

WHAT IS CLAIMED IS:

1 1. An antibody that binds to tumor tissue, wherein the antibody binds to
2 an extracellular RNA-protein complex and wherein the antibody comprises:

3 a heavy chain variable region comprising:

4 an HCDR1 comprising a sequence GFTFSKAWMS (SEQ ID NO:1),
5 or a variant HCDR1 in which 1 amino acid is substituted relative to the sequence;

6 an HCDR2 comprising a sequence RIKSVTDGETTDYAAPVKG
7 (SEQ ID NO:9), or a variant HCDR2 in which 1 amino acid is substituted relative to
8 the sequence; and

9 an HCDR3 comprising a sequence
10 TSSFCCRGGSCPSHDTSYCGGQYKSYYYMDV (SEQ ID NO:21), or a variant
11 HCDR3 in which 1, 2, or 3 amino acids are substituted relative to the sequence;

12 a light chain variable region comprising:

13 an LCDR1 comprising a sequence SGSSSNIGSSSVS (SEQ ID
14 NO:48), or a variant LCDR1 in which 1 amino acid is substituted relative to the
15 sequence;

16 an LCDR2 comprising a sequence KNNQRPS (SEQ ID NO:59), or
17 variant LCDR2 in which 1 amino acid is substituted relative to the sequence; and

18 an LCDR3 comprising a sequence STWDDSLSVRV (SEQ ID
19 NO:68), or a variant LCDR3 in which 1 amino acid is substituted relative to the
20 sequence.

1 2. The antibody of claim 1, wherein the antibody comprises an HCDR1
2 comprising a sequence GFTFSKAWMS (SEQ ID NO:1), an HCDR2 comprising a sequence
3 RIKSVTDGETTDYAAPVKG (SEQ ID NO:9), an HCDR3 comprising a sequence
4 TSSFCCRGGSCPSHDTSYCGGQYKSYYYMDV (SEQ ID NO:21), an LCDR1 comprising
5 a sequence SGSSSNIGSSSVS (SEQ ID NO:48), an LCDR2 comprising a sequence
6 KNNQRPS (SEQ ID NO:59), and an LCDR3 comprising a sequence STWDDSLSVRV
7 (SEQ ID NO:68) .

1 3. The antibody of claim 2, wherein the V_H comprises an amino acid
2 sequence having at least 95% identity to
3 EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRIKSVT
4 DGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFCCRGGSCPSH

5 DTSYCGGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:94); and the V_L comprises an
6 amino sequence having at 95% identity to
7 QSVLTQPPSASGTPGQRTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQRPSGV
8 PDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKLTVL (SEQ ID
9 NO:140).

1 4. The antibody of claim 3, wherein the V_H comprises a sequence
2 EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRIKSVT
3 DGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFCCRGGSCPSH
4 DTSYCGGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:94); and the V_L comprises a
5 sequence
6 QSVLTQPPSASGTPGQRTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQRPSGV
7 PDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKLTVL (SEQ ID
8 NO:140).

1 5. The antibody of any one of claims 1 to 4, wherein the antibody
2 comprises a heavy chain constant region sequence of SEQ ID NO:1721 and a light chain
3 constant region sequence of SEQ ID NO:1722.

1 6. The antibody of claim 5, wherein the heavy chain comprises a
2 sequence of SEQ ID NO:1723 and the light chain comprises a sequence of SEQ ID NO:1724.

