

```

                *           20           *           40
Mouse   : MSSNSFAYN-EQSGGGEAAELGQEATSTISPSGAFGLFSSDW : 41
Human   : MSSNSFPYN-EQSGGGEATELGQEATSTISPSGAFGLFSSDL : 41
Rat     : MSSNSFAYN-EQSGGGEAAELGQEATSTISSGAFGLFSSDW : 41
Dog     : MSGNSFAYS-EQAGGGEATELGQEATSTVSPSGAFGLFSSDL : 41
Fruitfly : MQONSASNPFAMSTYVERPQMGLDVEFGADPASGAAFQSDG : 42
Yeast   : MVDSIHRIASALDTAKVITREAAAVA TSKLGESSYTYYSQN- : 41
        M ns e g 5ss1

```

```

                *           60           *           80
Mouse   : KKNEDLKQMLESNKDSAKLDAMKRIVGMIAGKKN---ASELFF : 80
Human   : KKNEDLKQMLESNKDSAKLDAMKRIVGMIAGKKN---ASELFF : 80
Rat     : KKNEDLKQMLESNKDSAKLDAMKRIVGMIAGKKN---ASELFF : 80
Dog     : KKNEDLKQMLESNKDSAKLDAMKRIVGMIAGKKN---ASELFF : 80
Fruitfly : RKHDDLKQMLDSNKDGLKLEAMKRIIGMIARGRD---ASDLFF : 81
Yeast   : INPQQLVTLNLSRNSREVRDAMKRIISIMASDDDSIDVQLYF : 83
        k dLkq6L Snkd kldAMKRI6g66A g 1 as 1F

```

```

                *           100           *           120
Mouse   : PAVVKNVASKNIEIKKLVVYLVRYAEQQDLALLSISTFQR : 122
Human   : PAVVKNVASKNIEIKKLVVYLVRYAEQQDLALLSISTFQR : 122
Rat     : PAVVKNVASKNIEIKKLVVYLVRYAEQQDLALLSISTFQR : 122
Dog     : PAVVKNVASKNIEIKKLVVYLVRYAEQQDLALLSISTFQR : 122
Fruitfly : PAVVKNVASKNIEVKKLVVYLVRYAEQQDLALLSISTFQR : 123
Yeast   : ADVVKNITITNDTKVKRLIHLYLLRFAENDPNLTLLSINSLQK : 125
        paVVKN6 3k1ie6K4L6y6YL6R5AEqq1LaLLSIs3fQ4

```

```

                *           140           *           160
Mouse   : ALKDPNQLIRASALRVLSSIRVPIIIVPVMMLAIKEASADLSP : 164
Human   : ALKDPNQLIRASALRVLSSIRVPIIIVPIMMLAIKEASADLSP : 164
Rat     : ALKDPNQLIRASALRVLSSIRVPIIIVPVMMLAIKEASADLSP : 164
Dog     : ALKDPNQLIRASALRVLSSIRVPIIIVPIMMLAIKEASADLSP : 164
Fruitfly : ALKDPNQLIRASALRVLSSIRVSMIVPIVMLAIRDSAADLSP : 165
Yeast   : SLSDSNSELRCFALSALSDMKMSSLAPILHTVKKLVTDPISA : 167
        aLkDpNql6RasALrvLs646 6vP6661a64 aDlSp

```

```

                *           180           *           200           *
Mouse   : YVRKNAAHAIQKLYSLDP-EQKEMLIEVIEKLLKDKSTLVAG : 205
Human   : YVRKNAAHAIQKLYSLDP-EQKEMLIEVIEKLLKDKSTLVAG : 205
Rat     : YVRKNAAHAIQKLYSLDP-EQKEMLIEVIEKLLKDKSTLVAG : 205
Dog     : YVRKNAAHAIQKLYSLDP-EQKEMLIEVIEKLLKDKSTLVAG : 205
Fruitfly : YVRKTAHAHAIPKLYSLDA-DQKDELVMVIEKLLSDRTTLVVG : 206
Yeast   : MVRGEVALAIKLYRAGKNDYHELLDILKELMADTDPKVIS : 209
        yVRk aAhAI KLYsld qke L6 66ekL6 D tlV g

