

SEQUENCE LISTING

<110> DIPERSIO, John F.
COOPER, Matthew

<120> GENE EDITING OF CAR-T CELLS FOR THE TREATMENT OF T CELL
MALIGNANCIES WITH CHIMERIC ANTIGEN RECEPTORS

<130> 047563-576545

<150> 62/370,485
<151> 2016-08-03

<150> 62/482,570
<151> 2017-04-06

<150> 62/505,614
<151> 2017-05-12

<160> 54

<170> PatentIn version 3.5

<210> 1
<211> 25
<212> DNA
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<220>
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<400> 1
gcctgcgtgg gatctacctg aggca 25

<210> 2
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<223> SYNTHESIZED

<400> 2
agctatctag gaggctgctg ggggc 25

<210> 3
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> SYNTHESIZED

<400> 3

tggggcaaag agggaaatga 20

<210> 4
<211> 21
<212> DNA
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<220>
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<400> 4
gtcagatttg ttgctccagg c 21

<210> 5
<211> 34
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POSITIONS 1, 2, 32 AND 33

<400> 5
ataccgttat taacatatga caactcaatt aaac 34

<210> 6
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POSITIONS 1, 2, 32 AND 33

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gtttaattga gttgtcatat gttaataacg gtat 34

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<222> (21)..(21)
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<400> 7

gatgctcgga cgccccacca ngg 23

<210> 8
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<223> n is a, c, g, or t

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<210> 9
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<223> n is a, c, g, or t

<400> 9
aggctgtctg cgggtcaggg ngg 23

<210> 10
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<400> 10
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<210> 11
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<400> 11
tcagggaggg cggagcctgt ngg

23

<210> 12
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<223> n is a, c, g, or t

<400> 12
gacctccgtg atggcctggc ngg

23

<210> 13
<211> 23
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<223> SYNTHESIZED

<220>
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<222> (21)..(21)
<223> n is a, c, g, or t

<400> 13
cgtgatggcc tggcaggtgt ngg

23

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<222> (21)..(21)
<223> n is a, c, g, or t

<400> 14
gaggtcaatg tctacggctc ngg

23

<210> 15
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<222> (21)..(21)
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<400> 15
tgtctacggc tccggcaccc ngg

23

<210> 16
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<222> (21)..(21)
<223> n is a, c, g, or t

<400> 16
gtagacattg acctccgtga ngg

23

<210> 17
<211> 100
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<213> Artificial Sequence

<220>

<223> SYNTHESIZED; GM AT POSITION 1; UM AT POSITION 97; AND
PHOSPHOROTHIOATE AT POSITIONS 1, 2, 3, 97, 98 AND 99

<400> 17

guagacauug accuccguga guuuuagagc uagaaauagc aaguuaaaau aaggcuaguc 60

cguuaucaac uugaaaaaagu ggcaccgagu cggugcuuuu 100

<210> 18

<211> 100

<212> RNA

<213> Artificial Sequence

<220>

<223> SYNTHESIZED; 2'-O-METHYADENSOSINE AT POSITION 1; UM AT POSITION
97; AND PHOSPHOROTHIOATE AT POSITIONS 1, 2, 3, 97, 98 AND 99

<400> 18

aucacggagg ucaaugucua guuuuagagc uagaaauagc aaguuaaaau aaggcuaguc 60

cguuaucaac uugaaaaaagu ggcaccgagu cggugcuuuu 100

<210> 19

<211> 100

<212> RNA

<213> Artificial Sequence

<220>

<223> SYNTHESIZED

<400> 19

gagaaucaaa aucggugaau guuuuagagc uagaaauagc aaguuaaaau aaggcuaguc 60

cguuaucaac uugaaaaaagu ggcaccgagu cggugcuuuu 100

<210> 20

<211> 100

<212> DNA

<213> Artificial Sequence

<220>

<223> SYNTHESIZED; and phosphorothioate at position 99

<400> 20

caagcagaag acggcatacg agatcgcgat tagtgactgg agttcagacg tgtgctcttc 60

cgatctatac cgttattaac atatgacaac tcaattaaac 100

<210> 21

<211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 21
 caagcagaag acggcatacg agatgtgctg tagtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

