Figure 1

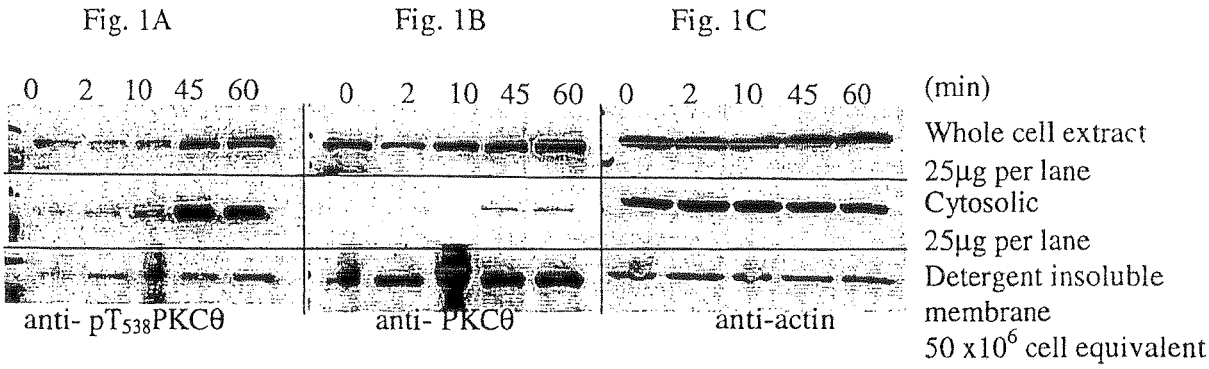

Fig. 1A
Fig. 1B
Fig. 1C
0 2 10 45 60
0 2 10 45 60
0 2 10 45 60
(min)
Whole cell extract
25µg per lane
Cytosolic
25µg per lane
Detergent insoluble
membrane
50 x10^6 cell equivalent
anti- pT538PKCθ
anti- PKCθ
anti-actin

Figure 2

Fig. 2A.

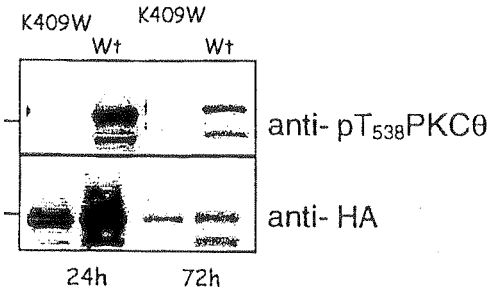



Fig. 2B.

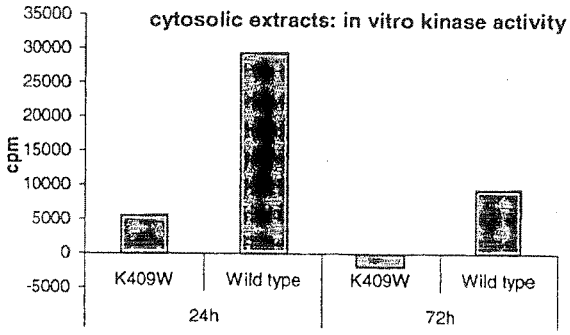



Fig. 2C.

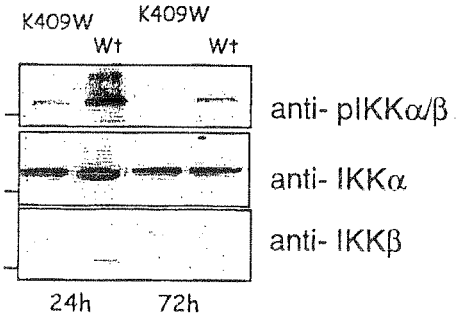


Fig. 3A

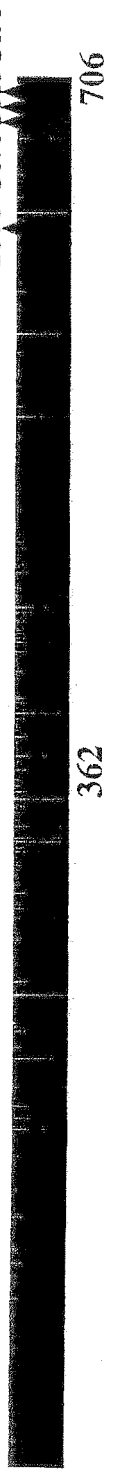

T538
S676
S685
S695
706
362

Fig. 3B


MS/MS of m/z 705.52(2+)
(M+2H-H3PO4)2+
656.40
693
N-F-pS-F-M-N-P-G-M-E-R
703
y9
y8
y7
y6
y5
y4
b2
b3
b6
b10
y5
589.20
b6-H3PO4
b6
821.09
y7
834.24
723.12
b3-H3PO4
b3
492.12
429.13
b3-H3PO4
b2
331.14
262.01
y8
981.21
y9-H3PO4
y9
1148.24
1050.27
b10
1236.16
803.98
Relative Abundance
m/z
0
20
40
60
80
100
400
600
800
1000
1200

Fig. 3C

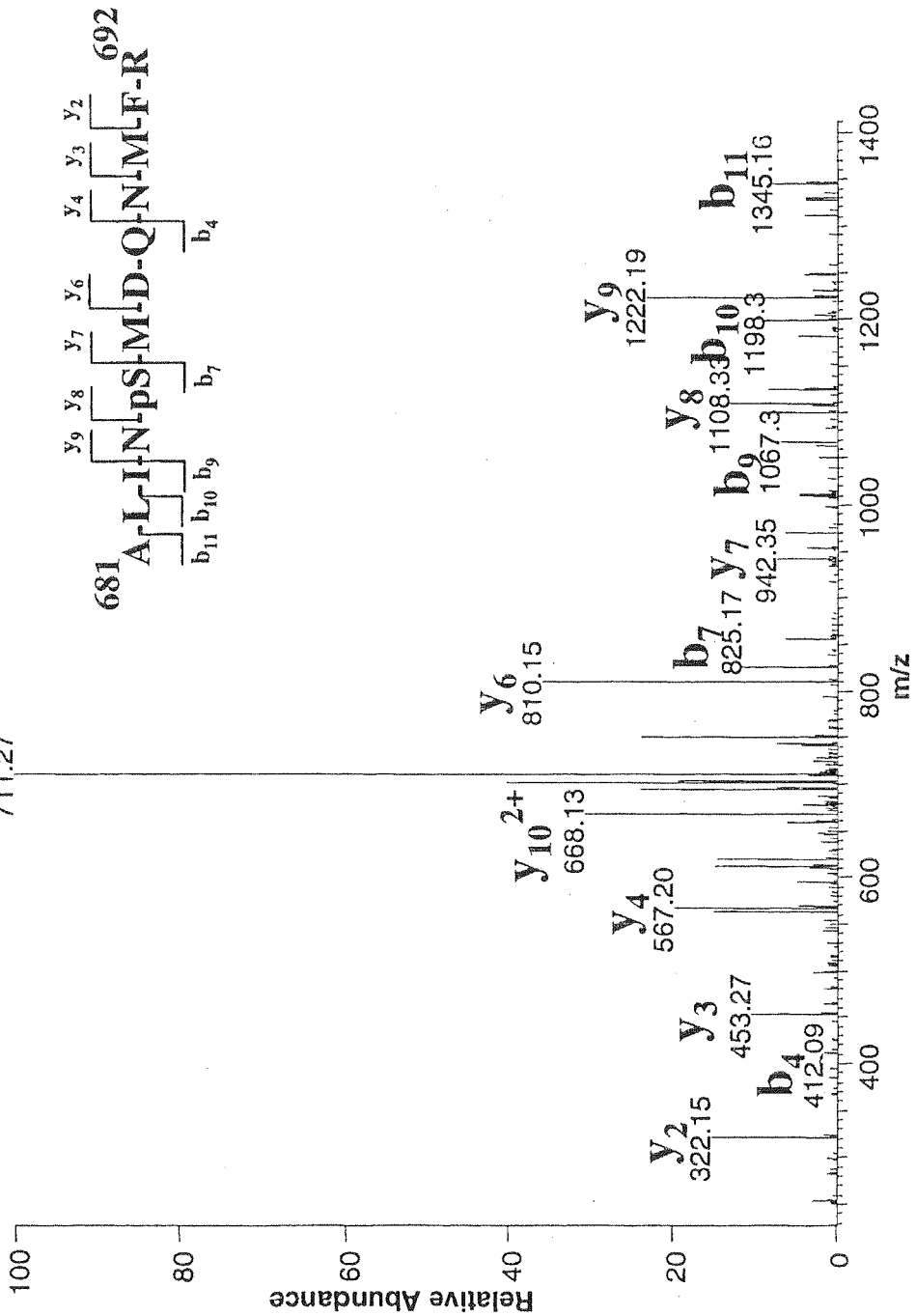
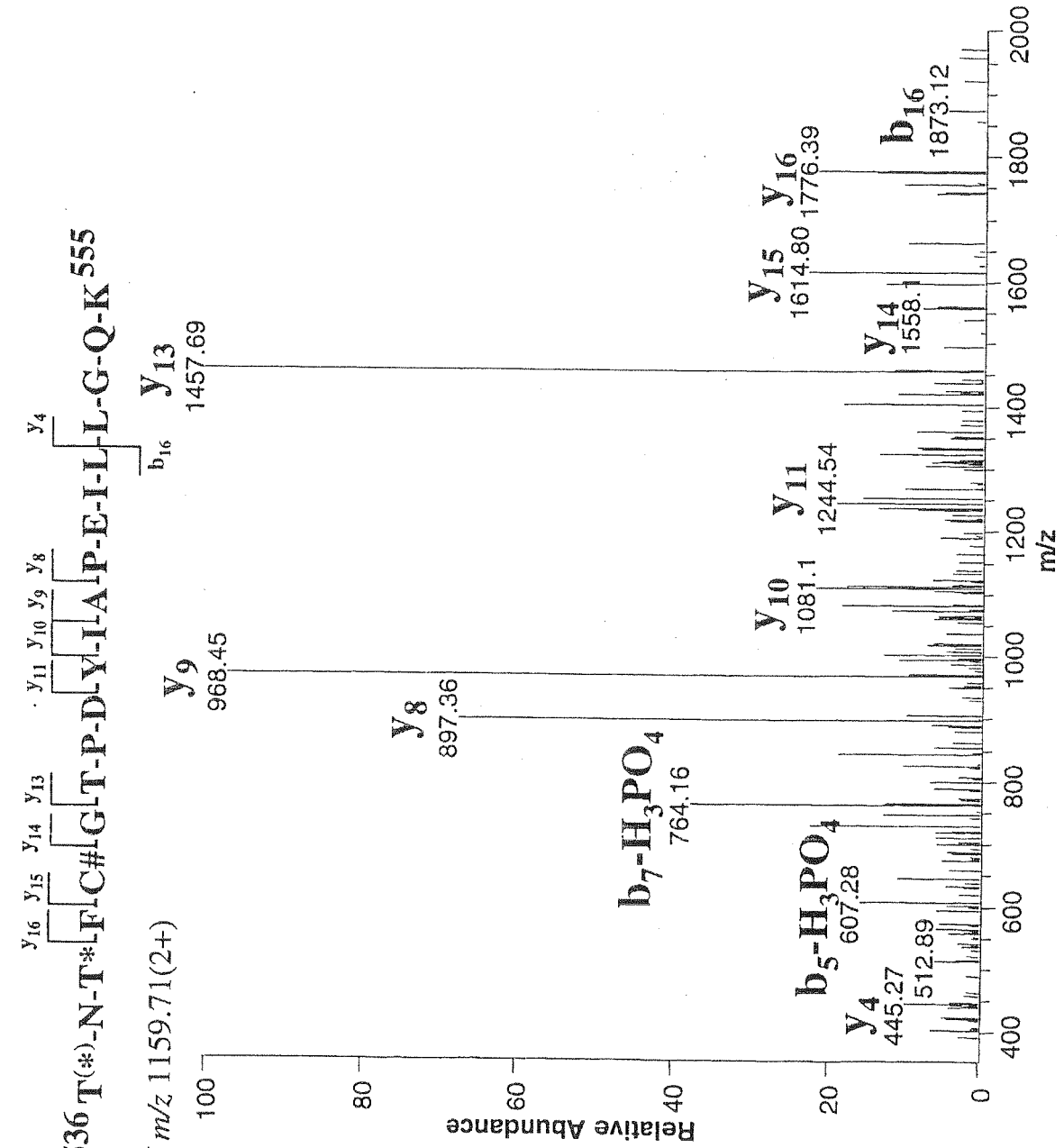