1 7. An antibody that binds to tumor tissue, wherein the antibody binds to
2 an extracellular RNA-protein complex and wherein the antibody comprises an HCDR1,
3 HCDR2, HCDR3, LCDR1, LCDR2, and LCDR3 designated as AIP-192482, AIP-171142,
4 AIP-165430, AIP-189526, AIP-122563, AIP-158623, AIP-155066, AIP-166120, AIP-
5 133645, AIP-187893, AIP-142079, AIP-102396, AIP-150055, AIP-167084, AIP-185304,
6 AIP-134770, AIP-141887, AIP-196203, AIP-128195, AIP-116579, AIP-192329, AIP-
7 197809, AIP-142489, AIP-167726, AIP-199834, AIP-143179, AIP-195587, AIP-153462,
8 AIP-115363, AIP-151090, AIP-168083, AIP-161082, AIP-114196, AIP-189338, AIP-
9 183190, AIP-110143, AIP-147176, AIP-134312, AIP-128243, AIP-156172, AIP-147389,
10 AIP-124314, AIP-185291, AIP-135247, AIP-113513, AIP-102299, AIP-179097, AIP-
11 109343, AIP-119622, AIP-191735, AIP-157078, AIP-153475, AIP-133650, AIP-190915,
12 AIP-167400, AIP-109729, AIP-151709, AIP-136628, AIP-101601, AIP-146871, AIP-
13 170053, AIP-199483, AIP-162041, AIP-180675, AIP-183133, AIP-191470, AIP-151167,

14 AIP-106633, AIP-102624, AIP-109484, AIP-126080, AIP-161571, AIP-163039, AIP-
15 101235, AIP-182061, AIP-181246, AIP-192216, AIP-171912, AIP-172872, AIP-167833,
16 AIP-190051, AIP-145518, AIP-167533, AIP-112580, AIP-143155, AIP-119664, AIP-
17 190526, AIP-114403, AIP-156760, AIP-103803, AIP-195588, AIP-145722, AIP-178251,
18 AIP-116142, AIP-183350, AIP-127108, AIP-128147, AIP-109510, AIP-104086, AIP-
19 143132, AIP-170105, AIP-169636, AIP-152243, AIP-138776, AIP-103817, AIP-130491,
20 AIP-188155, AIP-167246, AIP-106139, AIP-198351, AIP-159326, AIP-192275, AIP-
21 190761, AIP-166832, AIP-148062, AIP-129145, AIP-111240, AIP-153888, AIP-130915,
22 AIP-109048, AIP-170569, AIP-154873, AIP-159037, AIP-186826, AIP-156514, AIP-
23 157122, AIP-173276, AIP-150485, AIP-166847, AIP-124013, AIP-126285, AIP-168605,
24 AIP-190274, AIP-136060, AIP-180422, AIP-166722, AIP-127782, AIP-189473, AIP-
25 192571, AIP-112328, AIP-125258, AIP-150199, AIP-125062, AIP-177193, AIP-115388,
26 AIP-107759, AIP-170221, AIP-143369, AIP-189475, AIP-102833, AIP-157045, AIP-
27 175775, AIP-154181, AIP-125984, AIP-160829, AIP-184744, AIP-128136, AIP-181273,
28 AIP-153125, or AIP-131972 in Table 1A and 2A, or a variant thereof in which at least one,
29 two, three, four, five, or all six of the CDRs contain 1 or 2 amino acid substitutions compared
30 to the corresponding CDR sequence shown in Table 1B or Table 2B.

1 8 The antibody of claim 7, wherein the antibody comprises an HCDR1,
2 HCDR2, HCDR3, LCDR1, LCDR2, and LCDR3 of an antibody designated as AIP-192482,
3 AIP-171142, AIP-165430, AIP-189526, AIP-122563, AIP-158623, AIP-155066, AIP-
4 166120, AIP-133645, AIP-187893, AIP-142079, AIP-102396, AIP-150055, AIP-167084,
5 AIP-185304, AIP-134770, AIP-141887, AIP-196203, AIP-128195, AIP-116579, AIP-
6 192329, AIP-197809, AIP-142489, AIP-167726, AIP-199834, AIP-143179, AIP-195587,
7 AIP-153462, AIP-115363, AIP-151090, AIP-168083, AIP-161082, AIP-114196, AIP-
8 189338, AIP-183190, AIP-110143, AIP-147176, AIP-134312, AIP-128243, AIP-156172,
9 AIP-147389, AIP-124314, AIP-185291, AIP-135247, AIP-113513, AIP-102299, AIP-
10 179097, AIP-109343, AIP-119622, AIP-191735, AIP-157078, AIP-153475, AIP-133650,
11 AIP-190915, AIP-167400, AIP-109729, AIP-151709, AIP-136628, AIP-101601, AIP-
12 146871, AIP-170053, AIP-199483, AIP-162041, AIP-180675, AIP-183133, AIP-191470,
13 AIP-151167, AIP-106633, AIP-102624, AIP-109484, AIP-126080, AIP-161571, AIP-
14 163039, AIP-101235, AIP-182061, AIP-181246, AIP-192216, AIP-171912, AIP-172872,
15 AIP-167833, AIP-190051, AIP-145518, AIP-167533, AIP-112580, AIP-143155, AIP-
16 119664, AIP-190526, AIP-114403, AIP-156760, AIP-103803, AIP-195588, AIP-145722,

