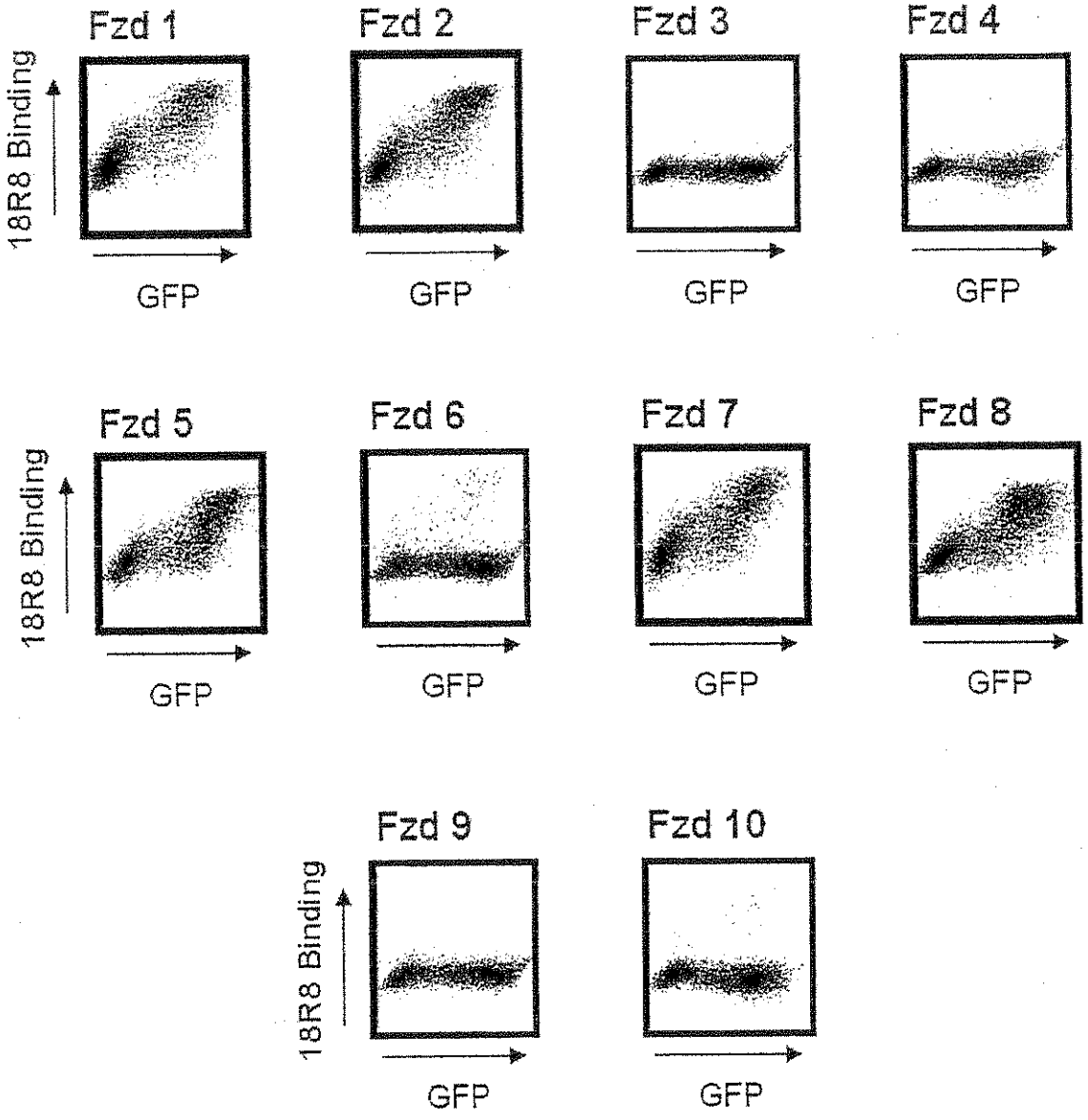
FIGURE 1



Transient transfection of FZD expression vectors + GFP
in HEK293 cells with 10ug/ml 18R8

FIGURE 2

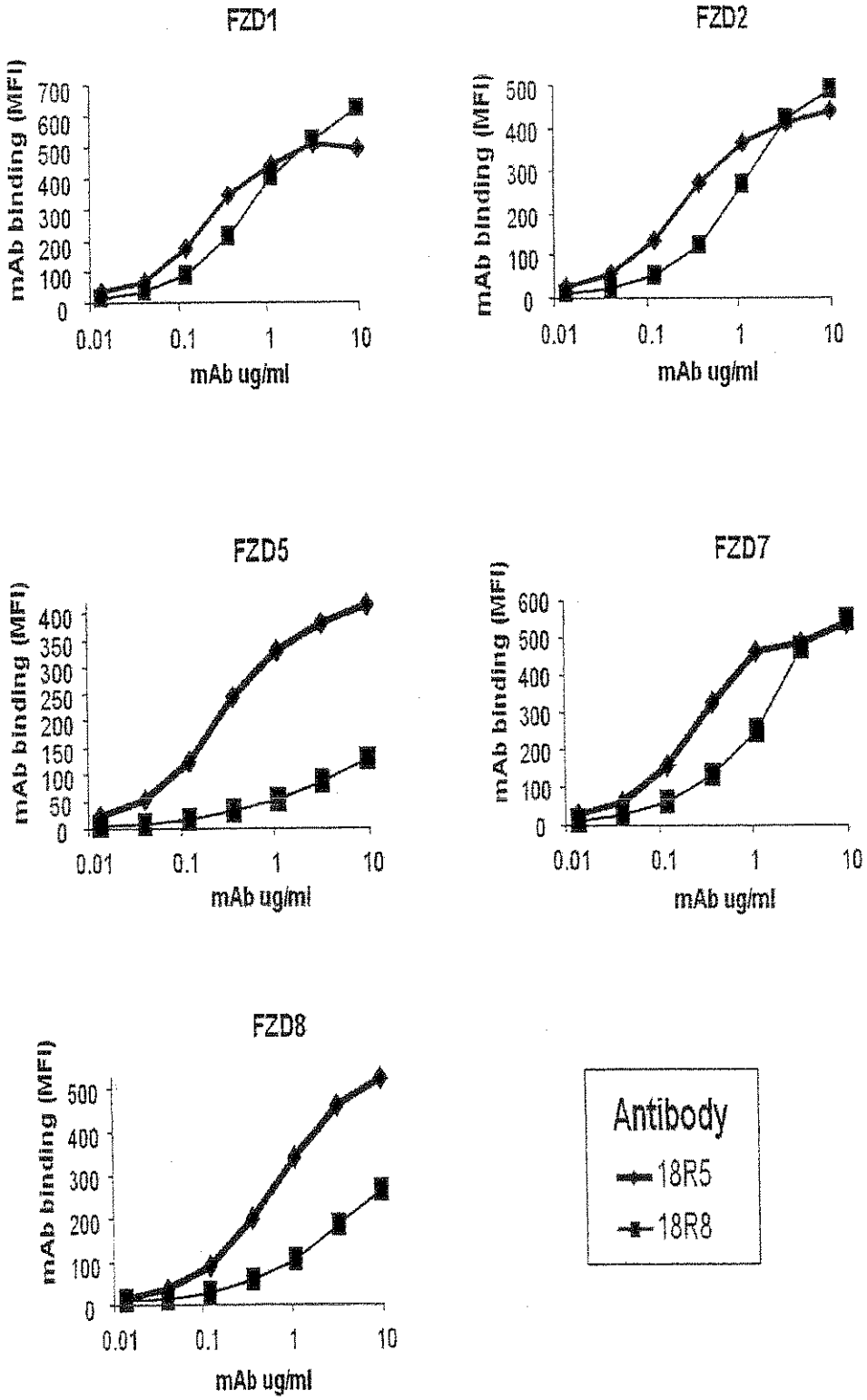

FZD1
mAb binding (MFI)
700
600
500
400
300
200
100
0
0.01
0.1
1
10
mAb ug/ml
FZD2
mAb binding (MFI)
500
400
300
200
100
0
0.01
0.1
1
10
mAb ug/ml
FZD5
mAb binding (MFI)
400
350
300
250
200
150
100
50
0
0.01
0.1
1
10
mAb ug/ml
FZD7
mAb binding (MFI)
600
500
400
300
200
100
0
0.01
0.1
1
10
mAb ug/ml
FZD8
mAb binding (MFI)
500
400
300
200
100
0
0.01
0.1
1
10
mAb ug/ml
Antibody
18R5
18R8

FIGURE 3

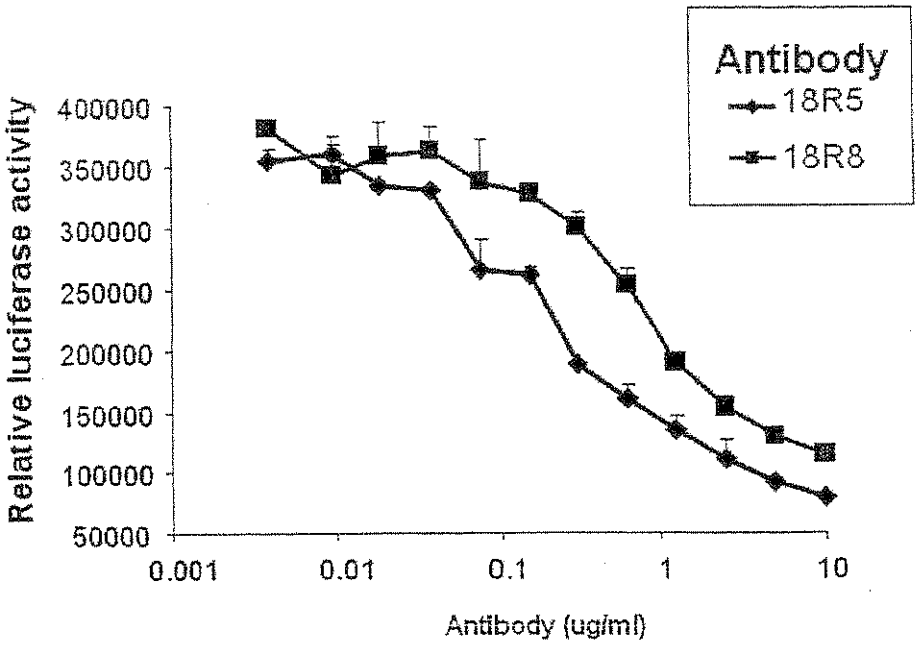

Antibody
18R5
18R8
Relative luciferase activity
400000
350000
300000
250000
200000
150000
100000
50000
0.001
0.01
0.1
1
10
Antibody (ug/ml)

FIGURE 4

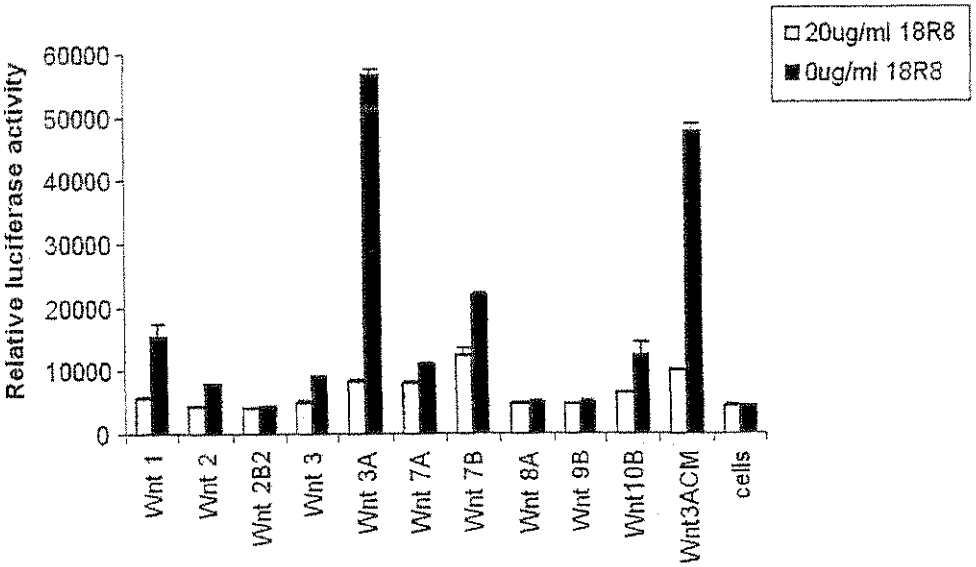

20ug/ml 18R8
0ug/ml 18R8
Relative luciferase activity
60000
50000
40000
30000
20000
10000
0
Wnt 1
Wnt 2
Wnt 2B2
Wnt 3
Wnt 3A
Wnt 7A
Wnt 7B
Wnt 8A
Wnt 9B
Wnt10B
Wnt3ACM
cells

FIGURE 5

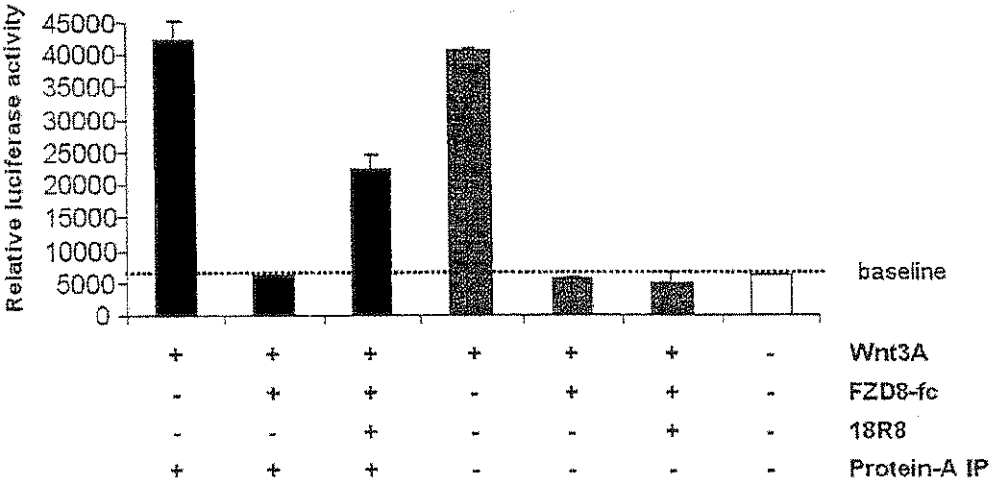

Relative luciferase activity
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
baseline
+ + + + + + - Wnt3A
- + + - + + - FZD8-fc
- - + - - + - 18R8
+ + + - - - - Protein-A IP

FIGURE 6

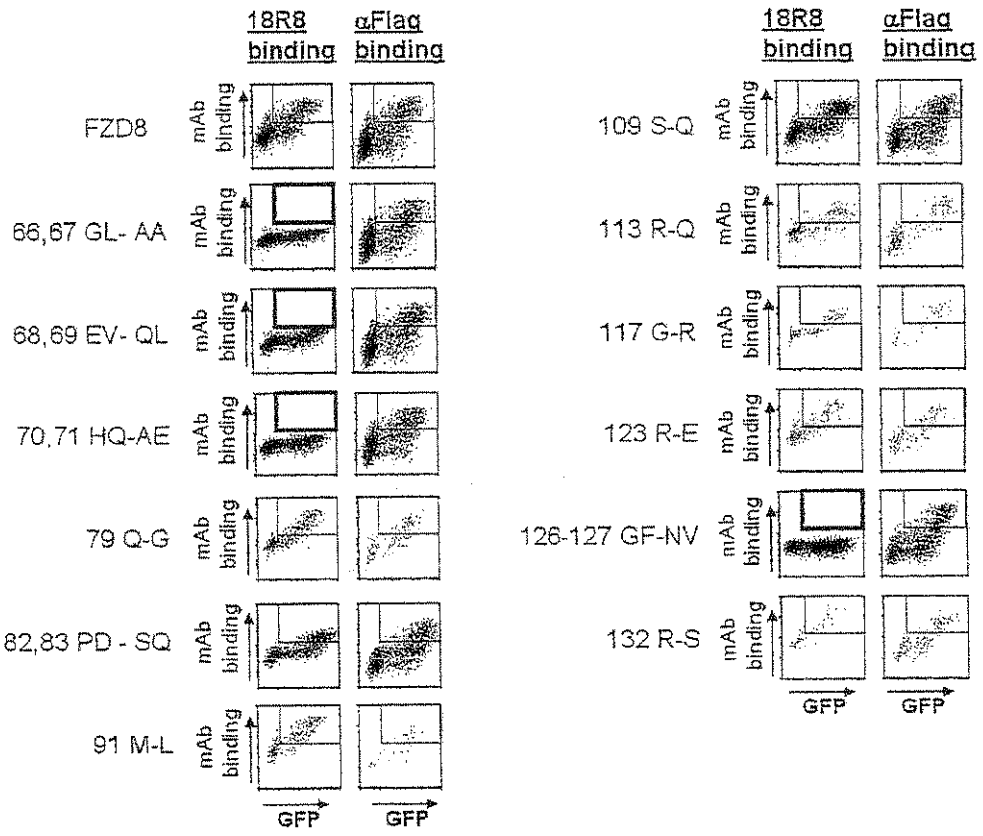

18R8 binding
αFlag binding
FZD8
66,67 GL- AA
68,69 EV- QL
70,71 HQ-AE
79 Q-G
82,83 PD - SQ
91 M-L
109 S-Q
113 R-Q
117 G-R
123 R-E
126-127 GF-NV
132 R-S
mAb binding
GFP

FIGURE 7

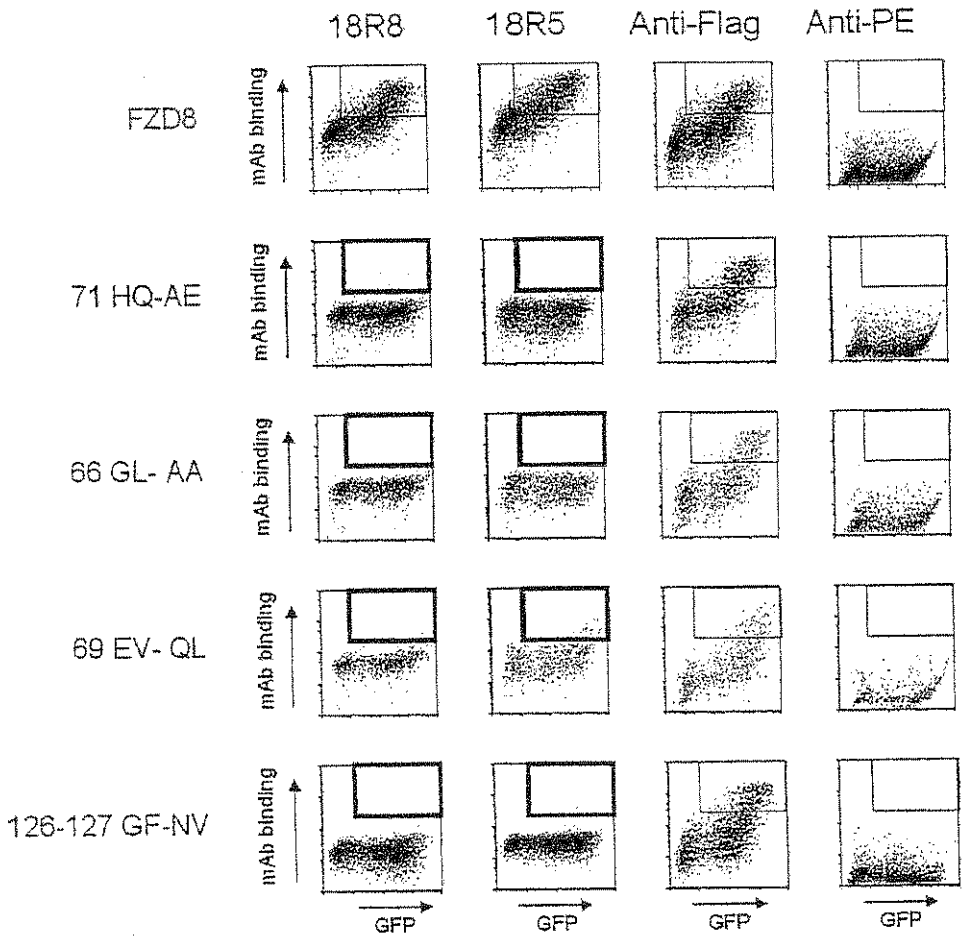
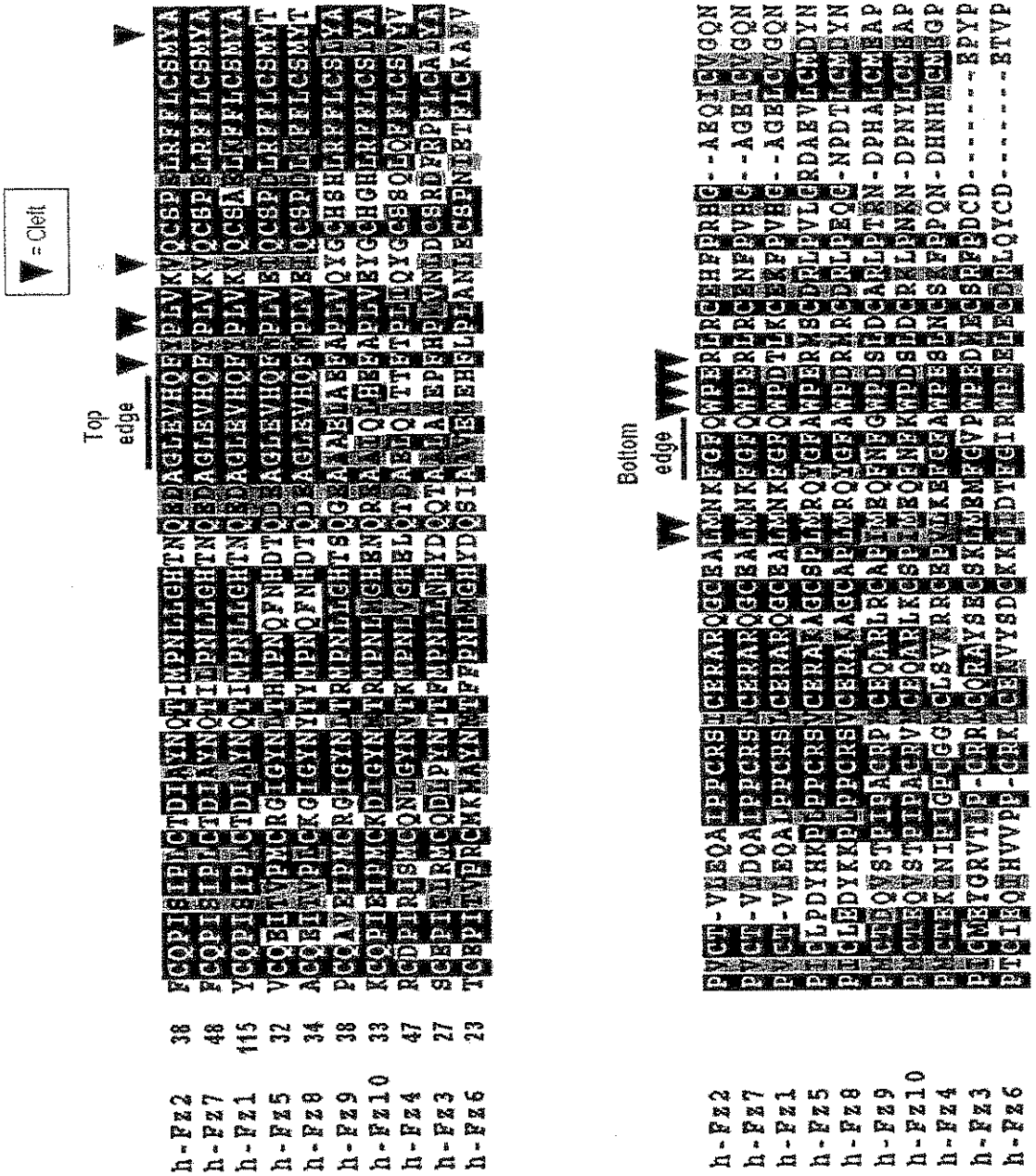

