SEQ ID NO	CDR	DNA sequence	Fab code
	VH3-CDR1		
1	1	GGATTTACCTTTTCTTCTTATGGTATGTCT	3ee9
2	2	GGATTTACCTTTTCTTCTTATGGTATGCAT	3ef2
3	3	GGATTTACCTTTTCTAATAATGCTATGAAT	1e4
4	4	GGATTTACCTTTTCTGATTATTCTATTAAT	3a4
5	5	GGATTTACCTTTTCTTCTTATGGTATTTCT	3ab4, 3ah10
6	6	GGATTTACCTTTTCTAATTATGGTATTTCT	3bb2
	VH3-CDR2		
7	1	GGTATCTCTTCTCTTGGTAGCACTACCTATTATGCGG ATAGCGTGAAAGGC	3ee9
8	2	GCTATCTCTTATTCTTCTAGCTCTACCTCTTATGCGG ATAGCGTGAAAGGC	3ef2
9	3	GGTATCTCTTATGATTCTAGCAAGACCTATTATGCGG ATAGCGTGAAAGGC	1e4
10	4	AATATCTCTTATTCTGGTAGCTCTACCTATTATGCGG ATAGCGTGAAAGGC	3a4
11	5	GGTATCTCTTATTCTGGTAGCTCTACCTATTATGCGG ATAGCGTGAAAGGC	3ab4
12	6	TCTATCTCTTATTCTGGTAGCAATACCTATTATGCGG ATAGCGTGAAAGGC	3ah10
13	7	GCTATCTCTTATTATGGTAGCAATACCTATTATGCGG ATAGCGTGAAAGGC	3bb2
	VH3-CDR3		
14	1	ACTGGTTCTCCTGGTACTTTTATGCATGGTGATCAT	3ee9
15	2	CTTTCTTATACTGGTTTTGCTGTT	3ef2
16	3	CTTACTTATACTGGTGCTTATCGT	1e4
17	4	TTTAAGTATTCTGGTGGTTCTGATTCT	3a4
18	5	CTTAAGCCTTATCGTCATAAGAATGGTTGGTTTGATT AT	3ab4
19	6	ATGAAGCCTATGCGTGGTTATTCTGGTGCTGTT	3ah10
20	7	CTTAAGGGTGGTTCTGGTTTTGTT	3bb2

Figure 1a

SEQ ID NO	CDR	DNA sequence	Fab code
	VH1b-CDR1		
21	1	GGATATACCTTTACTACTAATTATATGCAT	1aa1
	VH1b-CDR2		
22	1	ATTATCAATCCGCATAATGGCTCTACGTCTTACGCGC AGAAGTTTCAGGGC	1aa1
	VH1b-CDR3		
23	1	GGTCGTTATTTTCTTATGGATGTT	1aa1
	VH5-CDR1		
24	1	GGATATTCCTTTTCTAAGTATTGGATTGGT	5a6
25	2	GGATATTCCTTTACTGGTTATATTTCT	5aa3
	VH5-CDR2		
26	1	ATTATCTATCCGACTGATAGCTATACCCGTTATTCTC CGAGCTTTCAGGGC	5a6
27	2	ATTATCTATCCGGGTGATAGCTATACCAATTATTCTC CGAGCTTTCAGGGC	5aa3
	VH5-CDR3		
28	1	ACTCATGGTTATTATAAGAATGGTCGTATGGATGTT	5a6
29	2	TATTCTGGTCCTAATTGGGATGTTATGGATTCT	5aa3
SEQ ID NO	**CDR**	**DNA sequence**	**Fab code**
	Vk1-CDR1		
30	1	AGAGCGAGCCAGAATATTCTTTCTTATCTGAAT	1aa1
31	2	AGAGCGAGCCAGAATATTTCTAATTATCTGAAT	3ab4
32	3	AGAGCGAGCCAGGATATTTCTAATCGTCTGGCT	3ah10
33	4	AGAGCGAGCCAGGATATTAATAATTATCTGTCT	3ee9

Figure 1b

SEQ ID NO	CDR	DNA sequence	Fab code
	VLk1-CDR2		
34	1	TATGCTGCTTCTTCTTTGCAAAGC	1aa1
35	2	CATAAGGTTTCTAATTTGCAAAGC	3ab4
36	3	TATGATGCTAATTCTTTGCAAAGC	3ah10
37	4	TATGGTGCTTCTAATTTGCAAAGC	3ee9
	VLk1-CDR3		
38	1	CAGCAGTATGGTTCTGTTCCT	1aa1
39	2	CTTCAGTATGATGATTTTCCTCGT	3ab4
40	3	TTTCAGTATTCTGGTCCT	3ah10
41	4	CAGCAGTATTATGGTCGTCCTACT	3ee9
	VLk2-CDR1		
42	1	AGAAGCAGCCAAAGCCTGGTTTATTCTAATGGCAATACTACTCTGTCT	3bb2
43	2	AGAAGCAGCCAAAGCCTGGTTCATTCTAATGGCTATAATTATCTGTCT	5a6
	VLk2-CDR2		
44	1	TATGGTGTTTCTAATCGTGCCAGT	3bb2
45	2	TATCTTGGTTCTAATCGTGCCAGT	5a6
	VLk2-CDR3		
46	1	CAGCAGTATAATTCTTTTCCTCGT	3bb2
47	2	CATCAGTATGGTGATTTTTCTGAT	5a6
	VLλ1-CDR1		
48	1	AGCGGCAGCAGCAGCAACATTGGTTCTTATTATGTGAAT	5aa3
	VLλ1-CDR2		
49	1	CTTCTGATTTATGCTGATGATAAGCGTCCCTCA	5aa3

Figure 1c

SEQ ID NO	CDR	DNA sequence	Fab code
	VLλ1-CDR3		
50	1	CAGTCTTATGATTCTACTAAGGATGATTCT	5aa3
	VLλ3-CDR1		
51	1	AGCGGCGATAATCTTGGTTCTTATTATGTTCAT	1e4, 3ef2
52	2	AGCGGCGATAATCTTCCTGATTTTTATGTTCAT	3a4
	VLλ3-CDR2		
53	1	CTTGTGATTTATGATGATAATAATCGTCCCTCA	1e4, 3ef2
54	2	CTTGTGATTTCTGAGGATAATAAGCGTCCCTCA	3a4
	VLλ3-CDR3		
55	1	CAGTCTTATGATTTTGGTAAGGTT	1e4, 3ef2
56	2	TCTACTTATGGTTATACTTATTCTTATTCT	3a4

Figure 1d

SEQ ID NO	CDR	Amino Acid sequence	Fab code
	VH3-CDR1		
57	1	GFTFSSYGMS	3ee9
58	2	GFTFSSYGMH	3ef2
59	3	GFTFSNNAMN	1e4
60	4	GFTFSDYSIN	3a4
61	5	GFTFSSYGIS	3ab4, 3ah10
62	6	GFTFSNYGIS	3bb2
	VH3-CDR2		
63	1	GISSLGSTTYYADSVKG	3ee9
64	2	AISYSSSSTSYADSVKG	3ef2
65	3	GISYDSSKTYYADSVKG	1e4
66	4	NISYSGSSTYYADSVKG	3a4
67	5	GISYSGSSTYYADSVKG	3ab4
68	6	SISYSGSNTYYADSVKG	3ah10
69	7	AISYYGSNTYYADSVKG	3bb2
	VH3-CDR3		
70	1	TGSPGTFMHGDH	3ee9
71	2	LSYTGFAV	3ef2
72	3	LTYTGAYR	1e4
73	4	FKYSGGSDS	3a4
74	5	LKPYRHKNGWFDY	3ab4
75	6	MKPMRGYSGAV	3ah10
76	7	LKGGSGFV	3bb2
	VH1b-CDR1		
77	1	GYTFTTNYMH	1aa1
	VH1b-CDR2		
78	1	IINPHNGSTSYAQKFQG	1aa1
	VH1b-CDR3		
79	1	GRYFLMDV	1aa1
	VH5-CDR1		
80	1	GYSFSKYWIG	5a6
81	2	GYSFTGYIS	5aa3

Figure 2a

SEQ ID NO	CDR	Amino Acid sequence	Fab code
	VH5-CDR2		
82	1	IIYPTDSYTRYSPSFQG	5a6
83	2	IIYPGDSYTNYSPSFQG	5aa3
	VH5-CDR3		
84	1	THGYYKNGRMDV	5a6
85	2	YSGPNWDVMDS	5aa3
	VLk1-CDR1		
86	1	RASQNILSYLN	1aa1
87	2	RASQNISNYLN	3ab4
88	3	RASQDISNRLA	3ah10
89	4	RASQDINNYLS	3ee9
	VLk1-CDR2		
90	1	YAASSLQS	1aa1
91	2	HKVSNLQS	3ab4
92	3	YDANSLQS	3ah10
93	4	YGASNLQS	3ee9
	VLk1-CDR3		
94	1	QQYGSVP	1aa1
95	2	LQYDDFPR	3ab4
96	3	FQYSGP	3ah10
97	4	QQYYGRPT	3ee9
	VLk2-CDR1		
98	1	RSSQSLVYSNGNTTLS	3bb2
99	2	RSSQSLVHSNGYNYLS	5a6
	VLk2-CDR2		
100	1	YGVSNRAS	3bb2
101	2	YLGSNRAS	5a6
	VLk2-CDR3		
102	1	QQYNSFPR	3bb2
103	2	HQYGDFSD	5a6

Figure 2b

SEQ ID NO	CDR	Amino Acid sequence	Fab code
	VLλ1-CDR1		
104	1	SGSSSNIGSYYVN	5aa3
	VLλ1-CDR2		
105	1	LLIYADDKRPS	5aa3
	VLλ1-CDR3		
106	1	QSYDSTKDDS	5aa3
	VLλ3-CDR1		
107	1	SGDNLGSYYVH	1e4, 3ef2
108	2	SGDNLPDFYVH	3a4
	VLλ3-CDR2		
109	1	LVIYDDNNRPS	1e4, 3ef2
110	2	LVISEDNKRPS	3a4
	VLλ3-CDR3		
111	1	QSYDFGKV	1e4, 3ef2
112	2	STYGYTYSYS	3a4

Figure 2c

SEQ ID NO	Anti-body chain	DNA sequence	Fab code
113	VH1b	GAATTGGTTCAGAGCGGCGCGGAAGTGAAAAAACCG GGCGCGAGCGTGAAAGTGAGCTGCAAAGCCTCCGGA TATACCTTTACTACTAATTATATGCATTGGGTCCGC CAAGCCCCTGGGCAGGGTCTCGAGTGGATGGGCATT ATCAATCCGCATAATGGCTCTACGTCTTACGCGCAG AAGTTTCAGGGCCGGGTGACCATGACCCGTGATACC AGCATTAGCACCGCGTATATGGAACTGAGCAGCCTG CGTAGCGAAGATACGGCCGTGTATTATTGCGCGCGT GGTCGTTATTTTCTTATGGATGTTTGGGGCCAAGGC ACCCTGGTGACGGTTAGCTCAGC	1aa1
114	Vk1	GATATCCAGATGACCCAGAGCCCGTCTAGCCTGAGC GCGAGCGTGGGTGATCGTGTGACCATTACCTGCAGA GCGAGCCAGAATATTCTTTCTTATCTGAATTGGTAC CAGCAGAAACCAGGTAAAGCACCGAAACTATTAATT TATGCTGCTTCTTCTTTGCAAAGCGGGGTCCCGTCC CGTTTTAGCGGCTCTGGATCCGGCACTGATTTTACC CTGACCATTAGCAGCCTGCAACCTGAAGACTTTGCG GTTTATTATTGCCAGCAGTATGGTTCTGTTCCTACC TTTGGCCAGGGTACGAAAGTTGAAATTAAACGTACG	1aa1
115	VH3	GAATTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCG GGCGGCAGCCTGCGTCTGAGCTGCGCGGCCTCCGGA TTTACCTTTTCTAATAATGCTATGAATTGGGTGCGC CAAGCCCCTGGGAAGGGTCTCGAGTGGGTGAGCGGT ATCTCTTATGATTCTAGCAAGACCTATTATGCGGAT AGCGTGAAAGGCCGTTTTACCATTTCACGTGATAAT TCGAAAAACACCCTGTATCTGCAAATGAACAGCCTG CGTGCGGAAGATACGGCCGTGTATTATTGCGCGCGT CTTACTTATACTGGTGCTTATCGTTGGGGCCAAGGC ACCCTGGTGACGGTTAGCTCAGC	1e4
116	VL3	GATATCGAACTGACCCAGCCGCCTTCAGTGAGCGTT GCACCAGGTCAGACCGCGCGTATCTCGTGTAGCGGC GATAATCTTGGTTCTTATTATGTTCATTGGTACCAG CAGAAACCCGGGCAGGCGCCAGTTCTTGTGATTTAT GATGATAATAATCGTCCCTCAGGCATCCCGGAACGC TTTAGCGGATCCAACAGCGGCAACACCGCGACCCTG ACCATTAGCGGCACTCAGGCGGAAGACGAAGCGGAT TATTATTGCCAGTCTTATGATTTTGGTAAGGTTGTG TTTGGCGGCGGCACGAAGTTAAC	1e4