```

```

                220                *                240                *
Mouse      : SVVMAFEVCPDRIDLHNRNYRKLCLNLLVDVFEWGQVVIHMHM : 247
Human     : SVVMAFEVCPDRIDLHKNYRKLCLNLLVDVFEWGQVVIHMHM : 247
Rat      : SVVMAFEVCPDRIDLHNRNYRKLCLNLLVDVFEWGQVVIHMHM : 247
Dog      : SVVMAFEVCPDRIDLHKNYRKLCLNLLVDVFEWGQVVIHMHM : 247
Fruitfly : SAVMAFDEVCPERVDLIHKNYRKLCLNLLVDVFEWGQVVIHMHM : 248
Yeast    : CAVLAYKECYADHLELLHGHFRFYCRIIKQLDSWSQSYLIEL : 251
          s V6A5 Evcpcdr6dL6H n5R4lCn 6 d6 eWgQv 6I 6

```

```

                260                *                280                *
Mouse      : LTRYARTQFVSPWREDDGGLEDN-----EKNFYE----- : 275
Human     : LTRYARTQFVSPWKEGDELEDN-----GKNFYE----- : 275
Rat      : LTRYARTQFVSPWREDDGVEDN-----EKNFYD----- : 275
Dog      : LTRYARTQFVSPWKEDDGLEDN-----EKNFYE----- : 275
Fruitfly : LTRYARTQFVDPNADDEDLVNDGLGETPVSERFYDESSHSSS : 290
Yeast    : LIKYCKQYLPKPTVVDKSSSEGS-----PRSCPLP----- : 280
          Lt4Ya4tqfv P d e fy

```

```

                300                *                320                *
Mouse      : -----SEEEEEEEKEKSSRKK-----SYAMDPD : 297
Human     : -----SDDQKEK-TDKKKK-----PYTMDPD : 296
Rat      : -----SDDEEK---KSGKKK-----PYSMDPD : 294
Dog      : -----SDDEQKEK-TDQKKK-----PYAMDPD : 296
Fruitfly : HSDDGSSDDEKKNKSSSTNNKNNGGNGSRTTPSSPSNSYHIDVD : 332
Yeast    : -----DKYNEIEYPSYEVVN-----DPD : 298
          s 2 k y DpD

```

```

                340                *                360                *                3
Mouse      : HRLLIRNTKPLLQSRNAAVVMAVAQLYWHISPKSEAG--VIS : 337
Human     : HRLLIRNTKPLLQSRNAAVVMAVAQLYWHISPKSEAG--IIS : 336
Rat      : HRLLIRNTKPLLQSRNAAVVMAVAQLYWHISPRSEAG--VIS : 334
Dog      : HRLLIRNTKPLLQSRNAAVVMAVAQLYWHISPKSEVG--IIS : 336
Fruitfly : HRLLLRQTKPLLQSRNASVVMVAQLYHHVAPKNEVQ--LIA : 372
Yeast    : LDLFLLQSLNCLLIYSSNPTVILSCCNALYQLASPLQMKNTKFI : 340
          hrLl6r tkpL6qSrNa V66avaqly h6 p 2 i

```

```

                80                *                400                *                420
Mouse      : KSLVR--LLRSNREVQYIVLQNIATMSIERKGMFEPYLKSFY : 377
Human     : KSLVR--LLRSNREVQYIVLQNIATMSIQRKGMFEPYLKSFY : 376
Rat      : KSLVR--LLRSHREVQYIVLQNIATMSIQRKGMFEPYLKSFY : 374
Dog      : KSLVR--LLRSNREVQYIVLQNIATMSIQRKGMLEPYLKSFY : 376
Fruitfly : KALIR--LLRSHKEVQSVVLNCIASMSTKRKAIFEPHLKSFY : 412
Yeast    : EALVRTVTMTENQGNKEMLLQAIHFLSILDQTLFLPYTKKFFY : 382
          k L6R 16rs evq 66Lq Ia 6Si rk 6fePylKsF5