 <210> 22
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 22
 caagcagaag acggcatacg agatatgaat gagtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

 <210> 23
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 23
 caagcagaag acggcatacg agatacggta gagtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

 <210> 24
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 24
 caagcagaag acggcatacg agattgcatt cagtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

 <210> 25

<211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 25
 caagcagaag acggcatacg agatgttttg ttgtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

 <210> 26
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 26
 caagcagaag acggcatacg agataagggg ttgtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

 <210> 27
 <211> 100
 <212> DNA
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 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 27
 caagcagaag acggcatacg agatatcaag ttgtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

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 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 28
 caagcagaag acggcatacg agattaagtc ttgtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

 <210> 29

<211> 100
 <212> DNA
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 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 29
 caagcagaag acggcatacg agatactcgc ttgtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

<210> 30
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 <212> DNA
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 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 30
 caagcagaag acggcatacg agattgggtcc ttgtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

<210> 31
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 31
 caagcagaag acggcatacg agattcccta ttgtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

<210> 32
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 32
 caagcagaag acggcatacg agattatgtt gggtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cggtattaac atatgacaac tcaattaaac 100

<210> 33

<211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 33
 caagcagaag acggcatacg agatacgcgt gggtagactgg agttcagacg tgtgctcttc 60
 cgatctatac cgttattaac atatgacaac tcaattaaac 100

 <210> 34
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 34
 caagcagaag acggcatacg agatgtgggtt tcgtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cgttattaac atatgacaac tcaattaaac 100

 <210> 35
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 35
 caagcagaag acggcatacg agattatgcc gagtgactgg agttcagacg tgtgctcttc 60
 cgatctatac cgttattaac atatgacaac tcaattaaac 100

 <210> 36
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 36
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 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 37

<211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 37
 caagcagaag acggcatacg agattgaagc tagtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 38
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 38
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 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 39
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 39
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 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 40
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 40
 caagcagaag acggcatacg agataactct acgtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 41

<211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 41
 caagcagaag acggcatacg agatgtgcgg acgtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 42
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 42
 caagcagaag acggcatacg agattcggag aagtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 43
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 43
 caagcagaag acggcatacg agatcgatgg cagtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 44
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 44
 caagcagaag acggcatacg agatcggttt gtgtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 45

<211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 45
 caagcagaag acggcatacg agatcgccgt atgtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 46
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 46
 caagcagaag acggcatacg agatgttagg atgtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 47
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 47
 caagcagaag acggcatacg agataaagga atgtgactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 48
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 48
 caagcagaag acggcatacg agataagcca tggtagctgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 49

<211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 49
 caagcagaag acggcatacg agatataaaa tggtagactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 50
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 50
 caagcagaag acggcatacg agattgcatg gggtagactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 51
 <211> 100
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 99

 <400> 51
 caagcagaag acggcatacg agattacgta cggtagactgg agttcagacg tgtgctcttc 60
 cgatctgttt aattgagttg tcatatgtta ataacggtat 100

 <210> 52
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> SYNTHESIZED; and phosphorothioate at position 19

 <400> 52
 aatgatacgg cgaccaccga 20

 <210> 53
 <211> 70
 <212> DNA

<213> Artificial Sequence

<220>

<223> SYNTHESIZED; and phosphorothioate at position 69

<400> 53
aatgatacgg cgaccaccga gatctacact tgagctcaca ctctttccct acacgacgct 60
cttccgatct 70

<210> 54
<211> 65
<212> DNA
<213> Artificial Sequence

<220>

<223> SYNTHESIZED

<400> 54
gatcggaaga gcacacgtct gaactccagt cactatagcc tatctcgtat gccgtcttct 60
gcttg 65