

Supplementary Material

Unconserved 0 1 2 3 4 5 6 7 8 9 10 Conserved

	..... 10 .....	..... 20 .....	..... 30 .....	..... 40 .....	..... 50
human	MLWWEIVEDC	YEREDVQKKT	FTKWVNAQFS	KFGKQHIENL	FSDLQDGRRL
mouse	MLWWEIVEDC	YEREDVQKKT	FTKWINAQFS	KFGKQHIDNL	FSDLQDGKRL
dog	MLWWEIVEDC	YEREDVQKKT	FTKWVNAQFS	KFGKQHIENL	FSDLQDGRRL
Consistency	*****	*****	***9***	*****7**	*****7**
	..... 60 .....	..... 70 .....	..... 80 .....	..... 90 .....	..... 100
human	LDLLEGLTGQ	KLPKEKGSTR	VHALNNVKA	LRVLQNNNVD	LVNIGSTDIV
mouse	LDLLEGLTGQ	KLPKEKGSTR	VHALNNVKA	LRVLQKNNVD	LVNIGSTDIV
dog	LDLLEGLTGQ	KLPKEKGSTR	VHALNNVKA	LRVLQKNNVD	LVNIGSTDIV
Consistency	*****	*****	*****	*****6****	*****
	..... 110.....	..... 120.....	..... 130.....	..... 140.....	..... 150
human	DGNHKLTLGL	IWNIIILHWQV	KNVMKNIMAG	LQQTNSEKIL	LSWVRQSTRN
mouse	DGNHKLTLGL	IWNIIILHWQV	KNVMKTIMAG	LQQTNSEKIL	LSWVRQSTRN
dog	DGNHKLTLGL	IWNIIILHWQV	KNVMKNIMAG	LQQTNSEKIL	LSWVRQSTRN
Consistency	*****	*****	*****6****	*****	*****
	..... 160.....	..... 170.....	..... 180.....	..... 190.....	..... 200
human	YPQVNVINFT	TSWSDGLALN	ALIHSHRPDL	FDWNSVVCQQ	SATQRLEHAF
mouse	YPQVNVINFT	SSWSDGLALN	ALIHSHRPDL	FDWNSVVSQH	SATQRLEHAF
dog	YPQVNVINFT	TSWSDGLALN	ALIHSHRPDL	FDWNSVVCQQ	SATQRLEHAF
Consistency	*****	7*****	*****	*****5*5	*****
	..... 210.....	..... 220.....	..... 230.....	..... 240.....	..... 250
human	NIARYQLGIE	KLLDPEDVDT	TYPDKKSILM	YITSLFQVLP	QQVSIEAIQE
mouse	NIAKCYQLGIE	KLLDPEDVAT	TYPDKKSILM	YITSLFQVLP	QQVSIEAIQE
dog	NIAKYQLGIE	KLLDPEDVAT	TYPDKKSILM	YITSLFQVLP	QQVSIEAIQE
Consistency	***74****	*****4*	*****	*****	*****
	..... 260.....	..... 270.....	..... 280.....	..... 290.....	..... 300
human	VEMLPRPPKV	TKEEHFQL--	HHQMHYSQQI	TVSLAQGYER	TSSPKPRFKS
mouse	VEMLPRTSSK	VTREEHFQLH	HQMHYSQQIT	VSLAQGYEQT	SSSPKPRFKS
dog	VEMLPRPSQV	TREEHFQI-H	HQMHYSQQIT	VSLAQGYERA	PSFPKPRFKS
Consistency	*****5544	646*554303	*564646*45	6555543453	4*4*****
	..... 310.....	..... 320.....	..... 330.....	..... 340.....	..... 350
human	YAYTQAAYVT	TSDPTRSPFP	SQHLEAPEDK	SFGSSLMESE	VNLDRYQ TAL
mouse	YAFTQAAYVA	TSDSTQSPYP	SQHLEAPRDK	SLDSSLME TE	VNLDSYQ TAL
dog	YAYTQAAYVT	TSDPTRSPLP	SQHLETPE DK	SFGRSLTETE	ANLDSYQ TAL
Consistency	**7*****6	***5*7**4*	*****6*6**	*655**5*7*	6***5*****
	..... 360.....	..... 370.....	..... 380.....	..... 390.....	..... 400
human	EEVLSWLLSA	EDTLQAQGEI	SNDVEEVK DQ	FHTHEGYM MD	LTAHQGRVGN
mouse	EEVLSWLLSA	EDTLRAQGEI	SNDVEEVKEQ	FHAHEGFMD	LTSHQGLVGN
dog	EEVLSWLLSA	EDALQAQGEI	SNDVEEVKEQ	FHTHEGYM MD	LTSHQGRVGN
Consistency	*****	**6*7*****	*****4**7*	**6***7***	**7***4***

	..... 410 .....	..... 420 .....	..... 430 .....	..... 440 .....	..... 450
human	ILQLGSKLIG	TGKLSEDEET	EVQEQMNLN	SRWECLRVAS	MEKQSNLHRV
mouse	VLQLGSQLVG	KGKLSEDEEA	EVQEQMNLN	SRWECLRVAS	MEKQSKLHKV
dog	VLQLGSQLIG	TGKLSEDEET	EVQEQMNLN	SRWECLRVAS	MEKQSNLHKV
Consistency	9*****7*9*	5*****6	*****	*****	*****6**7*

