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R version 3.3.3 (2017-03-06) -- "Another Canoe"
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Platform: x86_64-apple-darwin13.4.0 (64-bit)

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[R.app GUI 1.69 (7328) x86_64-apple-darwin13.4.0]

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> # you must install packages klaR, openxlsx, caret and ggplot2
> library(klaR)
Loading required package: MASS
> library(openxlsx)
> training <- read.xlsx("haplo_train.xlsx", sheet=1,na.strings=c("NN", ""))
> test <- read.xlsx("haplo_test.xlsx", sheet=1,na.strings=c("NN", ""))
> training[] <- lapply( training, factor) #convert training into factor
> test[] <- lapply( test, factor)  #convert test into factor
> nb_mod <- NaiveBayes(Population ~., data=training)
> pred <- suppressWarnings(predict(nb_mod, test))
> nb_mod
$apriori
grouping
     POPA      POPB      POPC
0.5566166 0.1336971 0.3096862

$tables
$tables$Locus01
        var
grouping      AA         AG         GG
    POPA 0.0000000 0.06372549 0.93627451
    POPB 0.6734694 0.30612245 0.02040816
    POPC 0.0000000 0.04405286 0.95594714

$tables$Locus02
        var
grouping         AA         AG         GG
    POPA 0.654411765 0.3112745 0.03431373
    POPB 0.642857143 0.3469388 0.01020408
    POPC 0.004405286 0.2026432 0.79295154

$tables$Locus03
        var
grouping          AA         AC         AT         CC         CT         TT
    POPA 0.002469136 0.08888889 0.022222222 0.5456790 0.28641975 0.05432099
    POPB 0.547368421 0.16842105 0.221052632 0.0000000 0.05263158 0.01052632
    POPC 0.000000000 0.00000000 0.004405286 0.1277533 0.45814978 0.40969163

$tables$Locus04
        var
grouping       AA        AG         AT         GG         GT         TT
    POPA 0.3037037 0.4419753 0.08148148 0.11111111 0.05925926 0.002469136
    POPB 0.0000000 0.0000000 0.02105263 0.29473684 0.46315789 0.221052632
    POPC 0.3171806 0.2378855 0.27312775 0.03964758 0.08810573 0.044052863

$tables$Locus05
        var
grouping       AA        AG         GG
    POPA 0.8431373 0.1470588 0.009803922
    POPB 0.5510204 0.4183673 0.030612245
    POPC 0.8105727 0.1762115 0.013215859