17 AIP-178251, AIP-116142, AIP-183350, AIP-127108, AIP-128147, AIP-109510, AIP-
 18 104086, AIP-143132, AIP-170105, AIP-169636, AIP-152243, AIP-138776, AIP-103817,
 19 AIP-130491, AIP-188155, AIP-167246, AIP-106139, AIP-198351, AIP-159326, AIP-
 20 192275, AIP-190761, AIP-166832, AIP-148062, AIP-129145, AIP-111240, AIP-153888,
 21 AIP-130915, AIP-109048, AIP-170569, AIP-154873, AIP-159037, AIP-186826, AIP-
 22 156514, AIP-157122, AIP-173276, AIP-150485, AIP-166847, AIP-124013, AIP-126285,
 23 AIP-168605, AIP-190274, AIP-136060, AIP-180422, AIP-166722, AIP-127782, AIP-
 24 189473, AIP-192571, AIP-112328, AIP-125258, AIP-150199, AIP-125062, AIP-177193,
 25 AIP-115388, AIP-107759, AIP-170221, AIP-143369, AIP-189475, AIP-102833, AIP-
 26 157045, AIP-175775, AIP-154181, AIP-125984, AIP-160829, AIP-184744, AIP-128136,
 27 AIP-181273, AIP-153125, or AIP-131972 in Table 1A or 2A.

1 9. An antibody that binds to tumor tissue, wherein the antibody binds to
 2 an extracellular RNA-protein complex and wherein the antibody comprises:

3 (a) a heavy chain variable region comprising:

4 (i) an HCDR1 having the sequence

5 GF(T/V)(F/Y)(S/A)X₆AWM(S/T) (SEQ ID NO:1728), wherein X₆ is K, A, or
 6 M;

7 (ii) an HCDR2 having the sequence of

8 RIK(S/A)X₅X₆(D/E)(G/A)X₉X₁₀T(D/E)YAA(P/S)VKG (SEQ ID NO:1729),
 9 wherein X₅ is V, N, A, or T; X₆ is T, Q, S, D, or H; X₉ is E, H, K, or G; and
 10 X₁₀ is T, Q, or I; and

11 (iii) an HCDR3 having the sequence of

12 (I/T)(S/T)SFCC(H/R)(G/S)X₉X₁₀CPSX₁₄(D/E)TS(F/Y)CX₂₀(G/N)X₂₂X₂₃X₂₄
 13 X₂₅(F/Y)Y(F/Y)(M/V)(D/N)X₃₁ (SEQ ID NO:1730), wherein X₉ is A, G, K,
 14 or N; X₁₀ is N, Q, R, or S; X₁₄ is H, R, or S; X₂₀ is A, G, or N; X₂₂ is Q, S, or
 15 Y; X₂₃ is D, F, N, or Y; X₂₄ is A, K, N, P, or S; X₂₅ is D, Q, R, or S; X₁₉ is D
 16 or N; and X₃₁ is I, P, or V; and

17 (b) a light chain variable region comprising:

18 (i) an LCDR1 having the sequence of

19 SG(S/A)X₄(S/T)(N/D)IGSSX₁₁VX₁₃ (SEQ ID NO:1731), wherein X₄ is S, P,
 20 or K; X₁₁ is S, Y, or T; and X₁₃ is S, Y, or T;

21 (ii) an LCDR2 having the sequence of
 22 (K/M)(N/D)X₃X₄R(P/A)X₇ (SEQ ID NO:1732), wherein X₃ is S, N or T; X₄ is
 23 L, Q, or A; X₅ is P or A; X₇ is Q, S, Y, or L; and
 24 (iii) an LCDR3 having the sequence of
 25 (S/A)(T/S)W(D/N)X₅X₆(L/N)X₈(V/I)R(V/I) (SEQ ID NO:1733), wherein X₅
 26 is E, D or N; X₆ is S, A, or Q; and X₈ is N, S or T.

