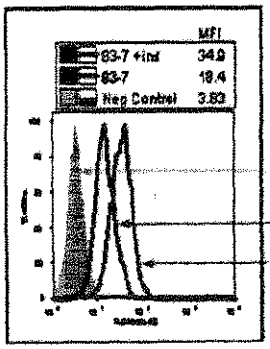
**Figure 1**

positive control (83.7 mAb)

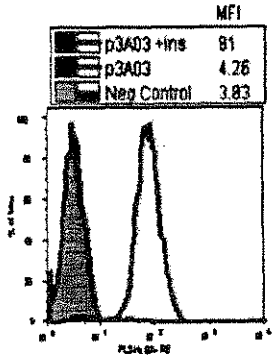



Background binding

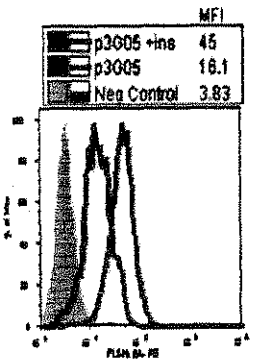
Binding to free receptor

Binding to INSR/INS complex

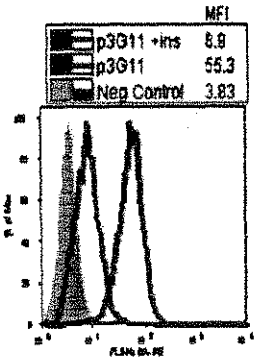
Binds exclusively to INS/INSR complex



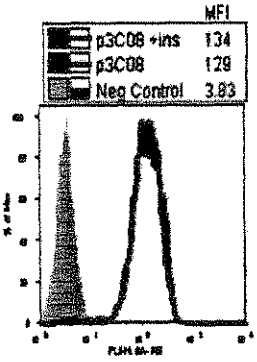

Preferentially binds INS/INSR complex




Preferentially binds INSR




Binds equally to INSR and INS/INSR complex



## Figure 2

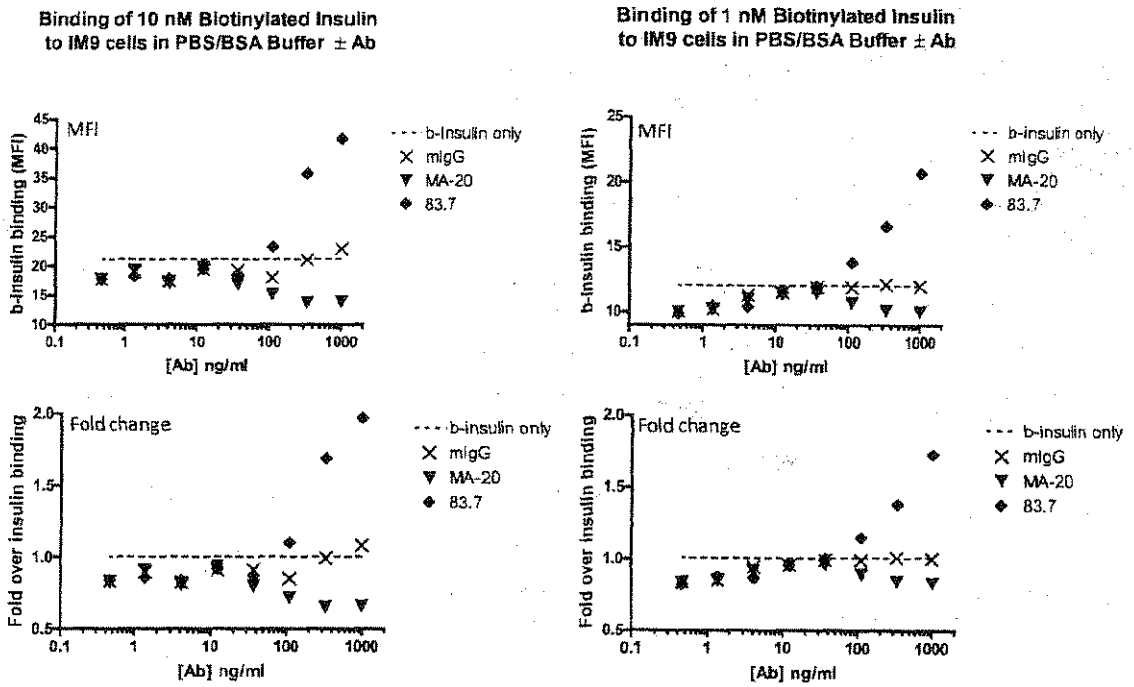

Binding of 10 nM Biotinylated Insulin to IM9 cells in PBS/BSA Buffer ± Ab
MFI
b-Insulin binding (MFI)
[Ab] ng/ml
b-insulin only
mIgG
MA-20
83.7
Fold change
Fold over insulin binding
Binding of 1 nM Biotinylated Insulin to IM9 cells in PBS/BSA Buffer ± Ab

Figure 3

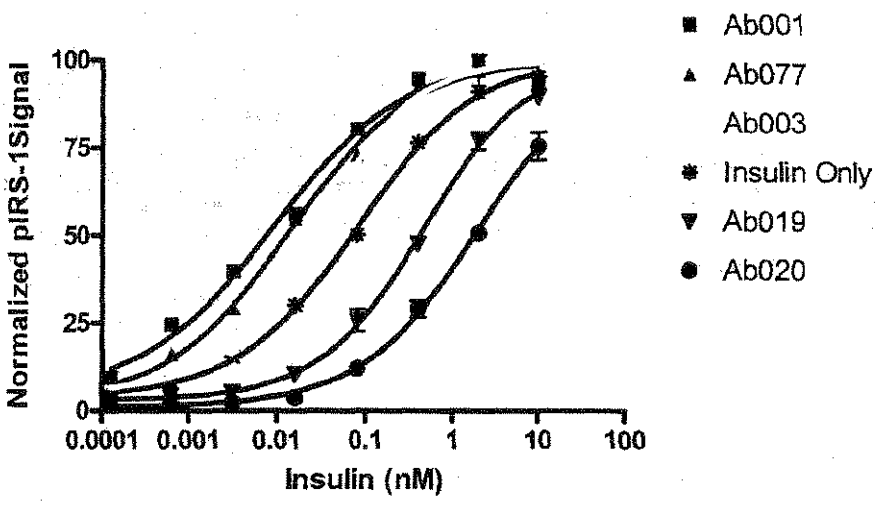
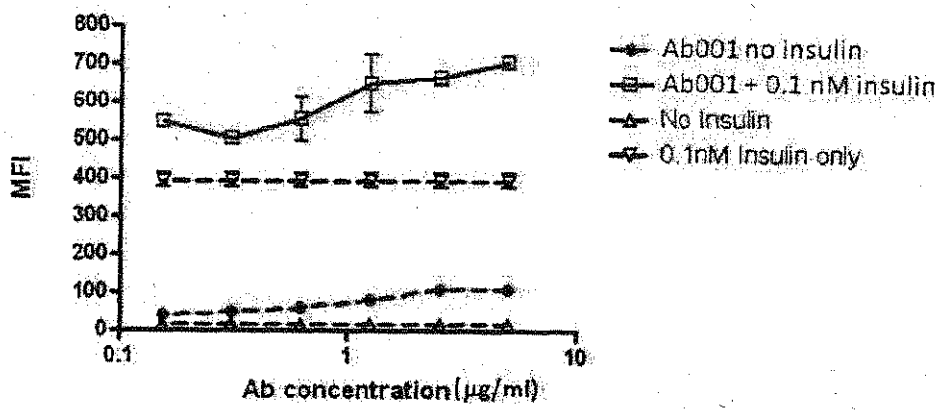

Normalized pIRS-1Signal
100
75
50
25
0
0.0001
0.001
0.01
0.1
1
10
100
Insulin (nM)
Ab001
Ab077
Ab003
Insulin Only
Ab019
Ab020

**Figure 4**

Figure 4A. Positive modulator



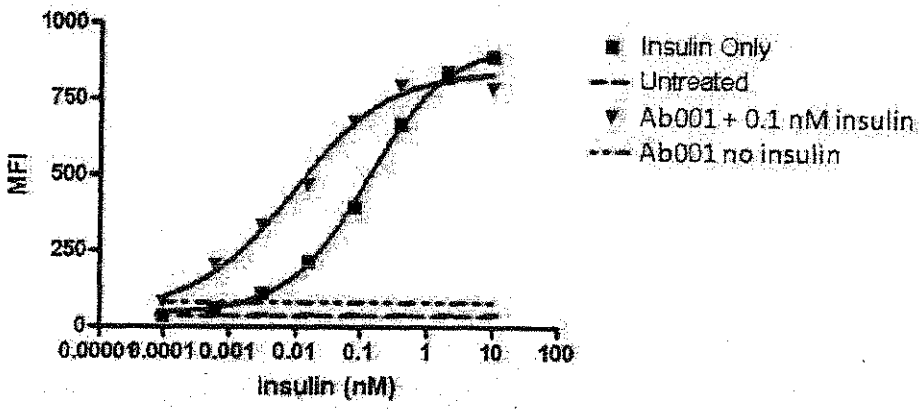



Figure 4B. Positive modulator with significant agonism

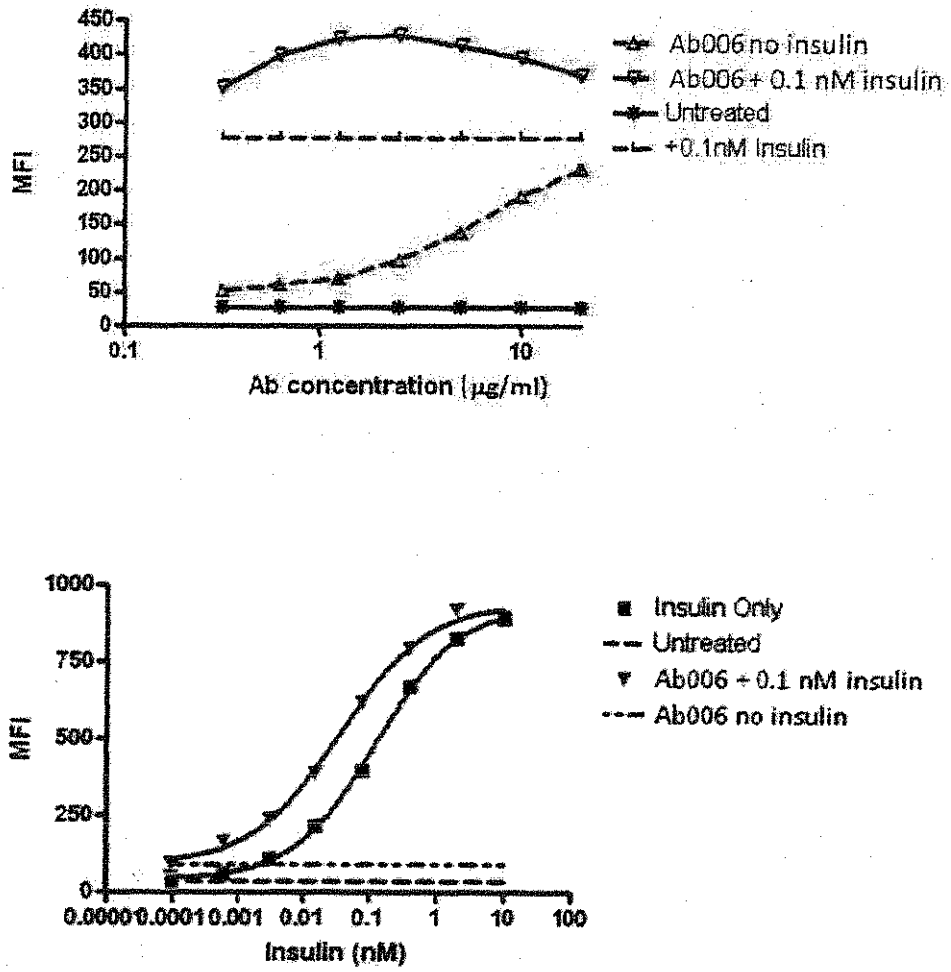


Figure 4C. Non-modulator

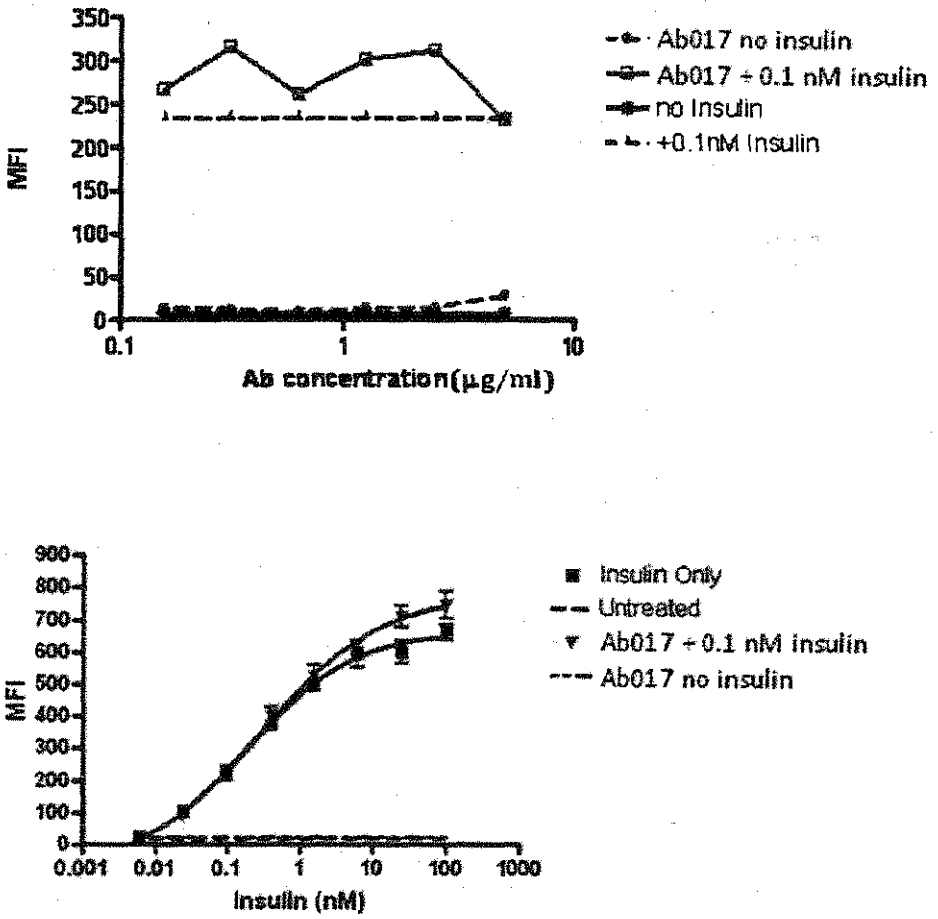


Figure 4D. Agonist Abs

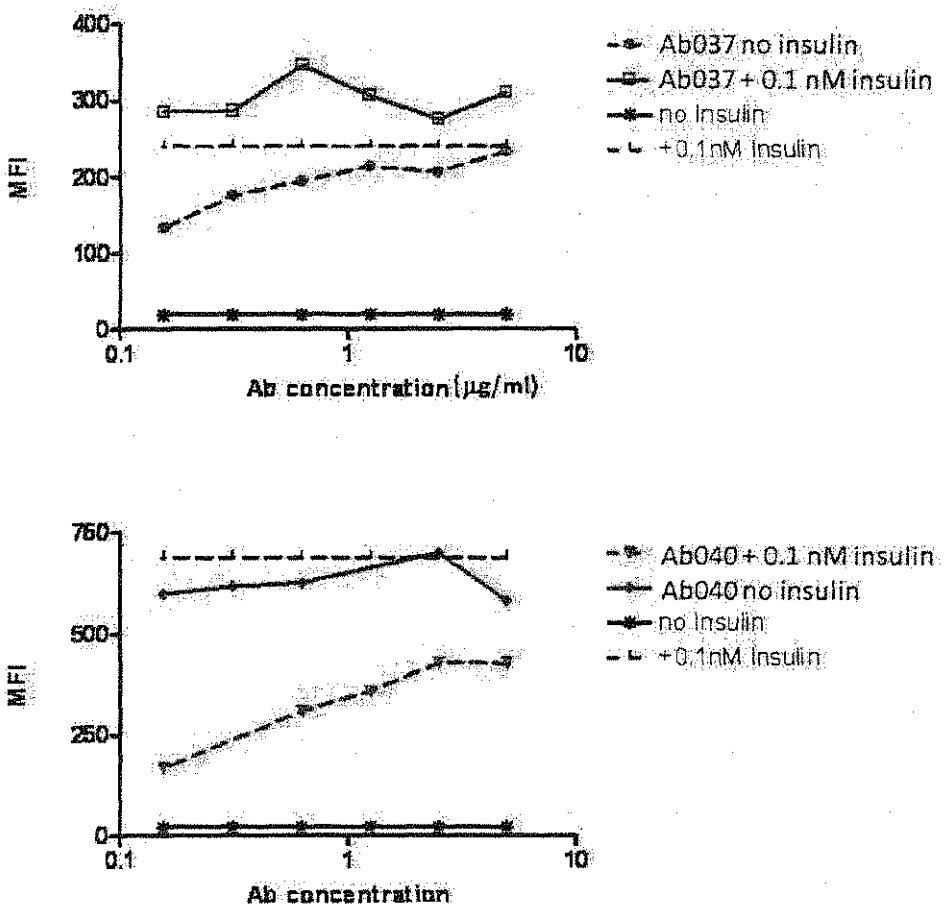


Figure 4E. Negative modulator

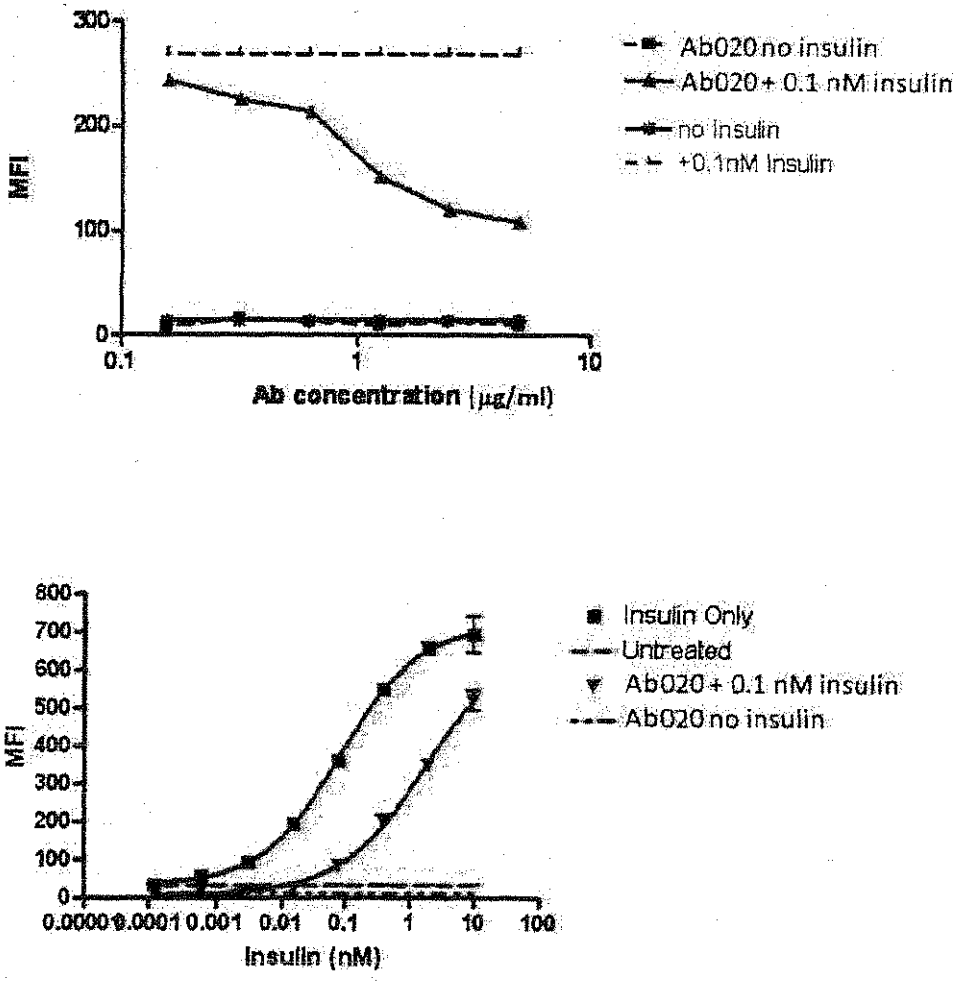


**Figure 5**

| *Ab* | *Ab type* | *[Ab] (ug/ml)* | *Insulin EC50 (nM)* | | *Fold change in insulin EC50* | | | *Ab property* |
|---|---|---|---|---|---|---|---|---|
| | | | *insulin alone* | *Insulin + antibody* | *-Ab EC50/+Ab EC50* | *+Ab EC50/-Ab EC50* | *absolute change* | |
| Ab001 | IgG2 | 5.00 | 0.11 | 0.0048 | 23.32 | 0.04 | 23.32 | Abs with significant positive modulation |
| Ab002 | IgG2 | 2.50 | 0.12 | 0.0166 | 7.32 | 0.14 | 7.32 | |
| Ab003 | IgG2 | 2.25 | 0.12 | 0.0171 | 7.11 | 0.14 | 7.11 | |
| Ab004 | IgG2 | 5.00 | 0.13 | 0.0239 | 5.34 | 0.19 | 5.34 | |
| Ab005 | Fab | 2.50 | 0.08 | 0.0188 | 4.48 | 0.22 | 4.48 | |
| Ab006 | IgG2 | 1.25 | 0.13 | 0.0367 | 3.47 | 0.29 | 3.47 | |
| Ab007 | IgG2 | 5.00 | 0.11 | 0.0346 | 3.22 | 0.31 | 3.22 | |
| Ab008 | Fab | 0.63 | 0.08 | 0.0270 | 3.11 | 0.32 | 3.11 | |
| Ab009 | IgG2 | 5.00 | 0.13 | 0.0461 | 2.77 | 0.36 | 2.77 | |
| Ab010 | IgG2 | 2.50 | 0.12 | 0.0463 | 2.62 | 0.38 | 2.62 | |
| Ab011 | IgG2 | 2.50 | 0.13 | 0.0719 | 1.78 | 0.56 | 1.78 | Abs without significant modulation |
| Ab012 | IgG2 | 2.50 | 0.08 | 0.0504 | 1.67 | 0.60 | 1.67 | |
| Ab013 | IgG2 | 1.25 | 0.08 | 0.0540 | 1.56 | 0.64 | 1.56 | |
| Ab014 | IgG2 | 5.00 | 0.11 | 0.0984 | 1.13 | 0.88 | 1.13 | |
| Ab015 | IgG2 | 1.25 | 0.20 | 0.2450 | 0.82 | 1.23 | 1.23 | |
| Ab016 | IgG2 | 1.25 | 0.20 | 0.2714 | 0.74 | 1.36 | 1.36 | |
| Ab017 | IgG2 | 2.50 | 0.20 | 0.2747 | 0.73 | 1.37 | 1.37 | |
| Ab018 | IgG2 | 5.00 | 0.09 | 0.2969 | 0.29 | 3.48 | 3.48 | Abs with significant negative modulation |
| Ab019 | Fab | 5.00 | 0.09 | 0.4527 | 0.19 | 5.31 | 5.31 | |
| Ab020 | IgG2 | 5.00 | 0.09 | 1.8570 | 0.05 | 21.79 | 21.79 | |