$tables$Locus06
        var
grouping       CC         CT TT
    POPA 0.997549 0.00245098  0
    POPB 0.000000 0.00000000  1
    POPC 0.000000 0.00000000  1
```

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$tables$Locus07
       var
grouping          AA        AG         GG
    POPA 0.004901961 0.1862745 0.80882353
    POPB 0.000000000 0.1734694 0.82653061
    POPC 0.806167401 0.1806167 0.01321586

$tables$Locus08
       var
grouping         CC         CT         TT
    POPA 0.9681373 0.03186275 0.00000000
    POPB 0.2448980 0.54081633 0.21428571
    POPC 0.8546256 0.13215859 0.01321586

$tables$Locus09
       var
grouping         AA         AC        AG         CC         CG        GG
    POPA 0.03209877 0.09629630 0.1950617 0.07901235 0.32592593 0.2716049
    POPB 0.26315789 0.02105263 0.4631579 0.00000000 0.02105263 0.2315789
    POPC 0.11013216 0.00000000 0.4405286 0.00000000 0.01762115 0.4317181

$tables$Locus10
       var
grouping          AA          AC          AG         CC        CG        GG       GT
    POPA 0.002469136 0.009876543 0.162962963 0.004938272 0.1728395 0.6469136 0.000000
    POPB 0.189473684 0.000000000 0.536842105 0.000000000 0.0000000 0.2736842 0.000000
    POPC 0.000000000 0.000000000 0.004405286 0.000000000 0.0000000 0.8722467 0.123348

$tables$MH1
       var
grouping AGCCC/AGGCC AGCCC/GGGCC AGCCC/GGGCT AGGCC/AGGCC AGGCC/AGGCT AGGCC/GGGCC AGGCC/GGGCT AGGCT/AGGCT AGGCT/GGGCT
    POPA 0.007352941 0.009803922 0.00000000  0.34313725  0.03676471  0.29901961  0.14215686  0.0000000 0.004901961
    POPB 0.000000000 0.020408163 0.01020408  0.06122449  0.04081633  0.32653061  0.09183673  0.0000000 0.010204082
    POPC 0.000000000 0.013215859 0.09691630  0.00000000  0.03524229  0.05726872  0.31718062  0.2687225 0.008810573
       var
grouping GGCCC/GGCCC GGCCC/GGGCC GGGCC/GGGCC GGGCC/GGGCT GGGCT/GGGCT
    POPA  0.00000000  0.00000000  0.08578431  0.06127451 0.009803922
    POPB  0.00000000  0.00000000  0.21428571  0.18367347 0.040816327
    POPC  0.01321586  0.07048458  0.11894273  0.00000000 0.000000000

$tables$MH2
       var
grouping       AA/AA      AA/AG      AA/GA      AA/GG      AG/AG      AG/GG      GA/GA      GA/GG      GG/GG
    POPA 0.00245098 0.02450980 0.00245098 0.09313725 0.63235294 0.21078431 0.00000000 0.02205882 0.01225490
    POPB 0.09183673 0.01020408 0.24489796 0.24489796 0.00000000 0.06122449 0.08163265 0.18367347 0.08163265
    POPC 0.45814978 0.32158590 0.04845815 0.08370044 0.07488987 0.01321586 0.00000000 0.00000000 0.00000000

$tables$MH3
       var
grouping    ACC/ACC    ACC/ACT    ACC/ATC    ACC/ATT    ACC/TCC    ACC/TCT     ACC/TTC    ACC/TTT    ACT/ACT     ACT/ATT
    POPA 0.07843137 0.07598039 0.08823529 0.21078431 0.00245098 0.01960784 0.004901961 0.05637255 0.03921569 0.098039216
    POPB 0.01020408 0.08163265 0.08163265 0.20408163 0.02040816 0.04081633 0.010204082 0.11224490 0.04081633 0.020408163
    POPC 0.00000000 0.00000000 0.03083700 0.04845815 0.00000000 0.00000000 0.000000000 0.02202643 0.00000000 0.008810573
       var
grouping     ACT/TCT    ACT/TTT    ATC/ATC    ATC/ATT    ATC/TTC    ATC/TTT    ATT/ATT    ATT/TTT    TCC/TCT    TCC/TTT
    POPA 0.007352941 0.03921569 0.05637255 0.09068627 0.00245098 0.03921569 0.04411765 0.03431373 0.00000000 0.00000000
    POPB 0.040816327 0.05102041 0.08163265 0.06122449 0.00000000 0.04081633 0.00000000 0.04081633 0.02040816 0.01020408
    POPC 0.000000000 0.01762115 0.32599119 0.19383260 0.01321586 0.16740088 0.03083700 0.09251101 0.00000000 0.00000000
       var
grouping    TCT/TCT    TCT/TTT     TTC/TTT    TTT/TTT
    POPA 0.00245098 0.004901961 0.002450980 0.00245098
    POPB 0.00000000 0.020408163 0.000000000 0.01020408
    POPC 0.00000000 0.008810573 0.004405286 0.03524229


$levels
[1] "POPA" "POPB" "POPC"

$call
NaiveBayes.default(x = X, grouping = Y)

$x
  Locus01 Locus02 Locus03 Locus04 Locus05 Locus06 Locus07 Locus08 Locus09 Locus10         MH1    MH2     MH3
1      GG      AA    <NA>    <NA>      AA      CC      AA      CC    <NA>    <NA> AGGCC/AGGCT AG/GG ACC/ATT
2      GG      AA    <NA>    <NA>      AA      CC      GG      CC    <NA>    <NA> AGGCC/AGGCC AG/AG ACT/ATT
3      GG      AG    <NA>    <NA>      AA      CC      GG      CC    <NA>    <NA> AGGCC/AGGCC AG/GG ACC/ACC
4      GG      AA      CC      AG      AA      CC      GG      CC      AG      AG AGGCC/AGGCC AG/AG ACC/ACT
5      GG      AA      CT      AA      AA      CC      GG      CC      GG      GG AGGCC/GGGCC AA/GG ACT/ATT
```

```
6    GG  AG  CC  AA  AA  CC  GG  CC  CG  GG AGGCC/GGGCC AG/AG ACC/TTT
7    GG  AA  CT  AA  AA  CC  GG  CC  CC  GG AGGCC/GGGCC AG/AG ACC/ATT
8    GG  AA  CC  AT  AA  CC  GG  CC  AG  GG AGGCC/GGGCC AG/AG ACC/TTT
9    GG  AA  CC  AG  AA  CC  GG  CC  GG  GG AGGCC/AGGCT AG/GG ACC/ATT
10   AG  AA  CT  AA  AA  CC  GG  CC  GG  GG AGGCC/GGGCC AG/AG ATC/ATT
11   GG  AA  TT  AA  AG  CC  GG  CC  CG  GG GGGCC/GGGCC AG/AG ACT/ATT
12   GG  AG  CC  GG  AA  CC  GG  CC  CG  GG AGGCC/GGGCC AG/AG ACC/ATT
13   GG  AA  CC  AG  AA  CC  GG  CC  AC  CG AGGCC/GGGCC AG/AG ATT/ATT
14   GG  AA  CT  AA  AA  CC  GG  CC  GG  GG AGGCC/GGGCT AG/AG ACC/TTC
15   GG  AA  CT  AG  AA  CC  GG  CC  CG  CG AGGCC/GGGCT AG/AG ACC/ATC
16   GG  AA  CT  GG  AA  CC  GG  CC  CG  AG AGGCC/AGGCC AG/AG ACC/ATC
17   GG  AA  CT  AT  AA  CC  GG  CC  AG  GG AGGCC/GGGCC AA/AG ACC/TCT
18   GG  AA  CC  GG  AA  CC  GG  CC  GG  GG AGGCC/AGGCC AG/GG ACT/ATT
19   GG  AA  AT  AG  AA  CC  AG  CC  GG  GG AGGCC/AGGCC AG/AG ATC/ATC
20   GG  AA  AC  AA  AA  CC  GG  CC  GG  AG GGGCC/GGGCT AG/AG ACC/ATT
21   GG  AA  CC  AG  AG  CC  GG  CC  GG  AG GGGCC/GGGCT AG/AG ACC/ATT
22   GG  AG  AC  AT  AA  CC  GG  CC  AG  GG AGGCC/AGGCC AG/GG ACC/ATT
23   GG  AG  CT  AA  AA  CC  GG  CC  CG  CG AGGCC/AGGCC AG/GG ACT/ATT
24   GG  AA  CT  AA  AA  CC  GG  CC  AA  GG AGGCC/AGGCC AG/AG ACT/ATT
25   GG  AA  CT  AG  AA  CC  GG  CC  AG  GG GGGCC/GGGCC AG/GG ATC/ATC
26   AG  AA  TT  AG  AA  CC  GG  CC  GG  CG AGGCC/AGGCC AG/AG ACC/TTT
27   GG  AA  CC  AA  AA  CC  GG  CC  GG  GG AGGCC/AGGCC AG/GG ACT/TTT
28   GG  AG  AC  GG  AA  CC  GG  CC  GG  AG AGGCC/AGGCC AG/AG ACC/ATT
29   GG  AA  CC  GG  AA  CC  GG  CC  AC  GG AGGCC/GGGCC AG/AG ATC/ATT
30   GG  AA  CC  AG  AA  CC  AG  CC  GG  GG AGGCC/AGGCC AG/GG ATC/ATT
31   GG  AG  CT  AG  AA  CC  GG  CC  CG  CG AGGCC/AGGCC AA/GG ATT/ATT
32   GG  AA  TT  AA  AA  CC  GG  CC  GG  GG AGGCC/GGGCC AG/AG ACC/ACT
33   GG  AA  CT  AG  AA  CC  GG  CC  AG  GG AGGCC/GGGCT AG/AG ACT/ATT
34   GG  AA  CC  GG  AA  CC  GG  CC  GG  GG AGGCC/AGGCC AG/AG ATC/ATC
35   GG  AA  CT  AG  AA  CC  GG  CC  AG  GG AGGCC/AGGCC AG/AG ACT/ACT
36   GG  AA  CC  AA  AA  CC  AG  CC  CG  AG AGGCC/GGGCC AG/GG ACC/TTT
37   GG  AA  CC  AG  AA  CC  GG  CC  AG  GG AGGCC/AGGCC AG/AG ACC/TCT
38   GG  AA  CC  GT  AA  CC  GG  CC  AC  GG AGGCC/GGGCT AG/AG ATC/ATT
39   GG  AG  CC  GG  AA  CC  GG  CC  CG  GG AGGCC/GGGCT AG/AG ACT/TTT
40   GG  AA  CC  AA  AA  CC  GG  CC  CG  GG GGGCC/GGGCC AG/GG TTT/TTT
41   GG  AG  CT  AG  AA  CC  AG  CC  AG  AC AGGCC/GGGCC AG/GG ACC/ATT
42   GG  AA  CC  AA  AA  CC  AG  CC  AG  GG AGGCC/AGGCC AG/AG ACC/ACT
43   GG  AG  CT  AA  AA  CC  GG  CC  CC  GG AGGCC/GGGCC AG/AG ATT/ATT
44   GG  AA  CT  AG  AA  CC  GG  CC  GG  GG AGGCC/GGGCT AG/AG ACC/ACT
45   AG  AA  AC  AG  AA  CC  GG  CC  AG  GG AGGCC/GGGCT AG/AG ACC/TTT
46   GG  AG  TT  AG  AA  CC  AG  CC  GG  GG AGGCC/GGGCC AG/AG ACC/ACT
47   GG  AA  CC  AG  AA  CC  GG  CC  CG  GG AGGCC/AGGCC AG/AG ATT/ATT
48   GG  AA  TT  AA  AA  CC  GG  CC  CG  GG AGGCC/AGGCC AG/AG ACC/ACC
49   GG  AA  CT  AG  AG  CC  AG  CC  GG  GG AGGCC/AGGCC AG/GG ACT/ATT
50   GG  AA  AC  AA  AA  CC  GG  CC  CG  GG GGGCC/GGGCC AG/GG ACC/ACC
51   GG  AG  CC  AT  AA  CC  GG  CC  GG  GG AGGCC/AGGCC AG/AG ACT/ACT
52   GG  AG  CT  AT  AA  CC  GG  CC  GG  CG GGGCC/GGGCC AG/AG ACT/TTT
53   GG  AA  CC  AA  AA  CC  GG  CC  AG  AC AGGCC/GGGCC AG/AG ACC/ATT
54   GG  AA  CT  GT  AA  CC  GG  CC  CG  GG AGGCC/AGGCC AG/AG ACT/ATT
55   GG  AA  CT  AA  AG  CC  AG  CC  CG  GG AGGCC/AGGCC AG/AG ACC/ATT
56   GG  AA  CC  AG  AA  CC  AG  CC  GG  GG AGGCC/GGGCT AG/AG ACC/ACC
57   GG  AA  TT  GT  AA  CC  GG  CC  AC  GG AGGCC/AGGCC AG/AG ATC/ATT
58   GG  AA  CT  AA  AA  CC  GG  CC  GG  GG AGGCC/AGGCC AA/AA ATC/ATC
59   GG  AA  CT  AA  AA  CC  GG  CC  GG  GG AGGCC/AGGCC AG/AG ATC/TTT
60   GG  AA  CC  AA  AA  CC  GG  CC  GG  GG AGGCC/AGGCC AG/AG ACC/ATT
61   GG  AA  TT  AA  AA  CC  GG  CC  CG  AG AGGCC/AGGCC AG/AG ACC/ATC
62   GG  AG  CC  AA  AG  CC  GG  CC  AG  GG AGGCC/AGGCC AG/AG ACC/ACT
63   GG  AG  CT  AA  AG  CC  GG  CC  GG  GG AGGCC/AGGCC AG/AG ACT/TCT
64   GG  AA  CC  AA  AG  CC  GG  CC  AC  GG AGGCC/GGGCT AG/AG ACT/ACT
65   GG  AG  TT  AA  AA  CC  GG  CC  CG  GG AGGCC/GGGCC AA/GG ATT/TTT
66   GG  AA  CC  GT  AA  CC  GG  CC  CG  CG GGGCC/GGGCT AG/GG ACT/TTT
67   GG  AG  AT  GT  AA  CC  GG  CC  GG  AG AGGCC/GGGCT AG/GG ACT/TTT
68   GG  AA  CC  AG  AA  CC  GG  CC  AG  CG AGGCC/AGGCC AG/GG ATT/TTT
69   GG  AA  CT  AT  AA  CC  GG  CC  AG  GG AGGCC/GGGCC AG/AG ATC/ATT
70   AG  AA  CC  AA  AA  CC  GG  CC  GG  AG AGGCC/AGGCC AG/GG ACC/ACC
71   GG  AA  CT  AG  AA  CC  AG  CC  CG  AA GGGCC/GGGCC AG/AG ACC/ACT
72   GG  AA  CT  AG  AA  CC  GG  CC  CG  GG AGGCC/GGGCC AG/AG TCT/TTT
73   GG  AG  CT  AG  AA  CC  GG  CC  AG  GG AGGCC/GGGCC AG/AG ACC/ATC
74   GG  AG  CC  AG  AA  CC  GG  CC  AC  GG AGGCC/GGGCC AG/AG ACC/ACC
75   GG  AA  CC  AA  AA  CC  AG  CC  CG  GG AGGCC/AGGCC AG/AG ACC/ATC
76   AG  AA  CC  AA  AG  CC  GG  CC  GG  GG AGGCC/GGGCC AG/GG ATC/ATT
77   GG  AA  CC  AA  AA  CC  GG  CC  GG  GG AGGCC/AGGCT AG/AG ATC/ATT
78   GG  AA  CT  AA  AA  CC  AG  CC  GG  GG AGGCC/GGGCC AG/AG ACC/ATC
79   GG  AG  CC  AG  AA  CC  GG  CC  CC  GG AGGCC/GGGCC AG/AG ATT/TTT
80   GG  AA  CT  AG  AA  CC  GG  CC  AG  GG AGGCC/AGGCC AA/GG ACC/ATT
81   GG  AG  CC  GG  AA  CC  GG  CC  CG  GG AGGCC/GGGCT AG/AG ACC/ATT
82   GG  AA  CC  AA  AG  CC  GG  CC  CG  AG AGGCC/GGGCC AG/AG ACC/ACC
83   GG  AA  CT  AA  AA  CC  GG  CC  CG  GG GGGCC/GGGCT AG/AG ACC/ATT
84   GG  AG  TT  AG  AA  CC  GG  CC  GG  GG AGGCC/AGGCC AG/AG ATT/ATT
```

