

### **CYCA1;1**

MSNILQNRSSFSSSTKSSLAKRQAPSSSENSVKLMPAMTKKRAPLSNITNQKI  
ASRLQNSDSVHCSNKS AKLKIAPSV CVNASFSSNLQQSIVPHKVASSPSKSDD  
GSVSMDETRSSSDSYKSPQVEYIENDDVSAVVSIERKALS NLFITPNSETIDNY  
CSRDLVLSDMKKMDKNQIVNIDSNNGDPQLCATFACDIYKHLRASEAKKRPD  
VDYMERVQKDVNSSMRGILVDWLIEVSEEYRLVPETLYLTVNYIDRYLSGNV  
ISRQKLQLLG VACMMIAAKYEEICAPQVEEFCYITDNTYLKDEVLDMESDVL  
NYLKFEMTAPTTKCFLRRFVRAAHGVHEAPLMQLECMANYIAELSLLEYTM  
LSHSPSLVAASAIFLAKYILD PTRRPWNSTLQHYTQYKAMELRGCVKDLQRL  
CSTAHGSTLPAVREKYSQH KYKFVAKKFCPSVIPQE FFNS

### **CYCA1;2**

MSSSSRNLSQENPIPRPNLAKTRTSLRDVGNRRAPLGDITNQKNGSRNPSPSST  
LVNCSNKIGQSKKAPKALSRNWNLGILDSGLPPKPNAKSNIIVPYEDTELLQS  
DDSLCSPALSLDASPTQSDPSISTHDSL TNHVVDY MVESTTDDGNDDDDDE  
IVNIDSDLMDPQLCASFACDIYEHLRVSEVNKR PALDYMERTQSSINASMRSIL  
IDWLVEVAEEYRLSPETLYLAVNYVD RYLTGNAINKQNLQLLGVT CMMIAA  
KYEEVCVPQVEDFCYITDNTYL RNELLEMESSVLNYLKFELTTPTAKCFLRRF  
LRAAQGRKEVP SLLSECLACYLTEL SLLDYAMLRYAPSLVAASAVFLAQYTL  
HPSRKPW NATLEHYTSYRAKHMEACVKNLLQLCNEKLSSDVVAIRKKYSQH  
KYKFAAKKLCPTSLPQELFL

### **CYCA2;1**

MHRASSKHTNAKKEAISTSKIRDNNVRVTRSRAKALGVSNSPSKPAFKHETK  
RVARPSNKR MASDNITVCNQKRR AVLKDVTNTLAESIISTEGNVKACKRGGK  
ETKQIEEDGLVDVDGEKSKLAEDLSKIRMVESLDASASKQKEDRS DVTDCVQ  
IVDIDSGVQDPQFCSLYAASIYDSINVAELEQRPSTSYMVQVQRDIDPTMRGIL  
IDWLVEVSEEYKLVS DTLYLTVNLIDRFMSHNYIEKQKLQLLGITCMLIASKY  
EEISAPRLEEFCFITDNTYTRLEVLSMEIKVLNSLHFRLSVPTTKTFLRRFIRAA  
QASDKVPLIEMEYLANYFAELTLTEYTFLRFLPSLIAASAVFLARWTL DQSNH  
PWNQTLQHYTRYETSALKNTVLAMEELQLNTSGSTLIAIHTKYNQQKFKRVA  
TLTSPERVNTLFSR

### **CYCA2;2**

MYCSSSMHPNANKENISTSDVQESFVRITRSRAKKAMGRGVSIPPTKPSFKQQ  
KRRAVLKDVSNTSADIYSELRKGGNIKANRKCLKEPKKAAKEGANSAMDIL  
VDMHTEKSKLAEDLSKIRMAEAQDVSLSNFKDEEITEQQEDGSGVMELLQVV  
DIDSNVEDPQCCSLYAADIYDNIHVAELQQRPLANYMELVQRDIDPDMRKILI  
DWLVEVSDDYKLV PDTLYLT VNLIDRFLSNSYIERQRLQLLGVS CMLIASKYE  
ELSAPGV EEF CFITANTYTRPEVLSMEIQILNFVHFRLSVPTTKTFLRRFIKAAQ  
ASYKVPFIELEYLANYLAE TLVEYSFLRFLPSLIAASAVFLARWTL DQTDHP  
WNPTLQHYTRYEVAELKNTVLAMEDLQLNTSGCTLAATREKYNQPKFKSVA  
KLTSPKRVTSLFSR

### **CYCA2;3**

MGKENAVSRPFTRSLASALRASEVTSTTQNQQRVNTKRPALEDTRATGPNKR  
KKRAVLGEITNVNSNTAILEAKNSKQIKKGRGHGLASTSQLATSVTSEVTDLQ  
SRDAKVEVASNTAGNLSVSKGTDNTADNCIEIWN SRLPPRPLGRSASTAEKS  
AVIGSSTVPDIPKFVDIDSDDDKDPLLCLYAPEIHYNLRVSELKRRPLPDFMERI  
QKDVTQSMRGILVDWLVEVSEEYTLASDTLYLT VYLIDWFLHGNYVQRQQL  
QLLGITCMLIASKYEEISAPRIEEFCFITDNTYTRDQVLEMENQVLKHFSFQIYT  
PTPKTFLRRFLRAAQASRLSPSLEVEFLASYLTEL TLIDYHFLKFLPSVVAASA  
VFLAKWTMDQSNHPWNPTLEHYTTYKASDLKASVHALQDLQLNTKGCPLS  
AIRMKYRQEKYKSVAVLTSPKLLDTLF