```

```

                *           440           *           460
Mouse   : VRSTDPTMIKTLKLEILTNLANEANISTLLREFQTYVRSQDK : 419
Human   : VRSTDPTMIKTLKLEILTNLANEANISTLLREFQTYVKSQDK : 418
Rat     : VRSTDPTMIKTLKLEILTNLANEANISTLLREFQTYVRSQDK : 416
Dog     : VRSTDPTMIKILKLEILTNLANEANISTLLREFQTYVKSQDK : 418
Fruitfly : VRTSDPTHIKLLKLDILTNLASAGSISLILREFQTYISSDR : 454
Yeast   : VFPKDPITVASIWKIQILSTLTINESNVKEIFKELKYYVASAHF : 424
        Vr Dpt ik lK6 IL3nLane n6s 6l4EfqtY6 S d

```

```

                *           480           *           500
Mouse   : --QFAAATIQTIGRCATSISEFTETCFNGLVCLLSNR--DEI : 457
Human   : --QFAAATIQTIGRCATNILEVTDTCINGLVCLLSNR--DEI : 456
Rat     : --QFAAATIQTIGRCATSIAEVTDTCINGLVCLLSNR--DEI : 454
Dog     : --QFAAATIQTIGRCATSISEVTDTCISGLVCLLSNR--DEI : 456
Fruitfly : --SFVAATIQAIGRCASSIKEVTEETCLSGLVHLLSNH--DEH : 492
Yeast   : PENVVIMAVKSLSRCGQLSTSWESHVMKWLIDHMESHNLSAS : 466
        f aat6q 6gRCa i e t tc gL6 l6sn de

```

```

                *           520           *           540
Mouse   : VVAESVVVIKLLQMQPAQHGEIIRHMAKFLDSIT--VPVAR : 497
Human   : VVAESVVVIKLLQMQPAQHGEIIKHMAKLLDSIT--VPVAR : 496
Rat     : VVAESVVVIKLLQMQPAQHGEIIKHMAKLLDSIT--VPVAR : 494
Dog     : VVAESVVVIKLLQMQPAQHGEIIKHMAKLLDSIT--VPVAR : 496
Fruitfly : VVAESVVVIKRLLOTKAAEHFEIITQMAKLIDYIN--VPAAR : 532
Yeast   : VLDAYVNVIRMLVQKNPCKHLRIIFKLADLLTVQTSADNAR : 508
        V6aesVvVI4 L6Q pa H e II 6Ak16d it vp AR

```

```

                *           560           *           580
Mouse   : ASILWLI GENCERVPKIAPDVL RKM AKSFTSEDDL VKLQILN : 539
Human   : ASILWLI GENCERVPKIAPDVL RKM AKSFTSEDDL VKLQILN : 538
Rat     : ASILWLI GENCERVPKIAPDVL RKM AKSFTSEDDL VKLQILN : 536
Dog     : ASILWLI GENCERVPKIAPDVL RKM AKSFTNEDDL VKLQILN : 538
Fruitfly : AAIWLI GEYNEKVPLIAPDVL RKM AKS FVDEQDVVKLQVLN : 574
Yeast   : AGIVWLFGEIASIEFKICPDVLRRLIQNF SNEG PETRCQILV : 550
        A I6WLiGE e vpkIaPDVLR46aksF E d v4lQ6Ln

