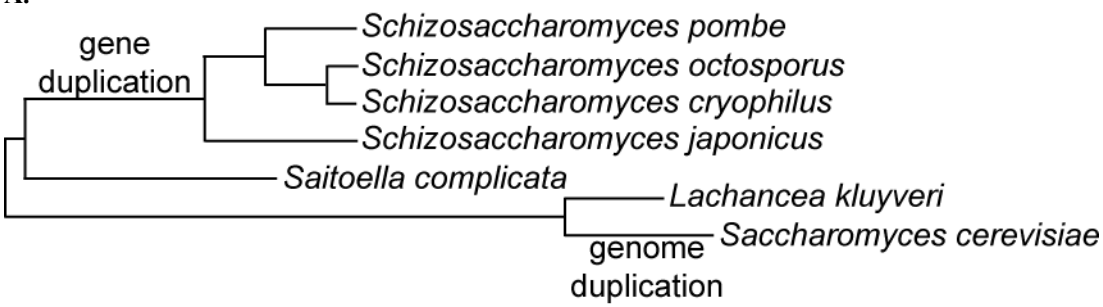
A.



B.

```
pomb_Hbs1     1 MSRHRDVKNLDLDDYELDEEPG----EEELTEEQEEEFRSAVATVRETLLGVP-ISEKEIADTVWYYYFDVEKSVNYLLQKASSKAGAKEKQNTDSQKEKKQ------------------
japo_Hbs1     1 MSRHKDLKNLDLNDYEDEFEP-----EEELTEDQEEAYREAIEQVQTALEGTN-IPFQEIKDTVWYYYFDVNKSVNYLLSKA-IKAKEKDAKKTPVAQSQTK------------------
octo_Hbs1     1 MSRHRNVKNLELEEYDADEP------VEELTDEQEEQFREAIAAVQETVEGLP-VTNKEIADTVWYYYFDVEKSVNYLVKSCTARAEEKNGKDESHKKKPPK------------------
cryo_Hbs1     1 MSRHRNIKNLDLAEYDYEDEPA----QEELTDEQEEQFREAIAAVQETLDGLP-VTTKEIADTVWYYFFDVEKSINYLLKSCTTKAAAQKEKEESEKKKQNK------------------
scom_long     1 MSRHRDVRNLDLDEEMYDDDDYYDGDGHDMTYEEQEQMEAGVAAVHDALNGVPGITLKEIRETLYYYYFDLEKSIAWLLEQHSVKKPAAKPKAAPTASKASGPRLVIDEFDDEPPRKIAR
pomb_Ski7    1 ------------------------------------------------------------------------------------------------------------------------
japo_Ski7     1 ------------------------------------------------------------------------------------------------------------------------
octo_Ski7     1 ------------------------------------------------------------------------------------------------------------------------
cryo_Ski7     1 ------------------------------------------------------------------------------------------------------------------------

scom_short    1 MSRHRDVRNLDLDEEMYDDDDYYDGDGHDMTYEEQEQMEAGVAAVHDALNGVPGITLKEIRETLYYYYFDLEKSIAWLLEQHSVKKPAAKPKAAPTASKA

pomb_Hbs1    98 ------------------------------------------------------------------------------------------------------------------------
japo_Hbs1    96 ------------------------------------------------------------------------------------------------------------------------
octo_Hbs1    96 ------------------------------------------------------------------------------------------------------------------------
cryo_Hbs1    98 ------------------------------------------------------------------------------------------------------------------------
scom_long   121 ISASVIIARHGITWGMGSTASIEPVHPPRVPPGGWGLLGGSGKMSKLAALAKARKEAQ-------------------------------------------------------------
pomb_Ski7     1 ---------------------------------------------MSRLSQLLNSKKAKQK--PPSEHPIGLSSILKQDSSSSSDSPNFFPSSSTNDHQERDTINDTNFVVPEKQKTSKLAL