MS/MS of m/z 760.48(2+)
(M+2H-H3PO4)2+
711.27
681
A-L-I-N-pS-M-D-Q-N-M-F-R
692
y9 y8 y7 y6 y4 y3 y2
b11 b10 b9 b7 b4
y6
810.15
y10 2+
668.13
y4
567.20
y3
453.27
b4
412.09
y2
322.15
b7
825.17
y7
942.35
b9
1067.3
y8
1108.3
b10
1198.3
y9
1222.19
b11
1345.16
Relative Abundance
m/z
0
20
40
60
80
100
400
600
800
1000
1200
1400

Fig. 3D


MS/MS of m/z 1159.71(2+)
536 T(*)-N-T*-F-C#-G-T-P-D-Y-I-A-P-E-I-L-L-G-Q-K 555
y16 y15 y14 y13 y11 y10 y9 y8 y4
b16
Relative Abundance
m/z
y9 968.45
y8 897.36
b7-H3PO4 764.16
b5-H3PO4 607.28
y4 445.27
512.89
y13 1457.69
y10 1081.1
y11 1244.54
y15 1614.80
y16 1776.39
y14 1558.1
b16 1873.12

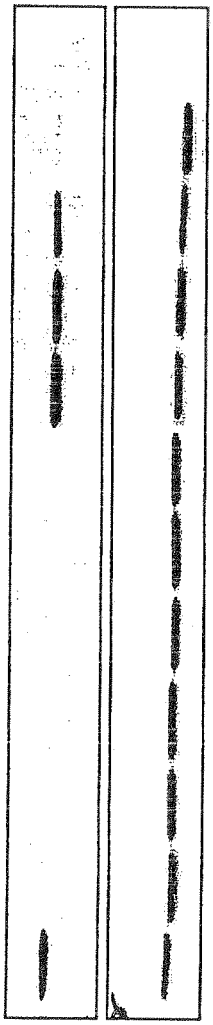



Fig. 4A




Fig. 4B

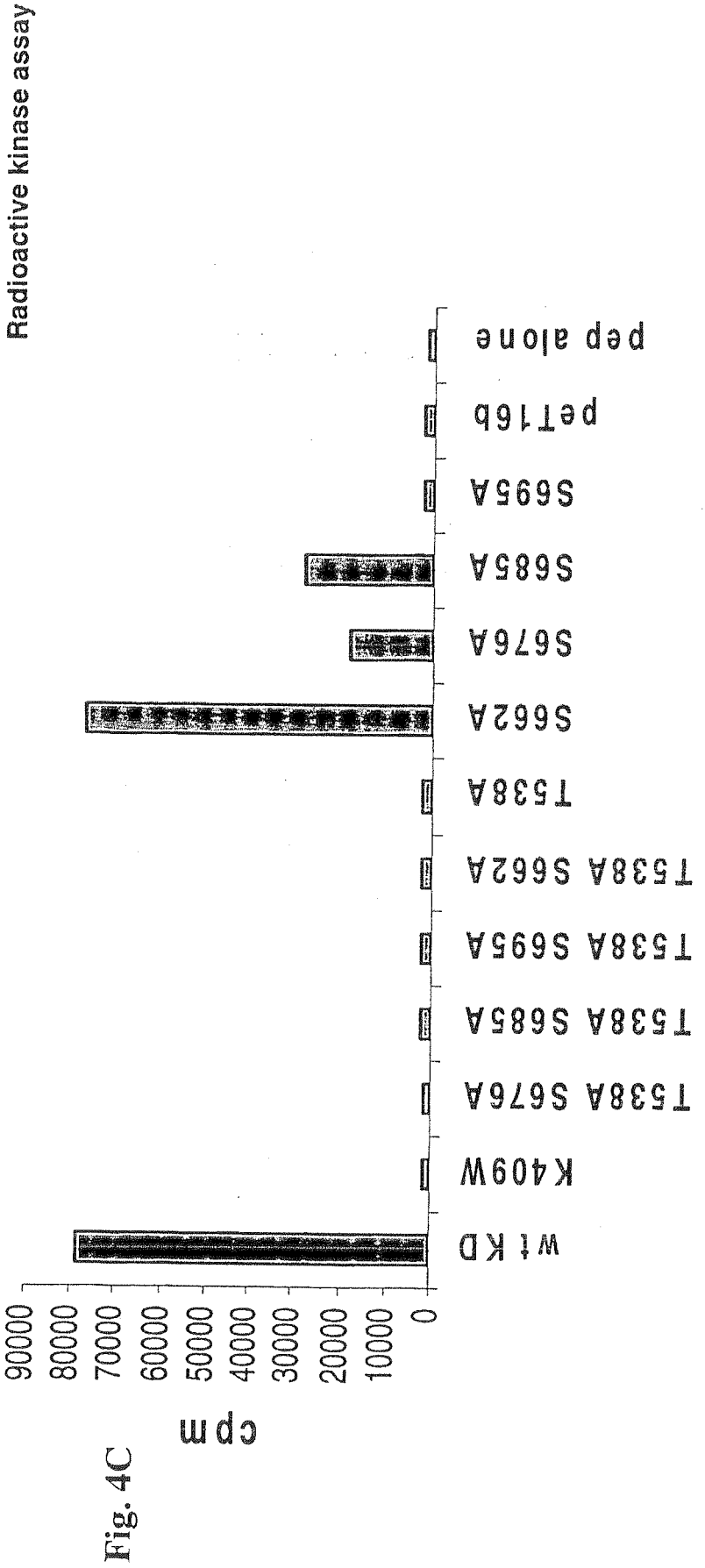



Fig. 4C

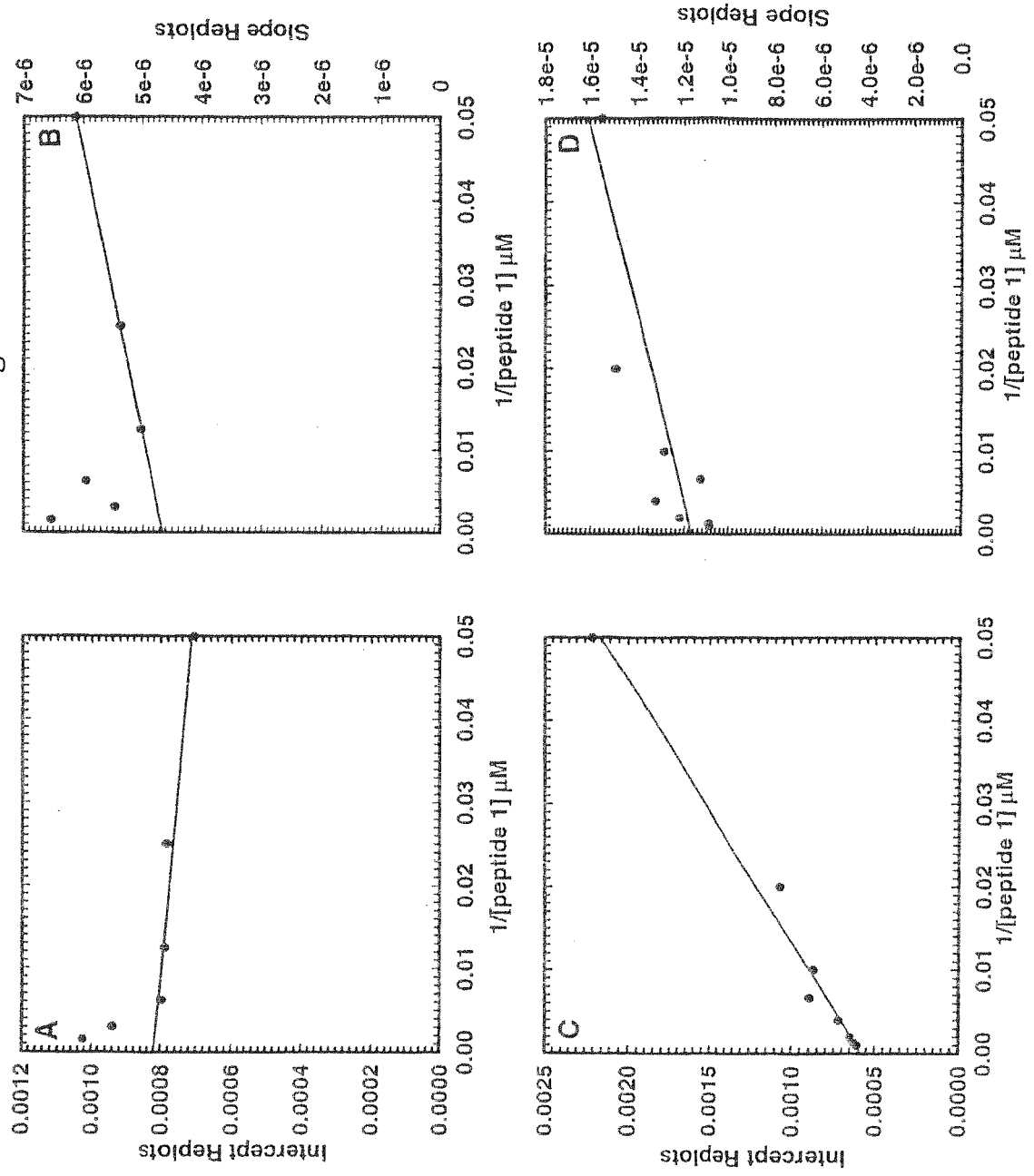


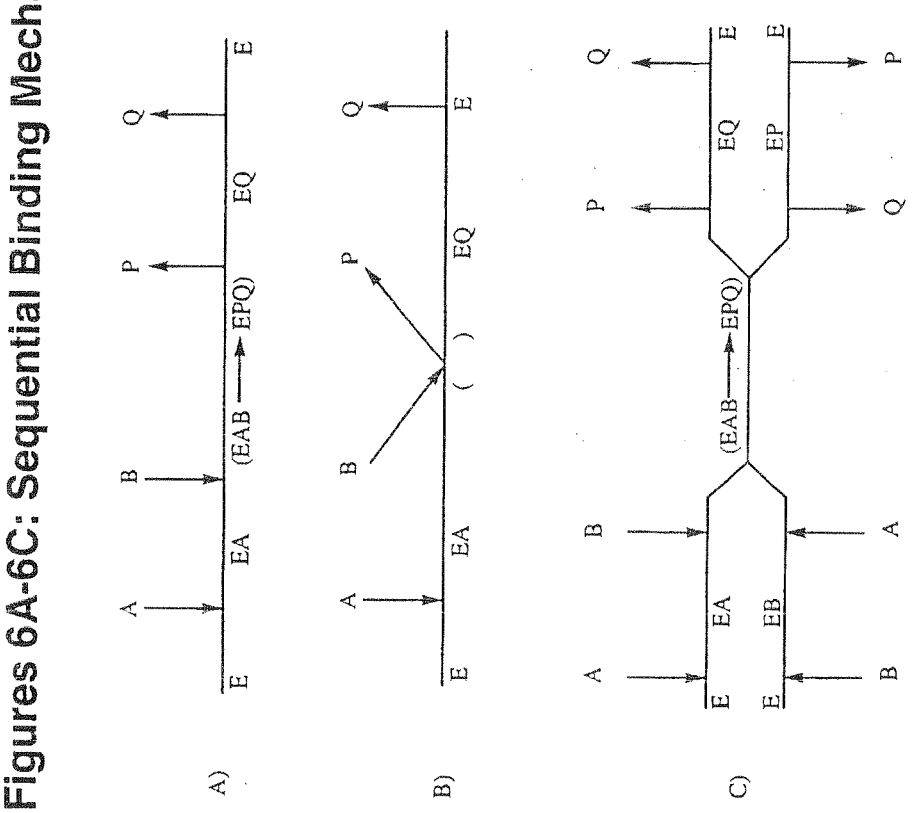