18R8
18R5
Anti-Flag
Anti-PE
FZD8
71 HQ-AE
66 GL- AA
69 EV- QL
126-127 GF-NV
mAb binding
GFP

FIGURE 8


= Cleft
Top
edge
Bottom
edge
h-Fz2
h-Fz7
h-Fz1
h-Fz5
h-Fz8
h-Fz9
h-Fz10
h-Fz4
h-Fz3
h-Fz6

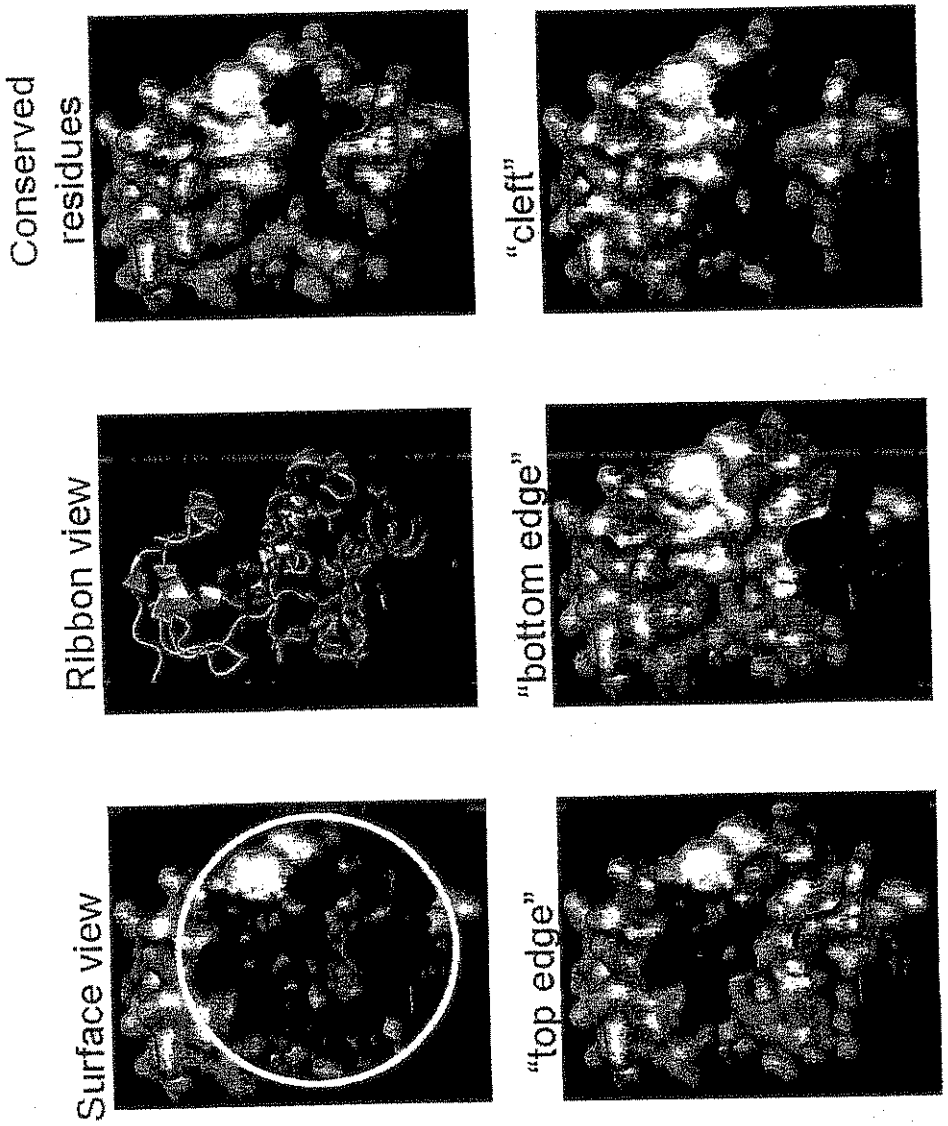

Surface view
Ribbon view
Conserved residues
"top edge"
"bottom edge"
"cleft"

Figure 9

FIGURE 10

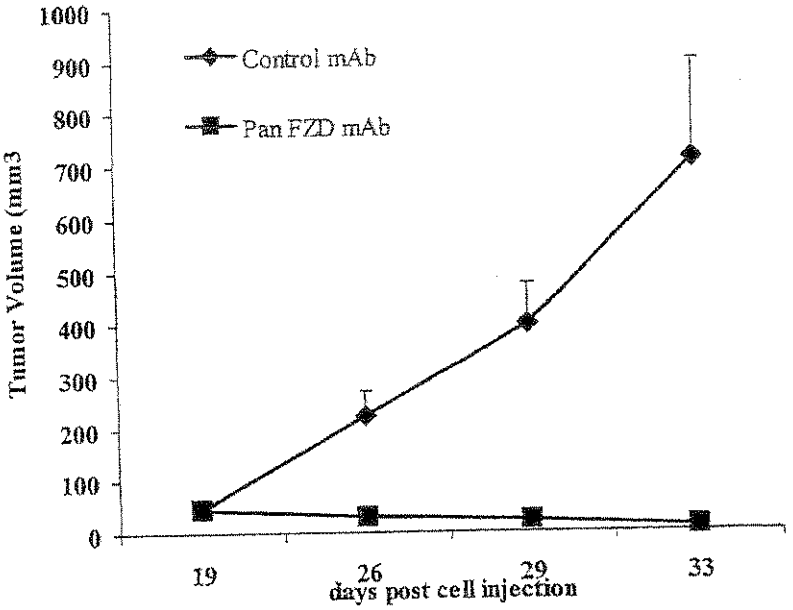

1000
900
800
700
600
500
400
300
200
100
0
Tumor Volume (mm3
Control mAb
Pan FZD mAb
19
26
29
33
days post cell injection

FIGURE 11

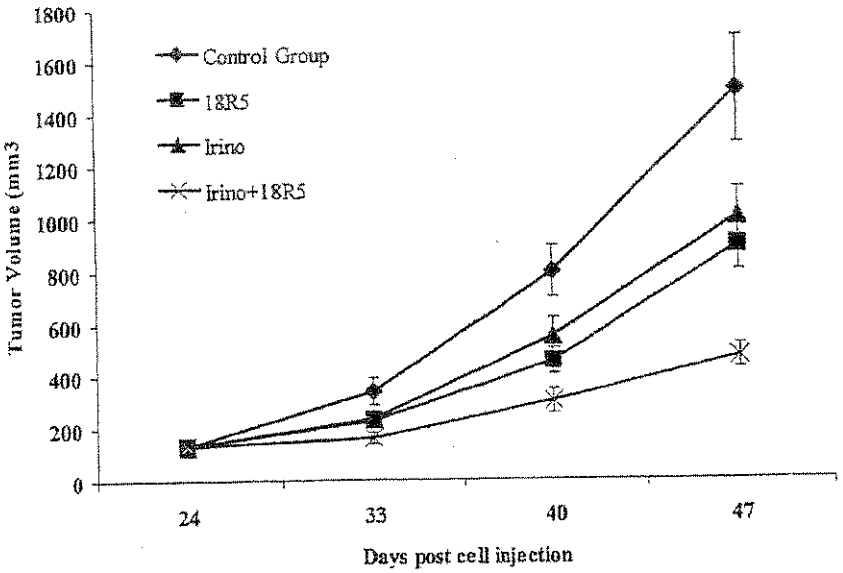

1800
1600
1400
1200
1000
800
600
400
200
0
Tumor Volume (mm3
Control Group
18R5
Irino
Irino+18R5
24
33
40
47
Days post cell injection

FIGURE 12

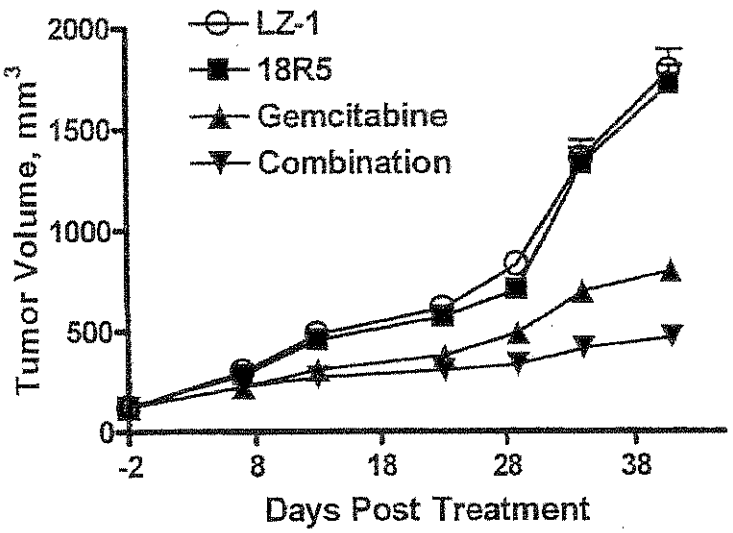

LZ-1
18R5
Gemcitabine
Combination
Tumor Volume, mm3
2000
1500
1000
500
0
-2
8
18
28
38
Days Post Treatment

FIGURE 13

18R5/18R8 heavy chain variable region (VH) amino acid sequence (SEQ ID NO:10):
EVQLVESGGGLVQPGGSLRLSCAASGFTFSHYTLSWVRQAPGKGLEWVSVISGDGSYTYYADSV
KGRFTISSDNSKNTLYLQMNSLRAEDTAVYYCARNFIKYVFANWGQGTLVTVSS

Full-length 18R5/18R8 heavy chain (IgG2) amino acid sequence (SEQ ID NO:11; underlining indicates VH):
MKHLWFFLLLVAAPRWVLSEVQLVESGGGLVQPGGSLRLSCAASGFTFSHYTLSWVRQAPGKGL
EWVSVISGDGSYTYYADSVKGRFTISSDNSKNTLYLQMNSLRAEDTAVYYCARNFIKYVFANWG
QGTLVTVSSASTKGPSVFPLAPCSRSTSESTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPA
VLQSSGLYSLSSVVTVPSSNFGTQTYTCNVDHKPSNTKVDKTVERKCCVECPPCPAPPVAGPSV
FLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVQFNWYVDGVEVHNAKTKPREEQFNSTFRVVS
VLTVVHQDWLNGKEYKCKVSNKGLPAPIEKTISKTKGQPREPQVYTLPPSREEMTKNQVSLTCL
VKGFYPSDIAVEWESNGQPENNYKTTPPMLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEAL
HNHYTQKSLSLSPGK

18R8 light chain variable region (VL) amino acid sequence (SEQ ID NO:12):
DIELTQPPSVSVAPGQTARISCSGDKLGKKYASWYQQKPGQAPVLVIYEKDNRPSGIPERFSGS
NSGNTATLTISGTQAEDEADYYCSSFAGNSLEVFGGGTKLTVLG

Full-length 18R8 light chain (lambda) amino acid sequence (SEQ ID NO:13; underlining indicates VL):
MAWALLLLTLLTQGTGSWADIELTQPPSVSVAPGQTARISCSGDKLGKKYASWYQQKPGQAPVL
VIYEKDNRPSGIPERFSGSNSGNTATLTISGTQAEDEADYYCSSFAGNSLEVFGGGTKLTVLGQ
PKAAPSVTLFPPSSEELQANKATLVCLISDFYPGAVTVAWKADSSPVKAGVETTTPSKQSNNKY
AASSYLSLTPEQWKSHRSYSCQVTHEGSTVEKTVAPTECS

18R5 light chain variable region (VL) amino acid sequence (SEQ ID NO:14):
DIELTQPPSVSVAPGQTARISCSGDNIGSFYVHWYQQKPGQAPVLVIYDKSNRPSGIPERFSGS
NSGNTATLTISGTQAEDEADYYCQSYANTLSLVFGGGTKLTVLG

Full-length 18R5 light chain (lambda) amino acid sequence (SEQ ID NO:15; underlining indicates VL):
MAWALLLLTLLTQGTGSWADIELTQPPSVSVAPGQTARISCSGDNIGSFYVHWYQQKPGQAPVL
VIYDKSNRPSGIPERFSGSNSGNTATLTISGTQAEDEADYYCQSYANTLSLVFGGGTKLTVLGQ
PKAAPSVTLFPPSSEELQANKATLVCLISDFYPGAVTVAWKADSSPVKAGVETTTPSKQSNNKY
AASSYLSLTPEQWKSHRSYSCQVTHEGSTVEKTVAPTECS

FIGURE 14

Nucleotide sequence encoding 18R5/18R8 heavy chain variable region (VH) (SEQ ID NO:17):

GAAGTGCAACTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCTGGCGGCAGCCTGAGACTGAGC
TGCGCTGCCTCCGGATTTACCTTTTCTCATTATACTCTGTCTTGGGTGCGCCAAGCCCCT
GGGAAGGGTCTCGAGTGGGTGAGCGTTATCTCTGGTGATGGTAGCTATACCTATTATGCT
GATAGCGTGAAAGGCAGATTTACCATTTCAAGTGATAATTCCAAAAACACCCTGTATCTG
CAAATGAACAGCCTGAGAGCTGAAGATACAGCCGTGTATTATTGCGCTAGAAATTTTATT
AAGTATGTTTTTGCTAATTGGGGCCAAGGCACCCTGGTGACAGTTAGCTCA

Nucleotide sequence encoding full-length 18R5/18R8 heavy chain (IgG2) (SEQ ID NO:18; underlining indicates nt sequence encoding VH):

ATGAAACACCTGTGGTTCTTCCTCCTGCTGGTGGCAGCTCCCAGATGGGTCCTGTCCGAA
GTGCAACTGGTGGAAAGCGGCGGCGGCCTGGTGCAACCTGGCGGCAGCCTGAGACTGAGC
TGCGCTGCCTCCGGATTTACCTTTTCTCATTATACTCTGTCTTGGGTGCGCCAAGCCCCT
GGGAAGGGTCTCGAGTGGGTGAGCGTTATCTCTGGTGATGGTAGCTATACCTATTATGCT
GATAGCGTGAAAGGCAGATTTACCATTTCAAGTGATAATTCCAAAAACACCCTGTATCTG
CAAATGAACAGCCTGAGAGCTGAAGATACAGCCGTGTATTATTGCGCTAGAAATTTTATT
AAGTATGTTTTTGCTAATTGGGGCCAAGGCACCCTGGTGACAGTTAGCTCAGCCAGCACA
AAGGGCCCTAGCGTCTTCCCTCTGGCTCCCTGCAGCAGGAGCACCAGCGAGAGCACAGCC
GCCCTGGGCTGCCTGGTCAAGGACTACTTCCCCGAACCGGTGACGGTGTCGTGGAACTCA
GGCGCTCTGACCAGCGGCGTGCACACCTTCCCAGCTGTCCTACAGTCCTCAGGACTCTAC
TCCCTCAGCAGCGTGGTGACCGTGCCCTCCAGCAACTTCGGCACCCAGACCTACACCTGC
AACGTAGATCACAAGCCCAGCAACACCAAGGTGGACAAGACAGTTGAGCGCAAATGTTGT
GTCGAGTGCCCACCGTGCCCAGCACCACCTGTGGCAGGACCGTCAGTCTTCCTCTTCCCC
CCAAAACCCAAGGACACCCTCATGATCTCCCGGACCCCTGAGGTCACGTGCGTGGTGGTG
GACGTGAGCCACGAAGACCCCGAGGTCCAGTTCAACTGGTACGTGGACGGCGTGGAGGTG
CATAATGCCAAGACAAAGCCACGGGAGGAGCAGTTCAACAGCACGTTCCGTGTGGTCAGC
GTCCTCACCGTTGTGCACCAGGACTGGCTGAACGGCAAGGAGTACAAGTGCAAGGTCTCC
AACAAAGGCCTCCCAGCCCCCATCGAGAAAACCATCTCCAAAACCAAAGGGCAGCCCCGA
GAACCACAGGTGTACACCCTGCCCCCATCCCGGGAGGAGATGACCAAGAACCAGGTCAGC
CTGACCTGCCTGGTCAAAGGCTTCTACCCCAGCGACATCGCCGTGGAGTGGGAGAGCAAT
GGGCAGCCGGAGAACAACTACAAGACCACACCTCCCATGCTGGACTCCGACGGCTCCTTC
TTCCTCTACAGCAAGCTCACCGTGGACAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTCA
TGCTCCGTGATGCATGAGGCTCTGCACAACCACTACACGCAGAAGAGCCTCTCCCTGTCT
CCGGGTAAA

FIGURE 15

Nucleotide sequence encoding 18R8 light chain variable region (VL) (SEQ ID NO:19):

GATATCGAACTGACCCAGCCTCCTTCAGTGAGCGTTGCACCAGGTCAGACCGCTAGAATCTCT
TGTAGCGGCGATAAGCTGGGTAAGAAGTATGCTTCTTGGTACCAGCAGAAACCCGGGCAG
GCTCCAGTTCTGGTGATTTATGAGAAGGATAATAGACCCTCAGGCATCCCTGAACGCTTT
AGCGGATCCAACAGCGGCAACACCGCTACCCTGACCATTAGCGGCACTCAGGCTGAAGAC
GAAGCCGATTATTATTGCTCTTCTTTTGCTGGTAATTCTCTGGAGGTGTTTGGCGGCGGC
ACCAAGTTAACCGTCCTGGGT

Nucleotide sequence encoding full-length 18R8 light chain (lambda) (SEQ ID NO:20; underlining indicates nt sequence encoding VL):

