

22 OCT 2003

1/17

```

                    5'   GTTCCAGGAGATTACAGCTCCAGCCACA
3'   ATGTTCAACACAGCAGCCATCCAAGGTCCTCTAATGTCGAGGTCGGTGT

                    10                               20
M   I   E   V   V   C   N   D   R   L   G   K   K   V   R   V   K   C   N   T
ATGATTGAGGTGGTTTGCAACGACCGTCTAGGAAAGAAAGTCCGCGTTAAGTGCAACACC
TACTAACTCCACCAAACGTTGCTGGCAGATCCTTTCTTTCAGGCGCAATTCACGTTGTGG

                    30                               40
D   D   T   I   G   D   L   K   K   L   I   A   A   Q   T   G   T   R   W   N
GATGACACCATCGGGGACTTGAAGAACTGATAGCGGCCCAAACCTGGCACTCGTTGGAAT
CTACTGTGGTAGCCCCCTGAACTTCTTTGACTATCGCCGGGTTTGACCGTGAGCAACCTTA

                    50                               60
K   I   V   L   K   K   W   Y   T   I   F   K   D   H   V   S   L   G   D   Y
AAGATCGTTCTTAAAAAGTGGTACACGATTTTTTAAGGACCATGTATCTCTGGGAGATTAT
TTCTAGCAAGAATTTTTCACCATGTGCTAAAAATTCCTGGTACATAGAGACCCTCTAATA

                    70                               40
E   I   H   D   G   M   N   L   E   L   Y   Y   Q   STOP
GAAATCCACGATGGGATGAACCTGGAGCTTTATTACCAGTAGAGGGGAATTCCTCCACC
CTTTAGGTGCTACCCTACTTGGACCTCGAAATAATGGTCATCTCCCCTTAAGGAGGTGG

TTGCCCCAACCTTGCTTTCCTCTCCCATGGCTCATTTAACACTGTTGTAGATGCTCATTTTTT
AACGGGTGGAACGAAAGGAGAGGGTACCGAGTAAATTGTGACAACATCTACGAGTAAAAA

AACAATTCACATGAATAAAAACTTTGATGCTGCAAAAAAAAA   3'
TTGTTAAGTGACT   5'

```

Figure 1a

22 OCT 2003

2/17

ATG ATC GAG GTT GTT TGC AAC GAC GAC CGT CTG GGG AAA AAG GTC CNC GTT	48
Met Ile Glu Val Val Cys Asn Asp Arg Leu Gly Lys Val Xaa Val	
1 5 10 15	
AAA TGC AAC ACG GAT GAT ACC ATC GGG GAC CTT AAG AAG CTG ATT GCA	96
Lys Cys Asn Thr Asp Asp Thr Ile Gly Asp Leu Lys Lys Leu Ile Ala	
20 25 30	
GCC TAA	102
Ala *	

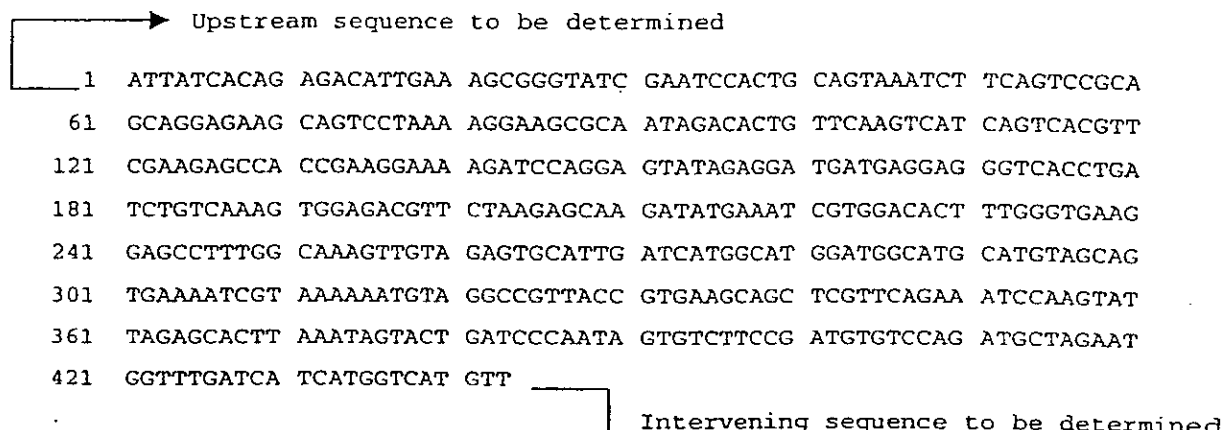
Figure 1b

3/17

* * * pPC86 Clone 31 Sequence * * *

(Human Homologue of Mouse Clk4)

