

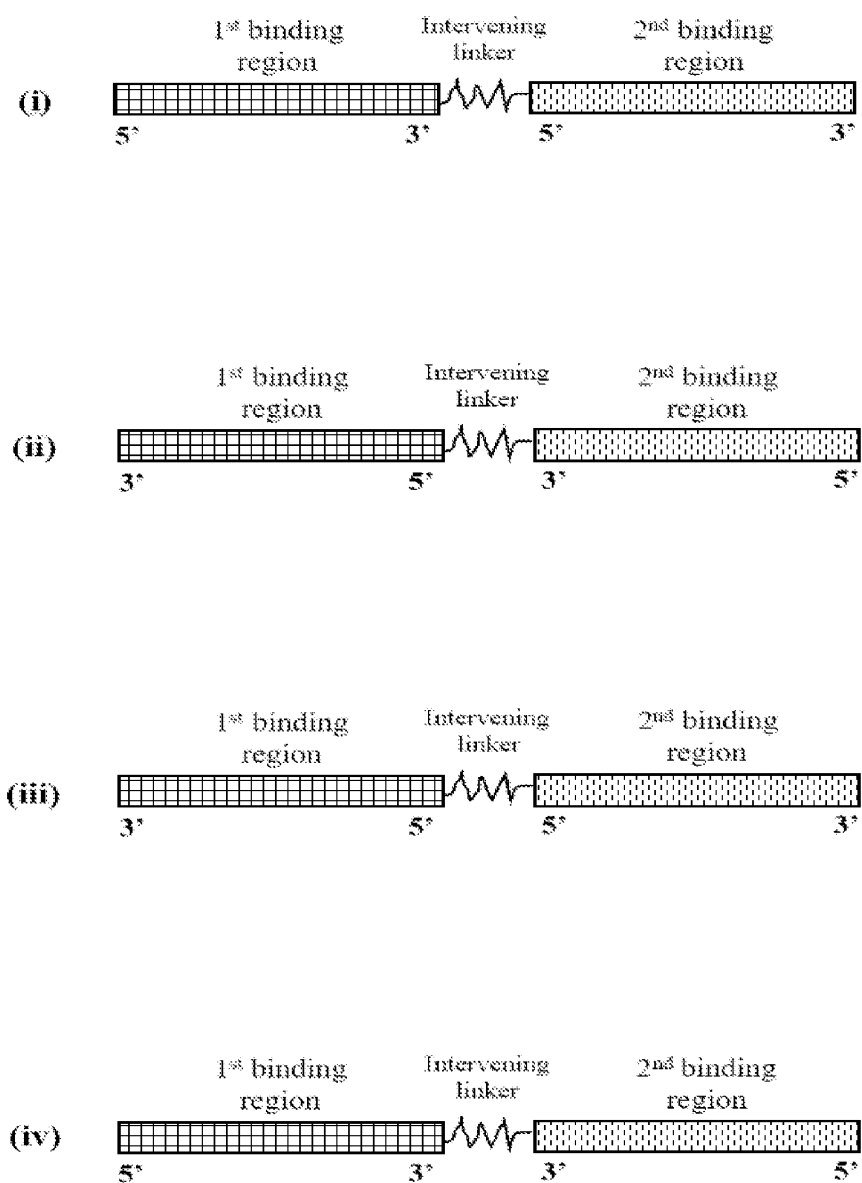


FIG. 1

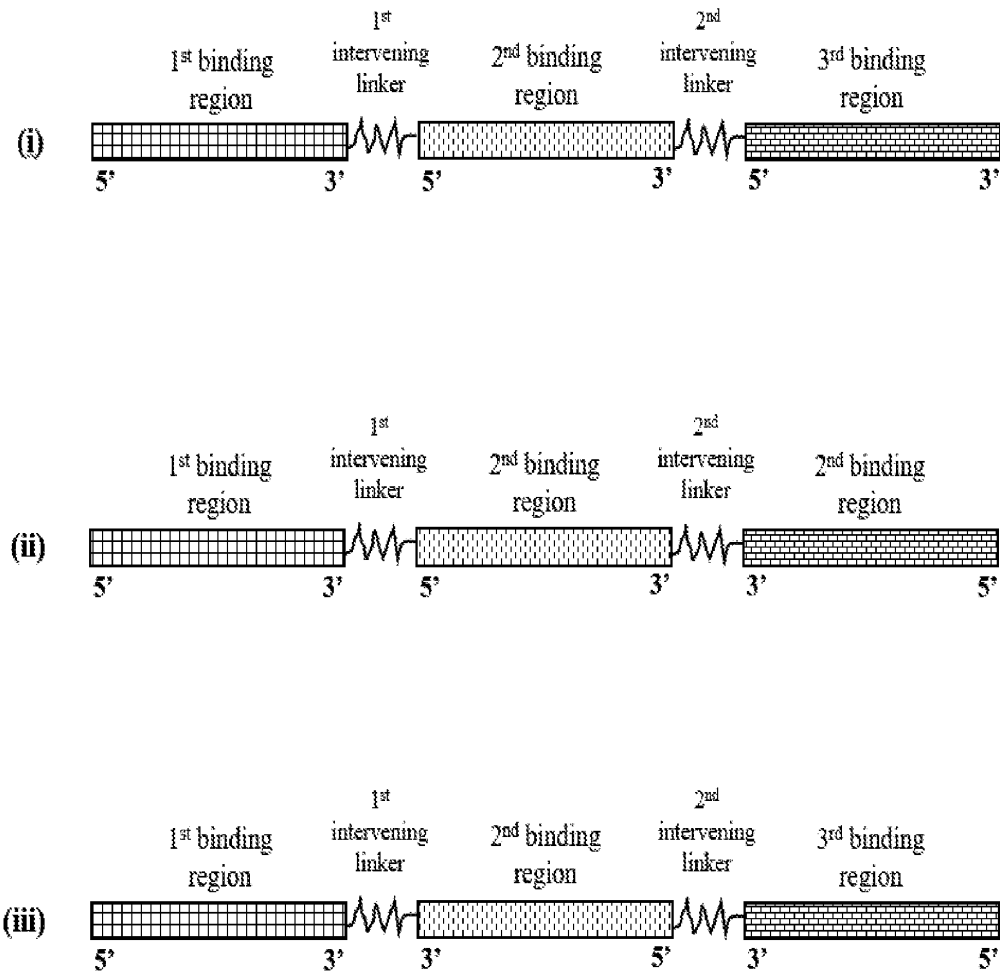


FIG. 2A

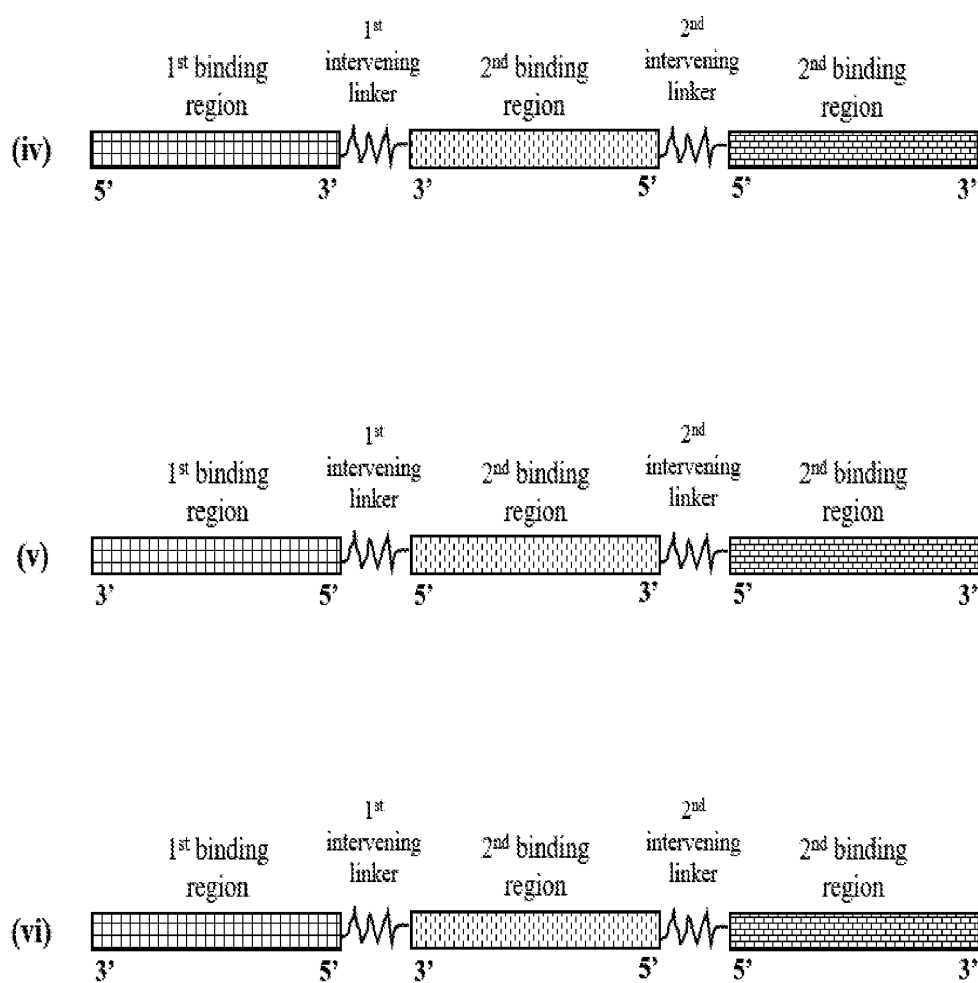


FIG. 2B

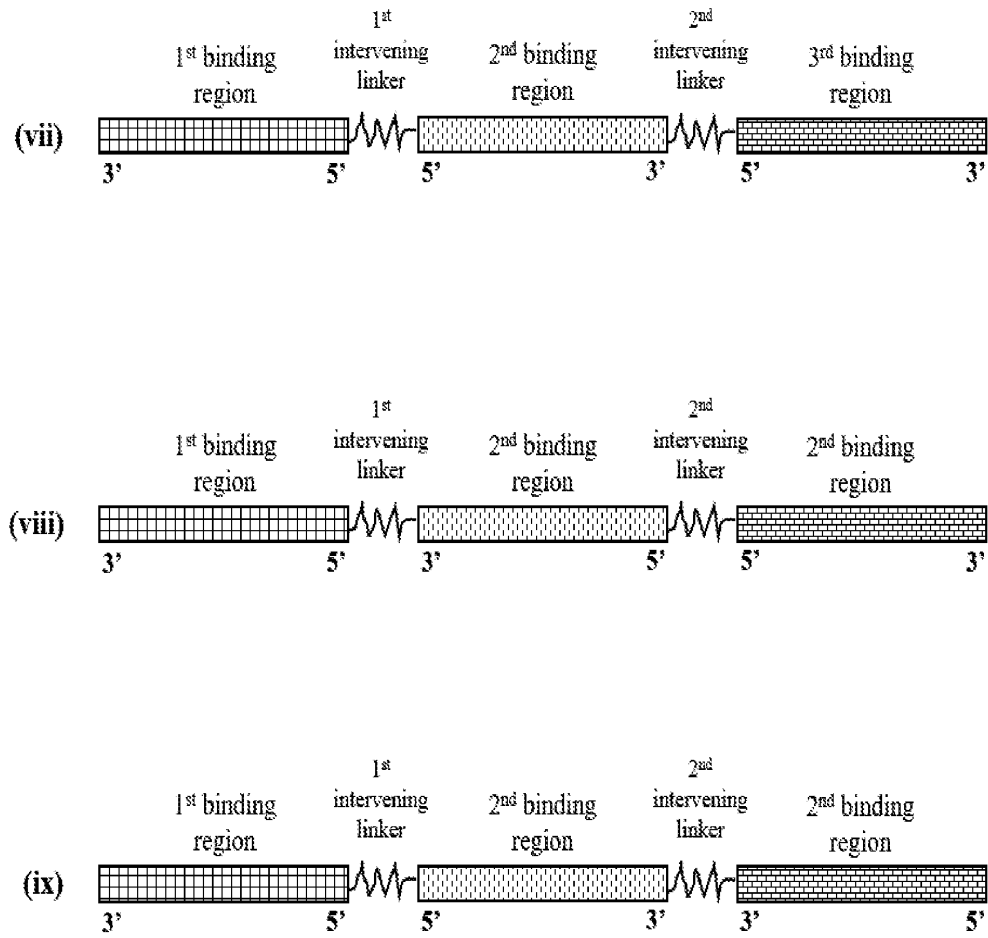


FIG. 2C

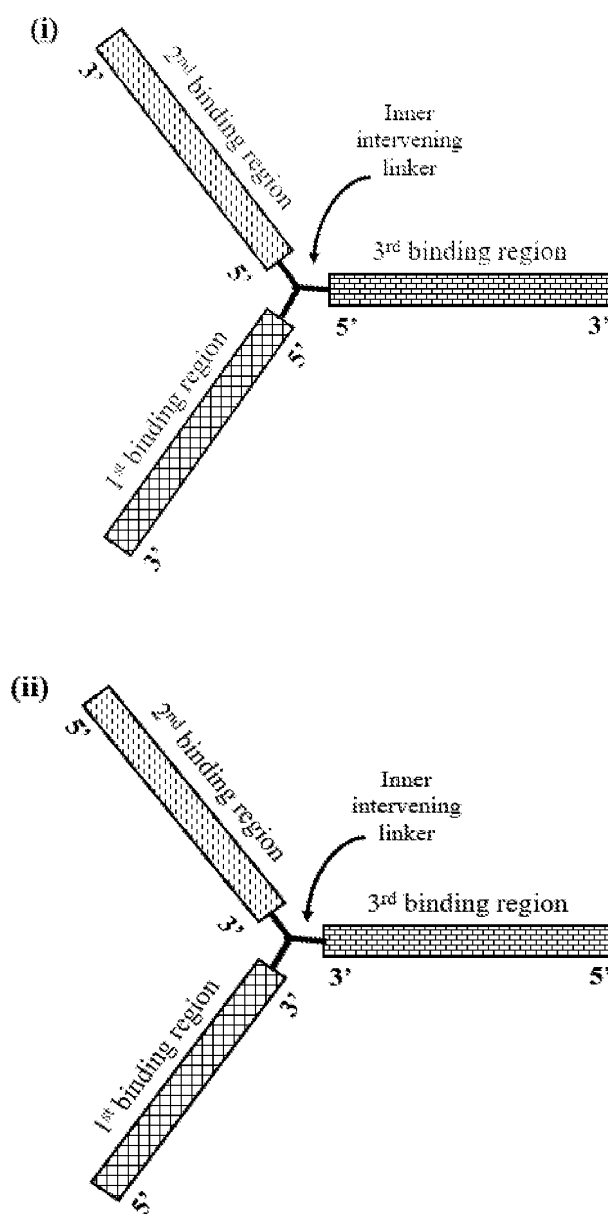


FIG. 3A

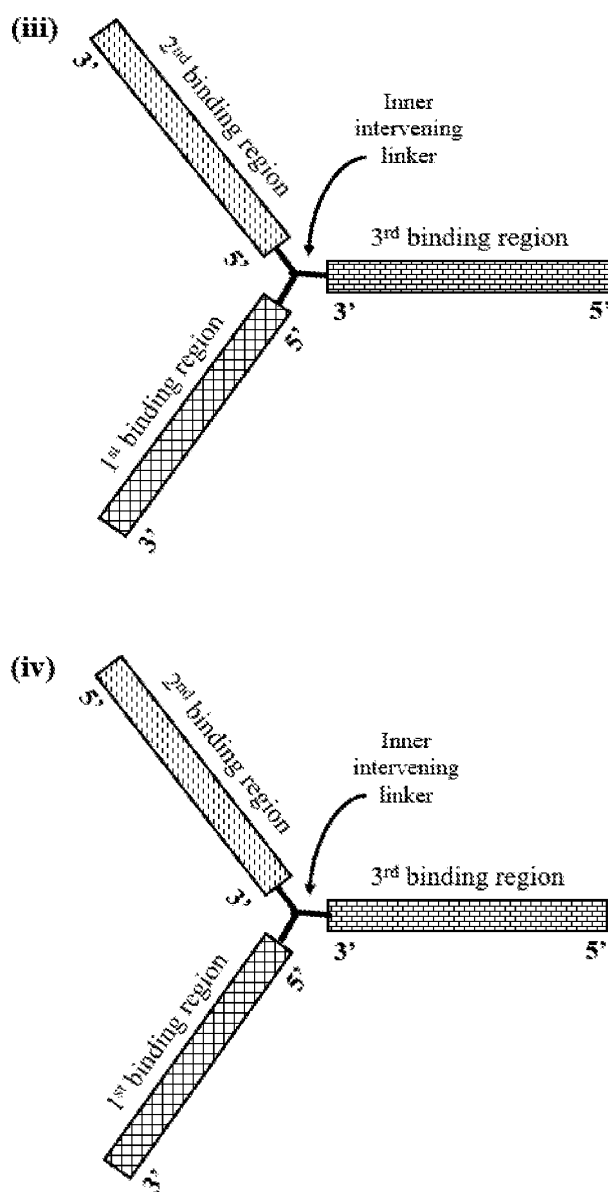


FIG. 3B

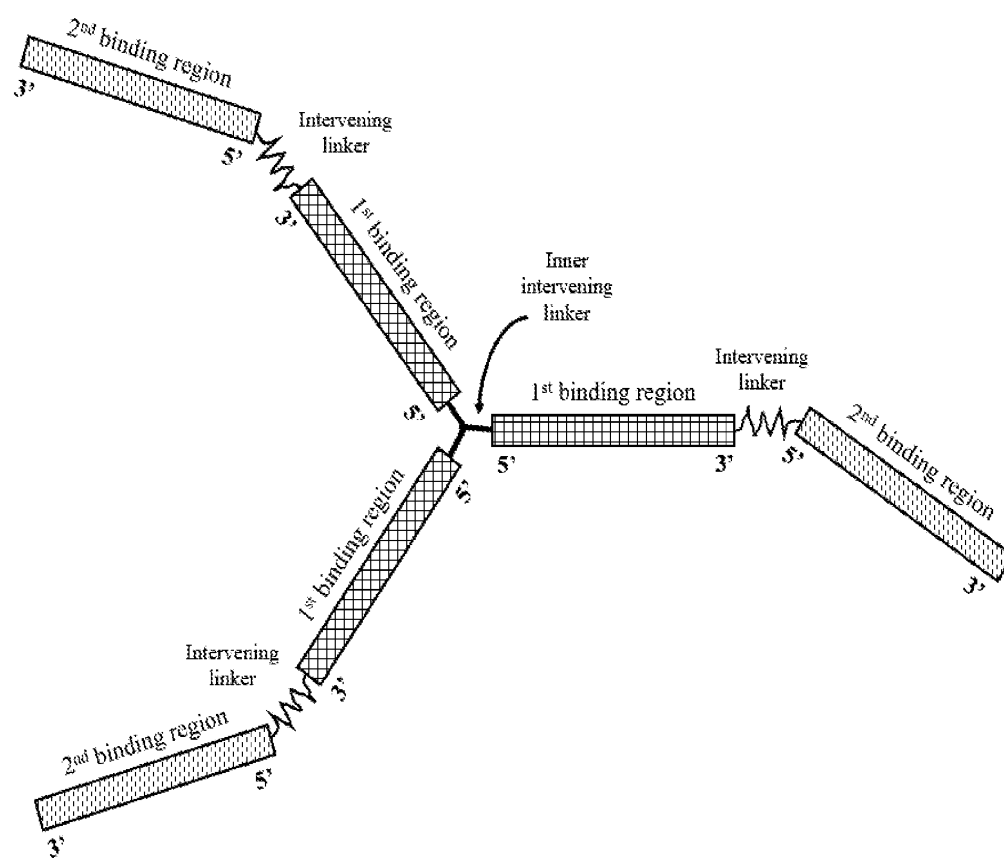


FIG. 4

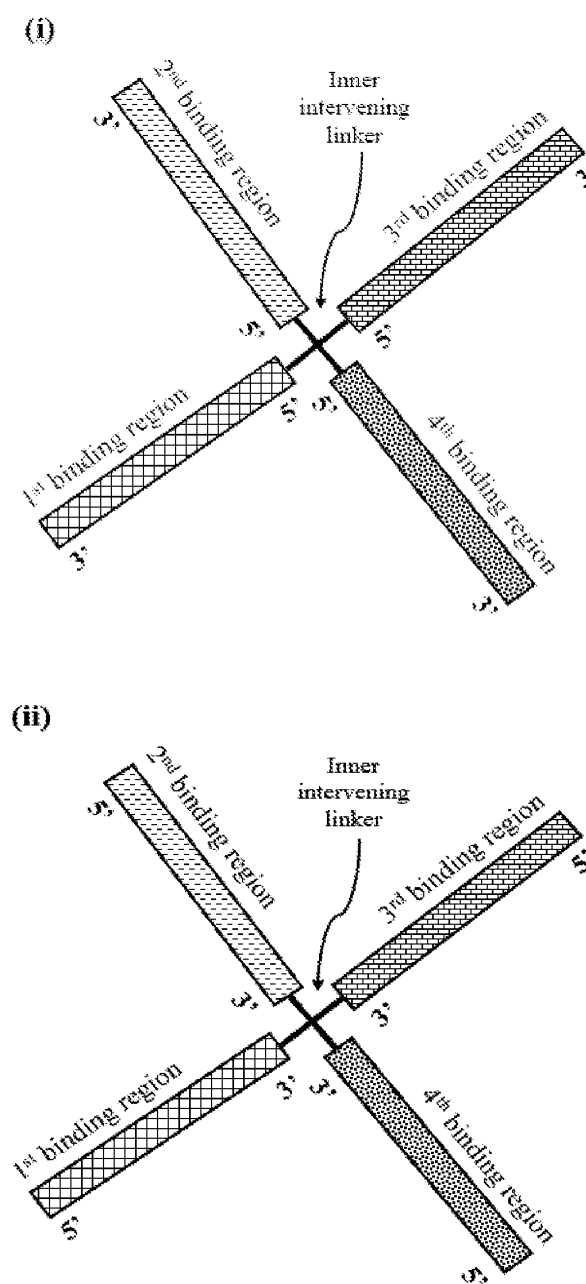


FIG. 5

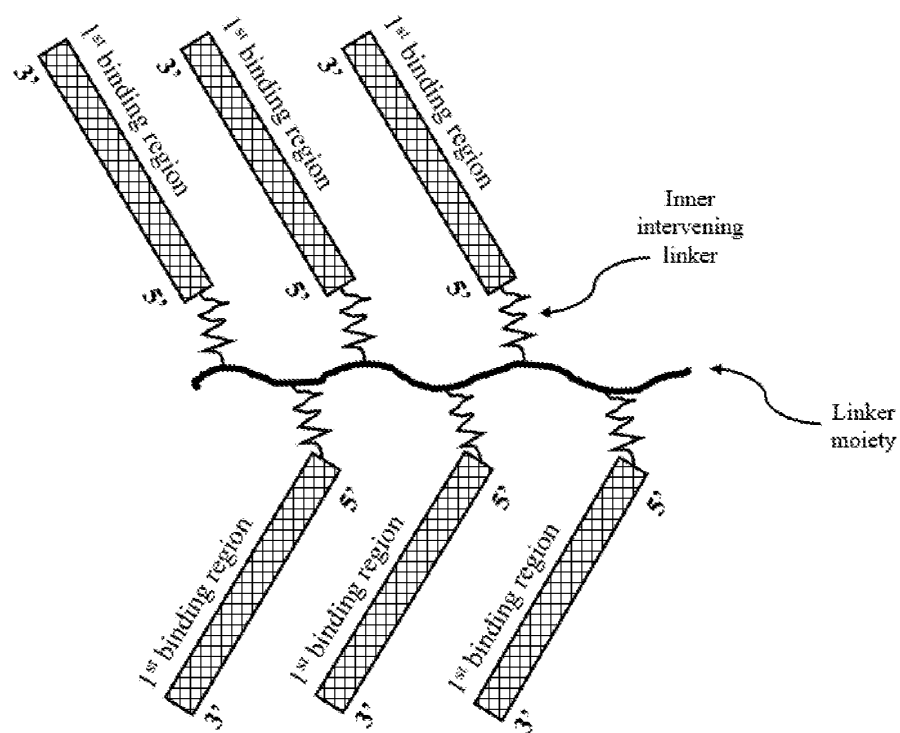
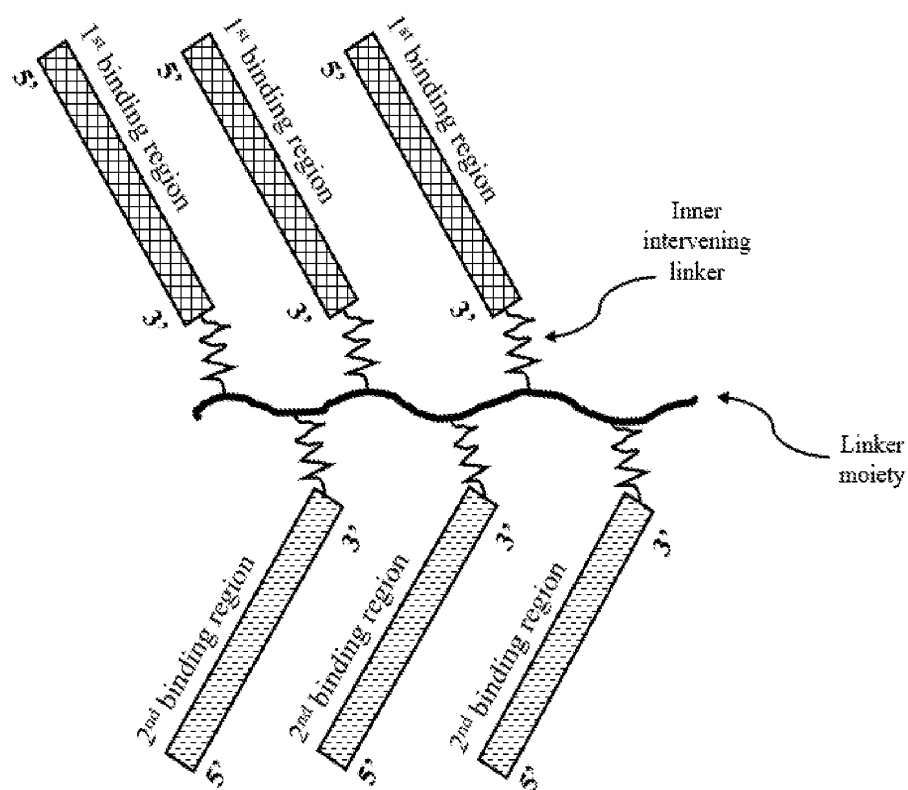


