FIGURE 1

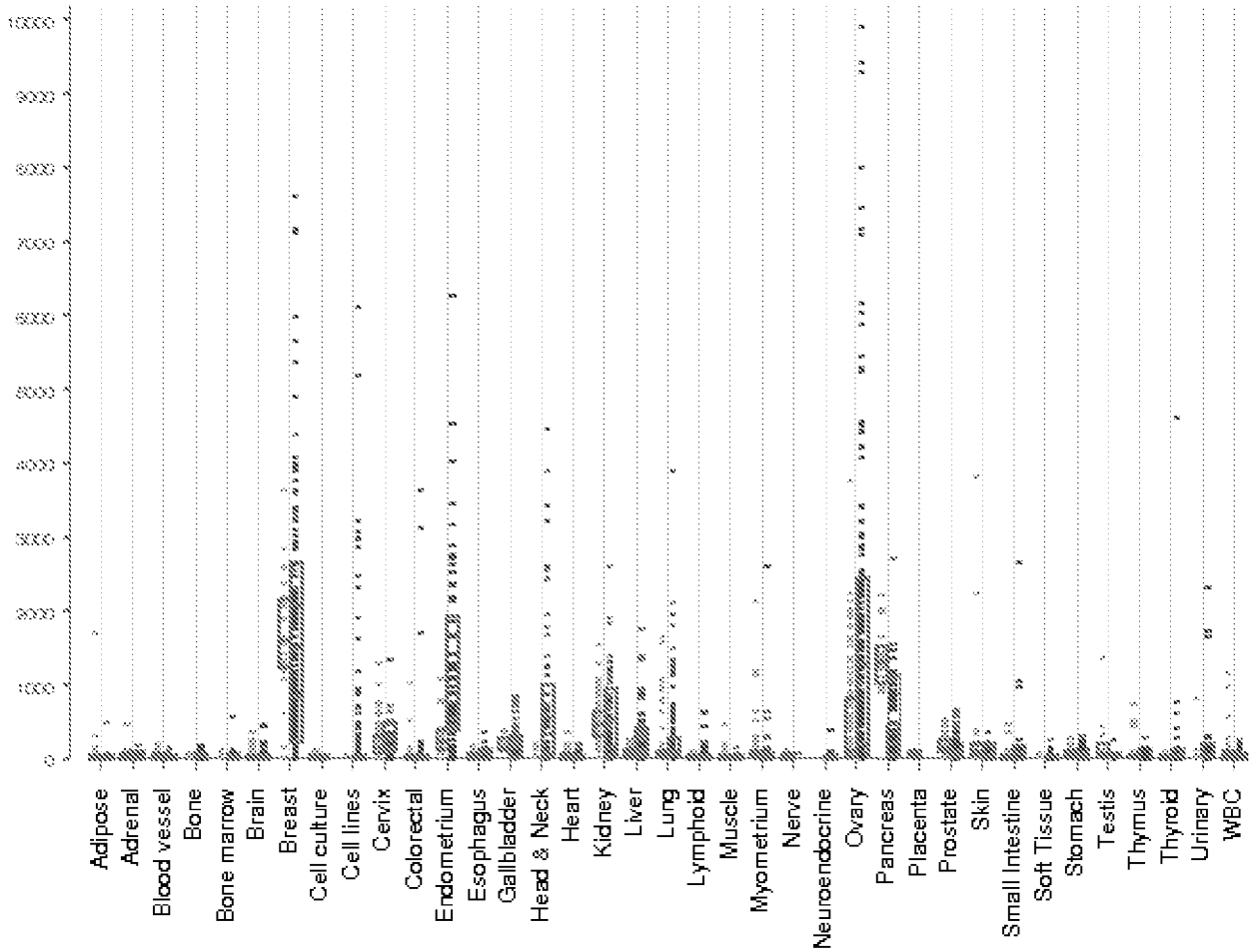
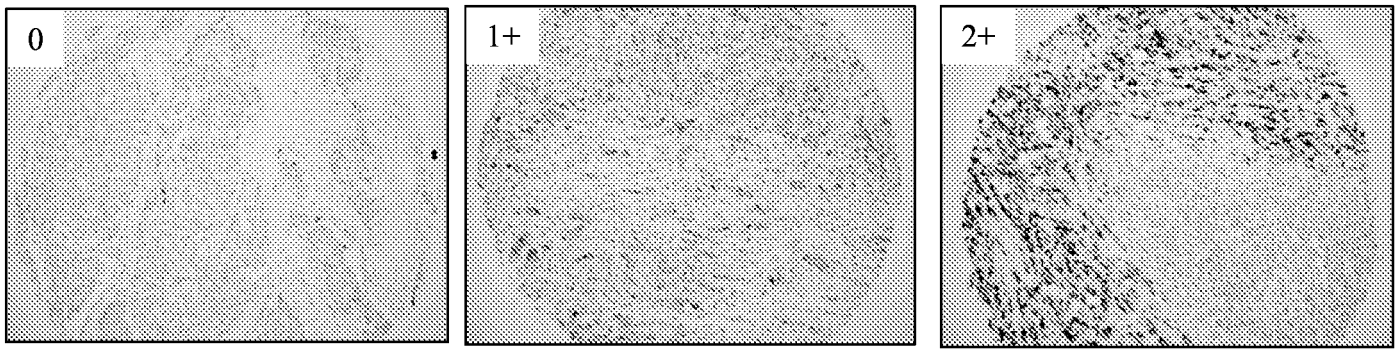

Adipose
Adrenal
Blood vessel
Bone
Bone marrow
Brain
Breast
Cell culture
Cell lines
Cervix
Colorectal
Endometrium
Esophagus
Gallbladder
Head & Neck
Heart
Kidney
Liver
Lung
Lymphoid
Muscle
Myometrium
Nerve
Neuroendocrine
Ovary
Pancreas
Placenta
Prostate
Skin
Small Intestine
Soft Tissue
Stomach
Testis
Thymus
Thyroid
Urinary
WBC

FIGURE 2

Breast Carcinomas



59/185 (32%) 59/185 (32%) 41/185 (22%)

Normal Breast

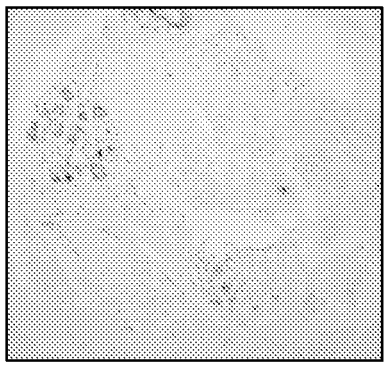
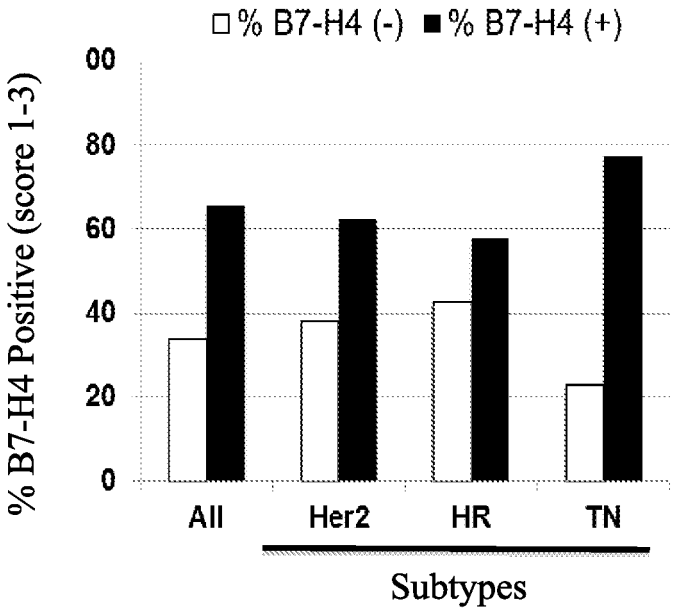


FIGURE 3

(A)


□% B7-H4 (-) ■% B7-H4 (+)
% B7-H4 Positive (score 1-3)
00
80
60
40
20
0
All
Her2
HR
TN
Subtypes

(B)

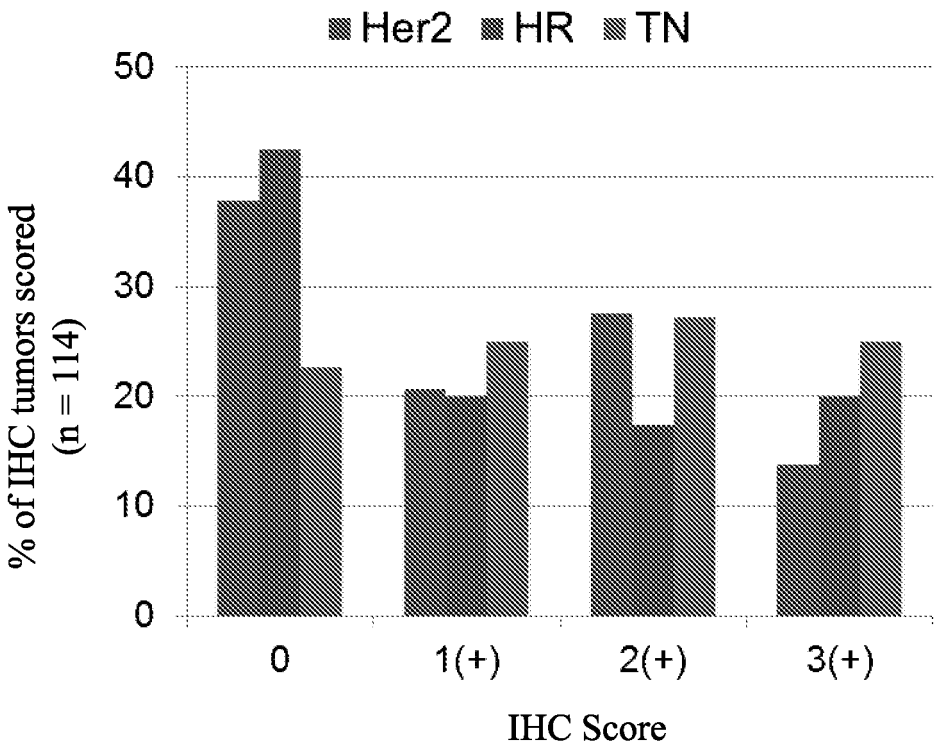

Her2 HR TN
% of IHC tumors scored (n = 114)
50
40
30
20
10
0
0
1(+)
2(+)
3(+)
IHC Score

FIGURE 3

(C)

