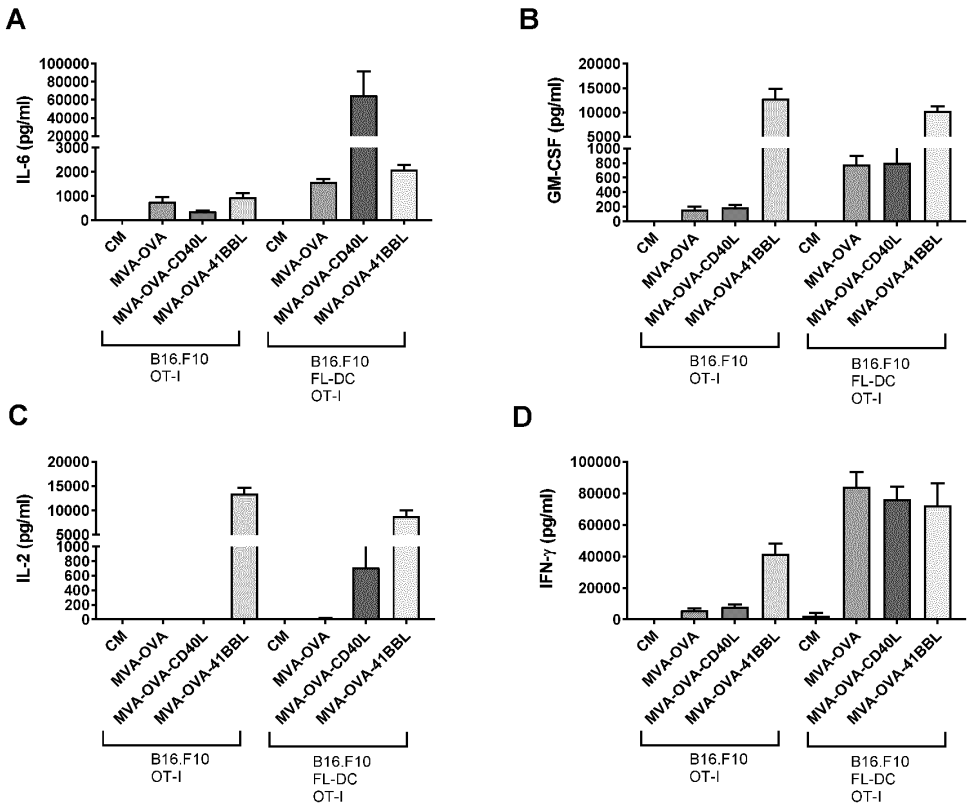

A
IL-6 (pg/ml)
100000
80000
60000
40000
20000
3000
2000
1000
0
CM
MVA-OVA
MVA-OVA-CD40L
MVA-OVA-41BBL
B16.F10 OT-I
B16.F10 FL-DC OT-I
B
GM-CSF (pg/ml)
20000
15000
10000
5000
1000
800
600
400
200
0
C
IL-2 (pg/ml)
D
IFN-γ (pg/ml)

Figure 1

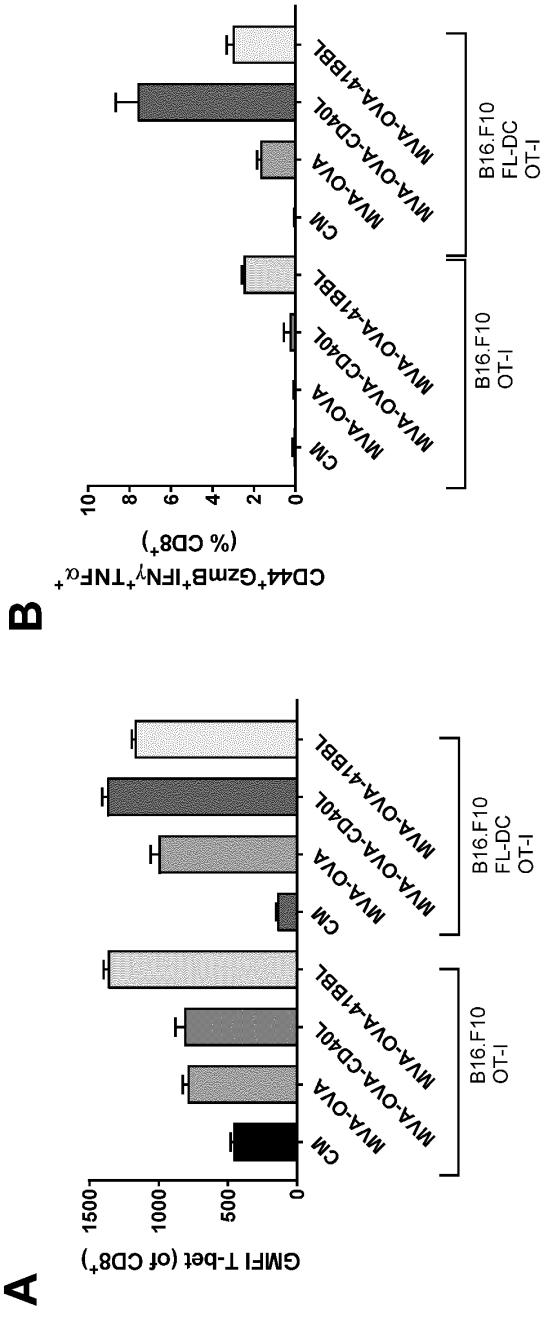

A
GMFI T-bet (of CD8+)
1500
1000
500
0
CM
MVA-OVA
MVA-OVA-CD40L
MVA-OVA-41BBL
B16.F10
OT-I
CM
MVA-OVA
MVA-OVA-CD40L
MVA-OVA-41BBL
B16.F10
FL-DC
OT-I
B
CD44+GzmB+IFNγ+TNFα+
(% CD8+)
10
8
6
4
2
0
CM
MVA-OVA
MVA-OVA-CD40L
MVA-OVA-41BBL
B16.F10
OT-I
CM
MVA-OVA
MVA-OVA-CD40L
MVA-OVA-41BBL
B16.F10
FL-DC
OT-I

Figure 2

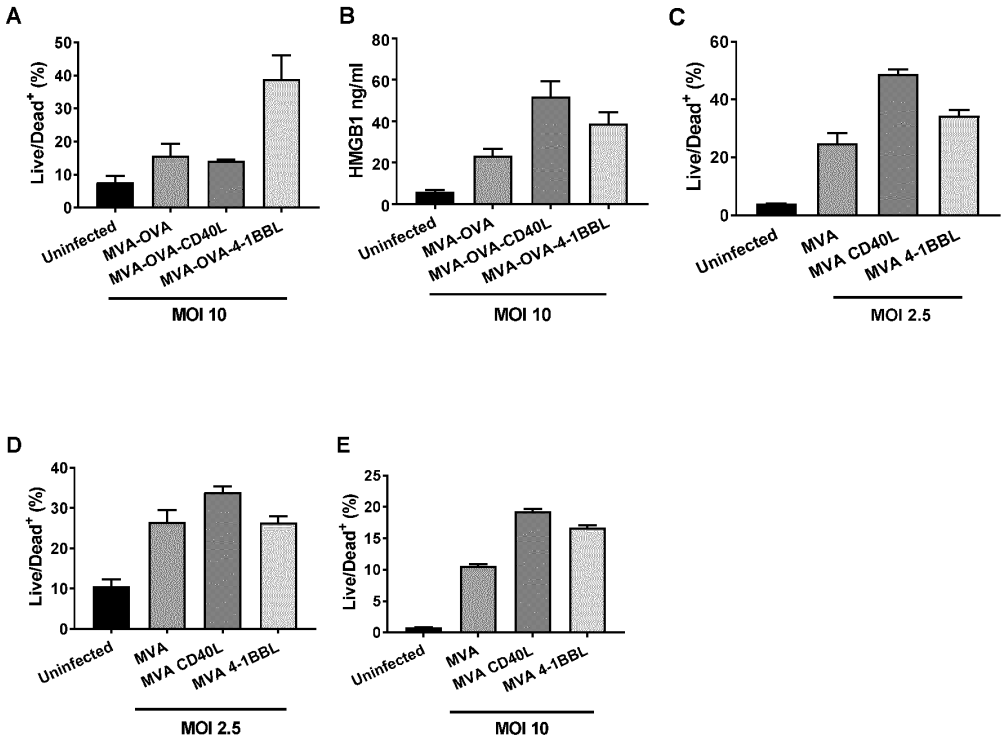
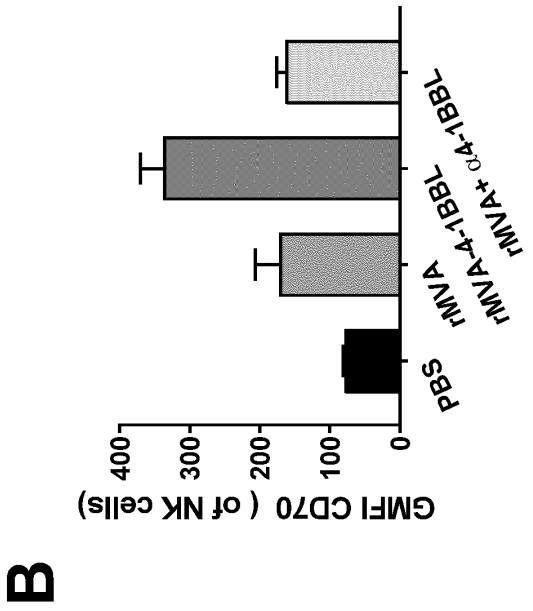

A
Live/Dead+ (%)
50
40
30
20
10
0
Uninfected
MVA-OVA
MVA-OVA-CD40L
MVA-OVA-4-1BBL
MOI 10
B
HMGB1 ng/ml
80
60
40
20
0
Uninfected
MVA-OVA
MVA-OVA-CD40L
MVA-OVA-4-1BBL
MOI 10
C
Live/Dead+ (%)
60
40
20
0
Uninfected
MVA
MVA CD40L
MVA 4-1BBL
MOI 2.5
D
Live/Dead+ (%)
40
30
20
10
0
Uninfected
MVA
MVA CD40L
MVA 4-1BBL
MOI 2.5
E
Live/Dead+ (%)
25
20
15
10
5
0
Uninfected
MVA
MVA CD40L
MVA 4-1BBL
MOI 10

Figure 3


B
GMFI CD70 (of NK cells)
0
100
200
300
400
PBS
rMVA
rMVA-4-1BBL
rMVA+ α4-1BBL

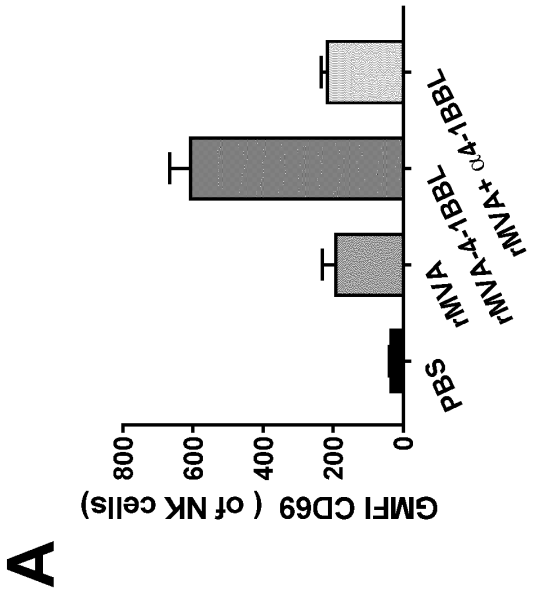

A
GMFI CD69 (of NK cells)
0
200
400
600
800
PBS
rMVA
rMVA-4-1BBL
rMVA+ α4-1BBL

Figure 4

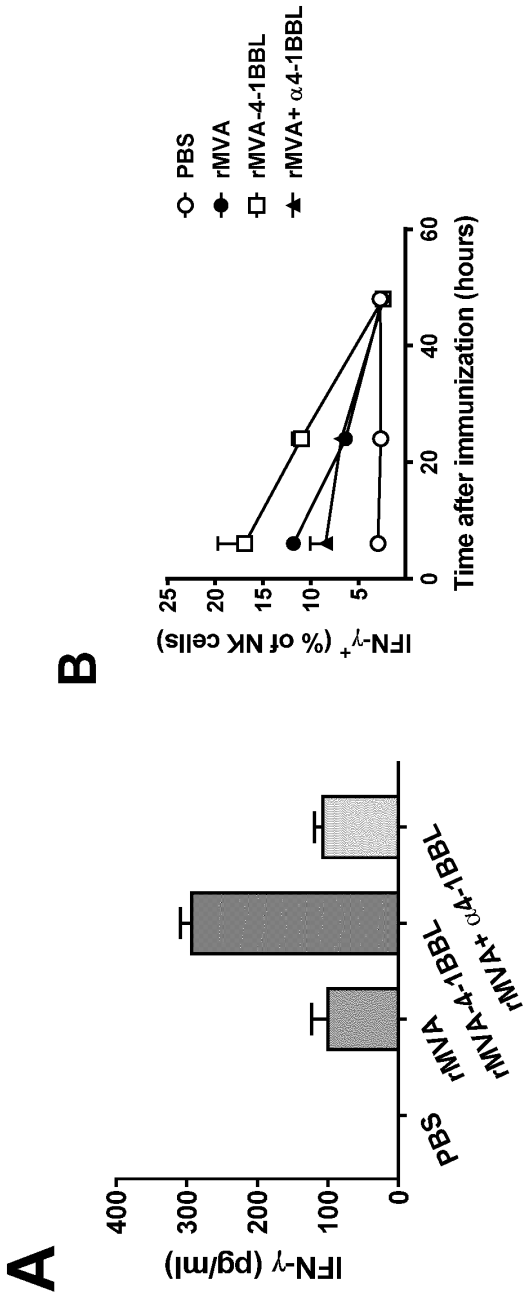

A
IFN-γ (pg/ml)
400
300
200
100
0
PBS
rMVA
rMVA-4-1BBL
rMVA+α4-1BBL
B
IFN-γ+ (% of NK cells)
25
20
15
10
5
0
0
20
40
60
Time after immunization (hours)
PBS
rMVA
rMVA-4-1BBL
rMVA+ α4-1BBL

