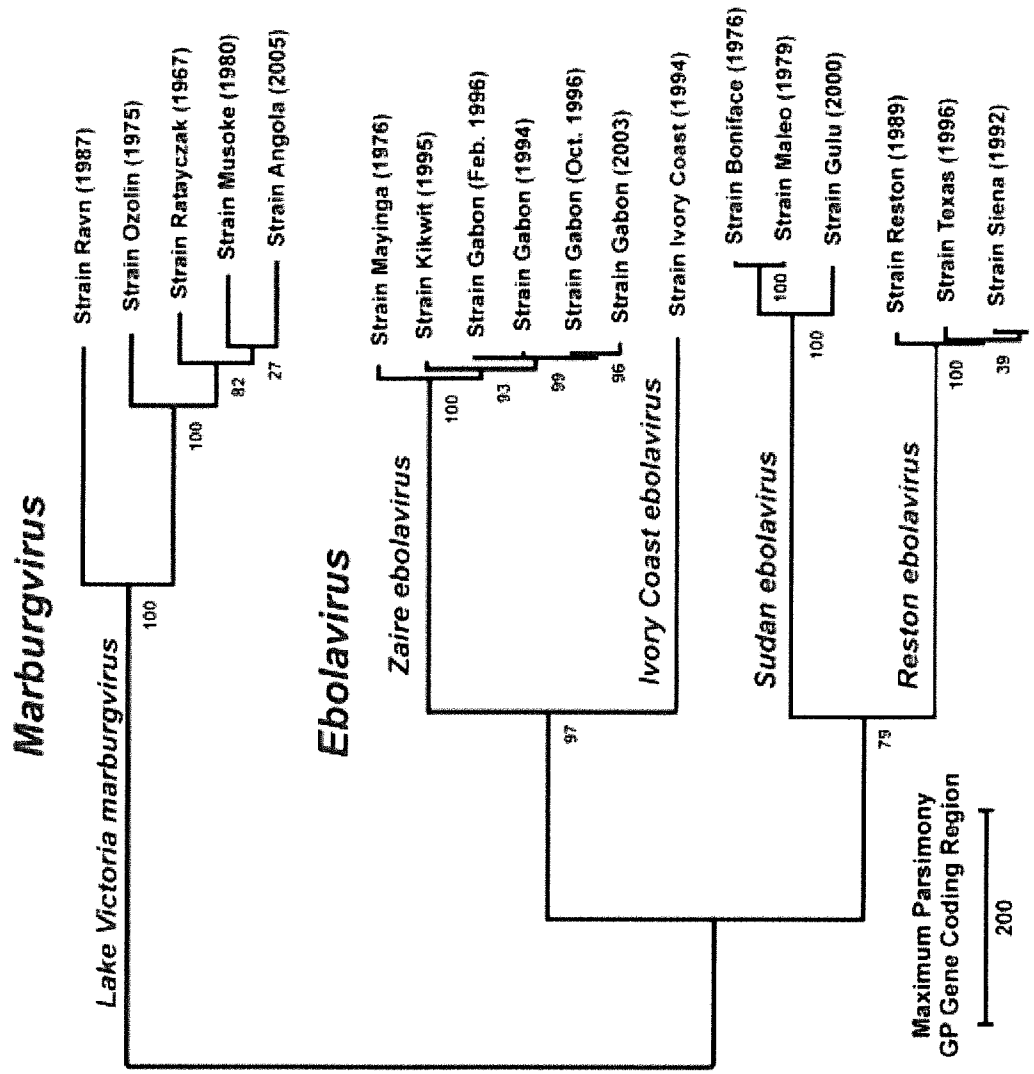

Marburgvirus
Lake Victoria marburgvirus
Strain Ravn (1987)
Strain Ozolin (1975)
Strain Ratayczak (1967)
Strain Musoke (1980)
Strain Angola (2005)
100
82
27
Ebolavirus
Zaire ebolavirus
Strain Mayinga (1976)
Strain Kikwit (1995)
Strain Gabon (Feb. 1996)
Strain Gabon (1994)
Strain Gabon (Oct. 1996)
Strain Gabon (2003)
100
93
99
96
Ivory Coast ebolavirus
Strain Ivory Coast (1994)
97
Sudan ebolavirus
Strain Boniface (1976)
Strain Maleo (1979)
Strain Gulu (2000)
100
100
Reston ebolavirus
Strain Reston (1989)
Strain Texas (1996)
Strain Siena (1992)
100
39
79
Maximum Parsimony
GP Gene Coding Region
200

Figure 1

Figure 2

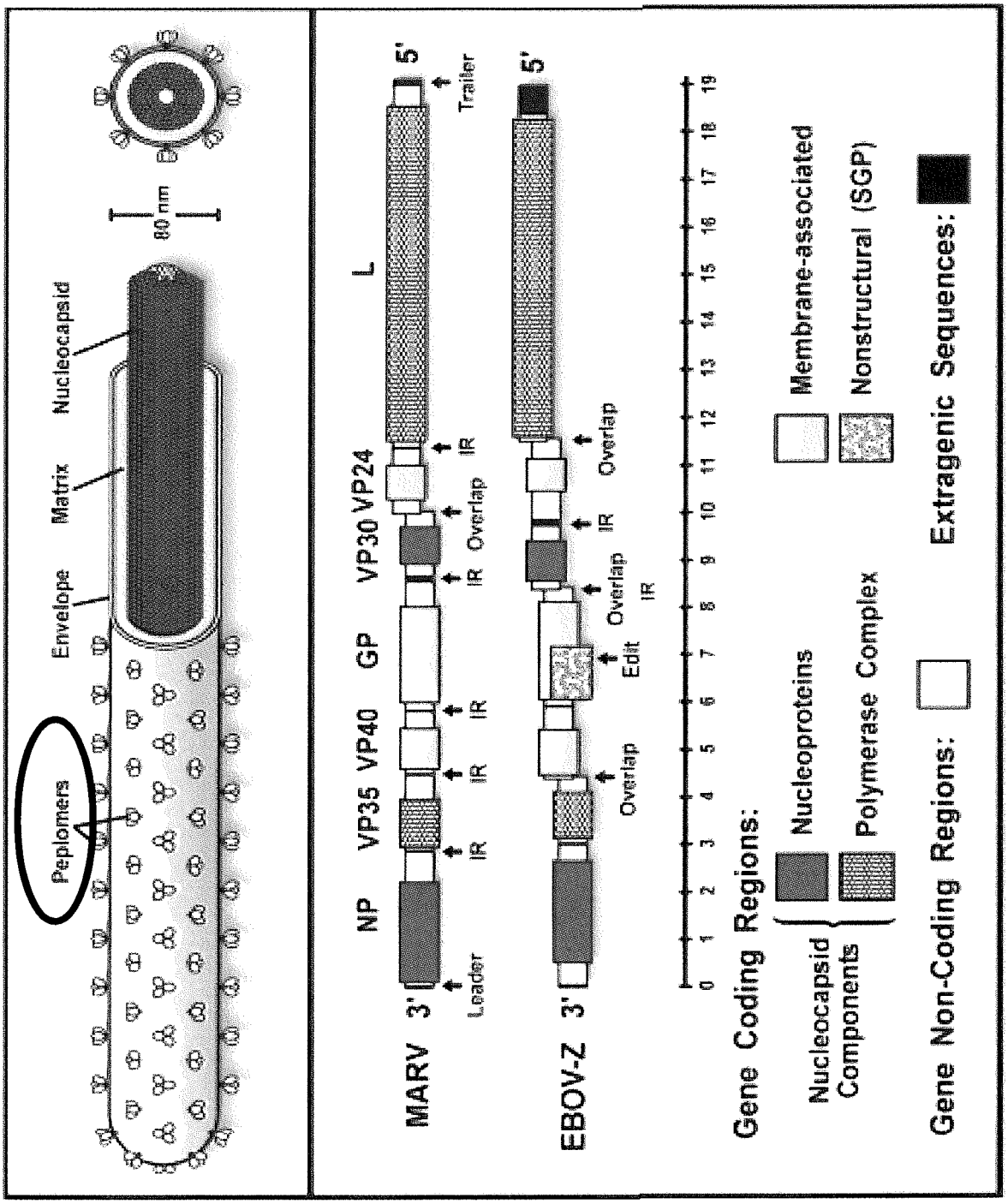

Peplomers
Envelope
Matrix
Nucleocapsid
80 nm
NP VP35 VP40 GP VP30 VP24 L
MARV 3'
Leader
IR
IR
IR
IR
Overlap
IR
Trailer
5'
EBOV-Z 3'
Overlap
Edit
Overlap
IR
Overlap
5'
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
Gene Coding Regions:
Nucleocapsid Components
Nucleoproteins
Polymerase Complex
Membrane-associated
Nonstructural (SGP)
Gene Non-Coding Regions:
Extragenic Sequences:
Adapted from Fields ed.: Virology

