ribonucleotides which is covalently linked to the first 5' ribonucleotide if the second RNA component is linked to the first 3' ribonucleotide or to the second 5' ribonucleotide if the second RNA component is linked to the first 5' ribonucleotide, and

_____wherein the 3' trailer sequence, if present, consists of a sequence of ribonucleotides which is covalently linked to the second 3' ribonucleotide if the second RNA component is linked to the first 3' ribonucleotide or to the first 3' ribonucleotide if the second RNA component is linked to the first 5' ribonucleotide,

_____wherein the RNA molecule is a single strand of ribonucleotides which comprises a 5' end and a 3' end, and

_____wherein the target RNA molecule is in an arthropod cell or in a plant cell.

2. An RNA molecule comprising a first RNA component, a second RNA component which is covalently linked to the first RNA component and, optionally, one or more or all of (i) a linking ribonucleotide sequence which covalently links the first and second RNA components, (ii) a 5' leader sequence and (iii) a 3' trailer sequence,

_____wherein the first RNA component consists of, in 5' to 3' order, a first 5' ribonucleotide, a first RNA sequence and a first 3' ribonucleotide, wherein the first 5' and 3' ribonucleotides basepair, wherein the first RNA sequence comprises a first sense ribonucleotide sequence, a first loop sequence of at least 4 ribonucleotides and a first antisense ribonucleotide sequence, wherein the first sense ribonucleotide sequence and first antisense ribonucleotide sequence each of at least 20 contiguous ribonucleotides whereby the at least 20 contiguous ribonucleotides of the first sense ribonucleotide sequence fully basepair with the at least 20 contiguous ribonucleotides of the first antisense ribonucleotide sequence, wherein the at least 20 contiguous ribonucleotides of the first sense ribonucleotide sequence are identical in sequence to a first region of a target RNA molecule,

_____wherein the second RNA component is covalently linked, via the linking ribonucleotide sequence if present, to the first 5' ribonucleotide or the first 3' ribonucleotide,

_____wherein the second RNA component consists of, in 5' to 3' order, a second 5' ribonucleotide, a second RNA sequence and a second 3' ribonucleotide, wherein the second 5' and 3' ribonucleotides basepair, wherein the second RNA sequence comprises a second sense ribonucleotide sequence, a second loop sequence of at least 4 ribonucleotides and a second antisense ribonucleotide sequence, wherein the second sense ribonucleotide sequence basepairs with the second antisense ribonucleotide sequence,

_____wherein the 5' leader sequence, if present, consists of a sequence of ribonucleotides which is covalently linked to the first 5' ribonucleotide if the second RNA component is linked to the first 3' ribonucleotide or to the second 5' ribonucleotide if the second RNA component is linked to the first 5' ribonucleotide, and

_____wherein the 3' trailer sequence, if present, consists of a sequence of ribonucleotides which is covalently linked to the second 3' ribonucleotide if the second RNA component is linked to the first 3' ribonucleotide or to the first 3' ribonucleotide if the second RNA component is linked to the first 5' ribonucleotide,

_____wherein the RNA molecule is a single strand of ribonucleotides which comprises a 5' end and a 3' end, and

_____wherein the target RNA molecule is in an arthropod cell or is in a plant cell.

~~3. The RNA molecule of claim 1 or claim 2, wherein the at least 20 contiguous ribonucleotides of the first antisense ribonucleotide sequence are all capable of basepairing to nucleotides of the first region of the target RNA molecule.~~

3. The RNA molecule of claim 1 or 2, wherein (a) the first sense ribonucleotide sequence or the first antisense ribonucleotide sequence, or both, is at least 40 contiguous nucleotides in length, or (b) wherein the second sense ribonucleotide sequence or the second antisense ribonucleotide sequence, or both, is at least 40 contiguous nucleotides in length, or both (a) and (b).

4. The RNA molecule according to any one of claims 1 to 3, wherein either (a) the first and second antisense ribonucleotide sequences flank the first and second sense ~~is linked covalently to the first 5'~~ ribonucleotide sequences, or (b) the first and second sense ~~without any intervening nucleotides, or the first antisense~~ ribonucleotide sequences flank the first and second antisense ~~is linked covalently to the first 3'~~ ribonucleotide sequences~~without any intervening nucleotides, or both~~.