1323 BPS DNA



1 ATTATCACAG AGACATTGAA AGCGGGTATC GAATCCACTG CAGTAAATCT TCAGTCCGCA
 61 GCAGGAGAAG CAGTCCTAAA AGGAAGCGCA ATAGACACTG TTCAAGTCAT CAGTCACGTT
 121 CGAAGAGCCA CCGAAGGAAA AGATCCAGGA GTATAGAGGA TGATGAGGAG GGTACCTGA
 181 TCTGTCAAAG TGGAGACGTT CTAAGAGCAA GATATGAAAT CGTGGACACT TTGGGTGAAG
 241 GAGCCTTTGG CAAAGTTGTA GAGTGCATTG ATCATGGCAT GGATGGCATG CATGTAGCAG
 301 TGAAAATCGT AAAAAATGTA GSCCGTTACC GTGAAGCAGC TCGTTCAGAA ATCCAAGTAT
 361 TAGAGCACTT AAATAGTACT GATCCCAATA GTGTCTTCCG ATGTGTCCAG ATGCTAGAAT
 421 GGT TTGATCA TCATGGTCAT GTT

1 TTCAAATTGA CCACATCAGG CAGATGGCGT ATCAGATCTG CCAGTCAATA AATTTTTTAC
 61 ATCATAATAA ATTAACCCAT ACAGATCTGA AGCCTGAAAA TATTTTGTTT GTGAAGTCTG
 121 ACTATGTAGT CAAATATAAT TCTAAAAATGA AACGTGATGA ACGCACACTG AAAAACACAG
 181 ATATCAAAGT TGTTGACTTT GGAAGTGCAA CGTATGATGA TGAACATCAC AGTACTTTGG
 241 TGTCTACCCG GCACTACAGA GCTCCCGAGG TCATTTTGGC TTTAGGTTGG TCTCAGCCTT
 301 GTGATGTTTG GAGCATAGGT TGCATTCTTA TTGAATATTA CCTTGGTTTC ACAGTCTTTC
 361 AGACTCATGA TAGTAAAGAG CACCTGGCAA TGATGGAACG AATATTAGGA CCCATACCAC
 421 AACACATGAT TCAGAAAACA AGAAAACGCA AGTATTTTCA CCATAACCAG CTAGATTGGG
 481 ATGAACACAG TTCTGCTGGT AGATATGTTA GGAGACGCTG CAAACCGTTG AAGGAATTTA
 541 TGCTTTGTCA TGATGAAGAA CATGAGAAAC TGT TTGACCT GGTTCGAAGA ATGTTAGAAT
 601 ATGATCCAAC TCAAAGAATT ACCTTGGATG AAGCATTGCA GCATCCTTTC TTGACTTAT
 661 TAAAAAAGAA ATGAAATGGG AATCAGTGGT CTTACTATAT ACTTCTCTAG AAGAGATTAC
 721 TTAAGACTGT GTCAGTCAAC TAAACATTCT AATATTTTGG TAAACATTAA ATTATTTTGT
 781 ACAGTTAAGT GTAAATATTG TATGTTTTGT ATCAATAGCA TAATTAACCT GTTAAGCAAG
 841 TATGGTCTTG ATAATGCATT AGAAAAATTA AAATTAATTT TTCTTTTGA AATTACCATT
 901 TTAAATACC TTGAAATAT CCTTGTGTC CAGTGATAAA TGTGATTGAT CTTGCCTTTT
 961 GTACATGGAG GTCACCTCTG AAGTGATTTT TTTTGAGTAA AAGGAAATCT TGA CTACTTT
 1021 ATATTCTTAA AGGAATATTC TTTATATACT TCAAATTTAG AACTTAACCT TAAAAGTTTT
 1081 TCTTCTGTAA TTGTTGAACG GGTGATTATT ATTAACCTCTA GATAAGCAGG TACTAGAAAC
 1141 CAAAACTCAG AAAATGTTTA CTGTTAGAAT TCTATTAAAT TTTAAGTGTT GTATTCTTTT
 1201 TCATTGGGTG ATGTCAGGGT GATAACCAGA CATTCATGGA AAGGCATGCA GTTTGTCCAT
 1261 TGTGACAGTT TGTTTAATAA AACCACATAC ACCCTTTAAA AAAAAAAAAA AAAAAAAAAA
 1321 AAA

