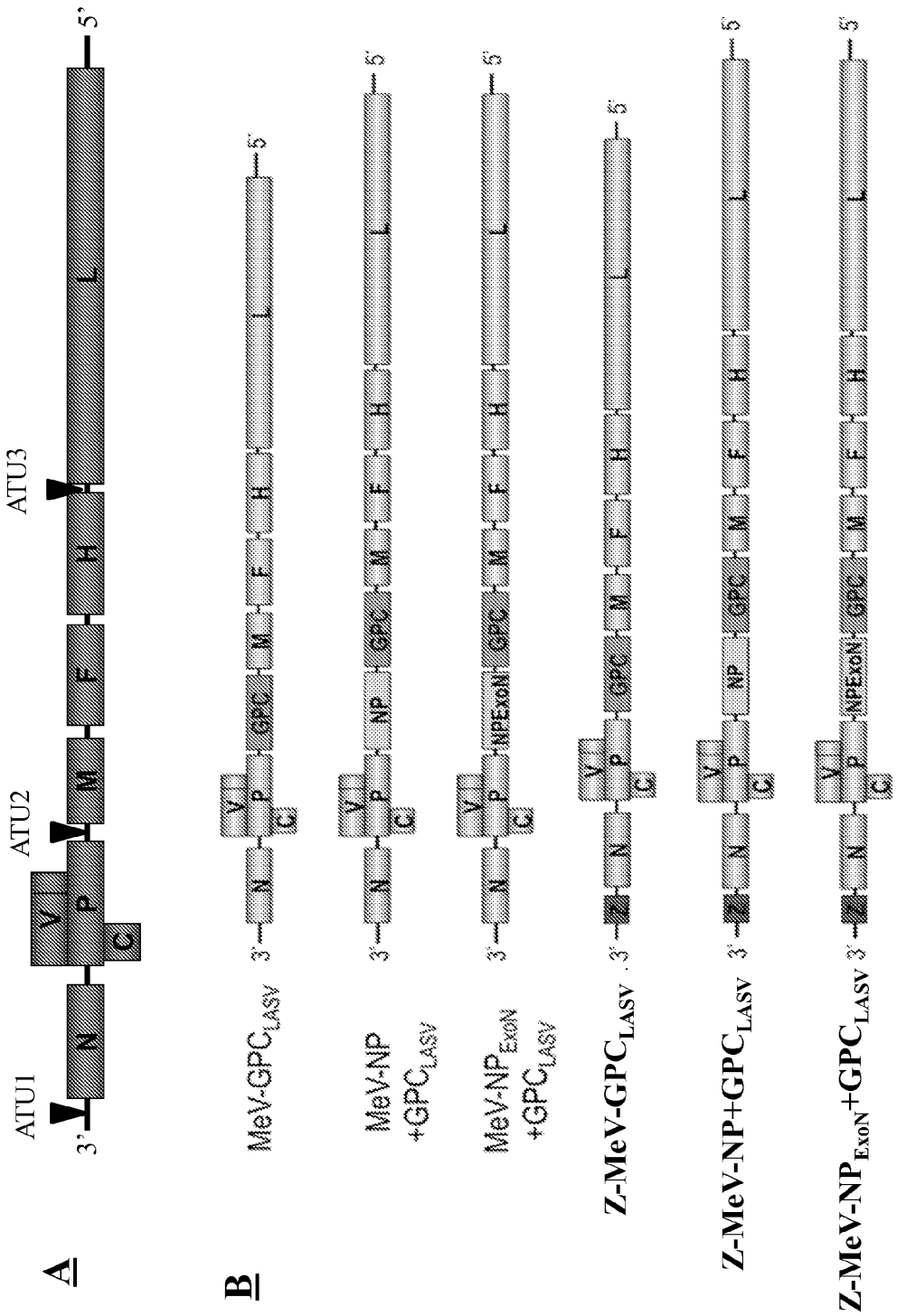

A
ATU1
ATU2
ATU3
3'
5'
N
V
P
C
M
F
H
L
B
MeV-GPC$_{LASV}$
MeV-NP +GPC$_{LASV}$
MeV-NP$_{ExoN}$ +GPC$_{LASV}$
Z-MeV-GPC$_{LASV}$
Z-MeV-NP+GPC$_{LASV}$
Z-MeV-NP$_{ExoN}$+GPC$_{LASV}$
Z
NP
NPExoN
GPC

