

FIG. 1A

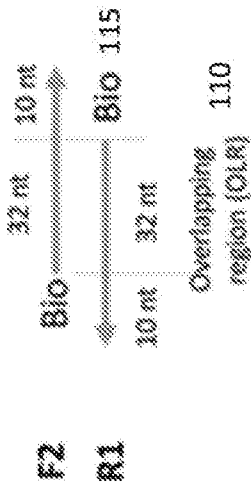


FIG. 1B

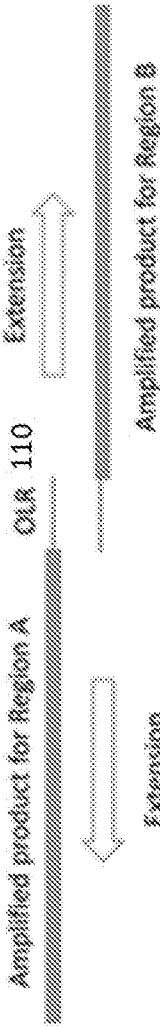


FIG. 1C



FIG. 1D

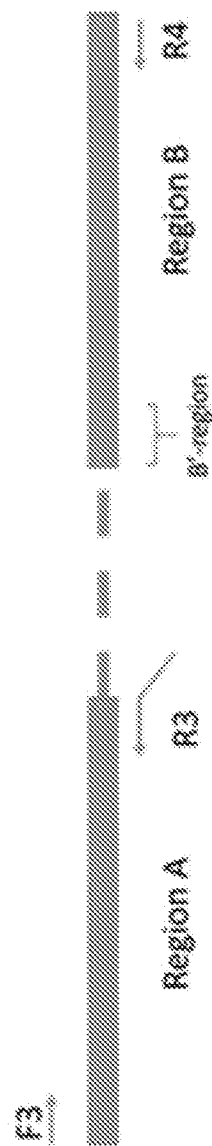


FIG. 2A

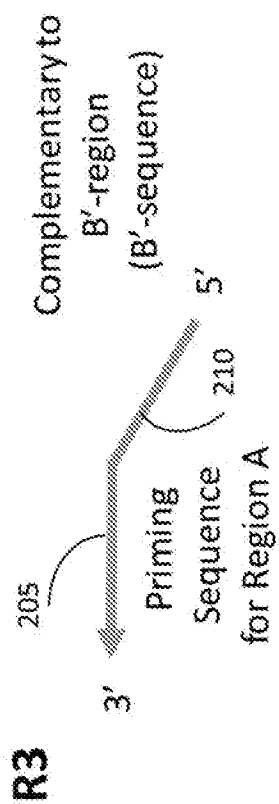


FIG. 2B

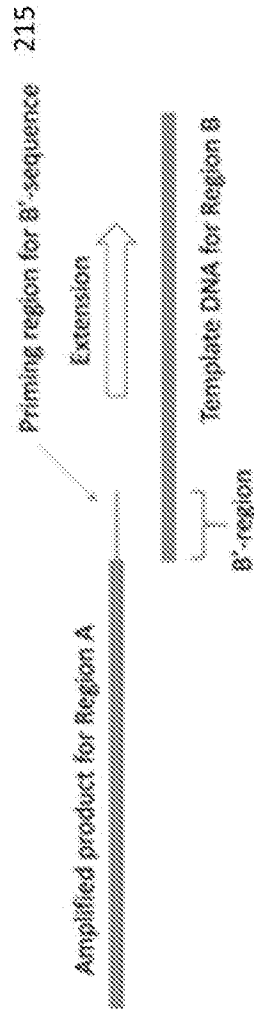
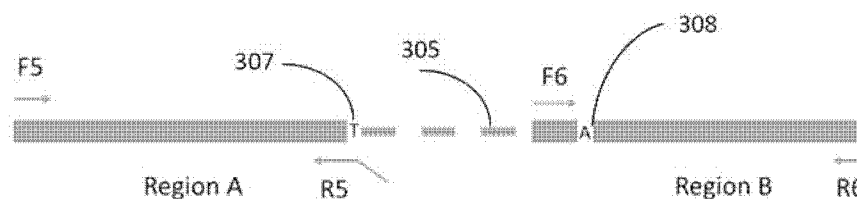
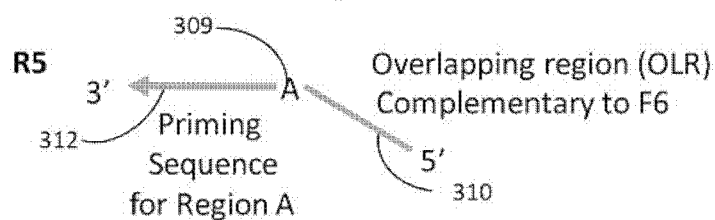
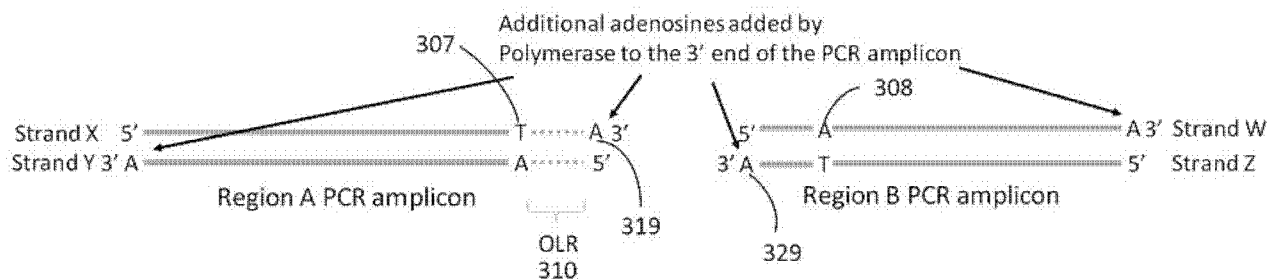
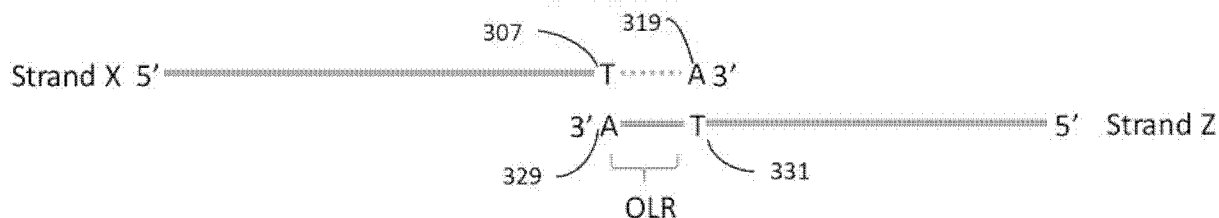
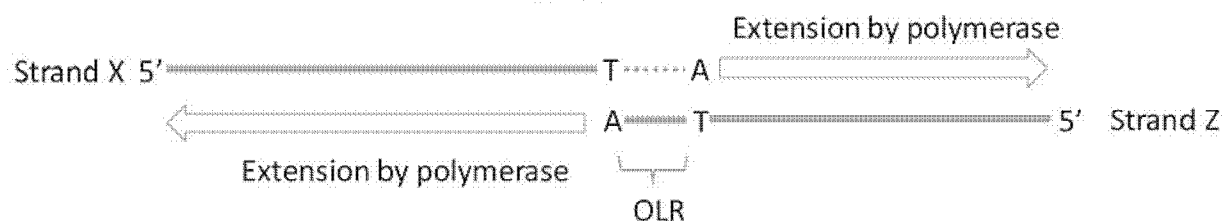
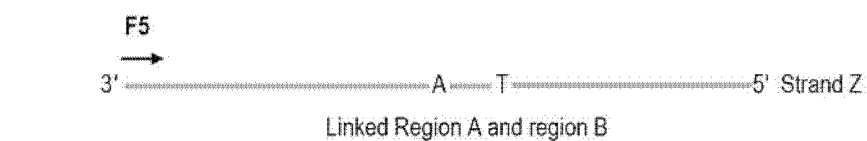


FIG. 2C

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**FIG. 3A****FIG. 3B****FIG. 3C****FIG. 3D****FIG. 3E****FIG. 3F**

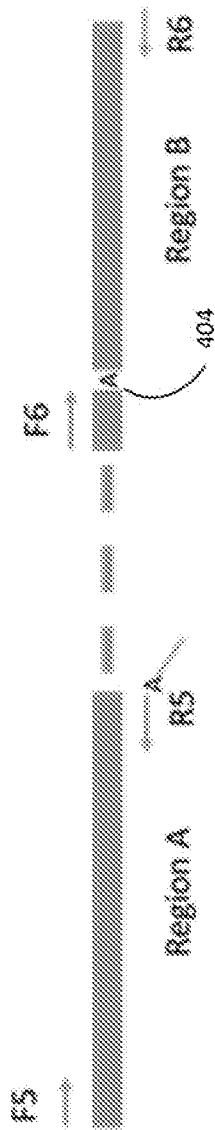


FIG. 4A

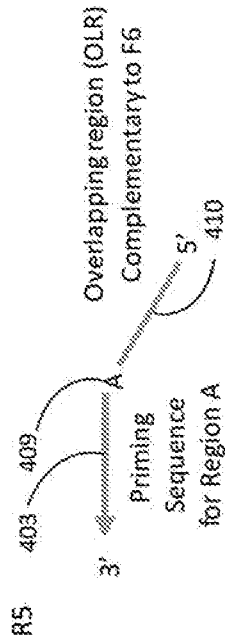


FIG. 4B

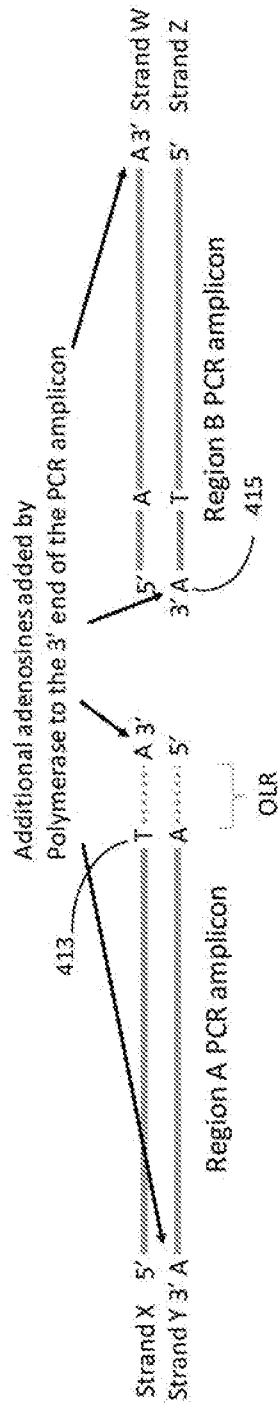


FIG. 4C

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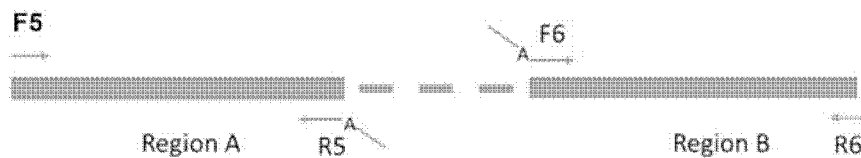


