

(2) H. sapiens	LALNDCHAEIISRRSLRFLYTLQLELYLNNKDD-QKESIFQKSE--RGGFRLKENVQFHL	444
(2) D. opalescens	FAVNDCHAEIITARRCFLRFIYDQLELHLSDNAEVRGQSIFELRD--AGGYKLPNIQFHL	410
(2) R. norvegicus	LALNDCHAEIISRRSLRFLYAQLELYLNNKED-QKKSIFQKSE--RGGFRLKDTVQFHL	444
(2) M. musculus	LALNDCHAEIISRRSLRFLYAQLELYLNNKED-QKKSIFQKSE--RGGFRLKDTVQFHL	444
(2) X. laevis	LALNDCHAEIISRRSLRFLYTLQLELFLSTKED-QQKSIFMKSE--RGGYKLDNVQFHL	443
(2) O. hannah	LALNDCHAEIITARRCLKFLYTLQLELHLSNKED-QQKSIFIKSE--QGGFKLDENVQFHL	449
(2) G. gallus	LALNDCHAEIISRRCLKFLYTLQLELYLSNKDD-QEKSIFIKSE--RGGFKLKENVQFHL	445
(2) C. anna	LALNDCHAEIISRRCLKFLYTLQLELYLSNKDD-QQKSIFIRSE--RGGFKLKENVQFHL	443
(2) D. rerio	LALNDCHAEIITARRSLIRYLYNQLEYFLSDSTEEHEKSI FRWCS--EHGYRLKDDIQFHL	464
(2) T. rubripes	LALNDCHAEIVARRSLIRYLYSQLEHFLSNHEEEHHKSMFTRCE--KKQGFRLKENVQFHL	438
D. melanogaster	AVLNDSHAEIVSRRCLKLYLAQLDLQCNQATA--YQSIFVRNTDGGYPYKLSGVHFFHL	416
A. mellifera	GALNDCHAEVARRCLCEYFLYQLELHTEEDRAA--ES-IL--EPAKKGFLKQGGIFHL	365
(1) O. hannah	ETVNDCHAEIISRRGFLRFLYNELMAFDPL---ATEESIFQLAE--DGKLIKDDVSFHL	544
(1) T. rubripes	DTVNDCHAEIISRRGFVRVFYSEILKYQDQD---NDDCIFEPAE--NNKLVKPDITFHL	913
(1) G. gallus	ETVNDCHAEIISRRGFVRFYSELKMYDPCPKPS-AEESIFEPAG--GRRLKIKSSITFHL	585
(1) C. anna	ETVNDCHAEIISRRGFVRFYSELKMYDPSNPSSAEDSIFEPAG--GNRLKIKSSITFHL	783
(1) D. rerio	DTVNDCHAEIISRRGFIRFLYSELMKHWES---PGDETIFELAG--DGKLIKSDITFHL	1076
(1) X. laevis	ETVNDCHAEIVSRRGFIRFLYSELKMYNPD---VPGDSIFEEAD--GDLLRVRPGVTFHL	858
(1) H. sapiens	ETVNDCHAEIISRRGFIRFLYSELKMYNSQ---TAKDSIFEPAK-GGEKLQIKKTVSFHL	959
(1) M. musculus	ETVNDCHAEIISRRGFIRFLYSELKMYNHH---TAKNSIFELAR-GGEKLQIKKTVSFHL	882
(1) R. norvegicus	ETVNDCHAEIISRRGFIRFLYSELKMYNHH---TAKNSIFELAR-GGEKLQIKKTVSFHL	364
(3) D. labrax	QVVNDCHAEVTARRALLRFLYSQLELFLSKRPEDWEESIFVRHK--ECGYRLRDNVHFHM	467
(3) C. anna	LAVNDCHAEIVARRAFVHFLYSQLELHLSKRREDWERSIFVRLK--EGGYRLRENILFHL	356
(3) H. sapien	LVVNDCHAEVARRAFVHFLYSQLELHLSKRREDSERSIFVRLK--EGGYRLRENILFHL	483
(3) M. musculus	LVVNDCHAEIVARRAFVHFLYSQLELHLSKQEDPERSIFIRLK--EGGYRLRENILFHL	489
(3) R. norvegicus	LVVNDCHAEIVARRAFVHFLYSQLELHLSKQEDPERSIFIRVK--EGGYRLRENILFHL	490