FIG. 6A

**FIG. 6B**

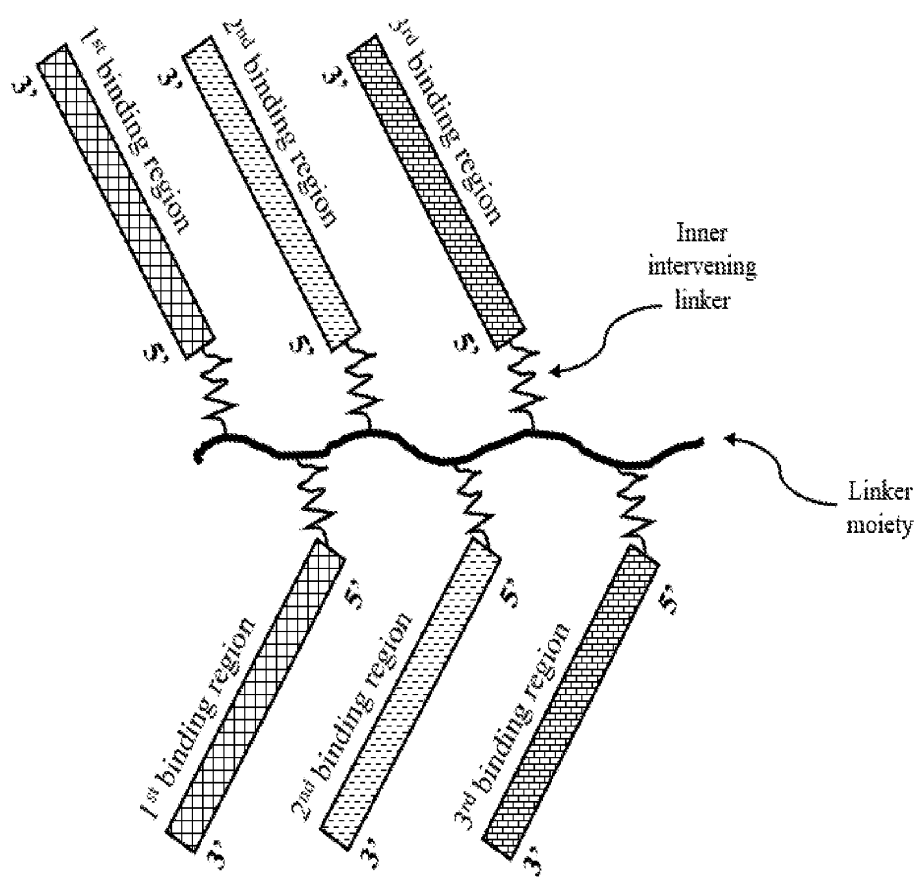


FIG. 6C

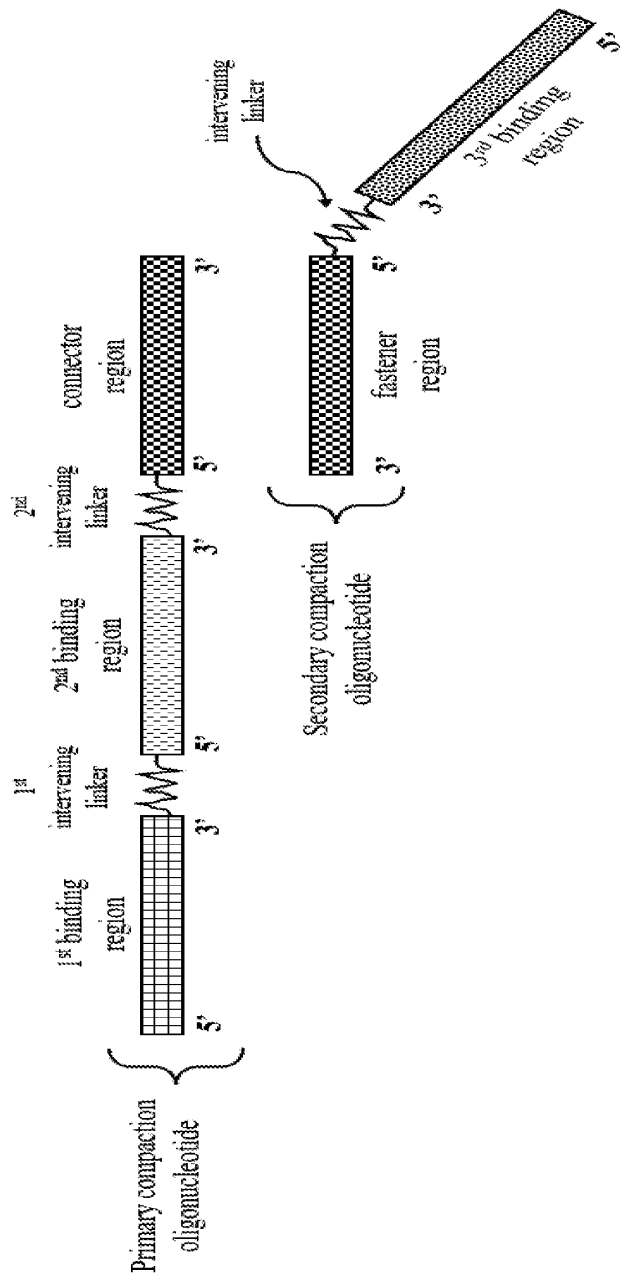


FIG. 7A

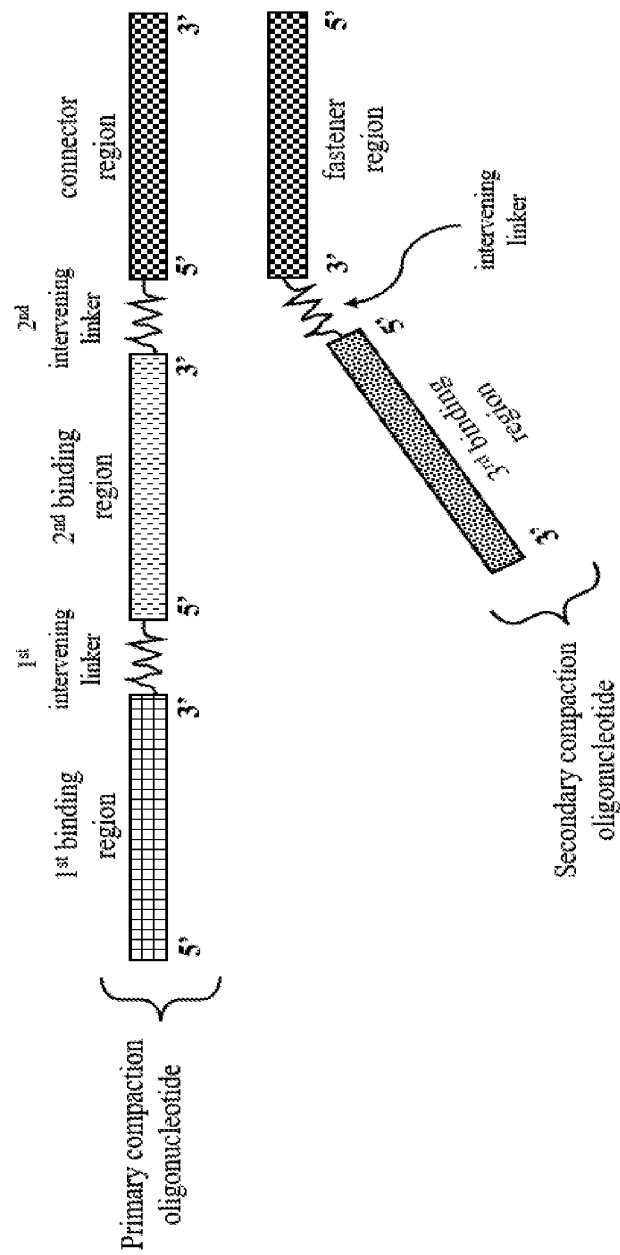


FIG. 7B

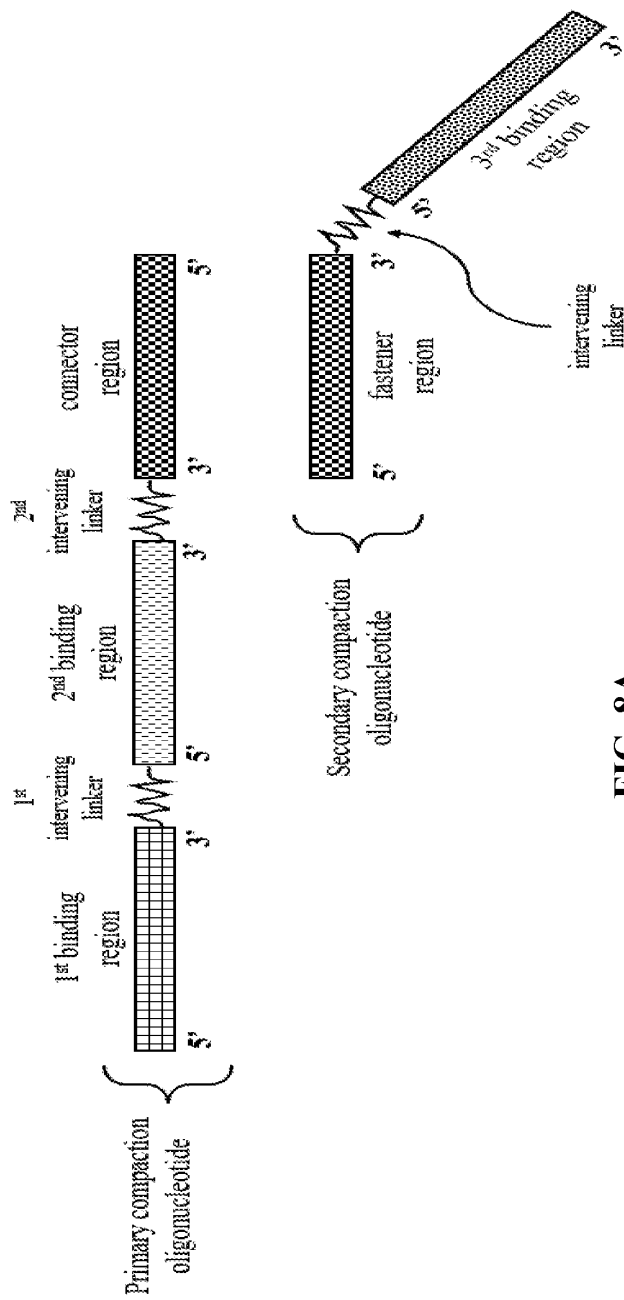


FIG. 8A

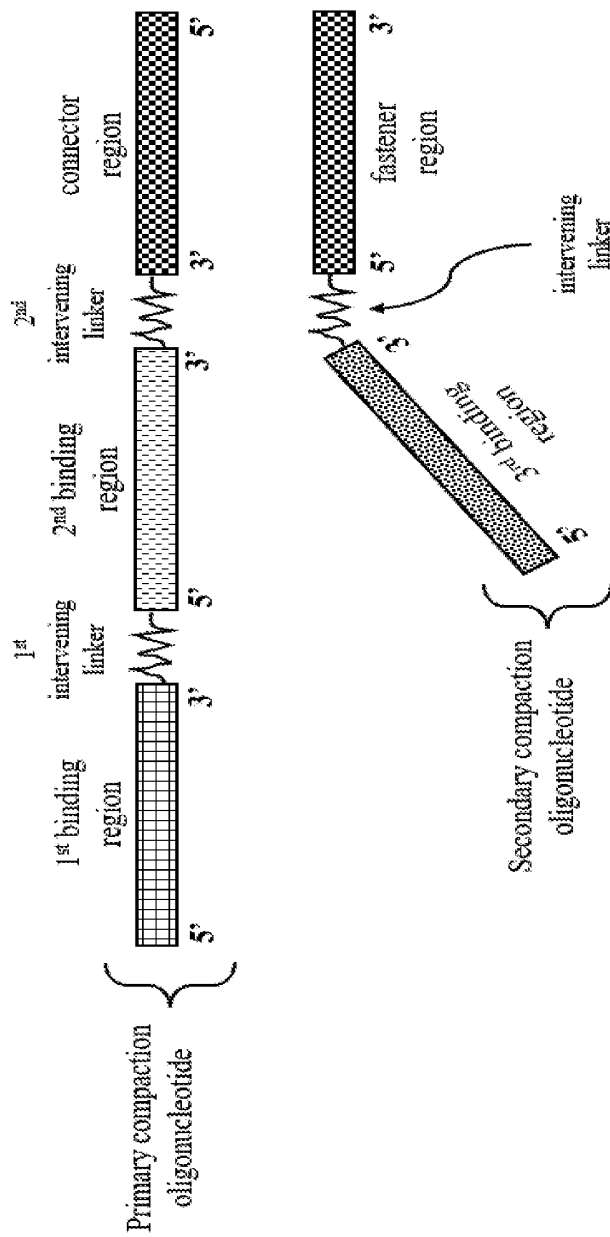


FIG. 8B

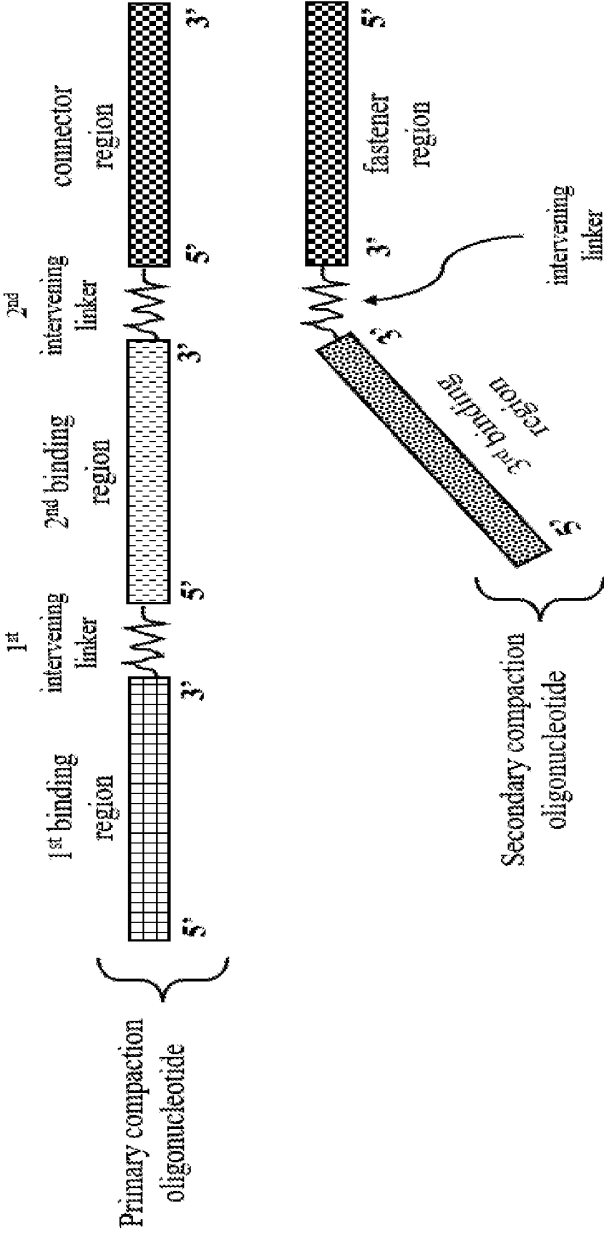


FIG. 9

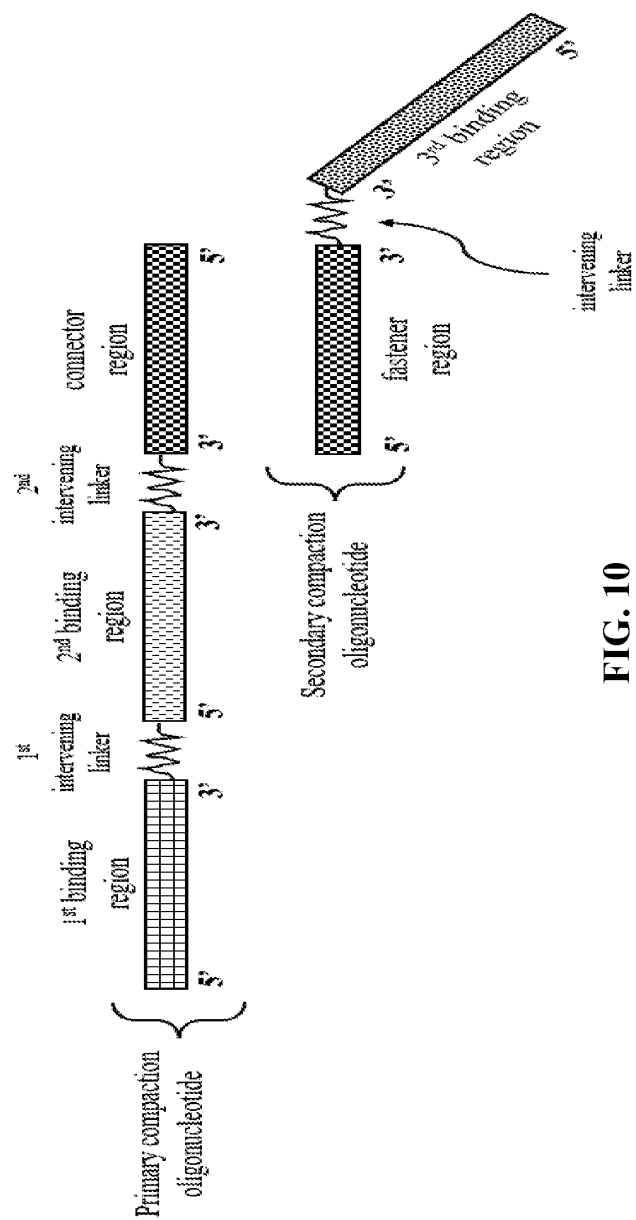


FIG. 10

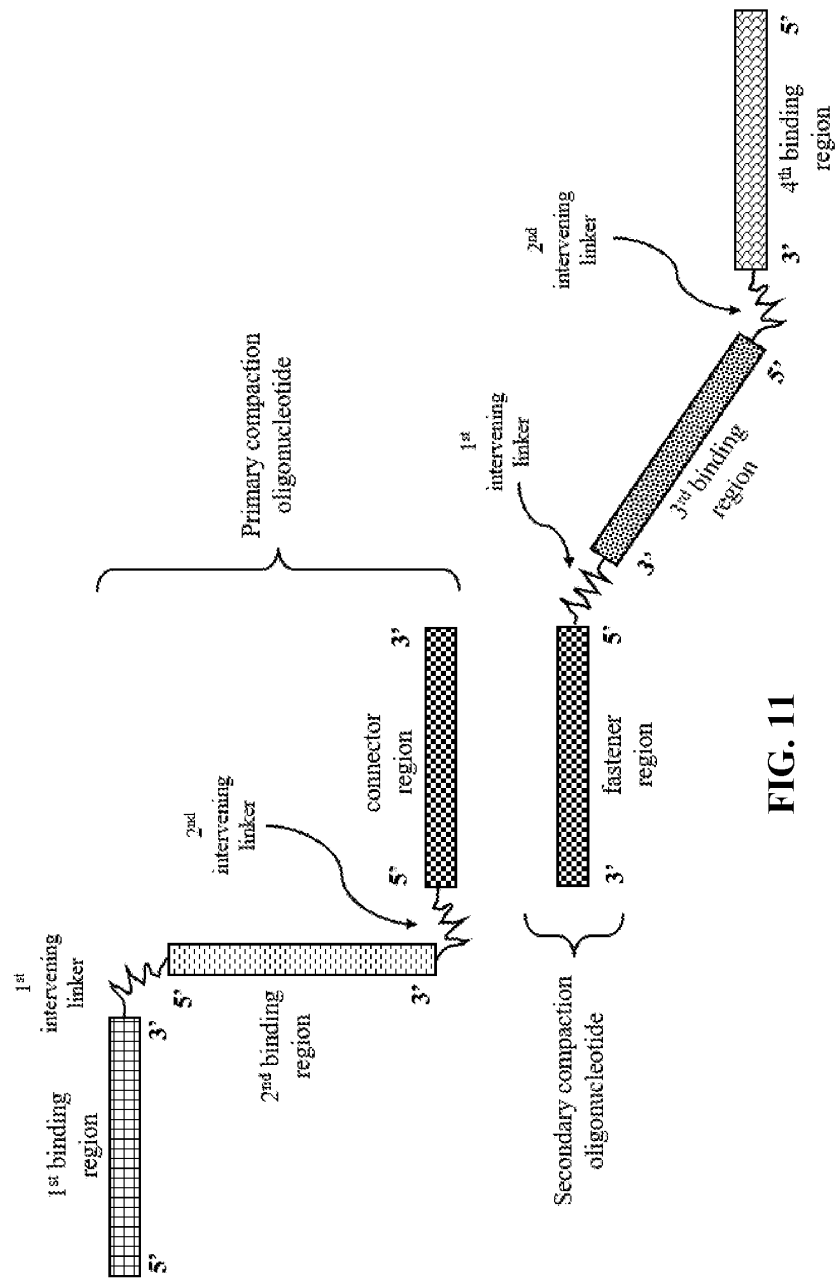


FIG. 11

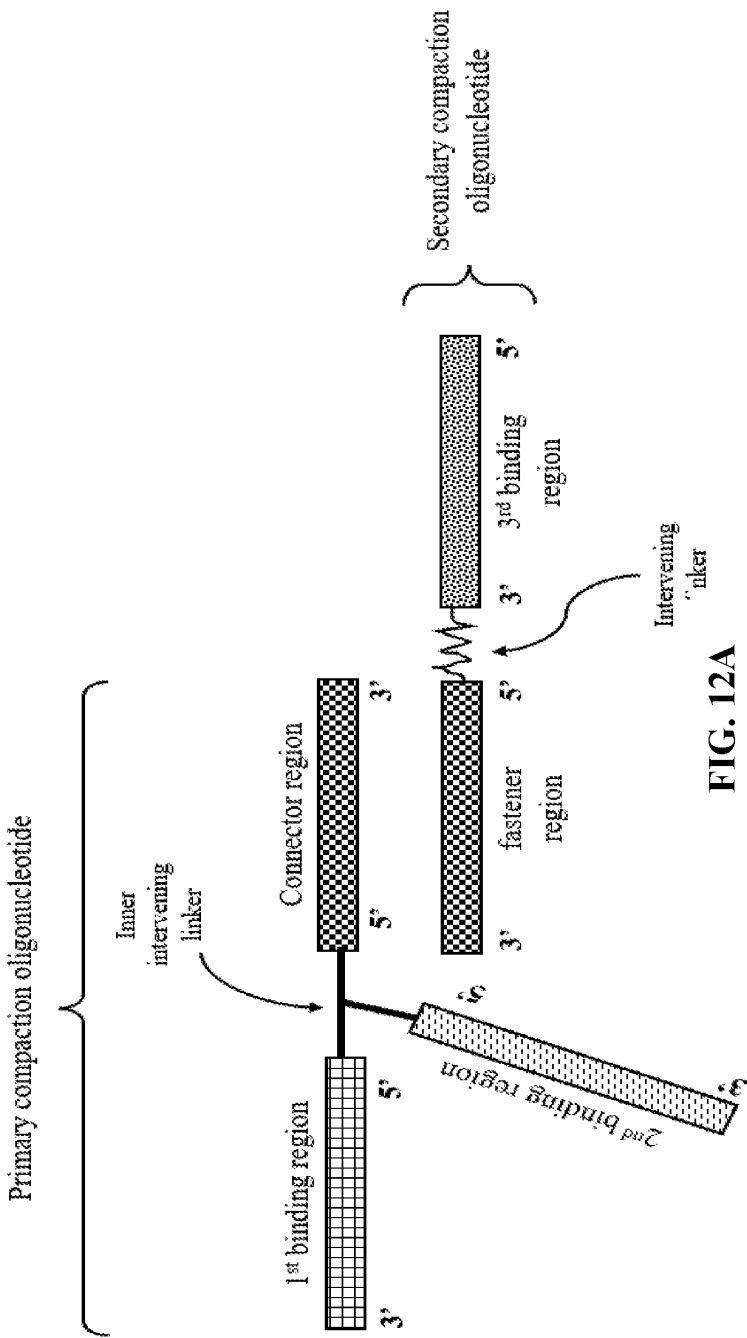


FIG. 12A

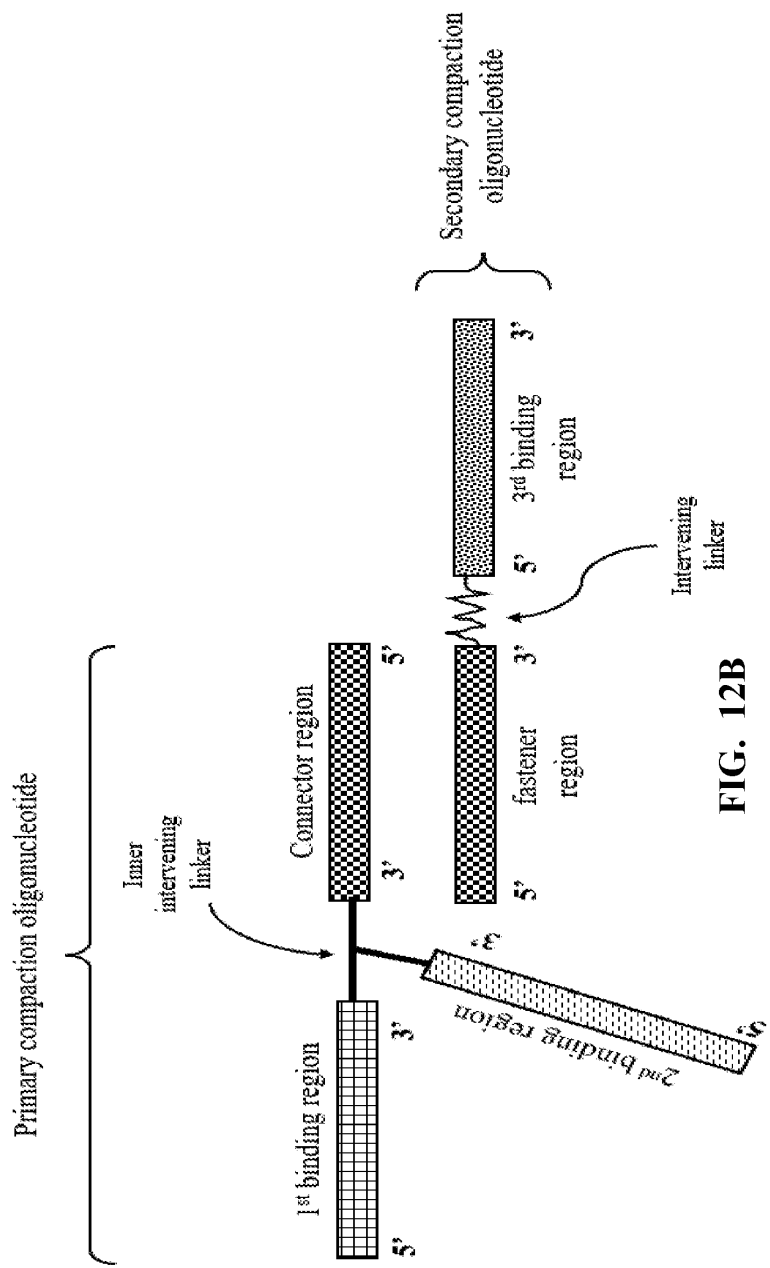


FIG. 12B

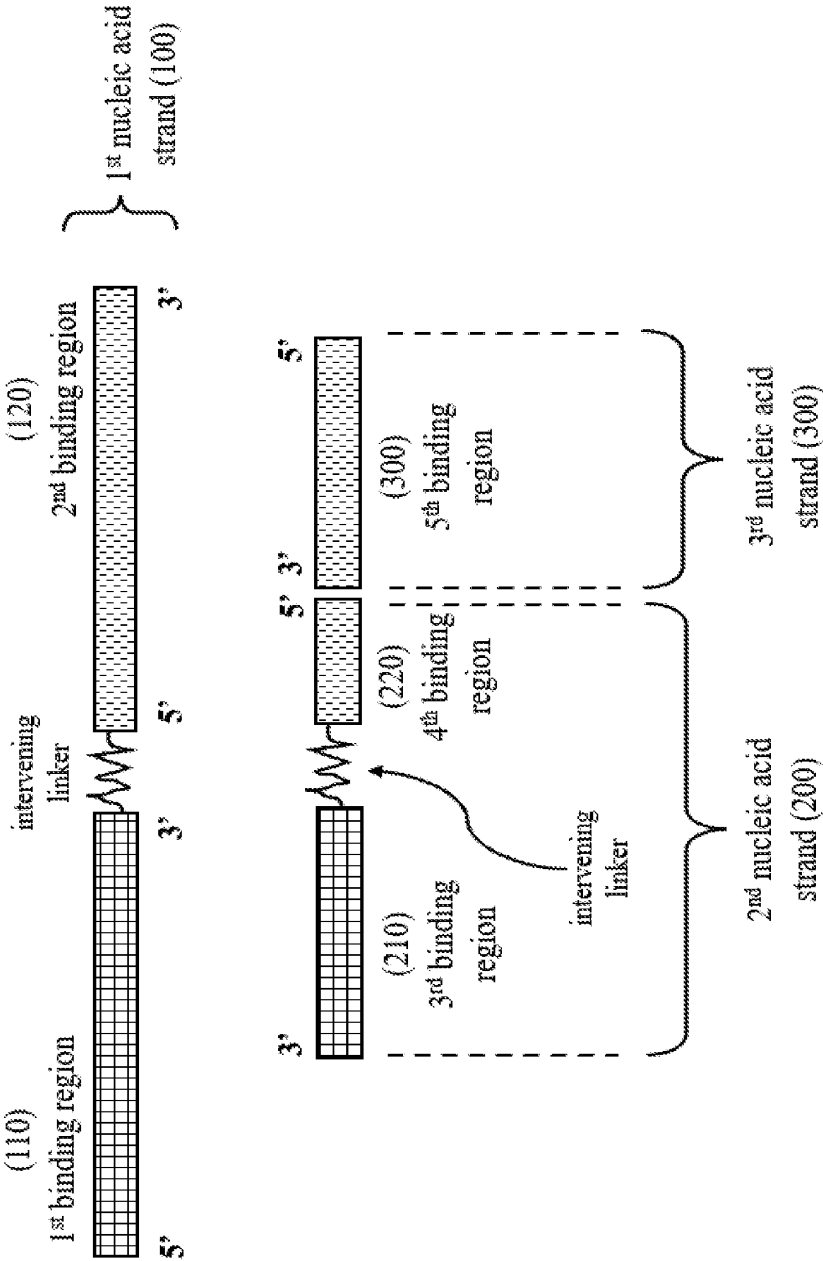


FIG. 13A

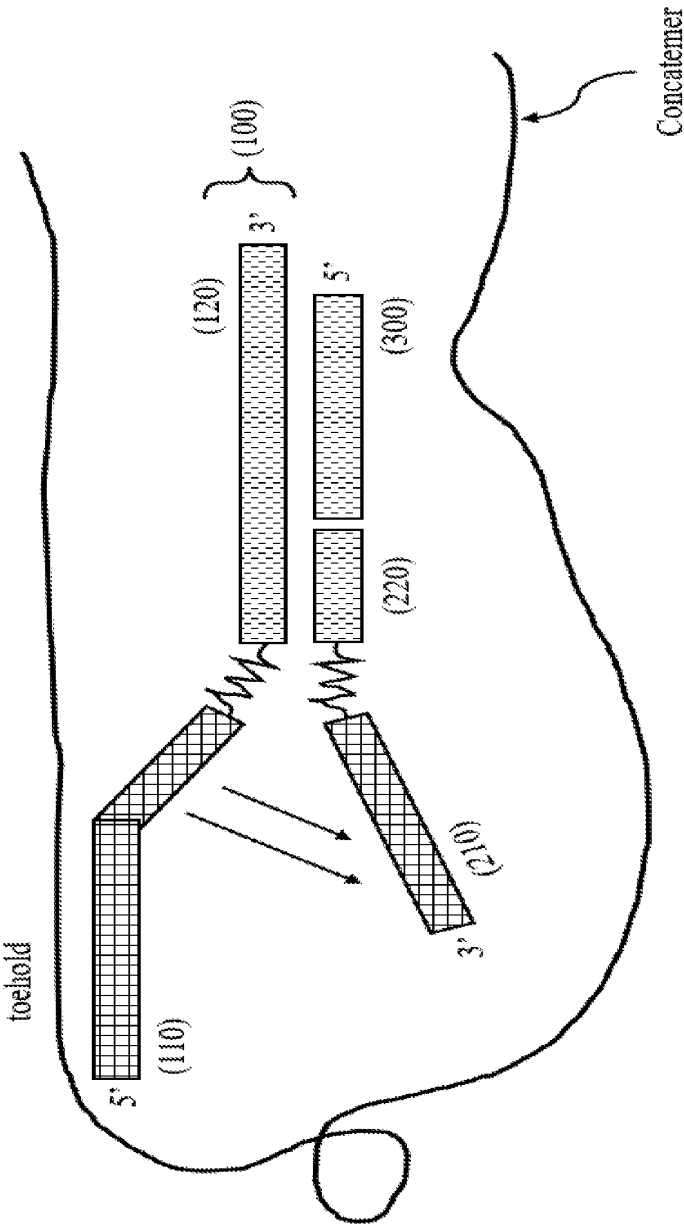


FIG. 13B

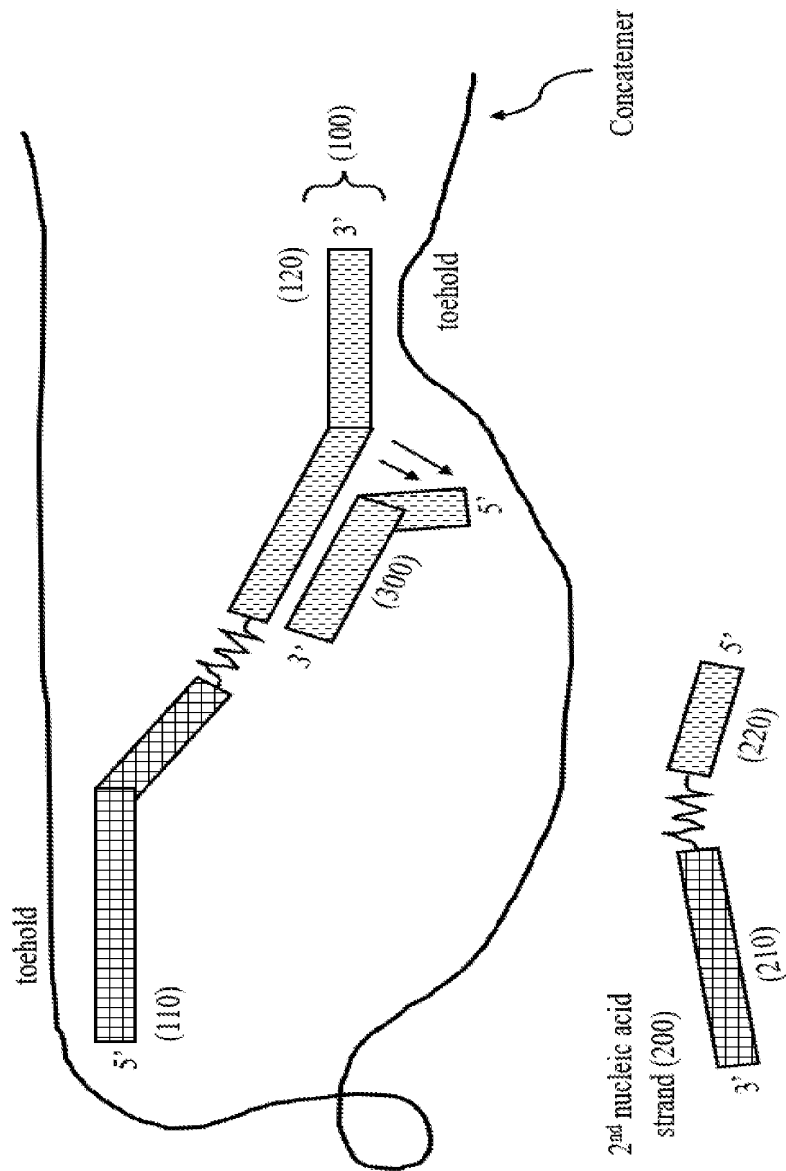


FIG. 13C

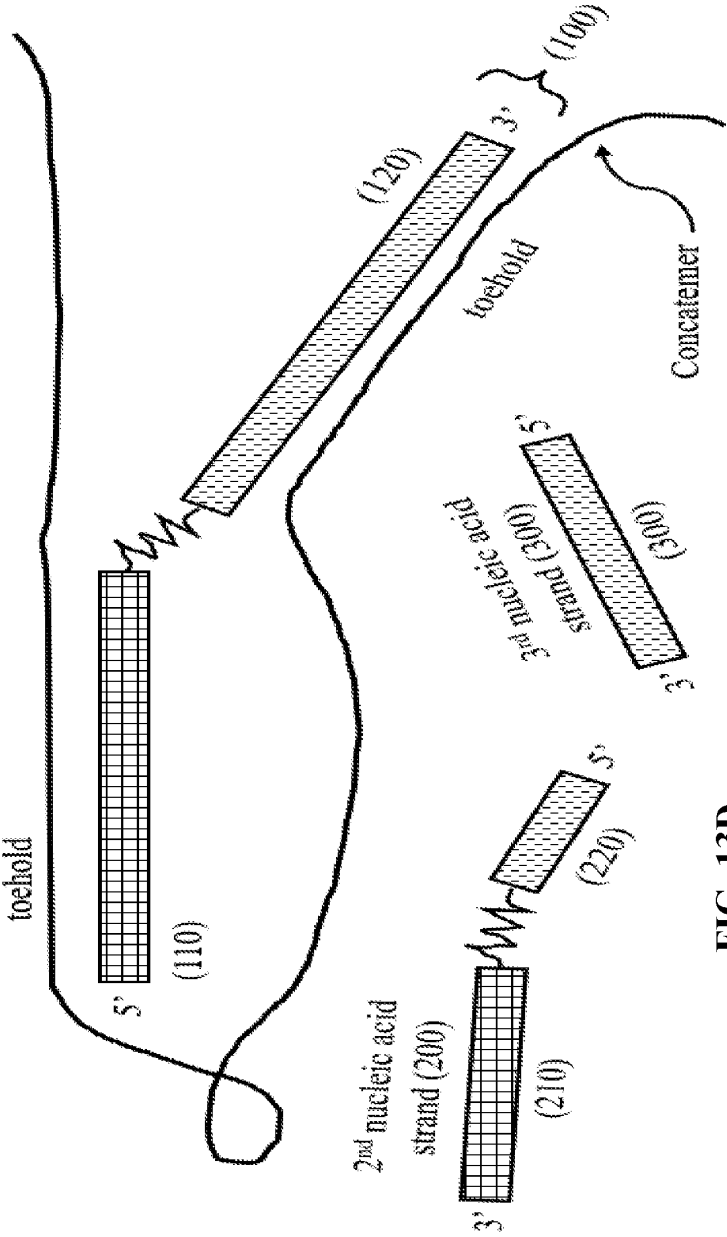


FIG. 13D

**Table 1: Compaction Oligonucleotides**

| SEQ ID NO: | Sequence (5' to 3' orientation)                                                    |
|------------|------------------------------------------------------------------------------------|
| 1          | ACACGTCTGAACTCCAGTCAC                                                              |
| 2          | CACTGACCTCAAGTCTGCACA                                                              |
| 3          | ACACGTCTGAACTCCAGTCAC <u>AAA</u> ACACGTCTGAACTCCA<br>GTCAC                         |
| 4          | GAGCACACGTCTGAACTCCAGTCAC                                                          |
| 5          | CACTGACCTCAAGTCTGCACACGAG                                                          |
| 6          | GAGCACACGTCTGAACTCCAGTCAC <u>AAAG</u> GAGCACACGTCT<br>GAACTCCAGTCAC                |
| 7          | CTGAACTCCAGTCACAAAAAAACCCTGAAAG                                                    |
| 8          | GAAAGTCCCAAAAAAACAACCTGACCTCAAGTC                                                  |
| 9          | CTGAACTCCAGTCACAAAAAAACCCTGAAAG <u>AAACT</u> GAACT<br>TCCAGTCACAAAAAAACCCTGAAAGTAC |
| 10         | CTGAACTCCAGTCACAAAAAAACCCTGAAAG                                                    |
| 11         | GAAAGTCCCAAAAAAACAACCTGACCTCAAGTC                                                  |
| 12         | CTGAACTCCAGTCACAAAAAAACCCTGAAAG <u>AAACTG</u><br>AACTCCAGTCACAAAAAAACCCTGAAAGTAC   |
| 13         | CTGAACTCCAGTCACAAAAAATCTCGTATGC                                                    |
| 14         | CGTATGCTCTAAAAAACAACCTGACCTCAAGTC                                                  |
| 15         | CTGAACTCCAGTCACAAAAAATCTCGTATGC <u>AAACTGAA</u><br>CTCCAGTCACAAAAAATCTCGTATGCCGT   |
| 16         | CTTCTGCTTGAATGATACGGCGACC                                                          |
| 17         | CCAGCGGCATAGTAAGTTCGTCTTC                                                          |
| 18         | CTTCTGCTTGAATGATACGGCGACC <u>AAACTTCTGCTTGAA</u><br>TGATACGGCGACC                  |
| 19         | GCATTACATGCATAATAGTGTGACG                                                          |
| 20         | GCAGTGTGATAATACGTACATTACG                                                          |
| 21         | GCATTACATGCATAATAGTGTGACG <u>AAAGCATTACATGCA</u><br>TAATAGTGTGACG                  |

**FIG. 14A**

Table 1 (continued): Compaction Oligonucleotides

| SEQ ID NO: | Sequence (5' to 3' orientation)                                                       |
|------------|---------------------------------------------------------------------------------------|
| 22         | CATAATAGTGTGACGTAATAG                                                                 |
| 23         | GATAATGCAGTGTGATAATAC                                                                 |
| 24         | CATAATAGTGTGACGTAATAG <u>AAA</u> CATAATAGTGTGACGT<br>AATAG                            |
| 25         | CGTAATAGACATACACTCTTTCCC                                                              |