	..... 460 .....	..... 470 .....	..... 480 .....	..... 490 .....	..... 500
human	LMDLQNKLLK	ELNDWLTKTE	ERTRKMEEEP	LGPDLLEDLKR	QVQQHKVLQE
mouse	LMDLQNKLLK	ELDDWLTKTE	ERTKKMEEEP	FGPDLEDLKC	QVQQHKVLQE
dog	LMDLQNQQLK	ELNDWLTKTE	ERTRKMEKEP	LGPDIEDLKR	QVQQHKVLQE
Consistency	*****7**	**6*****	**7***7**	6***8***3	*****

	..... 510 .....	..... 520 .....	..... 530 .....	..... 540 .....	..... 550
human	DLEQEQVRVN	SLTHMVVVVD	ESSGDHATAA	LEEQLKVLGD	RWANICRWTE
mouse	DLEQEQVRVN	SLTHMVVVVD	ESSGDHATAA	LEEQLKVLGD	RWANICRWTE
dog	DLEQEQVRVN	SLTHMVVVVD	ESSGDHATAA	LEEQLKVLGD	RWANICRWTE
Consistency	*****	*****	*****	*****	*****

	..... 560 .....	..... 570 .....	..... 580 .....	..... 590 .....	..... 600
human	DRVLLQDIL	LKWQRLTEEQ	CLFSAWLSEK	EDAVNKIHTT	GFKDQNEMLS
mouse	DRWIVLQDIL	LKWQHFTEEQ	CLFSTWLSEK	EDAMKNIQTS	GFKDQNEMLS
dog	DRVLLQDIL	LKWQRFTEEQ	CLFSAWLSEK	EDAVNKIHTT	GFKDQSEVLS
Consistency	**97*****	****56****	***6*****	***766*5*7	*****7*78*

	..... 610 .....	..... 620 .....	..... 630 .....	..... 640 .....	..... 650
human	SLQKLAFLKA	DLEKQKQSMG	KLYSLKQDLL	STLKNKSVTQ	KTEAWLDNFA
mouse	SLHKISTLKI	DLEKQKPTME	KLSSLNQDLL	SALKNKSVTQ	KMEIWMENFA
dog	NLQKLAFLKT	DLEKQKQTMG	KLCSLNQDLL	SALKNTVVAH	KMEAWLDNFA
Consistency	7*5*876**3	*****57*3	**2**6****	*6***55*65	*5*5*87***

	..... 660 .....	..... 670 .....	..... 680 .....	..... 690 .....	..... 700
human	RCWDNLVQKL	EKSTAQISQA	VTTTQPSLTQ	TTVMETVTV	TTREQILVKH
mouse	QRWDNLVQKL	EKSSAQISQA	VTTTQPSLTQ	TTVMETVTMV	TTREQIMVKH
dog	QRWDNLVQKL	EKSSAQISQA	VTTTQPSLTQ	TTVMETVTMV	TTREHILVKH
Consistency	73*****6**	***7*****	*****	*****5*	*****5*8***

	..... 710 .....	..... 720 .....	..... 730 .....	..... 740 .....	..... 750
human	AQEELPPPPP	QKKRQITVDS	EIRKRLDVDI	TELHWSITRS	EAVLQSPPEFA
mouse	AQEELPPPPP	QKKRQITVDS	ELRKRDLVDI	TELHWSITRS	EAVLQSSPEFA
dog	AQEELPPPPP	QKKRQIIVDS	EIRKRLDVDI	TELHWSITRS	EAVLQSPPEFA
Consistency	*****	*****5**	*8*****	*****	*****5***

	..... 760 .....	..... 770 .....	..... 780 .....	..... 790 .....	..... 800
human	IFRKEGNFSD	LKEKVNAIER	EKA EKFRKLQ	DASRSAQALV	EQMVNEGUNA
mouse	VYRKEGNISD	LQEKVNAIAR	EKA EKFRKLQ	DASRSAQALV	EQMANEGUNA
dog	IYRKEGNFSD	LKEKVNAIER	EKA EKFRKLQ	DASRSAQALV	EQMVNEGUNA
Consistency	97*****6**	*7*****5*	*****	*****	***6*****

	..... 810 .....	..... 820 .....	..... 830 .....	..... 840 .....	..... 850
human	DSIKQASEQL	NSRWIEFCQL	LSERLNWLEY	QNNIIAFYNQ	LQQLEQMTTT
mouse	ESIRQASEQL	NSRWTEFCQL	LSERLNWLEY	QTNIIITFYNQ	LQQLEQMTTT
dog	DSIKQASEQL	NSRWIEFCQL	LSERLNWLEY	QNNIIITFYNQ	LQQLEQMTTT
Consistency	7**7*****	****5*****	***7*****	*6***6****	*****