Figure 3a

SEQ ID NO	Anti-body chain	DNA sequence	Fab code
117	VH3	GAATTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCG GGCGGCAGCCTGCGTCTGAGCTGCGCGGCCTCCGGA TTTACCTTTTCTGATTATTCTATTAATTGGGTGCGC CAAGCCCCTGGGAAGGGTCTCGAGTATGTGAGCAAT ATCTCTTATTCTGGTAGCTCTACCTATTATGCGGAT AGCGTGAAAGGCCGTTTTACCATTTCACGTGATAAT TCGAAAAACACCCTGTATCTGCAAATGAACAGCCTG CGTGCGGAAGATACGGCCGTGTATTATTGCGCGCGT TTTAAGTATTCTGGTGGTTCTGATTCTTGGGGCCAA GGCACCCTGGTGACGGTTAGCTCAGC	3a4
118	VL3	GATATCGAACTGACCCAGCCGCCTTCAGTGAGCGTT GCACCAGGTCAGACCGCGCGTATCTCGTGTAGCGGC GATAATCTTCCTGATTTTTATGTTCATTGGTACCAG CAGAAACCCGGGCAGGCGCCAGTTCTTGTGATTTCT GAGGATAATAAGCGTCCCTCAGGCATCCCGGAACGC TTTAGCGGATCCAACAGCGGCAACACCGCGACCCTG ACCATTAGCGGCACTCAGGCGGAAGACGAAGCGGAT TATTATTGCTCTACTTATGGTTATACTTATTCTTAT TCTGTGTTTGGCGGCGGCACGAAGTTAAC	3a4
119	VH3	GAATTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCG GGCGGCAGCCTGCGTCTGAGCTGCGCGGCCTCCGGA TTTACCTTTTCTTCTTATGGTATTTCTTGGGTGCGC CAAGCCCCTGGGAAGGGTCTCGAGTGGGTGAGCGGT ATCTCTTATTCTGGTAGCTCTACCTATTATGCGGAT AGCGTGAAAGGCCGTTTTACCATTTCACGTGATAAT TCGAAAAACACCCTGTATCTGCAAATGAACAGCCTG CGTGCGGAAGATACGGCCGTGTATTATTGCGCGCGT CTTAAGCCTTATCGTCATAAGAATGGTTGGTTTGAT TATTGGGGCCAAGGCACCCTGGTGACGGTTAGCTCA GC	3ab4
120	Vk1	GATATCCAGATGACCCAGAGCCCGTCTAGCCTGAGC GCGAGCGTGGGTGATCGTGTGACCATTACCTGCAGA GCGAGCCAGAATATTTCTAATTATCTGAATTGGTAC CAGCAGAAACCAGGTAAAGCACCGAAACTATTAATT CATAAGGTTTCTAATTTGCAAAGCGGGGTCCCGTCC CGTTTTAGCGGCTCTGGATCCGGCACTGATTTTACC CTGACCATTAGCAGCCTGCAACCTGAAGACTTTGCG GTTTATTATTGCCTTCAGTATGATGATTTTCCTCGT ACCTTTGGCCAGGGTACGAAAGTTGAAATTAAACGT ACG	3ab4

Figure 3b

SEQ ID NO	Anti-body chain	DNA sequence	Fab code
121	VH3	GAATTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCG GGCGGCAGCCTGCGTCTGAGCTGCGCGGCCTCCGGA TTTACCTTTTCTTCTTATGGTATTTCTTGGGTGCGC CAAGCCCCTGGGAAGGGTCTCGAGTGGGTGAGCTCT ATCTCTTATTCTGGTAGCAATACCTATTATGCGGAT AGCGTGAAAGGCCGTTTTACCATTTCACGTGATAAT TCGAAAAACACCCTGTATCTGCAAATGAACAGCCTG CGTGCGGAAGATACGGCCGTGTATTATTGCGCGCGT ATGAAGCCTATGCGTGGTTATTCTGGTGCTGTTTGG GGCCAAGGCACCCTGGTGACGGTTAGCTCAGC	3ah10
122	Vk1	GATATCCAGATGACCCAGAGCCCGTCTAGCCTGAGC GCGAGCGTGGGTGATCGTGTGACCATTACCTGCAGA GCGAGCCAGGATATTTCTAATCGTCTGGCTTGGTAC CAGCAGAAACCAGGTAAAGCACCGAAACTATTAATT TATGATGCTAATTCTTTGCAAAGCGGGGTCCCGTCC CGTTTTAGCGGCTCTGGATCCGGCACTGATTTTACC CTGACCATTAGCAGCCTGCAACCTGAAGACTTTGCG ACTTATTATTGCTTTCAGTATTCTGGTCCTACCTTT GGCCAGGGTACGAAAGTTGAAATTAAACGTACG	3ah10
123	VH3	GAATTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCG GGCGGCAGCCTGCGTCTGAGCTGCGCGGCCTCCGGA TTTACCTTTTCTAATTATGGTATTTCTTGGGTGCGC CAAGCCCCTGGGAAGGGTCTCGAGTGGGTGAGCGCT ATCTCTTATTATGGTAGCAATACCTATTATGCGGAT AGCGTGAAAGGCCGTTTTACCATTTCACGTGATAAT TCGAAAAACACCCTGTATCTGCAAATGAACAGCCTG CGTGCGGAAGATACGGCCGTGTATTATTGCGCGCGT CTTAAGGGTGGTTCTGGTTTTGTTTGGGGCCAAGGC ACCCTGGTGACGGTTAGCTCAGC	3bb2
124	Vk2	GATATCGTGATGACCCAGAGCCCACTGAGCCTGCCA GTGACTCCGGGCGAGCCTGCGAGCATTAGCTGCAGA AGCAGCCAAAGCCTGGTTTATTCTAATGGCAATACT ACTCTGTCTTGGTACCTTCAAAAACCAGGTCAAAGC CCGCAGCTATTAATTATGGTGTTTCTAATCGTGCC AGTGGGGTCCCGGATCGTTTTAGCGGCTCTGGATCC GGCACCGATTTTACCCTGAAAATTAGCCGTGTGGAA GCTGAAGACGTGGGCGTGTATTATTGCCAGCAGTAT AATTCTTTTCCTCGTACCTTTGGCCAGGGTACGAAA GTTGAAATTAAACGTACG	3bb2

Figure 3c

SEQ ID NO	Anti-body chain	DNA sequence	Fab code
125	VH3	GAATTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCG GGCGGCAGCCTGCGTCTGAGCTGCGCGGCCTCCGGA TTTACCTTTTCTTCTTATGGTATGTCTTGGGTGCGC CAAGCCCCTGGGAAGGGTCTCGAGTGGGTGAGCGGT ATCTCTTCTCTTGGTAGCACTACCTATTATGCGGAT AGCGTGAAAGGCCGTTTTACCATTTCACGTGATAAT TCGAAAAACACCCTGTATCTGCAAATGAACAGCCTG CGTGCGGAAGATACGGCCGTGTATTATTGCGCGCGT ACTGGTTCTCCTGGTACTTTTATGCATGGTGATCAT TGGGGCCAAGGCACCCTGGTGACGGTTAGCTCAGC	3ee9
126	Vk1	GATATCCAGATGACCCAGAGCCCGTCTAGCCTGAGC GCGAGCGTGGGTGATCGTGTGACCATTACCTGCAGA GCGAGCCAGGATATTAATAATTATCTGTCTTGGTAC CAGCAGAAACCAGGTAAAGCACCGAAACTATTAATT TATGGTGCTTCTAATTTGCAAAGCGGGGTCCCGTCC CGTTTTAGCGGCTCTGGATCCGGCACTGATTTTACC CTGACCATTAGCAGCCTGCAACCTGAAGACTTTGCG GTTTATTATTGCCAGCAGTATTATGGTCGTCCTACT ACCTTTGGCCAGGGTACGAAAGTTGAAATTAAACGT ACG	3ee9
127	VH5	GAATTGGTTCAGAGCGGCGCGGAAGTGAAAAAACCG GGCGAAAGCCTGAAAATTAGCTGCAAAGGTTCCGGA TATTCCTTTTCTAAGTATTGGATTGGTTGGGTGCGC CAGATGCCTGGGAAGGGTCTCGAGTGGATGGGCATT ATCTATCCGACTGATAGCTATACCCGTTATTCTCCG AGCTTTCAGGGCCAGGTGACCATTAGCGCGGATAAA AGCATTAGCACCGCGTATCTTCAATGGAGCAGCCTG AAAGCGAGCGATACGGCCATGTATTATTGCGCGCGT ACTCATGGTTATTATAAGAATGGTCGTATGGATGTT TGGGGCCAAGGCACCCTGGTGACGGTTAGCTCAGC	5a6
128	Vk2	GATATCGTGATGACCCAGAGCCCACTGAGCCTGCCA GTGACTCCGGGCGAGCCTGCGAGCATTAGCTGCAGA AGCAGCCAAAGCCTGGTTCATTCTAATGGCTATAAT TATCTGTCTTGGTACCTTCAAAAACCAGGTCAAAGC CCGCAGCTATTAATTTATCTTGGTTCTAATCGTGCC AGTGGGGTCCCGGATCGTTTTAGCGGCTCTGGATCC GGCACCGATTTTACCCTGAAAATTAGCCGTGTGGAA GCTGAAGACGTGGGCGTGTATTATTGCCATCAGTAT GGTGATTTTTCTGATACCTTTGGCCAGGGTACGAAA GTTGAAATTAAACGTACG	5a6

Figure 3d

SEQ ID NO	Anti-body chain	DNA sequence	Fab code
129	VH5	GAATTGGTTCAGAGCGGCGCGGAAGTGAAAAAACCG GGCGAAAGCCTGAAAATTAGCTGCAAAGGTTCCGGA TATTCCTTTACTGGTTATATTTCTTGGGTGCGCCAA GCCCCTGGGAAGGGTCTCGAGTGGATGGGCATTATC TATCCGGGTGATAGCTATACCAATTATTCTCCGAGC TTTCAGGGCCAGGTGACCATTAGCGCGGATAAAAGC ATTAGCACCGCGTATCTTCAATGGAGCAGCCTGAAA GCGAGCGATACGGCCATGTATTATTGCGCGCGTTAT TCTGGTCCTAATTGGGATGTTATGGATTCTTGGGGC CAAGGCACCCTGGTGACGGTTAGCTCAGC	5aa3
130	VL1	GATATCGTGCTGACCCAGCCGCCTTCAGTGAGTGGC GCACCAGGTCAGCGTGTGACCATCTCGTGTAGCGGC AGCAGCAGCAACATTGGTTCTTATTATGTGAATTGG TACCAGCAGTTGCCCGGGACGGCGCCGAAACTTCTG ATTTATGCTGATGATAAGCGTCCCTCAGGCGTGCCG GATCGTTTTAGCGGATCCAAAAGCGGCACCAGCGCG AGCCTTGCGATTACGGGCCTGCAAAGCGAAGACGAA GCGGATTATTATTGCCAGTCTTATGATTCTACTAAG GATGATTCTGTGTTTGGCGGCGGCACGAAGTTAAC	5aa3
131	VH3	GAATTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCG GGCGGCAGCCTGCGTCTGAGCTGCGCGGCCTCCGGA TTTACCTTTTCTTCTTATGGTATGCATTGGGTGCGC CAAGCCCCTGGGAAGGGTCTCGAGTATGTGAGCGCT ATCTCTTATTCTTCTAGCTCTACCTCTTATGCGGAT AGCGTGAAAGGCCGTTTTACCATTTCACGTGATAAT TCGAAAAACACCCTGTATCTGCAAATGAACAGCCTG CGTGCGGAAGATACGGCCGTGTATTATTGCGCGCGT CTTTCTTATACTGGTTTTGCTGTTTGGGGCCAAGGC ACCCTGGTGACGGTTAGCTCAGC	3ef2
132	VL3	GATATCGAACTGACCCAGCCGCCTTCAGTGAGCGTT GCACCAGGTCAGACCGCGCGTATCTCGTGTAGCGGC GATAATCTTGGTTCTTATTATGTTCATTGGTACCAG CAGAAACCCGGGCAGGCGCCAGTTCTTGTGATTTAT GATGATAATAATCGTCCCTCAGGCATCCCGGAACGC TTTAGCGGATCCAACAGCGGCAACACCGCGACCCTG ACCATTAGCGGCACTCAGGCGGAAGACGAAGCGGAT TATTATTGCCAGTCTTATGATTTTGGTAAGGTTGTG TTTGGCGGCGGCACGAAGTTAAC	3ef2

Figure 3e

SEQ ID NO	Anti-body chain	Protein sequence	Fab code
133	VH1b	ELVQSGAEVKKPGASVKVSCKASGYTFTTNYM HWVRQAPGQGLEWMGIINPHNGSTSYAQKFQG RVTMTRDTSISTAYMELSSLRSEDTAVYYCAR GRYFLMDVWGQGTLVTVSS	1aa1
134	Vk1	DIQMTQSPSSLSASVGDRVTITCRASQNILSY LNWYQQKPGKAPKLLIYAASSLQSGVPSRFSG SGSGTDFTLTISSLQPEDFAVYYCQQYGSVPT FGQGTKVEIKRT	1aa1
135	VH3	ELVESGGGLVQPGGSLRLSCAASGFTFSNNAM NWVRQAPGKGLEWVSGISYDSSKTYYADSVKG RFTISRDNSKNTLYLQMNSLRAEDTAVYYCAR LTYTGAYRWGQGTLVTVSS	1e4
136	VL3	DIELTQPPSVSVAPGQTARISCSGDNLGSYYV HWYQQKPGQAPVLVIYDDNNRPSGIPERFSGS NSGNTATLTISGTQAEDEADYYCQSYDFGKVV FGGGTKLTVL	1e4
137	VH3	ELVESGGGLVQPGGSLRLSCAASGFTFSDYSI NWVRQAPGKGLEYVSNISYSGSSTYYADSVKG RFTISRDNSKNTLYLQMNSLRAEDTAVYYCAR FKYSGGSDSWGQGTLVTVSS	3a4
138	VL3	DIELTQPPSVSVAPGQTARISCSGDNLPDFYV HWYQQKPGQAPVLVISEDNKRPSGIPERFSGS NSGNTATLTISGTQAEDEADYYCSTYGYTYSY SVFGGGTKL	3a4
139	VH3	ELVESGGGLVQPGGSLRLSCAASGFTFSSYGI SWVRQAPGKGLEWVSGISYSGSSTYYADSVKG RFTISRDNSKNTLYLQMNSLRAEDTAVYYCAR LKPYRHKNGWFDYWGQGTLVTVSS	3ab4
140	Vk1	DIQMTQSPSSLSASVGDRVTITCRASQNISNY LNWYQQKPGKAPKLLIHKVSNLQSGVPSRFSG SGSGTDFTLTISSLQPEDFAVYYCLQYDDFPR TFGQGTKVEIKRT	3ab4
141	VH3	ELVESGGGLVQPGGSLRLSCAASGFTFSSYGI SWVRQAPGKGLEWVSSISYSGSNTYYADSVKG RFTISRDNSKNTLYLQMNSLRAEDTAVYYCAR MKPMRGYSGAVWGQGTLVTVSS	3ah10
142	Vk1	DIQMTQSPSSLSASVGDRVTITCRASQDISNR LAWYQQKPGKAPKLLIYDANSLQSGVPSRFSG SGSGTDFTLTISSLQPEDFATYYCFQYSGPTF GQGTKVEIKRT	3ah10