5. The RNA molecule according to any one of claims 1 to 4, which is characterised by one or more of the following:

(i) the at least 21 contiguous ribonucleotides of the first antisense ribonucleotide sequence are all capable of basepairing to nucleotides of the first region of the target RNA molecule,

(ii) the first sense ribonucleotide sequence is linked covalently to the first 5' ribonucleotide without any intervening nucleotides, or the first antisense ribonucleotide sequence is linked covalently to the first 3' ribonucleotide without any intervening nucleotides, or both,

(iii) the RNA molecule comprises the linking ribonucleotide sequence, wherein the linking ribonucleotide sequence is less than 20 ribonucleotides~~.~~,

(iv)

~~6. The RNA molecule of claim 5, wherein~~ the linking ribonucleotide sequence hybridizes to the target RNA molecule~~.~~,

~~7. The RNA molecule of claim 5 or claim 6, wherein~~(v) the linking ribonucleotide sequence is identical to a portion of the complement of the target RNA molecule~~.~~,

~~8. The RNA molecule according to any one of claims 5 to 7,~~(vi) wherein the linking ribonucleotide sequence is between 1 and 10 ribonucleotides in length~~.~~,

~~9. The RNA molecule according to any one of claims 1 to 8 which~~(vii) the RNA molecule comprises two or more sense ribonucleotide sequences, and antisense ribonucleotide sequences

fully based paired thereto, which are identical in sequence to a region of a target RNA molecule~~.~~,

~~10. The RNA molecule of claim 9, wherein~~(viii) the ~~two or more~~first and second sense ribonucleotide sequences are identical in sequence to different regions of the same target RNA molecule~~.~~,

~~11. The RNA molecule of claim 9, wherein~~(ix) the ~~two or more~~first and second sense ribonucleotide sequences are identical in sequence to a region of different target RNA molecules~~.~~,

~~12. The RNA molecule according to any one of claims 1 to 11, wherein~~(x) the ~~two or more~~first and second sense ribonucleotide sequences have no intervening loop sequences~~.~~,

~~13. The RNA molecule according to any one of claims 1 to 12 which comprises two or more~~(xi) the first and second antisense ribonucleotide sequences~~, and sense ribonucleotide sequences~~are fully based paired ~~thereto~~to the first and second sense ribonucleotide sequences, respectively, and ~~which~~ are each complementary to a region of a target RNA molecule~~.~~,

~~14. The RNA molecule of claim 13, wherein the two or more~~(xii) the first and second antisense ribonucleotide sequences are complementary to different regions of the same target RNA molecule~~.~~,

~~15. The RNA molecule of claim 13 or claim 14, wherein~~(xiii) the second ~~of the two or more~~ antisense ribonucleotide sequence~~s~~ ~~are~~is complementary to region of a different target RNA molecule than the first ~~of the two or more~~ antisense ribonucleotide sequence~~s~~.~~.~~,

~~16. The RNA molecule according to any one of claims 1 to 15, wherein~~(xiv) the ~~two or more~~first and second sense ribonucleotide sequences have no intervening loop sequences~~.~~,

~~17. The RNA molecule according to any one of claims 2 to 16 which is a single strand of ribonucleotides having a 5' end, at least one sense ribonucleotide sequence which is at least 21 nucleotides in length, an antisense ribonucleotide sequence which is fully base paired with each sense ribonucleotide sequence over at least 21 contiguous nucleotides, at least two loop sequences and a 3' end.~~

~~18. The RNA molecule according to any one of claims 1, or 3 to 16 which is a single strand of ribonucleotides having a 5' end, at least one sense ribonucleotide sequence which is at least 21 nucleotides in length, an antisense ribonucleotide sequence which is fully base paired with each sense ribonucleotide sequence over at least 21 contiguous nucleotides, at least two loop sequences and a 3' end.~~

