

```

PF14_0431 .....
PF14_0408 YKVVVKVLSKTQFSTTLKCLNLLYKKVKTDTDQVFLPYCHKYMKDDSEITHD
PF11_0156 .....
PFC0105w .....
1how .....DYRPGGFHPAFK

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          1      10      20
PF14_0431 .....F1LVIRK10MGDGTFRVLLCQH20IDNK.....K
PF14_0408 KKKNNYDKFVN1LNT10IKKKKNENYNRQHD20IKNNLHDNKHQIINNKKKVEPK
PF11_0156 .....S1VVCEL10VGKGVFSNVLKCYD20MV21NK.....I
PFC0105w .....Y1RIEGKL10GWGHFSTVWVATD20LKSKPL.....K
1how      GEPYKDARY1IL10VRKL20GWGHFSTVWLAKD21MV22NN.....T

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          30      40      50
PF14_0431 YYAV30VKV31VR32NIKKYTR40SAKIEA50DI51LKKIQND52IN53.....
PF14_0408 YVCL30LKV31MK32NGKQFLD40QGLLE50LMV51LNILCNANTN52NN.....
PF11_0156 PVA30VKV31IR32DNDMMKK40AAEK50EIS51LKKLNQYDKD52N.....
PFC0105w FVA30IKIQ31KGSE40TYTE50SAKCEI51NY52LNTVKVNSFD53SSWVELKEQQRERLFHY
1how      HVA30MKI31VR32GD40KVYTE50AAED51EIKL52LQ..RVNDAD53N....TKEDSMG.....

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          60      70      80      90      100
PF14_0431 ...NN60IVK61YHGK70FMY80YD...81HMCLIFEP90LGPS100IYEI101ITRNNY.NGFH102TE
PF14_0408 LSNKN60IIQ61LYDS70FYYKE...81HLIIVTEYMQSD90IYNY100FIRK101GK..LGT102LG
PF11_0156 ..KRH60IIR61LLSS70IKYKN...81HLCLVFEWMWGN90IRIAL100KKYGNHGHLN101AT
PFC0105w NMTKG60VVS61FIDS70FEHKGPN80GT81HICMVFEFMGPN90LLSL100IKHYDY.KGIP101LN
1how      ..ANH60ILK61LLDH70FNHKGPN80GV81HV82VMVFEV90LG100EN101LAL102IKKYE103H.RGIP104LI

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          110      120      130
PF14_0431 D110IKLYCIE111IL112KAL113NY114LR.115KMS116L117HT118DL119KPEN120IL121DDP.....
PF14_0408 Q110LQILTKN111LEGL112AYIH.113SKN114LI115HCD116L117KPEN118IMI119NM120KK121NKK122NHEK123GKYNK
PF11_0156 AV110H111CYT112KQ113LF114I115AL116LR117MR.118KCR119IM120HAD121KPD122NIL123IN.....
PFC0105w L110VRKIATH111V112LIG113MQY114LHD115VCK116I117HS118DL119KPEN120VLV121SPL122TTIPKPKDYTKDK
1how      Y110VKQISKQ111LL112LG113LDY114MHR115RCG116I117HT118DL119KPEN120VL121M.....

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PF14_0431
 PF14_0408
 PF11_0156
 PFC0105w TKKKKNINEPPYVKHKL RPSNSDPSLLTSYSNIHALQETLTRKPYHYNTY
 lhow

PF14_0431
 PF14_0408
 PF11_0156
 PFC0105w FLNNPEKYRDNKMNPLYLHRLPNDCLKKIDQDDSDETEEDDLSDVDQNK
 lhow

PF14_0431
 PF14_0408
 PF11_0156
 PFC0105w QNKNQLEVNLPNNKYPNNSNDVYKFFEKDINKFPIYCDMFNHLIHPEALRL
 lhow

PF14_0431 IQIYR
 PF14_0408 INIYNT
 PF11_0156
 PFC0105w HELYMKNKKNIDSNNTMNDLGNNQNSHKVVYINTEDGEY CIRPYDPSVYY
 lhow

	160	170	180	190	200
PF14_0431	TKSTGIK	LIDFGCATFKSDY.HGSI	INTRQ	YRAPEVIL	NLGWDVSDMWS
PF14_0408	KQFDKIK	IIDFNSCIYESDK.LEMY	IQTRS	YRSPEVLL	QQNYDRKIDIWS
PF11_0156	VCDLGSASDISENEITSY	LVSRF	YRAPEIIL	GFRYDAQIDVWS
PFC0105w	HEKSCYK	ICDLGNSLWIDES.RYAE	IQTRQ	YRAPEVIL	KSGFNETADIWS
lhow	IADLGNACWYDEH.YTNS	IQTRE	YRSPEVLL	GAPWGCGADIWS

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      210          220          230          240
PF14_0431  FGCVLAELYTGSLLFRTHE.....HMEHLAMMESITIQPIPKNMLY....
PF14_0408  LGCILFEELTKKILFDYQN.....IYRFIYSIVSYIGPFPFYMINNCRI
PF11_0156  AAATVFELATGKILFPGKS.....NNHMIKLMMEYKGFESHKMIK....
PFC0105w   FACMVFELVTGDFLFNPKGDRYDKNEEHLSEFIEVLGNIPKHMID....
1how      TACLIFELITGDFLFEPDEGHSYTKDDDHIAQIIELLGELPSYLLR....

                                          250          260
PF14_0431  .....EATKTINGSKYVN.....
PF14_0408  PHIFTKHGLIILKKFTTDNMYENYIKEEQLNQEDDEEIVFNSNDFRLNK
PF11_0156  .....GGQFYSQHFNENLDFLYVD
PFC0105w   .....AGYNCHKYFNK.....
1how      .....NGKYTRTFN.....

      270          280          290
PF14_0431  .....KDELKLAWPENASS.....INSIKHVKKCLP.....LYKIKH
PF14_0408  KDNILT KDLLKKNPNTSTPRKRNNNNNEIYYDVCYPSDNLKNNFQISD
PF11_0156  RDHYSKKEVVRVISDLRPTKNI...TCDLLEHQYWLKGNPKMQFLKKKI
PFC0105w   .....NNYRLKNI RN IKKYG.....LYKILKYKYNLP.....EKEI
1how      .....SRGLLRNISKLKFWP.....LEDVLT EKYKFS.....KDEA

      300          310          320
PF14_0431  ELFCDFLYSILQIDPTLRPSPAELLKHKFI.....
PF14_0408  TLFVDFLSSLQIDPSKRCNAMEALLKHPWL.....
PF11_0156  KQLGDLLEKCLILDPSKRYTPDQALQHPYL.....
PFC0105w   SPLCSFLLPMLSVDPQTRPSAYTMLQHPWL.....
1how      KEISDFLSPMLQLDPRKRADAGGLVNHLPWLKDTLGMEEIRVPDRELYGSG

PF14_0431  .....
PF14_0408  .....
PF11_0156  .....
PFC0105w   .....
1how      SDIPGWFEEVRDHKRH

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Fig. S1. Alignment of kinase domains of the four PfCLKs with SRPK Sky1p of *Saccharomyces cerevisiae* (PDB ID; 1how). The amino acid residues shown in red indicate highly conserved sequences essential for the kinase activity. PF14_0431, PfCLK-1; PF14_0408; PfCLK-2; PF11_0156, PfCLK-3; PFC0105w, PfCLK-4.