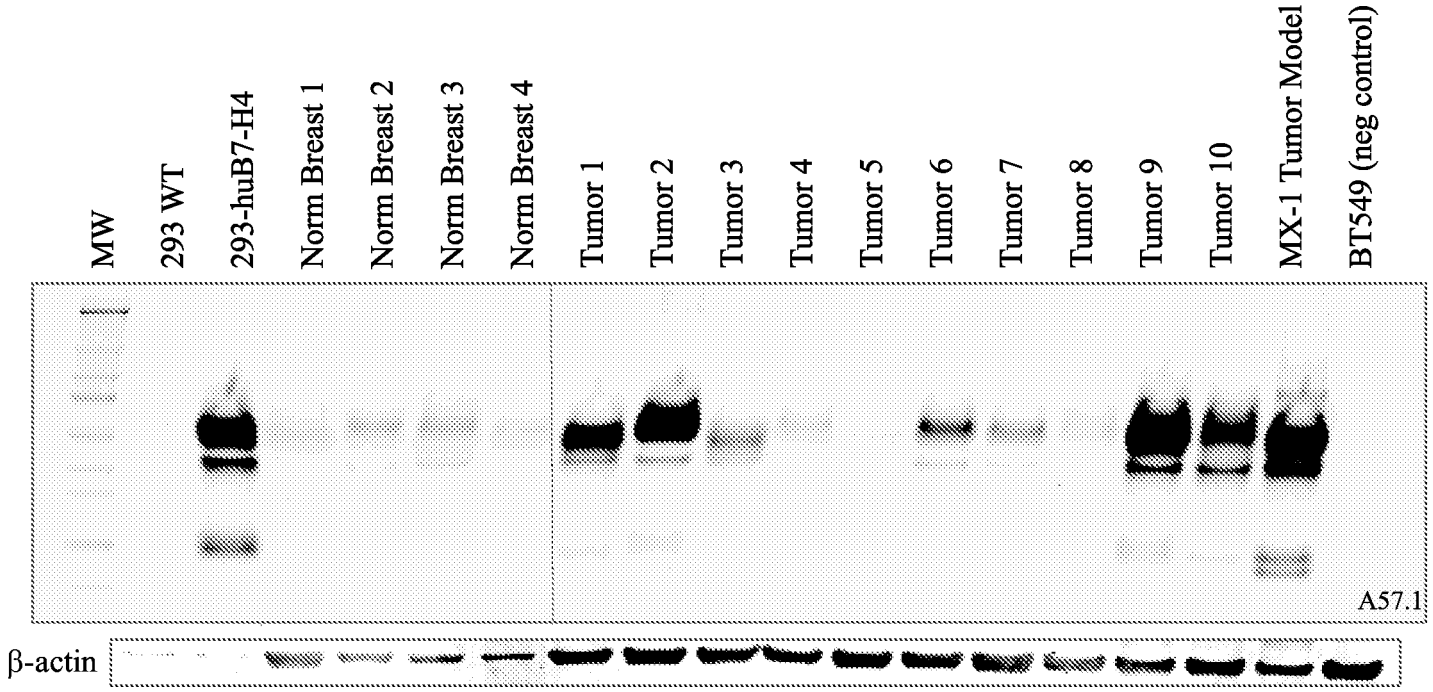
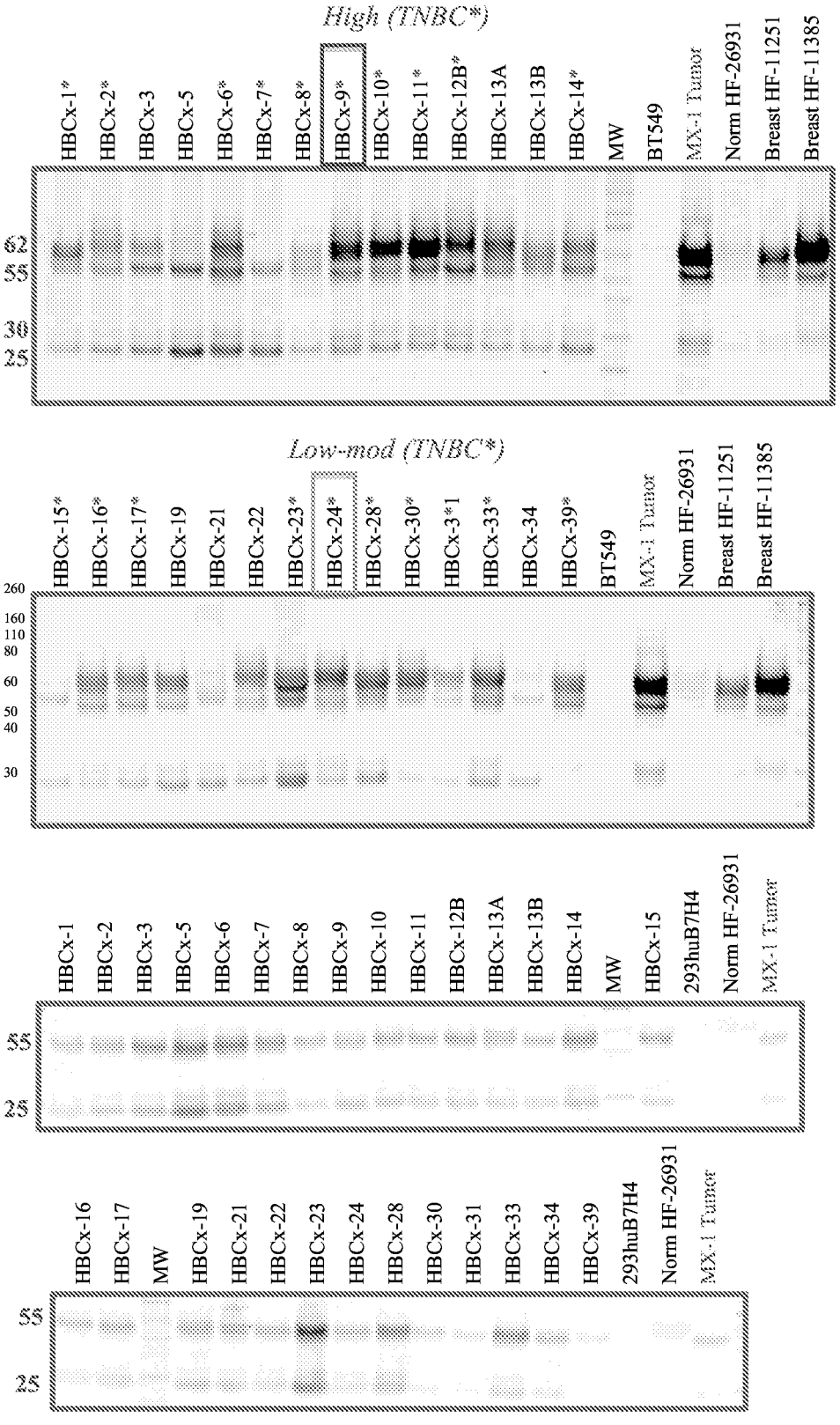

MW
293 WT
293-huB7-H4
Norm Breast 1
Norm Breast 2
Norm Breast 3
Norm Breast 4
Tumor 1
Tumor 2
Tumor 3
Tumor 4
Tumor 5
Tumor 6
Tumor 7
Tumor 8
Tumor 9
Tumor 10
MX-1 Tumor Model
BT549 (neg control)
A57.1
β-actin

FIGURE 3

(D)



Western (A57.1)
~ 50 mg lysate/lane

Western (2nd only)

FIGURE 3

(E)

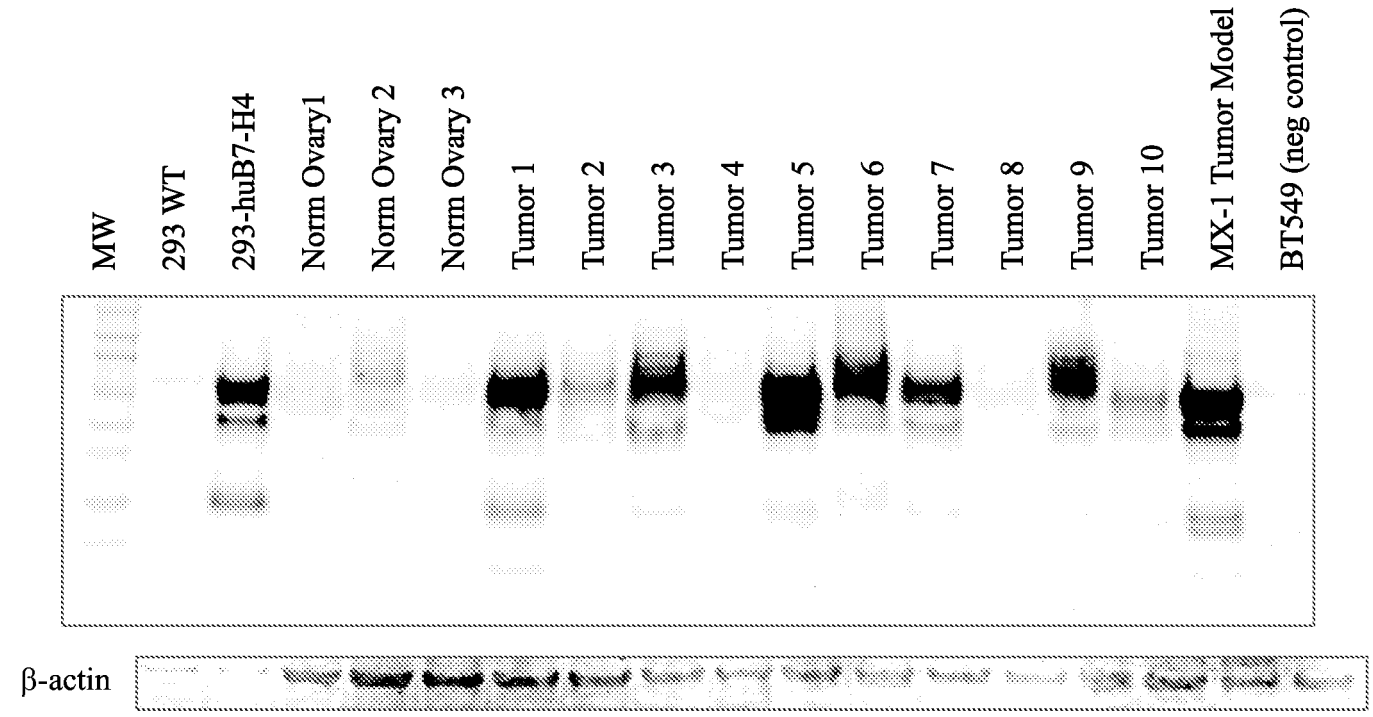

MW
293 WT
293-huB7-H4
Norm Ovary1
Norm Ovary 2
Norm Ovary 3
Tumor 1
Tumor 2
Tumor 3
Tumor 4
Tumor 5
Tumor 6
Tumor 7
Tumor 8
Tumor 9
Tumor 10
MX-1 Tumor Model
BT549 (neg control)
β-actin

FIGURE 4

(A)

Antibody	Affinity[1]	Epitope Group[2]	Domain[3]	Comments
1D11	H - 6.1nM C - 4.1nM M - 9.4nM R - 4.1nM	A	Ig-V	Protein immunization (mB7-H4:Fc) mB7-H4 $^{(-/-)}$ mouse
9B9	H - 6.6nM C - 5.2nM M -13.7nM R - 4.7nM	A	Ig-V	Cellular immunization 293-hB7-H4 cells
3.22.C10	H - 6.6nM C - 4.6nM M - 18.3nM R - 5.7nM	B	Ig-V/IgC	Cellular immunization 293-hB7-H4 cells
2.32D6	H - 4.8nM C - 3.1nM M - NB R - NB	C	Ig-V	DNA immunization & hB7-H4:Fc boost

[1] Scatchard on stable cell line expressing recombinant B7-H4

[2] Determined by FACS competition

[3] FACS (chimeric Ig domains)

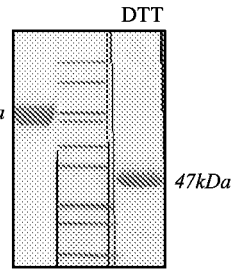
(B)



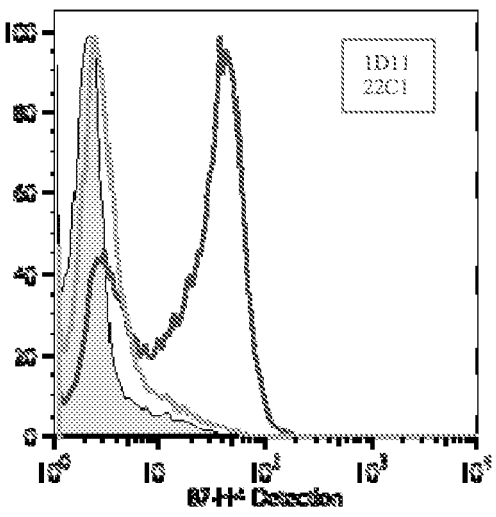
Membrane Expression

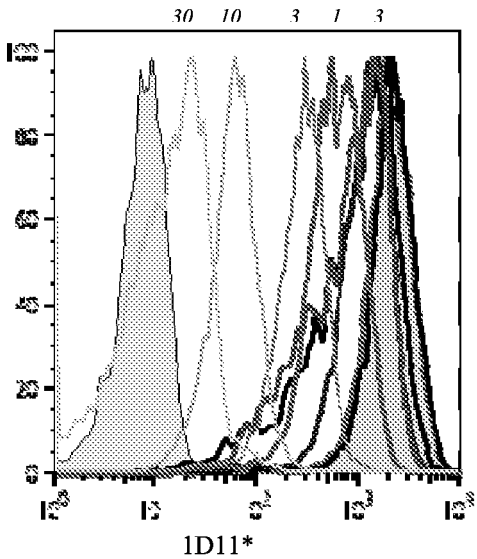


Soluble B7-H4-Fc

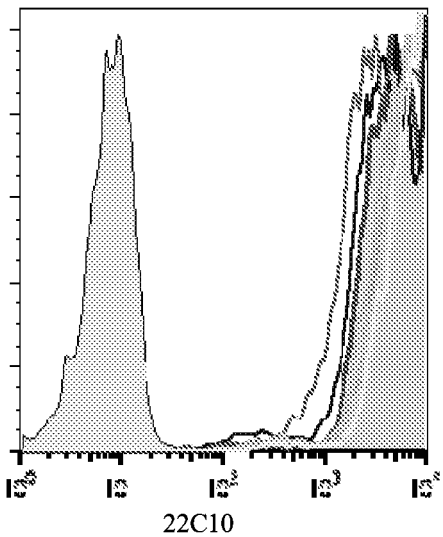


PUR 41124 (8.9% agg)