FIG. 5A

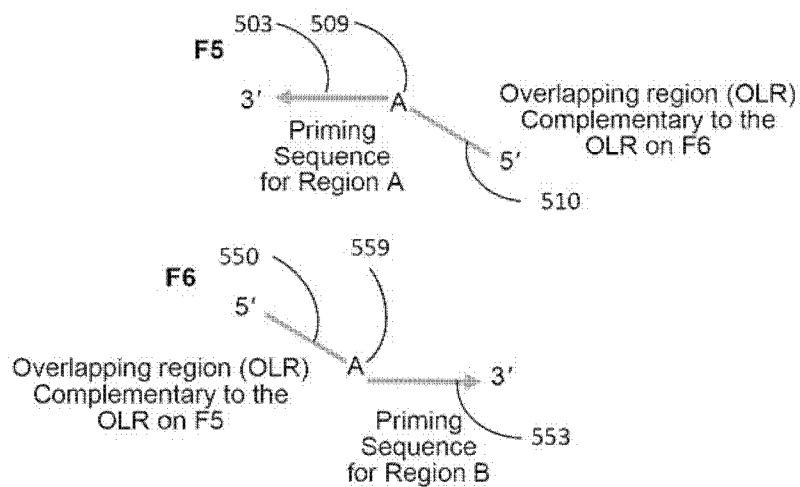


FIG. 5B

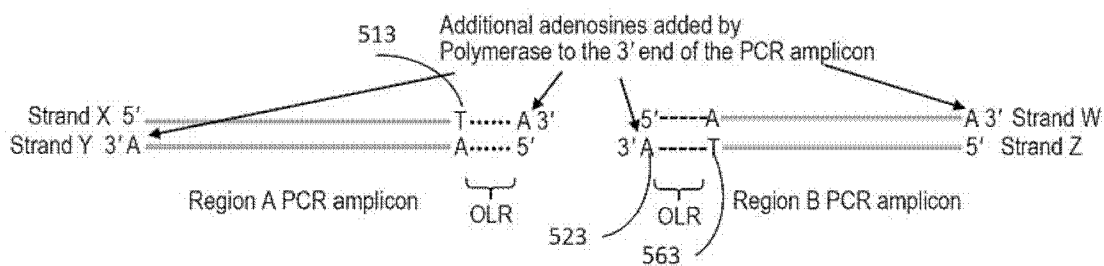


FIG. 5C

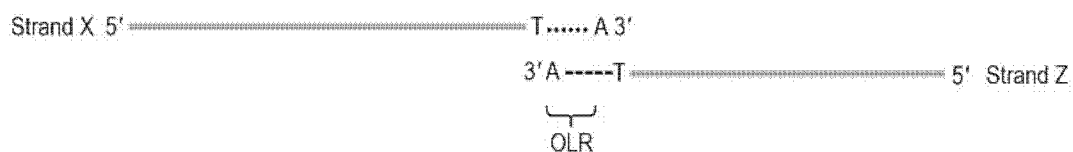


FIG. 5D

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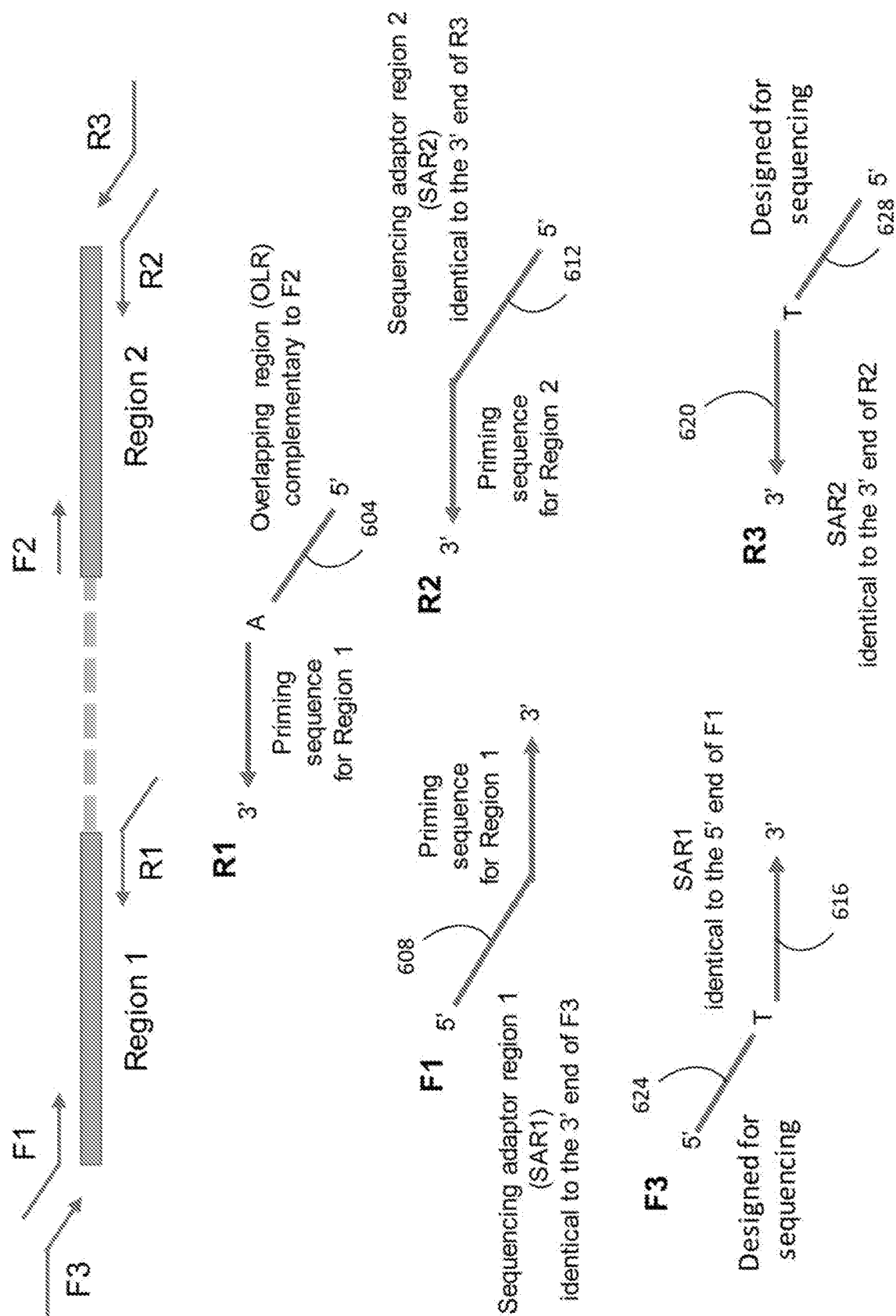


Fig. 6

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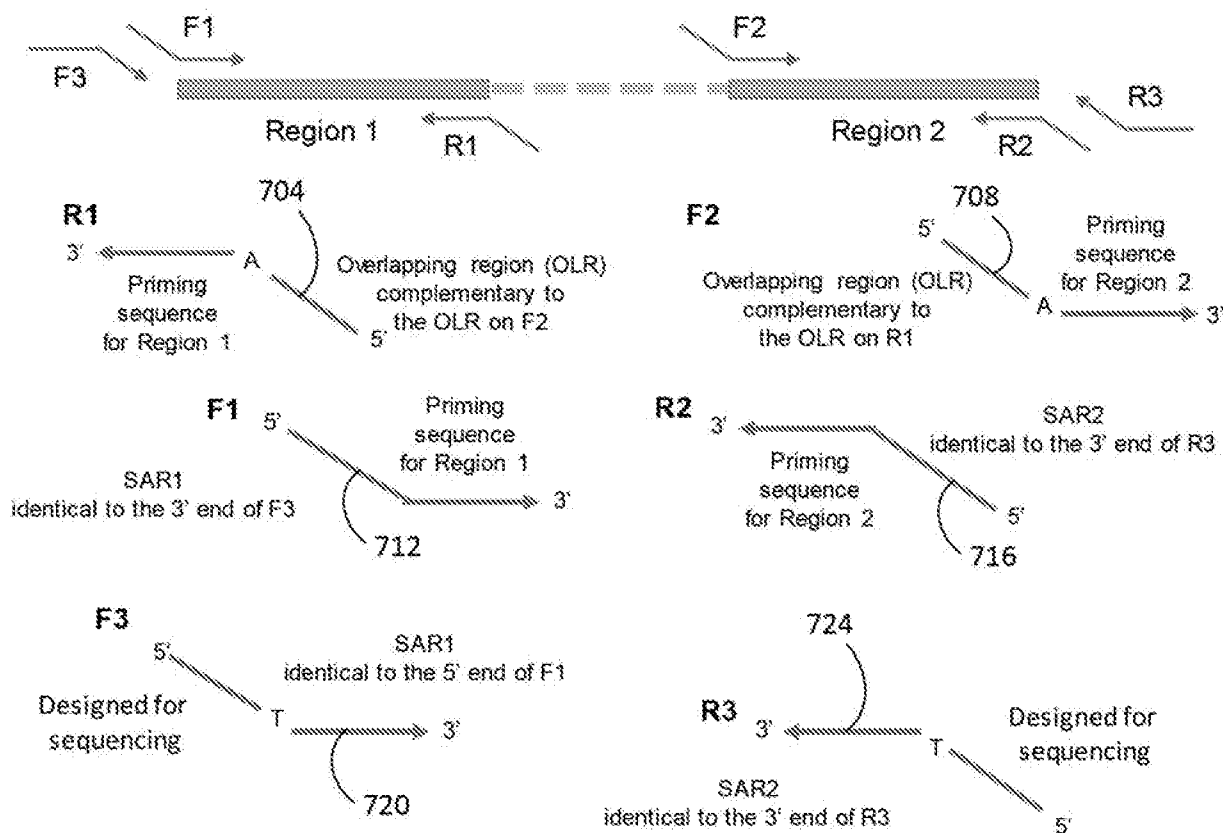


FIG. 7A



FIG. 7B

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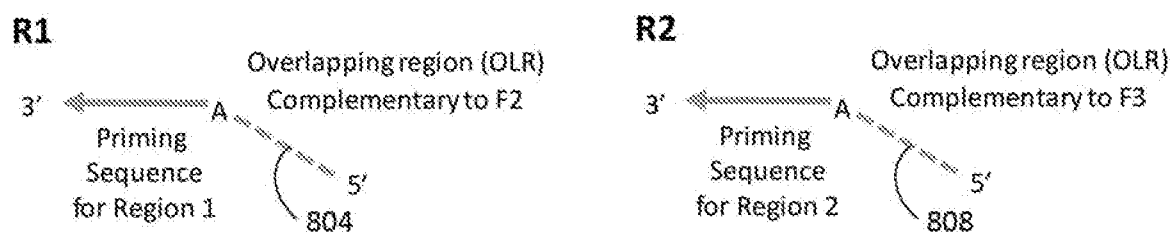
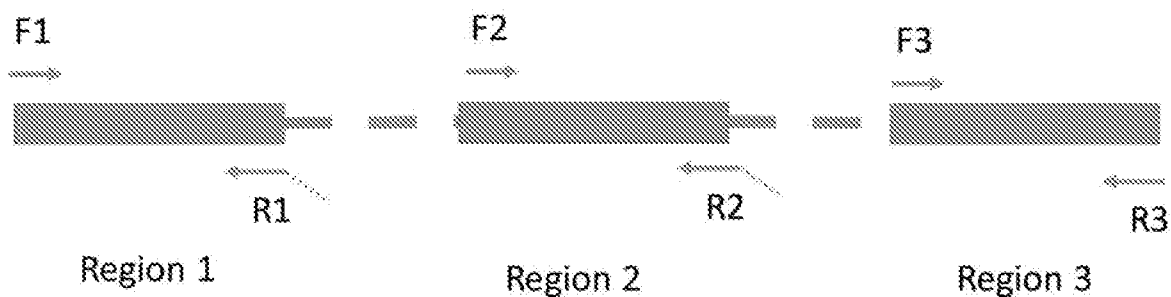


