FIG. 1

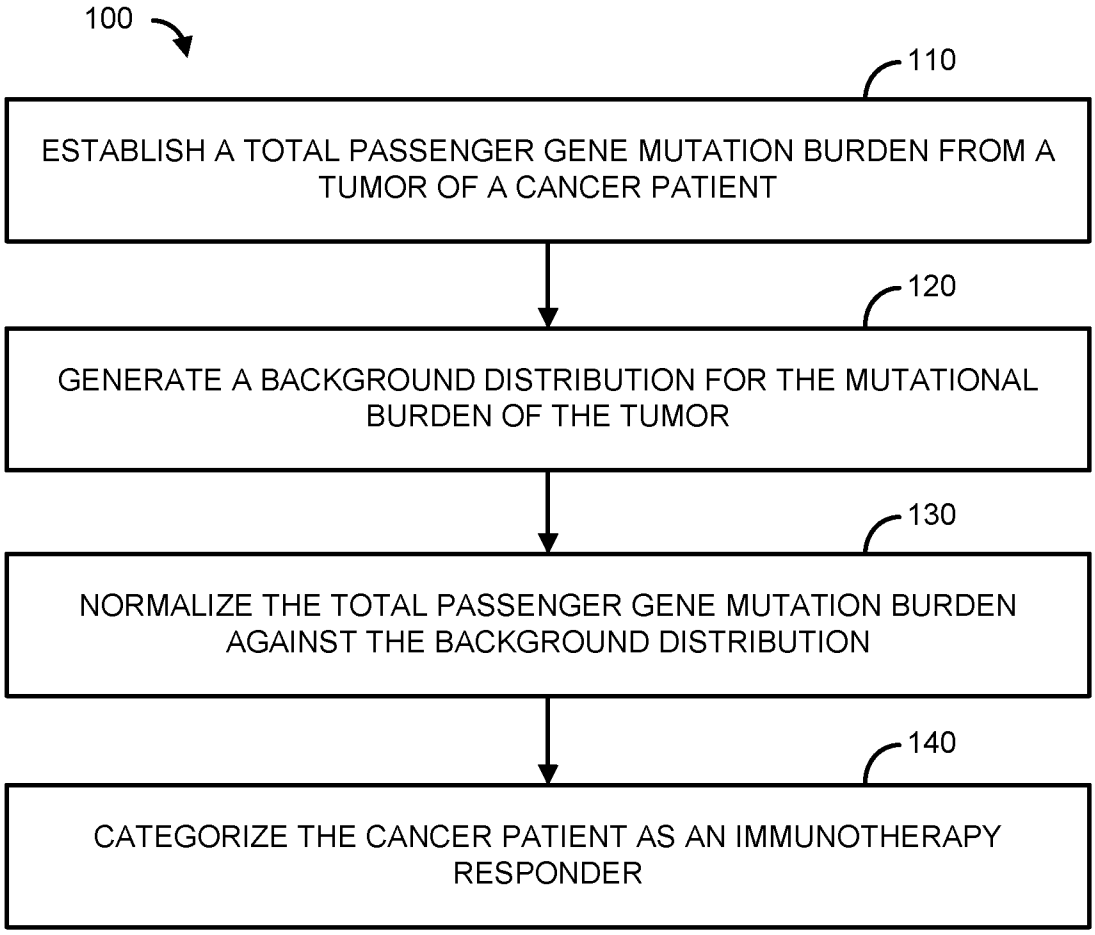

100
110
ESTABLISH A TOTAL PASSENGER GENE MUTATION BURDEN FROM A TUMOR OF A CANCER PATIENT
120
GENERATE A BACKGROUND DISTRIBUTION FOR THE MUTATIONAL BURDEN OF THE TUMOR
130
NORMALIZE THE TOTAL PASSENGER GENE MUTATION BURDEN AGAINST THE BACKGROUND DISTRIBUTION
140
CATEGORIZE THE CANCER PATIENT AS AN IMMUNOTHERAPY RESPONDER

FIG. 2

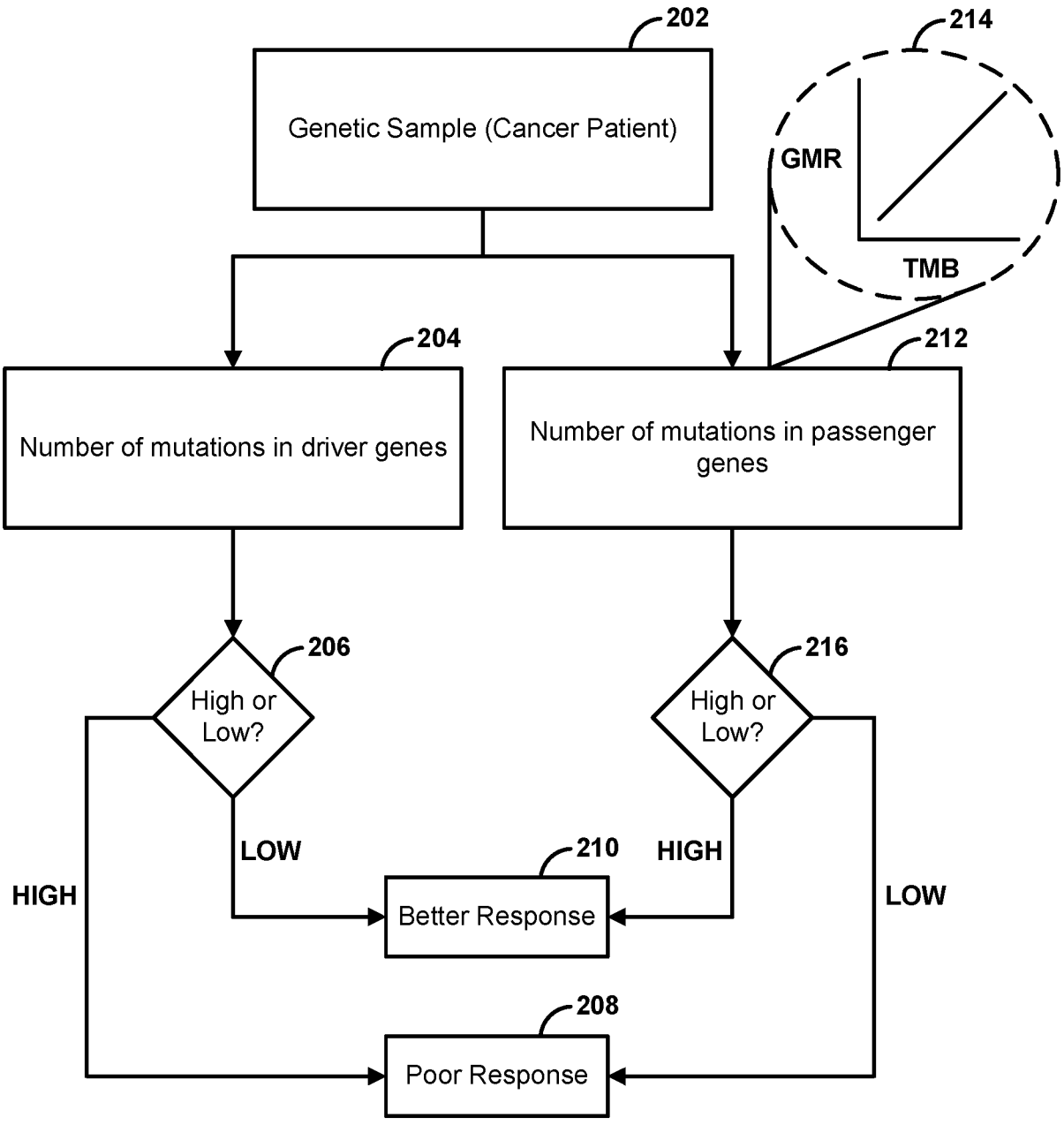

202
Genetic Sample (Cancer Patient)
214
GMR
TMB
204
Number of mutations in driver genes
212
Number of mutations in passenger genes
206
High or Low?
216
High or Low?
LOW
HIGH
210
Better Response
HIGH
LOW
208
Poor Response

