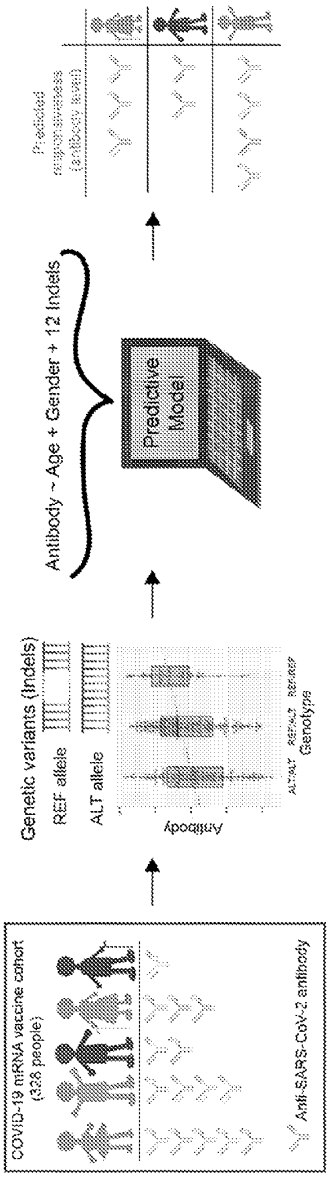

COVID-19 mRNA vaccine cohort
(328 people)
Anti-SARS-CoV-2 antibody
Genetic variants (Indels)
REF allele
ALT allele
Antibody
Genotype
Antibody ~ Age + Gender + 12 Indels
Predictive Model

Figure 1

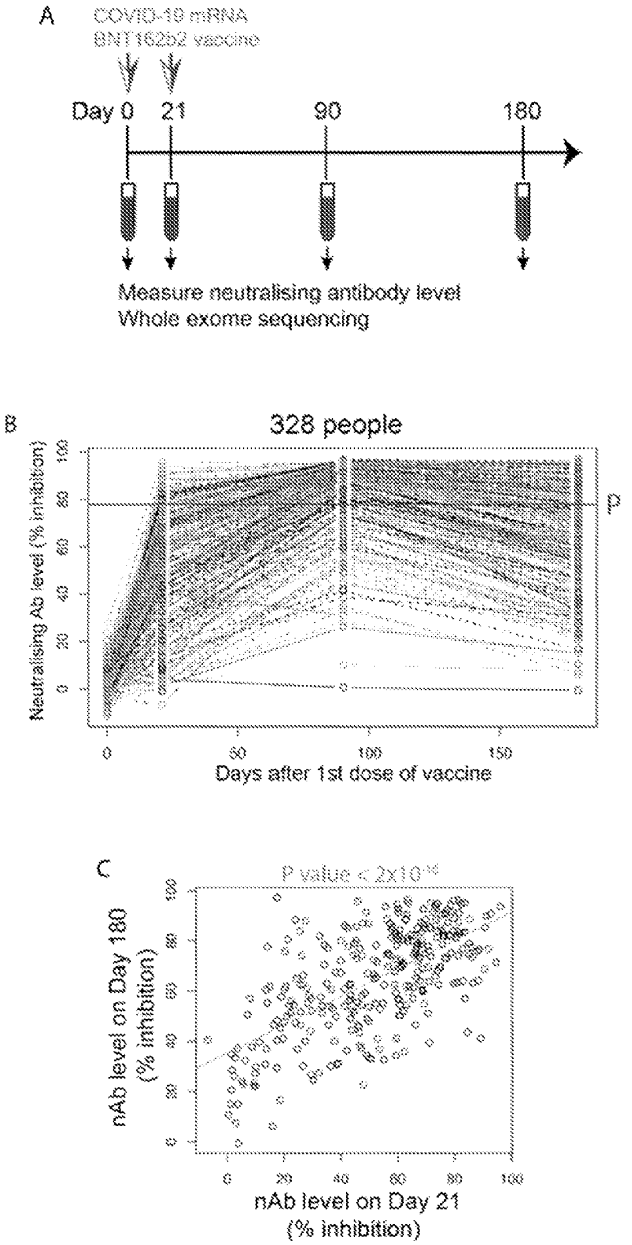


Figure 2A–C (continued)