FIG. 8A

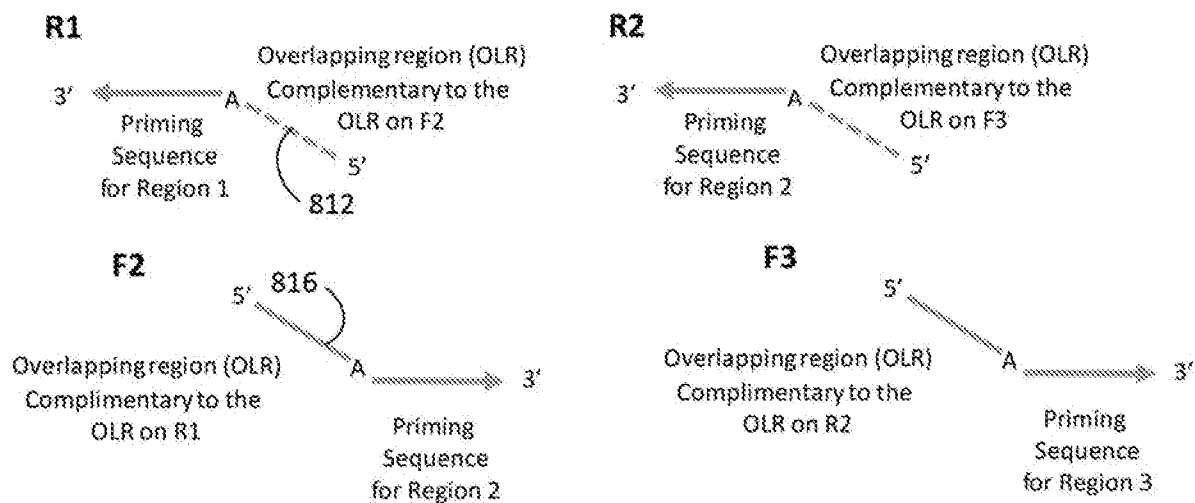
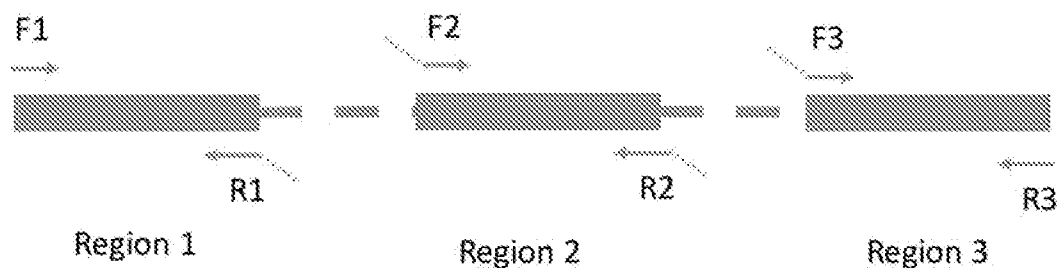


FIG. 8B

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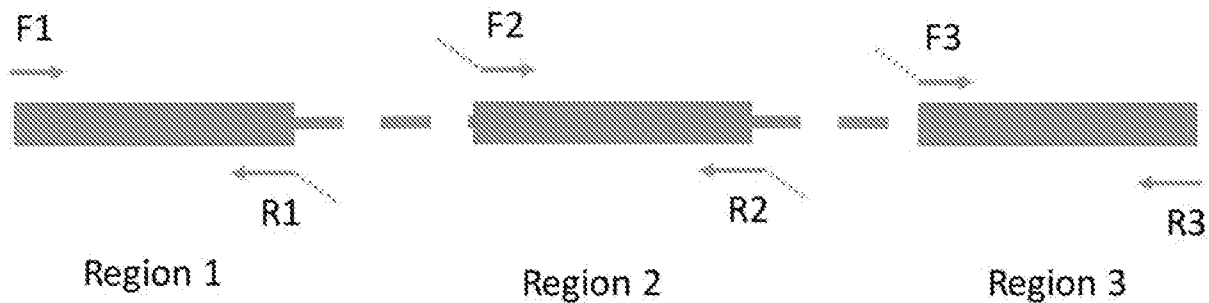


FIG. 9A

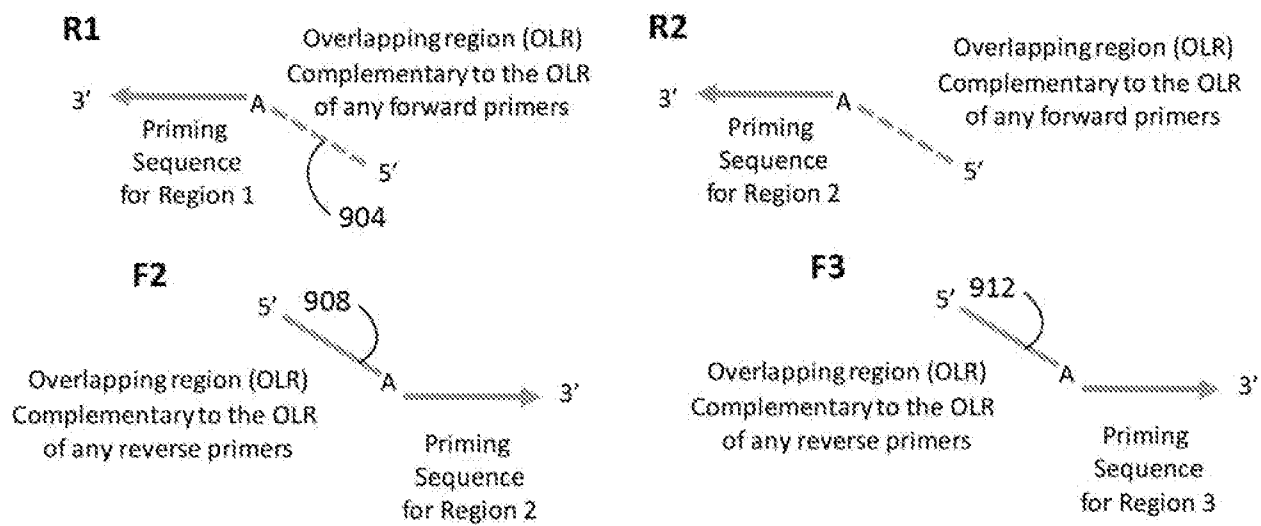


FIG. 9B

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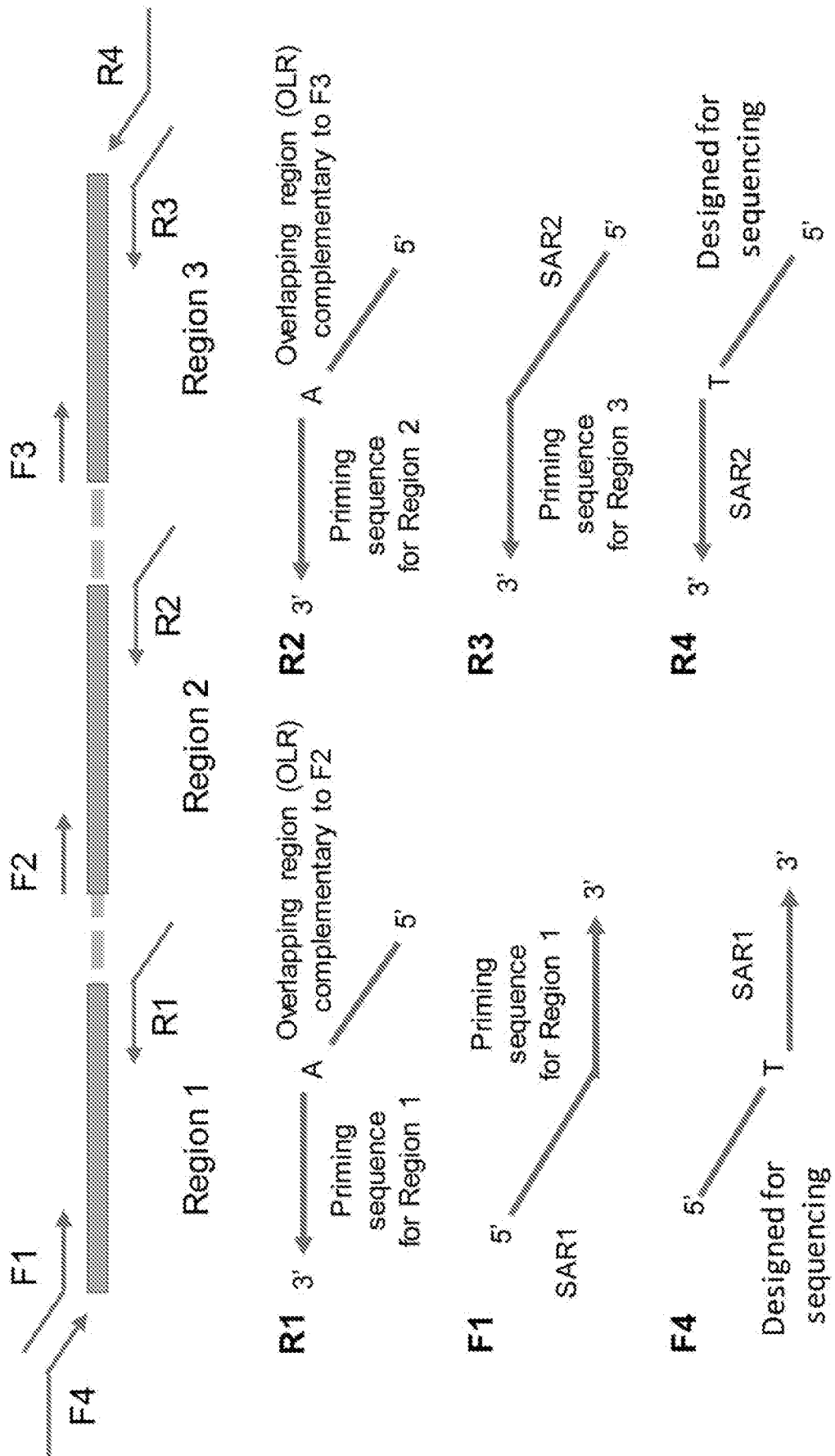