| 26         | CCCTTTCTCACATACAGATAATGC                                                              |
| 27         | CGTAATAGACATACACTCTTTCCC <u>AAA</u> CGTAATAGACATA<br>CACTCTTTCCC                      |
| 28         | AATGATACGGCGACCACCGA                                                                  |
| 29         | AGCCACCAGCGGCATAGTAA                                                                  |
| 30         | AATGATACGGCGACCACCGA <u>AAA</u> AATGATACGGCGACCAC<br>CGA                              |
| 31         | TGTAGGGAAAGAGTGTAGTCGTCGCAGCCTCACCT                                                   |
| 32         | TCCACTCCGACGCTGCTGATGTGAGAAAGGGATGT                                                   |
| 33         | TGTAGGGAAAGAGTGTAGTCGTCGCAGCCTCACCT <u>AAATG</u><br>TAGGGAAAGAGTGTAGTCGTCGCAGCCTCACCT |
| 34         | AGGTGAGGCTGCGACGACTACACTCTTCCCTACA                                                    |
| 35         | ACATCCCTTTCTCACATCAGCAGCGTCGGAGTGGA                                                   |
| 36         | AGGTGAGGCTGCGACGACTACACTCTTCCCTACA <u>AAA</u> AAG<br>GTGAGGCTGCGACGACTACACTCTTCCCTACA |
| 37         | GATGAGGTGAGGCTGCGACGACT                                                               |
| 38         | TCAGCAGCGTCGGAGTGGAGTAG                                                               |
| 39         | GATGAGGTGAGGCTGCGACGACT <u>AAA</u> GATGAGGTGAGGCT<br>GCGACGACT                        |
| 40         | TGACGTAATAGACATCTTCCCTAC                                                              |
| 41         | CATCCCTTTCTACAGATAATGCAGT                                                             |
| 42         | TGACGTAATAGACATCTTCCCTAC <u>AAA</u> TGACGTAATAGA<br>CATCTTCCCTAC                      |

FIG. 14B

Table 1 (continued): Compaction Oligonucleotides

| SEQ ID NO: | Sequence (5' to 3' orientation)                                          |
|------------|--------------------------------------------------------------------------|
| 43         | GTAGGGAAAGATGTCTATTACGTCA                                                |
| 44         | ACTGCATTATCTGTAGAAAGGGATG                                                |
| 45         | GTAGGGAAAGATGTCTATTACGTCA <u>AAA</u> GTAGGGAAAGATGTCTATTACGTCA           |
| 46         | AGGGAAAGATGTCTATTA                                                       |
| 47         | ATTATCTGTAGAAAGGGA                                                       |
| 48         | AGGGAAAGATGTCTATTA <u>AAA</u> AGGGAAAGATGTCTATTA                         |
| 49         | TTACATGGATGAGGTGAGGCTGCGACGACT                                           |
| 50         | TCAGCAGCGTCGGAGTGGAGTAGGTACATT                                           |
| 51         | TTACATGGATGAGGTGAGGCTGCGACGACT <u>AAAT</u> TACATGATGAGGTGAGGCTGCGACGACT  |
| 52         | CACACTATTATGCGAGCT                                                       |
| 53         | TCGAGCGTATTATCACAC                                                       |
| 54         | CACACTATTATGCGAGCT <u>AAA</u> CACACTATTATGCGAGCT                         |
| 55         | CATGTAATGCACGTACTTTCAGGGT                                                |
| 56         | TGGGACTTTCATGCACGTAATGTAC                                                |
| 57         | CATGTAATGCACGTACTTTCAGGGT <u>AAA</u> CATGTAATGCACGTACTTTCAGGGT           |
| 58         | TCATCCATGTAATGCACGTACTTTCAGGGT                                           |
| 59         | TGGGACTTTCATGCACGTAATGTACCTACT                                           |
| 60         | TCATCCATGTAATGCACGTACTTTCAGGGT <u>AAAT</u> CATCCATGTAATGCACGTACTTTCAGGGT |
| 61         | TGTAGGGAAAGAGTGTAGTCGT                                                   |
| 62         | TGCTGATGTGAGAAAGGGATGT                                                   |
| 63         | TGTAGGGAAAGAGTGTAGTCGT <u>AAA</u> TGTAGGGAAAGAGTGTAGTCGT                 |