Figure 5

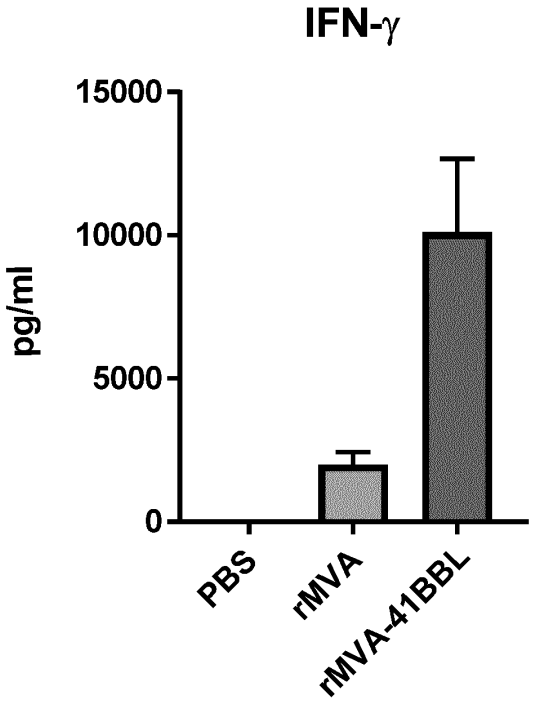


Figure 6

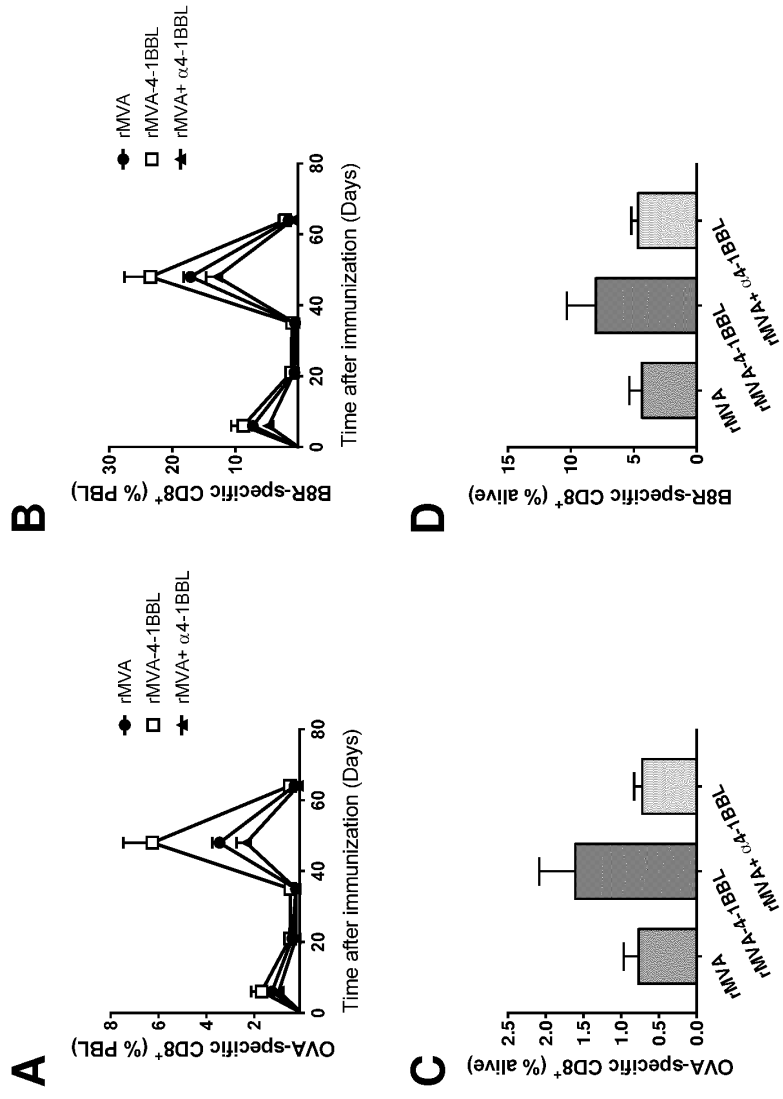

A
OVA-specific CD8+ (% PBL)
Time after immunization (Days)
rMVA
rMVA-4-1BBL
rMVA+ α4-1BBL
B
B8R-specific CD8+ (% PBL)
Time after immunization (Days)
rMVA
rMVA-4-1BBL
rMVA+ α4-1BBL
C
OVA-specific CD8+ (% alive)
rMVA
rMVA-4-1BBL
rMVA+α4-1BBL
D
B8R-specific CD8+ (% alive)
rMVA
rMVA-4-1BBL
rMVA+α4-1BBL

Figure 7

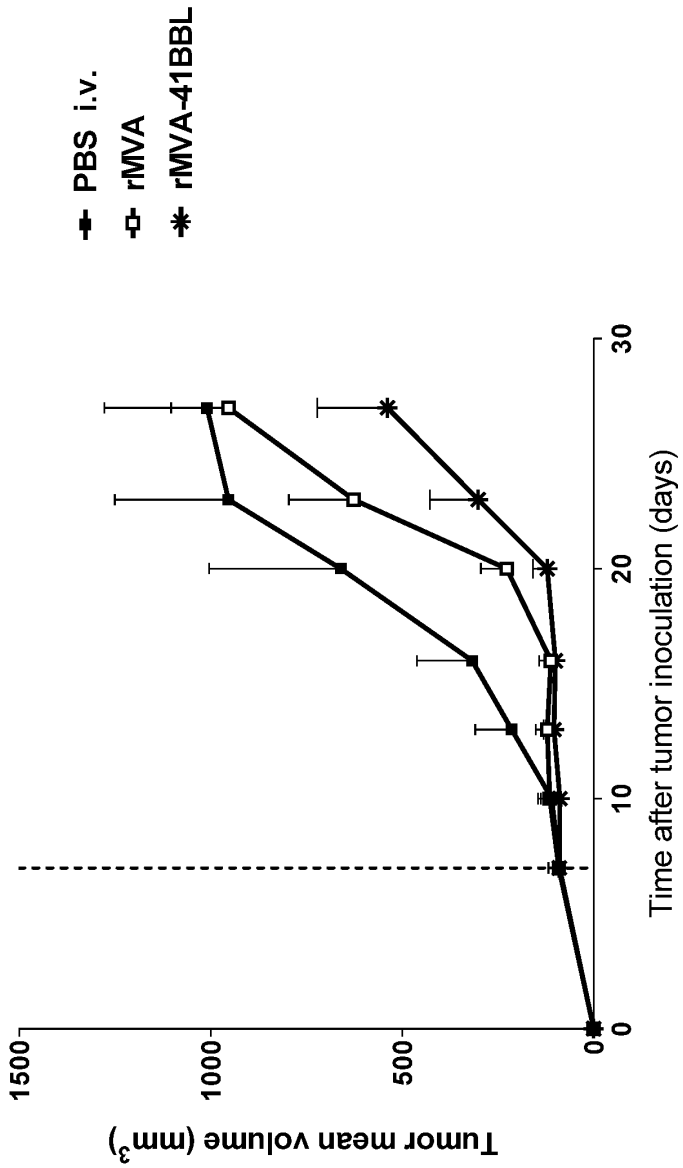

PBS i.v.
rMVA
rMVA-41BBL
Tumor mean volume (mm³)
1500
1000
500
0
0
10
20
30
Time after tumor inoculation (days)

Figure 8

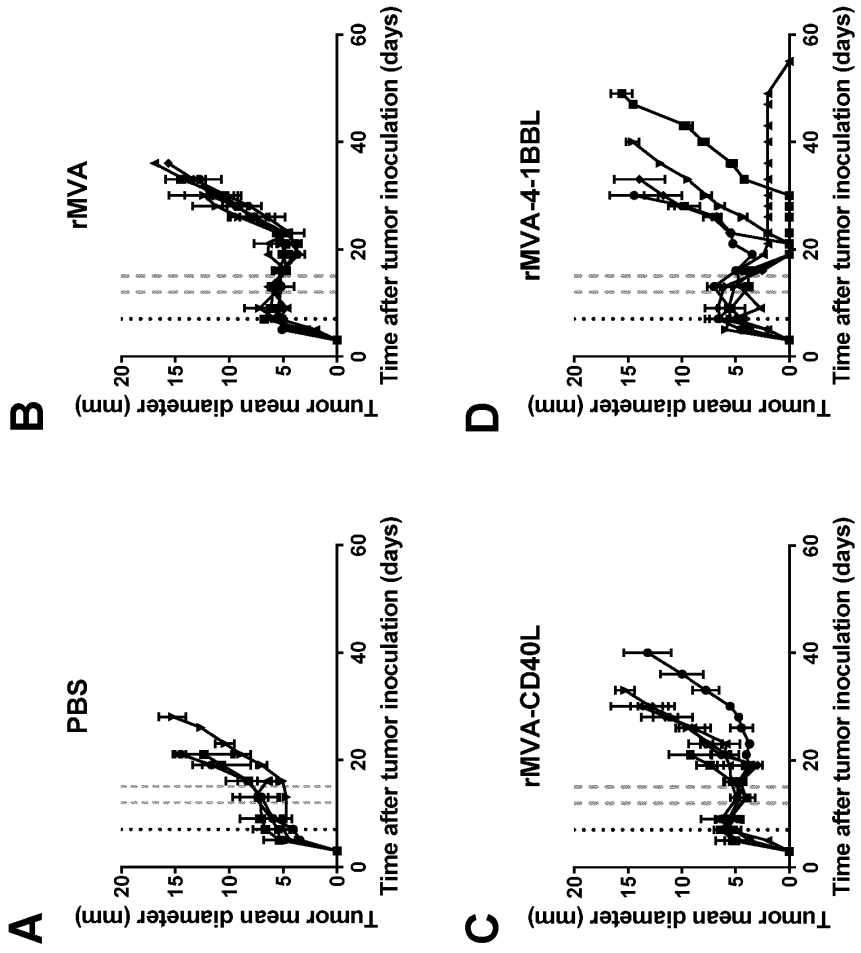

A
PBS
B
rMVA
C
rMVA-CD40L
D
rMVA-4-1BBL
Tumor mean diameter (mm)
Time after tumor inoculation (days)
0
5
10
15
20
0
20
40
60

Figure 9

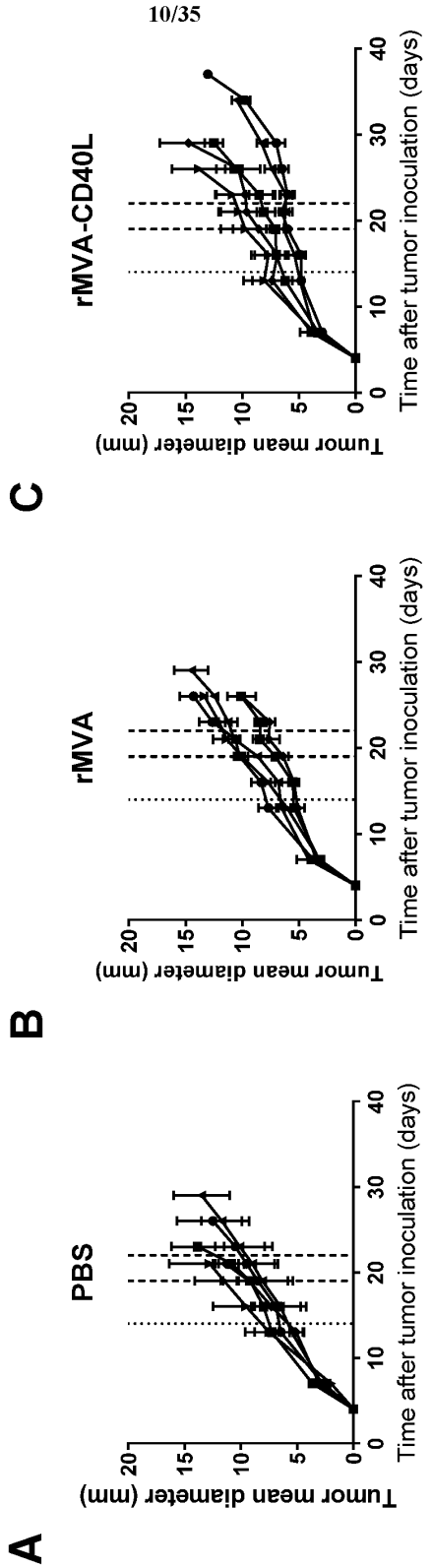

A
PBS
B
rMVA
C
rMVA-CD40L
Tumor mean diameter (mm)
Time after tumor inoculation (days)
0
5
10
15
20
0
10
20
30
40