Fig. 5A

Fig. 5B

Fig. 5C

Fig. 5D

# Figures 6A-6C: Sequential Binding Mechanisms



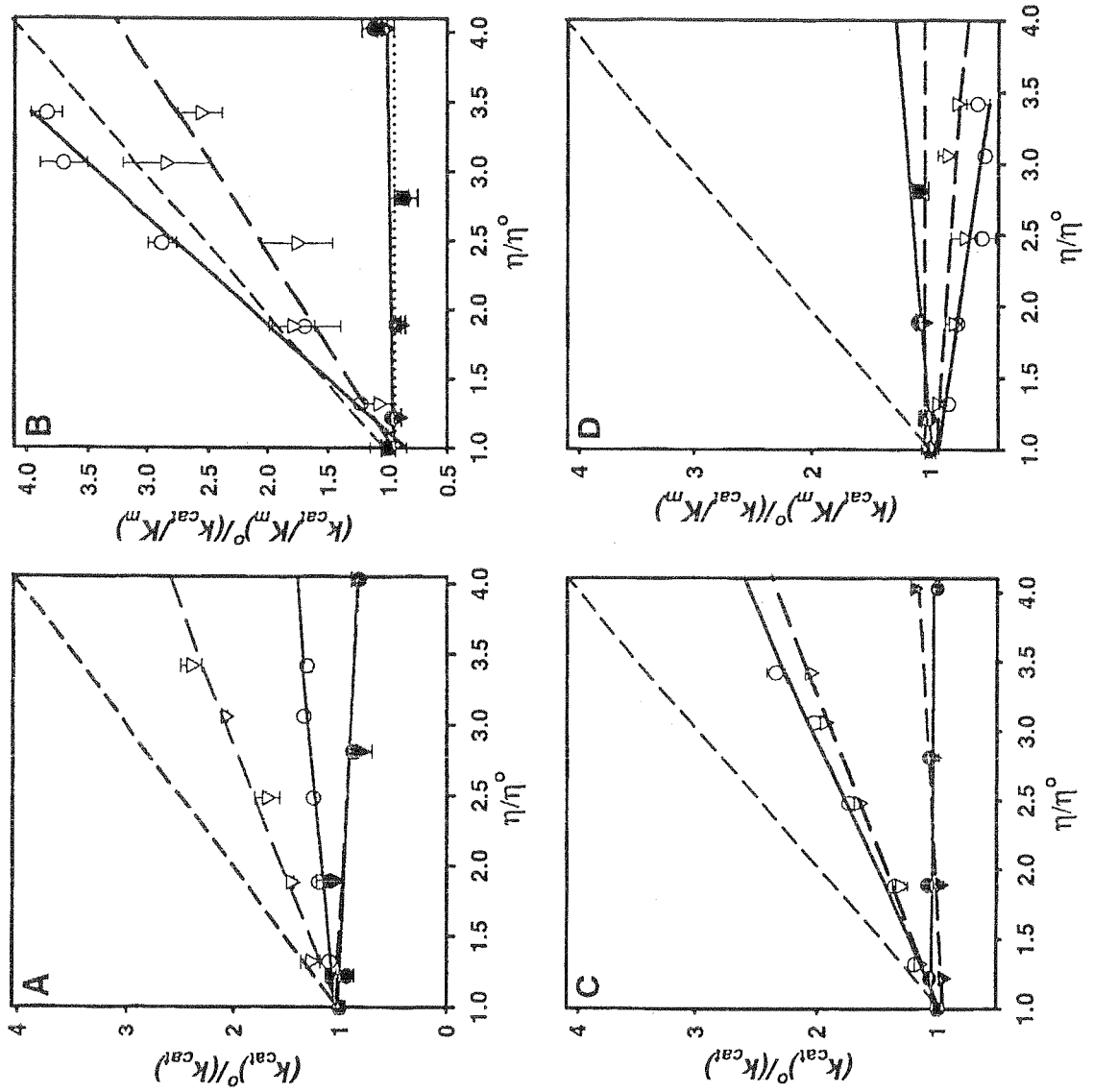



Figure 7

Figure 8: Mechanisms substrate inhibition

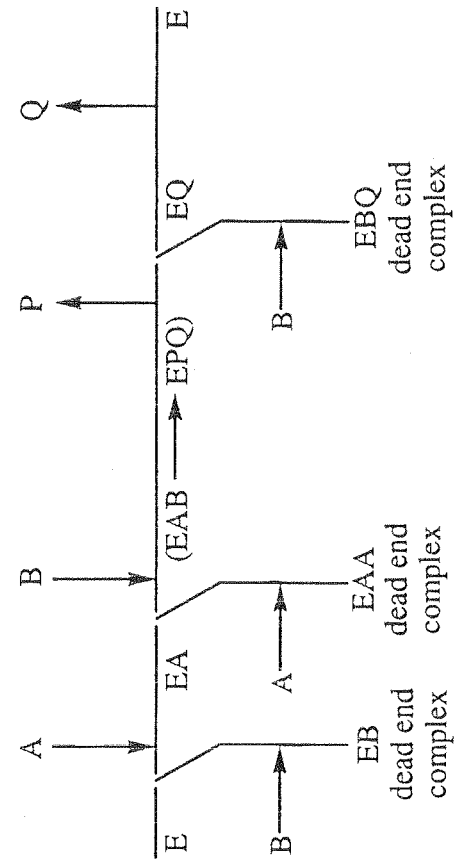


Figure 9

Figure 9A

Phosphorylation of Peptide Arrays by PKC θ

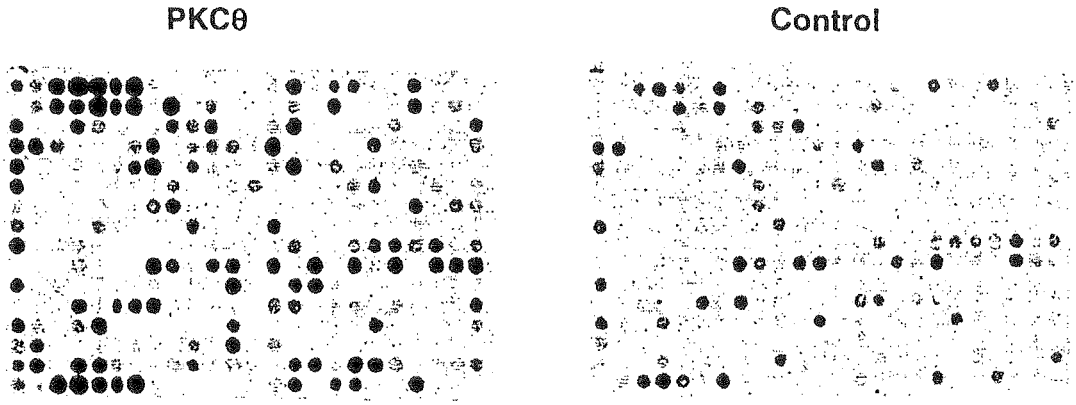
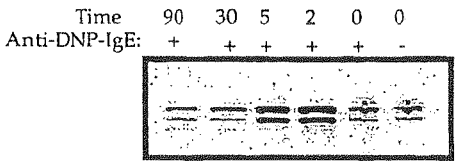



Figure 9B

Peptides Phosphorylated by PKC θ

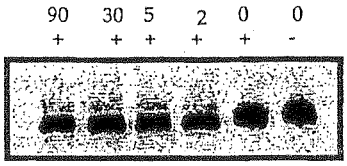
| | |
|---|---|
| Upstate (MBP) | QKRPSQRSKYL |
| MBP_HUMAN_1 | SQKRPSQRHGS |
| VTNC_HUMAN | NSRRPSRATWL |
| B1AR_HUMAN_1 | GKRRPSRLVAL |
| RYR1_HUMAN_3 | RLRRLTAREAA |
| CIC2_HUMAN_1 | DIKRLTPRFTL |
| EP42_HUMAN | NKRRGSVPILR |
| ST24_HUMAN | NKRRATLPHPG |
| ATHA_HUMAN | KTRRLSAFQQG |
| F263_HUMAN_1 | LMRRNSVTPLA |
| KPYR_HUMAN | YLRRASVAQLT |
| MypC_Human_1 | AFRRTSLAGGG |