85	GG	AG	CC	AA	AG	CC	GG	CC	AG	AG	AGGCC/AGGCC	AG/GG	ATT/TTT
86	GG	AA	CT	AT	AA	CC	AG	CC	AA	GG	GGGCC/GGGCT	AG/AG	ACT/TTT
87	GG	AA	CT	AG	AA	CC	GG	CC	CG	AG	AGGCC/AGGCC	AG/GG	ACT/TTT
88	GG	AG	CC	AG	AA	CC	GG	CC	AG	AG	AGGCC/AGGCC	AG/AG	ACC/ATT
89	GG	AA	AC	GG	AA	CC	GG	CC	AG	AG	AGGCC/AGGCC	AG/AG	ACC/ACC
90	GG	AG	CT	AA	AA	CC	GG	CC	AC	AG	AGGCC/GGGCC	AG/AG	ACC/TTT
91	GG	AG	CC	AG	AG	CC	GG	CC	AG	GG	AGGCC/GGGCC	AG/AG	TTC/TTT
92	GG	AG	CC	AG	AA	CC	GG	CC	CG	GG	AGGCC/GGGCC	AG/AG	ACC/ATT
93	GG	AA	CT	AA	AA	CC	GG	CC	CG	GG	GGGCC/GGGCT	AG/AG	ACC/TTT
94	GG	AG	CC	GG	AA	CC	GG	CC	CG	AG	AGGCC/GGGCC	AG/AG	ATC/ATC
95	GG	AG	CC	AG	AA	CC	GG	CC	CG	GG	AGGCC/GGGCC	AA/GG	ACC/ATT
96	AG	AG	CT	AT	AA	CC	GG	CC	CG	CG	AGGCC/AGGCC	AG/GG	ATC/ATC
97	GG	AG	CT	AA	AA	CC	AG	CC	CG	GG	AGGCC/AGGCC	AG/AG	ACT/ATT
98	GG	AA	CT	AG	AA	CC	GG	CC	CG	GG	AGGCC/AGGCC	AG/AG	ACC/ACT
99	GG	AG	CC	AG	AA	CC	GG	CC	AC	AG	GGGCC/GGGCC	AG/AG	ACT/ATT
100	GG	AA	CC	AG	AA	CC	GG	CC	CC	CG	AGGCC/GGGCC	AG/AG	ATC/ATT
101	GG	AA	CC	GT	AA	CC	GG	CC	AG	GG	AGGCC/AGGCC	AA/GG	ACC/ATT
102	GG	AG	CT	AG	AA	CC	AG	CC	GG	GG	AGGCC/GGGCC	AG/AG	ACC/ATT
103	GG	AG	CT	AG	AA	CC	GG	CC	AC	CG	AGGCC/AGGCC	AG/AG	ACC/ACT
104	GG	AA	CC	AG	AA	CC	GG	CC	CC	CG	GGGCC/GGGCC	AA/GG	ACC/TTT
105	GG	AG	CC	AG	AG	CC	AG	CC	GG	CG	AGGCC/GGGCC	AG/AG	ACC/ATC
106	GG	AG	CC	AG	AA	CC	GG	CC	CG	AG	AGGCC/GGGCT	AG/GG	ACC/ATT
107	GG	AA	CC	AT	AA	CC	AG	CC	AG	GG	AGGCC/AGGCT	AG/AG	ACC/ATT
108	GG	GG	AC	AG	AG	CC	GG	CC	AC	CG	GGGCC/GGGCC	GA/GG	ACC/ACT
109	GG	AA	AT	AA	AG	CC	GG	CC	AC	CG	GGGCC/GGGCC	AG/AG	ACT/ACT
110	GG	AG	AA	AG	AG	CC	GG	CC	CG	CG	GGGCC/GGGCT	AA/AG	ATC/TTT
111	GG	AA	CT	AA	AA	CC	GG	CC	GG	GG	AGGCC/AGGCC	AG/AG	ACC/ATT
112	GG	GG	AT	GT	AA	CC	GG	CC	CG	AG	AGGCC/AGGCC	AG/AG	TCT/TTT
113	GG	AA	AC	GT	AA	CC	GG	CC	AG	CG	AGGCC/AGGCC	AG/AG	ACC/ATT
114	GG	AA	CC	AA	AA	CC	GG	CC	GG	GG	AGGCC/AGGCC	AG/GG	ACC/ATT
115	GG	AA	CC	GG	AA	CC	GG	CC	GG	AG	AGGCC/GGGCC	AG/AG	ATC/ATT
116	GG	AA	CT	AG	AA	CC	GG	CC	AG	GG	AGGCC/GGGCC	GA/GG	ATC/ATT
117	GG	AA	CC	AA	AA	CC	GG	CC	CG	GG	AGGCC/GGGCT	AG/AG	ACC/ATT
118	AG	AA	CC	GG	AA	CC	GG	CC	CC	GG	AGGCC/GGGCC	AA/AG	ATT/ATT
119	GG	AG	CT	GT	AA	CC	GG	CC	GG	AG	AGGCC/GGGCC	AG/GG	ATT/ATT
120	GG	AG	CC	AG	AA	CC	GG	CC	AG	CG	AGGCC/GGGCC	AG/AG	ACT/TTT
121	GG	AA	CC	GT	AA	CC	GG	CC	AG	AG	AGGCC/GGGCT	AG/AG	ACT/ACT
122	GG	AA	CC	AA	AA	CC	GG	CC	CG	GG	AGGCC/GGGCC	AG/AG	ACT/ATT
123	GG	AG	CC	AA	GG	CC	GG	CC	AG	GG	AGGCC/GGGCC	AG/AG	ACC/ATT
124	GG	AG	CC	AG	AA	CC	GG	CC	AG	AG	AGGCC/AGGCC	AA/GG	ATC/ATT
125	GG	AA	CT	AG	AA	CC	GG	CC	CC	CG	AGGCC/GGGCT	AG/AG	ACC/ATC
126	GG	AA	CC	GG	AA	CC	GG	CC	CG	GG	AGGCC/GGGCT	AG/AG	ACT/ATT
127	GG	AA	CT	GT	AA	CC	GG	CC	CG	GG	AGGCC/GGGCT	AG/AG	ACT/ACT
128	GG	AA	CC	AG	AG	CC	GG	CC	CC	CG	AGGCC/AGGCT	AG/AG	ATC/ATT
129	GG	AG	CC	AG	AG	CC	GG	CC	CG	GG	AGGCC/GGGCC	AG/GG	ACC/TTC
130	GG	AG	CC	AG	AA	CC	GG	CC	CG	CC	AGGCC/AGGCC	AG/AG	ATC/ATT
131	GG	AA	CC	AG	AA	CC	GG	CC	GG	AG	AGGCC/GGGCT	AA/AG	ATC/ATT
132	GG	AG	CC	AA	AA	CC	GG	CC	CG	GG	AGGCC/GGGCC	AG/AG	ACT/ACT
133	GG	AG	CC	GG	AA	CC	GG	CC	CG	CG	AGGCC/GGGCT	GA/GG	ACC/ATT
134	GG	AA	TT	AT	AA	CC	GG	CC	CG	AG	AGGCC/AGGCC	AG/AG	ACT/ATT
135	GG	AA	CC	AT	GG	CC	GG	CC	CG	CG	GGGCC/GGGCC	AG/AG	ATT/ATT
136	GG	AG	AC	AG	AA	CC	GG	CC	CG	GG	GGGCC/GGGCC	AA/GG	ATC/TTT
137	GG	AA	CC	GT	AG	CC	GG	CC	AA	CG	AGGCC/GGGCC	AA/GA	ACC/ATC
138	GG	AG	CC	GT	AA	CC	AG	CC	AG	GG	GGGCC/GGGCC	AG/AG	ACC/ATT
139	GG	AA	TT	GG	AA	CC	GG	CC	CG	GG	GGGCC/GGGCT	AG/AG	ACC/ACT
140	GG	AA	CT	AG	AG	CC	AG	CC	CC	CG	AGGCC/AGGCT	AG/GG	ACT/ATT
141	GG	AA	CC	GG	AA	CC	AG	CC	CG	CG	AGGCC/AGGCC	AG/AG	ACC/TCC
142	GG	AA	CT	AG	AA	CC	GG	CC	AC	GG	AGGCC/AGGCC	AG/GG	ACC/ATC
143	GG	GG	AC	GG	AA	CC	AG	CC	AG	AC	AGGCC/AGGCC	AG/GG	ATC/ATC
144	GG	AA	AC	AA	AA	CC	GG	CC	AC	GG	AGGCC/GGGCT	AG/AG	ACT/ATT
145	GG	AA	CC	AA	AA	CC	GG	CC	AA	GG	AGGCC/GGGCC	AG/AG	ACT/ATT
146	GG	AG	CT	AG	AA	CC	GG	CC	CG	GG	AGGCC/GGGCC	AG/AG	ACC/ATT
147	GG	AG	CC	AG	AA	CC	AG	CC	CG	GG	AGGCC/AGGCC	AA/AG	ATC/ATT
148	GG	AA	CC	AT	AA	CC	GG	CC	CG	GG	AGGCC/GGGCC	AA/GG	ACC/ACC
149	GG	AA	CC	AT	AA	CC	GG	CC	CG	CG	AGGCC/AGGCC	AG/AG	ATC/ATT
150	GG	AA	CC	AG	AA	CC	AG	CC	CG	AG	AGGCC/GGGCC	AG/AG	ACC/TCT
151	GG	AA	AC	AG	AA	CC	GG	CC	CG	GG	AGGCC/GGGCC	AG/AG	ACC/ACC
152	GG	AG	CC	AA	AA	CC	AG	CC	AC	GG	AGGCC/GGGCC	AG/AG	ATT/TTT
153	GG	AG	CC	AT	AA	CC	AG	CC	AC	CG	AGGCT/GGGCT	AG/AG	ACC/ATT
154	GG	AA	CC	GG	AG	CC	GG	CC	GG	CG	AGGCC/AGGCC	AG/AG	ACT/ATT
155	GG	AG	CC	AG	AA	CC	GG	CC	CG	GG	AGGCC/AGGCT	AG/AG	ATC/TTT
156	GG	AA	TT	AA	AA	CC	GG	CC	CC	AG	AGGCC/AGGCC	AA/GG	ACT/ATT
157	GG	AG	TT	AG	AA	CC	GG	CC	AG	GG	AGGCC/GGGCT	AG/AG	ATT/TTT
158	GG	AA	CT	GG	AA	CC	AG	CC	CG	GG	AGGCC/AGGCC	AG/AG	ACC/ACT
159	GG	AA	TT	AT	AG	CC	GG	CC	CG	GG	GGGCT/GGGCT	AA/GG	ATC/ATT
160	AG	AA	CC	AT	AA	CC	AG	CC	AA	GG	AGGCC/AGGCC	AG/AG	ACC/TTT
161	GG	AA	CT	AG	AG	CC	GG	CC	AA	GG	AGGCC/AGGCC	AG/AG	ATC/ATT
162	GG	AA	CC	AG	AA	CC	GG	CC	GG	GG	AGGCC/GGGCC	GA/GG	ACC/ATT
163	GG	AA	CC	AA	AA	CC	GG	CC	AC	GG	GGGCC/GGGCC	AG/GG	ACC/ATT