	860	870	880	890	900
human	AENW L K I Q P T	T P S E P T A I K S	Q L K I C K D E V N	R L S G L Q P Q I E	R L K I Q S I A L K
mouse	AEN L L K T Q S T	T L S E P T A I K S	Q L K I C K D E V N	R L S A L Q P Q I E	Q L K I Q S L Q L K
dog	AENW L K T Q P T	T T S E P T A I K S	Q L K I C K D E I N	R L S A L Q P Q I E	R L K I Q S I A L K
Consistency	***4**5*5*	*2*****	*****9*	***6*****	7*****85**

	910	920	930	940	950
human	E K G Q G P M F L D	A D F V A F T N H F	K Q V F S D V Q A R	E K E L Q T I F D T	L P P M R Y Q E T M
mouse	E K G Q G P M F L D	A D F V A F T N H F	N H I F D G V R A K	E K E L Q T I F D T	L P P M R Y Q E T M
dog	E K G Q G P M F L D	A D F V A F T N H F	N Q V F A D V Q A R	E K E L Q T I F D S	L P P M R Y Q E T M
Consistency	*****	*****	659*45*7*7	*****7	*****

	960	970	980	990	1000
human	S A I R T W V Q Q S	E T K L S I P Q L S	V T D Y E I M E Q R	L G E L Q A L Q S S	L Q E Q Q S G L Y Y
mouse	S S I R T W I Q Q S	E S K L S V P Y L S	V T E Y E I M E E R	L G K L Q A L Q S S	L K E Q Q N G F N Y
dog	S T I L T W I Q Q S	E T K L S I P Q V T	V T E Y D I M E Q R	L G E L Q A L Q S S	L Q E Q Q N G L N Y
Consistency	*5*4**9***	*7***9*577	**7*7***7*	**7*****	*7***7*64*

	1010	1020	1030	1040	1050
human	L S T T V K E M S K	K A P - S E I S R K	Y Q S E F E E I E G	R W K K L S S Q L V	E H C Q K L E E Q M
mouse	L S D T V K E M A K	K A P - S E I C Q K	Y L S E F E E I E G	H W K K L S S Q L V	E S C Q K L E E H M
dog	L S T T V K E M S K	K A P L S D I S R K	Y Q S E F E E I E G	R W K K L S S Q L V	E H C Q K L E E Q M
Consistency	**5*****7*	***0*7*57*	*4*****	5*****	*5*****5*

	1060	1070	1080	1090	1100
human	N K L R K I Q N H I	Q T L K K W M A E V	D V F L K E E W P A	L G D S E I L K K Q	L K Q C R L L V S D
mouse	N K L R K F Q N H I	K T L Q K W M A E V	D V F L K E E W P A	L G D A E I L K K Q	L K Q C R L L V G D
dog	A K L R K I Q N H I	K T L K K W I T E V	D V F L K E E W P A	L G D S E I L K R Q	L K Q C R L L V N D
Consistency	4*****6****	7**7**76**	*****	***7***7*	*****4*

	1110	1120	1130	1140	1150
human	I Q T I Q P S L N S	V N E G G Q K I K N	E A E P E F A S R L	E T E L K E L N T Q	W D H M C Q Q V Y A
mouse	I Q T I Q P S L N S	V N E G G Q K I K S	E A E L E F A S R L	E T E L R E L N T Q	W D H I C R Q V Y T
dog	I Q T I Q P S L N S	V N E G A Q K M K N	E A E P E F A G R L	E T E L R E L N T Q	W D Y M C R Q V Y A
Consistency	*****	***6**7*7	***4***6**	***7*****	**67*7***6

	1160	1170	1180	1190	1200
human	R K E A L K G G L E	K T V S L Q K D L S	E M H E W M T Q A E	E E Y L E R D F E Y	K T P D E L Q K A V
mouse	R K E A L K A G L D	K T V S L Q K D L S	E M H E W M T Q A E	E E Y L E R D F E Y	K T P D E L Q T A V
dog	R K E A L K G G L D	K T V S L Q K D L S	E M H E W M T Q A E	E E Y L E R D F E Y	K T P D E L Q T A V
Consistency	*****6**7	*****	*****	*****	*****5**

	1210	1220	1230	1240	1250
human	E E M K R A K E E A	Q Q K E A K V K L L	T E S V N S V I A Q	A P P V A Q E A L K	K E L E T L T T N Y
mouse	E E M K R A K E E A	L Q K E T K V K L L	T E T V N S V I A H	A P P S A Q E A L K	K E L E T L T T N Y
dog	E E M K R A K E E A	Q Q K E A K V K L L	T E S V N S V I A Q	A P P A A Q E A L K	K E L D T L T T N Y
Consistency	*****	4***6*****	**7*****5	***4*****	***7*****

	1260	1270	1280	1290	1300
human	Q W L C T R L N G K	C K T L E E V W A C	W H E L L S Y L E K	A N K W L N E V E F	K L K T T E N I P G
mouse	Q W L C T R L N G K	C K T L E E V W A C	W H E L L S Y L E K	A N K W L N E V E L	K L K T M E N V P A
dog	Q W L C T R L N G K	C K T L E E V W A C	W H E L L S Y L E K	A N K W L S E V E V	K L K T T E N I S G
Consistency	*****	*****	*****	*****7***4	***5***956