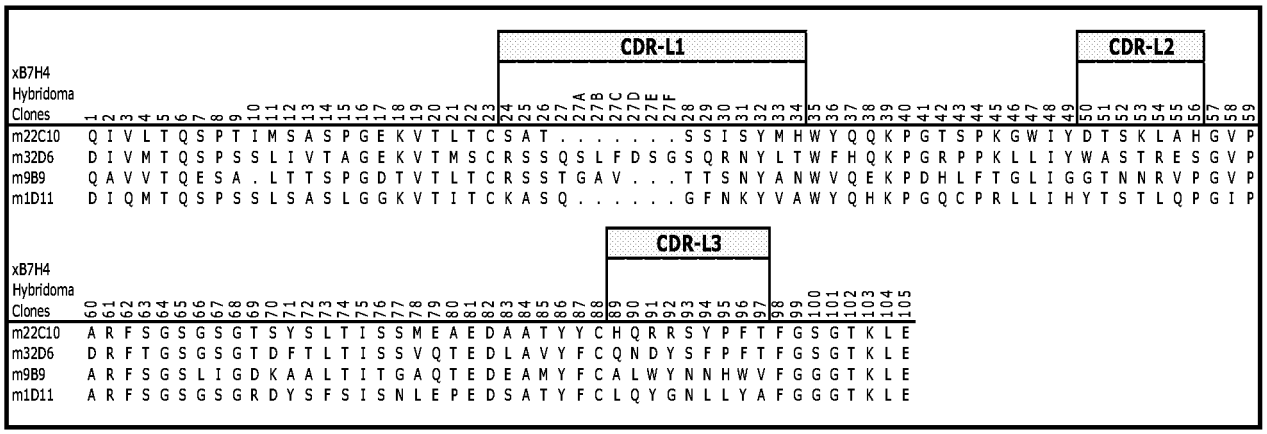
1D11*



22C10

FIGURE 5

xB7H4 Hybridoma Clones VL SEQ Alignment



xB7H4 Hybridoma Clones VH SEQ Alignment

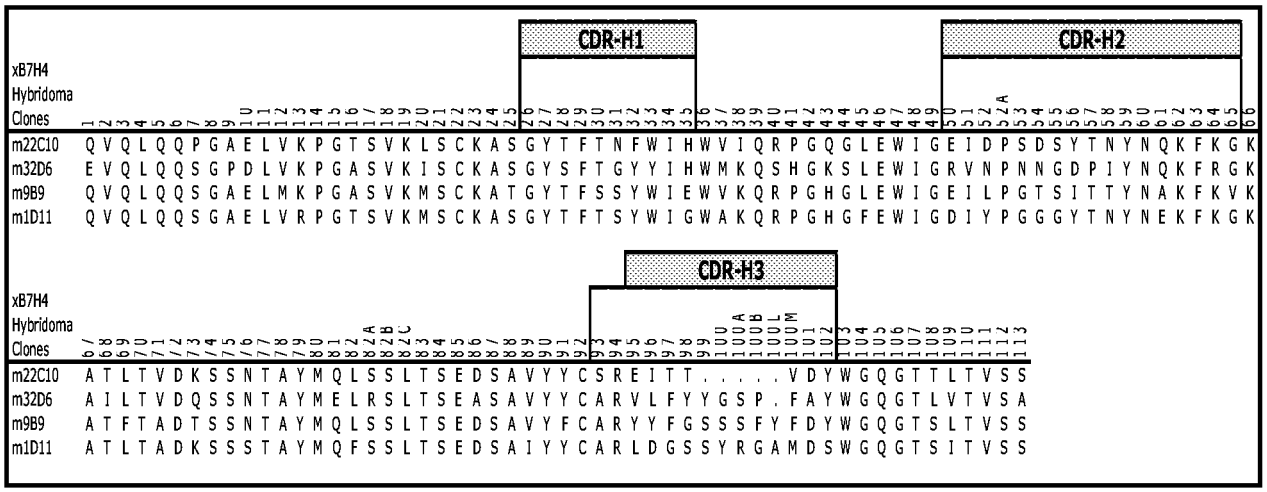
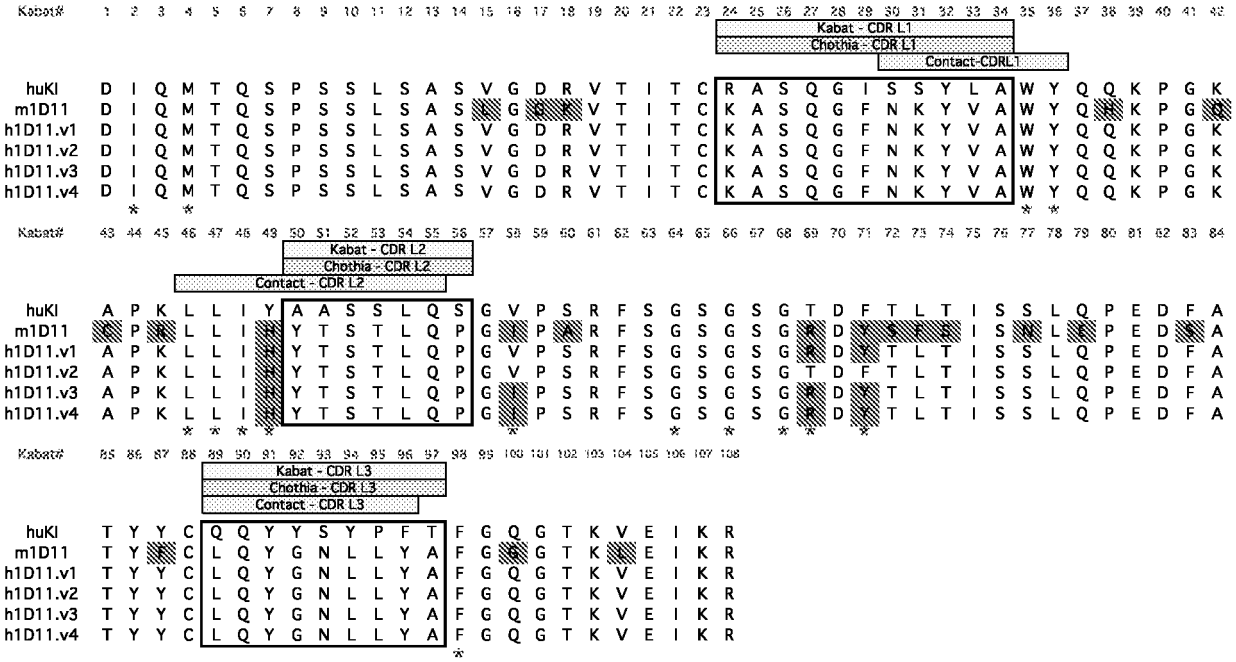


FIGURE 6

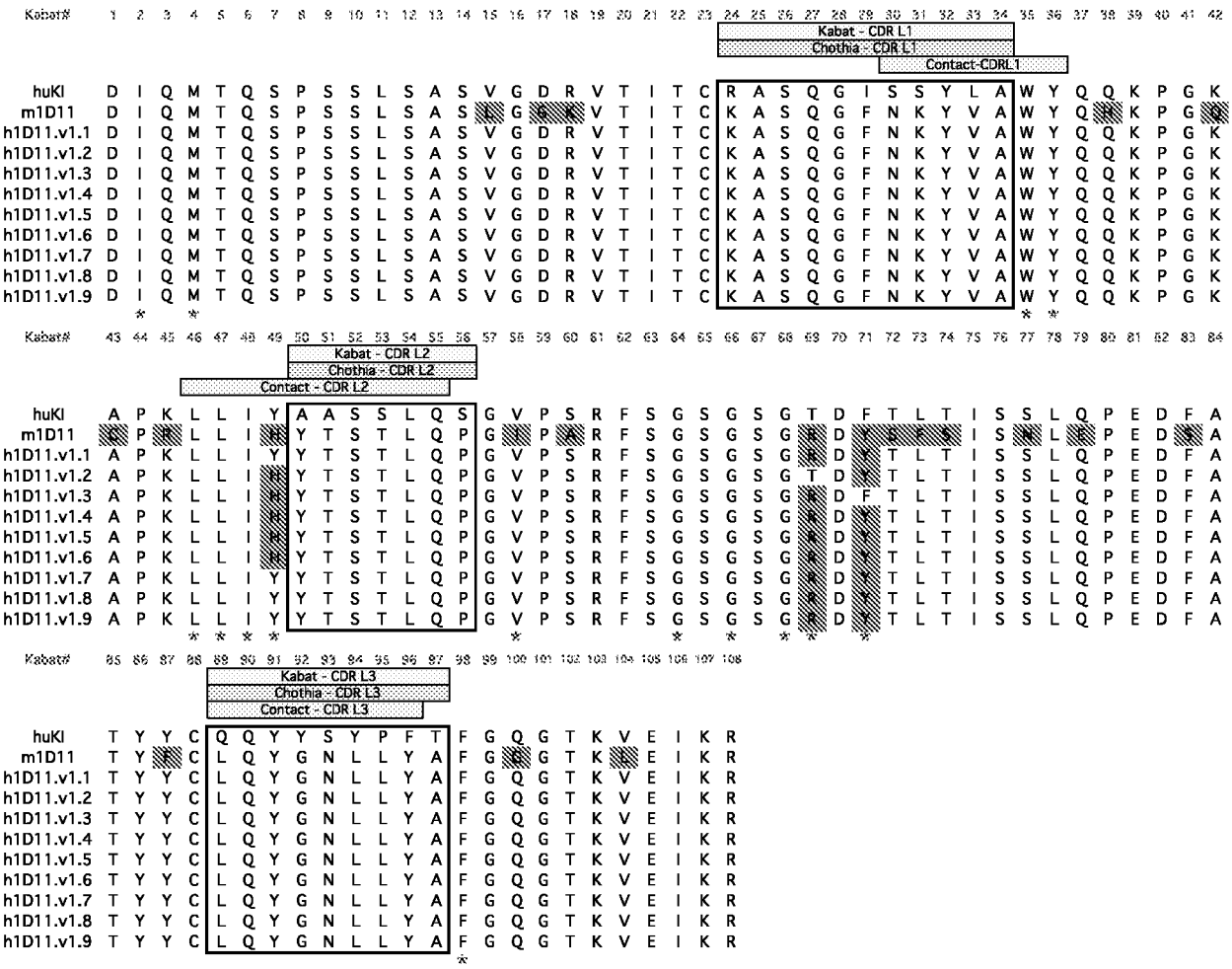
Light Chain Variable Domain Sequence
Alignment of xB7H4 m1D11 & h1D11.v1-4 with HuKI



Highlight framework difference by comparison m1D11 and h1D11.v1-4 to consensus human VL kappa 1

FIGURE 6 (continued)

Light Chain Variable Domain Sequence
Alignment of xB7H4 m1D11 & h1D11.v1.1-1.9 with HuKI