FIG. 3

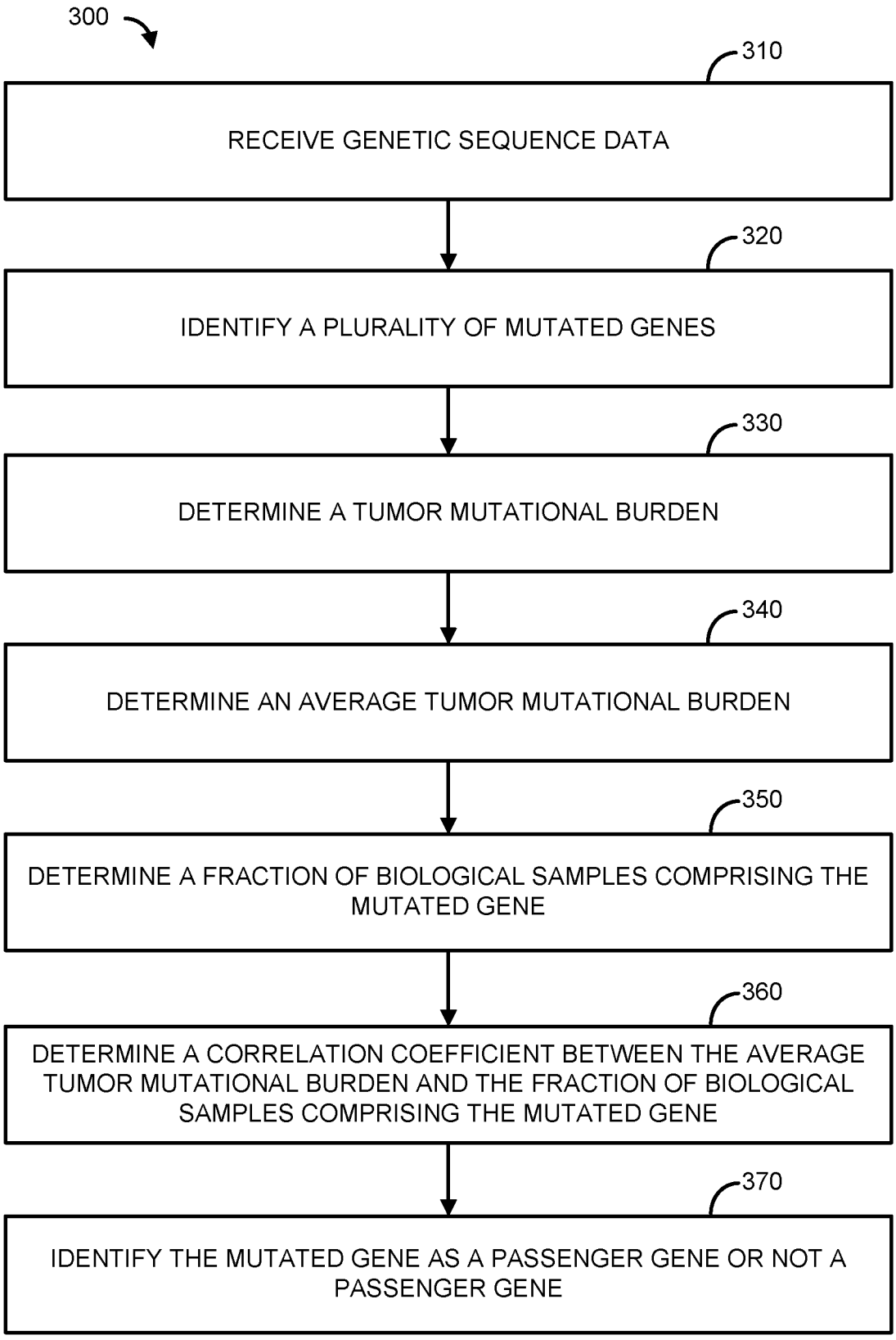
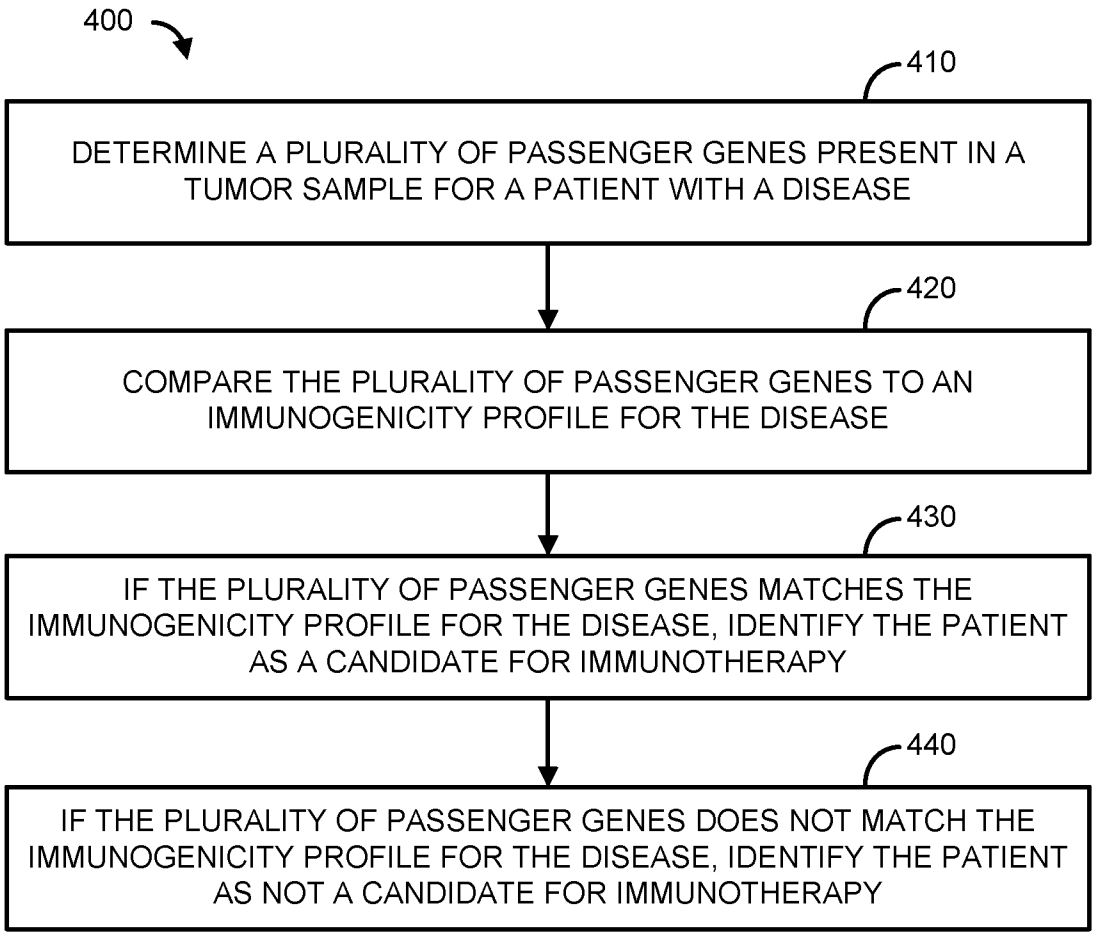

300
310
RECEIVE GENETIC SEQUENCE DATA
320
IDENTIFY A PLURALITY OF MUTATED GENES
330
DETERMINE A TUMOR MUTATIONAL BURDEN
340
DETERMINE AN AVERAGE TUMOR MUTATIONAL BURDEN
350
DETERMINE A FRACTION OF BIOLOGICAL SAMPLES COMPRISING THE MUTATED GENE
360
DETERMINE A CORRELATION COEFFICIENT BETWEEN THE AVERAGE TUMOR MUTATIONAL BURDEN AND THE FRACTION OF BIOLOGICAL SAMPLES COMPRISING THE MUTATED GENE
370
IDENTIFY THE MUTATED GENE AS A PASSENGER GENE OR NOT A PASSENGER GENE

FIG. 4


400
410
DETERMINE A PLURALITY OF PASSENGER GENES PRESENT IN A TUMOR SAMPLE FOR A PATIENT WITH A DISEASE
420
COMPARE THE PLURALITY OF PASSENGER GENES TO AN IMMUNOGENICITY PROFILE FOR THE DISEASE
430
IF THE PLURALITY OF PASSENGER GENES MATCHES THE IMMUNOGENICITY PROFILE FOR THE DISEASE, IDENTIFY THE PATIENT AS A CANDIDATE FOR IMMUNOTHERAPY
440
IF THE PLURALITY OF PASSENGER GENES DOES NOT MATCH THE IMMUNOGENICITY PROFILE FOR THE DISEASE, IDENTIFY THE PATIENT AS NOT A CANDIDATE FOR IMMUNOTHERAPY