FIG. 14C

Table 1 (continued): Compaction Oligonucleotides

| SEQ ID NO: | Sequence (5' to 3' orientation)                                                |
|------------|--------------------------------------------------------------------------------|
| 64         | ACGACTACACTCTTTCCCTACA                                                         |
| 65         | ACATCCCTTTCTCACATCAGCA                                                         |
| 66         | ACGACTACACTCTTTCCCTACA <u>AAA</u> ACGACTACACTCTTTCCCTACA                       |
| 67         | TCCAGTCACCGAGCT                                                                |
| 68         | TCGAGCCACTGACCT                                                                |
| 69         | TCCAGTCACCGAGCT <u>AAA</u> TCCAGTCACCGAGCT                                     |
| 70         | AATGATACGGCGACCACCGA                                                           |
| 71         | AGCCACCAGCGGCATAGTAA                                                           |
| 72         | AATGATACGGCGACCACCGA <u>AAA</u> AATGATACGGCGACCACCGA                           |
| 73         | GTAGGGAAAGAGTGTIIIIIIIGTGTAGATC                                                |
| 74         | CTAGATGTGIIIIIIITGTGAGAAAGGGATG                                                |
| 75         | GTAGGGAAAGAGTGTIIIIIIIGTGTAGATC <u>AAAG</u> TAGG<br>GAAAGAGTGTIIIIIIIGTGTAGATC |
| 76         | AATGATACGGCGACCACCGAGATCTACAC                                                  |
| 77         | CACATCTAGAGCCACCAGCGGCATAGTAA                                                  |
| 78         | AATGATACGGCGACCACCGAGATCTACAC <u>AAA</u> AATGATACGGCGACCACCGAGATCTACAC         |
| 79         | GAGCGTCGTGTAGGGAAAGAGTGT                                                       |
| 80         | TGTGAGAAAGGGATGTGCTGCGAG                                                       |
| 81         | GAGCGTCGTGTAGGGAAAGAGTGT <u>AAAG</u> GAGCGTCGTGTAGGGAAAGAGTGT                  |
| 82         | CTTCTGCTTGAATGATACGGCGACC                                                      |
| 83         | CCAGCGGCATAGTAAGTTCGTCTTC                                                      |
| 84         | CTTCTGCTTGAATGATACGGCGACC <u>AAA</u> CTTCTGCTTGAA<br>TGATACGGCGACC             |

FIG. 14D

Table 1 (continued): Compaction Oligonucleotides

| SEQ ID NO: | Sequence (5' to 3' orientation)                                               |
|------------|-------------------------------------------------------------------------------|
| 85         | CAAGCAGAAGACGGCATAACGAGAT                                                     |
| 86         | TAGAGCATACGGCAGAAGACGAAC                                                      |
| 87         | CAAGCAGAAGACGGCATAACGAGAT <u>AAA</u> CAAGCAGAAGACG<br>GCATAACGAGAT            |
| 88         | ACACTCTTTCCCTACACGACGCTC                                                      |
| 89         | CTCGCAGCACATCCCTTTCTCACA                                                      |
| 90         | ACACTCTTTCCCTACACGACGCTC <u>AAA</u> ACACTCTTTCCCT<br>ACACGACGCTC              |
| 91         | GTGACTGGAGTTCAGACGTGTGCTC                                                     |
| 92         | CTCGTGTGCAGACTTGAGGTCAGTG                                                     |
| 93         | GTGACTGGAGTTCAGACGTGTGCTC <u>AAAG</u> TGACTGGAGTT<br>CAGACGTGTGCTC            |
| 94         | GAGCACACGTCTGAACTCCAGTCAC                                                     |
| 95         | CACTGACCTCAAGTCTGCACACGAG                                                     |
| 96         | GAGCACACGTCTGAACTCCAGTCAC <u>AAAG</u> GAGCACACGTCT<br>GAACTCCAGTCAC           |
| 97         | CTGAACTCCAGTCACIIIIIIATCTCGTAT                                                |
| 98         | TATGCTCTAIIIIIIICACTGACCTCAAGTC                                               |
| 99         | CTGAACTCCAGTCACIIIIIIATCTCGTAT <u>AAAG</u> CTGAA<br>CTCCAGTCACIIIIIIATCTCGTAT |
| 100        | GAGCTCGACCCTGAAAG                                                             |
| 101        | GAAAGTCCCAGCTCGAG                                                             |
| 102        | GAGCTCGACCCTGAAAG <u>AAAG</u> GAGCTCGACC<br>CTGAAAG                           |
| 103        | CGTGCATTACATGCGAG                                                             |
| 104        | GAGCGTACATTACGTGC                                                             |
| 105        | CGTGCATTACATGCGAG <u>AAAG</u> CGTGCATTACATGCGAG                               |

FIG. 14E

Table 1 (continued): Compaction Oligonucleotides

| SEQ ID NO: | Sequence (5' to 3' orientation)                                  |
|------------|------------------------------------------------------------------|
| 106        | GCAGGCTACCGCTTGTCAACT                                            |
| 107        | TCAACTGTTCGCCATCGGACG                                            |
| 108        | GCAGGCTACCGCTTGTCAACT <u>AAA</u> GCAGGCTACCGCTTGTCAACT           |
| 109        | AGTTGACAAGCGGTAGCCTGC                                            |
| 110        | CGTCCGATGGCGAACAGTTGA                                            |
| 111        | AGTTGACAAGCGGTAGCCTGC <u>AAA</u> AGTTGACAAGCGGTAGCCTGC           |
| 112        | GGTGTGCAGGCTACCGCTTGTCAACT                                       |
| 113        | TCAACTGTTCGCCATCGGACGTGTGG                                       |
| 114        | GGTGTGCAGGCTACCGCTTGTCAACT <u>AAA</u> GGTGTGCAGGCTACCGCTTGTCAACT |
| 115        | AGTTGACAAGCGGTAGCCTGCACACC                                       |
| 116        | CCACACGTCCGATGGCGAACAGTTGA                                       |
| 117        | AGTTGACAAGCGGTAGCCTGCACACC <u>AAA</u> AGTTGACAAGCGGTAGCCTGCACACC |
| 118        | AGTCGTCGCAGCCTCACCTGATC                                          |
| 119        | CTAGTCCACTCCGACGCTGCTGA                                          |
| 120        | AGTCGTCGCAGCCTCACCTGATC <u>AAA</u> AGTCGTCGCAGCCTCACCTGATC       |
| 121        | GATCAGGTGAGGCTGCGACGACT                                          |
| 122        | TCAGCAGCGTCGGAGTGGACTAG                                          |
| 123        | GATCAGGTGAGGCTGCGACGACT <u>AAA</u> GATCAGGTGAGGCTGCGACGACT       |
| 124        | GGAAGGTGTGCAGGCTACCGCTT                                          |
| 125        | TTCGCCATCGGACGTGTGGAAGG                                          |
| 126        | GGAAGGTGTGCAGGCTACCGCTT <u>AAA</u> GGAAGGTGTGCAGGCTACCGCTT       |

FIG. 14F

Table 1 (continued): Compaction Oligonucleotides

| SEQ ID NO: | Sequence (5' to 3' orientation)                                  |
|------------|------------------------------------------------------------------|
| 127        | TGGTGAGCCAATCCAGCACG                                             |
| 128        | GCACGACCTAACCGAGTGGT                                             |
| 129        | TGGTGAGCCAATCCAGCACG <u>AAA</u> TGGTGAGCCAATCCAGCACG             |
| 130        | ATGTCGGAAGGTGTGCAGGCTA                                           |
| 131        | ATCGGACGTGTGGAAGGCTGTA                                           |
| 132        | ATGTCGGAAGGTGTGCAGGCTA <u>AAA</u> ATGTCGGAAGGTGTGCAGGCTA         |
| 133        | TGTCTGGTGAGCCAATCCAGCACG                                         |
| 134        | GCACGACCTAACCGAGTGGTCTGT                                         |
| 135        | TGTCTGGTGAGCCAATCCAGCACG <u>AAA</u> TGTCTGGTGAGCCAATCCAGCACG     |
| 136        | TTGAGTCGTCGCAGCCTCACCTGAT                                        |
| 137        | TAGTCCACTCCGACGCTGCTGAGTT                                        |
| 138        | TTGAGTCGTCGCAGCCTCACCTGAT <u>AAA</u> TTGAGTCGTCGCA GCCTCACCTGAT  |
| 139        | TCTTCTGCTTGAGTCGTCGCAGCC                                         |
| 140        | CCGACGCTGCTGAGTTCGTCTTCT                                         |
| 141        | TCTTCTGCTTGAGTCGTCGCAGCC <u>AAA</u> TCTTCTGCTTGAGTCGTCGCAGCC     |
| 142        | ATCTCGTATGCCGTCTTCTGCTTG                                         |
| 143        | GTTCGTCTTCTGCCGTATGCTCTA                                         |
| 144        | ATCTCGTATGCCGTCTTCTGCTTG <u>AAA</u> ATCTCGTATGCCGTCTTCTGCTTG     |
| 145        | CCTGATCCATGTAATGCACGTACTTT                                       |
| 146        | TTTCATGCACGTAATGTACCTAGTCC                                       |
| 147        | CCTGATCCATGTAATGCACGTACTTT <u>AAA</u> CCTGATCCATGTAATGCACGTACTTT |

FIG. 14G

**Table 1 (continued): Compaction Oligonucleotides**

| SEQ ID NO: | Sequence (5' to 3' orientation)                                    |
|------------|--------------------------------------------------------------------|
| 148        | CACGTACTTTCAGGGTAATGATACG                                          |
| 149        | GCATAGTAATGGGACTTTCATGCAC                                          |
| 150        | CACGTACTTTCAGGGTAATGATACG <u>AAA</u> CACGTACTTTCA<br>GGGTAATGATACG |
| 151        | AATGATACGCACGTACTTTCAGGGT                                          |
| 152        | TGGGACTTTCATGCACGCATAGTAA                                          |
| 153        | AATGATACGCACGTACTTTCAGGGT <u>AAA</u> AATGATACGCAC<br>GTACTTTCAGGGT |
| 154        | GTAGGGAAAGATGTCTATTACGTC                                           |
| 155        | CTGCATTATCTGTAGAAAGGGATG                                           |
| 156        | GTAGGGAAAGATGTCTATTACGTC <u>AAAA</u> GTAGGGAAAGAT<br>GTCTATTACGTC  |

**FIG. 14H**

**Table 2: Universal Adaptor Sequences**

| SEQ ID NO: | Description:     | Sequence (5' to 3' orientation)     |
|------------|------------------|-------------------------------------|
| 157        | Surface Primer 1 | AATGATACGGCGACCACCGAGATC            |
| 158        | Surface Primer 1 | GATCTCGGTGGTCGCCGTATCATT            |
| 159        | Surface Primer 2 | ATCTCGTATGCCGTCTTCTGCTTG            |
| 160        | Surface Primer 2 | CAAGCAGAAGACGGCATACGAGAT            |
| 161        | FWD Seq          | ACACTCTTTCCCTACACGACGCTCTTCCGATCT   |
| 162        | FWD Seq          | AGATCGGAAGAGCGTCGTGTAGGGAAAGAGTGT   |
| 163        | REV Seq          | AGATCGGAAGAGCACACGTCTGAACTCCAGTCAC  |
| 164        | REV Seq          | GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCT  |
| 165        | FWD Seq          | TCGTCGGCAGCGTCAGATGTGTATAAGAGACAG   |
| 166        | FWD Seq          | CTGTCTCTTATACACATCTGACGCTGCCGACGA   |
| 167        | REV Seq          | CTGTCTCTTATACACATCTCCGAGCCCACGAGAC  |
| 168        | REV Seq          | GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAG  |
| 169        | Surface Primer 1 | AGTCGTGCGAGCCTCACCTGATC             |
| 170        | Surface Primer 1 | GATCAGGTGAGGCTGCGACGACT             |
| 171        | Surface Primer 2 | CATGTAATGCACGTACTTTCAGGGT           |
| 172        | Surface Primer 2 | ACCCTGAAAGTACGTGCATTACATG           |
| 173        | FWD Seq          | CGTGCTGGATTGGCTCACCAGACACCTTCCGACAT |
| 174        | FWD Seq          | ATGTCGGAAGGTGTCTGGTGAGCCAATCCAGCACG |
| 175        | REV Seq          | ATGTCGGAAGGTGTGCAGGCTACCGCTTGTCAACT |
| 176        | REV Seq          | AGTTGACAAGCGGTAGCCTGCACACCTTCCGACAT |