**Figure 6**

Figure 6A. Positive modulator with very low agonism

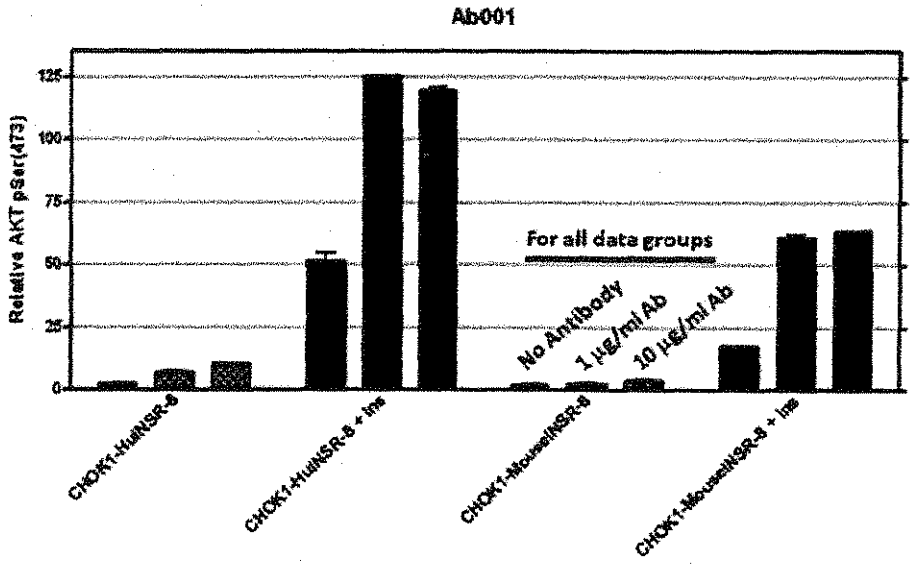



Figure 6B. Positive modulator with agonism

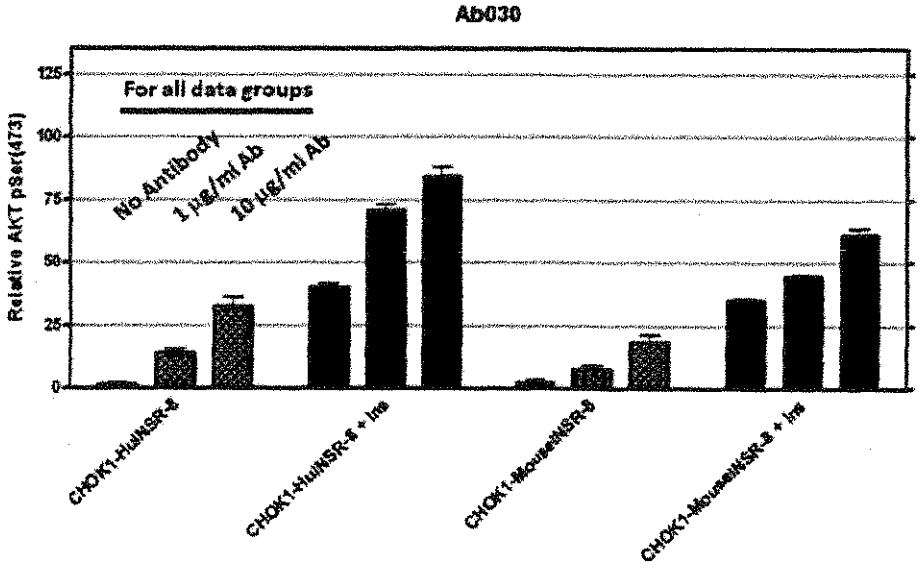


Figure 6C. Agonist Abs

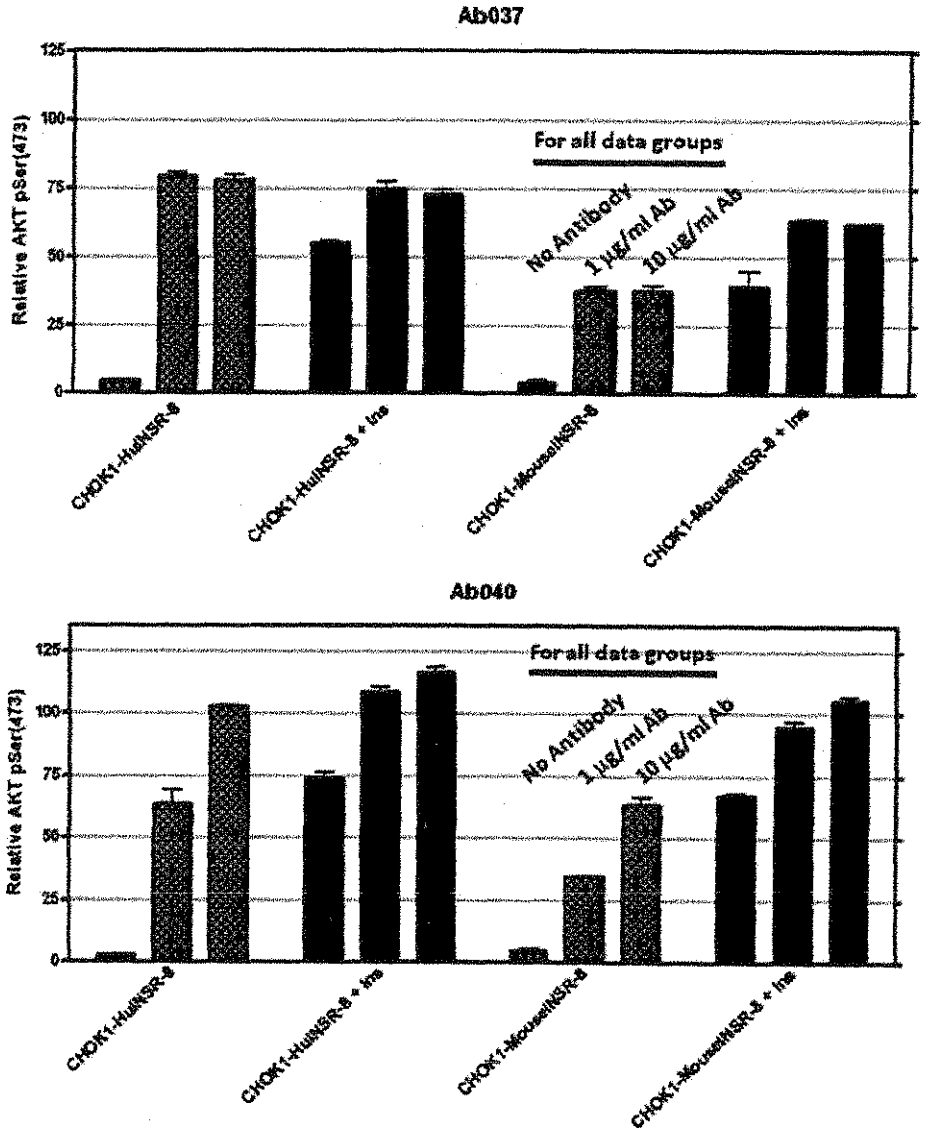


Figure 6D. 83-7

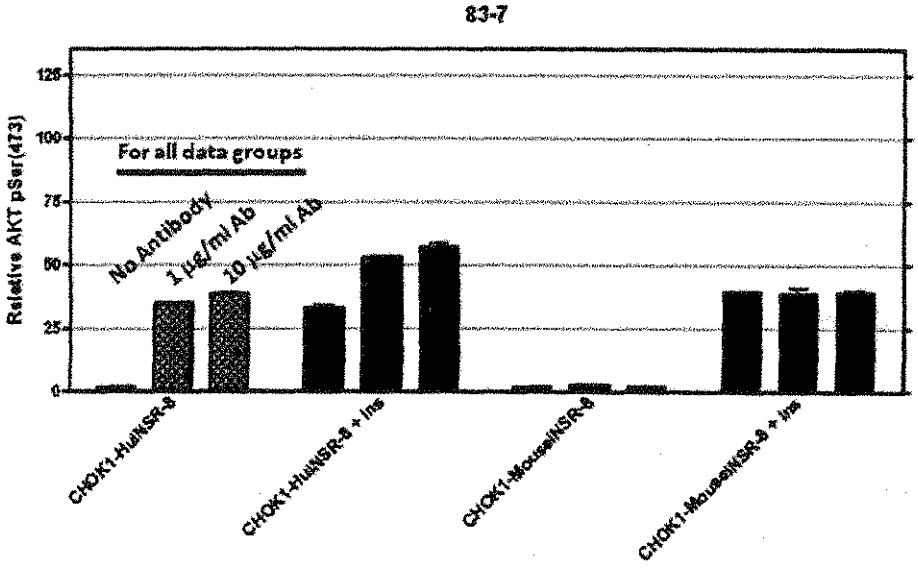



Figure 6E. Insulin and background response in the absence of antibody

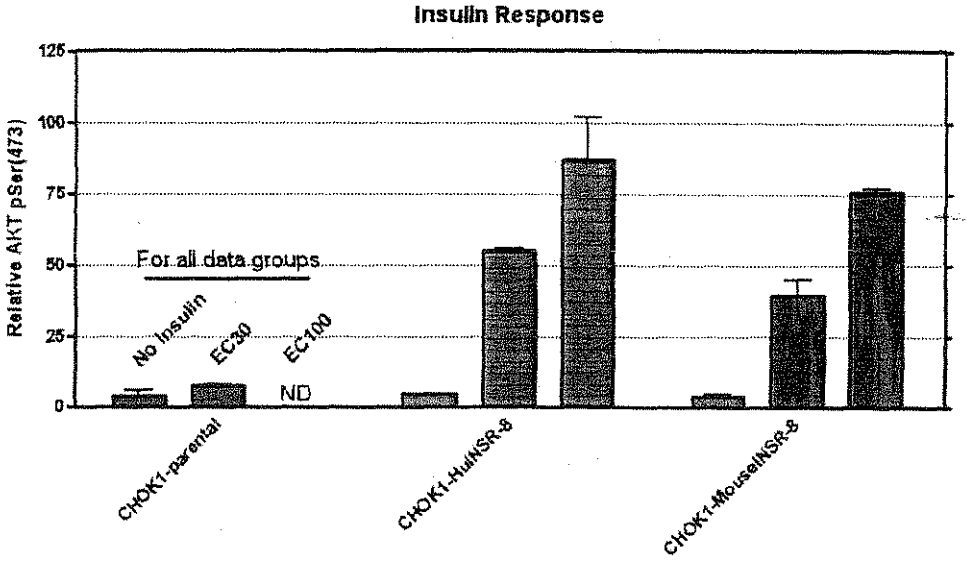


Figure 7

| *Agonism class* | *Antibody* | *agonist of human INSR by pIRS-1* | *agonist of human INSR by pAkt* | *agonist of mouse INSR by pAkt* | *cross reactive to mouse INSR by FACS* | *cross reactive to mouse INSR by pAkt* |
|---|---|---|---|---|---|---|
| Abs with weak or very weak agonism | Ab021 | yes | nd | nd | nd | nd |
| | Ab022 | yes | nd | nd | nd | nd |
| | Ab023 | yes | nd | nd | nd | nd |
| | Ab024 | yes | nd | nd | no | nd |
| | Ab025 | yes | nd | nd | no | nd |
| | Ab026 | yes | nd | nd | no | nd |
| | Ab027 | yes | nd | nd | no | nd |
| | Ab028 | yes | nd | nd | no | nd |
| | Ab013 | yes | nd | nd | no | nd |
| | Ab011 | yes | nd | nd | yes | nd |
| | Ab001 | yes | yes | no | yes | yes |
| | Ab015 | yes | yes | no | no | no |
| | Ab002 | yes | yes | no | no | no |
| Abs with moderate agonism | Ab029 | yes | nd | nd | nd | nd |
| | Ab017 | yes | yes | no | yes | no |
| | Ab030 | yes | yes | yes | yes | yes |
| | Ab031` | yes | nd | nd | no | nd |
| | Ab009 | yes | yes | yes | yes | yes |
| | Ab032 | yes | yes | yes | yes | yes |
| | Ab018 | yes | nd | nd | yes | nd |
| | Ab033 | yes | nd | nd | yes | nd |
| | Ab012 | yes | yes | no | no | yes |
| | Ab014 | yes | yes | yes | yes | yes |
| | Ab034 | yes | nd | nd | nd | nd |
| | Ab010G1 | yes | yes | no | no | no |
| | Ab010G2 | yes | yes | no | yes | yes |
| | Ab003 | yes | nd | nd | nd | nd |
| Abs with strong agonism | Ab006 | yes | yes | yes | yes | yes |
| | Ab035 | yes | nd | nd | no | nd |
| | Ab036 | yes | yes | yes | yes | yes |
| | Ab037 | yes | yes | yes | yes | yes |
| | Ab038 | yes | yes | no | yes | no |
| | Ab039 | yes | yes | yes | yes | yes |
| | Ab040 | yes | yes | yes | yes | yes |
| | Ab041 | yes | nd | nd | nd | nd |
| | Ab042 | yes | nd | nd | no | nd |
| | Ab043 | yes | yes | yes | yes | yes |

| *Agonism class* | *Antibody* | *agonist of human INSR by pIRS-1* | *agonist of human INSR by pAkt* | *agonist of mouse INSR by pAkt* | *cross reactive to mouse INSR by FACS* | *cross reactive to mouse INSR by pAkt* |
|---|---|---|---|---|---|---|
| | Ab044 | yes | nd | nd | yes | nd |
| | Ab045 | yes | nd | nd | yes | nd |
| | Ab046 | yes | yes | yes | yes | yes |
| | Ab047 | yes | nd | nd | no | nd |
| | Ab048 | yes | yes | no | yes | no |
| | Ab049 | yes | yes | no | no | no |

nd = not determined

Figure 7 (cont'd)

**Figure 8**

Figure 8A

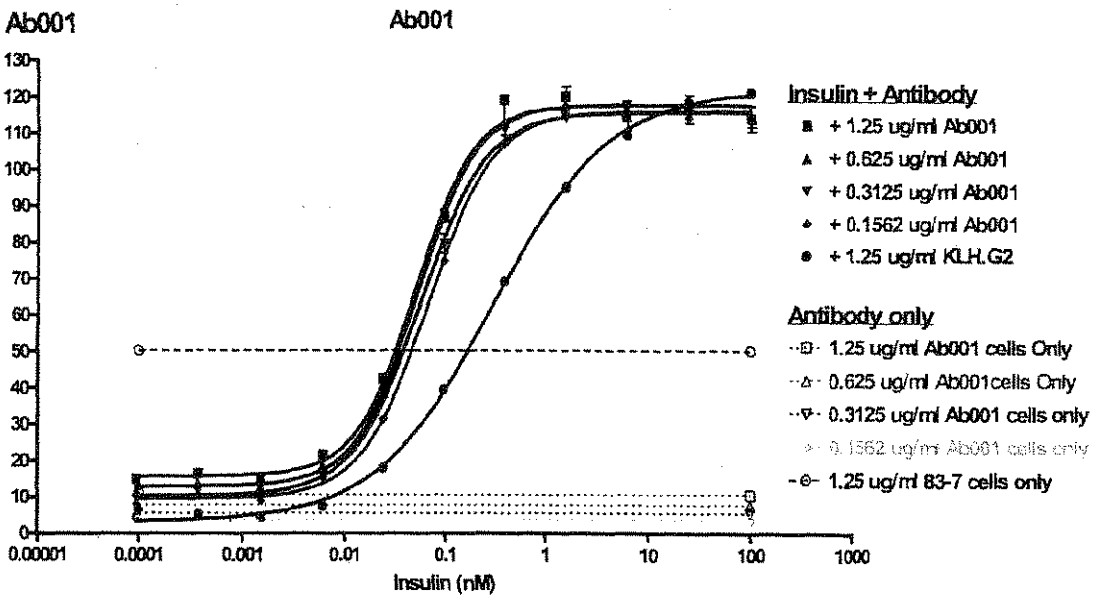



Figure 8B

| Ab Concentration (ug/mL) | HILLSLOPE | EC50 (pM) | Fold-change in EC50 |
|---|---|---|---|
| 1.25 Ab001 | 1.49 | 51 | 5.9 |
| 0.62 Ab001 | 1.44 | 53 | 5.7 |
| 0.31 Ab001 | 1.32 | 57 | 5.3 |
| 0.15 Ab001 | 1.33 | 68 | 4.4 |
| 1.25 anti-KLH | 0.76 | 301 | |

**Figure 9**

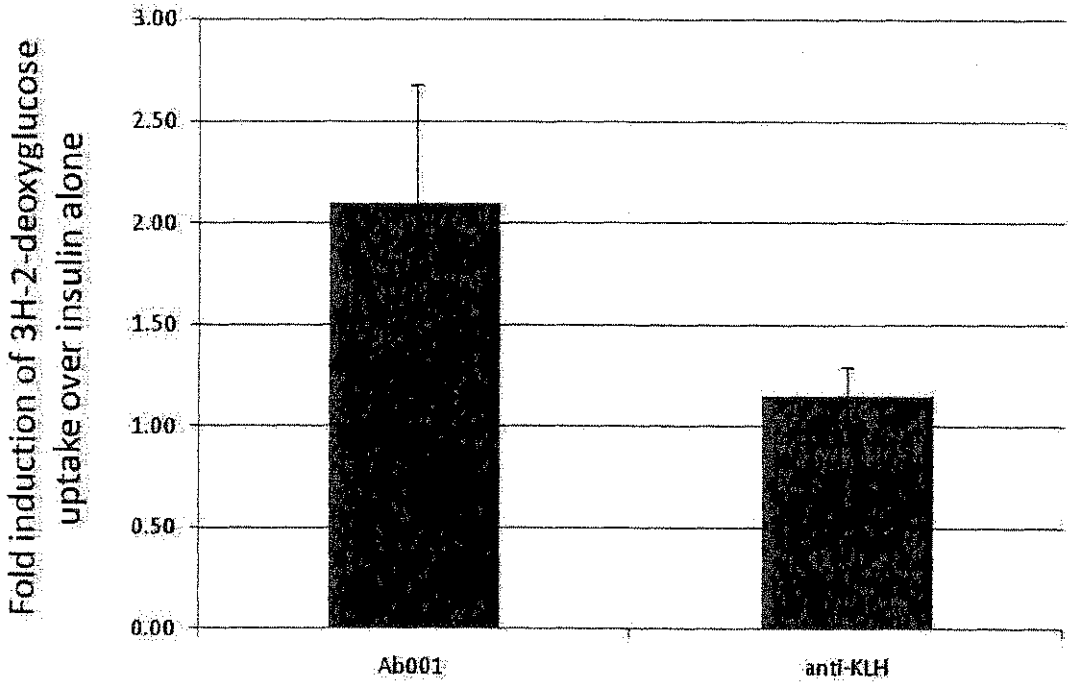
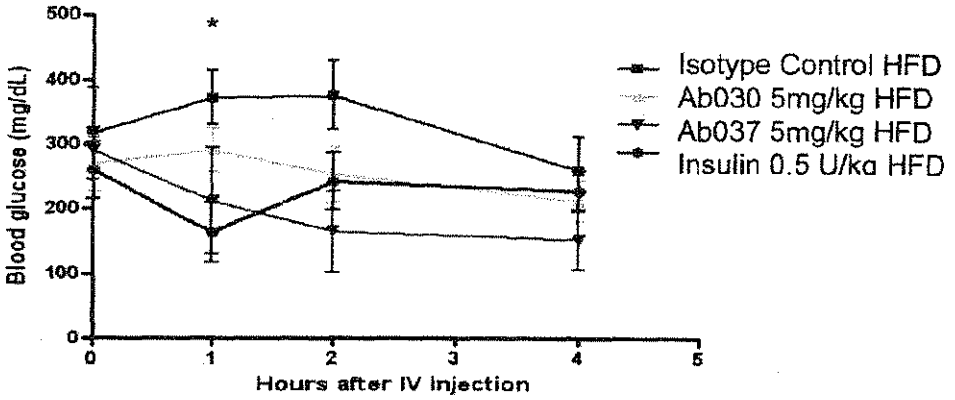

Fold induction of 3H-2-deoxyglucose uptake over insulin alone
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Ab001
anti-KLH

**Figure 10**

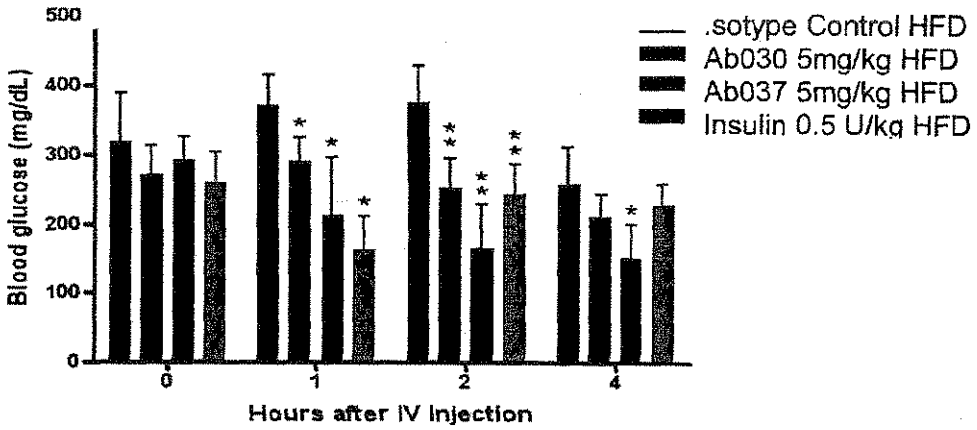
Blood Glucose Levels in DIO Mice Treated with Partial Agonist Anti-INSR Antibodies

A.




* $p < 0.01$ (one-tailed) ND/isotype compared to HFD/isotype

B.

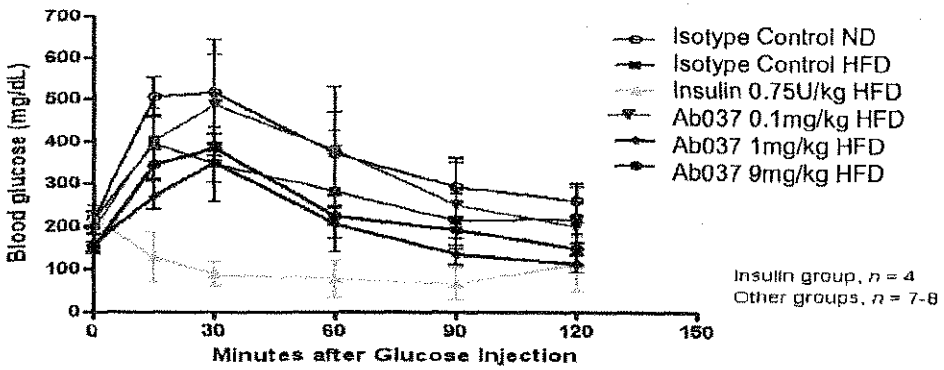



* $p \leq 0.01$ (two-tailed) compared to HFD/isotype

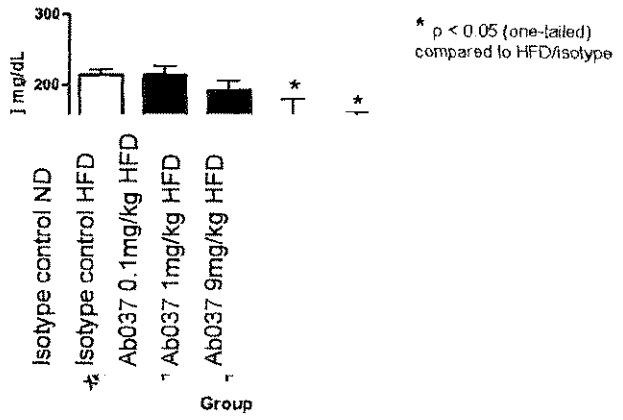
** $p < 0.001$ (two tailed) compared to HFD/isotype

**Figure 11**

A.




B.




C.

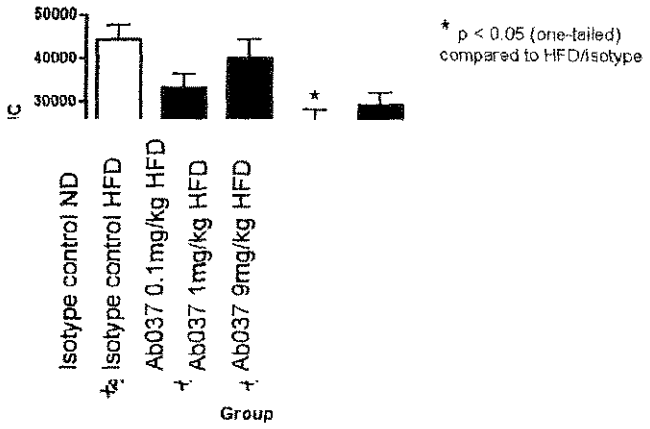
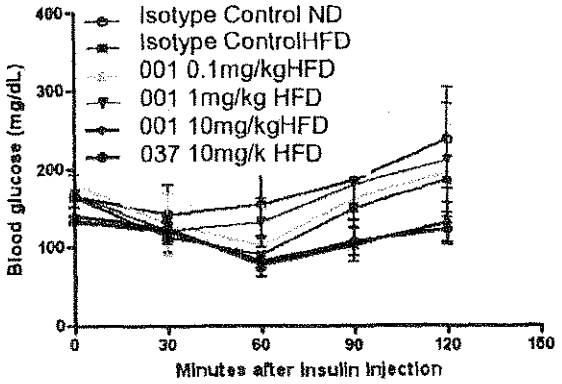
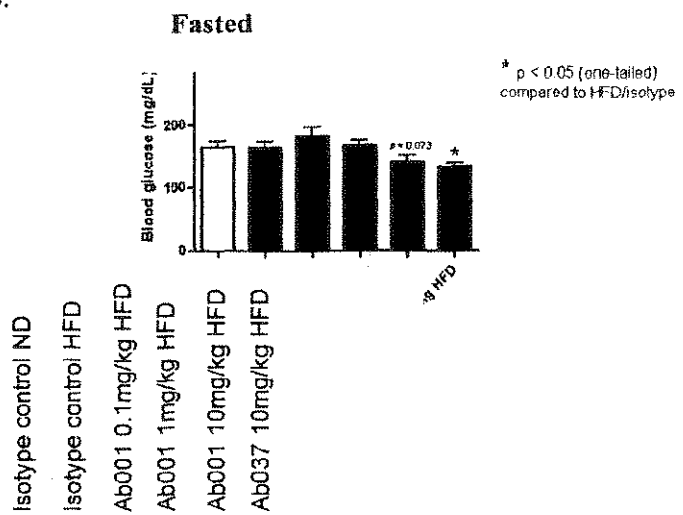


**Figure 12**

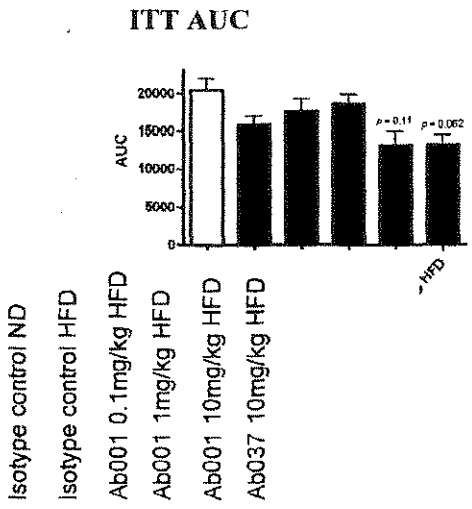
A.




B.



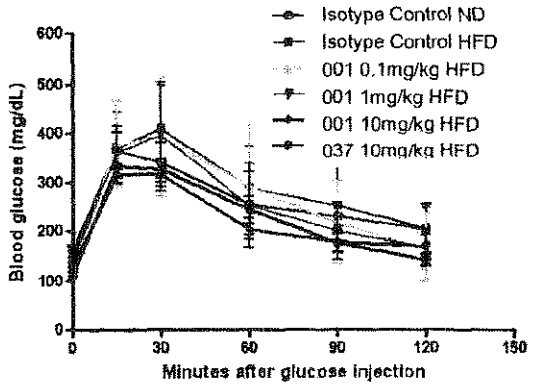

C.



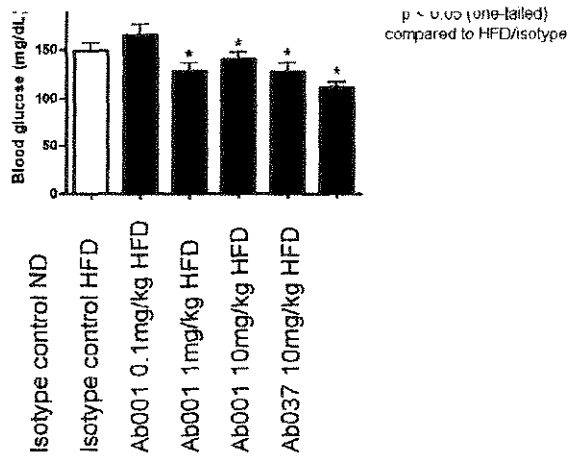

19/82

**Figure 13**

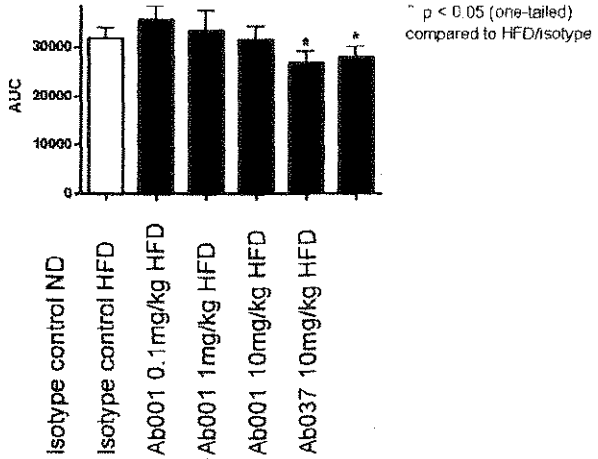
A.




B.



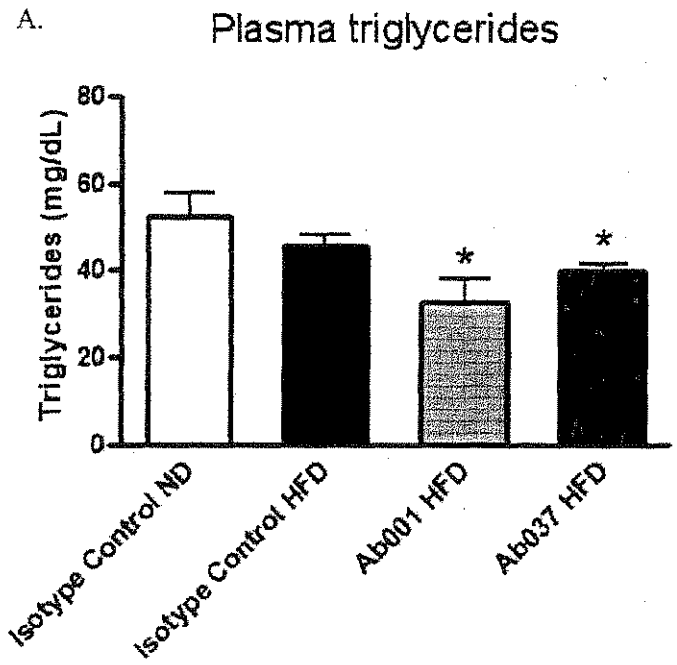

C.




20/82

**Figure 14**

A.


Plasma triglycerides
Triglycerides (mg/dL)
80
60
40
20
0
*
*
Isotype Control ND
Isotype Control HFD
Ab001 HFD
Ab037 HFD

B.

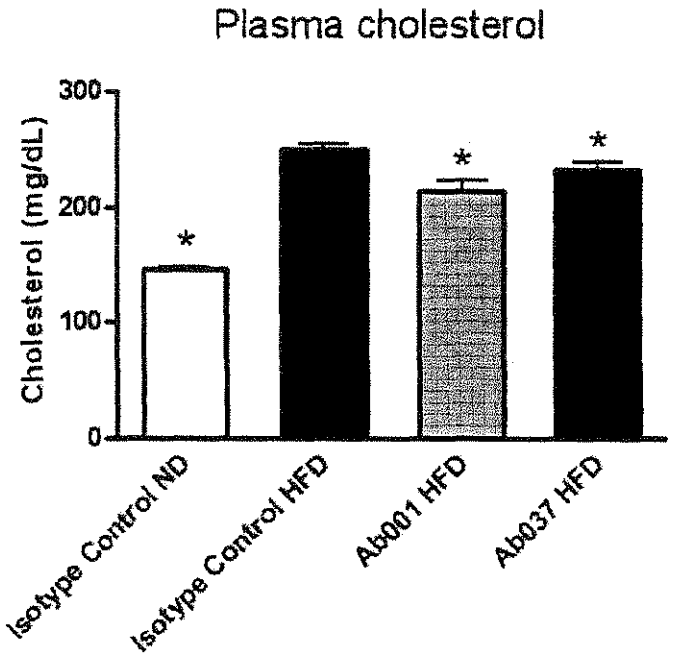
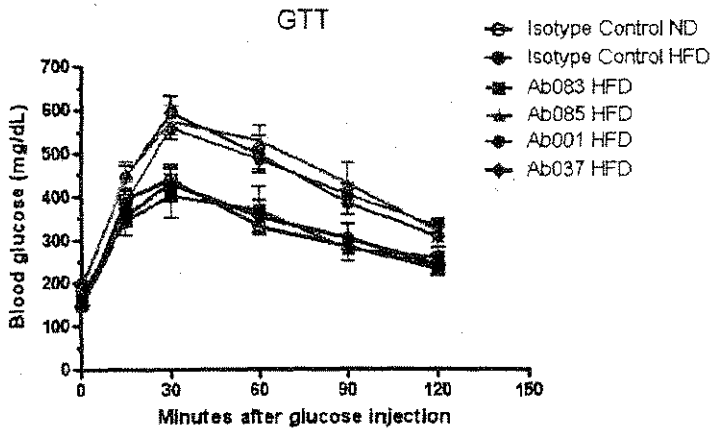
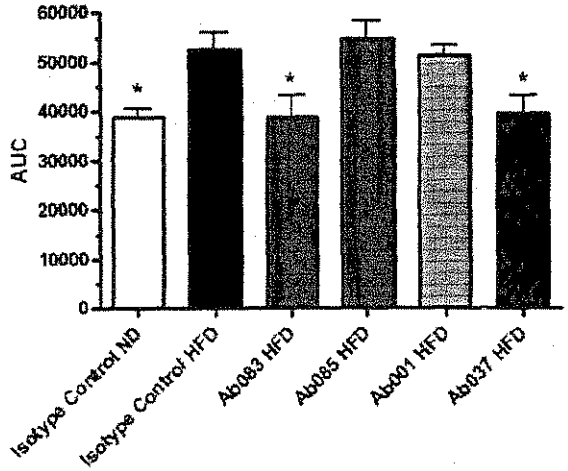

Plasma cholesterol
Cholesterol (mg/dL)
300
200
100
0
*
*
*
Isotype Control ND
Isotype Control HFD
Ab001 HFD
Ab037 HFD

**Figure 15**

A.




B.




C.

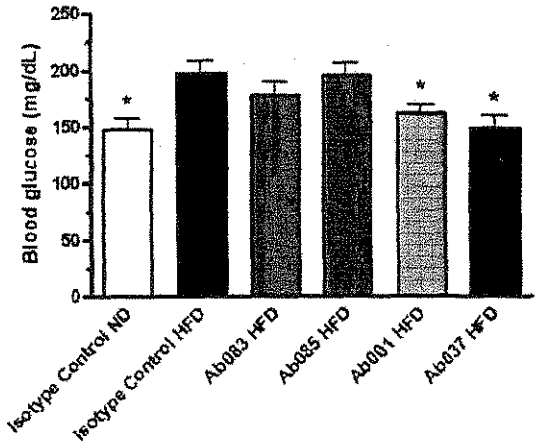
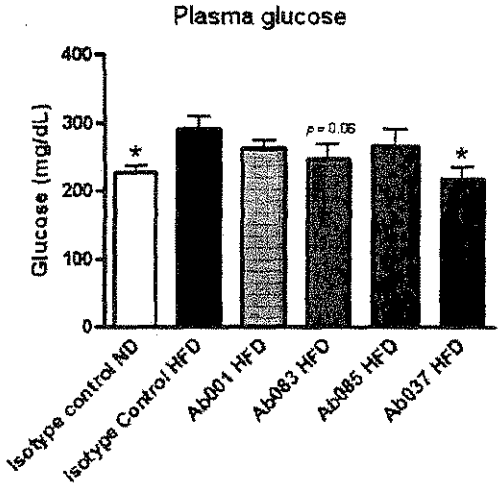
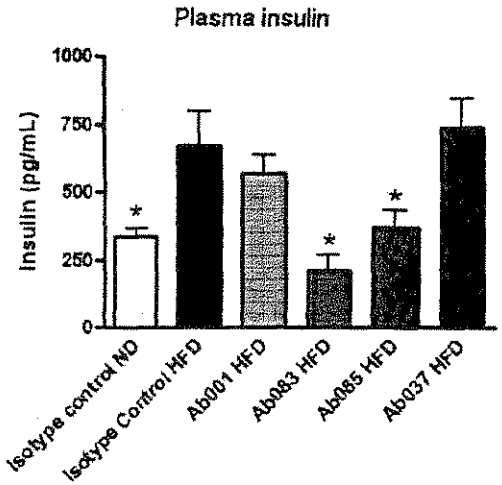


**Figure 16**

A.




B.




C.

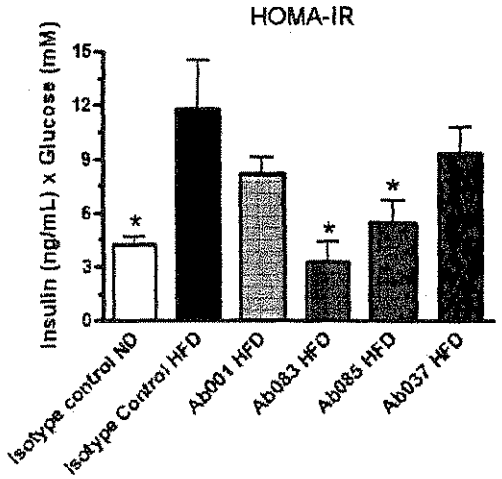
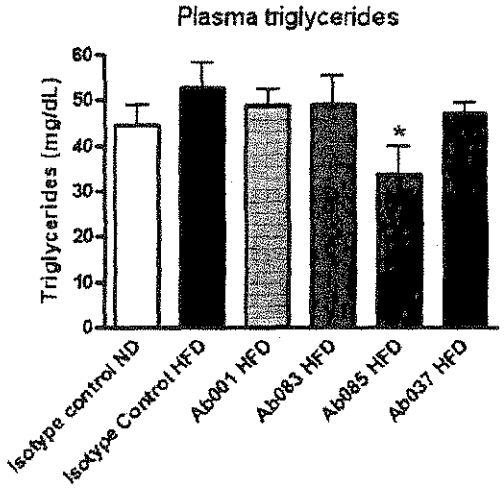
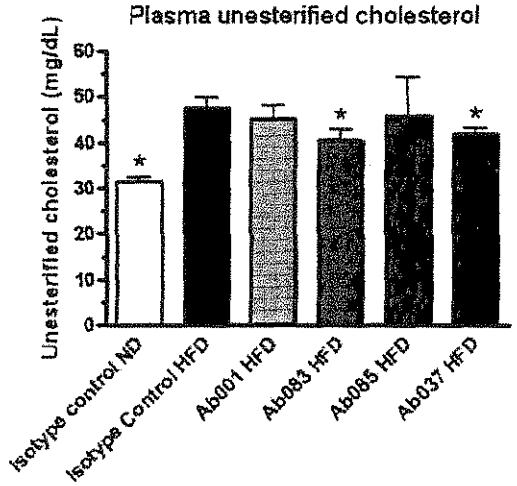


**Figure 16 (Cont'd)**

D.