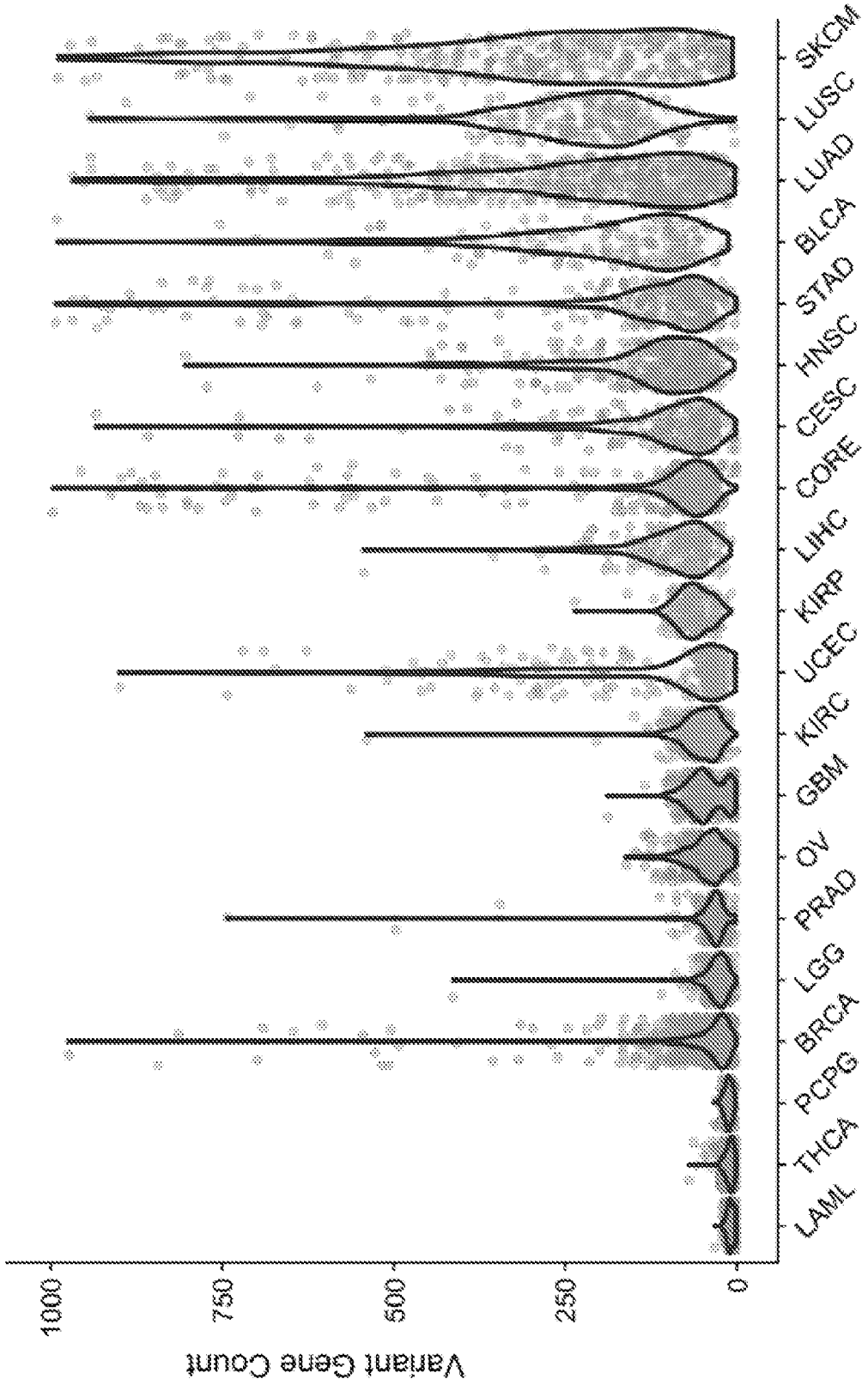

Variant Gene Count
1000
750
500
250
0
LAML
THCA
PCPG
BRCA
LGG
PRAD
OV
GBM
KIRC
UCEC
KIRP
LIHC
CORE
CESC
HNSC
STAD
BLCA
LUAD
LUSC
SKCM
Tumor Type

FIG. 5

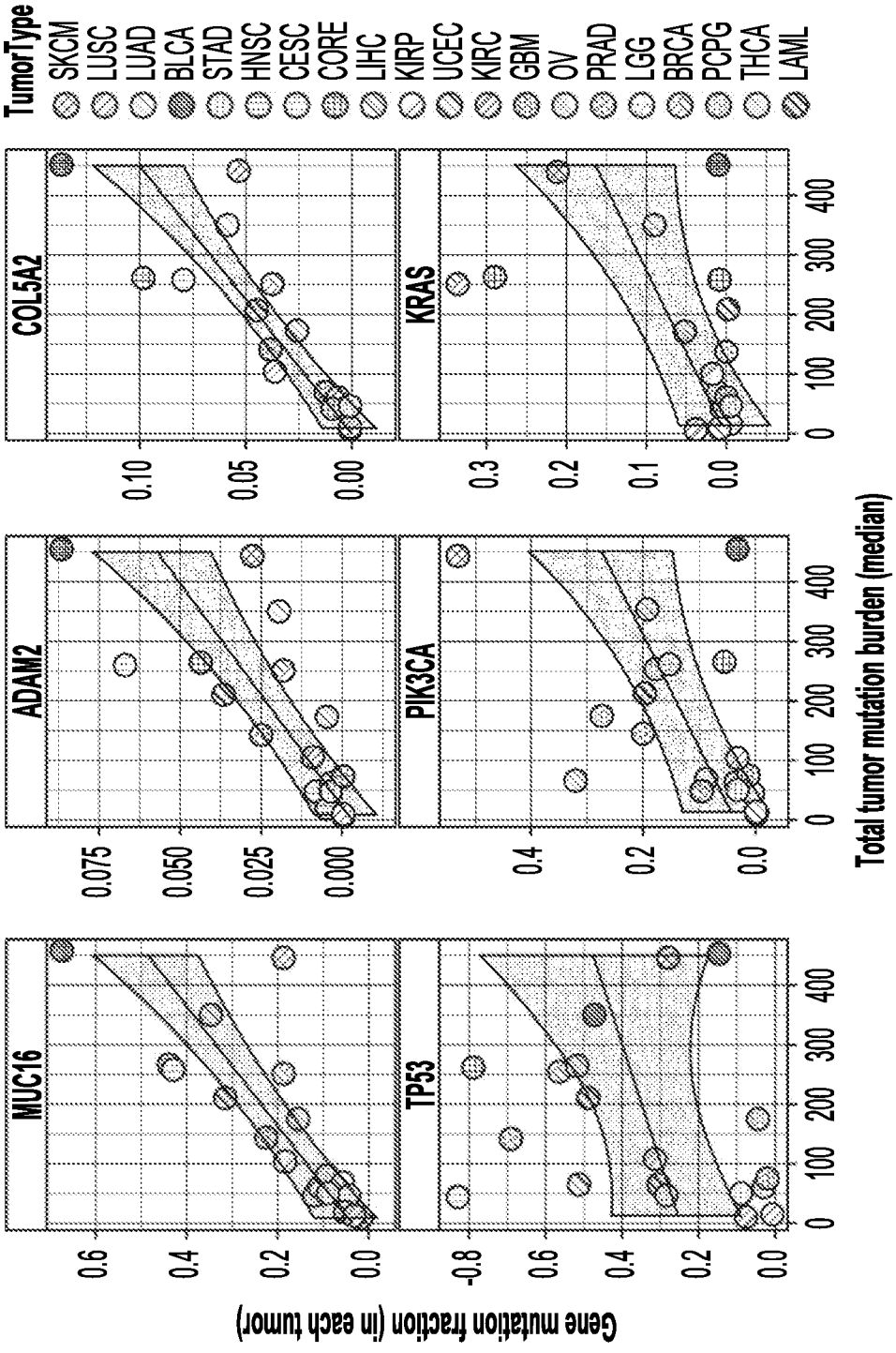

TumorType
SKCM
LUSC
LUAD
BLCA
STAD
HNSC
CESC
CORE
LIHC
KIRP
UCEC
KIRC
GBM
OV
PRAD
LGG
BRCA
PCPG
THCA
LAML
MUC16
ADAM2
COL5A2
TP53
PIK3CA
KRAS
Gene mutation fraction (in each tumor)
Total tumor mutation burden (median)