FIG. 10A

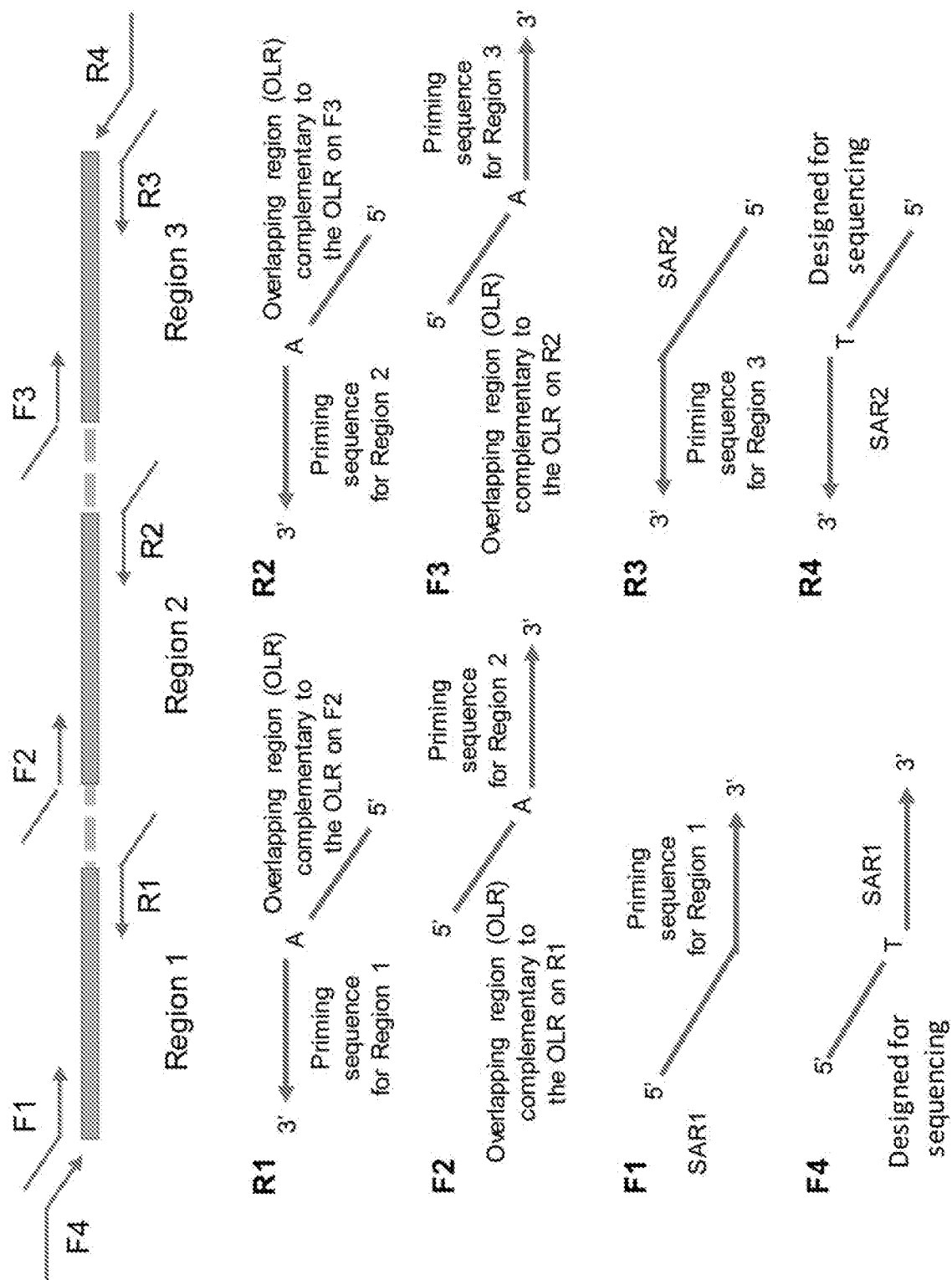


FIG. 10B

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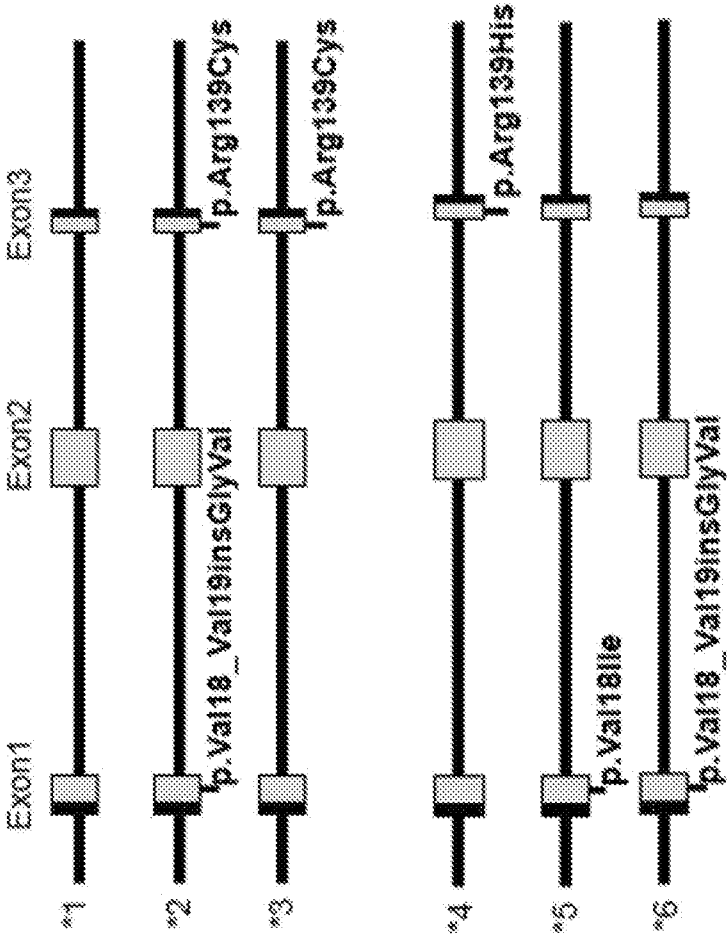