Figure 4a

SEQ ID NO	Antibody chain	Protein sequence	Fab code
143	VH3	ELVESGGGLVQPGGSLRLSCAASGFTFSNYGI SWVRQAPGKGLEWVSAISYYGSNTYYADSVKG RFTISRDNSKNTLYLQMNSLRAEDTAVYYCAR LKGGSGFVWGQGTLVTVSS	3bb2
144	Vk2	DIVMTQSPLSLPVTPGEPASISCRSSQSLVYS NGNTTLSWYLQKPGQSPQLLIYGVSNRASGVP DRFSGSGSGTDFTLKISRVEAEDVGVYYCQQY NSFPRTFGQGTKVEIKRT	3bb2
145	VH3	ELVESGGGLVQPGGSLRLSCAASGFTFSSYGM SWVRQAPGKGLEWVSGISSLGSTTYYADSVKG RFTISRDNSKNTLYLQMNSLRAEDTAVYYCAR TGSPGTFMHGDHWGQGTLVTVSS	3ee9
146	Vk1	DIQMTQSPSSLSASVGDRVTITCRASQDINNY LSWYQQKPGKAPKLLIYGASNLQSGVPSRFSG SGSGTDFTLTISSLQPEDFAVYYCQQYYGRPT TFGQGTKVEIKRT	3ee9
147	VH5	ELVQSGAEVKKPGESLKISCKGSGYSFSKYWI GWVRQMPGKGLEWMGIIYPTDSYTRYSPSFQG QVTISADKSISTAYLQWSSLKASDTAMYYCAR THGYYKNGRMDVWGQGTLVTVSS	5a6
148	Vk2	DIVMTQSPLSLPVTPGEPASISCRSSQSLVHS NGYNYLSWYLQKPGQSPQLLIYLGSNRASGVP DRFSGSGSGTDFTLKISRVEAEDVGVYYCHQY GDFSDTFGQGTKVEIKRT	5a6
149	VH5	ELVQSGAEVKKPGESLKISCKGSGYSFTGYIS WVRQAPGKGLEWMGIIYPGDSYTNYSPSFQGQ VTISADKSISTAYLQWSSLKASDTAMYYCARY SGPNWDVMDSWGQGTLVTVSS	5aa3
150	VL1	DIVLTQPPSVSGAPGQRVTISCSGSSSNIGSY YVNWYQQLPGTAPKLLIYADDKRPSGVPDRFS GSKSGTSASLAITGLQSEDEADYYCQSYDSTK DDSVFGGGTKL	5aa3
151	VH3	ELVESGGGLVQPGGSLRLSCAASGFTFSSYGM HWVRQAPGKGLEYVSAISYSSSSTSYADSVKG RFTISRDNSKNTLYLQMNSLRAEDTAVYYCAR LSYTGFAVWGQGTLVTVSS	3ef2

Figure 4b

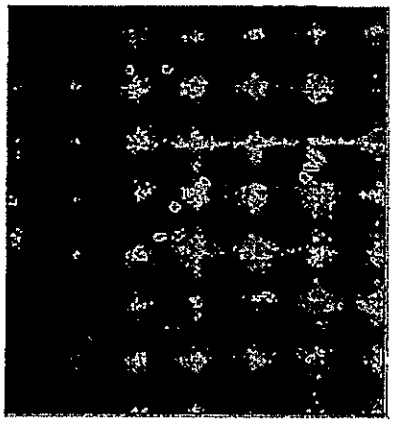
SEQ ID NO	Antibody chain	Protein sequence	Fab code
152	VL3	DIELTQPPSVSVAPGQTARISCSGDNLGSYYV HWYQQKPGQAPVLVIYDDNNRPSGIPERFSGS NSGNTATLTISGTQAEDEADYYCQSYDFGKVV FGGGTKL	3ef2

Figure 4c

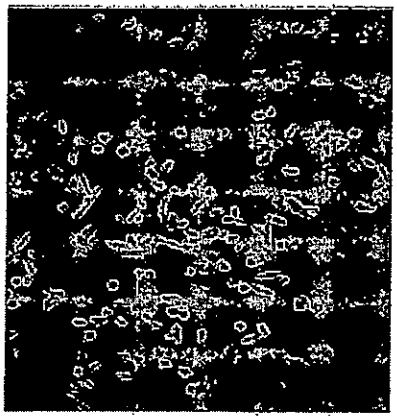
Anti-body	Form of anti-body used	ELISA Binding to purified human MN expressed in HKB-11 cells	ELISA Binding to purified human MN expressed in Sf9 cells	Binding affinity for purified human MN expressed in HKB-11 cells Kd (M)
1aa1	Pure Fab	Positive	Positive	1.5 x 10-10
1aa1	Pure IgG1	Positive	ND[1]	4.9 x 10-8
1e4	Pure Fab	Positive	ND	1.4 x 10-9
1e4	Pure IgG1	Positive	ND	1.0 x 10-9
3a4		Positive	Positive	
3ab4	Pure Fab	Positive	Positive	5.0 x 10-8
3ah10	Pure Fab	Positive	ND	1.6 x 10-8
3bb2	Pure Fab	Positive	ND	2.7 x 10-8
3ee9	Crude Fab	Positive	Positive	1.6 x 10-8
3ee9	Pure IgG1	Positive	ND	5.9 x 10-9
5a6	Crude Fab	Positive	Positive	3.4 x 10-9
5aa3	Crude Fab	Positive	Positive	2.5 x 10-8
3ef2	Crude Fab	Positive	Positive	4.1 x 10-9

[1]ND = not determined

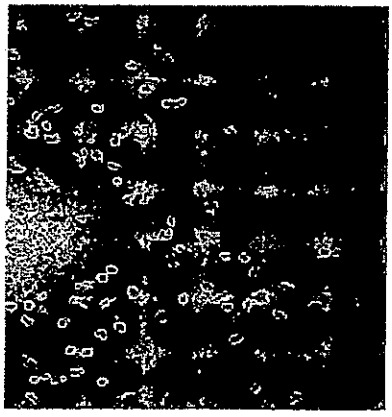
Figure 5



Anti-MN Mab 1e4



Control IgG



Buffer vehicle

Figure 6

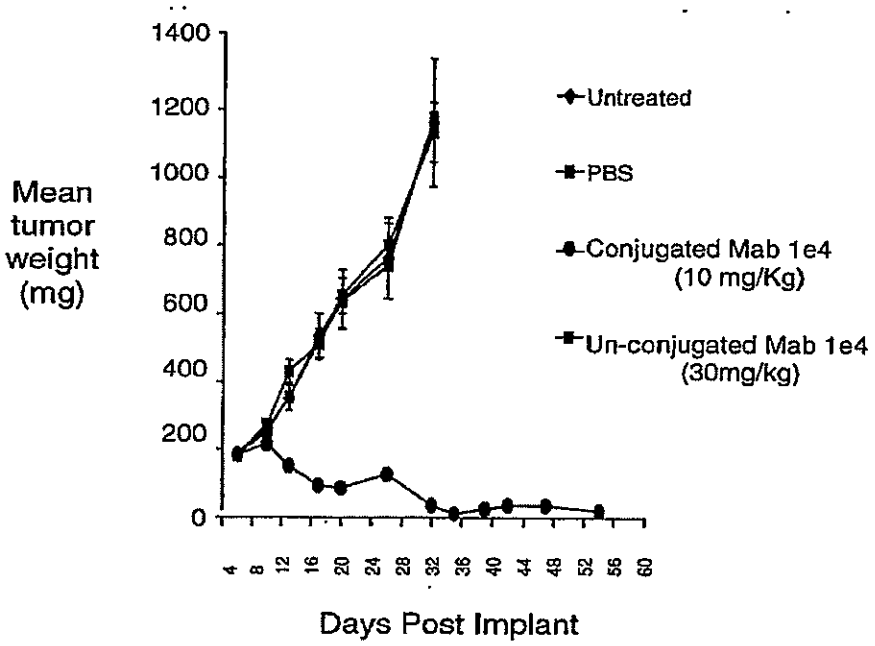

Mean tumor weight (mg)
1400
1200
1000
800
600
400
200
0
4
8
12
16
20
24
28
32
36
40
44
48
52
56
60
Days Post Implant
Untreated
PBS
Conjugated Mab 1e4 (10 mg/Kg)
Un-conjugated Mab 1e4 (30mg/kg)

Figure 7

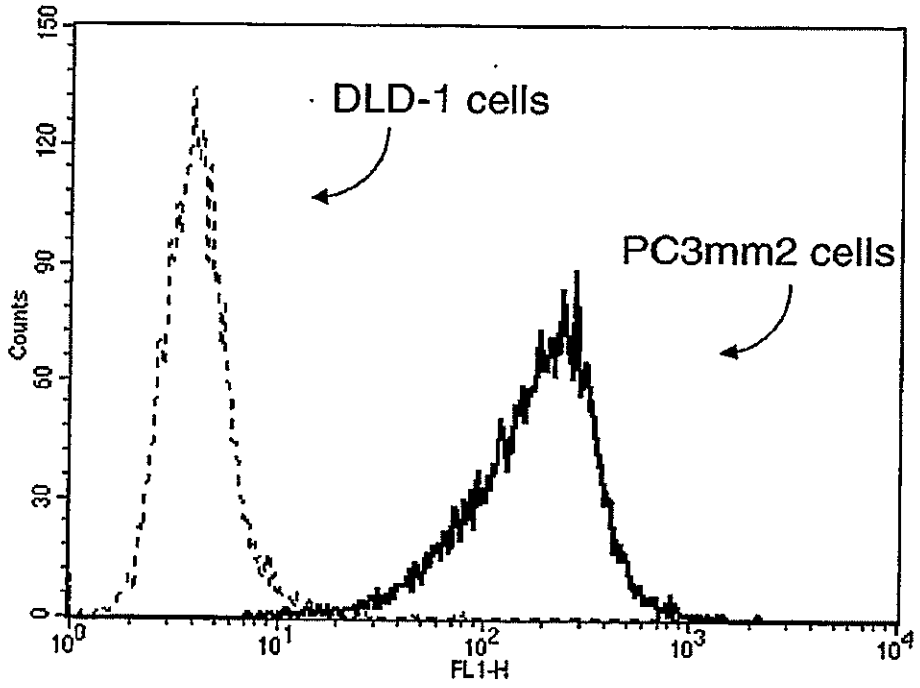
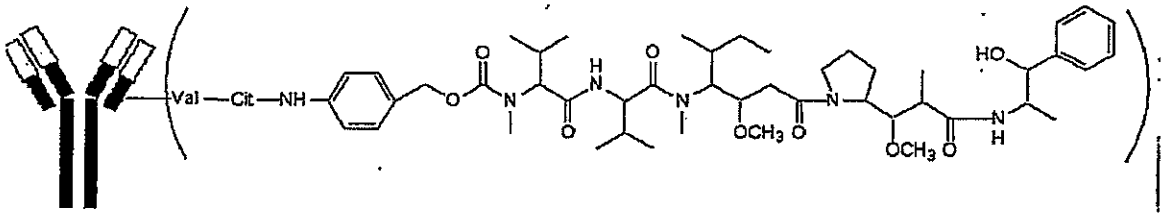

DLD-1 cells
PC3mm2 cells
Counts
0
30
60
90
120
150
10^0
10^1
10^2
10^3
10^4
FL1-H

Figure 8



Anti-MN Ab

Val-Cit-MMAE

Figure 9

3ee9

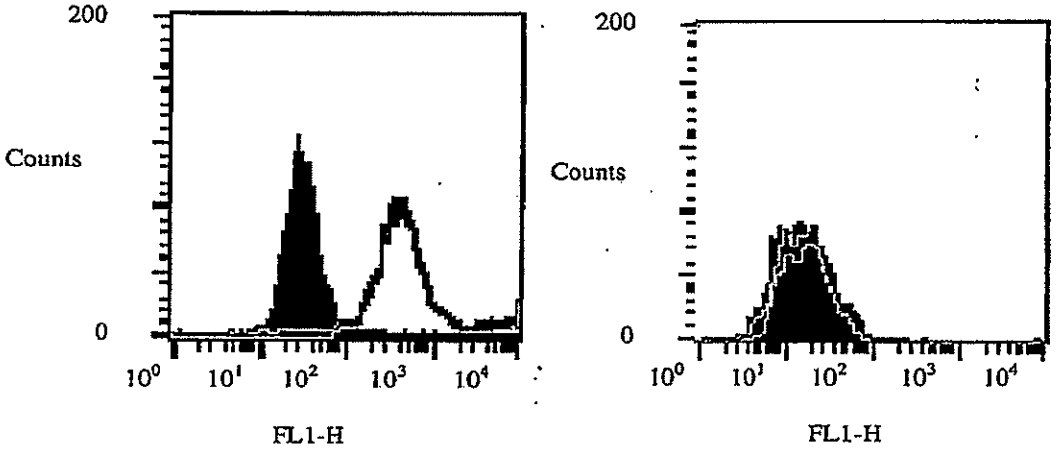


Figure 10a

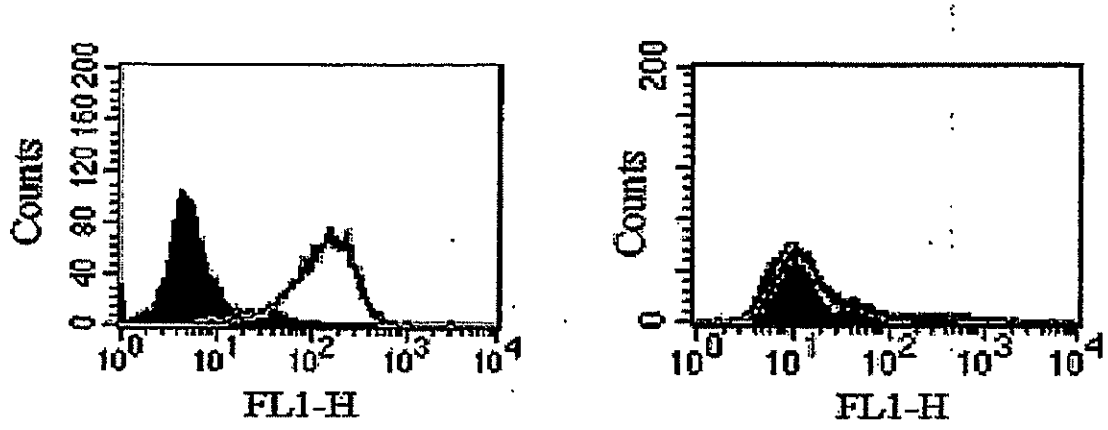

Counts
0 40 80 120 160 200
10^0 10^1 10^2 10^3 10^4
FL1-H
Counts
0 200
10^0 10^1 10^2 10^3 10^4
FL1-H