~~19. The RNA molecule according to any one of claims 1 to 18 which is a single strand of ribonucleotides comprising a 5' end, the first RNA component comprising a first sense ribonucleotide sequence which is at least 21 nucleotides in length, at least one loop sequence, a first antisense ribonucleotide sequence which hybridises with the first sense ribonucleotide sequence over a length of at least 21 contiguous nucleotides, and the second RNA component comprising a second sense ribonucleotide sequence which is at least 21 nucleotides in length, a loop sequence, a second antisense ribonucleotide sequence which hybridises with the second sense ribonucleotide sequence over a length of at least 21 contiguous nucleotides, and a 3' end, wherein the RNA molecule has only one 5' end and only one 3' end.~~

~~20. The RNA molecule of claim 19, wherein~~(xv) either (a) the first 5' ribonucleotide ~~at the 5' end~~ and the second 3' ribonucleotide ~~at the 3' end~~ are adjacent, each base paired and ~~are~~ not directly covalently bonded to each other, or (b) the second 5' ribonucleotide and the first 3' ribonucleotide are adjacent, each base paired and not directly covalently bonded to each other~~.~~,

~~21. The RNA molecule according to any one of claims 1 to 20 which comprises~~(xvi) ~~a~~the first antisense ribonucleotide sequence ~~which~~ hybridizes to a first region of a target RNA, ~~a~~the second antisense ribonucleotide sequence ~~which~~ hybridizes to a second region of a target RNA, the second region of the target RNA being different to the first region of the target RNA, and the ~~RNA molecule comprising only one~~first and second sense ribonucleotide sequences ~~which hybridizes to the target RNA~~are contiguous, wherein the two antisense sequences are not contiguous in the RNA molecule~~.~~,

~~22. The RNA molecule according to any one of claims 1 to 20 which comprises a~~(vxii) the first sense ribonucleotide sequence ~~which~~ is at least 60% identical to a first region of a target RNA, ~~a~~the second sense ribonucleotide sequence ~~which~~ is at least 60% identical to a second region of a target RNA, the second region of the target RNA being different to the first region of the target RNA, and the ~~RNA molecule comprising only one~~first and second antisense ribonucleotide sequences ~~which~~are contiguous and hybridize~~s~~ to the target RNA, wherein the two sense sequences are not contiguous in the RNA molecule~~.~~,

~~23. The RNA molecule according to any one of claims 1 to 22 which~~(xviii) the RNA molecule comprises~~has~~ the 5’ leader sequence~~.~~,

~~24. The RNA molecule according to any one of claims 1 to 19 which has~~ the 3’ trailer sequence, or both~~.~~,

~~25. The RNA molecule according to any one of claims 1 to 12, wherein each ribonucleotide is covalently linked to two other nucleotides.~~

~~26. The RNA molecule of claim 25, wherein~~(xix) at least one or all of the loop sequences in the RNA molecule are longer than 20 nucleotides~~.~~,

~~27. The RNA molecule according to any one of claims 1 to 14, wherein~~(xx) the RNA molecule~~s~~ has no~~ne~~, or one, or two or more bulges, or a double-stranded region of the RNA molecule comprises one, or two, or more nucleotides which are not base paired in the double-stranded region~~.~~,

~~28. The RNA molecule according to any one of claims 1 to 27 which~~(xxi) the RNA molecule has three, four or more loops~~.~~, and

~~29. The RNA molecule according to any one of claims 1 to 27 which~~(xxii) the RNA molecule ~~only~~ has only two loops.

~~30. The RNA molecule according to any one of claims 1 to 29, wherein the target RNA is in a eukaryotic cell.~~

~~31.~~6. The RNA molecule according to any one of claim~~s 30~~1 to 5, wherein the target RNA~~cell~~ is in a plant cell~~, an animal cell or a fungal cell~~.

7. The RNA molecule according to any one of claims 1 to 6 which is produced in a cell by transcription from a genetic construct or which is produced in a eukaryotic cell by transcription from a genetic construct.

8. The RNA molecule according to any one of claims 1 to 7, wherein between 5% and 40% of the ribonucleotides in total of the first sense ribonucleotide sequence and the first antisense ribonucleotide sequence, and/or the second sense ribonucleotide sequence and the second antisense ribonucleotide sequence, are basepaired in a non-canonical basepair.