FIG. 6

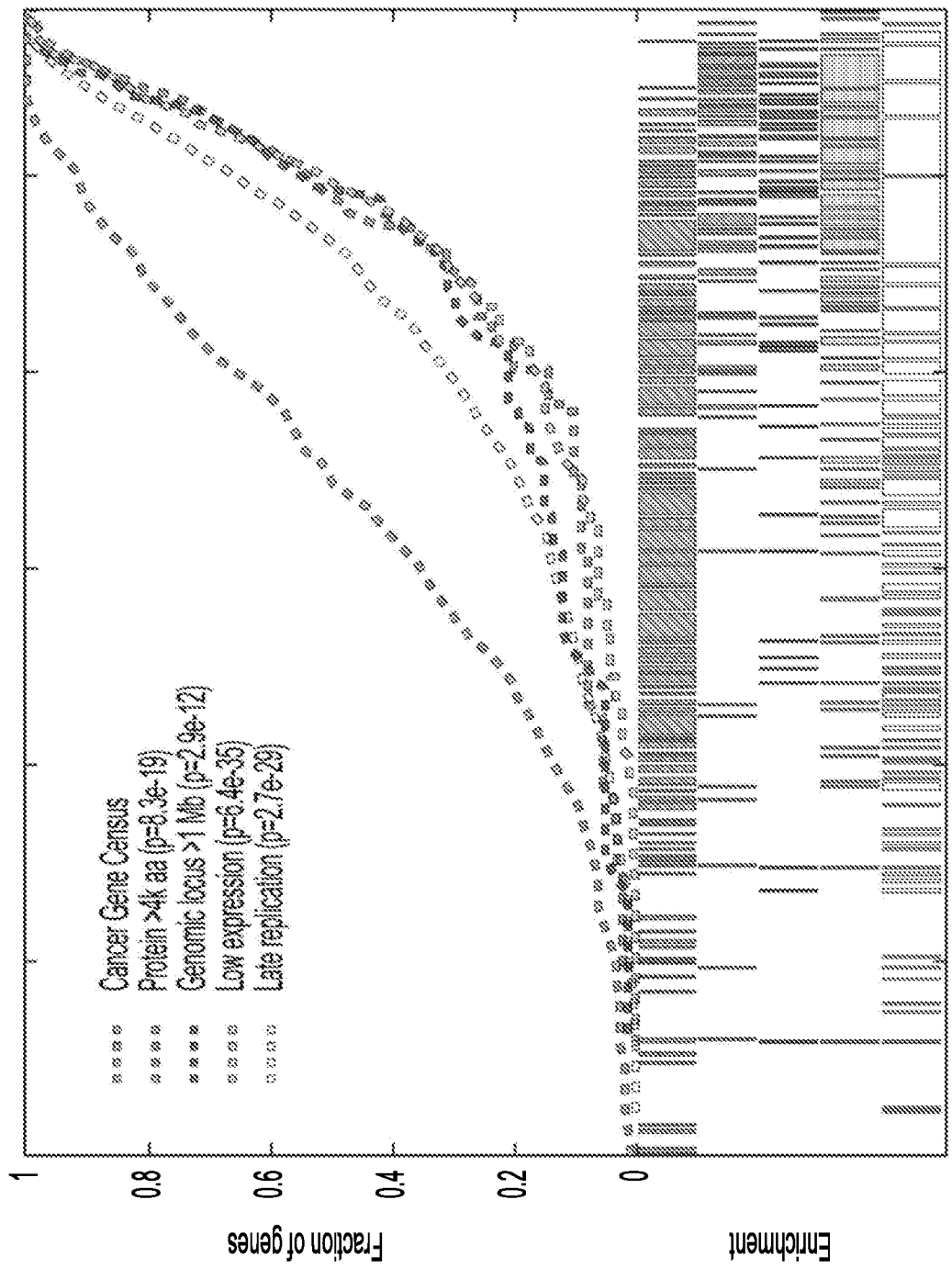

Cancer Gene Census
Protein >4k aa (p=8.3e-19)
Genomic locus >1 Mb (p=2.9e-12)
Low expression (p=6.4e-35)
Late replication (p=2.7e-29)
Fraction of genes
Enrichment
Passenger Gene Index (PGI)
1
0.8
0.6
0.4
0.2
0
-0.2
0
0.2
0.4
0.6
0.8

FIG. 7

FIG. 8

| Gene | PGI | Type | Perc |
|---|---|---|---|
| KDR | 0.94 | skcm | 0.14 |
| PDE4DIP | 0.89 | skcm | 0.15 |
| PDGFRA | 0.88 | skcm | 0.10 |
| TFE3 | 0.87 | skcm | 0.03 |
| PBX1 | 0.87 | skcm | 0.04 |
| CRLF2 | 0.86 | skcm | 0.03 |
| RANBP17 | 0.86 | skcm | 0.06 |
| COL1A1 | 0.86 | skcm | 0.12 |
| MLL3 | 0.85 | blca | 0.22 |
| ROS1 | 0.85 | skcm | 0.18 |
| ARID2 | 0.85 | skcm | 0.13 |
| KIAA1549 | 0.84 | skcm | 0.10 |
| PRDM16 | 0.84 | skcm | 0.08 |
| HIP1 | 0.84 | skcm | 0.04 |
| USP6 | 0.83 | skcm | 0.09 |
| NTRK3 | 0.83 | luad | 0.08 |
| SRGAP3 | 0.83 | skcm | 0.10 |
| IL7R | 0.83 | skcm | 0.11 |
| PDGFRB | 0.83 | skcm | 0.06 |
| ZNF331 | 0.83 | skcm | 0.06 |
| POT1 | 0.83 | luad | 0.03 |
| CREB3L2 | 0.82 | skcm | 0.03 |
| PAX7 | 0.81 | stad | 0.03 |
| SLC34A2 | 0.81 | skcm | 0.06 |
| PRDM1 | 0.81 | skcm | 0.06 |
| STL | 0.81 | skcm | 0.04 |
| C15orf55 | 0.81 | skcm | 0.09 |
| BCL11A | 0.81 | skcm | 0.10 |
| LCK | 0.81 | skcm | 0.04 |
| CHN1 | 0.80 | skcm | 0.02 |

| Gene | PGI | Type | Perc |
|---|---|---|---|
| CREB1 | 0.17 | ucec | 0.02 |
| CCND1 | 0.16 | ucec | 0.07 |
| NF2 | 0.16 | kirp* | 0.06 |
| CBFB | 0.16 | brca | 0.02 |
| TCF7L2 | 0.16 | coad* | 0.08 |
| RPL22 | 0.16 | ucec | 0.13 |
| YWHAE | 0.13 | ucec* | 0.04 |
| APC | 0.12 | coad* | 0.71 |
| PIK3CA | 0.12 | ucec | 0.54 |
| CIC | 0.11 | lgg* | 0.18 |
| SMARCB1 | 0.10 | stad | 0.04 |
| AKT1 | 0.09 | ucec | 0.03 |
| PBRM1 | 0.09 | kirc* | 0.33 |
| PTEN | 0.05 | ucec* | 0.69 |
| MAX | 0.04 | ucec | 0.05 |
| FLT3 | 0.03 | laml* | 0.30 |
| PHF6 | 0.02 | ucec | 0.04 |
| NACA | 0.02 | ucec | 0.07 |
| ATRX | 0.01 | lgg* | 0.44 |
| FAM22B | 0.00 | ucec* | 0.02 |
| PIK3R1 | 0.00 | ucec | 0.38 |
| U2AF1 | -0.03 | laml | 0.04 |
| DNMT3A | -0.08 | laml* | 0.23 |
| VHL | -0.08 | kirc* | 0.48 |
| FIP1L1 | -0.10 | ucec | 0.04 |
| IDH1 | -0.17 | lgg* | 0.76 |
| RUNX1 | -0.17 | laml* | 0.10 |
| CEBPA | -0.19 | laml* | 0.07 |
| NPM1 | -0.24 | laml* | 0.26 |
| IDH2 | -0.24 | laml | 0.10 |