| Glycogen Synth. | LSRTLSVAAKK |
| DCX_HUMAN_13 | PTSPGSLRKHK |
| PTN1_HUMAN_2 | RVVGGSLRGAQ |
| Calbiochem (PKCα) | FARKGSLRQKN |
| E2K2_HUMAN_3 | TRSKGTLRYMS |
| ACM1_HUMAN_2 | PKRPGSVHRTP |
| CIQ2_human | APKRGSILSKP |
| BAD_HUMAN_3 | RGRSRSAPPNL |
| CCAC_HUMAN_2 | RGFLRSASLGR |
| NPT2_HUMAN | ALGKRTAKYRW |
| K6PF_HUMAN | ITRKRSGEAAV |
| TFR1_HUMAN | SYTRFSLARQV |
| MARCKS | KKRFSFKKSFK |
| ADDA_HUMAN_6 | KFRTPSFLKKS |
| >Selectide | KIOASFRGHMA |

Figure 10




anti-$pT_{538}$PKCθ

Fig. 10A




anti-PKCθ

Fig. 10B

Figure 11

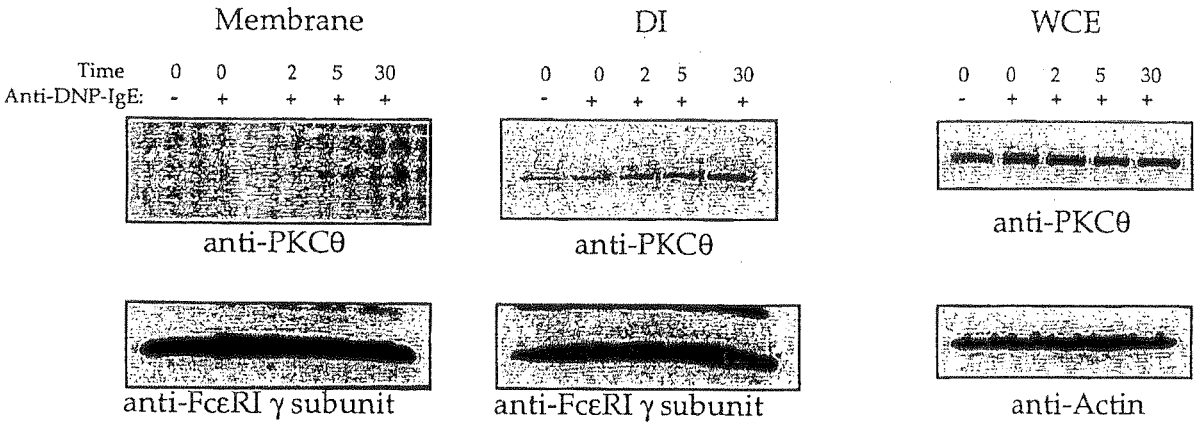



Fig. 11A Fig. 11B Fig. 11C

Figure 12

Fig. 12A

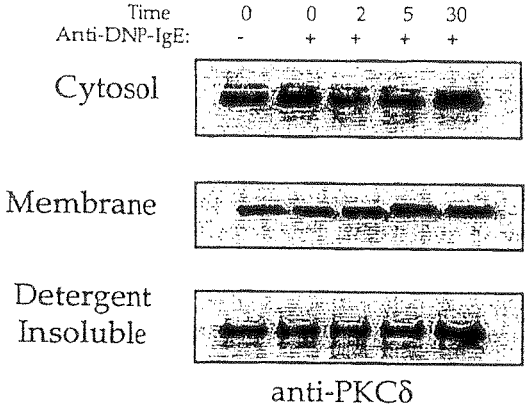



Fig. 12B

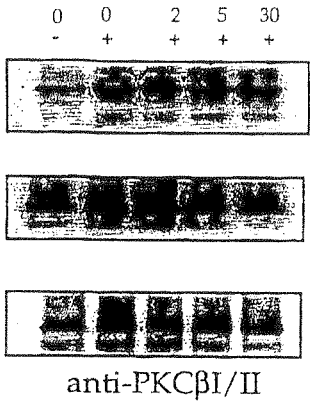


Figure 13

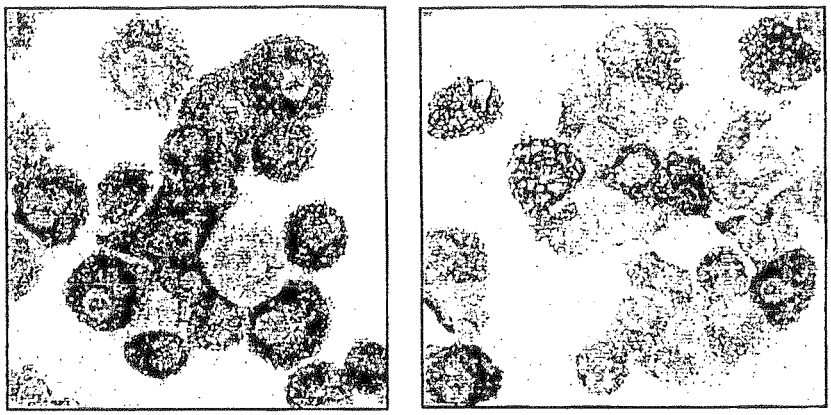
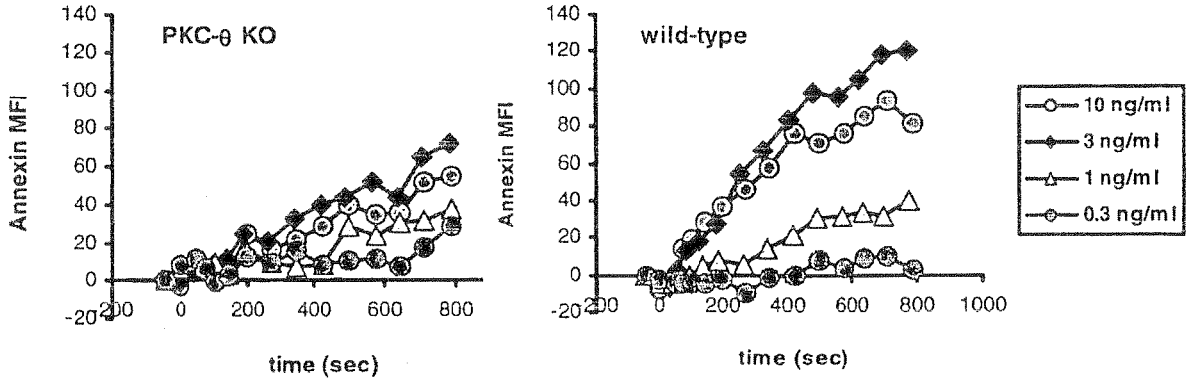