ATGGCCTGGGCTCTGCTGCTCCTCACCCTCCTCACTCAGGGCACAGGATCCTGGGCTGAT
ATCGAACTGACCCAGCCTCCTTCAGTGAGCGTTGCACCAGGTCAGACCGCTAGAATCTCT
TGTAGCGGCGATAAGCTGGGTAAGAAGTATGCTTCTTGGTACCAGCAGAAACCCGGGCAG
GCTCCAGTTCTGGTGATTTATGAGAAGGATAATAGACCCTCAGGCATCCCTGAACGCTTT
AGCGGATCCAACAGCGGCAACACCGCTACCCTGACCATTAGCGGCACTCAGGCTGAAGAC
GAAGCCGATTATTATTGCTCTTCTTTTGCTGGTAATTCTCTGGAGGTGTTTGGCGGCGGC
ACCAAGTTAACCGTCCTGGGTCAGCCCAAGGCTGCCCCCAGCGTCACTCTGTTCCCTCCC
TCCTCTGAGGAGCTGCAAGCCAACAAGGCCACACTGGTGTGTCTCATAAGTGACTTCTAC
CCTGGAGCCGTGACAGTGGCCTGGAAGGCAGATAGCAGCCCCGTCAAGGCTGGAGTGGAG
ACCACCACACCCTCCAAACAAAGCAACAACAAGTACGCTGCCAGCAGCTATCTGAGCCTG
ACACCTGAGCAGTGGAAGTCCCACAGAAGCTACAGCTGCCAGGTCACACATGAAGGGAGC
ACCGTGGAGAAGACAGTGGCCCCTACAGAATGTTCA

Nucleotide sequence encoding 18R5 light chain variable region (VL) (SEQ ID NO:21):

GATATCGAGCTGACTCAGCCTCCATCCGTGAGTGTGGCCCCTGGTCAGACAGCACGCATCAGC
TGCTCCGGGGACAATATCGGATCTTTCTACGTGCACTGGTATCAGCAGAAGCCTGGTCAG
GCTCCAGTTCTCGTTATCTATGATAAGAGTAATCGCCCCTCTGGGATTCCAGAGCGCTTC
AGCGGAAGCAACAGCGGAAATACTGCAACTCTCACAATTTCCGGTACTCAGGCTGAGGAC
GAAGCCGACTATTACTGCCAAAGCTACGCAAACACCCTGTCCCTCGTCTTCGGAGGCGGA
ACCAAGTTAACCGTCCTGGGT

Nucleotide sequence encoding full-length 18R5 light chain (lambda) (SEQ ID NO:22; underlining nt sequence encoding VL):

ATGGCATGGGCACTGCTGCTGCTCACTCTGCTGACACAAGGTACTGGCTCTTGGGCCGAT
ATCGAGCTGACTCAGCCTCCATCCGTGAGTGTGGCCCCTGGTCAGACAGCACGCATCAGC
TGCTCCGGGGACAATATCGGATCTTTCTACGTGCACTGGTATCAGCAGAAGCCTGGTCAG
GCTCCAGTTCTCGTTATCTATGATAAGAGTAATCGCCCCTCTGGGATTCCAGAGCGCTTC
AGCGGAAGCAACAGCGGAAATACTGCAACTCTCACAATTTCCGGTACTCAGGCTGAGGAC
GAAGCCGACTATTACTGCCAAAGCTACGCAAACACCCTGTCCCTCGTCTTCGGAGGCGGA
ACCAAGTTAACCGTCCTGGGTCAGCCCAAGGCTGCCCCCAGCGTCACTCTGTTCCCTCCC
TCCTCTGAGGAGCTGCAAGCCAACAAGGCCACACTGGTGTGTCTCATAAGTGACTTCTAC
CCTGGAGCCGTGACAGTGGCCTGGAAGGCAGATAGCAGCCCCGTCAAGGCTGGAGTGGAG
ACCACCACACCCTCCAAACAAAGCAACAACAAGTACGCTGCCAGCAGCTATCTGAGCCTG
ACACCTGAGCAGTGGAAGTCCCACAGAAGCTACAGCTGCCAGGTCACACATGAAGGGAGC
ACCGTGGAGAAGACAGTGGCCCCTACAGAATGTTCA

FIGURE 16

Fzd7 ECD Fc fusion protein amino acid sequence (SEQ ID NO:16):

MRDPGAAAPLSSLGLCALVLALLGALSAGAGAQPYHGEKGISVPDHGFCQPISIPLCTDIAYNQ
TILPNLLGHTNQEDAGLEVHQFYPLVKVQCSPELRFFLCSMYAPVCTVLDQAIPPCRSLCERAR
QGCEALMNKFGFQWPERLRCENFPVHGAGEICVGQNTSDGSGGPGGGPTAYPTAPYLPDLPFTA
LPPGASDGRGRPAFPFSCPRQLKVPPYLGYRFLGERDCGAPCEPGRANGLMYFKEEERRFARLG
RADKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGV
EVHNAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREP
QVYTLPPSRDELTKNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKL
TVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK

Nucleotide sequence encoding Fzd7 ECD Fc fusion protein (SEQ ID NO:23):

ATGCGGGACCCCGGCGCGGCCGCTCCGCTTTCGTCCCTGGGCCTCTGTGCCCTGGTGCTG
GCGCTGCTGGGCGCACTGTCCGCGGGCGCCGGGGCGCAGCCGTACCACGGAGAGAAGGGC
ATCTCCGTGCCGGACCACGGCTTCTGCCAGCCCATCTCCATCCCGCTGTGCACGGACATC
GCCTACAACCAGACCATCCTGCCCAACCTGCTGGGCCACACGAACCAAGAGGACGCGGGC
CTCGAGGTGCACCAGTTCTACCCGCTGGTGAAGGTGCAGTGTTCTCCCGAACTCCGCTTT
TTCTTATGCTCCATGTATGCGCCCGTGTGCACCGTGCTCGATCAGGCCATCCCGCCGTGT
CGTTCTCTGTGCGAGCGCGCCCGCCAGGGCTGCGAGGCGCTCATGAACAAGTTCGGCTTC
CAGTGGCCCGAGCGGCTGCGCTGCGAGAACTTCCCGGTGCACGGTGCGGGCGAGATCTGC
GTGGGCCAGAACACGTCGGACGGCTCCGGGGGCCCAGGCGGCGGCCCCACTGCCTACCCT
ACCGCGCCCTACCTGCCGGACCTGCCCTTCACCGCGCTGCCCCCGGGGGCCTCAGATGGC
AGGGGGCGTCCCGCCTTCCCCTTCTCATGCCCCCGTCAGCTCAAGGTGCCCCCGTACCTG
GGCTACCGCTTCCTGGGTGAGCGCGATTGTGGCGCCCCGTGCGAACCGGGCCGTGCCAAC
GGCCTGATGTACTTTAAGGAGGAGGAGAGGCGCTTCGCCCGCCTCGGGCGCGCCGACAAA
ACTCACACATGCCCACCGTGCCCAGCACCTGAACTCCTGGGGGGACCGTCAGTCTTCCTC
TTCCCCCCAAAACCCAAGGACACCCTCATGATCTCCCGGACCCCTGAGGTCACATGCGTG
GTGGTGGACGTGAGCCACGAAGACCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTG
GAGGTGCATAATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTG
GTCAGCGTCCTCACCGTCCTGCACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAG
GTCTCCAACAAAGCCCTCCCAGCCCCCATCGAGAAAACCATCTCCAAAGCCAAAGGGCAG
CCCCGAGAACCACAGGTGTACACCCTGCCCCCATCCCGGGATGAGCTGACCAAGAACCAG
GTCAGCCTGACCTGCCTGGTCAAAGGCTTCTATCCCAGCGACATCGCCGTGGAGTGGGAG
AGCAATGGGCAGCCGGAGAACAACTACAAGACCACGCCTCCCGTGCTGGACTCCGACGGC
TCCTTCTTCCTCTACAGCAAGCTCACCGTGGACAAGAGCAGGTGGCAGCAGGGGAACGTC
TTCTCATGCTCCGTGATGCATGAGGCTCTGCACAACCACTACACACAGAAGAGCCTCTCC
CTGTCTCCGGGTAAA

FIGURE 17

Human FZD1 full length amino acid sequence (SEQ ID NO:26; underlining indicates ECD):
MAEEEAPKKSRAAGGGASWELCAGALSARLAEEGSGDAGGRRRRPPVDPRRLARQLLLLLW
LLEAPLLLGVRAQAAGQGPGQGPGPGQQPPPPPQQQQSGQQYNGERGISVPDHGYCQPIS
IPLCTDIAYNQTIMPNLLGHTNQEDAGLEVHQFYPLVKVQCSAELKFFLCSMYAPVCTVL
EQALPPCRSLCERARQGCEALMNKFGFQWPDTLKCEKFPVHGAGELCVGQNTSDKGTPTP
SLLPEFWTSNPQHGGGGHRGGFPGGAGASERGKFSCPRALKVPSYLNYHFLGEKDCGAPC
EPTKVYGLMYFGPEELRFSRTWIGIWSVLCCASTLFTVLTYLVDMRRFSYPERPIIFLSG
CYTAVAVAYIAGFLLEDRVVCNDKFAEDGARTVAQGTKKEGCTILFMMLYFFSMASSIWW
VILSLTWFLAAGMKWGHEAIEANSQYFHLAAWAVPAIKTITILALGQVDGDVLSGVCFVG
LNNVDALRGFVLAPLFVYLFIGTSFLLAGFVSLFRIRTIMKHDGTKTEKLEKLMVRIGVF
SVLYTVPATIVIACYFYEQAFRDQWERSWVAQSCKSYAIPCPHLQAGGGAPPHPPMSPDF
TVFMIKYLMTLIVGITSGFWIWSGKTLNSWRKFYTRLTNSKQGETTV

Human FZD1 Fri domain amino acid sequence (SEQ ID NO:28; amino acids 87-237 of SEQ ID NO:26):
QQPPPPPQQQQSGQQYNGERGISVPDHGYCQPISIPLCTDIAYNQTIMPNLLGHTNQEDA
GLEVHQFYPLVKVQCSAELKFFLCSMYAPVCTVLEQALPPCRSLCERARQGCEALMNKFG
FQWPDTLKCEKFPVHGAGELCVGQNTSDKGT

FIGURE 18

Human FZD2 full length amino acid sequence (SEQ ID NO: 30; underlining indicates ECD):
MRPRSALPRLLLPLLLLPAAGPAQFHGEKGISIPDHGFCQPISIPLCTDIAYNQTIMPNL
LGHTNQEDAGLEVHQFYPLVKVQCSPELRFFLCSMYAPVCTVLEQAIPPCRSICERARQG
CEALMNKFGFQWPERLRCEHFPRHGAEQICVGQNHSEDGAPALLTTAPPPGLQPGAGGTP
GGPGGGGAPPRYATLEHPFHCPRVLKVPSYLSYKFLGERDCAAPCEPARPDGSMFFSQEE
TRFARLWILTWSVLCCASTFFTVTTYLVDMQRFRYPERPIIFLSGCYTMVSVAYIAGFVL
QERVVCNERFSEDGYRTVVQGTKKEGCTILFMMLYFFSMASSIWWVILSLTWFLAAGMKW
GHEAIEANSQYFHLAAWAVPAVKTITILAMGQIDGDLLSGVCFVGLNSLDPLRGFVLAPL
FVYLFIGTSFLLAGFVSLFRIRTIMKHDGTKTEKLERLMVRIGVFSVLYTVPATIVIACY
FYEQAFREHWERSWVSQHCKSLAIPCPAHYTPRMSPDFTVYMIKYLMTLIVGITSGFWIW
SGKTLHSWRKFYTRLTNSRHGETTV

Human FZD2 Fri domain amino acid sequence (SEQ ID NO:32; amino acids 24-159 of SEQ ID NO:30):
QFHGEKGISIPDHGFCQPISIPLCTDIAYNQTIMPNLLGHTNQEDAGLEVHQFYPLVKVQ
CSPELRFFLCSMYAPVCTVLEQAIPPCRSICERARQGCEALMNKFGFQWPERLRCEHFPR
HGAEQICVGQNHSEDG

FIGURE 19

Human FZD1 full length DNA sequence (SEQ ID NO:29):

ATGGCTGAGGAGGAGGCGCCTAAGAAGTCCCGGGCCGCCGGCGGTGGCGCGAGCTGGGAA
CTTTGTGCCGGGGCGCTCTCGGCCCGGCTGGCGGAGGAGGGCAGCGGGGACGCCGGTGGC
CGCCGCCGCCCGCCAGTTGACCCCCGGCGATTGGCGCGCCAGCTGCTGCTGCTGCTTTGG
CTGCTGGAGGCTCCGCTGCTGCTGGGGGTCCGGGCCCAGGCGGCGGGCCAGGGGCCAGGC
CAGGGGCCCGGGCCGGGGCAGCAACCGCCGCCGCCGCCTCAGCAGCAACAGAGCGGGCAG
CAGTACAACGGCGAGCGGGGCATCTCCGTCCCGGACCACGGCTATTGCCAGCCCATCTCC
ATCCCGCTGTGCACGGACATCGCGTACAACCAGACCATCATGCCCAACCTGCTGGGCCAC
ACGAACCAGGAGGACGCGGGCCTGGAGGTGCACCAGTTCTACCCTCTAGTGAAAGTGCAG
TGTTCCGCTGAGCTCAAGTTCTTCCTGTGCTCCATGTACGCGCCCGTGTGCACCGTGCTA
GAGCAGGCGCTGCCGCCCTGCCGCTCCCTGTGCGAGCGCGCGCGCCAGGGCTGCGAGGCG
CTCATGAACAAGTTCGGCTTCCAGTGGCCAGACACGCTCAAGTGTGAGAAGTTCCCGGTG
CACGGCGCCGGCGAGCTGTGCGTGGGCCAGAACACGTCCGACAAGGGCACCCCGACGCCC
TCGCTGCTTCCAGAGTTCTGGACCAGCAACCCTCAGCACGGCGGCGGAGGGCACCGTGGC
GGCTTCCCGGGGGGCGCCGGCGCGTCGGAGCGAGGCAAGTTCTCCTGCCCGCGCGCCCTC
AAGGTGCCCTCCTACCTCAACTACCACTTCCTGGGGGAGAAGGACTGCGGCGCACCTTGT
GAGCCGACCAAGGTGTATGGGCTCATGTACTTCGGGCCCGAGGAGCTGCGCTTCTCGCGC
ACCTGGATTGGCATTTGGTCAGTGCTGTGCTGCGCCTCCACGCTCTTCACGGTGCTTACG
TACCTGGTGGACATGCGGCGCTTCAGCTACCCGGAGCGGCCCATCATCTTCTTGTCCGGC
TGTTACACGGCCGTGGCCGTGGCCTACATCGCCGGCTTCCTCCTGGAAGACCGAGTGGTG
TGTAATGACAAGTTCGCCGAGGACGGGGCACGCACTGTGGCGCAGGGCACCAAGAAGGAG
GGCTGCACCATCCTCTTCATGATGCTCTACTTCTTCAGCATGGCCAGCTCCATCTGGTGG
GTGATCCTGTCGCTCACCTGGTTCCTGGCGGCTGGCATGAAGTGGGGCCACGAGGCCATC
GAAGCCAACTCACAGTATTTTCACCTGGCCGCCTGGGCTGTGCCGGCCATCAAGACCATC
ACCATCCTGGCGCTGGGCCAGGTGGACGGCGATGTGCTGAGCGGAGTGTGCTTCGTGGGG
CTTAACAACGTGGACGCGCTGCGTGGCTTCGTGCTGGCGCCCCTCTTCGTGTACCTGTTT
ATCGGCACGTCCTTTCTGCTGGCCGGCTTTGTGTCGCTCTTCCGCATCCGCACCATCATG
AAGCACGATGGCACCAAGACCGAGAAGCTGGAGAAGCTCATGGTGCGCATTGGCGTCTTC
AGCGTGCTGTACACTGTGCCAGCCACCATCGTCATCGCCTGCTACTTCTACGAGCAGGCC
TTCCGGGACCAGTGGGAACGCAGCTGGGTGGCCCAGAGCTGCAAGAGCTACGCTATCCCC
TGCCCTCACCTCCAGGCGGGCGGAGGCGCCCCGCCGCACCCGCCCATGAGCCCGGACTTC
ACGGTCTTCATGATTAAGTACCTTATGACGCTGATCGTGGGCATCACGTCGGGCTTCTGG
ATCTGGTCCGGCAAGACCCTCAACTCCTGGAGGAAGTTCTACACGAGGCTCACCAACAGC
AAACAAGGGGAGACTACAGTCTGA

FIGURE 20

Human FZD2 full length DNA sequence (SEQ ID NO: 33):

ATGCGGCCCCGCAGCGCCCTGCCCCGCCTGCTGCTGCCGCTGCTGCTGCTGCCCGCCGCC
GGGCCGGCCCAGTTCCACGGGGAGAAGGGCATCTCCATCCCGGACCACGGCTTCTGCCAG
CCCATCTCCATCCCGCTGTGCACGGACATCGCCTACAACCAGACCATCATGCCCAACCTT
CTGGGCCACACGAACCAGGAGGACGCAGGCCTAGAGGTGCACCAGTTCTATCCGCTGGTG
AAGGTGCAGTGCTCGCCCGAACTGCGCTTCTTCCTGTGCTCCATGTACGCACCCGTGTGC
ACCGTGCTGGAACAGGCCATCCCGCCGTGCCGCTCTATCTGTGAGCGCGCGCGCCAGGGC
TGCGAAGCCCTCATGAACAAGTTCGGTTTTCAGTGGCCCGAGCGCCTGCGCTGCGAGCAC
TTCCCGCGCCACGGCGCCGAGCAGATCTGCGTCGGCCAGAACCACTCCGAGGACGGAGCT
CCCGCGCTACTCACCACCGCGCCGCCGCCGGGACTGCAGCCGGGTGCCGGGGGCACCCCG
GGTGGCCCGGGCGGCGGCGGCGCTCCCCCGCGCTACGCCACGCTGGAGCACCCCTTCCAC
TGCCCGCGCGTCCTCAAGGTGCCATCCTATCTCAGCTACAAGTTTCTGGGCGAGCGTGAT
TGTGCTGCGCCCTGCGAACCTGCGCGGCCCGATGGTTCCATGTTCTTCTCACAGGAGGAG
ACGCGTTTCGCGCGCCTCTGGATCCTCACCTGGTCGGTGCTGTGCTGCGCTTCCACCTTC
TTCACTGTCACCACGTACTTGGTAGACATGCAGCGCTTCCGCTACCCAGAGCGGCCTATC
ATTTTTCTGTCGGGCTGCTACACCATGGTGTCGGTGGCCTACATCGCGGGCTTCGTGCTC
CAGGAGCGCGTGGTGTGCAACGAGCGCTTCTCCGAGGACGGTTACCGCACGGTGGTGCAG
GGCACCAAGAAGGAGGGCTGCACCATCCTCTTCATGATGCTCTACTTCTTCAGCATGGCC
AGCTCCATCTGGTGGGTCATCCTGTCGCTCACCTGGTTCCTGGCAGCCGGCATGAAGTGG
GGCCACGAGGCCATCGAGGCCAACTCTCAGTACTTCCACCTGGCCGCCTGGGCCGTGCCG
GCCGTCAAGACCATCACCATCCTGGCCATGGGCCAGATCGACGGCGACCTGCTGAGCGGC
GTGTGCTTCGTAGGCCTCAACAGCCTGGACCCGCTGCGGGGCTTCGTGCTAGCGCCGCTC
TTCGTGTACCTGTTCATCGGCACGTCCTTCCTCCTGGCCGGCTTCGTGTCGCTCTTCCGC
ATCCGCACCATCATGAAGCACGACGGCACCAAGACCGAAAAGCTGGAGCGGCTCATGGTG
CGCATCGGCGTCTTCTCCGTGCTCTACACAGTGCCCGCCACCATCGTCATCGCTTGCTAC
TTCTACGAGCAGGCCTTCCGCGAGCACTGGGAGCGCTCGTGGGTGAGCCAGCACTGCAAG
AGCCTGGCCATCCCGTGCCCGGCGCACTACACGCCGCGCATGTCGCCCGACTTCACGGTC
TACATGATCAAATACCTCATGACGCTCATCGTGGGCATCACGTCGGGCTTCTGGATCTGG
TCGGGCAAGACGCTGCACTCGTGGAGGAAGTTCTACACTCGCCTCACCAACAGCCGACAC
GGTGAGACCACCGTGTGA