### **CYCA2;4**

MGKENAVSGNSIPIHGRPVTALASALRASSKLITSSEVAATTQNQGRVLRAK  
SKRTALDEKKANAPKKRAVLKDITNVT CENSYTSCFSVAVENIKQIKKGRQSS  
SSSKVASSSATSQVTD AKVEVVSNSAGASLSVFTDTS LGTNETSYSIIAKPSSR  
SPPRPFGTVERSCGGASSPKFVDIDSDDDKDPLLCSLYAPDIYYNLRVAELKRRP  
FPDFMEKTQRDVTETMRGILVDWLVEVSEEYTLVPDTLYLT VYLIDWFLHGN  
YVERQRLQLLGITCMLIASKYEEIHAPRIEEFCFITDNTYTRDQVLEMESQVLK  
HFSFQIYTPTSKTFLRRFLRAAQVSFPNQSLEMEFLANYLTE LMDYPFLKFL  
PSIIAASAVFLAKWTLNQSSH PWNPTLEHYTTYKASDLKASVHALQDLQLNT  
KGCSLNSIRMKYRQDKFKSVAVFSSGELPDKLFIS

### **CYCA3;1**

MADEKENCVRMTRAATKRKASMEAAIDKERINKKR VVLGELPNLSNIKKSR  
KATTKQKKKSVSIPTIETLNSDIDTRSDDPQMCGPYVTSIFEYLRQLEVKS RPL

VDYIEKIQKDVTSNMRGVLVDWLVEVAEEYKLLSDTLYLAVSYIDRFLSLKT  
V NKQRLQLLGVTSM LIASKYEEITPPNVDDFCYITDNTYTKQEIVKMEADILL  
ALQFELGNPTSNTFLRRFTRVAQEDFEMSHLQMEFLCSYLSELSMLDYQSVK  
FLPSTVAASAVFLARFIIRPKQHPWNVMLEEYTRYKAGDLKECVAMIHDLYL  
SRKCGALEAIREKYKQHKFKCVATMPVSPELPLTVFEDVNI

### **CYCA3;2**

MTEQEICVRVTRAAAKRKASTAMGIDGDRVNKKRVVLGELLNVSNNLLAN  
LNQKKETQKPKRNLKPPPAKQIKSAPVAIIDLESKSDIDSRSDDPQMCGPYVA  
DIYEYLRQLEVKPKQRPLPDYIEKVQKDVTPSMRGVLVDWLVEVAEEYKLGS  
ETLYLTVSHIDRFLSLKTVNKQKLQLVGVSAMLIASKYEEISPPKVDDFCYITD  
NTFSKQDVVKMEADILLALQFELGRPTINTFMRRFTRVAQDDFKVPHLQLEPL  
CCYLSELSILDYKTVKFVPSLLAASAVFLARFIIRPKQHPWNQMLEEYTKYKA  
ADLQVCVGIHDLYLSRRGGALQAVREKYKHHKFQCVATMPVSPELPVTFW  
EDVTI

### **CYCA3;3**

MVSKKDKQIHSDHNPQDASPVEWAEIRHKLLAFQENIQSGSDIDARSDDPQM  
CGLYVSDIYEYLRLEVKPKLRPLHDYIEKIQEDITPSKRGVLVDWLVEVAEE  
FELVSETLYLTVSYIDRFLSLKMOVNEHWLQLVGVSAMFIASKYEEKRRPKVE  
DFCYITANTYTKQDVLKMEEDILLALEFELGRPTTNTFLRRFIRVAQEDFKVP  
NLQLEPLCCYLSELSMLDYSCVKFVPSLLAASAVFLARFIILPNQHPWSQMLE  
ECTKYKAADLQVCVEIMLDLYLSRSEGASKAVREKYKQHKFQYVAAIPVYQ  
ELPVTFWEDVVTI

### **CYCA3;4**

MAENQNCARMTRAAAKRKASSMALTENPVSKKRVLGELPNMSNVVAVPN  
QERETLKAKTSVNNTSKRQMKKALMIPEASVLIESRSVDPQMCEPFASDICAYL  
REMEGKPKHRPLPDYIEKVQSDLTPHMRAVLVDWLVEVAEEYKLVSDTLYL  
TISYVDRFLSVKPINRQKLQLVGVSAMLIASRKYEEIGPPKVEDFCYITDNTFT  
KQEVVSMEADILLALQFELGSPTIKTFLRRFTRVAQEDFKDSQLQIEFLCCYLS  
ELSM LDYTCVKYLP SLLSASAVFLARFIIRPKQHPWNQMLEEYTKYKAADLQ

VCVGIIHDLYLSRRGNTLEAVRNKYKQHKYKCVATMPVSPELPLAFFEDITIR  
GMA

#### **CYCB1;1**

MMTSRSIVPQQSTDDVVVVDGKNVAKGRNRQVLGDIGNVVRGNYPKNNEP  
EKINHRPRTSRQNPTLLVEDNLKKPVVKRNAVPKPKKVAGKPKVVDVIEISSD  
SDEELGLVAAREKKATKKKATTYTSVLTARSKAACGLEKKQKEKIVDIDSAD  
VENDLAAVEYVEDIYSFYKSVESEWRPRDYMASQPDINEKMRLILVEWLIDV  
HVRFELNPETFYLTVNILDRFLSVKPVPRKELQLVGLSALLMSAKYEEIWPPQ  
VEDLVDIADHAYSHKQILVMEKTILSTLEWYLTVPOTHYVFLARFIKASIADK  
MENMVHYLAELGVMHYDTMIMFSPSMVAASAIYAARSSLRQVPIWTSTLKH  
HTGYSETQLMDCAKLLAYQQWKQQEEGSESSTKGALRKKYSKDERFAVALI  
PPAKALLTGTESA