	1310	1320	1330	1340	1350
human	GAE ⁵ E ⁵ I ⁵ SEVLD	SL ⁴ ENLMRHSE	DNP ⁷ NQIRILA	QTLTDGGVMD	ELINEELET ⁸ F
mouse	GPEEITEVLE	SL ⁴ ENLMHHSE	ENPNQIRLLA	QTLTDGGVMD	ELINEELET ⁸ F
dog	GAE ⁵ E ⁵ IAEVLD	SL ⁴ ENLMQHSE	DNP ⁷ NQIRILA	QTLTDGGVMD	ELINEELET ⁸ F
Consistency	*5***5***7	*****4***	7*****8**	*****	*****

	1360	1370	1380	1390	1400
human	NSRWRELHEE	AVRRQK ⁷ LLEQ	SIQSAQE ⁵ TEK	SLHLIQESLT	FIDKQLAAYI
mouse	NSRWRELHEE	AVRKQK ⁷ LLEQ	SIQSAQEIEK	SLHLIQESLE	FIDKQLAAYI
dog	NSRWRELHEE	AVRRQK ⁷ LLEQ	SIQSAQEIEK	SLHLIQESLS	SIDKQLAAYI
Consistency	*****	***7*****	*****5**	*****4	4*****

	1410	1420	1430	1440	1450
human	ADKVDAAQMP	QEAQKI ⁶ QSDL	TSHEISLEEM	KKHNQ ⁷ GKEAA	Q ⁶ RVLSQIDVA
mouse	TDKVDAAQMP	QEAQKI ⁶ QSDL	TSHEISLEEM	KKHNQ ⁷ GKDAN	Q ⁶ RVLSQIDVA
dog	ADKVDAAQMP	QEAQKI ⁶ QSDL	TSHEISLEEM	KKHNQ ⁷ GKETA	Q ⁶ RVLSQIDVA
Consistency	6*****	*****	*****	*****764	*****

	1460	1470	1480	1490	1500
human	QK ⁷ KLQDVSMK	FRLFQK ⁷ PANF	EQRLQ ⁷ ESKMI	LDEVKMH ⁷ LPA	LET ⁷ KSVEQEV
mouse	QK ⁷ KLQDVSMK	FRLFQK ⁷ PANF	EQRL ⁷ EESKMI	LDEVKMH ⁷ LPA	LET ⁷ KSVEQEV
dog	QK ⁷ KLQDVSMK	FRLFQK ⁷ PANF	EQRLQ ⁷ ESKMI	LDEVKMH ⁷ LPA	LET ⁷ KSVEQEV
Consistency	*****	*****	***7****	*****	*****

	1510	1520	1530	1540	1550
human	VQ ⁹ SQLN ⁷ HCVN	LYKSLSE ⁷ VKS	EVEMVIKTGR	QIVQKKQ ⁷ TEN	PKELDERVTA
mouse	IQ ⁹ SQLSHCVN	LYKSLSE ⁷ VKS	EVEMVIKTGR	QIVQKKQ ⁷ TEN	PKELDERVTA
dog	VQ ⁹ SQLN ⁷ HCVN	LYKSLSE ⁷ VKS	EVEMVIKTGR	QIVQKKQ ⁷ TEN	PKELDERVTA
Consistency	9****7****	*****	*****	*****	*****

	1560	1570	1580	1590	1600
human	LKLHYNELGA	KVTERKQ ⁶ QLE	KCLKLSRKMR	KEMNVLTE ⁶ WL	AATDMELTKR
mouse	LKLHYNELGA	KVTERKQ ⁶ QLE	KCLKLSRKMR	KEMNVLTE ⁶ WL	AATDTELTKR
dog	LKLHYNELGA	KVTERKQ ⁶ QLE	KCLKLSRKMR	KEMNALTE ⁶ WL	AATDMELTKR
Consistency	*****	*****	*****	***6****	***5****

	1610	1620	1630	1640	1650
human	SAVEGMPSNL	DSEVAWGKAT	QKEIEKQ ⁶ KVH	LKSITEVGEA	LKT ⁵ VLGKKET
mouse	SAVEGMPSNL	DSEVAWGKAT	QKEIEKQ ⁶ KAH	LKSVTELGES	LKM ⁵ VLGKKET
dog	SAVEGMPSNL	DSEVAWGKAT	QKEIEKQ ⁶ KVH	LKSVTEVGEA	LKT ⁵ VLGKKEM
Consistency	*****	*****	*****6*	***9**7**7	**5*****5

	1660	1670	1680	1690	1700
human	LVEDKLSLLN	SNWIAVTSRA	EEWLNLLLEY	QKHMETF ⁹ DQN	VDHIT ⁷ KWIIQ
mouse	LVEDKLSLLN	SNWIAVTSRV	EEWLNLLLEY	QKHMETF ⁹ DQN	IEQIT ⁷ KWIIH
dog	LVEDKLSLLN	SNWIAVTSRA	EEWLNLLLEY	QKHMETF ⁹ DQN	VDYIT ⁷ NWIIQ
Consistency	*****	*****6	*****	*****	974**6***5

	1710	1720	1730	1740	1750
human	AD ³ TLLDESEK	KKPQQKEDVL	KRLKAELNDI	RPKVDSTRDQ	AANLMANRGD
mouse	ADELLDESEK	KKPQQKEDIL	KRLKAEMNDM	RPKVDSTRDQ	AAKLMANRGD
dog	AD ³ ALLDESEK	KKPQQKEDIL	KRLKAEMNDI	RPKVDSTRDQ	AANLMANRGD
Consistency	**3*****	*****9*	*****8**7	*****	**6*****