Highlight framework difference by comparison m1D11 and h1D11.v1.1-1.9 to consensus human VL kappa 1

FIGURE 7

Heavy Chain Variable Domain Sequence
Alignment of xB7H4 m1D11 & h1D11.v1-4 with HuVH1

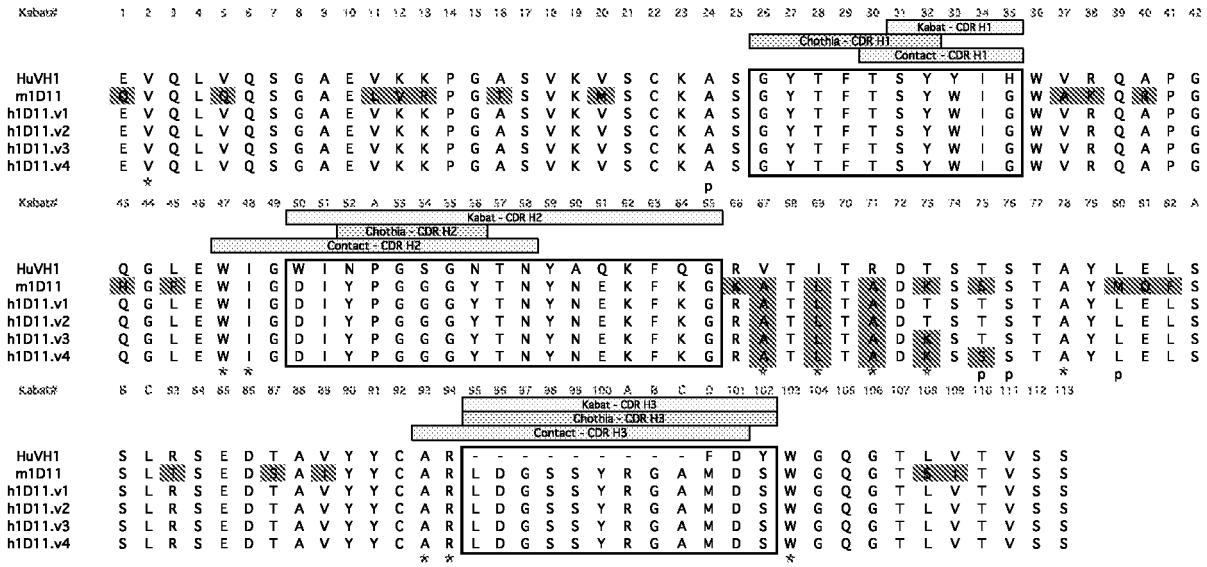
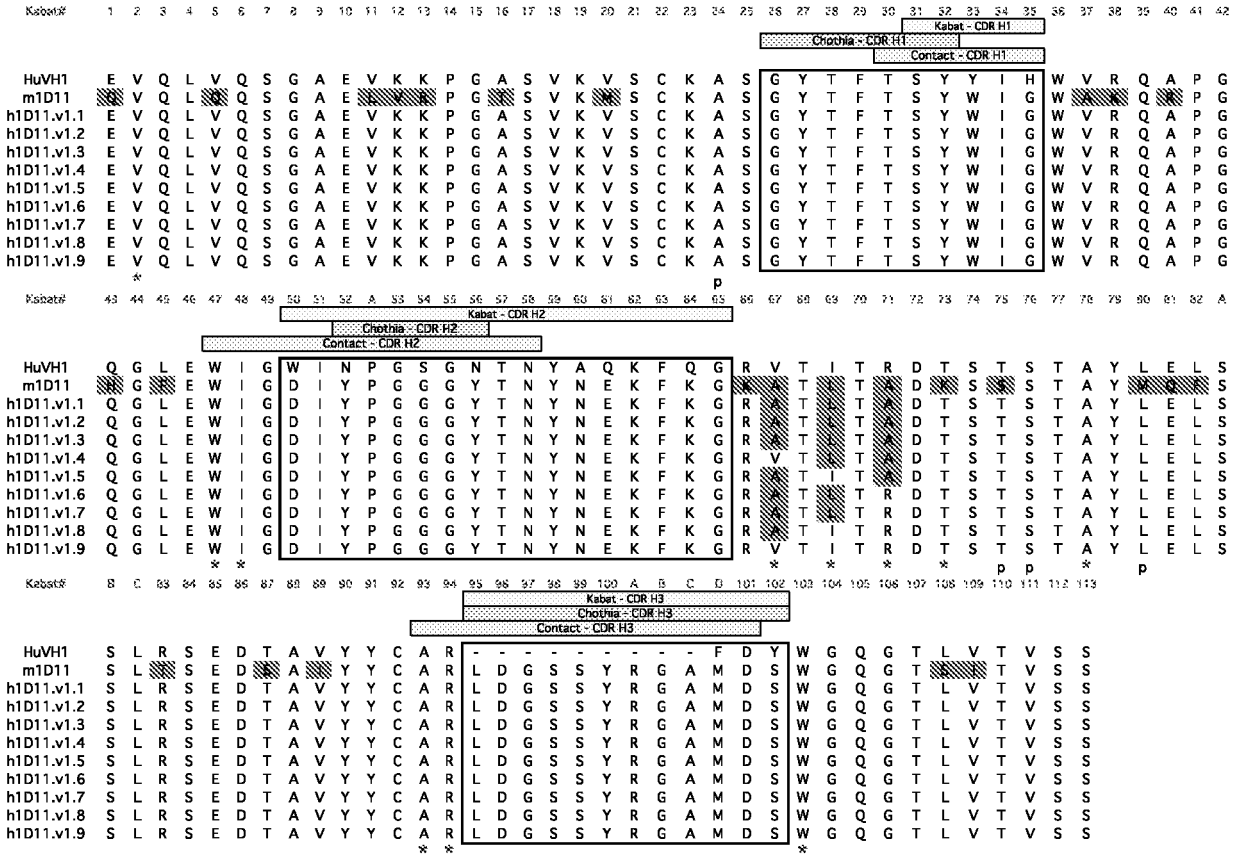


FIGURE 7

Highlight framework difference by comparison m1D11 and h1D11.v1-4 to consensus human VH subgroup 1

FIGURE 7 (continued)

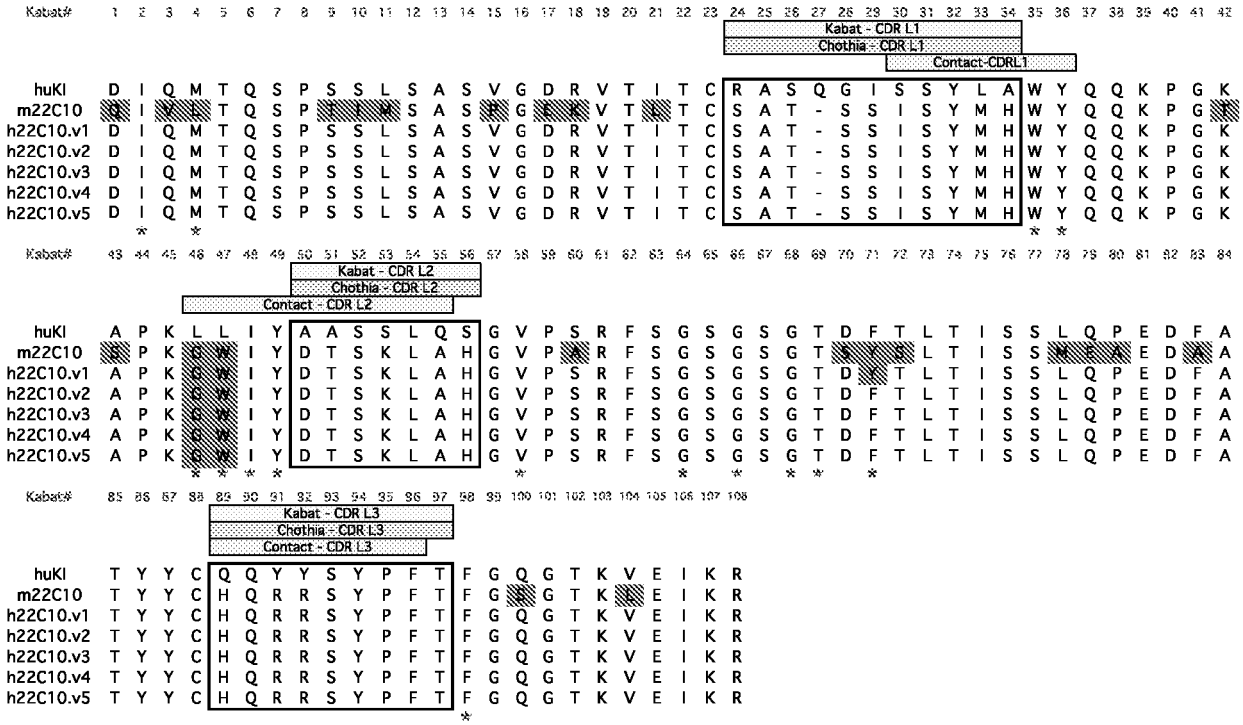
Heavy Chain Variable Domain Sequence Alignment of xB7H4 m1D11 & h1D11.v1.1-1.9 with HuVH1



Highlight framework difference by comparison m1D11 and h1D11.v1.1-1.9 to consensus human VH subgroup 1

FIGURE 8

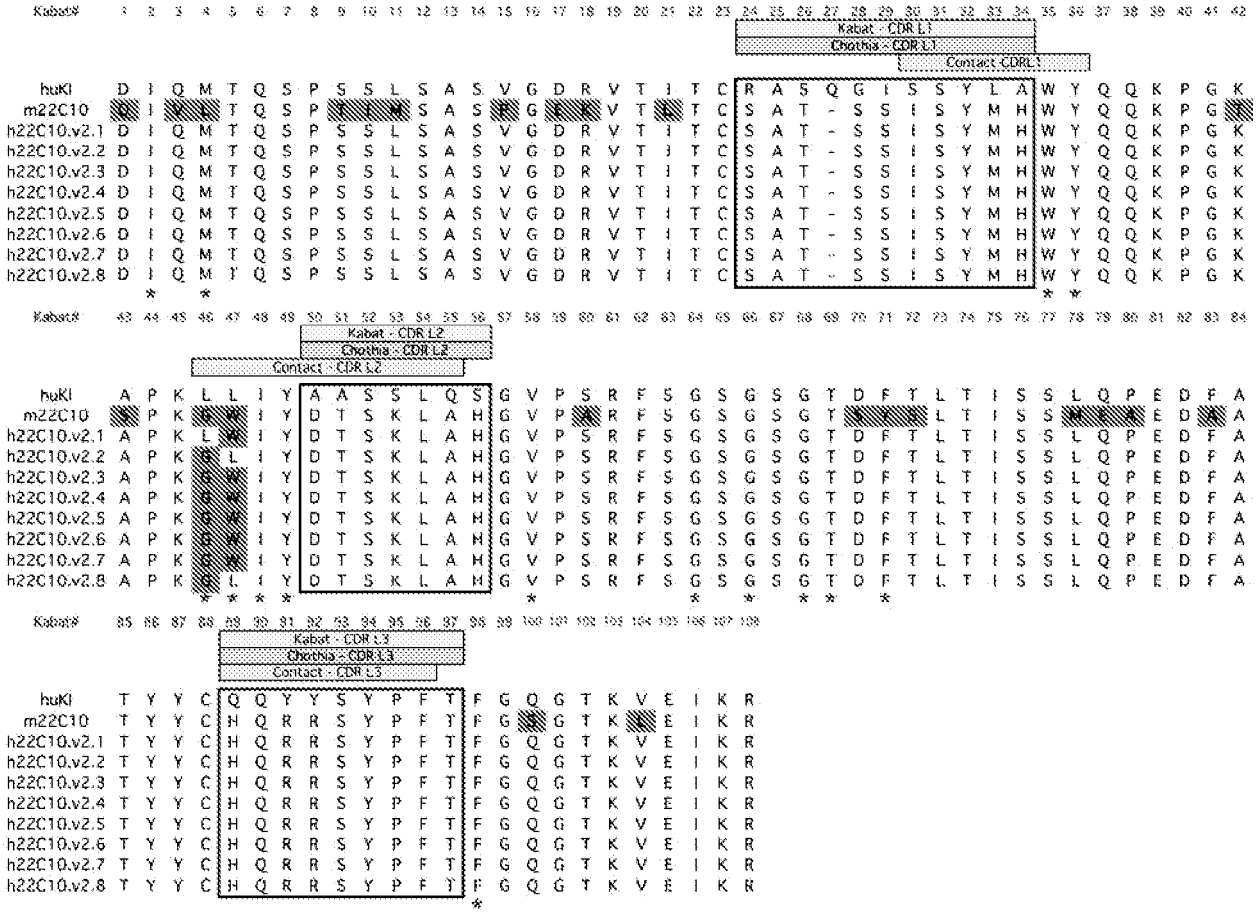
Light Chain Variable Domain Sequence
Alignment of xB7H4 m22C10 & h22C10.v1-5 with HuKI