#### **CYCB1;2**

MATRANVPEQVRGAPLVDGLKIQNKNGAVKSRRALGDIGNLVSVPGVQGGK  
AQPPINRPITRSFRAQLLANAQLERKPINGDNKVPALGPKRQPLAARNPEAQR  
AVQKKNLVVKQQTKPVEVIETKKEVTKKEVAMSPKNKKVTYSSVLSARSKA  
ACGIVNPKIIDIDESDKDNHLAAVEYVDDMYSFYKEVEKESQPKMYMHIQT  
EMNEKMRAILIDWLLEVHIKFELNLETLYLTVNIIDRFLSVKAVPKRELQLVGI  
SALLIASKYEEIWPPQVNDLVYVTDNAYSSRQILVMEKAILGNLEWYLTVPQT  
YVFLVRFIKASMSDPEMENMVHFLAELGMMHYDTLTFCPSMLAASAVYTAR  
CSLNKSPAWTDTLQFHTGYTESEIMDCSKLLAFLHSRCGESRLRAVYKKYSK  
AENGGVAMVSPAKSLLSAAADWKKPVSS

#### **CYCB1;3**

MATGPVVHPQPVRGDPIDLKNAAAKNRRALGDIGNVDSLIGVEGGKLNRPIT  
RNFRAQLLENAQVAAAANKKAPILDGVTKKQEVVRAVQKKARGDKREPSKP  
IEVIVISPDITNEVAKAKENKKKVITYSSVLDARSKAASKTLDIDYVDKENDLAA  
VEYVEDMYIFYKEVVNESKPQMYMHTQPEIDKMRSLIDWLVEVHVKFDLS  
PETLYLTVNIIDRFLSLKTVPRRELQLVGVSALLIASKYEEIWPPQVNDLVYVT  
DNSYNSRQILVMEKTILGNLEWYLTVPQTQYVFLVRFIKASGSDQKLENLVHFL  
AELGLMHHDLSLMFCPSMLAASAVYTARCCLNKTPWTDTLKFHTGYSESQ  
MDCSKLLAFIHSKAGESKLRGVLKKYSKLGRGAVALISPAKSLMSSAP

#### **CYCB1;4**

MASSRVSDLPHQRGIAGEIKPKNVAGHGRQNRKVLGDIGNLVTGRDVATGK  
DVAKKAKQPQQQTAEVIVISPDENEKCKPHFSRRTHIRGKTFTATLRARSK  
AASGLKDAVIDIDAVDANNELAAVEYVEDIFKFYRTVEEEGGIKDYIGSQPEI  
NEKMRSILIDWLVDVHRKFELMPETLYLTINLVDRFLSLTMVHRRELQLLGL  
GAMLIACKYEEIWAPEVNDFVCISDNAYNRKQVLAMEKSILGQVEWYITVPT  
PYVFLARYVKAAPCDAEMEKLVFYLAELGLMQYPIVVLNRPSMLAASAVY  
AARQILKKTPFWTETLKHHTGYSEDEIMEHAKMLMKLRDSASESKLIAVFKK  
YSVSENAEVALPSLDDFSVSCA

#### **CYCB1;5**

MAHYINYGKRLFDIGLYLKTSVDLILQQQHVLMSQQKFTDISLCHREAPNPK  
LDLPDDNRLSPLTELEDIGQQSKTLGTAIHRKISEQKRVIESGSVASIVEHKRTN  
LSAIMATRANIEQVRGAPLVDGLKIQNKNGAVKNRRALGDIGNLVSVPGVQ  
GGKAQPPINRPITLSFRAQLLANAQLERKPINGDNKVPALGPKSQPLAARNPE  
AQRAVQKKNLVVKQQTKPVEVIETKRNAQSKAACGIVNPKILDIDESDKDN  
HVAAVEYVDDMYSFYKEVEKESQPKMYMHIQTEMNEKMRAILIDWLLEVHI  
KFELNLETLYLTVNIIDRFLYVKAVPKRELQVNDLVYVTDNAYSSRQILVMK  
KAILGNLEWYLTIPYVFLFCFIKASISDPEVLHVQKKNLQASKTKSFSIQVL  
SFSSHKSIVKSDQFCKKFNLCEVTALASEFHLGNCEAWRETVTKLKDPETKC  
LKVVFEYTASDACGYG

#### **CYCB2;1**

MVNSCENKIFVKPTSTTILQDETRSRKFGQEMKREKRRVLRVINQNLAGARV  
YPCVVNKRGSLLSNKQEEEEGCQKKKFDSL RPSVTRSGVEEETNKKLKPSVPS  
ANDFGDCIFIDEEEATLDLPMPMSLEKPYIEADPMEEVEMEDVTVEEPIVDIDV  
LDSKNSLAAVEYVQDLYAFYRTMERFSCVPVDYMMQQIDLNEKMRAILIDW  
LIEVHDKFDLINETLFLTVNLIDRFLSKQNVMRKKLQLVGLVALLLACKYEEV  
SVPVVEDLVLISDKAYTRNDVLEMEKTMSTLQFNISLPTQYPFLKRFLKAAQ  
ADKKCEVLASFLIELALVEYEMLRFPSSLAAATSVYTAQCTLDGSRKWNSTC  
EFHCHYSEDQLMECSRKLVS LHQRAATGNLTGVYRKYSTSKFGYIAKCEAA  
HFLVSESHHS