FIG. 11

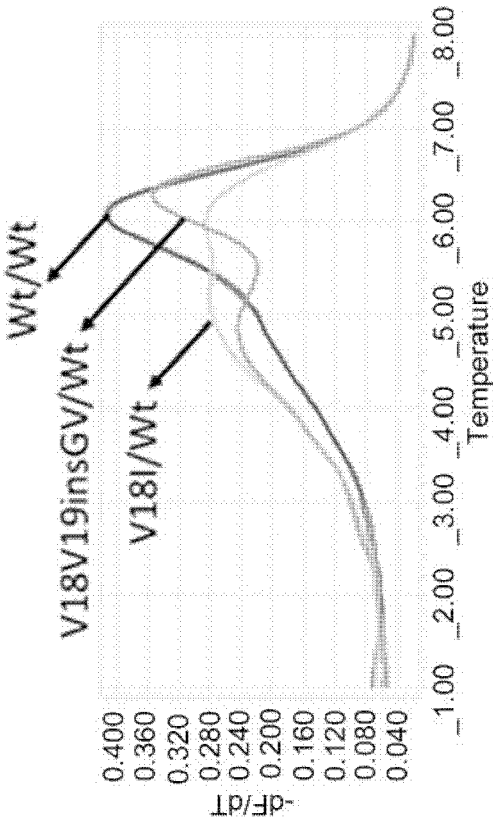


FIG. 12A

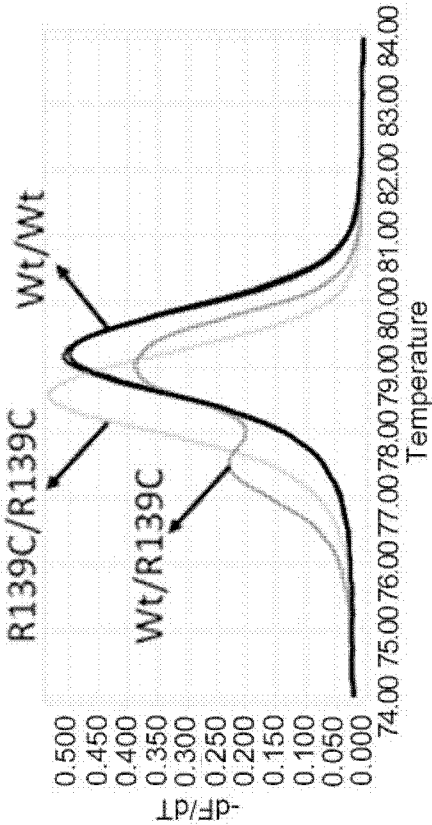
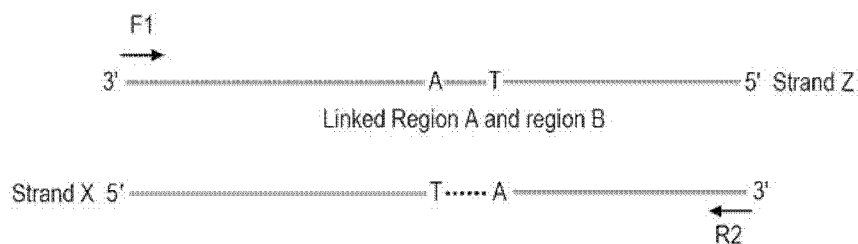
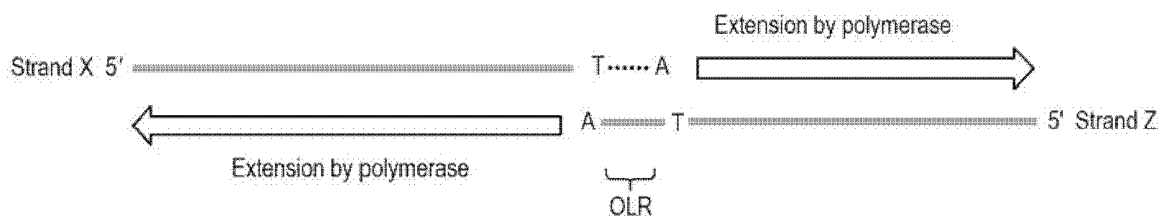
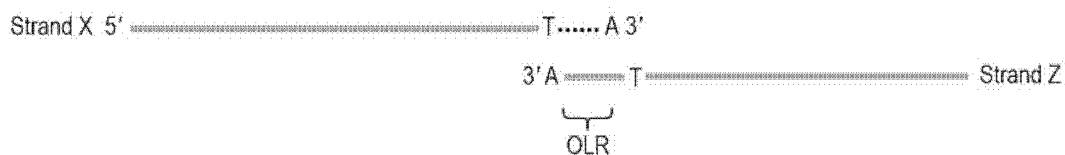
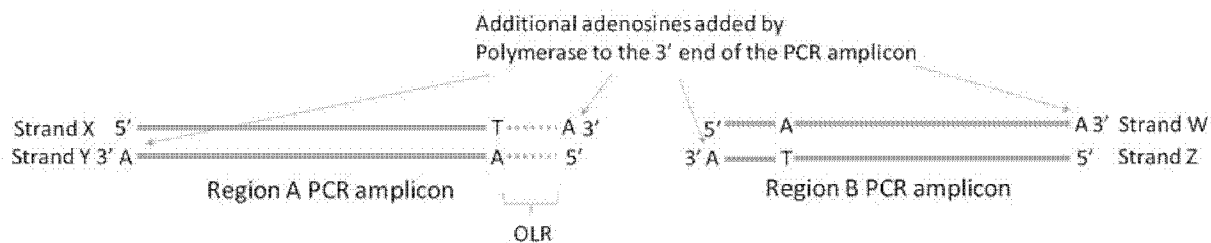
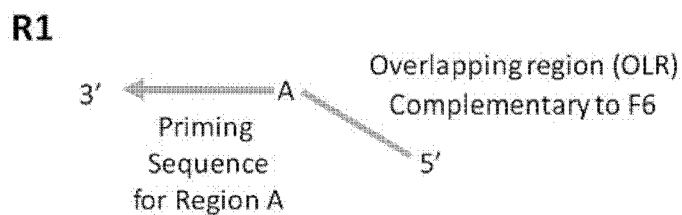
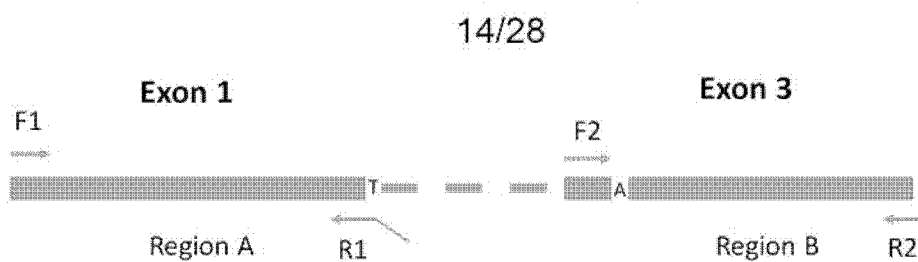
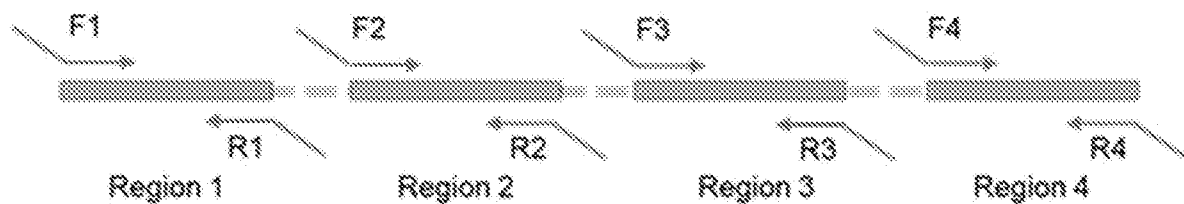
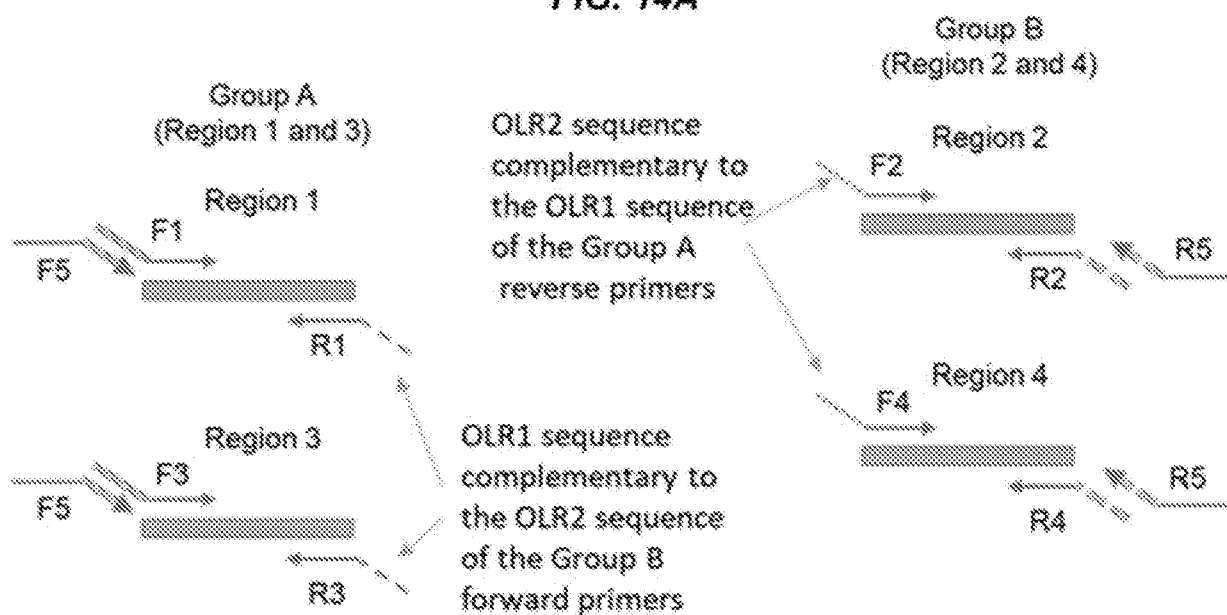
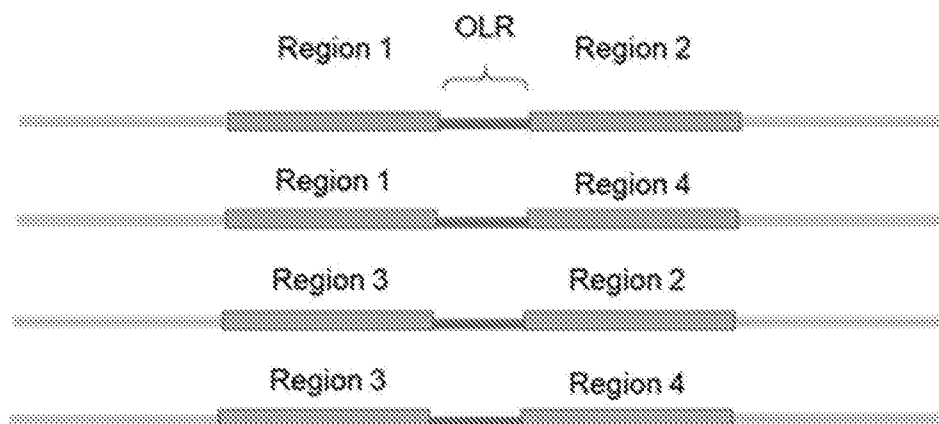


FIG. 12B



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**FIG. 14A****FIG. 14B****FIG. 14C**

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**Group A**

Region 1
Region 4
Region 7

•
•
•

Group B

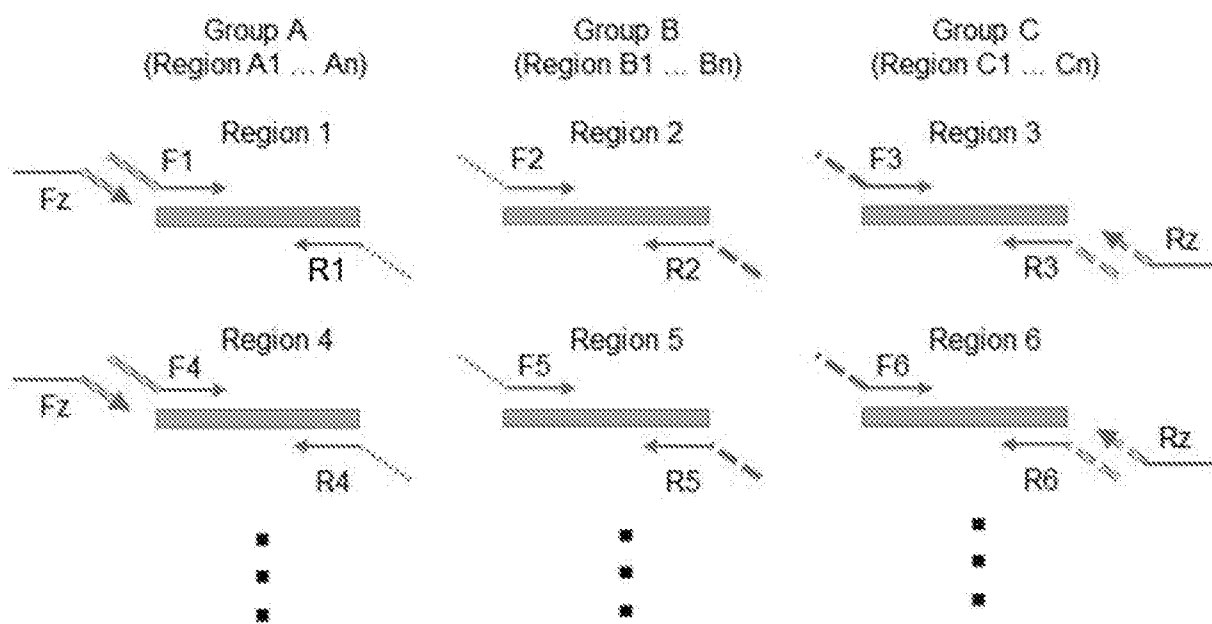
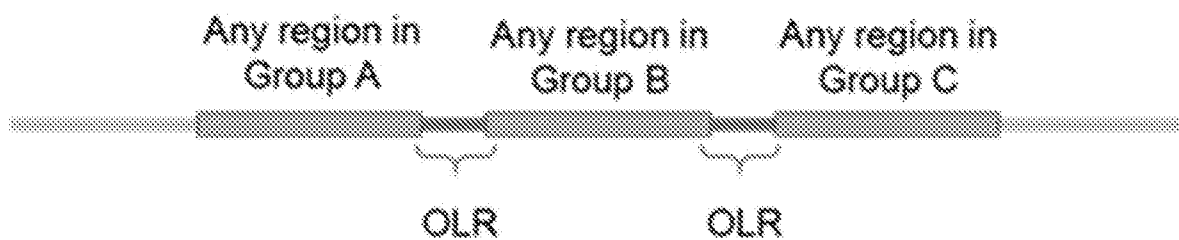
Region 2
Region 5
Region 8

•
•
•

Group C

Region 3
Region 6
Region 9

•
•
•

FIG. 15A**FIG. 15B****FIG. 15C**

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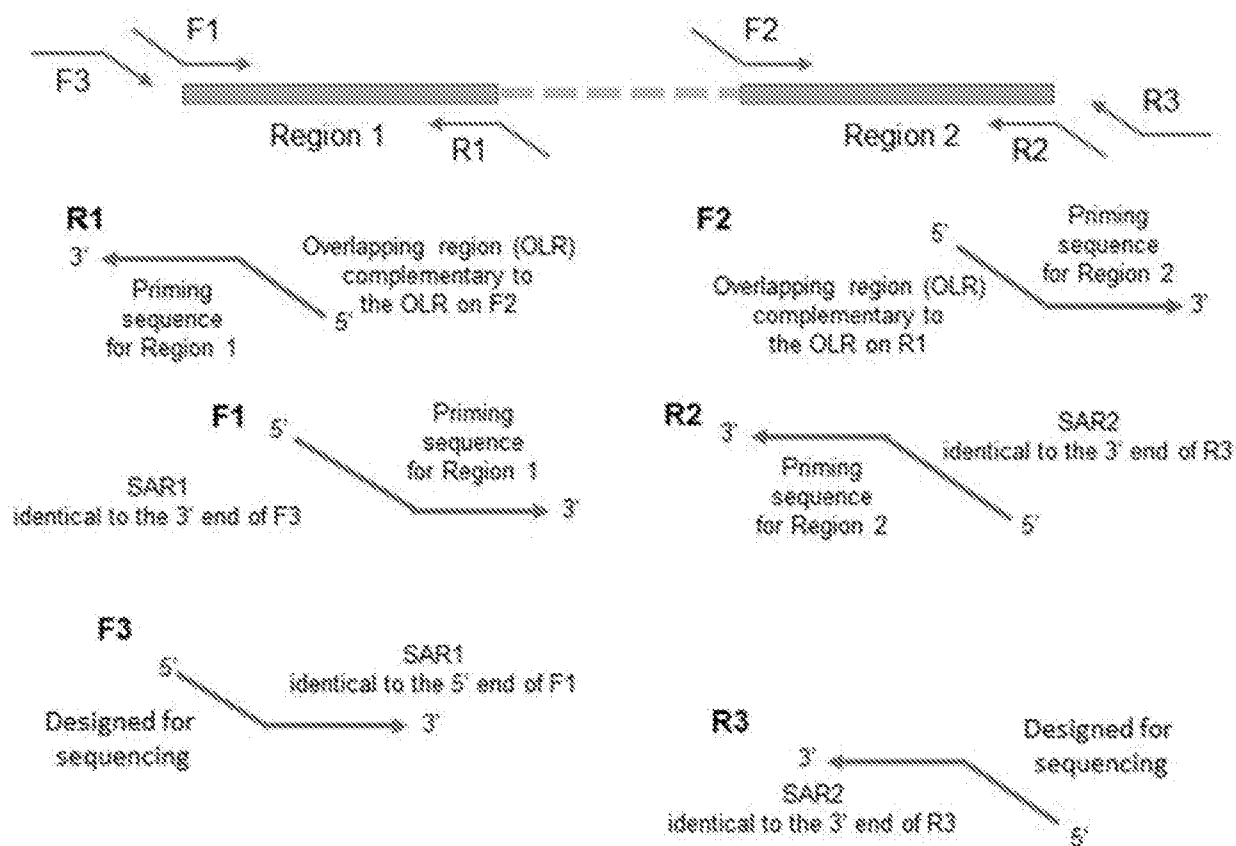