Figure 3A

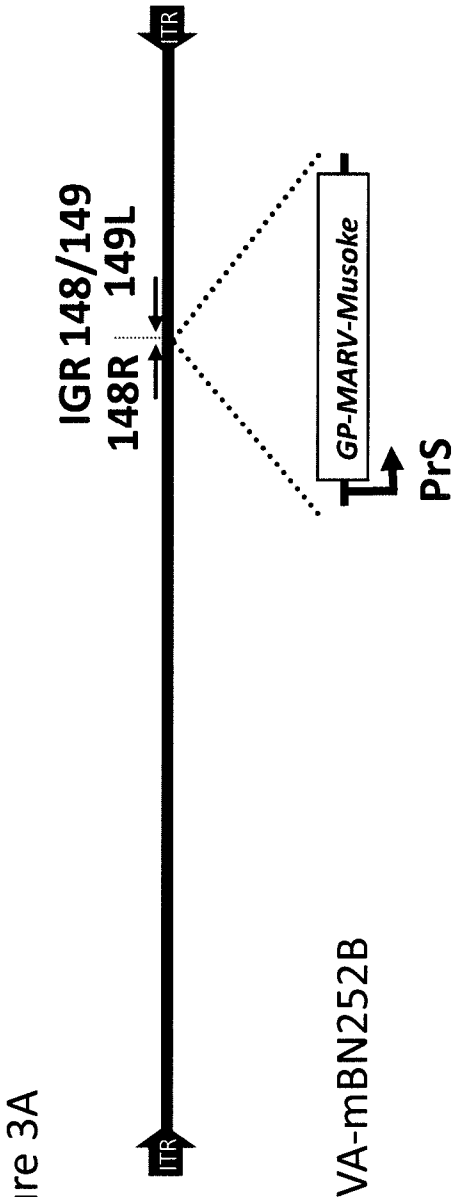
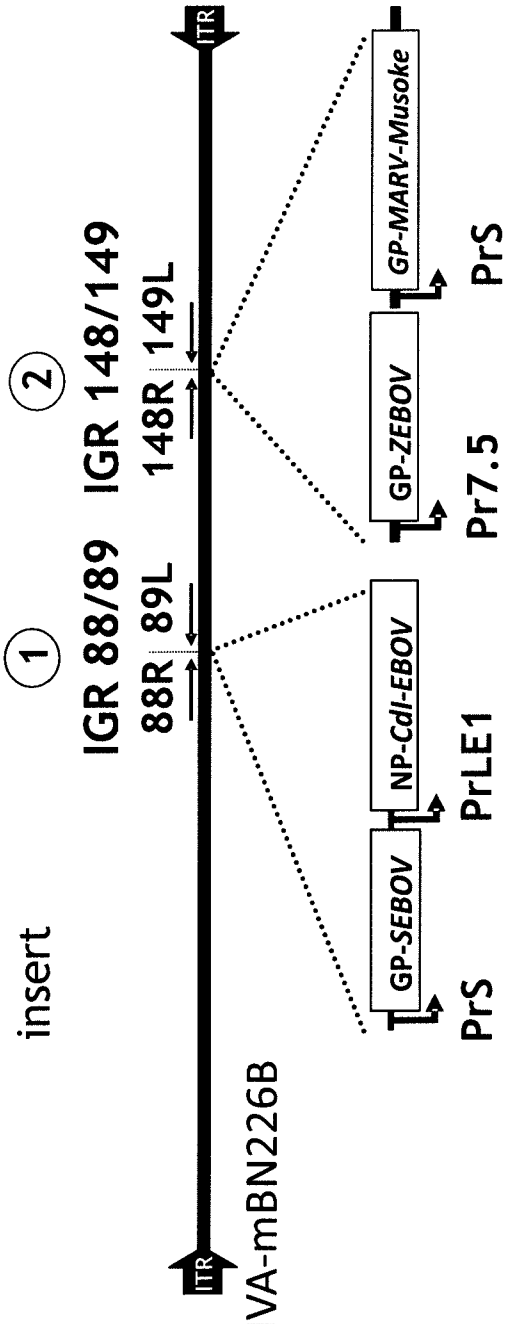
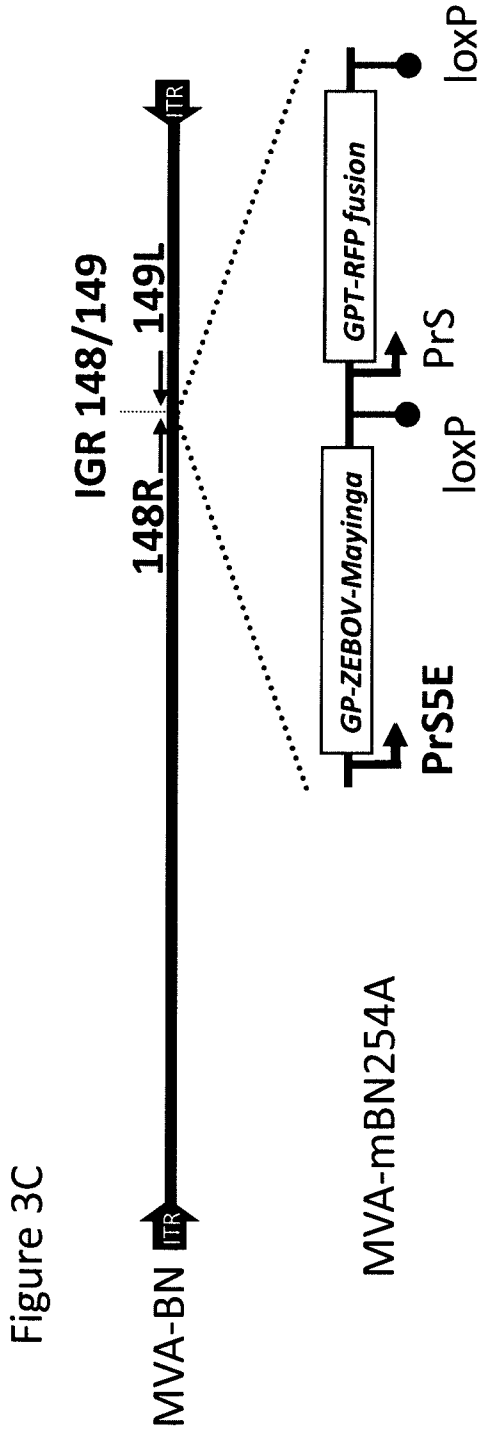
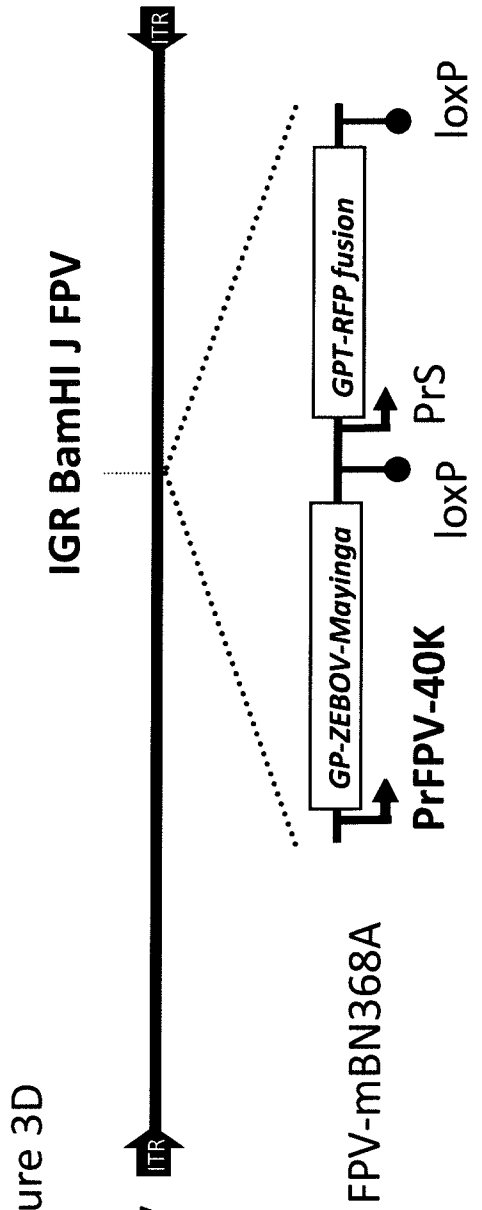


Figure 3B




Figure 3C
MVA-BN
ITR
ITR
148R
149L
IGR 148/149
GP-ZEBOV-Mayinga
PrS5E
loxP
PrS
GPT-RFP fusion
loxP
MVA-mBN254A


Figure 3D
FPV
ITR
ITR
IGR BamHI J FPV
GP-ZEBOV-Mayinga
PrFPV-40K
loxP
PrS
GPT-RFP fusion
loxP
FPV-mBN368A

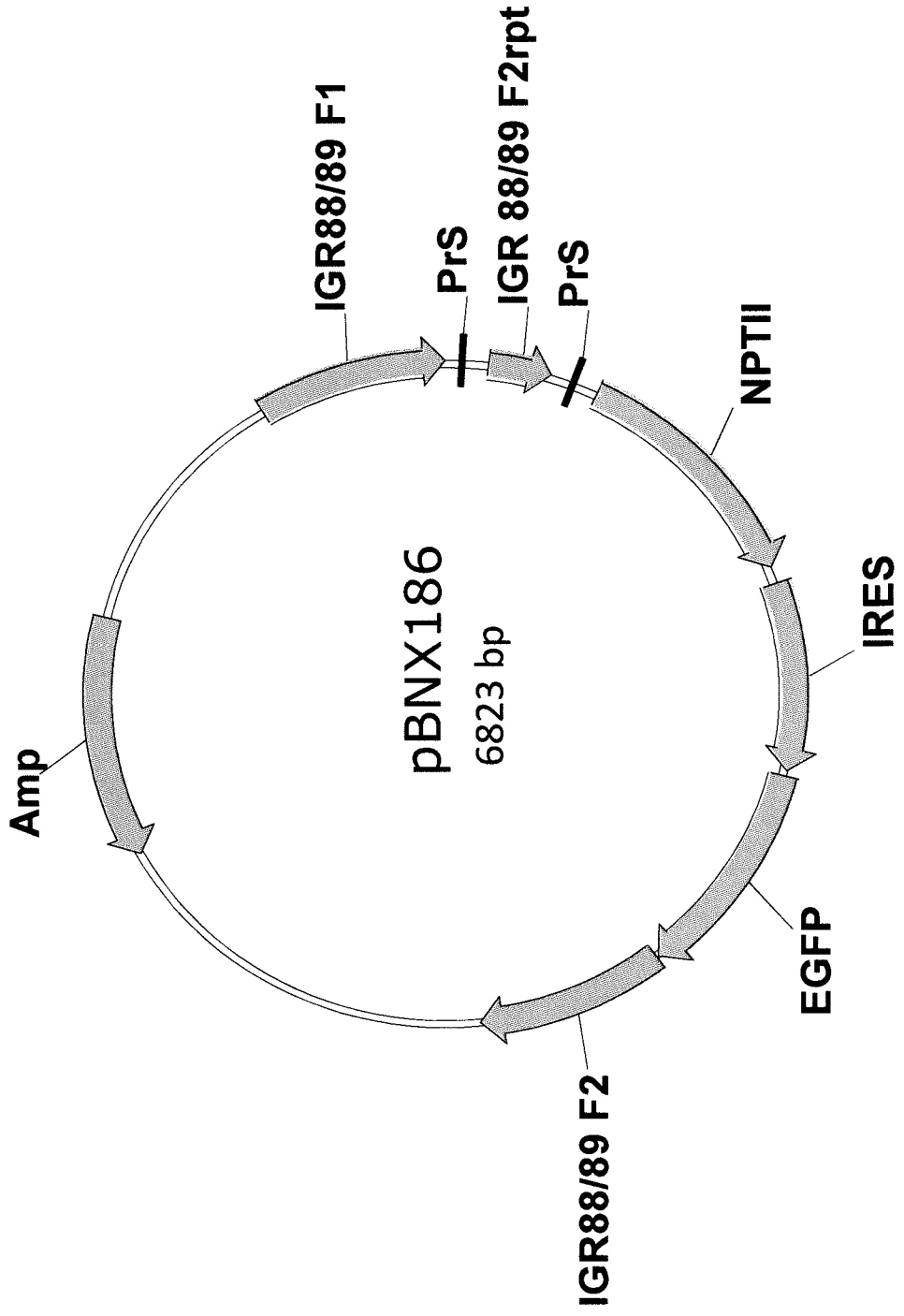

IGR88/89 F1
PrS
IGR 88/89 F2rpt
PrS
NPTII
IRES
EGFP
IGR88/89 F2
Amp
pBNX186
6823 bp

Figure 4A

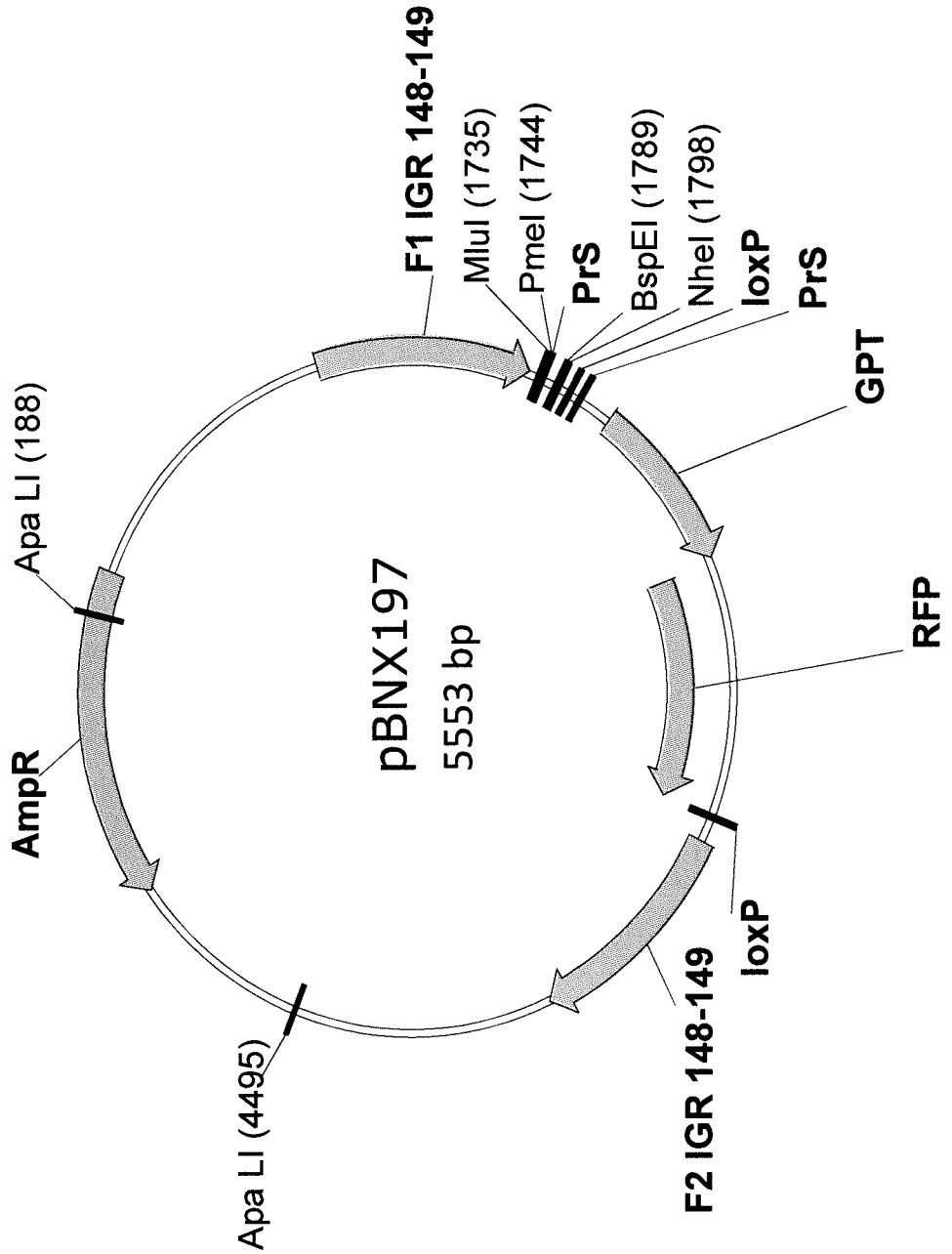

pBNX197
5553 bp
F1 IGR 148-149
MluI (1735)
PmeI (1744)
PrS
BspEI (1789)
NheI (1798)
loxP
PrS
GPT
RFP
loxP
F2 IGR 148-149
Apa LI (4495)
AmpR
Apa LI (188)