E.




F.

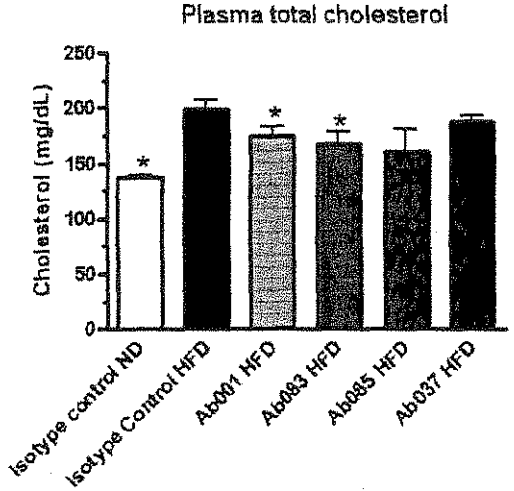
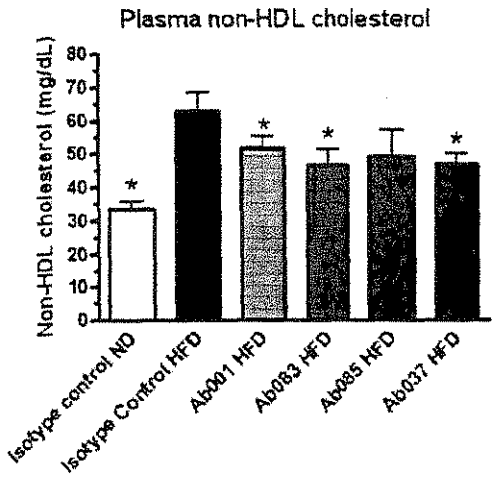


**Figure 16 (Cont'd)**

G.




H.

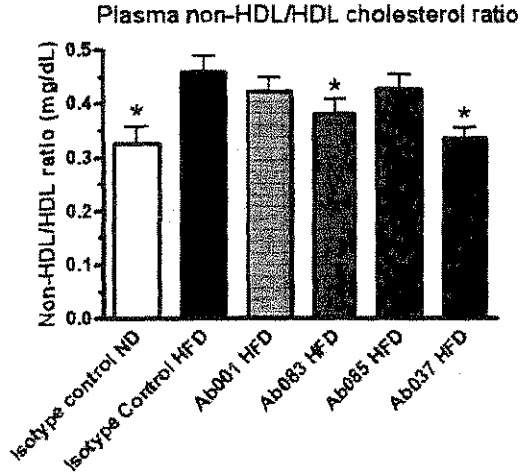
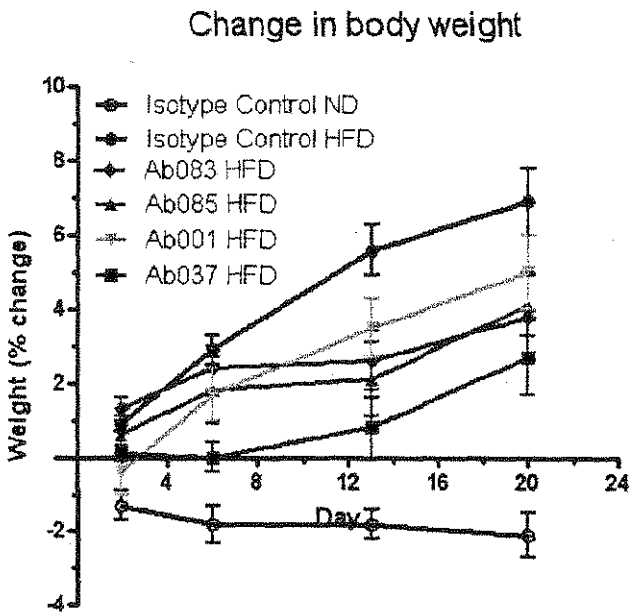


**Figure 17**

A.


Change in body weight
Isotype Control ND
Isotype Control HFD
Ab083 HFD
Ab085 HFD
Ab001 HFD
Ab037 HFD
Weight (% change)
Day
10
8
6
4
2
-2
-4
4
8
12
16
20
24

B.

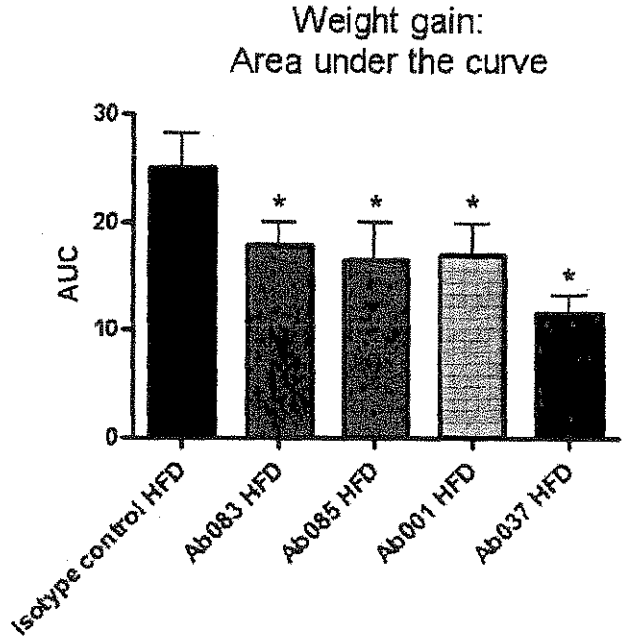
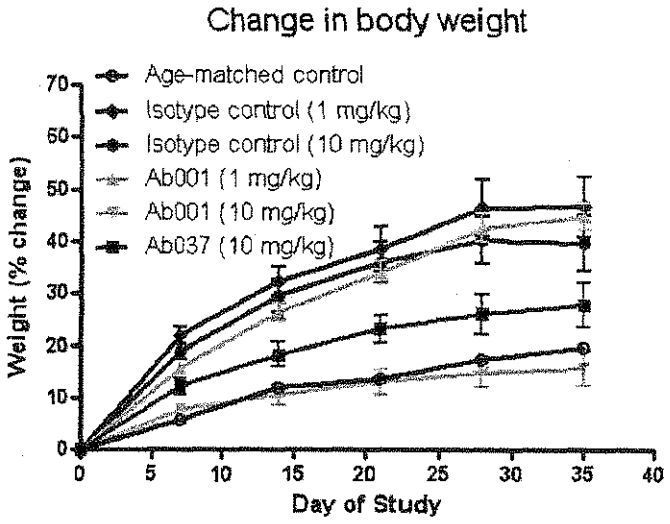

Weight gain:
Area under the curve
AUC
30
20
10
0
*
*
*
*
Isotype control HFD
Ab083 HFD
Ab085 HFD
Ab001 HFD
Ab037 HFD

**Figure 18**

A.


Change in body weight
Age-matched control
Isotype control (1 mg/kg)
Isotype control (10 mg/kg)
Ab001 (1 mg/kg)
Ab001 (10 mg/kg)
Ab037 (10 mg/kg)
Weight (% change)
Day of Study

B.

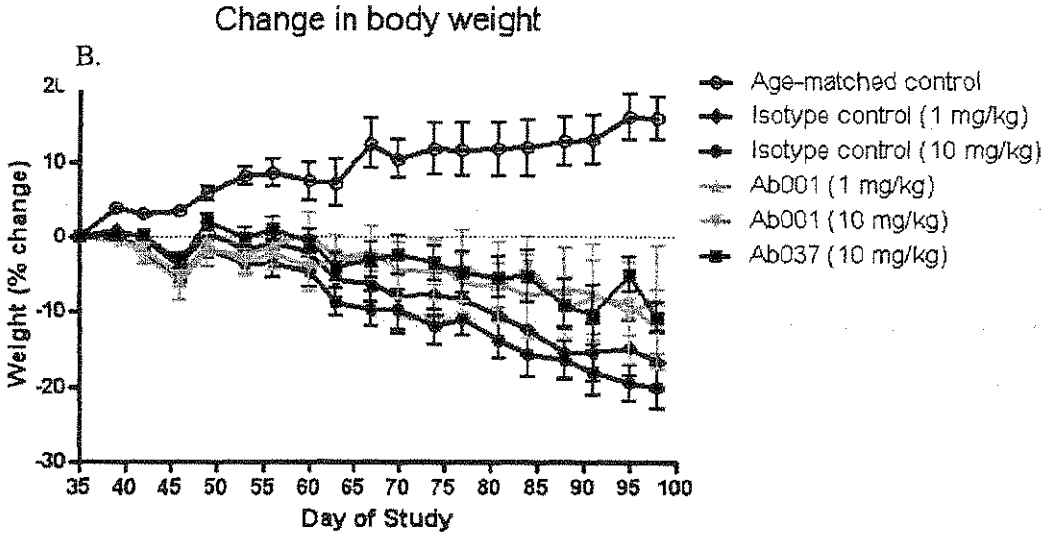
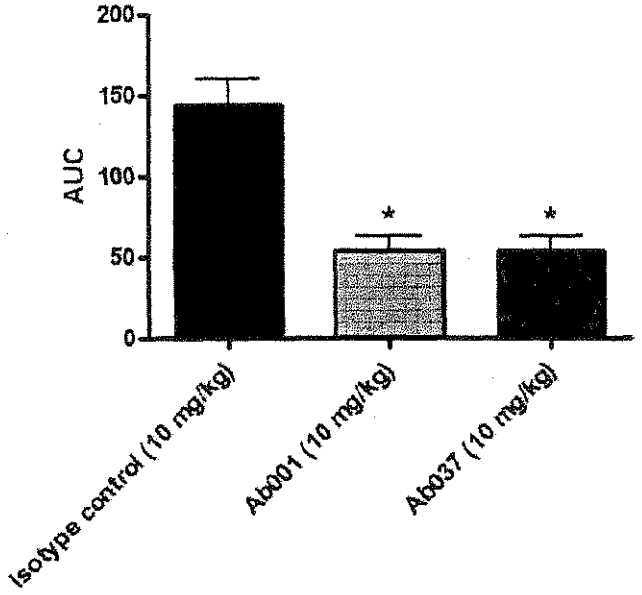

Change in body weight
Age-matched control
Isotype control (1 mg/kg)
Isotype control (10 mg/kg)
Ab001 (1 mg/kg)
Ab001 (10 mg/kg)
Ab037 (10 mg/kg)
Weight (% change)
Day of Study

**Figure 18 (cont'd)**

C. Weight gain: Area under the curve




D. Weight reduction: Area under the curve

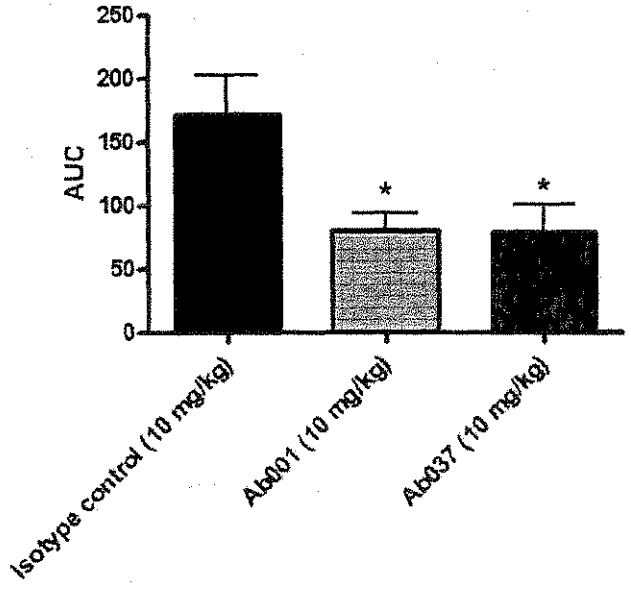
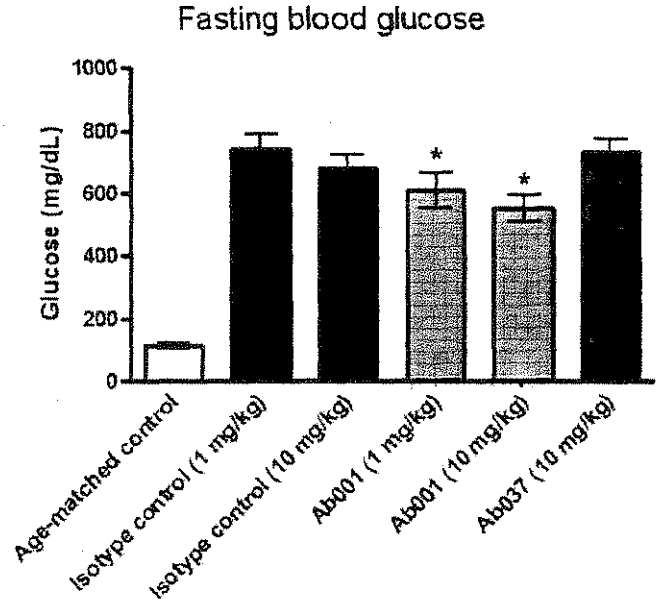


**Figure 19**

A.


Fasting blood glucose
Glucose (mg/dL)
1000
800
600
400
200
0
*
*
Age-matched control
Isotype control (1 mg/kg)
Isotype control (10 mg/kg)
Ab001 (1 mg/kg)
Ab001 (10 mg/kg)
Ab037 (10 mg/kg)

B.

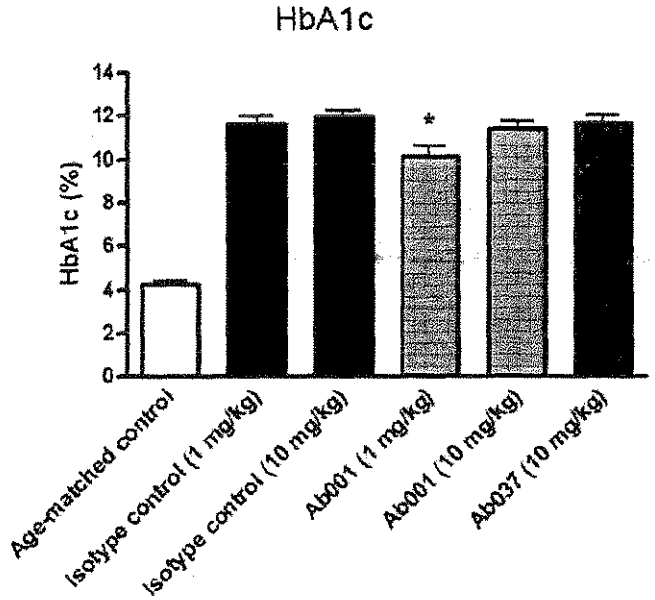
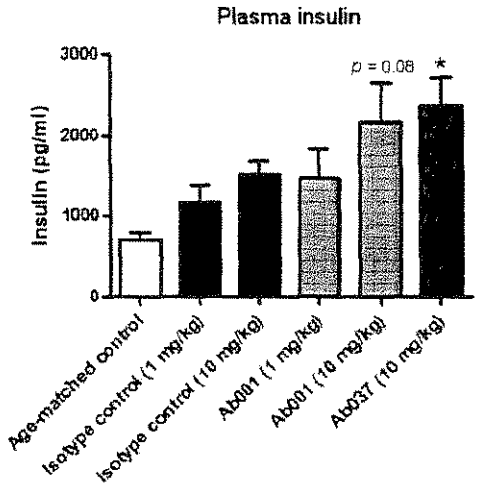
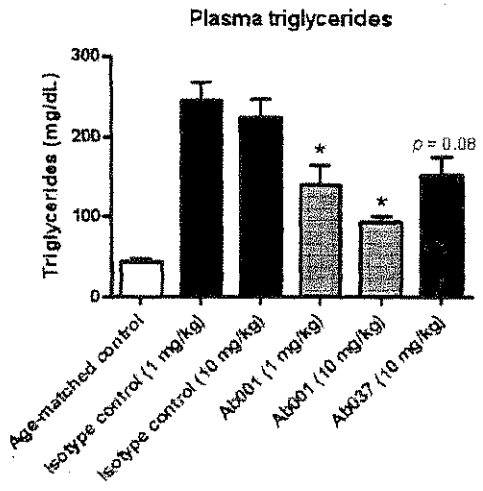

HbA1c
HbA1c (%)
14
12
10
8
6
4
2
0
*
Age-matched control
Isotype control (1 mg/kg)
Isotype control (10 mg/kg)
Ab001 (1 mg/kg)
Ab001 (10 mg/kg)
Ab037 (10 mg/kg)

**Figure 20**

A.




B.




C.

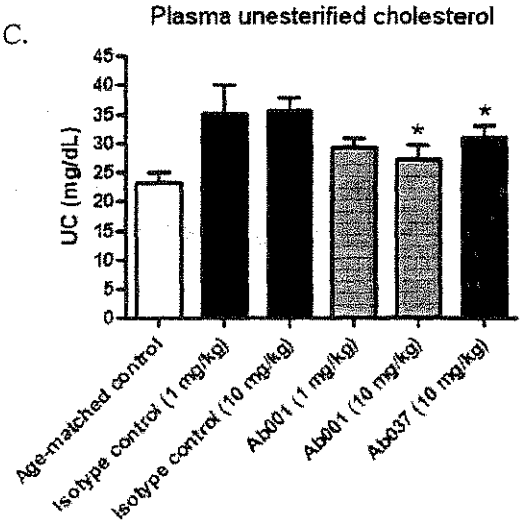
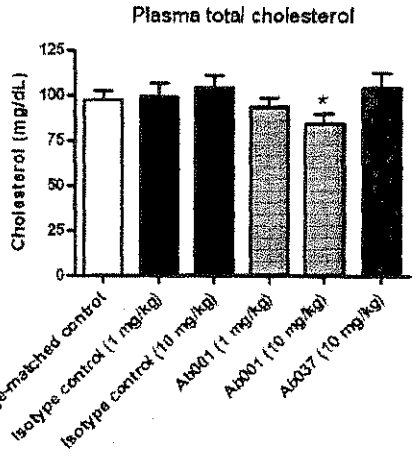
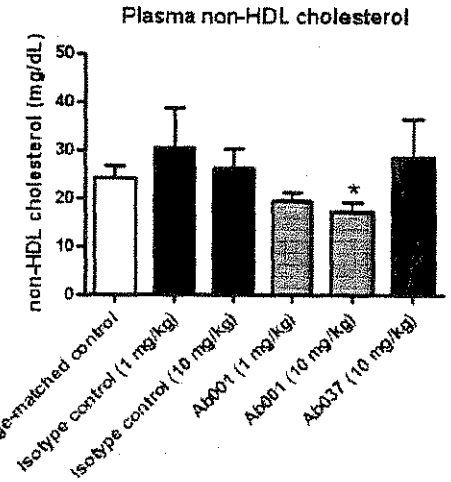


**Figure 20 (Cont'd)**

D.




E.




F.

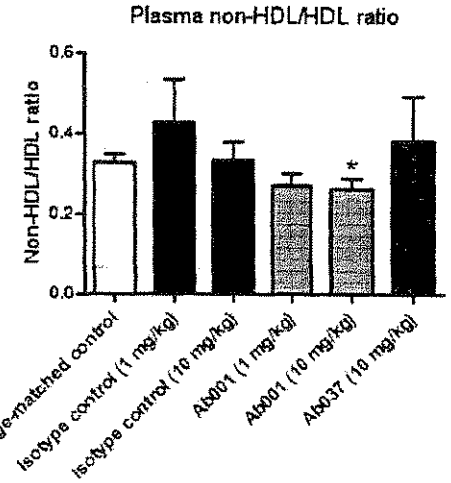


Figure 21

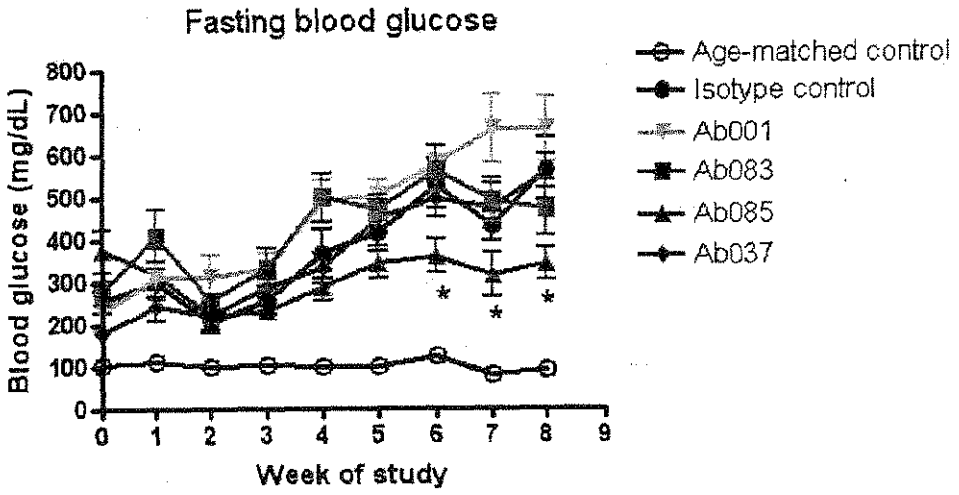



Figure 22

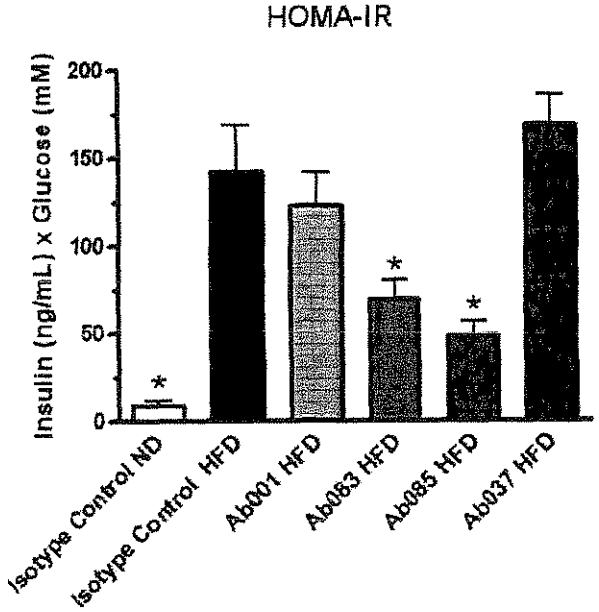
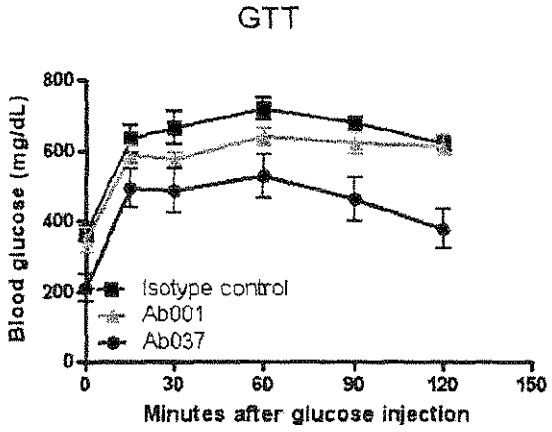
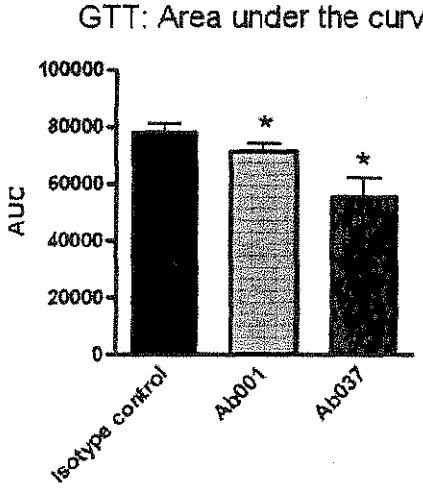


**Figure 23**

A.




B.




C.

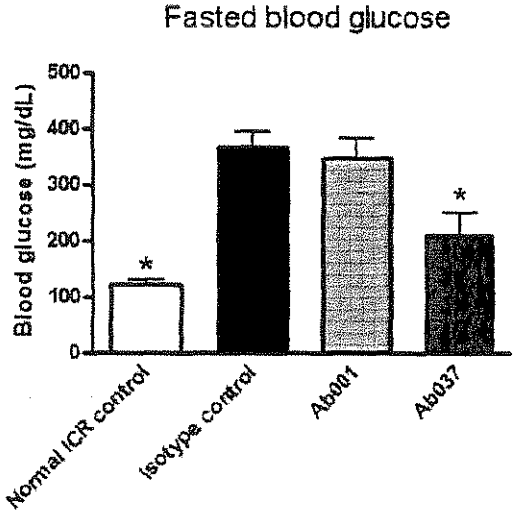
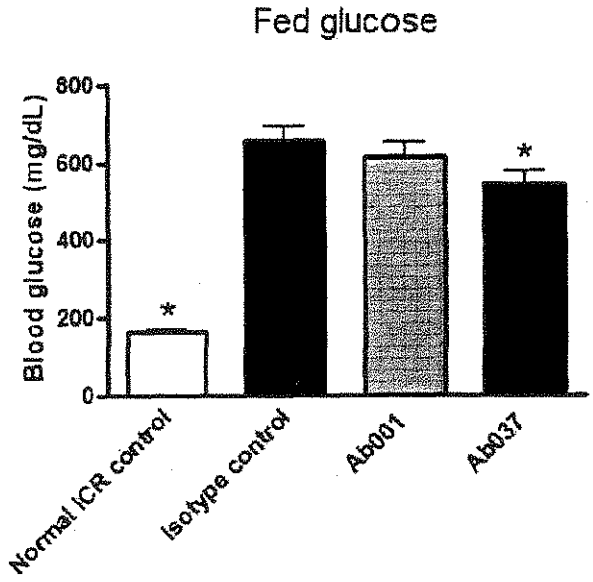


Figure 24

A.


Fed glucose
Blood glucose (mg/dL)
800
600
400
200
0
*
*
Normal ICR control
Isotype control
Ab001
Ab037

B.

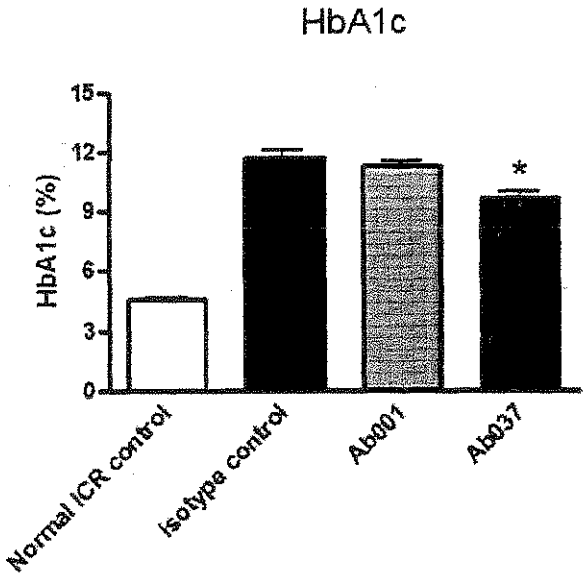
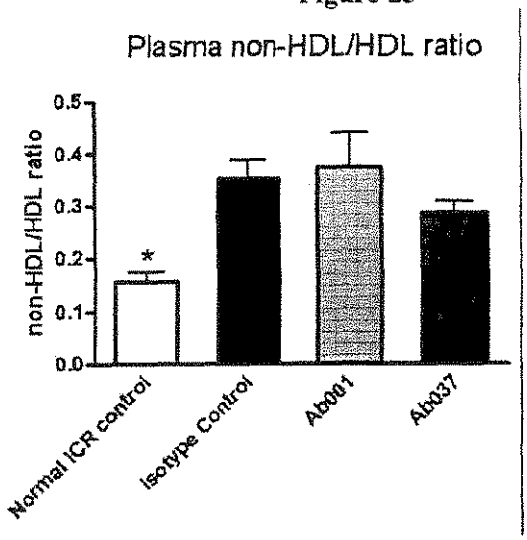
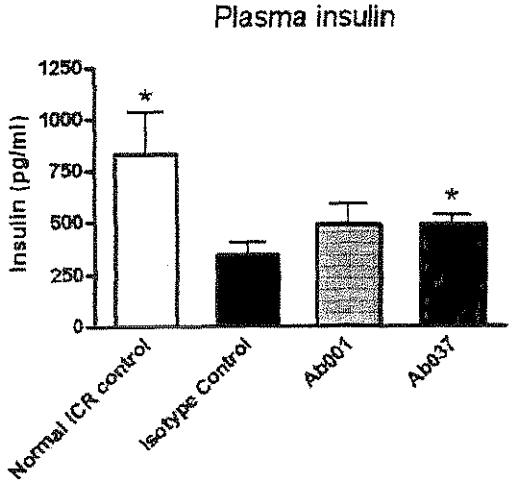

HbA1c
HbA1c (%)
15
12
9
6
3
0
*
Normal ICR control
Isotype control
Ab001
Ab037

**Figure 25**

A.




B.




C.

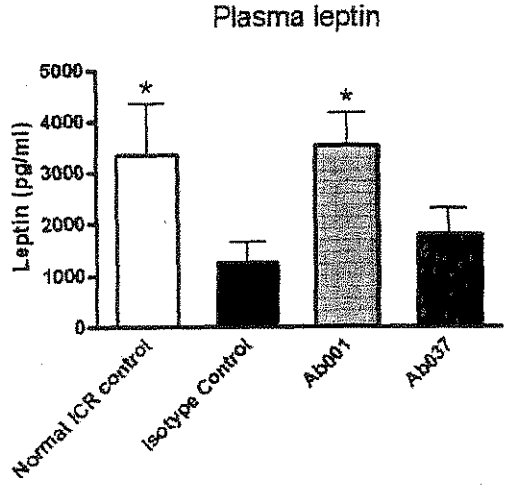
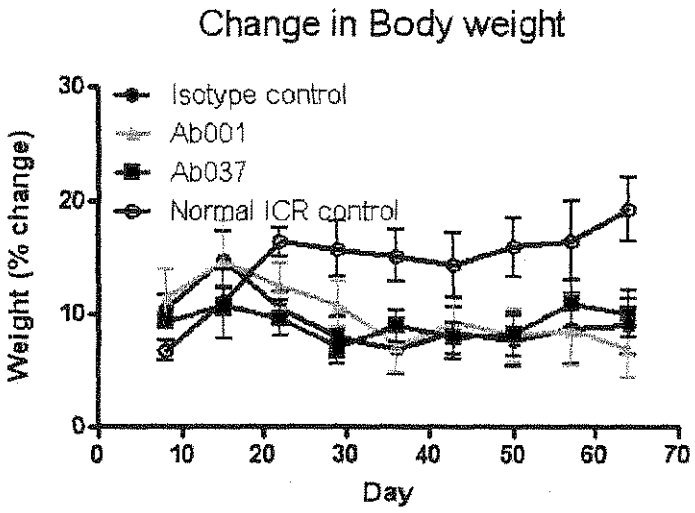
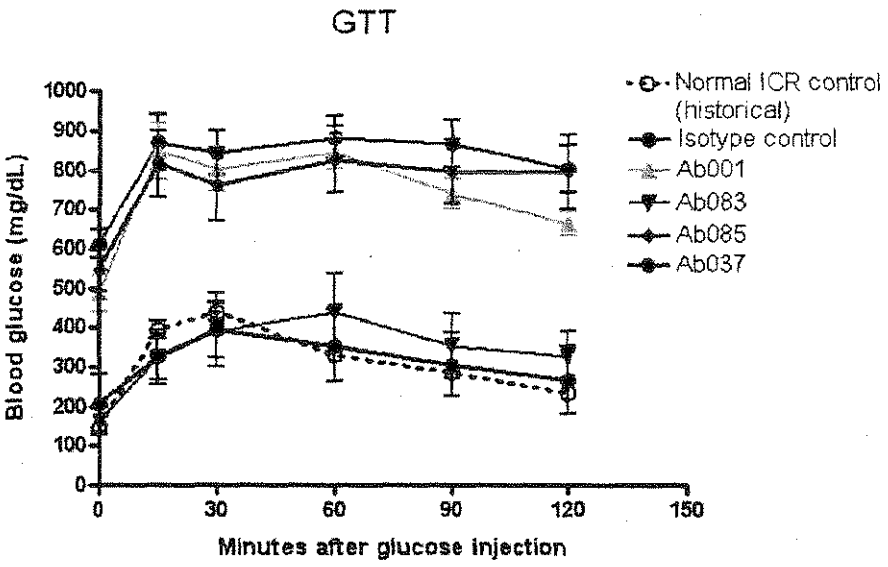


**Figure 26**


Change in Body weight
Isotype control
Ab001
Ab037
Normal ICR control
Weight (% change)
30
20
10
0
0
10
20
30
40
50
60
70
Day

A. ıre 27


GTT
Normal ICR control (historical)
Isotype control
Ab001
Ab083
Ab085
Ab037
Blood glucose (mg/dL)
1000
900
800
700
600
500
400
300
200
100
0
0
30
60
90
120
150
Minutes after glucose injection

B.