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(2) H. sapiens	YISTSPCGDARIFSPHEPI-----LEEPADRHFNPKARGQLRTKIESGEGTIPVRSNASI	499
(2) D. opalescens	YISTAPCGDARIFSPHGQD-----VETGDRHPNPKARGQLRTKIESGEGTIPVRSNGFI	464
(2) R. norvegicus	YISTSPCGDARIFSPHEPV-----LEEPADRHFNPKARGQLRTKIESGEGTIPVRSNASI	499
(2) M. musculus	YISTSPCGDARIFSPHEPV-----LEEPADRHFNPKARGQLRTKIESGEGTIPVRSNASI	499
(2) X. laevis	YISTSPCGDARIFSPHEVG-----QEDQGDRHPNPKARGQLRTKIESGEGTIPVRSSTI	498
(2) O. hannah	YISTSPCGDARIFSPHEAA-----QEDQGDRHPNPKARGQLRTKIESGEGTIPVRSSTTI	504
(2) G. gallus	YISTSPCGDARIFSPHEAA-----QEDQGDRHPNPKARGQLRTKIESGEGTIPVRSSTTI	500
(2) C. anna	YISTSPCGDARIFSPHEAA-----QEDQGDRHPNPKARGQLRTKIESGEGTIPVRSSTTI	498
(2) D. rerio	YISTSPCGDARIFSPHEAG-----AEDQGDRHPNPKARGQLRTKIESGEGTIPVRSNTI	519
(2) T. rubripes	YISTSPCGDARIFSPHEAG-----VEDQGDRHPNPKARGQLRTKIESGEGTIPVRSNTI	493
D. melanogaster	YINTAPCGDARIFSPHEND-----TGVDKHPNPKARGQLRTKIESGEGTIPVKSSDGI	469
A. mellifera	YINTAPCGDARIFSPHEEN-----ESVDKHPNRRARGQLRTKIESGEGTIPVKSSEGI	418
(1) O. hannah	YISTAPCGDGFALFDKSCSEQANTAGEDQHQLFENPKQGKLRITKVENGEGTIPVSSDIV	604
(1) T. rubripes	YISTAPCGDGFALFDKSCSETGDEI--KGHQPLFENVKQGKLRITKVENGEGTIPVSSAIV	971
(1) G. gallus	YISTAPCGDGFALFDKSCSDQASVVGPAEHPQLFENSKQGKLRITKVENGEGTIPVSSDIV	645
(1) C. anna	YVSTAPCGDGFALFDKSCSDQASVVGQTHQPLFENPKQGKLRITKVENGEGTIPVSSDIM	843
(1) D. rerio	YISTAPCGDGFALFDKSCSEAAE-LNGSGHMPLEFENIKQGKLRITKVENGEGTIPVSSDIV	1135
(1) X. laevis	YISTAPCGDGFALFDKSCSDQPSAEGDNKHCPIFENVKQGKLRITKVENGEGTIPVSSDIV	918
(1) H. sapiens	YISTAPCGDGFALFDKSCSDRAMESTESRHYPVFENPKQGKLRITKVENGEGTIPVSSDIV	1019
(1) M. musculus	YISTAPCGDGFALFDKSCSDRAVESTESRHYPVFENPKQGKLRITKVENGEGTIPVSSDIV	942
(1) R. norvegicus	YISTAPCGDGFALFDKSCSDRAVESTESRHYPVFENPKQGKLRITKVENGEGTIPVSSDIV	424
(3) D. labrax	YISTSPCGDGRLNSPYEIT--TDLHSSRHL---MRKHRSHLRTKIESGEGTIPVVRGRGSV	522
(3) C. anna	YVSTSPCGDARLNSPYEIT--TDLNSSKHI---VKKYRGLHRTKIESGEGTIPVVRCHNAA	411
(3) H. sapien	YVSTSPCGDARLNSPYEIT--TDLHSSKHL---VRKFRGLHRTKIESGEGTIPVVRGPSAV	538
(3) M. musculus	YVSTSPCGDARLNSPYEIT--TDLNSSKHI---VRKFRGLHRTKIESGEGTIPVVRGPSAV	544
(3) R. norvegicus	YVSTSPCGDARLNSPYEIT--TDLNSSKHI---VRKFRGLHRTKIESGEGTIPVVRGPSAV	545