	1760	1770	1780	1790	1800
human	HCRKLV ⁷ EPQI	SELNHRFAAI	SHRIKTGKAS	IPLKELEQFN	SDIQKLLLEPL
mouse	HCRKVVEPQI	SELNRRFAAI	SHRIKTGKAS	IPLKELEQFN	SDIQKLLLEPL
dog	HCRKVVEPKI	SELNHRFAAI	SHRIKTGKAS	IPLKELEQFN	SDIQKLLLEPL
Consistency	****7***7*	****5*****	*****	*****	*****

	1810	1820	1830	1840	1850
human	EAEIQQGVNL	KEEDFNKDMN	EDNEGTVKEL	LQRGDNLQQR	ITDERKREEI
mouse	EAEIQQGVNL	KEEDFNKDMS	EDNEGTVNEL	LQRGDNLQQR	ITDERKREEI
dog	EAEIQQGVNL	KEEDFNKDMS	EDNEGTVKEL	LQRGDNLQQR	ITDERKREEI
Consistency	*****	*****7	*****6**	*****	*****

	1860	1870	1880	1890	1900
human	KIKQQLLQTK	HNALKDLRSQ	RRKKALEISH	QWYQYKRQAD	DLLKCLDDIE
mouse	KIKQQLLQTK	HNALKDLRSQ	RRKKALEISH	QWYQYKRQAD	DLLKCLDEIE
dog	KIKQQLLQTK	HNALKDLRSQ	RRKKALEISH	QWYQYKRQAD	DLLKCLDDIE
Consistency	*****	*****	*****	*****	*****7**

	1910	1920	1930	1940	1950
human	KKLLASLPEPR	DERKIKEIDR	ELQKKKEELN	AVRRQAEGLS	EDGAAMAVEP
mouse	KKLLASLPEPR	DERKIKEIDR	ELQKKKEELN	AVRRQAEGLS	ENGAAMAVEP
dog	KKLLASLPEPR	DERKIKEIDR	ELQKKKEELN	AVRRQAEGLS	EDGAAMAVEP
Consistency	*****	****8*****	*****	*****	*6*****

	1960	1970	1980	1990	2000
human	TQIQLSKRWR	EIESKFAQFR	RLNFAQIHTV	REETMMVMTE	DMPLEISYVP
mouse	TQIQLSKRWR	QIESNFAQFR	RLNFAQIHTL	HEETMVTTE	DMPLDVSYVP
dog	TQIQLSKRWR	EIESKFAQFR	RLNFAQIHTV	HEESVVAMTE	DMPLEISYVP
Consistency	*****	7***6*****	*****7	5**77765**	****79****

	2010	2020	2030	2040	2050
human	STYLTEITHV	SQALLEVEQL	LNAPDLCAKD	FEDLFKQEEs	LKNIKDSLQQ
mouse	STYLTEISHI	LQALSEVDHL	LNTPELCAKD	FEDLFKQEEs	LKNIKDNLQQ
dog	STYLTEITHV	SQALSEVEEL	LNAPDLCAQD	FEDLFKQEEs	LKNIKDSLQQ
Consistency	*****7*9	5***5**74*	**6*7***7*	*****	*****7***

	2060	2070	2080	2090	2100
human	S ⁵ SGRIDIIHS	KKTAALQ ⁴ SAT	PVERVKLQEA	LSQLDFQWEK	VNKMYKDRQG
mouse	ISGRIDIIHK	KKTAALQ ⁵ SAT	SMEKVKVQEA	VAQMDFQGEK	LHRMYKERQG
dog	ISGRIDIIHN	KKTAALHSAT	PAERAKLQEA	LSRLDFQWER	VNNMYKDRQG
Consistency	5*****4	*****5***	54*76*7***	7778***4*7	765***7***

	2110	2120	2130	2140	2150
human	RFDRSVEKWR	RFHYDIKIFN	QWLTEAEQFL	RKTQIPENWE	HAKYKWYLKE
mouse	RFDRSVEKWR	HFHYDMKVFN	QWLNEVEQFF	KKTQNPENWE	HAKYKWYLKE
dog	RFDRSVEKWR	RFHYDMKILN	QWLTEAEQFL	KKTQIPENWE	HAKYKWYLKE
Consistency	*****	5****7*96*	**6*6***6	7***4*****	*****

	2160	2170	2180	2190	2200
human	LQDGIGQRQT	VVRTLNATGE	EIIQQSSKTD	ASILQEKLGS	LNLRWQEVCK
mouse	LQDGIGQRQA	VVRTLNATGE	EIIQQSSKTD	VNILEQEKLS	LSLRWHDIK
dog	LQDGIGQRQS	VVRVLNATGE	EIIQQSSKTD	ASILQEKLGS	LNLRWQEVCK
Consistency	*****5	***6*****	*****	67*****	*7***579**