FIGURE 21

Human FZD3 full length amino acid sequence (SEQ ID NO:34):
MAMTWIVFSLWPLTVFMGHIGGHSLFSCEPITLRMCQDLPYNTTFMPNLLNHYDQQTAAL
AMEPFHPMVNLDCSRDFRPFLCALYAPICMEYGRVTLPCRRLCQRAYSECSKLMEMFGVP
WPEDMECSRFPDCDEPYPRLVDLNLAGEPTEGAPVAVQRDYGFWCPRELKIDPDLGYSFL
HVRDCSPPCPNMYFRREELSFARYFIGLISIICLSATLFTFLTFLIDVTRFRYPERPIIF
YAVCYMMVSLIFFIGFLLEDRVACNASIPAQYKASTVTQGSHNKACTMLFMILYFFTMAG
SVWWVILTITWFLAAVPKWGSEAIEKKALLFHASAWGIPGTLTIILLAMNKIEGDNISGV
CFVGLYDVDALRYFVLAPLCLYVVVGVSLLLAGIISLNRVRIEIPLEKENQDKLVKFMIR
IGVFSILYLVPLLVVIGCYFYEQAYRGIWETTWIQERCREYHIPCPYQVTQMSRPDLILF
LMKYLMALIVGIPSVFWVGSKKTCFEWASFFHGRRKKEIVNESRQVLQEPDFAQSLLRDP
NTPIIRKSRGTSTQGTSTHASSTQLAMVDDQRSKAGSIHSKVSSYHGSLHRSRDGRYTPC
SYRGMEERLPHGSMSRLTDHSRHSSSHRLNEQSRHSSIRDLSNNPMTHITHGTSMNRVIE
EDGTSA

Human FZD3 Fri domain amino acid sequence (SEQ ID NO:36; amino acids 18-143 of SEQ ID NO:34):
GHIGGHSLFSCEPITLRMCQDLPYNTTFMPNLLNHYDQQTAALAMEPFHPMVNLDCSRDF
RPFLCALYAPICMEYGRVTLPCRRLCQRAYSECSKLMEMFGVPWPEDMECSRFPDCDEPY
PRLVDL

FIGURE 22

Human FZD4 full length amino acid sequence (SEQ ID NO:38):
MLAMAWRGAGPSVPGAPGGVGLSLGLLLQLLLLLGPARGFGDEEERRCDPIRISMCQNLG
YNVTKMPNLVGHELQTDAELQLTTFTPLIQYGCSSQLQFFLCSVYVPMCTEKINIPIGPC
GGMCLSVKRRCEPVLKEFGFAWPESLNCSKFPPQNDHNHMCMEGPGDEEVPLPHKTPIQP
GEECHSVGTNSDQYIWVKRSLNCVLKCGYDAGLYSRSAKEFTDIWMAVWASLCFISTAFT
VLTFLIDSSRFSYPERPIIFLSMCYNIYSIAYIVRLTVGRERISCDFEEAAEPVLIQEGL
KNTGCAIIFLLMYFFGMASSIWWVILTLTWFLAAGLKWGHEAIEMHSSYFHIAAWAIPAV
KTIVILIMRLVDADELTGLCYVGNQNLDALTGFVVAPLFTYLVIGTLFIAAGLVALFKIR
SNLQKDGTKTDKLERLMVKIGVFSVLYTVPATCVIACYFYEISNWALFRYSADDSNMAVE
MLKIFMSLLVGITSGMWIWSAKTLHTWQKCSNRLVNSGKVKREKRGNGWVKPGKGSETVV

Human FZD4 Fri domain amino acid sequence (SEQ ID NO:40; amino acids 40-170 of SEQ ID NO:38):
FGDEEERRCDPIRISMCQNLGYNVTKMPNLVGHELQTDAELQLTTFTPLIQYGCSSQLQF
FLCSVYVPMCTEKINIPIGPCGGMCLSVKRRCEPVLKEFGFAWPESLNCSKFPPQNDHNH
MCMEGPGDEEV

FIGURE 23

Human FZD3 full length DNA sequence (SEQ ID NO:37):

ATGGCTATGACTTGGATTGTCTTCTCTCTTTGGCCCTTGACTGTGTTCATGGGGCATATA
GGTGGGCACAGTTTGTTTTCTTGTGAACCTATTACCTTGAGGATGTGCCAAGATTTGCCT
TATAATACTACCTTCATGCCTAATCTTCTGAATCATTATGACCAACAGACAGCAGCTTTG
GCAATGGAGCCATTCCACCCTATGGTGAATCTGGATTGTTCTCGGGATTTCCGGCCTTTT
CTTTGTGCACTCTACGCTCCTATTTGTATGGAATATGGACGTGTCACACTTCCCTGTCGT
AGGCTGTGTCAGCGGGCTTACAGTGAGTGTTCGAAGCTCATGGAGATGTTTGGTGTTCCT
TGGCCTGAAGATATGGAATGCAGTAGGTTCCCAGATTGTGATGAGCCATATCCTCGACTT
GTGGATCTGAATTTAGCTGGAGAACCAACTGAAGGAGCCCCAGTGGCAGTGCAGAGAGAC
TATGGTTTTTGGTGTCCCCGAGAGTTAAAAATTGATCCTGATCTGGGTTATTCTTTTCTG
CATGTGCGTGATTGTTCACCTCCTTGTCCAAATATGTACTTCAGAAGAGAAGAACTGTCA
TTTGCTCGCTATTTCATAGGATTGATTTCAATCATTTGCCTCTCGGCCACATTGTTTACT
TTTTTAACTTTTTTGATTGATGTCACAAGATTCCGTTATCCTGAAAGGCCTATTATATTT
TATGCAGTCTGCTACATGATGGTATCCTTAATTTTCTTCATTGGATTTTTGCTTGAAGAT
CGAGTAGCCTGCAATGCATCCATCCCTGCACAATATAAGGCTTCCACAGTGACACAAGGA
TCTCATAATAAAGCCTGTACCATGCTTTTTATGATACTCTATTTTTTTACTATGGCTGGC
AGTGTATGGTGGGTAATTCTTACCATCACATGGTTTTTAGCAGCTGTGCCAAAGTGGGGT
AGTGAAGCTATTGAGAAGAAAGCATTGCTGTTTCACGCCAGTGCATGGGGCATCCCCGGA
ACTCTAACCATCATCCTTTTAGCGATGAATAAAATTGAAGGTGACAATATTAGTGGCGTG
TGTTTTGTTGGCCTCTACGATGTTGATGCATTGAGATATTTTGTTCTTGCTCCCCTCTGC
CTGTATGTGGTAGTTGGGGTTTCTCTCCTCTTAGCTGGCATTATATCCCTAAACAGAGTT
CGAATTGAGATTCCATTAGAAAAGGAGAACCAAGATAAATTAGTGAAGTTTATGATCCGG
ATCGGTGTTTTCAGCATTCTTTATCTCGTACCACTCTTGGTTGTAATTGGATGCTACTTT
TATGAGCAAGCTTACCGGGGCATCTGGGAAACAACGTGGATACAAGAACGCTGCAGAGAA
TATCACATTCCATGTCCATATCAGGTTACTCAAATGAGTCGTCCAGACTTGATTCTCTTT
CTGATGAAATACCTGATGGCTCTCATAGTTGGCATTCCCTCTGTATTTTGGGTTGGAAGC
AAAAAGACATGCTTTGAATGGGCCAGTTTTTTTCATGGTCGTAGGAAAAAAGAGATAGTG
AATGAGAGCCGACAGGTACTCCAGGAACCTGATTTTGCTCAGTCTCTCCTGAGGGATCCA
AATACTCCTATCATAAGAAAGTCAAGGGGAACTTCCACTCAAGGAACATCCACCCATGCT
TCTTCAACTCAGCTGGCTATGGTGGATGATCAAAGAAGCAAAGCAGGAAGCATCCACAGC
AAAGTGAGCAGCTACCACGGCAGCCTCCACAGATCACGTGATGGCAGGTACACGCCCTGC
AGTTACAGAGGAATGGAGGAGAGACTACCTCATGGCAGCATGTCACGACTAACAGATCAC
TCCAGGCATAGTAGTTCTCATCGGCTCAATGAACAGTCACGACATAGCAGCATCAGAGAT
CTCAGTAATAATCCCATGACTCATATCACACATGGCACCAGCATGAATCGGGTTATTGAA
GAAGATGGAACCAGTGCTTAA

FIGURE 24

Human FZD4 full length DNA sequence (SEQ ID NO:41):

ATGCTGGCCATGGCCTGGCGGGGCGCAGGGCCGAGCGTCCCGGGGGCGCCCGGGGGCGTC
GGTCTCAGTCTGGGGTTGCTCCTGCAGTTGCTGCTGCTCCTGGGGCCGGCGCGGGGCTTC
GGGGACGAGGAAGAGCGGCGCTGCGACCCCATCCGCATCTCCATGTGCCAGAACCTCGGC
TACAACGTGACCAAGATGCCCAACCTGGTTGGGCACGAGCTGCAGACGGACGCCGAGCTG
CAGCTGACAACTTTCACACCGCTCATCCAGTACGGCTGCTCCAGCCAGCTGCAGTTCTTC
CTTTGTTCTGTTTATGTGCCAATGTGCACAGAGAAGATCAACATCCCCATTGGCCCATGC
GGCGGCATGTGTCTTTCAGTCAAGAGACGCTGTGAACCCGTCCTGAAGGAATTTGGATTT
GCCTGGCCAGAGAGTCTGAACTGCAGCAAATTCCCACCACAGAACGACCACAACCACATG
TGCATGGAAGGGCCAGGTGATGAAGAGGTGCCCTTACCTCACAAAACCCCCATCCAGCCT
GGGGAAGAGTGTCACTCTGTGGGAACCAATTCTGATCAGTACATCTGGGTGAAAAGGAGC
CTGAACTGTGTGCTCAAGTGTGGCTATGATGCTGGCTTATACAGCCGCTCAGCCAAGGAG
TTCACTGATATCTGGATGGCTGTGTGGGCCAGCCTGTGTTTCATCTCCACTGCCTTCACA
GTACTGACCTTCCTGATCGATTCTTCTAGGTTTTCCTACCCTGAGCGCCCCATCATATTT
CTCAGTATGTGCTATAATATTTATAGCATTGCTTATATTGTCAGGCTGACTGTAGGCCGG
GAAAGGATATCCTGTGATTTTGAAGAGGCAGCAGAACCTGTTCTCATCCAAGAAGGACTT
AAGAACACAGGATGTGCAATAATTTTCTTGCTGATGTACTTTTTTGGAATGGCCAGCTCC
ATTTGGTGGGTTATTCTGACACTCACTTGGTTTTTGGCAGCAGGACTCAAATGGGGTCAT
GAAGCCATTGAAATGCACAGCTCTTATTTCCACATTGCAGCCTGGGCCATCCCCGCAGTG
AAAACCATTGTCATCTTGATTATGAGACTGGTGGATGCAGATGAACTGACTGGCTTGTGC
TATGTTGGAAACCAAAATCTCGATGCCCTCACCGGGTTCGTGGTGGCTCCCCTCTTTACT
TATTTGGTCATTGGAACTTTGTTCATTGCTGCAGGTTTGGTGGCCTTGTTCAAAATTCGG
TCAAATCTTCAAAAGGATGGGACAAAGACAGACAAGTTAGAAAGACTGATGGTCAAGATT
GGGGTGTTCTCAGTACTGTACACAGTTCCTGCAACGTGTGTGATTGCCTGTTATTTTTAT
GAAATCTCCAACTGGGCACTTTTTCGGTATTCTGCAGATGATTCCAACATGGCTGTTGAA
ATGTTGAAAATTTTTATGTCTTTGTTGGTGGGCATCACTTCAGGCATGTGGATTTGGTCT
GCCAAAACTCTTCACACGTGGCAGAAGTGTTCCAACAGATTGGTGAATTCTGGAAAGGTA
AAGAGAGAGAAGAGAGGAAATGGTTGGGTGAAGCCTGGAAAAGGCAGTGAGACTGTGGTA
TAA

FIGURE 25

Human FZD5 full length amino acid sequence (SEQ ID NO:42; underlining indicates ECD):
MARPDPSAPPSLLLLLLAQLVGRAAAASKAPVCQEITVPMCRGIGYNLTHMPNQFNHDTQ
DEAGLEVHQFWPLVEIQCSPDLRFFLCSMYTPICLPDYHKPLPPCRSVCERAKAGCSPLM
RQYGFAWPERMSCDRLPVLGRDAEVLCMDYNRSEATTAPPRPFPAKPTLPGPPGAPASGG
ECPAGGPFVCKCREPFVPILKESHPLYNKVRTGQVPNCAVPCYQPSFSADERTFATFWIG
LWSVLCFISTSTTVATFLIDMERFRYPERPIIFLSACYLCVSLGFLVRLVVGHASVACSR
EHNHIHYETTGPALCTIVFLLVYFFGMASSIWWVILSLTWFLAAGMKWGNEAIAGYAQYF
HLAAWLIPSVKSITALALSSVDGDPVAGICYVGNQNLNSLRGFVLGPLVLYLLVGTLFLL
AGFVSLFRIRSVIKQGGTKTDKLEKLMIRIGIFTLLYTVPASIVVACYLYEQHYRESWEA
ALTCACPGHDTGQPRAKPEYWVLMLKYFMCLVVGITSGVWIWSGKTVESWRRFTSRCCCR
PRRGHKSGGAMAAGDYPEASAALTGRTGPPGPAATYHKQVSLSHV

Human FZD5 Fri domain amino acid sequence (SEQ ID NO:44; amino acids 27-157 of SEQ ID NO:42):
ASKAPVCQEITVPMCRGIGYNLTHMPNQFNHDTQDEAGLEVHQFWPLVEIQCSPDLRFFL
CSMYTPICLPDYHKPLPPCRSVCERAKAGCSPLMRQYGFAWPERMSCDRLPVLGRDAEVL
CMDYNRSEATT

FIGURE 26

Human FZD6 full length amino acid sequence (SEQ ID NO:46; underlining indicates ECD):
MEMFTFLLTCIFLPLLRGHSLFTCEPITVPRCMKMAYNMTFFPNLMGHYDQSIAAVEMEH
FLPLANLECSPNIETFLCKAFVPTCIEQIHVVPPCRKLCEKVYSDCKKLIDTFGIRWPEE
LECDRLQYCDETVPVTFDPHTEFLGPQKKTEQVQRDIGFWCPRHLKTSGGQGYKFLGIDQ
CAPPCPNMYFKSDELEFAKSFIGTVSIFCLCATLFTFLTFLIDVRRFRYPERPIIYYSVC
YSIVSLMYFIGFLLGDSTACNKADEKLELGDTVVLGSQNKACTVLFMLLYFFTMAGTVWW
VILTITWFLAAGRKWSCEAIEQKAVWFHAVAWGTPGFLTVMLLAMNKVEGDNISGVCFVG
LYDLDASRYFVLLPLCLCVFVGLSLLLAGIISLNHVRQVIQHDGRNQEKLKKFMIRIGVF
SGLYLVPLVTLLGCYVYEQVNRITWEITWVSDHCRQYHIPCPYQAKAKARPELALFMIKY
LMTLIVGISAVFWVGSKKTCTEWAGFFKRNRKRDPISESRRVLQESCEFFLKHNSKVKHK
KKHYKPSSHKLKVISKSMGTSTGATANHGTSAVAITSHDYLGQETLTEIQTSPETSMREV
KADGASTPRLREQDCGEPASPAASISRLSGEQVDGKGQAGSVSESARSEGRISPKSDITD
TGLAQSNNLQVPSSSEPSSLKGSTSLLVHPVSGVRKEQGGGCHSDT

Human FZD6 Fri domain amino acid sequence (SEQ ID NO:48; amino acids 19-146 of SEQ ID NO:46):
HSLFTCEPITVPRCMKMAYNMTFFPNLMGHYDQSIAAVEMEHFLPLANLECSPNIETFLC
KAFVPTCIEQIHVVPPCRKLCEKVYSDCKKLIDTFGIRWPEELECDRLQYCDETVPVTFD
PHTEFLG

FIGURE 27

Human FZD5 full length DNA sequence (SEQ ID NO:45):

ATGGCTCGGCCTGACCCATCCGCGCCGCCCTCGCTGTTGCTGCTGCTCCTGGCGCAGCTG
GTGGGCCGGGCGGCCGCCGCGTCCAAGGCCCCGGTGTGCCAGGAAATCACGGTGCCCATG
TGCCGCGGCATCGGCTACAACCTGACGCACATGCCCAACCAGTTCAACCACGACACGCAG
GACGAGGCGGGCCTGGAGGTGCACCAGTTCTGGCCGCTGGTGGAGATCCAATGCTCGCCG
GACCTGCGCTTCTTCCTATGCTCTATGTACACGCCCATCTGTCTGCCCGACTACCACAAG
CCGCTGCCGCCCTGCCGCTCGGTGTGCGAGCGCGCCAAGGCCGGCTGCTCGCCGCTGATG
CGCCAGTACGGCTTCGCCTGGCCCGAGCGCATGAGCTGCGACCGCCTCCCGGTGCTGGGC
CGCGACGCCGAGGTCCTCTGCATGGATTACAACCGCAGCGAGGCCACCACGGCGCCCCCC
AGGCCTTTCCCAGCCAAGCCCACCCTTCCAGGCCCGCCAGGGGCGCCGGCCTCGGGGGGC
GAATGCCCCGCTGGGGGCCCGTTCGTGTGCAAGTGTCGCGAGCCCTTCGTGCCCATTCTG
AAGGAGTCACACCCGCTCTACAACAAGGTGCGGACGGGCCAGGTGCCCAACTGCGCGGTA
CCCTGCTACCAGCCGTCCTTCAGTGCCGACGAGCGCACGTTCGCCACCTTCTGGATAGGC
CTGTGGTCGGTGCTGTGCTTCATCTCCACGTCCACCACAGTGGCCACCTTCCTCATCGAC
ATGGAACGCTTCCGCTATCCTGAGCGCCCCATCATCTTCCTGTCAGCCTGCTACCTGTGC
GTGTCGCTGGGCTTCCTGGTGCGTCTGGTCGTGGGCCATGCCAGCGTGGCCTGCAGCCGC
GAGCACAACCACATCCACTACGAGACCACGGGCCCTGCACTGTGCACCATCGTCTTCCTC
CTGGTCTACTTCTTCGGCATGGCCAGCTCCATCTGGTGGGTCATCCTGTCGCTCACCTGG
TTCCTGGCCGCCGGCATGAAGTGGGGCAACGAGGCCATCGCGGGCTACGCGCAGTACTTC
CACCTGGCTGCGTGGCTCATCCCCAGCGTCAAGTCCATCACGGCACTGGCGCTGAGCTCC
GTGGACGGGGACCCAGTGGCCGGCATCTGCTACGTGGGCAACCAGAACCTGAACTCGCTG
CGCGGCTTCGTGCTGGGCCCGCTGGTGCTCTACCTGCTGGTGGGCACGCTCTTCCTGCTG
GCGGGCTTCGTGTCGCTCTTCCGCATCCGCAGCGTCATCAAGCAGGGCGGCACCAAGACG
GACAAGCTGGAGAAGCTCATGATCCGCATCGGCATCTTCACGCTGCTCTACACGGTCCCC
GCCAGCATTGTGGTGGCCTGCTACCTGTACGAGCAGCACTACCGCGAGAGCTGGGAGGCG
GCGCTCACCTGCGCCTGCCCGGGCCACGACACCGGCCAGCCGCGCGCCAAGCCCGAGTAC
TGGGTGCTCATGCTCAAGTACTTCATGTGCCTGGTGGTGGGCATCACGTCGGGCGTCTGG
ATCTGGTCGGGCAAGACGGTGGAGTCGTGGCGGCGTTTCACCAGCCGCTGCTGCTGCCGC
CCGCGGCGCGGCCACAAGAGCGGGGGCGCCATGGCCGCAGGGGACTACCCCGAGGCGAGC
GCCGCGCTCACAGGCAGGACCGGGCCGCCGGGCCCCGCCGCCACCTACCACAAGCAGGTG
TCCCTGTCGCACGTGTAG

FIGURE 28

Human FZD6 full length DNA sequence (SEQ ID NO:49):

