Detection of pleiotropic repeat expansions and their oligogenic contribution to amyotrophic lateral sclerosis



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Appendix A

Supplementary Tables

Chapter 2

Supplementary Table S 2-1 PCR components of each 35 NDREs genes.

Gene	*Primers*	*Enzyme*	*Buffer*	*Enhancer*	*[Primers]$_f$ (ng/µL)*	*DNA$_o$ (ng)*	*TM (°C)*	*Fragment length (bp)*
AFF2	AFF2 F1 / AFF2 R2	AccuPrime™ GC-Rich DNA Polymerase	Buffer A	MgSO4 [0.8]f/ Betaine/ DMSO/ 7-Deaza	1.25	100	60.1	258
AFF3	AFF3 F/ AFF3 R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	70	368
AR	AR F / AR R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	63 - 66	230
ARX	ARX F /ARX R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.12	100	72	380
ATN1	ATN1 F2 / ATN1 R2	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	61	198
ATXN1	SCA1 F / SCA1 R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	57	202
ATXN2	ATXN2 F / ATXN2 R	Hot FirePol® DNA Polymerase	B1	3X	0.3	100	65	157

ATXN3	ATXN3 F1 / ATXN3 R1	Hot FirePol® DNA Polymerase	B2	3X	0.3	100	62	273
ATXN7	ATXN7 2F / ATXN7R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	63	290
ATXN8	SCA8 F3 / SCA8 R4	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	67	309
ATXN10	ATXN10-2 F/ATXN10-2 R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	62	188
CACNA1A	SCA6 F / SCA6 R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	61 - 62	141
CNBP	CNBP F/ CNBP R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	61	248
CSTB	CSTB AF/ CSTB AR	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	61	190
C9orf72	C9ORF72 F3 / C9ORF72 R6	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	68.3	158

DIP2B	DIP2B-CGG-F / DIP2B-CGG-R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	67	255
DMPK	DMPK-TP-PCR P1-F / DMPK- P2-R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	65	207
FMR1	FMR1 F1 / FMR1 R1	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.25	100	63.8	324
FRA10AC1	FRA10AC1 F1/ R1	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	61	217
C11orf80 (FRA11A)	FRA11A F4/ FRA11A R4	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	65.4	399
FXN	FXN 2F / FXN R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	62	378
GIPC1	GIPC1 F1 / GICP1 R1	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	65	224
HTT	HTT-2 F / HTT-2 R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	60	284

JPH3	JPH3 1F / JPH3 1R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	60	233
LRP12	LRP12 F3 / LRP R3	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	59.8	470
NIPA1	NIPA1 F / NIPA1 R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	66	287
NOP56	NOP56 Fwd RP / NOP56 Frg RP	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	62-63-64	358
NOTCH2NLC	NOTCH -AL F/ NOTCH-AL R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	66	198
NUTM2B-AS1	NUT LOC642361 P CR-F3 pGEX3'-NUT-LOC642361_PCR-R NUT_pGEX3'	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.085 0.03 0.085	100	67.2	400
PABN1	PABPN1 F / PABPN1 R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	68	246
PPP2R2B	PPP2R2B F/ PPP2R2B R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	62	154

T2K-BEAN1	TK2-BEAN F1 / TK2-BEAN R1	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	62	233
TBP	TBP F/ TBP R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	62	503
TCF4	TCF4 F3 / TCF4 R3	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	61	225
ZNF713	ZNF713 F/ ZNF713 R	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	67	150

Supplementary Table S 2-2 Details of the optimized primers from all the NDREs genes.

Gene	*Primer Name*	*5' Fluorescent modification*	*Primer sequence (5'-3')*	*References*
AFF2	AFF2 F	Atto 565	TGTGAGTGTGTAAGTGTGTGATGCTGCC	(Jorge et al. 2013)
	AFF2 R		CCGCGCGCACCCAGCGAC	
AFF3	AFF3 F	Fluorescein	GGCCGTAAAAGCCACGAGAGAGGG	(Metsu, Rooms, et al. 2014)
	AFF3 R		CTTGCGCGCAGGCACACTCAAGAG	
AR	AR F	Yakima YellowTM	GTGCGCGAAGTGATCCAGAA	(Ackerman et al. 2012)
	AR R		TAGCCTGTGGGGCCTCTACG	
ARX	ARX F	Fluorescein	CAGCAGCCCTGGCTGGGACTC	(Jorge et al. 2013)
	ARX R		CGGTACGACTTGCTGCGGCTG	
ATN1	ATN1 F2	Fluorescein	CAACAGCAATGCCCATCCAG	(Anon n.d.-d)
	ATN1 R2		AGTGGGTGGGGAAATGCTC	
ATXN1	SCA1-F	Fluorescein	CAACATGGGCAGTCTGAG	(Lai et al. 2009)
	SCA1-R		AACTGGAAATGTGGACGTAC	
ATXN2	ATXN2 F	Atto 565	CCCCGCCCGGCGTGCGAGCCGGTGTATG	(Ackerman et al. 2012)
	ATXN2 R		CGGGCTTGCGGACATTGG	
ATXN3	ATXN3 F1	Fluorescein	TTTCCTAAGATCAGCACTTCCA	(Anon n.d.-d)
	ATXN3 R1		GCTGGCCTTTCACATGGATG	
ATXN7	ATXN7 2F	Atto 550	GTGTTACATTGTAGGAGCGGAA	(Katagiri et al. 2015)
	ATXN7 R		CTTCAGGACTGGGCAGAGG	
ATXN8	SCA8 F3	Atto 565	TTTGAGAAAGGCTTGTGAGGACTGAGAATG	(Koob et al. 1998)
	SCA8 R4		GGTCCTTCATGTTAGAAAACCTGGCT	
ATXN10	ATXN10-2 F	Atto 565	CAGATGGCAGAATGATAAACTCA	(Anon n.d.-d)
	ATXN10-2 R		TGGGCAACATAGAGAGACTTCA	

CACNA1A	SCA6 F1	Yakima YellowTM	ACGTGTCCTATTCCCCTGTG	(Anon n.d.-d)
	SCA6 R1		GACCCGCCTCTCCATCCT	
CNBP	CNBP F	Atto 550 / NED (YELLOW)	GCCTAGGGGACAAAGTGAGA	(C L Liquori et al. 2001)
	CNBP R		GGCCTTATAACCATGCAAATG	
CSTB	CSTB AF	Atto 565 / PET (RED)	GGAAAGACGATACCAGCCCC	(Anon n.d.-d)
	CSTB AR		GCACTTTGGCTTCGGAGTC	
C9orf72	C9orf72-F3	Fluorescein	AGCAAGCTCTGGAACTCAGGAGTCG	(Cleary et al. 2016)
	C9orf72-R6		CCTCACTCACCCACTCGCCAC	
DIP2B	DIP2B-CGG-F	Fluorescein (BLUE)	GTCTTCAGCCTGACTGGGCTGG	(Winnepenninckx et al. 2007)
	DIP2B-CGG-R		CCGGCGACGGCTCCAGGCCTCG	
DMPK	DMPK-TP-PCR P1-F	Atto 550 / NED (YELLOW)	GGGGCTCGAAGGGTCCTTGT	(Singh et al. 2014)
	DMPK-P2 R		GTGCGTGGAGGATGGAACACG	
FMR1	FMR1-F1	Atto 550	CGTGACGTGGTTTCAGTGTT	(Anon n.d.-d)
	FMR1-R1		CACCAGCTCCTCCATCTTCT	
FRA10AC1	FRA10AC1 F1	Atto 565 / PET (RED)	GTTTCCTTCTTTCCCGGCAG	(Anon n.d.-d)
	FRA10AC1 R1		GGGACGGTGCCATTTAGATG	
C11orf80 (FRA11A)	FRA11A F4	Fluorescein (BLUE)	CCTCATTCCCGCTCACCT	(Anon n.d.-d)
	FRA11A R4		ATCACCTCGAACACGGCC	
FXN	FXN 2F	Atto 550 / NED (YELLOW)	ACACGTGTTATTTGGCCCAC	(Anon n.d.-d)
	FXN 2R		GCATTGGGCGATCTTGGC	
GIPC1	GICP1 F1	Atto 550 / NED (YELLOW)	GAAGACGCGGATTGGCTG	(Anon n.d.-d)
	GICP1 R1		CGGAGCAGACACATCCTTCT	
HTT	HTT-2 F	Fluorescein (BLUE)	CATGGCGACCCTGGAAAAG	(Anon n.d.-d)
	HTT-2 R		GGGCCCAAACTCACGGTC	

JPH3	JPH3 1F	Yakima YellowTM (GREEN)	CTTTCAGTGGCTGCATCGTT	(Anon n.d.-d)
	JPH3 1R		ACTGAGGAGTGGATATCGGAG	
LRP12	LRP12-F3	Atto 550 / NED (YELLOW)	CGCACGCTCTGTCATCGAT	(Ackerman et al. 2012)
	LRP12-R3		GGAGGAGAAGCTGGAGGTAG	
NIPA1	NIPA1 F	Atto 565 / PET (RED)	GCCCCTCTTCCTGCTCC	(Blauw et al. 2012)
	NIPA1 R		CGATGCCCTTCTTCTGTAGC	
NOP56	NOP56 Fwd RP	Fluorescein	TTTCGGCCTGCGTTCGGG	(Kobayashi et al. 2011; Lee et al. 2016)
	NOP56 Frg RP		ATCTAGAGCTTTCCAGGCCC	
NOTCH2NLC	NOTCH2NLC-AL-F	Atto 550	CATTTGCGCCTGTGCTTCGGAC	(Sone et al. 2019)
	NOTCH2NLC-R		CTCAGCCCGATACTCACCAT	
NUTM2B-AS1	NUT_pGEX3’	Yakima YellowTM	CCGGGAGCTGCATGTGTCAGAGG	(Ishiura et al. 2019)
	NUT_LOC642361_PCR-F3		CGCAGCCCGAGTTTCCCACCTTTTA	
	pGEX3'-NUT-LOC642361_PCR-R		CCGGGAGCTGCATGTGTCAGAGGCTCGC TAGAAGGAGTGTGGTCCACC	
PABPN1	PABPN1 F	Atto 565 / PET (RED)	CGCAGTGCCCCGCCTTAGA	(Richard et al. 2017)
	PABPN1 R		ACAAGATGGCGCCGCCGCCCCGGC	
PPP2R2B	PPP2R2B F	Yakima YellowTM (GREEN)	CTGCTGGGAAAGAGTCGTG	(Holmes et al. 1999; Lone et al. 2016)
	PPP2R2B R		CGCCAGCGCACTCACCCTC	
TBP	TBP F	Atto 550 / NED (YELLOW)	TTTCTCCTTGCTTTCCACAGG	(Lone et al. 2015)
	TBP R		ACTCCTAAGTGGGAGGAAACAT	
TCF4	TCF4 F3	Atto 565 / PET (RED)	AGTTTGGTGTAAGATGCATTTGT	(Anon n.d.-d)
	TCF4 R3		CCAAAAGAAGGTCTAGAAGAGGA	
TK2-BEAN1	TK2-BEAN F1	Atto 565 / PET (RED)	AAGGTGGAAATTGCAGTGGG	(Anon n.d.-d)
	TK2-BEAN R1		CCCTGGGTGGCCAATTCTTA	

ZNF713	ZNF713 F	Yakima YellowTM (GREEN)	AGTCACCGGGCGTCATTGGCT	(Metsu, Rainger, et al. 2014)
	ZNF713 R		CGCACTCACCTCCGCAGACA	

Supplementary Table S 2-3 PCR components of each FLA panel / multiplex PCR.