FIGURE 1

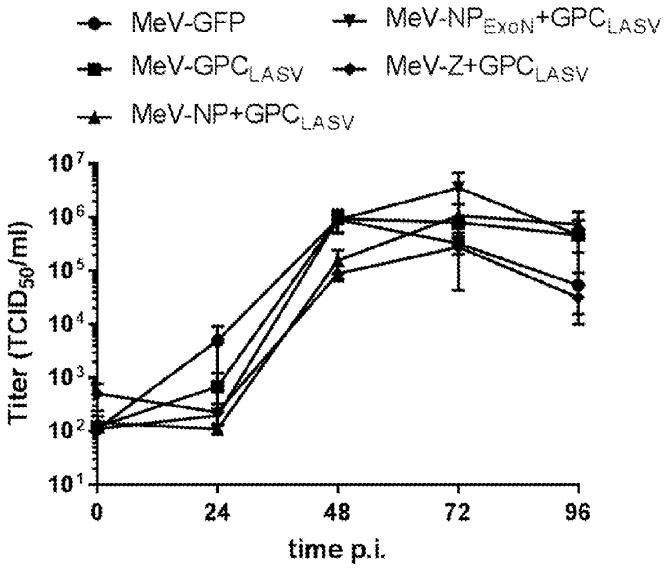


FIGURE 2

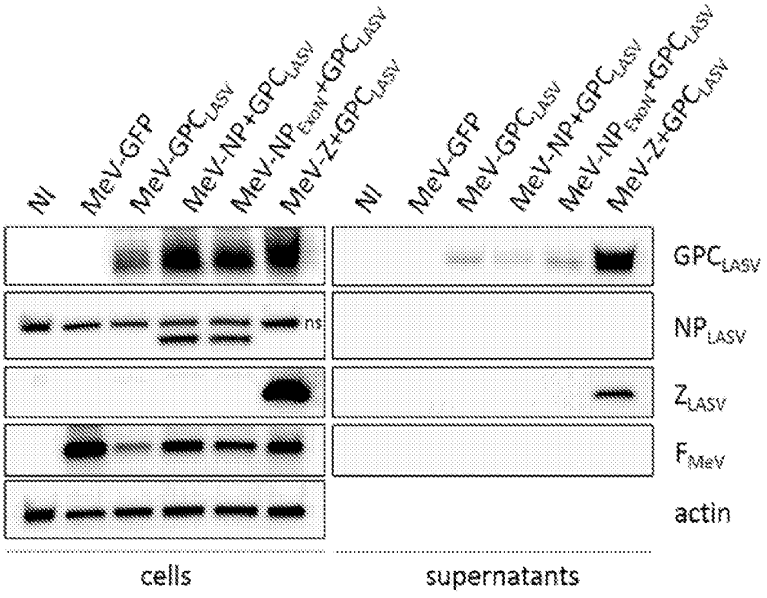


FIGURE 3

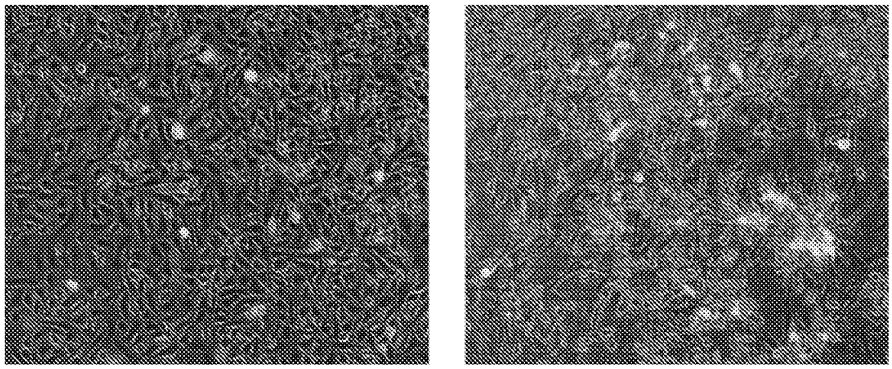


FIGURE 4

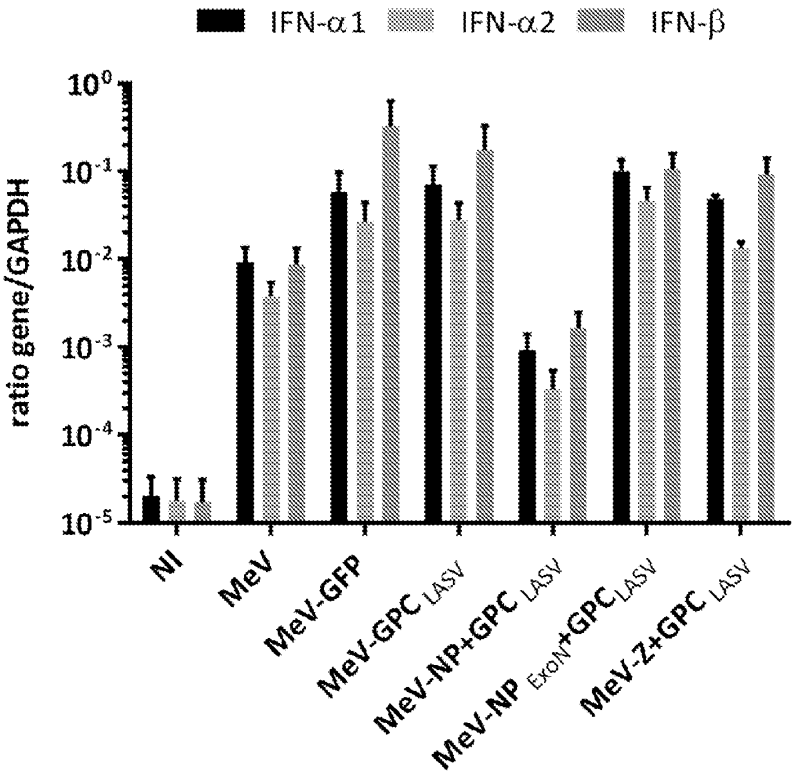


FIGURE 5

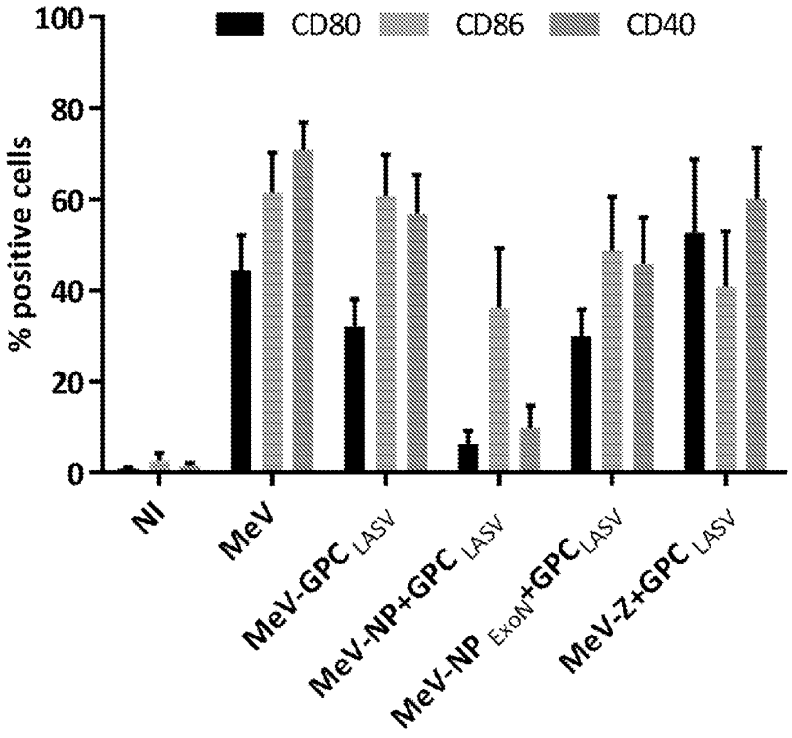


FIGURE 6

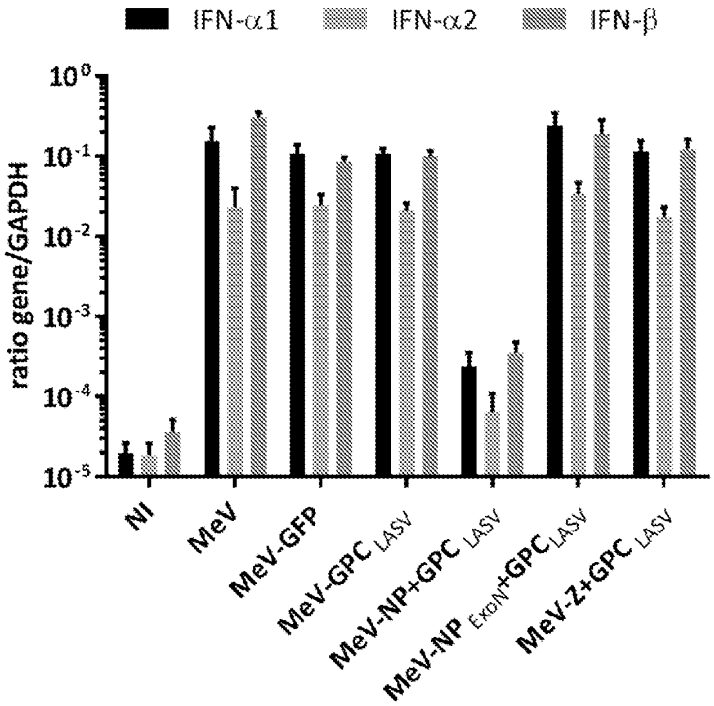


FIGURE 7

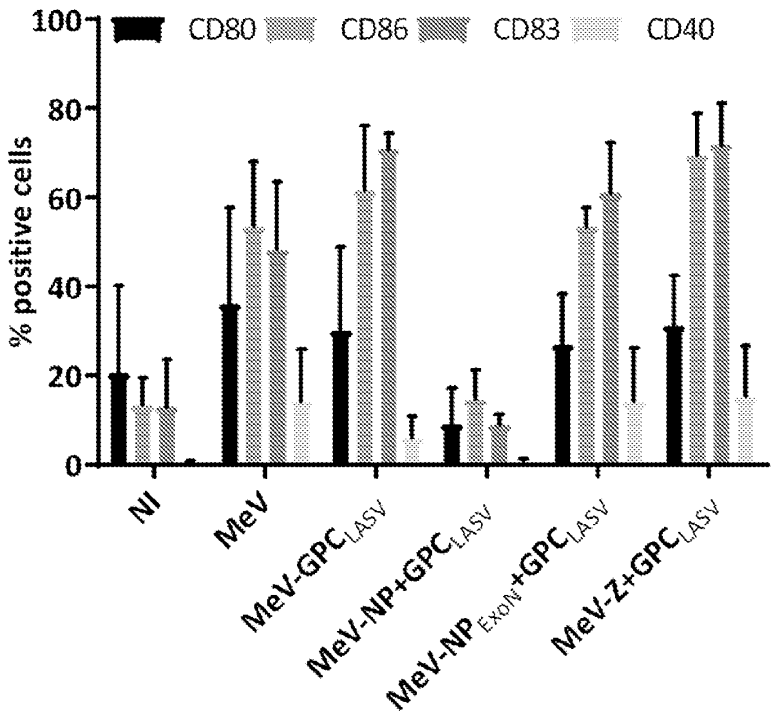

100
80
60
40
20
0
% positive cells
CD80
CD86
CD83
CD40
NI
MeV
MeV-GPC$_{LASV}$
MeV-NP+GPC$_{LASV}$
MeV-NP$_{ExoN}$+GPC$_{LASV}$
MeV-Z+GPC$_{LASV}$

FIGURE 8

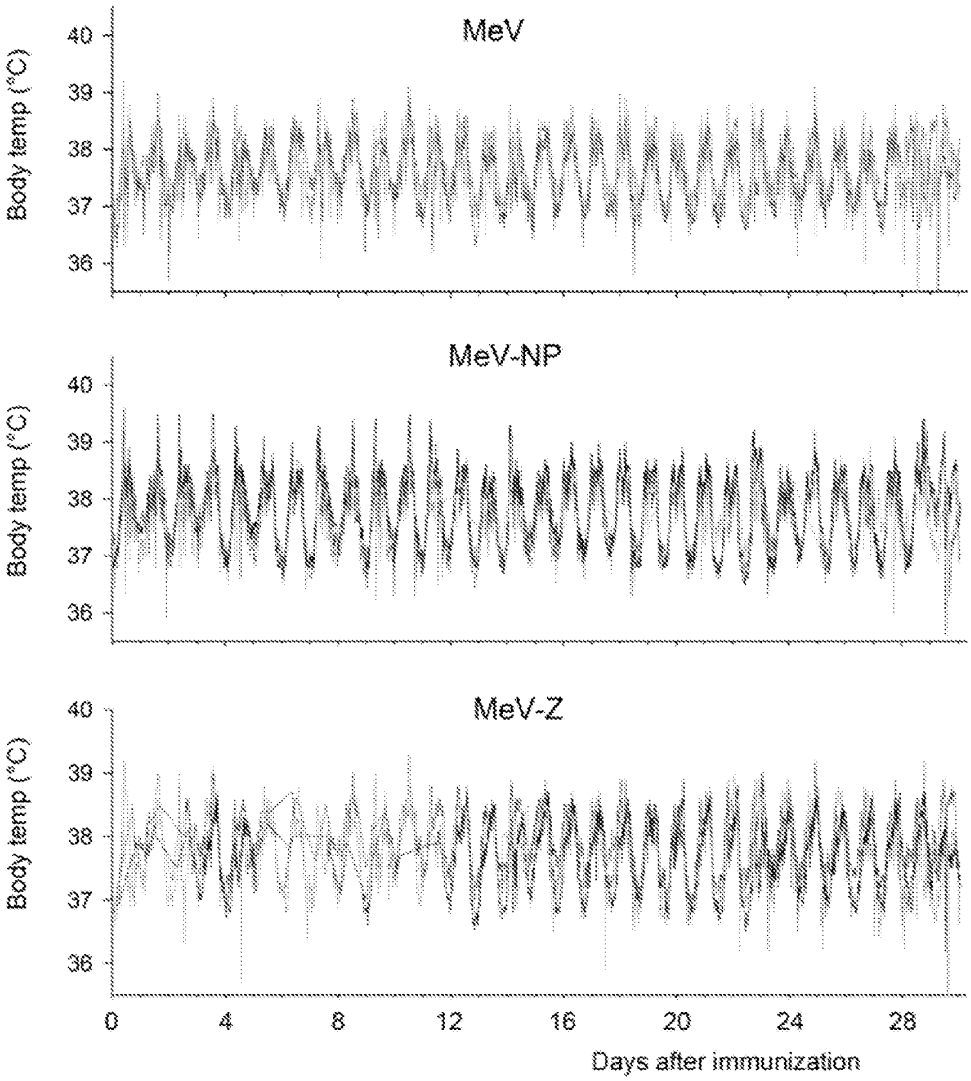

MeV
MeV-NP
MeV-Z
Body temp (°C)
40
39
38
37
36
0
4
8
12
16
20
24
28
Days after immunization

FIGURE 9

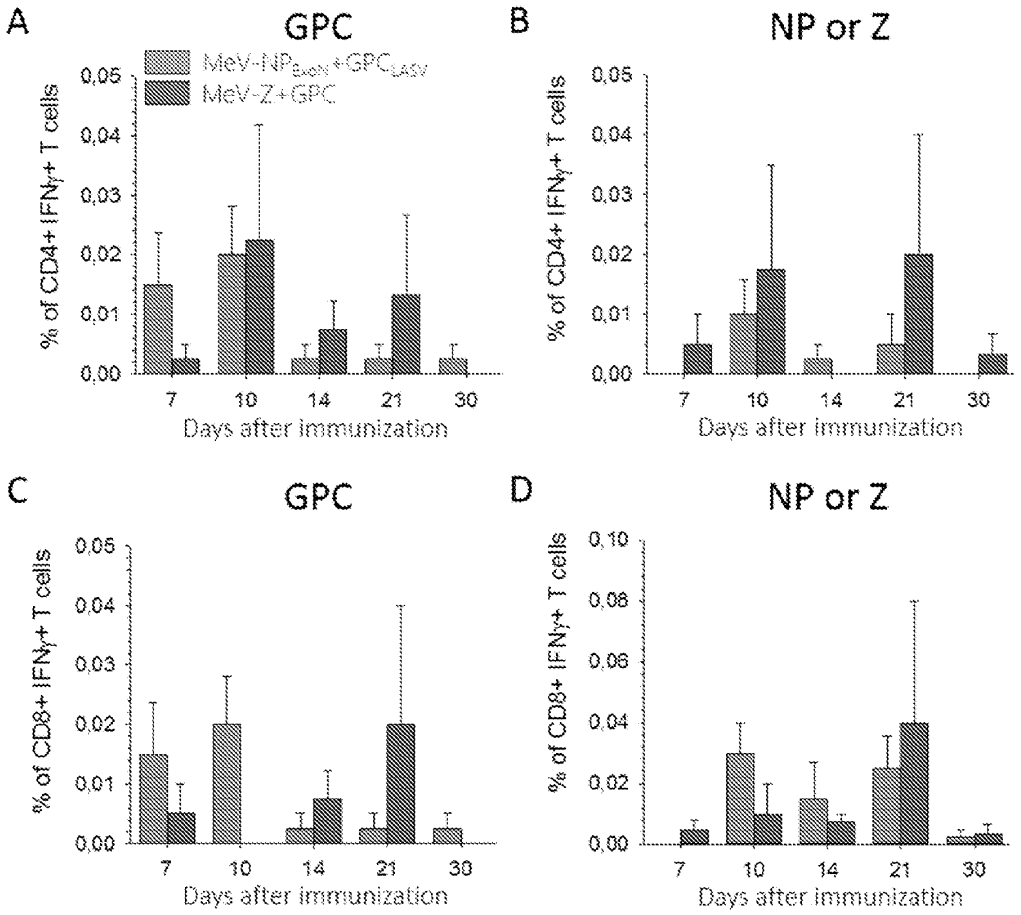

A
GPC
MeV-NP$_{EBOV}$+GPC$_{LASV}$
MeV-Z+GPC
% of CD4+ IFNγ+ T cells
0,05
0,04
0,03
0,02
0,01
0,00
7
10
14
21
30
Days after immunization
B
NP or Z
% of CD4+ IFNγ+ T cells
0,05
0,04
0,03
0,02
0,01
0,00
7
10
14
21
30
Days after immunization
C
GPC
% of CD8+ IFNγ+ T cells
0,05
0,04
0,03
0,02
0,01
0,00
7
10
14
21
30
Days after immunization
D
NP or Z
% of CD8+ IFNγ+ T cells
0,10
0,08
0,06
0,04
0,02
0,00
7
10
14
21
30
Days after immunization

FIGURE 10

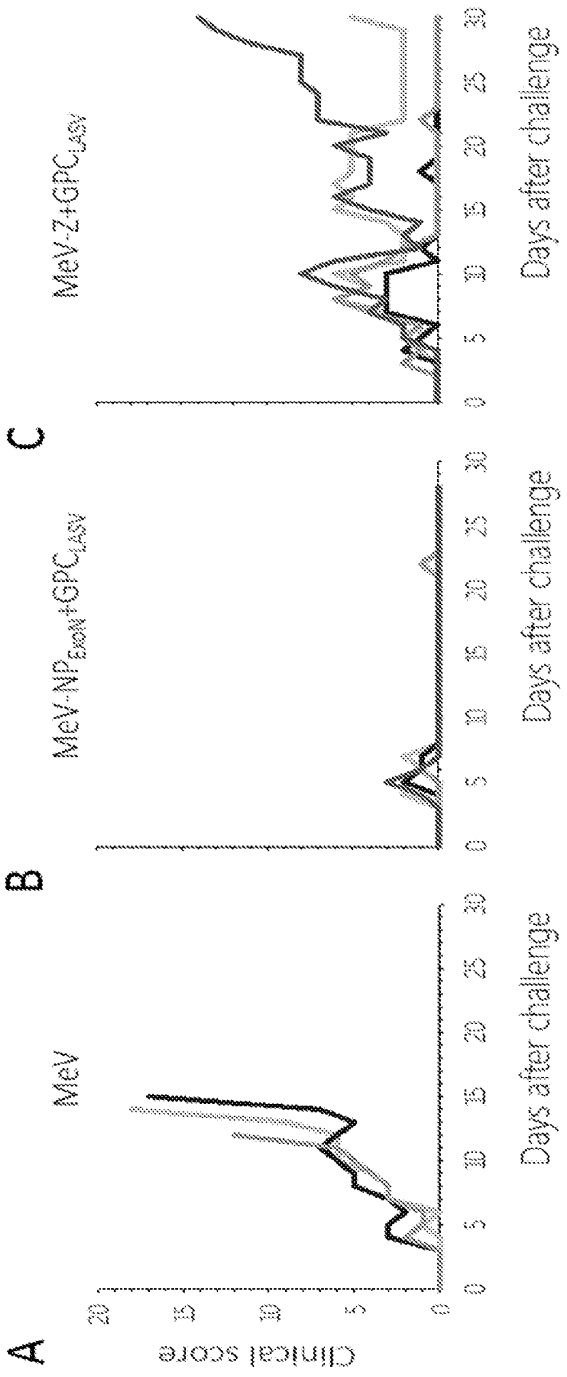

A
MeV
Clinical score
20
15
10
5
0
0 5 10 15 20 25 30
Days after challenge
B
MeV-NP$_{EAV}$+GPC$_{EASV}$
0 5 10 15 20 25 30
Days after challenge
C
MeV-Z+GPC$_{EASV}$
0 5 10 15 20 25 30
Days after challenge