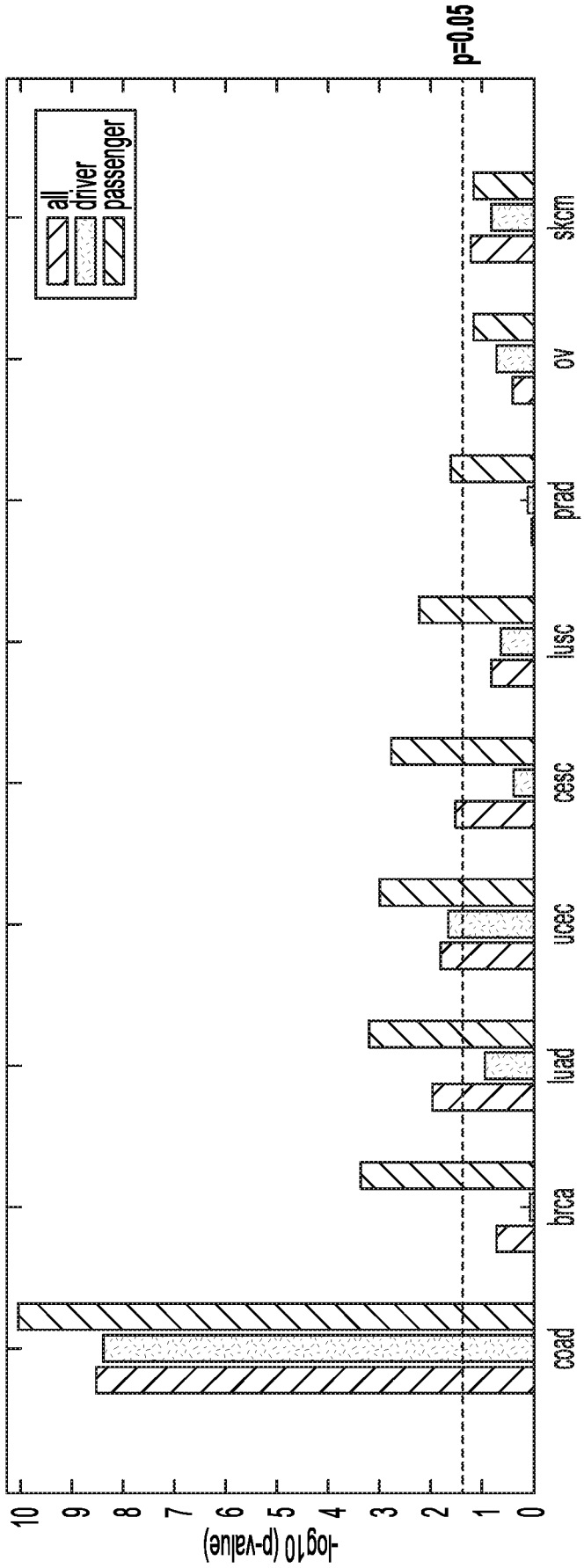

p=0.05
all
driver
passenger
-log10 (p-value)
0
1
2
3
4
5
6
7
8
9
10
coad
brca
luad
ucec
cesc
lusc
prad
ov
skcm

FIG. 9A

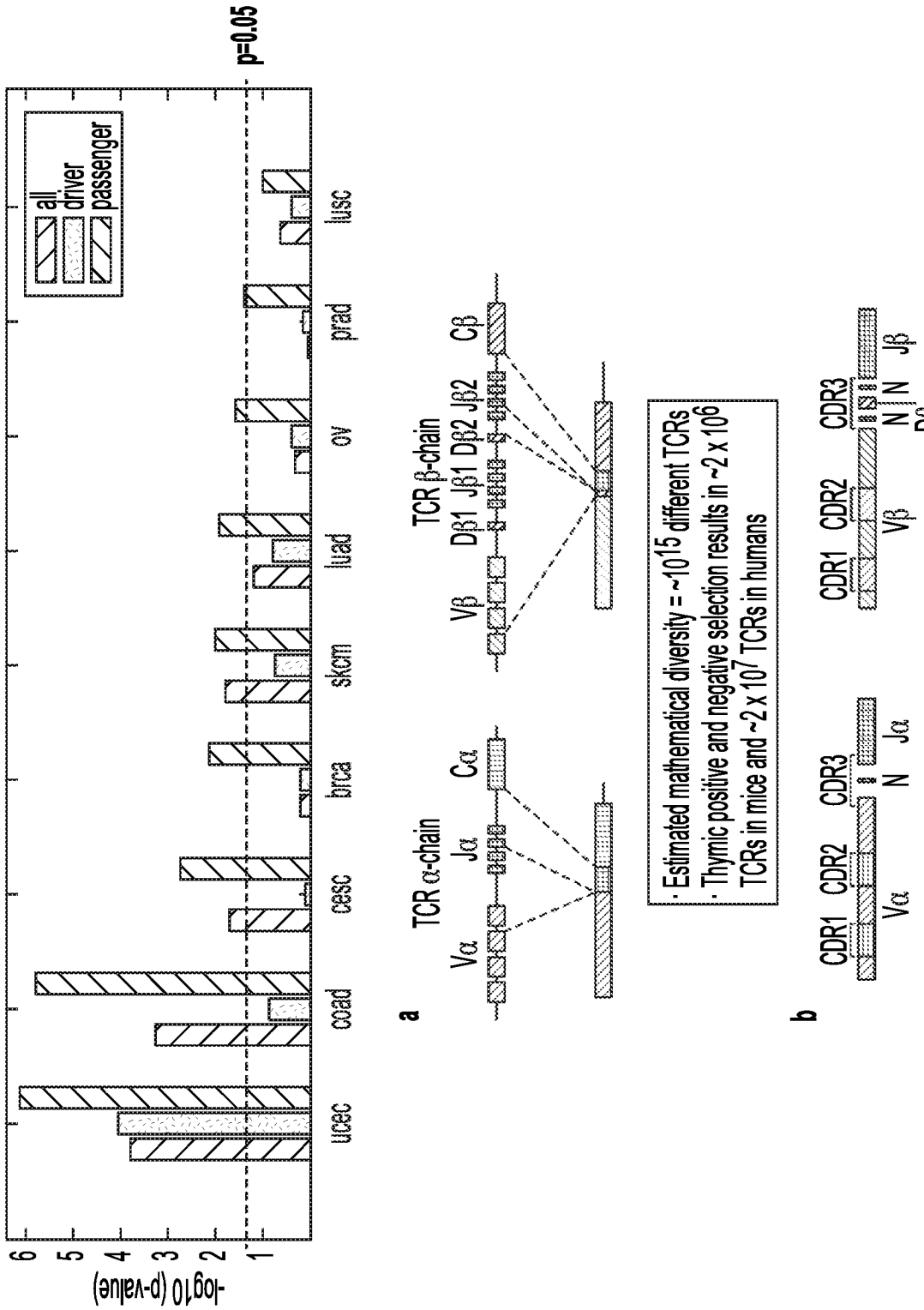

p=0.05
all
driver
passenger
-log10 (p-value)
6
5
4
3
2
1
ucec
coad
cesc
brca
skcm
luad
ov
prad
lusc
a
TCR α-chain
Vα
Jα
Cα
TCR β-chain
Vβ
Dβ1 Jβ1 Dβ2 Jβ2
Cβ
· Estimated mathematical diversity = ~10^15 different TCRs
· Thymic positive and negative selection results in ~2 x 10^6 TCRs in mice and ~2 x 10^7 TCRs in humans
b
CDR1 CDR2 CDR3
Vα
N
Jα
CDR1 CDR2 CDR3
Vβ
N N
Dβ
Jβ