Panel	Gene	Primers	Label Primers 5'	Eurofins FLA Protocol	Type PCR	Enzyme	Buffer	Enhancer	[Primers]$_f$ (ng/uL)	V_f PCR	DNA_o (ng)	TM (°C)	Fragment length (bp)	Volume for FLA (µL)
1	*ATXN10* *ATXN7* *HTT* *JPH3*	ATXN10-2 F / ATXN10-2 R	Atto 565 (RED)	MWG-G5	Multiplex 1	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.31	20	40	63.4	188	20
		ATXN7-2F / ATXN7 R	Atto 550 (YELLOW)						0.18				290	
		HTT-2 F / HTT-2 R	Fluorescein (BLUE)						0.15				284	
		JPH3 1F / JPH3 1R	Yakima YellowTM (GREEN)						0.28				233	
2	*NOP56* *PPP2R2B* *TBP* *TK2-BEAN1*	NOP56 Fwd RP / NOP56 Frg RP	Fluorescein (BLUE)	MWG-G5	Multiplex 2	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.18	20	40	61	358	20
		PPP2R2B F / PPP2R2B R	Yakima YellowTM						0.04				154	
		TBP F/ TBP R	Atto 550 (YELLOW)						0.35				503	
		TK2-BEAN F1 / TK2-BEAN R1	Atto 565 (RED)						0.22				233	
3	*CNBP*	CNBP F/ CNBP R	Atto 550 (YELLOW)	MWG-G5	Multiplex 3	Hot FirePol®	B2	Sol S 3X	0.04	15	16	60	248	10

	CSTB	CSTB AF/ CSTB AR	Atto 565 (RED)			DNA Polymerase			0.04				190	
	AFF3 ***ZNF713***	AFF3 F/ AFF3 R	Fluorescein (BLUE)		**Multiplex 4**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.14	15	16	72.8	345	10
		ZNF713 F/ ZNF713 R	Yakima YellowTM (GREEN)						0.32				153	
4	***DMPK*** ***NIPA1*** ***ATXN1***	DMPK-TP-PCR P1-F / DMPK- P2-R	Atto 550 (YELLOW)	**MWG-G5**	**Multiplex 5**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.11	15	20	64	207	15
		NIPA1 F / NIPA1 R	Atto 565 (RED)						0.22				287	
		SCA1 F / SCA1 R	Fluorescein (BLUE)						0.36				212	
5	***DIP2B*** ***PABPN1***	DIP2B-CGG-F / DIP2B-CGG-R	Fluorescein (BLUE)	**MWG-G5**	**Multiplex 6**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.13	20	20	71	255	20
		PABPN1 F / PABPN1 R	Atto 565 (RED)						0.19				246	
6	***FMR1***	FMR1 F1 / FMR1 R1	Atto 550 (YELLOW)	**MWG-G5**	**Individual 8**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.25	15	60 70 16.00	63.8	324	6
	AFF2 ***ARX***	AFF2 F / AFF2 R	Atto 565 (RED)		**Multiplex 7**	AccuPrime ™ GC-Rich DNA Polymerase	Buffer A	MgSO4 [0.8]f/betaine/ DMSO/ 7-Deaza	0.45	15	70	60.1	258	14
		ARX F / ARX R	Fluorescein (BLUE)						0.35				380	

7	***AR*** ***ATXN8***	AR F / AR R	Yakima YellowTM (GREEN)	**MWG-G5**	**Multiplex 9**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.2	15	16	68	233	13
		SCA8 F3 / SCA8 R4	Atto 565 RED)						0.38				309	
	FRA11A (C11orf80) ***NOTCH2NLC***	FRA11A F4 / FRA11A R4	Fluorescein (BLUE)		**Multiplex 10**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.41	15	16	66	399	7
		NOTCH -ALF/ NOTCH-AL R	Atto 550 (YELLOW)						0.08				185	
8	***ATXN2*** ***GIPC1***	ATXN2 F / ATXN2 R	Atto 565 (RED)	**MWG-G5**	**Multiplex 11**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.08	15	16	65.3	157	11
		GIPC1 F1 / GIPC1 R1	Atto 550 (YELLOW)						0.1				224	
	C9orf72 ***NUTM2B-AS1***	C9ORF72 F3 / C9ORF72 R6	Fluorescein (BLUE)		**Multiplex 12**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.18	15	16.	68.3	158	9
		NUT_LOC642361_PCR-F3							0.085				400	
		pGEX3'-NUT-LOC642361_PCR-R							0.03					
		NUT_pGEX3'	Yakima YellowTM (GREEN)						0.085					

9	***ATXN3***	ATXN3 F1 / ATXN3 R1	Fluorescein (BLUE)	**MWG-G5**	**Multiplex 13**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.12	15	16.	61.2	276	13
	TCF4	TCF4 F3 / TCF4 R3	Atto 565 (RED)						0.2				225	
	CACNA1A	SCA6 F1 / R1	Yakima YellowTM (GREEN)		**Multiplex 14**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.09	15	16	61.2	227	7
	FXN	FXN 2F /2R	Atto 550 (YELLOW)						0.1				378	
10	***ATN1***	ATN1 F2 / ATN1 R2	Fluorescein (BLUE)	**MWG-G5**	**Multiplex 15**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.1	15	16	62.3	198	10
	FRA10AC1	FRA10AC1 F1 / R1	Atto 565 (RED)						0.09v				215	
	LRP12	LRP12 F3 / LRP R3	Atto 550 (YELLOW)		**Individual 16**	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.2	15	16	59.8	470	10

Supplementary Table S 2-4 Complete repeat count calibration results for each gene obtained by sequencing.

GENE	ID	PRIMER LABEL	ALLELE LENGTH (BP)	ALLELE REPEAT COUNT	SEQUENCING REPEAT COUNT	DIFFERENCE REPEATS COUNT	CONSENSUS MODIFICATION
AFF2	C1	Atto 565 (Red)	256	16	15	-1	Change 256 bp = 3 repeats
AFF3	P11	Fluorescin (Blue)	324	1	8	7	Add 5.75 extra repeats to formula
	C16		340	6	11	5	
	P12		323	1	9	8	
	C17		355	11	14	3	
AR	P12	Yakimma Yellow (Green)	210	14	19	5	Add 4.67 extra repeats to formula
	C18		202	12	16	4	
	C19		211	14	19	5	
ARX	P13	Fluorescin (Blue)	376.46	12	10	-2	Add -2.67 less repeats to formula
	C20		377.29	13	10	-3	
	C1		376	13	10	-3	
ATN1	P14	Fluorescin (Blue)	174	7	10	3	Add 3 extra repeats to formula
	C22		169	5	8	3	
	C23		169	5	8		
ATXN1	P15	Fluorescin (Blue)	204	30	29	-1	Add -0.33 less repeats to formula
	C24		203	29	29	0	

	C25		200	28	28	0	
ATXN2	P16	Atto 565 (Red)	150	20	22	2	Add 2 extra repeats to formula
	C26		151	20	22	2	
	C27		154.52	21	23	2	
ATXN3	P17	Fluorescin (Blue)	271	12	14	2	Add 2 extra repeats to formula
	C28		271	12	14	2	
	C29		272	13	14	1	
ATXN7	P3	Atto 550 (Yellow)	273	4	10	6	Change 274 bp = 10 repeats
	P4		276	4	10	6	
ATXN8	P18	Atto 565 (Red)	302	13	12	-1	Add -0.33 less repeats to formula
	C30		302	13	12	-1	
	C31		289	8	9	1	
ATXN10	P6	Atto 565 (Red)	180	12	12	0	No changes
	C9		190	14	14	0	
C9ORF72	P19	Fluorescin (Blue)	145	1	2	1	Add 1 extra repeats to formula
	C32		163	4	5	1	
	C33		163	4	5	1	
CACNA1A	P20	Yakimma Yellow (Green)	210	7	11	4	Add 3.67 extra repeats to formula
	C34		240	7	11	4	
	C35		199	4	7	3	

CNBP	P21	Atto 550 (Yellow)	214	11	13	2	Add 2 extra repeats to formula
	C36		220	13	15	2	
	C37		220	13	15	2	
CSTB	P22	Atto 565 (Red)	174	2	2	0	No changes
	C38		174	2	2	0	
	C39		174	2	2	0	
	C1		185	3	3	0	
DIP2B	P23	Fluorescin (Blue)	250	5	7	2	Add 1.67 extra repeats to formula
	C40		250	5	7	2	
	C41		251	6	7	1	
DMPK	P24	Atto 550 (Yellow)	166	6	5	-1	Add -0.33 less repeats to formula
	P25		163	5	5	0	
	C42		163	5	5	0	
FMR1	C43	Atto 550 (Yellow)	308.42	15	19	4	Change 336 bp = 28 repeats
FRA10AC1	P26	Atto 565 (Red)	213	7	8	1	Add 1 extra repeats to formula
	C44		213	7	8	1	
	C45		210	6	7	1	
FRA11A	P27	Fluorescin (Blue)	386	4	9	5	Add 5.33 extra repeats to formula

(C11OF80)	C46		386	4	10	6	
	C47		386	4	9	5	
FXN	P28	Atto 550 (Yellow)	384	8	9	1	Add 1 extra repeats to formula
	C48		381	8	9	1	
	C49		384	8	9	1	
GICP1	P29	Atto 550 (Yellow)	211	6	6	0	Add 1 extra repeats to formula
	C50		219	8	10	2	
	C51		217	8	9	1	
	C1		217	8	9	1	
HTT	P1	Fluorescin (Blue)	261	13	17	4	Change 261 bp = 17 repeats
	C5		275	18	21	3	
	C6		261	13	17	4	
JPH3	P2	Yakimma Yellow (Green)	230	13	14	1	Add 1 extra repeat to formula
	C7		232	13	14	1	
	C8		232	13	14	1	
LRP12	P30	Atto 550 (Yellow)	455	4	12	8	Change 455 bp = 12 repeats
	C52		455	4	12	8	
	C53		460	6	14	8	
NIPA1	P31	Atto 565 (Red)	275	4	8	4	Add 4 extra repeat to formula
	C54		276	4	8	4	
	C55		276	4	8	4	
	C1		276	4	8	4	
NOP56	P7	Fluorescin (Blue)	349	3	4	1	Add 1 extra repeat to formula

	C10		350	3	4	1	
	C1		363	3 & 5	4 & 6	1	
NOTCH2NLC	P32	Atto 550 (Yellow)	186	9	10	1	Add 0.33 extra repeat to formula
	P33		186	9	9	0	
	C56		186	9	9	0	
NUTM2B-AS1	P34	Yakimma Yellow (Green)	392	3	6	3	Add 3 extra repeat to formula
	C57		397	5	8	3	
	C58		392	3	6	3	
PABPN1	P35	Atto 565 (Red)	243	9	6	-3	Change 243 bp = 6 repeats
	C59		243	9	6	-3	
	C60		243	9	6	-3	
	C1			9	6	-3	
PPP2R2B	P8	Yakimma Yellow (Green)	149	8	10	2	Add 2 extra repeat to formula
	C12		149	8	10	2	
	C13		149	8	10	2	
TBP	P9	Atto 550 (Yellow)	489	33	35	2	Change 488 bp = 35 repeats
	C14		488	33	35	2	
TCF4	P36	Atto 565 (Red)	187	11	11	0	No changes
	C61		187	11	11	0	
	C62		187	11	11	0	

TK2-BEAN1	P10	Atto 565 (Red)	242	4	15 (AATAA)	11	Change 242 bp = 16 repeats
	C15		242	4	15 (AATAA)	11	
	C16		246	5	16 (AATAA)	11	
ZNF713	P37	Yakimma Yellow (Green)	128	4	6	2	Change 153 bp = 12 repeats
	C63		128	4	6	2	
	C64		133	5	8	3	

Supplementary Table S 2-5 Complete allele-plate repeat count calibration using replicated control 1 results.