9. An isolated and/or exogenous polynucleotide or a vector encoding an RNA molecule according to any one of claims 1 to 8.

10. The isolated and/or exogenous polynucleotide or vector according to claim 9, wherein the polynucleotide is operably linked to a promoter capable of directing expression of the RNA molecule in a plant cell or arthropod cell.

~~32. The RNA molecule of claim 30 or claim 31 which is present in the cell.~~

~~33. The RNA molecule of claim 32 which is expressed in the cell.~~

~~34. The RNA molecule according to any one of claims 1 to 25 or 27 to 34, wherein at least one of the loops is between 4 and 1,000 ribonucleotides, or between 4 and 200 ribonucleotides, in length.~~

~~35. The RNA molecule of claim 34, wherein all of the loops are between 4 and 1,000 ribonucleotides, or between 4 and 200 ribonucleotides, in length.~~

~~36. The RNA molecule of claim 35, wherein all of the loops are between 4 and 50 ribonucleotides in length.~~

~~37. The RNA molecule according to any one of claims 30 to 36, wherein the eukaryotic cell is a vertebrate cell, and each loop is between 20 and 30 ribonucleotides in length.~~

~~38. The RNA molecule according to any one of claims 1 to 37, wherein the target RNA encodes a protein.~~

~~39. A chimeric ribonucleic acid (RNA) molecule, comprising a double-stranded RNA (dsRNA) region which comprises a sense ribonucleotide sequence and an antisense ribonucleotide sequence which are capable of hybridising to each other to form the dsRNA region, wherein~~

~~i) the sense ribonucleotide sequence consists of, covalently linked in 5' to 3' order, a first 5' ribonucleotide, a first RNA sequence and a first 3' ribonucleotide,~~

~~ii) the antisense ribonucleotide sequence consists of, covalently linked in 5' to 3' order, a second 5' ribonucleotide, a second RNA sequence and a second 3' ribonucleotide,~~

~~iii) the first 5' ribonucleotide basepairs with the second 3' ribonucleotide to form a terminal basepair of the dsRNA region,~~

iv) the second 5’ ribonucleotide basepairs with the first 3’ ribonucleotide to form a terminal basepair of the dsRNA region,

v) between about 5% and about 40% of the ribonucleotides of the sense ribonucleotide sequence and the antisense ribonucleotide sequence, in total, are either basepaired in a non-canonical basepair or are not basepaired,

vi) the dsRNA region does not comprise 20 contiguous canonical basepairs,

vii) the RNA molecule is capable of being processed in a eukaryotic cell *or in vitro* whereby the antisense ribonucleotide sequence is cleaved to produce short antisense RNA (asRNA) molecules of 20-24 ribonucleotides in length,

viii) the RNA molecule or at least some of the asRNA molecules, or both, are capable of reducing the expression or activity of a target RNA molecule in the eukaryotic cell, and

ix) the RNA molecule is capable of being made enzymatically by transcription *in vitro* or in a cell, or both.

40. The chimeric RNA molecule of claim 39, wherein between about 15% and about 30%, or between about 16% and about 25%, of the ribonucleotides of the sense ribonucleotide sequence and the antisense ribonucleotide sequence, in total, are either basepaired in a non-canonical basepair or are not basepaired.

41. The chimeric RNA molecule of claim 39 or claim 40, wherein at least 50%, at least 60%, at least 70%, at least 80%, at least 90%, at least 95%, at least 97%, or 100% of the non-canonical basepairs are G:U basepairs.

42. The chimeric RNA molecule according to any one of claims 39 to 41, wherein less than 25%, less than 20%, less than 15%, less than 10%, less than 5%, less than 1% or none, of the ribonucleotides in the dsRNA region are not basepaired.

43. The chimeric RNA molecule according to any one of claims 39 to 42, wherein every one in four to every one in six ribonucleotides in the dsRNA region form a non-canonical basepair or are not basepaired.

44. The chimeric RNA molecule according to any one of claims 39 to 43, wherein the dsRNA region does not comprise 8 contiguous canonical basepairs.

45. The chimeric RNA molecule according to any one of claims 39 to 43, wherein the dsRNA region comprises at least 8 contiguous canonical basepairs.