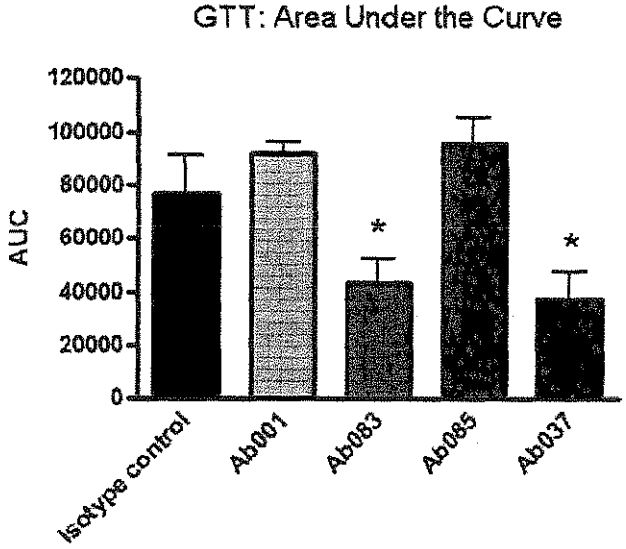

GTT: Area Under the Curve
AUC
120000
100000
80000
60000
40000
20000
0
*
*
Isotype control
Ab001
Ab083
Ab085
Ab037

**Figure 28**

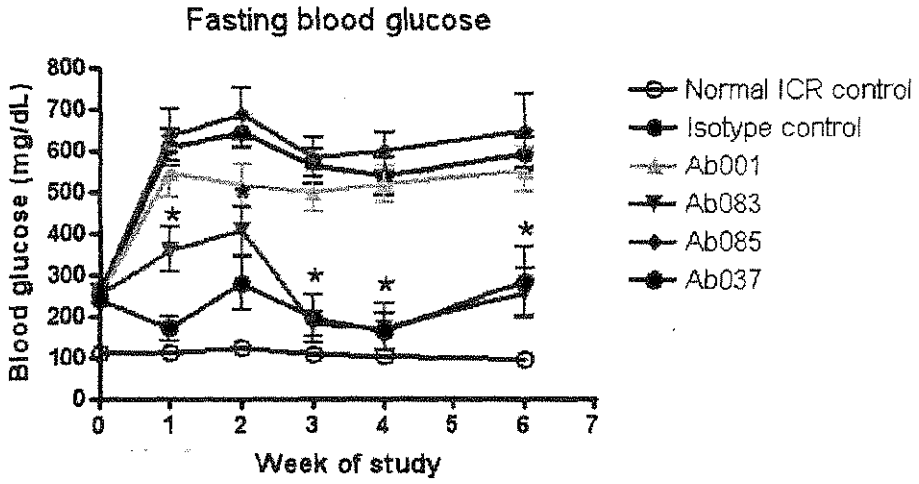
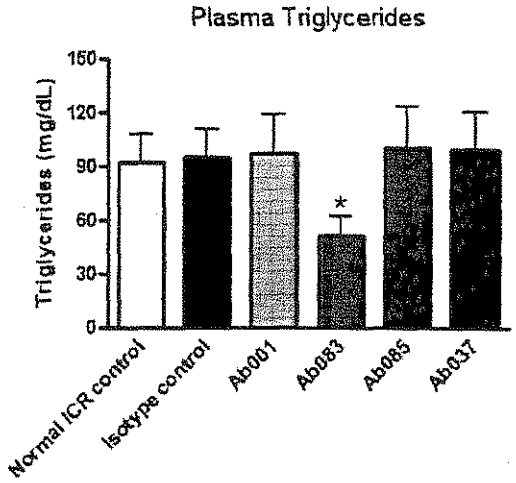
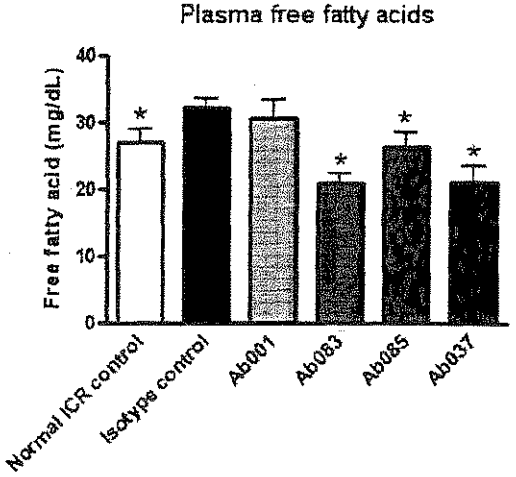

Fasting blood glucose
Blood glucose (mg/dL)
800
700
600
500
400
300
200
100
0
0
1
2
3
4
5
6
7
Week of study
Normal ICR control
Isotype control
Ab001
Ab083
Ab085
Ab037
*
*
*
*
*

**Figure 29**

A.




B.




C.

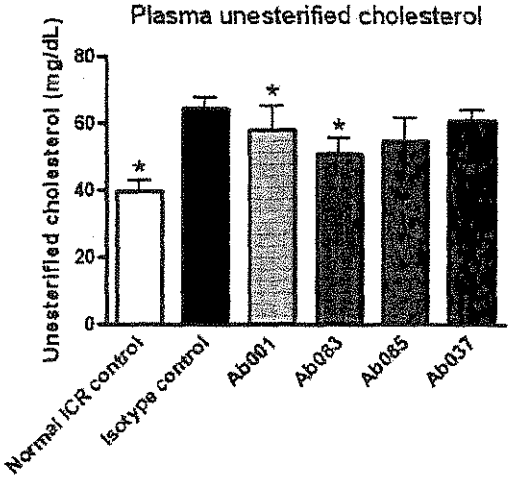
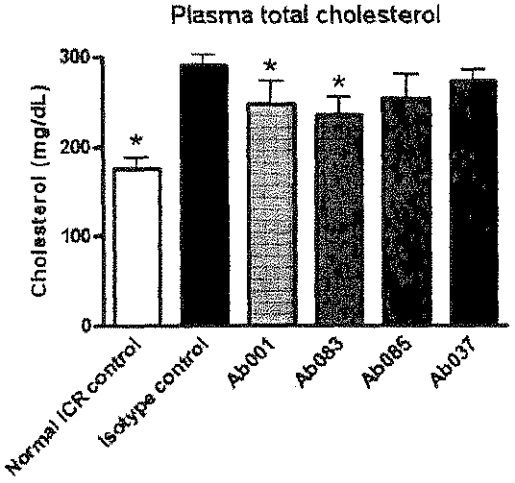
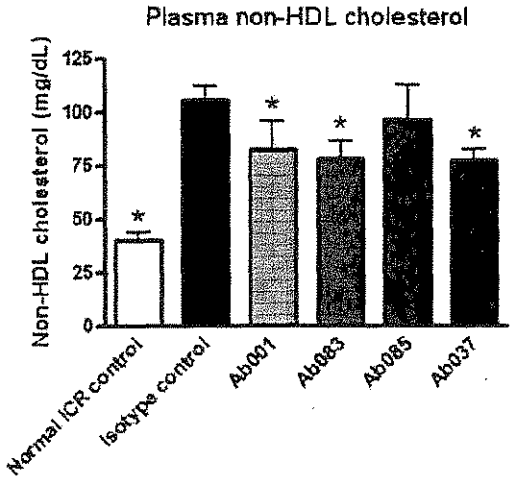


**Figure 29 cont'd**

D.




E.




F.

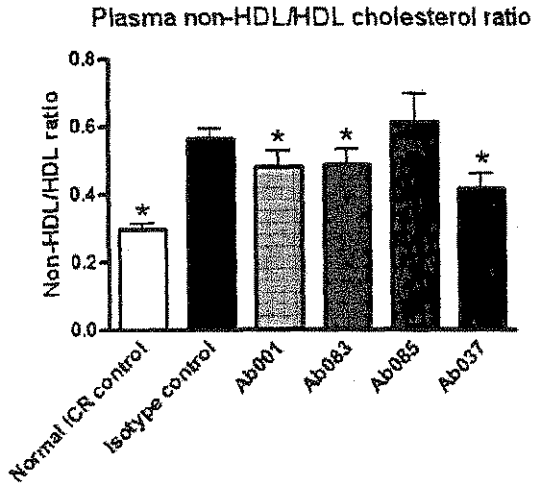


**Figure 30**

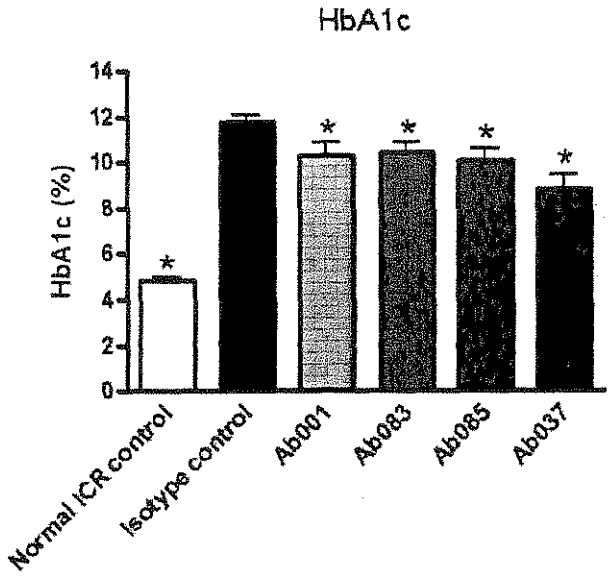



**Figure 31**

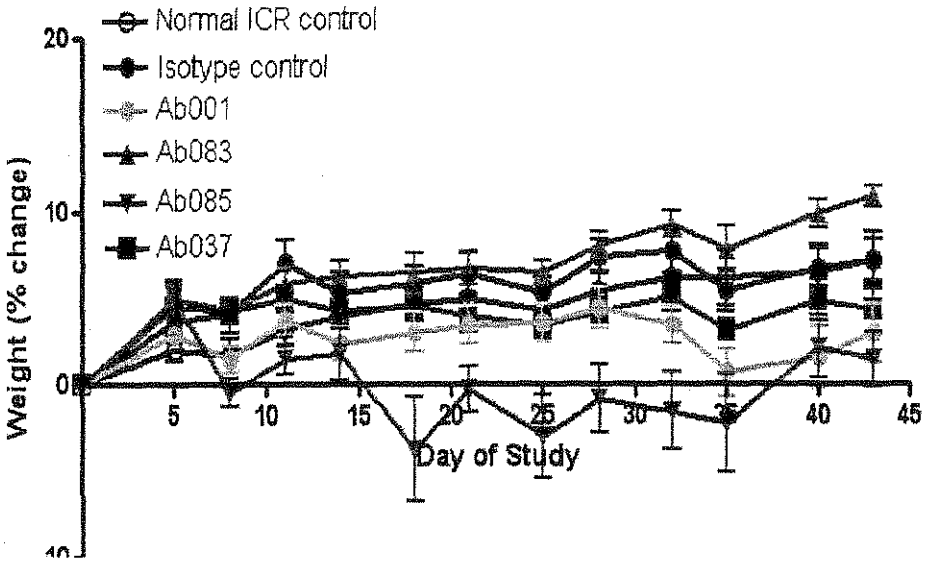
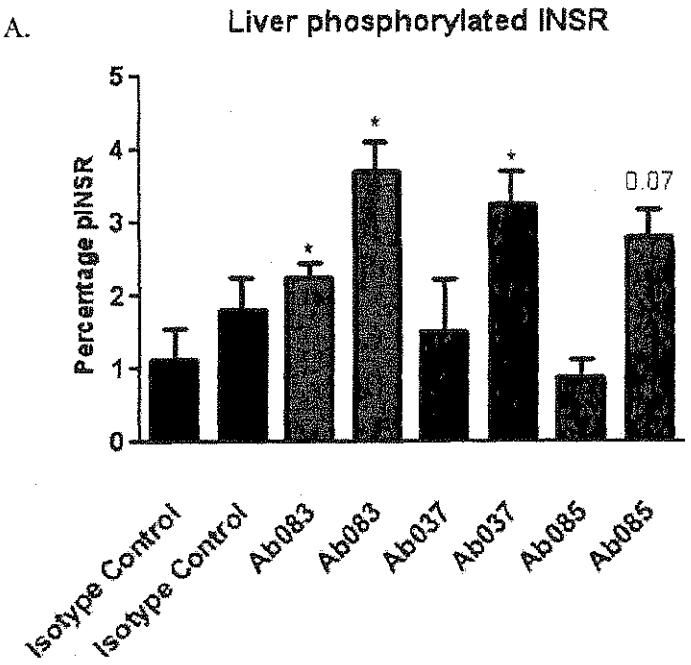


Figure 32

A.


Liver phosphorylated INSR
Percentage pINSR
0
1
2
3
4
5
0.07
Isotype Control
Isotype Control
Ab083
Ab083
Ab037
Ab037
Ab085
Ab085

B.

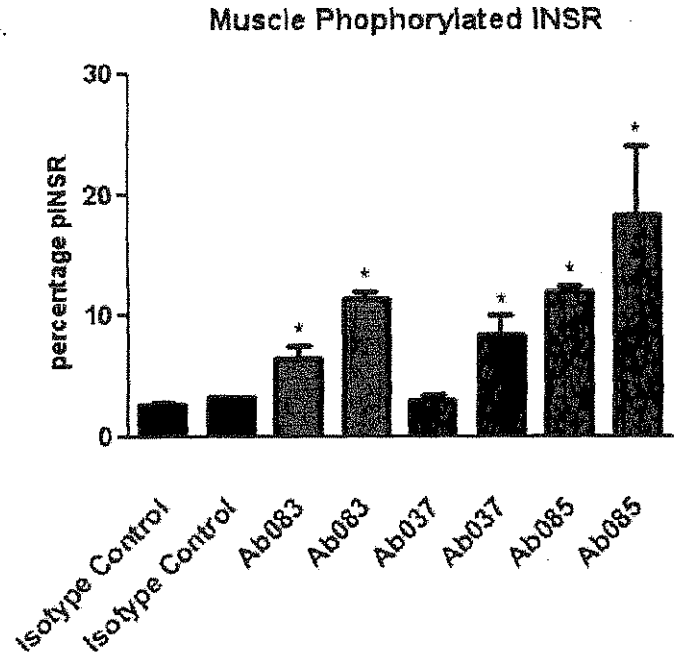

Muscle Phophorylated INSR
percentage pINSR
0
10
20
30
Isotype Control
Isotype Control
Ab083
Ab083
Ab037
Ab037
Ab085
Ab085

**Figure 33**

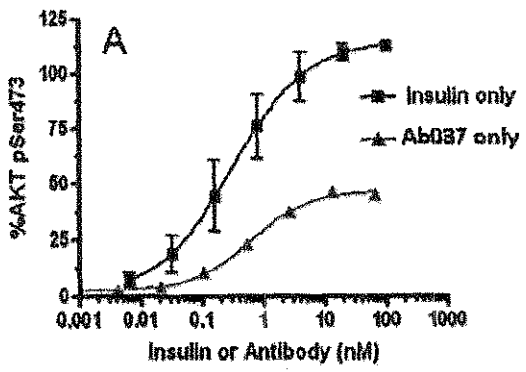
| *Antibody tested* | *FACS area under log transformed data MFI of clones binding to INSR CHO-K1 cells following serum starvation* | | | | *FACS area under log transformed data MFI ratio of clones binding to human INSR CHO-K1 with insulin and without insulin (+insulin/-insulin)* | |
|---|---|---|---|---|---|---|
| | *human INSR, no insulin* | *mouse INSR, no insulin* | *human INSR, with insulin* | *mouse INSR, with insulin* | *human INSR* | *mouse INSR* |
| Ab050 | 252 | 424 | 81 | 170 | 0.32 | 0.40 |
| Ab051 | 554 | 663 | 378 | 470 | 0.68 | 0.71 |
| Ab052 | 445 | 892 | 134 | 397 | 0.30 | 0.45 |
| Ab053 | 1331 | 1131 | 451 | 574 | 0.34 | 0.51 |
| Ab054 | 1128 | 1027 | 356 | 519 | 0.32 | 0.51 |
| Ab055 | 1192 | 1300 | 759 | 1050 | 0.64 | 0.81 |
| Ab056 | 1110 | 21 | 927 | 41 | 0.84 | 1.98 |
| Ab057 | 155 | 409 | 87 | 250 | 0.56 | 0.61 |
| Ab058 | 1407 | 812 | 370 | 388 | 0.26 | 0.48 |
| Ab059 | 22 | 14 | 764 | 13 | 34.25 | ND |
| Ab060 | 460 | 210 | 308 | 388 | 0.67 | 1.85 |
| Ab061 | 204 | 462 | 59 | 170 | 0.29 | 0.37 |
| Ab062 | 1398 | 1448 | 790.3 | 1009 | 0.57 | 0.70 |
| Ab063 | 943 | 1025 | 674 | 733 | 0.71 | 0.72 |
| Ab064 | 1710 | 1019 | 1271 | 813 | 0.74 | 0.80 |
| Ab065 | 205 | 483 | 57 | 177 | 0.28 | 0.37 |
| Ab066 | 1564 | 1516 | 1157 | 1145 | 0.74 | 0.76 |
| Ab067 | 1537 | 1281 | 1063 | 786 | 0.69 | 0.61 |
| Ab068 | 1422 | 803 | 1028 | 445 | 0.72 | 0.55 |
| Ab069 | 357 | 642 | 146 | 383 | 0.41 | 0.60 |

| *Antibody tested* | *FACS area under log transformed data MFI of clones binding to INSR CHO-K1 cells following serum starvation* | | | | *FACS area under log transformed data MFI ratio of clones binding to human INSR CHO-K1 with insulin and without insulin (+insulin/-insulin)* | |
|---|---|---|---|---|---|---|
| | *human INSR, no insulin* | *mouse INSR, no insulin* | *human INSR, with insulin* | *mouse INSR, with insulin* | *human INSR* | *mouse INSR* |
| Ab070 | 283 | 587 | 150 | 389 | 0.53 | 0.66 |
| Ab071 | 490 | 818 | 194 | 518 | 0.40 | 0.63 |
| Ab072 | 226 | 508 | 84 | 267 | 0.37 | 0.53 |
| Ab073 | 729 | 307 | 341 | 321 | 0.47 | 1.05 |
| Ab074 | 596 | 932 | 260 | 503 | 0.44 | 0.54 |
| Ab075 | 692 | 425 | 353 | 446 | 0.51 | 1.05 |
| Ab076 | 552 | 268 | 543 | 391 | 0.98 | 1.46 |
| Ab077 | 127 | 45 | 268 | 103 | 2.12 | 2.28 |
| Ab078 | 11 | 12 | 704 | 217 | 66 | 17.6 |
| Ab079 | 296 | 154 | 385 | 215 | 1.30 | 1.39 |
| Ab080 | 282 | 157 | 386 | 191 | 1.37 | 1.22 |
| Ab081 | 176 | 189 | 75 | 125 | 0.42 | 0.66 |
| Ab082 | 399 | 257 | 236 | 267 | 0.59 | 1.04 |
| Ab083 | 97 | 81 | 294 | 179 | 3.03 | 2.21 |
| Ab084 | 532 | 196 | 508 | 344 | 0.95 | 1.75 |
| Ab001+anti-human IgG APC p1 | 294 | 34 | 565 | 127 | 1.92 | 3.68 |
| Ab001+anti-human IgG APC p2 | 687 | 443 | 1017 | 1062 | 1.48 | 2.40 |
| Ab001+anti-human IgG APC p3 | | | | | | |
| Ab001+anti-human IgG APC p5 | 534 | 176 | 1006 | 485 | 1.89 | 2.76 |
| Ab001+anti-human IgG APC p6 cropped | 693 | 232 | 1030 | 518 | 1.49 | 2.24 |

**Figure 33 (cont'd)**

ND = not determine

Figure 34



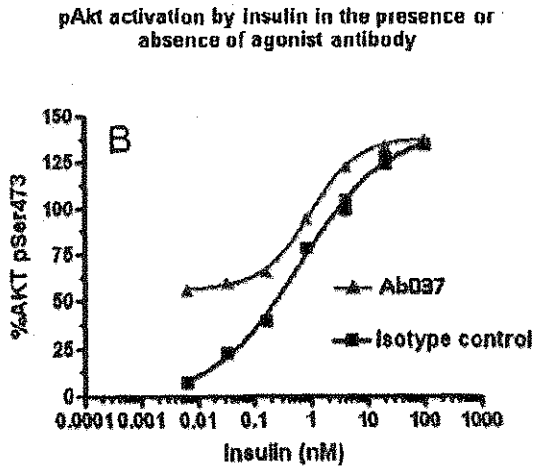
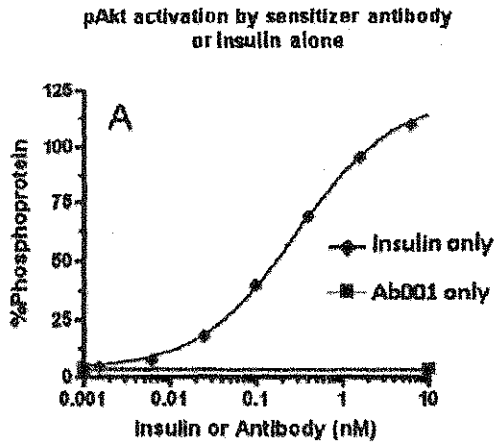




Figure 35



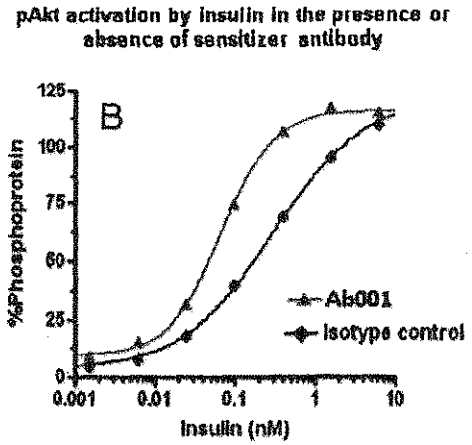



**Figure 36**

| *Engineered insulin receptor cell line used in the assay* | *Assay parameter determined from sigmoidal dose-response curve fit* | *Human Insulin* | *Ab037* | *Ab030* | *Ab040* | *Ab018* |
|---|---|---|---|---|---|---|
| *Human INSR CHO-K1* | *Relative maximum activation of pAkt by insulin or antibody alone* | 100% | 44% | 47% | 19% | 36% |
| | *$EC_{50}$ (nM) of insulin or antibody alone* | 0.6 | 0.8 | 12 | 4 | 1 |
| | *Hill coefficient of insulin or antibody alone* | 0.8 | 0.9 | 1.8 | 1.4 | 1.4 |
| *Mouse INSR CHO-K1* | *Relative maximum activation of pAkt by insulin or antibody alone* | 100% | 29% | 37% | 25% | 26% |
| | *$EC_{50}$ (nM) of insulin or antibody alone* | 3.4 | 1.4 | 11 | 4 | 3 |
| | *Hill coefficient of insulin or antibody alone* | 0.7 | 1 | 1.7 | 1.3 | 1 |

**Figure 37**

| *Engineered insulin receptor cell line used in the assay* | *Assay parameter determined from sigmoidal dose-response curve fit* | *Assay 1* | | *Assay 2* | |
|---|---|---|---|---|---|
| | | ***Hu Insulin with 10 ug/ml control antibody*** | ***Hu Insulin with 10 ug/ml Ab037*** | ***Hu Insulin with 10 ug/ml control antibody*** | ***Hu Insulin with 10 ug/ml Ab040*** |
| *Human INSR CHO-K1* | Relative maximum activation of pAkt in the presence of 10 ug/ml antibody | 100 ± 5% | 93 ± 2% | 100 ± 3% | 85 ± 1% |
| | EC50 of insulin in the presence of 10 ug/ml antibody (nM) | 0.7 ± 0.3 | 1 ± 0.3 | 0.8 ± 0.2 | 0.3 ± 0.1 |
| *Mouse INSR CHO-K1* | Relative maximum activation of pAkt in the presence of 10 ug/ml antibody | 100 ± 2% | 99 ± 1% | 100 ± 3% | 98 ± 1% |
| | EC50 of insulin in the presence of 10 ug/ml antibody (nM) | 3.3 ± 0.6 | 2.1 ± 0.4 | 3 ± 1 | 0.6 ± 0.2 |

Figure 38

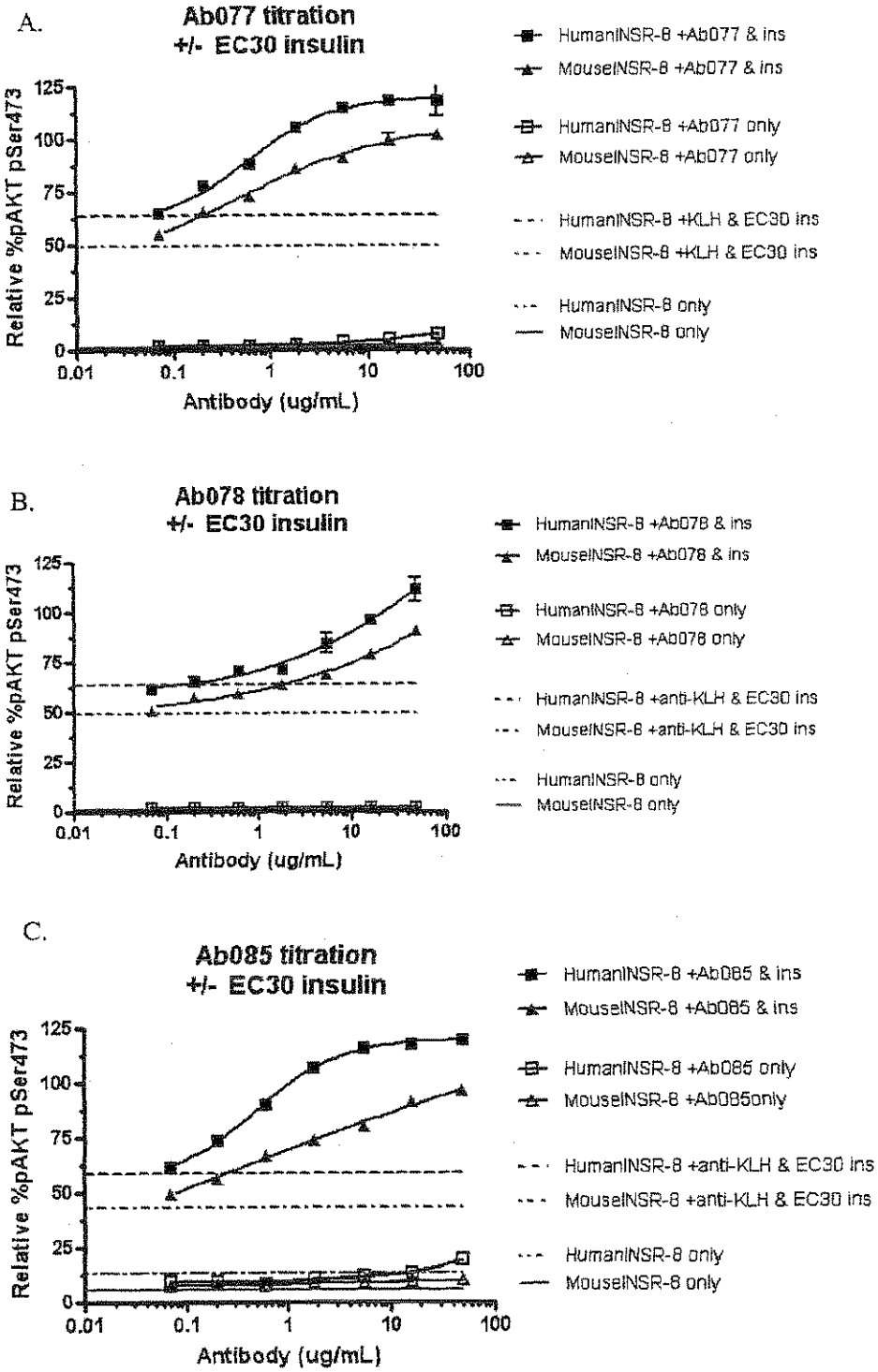
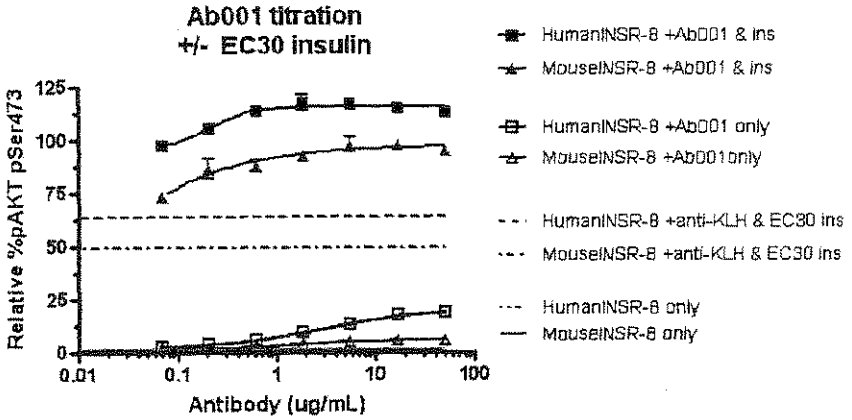
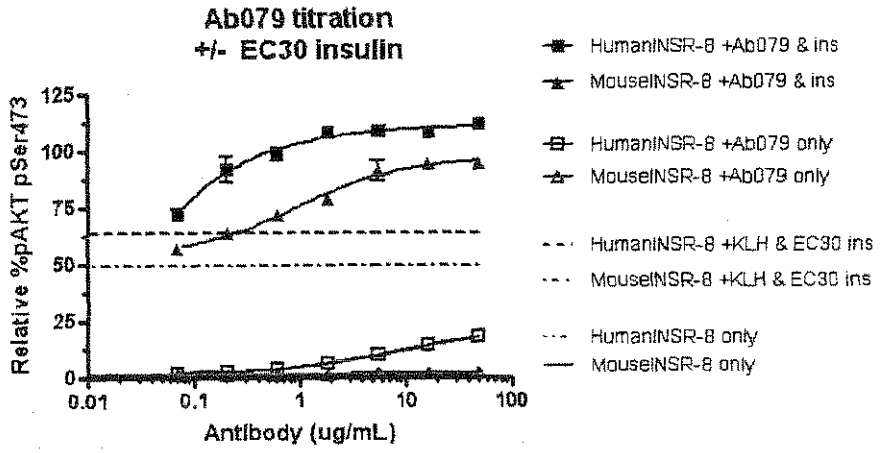

A.
Ab077 titration
+/- EC30 insulin
Relative %pAKT pSer473
Antibody (ug/mL)
HumaniNSR-8 +Ab077 & ins
MouseINSR-8 +Ab077 & ins
HumaniNSR-8 +Ab077 only
MouseINSR-8 +Ab077 only
HumaniNSR-8 +KLH & EC30 ins
MouseINSR-8 +KLH & EC30 ins
HumaniNSR-8 only
MouseINSR-8 only
B.
Ab078 titration
+/- EC30 insulin
Relative %pAKT pSer473
Antibody (ug/mL)
HumaniNSR-8 +Ab078 & ins
MouseINSR-8 +Ab078 & ins
HumaniNSR-8 +Ab078 only
MouseINSR-8 +Ab078 only
HumaniNSR-8 +anti-KLH & EC30 ins
MouseINSR-8 +anti-KLH & EC30 ins
HumaniNSR-8 only
MouseINSR-8 only
C.
Ab085 titration
+/- EC30 insulin
Relative %pAKT pSer473
Antibody (ug/mL)
HumaniNSR-8 +Ab085 & ins
MouseINSR-8 +Ab085 & ins
HumaniNSR-8 +Ab085 only
MouseINSR-8 +Ab085only
HumaniNSR-8 +anti-KLH & EC30 ins
MouseINSR-8 +anti-KLH & EC30 ins
HumaniNSR-8 only
MouseINSR-8 only

Figure 39

A.