Figure 10

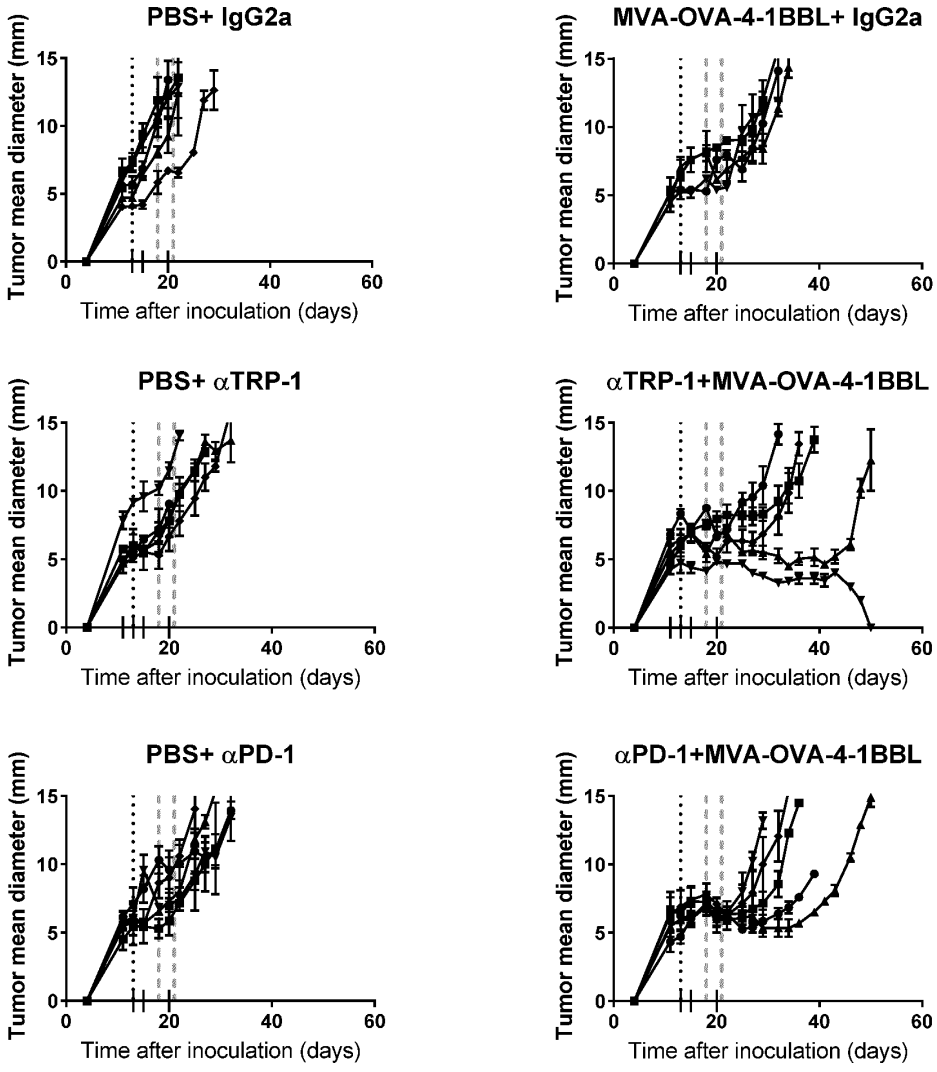

PBS+ IgG2a
MVA-OVA-4-1BBL+ IgG2a
PBS+ αTRP-1
αTRP-1+MVA-OVA-4-1BBL
PBS+ αPD-1
αPD-1+MVA-OVA-4-1BBL
Tumor mean diameter (mm)
Time after inoculation (days)
0
5
10
15
0
20
40
60

Figure 11

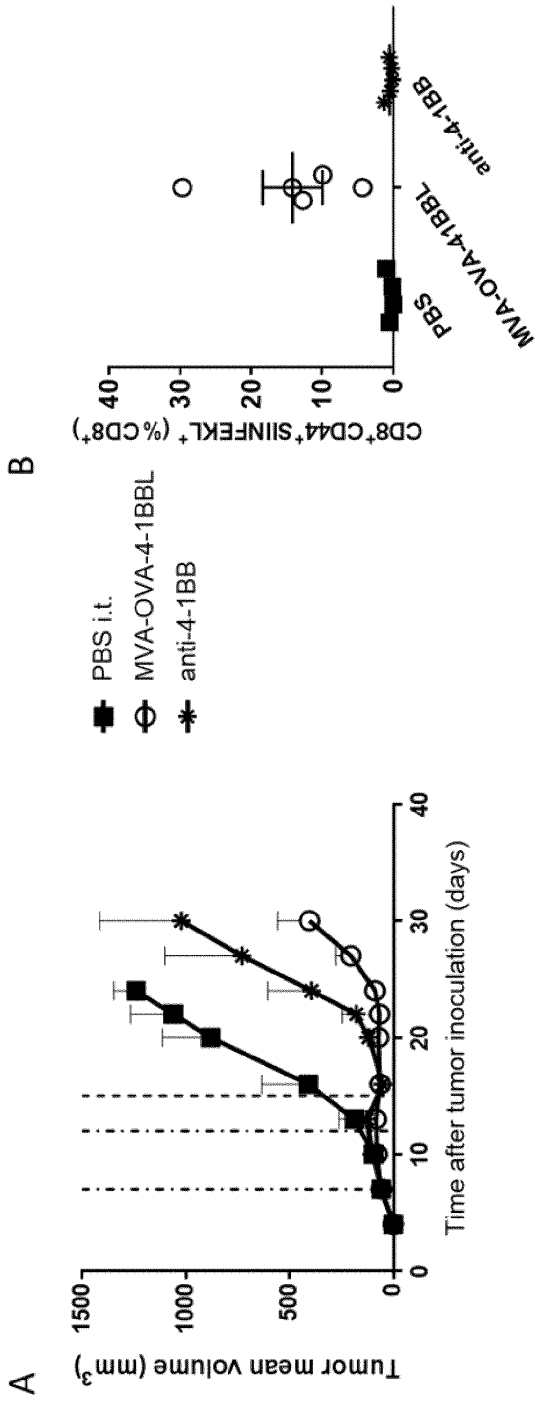

A
Tumor mean volume (mm³)
1500
1000
500
0
0
10
20
30
40
Time after tumor inoculation (days)
PBS i.t.
MVA-OVA-4-1BBL
anti-4-1BB
B
CD8⁺CD44⁺SIINFEKL⁺ (%CD8⁺)
40
30
20
10
0
PBS
MVA-OVA-4BBL
anti-4-1BB

Figure 12

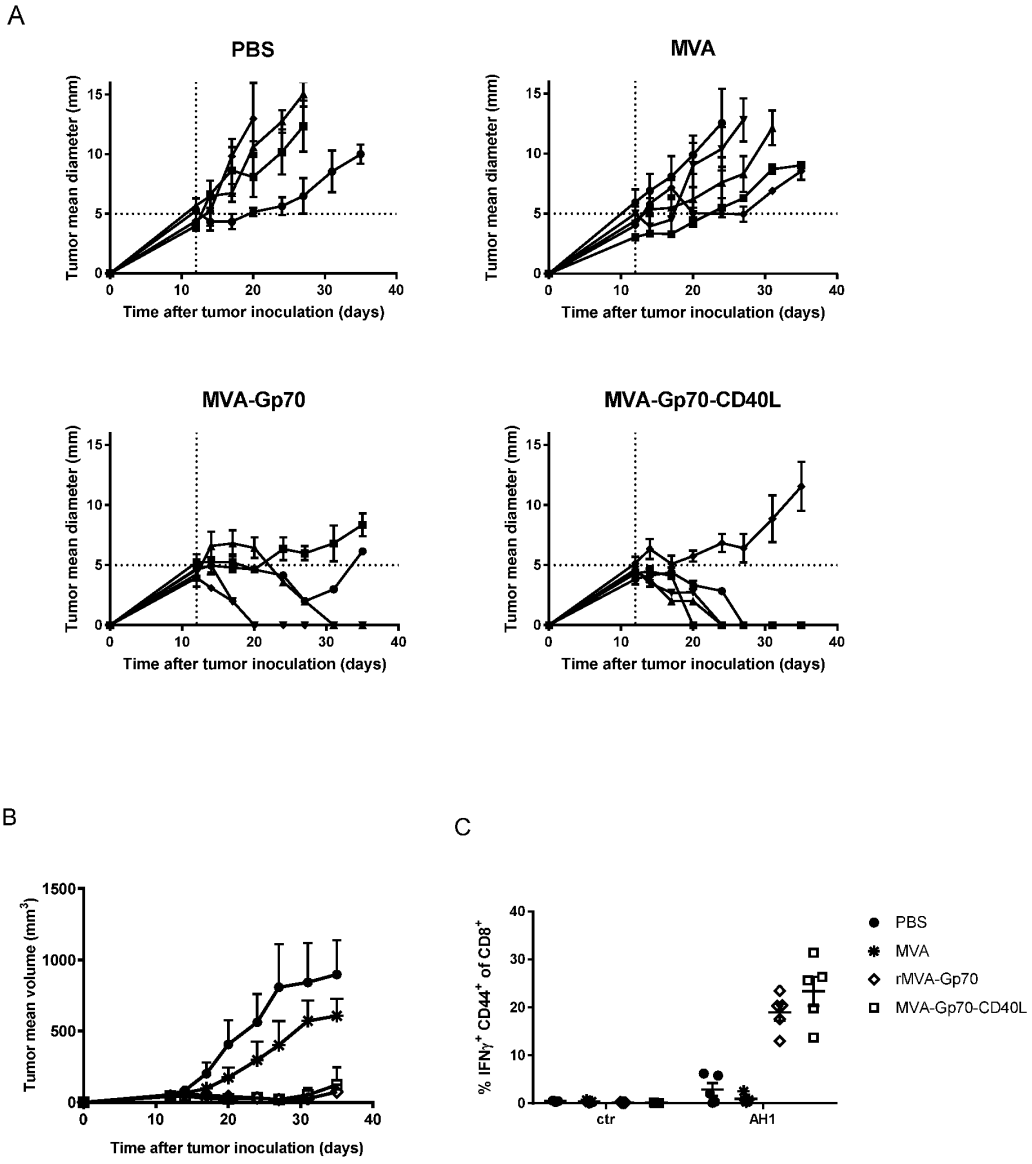
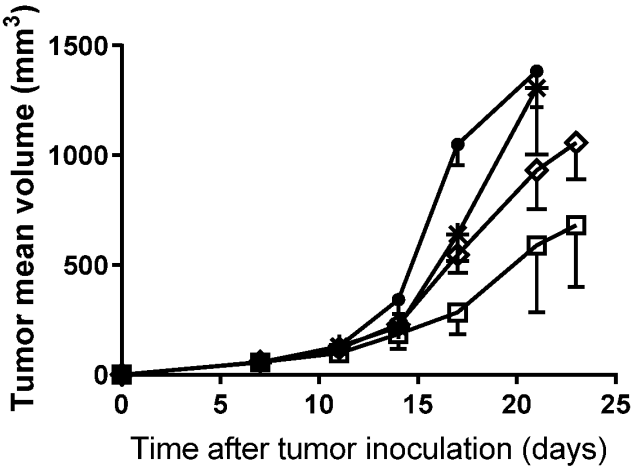

A
PBS
MVA
MVA-Gp70
MVA-Gp70-CD40L
Tumor mean diameter (mm)
Time after tumor inoculation (days)
B
Tumor mean volume (mm3)
Time after tumor inoculation (days)
C
% IFNγ+ CD44+ of CD8+
ctr
AH1
PBS
MVA
rMVA-Gp70
MVA-Gp70-CD40L

Figure 13

A


Tumor mean volume (mm3)
1500
1000
500
0
0
5
10
15
20
25
Time after tumor inoculation (days)