46. The chimeric RNA molecule according to any one of claims 39 to 45, wherein all of the ribonucleotides in the dsRNA region are base-paired with a canonical basepair or a non-canonical basepair.

47. The chimeric RNA molecule according to any one of claims 39 to 46, wherein one or more ribonucleotides of the sense ribonucleotide sequence or one or more ribonucleotides of the antisense ribonucleotide sequence, or both, are not basepaired.

48. The chimeric RNA molecule according to any one of claims 39 to 47, wherein the antisense RNA sequence is less than 100% identical, or between about 80% and 99.9% identical, or between about 90% and 98% identical, or between about 95% and 98% identical, in sequence to the complement of a region of the target RNA molecule.

49. The chimeric RNA molecule according to any one of claims 39 to 48, wherein the antisense RNA sequence is 100% identical in sequence to a region of the target RNA molecule.

50. The chimeric RNA molecule according to any one of claims 39 to 49, wherein the sense and/or antisense ribonucleotide sequence is at least 50, at least about 100, at least about 200, at least about 300, at least about 400, at least about 500, at least about 600, at least about 700, at least about 800, at least about 900, at least about 1,000, or about 100 to about 1,000, in length.

51. The chimeric RNA molecule according to any one of claims 39 to 50, wherein the number of ribonucleotides in the sense ribonucleotide sequence is between about 90% and about 110% of the number of ribonucleotides in the antisense ribonucleotide sequence.

52. The chimeric RNA molecule according to any one of claims 39 to 51, wherein the number of ribonucleotides in the sense ribonucleotide sequence is the same as the number of ribonucleotides in the antisense ribonucleotide sequence.

53. The chimeric RNA molecule according to any one of claims 39 to 52, wherein the first 3’ ribonucleotide and the second 5’ ribonucleotide are covalently joined by a loop sequence consisting of at least 4 ribonucleotides, or between 4 and 1,000 ribonucleotides, or between 4 and 200 ribonucleotides, between 4 and 50 ribonucleotides.

54. The chimeric RNA molecule according to any one of claims 39 to 53, wherein the chimeric RNA molecule further comprises a 5’ extension sequence which is covalently linked

to the first 5’ ribonucleotide or a 3’ extension sequence which is covalently linked to the second 3’ ribonucleotide, or both.

55. The chimeric RNA molecule according to any one of claims 39 to 54, wherein the chimeric RNA molecule further comprises a 5’ extension sequence which is covalently linked to the second 5’ ribonucleotide or a 3’ extension sequence which is covalently linked to the first 3’ ribonucleotide, or both.

56. The chimeric RNA molecule according to any one of claims 39 to 55, which comprises two or more dsRNA regions which are the same or different.

57. The chimeric RNA molecule according to any one of claims 39 to 56, wherein when expressed in a eukartotic cell more asRNA molecules are formed that are 22 and/or 20 ribonucleotides in length when compared to processing of an analogous RNA molecule which has a corresponding dsRNA region which is fully basepaired with canonical basepairs.

58. The chimeric RNA molecule according to any one of claims 39 to 57 which comprises one or more further features as defined in any one or more of claims 1 or 3 to 38.

59. An isolated and/or exogenous polynucleotide encoding an RNA molecule according to any one of claims 1 to 38, or a chimeric RNA molecule according to any one of claims 39 to 58.

60. The polynucleotide of claim 59 which is a DNA construct.

61. The polynucleotide of claim 59 or claim 60 which is operably linked to a promoter capable of directly expression of the RNA molecule in a host cell.

62. The polynucleotide of claim 61, wherein the promoter is an RNA polymerase promoter such as an RNA polymerase III promoter, an RNA polymerase II promoter, or a promoter which functions *in vitro*.

63. The polynucleotide according to any one of claims 59 to 62 which encodes an RNA precursor molecule comprising an intron in at least one loop sequence which is capable of being spliced out during transcription of the polynucleotide in a host cell.