FIGURE 11

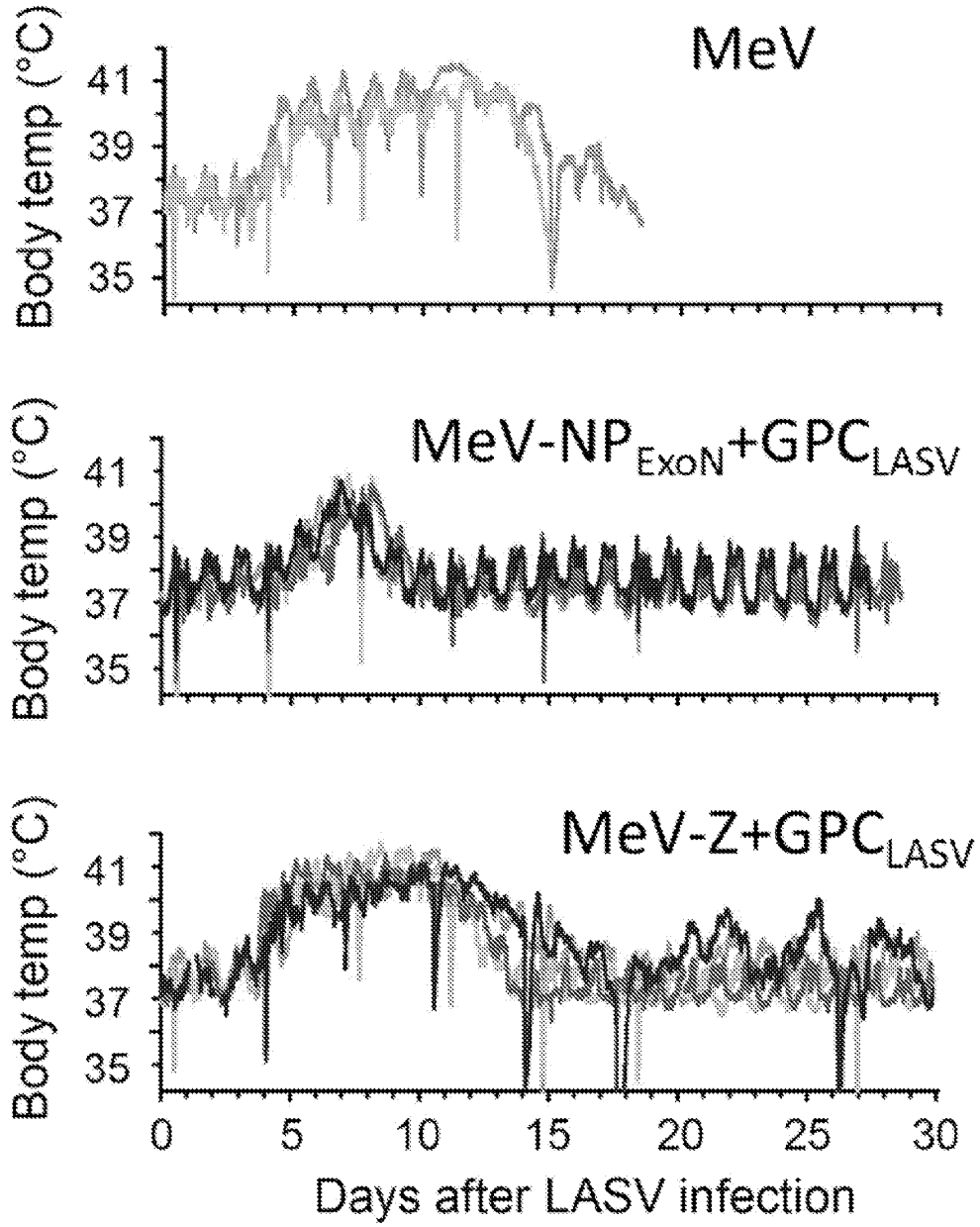

MeV
MeV-NP$_{ExoN}$+GPC$_{LASV}$
MeV-Z+GPC$_{LASV}$
Body temp (°C)
41
39
37
35
0
5
10
15
20
25
30
Days after LASV infection

FIGURE 12

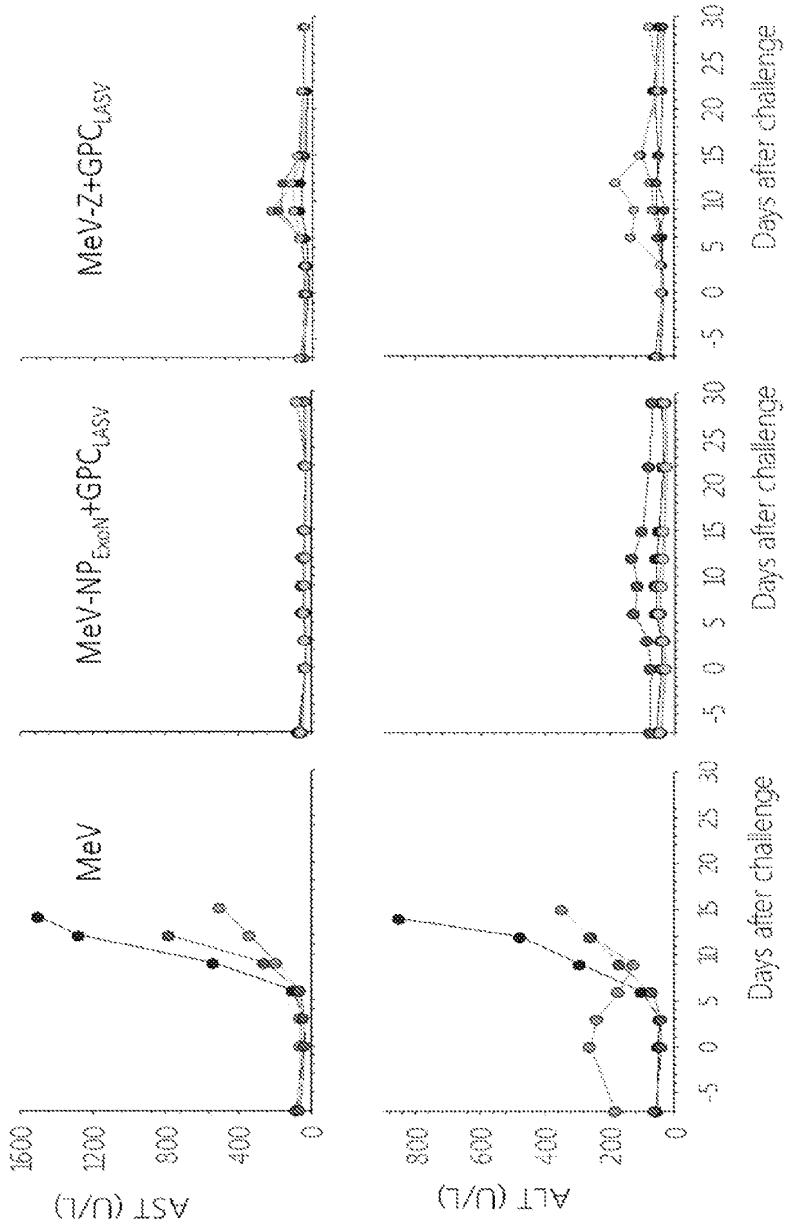

MeV
MeV-NP$_{ExoN}$+GPC$_{LASV}$
MeV-Z+GPC$_{LASV}$
AST (U/L)
ALT (U/L)
Days after challenge
1600
1200
800
400
0
800
600
400
200
-5
0
5
10
15
20
25
30

FIGURE 13

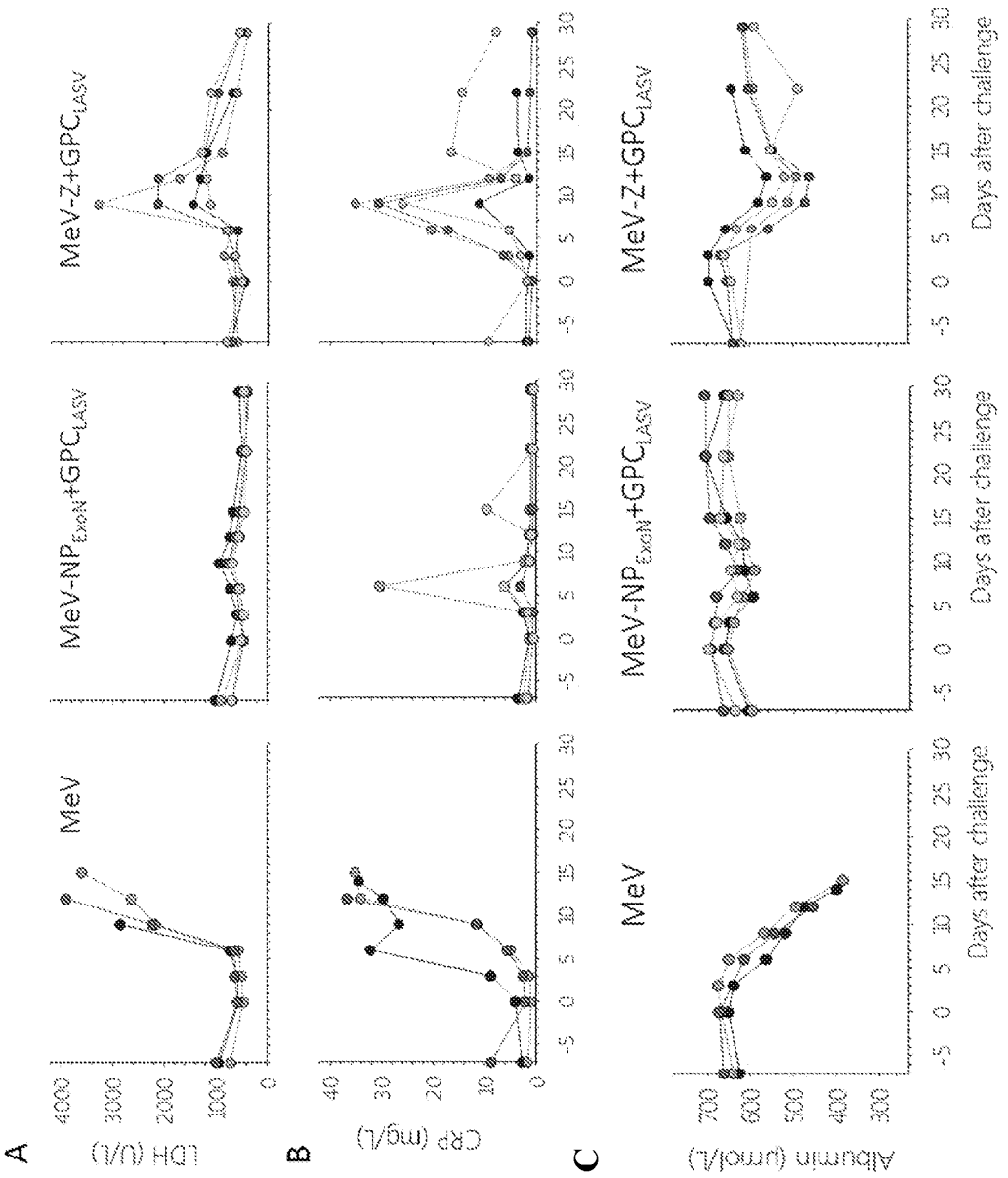

A
B
C
MeV
MeV-NP$_{ExoN}$+GPC$_{LASV}$
MeV-Z+GPC$_{LASV}$
LDH (U/L)
CRP (mg/L)
Albumin (µmol/L)
Days after challenge

FIGURE 14

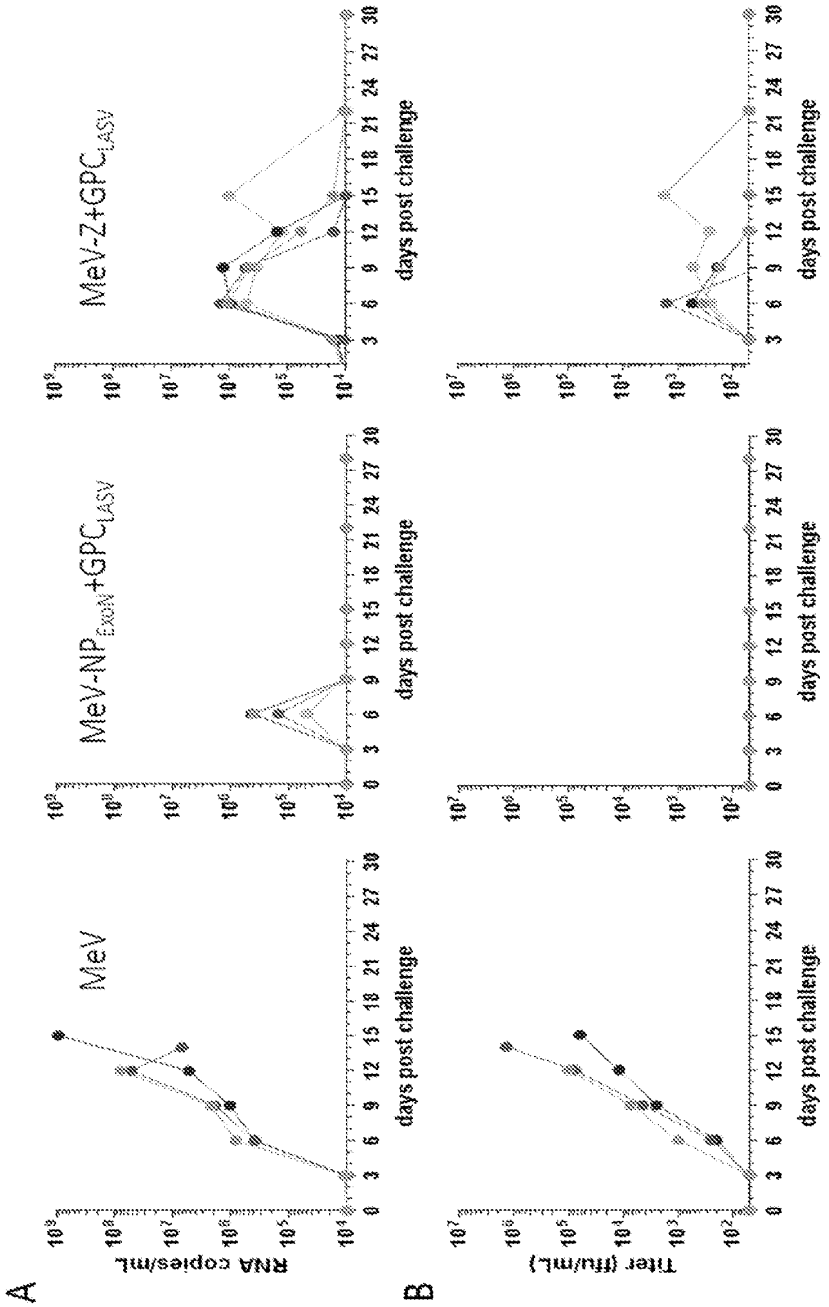

A
B
MeV
MeV-NP$_{EboM}$+GPC$_{LASV}$
MeV-Z+GPC$_{LASV}$
RNA copies/mL
Titer (ffu/mL)
days post challenge