Figure 4B

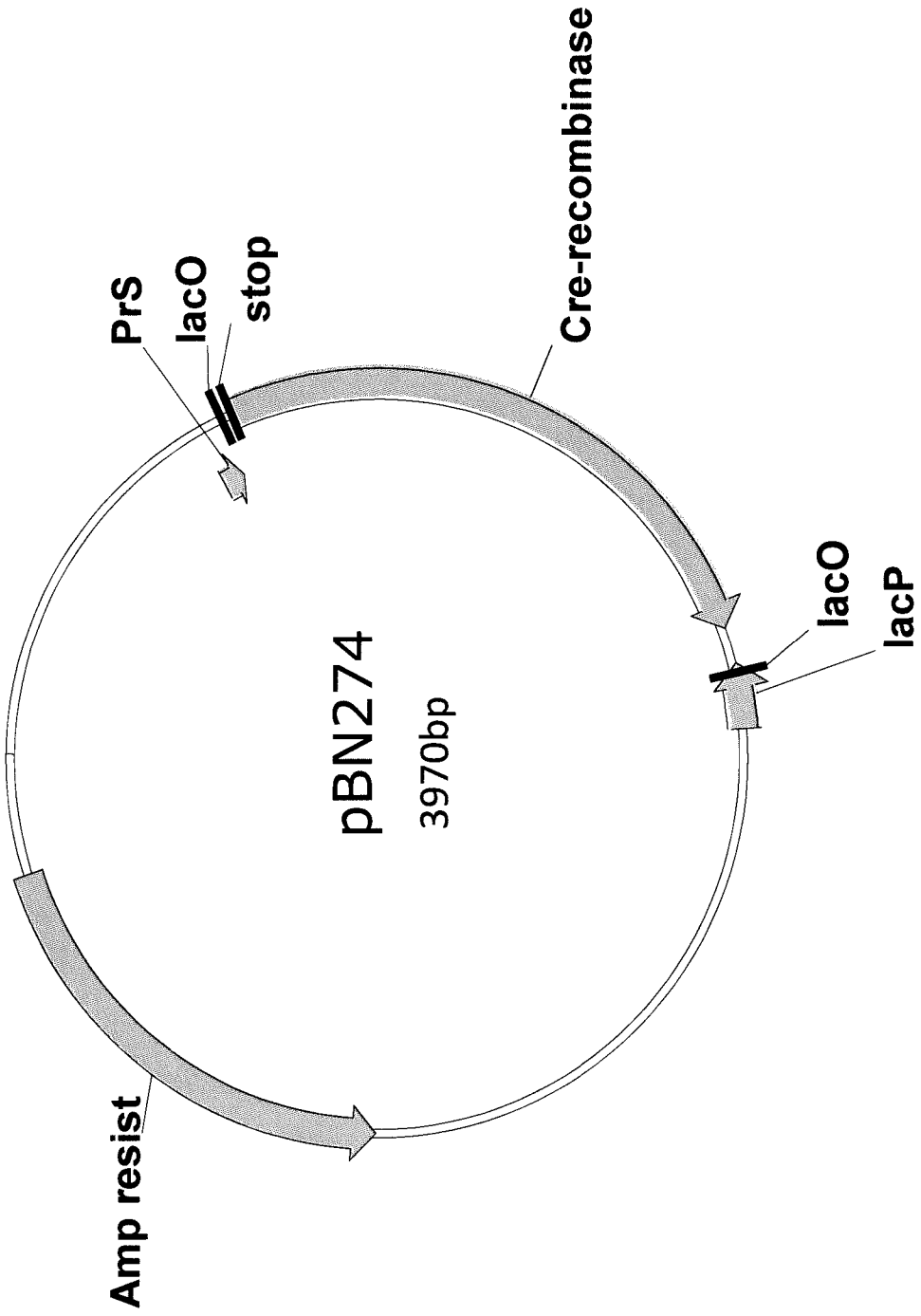

PrS
lacO
stop
Cre-recombinase
lacO
lacP
pBN274
3970bp
Amp resist

Figure 4C

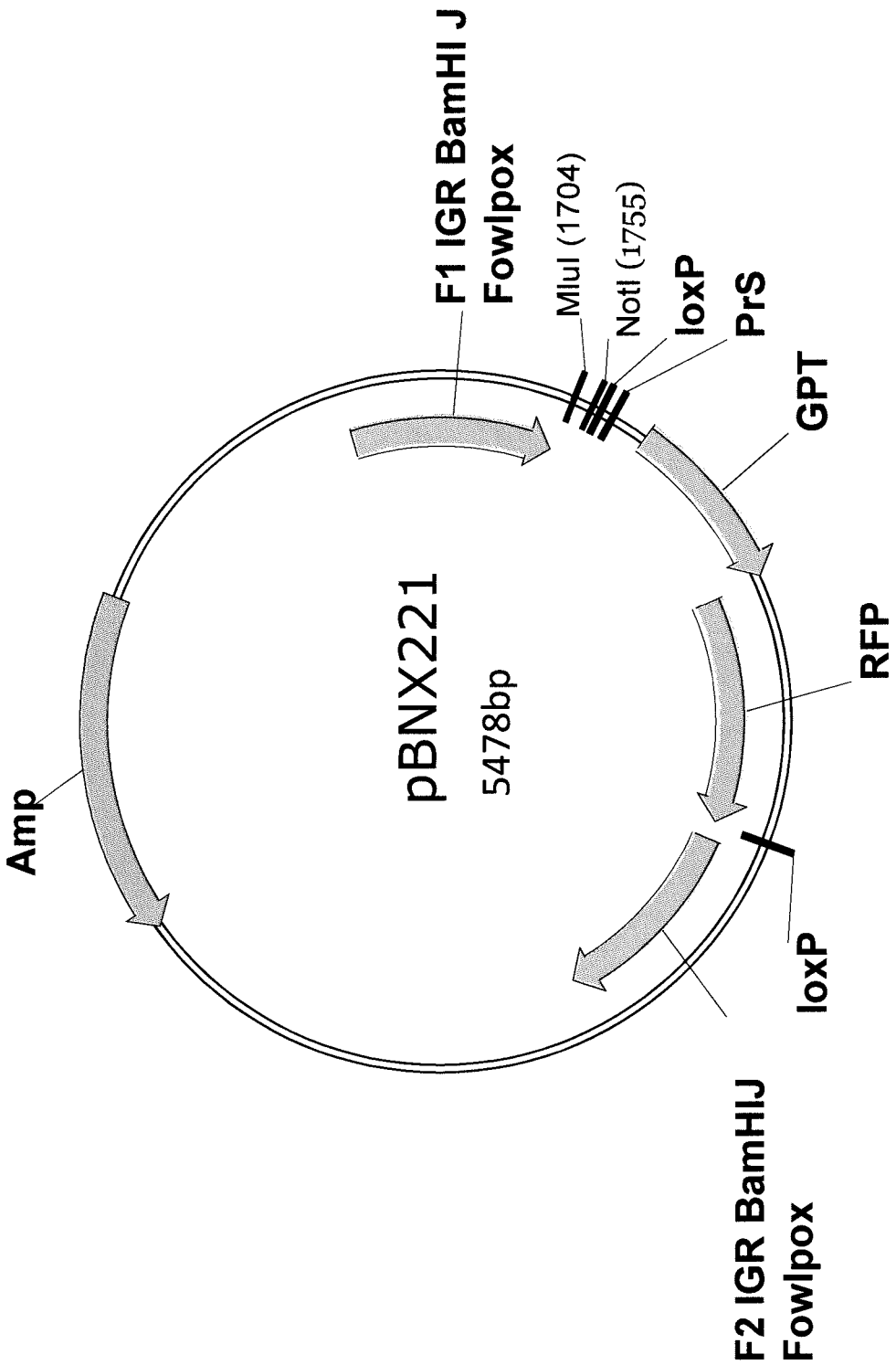

F1 IGR BamHI J
Fowlpox
MluI (1704)
NotI (1755)
loxP
PrS
GPT
RFP
loxP
F2 IGR BamHIJ
Fowlpox
Amp
pBNX221
5478bp

Figure 4D

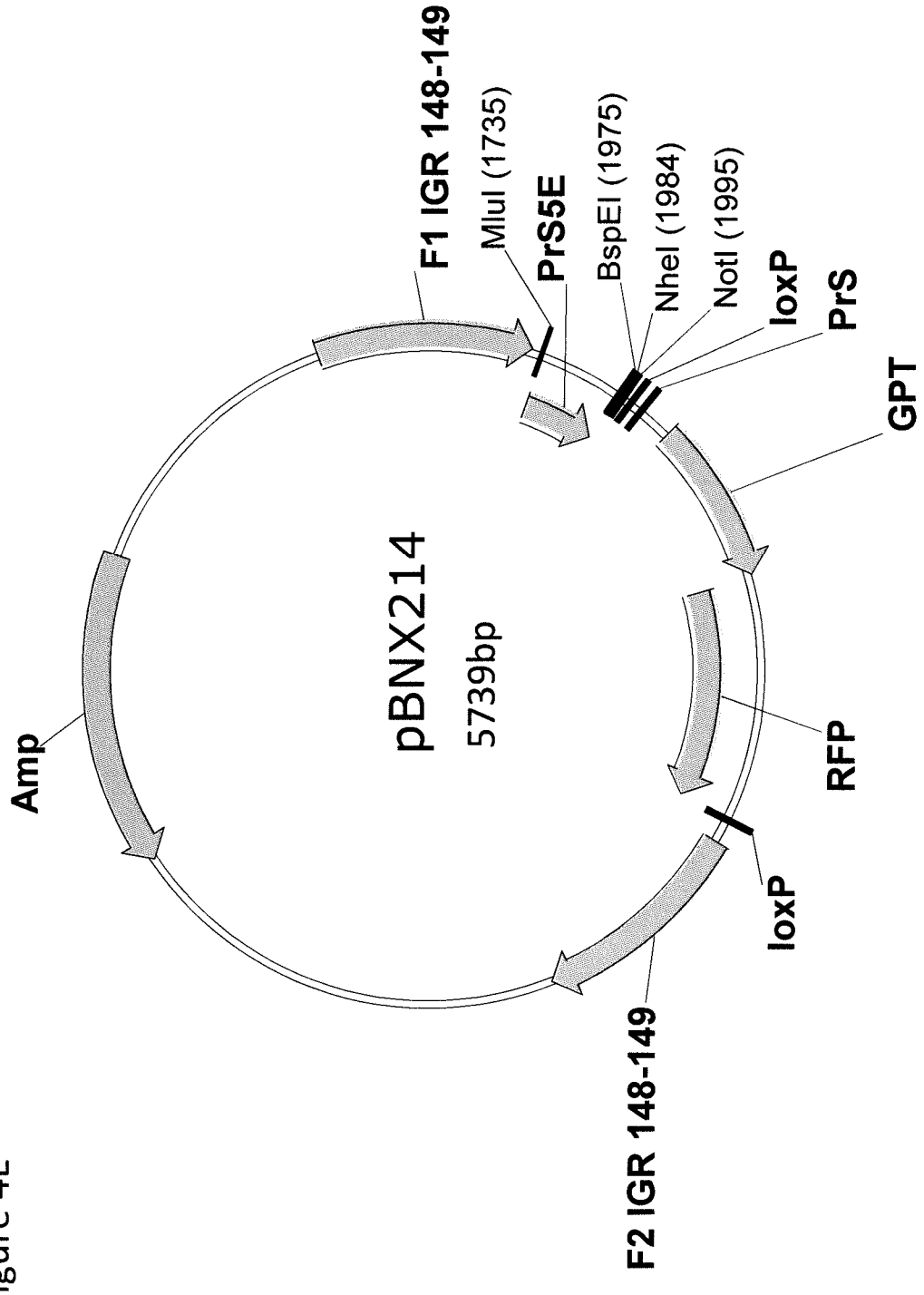

pBNX214
5739bp
F1 IGR 148-149
MluI (1735)
PrS5E
BspEI (1975)
NheI (1984)
NotI (1995)
loxP
PrS
GPT
RFP
loxP
F2 IGR 148-149
Amp