Fig. 13A

Fig. 13B



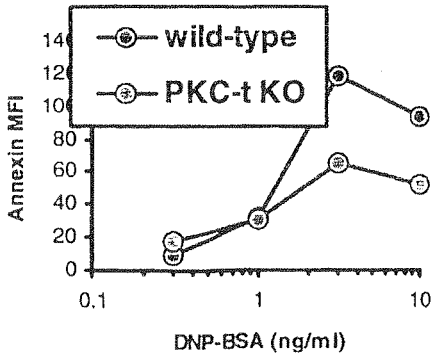



Figure 14

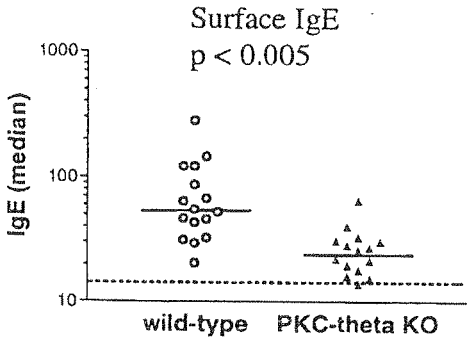



Fig. 14A

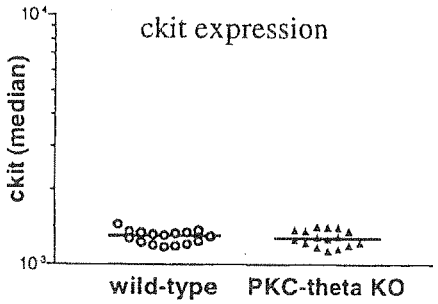
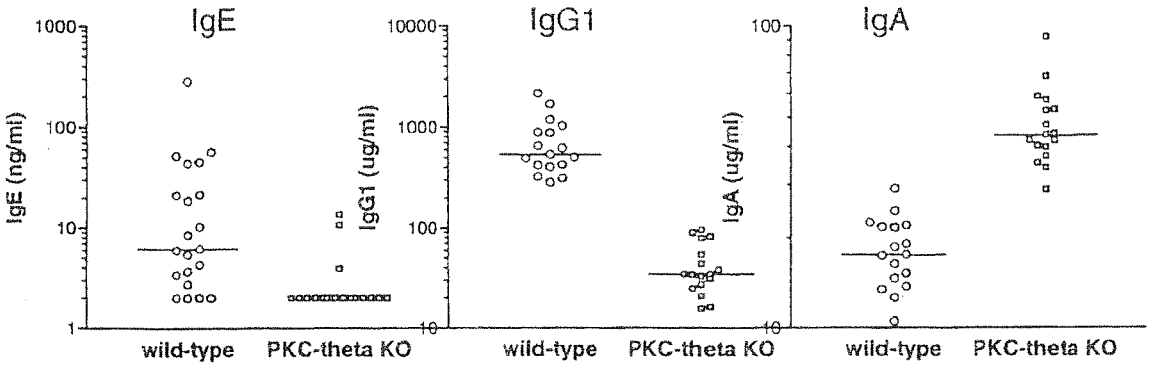



Fig. 14B

Figure 15

Fig. 15A Fig. 15B Fig. 15C




$p < 0.0005$ $p < 0.0001$ $p < 0.0001$

Figure 16

Fig. 16A

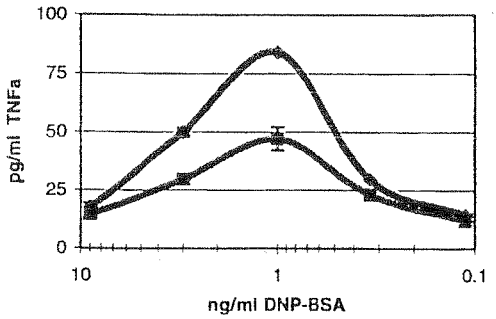



Fig. 16B

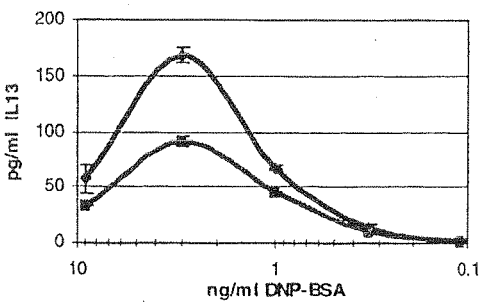
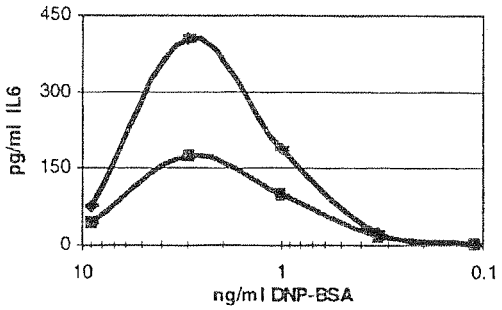