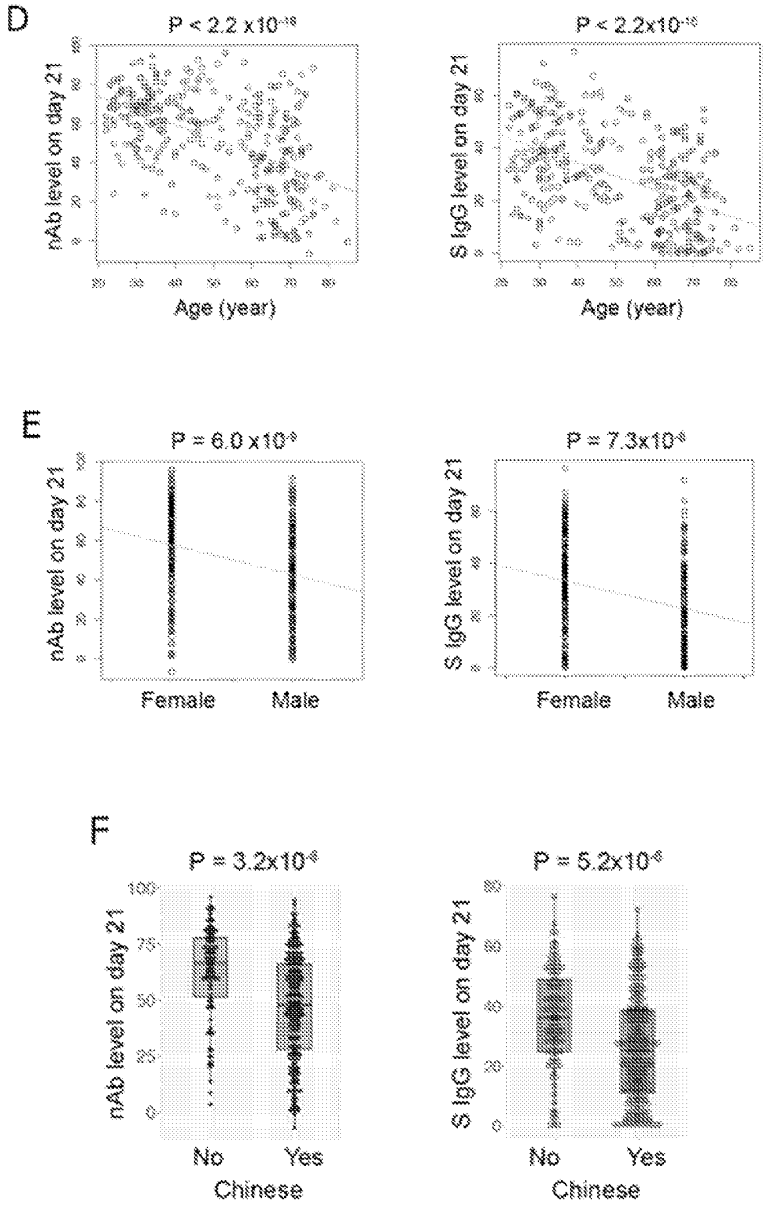


Figure 2D–F (continued)

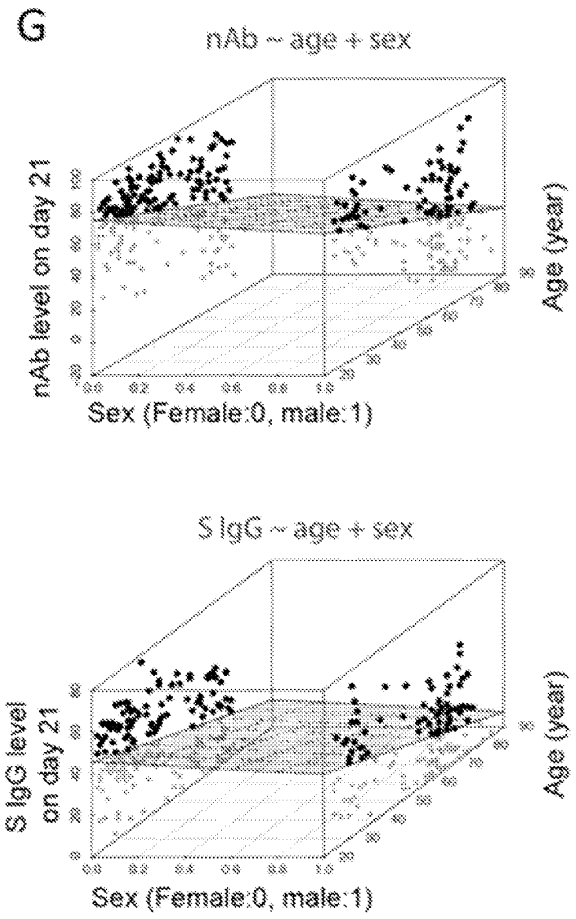


Figure 2G (end)