Figure 4E

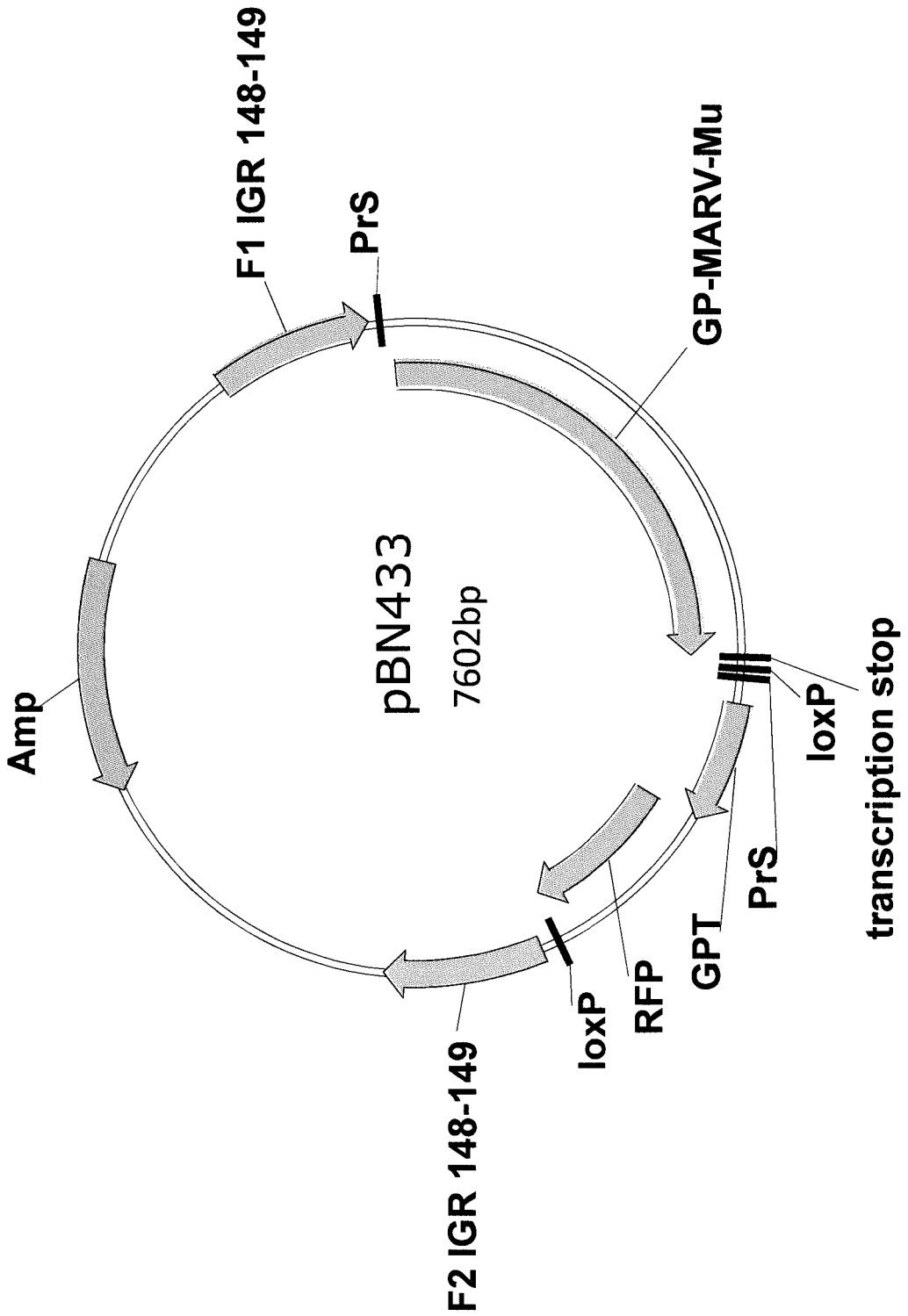

F1 IGR 148-149
PrS
GP-MARV-Mu
pBN433
7602bp
Amp
loxP
transcription stop
PrS
GPT
RFP
loxP
F2 IGR 148-149

Figure 5A

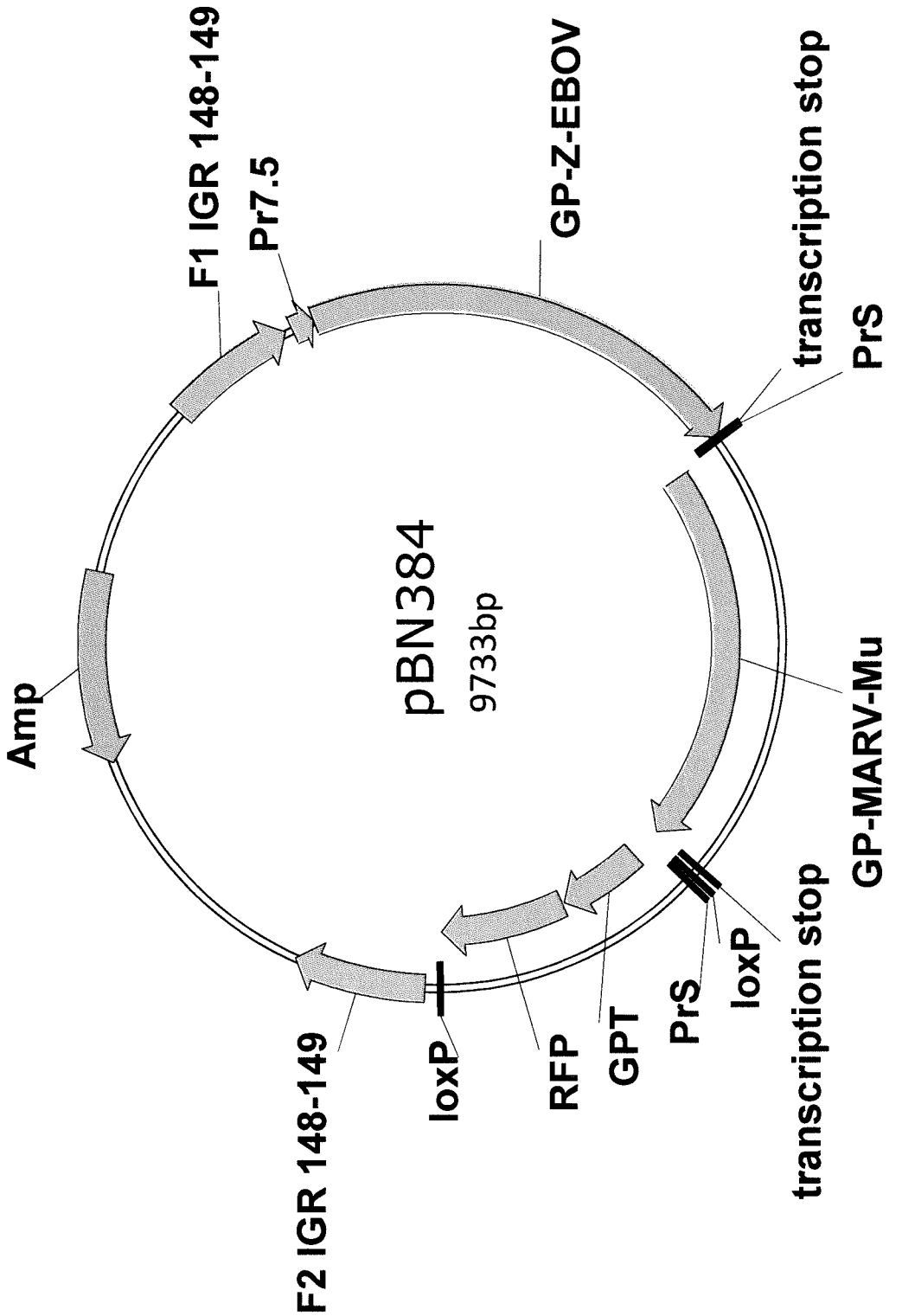

F1 IGR 148-149
Pr7.5
GP-Z-EBOV
transcription stop
PrS
pBN384
9733bp
Amp
GP-MARV-Mu
transcription stop
loxP
PrS
GPT
RFP
loxP
F2 IGR 148-149

Figure 5B

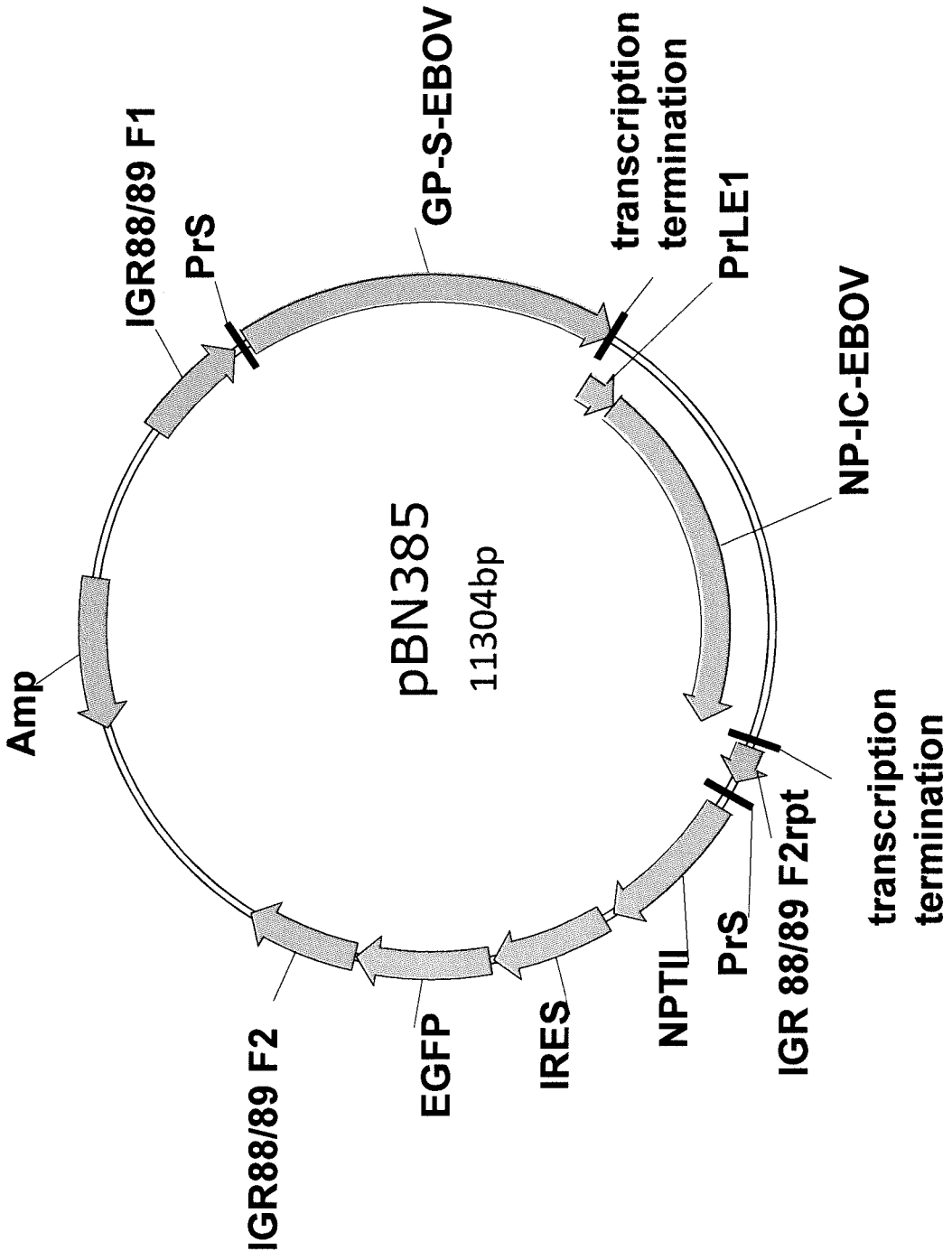

pBN385
11304bp
Amp
IGR88/89 F1
PrS
GP-S-EBOV
transcription termination
PrLE1
NP-IC-EBOV
transcription termination
IGR 88/89 F2rpt
PrS
NPTII
IRES
EGFP
IGR88/89 F2

