

CSK (c-src tyrosine kinase)

1

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Gibbon	SWFHGKITRE	QAERLLYPPE	TGLFLVREST	NYPGDYTLCV	SCDGKVEHYR	IMYHASKLSI	DEEVYFENLM
Human	PWFHGGKITRE	QAERLLYPPE	TGLFLVREST	NYPGDYTLCV	SCDGKVEHYR	IMYHASKLSI	DEEVYFENLM
Chimpanzee	PWFHGGKITRE	QAERLLYPPE	TGLFLVREST	NYPGDYTLCV	SCDGKVEHYR	IMYHASKLSI	DEEVYFENLM
Gorilla	PWFHGGKITRE	QAERLLYPPE	TGLFLVREST	NYPGDYTLCV	SCDGKVEHYR	IMYHASKLSI	DEEVYFENLM
Orangutan	PWFHGGKITRE	QAERLLYPPE	TGLFLVREST	NYPGDYTLCV	SCDGKVEHYR	IMYHASKLSI	DEEVYFENLM
Macaque	PWFHGGKITRE	QAERLLYPPE	TGLFLVREST	NYPGDYTLCV	SCDGKVEHYR	IMYHASKLSI	DEEVYFENLM
Marmoset	PWFHGGKITRE	QAERLLYPPE	TGLFLVREST	NYPGDYTLCV	SCDGKVEHYR	IMYHASKLSI	DEEVYFENLM

71

Gibbon	QLVEHYTSDA	DGLCTRLIKP	KVMEGTVAAG	DEFYRSGWAL	NMKELKLLQT	IGKGEFGDVM	LGDYRKVVVKC
Human	QLVEHYTSDA	DGLCTRLIKP	KVMEGTVAAG	DEFYRSGWAL	NMKELKLLQT	IGKGEFGDVM	LGDYRKVVVKC
Chimpanzee	QLVEHYTSDA	DGLCTRLIKP	KVMEGTVAAG	DEFYRSGWAL	NMKELKLLQT	IGKGEFGDVM	LGDYRKVVVKC
Gorilla	QLVEHYTSDA	DGLCTRLIKP	KVMEGTVAAG	DEFYRSGWAL	NMKELKLLQT	IGKGEFGDVM	LGDYRKVVVKC
Orangutan	QLVEHYTSDA	DGLCTRLIKP	KVMEGTVAAG	DEFYRSGWAL	NMKELKLLQT	IGKGEFGDVM	LGDYRKVVVKC
Macaque	QLVEHYTSDA	DGLCTRLIKP	KVMEGTVAAG	DEFYRSGWAL	NMKELKLLQT	IGKGEFGDVM	LGDYRKVVVKC
Marmoset	QLVEHYTSDA	DGLCTRLIKP	KVMEGTVAAG	DEFYRSGWAL	NMKELKLLQT	IGKGEFGDVM	LGDYRKVVVKC

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Gibbon	IKDAFLEASV	MSGRVDFGLT	EASSTQDTGK	LPVKWTAPEA	LREKKFSTKS	DVWSFGILLW	EIYSFGRVPY
Human	IKDAFLEASV	MSRRVDFGLT	EASSTQDTGK	LPVKWTAPEA	LREKKFSTKS	DVWSFGILLW	EIYSFGRVPY
Chimpanzee	IKDAFLEASV	MSRRVDFGLT	EASSTQDTGK	LPVKWTAPEA	LREKKFSTKS	DVWSFGILLW	EIYSFGRVPY
Gorilla	IKDAFLEASV	MSRRVDFGLT	EASSTQDTGK	LPVKWTAPEA	LREKKFSTKS	DVWSFGILLW	EIYSFGRVPY
Orangutan	IKDAFLEASV	MSRRVDFGLT	EASSTQDTGK	LPVKWTAPEA	LREKKFSTKS	DVWSFGILLW	EIYSFGRVPY
Macaque	IKDAFLEASV	MSRRVDFGLT	EASSTQDTGK	LPVKWTAPEA	LREKKFSTKS	DVWSFGILLW	EIYSFGRVPY
Marmoset	IKDAFLEASV	MSRRVDFGLT	EASSTQDTGK	LPVKWTAPEA	LREKKFSTKS	DVWSFGILLW	EIYSFGRVPY

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Gibbon	PRIPDKDVPV	RVEKGYKMDA	PDGCPPAVYE	VMKNCWHLDT	AMRPSFLQLR	EQLEHIKTHE	LHL
Human	PRIPDKDVPV	RVEKGYKMDA	PDGCPPAVYE	VMKNCWHLDA	AMRPSFLQLR	EQLEHIKTHE	LHL
Chimpanzee	PRIPDKDVPV	RVEKGYKMDA	PDGCPPAVYE	VMKNCWHLDA	AMRPSFLQLR	EQLEHIKTHE	LHL
Gorilla	PRIPDKDVPV	RVEKGYKMDA	PDGCPPAVYE	VMKNCWHLDA	AMRPSFLQLR	EQLEHIKTHE	LHL
Orangutan	PRIPDKDVPV	RVEKGYKMDA	PDGCPPAVYE	VMKNCWHLDA	AMRPSFLQLR	EQLEHIKTHE	LHL
Macaque	PRIPDKDVPV	RVEKGYKMDA	PDGCPPAVYE	VMKNCWHLDA	AMRPSFLQLR	EQLEHIKTHE	LHL
Marmoset	PRIPDKDVPV	RVEKGYKMDA	PDGCPPAVYE	VMKNCWHLDA	AMRPSFLQLR	EQLEHIKTHE	LHL

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Gibbon	MKRKVVNDIA	LQIRHIKARK	EALLVEKERS	AKITSLPPPP	PTLFENIEVK	RISAVKTNSS	TYHHLHTFVN
Human	MKRKVVNDIA	LQIRHIKARK	EALLVEKERS	AKITSLPPPP	PTLFENIEVK	RISAVKTNSS	TYHHLHTFVN
Chimpanzee	MKRKVVNDIA	LQIRHIKARK	EALLVEKERS	AKITSLPPPP	PTLFENIEVK	RISAVKTNSS	TYHHLHTFVS
Gorilla	MKRKVVNDIA	LQIRHINARK	EALLVEKERS	AKITSLPPPP	PTLFENIEVK	RISAVKTNSS	TYHHLRTFVN
Orangutan	MTERLIDDIS	CFLRHIKARK	EALLVEKERS	AKITSLPPPP	PTLFENIEVK	RISAVKTNSS	TYHHLHTFVN
Macaque	MKRKVVNDIA	LQIRHIKARK	EALLVEKERS	AKITSLPPPP	PTLFENIEVK	RISAVKTNSS	TYHHLHTFVS
Marmoset	MKRKVVNDIA	LQIRHIKARK	EALLVEKERS	AKITSLPPPP	PTRFENIEIK	RISAVKTNSS	TYHHLHTFVN

71

Gibbon	RETDTKQPD	RLAAEEEGKR	LEELQKQAAQ	ERMERFEKAH	VRGFQAMKKI	HLAQNQKML	KELKQLQOED
Human	RETDTKRPA	RLAAEEEAAR	LEELQKQAAQ	ERMERFEKAH	VRGFQAMKKI	HLAQNQKML	KELKQLQOED
Chimpanzee	RETDTKQPD	RLAAEEEAAR	LEELQKQAAQ	ERMERFEKAH	VRGFQAMKKI	HLAQNQKML	KELKQLQOED
Gorilla	RETDTKQPD	RLAAEEEAAR	LEELQKQAAQ	ERIERFEKAH	VRGFQAMKKI	HLAQNQKML	KELKQLQOED
Orangutan	RETDTKQPD	RLAAEEQAKR	LEELQKQAAQ	ERMERFEKAH	IRGFQAMKKI	HLAQNQKML	KELKQLQOED
Macaque	RETDTKQPD	HLAAEEEAAR	LEELQKQAAQ	ERMERFEKAH	VRGFQAMKKI	HLAQNQKML	KELKQLQOED
Marmoset	REIDTKQPD	HLAAEEEAAR	LEELQKQAAQ	ERMQQFEKAH	VRGFQAMKKI	HLAQNQKML	KELKQLQOED

141

Gibbon	LARRRQTV	MPPQVLEL	KRSEMKEDWQ	RELEF	YNADR	LILHLEPEPL	PTVTDQIQDE
Human	LARRRQTV	MPPQVLEL	KRSEMKEDWQ	RELEF	YNADR	LILHLEPEPL	PTVTNQIQDE
Chimpanzee	LARRRQTV	MPPQVLEL	KRSEMKEDWQ	RELEF	YNADR	LILHLEPEPL	PTMTNQIQDE
Gorilla	LARRRQTV	MPPQVLEL	KRSEMKEDWQ	RELEF	YNADR	LILHLEPEPL	PTVTDQIQDE
Orangutan	LARRRQTV	MPPQVLEL	KRSEMKEDWQ	RELEF	YNADR	LILHLEPEPL	PTVTDQIQDE
Macaque	LARRRQTV	MPPQVLEL	KRSELKEDWQ	RELEF	YNADR	LILHLEPEPL	PTVTDQIQDE
Marmoset	LARRRQTV	MPPQVLEL	KRSEMKEDWQ	RELEF	YNADR	LILHLEPEPL	PTVTDHIQDE

211

Gibbon	ELDLSVEQEN	LGA	EAKICSSETD	VPLVMKTQQI	PSKVL	NKIRNQKSLW	TIKSMSEDES
Human	ELDLSMEQEN	LGA	EAEIC	VPLVMKTQQI	PSKVL	NKIRSQKSLW	TIKSMSEDES
Chimpanzee	ELDLSMEQEN	LGA	EAEIC	VPLVMKTQQI	PSKVL	NKIRSQKSLW	TIKSMSEDES
Gorilla	ELDLSMEQEN	LGA	EAEIC	VPLAMKTQQI	PSKVL	NKIRSQKSLW	TIKSMSEDES
Orangutan	ELDLSIEQEN	LGA	EAEIC	VPLVMKTQQI	PSKVL	NKIRSQKSLW	TIKSMSEDES
Macaque	ELNLSMEQEN	LGA	EAEIC	VPLVMKTQQI	PSKVL	NKIRSQKSLW	TIKSMSEDES
Marmoset	ELDLSMEQEN	LGT	EAEIC	VPLAMKTQKI	PSKVL	NKIRSQKSLW	TIQSMSEDEN