#### **CYCB2;2**

MVNPEENNRLVVKPITEILQDDDKRSRKFVEMKRQNRALGVINHNLVG  
AKAYPCVVNKRRLSQRKQESCDKKKLDLHPSISRSQEETKKLKPSGNEFG

DCIFIDEEEEKNEEVTLDQPMPSLEOPYIEFDPMEEEVEMEDMEEEQEEPVL  
DIDEYDANNSLAAVEYVQDLYDFYRKTERFSCVPLDYMAQQFDISDKMRAIL  
IDWLIEVHDKFELMNETLFLT VNLIDRFLSKQAVARKKLQLVGLVALLLACK  
YEEVSVPIVEDLVVISDKAYTRTDVLEMEKIMLSTLQFNMSLPTQYPFLKRFL  
KAAQSDKKLEILASFLIELALVDYEMVRYPPSLLAATAVYTAQCTIHGFSEWN  
STCEFHCCHYSENQLECCRRMVRLHQKAGTDKLTGVHRKYSSSKFGYIATKY  
EAAHFLVSDSH

### **CYCB2;3**

MVRSDENSLGLIGSMSLQGGGVVGKIKTTATTGPTRRALSTINKNITEAPSYP  
YAVNKRSVSERDGICNKPPVHRPVTRKFAAQLADHKPHIRDEETKKPDSVSSE  
EPETIIIDVDESDKEGGDSNEPMFVQHTEAMLEEIEQMEKEIEMEDADKEEEPV  
IDIDACDKNNPLAAVEYIHD MHTFYKNFEKLSCVPPNYMDNQQDLNERMGI  
LIDWLIEVHYKFELMEETLYLTINVIDRFLAVHQIVRKKLQLVGVTALLLACK  
YEEVSVPVVDDLILISDKAYSRRVLDMEKLMANTLQFNFSLPTPYVFMKRFL  
KAAQSDKKLEILSFFMIELCLVEYEMLEYLPSKLAASAIYTAQCTLKGFEWS  
KTCEFHTGYNEKQLLACARKMVAFH HKAGTGKLTGVHRKYNTSKFCHAAR  
TEPAGFLI

### **CYCB2;4**

MGGSDENRHGVIGPMNRQQGGLRGGKVIPTNGQTRRALSNINKNIIGAPVYP  
CAVKRPFTEKNGICNKKIPPVPVHRPVTRKFAAQLAENNLQIHKEETKKPDLIS  
NEALDRIITDVEEGDFNEPMFVQHTEAMLEEIDKMEGIEMQDSNDIDAEVEES  
VMDIDSCDKNNPLSVVEYINDIYCFYKKNECRSCVPPNYMENQHDINERMGR  
ILFDWLIEVHYKFELMEETLYLTINLIDRFLAVHQHIARKKLQLVGVTAMLLA  
CKYEEVSVPVVDDLILISDKAYTRTEILDMEKLMANTLQFNFCLPTPYVFMRR  
FLKAAQSDKKLELLSFFMIELCLVEYEMLQYTPSQLAASAIYTAQSTLKG YED  
WSKTSEFHSGYTEEALLECSRKMVGLHHKAGTGKLTGVHRKYNTSKFGYAA  
RIEPAGFLLL

### **CYCB2;5**

MNYSNNYIEHQNKKKTIIFFRQFKKQKPMLRMGVHLVVINKNTFNFFNRQN  
NYFN SGKTKKIFVIDRFLAVHQIVRKKLQLVGVTALLLACKYEEVSVPVVDD  
LILISDKAYSRRVLDMEKLMANTLQFNFSLPTPYVFMKRFLKAAQSDKKLEI  
LSFFMIELCLVEYEMLEYLPSKLAASAIYTAQCTLKGFEWSKTCEFHTGYNE

EQLLACARKMVAFHKKAGTGKLTGSTTHLSSFMLQEVNQLGFCFKGGKNYN  
KNLI

### **CYCB3;1**

MAFAKAPRLSRDDILGNRVSTRSFKIFSDNQKTDPASTIGTSQKKTRIPLRRKS  
VTISNGLGATSNTNNMKKENSRTGKKGSSIENWEEYTKVTRKALADLSNLG  
GNTLRIPTLCGSSTMKWKGVKMANPKRVSVGPTRANNISVKKSTKENVSKRT  
TELGNNNLYKTGQKFIKNKTLSLGSTAGGTRKSLPTLKRTSLTDKSLKKFNVS  
GLNSKQLGQGLASKASNQAVPQLSSAGTYTWKTRTSVGSIQSDGNKQSKNN  
VRFVRKSIKIQTTVKTSLQNRSSLKKPPVGRSKSRSSIPSSAVASTLSLPEKVE  
TKCLEEDTQGESSSSGNKDPTTKVLDVTAKPKSKRRKSFTSLLVNGSKFDEKN  
GETTEPEKLPSIDDESQLEVAEYVDDIYQFYWTAEALNPALGHYLSAHAEV  
SPVTRGILINWLIEVHFKFDLMHETLYLTMDLLDRYLSQVPIHKNEMLIGLT  
ALLASKYEDYWHPRIKDLISISAESYTREQILGMERSMLKQLKFRLNAPTPY  
VFMLRFLKAAQSNKKLEQLAFYLIELCLVEYEALKYKPSLLCASAIYVARCTL  
HMTVPVWTSLLNNHTHYNVSQMKDCSDMILRFHKA AKTGNLRVTYEKYINPD  
RSNVAVLKPLDKLPL

### **CYCC1;1**

MAANFWNSSHYKQLLDPEEVDVVDLDERGKISIDDFKLIKFMNSNHIMKLA  
QHIKVRQRVVATAITYMRRVYIRKSMVEFEPRLVALTCLYLASKAEESIVQAR  
NLVFYIKRLYPDEYNKYELKDILGMEMKVL EALDYLVVFHPYRSLSEFLQD  
AALNDVNMNQITWGIVNDTYKMDLILVHPPYRIALACIYIASVHREKDITAWF  
EDLHEDMNLVKNIAMEILDFYENYRTITEEKVNSAFSKLALKL