ATGGAAATGTTTACATTTTTGTTGACGTGTATTTTTCTACCCCTCCTAAGAGGGCACAGT
CTCTTCACCTGTGAACCAATTACTGTTCCCAGATGTATGAAAATGGCCTACAACATGACG
TTTTTCCCTAATCTGATGGGTCATTATGACCAGAGTATTGCCGCGGTGGAAATGGAGCAT
TTTCTTCCTCTCGCAAATCTGGAATGTTCACCAAACATTGAAACTTTCCTCTGCAAAGCA
TTTGTACCAACCTGCATAGAACAAATTCATGTGGTTCCACCTTGTCGTAAACTTTGTGAG
AAAGTATATTCTGATTGCAAAAAATTAATTGACACTTTTGGGATCCGATGGCCTGAGGAG
CTTGAATGTGACAGATTACAATACTGTGATGAGACTGTTCCTGTAACTTTTGATCCACAC
ACAGAATTTCTTGGTCCTCAGAAGAAAACAGAACAAGTCCAAAGAGACATTGGATTTTGG
TGTCCAAGGCATCTTAAGACTTCTGGGGGACAAGGATATAAGTTTCTGGGAATTGACCAG
TGTGCGCCTCCATGCCCCAACATGTATTTTAAAAGTGATGAGCTAGAGTTTGCAAAAAGT
TTTATTGGAACAGTTTCAATATTTTGTCTTTGTGCAACTCTGTTCACATTCCTTACTTTT
TTAATTGATGTTAGAAGATTCAGATACCCAGAGAGACCAATTATATATTACTCTGTCTGT
TACAGCATTGTATCTCTTATGTACTTCATTGGATTTTTGCTAGGCGATAGCACAGCCTGC
AATAAGGCAGATGAGAAGCTAGAACTTGGTGACACTGTTGTCCTAGGCTCTCAAAATAAG
GCTTGCACCGTTTTGTTCATGCTTTTGTATTTTTTCACAATGGCTGGCACTGTGTGGTGG
GTGATTCTTACCATTACTTGGTTCTTAGCTGCAGGAAGAAAATGGAGTTGTGAAGCCATC
GAGCAAAAAGCAGTGTGGTTTCATGCTGTTGCATGGGGAACACCAGGTTTCCTGACTGTT
ATGCTTCTTGCTATGAACAAAGTTGAAGGAGACAACATTAGTGGAGTTTGCTTTGTTGGC
CTTTATGACCTGGATGCTTCTCGCTACTTTGTACTCTTGCCACTGTGCCTTTGTGTGTTT
GTTGGGCTCTCTCTTCTTTTAGCTGGCATTATTTCCTTAAATCATGTTCGACAAGTCATA
CAACATGATGGCCGGAACCAAGAAAAACTAAAGAAATTTATGATTCGAATTGGAGTCTTC
AGCGGCTTGTATCTTGTGCCATTAGTGACACTTCTCGGATGTTACGTCTATGAGCAAGTG
AACAGGATTACCTGGGAGATAACTTGGGTCTCTGATCATTGTCGTCAGTACCATATCCCA
TGTCCTTATCAGGCAAAAGCAAAAGCTCGACCAGAATTGGCTTTATTTATGATAAAATAC
CTGATGACATTAATTGTTGGCATCTCTGCTGTCTTCTGGGTTGGAAGCAAAAAGACATGC
ACAGAATGGGCTGGGTTTTTTAAACGAAATCGCAAGAGAGATCCAATCAGTGAAAGTCGA
AGAGTACTACAGGAATCATGTGAGTTTTTCTTAAAGCACAATTCTAAAGTTAAACACAAA
AAGAAGCACTATAAACCAAGTTCACACAAGCTGAAGGTCATTTCCAAATCCATGGGAACC
AGCACAGGAGCTACAGCAAATCATGGCACTTCTGCAGTAGCAATTACTAGCCATGATTAC
CTAGGACAAGAAACTTTGACAGAAATCCAAACCTCACCAGAAACATCAATGAGAGAGGTG
AAAGCGGACGGAGCTAGCACCCCCAGGTTAAGAGAACAGGACTGTGGTGAACCTGCCTCG
CCAGCAGCATCCATCTCCAGACTCTCTGGGGAACAGGTCGACGGGAAGGGCCAGGCAGGC
AGTGTATCTGAAAGTGCGCGGAGTGAAGGAAGGATTAGTCCAAAGAGTGATATTACTGAC
ACTGGCCTGGCACAGAGCAACAATTTGCAGGTCCCCAGTTCTTCAGAACCAAGCAGCCTC
AAAGGTTCCACATCTCTGCTTGTTCACCCGGTTTCAGGAGTGAGAAAAGAGCAGGGAGGT
GGTTGTCATTCAGATACTTGA

FIGURE 29

Human FZD7 full length amino acid sequence (SEQ ID NO:50; ECD is underlined):

MRDPGAAAPLSSLGLCALVLALLGALSAGAGAQPYHGEKGISVPDHGFCQPISIPLCTDI
AYNQTILPNLLGHTNQEDAGLEVHQFYPLVKVQCSPELRFFLCSMYAPVCTVLDQAIPPC
RSLCERARQGCEALMNKFGFQWPERLRCENFPVHGAGEICVGQNTSDGSGGPGGGPTAYP
TAPYLPDLPFTALPPGASDGRGRPAFPFSCPRQLKVPPYLGYRFLGERDCGAPCEPGRAN
GLMYFKEEERRFARLWVGVWSVLCCASTLFTVLTYLVDMRRFSYPERPIIFLSGCYFMVA
VAHVAGFLLEDRAVCVERFSDDGYRTVAQGTKKEGCTILFMVLYFFGMASSIWWVILSLT
WFLAAGMKWGHEAIEANSQYFHLAAWAVPAVKTITILAMGQVDGDLLSGVCYVGLSSVDA
LRGFVLAPLFVYLFIGTSFLLAGFVSLFRIRTIMKHDGTKTEKLEKLMVRIGVFSVLYTV
PATIVLACYFYEQAFREHWERTWLLQTCKSYAVPCPPGHFPPMSPDFTVFMIKYLMTMIV
GITTGFWIWSGKTLQSWRRFYHRLSHSSKGETAV

Human FZD7 Fri domain amino acid sequence (SEQ ID NO:52; amino acids 32-170 of SEQ ID NO:50):

AQPYHGEKGISVPDHGFCQPISIPLCTDIAYNQTILPNLLGHTNQEDAGLEVHQFYPLVK
VQCSPELRFFLCSMYAPVCTVLDQAIPPCRSLCERARQGCEALMNKFGFQWPERLRCENF
PVHGAGEICVGQNTSDGSG

FIGURE 30

Human FZD8 full length amino acid sequence (SEQ ID NO:54; ECD is underlined):

MEWGYLLEVTSLLAALALLQRSSGAAAASAKELACQEITVPLCKGIGYNYTYMPNQFNHD
TQDEAGLEVHQFWPLVEIQCSPDLKFFLCSMYTPICLEDYKKPLPPCRSVCERAKAGCAP
LMRQYGFAWPDRMRCDRLPEQGNPDTLCMDYNRTDLTTAAPSPPRRLPPPPPGEQPPSGS
GHGRPPGARPPHRGGGRGGGGGDAAAPPARGGGGGGKARPPGGGAAPCEPGCQCRAPMVS
VSSERHPLYNRVKTGQIANCALPCHNPFFSQDERAFTVFWIGLWSVLCFVSTFATVSTFL
IDMERFKYPERPIIFLSACYLFVSVGYLVRLVAGHEKVACSGGAPGAGGAGGAGGAAAGA
GAAGAGAGGPGGRGEYEELGAVEQHVRYETTGPALCTVVFLLVYFFGMASSIWWVILSLT
WFLAAGMKWGNEAIAGYSQYFHLAAWLVPSVKSIAVLALSSVDGDPVAGICYVGNQSLDN
LRGFVLAPLVIYLFIGTMFLLAGFVSLFRIRSVIKQQDGPTKTHKLEKLMIRLGLFTVLY
TVPAAVVVACLFYEQHNRPRWEATHNCPCLRDLQPDQARRPDYAVFMLKYFMCLVVGITS
GVWVWSGKTLESWRSLCTRCCWASKGAAVGGGAGATAAGGGGGPGGGGGGGPGGGGGPGG
GGGSLYSDVSTGLTWRSGTASSVSYPKQMPLSQV

Human FZD8 Fri domain amino acid sequence (SEQ ID NO:56; amino acids 28-158 of SEQ ID NO:54):

ASAKELACQEITVPLCKGIGYNYTYMPNQFNHDTQDEAGLEVHQFWPLVEIQCSPDLKFF
LCSMYTPICLEDYKKPLPPCRSVCERAKAGCAPLMRQYGFAWPDRMRCDRLPEQGNPDTL
CMDYNRTDLTT

FIGURE 31

Human FZD7 full length DNA sequence (SEQ ID NO:53):

ATGCGGGACCCCGGCGCGGCCGCTCCGCTTTCGTCCCTGGGCCTCTGTGCCCTGGTGCTG
GCGCTGCTGGGCGCACTGTCCGCGGGCGCCGGGGCGCAGCCGTACCACGGAGAGAAGGGC
ATCTCCGTGCCGGACCACGGCTTCTGCCAGCCCATCTCCATCCCGCTGTGCACGGACATC
GCCTACAACCAGACCATCCTGCCCAACCTGCTGGGCCACACGAACCAAGAGGACGCGGGC
CTCGAGGTGCACCAGTTCTACCCGCTGGTGAAGGTGCAGTGTTCTCCCGAACTCCGCTTT
TTCTTATGCTCCATGTATGCGCCCGTGTGCACCGTGCTCGATCAGGCCATCCCGCCGTGT
CGTTCTCTGTGCGAGCGCGCCCGCCAGGGCTGCGAGGCGCTCATGAACAAGTTCGGCTTC
CAGTGGCCCGAGCGGCTGCGCTGCGAGAACTTCCCGGTGCACGGTGCGGGCGAGATCTGC
GTGGGCCAGAACACGTCGGACGGCTCCGGGGGCCCAGGCGGCGGCCCCACTGCCTACCCT
ACCGCGCCCTACCTGCCGGACCTGCCCTTCACCGCGCTGCCCCCGGGGGCCTCAGATGGC
AGGGGGCGTCCCGCCTTCCCCTTCTCATGCCCCCGTCAGCTCAAGGTGCCCCCGTACCTG
GGCTACCGCTTCCTGGGTGAGCGCGATTGTGGCGCCCCGTGCGAACCGGGCCGTGCCAAC
GGCCTGATGTACTTTAAGGAGGAGGAGAGGCGCTTCGCCCGCCTCTGGGTGGGCGTGTGG
TCCGTGCTGTGCTGCGCCTCGACGCTCTTTACCGTTCTCACCTACCTGGTGGACATGCGG
CGCTTCAGCTACCCAGAGCGGCCCATCATCTTCCTGTCGGGCTGCTACTTCATGGTGGCC
GTGGCGCACGTGGCCGGCTTCCTTCTAGAGGACCGCGCCGTGTGCGTGGAGCGCTTCTCG
GACGATGGCTACCGCACGGTGGCGCAGGGCACCAAGAAGGAGGGCTGCACCATCCTCTTC
ATGGTGCTCTACTTCTTCGGCATGGCCAGCTCCATCTGGTGGGTCATTCTGTCTCTCACT
TGGTTCCTGGCGGCCGGCATGAAGTGGGGCCACGAGGCCATCGAGGCCAACTCGCAGTAC
TTCCACCTGGCCGCGTGGGCCGTGCCCGCCGTCAAGACCATCACTATCCTGGCCATGGGC
CAGGTAGACGGGGACCTGCTGAGCGGGGTGTGCTACGTTGGCCTCTCCAGTGTGGACGCG
CTGCGGGGCTTCGTGCTGGCGCCTCTGTTCGTCTACCTCTTCATAGGCACGTCCTTCTTG
CTGGCCGGCTTCGTGTCCCTCTTCCGTATCCGCACCATCATGAAACACGACGGCACCAAG
ACCGAGAAGCTGGAGAAGCTCATGGTGCGCATCGGCGTCTTCAGCGTGCTCTACACAGTG
CCCGCCACCATCGTCCTGGCCTGCTACTTCTACGAGCAGGCCTTCCGCGAGCACTGGGAG
CGCACCTGGCTCCTGCAGACGTGCAAGAGCTATGCCGTGCCCTGCCCGCCCGGCCACTTC
CCGCCCATGAGCCCCGACTTCACCGTCTTCATGATCAAGTACCTGATGACCATGATCGTC
GGCATCACCACTGGCTTCTGGATCTGGTCGGGCAAGACCCTGCAGTCGTGGCGCCGCTTC
TACCACAGACTTAGCCACAGCAGCAAGGGGGAGACTGCGGTATGA

FIGURE 32

Human FZD8 full length DNA sequence (SEQ ID NO:57):

ATGGAGTGGGGTTACCTGTTGGAAGTGACCTCGCTGCTGGCCGCCTTGGCGCTGCTGCAG
CGCTCTAGCGGCGCTGCGGCCGCCTCGGCCAAGGAGCTGGCATGCCAAGAGATCACCGTG
CCGCTGTGTAAGGGCATCGGCTACAACTACACCTACATGCCCAATCAGTTCAACCACGAC
ACGCAAGACGAGGCGGGCCTGGAGGTGCACCAGTTCTGGCCGCTGGTGGAGATCCAGTGC
TCGCCCGATCTCAAGTTCTTCCTGTGCAGCATGTACACGCCCATCTGCCTAGAGGACTAC
AAGAAGCCGCTGCCGCCCTGCCGCTCGGTGTGCGAGCGCGCCAAGGCCGGCTGCGCGCCG
CTCATGCGCCAGTACGGCTTCGCCTGGCCCGACCGCATGCGCTGCGACCGGCTGCCCGAG
CAAGGCAACCCTGACACGCTGTGCATGGACTACAACCGCACCGACCTAACCACCGCCGCG
CCCAGCCCGCCGCGCCGCCTGCCGCCGCCGCCGCCCGGCGAGCAGCCGCCTTCGGGCAGC
GGCCACGGCCGCCCGCCGGGGGCCAGGCCCCCGCACCGCGGAGGCGGCAGGGGCGGTGGC
GGCGGGGACGCGGCGGCGCCCCCAGCTCGCGGCGGCGGCGGTGGCGGGAAGGCGCGGCCC
CCTGGCGGCGGCGCGGCTCCCTGCGAGCCCGGGTGCCAGTGCCGCGCGCCTATGGTGAGC
GTGTCCAGCGAGCGCCACCCGCTCTACAACCGCGTCAAGACAGGCCAGATCGCTAACTGC
GCGCTGCCCTGCCACAACCCCTTTTTCAGCCAGGACGAGCGCGCCTTCACCGTCTTCTGG
ATCGGCCTGTGGTCGGTGCTCTGCTTCGTGTCCACCTTCGCCACCGTCTCCACCTTCCTT
ATCGACATGGAGCGCTTCAAGTACCCGGAGCGGCCCATTATCTTCCTCTCGGCCTGCTAC
CTCTTCGTGTCGGTGGGCTACCTAGTGCGCCTGGTGGCGGGCCACGAGAAGGTGGCGTGC
AGCGGTGGCGCGCCGGGCGCGGGGGGCGCTGGGGGCGCGGGCGGCGCGGCGGCGGGCGCG
GGCGCGGCGGGCGCGGGCGCGGGCGGCCCGGGCGGGCGCGGCGAGTACGAGGAGCTGGGC
GCGGTGGAGCAGCACGTGCGCTACGAGACCACCGGCCCCGCGCTGTGCACCGTGGTCTTC
TTGCTGGTCTACTTCTTCGGCATGGCCAGCTCCATCTGGTGGGTGATCTTGTCGCTCACA
TGGTTCCTGGCGGCCGGTATGAAGTGGGGCAACGAAGCCATCGCCGGCTACTCGCAGTAC
TTCCACCTGGCCGCGTGGCTTGTGCCCAGCGTCAAGTCCATCGCGGTGCTGGCGCTCAGC
TCGGTGGACGGCGACCCGGTGGCGGGCATCTGCTACGTGGGCAACCAGAGCCTGGACAAC
CTGCGCGGCTTCGTGCTGGCGCCGCTGGTCATCTACCTCTTCATCGGCACCATGTTCCTG
CTGGCCGGCTTCGTGTCCCTGTTCCGCATCCGCTCGGTCATCAAGCAACAGGACGGCCCC
ACCAAGACGCACAAGCTGGAGAAGCTGATGATCCGCCTGGGCCTGTTCACCGTGCTCTAC
ACCGTGCCCGCCGCGGTGGTGGTCGCCTGCCTCTTCTACGAGCAGCACAACCGCCCGCGC
TGGGAGGCCACGCACAACTGCCCGTGCCTGCGGGACCTGCAGCCCGACCAGGCACGCAGG
CCCGACTACGCCGTCTTCATGCTCAAGTACTTCATGTGCCTAGTGGTGGGCATCACCTCG
GGCGTGTGGGTCTGGTCCGGCAAGACGCTGGAGTCCTGGCGCTCCCTGTGCACCCGCTGC
TGCTGGGCCAGCAAGGGCGCCGCGGTGGGCGGGGGCGCGGGCGCCACGGCCGCGGGGGGT
GGCGGCGGGCCGGGGGGCGGCGGCGGCGGGGGACCCGGCGGCGGCGGGGGGCCGGGCGGC
GGCGGGGGCTCCCTCTACAGCGACGTCAGCACTGGCCTGACGTGGCGGTCGGGCACGGCG
AGCTCCGTGTCTTATCCAAAGCAGATGCCATTGTCCCAGGTCTGA

FIGURE 33

Human FZD9 full length amino acid sequence (SEQ ID NO:58):
MAVAPLRGALLLWQLLAAGGAALEIGRFDPERGRGAAPCQAVEIPMCRGIGYNLTRMPNL
LGHTSQGEAAAELAEFAPLVQYGCHSHLRFFLCSLYAPMCTDQVSTPIPACRPMCEQARL
RCAPIMEQFNFGWPDSLDCARLPTRNDPHALCMEAPENATAGPAEPHKGLGMLPVAPRPA
RPPGDLGPGAGGSGTCENPEKFQYVEKSRSCAPRCGPGVEVFWSRRDKDFALVWMAVWSA
LCFFSTAFTVLTFLLEPHRFQYPERPIIFLSMCYNVYSLAFLIRAVAGAQSVACDQEAGA
LYVIQEGLENTGCTLVFLLLYYFGMASSLWWVVLTLTWFLAAGKKWGHEAIEAHGSYFHM
AAWGLPALKTIVILTLRKVAGDELTGLCYVASTDAAALTGFVLVPLSGYLVLGSSFLLTG
FVALFHIRKIMKTGGTNTEKLEKLMVKIGVFSILYTVPATCVIVCYVYERLNMDFWRLRA
TEQPCAAAAGPGGRRDCSLPGGSVPTVAVFMLKIFMSLVVGITSGVWVWSSKTFQTWQSL
CYRKIAAGRARAKACRAPGSYGRGTHCHYKAPTVVLHMTKTDPSLENPTHL

Human FZD9 fri domain amino acid sequence (SEQ ID NO:60; amino acids 23-159 of SEQ ID NO:58):
LEIGRFDPERGRGAAPCQAVEIPMCRGIGYNLTRMPNLLGHTSQGEAAAELAEFAPLVQY
GCHSHLRFFLCSLYAPMCTDQVSTPIPACRPMCEQARLRCAPIMEQFNFGWPDSLDCARL
PTRNDPHALCMEAPENA

FIGURE 34

Human FZD10 full length amino acid sequence (SEQ ID NO:62; ECD is underlined):
MQRPGPRLWLVLQVMGSCAAISSMDMERPGDGKCQPIEIPMCKDIGYNMTRMPNLMGHEN
QREAAIQLHEFAPLVEYGCHGHLRFFLCSLYAPMCTEQVSTPIPACRVMCEQARLKCSPI
MEQFNFKWPDSLDCRKLPNKNDPNYLCMEAPNNGSDEPTRGSGLFPPLFRPQRPHSAQEH
PLKDGGPGRGGCDNPGKFHHVEKSASCAPLCTPGVDVYWSREDKRFAVVWLAIWAVLCFF
SSAFTVLTFLIDPARFRYPERPIIFLSMCYCVYSVGYLIRLFAGAESIACDRDSGQLYVI
QEGLESTGCTLVFLVLYYFGMASSLWWVVLTLTWFLAAGKKWGHEAIEANSSYFHLAAWA
IPAVKTILILVMRRVAGDELTGVCYVGSMDVNALTGFVLIPLACYLVIGTSFILSGFVAL
FHIRRVMKTGGENTDKLEKLMVRIGLFSVLYTVPATCVIACYFYERLNMDYWKILAAQHK
CKMNNQTKTLDCLMAASIPAVEIFMVKIFMLLVVGITSGMWIWTSKTLQSWQQVCSRRLK
KKSRRKPASVITSGGIYKKAQHPQKTHHGKYEIPAQSPTCV

Human FZD10 fri domain amino acid sequence (SEQ ID NO:64; amino acids 21-154 of SEQ ID NO:62):
ISSMDMERPGDGKCQPIEIPMCKDIGYNMTRMPNLMGHENQREAAIQLHEFAPLVEYGCH
GHLRFFLCSLYAPMCTEQVSTPIPACRVMCEQARLKCSPIMEQFNFKWPDSLDCRKLPNK
NDPNYLCMEAPNNG

FIGURE 35

Human FZD9 full length DNA sequence (SEQ ID NO:61):