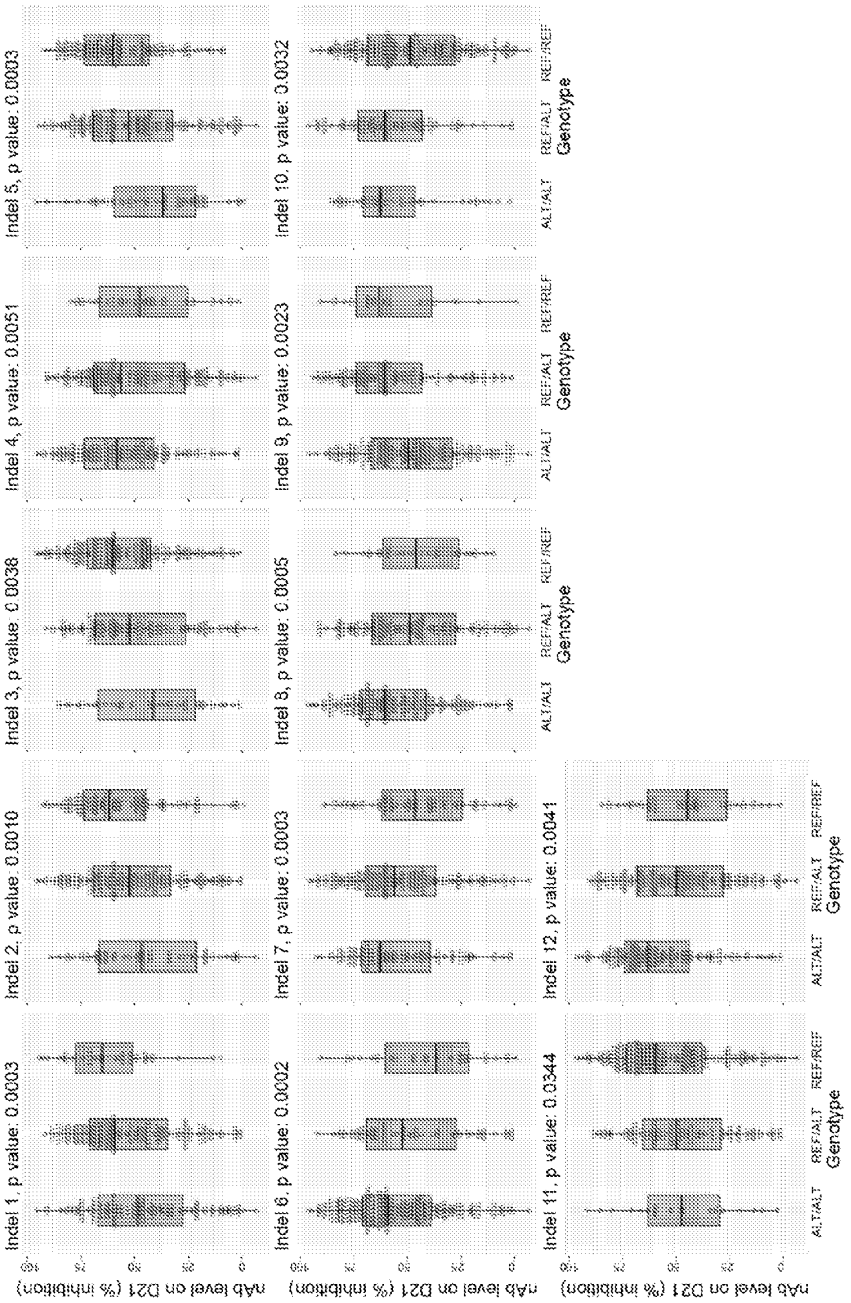

Indel 1, p value: 0.0003
Indel 2, p value: 0.0010
Indel 3, p value: 0.0036
Indel 4, p value: 0.0051
Indel 5, p value: 0.0003
Indel 6, p value: 0.0002
Indel 7, p value: 0.0003
Indel 8, p value: 0.0005
Indel 9, p value: 0.0023
Indel 10, p value: 0.0032
Indel 11, p value: 0.0344
Indel 12, p value: 0.0041
nAb level on D21 (% inhibition)
ALT/ALT
REF/ALT
REF/REF
Genotype