B

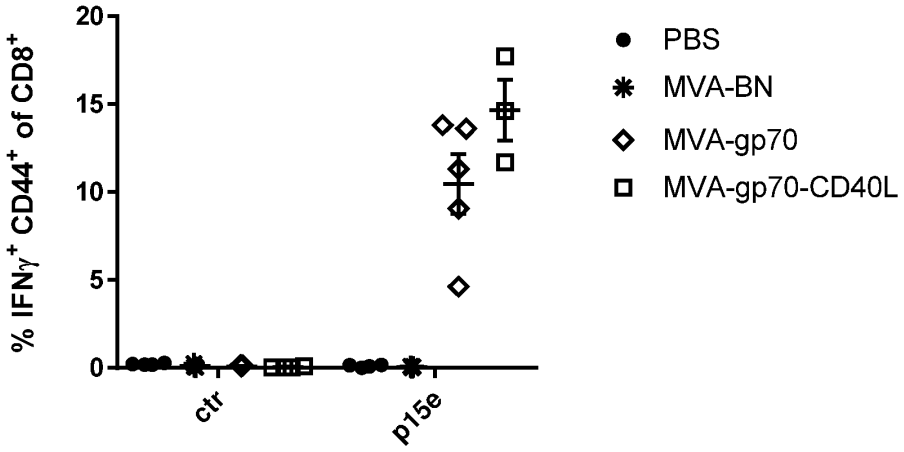

% IFNγ+ CD44+ of CD8+
20
15
10
5
0
ctr
p15e
PBS
MVA-BN
MVA-gp70
MVA-gp70-CD40L

Figure 14

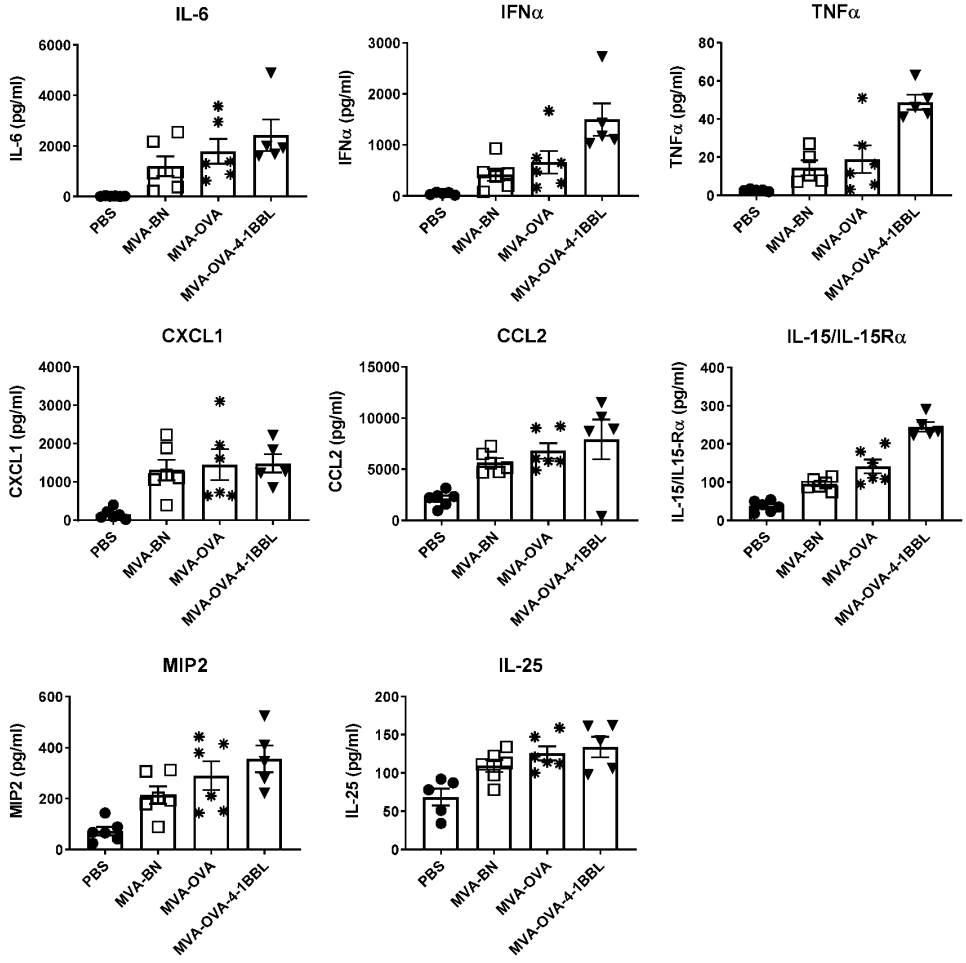

IL-6
IL-6 (pg/ml)
6000
4000
2000
0
PBS
MVA-BN
MVA-OVA
MVA-OVA-4-1BBL
IFNα
IFNα (pg/ml)
3000
2000
1000
0
TNFα
TNFα (pg/ml)
80
60
40
20
CXCL1
CXCL1 (pg/ml)
4000
3000
2000
1000
CCL2
CCL2 (pg/ml)
15000
10000
5000
IL-15/IL-15Rα
IL-15/IL15-Rα (pg/ml)
400
300
200
100
MIP2
MIP2 (pg/ml)
600
400
200
IL-25
IL-25 (pg/ml)
200
150
100
50

Figure 15

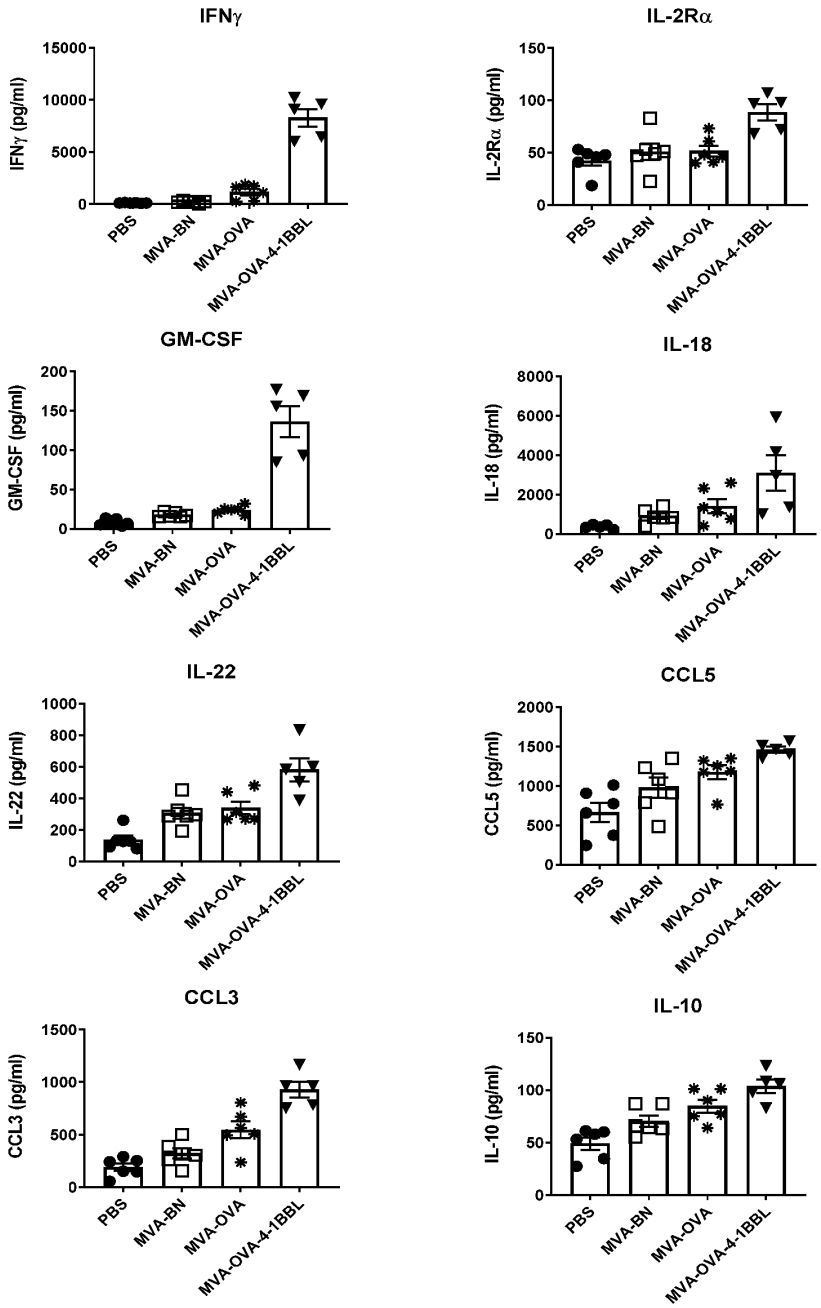

IFNγ
IFNγ (pg/ml)
15000
10000
5000
0
IL-2Rα
IL-2Rα (pg/ml)
150
100
50
0
GM-CSF
GM-CSF (pg/ml)
200
150
100
50
0
IL-18
IL-18 (pg/ml)
8000
6000
4000
2000
0
IL-22
IL-22 (pg/ml)
1000
800
600
400
200
0
CCL5
CCL5 (pg/ml)
2000
1500
1000
500
0
CCL3
CCL3 (pg/ml)
1500
1000
500
0
IL-10
IL-10 (pg/ml)
150
100
50
0
PBS
MVA-BN
MVA-OVA
MVA-OVA-4-1BBL

Figure 16

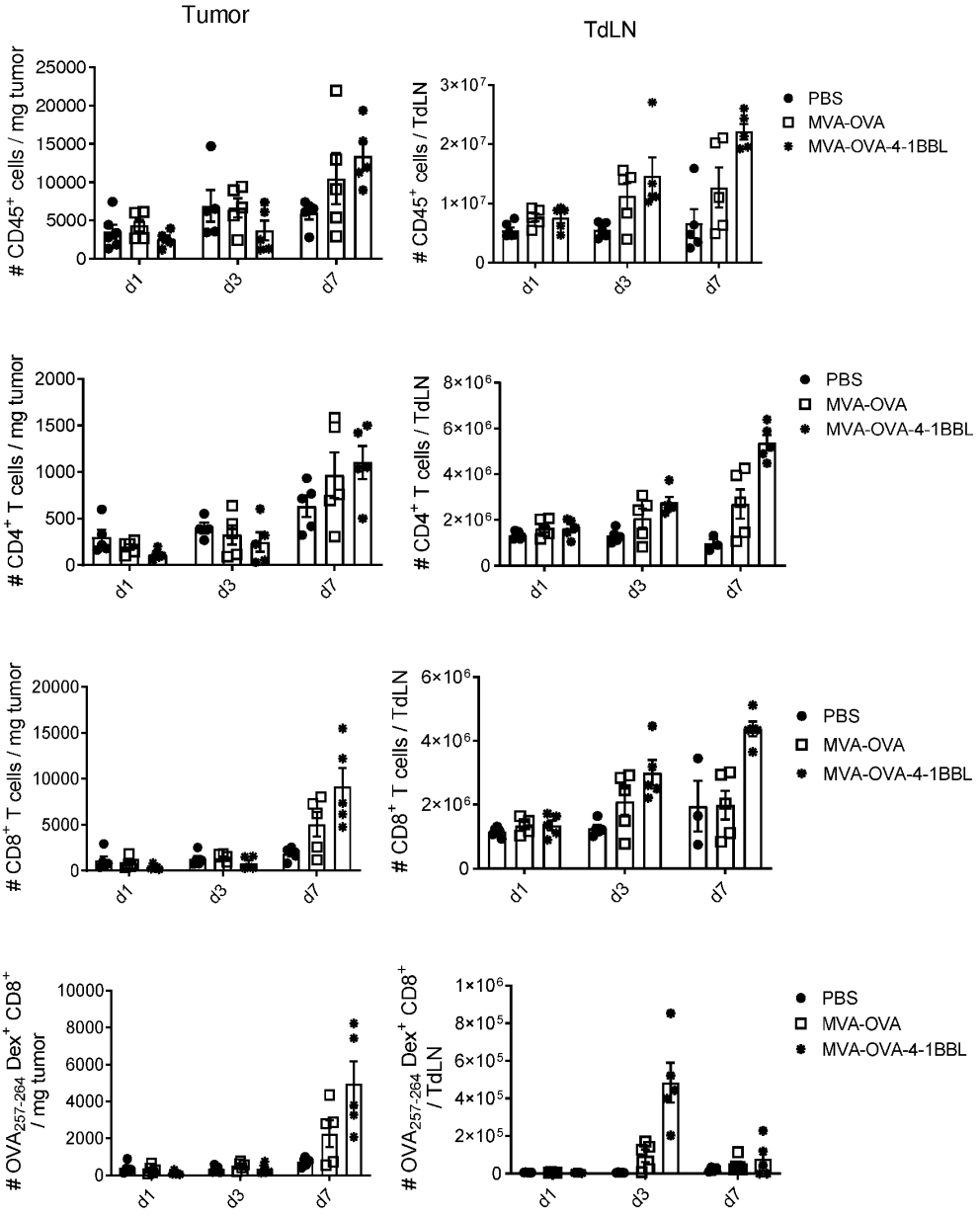

Tumor
TdLN
CD45+ cells / mg tumor
CD45+ cells / TdLN
CD4+ T cells / mg tumor
CD4+ T cells / TdLN
CD8+ T cells / mg tumor
CD8+ T cells / TdLN
OVA257-264 Dex+ CD8+ / mg tumor
OVA257-264 Dex+ CD8+ / TdLN
PBS
MVA-OVA
MVA-OVA-4-1BBL
d1
d3
d7

Figure 17

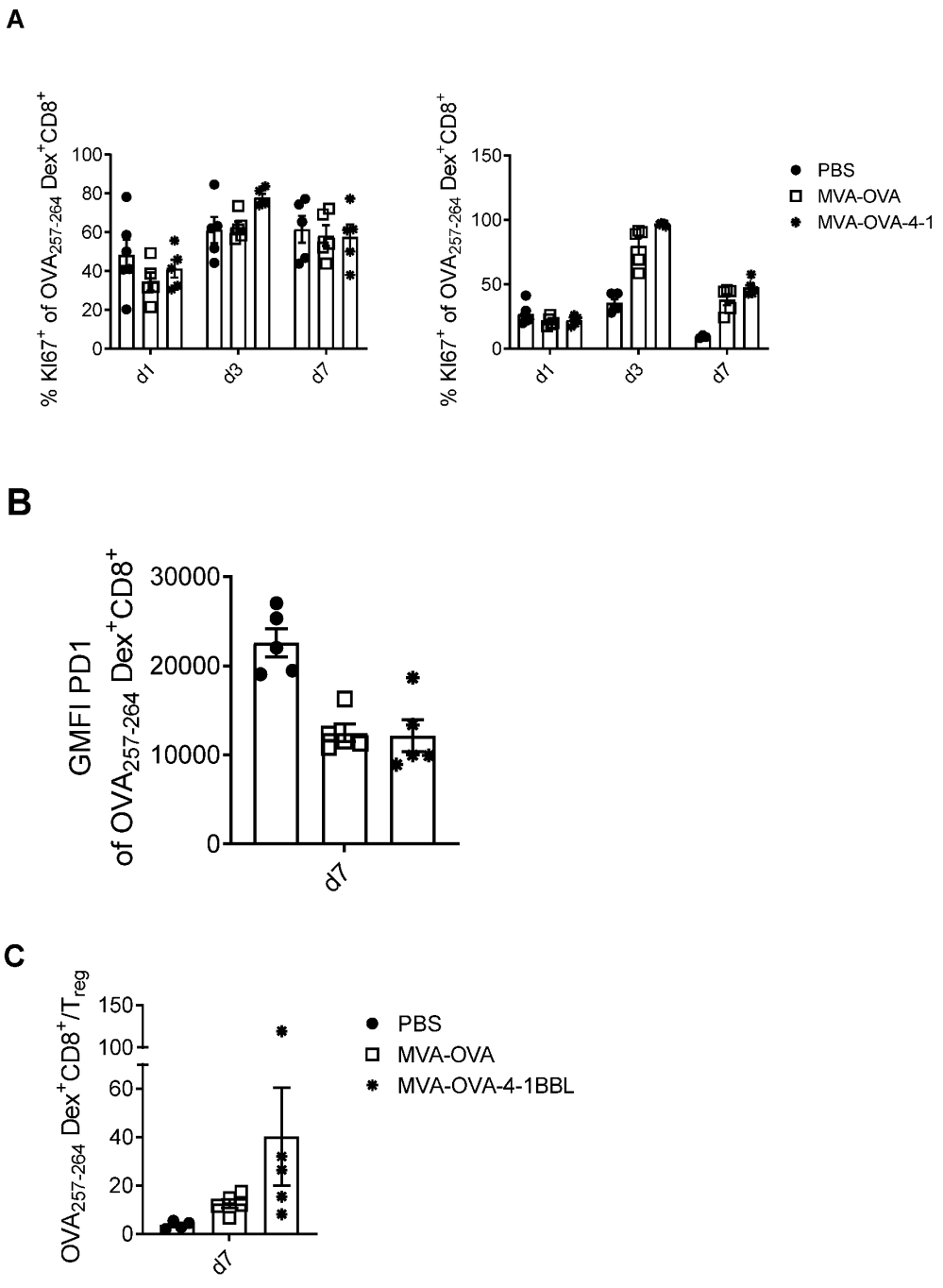

A
% KI67+ of OVA257-264 Dex+CD8+
100
80
60
40
20
0
d1
d3
d7
% KI67+ of OVA257-264 Dex+CD8+
150
100
50
0
d1
d3
d7
PBS
MVA-OVA
MVA-OVA-4-1
B
GMFI PD1 of OVA257-264 Dex+CD8+
30000
20000
10000
0
d7
C
OVA257-264 Dex+CD8+/Treg
150
100
60
40
20
0
d7
PBS
MVA-OVA
MVA-OVA-4-1BBL