ATGGCCGTGGCGCCTCTGCGGGGGGCGCTGCTGCTGTGGCAGCTGCTGGCGGCGGGCGGC
GCGGCACTGGAGATCGGCCGCTTCGACCCGGAGCGCGGGCGCGGGGCTGCGCCGTGCCAG
GCGGTGGAGATCCCCATGTGCCGCGGCATCGGCTACAACCTGACCCGCATGCCCAACCTG
CTGGGCCACACGTCGCAGGGCGAGGCGGCTGCCGAGCTAGCGGAGTTCGCGCCGCTGGTG
CAGTACGGCTGCCACAGCCACCTGCGCTTCTTCCTGTGCTCGCTCTACGCGCCCATGTGC
ACCGACCAGGTCTCGACGCCCATTCCCGCCTGCCGGCCCATGTGCGAGCAGGCGCGCCTG
CGCTGCGCGCCCATCATGGAGCAGTTCAACTTCGGCTGGCCGGACTCGCTCGACTGCGCC
CGGCTGCCCACGCGCAACGACCCGCACGCGCTGTGCATGGAGGCGCCCGAGAACGCCACG
GCCGGCCCCGCGGAGCCCCACAAGGGCCTGGGCATGCTGCCCGTGGCGCCGCGGCCCGCG
CGCCCTCCCGGAGACCTGGGCCCGGGCGCGGGCGGCAGTGGCACCTGCGAGAACCCCGAG
AAGTTCCAGTACGTGGAGAAGAGCCGCTCGTGCGCACCGCGCTGCGGGCCCGGCGTCGAG
GTGTTCTGGTCCCGGCGCGACAAGGACTTCGCGCTGGTCTGGATGGCCGTGTGGTCGGCG
CTGTGCTTCTTCTCCACCGCCTTCACTGTGCTCACCTTCTTGCTGGAGCCCCACCGCTTC
CAGTACCCCGAGCGCCCCATCATCTTCCTCTCCATGTGCTACAACGTCTACTCGCTGGCC
TTCCTGATCCGTGCGGTGGCCGGAGCGCAGAGCGTGGCCTGTGACCAGGAGGCGGGCGCG
CTCTACGTGATCCAGGAGGGCCTGGAGAACACGGGCTGCACGCTGGTCTTCCTACTGCTC
TACTACTTCGGCATGGCCAGCTCGCTCTGGTGGGTGGTCCTGACGCTCACCTGGTTCCTG
GCTGCCGGGAAGAAATGGGGCCACGAGGCCATCGAGGCCCACGGCAGCTATTTCCACATG
GCTGCCTGGGGCCTGCCCGCGCTCAAGACCATCGTCATCCTGACCCTGCGCAAGGTGGCG
GGTGATGAGCTGACTGGGCTTTGCTACGTGGCCAGCACGGATGCAGCAGCGCTCACGGGC
TTCGTGCTGGTGCCCCTCTCTGGCTACCTGGTGCTGGGCAGTAGTTTCCTCCTGACCGGC
TTCGTGGCCCTCTTCCACATCCGCAAGATCATGAAGACGGGCGGCACCAACACAGAGAAG
CTGGAGAAGCTCATGGTCAAGATCGGGGTCTTCTCCATCCTCTACACGGTGCCCGCCACC
TGCGTCATCGTTTGCTATGTCTACGAACGCCTCAACATGGACTTCTGGCGCCTTCGGGCC
ACAGAGCAGCCATGCGCAGCGGCCGCGGGGCCCGGAGGCCGGAGGGACTGCTCGCTGCCA
GGGGGCTCGGTGCCCACCGTGGCGGTCTTCATGCTCAAAATTTTCATGTCACTGGTGGTG
GGGATCACCAGCGGCGTCTGGGTGTGGAGCTCCAAGACTTTCCAGACCTGGCAGAGCCTG
TGCTACCGCAAGATAGCAGCTGGCCGGGCCCGGGCCAAGGCCTGCCGCGCCCCCGGGAGC
TACGGACGTGGCACGCACTGCCACTATAAGGCTCCCACCGTGGTCTTGCACATGACTAAG
ACGGACCCCTCTTTGGAGAACCCCACACACCTCTAG

FIGURE 36

Human FZD10 full length DNA sequence (SEQ ID NO:65):

ATGCAGCGCCCGGGCCCCCGCCTGTGGCTGGTCCTGCAGGTGATGGGCTCGTGCGCCGCC
ATCAGCTCCATGGACATGGAGCGCCCGGGCGACGGCAAATGCCAGCCCATCGAGATCCCG
ATGTGCAAGGACATCGGCTACAACATGACTCGTATGCCCAACCTGATGGGCCACGAGAAC
CAGCGCGAGGCAGCCATCCAGTTGCACGAGTTCGCGCCGCTGGTGGAGTACGGCTGCCAC
GGCCACCTCCGCTTCTTCCTGTGCTCGCTGTACGCGCCGATGTGCACCGAGCAGGTCTCT
ACCCCCATCCCCGCCTGCCGGGTCATGTGCGAGCAGGCCCGGCTCAAGTGCTCCCCGATT
ATGGAGCAGTTCAACTTCAAGTGGCCCGACTCCCTGGACTGCCGGAAACTCCCCAACAAG
AACGACCCCAACTACCTGTGCATGGAGGCGCCCAACAACGGCTCGGACGAGCCCACCCGG
GGCTCGGGCCTGTTCCCGCCGCTGTTCCGGCCGCAGCGGCCCCACAGCGCGCAGGAGCAC
CCGCTGAAGGACGGGGGCCCCGGGCGCGGCGGCTGCGACAACCCGGGCAAGTTCCACCAC
GTGGAGAAGAGCGCGTCGTGCGCGCCGCTCTGCACGCCCGGCGTGGACGTGTACTGGAGC
CGCGAGGACAAGCGCTTCGCAGTGGTCTGGCTGGCCATCTGGGCGGTGCTGTGCTTCTTC
TCCAGCGCCTTCACCGTGCTCACCTTCCTCATCGACCCGGCCCGCTTCCGCTACCCCGAG
CGCCCCATCATCTTCCTCTCCATGTGCTACTGCGTCTACTCCGTGGGCTACCTCATCCGC
CTCTTCGCCGGCGCCGAGAGCATCGCCTGCGACCGGGACAGCGGCCAGCTCTATGTCATC
CAGGAGGGACTGGAGAGCACCGGCTGCACGCTGGTCTTCCTGGTCCTCTACTACTTCGGC
ATGGCCAGCTCGCTGTGGTGGGTGGTCCTCACGCTCACCTGGTTCCTGGCCGCCGGCAAG
AAGTGGGGCCACGAGGCCATCGAAGCCAACAGCAGCTACTTCCACCTGGCAGCCTGGGCC
ATCCCGGCGGTGAAGACCATCCTGATCCTGGTCATGCGCAGGGTGGCGGGGGACGAGCTC
ACCGGGGTCTGCTACGTGGGCAGCATGGACGTCAACGCGCTCACCGGCTTCGTGCTCATT
CCCCTGGCCTGCTACCTGGTCATCGGCACGTCCTTCATCCTCTCGGGCTTCGTGGCCCTG
TTCCACATCCGGAGGGTGATGAAGACGGGCGGCGAGAACACGGACAAGCTGGAGAAGCTC
ATGGTGCGTATCGGGCTCTTCTCTGTGCTGTACACCGTGCCGGCCACCTGTGTGATCGCC
TGCTACTTTTACGAACGCCTCAACATGGATTACTGGAAGATCCTGGCGGCGCAGCACAAG
TGCAAAATGAACAACCAGACTAAAACGCTGGACTGCCTGATGGCCGCCTCCATCCCCGCC
GTGGAGATCTTCATGGTGAAGATCTTTATGCTGCTGGTGGTGGGGATCACCAGCGGGATG
TGGATTTGGACCTCCAAGACTCTGCAGTCCTGGCAGCAGGTGTGCAGCCGTAGGTTAAAG
AAGAAGAGCCGGAGAAAACCGGCCAGCGTGATCACCAGCGGTGGGATTTACAAAAAAGCC
CAGCATCCCCAGAAAACTCACCACGGGAAATATGAGATCCCTGCCCAGTCGCCCACCTGC
GTGTGA

FIGURE 37

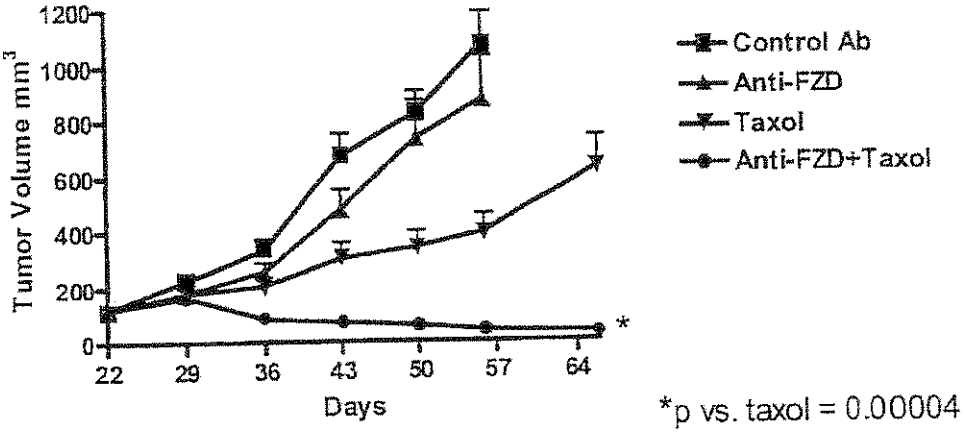

Tumor Volume mm3
1200
1000
800
600
400
200
0
22
29
36
43
50
57
64
Days
*
Control Ab
Anti-FZD
Taxol
Anti-FZD+Taxol
*p vs. taxol = 0.00004

FIGURE 38

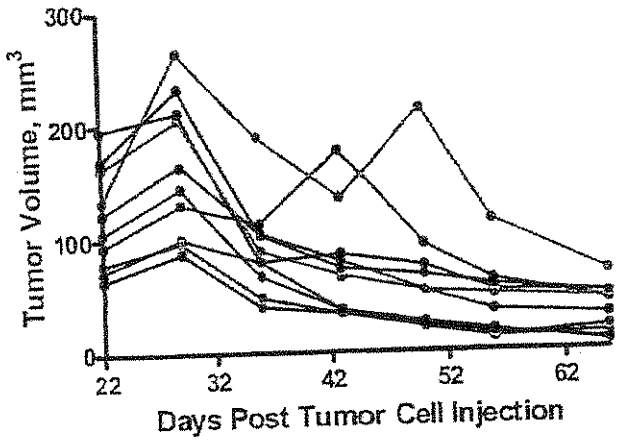

300
200
100
0
Tumor Volume, mm3
22
32
42
52
62
Days Post Tumor Cell Injection

FIGURE 39

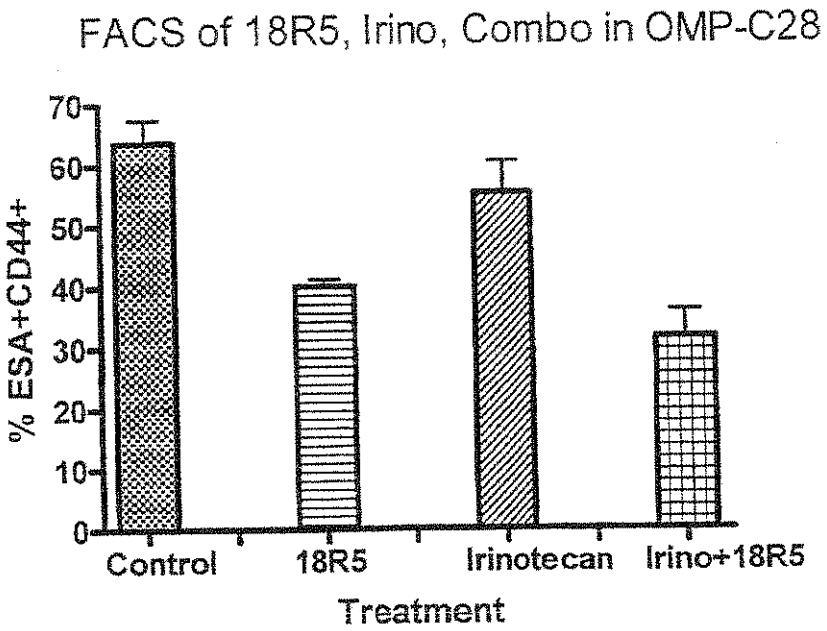

FACS of 18R5, Irino, Combo in OMP-C28
% ESA+CD44+
70
60
50
40
30
20
10
0
Control
18R5
Irinotecan
Irino+18R5
Treatment

FIGURE 40

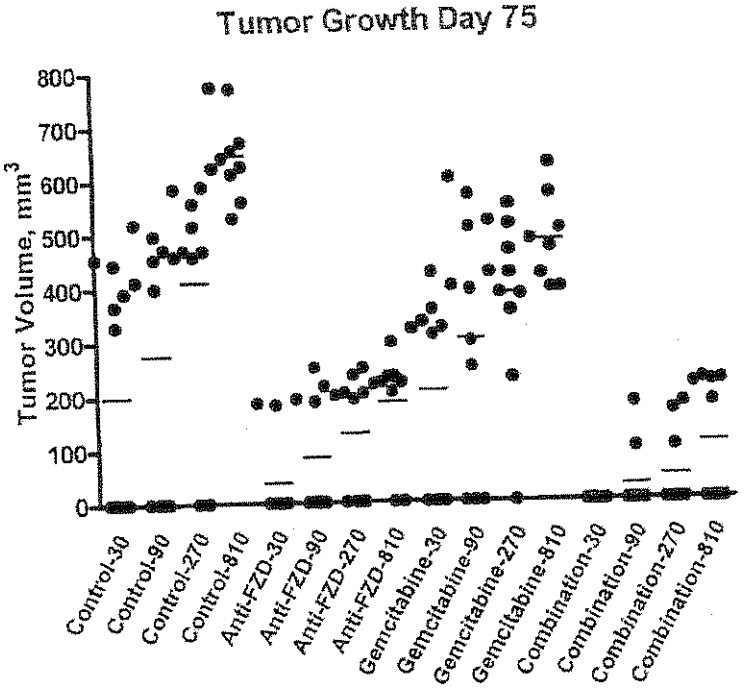
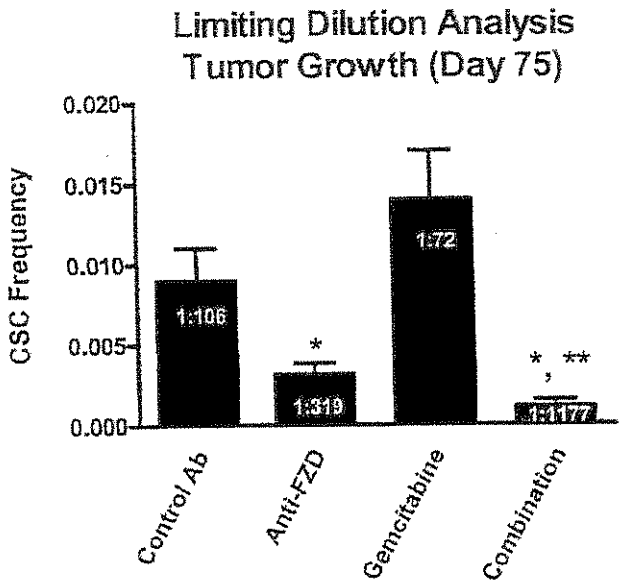

Tumor Growth Day 75
Tumor Volume, mm3
800
700
600
500
400
300
200
100
0
Control-30
Control-90
Control-270
Control-810
Anti-FZD-30
Anti-FZD-90
Anti-FZD-270
Anti-FZD-810
Gemcitabine-30
Gemcitabine-90
Gemcitabine-270
Gemcitabine-810
Combination-30
Combination-90
Combination-270
Combination-810

FIGURE 41



*: p < 0.05 vs. Control Ab
**: p < 0.05 vs. Gemcitabine

FIGURE 42

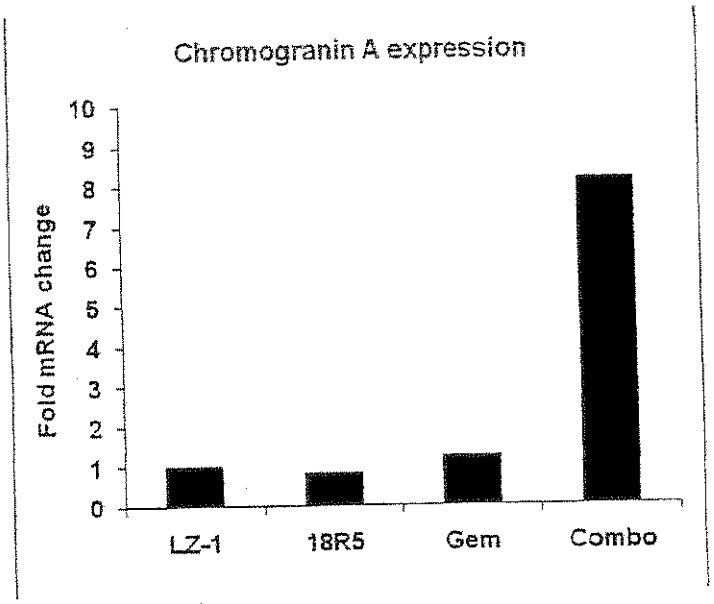

Chromogranin A expression
Fold mRNA change
10
9
8
7
6
5
4
3
2
1
0
LZ-1
18R5
Gem
Combo

FIGURE 43

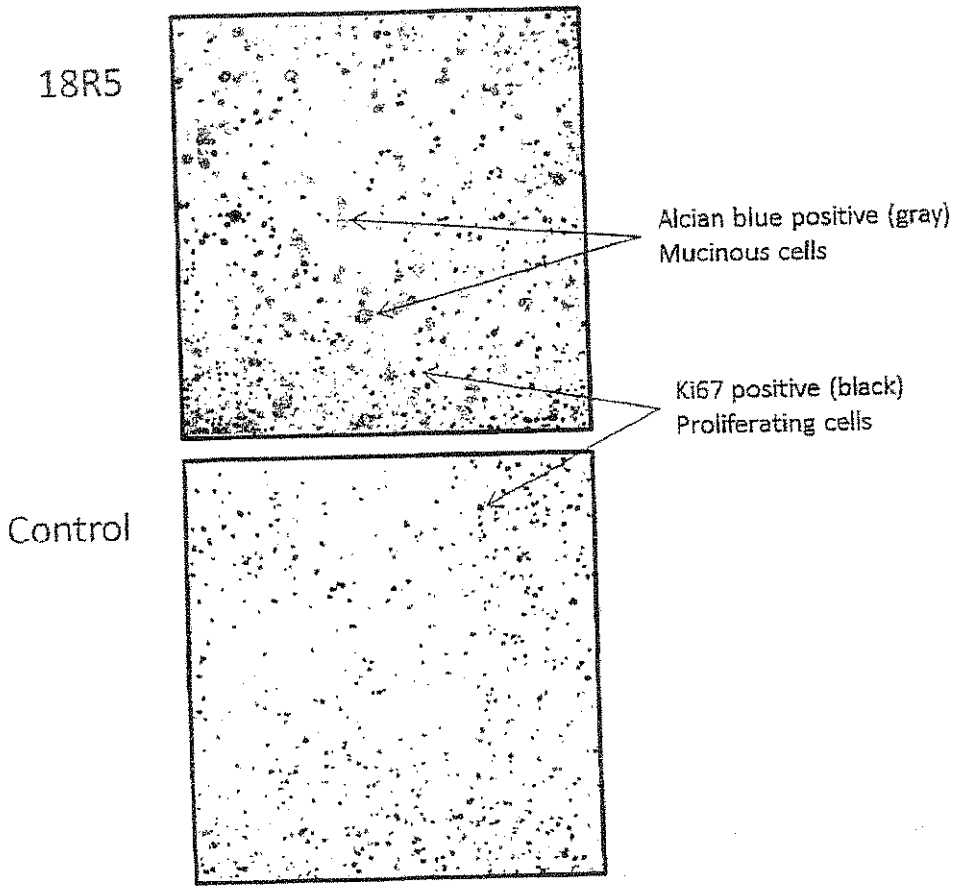

18R5
Alcian blue positive (gray)
Mucinous cells
Ki67 positive (black)
Proliferating cells
Control

FIGURE 44

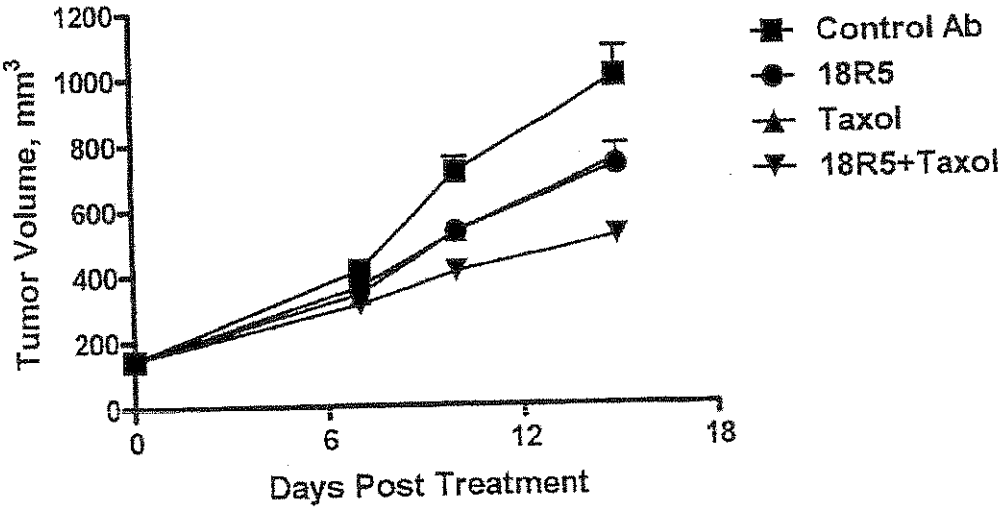

Tumor Volume, mm3
1200
1000
800
600
400
200
0
0
6
12
18
Days Post Treatment
Control Ab
18R5
Taxol
18R5+Taxol