Plate number	*Gene*	*Allele 1 repeat*	*Average allele 1 length (bp)*	*Allele 1 length (bp)*	*Allele 1 difference (bp)*	*Allele 2 repeat*	*Average allele 2 length (bp)*	*Allele 2 length (bp)*	*Allele 2 difference (bp)*
CNBP-P04	***AFF3***	3	312.73	314.98	**-2.25**				**-2.25**
CNBP-P16	***AFF3***	3	312.73	311.19	**1.54**				**1.54**
CNBP-P17	***AFF3***	3	312.73	315.23	**-2.50**				**-2.50**
CNBP-P18	***AFF3***	3	312.73	316.06	**-3.33**				**-3.33**
CNBP-P19	***AFF3***	3	312.73	316.13	**-3.40**				**-3.40**
CNBP-P20	***AFF3***	3	312.73	315.69	**-2.96**	12	339.56	342.36	**-2.80**
CNBP-P21	***AFF3***	3	312.73	315.32	**-2.59**	12	339.56	341.88	**-2.32**
CNBP-P22	***AFF3***	3	312.73	315.49	**-2.76**	12	339.56	342.08	**-2.52**
CNBP-P24	***AFF3***	3	312.73	314.98	**-2.25**	12	339.56	341.58	**-2.02**
CNBP-P25	***AFF3***	3	312.73	316.43	**-3.70**	12	339.56	342.97	**-3.41**
CNBP-P28	***AFF3***	3	312.73	314.59	**-1.86**				**-1.86**
CNBP-P33	***AFF3***	3	312.73	315.04	**-2.31**	12	339.56	341.62	**-2.06**
CNBP-P34	***AFF3***	3	312.73	314.28	**-1.55**				**-1.55**
CSTB-FTD	***AFF3***	3	312.73	314.54	**-1.81**				**-1.81**
CNBP-P13	***AFF3***	3			**1.41**	12	339.56	338.15	**1.41**
CNBP-P14	***AFF3***	3			**1.69**	12	339.56	337.87	**1.69**
CNBP-P29	***AFF3***	3			**1.66**	12	339.56	337.9	**1.66**
AR-P18	***AR***	24	225.92	226.56	**-0.64**				**-0.64**
AR-P01	***AR***	24	225.92	228.8	**-2.88**				**-2.88**
AR-P03	***AR***	24	225.92	229.38	**-3.46**				**-3.46**

AR-P02	***AR***	24	225.92	220.08	**5.84**				**5.84**
AR-P22	***AR***	24	225.92	227.02	**-1.10**				**-1.10**
AR-P23	***AR***	24	225.92	227.27	**-1.35**				**-1.35**
AR-P24	***AR***	24	225.92	227.05	**-1.13**				**-1.13**
AR-P26	***AR***	24	225.92	226.93	**-1.01**				**-1.01**
AR-P12	***AR***	24	225.92	226.72	**-0.80**				**-0.80**
AR-P27	***AR***	24	225.92	226.76	**-0.84**				**-0.84**
AR-P30	***AR***	24	225.92	226.55	**-0.63**				**-0.63**
AR-P32	***AR***	24	225.92	226.81	**-0.89**				**-0.89**
AR-P35	***AR***	24	225.92	226.87	**-0.95**				**-0.95**
AR-P11	***AR***	24	225.92	226.88	**-0.96**				**-0.96**
AR-FTD	***AR***	24	225.92	226.54	**-0.62**				**-0.62**
FMR1-FTD	***ARX***	10	375.67	374.76	**0.91**				**0.91**
FMR1-P15	***ARX***	10	375.67	374.55	**1.12**				**1.12**
FMR1-P17	***ARX***	10	375.67	375.41	**0.26**				**0.26**
FMR1-P18	***ARX***	10	375.67	374.74	**0.93**				**0.93**
FMR1-P19	***ARX***	10	375.67	375.19	**0.48**				**0.48**
DMPK-P02	***ATXN1***	29	203.76	205.99	**-2.23**				**-2.23**
DMPK-P03	***ATXN1***	29	203.76	200.74	**3.02**				**0.00**
ATXN7-P02	***ATXN7***	10	274.97	275.74	**-0.77**				**-0.77**
ATXN7-P03	***ATXN7***	10	274.97	275.73	**-0.76**				**-0.76**
ATXN7-P10	***ATXN7***	10	274.97	277.39	**-2.42**	13	283.8	285.94	**-2.14**
ATXN7-P12	***ATXN7***	10	274.97	276.56	**-1.59**	13	283.8	285.14	**-1.34**
ATXN7-P13	***ATXN7***	10	274.97	276.3	**-1.33**	13	283.8	284.84	**-1.04**
ATXN7-P14	***ATXN7***	10	274.97	276.32	**-1.35**	13	283.8	284.86	**-1.06**

ATXN7-P15	***ATXN7***	10	274.97	276.09	**-1.12**	13	283.8	284.79	**-0.99**
ATXN7-P16	***ATXN7***	10	274.97	276.45	**-1.48**	13	283.8	285.07	**-1.27**
ATXN7-P04	***ATXN7***	10	274.97	276.87	**-1.90**	13	283.8	285.52	**-1.72**
ATXN7-P07	***ATXN7***	10	274.97	277.31	**-2.34**	13	283.8	285.89	**-2.09**
ATXN7-P09	***ATXN7***	10	274.97	276.5	**-1.53**	13	283.8	285.02	**-1.22**
ATXN7-P08	***ATXN7***	10	274.97	277.14	**-2.17**	13	283.8	285.73	**-1.93**
ATXN7-P17	***ATXN7***	10	274.97	277.26	**-2.29**	13	283.8	285.88	**-2.08**
ATXN7-P18	***ATXN7***	10	274.97	277.03	**-2.06**	13	283.8	285.65	**-1.85**
ATXN7-P19	***ATXN7***	10	274.97	277.18	**-2.21**	13	283.8	285.7	**-1.90**
ATXN7-P20	***ATXN7***	10	274.97	277.19	**-2.22**	13	283.8	285.76	**-1.96**
ATXN7-P21	***ATXN7***	10	274.97	276.56	**-1.59**	13	283.8	285.13	**-1.33**
ATXN7-P22	***ATXN7***	10	274.97	276.25	**-1.28**	13	283.8	284.81	**-1.01**
ATXN7-P23	***ATXN7***	10	274.97	275.76	**-0.79**	13	283.8		**-0.79**
ATXN7-P24	***ATXN7***	10	274.97	276.17	**-1.20**	13	283.8	284.69	**-0.89**
ATXN7-P29	***ATXN7***	10	274.97	275.54	**-0.57**	13	283.8		**-0.57**
ATXN7-P30	***ATXN7***	10	274.97	275.76	**-0.79**	13	283.8		**-0.79**
ATXN7-P31	***ATXN7***	10	274.97	276.79	**-1.82**	13	283.8	285.27	**-1.47**
ATXN7-P32	***ATXN7***	10	274.97	276.82	**-1.85**	13	283.8	285.43	**-1.63**
ATXN7-P33	***ATXN7***	10	274.97	275.85	**-0.88**	13	283.8		**-0.88**
ATXN7-P36	***ATXN7***	10	274.97	276.06	**-1.09**	13	283.8	284.66	**-0.86**
ATXN7-FTD	***ATXN7***	10	274.97	276.03	**-1.06**	13	283.8		**-1.06**
AR-P21	***ATXN8***	8	287.69	287.47	**0.22**				**0.22**
AR-P23	***ATXN8***				**-0.38**	12	302.15	302.53	**-0.38**
AR-P24	***ATXN8***				**-0.40**	12	302.15	302.25	**-0.40**
ATXN3-P14	***CACNA1A***	5	191.08	189.77	**1.31**				**1.31**

ATXN3-P15	***CACNA1A***	5	191.08	189.71	**1.37**	11	210.54	209.55	**0.99**
ATXN3-P16	***CACNA1A***	5	191.08	190.4	**0.68**				**0.68**
ATXN3-P19	***CACNA1A***	5	191.08	190.38	**0.70**				**0.70**
ATXN3-P21	***CACNA1A***	5	191.08	190.22	**0.86**				**0.86**
ATXN3-P31	***CACNA1A***	5	191.08	189.81	**1.27**				**1.27**
ATXN3-FTD	***CACNA1A***	5	191.08	190.36	**0.72**				**0.72**
ATXN3-P03	***CACNA1A***	5	191.08	190.29	**0.79**				**0.79**
ATXN3-P05	***CACNA1A***	5	191.08	190.37	**0.71**				**0.71**
ATXN3-P17	***CACNA1A***	5	191.08	190.38	**0.70**				**0.70**
ATXN3-P27	***CACNA1A***	5	191.08	191.72	**-0.64**	11	210.54	211.77	**-1.23**
ATXN3-P32	***CACNA1A***				**-0.96**	11	210.54	211.5	**-0.96**
ATXN3-P34	***CACNA1A***				**-1.23**	11	210.54	211.77	**-1.23**
ATXN2-P12	***C9orf72***				**1.23**	5	161.92	160.69	**1.23**
ATXN2-P18	***C9orf72***				**1.01**	5	161.92	160.91	**1.01**
DIP2B-P21	***DIP2B***	7	250.89	251.74	**-0.85**				**-0.85**
DIP2B-P25	***DIP2B***	7	250.89	251.58	**-0.69**				**-0.69**
ATN1-P09	***FRA10AC1***	7	207.85	206.75	**1.10**	9	213.6	212.28	**1.32**
ATN1-P01	***FRA10AC1***	7	207.85	206.68	**1.17**	9	213.6	212.22	**1.38**
ATN1-P02	***FRA10AC1***	7	207.85	206.93	**0.92**	9	213.6	212.42	**1.18**
ATN1-P04	***FRA10AC1***				**0.39**	9	213.6	213.21	**0.39**
ATN1-P03	***FRA10AC1***				**0.55**	9	213.6	213.05	**0.55**
ATN1-P17	***FRA10AC1***				**0.25**	9	213.6	213.35	**0.25**
ATN1-P06	***FRA10AC1***	7	207.85	210.59	**-2.74**	9	213.6		**-2.74**
ATN1-P07	***FRA10AC1***	7	207.85	207.28	**0.57**	9	213.6	212.9	**0.70**
ATN1-P10	***FRA10AC1***	7	207.85	206.87	**0.98**	9	213.6	212.41	**1.19**

ATN1-P34	***FRA10AC1***	7	207.85	207.21	**0.64**	9	213.6	212.78	**0.82**
ATN1-P35	***FRA10AC1***	7	207.85	207.17	**0.68**	9	213.6	212.81	**0.79**
ATN1-FTD	***FRA10AC1***	7	207.85	207.33	**0.52**	9	213.6	212.99	**0.61**
ATN1-P12	***FRA10AC1***				**0.42**	9	213.6	213.27	**0.33**
ATN1-P13	***FRA10AC1***				**0.42**	9	213.6	213.43	**0.17**
ATN1-P14	***FRA10AC1***				**0.42**	9	213.6	213.37	**0.23**
ATN1-P15	***FRA10AC1***				**0.42**	9	213.6	213.29	**0.31**
ATN1-P23	***FRA10AC1***				**0.42**	9	213.6	213.44	**0.16**
ATN1-P29	***FRA10AC1***				**0.42**	9	213.6	213.42	**0.18**
ATN1-P31	***FRA10AC1***				**0.42**	9	213.6	213.27	**0.33**
ATN1-P33	***FRA10AC1***				**0.42**	9	213.6	213.42	**0.18**
AR-P18	***FRA11A***	8	384.32	385.6	**-1.28**				**-1.28**
AR-P03	***FRA11A***	8	384.32	385.74	**-1.42**				**-1.42**
AR-P11	***FRA11A***	8	384.32	385.85	**-1.53**				**-1.53**
AR-P22	***FRA11A***	8	384.32	386.95	**-2.63**	9	387.18	389.46	**-2.28**
AR-P23	***FRA11A***	8	384.32	387.38	**-3.06**	9	387.18	389.9	**-2.72**
AR-P24	***FRA11A***	8	384.32	387.05	**-2.73**	9	387.18	389.59	**-2.41**
AR-P25	***FRA11A***	8	384.32	386.45	**-2.13**	9	387.18	388.89	**-1.71**
AR-P26	***FRA11A***	8	384.32	386.72	**-2.40**	9	387.18	389.22	**-2.04**
AR-P12	***FRA11A***	8	384.32	385.93	**-1.61**				**-1.61**
AR-P27	***FRA11A***	8	384.32	385.77	**-1.45**				**-1.45**
AR-P30	***FRA11A***	8	384.32	385.59	**-1.27**				**-1.27**
AR-P32	***FRA11A***	8	384.32	385.98	**-1.66**				**-1.66**
AR-P35	***FRA11A***	8	384.32	386.33	**-2.01**	9	387.18	388.74	**-1.56**
AR-P01	***FRA11A***	8	384.32	384.71	**-0.39**				**-0.39**