Figure 10b

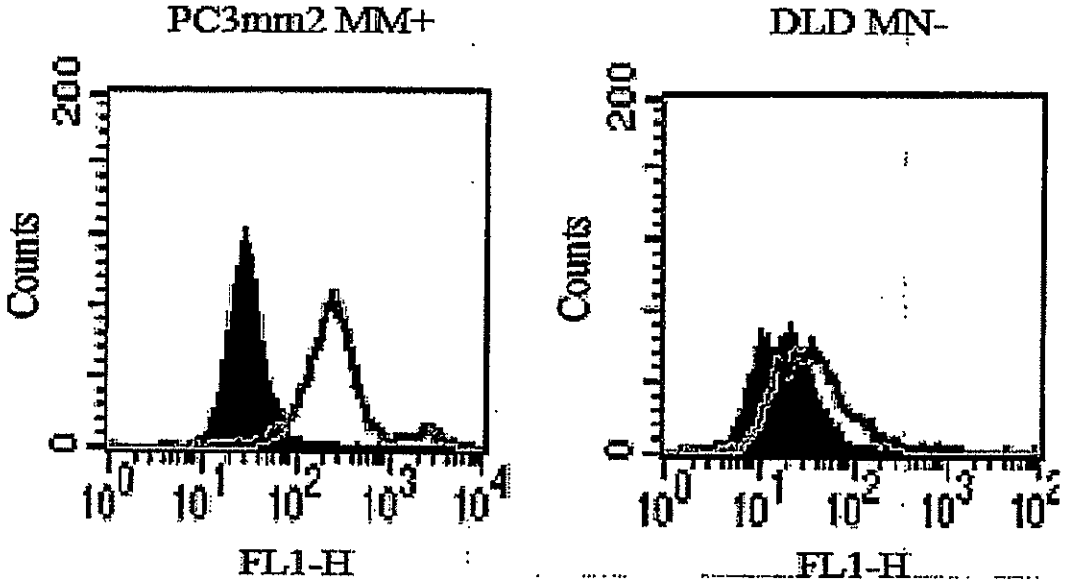

PC3mm2 MM+
DLD MN-
Counts
200
0
10^0 10^1 10^2 10^3 10^4
FL1-H
Counts
200
0
10^0 10^1 10^2 10^3
FL1-H

Figure 10c

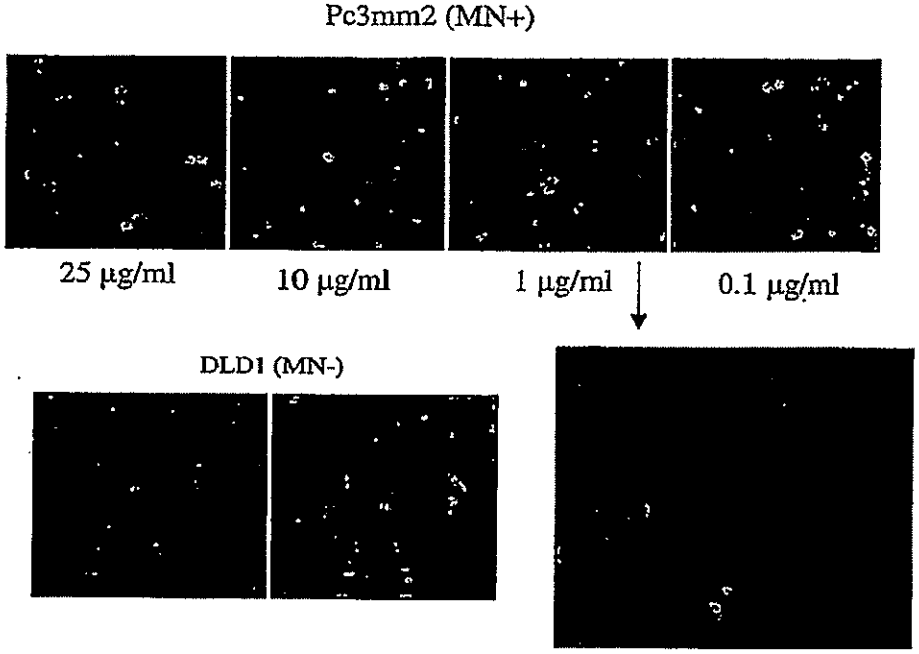


Figure 11a

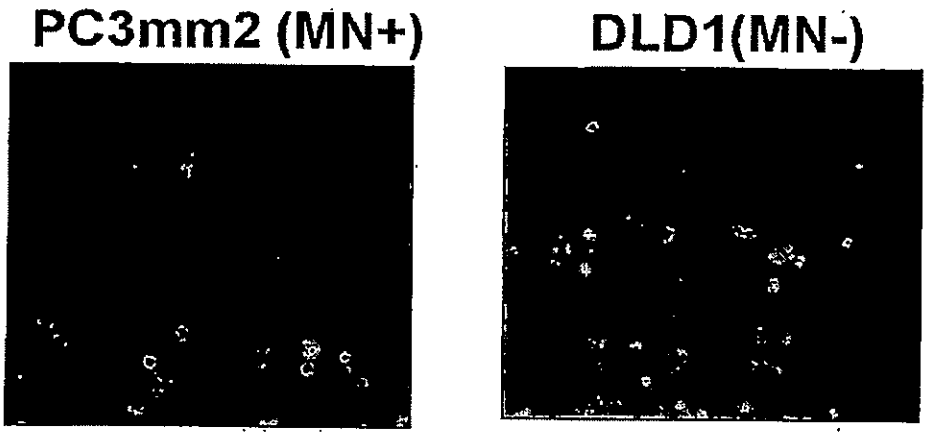


Figure 11b

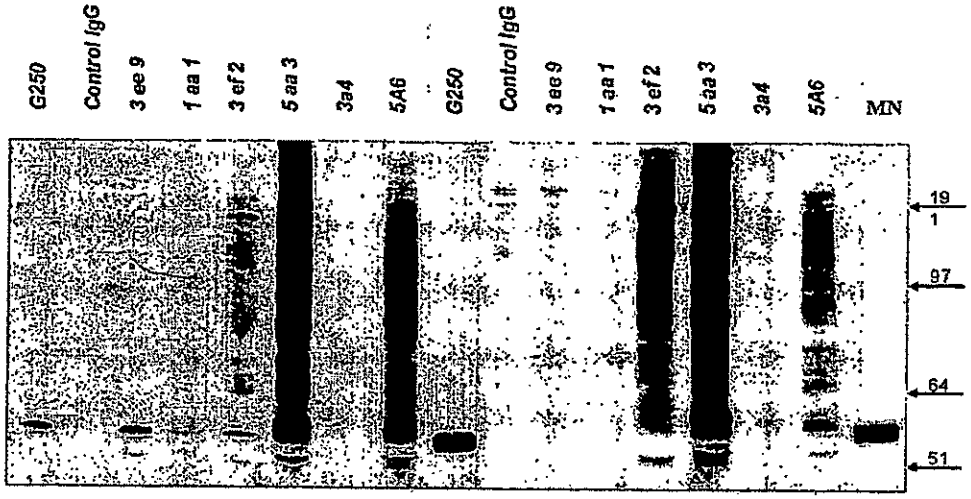

G250
Control IgG
3 ee 9
1 aa 1
3 ef 2
5 aa 3
3a4
5A6
G250
Control IgG
3 ee 9
1 aa 1
3 ef 2
5 aa 3
3a4
5A6
MN
19
1
97
64
51

Figure 12

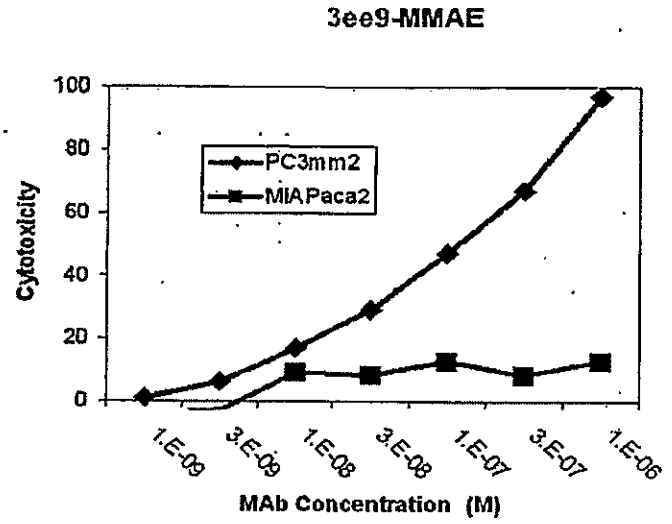

3ee9-MMAE
Cytotoxicity
100
80
60
40
20
0
PC3mm2
MIAPaca2
1.E-09
3.E-09
1.E-08
3.E-08
1.E-07
3.E-07
1.E-06
MAb Concentration (M)

Figure 13a

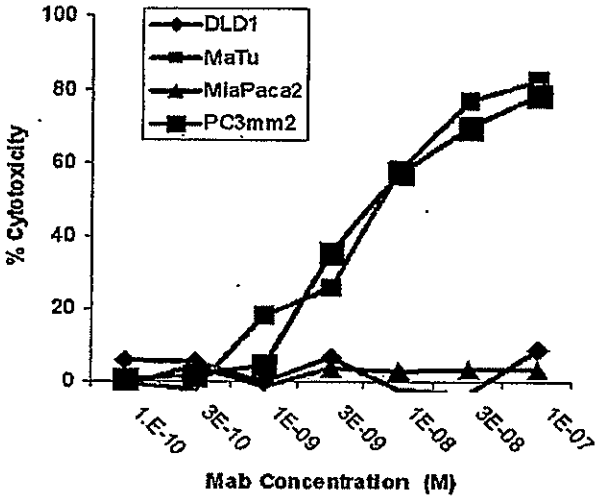

100
80
60
40
20
0
% Cytotoxicity
DLD1
MaTu
MiaPaca2
PC3mm2
1.E-10
3E-10
1E-09
3E-09
1E-08
3E-08
1E-07
Mab Concentration (M)

Figure 13b

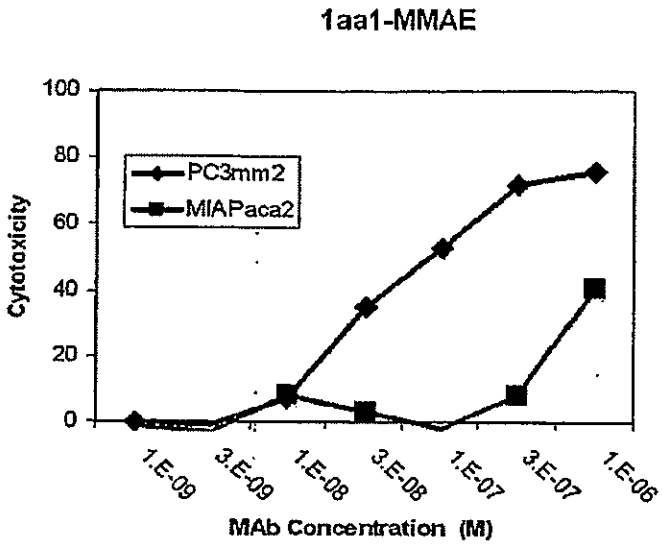

1aa1-MMAE
100
80
60
40
20
0
Cytotoxicity
PC3mm2
MIAPaca2
1.E-09
3.E-09
1.E-08
3.E-08
1.E-07
3.E-07
1.E-06
MAb Concentration (M)

Figure 13c

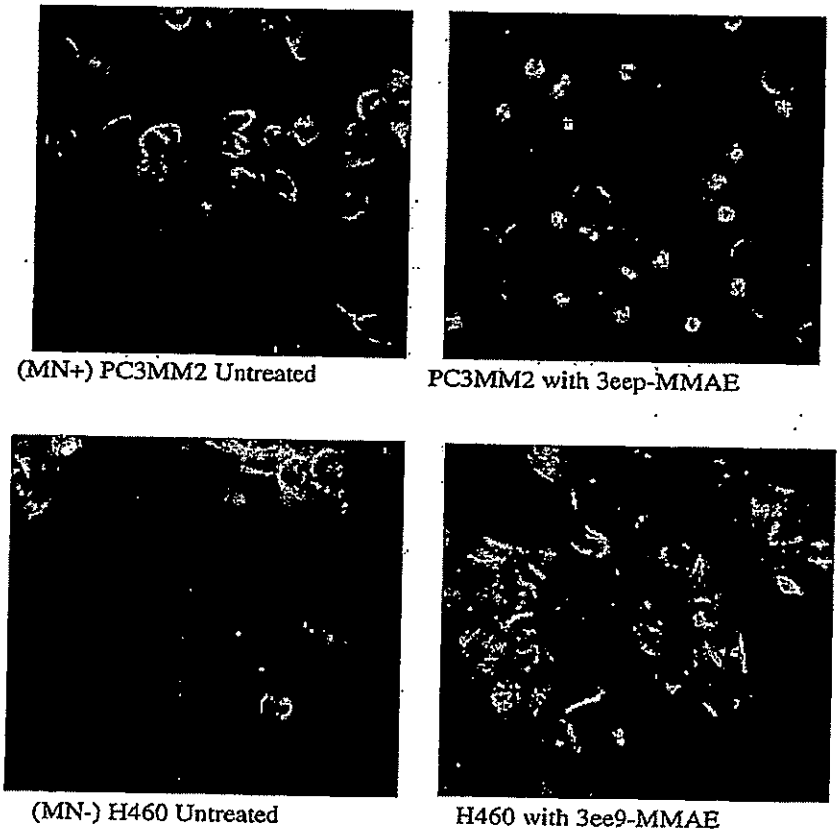

(MN+) PC3MM2 Untreated
PC3MM2 with 3eep-MMAE
(MN-) H460 Untreated
H460 with 3ee9-MMAE