FIG 16C



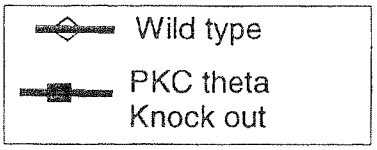



Figure 17

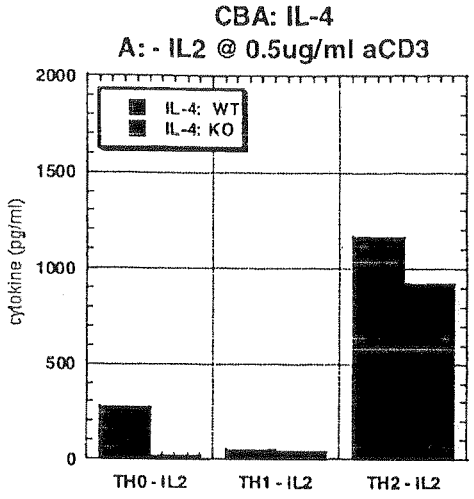



Fig. 17A

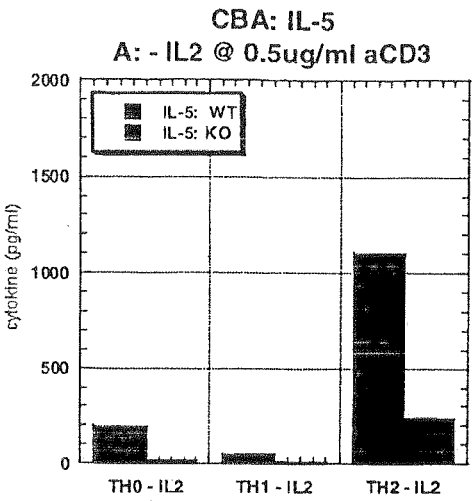



Fig. 17B

Figure 18

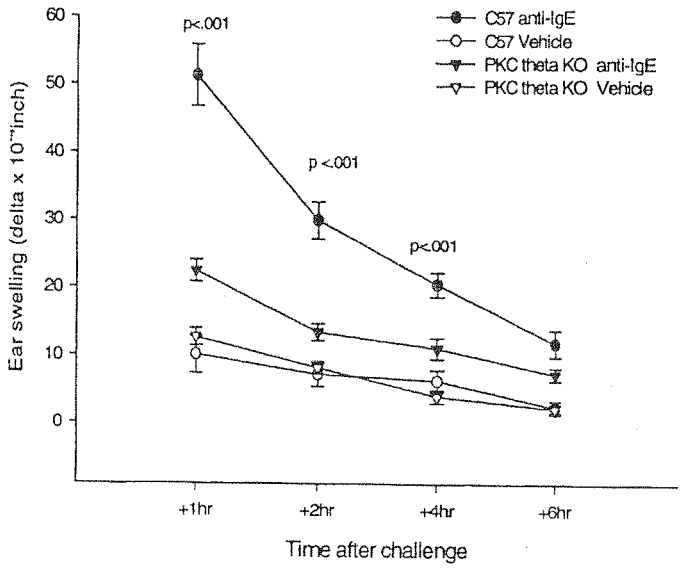
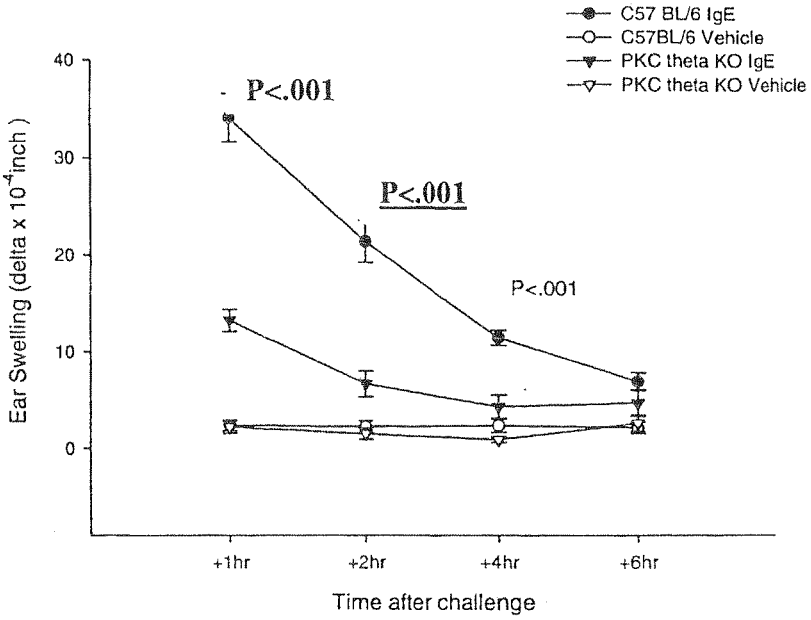
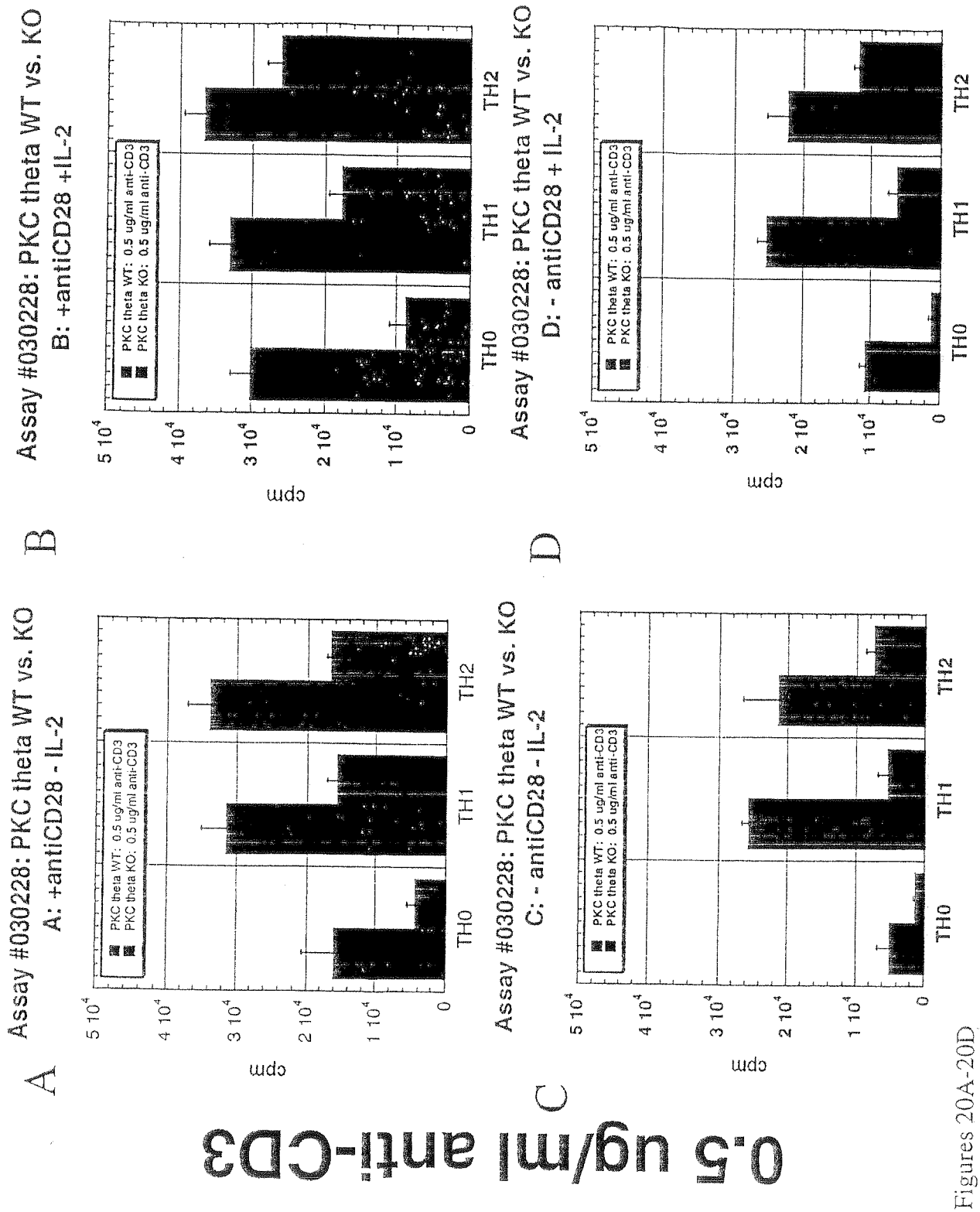
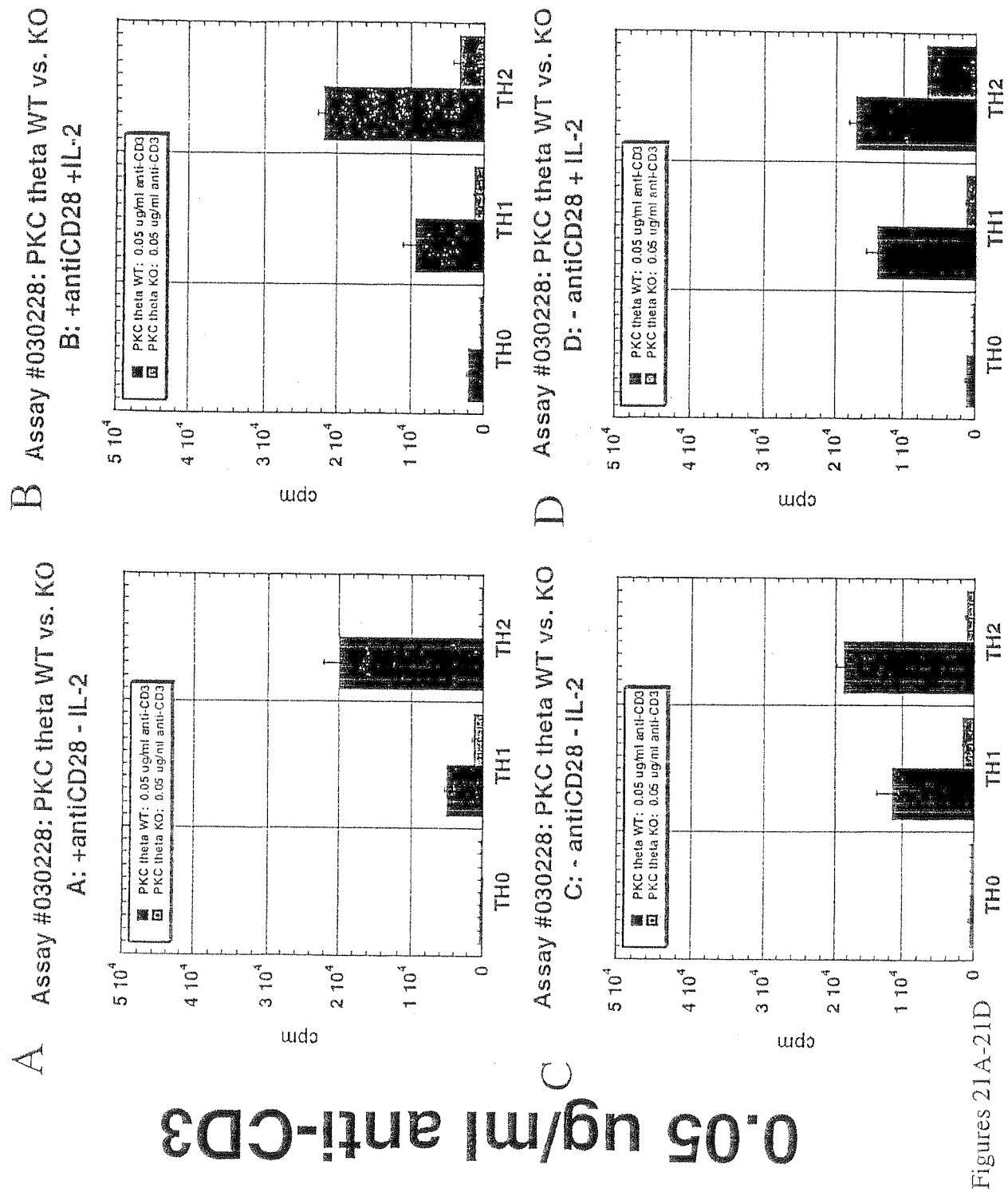

C57 anti-IgE
C57 Vehicle
PKC theta KO anti-IgE
PKC theta KO Vehicle
p<.001
p <.001
p<.001
Ear swelling (delta x 10"inch)
60
50
40
30
20
10
0
+1hr
+2hr
+4hr
+6hr
Time after challenge

Figure 19


C57 BL/6 IgE
C57BL/6 Vehicle
PKC theta KO IgE
PKC theta KO Vehicle
P<.001
P<.001
P<.001
Ear Swelling (delta x 10-4inch )
40
30
20
10
0
+1hr
+2hr
+4hr
+6hr
Time after challenge




Figures 20A-20D




Figures 21A-21D

# METHODS OF TREATING ASTHMA (Attorney Docket No. 36119.143 WO)

SEQ ID NO: 1
GenBank: NM_006257

human PKC-theta

MSPFLRIGLSNFDCGSCQSCQGEAVNPYCAVLVKEYVESENGQM
YIQKKPTMYPPWDSTFDAHINKGRVMQIIVKGKNVDLISETTVELYSLAERCRKNNGK
TEIWLELKPQGRMLMNARYFLEMSDTKDMNEFETEGFFALHQRRGAIKQAKVHHVKCH
EFTATFFPQPTFCSVCHEFVWGLNKQGYQCRQCNAAIHKKCIDKVIAKCTGSAINSRE
TMFHKERFKIDMPHRFKVYNYKSPTFCEHCGTLLWGLARQGLKCDACGMNVHHRCQTK
VANLCGINQKLMAEALAMIESTQQARCLRDTEQIFREGPVEIGLPCSIKNEARPPCLP
TPGKREPQGISWESPLDEVDKMCHLPEPELNKERPSLQIKLKIEDFILHKMLGKGSFG
KVFLAEFKKTNQFFAIKALKKDVVLMDDDVECTMVEKRVLSLAWEHPFLTHMFCTFQT
KENLFFVMEYLNGGDLMYHIQSCHKFDLSRATFYAAEIILGLQFLHSKGIVYRDLKLD
NILLDKDGHIKIADFGMCKENMLGDAKTNTFCGTPDYIAPEILLGQKYNHSVDWWSFG
VLLYEMLIGQSPFHGQDEEELFHSIRMDNPFYPRWLEKEAKDLLVKLFVREPEKRLGV
RGDIRQHPLFREINWEELERKEIDPPFRPKVKSPFDCSNFDKEFLNEKPRLSFADRAL
INSMDQNMFRNFSFMNPGMERLIS