Figure 2

4/17

(i)
(ii)
(iii)
(iv)
(v)
(vi)
(vii)
(viii)
(ix)
(x)
(xi)
(xii)

Figure 3

5/17

Partial Sequence Alignment

PPC86-31 and Mouse Clk4

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Reference molecule: 31FSEQ.TXT      1 - 443  ( 443 bps)  Homology
Sequence 2:        CLK4M.TXT      341 - 783  ( 443 bps)  92%

Parameters set: Mismatch = 2;  Open Gap = 0;  Extend Gap = 2

31FSEQ.TXT  ( 1)  ATTATCACAGAGACATTGAAAGCGGGTATCGAATCCACTGCAGTAAATCT
CLK4M.TXT   ( 341)  ....C..T.....G.....ACT..C..G.....T.....C

31FSEQ.TXT  ( 51)  TCAGTCCGACGAGGAGAGCAGTCCTAAAGGAAAGCGCAATAGACACTG
CLK4M.TXT   ( 391)  .....A.G.....C.....G..A.....T.....C...

31FSEQ.TXT  ( 101)  TTCAAGTCATCAGTCACGTTCTGAAGAGCCACCGAAGGAAAGATCCAGGA
CLK4M.TXT   ( 441)  .G.....G.A.....

31FSEQ.TXT  ( 151)  GTATAGAGGATGATGAGGAGGGTCACCTGATCTGTCAAAGTGGAGACGTT
CLK4M.TXT   ( 491)  .....

31FSEQ.TXT  ( 201)  CTAAGAGCAAGATATGAAATCGTGGACACTTTGGGTGAAGGAGCCTTTGG
CLK4M.TXT   ( 541)  .....A.....

31FSEQ.TXT  ( 251)  CAAAGTTGTAGAGTGCATTGATCATGGCATGGATGGCATGCATGTAGCAG
CLK4M.TXT   ( 591)  .....C.....T.A.....

31FSEQ.TXT  ( 301)  TGAAAAATCGTAAAAAATGTAGGCCGTTACCGTGAAGCAGCTCGTTCAGAA
CLK4M.TXT   ( 641)  .....T.....A.....G..G.....T...

31FSEQ.TXT  ( 351)  ATCCAAAGTATTAGAGCACTTAATAGTACTGATCCCAATAGTGCTTCCG
CLK4M.TXT   ( 691)  .....G.....G..C..C.....C.....

31FSEQ.TXT  ( 401)  ATGTGTCCAGATGCTAGAATGGTTTGATCATCATGGTCATGTT
CLK4M.TXT   ( 741)  ...C.....G.....

```

Figure 3(i)

6/17

Multiple Sequence Alignment

pPC86-31

Reference molecule: 31SEQ.TXT 1 - 1323 (1323 bps) Homology

Sequence 2: CLK4M.TXT 1 - 1549 (1549 bps) 47%

Sequence 3: STYMA.TXT 1 - 1740 (1740 bps) 51%

Sequence 4: CLK1H.TXT 1 - 1834 (1834 bps) 53%

Parameters set: Mismatch = 2; Open Gap = 4; Extend Gap = 1

```

31SEQ.TXT ( 1) -----
CLK4M.TXT ( 1) AAAGAGACGCAGCGGCTGGAGAGGAACGACGCGGTTTGGCGACATTCT
STYMA.TXT ( 1) ATCGTCGTAATCGTTTGACAGACTTCTCGCCGTCGCCCTTGTAAAGCTTTGTC
CLK1H.TXT ( 1) ATTTTAGATAATCATTAAGAGACCACAGAAAATGTAACAGATCCTACTC-
-----

31SEQ.TXT ( 1) -----
CLK4M.TXT ( 51) GCCCAAAGCGCGCTTGCTTTTGGGAGATGCGGCATTCCAAACGAACTC
STYMA.TXT ( 51) TTCGCCCTTGCAAGCTTTGTCTTCAGGGTTGGAAAGATGAGACATTCAAAG
CLK1H.TXT ( 50) -----
-----

31SEQ.TXT ( 1) -----
CLK4M.TXT ( 101) ACTGTCCTGATTGGGATAGTAGAGAAAGCTGGGGCCATGAAAGCTACAGT
STYMA.TXT ( 101) AGAACTTACTGTCCCTGACTGGGATGAAAGAGACTGGGATTATGGAACATG
CLK1H.TXT ( 50) -----
-----

