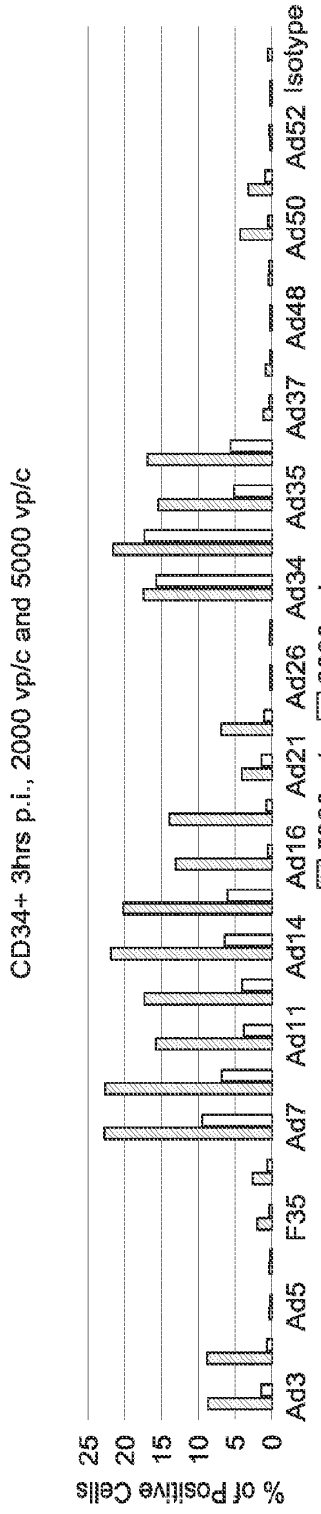

CD34+ 3hrs p.i., 2000 vp/c and 5000 vp/c
% of Positive Cells
0
5
10
15
20
25
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52 Isotype
5000vp/c
2000vp/c

Fig. 1

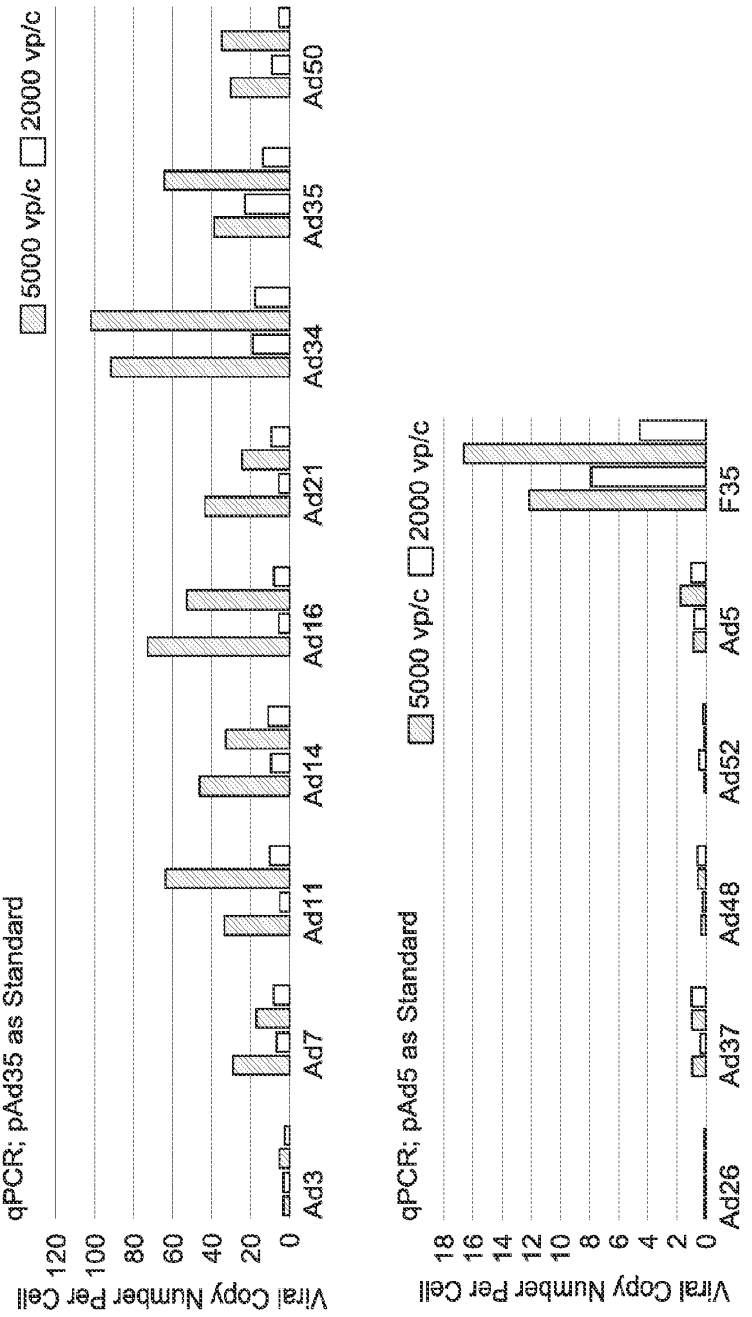

qPCR; pAd35 as Standard
5000 vp/c
2000 vp/c
Viral Copy Number Per Cell
0
20
40
60
80
100
120
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
qPCR; pAd5 as Standard
5000 vp/c
2000 vp/c
Viral Copy Number Per Cell
0
2
4
6
8
10
12
14
16
18
Ad26
Ad37
Ad48
Ad52
Ad5
F35

Fig. 2

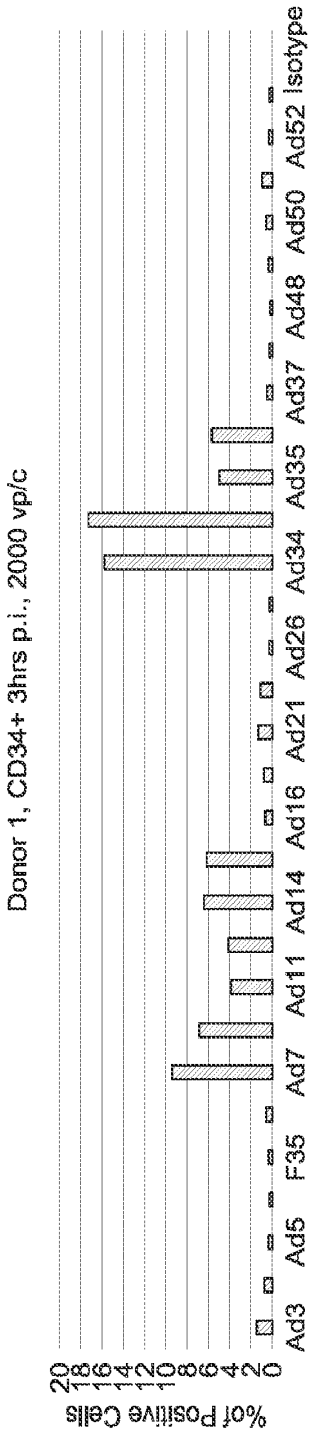

Donor 1, CD34+ 3hrs p.i., 2000 vp/c
%of Positive Cells
0
2
4
6
8
10
12
14
16
18
20
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52 Isotype
2000vp/c

Fig. 3

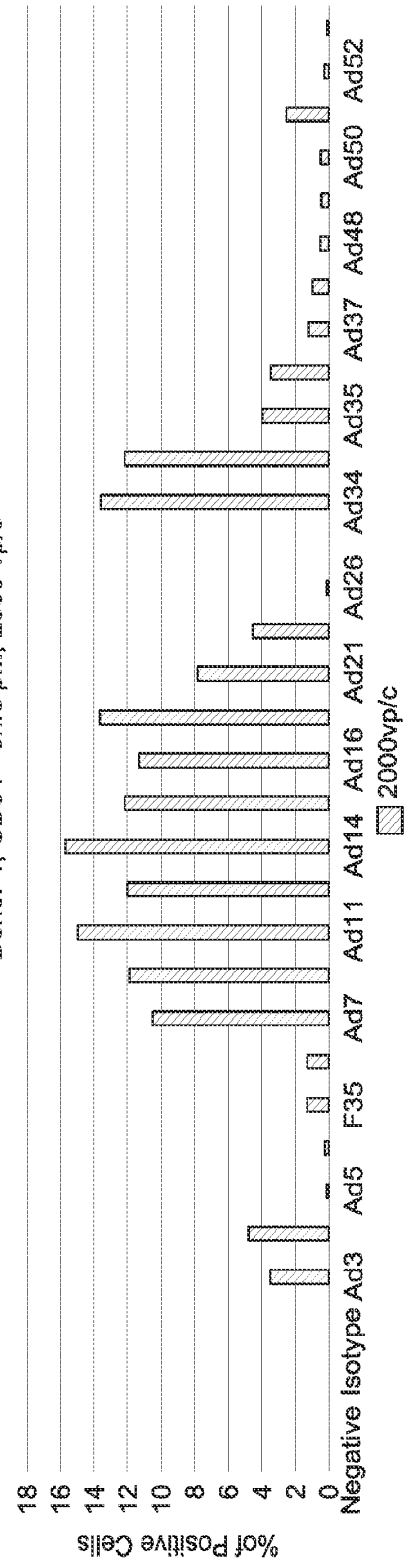

Donor 1, CD34+ 6hrs p.i., 2000 vp/c
%of Positive Cells
0
2
4
6
8
10
12
14
16
18
Negative Isotype
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52
2000vp/c

Fig. 4

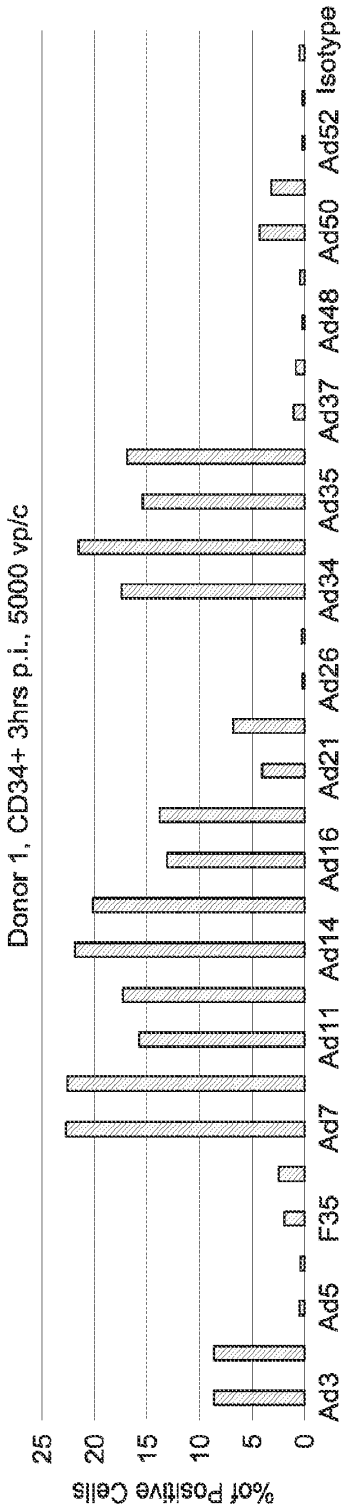

Donor 1, CD34+ 3hrs p.i., 5000 vp/c
%of Positive Cells
25
20
15
10
5
0
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52
Isotype

Fig. 5

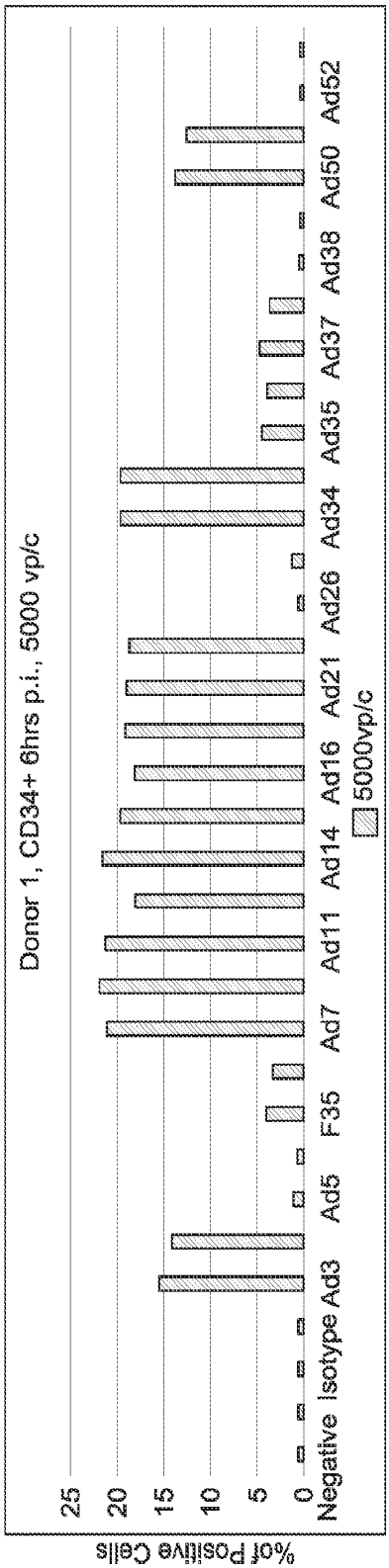

Donor 1, CD34+ 6hrs p.i., 5000 vp/c
%of Positive Cells
25
20
15
10
5
0
Negative
Isotype
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad38
Ad50
Ad52
5000vp/c

Fig. 6

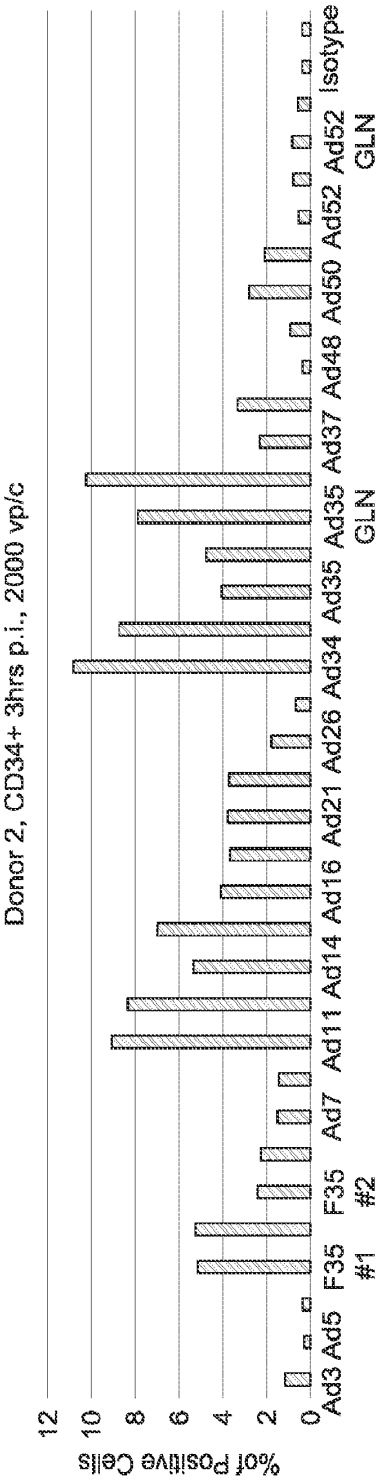

Donor 2, CD34+ 3hrs p.i., 2000 vp/c
%of Positive Cells
0
2
4
6
8
10
12
Ad3
Ad5
F35 #1
F35 #2
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad35 GLN
Ad37
Ad48
Ad50
Ad52
Ad52 GLN
Isotype

Fig. 7

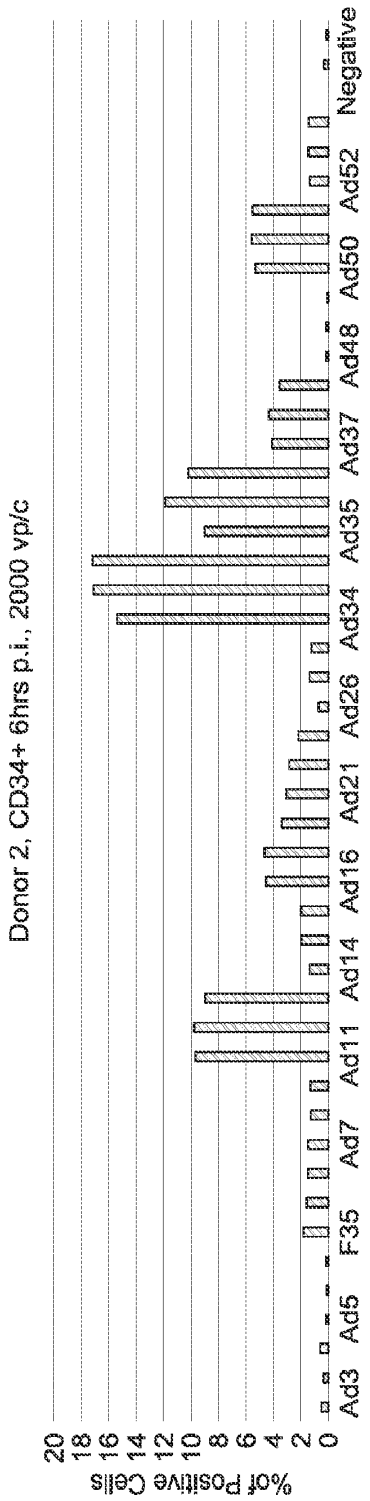

Donor 2, CD34+ 6hrs p.i., 2000 vp/c
%of Positive Cells
0
2
4
6
8
10
12
14
16
18
20
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52
Negative

Fig. 8

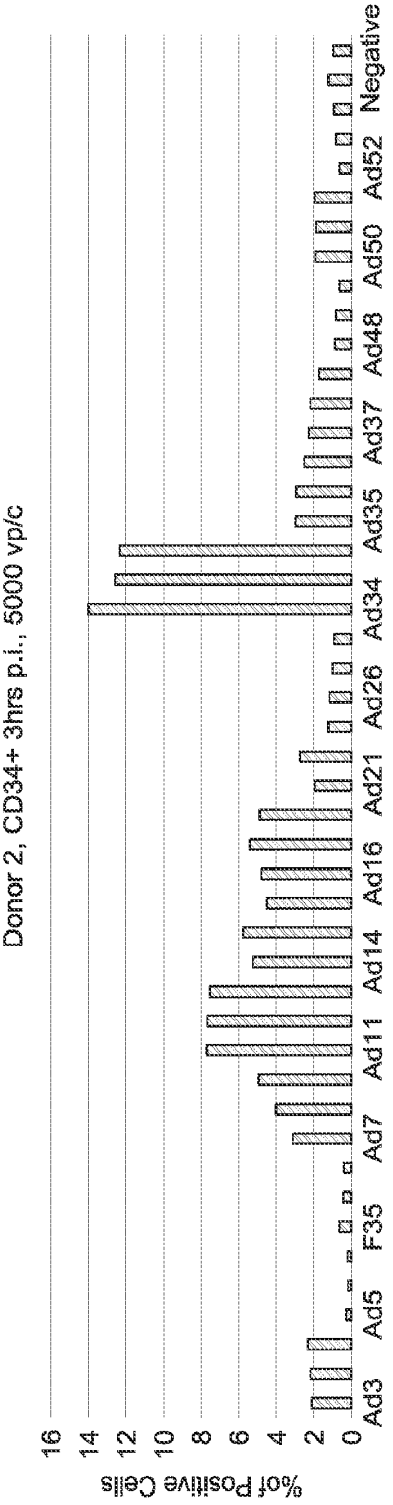

Donor 2, CD34+ 3hrs p.i., 5000 vp/c
%of Positive Cells
0
2
4
6
8
10
12
14
16
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52
Negative

Fig. 9

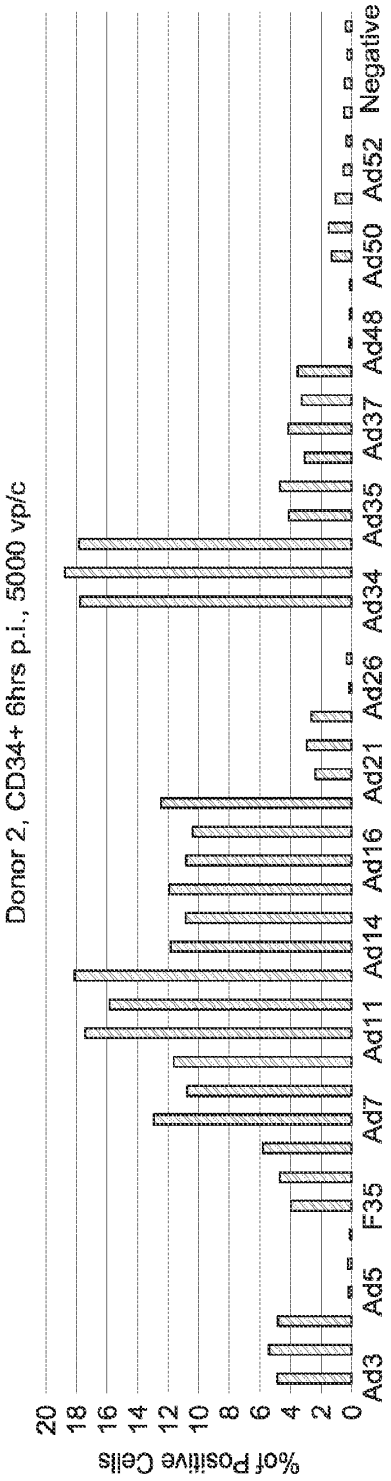

Donor 2, CD34+ 6hrs p.i., 5000 vp/c
%of Positive Cells
0
2
4
6
8
10
12
14
16
18
20
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52
Negative

Fig. 10

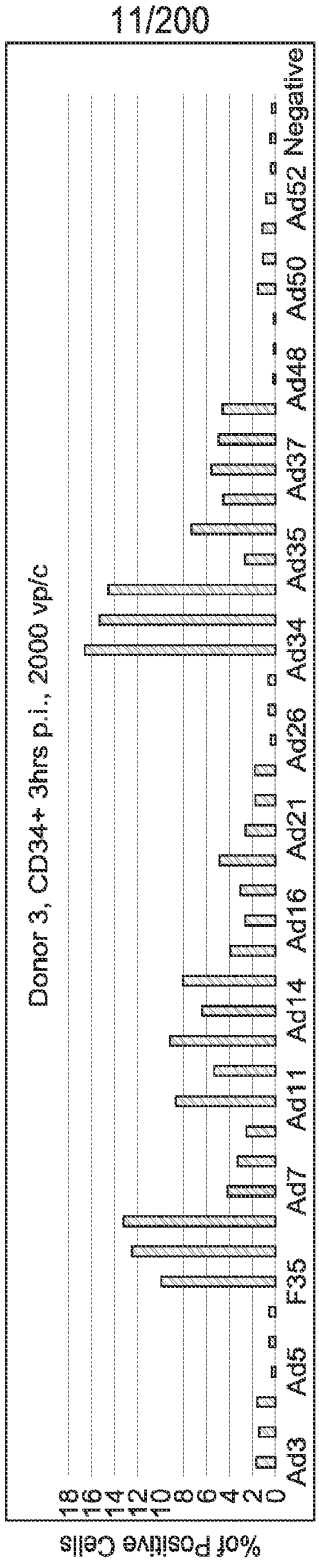

Donor 3, CD34+ 3hrs p.i., 2000 vp/c
%0f Positive Cells
0
2
4
6
8
10
12
14
16
18
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52
Negative

Fig. 11

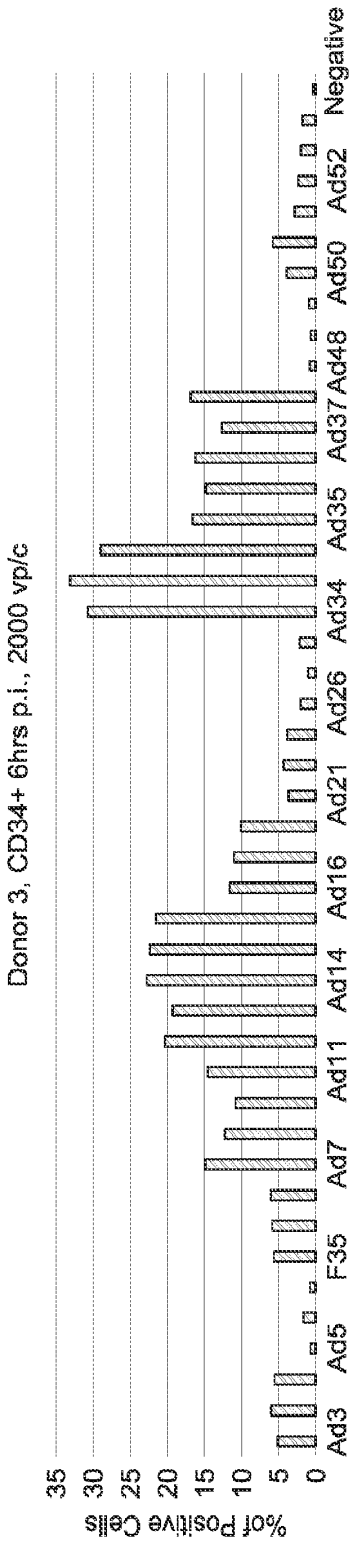

Donor 3, CD34+ 6hrs p.i., 2000 vp/c
%of Positive Cells
0
5
10
15
20
25
30
35
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52
Negative

Fig. 12

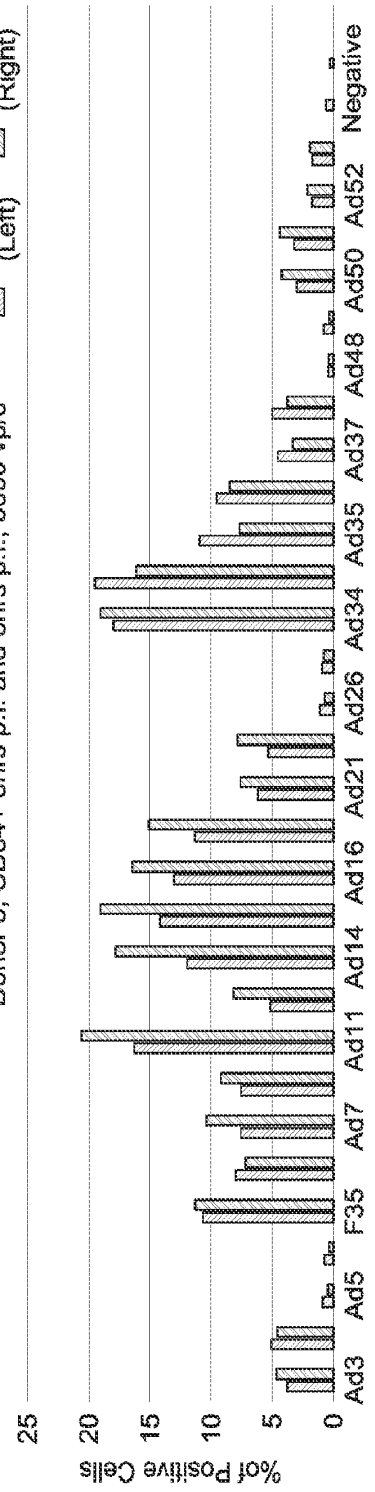

Donor 3, CD34+ 3hrs p.i. and 6hrs p.i., 5000 vp/c
3hrs p.i. (Left)
6hrs p.i. (Right)
%of Positive Cells
25
20
15
10
5
0
Ad3
Ad5
F35
Ad7
Ad11
Ad14
Ad16
Ad21
Ad26
Ad34
Ad35
Ad37
Ad48
Ad50
Ad52
Negative

Fig. 13

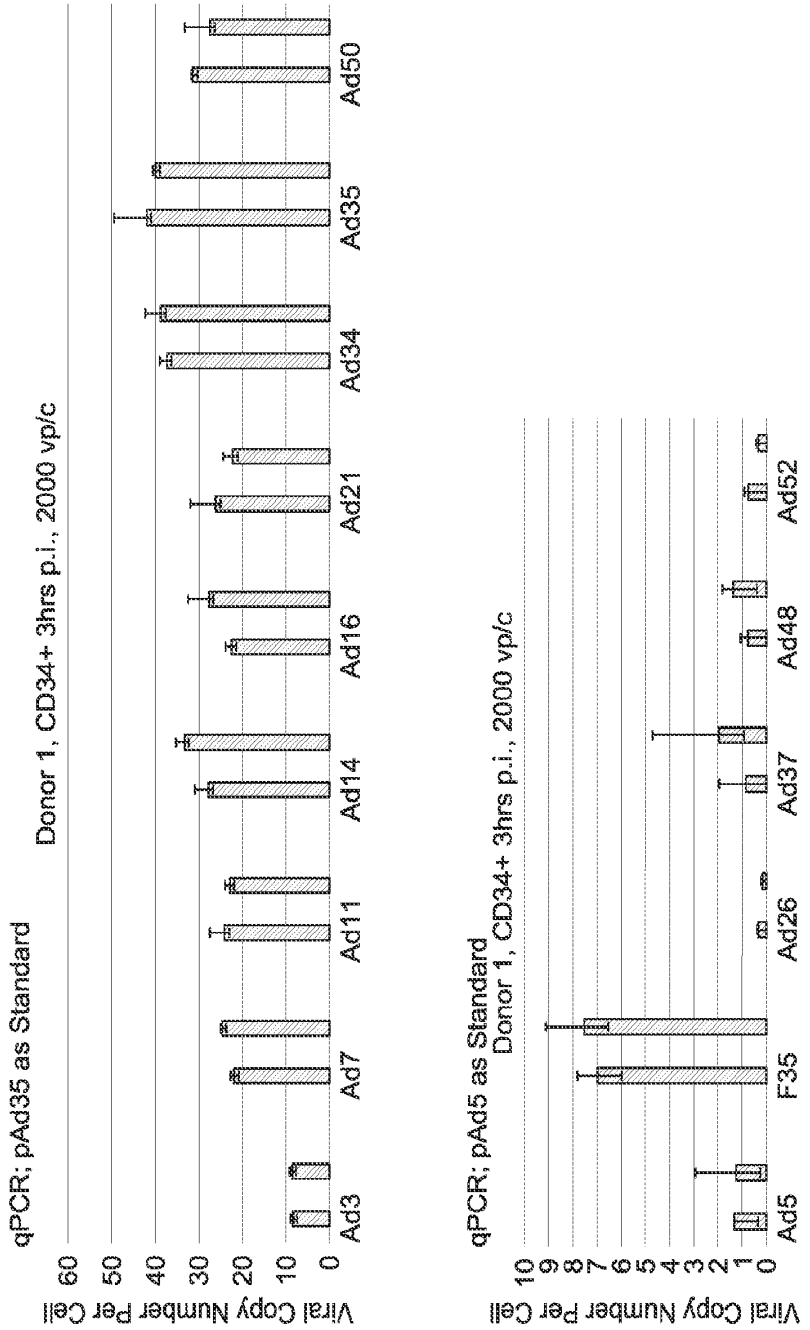

qPCR; pAd35 as Standard
Donor 1, CD34+ 3hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
10
20
30
40
50
60
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
qPCR; pAd5 as Standard
Donor 1, CD34+ 3hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
1
2
3
4
5
6
7
8
9
10
Ad5
F35
Ad26
Ad37
Ad48
Ad52

Fig. 14

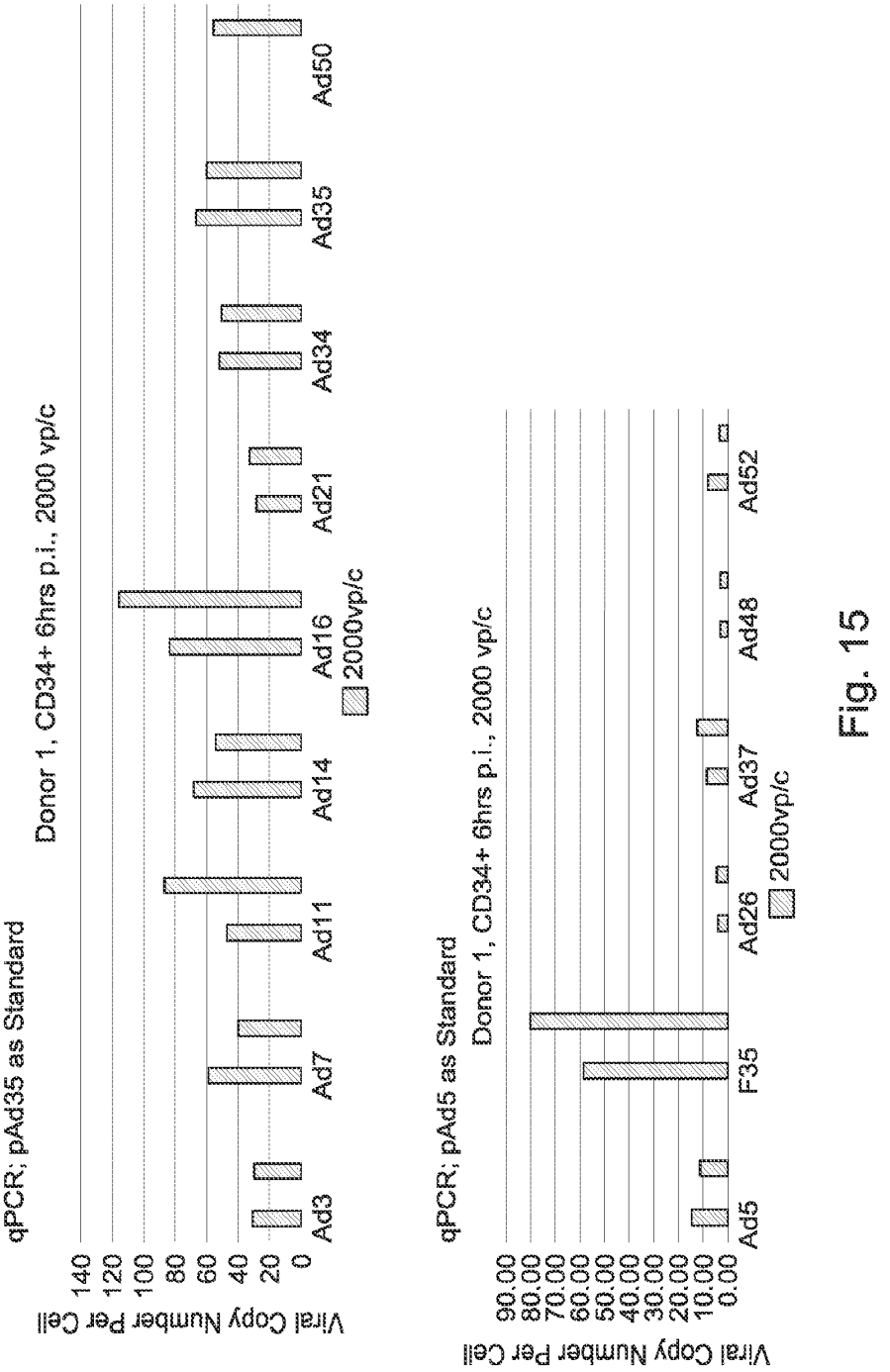

qPCR; pAd35 as Standard
Donor 1, CD34+ 6hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
140
120
100
80
60
40
20
0
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
2000vp/c
qPCR; pAd5 as Standard
Donor 1, CD34+ 6hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Ad5
F35
Ad26
Ad37
Ad48
Ad52
2000vp/c

Fig. 15

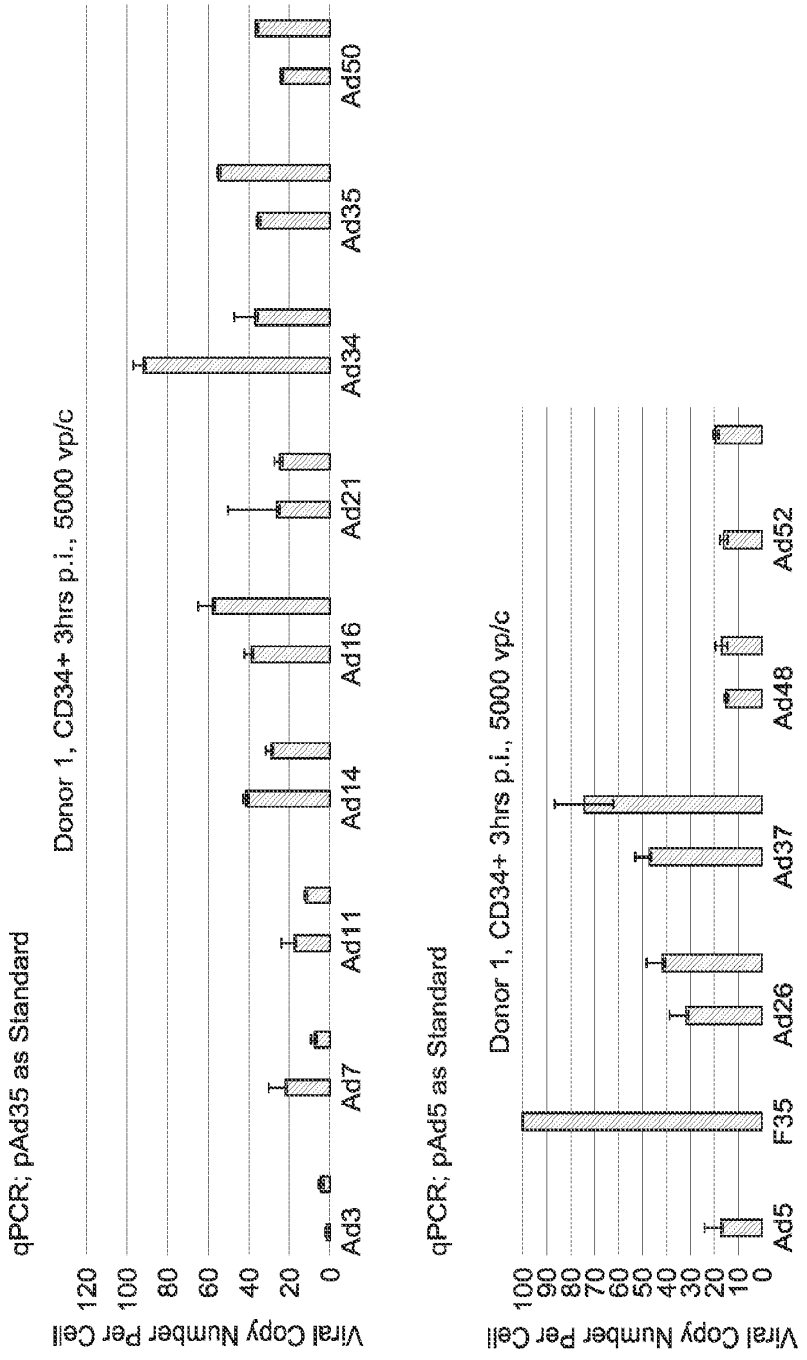
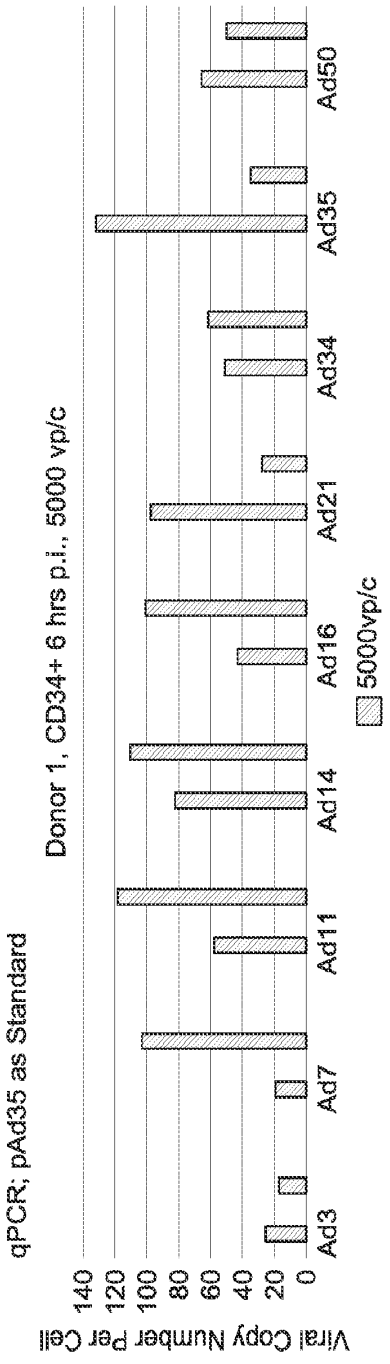

qPCR; pAd35 as Standard
Donor 1, CD34+ 3hrs p.i., 5000 vp/c
Viral Copy Number Per Cell
0
20
40
60
80
100
120
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
qPCR; pAd5 as Standard
Donor 1, CD34+ 3hrs p.i., 5000 vp/c
Viral Copy Number Per Cell
0
10
20
30
40
50
60
70
80
90
100
Ad5
F35
Ad26
Ad37
Ad48
Ad52

Fig. 16


qPCR; pAd35 as Standard
Donor 1, CD34+ 6 hrs p.i., 5000 vp/c
Viral Copy Number Per Cell
0
20
40
60
80
100
120
140
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
5000vp/c

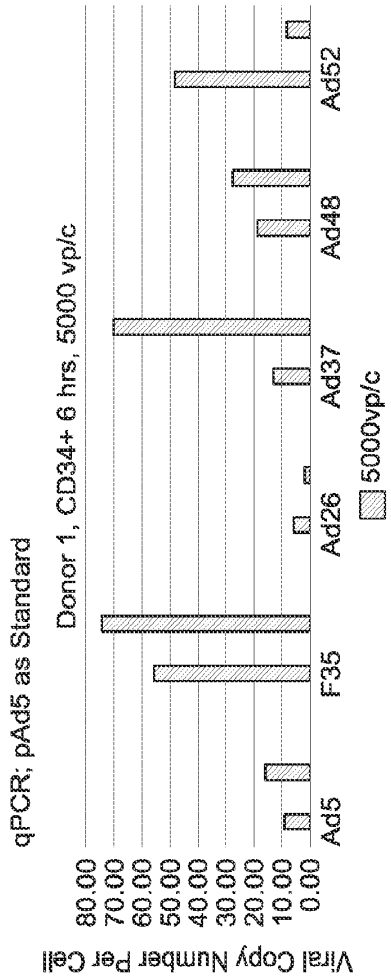

qPCR; pAd5 as Standard
Donor 1, CD34+ 6 hrs, 5000 vp/c
Viral Copy Number Per Cell
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
Ad5
F35
Ad26
Ad37
Ad48
Ad52
5000vp/c

Fig. 17

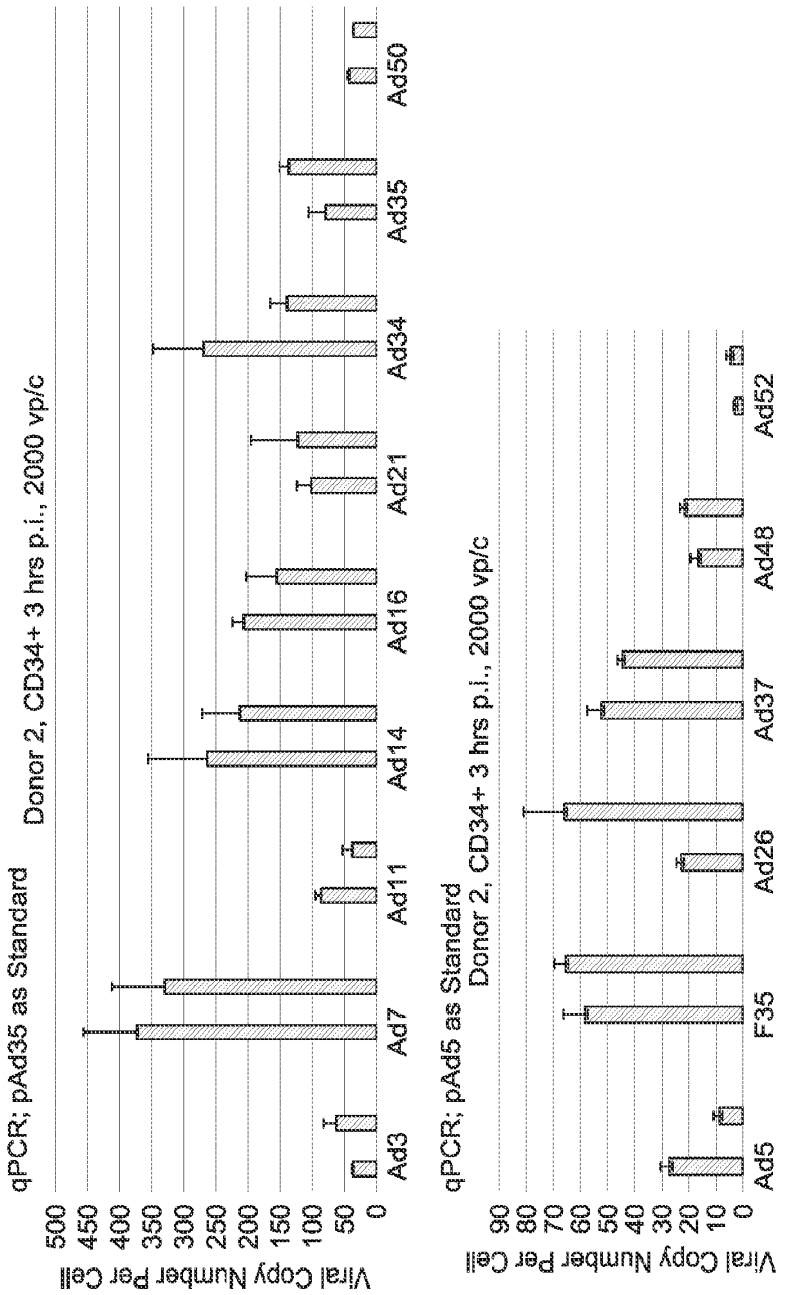

qPCR; pAd35 as Standard
Donor 2, CD34+ 3 hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
50
100
150
200
250
300
350
400
450
500
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
qPCR; pAd5 as Standard
Donor 2, CD34+ 3 hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
10
20
30
40
50
60
70
80
90
Ad5
F35
Ad26
Ad37
Ad48
Ad52

Fig. 18

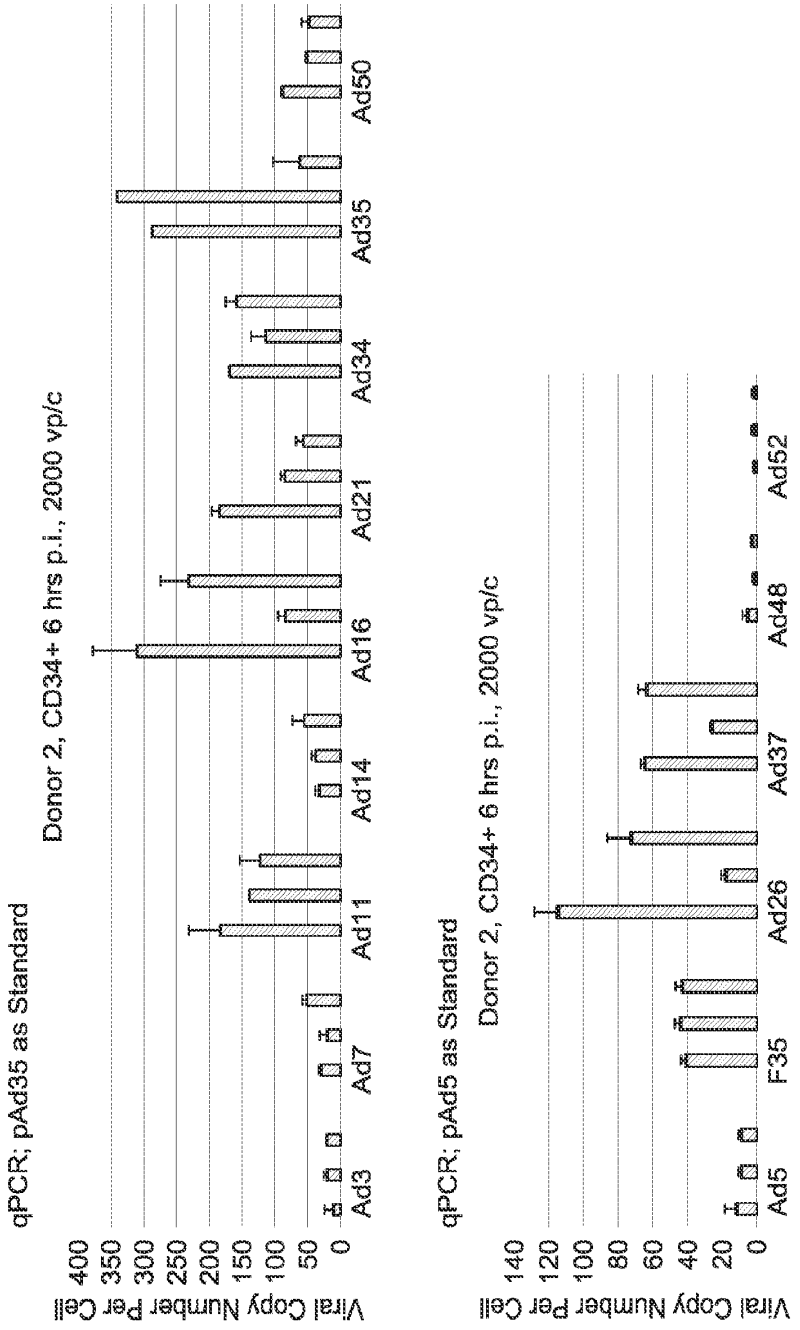

qPCR; pAd35 as Standard
Donor 2, CD34+ 6 hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
50
100
150
200
250
300
350
400
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
qPCR; pAd5 as Standard
Donor 2, CD34+ 6 hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
20
40
60
80
100
120
140
Ad5
F35
Ad26
Ad37
Ad48
Ad52

Fig. 19

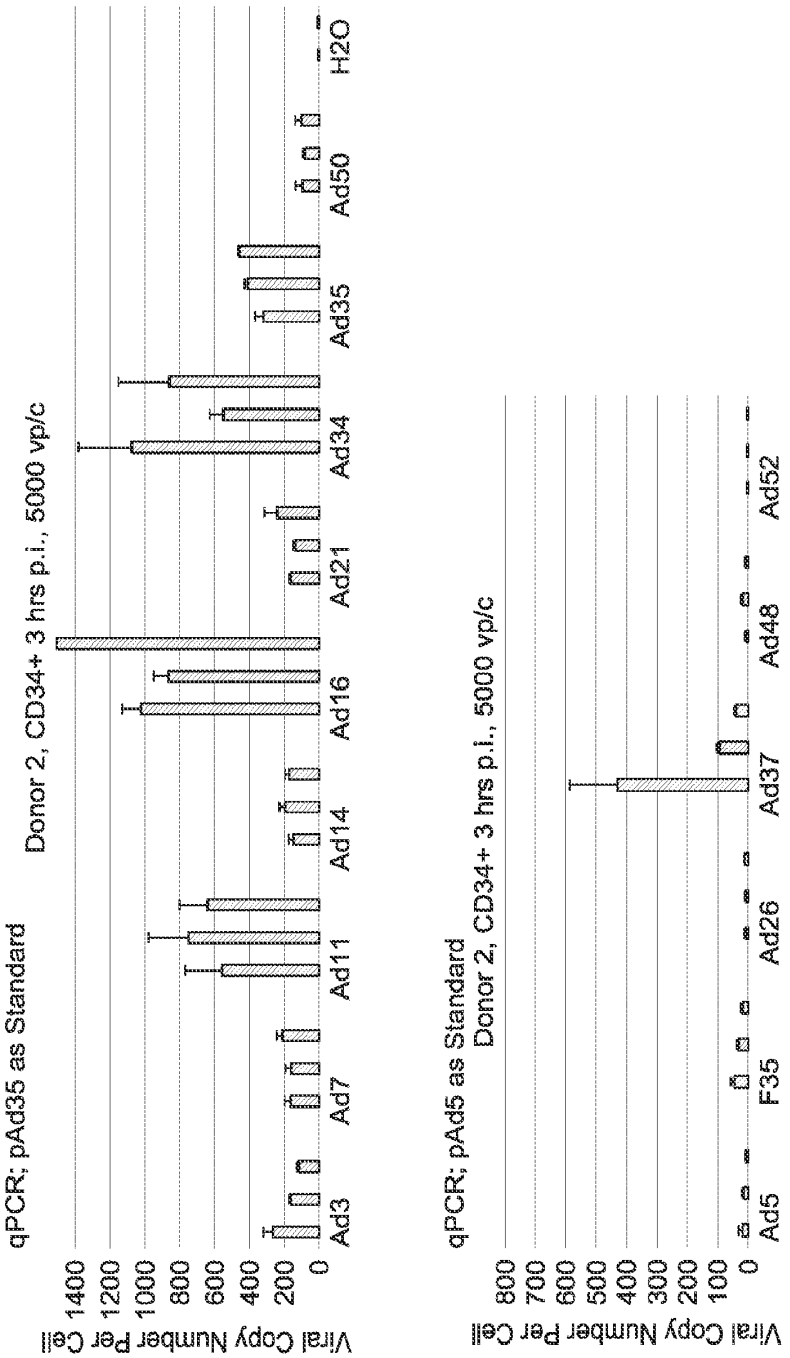

qPCR; pAd35 as Standard
Donor 2, CD34+ 3 hrs p.i., 5000 vp/c
Viral Copy Number Per Cell
0
200
400
600
800
1000
1200
1400
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
H2O
qPCR; pAd5 as Standard
Donor 2, CD34+ 3 hrs p.i., 5000 vp/c
Viral Copy Number Per Cell
0
100
200
300
400
500
600
700
800
Ad5
F35
Ad26
Ad37
Ad48
Ad52

Fig. 20

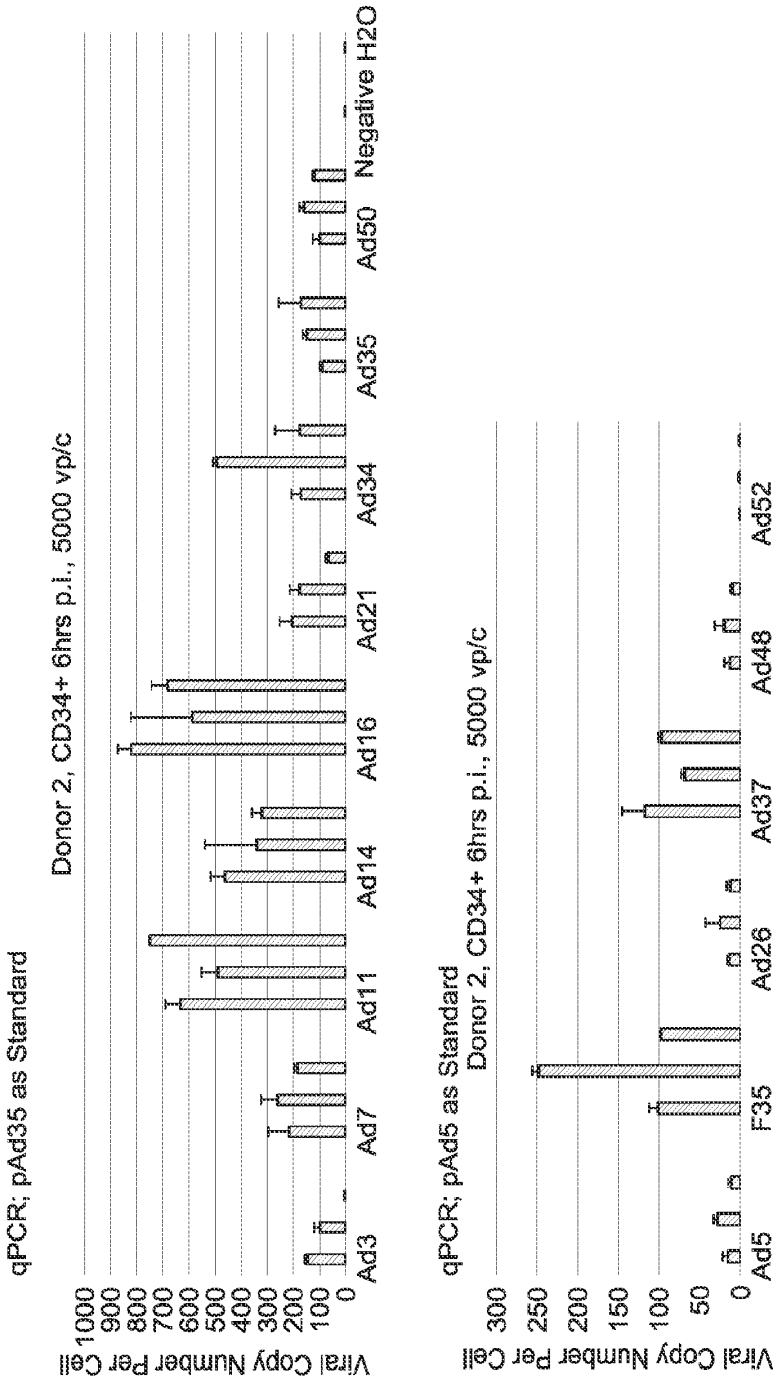

qPCR; pAd35 as Standard
Donor 2, CD34+ 6hrs p.i., 5000 vp/c
Viral Copy Number Per Cell
0
100
200
300
400
500
600
700
800
900
1000
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
Negative H2O
qPCR; pAd5 as Standard
Donor 2, CD34+ 6hrs p.i., 5000 vp/c
Viral Copy Number Per Cell
0
50
100
150
200
250
300
Ad5
F35
Ad26
Ad37
Ad48
Ad52

Fig. 21

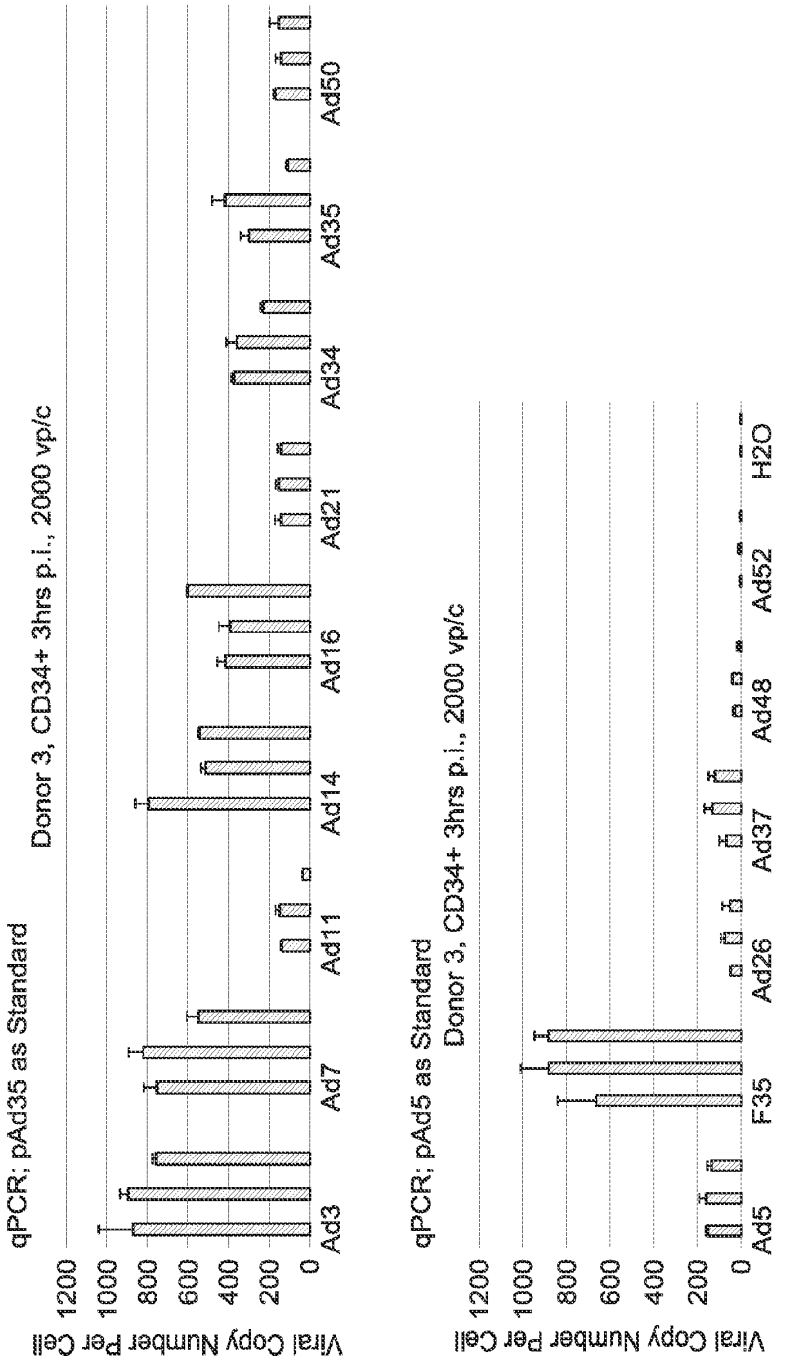

qPCR; pAd35 as Standard
Donor 3, CD34+ 3hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
200
400
600
800
1000
1200
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
qPCR; pAd5 as Standard
Donor 3, CD34+ 3hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
200
400
600
800
1000
1200
Ad5
F35
Ad26
Ad37
Ad48
Ad52
H2O

Fig. 22

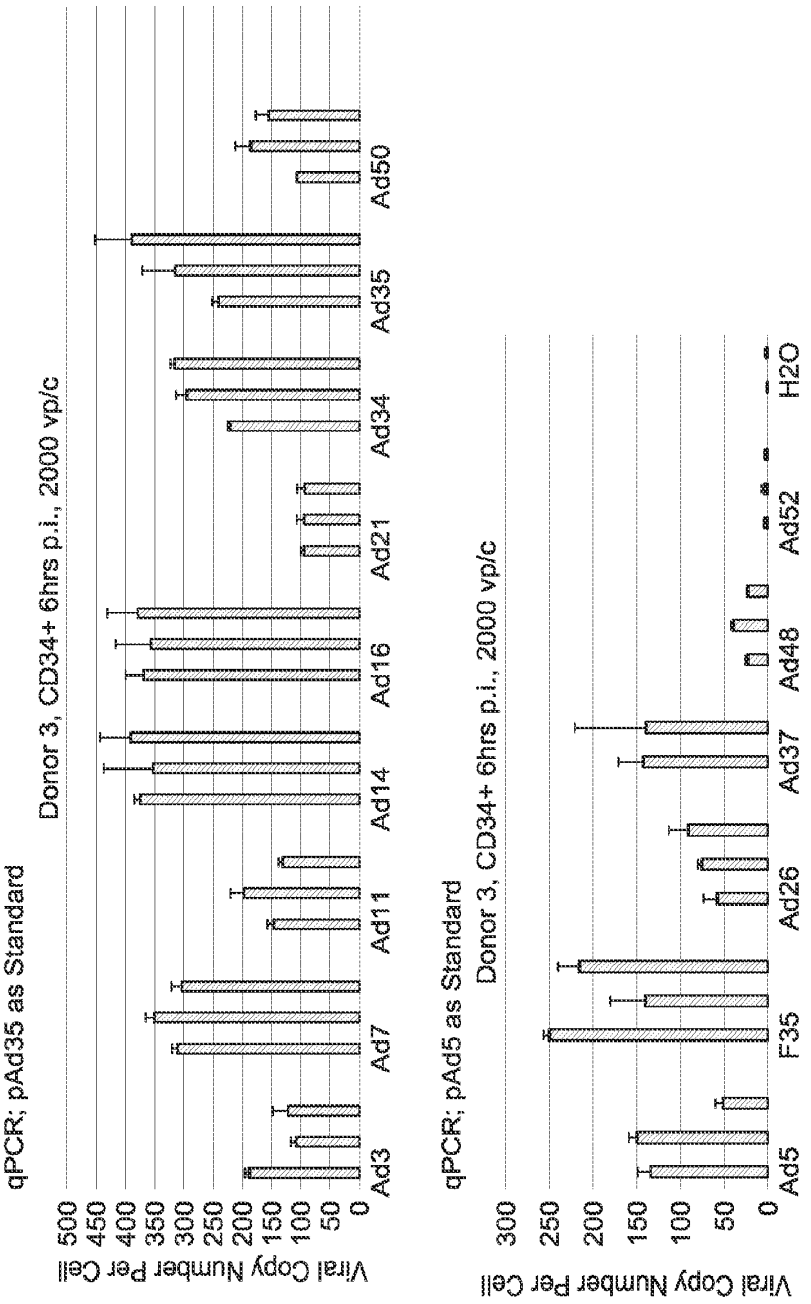

qPCR; pAd35 as Standard
Donor 3, CD34+ 6hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
50
100
150
200
250
300
350
400
450
500
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
qPCR; pAd5 as Standard
Donor 3, CD34+ 6hrs p.i., 2000 vp/c
Viral Copy Number Per Cell
0
50
100
150
200
250
300
Ad5
F35
Ad26
Ad37
Ad48
Ad52
H2O

Fig. 23

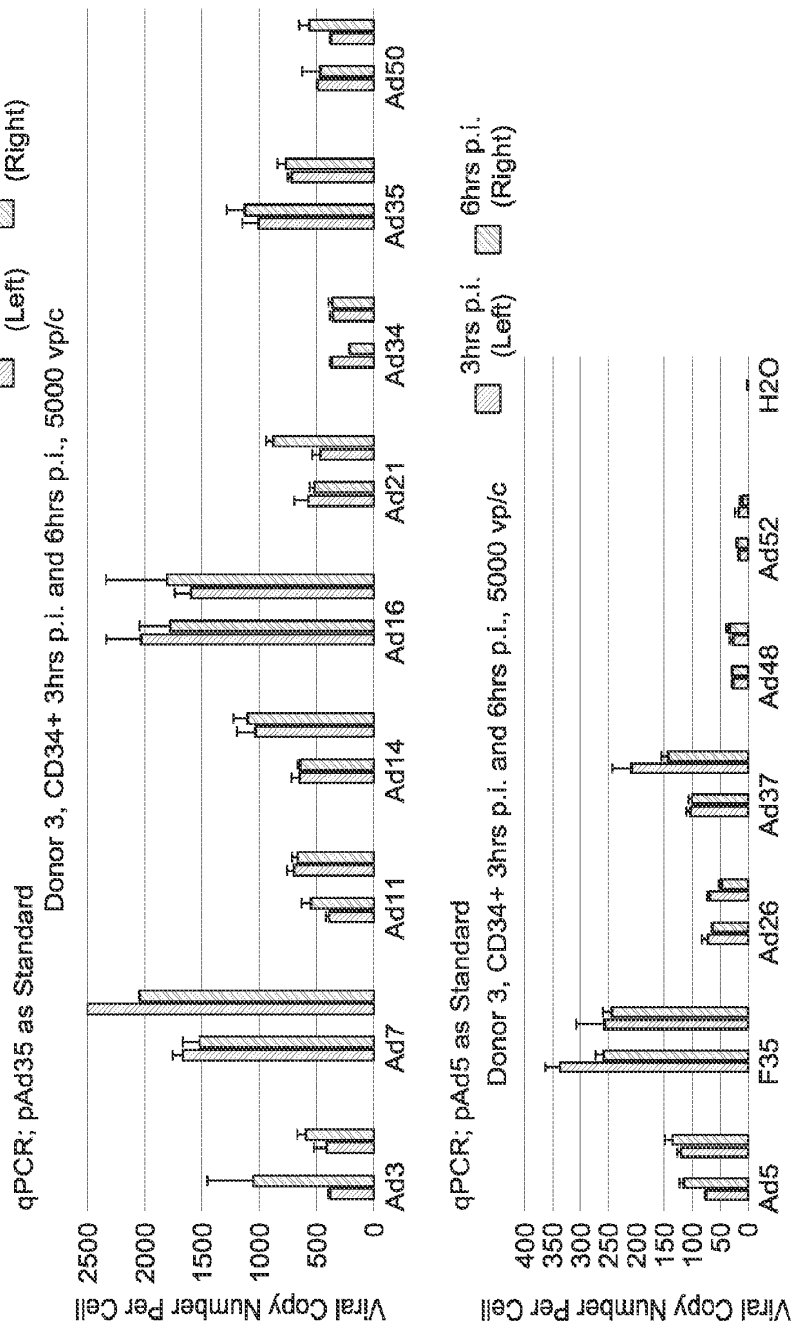

qPCR; pAd35 as Standard
Donor 3, CD34+ 3hrs p.i. and 6hrs p.i., 5000 vp/c
3hrs p.i. (Left)
6hrs p.i. (Right)
Viral Copy Number Per Cell
0
500
1000
1500
2000
2500
Ad3
Ad7
Ad11
Ad14
Ad16
Ad21
Ad34
Ad35
Ad50
qPCR; pAd5 as Standard
Donor 3, CD34+ 3hrs p.i. and 6hrs p.i., 5000 vp/c
3hrs p.i. (Left)
6hrs p.i. (Right)
Viral Copy Number Per Cell
0
50
100
150
200
250
300
350
400
Ad5
F35
Ad26
Ad37
Ad48
Ad52
H2O