AR-P04	***FRA11A***	8	384.32	385.18	**-0.86**		387.18	387.52	**-0.34**
AR-P21	***FRA11A***	8	384.32	384.63	**-0.31**				**-0.31**
AR-P07	***FRA11A***	8	384.32	384.56	**-0.24**				**-0.24**
AR-P28	***FRA11A***	8	384.32	384.93	**-0.61**				**-0.61**
AR-P31	***FRA11A***	8	384.32	384.54	**-0.22**				**-0.22**
AR-P33	***FRA11A***	8	384.32	384.85	**-0.53**				**-0.53**
AR-P36	***FRA11A***	8	384.32	385.2	**-0.88**		387.18	387.72	**-0.54**
AR-FTD	***FRA11A***	8	384.32	385.7	**-1.38**				**-1.38**
ATXN2-P07	***GIPC1***	9	217.96	215.76	**2.20**				**2.20**
ATXN2-P02	***GIPC1***	9	217.96	219.91	**-1.95**				**-1.95**
ATXN2-P03	***GIPC1***	9	217.96	219.55	**-1.59**				**-1.59**
ATXN2-P04	***GIPC1***	9	217.96	220.19	**-2.23**				**-2.23**
ATXN2-P05	***GIPC1***	9	217.96	220	**-2.04**				**-2.04**
ATXN2-P06	***GIPC1***	9	219.45	220.09	**-0.64**				**-0.64**
ATXN2-P08	***GIPC1***	9	217.96	220.17	**-2.21**				**-2.21**
ATXN2-P09	***GIPC1***	9	217.95	219.72	**-1.77**				
ATXN2-P11	***GIPC1***	9	217.96	219.66	**-1.70**				**-1.70**
ATXN7-P10	***HTT***	20	271.03	271.59	**-0.56**	21	273.91	274.61	**-0.70**
ATXN7-P18	***HTT***	20	271.03	271.72	**-0.69**	21	273.91	274.6	**-0.69**
ATXN7-P19	***HTT***	20	271.03	271.54	**-0.51**				**-0.51**
ATXN7-P31	***HTT***	20	271.03	271.66	**-0.63**				**-0.63**
ATXN7-P07	***HTT***	20	271.03	271.66	**-0.63**	21	273.91	274.62	**-0.71**
ATXN7-P08	***HTT***	20	271.03	271.57	**-0.54**				**-0.54**
ATXN7-P17	***HTT***	20	271.03	271.65	**-0.62**				**-0.62**
ATXN7-P36	***HTT***	20	271.03	271.51	**-0.48**				**-0.48**

ATXN7-P32	***HTT***	20	271.03	271.82	**-0.79**	21	273.91	274.73	**-0.82**
ATXN7-P09	***JPH3***	14	231.02	232.72	**-1.70**				**-1.70**
ATXN7-P19	***JPH3***	14	231.02	232.94	**-1.92**				**-1.92**
ATXN7-P21	***JPH3***	14	231.02	232.82	**-1.80**				**-1.80**
ATXN7-P05	***JPH3***		231.02	232.61	**-1.59**				**-1.59**
ATXN7-P32	***JPH3***	14	231.02	232.79	**-1.77**				**-1.77**
ATXN7-P33	***JPH3***	14	231.02	232.55	**-1.53**				**-1.53**
ATN1-P01	***LRP12***	13	458.8	457	**1.80**				**1.80**
ATN1-P02	***LRP12***	13	458.8	456.1	**2.70**				**2.70**
ATN1-P09	***LRP12***	13	458.8	454.15	**4.65**				**4.65**
ATN1-P10	***LRP12***	13	458.8	455.67	**3.13**				**3.13**
ATN1-P08	***LRP12***	13	458.8	462.25	**-3.45**				**-3.45**
ATN1-P14	***LRP12***	13	458.8	459.55	**-0.75**				**-0.75**
ATN1-P16	***LRP12***	13	458.8	460	**-1.20**				**-1.20**
ATN1-P18	***LRP12***	13	458.8	459.91	**-1.11**				**-1.11**
ATN1-P19	***LRP12***	13	458.8	460.28	**-1.48**				**-1.48**
ATN1-P20	***LRP12***	13	458.8	460	**-1.20**				**-1.20**
ATN1-P22	***LRP12***	13	458.8	460.49	**-1.69**				**-1.69**
ATN1-P23	***LRP12***	13	458.8	460.24	**-1.44**				**-1.44**
ATN1-P24	***LRP12***	13	458.8	460.9	**-2.10**				**-2.10**
ATN1-P25	***LRP12***	13	458.8	461.16	**-2.36**				**-2.36**
ATN1-P27	***LRP12***	13	458.8	459.53	**-0.73**				**-0.73**
ATN1-P28	***LRP12***	13	458.8	459.63	**-0.83**				**-0.83**
ATN1-P34	***LRP12***	13	458.8	456.08	**2.72**				**2.72**
ATN1-P35	***LRP12***	13	458.8	456.18	**2.62**				**2.62**

ATN1-P36	***LRP12***	13	458.8	459.62	**-0.82**	**-0.82**
DMPK-P01	***NIPA1***	8	275.81	277.29	**-1.48**	**-1.48**
DMPK-P03	***NIPA1***	8	275.81	276.98	**-1.17**	**-1.17**
DMPK-P04	***NIPA1***	8	275.81	277.5	**-1.69**	**-1.69**
DMPK-P06	***NIPA1***	8	275.81	276.84	**-1.03**	**-1.03**
DMPK-P12	***NIPA1***	8	275.81	277.12	**-1.31**	**-1.31**
DMPK-P17	***NIPA1***	8	275.81	276.73	**-0.92**	**-0.92**
DMPK-P07	***NIPA1***	8	275.81	276.74	**-0.93**	**-0.93**
DMPK-P22	***NIPA1***	8	275.81	276.73	**-0.92**	**-0.92**
DMPK-P23	***NIPA1***	8	275.81	276.96	**-1.15**	**-1.15**
DMPK-P24	***NIPA1***	8	275.81	276.88	**-1.07**	**-1.07**
DMPK-P25	***NIPA1***	8	275.81	277.11	**-1.30**	**-1.30**
DMPK-P26	***NIPA1***	8	275.81	277.1	**-1.29**	**-1.29**
DMPK-P27	***NIPA1***	8	275.81	277	**-1.19**	**-1.19**
DMPK-P28	***NIPA1***	8	275.81	277.52	**-1.71**	**-1.71**
DMPK-P29	***NIPA1***	8	275.81	276.88	**-1.07**	**-1.07**
DMPK-P31	***NIPA1***	8	275.81	276.53	**-0.72**	**-0.72**
DMPK-P32	***NIPA1***	8	275.81	276.8	**-0.99**	**-0.99**
DMPK-P33	***NIPA1***	8	275.81	277.67	**-1.86**	**-1.86**
DMPK-P34	***NIPA1***	8	275.81	277.6	**-1.79**	**-1.79**
DMPK-P35	***NIPA1***	8	275.81	276.92	**-1.11**	**-1.11**
DMPK-P36	***NIPA1***	8	275.81	276.8	**-0.99**	**-0.99**
DMPK-FTD	***NIPA1***	8	275.81	277.12	**-1.31**	**-1.31**
AR-P01	***NOTCH2NLC***	16	205.53	202.7	**2.83**	**2.83**
DIP2B-P07	***PABPN1***	6	243.2	241.28	**1.92**	**1.92**

DIP2B-P08	***PABPN1***	6	243.2	240.94	**2.26**				**2.26**
DIP2B-P09	***PABPN1***	6	243.2	241.43	**1.77**				**1.77**
DIP2B-P10	***PABPN1***	6	243.2	241.1	**2.10**				**2.10**
NOP56-P12	***PPP2R2B***	10	148.81	150.07	**-1.26**				**-1.26**
NOP56-P15	***PPP2R2B***	10	148.81	149.93	**-1.12**				**-1.12**
NOP56-P17	***PPP2R2B***	10	148.81	149.84	**-1.03**				**-1.03**
NOP56-P19	***PPP2R2B***	10	148.81	149.57	**-0.76**				**-0.76**
NOP56-P25	***PPP2R2B***	10	148.81	150.03	**-1.22**				**-1.22**
NOP56-P26	***PPP2R2B***	10	148.81	150.08	**-1.27**				**-1.27**
NOP56-P27	***PPP2R2B***	10	148.81	149.59	**-0.78**				**-0.78**
NOP56-P29	***PPP2R2B***	10	148.81	149.92	**-1.11**				**-1.11**
NOP56-P32	***PPP2R2B***	10	148.81	150.21	**-1.40**				**-1.40**
NOP56-FTD	***PPP2R2B***	10	148.81	150.17	**-1.36**				**-1.36**
NOP56-P13	***TBP***	37	492.5	490	**2.50**				**2.50**
NOP56-P15	***TBP***	37	492.5	490.09	**2.41**				**2.41**
NOP56-P16	***TBP***	37	493.44	492.38	**1.06**	39	499.78	498.11	**1.67**
NOP56-P20	***TBP***	37	493.44	492.26	**1.18**	39	499.78	497.99	**1.79**
NOP56-P21	***TBP***	37	493.44	491.78	**1.66**	39	499.78	497.46	**2.32**
NOP56-P28	***TBP***	37	493.44	492.49	**0.95**	39	499.78	498.21	**1.57**
NOP56-P29	***TBP***	37	493.44	492.28	**1.16**				**1.16**
NOP56-P33	***TBP***	37	493.44	491.98	**1.46**	39	499.78	497.74	**2.04**
NOP56-P35	***TBP***	37	493.44	492.17	**1.27**	39	499.78	497.9	**1.88**
NOP56-P36	***TBP***	37	493.44	491.47	**1.97**	39	499.78	497.21	**2.57**
NOP56-P09	***TBP***				**1.42**	39	499.78	498.36	**1.42**
NOP56-P18	***TBP***				**1.56**	39	499.78	498.22	**1.56**

NOP56-P19	***TBP***	**1.49**	39	499.78	498.29	**1.49**
NOP56-P31	***TBP***	**1.46**	39	499.78	498.32	**1.46**
NOP56-P04	***TBP***	**1.33**	39	499.78	498.45	**1.33**
NOP56-P08	***TBP***	**1.30**	39	499.78	498.48	**1.30**
NOP56-P34	***TBP***	**1.38**	39	499.78	498.4	**1.38**

Supplementary Table S 2-6 rpPCR conditions

Gene	*Primers*	*Sequence 5' – 3'*	*Primer label (5')*	*Enzyme*	*Buffer (1X)*	*Enhancer*	*[Primers]$_f$ (ng/uL)*	*[DNA]$_o$ (ng)*	*TM (°C)*	*PCR type*	*Fragment length*	*Reference*
AFF3	AFF3 F	GGCCGTAAAAGC CACGAGAGAGGG	Fluorescin	AccuPrime™ GC-Rich DNA Polymerase	Buffer A	MgSO4 $[0.8]_f$	0.5	100	68	Touch Down PCR	Starts at ≈ 240bp, 6 CGG repeats	(Metsu, Rooms, et al. 2014)
	AFF3-CGG primer	TACGCATCCCAG TTTGAGACGGCC GCCGCCGCCGCC					0.5					
	AFF3 P3	TACGCATCCCAG TTTGAGACG					5					
ATXN8	ATXN8-2F	CTGGGTCCTTCAT GTTAGAAAACCT	Fluorescin	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	66	Enzyme Normal PCR	Starts at ≈ 98bp, 5 CAG repeats	(Tanaka et al. 2011)
	ATXN8-2R	TACGCATCCCAG TTTGAGACGCAG CAGCAGCAGCAG					0.15					
	ATXN8-2FLAG	TACGCATCCCAG TTTGAGACG					0.3					
C11orf80 (FRA11A)	FRA11A F	CGGGGCCCTGCA GCGTCGAG		AccuPrime™ GC-Rich DNA Polymerase	Buffer A	MgSO4 $[0.8]_f$	0.6	100	73	Touch Down PCR	Starts at ≈ 199bp, 5 CGG repeats	(Debacker et al. 2007)
	FRA11A R P4	TACGCATCCCAG TTTGAGACGGCC GCCGCCGCCGCC GC					0.06					
	FRA11A R P3	TACGCATCCCAG TTTGAGACG					0.6					
DIP2B	DIP2B-CGG-F	GTCTTCAGCCTGA CTGGGCTGG	Fluorescin	AccuPrime™ GC-Rich	Buffer A	MgSO4 $[0.8]_f$	0.5	100	68	Enzyme Normal PCR	Starts at ≈ 70bp, 6	(Winnepenninckx et al. 2007)
	DIP2B-P4	TACGCATCCCAG TTTGAGACGGCC					0.5					