Highlight framework difference by comparison m22C10 and h22C10.v1-5 to consensus human VL kappa 1

FIGURE 8 (continued)

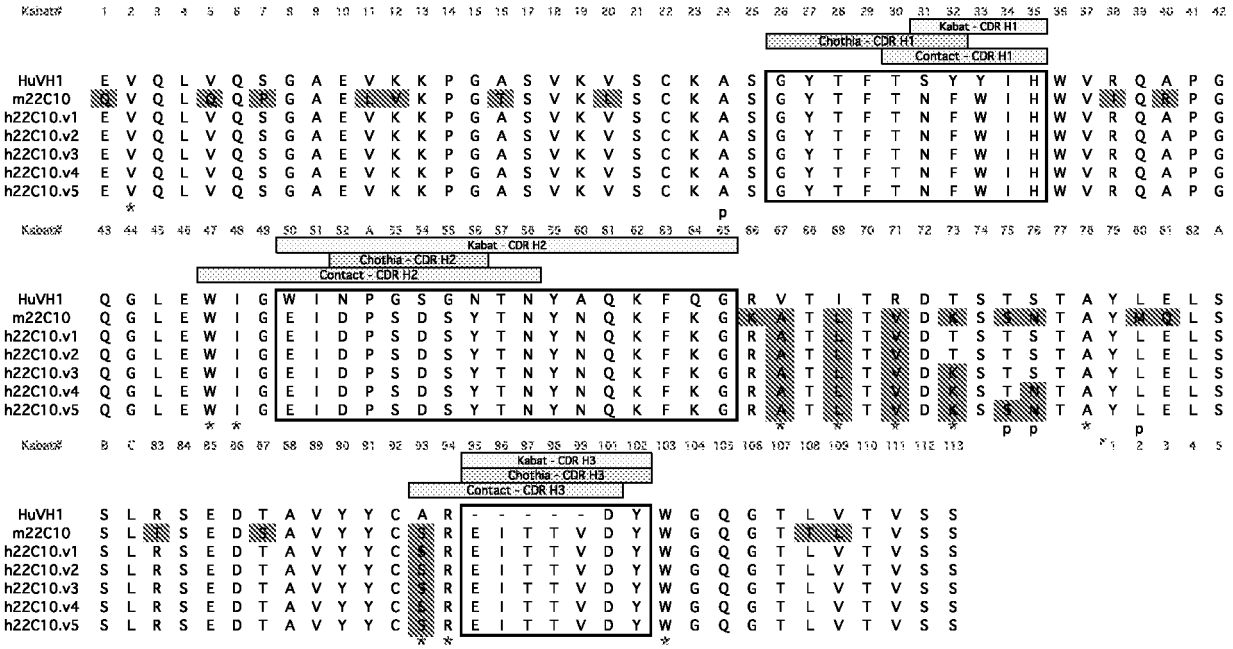
Light Chain Variable Domain Sequence
Alignment of xB7H4 m22C10 & h22C10.v2.1-2.8 with HuKI



Highlight framework difference by comparison m22C10 and h22C10.v2.1-2.8 to consensus human VL kappa 1

FIGURE 9

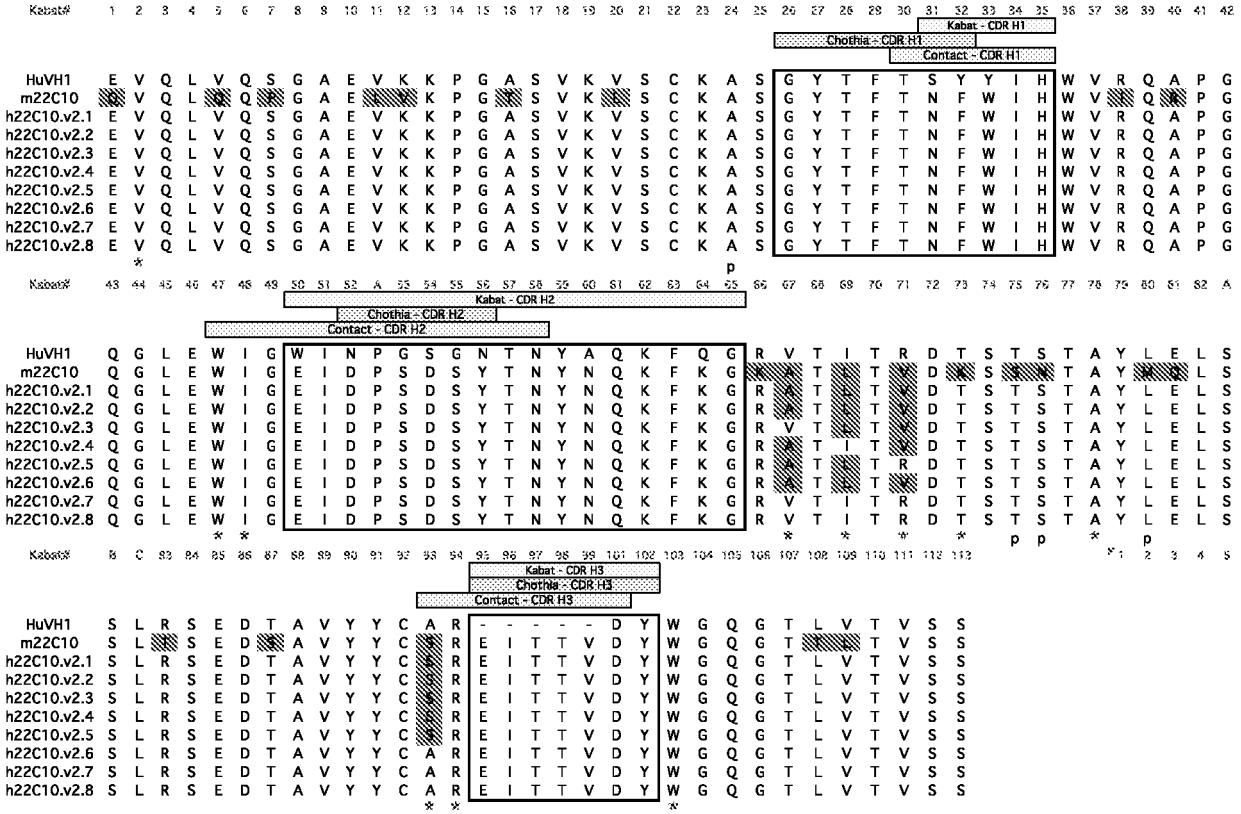
Heavy Chain Variable Domain Sequence
Alignment of xB7H4 m22C10 & h22C10.v1-5 with HuVH1



Highlight framework difference by comparison m22C10 and h22C10.v1-5 to consensus human VH subgroup 1

FIGURE 9 (continued)

Heavy Chain Variable Domain Sequence
Alignment of xB7H4 m22C10 & h22C10.v2.1-2.8 with HuVH1



Highlight framework difference by comparison m22C10 and h22C10.v2.1-2.8 to consensus human VH subgroup 1

FIGURE 10

	Human	Chimp	Cyno	Mouse	Rat
Identity %	100	96.09	98.6	87.63	86.87
Similarity %	100	97.42	98.8	90.12	89.3