Fig. 24

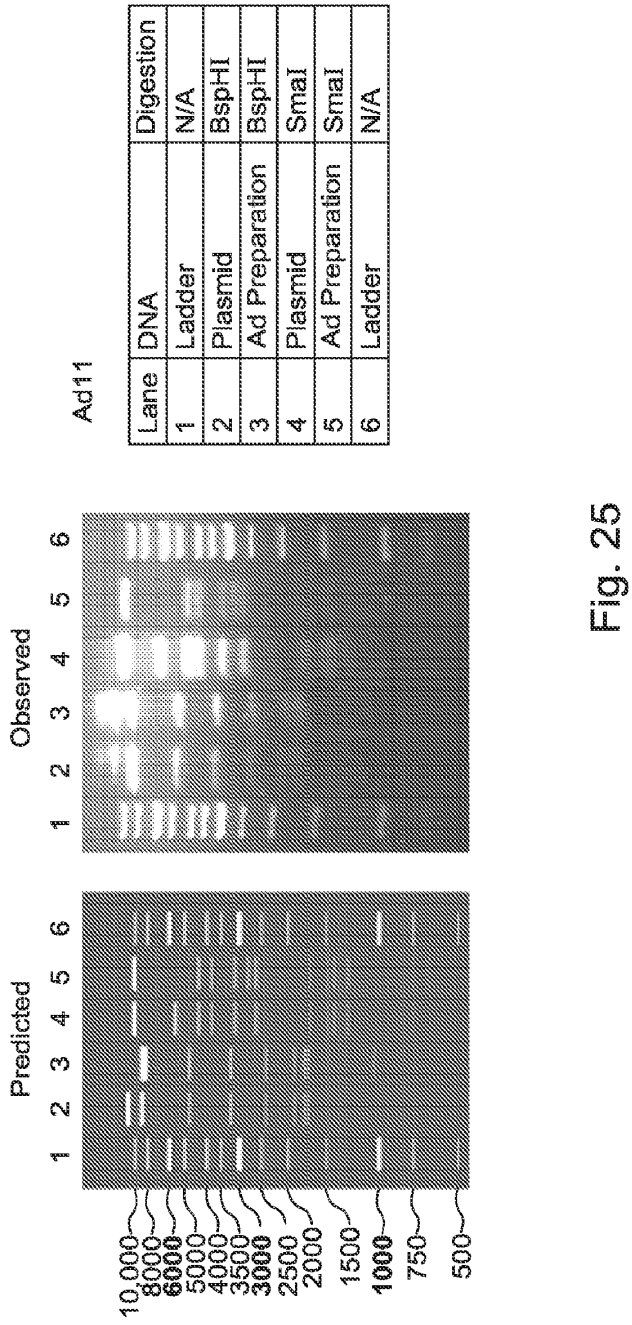

Ad11
Lane DNA Digestion
1 Ladder N/A
2 Plasmid BspHI
3 Ad Preparation BspHI
4 Plasmid SmaI
5 Ad Preparation SmaI
6 Ladder N/A
Observed
1 2 3 4 5 6
Predicted
1 2 3 4 5 6
10,000
8000
6000
5000
4000
3500
3000
2500
2000
1500
1000
750
500

Fig. 25

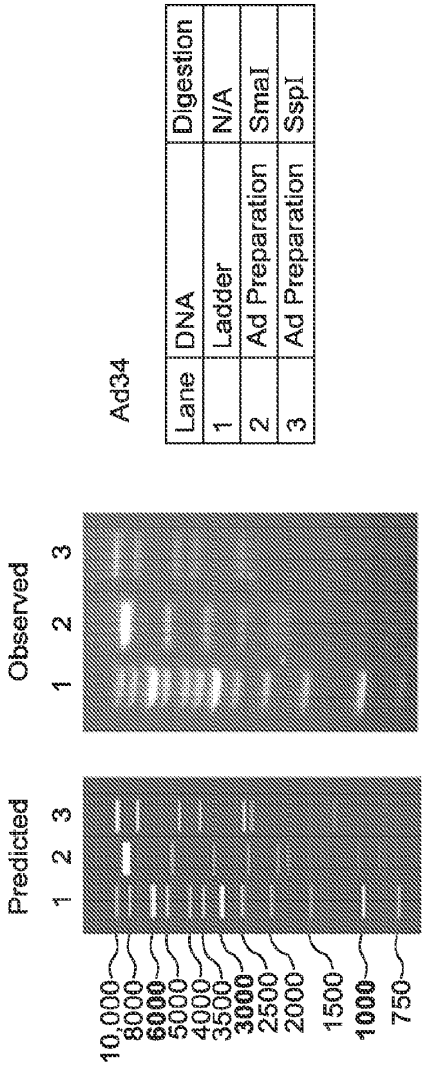

Ad34
Lane | DNA | Digestion
1 | Ladder | N/A
2 | Ad Preparation | SmaI
3 | Ad Preparation | SspI
Observed
1 2 3
Predicted
1 2 3
10,000
8000
6000
5000
4000
3500
3000
2500
2000
1500
1000
750

Fig. 26

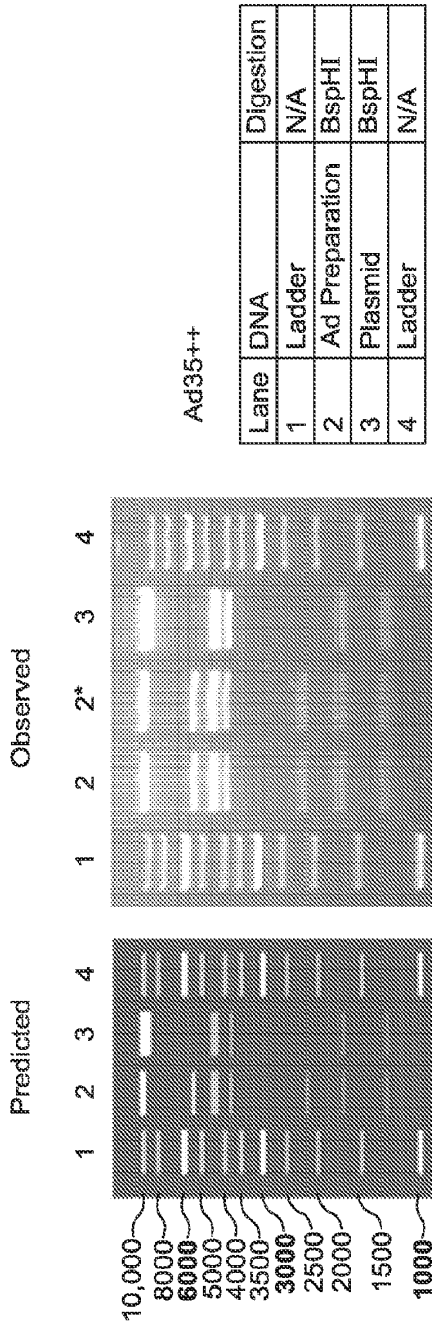

Ad35++
Lane | DNA | Digestion
1 | Ladder | N/A
2 | Ad Preparation | BspHI
3 | Plasmid | BspHI
4 | Ladder | N/A
Observed
1 2 2* 3 4
Predicted
1 2 3 4
10,000
8000
6000
5000
4000
3500
3000
2500
2000
1500
1000
750
500
250

Fig. 27

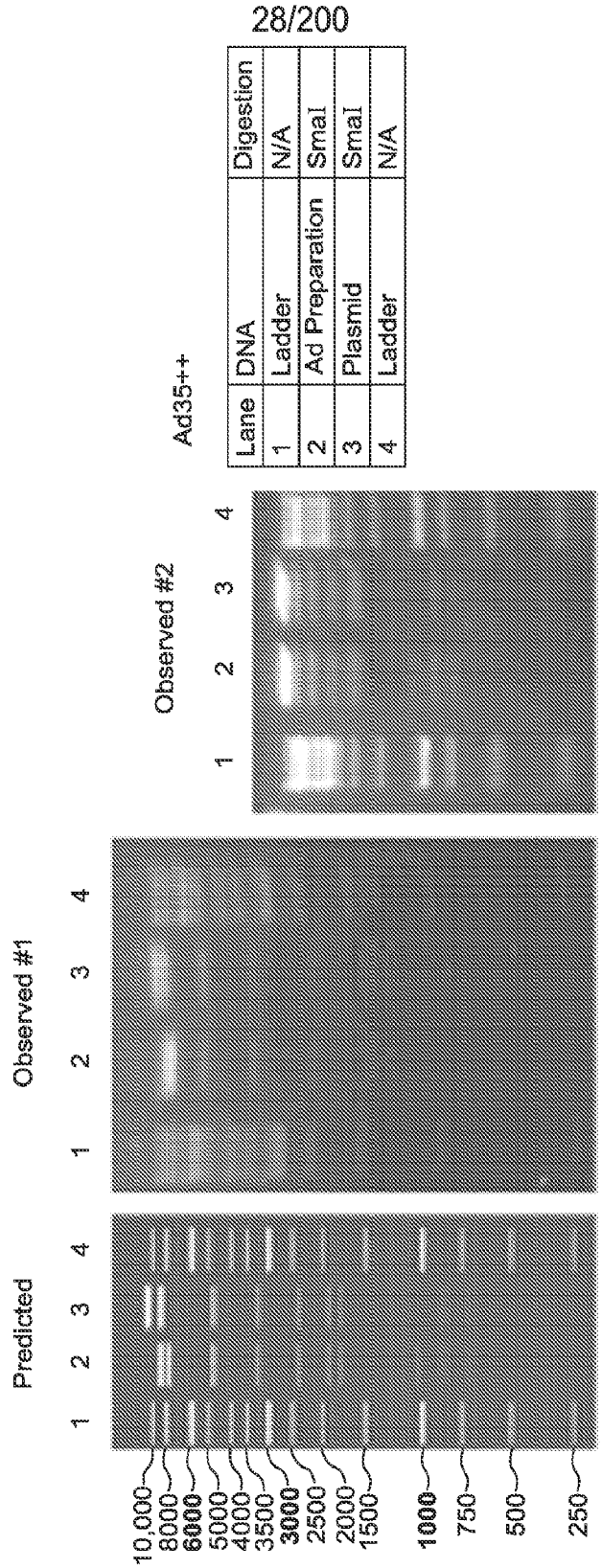

Ad35++
Lane | DNA | Digestion
1 | Ladder | N/A
2 | Ad Preparation | SmaI
3 | Plasmid | SmaI
4 | Ladder | N/A
Observed #2
1 2 3 4
Observed #1
1 2 3 4
Predicted
1 2 3 4
10,000
8000
6000
5000
4000
3500
3000
2500
2000
1500
1000
750
500
250

Fig. 28

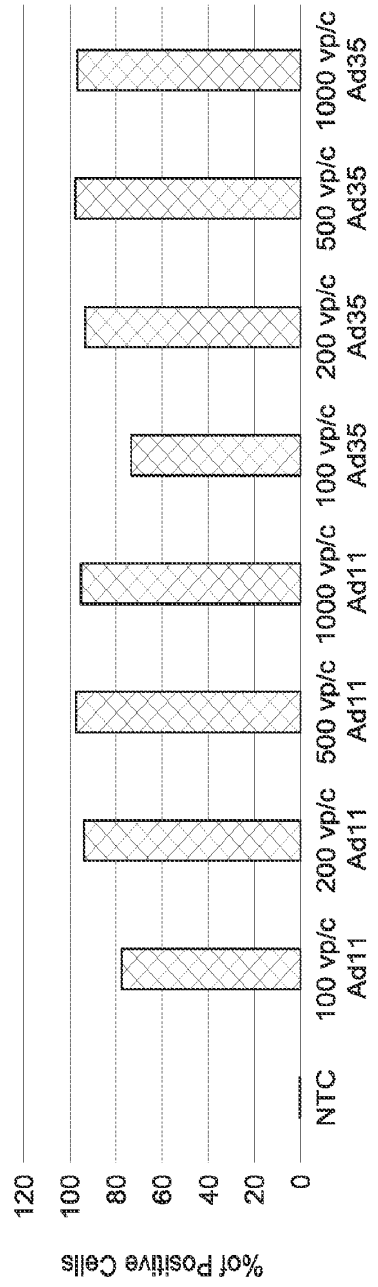

HEK293, 25 hrs p.i.
%of Positive Cells
120
100
80
60
40
20
0
NTC
100 vp/c Ad11
200 vp/c Ad11
500 vp/c Ad11
1000 vp/c Ad11
100 vp/c Ad35
200 vp/c Ad35
500 vp/c Ad35
1000 vp/c Ad35

Fig. 29

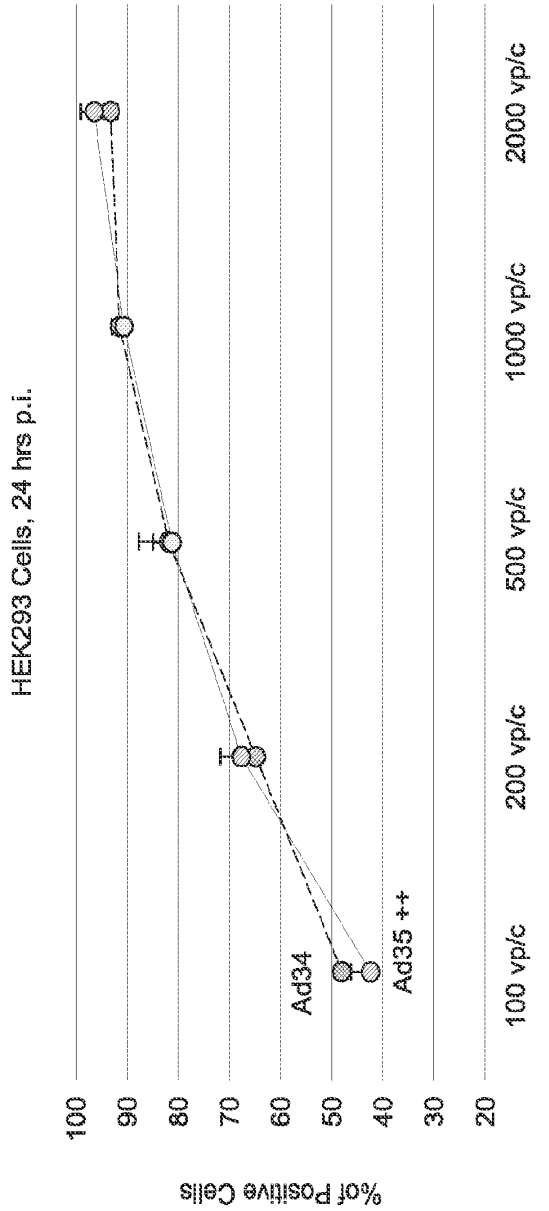

HEK293 Cells, 24 hrs p.i.
%of Positive Cells
100
90
80
70
60
50
40
30
20
Ad34
Ad35 ++
100 vp/c
200 vp/c
500 vp/c
1000 vp/c
2000 vp/c
Ad34
Ad35 ++

Fig. 30

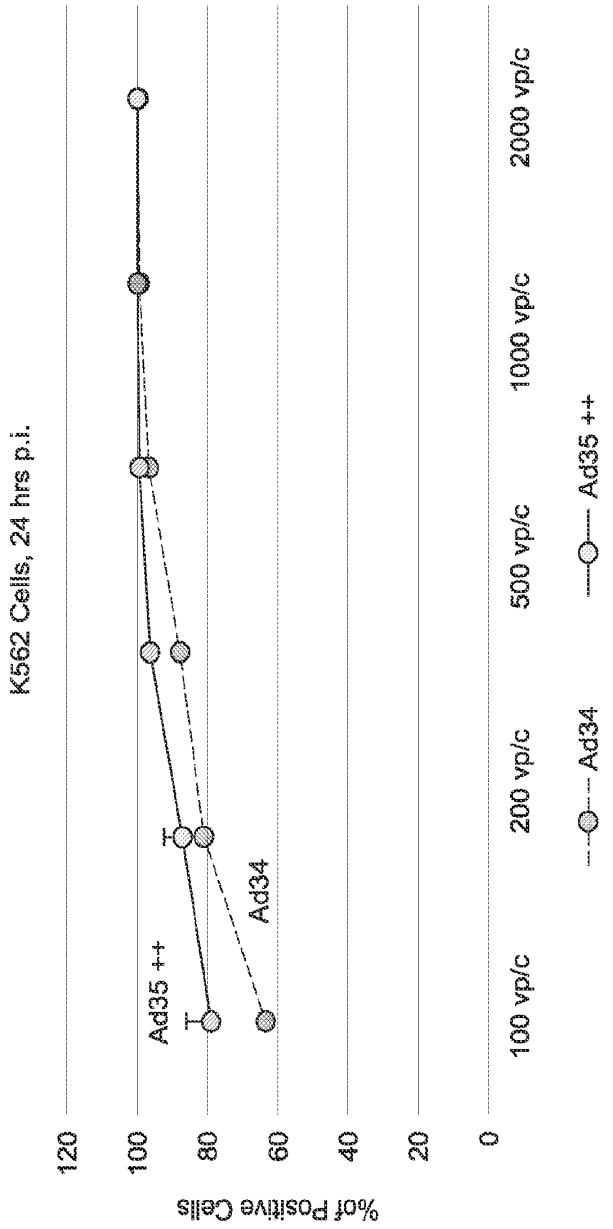

K562 Cells, 24 hrs p.i.
%of Positive Cells
120
100
80
60
40
20
0
100 vp/c
200 vp/c
500 vp/c
1000 vp/c
2000 vp/c
Ad35 ++
Ad34
Ad34
Ad35 ++

Fig. 31

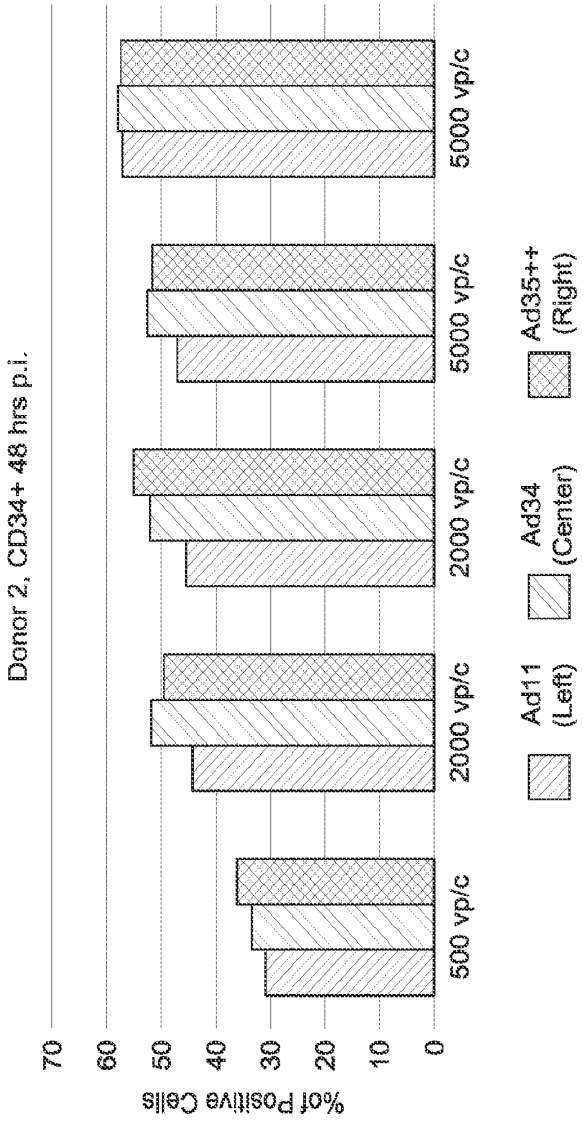

Donor 2, CD34+ 48 hrs p.i.
%of Positive Cells
70
60
50
40
30
20
10
0
500 vp/c
2000 vp/c
2000 vp/c
5000 vp/c
5000 vp/c
Ad11 (Left)
Ad34 (Center)
Ad35++ (Right)

Fig. 32

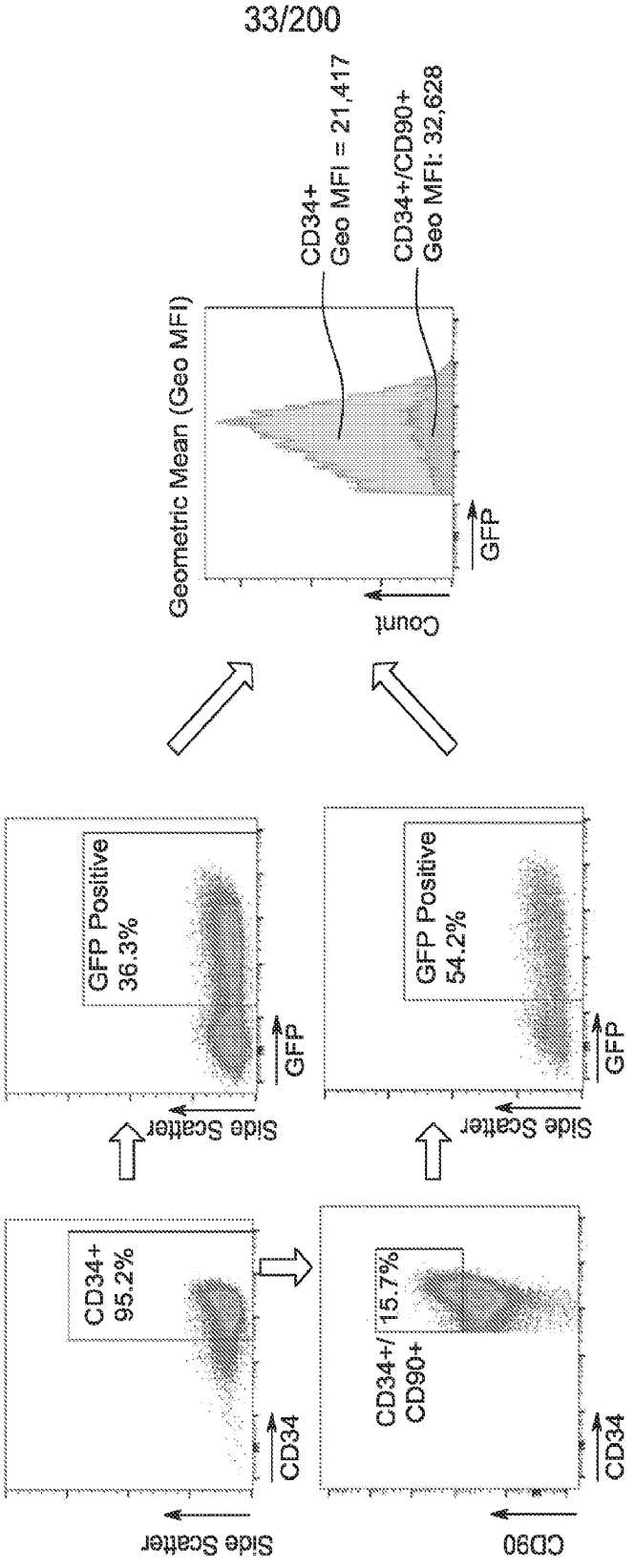

Side Scatter
CD34
CD34+
95.2%
CD90
CD34
CD34+/
CD90+
15.7%
Side Scatter
GFP
GFP Positive
36.3%
Side Scatter
GFP
GFP Positive
54.2%
Count
GFP
Geometric Mean (Geo MFI)
CD34+
Geo MFI = 21,417
CD34+/CD90+
Geo MFI: 32,628

FIG. 33

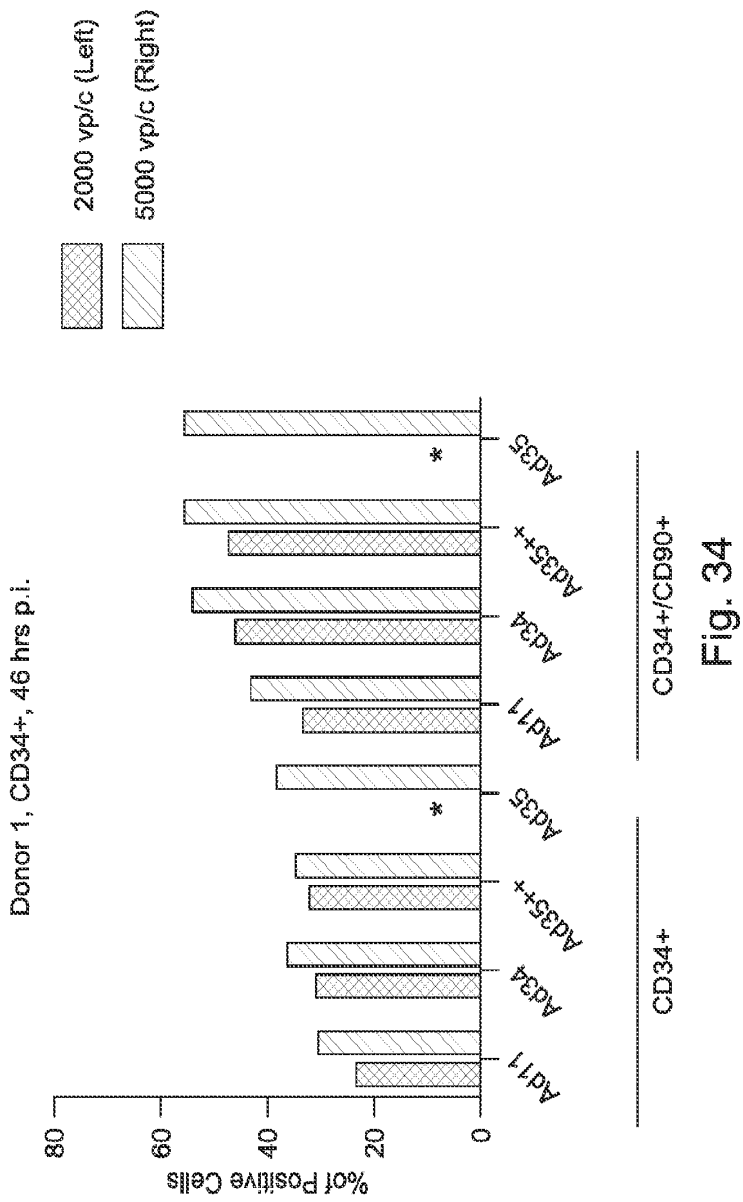

2000 vp/c (Left)
5000 vp/c (Right)
Donor 1, CD34+, 46 hrs p.i.
%of Positive Cells
0
20
40
60
80
Ad11
Ad34
Ad35++
Ad35
Ad11
Ad34
Ad35++
Ad35
CD34+
CD34+/CD90+

Fig. 34

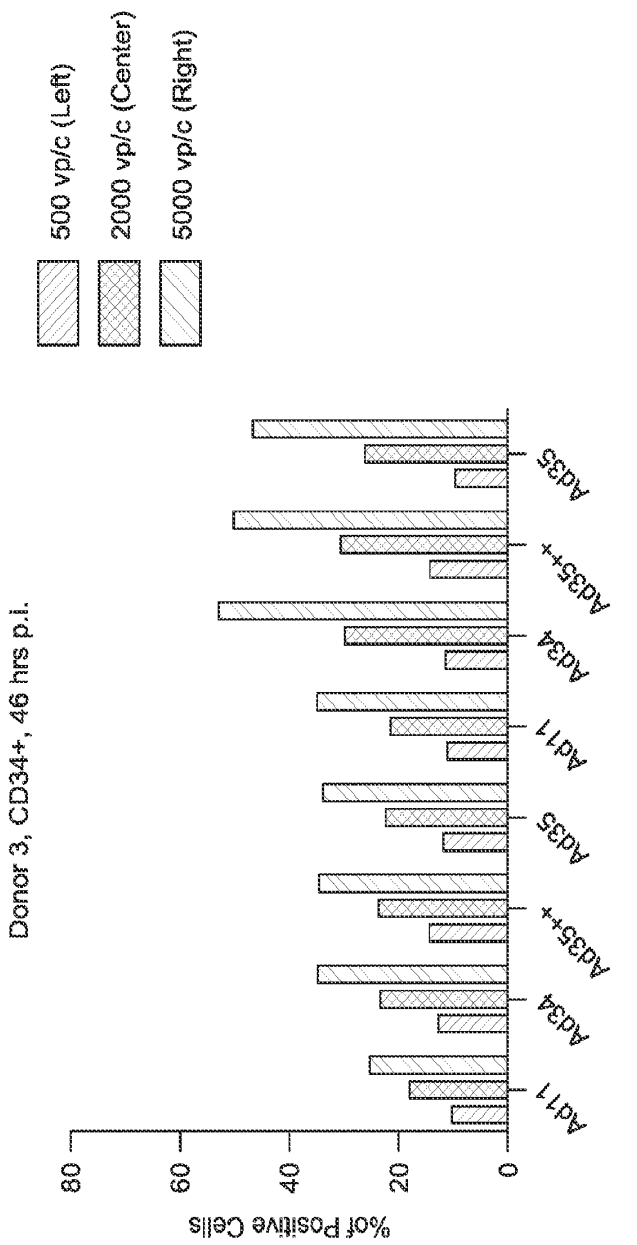

500 vp/c (Left)
2000 vp/c (Center)
5000 vp/c (Right)
Donor 3, CD34+, 46 hrs p.i.
%of Positive Cells
0
20
40
60
80
Ad11
Ad24
Ad35++
Ad35
Ad11
Ad24
Ad35++
Ad35
CD34+
CD34+/CD90+

Fig. 35

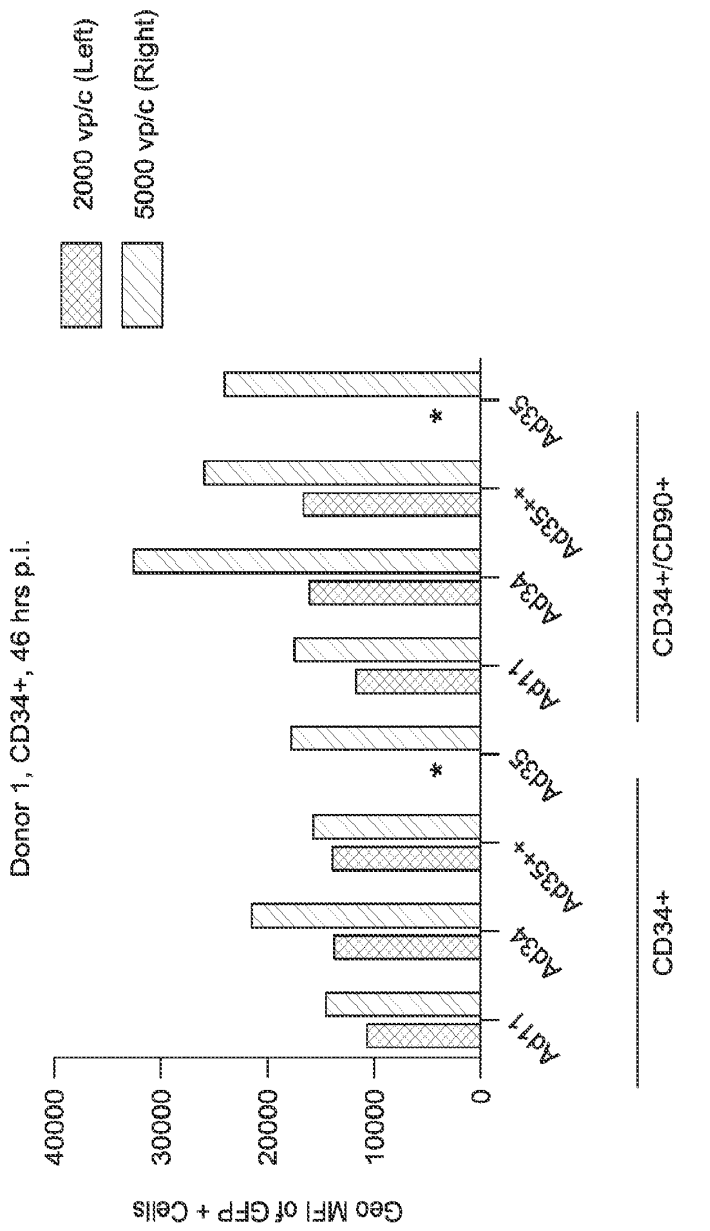

2000 vp/c (Left)
5000 vp/c (Right)
Donor 1, CD34+, 46 hrs p.i.
Geo MFI of GFP + Cells
40000
30000
20000
10000
0
Ad11
Ad34
Ad35++
Ad35
Ad11
Ad34
Ad35++
Ad35
*
*
CD34+
CD34+/CD90+

Fig. 36

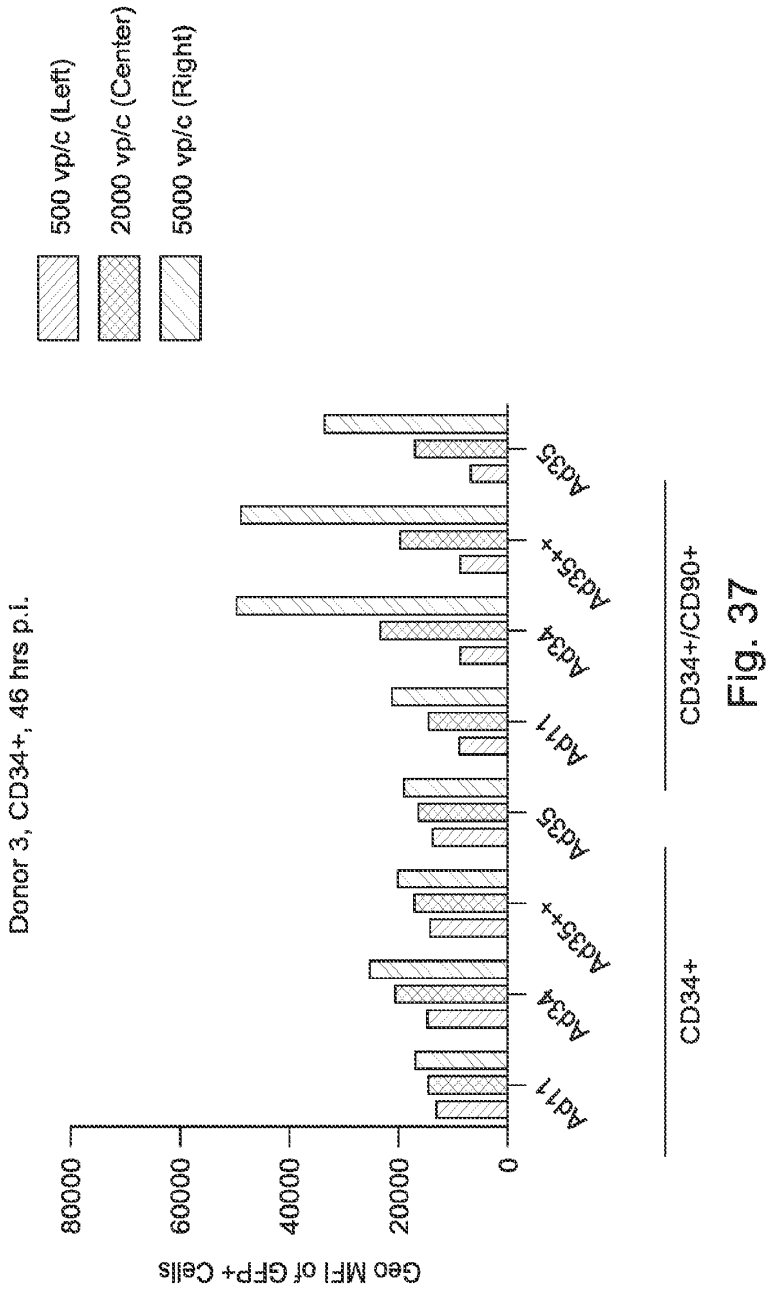

500 vp/c (Left)
2000 vp/c (Center)
5000 vp/c (Right)
Donor 3, CD34+, 46 hrs p.i.
Geo MFI of GFP+ Cells
80000
60000
40000
20000
0
Ad11
Ad34
Ad35++
Ad35
Ad11
Ad34
Ad35++
Ad35
CD34+
CD34+/CD90+

Fig. 37

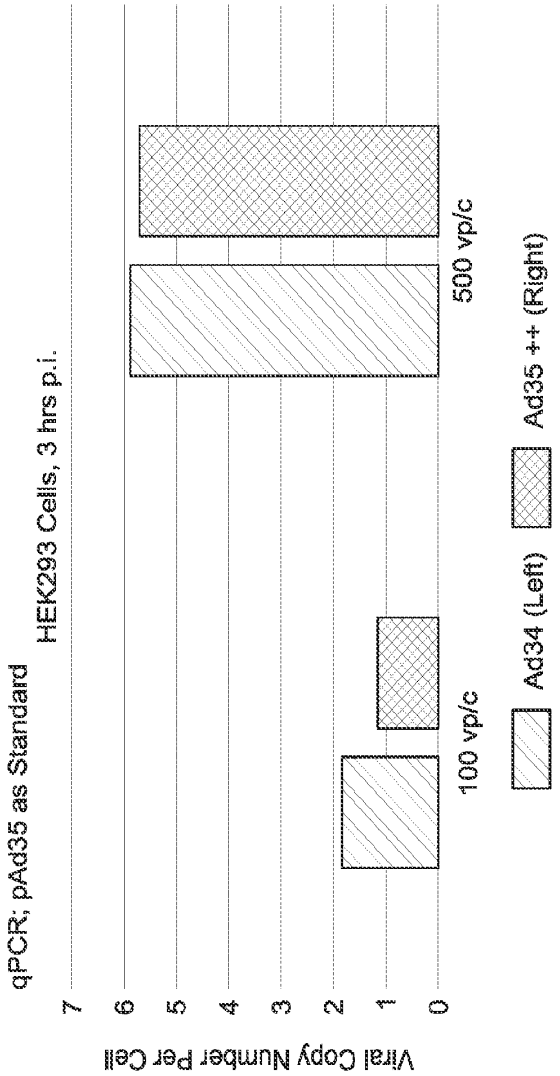

qPCR; pAd35 as Standard
HEK293 Cells, 3 hrs p.i.
Viral Copy Number Per Cell
0
1
2
3
4
5
6
7
100 vp/c
500 vp/c
Ad34 (Left)
Ad35 ++ (Right)

Fig. 38

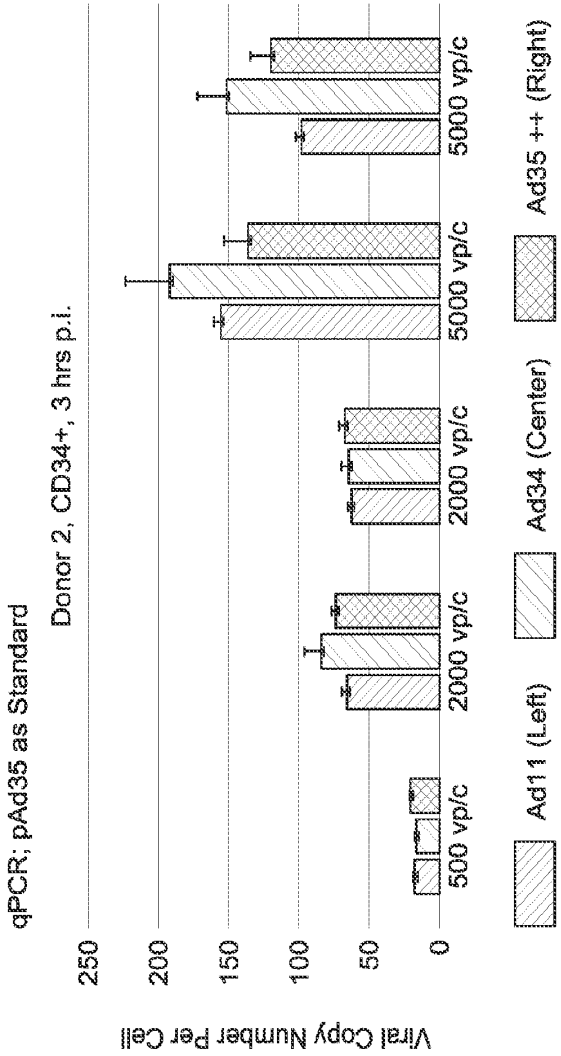

qPCR; pAd35 as Standard
Donor 2, CD34+, 3 hrs p.i.
Viral Copy Number Per Cell
250
200
150
100
50
0
500 vp/c
2000 vp/c
5000 vp/c
2000 vp/c
5000 vp/c
5000 vp/c
Ad11 (Left)
Ad34 (Center)
Ad35 ++ (Right)

Fig. 39

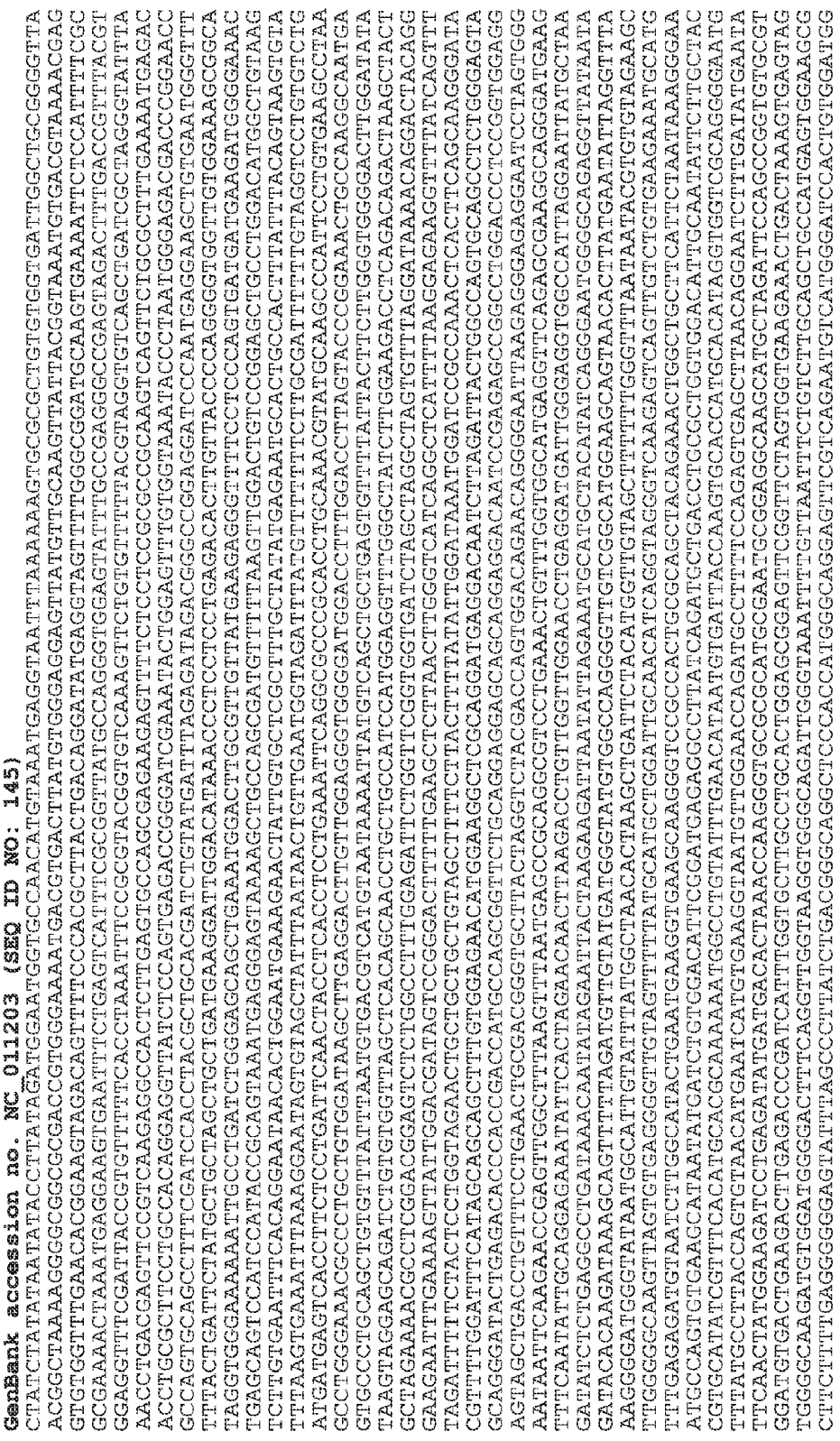

GenBank accession no. NC 011203 (SEQ ID NO: 145)
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GTGTGGTTTGAACACGGAAGTAGACAGTTTCCCACGCTTACTGACAGGATATGAGGTAGTTTTGGGCGGATGCAAGTGAAAATTCTCCATTTTCGC
GCGAAAACTAAATGAGGAAGTGAATTTCTGAGTCATTTCGCCAGGGTGGAGTATTTGCCGAGGGCCGAGTAGACTTTGACCGTTTACGT
GGAGGTTTCGATTACCGTGTTTTTCACCTAAAATTTCCGCGTACGGTGTCAAAGTTCTGTGTTTACGTAGGTGTCAGCTGATCGCTAGGGTATTTA
AACCTGACGAGTTCCGTCAAGAGGCCACTCTTGAGTGCCAGCGAGAAGAGTTTCTCCTCCGCGCCGCCAAGTCAGTTCTGCGCTTTGAAAATGAGAC
ACCTGCGCTTCCTGCCACAGGAGGTTATCTCCAGTGAGACCGGGATCGACTCGTAGAATTCTGTAGTTTGTGGAGTAGACGATCCCGAGTATCGACC
GCCAGTGCAGCCTTTCGATCCACGCTGCACGATCTGTATGATTTAGAGATAGACGGCCGGAGGATCCCAATGAGGAAGCTGTGAATGGGTTT
TTTACTGATTCTATGCTGCTAGCTGCTGATGAAGGATTGGACATAAACCCTCCTCCTGAGACACTTGTTACCCCAGGGGTGGTTGTGGAAAGCGGCA
TAGGTGGGAAAAAATTGCCTGATCTGGGAGCAGCTGAAATGGACTTGCGTTGTATGAAGAGGGTTTCCTCCCAGTGATGATGAAGATGGGGAAAC
TGAGCAGTCCATCCATACCGCAGTAAAATGAGGGAGTAAAAGCTGCCAGCGATGTTTTTAAGTTGGACTGTCCTGGACATGGCTGTGTAAG
TCTTGTGAATTTCACAGGAATAACACTGGAATGAAAGAACTATTGTGCTCGCTTTGCTATATGAGAATGCCACTGCCACTTTATTTACAGTAAGTGTA
TTTAAGTGAAATTTAAAGGAATAGTGTAGCTATTTAATAACTGTTGAATTTATGTTTTTCTTTGCGATTTTTGTAGGTCCTGTGTCTG
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GCCTGGGAAACGCCCTGCTGTGGATAAGCTTGAGGACTTGTTGGAGGGTGGGGATGGACCTTTGGACCTTAGTACCCGGAAACTGCCCAAGGCAATGA
GTGCCCTGCAGCTGTGTTTATTTAATGTGACGTCATGTAATAAAATTATGTTCAGCTGCTGAGTGTTTTATTACTTCTTGGGTGGGGACTTGGATATA
TAAGTAGGAGCAGATCTGTGTGGTTAGCTCACACAGCAACCTGCTGCCATCTTGGAAGACCTCAGACAGACTAAGCTACT
GCTAGAAAACGCCTCGGACGGAGTCTCTGGCCTTTGGAGATTCTGGTGGTGATCTAGCTAGGCTAGTGTTTAGGATAAAACAGGACTACAGG
GAAGAATTTGAAAAGTTATTGGACGATAGTCCGGGACTTTTTCAAGCTCTTAACTTGGGTCATCAGGCTCATTTTAAGGAGAAGGTTTTATCAGTTT
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CGTTTTGCATTTCATAGCAGCAGCTTTGTGGAGAACATGGAAGGCTCGCAGGATGAGGACAATCTTAGATTACTGGCCAGTGCAGCCTCTGGGAGTA
GCAGGGATACTGAGACACCCACCGACCATGCCAGCGGTTCTGCAGGAGGAGCAGCAGGAGGACAATCCGAGAGCCGGCCTGGACCCTCCGGTGGAGG
AGTAGCTGACCTGTTTCCTGAACTGCGACGGGTGCTTACTAGGTCTACGACCAGTGGACAGAACAGGGGAATTAAGAGGGAGAGGAGGAATCCTAGTGGG
AATAATTCAAGAACCGAGTTGGCTTTAAGTTTATGAGCCGCAGGCGTCCTGAAACTGTTTGGTGGCATGAGGTTCAGAGCGAAGGCAGGGATGAAG
TTTCAATATTGCAGGAGAAATATTCACTAGAACAACTTAAGACCTGTTGGTTGGAACCTGAGGATGATTGGAGAGTTATGGAATTTATGCTAA
GATATCTCTGAGGCCTGATAAACAATATAGAAGATTACTAAGAAATGCATGCTACATATCAGGGAATGGGGCAGAGGTTATATAATA
GATACACAAGATAAAGCAGTTTTTAGATGTGTATGGTGCCAGGGTTGTCGGCATGGAAGCAGTAACACTTATGAATATTAGGTTTA
AAGGGGATGGGTATAATGGCATTGTATTTATGCTTCTACATGGTTGTAGCTTTTTTGGGTTTAATAATACGTGTGTAGAAGCC
TTGGGGGCCAAGTTAGTGTGAGGGGTTGTAGTTTTTATGCATGCTGGATTGCTAAGAGTCAGTTGTCTGTGAAGAAATGCATG
TTTGAGAGATGTAATCTTGGCATACTGAATGAAGGTGAAGCAAGGGTCCGCCACTGCGCAGCTACAGAAACTGGCTGCTTCATTCTTAATAAAGGGAA
ATGCCCAGTGTCGAAGCATAATATGATCATCTGTGGACATTCCGATCAGAGAGGCCTTATCAGATGCCTGACCTGCCGCTGGTGCACATTGCAATATTCTTGCTAC
CGTGCATATCGTTTCACATGCACGCAAAAAATGGCCTGTATTTGAACATAATGTGATTACCAAGTGCACCATGCACATAGGTGGTCGCAGGGCAATG
TTTATGCCTTACCAGTGTAACATGAATCATGTTGAAGGTAATGTTGGAACCAGATGCCTTTTCCAGAGTGAGCTTAACAGGAATCTTTGATATGAATA
TTCAACTATGGAAGATCCTGAGATATGATGACACTAAACCAAGGGTGCGCGCATGCGAATGCGGAGGCAAGCATGCTAGATTCCAGCCGGTGTGCGT
GGATGTGACTGAAGACTTGAGACCCGATCATTTGGTGCTTGCCTGCACTGGAGCGGAGTTCGGTTCTAGTGGTGAAGAAACTGACTAAAGTGAGTAG
TGGGGCAAGATGTGGATGGGGACTTTCAGGTTGGTAAGGTGGGCAGATTTGGTAAATTTTGTTAATTTCTGTCTTGCAGCTGCCATGAGTGGAAGCG
CTTCTTTGAGGGGGGAGTATTTAGCCCTTATCTGACGGGCAGGCTCCCACCATGGGCAGGAGTTCGTCAGAATGTCATGGGATCCACTGTGGATGG

Fig. 40

GAGACCCGTCCAGCCCGCCAATTCCTCAACGCTGACCTATGCCACTTTGAGTTCGTCACCATTGGATGCAGCTGCAGCCGCCGCCGCTACTGCTGCC
GCCAACACCATCCTTGGAATGGGCTATTATGGAAGCATCGTTGCCAATTCCAGTTCCTCTAATAACCCTTCAACCCTGGCTGAGGACAAGCTACTTG
TTCTCTTGGCGCAGCTCGAGGCCTTAACCCAACCGCTTAGCAGGTGGCCCAGTTGCGTGAGCAAACTGAGTCTGCTGTTGCCAC
AGCAAAGTCTAAATAAAGATCTCAAATCAATAAATAAAACAAATGAATGTTTATTTGATTTTTCGCGCGCGGTATGCCCT
GGACCATCGGTCTCGATCATTGAGAACGCGGTGGGATCTTTTCCAGTACCCTGTAAAGGTGGGATTGAATGTTTAGATACATGGGCATTAGTCCGTCT
CGGGGGTGGAGATAGCTCCATTGAAGAGCCTCTTGCTCCGGGGTAGTGTTATAAATCACCCAGTCATAGCAAGGTCGGAGTGCATGGTGTTGCACAA
TATCTTTTAGGAGCAGACTAATTGCAACGGGGAGGCCCTTAGTGTAGGTGTTTACAAATCTGTTGAGCTGGGACGGGTGCATCCCGGGGTGAAATTAT
ATGCATTTTGGACTGGATCTTGAGGTTGCCGCCTAGATCCCGTCTCGGGTTCATATTGTGCAGGACCACCAAGACAGTGTATCCGGTG
CACTTGGGAAATTTATCATGCAGCTTAGAGGGAAAAGCATGAAAAAATTGGAGACGCCTTTGTGACCCCCCAGATTCTCCATGCACTCATCCATAA
TGATAGCGATGGGGCCGTGGGCAGCGGCACGGGCGAACACGTTCCGGGGGTCTGAAACATCATAGTTATGCTCCTGAGTCAGGTCATCATAAGCCAT
TTTAATAAACTTTGGGCGGAGGGTGCCAGATTGGGGGATGAAAGTTCCCTCTGGCCCGGGAGCATAGTTTCCCTCACATATTTGCATTTCCCAGGCT
TTCAGTTCAGAGGGGGGGATCATGTCCACCTGCGGGGCTATAAAAAATACCGTTTCTGGAGCCGGGGTGATTAACTGGGACGAGAGCAAATTCCTAA
GCAGCTGAGACTTGCCCGCACCCAGTGGGACCCGTAAATGACCCCCAATTACGGGTTGCAGATGGTAGTTTAGGGAACGACAGCTGCCGTCCTCCGGAG
CAGGGGGGCCACTTCGTTCATCATTTCCCTTACATGGATATTTTCCCGCACCAAGTCCGTTAGGAGGCGCTCTCCCCCCAAGGGATAGAAGGCTCCTGG
AGCGAGGAGAAGTTTTTCAGCGGCTTCAGCCCGTCAGCCATGGGCATTTTGGAAAGAGTCTGTTGCAAGAGCTCGAGCCGGTCCCAGAGCTCGGTGA
TGTGCTCTATGGCATCTCGATCCAGCAGACCTCCTCGTTTCGCGGGTTGGGACGGCTCCTGGAGTAGGGAATCAGACGATGGGCGTCCAGCGCTGCC
AGGGTCCGATCCTTCCATGGTCGCAGCGTCCGAGTCAGGGTTGTTTCCGTCACGGTGAAGGGGTGCGCGCCTTGGTTGGGCGAGGGTGCGCT
TCAGACTCATCCTGCTGGTCGAGAACCGCTGCCGATTGGCGCCCTGCATGTCGGCCAGGTAGCAGTTCCGTAGTTCGAGCGCCTCGGC
CGCGTGGCCTTTGGCACGGAGCTTACCTTTGGAAGTTTTATGGCAGGCGGGGCAGTAGATACATTTGAGGGCATACACTTGGGCGCGAGGAAAATG
GATTCGGGGGAGTATGCATCCGCACCGCAGGAGGCGCAGACGGTTTCGCACTCCACGAGCCAGGTCAGATCCGGCTCATCGGGGTCAAAAACAAGTT
TTCCGCCATGTTTTTTTGATGCGTTTCTTACCTTTGGTTTCCATGAGTTCGTGTCCCCGCTGGGTGACAAAGAGGCTGTGTCCCGTAGACCGA
CTTTATGGGCCTGTGTCCTCGAGCGGAGTGCCTCTTCGTAGAGGAACCCAGCCCACTCTGATACAAAAGCGCGTGTCCCAGGCCAGCACAAAG
GAGGCCACGTGGGAGGGGTAGCGGTCGTTGTCAACCAGGGGGTCCACCTTCTCTACGGTATGTAAACACATGTCCCCCTCCTCCACATCCAAGAATG
TGATTGGCTTGTAAGTGTAGGCCACGTGACCAGGGGTCCCCGGCGGGGGGGTATAAAAGGGGGCGGCCTCTGTTCGTCCTCACTGTCTTCCGGATC
GCTGTCCAGGAGCGCCAGCTGTTGGGGTAGGTATTCCCTCTCGAAGGCGGGCATGACCTCTGCACTCAGGTTGTCAGTTTCTAGGAACGAGGAGGAT
TTGATATTGACAGTACCAGCAGACATGCCTTTCATAAGACTCTCGTCCATCTGGTCAGAAAACACAATCTTCTTGTTGTCCAGCTTGGTGGCAAATG
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GTACTCGCGCGCCACACATTTCCATTCAGGAAAGATGGTTGTCAGTTCATCCGAACTATTCTGATTCGCCATCCCCTATTGTGCAGGGTTATCAGA
TCCACACTGGTGGCCACCTCGCCTCGGAGGGGCTCATTGGTCCAGCAGAGTCGACCTCCTTTTCTTGAACAGAAAGGGGGGAGGGGTCTAGCATGA
ACTCATCAGGGGGGGTCCGCATCTATGGTAAATATTCCCGGTAGCAAATCTTTGTCAAAATAGCTGATGGTGGCGGGATCATCCAAGGTCATCTGCCA
TTCTCGAACTGCCAGCGCGCGCTCATAGGGGTTAAGAGGGGGTGCCCCAGGGGCATGGGGTGGGTGAGCGCGGAGGCATACATGCCACAGATATCGTAG

Fig. 40, cont'd

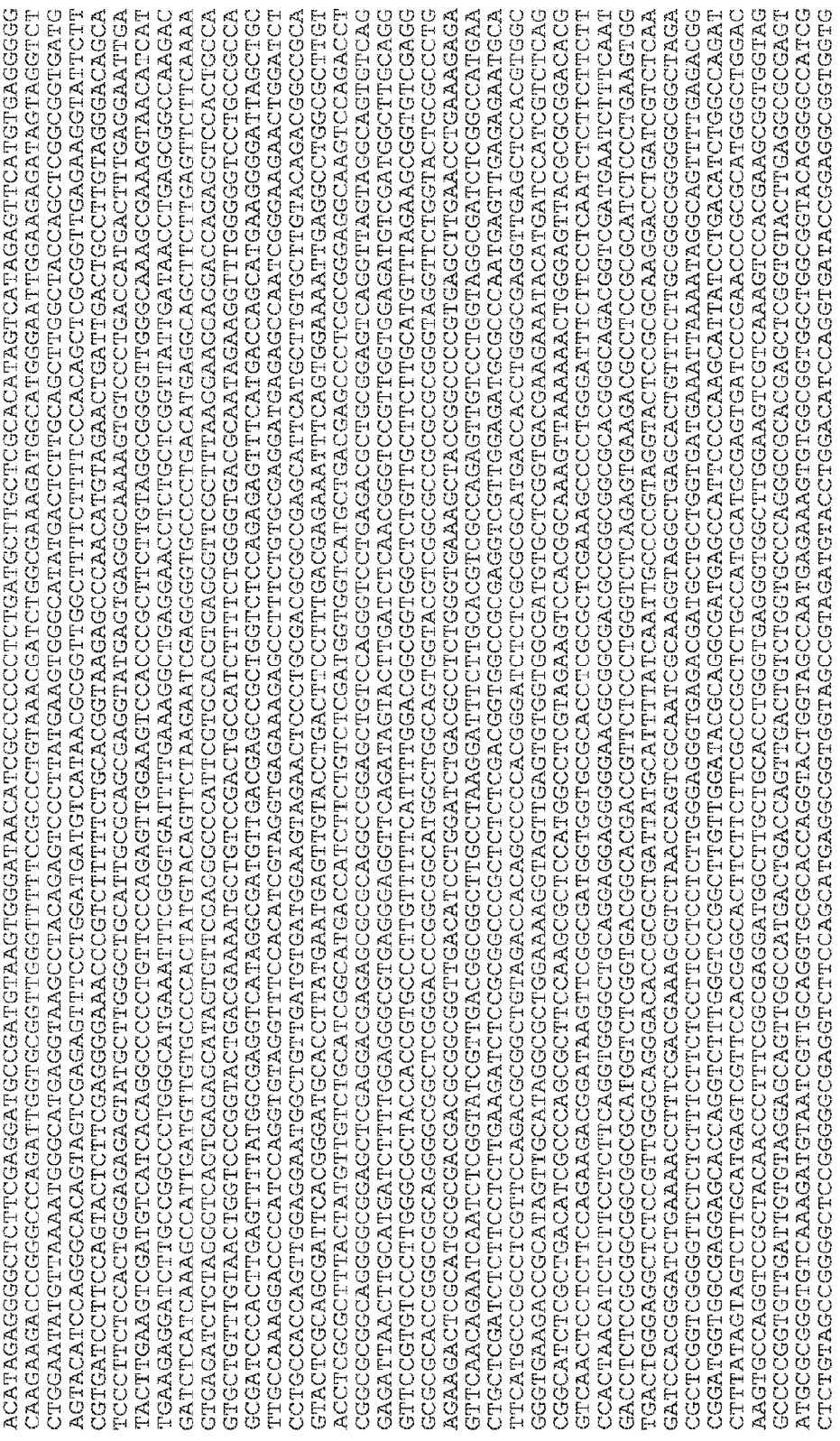


Fig. 40, cont'd

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CATTGACGCTCTGTAGACACGGAGAAAACGAAAGCGATGAGCGGCTCGACTCCGTGGTCTGGGGGAACGTGAACGGGTTGGGTCGCGGTGTACCCCG
GTTCGAGTCCCAAAGCTAAGCGATCACGCTCGGCCGGAGCCGCGGCTAACGTGGTATTGGCTATCCCGTCTCGACCCAGCCGACGAATATCCA
GGGTACGGAGTAGAGTCGTTTTTCCTGGACGTGTGCCATTGCCACGTCAAGCTTTAGAACGCTCAGTTCTCGGGCCGTGAGTGGCTC
GCGCCCGTAGTCTGGAGAATCAGTCGCCAGGGTTGCGTTCGGTATGCCCCGGTCTCGTATCCGGCCGGTTTCCGCGACAAG
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CCAGATGCATCCAGTGCTGCGACAGATGCGCCCCCAGCAACACAGGCCCCTTCTCAGCAACACAGCCACAAAGGCTCTTCTTGCTCCTGCAACTACTGCA
GCTGCAGCCGTGAGCGGCGCGGGACAGCCCGCCTATGATCTGGACTTGGAAGAGGGCGAGGGATTGGCGCGCCTGGGGGCTCCATCGCCCGAGCGGC
ACCCGCGGGGTGCAACTAAAAAAGGCACTCTCGCGAGGCGTACGTGCCCCCAGCAGAACCCTGTTCAGGGACAGGAGCGGCGAGGAGCCAGAGGAGATGCG
AGCATCTCGATTTAACGCGGGTCGCGACGCTGCGCCACGGTCTGGATCGAAGACGGGTGCTGCAAGACGAGGATTTTGAGGTCGATGAAGTCACAGGG
ATCAGCCCAGCTAGGGCACATGTGGCCGCGGCCAACCTAGTCTCGGCCTACGAGCAGCACCGTGAAGGAGGAGCGCCAACTTCCAAAAAATCTTTTAACA
ACCATGTGCGCACCCCTGATCGCCCGCGAGGAAGTGACCCTGGGTCTGATGCATCTGTGGACCTGATGGAGCCTATCGCCCAAAACCCCACTAGCAA
ACCACTGACAGCTCAGCTGTTTCTGGTGGTTCAACATAGCAGGGACAACGAGGCATTCAGGGAGGCGTTGTTGAACATCACCGAGCCTGATGGGAGA
TGGCTGTATGATCTGATCAACATCCTGCAAAGTATTATAGTGCAGGAACGTAGCCTGGGTTTGGCTGAGAAAGTGGCAGCTATCAACTACTCGGTCT
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TCTGAAGGTGCTGACTCTGAGCGACGATCTGGGGGTGTATCGCAATGACAGGATGCACCGCGCGGTGAGCGCCAGCAGGAGGCGCGAGCTGAGCGAC
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GACGATTGGACCCAGGCCATGCAACGCATAATGGCGCTGACGACCCCGCAACCCCCGAAGCCTTTAGACAGCAACCCCAGGCCAACCGCCTTTCTGCCA
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CGCGAGGCCGTGTCTCAGCGCGACGCCAACTTGGGGTCGTTGGTAGCGCTAAACGCTTTCCTCAGCACCCAGCCCGCCAACG
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GGGGATCGCGCGACCGTGTCTAGCTTGCTCGACTCCCAACTCCCGCCTGCTGCTGGTATCCCCCTTTACTGACAGCGGTAGCATTGACCGCA
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GCTGAGGAGGAGCGGATCCTCAGATACGTGCAACAGAGCGTTGGACTGTTCCTGATGCAGGAGGGGGCGACACCTACCGCCGCGCTGGACATGACAG
CTCGAAACATGGAGCCCAGCATGTATGCTAGTAACAGGCCTTTCATTAACAAACTGCTGGACTACCTGCACAGGGCGGCCGCCATGAACTCTGATTA
TTTCACCAATGCTATCCTGAACCCACACTGGCTGCCCCCACCTGGTTTCTACACTGGCGAGTACGACATGCCCCGACCCCAATGACGGGTTCCTGTGG

Fig. 40, cont'd

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GAACGGCTGGTGCTGCCGCGACCGTGCCCGAAGCTGCCAAGTCCTTTCCCTAGCTTGCCCCTTTTCACTAAACAGCGTTCGCAGCAGTGAACTGGGGAG
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AGTCTGGTGGATAAGATGAGTAGATGAAGACCTATGCGCAGGATCACAGAGACGAGCCCAGGATCTTGGGGCTACAAGCAGACCGATCCGTAGAC
GCCAGCGCCACGACAGGCAGATGGGTCTTGTGTGGGACGATGAGGACTCTGCCGATGATAGCAGCGTGTTGGACTTGGGTGGAAGAGGAGGGGCAA
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GTTCGTTCTTTTTTGTTATCTGTGTCTAGTACGATGAGGAGACGAGCCGTGCTAGGCGGAGCGGTGGTGTATCCGGAGGGTCCTCCTCCTTCTTACG
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Fig. 40, cont'd