31SEQ.TXT ( 1) -----
CLK4M.TXT ( 151) GGAAGTCACAAACGCAAGAGAGAGGTTCTCACAGCAGTACTCAGGAGAACAG
STYMA.TXT ( 151) GAGAAGCAGCAGCAGTCACAAAAGAAAGAGAGATCACATAGCAGCGCCC
CLK1H.TXT ( 50) -----
-----

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Figure 3(ii)

7/17

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31SEQ.TXT      ( 1)      -----
CLK4M.TXT      ( 201)     GCACGTAAACCACATCATCAGTTTAAAGACTCGGATTGTCACATATTAG
STYMA.TXT      ( 201)     GTGAGCAAAAGCGCTGCAGGTACGATCACTCCAAAACGACAGACAGCTAT
CLK1H.TXT      ( 50)      -----

31SEQ.TXT      ( 1)      -----
CLK4M.TXT      ( 251)     AAGCAAGATGCTTGAATGAGAGAGAGATTATCGGGACCGGAGATACATTGAT
STYMA.TXT      ( 251)     TATCTGGAAGCAGATCCATAAATGAGAAAGCTTATCATAGTCGACGCTA
CLK1H.TXT      ( 50)      -----

31SEQ.TXT      ( 1)      -----
CLK4M.TXT      ( 301)     GAATACAGAAATGACTACTGCGAAGGATATGTCCAAGACATTACCATAG
STYMA.TXT      ( 301)     TGTTGATGAATACAGGAATGACTACATGCGGTACGAGCCAGGGCATCCCT
CLK1H.TXT      ( 50)      -----

31SEQ.TXT      ( 1)      -----
CLK4M.TXT      ( 351)     AGACGTTGAAAGCACTTACCGGATCCATTGCAGTAAATCCTCAGTCAGGA
STYMA.TXT      ( 351)     ATGGAGAACCTGGGAAGCAGATACCAGATGCATAGTAGCAAGTCCCTCTGGT
CLK1H.TXT      ( 50)      -----

31SEQ.TXT      ( 1)      -----
CLK4M.TXT      ( 401)     GCAGGAGAAGCAGCCCTAAGAGAAAGCGTAATAGACCCCTGTGCAAGTCAT
STYMA.TXT      ( 401)     AGGAGTGGAGAAGCAGTGTACAAAAAGTAAACACAGGAGTCGCCACCCACAC
CLK1H.TXT      ( 50)      -----

```

Figure 3iii

8/17

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31SEQ.TXT      ( 1)
CLK4M.TXT      ( 451)
STYMA.TXT      ( 451)
CLK1H.TXT      ( 50)
-----
CAGTCGCATTCTGAAGAGCCACCGAAGGAAAAGATCCAGGAGTATAGAGGA
ATCGCAGCACCAATTCACACGGGAAGAGTCACCGAAGGAAAAGATCGAGGA
-----

31SEQ.TXT      ( 1)
CLK4M.TXT      ( 501)
STYMA.TXT      ( 501)
CLK1H.TXT      ( 50)
-----
TGATGAGGAGGGTCACCTGATCTGTCTAAAGTGGAGACGTTCTAAGAGCAA
GTGTAGAGGATGATGAGGAGGGTCACTGATCTGTCTCAGAGTGGAGACGTA
-----

31SEQ.TXT      ( 1)
CLK4M.TXT      ( 551)
STYMA.TXT      ( 551)
CLK1H.TXT      ( 50)
-----
GATATGAAATCGTGGACACTTTAGGTGAAGGAGCCCTTTGGCAAAGTTGTA
CTAAGTGCAAGATATGAAAATTGTTGATACTTTAGGTGAAGTGCTTTCCGG
-----

31SEQ.TXT      ( 1)
CLK4M.TXT      ( 601)
STYMA.TXT      ( 601)
CLK1H.TXT      ( 50)
-----
GAGTGCATTGATCACGGCATGGATGGCTTACATGTAGCAGTGAAAATTGT
AAAAGTGGTGGAAATGCATCGATCATAAAGTGGGAGGTAGACGTGTAGCAG
-----

31SEQ.TXT      ( 1)
CLK4M.TXT      ( 651)
STYMA.TXT      ( 651)
CLK1H.TXT      ( 50)
-----
AAAAAATGTAGGACGTTACCGGAGGCAGCTCGTCTGAAAATCCAAGTAT
TAAAAATAGTTAAAAAATGTGGATAGATACTGTGAAGCTGCTCAATCGGAA
-----

31SEQ.TXT      ( 1)
CLK4M.TXT      ( 701)
STYMA.TXT      ( 701)
CLK1H.TXT      ( 50)
-----
TGGAGCACTTGAACAGCACTGACCCCAACAGTGTCTTCCGATGCGTCCAG
ATACAAGTTTGGAACTTGAATACAAACAGACCCCATAGTACTTTCCG
-----