281

Gibbon	EMITTVSEIE	SKVPTVESGT	IASEERTLSS	GQEQVVEDT	LTIESGPLAS	EDKPLSCGTN	SGKEQEI
Human	EMITTVSEIE	SKAPTVESGT	IASKERTLSS	GQEQVVEDT	LTIESGPLAS	EDKPLSCGTN	SGKEQEI
Chimpanzee	EMITTVSEIE	SKAPTVESGT	IASEERTLSS	GQEQVVEDT	LTIESGPLAS	EDKPLSCGTN	SGKEQEI
Gorilla	EMITTVSEIE	SKAPTVESGT	IASEERTLSS	GQEQVVEDT	LTIESGPLAS	EDKPLSCGTN	SGKEQEI
Orangutan	EMITTVSEIE	SKAPTVESGA	IASEERTLSS	GQEQVVEDT	LTIESGPLAS	EDKPLSCGTN	SGKEQEI
Macaque	EMITTVSEIE	SKAPTVESGT	IASEERTLSS	GQEQVVEDT	LTIESGPLAS	EDKPLSCGTN	SGKEQEI
Marmoset	EMITTVSEIE	SKAPTIESGT	LASEERMLSS	GQEQVVEDT	LTIESGPLTS	EDKSLSCGTN	SGKEQEI

351

Gibbon	LPITTVQAQSS	VLLHPQEEAA	KIRMSARQKQ	IMEIEEQKQK	QLELLEQIEQ	QKLKLETDCF	RAQLEEEKKK
Human	LPITTVQAQSS	VLLHPQEEAA	RIRMSARQKQ	IMEIEEQKQK	QLELLEQIEQ	QKLKLETDCF	RAQLEEEKKK
Chimpanzee	LPITTVQAQSS	VLLHPQEEAA	RIRMSARQKQ	IMEIEEQKQK	QLELLEQIEQ	QKLKLETDCF	RAQLEEEKKK
Gorilla	LPITTVQAQSS	VLLHPQEEAA	RIRMSARQKQ	IMETEEQKQK	QLELLEQIEQ	QKLKLETDCF	RAQLEEEKKK
Orangutan	LPVTTVAQSS	VLLHPQEEAA	RIRMSARQKQ	IMEIEEQKQK	QLELLEQIEQ	QKLKLETDCF	RAQLEEEKKK
Macaque	LPITTVQAQSS	VLLHPQEEAA	RIRMSARQKQ	IMEIEEQKQK	QLELLEQIEQ	QKLKLETDCF	RAQLEEEKKK
Marmoset	LPITTVQAQSS	VLLHPQEEAA	RIRKSARQKQ	IMEIEEQKQK	QLELLEQIEQ	QKLKLETDCF	KAQLEENKK

421

Gibbon	TQPTGVGIAP	ASCTVISDED	SHRQMI	HQLLQONRLH	RQSVETAKKR	LLEYQTMLKG	RCPSMSAVSL
Human	TQPTGVGIAP	ASCPVISDED	SHRQMI	HQLLQONRLH	RQSVETARKQ	LLEYQTMLKG	RCPSVSA
Chimpanzee	TQPTGVGIAP	ASCPVISDED	SHRQMI	HQLLQONRLH	RQSVETARKR	LLEYQTMLKG	RCPSVSA
Gorilla	TQPTGVGIAP	ASCPVISDED	SHRQMI	RQLLQONRLH	RQSVETARKR	LLEYQTMLKG	RCPSVSA
Orangutan	TQPTGVDIAP	ASCTVISDED	SHRQMI	HQLLQONRLH	RQSVETARKR	LLEYQTMLKG	RCPSMSA
Macaque	TQPTGVGIAP	ASCAVISDED	SHRQMI	HQLLQONRLH	RQSVETARKR	LLEYQTMLKG	RCPSMSA
Marmoset	TQQTGVGIVP	ASCTVISDED	SHROLIRNYQ	HQLLQONRLH	RQSVETARKR	LLEYQTVLKG	RCPWMSA

491

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Gibbon	ITDSVISVPS	WKSERPTAIS	EHWDRGQRLK	LSPNKYQCIQ	PIQTSKLEQD	HFQVARQNHF	PQRQVETTET
Human	ITDSVISVPS	WKSERPTAIS	EHWDQGQRLK	LSPNKYQPIQ	PIQTSKLEQD	HFQVARQNHF	PQRQVETTET
Chimpanzee	ITDSVISVPS	WKSERPTAIS	EHWDQGQRLK	LSPNKYQPIQ	PIQTSKLEQD	HFQVARQNHF	PQRQVETTET
Gorilla	ITDSIISVPS	WKSERPTAIS	EHWDQGQRLK	LSPNKYQPIQ	PIQTSKLEQD	HFQVARQNHF	PQRQLETTET
Orangutan	ITDSVISVPS	WKSERPTAIS	EHWDQGQRLK	LSPNKYQPIQ	PIQTSKLEQD	HFQVVRQNHF	PQRQVETTET
Macaque	ITDSVISVPS	WKSERPTAIS	EHWDQGQRLK	LSPDKYQPIQ	PVQTSKLEQD	HFQVAKQNHF	PQRQVETAET
Marmoset	ITDSTVSVPS	WKSERPRAVS	EHWDQGQRLK	LSPNKYQPIQ	PIQTSKLEQD	HFQEARQNHF	PQRQVETTET

561

			X				
Gibbon	LGASDILTNO	ALESQEHRLQ	FSQTETQQRD	CKLVPKDSET	LSRALSRRR	LISQDARKIS	ETFRATTFQS
Human	LRASDILTNO	ALESQEHRLQ	FSQTETQQRD	YKLVPKDSET	LSRALSHDRQ	LISQDARKIS	ETFGATTFQS
Chimpanzee	LRTSDILTNO	ALESQEHRLQ	FSQTETQQRD	YKLVPKDSET	LSRALSHDRQ	LISQDARKIS	ETFRATTFQS
Gorilla	LGASDILTNO	ALESQEHRLQ	FSQTETQQRD	YKLVTKDSET	LSRALSHDRQ	LISQDARKIS	ETFRATTFQS
Orangutan	LGASDILTNO	ALESQEHLSQ	FSQTETQQRD	YKLVPKDSET	LSRALSHDRQ	LISQDARKIS	ETFRATTFQS
Macaque	SGASDTLTNO	SLESQEHRLQ	FSQTETQQRD	YKLVPENSET	LSRALSHDRR	LISQDARKIS	ETFRATTFQS
Marmoset	LGVSNILTNO	SLKSQEHLMQ	FSQTETQQRD	YKLI SEDSET	LSRALSHDRQ	LVSQDARKIS	ETFRVTTFQS

631

Gibbon	LESQQLFSEN	SENISSHLTE	PSSFVPLVPQ	HSFSSLPVKV	ESGKIQEPFS	AMSKSTVSTS	HSIISQMHDR
Human	LESQQLFSEN	SENISYHLTE	PSSFVPLVPQ	HSFSSLPVKV	ESGKIQEPFS	AMSKSTVSTS	HSIISQMHDR
Chimpanzee	LESQQLFSEN	SENISYHLTE	PSSFVPLVPQ	HSFSSLPVKV	ESGKIQEPFS	AMSKSTVSTS	HSIISQMHDR
Gorilla	LESQQLFSEN	SENISYHLTE	PSSFVPLVPQ	HSFSSLPVKV	ESGKIQEPFS	AMSKSTVSTS	HSIISQMHDR
Orangutan	LESQQLFSEN	SENVSSHITE	PSSFVPLVPQ	HAFSSLPVKV	ESGKIQEPFS	AMSKSTVSTS	HSIISQMHDR
Macaque	LDSQQLFSEN	SENISSHLTE	PSSFVPLVPQ	HSFSSLPVKV	ESGNIQEPFS	AMSKSTVSTS	HSIINQMYDR
Marmoset	LDSQQMFSEN	SENTSSKPTE	PSSFVPLLLQ	HSFSSPPVKV	ESGKMQEPFS	TMRKSTVSTS	HAIVSQMHDR

701

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Gibbon	PLLSENITA	QQGNIKALQE	QLDLQKKVLQ	ARQEAQEQLL	LCKQKELEQQ	TGLSVFLPLV	TPDSSALLPS
Human	PLLSENITA	QQGNMKALQE	QLDLQKKVLQ	ATQEAQEQLL	LCKQKEVEQQ	TGLSVFLPLV	TPDSSALLPS
Chimpanzee	PLLSENITA	QQGNMKALQE	QLDLQKKVLQ	ARQEAQEQLL	LCKQKELEQQ	MGLSVFLPLV	TPDSSALLPS
Gorilla	PLLSENITA	QQGNMKALQE	QLDLQKKVLH	ARQEAQEQLL	LCKQKELEQQ	MGLSVFLPLV	TPDSSALLPS
Orangutan	RLLPSENITA	QQGNMKALQE	QLDLQKKVLQ	ARQEAQEQLL	LCKQKELEQQ	TGLSVFLPLV	TPDSSALLPS
Macaque	PLLSENITV	QQGNMKALQE	QLDLQKKVLQ	ARQEAQEQLL	LCKQKELEQQ	TGLSVFLPLV	TPDLSALLPS
Marmoset	HLLPSENIIA	QQGNMKALQE	QLDLQKKVLQ	ARQEAQEQLL	LCKQKELEQQ	TGLSVFLPLV	TPNSSALLPS

771

Gibbon	AKADLGRIQE	SSPTKNN TAV	SSDHHVISQL	QDRFLSLSQP	ILSQONNFKF	LQEQLNIQKD	SLQARREAQE
Human	AKADLGRIQE	SSPTKNN IAV	SSDHHVISQL	QDKRLSLSQP	ILSQONNFKF	LQEQLNIQKD	SLQARREAQE
Chimpanzee	AKADLGRIQE	SSPTKNN TAV	SSDHHVISQL	QDKRLSLSQP	ILSQONNFKF	LQEQLNIQKD	SLQARREAQE
Gorilla	AKADLGRIQE	SSPTKNN TAV	SSDHHVISQL	QDKRLSLSQP	ILSQONNFKF	LQEQLNIQKD	SLQARREAQE
Orangutan	AKADLGRIQE	SSPTKNN TAV	SSDHHVISQL	QDRLLSLSQP	ILSQONNFKF	LQEQLNIQKD	SLQARREAQE
Macaque	AKADLGRTKE	SSPTKNN TAV	SSDHHVISQL	QDRLLSLSQP	ILSQONNFKF	LQEQLNIQKD	SLQARREAQE
Marmoset	AKADLGSIQE	SSPAKNN TAI	SSDHHVISQL	QDRLLNFSQP	ILSQONNLKF	LQEQLNIQKD	SLQARREAQE