1 10. The antibody of claim 9 wherein:
 2 the HCDR1 has a sequence GFTFSKAWMS (SEQ ID NO:1),
 3 GFTFSAAWMS (SEQ ID NO:4), or GFTFSKAWMT (SEQ ID NO:8);
 4 the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9) or
 5 RIKSTSDGETTDYAAPVKG (SEQ ID NO:15);
 6 the HCDR3 has a sequence TSSFCCRGGSCPSSDTSYCGGQYKSYYFMDV
 7 (SEQ ID NO:32), TSSFCCRSGSCPSSDTSYCNGQYKSYYYMDV (SEQ ID NO:20),
 8 TSSFCCRGNQCPSSDTSYCGGQYPSYYYMDP (SEQ ID NO:23),
 9 ISSFCCRGGSCP SRDTSYCGGQYKSYYFMDV (SEQ ID NO:30),
 10 ISSFCCRGNSCPSSDTSYCNGQYKSYYYMDV (SEQ ID NO:27),
 11 TSSFCCRGGSCP SHDTSYCGGQYKSYYYMDV (SEQ ID NO:21), or
 12 TSSFCCRGGSCP SHDTSFCGGQDKRYYYMDV (SEQ ID NO:34);
 13 the LCDR1 has a sequence SGSSSNIGSSSVY (SEQ ID NO:56),
 14 SGSSSNIGSSSVS (SEQ ID NO:48), SGSSTNIGSSSVS (SEQ ID NO:54), or
 15 SGSKSNIGSSSVS (SEQ ID NO:51);
 16 the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59) or KDNQRPS (SEQ
 17 ID NO:62); and
 18 the LCDR3 has a sequence STWDDALSVRV (SEQ ID NO:72),
 19 STWDDSLSVRV (SEQ ID NO:68), SSWDDSNSVRI (SEQ ID NO:71), or
 20 ATWDNSLSIRV (SEQ ID NO:70).

1 11. The antibody of claim 10, wherein the heavy chain variable region has
 2 a sequence having at least 90% identity to the sequence of any one of
 3 EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRIKSVT
 4 DGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFCCRGGSCPSS
 5 DTSYCGGQYKSYYFMDVWGKGTTVTVSS (SEQ ID NO:92),
 6 EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRIKSVT

7 DGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFCCRSGSCPSS
 8 DTSYCNGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:77),
 9 EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRIKSVT
 10 DGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFCCRGNGQCPSS
 11 DTSYCGGQYPSYYYMDPWGKGTTVTVSS (SEQ ID NO:80),
 12 EVQLVESGGALVKPGGSLRLSCAASGFTFSAWMSWVRQAPGKGLEWVGRIKSTSD
 13 GETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCISFCCRGGSCPSRDT
 14 SYCGGQYKSYFMDVWGKGTTVTVSS (SEQ ID NO:90),
 15 EVQLVESGGALVKPGGSLRLSCAASGFTFSAWMSWVRQAPGKGLEWVGRIKSVT
 16 DGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCISFCCRGNSCPSSD
 17 TSYCNGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:86),
 18 EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRIKSVT
 19 DGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFCCRGGSCPSH
 20 DTSYCGGQYKSYYYMDVWGKGTTVTVSS (SEQ ID NO:94), and
 21 EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMTWVRQAPGKGLEWVGRIKSVT
 22 DGETTDYAAPVKGRFTISRDDSKSVLYLQMSSLKTEDTAVYFCTSSFCCRGGSCPSH
 23 DTSFCGGQDKRYYYMDVWGKGTTVTVSS (SEQ ID NO:95).