164	GG	AG	CC	AG	AA	CC	GG	CT	CC	CG	AGGCC/GGGCC	AG/AG	ACC/ATT
165	GG	AA	CC	TT	AA	CC	GG	CC	CG	CG	AGGCC/GGGCC	AG/AG	ATC/TTT
166	AG	AG	CC	AG	AA	CC	GG	CC	GG	GG	AGGCC/AGGCC	AG/AG	ACC/TTT
167	GG	AA	AC	AG	AA	CC	GG	CC	CC	GG	AGGCC/AGGCC	AG/AG	ATC/ATT
168	GG	AG	CT	AG	AA	CC	GG	CC	CG	GG	AGGCC/AGGCC	AG/AG	ACC/ATT
169	GG	AA	CC	AG	AA	CC	GG	CT	CC	CG	AGGCC/AGGCC	AG/AG	ACC/ACC
170	GG	AG	CC	AG	AA	CC	GG	CC	AG	GG	AGGCC/AGGCC	AA/GG	ACC/ATT
171	GG	AA	CT	AG	AA	CC	GG	CC	AC	AG	GGGCT/GGGCT	AG/AG	ACC/TCT
172	GG	AA	CC	AA	AA	CC	GG	CC	CG	GG	AGGCC/AGGCC	AG/AG	ATC/ATT
173	GG	AA	AC	AA	AA	CC	GG	CC	GG	GG	AGGCC/GGGCT	AG/AG	ACT/ATT
174	GG	AG	TT	GT	AA	CC	GG	CC	GG	CG	AGGCC/AGGCC	AG/AG	ACC/ACC
175	GG	AA	CT	AT	AA	CC	GG	CC	AC	AG	AGGCC/AGGCC	AG/AG	ACC/ACC
176	GG	AA	CT	AG	AA	CC	AG	CC	CC	GG	AGGCC/GGGCC	AG/AG	ATC/ATC
177	GG	AG	CT	AA	AA	CC	GG	CC	CG	GG	AGGCC/AGGCC	AG/AG	ACT/TTT
178	GG	AA	CT	AA	AA	CC	AG	CC	CG	CG	AGGCC/AGGCT	GG/GG	ACC/ATT
179	GG	AA	CT	AA	AA	CC	GG	CC	AG	CG	GGGCC/GGGCC	AG/AG	ACC/ATT
180	GG	AA	CT	AA	AA	CC	GG	CC	CC	GG	GGGCC/GGGCT	AG/AG	ACT/ATT
181	GG	AA	CC	AA	AA	CC	GG	CC	GG	CG	AGGCC/GGGCT	AA/AG	ATT/TTT
182	GG	AA	CC	AG	AA	CC	GG	CC	GG	GG	AGGCC/AGGCC	AG/AG	ATC/TTT
183	GG	GG	CC	AG	AA	CC	AG	CC	GG	GG	AGGCC/AGGCC	AG/AG	ACC/ATC
184	GG	AG	CC	AG	AA	CC	AG	CC	CG	AG	AGGCC/AGGCC	AA/AG	ACT/ATT
185	GG	AA	CT	AG	AA	CC	GG	CT	GG	GG	AGGCC/GGGCC	AG/AG	ACC/ACT
186	GG	AA	AC	GT	AA	CC	GG	CC	AC	GG	AGGCC/AGGCC	AA/GG	ACC/ACC
187	GG	AA	AC	AA	AA	CC	GG	CC	CG	CG	AGGCC/GGGCC	AG/AG	ACC/ATC
188	GG	AA	CC	AA	AG	CC	GG	CC	CG	GG	AGGCC/AGGCC	AG/AG	ATC/ATT
189	GG	AG	CT	GT	AA	CC	GG	CC	CG	AG	AGGCC/GGGCT	AG/AG	ACC/ATC
190	GG	AA	CC	AT	AA	CC	GG	CC	AC	CG	AGGCC/AGGCC	GA/GG	ACC/ATT
191	GG	AA	CC	GT	AA	CC	GG	CC	CG	CG	AGGCC/GGGCT	GA/GG	ACC/ATT
192	GG	AG	CC	AG	AA	CC	AG	CC	AG	GG	AGGCC/AGGCC	AG/GG	ACC/ATT
193	GG	AA	CC	AG	AA	CC	GG	CC	CC	GG	AGGCC/GGGCC	AG/AG	ACT/ATT
194	GG	AA	TT	AG	AA	CC	GG	CC	CG	GG	GGGCT/GGGCT	AG/AG	ACT/ATT
195	GG	AA	CC	GT	AG	CC	AG	CC	CG	CG	AGGCC/AGGCC	AG/AG	ACT/ATT
196	GG	AG	CT	AA	AA	CC	GG	CC	AA	GG	AGGCC/GGGCT	AG/AG	ACC/ATT
197	GG	AA	CC	GT	AA	CC	GG	CC	CC	GG	AGGCC/GGGCT	AG/GG	ACC/ATT
198	GG	AA	CC	AG	AA	CC	GG	CC	AG	GG	AGGCC/GGGCC	AG/GG	ACC/ATT
199	AG	AA	CC	AG	AA	CC	GG	CC	CG	AG	AGGCC/GGGCC	AG/AG	ACC/ACC
200	GG	AG	CT	AA	AA	CC	GG	CC	AC	AG	AGGCC/AGGCC	AA/GG	ACC/ATT
201	GG	AA	CC	AA	AA	CC	GG	CT	CC	CG	AGGCC/GGGCC	AG/AG	ATT/ATT
202	GG	AG	AC	AA	AA	CC	AG	CC	AG	GG	GGGCC/GGGCT	AA/GG	ACC/ATT
203	GG	AG	CC	AG	AA	CC	AG	CC	CG	GG	GGGCC/GGGCT	AG/AG	ACC/ACC
204	GG	AA	CT	GG	AA	CC	GG	CC	GG	GG	AGGCC/GGGCC	AG/AG	ACT/ATT
205	GG	AA	CT	AA	AA	CC	GG	CC	AG	GG	AGGCC/GGGCT	AG/GG	ACC/ACT
206	GG	AA	CC	GG	AA	CC	GG	CC	AC	CG	AGGCC/GGGCT	AA/GG	ATC/TTT
207	GG	AA	CC	AG	AA	CC	AG	CC	CG	CG	AGGCC/GGGCC	AG/GG	ATC/ATC
208	GG	AA	CC	AT	AA	CC	GG	CC	CG	GG	AGGCT/GGGCT	AG/AG	ATT/TTT
209	AG	AA	TT	AG	AA	CC	AG	CC	CC	GG	AGGCC/GGGCC	GA/GG	ATT/ATT
210	GG	AA	CT	AG	AG	CC	AG	CC	AC	GG	AGGCC/AGGCC	AG/AG	ACC/ACT
211	GG	AA	CC	AT	AA	CC	GG	CT	CG	GG	AGGCT/GGGCT	AA/GG	ATT/ATT
212	GG	AA	CC	AT	AA	CC	GG	CC	AG	AG	AGGCC/GGGCT	AG/AG	ACC/ATC
213	GG	AA	CC	AA	AA	CC	GG	CC	AG	GG	AGGCC/GGGCC	AA/GG	ACC/ACT
214	GG	AA	CC	AG	AA	CC	GG	CC	GG	GG	AGGCC/AGGCC	AG/AG	ATT/TTT
215	GG	AA	AC	GG	AA	CC	AG	CC	AG	GG	AGGCC/GGGCT	AG/AG	ATC/ATC
216	GG	AG	CC	AA	AA	CC	GG	CC	CG	GG	AGGCC/AGGCT	AG/AG	ACT/TCT
217	AG	AG	CC	AG	AA	CC	AG	CC	GG	GG	GGGCC/GGGCT	GG/GG	ATC/ATT
218	GG	AA	CC	AA	AA	CC	GG	CC	AG	CG	GGGCC/GGGCC	AG/AG	ACC/ATC
219	GG	AG	CT	GT	AA	CC	GG	CC	GG	GG	AGGCC/GGGCC	AG/AG	ACC/ACC
220	GG	AA	CC	AA	AA	CC	GG	CC	CG	GG	AGGCT/GGGCT	AG/AG	ATT/TTT
221	AG	AG	CC	AA	AA	CC	GG	CC	CG	GG	AGGCC/GGGCT	AG/GG	ATC/TTT
222	GG	AA	CC	AG	AG	CC	AG	CC	CG	AG	GGGCC/GGGCC	AG/AG	ATT/ATT
223	GG	AA	CC	AT	AA	CC	GG	CC	GG	GG	AGGCC/AGGCT	AG/AG	ATT/ATT
224	GG	AA	AC	AG	AA	CC	GG	CC	CG	GG	AGGCC/GGGCC	AA/AG	ACC/ATT
225	GG	AA	CC	AG	AA	CC	GG	CC	GG	GG	AGGCC/GGGCC	AA/GG	ACC/ACC
226	GG	AG	CT	AG	AG	CC	GG	CC	CG	GG	AGGCC/AGGCC	GA/GG	ACC/ACT
227	GG	AA	CT	AG	AA	CC	GG	CC	GG	AG	AGGCC/AGGCC	AG/AG	ACC/ACC
228	GG	GG	CC	AG	AA	CC	GG	CC	AG	GG	AGGCC/AGGCC	AG/AG	ACC/ATT
229	GG	AA	AC	AG	AA	CC	GG	CC	AA	GG	AGGCC/GGGCC	AA/GG	ACT/ACT
230	GG	AA	AC	AG	AG	CC	GG	CC	GG	GG	AGGCC/GGGCC	AG/AG	ACC/ATT
231	GG	AA	CT	AA	AG	CC	GG	CC	AG	GG	GGGCC/GGGCC	AG/AG	ACC/ATC
232	GG	AA	CT	AG	AG	CC	AG	CC	GG	GG	GGGCC/GGGCT	AA/GG	ACC/ATT
233	GG	AA	CC	AA	AA	CC	GG	CC	CG	CG	AGGCC/AGGCC	GG/GG	ACC/TTT
234	GG	AG	CC	AG	AA	CC	GG	CC	GG	GG	AGGCC/GGGCC	AG/AG	ACC/ACC
235	GG	AA	CC	AG	AA	CC	GG	CC	CC	GG	AGGCC/GGGCC	AG/AG	ACC/ATC
236	GG	AA	CC	AG	AA	CC	AG	CC	GG	GG	AGGCC/GGGCC	AA/GG	ACC/ATT
237	GG	AG	CC	AA	AA	CC	GG	CC	GG	AG	AGGCC/AGGCC	AG/AG	ATC/ATC
238	GG	AA	CC	GG	AG	CC	AG	CC	CG	GG	AGGCC/GGGCC	AG/GG	ATC/ATT
239	AG	AG	CC	AG	AA	CC	GG	CC	AG	GG	AGGCC/GGGCT	AG/GG	ACT/ATT
240	GG	GG	AC	AG	AA	CC	GG	CC	GG	GG	GGGCC/GGGCT	AG/AG	ACC/ATC
241	GG	AG	CT	AA	AA	CC	GG	CC	GG	CC	AGGCC/AGGCC	AG/AG	ACC/ATT
242	GG	AA	AC	AG	AA	CC	AG	CC	AG	GG	AGGCC/GGGCT	AG/GG	ACC/ATT