### **CYCC1;2**

MASNFWTSTHYKELKDPEEVNVVHPLDAQRGISVEDFRLIKLHMSNYISKLA  
QHIKIRQRVVATAVTYMRRVYTRKSLTEYEPRLVAPTCLYLACKAEESVVHA  
KLLVFYMKKLYADEKFRYEIKDILEMEMKVL EALNFYLVVFHPYRSLPEFLQ  
DSGINDTSMTHLTWGLVNDTYRMDLILHPPFLITLACIYIASVHKEKDIKTWF  
EELSVDNMNIVKNIAMEILDFYENHRLFTEERVHAAFNKLATNP

### **CYCD1;1**

MRSYRFSDY LHMSVSFSNDMDLFCGEDSGVFSGESTVDFSSSEVDSWPGDSI  
ACFIEDERHFVPGHDYLSRFQTRSLDASAREDSVAWILKVQAYYNFQPLTAY  
LAVNYMDRFLYARRLPETSGWPMQLLAVACLSLAAKMEEILVPSLFDFQVA

GVKYLFEAKTIKRMELLVLSVLDWRLRSVTPFDFISFFAYKIDPSGTFLGFFISH  
ATEIILSNIKEASFLEYWPSSIAAAAILCVANELPSLSSVVNPHESPETWCDGLS  
KEKIVRCYRLMKAMAIENNRLNTPKVIAKLRVSVRASSTLTRPSDESSFSSSSP  
CKRRKLSGYSWVGDETSTSN

### **CYCD2;1**

MAENLACGETSESWIIDNDDDDINYGGGFTNEIDYNHQLFAKDDNFGGNGSI  
PMMGSSSSSLSEDRIKEMLVREIEFCPGTDYVKRLLSGDLDSLVRNQALDWIL  
KVCAHYHFGHLCICLSMNYLDRFLTSELPKDKDWAAQLLAVSCLSLASKM  
EETDVPHIVDLQVEDPKFVFEAKTIKRMELLVVTTLNWRLQALTPFSFIDYFV  
DKISGHVSENLIYRSSRFILNTTKAIEFLDFRPSEIAAAAAVSVSISGETECIDEE  
KALSSLIYVKQQERVKRCLNLMRSLTGEENVRGTSLSQEQARVAVRAVPASP  
VGVLEATCLSYRSEERTVESCTNSSQSSPDNNNNNNNSNKRRRKQ

### **CYCD3;1**

MAIRKEEESREEQSNSFLLDALYCEEKWDDEGEEVEENSSLSSSSSPFVVLQ  
QDLFWEDDLVTLFSKEEQGLSCLDDVYLSTDRKEAVGWILRVNAHYGFST  
LAAVLAITYLDKFICSYSLQRDKPWMLQLVSVACLSLAAKVEETQVPLLLDF  
QVEETKYVFEAKTIQRMELLILSTLEWKMHLPISFVDHIIRRLGLKNNAHW  
DFLNKCHRLLLSVISDSRFVGYLPSVVAATMMRIIEQVDPFDPLSYQTNLLG  
VLNLTKKVKTCYDLILQLPVDRIGLQIQIQSSKKRKSHDSSSSLNSPSCVIDA  
NPFNSDESSNDSWSASSCNPTSSSSPQQQPPLKKMRGAENEKKKPILHLPW  
AIVATP

### **CYCD3;2**

MALEKEEEASQNGAFCVLDGLYCEEETGFVEDDLDDGDLDLFLEKSDESVV  
KFQFLPLLDMFLWDDDEILSLISKENETNPCFGEQILDGFLVSCRKEALDWVL  
RVKSHYGFTSLTAILAVNYFDRFMTSIKLQTDKPWMSQLVAVASLSLAAKVE  
EIQVPLLLDLQVEEARYLFEAKTIQRMELLILSTLQWRMHPVTPISFFDHIIRRF  
GSKWHQQLDFCRKCERLLISVIADTRFMRYFPSVLATAIMILVFEELKPCDEV  
EYQSQITTLKVNQEKVNECYELLLEHNPSKKRMMNLVDQDSPSGVLDFDDS  
SNSSWNVSTTASVSSSSSSPEPLLKRRRVQEQQMRLPSINRMFLDVLSSPR

### **CYCD3;3**

MALEEEEEQNAPFCVLDGLFCEEESEFHEQVDLCDESVEKFPFLNLGLSDHD  
MLWDDDELSTLISKQEPCLYDEILDDEFLVLCREKALDWIFKVKSHYGFNSLT



ALLAVNYFDRFITSRKFKQTDKPWMSQLTALACLSLAAKVEEIRVPFLLDQVE  
EARYVFEAKTIQRMELLVLSTLDWRMHPVTPISFFDHIIRRYSFKSHHQLEFLS  
RCESLLLSIIPDSRFLSFSPSVLATAIMVSVIRDLKMCDEAVYQSQLMTLLKVD  
SEKVNKCYELVLDHSPSKKRMMNWMQQPASPIGVFDASFSSDSSNESWVVS  
ASASVSSSPSSEPLLKRRRVQEQQMRLSSINRMFFDVLSSSPR