Rat B7-H4 is 97.17
Identical to Mouse B7-H4

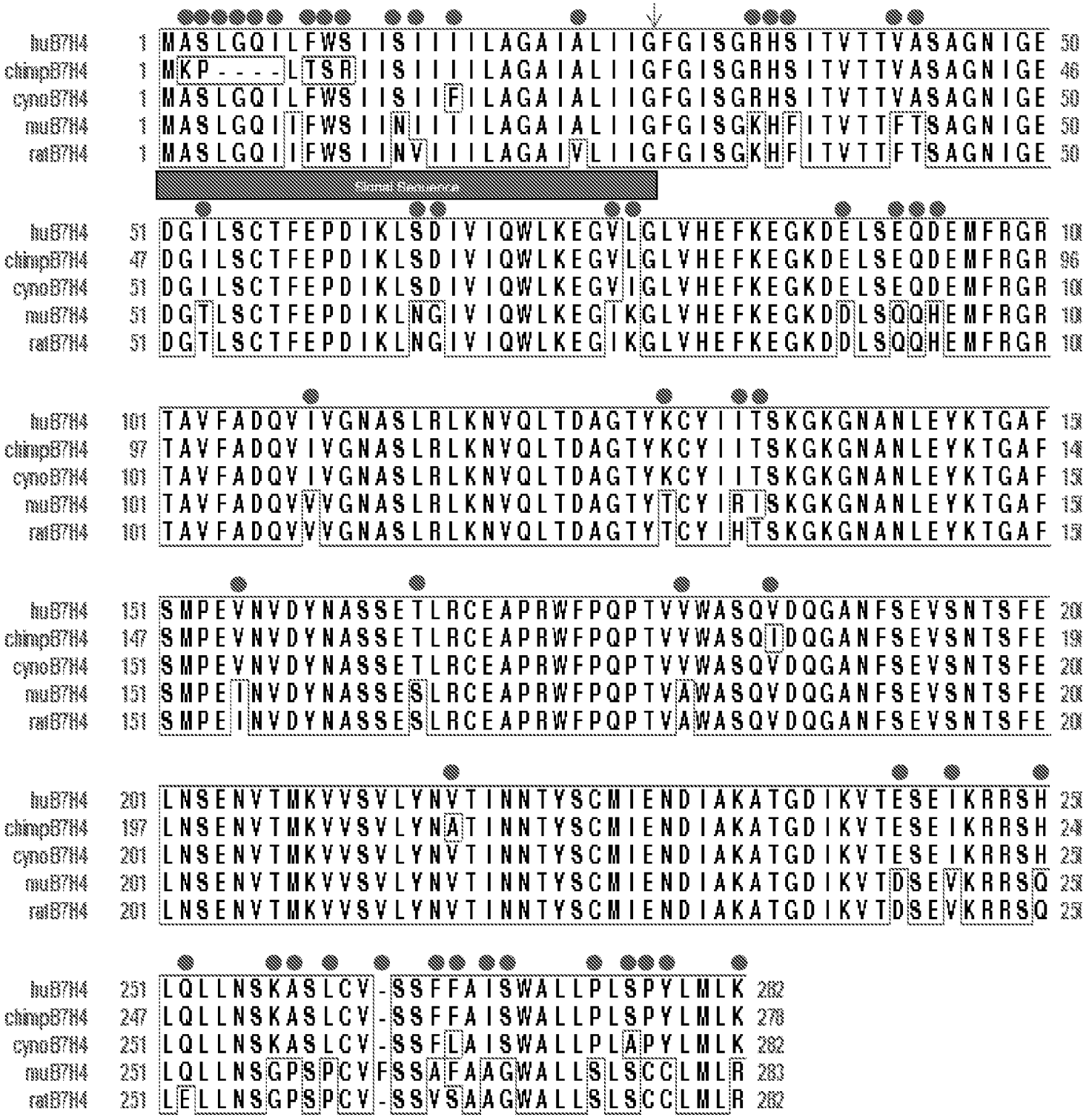


FIGURE 11

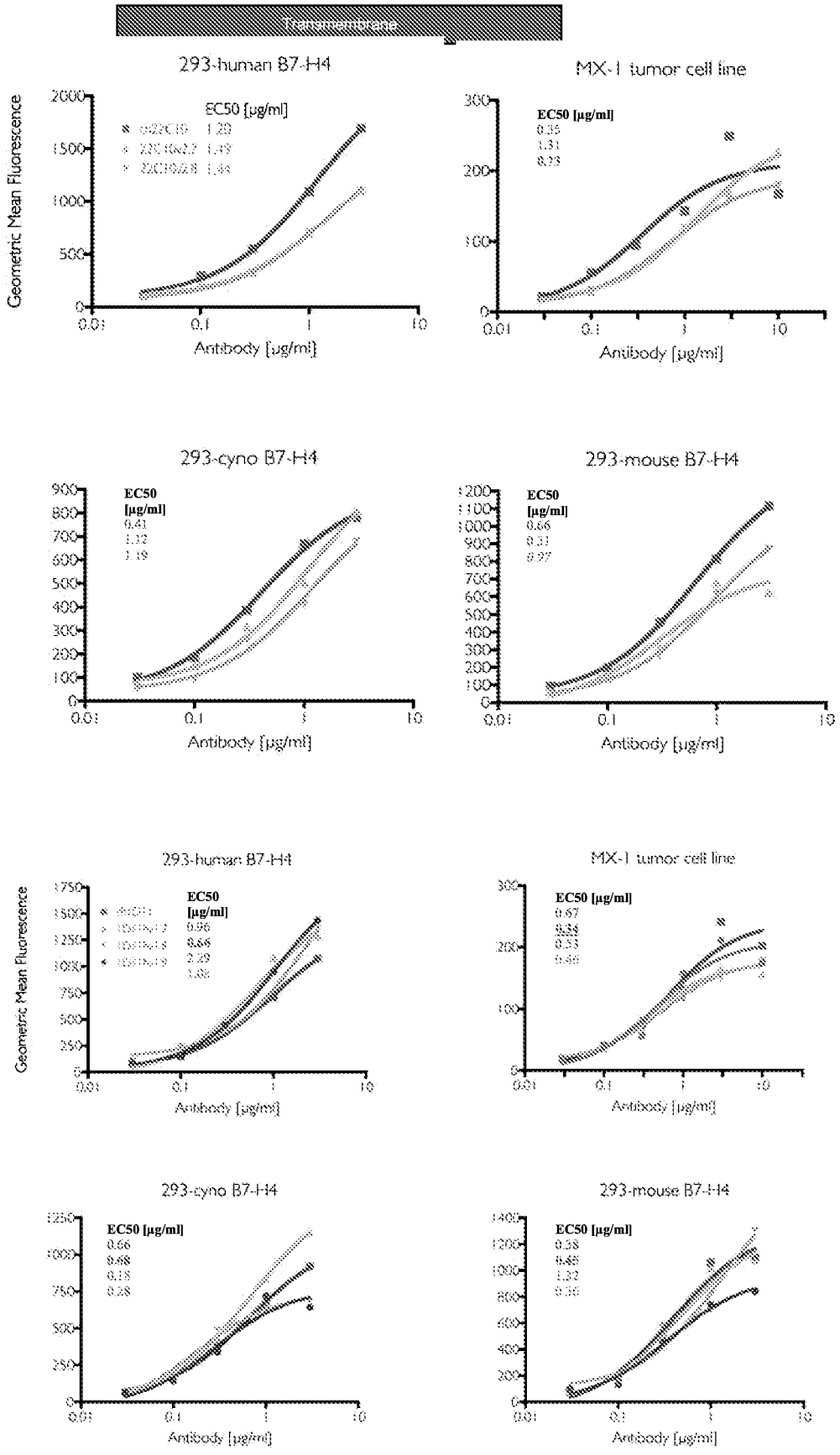

Transmembrane
293-human B7-H4
MX-1 tumor cell line
293-cyno B7-H4
293-mouse B7-H4
Geometric Mean Fluorescence
Antibody [µg/ml]
EC50 [µg/ml]
EC50 [µg/ml]
0.35
1.31
0.23
EC50
[µg/ml]
0.41
1.32
1.19
EC50
[µg/ml]
0.66
0.31
0.27
293-human B7-H4
MX-1 tumor cell line
293-cyno B7-H4
293-mouse B7-H4
EC50
[µg/ml]
0.96
0.66
2.49
EC50 [µg/ml]
0.67
0.33
0.66
EC50 [µg/ml]
0.66
0.68
0.18
0.28
EC50 [µg/ml]
0.38
0.65
1.32
0.36

FIGURE 12

Antibody	Affinity (MX-1)	Affinity of parent antibody (MX-1)	Fold to Parent mAb	Epitope	Mouse Framework Residues
1D11hv1.7	8.3 nM	7.8 nM	0.94	A	LC – R69, Y71 HC – A67, L69
1D11hv1.8	8.7 nM	7.8 nM	0.89	A	LC – R69, Y71 HC –A67
1D11hv1.9	7.8 nM	7.8 nM	1	A	LC – R69, Y71 HC – None
22C10hv2.7	6.3 nM	4.9nM	0.78	C	LC - G46, W47 HC - None
22C10hv2.8	10 nM	4.9nM	.49	C	LC - G46 HC - None

FIGURE 13

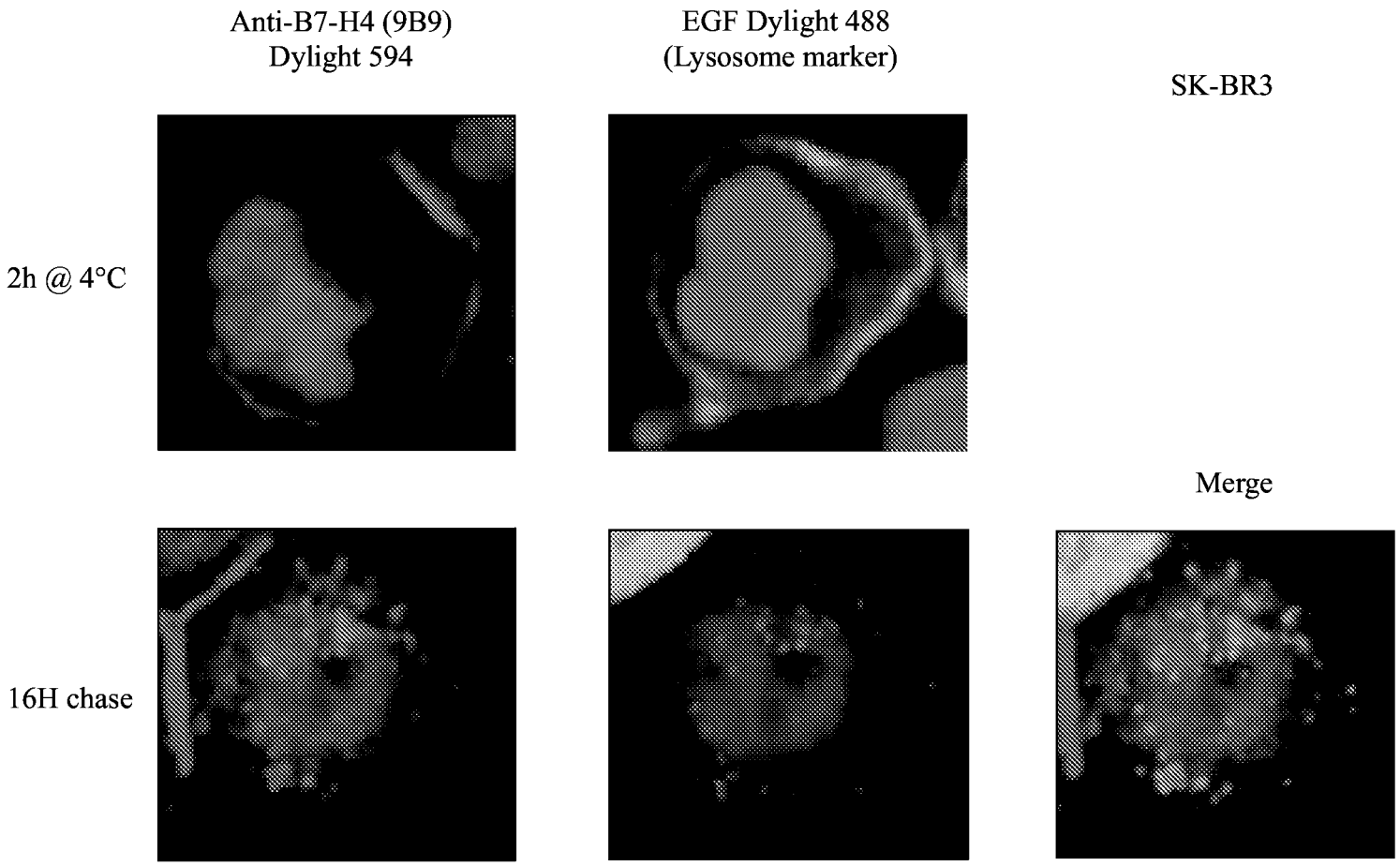
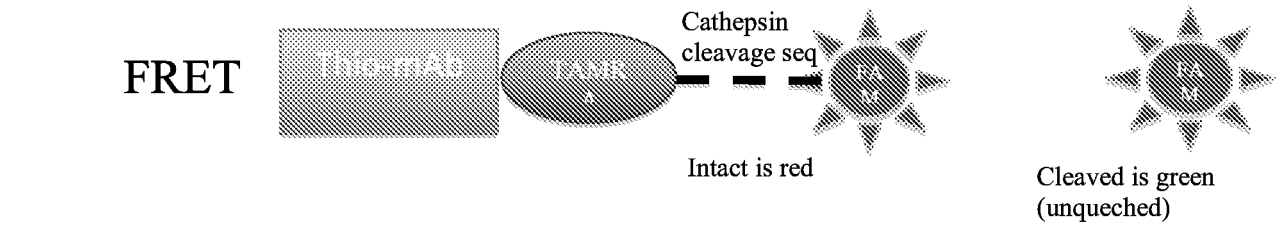

Anti-B7-H4 (9B9)
Dylight 594
EGF Dylight 488
(Lysosome marker)
SK-BR3
2h @ 4°C
Merge
16H chase

FIGURE 14


FRET
Cathepsin
cleavage seq
Intact is red
Cleaved is green
(unqueched)