Figure 3

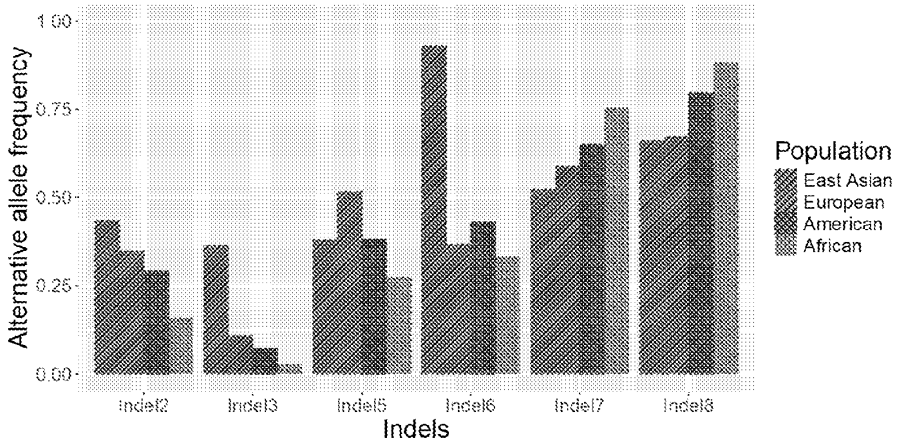


Figure 4A (continued)

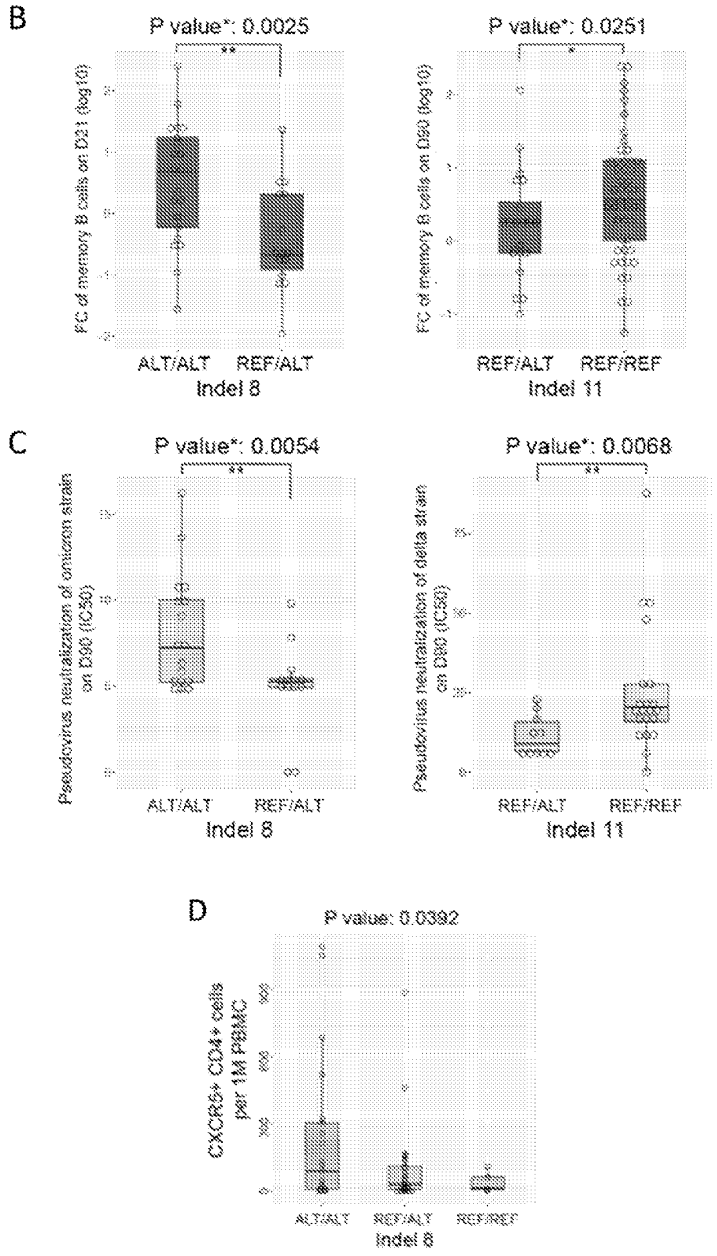


Figure 4B–D (end)