Figure 14

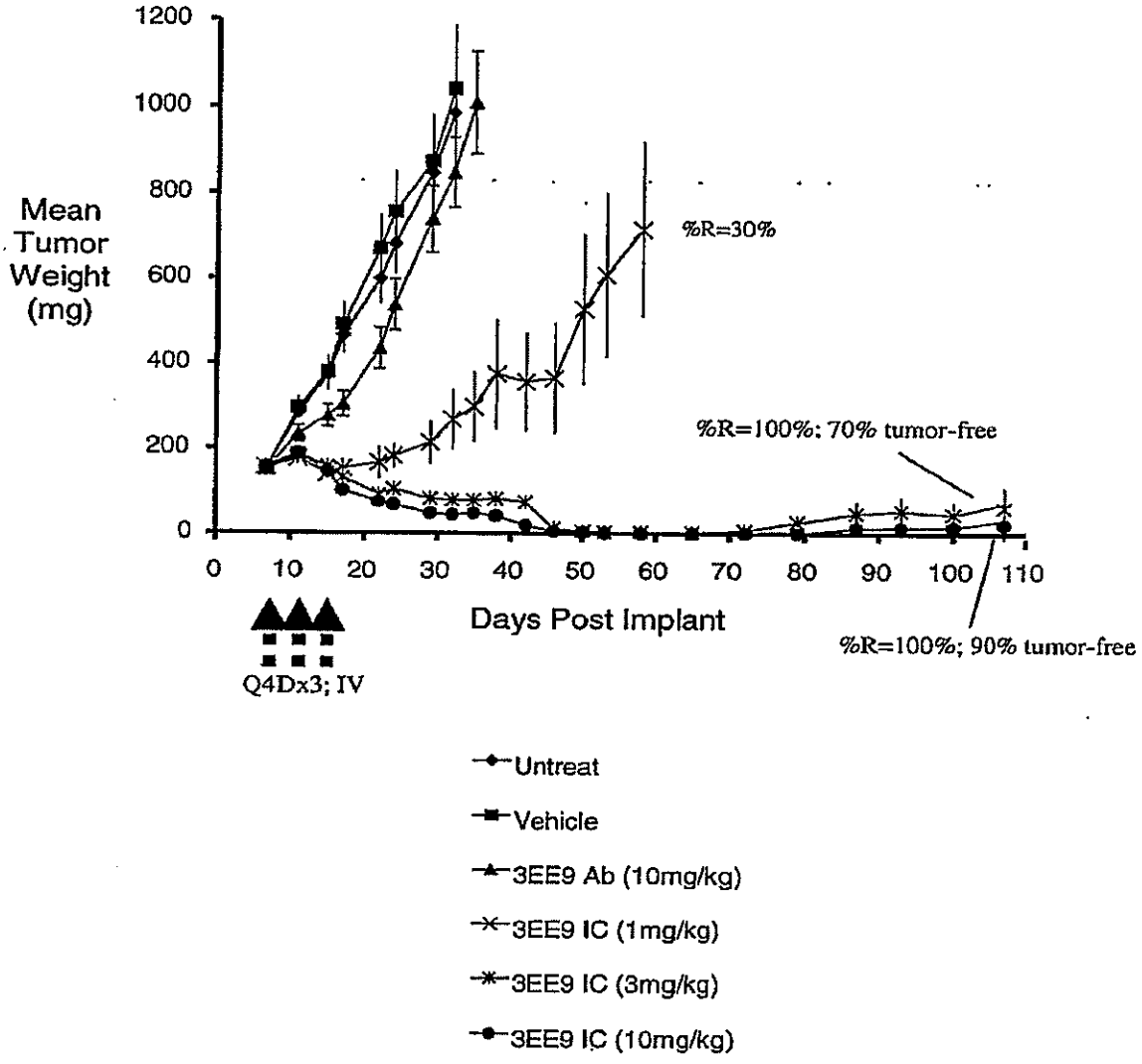

Mean Tumor Weight (mg)
1200
1000
800
600
400
200
0
0
10
20
30
40
50
60
70
80
90
100
110
Days Post Implant
%R=30%
%R=100%; 70% tumor-free
%R=100%; 90% tumor-free
Q4Dx3; IV
Untreat
Vehicle
3EE9 Ab (10mg/kg)
3EE9 IC (1mg/kg)
3EE9 IC (3mg/kg)
3EE9 IC (10mg/kg)

Figure 15

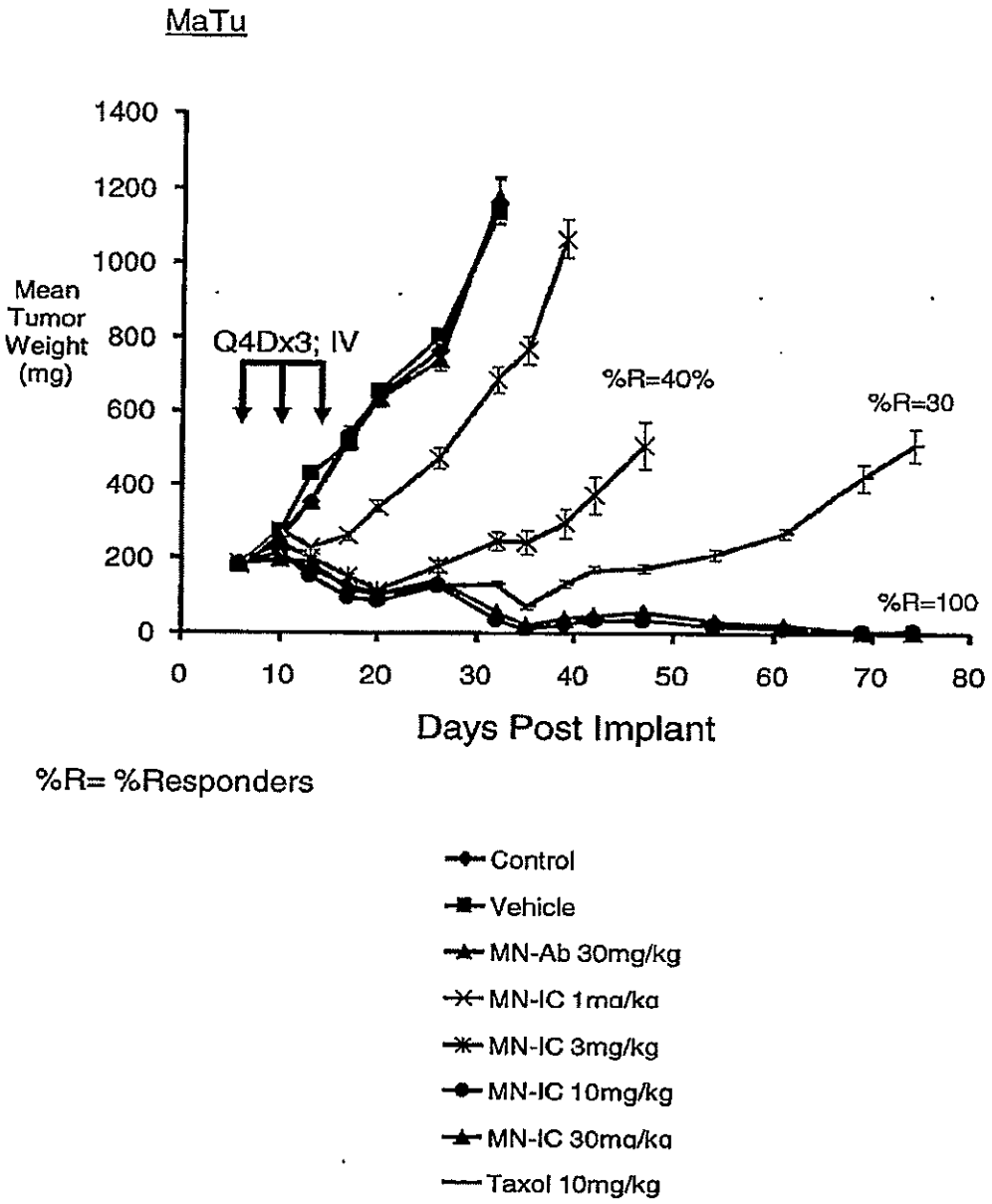
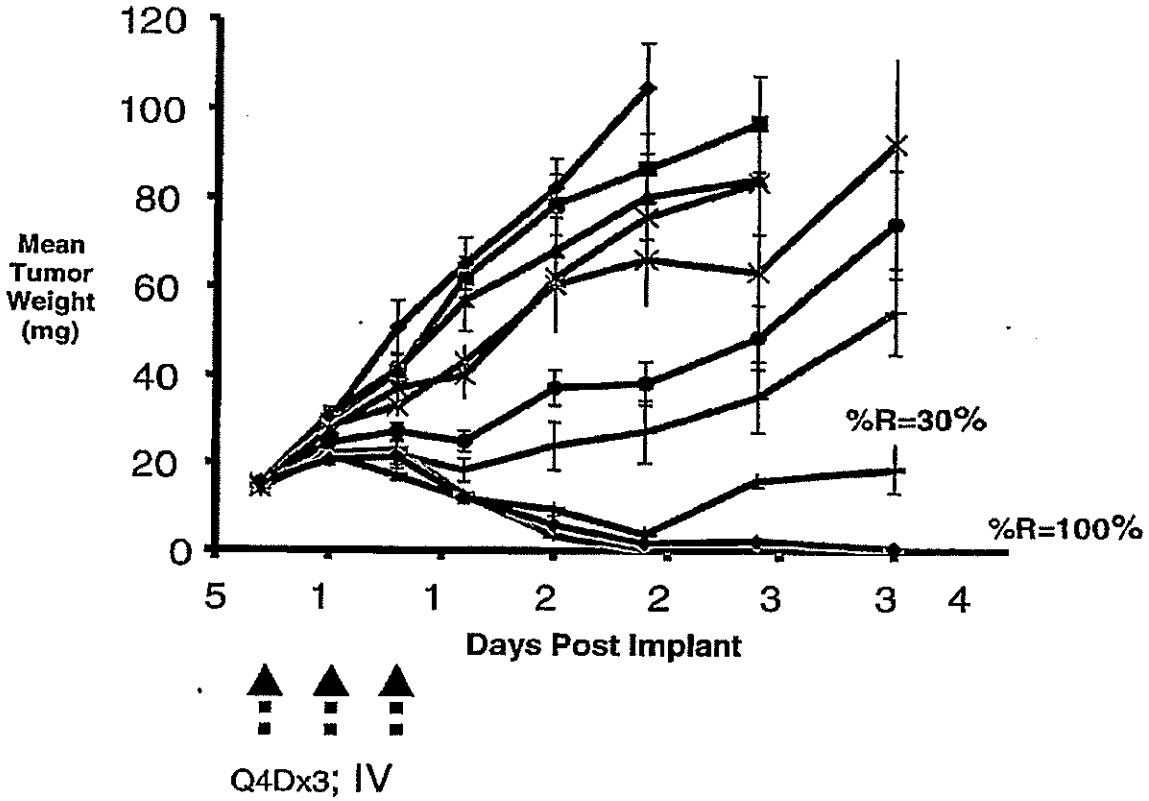

MaTu
1400
1200
1000
800
600
400
200
0
Mean Tumor Weight (mg)
Q4Dx3; IV
%R=40%
%R=30
%R=100
0
10
20
30
40
50
60
70
80
Days Post Implant
%R= %Responders
Control
Vehicle
MN-Ab 30mg/kg
MN-IC 1mg/kg
MN-IC 3mg/kg
MN-IC 10mg/kg
MN-IC 30mg/kg
Taxol 10mg/kg

Figure 16


120
100
80
60
40
20
0
Mean Tumor Weight (mg)
%R=30%
%R=100%
5 1 1 2 2 3 3 4
Days Post Implant
Q4Dx3; IV

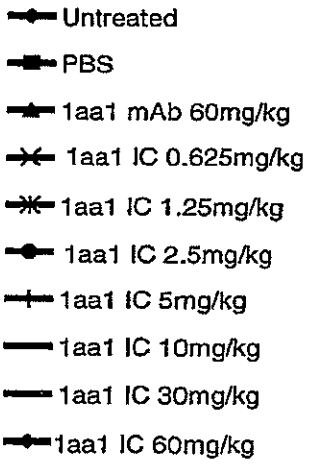

Untreated
PBS
1aa1 mAb 60mg/kg
1aa1 IC 0.625mg/kg
1aa1 IC 1.25mg/kg
1aa1 IC 2.5mg/kg
1aa1 IC 5mg/kg
1aa1 IC 10mg/kg
1aa1 IC 30mg/kg
1aa1 IC 60mg/kg

Figure 17

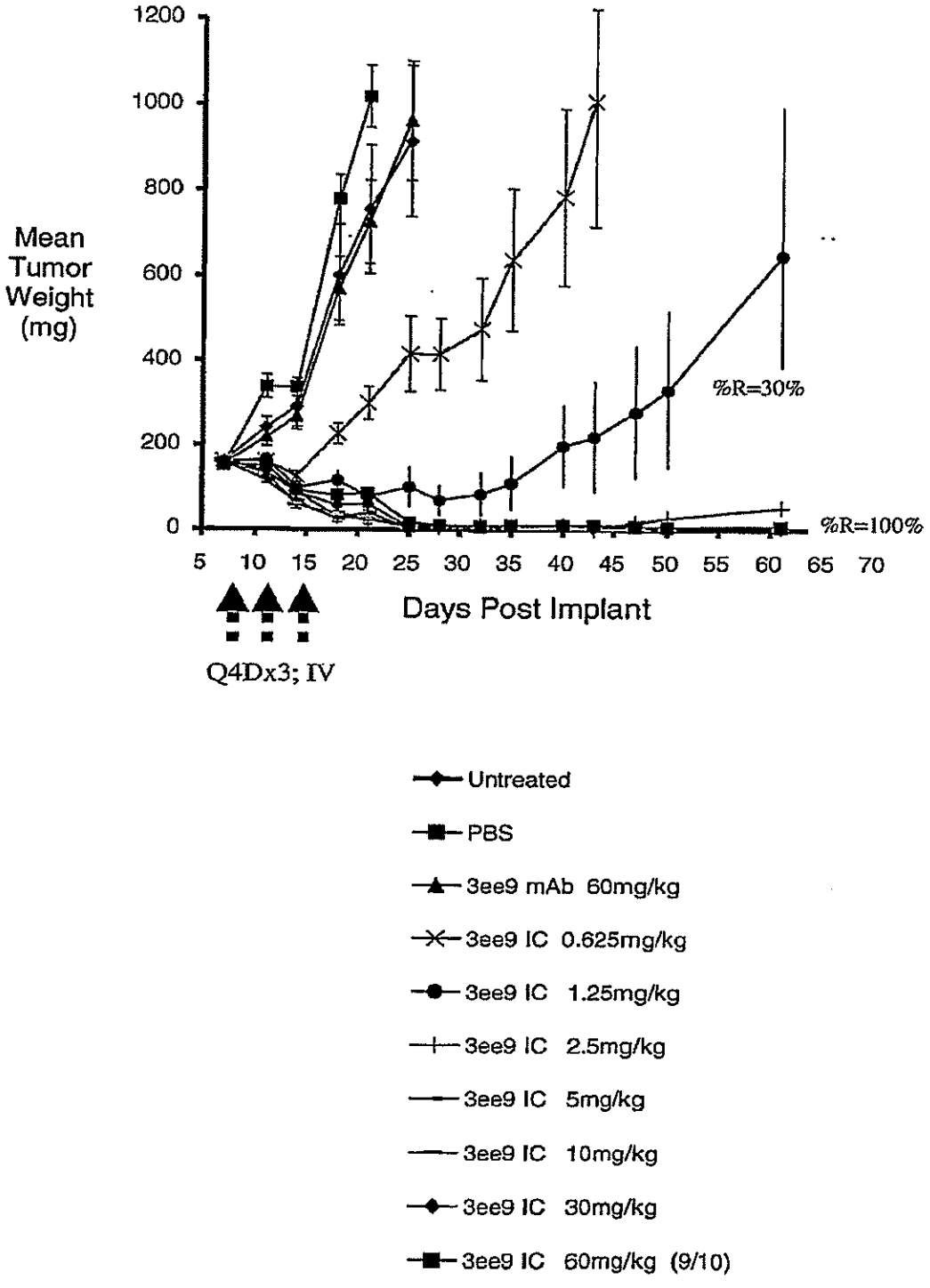

Mean Tumor Weight (mg)
1200
1000
800
600
400
200
0
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Days Post Implant
%R=30%
%R=100%
Q4Dx3; IV
Untreated
PBS
3ee9 mAb 60mg/kg
3ee9 IC 0.625mg/kg
3ee9 IC 1.25mg/kg
3ee9 IC 2.5mg/kg
3ee9 IC 5mg/kg
3ee9 IC 10mg/kg
3ee9 IC 30mg/kg
3ee9 IC 60mg/kg (9/10)