1 12. The antibody of claim 10 or 11, wherein the light chain variable region
 2 has a sequence having at least 90% identity to the sequence of any one of
 3 QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVYQQLPGTAPKLLIYKNNQRPSG
 4 VPDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDALSVRVFGGGTKLTVL (SEQ
 5 ID NO:138),
 6 QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQRPSGV
 7 PDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKLTVL (SEQ ID
 8 NO:140),
 9 QSVLTQPPSASGTPGQRVTISCSGSSTNIGSSSVSWYQQLPGTAPKLLIYKDNQRPSGV
 10 PDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDNSVRIFGGGTKLTVL (SEQ ID
 11 NO:136),
 12 QSVLTQPPSASGTPGQRVTISCSGSKSNIGSSSVSWYQQLPGTAPKLLIYKDNQRPSG
 13 VPDRFSGSKSGTSASLAISGLRSEDEADYYCATWDNSLSIRVFGGGTKLTVL (SEQ ID
 14 NO:132), and
 15 QSVLTQAPSASETGQRVIISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQRPSGV

16 PDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKLTVL (SEQ ID
17 NO:141).

1 13. The antibody of claim 10, wherein:

2 (a)
3 the HCDR1 has a sequence GFTFSKAWMS (SEQ ID NO:1);
4 the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
5 the HCDR3 has a sequence TSSFCCRGGSCPSSDTSYCGGQYKSYFMDV
6 (SEQ ID NO:32);

7 the LCDR1 has a sequence SGSSSNIGSSSVY (SEQ ID NO:56);
8 the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59); and
9 the LCDR3 has a sequence STWDDALSVRV (SEQ ID NO:72); or

10 (b)
11 the HCDR1 has a sequence GFTFSKAWMS (SEQ ID NO:1);
12 the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
13 the HCDR3 has a sequence of

14 TSSFCCRSGSCPSSDTSYCNGQYKSYYYMDV (SEQ ID NO:20);
15 the LCDR1 has a sequence SGSSSNIGSSSVS (SEQ ID NO:48);
16 the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59); and
17 the LCDR3 has a sequence STWDDSLSVRV (SEQ ID NO:68); or

18 (c)
19 the HCDR1 has a sequence GFTFSKAWMS (SEQ ID NO:1);
20 the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
21 the HCDR3 has a sequence TSSFCCRGNQCPSSDTSYCGGQYPSYYMDP
22 (SEQ ID NO:23);

23 the LCDR1 has a sequence SGSSSNIGSSSVS (SEQ ID NO:48);
24 the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59); and
25 the LCDR3 has a sequence STWDDSLSVRV (SEQ ID NO:68); or

26 (d)
27 the HCDR1 has a sequence GFTFSAAWMS (SEQ ID NO:4);
28 the HCDR2 has a sequence RIKSTSDGETTDYAAPVKG (SEQ ID NO:15);
29 the HCDR3 has a sequence ISSFCCRGGSCPSRDTSYCGGQYKSYFMDV
30 (SEQ ID NO:30);

31 the LCDR1 has a sequence SGSSTNIGSSSVS (SEQ ID NO:54);

32 the LCDR2 has a sequence KDNQRPS (SEQ ID NO:62); and
 33 the LCDR3 has a sequence SSWDDSNSVRI (SEQ ID NO:71) or
 34 (e)
 35 the HCDR1 has a sequence GFTFSAAWMS (SEQ ID NO:4);
 36 the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
 37 the HCDR3 has a sequence ISSFCCRGNSCPSSDTSYCNGQYKSYYYMDV
 38 (SEQ ID NO:27);
 39 the LCDR1 has a sequence SGSKSNIGSSSVS (SEQ ID NO:51);
 40 the LCDR2 has a sequence KDNQRPS (SEQ ID NO:62); and
 41 the LCDR3 has a sequence ATWDNSLSIRV (SEQ ID NO:70); or.
 42 (f)
 43 the HCDR1 has a sequence GFTFSKAWMT (SEQ ID NO:8);
 44 the HCDR2 has a sequence RIKSVTDGETTDYAAPVKG (SEQ ID NO:9);
 45 the HCDR3 has a sequence
 46 TSSFCCRGGSCPSHDTSFCCGGQDKRYYYMDV (SEQ ID NO:34);
 47 the LCDR1 has a sequence SGSSSNIGSSSVS (SEQ ID NO:48);
 48 the LCDR2 has a sequence KNNQRPS (SEQ ID NO:59); and
 49 the LCDR3 has a sequence STWDDSLSVRV (SEQ ID NO:68).