FIGURE 15

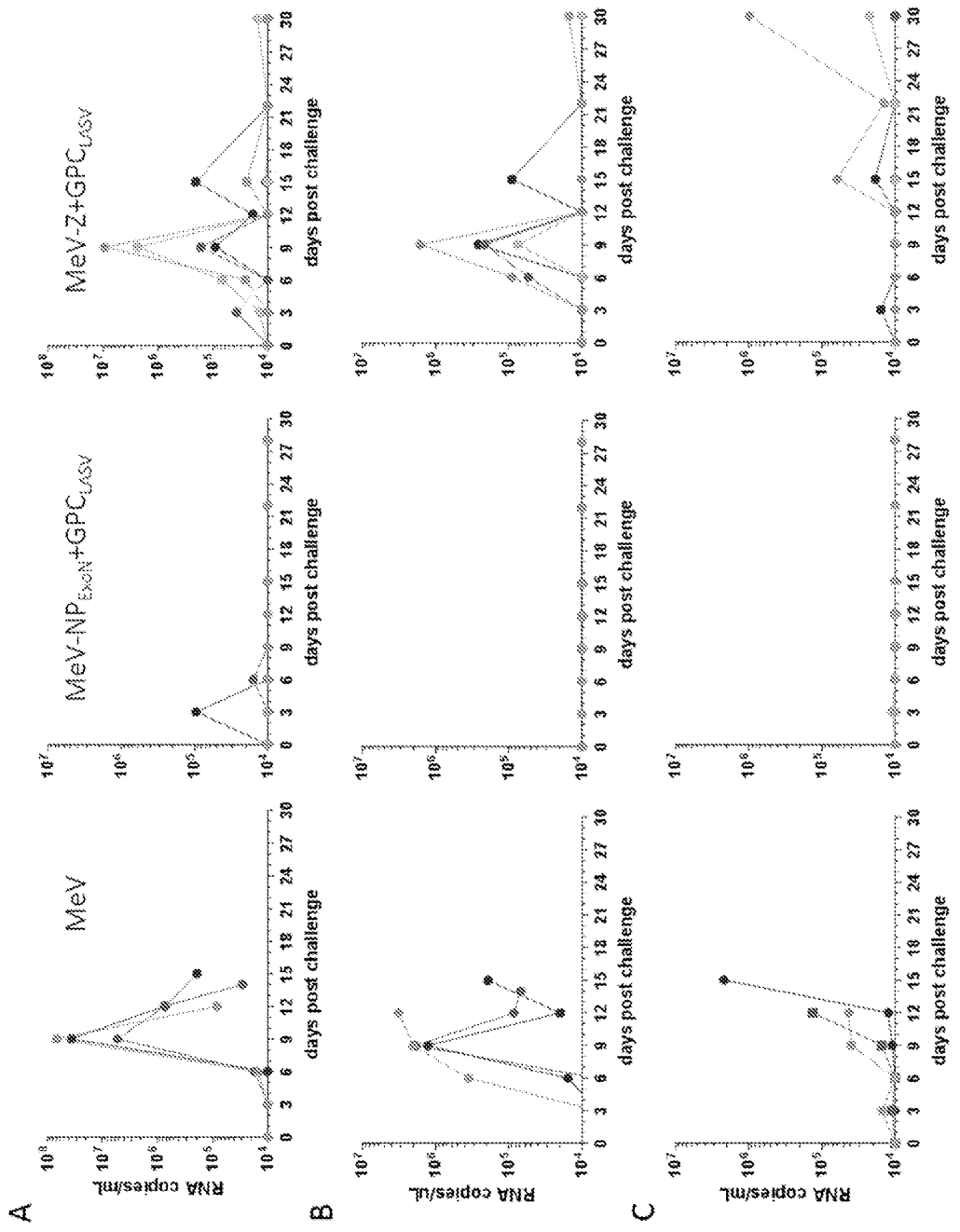

A
B
C
MeV
MeV-NP$_{EboN}$+GPC$_{LASV}$
MeV-Z+GPC$_{LASV}$
RNA copies/mL
RNA copies/uL
days post challenge