**FIG. 15**

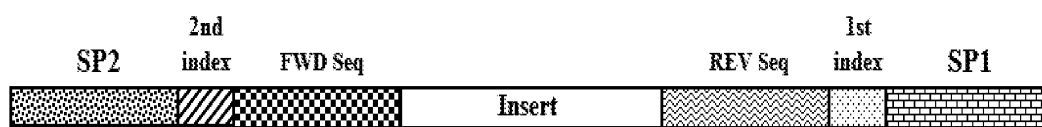


FIG. 16A

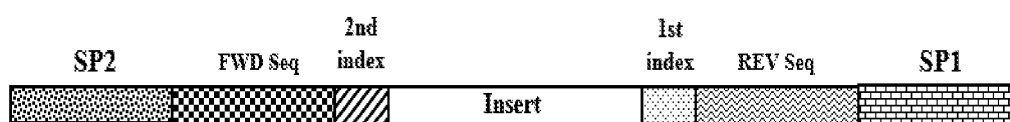


FIG. 16B

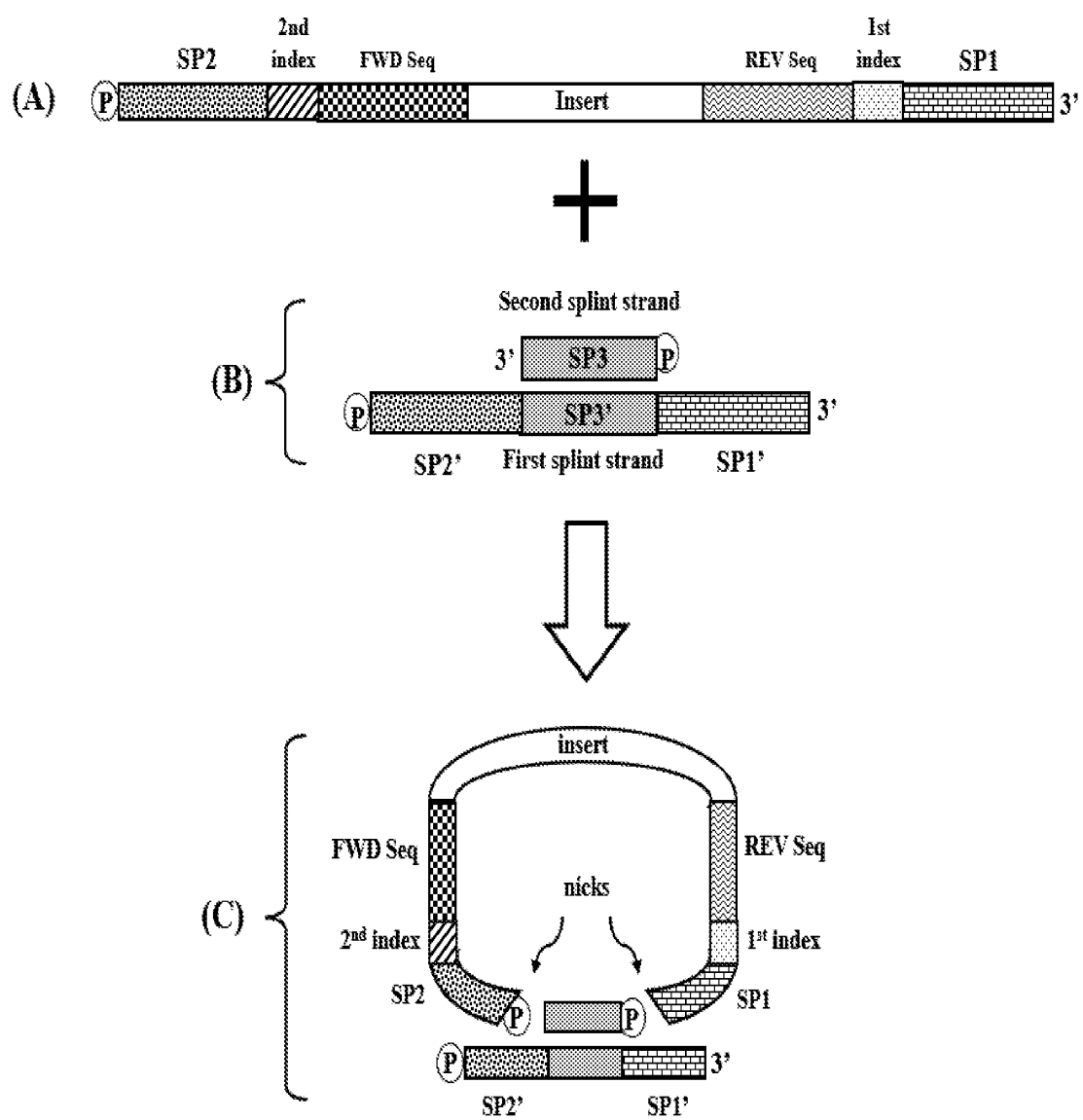


FIG. 17

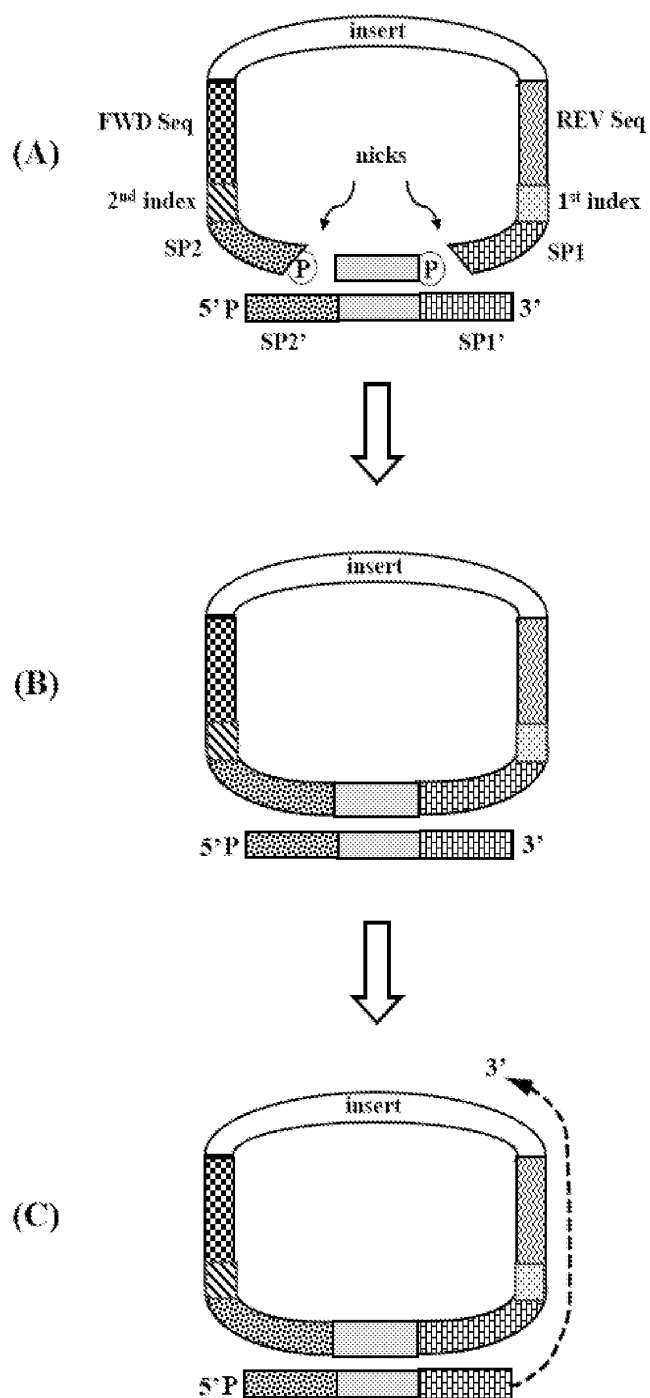


FIG. 18

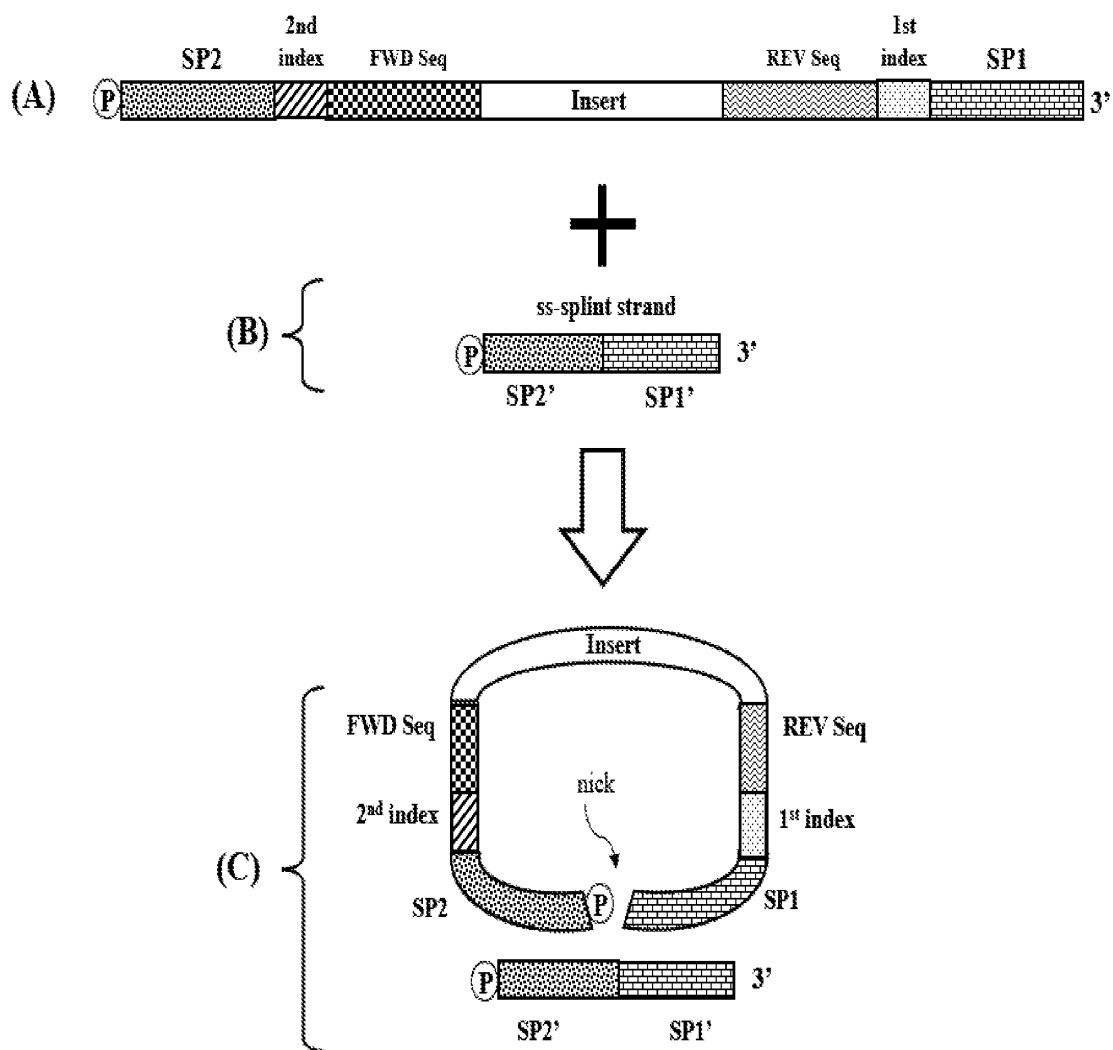


FIG. 19

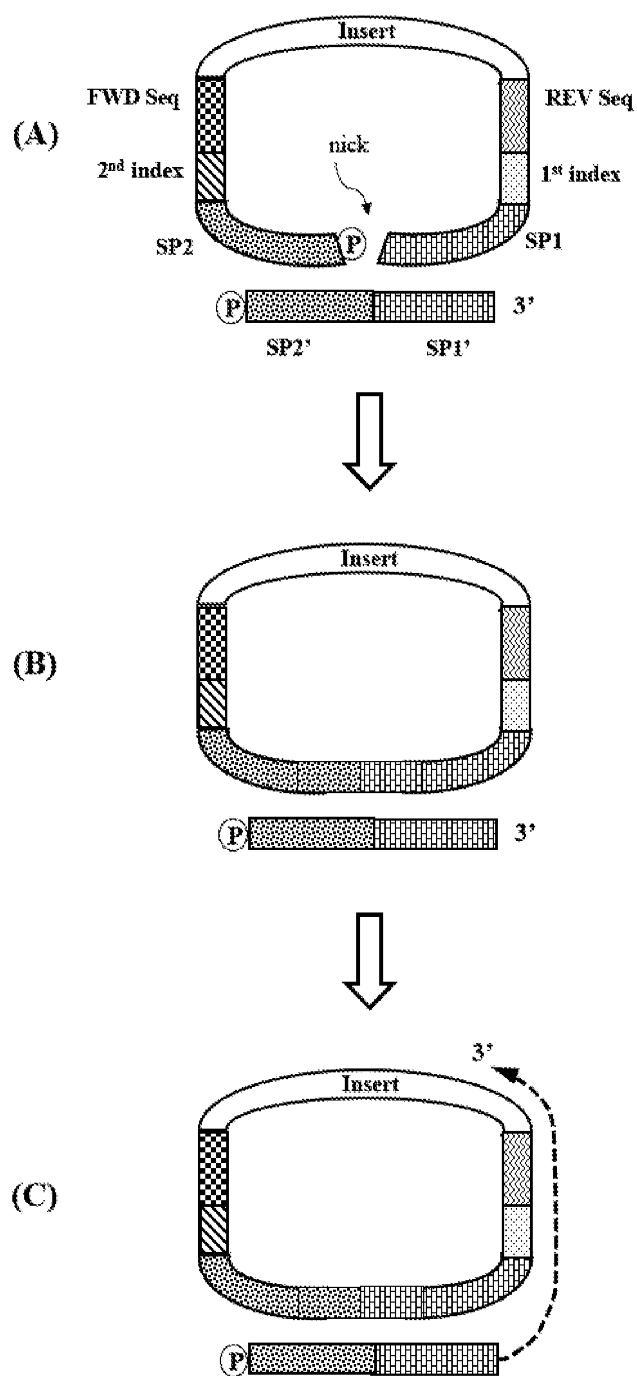


FIG. 20

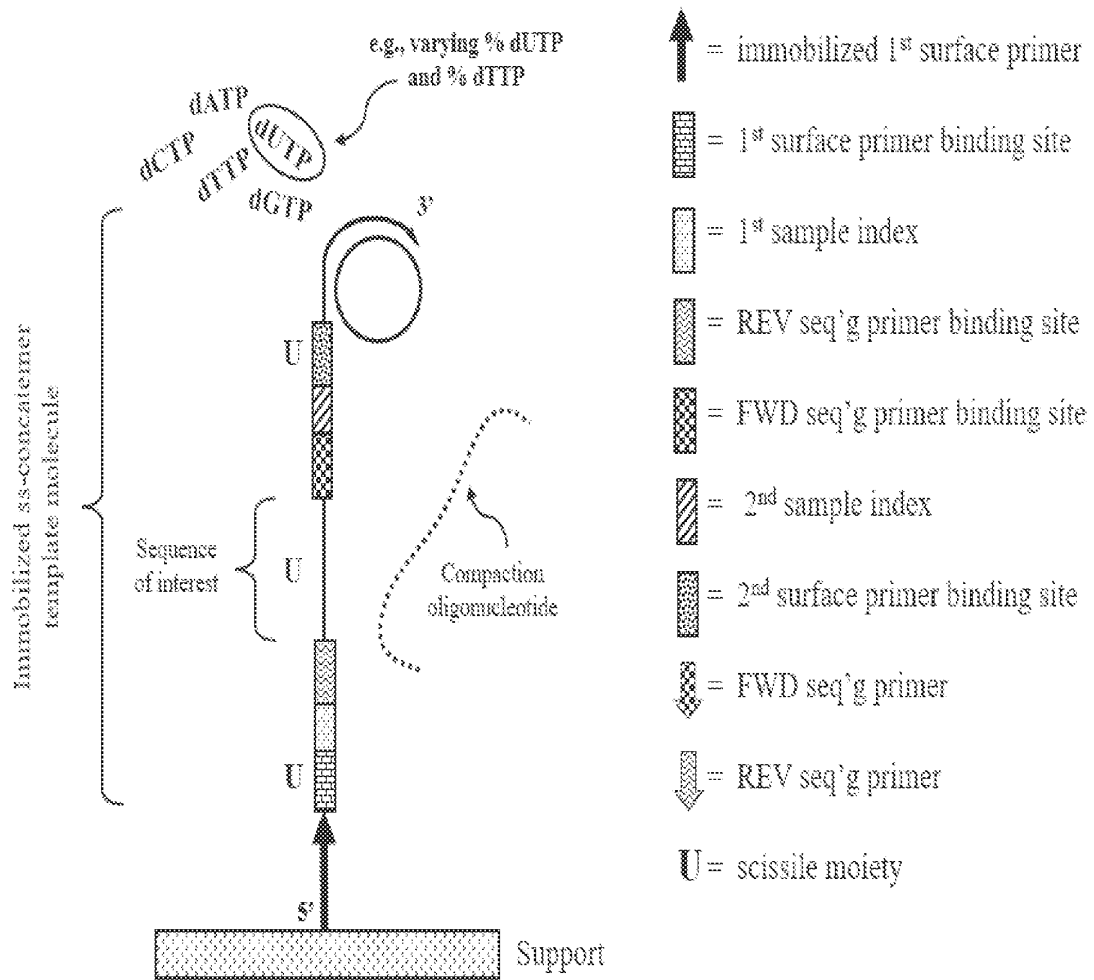


FIG. 21

FIG. 22

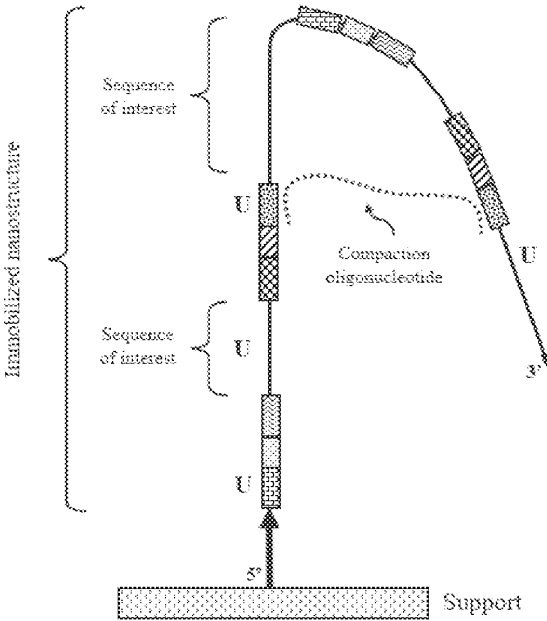


FIG. 23

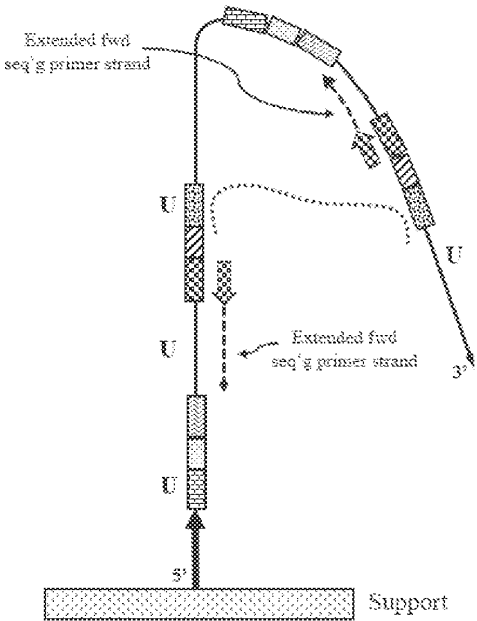


FIG. 24

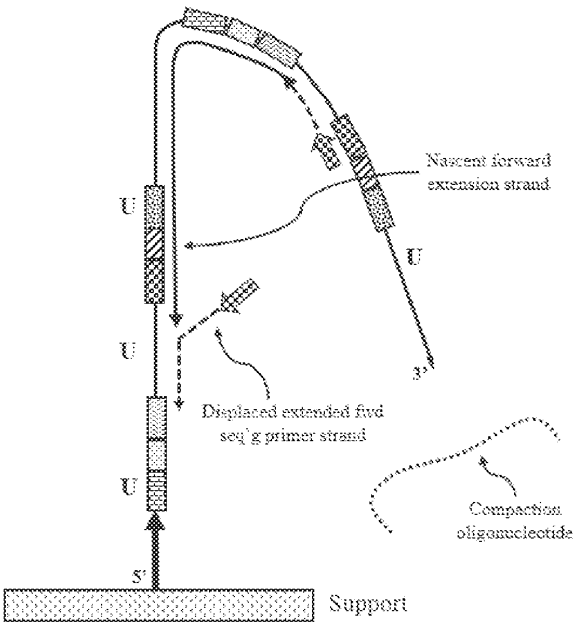


FIG. 25

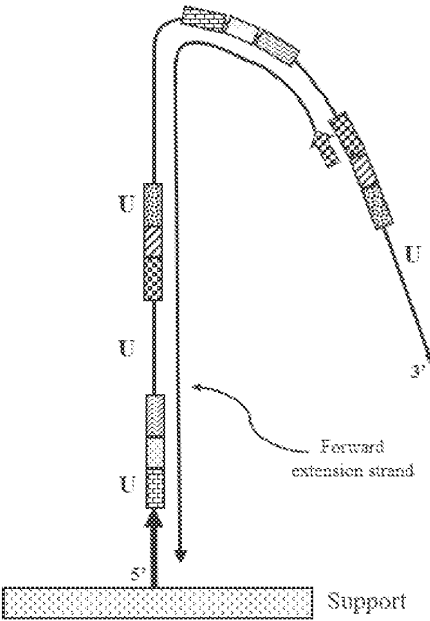


FIG. 26

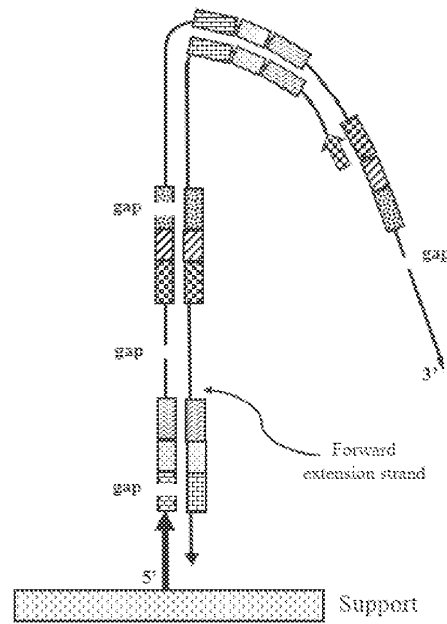


FIG. 27

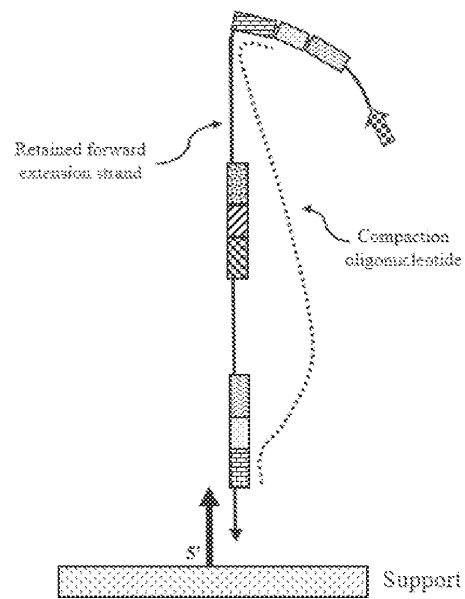


FIG. 28

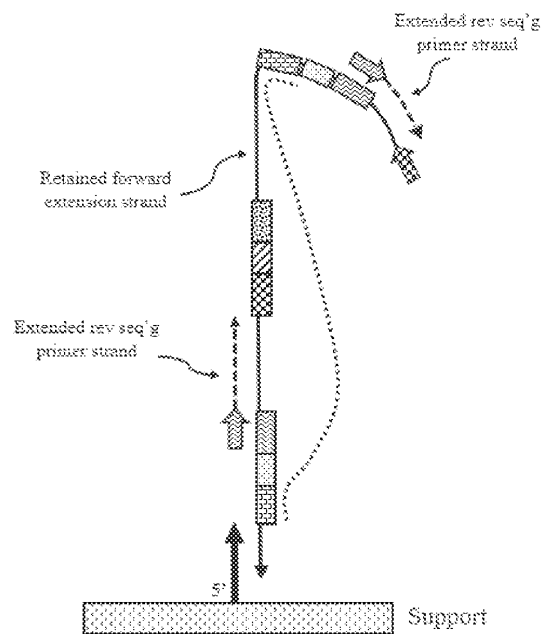


FIG. 29

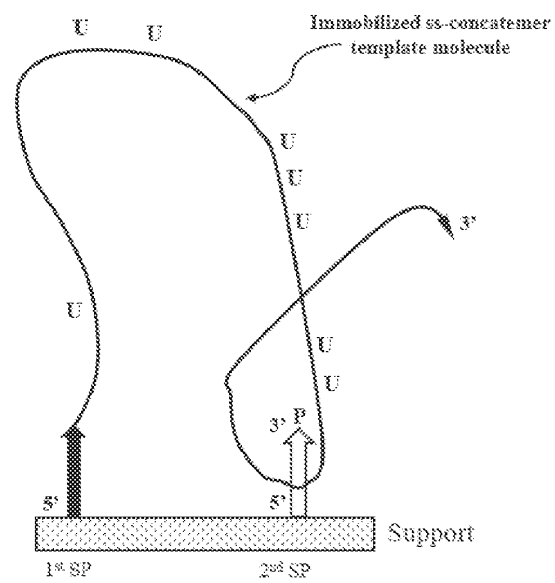


FIG. 30

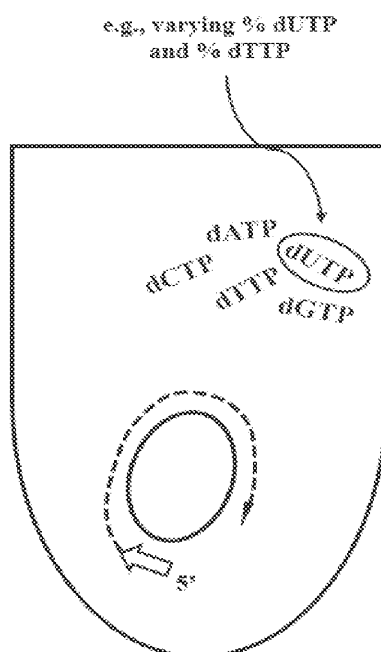
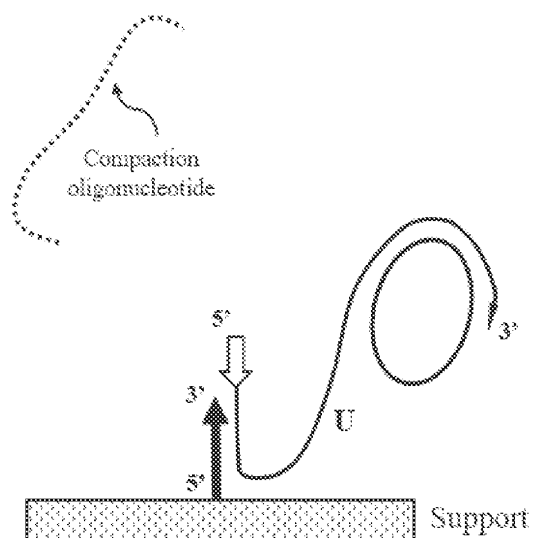


FIG. 31



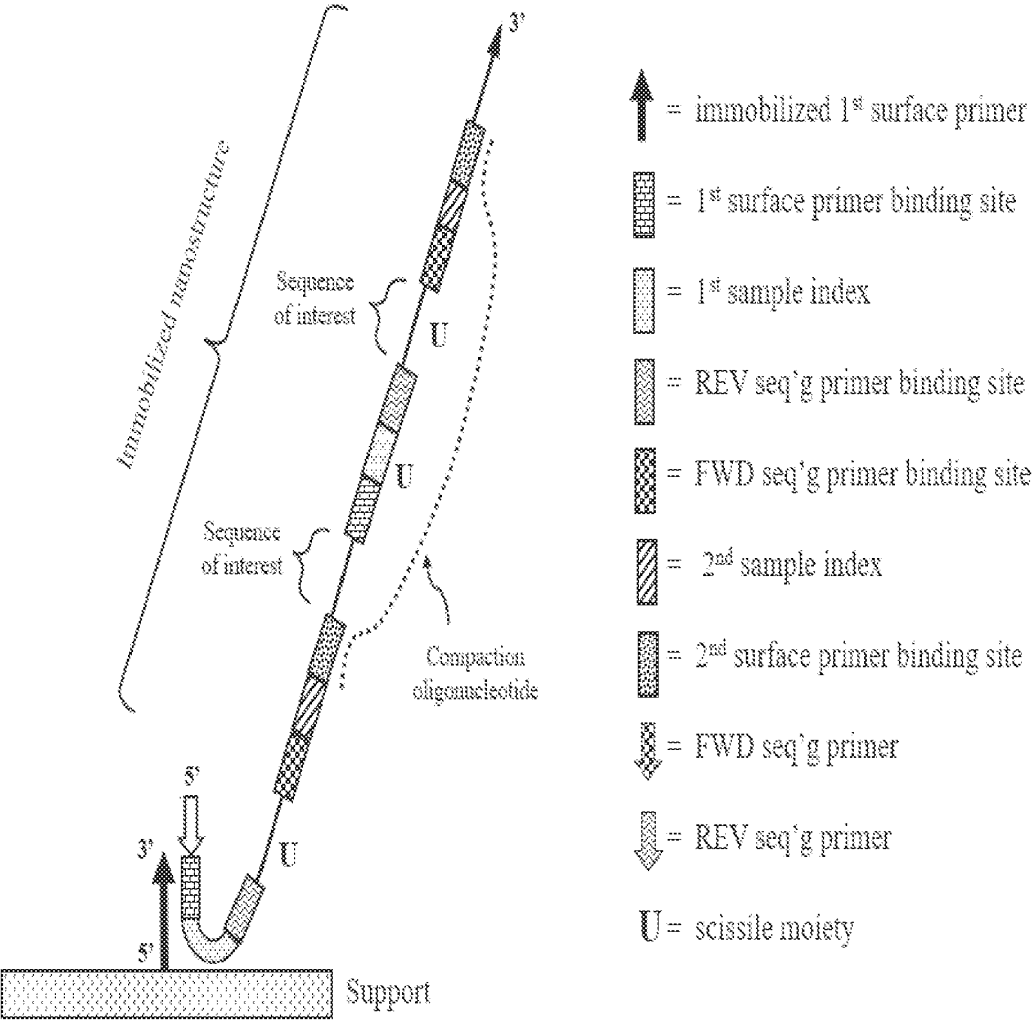


FIG. 32

FIG. 33

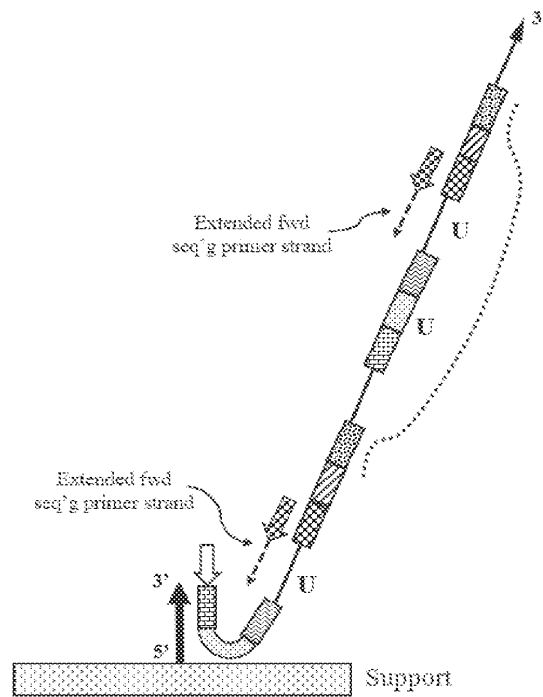


FIG. 34

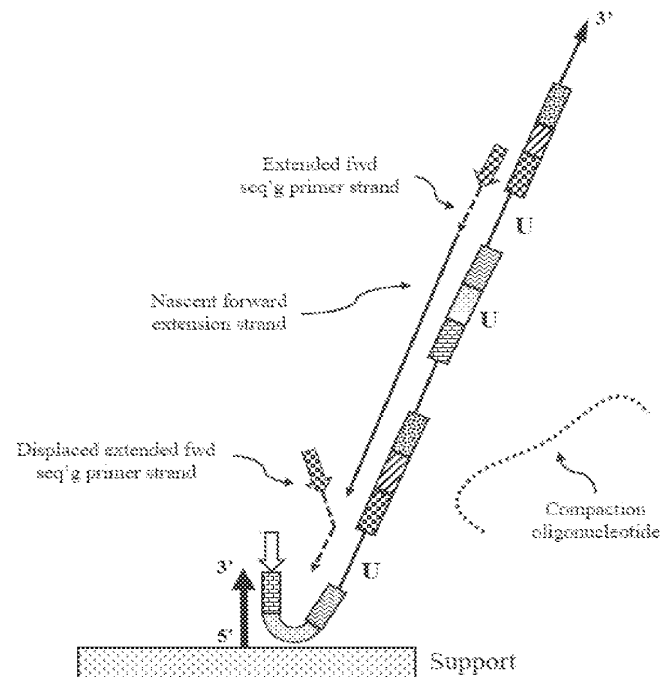


FIG. 35

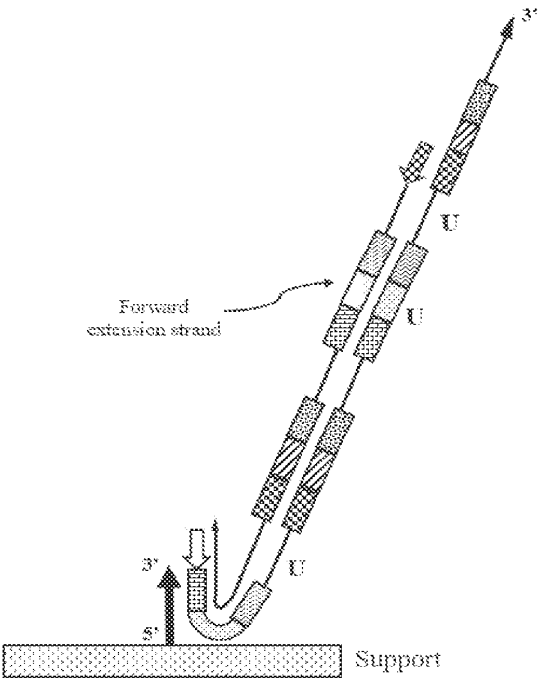


FIG. 36

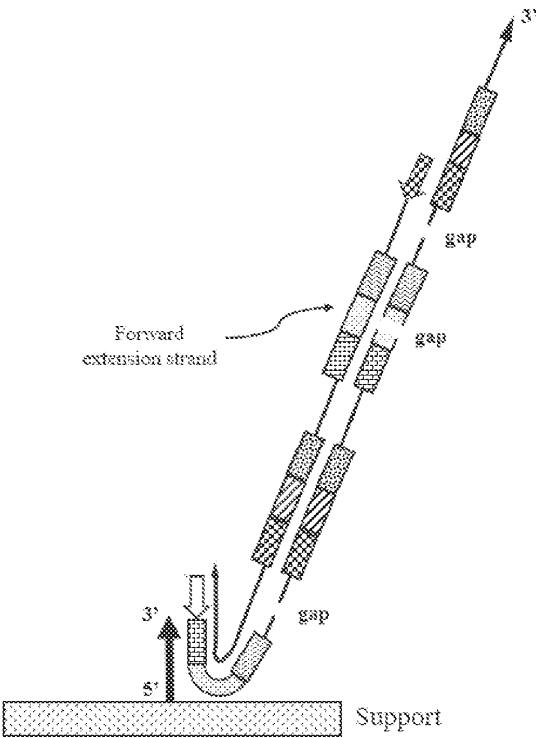
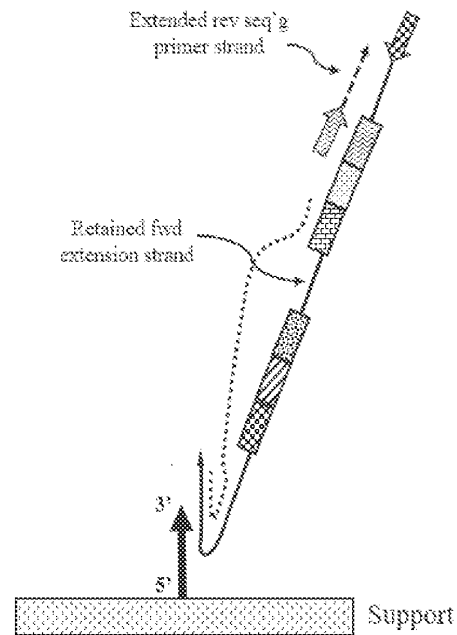
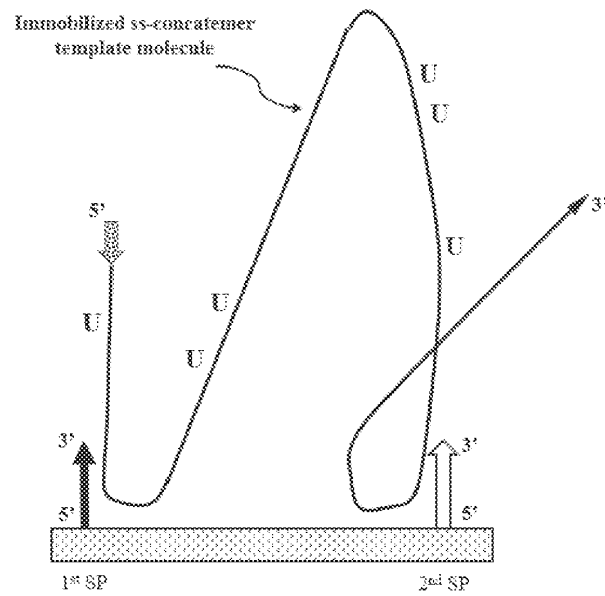