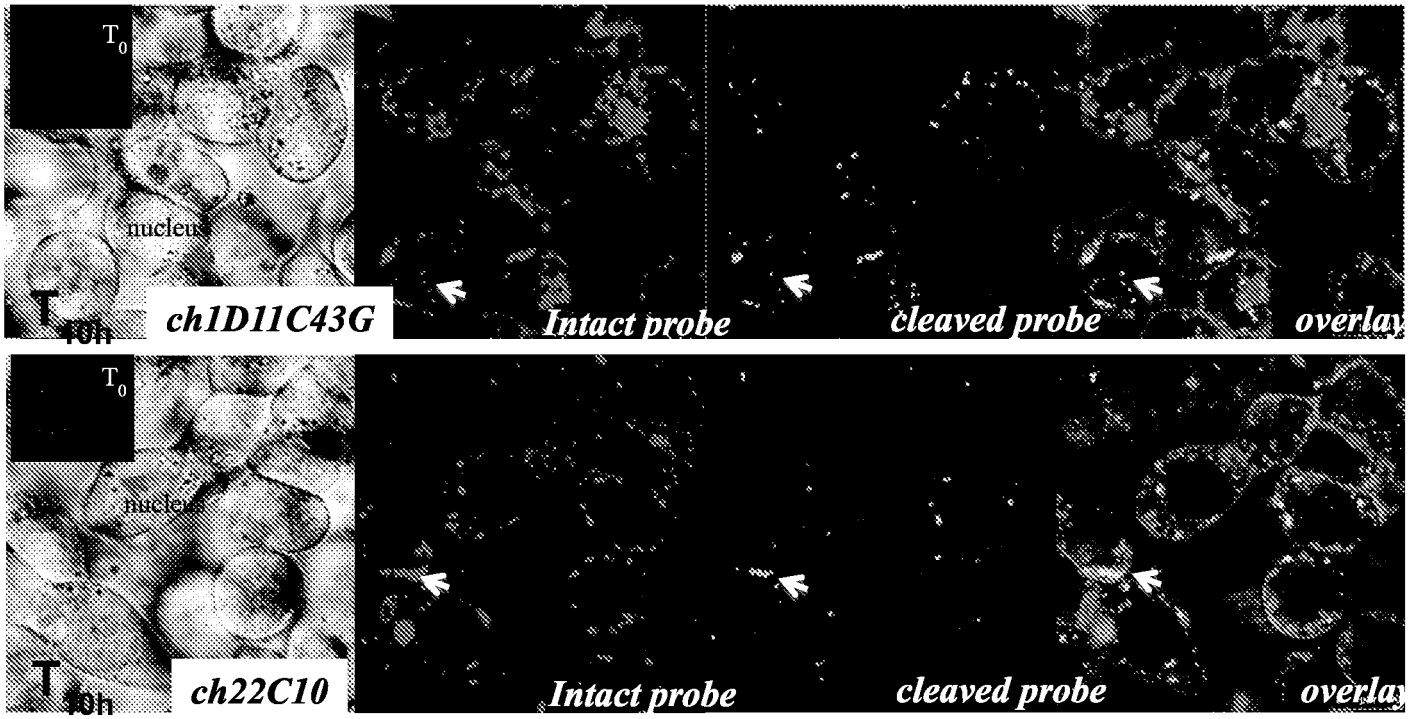

T0
nucleus
T10h
ch1D11C43G
Intact probe
cleaved probe
overlay
T0
nucleus
T10h
ch22C10
Intact probe
cleaved probe
overlay

FIGURE 15

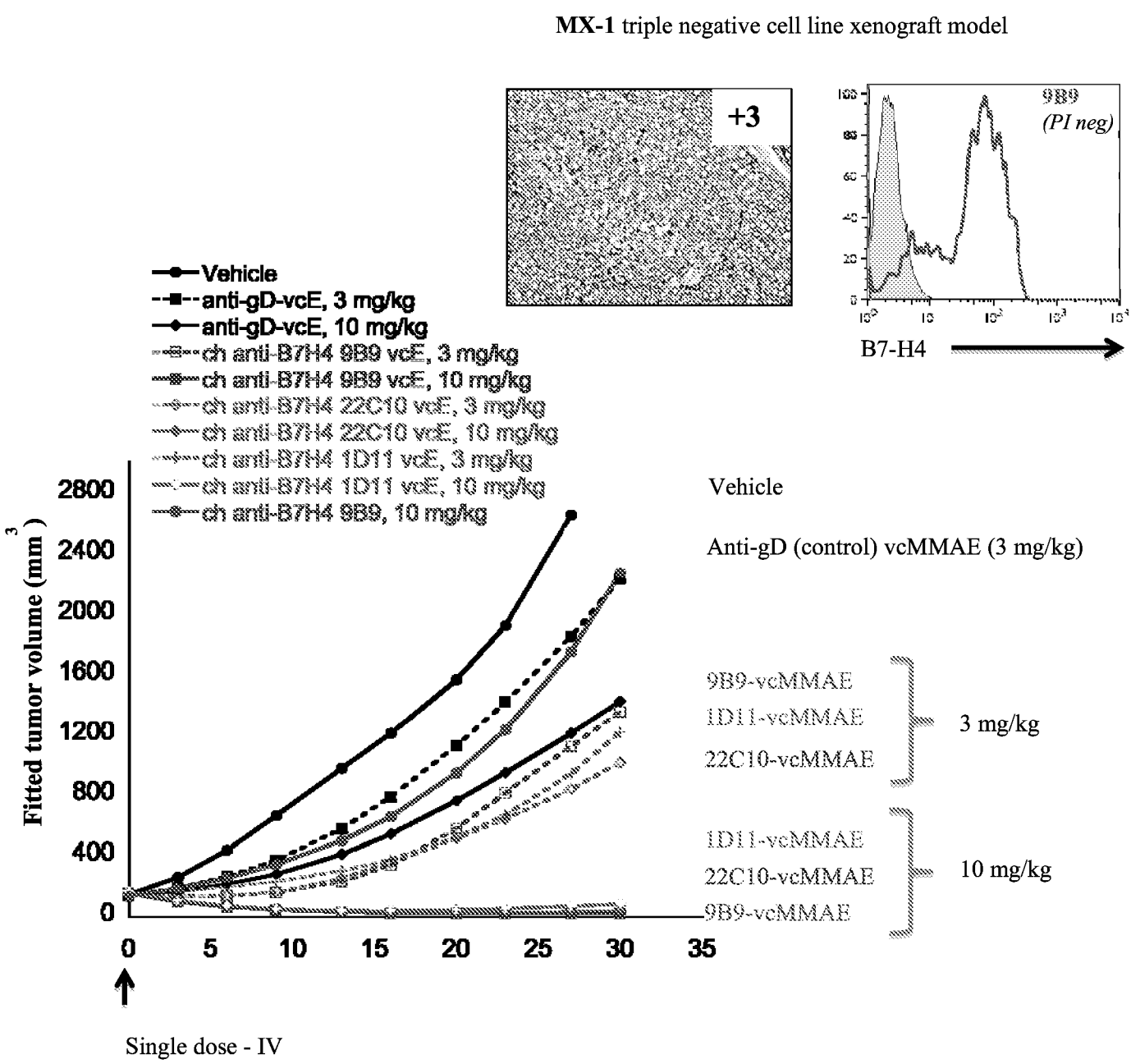
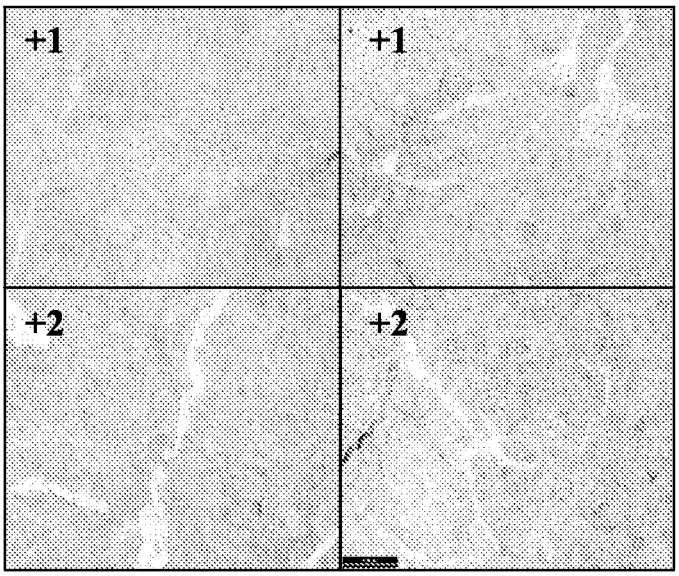

MX-1 triple negative cell line xenograft model
+3
9B9
(PI neg)
B7-H4
Vehicle
anti-gD-vcE, 3 mg/kg
anti-gD-vcE, 10 mg/kg
ch anti-B7H4 9B9 vcE, 3 mg/kg
ch anti-B7H4 9B9 vcE, 10 mg/kg
ch anti-B7H4 22C10 vcE, 3 mg/kg
ch anti-B7H4 22C10 vcE, 10 mg/kg
ch anti-B7H4 1D11 vcE, 3 mg/kg
ch anti-B7H4 1D11 vcE, 10 mg/kg
ch anti-B7H4 9B9, 10 mg/kg
Fitted tumor volume (mm 3)
2800
2400
2000
1600
1200
800
400
0
0
5
10
15
20
25
30
35
Vehicle
Anti-gD (control) vcMMAE (3 mg/kg)
9B9-vcMMAE
1D11-vcMMAE
22C10-vcMMAE
3 mg/kg
1D11-vcMMAE
22C10-vcMMAE
9B9-vcMMAE
10 mg/kg
Single dose - IV

FIGURE 16

HBCX-24 Triple negative breast cancer primary transplant model



6/6 positive for B7-H4; 1+ (n=4) / 2+ (n=2)

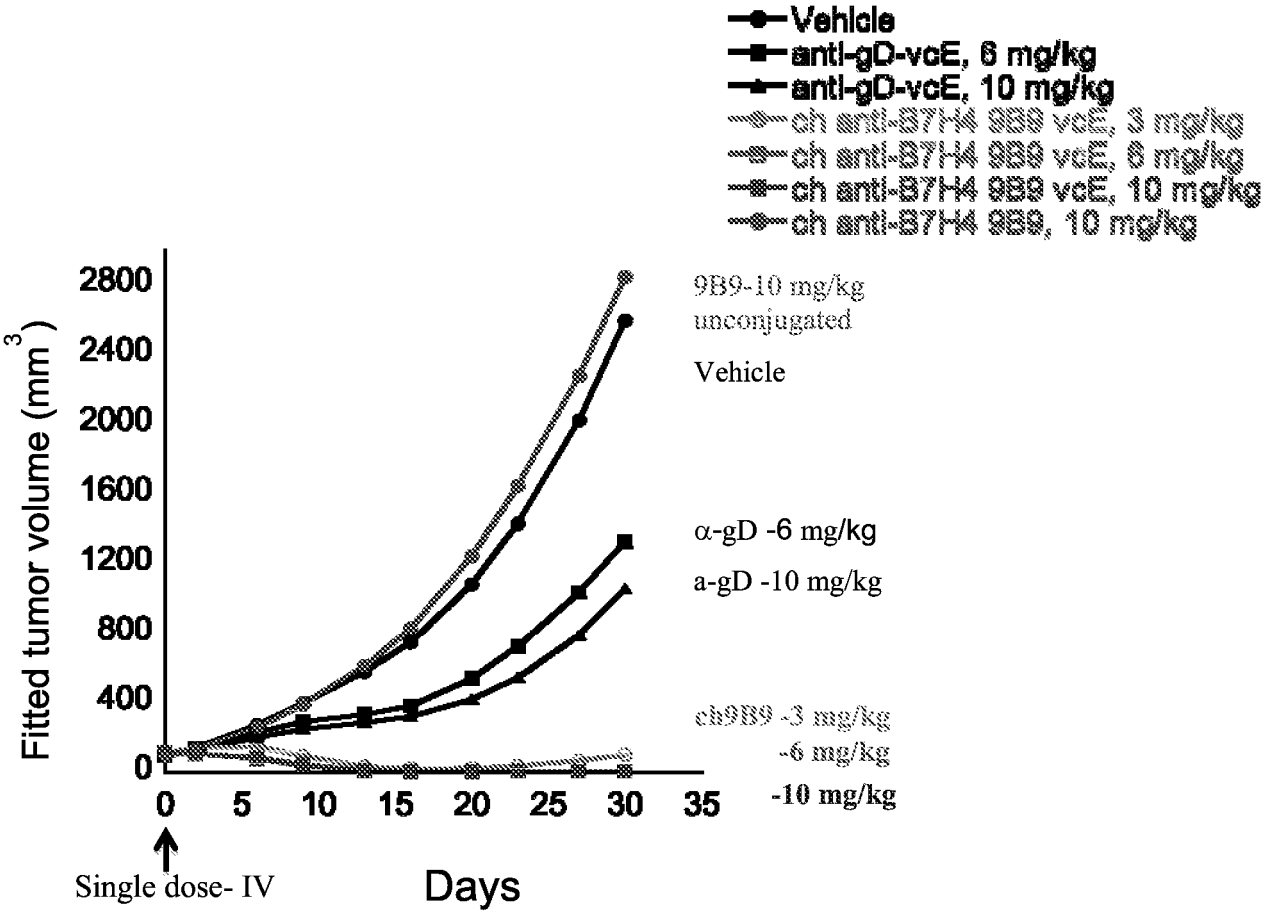
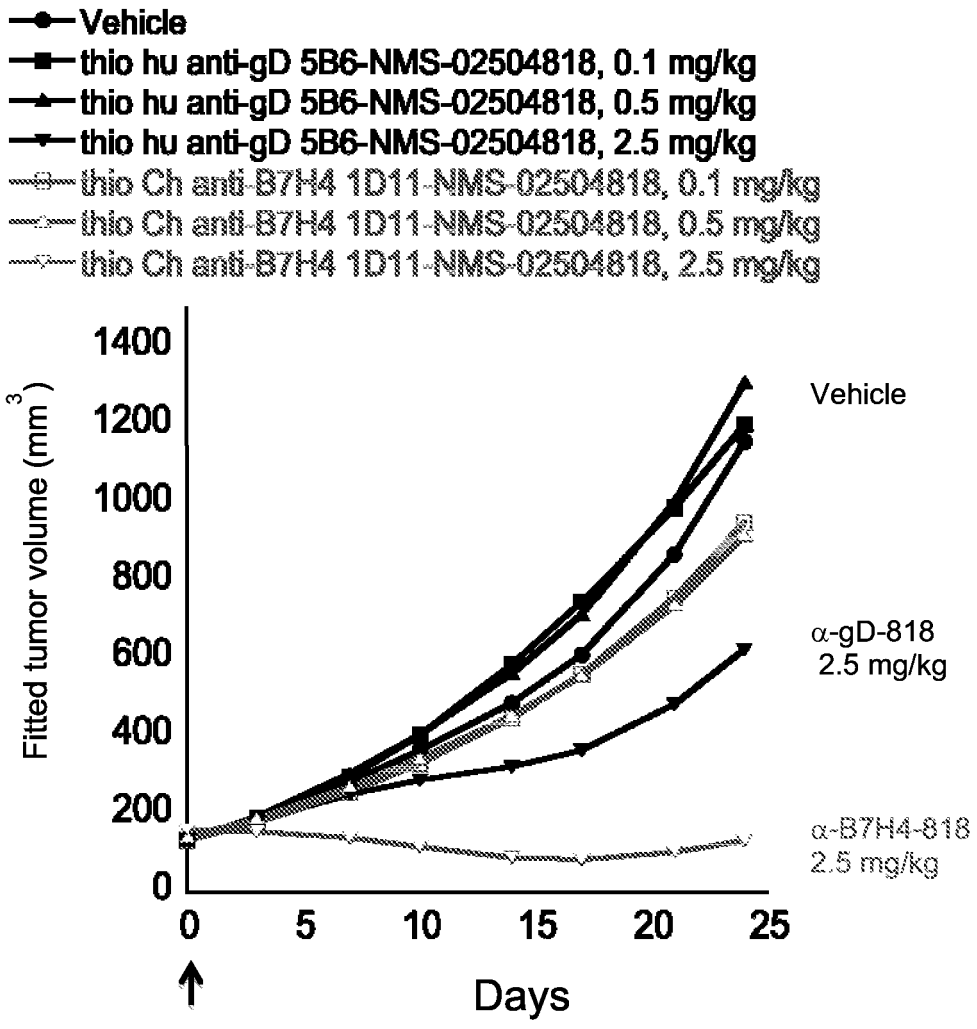