841

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Gibbon	VLCVHKQSEL	DRRVCSEQAE	PSFFPQVAQH	TFASLPSADT	KCGKIQEQHL	SKSEKGLVSC	QSDIPKSQDG
Human	VLYVHKQSEL	DRRVCSEQAE	PSFFPQVAQH	TFTSLPSADT	KSGKIQEQHS	SKSEKGLVSC	QSDIPI SQDG
Chimpanzee	VLYVHKQSEL	DRRVCSEQAE	PSFFPQVAQH	TFTSLPSADT	KSGKIQEQHS	SKSKKGLVSC	QSDIPI SQDG
Gorilla	VLYVHKQSEL	DRRVCSEQAE	PSFFPQVAQH	TFTSLPSADT	KSGKIQEQHS	SKSEKGLVSC	QSDIPKSQDG
Orangutan	VLYVHKQSEL	ERRVCSEQAE	PSFFPQVAQH	TFTSLPSADT	KSGKTQEQHS	SKSEKGLVSC	QSDIPKSQDG
Macaque	VLCVHKQSEL	DGRVCSEQAE	PSFFPQVAQH	TFTSLPSTDT	KSGKTQEQYS	SKSDKGLVSC	QSGIPKSQDG
Marmoset	VLCVHKQSEL	DGRACSEQSE	PSPFPQIAQH	IFTSLPSADR	KPGKIQEQYS	SKSEKGLVFC	QSDIPKTQDG

911

Gibbon	SLSFLQQFLP	LHDSLKLLQE	QLTKQRTDLO	ARHEAQVELH	RQRDLGDSKS	GVVSSSSSPV	VVQHSVASQA
Human	SLSFLQQFLP	LHDSLKLLQE	QLTKQRTDLO	ARHEAQVELH	RQRDLGDSKS	GLVSSSSSPV	VVQHSVASQA
Chimpanzee	SLSFLQQFLP	LHDSLKLLQE	QLTKQRTDLO	ARHEAQVELH	RQRDLGDSKS	GLVSSSSSPV	VVQHSVASQA
Gorilla	SLSFLQQFLP	LHDSLKLLQE	QLTKQRTDLO	ARHEAQVELH	RQRDLGDSKS	GLVSSSSSPV	VVQHSVASQA
Orangutan	SLSFLQQFLP	LHDSLKLLQE	QLTKQRTDLO	ARHEAQVELH	RQRDLGDSKS	GLVSSSSSPV	VVQHSVASQA
Macaque	SLSFLQQFLP	LHDSLKLLQE	QLTKQRTDLO	ARHEAQVELH	RQRDLGDSKS	GPVSSSSSPV	VVQHSVASQA
Marmoset	SSSFLQQFLP	LHDSLKLLQE	QLTKQRTDLO	AQPEAQVALH	RQRDSGDSKS	GLVSSSSLPM	VVKHSVASQA

981

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Gibbon	SAKAEPRISQ	HILPLQGNLE	EHQARLDPEK	FSQKTQENTS	SEQTGSSSFI	PQLVQLSFTS	LASAESGTLI
Human	SAKAEPRISQ	HMLPLQDNLE	EHQAWLDTEK	FSQKTQENTS	SEQTGSSSFI	PQLVQLSFTS	LASAESGTLI
Chimpanzee	SAKAEPRISQ	HMLPLQDNLE	EHQAWLDTEK	VSQKTQENMS	SEQTGSSSFI	PQLVQLSFTS	LASAESGTLI
Gorilla	SAKAEPRISQ	HVLPLQDNLE	EHQAWLDTEK	FSQKTQENTS	SEQTGSSSFI	PQLVQFSFTS	LASAESGTLI
Orangutan	STKAEPRISQ	RMLPLQDNLE	EHQAWLDTEK	FSQKTQENTS	SEQTGSSSFI	PHLVQLSFTS	LASAESGTLI
Macaque	SAKAEPRISQ	CILPLQDNLE	EHQAWLDTEK	FSQKTQENTA	SEQSGSSSFI	PQLVQLSFTS	LASAESGTLI
Marmoset	SAKAEPRISQ	HILPLQDNLE	EHQAWLDTEK	FSRKTQENTS	SEQTGSSSFV	PQLVQLSFTS	LASAESGTLI

1051

	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	
Gibbon	EPLFTESESK	IFSSHLOIPQ	LQDRLLRISQ	LIQPOQDNLK	ALQEQIATOR	EAIILARQEA	REELLROSE
Human	EPLFTESESK	IFSSHLOIPQ	LQDRLLRISQ	LIQPOQDNLK	ALQEQIATOR	EAIILARQEA	REELLRHQSE
Chimpanzee	EPLFTESESK	IFSSHLOIPQ	LQDRLLRISQ	LIQPOQDNLK	ALQEQIATOR	EAIILARQEA	REELLRHQSE
Gorilla	EPLFTESESK	IFSSHLOIPQ	LQDRLLRISQ	LIQPOQDNLK	ALQEQIATOR	EAIILARQEA	REELLRHQSE
Orangutan	EPLFTESESK	IFSSHLOIPQ	LQDRLLRISQ	LIQPOQDNLK	ALQEQIATOR	EAIILARQEA	REELLRHQSE
Macaque	EPLLTESESK	IFSGHLOIPQ	LQDRLLRISQ	LIQPOQDNLK	ALQEQIATOR	EAIILARQEA	REELLRHQSE
Marmoset	EPLSIESESK	ISSTHLOIPQ	LQNRLLRISQ	LIQPOQDNLK	ALQEKIATOR	EAIILARQEA	REELLHWSE

1121

	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	
Gibbon	WEGRISPKQV	DTSFPLPLVPQ	HSFASLPLTE	SERNQEPCSI	NSDNMVSSGH	SEITLPGDLL	GLSHLVLPQQ
Human	WEGRISPEQV	DTSSLPLVPQ	HSFASLPLTE	SERNQEPCSI	NSDNIVSSGH	SEITLPGDLL	GLSHLVLPQQ
Chimpanzee	WEGRISPEQV	DTSNLPLVPQ	HSFASLPLTE	SERNQEPCSI	NSDNIVSSGH	SEITLPGDLL	GLSHLVLPQQ
Gorilla	WEGRISPEQV	DTSSLPLVPQ	HSFASLPLTE	SERNQEPCSI	NSDNIVSSGH	SEITLPGDLS	GLSHLVLPQQ
Orangutan	WEGRISPEQV	DTSSLPLVPQ	HSLASLPLTE	SERNQEPCSI	NSDNMVSSGH	SEITLPGDLL	GLSHLVLPQQ
Macaque	WEGRISPEQV	DTSSLPLVPQ	HSFTSLPLTE	SERNQEPCSI	NSDNMVSSGP	SEITLPRDPL	GLSHLVLPQQ
Marmoset	WEGRISPKQV	DTSSLPLIPQ	HSFASLPLTE	SERNQEPCSI	NGDNMLSSGH	AEIRLPGDLL	GLSHVVLPPQ

1191

	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	
Gibbon	DNLIALEEHL	HTQTDFLPSV	EKTQKELVLS	KPCKFEEEKIS	SEHFIQSHHG	DLQALQQQLD	TQKKAIRSIO
Human	DNLIALEEHL	HAQTDFLPSI	EKTQKELVLS	KPCKFEEEKVS	SEHFIQSHHG	DLQALQQQLD	TQKKAIRSIO
Chimpanzee	DNLIALEEHL	HAQTDFLPSI	EKTQKELVLS	KPCKFEEEKVS	SEHFIQSHHG	DLQALQQQLD	TQKKAIRSIO
Gorilla	DNLIALEEHL	HAQTGFLPSI	EKTQKELVLS	KPCKFEEEKVS	SEHFIQSHHG	DLQALQQQLD	TQKKAIRSIO
Orangutan	DNLIALEEHL	HAQTDFLPSI	GKTQKELVLS	KPCKFEEEKVS	SEHFIQSHHG	DLQALQQQLD	TQKKAIRSIO
Macaque	DNSIALEEHL	HAQTDFLPSI	EKTQKELVLS	QPKCFEEKVS	SEHFIQSHHG	DLQALQQQLD	TQKKAIRSIH
Marmoset	DNLIALEENL	HTQTDFFPSI	EKTQKELILS	KPCTFEEEKVS	PEHFHSHHS	DLQALQQQLD	AQKKAIRSSQ

1261

	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	
Gibbon	EVQEELLQOR	LSELEKRVSS	EQVSSSSFVS	QVPVADSERT	QKSFPTKSNQ	TVPSSHREIP	RLQDRLLSLS
Human	EVQEELLQOR	LSELEKRVSS	EQVCSSSFVS	QVPVADSERT	QKSFPTKSNQ	TLPSSHREIP	RLQDRLLSLS
Chimpanzee	EVQEELLQOR	LSELEKRVSS	EQVCSSSFVS	QVPVADSERT	QKSFPTKSNQ	TLPSSHCEIP	RLQDRLLSLS
Gorilla	EVQEELLQOR	LSELEKRVSS	EQVCSSSFVS	QVPVADSERT	QKSFPTKSNQ	ILPSSHREIP	RLQDRLLSLS
Orangutan	EVQEELLQOR	LSELEKRVSS	EQVSSSSFIS	QVPVAASERT	QKSFPTKSNQ	TVSSSHCEIP	RLQDRLLSLT
Macaque	EVQEELLQOR	LSELEKRVSS	EQVSSSSFVS	QVPVADSERT	QKSFPTKSNQ	TVPSSHPEIP	RLQDRLLSLS
Marmoset	EVQEELLQOT	LRELEKRVSS	EQISSSSYLS	QIPVADSERT	QKSLPTKSNQ	TVPSSGYPEIP	RLQDRLLSLS

1331

	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	
Gibbon	QPILPQODSM	TAQLDAQREV	MYSYEKPQEE	LSLNKQRKLN	KSESAEHTIP	SLFLPKETEH	SFIPLPFAEA
Human	KPILPQODNM	TAQLDAQREV	MYSYEKPQEE	LSLNKQRKLN	KSESAEHTIP	SLFLPKETEH	SFIPLPFAEA
Chimpanzee	QPILPQODNM	TAQLDAQREV	MYSYEKPQEE	LSLNKQRKLN	KSESAEHTIP	SLFLPKETEH	SFIPLPFAEA
Gorilla	QPILPQODNM	TAQLDAQREV	MYSYEKPQEE	QSLNKQRKLN	KSESAEHTIP	SLFLPKETEH	SFIPLPFAEA
Orangutan	QPILPQODNM	TAQLDAQREV	MYSYEKPQEE	LSLNKQRKLN	KSESAEHTIP	SLFLPKETEH	SFIPLPFAEA
Macaque	QSILPQODNL	TAQLDAQREV	VYSYEKPQEE	LPLNKQRKLN	KSESAEHTIP	SLLLPKETEH	SFIPLPFAEA
Marmoset	QSILPQEDNL	TAQLDVQREV	MYSYEKSQGE	LPLNKQTCLN	KSESAEHTIP	SLLLPKETEH	SFIPLPFAET