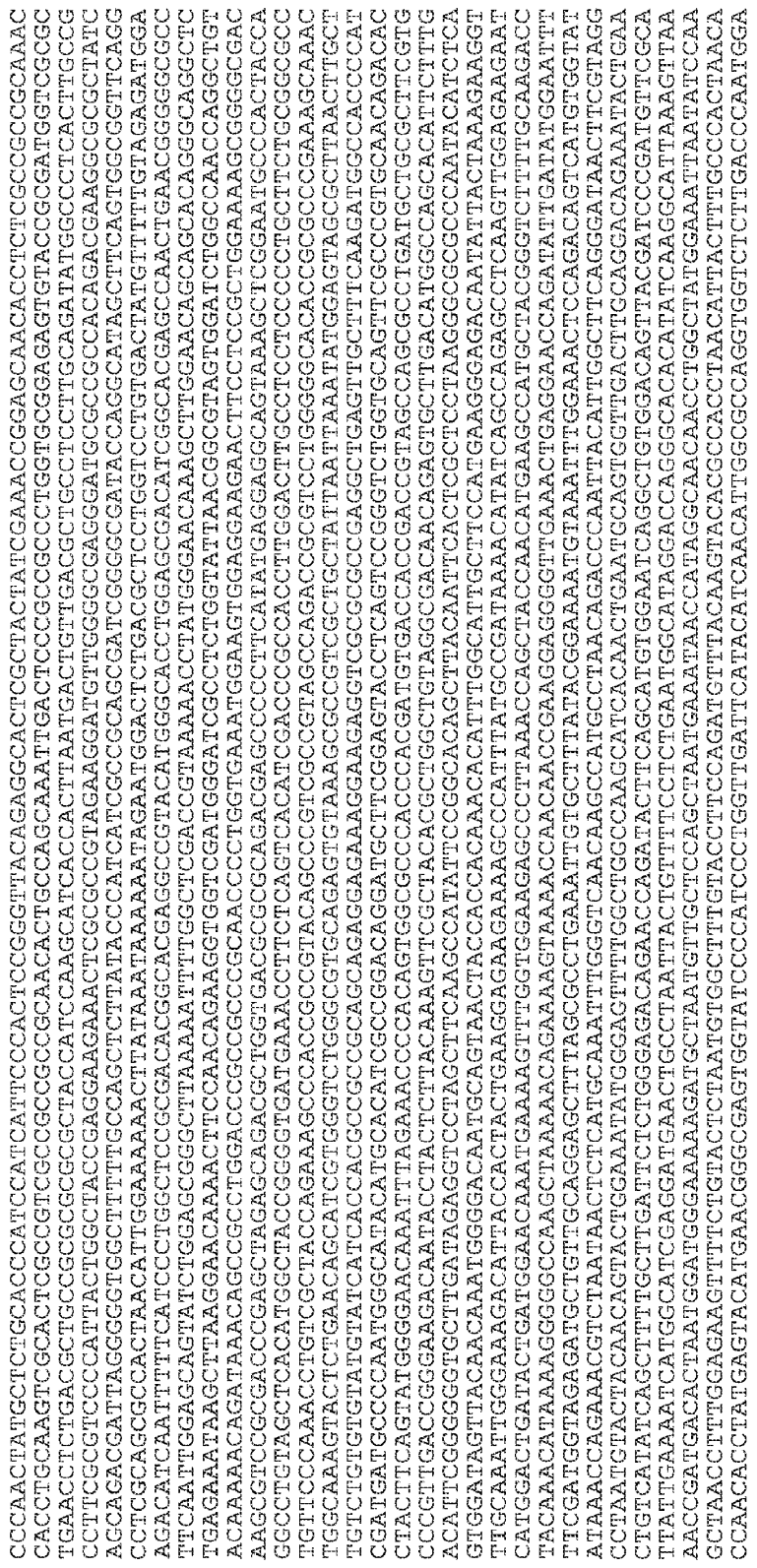


Fig. 40, cont'd

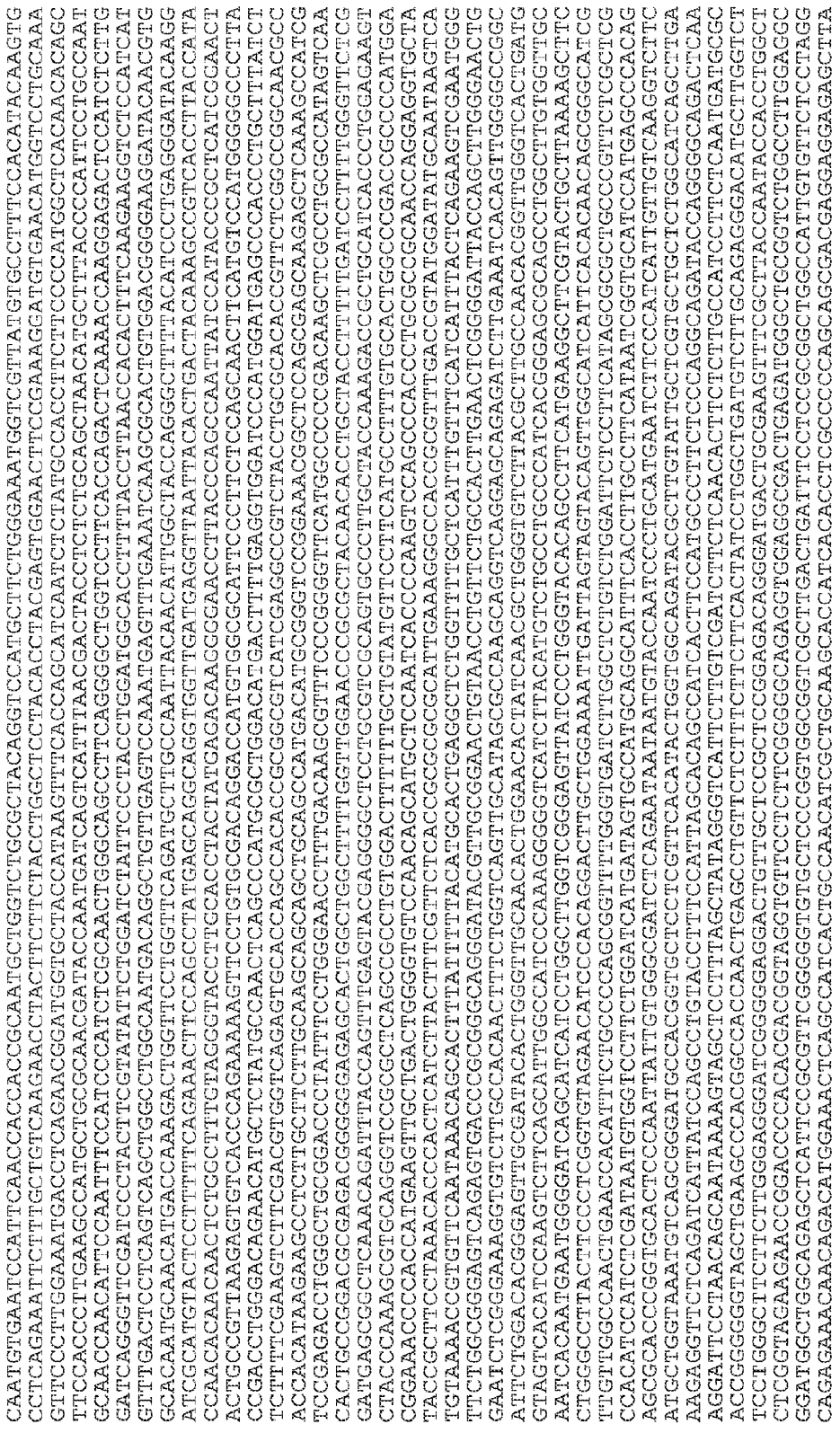


Fig. 40, cont'd

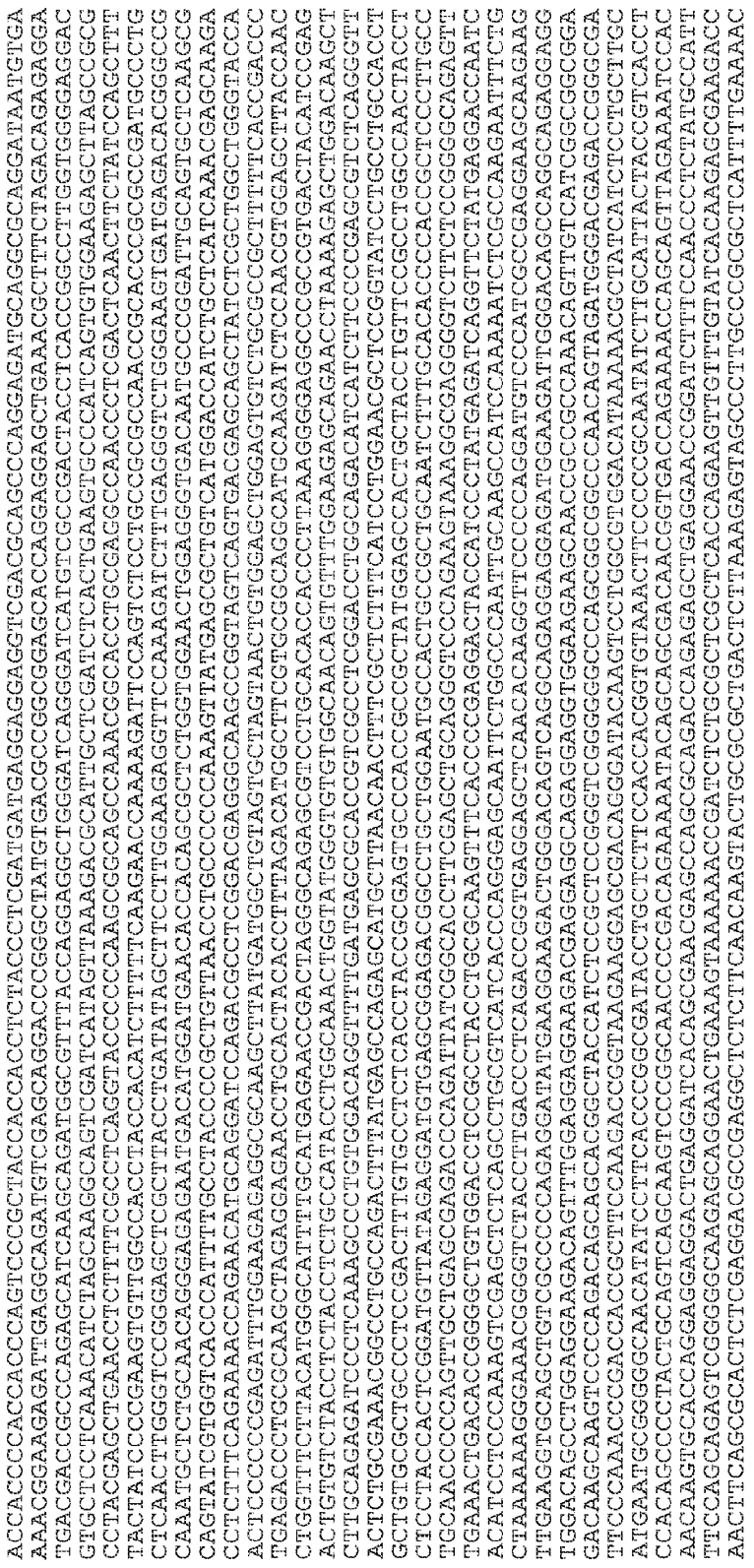


Fig. 40, cont'd

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Fig. 40, cont'd

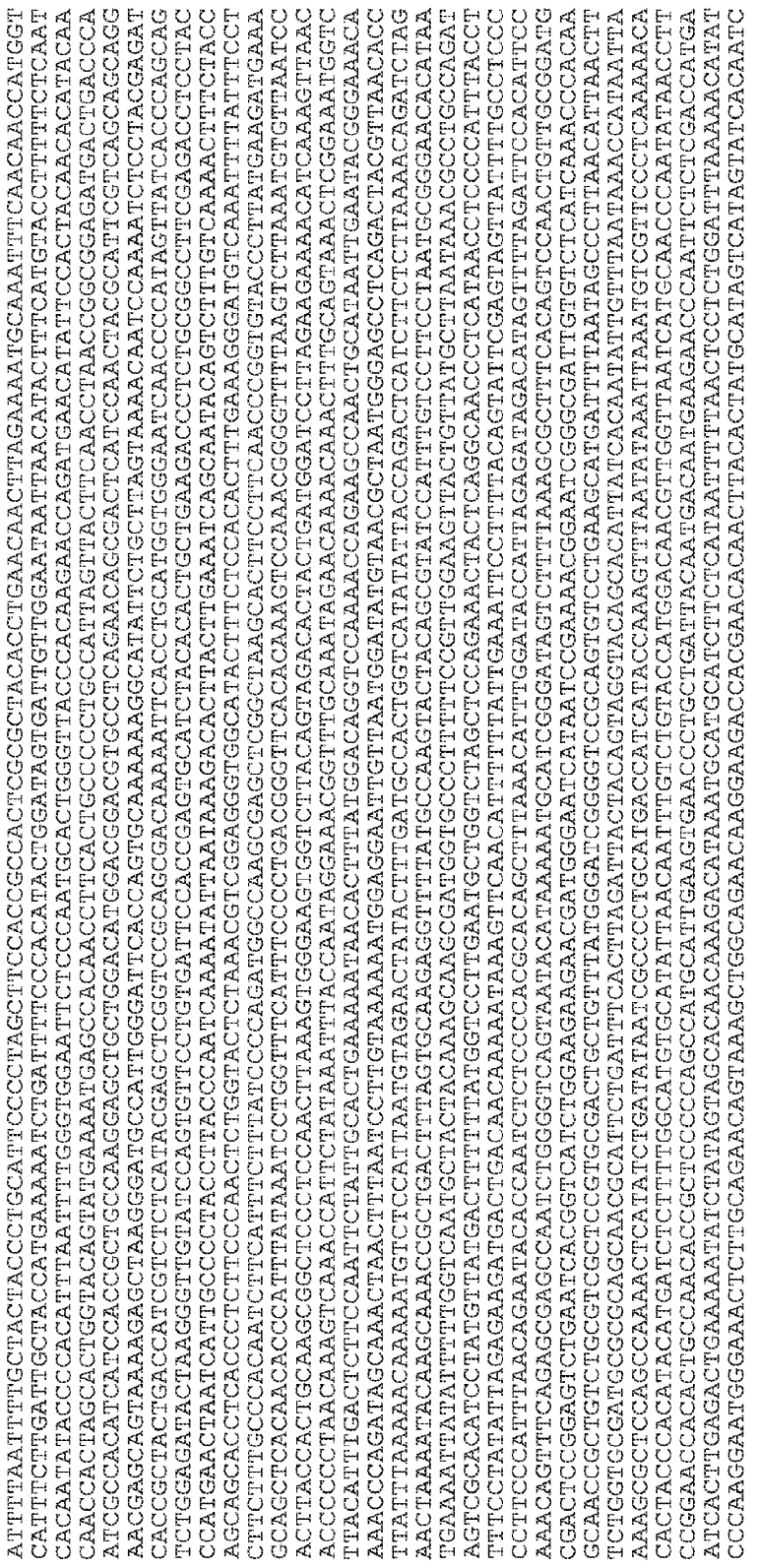


Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

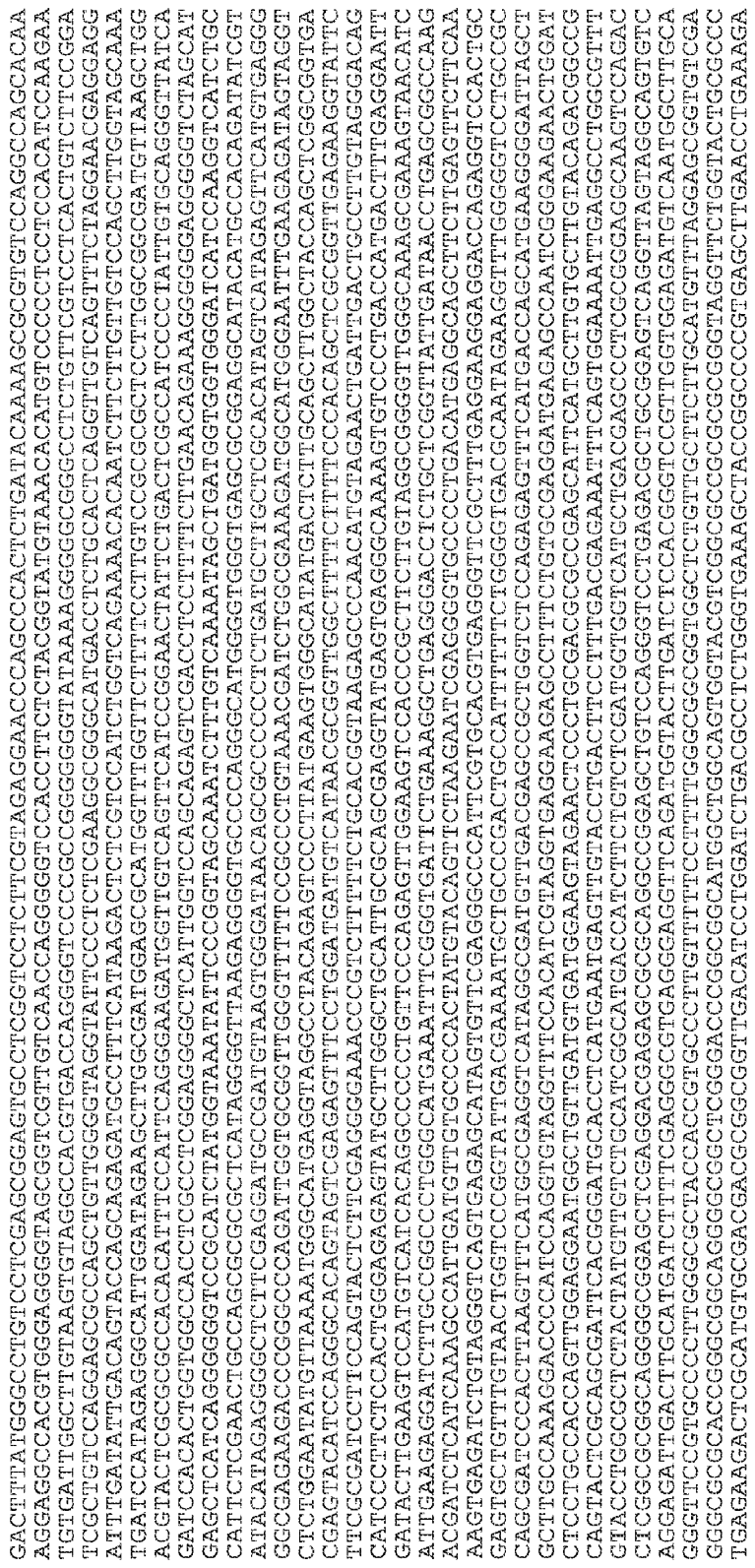


Fig. 40, cont'd

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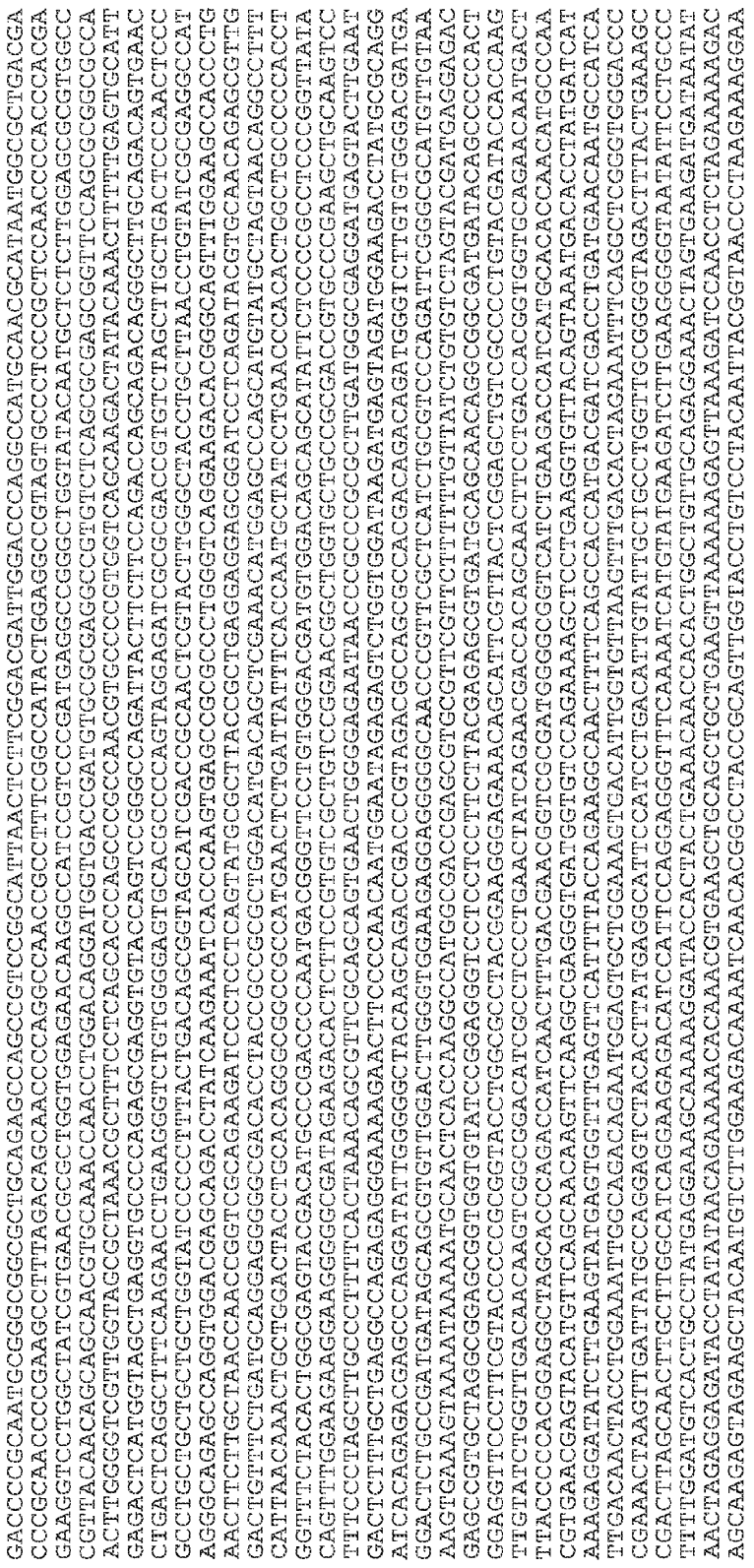


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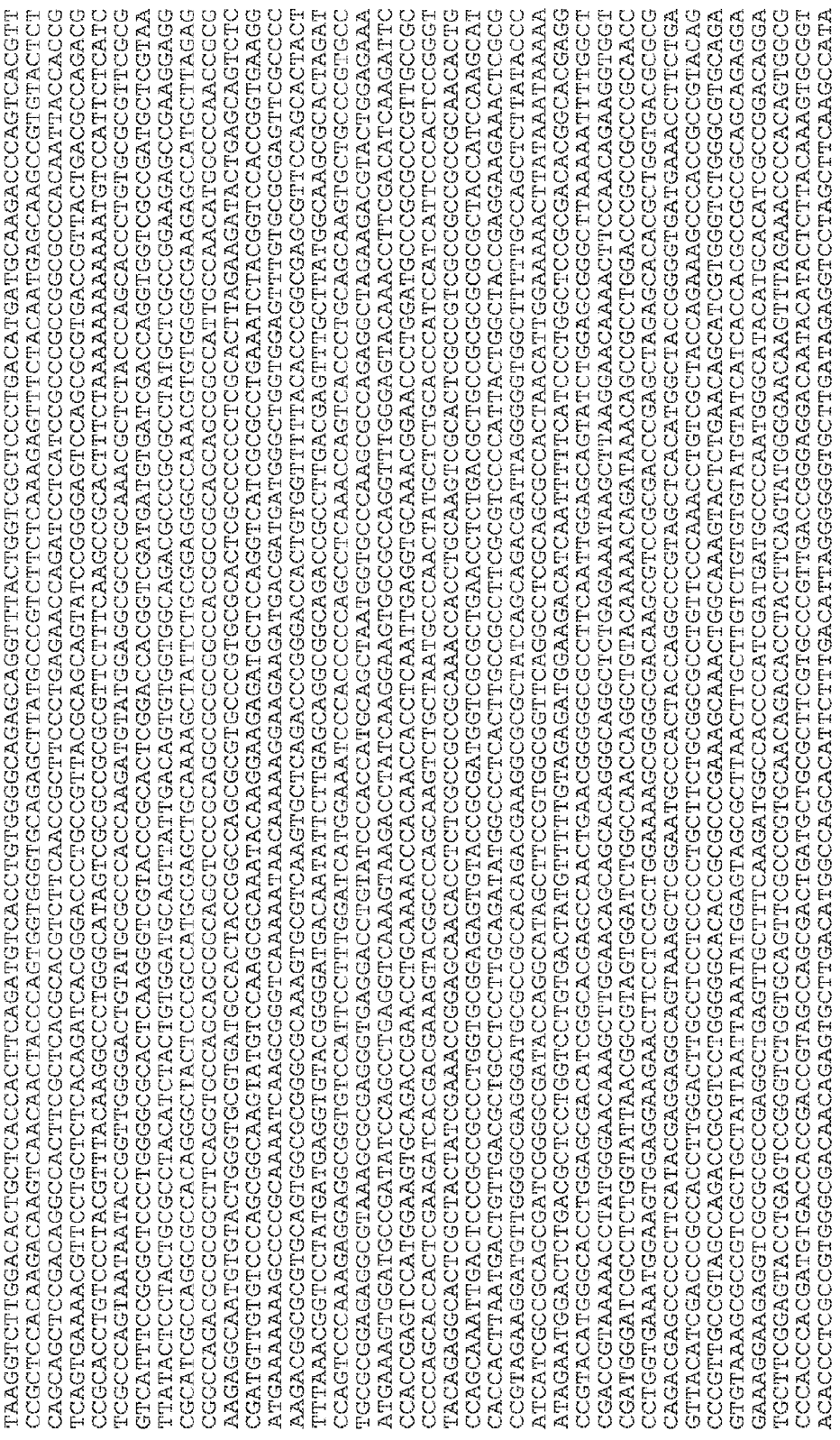


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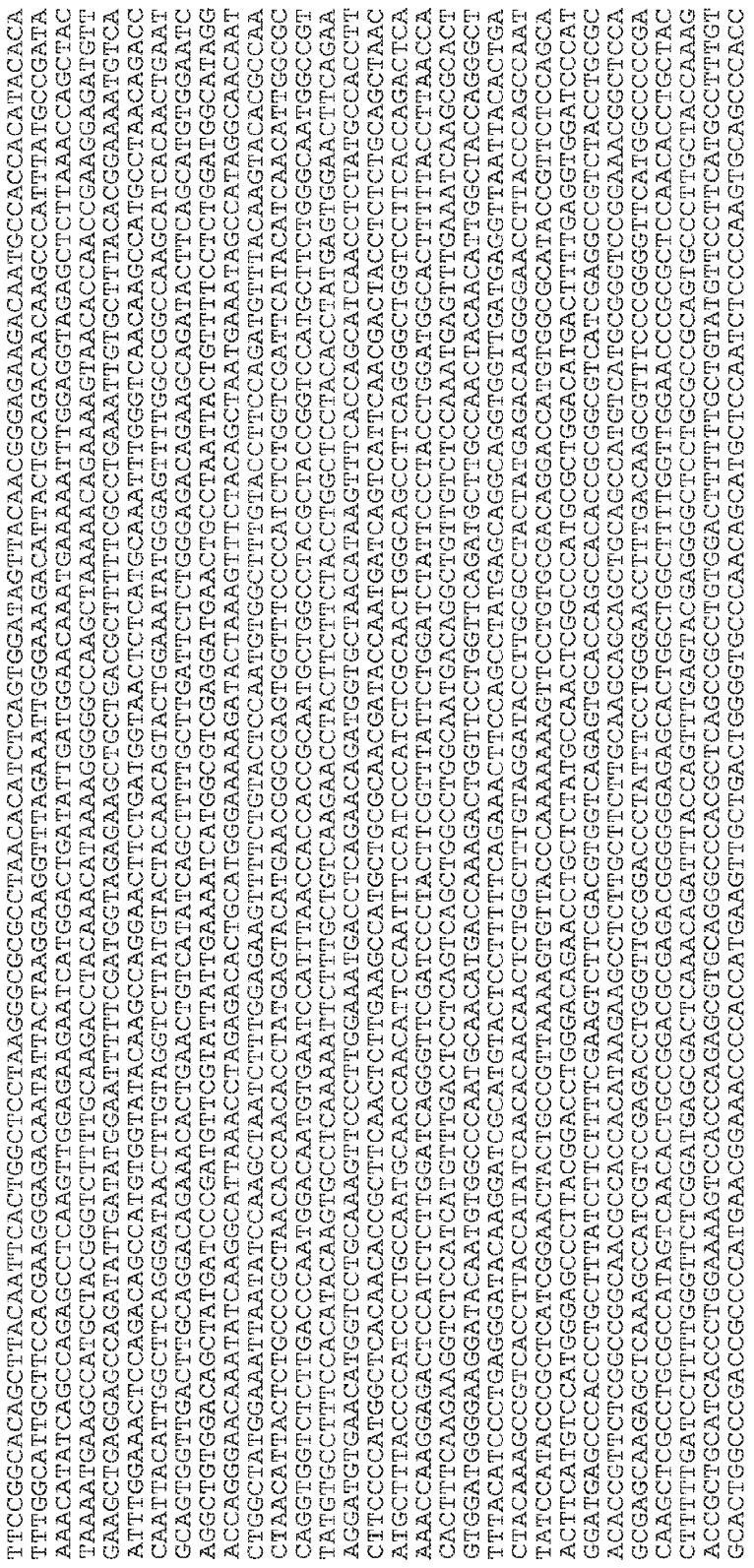


Fig. 40, cont'd

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Fig. 40, cont'd

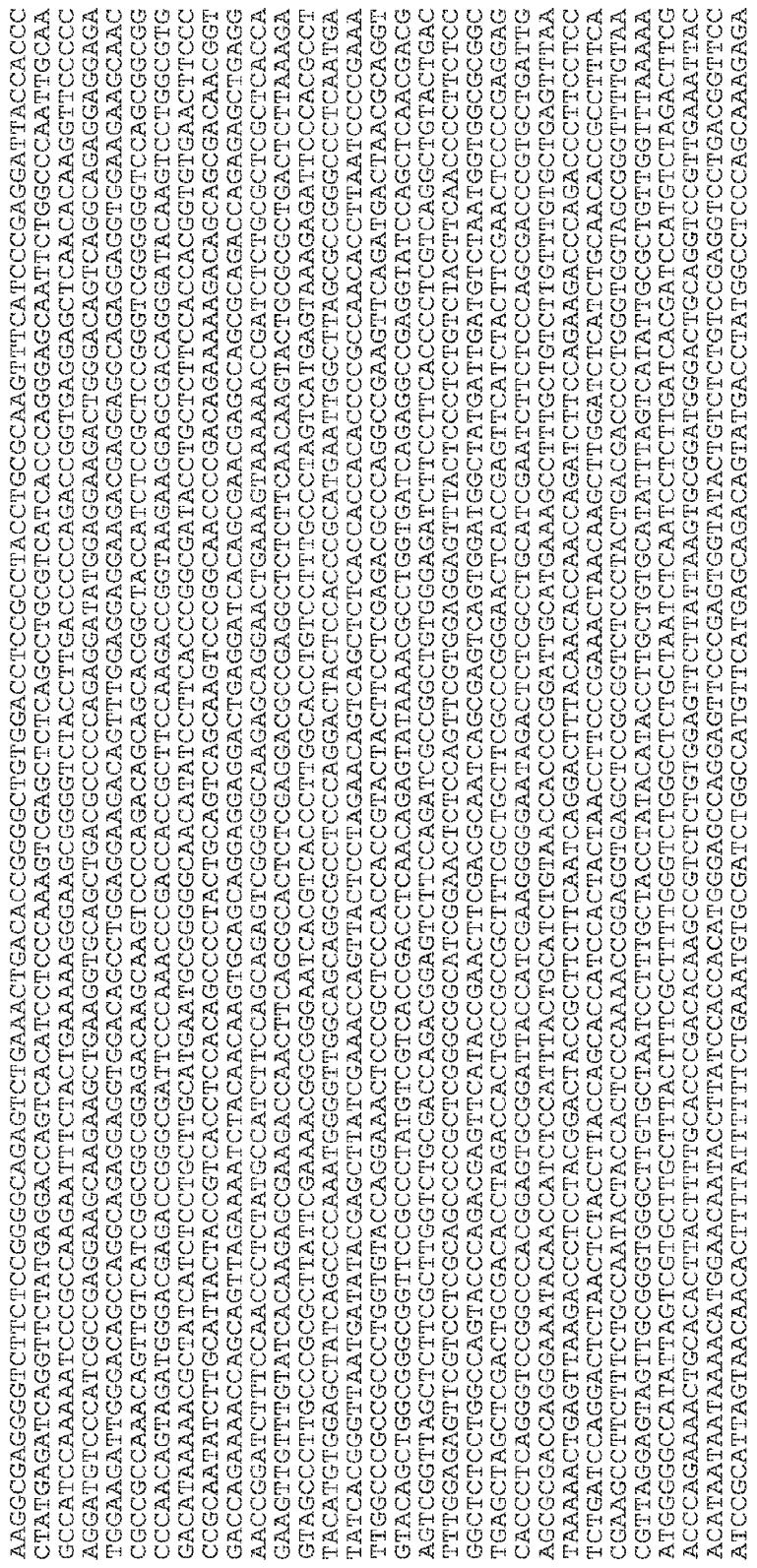


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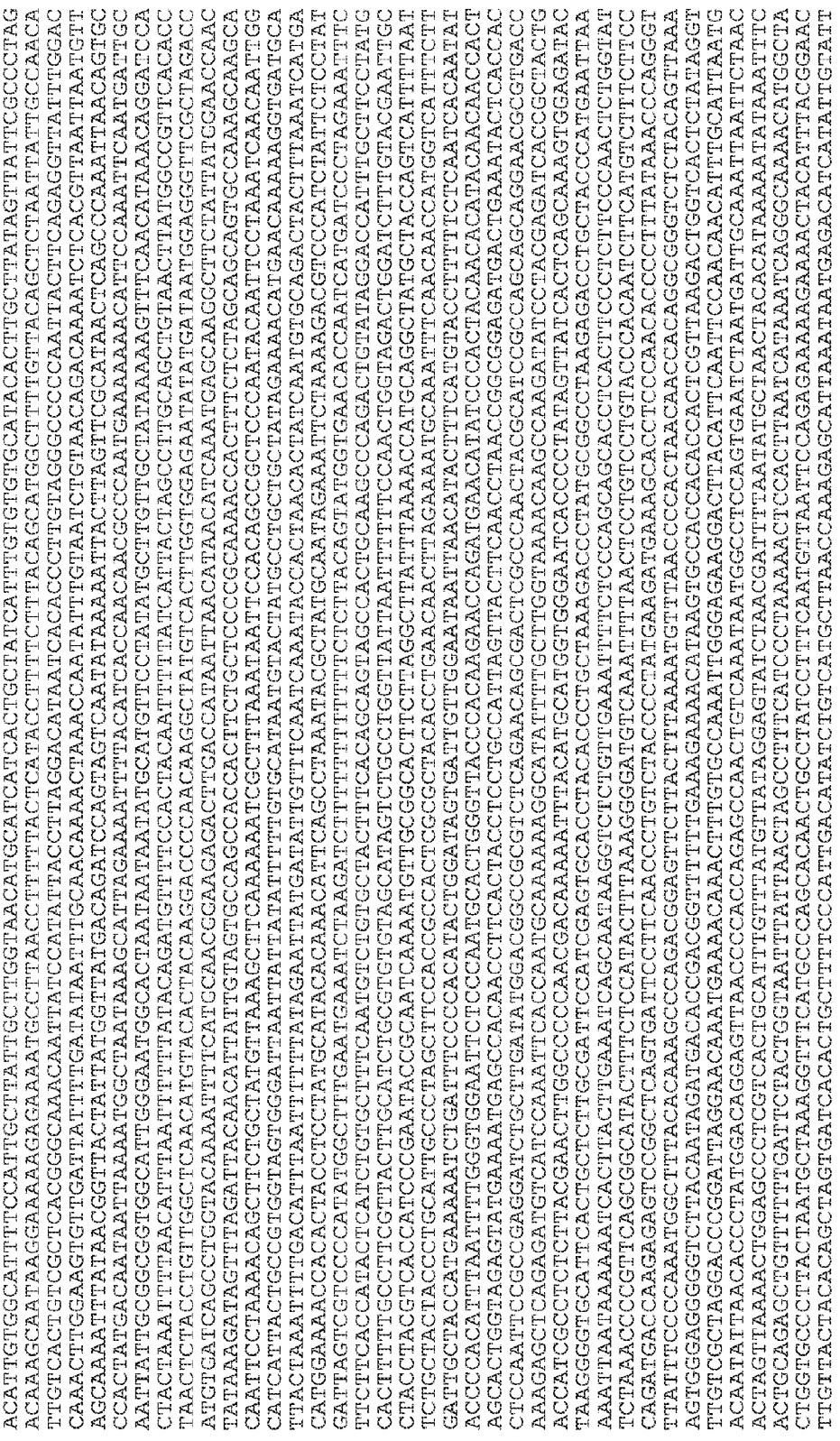


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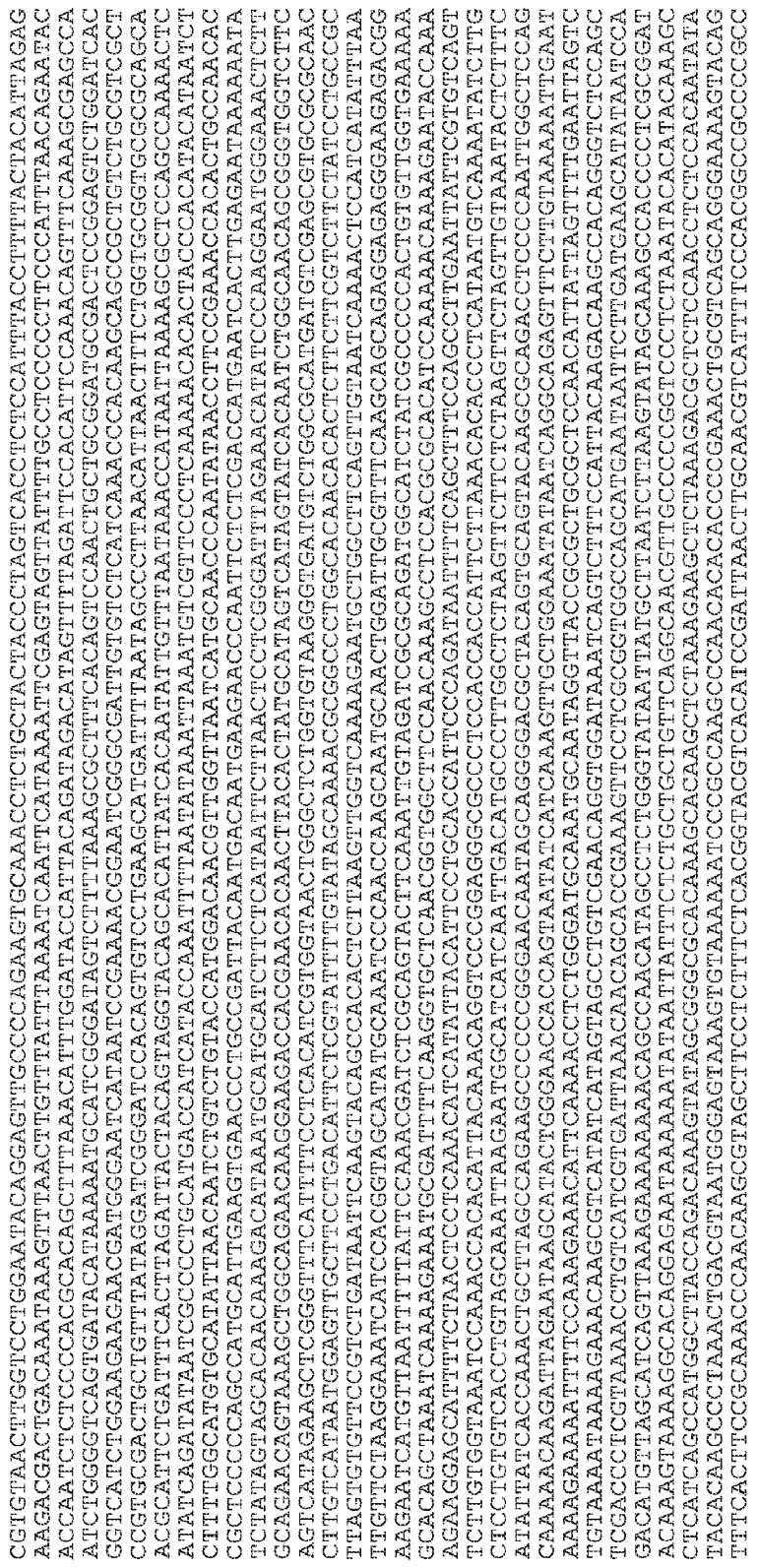


Fig. 40, cont'd

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GenBank accession - AP_000564

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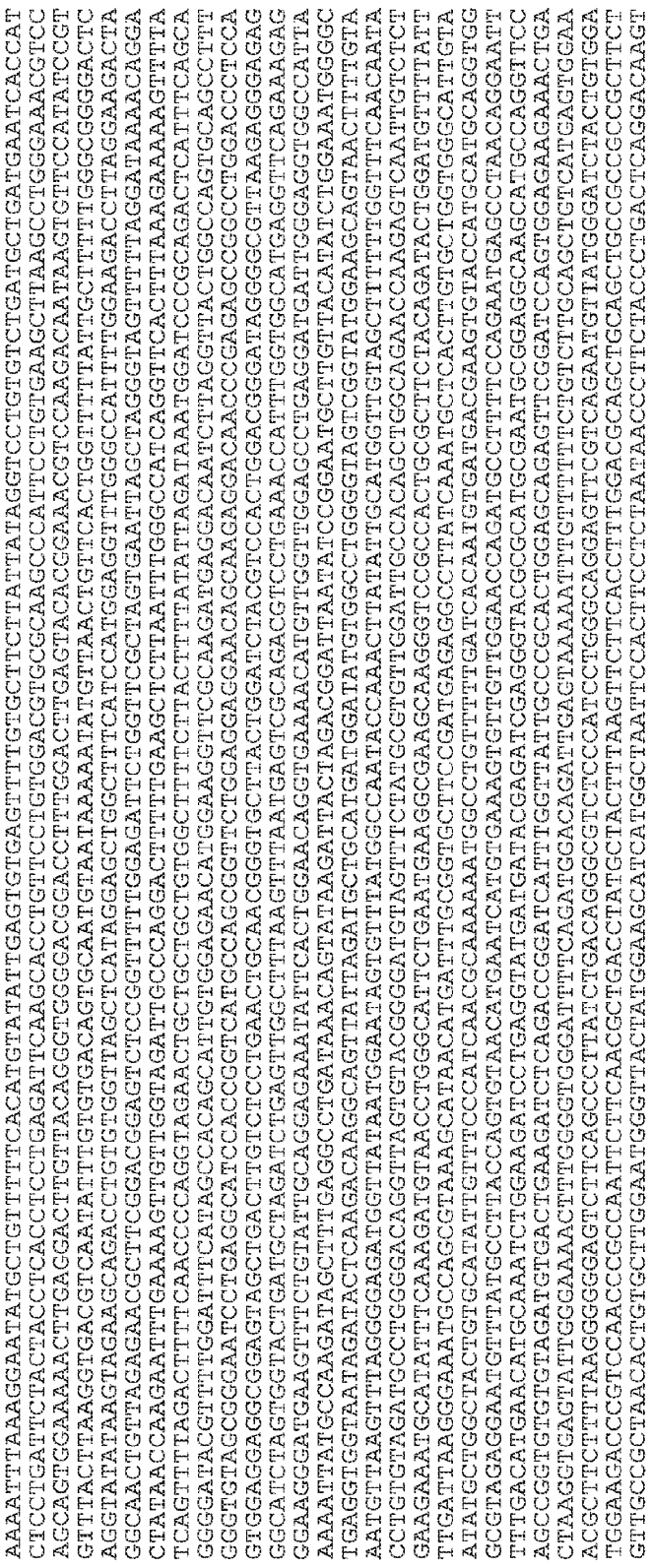


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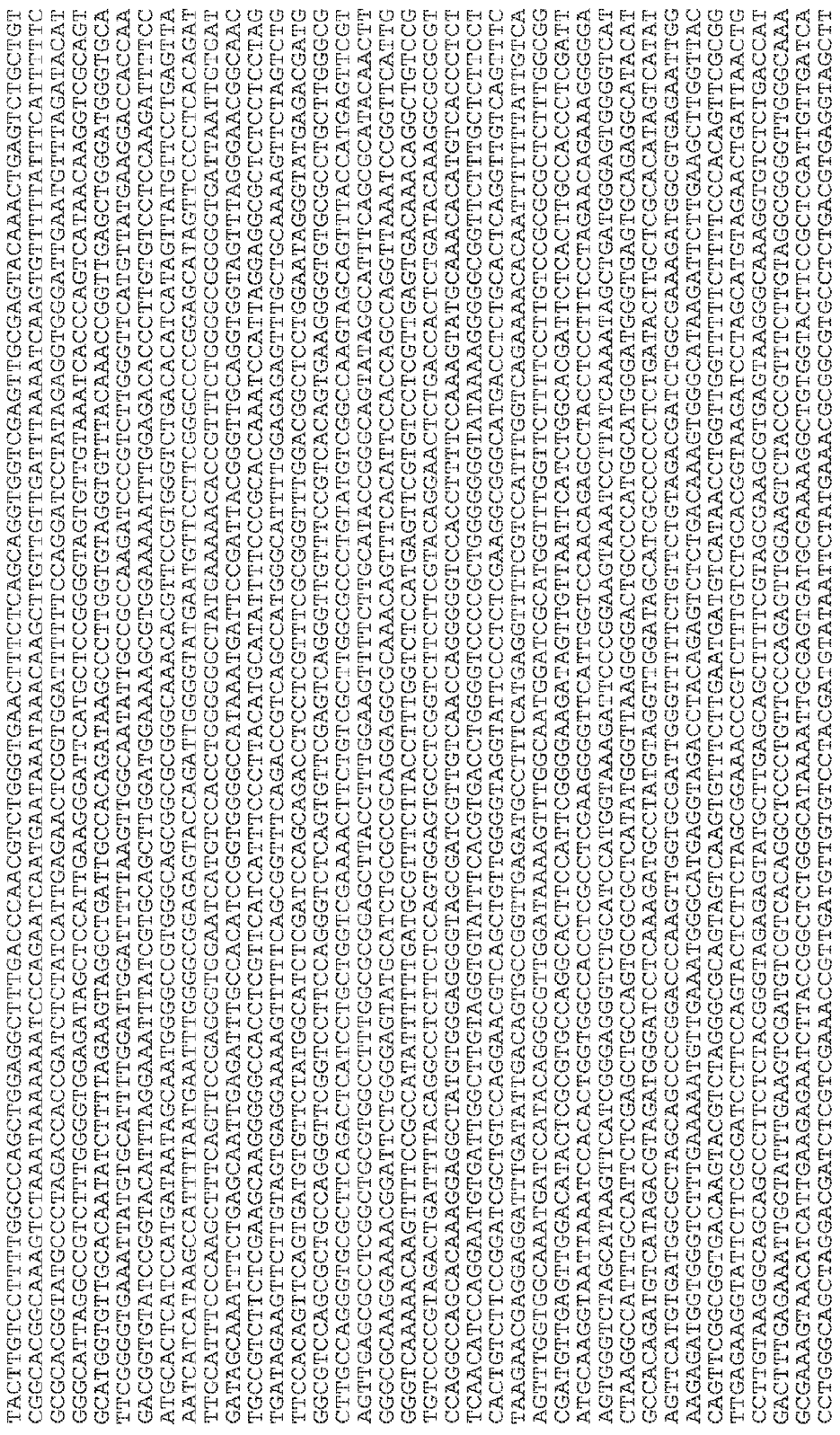


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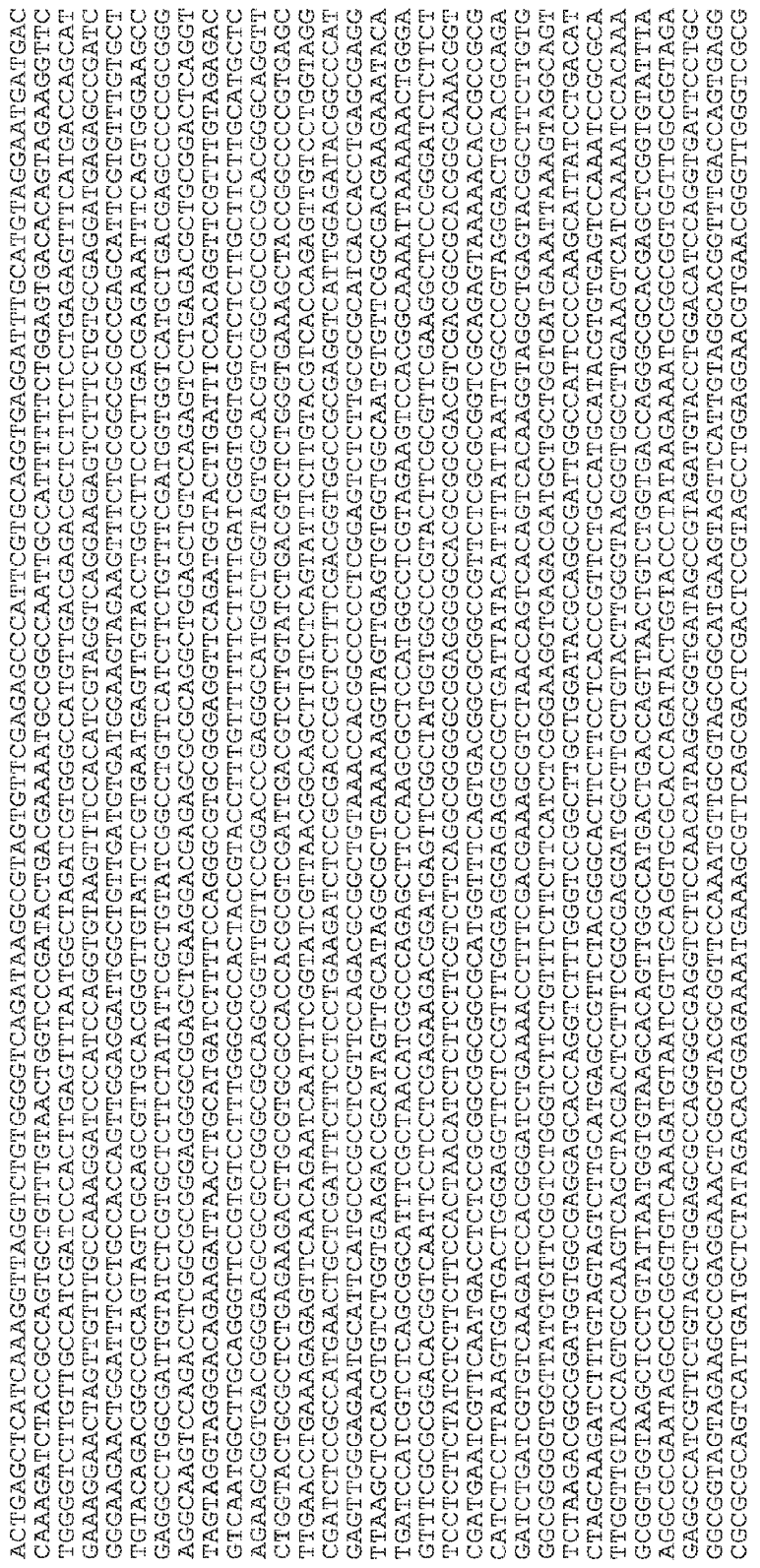

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Fig. 40, cont'd

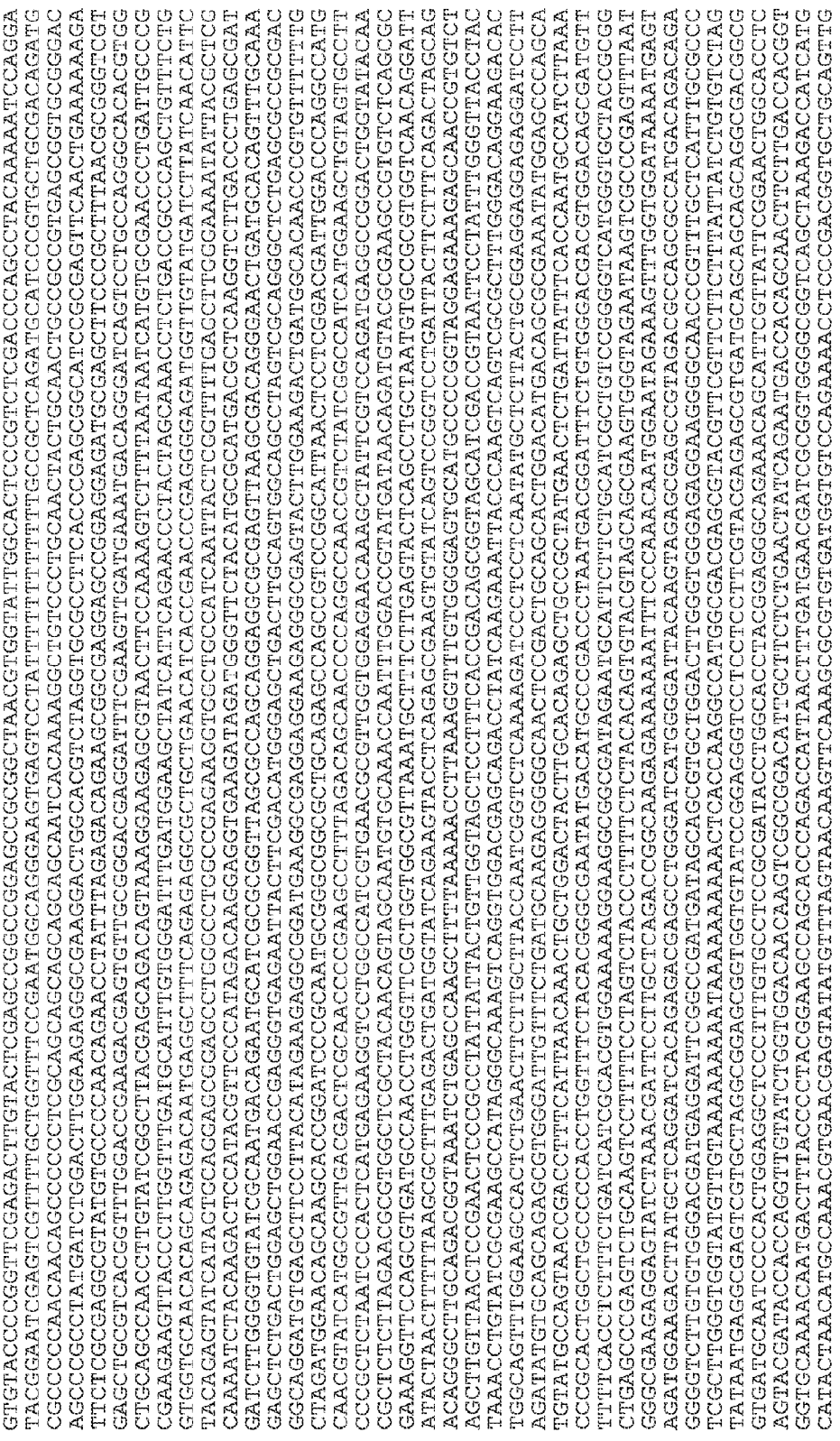


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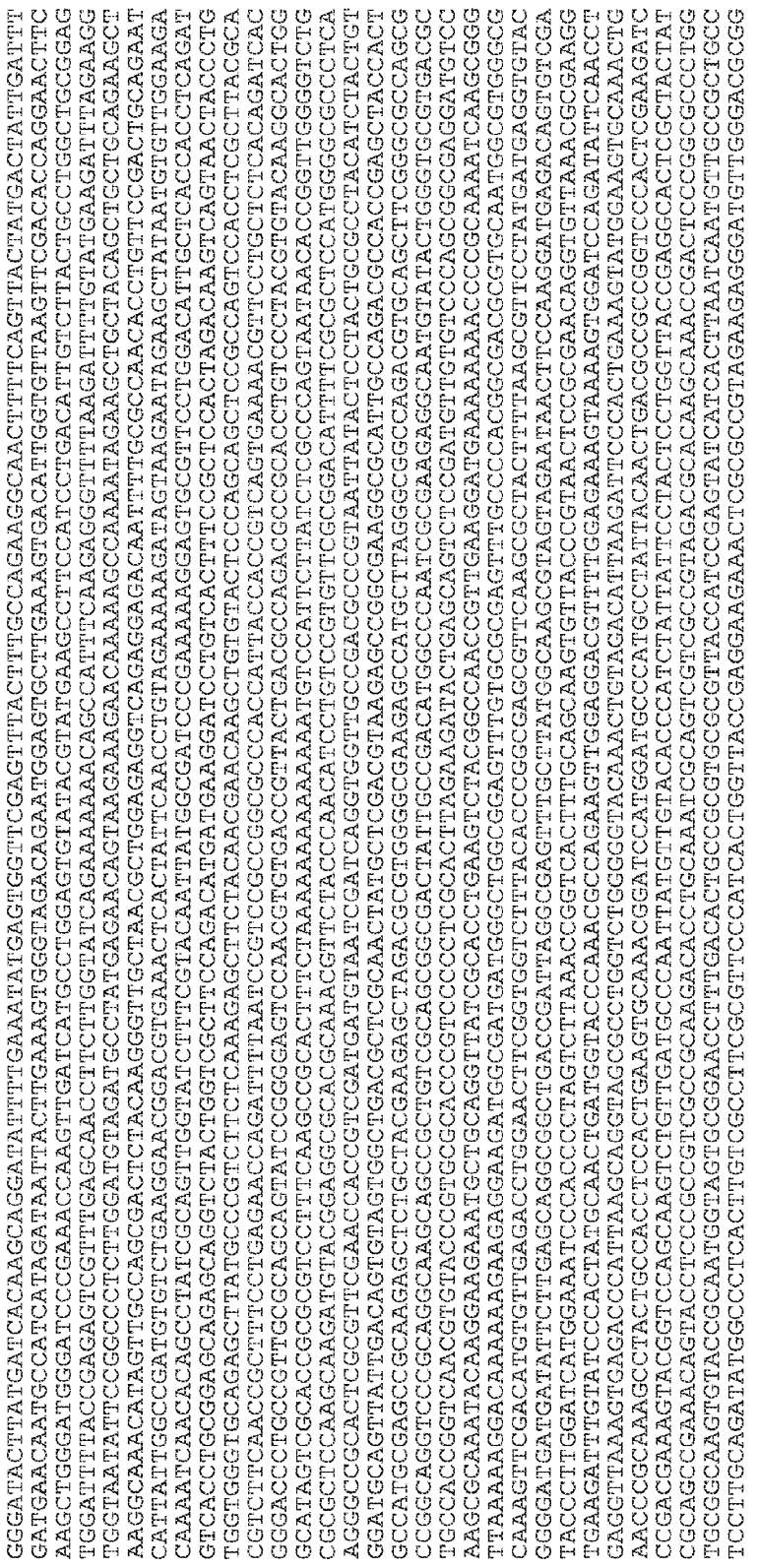


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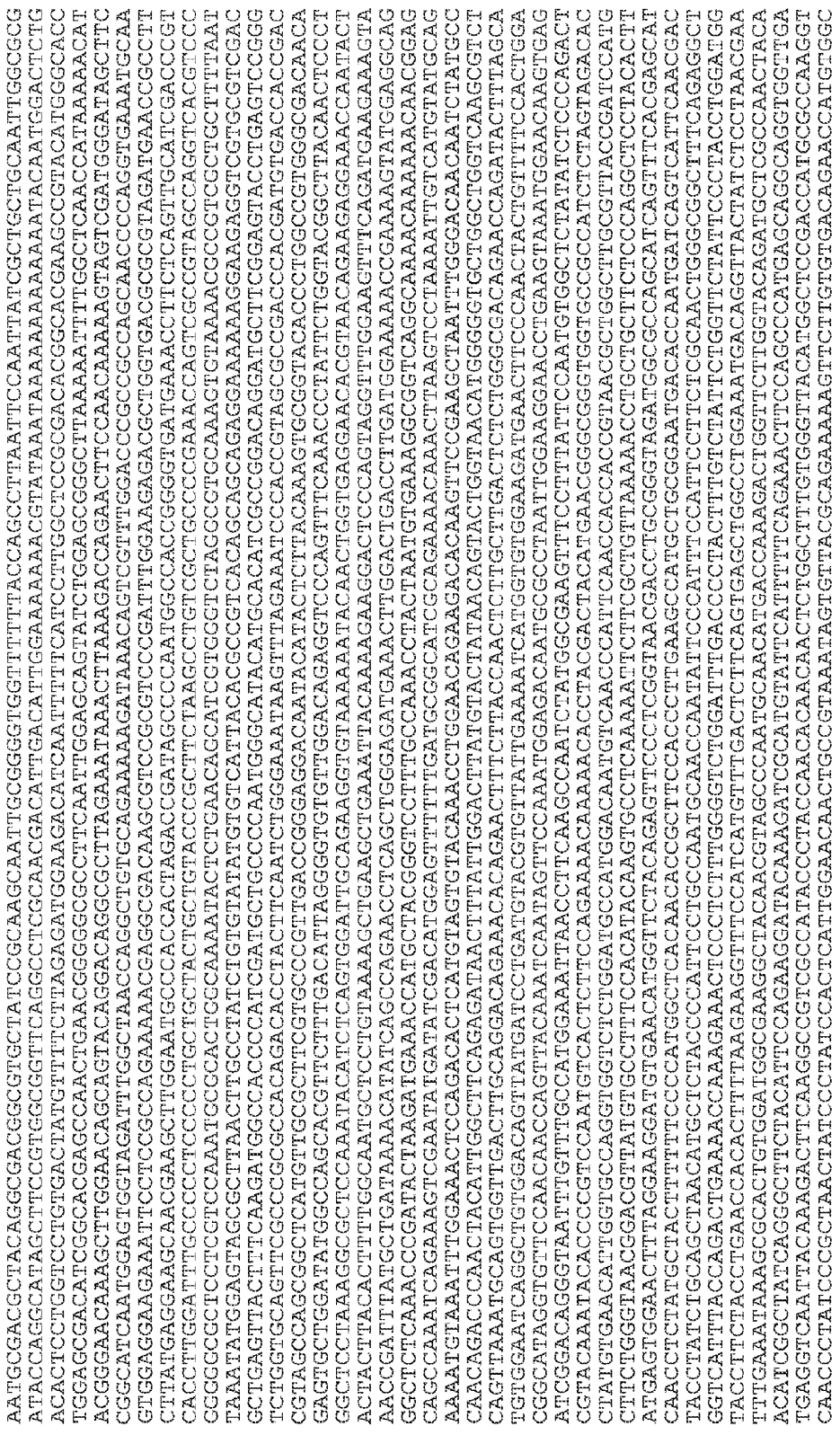


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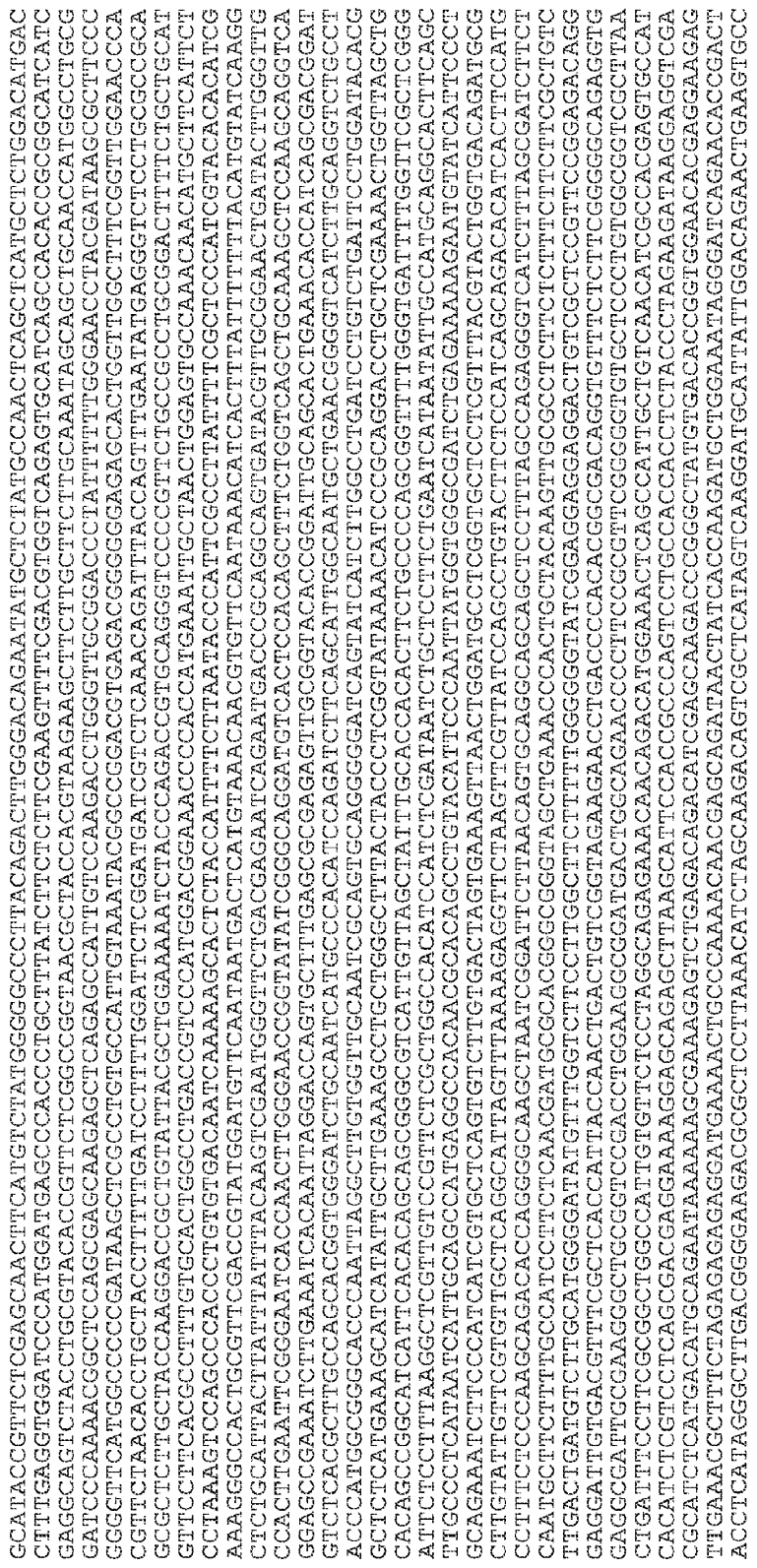


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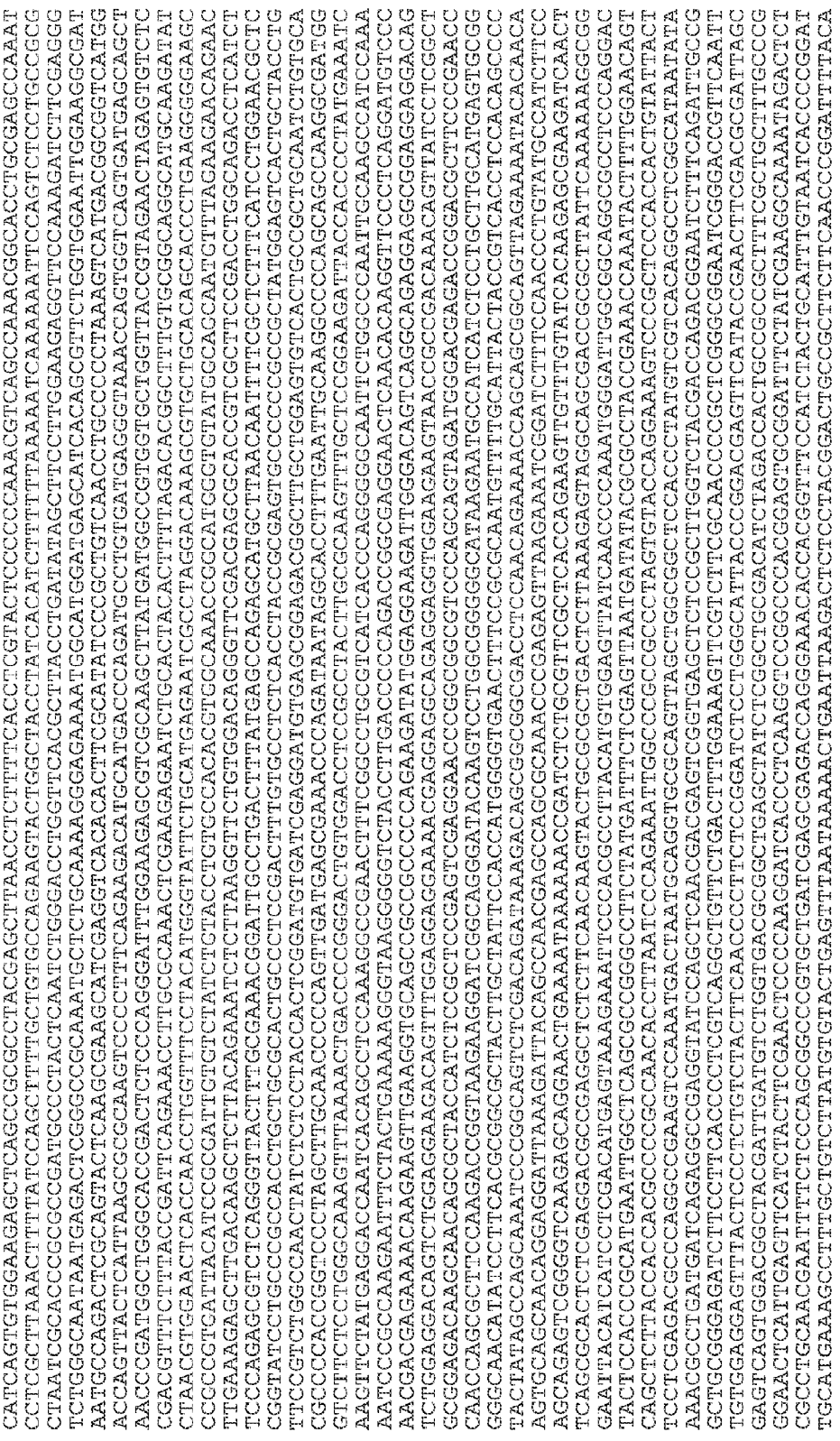