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(2) H. sapiens	QTDWGVLQGERLLTMSCSDKIARWNVVGIQGSLLSIFVEPIYFSSIIILGSLYHGDHLSRA	559
(2) D. opalescens	QTDWGVLEGERLLTMSCSDKIARWNVVGIQGSLLSIFVEPIYFSSIIILGSLYHSDHLSRA	524
(2) R. norvegicus	QTDWGVLQGERLLTMSCSDKIARWNVVGIQGSLLSIFVEPIYFSSIIILGSLYHGDHLSRA	559
(2) M. musculus	QTDWGVLQGERLLTMSCSDKIARWNVVGIQGSLLSIFVEPIYFSSIIILGGLYHGDHLSRA	559
(2) X. laevis	QTDWGVLQGERLLTMSCSDKLARWNVVGIQGSLLSIFVEPIYLSIIILGSLYHGDHLSRA	558
(2) O. hannah	QTDWGVLQGERLLTMSCSDKIARWNVVGIQGSLLSIFVEPIYLSIIILGSLYHGDHLSRA	564
(2) G. gallus	QTDWGVLQGERLLTMSCSDKIARWNVVGIQGSLLSIFVEPIYFSSIIILGSLYHGDHLSRA	560
(2) C. anna	QTDWGVLQGERLLTMSCSDKIARWNVVGIQGSLLSIFVEPIYFSSIIILGSLYHGDHLSRA	558
(2) D. rerio	QTDWGVLQGERLLTMSCSDKIARWNVVGIQGSLLSYFTEPIYFSSIIILGSLYHADHLSRA	579
(2) T. rubripes	QTDWGVLQGERLLTMSCSDKIARWNVVGFQGSLSYFTEPIYFSSIIILGSLYHADHLSRA	553
D. melanogaster	QTDWGVLQGERLLTMSCSDKIARWNVVGIQGSLLSIIIEPVYLHSIVLGSLLHPEHMYRA	529
A. mellifera	QTDWGVLMGQRLTMSCSDKIARWNVVGIQGSLLSYFIEPIYFHSIVLGSLLNPSHMYRA	478
(1) O. hannah	PTWDGIQHGERLRTMSCSDKILRWNV-----	630
(1) T. rubripes	PTWDGIQHGERLRTMSCSDKILRWNVVGLQGALLSHFINPIYLSITLGYLYSHGHLTRA	1031
(1) G. gallus	PTWDGIQHGERLRTMSCSDKILRWNVVGLQGALLSHFIEPVYLSVTLGYLYSQGHLTR	705
(1) C. anna	PTWDGIQHGERLRTMSCSDKILRWNVVGLQGALLSHFMEPVYLSVTLGYLYSQGHLTR	903
(1) D. rerio	PTWDGIQHGERLRTMSCSDKILRWNVVGLQGALLTHFIHPIYLSITLGYLYSHGHLTRA	1195
(1) X. laevis	PTWDGIQHGERLRTMSCSDKILRWNVVGLQGALLTHFMEPVYLSVTLGYLYSKGHLTR	978
(1) H. sapiens	PTWDGIRLGERLRTMSCSDKILRWNVVGLQGALLTHFLQPIYLSVTLGYLYSQGHLTR	1079
(1) M. musculus	PTWDGIRLGERLRTMSCSDKILRWNVVGLQGALLTHFLQPVYLSVTLGYLYSQGHLTR	1002
(1) R. norvegicus	PTWDGIRLGERLRTMSCSDKILRWNVVGLQGALLTHFLQPVYLSVTLGYLYSQGHLTR	484
(3) D. labrax	QTDWGVLLGQEQLITMSCTDKIARWNVVGLQGALLSHFVEPVYLSVTVGSLRHTGHLGRV	582
(3) C. anna	QTDWGVLLGQEQLITMSCTDKIARWNVVGLQGALLSFFIEPMLHSIIVGSLYHTGHLGRV	471
(3) H. sapien	QTDWGVLLGQEQLITMSCTDKIARWNVVGLQGALLSHFVEPVYLSIIVGSLHHTGHLARV	598
(3) M. musculus	QTDWGVLLGQEQLITMSCTDKIASWNVVGLQGALLCHFIEPVYLSIIVGSLHHTGHLARV	604
(3) R. norvegicus	QTDWGVLLGQEQLITMSCTDKIASWNVVGLQGALLCHFIEPVYLSIIVGSLHHTGHLARV	605