B.




C.

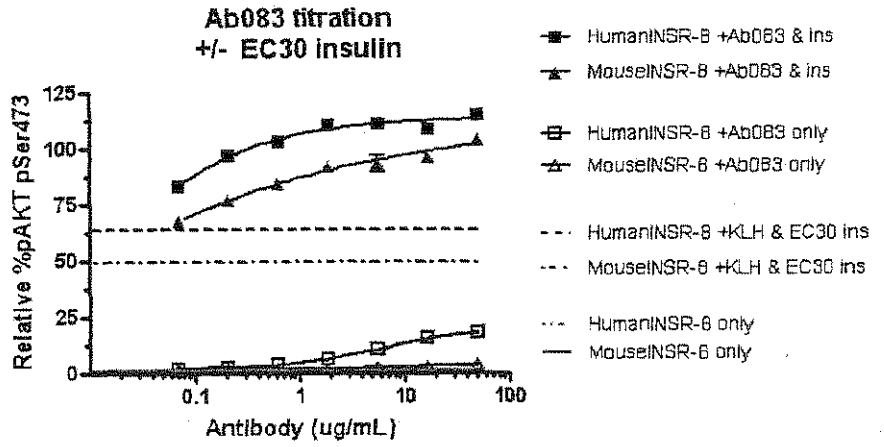


Figure 40

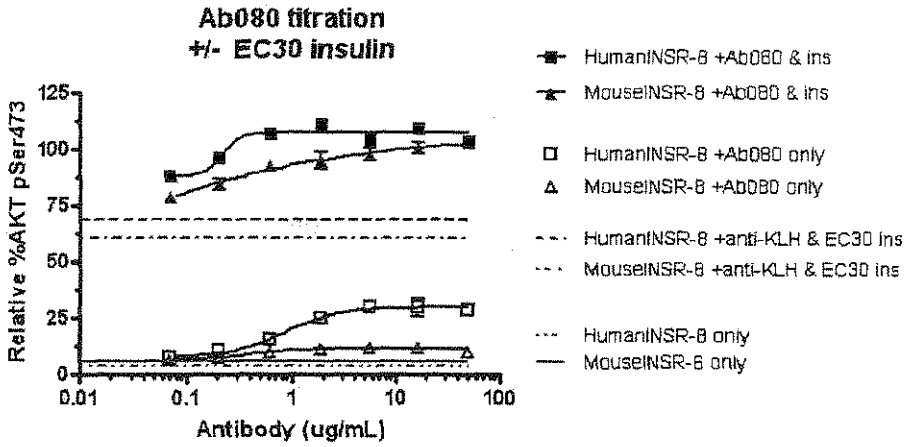

Ab080 titration
+/- EC30 insulin
Relative %AKT pSer473
125
100
75
50
25
0
0.01
0.1
1
10
100
Antibody (ug/mL)
HumanINSR-8 +Ab080 & ins
MouseINSR-8 +Ab080 & ins
HumanINSR-8 +Ab080 only
MouseINSR-8 +Ab080 only
HumanINSR-8 +anti-KLH & EC30 ins
MouseINSR-8 +anti-KLH & EC30 ins
HumanINSR-8 only
MouseINSR-8 only

Figure 41

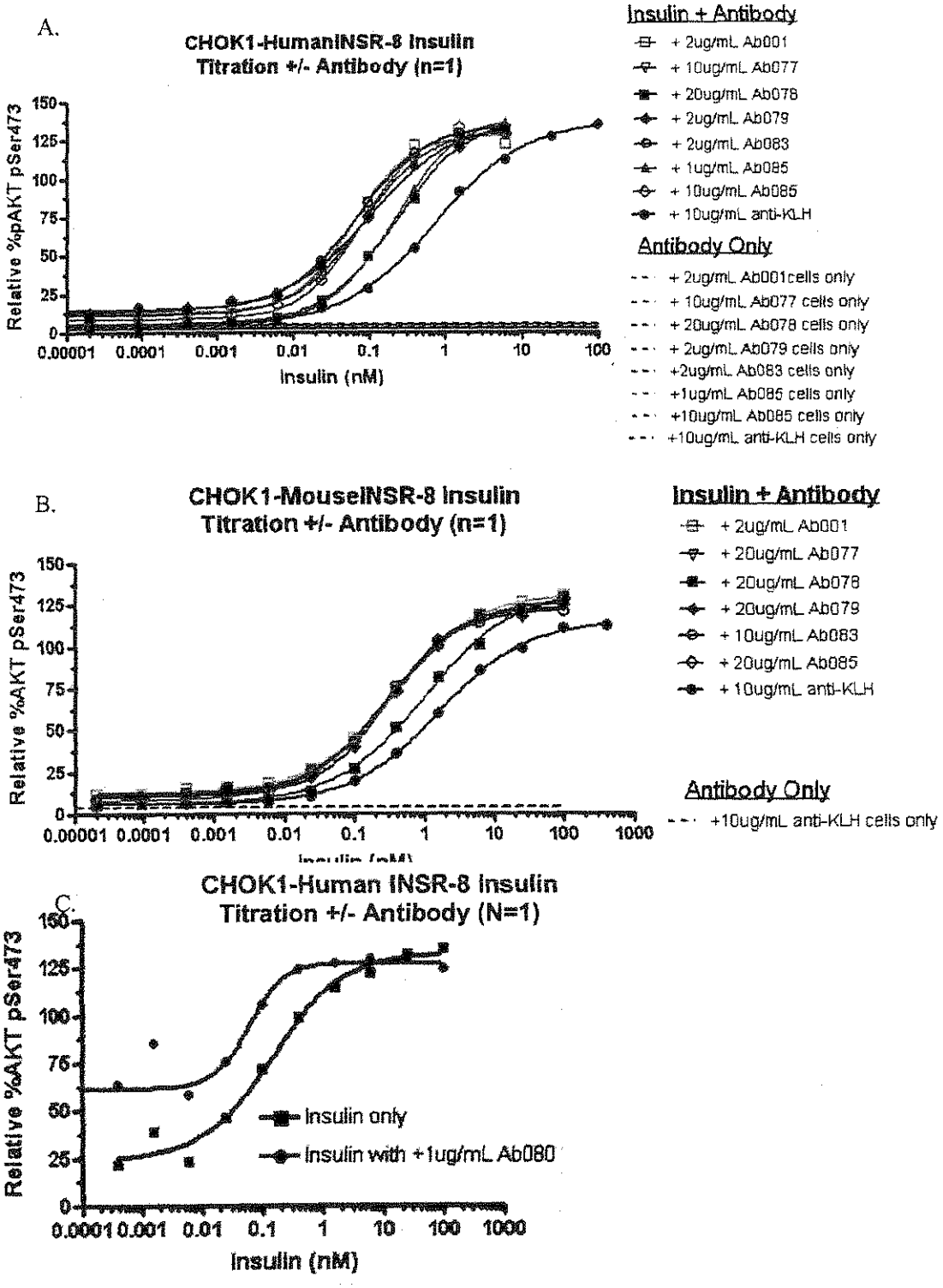
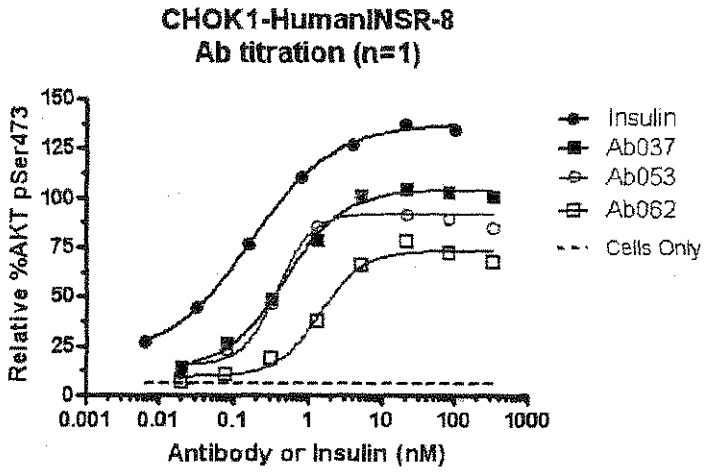

A.
CHOK1-HumanINSR-8 Insulin Titration +/- Antibody (n=1)
Relative %pAKT pSer473
Insulin (nM)
Insulin + Antibody
+ 2ug/mL Ab001
+ 10ug/mL Ab077
+ 20ug/mL Ab078
+ 2ug/mL Ab079
+ 2ug/mL Ab083
+ 1ug/mL Ab085
+ 10ug/mL Ab085
+ 10ug/mL anti-KLH
Antibody Only
+ 2ug/mL Ab001cells only
+ 10ug/mL Ab077 cells only
+ 20ug/mL Ab078 cells only
+ 2ug/mL Ab079 cells only
+2ug/mL Ab083 cells only
+1ug/mL Ab085 cells only
+10ug/mL Ab085 cells only
+10ug/mL anti-KLH cells only
B.
CHOK1-MouseINSR-8 Insulin Titration +/- Antibody (n=1)
Relative %AKT pSer473
Insulin + Antibody
+ 2ug/mL Ab001
+ 20ug/mL Ab077
+ 20ug/mL Ab078
+ 20ug/mL Ab079
+ 10ug/mL Ab083
+ 20ug/mL Ab085
+ 10ug/mL anti-KLH
Antibody Only
+10ug/mL anti-KLH cells only
C.
CHOK1-Human INSR-8 Insulin Titration +/- Antibody (N=1)
Relative %AKT pSer473
Insulin only
Insulin with +1ug/mL Ab080
Insulin (nM)

Figure 42

A..




B..

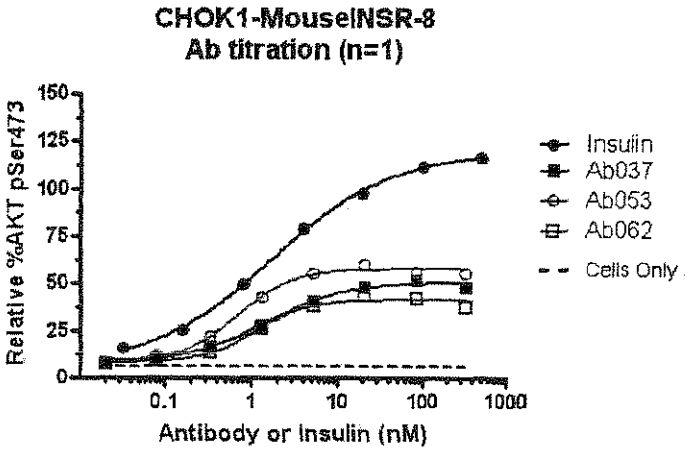
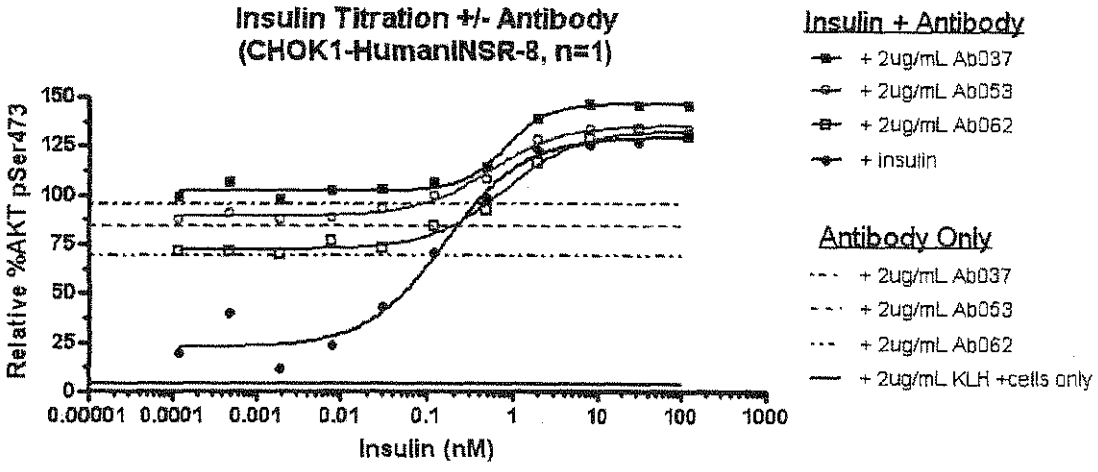
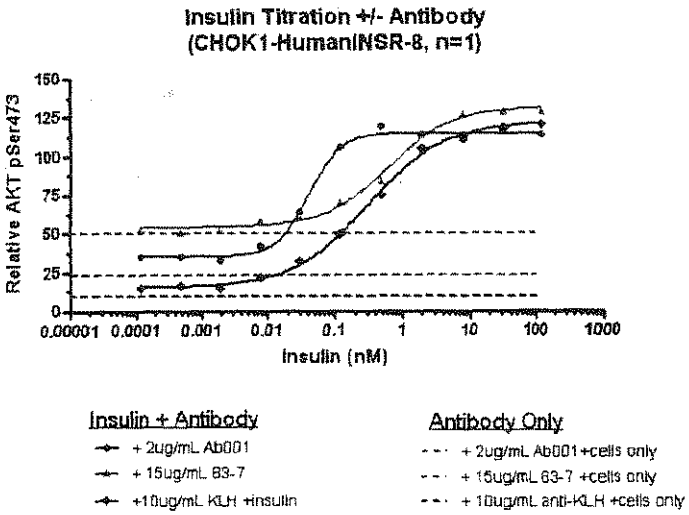



Figure 43



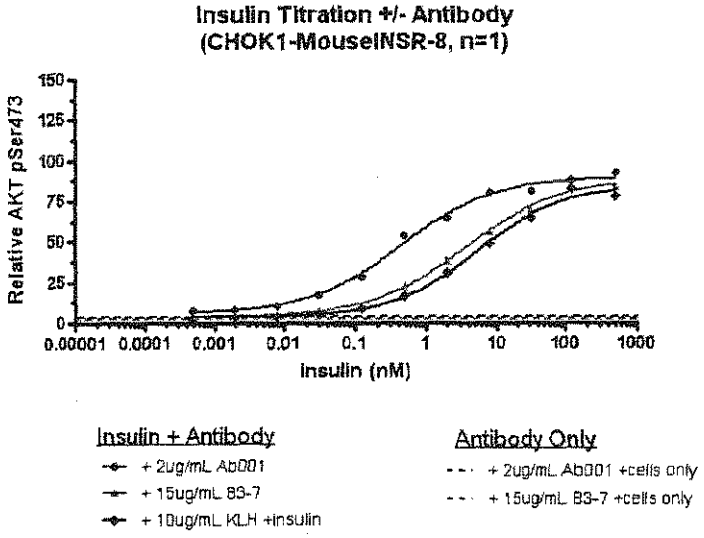
## Figure 44

A.




| | +2ug/mL Ab001 | +15ug/mL 83-7 | +2ug/mL anti-KLH |
|---|---|---|---|
| EC50 | 0.04093 | 0.6235 | 0.3129 |
| EC50 (95% Confidence Interval) | 0.03330 to 0.05030 | 0.4215 to 0.9225 | 0.2483 to 0.3942 |

B.




| | +2ug/mL Ab001 | +15ug/mL 83-7 | +10ug/mL anti-KLH |
|---|---|---|---|
| EC50 | 0.4418 | 3.622 | 5.293 |
| EC50(95% Confidence Interval) | 0.2741 to 0.7121 | 2.681 to 4.893 | 3.294 to 8.505 |

Figure 45

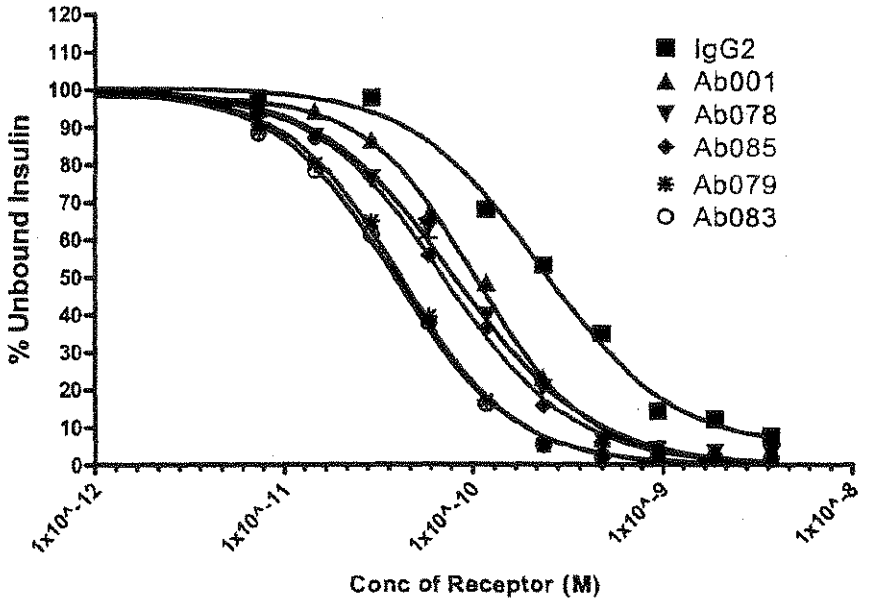



Figure 46

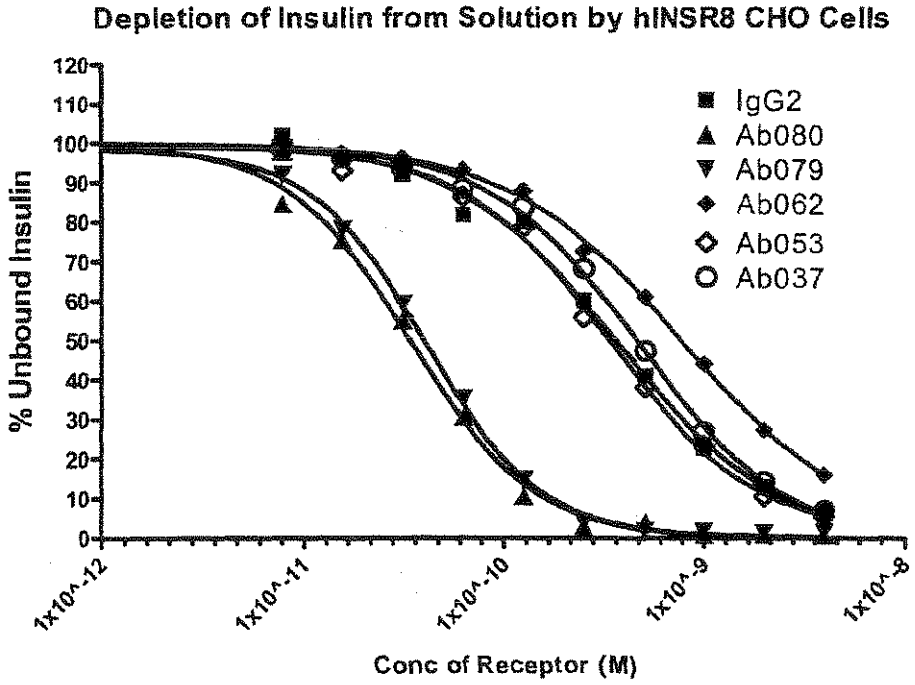



Figure 47

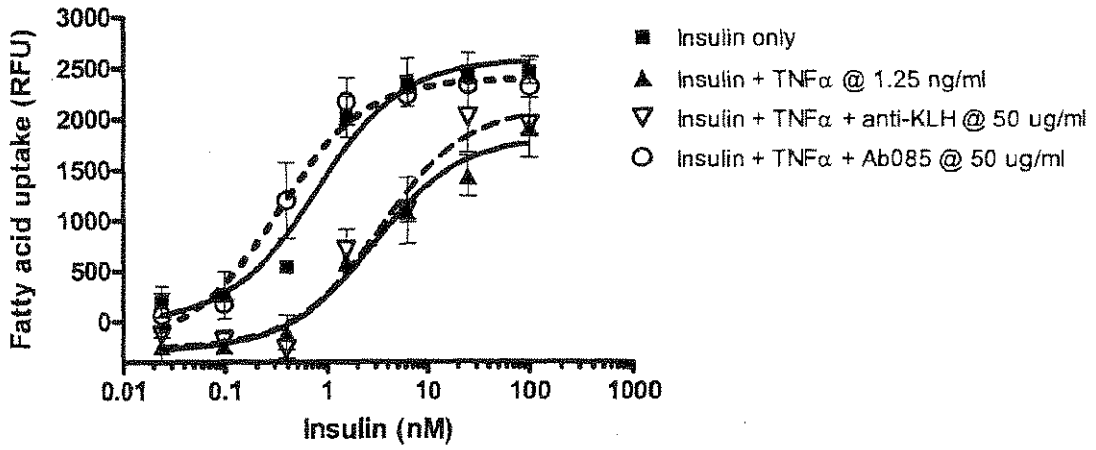

Fatty acid uptake (RFU)
3000
2500
2000
1500
1000
500
0
0.01
0.1
1
10
100
1000
Insulin (nM)
Insulin only
Insulin + TNFα @ 1.25 ng/ml
Insulin + TNFα + anti-KLH @ 50 ug/ml
Insulin + TNFα + Ab085 @ 50 ug/ml

**Figure 48**

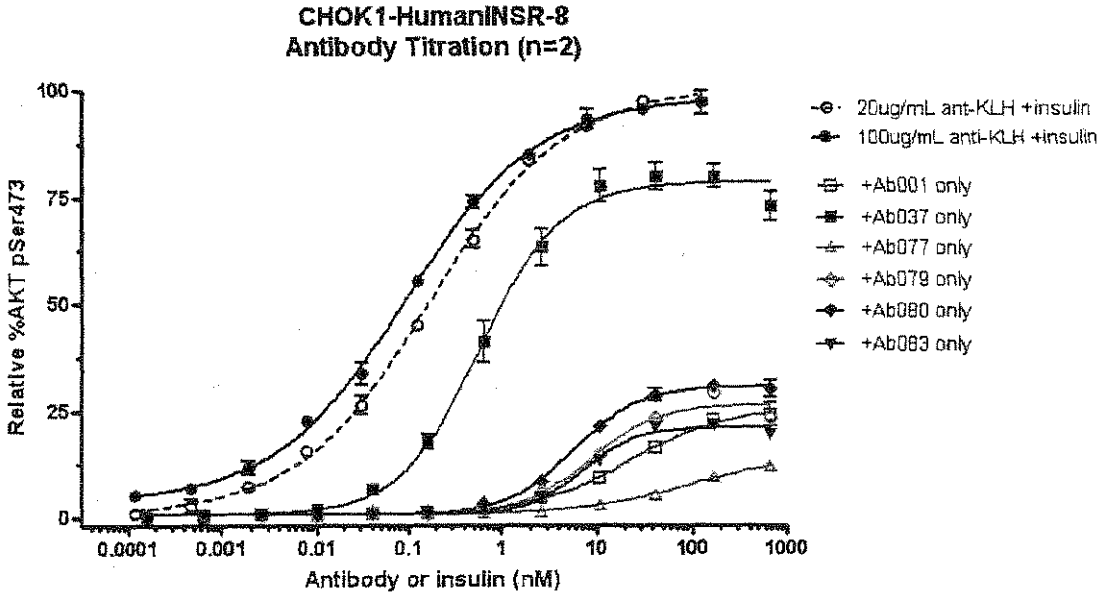

CHOK1-HumanINSR-8
Antibody Titration (n=2)
Relative %AKT pSer473
100
75
50
25
0
0.0001
0.001
0.01
0.1
1
10
100
1000
Antibody or insulin (nM)
20ug/mL anti-KLH +insulin
100ug/mL anti-KLH +insulin
+Ab001 only
+Ab037 only
+Ab077 only
+Ab079 only
+Ab080 only
+Ab083 only