```

Figure 3(iv)

9/17

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31SEQ.TXT      ( 1)
CLK4M.TXT      ( 751)
STYMA.TXT      ( 751)
CLK1H.TXT      ( 50)
-----
ATGCTAGAGTGGTTTGATCATCATGGTCATGTTGTGATTGTGTTGAGCT
TTGTGTCCAGATGTTGGAGTGGTTGAGCATCGAGGCACATTGTCATTG
-----
31SEQ.TXT      ( 1)
CLK4M.TXT      ( 801)
STYMA.TXT      ( 801)
CLK1H.TXT      ( 50)
-----
GCTGGGACTTAGTACCTATGATTTTATTAAAGAAAAATAGTTTCTGCCAT
TGTTTGAACCTTCTGGGGCTTAGTACTTATGATTTTCATTAAAGAAAACAGT
-----
31SEQ.TXT      ( 1)
CLK4M.TXT      ( 851)
STYMA.TXT      ( 851)
CLK1H.TXT      ( 50)
-----
-----TTCAAA-----
-----
TTTCTGCCGT...G-----
-----ATAATTGCTATTCAGTATTAAACGAGCAGTCAG-----
-----
31SEQ.TXT      ( 7)
CLK4M.TXT      ( 857)
STYMA.TXT      ( 867)
CLK1H.TXT      ( 90)
-----
CTGCGTGATTCCCGTGATTGCGGTACAAAGCTTTGTCTCCTTCGACTTGGA
-----
31SEQ.TXT      ( 7)
CLK4M.TXT      ( 857)
STYMA.TXT      ( 867)
CLK1H.TXT      ( 140)
-----
GTCTTTGTCCAGGACGATGAGACACTCAAAGAGAACTTACTGTCCCTGATT
-----
31SEQ.TXT      ( 7)
CLK4M.TXT      ( 857)
STYMA.TXT      ( 867)
CLK1H.TXT      ( 190)
-----
GGGATGACAAGGATTGGGATTATGGAAAATGGAGGAGCAGCAGCAGTCAT

```

Figure 3(v)

10/17

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31SEQ.TXT      ( 7)      -----
CLK4M.TXT      ( 857)    -----
STYMA.TXT      ( 867)    -----
CLK1H.TXT      ( 240)    AAAAGGAAGAGATCACATAGCAGTGCCAGGAGAACAGCGTGCAA
                               -----

31SEQ.TXT      ( 7)      -----
CLK4M.TXT      ( 857)    -----
STYMA.TXT      ( 867)    -----
CLK1H.TXT      ( 290)    ATACAATCACTCTAAAAATGTGTGATAGCCATTATTGGAAAGCAGGTCTA
                               -----

31SEQ.TXT      ( 7)      -----
CLK4M.TXT      ( 857)    -----
STYMA.TXT      ( 867)    -----
CLK1H.TXT      ( 340)    TAAATGAGAAAGATTATCATAGTCGCGCTACATTGATGAGTACAGAAAT
                               -----

31SEQ.TXT      ( 7)      -----
CLK4M.TXT      ( 857)    -----
STYMA.TXT      ( 867)    -----
CLK1H.TXT      ( 390)    GACTACACTCAAGGATGTGAACCTGGACATCGCCAAAGAGACCATGAAAG
                               -----

31SEQ.TXT      ( 7)      -----
CLK4M.TXT      ( 857)    -----
STYMA.TXT      ( 867)    -----
CLK1H.TXT      ( 440)    CCGGTATCAGAACCATAGTAGCAAGTCTTCTGGTAGAAGTGGAAGAAGTA
                               -----

31SEQ.TXT      ( 7)      -----
CLK4M.TXT      ( 857)    -----
STYMA.TXT      ( 867)    -----
CLK1H.TXT      ( 490)    GTTATAAAAGCAACACAGGA..C.....GTACTTCACATCGTCGTCA
                               -----

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Figure 3(vi)

11/17

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31SEQ.TXT      ( 16)      -----