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(2) H. sapiens	MYQRISN-----IEDLPPLYTLNKPPLLSGISNA-EARQPGKAPNFSVNWTVGDS-AIEVI	612
(2) D. opalescens	VYCRIAA-----IENLPDLFRLNRPFLSGISSP-ESRQPGKAPNFGINWRRND-SFEVI	577
(2) R. norvegicus	MYQRISN-----IEDLPPLYTLNKPPLLSGISNA-EARQPGKAPNFSVNWTVGDT-AIEVI	612
(2) M. musculus	MYQRISN-----IEDLPPLYTLNKPPLLSGISNA-EARQPGKAPNFSVNWTVGDA-TIEVI	612
(2) X. laevis	VYQRISD-----IEDLPILYALNKPPLLSGISNA-EARQPGKAPSFVNWTVGDL-SLEVI	611
(2) O. hannah	AYQRIAE-----IEDLPSLYVLNRPPLLSGISNA-EARQPGKAPNFSVNWTVGDA-GLEVI	617
(2) G. gallus	VYQRIAE-----IEDLPPLYTLNRPPLLSGISNA-EARQPGKAPNFSVNWTVGDT-GLEVI	613
(2) C. anna	VYQRIAE-----IEDLPPLYTLNRPPLLSGISNA-EARQPGKAPNFSVNWTVGDT-GLEVI	610
(2) D. rerio	MYQRIAD-----MDDIPPPFRINRPPLLSGISNT-EARQPGKAPNFSVNWTVGDT-GLEII	632
(2) T. rubripes	MYQRITD-----IEDLPQSFSLNRPPLLSGISNA-EARQPGKAPNFRVNWTVGDT-GLKVI	606
D. melanogaster	VCGRIEKS----IQGLPPPYHLNKPRLALVTS-AEPRNQAKAPNFGINWTIGDT-ELEV	583
A. mellifera	VCGRIENT----IQGLPPPYRLNKPMLSLITSS-EVRQPGKAPNFSVNWTIGQL-EAEVI	532
(1) O. hannah	-----GRVSVYDSARQTGKTKESSINWCLPDGTSVEIL	663
(1) T. rubripes	VCCRMATNGQEFAQSLAPFMLNHPEVGRVSVYDSTRHTGKTKESSVNWSFPDQHSVEVL	1091
(1) G. gallus	ICCRVLRDGDVQLKRLQAPYQINHPVEVGRVSVYDSARQTGKTKESSVNWCLADGSKVEVL	765
(1) C. anna	ICCRVARERNVLQAKLQAPYHINHPEVGRVSVYDSARQTGKTKESSVNWCLADESEVEVL	963
(1) D. rerio	VCCRLSRDGDVFKSSLPANFTLNHPVEVGRVSVYDSTRHTSKTKESSVNWSQPDQYSVEVL	1255
(1) X. laevis	ICCRMSRDGDVAFQNLQPLDLYLVNHPVEVGRVSVYDSTRQTGKTKESSVNWCLADE-EAEVL	1037
(1) H. sapiens	ICCRVTRDGSFAFEDGLRHPFIVNHPKVGSRVSIYDSKRQSGKTKETS VNWCLADGYDLEIL	1139
(1) M. musculus	ICCRVTRDGGAFEDGLRYPFIVNHPKVGSRVSVYDSKRQSGKTKETS VNWCMADGYDLEIL	1062
(1) R. norvegicus	ICCRVTRDGNFEDGLRYPFIVNHPKVGSRVSVYDSKRQSGKTKETS VNWCLADGYDLEIL	544
(3) D. labrax	LNQRLER-----LGPLPATHRRNQPLLSGLSSA-EYQQPGKASCVSVNWTGDT-QLLEV	635
(3) C. anna	MSHRIED-----IGQLPASVYRNRQLLSGVSHA-DARQPGKSPGFSVNWI VNT-DLEVI	524
(3) H. sapien	MSHRMEG-----VGQLPASVYRNRPLLSGVSDA-EARQPGKSPPFMNVVVGSA-DLEII	651
(3) M. musculus	MSHRMEG-----IGQLPASVYRNRPLLSGVSHA-EARQPGKSPHFSANWVVGSA-DLEII	657
(3) R. norvegicus	MSHRMEG-----IGQLPASVYRNRPLLSGVSDA-EARQPGKSPHFSANWVVGSA-DLEII	658