FIGURE 45

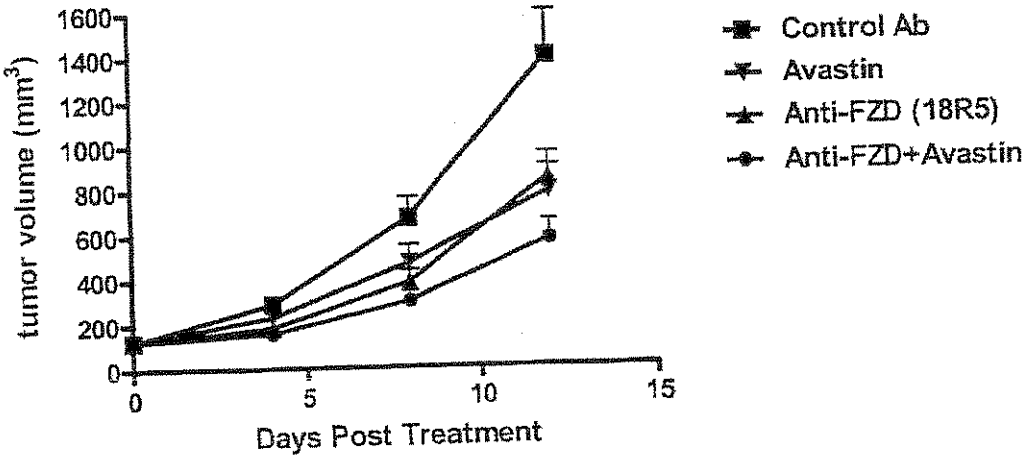
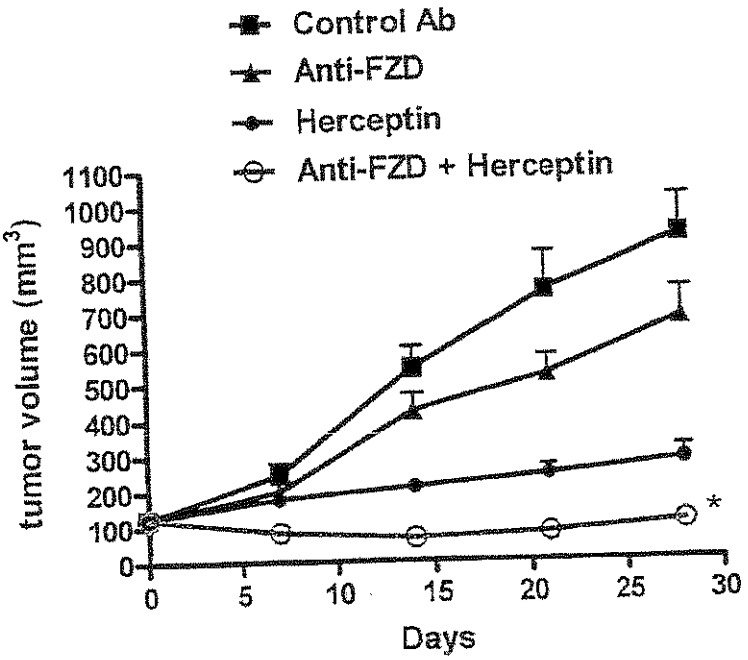

tumor volume (mm3)
1600
1400
1200
1000
800
600
400
200
0
0
5
10
15
Days Post Treatment
Control Ab
Avastin
Anti-FZD (18R5)
Anti-FZD+Avastin

FIGURE 46



*p = 0.0005 vs. Herceptin

Figure 47

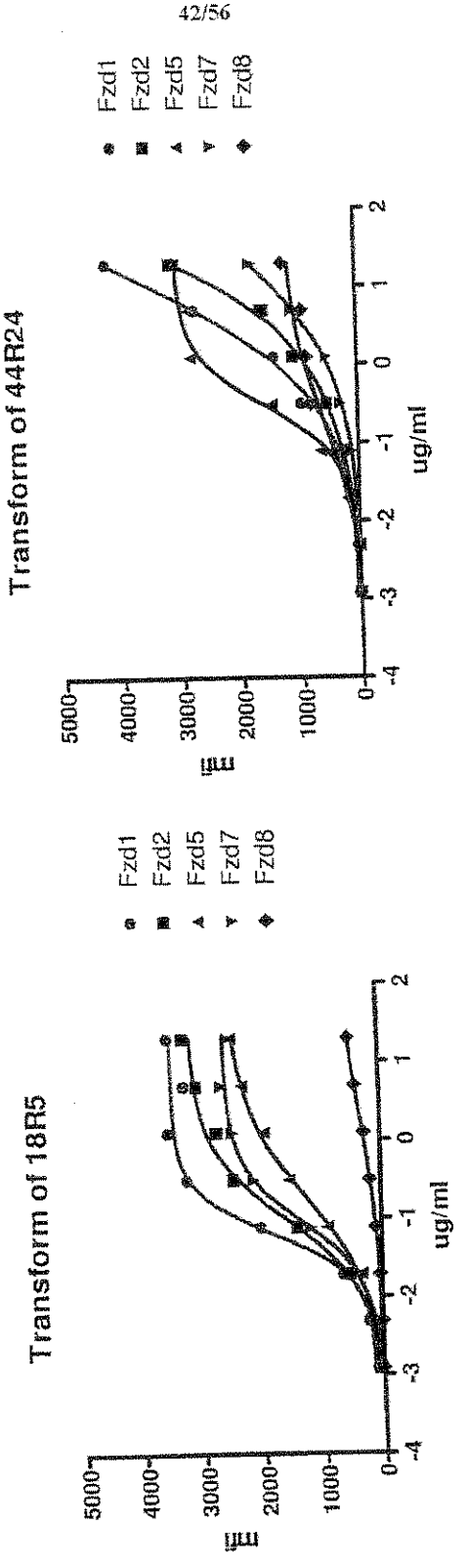

Transform of 44R24
Fzd1
Fzd2
Fzd5
Fzd7
Fzd8
mm
ug/ml
Transform of 18R5
Fzd1
Fzd2
Fzd5
Fzd7
Fzd8
mm
ug/ml

Figure 48

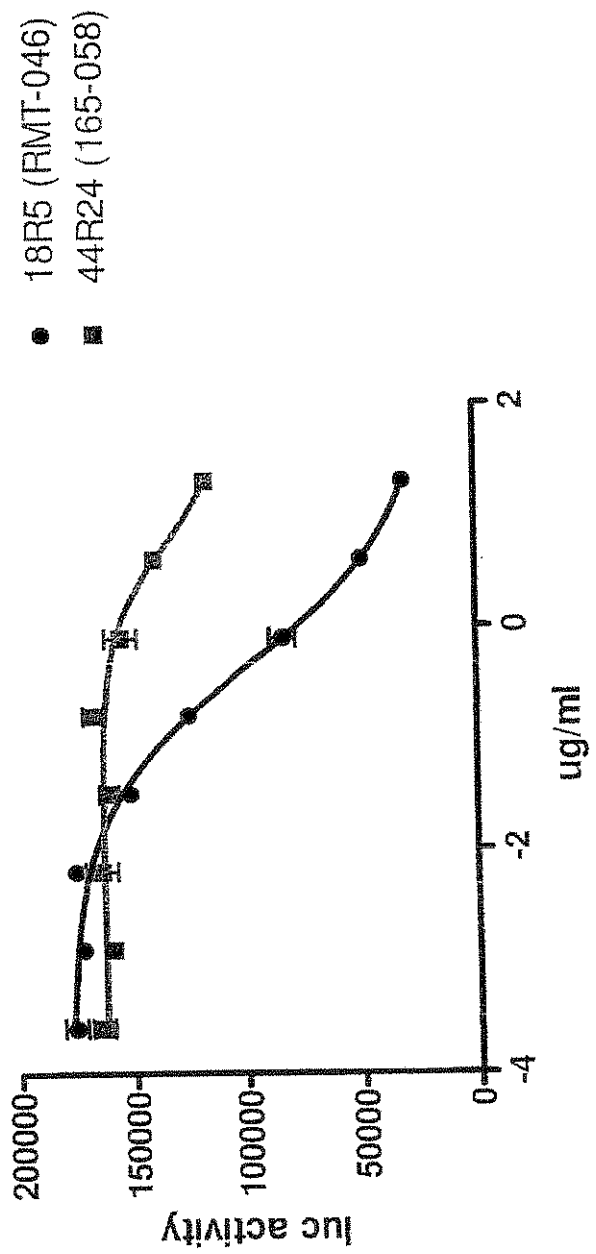

Transform of 44R24
18R5 (RMT-046)
44R24 (165-058)
luc activity
200000
150000
100000
50000
0
-4
-2
0
2
ug/ml

Figure 49

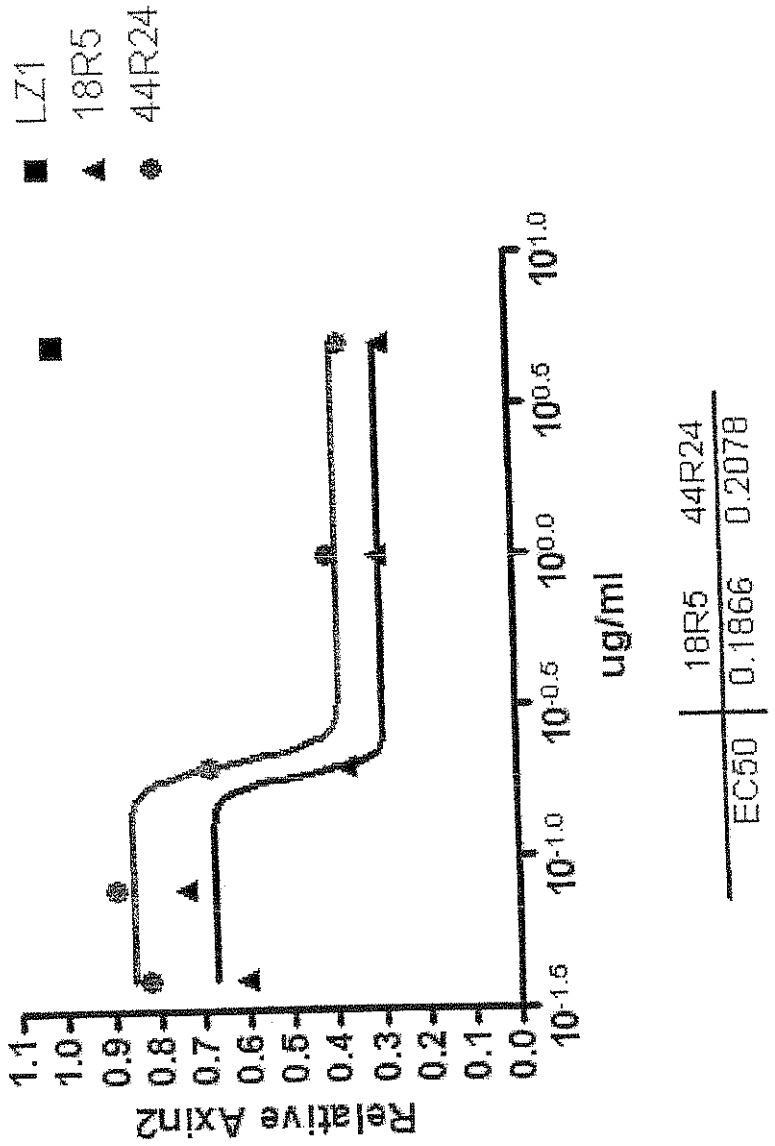

LZ1
18R5
44R24
Relative Axin2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
10-1.5
10-1.0
10-0.5
100.0
100.5
101.0
ug/ml
18R5 44R24
EC50 0.1866 0.2078

Figure 50

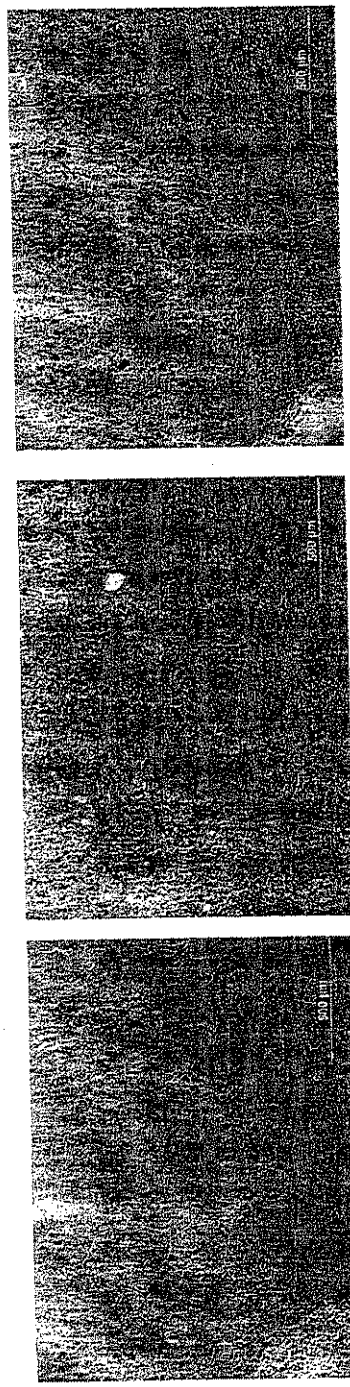


Figure 51

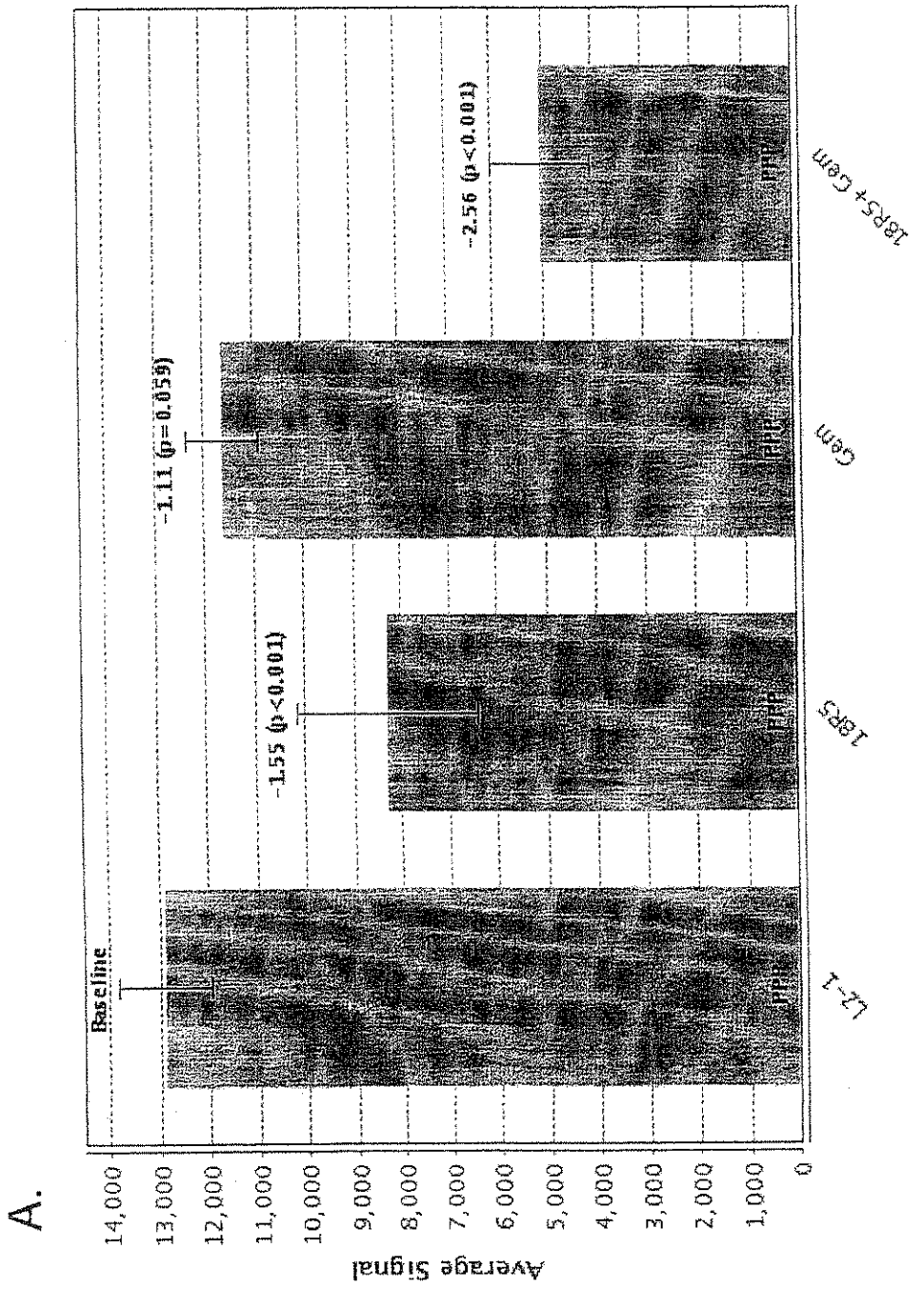

A.
Average Signal
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Baseline
-1.11 (p=0.059)
-1.55 (p<0.001)
-2.56 (p<0.001)
LZ-1
18R5
Gem
18R5+Gem

Figure 51

B.

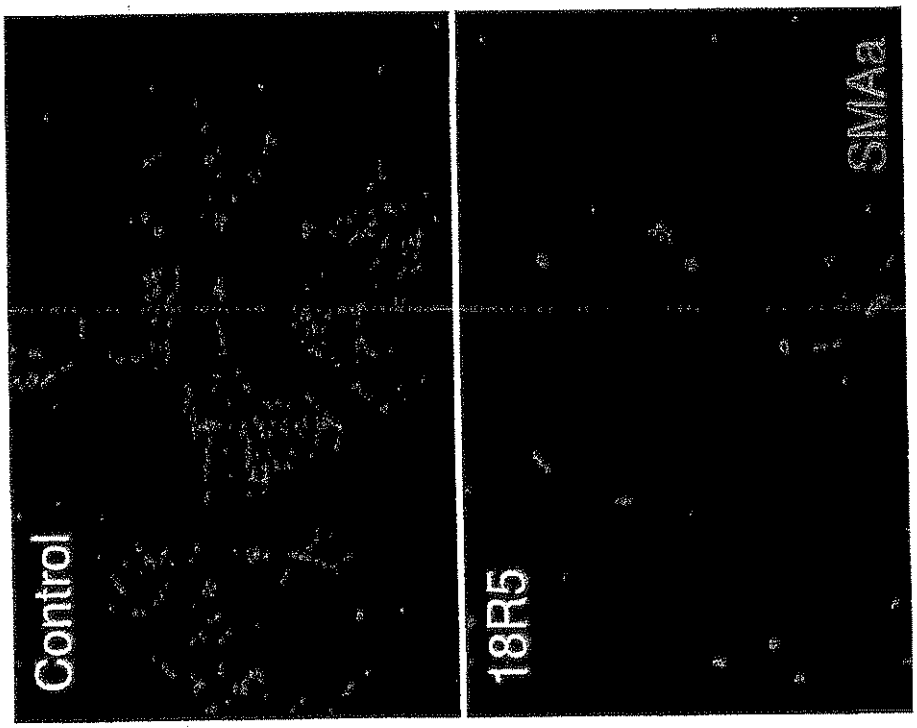


Figure 52

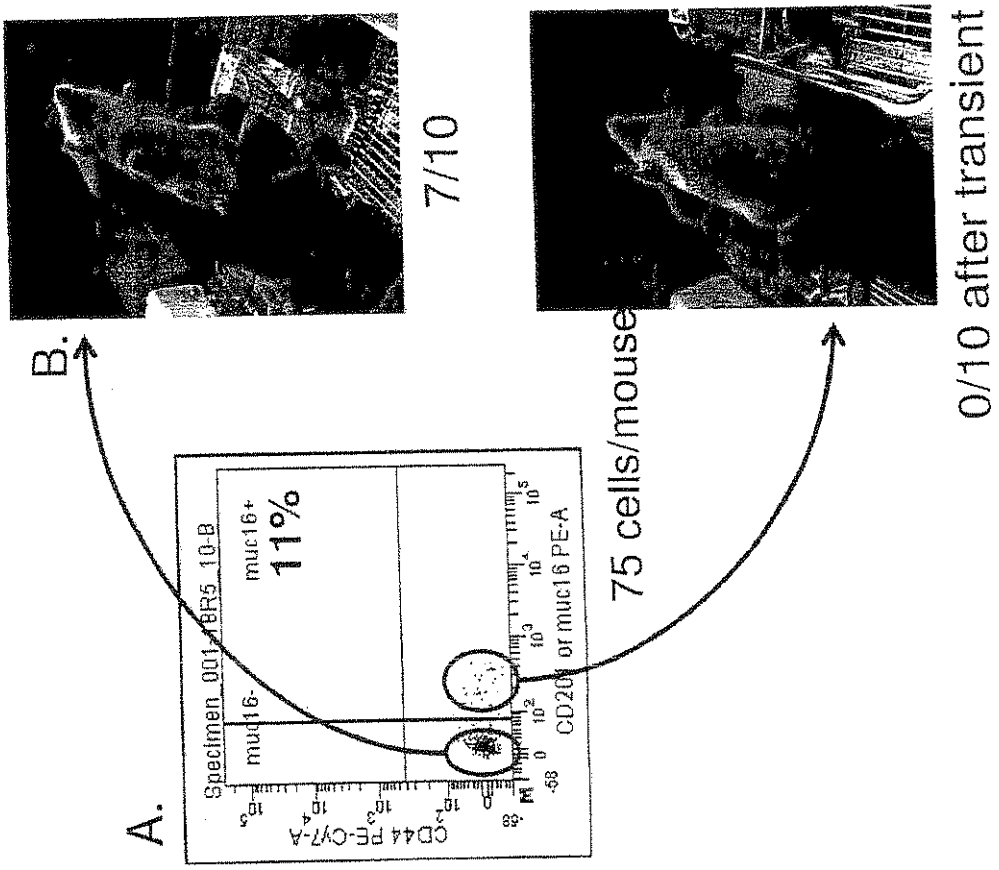

A.
Specimen_001_6R5_10-B
muc16-
muc16+
11%
CD44 PE-Cy7-A
CD20 or muc16 PE-A
B.
7/10
75 cells/mouse
0/10 after transient growth