FIG. 16A



FIG. 16B

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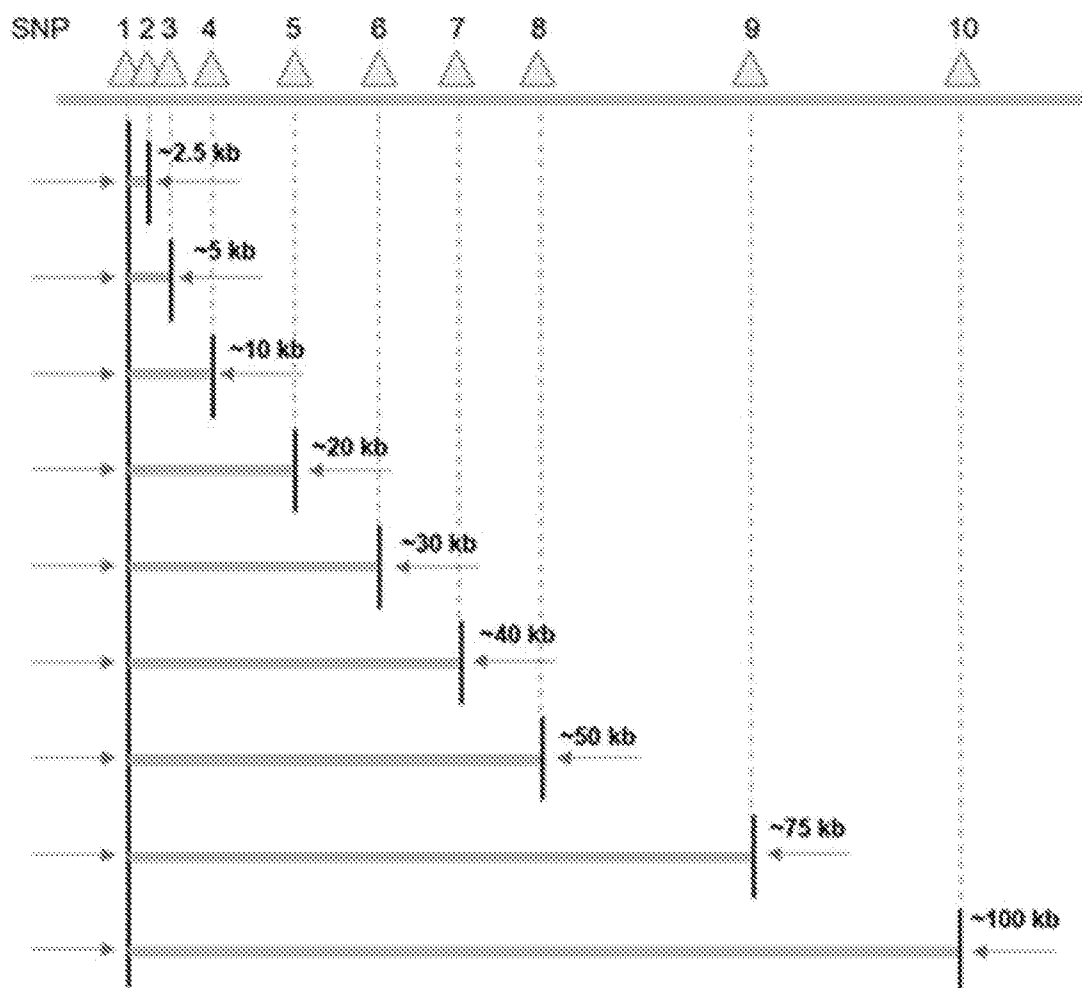
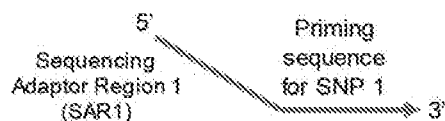
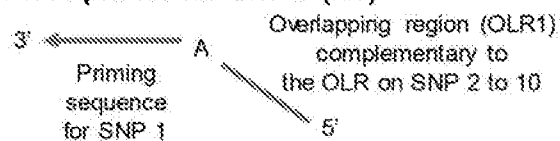


FIG. 17A

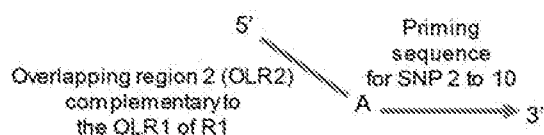
Forward primer for SNP 1 (F1)



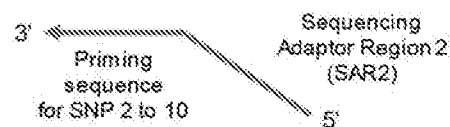
Reverse primer for SNP 1 (R1)



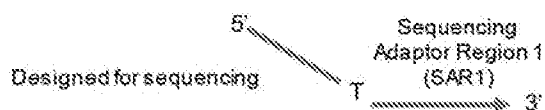
Forward primer for SNP 2 to 10



Reverse primer for SNP 2 to 10



Outer Forward Primer (Fz)



Outer Reverse Primer (Rz)

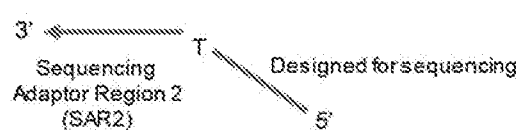


FIG. 17B

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SNP ID	Coordinate on Chr11	Distance from the first SNP (kb)	Genotype	Forward primer (5' to 3')	Reverse primer (5' to 3')
rs11036868	5331270	-	T / C	AATCGGGAAGCT GAAGGCCAAGGA CTGTAGAGACAT AGATGA	<u>CACTACCGTC</u> <u>GGATGACATA</u> CTGGAGAGAT TTCATCCTTGG AG
rs78930059	5333450	2.18	G / T	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> AGCAAT GACAGAGTTTGA CATATTGATT	GTGCTCTTCC GATCTGTTAG TGATCAATGT GTAAATCATA AAGTAATT
rs10768807	5336582	5.31	T / A	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> ACCTTCC TCCATAATCACAT CTGCTA	GTGCTCTTCC GATCTCTGTT GCACCAACCT AATATAAGGA A
rs4910551	5343046	11.78	G / A	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> AGGAGT GACAATACAGAA AAAAATAGAGG	GTGCTCTTCC GATCTGAGGG GATTTGTATC CGTTGTTC
rs10837882	5351633	20.36	T / A	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> ACCTACA TCTCCATACTTCT TGGCAAT	GTGCTCTTCC GATCTATGAT CATTCCCTGAT GAGAAAGAG AAG
rs2736557	5361361	30.09	G / T	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> AGGAGA GAGGAGTGGGCC GTA	GTGCTCTTCC GATCTAAAGA AAATTAGTTT CAGAAACTCC TCC
rs884222	5371742	40.47	A / T	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> ATATCCA TCAATACAACACC TTCCATAG	GTGCTCTTCC GATCTACAGT AGATGTTAGA TGCCCTTACA CA
rs2736543	5381334	50.06	A / G	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> ATACCTT AAAGGTTAAGGC CTGAATG	GTGCTCTTCC GATCTGGGGA AGGTGAAGTA TCAACACA
rs4910781	5406896	75.63	A / C	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> AAGCAA ACTCAGAGGGTT GGAGTAC	GTGCTCTTCC GATCTTATTTT TGTAGCTCTG ACAGTTGTCT CC
rs10838096	5431296	100.03	A / G	<u>ATGTCATCCGACG</u> <u>GTAGTG</u> ACCCTGA CTCCATGCAGGA GA	GTGCTCTTCC GATCTGTTGA CTTTGATGGC TGCTG

FIG. 18

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	Hap I: C allele at SNP 1 (Reference: 5'-CTAATTTAAG-3')		Hap II: T allele at SNP 1 (Reference: 5'-TGTGAGAGCA-3')	
SNP pairing	Alleles combination (frequency)	Determined Hap I	Alleles combination (frequency)	Determined Hap II
SNP 1—SNP 2	C—T (80.5%) C—G (19.5%)	CT-----	T—G (84.7%) T—T (15.3%)	TG-----
SNP 1—SNP 3	C—A (89%) C—T (11%)	C-A-----	T—T (85.5%) T—A (14.5%)	T-T-----
SNP 1—SNP 4	C—A (81.3%) C—G (18.7%)	C-A-----	T—G (83.1%) T—A (16.9%)	T-G-----
SNP 1—SNP 5	C—T (67.8%) C—A (32.2%)	C---T-----	T—A (90.3%) T—T (9.7%)	T---A-----
SNP 1—SNP 6	C—T (80.2%) C—G (19.8%)	C-----T----	T—G (86.4%) T—T (13.6%)	T-----G----
SNP 1—SNP 7	C—T (67.2%) C—A (32.8%)	C-----T----	T—A (65.2%) T—T (34.8%)	T-----A----
SNP 1—SNP 8	C—A (68.6%) C—G (31.4%)	C-----A---	T—G (61.7%) T—A (38.3%)	T-----G---
SNP 1—SNP 9	C—A (65.8%) C—C (34.2%)	C-----A-	T—A (53%) T—C (47%)	T-----x-
SNP 1—SNP 10	C—G (58.1%) C—A (41.9%)	C-----x	T—A (50.4%) T—G (49.6%)	T-----x