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(2) H. sapiens	NATTGKD-ELG--RASRLCKHALYCRWMRVHGKVPVSH--LLRSKITKPNVYHESKLAKEY	668
(2) D. opalescens	NAMTGRV-EGG--SMSRICKQALFDRFMNLYGKLSSL-TGQSVTTTRPALYSEAKATVMEY	633
(2) R. norvegicus	NATTGKD-ELG--RPSRLCKHALYCRWMRVHGKVPPH--LLRTKITKPTTYHESKLAKEY	668
(2) M. musculus	NATTGKD-ELG--RPSRLCKHALYCRWMRVHGKVPPH--LLRTKITKPTTYHESKLAAREY	668
(2) X. laevis	NATTGKD-EMG--RASRLCKHALYSRWMMRIHAKLSSS--VRCKFGKPNVYHETKQSAVEY	666
(2) O. hannah	NATTGKD-ELG--RASRLCKHALYTRWMRVYTKLPAS--LHSKVNKPNVYHETKQVAAEY	672
(2) G. gallus	NATTGKD-EMG--RASRLCKHALYSRWMMRIHAKLSSS--LRLKIFKPNLYHDTKQGATEY	668
(2) C. anna	NATTGKD-EMG--RASRLCKHAFYSRWMMRIHAKLSSS--LRSKILKPNLYHETKQGAVEY	665
(2) D. rerio	NATTGKH-DLG--RQSQCKHALYSRWVCLHAKLSET--LRIRGSRPGSYHEAKQGAVEY	687
(2) T. rubripes	NATTGKD-DLG--RPSRLCKHALYGRWMLRHSKLSPS--LRIRTVRPSYHEAKQAAVDY	661
D. melanogaster	NSLTGRT-IGG--QVSRITKQAFFVKYGFMLANLPGI--LV--RKVTTDYGGTKANVKDY	636
A. mellifera	NCTTGKD-ELG--KPSRISKQGLFRFRFYLLGKLSI--EDADKNQCRHYLDAKSSVQNY	587
(1) O. hannah	DGTGKGV-DGPKLDISRVSKQSLFQLFRMLCTKM----VRKDLKNFVVYSEAKESATDY	717
(1) T. rubripes	DGTTGKL-DGNKLSVSRVTKSNLFAFRVAVQRC-----GRDLSLHYSYQAKMAALS	1145
(1) G. gallus	DGTGKGV-DGPKLEVSRSVSKRRTFALFQQLCAKS-----DCKELQKLSVYSEAKAAVQY	819
(1) C. anna	DGTGKGV-DGPKLEVSRSVSKRRTFALFQQLCAKS-----NRGDLQSLSVYSDAKEAATAY	1017
(1) D. rerio	DGTGKGL-DSPKMEVSRSVSKSNLFRFHALCQRA-----GRADLLALQSYAHAKMAATS	1309
(1) X. laevis	DGTGKGV-EGAKLEISRVSKLHMFTLFQELCLLR-----GRHDLALSSYSDVKATVGTY	1091
(1) H. sapiens	DGTRGTV-DGPRNELSRVSKKNIFFLQFKKCSFR-----YRDLRLLS-YGEAKKAARDY	1192
(1) M. musculus	DGTRGTV-DGPGKELSRVSKKNIFFLQFKKCSFR-----ARRDLLQLS-YGEAKKAARDY	1115
(1) R. norvegicus	DGTRGTV-DGPGKELSRVSKKNIFFLQFKKCSFR-----ARRDLLQLS-YGEAKKAARDY	597
(3) D. labrax	NTATGRRRESG--TPSRLCKHALFTRWNRLYRKVRLGIHVSSADRQLMYCEAKMAARPY	693
(3) C. anna	NAMTKGR-TCG--SPSRLCKHMFTRWAKLHGKLS--TRTPSHGEMPSVYSEAKLVAQTY	579
(3) H. sapien	NATTGRR-SCG--GPSRLCKHVL SARWARLYGRLS--TRTPSPGDTPSMYCEAKLGAHTY	706
(3) M. musculus	NAMTKGR-SCG--GSSRLCKHVFSAWARLHGRLS--TRIPSHGDTPSMYCEAKQGAHTY	712
(3) R. norvegicus	NAMTKGR-SCG--GSSRLCKHVF SARWARLHGRLS--TRIPSHGDTPSMYCEAKRGAHTY	713
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(2) H. sapiens	QAAKARLFTAFIKAGLGAWVEKPTEQDQFSLTP-----	701