FIGURE 17



Single dose- IV

FIGURE 18

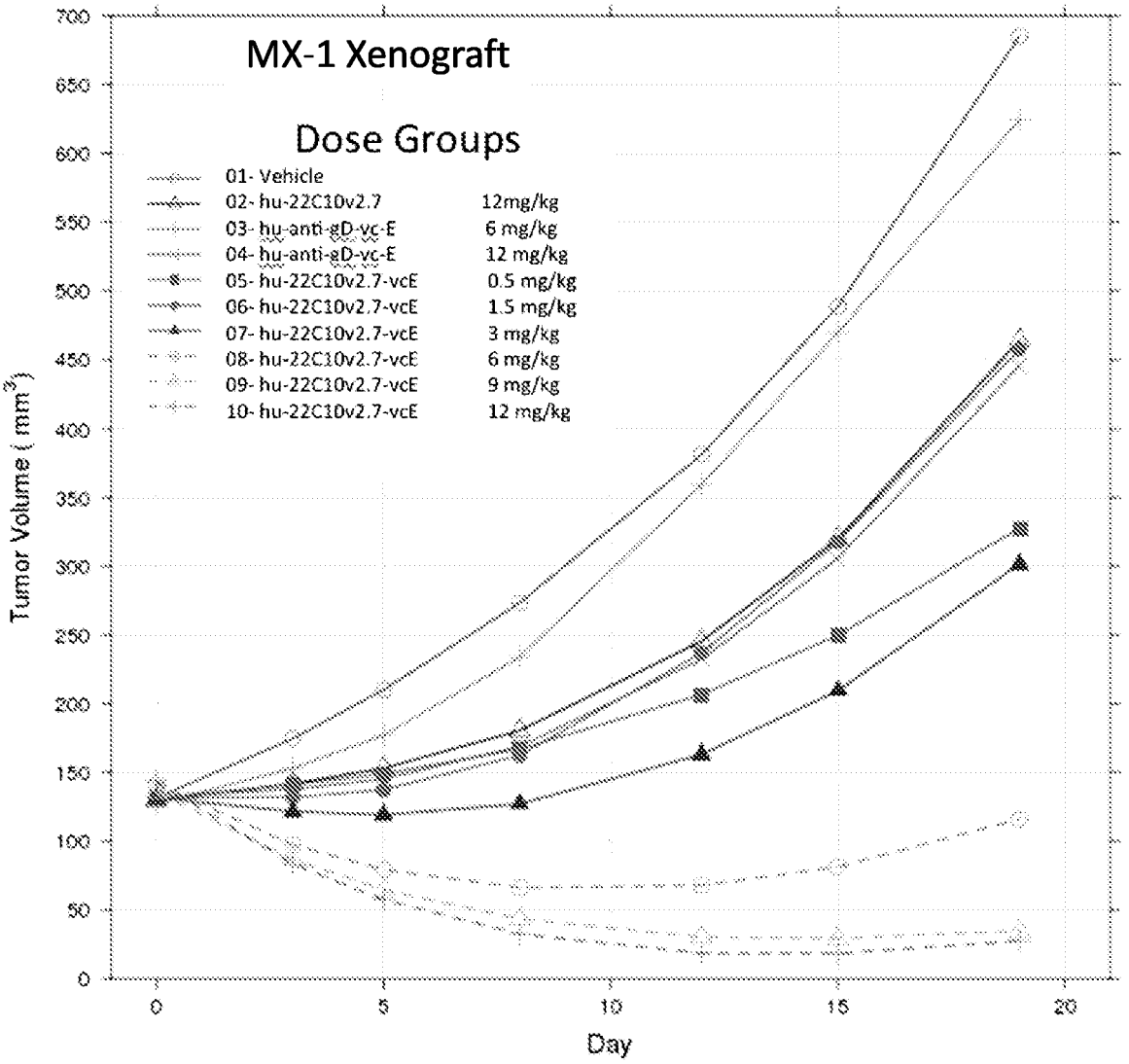
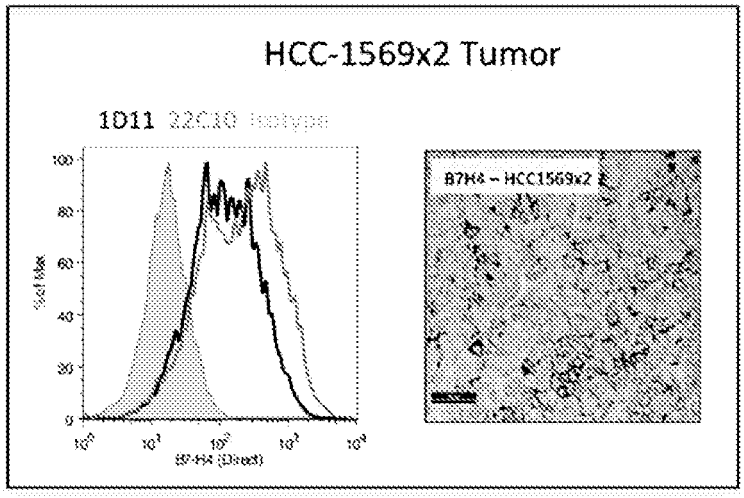
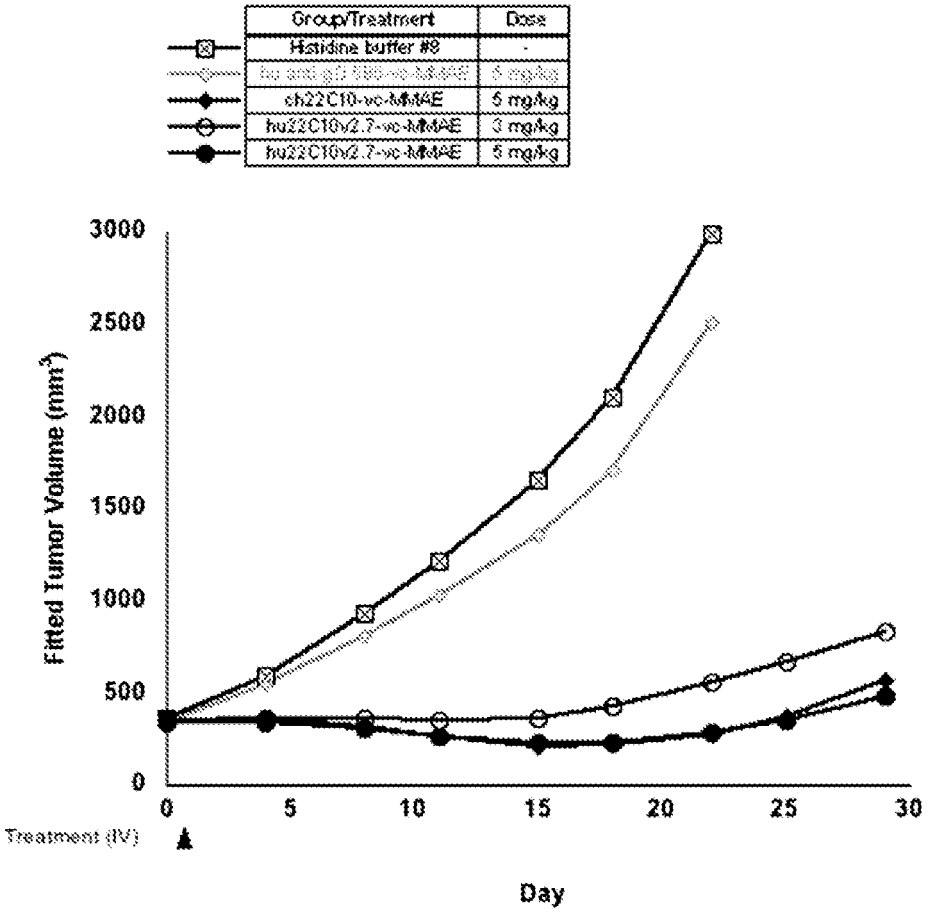

MX-1 Xenograft
Dose Groups
01- Vehicle
02- hu-22C10v2.7 12mg/kg
03- hu-anti-gD-vc-E 6 mg/kg
04- hu-anti-gD-vc-E 12 mg/kg
05- hu-22C10v2.7-vcE 0.5 mg/kg
06- hu-22C10v2.7-vcE 1.5 mg/kg
07- hu-22C10v2.7-vcE 3 mg/kg
08- hu-22C10v2.7-vcE 6 mg/kg
09- hu-22C10v2.7-vcE 9 mg/kg
10- hu-22C10v2.7-vcE 12 mg/kg
Tumor Volume (mm3)
Day
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
0
5
10
15
20

FIGURE 19

A


HCC-1569x2 Tumor
1D11 22C10 Isotype
B7H4 – HCC1569x2

B


Group/Treatment
Dose
Histidine buffer #8
ch22C10-vc-MMAE
5 mg/kg
hu22C10v2.7-vc-MMAE
3 mg/kg
hu22C10v2.7-vc-MMAE
5 mg/kg
Fitted Tumor Volume (mm³)
3000
2500
2000
1500
1000
500
0
0
5
10
15
20
25
30
Treatment (IV)
Day