FIG. 37



**FIG. 38**



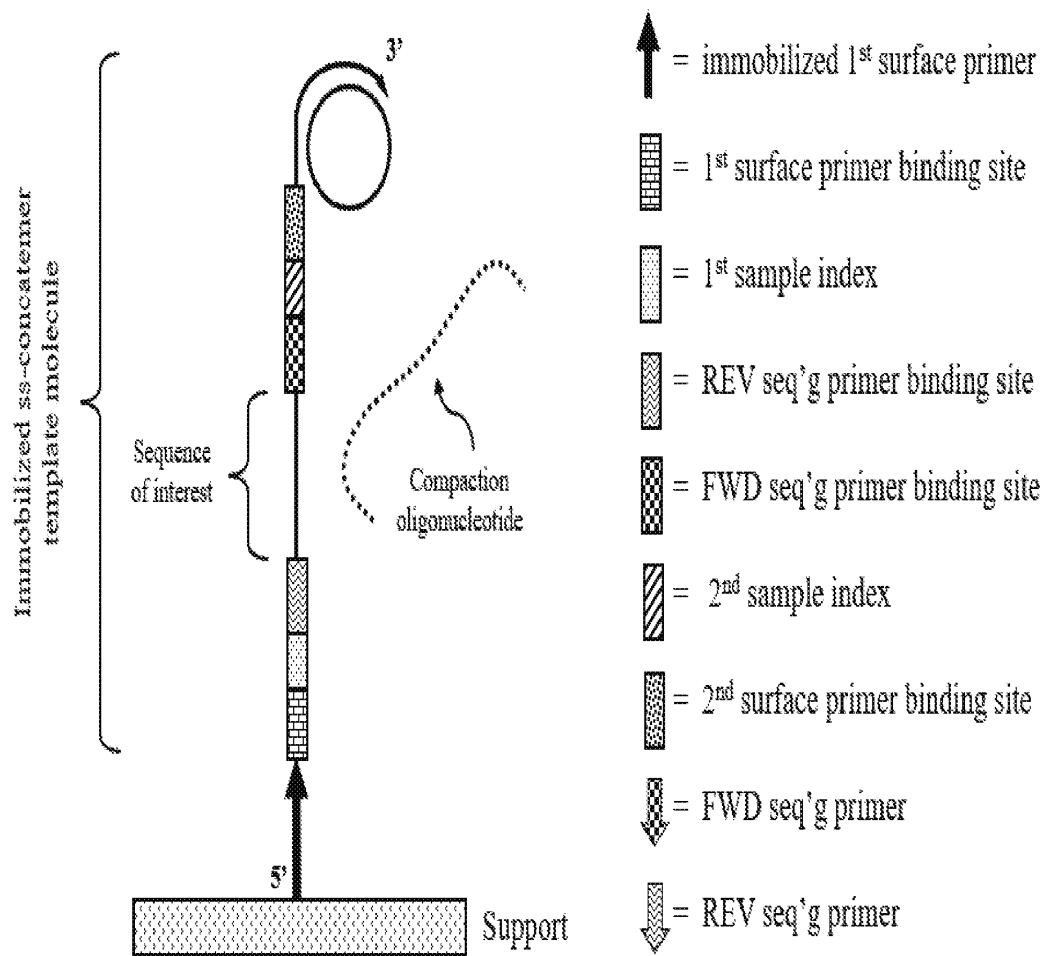


FIG. 39

FIG. 40

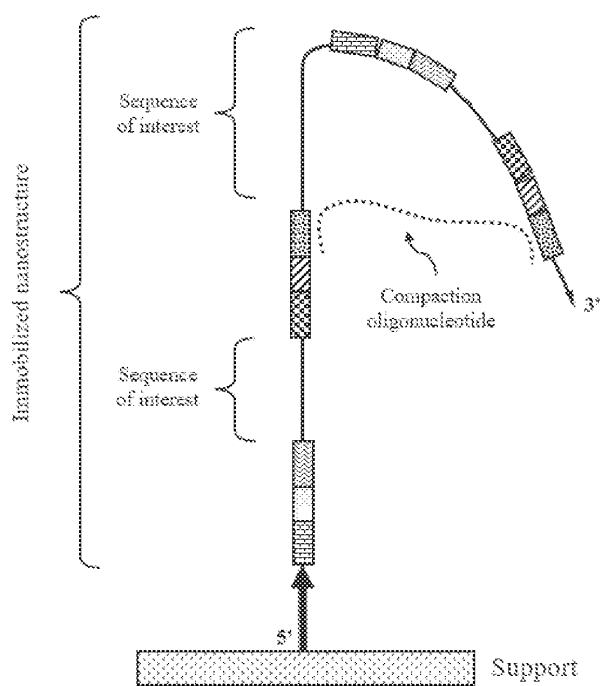


FIG. 41

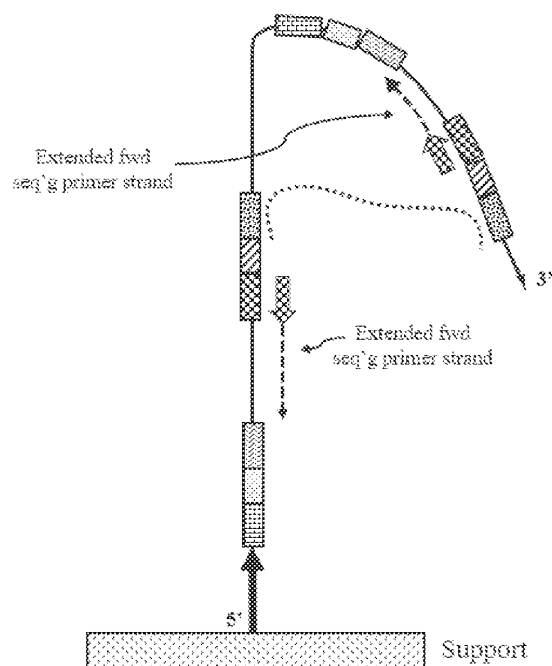


FIG. 42

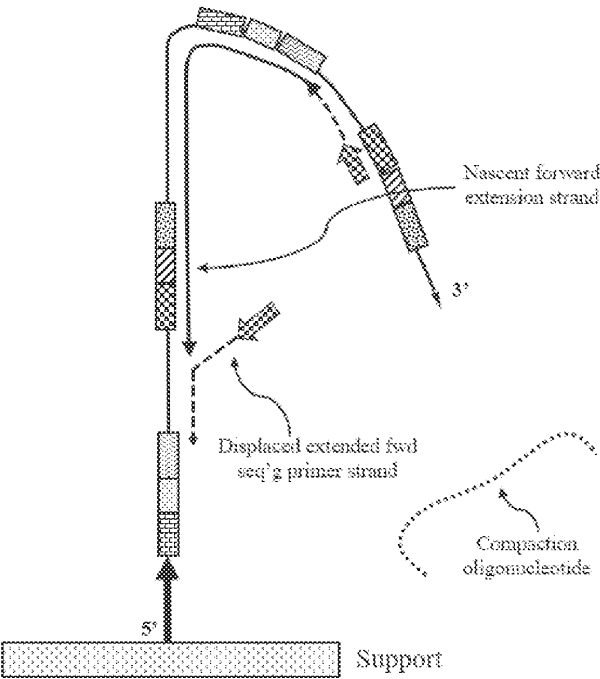


FIG. 43

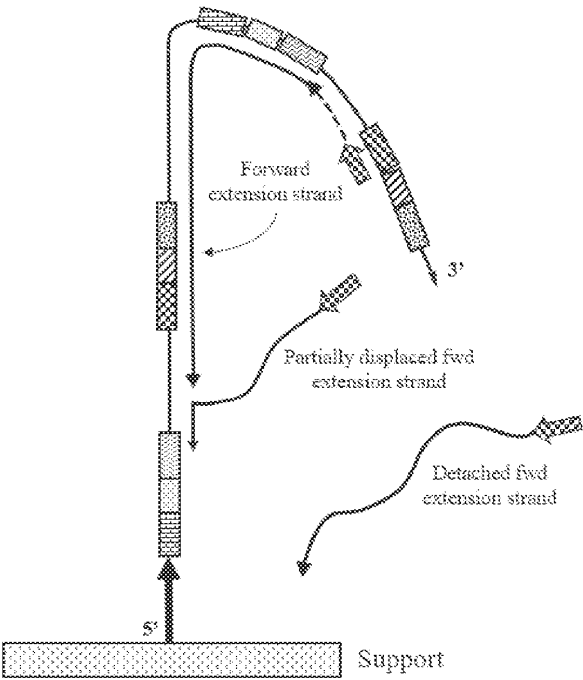


FIG. 44

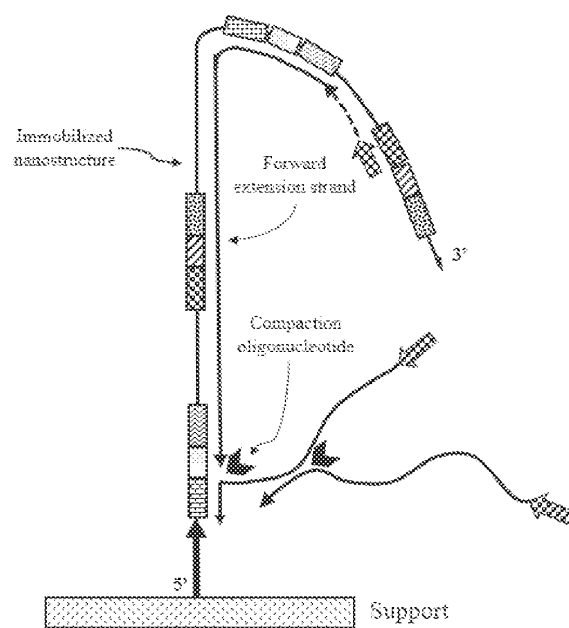


FIG. 45

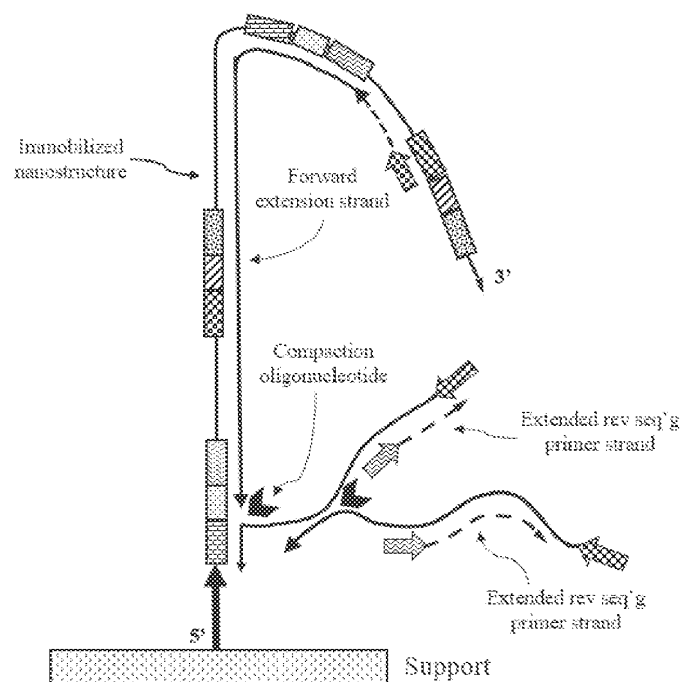


FIG. 46

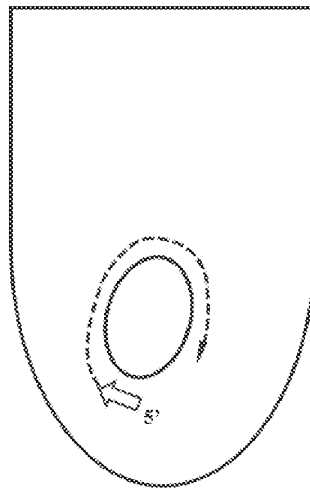
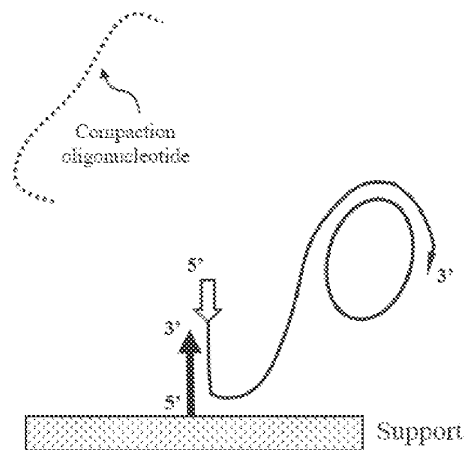


FIG. 47



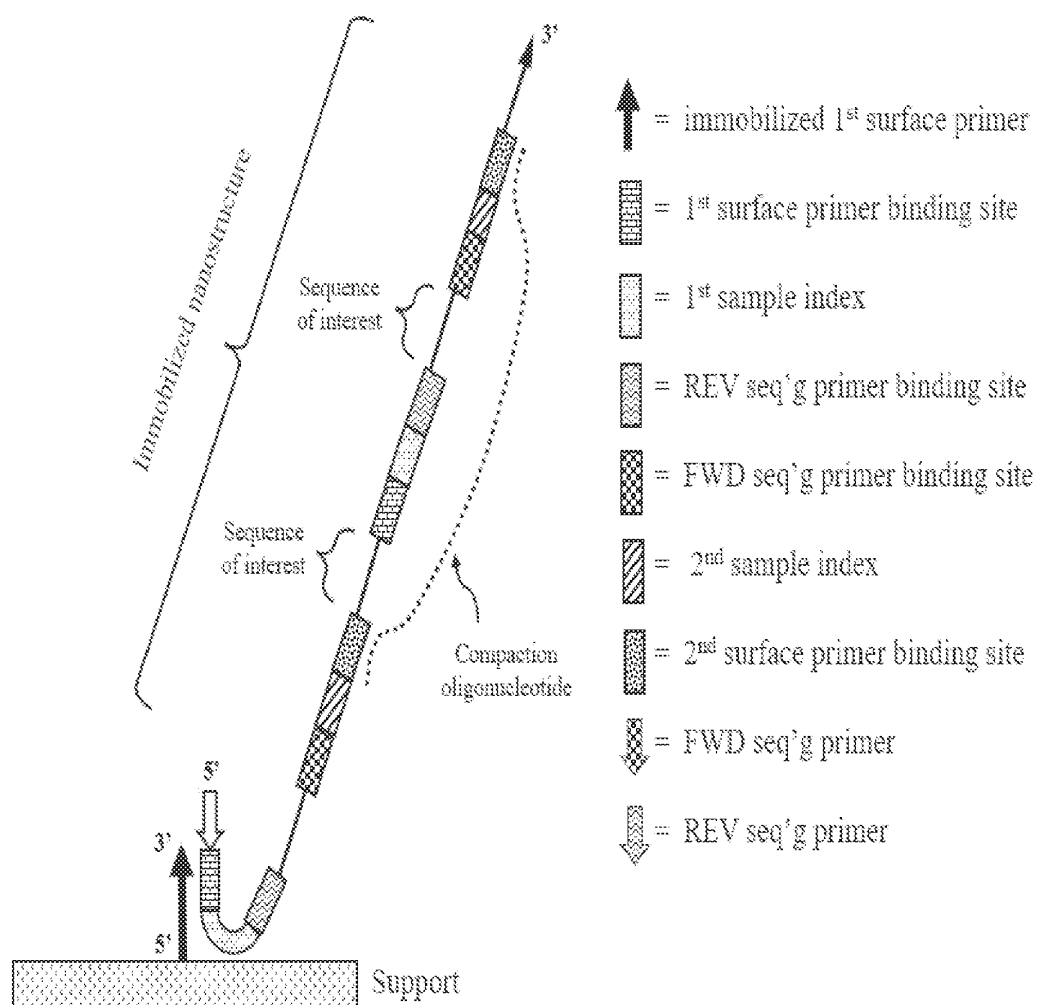


FIG. 48

The diagram illustrates a sequencing primer strand being extended on a support. A solid line represents the primer strand, which is anchored to a hatched rectangular support at its 5' end. An arrow labeled '3'' points upwards from the 5' end, indicating the direction of extension. The strand is composed of several segments, some of which are hatched. A dashed line labeled 'Extended fwd seq'g primer strand' points to a segment of the strand that is being extended. A dotted line indicates the path of the strand as it extends away from the support. The label 'Support' is located at the bottom right of the diagram.

Extended fwd seq'g primer strand

Nascent forward extension strand

Displaced extended fwd seq'g primer strand

Compression oligonucleotide

3'

5'

Support

FIG. 51

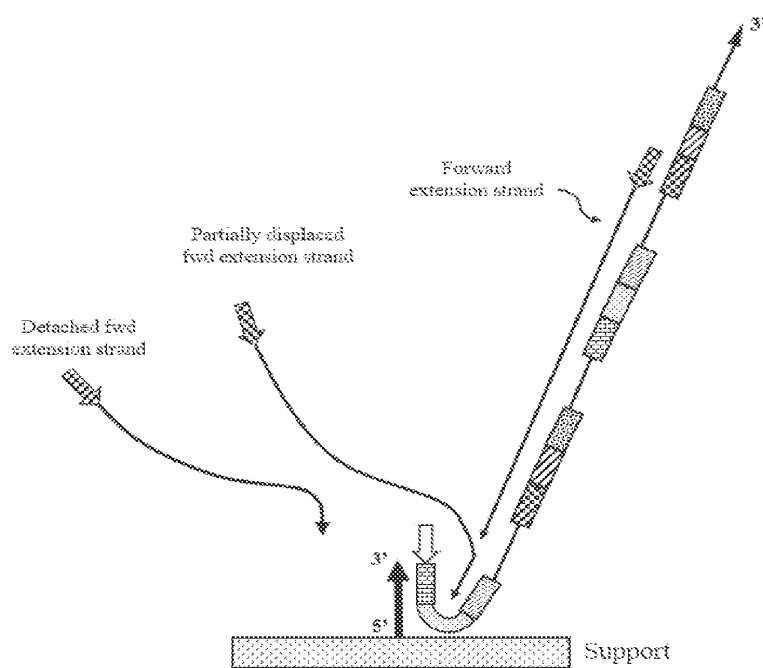


FIG. 52

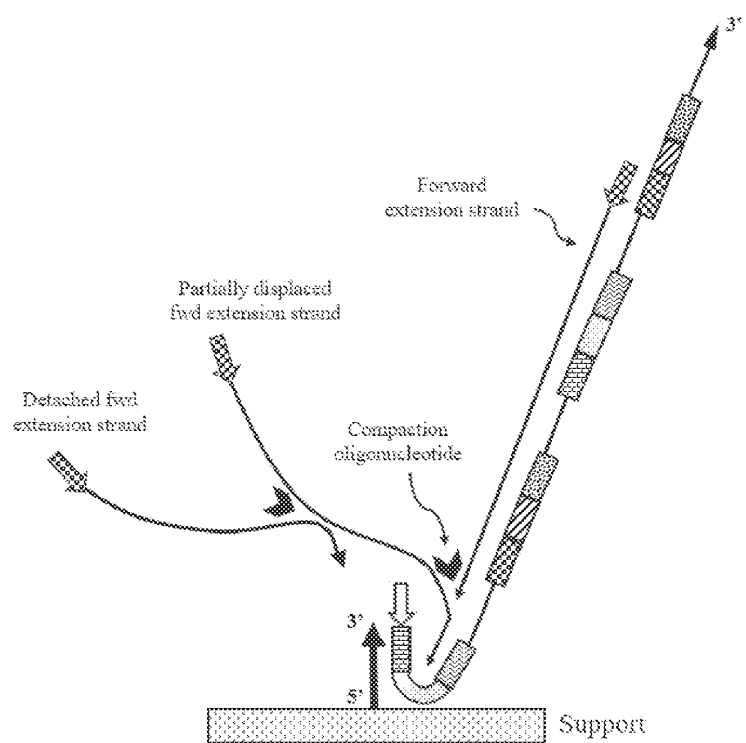


FIG. 53

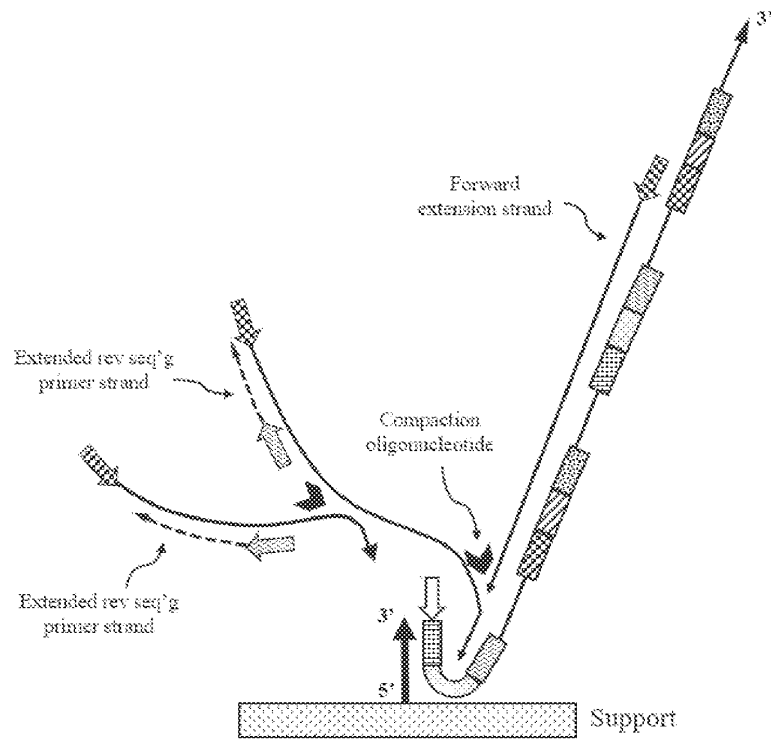
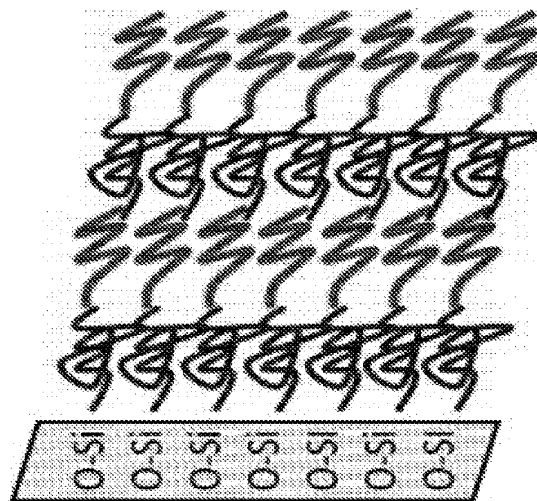