1401

	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	-----X-----	
Gibbon	KPKSTRELYS	SQNEHAAPPQ	DPVIPGFHDG	LLSFSQPVLV	QODNLGLQKQ	LDLQREVLHY	SQKAQEKLLV
Human	KPKSTCELYS	SQNEHAAPPQ	NPVIPGFQDR	LLSFSQSVLV	QODNLGLQKQ	LDLQREVLHY	SQKAQEKLLV
Chimpanzee	KPKSTCELYS	SQNEHAAPPQ	NPVIPGFQDR	LLSFSQPVLV	QODNLGLQKQ	LDLQREVLHY	SQKAQEKLLV
Gorilla	KPKSTCELYS	SQNEHAAPPQ	DPVIPGFQDR	LLSFSQPVLV	QODNLGLQKQ	LDLQREVLHY	SQKAQEKLLV
Orangutan	KPKSTCELYS	SQNEHAAPPQ	DPVIPGFQDR	LLSFSQPVLV	QODNLGLQKQ	LDLQREVLHY	SQKAQEKLLV
Macaque	KPKSTCELYS	SQNEHAAPPQ	GPVIPGFQDR	LLSFSQPVLA	QODNLGLQKQ	LDLQREVLHY	SQKAQEKLLV
Marmoset	KPKSTCELYS	SHNEHAAPPQ	DPVIPAFQDR	LLSFSQPVLA	QODNLGLQKQ	LELQREVLHY	SQKTQEKLLV

1471

Gibbon	QRQTALQQQI	QKHEETLKDF	FKDSQISKPT	VENDLKTQKM	GQLREWFNPNT	QDQENIRHAD	RNNSDDNHHLA
Human	QRQTALQQQI	QKHEETLKDF	FKDSQISKPT	VENDLKTQKM	GQLRDWFPNT	QDQENIRHAD	RNNSDDNHHLA
Chimpanzee	QRQTALQQQI	QKHEETLKDF	FKDSQISKPT	VENDLKTQKM	GQLRDWFPNT	QDQENIRHAD	RNNSDDNHHLA
Gorilla	QRQTALQQQI	QKHEETLKDF	FKDSQISKPT	VENDLKTQKM	GQLREWLPNT	QDQENIRHAD	RNNSDDNHHLA
Orangutan	QRQTALQQQI	QEHEETLKDF	FKDSQISKPT	VENDLKTQKM	GQLREWFNPNT	QDQENIRHAD	RNNSDDNHHLA
Macaque	QRQTALQQQM	QKHEETLKDF	FKDSQISKPT	VENDLKTQKM	GQLREWFNPNT	QDQENIRHAD	RNNSDDDHLA
Marmoset	QRQTALQQQI	QKHDETLKDF	LKDSQISKPT	VGNDLKTQKM	GQLKEWFSNI	QDQEDIRHAD	RNNTDDNQLV

1541

Gibbon	SED TSAKQSG	EHLEKDLGRR	SSKPPVAKAR	CGLDLNQHEL	SAIQEVESPA	SGRTSIPGKP	GIYQDRDPLR
Human	SED TSAKQSG	EHLEKDLGRR	SSKPPVAKVK	CGLDLNQHEL	SAIQEVESPA	IGRTSILGKP	GIYEDRDPLR
Chimpanzee	SED TSAKQSG	EHLEKDLGRR	SSKPPVAKVK	CGLDLNQHEL	SAIQEVESPA	IGRTSILGKP	GIYQDRDPLR
Gorilla	SED TSAKQSG	EHLEKDLGRR	SSKPPVAKVK	CGLDLNQHEL	SAIQEVESPA	TGRTSILGKP	GIYQDRDPLR
Orangutan	SED TSAKQSG	EHLEKDLGRR	SSKPPVAKVK	CGLDLNQHEL	SAIQEVESPA	SGRTSILGKP	GIYQDRDPLR
Macaque	SDD TSAKQSG	EHLERDLGRR	SSKPPVAKVK	CGLDLNQHEL	SAIQEVESPA	SGRTSLLGKP	GIYQDRDPLR
Marmoset	SED SSAKQSG	EHLEKELGIR	SSKPPVAKVK	YGLDLNQHEL	SAIQEAESPA	SGRTSILGKP	GVYQERDPLR

1611

Gibbon	VSVSREQSFF	GSPLARDPFS	CLQPVGENVC	GDNSDEAVKV	KE SAENHAVL	SYAVEEEHTY	LAVKPDDKAK
Human	VSISREQSFF	GSPLAHPDFS	CLQLVGENVC	GDDYDEAVKL	KE SVENHAVL	SYAVEEEHAY	LTVKPDDKAK
Chimpanzee	VSISREQSFF	GSPLAHPDFS	CLQPVGENVC	GDDYDEAVKL	KE SVENHAVL	SYAVEEEHTY	LTVKPDDKAK
Gorilla	VSISREQSFF	GSPLAHPDFS	CLQPVGENVC	GDDYDEAVKL	KE SVENHAVL	SYAVEEEHTY	LTVKPDDKAK
Orangutan	VSISREQSFF	GSPLACDPFS	CLQPVGENVC	GDDYDEAVKL	KE SVENHAVL	SYAVEEEHTY	LTVKPDDKAK
Macaque	VSISREQSFF	GSPLACDPFS	CLQPVGENVC	GDDYDEAVKV	KE SVENHAVL	SYAVEEEHTY	LTVKPDDKAK
Marmoset	VSISREQNFF	ASPMACYSG	CLQPVGENVC	GDDHDETVKV	KE STENHAVL	SYAVEEEHTY	LSVKPDDKTK

1681

Gibbon	TL SHEPLSSV	TISTGSLLSY	ENTDLSLTD P	ESFSEHMDDG	KQESTTGKEE	ETNISSIVPS	TEDIYQRQNS
Human	TL SYEPLSSA	TVSTGSLLSY	ENTDLSLTD P	ESFSEHMDD S	KQESTTSKEE	ETNISSIVPS	TQDIYQRQNS
Chimpanzee	TL SHEPLSSA	TVSTGSLLSY	ENTDLSLTD P	ESFSEHMDD S	KQESTTSKEE	ETNISSIVPS	TQDIYQQQNS
Gorilla	TL SHEPLSSA	TVSTGSLLSY	ENTDLSLTD P	ESFSEHMDD S	KQESTTSKEE	ETNISSIVPS	TQDIYQRQNS
Orangutan	TL SHEPLSSV	TVSTGSLLSY	ENTDLSLTD P	ESFSEHMDD S	KQESTTSKEE	ETNISSIVPS	TQDIYQRQNS
Macaque	TL SHEPLSSV	TVSTGSLLSY	ENTDLSLTD P	ESFSEHMDD S	KQESTASKEQ	ETNISSIVPS	TQDIYQWRNS
Marmoset	TL SHEPLSSA	TVSTGSLLSY	ENTDLSLTD P	ESFSEHMDD S	EQEYTTGKEE	ETNISSIVPS	TQDTYPWQNS

1751

Gibbon	SDFHKSLLP I	VDETT CGHTH	FQOMIDKYIN	EANLIPEKTD	SQELEHIFPN	LHHQLFKPLE	PHPDFDLSSS
Human	SDVHKSLLP A	VDETT CGHTH	FQOMIDKYIN	EANLIPEKTD	LQELEHIFPN	LHHQLFKPLE	PHPDFDLSSS
Chimpanzee	SNVHKSLLP A	VDETT CGHTH	FQOMIDKYIN	EANLIPEKTD	LQELEHIFPN	LHHQLFKPLE	PHPDFDLSSS
Gorilla	SDVHKSLLP A	VDETT CGHTH	FQOMIDKYIN	EANSIPEKTD	LQELEHIFPN	LHHQLFKPLE	PHPDFDLSSS
Orangutan	SDVHKSLLP A	VDETT CGHTH	FQOMIDKYIN	EANLIPEKTD	LQELEHIFPN	LHRQLFKPLE	PHPDFDLSSS
Macaque	SDVHKSLLP A	VDETT CGHTH	FQOMIDKYIN	EANLIPEKTD	LRELEHIFPN	LHHQLFKPLE	PHPDFDLSSS
Marmoset	SDGHKSLLP E	VDKTT CGHTH	FQEMIDKYIN	EAKMTPEKTD	LQELEHIFPN	LHHQLFKPLE	PHPDFDLSSS

1821

Gibbon	SGISPDNRDF	YQRSDSSSES	HRATGSSKST	VYFTALRTSM	HSPNQQPDTN	LAHVG AHSFA	TENIGGSEQC
Human	SGISPDNRDF	YQRSDSSSES	HCATGLSKST	VYFTALRTSM	HSPNQQPDTN	LAHVG AHSFA	TENIGGSEQC
Chimpanzee	SGISPDNRDF	YQRSDSSSES	HCATGLSKST	VYFTALRTSM	HSLNQQPDTN	LAHVG AHSFA	TENIGGSEQC
Gorilla	SGISPDNRDF	YQRSDSSSES	HCATGSSKST	VYFTALRTSM	HSPNQQPDTN	LAHVG AHSFA	TENIGGSEQC
Orangutan	SGISPDNRDF	YQRSDSSSES	HHATGSSKST	VYFTALTTSV	HSPNQQPDTN	LAHVG AHSFA	TENIGGSEQC
Macaque	SGISPDNRDF	YQRSDSSSES	HCATGSSKST	VYFTALRTSM	HSPNQQPDTN	LAHVG AHSFA	TENIGGSEQC
Marmoset	SGISPDNRDF	YQRSDSSFES	HCATGSSKST	IYFTALRTGM	HFLNQQPDTN	LAHVG AHSFA	TENMEGAEQS