		GCCGCCGCCGCCGC		DNA Polymerase						CGG repeats	
	DIP2B-P3	TACGCATCCCAGTTTGAGACG					5				
DMPK	DMPK-TP-PCR P1-F	GGGGCTCGAAGGGTCCTTGT	Fluorescin	Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.3	100	66	Enzyme Normal PCR	Starts at ≈ 70bp, 6 CAG repeats	(Singh et al. 2014)
	DMPK-P4-(CAG)-R	AGCGGATAACAATTTCACACAGGACAGCAGCAGCAGCAGCAG					0.2				
	DMPK- P3	AGCGGATAACAATTTCACACAGGA					0.3				
	DMPK- P2-R	GTGCGTGGAGGATGGAACACG					0.3				
FMR1	FMR1 F Int	TCAGGCGCTCAGCTCCGTTTCGGTTTCA		AccuPrime™ GC-Rich DNA Polymerase	Buffer A	MgSO4 $[0.8]_f$	0.6	100	65	Enzyme Normal PCR	Starts at ≈ 166bp, 5 CCG repeats	(Chen et al. 2010)
	FMR1 CCG Int	AGCGTCTACTGTCTCGGCACTTGCCCGCCGCCGCCGCCG					0.06				
	FMR1- FLAG	AGCGTCTACTGTCTCGGCACTTGC	Fluorescin				0.6				
LRP12	LRP12-R5	GGAGGGAGGAGAAGCTGGAGGTAGACG		AccuPrime™ GC-Rich DNA Polymerase	Buffer A	MgSO4 $[0.8]_f$	0.6	100	72	Touch Down PCR	Starts at ≈ 74bp, 5 CGG repeats	(Ishiura et al. 2019)
	pGEX3'-(CGG)5	CCGGGAGCTGCATGTGTCAGAGGCGGCGGCGGCGGCGG					0.06				

	pGEX3’	CCGGGAGCTGCATGTGTCAGAGG	Fluorescin				0.6					
	NOP56 Fwd RP	TTTCGGCCTGCGTTCGGG	Fluorescin				0.6					
NOP56	NOP56 Spc RP	CAGGAAACAGCTATGACCCAGGCCCAGGCCCAGGCCCAGGCC		AccuPrime™ GC-Rich DNA Polymerase	Buffer A	$MgSO4\ [0.8]_f$	0.6	100	63	Enzyme Normal PCR	Starts at ≈ 70bp, 4 GGCCTG repeats	(Debacker et al. 2007)
	NOP56 Anc P	CAGGAAACAGCTATGACC					0.6					
	NOTCH2NLC-RP-F	GGCATTTGCGCCTGTGCTTCGGACCGT					0.3					
NOTCH2NLC	M13-(GGC) 4 (GGA) 2 -R	CAGGAAACAGCTATGACCTCCTCCGCCGCCGCCGCC		Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.2	100	72	Touch Down PCR	Starts at ≈ 153bp, 4 CGG repeats	(Sone et al. 2019)
	M13-linker-R	CAGGAAACAGCTATGACC	Fluorescin				0.3					
	LOC642361-R2	CGCTAGAAGGAGTGTGGTCCACC					0.3					
NUTM2B-AS1	pGEX3’-(CGG)5	CCGGGAGCTGCATGTGTCAGAGGCGGCGGCGGCGGCGG		Hot FirePol® DNA Polymerase	B2	Sol S 3X	0.2	100	72	Touch Down PCR	Starts at ≈ 188bp, 5 CGG repeats	(Ishiura et al. 2019)
	pGEX3’	CCGGGAGCTGCATGTGTCAGAGG	Fluorescin				0.3					

Chapter 3

Supplementary Table S 3-1 ALS short allele statistical information from all 35 NDREs genes plots.

Gene	Repeat count	ALS (n)	Control (n)	ALS proportion	Control proportion
AFF2	4	0	3	0	0.193673
AFF2	6	1	0	0.072098	0
AFF2	7	3	2	0.216294	0.129116
AFF2	8	1	0	0.072098	0
AFF2	9	2	2	0.144196	0.129116
AFF2	10	2	3	0.144196	0.193673
AFF2	11	7	13	0.504686	0.839251
AFF2	12	19	26	1.369863	1.678502
AFF2	13	35	32	2.523432	2.065849
AFF2	14	403	411	29.05552	26.53325
AFF2	15	395	505	28.47873	32.60168
AFF2	16	129	153	9.300649	9.87734
AFF2	17	150	175	10.81471	11.29761
AFF2	18	85	65	6.128335	4.196256
AFF2	19	47	35	3.388609	2.259522
AFF2	20	19	17	1.369863	1.097482
AFF2	21	9	16	0.648882	1.032924
AFF2	22	14	22	1.009373	1.420271
AFF2	23	20	23	1.441961	1.484829
AFF2	24	15	18	1.081471	1.16204
AFF2	25	10	10	0.720981	0.645578
AFF2	26	7	7	0.504686	0.451904
AFF2	27	4	2	0.288392	0.129116
AFF2	28	2	4	0.144196	0.258231
AFF2	29	3	1	0.216294	0.064558
AFF2	30	0	1	0	0.064558
AFF2	31	1	2	0.072098	0.129116
AFF2	32	0	1	0	0.064558
AFF2	33	2	0	0.144196	0
AFF2	34	1	0	0.072098	0
AFF2	36	1	0	0.072098	0
AFF3	-59	0	1	0	0.058651
AFF3	-6	0	1	0	0.058651
AFF3	-4	0	1	0	0.058651

AFF3	0	0	1	0	0.058651
AFF3	1	1	2	0.066094	0.117302
AFF3	2	38	60	2.511566	3.519062
AFF3	3	507	544	33.50958	31.90616
AFF3	4	266	344	17.58096	20.17595
AFF3	5	26	21	1.71844	1.231672
AFF3	6	86	79	5.684071	4.633431
AFF3	7	523	563	34.56709	33.02053
AFF3	8	16	23	1.057502	1.348974
AFF3	9	7	2	0.462657	0.117302
AFF3	10	1	3	0.066094	0.175953
AFF3	11	2	7	0.132188	0.410557
AFF3	12	24	28	1.586252	1.642229
AFF3	14	1	1	0.066094	0.058651
AFF3	15	2	1	0.132188	0.058651
AFF3	16	8	5	0.528751	0.293255
AFF3	17	3	9	0.198282	0.527859
AFF3	18	0	6	0	0.351906
AFF3	19	0	2	0	0.117302
AFF3	21	1	0	0.066094	0
AFF3	23	1	0	0.066094	0
AFF3	24	0	1	0	0.058651
AR	7	1	0	0.067249	0
AR	9	3	4	0.201748	0.235156
AR	10	0	1	0	0.058789
AR	12	3	2	0.201748	0.117578
AR	14	5	2	0.336247	0.117578
AR	15	10	14	0.672495	0.823045
AR	16	10	25	0.672495	1.469724
AR	17	27	45	1.815736	2.645503
AR	18	89	115	5.985205	6.760729
AR	19	162	229	10.89442	13.46267
AR	20	233	246	15.66913	14.46208
AR	21	282	334	18.96436	19.63551
AR	22	160	210	10.75992	12.34568
AR	23	171	149	11.49966	8.759553
AR	24	134	134	9.011432	7.877719
AR	25	93	97	6.254203	5.702528

AR	26	37	54	2.488231	3.174603
AR	27	28	16	1.882986	0.940623
AR	28	21	5	1.412239	0.293945
AR	29	8	10	0.537996	0.587889
AR	30	3	4	0.201748	0.235156
AR	31	4	2	0.268998	0.117578
AR	32	0	1	0	0.058789
AR	33	1	2	0.067249	0.117578
AR	43	1	0	0.067249	0
AR	52	1	0	0.067249	0
ARX	3	1	1	0.07764	0.065876
ARX	4	2	1	0.15528	0.065876
ARX	8	3	1	0.232919	0.065876
ARX	9	368	349	28.57143	22.99078
ARX	10	882	1148	68.47826	75.62582
ARX	11	30	18	2.329193	1.185771
ARX	13	2	0	0.15528	0
ATN1	0	2	0	0.12987	0
ATN1	3	0	1	0	0.05814
ATN1	5	0	2	0	0.116279
ATN1	6	1	1	0.064935	0.05814
ATN1	7	1	0	0.064935	0
ATN1	8	345	401	22.4026	23.31395
ATN1	9	7	9	0.454545	0.523256
ATN1	10	320	357	20.77922	20.75581
ATN1	11	3	7	0.194805	0.406977
ATN1	12	26	36	1.688312	2.093023
ATN1	13	18	20	1.168831	1.162791
ATN1	14	91	102	5.909091	5.930233
ATN1	15	582	602	37.79221	35
ATN1	16	129	155	8.376623	9.011628
ATN1	17	14	26	0.909091	1.511628
ATN1	18	0	1	0	0.05814
ATN1	19	1	0	0.064935	0
ATXN1	22	2	0	0.144823	0
ATXN1	23	4	3	0.289645	0.195822
ATXN1	24	3	6	0.217234	0.391645
ATXN1	25	11	17	0.796524	1.109661

ATXN1	26	15	9	1.086169	0.587467
ATXN1	27	35	32	2.534395	2.088773
ATXN1	28	198	200	14.33744	13.05483
ATXN1	29	675	776	48.87762	50.65274
ATXN1	30	369	397	26.71977	25.91384
ATXN1	31	44	48	3.186097	3.133159
ATXN1	32	22	34	1.593049	2.219321
ATXN1	33	1	6	0.072411	0.391645
ATXN1	34	2	2	0.144823	0.130548
ATXN1	35	0	2	0	0.130548
ATXN2	10	1	1	0.065488	0.058309
ATXN2	11	1	0	0.065488	0
ATXN2	13	1	0	0.065488	0
ATXN2	14	0	3	0	0.174927
ATXN2	16	2	1	0.130976	0.058309
ATXN2	17	7	7	0.458415	0.408163
ATXN2	18	1	1	0.065488	0.058309
ATXN2	19	6	11	0.392927	0.641399
ATXN2	20	0	1	0	0.058309
ATXN2	21	3	4	0.196464	0.233236
ATXN2	22	1472	1650	96.39817	96.20991
ATXN2	23	29	36	1.899149	2.099125
ATXN2	24	1	0	0.065488	0
ATXN2	25	1	0	0.065488	0
ATXN2	30	1	0	0.065488	0
ATXN2	32	1	0	0.065488	0
ATXN3	14	233	264	15.96984	16.8906
ATXN3	15	360	399	24.67443	25.52783
ATXN3	16	1	2	0.06854	0.127959
ATXN3	18	22	12	1.507882	0.767754
ATXN3	19	1	0	0.06854	0
ATXN3	20	182	162	12.4743	10.36468
ATXN3	21	150	173	10.28101	11.06846
ATXN3	22	22	24	1.507882	1.535509
ATXN3	23	380	412	26.04524	26.35956
ATXN3	24	35	29	2.398903	1.855406
ATXN3	25	1	0	0.06854	0
ATXN3	26	12	5	0.822481	0.319898