FIG. 9B

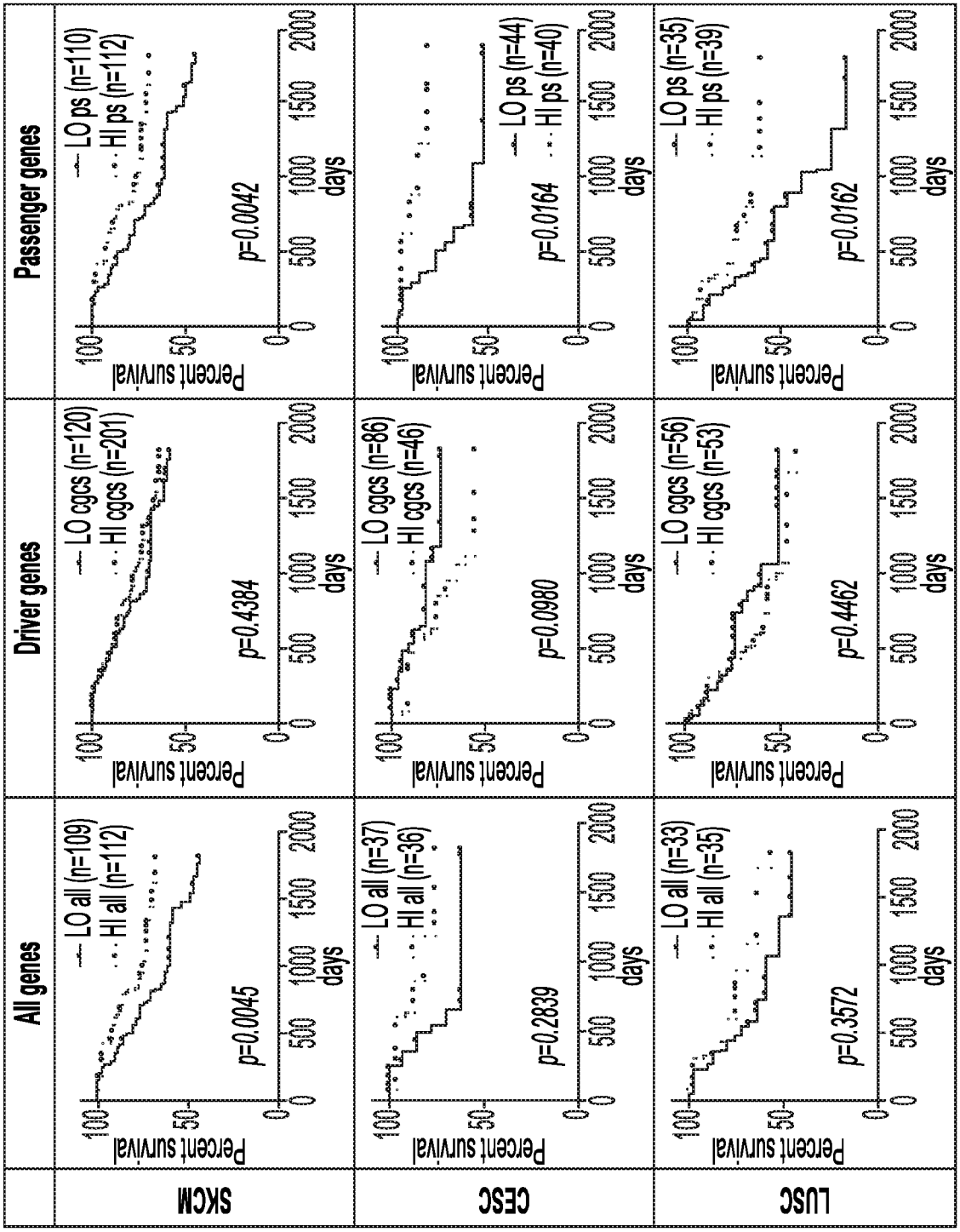

All genes
Driver genes
Passenger genes
SKCM
CESC
LUSC
Percent survival
days
LO all (n=109)
HI all (n=112)
p=0.0045
LO cgcs (n=120)
HI cgcs (n=201)
p=0.4384
LO ps (n=110)
HI ps (n=112)
p=0.0042
LO all (n=37)
HI all (n=36)
p=0.2839
LO cgcs (n=86)
HI cgcs (n=46)
p=0.0980
LO ps (n=44)
HI ps (n=40)
p=0.0164
LO all (n=33)
HI all (n=35)
p=0.3572
LO cgcs (n=56)
HI cgcs (n=53)
p=0.4462
LO ps (n=35)
HI ps (n=39)
p=0.0162

FIG. 9C

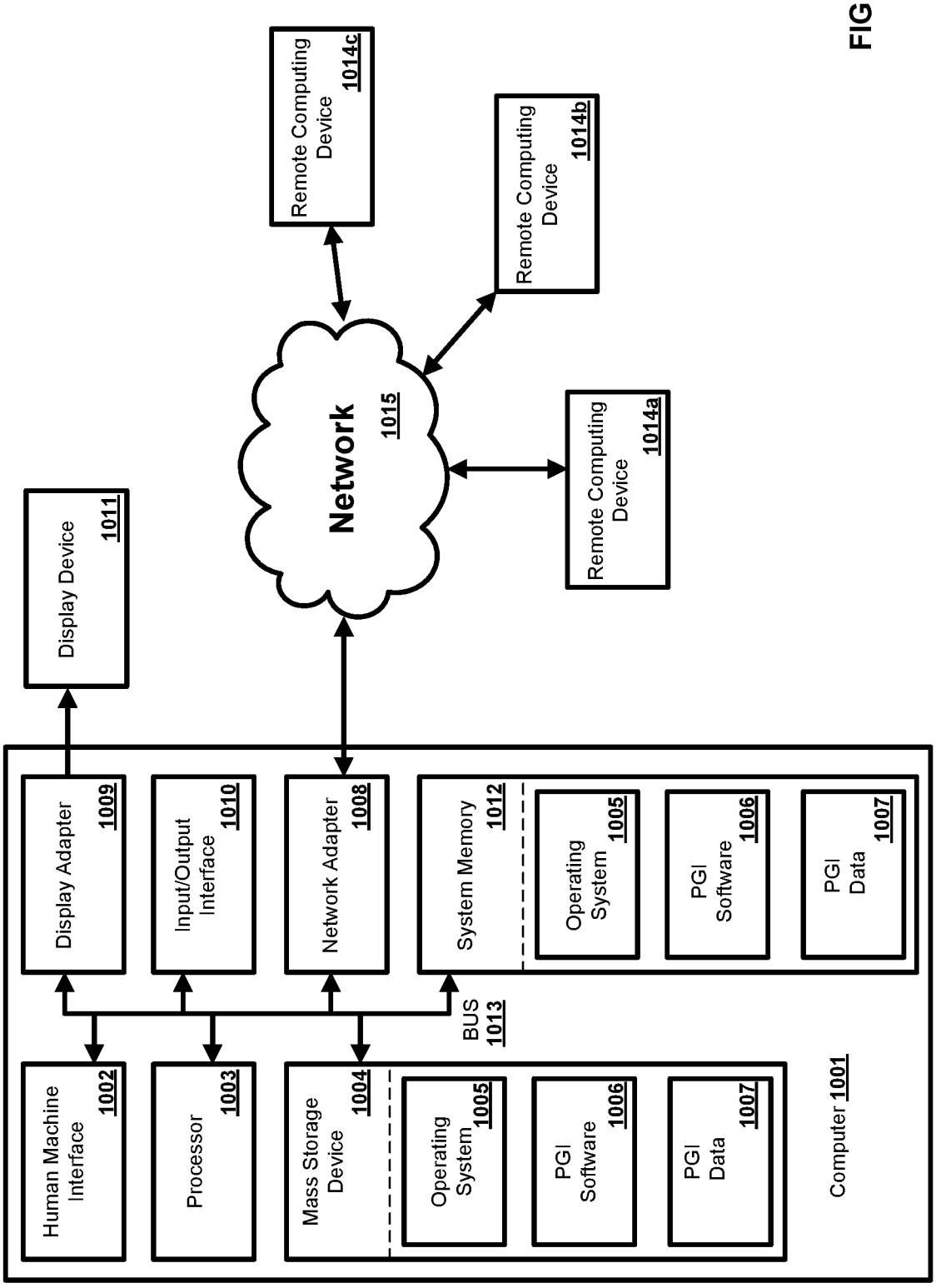
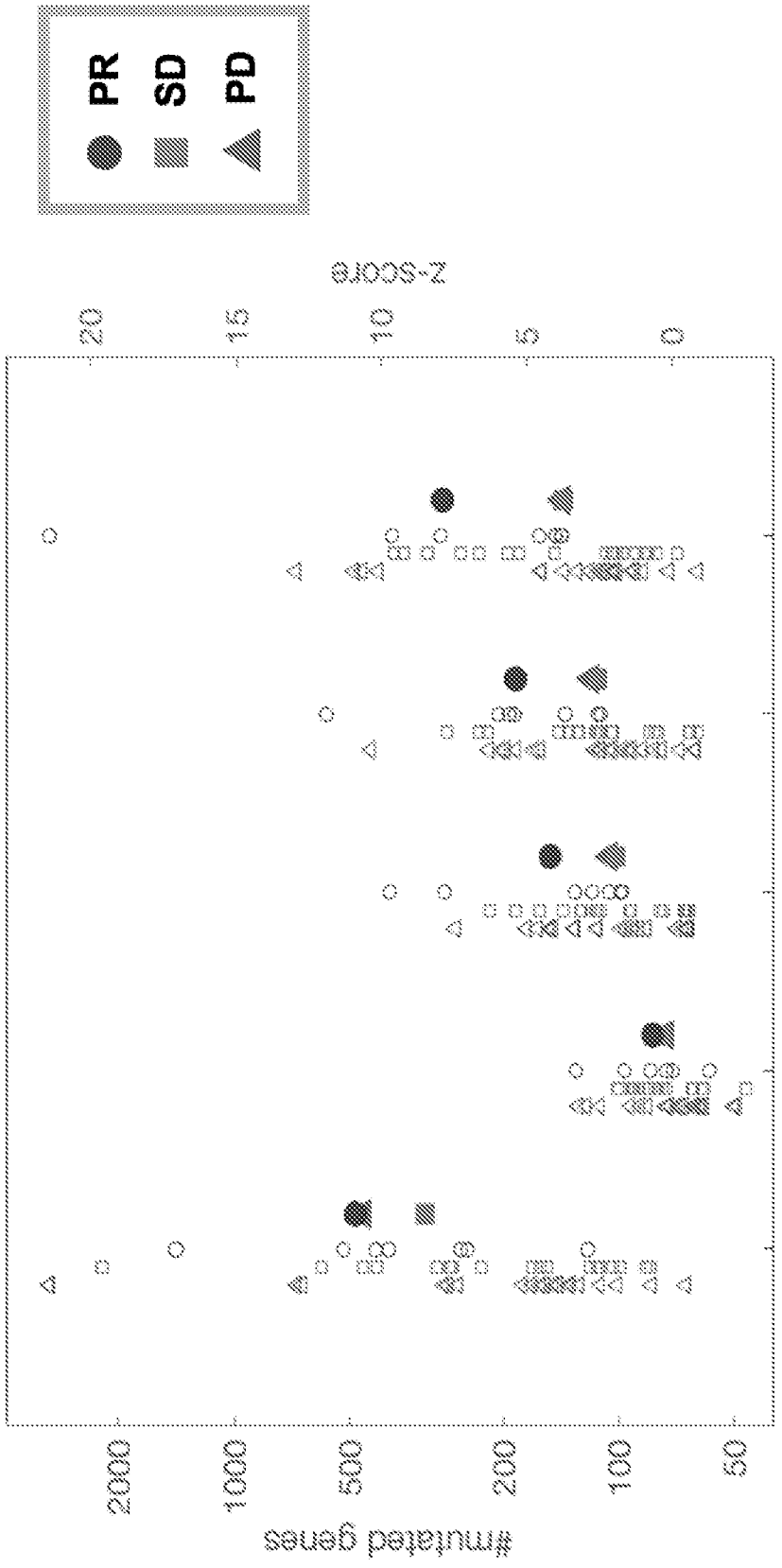