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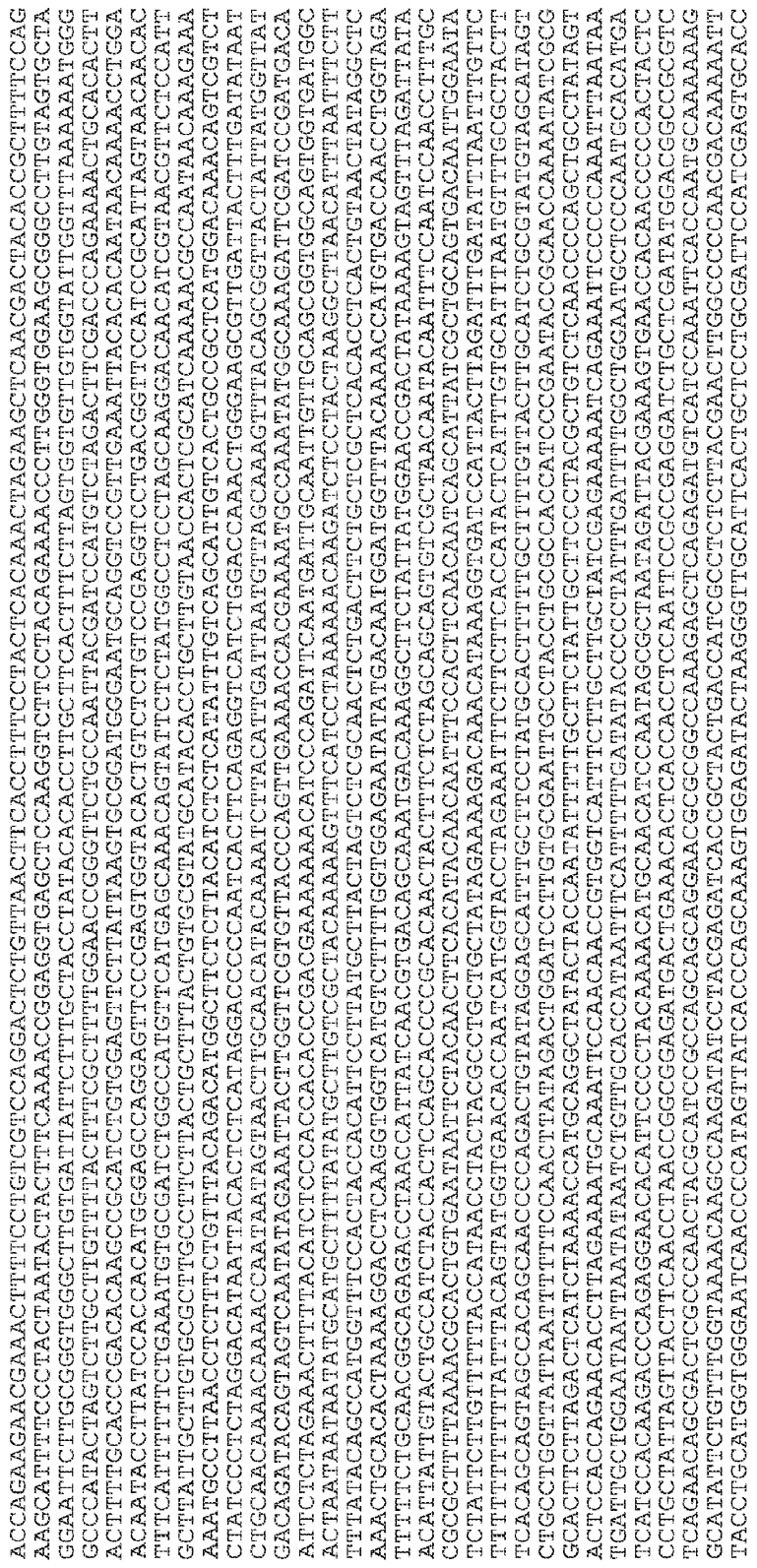


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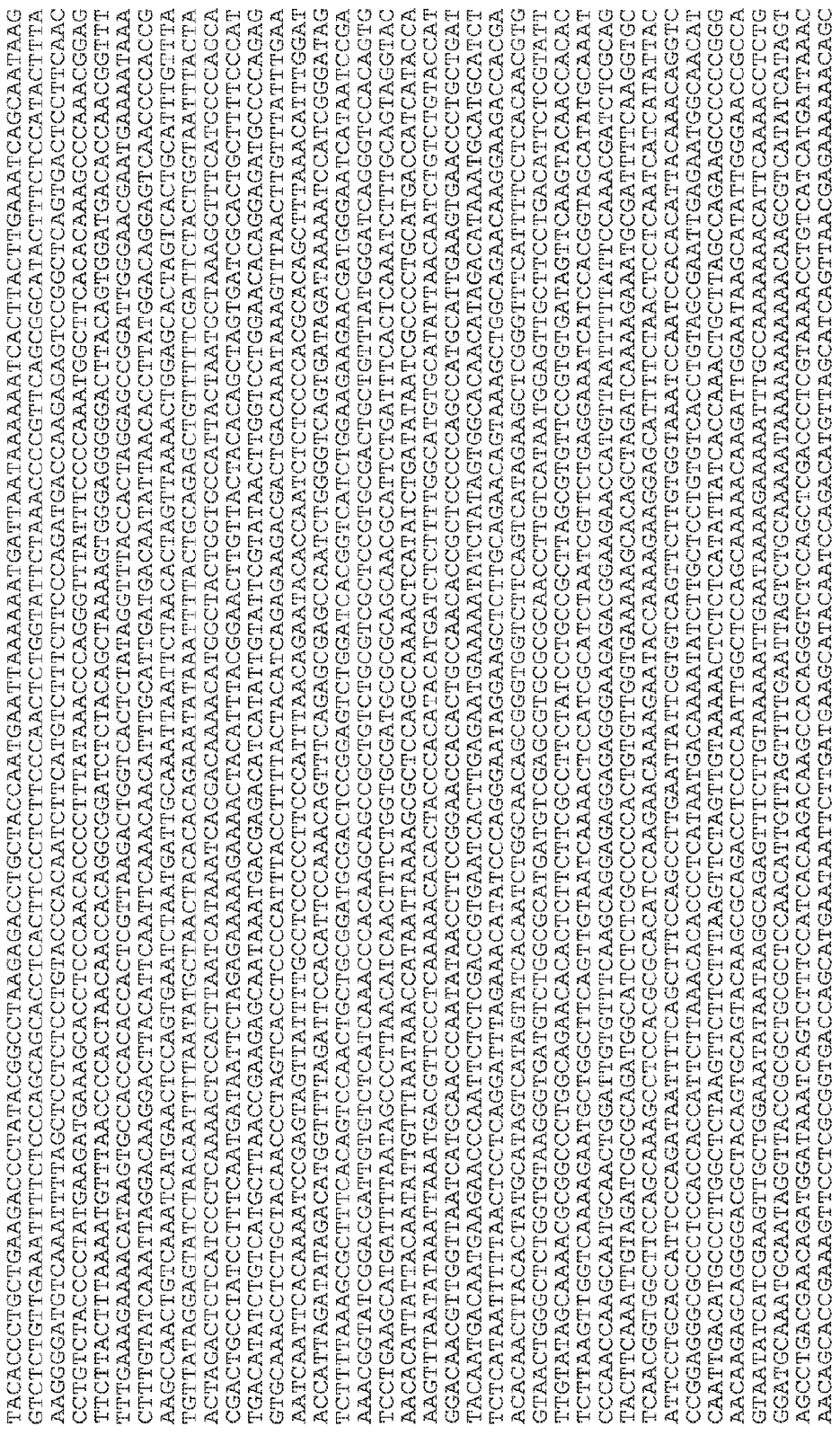


Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

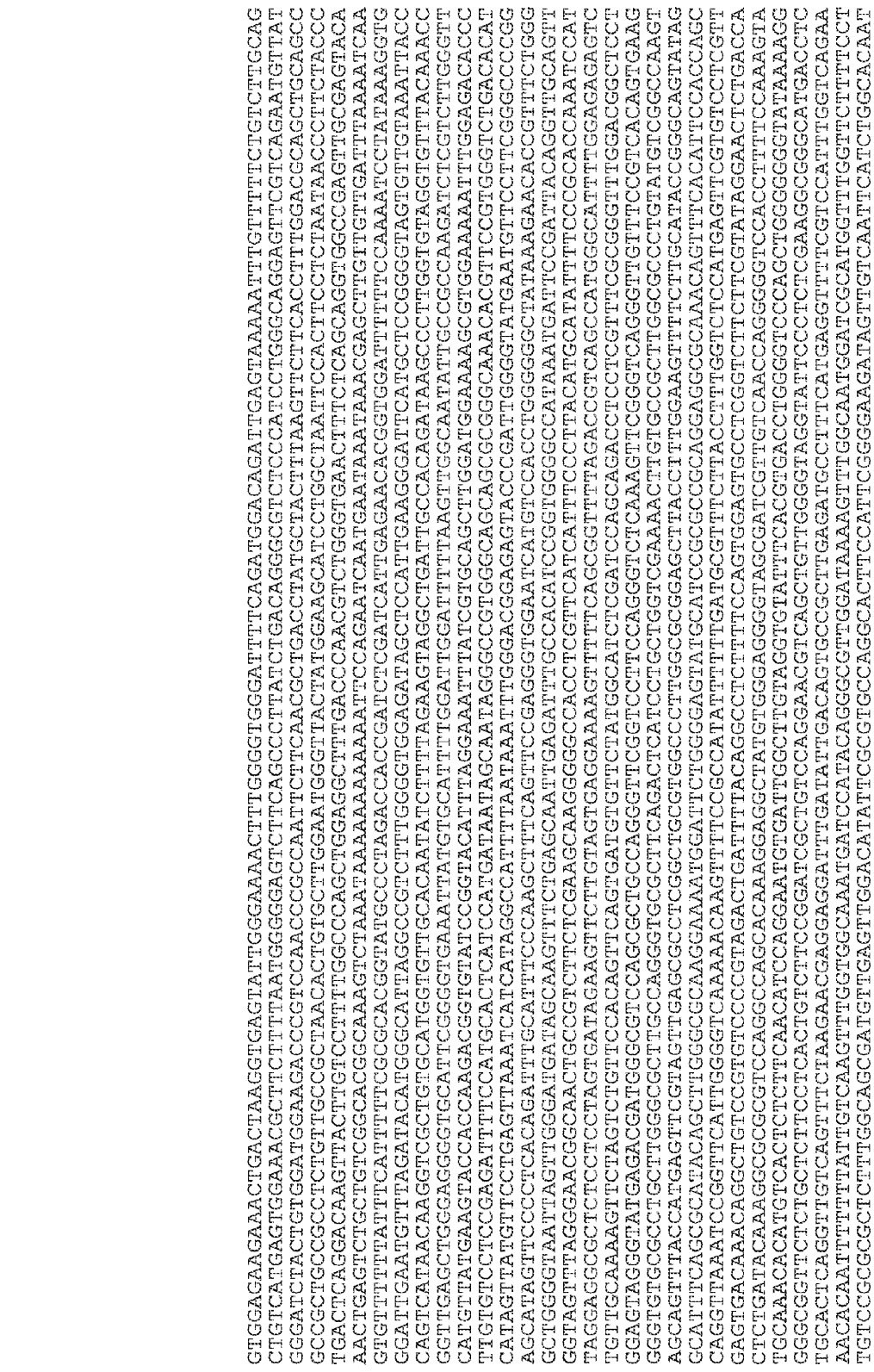


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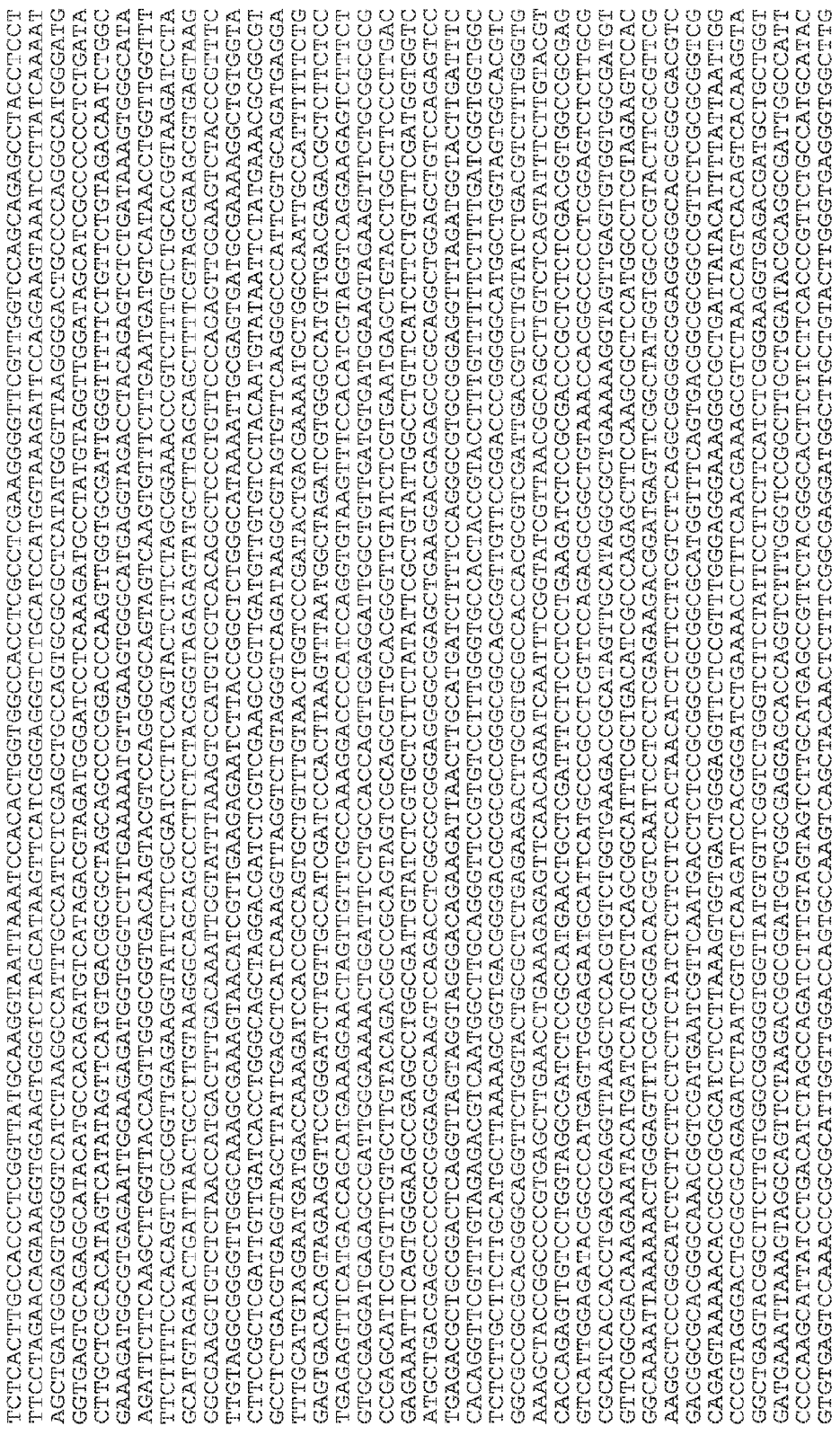


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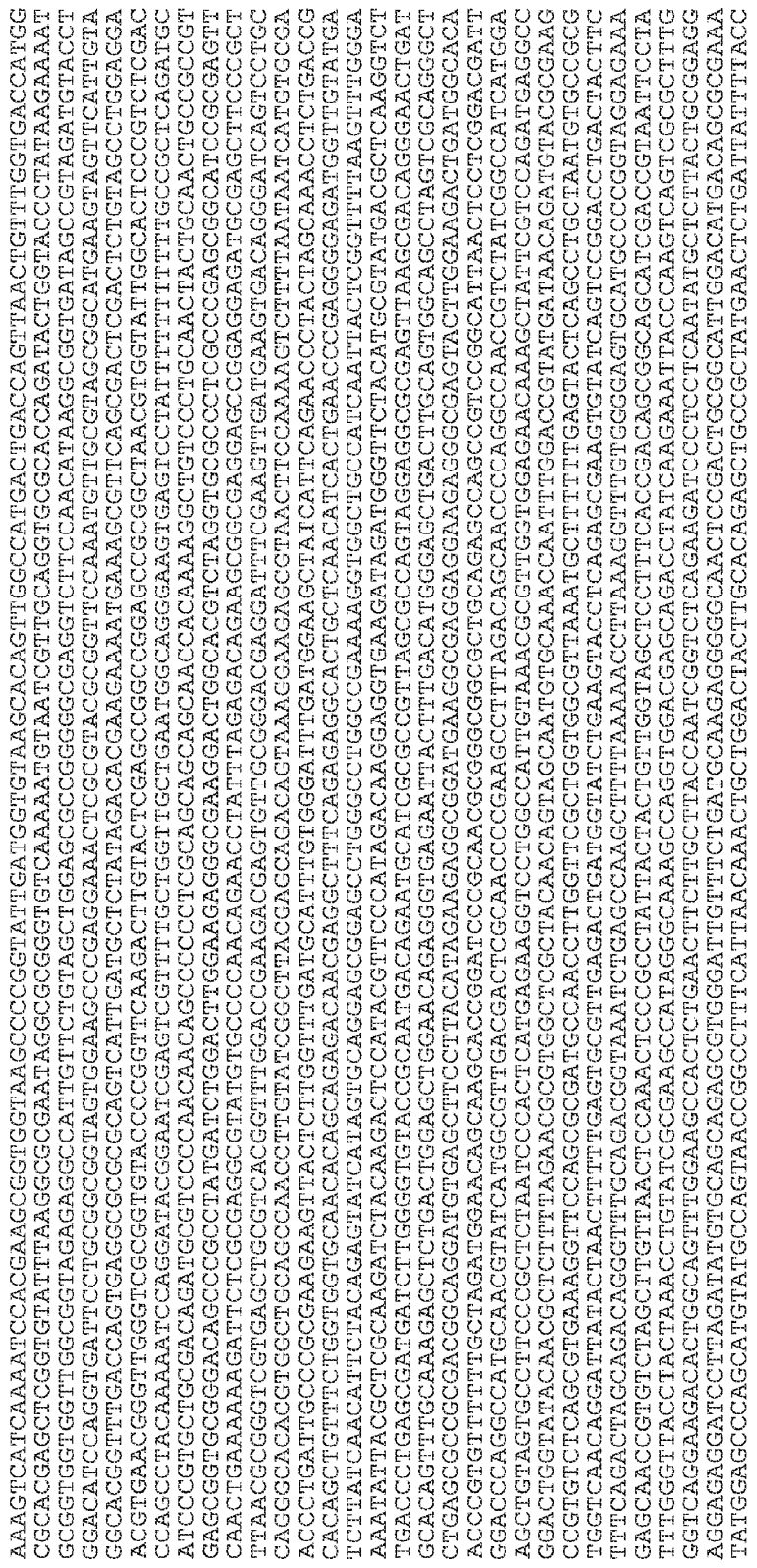


Fig. 40, cont'd

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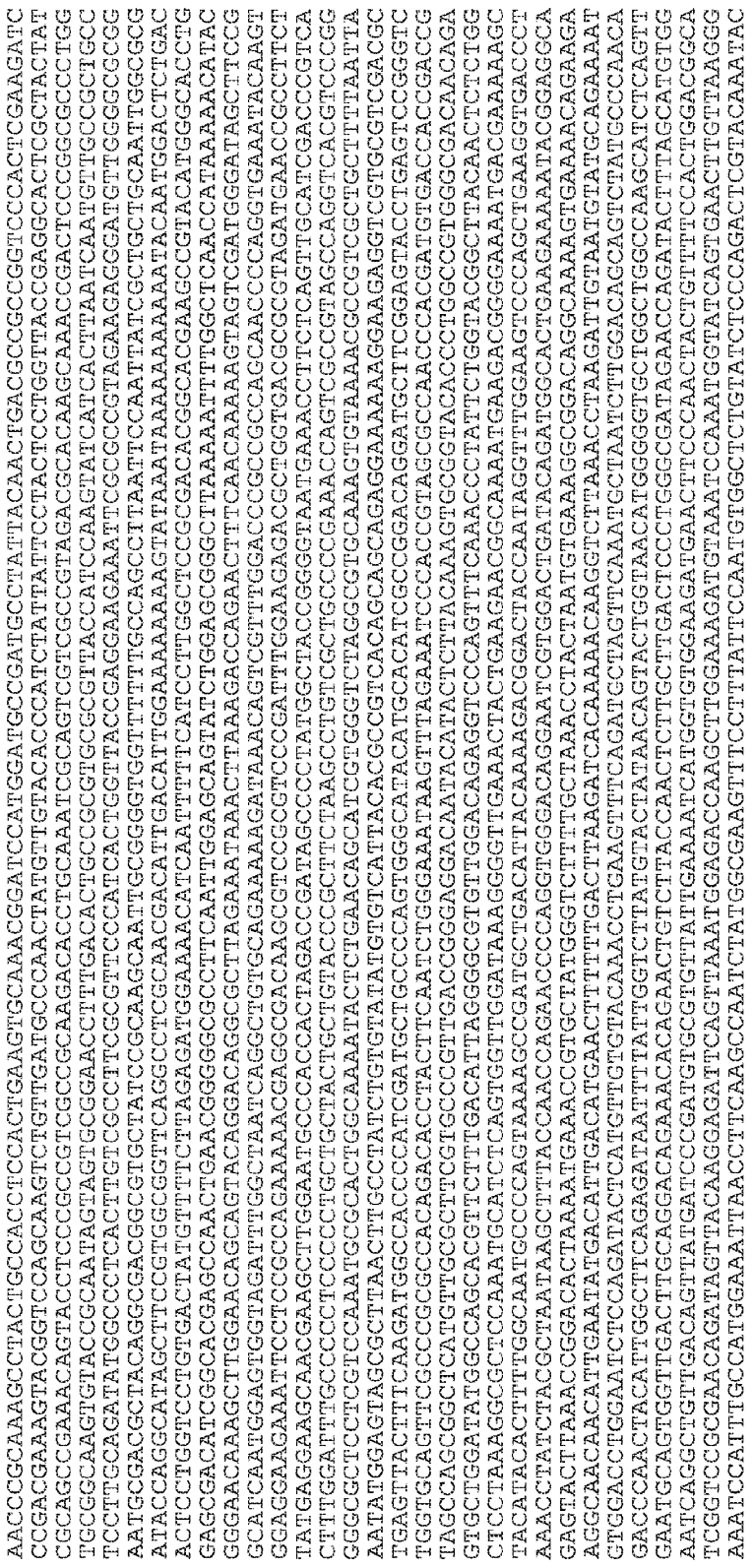

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Fig. 40, cont'd

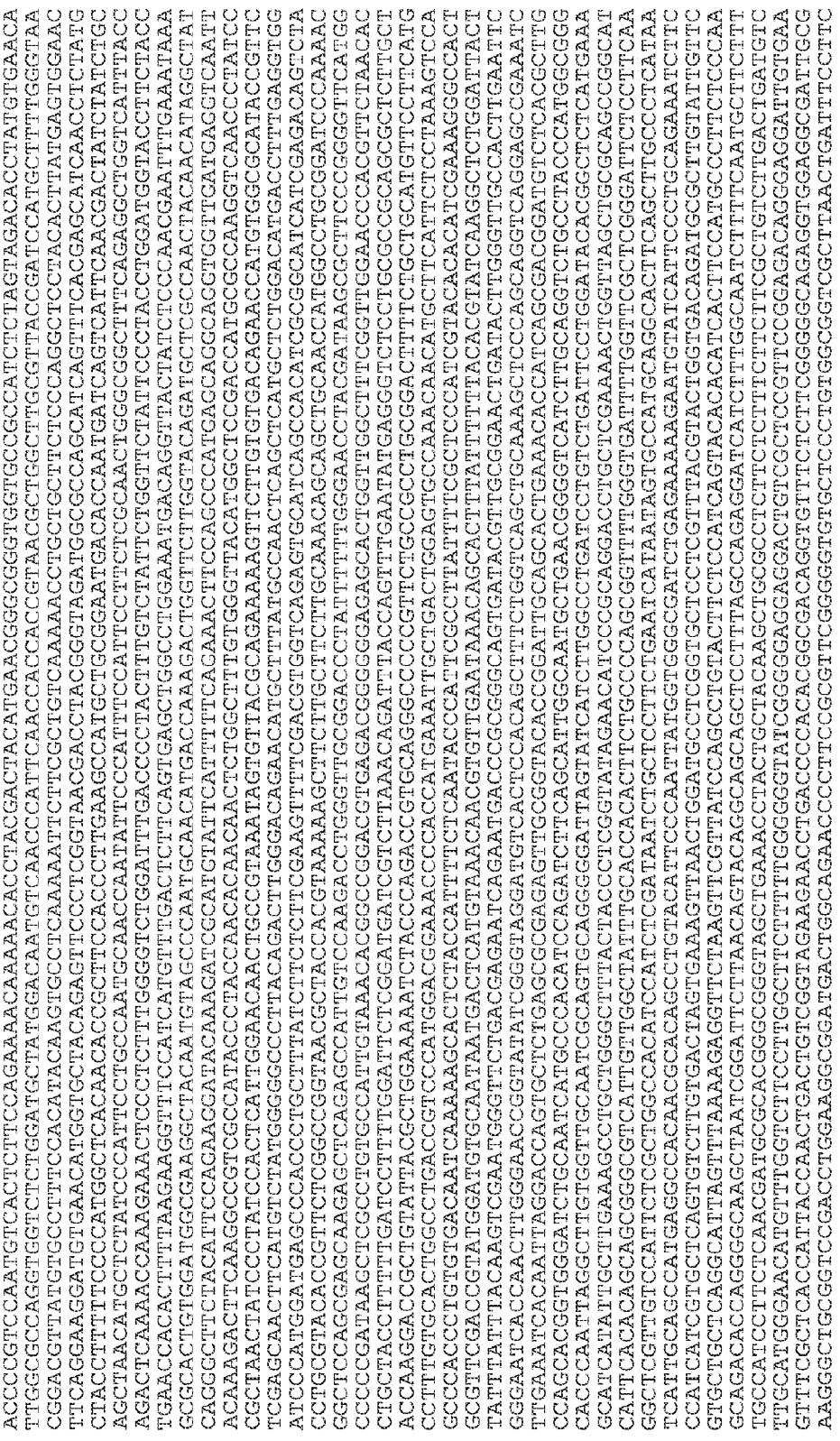


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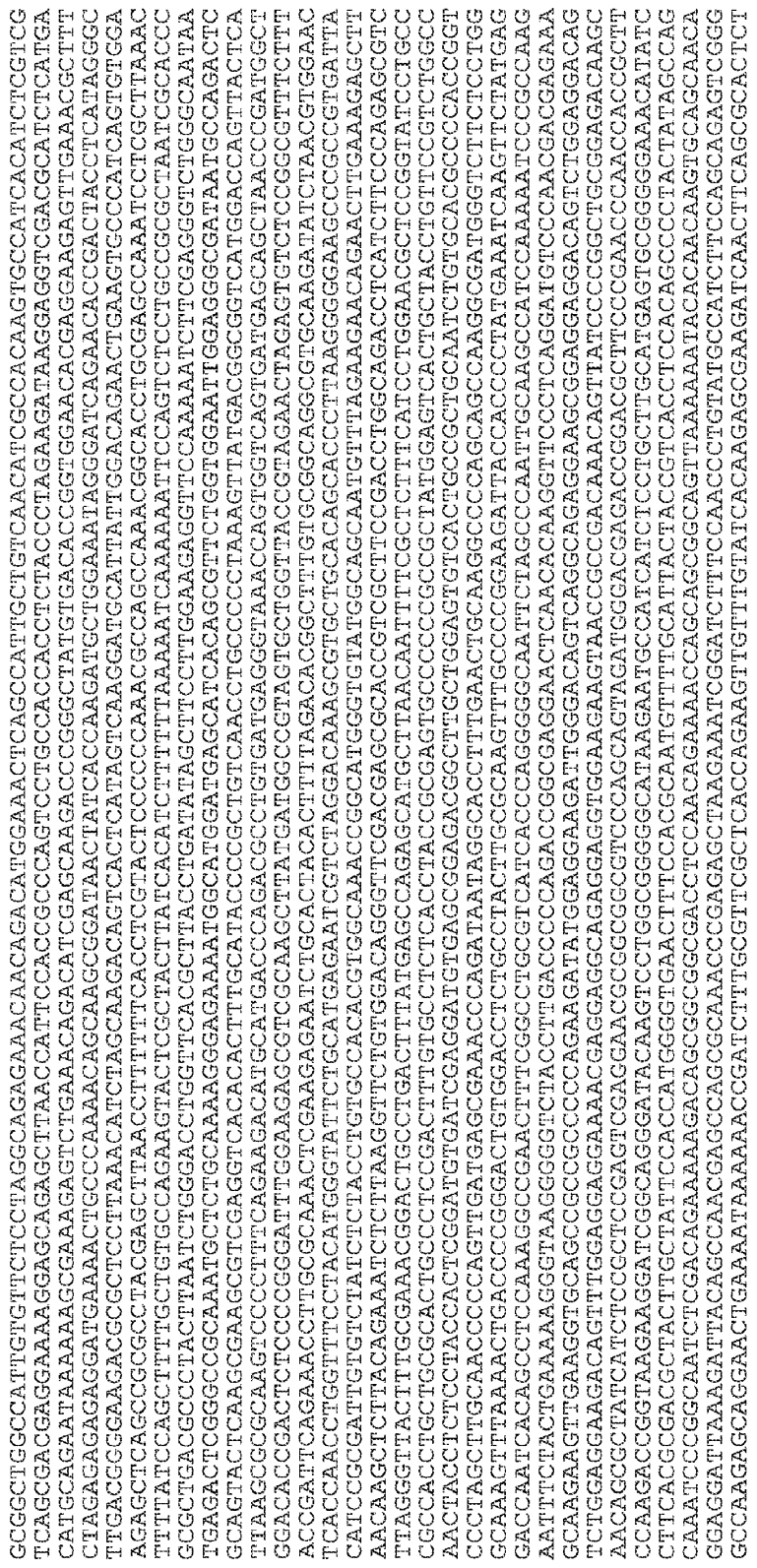

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Fig. 40, cont'd

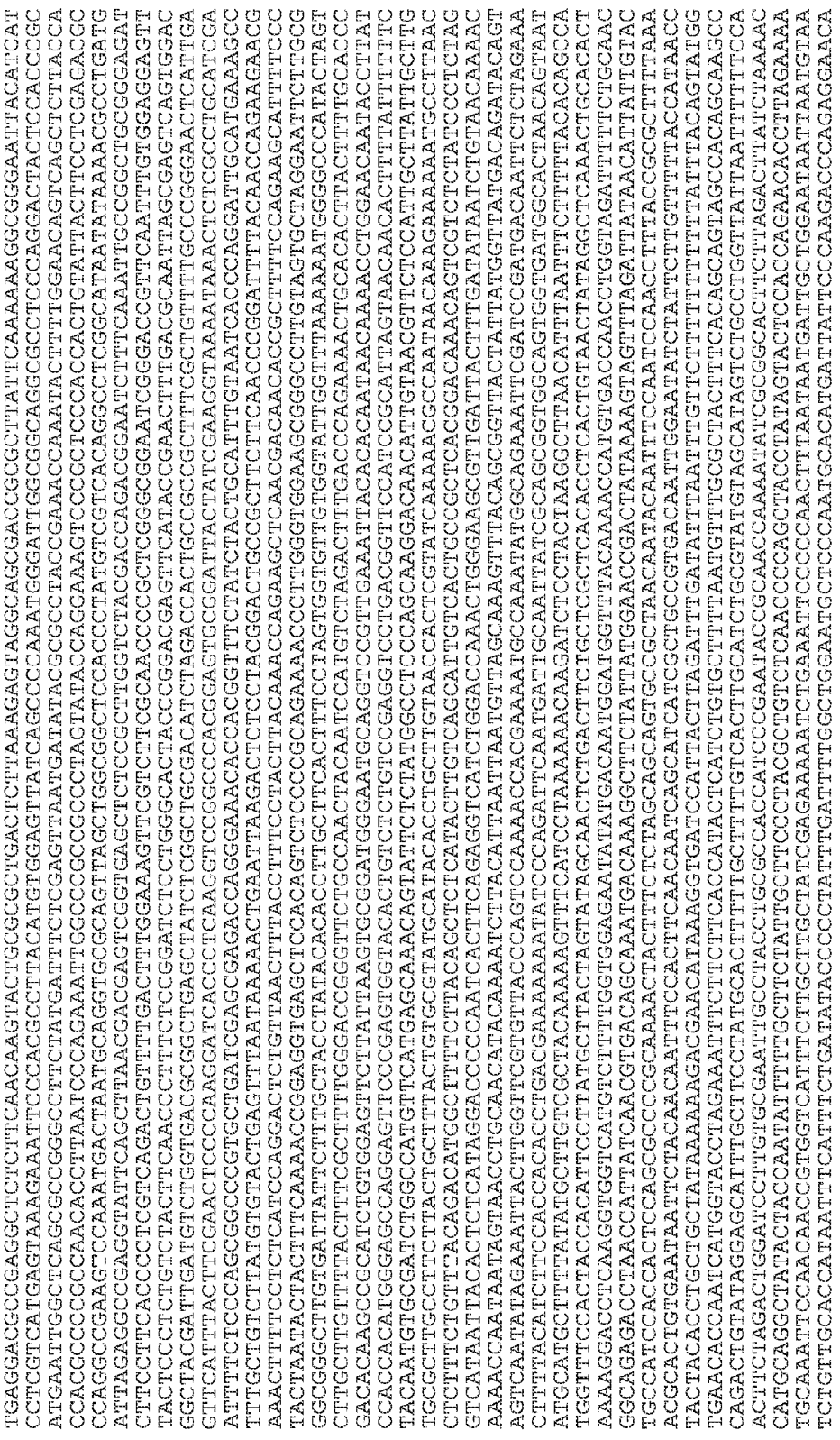


Fig. 40, cont'd

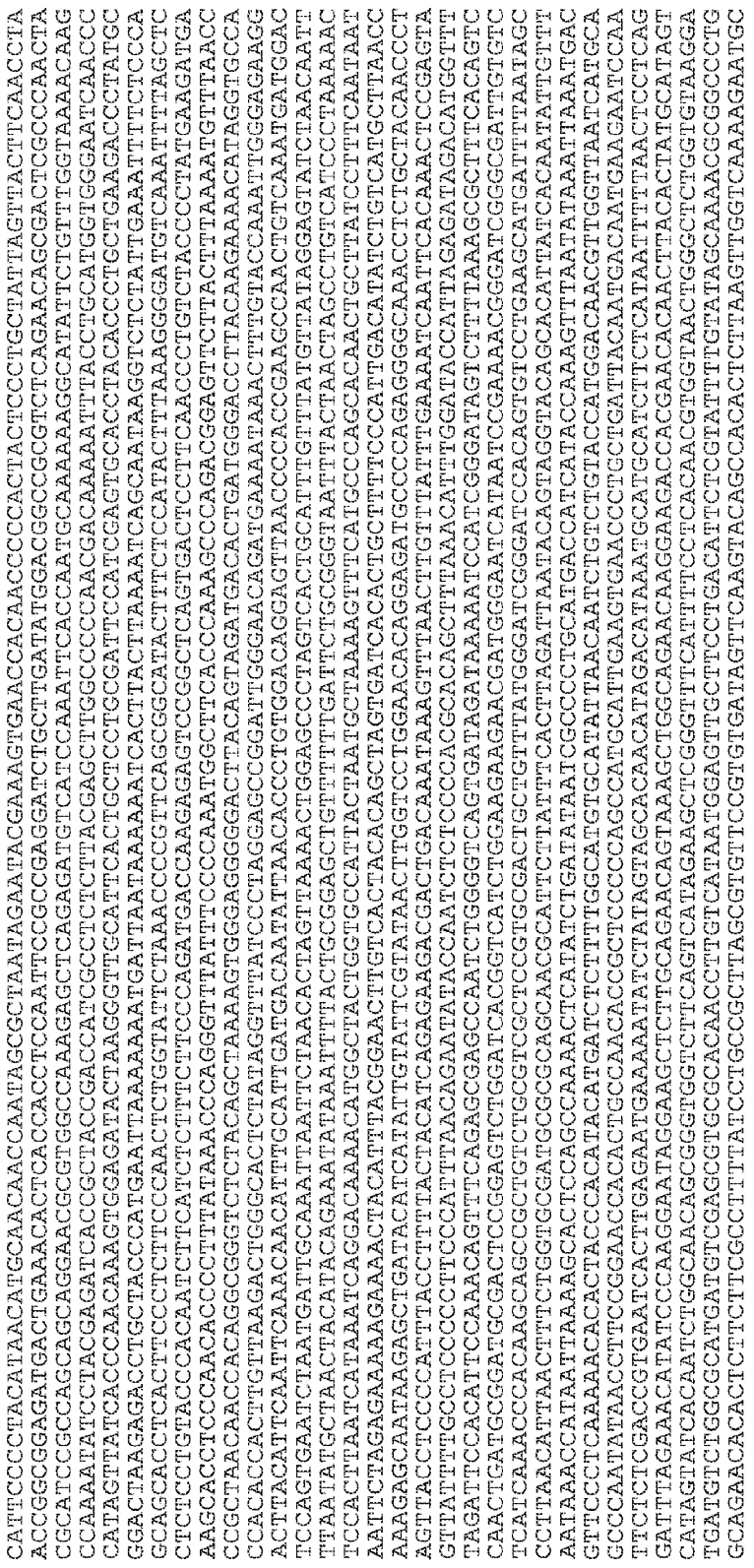
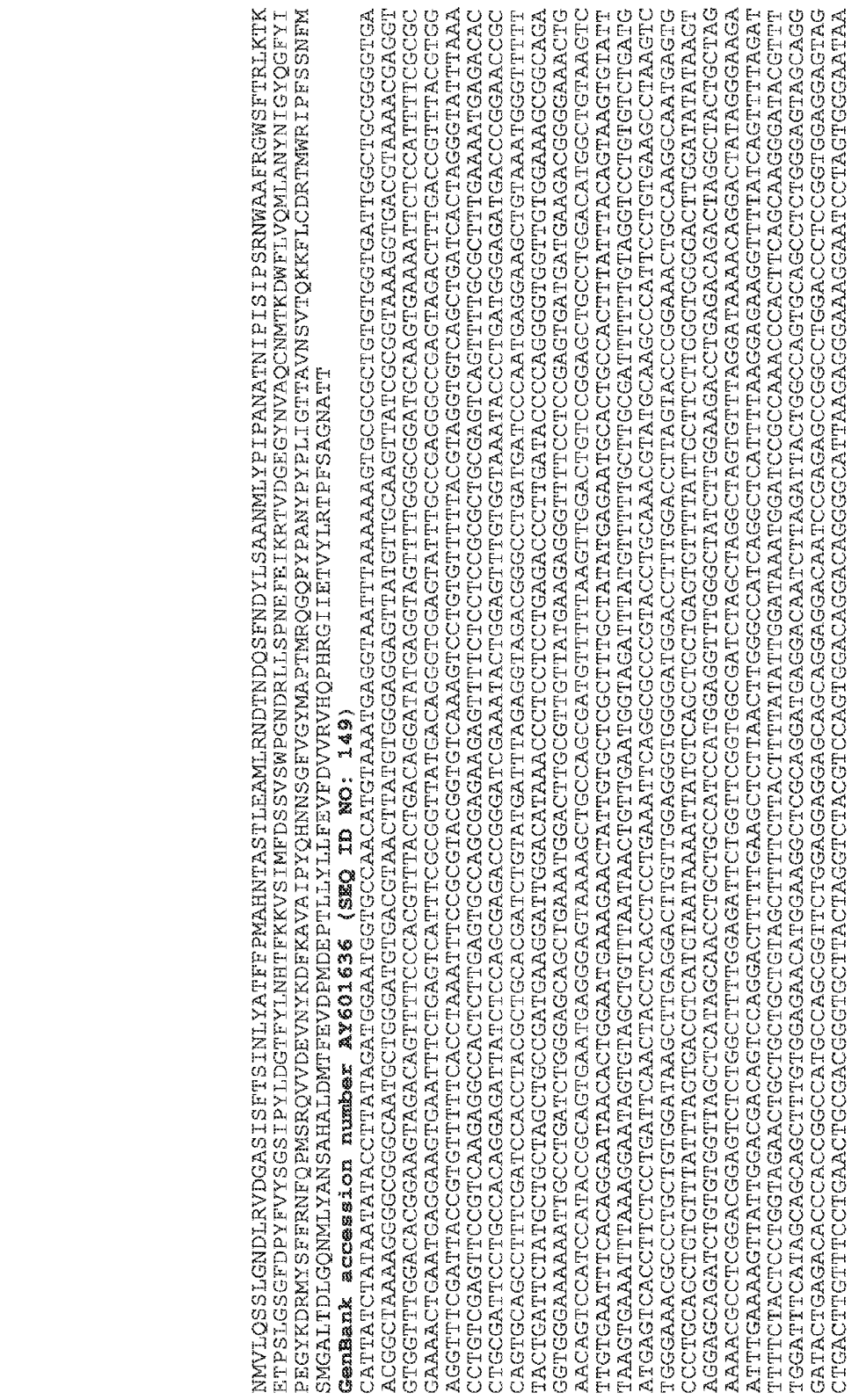


Fig. 40, cont'd

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Fig. 40, cont'd



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Fig. 40, cont'd

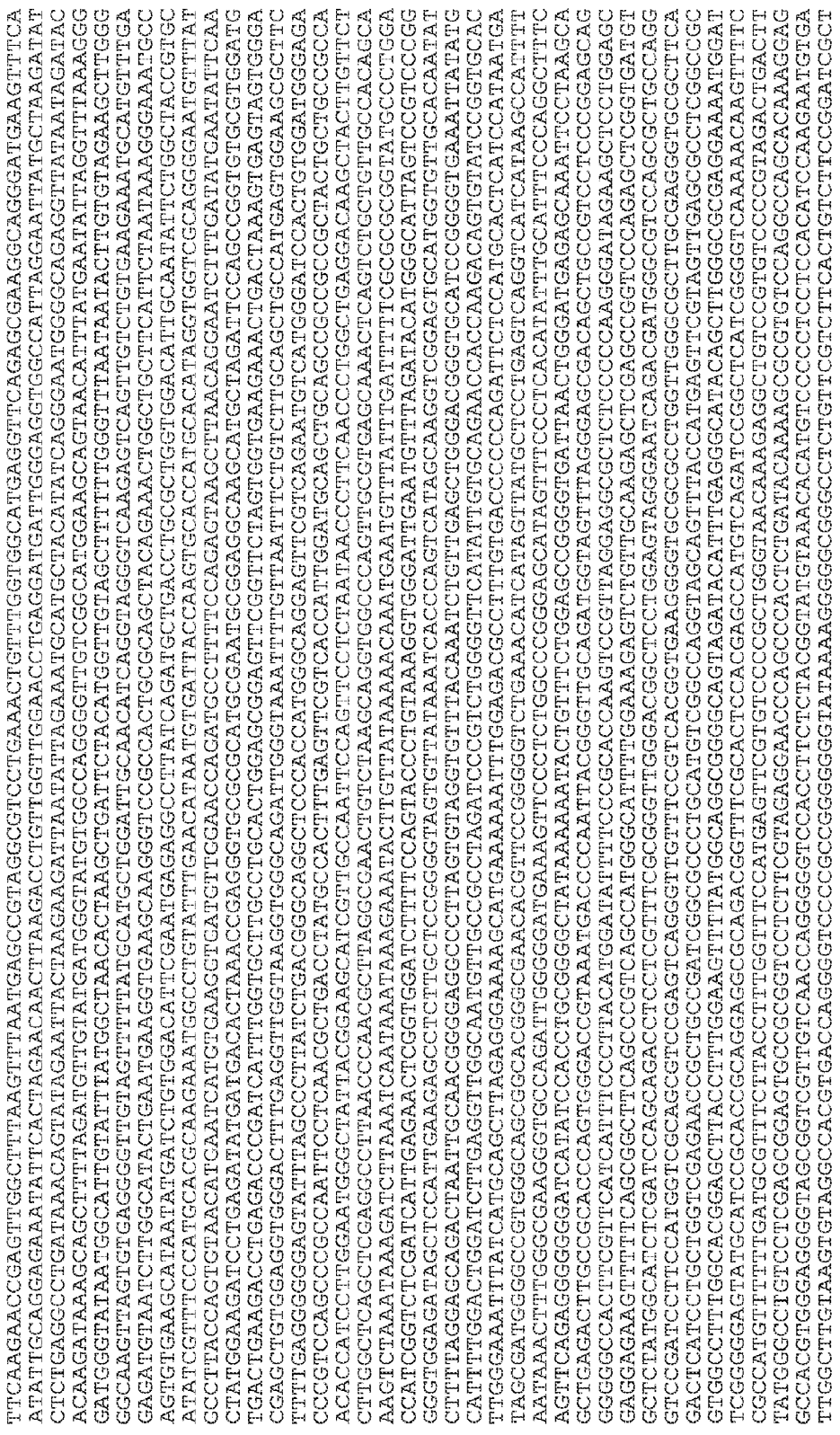


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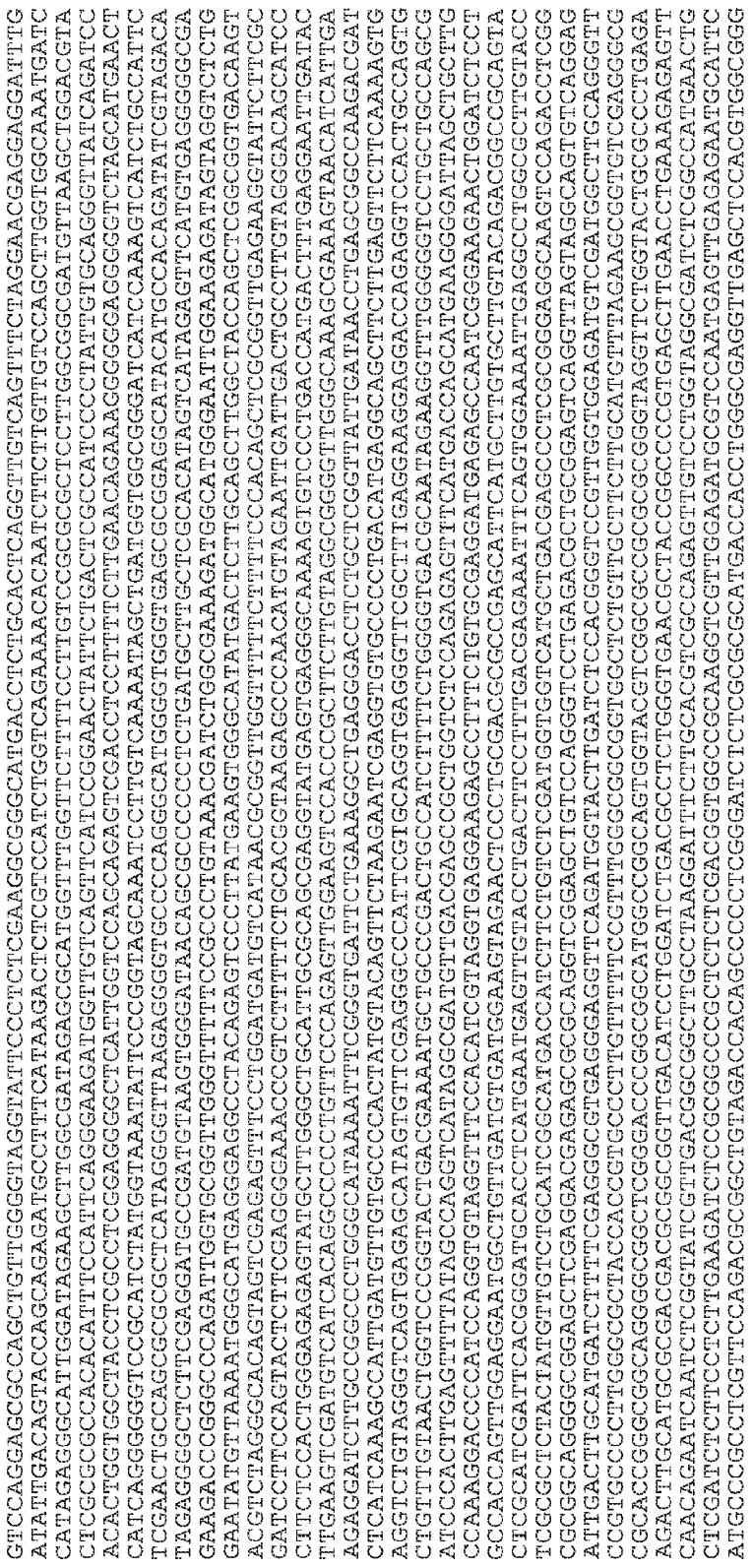


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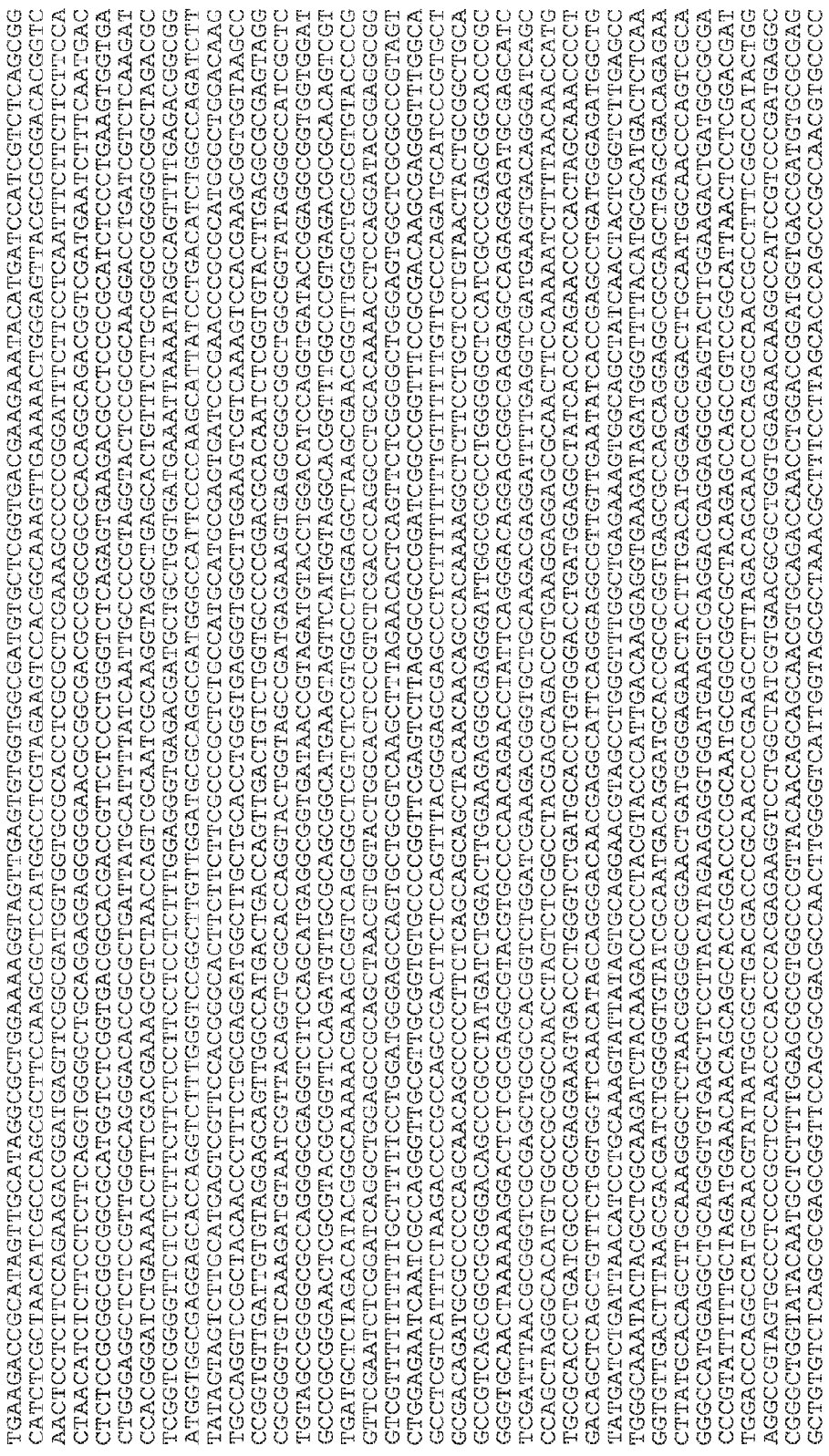


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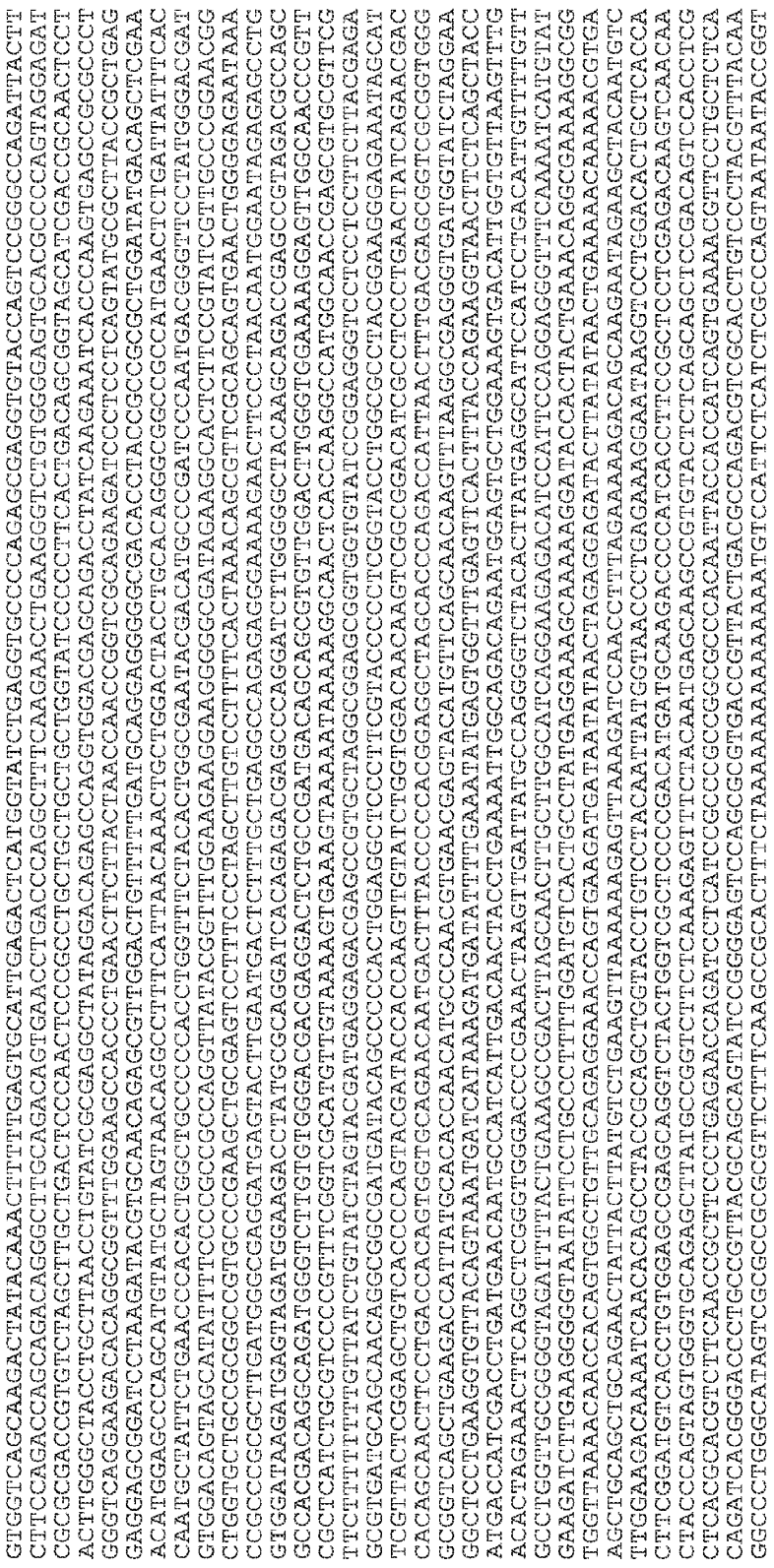


Fig. 40, cont'd

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Fig. 40, cont'd

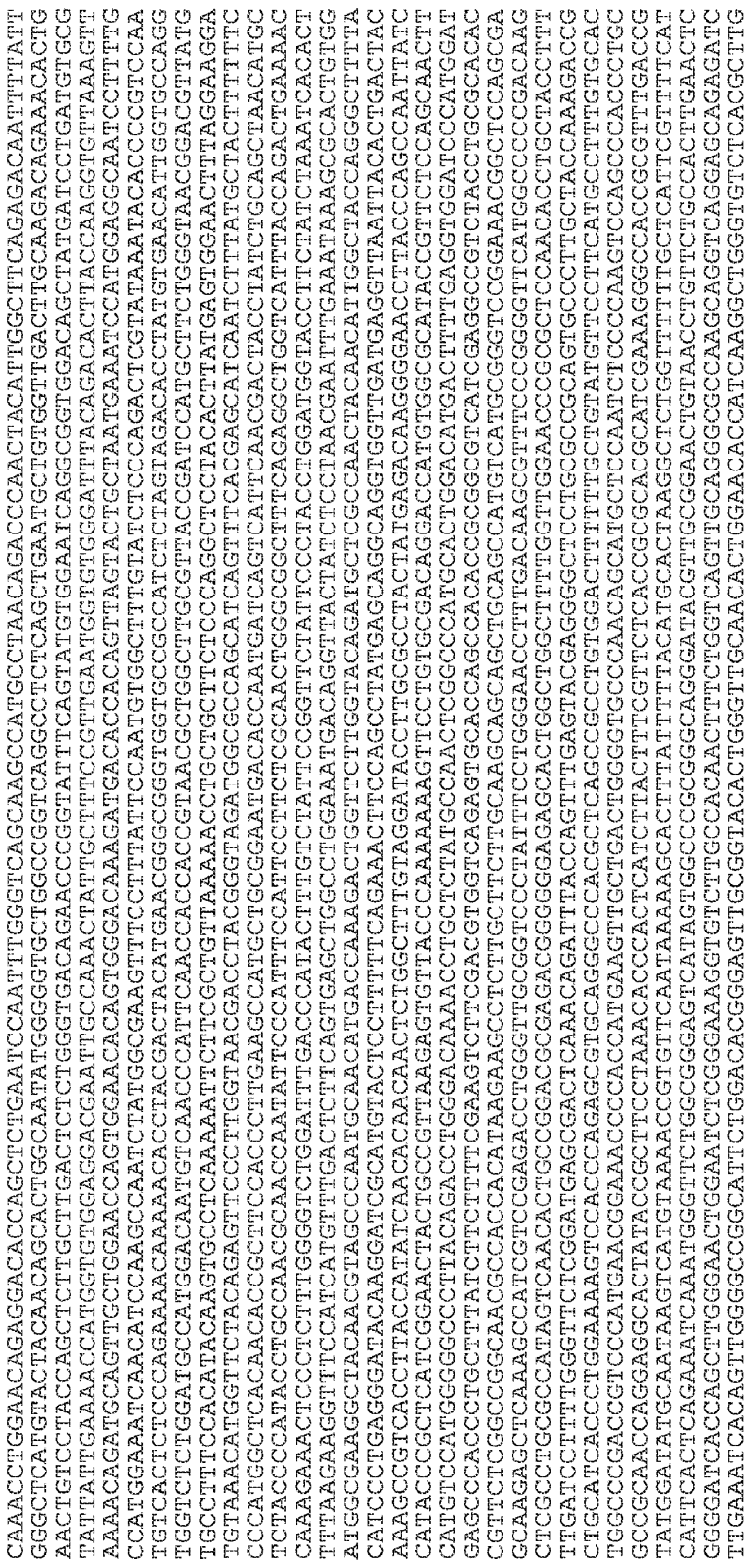


Fig. 40, cont'd

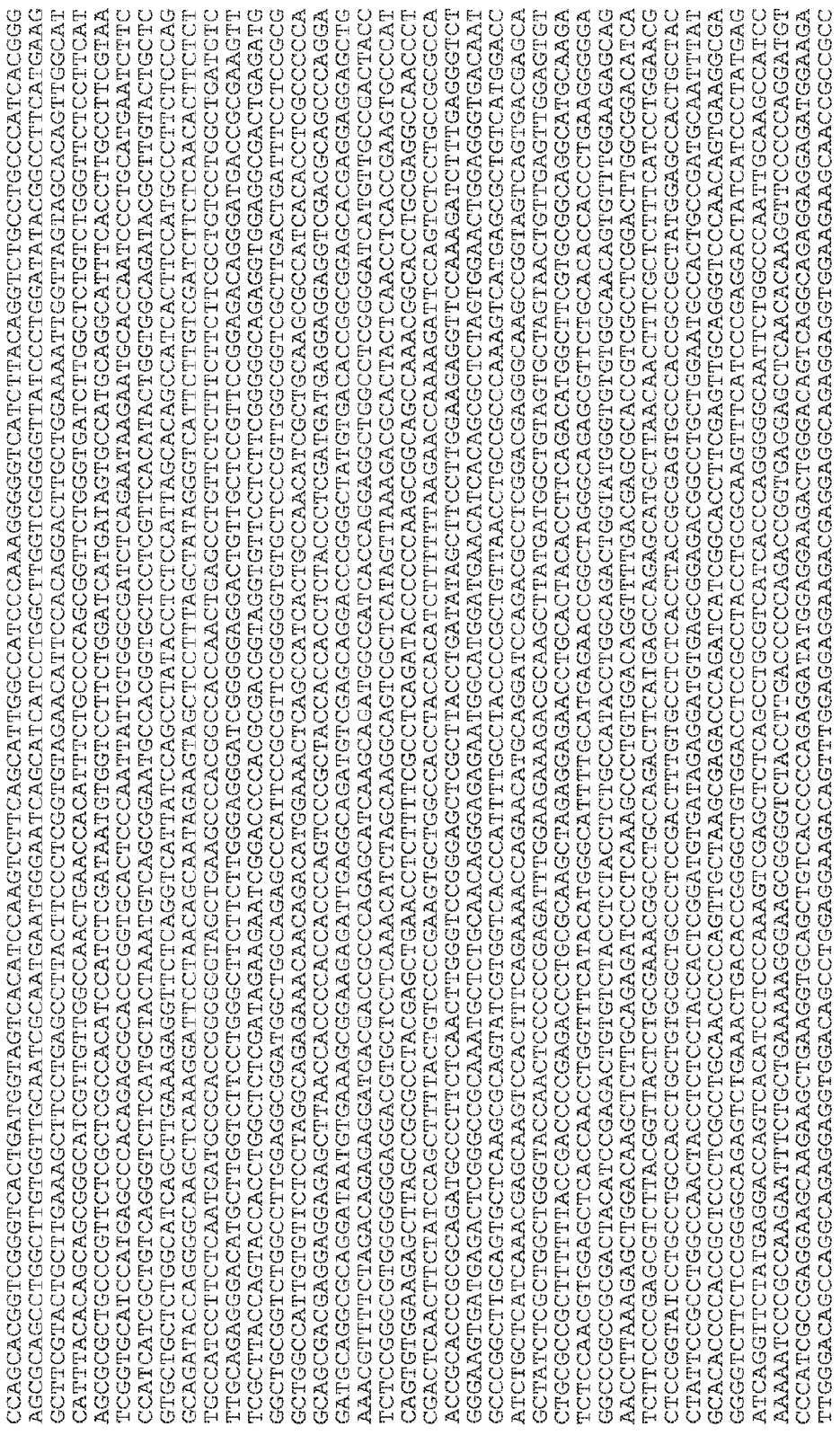


Fig. 40, cont'd

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Fig. 40, cont'd

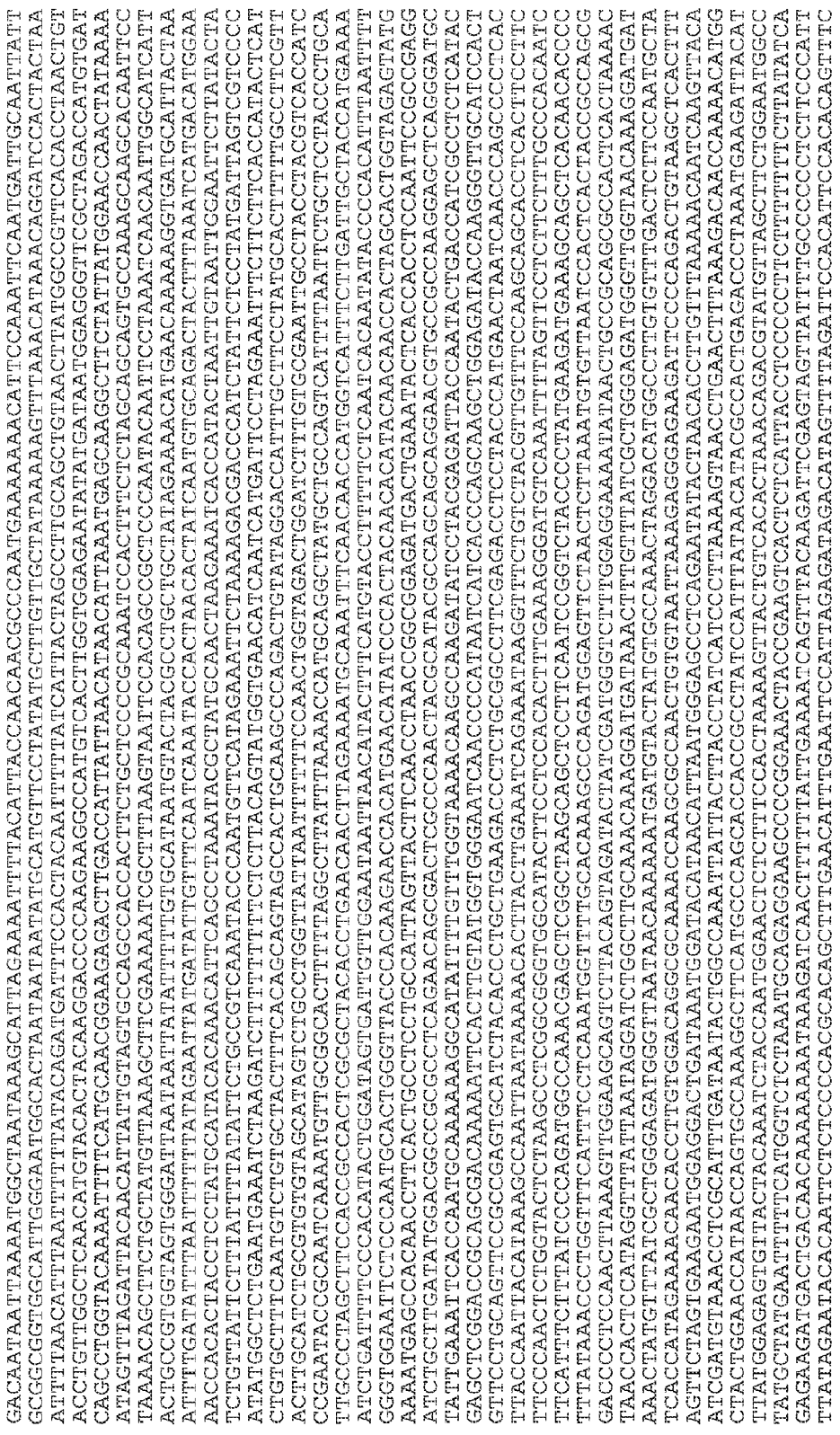


Fig. 40, cont'd

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Fig. 40, cont'd

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GenBank accession no. AAW33439

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GenBank accession no. AAW33444

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GenBank accession number AY601633 (SEQ ID NO: 150)