Figure 18

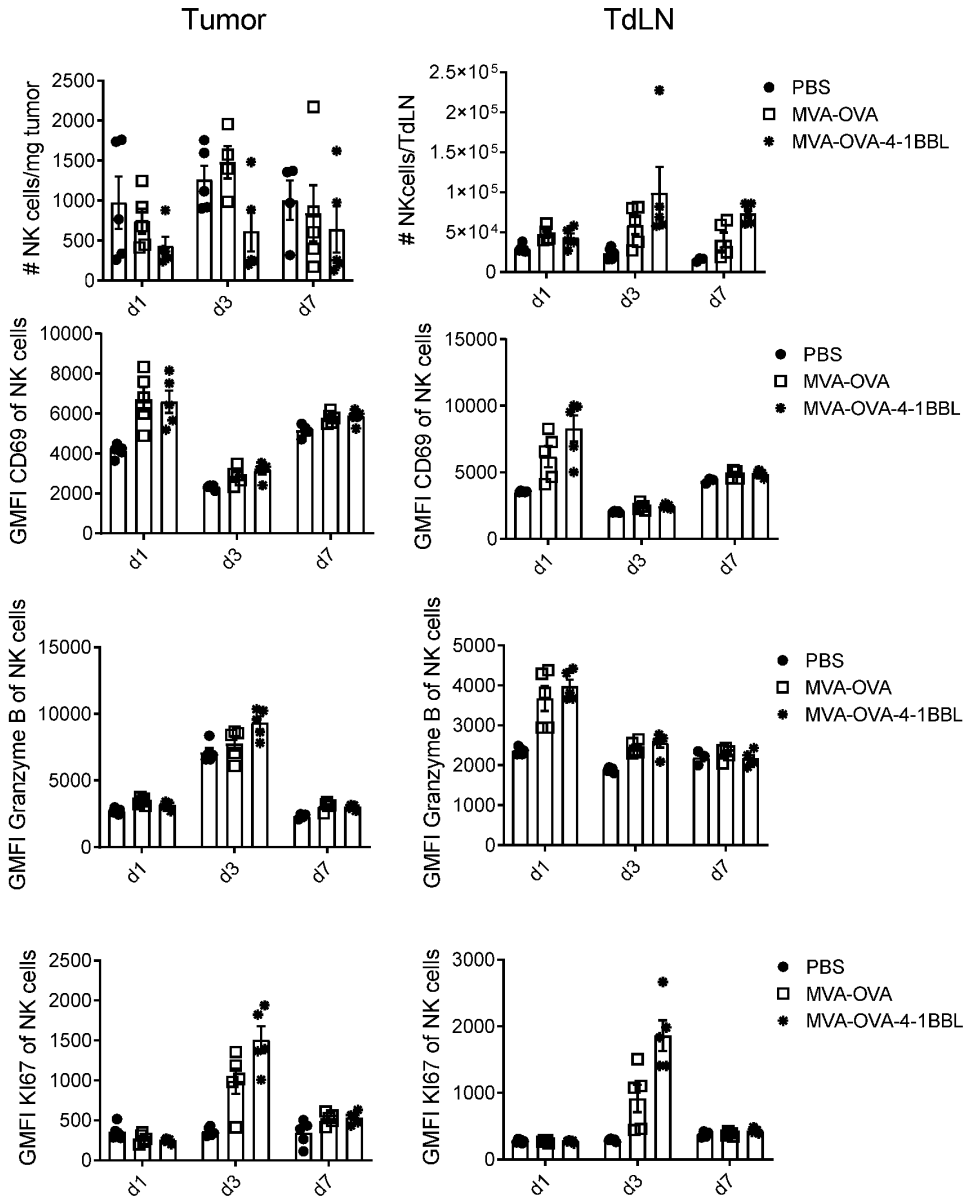

Tumor
TdLN
NK cells/mg tumor
NKcells/TdLN
GMFI CD69 of NK cells
GMFI Granzyme B of NK cells
GMFI KI67 of NK cells
d1
d3
d7
PBS
MVA-OVA
MVA-OVA-4-1BBL

Figure 19

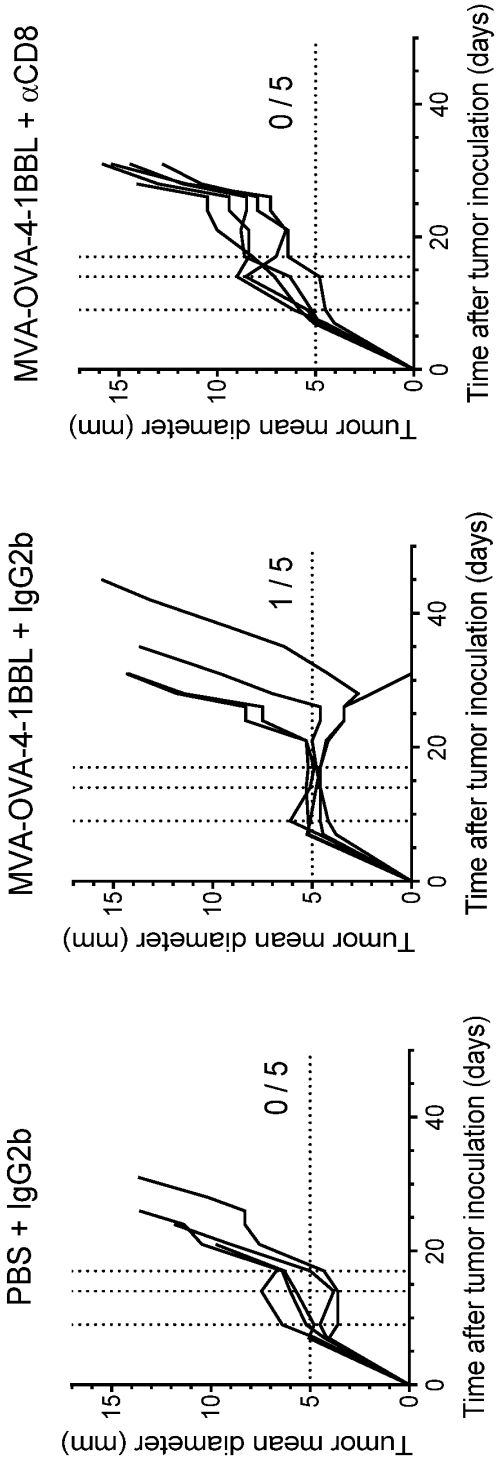

PBS + IgG2b
0 / 5
MVA-OVA-4-1BBL + IgG2b
1 / 5
MVA-OVA-4-1BBL + αCD8
0 / 5
Tumor mean diameter (mm)
Time after tumor inoculation (days)
0
5
10
15
0
20
40

Figure 20

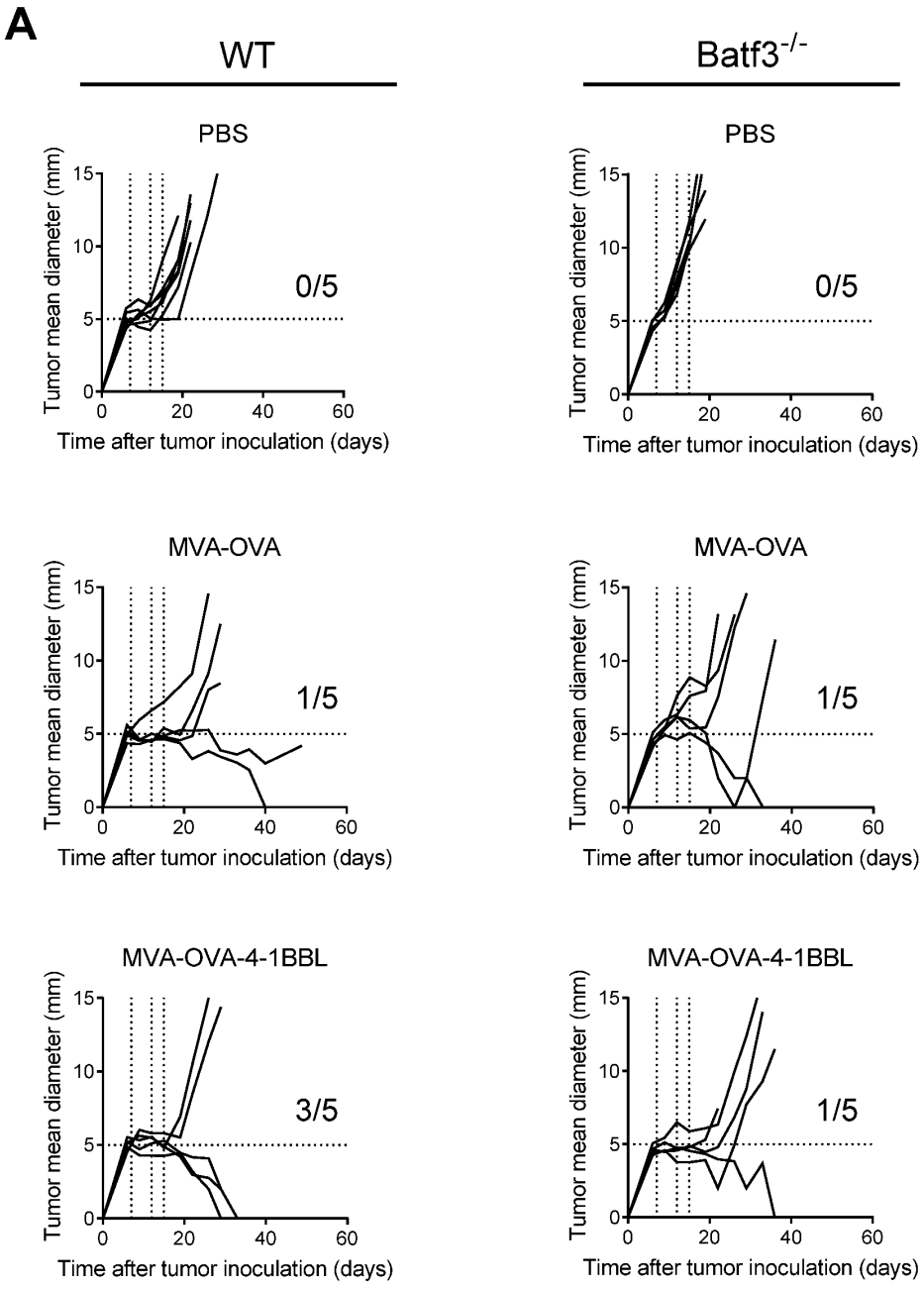

A
WT
Batf3-/-
PBS
PBS
MVA-OVA
MVA-OVA
MVA-OVA-4-1BBL
MVA-OVA-4-1BBL
0/5
0/5
1/5
1/5
3/5
1/5
Tumor mean diameter (mm)
Time after tumor inoculation (days)
0
5
10
15
0
20
40
60

Figure 21

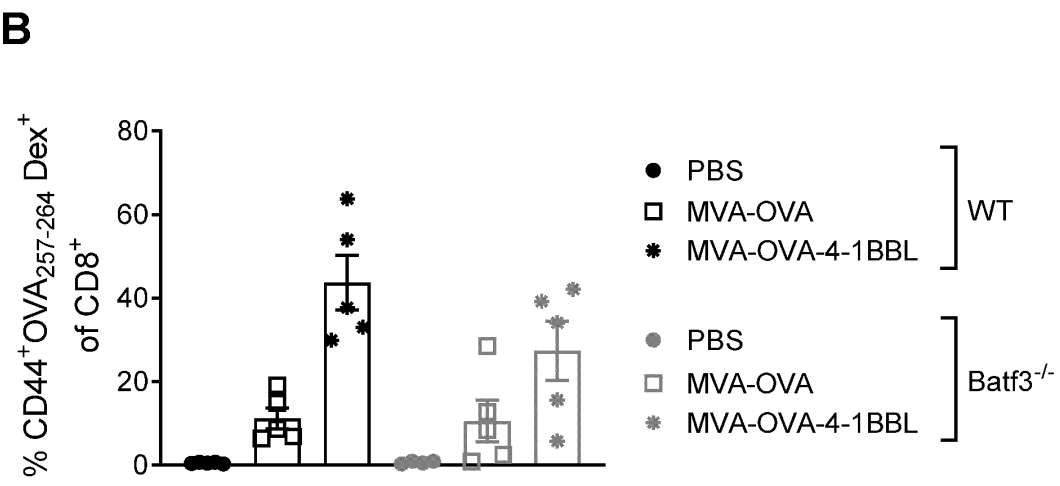


Figure 21 (cont'd.)