Figure 49

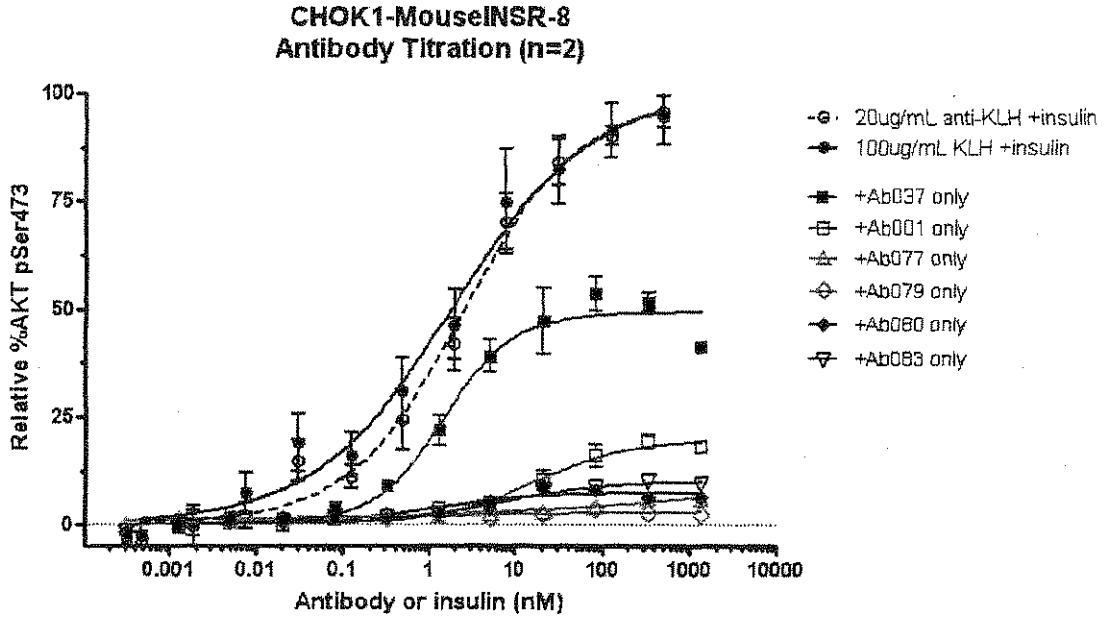



Figure 50

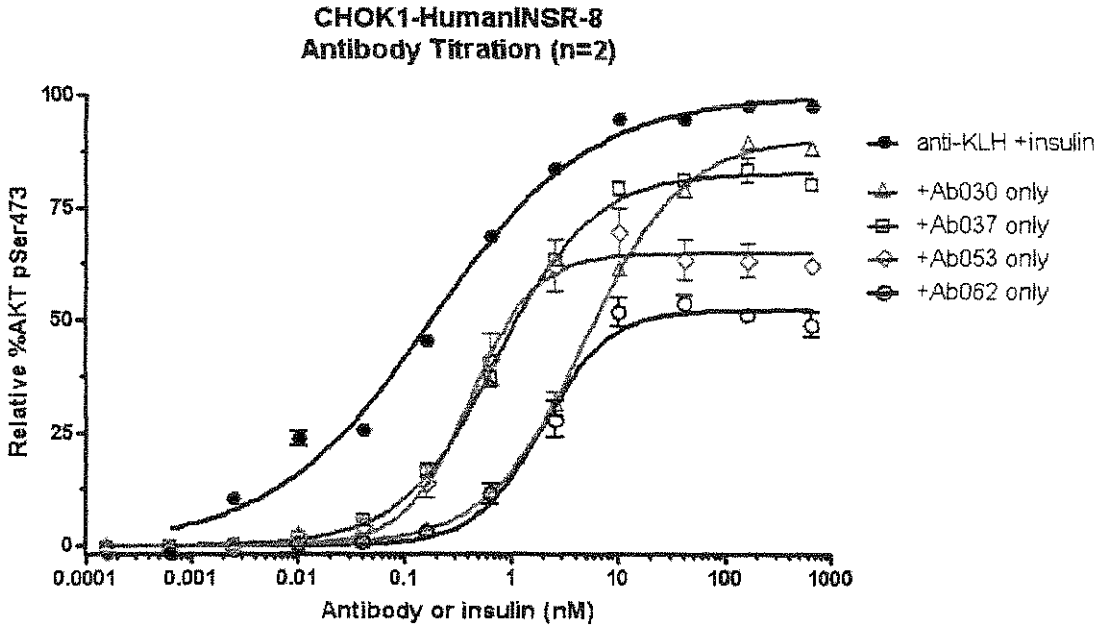


Figure 51

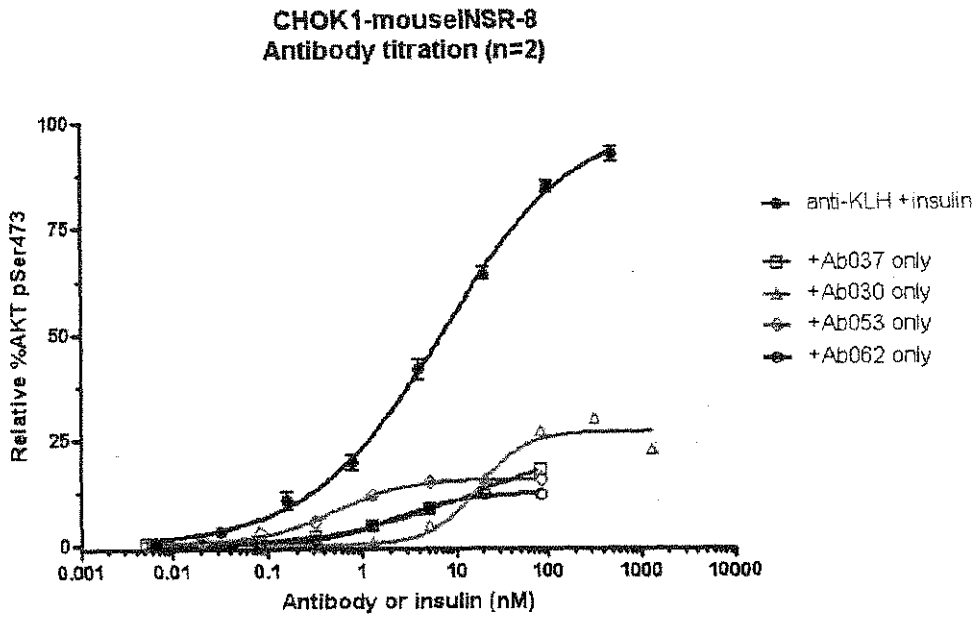



Figure 52

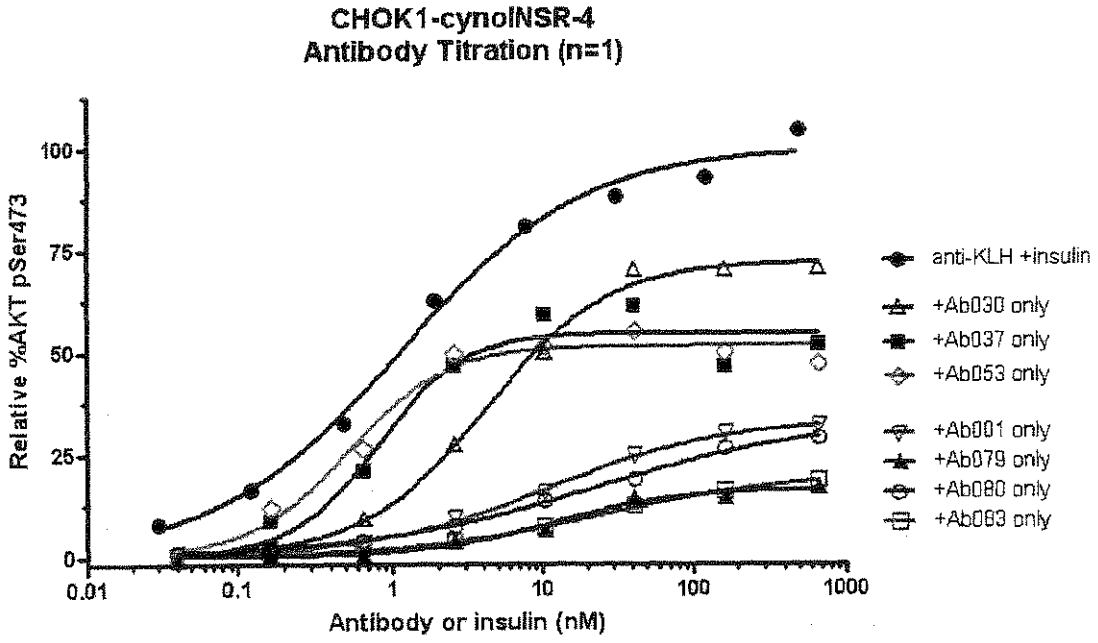


Figure 53

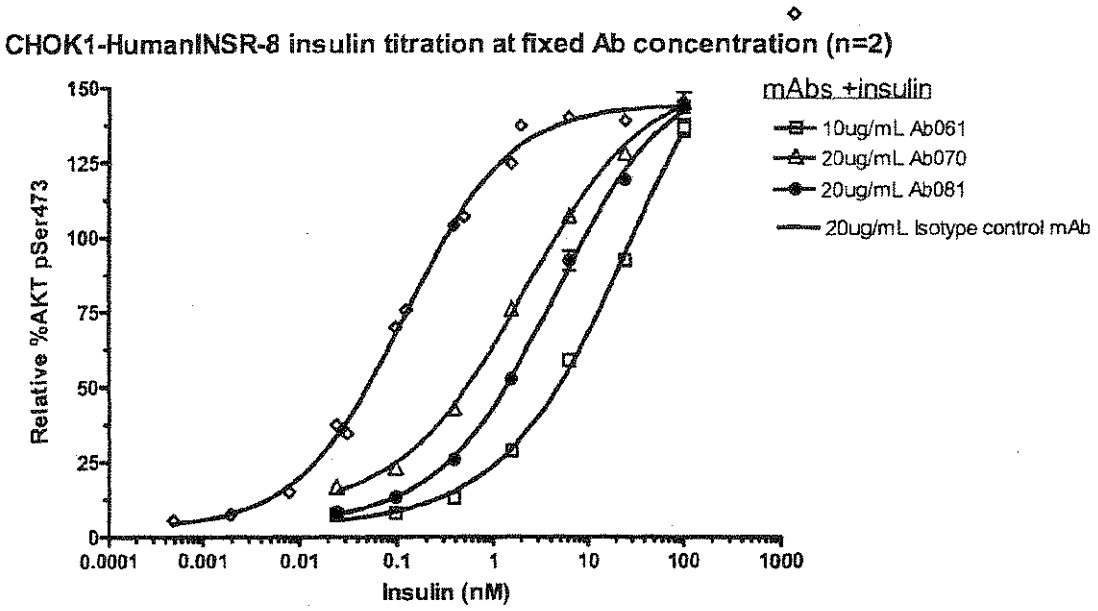

CHOK1-HumanINSR-8 insulin titration at fixed Ab concentration (n=2)
Relative %AKT pSer473
150
125
100
75
50
25
0
0.0001
0.001
0.01
0.1
1
10
100
1000
Insulin (nM)
mAbs +insulin
10ug/mL Ab061
20ug/mL Ab070
20ug/mL Ab081
20ug/mL Isotype control mAb

**Table 1**
**Light Chain Sequences**
**Figure 54**

| Clone | Human PBMC | | CHO Hu InsR | | Cyno PBMC | | CHO Cyno InsR | | Rabbit PBMC | | CHO Rabbit InsR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *(-) insulin* | *(+) insulin* | *(-) insulin* | *(+) insulin* | *(-) insulin* | *(+) insulin* | *(-) insulin* | *(+) insulin* | *(-) insulin* | *(+) insulin* | *(-) insulin* | *(+) insulin* |
| Ab001 | + | ++ | + | ++ | + | ++ | + | ++ | + | ++ | ++ | + |
| Ab010 | + | ++ | | | - | - | | | | | | |
| Ab018 | | | | | + | ++ | | | | | | |
| Ab030 | + | ++ | | | + | + | | | | | | |
| Ab037 | + | + | + | ++ | + | ++ | + | ++ | + | + | ++ | + |
| Ab040 | + | + | | | + | ++ | | | | | | |
| Ab050 | | | ++ | + | | | ++ | + | | | + | + |
| Ab052 | | | + | + | | | + | + | | | ++ | + |
| Ab053 | | | ++ | + | + | + | ++ | + | + | + | ++ | + |
| Ab054 | | | ++ | + | | | ++ | + | | | ++ | + |
| Ab058 | | | + | + | | | + | + | | | ++ | + |
| Ab062 | | | + | + | | | + | + | + | + | ++ | + |
| Ab077 | | | | | + | ++ | | | - | - | | |
| Ab078 | | | - | ++ | + | ++ | - | ++ | - | ++ | - | ++ |
| Ab079 | | | | | + | ++ | | | + | ++ | | |
| Ab080 | | | + | ++ | + | + | + | ++ | + | + | + | ++ |
| Ab083 | | | | | + | ++ | | | + | ++ | | |
| Ab085 | | | - | ++ | + | ++ | - | ++ | + | ++ | - | ++ |

**Table 1**
**Light Chain Sequences**

| Name | Ab # | L-FR1 | L-CDR1 | L-FR2 | L-CDR2 | L-FR3 | L-CDR3 | L-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-093_VL | Ab023 | QSVLT---QPP-SASGTPGQRVTISCSGS | ISNIGSNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSPHV | VFGGGTKLTVLG | 21 |
| XPA-15-096_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | FSNIGSNY- | VYWYQQLPGTARKLLIY | ADT | FRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGV- | VFGGGTKLTVLG | 22 |
| XPA-15-094_VL | Ab043 | QSVLT---QPP-SASGTPGQRVTISCSGS | ISNIGSNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPGRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSPHV | VFGGGTKLTVLG | 23 |
| XPA-15-106_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VTWYQQLPGTAPKLLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ATWDDS-LSGW- | VFGGGTKLTVLG | 24 |
| XPA-15-105_VL | | QSVLT---QPP-SASGTPGQRVTISCSGG | PSNIGSNI- | VNWYQQLPGTAPKLLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ETWDSN--TQ-- | VFGGGTKLTVLG | 25 |
| XPA-15-100_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | ASNLGMHF- | VSWYQQLPGTAPKLLIY | DND | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | QSYDSS-LSGPV | LFGGGTKLTVLG | 26 |
| XPA-15-124_VL | | QSVLT---QPP-SASGTPGQRVTISCSGG | SSNIGAGYD | VHWYQQLPGTAPKLLIY | GNN | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGP- | VFGGGTKLTVLG | 27 |
| XPA-15-121_VL | Ab047 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VNWYQQLPGTAPKLLIY | DNN | KRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | QSYDSS-LSGWE | VFGGGTKLTVLG | 28 |
| XPA-15-122_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGRNP- | VNWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGQ- | VFGGGTKLTVLG | 29 |
| XPA-15-127_VL | | QSVLT---QPP-SASGTPGQRVTISCSGN | SSNIGNNY- | VAWYQQLPGTAPKLLIY | SDH | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGHV | IFGGGTKLTVLG | 30 |
| XPA-15-125_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | NSNIGSRT- | VNWYQQLPGTAPKLLIY | ENN | KRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | SSYAGS--NNLG | VFGGGTKLTVLG | 31 |
| XPA-15-133_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | FSNIGGNT- | VNWYQQLPGTAPKLLIY | SYD | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ASWDVS-LSGV- | VFGGGTKLTVLG | 32 |
| XPA-15-135_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGNNA- | VNWYQQLPGTAPKLLIY | TDS | RRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | VSRDDS-LNGW- | VFGGGTKLTVLG | 33 |
| XPA-15-139_VL | Ab018 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VNWYQQLPGTAPKLLIY | DNN | KRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ATWDDS-LNGP- | IFGGGTKLTVLG | 34 |
| XPA-15-138_VL | Ab001 | QSVLT---QPP-SASGTPGQRVTISCSGS | TSNIGSNT- | VNWYQQLPGTAPKLLIY | RNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGFV | VFGGGTKLTVLG | 35 |
| XPA-15-143_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VNWYQQLPGTAPKLLIY | GNT | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGV- | VFGGGTKLTVLG | 36 |
| XPA-15-141_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGNNY- | VFWYQQLPGTAPKLLIY | RNY | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ATWDDS-LTGW- | VFGGGTKLTVLG | 37 |
| XPA-15-145_VL | Ab012 | QSVLT---QPP-SASGTPGQRVTISCSGS | RSNIGANT- | VNWYQQLPGTAPKLLIY | GVN | HRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGW- | VFGGGTKLTVLG | 38 |
| XPA-15-140_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VNWYQQLPGTAPKLLIY | GAT | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | SSWDDS-LSGP- | VFGGGTKLTVLG | 39 |

**Table 1**
**Light Chain Sequences**

| Name | Ab # | L-FR1 | L-CDR1 | L-FR2 | L-CDR2 | L-FR3 | L-CDR3 | L-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-159_VL | Ab015 | QSVLT---QPP-SASGTPGQRVTISCSGS | TSNIGNNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | SAWDDT-LNGP- | VFGGGTKLTVLG | 40 |
| XPA-15-167_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGNNY- | VSWYQQLPGTAPKLLIY | GDI | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDR-LNGP- | VFGGGTKLTVLG | 41 |
| XPA-15-169_VL | Ab034 | QSVLT---QPP-SASGTPGQRVTISCSGG | SSNIGSNT- | VYWYQQLPGTAPKLLIY | DNN | KRPAGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGP- | VFGGGTKLTVLG | 42 |
| XPA-15-013_VL | Ab006 | QSVLT---QPP-SASGTPGQRVTISCSGS | ISNIGSNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSPHV | VFGGGTKLTVLG | 43 |
| XPA-15-020_VL | | QSVLT---QPF-SASGTPGQRVTISCSGS | SSNIGNNY- | VSWYQQLPGTAPKLLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGL- | VFGGGTKLTVLG | 44 |
| XPA-15-017_VL | Ab017 | QSVLT---QPP-SASGTPGQRVTISCTGS | SSNIGAGYD | VHWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGW- | VFGGGTKLTVLG | 45 |
| XPA-15-009_VL | Ab022 | QSVLT---QPP-SASGTPGQRVTISCTGS | SSNIGAGYD | VHWYQQLPGTAPKLLIY | RND | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDHS-LSAHV | VFGGGTKLTVLG | 46 |
| XPA-15-033_VL | | QSVLT---QPP-SASGTPGQRVTISCSGT | SSNFGRRT- | VNWYQQLPGTAPKLLIY | SNN | LRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGW- | VFGGGTKLTVLG | 47 |
| XPA-15-037_VL | Ab031 | QSVLT---QPP-SASGTPGQRVTISCSGR | SSNIGYNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGP- | VFGGGTKLTVLG | 48 |
| XPA-15-042_VL | Ab027 | QSVLT---QPP-SASGTPGQRVTISCSGR | SSNIENNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGV- | VFGGGTKLTVLG | 49 |
| XPA-15-036_VL | Ab030 | QSVLT---QPP-SASGTPGQRVTISCTGS | SSNIGAGYD | VHWYQQLPGTAPKLLIY | DNN | KRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ASWDDS HLHV-- | LFGGGTKLTVLG | 50 |
| XPA-15-047_VL | Ab036 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGGNS- | VHWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSPHV | VFGGGTKLTVLG | 51 |
| XPA-15-007_VL | Ab029 | QSVLT---QPP-SASGTPGQRVTISCSGN | SSNIGNSY- | VSWYQQLPGTAPKLLIY | SND | IRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGP- | VFGGGTKLTVLG | 52 |
| XPA-15-074_VL | Ab039 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VNWYQQLPGTAPKLLIY | RNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGP- | VFGGGTKLTVLG | 53 |
| XPA-15-085_VL | Ab011 | QSVLT---QPP-SASGTPGQRVTISCSGS | ISNIGSNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSPHV | VFGGGTKLTVLG | 54 |
| XPA-15-075_VL | Ab009 | QSVLT---QPP-SASGTPGQRVTISCSGS | ISNIGSNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSPHV | VFGGGTKLTVLG | 55 |
| XPA-15-082_VL | Ab041 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VTWYQQLPGTAPKLLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ATWDDS-LSGW- | VFGGGTKLTVLG | 56 |
| XPA-15-066_VL | Ab004 | QSVLT---QPP-SASGTPGQRVTISCSGG | NSNIGSNY- | VSWYQQLPGTAPKLLIY | RNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGR- | VFGGGTKLTVLG | 57 |
| XPA-15-080_VL | | QSVLT---QPP-SASGTPGQRVTISCTGS | SSNIGAGYV | VHWYQQLPGTAPKLLIY | TND | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | QSVDRS-LSGS- | VFGGGTKLTVLG | 58 |
| XPA-15-099_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | ISNIGSNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSPHV | VFGGGTKLTVLG | 59 |

**Table 1**
**Light Chain Sequences**

| Name | Ab # | L-FR1 | L-CDR1 | L-FR2 | L-CDR2 | L-FR3 | L-CDR3 | L-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-102_VL | Ab044 | QSVLT---QPP-SASGTPGQRVTISCSGS | TSNIGNNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | SAWDDT-LNGP- | VFGGGTKLTVLG | 60 |
| XPA-15-115_VL | Ab046 | QSVLT---QPP-SASGTPGQRVTISCSGS | ISNIGSNY- | VSWYQXLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSPHV | VFGGGTKLTVLG | 61 |
| XPA-15-111_VL | Ab045 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VNWYQQLPGTAPKLLIY | GNS | NRSSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDR-LNGP- | VFGGGTKLTVLG | 62 |
| XPA-15-142_VL | | QSVLT---QPP-SASGTPGQRVTISCSGR | NSNIGSNY- | VSWYQQLPGTAPKLLIY | RNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDVADYYC | SSYAGS--NNFV | VFGGGTKLTVLG | 63 |
| XPA-15-146_VL | | QSVLT---QPP-SASGTPGQRVTISCSGI | DSNFGSNS- | VNWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGW- | VFGGGTKLTVLG | 64 |
| XPA-15-144_VL | | QSVLT---QPP-SASGTPGQRVTISCTGS | SSNIGAGYD | VHWYQQLPGTAPKPLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | TSYTGN--NQFV | IFGGGTKLTVLG | 65 |
| XPA-15-154_VL | Ab033 | QSVLT---QPP-SASGTPGQRVTISCSGI | SSNIGNNF- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-PRGP- | VFGGGTKLTVLG | 66 |
| XPA-15-158_VL | Ab014 | QSVLT---QPP-SASGTPGQRVTISCSGC | SSNIGNNA- | VNWYQQLPGTAPKLLIY | RSD | QRLAGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | QSYDSS-LIGHW | VFGGGTKLTVLG | 67 |
| XPA-15-155_VL | Ab048 | QSVLT---QPP-SASGTPGQRVTISCSGI | SSNIGNNF- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-PRGP- | VFGGGTKLTVLG | 68 |
| XPA-15-165_VL | Ab049 | QSVLT---QPP-SASGTPGQRVTISCSGR | SSNIGYNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGP- | VFGGGTKLTVLG | 69 |
| XPA-15-023_VL | Ab025 | QSVLT---QPP-SASGTPGQRVTISCSGS | TSNIGNNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | SAWDDT-LNGP- | VFGGGTKLTVLG | 70 |
| XPA-15-022_VL | Ab024 | QSVLT---QPP-SASGTPGQRVTISCSGT | SSNLGSHT- | VSWYQQLPGTAPKLLIY | DNN | ERPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSAW- | VFGGGTKLTVLG | 71 |
| XPA-15-019_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGNNA- | VNWYQQLPGTAPKLLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | GTWDDS-LSVW- | VFGGGTKLTVLG | 72 |
| XPA-15-021_VL | Ab023 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNP- | VNWYQQLPGTAPKLLIY | DNS | KRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | GTWDDS-LSVW- | VFGGGTKLTVLG | 73 |
| XPA-15-006_VL | Ab021 | QSVLT---QPP-SASGTPGQRVTISCTGT | SSNIGAGFD | VHWYQQLPGTAPKLLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGL- | VFGGGTKLTVLG | 74 |
| XPA-15-026_VL | Ab026 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGNNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGP- | VFGGGTKLTVLG | 75 |
| XPA-15-043_VL | | QSVLT---QPP-SASGTPGQRVTISCTGS | SSNIGAGYD | VHWYQQLPGTAPKLLIY | KNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LGG-- | VFGGGTKLTVLG | 76 |
| XPA-15-048_VL | Ab037 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGNSA- | VNWYQQLPGTAPKLLIY | DNN | KRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | QVWDSG--TA-- | VFGGGTKLTVLG | 77 |
| XPA-15-062_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGNNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGP- | VFGGGTKLTVLG | 78 |
| XPA-15-059_VL | Ab028 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGNNY- | VSWYQQLPGTAPKLLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LNGL- | VFGGGTKLTVLG | 79 |

**Table 1**
**Light Chain Sequences**

| Name | Ab # | L-FR1 | L-CDR1 | L-FR2 | L-CDR2 | L-FR3 | L-CDR3 | L-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-064_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGRRT- | VNWYQQLPGTAPKLLIY | DNN | KRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ATWDDS-LNGW- | VFGGGTKLTVLG | 80 |
| XPA-15-068_VL | Ab013 | QSVLT---QPP-SASGTPGQRVTISCSGS | TSNIGNNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | SAWDDT-LNGP- | VFGGGTKLTVLG | 81 |
| XPA-15-081_VL | Ab007 | QSVLT---QPP-SASGTPGQRVTISCSGS | TSNIGNNY- | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | SAWDDT-LNGP- | VFGGGTKLTVLG | 82 |
| XPA-15-065_VL | Ab038 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VTWYQQLPGTAPKLLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ATWDDS-LSGW- | VFGGGTKLTVLG | 83 |
| XPA-15-077_VL | Ab040 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNS- | VNWYQQLPGTAPKLLIY | DNN | KRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDS-LSGP- | VFGGGTKLTVLG | 84 |
| XPA-15-086_VL | Ab042 | QSVLT---QPP-SASGTPGQRVTISCSGS | SSNIGSNT- | VTWYQQLPGTAPKPLIY | SNN | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | ATWDDS-LSGW- | VFGGGTKLTVLG | 85 |
| XPA-15-088_VL | | QSVLT---QPP-SASGTPGQRVTISCSGS | ASNLGMHF- | VSWYQQLPGTAPKLLIY | DND | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | QSYDSS-LSGPV | LFGGGTKLTVLG | 86 |
| XPA.015.175_VL | Ab019 | DLVLTQSPASLAVSLGQRATISCRAS | KSVSTSGYSY | IHWYQQKPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFTLNIHPVEEEDAATYYC | -QHNREP | RTFGGGTNLEIKR | 1 |
| XPA.015.176_VL | Ab088 | DLVLTQSPASLAVSLGQRATISCRAS | KSVTTSGYSY | IHWYQQKPGQPPKLLIY | LAS | NLESGAPARFSGSGSGTDFTLNIHPVEEEDAGNYYC | -QHNREP | RTFGGGTKLEIKR | 2 |
| XPA.015.177_VL | | DIVMTQSPASLAVSLGQRATISCRAS | KSVSTSGYSY | IHWYQQKPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFTLNIHPVEEEDAATYYC | -QHNREP | RTFGGGTNLEIKR | 3 |
| XPA.015.178_VL | Ab089 | DLVLTQSPASLAVSLGQRATISCRAS | KSVSTSGYSY | IHWYQQKPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFTLNIHPVEEEDAATYYC | -QHNREL | RTFGGGTKLEIKR | 4 |
| XPA.015.179_VL | | DLVLTQSPASVAVSLGQRATISCRAS | KSVSTSGYSY | MHWYQQKPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFTLNIHPVEEEDVATYYC | -QHNRDP | RTFGGGTKLEIKR | 5 |
| XPA.015.181_VL | Ab010* | DVQIIQSPSYLAASPGETITINCRAS | KSIS----KY | LAWYQEKPGKTNKLLIY | SGS | TLQSGIPSRFSGSGSGTDFTLTISSLEPEDFAMYYC | QQHNEYP | LTFGAGTKLELKR | 6 |
| XPA.015.182_VL | Ab020 | DVQITQSPSYLAASPGETITINCRAS | KSIS----KY | LAWYQEKPGKTNKLLIY | SGS | TLQSGIPSRFSGSGSGTDFTLTISSLEPEDFAMYYC | QQHNEYP | LTFGAGTKLELKR | 7 |
| XPA.015.183_VL | | DLVLTQSPASLAVSLGQRATISCRAS | KSVSTSGYSY | IHWYQQKPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFTLNIHPVEEEDAATYYC | -QHNREL | RTFGGGTKLEIKR | 8 |
| XPA.015.184_VL | | DIVMTQSPTSLAVSLGQRATISCRAS | ESVSISGYSY | IHWYQQRPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFTLNIHPVEEEDVATYYC | -QHNRDP | RTFGGGTKLEIKR | 9 |
| XPA.015.185_VL | Ab003 | DIQMTQSPSYLAASPGETITINCRAS | KSIS----KY | LAWYQEKPGKTNKLLIY | SGS | TLQSGIPSRFSGSGSGTDFTLTISSLEPEDFAMYYC | QQHNEYP | LTFGAGTKLELKR | 10 |
| XPA.015.186_VL | | DIQMTQSPSSLSASLGDTITITCHAS | QNIN----VW | LTWYQQKPGNIPKLLIS | KAS | NLHTGVPSRFSGSGSGTGFTLTISSLQPEDIATYYC | QQGQSYP | WTFGGGTKLEIKR | 11 |
| XPA.015.187_VL | | DLVLTQSPASLAVSLGQRATISCRAS | KSVSTSGYSY | IHWYQQKPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFTLNIHPVEEEDAGNYYC | -QHNREP | RTFGGGTKLEIKR | 12 |
| XPA.015.188_VL | Ab008 | DVQITQSPSYLTASPGETITINCRAS | KSIS----NY | LAWYQEKPGKTNKLLIY | SGS | TLQSGIPSRFSGSGSGTDFTFTISSLEPEDFAMYYC | QQHNEYP | LTFGAGTKLELKR | 13 |

**Table 1**
**Light Chain Sequences**

| Name | Ab # | L-FR1 | L-CDR1 | L-FR2 | L-CDR2 | L-FR3 | L-CDR3 | L-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA.015.189_VL | | DIVMTQSPASLAVSLGQR ATISCRAS | KSVSISGYS Y | IHWYQQKPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFTLNIHPVEEEDAGNYYC | - QHNREP | RTFGGGTKLEIKR | 14 |
| XPA.015.190_VL | Ab002 | DIQMTQTTSSLSASLGDR VTISCRAS | QDIS---- NY | LNWYQQKPDGTVKLLIY | YTS | RLHSGVPSRFSGSGSGTDYSLTISNLEPEDIATFYC | QQYSDL P | YTFGGGTKLEIKR | 15 |
| XPA.015.191_VL | | DVQITQSPSSLSASLGER VSLTCRAS | QDIG---- SS | LNWLQQEPDGTIKRLIS | ATS | TLDSGVPKRFSGSRSGSDYSLTISSLEPEDFVDYYC | LQYASY P | FTFGSGTKVEIKR | 16 |
| XPA.015.192_VL | Ab005 | DIQMTQSPSYLAASPGET ITINCRAS | KSIS---- KY | LAWYQEKPGKTNKLLIY | SGS | TLQSGIPSRFSGSGSGTDFTLTISSLEPEDFAMYYC | QQHNEY P | LTFGAGTKLELKR | 17 |
| XPA.015.173_VL | Ab087 | DIQMTQSPSSLSASLGGK VTITCKAS | QHIN---- KY | IAWYQHKPGKGPRLLIH | YTS | TLQPGIPSRFSGSGSGRDYSFSISNLEPEDIATYYC | LQYDNL - | YTFGGGTKLEIKR | 18 |
| XPA.015.174_VL | | DIVMTQSPSSLFASLGER VSLTCRAS | QDIG---- DR | LYWLQQEPDGAIKRLIF | ATS | SLDSGVPKRFSGSRSGSEYSLTISSLESEDFVDYYC | LQYASS P | WTFGGGTKLEIKR | 19 |
| XPA.015.172_VL | | DIVMTQSPTSLAVSLGQR ATISCRAS | KSVSTSGYS Y | IHWYQQKPGQPPKLLIY | LAS | NLESGVPARFSGSGSGTDFILNIHPVEEEDAATYYC | - QHNRDP | RTFGGGTKLELKR | 20 |
| XPA.15.193 | Ab050 | NFMLTQPHSVSESPGKTV SISCTGS | SGSIGSNY | VQWYQQRPGSAPTTVIY | EDN | QRPSGVPDRFSGSIDSSSNSASLTISGLKTEDEADYYC | QSYYNS NV | VFGGGTKLTVL | 87 |
| XPA.15.194 | Ab051 | SSELTQDPAVSVALGQTV RITCQGN | SLRSFY | AIWYQQKPGQAPVLVIY | GKN | IRPSGIPDRFSGSNSGDTASLTITGTQAEDEADYYC | NSRDNN RNHL | LFAGGTKVTVL | 88 |
| XPA.15.195 | Ab052 | QAMLTQPASLSASPGASA SLTCTLR | SGINVVAYN | IYWYRQKSGSPPQSVLR | YKSD SDS | ERDSGVPSRFSGSKDVSANAGILLISGLQSEDEADYYC | LIWHNS AW | VFGGGTQLTVL | 89 |
| XPA.15.196 | Ab053 | QSALTQPRSVSESPGKTV TISCTGS | GGSIGSNY | VQWYQQRPGSAPTTVIF | EDN | RRPSGVPDRFSGSIHSSSNSASLTISGLKTEDEADYYC | QSYVGT IV | VFGGGTKVTVL | 90 |
| XPA.15.197 | Ab054 | QSALTQPRSVSESPGKTV TISCTGS | GGSIGSNY | VQWYQQRPGSAPTTVIF | EDN | RRPSGVPDRFSGSIHSSSNSASLTISGLKTEDEADYYC | QSYVGT IV | VFGGGTKVTVL | 91 |
| XPA.15.198 | Ab055 | SYELTQLPSVSVSPGQTA RITCSGD | ALPNKY | AYWYQQKSGQAPVLVIY | EDT | RRPSEIPERFSASSSGIMATLTISGAQVEDEAEYYC | YSTDSS GNER | VFGGGTKLTVL | 92 |
| XPA.15.199 | Ab056 | QSALTQPASVSESPGQSI TISCTGT | GSDIGTYNL | VSWYQHHPGKAPKLMIY | EVT | KRPSGVSNRFSGSKSGNTASLTISGLQAEDEADYYC | SSYTSS STLY | VFGTGTKLTVL | 93 |
| XPA.15.200 | Ab057 | QTVVTQEPSFSVSPGGTV TLTCGLI | SGSVSTSYY | PSWYQQTPGQAPRMLVH | STS | TRYSGVPDRFSGSILGNKAALTITGAQADDESDYYC | ALYMGG GIY | VFGGGTQLTVL | 94 |
| XPA.15.201 | | QAVLTQPSSSSASPGESA RLTCTLP | SDINVRYHN | IYWYQEKPGSPPRYLLY | YYSD SSK | GQGSGVPSRFSGSKDVSTNTGILVISGLQSEDEAEYYC | MTWSSN GSG | VFGGGTQLTVL | 95 |
| XPA.15.202 | Ab058 | QSVLTQPPSVSGAPGQRV TISCTGS | RSNIGADHD | VHWYQQIPGRAPKLLIY | GNS | NRPSGVPDRFSGSRSGTSASLAITGLQAEDEADYYC | QSYDNS LSGS | VFGGGTKLTVL | 96 |
| XPA.15.203 | | QTVVTQEPSFSVSPGGTV TLTCGLN | SASVSTYSY | PSWYQQTPGQAPRMLIY | STN | TRSSGVPDRFSGSILGNKAALTITGAQADDESDYYC | ALYMGS GIW | VFGGGTKLTVL | 97 |
| XPA.15.204 | Ab059 | QAVLTQPASLSASPGASA SLTCTLR | SDISVGVYR | ISWYQQKPGSPPQYLLS | YNSD SNN | HQGSGVPSRFSGSKDASANAGILLISGLQSEDEADYYC | MIWHIN AW | VFGGGTKVTVL | 98 |
| XPA.15.205 | | QSVLTQPFSVSGAPGQRV TISCIGS | RSDIGYYA | VHWYRQLPGTAPKLVIY | AND | NRPSGVPDRFSGSKSGTSAFLAISGLQADDEADYYC | QSYDTV TGKG | VFGGGTKVTVL | 99 |