CLK4M.TXT      ( 866)     -----
STYMA.TXT      ( 876)     -----
CLK1H.TXT      ( 540)     CATGGGAAGAGTCACCGAAGGAAAAGAACCCAGGAGTGTAGAGGATGATGA
                               -----

31SEQ.TXT      ( 16)      -----
CLK4M.TXT      ( 866)     -----
STYMA.TXT      ( 876)     -----
CLK1H.TXT      ( 590)     GGAGGGTCACCTGATCTGTCTCAGAGTGGAGACGTAAGTCAAGATATG
                               -----

31SEQ.TXT      ( 16)      -----
CLK4M.TXT      ( 866)     -----
STYMA.TXT      ( 876)     -----
CLK1H.TXT      ( 640)     AAATTGTTGATACTTTAGGTGAAGGAGCCTTTTGGAAAAGTTGTGGAGTGC
                               -----

31SEQ.TXT      ( 16)      -----
CLK4M.TXT      ( 866)     -----
STYMA.TXT      ( 876)     -----
CLK1H.TXT      ( 690)     ATCGATCATAAAGCGGGAGGTAGACATGTAGCAGTAAAAAATAGTTAAAAA
                               -----

31SEQ.TXT      ( 16)      -----
CLK4M.TXT      ( 866)     -----
STYMA.TXT      ( 876)     -----
CLK1H.TXT      ( 740)     TGTGGATAGATACTGTGAAGCTGCTCGCTCAGAAATACAGTTCTGGAAC
                               -----

31SEQ.TXT      ( 16)      -----
CLK4M.TXT      ( 866)     -----
STYMA.TXT      ( 876)     -----
CLK1H.TXT      ( 790)     ATCTGAATACAAACAGACACCCCAACAGTACTTCCGCTGTGTCCAGATGTTG

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Figure 3(vii)

12/17

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31SEQ.TXT      ( 16)  -----
CLK4M.TXT      ( 866)  -----
STYMA.TXT      ( 876)  -----
CLK1H.TXT      ( 840)  GAATGGTTGAGCATCATGGTCACATTTGCATGTGTTTGAACATATGGG

31SEQ.TXT      ( 16)  -----
CLK4M.TXT      ( 866)  -----
STYMA.TXT      ( 876)  -----
CLK1H.TXT      ( 890)  ACTTAGTACTACGACTTCATTAAAGAAAATGGTTTCTACCATTTTCGAC

31SEQ.TXT      ( 16)  -----TCAGGCAGATGGCGTATCAGATCTGCCAGTCAATAAATTTT
CLK4M.TXT      ( 866)  -----A.....T.....
STYMA.TXT      ( 876)  -----A.....A.....A.A..A.A..TG....C...
CLK1H.TXT      ( 940)  TGGATCATA...AA.....A.....A.A...TG.G.....

31SEQ.TXT      ( 57)  TTACATCATATAAATTAACCCATACAGATCTGAAGCCTGAAAATATTTT
CLK4M.TXT      ( 907)  .....A.C.G.C.A.A.....
STYMA.TXT      ( 917)  ..G..AG.....G.T.....CT.....C.C...
CLK1H.TXT      ( 990)  ..G..CAG.....G.G.T.C...CT.A.....C.C...

31SEQ.TXT      ( 107)  GTTGTGAAGTCTGACTATGTAGTCAAAATATAATTTCTAAAATGAAACGTG
CLK4M.TXT      ( 957)  A.....C.....A.
STYMA.TXT      ( 967)  A.....CAC..AGGCT.....C.C.....
CLK1H.TXT      (1040)  A.....C.....CAC..AGGCG.....C.C.....A.....

31SEQ.TXT      ( 157)  ATGAACGCACACTGAAAAACACAGATATCAAAAGTTGTGACTTTGGAAGT
CLK4M.TXT      (1007)  ....G.....T.....T.....
STYMA.TXT      (1017)  ....T..TA.AGT...TC.....T.....G.G.....
CLK1H.TXT      (1090)  ....CT.A.T...TC.....T.....A.....T...