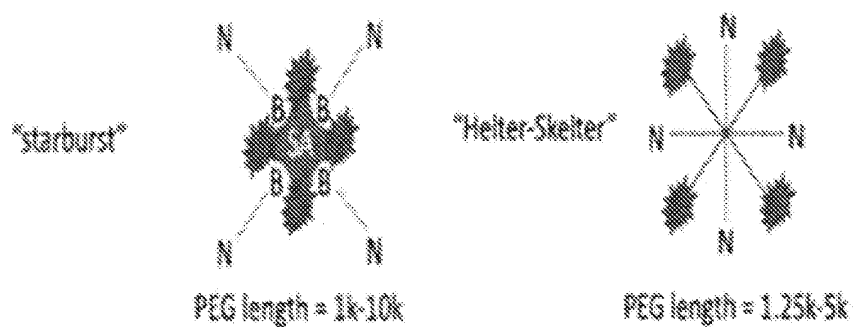
FIG. 54



**Class I**

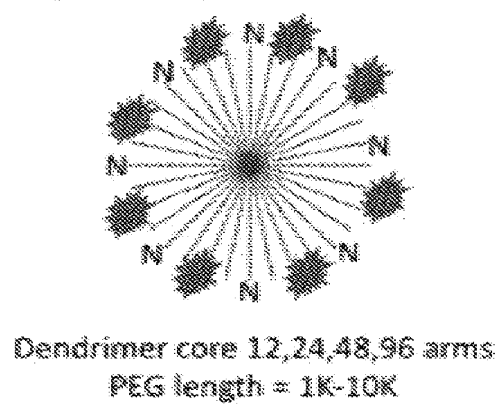
Valency = 0-4

Homogenous population with saturation

**FIG. 55A****Class II**

Valency &gt;4

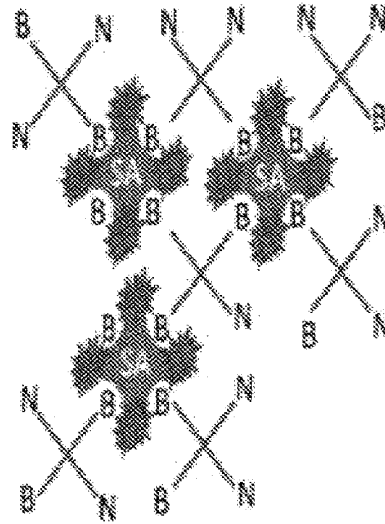
Homogenous population with Saturation



Other cores = dextrans, other polymers

**FIG. 55B**

Class III  
Valency >4  
Distribution of sizes based on construction



8arm PEG-NHS mixed with Biotin-NH<sub>2</sub>  
and dNTP-NH<sub>2</sub> then mixed with labeled  
streptavidin

FIG. 55C

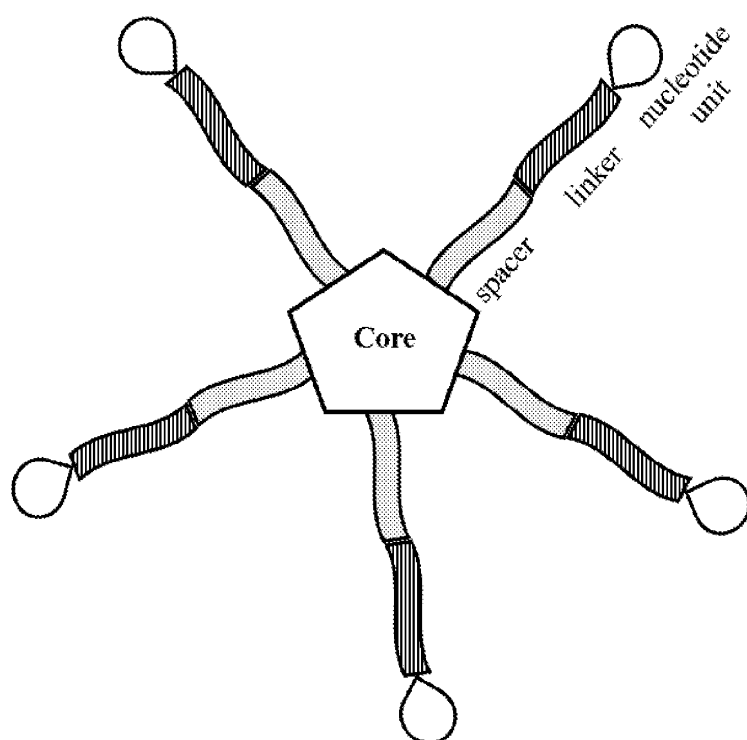


FIG. 56

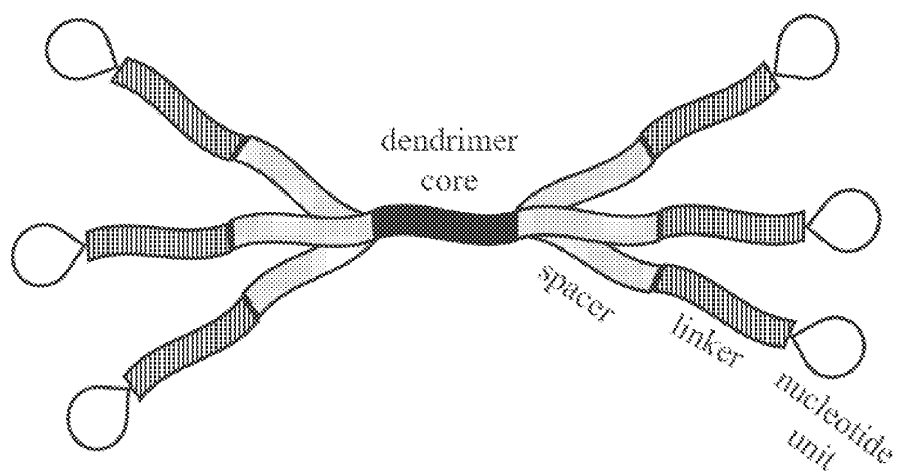


FIG. 57

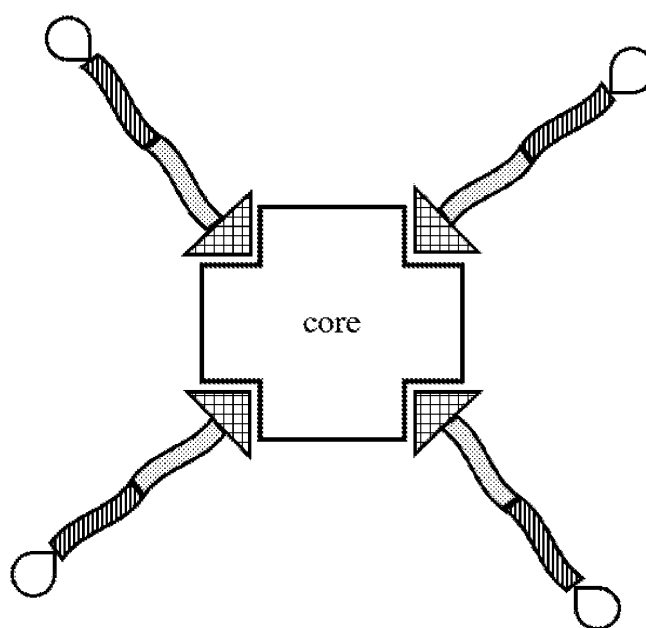


FIG. 58

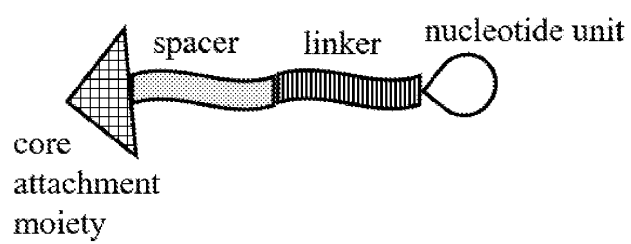
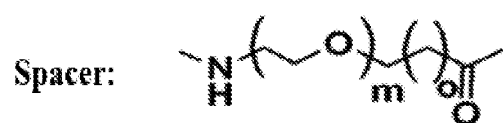
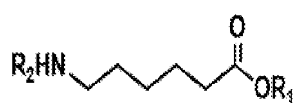


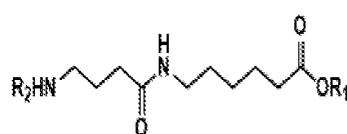
FIG. 59

**Linkers:**

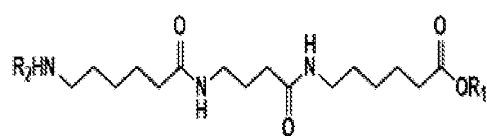
11 atom Linker:



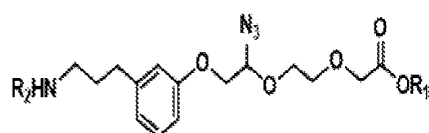
16 atom Linker:



23 atom Linker:



N3 Linker:

**FIG. 60**

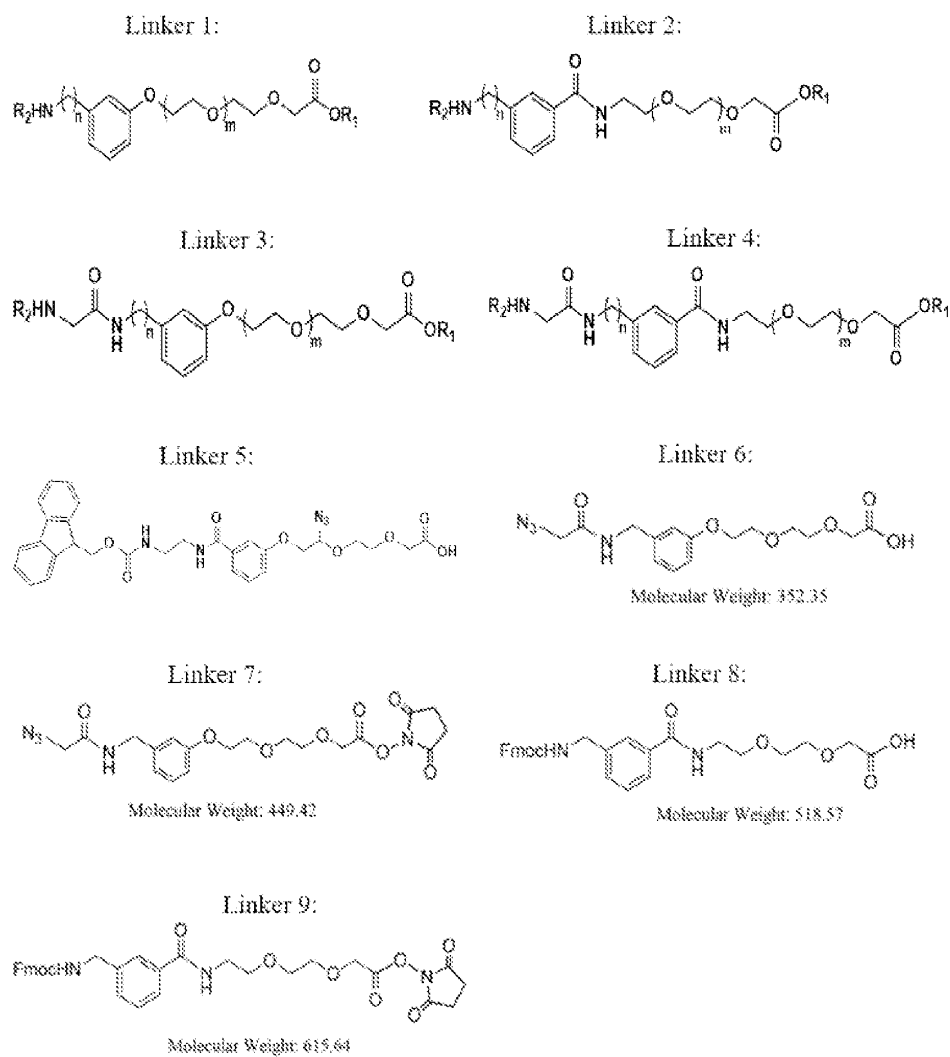
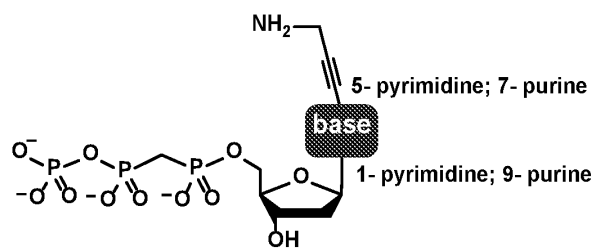
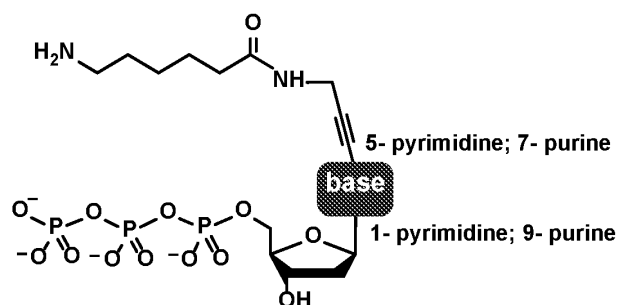
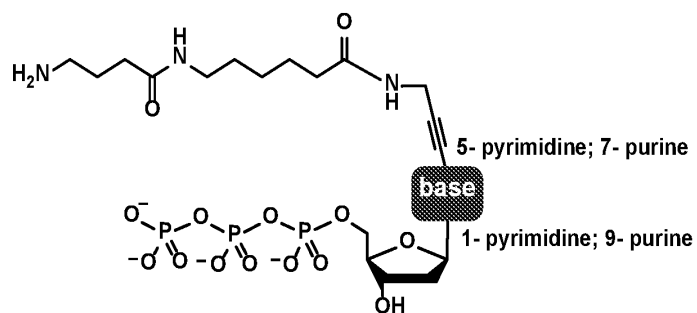


FIG. 61

**dNTP-PA-NH<sub>2</sub>:****dNTP-PA-11 Atom Linker-NH<sub>2</sub>:****dNTP-PA-16 Atom Linker-NH<sub>2</sub>:****FIG. 62A**

Chemical structure of a nucleoside triphosphate (NTP) derivative. The structure shows a sugar (ribose or deoxyribose) with a phosphate group (labeled 1- pyrimidine; 9- purine) and a base (labeled 5- pyrimidine; 7- purine). The base is connected to a long chain of amide bonds (H<sub>2</sub>N-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-C(=O)-NH-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-C(=O)-NH-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-C(=O)-NH-).

Chemical structure of a nucleotide derivative. The structure shows a 5' phosphate group, a sugar (1- pyrimidine; 9- purine), a base (5- pyrimidine; 7- purine), and a side chain with a benzyl group and a terminal amine group.

NCC1=CC=C(C=C1)OCCOCCOCCOCC(=O)NCC#CC2=NC=CC=C2

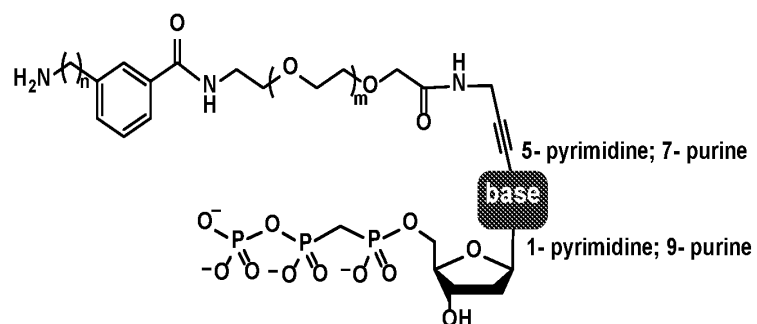
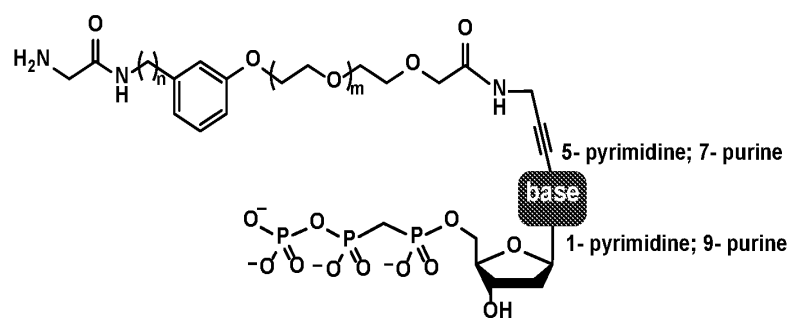
5- pyrimidine; 7- purine

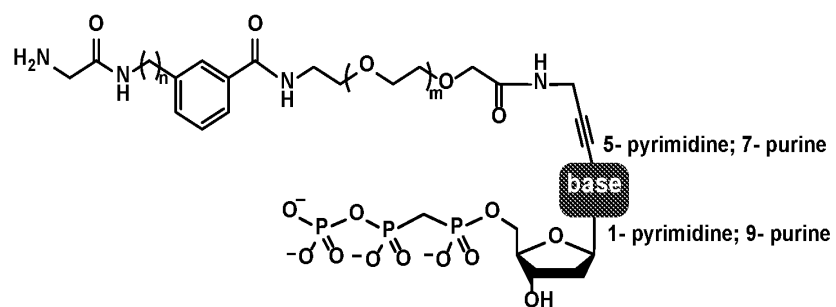
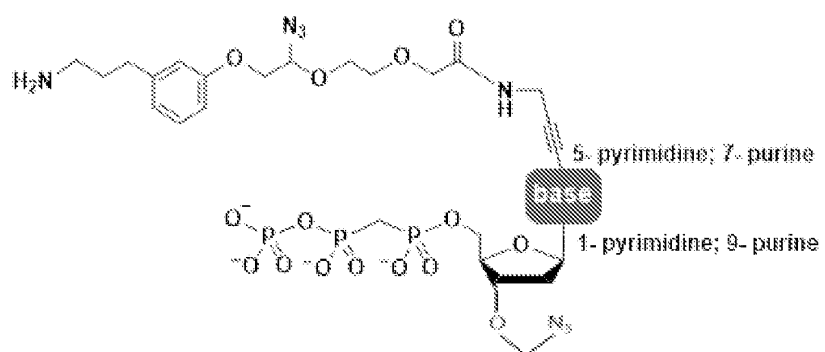
base