1891

Gibbon	FEQLQPEYSS	QESQHADLPS	IFSIEARDSS	QGMKNQNYPS	EEHTEILQNK	KKSVHFQLSV	GNLSVYSSSD
Human	FEQLQPEYSS	QESQHADLPS	IFSIEARDSS	QGMKNQNYPS	EEHTEILQNK	KKIVHFQLSI	GNLSVYSSSD
Chimpanzee	FEQLQPEYSS	QESQHADLPS	IFSIEARDSS	QGMKNQNYPS	EEHTEILQNK	KKIVHFQLSV	GNFSVYSSSD
Gorilla	FEQLQPEYSS	QESQHADLPS	IFSIEARDSS	QGMKNQNYPS	EEHTEILQNK	KKSVHFQLSV	GNLSVYSSSD
Orangutan	FEQLQPEYSS	QESQHADLPS	IFSIEARGSS	QGMKNQNYPS	EEHTEILQNK	KKSVHFQLSV	GNLSVYSSSD
Macaque	FEQLLPEYSS	QESQHADLPS	IFSIEARDSS	QGMKNQNYPS	EEHTEILQNK	KKSVHFQLSV	GNLSVYSSSD
Marmoset	FEQLLPECSS	QESQHADLPS	IFSTEARDSS	QDIKNQNYPS	EEHTEVVQNK	KKSVHFQLSI	GNLSVCSSSD

1961

	-----	-----X-----	-----X-----	-----X-----
Gibbon	EANVFDQLNV	QHSTPCGSNS	SECSIKYQLE	SRKERMGFEE
Human	EANVFDQLNV	QHSTPCGSNS	SECSTKHQLE	SRKESMGFEE
Chimpanzee	EANVFDQLNV	QHSTPCGSNS	SECSTKHQLE	SRKESMGFEE
Gorilla	EANVFDQLNV	QHSTPCGSNS	SECSTKHQLE	SRKESMGFEE
Orangutan	EANVFDQLNV	QHSTPCGSNS	SECSTKHQLE	SKKESMGFEE
Macaque	EANVFDQLNI	QHSTPCGSNS	SECSIKHQLE	SRKERMGFEE
Marmoset	EANVFHQNLV	QHSTPCGSNC	SECSIKHQLE	SRKERMGFEE

2031

	-----	X-----	-----	-----X-----	-----	-----X-----
Gibbon	QVEEIDSHLC	LRTVEMGTSM	QAPYSLTTQK	YFENSAETDI	PKITKKLPOL	GQSELFASSG
Human	QVEETDSRLC	VRTVEMGTSI	QAPYSLTTQK	YFENSAETDI	PKITKKLSQL	GESELFASSG
Chimpanzee	QVEETDSGLC	VRTVEMGTSI	QAPYSLTTQK	YFENSAETDI	PKITKKLSQL	GESELFASSG
Gorilla	QVEETDSRLC	VRTVEMGTSI	QAPYSLTTQK	YFENSAETDI	PKITKKLSQL	GESELFASSG
Orangutan	QVEEIDSHLC	VRTVEMGTSI	QAPYSLTTQK	YFENSAKTDI	PKITKKLSQL	GESELFASSG
Macaque	QIEEIDSHLC	VRTVEMGTSI	QAPYSLTTQK	CFENLAETDI	PKITKKLSQL	GQSELFTSSG
Marmoset	QGEETDSQFC	VRTVEMGTSV	QAPHSLTTQK	YSENSPETDI	PKITNQLSEK	EHSSELFASSG

2101

Gibbon	WETETGHGIM	EEPELTLVST	SDNSIAEMDF	ANLTLEEKSE	NEAKSCFQVS	EFLPLVSGTE	ASDYPAVSEL
Human	WETETGHGIM	EEPELTLIST	TDTAIAEMDF	ANLTLEEKSE	NEAKCFFQVS	EFLPLVSATE	ASDYPAVSEL
Chimpanzee	WETETGHGIM	EEPELTLVST	TDTAIAEMDF	ANLTLEEKSE	NEAKSFFQVS	EFLPLVSATE	ASDYPAVSEL
Gorilla	WETETGHGIM	EEPELTLVST	TDTAIAETDF	ANLTLEEKSE	NEAKSFFQVS	EFLPLVSATE	SSDYPAVSEL
Orangutan	WETEIGHGIM	EEPELTLVST	TDTAIAEMDF	ANLTLEEKSE	SEAKSFFEVS	EFLPLASATE	ASDYPAVSEL
Macaque	WETETGHGIM	EEPELTLVST	SDISIAETDF	ANLTLEEKSE	NEAKNSFRVS	EFLPLVSETE	ASDYPAVSEL
Marmoset	WETESGHGIM	EEPELTLVST	SDISIAEIDF	TNLTLEEKGE	DEAKSCLKVS	EFLPLVSETE	ASDYPAVSEL

2171

	-----	-----X-----	-----	-----	-X-----	-----X-----	-----
Gibbon	SIEKPRTAST	ETPRWPGSLQ	KRSFERSHQK	QKEITVKEKP	SLSSSVSRLK	GVIKVRAPPE	DRQTQALRH
Human	SIEKPRTAST	ETPRRPGSLQ	KRSFERSHQK	QKEITVKEKP	SISSSVSRLK	GVNKVRAFPE	DRKTQALRH
Chimpanzee	SIEKPRTAST	ETPRRTGSLQ	KRSFERSHQK	QKEITVKEKP	SISSSVSHLK	GVNKVAFPE	DRKTQALRH
Gorilla	SIEKPRTAST	ETPRRPGSLQ	KRSFERSHQK	QKEITVKEKP	FISSSVSRLK	GVNKVRAFPE	DRKTQALRH
Orangutan	SIEKPRTAST	ETPRRPGSLQ	KRSFERSHQK	QKEITVKEKP	SISSSVSHLK	GVNKVRAFPE	DRKTQALRH
Macaque	SIEKPRTAST	DTPORPGSLQ	KRSFERSHQK	EKEITVKEKP	SISSSVSCLK	GVNKVRAFPE	DRKTQVLRH
Marmoset	SIENPKTAST	ESPPRSRSLO	KRTFERSHQK	QKEITIKEKP	SIGSSVSRLK	GVNKVRALPE	ERQTQALRH

2241

Gibbon	QRGLR
Human	QRGLR
Chimpanzee	QRGLR
Gorilla	QRGLR
Orangutan	QRGLR
Macaque	QRGLR
Marmoset	QRSLR

TBX5

1

Gibbon	MADADEGFGL	AHTPLEPDAK	DLPCDSKPES	ALGAPSKSPS	SPQAAFTQOG	MEGIKVFLEH	RELWLKFHEV
Human	MADADEGFGL	AHTPLEPDAK	DLPCDSKPES	ALGAPSKSPS	SPQAAFTQOG	MEGIKVFLEH	RELWLKFHEV
Chimpanzee	MADADEGFGL	AHTPLEPDAK	DLPCDSKPES	ALGAPSKSPP	SPQAAFTQOG	MEGIKVFLEH	RELWLKFHEV
Gorilla	MADADEGFGL	AHTPLEPDAK	DLPCDSKPES	ALGAPSKSPS	SPQAAFTQOG	MEGIKVFLEH	RELWLKFHEV
Orangutan	MADADEGFGL	AHTPLEPDAK	DLPCDSKPES	ALGAPSKSPS	SPQAAFTQOG	MEGIKVFLEH	RELWLKFHEV
Macaque	MADADEGFGL	AHTPLEPDAK	DLPCDSKPES	ALGAPSKSPS	SPQAAFTQOG	MEGIKVFLEH	RELWLKFHEV
Marmoset	MADADEGFGL	AHTPLEPDAK	DLPCDSKPES	ALGAPSKSPS	SPQAAFTQOG	MEGIKVFLEH	RELWLKFHEV

71

Gibbon	GTEMIITKAG	RRMFPSYKVK	VTGLNPCKTY	ILLMDIVPAD	DHRYKFADNK	WSSFQKCLKT	NNHLDPFGHI
Human	GTEMIITKAG	RRMFPSYKVK	VTGLNPCKTY	ILLMDIVPAD	DHRYKFADNK	WSSFQKCLKT	NNHLDPFGHI
Chimpanzee	GTEMIITKAG	RRMFPSYKVK	VTGLNPCKTY	ILLMDIVPAD	DHRYKFADNK	WSSFQKCLKT	NNHLDPFGHI
Gorilla	GTEMIITKAG	RRMFPSYKVK	VTGLNPCKTY	ILLMDIVPAD	DHRYKFADNK	WSSFQKCLKT	NNHLDPFGHI
Orangutan	GTEMIITKAG	RRMFPSYKVK	VTGLNPCKTY	ILLMDIVPAD	DHRYKFADNK	WSSFQKCLKT	NNHLDPFGHI
Macaque	GTEMIITKAG	RRMFPSYKVK	VTGLNPCKTY	ILLMDIVPAD	DHRYKFADNK	WSSFQKCLKT	NNHLDPFGHI
Marmoset	GTEMIITKAG	RRMFPSYKVK	VTGLNPCKTY	ILLMDIVPAD	DHRYKFADNK	WSSFQKCLKT	NNHLDPFGHI

141

Gibbon	ILNSMHKYQP	RLHIVKADEN	NGFGSKNTAF	CTHVPETAF	IAVTSYQNHK	ITQLKIENNP	FAKGFRGSD
Human	ILNSMHKYQP	RLHIVKADEN	NGFGSKNTAF	CTHVPETAF	IAVTSYQNHK	ITQLKIENNP	FAKGFRGSD
Chimpanzee	ILNSMHKYQP	RLHIVKADEN	NGFGSKNTAF	CTHVPETAF	IAVTSYQNHK	ITQLKIENNP	FAKGFRGSD
Gorilla	ILNSMHKYQP	RLHIVKADEN	NGFGSKNTAF	CTHVPETAF	IAVTSYQNHK	ITQLKIENNP	FAKGFRGSD
Orangutan	ILNSMHKYQP	RLHIVKADEN	NGFGSKNTAF	CTHVPETAF	IAVTSYQNHK	ITQLKIENNP	FAKGFRGSD
Macaque	ILNSMHKYQP	RLHIVKADEN	NGFGSKNTAF	CTHVPETAF	IAVTSYQNHK	ITQLKIENNP	FAKGFRGSD
Marmoset	ILNSMHKYQP	RLHIVKADEN	NGFGSKNTAF	CTHVPETAF	IAVTSYQNHK	ITQLKIENNP	FAKGFRGSD