64. A vector comprising a polynucleotide according to any one of claims 59 to 63.

~~65. The vector of claim 64 which is a viral vector.~~

~~66.~~11. A host cell, or a plant or a part thereof, comprising one or ~~more~~both ~~or all~~ of an RNA molecule according to any one of claims 1 to ~~38~~8, ~~a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide according to any one of claims 59 to 63,~~ or a vector or polynucleotide according ~~of~~to claim ~~64~~9 or ~~claim 65~~10.

~~67. The host cell of claim 66 which is a bacterial cell, a fungal cell, a plant cell or an animal cell.~~

~~68. The host cell of claim 66 or claim 67 which is dead.~~

12. The host cell or plant or a part thereof according to claim 11, wherein the polynucleotide is stably integrated into the genome of the organism.

~~69. The polynucleotide claim 61 or claim 62 or the host cell according to any one of claims 66 to 68 which encodes and/or comprises the chimeric RNA molecule according to any one of claims 39 to 58, wherein the promoter region of the polynucleotide has a lower level of methylation, such as less than about 50%, less than about 40%, less than about 30% or less than about 20%, when compared to the promoter of a corresponding polynucleotide encoding an RNA molecule which has a corresponding dsRNA region which is fully basepaired with canonical basepairs.~~

~~70. The host cell according to any one of claims 66 to 69 which comprises at least two copies of the polynucleotide encoding a chimeric RNA molecule according to any one of claims 39 to 58, and wherein~~

~~i) the level of reduction in the expression or activity of the target RNA molecule in the eukaryotic cell is at least the same when compared to if the cell had a single copy of the polynucleotide, and/or~~

~~ii) the level of reduction in the expression or activity of the target RNA molecule in the eukaryotic cell is lower when compared to a corresponding cell comprising an RNA molecule which has a corresponding dsRNA region which is fully basepaired with canonical basepairs.~~

~~71. The host cell according to any one of claims 66 to 70, wherein the cell encodes and/or comprises the chimeric RNA molecule according to any one of claims 39 to 58 and the level of~~

sense ribonucleotide sequence in the cell is less than 50 to 99% the level of the antisense ribonucleotide.

72. A non-human organism comprising one or more or all of an RNA molecule according to any one of claims 1 to 38, a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide according to any one of claims 59 to 63 or 69, a vector of claim 64 or claim 65, or a host cell according to any one of claims 66 to 71.

73. The non-human organism of claim 72 which is a transgenic non-human organism comprising a polynucleotide according to any one of claims 59 to 63.

74. The non-human organism of claim 73, wherein the polynucleotide is stably integrated into the genome of the organism.

75.13. A method of producing an RNA molecule according to any one of claims 1 to 388, or a chimeric RNA molecule according to any one of claims 39 to 58, the method comprising expressing the polynucleotide according to any one of claims 59 to 63 or 69claim 9 or 10 in a host cell or cell-free expression system.

76. The method of claim 75 which further comprises at least partially purifying the RNA molecule.

77.14. A method of producing a non-human organism of claim 73 or claim 74a plant of claim 11, the method comprising introducing the polynucleotide according to any one of claims 59 to 63 or 69claim 9 or 10 into a cell so that it is stably integrated into the genome of the cell, and generating the non-human organismplant from the cell.

78.15. An extract of a host cell according to any one of claims 66 to 71claim 11 or 12, wherein the extract comprises the RNA molecule according to any one of claims 1 to 388, a chimeric RNA molecule according to any one of claims 39 to 58 and/or theand/or a vector or polynucleotide according to any one of claims 59 to 63 or 69claim 9 or 10.

79.16. A composition comprising one or more of an RNA molecule according to any one of claims 1 to 388, a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide according to any one of claims 59 to 63 or 69, a vector or a polynucleotide ofaccording to claim 649 or claim 6510, a host cell or plant or part thereof according to any one of claims 66 to 71claim 11 or 12, or an extract of claim 7815, and one or more suitable carriers.