Figure 5C

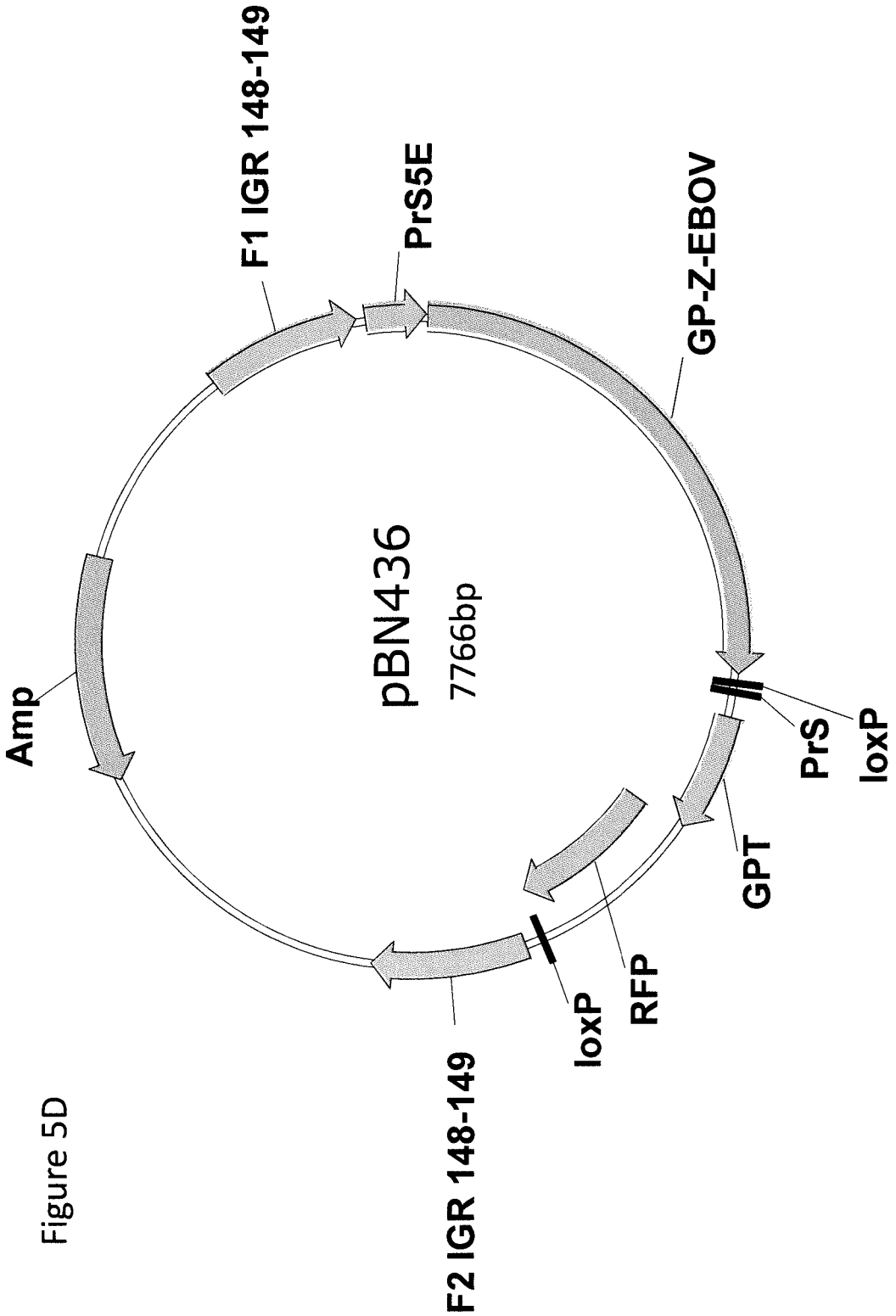

F1 IGR 148-149
PrS5E
GP-Z-EBOV
pBN436
7766bp
Amp
PrS
loxP
GPT
RFP
loxP
F2 IGR 148-149

Figure 5D

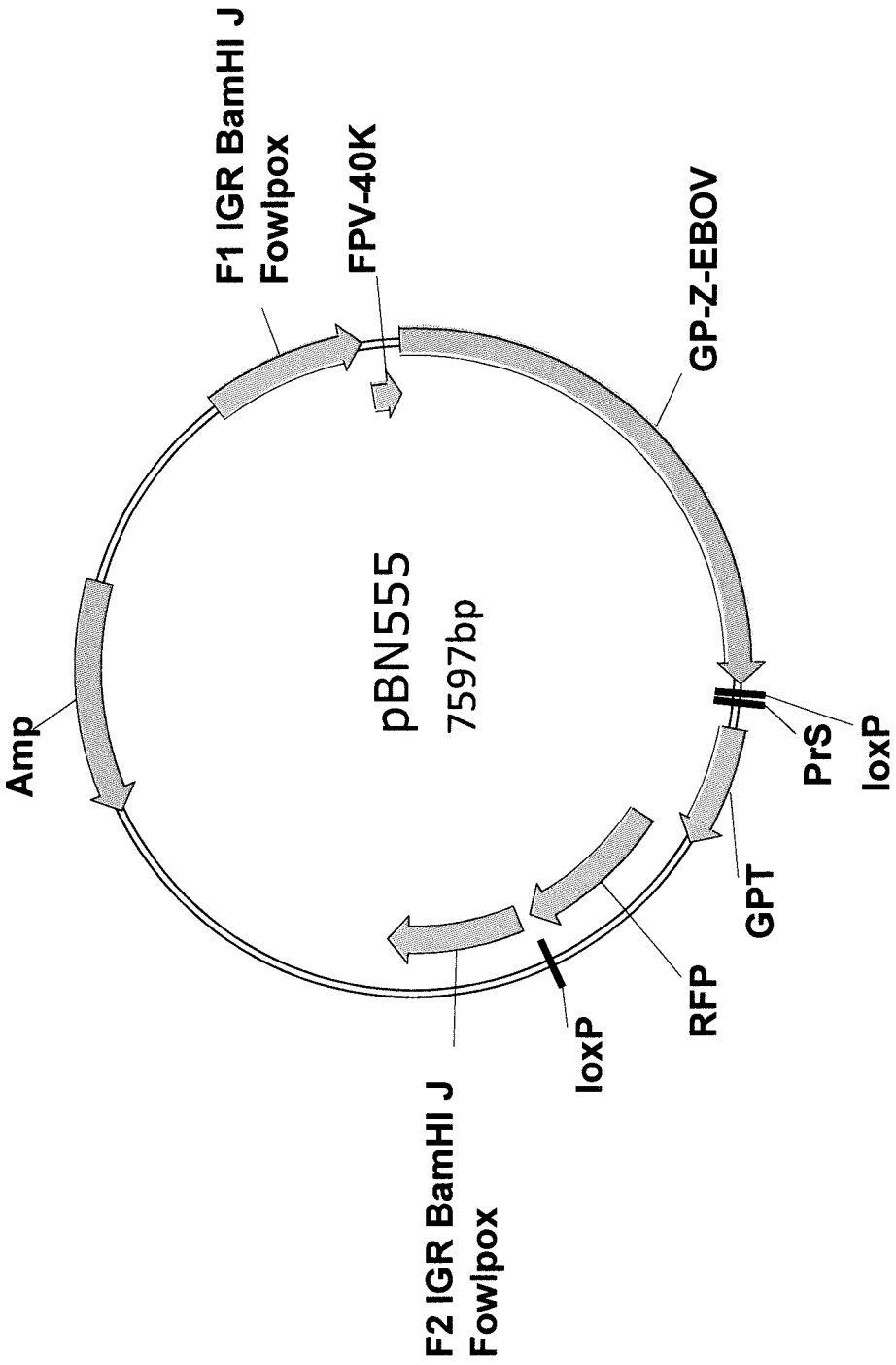
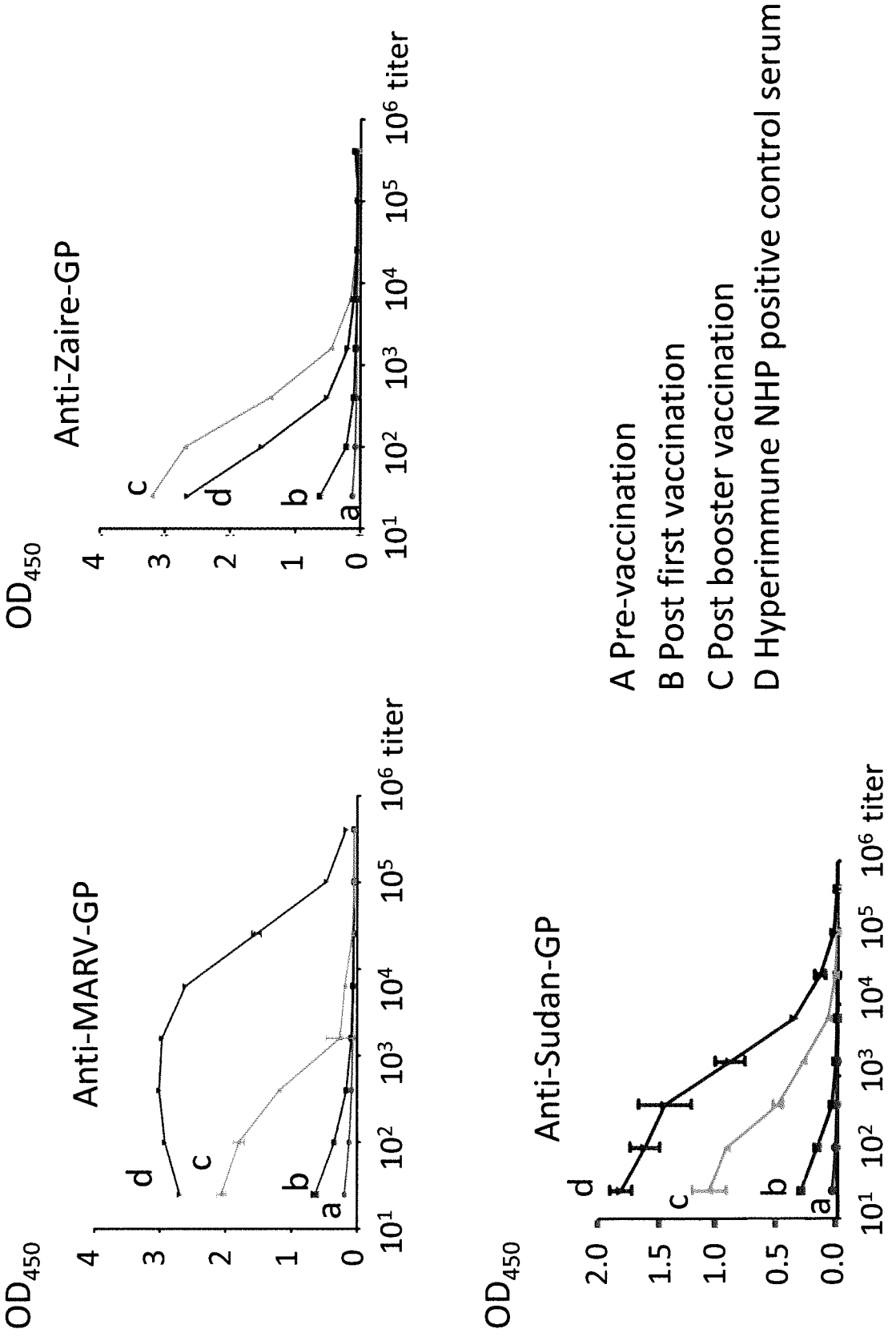