	2210	2220	2230	2240	2250
human	QLSDRKKRLE	EQKNILSEFQ	RDLNEFVLWL	EEADNIASIP	LEPGKEQQLK
mouse	ELAERRKRLE	EQKNVLSEFQ	RDLNEFVLWL	EEADNIAIT-	-PLGDEQQLK
dog	QLAERKKRLE	EQKNILSEFQ	RDVNEFVLWL	EEADNVANIP	LEPGNEQQLK
Consistency	7*77*7**8*	***9*****	**7*****	*****9*353	354*4*****

	2260	2270	2280	2290	2300
human	EKLEQVKLLV	EELPLRQGIL	KQLNETGGPV	LVSAPISPEE	QDKLENKLLKQ
mouse	EQLEQVKLLA	EELPLRQGIL	KQLNETGGAV	LVSAPIRPEE	QDKLEKLLKQ
dog	EKLEQVKLLA	EELPLRQGIL	KQLNETGGTV	LVSAPLSPEE	QDKLENKLLKQ
Consistency	*7*****6	*****	*****3*	*****85***	*****6****

	2310	2320	2330	2340	2350
human	TNLQWIKVSR	ALPEKQGEIE	AQIKDLGQLE	KKLEDLEEQL	NHLLLWLSPI
mouse	TNLQWIKVSR	ALPEKQGELE	VHLKDFRQLE	EQLDHLLLWL	SPIRNQLEIY
dog	TNLQWIKVSR	NLPEKQEEIE	AHVKDLGQLE	EQLNHLLLWL	SPIRNQLEIY
Consistency	*****	4*****4*8*	657**64***	77*55*444*	748444*645

	2360	2370	2380	2390	2400
human	RNQLLEIYNQP	NQEGPFDVQE	TEIAVQAKQP	DVEEILSKGQ	HLYKEKPATQ
mouse	NQPS-----	-QAGPFDIKE	IEVTVHGKQA	DVERLLSKGQ	HLYKEKPS TQ
dog	NQPN-----	-QTGPFDIKE	IEVAVQAKQP	DVEGILSKGQ	HLYKEKPATQ
Consistency	6653000000	0*3*****97*	5*96*56**5	***28*****	*****7**

	2410	2420	2430	2440	2450
human	PVKKKLEDLS	SEWKAVNRL	QELRAKQPD	APGLTTIGAS	PTQTVTLVTQ
mouse	PVKKKLEDLR	SEWEAVNHLL	RELRTKQPD	APGLSTTGAS	ASQTVTLVTQ
dog	PAKKKLEDLS	SDWKVVTQL	QELRAKQGP	APGLTTVRAP	PSQTVTLVTQ
Consistency	*6*****5	*7*76*64**	7***6***51	***7*54*5	57*****

	2460	2470	2480	2490	2500
human	PVVTKETAI	KLEMPSSLML	EVPALADFNR	AWTELDWLS	LLDQVIKSQR
mouse	SVVTKETVIS	KLEMPSSLLL	EVPALADFNR	AWTELDWLS	LLDRVIKSQR
dog	PAVTKETAI	KLEMPSSLLL	EVPALADFNR	AWTELDWLS	LLDRVIKSQR
Consistency	56*****6**	*****8*	*****	*****	***7*****

	2510	2520	2530	2540	2550
human	VMVGDLIEDIN	EMIIKQKATM	QDLEQRRPQL	EELITAAQNL	KNKTSNQEAR
mouse	VMVGDLIEDIN	EMIIKQKATL	QDLEQRRPQL	EELITAAQNL	KNKTSNQEAR
dog	VMVGDLIEDIN	EMIIKQKATL	QDLEQRRPQL	EELITAAQNL	KNKTSNQEAR
Consistency	*****	*****8	*****	*****	*****

	2560	2570	2580	2590	2600
human	TIITDRIERI	QNQWDEVQEH	LQNRRLQQLNE	MLKDSTQWLE	AKEEAEQVLG
mouse	TIITDRIERI	QIQWDEVQEQ	LQNRRLQQLNE	MLKDSTQWLE	AKEEAEQVIG
dog	TIITDRIERI	QSQWDEVQEH	LQNRRLQLTE	MLKDSTQWLE	AKEEAEQVLG
Consistency	*****	*3*****5	*****4**6*	*****	*****8*

	2610	2620	2630	2640	2650
human	QARAKLESWK	EGPYTVDAIQ	KKITETKQLA	KDLRQWQTNV	DVANDLALKL
mouse	QVRGKLDLWK	EGPHTVDAIQ	KKITETKQLA	KDLRQRQISV	DVANDLALKL
dog	QARAKLESWK	EAPYTVDAIQ	KKITETKQLA	KDLRQWQINV	DVANDLALKL
Consistency	*6*6**7***	*6*6*****	*****	*****3*57*	*****

	2660	2670	2680	2690	2700
human	LRDYSADDTR	KVHMITENIN	ASWRSIHKRV	SEREAALEET	HRLQQQFPLD
mouse	LRDYSADDTR	KVHMITENIN	TSWGNIHKRV	SEQEAALEET	HRLQQQFPLD
dog	LRDYSADDTR	KVHMITENIN	ASWASIHKRL	SEREAALEET	HRLQQQFPLD
Consistency	*****	*****	6**37***7	**7*****	*****