ATXN3	27	54	74	3.701165	4.734485
ATXN3	28	4	6	0.27416	0.383877
ATXN3	29	1	1	0.06854	0.06398
ATXN3	30	1	0	0.06854	0
ATXN7	6	4	4	0.259572	0.233236
ATXN7	7	13	14	0.843608	0.816327
ATXN7	8	13	17	0.843608	0.991254
ATXN7	9	19	18	1.232966	1.049563
ATXN7	10	1239	1416	80.40234	82.5656
ATXN7	11	190	185	12.32966	10.78717
ATXN7	12	50	56	3.244646	3.265306
ATXN7	13	12	4	0.778715	0.233236
ATXN7	15	1	1	0.064893	0.058309
ATXN8	5	14	11	0.97561	0.678175
ATXN8	6	0	1	0	0.061652
ATXN8	7	14	12	0.97561	0.739827
ATXN8	8	392	467	27.31707	28.79162
ATXN8	9	12	14	0.836237	0.863132
ATXN8	10	12	12	0.836237	0.739827
ATXN8	11	6	7	0.418118	0.431566
ATXN8	12	498	594	34.70383	36.62145
ATXN8	13	174	192	12.12544	11.83724
ATXN8	14	165	140	11.49826	8.631319
ATXN8	15	76	95	5.296167	5.856967
ATXN8	16	43	46	2.996516	2.836005
ATXN8	17	19	21	1.324042	1.294698
ATXN8	18	6	6	0.418118	0.369914
ATXN8	19	3	3	0.209059	0.184957
ATXN8	21	0	1	0	0.061652
ATXN8	24	1	0	0.069686	0
ATXN10	10	2	2	0.129199	0.116414
ATXN10	11	73	80	4.715762	4.656577
ATXN10	12	358	368	23.12661	21.42026
ATXN10	13	578	657	37.3385	38.24214
ATXN10	14	411	484	26.55039	28.17229
ATXN10	15	90	86	5.813953	5.005821
ATXN10	16	16	24	1.033592	1.396973
ATXN10	17	16	13	1.033592	0.756694

ATXN10	18	4	3	0.258398	0.174622
ATXN10	19	0	1	0	0.058207
CACNA1A	-3	0	1	0	0.063412
CACNA1A	3	1	2	0.067204	0.126823
CACNA1A	4	4	1	0.268817	0.063412
CACNA1A	5	22	20	1.478495	1.268231
CACNA1A	6	1	0	0.067204	0
CACNA1A	7	116	107	7.795699	6.785035
CACNA1A	8	162	177	10.8871	11.22384
CACNA1A	9	4	6	0.268817	0.380469
CACNA1A	10	2	5	0.134409	0.317058
CACNA1A	11	601	702	40.38978	44.5149
CACNA1A	12	343	292	23.05108	18.51617
CACNA1A	13	219	248	14.71774	15.72606
CACNA1A	14	13	15	0.873656	0.951173
CACNA1A	17	0	1	0	0.063412
CNBP	7	1	1	0.068446	0.060423
CNBP	8	9	19	0.616016	1.148036
CNBP	9	6	6	0.410678	0.362538
CNBP	11	2	2	0.136893	0.120846
CNBP	12	24	31	1.64271	1.873112
CNBP	13	115	139	7.871321	8.398792
CNBP	14	103	113	7.049966	6.827795
CNBP	15	321	338	21.97125	20.42296
CNBP	16	314	389	21.49213	23.50453
CNBP	17	495	506	33.8809	30.57402
CNBP	18	68	106	4.654346	6.404834
CNBP	19	1	3	0.068446	0.181269
CNBP	20	2	1	0.136893	0.060423
CNBP	21	0	1	0	0.060423
CSTB	1	1	0	0.065147	0
CSTB	2	791	908	51.53094	52.82141
CSTB	3	743	811	48.40391	47.17859
C9ORF72	0	1	0	0.064851	0
C9ORF72	1	0	1	0	0.058038
C9ORF72	2	1235	1435	80.09079	83.28497
C9ORF72	3	1	2	0.064851	0.116077
C9ORF72	4	36	44	2.33463	2.553685

C9ORF72	5	147	134	9.533074	7.777133
C9ORF72	6	35	28	2.26978	1.625073
C9ORF72	7	56	51	3.631647	2.959954
C9ORF72	8	10	14	0.648508	0.812536
C9ORF72	9	7	9	0.453956	0.522345
C9ORF72	10	10	2	0.648508	0.116077
C9ORF72	11	0	1	0	0.058038
C9ORF72	12	1	0	0.064851	0
C9ORF72	13	1	1	0.064851	0.058038
C9ORF72	14	0	1	0	0.058038
C9ORF72	15	1	0	0.064851	0
C9ORF72	16	1	0	0.064851	0
DIP2B	6	2	3	0.129786	0.173913
DIP2B	7	1214	1357	78.78001	78.66667
DIP2B	8	182	176	11.81051	10.2029
DIP2B	9	5	5	0.324465	0.289855
DIP2B	10	3	4	0.194679	0.231884
DIP2B	11	7	9	0.45425	0.521739
DIP2B	12	20	29	1.297859	1.681159
DIP2B	13	32	32	2.076574	1.855072
DIP2B	14	24	35	1.55743	2.028986
DIP2B	15	21	30	1.362751	1.73913
DIP2B	16	11	19	0.713822	1.101449
DIP2B	17	12	14	0.778715	0.811594
DIP2B	18	3	4	0.194679	0.231884
DIP2B	19	2	2	0.129786	0.115942
DIP2B	20	2	1	0.129786	0.057971
DIP2B	21	0	1	0	0.057971
DIP2B	22	0	2	0	0.115942
DIP2B	23	0	1	0	0.057971
DIP2B	25	1	1	0.064893	0.057971
DMPK	0	13	10	0.84088	0.578369
DMPK	1	12	9	0.776197	0.520532
DMPK	3	2	1	0.129366	0.057837
DMPK	5	870	997	56.27426	57.66339
DMPK	6	6	9	0.388098	0.520532
DMPK	7	3	5	0.194049	0.289184
DMPK	8	45	57	2.910737	3.296703

DMPK	9	6	7	0.388098	0.404858
DMPK	10	28	19	1.811125	1.098901
DMPK	11	202	230	13.06598	13.30249
DMPK	12	151	150	9.767141	8.675535
DMPK	13	148	161	9.573092	9.311741
DMPK	14	35	36	2.263907	2.082128
DMPK	15	1	2	0.064683	0.115674
DMPK	16	9	4	0.582147	0.231348
DMPK	17	1	2	0.064683	0.115674
DMPK	19	2	1	0.129366	0.057837
DMPK	20	5	7	0.323415	0.404858
DMPK	21	1	13	0.064683	0.75188
DMPK	22	1	2	0.064683	0.115674
DMPK	23	1	1	0.064683	0.057837
DMPK	24	3	4	0.194049	0.231348
DMPK	25	0	2	0	0.115674
DMPK	29	1	0	0.064683	0
FMR1	-9	2	0	0.142755	0
FMR1	-4	3	0	0.214133	0
FMR1	-3	1	0	0.071378	0
FMR1	0	1	0	0.071378	0
FMR1	2	1	1	0.071378	0.063613
FMR1	3	0	1	0	0.063613
FMR1	4	3	2	0.214133	0.127226
FMR1	5	8	2	0.571021	0.127226
FMR1	6	22	20	1.570307	1.272265
FMR1	7	69	58	4.925054	3.689567
FMR1	8	17	27	1.213419	1.717557
FMR1	9	34	43	2.426838	2.735369
FMR1	10	52	45	3.711635	2.862595
FMR1	11	60	68	4.282655	4.3257
FMR1	12	64	69	4.568166	4.389313
FMR1	13	185	197	13.20485	12.53181
FMR1	14	46	34	3.283369	2.16285
FMR1	15	36	38	2.569593	2.417303
FMR1	16	51	49	3.640257	3.117048
FMR1	17	32	49	2.284083	3.117048
FMR1	18	98	102	6.995004	6.48855

FMR1	19	194	264	13.84725	16.79389
FMR1	20	40	50	2.855103	3.180662
FMR1	21	78	74	5.567452	4.707379
FMR1	22	71	87	5.067809	5.534351
FMR1	23	22	15	1.570307	0.954198
FMR1	24	4	14	0.28551	0.890585
FMR1	25	4	6	0.28551	0.381679
FMR1	26	5	5	0.356888	0.318066
FMR1	27	51	73	3.640257	4.643766
FMR1	28	89	132	6.352605	8.396947
FMR1	29	39	34	2.783726	2.16285
FMR1	30	8	8	0.571021	0.508906
FMR1	31	2	1	0.142755	0.063613
FMR1	32	2	0	0.142755	0
FMR1	33	2	0	0.142755	0
FMR1	34	0	1	0	0.063613
FMR1	35	0	1	0	0.063613
FMR1	36	0	1	0	0.063613
FMR1	38	1	0	0.071378	0
FMR1	41	1	1	0.071378	0.063613
FMR1	45	1	0	0.071378	0
FMR1	51	1	0	0.071378	0
FMR1	79	1	0	0.071378	0
FRA10C1	5	0	2	0	0.116686
FRA10C1	6	76	106	4.96732	6.184364
FRA10C1	7	533	626	34.8366	36.52275
FRA10C1	8	771	824	50.39216	48.07468
FRA10C1	9	126	128	8.235294	7.467911
FRA10C1	10	0	1	0	0.058343
FRA10C1	11	1	0	0.065359	0
FRA10C1	12	1	1	0.065359	0.058343
FRA10C1	13	2	4	0.130719	0.233372
FRA10C1	14	3	6	0.196078	0.350058
FRA10C1	15	1	3	0.065359	0.175029
FRA10C1	16	8	7	0.522876	0.408401
FRA10C1	17	1	2	0.065359	0.116686
FRA10C1	18	1	1	0.065359	0.058343
FRA10C1	19	1	1	0.065359	0.058343

FRA10C1	21	1	1	0.065359	0.058343
FRA10C1	22	1	0	0.065359	0
FRA10C1	23	1	0	0.065359	0
FRA10C1	24	0	1	0	0.058343
FRA10C1	25	1	0	0.065359	0
FRA10C1	26	1	0	0.065359	0
FRA11A	7	3	3	0.196592	0.174825
FRA11A	8	556	625	36.43512	36.42191
FRA11A	9	866	1035	56.74967	60.31469
FRA11A	10	101	52	6.618611	3.030303
FRA11A	12	0	1	0	0.058275
FXN	5	0	1	0	0.063694
FXN	6	16	6	1.085482	0.382166
FXN	7	0	3	0	0.191083
FXN	8	558	596	37.85617	37.96178
FXN	9	261	265	17.70692	16.87898
FXN	10	573	625	38.87381	39.80892
FXN	11	1	0	0.067843	0
FXN	12	1	0	0.067843	0
FXN	13	1	6	0.067843	0.382166
FXN	14	0	2	0	0.127389
FXN	16	6	3	0.407056	0.191083
FXN	17	14	16	0.949796	1.019108
FXN	18	23	15	1.56038	0.955414
FXN	19	9	8	0.610583	0.509554
FXN	20	7	8	0.474898	0.509554
FXN	21	1	4	0.067843	0.254777
FXN	22	2	4	0.135685	0.254777
FXN	23	1	2	0.067843	0.127389
FXN	24	0	2	0	0.127389
FXN	25	0	1	0	0.063694
FXN	26	0	2	0	0.127389
FXN	27	0	1	0	0.063694
GIPC1	0	0	1	0	0.059488
GIPC1	4	3	2	0.199734	0.118977
GIPC1	5	1	5	0.066578	0.297442
GIPC1	6	12	9	0.798935	0.535396
GIPC1	7	11	7	0.732357	0.416419

GIPC1	8	56	54	3.728362	3.212374
GIPC1	9	636	735	42.34354	43.72397
GIPC1	10	636	708	42.34354	42.11779
GIPC1	11	136	152	9.054594	9.042237
GIPC1	12	11	8	0.732357	0.475907
HTT	9	0	1	0	0.058173
HTT	11	1	3	0.064516	0.17452
HTT	12	23	24	1.483871	1.396161
HTT	13	33	34	2.129032	1.977894
HTT	14	23	21	1.483871	1.22164
HTT	15	52	61	3.354839	3.548575
HTT	16	89	105	5.741935	6.108202
HTT	17	432	525	27.87097	30.54101
HTT	18	302	341	19.48387	19.83711
HTT	19	167	148	10.77419	8.609657
HTT	20	211	231	13.6129	13.43805
HTT	21	125	138	8.064516	8.027923
HTT	22	55	52	3.548387	3.025015
HTT	23	20	19	1.290323	1.105294
HTT	24	7	8	0.451613	0.465387
HTT	25	5	4	0.322581	0.232693
HTT	26	4	2	0.258065	0.116347
HTT	27	1	0	0.064516	0
HTT	29	0	1	0	0.058173
HTT	32	0	1	0	0.058173
JPH3	7	1	0	0.064725	0
JPH3	8	2	0	0.12945	0
JPH3	9	2	2	0.12945	0.116347
JPH3	10	4	7	0.2589	0.407213
JPH3	11	109	98	7.055016	5.700989
JPH3	12	4	0	0.2589	0
JPH3	13	53	48	3.430421	2.792321
JPH3	14	1050	1188	67.96117	69.10995
JPH3	15	108	123	6.990291	7.155323
JPH3	16	195	229	12.62136	13.3217
JPH3	17	16	24	1.035599	1.396161
JPH3	19	1	0	0.064725	0
LRP12	4	5	3	0.322789	0.174216