243	GG	AA	CC	GG	AG	CC	GG	CC	CG	CG AGGCC/GGGCC AG/AG ACC/ACT
244	GG	AA	AC	AG	AA	CC	AG	CC	GG	GG AGGCC/AGGCC AG/GG ATC/ATT
245	GG	AA	AT	AG	AA	CC	GG	CC	CG	GG GGGCC/GGGCC AG/AG ATC/TTT
246	GG	AA	AC	GG	AA	CC	GG	CC	CG	GG AGGCC/AGGCC AG/AG ATC/TTT
247	AG	GG	CC	GG	AG	CC	GG	CC	CG	GG AGGCC/GGGCC AG/AG ATC/ATT
248	GG	AG	CT	AA	AA	CC	GG	CC	GG	CG AGGCC/GGGCC AG/GG ATC/ATT
249	GG	AG	AC	AG	AA	CC	GG	CC	AG	GG AGGCC/AGGCC AA/GG ACC/ATT
250	GG	AA	CC	AG	AA	CC	GG	CC	CG	GG GGGCC/GGGCC AG/AG ACC/ATT
251	GG	AG	CC	AG	AG	CC	GG	CC	GG	CG AGGCC/AGGCC AG/AG ATC/ATC
252	GG	AA	CT	GG	GG	CC	GG	CT	GG	GG GGGCC/GGGCC AG/AG ACC/ACT
253	GG	AA	CC	AG	AA	CC	GG	CC	AC	GG AGGCC/AGGCC AG/AG ACC/ATC
254	GG	AA	CT	AG	AA	CC	GG	CC	GG	GG AGGCC/GGGCC AA/GG ATT/ATT
255	GG	AA	AT	AG	AA	CC	GG	CC	GG	GG AGGCC/GGGCC AG/GG ACC/ATC
256	GG	AA	CC	GG	AA	CC	GG	CT	CG	GG GGGCC/GGGCT AG/AG ATC/ATT
257	GG	AA	CT	GG	AG	CC	AG	CC	CC	CG AGGCC/GGGCC AG/AG ATT/ATT
258	GG	AG	CC	AG	AA	CC	AG	CC	AG	GG AGGCC/AGGCC AG/AG ATC/TTT
259	GG	AA	CC	AG	AA	CC	AG	CC	GG	GG AGGCC/AGGCC AG/AG ATC/ATC
260	GG	GG	CC	AA	AA	CC	AG	CC	CC	GG AGGCC/AGGCC AG/GG ACC/ACT
261	AG	AA	AT	AG	AA	CC	GG	CT	CC	GG AGGCC/AGGCC AG/AG ACT/ACT
262	GG	AG	CT	GG	AA	CC	AG	CC	CG	GG AGGCC/GGGCT AG/AG ACT/ATT
263	GG	AA	CT	AG	AA	CC	GG	CC	GG	GG AGGCC/GGGCC AG/AG ATC/ATT
264	GG	AA	CT	AG	AA	CC	AG	CC	GG	GG AGGCC/AGGCC AG/AG ACC/ACC
265	GG	AG	CC	AA	AG	CC	GG	CC	CC	AG AGGCC/AGGCC AG/GG ACC/TCT
266	GG	AA	CC	AG	AA	CC	GG	CC	AC	GG AGGCC/GGGCT AG/GG ACC/ATC
267	GG	AA	AC	AA	AA	CC	GG	CC	AC	GG AGGCC/GGGCC AA/GG ACC/ATT
268	GG	AA	CT	GG	AG	CC	AG	CC	CC	GG AGGCC/GGGCC AA/AG ATT/TTT
269	GG	AG	TT	AG	AA	CC	GG	CT	CG	GG GGGCC/GGGCC AG/GG ACC/ACC
270	GG	AA	CC	GG	AA	CC	GG	CC	GG	AG AGGCC/AGGCC AG/AG ATC/ATT
271	GG	AA	CC	GG	AA	CC	GG	CC	CG	GG GGGCC/GGGCT AG/AG ATT/ATT
272	GG	AG	CC	AG	AA	CC	GG	CC	GG	CG AGGCC/AGGCC AA/GG ACC/TTT
273	GG	AG	CC	AG	AA	CC	GG	CC	CG	GG AGGCC/GGGCT AG/AG ACC/ATT
274	GG	AA	CT	AG	AA	CC	GG	CC	GG	CG AGGCC/GGGCC AG/AG ATC/ATC
275	GG	AA	AC	AG	AA	CC	GG	CC	CG	AG AGGCC/AGGCC AA/GG ACC/ATT
276	GG	AA	CC	AG	AA	CC	GG	CC	AC	GG AGGCC/AGGCC AG/AG ACT/ACT
277	AG	GG	CT	AT	AA	CC	AG	CC	CC	GG AGGCC/AGGCC AG/GG ATC/ATC
278	GG	AG	CC	AT	AA	CC	GG	CC	GG	AG GGGCC/GGGCT AG/GG ACC/ACT
279	GG	AA	CC	GG	AA	CC	AG	CC	CG	GG AGGCC/AGGCC AA/GG ACC/ATT
280	GG	AA	CC	AG	AA	CC	GG	CC	CC	GG GGGCC/GGGCT AG/AG ATC/ATT
281	GG	AA	TT	AA	AA	CC	GG	CT	AG	CG AGGCC/AGGCC AG/GG ACC/ACC
282	GG	AG	CC	AG	AA	CC	GG	CC	CG	GG AGGCC/AGGCC AG/AG ACT/TTT
283	GG	AA	CT	AG	AG	CC	GG	CC	CC	GG AGGCC/AGGCC AG/AG ACT/ATT
284	GG	AA	CC	AA	AA	CC	GG	CC	AG	GG AGGCC/GGGCC AG/AG ACT/ACT
285	GG	AA	AC	AG	AA	CC	AG	CC	GG	GG AGGCC/GGGCC AG/AG ATC/ATC
286	GG	AA	CC	AG	AA	CC	GG	CC	GG	GG AGGCC/AGGCC AG/AG ACC/ATT
287	AG	AA	CC	AG	AA	CC	GG	CC	GG	GG AGGCC/AGGCC AG/AG ACT/ATT
288	AG	AA	CC	AT	AG	CC	AG	CC	GG	GG GGGCC/GGGCT AG/AG ATC/ATC
289	GG	AA	CC	AG	AA	CC	GG	CC	CC	GG AGGCC/AGGCC AG/GG ACT/ACT
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291	GG	AA	AC	GG	AA	CC	GG	CC	AG	CG AGGCC/GGGCC AG/GG ACC/ACT
292	GG	GG	CC	GG	AG	CC	GG	CC	CG	CG AGGCC/GGGCT AG/GG ACC/ATT
293	GG	AA	CC	AA	AA	CC	GG	CC	AA	GG AGGCC/GGGCC AA/GG ACC/ATT
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295	GG	AG	CC	AA	AA	CC	GG	CC	CG	GG AGGCC/GGGCC AG/AG ACT/ATT
296	GG	AG	CT	GT	AA	CC	AG	CC	CG	AG AGGCC/AGGCC AG/GG ACT/TTT
297	AG	AA	CC	AG	AA	CC	GG	CC	AA	GG AGGCC/GGGCT AA/GG ACC/ATT
298	GG	AA	CC	AG	AA	CC	AG	CC	GG	CG AGCCC/GGGCC AG/GG ACC/ATT
299	GG	AA	CC	AT	AA	CC	GG	CC	GG	AG GGGCC/GGGCC AG/GG ACC/ACC
300	AG	AA	CC	GT	AA	CC	AG	CC	CG	GG AGGCC/AGGCC AG/GG ACC/ACC
301	GG	AA	CC	AA	AA	CC	GG	CC	AG	GG AGGCC/GGGCT AG/GG ATT/ATT
302	GG	AA	AT	AA	AA	CC	GG	CC	CG	GG AGGCC/AGGCT AG/AG ACC/ACC
303	GG	AG	TT	AG	AA	CC	GG	CC	AG	GG GGGCC/GGGCC AG/GG ACC/ATT
304	GG	AA	CC	GG	AA	CC	GG	CC	CG	GG AGGCC/GGGCT AA/GG ACT/TTT
305	GG	AA	TT	AG	AG	CC	GG	CC	CG	AG GGGCC/GGGCT AG/AG ACC/TTT
306	GG	AG	CC	AA	AA	CC	GG	CC	GG	AG GGGCC/GGGCC AG/AG ATC/ATT
307	GG	AG	CC	AG	AA	CC	GG	CC	CC	GG GGGCC/GGGCC AG/GG ACC/ACT
308	GG	AG	CC	AG	AG	CC	AG	CC	GG	AG GGGCC/GGGCC AG/AG ACC/ACC
309	GG	AA	CT	AA	AA	CC	GG	CC	GG	GG GGGCC/GGGCC AG/AG ATT/TTT
310	AG	AG	CC	AG	AA	CC	GG	CC	AG	GG AGGCC/GGGCC AG/AG ACC/ATT
311	GG	AG	AT	AG	AA	CC	GG	CC	GG	AG AGGCC/AGGCC AG/AG ATC/ATC
312	GG	AA	AC	AA	AA	CC	GG	CC	GG	AG AGGCC/AGGCT AG/AG ATC/ATT
313	GG	AA	CT	AA	AA	CC	GG	CC	AC	GG GGGCC/GGGCC AG/GG ACC/ATC
314	GG	AA	CT	GG	AA	CC	GG	CC	GG	CG GGGCT/GGGCC AG/AG ACC/ATT
315	GG	AG	CC	AA	AA	CC	GG	CC	AG	GG AGGCC/GGGCT AG/AG ACC/ACT
316	GG	AG	CC	GG	AA	CC	GG	CC	AG	GG AGGCC/GGGCC AG/AG ATC/ATC
317	GG	AG	CC	AG	AA	CC	GG	CC	AG	GG AGGCC/GGGCC AG/AG ATC/TTC
318	GG	GG	CT	AA	AA	CC	AG	CC	AG	GG AGCCC/GGGCC AG/AG ACC/ACC
319	GG	AA	CT	AA	AG	CC	GG	CC	GG	CG AGGCC/GGGCT AG/AG ACT/TTT
320	GG	AA	CC	GG	AA	CC	AG	CC	GG	AG AGGCC/GGGCT AA/GG ATT/TTT
321	GG	AA	CT	AA	AA	CC	GG	CC	GG	CG AGGCC/AGGCC AG/AG ACT/ATT