FIG. 19

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Region No.	SNP ID	Coordinate on chr11	Forward primer (5' to 3')	Reverse primer (5' to 3')
1	rs7930833	5222527	AATCGGGAAGCTGA AGCTTGATAGTTTCT ACTTTGGGTGATAA TT	<u>CACTACCGTCGGATGAC</u> <u>ATAATGGGAAGACATGT</u> ATATAATCTTAGAGATA
2	rs1236487 2	5222914	<u>ATGTCATCCGACGG</u> <u>TAGTGA</u> GCAGAAAG AGATAATATTAAGG ATAATCAG	GTGCTCTTCCGATCTGC AGAAAGAGATAATATT AAGGATAATCAG
3	rs1083762 8	5223174	<u>ATGTCATCCGACGG</u> <u>TAGTGA</u> GTCAAATG GATATTTGTATCTGA AAAATC	GTGCTCTTCCGATCTAT GCATCTTGATGATTAGA ATTGCA
4	rs2187610	5224176	AATCGGGAAGCTGA AGTCATGGTTCACCT TTCATTGTTC	<u>CACTACCGTCGGATGAC</u> <u>ATAACATCAA</u> ACTAAAA AATTTCCACACAA
5	rs1076868 2	5224277	<u>ATGTCATCCGACGG</u> <u>TAGTGA</u> CAAATTCA AAAAACGGCTGCA	GTGCTCTTCCGATCTAA GAAATCAAAAAGAAGAA AATTCTAATATTCA
6	rs1083763 0	5224812	AATCGGGAAGCTGA AGGTAATAAGACAG TAGTGAATATCAAG CTACAAA	<u>CACTACCGTCGGATGAC</u> <u>ATAAGTTAGG</u> ACTGAGA AGAATTTGAAAGG
7	rs1083763 1	5225126	<u>ATGTCATCCGACGG</u> <u>TAGTGA</u> GTATCTCTA AGCAAGAGAACTGA GTGG	GTGCTCTTCCGATCTATT TGCTTATCCTGCATCTCT CAG
8	rs7110263	5225282	AATCGGGAAGCTGA AGTTTTCTGAGGGAT GAATAAGGCAT	<u>CACTACCGTCGGATGAC</u> <u>ATAATTGGCA</u> ACAGCCC CTGAT
9	rs1609812	5225911	<u>ATGTCATCCGACGG</u> <u>TAGTGA</u> TACAATTTA TATGCAGAAATATT ATATGCAG	GTGCTCTTCCGATCTATT TCTGGGTTAAGGCAATA GCAA
10	rs7480526	5226503	AATCGGGAAGCTGA AGTTCCCATTTCTAAA CTGTACCCTGTT	<u>CACTACCGTCGGATGAC</u> <u>ATAATGGTTA</u> AGTTTCAT GTCATAGGAAGG

FIG. 20

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Region No.	SNP ID	Coordinate on chr11	Forward primer (5' to 3')	Reverse primer (5' to 3')
11	rs10768683	5226561	AATCGGGAAGCTGAAG CCTATGACATGAACTTA ACCATAGAAA	<u>CACTACCGTCGGATGAC</u> <u>ATATGAGAACTTCAGGG</u> TGAGTCTATG
12	rs10742583	5227411	<u>ATGTCATCCGACGGTA</u> <u>GTG</u> ATTCCCAATTTTCT TATTACACAAATAAGA	GTGCTCTTCCGATCTAA ACTCTTCCACTTTTAGTG CATCAA
13	rs11036364	5227774	AATCGGGAAGCTGAAG TTAGTTACTTATTAGGT TTTGGGAAACAAG	<u>CACTACCGTCGGATGAC</u> <u>ATA</u> ATTTTGTACTGCAT TAAGAGGTCTCTAGT
14	rs7936823	5228938	<u>ATGTCATCCGACGGTA</u> <u>GTG</u> AGAAAAGACGTCT TTAAATATTTTAAATG TT	GTGCTCTTCCGATCTAA AATCTAACAGCCAAGTC AAATCTG
15	rs3813727	5234682	AATCGGGAAGCTGAAG CTGTCATGTGTGTCTTG ACTCAGAA	<u>CACTACCGTCGGATGAC</u> <u>ATA</u> AGATGCGGTGGGG AGATATG
16	rs10837643	5236808	<u>ATGTCATCCGACGGTA</u> <u>GTG</u> AAAGGCCATGAGG ACTGTTATTTG	GTGCTCTTCCGATCTAG CCAAGTCTTTGGAATTA ACAGAC
17	rs4283007	5237260	AATCGGGAAGCTGAAG CCGCATCCAGCCAGGA TA	<u>CACTACCGTCGGATGAC</u> <u>ATA</u> ACAAGAGTAGATG CTATTCTTTCCACTTT
18	rs4402323	5237362	<u>ATGTCATCCGACGGTA</u> <u>GTG</u> ATAGATAGGGACA AATTGAAGCAGAA	GTGCTCTTCCGATCTCA TTTCCCTACCTCTAATCA ACAGTT
19	rs4910736	5237759	<u>ATGTCATCCGACGGTA</u> <u>GTG</u> AGAAGTATGAAGT AAGACATAGTCCCCAA	GTGCTCTTCCGATCTATT AAAATCGATACTGAGTT CTAAAATCATC
20	rs2105819	5238497	AATCGGGAAGCTGAAG GCTCTCCACAATTCTAA TCTCAGTTC	<u>CACTACCGTCGGATGAC</u> <u>ATA</u> ATTGATAAGATAAT ATGAAAACACAGAATTC A

FIG. 20 (cont.)



FIG. 21A

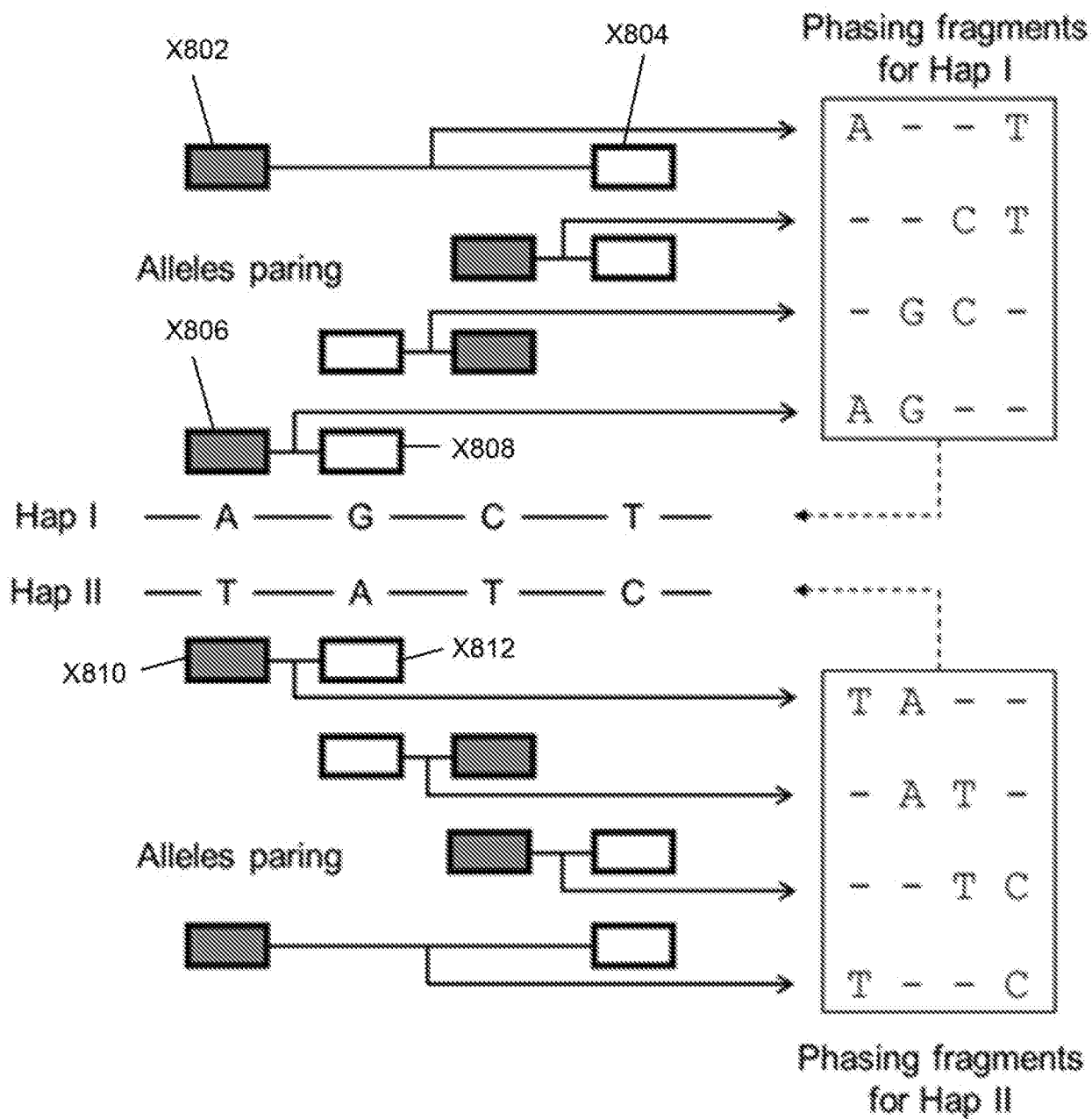


FIG. 21B

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	SNP No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Family 1																					
Father	Hap I*	C	A	C	A	C	T	G	A	C	A	G	G	A	T	A	C	G	A	G	C
	Hap II	C	G	G	A	C	A	G	A	A	A	G	A	G	A	T	A	C	A	G	T
Mother	Hap I	C	G	G	A	C	A	G	A	A	A	A	A	G	A	T	A	C	A	G	T
	Hap II*	G	A	G	G	G	T	T	G	A	G	A	G	A	T	A	C	G	A	C	C
Fetus	Hap from father	C	A	C	A	C	T	G	A	C	A	G	G	A	T	A	C	G	A	G	C
	Hap from mother	G	A	G	G	G	T	T	G	A	G	A	G	A	T	A	C	G	A	C	C
Family 2																					
Father	Hap I	G	A	G	G	G	T	T	G	A	G	A	A	G	A	T	A	C	A	C	T
	Hap II*	G	A	G	G	G	T	T	G	A	G	A	G	A	T	A	C	G	A	C	C
Mother	Hap I*	C	G	G	A	C	A	G	A	A	A	G	G	A	T	A	C	G	A	G	C
	Hap II	G	A	G	G	G	T	T	G	A	G	A	A	G	A	T	A	C	A	C	T
Fetus	Hap from Father	G	A	G	G	G	T	T	G	A	G	A	G	A	T	A	C	G	A	C	C
	Hap from Mother	C	G	G	A	C	A	G	A	A	A	G	G	A	T	A	C	G	A	G	C
Family 3																					
Father	Hap I	C	A	C	A	C	T	G	A	C	A	G	A	G	A	T	A	C	A	G	T
	Hap II*	C	A	G	A	C	T	G	A	C	A	G	G	A	T	A	C	G	A	G	C
Mother	Hap I	C	A	C	A	C	T	G	A	C	A	G	G	A	T	A	C	G	A	G	C
	Hap II*	G	A	G	G	G	T	T	G	A	G	G	G	A	T	A	C	G	A	C	C
Fetus	Hap from Father	C	A	G	A	C	T	G	A	C	A	G	G	A	T	A	C	G	A	G	C
	Hap from Mother	G	A	G	G	G	T	T	G	A	G	G	G	A	T	A	C	G	A	C	C

FIG. 22

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	SNP No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Family 4																				
Father	Hap I*	G	A	G	G	G	T	T	G	A	G	A	A	G	A	T	A	C	A	C	T
	Hap II*	G	A	G	G	G	T	T	G	A	G	A	A	G	A	T	A	C	A	C	T
Mother	Hap I*	C	G	G	A	C	A	G	A	A	A	A	A	G	A	T	A	C	A	G	T
	Hap II	G	A	G	G	G	T	T	A	A	G	A	A	A	T	A	C	G	A	C	C
Fetus	Hap from father	G	A	G	G	G	T	T	G	A	G	A	A	G	A	T	A	C	A	C	T
	Hap from mother	C	G	G	A	C	A	G	A	A	A	A	A	G	A	T	A	C	A	G	T

FIG. 22 (cont.)