Figure 18

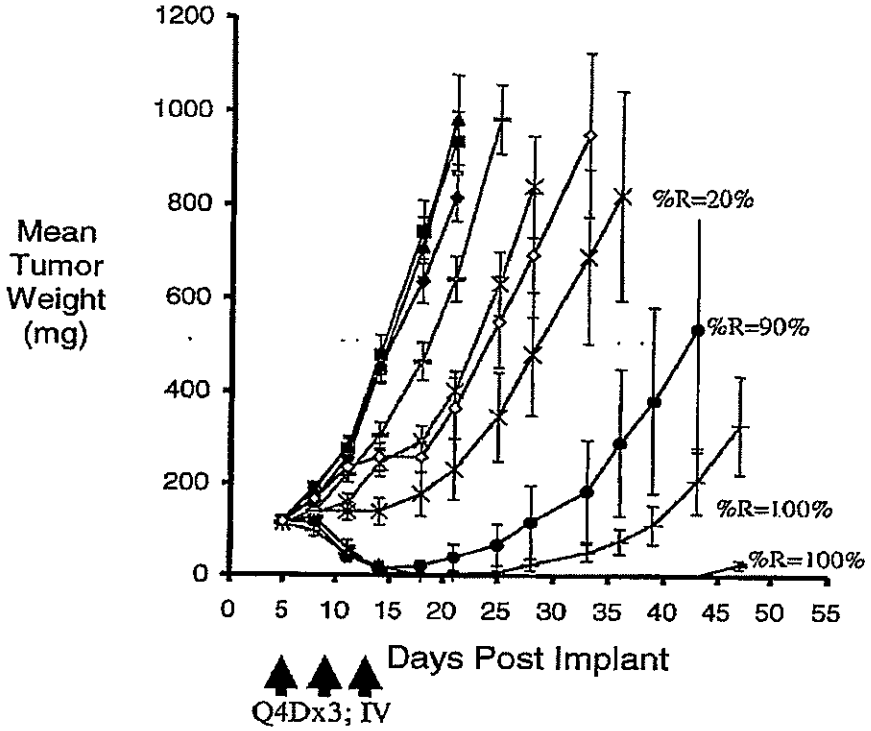
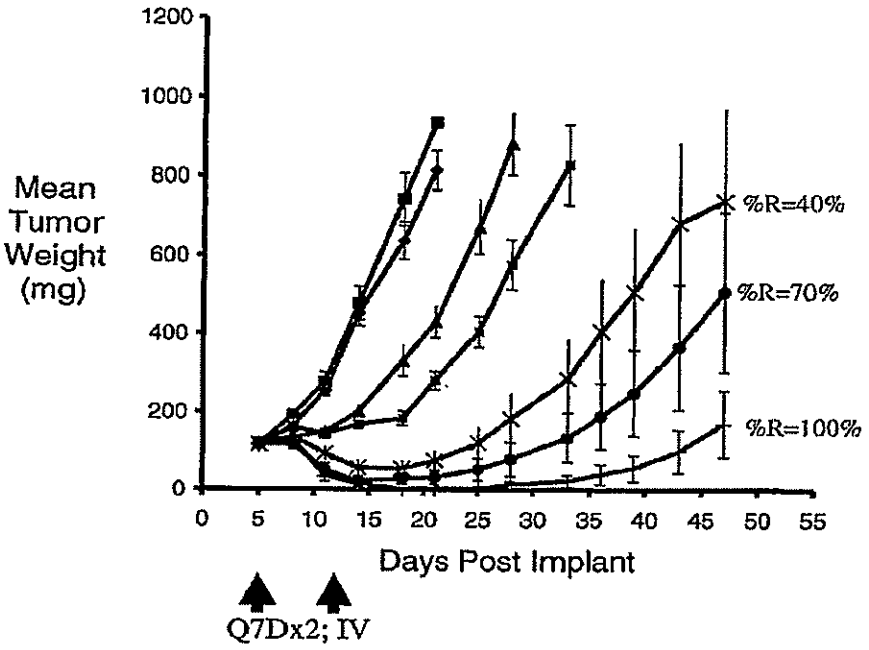

Mean Tumor Weight (mg)
1200
1000
800
600
400
200
0
0 5 10 15 20 25 30 35 40 45 50 55
Days Post Implant
Q4Dx3; IV
%R=20%
%R=90%
%R=100%
%R=100%
Untreated
Vehicle
3ee9 Ab @ 10mg/kg
3ee9 Conj @ 0.625 mg/kg
3ee9 Conj @ 1.25 mg/kg
3ee9 Conj @ 2.5 mg/kg
3ee9 Conj @ 5 mg/kg
3ee9 Conj @ 10 mg/kg
MMAE @ 0.1 mg/kg
MMAE @ 0.2 mg/kg

Figure 19


Mean Tumor Weight (mg)
1200
1000
800
600
400
200
0
0 5 10 15 20 25 30 35 40 45 50 55
Days Post Implant
%R=40%
%R=70%
%R=100%
Q7Dx2; IV

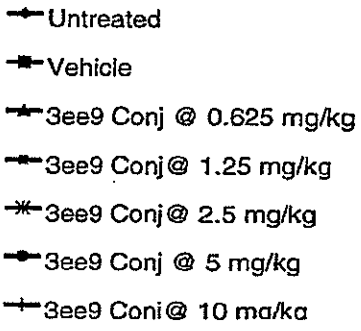

Untreated
Vehicle
3ee9 Conj @ 0.625 mg/kg
3ee9 Conj@ 1.25 mg/kg
3ee9 Conj@ 2.5 mg/kg
3ee9 Conj @ 5 mg/kg
3ee9 Conj@ 10 mg/kg

Figure 20

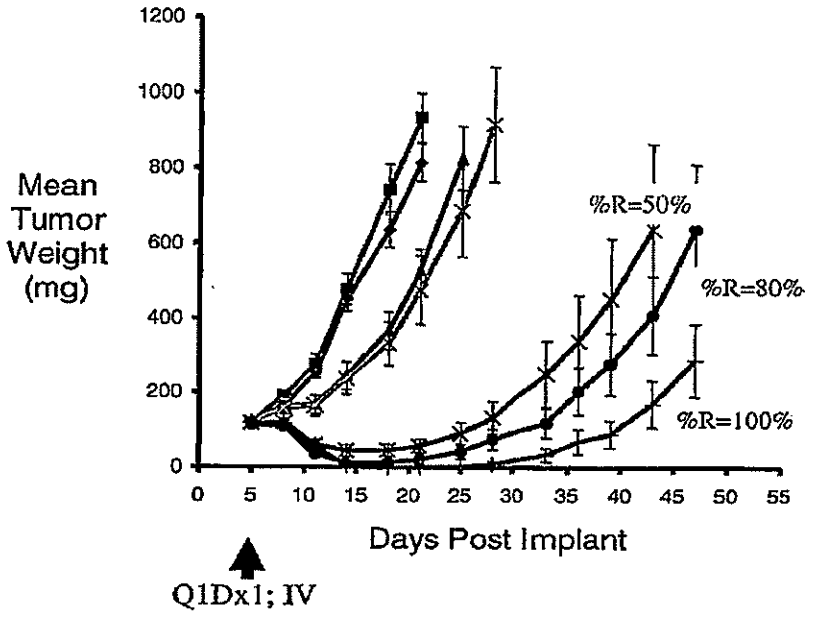

Mean Tumor Weight (mg)
1200
1000
800
600
400
200
0
0 5 10 15 20 25 30 35 40 45 50 55
Days Post Implant
%R=50%
%R=80%
%R=100%
Q1Dx1; IV
Untreated
Vehicle
3ee9 Conj @ 0.625 mg/kg
3ee9 Conj@ 1.25 mg/kg
3ee9 Conj @ 2.5 mg/kg
3ee9 Conj@ 5 mg/kg
3ee9 Conj@ 10 mg/kg

Figure 21

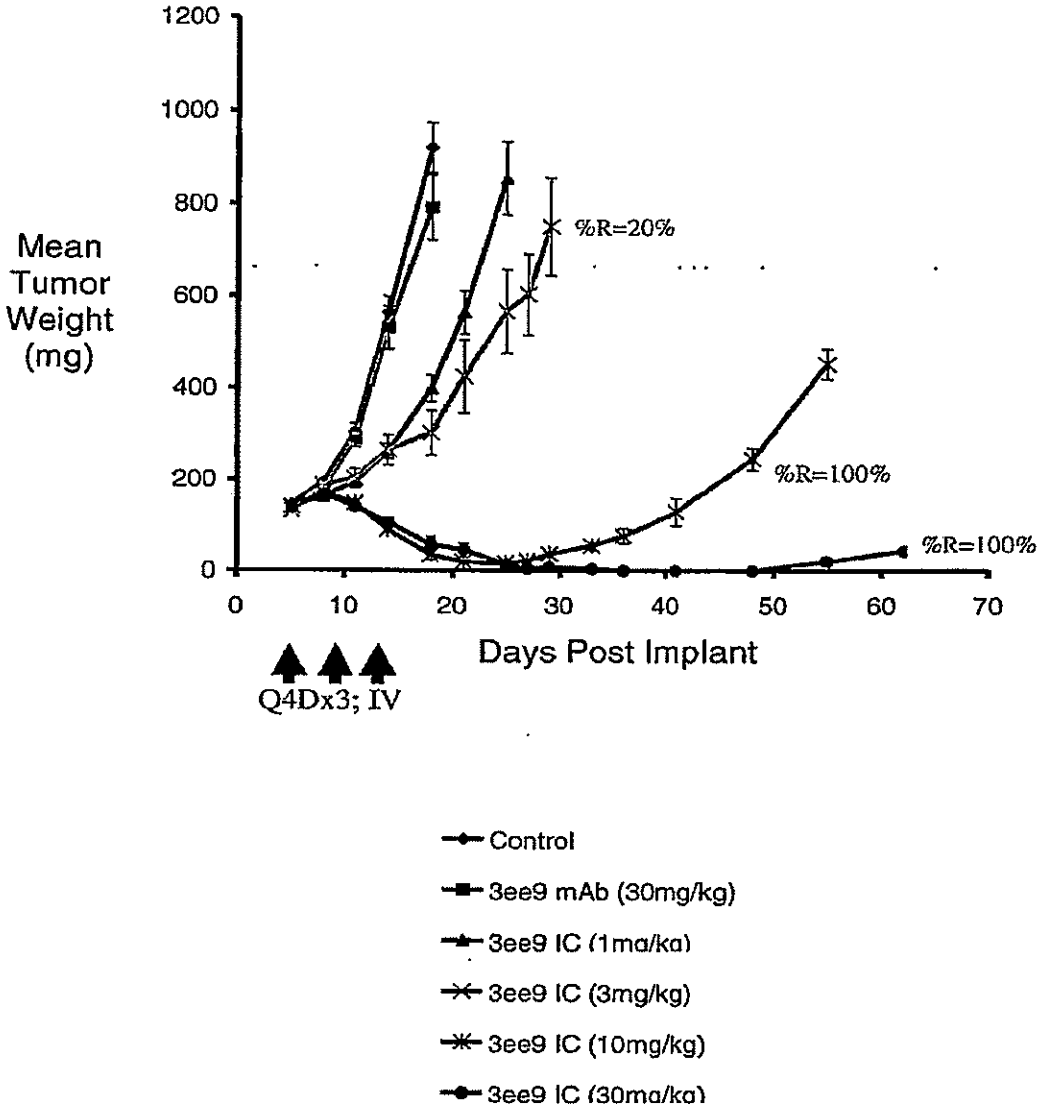

Mean Tumor Weight (mg)
1200
1000
800
600
400
200
0
0
10
20
30
40
50
60
70
%R=20%
%R=100%
%R=100%
Days Post Implant
Q4Dx3; IV
Control
3ee9 mAb (30mg/kg)
3ee9 IC (1mg/kg)
3ee9 IC (3mg/kg)
3ee9 IC (10mg/kg)
3ee9 IC (30mg/kg)