	2710	2720	2730	2740	2750
human	LEKFLAWLTE	AETTANVLQD	ATRKERLLED	SKGVKELMKQ	WQDLQGEIEA
mouse	LEKFLSWITE	AETTANVLQD	ASRKEKLED	SRGVRELMKP	WQDLQGEIET
dog	LEKFLAWLTE	AETTANVLQD	ATHKERLLED	SKGVRELMKQ	WQDLQGEIEA
Consistency	*****7*8**	*****	*75**7****	*7**7****5	*****6

	2760	2770	2780	2790	2800
human	HTDVYHNLDE	NSQKILRSLE	GSDDAVLLQR	RLDNMNFKWS	ELRKKSLNIR
mouse	HTDIYHNLDE	NGQKILRSLE	GSDEAPLLQR	RLDNMNFKWS	ELQKKSLNIR
dog	HTDIYHNLDE	NGQKVLRSLE	GSDDAALLQR	RLDNMNFKWS	ELRKKSLNIR
Consistency	**9*****	*6**9*****	**7*3****	*****	**7*****

	2810	2820	2830	2840	2850
human	SHLEASSDQW	KRLHLSLQEL	LVWLQLKDDE	LSRQAPIGGD	FPAVQKQNDV
mouse	SHLEASSDQW	KRLHLSLQEL	LVWLQLKDDE	LSRQAPIGGD	FPAVQKQNDI
dog	SHLEASSDQW	KRLHLSLQEL	LVWLQLKDDE	LSRQAPIGGD	FPAVQKQNDV
Consistency	*****	*****	*****	*****	*****9

	2860	2870	2880	2890	2900
human	HRAFKRELKT	KEPVIMSTLE	TVRIFLTEQP	LEGLEKLYQE	PRELPPEERA
mouse	HRAFKRELKT	KEPVIMSTLE	TVRIFLTEQP	LEGLEKLYQE	PRELPPEERA
dog	HRAFKRELKT	KEPVIMSTLE	TVRIFLTEQP	LEGLEKLYQE	PRELPPEERA
Consistency	*****	*****	*****	*****	*****

	2910	2920	2930	2940	2950
human	QNVTRLRQ	AEEVNTWEK	LNLHSADWQR	KIDETLERLQ	ELQEATDELD
mouse	QNVTRLRQ	AEEVNAEWDK	LNLRSADWQR	KIDEALERLQ	ELQEAADELD
dog	QNVTRLRQ	AEEVNTQWEK	LNVHSADWQR	KIDEALERLQ	ELQEATDELD
Consistency	*****	*****67*7*	**75*****	****6*****	*****6****

	2960	2970	2980	2990	3000
human	LKLRQAEVIK	GSWQPVGDLL	IDSLQDHLEK	VKALRGEIAP	LKENVSHVND
mouse	LKLRQAEVIK	GSWQPVGDLL	IDSLQDHLEK	VKALRGEIAP	LKENVNRVND
dog	LKLRQAEVIK	GSWQPVGDLL	IDSLQDHLEK	VKALRGEITP	LKENVSYVND
Consistency	*****	*****	*****	*****6*	*****73***

	3010	3020	3030	3040	3050
human	LARQLTTLGI	QLSPYNLSTL	EDLNTRWKLL	QVAVEDRVRQ	LHEAHRDFGP
mouse	LAHQTLTTLGI	QLSPYNLSTL	EDLNTRWRLL	QVAVEDRVRQ	LHEAHRDFGP
dog	LARQLTTLGI	QLSPYNLNTL	EDLNTRWKLL	QVAIEDRIRQ	LHEAHRDFGP
Consistency	**5*****	*****7**	*****7**	**9**9**	*****

	3060	3070	3080	3090	3100
human	ASQHFLSTSV	QGPWERAISP	NKVPYYINHE	TQTTTCWDHPK	MTELYQSLAD
mouse	ASQHFLSTSV	QGPWERAISP	NKVPYYINHE	TQTTTCWDHPK	MTELYQSLAD
dog	ASQHFLSTSV	QGPWERAISP	NKVPYYINHE	TQTTTCWDHPK	MTELYQSLAD
Consistency	*****	*****	*****	*****	*****

	..... 3110..... 3120..... 3130..... 3140..... 3150
human	LNNVRFSAAYR TAMKLRRRLQK ALCLDLLSLS AACDALDQHN LKQNDQPMDI
mouse	LNNVRFSAAYR TAMKLRRRLQK ALCLDLLSLS AACDALDQHN LKQNDQPMDI
dog	LNNVRFSAAYR TAMKLRRRLQK ALCLDLLSLS AACDALDQHN LKQNDQPMDI
Consistency	*****

	..... 3160..... 3170..... 3180..... 3190..... 3200
human	LQIINCLTTI YDRLEQEHNN LVNVPLCVDM CLNWLLNVYD TGRTGRIRVL
mouse	LQIINCLTTI YDRLEQEHNN LVNVPLCVDM CLNWLLNVYD TGRTGRIRVL
dog	LQVINCLTTI YDRLEQEHNN LVNVPLCVDM CLNWLLNVYD TGRTGRIRVL
Consistency	**9*****