SEQ ID NO: 3
Human PKC-theta Nucleotide

1 tgctcgctcc agggcgcaac catgtcgcca tttcttcgga ttggcttgtc caactttgac
61 tgcgggtcct gccagtcttg tcagggcgag gctgttaacc cttactgtgc tgtgctcgtc
121 aaagagtatg tcgaatcaga gaacgggcag atgtatatcc agaaaaagcc taccatgtac
181 ccaccctggg acagcacttt tgatgcccat atcaacaagg gaagagtcat gcagatcatt
241 gtgaaaggca aaaacgtgga cctcatctct gaaaccaccg tggagctcta ctcgctggct
301 gagaggtgca ggaagaacaa cgggaagaca gaaatatggt tagagctgaa acctcaaggc
361 cgaatgctaa tgaatgcaag atactttctg gaaatgagtg acacaaagga catgaatgaa
421 tttgagacgg aaggcttctt tgctttgcat cagcgccggg gtgccatcaa gcaggcaaag
481 gtccaccacg tcaagtgcca cgagttcact gccaccttct tcccacagcc cacattttgc
541 tctgtctgcc acgagtttgt ctggggcctg aacaaacagg gctaccagtg ccgacaatgc
601 aatgcagcaa ttcacaagaa gtgtattgat aaagttatag caaagtgcac aggatcagct
661 atcaatagcc gagaaaccat gttccacaag gagagattca aaattgacat gccacacaga
721 tttaaagtct acaattacaa gagcccgacc ttctgtgaac actgtgggac cctgctgtgg
781 ggactggcac ggcaaggact caagtgtgat gcatgtggca tgaatgtgca tcatagatgc
841 cagacaaagg tggccaacct ttgtggcata aaccagaagc taatggctga agcgctggcc
901 atgattgaga gcactcaaca ggctcgctgc ttaagagata ctgaacagat cttcagagaa
961 ggtccggttg aaattggtct cccatgctcc atcaaaaatg aagcaaggcc gccatgttta

1021 ccgacaccgg gaaaaagaga gcctcagggc atttcctggg agtctccgtt ggatgaggtg
1081 gataaaatgt gccatcttcc agaacctgaa ctgaacaaag aaagaccatc tctgcagatt
1141 aaactaaaaa ttgaggattt tatcttgcac aaaatgttgg ggaaaggaag ttttggcaag
1201 gtcttcctgg cagaattcaa gaaaaccaat caatttttcg caataaaggc cttaaagaaa
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1621 gccaagacga ataccttctg tgggacacct gactacatcg ccccagagat cttgctgggt
1681 cagaaataca accactctgt ggactggtgg tccttcgggg ttctccttta tgaaatgctg
1741 attggtcagt cgcctttcca cgggcaggat gaggaggagc tcttccactc catccgcatg
1801 gacaatccct tttacccacg gtggctggag aaggaagcaa aggaccttct ggtgaagctc
1861 ttcgtgcgag aacctgagaa gaggctgggc gtgaggggag acatccgcca gcacccttg
1921 tttcgggaga tcaactggga ggaacttgaa cggaaggaga ttgacccacc gttccggccg
1981 aaagtgaaat caccatttga ctgcagcaat ttcgacaaag aattcttaaa cgagaagccc
2041 cggctgtcat ttgccgacag agcactgatc aacagcatgg accagaatat gttcaggaac
2101 ttttccttca tgaaccccgg gatggagcgg ctgatatcct gaatcttgcc cctccagaga
2161 caggaaagaa tttgccttct ccctgggaac tggttcaaga gacactgctt gggttccttt
2221 ttcaacttgg aaaaagaaag aaacactcaa caataaagac tgagacccgt tcgcccccat
2281 gtgactttat ctgtagcaga aaccaagtct acttcactaa tgacgatgcc gtgtgtctcg
2341 tctcctgaca tgtctcacag acgctcctga agttaggtca ttactaacca tagttattta
2401 cttgaaagat gggtctccgc acttggaaag gtttcaagac ttgatactgc aataaattat
2461 ggctcttcac ctgggcgcca actgctgatc aacgaaatgc ttgttgaatc aggggcaaac
2521 ggagtacaga cgtctcaaga ctgaaacggc cccattgcct ggtctagtag cggatctcac
2581 tcagccgcag acaagtaatc actaacccgt tttattctat cctatctgtg gatgtataaa
2641 tgctgggggc cagccctgga taggttttta tgggaattct ttacaataaa catagcttgt
2701 acttg//

SEQ ID NO: 2

NM_008859

Murine PKC-theta amino acid sequence

MSPFLRIGLSNFDCGTCQACQGEAVNPYCAVLVKEYVESENGQM
YIQKKPTMYPPWDSTFDAHINKGRVMQIIVKGKNVDLISETTVELYSLAERCRKNNGR
TEIWLELKPQGRMLMNARYFLEMSDTKDMSEFENEGFFALHQRRGAIKQAKVHHVKCH
EFTATFFPQPTFCSVCHEFVWGLNKQGYQCRQCNAAIHKKCIDKVIAKCTGSAINSRE
TMFHKERFKIDMPHRFKVYNYKSPTFCEHCGTLLWGLARQGLKCDACGMNVHHRCQTK
VANLCGINQKLMAEALAMIESTQQARSLRDSEHIFREGPVEIGLPCSTKNETRPPCVP
TPGKREPQGISWDSPLDGSNKSAGPPEPEVSMRRTSLQLKLKIDDFILHKMLGKGSFG
KVFLAEFKRTNQFFAIKALKKDVVLMDDDVECTMVEKRVLSLAWEHPFLTHMFCTFQT
KENLFFVMEYLNGGDLMYHIQSCHKFDLSRATFYAAEVILGLQFLHSKGIVYRDLKLD
NILLDRDGHIKIADFGMCKENMLGDAKTNTFCGTPDYIAPEILLGQKYNHSVDWWSFG
VLVYEMLIGQSPFHGQDEEELFHSIRMDNPFYPRWLEREAKDLLVKLFVREPEKRLGV
RGDIRQHPLFREINWEELERKEIDPPFRPKVKSPYDCSNFDKEFLSEKPRLSFADRAL
INSMDQNMFSNFSFINPGMETLICS"

SEQ ID NO: 4
Murine PKC-theta nucleotide sequence

1 cttgggtcgc caggcccgcg ccagtccccg ccatccgagc aacagcggcg ctgctctggg
61 accgcggccg cgacaccagg gaacaaccat gtcaccgttt cttcgaatcg gtttatccaa
121 ctttgactgt gggacctgcc aagcttgtca gggagaggca gtgaacccct actgcgctgt
181 gcttgtcaaa gagtatgtgg aatcagaaaa tgggcagatg tacatccaga aaaagccaac
241 catgtaccca ccttgggaca gcacctttga cgcccacatt aacaagggaa gggtgatgca
301 gatcatcgtg aagggcaaga atgtagacct catctcagaa acaaccgtgg aactctactc
361 cctggcggag agatgccgca agaacaatgg gcggacagaa atatggttag agctgaaacc
421 tcaaggccga atgctaatga atgcaagata ctttctggaa atgagtgaca caaaggacat
481 gagtgagttt gagaatgaag gattctttgc actgcatcag cgccgaggag ccatcaaaca
541 ggccaaagtc caccatgtca agtgtcacga gttcacggcc acctttttcc ctcaacccac
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661 acagtgtaat gcagcgattc acaagaagtg cattgataaa gtgatagcca agtgcacagg
721 atccgcaatc aatagccgag aaaccatgtt ccataaggag agattcaaga tcgacatgcc
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901 ccgatgccag acaaaggttg ccaatctttg tggtataaac cagaagctaa tggctgaagc
961 actagcgatg attgaaagca cccaacaggc tcgctcctta cgagattcag aacacatctt
1021 ccgagaaggc ccagttgaaa ttggtctccc atgctccacc aaaaacgaaa ccaggccacc
1081 atgcgtacca acacctggga aaagagaacc ccagggcatt tcctgggatt ccccttggga
1141 tgggtcaaat aaatcggccg gtcctcctga acccgaagtg agcatgcgca ggacttcact
1201 gcagctgaaa ctgaagatcg atgacttcat cctgcacaag atgttgggaa aaggaagttt
1261 tggcaaggtc ttcctggcag agttcaagag aaccaatcag tttttcgcaa taaaagcctt
1321 aaagaaagat gtggtgttga tggatgatga cgtcgagtgt acaatggtgg aaaagagggt

1381 tctgtccttg gcatgggagc atccatttct aacacacatg ttctgcacat tccagaccaa
1441 ggaaaatctc tttttcgtga tggagtatct caatggaggc gacttaatgt accacatcca
1501 aagttgccac aaatttgatc tttccagagc cacgttttat gctgctgagg tcatccttgg
1561 tctgcagttc cttcattcca aaggaattgt ctacagggac ctgaagcttg ataatatcct
1621 gttagacaga gatggacata tcaaaatagc agactttggg atgtgcaaag agaacatgct
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1861 ccgcatggac aacccccttct acccgaggtg gctcgaaagg gaggccaagg accttctagt
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1981 tcctttgttt cgagagatca actgggaaga gcttgaaagg aaagagattg acccaccctt
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2521 gattcgaaat gcagttctgc tcttgcccta gacaacagct gctggttggt gatgaaccaa
2581 ggcgcaagtg gaacagattt ctcaagactg gagcagtgat cgcctgttat agaagtcaat
2641 tccactcaac cacagagaag gaaccactaa gccacgttga tgtgtgcatg tctgtggaaa
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2761 caataaacat agcatgaaac ttgaaattta caaatctgtt cattctggct agccccaaaa
2821 ttcccaaggc agaggaaagt aaagggcagt gagcttagca gagcccttg tcgccaacag
2881 ggaagggtaa ggatgtcgcc tacgtggaac aacttataca cacagaagga aagtataacc
2941 aacaagggca gggtggttta cagctgccaa tcaaacctgc cctcccccct ctgttctcag
3001 ttgatctctc tgtcagcgta ggtaggcact cattaccatc ctcccatcat acaagaaata
3061 aaatgcatga ctcttctaag ataaagaaaa ccaatccctt atcacgttgt tcccagtgat
3121 ttgatggcaa ataagtccct ccttaggcat cctgcaagac aacccaaccc atgcatgcta
3181 tttgcagtag tcagtcctgt tgagttagag tcctaactat acacaatatc gtgcgatgtt
3241 tatatatgtt gatgagatgt tgtgatgata acgtggatat gtaaaaggga ataaaagaag
3301 aaagaaagat gcc

KKRFSFKKSFK (SEQ ID NO: 5)

FARKGSLRQKN (SEQ ID NO: 6)

CAGAATATGTTCAGGAACTTTTCCTTCATGAACCCCG (SEQ ID NO:7)