Remote Computing Device 1014c
Remote Computing Device 1014b
Remote Computing Device 1014a
Network 1015
Display Device 1011
Display Adapter 1009
Input/Output Interface 1010
Network Adapter 1008
System Memory 1012
Operating System 1005
PGI Software 1006
PGI Data 1007
BUS 1013
Human Machine Interface 1002
Processor 1003
Mass Storage Device 1004
Operating System 1005
PGI Software 1006
PGI Data 1007
Computer 1001

FIG. 10




| | | | | | |
|---|---|---|---|---|---|
| PR vs PD | p=0.48 | p=0.24 | p=0.039 | p=0.026 | p=0.021 |
| PR vs PD+SD | p=0.38 | p=0.24 | p=0.017 | p=0.010 | p=0.006 |

FIG. 11

# FIG. 12

| | |
|---|---|
| 1 | MUC16 |
| 2 | PKHD1L1 |
| 3 | PAPPA2 |
| 4 | CTNND2 |
| 5 | NEB |
| 6 | TRPV5 |
| 7 | FLG2 |
| 8 | FLG |
| 9 | C1orf173 |
| 10 | MUC17 |
| 11 | XIRP2 |
| 12 | TTN |
| 13 | KRTAP12-3 |
| 14 | RNASE3 |
| 15 | OR2G2 |
| 16 | MYH2 |
| 17 | SLC4A10 |
| 18 | CDH18 |
| 19 | OR4A47 |
| 20 | OR10R2 |
| 21 | TPTE |
| 22 | OR4N4 |
| 23 | BBOX1 |
| 24 | OR5A2 |
| 25 | MAGEB18 |
| 26 | ADAM2 |
| 27 | PDE1C |
| 28 | TAS2R16 |
| 29 | CD177 |
| 30 | SORCS3 |
| 31 | GRM8 |
| 32 | HRNR |
| 33 | SPHKAP |
| 34 | EPHA6 |
| 35 | CSMD2 |
| 36 | FAM83C |
| 37 | PEG3 |
| 38 | OR5AC2 |
| 39 | USP29 |
| 40 | ZNF208 |
| 41 | COL5A2 |
| 42 | OR52N4 |

| | |
|---|---|
| 43 | CRB1 |
| 44 | CNTN5 |
| 45 | ADAMTS20 |
| 46 | OR4M1 |
| 47 | LILRA2 |
| 48 | CNTNAP2 |
| 49 | TNN |
| 50 | LRFN2 |
| 51 | GABRG1 |
| 52 | GPR98 |
| 53 | UNC13A |
| 54 | DNAH7 |
| 55 | COL6A6 |
| 56 | NLRP8 |
| 57 | LTBP1 |
| 58 | PRB1 |
| 59 | ADCYAP1R1 |
| 60 | RELN |
| 61 | OR10S1 |
| 62 | ACAN |
| 63 | NLRP7 |
| 64 | APOB |
| 65 | ACSM5 |
| 66 | ZFP14 |
| 67 | FAM5C |
| 68 | RIT2 |
| 69 | DNAH8 |
| 70 | OR4C15 |
| 71 | COL22A1 |
| 72 | OR11L1 |
| 73 | RFX6 |
| 74 | PSKH2 |
| 75 | MYH15 |
| 76 | KALRN |
| 77 | TNR |
| 78 | OR4B1 |
| 79 | FCRL5 |
| 80 | NUP210L |
| 81 | ZNF99 |
| 82 | F5 |
| 83 | MYH1 |
| 84 | EXPH5 |

| | |
|---|---|
| 85 | LAMA2 |
| 86 | HS3ST4 |
| 87 | GH1 |
| 88 | RBP3 |
| 89 | SMR3A |
| 90 | OR4M2 |
| 91 | SCN1A |
| 92 | GRID2 |
| 93 | CFHR4 |
| 94 | DMBT1 |
| 95 | CSMD1 |
| 96 | COL11A2 |
| 97 | RPS4Y2 |
| 98 | PCLO |
| 99 | BCLAF1 |
| 100 | ZNF831 |
| 101 | CRISP3 |
| 102 | RGS5 |
| 103 | EPHA7 |
| 104 | OR52B4 |
| 105 | VWA3B |
| 106 | PLCB1 |
| 107 | CD1E |
| 108 | SLC9A4 |
| 109 | OR2G3 |
| 110 | OR2T1 |
| 111 | TMEM132D |
| 112 | ZNF804A |
| 113 | KCNT2 |
| 114 | NTRK3 |
| 115 | FAM47A |
| 116 | PTGDR |
| 117 | OR4N2 |
| 118 | ZNF536 |
| 119 | OR2G6 |
| 120 | LRP1B |
| 121 | OR2T6 |
| 122 | ZSCAN1 |
| 123 | OR5R1 |
| 124 | TRAT1 |
| 125 | OR6F1 |
| 126 | FIBIN |

| | |
|---|---|
| 127 | PKP2 |
| 128 | DYSF |
| 129 | SLC8A1 |
| 130 | STON1-GTF2A1L |
| 131 | OR5D13 |
| 132 | CNTNAP4 |
| 133 | MAGEA6 |
| 134 | OR51A4 |
| 135 | KIAA1210 |
| 136 | NBPF1 |
| 137 | NDST4 |
| 138 | PRIM2 |
| 139 | COL11A1 |
| 140 | DNAH9 |
| 141 | MAGEC1 |
| 142 | PLXNA4 |
| 143 | C2CD3 |
| 144 | CALCR |
| 145 | SLCO1B1 |
| 146 | OR8H1 |
| 147 | ITGAD |
| 148 | CACNA1C |
| 149 | OR51L1 |
| 150 | PTPRT |
| 151 | CACNA1I |
| 152 | CATSPERD |
| 153 | ZFHX4 |
| 154 | C2orf78 |
| 155 | CHAT |
| 156 | SPAG17 |
| 157 | UNC13C |
| 158 | POTEA |
| 159 | GRIN3A |
| 160 | FAM5B |
| 161 | MORC1 |
| 162 | NLRP14 |
| 163 | OR8B2 |
| 164 | ACSM2B |
| 165 | IRGC |
| 166 | ADCY8 |
| 167 | KIAA1462 |
| 168 | VEGFC |

**FIG. 12**
**(continued)**

| | |
|---|---|
| 169 | OR5J2 |
| 170 | GRIN2B |
| 171 | FAM47C |
| 172 | MROH2B |
| 173 | DACH1 |
| 174 | FAM135B |
| 175 | TAC1 |
| 176 | FER1L6 |
| 177 | DUSP27 |
| 178 | OR2M3 |
| 179 | LPA |
| 180 | FREM1 |
| 181 | CD163 |
| 182 | PRUNE2 |
| 183 | PTPRB |
| 184 | NAALAD2 |
| 185 | OR4D5 |
| 186 | SPANXN2 |
| 187 | HYDIN |
| 188 | TCHHL1 |
| 189 | COL9A1 |
| 190 | OR8B4 |
| 191 | LDB2 |
| 192 | KLK5 |
| 193 | LEPR |
| 194 | CSMD3 |
| 195 | MYH13 |
| 196 | ADAM12 |
| 197 | RIMS2 |
| 198 | USH2A |
| 199 | CDHR1 |
| 200 | NEUROD1 |
| 201 | FAT3 |
| 202 | SELV |
| 203 | C2orf16 |
| 204 | CPA3 |
| 205 | SEZ6L2 |
| 206 | ASF1B |
| 207 | COL19A1 |
| 208 | NPTXR |
| 209 | CLEC6A |
| 210 | CRISP2 |