322	GG	AA	AC	GG	AG	CC	GG	CC	AC	GG AGGCC/AGGCC AA/GG ACC/ATT
323	GG	AA	CC	AG	AA	CT	GG	CC	GG	GG AGGCC/GGGCT AG/GG ACC/ATT
324	GG	GG	CC	AA	AA	CC	GG	CC	GG	GG AGGCC/AGGCC GA/GG ACC/ATC
325	GG	AA	CC	AG	AA	CC	GG	CC	CG	GG AGGCC/GGGCC AG/AG ACC/ATC
326	GG	AG	CC	AG	AA	CC	GG	CC	CG	GG GGGCC/GGGCC AG/AG ACT/ACT
327	GG	AA	CT	AT	AA	CC	GG	CC	CG	GG AGGCC/AGGCC AG/AG ACT/ATT
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336	GG	AA	CT	AG	AA	CC	AG	CC	AG	GG AGGCC/AGGCC AG/GG ACC/ATC
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340	GG	AG	CT	AG	AA	CC	GG	CC	GG	GG AGGCC/AGGCC AG/AG ACC/TTT
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343	GG	AA	CC	AA	AG	CC	GG	CC	AG	GG AGGCC/GGGCC AG/GG ACC/ATT
344	GG	AA	CC	AA	AA	CC	GG	CC	CG	GG AGGCC/GGGCT AG/AG ACT/TTT
345	GG	AA	CC	AG	AG	CC	GG	CC	AG	AG AGGCC/AGGCC AG/AG ACC/ACT
346	GG	AA	CT	AG	AA	CC	GG	CC	GG	AG GGGCC/GGGCC AG/AG ACT/ATT
347	GG	AA	CC	AA	AA	CC	GG	CC	CG	GG AGGCC/AGGCC AG/AG ACC/ATT
348	AG	AA	AC	AA	AA	CC	GG	CT	GG	GG AGGCC/GGGCC AG/GG ACC/TCT
349	GG	AA	CT	AA	AA	CC	AA	CC	AG	AG AGGCC/GGGCC AG/AG ACT/ATT
350	GG	AA	CT	AA	AA	CC	GG	CC	GG	CG AGGCC/GGGCT AG/AG ACC/TTT
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353	GG	AA	CC	AG	AA	CC	GG	CC	GG	GG AGGCC/AGGCC AG/GG ACT/ATT
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355	GG	AA	CT	AA	AA	CC	GG	CC	GG	GG AGGCC/GGGCC AG/AG ATT/ATT
356	GG	AG	CT	AA	AA	CC	GG	CC	AG	GG AGGCC/GGGCC AG/GG ACC/ATT
357	GG	AA	CC	AT	AA	CC	GG	CT	GG	GG AGGCC/GGGCC AG/AG ACC/ACC
358	GG	AA	CT	AG	AA	CC	GG	CC	CG	GG GGGCC/GGGCT AG/AG ATT/TTT
359	GG	AA	CC	AA	AG	CC	GG	CC	GG	AG AGGCC/AGGCC AG/AG ACC/ACT
360	GG	AG	CC	AG	AA	CC	GG	CC	GG	GG AGGCC/GGGCC AG/GG ACC/ATC
361	GG	AA	CT	AG	AA	CC	GG	CC	CG	GG AGGCC/GGGCT AG/AG ACC/ATC
362	GG	AG	CC	AG	AG	CC	GG	CC	GG	GG AGGCC/AGGCC AG/AG ACC/ATT
363	GG	AA	CC	AG	AA	CC	GG	CC	CG	CG GGGCC/GGGCT AG/GG ACC/ACT
364	GG	AA	CC	AG	AG	CC	AG	CC	CG	AC AGGCC/GGGCT AG/AG ATC/TTT
365	GG	AG	CC	AG	AA	CC	GG	CC	CG	CG GGGCC/GGGCT AG/AG ACC/ATT
366	GG	AA	CC	AG	AA	CC	GG	CC	CG	AG AGGCC/GGGCT AG/AG ACC/ATT
367	GG	AG	CC	AA	AA	CC	GG	CC	CG	AG AGGCC/GGGCC AG/AG ACT/ATT
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592	GG	GG	TT	AT	AG	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/GG	ATC/ATT
593	GG	GG	TT	AG	AA	TT	AG	CC	GG	GG	AGGCC/GGGCT	AA/AA	ATC/TTT
594	GG	GG	TT	AA	AA	TT	AA	CC	GG	GT	AGGCC/GGGCT	AA/AA	ATC/TTT
595	GG	GG	CT	GT	AA	TT	AG	CC	GG	GG	AGGCC/GGGCT	AA/AA	ATC/ATT
596	GG	GG	CT	AT	AA	TT	AA	CC	AG	GG	GGGCC/GGGCC	AA/AA	ATC/ATT
597	GG	AG	TT	AG	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ACC/TTT
598	GG	GG	CT	AA	AA	TT	AA	CC	CG	GG	AGGCT/AGGCT	AA/AG	ATT/ATT
599	GG	GG	TT	AG	AA	TT	AA	CC	AA	GG	AGGCC/AGGCT	AA/AA	ATT/TTT
600	GG	AG	CT	GT	AG	TT	AA	CC	GG	GG	AGGCT/AGGCT	AA/AA	ACC/ATT
601	GG	GG	CT	AT	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ATC/ATT
602	GG	GG	CT	AT	AA	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/AG	ACC/ATT
603	GG	GG	CT	AA	AA	TT	AA	CC	AG	GT	AGCCC/GGGCT	AA/AG	ATC/ATC
604	GG	GG	CC	AA	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ACT/TTT
605	GG	GG	CT	AG	AA	TT	AG	CT	GG	GG	GGGCC/GGGCC	AA/AA	ATC/TTT
606	GG	GG	CT	GT	AA	TT	AA	CC	GG	GT	AGGCC/GGGCT	AA/AA	ATT/ATT
607	GG	GG	CC	AG	AA	TT	AA	CC	AG	GG	GGGCC/GGGCC	AA/AG	ATC/ATC
608	GG	GG	TT	AG	AA	TT	AA	CC	AG	GG	GGGCC/GGGCC	AA/AA	ATC/TTT
609	GG	GG	CT	AA	AA	TT	AA	CC	GG	GG	AGGCT/AGGCT	AA/AA	ATC/ATT
610	GG	GG	CC	AT	AA	TT	AA	CC	GG	GG	GGGCC/GGGCC	AA/AA	ATC/ATT
611	GG	GG	TT	AA	AA	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/AA	ACC/ATT
612	GG	GG	TT	AA	AA	TT	AA	CC	AA	GG	AGGCT/GGGCT	AA/AA	ATC/ATT
613	GG	GG	CT	AG	AA	TT	AA	CC	AA	GT	AGGCT/AGGCT	AA/AA	ATC/ATC
614	GG	AG	CT	AT	AA	TT	AG	CC	AG	GG	AGCCC/GGGCT	AA/AG	ATC/TTT
615	GG	GG	TT	AA	AA	TT	AA	CT	GG	GG	AGGCC/GGGCT	AA/AA	ATT/TTT
616	GG	GG	CT	AT	AA	TT	AA	CT	AA	GG	AGGCT/AGGCT	AA/GA	ATC/ATC
617	GG	GG	CT	AA	AG	TT	AA	CC	CG	GG	AGGCC/GGGCC	AA/AG	ATC/ATT
618	GG	AG	CT	AA	AA	TT	AA	CC	AG	GG	GGCCC/GGGCC	AA/AA	ACC/ATT
619	GG	GG	TT	AG	AA	TT	AA	CC	GG	GG	GGGCC/GGGCC	AA/AA	ATC/TTT
620	GG	AA	TT	GT	AA	TT	AA	CC	GG	GG	AGGCT/GGGCT	AA/GG	ATC/ATC
621	GG	GG	TT	GG	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AG	ATC/TTT
622	GG	GG	CC	AG	AG	TT	AA	CC	GG	GG	GGCCC/GGGCC	AA/AG	ATC/ATC
623	GG	GG	CC	GG	AA	TT	AA	CC	GG	GG	AGGCT/AGGCT	AA/AG	ATC/ATC
624	GG	GG	CT	AG	AA	TT	AA	CC	AG	GG	GGGCC/GGGCC	AA/AG	ACC/ATT
625	AG	GG	CT	AA	AA	TT	AA	CC	GG	GG	AGGCT/GGGCT	AA/AG	ATC/ATT
626	GG	AG	TT	GT	AG	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ATC/ATC
627	AG	AG	TT	AA	AA	TT	AG	CC	AG	GG	GGGCC/GGGCC	AA/AA	ATC/ATC
628	GG	GG	CT	AT	AG	TT	AA	CC	AA	GG	AGGCC/GGGCT	AA/AG	ATC/TTT
629	GG	GG	CT	AT	AA	TT	AA	CC	AG	GG	AGCCC/GGGCT	AA/GG	ATC/ATC
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631	GG	GG	CT	AA	AA	TT	AA	CT	GG	GG	AGGCT/AGGCT	AA/AA	ATC/ATC
632	GG	GG	TT	AA	AA	TT	AA	CT	AG	GG	GGGCC/GGGCC	AA/AA	ATT/TTT
633	GG	GG	CT	AA	AA	TT	AA	CT	AG	GG	GGCCC/GGGCC	AA/AG	ATC/TTT
634	GG	GG	CC	AA	AA	TT	AA	CC	GG	GG	AGGCT/AGGCT	AA/AG	ATC/TTT
635	GG	AG	CT	AA	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ATC/ATC
636	GG	GG	CT	AA	AG	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ACT/TTT
637	GG	GG	TT	AA	AA	TT	AA	CT	GG	GG	GGGCC/GGGCC	AA/AA	ATC/ATC