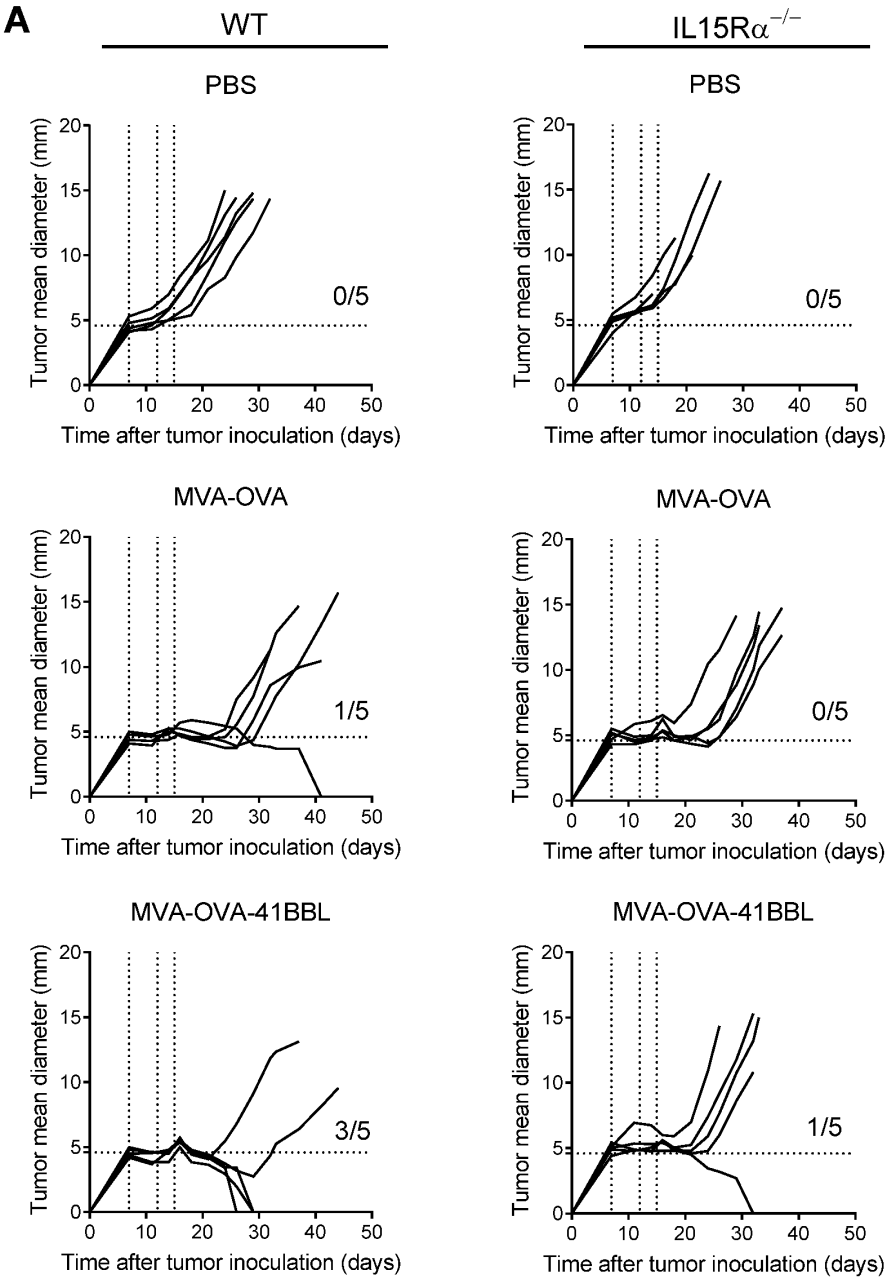
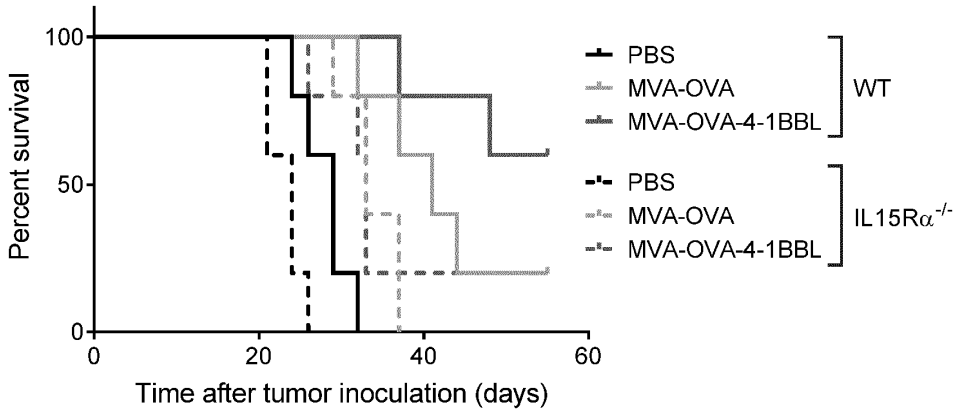

A
WT
IL15Rα−/−
PBS
PBS
MVA-OVA
MVA-OVA
MVA-OVA-41BBL
MVA-OVA-41BBL
Tumor mean diameter (mm)
Time after tumor inoculation (days)
0/5
0/5
1/5
0/5
3/5
1/5

Figure 22

B



C

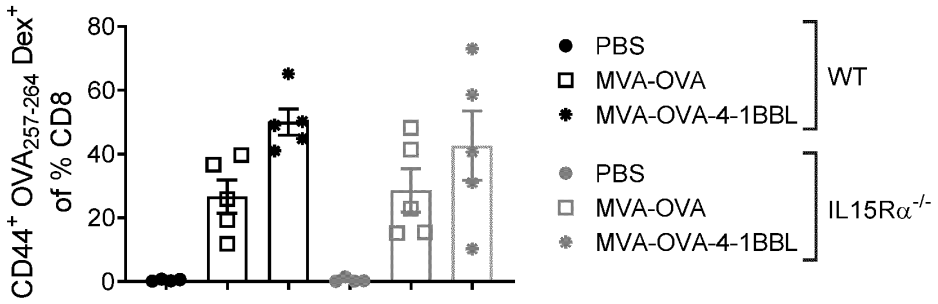


Figure 22, cont'd.

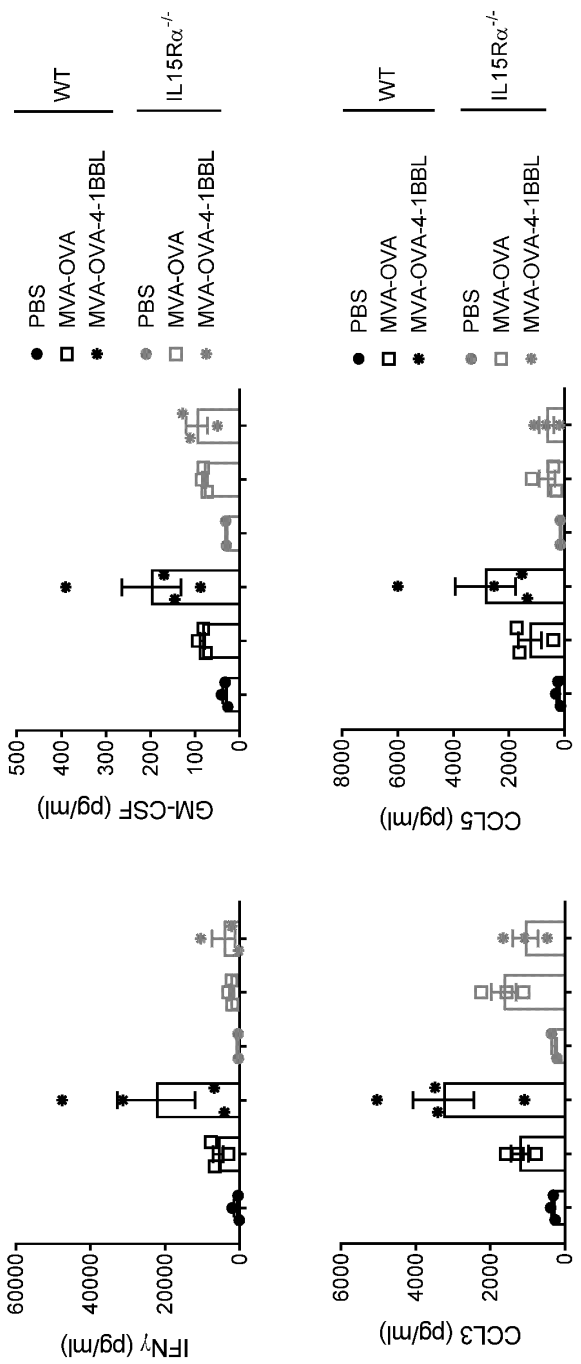
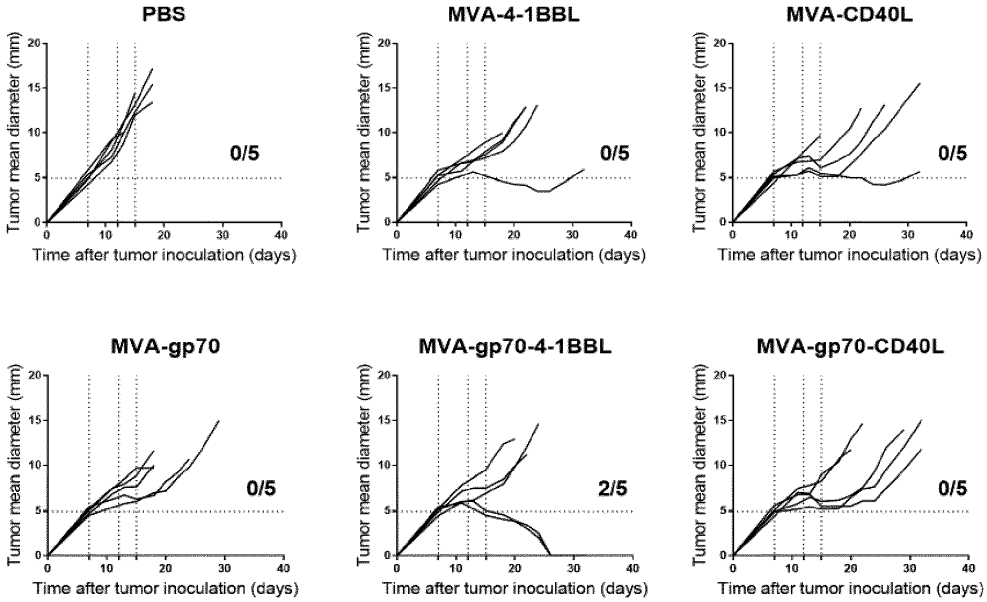

WT
IL15Rα-/-
PBS
MVA-OVA
MVA-OVA-4-1BBL
GM-CSF (pg/ml)
CCL5 (pg/ml)
IFNγ (pg/ml)
CCL3 (pg/ml)

Figure 23

A


PBS
MVA-4-1BBL
MVA-CD40L
MVA-gp70
MVA-gp70-4-1BBL
MVA-gp70-CD40L
Tumor mean diameter (mm)
Time after tumor inoculation (days)
0/5
0/5
0/5
0/5
2/5
0/5

B

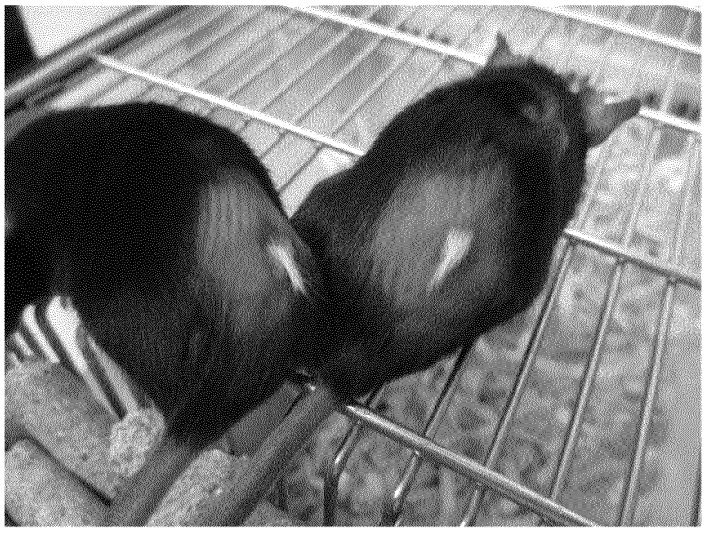


Figure 24

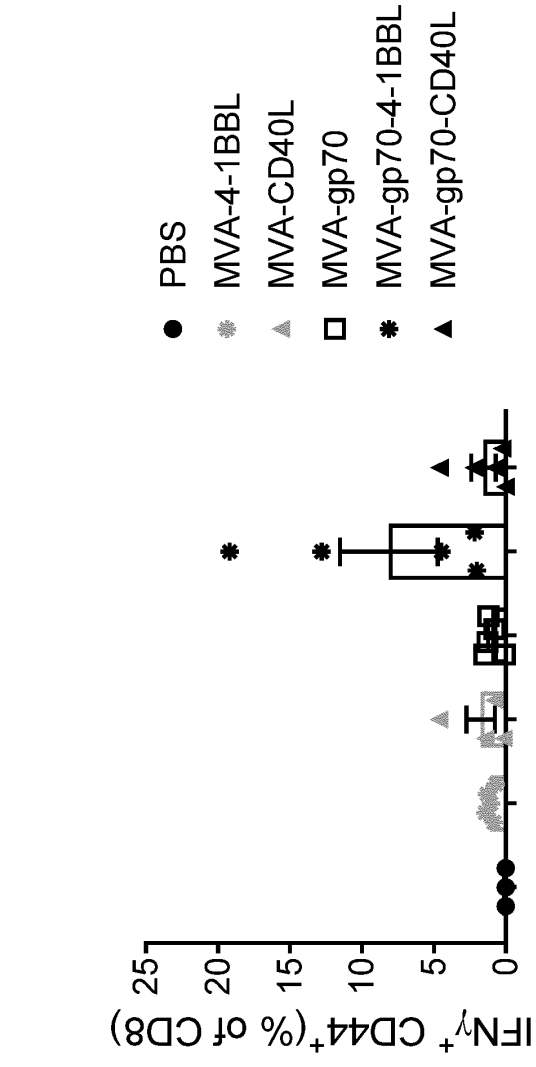


Figure 24, cont'd.