```

Figure 3(viii)

13/17

31SEQ.TXT	(207)	GCAACGTATGATGATGAACATCACAGTACTTTGGTGTCTACCCGGCAGTA
CLK4M.TXT	(1057)	A....C..C.....T.....C..AA.....
STYMA.TXT	(1067)	A.....C.....C..A.....A..A..T..
CLK1H.TXT	(1140)	A.....C.....A.....A.....AA..A..T..
31SEQ.TXT	(257)	CAGAGCTCCCGAGGTCATTTGGCCTTAGGTTGGTCTCAGCCTTGTGATG
CLK4M.TXT	(1107)	...G.....A.....C.....
STYMA.TXT	(1117)	T.....A..G..A..T.....A..CC..C..G.....A.....
CLK1H.TXT	(1190)	T.....A..T..A..T.....A..CC.....G.....C..A..A.....
31SEQ.TXT	(307)	TTTGGAGCATAGGTTGCATTCTTATTGAATATFACCTTGGTTTCACAGTC
CLK4M.TXT	(1157)	C.....G..C.....G.....
STYMA.TXT	(1167)	.C.....A..T.....C..G.....T.....A..T.....T
CLK1H.TXT	(1240)	.C.....A.....C.....C..T.....G..T..C..A
31SEQ.TXT	(357)	TTTCAGACTCATGATAGTAAGAGCACCTGGCAATGATGGAACGAATATT
CLK4M.TXT	(1207)	C..C.....G.....G..G..C..
STYMA.TXT	(1217)	...TC.....C..G..A..TT..A.....A..G..TC.
CLK1H.TXT	(1290)	CA..A..C.....G.....TT..A.....A..G..TC.
31SEQ.TXT	(407)	AGGACCCATACCACAAACACATGATTCAGAAAACAAGAAAACGCAAGTATT
CLK4M.TXT	(1257)	C...GC...T.....C.....G.....
STYMA.TXT	(1267)	T.....AC.....A..G.....A.....C..G.....GA....
CLK1H.TXT	(1340)	T.....TC.....A...T.....A.....C..G.....T..A....
31SEQ.TXT	(457)	TTCACCATAACCAGCTAGATTGGGATGAACACACAGTTCTGCTGGTAGATAT
CLK4M.TXT	(1307)	.C.....C.....C..G..T.....A.....G.....
STYMA.TXT	(1317)	.C..T...G..T..GAT.....C.....C.....
CLK1H.TXT	(1390)	CG..T..GAT....C.....C.....C..C.....

Figure 3(ix)

14/17

31SEQ.TXT	(507)	GTTAGGAGACGCTGCAAACCGTTGAAGGAATTTATGCTTTGTGCATGATGA
CLK4M.TXT	(1357)	G.....A.....G.....C..
STYMA.TXT	(1367)	...TCTC.G....T....TC.....G.....A.C...G....C
CLK1H.TXT	(1440)	...TCA...GC...T....TC.....C...A....T
31SEQ.TXT	(557)	AGAACATGAGAAACTGTTTGACCTGGTTCGAAGAAATGTTAGAATATGATC
CLK4M.TXT	(1407)	...G.....G.....G.....G.G.....C.
STYMA.TXT	(1417)	C.....CTT..C.....CA..G.G.A.....G.G.....
CLK1H.TXT	(1490)	T.....CGT..C.....CA..AG.A.....G.G.....
31SEQ.TXT	(607)	CAACTCAAAGAATTACCTTGGATGAAGCATTCAGCATCCTTCTTTGAC
CLK4M.TXT	(1457)	..G.GAG...G..C.....C.....C.....
STYMA.TXT	(1467)	.CG.CA.....TC.CA.A.....CC.AA.....T..
CLK1H.TXT	(1540)	..G.CA.....TC.CAGA.....C..AA.....
31SEQ.TXT	(657)	TTATTAAAAAGAAATGAATGGGAATCAGTGGTCTTACTATATACTTCT
CLK4M.TXT	(1507)	G.....G.....G.....G.....
STYMA.TXT	(1517)	CC.C.T.....C..AC...A.T.ATAA.C.C.G.G...
CLK1H.TXT	(1590)	C.TC.G..G..A.....T.TAT..ATC.G.A.T.GG.C.GC...
31SEQ.TXT	(707)	CTAGAAGAGATTACTTA-AGACTGTGTCAGTCAACTAAACATTCTAATAT
CLK4M.TXT	(1536)	-----
STYMA.TXT	(1555)	..GA...GA...C.....A.....GCT.
CLK1H.TXT	(1631)	..C.....C.....A.....
31SEQ.TXT	(756)	TTTTGTAAACATTAAATTATTTGTACAGTTAAGTGTAATAATGTATGT
CLK4M.TXT	(1536)	-----
STYMA.TXT	(1591)	-----A.....G.....
CLK1H.TXT	(1664)	---T....TT....G.....