japo_Ski7     1 ---------------------------------------------MSKLAKLLSSKKAQKAENNTQQNEESKNVINS-------LTKSLETSSISGSSSNTQAQTQTRAPAVPSKLMSKLSQ
octo_Ski7     1 ---------------------------------------------MSKLSQLLNAKRTNQQNSSLSESSGKLTSLLK---SPSSSSEQEHTASVDTVHTTSNAAAESSASTPQPNGLSKLAA
cryo_Ski7     1 ---------------------------------------------MSKLSQLLNAKRANQQNTPAPESSGKLTSLLK---TPPPSVE-EHPAPLDFSQTTSNDTTEYSASSSQPSGLSKLAA
                                                              motif S1                                                                 motif S1'
scom_short  101 ------------------------------------------------------------------------------------------------------------------------

pomb_Hbs1    98 ------------------------------------------------------------------------------------------------------------------------
japo_Hbs1    96 ------------------------------------------------------------------------------------------------------------------------
octo_Hbs1    96 ------------------------------------------------------------------------------------------------------------------------
cryo_Hbs1    98 ------------------------------------------------------------------------------------------------------------------------
scom_long   179 AASKAEKGAAPGLASVSLLSKLTAAKTAPKAAAAPDTPTEPPA-PQAPAEPAVSEPESSQPSSIPPPQSPSPPPVVADDVDMSEAPLLVSPTPSPSSPEHPTFEPALVEATPSVFATSLF
pomb_Ski7    76 LAAERKKLHSSFPSTQQQPPKTEKEKEKEPIQAKHKKNVENDFLLQRFRKVRIAEKKD----------SEQPSSHEIHLTDDDDKTTLQKQMVE--SDQLKKNPQEVKLAPPSSFAKCLT
japo_Ski7    71 LQKRKQQEQQEKHASLASETKNSQSNSKVNDTANLFSQFRKRRLNSQPTTPIIDSKSSLNTEPVPKATPLSPIPHN-TPSPPDRHNSQCSTSCY--DHSIQTPDASMYMSPPSSFAKCLC
octo_Ski7    75 LAAQKKKNENTEETANKRSLPSSSS---LQTDSNSKDSYDKEQLLQRFRKVRIAESKEPNEKPSLVHRQEQQTPTRDTKLNINEDDFASPSQTS--SAHLFSSSPTSLMASPSVFARCLT
cryo_Ski7    74 LAAQKK-NQNSEEASNKRPLPSSSSSS-LQPDTKSNDSFDKEQLLQRFRKVRIAESKTPSEELDHDTLSRYPAPPEEQVNNINYD--PSSSELP--QYDLSSSSPTSMMAAPSIFARCLT

scom_short  101 ------------------------------------------------------------------------------------------------------------------------
```

```
pomb_Hbs1   98 ----------------------------------------NKSKEALADAKDPLDESSNGIKNLSLNKNDEPAFQTNGEVKMKNSSESDNQPEKKKIKKQNPTDLVSVPEIFEQSNPKPV