FIGURE 16

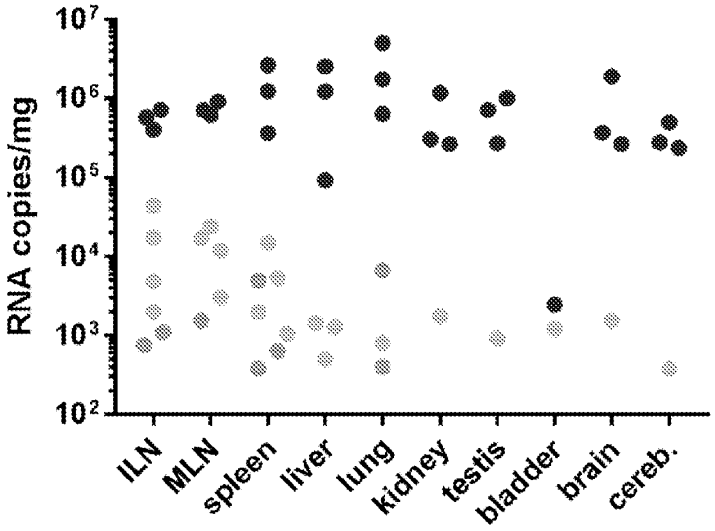


FIGURE 17

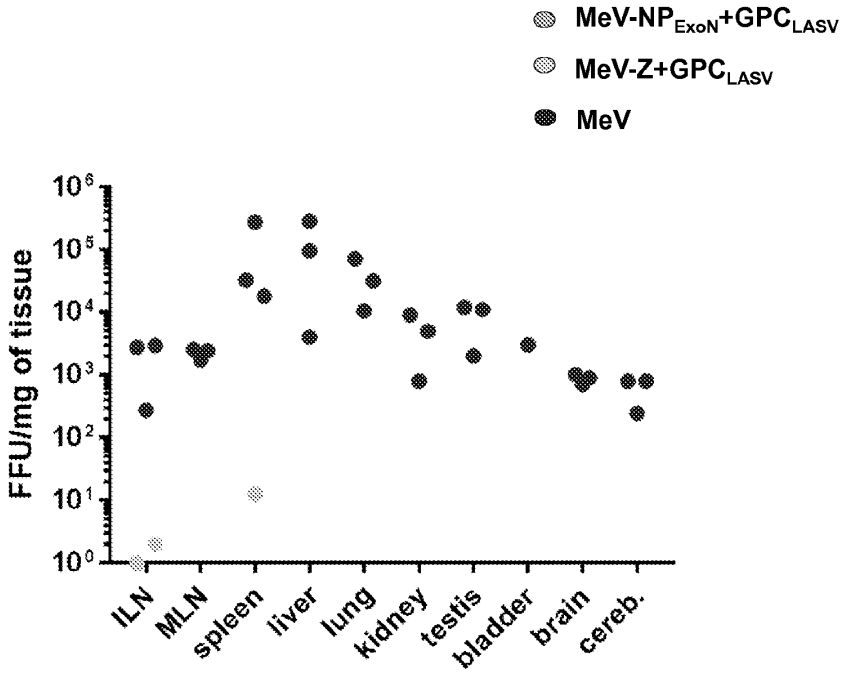


FIGURE 18

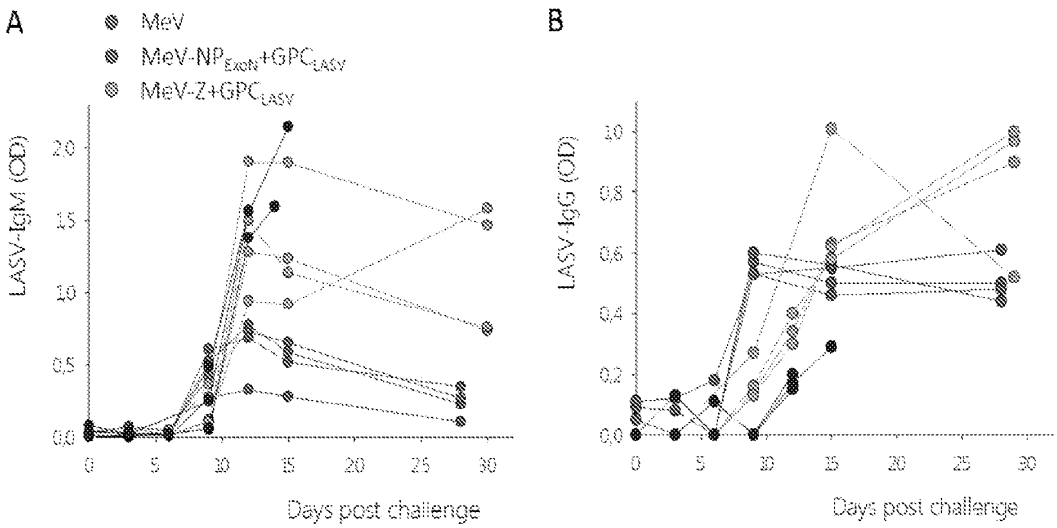


FIGURE 19

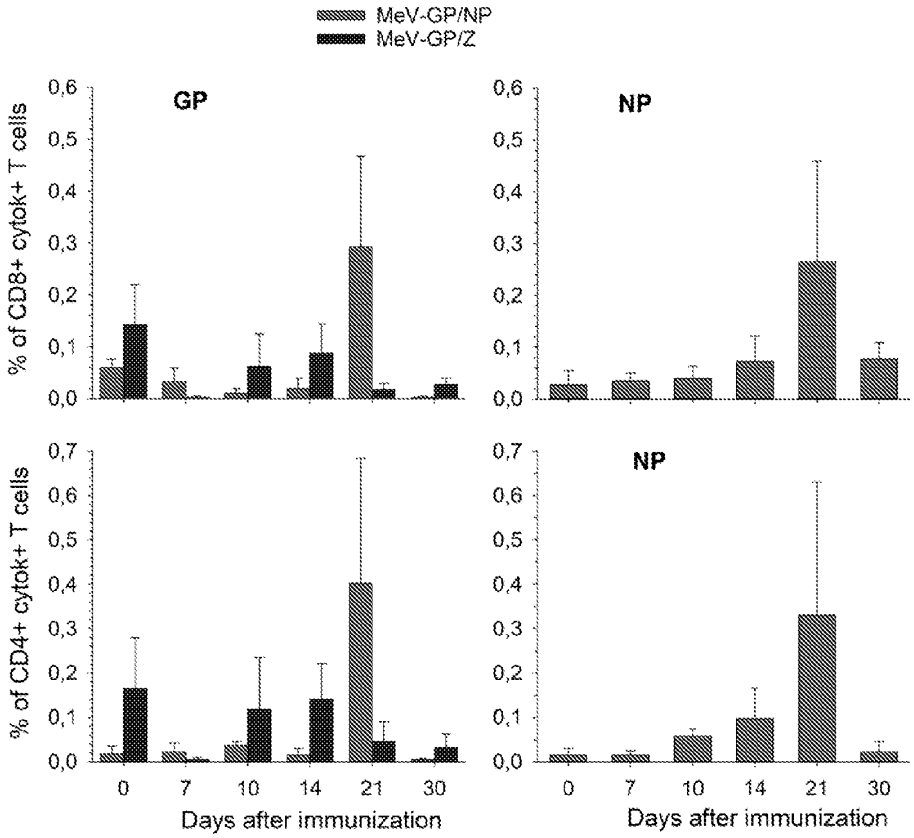


FIGURE 20

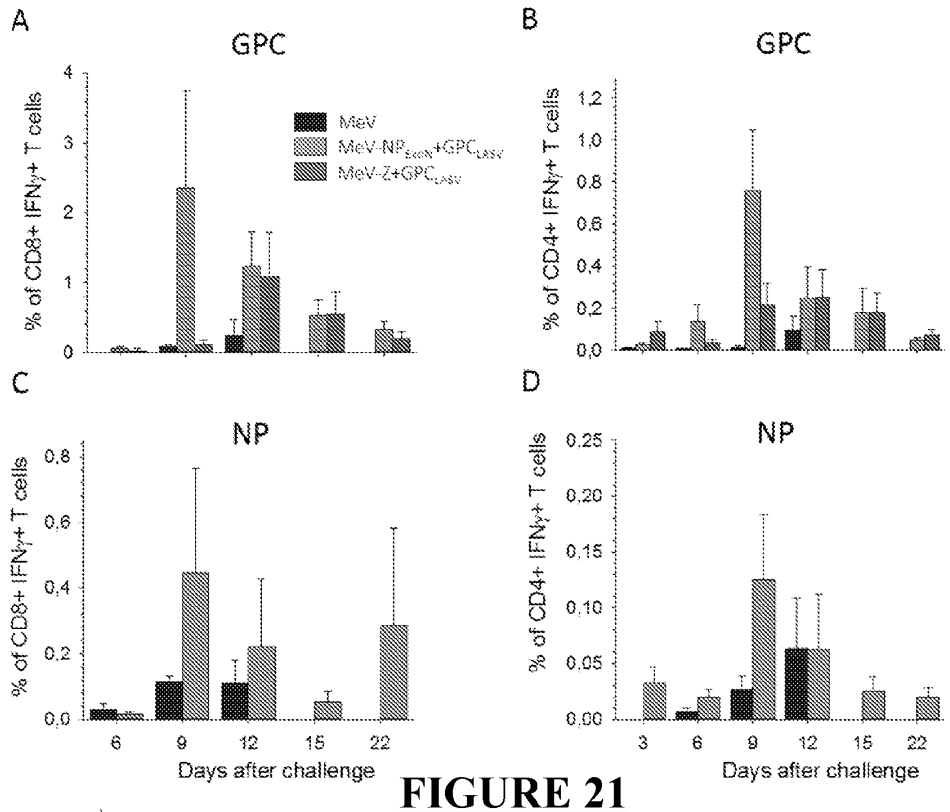


FIGURE 21

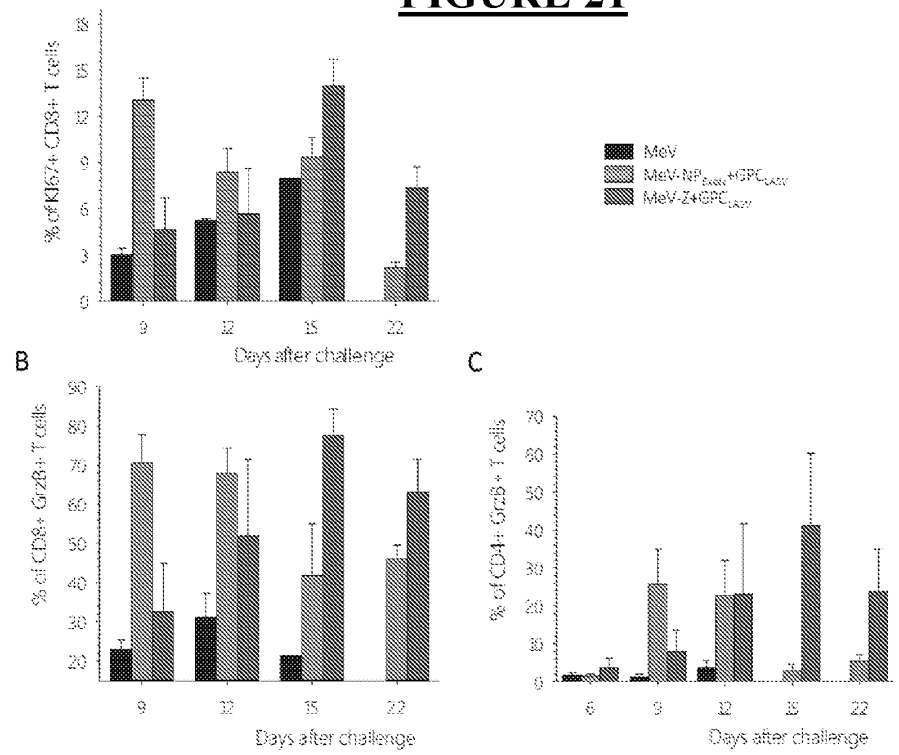


FIGURE 22

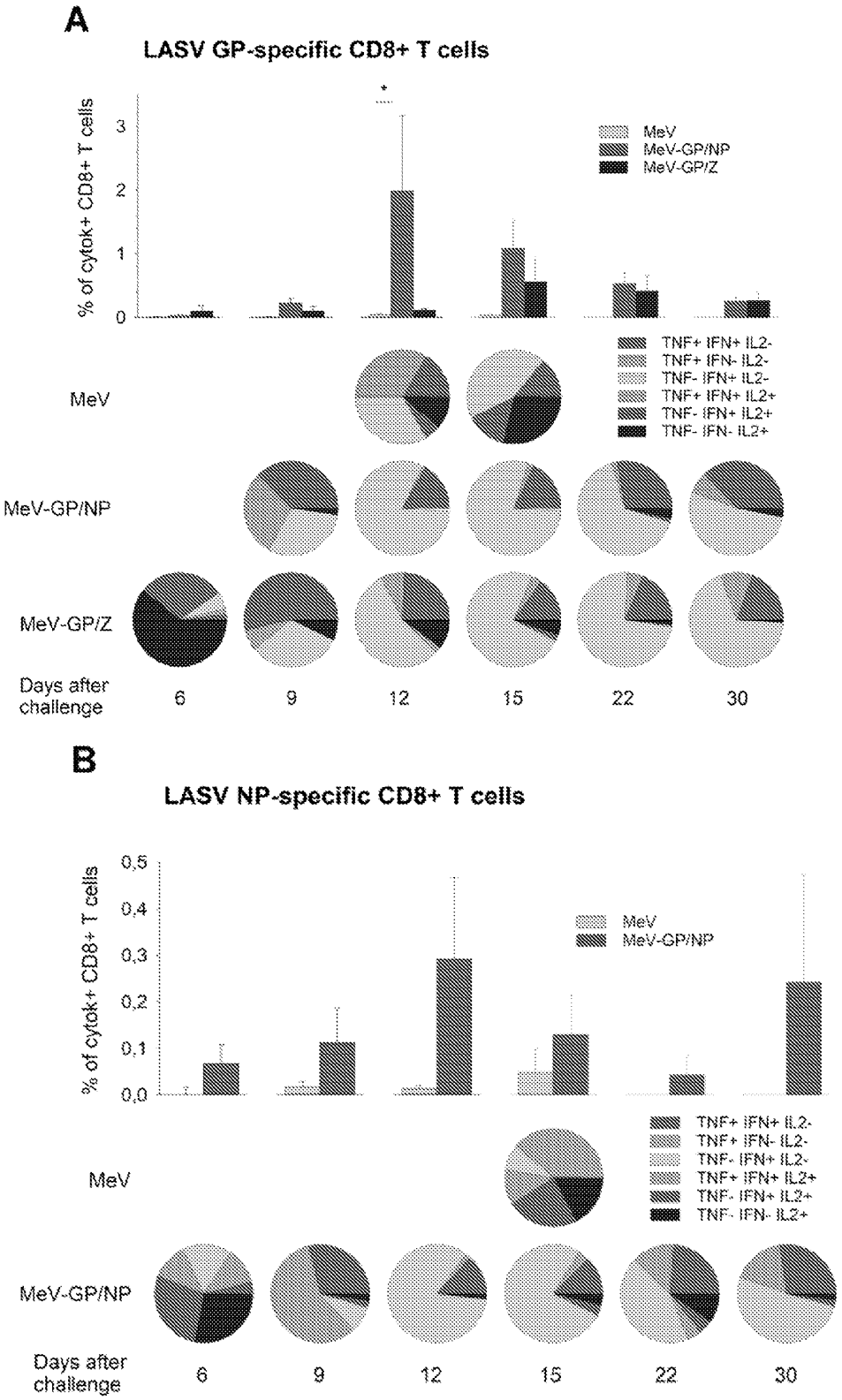

A
LASV GP-specific CD8+ T cells
% of cytok+ CD8+ T cells
0
1
2
3
*
MeV
MeV-GP/NP
MeV-GP/Z
TNF+ IFN+ IL2-
TNF+ IFN- IL2-
TNF- IFN+ IL2-
TNF+ IFN+ IL2+
TNF- IFN+ IL2+
TNF- IFN- IL2+
MeV
MeV-GP/NP
MeV-GP/Z
Days after challenge
6
9
12
15
22
30
B
LASV NP-specific CD8+ T cells
% of cytok+ CD8+ T cells
0,0
0,1
0,2
0,3
0,4
0,5
MeV
MeV-GP/NP
TNF+ IFN+ IL2-
TNF+ IFN- IL2-
TNF- IFN+ IL2-
TNF+ IFN+ IL2+
TNF- IFN+ IL2+
TNF- IFN- IL2+
MeV
MeV-GP/NP
Days after challenge
6
9
12
15
22
30

FIGURE 23

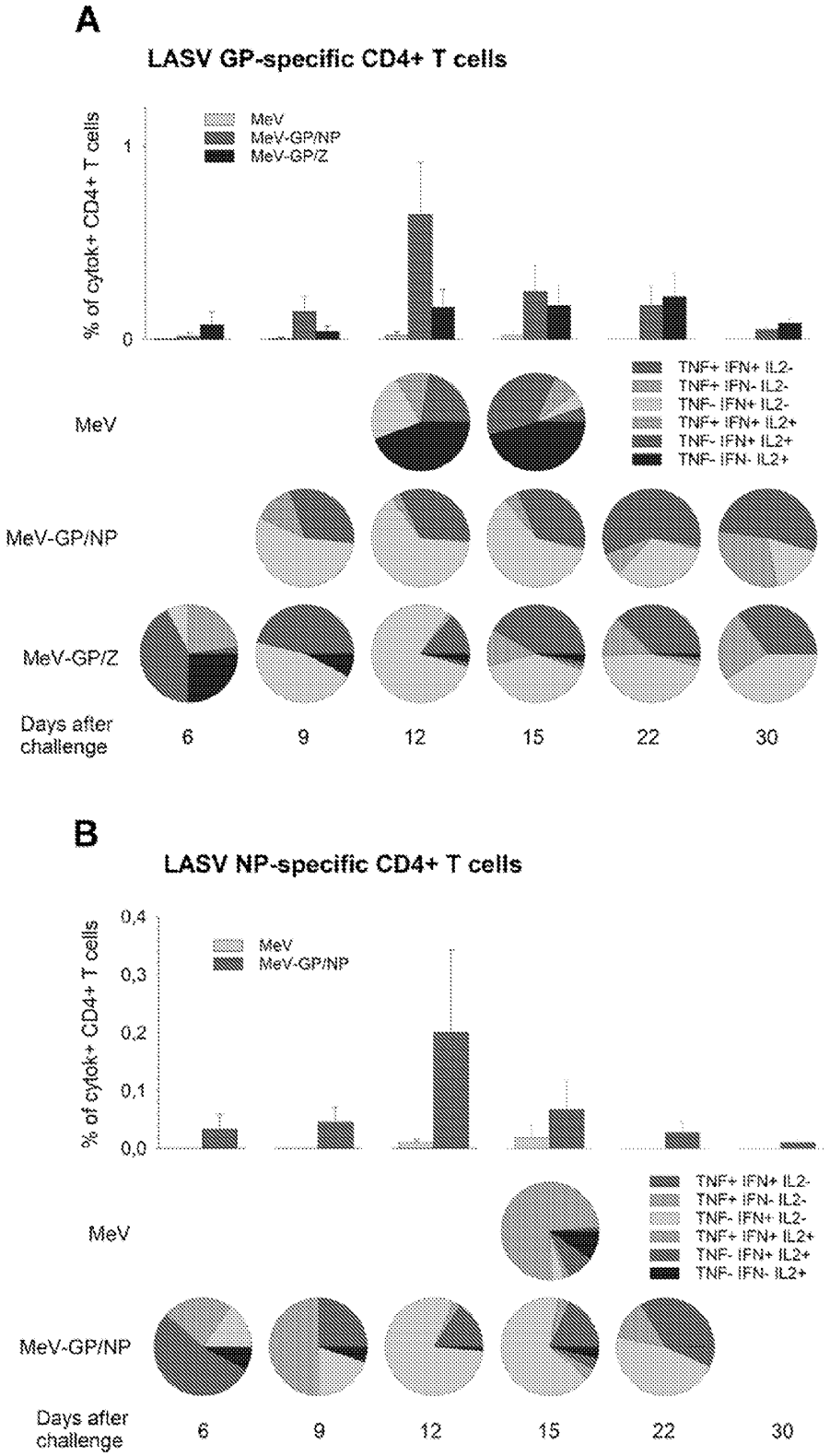

A
LASV GP-specific CD4+ T cells
% of cytok+ CD4+ T cells
1
0
MeV
MeV-GP/NP
MeV-GP/Z
TNF+ IFN+ IL2-
TNF+ IFN- IL2-
TNF- IFN+ IL2-
TNF+ IFN+ IL2+
TNF- IFN+ IL2+
TNF- IFN- IL2+
MeV
MeV-GP/NP
MeV-GP/Z
Days after challenge
6
9
12
15
22
30
B
LASV NP-specific CD4+ T cells
% of cytok+ CD4+ T cells
0,4
0,3
0,2
0,1
0,0
MeV
MeV-GP/NP
TNF+ IFN+ IL2-
TNF+ IFN- IL2-
TNF- IFN+ IL2-
TNF+ IFN+ IL2+
TNF- IFN+ IL2+
TNF- IFN- IL2+
MeV
MeV-GP/NP
Days after challenge
6
9
12
15
22
30