#### **CYCD4;1**

MAEENLELSLLCTESNVDDEGMIVDETPIEISIPQMGFSQSESEEIIMEMVEKEK  
QHLPSDDYIKRLRSGDLDLNVGRRDALNWIWKIRGLCRTDREACEVHQFGPL  
CFCLAMNYLDRFLSVHDLPSGKGWILQLLAVACLSLAAKIEETEVPMLIDLQ  
VGDPQFVFEAKSVQRMELLVLNKLKWRLRAITPCSYIRYFLRKMSKCDQEPS  
NTLISRSLQVIASTTKGIDFLEFRPSEVAAAVALSVSGELQRVHFDNSSFSPLFS  
LLQKERVKKIGEMIESDGSDLCSQTPNGVLEVSACCFSEFKTHDSSSSYTHLS

#### **CYCD4;2**

MAEFMEPNLVSNFDDEKSNSVDTRSIFQMGFPLESEEIVREMIKERQHSPRD  
DYLKRLRNGDLDFNVRIQALGWIWKACEELQFGPLCICLAMNYLDRFLSVHD  
LPSGKAQTVQLLAVACLSLAAKIEETNPPELMQLQVGAPMFVFEAKSVQRM  
ELLVLNVLRWRLRAVTPCSYVRYFLSKINGYDQEPHSRLVTRSLQVIASTTKG  
IDFLEFRASEIAAAVALSVSGEHFDKFSFSSSFSSLEKERVKKIGEMIERDGSSS  
SSQTPNNTVLQFKSRRYSHSLSTASVSSSLTSL

#### **CYCD5;1**

MGEPKDSLALFLCHESESSLNEDDDDETIERSDKQEPHFTTTIDDEDYVADLVL  
KENLRFETLPSKTTSSSDRLIAIDWILTTRTRFGFQHQTAYIAISYFDLFLHKRFI  
GLQKDETWAMRLLSVACLSLAAKMEERIVPGLSQYPQDHDVFVKPDVIRKTE  
LLILSTLDWKMNLITPFHYFNYFLAKISQDNHVSVDLVLLRSSDLSLLALTKEI  
SFTEYRQFVVAAVTTLLASSSTSSDIRLTREEIANKFGSISWWTSNENENVYLC  
YQRTLEIEERKHMTTPPEIAVSREPPASGSGAKRRLSFDDSDQSSPPAKRMRL

#### **CYCD6;1**

MEFHLEHPLSHSSLHNNFNDDTDYETLPHSLFLVEFQHMPSSHYPHSLKSSAF  
LLSNRNQAISSITQYSRKFDPSLTYLAVNYLDRFLSSEDMPQSKPWILKLISLS  
CVSLSAKMRKPDMSVSDLPVEGEFFDAQMIERMENVILGALKWRMRSVTPFS  
FLAFFISLFELKEEDPLLLKHSLKSQTSDLTFSLQHDISFLEFKPSVIAGAALLFA

SFELCPLQFPCFSNRINQCTYVNKDELMECYKAIQERDIIVGENEGSTETAVNV  
LDQQFSSCESDKSITITASSSPKRRKTSTRRY

**CYCD7;1**

MDNLLCEESWPASPLTPEPLPNFRHRSHDNDVVKMYPEIDAATMEEAIAMD  
EKELCFNNHGDKFVEFFVSKKLTDIRFHAFQWLIQTRSRLNLSYETVFSAAN  
CFDRFVYMTCCDEWTNWMVELVAVTSLSIASKFNEVTTPLLEELEMEGLTH  
MFHVNTVAQMELIILKALEWRVNAVTSYTFSSQTLVSKIGMVGDMIMNRITN  
HLLDVICDLKMLQYPPSVVATAAIWILMEDKVCRESIMNLFQNHKEKIVKC  
VDGMKNRDIDHQSSRRRYSEGRSILSLQRGDVMNMNGDYNVEDLSKIFQIF  
RYEKKKRDRGNHQDNIRPAKRMTIEMSNI

**CYCH1;1**

MADFQTSTQRAKWIFTPQKLAERYKAANQRAVQMLEKCGTTQVEVDASGSL  
TYPKDKVGSGDQADKKLKPLSADEERFMRAFYEAKVQEVCSAFAPPHKIQA  
TALQYFKRFYLQWSVMQHHPKEIMLTCVYAACKIEENHVSAAEIGKGINQDH  
RIILKYEMAVLQSLEFDLIVYAPYRAIEGFVNNMEEFLQARDDEIQKLESLLKG  
ATAEADKVMLTDAPLLFPPGQLALASLRIANGVLGVIDFDRYLENIVSQPNSE  
HTTSELTKLLDNIEYLVKNYKCPSEKDMKHINRKLKSCLGHSSSHDESKKREK  
RSKHKSHRSSNDTPNGAPPIG

**CYCT1;1**

MAETKNWYNTREAIEKTSPSRDLGINLKEETFQRWSYTSFLQELGQRLNNPQ  
KTIATAIVLCQRFFTRQSLTKNDPKTVAIICMFIAGKVEGSPRPAGDVVFSYR  
VLFNKEPLRDVFERLKMTVLTGEKLVSTLECDLEIEHPYKLVMDWVKRSVK  
TEDGRRLCQAAFNFNDSLRTSLCLQFGPSQIASAAIYIGLSMCKMTLPCDGD  
KAWWREFDVTKRQLWEICDQMLDLYVQDFVVRHGL