Figure 22

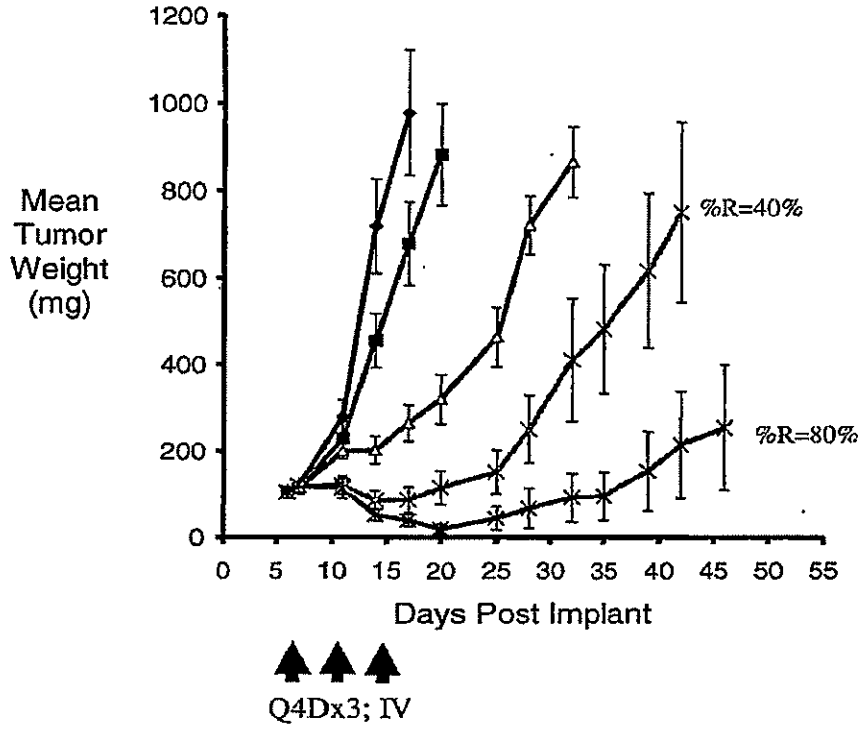

Mean Tumor Weight (mg)
1200
1000
800
600
400
200
0
0 5 10 15 20 25 30 35 40 45 50 55
Days Post Implant
%R=40%
%R=80%
Q4Dx3; IV
Untreated
79-4620 1.25mg/kg
79-4620 2.5mg/kg
79-4620 5.0mg/kg
79-4620 10.0mg/kg

Figure 23

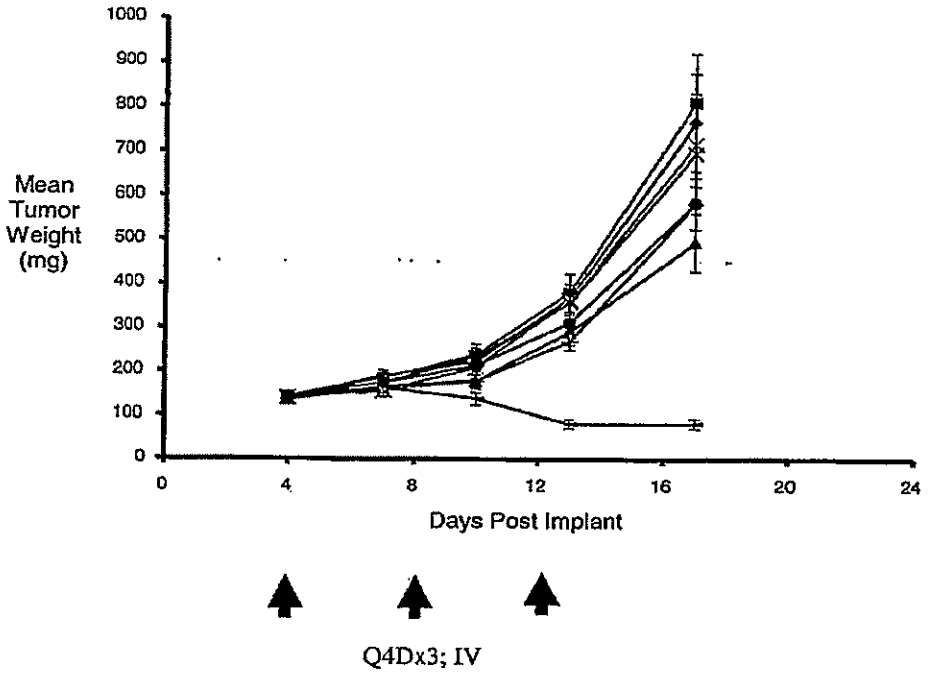

Mean Tumor Weight (mg)
1000
900
800
700
600
500
400
300
200
100
0
0
4
8
12
16
20
24
Days Post Implant
Q4Dx3; IV
Untreated
PBS. IV. Q4Dx3
3ee9 MMAE @ 1.25 mg/kg, IV, Q4Dx3
3ee9 MMAE @ 2.5 mg/kg, IV, Q4Dx3
3ee9 MMAE @ 5 mg/kg, IV, Q4Dx3
3ee9 MMAE @ 10mg/kg, IV, Q4Dx3
Taxol @ 15 mg/kg, IV, Q4Dx3
Gemcitabine @ 120 mg/kg. IP. Q4Dx3

Figure 24

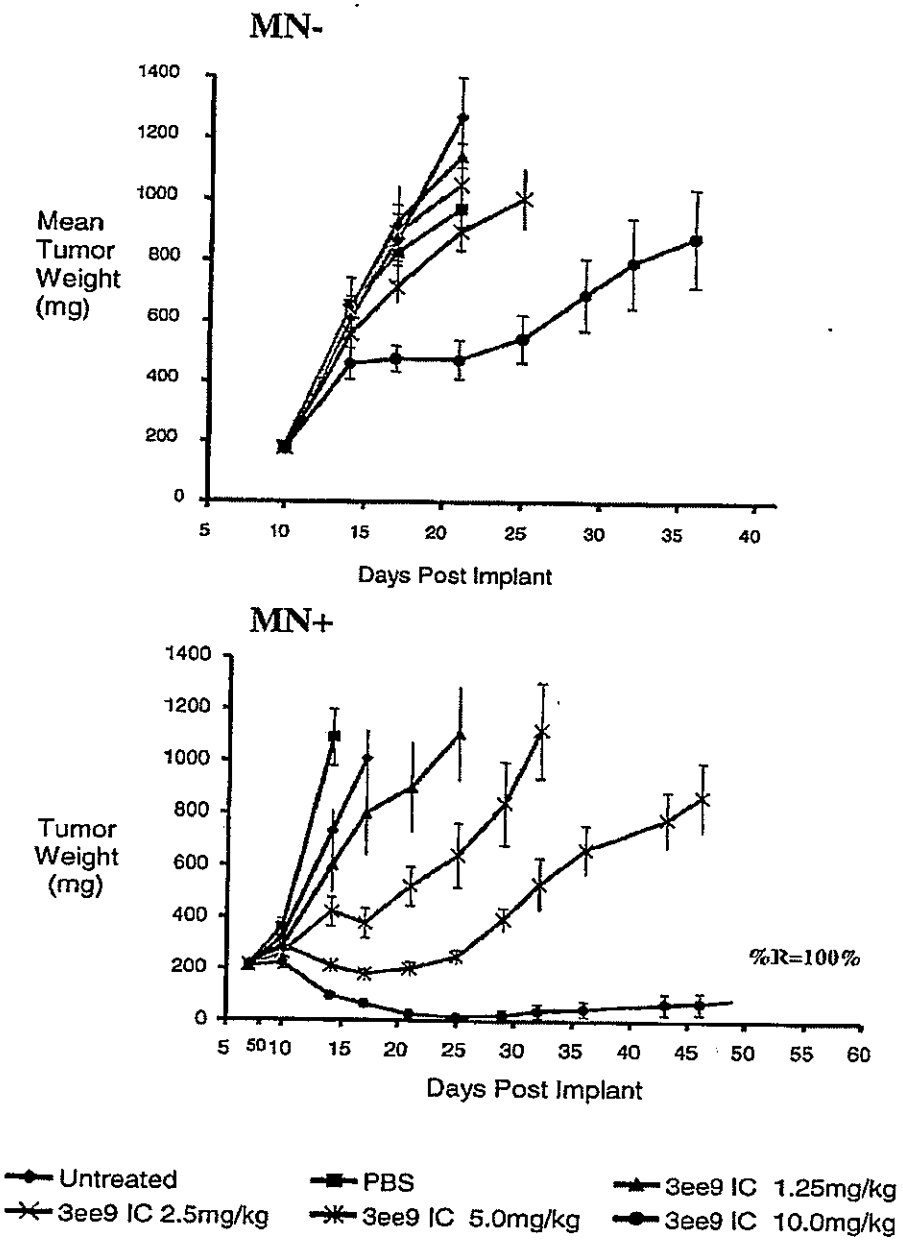

MN-
Mean Tumor Weight (mg)
1400
1200
1000
800
600
400
200
0
5 10 15 20 25 30 35 40
Days Post Implant
MN+
Tumor Weight (mg)
1400
1200
1000
800
600
400
200
0
5 50 10 15 20 25 30 35 40 45 50 55 60
%R=100%
Days Post Implant
Untreated
PBS
3ee9 IC 1.25mg/kg
3ee9 IC 2.5mg/kg
3ee9 IC 5.0mg/kg
3ee9 IC 10.0mg/kg

Figure 25

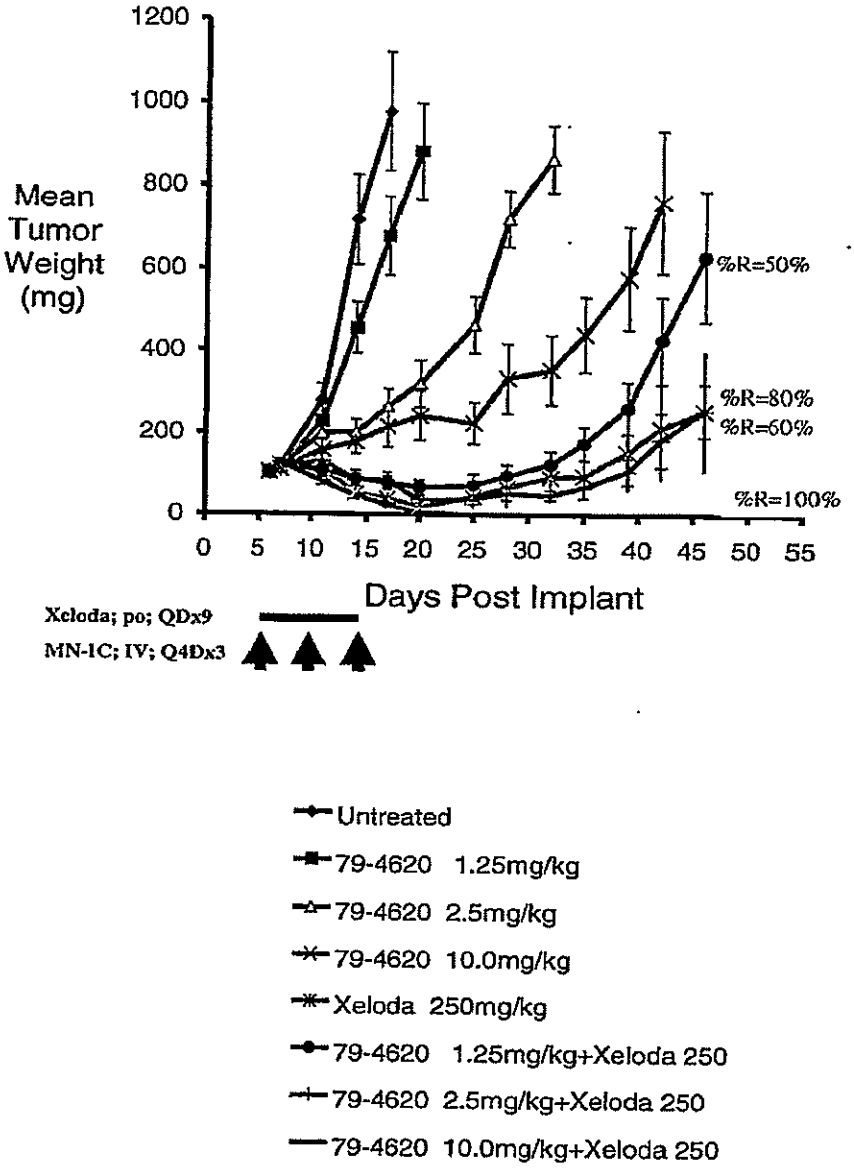

1200
1000
800
600
400
200
0
Mean Tumor Weight (mg)
%R=50%
%R=80%
%R=60%
%R=100%
0 5 10 15 20 25 30 35 40 45 50 55
Days Post Implant
Xeloda; po; QDx9
MN-1C; IV; Q4Dx3
Untreated
79-4620 1.25mg/kg
79-4620 2.5mg/kg
79-4620 10.0mg/kg
Xeloda 250mg/kg
79-4620 1.25mg/kg+Xeloda 250
79-4620 2.5mg/kg+Xeloda 250
79-4620 10.0mg/kg+Xeloda 250

Figure 26a

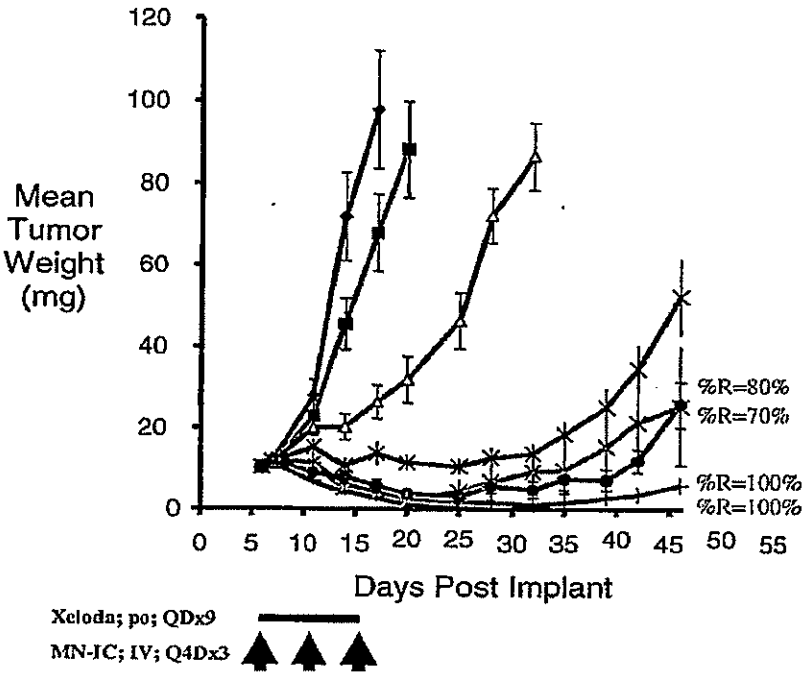

120
100
80
60
40
20
0
Mean Tumor Weight (mg)
0 5 10 15 20 25 30 35 40 45 50 55
Days Post Implant
%R=80%
%R=70%
%R=100%
%R=100%
Xeloda; po; QDx9
MN-JC; IV; Q4Dx3
Untreated
79-4620 1.25mg/kg
79-4620 2.5mg/kg
79-4620 10.0mg/kg
Xeloda 500mg/kg
79-4620 1.25mg/kg+Xeloda 500
79-4620 2.5mg/kg+Xeloda 500
79-4620 10.0mg/kg+Xeloda 500