Figure 52

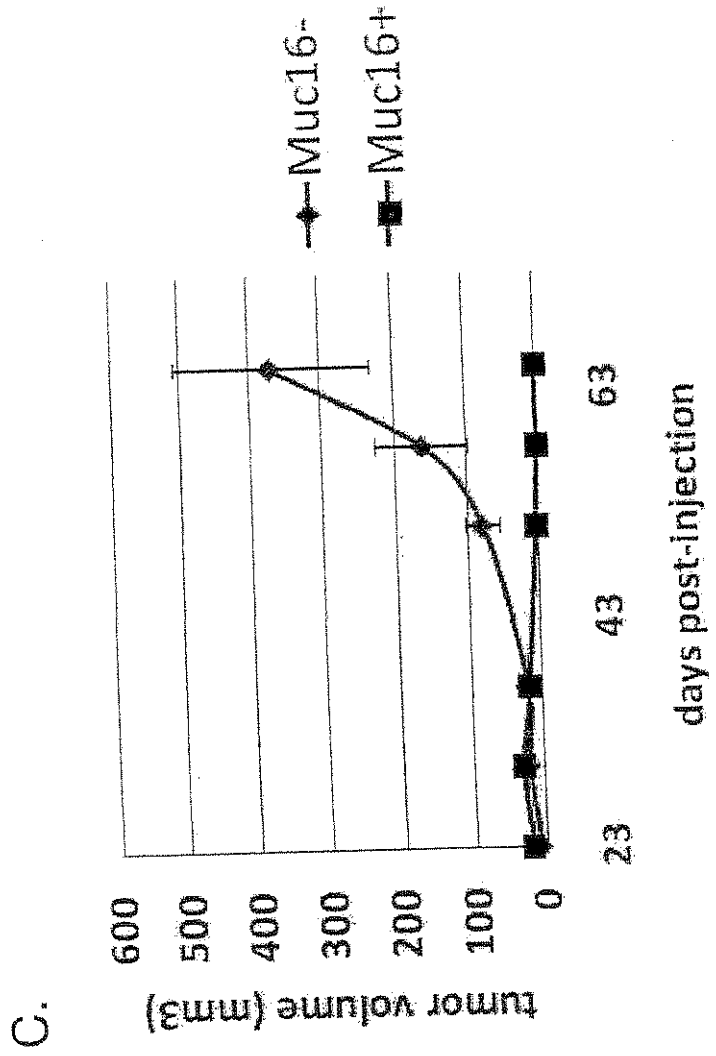

C.
tumor volume (mm3)
600
500
400
300
200
100
0
23
43
63
days post-injection
Muc16-
Muc16+

Figure 53

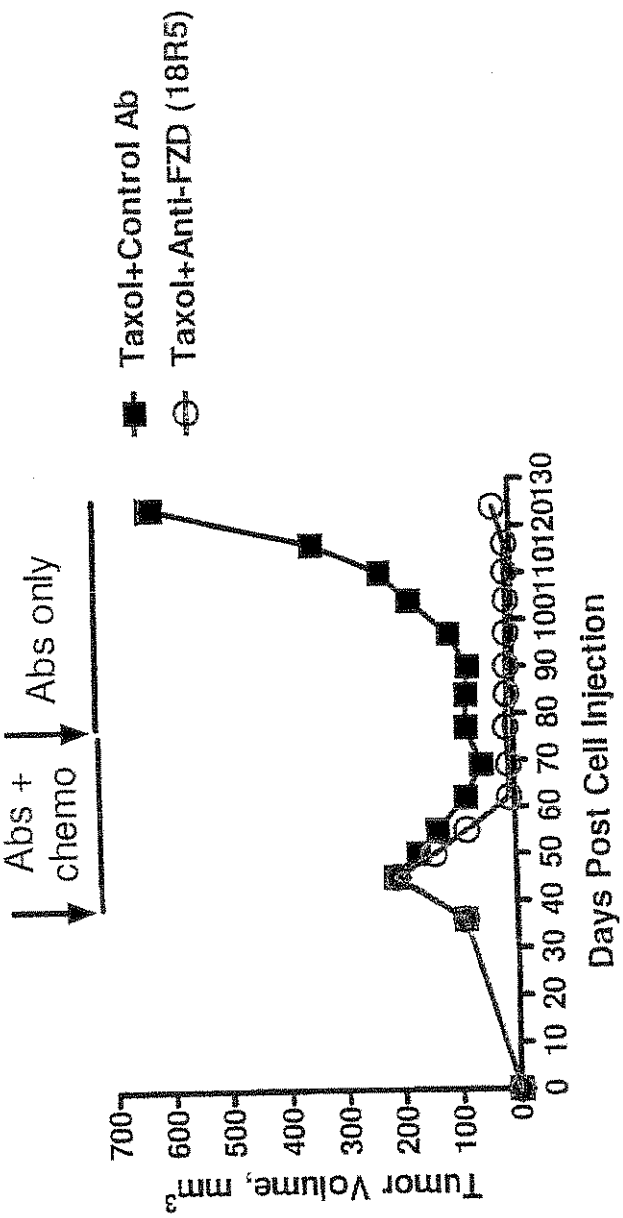

Taxol+Control Ab
Taxol+Anti-FZD (18R5)
Abs + chemo
Abs only
Tumor Volume, mm3
0
100
200
300
400
500
600
700
0 10 20 30 40 50 60 70 80 90 100110120130
Days Post Cell Injection

Figure 54

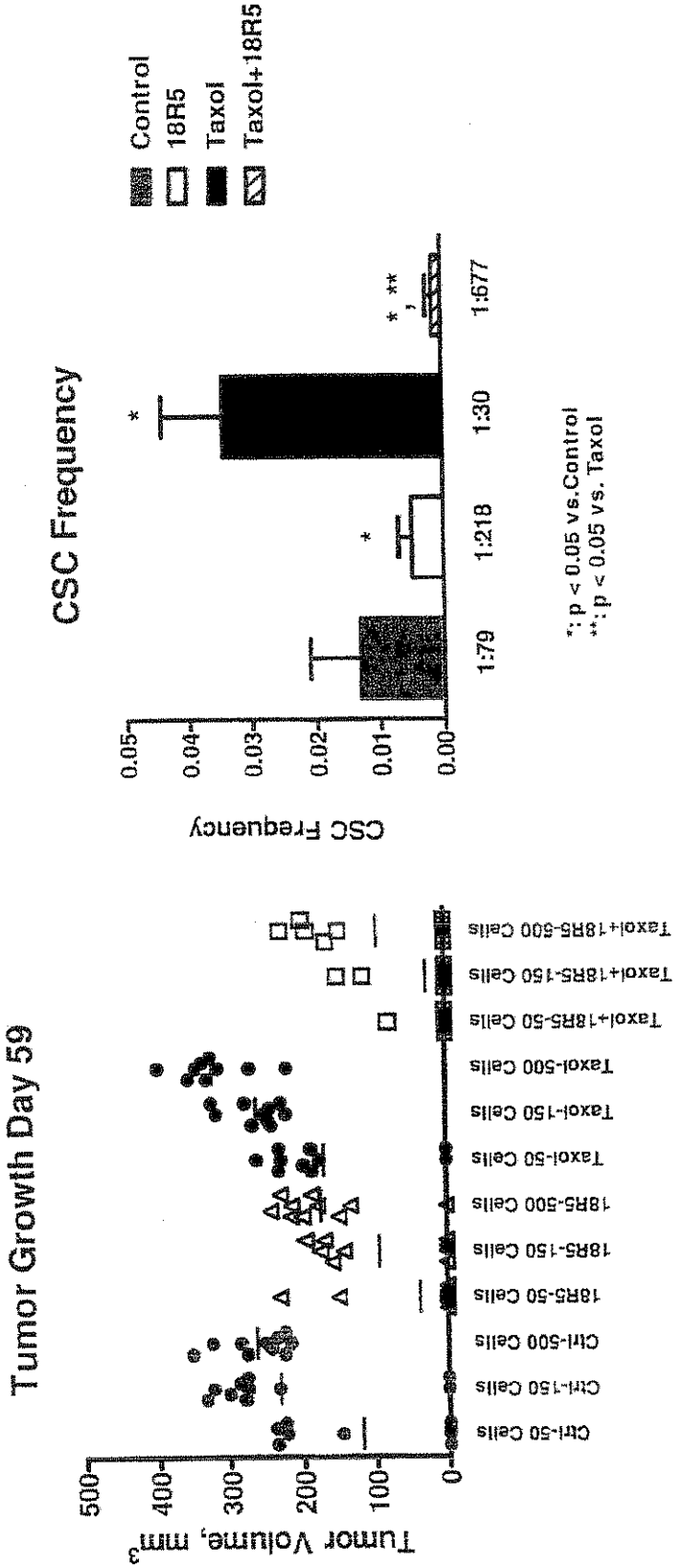

Tumor Growth Day 59
Tumor Volume, mm3
0
100
200
300
400
500
Ctrl-50 Cells
Ctrl-150 Cells
Ctrl-500 Cells
18R5-50 Cells
18R5-150 Cells
18R5-500 Cells
Taxol-50 Cells
Taxol-150 Cells
Taxol-500 Cells
Taxol+18R5-50 Cells
Taxol+18R5-150 Cells
Taxol+18R5-500 Cells
CSC Frequency
CSC Frequency
0.00
0.01
0.02
0.03
0.04
0.05
1:79
1:218
1:30
1:677
Control
18R5
Taxol
Taxol+18R5
*: p < 0.05 vs.Control
**: p < 0.05 vs. Taxol

Figure 55

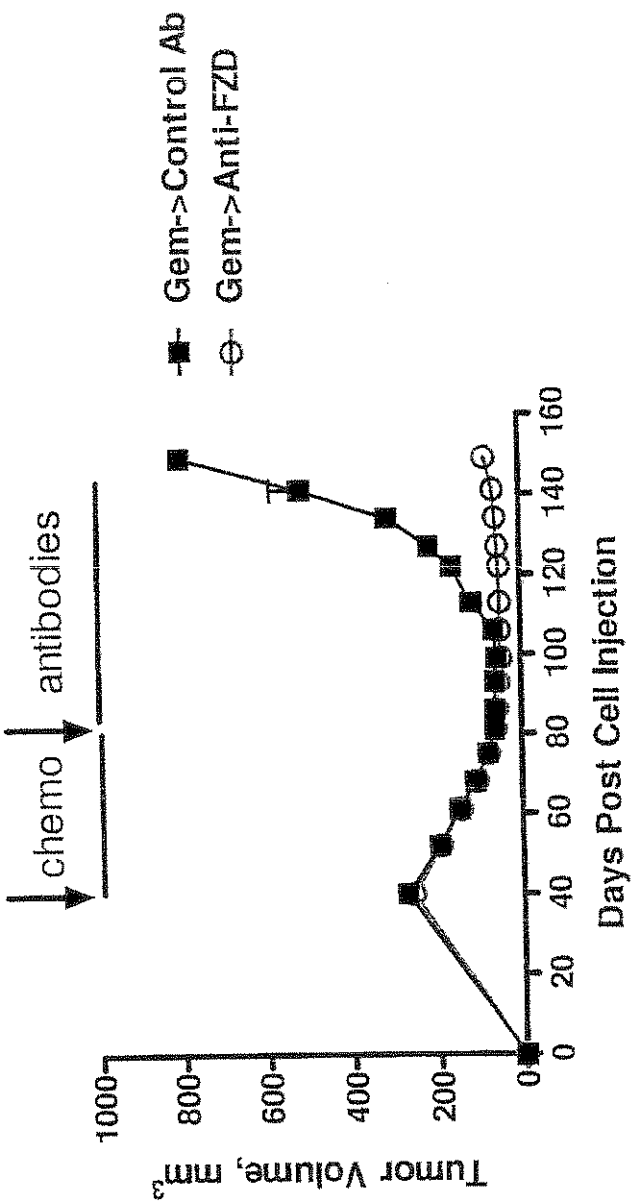

chemo
antibodies
Gem->Control Ab
Gem->Anti-FZD
Tumor Volume, mm3
1000
800
600
400
200
0
0
20
40
60
80
100
120
140
160
Days Post Cell Injection

Figure 56

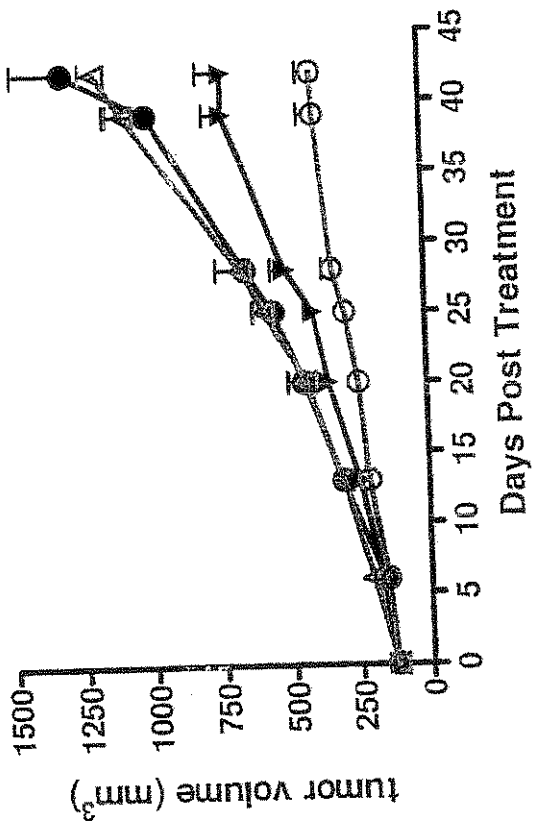

Control Ab
Anti-FZD 44R24
Gemcitabine
44R24+Gemcitabine
tumor volume (mm3)
1500
1250
1000
750
500
250
0
0
5
10
15
20
25
30
35
40
45
Days Post Treatment

Figure 57

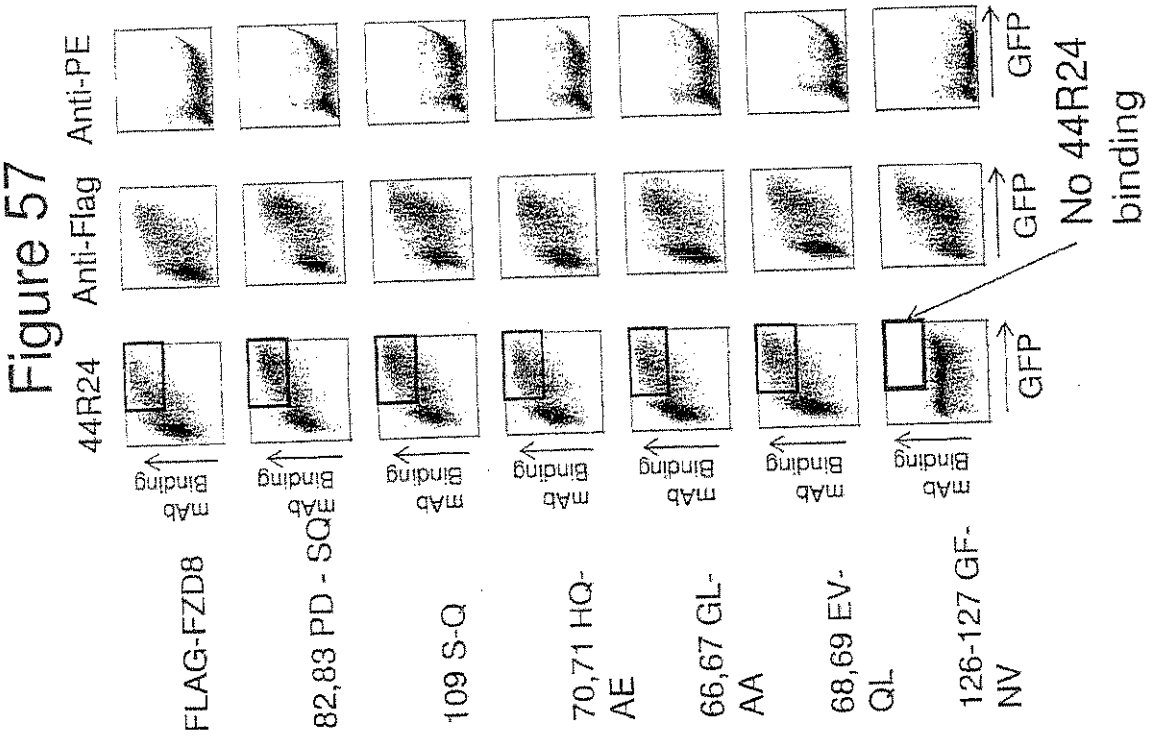

44R24
Anti-Flag
Anti-PE
FLAG-FZD8
82,83 PD - SQ
109 S-Q
70,71 HQ-AE
66,67 GL-AA
68,69 EV-QL
126-127 GF-NV
mAb Binding
GFP
No 44R24 binding

Figure 58

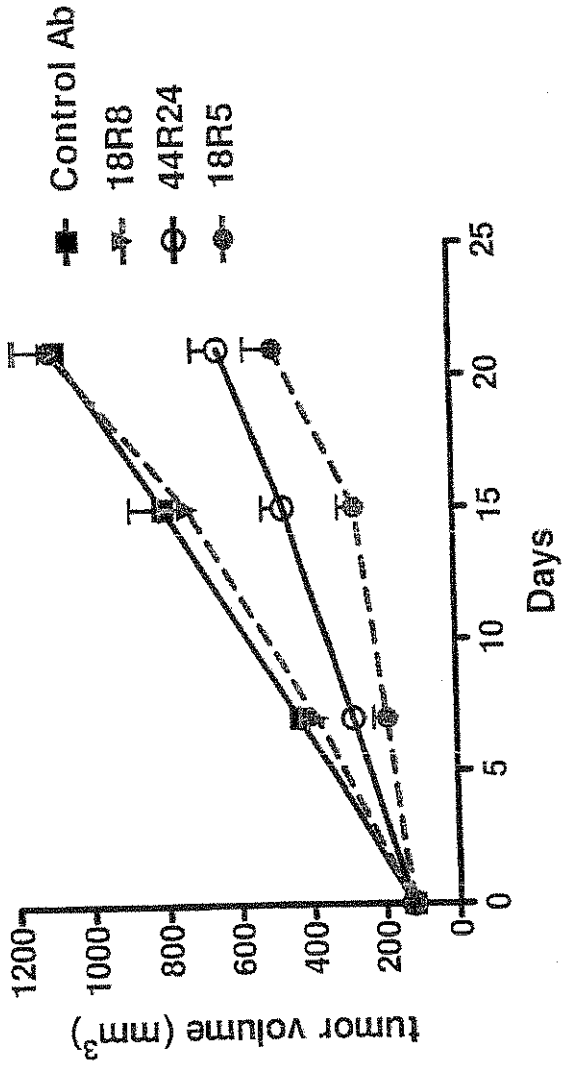

Control Ab
18R8
44R24
18R5
tumor volume (mm3)
1200
1000
800
600
400
200
0
0
5
10
15
20
25
Days

Figure 59