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Fig. 40, cont'd

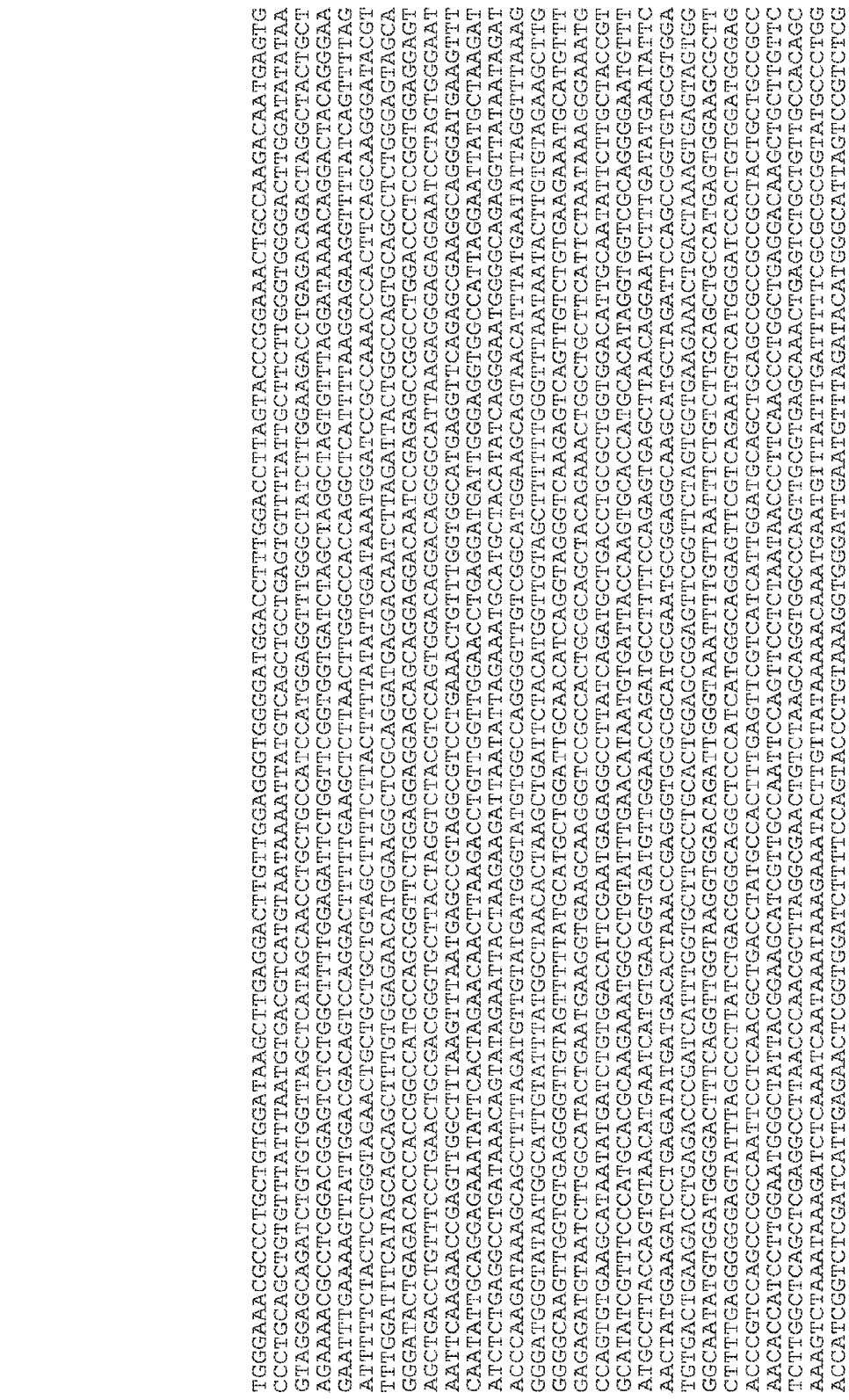

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Fig. 40, cont'd

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Fig. 40, cont'd

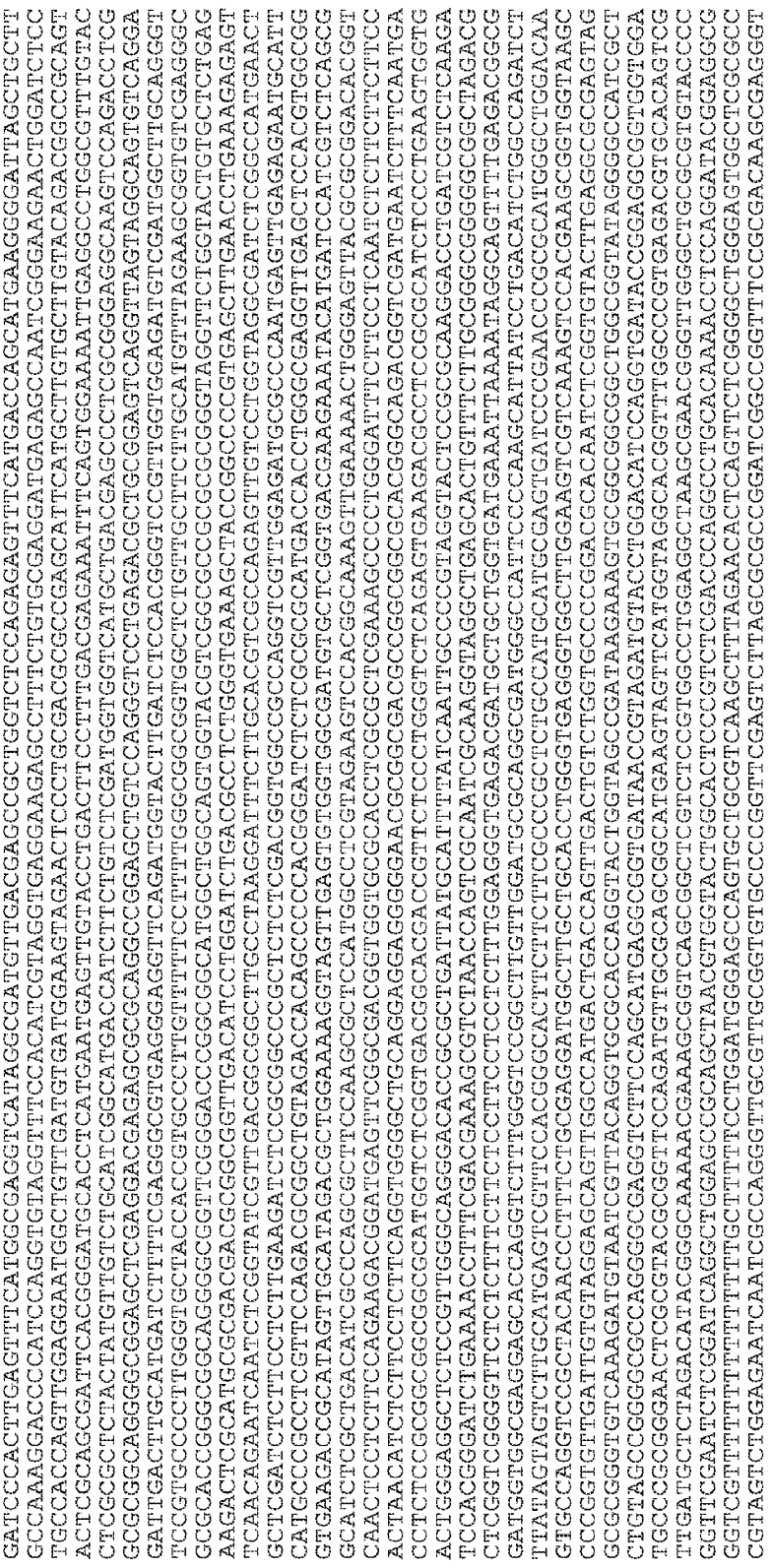


Fig. 40, cont'd

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Fig. 40, cont'd

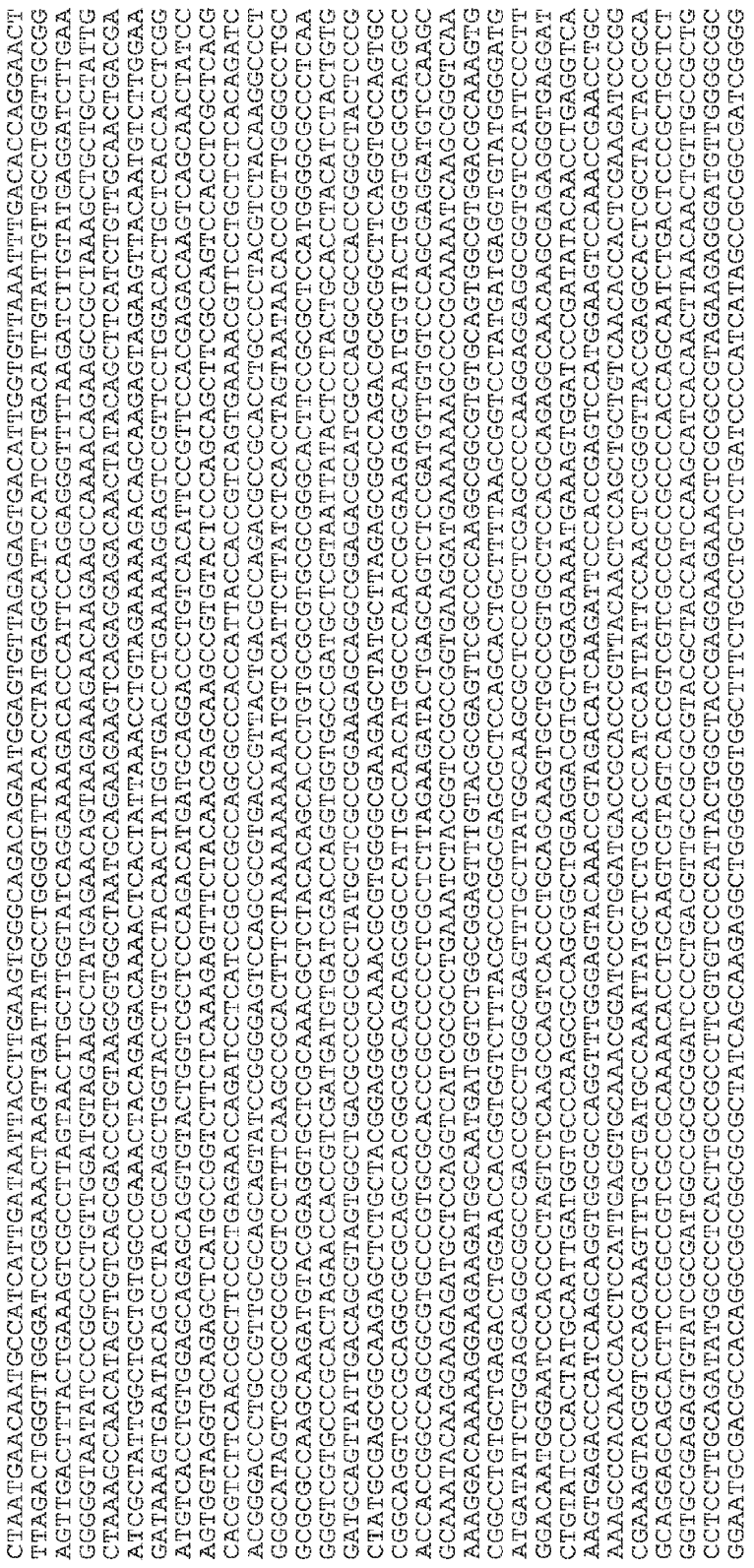


Fig. 40, cont'd

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Fig. 40, cont'd

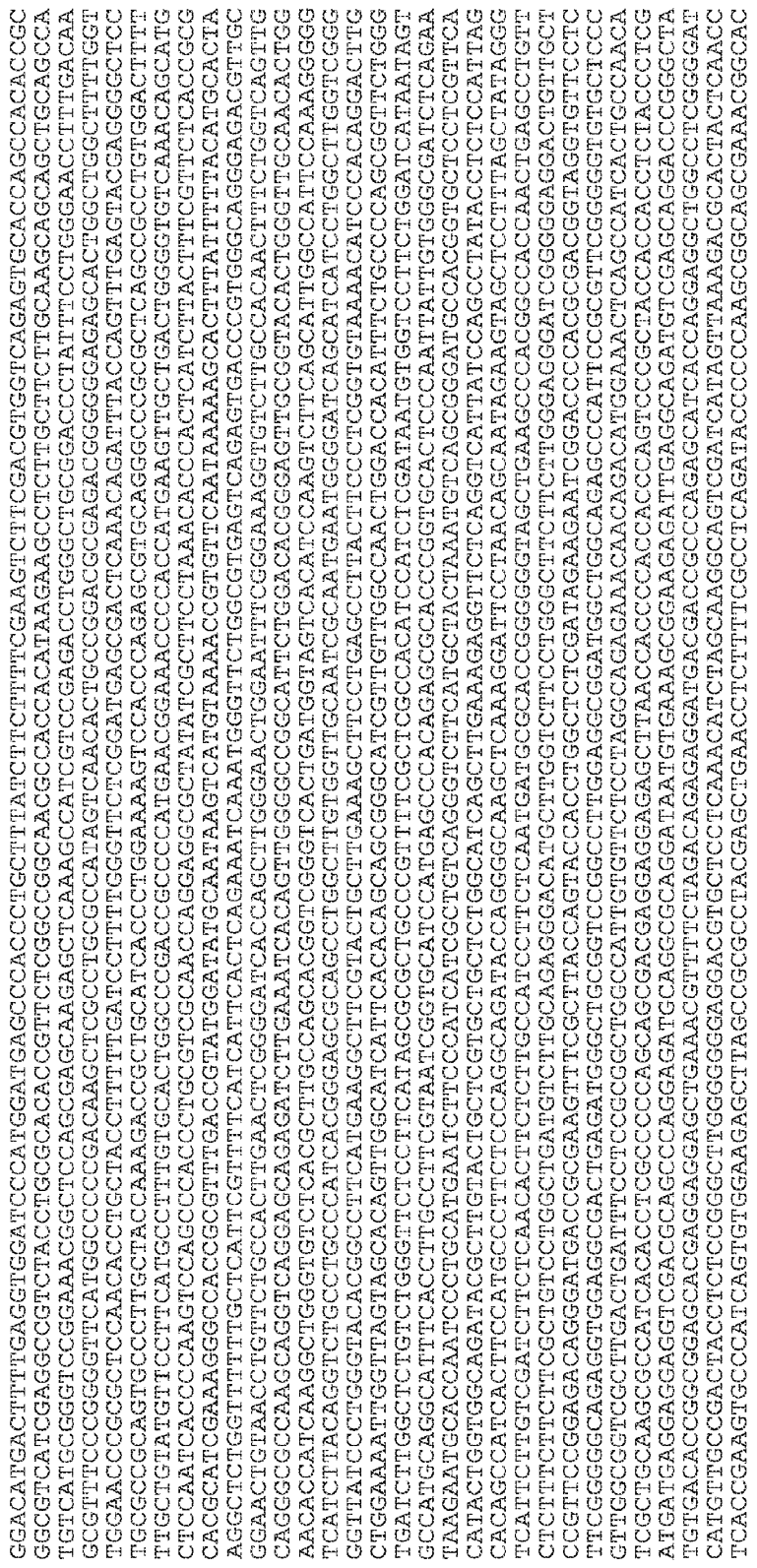


Fig. 40, cont'd

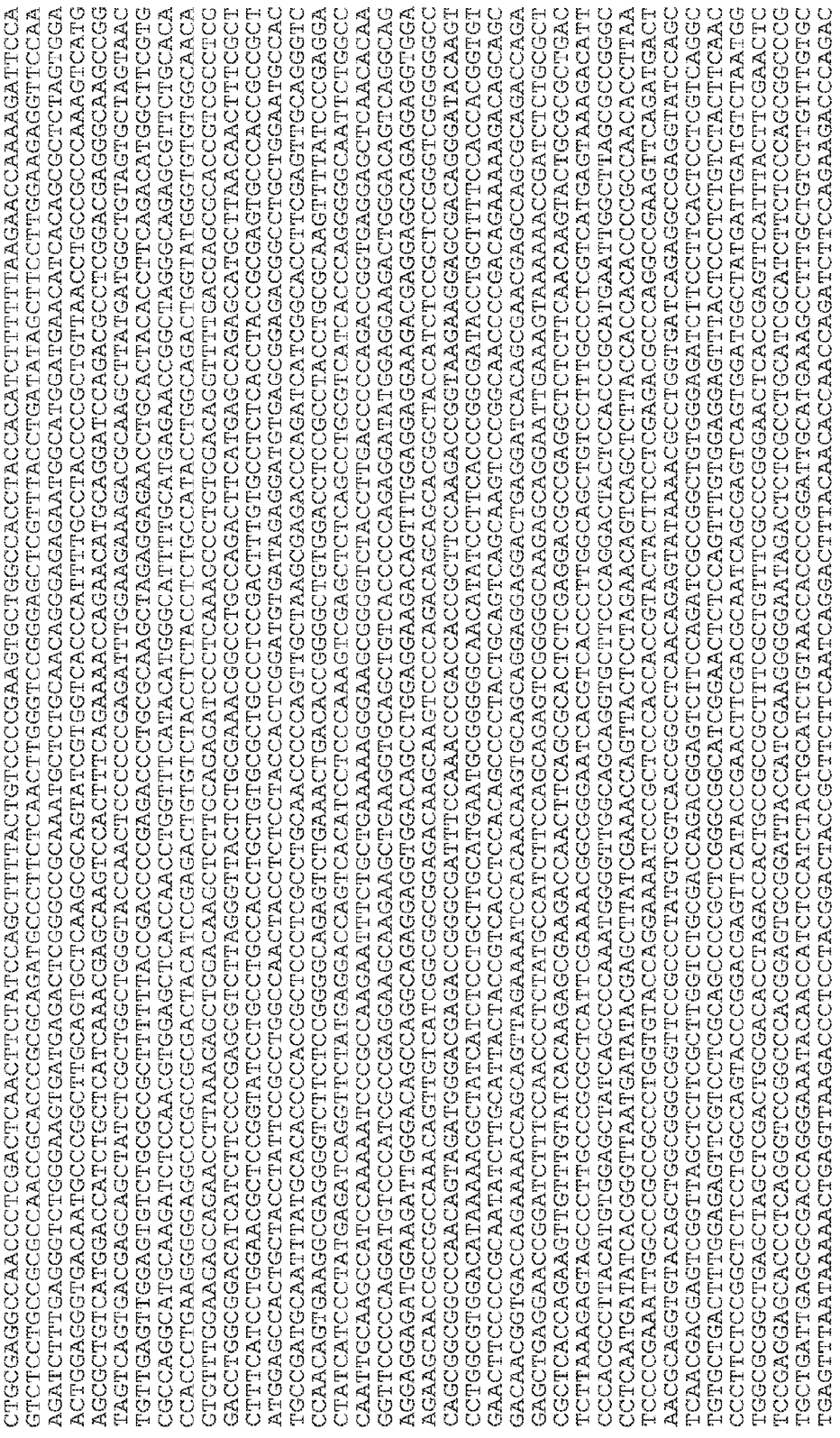


Fig. 40, cont'd

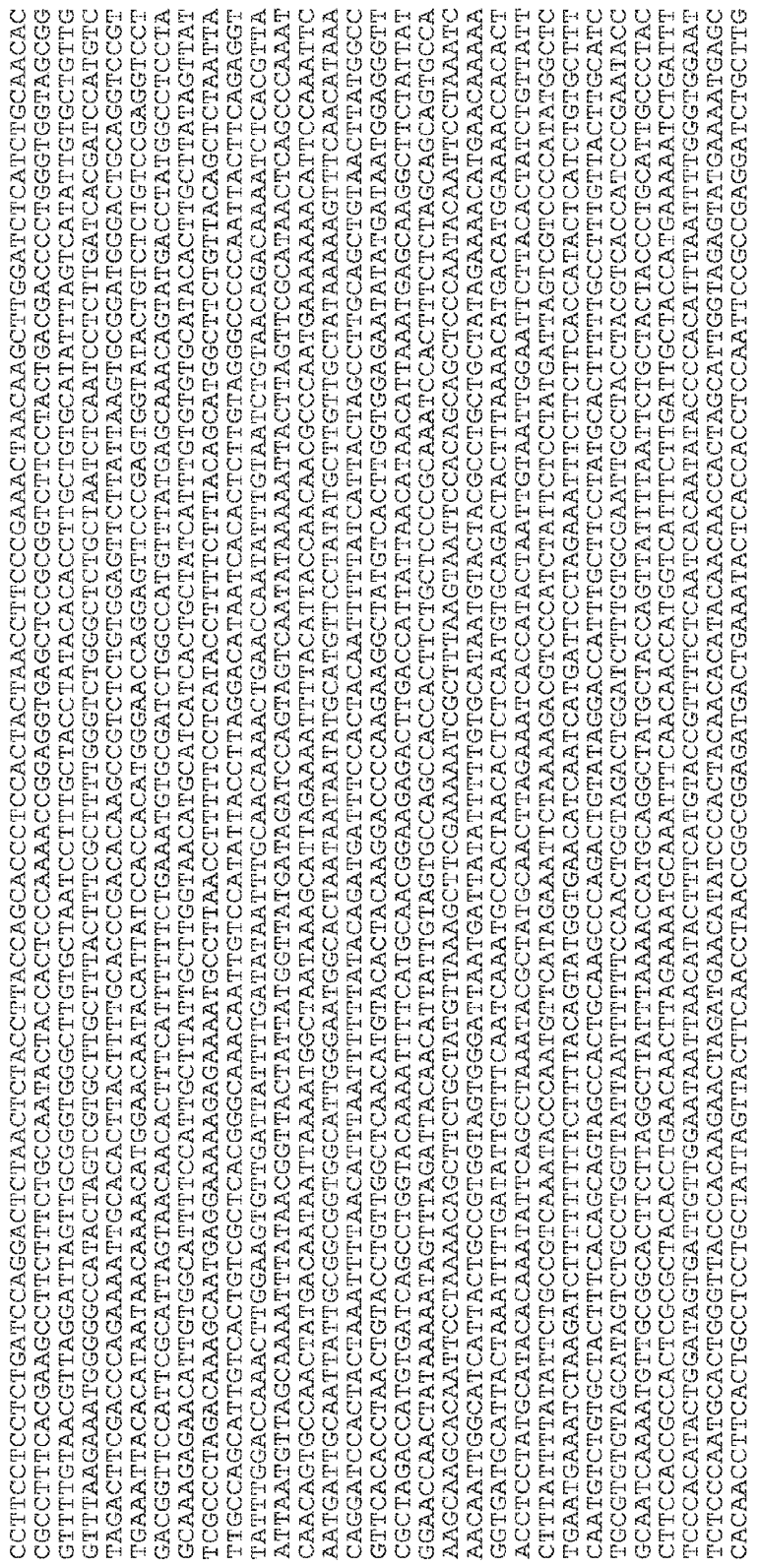


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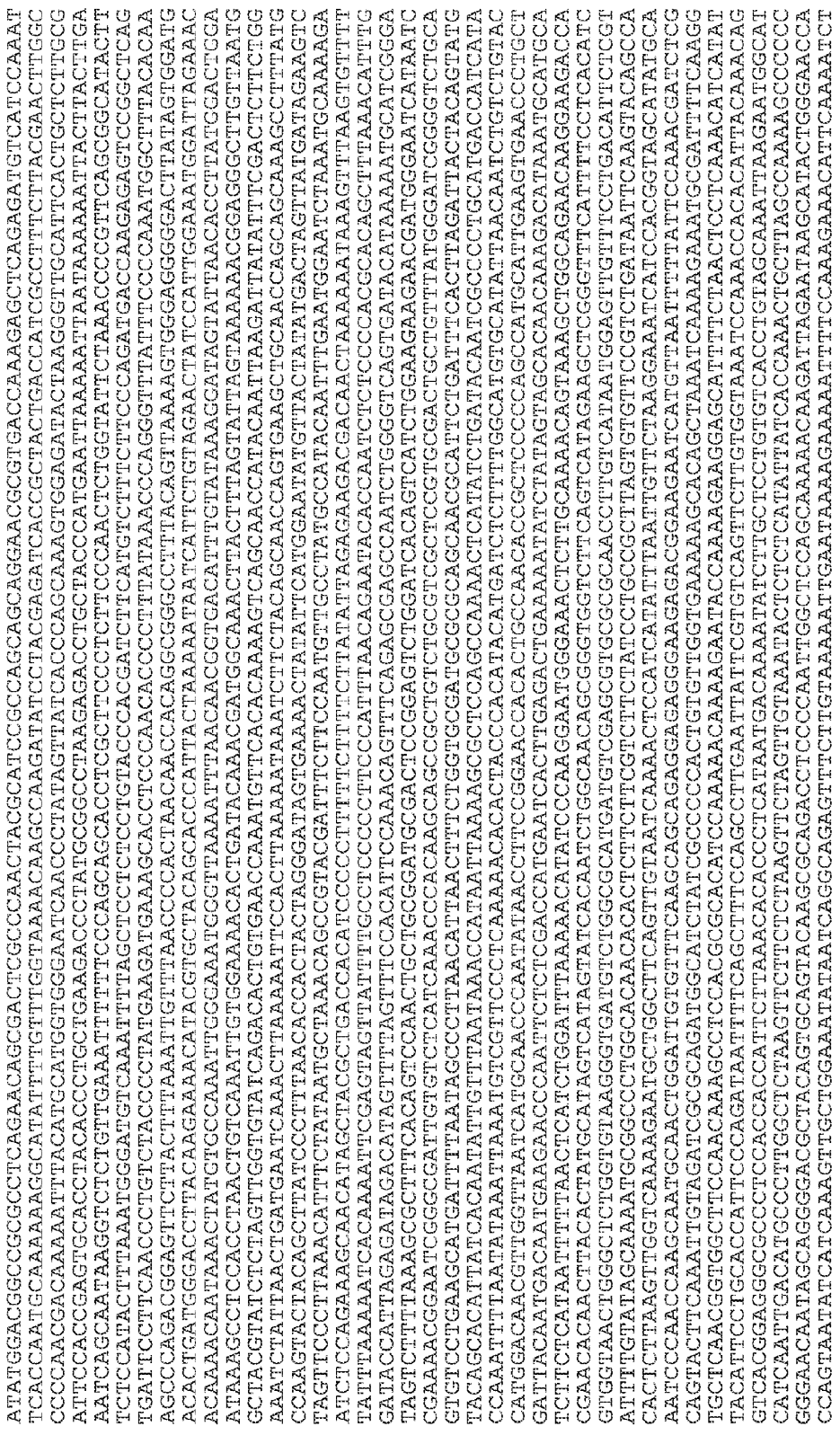


Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

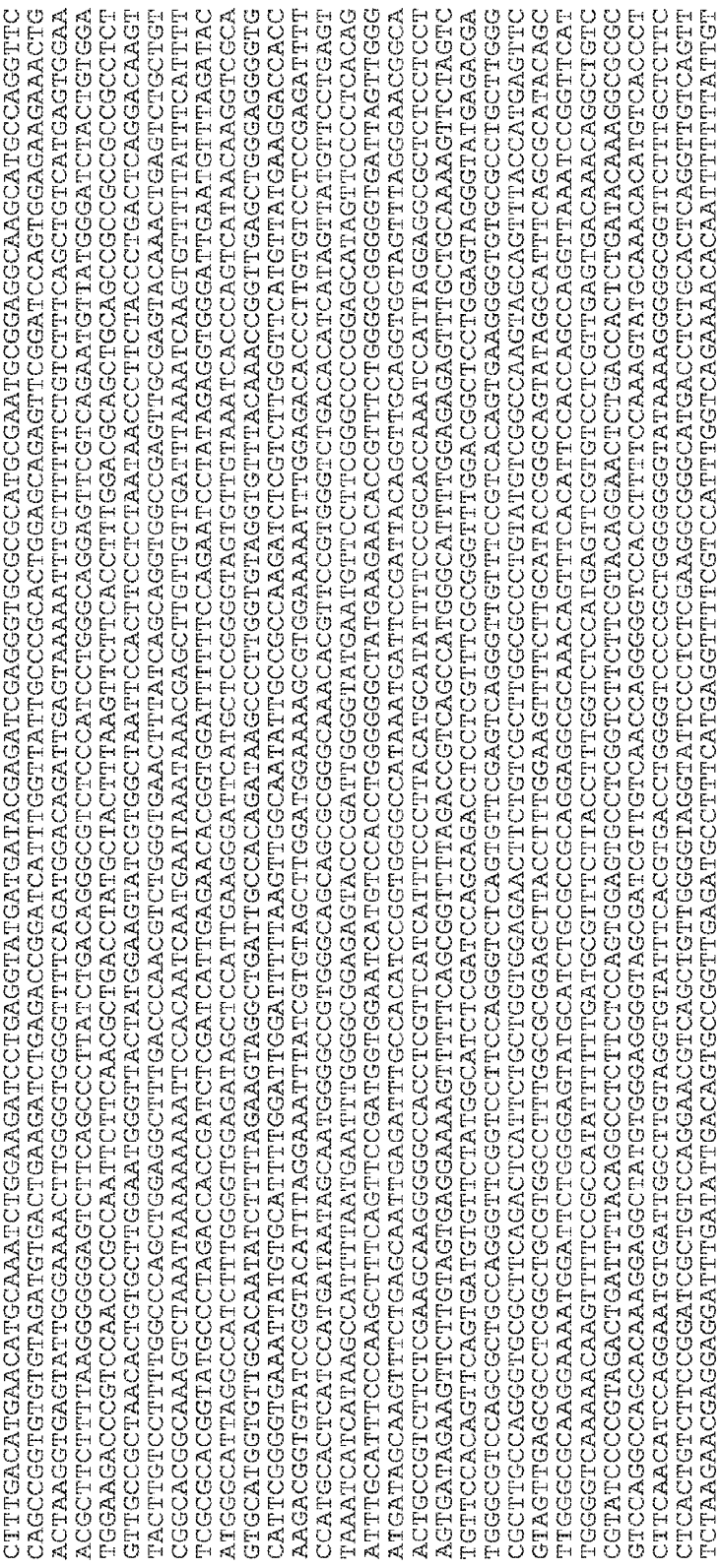


Fig. 40, cont'd

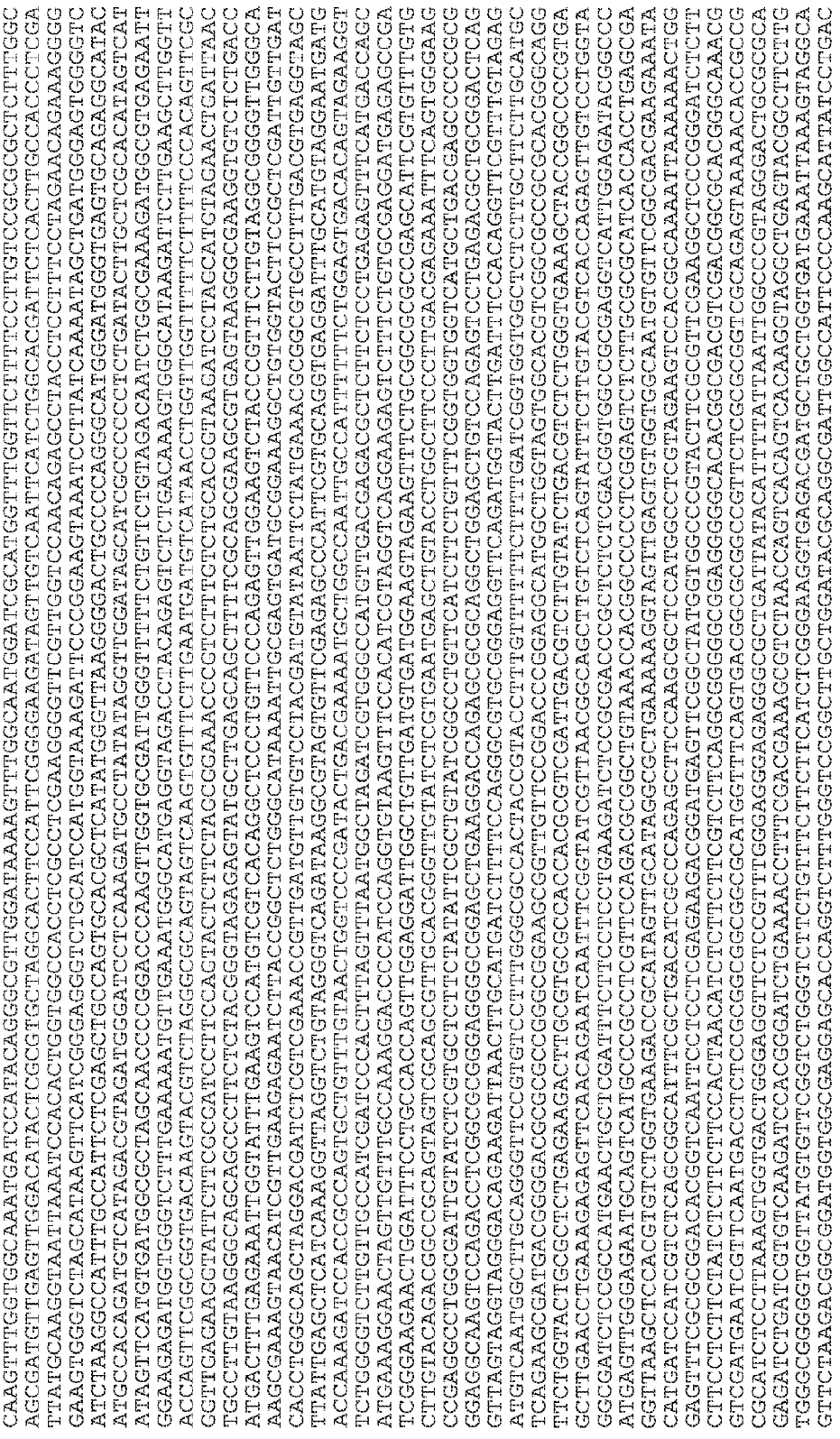


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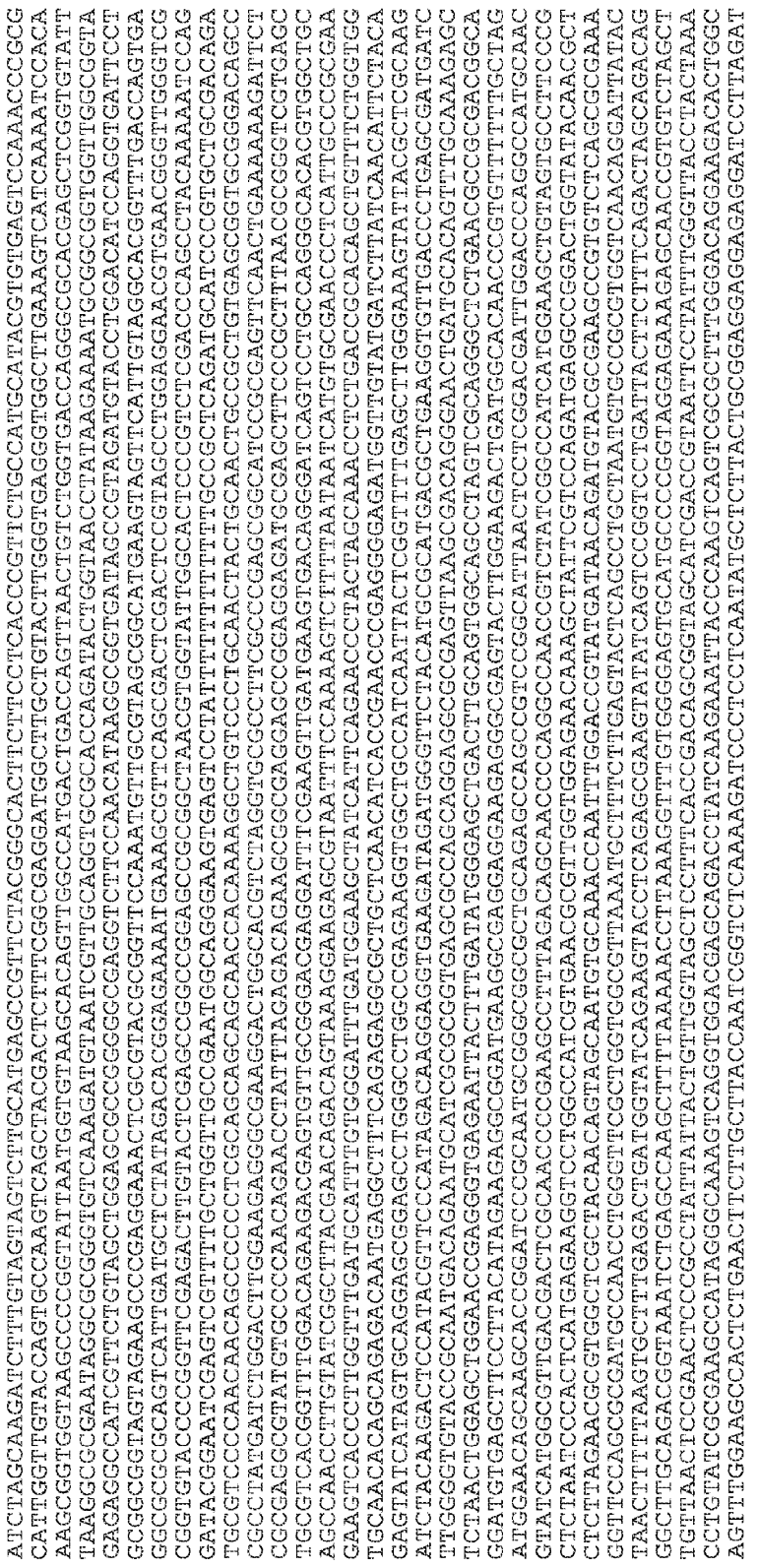


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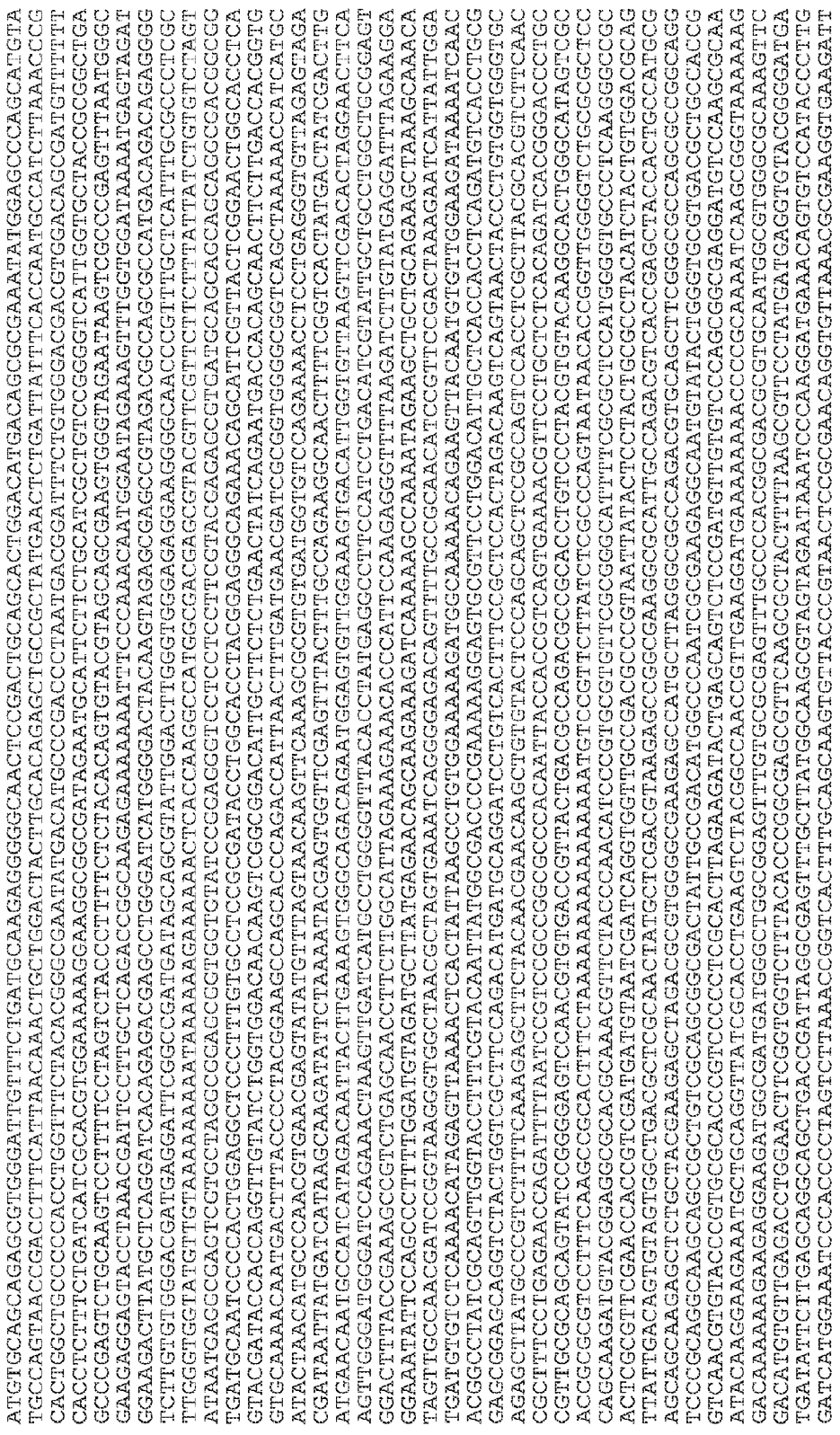

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Fig. 40, cont'd

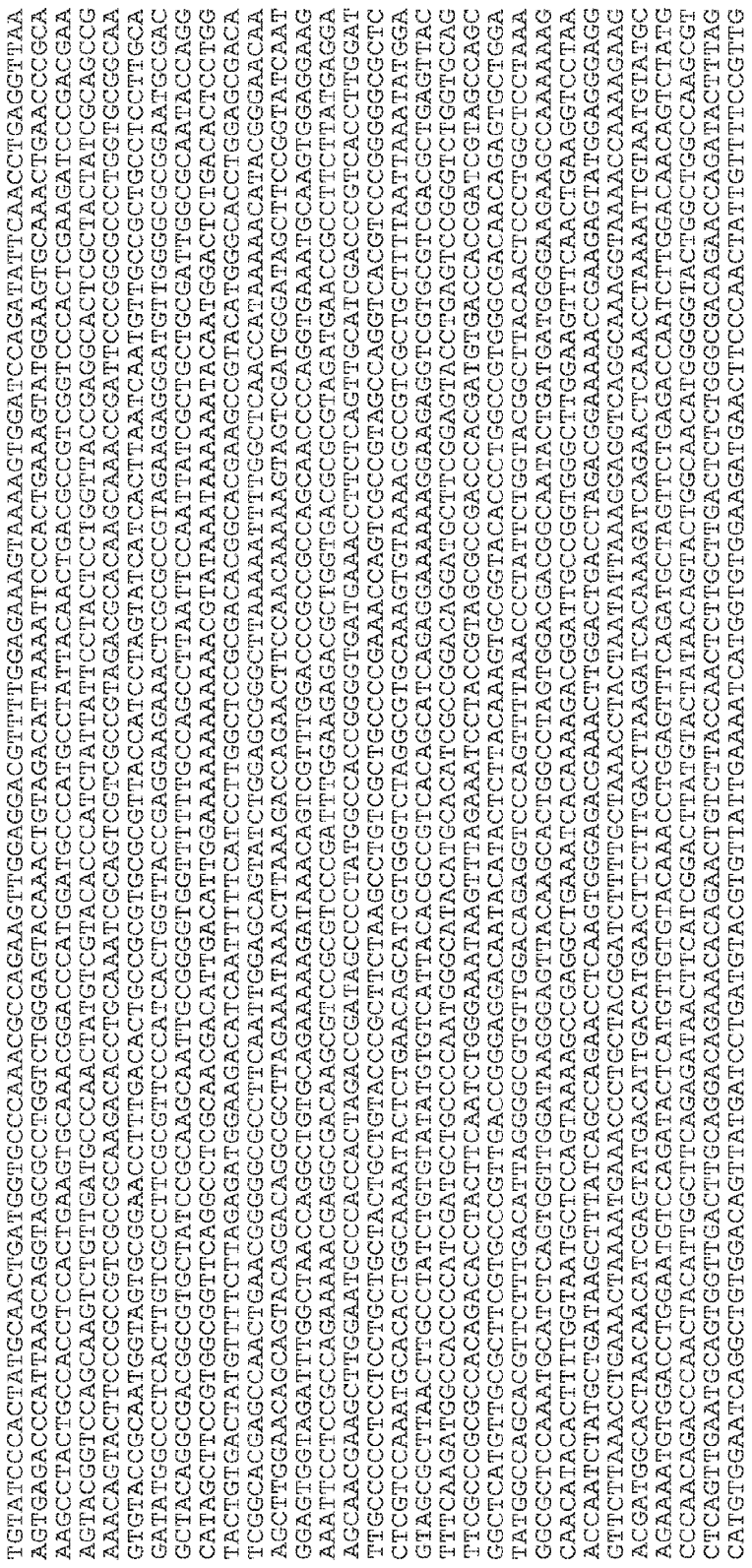


Fig. 40, cont'd

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Fig. 40, cont'd

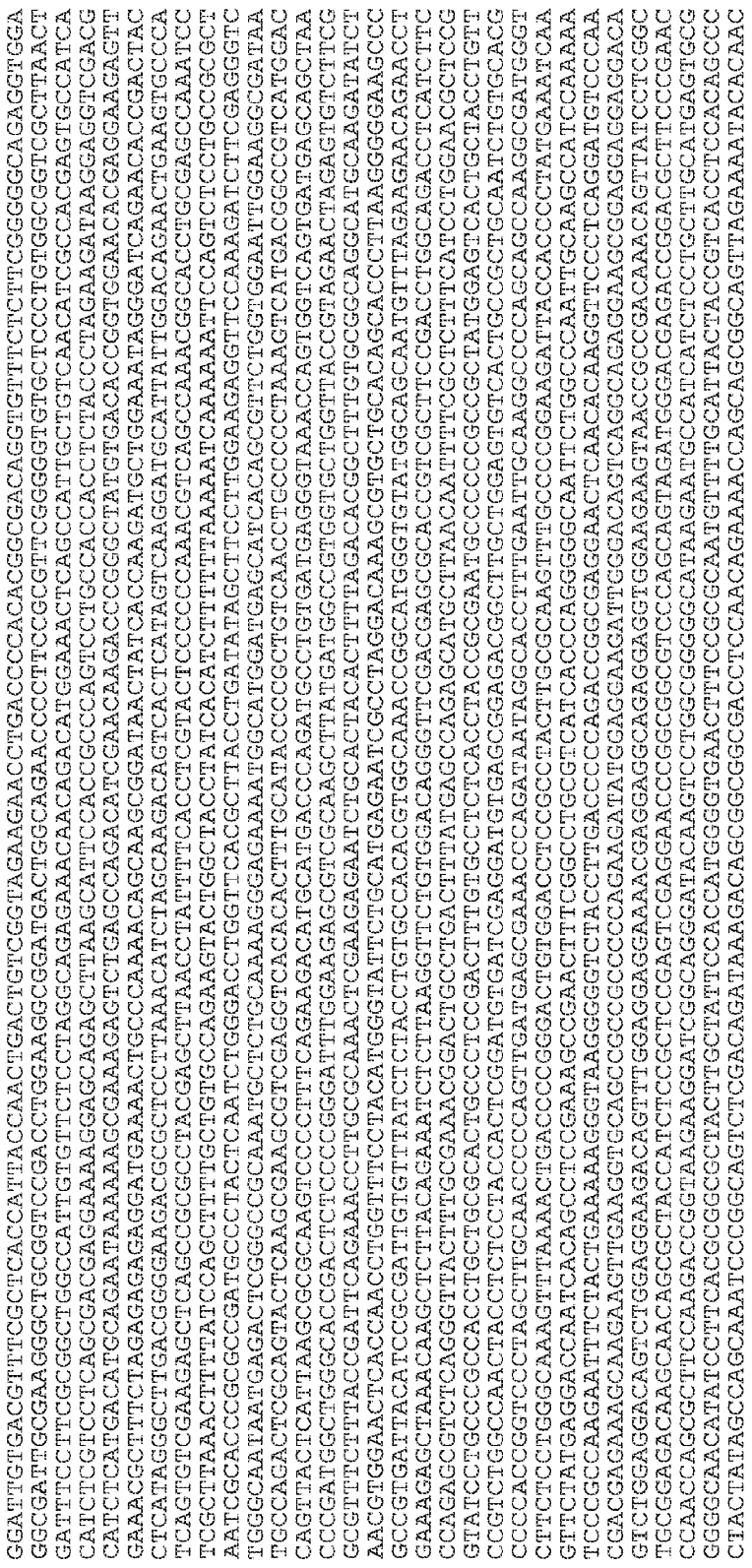


Fig. 40, cont'd

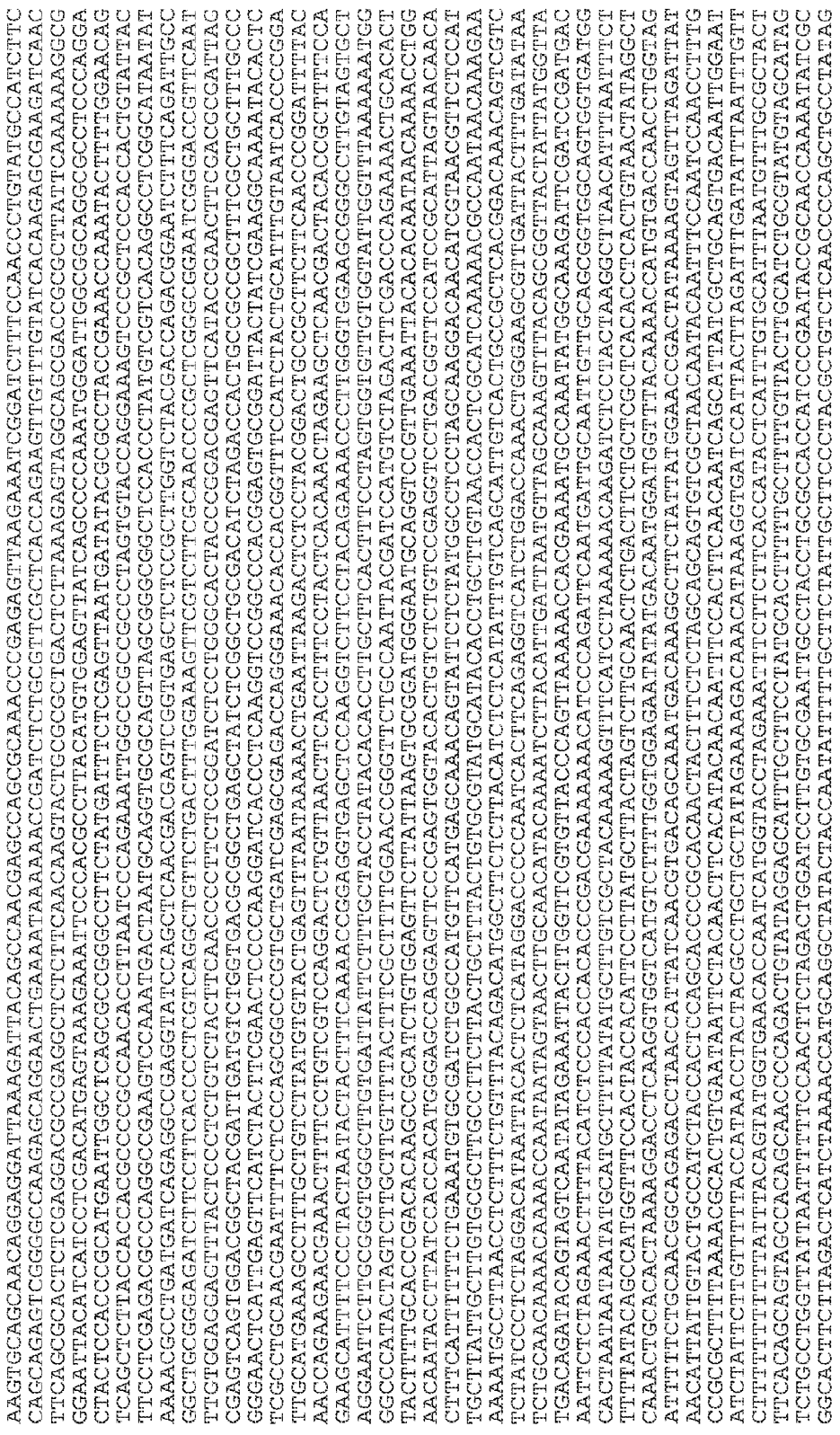

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Fig. 40, cont'd

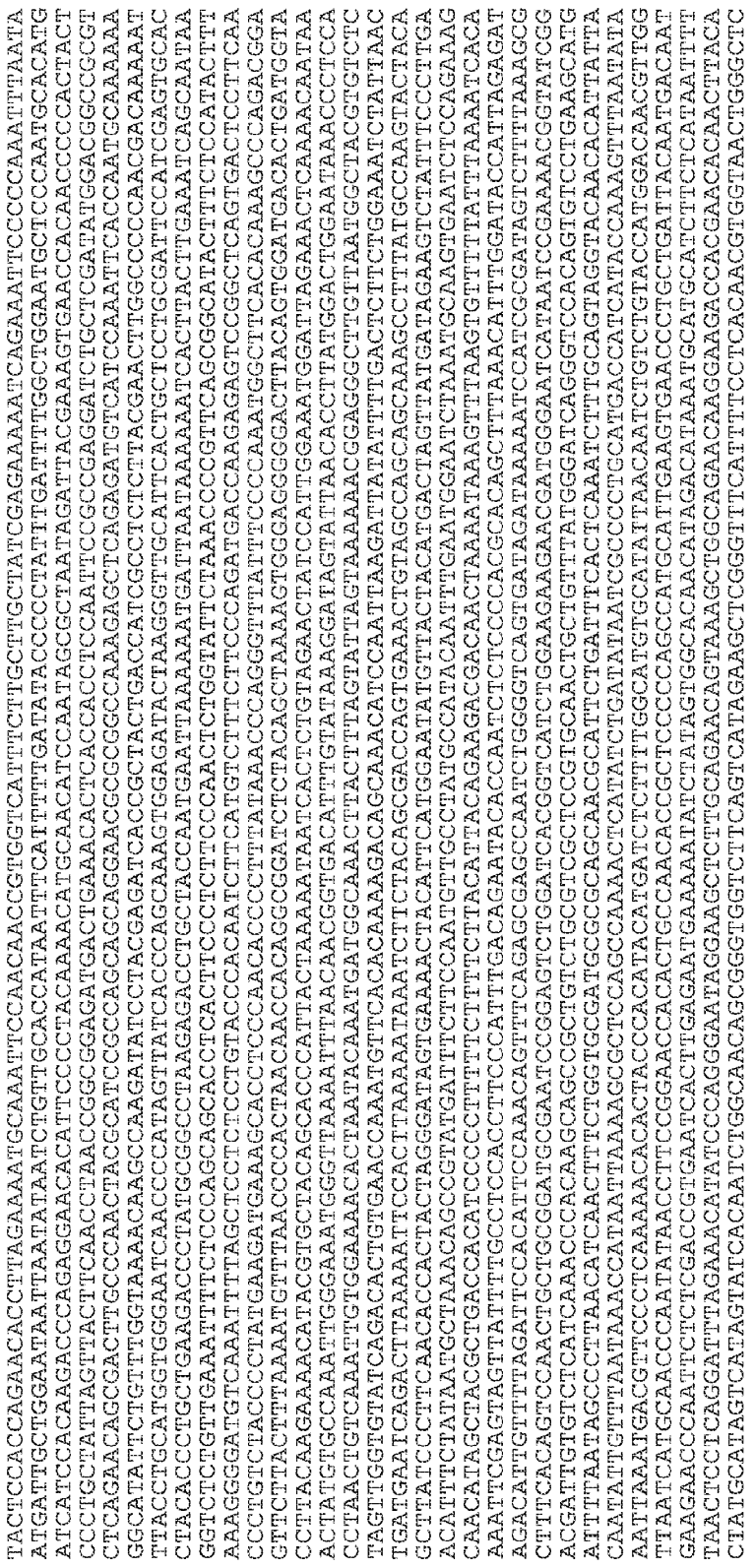

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Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