japo_Hbs1   96 -------------------------------------------------------ENSTKDVTAAVKKVTISQPSNALRKKQVIPQTTKTESEHAQIPQKKEPKLLDIPSLYEKEHEKPS
octo_Hbs1   96 ------------------------------------------------QEQKQKQTVEAQPSTKNASASLNVSMKKLNLNGKEQTGEKSKDEEETQTPRKQESSLLIDVPKIYEESQPKPV
cryo_Hbs1   98 ------------------------------------------------QEQNSTAGNRPSSKKTPVPLDASLEKLNLDGKEQTHETAKGLEETQKVRKQESSALIDVPKIYEESHPKPV
scom_long  298 GPEDYEVKYRSKRRREADSRFFYLPASAAPEVAKVFSGPSPDDVVIAAREEGPKSGKKAKTAKKDQAIAAPTNQLEVDMQAMNMGSSATGGAPAPAPPIKIARKKVNVVEEYAKVDVKES
pomb_Ski7 184 GAKKRVFEDQ-------------IEIHLSKSSLLGFNAPSPDDIVLMAQS---KSKSFQKHKRLDEQLLNSVKSMKKVSQQLKPQKNTNDSNNDHTLLSQDQ--LIELSKLV-----KPR
japo_Ski7  188 FDIHKPPKDN-------------IVIPYSRSALLGFHAPSPDDIVLAAQS---KSKAFQKTANK---------------------AAVGGAAQKPKEDVKLS--IEEITRHA-----KPV
octo_Ski7  190 GAKKKALQNE-------------IKVNLKRSSILGFNTPSPDDLVLMAQS---KSKGFQKHSKRDKALHDSLEQFKAANLQQASNSTTSPISTKDVLIDKEK--LLEISKEV-----KPT
cryo_Ski7  188 GAKKKAMQKE-------------IKVNLKRSSILGFNAPSPDDLVLMAQS---KSKGFQKYNRKDRALFNSLQQLKNASLQRTSTSIATPTVTKDVMVDKSK--LLELSKDI-----KPT
                                                 motif S3
scom_short 101 --------------------------SAAPEVAKVFSGPSPDDVVIAAREEGPKSGKKAKTAKKDQAIAAPTNQLEVDMQAMNMGSSATGGAPAPAPPIKIARKKVNVVEEYAKVDVKES

pomb_Hbs1  178 VHLVVTGHVDSGKSTMLGRIMFELGEINSRSMQKLHNEAANSGKGSFSYAWLLDTTEEERARGVTMDVASTTFESDKKIYEIGDAPGHRDFISGMIAGASSADFAVLVVDSSQNNFERGF
japo_Hbs1  161 IHLVVSGHVDSGKSTMIGRLLYEVGMVDERSMQKLKQSAANAGKGSFSYAWLLDSTDEERARGVTMDVADTTFESSKHIYQIGDAPGHKDFISGMIAGAYLSDYAILVVDASPNNFERGF
octo_Hbs1  169 VHLVVTGHVDSGKSTMLGRIMFELGDVNTRSMQKLHNEASNQGKGSFSYAWLLDSTDEERLRGVTMDVAATSFESHKQIYEVGDAPGHKDFISGMIAGAASAEFAILVVDSSQNNYERGF
cryo_Hbs1  169 VHLVVTGHVDSGKSTMLGRIMYQLGDVNSRSMQKLHNEAANQGKGSFSYAWLLDSTDEERLRGVTMDVAATSFESKKQIYEVGDAPGHKDFISGMIAGAASAEFAILVVDSSQNNYERGF
scom_long  418 ANFVIIGHVDAGKSTMMGRLLYDIGAVDERTIQKFRKESEKMGKGSFALAWVMDSTDEERARGVTVDIATNQFETPKRKFTILDAPGHADFVPNMIAGAAQADFAVLVIDASTGGFESGF
pomb_Ski7  281 TKLLLLGPPKSGKKTLLSRLFFQIGSFDPKTMQKCTVLNAK--KESLSSVLKSTKTKWYDFETFSNSYSSTIIDFPLGIFTTNASS--RDNFLKHSSLFQVMNTAIFTIDCLNP-----L