638	GG	GG	CT	AA	AG	TT	AG	CC	GG	GG	AGGCT/AGGCT	AA/AG	ATC/ATT
639	GG	GG	CT	GT	AA	TT	AG	CC	GG	GG	AGGCC/GGGCT	AA/AA	ATC/TTT
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642	GG	GG	TT	AA	AG	TT	AG	CT	CG	GG	AGCCC/GGGCT	AA/AA	ATT/TTT
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646	GG	GG	CT	AG	AG	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ATC/ATC
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648	GG	GG	CT	AT	AA	TT	AA	CC	GG	GG	AGGCT/AGGCT	AA/AA	ATC/ATC
649	GG	GG	TT	AA	AA	TT	AA	CT	GG	GG	AGGCC/GGGCT	AA/AG	ATC/TTT
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651	AG	GG	TT	GG	AA	TT	AA	CC	AG	GT	AGGCT/GGGCT	AA/AG	ATT/ATT
652	GG	GG	CT	AG	AA	TT	AA	CC	GG	GT	AGGCC/GGGCT	AA/AG	ATC/ATC
653	GG	GG	TT	AT	AA	TT	AA	CC	GG	GG	AGGCC/GGGCT	AG/AG	ATC/TTT
654	GG	GG	CT	GG	AA	TT	AG	CC	AA	GG	AGCCC/GGGCT	AA/AA	ATC/ATC
655	GG	GG	CT	AT	AA	TT	AA	CT	AG	GG	GGGCC/GGGCC	AA/AG	ATC/ATT
656	GG	GG	TT	AG	AA	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/AA	ATC/ATT
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658	GG	GG	TT	GT	AA	TT	AA	CC	AG	GG	AGGCT/AGGCT	AA/AG	TTT/TTT
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662	GG	GG	CT	AG	AA	TT	AG	CC	AA	GG	AGGCC/GGGCT	AA/AG	ATT/TTT
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664	GG	AG	TT	AT	AA	TT	AA	CC	AG	GG	AGGCT/AGGCT	AA/GG	ATC/ATC
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668	GG	GG	TT	AG	AA	TT	AA	CT	AG	GG	AGGCT/AGGCT	AA/AA	TTC/TTT
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670	GG	GG	TT	AT	AG	TT	AA	CC	GG	GG	GGCCC/GGGCC	AA/AG	ATT/TTT
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673	GG	GG	CT	AA	AA	TT	AG	CC	AG	GG	AGGCC/GGGCT	AA/AA	ATC/ATC
674	GG	GG	TT	AG	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ATC/ATT
675	GG	GG	CT	AT	AG	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ATC/ATC
676	GG	AG	CT	AA	AA	TT	AG	CC	AG	GT	AGGCC/GGGCT	AA/AA	TTT/TTT
677	GG	GG	CT	AG	AA	TT	AG	CC	GG	GT	AGCCC/GGGCC	AA/AG	ATT/TTT
678	GG	GG	CT	AT	AA	TT	AG	CC	GG	GG	AGGCC/GGGCC	AA/AA	ATC/ATC
679	GG	GG	TT	GT	AA	TT	AA	CC	AG	GT	AGGCC/AGGCT	AA/AA	ATC/ATC
680	GG	GG	CT	AA	AA	TT	AA	CC	AA	GG	AGGCC/GGGCT	AA/AG	ACT/ATT
681	GG	GG	CT	AT	AA	TT	AG	CC	GG	GG	AGGCC/GGGCT	AA/AA	ATC/TTT
682	GG	GG	TT	AA	AA	TT	AA	CC	GG	GG	AGCCC/GGGCT	AA/AG	ATC/TTT
683	GG	GG	TT	AG	AG	TT	AA	CT	AG	GG	GGCCC/GGCCC	AA/AA	ATC/ATC
684	GG	GG	TT	AG	AG	TT	AA	CT	GG	GT	AGCCC/GGGCC	AA/AG	ATC/ATT
685	GG	AG	TT	AT	AA	TT	AA	CC	GG	GG	GGCCC/GGGCC	AA/AA	ATC/TTT
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687	GG	GG	CT	AT	AA	TT	AA	CC	GG	GT	AGGCT/AGGCT	AA/AG	ACT/TTT
688	GG	GG	CT	GG	AA	TT	AA	CC	AG	GG	AGCCC/GGGCT	AA/AA	ATT/TTT
689	GG	GG	TT	GT	AA	TT	AA	CT	GG	GG	GGGCC/GGGCC	AA/AA	ATT/TTT
690	GG	GG	CC	TT	AA	TT	AA	CC	AG	GG	AGGCC/GGGCC	AA/AA	ATC/TTT
691	GG	GG	CC	AG	AA	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/AA	ATC/ATT
692	GG	AG	CT	TT	AA	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/AA	ATC/ATT
693	GG	AG	CT	AT	AA	TT	GG	CC	AG	GG	GGGCC/GGGCC	AA/AA	ATC/ATC
694	GG	GG	CC	AA	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AA	ACC/ATC
695	GG	AG	CT	AT	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AG	ATC/ATC
696	GG	GG	CT	AT	AG	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/GG	ATC/ATC
697	GG	GG	CC	AT	AA	TT	AG	TT	CG	GT	AGCCC/GGGCT	AA/AG	ATC/ATC
698	GG	AG	CT	AA	AA	TT	AA	CC	AG	GG	AGGCC/GGGCC	AA/AG	ATC/ATT
699	GG	GG	TT	AA	AA	TT	AA	CC	AG	GG	AGGCC/GGGCT	AA/AG	ATC/ATT
700	GG	GG	TT	GT	AA	TT	AA	CC	GG	GG	GGGCC/GGGCC	AA/AA	ATC/ATC
701	GG	GG	TT	AA	AA	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/AG	ATC/ATT
702	GG	GG	CT	AG	AA	TT	AA	CC	GG	GG	AGGCC/AGGCT	AA/AA	ATC/ATC
703	GG	GG	TT	AG	AA	TT	AA	CC	GG	GG	AGGCT/AGGCT	AA/AA	ATC/TTT
704	GG	GG	TT	AG	AA	TT	AA	CT	AG	GG	AGGCC/GGGCT	AA/AA	ATC/ATT
705	GG	GG	TT	AG	AG	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/GA	ACC/TTT
706	GG	GG	CT	AT	AA	TT	AA	CC	GG	AG	AGGCT/AGGCT	AA/AG	ATC/TTT
707	GG	GG	CT	GG	AA	TT	AA	CT	AA	GG	AGGCC/AGGCT	AG/AG	TTT/TTT
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709	GG	GG	TT	AA	AG	TT	AA	CC	GG	GT	GGGCC/GGGCC	AA/AA	ATC/ATT
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711	GG	GG	TT	AT	AA	TT	AA	CC	AA	GG	AGGCT/AGGCT	AA/AG	ATC/TTT
712	GG	GG	TT	TT	AA	TT	AA	CC	GG	GG	AGGCT/AGGCT	AA/AA	ATC/ATT
713	GG	AG	CT	AG	AA	TT	AA	CC	AG	GG	GGGCC/GGGCC	AA/AG	ACC/ATC
714	GG	GG	TT	AA	AA	TT	AA	CC	AG	GT	AGGCT/AGGCT	AG/AG	ATC/TTT
715	GG	AG	TT	AG	AA	TT	AA	CT	GG	GG	AGGCT/AGGCT	AA/AA	ATC/TTT
716	GG	GG	TT	AT	AA	TT	AA	CC	GG	GG	AGGCC/GGGCT	AA/AA	ATC/ATC