1 14. Use of an antibody of any one of claims 1 to 13 in the manufacture of
 2 a medicament for inducing an immune response.

1 15. Use of the antibody of any one of claims 1 to 13 in the manufacture of
 2 a medicament for the treatment of a cancer patient having a tumor that comprises an
 3 extracellular RNA-protein complex.

1 16. The use of claim 15, wherein the cancer is lung cancer, breast cancer,
 2 colorectal cancer, esophageal cancer, stomach cancer, kidney cancer, ovarian cancer,
 3 melanoma, uterine cancer, liver cancer, bladder cancer, or testicular cancer.

1 17. The use of claim 16, wherein the cancer is non-small cell lung cancer,
 2 triple negative breast cancer, colorectal cancer, ovarian cancer or melanoma.

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- 1 18. The use of any one of claims 15 to 17, further comprising
2 administering chemotherapy and/or radiation therapy.
- 1 19. The use of any one of claims 15 to 18, further comprising
2 administering an agent that targets an immunological checkpoint antigen.
- 1 20. The use of claim 19, wherein the agent is a monoclonal antibody.
- 1 21. The use of claim 20, wherein the monoclonal antibody blocks PD-1
2 ligand binding to PD-1.
- 1 22. The use of claim 21, wherein the monoclonal antibody is an anti-PD-1
2 antibody.
- 1 23. A method of identifying a patient that has a tumor comprising an
2 extracellular RNA-protein complex, the method comprising contacting a tumor sample from
3 the patient with an antibody of any one of claims 1 to 13.
- 1 24. An expression vector comprising a polynucleotide encoding the V_H
2 region of the antibody of any one of claims 1 to 13.
- 1 25. An expression vector comprising a polynucleotide encoding the V_L
2 region of the antibody of any one of claims 1 to 13.
- 1 26. An expression vector comprising a polynucleotide encoding the V_H
2 region and the V_L region of the antibody of any one of claims 1 to 13.
- 1 27. A host cell comprising a polynucleotide that encodes the V_H region of
2 the anti-tumor antibody of any one of claims 1 to 13.
- 1 28. A host cell comprising a polynucleotide that encodes the V_L region of
2 the anti-tumor antibody of any one of claims 1 to 13.
- 1 29. A host cell comprising a polynucleotide that encodes the V_H region
2 and the V_L region of the anti-tumor antibody of any one of claims 1 to 13.

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1 30. A method of producing an antibody, the method comprising culturing a
2 host cell of claim 29 under conditions in which the polynucleotide encoding the heavy chain
3 and the polynucleotide encoding the light chain are expressed.

1 31. A method of identifying an antibody having anti-tumor activity, the
2 method comprising mutagenizing a polynucleotide encoding a V_H or a V_L CDR3 of an
3 antibody of any one of claims 1 to 13, expressing an antibody comprising the mutagenized
4 V_H or V_L CDR3; and selecting an antibody that inhibits tumor growth or decreases tumor
5 size, tumor invasion, and/or metastasis *in vivo*.

1 32. A polypeptide comprising a V_H sequence
2 EVQLVESGGALVKPGGSLRLSCAASGFTFSKAWMSWVRQAPGKGLEWVGRIKSVT
3 DGETTDYAAPVKGRFTISRDDSKSTLYLQMNSLKTEDTAVYYCTSSFCCRRGGSCPSH
4 DTSYCGGQYKSYYYMDVWVGKGTTVTVSS (SEQ ID NO:94); and a V_L sequence
5 QSVLTQPPSASGTPGQRVTISCSGSSSNIGSSSVSWYQQLPGTAPKLLIYKNNQRPSGV
6 PDRFSGSKSGTSASLAISGLRSEDEADYYCSTWDDSLSVRVFGGGTKLTVL (SEQ ID
7 NO:140).