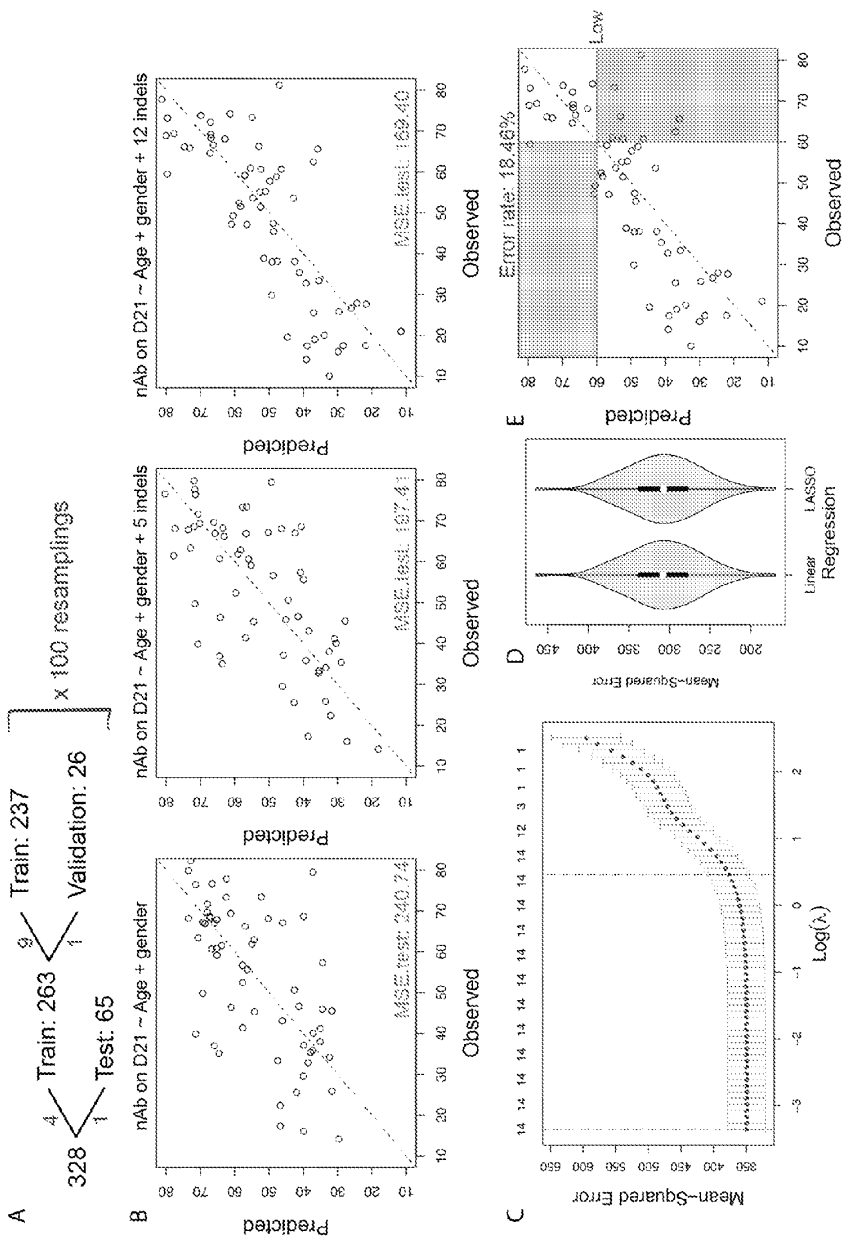

A
328
4
Train: 263
1
Test: 65
9
Train: 237
1
Validation: 26
x 100 resamplings
B
nAb on D21 ~ Age + gender
MSE test: 240.74
nAb on D21 ~ Age + gender + 5 indels
MSE test: 167.41
nAb on D21 ~ Age + gender + 12 indels
MSE test: 169.40
Predicted
Observed
C
Mean−Squared Error
Log(λ)
D
Mean−Squared Error
Linear
LASSO
Regression
E
Error rate: 18.46%
Low
Predicted
Observed