LRP12	5	17	25	1.097482	1.4518
LRP12	6	45	53	2.9051	3.077816
LRP12	7	9	6	0.58102	0.348432
LRP12	8	12	18	0.774693	1.045296
LRP12	9	172	236	11.10394	13.70499
LRP12	10	504	552	32.53712	32.05575
LRP12	11	378	389	24.40284	22.59001
LRP12	12	42	43	2.711427	2.497096
LRP12	13	236	273	15.23564	15.85366
LRP12	14	116	104	7.488702	6.039489
LRP12	15	10	17	0.645578	0.987224
LRP12	16	3	2	0.193673	0.116144
LRP12	18	0	1	0	0.058072
NIPA1	-1	1	0	0.064683	0
NIPA1	5	2	0	0.129366	0
NIPA1	6	1	3	0.064683	0.174622
NIPA1	7	407	492	26.326	28.63795
NIPA1	8	1006	1105	65.07115	64.31898
NIPA1	9	128	118	8.279431	6.868452
NIPA1	10	1	0	0.064683	0
NOP56	2	9	14	0.584795	0.811594
NOP56	3	515	574	33.46329	33.27536
NOP56	4	429	465	27.87524	26.95652
NOP56	5	27	41	1.754386	2.376812
NOP56	6	528	588	34.30799	34.08696
NOP56	7	10	18	0.649773	1.043478
NOP56	8	21	25	1.364522	1.449275
NOTCH2NCL	6	3	5	0.19698	0.292569
NOTCH2NCL	7	5	2	0.328299	0.117028
NOTCH2NCL	8	14	17	0.919238	0.994734
NOTCH2NCL	9	400	523	26.26395	30.60269
NOTCH2NCL	10	99	102	6.500328	5.968403
NOTCH2NCL	11	25	31	1.641497	1.813926
NOTCH2NCL	12	74	75	4.858831	4.388531
NOTCH2NCL	13	185	200	12.14708	11.70275
NOTCH2NCL	14	236	219	15.49573	12.81451
NOTCH2NCL	15	191	226	12.54104	13.22411
NOTCH2NCL	16	156	143	10.24294	8.367466

NOTCH2NCL	17	79	94	5.187131	5.500293
NOTCH2NCL	18	26	24	1.707157	1.40433
NOTCH2NCL	19	7	11	0.459619	0.643651
NOTCH2NCL	20	10	10	0.656599	0.585138
NOTCH2NCL	21	7	19	0.459619	1.111761
NOTCH2NCL	22	2	5	0.13132	0.292569
NOTCH2NCL	23	2	3	0.13132	0.175541
NOTCH2NCL	25	2	0	0.13132	0
NUTM2B-AS1	3	1	0	0.064977	0
NUTM2B-AS1	5	4	6	0.259909	0.348028
NUTM2B-AS1	6	293	309	19.03834	17.92343
NUTM2B-AS1	7	17	13	1.104613	0.75406
NUTM2B-AS1	8	145	161	9.421702	9.338747
NUTM2B-AS1	9	1041	1205	67.64133	69.89559
NUTM2B-AS1	10	20	21	1.299545	1.218097
NUTM2B-AS1	11	1	0	0.064977	0
NUTM2B-AS1	12	7	2	0.454841	0.116009
NUTM2B-AS1	13	8	7	0.519818	0.406032
NUTM2B-AS1	14	1	0	0.064977	0
NUTM2B-AS1	15	1	0	0.064977	0
PABPN1	5	62	65	4.018146	3.765933
PABPN1	6	1457	1661	94.42644	96.23407
PABPN1	7	24	0	1.555412	0
PPP2R2B	4	1	0	0.064935	0
PPP2R2B	6	0	1	0	0.058038
PPP2R2B	8	0	1	0	0.058038
PPP2R2B	9	84	83	5.454545	4.817179
PPP2R2B	10	1193	1354	77.46753	78.58387
PPP2R2B	11	102	105	6.623377	6.094022
PPP2R2B	12	1	0	0.064935	0
PPP2R2B	13	93	109	6.038961	6.326175
PPP2R2B	14	38	37	2.467532	2.147417
PPP2R2B	15	26	32	1.688312	1.857226
PPP2R2B	16	1	0	0.064935	0
PPP2R2B	17	0	1	0	0.058038
PPP2R2B	18	1	0	0.064935	0
TBP	24	4	1	0.257898	0.057904
TBP	27	4	2	0.257898	0.115808

TBP	28	1	4	0.064475	0.231616
TBP	29	3	6	0.193424	0.347423
TBP	30	39	35	2.514507	2.026636
TBP	31	21	17	1.353965	0.984366
TBP	32	31	35	1.998711	2.026636
TBP	33	20	24	1.289491	1.389693
TBP	34	19	21	1.225016	1.215981
TBP	35	206	212	13.28175	12.27562
TBP	36	429	519	27.65957	30.05211
TBP	37	437	466	28.17537	26.98321
TBP	38	318	374	20.5029	21.65605
TBP	39	19	11	1.225016	0.636943
TCF4	2	1	0	0.068493	0
TCF4	3	0	1	0	0.063776
TCF4	7	2	1	0.136986	0.063776
TCF4	8	0	1	0	0.063776
TCF4	9	3	1	0.205479	0.063776
TCF4	10	0	2	0	0.127551
TCF4	11	755	853	51.71233	54.40051
TCF4	12	7	8	0.479452	0.510204
TCF4	13	38	25	2.60274	1.594388
TCF4	14	297	284	20.34247	18.11224
TCF4	15	79	107	5.410959	6.82398
TCF4	16	36	34	2.465753	2.168367
TCF4	17	161	178	11.0274	11.35204
TCF4	18	3	2	0.205479	0.127551
TCF4	19	2	1	0.136986	0.063776
TCF4	20	0	1	0	0.063776
TCF4	21	2	3	0.136986	0.191327
TCF4	22	2	3	0.136986	0.191327
TCF4	23	16	11	1.09589	0.701531
TCF4	24	31	21	2.123288	1.339286
TCF4	25	9	11	0.616438	0.701531
TCF4	26	7	8	0.479452	0.510204
TCF4	27	2	3	0.136986	0.191327
TCF4	28	2	5	0.136986	0.318878
TCF4	30	0	1	0	0.063776
TCF4	31	1	0	0.068493	0

TCF4	33	1	1	0.068493	0.063776
TCF4	34	1	0	0.068493	0
TCF4	37	1	0	0.068493	0
TCF4	43	1	0	0.068493	0
TCF4	66	0	1	0	0.063776
TCF4	77	0	1	0	0.063776
TK2-BEAN1	-24	0	1	0	0.058207
TK2-BEAN1	6	1	1	0.065189	0.058207
TK2-BEAN1	7	1	0	0.065189	0
TK2-BEAN1	9	123	149	8.018253	8.672875
TK2-BEAN1	10	22	29	1.434159	1.688009
TK2-BEAN1	11	6	11	0.391134	0.640279
TK2-BEAN1	12	197	192	12.84224	11.17579
TK2-BEAN1	13	148	167	9.647979	9.720605
TK2-BEAN1	14	202	198	13.16819	11.52503
TK2-BEAN1	15	195	227	12.71186	13.21304
TK2-BEAN1	16	388	410	25.29335	23.86496
TK2-BEAN1	17	158	216	10.29987	12.57276
TK2-BEAN1	18	51	71	3.324641	4.132712
TK2-BEAN1	19	20	20	1.303781	1.164144
TK2-BEAN1	20	4	8	0.260756	0.465658
TK2-BEAN1	21	4	6	0.260756	0.349243
TK2-BEAN1	22	1	4	0.065189	0.232829
TK2-BEAN1	23	3	2	0.195567	0.116414
TK2-BEAN1	24	3	0	0.195567	0
TK2-BEAN1	25	1	2	0.065189	0.116414
TK2-BEAN1	28	2	0	0.130378	0
TK2-BEAN1	29	2	0	0.130378	0
TK2-BEAN1	32	0	1	0	0.058207
TK2-BEAN1	33	0	1	0	0.058207
TK2-BEAN1	36	1	0	0.065189	0
TK2-BEAN1	56	0	1	0	0.058207
TK2-BEAN1	62	1	0	0.065189	0
TK2-BEAN1	70	0	1	0	0.058207
ZNF713	2	1	0	0.069589	0
ZNF713	3	3	1	0.208768	0.06079
ZNF713	4	167	172	11.62143	10.45593
ZNF713	5	14	20	0.974252	1.215805

ZNF713	6	468	524	32.56785	31.8541
ZNF713	7	64	74	4.453723	4.49848
ZNF713	8	368	467	25.60891	28.38906
ZNF713	9	112	142	7.794015	8.632219
ZNF713	10	47	49	3.270703	2.978723
ZNF713	11	147	151	10.22965	9.179331
ZNF713	12	20	26	1.391788	1.580547
ZNF713	13	2	4	0.139179	0.243161
ZNF713	14	1	4	0.069589	0.243161
ZNF713	15	6	3	0.417537	0.182371
ZNF713	16	5	2	0.347947	0.121581
ZNF713	17	5	0	0.347947	0
ZNF713	18	3	4	0.208768	0.243161
ZNF713	19	1	0	0.069589	0
ZNF713	20	2	0	0.139179	0
ZNF713	22	0	1	0	0.06079
ZNF713	23	0	1	0	0.06079
ZNF713	37	1	0	0.069589	0

Supplementary Table S 3-2 ALS long allele statistical information: Population proportions and ORs.

Gene	Repeat count	OR	Lower CI	Upper CI	*p*-Value	Significance	ALS (n)	Controls (n)	ALS proportion	Control proportion
AFF2	4	0.895450145	0.017754823	45.16130316	1	NA	0	2	0	0.129115558
AFF2	6	4.483037157	0.215028916	93.46474186	0.501352418	NA	1	0	0.072098053	0
AFF2	7	1.493268713	0.196988695	11.31969248	1	NA	2	0	0.144196107	0
AFF2	10	0.639049158	0.12587992	3.244233269	0.672016434	NA	2	1	0.144196107	0.064557779
AFF2	11	0.568879875	0.148640536	2.177227833	0.487955309	NA	1	6	0.072098053	0.387346675
AFF2	12	1.310688338	0.482014105	3.564011723	0.614647115	NA	11	17	0.793078587	1.097482247
AFF2	13	1.362211074	0.741550933	2.502348697	0.357027562	NA	18	17	1.29776496	1.097482247
AFF2	14	1.100092089	0.701904455	1.724170002	0.730681791	NA	337	319	24.29704398	20.59393157
AFF2	15	0.832200636	0.704124537	0.983573021	0.032819649	*	265	341	19.10598414	22.01420271
AFF2	16	0.978380181	0.845974898	1.13150849	0.79505627	NA	99	103	7.137707282	6.649451259
AFF2	17	0.959544384	0.829976407	1.109339273	0.578977969	NA	214	232	15.42898342	14.97740478
AFF2	18	0.934516124	0.800315455	1.091220194	0.406508999	NA	136	130	9.805335256	8.392511298
AFF2	19	0.849946834	0.715532027	1.009611859	0.066069671	Â°	68	76	4.902667628	4.90639122
AFF2	20	0.823904043	0.682522291	0.994572457	0.044828431	*	32	41	2.307137707	2.646868948
AFF2	21	0.825379565	0.676076291	1.007654662	0.061100731	Â°	18	27	1.29776496	1.743060039
AFF2	22	0.841908632	0.683865584	1.036475823	0.113190924	NA	32	45	2.307137707	2.905100065
AFF2	23	0.864027602	0.688985098	1.083541138	0.206151145	NA	47	47	3.388608508	3.034215623
AFF2	24	0.785921496	0.604488493	1.02181035	0.073407147	Â°	37	50	2.667627974	3.227888961
AFF2	25	0.778530661	0.56507411	1.072620352	0.124899183	NA	20	30	1.441961067	1.936733376
AFF2	26	0.803092728	0.548785737	1.17524543	0.288552435	NA	11	26	0.793078587	1.67850226
AFF2	27	1.032762472	0.654611628	1.629360491	0.907249259	NA	12	16	0.86517664	1.032924467
AFF2	28	1.167185513	0.659664433	2.065174282	0.659510425	NA	5	8	0.360490267	0.516462234
AFF2	29	1.410668615	0.721172766	2.75937478	0.38805707	NA	7	4	0.504686373	0.258231117