F1 IGR BamHI J
Fowlpox
FPV-40K
GP-Z-EBOV
pBN555
7597bp
Amp
PrS
loxP
GPT
RFP
loxP
F2 IGR BamHI J
Fowlpox

Figure 5E

Figure 6


Anti-MARV-GP
Anti-Zaire-GP
Anti-Sudan-GP
OD450
10^6 titer
A Pre-vaccination
B Post first vaccination
C Post booster vaccination
D Hyperimmune NHP positive control serum

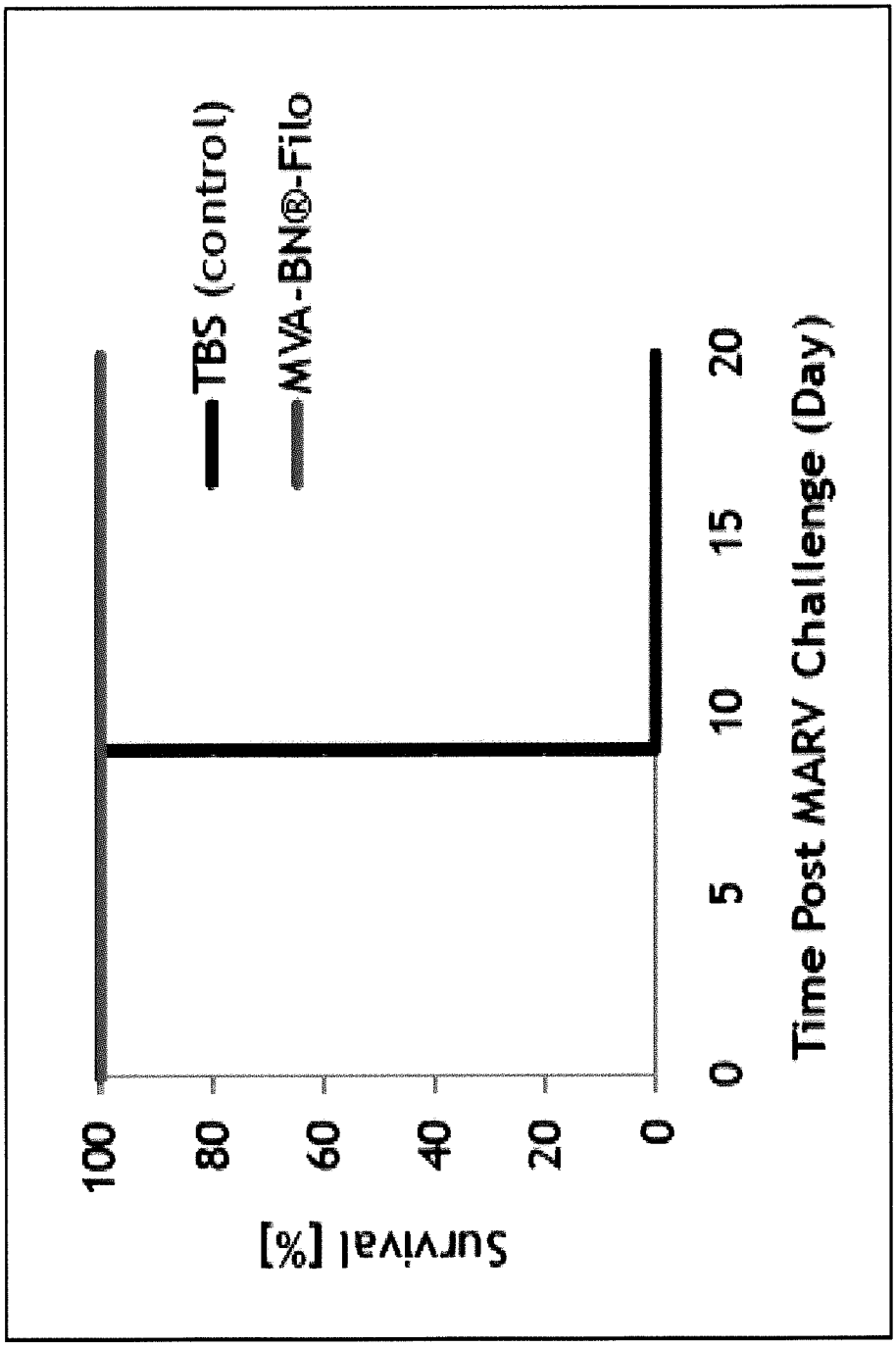

TBS (control)
MVA-BN®-Filo
Survival [%]
100
80
60
40
20
0
0
5
10
15
20
Time Post MARV Challenge (Day)

Figure 7A

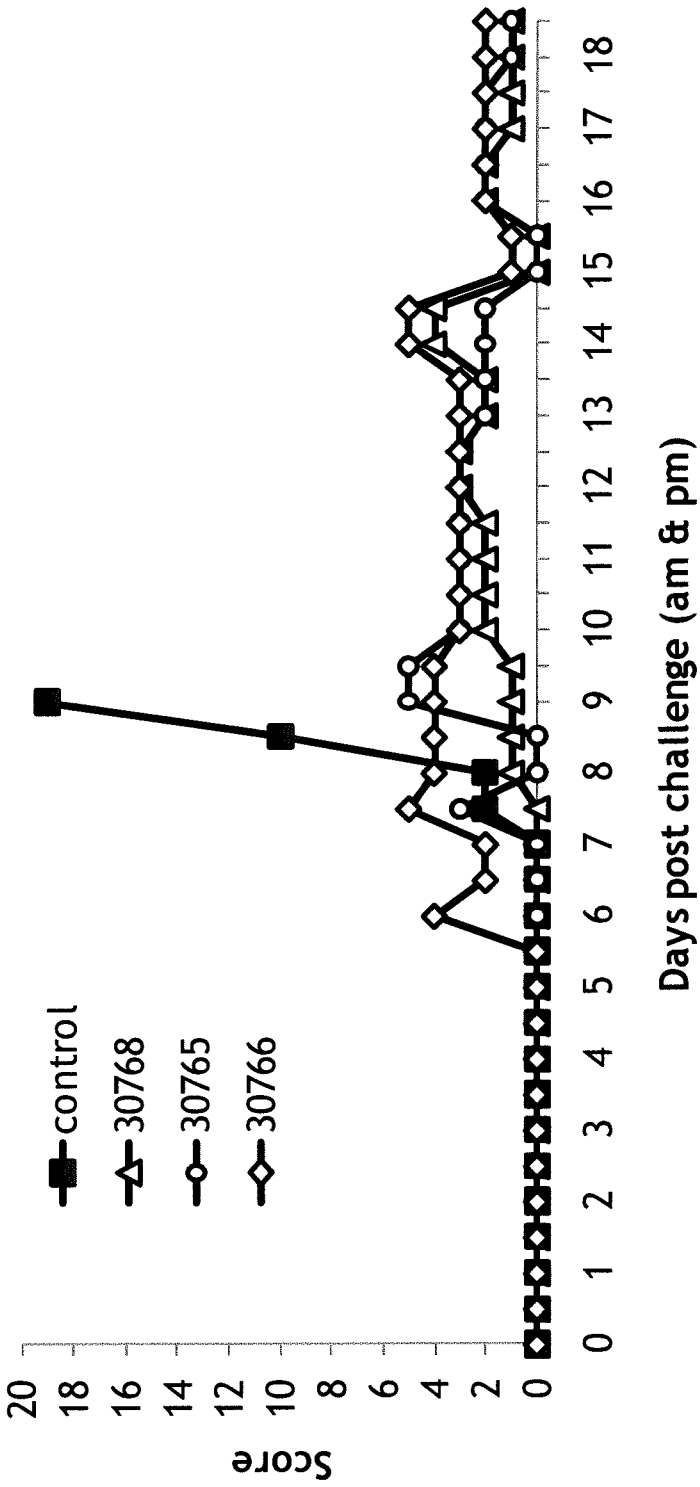

Clinical scores post MARV challenge
control
30768
30765
30766
Score
0
2
4
6
8
10
12
14
16
18
20
Days post challenge (am & pm)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Figure 7B