QNMFRNFSFMNP (SEQ ID NO:8),

GGAGATGCCAAGACGAATACCTTCTGTGGGACACCT (SEQ ID NO: 9)

GDAKTNTFCGTP (SEQ ID NO:10),

SEQ ID NO: 11
PKCtheta full length C-terminus HA tagged nt sequence
atgtcgccatttcttcggattggcttgtccaactttgactgcgggtcctgccagtcttgtcagggcgaggctgttaacccttact
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atggaccagaatatgttcaggaacttttccttcatgaaccccgggatggagcggctgatatcctacccatacgatgttccagat
tacgcttag

SEQ ID NO: 12
PKCtheta full length C-terminus HA tagged aa sequence
MSPFLRIGLSNFDCGSCQSCQGEAVNPYCAVLVKEYVESENGQMYIQKKPTM
YPPWDSTFDAHINKGRVMQIIVKGKNVDLISETTVELYSLAERCRKNNGKTEI
WLELKPQGRMLMNARYFLEMSDTKDMNEFETEGFFALHQRRGAIKQAKVH
HVKCHEFTATFFPQPTFCSVCHEFVWGLNKQGYQCRQCNAAIHKKCIDKVIA
KCTGSAINSRETMFHKERFKIDMPHRFKVYNYKSPTFCEHCGTLLWGLARQG
LKCDACGMNVHHRCQTKVANLCGINQKLMAEALAMIESTQQARCLRDTEQI
FREGPVEIGLPCSIKNEARPPCLPTPGKREPQGISWESPLDEVDKMCHLPEPELN
KERPSLQIKLKIEDFILHKMLGKGSFGKVFLAEFKKTNQFFAIKALKKDVVLM
DDDVECTMVEKRVLSLAWEHPFLTHMFCTFQTKENLFFVMEYLNGGDLMYH
IQSCHKFDLSRATFYAAEIILGLQFLHSKGIVYRDLKLDNILLDKDGHIKIADFG
MCKENMLGDAKTNTFCGTPDYIAPEILLGQKYNHSVDWWSFGVLLYEMLIG
QSPFHGQDEEELFHSIRMDNPFYPRWLEKEAKDLLVKLFVREPEKRLGVRGDI

RQHPLFREINWEELERKEIDPPFRPKVKSPFDCSNFDKEFLNEKPRLSFADRALI
NSMDQNMFRNFSFMNPGMERLISYPYDVPDYA

SEQ ID NO:13;
PKCtheta full length K409W kinase dead C-terminus HA tagged nt sequence
atgtcgccatttcttcggattggcttgtccaactttgactgcgggtcctgccagtcttgtcagggcgaggctgttaacccttact
gtgctgtgctcgtcaaagagtatgtcgaatcagagaacgggcagatgtatatccagaaaaagcctaccatgtacccaccctg
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atttgactgcagcaatttcgacaaagaattcttaaacgagaagccccggctgtcatttgccgacagagcactgatcaacagc
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tacgcttag

SEQ ID NO: 14
PKCtheta full length K409W kinase dead C-terminus HA tagged aa sequence
MSPFLRIGLSNFDCGSCQSCQGEAVNPYCAVLVKEYVESENGQMYIQKKPTM
YPPWDSTFDAHINKGRVMQIIVKGKNVDLISETTVELYSLAERCRKNNGKTEI
WLELKPQGRMLMNARYFLEMSDTKDMNEFETEGFFALHQRRGAIKQAKVH
HVKCHEFTATFFPQPTFCSVCHEFVWGLNKQGYQCRQCNAAIHKKCIDKVIA
KCTGSAINSRETMFHKERFKIDMPHRFKVYNYKSPTFCEHCGTLLWGLARQG
LKCDACGMNVHHRCQTKVANLCGINQKLMAEALAMIESTQQARCLRDTEQI
FREGPVEIGLPCSIKNEARPPCLPTPGKREPQGISWESPLDEVDKMCHLPEPELN
KERPSLQIKLKIEDFILHKMLGKGSFGKVFLAEFKKTNQFFAIWALKKDVVLM
DDDVECTMVEKRVLSLAWEHPFLTHMFCTFQTKENLFFVMEYLNGGDLMYH
IQSCHKFDLSRATFYAAEIILGLQFLHSKGIVYRDLKLDNILLDKDGHIKIADFG
MCKENMLGDAKTNTFCGTPDYIAPEILLGQKYNHSVDWWSFGVLLYEMLIG
QSPFHGQDEEELFHSIRMDNPFYPRWLEKEAKDLLVKLFVREPEKRLGVRGDI
RQHPLFREINWEELERKEIDPPFRPKVKSPFDCSNFDKEFLNEKPRLSFADRALI
NSMDQNMFRNFSFMNPGMERLISYPYDVPDYA.

FARKGSLRQ; SEQ ID NO15)

KKRFSFKKSFK (SEQ ID NO:16)
QKRPSQRSKYL (SEQ ID NO:17)
KIQASFRGHMA (SEQ ID NO:18)
LSRTLSVAAKK (SEQ ID NO:19)
AKIQASFRGHM (SEQ ID NO:20)
VAKRESRGLKS (SEQ ID NO:21)
KAFRDTFRLLL (SEQ ID NO:22)
PKRPGSVHRTP (SEQ ID NO:23)
ATFKKTFKHLL (SEQ ID NO:24)
SPLRHSFQKQQ (SEQ ID NO:25)
KFRTPSFLKKS (SEQ ID NO:26)
IYRASYYRKGG (SEQ ID NO:27)
KTRRLSAFQQG (SEQ ID NO:28)
RGRSRSAPPNL (SEQ ID NO:29)
MYRRSYVFQT (SEQ ID NO:30)
QAWSKTTPRRI (SEQ ID NO:31)
RGFLRSASLGR (SEQ ID NO:32)
ETKKQSFKQTG (SEQ ID NO:33)
DIKRLTPRFTL (SEQ ID NO:34)
APKRGSILSKP (SEQ ID NO:35)
MYHNSSQKRH (SEQ ID NO:36)
MRRSKSPADSA (SEQ ID NO:37)
TRSKGTLRYMS (SEQ ID NO:38)
LMRRNSVTPLA (SEQ ID NO:39)
ITRKRSGEAAV (SEQ ID NO:40)
EEPVLTLVDEA (SEQ ID NO:41)
SQKRPSQRHGS (SEQ ID NO:42)
KPFKLSGLSFK (SEQ ID NO:43)
AFRRTSLAGGG (SEQ ID NO:44)
ALGKRTAKYRW (SEQ ID NO:45)
VVRTDSLKGRR (SEQ ID NO:46)
KRRQISIRGIV (SEQ ID NO:47)
WPWQVSLRTRF (SEQ ID NO:48)
GTFRSSIRRLS (SEQ ID NO:49)
RVVGGSLRGAQ (SEQ ID NO:50)
LRQLRSPRRTQ (SEQ ID NO:51)
KTRKISQSAQT (SEQ ID NO:52)
NKRRATLPHPG (SEQ ID NO:53)
SYTRFSLARQV (SEQ ID NO:54)
NSRRPSRATWL (SEQ ID NO:55)

NKRRGSVPILR (SEQ ID NO:57)
GKRRPSRLVAL (SEQ ID NO:58)
QKKRVSMILQS (SEQ ID NO:59)
RLRRLTAREAA (SEQ ID NO:60)

SEQ ID NO: 61
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ALKKDVVLMD DDVECTMVEK RVLSLAWEHP FLTHMFCTFQ TKENLFFVME
YLNGGDLMYH IQSCHKFDLS RATFYAAEII LGLQFLHSKG IVYRDLKLDN
ILLDKDGHIK IADFGMCKEN MLGDAKTNTF CGTPDYIAPE ILLGQKYNHS
VDWWSFGVLL YEMLIGQSPF HGQDEEELFH SIRMDNPFYP RWLEKEAKDL
LVKLFVREPE KRLGVRGDIR QHPLFREINW EELERKEIDP PFRPKVKSPF
DCSNFDKEFL NEKPRLSFAD RALINSMDQN MFRNFSFMNP GMERLIS

SEQ ID NO: 62
MGPELNKERP SLQIKLKIED FILHKMLGKG SFGKVFLAEF KKTNQFFAIK
ALKKDVVLMD DDVECTMVEK RVLSLAWEHP FLTHMFCTFQ TKENLFFVME
YLNGGDLMYH IQSCHKFDLS RATFYAAEII LGLQFLHSKG IVYRDLKLDN
ILLDKDGHIK IADFGMCKEN MLGDAKTNTF CGTPDYIAPE ILLGQKYNHS
VDWWSFGVLL YEMLIGQSPF HGQDEEELFH SIRMDNPFYP RWLEKEAKDL
LVKLFVREPE KRLGVRGDIR QHPLFREINW EELERKEIDP PFRPKVKSPF
DCSNFDKEFL NEKPRLSFAD RALINSMDQN MFRNFSFMNP GMERLIS

SEQ ID NO: 63
MGPELNKERP SLQIKLKIED FILHKMLGKG SFGKVFLAEF KKTNQFFAIK
ALKKDVVLMD DDVECTMVEK RVLSLAWEHP FLTHMFCTFQ TKENLFFVME
YLNGGDLMYH IQSCHKFDLS RATFYAAEII LGLQFLHSKG IVYRDLKLDN
ILLDKDGHIK IADFGMCKEN MLGDAKTNTF CGTPDYIAPE ILLGQKYNHS
VDWWSFGVLL YEMLIGQSPF HGQDEEELFH SIRMDNPFYP RWLEKEAKDL
LVKLFVREPE KRLGVRGDIR QHPLFREINW EELERKEIDP PFRPKVKSPF
DCSNFDKEFL NEKPRLSFAD RALINSMDQN MFRNFSFMNP GMERLISHHH
HHH

NFSFMNPGMER (SEQ ID NO: 64)
ALINSMDQNMFR (SEQ ID NO: 65)

TNTFCGTPDYIAPEILLGQK (SEQ ID NO: 66)