japo_Ski7  264 IHIGIFGDVGAGKKSLLSRFLYQIGGLDTKHAQKCRLLNSR---QCTMESILSQSNDWYNFETFASSCSTTLLSYSEL------------DLNACSRRLFPLDMGVFVLRPHPTD-----
octo_Ski7  287 TRLSIFGPPKVGKKTLLARLLYQVGALDIKLMQRCALLNSR--KENFSSVLDRDASGLYQFETFSHNYLSSLFALPL------------QDLASFAPFLQTTDIVIVIIHAKYP-----L
cryo_Ski7  285 NRISIFGAPKVGKKTLLARLLYQVGALDIKLMQRCTLLNSR--KENLSSVLGRNESGLYQFETFSHNYLSSLFALPL------------HDLAALATFLQTTDIAVIVIHAKYP-----L
                    motif G1                                                  motif G2                 motif G3

scom_short 195 ANFVIIGHVDAGKSTMMGRLLYDIGAVDERTIQKFRKESEKMGKGSFALAWVMDSTDEERARGVTVDIATNQFETPKRKFTILDAPGHADFVPNMIAGAAQADFAVLVIDASTGGFESGF

pomb_Hbs1  298 LENGQTREHAYLLRALGISEIVVSVNKLDLMSWSEDRFQEIKNIVSDFLIKMVGFKTSNVHFVPISAISGTNLIQKDSSDLYKWYKGPTLLSALDQLVPP---EKPYRKPLRLSIDDVYR
japo_Hbs1  281 FSNGQTREHAYLLRALSVKGIAVCVNKLDTVDWSYERFIAIKENILDFLVSKVGFKETMVHIVPVSGLSGENLIKRDEPKLLSWYNGPTLMNILDDFVPP---TKPVKASLRITVNDTYR
octo_Hbs1  289 LANGQTREHAYLLRALGVSELAVAVNKLDLMSWSLDRYNEIKASVSDFLIRMVGFKEENVHFIPVSAVSGVNLIEKSSSPLYTWYNGPTLIEVLDNFNPP---LKAYRGPLRVSVHDTYR
cryo_Hbs1  289 LANGQTREHAYLLRALGVSEVAVAVNKLDLISWSSDRYFEIKSSISDFLVRMVGFKEENVHFIPVSAVSGVNLIEKQSSPLYNWYDGPTLIEVLDNFIPP---LKSYRGPLRVSVYDTYR
scom_long  538 NVRGQTKEHALLVRSLGVQNLIVAVNKLDSVDWNHERFEEIEMQVSQFLTN-AGFDPQNVQYIPCSGLTGENLVKRSAEPALTWFNGPTVLGALESIAPT---ARAIEKSLRISVQDVYK
pomb_Ski7  392 EGLDGISSILQLMNGLSISSYMFAITKMDEIEWDENKFINLVNSIQSFLKESCGIIEK-SKFIPISGLKGTNLTSISQEKLSQWYKSDTLLGKIDKEADTNHGTWNFLLNLPLSLTISHI
japo_Ski7  369 TELQHICEVVRVLDVLQIRLFVFIITGMDIVDWSESAFTETCQLLQQAIQKQCKQSIPATQFVPTSALNGENLTSLSQGKLRKWYRSGTVLSVLDELCESLAPQKKALNKEPLRASLESI
octo_Ski7  393 DEIESIVYLLRLCYGEKIRDVLFVVTQMDQVSWQEEQYQFAVSSITTCLKDTHGITVSPSSFIPVSGFKGDNVTTLSFGTLQSWYGSDTLLGKIDELSDNSTDEKIQLQHLPLSLSITSW
cryo_Ski7  391 DEIESIVCLLRLFYGVTIKNVLFVVTQMDQISWEEEQYQYVVSSVITCLKETYSITVPWSSFLPVSGFRGDNLTTLSYGTLQSWYDDETLLGKIDELSDKSIDEKLQLQHLPLSLTITSW
                                     motif G4                                  motif G5
scom_short 315 NVRGQTKEHALLVRSLGVQNLIVAVNKLDSVDWNHERFEEIEMQVSQFLTN-AGFDPQNVQYIPCSGLTGENLVKRSAEPALTWFNGPTVLGALESIAPT---ARAIEKSLRISVQDVYK

pomb_Hbs1  416 S-------PRSVTVTGRVEAGNVQVNQVLYDVSSQEDAYVKNVIRNSDPSSTWAVAGDTVTLQLADIEVNQLRPGDILSNYENPVRRVRSFVAEIQTFDIHGPILSGSTLVLHLGRT--V