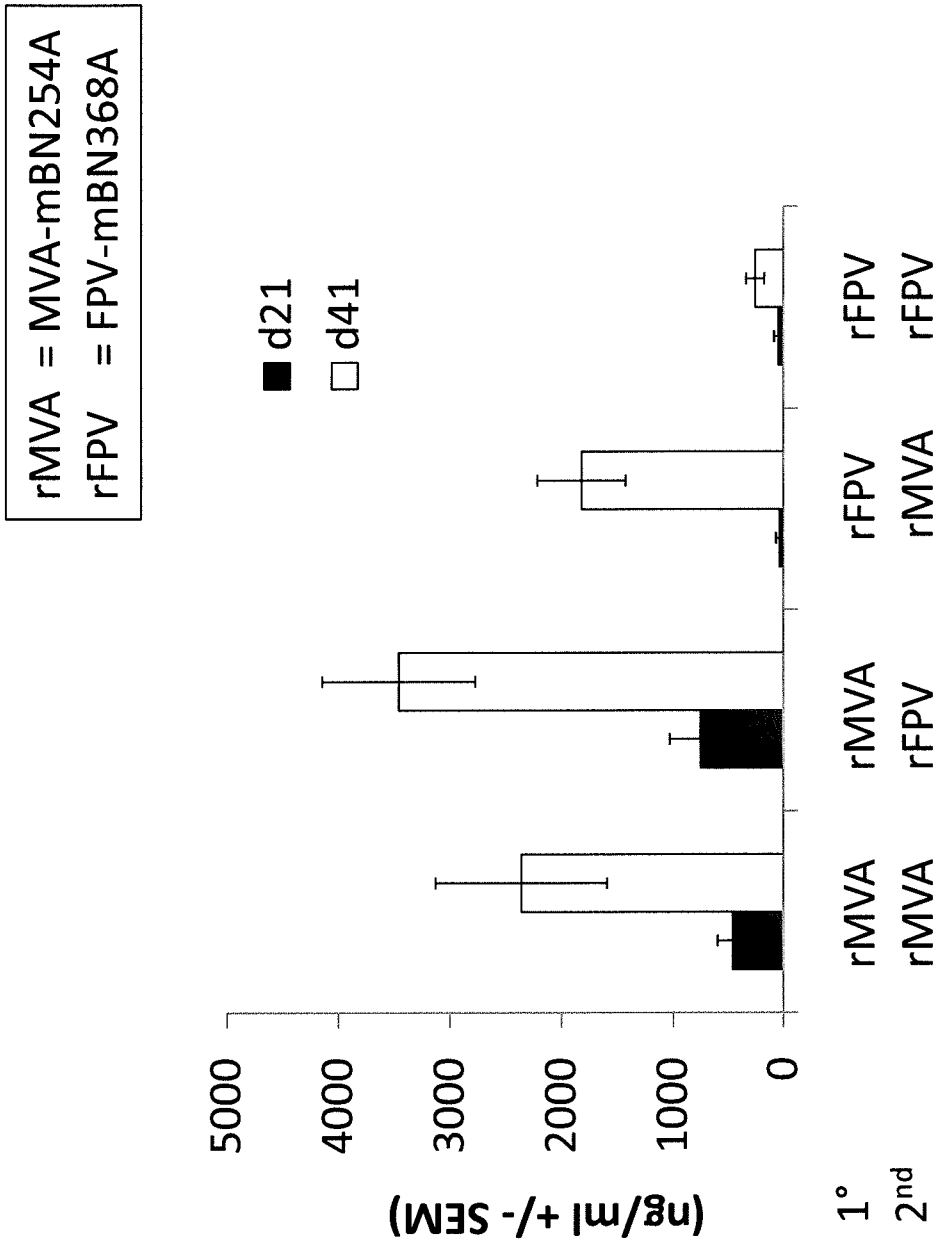
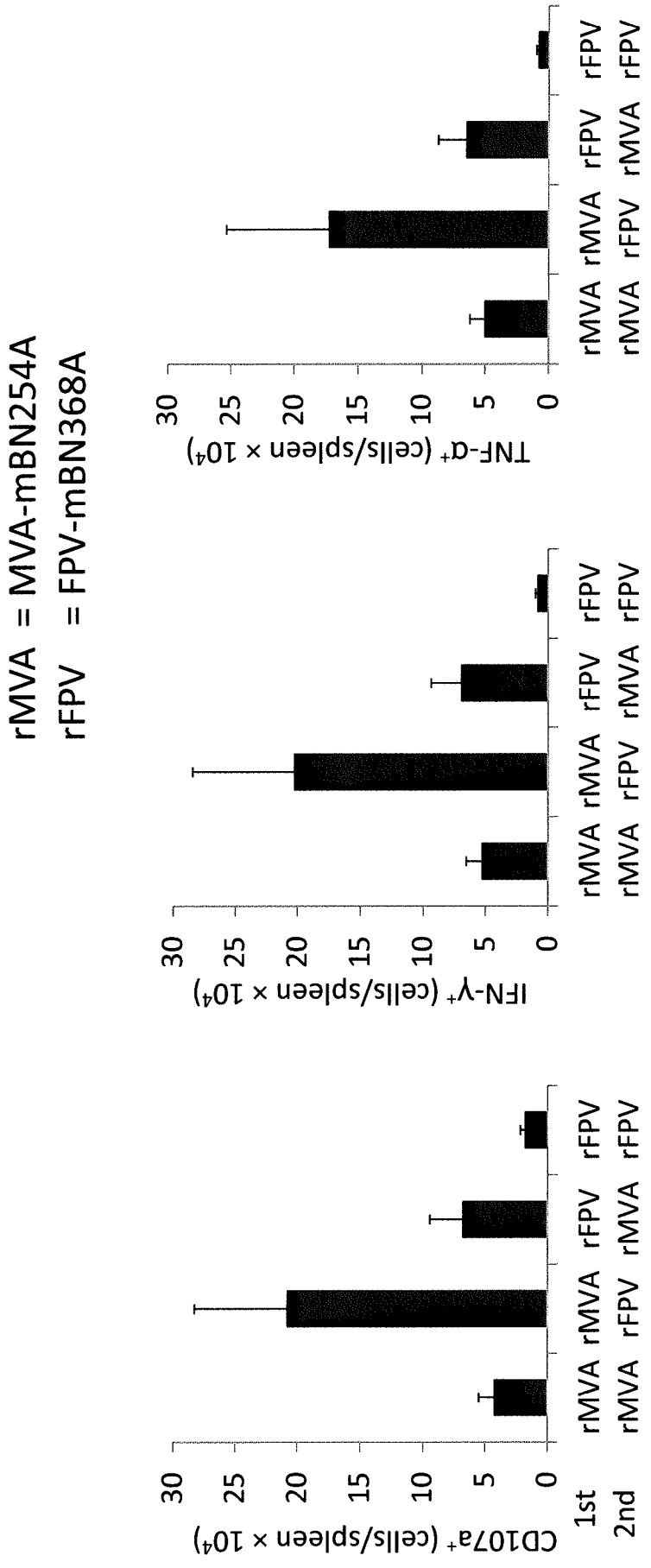

rMVA = MVA-mBN254A
rFPV = FPV-mBN368A
d21
d41
ZEBOV-GP specific IgG
(ng/ml +/- SEM)
5000
4000
3000
2000
1000
0
1°
2nd
rMVA
rMVA
rMVA
rFPV
rFPV
rMVA
rFPV
rFPV

Figure 8A

Figure 8B


rMVA = MVA-mBN254A
rFPV = FPV-mBN368A
CD107a+ (cells/spleen x 10⁴)
IFN-γ+ (cells/spleen x 10⁴)
TNF-α+ (cells/spleen x 10⁴)
0
5
10
15
20
25
30
1st rMVA rMVA rFPV rFPV
2nd rMVA rFPV rMVA rFPV

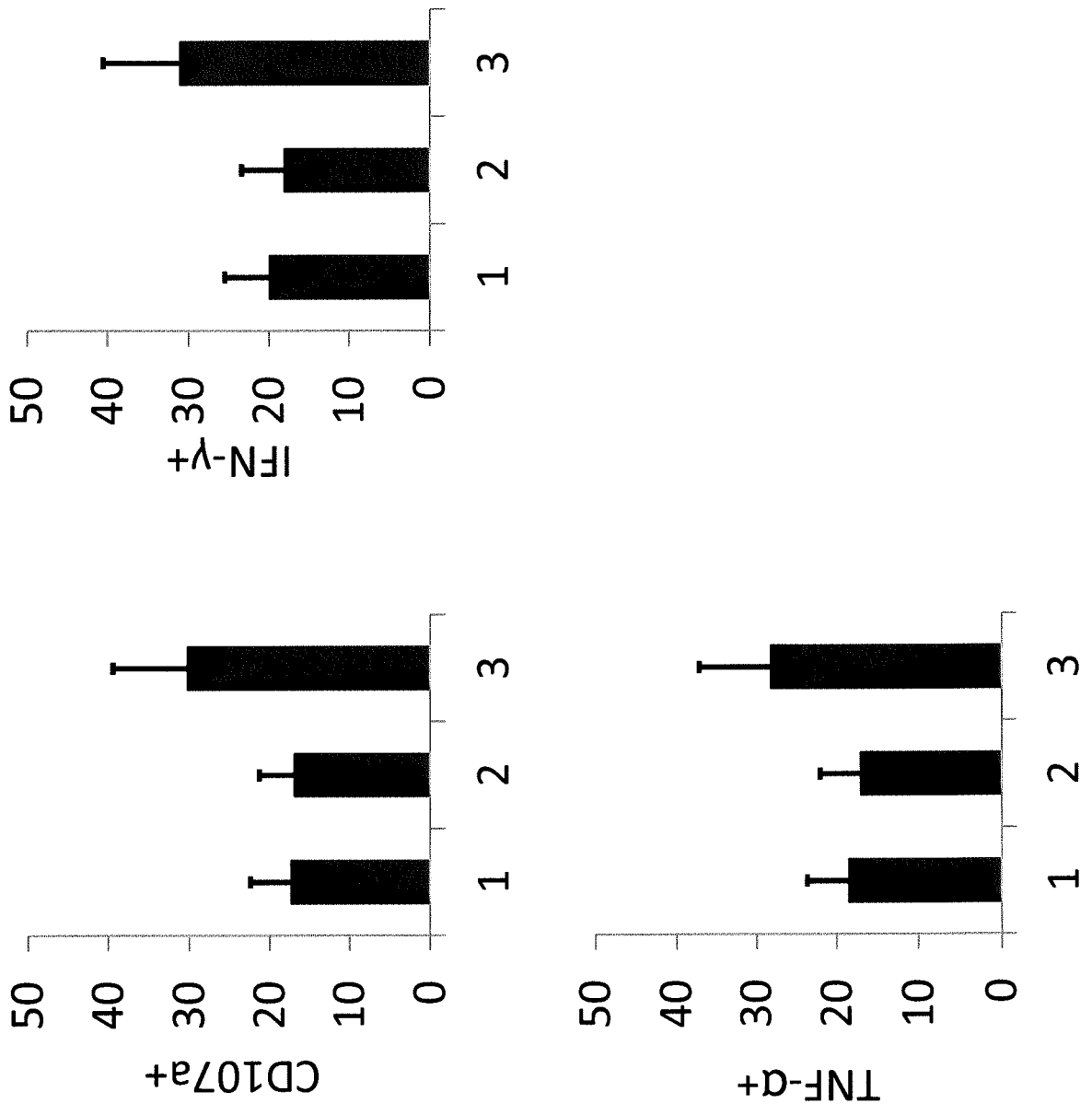


Figure 9

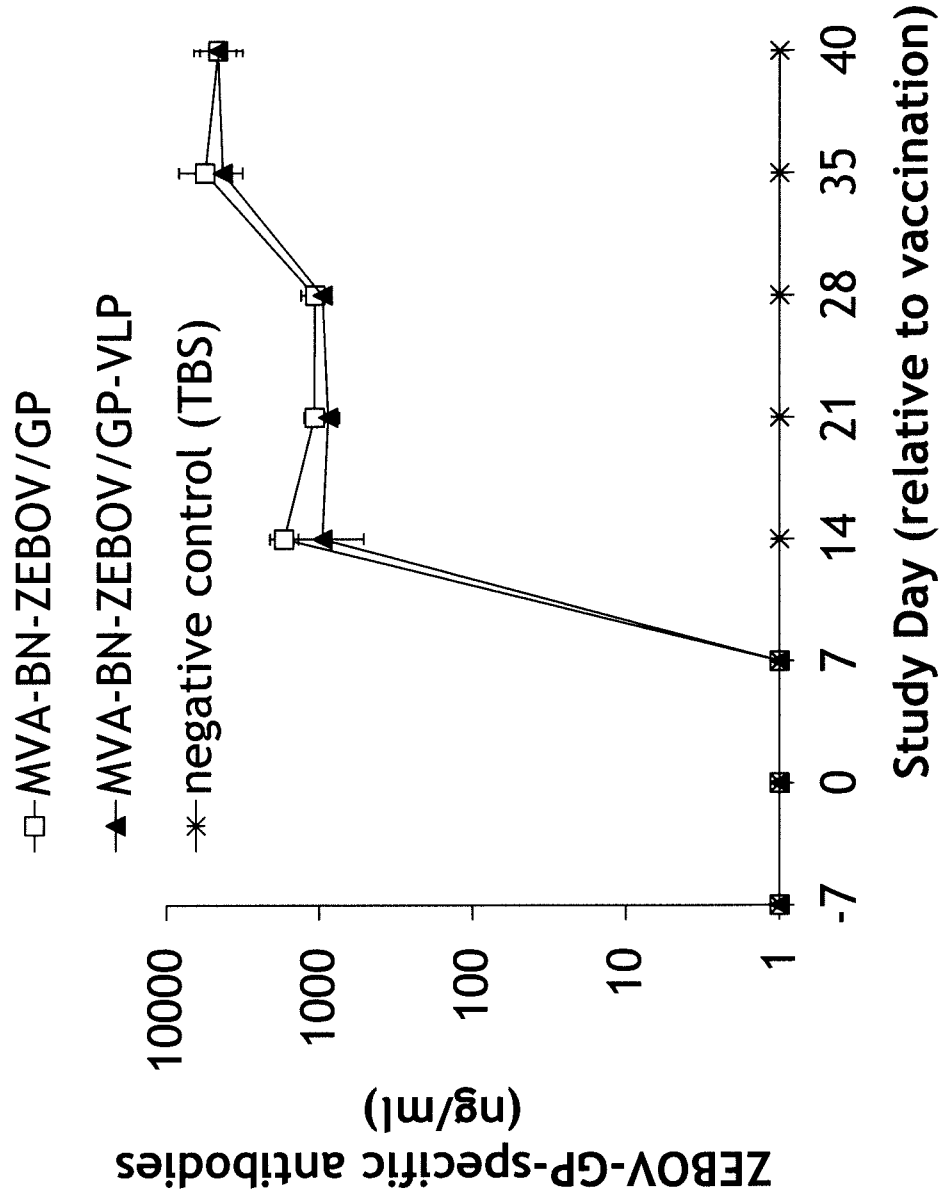

MVA-BN-ZEBOV/GP
MVA-BN-ZEBOV/GP-VLP
negative control (TBS)
ZEBOV-GP-specific antibodies (ng/ml)
10000
1000
100
10
1
-7
0
7
14
21
28
35
40
Study Day (relative to vaccination)