```

```

                *           600           *           620           *
Mouse   : LA AKLYLTNSKQT KLLTQY IILNLGKYDQNYDIRDRTRFIRQL : 581
Human   : LG AKLYLTNSKQT KLLTQY IILNLGKYDQNYDIRDRTRFIRQL : 580
Rat     : LG AKLYLTNSKQT KLLTQY IILNLGKYDQNYDIRDRTRFIRQL : 578
Dog     : LG AKLYLTNSKQT KLLTQY IILNLGKYDQNYDIRDRTRFIRQL : 580
Fruitfly : LGVKLYLTNPEQTSLLCQYVFTLARYDPNYDVRDRARFLRQI : 616
Yeast   : LSAKLLSYDIDNFKQAQVTGSEENNQNPPYYDFSGSRIS--- : 589
        L aKLy1t1 qtkll1 qy 1 y1 nYd rdr Rf rq

```

```

                640          *          660          *
Mouse   : IVPNE-KSGALSKYAKKIFLAPPKPAPLESPFKDRDRFQLGT : 622
Human   : IVPNV-KSGALSKYAKKIFLAQPKPAPLESPFKDRDRFQLGT : 621
Rat     : IVPNE-KSGALSKYAKKIFLAQPKPAPLESPFKDRDRFQLGT : 619
Dog     : IVPNE-KSGALSKYAKKIFLAQPKPAPLESPFKDRDRFQLGT : 621
Fruitfly : IFPASGTSSVLSQHARQVFLASKPAPVPESKYRDGNNFQLGS : 658
Yeast   : -----QMYNAVLYLAKYDDEFDIRDRARMIS : 615
        i p      s  ls  a  65lA  kpap  es  5  dr1  fq6g3

```

```

                680          *          700          *
Mouse   : LSHTLNIKASGYLELSNWPEVAPDPSVRNVE--VIES-AKEW : 661
Human   : LSHTLNIKATGYLELSNWPEVAPDPSVRNVE--VIEL-AKEW : 660
Rat     : LSHTLNVKASGYLELSNWPEVAPDPSVRNVE--VIES-AKEW : 658
Dog     : LSHTLNTKATGYLELSNWPEVAPDPSVRNVE--VIELQAKEW : 661
Fruitfly : LSHYLNMPAAGYKELPAFPVIPPDSSVRNIAGFMQDKLPGED : 700
Yeast   : -----SLFDSGKYEIVSLLLQAPKPTARSDD-FIVSARLETH : 651
        lsh  ln  a  Gy  E6      p  aPdp3vRn      6      e

```

```

                720          *          740          *
Mouse   : TPLGKTK-----KEKPM---KKFYSESEEEEEDEDEDEDE : 692
Human   : TPAGKAK-----QENSA---KKFYSESEEEEEEDS----- : 685
Rat     : TPLGKTK-----KEKPE---KKFYSESEEEEEEE----- : 683
Dog     : TPAGKAK-----KENPA---RKFYSDSEEEEEEDS----- : 686
Fruitfly : SPSGHSKDKSGREGGKEKGAGGKGFLSESDDKSSAYS---- : 738
Yeast   : TP-----EIKFFRMLP----- : 663
        3P  g  k          e          4  F  s  s

```

```

                760          *          780          *          8
Mouse   : EEEKEDEDEDENPSDSSSDSE-SGSGSESGDTG--TEDSSSEDS : 731
Human   : -----SDSSDSESESGSE-SGEQGSGEEGDSNEDSSSEDS : 720
Rat     : EEEDEEEDDEEDPSDSSSDSE-SGSGRESGDSSGSSSEDSSEDS : 724
Dog     : -----SDSSDSESESGSA-SGEQDE---EGDSSSEDSSEDS : 718
Fruitfly : --ESGSSSGSGTSDSESSDSDGSGSSDEEEEEVQKQPTKVSS : 778
Yeast   : -----WNTEITEVGETGNDIREGAELKDYNKYKKSF : 694
                s  s  3  s  3G  e          s