Figure 5

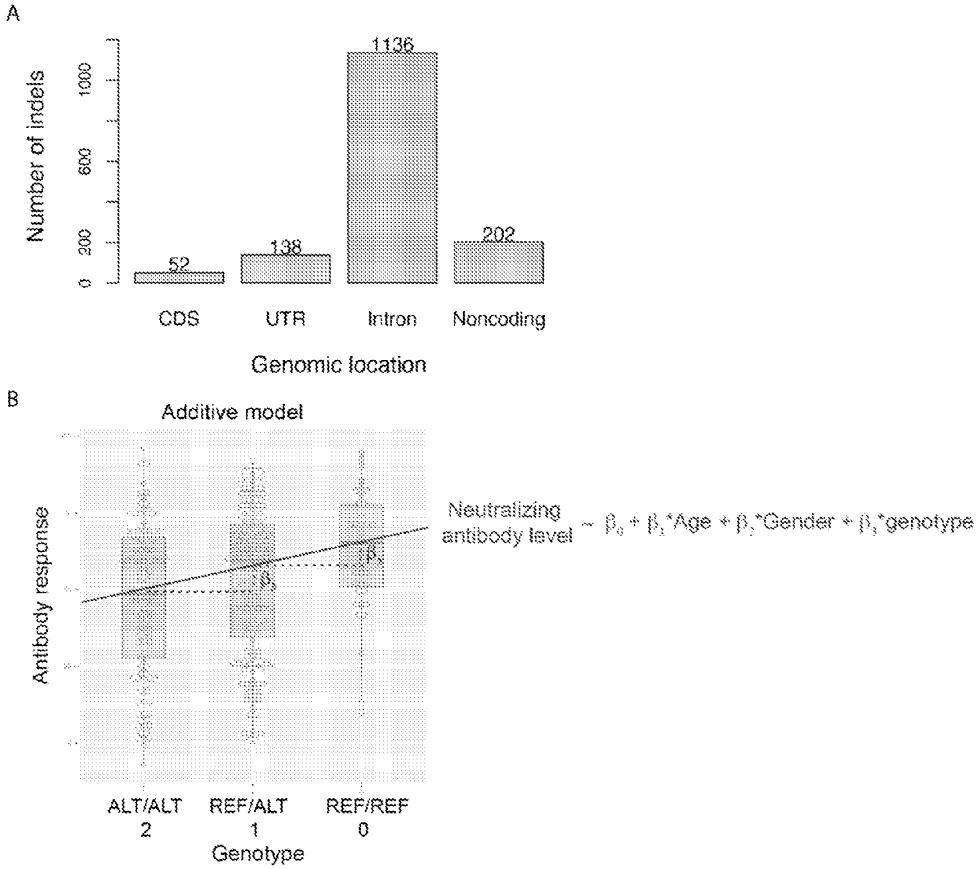

A
Number of indels
0
200
600
1000
52
138
1136
202
CDS
UTR
Intron
Noncoding
Genomic location
B
Additive model
Antibody response
Neutralizing antibody level ~ β0 + β1*Age + β2*Gender + β3*genotype
ALT/ALT
2
REF/ALT
1
REF/REF
0
Genotype