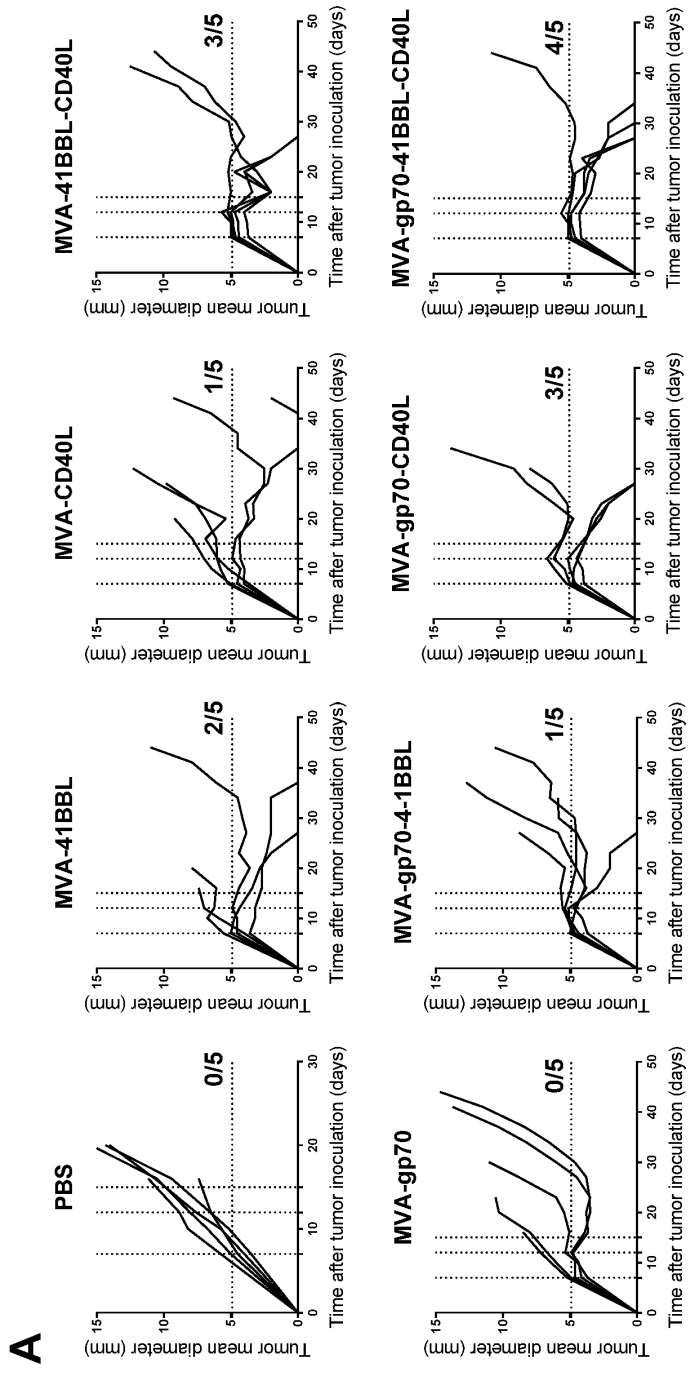

A
PBS
0/5
MVA-41BBL
2/5
MVA-CD40L
1/5
MVA-41BBL-CD40L
3/5
MVA-gp70
0/5
MVA-gp70-4-1BBL
1/5
MVA-gp70-CD40L
3/5
MVA-gp70-41BBL-CD40L
4/5
Tumor mean diameter (mm)
Time after tumor inoculation (days)

Figure 25

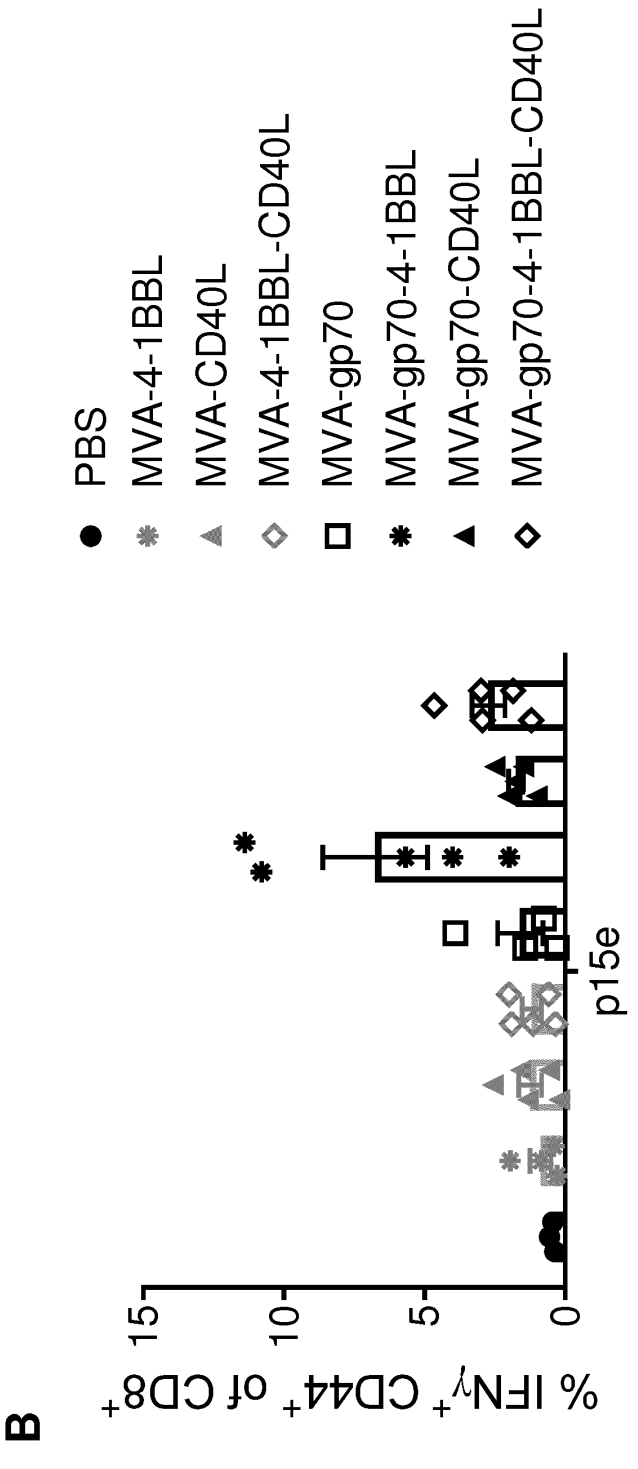


Figure 25, cont'd.

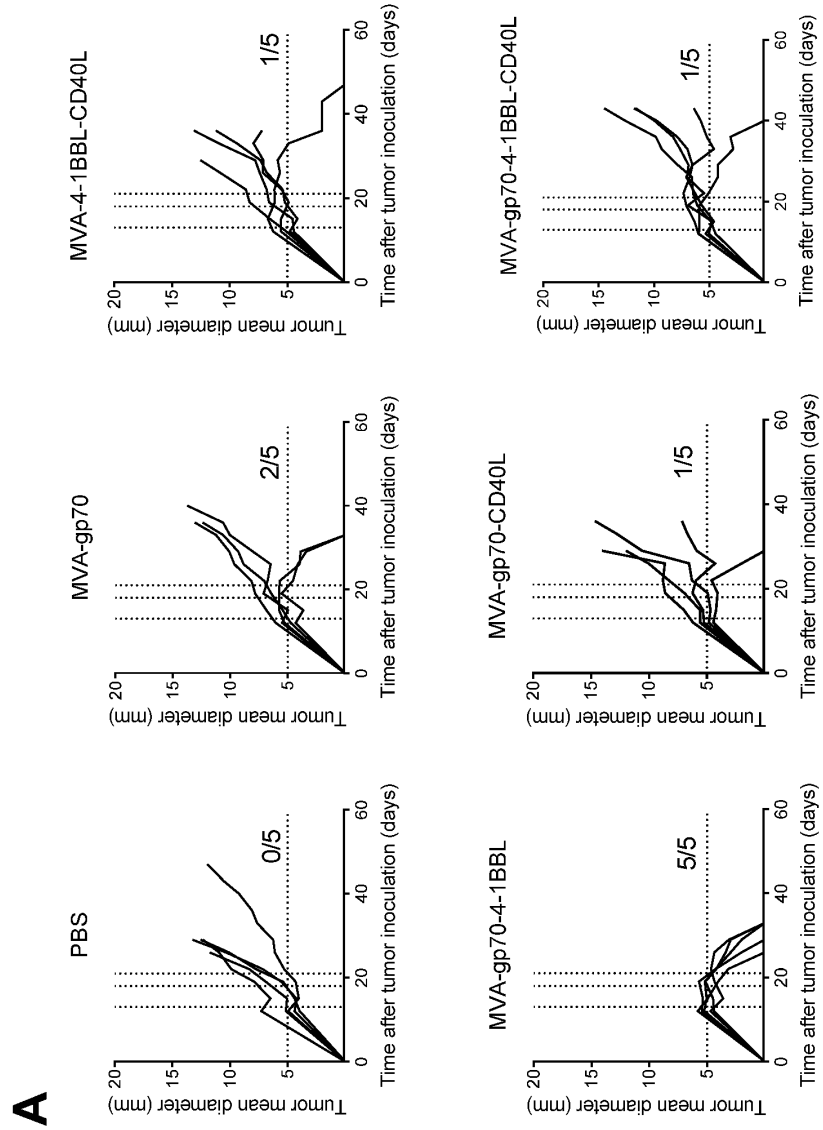
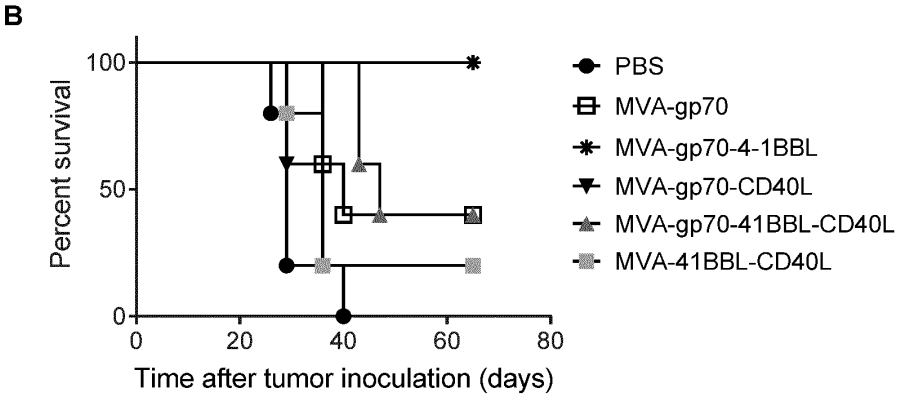

A
PBS
0/5
MVA-gp70
2/5
MVA-4-1BBL-CD40L
1/5
MVA-gp70-4-1BBL
5/5
MVA-gp70-CD40L
1/5
MVA-gp70-4-1BBL-CD40L
1/5
Tumor mean diameter (mm)
Time after tumor inoculation (days)
0
5
10
15
20
0
20
40
60

Figure 26



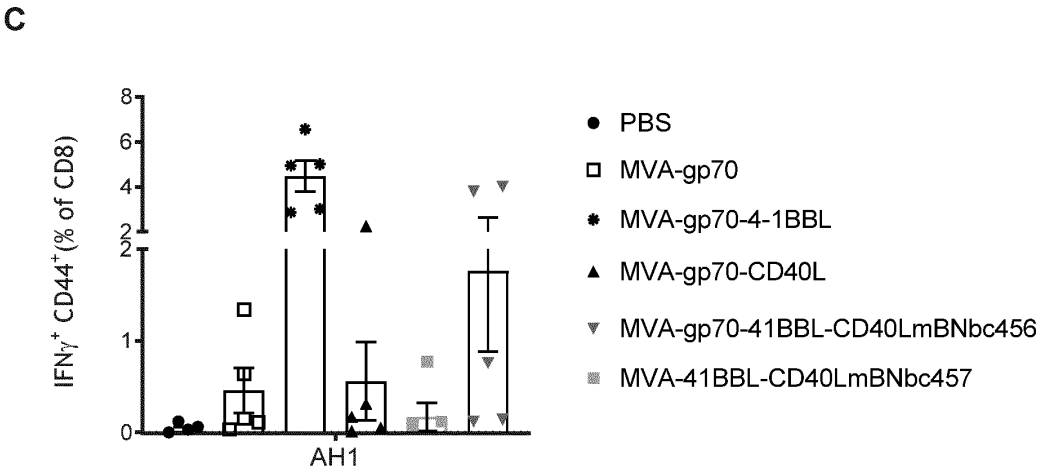


Figure 26, cont'd.