japo_Hbs1  398 S-------AKGVCVQGRVESGNVQNNQVLFNVSTNSDAYVKSIIRNGHP-HDWSVAGDNITMQLTDIDANEIRPGDILTTTSQPVKKTKSFIAEIQTFDLLRPILSGATLVLHRGRL--S
octo_Hbs1  406 S-------VRGATISGRVESGNIQNGQVLYNVSSQEDAYVKAVMRNSDPSVSWAVAGDNVTVQLTDIEPNQISLGDILSTYSDPVKRSKSFTADIQTFDILGPILSGSTLVLHRGRT--V
cryo_Hbs1  406 S-------VRGATVSGRVESGSIQNGQVLYNVSSQEDAYVKSVMRNSDPSVSWAVAGDSVTLQLTDIEPNQISLGDILSTYNDPVKRTKSFIAEIQTFDILGPILSGSTLVLHRGRT--V
scom_long  654 AGVT----GGSVTISGRVDAGNVQVGETVHAAPSGEPATVKS-MQVNDDIADWAVAGSNVVLNLNDIDPMHLKAGDILCDPLNPVPTVRAFRARIITFDLARPITNGATIVLHRGRINEA
pomb_Ski7  511 TPLP----ENQSHIYCSIHSGMLQDSQKLYVGTGRLETQITG-LSSDENPKGFNVAGDMIQAKIPTLP--NLCPGILIADSIDAFTSSKTAYVNATWFHGSLEKGKSMHVIALFGCHAVL
japo_Ski7  484 QLEKTGESIGEVNATALIHSGILQQDMPFYLGAGKLACTVTTTHSITNSSHAFGVSGERVRLSFTLSSN-CPPVGSFISGDYAVTHSSRVLYFQGIALQPWMS-MDVHTMDLFVCGYHCK
octo_Ski7  508 SLLP----ENKIRAEFYVHSGILQAHQSIYTSVGKIETKVHG-IKLRQHERTWCLPGEQTEMHLTSLP--NLLNGTLCVDEENSYHLSRNAYITVFSIDSSLKAQNPVYVNAFFGAFRMS
cryo_Ski7  506 SLLP----ENKIAAQFDVHSGIVQAYQKIYTSVGKLEARVQS-LKLHQHARTWCLPGEHTEMHLSSLP--NLMNGTLCIDVENSYHLSRIAYISAFTFDSSLKVHSPIYVNAFFGAFSMN

scom_short 431 AGVT----GGSVTISGRVDAGNVQVGETVHAAPSGEPATVKS-MQVNDDIADWAVAGSNVVLNLNDIDPMHLKAGDILCDPLNPVPTVRAFRARIITFDLARPITNGATIVLHRGRINEA

pomb_Hbs1  528 TSVSLKIVTVN-------NKRSRHIASRKRALVRISFLDGLFPLCLAEECPALGRFILRRS--GDTVAAGIVKELC-
japo_Hbs1  508 APVVIKLQSVN-------GKKVRHITSRKTAIVKFTFLDGSYPICTVDDCKTLGKIILRRE--GDTVAAGVIRKV--
octo_Hbs1  519 APVAVKIINVN-------GKKARHITSRKRASMQVNFLEGLYPVCTSEESPSLSRIILRRD--GNTIAAGIVKTIL-
cryo_Hbs1  519 ASVSVKIISVN-------GKKARHITSRKRASIQVNFLDGSYPVCPSEESSSLSRIILRRD--GNTIAAGIVKTIL-
scom_long  769 ARIQALVATIDRADGQIIKKKPRHLASGQSAVVEIAFLGNGIPMETFKDSKDLGRVILRTG--GDTIAAGIVDELF-
pomb_Ski7  624 TKLYCFTDSQEKA-----PNAIGNDLERNRTSLVKIELENAFPLVKESYINTLSRVLFVSEKWNSLIAFGTVLSLHD
japo_Ski7  602 ARLSIMSTERE----------STQQEDGPLELFKAEILDQPIVACTSSTLLSMSRIIAGNVDDHTVNVIGFITSML-
octo_Ski7  621 GKVFLYSEGKEND-----MALRGIEFHSKDLLLLRLELDQSVPLVEHNNVPSLSRLLLLSKEENALLASGVVLSVQK
cryo_Ski7  619 AKVFFYSEGKENT-----MALQGLQFQNKNLFLIRLELDQPIPLVEFNTVPSLSRVLLLSKEAKTLWASGIIISVQK

scom_short 546 ARIQALVATIDRADGQIIKKKPRHLASGQSAVVEIAFLGNGIPMETFKDSKDLGRVILRTG--GDTIAAGIVDELF-
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