**CYCT1;2**

MDEALNENASGSESDASSVASNLHDDDEIIPWFFSREEIERNSPSRRDGIDLKTE  
TRLRDSYCTFLEILGERLKVPQVTIATAIFFCHRFFLRQSHAKNDRQTIATVCM  
LLAGKVEETPVTLEDVIIASYERIHKKDLAGAQRKEVYDQQKELVLIGEELVL  
STLNFDLCISHPYKPLVEAIKKYMVEDAKTQLAQFAWNFVNDCLRTTLCLQY  
QPHHIAAGAILLAAELPTVDLQSYREVLCQEFDITPCQLEDIRGQILELYERIPT  
SQESKVESSGGVAVVHQPISRDMASTEKCPSSDIEGGSSQVNLSQSDDHSVHD  
GSRSEGIGEVNSESEAQKNLQDHSVGNIMVEKSDDVGVVQLKKDLQLHQEE

VESKQEKDKKSFEKDITKIDLMDEKDLTESEVEDEINKTMQTGRQIFMKVEDP  
DDNMTVEHSEIRNANNSGVDEL VADTCLINDSDL

### **CYCT1;3**

MGEEHPRKRSRQHFEAEARNVSLFESPQCETSKWYFSREEIERFSPSRKDGIDL  
VKESFLRSSYCTFLQRLGMKLHVSQVTISCAMVMCHRFYMRQSHAKNDWQT  
IATSSLFLACKAEDEPCQLSSVVVASYEIIYEWDPASASIRIHQTECYHEFKEILS  
GESLLLSTSAFHLDIELPYKPLAAALNRLNAWPD LATAAWN FVHDWIRTTL C  
LQYKPHVIATATVHLAATFQNAKVGSRRDWWLEFGVTTKLLKEVIQEMCTLI  
EVDRRRNMPPPPPPPRRELSWAIPAAVKPVHMARAYPFHSYPLQSYRQAGIW

### **CYCT1;4**

MAGVLAGDCSFGESGVSSYSRNSNEKQDEVARWYFGRKEIEENSPSRLDSID  
LKKETYLRKSYCTFLQDLGMRLKVPQVTIATAIIFCHRFFIRQSHARNDRRTIA  
TVCMFLAGKVEETPRPLKDVIVVSYEIIHKKDPTTAQKIKQKEVYEQQKELIL  
NGEKIVLSTLGFDNFVYHPYKPLVEAIKKFKVAQNALAQVAWNFVNDGLRT  
SLCLQFKPHHIAAGAIFLAAKFLKVKLPSDGEKVWWQEFDVTPRQLEDVSNQ  
MLEL YEQNRVPASQVSEVESSVGGGSAHHVGSRPSARLTHEHSNSDNLGGST  
KATQNRSDNNGSGEAGSVITEQKGERDTETKDSMHTESH PAHKSRSGVEAPG  
EDKIEKAGAHFPEDDKSRIVGTADVTVSQSPKDIKMFRDKVKAKLEAKKVQG  
EKTRKKDLVDEDDLIERELEDVELAVEDDKDIQNKSSMGTEHGEILDGNNLV  
VNTEEGEMIDDVSSTMP SRKRKMESPCEKQLGEGKRRHDNSENVEEGQKTN  
PGGSSHSYGDREPRRHSQER

### **CYCT1;5**

MAGVLAGECSYSESGVSSHSRNSHEKQEEVSRWYFGRKEIEENSPSRLDGIDL  
KKETYLRKSYCTFLQDLGMRLKLAWFLDIIAYVCTDVTIATAIIFCHRFFFRQS  
HAKNDRRTIATVCMFLAGKVEETPRPLKDVIFVSYEIIINKKDPGASQKIKQKE  
VYEQQKELILNGEKIVLSTLGFDLNVYHPYKPLVEAIKKFKVAQNALAQVAW  
NFVNDGLRTSLCLQFKPHHIAAGAIFLAAKFLKVKLPSDGEKVWWQEFDVTP  
RQLEDVSNQMLEL YEQNRVPASQGSEVESSVGGGSAQRPGSRNAVSTDEHV  
GSRQTSSVRSTHEQSNSDNHGGSSKGVLNQNNENGGEAANVSVDNKEEIER  
ETKESSLHLESHPAHKDNVREAPHNSRPLVEGPGKDNSEREGGELQDDGAVH  
KSRNVDVGDALISQSPKDLKLLRDKVKAKREKAKKLLGERTRKKDLMDDED  
LIERELEDVQLAVEDEKTKERKVQSRPKAENS DLMGTEHGEILDVKGEVKNT

EEGEMVNNNVSPMMHSRKRKMGSPPEKQSEGKRRHNSENGEEESHKTSRGSS  
HHGDREHRRHSQENNHS

**CYCL1;1**

MIYTAIDTFYLTDEQLRDSPSRKDGIDEATETALRVYGCDLIQESGILLKLPQA  
VMATAQVLFHRFYCKKSFVRFSVKRVAASCVWLAGKLEESPRRSKHIIIVFHR  
MECRRENVPIEHLDFVSKKYSCLKHDLVRTERHLLKEMGFICHVEHPHKFISN  
YLATLEAPELTQEAWNLANDSLRTTLCVRFKSEVVACGVVYAAARRHGVPL  
PEDPPWWNVFDADEAGIQEVCRLAHLVSLPKSQYIQVYKDNDSTHRTSD  
TNASKESPATTVASDKGTPVPSSSSQEKDALIKAGSDKVKEKGDDDGKTLPSE  
PNGKEGPAVNLKSEKSESNVDRSRERERDRSRGRDRDSRGRDSRDSKGRDS  
DRERERDREADRDRQRRHHSKDRSSGYSDKEKSRHRSSRDRGDHYSSHSSRD  
KDRHRRQ