CC1=CC=C(C=C1)OCCOCCOCCOCC(=O)NCC#CC2=NC=CC=C2

1- pyrimidine; 9- purine

**FIG. 62B**

**dNTP-PA-Linker 2-NH<sub>2</sub>:****dNTP-PA-Linker 3-NH<sub>2</sub>:****FIG. 62C**

**dNTP-PA-Linker 4-NH<sub>2</sub>:****dNTP-PA-N3 Linker-NH<sub>2</sub>:****FIG. 62D**

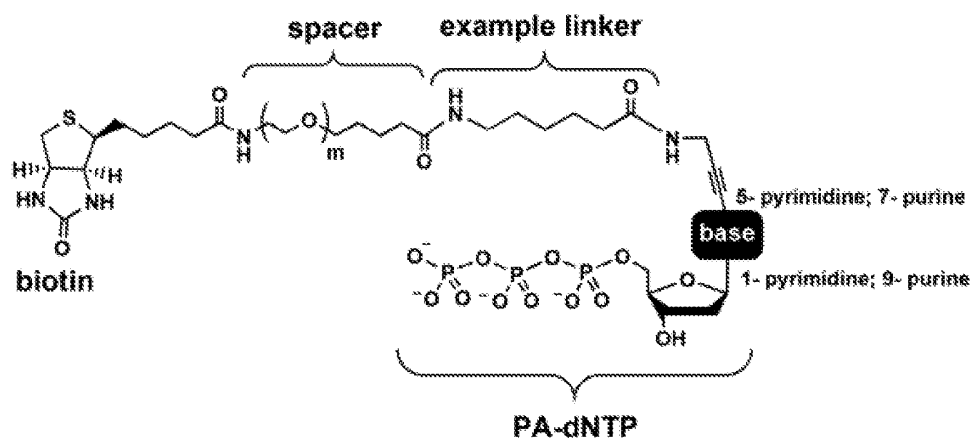


FIG. 63

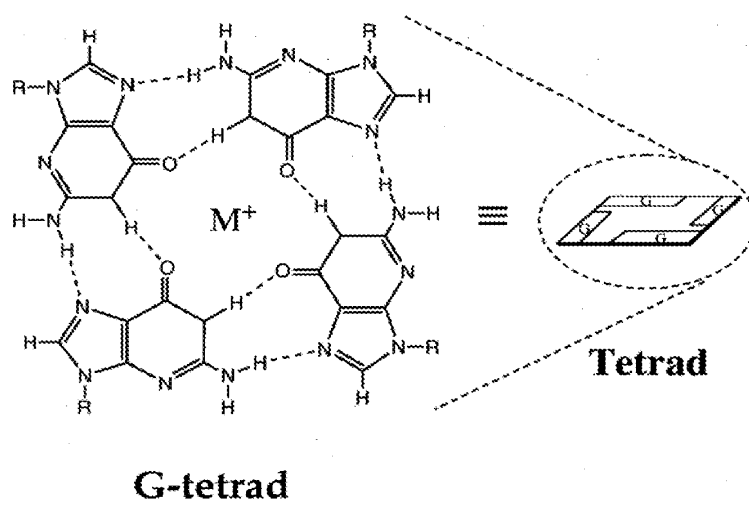


FIG. 64

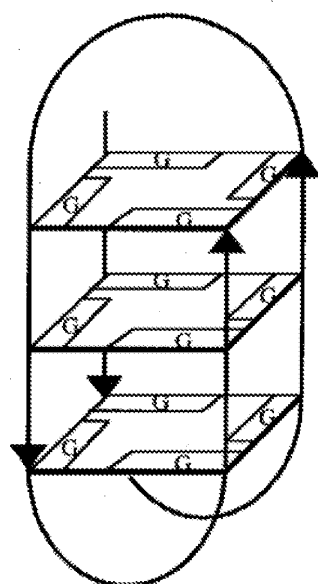


FIG. 65

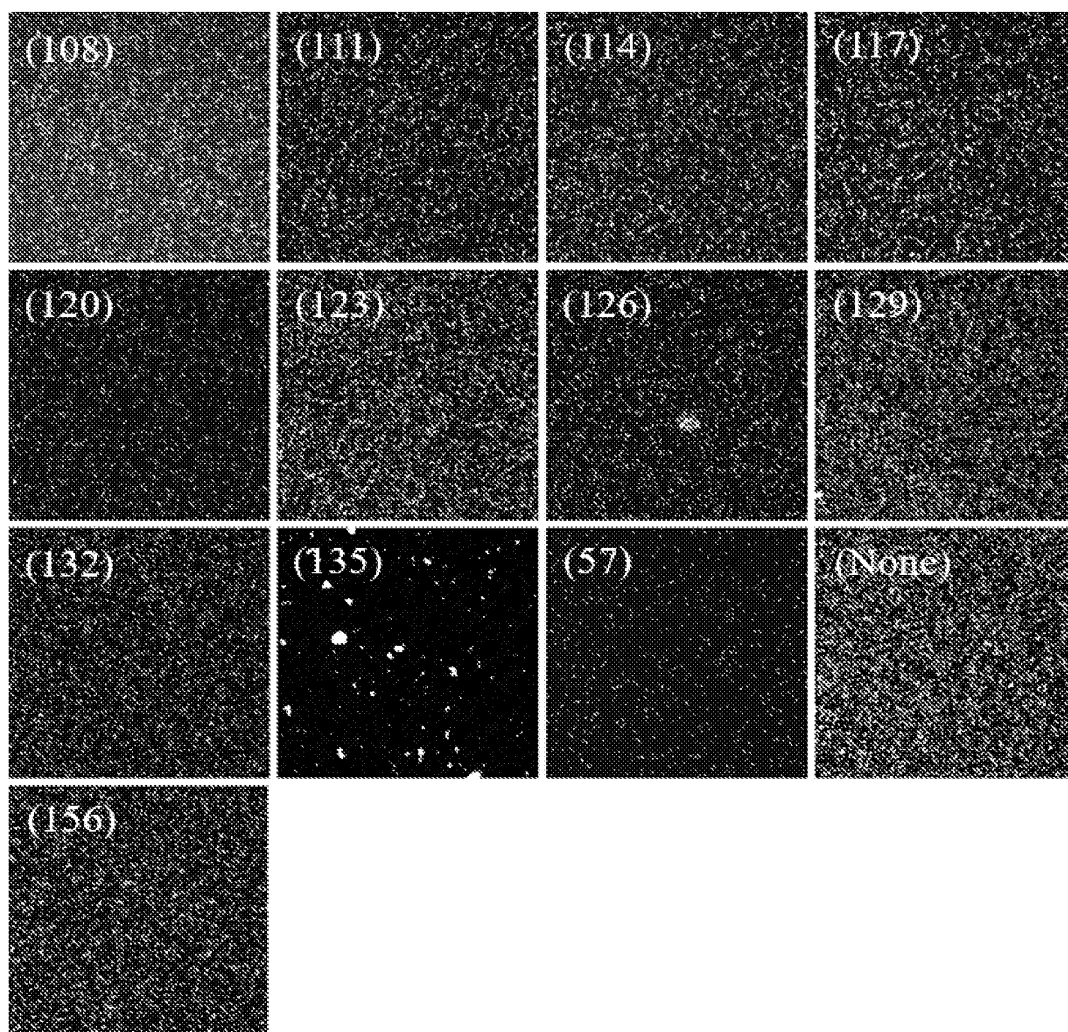


FIG. 66

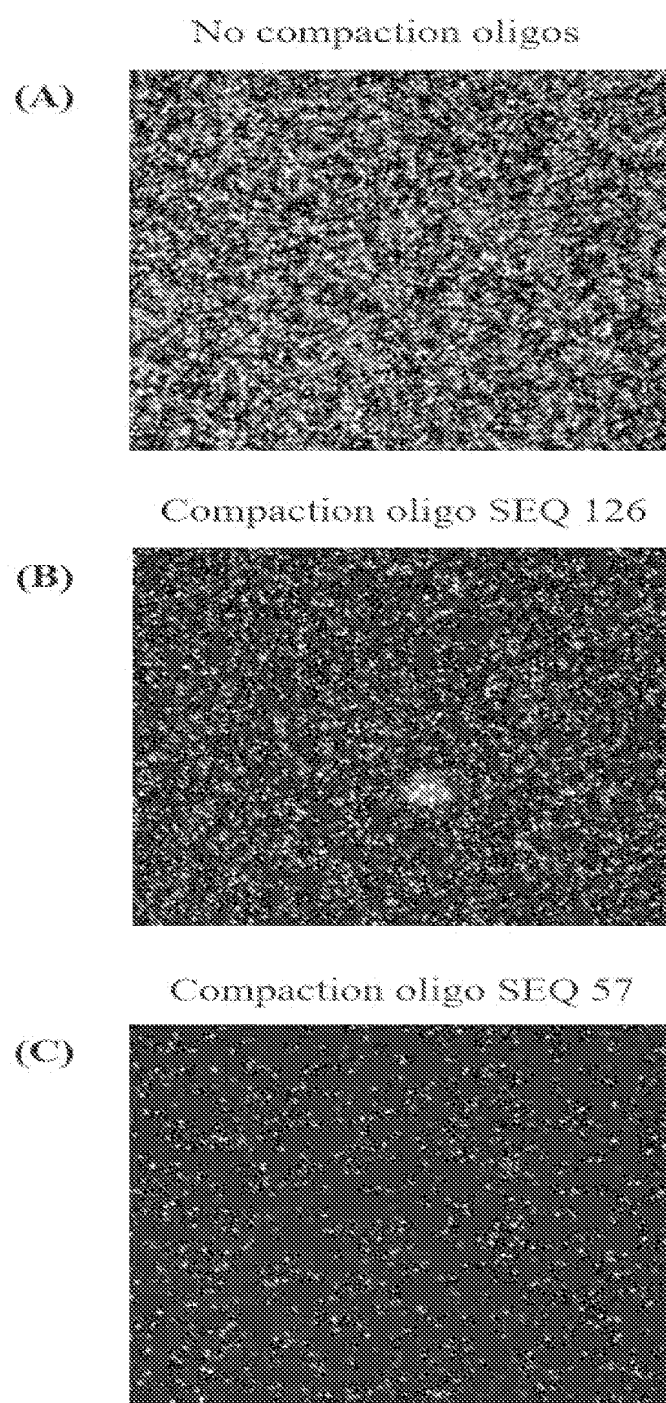


FIG. 67

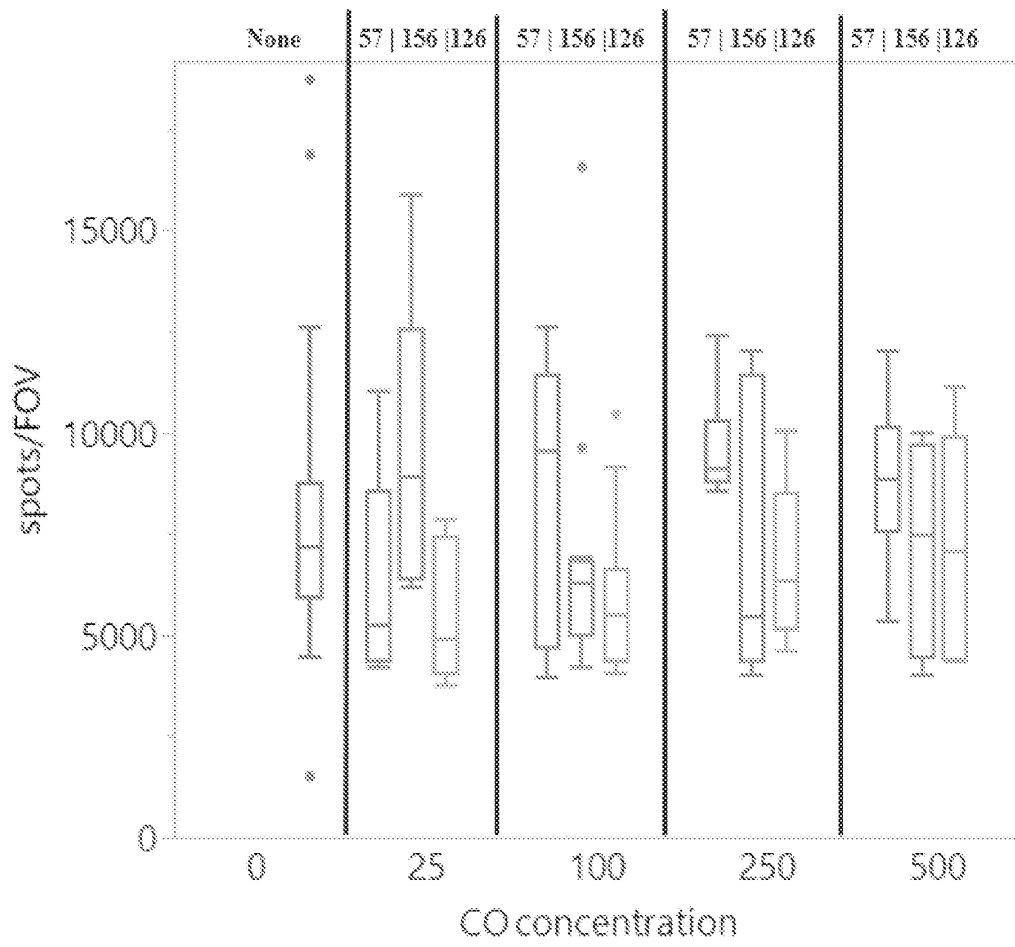


FIG. 68

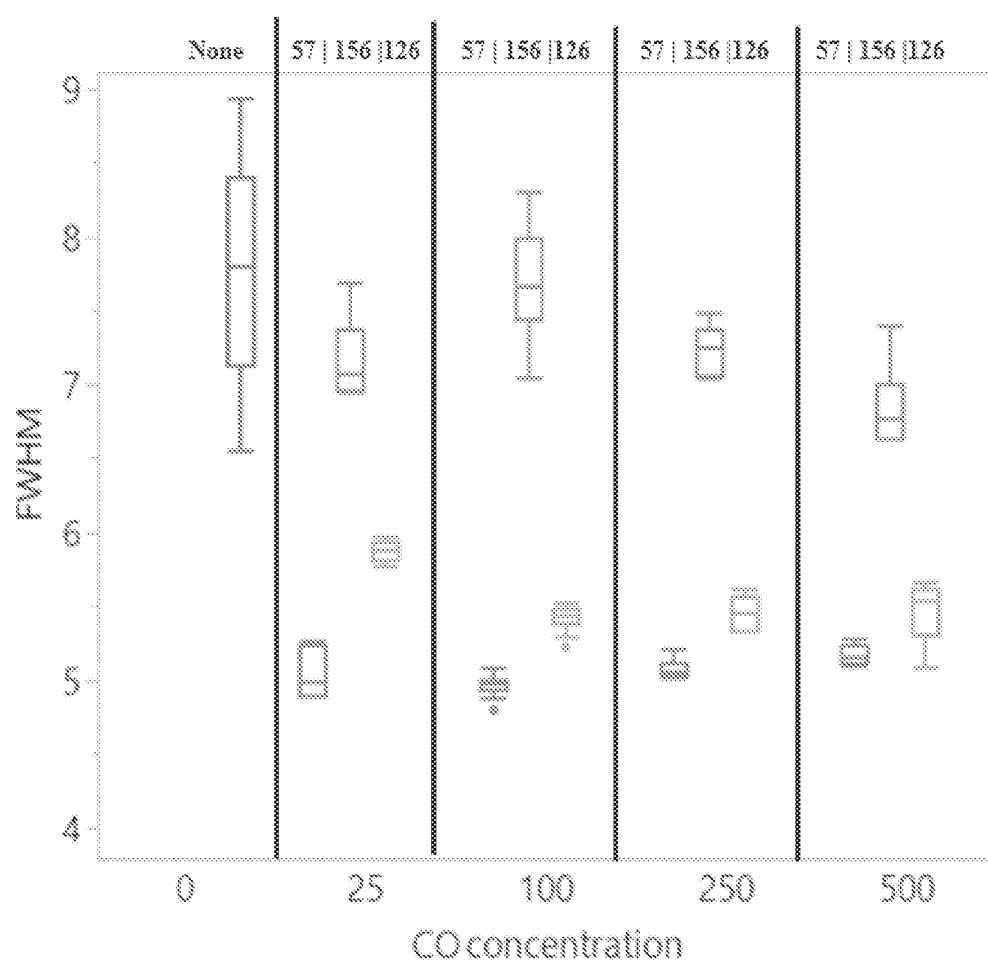


FIG. 69

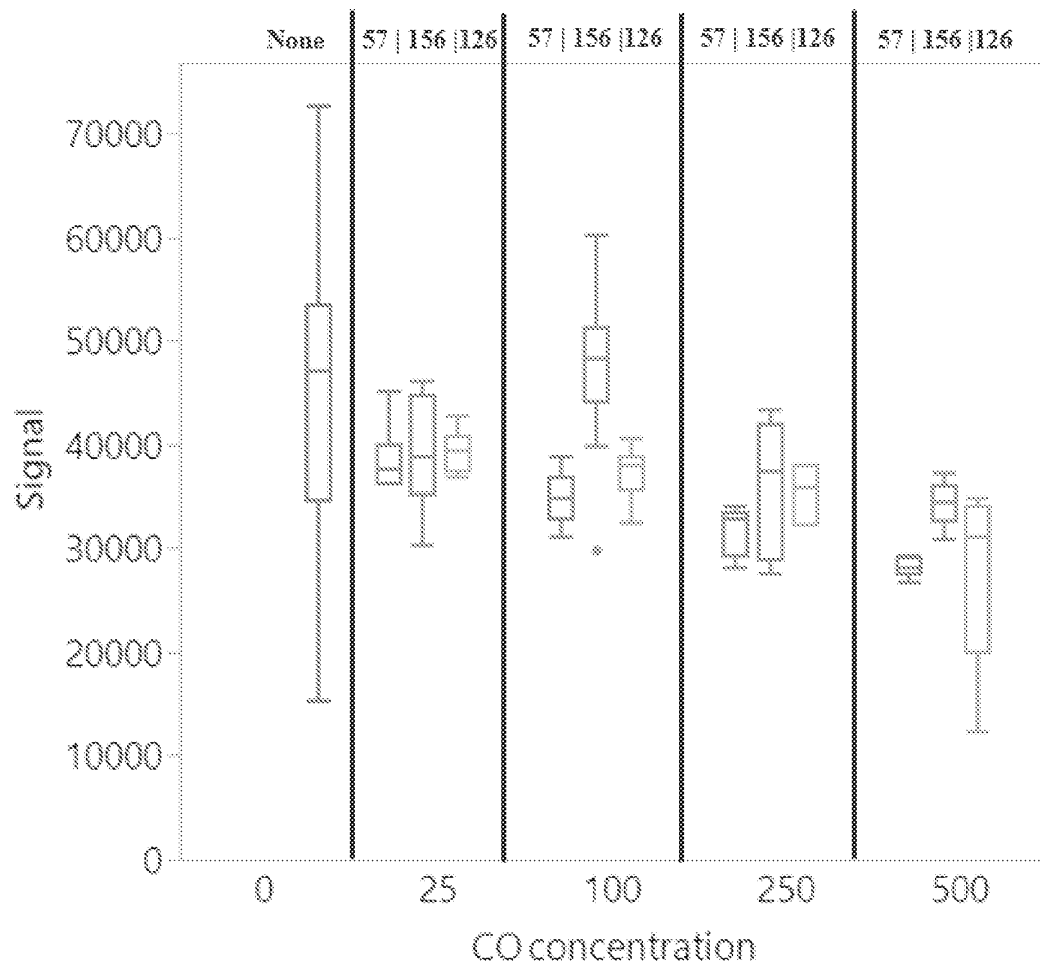


FIG. 70

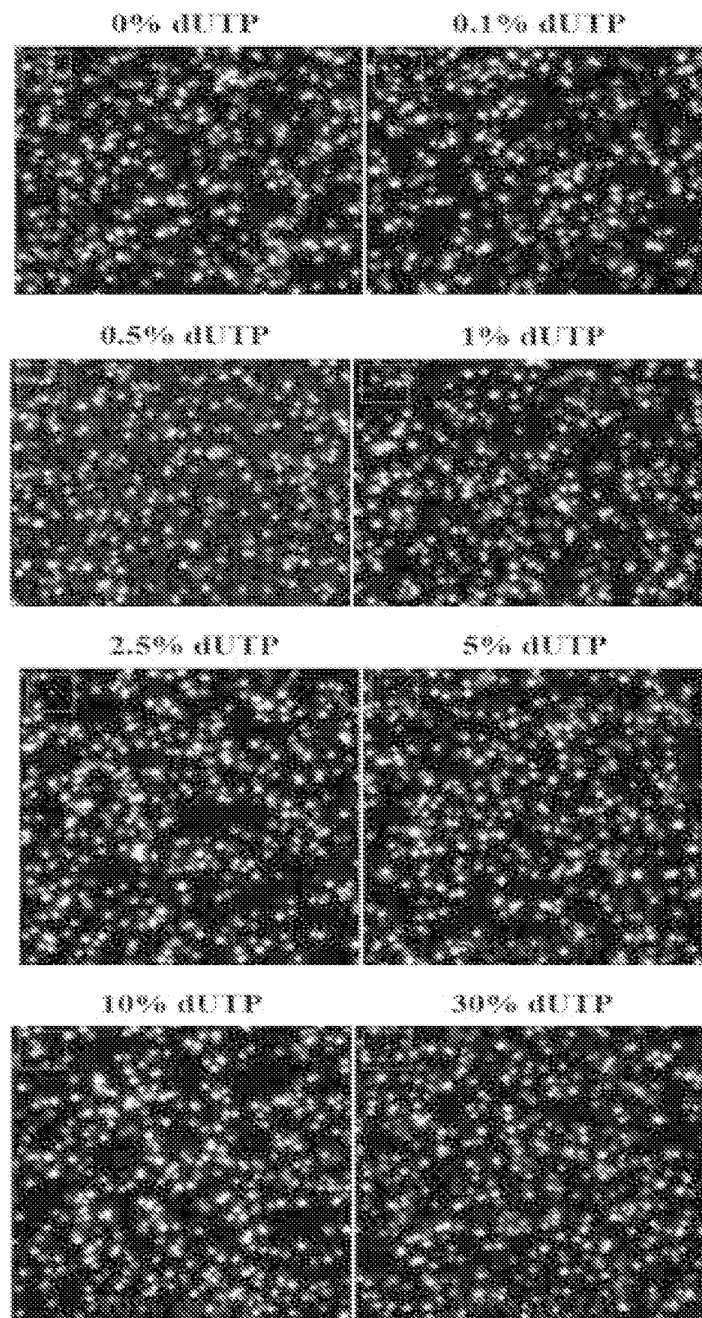


FIG. 71

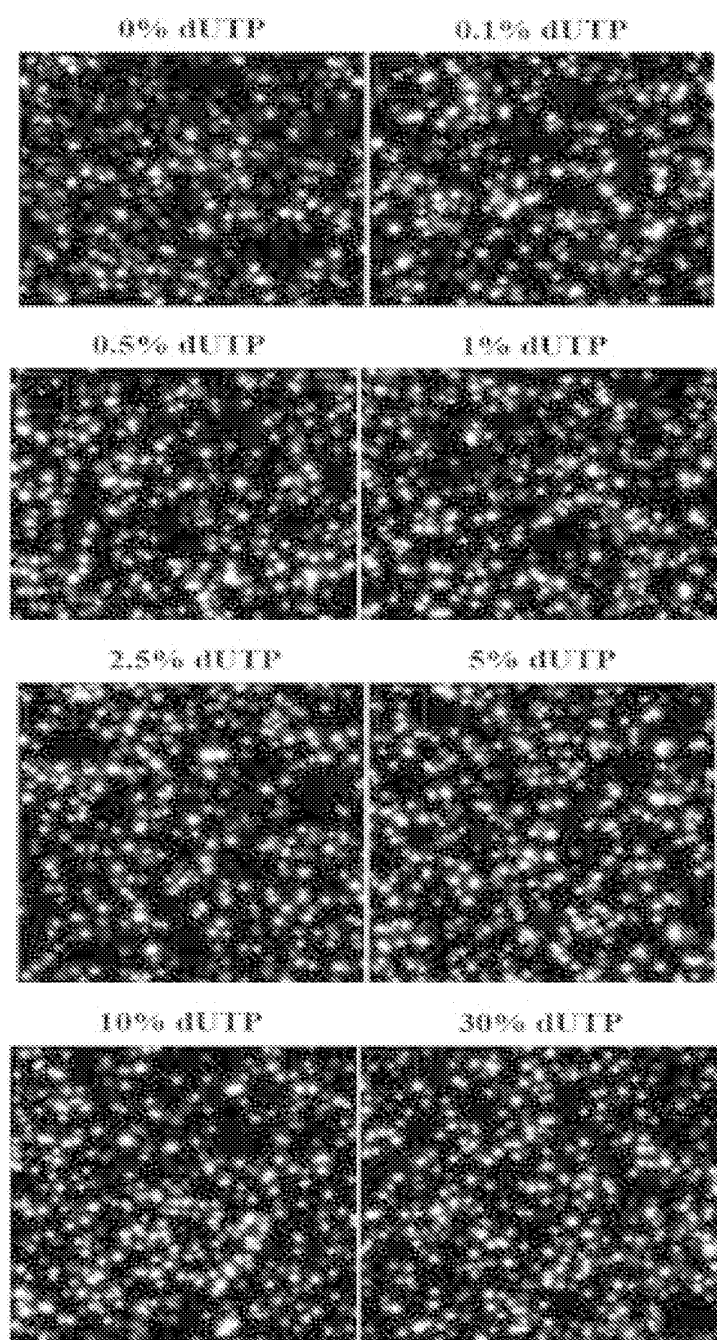
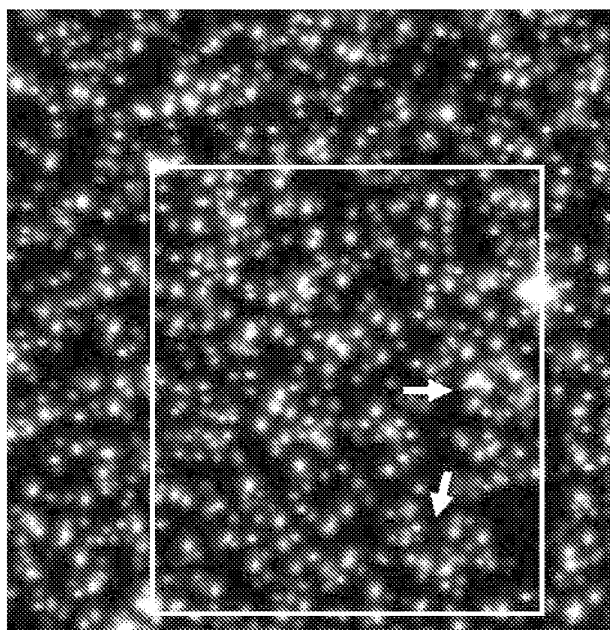


FIG. 72

0% dUTP R1



0% dUTP R2

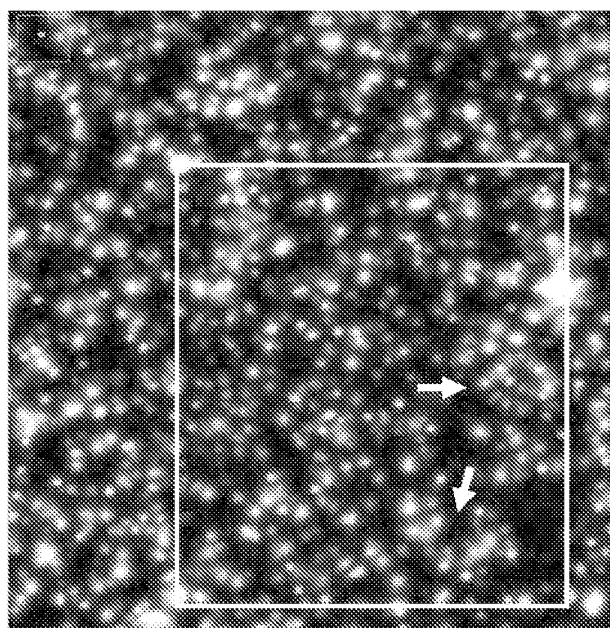


FIG. 73