211

Gibbon	MELHRMSRMQ	SKEYPVVPRS	TVRQKVTSNH	SPFSSESRAL	STSSNLGSQY	QCENGVSGPS	QDLLPPPNPY
Human	MELHRMSRMQ	SKEYPVVPRS	TVRQKVASNH	SPFSSESRAL	STSSNLGSQY	QCENGVSGPS	QDLLPPPNPY
Chimpanzee	MELHRMSRMQ	SKEYPVVPRS	TVRQKVASNH	SPFSSESRAL	STSSNLGSQY	QCENGVSGPS	QDLLPPPNPY
Gorilla	MELHRMSRMQ	SKEYPVVPRS	TVRQKVASNH	SPFSSESRAL	STSSNLGSQY	QCENGVSGPS	QDLLPPPNPY
Orangutan	MELHRMSRMQ	SKEYPVVPRS	TVRQKVASNH	SPFSSESRAL	STSSNLGSQY	QCENGVSGPS	QDLLPPPNPY
Macaque	MELHRMSRMQ	SKEYPVVPRS	TVRQKVASNH	SPFSSESRAL	STSSNLGSQY	QCENGVSGPS	QDLLPPPNPY
Marmoset	MELHRMSRMQ	SKEYPVVPRS	TVRQKVASNH	SPFSSESRAL	STSSNLGSQY	QCENGVSGPS	QDLLPPPNPY

281

Gibbon	PLPQEHSQIY	HCTKRKEEEC	STTDHPYKPK	YMETSPSEES	FYPQQQGGAYR	TESAQRQACM	YASSAPPSEP
Human	PLPQEHSQIY	HCTKRKEEEC	STTDHPYKPK	YMETSPSEES	FYPQQQGGAYR	TESAQRQACM	YASSAPPSEP
Chimpanzee	PLPQEHSQIY	HCTKRKEEEC	STTDHPYKPK	YMETSPSEES	FYPQQQGGAYR	TESAQRQACM	YASSAPPSEP
Gorilla	PLPQEHSQIY	HCTKRKEEEC	STTDHPYKPK	YMETSPSEES	FYPQQQGGAYR	TESAQRQACM	YASSAPPSEP
Orangutan	PLPQEHSQIY	HCTKRKEEEC	STTDHPYKPK	YMETSPSEES	FYPQQQGGAYR	TESAQRQACM	YASSAPPSEP
Macaque	PLPQEHSQIY	HCTKRKEEEC	STTDHPYKPK	YMETSPSEES	FYPQQQGGAYR	TESAQRQACM	YASSAPPSEP
Marmoset	PLPQEHSQIY	HCTKRKEEEC	STTDHPYKPK	YMETSPSEES	FYPQQQGGYR	TESAQRQACM	YASSAPPSEP

351

Gibbon	VPSLEDISCN	TWPSMPSYSS	CTVTTVQPM	RLPYQHFSAH	FTSGPLVPR	AGMANHGSPQ	LGEGMFQHQT
Human	VPSLEDISCN	TWPSMPSYSS	CTVTTVQPM	RLPYQHFSAH	FTSGPLVPR	AGMANHGSPQ	LGEGMFQHQT
Chimpanzee	VPSLEDISCN	TWPSMPSYSS	CTVTTVQPM	RLPYQHFSAH	FTSGPLVPR	AGMANHGSPQ	LGEGMFQHQT
Gorilla	VPSLEDISCN	TWPSMPSYSS	CTVTTVQPM	RLPYQHFSAH	FTSGPLVPR	AGMANHGSPQ	LGEGMFQHQT
Orangutan	VPSLEDISCN	TWPSMPSYSS	CTVTTVQPM	RLPYQHFSAH	FTSGPLVPR	AGMANHGSPQ	LGEGMFQHQT
Macaque	VPSLEDISCN	TWPSMPSYSS	CTVTTVQPM	RLPYQHFSAH	FTSGPLVPR	AGMANHGSPQ	LGEGMFQHQT
Marmoset	VPSLEDISCN	TWPSMPSYSS	CTVTTVQPM	RLPYQHFSAH	FTSGPLVPR	AGMANHGSPQ	LGEGMFQHQT

421

Gibbon	SVAHQPVVRQ	CGPQTGLQSP	GTLQPPEFLY	SHGVPRTLSP	HQYHSHVHGV	MVPEWSDNS
Human	SVAHQPVVRQ	CGPQTGLQSP	GTLQPPEFLY	SHGVPRTLSP	HQYHSHVHGV	MVPEWSDNS
Chimpanzee	SVAHQPVVRQ	CGPQTGLQSP	GTLQPPEFLY	SHGVPRTLSP	HQYHSHVHGV	MVPEWSDNS
Gorilla	SVAHQPVVRQ	CGPQTGLQSP	GTLQPPEFLY	SHGVPRTLSP	HQYHSHVHGV	MVPEWSDNS
Orangutan	SVAHQPVVRQ	CGPQTGLQSP	GTLQPPEFLY	SHGVPRTLSP	HQYHSHVHGV	MVPEWSDNS
Macaque	SVAHQPVVRQ	CGPQTGLQSP	GTLQPPEFLY	SHGMPRTLSP	HQYHSHVHGV	MVPEWSDNS
Marmoset	SVAHQPVVRQ	CGPQTGLQSP	GTLQPPEFLY	SHGVPRTLSP	HQYHSHVHGV	MVPEWSDNS

COL1A1

1

Gibbon	MFSFVDLRLL	LLLAATALLT	HGQEEGQVEG	QDEDIIPPITC	VQNGRLRYHDR	DVWKPEPCRI	CVCDNGKVLG
Human	MFSFVDLRLL	LLLAATALLT	HGQEEGQVEG	QDEDIIPPITC	VQNGRLRYHDR	DVWKPEPCRI	CVCDNGKVLG
Chimpanzee	MFSFVDLRLL	LLLAATALLT	HGQEEGQVEG	QDEDIIPPITC	VQNGRLRYHDR	DVWKPEPCRI	CVCDNGKVLG
Gorilla	MFSFVDLRLL	LLLAATALLT	HGQEDGQVEG	QDEDIIPPITC	VQNGRLRYHDR	DVWKPEPCRI	CVCDNGKVLG
Orangutan	MFSFVDLRLL	LLLAATALLT	HGQEEGQVEG	QDEDIIPPITC	VQNGRLRYHDR	DVWKPEPCRI	CVCDNGKVLG
Macaque	MFSFVDLRLL	LLLAATALLT	HGQEEGQVEG	QDEDIIPPITC	VQNGRLRYHDR	DVWKPEPCRI	CVCDNGKVLG
Marmoset	MFSFVDLRLL	LLLAATAALLT	HGQEEGQVEG	QDEDIIPPITC	VQNGRLRYHDR	LVEKPEPCRI	CVCDNGKVLG

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Gibbon	DDVICTDQET	TGVEGPKGDG	PRGPRGPAGP	DIPGLGPPGP	PGPPGPPGLG	GNFAPQLSYG	YDEKSAGGIS
Human	DDVICTDQET	TGVEGPKGDG	PRGPRGPAGP	DIPGLGPPGP	PGPPGPPGLG	GNFAPQLSYG	YDEKSTGGIS
Chimpanzee	DDVICTDQET	TGVEGPKGDG	PRGPRGPAGP	DIPGLGPPGP	PGPPGPPGLG	GNFAPQLSYG	YDEKSTGGIS
Gorilla	DDVICTDQET	TGVEGPKGDG	PRGPRGPAGP	DIPGLGPPGP	PGPPGPPGLG	GNFAPQLSYG	YDEKSAGGIS
Orangutan	DDVICTDQET	TGVEGPKGDG	PRGPRGPAGP	DIPGLGPPGP	PGPPGPPGLG	GNFAPQLSYG	YDEKSTGGIS
Macaque	DDVICTDQET	TGVEGPKGDG	PRGPRGPAGP	DIPGLGPPGP	PGPPGPPGLG	GNFAPQLSYG	YDEKSTGGIS
Marmoset	DDVICTDRET	TGVEGPKGDG	PRGPRGPAGP	DIPGLGPPGP	PGPPGPPGLG	GNFAPQLSYG	YDEKSTGGIS

141

Gibbon	VPGPMGPSGP	RGLGPPGAPG	POGFQGPPE	PGEFGASGPM	GPRGPPGPPG	KNGDDGEAGK	PGRPGERGPP
Human	VPGPMGPSGP	RGLGPPGAPG	POGFQGPPE	PGEFGASGPM	GPRGPPGPPG	KNGDDGEAGK	PGRPGERGPP
Chimpanzee	VPGPMGPSGP	RGLGPPGAPG	POGFQGPPE	PGEFGASGPM	GPRGPPGPPG	KNGDDGEAGK	PGRPGERGPP
Gorilla	VPGPMGPSGP	RGLGPPGAPG	POGFQGPPE	PGEFGASGPM	GPRGPPGPPG	KNGDDGEAGK	PGRPGERGPP
Orangutan	VPGPMGPSGP	RGLGPPGAPG	POGFQGPPE	PGEFGASGPM	GPRGPPGPPG	KNGDDGEAGK	PGRPGERGPP
Macaque	VPGPMGPSGP	RGLGPPGAPG	POGFQGPPE	PGEFGASGPM	GPRGPPGPPG	KNGDDGEAGK	PGRPGERGPP
Marmoset	VPGPMGPSGP	RGLGPPGSPG	POGFQGPPE	PGEFGASGPM	GPRGPPGPPG	KNGDDGEAGK	PGRPGERGPP

211

Gibbon	GPOGARGLPG	TAGLPKGKHR	GFSGLDGAKE	NGAPQOMGPR	GLPGERGRPG	APGPAGARGN	DGATGAAGPP
Human	GPOGARGLPG	TAGLPKGKHR	GFSGLDGAKE	NGAPQOMGPR	GLPGERGRPG	APGPAGARGN	DGATGAAGPP
Chimpanzee	GPOGARGLPG	TAGLPKGKHR	GFSGLDGAKE	NGAPQOMGPR	GLPGERGRPG	APGPAGARGN	DGATGAAGPP
Gorilla	GPOGARGLPG	TAGLPKGKHR	GFSGLDGAKE	NGAPQOMGPR	GLPGERGRPG	APGPAGARGN	DGATGAAGPP
Orangutan	GPOGARGLPG	TAGLPKGKHR	GFSGLDGAKE	NGAPQOMGPR	GLPGERGRPG	APGPAGARGN	DGATGAAGPP
Macaque	GPOGARGLPG	TAGLPKGKHR	GFSGLDGAKE	NGAPQOMGPR	GLPGERGRPG	APGPAGARGN	DGATGAAGPP
Marmoset	GPOGARGLPG	TAGLPKGKHR	GFSGLDGAKE	NGAPQOMGPR	GLPGERGRPG	PPGPAGARGN	DGATGAAGPP