~~80. The composition of claim 79 which is a pharmaceutical composition.~~

~~81. The composition of claim 79 suitable for application to a field.~~

~~82. The composition of claim 81, wherein the field comprises plants.~~

~~83. The composition according to any one of claims 79 to 82 which further comprises at least one compound which enhances the stability of the RNA molecule, chimeric RNA molecule or polynucleotide and/or which assists in the RNA molecule, chimeric RNA molecule or polynucleotide being taken up by a cell of an organism.~~

~~84. The composition of claim 83, wherein the compound is a transfection promoting agent.~~

~~85.~~17. A method for down-regulating the level and/or activity of a target RNA molecule in an organism or in an arthropod, the method comprising delivering to the ~~organism~~plant or arthropod one or more of an RNA molecule according to any one of claims 1 to ~~38~~8, ~~a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide according to any one of claims 59 to 63 or 69,~~ a vector or a polynucleotide ~~of~~according to claim ~~64~~9 or ~~claim 65~~10, a host cell according to ~~any one of claims 66 to 71~~claim 11 or 12, an extract of claim ~~78~~15, or a composition according to ~~any one of claims 79 to 84~~claim 16.

~~86. The method of claim 85, wherein the target RNA molecule encodes a protein.~~

~~87.~~18. A method of controlling a non-human organism, the method comprising delivering to the non-human organism one or more of an RNA molecule according to any one of claims 1 to ~~38~~8, ~~a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide according to any one of claims 59 to 63 or 69,~~ a vector or a polynucleotide ~~of~~according to claim ~~64~~9 or ~~claim 65~~10, a host cell according to ~~any one of claims 66 to 71~~claim 11 or 12, an extract of claim ~~78~~15, or a composition according to ~~any one of claims 79 to 84~~claim 16, wherein the RNA molecule has a deleterious effect on the non-human organism, wherein the non-human organism is an arthropod or a plant.

~~88. The method of claim 87, wherein the non-human organism is an arthropod or a plant.~~

~~89. The method of claim 88, wherein the non-human organism according to any one of claims 72 to 74 is a plant, and the arthropod eats the plant or a portion thereof.~~

~~90.~~19. A method of preventing or treating a disease in a ~~subject~~plant or an arthropod, ~~the method~~ comprising administering the ~~subject one or more of an~~ RNA molecule according to any one of claims 1 to ~~38~~8, ~~a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide according to any one of claims 59 to 63 or 69,~~ a vector or a polynucleotide ~~of claim 64 or claim 65~~claim 9 or 10, a host cell or plant or part thereof according to ~~any one of claims 66 to 71~~claim 11 or 12, an extract of claim ~~78~~15, or a composition according to ~~any one of claims 79 to 84~~claim 16, wherein the RNA molecule has a beneficial effect on at least one symptom of the disease or preventing the disease.

20. A method of introducing an RNA molecule to a plant, the method comprising topically applying a composition comprising the RNA molecule according to any one of claims 1 to 8 to the plant or a part thereof.

~~91. The method of claim 90, wherein the RNA molecule, chimeric RNA molecule, polynucleotide, vector or composition are administered topically, orally or injected.~~

~~92. The method of claim 90 or claim 91, wherein the subject is a vertebrate.~~

~~93. The method of claim 92, wherein the vertebrate is a mammal such as a human.~~

~~94. An RNA molecule according to any one of claims 1 to 38, a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide according to any one of claims 59 to 63 or 69, a vector of claim 64 or claim 65, a host cell according to any one of claims 66 to 71, an extract of claim 78, or a composition according to any one of claims 79 to 84 for use in treating a disease in a subject, wherein the RNA molecule has a beneficial effect on at least one symptom of the disease.~~

~~95. Use of an RNA molecule according to any one of claims 1 to 38, a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide according to any one of claims 59 to 63 or 69, a vector of claim 64 or claim 65, a host cell according to any one of claims 66 to 71, an extract of claim 78, or a composition according to any one of claims 79 to 84 for the manufacture of a medicament for treating a disease in a subject, wherein the RNA molecule has a beneficial effect on at least one symptom of the disease.~~

~~96. A kit comprising one or more of an RNA molecule according to any one of claims 1 to 38, a chimeric RNA molecule according to any one of claims 39 to 58, a polynucleotide~~

~~according to any one of claims 59 to 63 or 69, a vector of claim 64 or claim 65, a host cell according to any one of claims 66 to 71, an extract of claim 78, or a composition according to any one of claims 79 to 84.~~