Figure 6

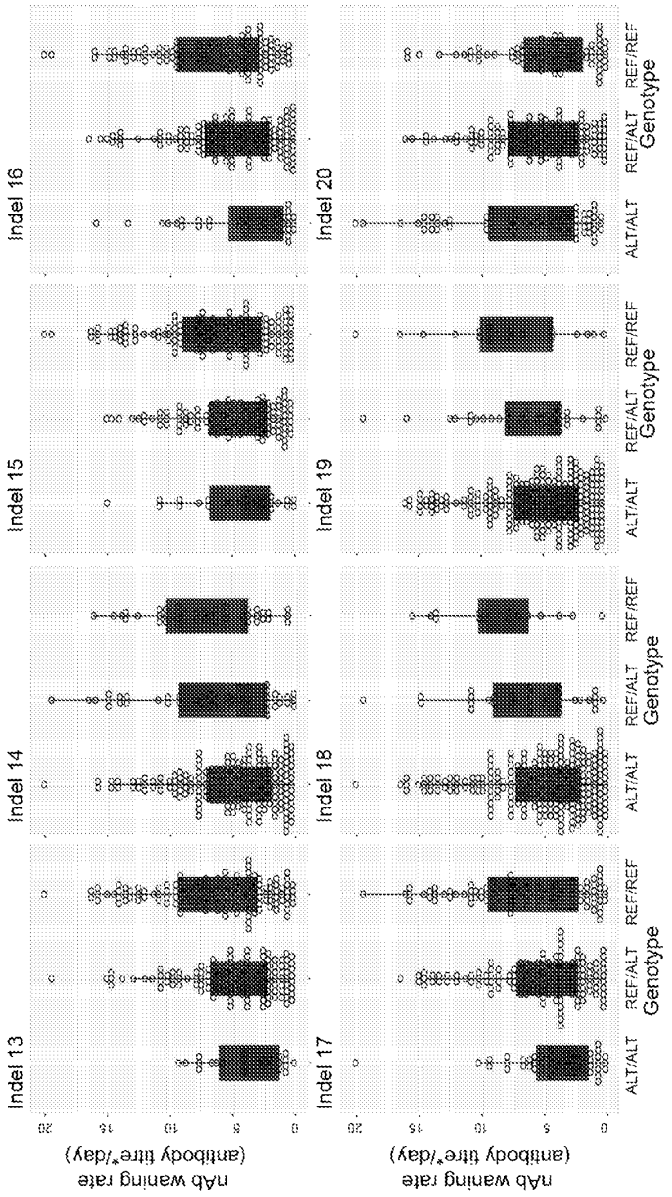

Indel 13
Indel 14
Indel 15
Indel 16
Indel 17
Indel 18
Indel 19
Indel 20
nAb waning rate
(antibody titre*/day)
0
5
10
15
20
ALT/ALT
REF/ALT
REF/REF
Genotype

Figure 7

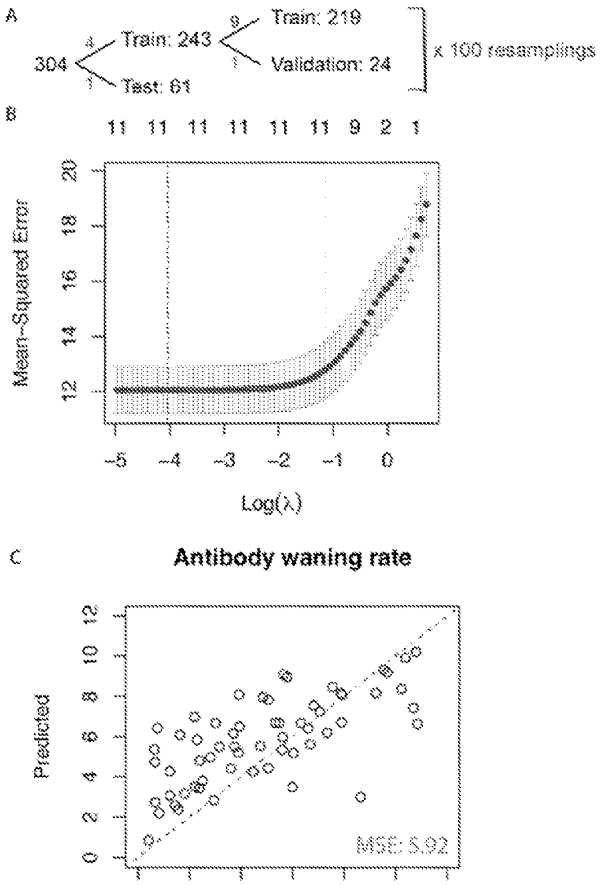

A
304
Train: 243
Test: 61
Train: 219
Validation: 24
x 100 resamplings
B
11 11 11 11 11 11 9 2 1
Mean−Squared Error
Log(λ)
C
Antibody waning rate
Predicted
MSE: 5.92