**Table 1**
**Light Chain Sequences**

| Name | Ab # | L-FR1 | L-CDR1 | L-FR2 | L-CDR2 | L-FR3 | L-CDR3 | L-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA.15.206 | | QSVLTQPPSVSGAPGQRVTISCTGS | SSNIGAGYY | AHWYQQLPGTAPRLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAITGLQAEDEADYYC | QSYDSSLSGPNY | VFGTGTKVTVL | 100 |
| XPA.15.207 | Ab060 | QAVLTQPASLSASPGESARLTCTLP | SDINVRYYN | IYWYQQKPGSPPRYLLY | YYSDSNK | DQGSGVPSRFSGSKDVSTNTGILVISGLQSEDEAEYYC | MTWSSNGSG | VFGGGTQLTVL | 101 |
| XPA.15.208 | | QAVLTQPASLSASPGESARLTCTLP | SDINVRYHN | IYWYQEKPGSPPRYLLY | YYSDSSK | GQGSGVPSRFSGSKDVSTNTGILVISGLQSEDEAEYYC | MTWSSNGSG | VFGGGTKLTVL | 102 |
| XPA.15.209 | Ab061 | QTVVTQEPSFSVSPGGTVTLTCGLS | SGSVSTGYS | PGWYQQTPGQAPRTLVY | NTN | TRSSGVPDRFSGSILGNKAALTITGAQADDESDYYC | ALYMGSGTY | VFGGGTKLTVL | 103 |
| XPA.15.211 | Ab062 | QSVLTQPPSVSGAPGQRVTISCTGS | SSNIGAGYD | VHWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAITGLQAEDEADYYC | QSYDSSLSGSG | VFGGGTKVTVL | 104 |
| XPA.15.212 | Ab063 | SSELTQPPSVSVAPGKTATITCGGD | NIASKS | VHWYQQKPGQAPVLVLY | DDS | VRPSDIPERFSGSNSANTATLTLTRVEAGDEGEYYC | QVWDVRSDHP | FFGPGTKVTVL | 105 |
| XPA.15.213 | Ab064 | QAVVTQEPSLTVSPGGTVTLTCASS | TGAVTSGYY | PNWFQQKPGQAPRALIY | STS | NKHSWTPARFSGSLLGGKAALTLSGVQPEDEAEYYC | LLYYGGAQPW | VFGGGTQLTVL | 106 |
| XPA.15.214 | Ab065 | QAGLTQPPSVSKGLRQTATLTCTGD | NNIVGDQG | AAWLQQHQGHPPKLLSF | RNN | SRPSGISERFSASRSRNTASLTITRLQPEDAADYYC | SAWDSFLSAW | VFGGGTKLTVL | 107 |
| XPA.15.215 | Ab066 | SSELTQDPAVSVAVGQSVRITCQGD | SLKNFY | ATWYQQRPGQAPLLVIF | GKN | NRPSGIPDRFSGSSSGNTASLTVTGAQADDEADYYC | NSPDSSNKLV | VFGGGTKLTVL | 108 |
| XPA.15.216 | Ab067 | EIVLTQSPGTLSLSPGERATLSCRAS | QSVSSSY | LAWYQQKPGQAPRLLIY | GAS | SRATGIPDRFSGSGSGTDFTLTISRLEPEDFAVYYC | QQYGSSL | GTFGQGTKLEIK | 109 |
| XPA.15.217 | Ab068 | DVVMTQTPLSLSVTPGQPASISCKAS | QSLLYTNGDTY | VSWYVQKPGQAPQLLFS | DVS | SRFFGVPDRFSASGSGTDFTLKISRVEAEDVGVYYC | VQAMYLP | LVFGQGTKVEIK | 110 |
| XPA.15.218 | | SSELTQDPAVSVALGQTVRITCQGD | SLRSYY | ASWYQQKPGQAPVLVIY | GKN | NRPSGIPDRFSGSSSGNTASLTITGAQAEDEADYYC | NSRDSSGNHL | MFGGGTQLTVL | 111 |
| XPA.15.219 | Ab086 | QSALTQPASVSGSLGQSITISCTGT | SSDIGLYKF | VSWYQQHPGKAPKLMIY | DVS | YRPSGVSNRFSGSSSGNTASLTISGLQAEDEADYYC | NSYTSSSTLV | VFGGGTKLTVL | 112 |
| XPA.15.220 | | SSELTQDPAVSVALGQTVRITCQGD | SLRNYY | ASWYQQKPGQAPLLVMY | DRN | SRPSGIPDRFSGSRSGNTASLTITGAQAEDEADYYC | NSRDSSGNHA | VFGGGTQLTVL | 113 |
| XPA.15.221 | | SYELMQPPSVSVAPGQTATITCGGN | NIGTKS | VHWYQQKTGQAPVLVVY | DDS | DRPSGIPERFSGSNSGNTATLTISRLEAGDEADYYC | QVWDRSSEHH | VFGGGTQLTVL | 114 |
| XPA.15.222 | Ab069 | SSELTQDPAVSVALGQTVRITCQGD | SLRSYY | ASWYQQKPGQAPVLVIY | GKN | NRPSGIPDRFSGSRSGNTASLTITGAQAEDEADYYC | NSRDSSGNHV | VFGGGTKVTVL | 115 |
| XPA.15.223 | | SSELTQDPAVSVALGQTVRITCQGD | SLRSYS | VAWYQQKPGQAPLLVIY | GNT | NRPSGIPDRFSGSSSGNTASLTITGAQAEDEADYYC | NSRASSGFSW | VFGGGTKVTVL | 116 |
| XPA.15.224 | | SSELTQDPAVSVALGQTVRITCQGD | SLRSYY | ASWYQQKPGQAPVLVIY | GKN | NRPSGIPDRFSGSSSGNTASLTITGAQAEDEADYYC | NSRDSSGNHA | VFGGGTQLTVLG | 117 |
| XPA.15.225 | | SYELMQPPSVSVAPGQTATITCGGN | NIGTKS | VHWYQQKTGQAPVLVVY | DDS | DRPSGIPERFSGSNSGNTATLTISRLEAGDEADYYC | QVWDRSSEHH | VFGGGTQLTVL | 118 |
| XPA.15.226 | Ab070 | SSELTQDPAVSVALGQTVRITCQGD | SLRSYY | TSWYQQKPGQAPVLVIF | GKN | NRPSGIPDRFSGSSSGNTASLTITGAQAEDEADYYC | NSRDSSGNYA | VFGGGTQLTVL | 119 |

**Table 1**
**Light Chain Sequences**

| Name | Ab # | L-FR1 | L-CDR1 | L-FR2 | L-CDR2 | L-FR3 | L-CDR3 | L-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA.15.227 | Ab071 | SSELTQDPAVSVALGQTVRITCQGD | SLRSYY | ASWYQQKPGQAPVLVFY | GKN | NRPSGIPGRFSGSKSGNTASLTITGAQAEDEADYYC | NSRDSSGNHW | VFGGGTKLTVL | 120 |
| XPA.15.228 | Ab072 | SYVLTQPPSASGTPGQRVTISCSGS | NSNIGSNF | VTWYQQLPGAAPKLLIY | TNS | QRPSGVPDRFSGSRSGTSASLAISGLQSEDEADYFC | AAWDDSLNGP | VFGGGTQLTVL | 121 |
| XPA.15.229 | Ab073 | QSVLTQPPSVSAAAGQKVTISCSGS | SSNIGNNY | VTWYQHVPGTAPKLLIF | DND | KRPSGIPDRFSGSKSGTSATLAITGLQTGDEADYYC | GTWDSSLNP | LFGGSTQLTVL | 122 |
| XPA.15.230 | Ab074 | SSELTQDPAVSVALGQTVRITCQGD | SLRSYY | ASWYQQKPGQAPVLVIY | GKN | NRPSGIPDRFSGSSSGNTASLTITGAQAEDEADYYC | SSRDSSGDQW | VFGGGTKLTVL | 123 |
| XPA.15.231 | | SSELTQNPAVSVALGQTVRITCQGD | SLRNYY | ASWYQQKPGQAPLLVMY | DRN | SRPSGIPDRFSGSRSGNTASLTITGAQAEDEADYYC | NSRDSSGNHA | VFGGGTQLTVL | 124 |
| XPA.15.232 | Ab075 | QSVLTQPPSVSAAPGQKVTISCSGS | SSNIGNNY | VTWYQHVPGTAPKLLIF | DND | KRPSGIPDRFSGSKSGTSATLAITGLQTGDEADYYC | GTWDSSLNP | LFGGGTQLTVL | 125 |
| XPA.15.233 | | QSVLTQPPSVSAAAGQKVTISCSGS | SSNIGNNY | VTWYQHVPGTAPKLLIF | DND | KRPSGIPDRFSGSKSGTSATLAITGLQTGDEADYYC | GTWDSSLNP | LFGGGTQLTVL | 126 |
| XPA.15.234 | | QSVLTQPPSVSAAAGQKVTISCSGS | SSNIGNNY | VTWYQHVPGTAPKLLIF | DND | KRPSGIPDRFSGSKSGTSATLAITGLQTGDEADYYC | GTWDSSLNP | LFGGGTQLTVL | 127 |
| XPA.15.235 | | DVVMTQSPLSLPVTLGQPASISCRSS | QSLVYSDGNTY | LNWFQQRPGQSPRRLIY | KVS | NRDSGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYC | MQGTH | WSFGQGTRLEIK | 128 |
| XPA.15.236 | | EIVLTQSPDFQSVTPKEKVTITCRAS | QSIGSS | LHWYQQKPDQSPKLLIK | YAS | QSISGVPSRFSGSGSGTDFTLTTNSLEAEDAATYYC | HQSSSLP | WTFGQGTKVEIK | 129 |
| XPA.15.237 | | DIQLTQSPSSLSASVGDRVTITCRAS | QGISNS | LAWYQQKPGKAPKLLLY | AAS | RLESGVPSRFSGSGSGTDYTLTISSLQPEDFATYYC | QQYYSTL | LTFGGGTKVDIK | 130 |
| XPA.15.238 | | EIVLTQSPGTLSLSPGERATLSCRAS | QSVSSSY | LAWYQRKPGRAPRLLIY | GAS | SRATGIPNRFSGSGSGTDFTLTISRLEPEDFAVYYC | QQYGSSP | PTFGQGTKLEIK | 131 |
| XPA.15.239 | | DIVMTQSPLSLPVTPGEPASISCRSS | QSLLHSNGYNY | LDWYLQKPGQSPQLLIY | LGS | NRASGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYC | MQALQTP | HTFGQGTKLEIK | 132 |
| XPA.15.241 | Ab076 | EIVMTQSPATLSVSPGERATLSCRAS | QSISTN | LAWYQQKPGQTPRLLIY | GAS | TRATGIPARFSGSGSGTEFTLTISSLQSEDFAVYYC | QQYNSE | ISFGQGTRLEIK | 133 |
| XPA.15.242 | | DIQMTQSPSSLSASVGDRVTITCRAS | QGISNS | LAWYQQKPGKAPKLLLY | ATS | RLETGVPSRFSGSGSGTDYTLTISSLQPEDFASYYC | QQFYSN | PSFGQGTKVEIK | 134 |
| XPA.15.243 | Ab077 | DIQMTQSPSSLSASVGDRVTITCRAS | QGISSW | LAWYQQKPGKAPKLLIY | AAS | SLQSGVPSRFSGSGSGTDFTLTISSLQPEDFATYYC | QQANSFP | ITFGQGTRLEIK | 135 |
| XPA.15.244 | Ab078 | DIQLTQSPSSLSASVGDRVTITCRAS | QGISSA | LAWYQQKPGKAPKVLIY | DAS | SLERGVPSRFSGSGTGTDFTLTISSLQPEDFASYYC | HQFNSYP | DTFGQGTRLEIK | 136 |
| XPA.15.245 | Ab079 | AIRMTQSPSTLSASVGDRVTITCRAS | QSISTW | LAWYQQKPGKAPKLLIY | TTS | TLESGVPSRFSGSRSGTEFTLTISSLQPDDFATYYC | QQYNSYP | LTFGGGTKVEIK | 137 |
| XPA.15.246 | Ab080 | EIVLTQSPGTLSLSPGERATLSCRAS | QSLSSSF | LAWYQQKPGQAPRLLIY | GAG | SRATGVPDRFSGSGYGTDFSLTISRLELEDFAVYYC | QQYDRSQ | ITFGQGTRLEIK | 138 |
| XPA.15.247 | Ab081 | DVVMTQSPLSLSVTLGQPASISCRSS | LSLVYGDENTY | LNWFQQRPGQSPRRLLY | KVS | DRDSGVPDRFSGSGSGTDFTLKISRVEADDVGVYYC | MQGTHWP | YTFGQGTKLEIK | 139 |

**Table 1**
**Light Chain Sequences**

| Name | Ab # | L-FR1 | L-CDR1 | L-FR2 | L-CDR2 | L-FR3 | L-CDR3 | L-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA.15.248 | Ab082 | EIVLTQSPDFQSVTPKET VTISCRAS | QNIGVS | LHWYQQKPDQSPKVLIK | YAS | QSLSGVPSRFSGTGSGTDFTLTIKSLEAEDAATYYC | LQTSSLP | WTFGQGTKVEIK | 140 |
| XPA.15.249 | Ab083 | AIQLTQSPSSLSASVGDR VTISCRAS | QSITSY | LNWYQQKPGKAPNLLIY | AAS | SLQSGVPSRFSGSGSGTDFTLTIAGLQPEDFATYYC | QQFDSYP | FTFGGGTKLEIK | 141 |
| XPA.15.250 | Ab084 | AIRMTQSPSTLSASVGDR VTITCRAS | QSISSW | LAWYQQTPGKAPKLLIY | AAS | NLQSGVPSRFSGSGSGTDFTLTISSLQPEDFATYYC | QQSYNTP | LTFGGGTKVEIK | 142 |
| XPA.15.272 | | QSALTQPASVSGSPGQSI TISCLGT | INDVGLYNL | VSWYQQHPGKAPKLMIY | EVS | KRPSGVSNRFSGSKSGNTASLTISGLQAEDEAVYYC | NSYTSSNFW | VFGGGTQLTVLG | 143 |
| XPA.15.275 | Ab085 | QTVVTQEPSFSVSPGGTV TLTCGLT | SGSVSTRNF | PGWYQQTPGQTLRTLIY | NTN | TRSSGVPDRFSGSILGNKAALTITGAQADDESDYYC | VLYMTGDIW | VFGGGTKVTVLG | 144 |
| XPA.15.282 | | QSVLTQPPSVSAAAGQKV TISCSGS | SSNIGNNY | VTWYQHVPGTAPKLLIF | DND | KRPSGIPDRFSGSKSGTSATLAITGLQTGDEADYYC | GTWDSSLNP | LFGGGTQLTVLG | 145 |
| XPA.15.284 | | QSVLTQPPSVSAAAGQKV TISCSGS | SSNIGNNY | VTWYQHVPGTAPKLLIF | DND | KRPSGIPDRFSGSKSGTSATLAITGLQTGDEADYYC | GTWDSSLNP | LFGGGTQLTVLG | 146 |
| XPA.15.293 | | DIVMTQTPLSLPVTPGEP ASISCRSS | QSLLDSDDG NTY | LDWYVQKPGQSPQLLMY | SLS | YRASGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYC | MQRIEFP | YTFGQGTKLEIKR | 147 |
| XPA.15.110 | | QSVLTQPPSASGTPGQRV TISCSGS | SSNIGRNP | ISWYQQLPGTAPKLLIY | NND | QRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDSLNGPVW | VFGGGTKLTVLG | 148 |
| XPA.15.120 | | QSVLTQPPSASGTPGQRV TISCSGS | SSNIGNNY | VSWYQQLPGTAPKLLIY | GNS | NRPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | AAWDDSLSAV | VFGGGTKLTVLG | 149 |
| XPA.15.163 | | QSVLTQPPSASGTPGLRV IISCAGS | SSNIGAGYD | VHWYHQLPGTAPKLLIY | GNS | NQPSGVPDRFSGSKSGTSASLAISGLRSEDEADYYC | TSYTGNNQFV | IFGGGTKLTVLG | 150 |

## Table 2
## Heavy Chain Sequences

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA.015 .172_VH | | QVQLQQSEAELVK PGASVKISCKAS | GYTFSSYW | MSWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNGKFKGKATLTADKSSGTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 151 |
| XPA.015 .173_VH | Ab087 | EVQLVESGGGLVK PGGSLKLSCAAS | GFTFSNYA | MSWVRQTPEKRLEWVAT | IS-- DGGHYI | DYPDNVKGRFTISRDNAKNNLYLQMSHLRSEDSAMYYC | ARA----- TNFAY | WGQGTLVTVSA | 169 |
| XPA.015 .174_VH | | QVQLQQSGPELVK PGASVKLSCKAS | GYTFTSYD | INWVKQRPGQGLEWIGW | IYPRDGS T-- | KSNEKFKGKATLTVDTSSSTAYMELHSLTSEDSAVYFC | AR------- EFDY | WGQGTLVTVSA | 170 |
| XPA.015 .175_VH | Ab019 | QVQLQQSEAELVK PGASVKISCKAS | GYTFSNYW | MNWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNGKFKGKATLIADKSSSTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 160 |
| XPA.015 .176_VH | Ab088 | QVQLQQSEAELVK PGASVKISCKAS | GYTFSSYW | MSWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNGKFKGKATLTADKSSGTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 153 |
| XPA.015 .177_VH | | QVQLQQSEAELVK PGASVKISCKAS | GYTFSNYW | MNWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNGKFKGEATLIADKSSSTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 159 |
| XPA.015 .178_VH | Ab089 | QVQLQQSEAELVK PGASVKISCKAS | GYTFSSYW | MNWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNVKFKGKATLTADKSSGTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 154 |
| XPA.015 .179_VH | | EVQLQQSVAELVK PGASVKISCKAS | GYTFSNYW | MNWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNGRFKGKATLTADKSSSTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 161 |
| XPA.015 .181_VH | Ab010* | EVQLQQSGPVLVK PGASVKMSCKAA | GYTFTDSY | MNWVKQSHGKSLEWIGD | INPYNGG T-- | SYNQHFKGKATLTVDKSSSTAYMELNSLTSEDSAVYYC | AR----- RRGAMDY | WGQGTSVTVSS | 163 |
| XPA.015 .182_VH | | EIQLQQSGPVLVK PGASVKMSCKAA | GYTFTDSY | MNWVKQSHGKSLEWIGD | INPYNGG T-- | SYNQHFKGKATLTVDKSSSTAYMELNSLTSEDSAVYYC | AR----- RRGAMDY | WGQGTSVTVSS | 164 |
| XPA.015 .183_VH | Ab020 | QVQLQQSEAELVK PGASVKISCKAS | GYTFSSYW | MNWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNVKFKGKATLTADKSSGTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 155 |
| XPA.015 .184_VH | | EVQLQQSVAELVK PGASVKISCKAS | GYTFSNYW | MNWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNGRFKGKATLTADKSSSTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 162 |
| XPA.015 .185_VH | Ab003 | EVQLQQSGPELVK PGASVKISCKAS | GYTFTDSY | MNWVKQSHGKSLKWIGD | INPNNGG S-- | NYNQKFKGKATLTVDKSSSTAYMELRSLTSEDSAVYYC | AR----- RRGAMDY | WGQGTSVTVSS | 157 |
| XPA.015 .186_VH | | QVQLQQSRAELVK PGASVKLSCKAS | GYTFTRYW | MHWVKQRPGQGLEWIGM | IHPNSGG T-- | NYNEKFRSKATLTGDKSSSTAYMQLNSLTSDDSAVYYC | ARWDYGSAS YFDF | WGQGTTLIVSS | 165 |
| XPA.015 .187_VH | | EVQLQQSGAELVK PGASVKISCKAS | GYTFSNYW | MNWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNGKFKGKATLTADKSSGTAYMQLSSLTSEDSADYFC | ARGVS- GYGAVDH | WGQGTSVTVSS | 166 |
| XPA.015 .188_VH | Ab008 | EVQLQQSGPELVK PGASVKISCKAS | GYTFTDSY | MNWVKQSHGKSLEWIGD | INPNNGG T-- | NYNQKFKDKATLTVDKSSSSAFMELRSLTSEDSAVYYC | AR----- RRGAMDY | WGQGTSVTVSS | 156 |
| XPA.015 .189_VH | | EVQLQQSVAELVK PGASVKISCKAS | GYAFSSYW | MNWVKQRPGKGLEWIGQ | IYPGDGD T-- | NYNGKFKGKATLTADKSSGTAYMQLSSLTSEDSAVYFC | ARGVS- GYGAMDY | WGQGTSVTVSS | 152 |
| XPA.015 .190_VH | Ab002 | EVKLVESEEGLVK PGGSLKLSCAAS | GFTFSNYA | MSWVRQTPEKRLEWVAT | IS-- DGGHYT | YYSDTIKGRFTISRDNAKNNLFLQLSHLKSEDTAIYYC | ARG----- TVFDY | WGQGTTLTVSS | 167 |
| XPA.015 .191_VH | | QVQLQQPGAELVK PGASVKLSCKAS | GYIFTNYW | MHGVKQRPGQGLEWIGM | IHPNSGS T-- | SYNEKFKTKATLTVDKSSSTAYMQLSSLTSEDSAVYYC | ARGYGSTYW YFDV | WGTGTTVTVSS | 168 |
| XPA.015 .192_VH | | EVQLQQSGPELVK PGASVKISCKAS | GYTFTDSY | MNWVKQSHGKSLEWIGD | INPNNGD T-- | NYNQKFKDKATLTVDKSSSSAFMELRSLTSEDSAVYYC | AR---- RRGAMDY | WGQGTSVTVSS | 158 |

## Table 2
## Heavy Chain Sequences

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA.15.006 | Ab021 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSSYE | MNWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARATGIGGYHFDY | WGQGTLVTVSQ | 288 |
| XPA.15.009 | Ab022 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSSYW | MHWVRQAPGKGLEWVSG | INNSGGTT | FYADAVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARDRRFLEWTFDY | WGQGTLVTVSQ | 289 |
| XPA.15.019 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSNAW | MSWVRQAPGKGLEWVSA | IGTGGGT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | AKSRWLPYFDY | WGQGTLVTVSQ | 290 |
| XPA.15.043 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSDHY | MDWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | AKEIPGRWLQLGGFDY | WGQGTLVTVRL | 291 |
| XPA.15.062 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSNYV | ISWVRQAPGKGLEWVSA | ISGSGGST | FYPDSVKGRFTISRDNSKNTLYLQMNSLRAEDTANYYC | ARVGLSGWYYFDY | WGQGTLVTVSS | 292 |
| XPA.15.085 | Ab011 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSNYA | MGWVRQAPGKGLEWVSS | ISGSGGTT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARHKGLQPLDY | WGQGTLVTVSF | 293 |
| XPA.15.099 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSNYA | MGWVRQAPGKGLEWVSS | ISGSGGTT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARHKGLQPLDY | WGQGTLVTVSQ | 294 |
| XPA.15.141 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFDDYG | MNWVRQAPGKGLEWVSG | VSWNGSRT | HYAYSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARRSPLKDGFDI | WGLGTLVTVTQ | 295 |
| XPA.15.142 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFNKFA | VHWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ASDVEGGYFHNSGPDY | WGQGTLVTVSS | 296 |
| XPA.15.144 | Ab033 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFTNYN | MIWVRQAPGKGLEWVSG | VSWNGSRT | HYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARERGSWDTTGYYNYYYYGMDV | WGQGTLVTVSS | 297 |
| XPA.15.146 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSNYW | MSWVRQAPGKGLEWVST | VSATGPHT | YYADSAKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARQVGGGPFDI | WGQGTLVTVSS | 298 |
| XPA.15.154 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSSNY | MSWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARVGSSGWYYFDY | WGQGTLVTVSS | 299 |
| XPA.15.155 | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSSNY | MSWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARVGSSGWYYFDY | WGQGTLVTVSS | 300 |
| XPA.15.158 | Ab014 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSNAW | MSWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | AAPTVPYYYYGMDV | WGQGTLVTVSS | 301 |
| XPA.15.165 | Ab049 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSSNY | MSWVRQAPGKGLEWVSS | ISGGST | YYADSRKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARLDWSSGAFDI | WGQGTLVTVSS | 302 |
| XPA.15.193 | Ab050 | QVQLVQSGAELKKPGATVKISCKVS | GYTFGDYH | MHWVKQAPGKGLEWMGL | VDPENGET | EYGEKFQDRITMAADTSTDTAYMELSSLRSEDTAVYYC | ARSPSSSGYFRVDGFDI | WGQGTMVTVSS | 226 |
| XPA.15.194 | Ab051 | QVQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGG | IIPIFGTA | NYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYC | AGKLYSRDYWYFDL | WGRGTLVTVSS | 227 |
| XPA.15.195 | Ab052 | EVQLVQSGAEVKKPGESLKISCKGS | GYRFTSYW | IGWVRQMPGRGLEWMGI | IYPGDSDT | RYSPSFQGQVTISVDKSISTAYLQWSSLKASDTAMYYC | ATHHASGRGLDP | WGQGTLVTVSS | 228 |
| XPA.15.196 | Ab053 | QVQVVQSGAEVKKPGASVKVSCKAS | GYTFTGHY | MHWVRQAPGQGLEWMGW | INPNSGGT | NYAQKFQGRVTMTRDTSISTAYMELSRLRSDDTAVYYC | ARGSSSSWPVYFYYMDV | WGKGSTVTVSS | 229 |
| XPA.15. | Ab054 | QVQLVQSGAEVKK | GYTFTGHY | MHWVRQAPGQGLEWMGW | INPNSGG | NYAQKFQGRVTMTRDTSISTAYMELSRLRSDDTAVYYC | ARGSSSSWP | WGKGTTVTVSS | 230 |

**Table 2**
**Heavy Chain Sequences**

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| 197 | | PGASVKVSCKAS | | | T | | VYFYYMDV | | |
| XPA.15.198 | Ab055 | QVQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGG | IIPIFGTA | NYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYC | ARGQGWLRFYGMDV | WGQGTTVTVSS | 231 |
| XPA.15.199 | Ab056 | QVQLVQSGSEVKKPGASVKVSCKAS | GYTFTNSY | MHWVRQAPGQGLEWMGI | INPSAGT | SYAQKFQGRVTMTRDTSTSTVYMELSSLKSEDTAVYYC | ARDVGWLPGDY | WGQGTLVTVSS | 232 |
| XPA.15.200 | Ab057 | QMQLVQSGAEVKKPGESLKISCKGY | GYRFSDNW | IGWVRQMPGRGLEWMGI | IYPGDSET | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARHAPLAVAGMALGD | WGQGTLVTVSS | 233 |
| XPA.15.202 | Ab058 | QLQLQQWGAGLLKPSETLSLTCAVY | SGSFSGYY | YSWIRQSPGRGLEWIGD | ISHTGST | DYNPSLKTRVTISVDTSKNQFSLNLNSVTAADTAVYYC | ARDAPKGGSGLYLFDY | WGQGILVTVSS | 234 |
| XPA.15.203 | | QVQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGR | IIPILGIA | WYAQKFQGRVTITADKSTSTAYMELSSLRSEDTAVYYC | ARDSYSSGWYSHGPEYFQH | WGQGTLVTVSS | 235 |
| XPA.15.204 | Ab059 | EVQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGR | IIPIFGIA | NYAQKFQGRVTITADKSTSTAYMELSSLRSEDTAVYYC | AREPDYDFWNDAFDI | WGQGTMVTVSS | 236 |
| XPA.15.205 | | QVQLVQSGAEVKKPGSSVKVSCKAS | GYTFSSYA | ISWVRQAPGQGLEWMGG | IIPIFGTA | NYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYC | ASHYYDFWSGYQYYYGMDV | WGQGTTVTVSS | 237 |
| XPA.15.206 | | QMQLVQSGAEVKKPGASVKVSCKAS | GYTFTSYA | MHWVRQAPGQRLEWMGW | INAGNGNT | RYSQKFQGRVTITRDTSASTAYMELSSLRSEDTAVYYC | ARYTSGSFDY | WGQGTLVTVSS | 238 |
| XPA.15.207 | Ab060 | QMQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGI | INPSGGST | SYAQKFQGRVTMTRDRSTSTVYMELSSLTSEDTAVYYC | VRDNHGWSFDY | WGQGTLVTVSS | 239 |
| XPA.15.208 | | QMQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGG | IIPIFGTA | NYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYC | ATKGSDFWSGYYYYYYMDV | WGKGTTVTVSS | 240 |
| XPA.15.209 | Ab061 | QMQLVQSGAEVKKTGESLKISCQGY | GYRFTDNW | IGWVRQMPGRGLEWMGI | IYPGDSET | RYSPSFQGQVTISADKSISTAYLEWSSLKASDTAMYYC | ARHAPLAVAGMALGD | WGQGTLVTVSS | 241 |
| XPA.15.210 | | QVQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGG | IIPIFGTA | NYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYC | ARGLPPKPYYDFWSGYWGYYYYGMDV | WGQGTTVTVSS | 242 |
| XPA.15.211 | Ab062 | QVQLQQWGAGLLKPSETLSLTCAVY | GGSFSGYY | WSWIRQPPGKGLEWIGE | INHSGST | NYNPSLKSRVTISVDTSKNQFSLKLSSVTAADTAVYYC | ARGPSGWYIREFDY | WGQGTLVTVSS | 243 |
| XPA.15.212 | Ab063 | QVQLQQSGPGLVKPSQTLSLTCAIS | GDSVSSNSAA | WNWIRQSPSRGLEWLGR | TYYRSKWYT | DYALSVKSRITINPDTSKNQFSLHLNSVTPEDTAVYYC | AREGWLGYFDF | WGQGTLVTVSS | 244 |
| XPA.15.213 | Ab064 | QVQLVQSGAEVKKPGESLKISCKGS | GFSFPSYW | IGWVRQMPGKGLELVGI | IYPGDSDI | RYSPSFQGQVTISADTSISTVYLQWSSLQTTDTATYYC | ARGGFNWFDP | WGQGTLVTVSS | 245 |
| XPA.15.214 | Ab065 | QVQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARHELGIDY | WGQGTLVTVSS | 246 |
| XPA.15.215 | Ab066 | EVQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGG | IIPIFGTA | NYAQKFQGRVTITADKSTSTAYMELSRLRSDDTAVYYC | ARDASYGGNSEGFDY | WGQGTLVTVSS | 247 |