(2) D. opalescens	QLAKQCVFQAFQKAGLGNWVQKPIEQDQFEMSLDAPAIQLKAAETETANTETSA-----	687
(2) R. norvegicus	QAAKARLFTAFIKAGLGAWVEKPTEQDQFSLTP-----	701
(2) M. musculus	QAAKARLFTAFIKAGLGAWVEKPTEQDQFSLTP-----	701
(2) X. laevis	QSAKECVFKVFQKTGLGAWVKKPIEQDQFSLNV-----	699
(2) O. hannah	QTAKECLFKAFKAGLGAWVEKPPIEQDQFSLVV-----	705
(2) G. gallus	QTAKECLFKAFKAGLGAWVEKPPIEQDQFSLTV-----	701
(2) C. anna	QTAKECLFKAFKAGLGAWVEKPPIEQDQFSLTV-----	698
(2) D. rerio	HEAKQTLFKAFYKAGLGAWVEKPPIEQDQFSLIP-----	720
(2) T. rubripes	HSKQTLFKAFQKSGLGAWVKKPIEQDQFSLVTT-----	694
D. melanogaster	QIAKLELFSAFKREDLGSWLKPIEQDEFGLAE-----	669
A. mellifera	SLAKHQLEAFVKAHLGSWVKKPIEQDMFEVDI-----	620
(1) O. hannah	QSAKQQFFWGLQEMGYGSWICKPQEEAFVLPPEAAPPFL-----	757
(1) T. rubripes	QLAKQQFFQALTAHGYGTWIGKPLEEKSFEAGESSWNNEASVP-----CGRRQQ-----	1194
(1) G. gallus	QKAKQCFFSALEEMGYGSWICKPQEEENFIPDA-----	853
(1) C. anna	QEAKQCFFSALEELGYGSWIKPQEEENFSL-----	1048
(1) D. rerio	QEAKRFLFLALSQHYGAWIGKPLEEKSFEAGEAKSFEPMGSGDVQASGCVVDPNSFLSS	1369
(1) X. laevis	QTARGQFFRQLEQMGYGNWISKPQEEKCFSLSI-----	1124
(1) H. sapiens	ETAKNYFKKGLKDMGYGNWISKPQEEKNFYLCVPV-----	1226
(1) M. musculus	DLAKNYFKKSLRDMGYGNWISKPQEEKNFYLCVPVND-----	1152
(1) R. norvegicus	DLAKNYFKKSLRDMGYGNWISKPQEEKNFYLCVPVND-----	634
(3) D. labrax	QTVKQQWFRSLQETGLGTWVKKPPEQDQFLLTV-----	726
(3) C. anna	QSVKQQLFKAFQKAGLGTWVKKPPEQDQFLLTV-----	612
(3) H. sapien	QSVKQQLFKAFQKAGLGTWVKKPPEQDQFLLTL-----	739
(3) M. musculus	QSVKQQLFKAFQKAGLGTWVKKPPEQDQFLLSL-----	745
(3) R. norvegicus	QSVKQQLFKAFQKAGLGTWVKKPPEQDQFLLSL-----	746
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(2)H.sapiens	-----	701
(2)D.opalescens	-----	687
(2)R.norvegicus	-----	701
(2)M.musculus	-----	701
(2)X.laevis	-----	699
(2)O.hannah	-----	705
(2)G.gallus	-----	701
(2)C.anna	-----	698
(2)D.rerio	-----	720
(2)T.rubripes	-----	694
D.melanogaster	-----	669
A.mellifera	-----	620
(1)O.hannah	-----	757
(1)T.rubripes	-----	1194
(1)G.gallus	-----	853
(1)C.anna	-----	1048
(1)D.rerio	ENNNFLSAAQGF	1381
(1)X.laevis	-----	1124
(1)H.sapiens	-----	1226
(1)M.musculus	-----	1152
(1)R.norvegicus	-----	634
(3)D.labrax	-----	726
(3)C.anna	-----	612
(3)H.sapien	-----	739
(3)M.musculus	-----	745
(3)R.norvegicus	-----	746