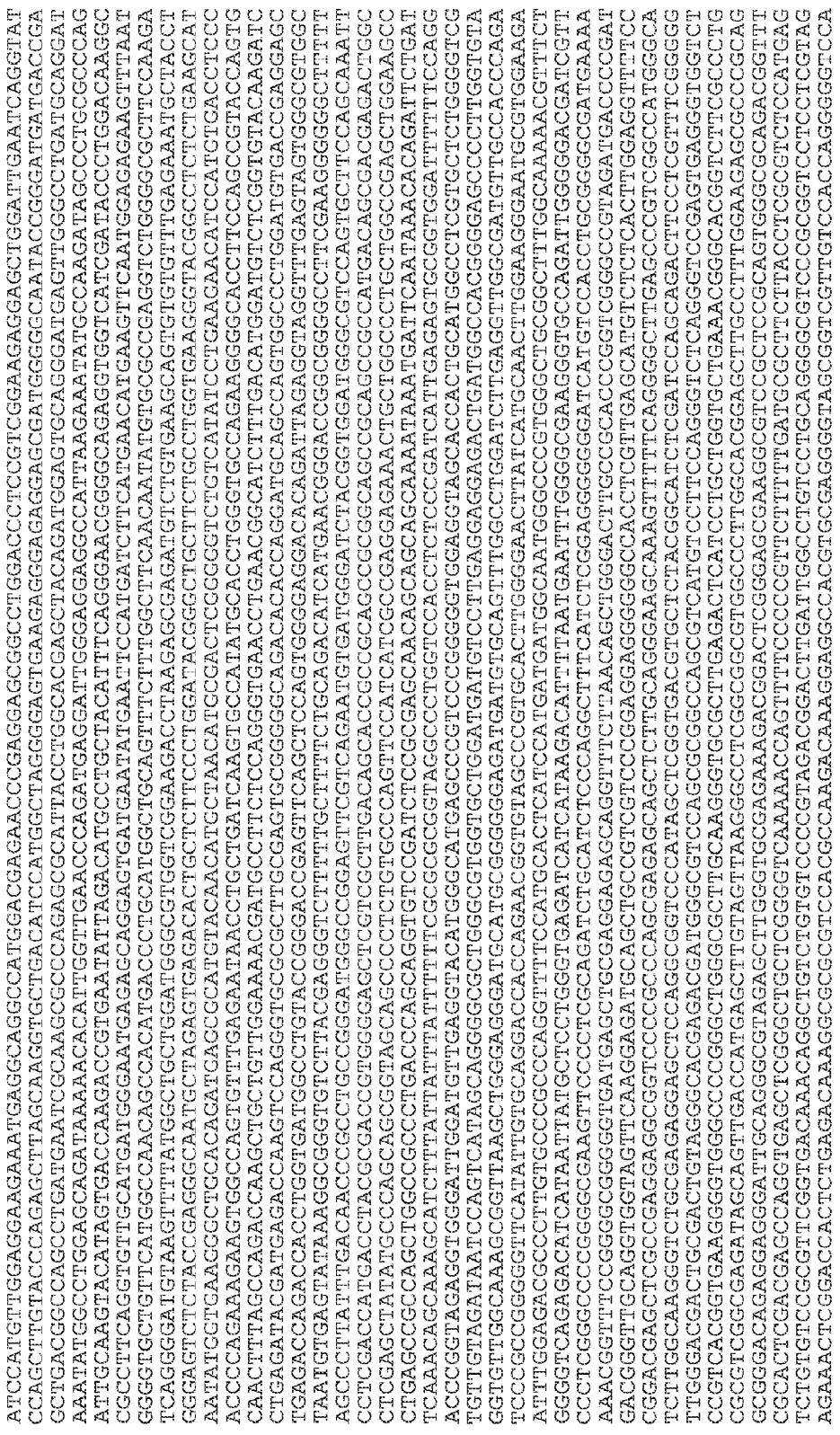


Fig. 40, cont'd

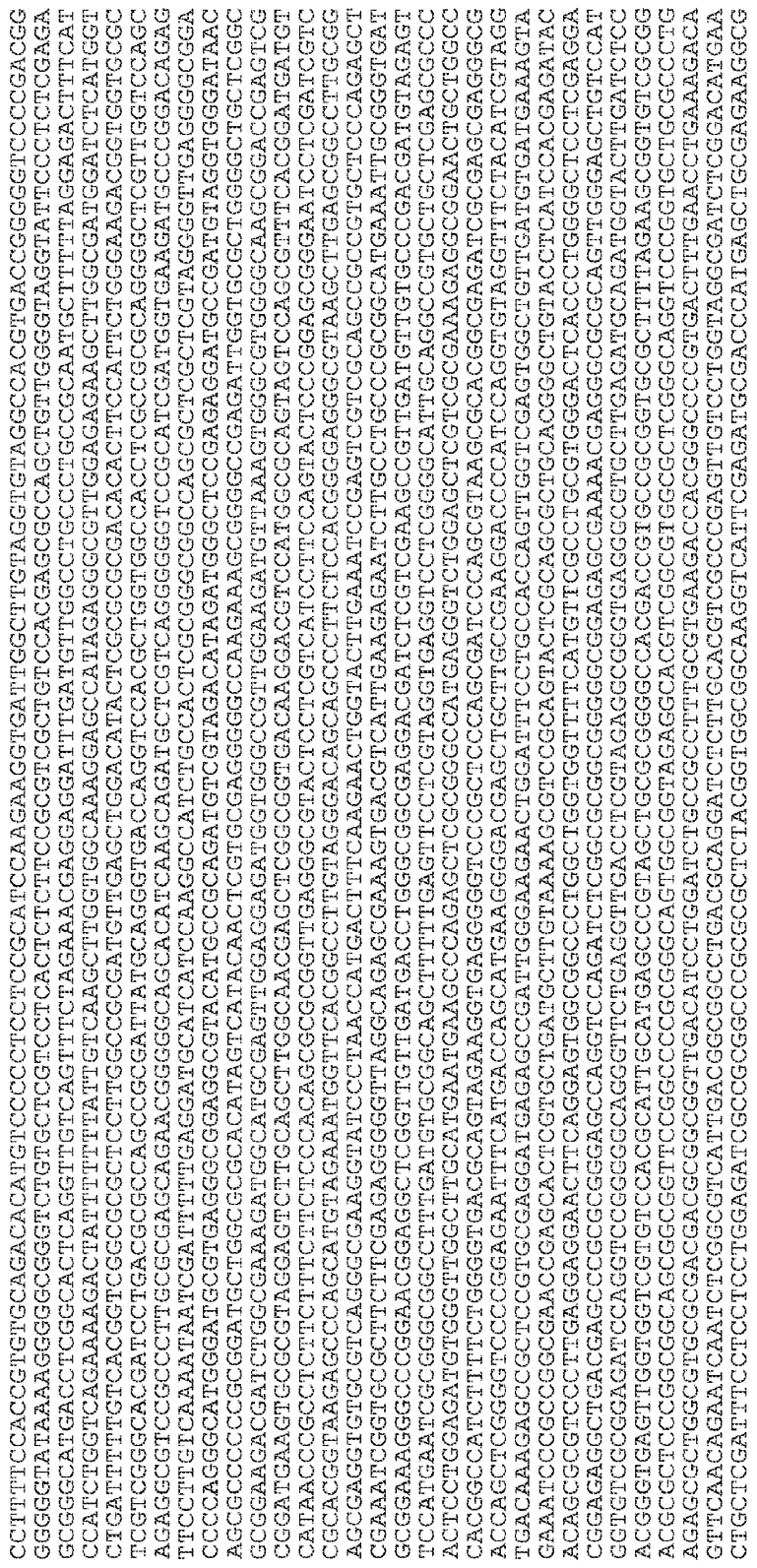


Fig. 40, cont'd

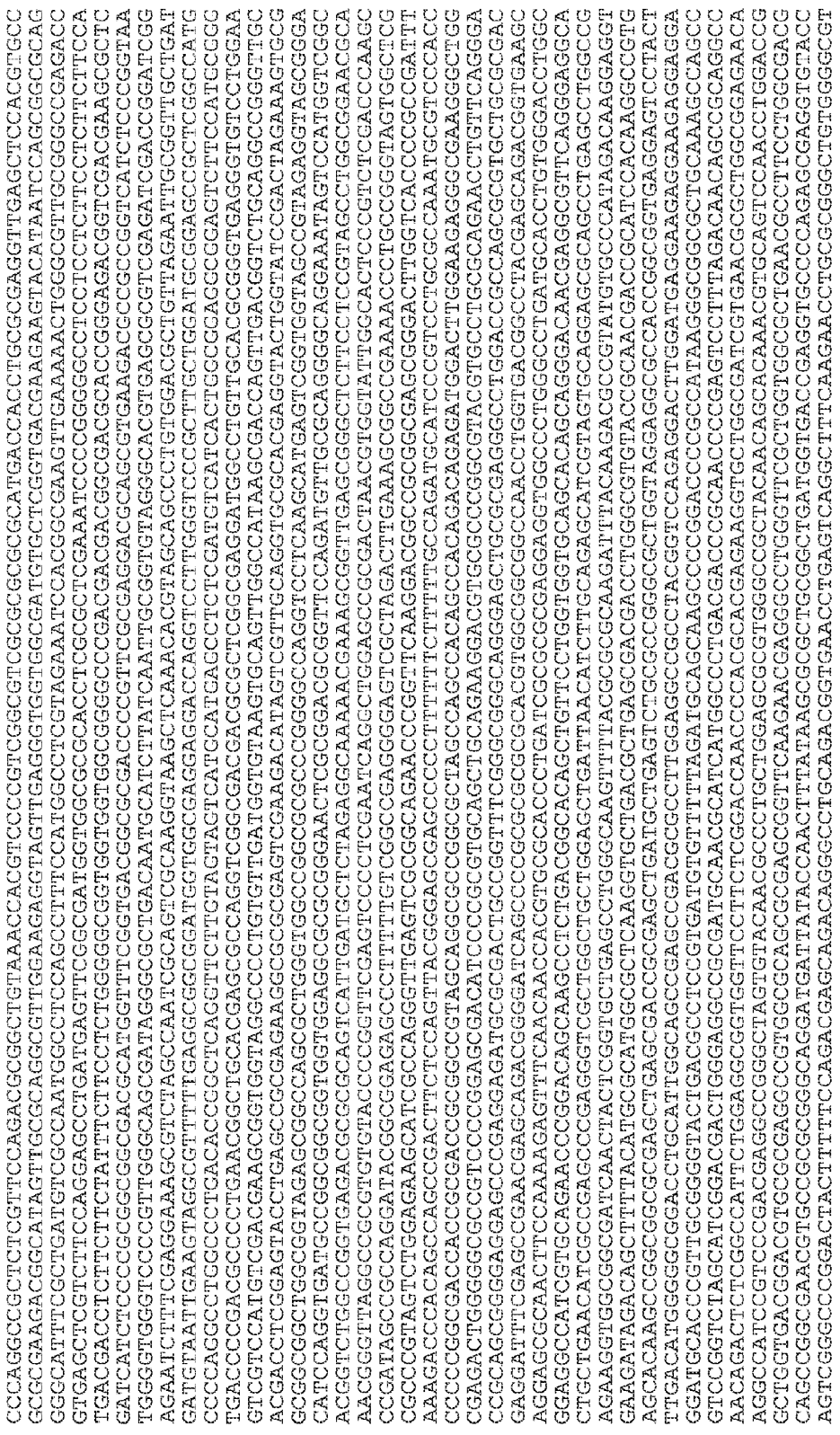


Fig. 40, cont'd

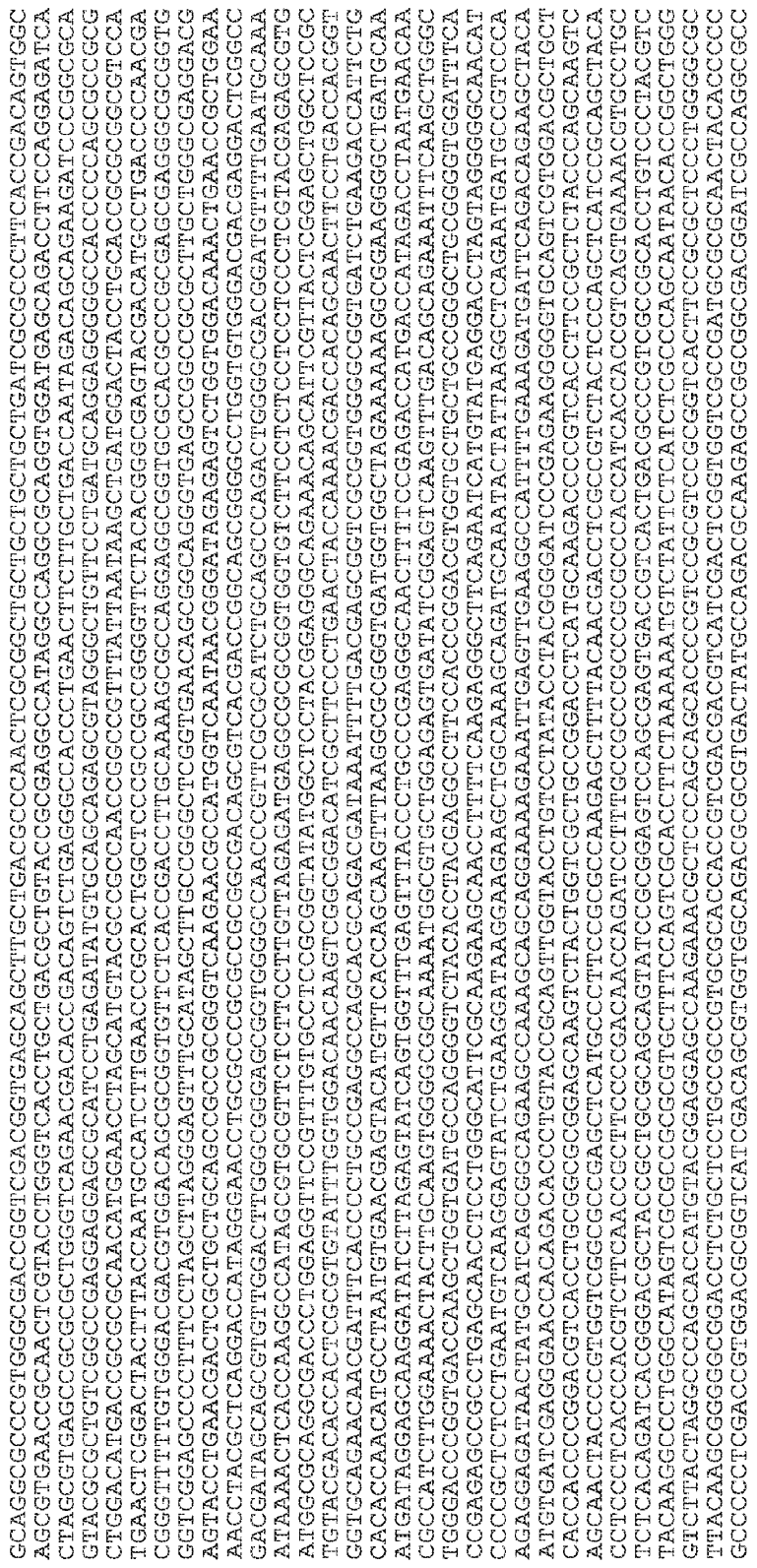


Fig. 40, cont'd

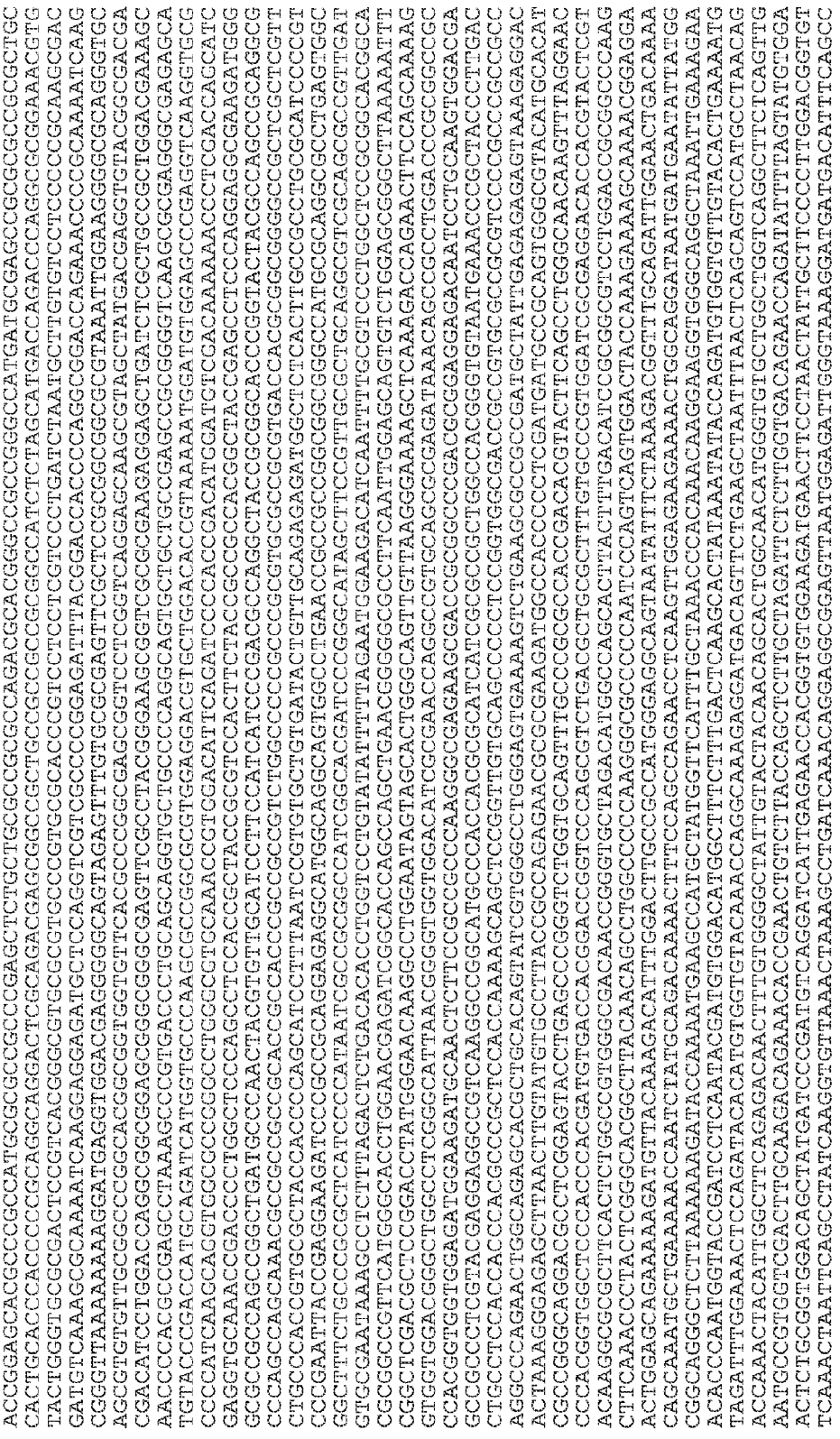


Fig. 40, cont'd

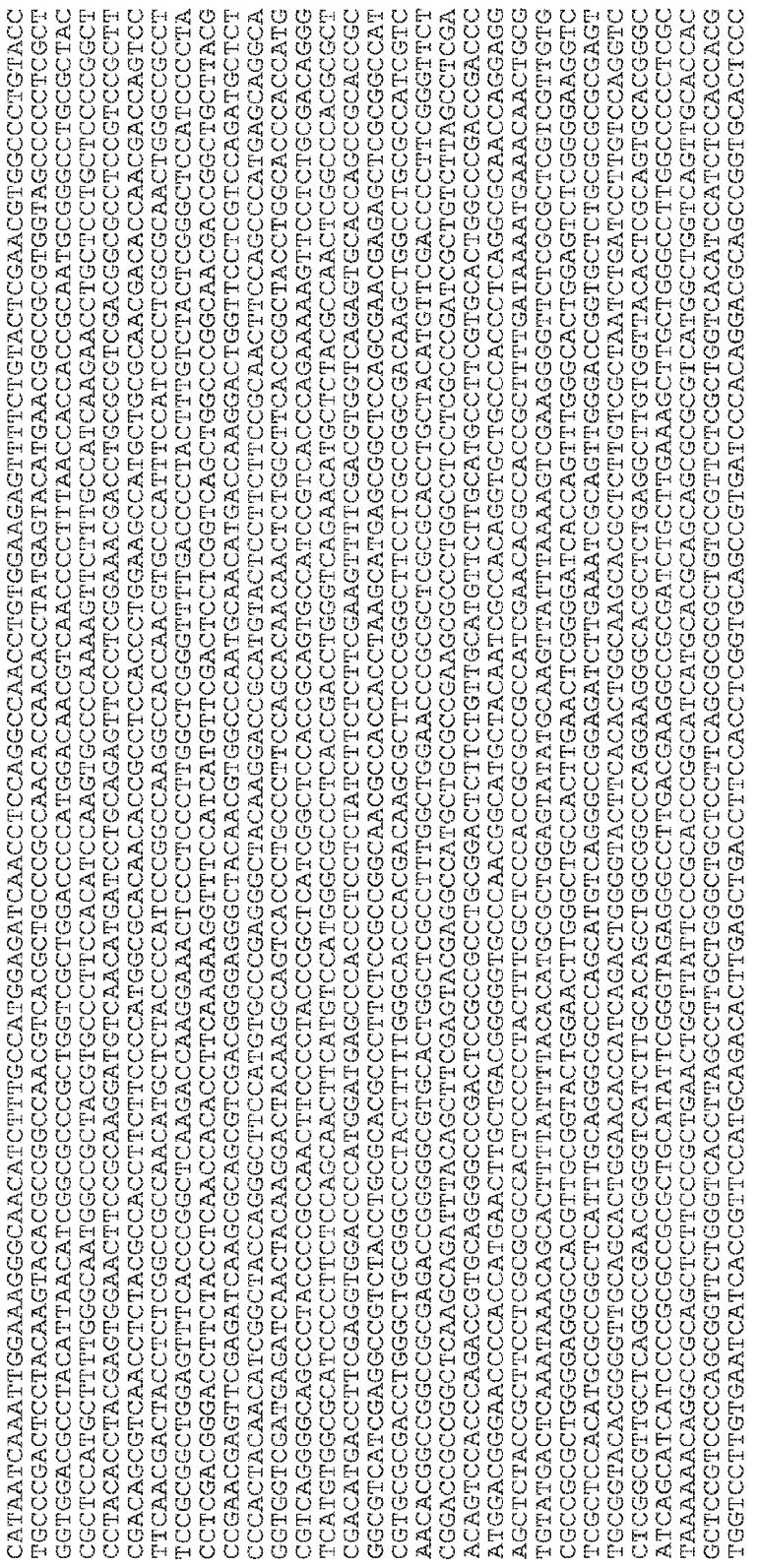


Fig. 40, cont'd

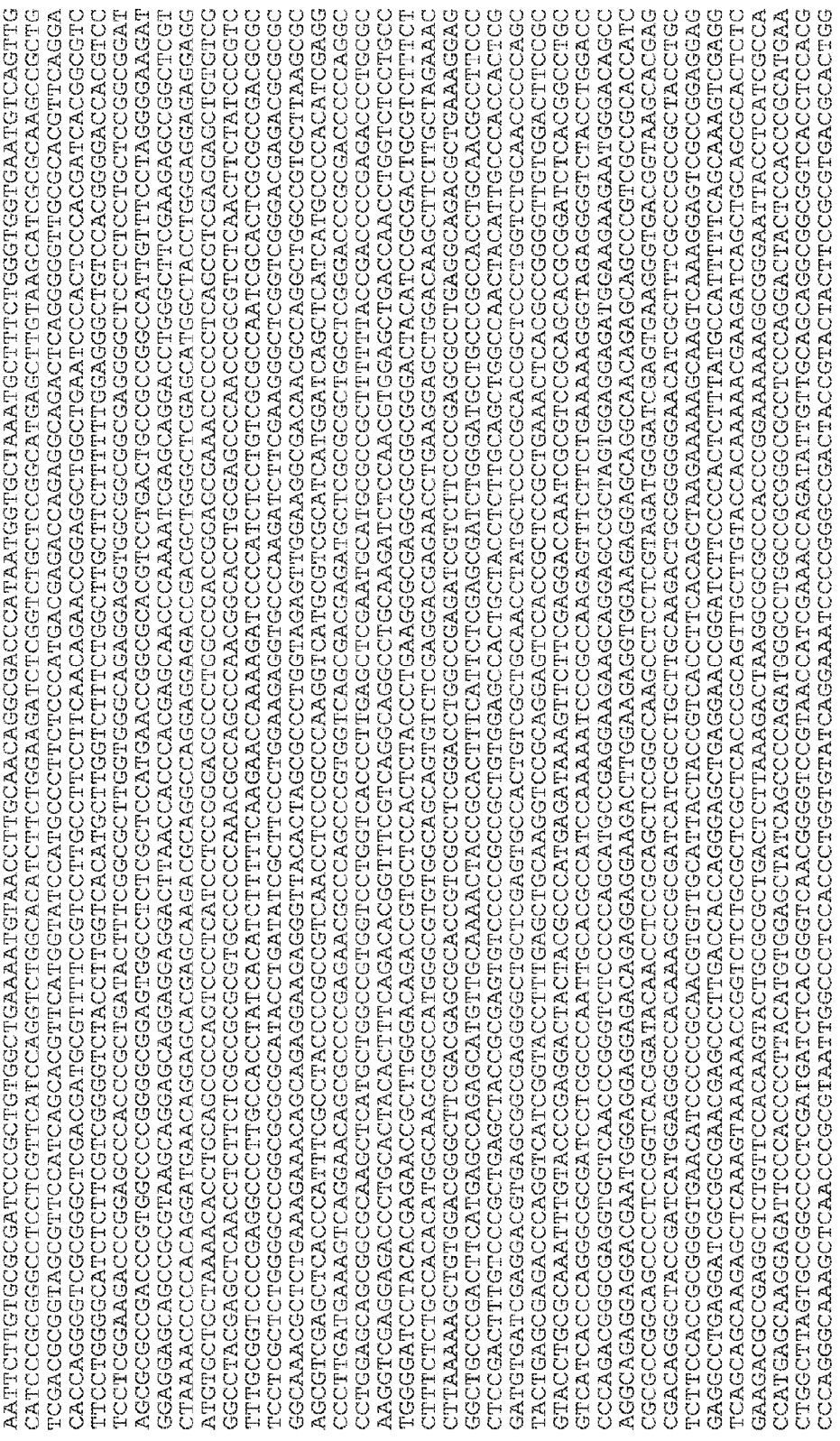


Fig. 40, cont'd

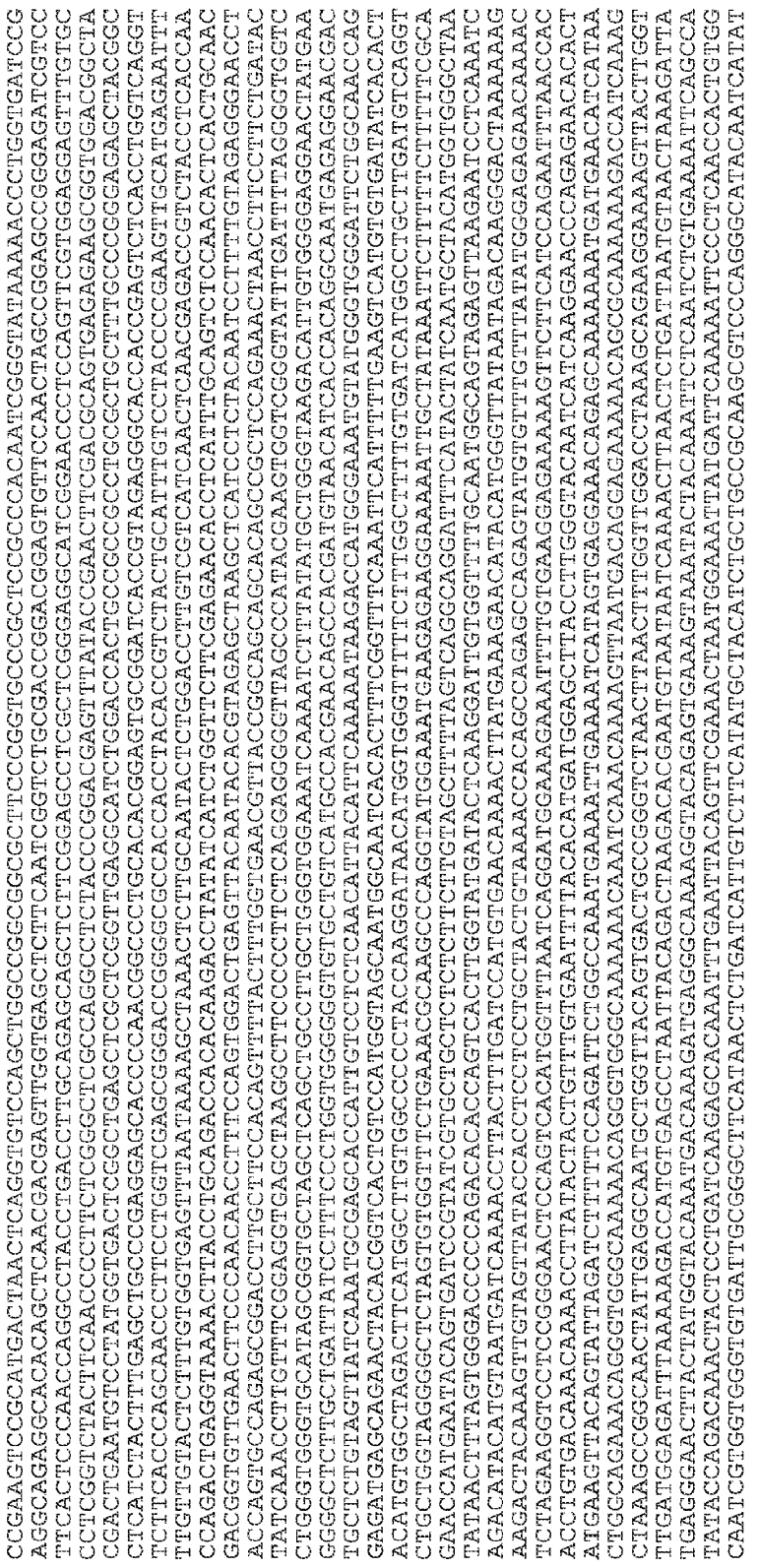

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Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

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GenBank accession no. ABK59086

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GenBank accession no. ABK59070

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GenBank accession number AY737798 (SEQ ID NO: 153)

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Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

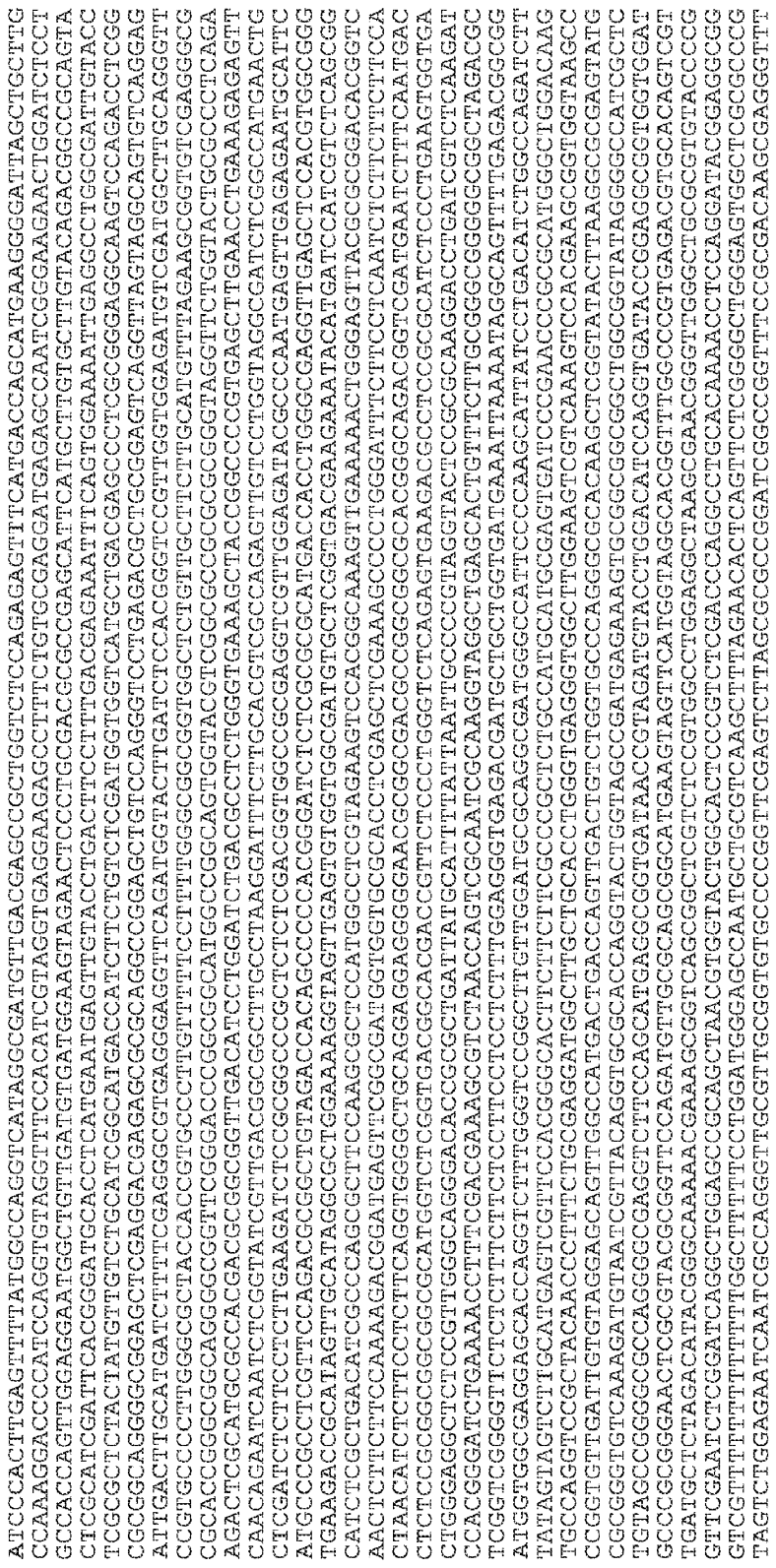


Fig. 40, cont'd

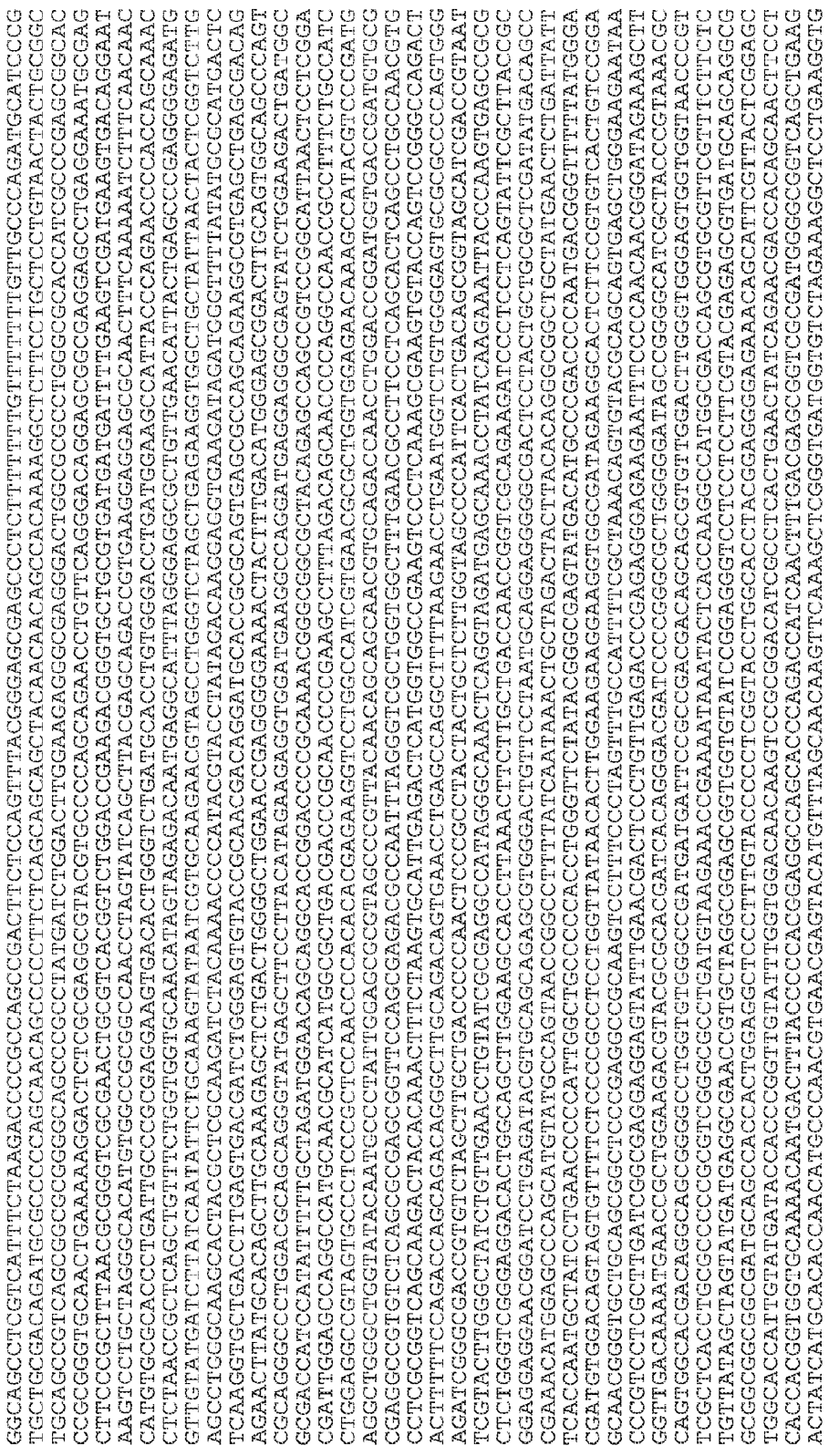


Fig. 40, cont'd

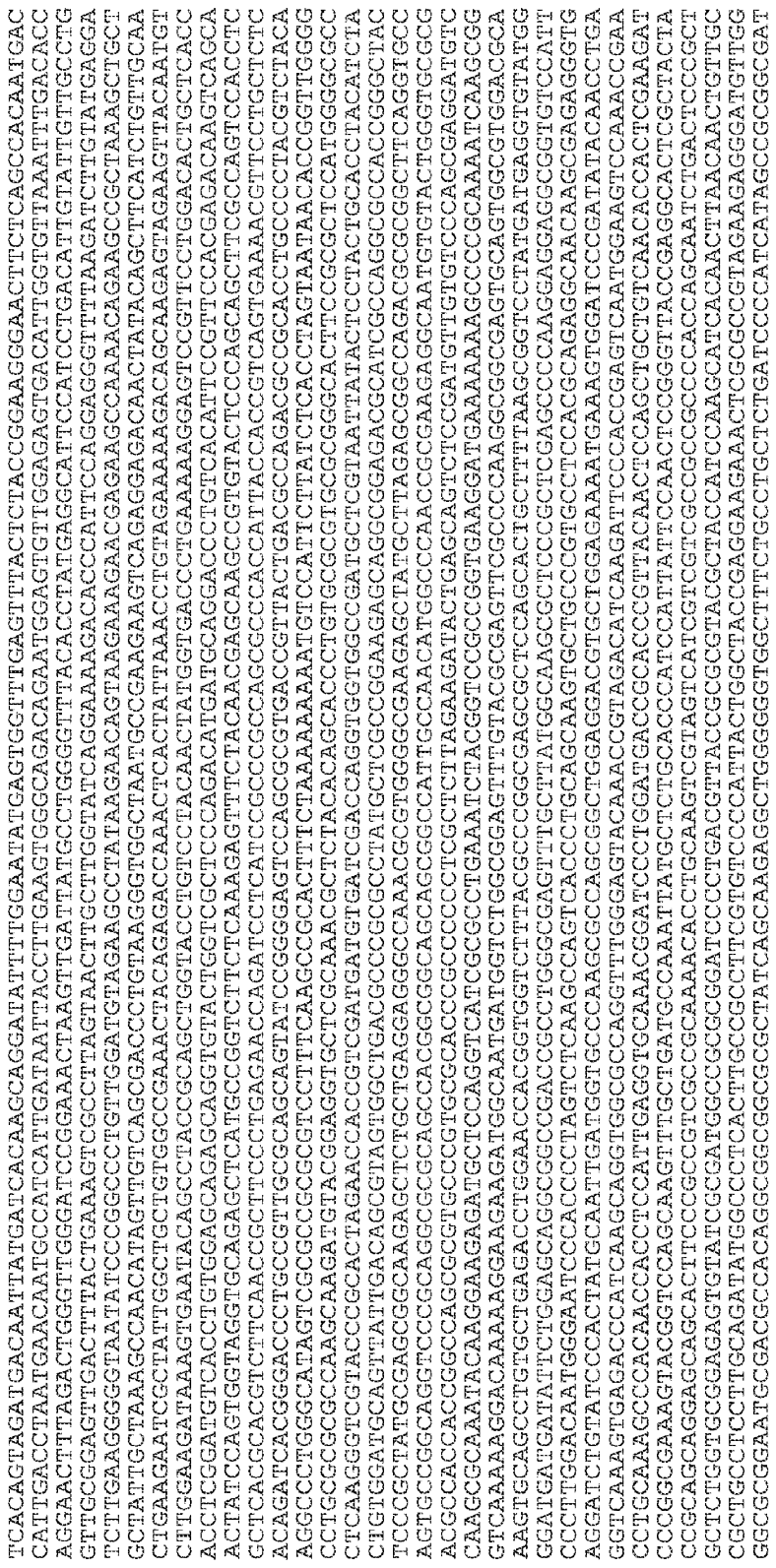


Fig. 40, cont'd

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Fig. 40, cont'd

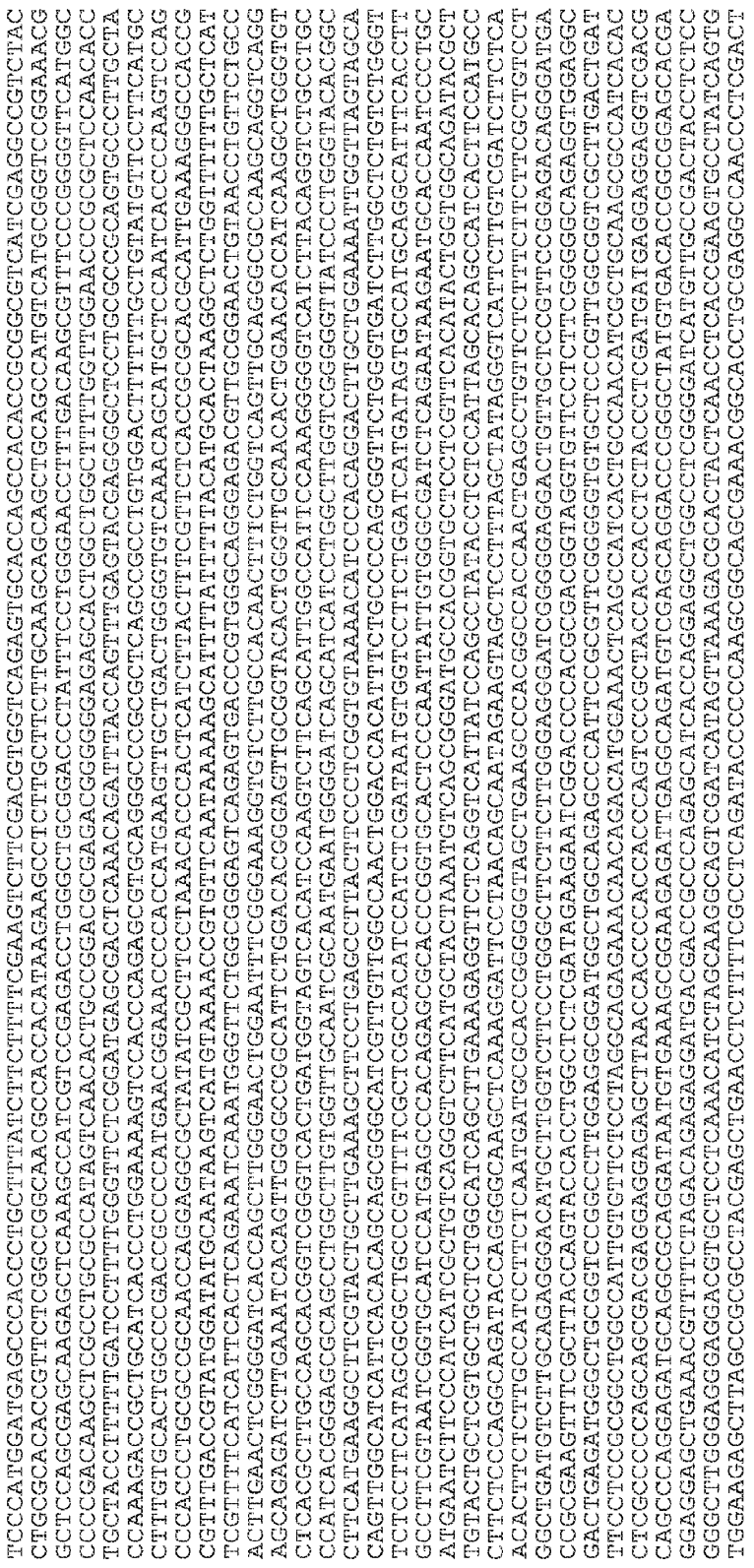


Fig. 40, cont'd

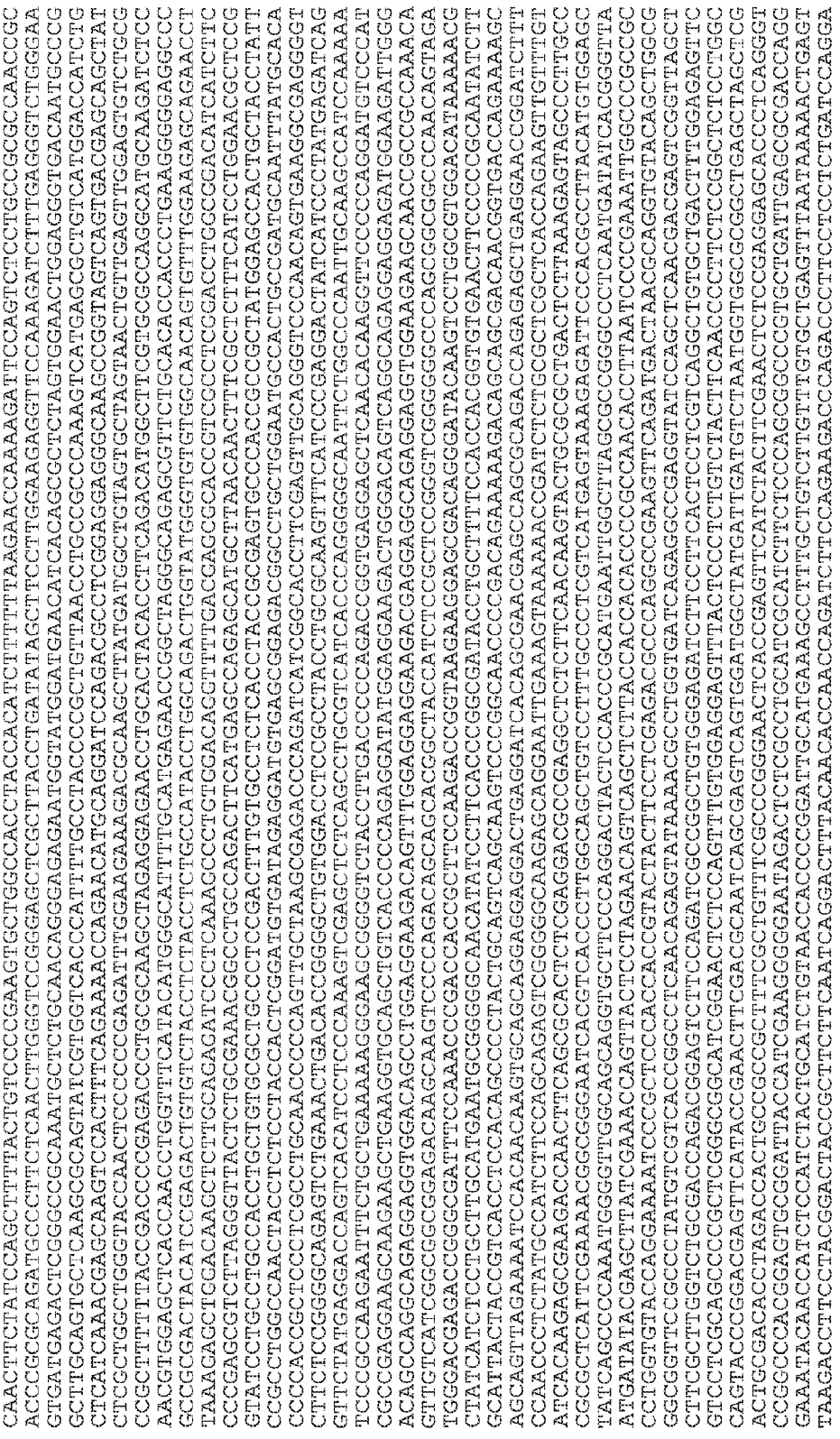


Fig. 40, cont'd

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Fig. 40, cont'd

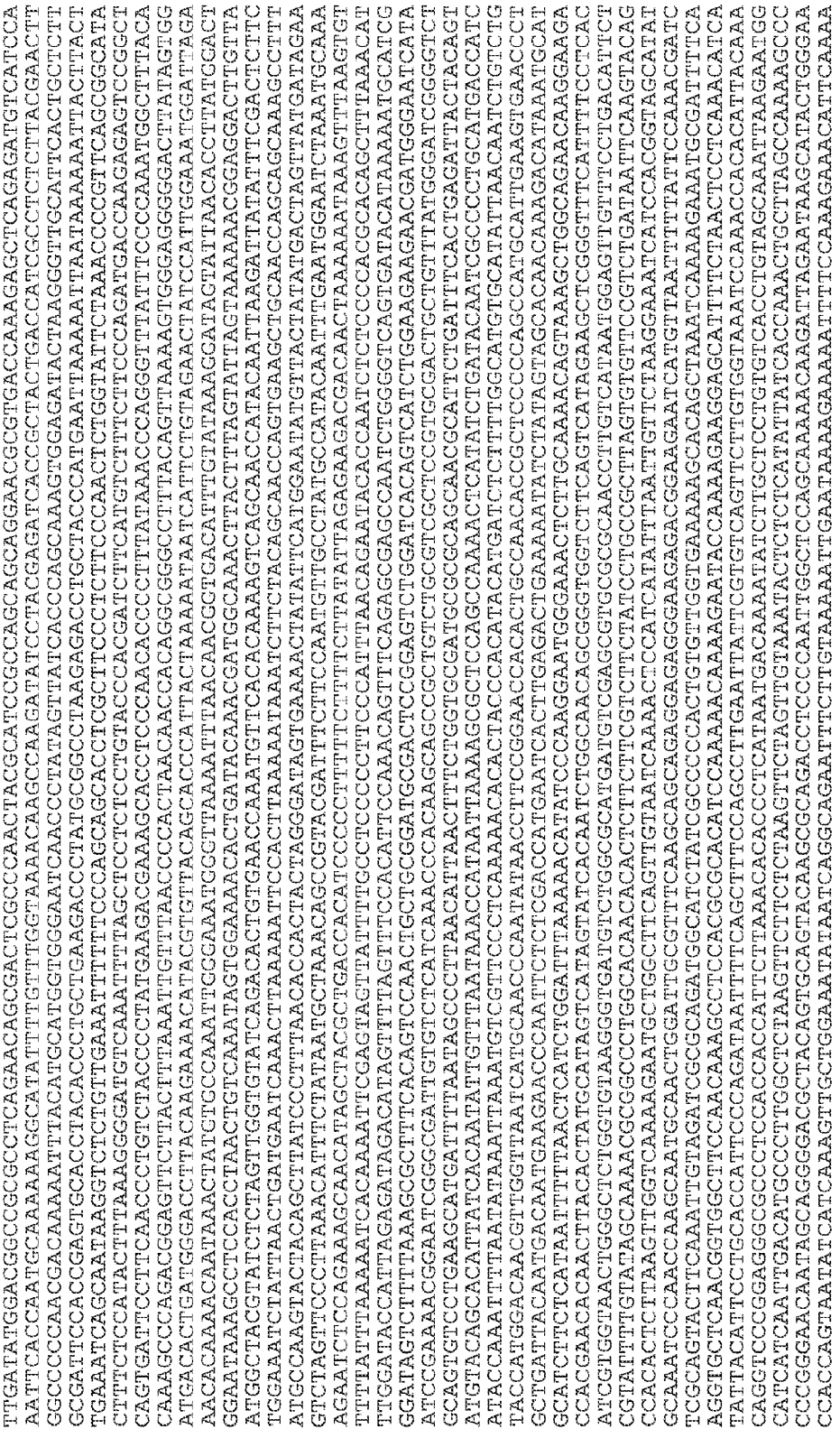


Fig. 40, cont'd

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GenBank accession no. AAW33530