Figure 10

Figure 11

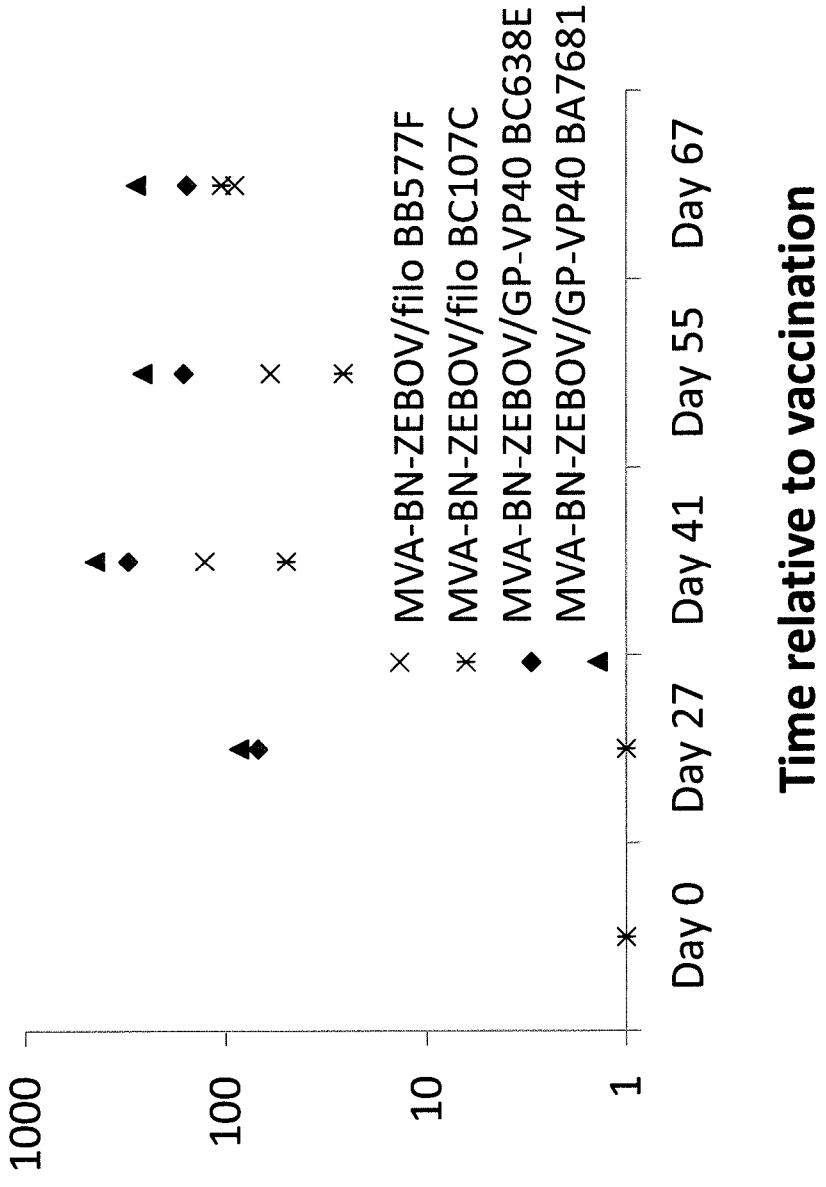

PsVNA80 titer (Log10)
1000
100
10
1
Day 0
Day 27
Day 41
Day 55
Day 67
Time relative to vaccination
MVA-BN-ZEBOV/filo BB577F
MVA-BN-ZEBOV/filo BC107C
MVA-BN-ZEBOV/GP-VP40 BC638E
MVA-BN-ZEBOV/GP-VP40 BA7681

Figure 12

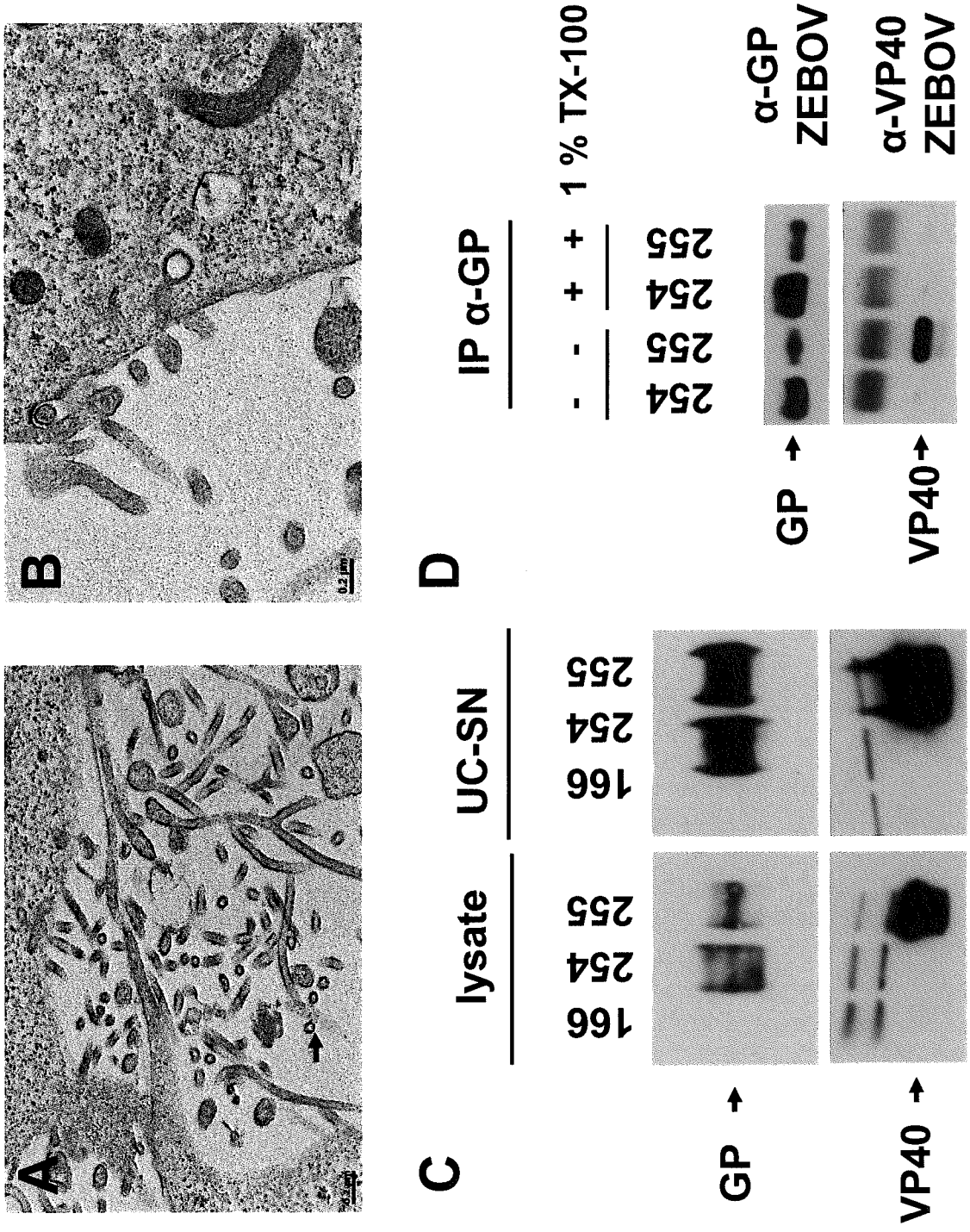
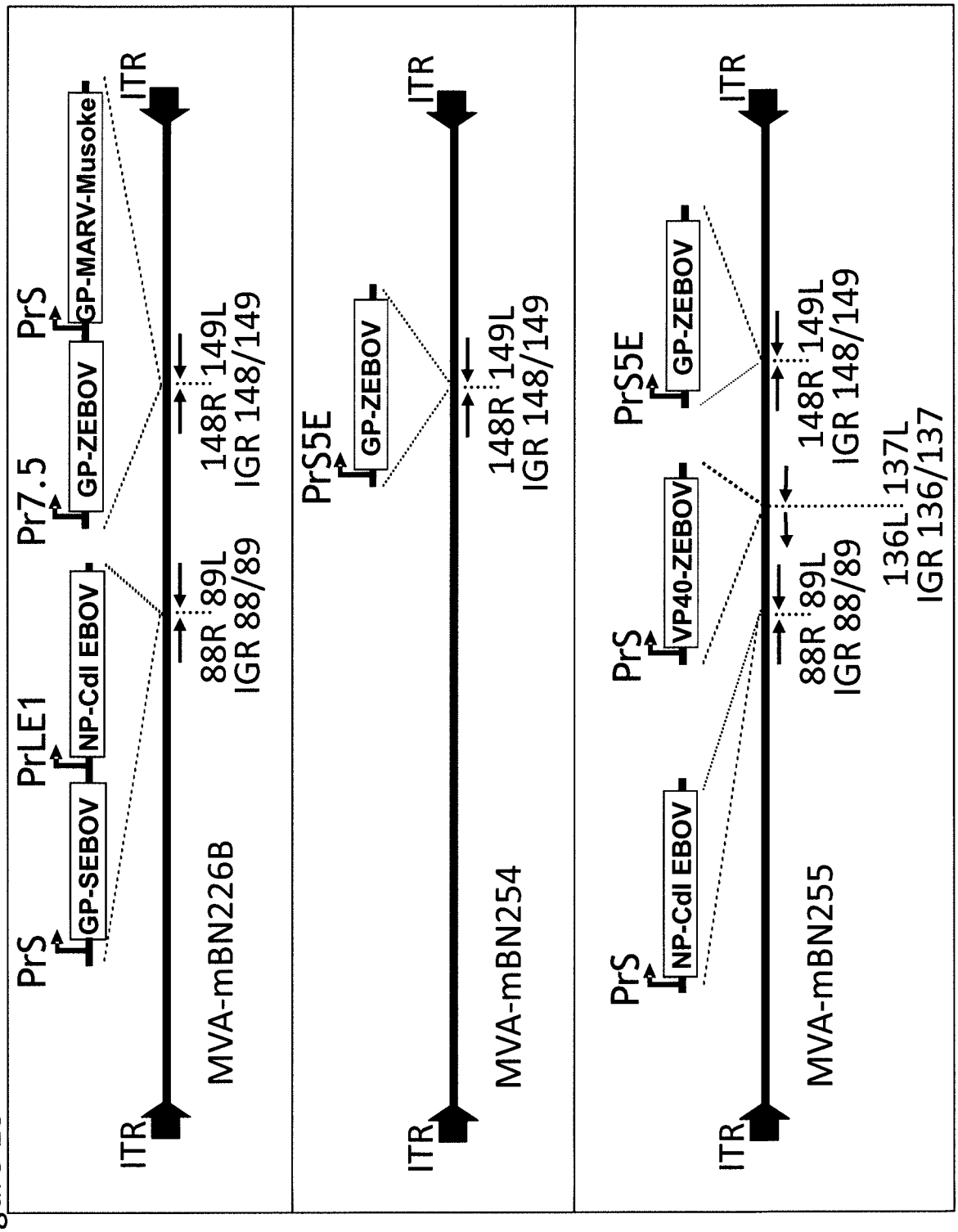

A
B
0.2 µm
C
lysate
UC-SN
166
254
255
GP
VP40
D
IP α-GP
1 % TX-100
254
255
254
255
GP
VP40
α-GP ZEBOV
α-VP40 ZEBOV

Figure 13


PrS
GP-SEBOV
PrLE1
NP-Cdl EBOV
Pr7.5
GP-ZEBOV
PrS
GP-MARV-Musoke
ITR
88R 89L
IGR 88/89
148R 149L
IGR 148/149
MVA-mBN226B
ITR
PrS5E
GP-ZEBOV
ITR
148R 149L
IGR 148/149
MVA-mBN254
ITR
PrS
NP-Cdl EBOV
PrS
VP40-ZEBOV
PrS5E
GP-ZEBOV
ITR
88R 89L
IGR 88/89
136L 137L
IGR 136/137
148R 149L
IGR 148/149
MVA-mBN255
ITR