**CYCU1;1**

MLTAAGDDELDPVVGPESATEAATPRVLTIIISHVMEKLVARNEWLAKQTKGF  
GKSLEAFHGVRAPSISIAKYLERIYKYTKCSPACFVVGYYIDRLAHKHPGSL  
VVSILNVHRLLVTCVMIAAKILDDVHYNNEFYARVGGVSNADLNKMELELLF  
LLDFRVTVSFRVFESYCFHLEKEMQLNDAVSSLKDIQPMQESLSPASTLSSLY  
V

**CYCU2;1**

MDSLAI SPRKLRS DLYSYSYQDDSN TVPLVISVLSSLIERTLARNERISRSYGGF  
GKTRVFD CREIPDM TIQSYLERIFRYTKAGPSVYVVAYVYIDRFCQNNQGFRI  
SLTNVHRL LITTIMIASKYVEDMNYKNSYFAKVGGLETEDLNNLELEFLFLMG  
FKLHVNVSVFESYCCHLEREVSIGGGYQIEKALRCAEEIKSRQIVQDPKHHHH  
HQFSRIML

**CYCU2;2**

MAVSNSLTISPRKLRS DLYSYSYQNN SKTPLVISVLSSLIDRTLTRNERISRRAL  
PSSGAGGKTQIFDCREIPDM TIQSYLGRIFRYTKAGPSVYVVAYVYIDRFCQTN  
PGFRISLTNVHRL LITTIMIASKYVEDLN YRNSYFAKVGGLETEDLNKLELEFL  
FLMGFKLHVNVSVFESYCCHLEREVSFGGGYQIEKALRCAEEIKSRQMIIQDP  
KHHHHHHQLARILL

**CYCU3;1**

MDSLATDPAFIDSDVYLRLGLIIEGKRLKKPPTVLSRLSSSLERSLLLNHDDKIL  
LGSPDSVTVFDGRSPPEISIAHYLDRIFKYSCCSPSCFVIAHIYIDHFLHKTRALL  
KPLNVHRLIITTVMLAAKVFD DRYFN NAYYARVGGVTTRELNRLEMELLFTL  
DFKLQVDPQTFHTHCCQLEKQNRDGFQIEWPIKEACRANKETWQKRTPDSLC  
SQTAR

#### **CYCU4;1**

MAELENPSVMSKLIAFLSSLLERVAESNDLTRRVATQSQRVSVFHGLSRPTITI  
QSYLERIFKYANCSPSCFVVAYVYLD RFT HRQPSLPINSFNVHRL LITSVMVA  
AKFLDDL YNNAYYAKVGGISTKEMNFLELDFLFG LGFELNVT PNTFNAYFS  
YLQKEMTLLQPLSLVVPSSRSLITFNDDEASHQKQQQQQLAV

#### **CYCU4;2**

MAYQIDQKMIHDQEPMAEIMPNVITAMSSLLQRVSETNDDL SRPFREHKRISA  
FNAVTKPSISIRSYMERIFKYADCSDSCYIVAYIYLD RFIQKQPLLIDSSNVHR  
LIITSVLVSAKFMDDL CYNNAFYAKVGGITTEEMN LLELDFLFGIGFQLNVTIS  
TYNDYCSSLQREMVMRTMYSPLLEPAFLVRSFHKNLLKNLYDEDHRNSQVT  
SAV

#### **CYCU4;3**

MADQIEIQRMNQDLQEPLAEIMPSVLTAMS YLLQRVSETNDNLSQKQKPSSFT  
GVTKPSISIRSYLERIFEYANC SYSCYIVAYIYLD R FVKKQPFLPINSFNVHRLII  
TSVLVSAKFMDDL SYNNEYAKVGGISREEMNM LLELDFLFGIGFELNVTVST  
FNNYCCFLQREMAMLMKMKS LFLEPSSF KISSKTKLVMYPHEEDSLSTH NK  
KQLAAA

#### **SDS**

MKEIAMRNSKRKPEPTPFAGKKLRSTR LRRKRAQISPVLVQSPLWSKQIGVSA  
ASVDSCSDLLADDNVSCGSSRVEKSSNP KKT LIEEVEVSKPGYNVKETIGDSK  
FRRITRSYSKLHKEKEGDEIEVSESSCVDSNSGAGLRRLNVKGNKINDNDEISF  
SRSDVTFAGHVSNSRSLNFESENKESDVVSVISGVEYCSKFGSVTGGADNEEI  
EISKPSSFVEADSSLGSAKELKPELEIVGCVSDLACSEKFSEEVS DSLDDESSEQ  
RSEIYSQYSDFDYSDYTPSIFFD SGSEFSEKSSSDSPISHSRSLYLQFKEQFCRSTI  
PNDFGSSCEEEIHSELLRFDDEEVEESYLRLRERERSHAYMRDCAKAYCSRM  
DNTGLIPRLRSIMVQWIVKQCSDMGLQQETLFLGVGLLDRFLSKGSFKSERTL  
ILVGIASLTLATRIEENQPYNSIRKRNFTIQNLRYSRHEVVAMEWL VQEVLNF

KCFTPTIFNFLWFYLKAARANPEVERKAKSLAVTSLSDQTQLCFWPSTVAAA  
LVVLACIEHNKISAYQRVIKVHVRTTDNELPECVKSLDWLLGQ

**J18**

MSTEIGHLRRRLVEFLIQSTTLLELPPIVKYSALSLFFDRFRPNLVRFLQKKKAE  
HWLLQPLNESNLQLFVLISIWISCKMHCTRGLSVHSLKSFGDKVITEQLFMVR  
DFLDAELVFLKVLKFEIGTLNIA YTRLEDLLIQKEVAKVGEQLNFEACMDM  
MDLLYEKEDTSLLYQSSKSLAASILVSSYIITVPKQQYEFILPWVKMVTNKEE  
REVVELVEYILAHVLYSNSP