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717    GG    GG    CC    AA    AG    TT    AA    CC    GG    GG AGGCT/AGGCT AA/AA ATC/TTT
718    GG    GG    CC    AG    AA    TT    AA    TT    AG    GG AGCCC/GGGCC AA/AA ATC/TTT
719    GG    GG    TT    AT    AA    TT    AA    CC    AA    GG AGGCT/AGGCT AA/AA ATC/ATT
720    GG    GG    CT    GT    AG    TT    AA    CC    GG    GG AGGCT/AGGCT AG/GG ATC/TTC
721    GG    GG    CT    GT    AA    TT    AA    CT    GG    GG AGGCT/AGGCT AA/AA ATT/TTT
722    GG    GG    TT    AG    AG    TT    AA    CC    AG    GG AGGCC/GGGCT AA/AA ATC/ATC
723    GG    GG    CT    AA    AG    TT    AA    CC    AG    GT AGGCT/AGGCT AA/AA ATC/ATC
724    GG    AG    TT    AT    AA    TT    AG    CC    GG    GG AGGCT/AGGCT AA/AG ATC/ATT
725    GG    GG    TT    AA    AA    TT    AG    CC    AG    GG AGGCC/GGGCT AA/AA TTT/TTT
726    GG    GG    TT    AA    AA    TT    AA    CC    AG    GG AGGCC/GGGCT AA/AA ATT/TTT
727    GG    AG    TT    GT    AA    TT    AA    CC    AA    GG AGGCC/GGGCT AA/GA ATC/ATC
728    GG    AG    TT    AA    AA    TT    AG    CC    GG    GG AGGCT/AGGCT AA/AA ACC/ATT
729    GG    GG    TT    GG    AA    TT    AA    CC    AG    GG GGCCC/GGCCC AA/GG ATT/TTT
730    AG    AG    CT    AT    AA    TT    AA    CC    AG    GG AGGCC/GGGCC AA/AA ACC/ATT
731    GG    GG    CT    AG    AA    TT    AA    CC    GG    GG GGCCC/GGGCC AA/AG ATC/ATC
732    GG    GG    TT    AG    AA    TT    AG    CC    AG    GG AGGCT/AGGCT AA/AG ATC/ATC
733    GG    GG    CT    AA    AA    TT    AA    CC    AG    GT AGGCT/AGGCT AA/AG ACT/ATT

$usekernel
[1] FALSE

$varnames
 [1] "Locus01" "Locus02" "Locus03" "Locus04" "Locus05" "Locus06" "Locus07" "Locus08" "Locus09" "Locus10" "MH1"
[12] "MH2"     "MH3"

attr(,"class")
[1] "NaiveBayes"
> pred
$class
   1    2    3    4    5    6    7    8    9   10   11   12
POPA POPA POPA POPA POPB POPB POPB POPB POPC POPA POPA POPC
Levels: POPA POPB POPC

$posterior
          POPA         POPB         POPC
1  1.000000e+00 9.239276e-14 2.614598e-11
2  1.000000e+00 3.324112e-15 6.465343e-11
3  9.999997e-01 2.573145e-07 2.493413e-15
4  9.999997e-01 2.837325e-07 1.368490e-10
5  1.177806e-09 1.000000e+00 4.214800e-17
6  3.027749e-03 9.969458e-01 2.646317e-05
7  6.411029e-10 1.000000e+00 1.083444e-13
8  3.301479e-08 1.000000e+00 5.539512e-13
9  4.846501e-01 7.314928e-05 5.152768e-01
10 9.995842e-01 3.908011e-04 2.496270e-05
11 9.991990e-01 3.009951e-05 7.709274e-04
12 3.341821e-02 4.757972e-07 9.665813e-01

> tab <- table(pred$class, test$Population)
> caret::confusionMatrix(tab)
Confusion Matrix and Statistics


      POPA POPB POPC
  POPA    4    0    2
  POPB    0    4    0
  POPC    0    0    2

Overall Statistics

               Accuracy : 0.8333
                 95% CI : (0.5159, 0.9791)
    No Information Rate : 0.3333
    P-Value [Acc > NIR] : 0.0005438

                  Kappa : 0.75
 Mcnemar's Test P-Value : NA

Statistics by Class:

                     Class: POPA Class: POPB Class: POPC
Sensitivity               1.0000      1.0000      0.5000
Specificity               0.7500      1.0000      1.0000
Pos Pred Value            0.6667      1.0000      1.0000
Neg Pred Value            1.0000      1.0000      0.8000
Prevalence                0.3333      0.3333      0.3333
Detection Rate            0.3333      0.3333      0.1667
Detection Prevalence      0.5000      0.3333      0.1667
Balanced Accuracy         0.8750      1.0000      0.7500
```

```
> library(ggplot2)
> test$pred <- pred$class
> ggplot(test, aes(Population, pred, color = Population)) +geom_jitter(width = 0.2, height = 0.1,
size=2)+labs(title="Confusion Matrix", subtitle="Predicted vs. Observed from haplotype dataset", y="Predicted",
x="Truth")
>
>
```