| | |
|---|---|
| 211 | MYH8 |
| 212 | HSD3B2 |
| 213 | OR8I2 |
| 214 | RTP3 |
| 215 | OR52J3 |
| 216 | RP1 |
| 217 | THSD7B |
| 218 | DGKK |
| 219 | CLVS2 |
| 220 | SNTG2 |
| 221 | NPC1L1 |
| 222 | CDH6 |
| 223 | WDR49 |
| 224 | FAM24A |
| 225 | OR2L13 |
| 226 | OR3A1 |
| 227 | KANK4 |
| 228 | OR2F1 |
| 229 | UNC79 |
| 230 | SYT4 |
| 231 | ANKRD30A |
| 232 | POM121L12 |
| 233 | KCNB2 |
| 234 | SHROOM3 |
| 235 | LRRC7 |
| 236 | CNGB3 |
| 237 | CTNNA3 |
| 238 | SPTA1 |
| 239 | ABCA13 |
| 240 | ASTN1 |
| 241 | AMER3 |
| 242 | LY86 |
| 243 | ANKS1B |
| 244 | ACTRT2 |
| 245 | NLRP5 |
| 246 | PSG2 |
| 247 | SKP1 |
| 248 | TRIOBP |
| 249 | SAMD3 |
| 250 | DNAH5 |
| 251 | MRRF |
| 252 | OC90 |

| | |
|---|---|
| 253 | ROBO4 |
| 254 | UBA3 |
| 255 | NEU4 |
| 256 | SCN3A |
| 257 | TRIM10 |
| 258 | AK024141 |
| 259 | TMEM200A |
| 260 | FAM188B |
| 261 | OR5B17 |
| 262 | HDAC9 |
| 263 | NAA11 |
| 264 | LILRB1 |
| 265 | OR51M1 |
| 266 | TRIM58 |
| 267 | NLRP4 |
| 268 | OR4L1 |
| 269 | OR4K1 |
| 270 | F13A1 |
| 271 | GABRB3 |
| 272 | FOLH1B |
| 273 | SYNDIG1L |
| 274 | PXDNL |
| 275 | MYH4 |
| 276 | OR2T3 |
| 277 | TIGD3 |
| 278 | OR8H3 |
| 279 | MAGI2 |
| 280 | SLC6A19 |
| 281 | CACNA1S |
| 282 | FSTL5 |
| 283 | KDR |
| 284 | OR5D14 |
| 285 | OR8H2 |
| 286 | VN1R4 |
| 287 | PREX2 |
| 288 | GIMAP6 |
| 289 | AHNAK |
| 290 | UGT3A1 |
| 291 | OR4N5 |
| 292 | IMPG1 |
| 293 | OR10A2 |
| 294 | CDR1 |

| | |
|---|---|
| 295 | SI |
| 296 | AOX1 |
| 297 | TRHDE |
| 298 | RGS7 |
| 299 | OR52B2 |
| 300 | BAI3 |
| 301 | NLRP13 |
| 302 | DGKI |
| 303 | CFHR5 |
| 304 | PDE4DIP |
| 305 | GPR111 |
| 306 | ZDHHC19 |
| 307 | SPATA31D1 |
| 308 | FSHR |
| 309 | CWH43 |
| 310 | OR9Q2 |
| 311 | TENM3 |
| 312 | TMEM132B |
| 313 | CA10 |
| 314 | PLCH1 |
| 315 | ZCCHC12 |
| 316 | LAIR2 |
| 317 | OR5B2 |
| 318 | OR2T34 |
| 319 | TLR4 |
| 320 | SIGLEC14 |
| 321 | GCK |
| 322 | DNAH3 |
| 323 | C6 |
| 324 | ADAM29 |
| 325 | OR2L3 |
| 326 | OR5L1 |
| 327 | PDILT |
| 328 | UNC5D |
| 329 | RNF133 |
| 330 | OR2M7 |
| 331 | GPR123 |
| 332 | OR52E4 |
| 333 | OR2F2 |
| 334 | ESRRG |
| 335 | KCNH1 |
| 336 | PRR23B |

**FIG. 12**
**(continued)**

| | |
|---|---|
| 337 | PCDH15 |
| 338 | LRP2 |
| 339 | STAB2 |
| 340 | OR9A2 |
| 341 | COL2A1 |
| 342 | JAM2 |
| 343 | NPAP1 |
| 344 | DCAF4L2 |
| 345 | MYLK3 |
| 346 | MYOCD |
| 347 | ITGA7 |
| 348 | OR8K5 |
| 349 | CLSTN2 |
| 350 | CFTR |
| 351 | PCK1 |
| 352 | TECRL |
| 353 | RYR1 |
| 354 | PTPRD |
| 355 | MXRA5 |
| 356 | NPAS4 |
| 357 | CDS1 |
| 358 | SLC6A18 |
| 359 | ROS1 |
| 360 | BLK |
| 361 | NPFFR2 |
| 362 | OR51T1 |
| 363 | GRXCR1 |
| 364 | SLCO1B3 |
| 365 | CAPN13 |
| 366 | SELP |
| 367 | SCN11A |
| 368 | TDRD5 |
| 369 | UGT3A2 |
| 370 | DZIP3 |
| 371 | LPAR4 |
| 372 | ZDBF2 |
| 373 | TSHZ2 |
| 374 | PCDHGA3 |
| 375 | HOXB1 |
| 376 | PSG7 |
| 377 | MYO18B |
| 378 | NKAIN2 |

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|---|---|
| 379 | SCN2A |
| 380 | SLC5A8 |
| 381 | PARD3B |
| 382 | CSH2 |
| 383 | NCKAP1L |
| 384 | DAB1 |
| 385 | GPR142 |
| 386 | OR2B6 |
| 387 | SEMA5B |
| 388 | OR10C1 |
| 389 | ENTHD1 |
| 390 | LCT |
| 391 | PI16 |
| 392 | SLC35G3 |
| 393 | SLC5A7 |
| 394 | FOLH1 |
| 395 | PAK7 |
| 396 | FLT1 |
| 397 | CNR1 |
| 398 | ASXL3 |
| 399 | NLRP3 |
| 400 | CIB4 |
| 401 | ADCY10 |
| 402 | DENND2A |
| 403 | OR51S1 |
| 404 | DNAH11 |
| 405 | ALPK2 |
| 406 | SPATA16 |
| 407 | EMILIN3 |
| 408 | SLC17A8 |
| 409 | SIGLEC9 |
| 410 | DCC |
| 411 | OR4C3 |
| 412 | KRTAP12-4 |
| 413 | KCNK10 |
| 414 | CEACAM8 |
| 415 | HCN1 |
| 416 | NOS1 |
| 417 | TPO |
| 418 | GRIN2A |
| 419 | PPAPDC1A |
| 420 | OR2A12 |

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|---|---|
| 421 | STON2 |
| 422 | RYR2 |
| 423 | GRM7 |
| 424 | SLCO6A1 |
| 425 | PDGFRA |
| 426 | TRPC5 |
| 427 | OR4F17 |
| 428 | SLC17A6 |
| 429 | ARPP21 |
| 430 | CPED1 |
| 431 | OR10G7 |
| 432 | OR2M4 |
| 433 | NCKAP5 |
| 434 | OR5AP2 |
| 435 | KIF4B |
| 436 | RP1L1 |
| 437 | KRTAP13-3 |
| 438 | OR1J4 |
| 439 | OR4A15 |
| 440 | BPIFB4 |
| 441 | MYO7B |
| 442 | OR10G8 |
| 443 | ITGA4 |
| 444 | MYF5 |
| 445 | SLIT2 |
| 446 | PCDHGA1 |
| 447 | SERPINI2 |
| 448 | ZSWIM2 |
| 449 | GPC5 |
| 450 | OR2T11 |
| 451 | OR8K1 |
| 452 | C7 |
| 453 | CLCN1 |
| 454 | CYP11B2 |
| 455 | C8orf34 |
| 456 | ZNF676 |
| 457 | COMMD1 |
| 458 | PCDHB7 |
| 459 | OR11A1 |
| 460 | KCNH7 |
| 461 | MYH3 |
| 462 | FCRL3 |

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|---|---|
| 463 | OR52E6 |
| 464 | SALL1 |
| 465 | RYR3 |
| 466 | FUT9 |
| 467 | ZNF274 |
| 468 | LCE3D |
| 469 | MYT1L |
| 470 | DNM3 |
| 471 | TNXB |
| 472 | ST6GAL2 |
| 473 | CCNB3 |
| 474 | DNAH10 |
| 475 | MBL2 |
| 476 | GABRB1 |
| 477 | PCDHB4 |
| 478 | COL17A1 |
| 479 | TIE1 |
| 480 | PYDC2 |
| 481 | KCNV1 |
| 482 | BTK |
| 483 | AMPH |
| 484 | CNGA2 |
| 485 | OR4X2 |
| 486 | BCAS1 |
| 487 | ADAM22 |
| 488 | PHLDB2 |
| 489 | WNT3A |
| 490 | DCDC5 |
| 491 | GAB4 |
| 492 | OR8B12 |
| 493 | ELTD1 |
| 494 | LPHN3 |
| 495 | NXF5 |
| 496 | OR8G2 |
| 497 | ADAMTS16 |
| 498 | FSTL1 |
| 499 | MYCT1 |
| 500 | PMFBP1 |