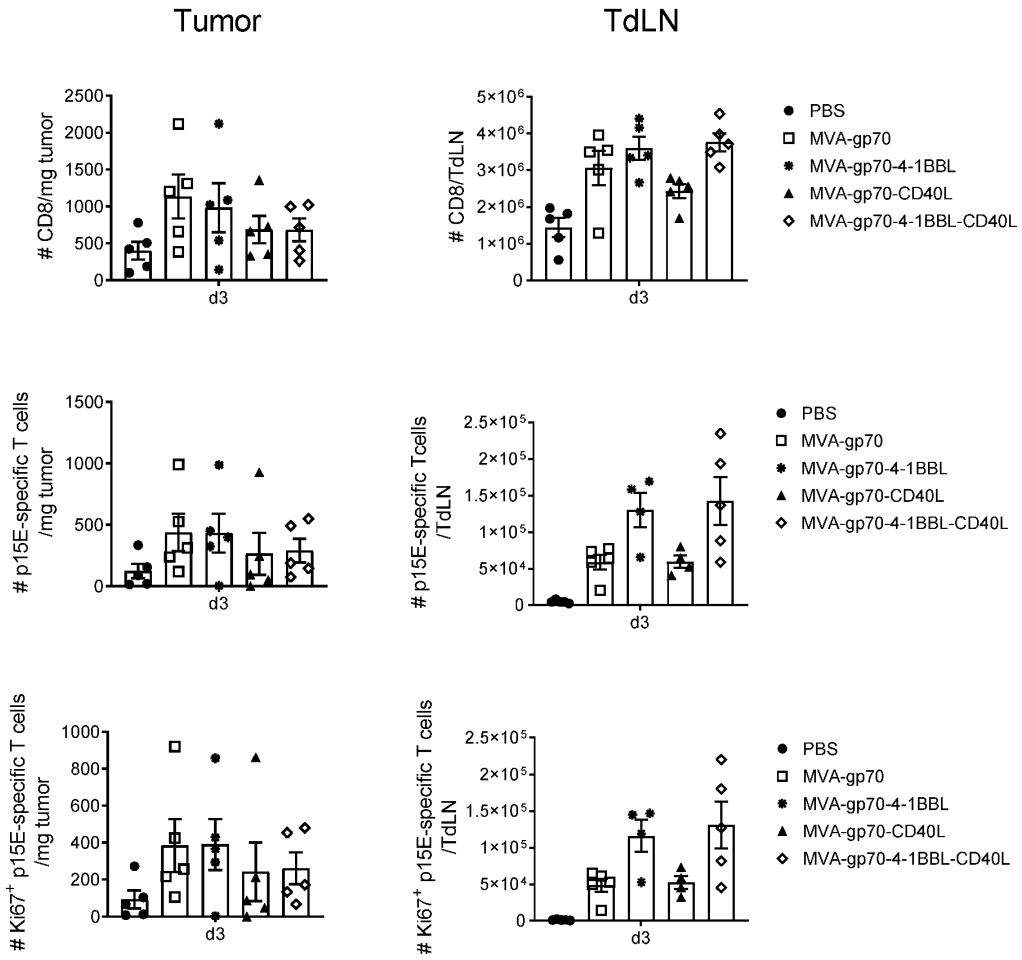

Tumor
TdLN
CD8/mg tumor
CD8/TdLN
p15E-specific T cells /mg tumor
p15E-specific Tcells /TdLN
Ki67+ p15E-specific T cells /mg tumor
Ki67+ p15E-specific T cells /TdLN
d3
PBS
MVA-gp70
MVA-gp70-4-1BBL
MVA-gp70-CD40L
MVA-gp70-4-1BBL-CD40L

Figure 27

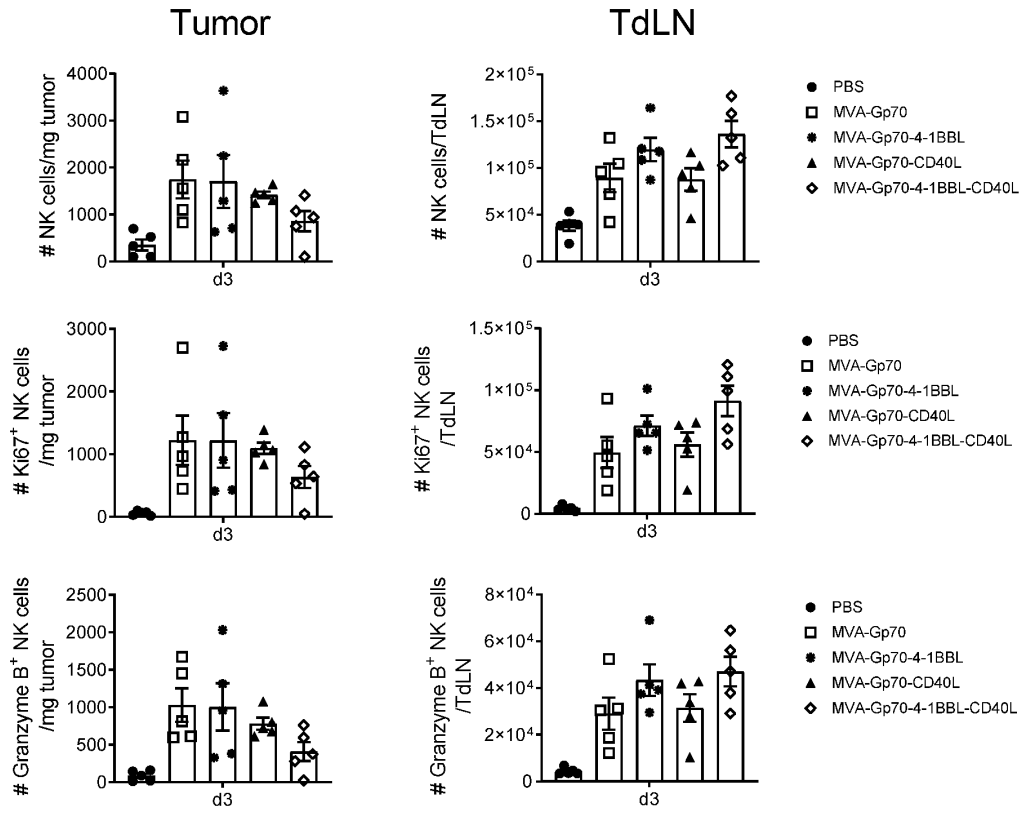

Tumor
TdLN
NK cells/mg tumor
NK cells/TdLN
Ki67+ NK cells /mg tumor
Ki67+ NK cells /TdLN
Granzyme B+ NK cells /mg tumor
Granzyme B+ NK cells /TdLN
d3
PBS
MVA-Gp70
MVA-Gp70-4-1BBL
MVA-Gp70-CD40L
MVA-Gp70-4-1BBL-CD40L

Figure 28

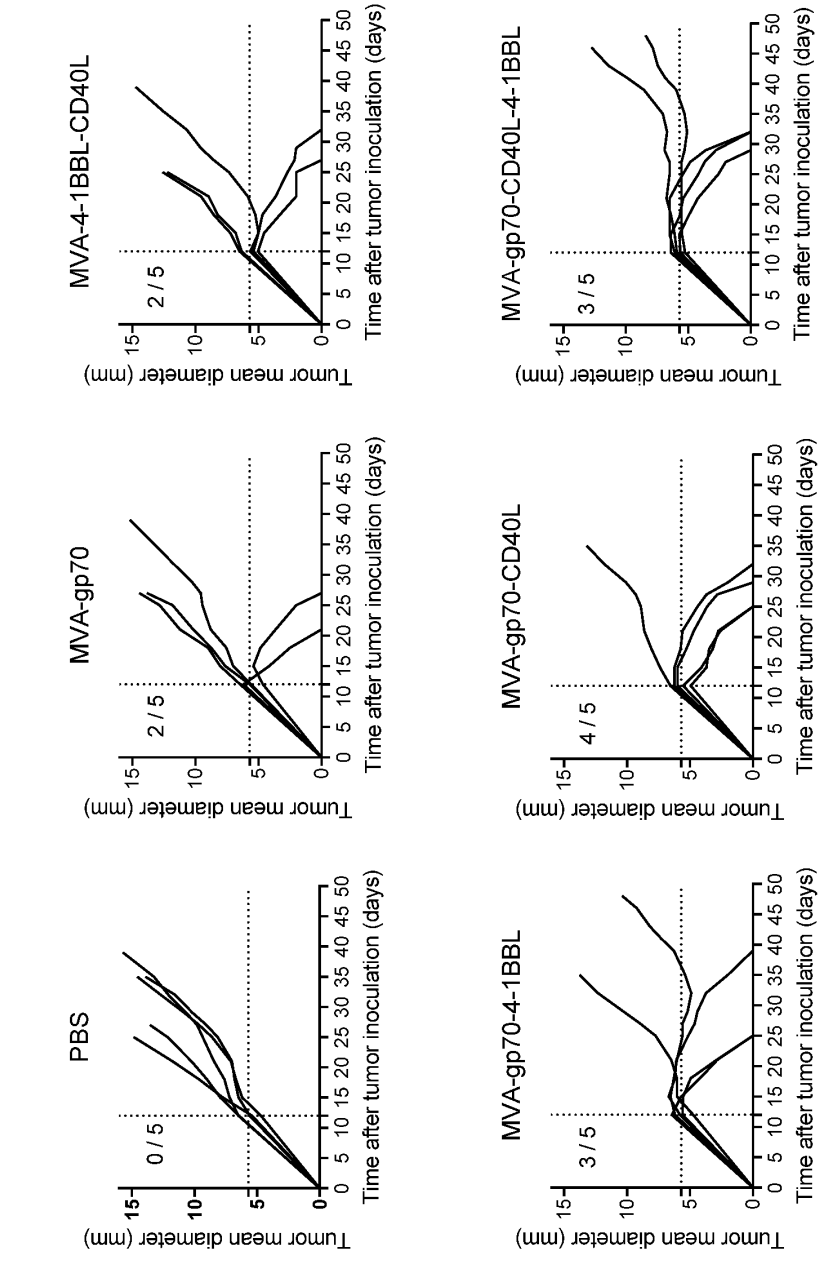

A
PBS
0 / 5
MVA-gp70
2 / 5
MVA-4-1BBL-CD40L
2 / 5
MVA-gp70-4-1BBL
3 / 5
MVA-gp70-CD40L
4 / 5
MVA-gp70-CD40L-4-1BBL
3 / 5
Tumor mean diameter (mm)
Time after tumor inoculation (days)
0 5 10 15 20 25 30 35 40 45 50
0 5 10 15

Figure 29

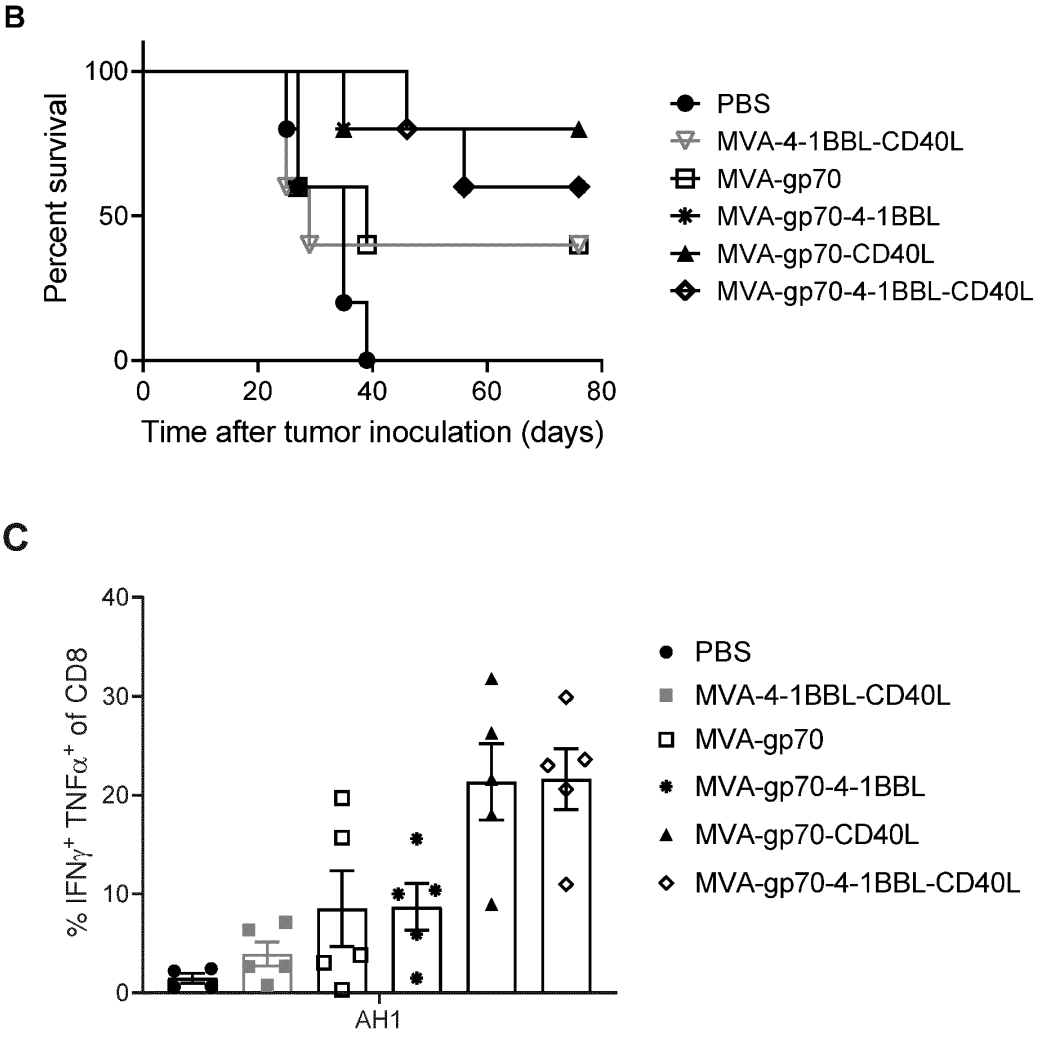


Figure 29, cont'd.