	..... 3210..... 3220..... 3230..... 3240..... 3250
human	SFKTGIISLC KAHLEDKYRY LFKQVASSTG FCDQRRLLGLL LHDSIQIPRQ
mouse	SFKTGIISLC KAHLEDKYRY LFKQVASSTG FCDQRRLLGLL LHDSIQIPRQ
dog	SFKTGIISLC KAHLEDKYRY LFKQVASSTG FCDQRRLLGLL LHDSIQIPRQ
Consistency	*****

	..... 3260..... 3270..... 3280..... 3290..... 3300
human	LGEVASFGGS NIEPSVRSCF QFANNKPEIE AALFLDWMRL EPQSMVWLPV
mouse	LGEVASFGGS NIEPSVRSCF QFANNKPEIE AALFLDWMRL EPQSMVWLPV
dog	LGEVASFGGS NIEPSVRSCF QFANNKPEIE AALFLDWMRL EPQSMVWLPV
Consistency	*****

	..... 3310..... 3320..... 3330..... 3340..... 3350
human	LHRVAAAETA KHQAKCNICK ECPIIGFRYR SLKHFNYDIC QSCFFSGRVA
mouse	LHRVAAAETA KHQAKCNICK ECPIIGFRYR SLKHFNYDIC QSCFFSGRVA
dog	LHRVAAAETA KHQAKCNICK ECPIIGFRYR SLKHFNYDIC QSCFFSGRVA
Consistency	*****

	..... 3360..... 3370..... 3380..... 3390..... 3400
human	KGHKMHYPMV EYCTPTTSGE DVRDFAKVLK NKFRTKRYFA KHPRMGYLPV
mouse	KGHKMHYPMV EYCTPTTSGE DVRDFAKVLK NKFRTKRYFA KHPRMGYLPV
dog	KGHKMHYPMV EYCTPTTSGE DVRDFAKVLK NKFRTKRYFA KHPRMGYLPV
Consistency	*****

	..... 3410..... 3420..... 3430..... 3440..... 3450
human	QTVLEGDNME TPVTLINEFWP VDSAPASSPQ LSHDDTHSRI EHYASRLAEM
mouse	QTVLEGDNME TPVTLINEFWP VDSAPASSPQ LSHDDTHSRI EHYASRLAEM
dog	QTVLEGDNME TPVTLINEFWP VDSAPASSPQ LSHDDTHSRI EHYASRLKKM
Consistency	*****57*

	..... 3460..... 3470..... 3480..... 3490..... 3500
human	ENSNGSYLND SISPNESIDD EHLLIQHYCQ SLNQDSPLSQ PRSPAQILIS
mouse	ENSNGSYLND SISPNESIDD EHLLIQHYCQ SLNQDSPLSQ PRSPAQILIS
dog	ENSNGSYLND SISPNESIDD EHLLIQHYWR SLNQESPLSQ PRSPAQILIS
Consistency	*****47****7*****

	..... 3510..... 3520..... 3530..... 3540..... 3550
human	LESEERGELE RILADLEEN RNLQAEYDRL KQQHEHKGLS PLPSPPEMMP
mouse	LESEERGELE RILADLEEN RNLQAEYDRL KQQHEHKGLS PLPSPPEMMP
dog	LESEERGELE RILADLEGRN RNLQAEYDRL KQQHEHKGLS PLPSPPEMMP
Consistency	*****46*****

	.....	3560	.....	3570	.....	3580	.....	3590	.....	3600
human	TSPQSPRDAE	LIAEAKLLRQ	HKGRLEARMQ	ILEDHMKQLE	SQLHRLRQLL					
mouse	TSPQSPRDAE	LIAEAKLLRQ	HKGRLEARMQ	ILEDHMKQLE	SQLHRLRQLL					
dog	TSPQSPRDAE	LIAEAKLLRQ	HKGRLEARMQ	ILEDHMKQLE	SQLHRLRQLL					
Consistency	*****	*****	*****	*****	*****					

	.....	3610	.....	3620	.....	3630	.....	3640	.....	3650
human	EQPQAEAKVN	GTTVSSPSTS	LQRSDSSQPM	LLRVVGSQTS	DSMGEEDLLS					
mouse	EQPQAEAKVN	GTTVSSPSTS	LQRSDSSQPM	LLRVVGSQTS	ESMGEEDLLS					
dog	EQPQAEAKVN	GTTVSSPSTS	LQRSDSSQPM	LLRVVGSQTS	ESMGEEDLLS					
Consistency	*****	*****	*****	*****	7	*****				

	.....	3660	.....	3670	.....	3680	.....
human	PPQDTSTGLE	EVMEQLNNSF	PSSRGRNTPG	KPMREDTM			
mouse	PPQDTSTGLE	EVMEQLNNSF	PSSRGRNAPG	KPMREDTM			
dog	PPQDTSTGLE	EVMEQLNHSF	PSSRGRNTPG	KPMREDTM			
Consistency	*****	*****6**	*****6**	*****			

Supplementary Fig. 1. Aligned human, mouse and dog *DMD* protein sequences, color-coded to indicate sequence conservation. The alignment and conservation scoring were performed by PRALINE [157]. Conservation scores range from 0 for the least conserved alignment position, up to 10 for the most conserved alignment position.