Figure 3(x)

15/17

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31SEQ.TXT      ( 806)      TTTGTATCAATAGCATAATTAACTTGTTAAGCAAGTATGGTCTTGATAAT
CLK4M.TXT      (1536)      -----
STYMA.TXT      (1609)      -----
CLK1H.TXT      (1693)      -----
                  ....T-----
                  ....A.C-----

31SEQ.TXT      ( 856)      GCATTAGAAAAATTAAATTTTCTTTTGGAAATTACCATTTTTAA
CLK4M.TXT      (1536)      -----
STYMA.TXT      (1623)      -----
CLK1H.TXT      (1708)      -----
                  ....AC.T....T.G.--G.T..A....
                  ....A....T.T...G....G....

31SEQ.TXT      ( 906)      ATACCTTTGAAATATCCTTTGTGTCCAGTGATAAATGTGATTGATCTTGC
CLK4M.TXT      (1536)      -----
STYMA.TXT      (1656)      ....A-----
CLK1H.TXT      (1729)      -----

31SEQ.TXT      ( 956)      CTTTGTACATGGAGGTCACCTCTGAAGTGATTTTTTTTGGATAAAAGGA
CLK4M.TXT      (1536)      -----
STYMA.TXT      (1662)      ....C..C.G-----
CLK1H.TXT      (1729)      -----
                  ....G....G....

31SEQ.TXT      (1006)      AATCTTGACTACTTTATATCTTAAAGGAATATCTTATATACTTCAAA
CLK4M.TXT      (1545)      -----
STYMA.TXT      (1672)      ....A..AT....CAG.AA...T..A.TG-----T.
CLK1H.TXT      (1744)      -----
                  ....TGG...A.T-----C...GC.A.GG

31SEQ.TXT      (1056)      TTTAGAACTTAACCTTAAAAGTTTTTCTTCTGTAAATTGTTGAACGGTGA
CLK4M.TXT      (1545)      -----
STYMA.TXT      (1705)      ....G-----T..G.G...A-----
CLK1H.TXT      (1771)      ....AAT-----A.C..T...A.....AA-----

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Figure 3(xi)

16/17

31SEQ.TXT	(1106)	TTATTATTA	CTCTAGATAAGCAGGTACTAGAAACCAAACTCAGAAAAAT
CLK4M.TXT	(1545)		-----
STYMA.TXT	(1729)		-----
CLK1H.TXT	(1804)		-----T.T.-----
31SEQ.TXT	(1156)	GTTACTGTTAGAAT	CTCTATAAATTTAAGTGTGTATCTTTTTCATT
CLK4M.TXT	(1545)		-----
STYMA.TXT	(1732)		-----
CLK1H.TXT	(1815)		-----
31SEQ.TXT	(1206)	GGTGATGTCAGGGTGATA	ACCAGACATTCATGGAAGGCATGCAGTTTG
CLK4M.TXT	(1545)		-----
STYMA.TXT	(1734)		-----
CLK1H.TXT	(1822)		-----
31SEQ.TXT	(1256)	TCCATTGTGACAGTTT	GTTTAAATAAAACCACATACACCCCTTAAAAAAA
CLK4M.TXT	(1545)		-----G.-----
STYMA.TXT	(1734)		-----
CLK1H.TXT	(1826)		-----G.T.-----
31SEQ.TXT	(1306)	AAAAAAAAAAAA	AAAAA
CLK4M.TXT	(1550)		-----
STYMA.TXT	(1734)		-----
CLK1H.TXT	(1831)		-----TG.-----

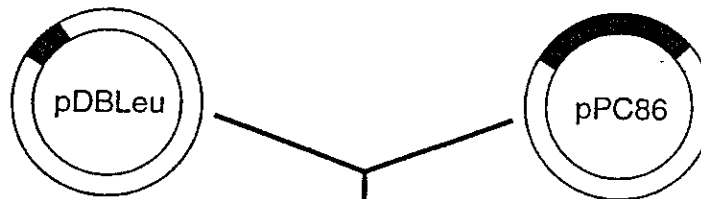
Figure 3(xii)

17/17

Methodology

Clone Beacon into
the vector pDBLeu

Human Brain cDNA library
constructed in the vector
pPC86



Transform both plasmids into the
yeast strain MaV203

Select for cells containing both plasmids,
and induce the *HIS3* reporter gene

Purify cells containing interacting proteins
and test for induction of the 3 reporter genes

Isolate plasmid DNA from clones expressing the three reporter
genes and perform a re-transformation assay to confirm phenotypes

Isolate plasmid DNA from positive clones
and sequence unknown cDNA's

Confirm the interactions by independent methods
such as co-immunoprecipitation and biological assays

Figure 4