Supplementary table 2. Sequences of DNA and RNA oligonucleotides used in methods.

a) RNA sequences used for crystallography

RNA name	RNA sequence	Calculated/Observed monoisotopic mass(ESI)
Bdf2 8-aza-N TOP	UUCCCCACAUUNGACGUUCAGUC	7186.93/7187.09
Bdf2-C BOTTOM	GACUGAACGACCAAUGUGGGGAA	7472.6/7472.1
Bdf2-U BOTTOM	GACUGAACGACCAAUGUGGGGAA	7473.6/7473.6
GLI1-23mer 8AN TOP	GCUCGCGAUGCUNGAGGGCUCUG	7376.98/7376.24
GLI1-23mer BOTTOM	CAGAGCCCCCAGCAUCGCGAGC	7315.06/7306.18

b) Primers for site directed mutagenesis

Oligo name	Sequence
3' end of ligated Gli1 top strand RNA	5'-AXA GGG CUC UGC-3'
5' end of ligated Gli1 top strand RNA	5'-GCU CGC GAU GCU-3'
Gli1 bottom strand RNA	5'-GCA GAG CCC CYC AGC AUC GCG AGC-3'
DNA splint	5'-GCA GAG CCC TYT AGC ATC GCG AGC-3'

c) RNA sequences used for in vitro deamination kinetics

Mutant	Forward primer	Reverse primer
R510Q	GGTGCTGCAAGGGGAGCAACTGCTCACCATGTCC	GGACATGGTGAGCAGTTGCTCCCCTGCAGCACC
R510A	GGTGCTGCAAGGGGAGGCTCTGCTCACCATGTCC	GGACATGGTGAGCAGAGCCTCCCCTGCAGCACC
G593A	GCAGAAGCACGGCAGCCAGCTAAGGCCCCCAACTTCA GTG	CACTGAAGTTGGGGGCCTTAGCTGGCTGCCGTGCTTCT GC
G593E	GCAGAAGCACGGCAGCCAGAAAAGGCCCCCAACTTCA GTG	CACTGAAGTTGGGGGCCTTTTCTGGCTGCCGTGCTTCT GC
K594A	CAGAAGCACGGCAGCCAGGGGCTGCCCCCAACTTCA GTGTC	GACACTGAAGTTGGGGGCAGCCCTGGCTGCCGTGCTT CTG
R348A	CTTCTCCTCCCCTCACGCTGCAAGAAAAGTGCTGGCT GG	CCAGCCAGCACTTTTCTTGCAGCGTGAGGGGAGGAGAA G

d) primers used for mutagenesis of hGLI1 in vitro transcription template

3' nearest neighbor mutant	Forward primer	Reverse primer
G to C	GTCTACTCACCACAGCCCCGAGCATCACTGAG AATGCTGCCATGGATGCTACAGGGCTACAGGAA GAGCCAG	CTGGCTCTTCTGTAGCCCTGTAGCATCCATGGCAG CATTCTCAGTGATGCTGCGGGGCTGTGGTGAGTAG AC
G to A	GTCTACTCACCACAGCCCCCAGCATCACTGAGA ATGCTGCCATGGATGCTAAGGGCTACAGGAAG AGCCAG	CTGGCTCTTCTGTAGCCCTTTAGCATCCATGGCAG CATTCTCAGTGATGCTGAGGGGCTGTGGTGAGTAGA C
G to U	GTCTACTCACCACAGCCCCACAGCATCACTGAG AATGCTGCCATGGATGCTATAGGGCTACAGGAA GAGCCAG	CTGGCTCTTCTGTAGCCCTATAGCATCCATGGCAG CATTCTCAGTGATGCTGTGGGGGCTGTGGTGAGTAGA C

e) RNA sequences used for EMSA binding experiments

RNA name	RNA sequence	Calculated/Observed monoisotopic mass(ESI)
GLI1-24mer 8AN TOP	GCUCGCGAUGCUNGAGGGCUCUGC	7682.0/7681.9
GLI1-24mer BOTTOM	GCAGAGCCCCCAGCAUCGCGAGC	7663.7/7663.4