Figure 26b

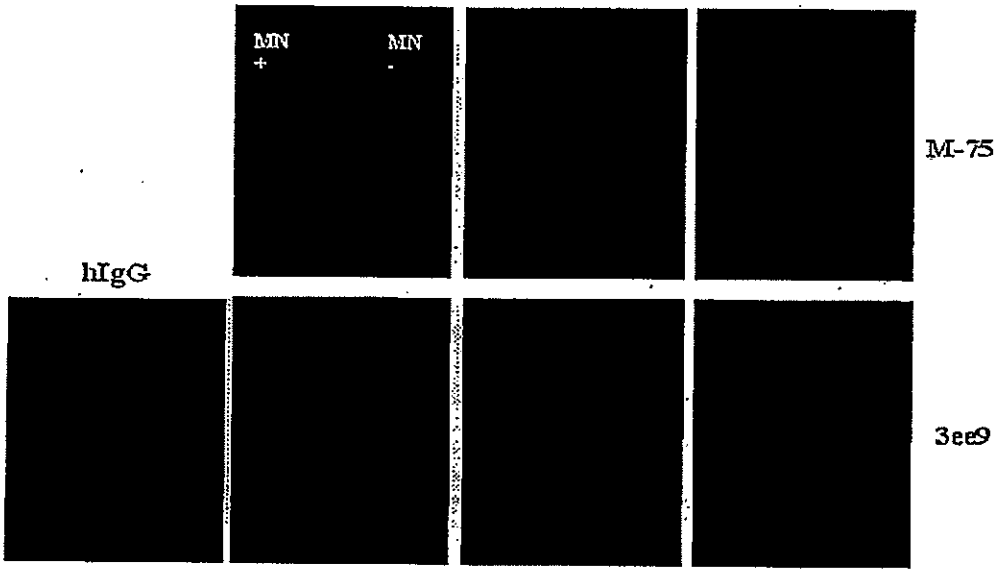


Figure 27

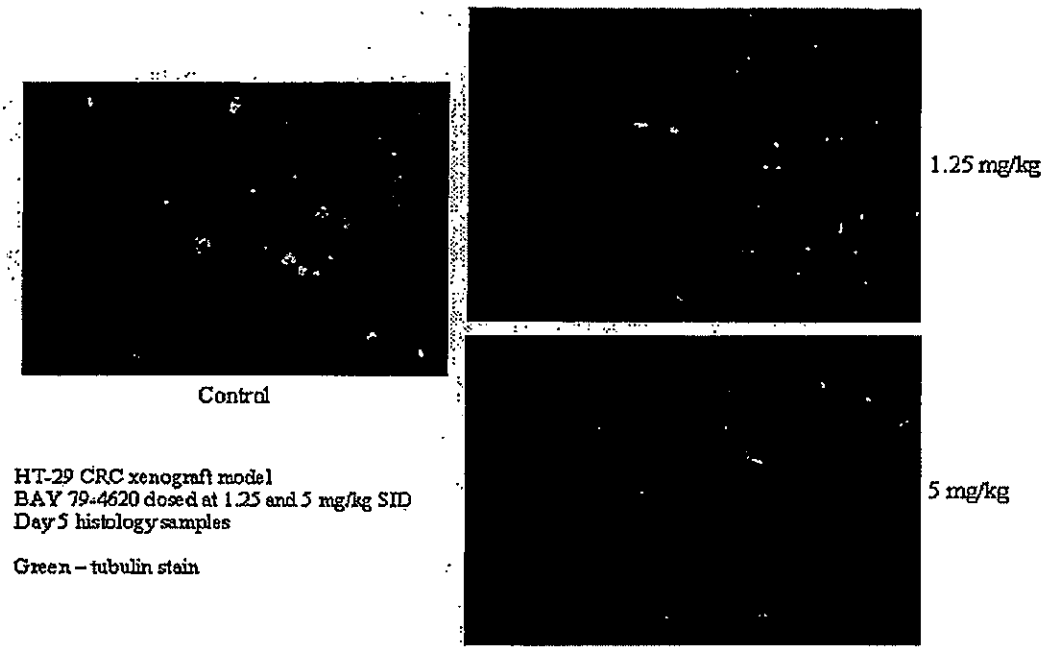

1.25 mg/kg
Control
HT-29 CRC xenograft model
BAY 79-4620 dosed at 1.25 and 5 mg/kg SID
Day 5 histology samples
Green – tubulin stain
5 mg/kg

Figure 28

AATTGGAGGCTACAGTCAGTGGAGAGGACTTTCACTGACTGACTGACTGCGTCTCAACCT
GGGGACAAGTTTGTACAAAAAAGCAGGCTCTGTCTAGAGGGCACCATGGTGTTGCAGACC
CAGGTCTTCATTTCTCTGTTGCTCTGGATCTCTGGTGCCTACGGGGATATCCAGATGACC
CAGAGCCCGTCTAGCCTGAGCGCGAGCGTGGGTGATCGTGTGACCATTACCTGCAGAGCG
AGCCAGGATATTAATAATTATCTGTCTTGGTACCAGCAGAAACCAGGTAAAGCACCGAAA
CTATTAATTTATGGTGCTTCTAATTTGCAAAGCGGGGTCCCGTCCCGTTTTAGCGGCTCT
GGATCCGGCACTGATTTTACCCTGACCATTAGCAGCCTGCAACCTGAAGACTTTGCGGTT
TATTATTGCCAGCAGTATTATGGTCGTCCTACTACCTTTGGCCAGGGTACGAAAGTTGAA
ATTAAACGTACGGTGGCTGCACCATCTGTCTTCATCTTCCCGCCATCTGATGAGCAGTTG
AAATCTGGAACTGCCTCTGTTGTGTGCCTGCTGAATAACTTCTATCCCAGAGAGGCCAAA
GTACAGTGGAAGGTGGATAACGCCCTCCAATCGGGTAACTCCCAGGAGAGTGTCACAGAG
CAGGACAGCAAGGACAGCACCTACAGCCTCAGCAGCACCCTGACGCTGTCTAAAGCAGAC
TACGAGAAACACAAAGTCTACGCCTGCGAAGTCACCCATCAGGGCCTGAGCTCGCCCGTC
ACAAAGAGCTTCAACAGGGGAGAGTGTTAGGCGGCCGCGCCTCGACTGTGCCTTCTAGTT
GCCAGCCATCTGTTGTTTGCCCCTCCCCCGTGCCTTCCTTGACCCTGGAAGGTGCCACTC
CCACTGTCCTTTCCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCATT
CTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCA
GGCATGCTGGGGATGCGGTGGGCTCTATGGGATGCTTATCGCCACGTTCGGCGCGCCGTC
GACGATGTACGGGCCAGATATACGCGTTGACATTGATTATTGACTAGTTATTAATAGTAA
TCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACG
GTAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCCGCCCATTGACGTCAATAATGACG
TATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGACTATTTA
CGGTAAACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATT
GACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATGACCTTATGGGAC
TTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTT
TGGCAGTACATCAATGGGCGTGGATAGCGGTTTGACTCACGGGGATTTCCAAGTCTCCAC
CCCATTGACGTCAATGGGAGTTTGTTTTGGCACCAAAATCAACGGGACTTTCCAAAATGT
CGTAACAACTCCGCCCCATTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGAGGTCTAT

Figure 29a

ATAAGCAGAGCTCTCTGGCTAACTAGAGAACCCACTGCTTACTGGCTTATCGAAATTAAT
ACGACTCACTATAGGGAGACCCAAGCTGGCTAGCGCCACCATGAAACACCTGTGGTTCTT
CCTCCTGCTGGTGGCAGCTCCCAGATGGGTCCTGTCCCAGGTGGAATTGGTGGAAAGCGG

CGGCGGCCTGGTGCAACCGGGCGGCAGCCTGCGTCTGAGCTGCGCGGCCTCCGGATTTAC
CTTTTCTTCTTATGGTATGTCTTGGGTGCGCCAAGCCCCTGGGAAGGGTCTCGAGTGGGT
GAGCGGTATCTCTTCTCTTGGTAGCACTACCTATTATGCGGATAGCGTGAAAGGCCGTTT
TACCATTTCACGTGATAATTCGAAAAACACCCTGTATCTGCAAATGAACAGCCTGCGTGC
GGAAGATACGGCCGTGTATTATTGCGCGCGTACTGGTTCTCCTGGTACTTTTATGCATGG
TGATCATTGGGGCCAAGGCACCCTGGTGACGGTTAGCTCAGCCTCCACCAAGGGTCCATC
GGTCTTCCCCCTGGCACCCTCCTCCAAGAGCACCTCTGGGGGCACAGCGGCCCTGGGCTG
CCTGGTCAAGGACTACTTCCCCGAACCGGTGACGGTGTCGTGGAACTCAGGCGCCCTGAC
CAGCGGCGTGCACACCTTCCCGGCTGTCCTACAGTCCTCAGGACTCTACTCCCTCAGCAG
CGTGGTGACCGTGCCCTCCAGCAGCTTGGGCACCCAGACCTACATCTGCAACGTGAATCA
CAAGCCCAGCAACACCAAGGTGGACAAGAAAGTTGAGCCCAAATCTTGTGACAAAACTCA
CACATGCCCACCGTGCCCAGCACCTGAACTCCTGGGGGGACCGTCAGTCTTCCTCTTCCC
CCCAAAACCCAAGGACACCCTCATGATCTCCCGGACCCCTGAGGTCACATGCGTGGTGGT
GGACGTGAGCCACGAAGACCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGT
GCATAATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGGGTGGTCAG
CGTCCTCACCGTCCTGCACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTC
CAACAAAGCCCTCCCAGCCCCCATCGAGAAAACCATCTCCAAAGCCAAAGGGCAGCCCCG
AGAACCACAGGTGTACACCCTGCCCCCATCCCGGGATGAGCTGACCAAGAACCAGGTCAG
CCTGACCTGCCTGGTCAAAGGCTTCTATCCCAGCGACATCGCCGTGGAGTGGGAGAGCAA
TGGGCAGCCGGAGAACAACTACAAGACCACGCCTCCCGTGCTGGACTCCGACGGCTCCTT
CTTCCTCTACAGCAAGCTCACCGTGGACAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTC
ATGCTCCGTGATGCATGAGGCTCTGCACAACCACTACACGCAGAAGAGCCTCTCCCTGTC
TCCGGGTAAATGAGGGCCCGTTTAAACCCGCTGATCAGCCTCGACTGTGCCTTCTAGTTG
CCAGCCATCTGTTGTTTGCCCCTCCCCCGTGCCTTCCTTGACCCTGGAAGGTGCCACTCC
CACTGTCCTTTCCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCATTC
TATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATA

Figure 29b

GCAGGCATGCTGGGGATGCGGTGGGCTCTATGGCTTCTGAGGCGGAAAGAACCAGCCTCA
CGTGGACCCAGCTTTCTTGTACAAAGTGGTCCCCCTACAGAGACGACTGACTGACTGACT
GGAAAGAGGAAGGGCTGGAAGAGGAAGGAGCTTGGCGTAATCATGGTCATAGCTGTTTCC
TGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGTG
TAAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCC
CGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGG

GAGAGGCGGTTTGCGTATTGGGCGCTCTTCCGCTTCCTCGCTCACTGACTCGCTGCGCTC
GGTCGTTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCAC
AGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAA
CCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCA
CAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGC
GTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATA
CCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTA
TCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCA
GCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGA
CTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGG
TGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGG
TATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGG
CAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAG
AAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAA
CGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGAT
CCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTC
TGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCGTTC
ATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATC
TGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGC
AATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTC
CATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTT
GCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCACGCTCGTCGTTTGGTATGGC
TTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGT

Figure 29c

GCAAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAG
TGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCATGCCATCCGTAA
GATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGC
GACCGAGTTGCTCTTGCCCGGCGTCAATACGGGATAATACCGCGCCACATAGCAGAACTT
TAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACTCTCAAGGATCTTACCGC
TGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTA
CTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAAGGGAA
TAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTTCAATATTATTGAAGCA
TTTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTATTTAGAAAAATAAAC

AAATAGGGGTTCCGCGCACATTTCCCCGAAAAGTGCCACCTGACGTCTAAGAAACCATTA
TTATCATGACATTAACCTATAAAAATAGGCGTATCACGAGGCCCTTTCGTCTCGCGCGTT
TCGGTGATGACGGTGAAAACCTCTGACACATGCAGCTCCCGGAGACGGTCACAGCTTGTC
TGTAAGCGGATGCCGGGAGCAGACAAGCCCGTCAGGGCGCGTCAGCGGGTGTTGGCGGGT
GTCGGGGCTGGCTTAACTATGCGGCATCAGAGCAGATTGTACTGAGAGTGCACCATAAAA
TTGTAAACGTTAATATTTTGTTAAAATTCGCGTTAAATTTTTGTTAAATCAGCTCATTTT
TTAACCAATAGGCCGAAATCGGCAAAATCCCTTATAAATCAAAAGAATAGCCCGAGATAG
GGTTGAGTGTTGTTCCAGTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACG
TCAAAGGGCGAAAAACCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCAAAT
CAAGTTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCTAAAGGGAGCCCCC
GATTTAGAGCTTGACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGAAGGGAAGAAAGCGA
AAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGGTCACGCTGCGCGTAACCACCACAC
CCGCCGCGCTTAATGCGCCGCTACAGGGCGCGTACTATGGTTGCTTTGACGTATGCGGTG
TGAAATACCGCACAGATGCGTAAGGAGAAAATACCGCATCAGGCGCCATTCGCCATTCAG
GCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGC
GAAAGGGGGATGTGCTGCAAGGCGATTAAGTTGGGTAACGCCAGGGTTTTCCCAGTCACG
ACGTTGTAAAACGACGGCCAGTG [SEQ ID NO: 153]

Figure 29d