**Table 2**
**Heavy Chain Sequences**

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA.15.216 | Ab067 | EVQLVQSGAEVKKPGSSVKVSCKAS | GGTFSSYA | ISWVRQAPGQGLEWMGG | IIPIFGTA | NYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYC | ARASGDYDFWSGYYGAEYFQH | WGQGTLVTVSS | 248 |
| XPA.15.217 | Ab068 | EVQLVQSGAEVKQPGSSVKVSCKAS | GGSFNSYT | FSWVRQAPGQGLEWMGW | ISAYNGGTNYFA | NYALKFQGRVTMTTDTSTGTAYMELRSLRSDDTAVYYC | ARVRDSWSHEDYSYYYYMDV | WGKGTTVTVSS | 249 |
| XPA.15.218 | | QVQLVESGGGLVQPGGSLRLSCAAS | GFTFSSYA | MSWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNSLYLQMNSLRAEDTAVYYC | ARERVFPDYYDSIASNYPLDDI | WGQGTMVTVSS | 250 |
| XPA.15.219 | Ab086 | EVQLVETGGGVVRPGGSLRLSCAAS | GFTFGDYG | MSWVRQAPGKGLEWVSG | INWNGGST | GYADSVKGRFTISRDNAKNSLYLQMNSLRAEDTALYYC | ARDILGVEFDY | WGQGTLVTVSS | 251 |
| XPA.15.220 | | EVQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARLGSGSYSFDY | WGQGTLVTVSS | 252 |
| XPA.15.221 | | EVQLVESGGGVVQPGMSLRLSCAAS | GFTFDDYA | MHWVRQAPGKGLEWVSS | ISWNSANI | VYADSVRGRFTISRDNAKNSLYLQMNSLRADDMALYYC | VKGDTTMIYYAMAV | WGQGTTVTVSS | 253 |
| XPA.15.222 | Ab069 | EVQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARLGRGYYGMDV | WGQGTTVTVSS | 254 |
| XPA.15.223 | | QMQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARWGPDAFDI | WGQGTMVTVSS | 255 |
| XPA.15.224 | | EVQLVESGGSVVQPGGSLRLSCAAS | GFTFSDYY | MSWIRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSENTLYLQMNSLRAEDTAVYYC | AKDDYDFWSGYYDPYYYGMDV | WGQGTTVTVSS | 256 |
| XPA.15.225 | | EVQLLESGGGLVQPGMSLRLSCAAS | GFTFDDYA | MHWVRQAPGKGLEWVSS | ISWNSANI | VYADSVRGRFTISRDNAKNSLYLQMNSLRADDMALYYC | VKGDTTMIYYAMAV | WGQGTTVTVSS | 257 |
| XPA.15.226 | Ab070 | EVQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTSYLQWSSLRASDTAMYYC | ARLGSGWYGNDY | WGQGTLVTVSS | 258 |
| XPA.15.227 | Ab071 | EVQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARWDAGYSP | WGQGTLVTVSS | 259 |
| XPA.15.228 | Ab072 | QMQLVQSGAEVKKPGESLKISCKGS | GYSFTGYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKVSDTAMYYC | GRISTPYAFDI | WGQGTMVTVSS | 260 |
| XPA.15.229 | Ab073 | QVQLQESGPGLVKPSGTLSLTCAVS | GGSISSSNW | WSWVRQPPGKGLEWIGE | IYHSGST | NYNPSLKSRVTISVDKSKNQFSLKLSSVTAADTAVYYC | ARVGAAAAWFDP | WGQGTLVTVSS | 261 |
| XPA.15.230 | Ab074 | EVQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARWDAGYSP | WGQGTLVTVSS | 262 |
| XPA.15.231 | | QMQLVQSGAEVKKPGESLKISCKGS | GYSFSSSW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADRSISTAYLQWSSLKASDTAMYYC | ARVGASGWTFDY | WGQGTLVTVSS | 263 |
| XPA.15.232 | Ab075 | EVQLVETGGGVVQPGRSLRLSCAAS | GFSFSSYD | MYWVRQAPGKGLEWVAV | ISYDGNDK | QYADSVKGRFTISRDNSKRTLYLQMDSLRTEDTATYYC | TREGNGREIDY | WGPGTLVTVSS | 264 |
| XPA.15.233 | | QVQLVQSGAEVRRPGASVKVSCEAS | GYTFHSYD | INWVRQATGQGLEWVGW | MNPNSGNI | DFAQKFQGRVTMTRNTSINTAYMELSSLRSDDTAVYYC | ARVNWNYGGTSDS | WGQGTLVTVSS | 265 |

**Table 2**
**Heavy Chain Sequences**

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA.15.234 | | QVQLQESGPGLVKPSGTLSLTCAVS | GGSISSSNW | WSWVRQPPGKGLEWIGE | IYHSGST | NYNPSLKSRVTISVDKSKNQFSLKLSSVTAADTAVYYC | ARVGVAAFDY | WGQGTLVTVSS | 266 |
| XPA.15.235 | | EVQLVESGGGVVQPGRSLRLSCAAS | GFTFSSYA | MHWVRQAPGKGLEWVAV | ISYDGSNK | YYADSVKGRFTISRDNSKNTLCLQMNSLRAEDTAVYYC | AREEAYGDAFDI | WGQGTMVTVSS | 267 |
| XPA.15.236 | | QMQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARWGPDAFDI | WGQGTMVTVSS | 268 |
| XPA.15.237 | | EVQLVETGGGVVRPGRSLRLSCAAS | GFTFEDYA | MHWVRQGPGKGLEWVSS | ISWNGGFI | GYADSVKGRFTISRDNAKNSLYLQMNSLSAEDTALYYC | AKGASYDSYAAMDV | WGQGTTVTVSS | 269 |
| XPA.15.238 | | EVQLVESGGGVVQPGGSLRLSCAAS | GFTFSSYA | MSWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | AKDPRVVHRFDI | WGQGTMVTVSS | 270 |
| XPA.15.239 | | QLQLQESGPGLVKPSETLSLTCTVS | GGSFSTYY | WSWVRQAPGKGLEWIGN | IYYSGKT | NYNPSLESRVTISVDTSKNQFSLKLSSVTTADTAVYYC | ARDSFYFESSRSWNDLFDI | WGQGTMVTVSS | 271 |
| XPA.15.240 | | QLQLQESGPGLVKPSETLSLTCTVS | GGSFSTYY | WSWVRQAPGKGLEWIGN | IYYSGKT | NYNPSLGSRVTISVDTSKNQFSLKLSSVTAADTAVYYC | ARDSFYFESSRSWNDLFDI | WGQGTMVTVSS | 272 |
| XPA.15.241 | Ab076 | EVQLVESGGGVVQPGGSLRLSCAAS | GFTFDDYA | MHWVRQAPGKGLEWVSL | ISWDGGST | YYADSVKGRFTISRDNSKNSLYLQMNSLRAEDTALYYC | AKARGVVIIDY | WGQGTLVTVSS | 273 |
| XPA.15.242 | | QLQLQESGPGLVKPSETLSLTCTVS | GGSFSTYY | WSWIRQAPGKGLEWIGN | IYYSGKT | NYNPSLESRVTISVDTSKNQFSLKLSSVTAADTAVYYC | ARDSFYFESSRSWNDLFDI | WGQGTMVTVSS | 274 |
| XPA.15.243 | Ab077 | EVQLVESGGGVVQPGGSLRLSCAAS | GFTFSSYW | MTWVRQAPGKGLEWVAN | INQDGSEK | HYVDSVKGRFTISRDNAKNSLYLQMNSLRGEDTAVYYC | ARGRGAWAFDY | WGQGTLVTVSS | 275 |
| XPA.15.244 | Ab078 | QVQLVQSGGGLVQPGGSLRLSCAAS | GFTFSSYS | MNWVRQAPGKGLEWVSS | ISSSSSYI | YYADSVKGRFTISRDNAKNSLYLQMNSLRAEDTAVYYC | ARDQGGELLGFTGYFDY | WGQGTLVTVSS | 276 |
| XPA.15.245 | Ab079 | QMQLVQSGAEMKKPGASVKVSCKAS | GYSFSDYG | ITWVRQAPGQGFEWMGW | ISGYNGNT | NYAQKFQDRVTMTTDTSTSTAYMELRSLKSDDTAVYFC | ARARGVWMFDN | WGQGTLVTVSS | 277 |
| XPA.15.246 | Ab080 | EVQLVESGGGVVQPGGSLRLSCAAS | GFTFDDYA | MHWVRQAPGKGLEWVSL | ISWDGGST | YYADSVKGRFTISRDNSKNSLYLQMNSLRAEDTALYYC | AKARGVVIIDY | WGQGTLVTV88 | 278 |
| XPA.15.247 | Ab081 | EVQLVETGGGVVQPGRSLRLSCAAS | GFTFSSYA | MHWVRQAPGKGLEWVAV | ISYDGSNK | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ARHEWGFGMDV | WGQGTTVTVSS | 279 |
| XPA.15.248 | Ab082 | QMQLVQSGAEVKKPGESLKISCKGS | GYSFTSYW | IGWVRQMPGKGLEWMGI | IYPGDSDT | RYSPSFQGQVTISADKSISTAYLQWSSLKASDTAMYYC | ARWGPDAFDI | WGQGTMVTVSS | 280 |
| XPA.15.249 | Ab083 | QVQLVESGGGLVQPGGSLRLSCAAS | GFTFSSYA | MSWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | AKDRVGAANGWFDP | WGQGTLVTVSS | 281 |
| XPA.15.250 | Ab084 | QVQLVESGGGLVQPGGSLRLSCAAS | GFTFKNYW | MTWVRQAPGKGLEWVAD | IKGDGSRQ | HYADSVKGRFTISRDNARNSLFLQMNSLRVEDTALYYC | ATDPPWDRDAFDL | WGQGTMVTVSS | 282 |
| XPA.15.272 | | QVQLVESGGGLVQPGGSLRLSCAAS | GFTFGGYW | MSWVRQAPGKGLEWVSN | IKQDGSEQ | YYVDSVKGRFTISRDNAKNSLYLQMNSLRAEDTAIYYC | ARDRMDYIFDI | WGRGTLVTVSS | 283 |
| XPA.15. | Ab085 | EVQLVESGGGVVQ | GFIFSSYG | MHWVRQVPDKGLEWVAG | ISLRGSD | YYADSVKGRFTISRDNSKNTLYLQMNNLRPDDTAVYYC | ARGFRWPVT | WGQGTLVTVSS | 284 |

**Table 2**
**Heavy Chain Sequences**

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| 275 | | PGRSLRLSCAAS | | | N | | PFDH | | |
| XPA.15.282 | | QVQLQESGPGLVKPSGTLSLTCAVS | GGSISSSNW | WSWVRQPPGKGLEWIGE | IYHSGST | NYNPSLKSRVTISVDKSKNQFSLKLSSVTAADTAVYYC | ARPDYSNYGGAFDY | WGQGTLVTVSS | 285 |
| XPA.15.284 | | QVQLQESGPGLVKPSGTLSLTCAVS | GGSISSSNW | WSWVRQPPGKGLEWIGE | IYHSGST | NYNPSLKSRVTISVDKSKNQFSLKLSSVTAADTAVYYC | ARVGAAAAWFDP | WGQGTLVTVSS | 286 |
| XPA.15.293 | | QLQLQESGPGLVKPSETLSLTCTVS | GGSFSTYY | WSWVRQAPGKGLEWIGN | IYYSGKT | NYNPSLESRVTISVDTSKNQFSLKLSSVTAADTAVYYC | ARDSFYFESSRSWNDLFDI | WGQGTMVTVSS | 287 |
| XPA-15-007_VH | Ab029 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSS-YG | MHWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARDRYSSGWYW-----SDY------ | WGQGTLVTVSS | 221 |
| XPA-15-013_VH | Ab006 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YA | MGWVRQAPGKGLEWVSS | ISGSGGTT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AR---HKGLQ---PLDY-------- | WGQGTLVTVSS | 179 |
| XPA-15-017_VH | Ab017 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSS-YS | MNWVRQAPGKGLEWVSV | IY-SGDST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARQV-RDGDY--GDWFDP------ | WGQGTLVTVSS | 216 |
| XPA-15-020_VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSS-YS | MNWVRQAPGKGLEWVSL | IYRDGST- | TYADSVRGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARES-TR------LRGSYYYGMDV | WGQGTLVTVSS | 215 |
| XPA-15-021_VH | Ab023 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-AW | MSWVRQAPGKGLEWVSA | IGTGGGT- | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AK---SRWLP---YFDY-------- | WGQGTLVTVSS | 193 |
| XPA-15-022_VH | Ab024 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSD-YY | MSWIRRAPGKGLEWVSR | ISWNSGSI | GYADSLKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARER-G---------YGYDY------ | WGQGTLVTVSS | 192 |
| XPA-15-023_VH | Ab025 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSSNY- | MSWVRQAPGKGLEWVSG | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVG-SSGWYY------FDY-------- | WGQGTLVTVSS | 171 |
| XPA-15-026_VH | Ab026 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YV | ISWVRQAPGKGLEWVSA | ISGSGGST | EYPDSVKGRFTISRDNSKNTLYLQMNSLRAEDTAMYYC | ----ARVG-LSGWYY------FDY-------- | WGQGTLVTVSS | 194 |

**Table 2**
**Heavy Chain Sequences**

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-033 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSD-YY | MSWVRQAPGKGLEWVAV | ISYDGSNK | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ------AR--GS------SSFDY------ | WGQGTLVTVSS | 217 |
| XPA-15-036 VH | Ab030 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YS | MNWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARD------SWELLGYDAFDI------ | WGQGTLVTVSS | 220 |
| XPA-15-037 VH | Ab031 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSSNY- | MSWVRQAPGKGLEWVSS | I--SGGST | YYADSRKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARL------DWS------SGAFDI------ | WGQGTLVTVSS | 218 |
| XPA-15-042 VH | Ab027 | EVQLLESGGGLVQ PGGSLGLSCAAS | GFTFNN-YW | MSWVRQAPGKGLEWVSY | ISGSGRTI | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVG-SSGWYY------FDY------ | WGQGTLVTVSS | 219 |
| XPA-15-047 VH | Ab036 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSN-YA | MGWVRQAPGKGLEWVSS | ISGSGGTT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AR------HKGLQ------PLDY------ | WGQGTLVTVSS | 180 |
| XPA-15-048 VH | Ab037 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YE | MNWVRQAPGKGLEWVSS | ISSSSRYA | DVANSVVGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AR------GEWLD------HFDY------ | WGQGTLVTVSS | 195 |
| XPA-15-059 VH | Ab028 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFRN-YW | MTWVRQAPGKGLEWVAN | IKQDGSEK | YYVDSVKGRSTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARQV--G-------GGPFDI------ | WGQGTLVTVSS | 191 |
| XPA-15-064 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSD-YY | MNWVRQAPGKGLEWVAL | ISYDGSNK | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTALYYC | ----AS------QSTAFDI------ | WGQGTLVTVSS | 196 |
| XPA-15-065 VH | Ab038 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSN-YA | MTWVRQAPGKGLEWVSY | IHAGGGT- | HYANSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AROL--HWEG------WGLGFDY--- | WGQGTLVTVSS | 183 |
| XPA-15-066 VH | Ab004 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFRN-FA | MMWVRQAPGKGLEWVSG | ISWNSGSI | GYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARPS--GAYPT------PFDN------ | WGQGTLVTVSS | 223 |

**Table 2**
**Heavy Chain Sequences**

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-068 VH | Ab013 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSSNY - | MSWVRQAPGKGLEWVSG | ISGSGGS T | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVG-SSGWYY-----FDY-------- | WGQGTLVTVSS | 172 |
| XPA-15-074 VH | Ab039 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YW | MSWVRQAPGKGLEWVSG | ISGSGGY T | SYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AKDS--SDWY-------TNS-------- | WGQGTLVTVSS | 222 |
| XPA-15-075 VH | Ab009 | EVQLLESGGGLVQ PWGSLRLSCAAS | GFTFSN-YA | MGWVRQAPGKGLEWVSS | ISGSGGT T | YYADSVKGRFTISRDNSKNTFYLQMNSLRAEDTAVYYC | ----AR-----HKGLQ-----FLDY-------- | WGQGTLVTVSS | 181 |
| XPA-15-077 VH | Ab040 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YW | MSWVRQAPGKGLEWVAV | ISKDGSS T | DYAHSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARDR--DWIP-------GDV-------- | WGQGTLVTVSS | 197 |
| XPA-15-080 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YS | MNWVRQAPGKGLEWVSA | ISGSGGR T | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARDG--IWSA-------MDV-------- | WGQGTLVTVSS | 224 |
| XPA-15-081 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSSNY - | MSWVRQAPGKGLEWVSG | ISGSGGS T | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVG-SSGWYY-----FDY-------- | WGQGTLVTVSS | 173 |
| XPA-15-082 VH | Ab041 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSN-YA | MTWVRQAPGKGLEWVSY | IHAGGGT - | HYANSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARDL--HWEG-------WGLGFDY-- | WGQGTLVTVSS | 186 |
| XPA-15-086 VH | Ab042 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSN-YA | MTWVRQAPGKGLEWVSY | IHAGGGT - | HYANSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARDL--HWEG-------WGLGFDY-- | WGQGTLVTVSS | 184 |
| XPA-15-088 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSN-YN | MQWVRQAPGKGLEWVSG | VSWNGSR T | HYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AREG-GSWDTT-GYYNYYYYG MDV | WGQGTLVTVSS | 187 |
| XPA-15-093 VH | Ab032 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSN-YA | MGWVRQAPGKGLEWVSS | ISGSGGT T | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AR-----HKGLQ-----PLDY-------- | WGQGTLVTVSS | 177 |

**Table 2**
**Heavy Chain Sequences**

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-094_VH | Ab043 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YA | MGWVRQAPGKGLEWVSS | ISGSGGTT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AR----HKGLQ----PLDY------ | WGQGTLVTVSS | 178 |
| XPA-15-096_VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSS-YS | MNWVRQAPGKGLEWVAN | IKQDGRET | YYVDSVTGRFTISRDNSKNTLYLQMNSLRAEDTAMYYC | ----TTDL-GRYYDILTGYYAPNY------ | WGQGTLVTVSS | 198 |
| XPA-15-100_VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YN | MQWVRQAPGKGLEWVSG | VSWNGSRT | HYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARER-GSWDTT-GYYNYYYYGMDV | WGQGTLVTVSS | 188 |
| XPA-15-102_VH | Ab044 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSSNY- | MSWVRQAPGKGLEWVSG | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVG-SSGWYY------FDY------ | WGQGTLVTVSS | 176 |
| XPA-15-105_VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YA | MGWVRQAPGKGLEWVSS | ISGSGGTT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARDH-SSSW------AFDY------ | WGQGTLVTVSS | 199 |
| XPA-15-106_VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YA | MTWVRQAPGKGLEWVSY | IHAGGGT- | HYANSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARDL-HWEG------WGLGFDY-- | WGQGTLVTVSS | 185 |
| XPA-15-110_VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSS-YT | MDWVRQAPGKGLEWVSG | INWNGGST | GYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVK-GYCSST-SCYFDYYYGMDV | WGQGTLVTVSS | 200 |
| XPA-15-111_VH | Ab045 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSS-YW | MSWVRQAPGKCLEWVSG | ISGSGGST | DYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AREL-PAFWS------AFDY------ | WGQGTLVTVSF | 225 |
| XPA-15-115_VH | Ab046 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YA | MGWVRQAPGKGLEWVSS | ISGSGGTT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AR----HKGLQ----PLDY------ | WGQGTLVTVSS | 182 |
| XPA-15-120_VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSS-YW | MSWVRQAPGKGLEWVAN | IKQDGSEK | YYVDSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARQV-G-------GGPFDI------ | WGQGTLVTVSS | 190 |

## Table 2
## Heavy Chain Sequences

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-121 VH | Ab047 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YA | MSWVRQAPGKGLEWVSS | I--SGGST | YYADSRKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARH---ADQWP---GSWFDP------ | WGQGTLVTVSS | 202 |
| XPA-15-122 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFRN-YA | MSWVRQAPGKGLEWVSS | I--SGGST | YYADSRKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AR------GGV---GDWFDP------ | WGQGTLVTVSS | 203 |
| XPA-15-124 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFST-YV | MTWVRQAPGKGLEWVSV | IY-SGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARI---NWND---GGNFDY------ | WGQGTLVTVSS | 201 |
| XPA-15-125 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSD-YY | MSWIRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARG---PVGI---SGNYDY------ | WGQGTLVTVSS | 205 |
| XPA-15-127 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFNK-FA | VHWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ASDV-E-------GGYFHNSGPDH- | WGQGTLVTVSS | 204 |
| XPA-15-133 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YE | MNWVRQAPGKGLEWVAL | ISYDGSNK | DYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTALYYC | --AADLGI--GS-------GYFDY------ | WGQGTLVTVSS | 206 |
| XPA-15-135 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSN-AW | MSWVRQAPGKGLEWVSA | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARD---PGGI---YDYFDY------ | WGQGTLVTVSS | 207 |
| XPA-15-136 VH | Ab001 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YE | MNWVRQAPGKGLEWVSS | ISSSSSYI | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARV---RWYK-DSDAFDI------ | WGQGTLVTVSS | 209 |
| XPA-15-139 VH | Ab018 | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YW | MSWVRQAPGKGLEWVSG | ISGSGGYI | HYADSVKGRFTISRDDSKNTLYLQMNSLRAEDTAVYYC | ----AREG--SGWL-------VDQ------ | WGQGTLVTVSS | 208 |
| XPA-15-140 VH | | EVQLLESGGGLVQ PGGSLRLSCAAS | GFTFSS-YT | MDWVRQAPGKGLEWVSS | ISSSSSYI | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | VREAWREN--NDWYE-------LDY------ | WGQGTLVTVSS | 212 |

**Table 2**
**Heavy Chain Sequences**

| Name | Ab # | H-FR1 | H-CDR1 | H-FR2 | H-CDR2 | H-FR3 | H-CDR3 | H-FR4 | SEQ ID NO: |
|---|---|---|---|---|---|---|---|---|---|
| XPA-15-143 VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YA | MNWVRQAPGKGLEWVAH | INQDGSEK | YYVESVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----GKLR--GG------AYNDY--------- | WGQGTLVTVSS | 210 |
| XPA-15-145 VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSN-YA | MTWVRQSPGKGLEWVSV | ISGSGGTT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AKAK--GS------QVFDY--------- | WGQGTLVTVSS | 211 |
| XPA-15-159 VH | Ab015 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSSNY- | MSWVRQAPGKGLEWVSG | ISGSGGST | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVG-SSGWYY------FDY--------- | WGQGTLVTVSS | 174 |
| XPA-15-163 VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFTN-YN | MIWVRQAPGKGLEWVSG | VSWNGSRT | HYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARER--GSWDTT-GYYNYYYYGMDV | WGQGTLVTVSS | 189 |
| XPA-15-167 VH | | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFDD-YG | MSWVRQAPGKGLEWVSF | ISGSGGST | NYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVG-SSGWYY------FDY--------- | WGQGTLVTVSS | 213 |
| XPA-15-169 VH | Ab034 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSS-YW | MSWVRQAPGKGLEWVSS | I--SGGST | YYADSRKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----AREV--EYSS-SWGAFDI--------- | WGQGTLVTVSS | 214 |
| XPA-15-171 VH | Ab016 | EVQLLESGGGLVQPGGSLRLSCAAS | GFTFSD-YY | MSWIRQAPGKGLEWVSA | ISGSGGGT | YYADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYC | ----ARVG-SSGWYY------FDY--------- | WGQGTLVTVSS | 175 |
| XPA.15.196 | Ab053 | QVQLVQSGAEVKKPGASVKVSCKAS | GYTFTGHY | MHWVRQAPGQGLEWMGW | INPNSGGT | NYAQKFQGRVTMTRDTSISTAYMELSRLRSDDTAVYYC | ARGSSSSWPVYFYYMDV | WGKGSTVTVSS | 303 |

**Table 3**

| Clone No. | Antibody No. | Light Chain SEQ ID NO: | Heavy Chain SEQ ID NO: |
|---|---|---|---|
| XPA.015.172 | | 20 | 151 |
| XPA.015.173 | Ab087 | 18 | 169 |
| XPA.015.174 | | 19 | 170 |
| XPA.015.175 | Ab019 | 1 | 160 |
| XPA.015.176 | Ab088 | 2 | 153 |
| XPA.015.177 | | 3 | 159 |
| XPA.015.178 | Ab089 | 4 | 154 |
| XPA.015.179 | | 5 | 161 |
| XPA.015.181 | Ab010* | 6 | 163 |
| XPA.015.182 | | 7 | 164 |
| XPA.015.183 | Ab020 | 8 | 155 |
| XPA.015.184 | | 9 | 162 |
| XPA.015.185 | Ab003 | 10 | 157 |
| XPA.015.186 | | 11 | 165 |
| XPA.015.187 | | 12 | 166 |
| XPA.015.188 | Ab008 | 13 | 156 |
| XPA.015.189 | | 14 | 152 |
| XPA.015.190 | Ab002 | 15 | 167 |
| XPA.015.191 | | 16 | 168 |
| XPA.015.192 | | 17 | 158 |
| XPA.015.006 | Ab021 | 74 | 288 |
| XPA.015.007 | Ab029 | 52 | 221 |
| XPA.015.009 | Ab022 | 46 | 289 |
| XPA.015.013 | Ab006 | 43 | 179 |
| XPA.015.017 | Ab017 | 45 | 216 |
| XPA.015.019 | | 72 | 290 |
| XPA.015.020 | | 44 | 215 |
| XPA.015.021 | Ab023 | 73 | 193 |
| XPA.015.022 | Ab024 | 71 | 192 |
| XPA.015.023 | Ab025 | 70 | 171 |
| XPA.015.026 | Ab026 | 75 | 194 |
| XPA.015.033 | | 47 | 217 |
| XPA.015.036 | Ab030 | 50 | 220 |
| XPA.015.037 | Ab031 | 48 | 218 |
| XPA.015.042 | Ab027 | 49 | 219 |
| XPA.015.043 | | 76 | 291 |
| XPA.015.047 | Ab036 | 51 | 180 |
| XPA.015.048 | Ab037 | 77 | 195 |
| XPA.015.059 | Ab028 | 79 | 191 |
| XPA.015.062 | | 78 | 292 |
| XPA.015.064 | | 80 | 196 |
| XPA.015.065 | Ab038 | 83 | 183 |
| XPA.015.066 | Ab004 | 57 | 223 |
| XPA.015.068 | Ab013 | 81 | 172 |
| XPA.015.074 | Ab039 | 53 | 222 |
| XPA.015.075 | Ab009 | 55 | 181 |
| XPA.015.077 | Ab040 | 84 | 197 |

**Table 3**

| | | | |
|---|---|---|---|
| XPA.015.080 | | 58 | 224 |
| XPA.015.081 | | 82 | 173 |
| XPA.015.082 | Ab041 | 56 | 186 |
| XPA.015.085 | Ab011 | 54 | 293 |
| XPA.015.086 | Ab042 | 85 | 184 |
| XPA.015.088 | | 86 | 187 |
| XPA.015.093 | Ab032 | 21 | 177 |
| XPA.015.094 | Ab043 | 23 | 178 |
| XPA.015.096 | | 22 | 198 |
| XPA.015.099 | | 59 | 294 |
| XPA.015.100 | | 26 | 188 |
| XPA.015.102 | Ab044 | 60 | 176 |
| XPA.015.105 | | 97 | 199 |
| XPA.015.106 | | 24 | 185 |
| XPA.015.110 | | 148 | 200 |
| XPA.015.111 | Ab045 | 62 | 225 |
| XPA.015.115 | Ab046 | 61 | 182 |
| XPA.015.120 | | 149 | 190 |
| XPA.015.121 | Ab047 | 28 | 202 |
| XPA.015.122 | | 29 | 203 |
| XPA.015.124 | | 27 | 201 |
| XPA.015.125 | | 31 | 205 |
| XPA.015.127 | | 30 | 204 |
| XPA.015.133 | | 32 | 206 |
| XPA.015.135 | | 33 | 207 |
| XPA.015.138 | Ab001 | 35 | 209 |
| XPA.015.139 | Ab018 | 34 | 208 |
| XPA.015.140 | | 39 | 212 |
| XPA.015.141 | | 37 | 295 |
| XPA.015.142 | | 63 | 296 |
| XPA.015.143 | | 36 | 210 |
| XPA.015.144 | Ab033 | 65 | 297 |
| XPA.015.145 | | 38 | 211 |
| XPA.015.146 | | 64 | 298 |
| XPA.015.154 | | 66 | 299 |
| XPA.015.155 | | 68 | 300 |
| XPA.015.158 | Ab014 | 67 | 301 |
| XPA.015.159 | Ab015 | 40 | 174 |
| XPA.015.163 | | 150 | 189 |
| XPA.015.165 | Ab049 | 69 | 302 |
| XPA.015.167 | | 41 | 213 |
| XPA.015.169 | Ab034 | 42 | 214 |
| XPA.015.171 | Ab016 | 151 | 175 |
| XPA.015.193 | Ab050 | 87 | 226 |
| XPA.015.194 | Ab051 | 88 | 227 |
| XPA.015.195 | Ab052 | 89 | 228 |
| XPA.015.196 | Ab053 | 90 | 229 (303) |
| XPA.015.197 | Ab054 | 91 | 230 |
| XPA.015.198 | Ab055 | 92 | 231 |
| XPA.015.199 | Ab056 | 93 | 232 |

**Table 3**

| | | | |
|---|---|---|---|
| XPA.015.200 | Ab057 | 94 | 233 |
| XPA.015.201 | | 95 | --- |
| XPA.015.202 | Ab058 | 96 | 234 |
| XPA.015.203 | | 97 | 235 |
| XPA.015.204 | Ab059 | 98 | 236 |
| XPA.015.205 | | 99 | 237 |
| XPA.015.206 | | 100 | 238 |
| XPA.015.207 | Ab060 | 101 | 239 |
| XPA.015.208 | | 102 | 240 |
| XPA.015.209 | Ab061 | 103 | 241 |
| XPA.015.210 | | --- | 242 |
| XPA.015.211 | Ab062 | 104 | 243 |
| XPA.015.212 | Ab063 | 105 | 244 |
| XPA.015.213 | Ab064 | 106 | 245 |
| XPA.015.214 | Ab065 | 107 | 246 |
| XPA.015.215 | Ab066 | 108 | 247 |
| XPA.015.216 | Ab067 | 109 | 248 |
| XPA.015.217 | Ab068 | 110 | 249 |
| XPA.015.218 | | 111 | 250 |
| XPA.015.219 | Ab086 | 112 | 251 |
| XPA.015.220 | | 113 | 252 |
| XPA.015.221 | | 114 | 253 |
| XPA.015.222 | Ab069 | 115 | 254 |
| XPA.015.223 | | 116 | 255 |
| XPA.015.224 | | 117 | 256 |
| XPA.015.225 | | 118 | 257 |
| XPA.015.226 | Ab070 | 119 | 258 |
| XPA.015.227 | Ab071 | 120 | 259 |
| XPA.015.228 | Ab072 | 121 | 260 |
| XPA.015.229 | Ab073 | 122 | 261 |
| XPA.015.230 | Ab074 | 123 | 262 |
| XPA.015.231 | | 124 | 263 |
| XPA.015.232 | Ab075 | 125 | 264 |
| XPA.015.233 | | 126 | 265 |
| XPA.015.234 | | 127 | 266 |
| XPA.015.235 | | 128 | 267 |
| XPA.015.236 | | 129 | 268 |
| XPA.015.237 | | 130 | 269 |
| XPA.015.238 | | 131 | 270 |
| XPA.015.239 | | 132 | 271 |
| XPA.015.240 | | --- | 272 |
| XPA.015.241 | Ab076 | 133 | 273 |
| XPA.015.242 | | 134 | 274 |
| XPA.015.243 | Ab077 | 135 | 275 |
| XPA.015.244 | Ab078 | 136 | 276 |
| XPA.015.245 | Ab079 | 137 | 277 |
| XPA.015.246 | Ab080 | 138 | 278 |
| XPA.015.247 | Ab081 | 139 | 279 |
| XPA.015.248 | Ab082 | 140 | 280 |
| XPA.015.249 | Ab083 | 141 | 281 |

**Table 3**

| | | | |
|---|---|---|---|
| XPA.015.250 | Ab084 | 142 | 282 |
| XPA.015.272 | | 143 | 283 |
| XPA.015.275 | Ab085 | 144 | 284 |
| XPA.015.282 | | 145 | 285 |
| XPA.015.284 | | 146 | 286 |
| XPA.015.293 | | 147 | 287 |