```

```

                800          *          820          *          840
Mouse   : SSGQDSETGSQAEAEERQKVAKRNSKTKRKSDSENREKKNENS : 773
Human   : SSEQDSESGRESGLENKRTAKRNSKAKGKSDSEEDGEKENEKS : 762
Rat     : SSGQDSETGSEAEAEHQRVAKTNSKTKRKSASEDREKKNNGKS : 766
Dog     : SSEHRSDSESVSEVGDKRTAKRNSKSKGKSDSEDEEKENEKS : 760
Fruitfly : VKERLIDAGSNELAATSSPVKATINTNNNARGSSGTSDSEDS : 820
Yeast   : SSQSFITNNSARSFTSSNAKLTGINDGDSNSISG-----KG : 731
        ss          s          aK          s  s          s

```

```

                *           860           *           880
Mouse   : KASESSSEESSMEDSSSESESESGSDSEPAPRNVAPAKERK : 815
Human   : KTSDESSNDESSSIEDSSSDSESESEPESESESRRVTKEKEKK : 804
Rat     : QASESSSEESSSTEESSESE--SGSDSEPAPRKTAKAKERK : 806
Dog     : KTSDESSSTDSSSVEESSSDSESESESESESESESKKVMEKEKK : 802
Fruitfly : SAYSGSSSDSSASGSDNEVKKNETKTDITGKPEKLEKHEKQ : 862
Yeast   : NVNTFTSQNGKKYRLQSLDEFFSDIPERKSKPRKIIVKVEES : 773
                3s   s       s                               E

```

```

                *           900           *           920
Mouse   : PQQERHPPSKDVFLLDLDDFNPVSTPVALPTP-----ALSPS : 852
Human   : TKQDRTP LTKDVSLLDLDDFNPVSTPVALPTP-----ALSPS : 841
Rat     : PQQERHPPSKDVFLLDLDDFNPVSTPVALPTP-----ALSPS : 843
Dog     : TKEDRN-LTKDVSLLDLDDFNPVSTPVVLPTP-----ALSPS : 838
Fruitfly : PEQTAVKSNLDDL-LLDLDDIPPIG-PVMTPSLGGFLTPGTPM : 902
Yeast   : SDEDEDESEESSDDDEYSDS----- : 793
                2           d lldldD   p   pv   p           p

```

```

                *           940           *           960
Mouse   : LIADLEGLNLSSTSSSVINVESTPVFVPTKTHELLHRMHGKGLA : 894
Human   : LMADLEGLHLSSTSSSVISVSTPAFVPTKTHVLLHRMSGKGLA : 883
Rat     : LIADLEGLNLSSTSSSIINVESTPVFVPTKTHELLHRMRGKGLA : 885
Dog     : LIADLEGLNLSSTSSSVISVNTPVFVPVKTHVLLHRMSGRGLA : 880
Fruitfly : MAGQAAPLQPQHARNRVELVGP SHIEFKHKE LLNKVSGHGLH : 944
Yeast   : ---S IGTSSSGTSSSHLEL----- : 809
                1 1   tsss 6 6   p       k   ll   g gl

```

```

                *           980           *           1000
Mouse   : AHYCFPRQPCIFSDKMVSQITLNTSDRKIENIHIGGKGLP : 936
Human   : AHYFFPRQPCIFGDKMVSQITLNNTTDRKIENIHIGEKKLP : 925
Rat     : AHYCFPRQPCIFGDKMVSQITLNTSDGKIENIHVGGKKLA : 927
Dog     : AHYFFPRQPCIFGDKMVSQITLNNTTDRKIENIHIEGKLP : 922
Fruitfly : LAYRFTRSPHLYSSSMCSIELQFQNRGEKEITAIRLQGOTTLP : 986
Yeast   : ----- : -
                y f r p           m s           n           i i           l

```

```

                *           1020           *           1040           *
Mouse   : VGMQMHAHFHPIDSLEPKGSVTVSVGIDFC DSTQTASFQ L C-- : 976
Human   : IGMKMHVFNPIIDSLEPEGSITVSMGIDFC DSTQTASFQ L C-- : 965
Rat     : VGVQMHVFHPIESLEPEGSVTVSMGIDFC DSTQTASFQ LWMC : 969
Dog     : MGMQMHVFNPIESLEPEGSITVSMGIDFC DSTQTASFQ L C-- : 962
Fruitfly : AGMQLNEFAPIITVLPQQQTASGVLGVDFNDSTHAVDLELL-- : 1026
Yeast   : ----- : -
                g           f pi   l p           g df dst           l