FIGURE 24

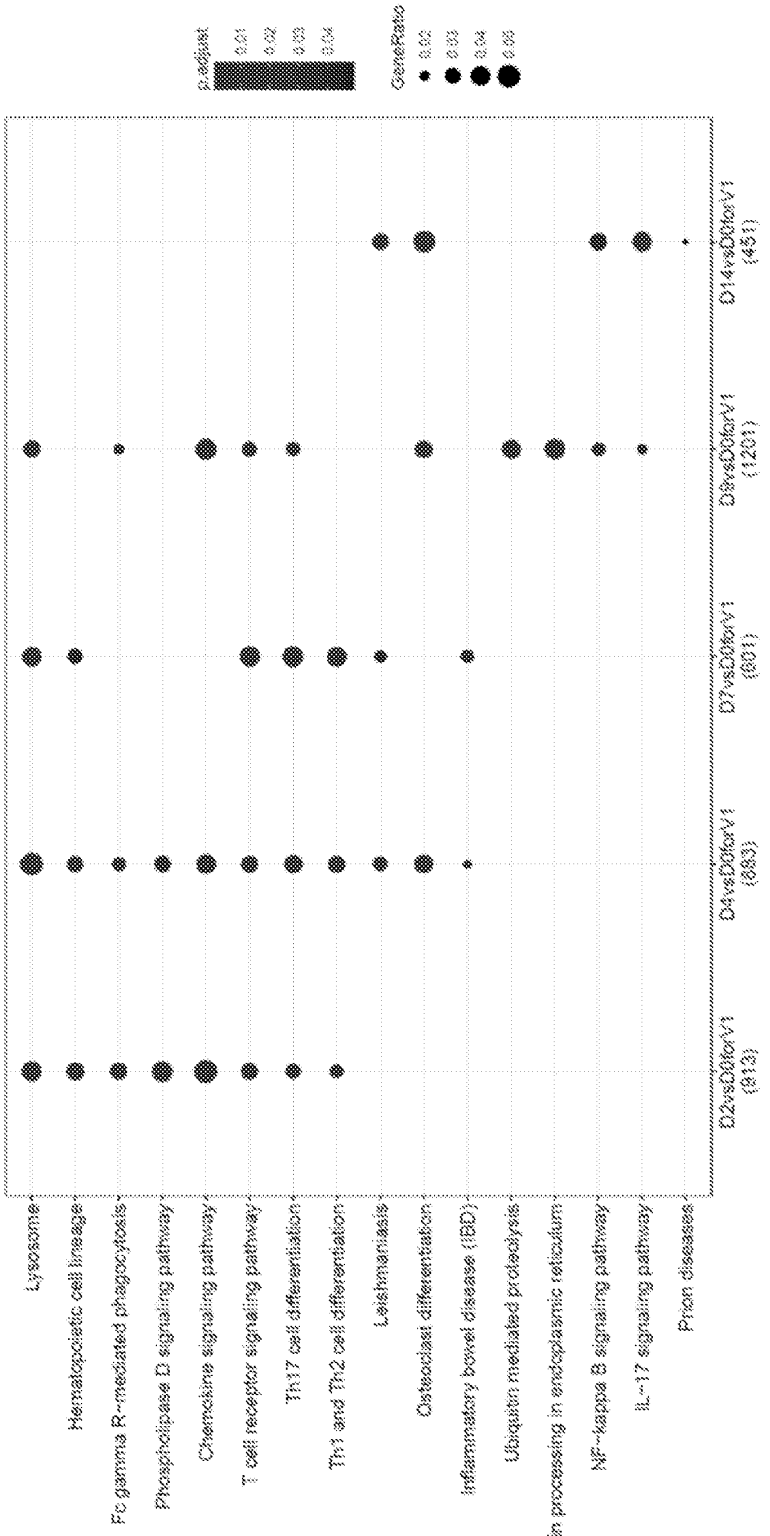

p.adjust
0.01
0.02
0.03
0.04
GeneRatio
0.02
0.03
0.04
0.05
D2vsD0forV1 (813)
D4vsD0forV1 (833)
D7vsD0forV1 (601)
D8vsD0forV1 (1201)
D14vsD0forV1 (451)
Lysosome
Hematopoietic cell lineage
Fc gamma R-mediated phagocytosis
Phospholipase D signaling pathway
Chemokine signaling pathway
T cell receptor signaling pathway
Th17 cell differentiation
Th1 and Th2 cell differentiation
Leishmaniasis
Osteoclast differentiation
Inflammatory bowel disease (IBD)
Ubiquitin mediated proteolysis
Protein processing in endoplasmic reticulum
NF-kappa B signaling pathway
IL-17 signaling pathway
Prion diseases

FIGURE 25

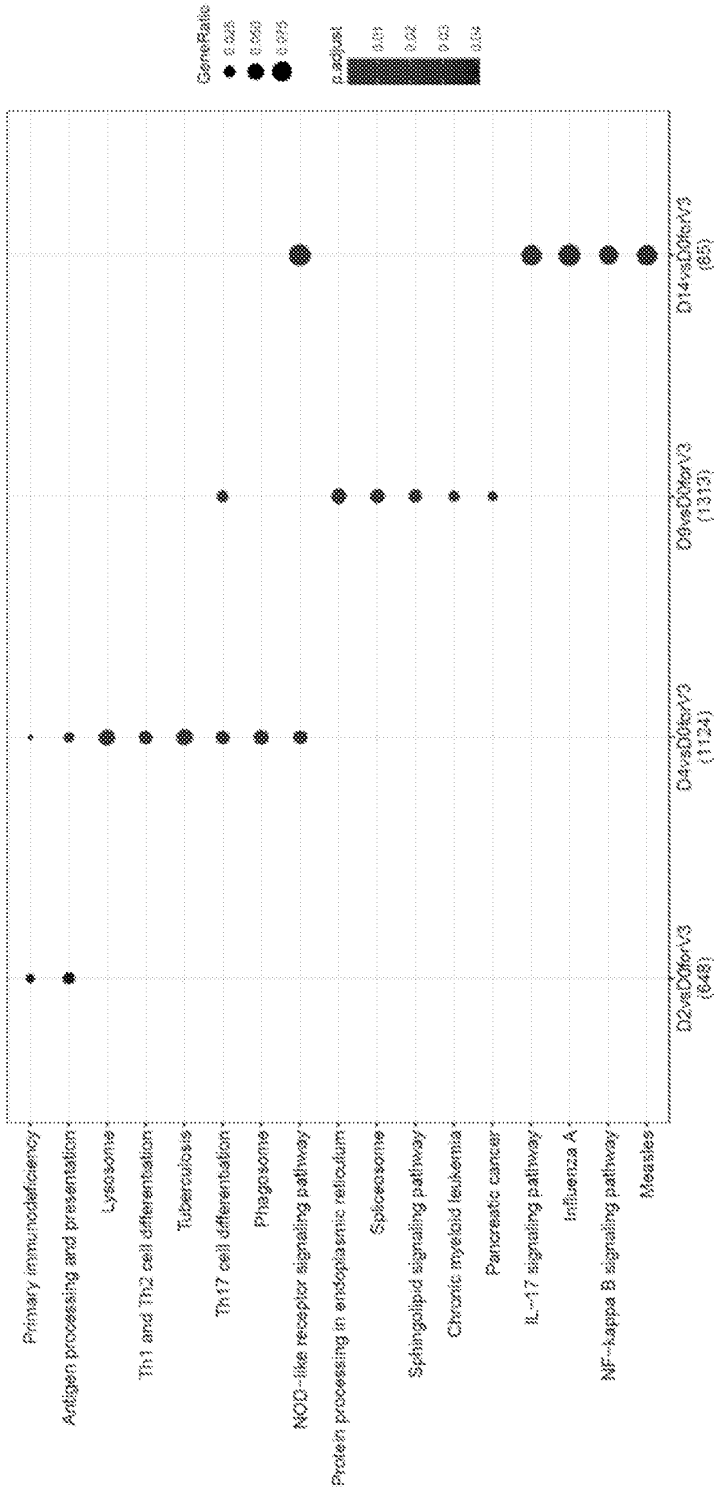

GeneRatio
0.025
0.050
0.075
p.adjust
0.03
0.02
0.01
D2vsDMonV3 (648)
D4vsDMonV3 (1124)
D8vsDMonV3 (1313)
D14vsDMonV3 (85)
Primary immunodeficiency
Antigen processing and presentation
Lysosome
Th1 and Th2 cell differentiation
Tuberculosis
Th17 cell differentiation
Phagosome
NOD−like receptor signaling pathway
Protein processing in endoplasmic reticulum
Spliceosome
Sphingolipid signaling pathway
Chronic myeloid leukemia
Pancreatic cancer
IL−17 signaling pathway
Influenza A
NF−kappa B signaling pathway
Measles

FIGURE 26

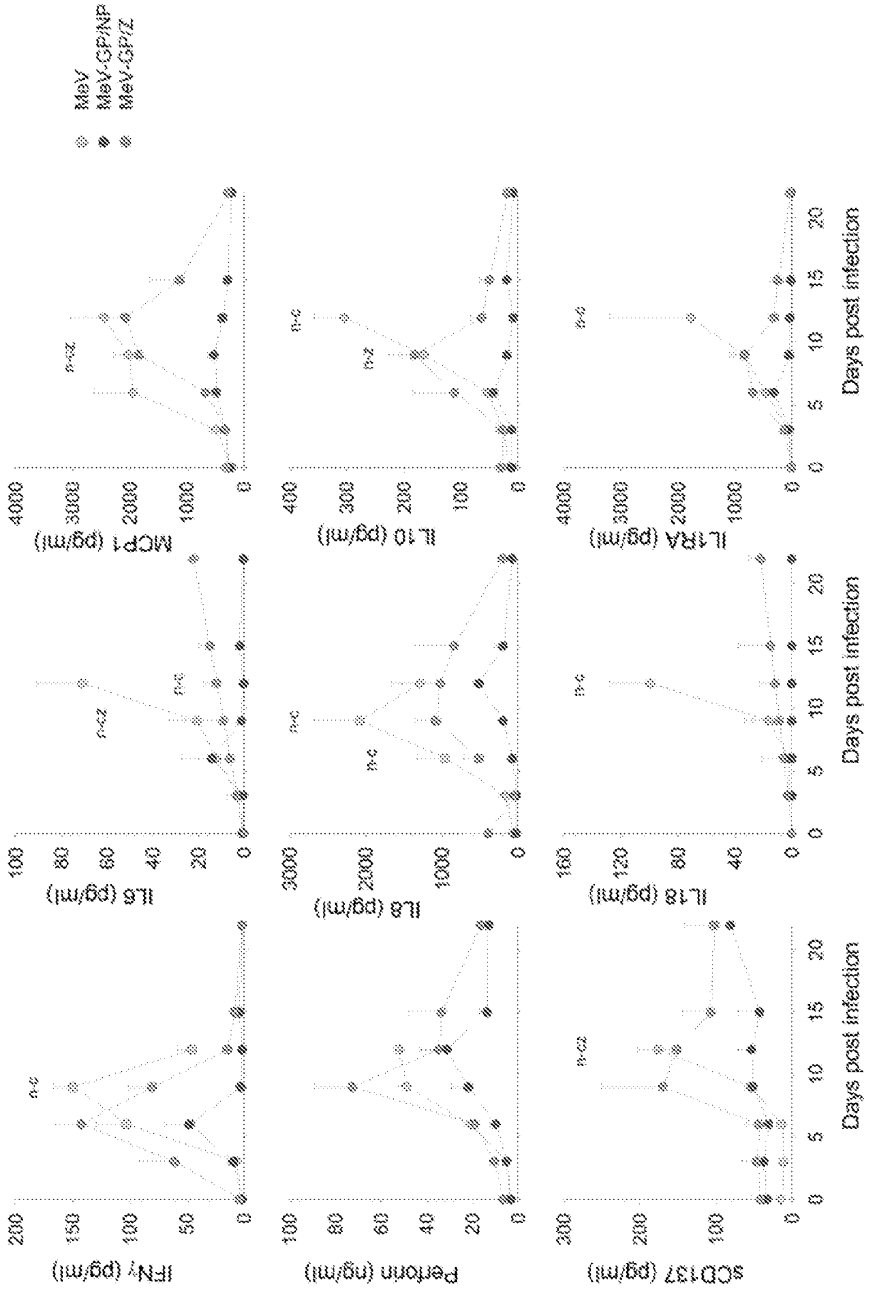

MeV
MeV-GP/NP
MeV-GP/Z
MCP1 (pg/ml)
IL10 (pg/ml)
IL1RA (pg/ml)
IL6 (pg/ml)
IL8 (pg/ml)
IL18 (pg/ml)
IFNγ (pg/ml)
Perforin (ng/ml)
sCD137 (pg/ml)
Days post infection