281

Gibbon	GPTGPAGPPG	FPGAVGAKGE	AGPOGPRGSE	GPOGVRGEPG	PPGPAGAAAGP	AGNPGADGQP	GAKGANGAPG
Human	GPTGPAGPPG	FPGAVGAKGE	AGPOGPRGSE	GPOGVRGEPG	PPGPAGAAAGP	AGNPGADGQP	GAKGANGAPG
Chimpanzee	GPTGPAGPPG	FPGAVGAKGE	AGPOGPRGSE	GPOGVRGEPG	PPGPAGAAAGP	AGNPGADGQP	GAKGANGAPG
Gorilla	GPTGPAGPPG	FPGAVGAKGE	AGPOGPRGSE	GPOGVRGEPG	PPGPAGAAAGP	AGNPGADGQP	GAKGANGAPG
Orangutan	GPTGPAGPPG	FPGAVGAKGE	AGPOGPRGSE	GPOGVRGEPG	PPGPAGAAAGP	AGNPGADGQP	GAKGANGAPG
Macaque	GPTGPAGPPG	FPGAVGAKGE	AGPOGPRGSE	GPOGVRGEPG	PPGPAGAAAGP	AGNPGADGQP	GAKGANGAPG
Marmoset	GPTGPAGPAG	FPGAVGAKGE	AGPOGPRGSE	GPOGVRGEPG	PPGPAGAAAGP	AGNPGADGQP	GAKGANGAPG

351

Gibbon	IAGAPGFPGA	RGPSGPQPG	GPPGPKGNSG	EPGAPGSKGD	TGAKGEPGPV	GVQGPPGPAG	EEGKRGARGE
Human	IAGAPGFPGA	RGPSGPQPG	GPPGPKGNSG	EPGAPGSKGD	TGAKGEPGPV	GVQGPPGPAG	EEGKRGARGE
Chimpanzee	IAGAPGFPGA	RGPSGPQPG	GPPGPKGNSG	EPGAPGSKGD	TGAKGEPGPV	GVQGPPGPAG	EEGKRGARGE
Gorilla	IAGAPGFPGA	RGPSGPQPG	GPPGPKGNSG	EPGAPGSKGD	TGAKGEPGPV	GVQGPPGPAG	EEGKRGARGE
Orangutan	IAGAPGFPGA	RGPSGPQPG	GPPGPKGNSG	EPGAPGSKGD	TGAKGEPGPV	GVQGPPGPAG	EEGKRGARGE
Macaque	IAGAPGFPGA	RGPSGPQPG	GPPGPKGNSG	EPGAPGSKGD	TGAKGEPGPV	GVQGPPGPAG	EEGKRGARGE
Marmoset	IAGAPGFPGA	RGPSGPQGPS	GPPGPKGNSG	EPGAPGSKGD	TGAKGEPGPV	GVQGPPGPAG	EEGKRGARGE

421

Gibbon	PGPTGLPGPP	GERGGPGSRG	FPGADGVAGP	KPAGERGSGP	AGPKGGGREA	LGAKGLTGSP	GSPGPDGKTG
Human	PGPTGLPGPP	GERGGPGSRG	FPGADGVAGP	KPAGERGSGP	AGPKGGGREA	LGAKGLTGSP	GSPGPDGKTG
Chimpanzee	PGPTGLPGPP	GERGGPGSRG	FPGADGVAGP	KPAGERGSGP	AGPKGGGREA	LGAKGLTGSP	GSPGPDGKTG
Gorilla	PGPTGLPGPP	GERGGPGSRG	FPGADGVAGP	KPAGERGSGP	AGPKGGGREA	LGAKGLTGSP	GSPGPDGKTG
Orangutan	PGPTGLPGPP	GERGGPGSRG	FPGADGVAGP	KPAGERGSGP	AGPKGGGREA	LGAKGLTGSP	GSPGPDGKTG
Macaque	PGPTGLPGPP	GERGGPGSRG	FPGADGVAGP	KPAGERGSGP	AGPKGGGREA	LGAKGLTGSP	GSPGPDGKTG
Marmoset	PGPTGLPGPP	GERGGPGSRG	FPGADGVAGP	KPAGERGSGP	AGPKGGGREA	LGAKGLTGSP	GSPGPDGKTG

491

Gibbon	PPGPAGQDGR	PGPPGPPGAR	GQAGVMGFPG	PKGAAGEPGK	AGERGVPGPP	GAVGPAGKDG	EAGAQQPPGP
Human	PPGPAGQDGR	PGPPGPPGAR	GQAGVMGFPG	PKGAAGEPGK	AGERGVPGPP	GAVGPAGKDG	EAGAQQPPGP
Chimpanzee	PPGPAGQDGR	PGPPGPPGAR	GQAGVMGFPG	PKGAAGEPGK	AGERGVPGPP	GAVGPAGKDG	EAGAQQPPGP
Gorilla	PPGPAGQDGR	PGPPGPPGAR	GQAGVMGFPG	PKGAAGEPGK	AGERGVPGPP	GAVGPAGKDG	EAGAQQPPGP
Orangutan	PPGPAGQDGR	PGPPGPPGAR	GQAGVMGFPG	PKGAAGEPGK	AGERGVPGPP	GAVGPAGKDG	EAGAQQPPGP
Macaque	PPGPAGQDGR	PGPPGPPGAR	GQAGVMGFPG	PKGAAGEPGK	AGERGVPGPP	GAVGPAGKDG	EAGAQQPPGP
Marmoset	PPGPAGQDGR	PGPPGPPGAR	GQAGVMGFPG	PKGAAGEPGK	AGERGVPGPP	GAVGPAGKDG	EAGAQQPPGP

561

Gibbon	AGPAGERGEO	GPAGSPGFQG	LPGPAGPPGE	AGKPGEQGV	GD LGAPGPSG	AR GERGF PGE	RGVQ GPPGPA
Human	AGPAGERGEO	GPAGSPGFQG	LPGPAGPPGE	AGKPGEQGV	GD LGAPGPSG	AR GERGF PGE	RGVQ GPPGPA
Chimpanzee	AGPAGERGEO	GPAGSPGFQG	LPGPAGPPGE	AGKPGEQGV	GD LGAPGPSG	AR GERGF PGE	RGVQ GPPGPA
Gorilla	AGPAGERGEO	GPAGSPGFQG	LPGPAGPPGE	AGKPGEQGV	GD LGAPGPSG	AR GERGF PGE	RGVQ GPPGPA
Orangutan	AGPAGERGEO	GPAGSPGFQG	LPGPAGPPGE	AGKPGEQGV	GD LGAPGPSG	AR GERGF PGE	RGVQ GPPGPA
Macaque	AGPAGERGEO	GPAGSPGFQG	LPGPAGPPGE	AGKPGEQGV	GD LGAPGPSG	AR GERGF PGE	RGVQ GPPGPA
Marmoset	AGPAGERGEO	GPAGSPGFQG	LPGPAGPPGE	AGKPGEQGV	GD LGAPGPSG	AR GERGF PGE	RGVQ GPPGPA

631

Gibbon	GPRGANGAPG	NDGAKGDAGA	PGAPGSQGAP	GLOGMPGERG	AAGLPGPKGD	RGDAGPKGAD	GSPGKDGVRG
Human	GPRGANGAPG	NDGAKGDAGA	PGAPGSQGAP	GLOGMPGERG	AAGLPGPKGD	RGDAGPKGAD	GSPGKDGVRG
Chimpanzee	GPRGANGAPG	NDGAKGDAGA	PGAPGSQGAP	GLOGMPGERG	AAGLPGPKGD	RGDAGPKGAD	GSPGKDGVRG
Gorilla	GPRGANGAPG	NDGAKGDAGA	PGAPGSQGAP	GLOGMPGERG	AAGLPGPKGD	RGDAGPKGAD	GSPGKDGVRG
Orangutan	GPRGANGAPG	NDGAKGDAGA	PGAPGSQGAP	GLOGMPGERG	AAGLPGPKGD	RGDAGPKGAD	GSPGKDGVRG
Macaque	GPRGANGAPG	NDGAKGDAGA	PGAPGSQGAP	GLOGMPGERG	AAGLPGPKGD	RGDAGPKGAD	GSPGKDGVRG
Marmoset	GPRGANGAPG	NDGAKGDAGA	PGAPGSQGAP	GLOGMPGERG	AAGLPGPKGD	RGDAGPKGAD	GSPGKDGVRG

701

Gibbon	LTGPIGPPGP	AGAPGDKGET	GPSGPAGPTG	ARGAPDRGE	PGPPGPAGFA	GPPGADGQPG	AKGEPGDAGA
Human	LTGPIGPPGP	AGAPGDKGES	GPSGPAGPTG	ARGAPDRGE	PGPPGPAGFA	GPPGADGQPG	AKGEPGDAGA
Chimpanzee	LTGPIGPPGP	AGAPGDKGES	GPSGPAGPTG	ARGAPDRGE	PGPPGPAGFA	GPPGADGQPG	AKGEPGDAGA
Gorilla	LTGPIGPPGP	AGAPGDKGES	GPSGPAGPTG	ARGAPDRGE	PGPPGPAGFA	GPPGADGQPG	AKGEPGDAGA
Orangutan	LTGPIGPPGP	AGAPGDKGET	GPSGPAGPTG	ARGAPDRGE	PGPPGPAGFA	GPPGADGQPG	AKGEPGDAGA
Macaque	LTGPIGPPGP	AGAPGDKGET	GPSGPAGPTG	ARGAPDRGE	PGPPGPAGFA	GPPGADGQPG	AKGEPGDAGA
Marmoset	LTGPIGPPGP	AGAPGDKGET	GPSGPAGPTG	ARGAPDRGE	PGPPGPAGFA	GPPGADGQPG	AKGEPGDAGA

771

Gibbon	KGDAGPPGPA	GPAGPPGPIG	NVGAPGAKGA	RGSAGPPGAT	GFPGAAGR VG	PPGPSGNAGP	PGPPGPAGKE
Human	KGDAGPPGPA	GPAGPPGPIG	NVGAPGAKGA	RGSAGPPGAT	GFPGAAGR VG	PPGPSGNAGP	PGPPGPAGKE
Chimpanzee	KGDAGPPGPA	GPAGPPGPIG	NVGAPGAKGA	RGSAGPPGAT	GFPGAAGR VG	PPGPSGNAGP	PGPPGPAGKE
Gorilla	KGDAGPPGPA	GPAGPPGPIG	NVGAPGAKGA	RGSAGPPGAT	GFPGAAGR VG	PPGPSGNAGP	PGPPGPAGKE
Orangutan	KGDAGPPGPA	GPAGPPGPIG	NVGAPGAKGA	RGSAGPPGAT	GFPGAAGR VG	PPGPSGNAGP	PGPPGPAGKE
Macaque	KGDAGPPGPA	GPAGPPGPIG	NVGAPGPKGA	RGSAGPPGAT	GFPGAAGR VG	PPGPSGNAGP	PGPPGPAGKE
Marmoset	KGDAGPPGPA	GPAGPPGPIG	NVGAPGPKGA	RGSAGPPGAT	GFPGAAGR VG	PPGPSGNAGP	PGPPGPAGKE