```

```

                1060          *          1080          *
Mouse      : ----- : -
Human      : ----- : -
Rat       : RIHLAALTVEKNLSQALLGVRVLSSARTDPHLCDFLESHFLV : 1011
Dog        : ----- : -
Fruitfly  : ----- : -
Yeast     : ----- : -

```

```

                1100          *          1120          *
Mouse      : -----TKDDCFNVTLIQ : 987
Human      : -----TKDDCFNVNIQ : 976
Rat       : KEVKLIKKMGNHLWAGRATTSADWCAPGISGTKDDCFNVNIQ : 1053
Dog        : -----TKDDCFNVNIQ : 973
Fruitfly  : -----SSAGSSRLQLK : 1037
Yeast     : ----- : -

```

```

                1140          *          1160          *
Mouse      : PPVGELLSPVAMSEKDFKKEQGTLTGMNETSATLIAAPQNFT : 1029
Human      : PPVGELLLPVAMSEKDFKKEQGVLTGMNETSAVILIAAPQNFT : 1018
Rat       : PPVGELLLPVAMSEKDFKKEQGMLTGMNETSATLIAAPQNFT : 1095
Dog        : PPVGELLLPVAMSEKDFKKEQGMLTGMNETSTVILIAAPQNFT : 1015
Fruitfly  : PPVGEVRSVQIGESCHREERAKLRGMNEHQCELRLRQLLI : 1079
Yeast     : ----- : -
ppvgel  v  e  e  l  gmne  q

```

```

                1180          *          1200          *          12
Mouse      : PSMILQKVVNVANLGA VPS SQD-NVHRFAARTVHSGSLMLV : 1069
Human      : PSVIFQKVVNVANVGA VPS SQD-NIHRFAAKTVHSGSLMLV : 1058
Rat       : PSMILQKVVNVANLGA VPS SQD-NIHRFAAKTVHSGSLMLV : 1135
Dog        : PSVILQKVVNIANVGV VPS SQD-NIYRFAAKTVHSGSLMLV : 1055
Fruitfly  : DVVALRQKVFESINVAH THSSSSSQQLHCFAGQTLSSKSLVLL : 1121
Yeast     : ----- : -
          qkv  n  s          fa  t  s  sl  l

```

```

                20          *          1240          *          1260
Mouse      : TVELKEGSTAQLIINTEKTVIGSVLLRELKPVLSQG----- : 1105
Human      : TVELKEGSTAQLIINTEKTVIGSVLLRELKPVLSQG----- : 1094
Rat       : TVELKEGSTAQLIINTEKTVIGSVLLRELKPVLSQG----- : 1171
Dog        : TVELKEGSTAQLIINTERTVIGSVLLRELKPVLSQG----- : 1091
Fruitfly  : TLDWKTEDALTLLVNCEK M VIGSMVLNELRNALQLSFAM--- : 1160
Yeast     : ----- : -
t  k          l  n  e  vigs  l  el  l

```

| | | | | | | | |
|----------|---|-------|------|---|------|---|---|
| | | * | 1280 | * | 1300 | | |
| Mouse | : | ----- | | | | : | - |
| Human | : | ----- | | | | : | - |
| Rat | : | ----- | | | | : | - |
| Dog | : | ----- | | | | : | - |
| Fruitfly | : | ----- | | | | : | - |
| Yeast | : | ----- | | | | : | - |

| | | | | | | | |
|----------|---|-------|------|---|--|---|---|
| | | * | 1320 | * | | | |
| Mouse | : | ----- | | | | : | - |
| Human | : | ----- | | | | : | - |
| Rat | : | ----- | | | | : | - |
| Dog | : | ----- | | | | : | - |
| Fruitfly | : | ----- | | | | : | - |
| Yeast | : | ----- | | | | : | - |