FIGURE 27

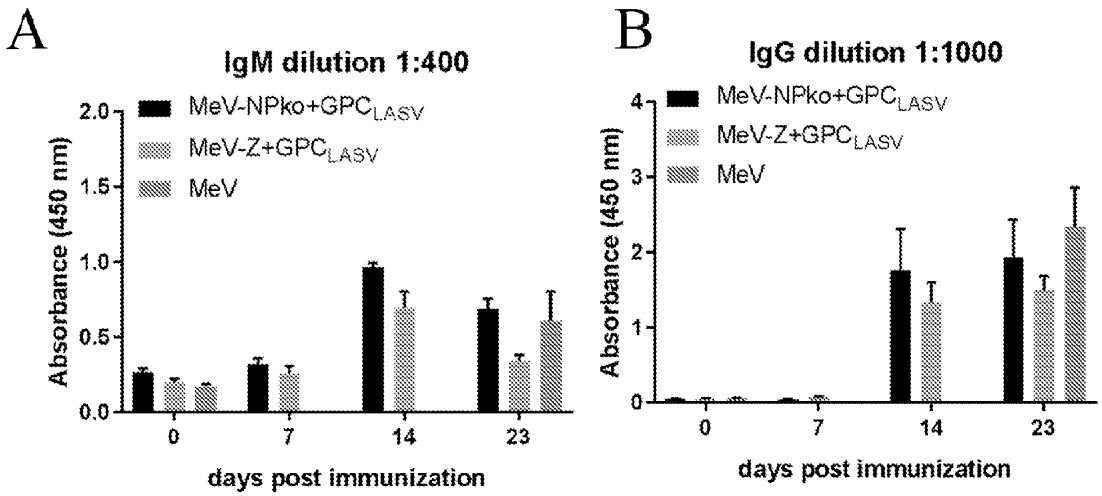


FIGURE 28

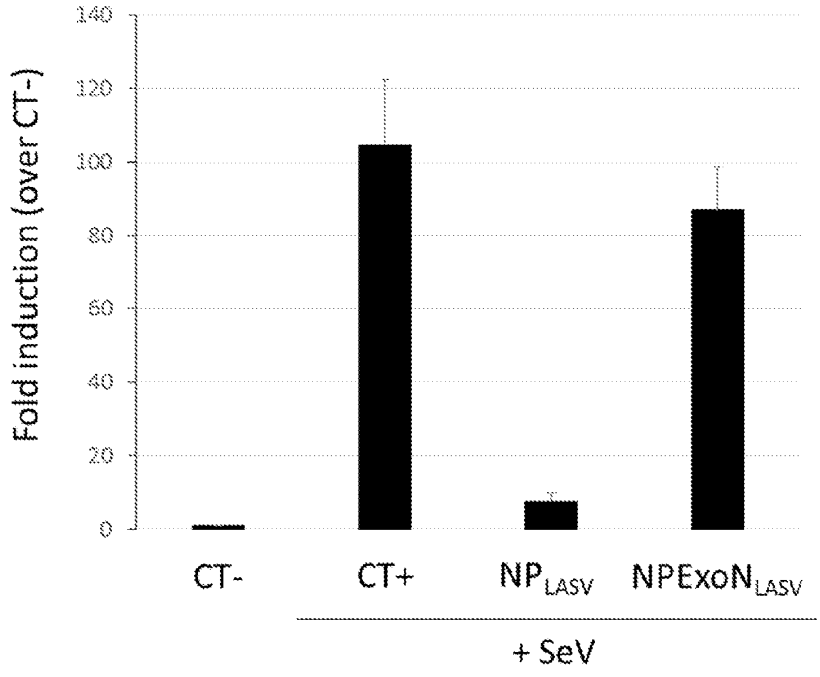


FIGURE 29

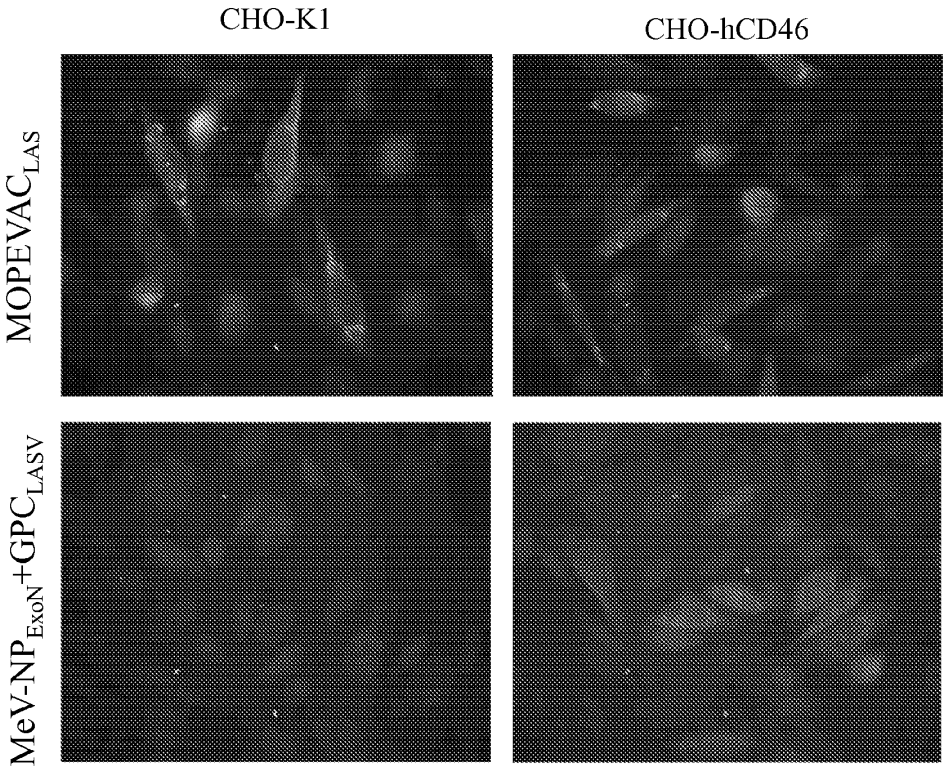


FIGURE 30

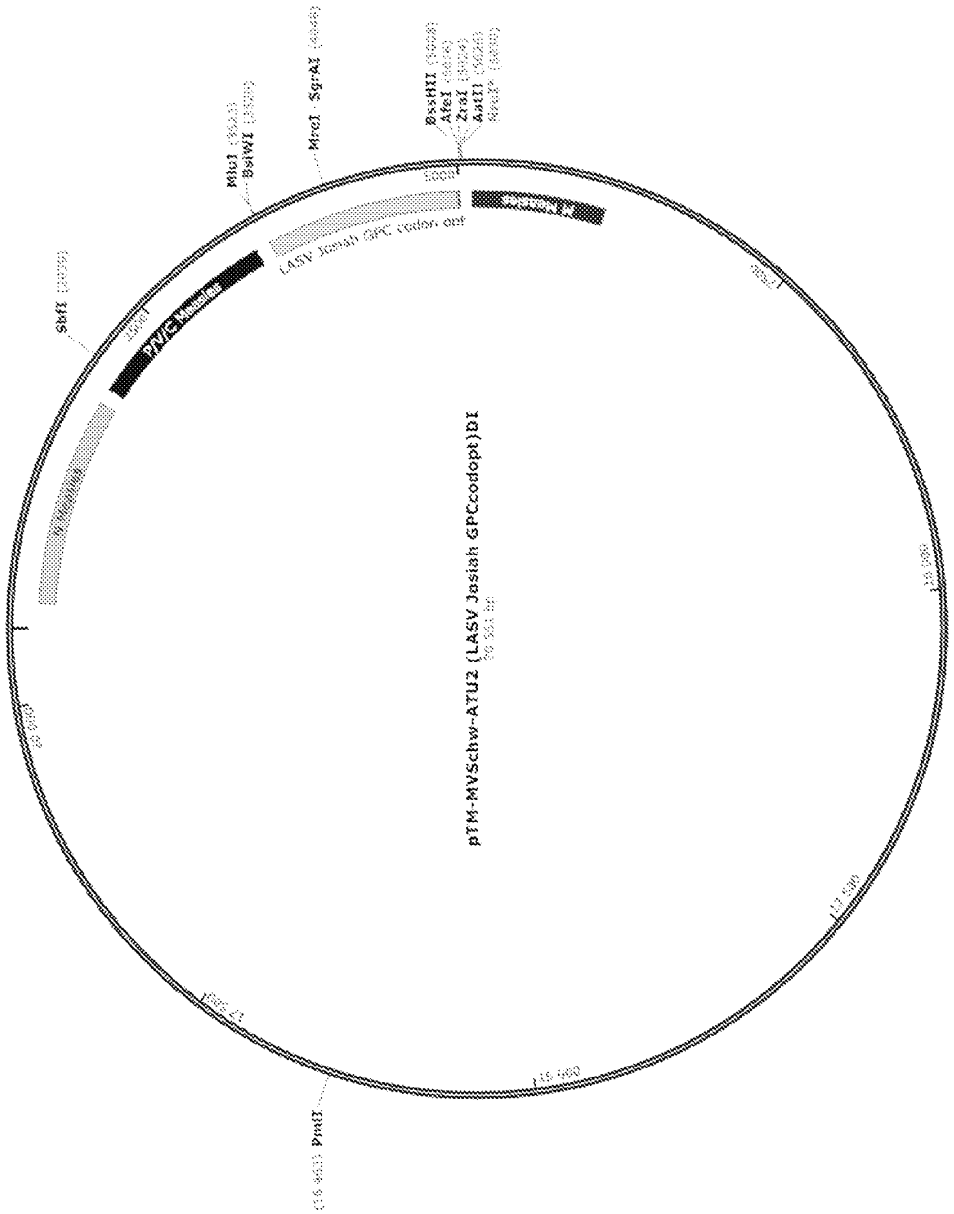

pIM-MVSchw-ATU2 (LASV Josiah GPCcodopt)DI
LASV Josiah GPC codon opt
PmeI

FIGURE 31

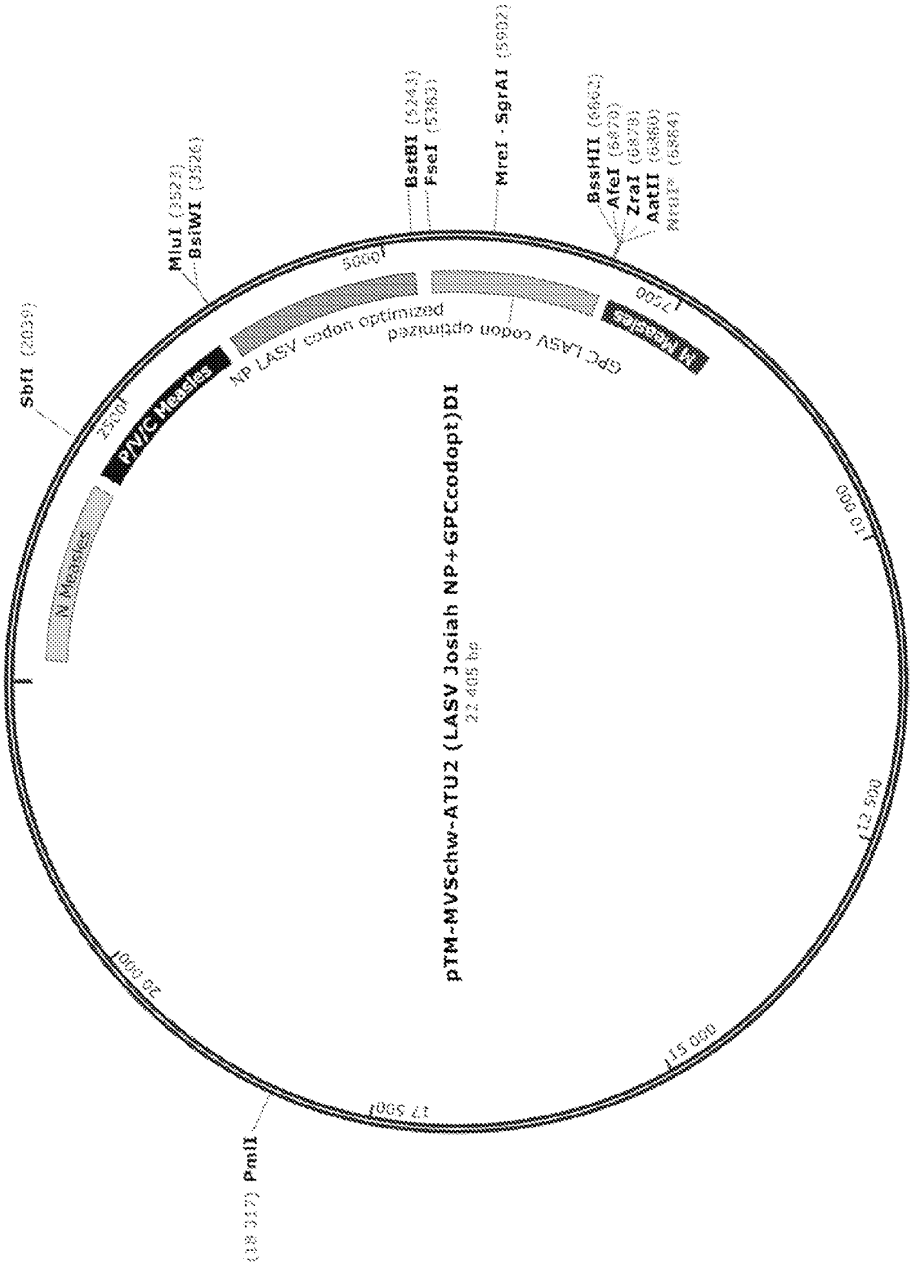

pTM-MVSchw-ATU2 (LASV Josiah NP+GPCcodopt)DI
22 405 bp
NP LASV codon optimized
GPC LASV codon optimized
L Measles
P/V/C Measles
SbfI (2039)
MluI (3523)
BsiWI (3526)
BstBI (5243)
FseI (5383)
MreI - SgrAI (5932)
BssHII (6662)
AfeI (6670)
ZraI (6870)
AatII (6880)
MroI* (6884)
PmlI (18 917)
5000
7500
10 000
12 500
15 000
17 500
20 000
22 500

FIGURE 32

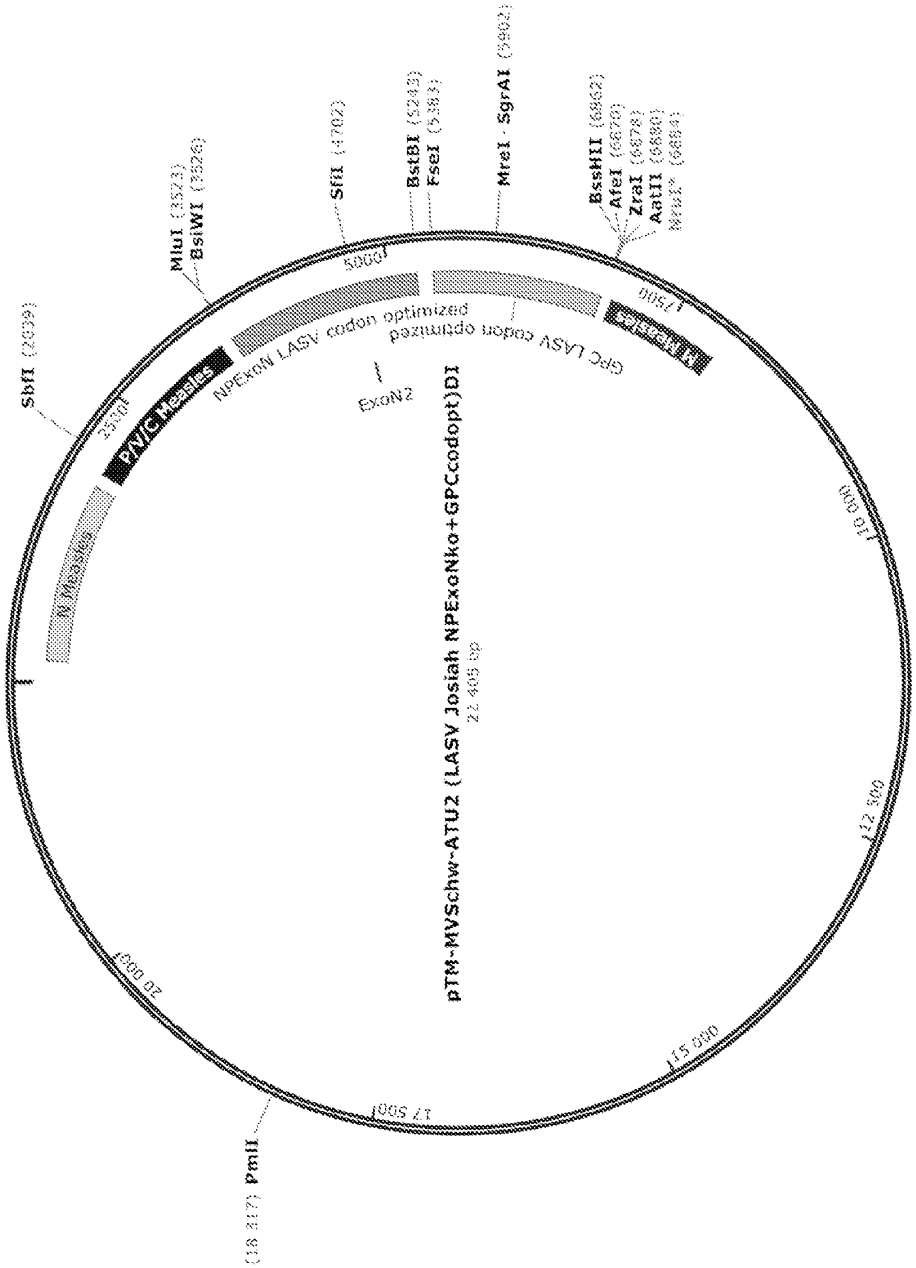

pTM-MVSchw-ATU2 (LASV Josiah NPExoNko+GPCcodopt)DI
22 405 bp
NPExoN LASV codon optimized
GPC LASV codon optimized
ExoN2
L
P/VIC Measles
N Measles
SbfI (2039)
MluI (3523)
BsiWI (3526)
SfiI (4702)
BstBI (5243)
FseI (5383)
MreI - SgrAI (5802)
BssHII (6662)
AfeI (6670)
ZraI (6678)
AatII (6690)
MreI* (6884)
PmlI
(18 817)