841

Gibbon	GGKGRGETG	PAGRPEVGP	PGPPGPAGEK	GSPGADGPAG	APGTPGPQGI	AGQRGVVGLP	GQRGERGFP
Human	GGKGRGETG	PAGRPEVGP	PGPPGPAGEK	GSPGADGPAG	APGTPGPQGI	AGQRGVVGLP	GQRGERGFP
Chimpanzee	GGKGRGETG	PAGRPEVGP	PGPPGPAGEK	GSPGADGPAG	APGTPGPQGI	AGQRGVVGLP	GQRGERGFP
Gorilla	GGKGRGETG	PAGRPEVGP	PGPPGPAGEK	GSPGADGPAG	APGTPGPQGI	AGQRGVVGLP	GQRGERGFP
Orangutan	GGKGRGETG	PAGRPEVGP	PGPPGPAGEK	GSPGADGPAG	APGTPGPQGI	AGQRGVVGLP	GQRGERGFP
Macaque	GGKGRGETG	PAGRPEVGP	PGPPGPAGEK	GSPGADGPAG	APGTPGPQGI	AGQRGVVGLP	GQRGERGFP
Marmoset	GGKGRGETG	PAGRPEVGP	PGPPGPAGEK	GSPGADGPAG	APGTPGPQGI	AGQRGVVGLP	GQRGERGFP

911

Gibbon	SAGAPGKDGL	NGLPGPIGPP	GPRGRTGDAS	ASCPS
Human	SAGAPGKDGL	NGLPGPIGPP	GPRGRTGDAE	ASCCKN
Chimpanzee	SAGAPGKDGL	NGLPGPIGPP	GPRGRTGDAE	ASCCKN
Gorilla	SAGAPGKDGL	NGLPGPIGPP	GPRGRTGDAE	ASCCKN
Orangutan	SAGAPGKDGL	NGLPGPIGPP	GPRGRTGDAE	ASCCKN
Macaque	SAGTPGKDGL	NGLPGPIGPP	GPRGRTGDAE	ASCCKN
Marmoset	SAGAPGKDGL	NGLPGPIGPP	GPRGRTGDAE	ASCCKN

CHRNA1

1

Gibbon	MEPWPFLLFS	LCSAGLVLGS	EHETRLVAKL	FKDYSSVVRP	VEDHHQVVEV	TVGLQLIQLI	NVDEVNQIVT
Human	MEPWPLLLFS	LCSAGLVLGS	EHETRLVAKL	FKDYSSVVRP	VEDHRQVVEV	TVGLQLIQLI	NVDEVNQIVT
Chimpanzee	MEPWPLLLFS	FCSAGLVLGS	EHETRLVAKL	FKDYSSVVRP	VEDHRQVVEV	TVGLQLIQLI	NVDEVNQIVT
Gorilla	MEPWPLLLFS	LCSAGLVLGS	EHETRLVAKL	FKDYSSVVRP	VEDHHQVVEV	TVGLQLIQLI	NVDEVNQIVT
Orangutan	MEPWPLLLFS	LCSAGLVLGS	EHETRLVAKL	FKDYSSVVRP	VEDHHQVVEV	TVGLQLIQLI	NVDEVNQIVT
Macaque	MEPWPLLLFS	LCSAGLVLGS	EHETRLVAKL	FKDYSSVVRP	VEDHHQVVEV	TVGLQLIQLI	NVDEVNQIVT
Marmoset	MEPRPFLLFS	LCSAGLVLGS	EHETRLVAKL	FKDYSSVVRP	VEDHRQVVEV	TVGLQLIQLI	NVDEVNQIVT

71

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Gibbon	TNVRLCSADG	DFAIVKFTKV	LLDYTGHIW	TPPAIFKSYC	EIIVTHFPFD	EQNCSMKLGT	WTYDGSVVAI
Human	TNVRLNNDAG	DFAIVKFTKV	LLQYTGHIW	TPPAIFKSYC	EIIVTHFPFD	EQNCSMKLGT	WTYDGSVVAI
Chimpanzee	TNVRLNNDAG	DFAIVKFTKV	LLEYTGHIW	TPPAIFKSYC	EIIVTHFPFD	EQNCSMKLGT	WTYDGSVVAI
Gorilla	TNVRLNNDAG	DFAIVKFTKV	LLEYTGHIW	TPPAIFKSYC	EIIVTHFPFD	EQNCSMKLGT	WTYDGSVVAI
Orangutan	TNVRLNNDAG	DFAIVKFTKV	LLDYTGHIW	TPPAIFKSYC	EIIVTHFPFD	EQNCSMKLGT	WTYDGSVVAI
Macaque	TNVRLNNDAG	DFAIVKFTKV	LLDHTGHIW	TPPAIFKSYC	EIIVTHFPFD	EQNCSMKLGT	WTYDGSVVAI
Marmoset	TNVRLNNDAG	DFAIVKFTKV	LLDYTGHIW	TPPAIFKSYC	EIIVTHFPFD	EQNCSMKLGT	WTYDGSVVAI

141

Gibbon	NPESDQPDLS	NFMESGEWVI	KESRGWKHWV	FYSCCPDTPY	LDITYHFVMQ	RLPLYFIVNV	IIPCLLFSFL
Human	NPESDQPDLS	NFMESGEWVI	KESRGWKHSV	TYSCCPDTPY	LDITYHFVMQ	RLPLYFIVNV	IIPCLLFSFL
Chimpanzee	NPESDQPDLS	NFMESGEWVI	KESRGWKHSV	TYSCCPDTPY	LDITYHFVMQ	RLPLYFIVNV	IIPCLLFSFL
Gorilla	NPESDQPDLS	NFMESGEWVI	KESRGWKHSV	TYSCCPDTPY	LDITYHFVMQ	RLPLYFIVNV	IIPCLLFSFL
Orangutan	NPESDQPDLS	NFMESGEWVI	KESRGWKHWV	SYSCCPNTPY	LDITYHFVMQ	RLPLYFIVNV	IIPCLLFSFL
Macaque	NPESDQPDLS	NFMESGEWVI	KESRGWKHWV	FYSCCPNTPY	LDITYHFVMQ	RLPLYFIVNV	IIPCLLFSFL
Marmoset	NPESDQPDLS	NFMESGEWVI	KESRGWKHWV	FYSCCPDTPY	LDITYHFVMQ	RLPLYFIVNV	IIPCLLFSFL

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Gibbon	TGLVFYLPD	SGEKMTLSIS	VLLSLTVFLL	VIVELIPSTS	SAVPLIGKYM	LFTMVFVIAS	IIITVIVINI
Human	TGLVFYLPD	SGEKMTLSIS	VLLSLTVFLL	VIVELIPSTS	SAVPLIGKYM	LFTMVFVIAS	IIITVIVINT
Chimpanzee	TGLVFYLPD	SGEKMTLSIS	VLLSLTVFLL	VIVELIPSTS	SAVPLIGKYM	LFTMVFVIAS	IIITVIIINT
Gorilla	TGLVFYLPD	SGEKMTLSIS	VLLSLTVFLL	VIVELIPSTS	SAVPLIGKYM	LFTMVFVIAS	IIITVIVINT
Orangutan	TGLVFYLPD	SGEKMTLNIS	VLMLTVFLL	VIVELIPSTS	SAVPLIGKYM	LFTMVFVIAS	IIITVIVINT
Macaque	TGLVFYLPD	SGEKMTLSIS	VLLSLTVFLL	VIVELIPSTS	SAVPLIGKYM	LFTMVFVIAS	IIITVIVINT
Marmoset	TGLVFYLPD	SGEKMTLSIS	VLLSLTVFLL	VIVELIPSTS	SAVPLIGKYM	LFTMVFVIAS	IIITVIVINT

281

Gibbon	HHRSPSTHVM	PDWVRKVFID	TINIMFSTMK	RPSREKQDKK	IFTEDIDISD	ISGKPGPPPM	GFHSPLIKHP
Human	HHRSPSTHVM	PNWVRKVFID	TINIMFSTMK	RPSREKQDKK	IFTEDIDISD	ISGKPGPPPM	GFHSPLIKHP
Chimpanzee	HHRSPSTHVM	PNWVRKVFID	TINIMFSTMK	RPSREKQDKK	IFTEDIDISD	ISGKPGPPPM	GFHSPLIKHP
Gorilla	HHRSPSTHVM	PNWVRKVFID	TINIMFSTMK	RPSREKQDKK	IFTEDIDISD	ISGKPGPPPM	GFHSPLIKHP
Orangutan	HHRSPSTHVM	PDWVRKVFID	TINIMFSTMK	RPSREKQDKK	IFTEDIDISD	ISGKPGPPPM	GFHSPLIKHP
Macaque	HHRSPSTHVM	PDWVRKVFID	TINIMFSTMK	RPSREKQDKK	IFTEDIDISD	ISGKPGPPPM	GFHSPLIKHP
Marmoset	HHRSPSTHVM	PNWVRKVFID	TINIMFSTMK	RPSREKQDKK	IFTEDIDISD	ISGKPGPPPM	GFHSPLIKHP

351

Gibbon	EVKSAIEGIK	YIAETMKSQ	ESNNAAEWK	YVAMVDHIL	LGVMFLVCII	GTLAVFAGRL	IELNQOG
Human	EVKSAIEGIK	YIAETMKSQ	ESNNAAAEWK	YVAMVDHIL	LGVMFLVCII	GTLAVFAGRL	IELNQOG
Chimpanzee	EVKSAIEGIK	STTVTMKSQ	ESNYAAAEWK	YVAMVDHIL	LGVMFLVCII	GTLAVFAGRL	IELNQOG
Gorilla	EVKSAIEGIK	YIAETMKSQ	ESNNAAAEWK	YVAMVDHIL	LGVMFLVCII	GTLAVFAGRL	IELNQOG
Orangutan	EVKSAIEGIK	YIAETMKSQ	ESNNAAEWK	YVAMVDHIL	LGVMFLVCII	GTLAVFAGRL	IELNQOG
Macaque	EVKSAIEGIK	YIAETMKSQ	ESNNAAEWK	YVAMVDHIL	LGVMFLVCII	GTLAVFAGRL	IELNQOG
Marmoset	EVKSAIEGIK	YIAETMKAD	ESNNAAEWK	YVAMVDHIL	LGVMFLICII	GTLAVFAGRL	IELNQOG