Figure 8

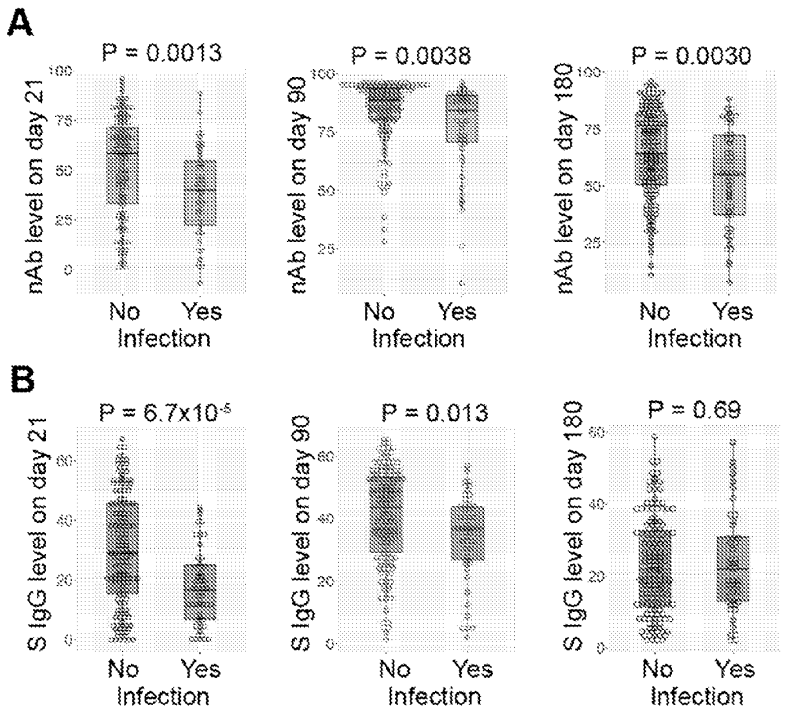

A
P = 0.0013
P = 0.0038
P = 0.0030
nAb level on day 21
nAb level on day 90
nAb level on day 180
No
Yes
Infection
B
P = 6.7x10-5
P = 0.013
P = 0.69
S IgG level on day 21
S IgG level on day 90
S IgG level on day 180

Figure 9

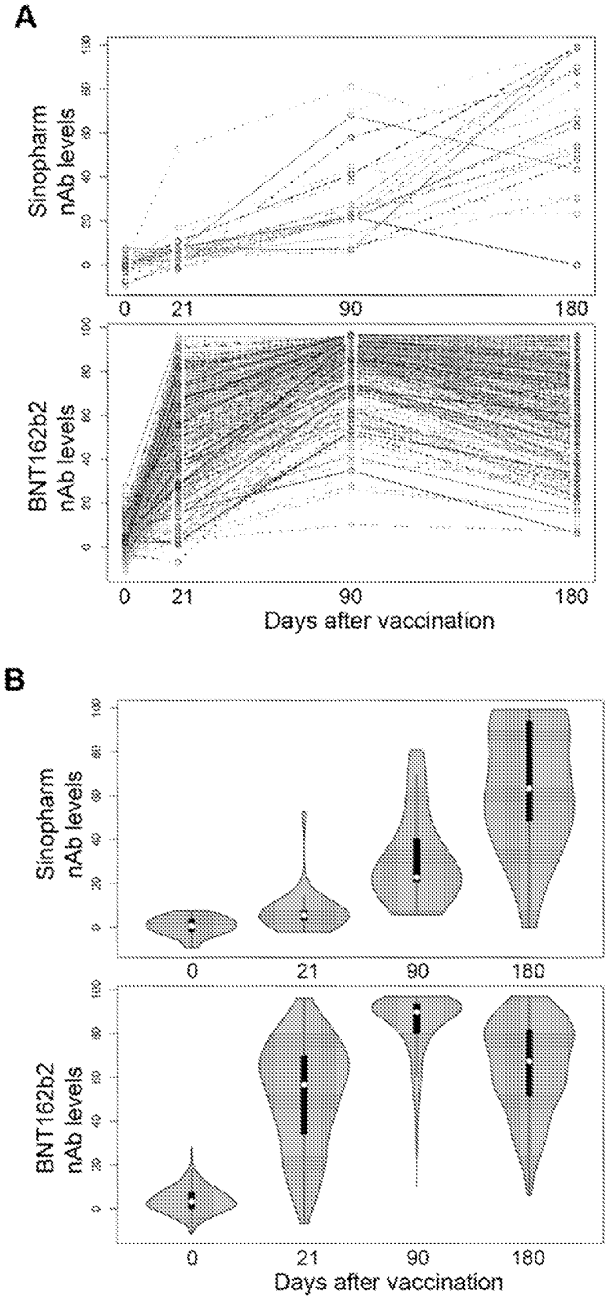


Figure 10A–B (continued)

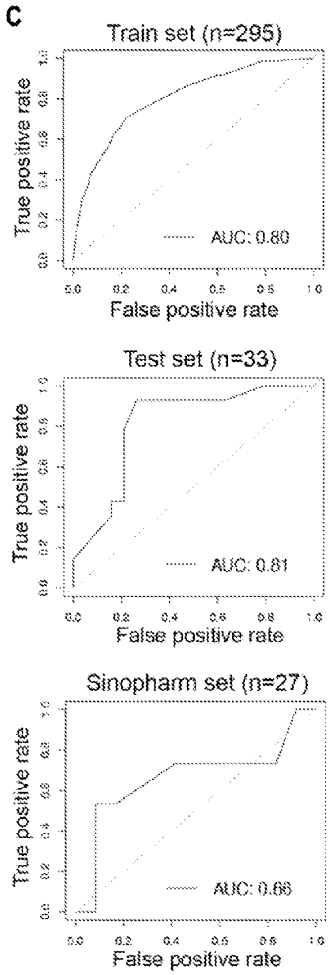


Figure 10C (end)