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Fig. 40, cont'd

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Fig. 40, cont'd

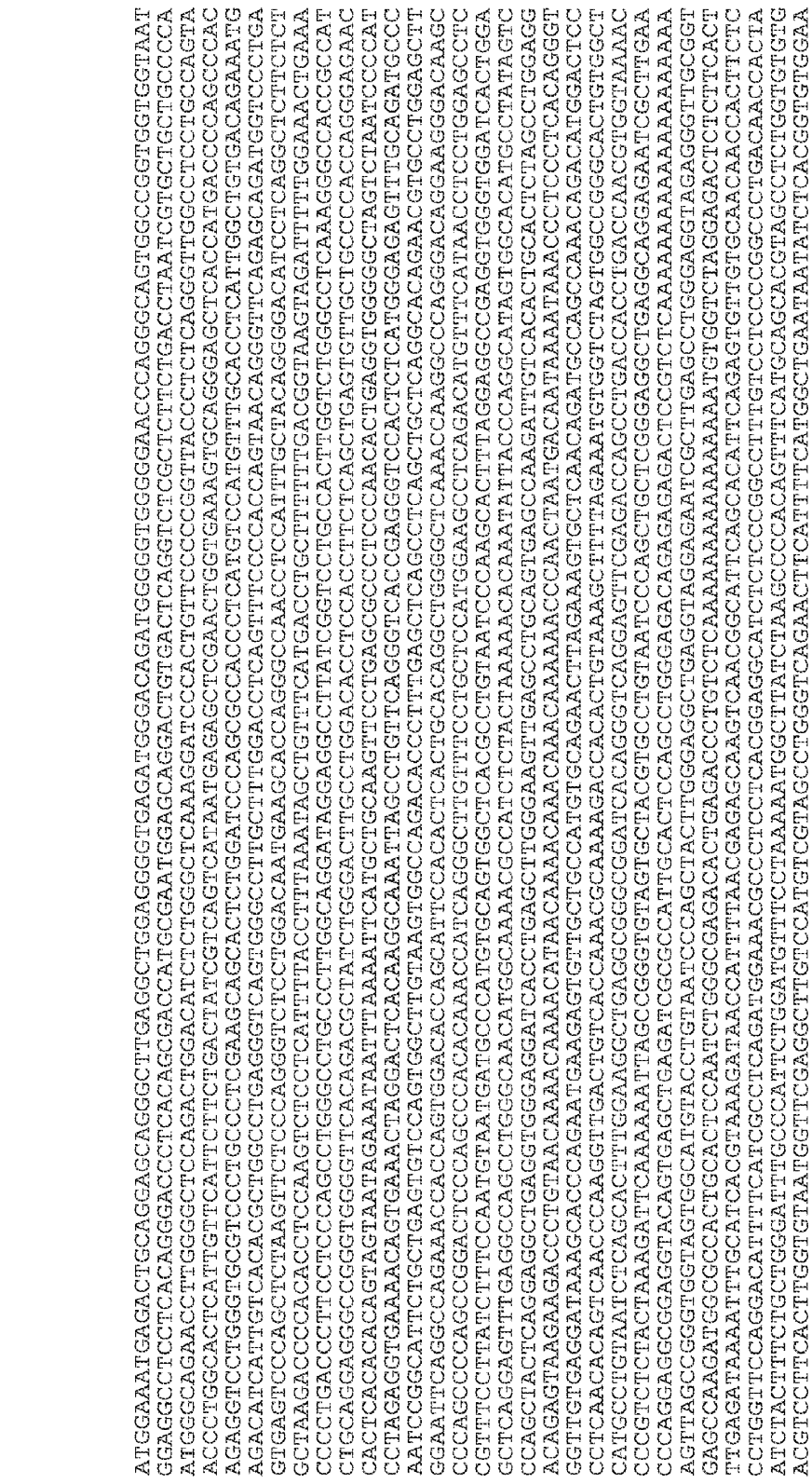


Fig. 40, cont'd

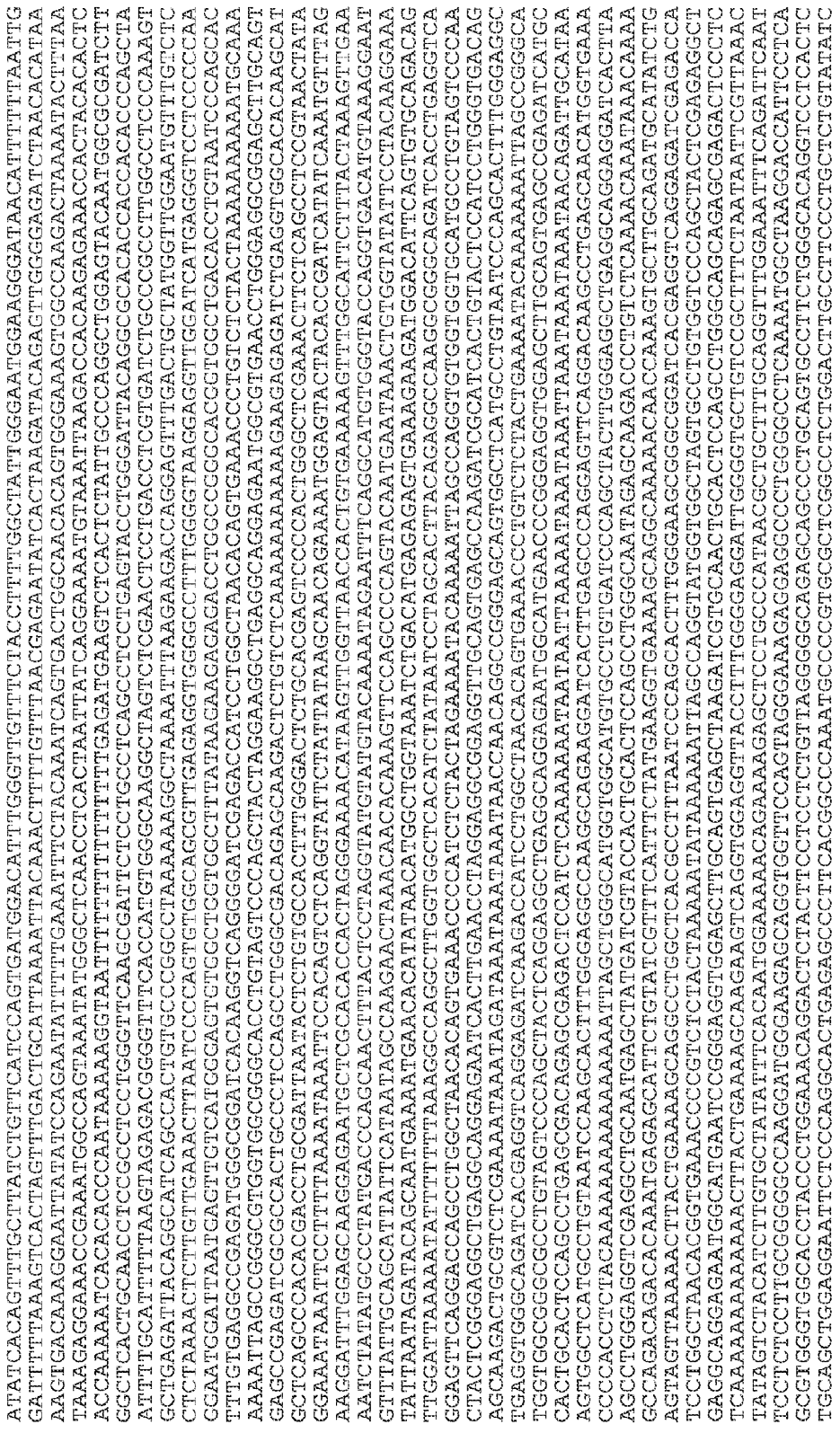


Fig. 40, cont'd

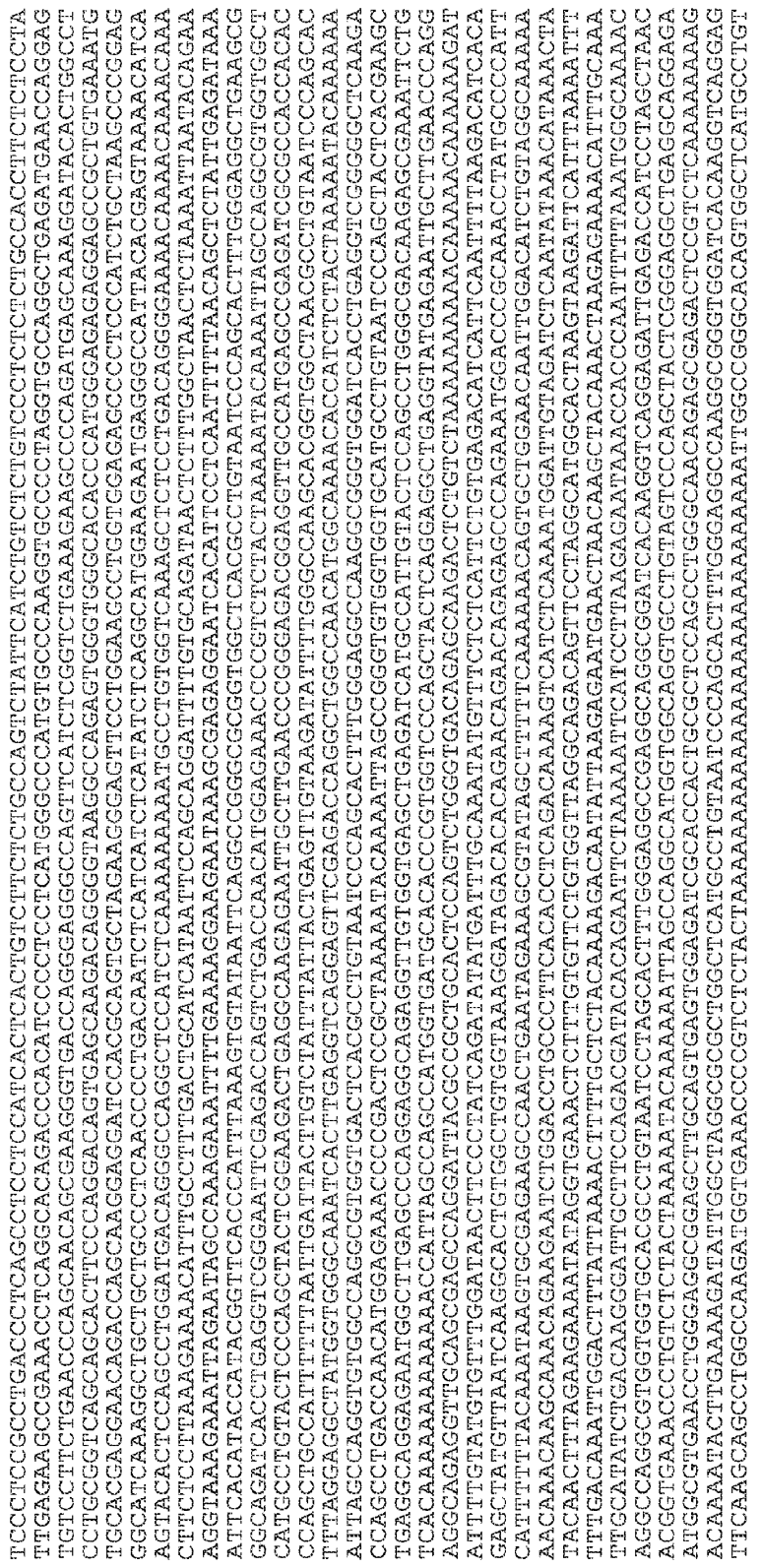


Fig. 40, cont'd

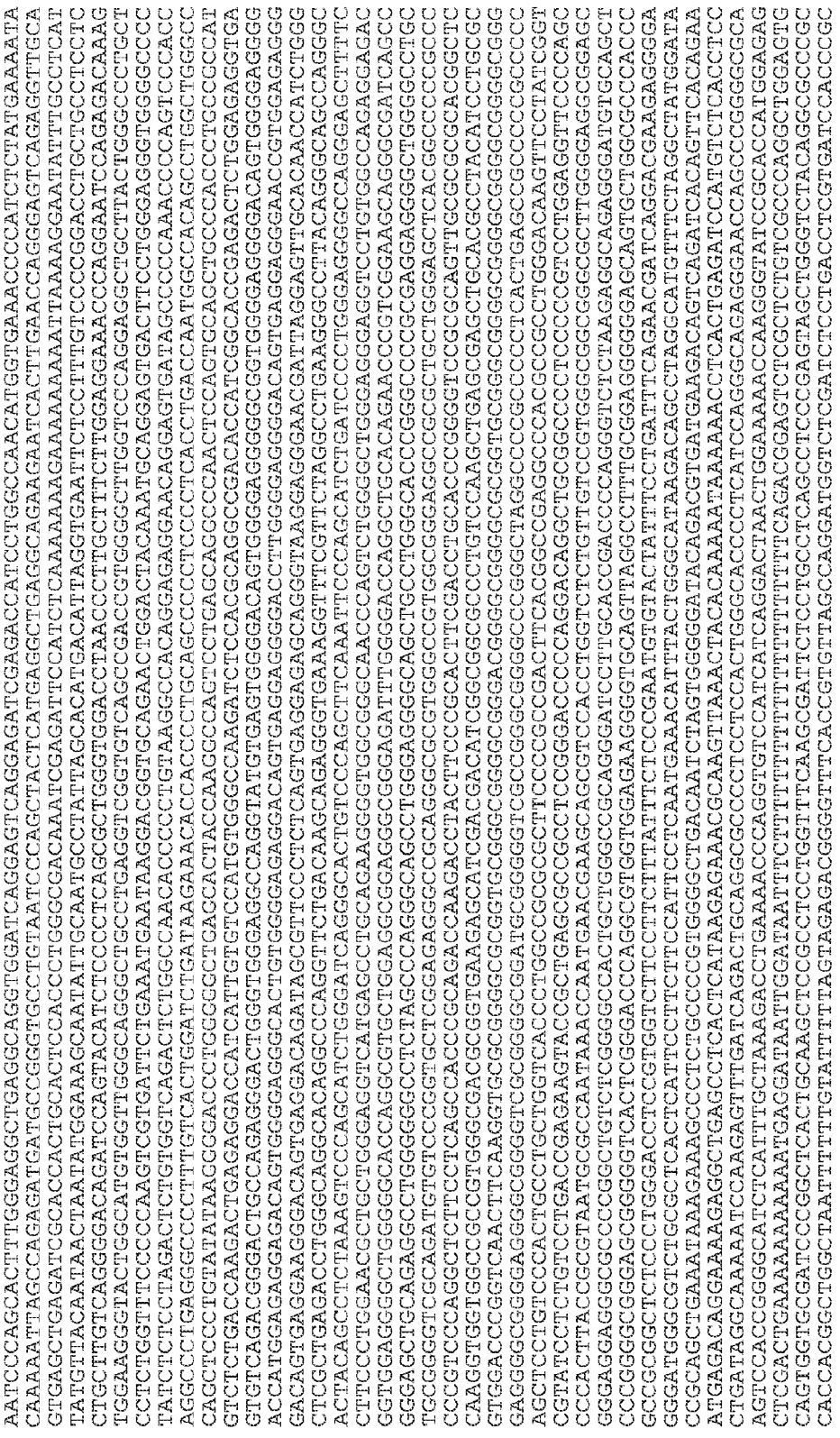


Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

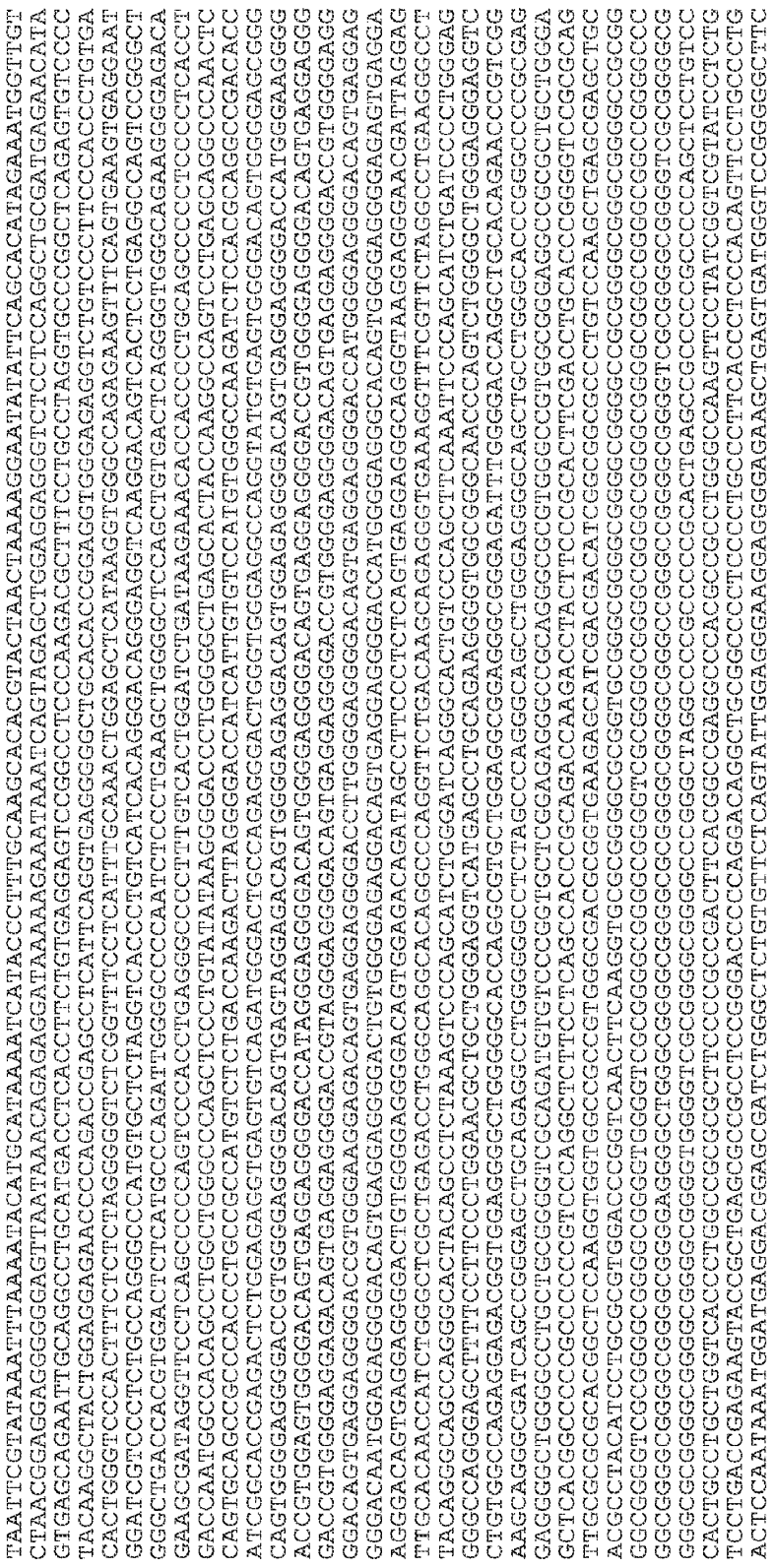


Fig. 40, cont'd

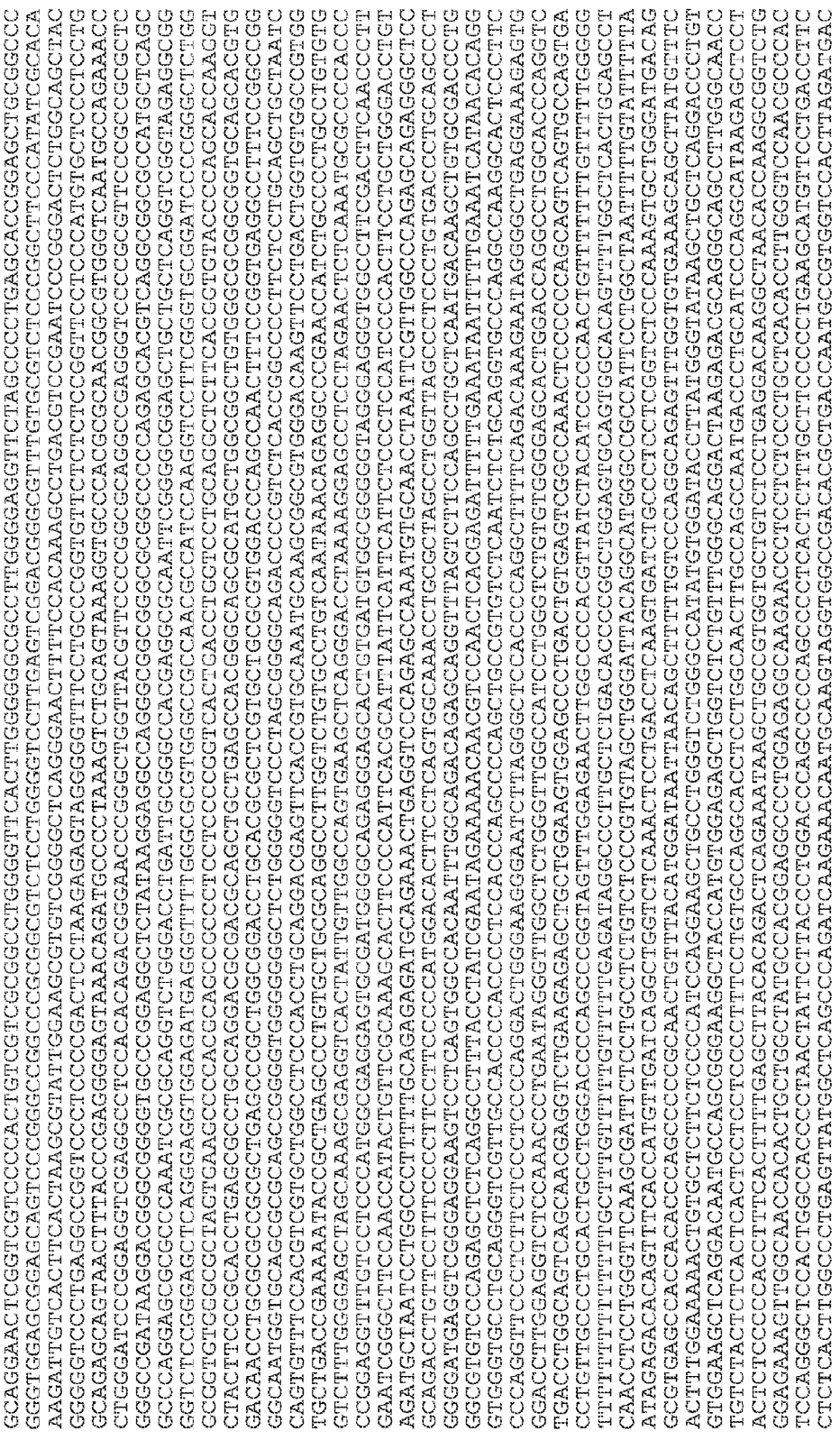


Fig. 40, cont'd

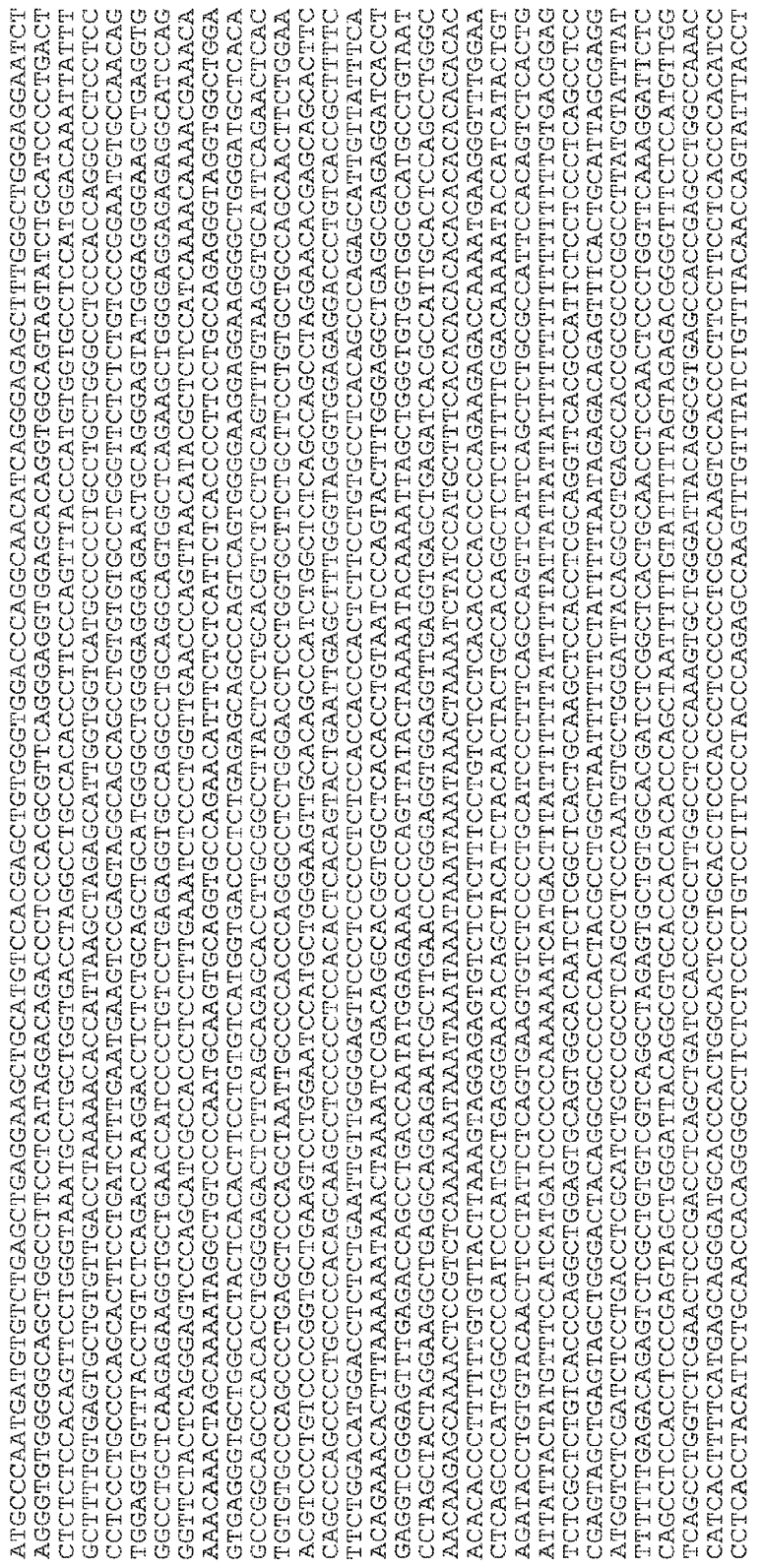


Fig. 40, cont'd

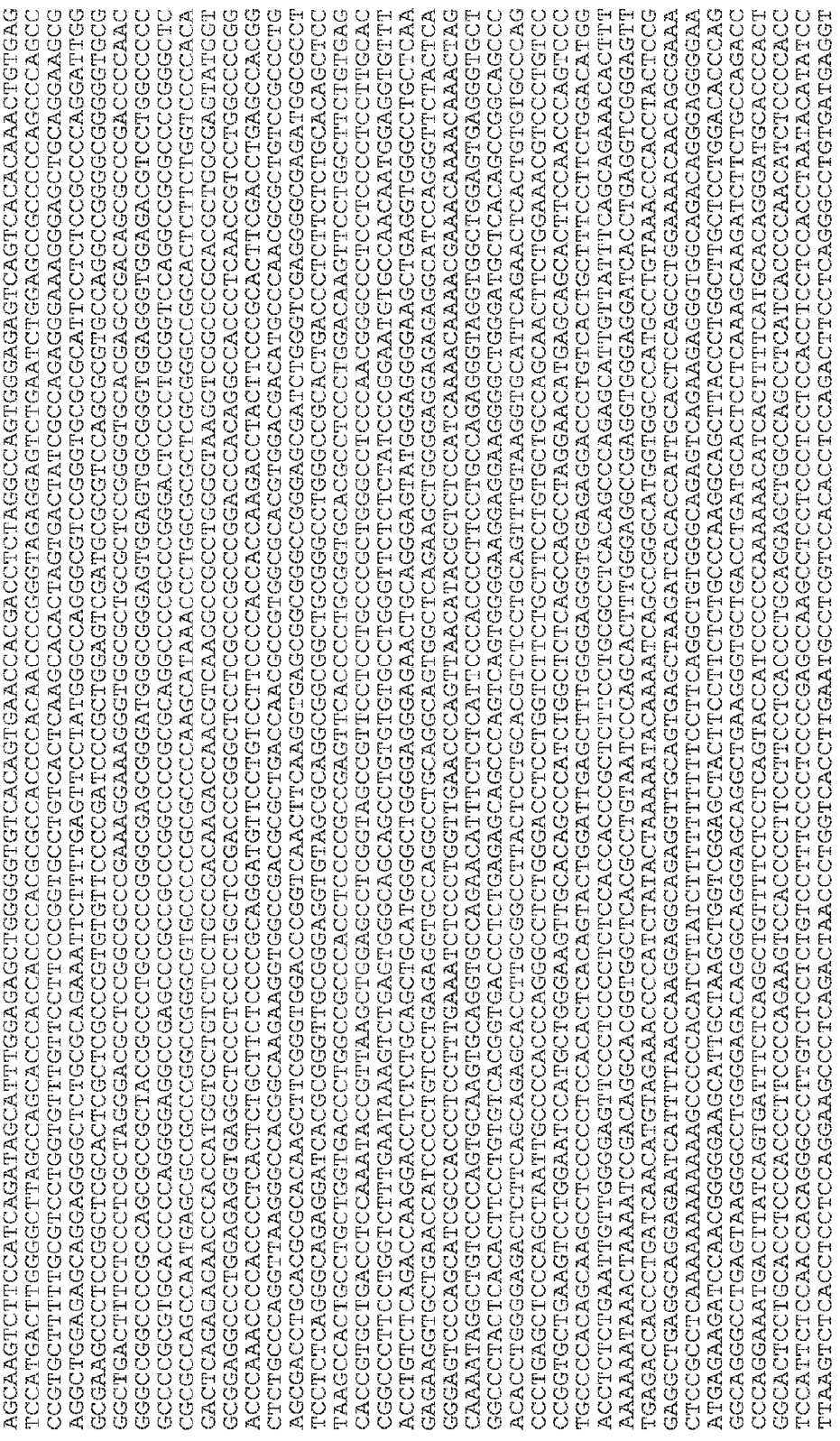


Fig. 40, cont'd

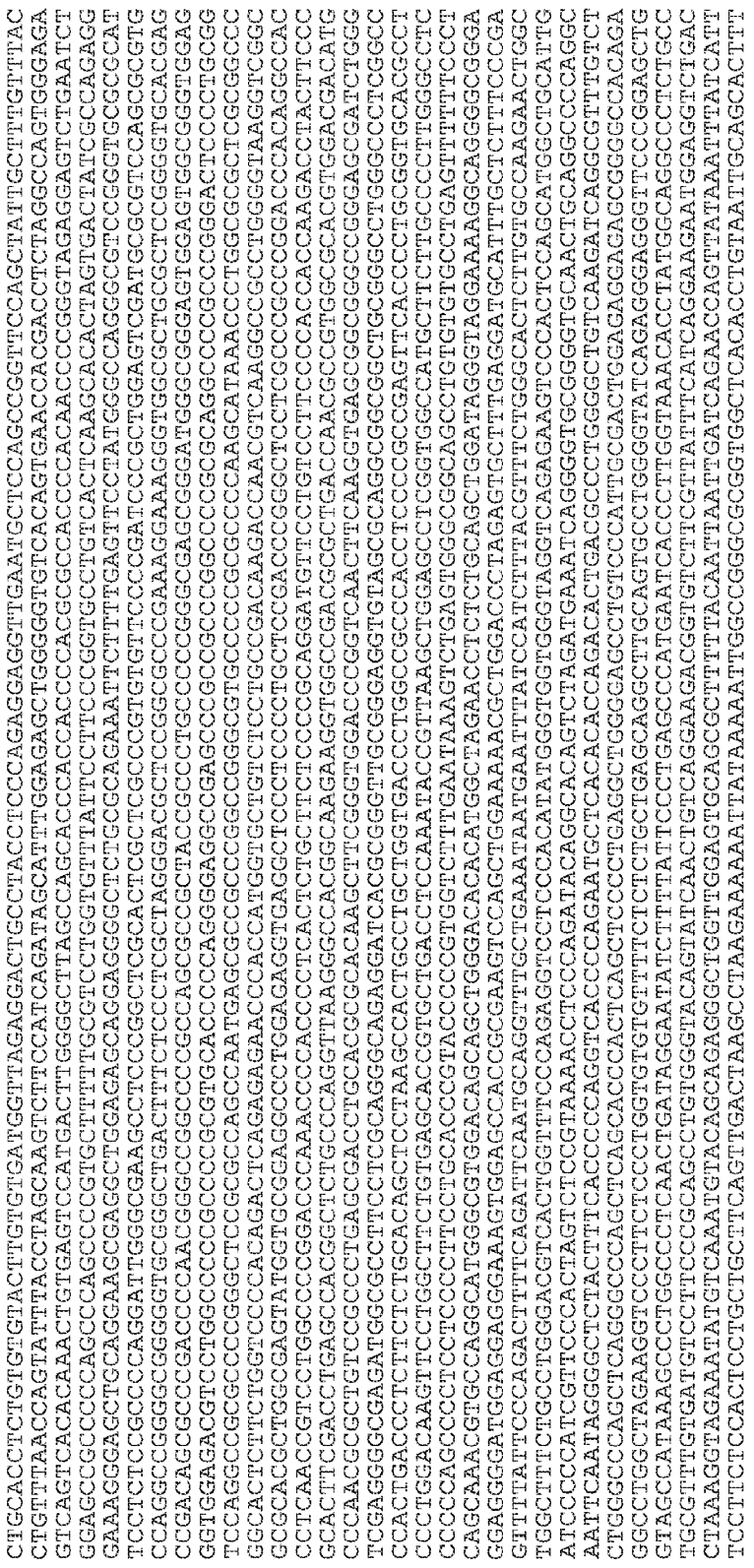


Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

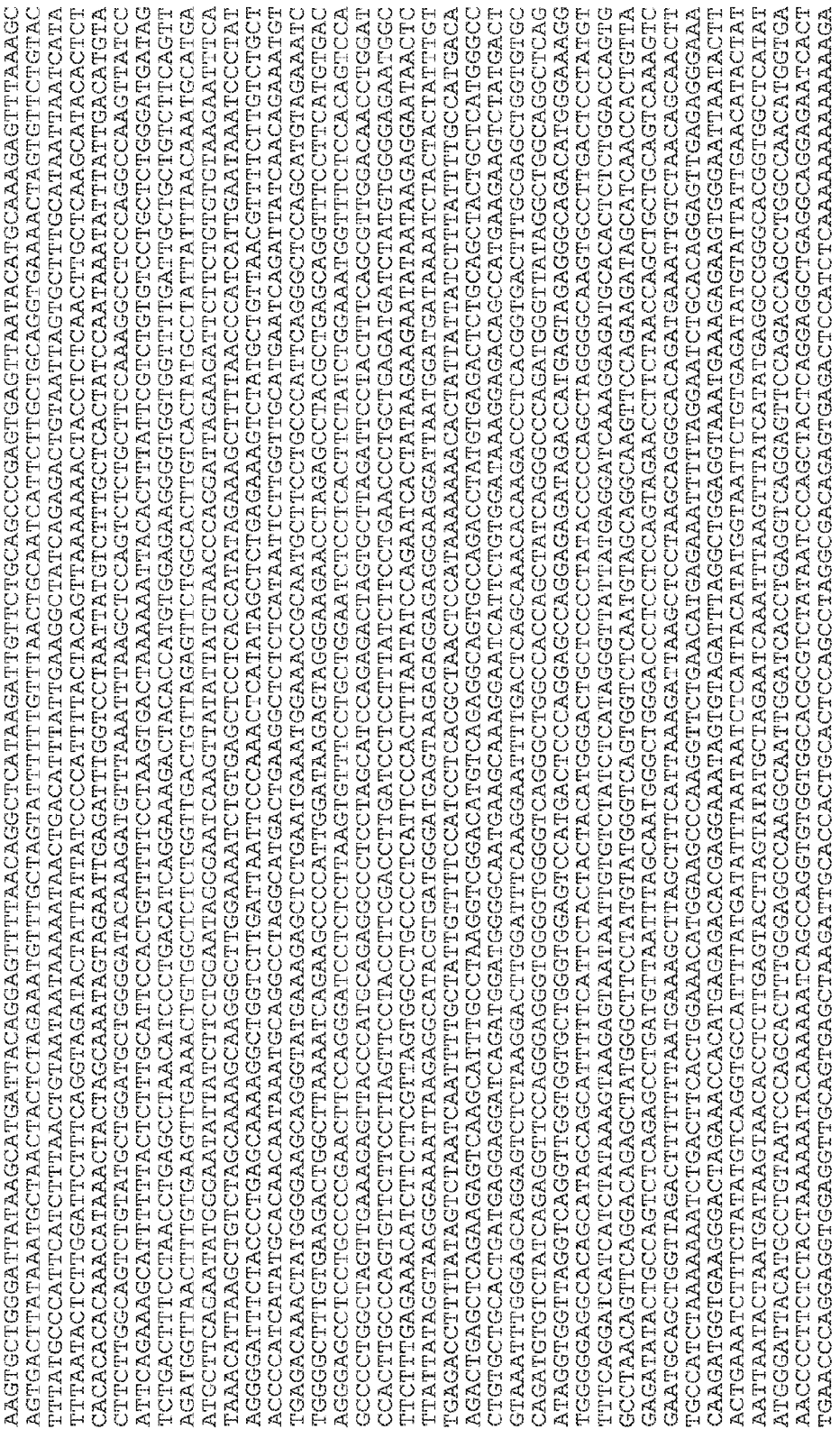

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Fig. 40, cont'd

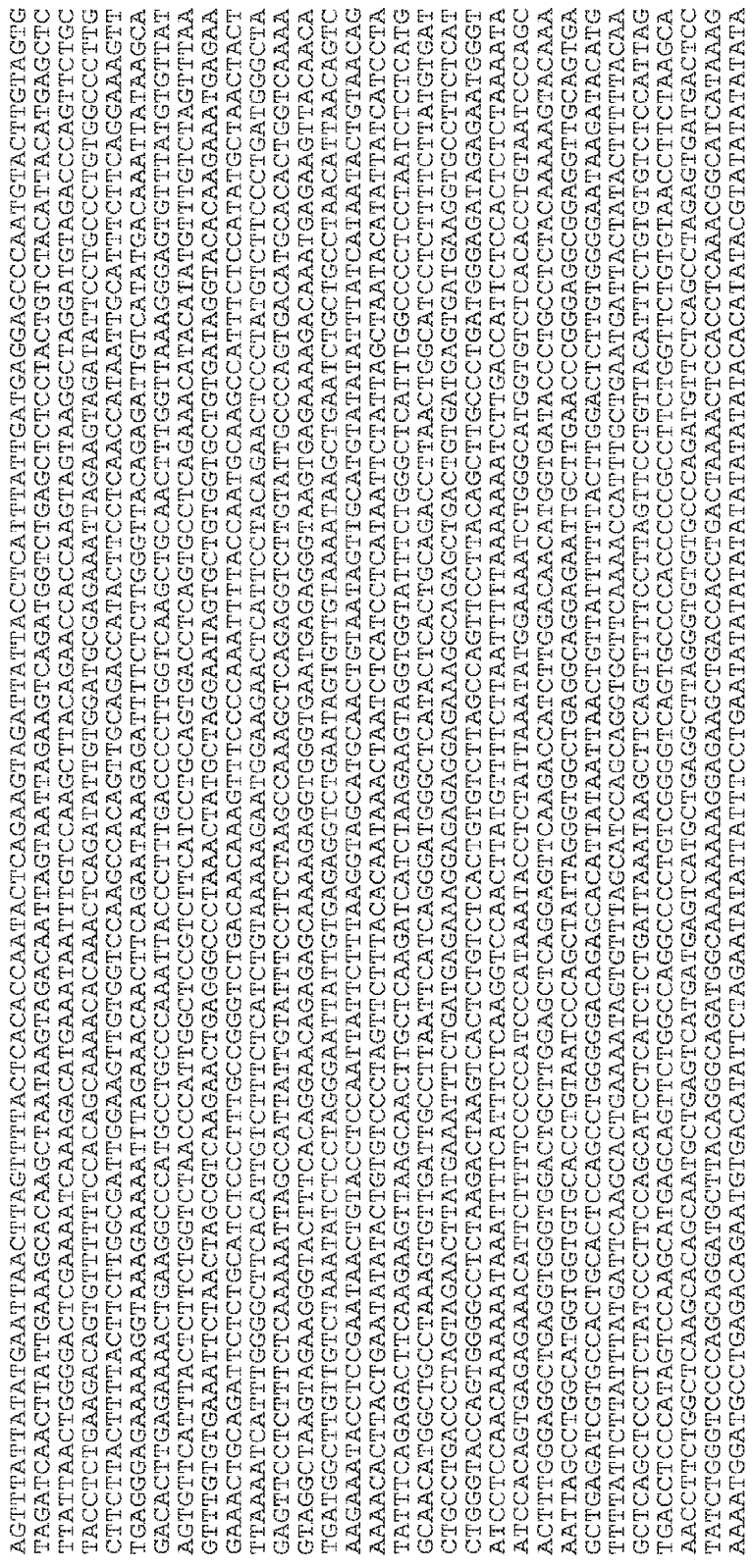


Fig. 40, cont'd

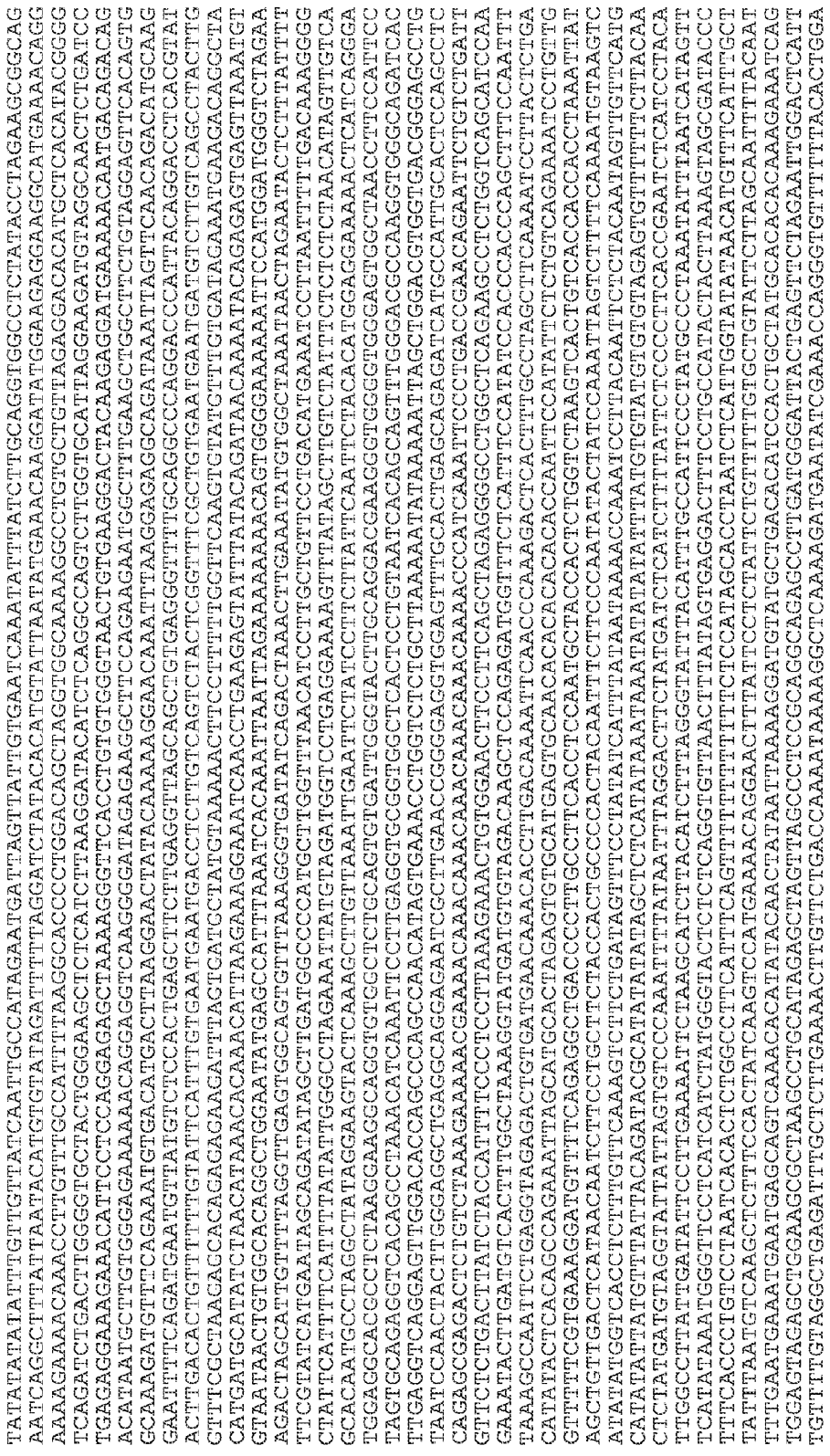


Fig. 40, cont'd

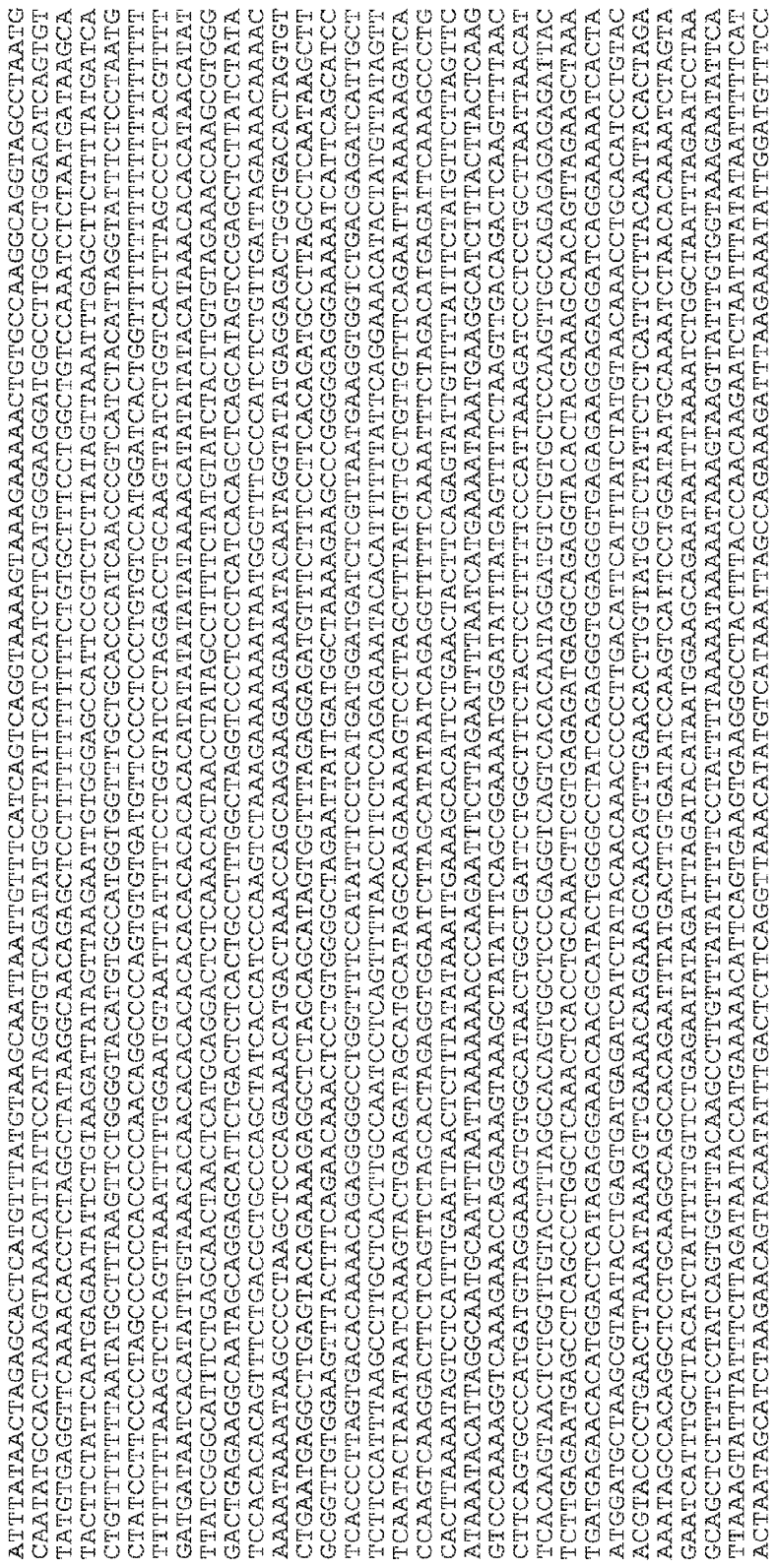


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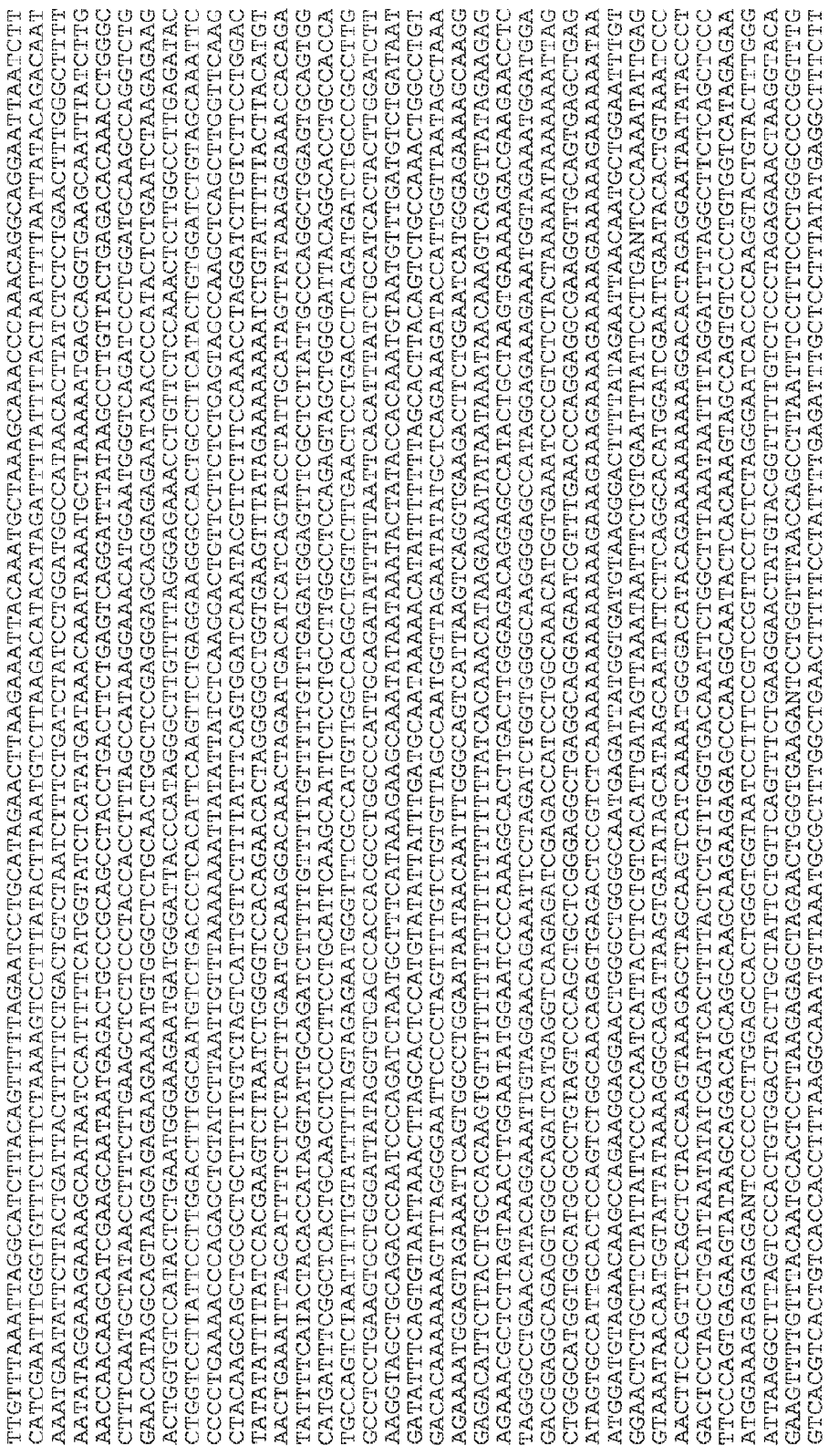


Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

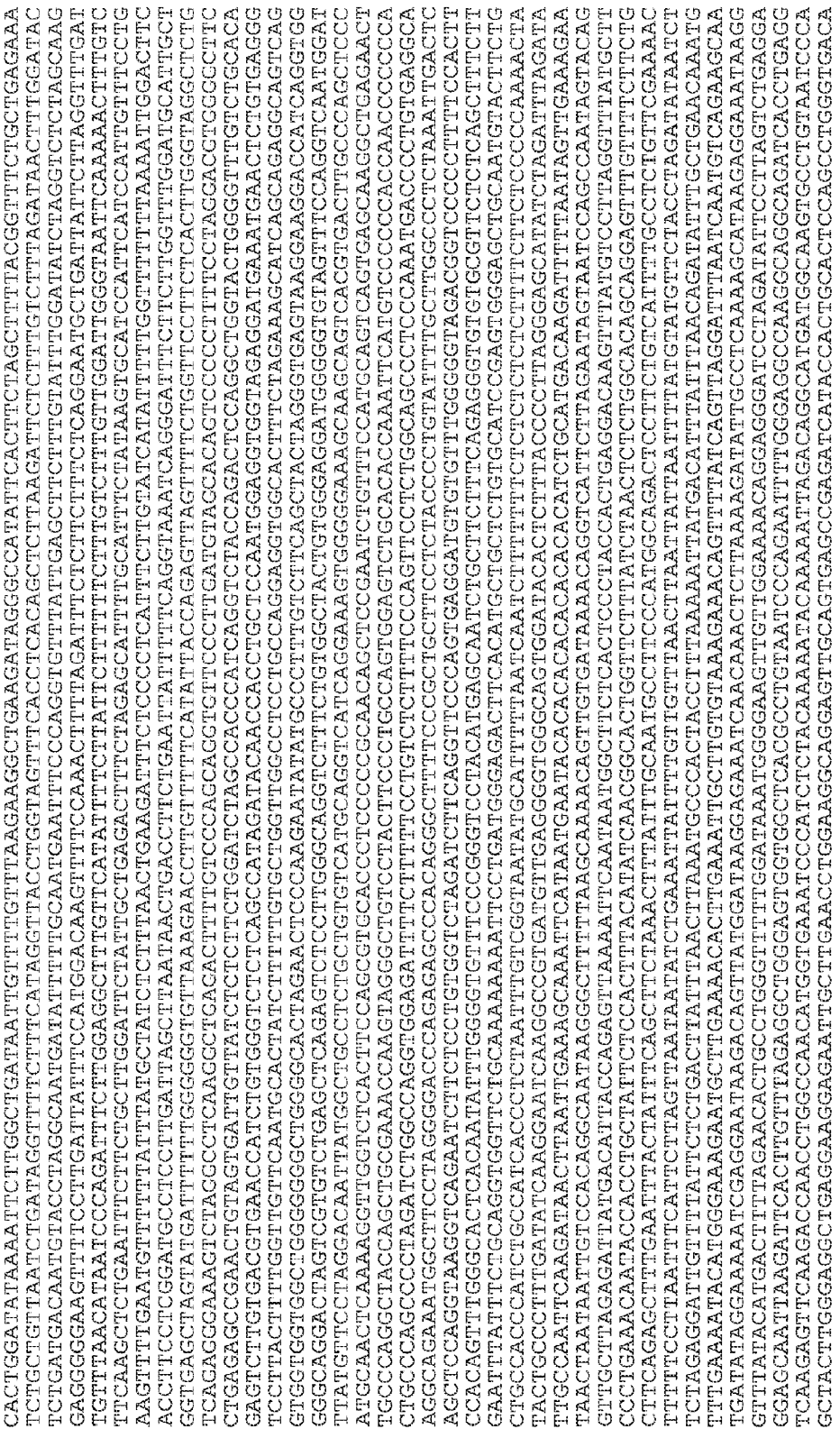


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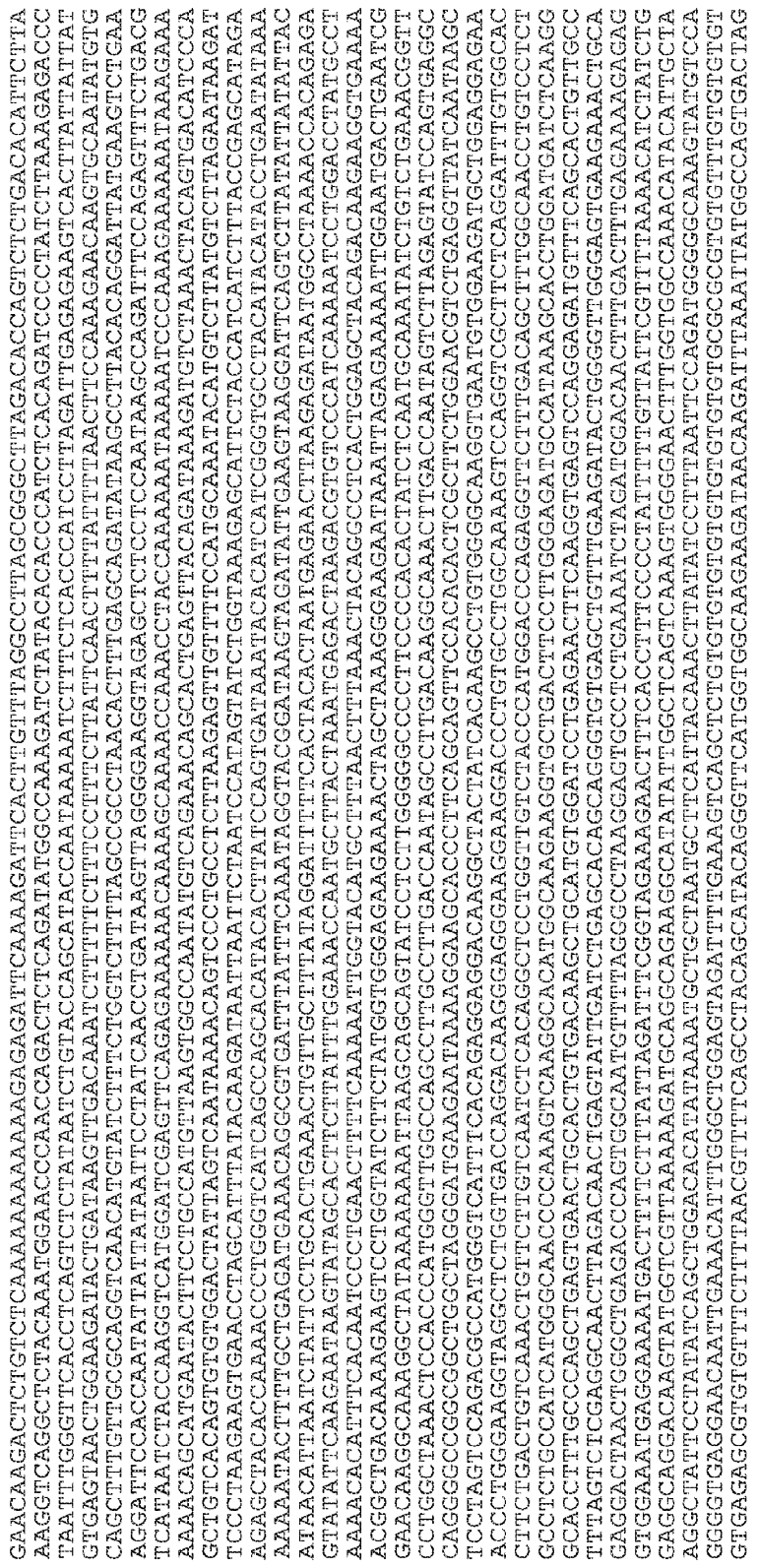


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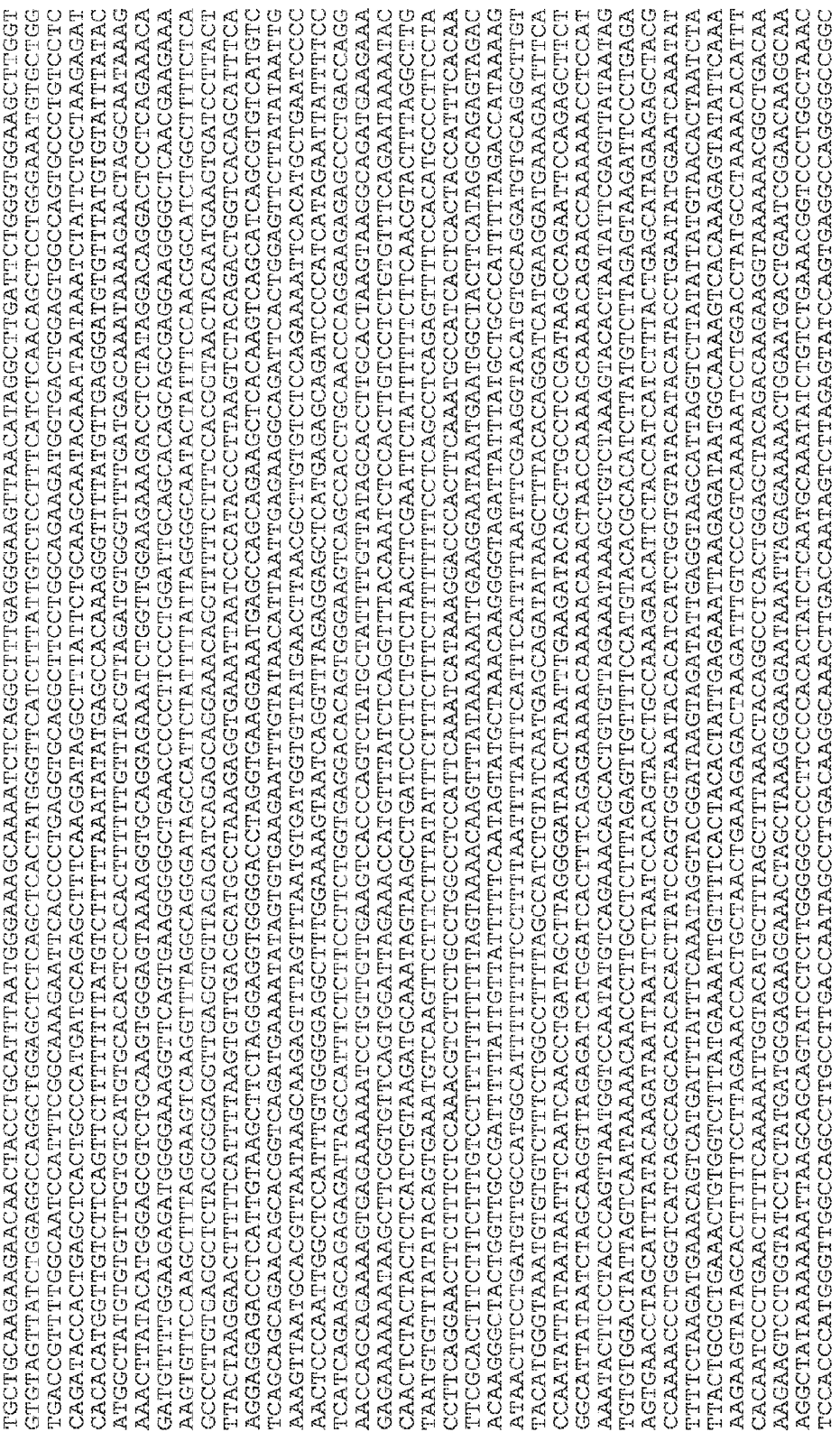


Fig. 40, cont'd

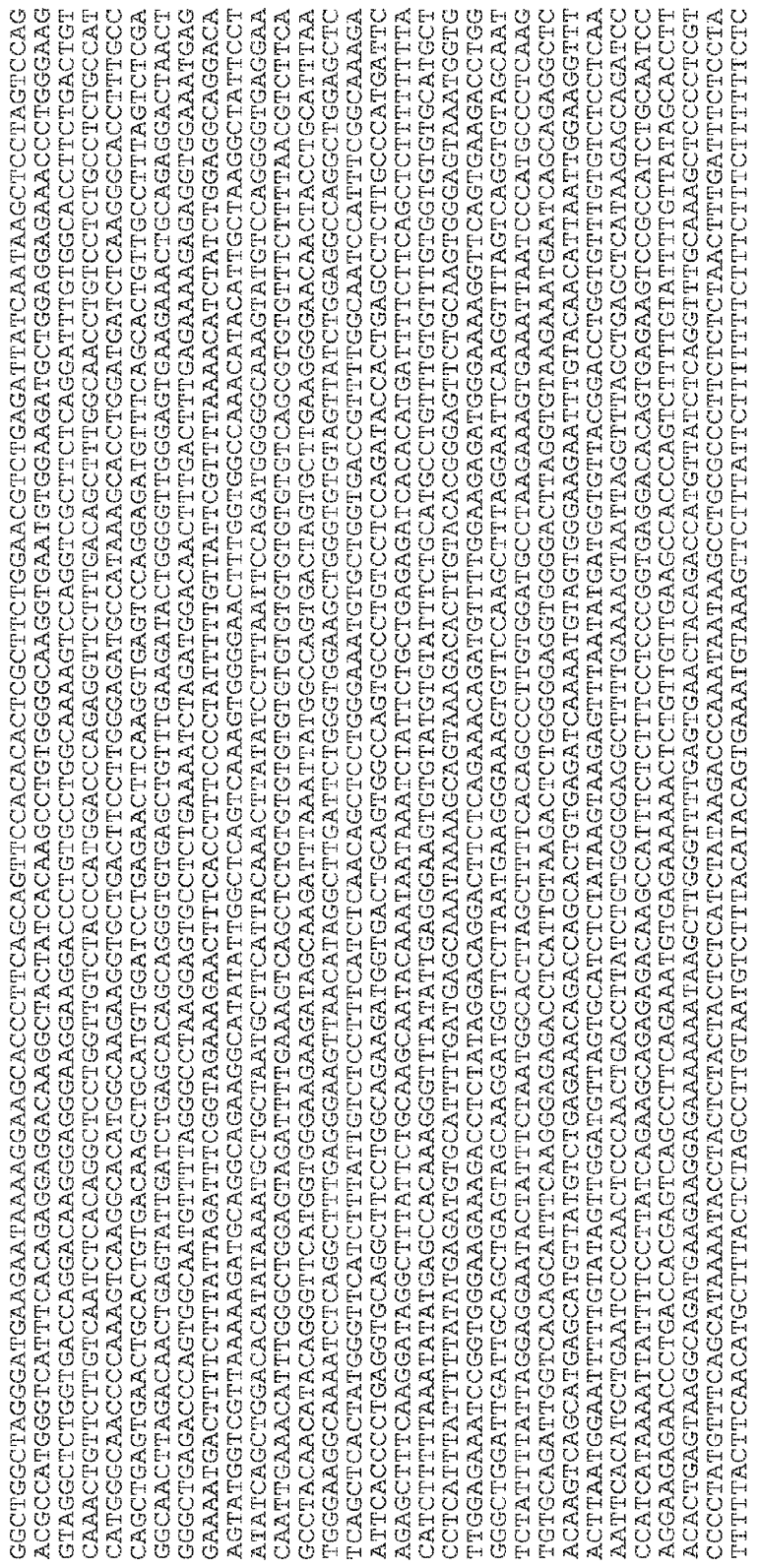


Fig. 40, cont'd

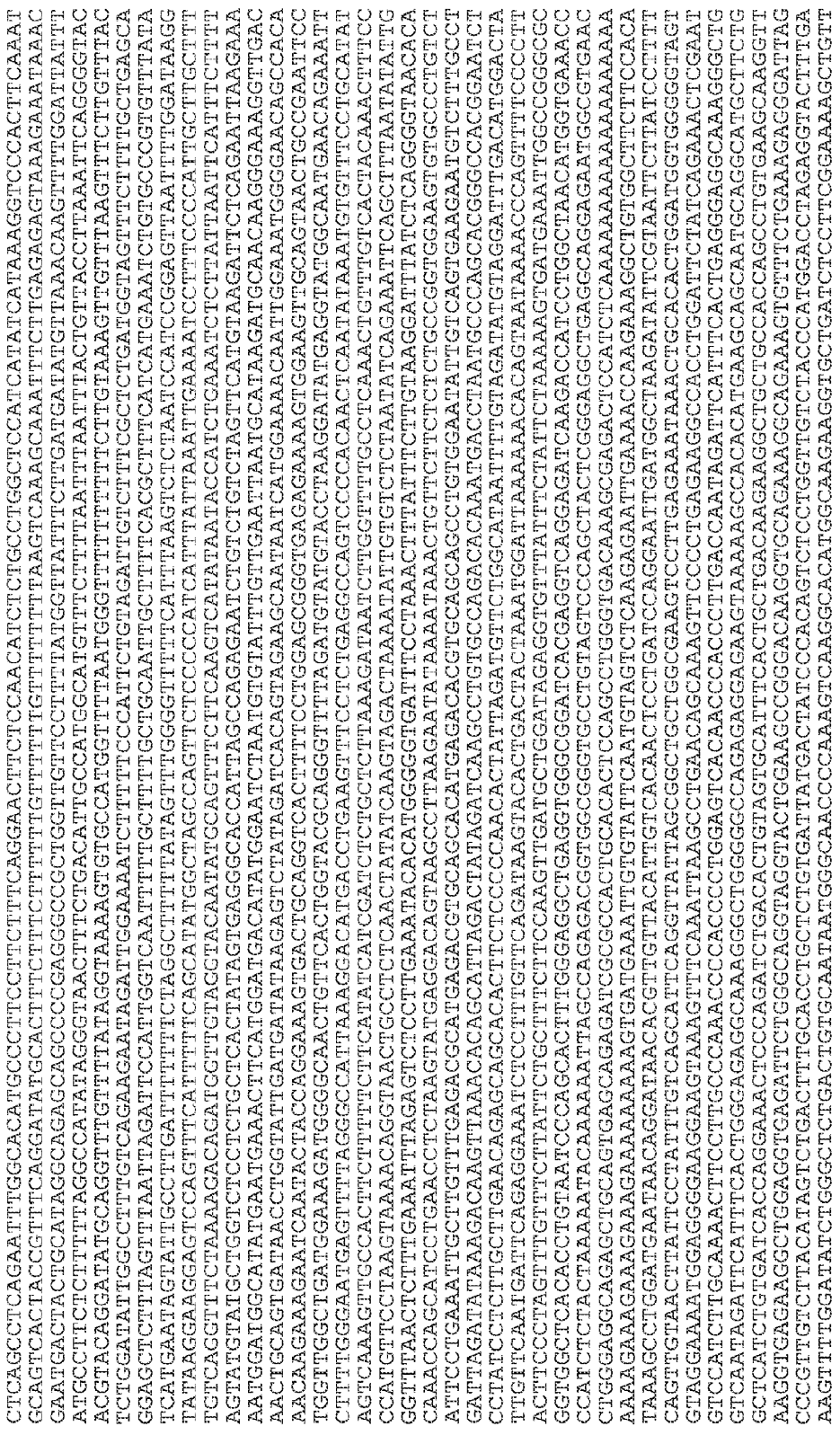

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Fig. 40, cont'd

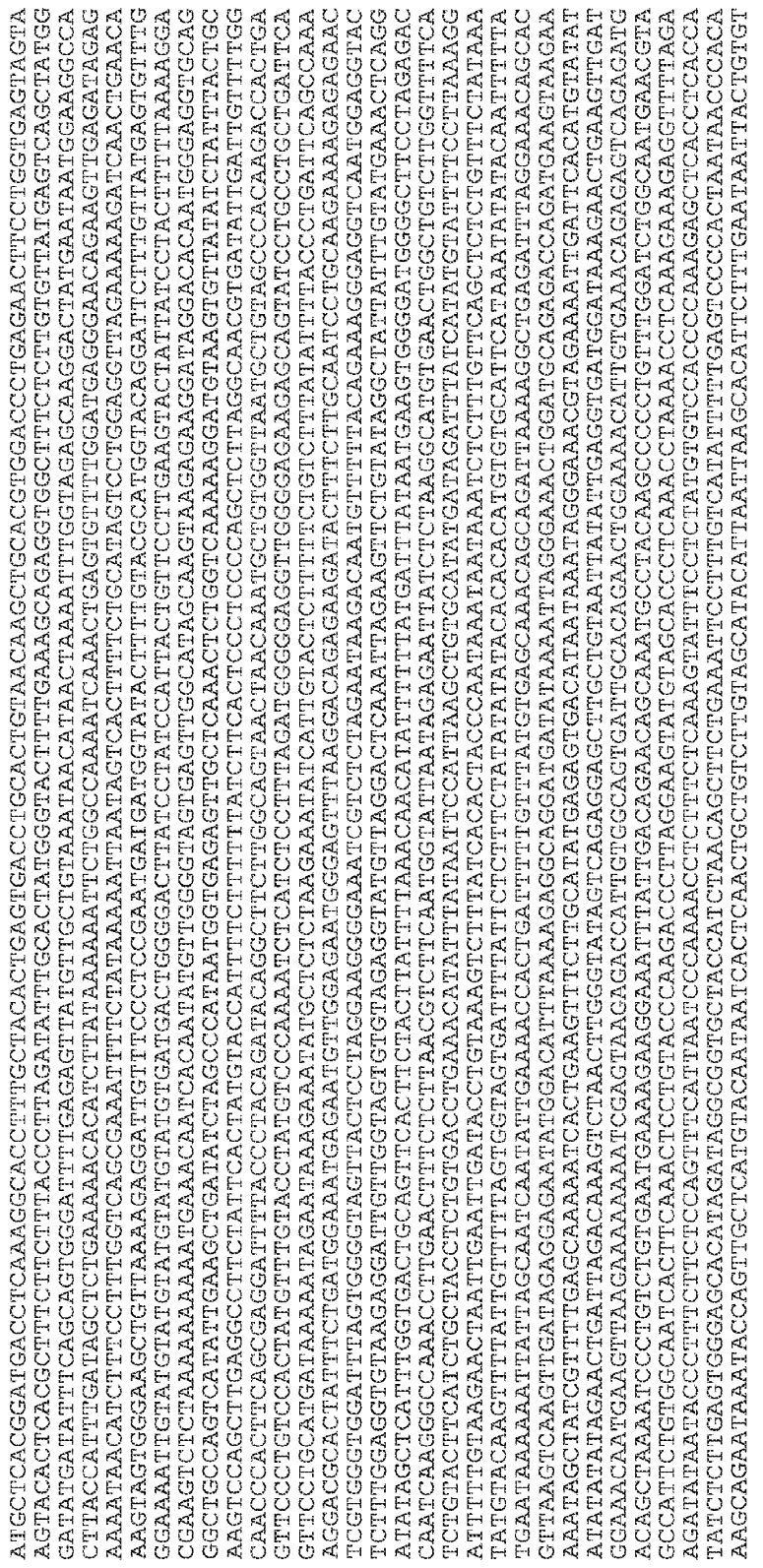


Fig. 40, cont'd

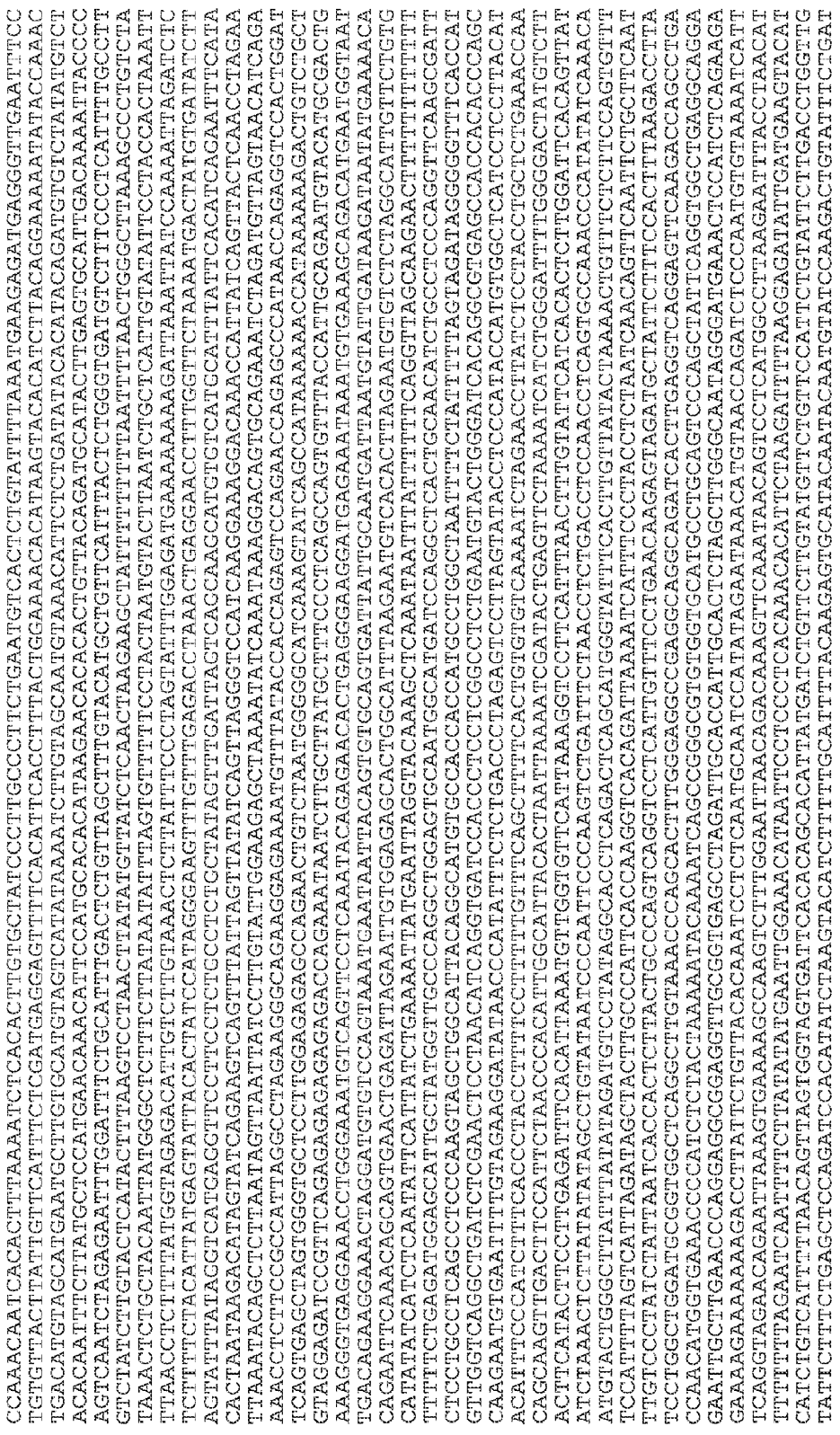


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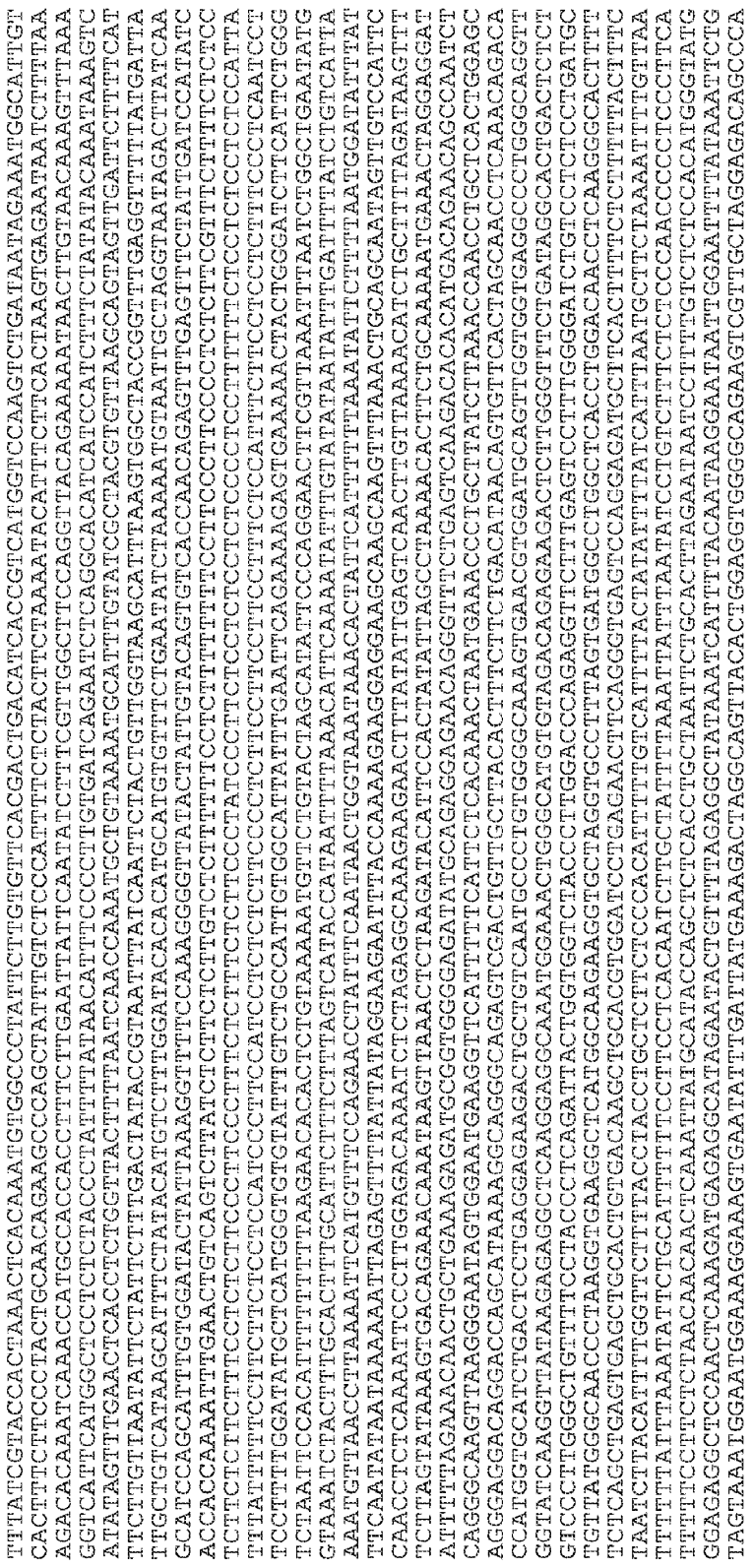


Fig. 40, cont'd

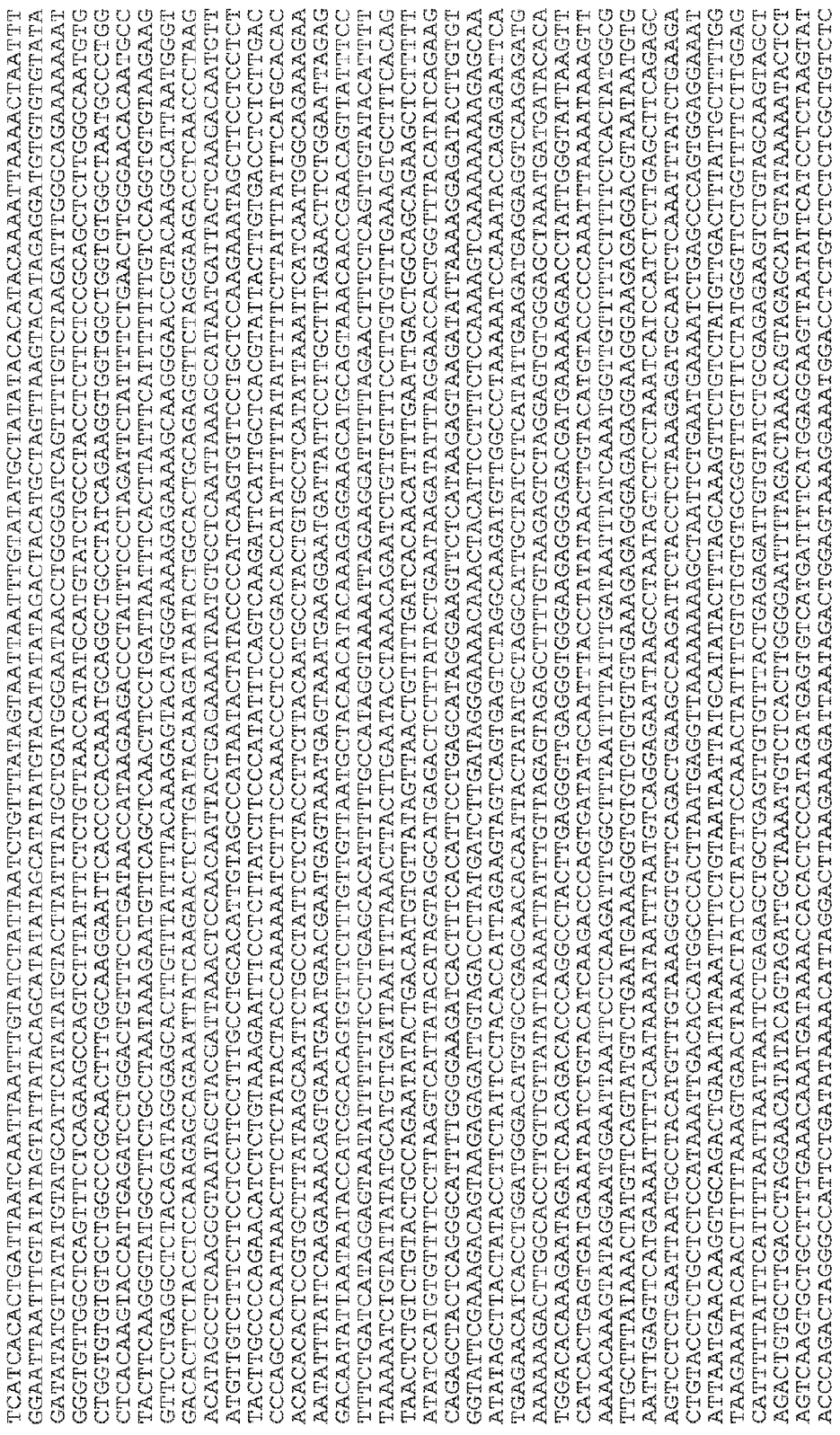


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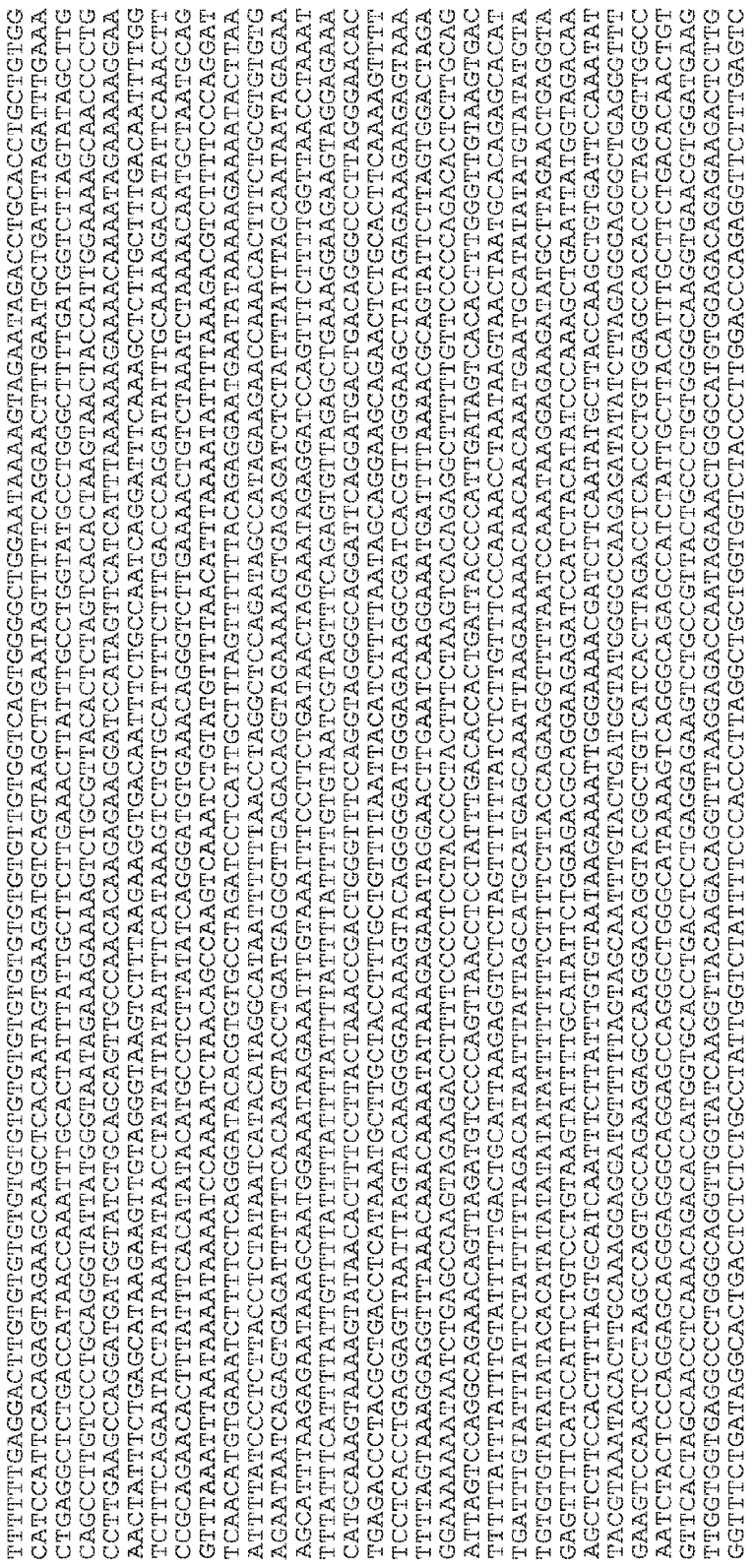