FIGURE 33

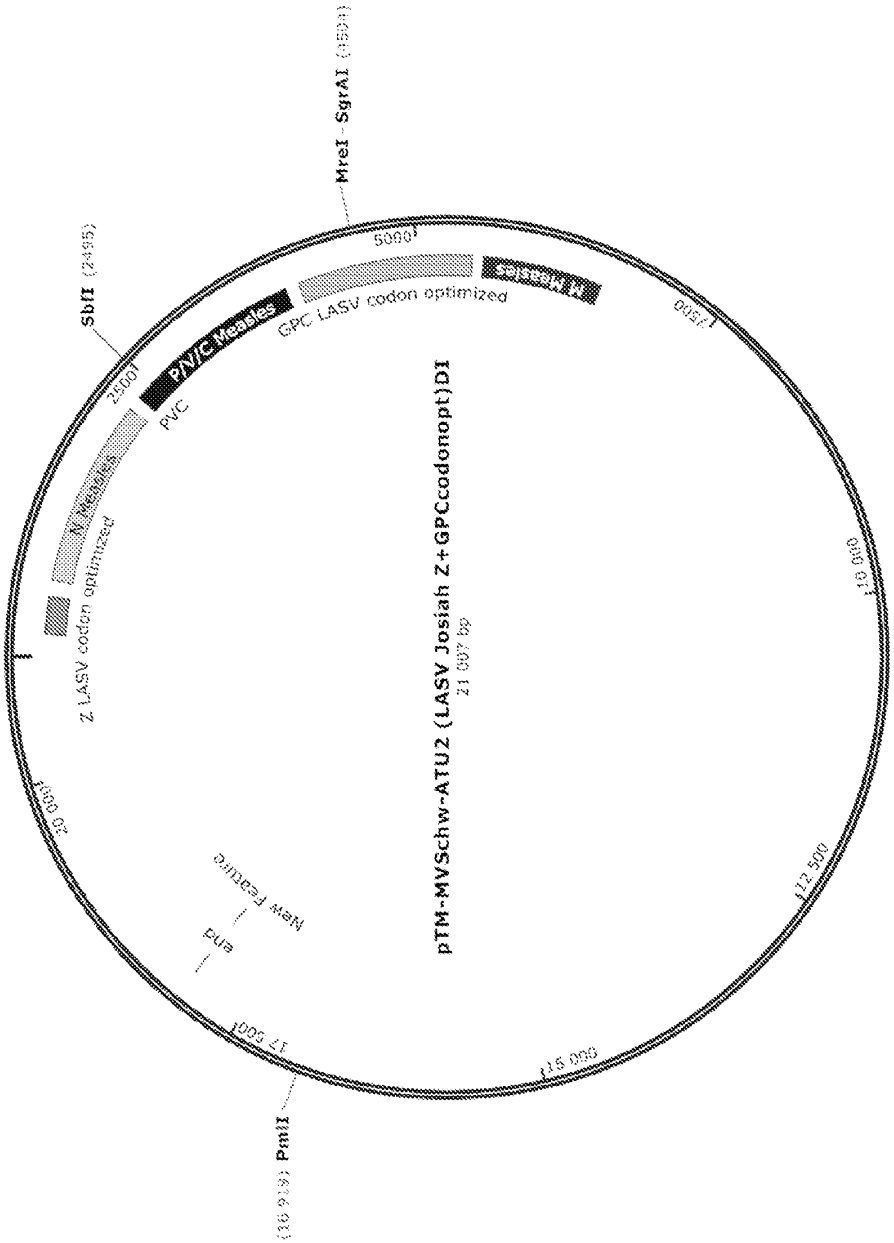

MreI - SgrAI (1891)
5000
SbfI (2495)
2500
PVC/Vesicles
PVC
GPC LASV codon optimized
GPC
Z LASV codon optimized
pTM-MVSchw-ATU2 (LASV Josiah Z+GPCcodonopt)D1
21 007 bp
New Feature
end
PmlI
(16 919)
17 500
15 000
12 500
10 000
7 500
5 000
2 500
1

FIGURE 34

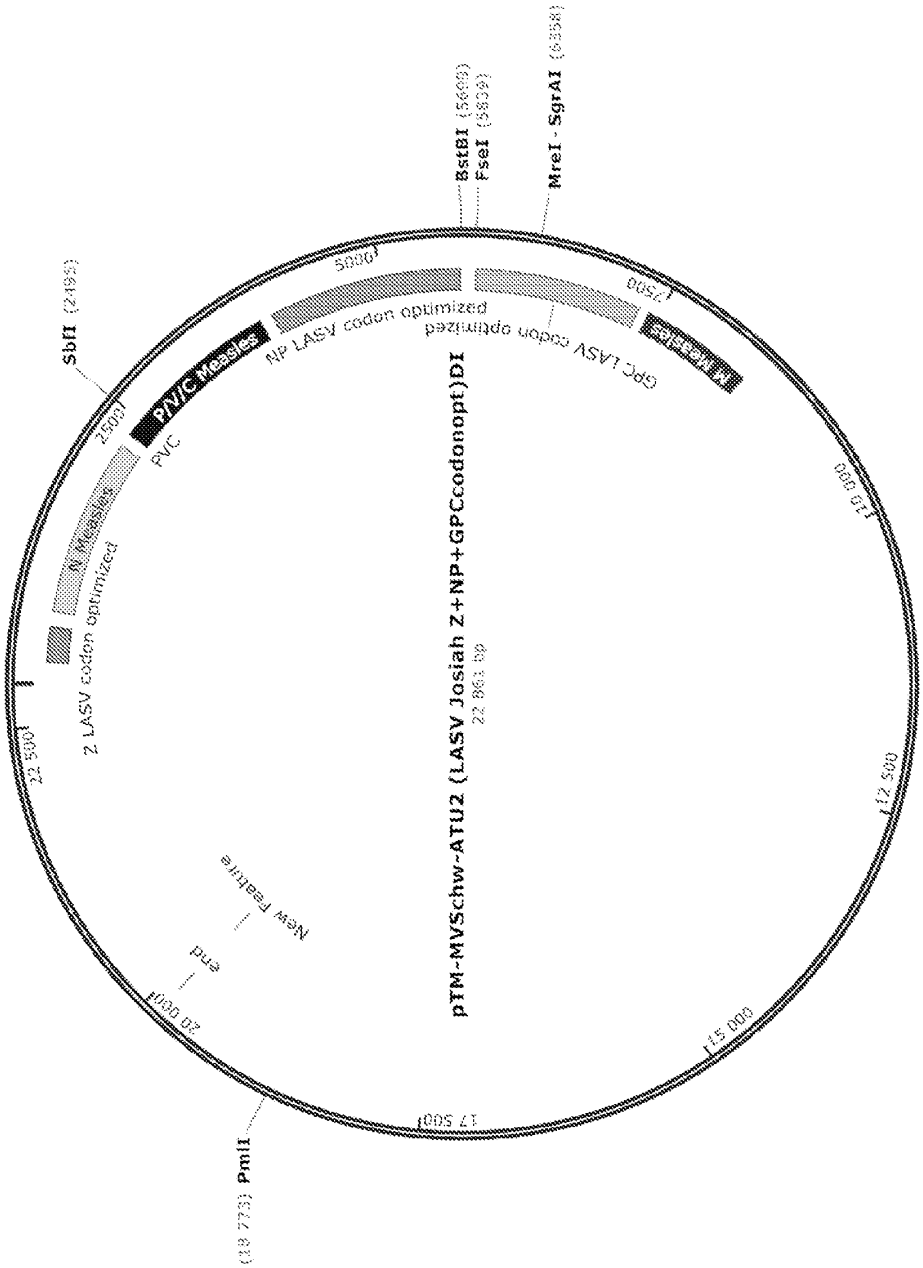

pTM-MVSchw-ATU2 (LASV Josiah Z+NP+GPCcodonopt)DI
22 861 bp
BstBI (5609)
FseI (5839)
MreI - SgrAI (6358)
SbfI (2492)
PmlI (18 773)
5000
7500
10 000
12 500
15 000
17 500
20 000
22 500
2500
PVC Measles
PVC
N Measles
2 LASV codon optimized
NP LASV codon optimized
GPC LASV codon optimized
L Measles
New Feature
end

FIGURE 35

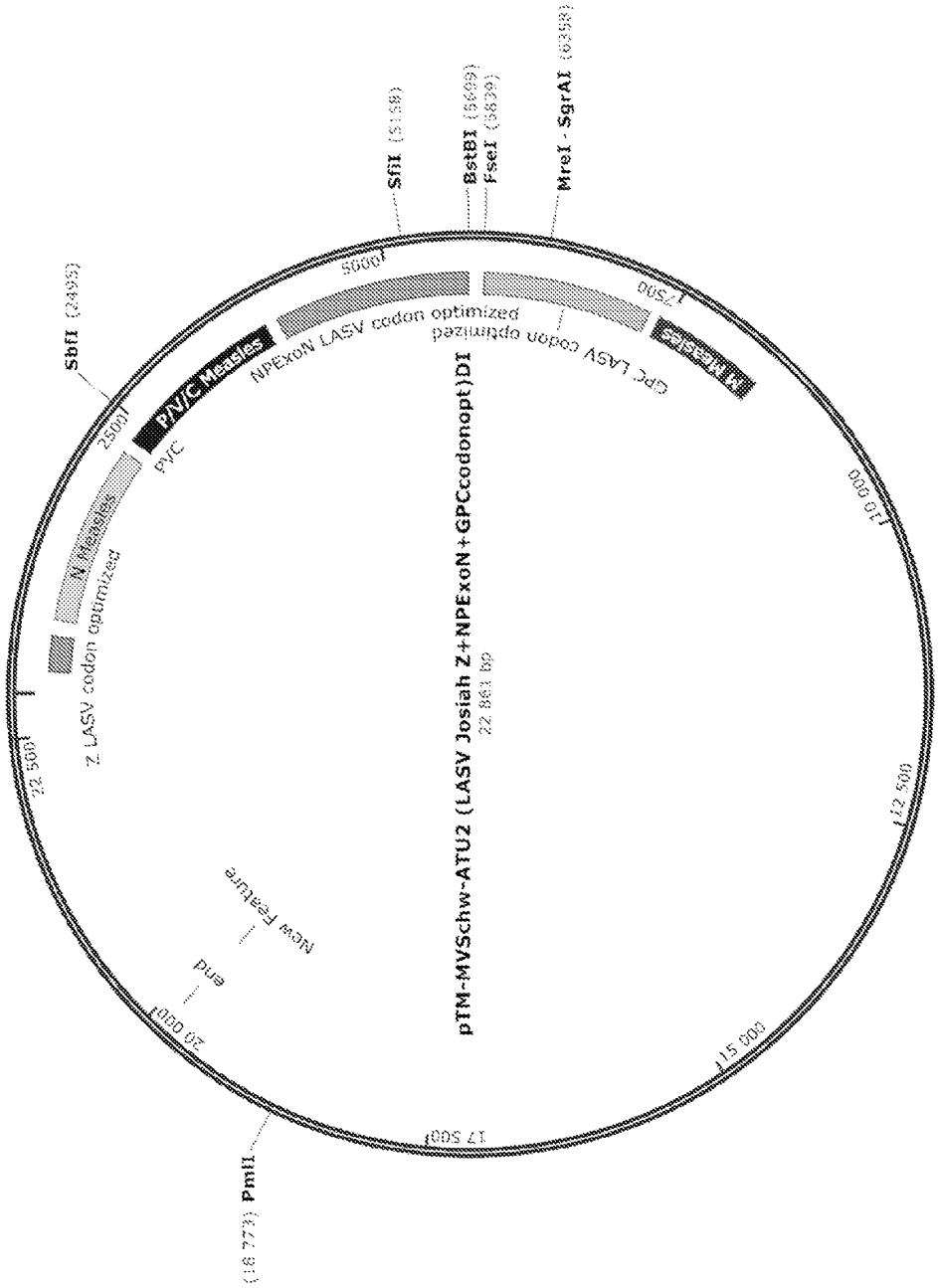

pTM-MVSchw-ATU2 (LASV Josiah Z+NPExoN+GPCcodonopt)DI
22 861 bp
SbfI (2495)
SfiI (5159)
BstBI (5669)
FseI (5839)
MreI - SgrAI (6358)
2 500
5 000
7 500
10 000
12 500
15 000
17 500
20 000
22 500
P/C Measles
P/C
N Measles
Z LASV codon optimized
NPExoN LASV codon optimized
GPC LASV codon optimized
L Measles
New Feature
end
PmlI (18 773)

FIGURE 36