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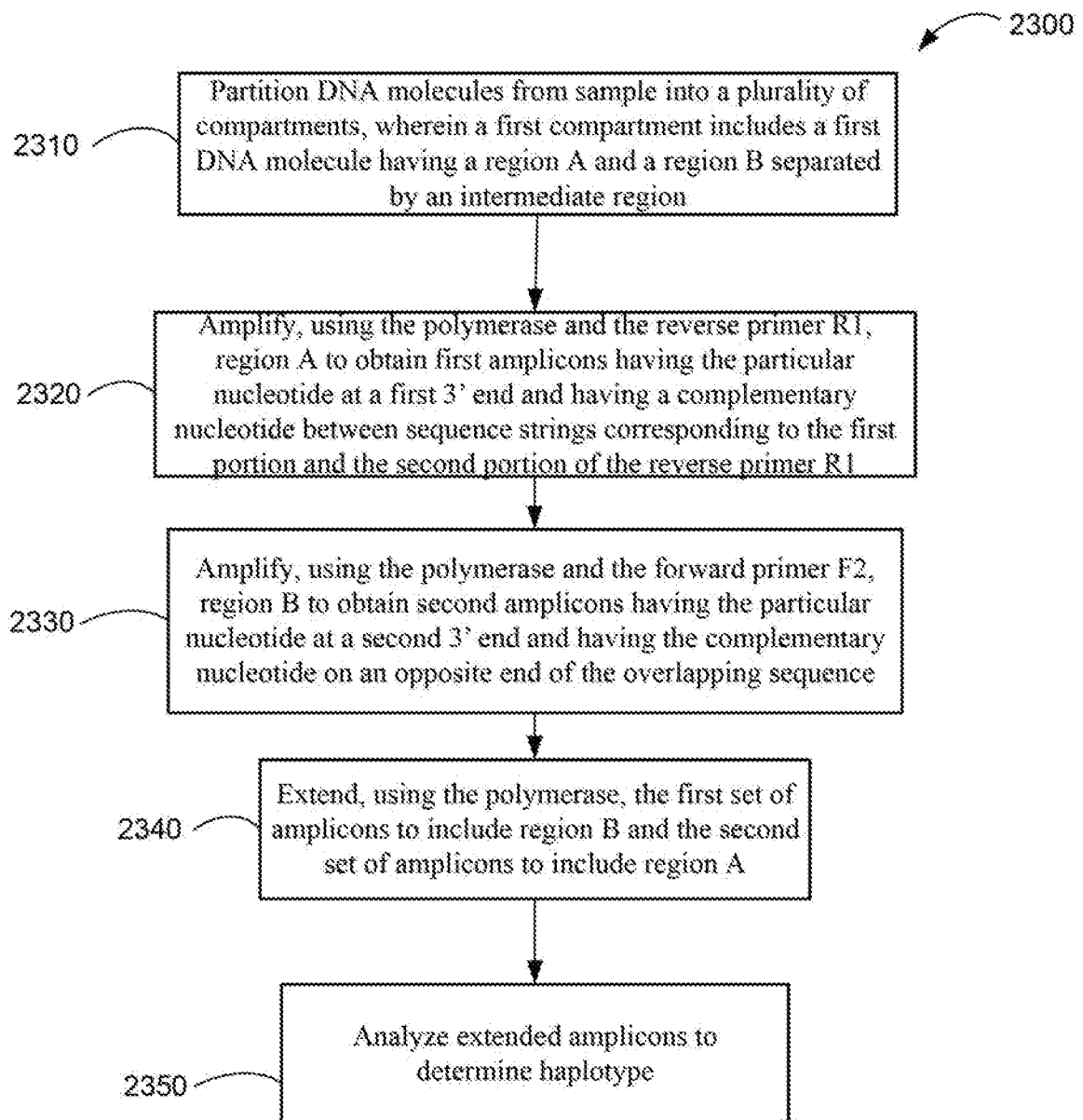


FIG. 23

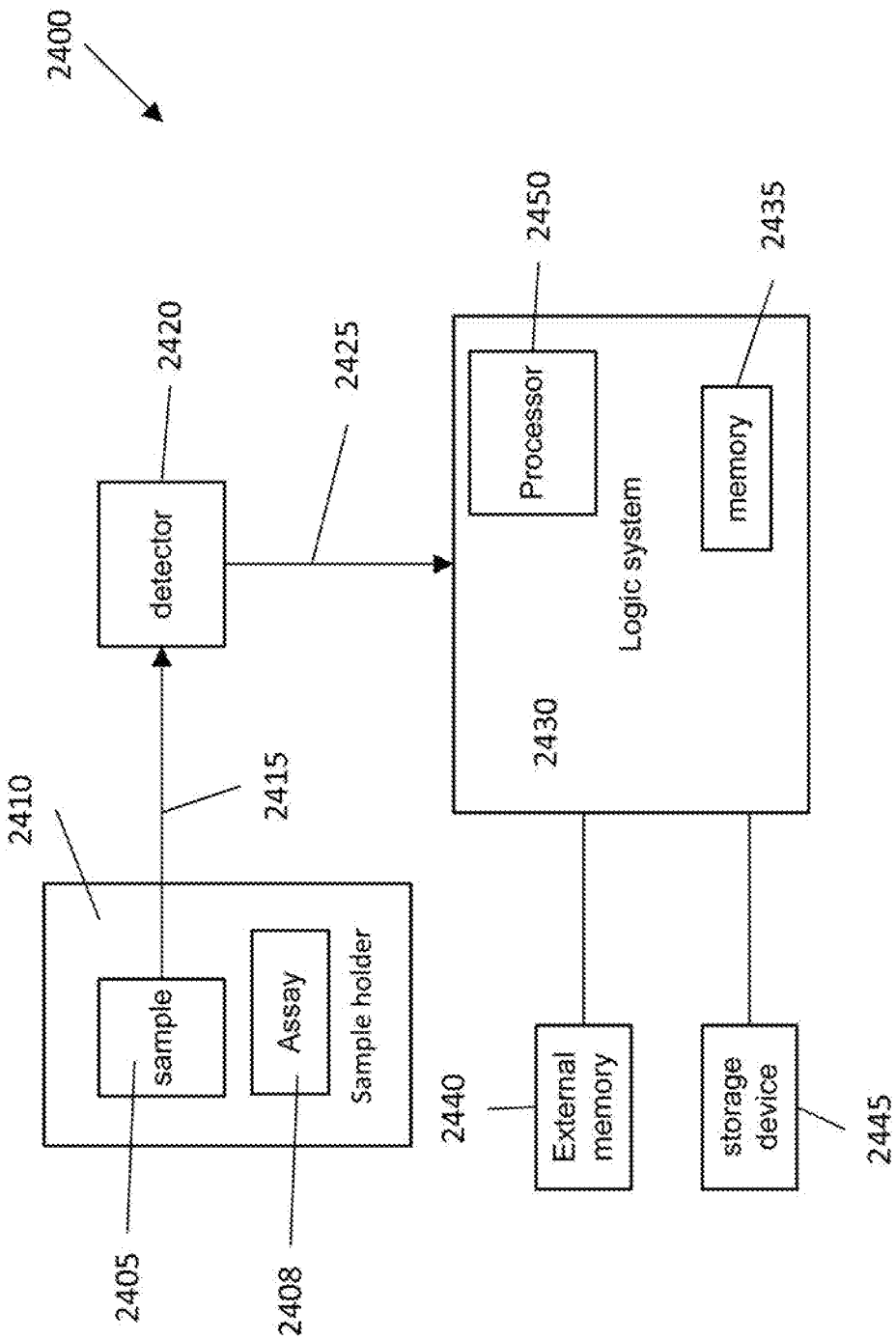


FIG. 24

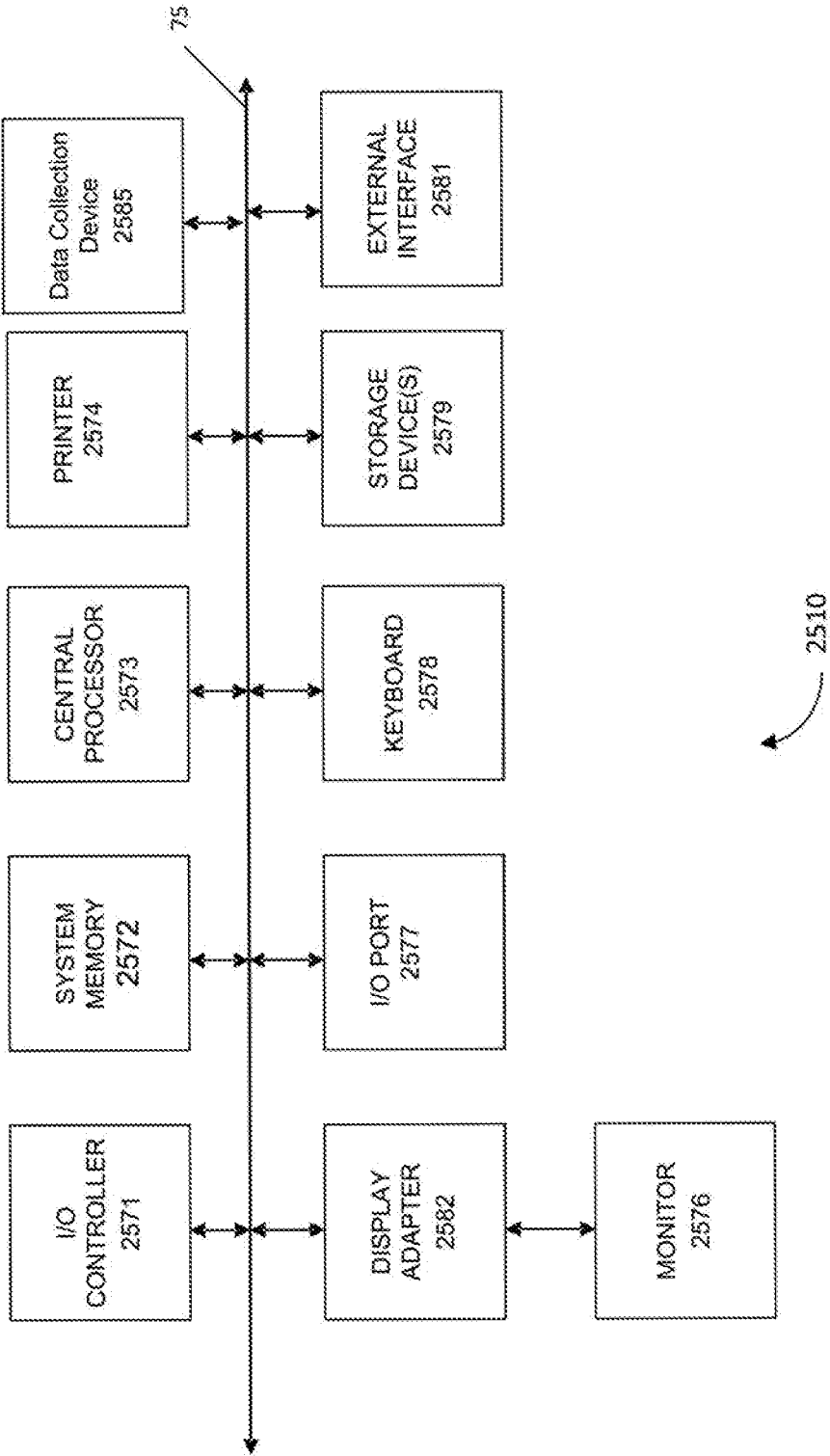


FIG. 25