Fig. 40, cont'd

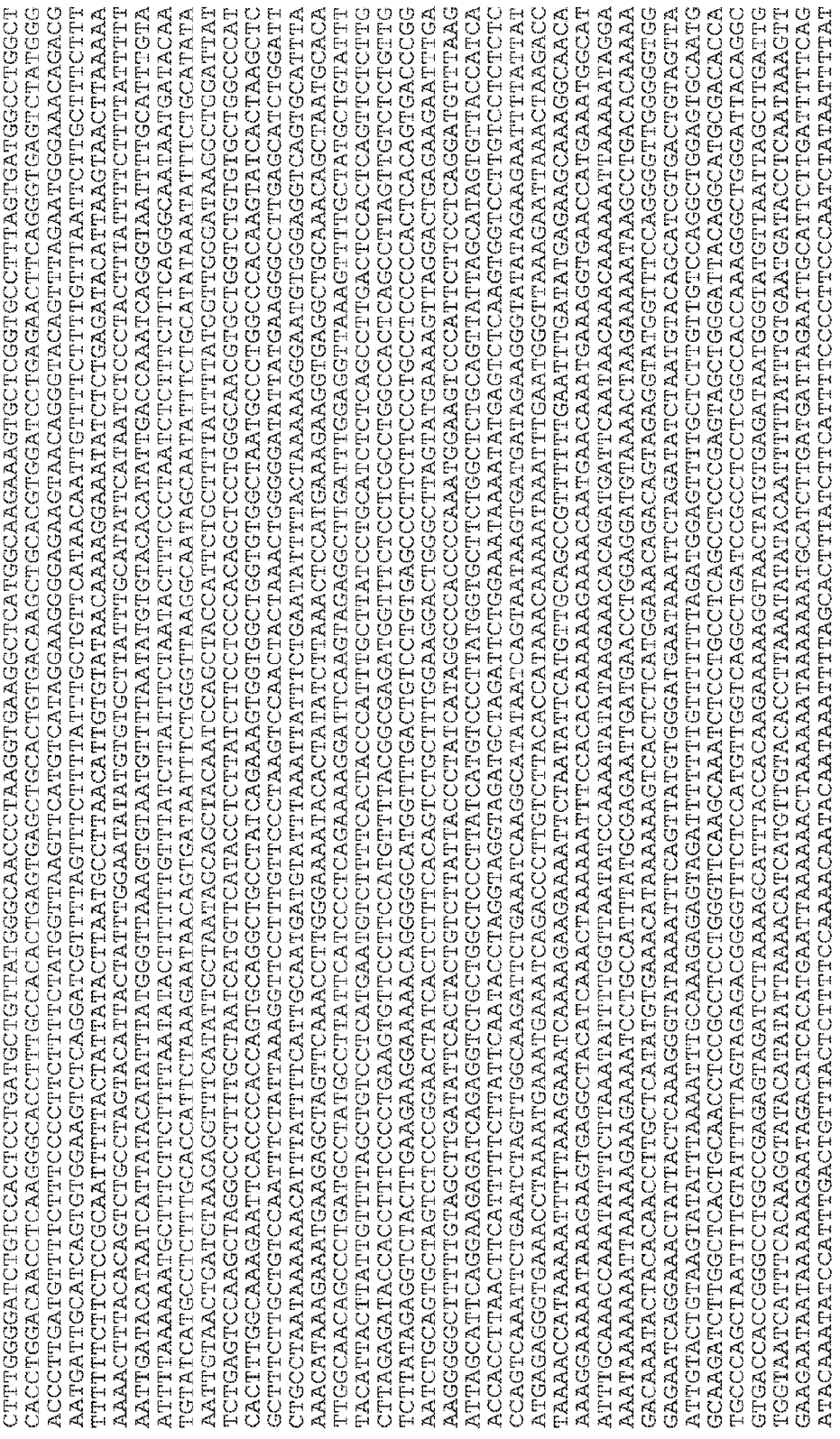


Fig. 40, cont'd

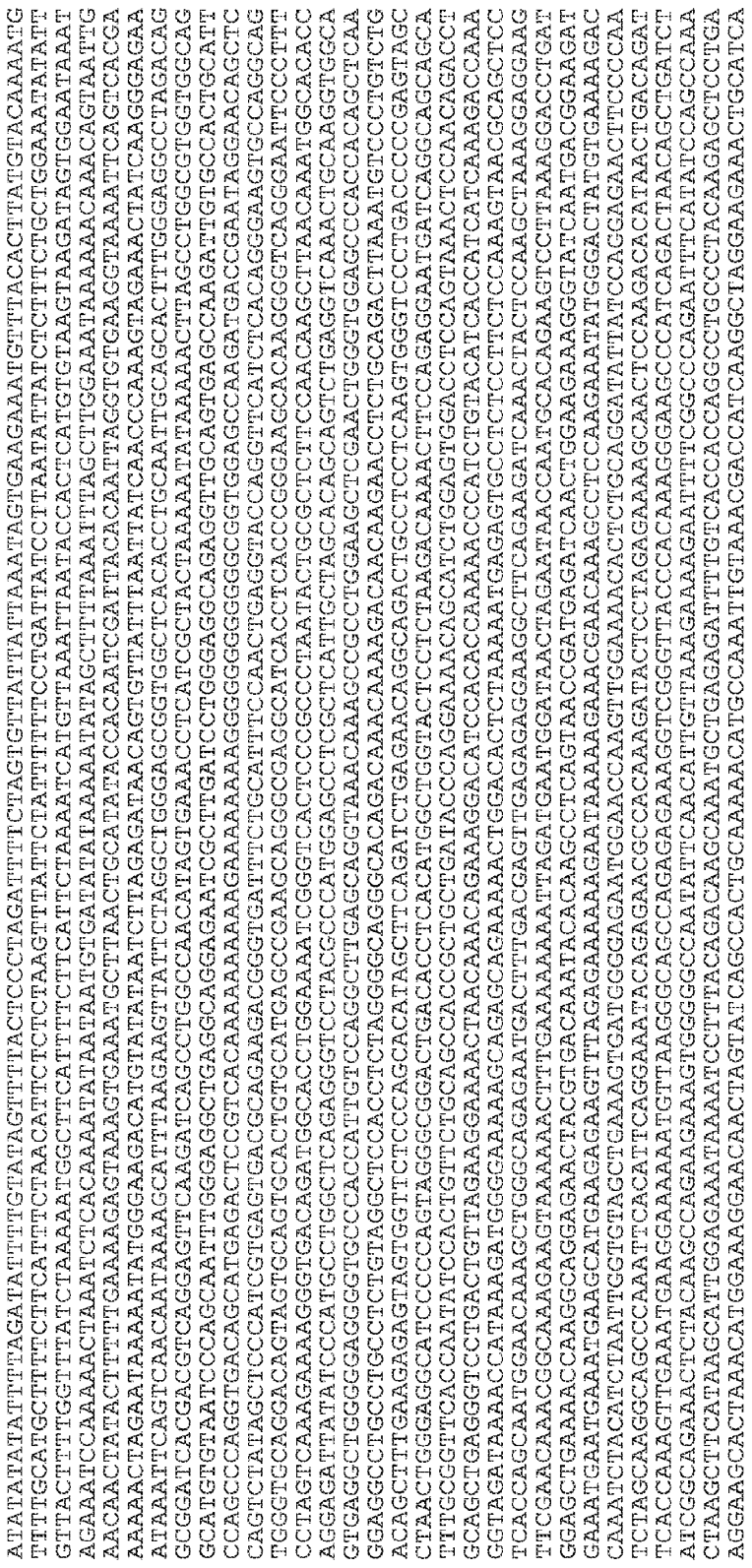

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Fig. 40, cont'd

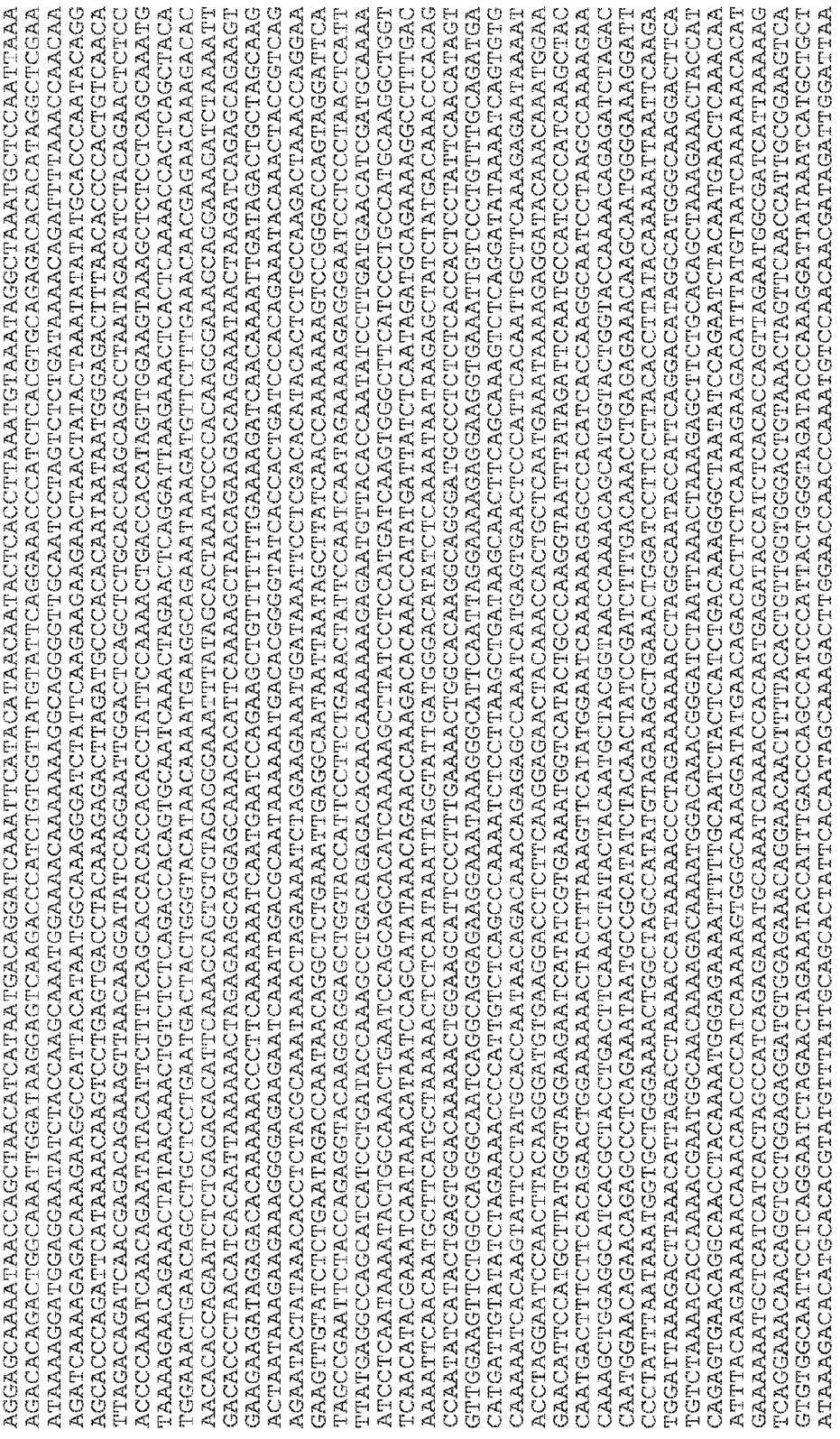

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Fig. 40, cont'd


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Fig. 40, cont'd

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Fig. 40, cont'd

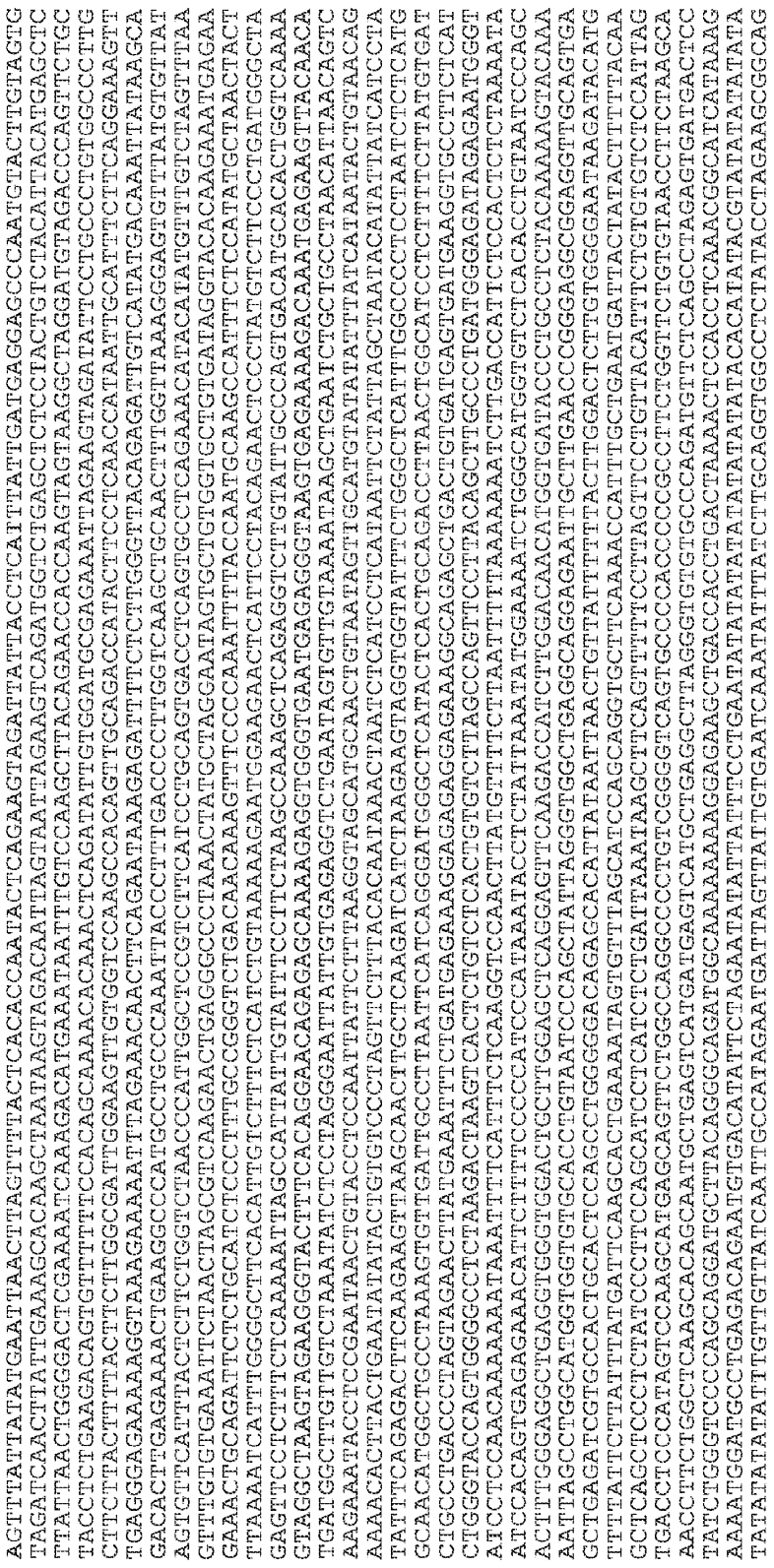


Fig. 40, cont'd

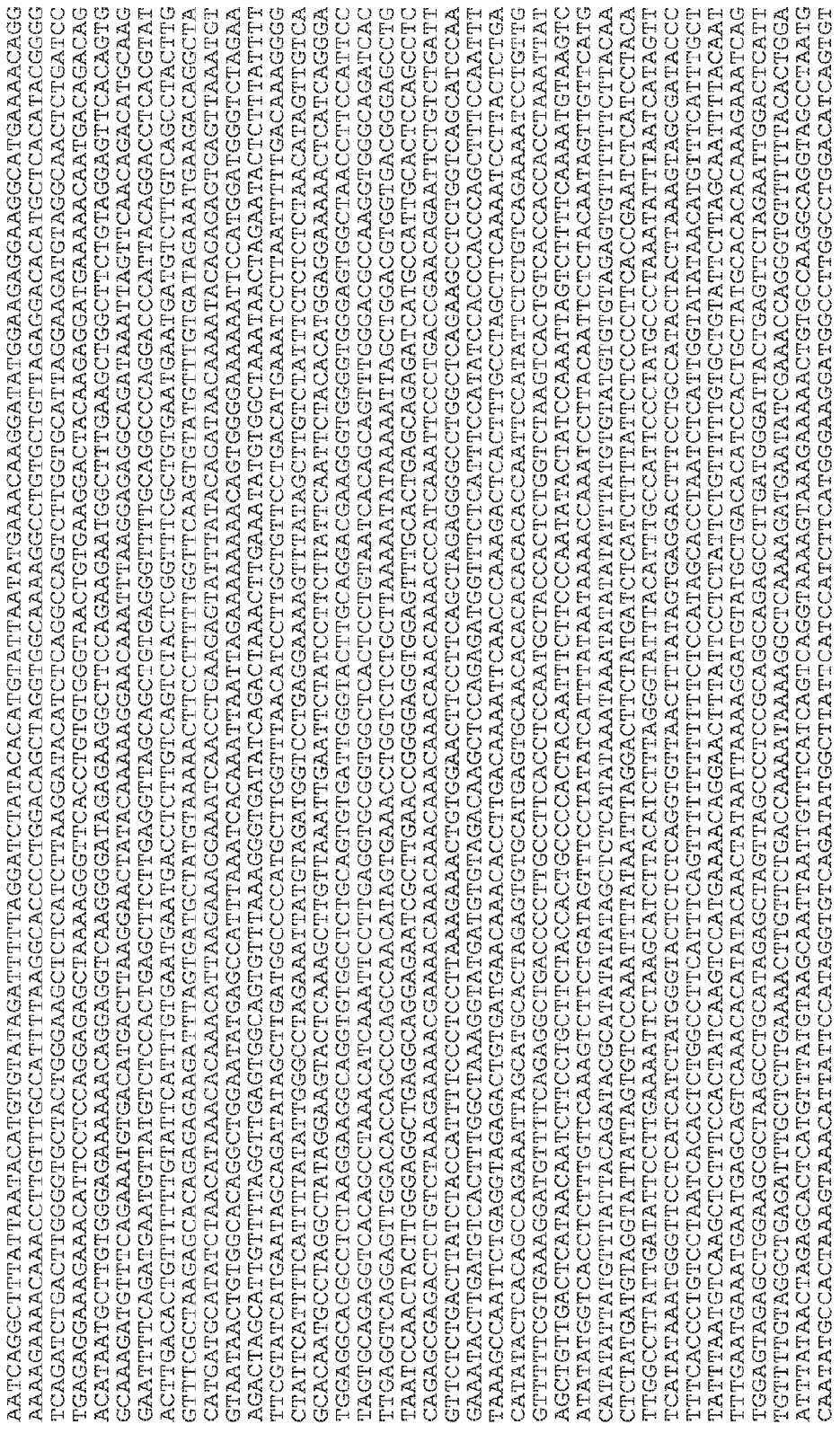

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Fig. 40, cont'd

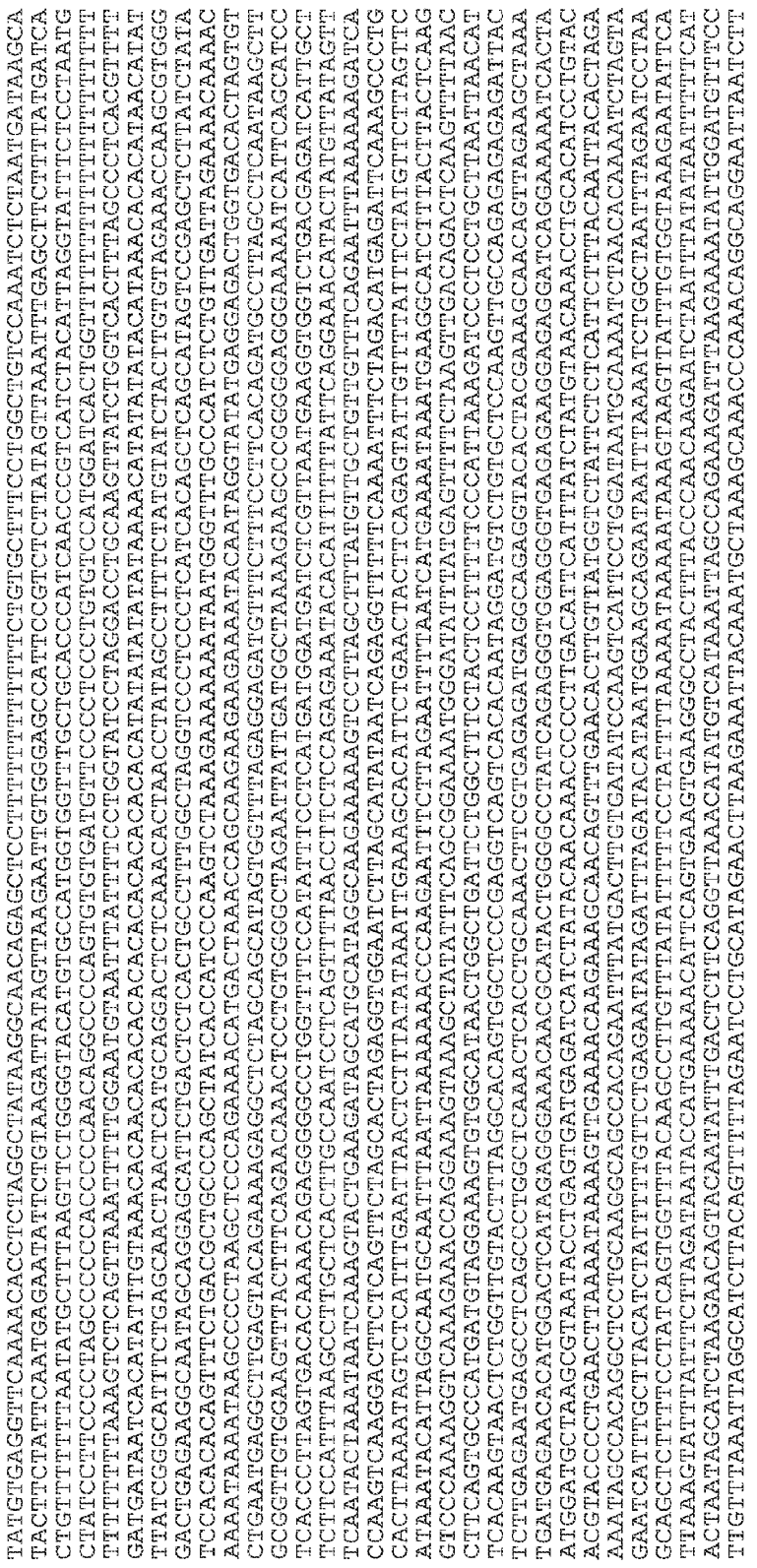


Fig. 40, cont'd

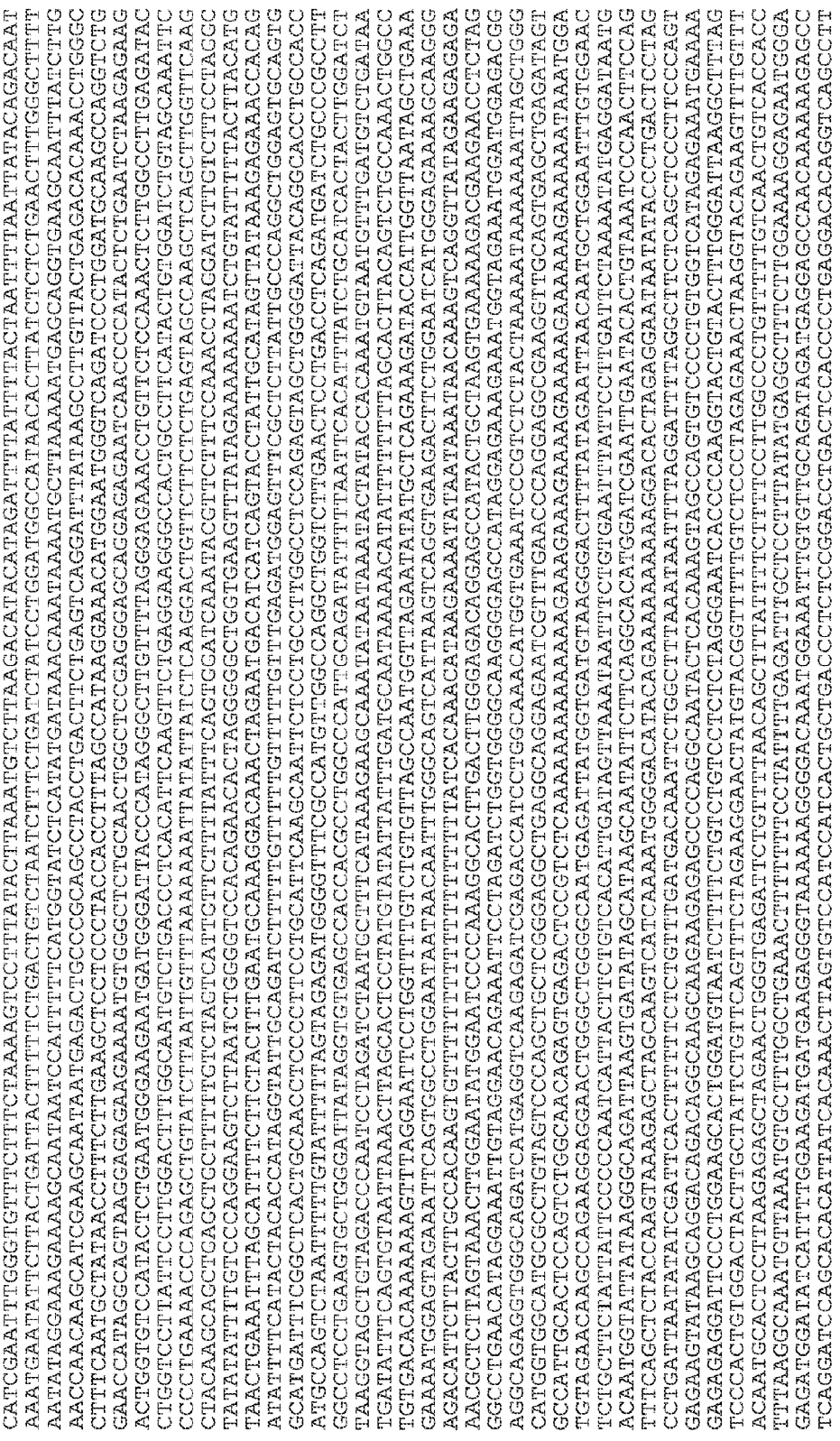

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Fig. 40, cont'd

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Fig. 40, cont'd

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Fig. 40, cont'd

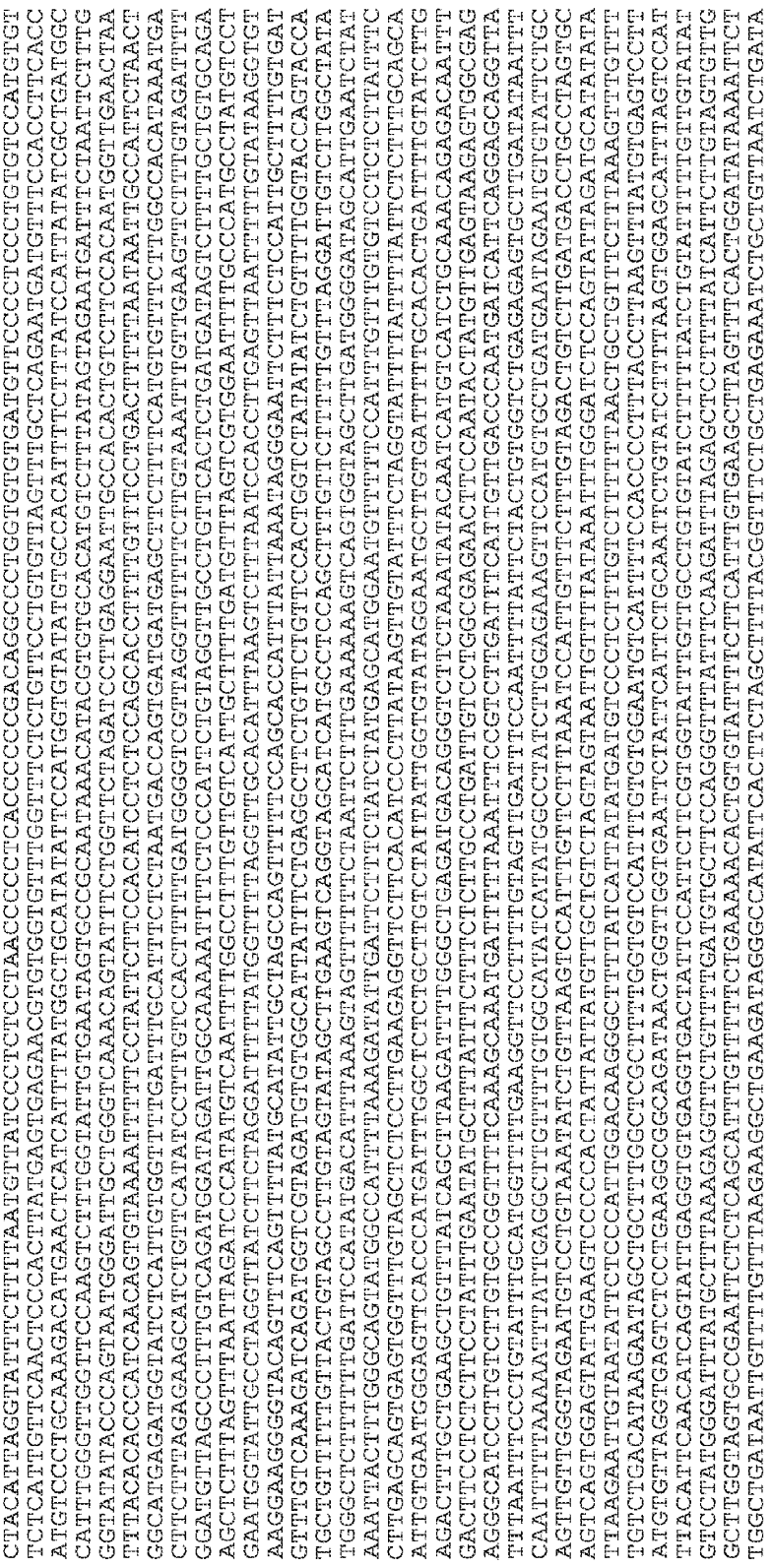


Fig. 40, cont'd

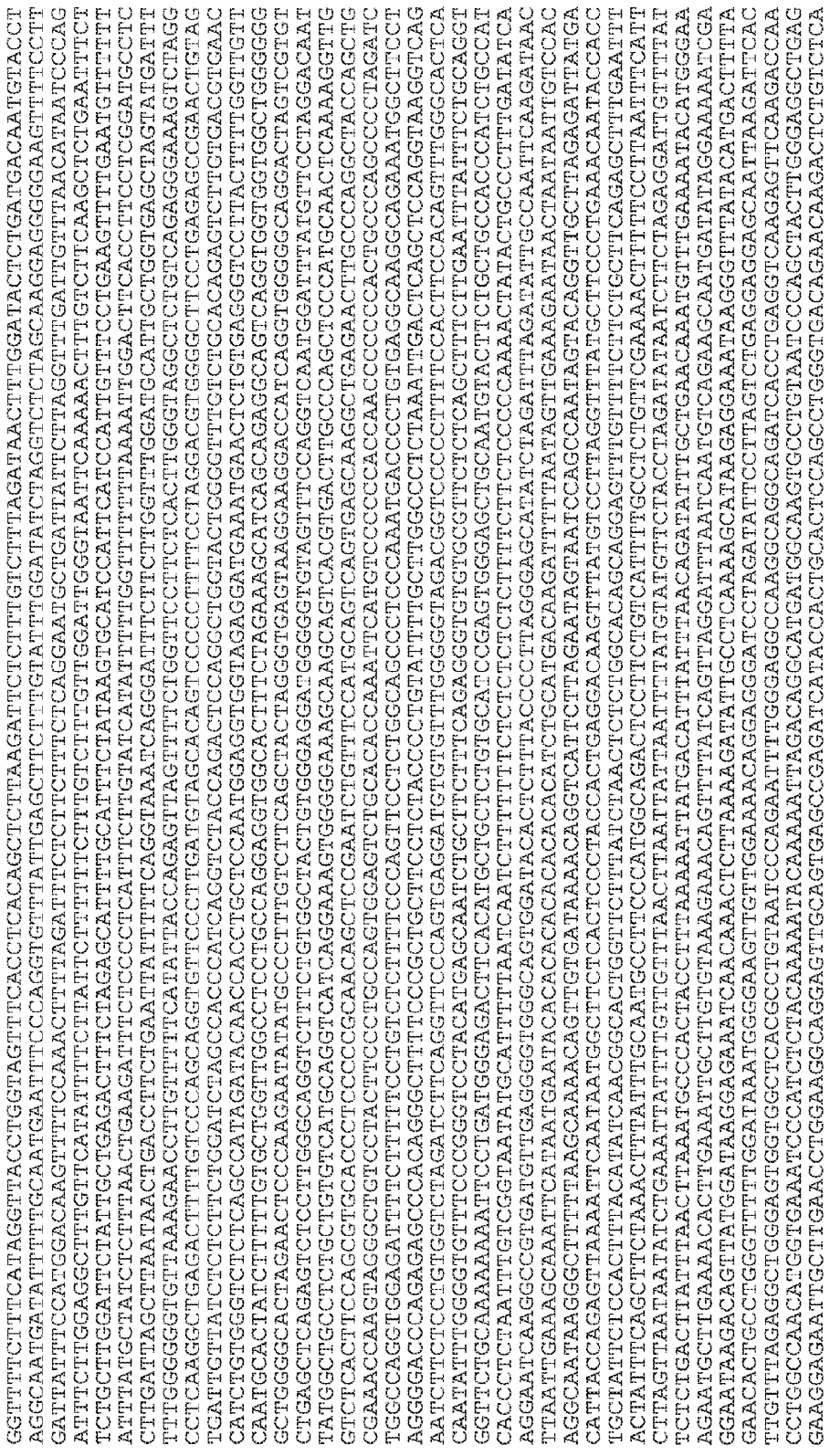


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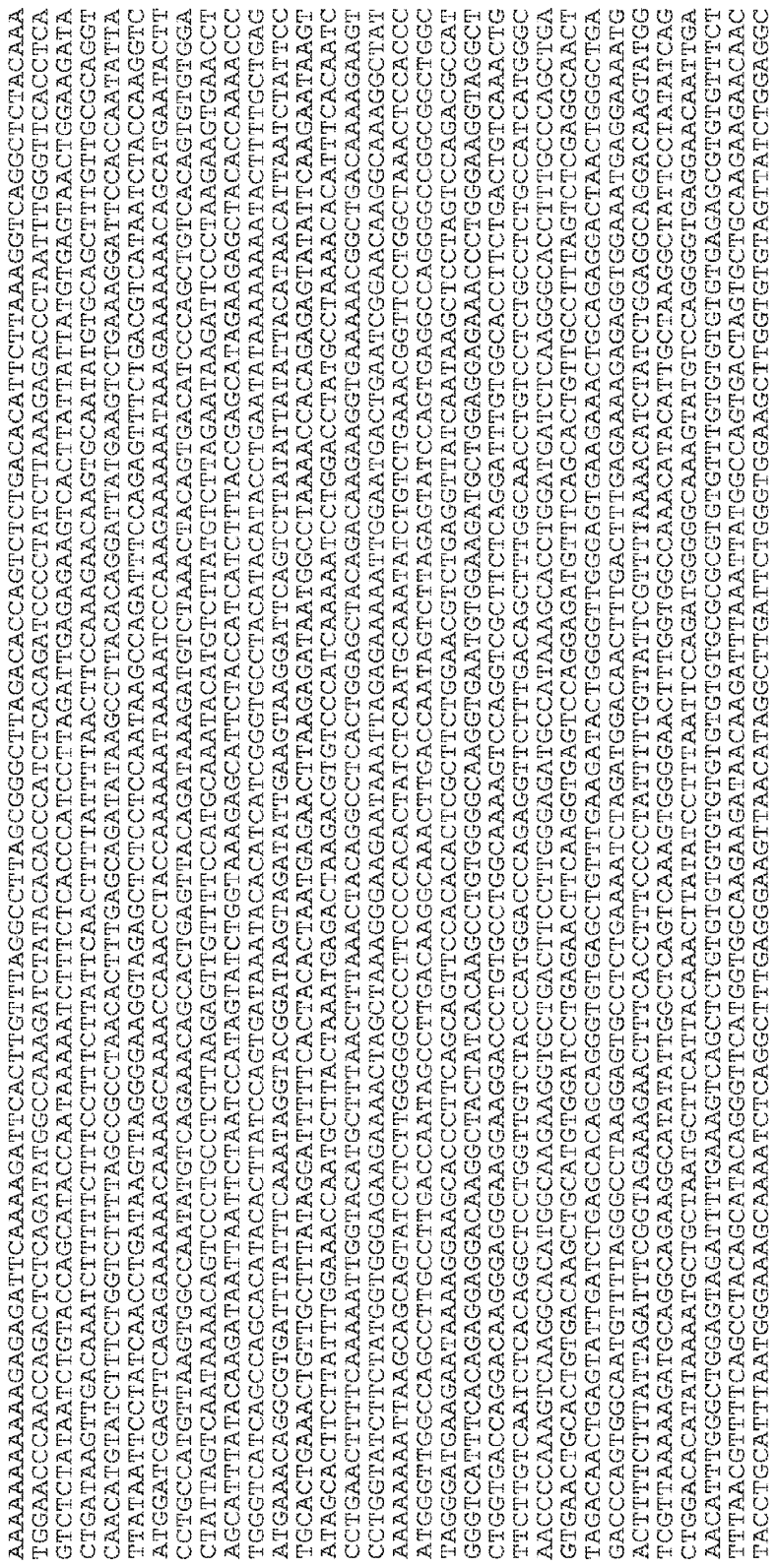


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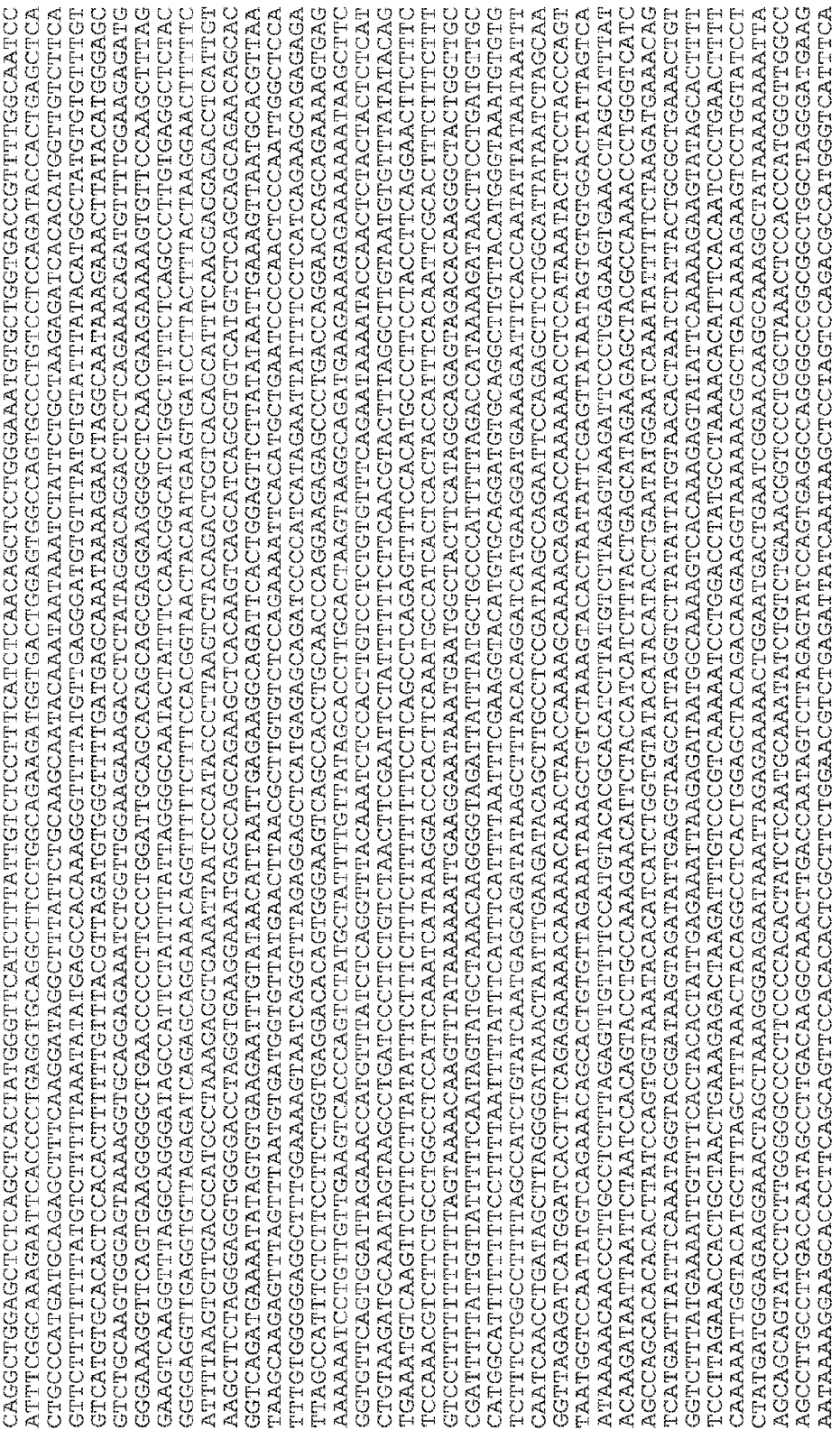


Fig. 40, cont'd

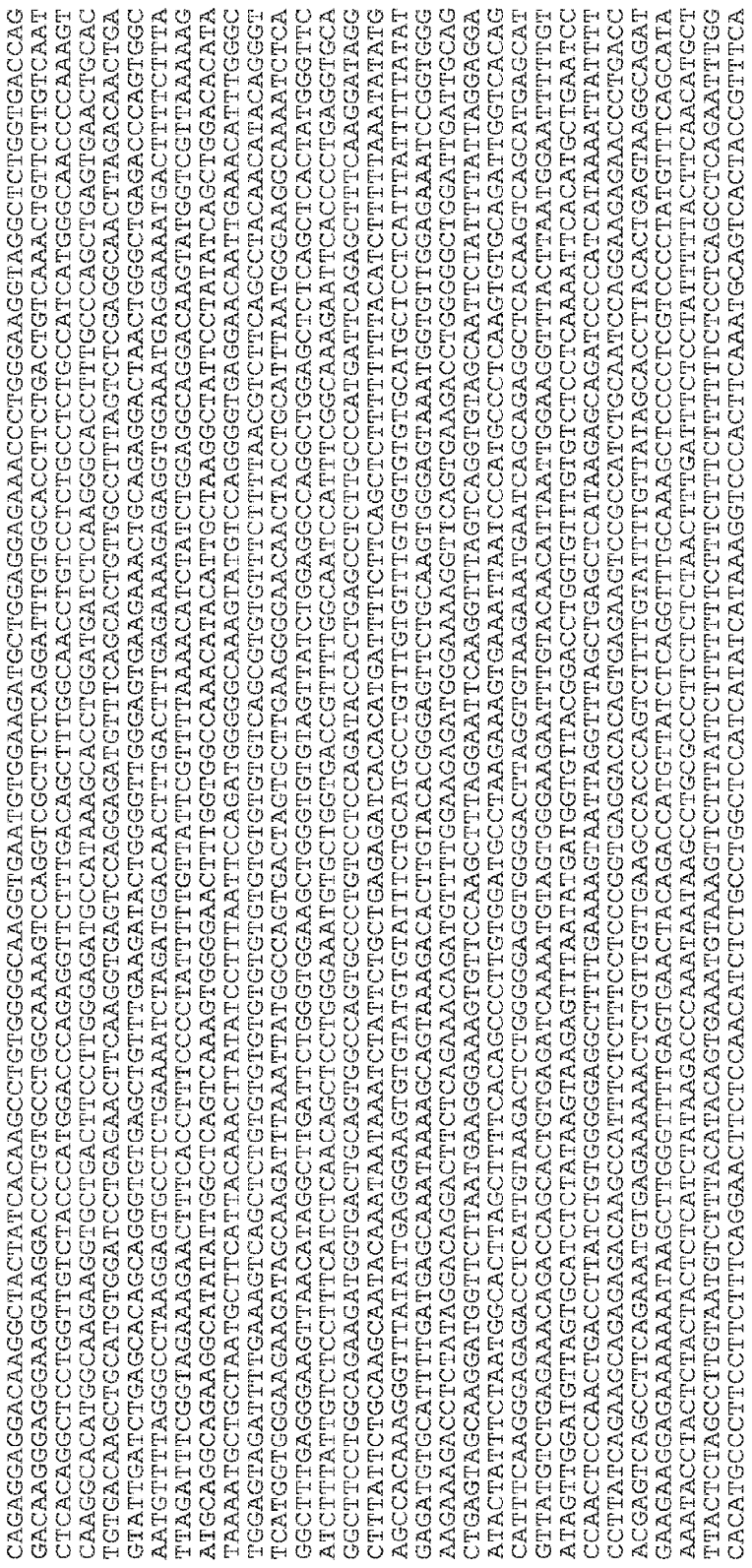


Fig. 40, cont'd

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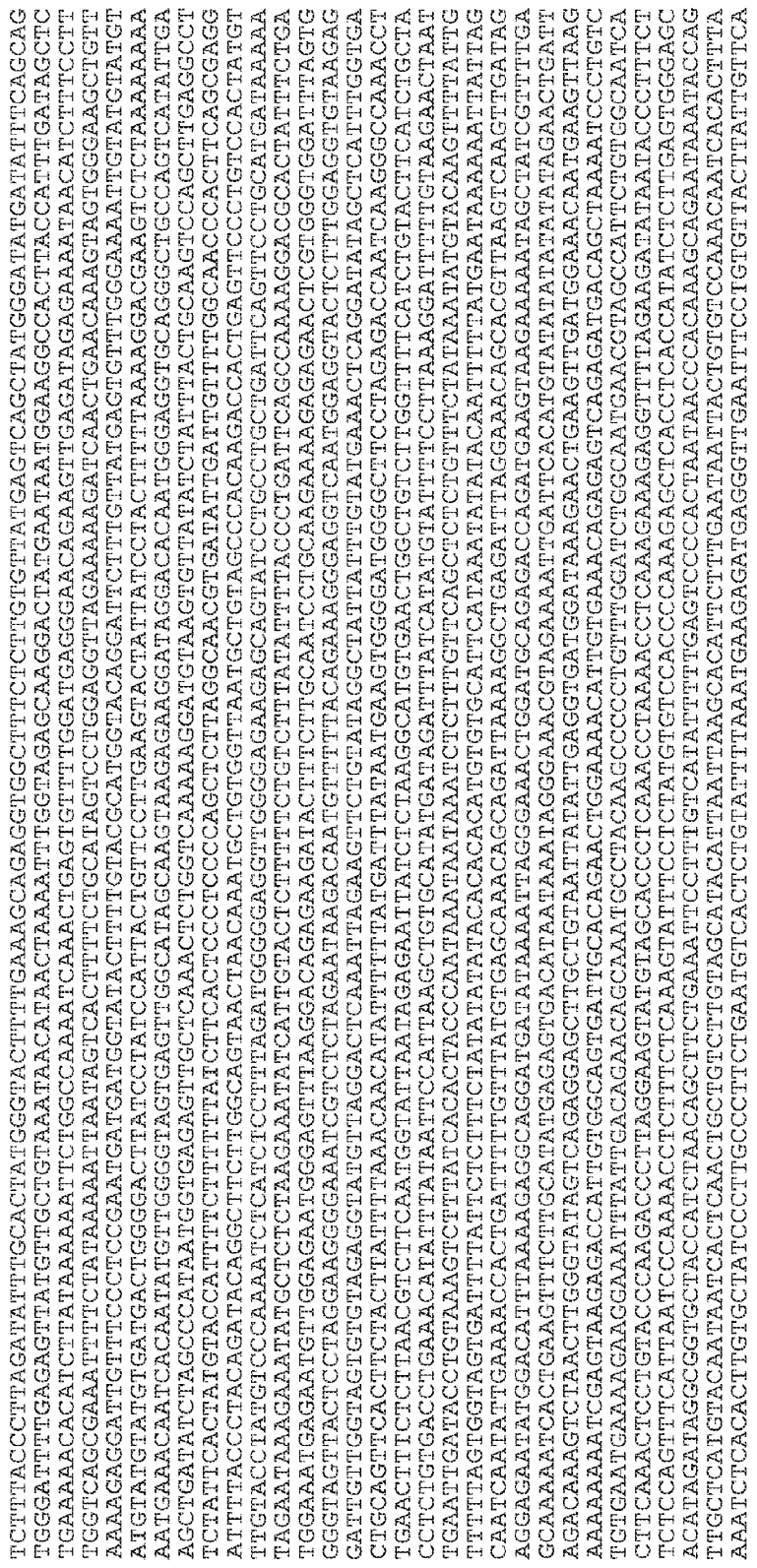


Fig. 40, cont'd

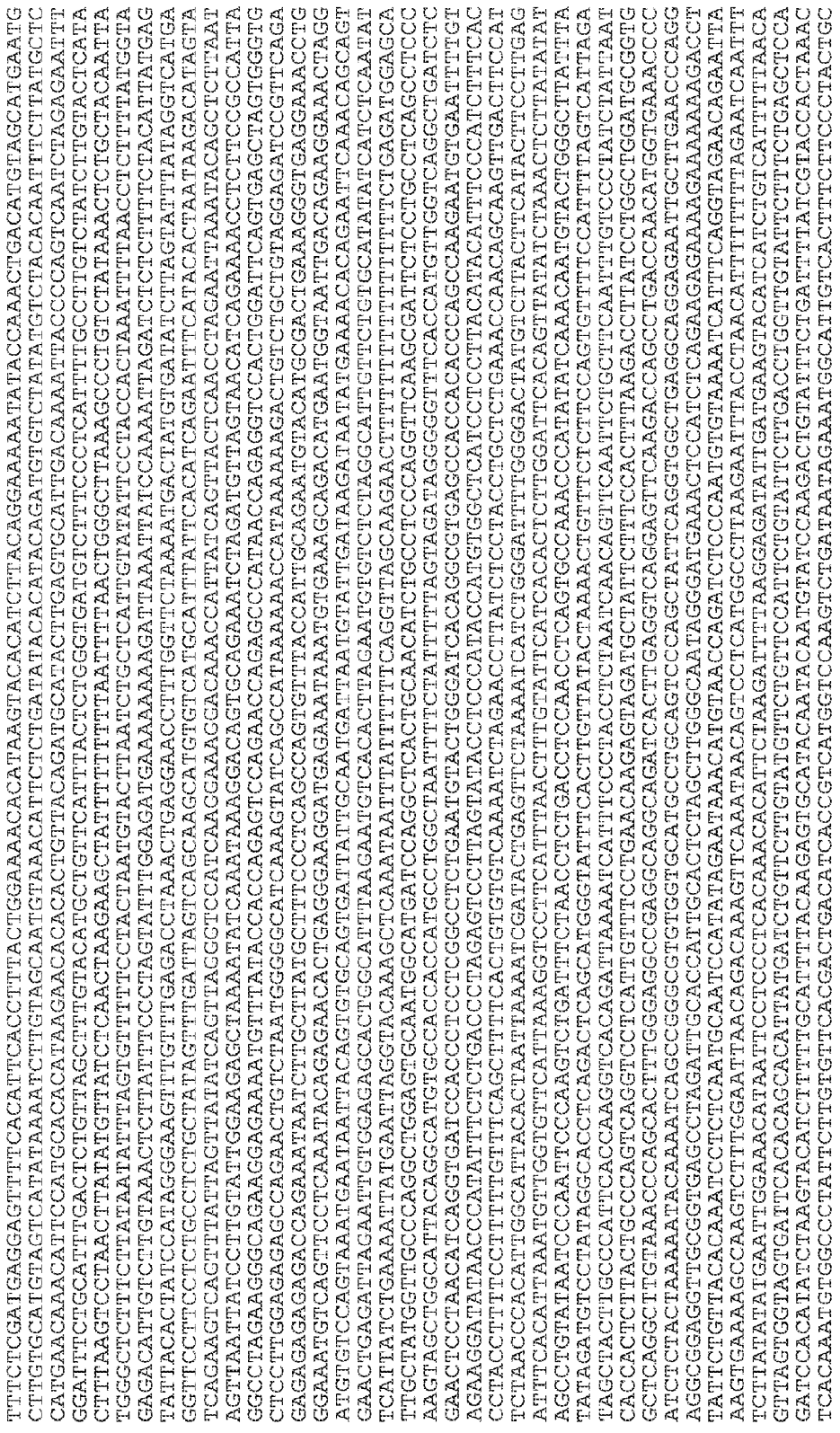


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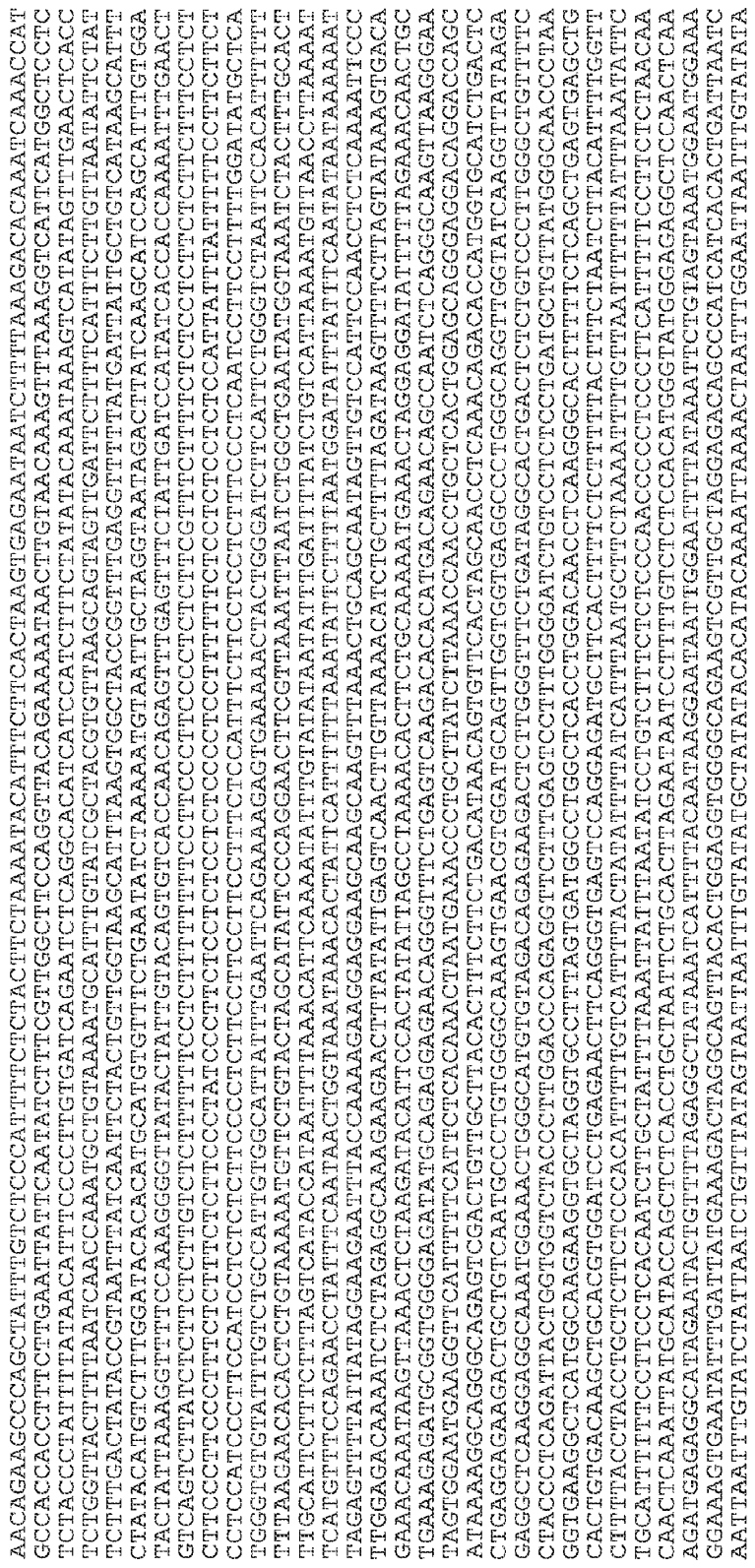


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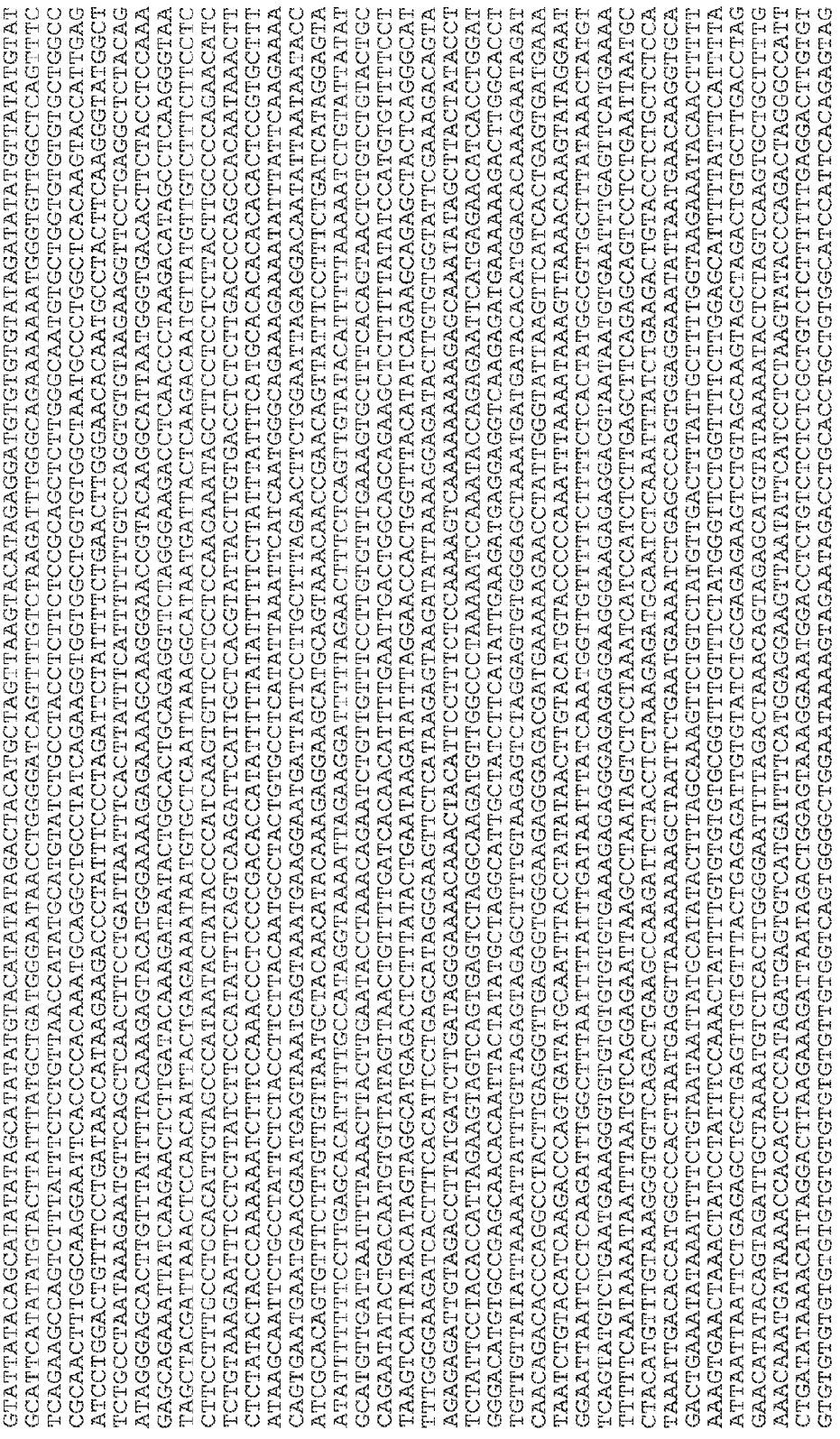


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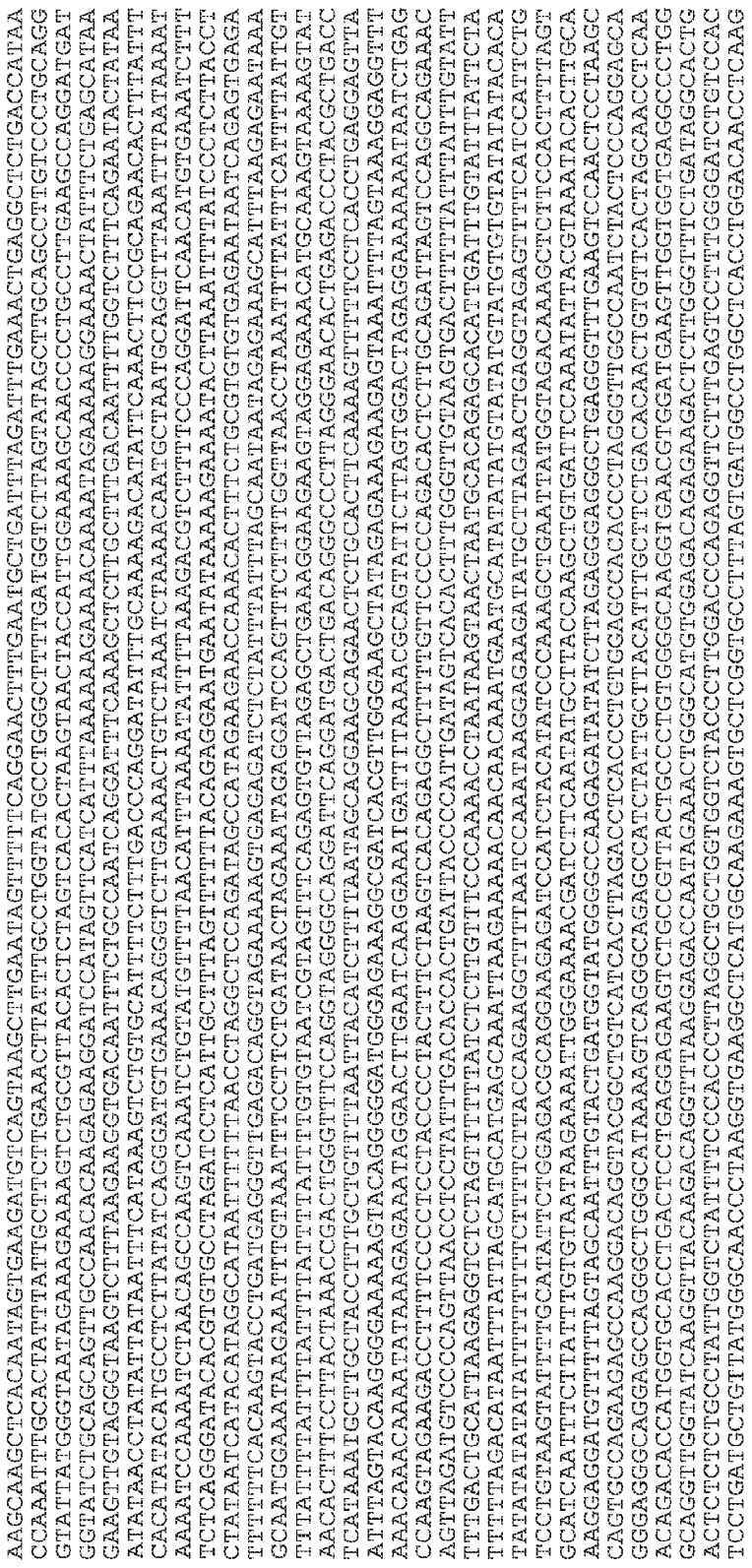


Fig. 40, cont'd

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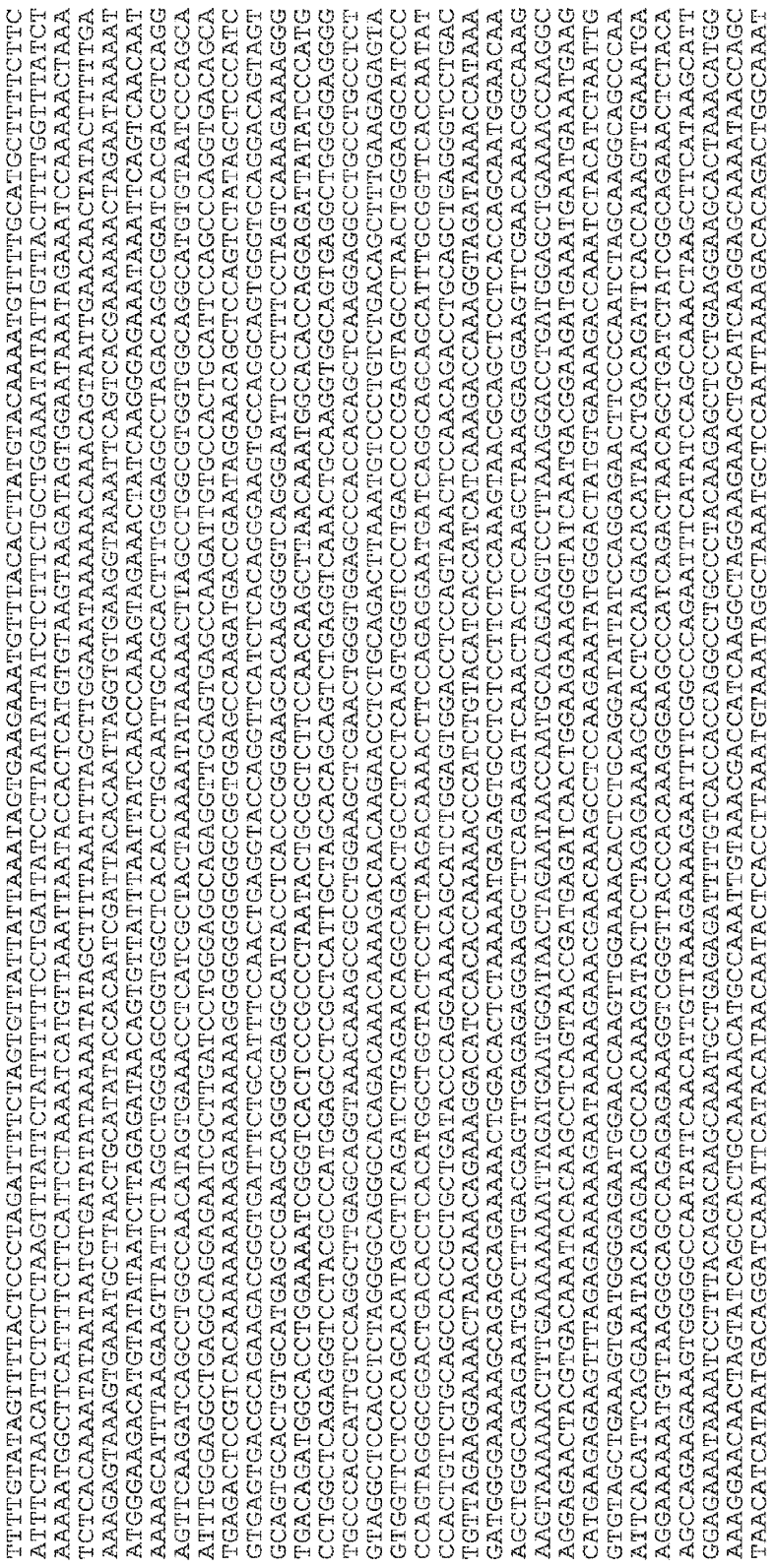


Fig. 40, cont'd

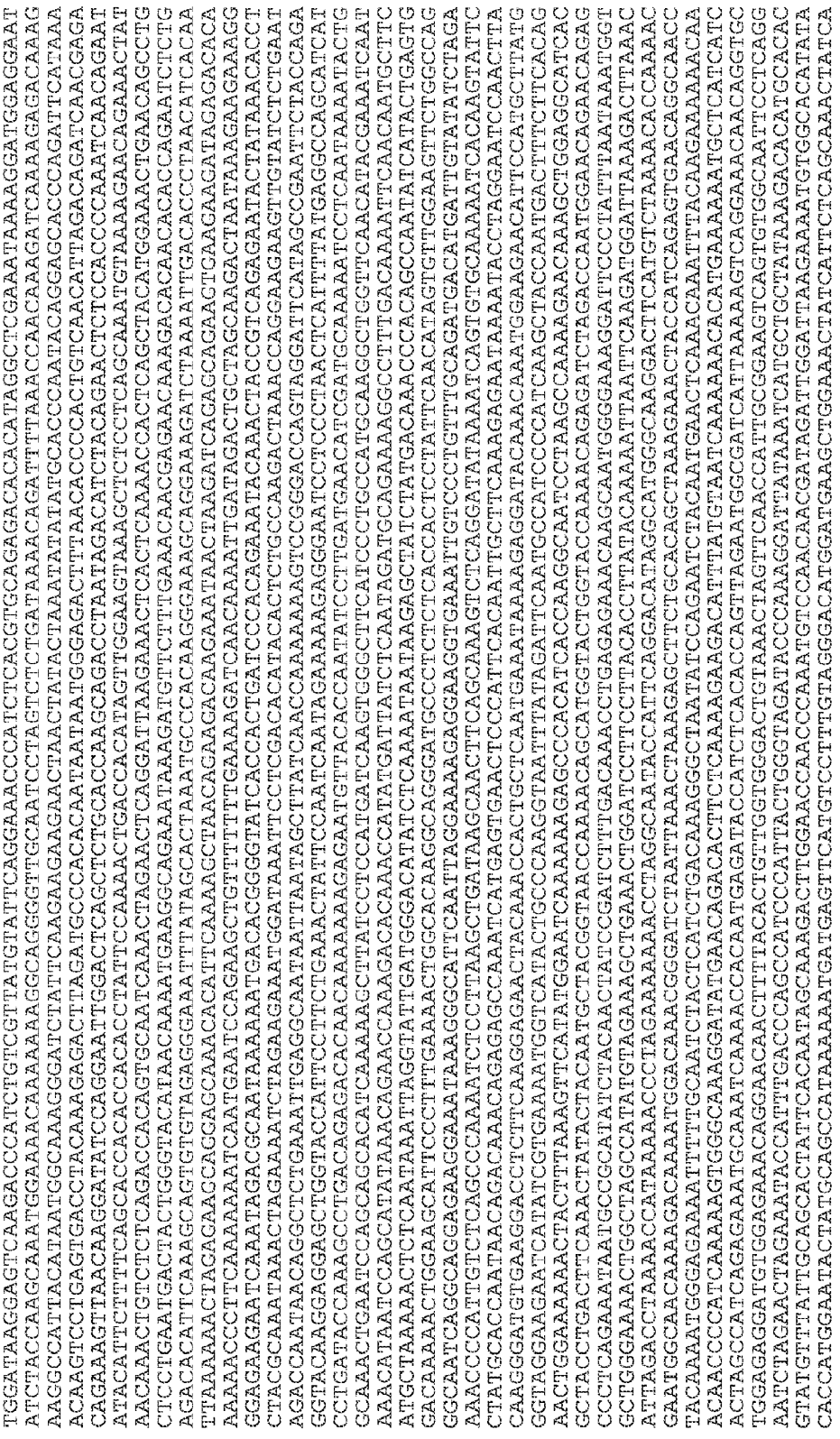

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Fig. 40, cont'd

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GITIMERSSFEKNPIDFLEAKGYKEVKKDLIIKLPKYSLFELENGRKRMLASAGELQKGNELALPSKYVNFLYLASHYEKLKGSPEDNEQKQLFVEQ
HKHYLDEIIEQISEFSKRVILADANLDKVLSAYNKHRDKPIREQAENIIHLFTLTNLGAPAAFKYFDTTIDRKRYTSTKEVLDATLIHQSITGLYET
RIDLSQLGGD

Fig. 40, cont'd

NCBI Ref. Seq. No. WP_011681470
MTKPYSIGLDIGTNSVGWAVTTDNYKVPSKKMKVLGNTSKKYIKKNLLGVLLFDSGITAEGRRLKRTARRRYTRRRNRILYLQEIFSTEMATLDDAF
FQRLDDSFLVPDDKRDSKYPIFGNLVEEKAYHDEFPTIYHLRKYLADSTKKADLRLVYLALAHMIKYRGHFLIEGEFNSKNNDIQKNFQDFLDTYNA
IFESDLSLENSKQLEEIVKDKISKLEKKDRILKLFPGEKNSGIFSEFLKLIVGNQADFRKCFNLDEKASLHFSKESYDEDLETLLGYIGDDYSDVFL
KAKKLYDAILLSGFLTVTDNETEAPLSSAMIKRYNEHKEDLALLKEYIRNISLKTYNEVFKDDTKNGYAGYIDGKTNQEDFYVYLKKLLAEFEGADY
FLEKIDREDFLRKQRTFDNGSIPYQIHLQEMRAILDKQAKFYPFLAKNKERIEKILTFRIPYYVGPLARGNSDFAWSIRKRNEKITPWNFEDVIDKE
SSAEAFINRMTSFDLYLPEEKVLPKHSLLYETFNVYNELTKVRFIAESMRDYQFLDSKQKKDIVRLYFKDKRKVTDKDIIEYLHAIYGYDGIELKGI
EKQFNSSLSTYHDLLNIINDKEFLDDSSNEAIIEEIIHTLTIFEDREMIKQRLSKFENIFDKSVLKKLSRRHYTGWGKLSAKLINGIRDEKSGNTIL
DYLIDDGISNRNFMQLIHDDALSFKKKIQKAQIIGDEDKGNIKEVVKSLPGSPAIKKGILQSIKIVDELVKVMGGRKPESIVVEMARENQYTNQGKS
NSQQRLKRLEKSLKELGSKILKENIPAKLSKIDNNALQNDRLYLYYLQNGKDMYTGDDLDIDRLSNYDIDEIIPQAFLKDNSIDNKVLVSSASNRGK
SDDVPSLEVVKKRKTFWYQLLKSKLISQRKFDNLTKAERGGLSPEDKAGFIQRQLVETRQITKHVARLLDEKFNNKKDENNRAVRTVKIITLKSTLV
SQFRKDFELYKVREINDFHHAHDAYLNAVVASALLKKYPKLEPEFVYGDYPKYNSFRERKSATEKVYFYSNIMNIFKKSISLADGRVIERPLIEVNE
ETGESVWNKESDLATVRRVLSYPQVNVVKKVEEQNHGLDRGKPKGLFNANLSSKPKPNSNENLVGAKEYLDPKKYGGYAGISNSFTVLVKGTIEKGA
KKKITNVLEFQGISILDRINYRKDKLNFLLEKGYKDIELIIELPKYSLFELSDGSRRMLASILSTNNKRGEIHKGNQIFLSQKFVKLLYHAKRISNT
INENHRKYVENHKKEFEELFYYILEFNENYVGAKKNGKLLNSAFQSWQNHSIDELCSSFIGPTGSERKGLFELTSRGSAADFEFLGVKIPRYRDYTP
SSLLKDATLIHQSVTGLYETRIDLAKLGEG
GenBank: ABD57356.1
MNEQAKQLVAVTRQPALNAGVGLVLAQLAEVEARQIPGSLAEARAHCLAQGAPDILLVEVENPQTLAADLAALAECCPPQMRLVLLGERGDVTLFRW
LISVGVDDYPAPLDPDALRTGLLRLLGVPLVTSLRKGRVICVVGAAGGVGTSTVAANLAMALADQHRQVALLDLNLHHSRHPTLLGSDYAPPGEQ
WWQATDRLDGTLLAHTAHQLGPRLFLFYDEGQELVLGAEQLVAAVNVMAEHYSTLIIDVPDLRTHGLRALLQEADVVLWLHDFSLGALRLLGQCPQG
GQAQRRLIVGNHCRGKEGRVPAQELERVCGQPHAAVLPYDHGVFVRAERAGQPLIQQKSKLARALTLLAGELVGAQVTGRGRR
GenBank: ANW61888.1
MAPKKKRKVMSQFDILCKTPPKVLVRQFVERFERPSGEKIASCAAELTYLCWMITHNGTAIKRATFMSYNTIISNSLSFDIVNKSLQFKYKTQKATI
LEASLKKLIPAWEFTIIPYNGQKHQSDITDIVSSLQLQFESSEEADKGNSHSKKMLKALLSEGESIWEITEKILNSFEYTSRFTKTKTLYQFLFLAT
FINCGRFSDIKNVDPKSFKLVQNKYLGVIIQCLVTETKTSVSRHIYFFSARGRIDPLVYLDEFLRNSEPVLKRVNRTGNSSSNKQEYQLLKDNLVRS
YNKALKKNAPYPIFAIKNGPKSHIGRHLMTSFLSMKGLTELTNVVGNWSDKRASAVARTTYTHQITAIPDHYFALVSRYYAYDPISKEMIALKDETN
PIEEWQHIEQLKGSAEGSIRYPAWNGIISQEVLDYLSSYINRRI

Fig. 40, cont'd