AFF2	30	1.215763438	0.54401104	2.717005038	0.678947003	NA	0	5	0	0.322788896
AFF2	31	2.157956547	0.834076405	5.583153332	0.153504979	NA	5	3	0.360490267	0.193673338
AFF2	32	2.400527759	0.67356591	8.555263018	0.206502906	NA	0	2	0	0.129115558
AFF2	33	5.60847519	0.970155393	32.42263474	0.030444834	*	1	0	0.072098053	0
AFF2	34	4.857160092	0.821652563	28.71287112	0.057414216	Â°	1	0	0.072098053	0
AFF2	35	4.106931887	0.674219722	25.01690321	0.10684438	NA	2	1	0.144196107	0.064557779
AFF2	36	7.834236186	0.404289337	151.8102285	0.10530893	NA	2	0	0.144196107	0
AFF2	54	3.352686621	0.13645988	82.37225177	0.472411444	NA	1	0	0.072098053	0
AFF3	0	0.887423043	0.01759669	44.75385282	1	NA	0	2	0	0.117302053
AFF3	1	4.442324626	0.213092199	92.60896521	0.501625049	NA	0	1	0	0.058651026
AFF3	2	6.222907489	0.321160865	120.5768877	0.252437573	NA	9	15	0.594844679	0.879765396
AFF3	3	1.736187135	0.791587544	3.80797524	0.17753353	NA	81	96	5.353602115	5.630498534
AFF3	4	1.131638556	0.851176759	1.504512204	0.425442725	NA	116	125	7.66688698	7.331378299
AFF3	5	1.03405846	0.846190318	1.263636413	0.759020093	NA	19	13	1.255783212	0.762463343
AFF3	6	0.992622746	0.817079689	1.20587983	0.960378832	NA	114	138	7.534699273	8.093841642
AFF3	7	1.026936117	0.870418536	1.211598496	0.767821455	NA	754	879	49.83476537	51.5542522
AFF3	8	1.118396167	0.956425769	1.3077962	0.162129803	NA	26	26	1.718440185	1.524926686
AFF3	9	1.112108514	0.947993291	1.304635125	0.206019744	NA	14	6	0.925313946	0.351906158
AFF3	10	1.08008711	0.919432003	1.268813965	0.365461425	NA	18	13	1.189689359	0.762463343
AFF3	11	1.056994902	0.897739262	1.244501907	0.531541757	NA	24	26	1.586252479	1.524926686
AFF3	12	1.056125373	0.893414164	1.248470025	0.549631507	NA	137	135	9.054857898	7.917888563
AFF3	13	0.982752195	0.802094721	1.204099531	0.876496538	NA	5	6	0.330469266	0.351906158
AFF3	14	0.984231457	0.801516676	1.208598136	0.916512106	NA	9	10	0.594844679	0.586510264
AFF3	15	0.982856194	0.797125109	1.211862839	0.872749637	NA	9	10	0.594844679	0.586510264
AFF3	16	0.981355481	0.792395886	1.215375542	0.870047116	NA	48	45	3.172504957	2.639296188
AFF3	17	0.914577652	0.717669445	1.165511905	0.496979783	NA	59	74	3.899537343	4.340175953
AFF3	18	0.939448853	0.680806898	1.296350184	0.742447264	NA	30	28	1.982815598	1.642228739
AFF3	19	0.808004724	0.53872535	1.211882149	0.306045547	NA	12	20	0.793126239	1.173020528

AFF3	20	0.884172	0.543078457	1.439497579	0.621181529	NA	10	12	0.660938533	0.703812317
AFF3	21	0.859878378	0.474880529	1.557003877	0.650459041	NA	7	6	0.462656973	0.351906158
AFF3	22	0.720006489	0.35272866	1.469711434	0.372435056	NA	2	9	0.132187707	0.527859238
AFF3	23	1.127702029	0.478047394	2.66022131	0.825294601	NA	8	5	0.528750826	0.293255132
AFF3	24	0.511382432	0.114489565	2.284155693	0.458446791	NA	1	3	0.066093853	0.175953079
AFF3	25	0.675768595	0.089155976	5.122070493	1	NA	1	1	0.066093853	0.058651026
AFF3	27	0.375399185	0.015280459	9.222533488	1	NA	0	1	0	0.058651026
AR	9	0.874228622	0.017334948	44.0887209	1	NA	1	4	0.067249496	0.235155791
AR	10	2.627098675	0.413401178	16.69479386	0.380234455	NA	0	1	0	0.058788948
AR	14	3.21279104	0.527491914	19.56812226	0.224641606	NA	1	1	0.067249496	0.058788948
AR	15	2.2779711	0.528863202	9.811899016	0.2972988	NA	2	2	0.134498991	0.117577895
AR	16	1.654659974	0.526673163	5.198479479	0.399793988	NA	5	6	0.336247478	0.352733686
AR	17	1.337278752	0.588337215	3.039607925	0.533364648	NA	10	14	0.672494956	0.823045267
AR	18	1.282503275	0.71787987	2.291211553	0.462047156	NA	47	42	3.160726295	2.469135802
AR	19	0.92369216	0.655805417	1.301006647	0.661477489	NA	87	102	5.85070612	5.996472663
AR	20	0.980505008	0.779405005	1.2334923	0.906618302	NA	150	152	10.08742434	8.935920047
AR	21	0.919389339	0.772001429	1.094916051	0.348714681	NA	234	259	15.73638198	15.22633745
AR	22	0.922525808	0.797505414	1.067144939	0.281097424	NA	175	220	11.76866174	12.93356849
AR	23	0.973340363	0.84678132	1.118814786	0.722269571	NA	206	216	13.8533961	12.6984127
AR	24	0.926187984	0.803126211	1.068106319	0.292074972	NA	204	233	13.71889711	13.69782481
AR	25	0.907296154	0.773276303	1.064543564	0.237938022	NA	158	196	10.62542031	11.52263374
AR	26	0.925931916	0.759383978	1.129007114	0.4491078	NA	78	126	5.245460659	7.407407407
AR	27	1.177179271	0.91214809	1.519217165	0.215121829	NA	56	56	3.765971755	3.29218107
AR	28	1.184947608	0.849107871	1.653618911	0.347280732	NA	33	22	2.219233356	1.293356849
AR	29	0.934055582	0.61295921	1.423357078	0.829514061	NA	20	26	1.344989913	1.52851264
AR	30	0.997767226	0.549523812	1.811640216	1	NA	9	10	0.605245461	0.587889477
AR	31	0.974163124	0.442289035	2.145641685	1	NA	5	8	0.336247478	0.470311581
AR	32	1.353327402	0.433819471	4.221790809	0.764243008	NA	0	2	0	0.117577895

AR	33	2.129164457	0.579491447	7.822964963	0.31925728	NA	2	2	0.134498991	0.117577895
AR	34	3.438827098	0.54113487	21.85320606	0.191288922	NA	0	1	0	0.058788948
AR	35	10.32254803	0.555273634	191.8963755	0.047231806	*	1	0	0.067249496	0
AR	43	8.023240148	0.414071497	155.4619985	0.101370149	NA	1	0	0.067249496	0
AR	45	5.727027937	0.274715366	119.3921166	0.217485046	NA	1	0	0.067249496	0
AR	52	3.433905146	0.139774511	84.36233788	0.466436637	NA	1	0	0.067249496	0
ARX	3	0.848534738	0.016824028	42.79659985	1	NA	1	1	0.077639752	0.065876153
ARX	4	0.848434926	0.08814315	8.166735877	1	NA	2	1	0.155279503	0.065876153
ARX	8	0.605482549	0.119258263	3.074077275	0.666142457	NA	3	1	0.232919255	0.065876153
ARX	9	0.455675964	0.123988453	1.674676779	0.316482072	NA	368	347	28.57142857	22.85902503
ARX	10	0.732472279	0.618313137	0.867708623	0.000325704	***	880	1149	68.32298137	75.6916996
ARX	11	2.114756109	1.207558173	3.703501413	0.007967119	**	30	18	2.329192547	1.185770751
ARX	13	3.544180615	0.557611766	22.52681347	0.186434889	NA	3	0	0.232919255	0
ARX	17	1.178640777	0.122447942	11.34518114	1	NA	1	0	0.077639752	0
ARX	89	0.392575346	0.015977808	9.645590904	1	NA	0	1	0	0.065876153
ATN1	0	0.89537925	0.017754598	45.15472502	1	NA	1	0	0.064935065	0
ATN1	8	0.298266008	0.012140908	7.327508782	0.472392638	NA	23	19	1.493506494	1.104651163
ATN1	9	0.709380079	0.38977222	1.291061985	0.283674736	NA	1	6	0.064935065	0.348837209
ATN1	10	0.893836626	0.514017659	1.554312194	0.775689328	NA	65	100	4.220779221	5.813953488
ATN1	11	1.260712536	0.953311156	1.66723749	0.104527774	NA	5	3	0.324675325	0.174418605
ATN1	12	1.221345147	0.928431699	1.606670657	0.164596073	NA	12	7	0.779220779	0.406976744
ATN1	13	1.139625824	0.876043248	1.482514729	0.349062353	NA	9	8	0.584415584	0.465116279
ATN1	14	1.112292634	0.862182714	1.434956749	0.43652632	NA	36	44	2.337662338	2.558139535
ATN1	15	1.113252123	0.888306756	1.395160266	0.358321613	NA	604	604	39.22077922	35.11627907
ATN1	16	0.8830505	0.769454228	1.013417247	0.079070402	Â°	414	493	26.88311688	28.6627907
ATN1	17	0.931465245	0.794134042	1.092545409	0.393298064	NA	235	272	15.25974026	15.81395349
ATN1	18	0.912203361	0.718606187	1.15795687	0.466119361	NA	38	40	2.467532468	2.325581395
ATN1	19	0.866138611	0.658254261	1.139675254	0.328703039	NA	24	35	1.558441558	2.034883721

ATN1	20	0.913005244	0.66531314	1.252911637	0.573394406	NA	28	44	1.818181818	2.558139535
ATN1	21	1.120361083	0.738488296	1.699700543	0.594713771	NA	16	16	1.038961039	0.930232558
ATN1	22	1.119087	0.668632324	1.873011022	0.69234169	NA	22	21	1.428571429	1.220930233
ATN1	23	0.985346861	0.368212086	2.636818491	1	NA	5	4	0.324675325	0.23255814
ATN1	24	0.619831726	0.131874225	2.913316594	0.690067609	NA	1	3	0.064935065	0.174418605
ATN1	25	1.116921078	0.116056073	10.74922371	1	NA	0	1	0	0.058139535
ATN1	27	3.352711919	0.13647203	82.36616101	0.472392638	NA	1	0	0.064935065	0
ATXN1	28	0.901468189	0.017874058	45.46504752	1	NA	7	17	0.506879073	1.109660574
ATXN1	29	2.116243264	0.896836841	4.993645832	0.099055143	Â°	267	305	19.33381608	19.90861619
ATXN1	30	1.074895665	0.897456943	1.287416292	0.434735327	NA	580	616	41.99855177	40.20887728
ATXN1	31	0.974524619	0.839247283	1.131607158	0.760337081	NA	152	203	11.00651702	13.25065274
ATXN1	32	1.087778101	0.922319284	1.282919287	0.332436979	NA	215	227	15.56842867	14.81723238
ATXN1	33	1.093101436	0.86786413	1.376794717	0.478947209	NA	47	47	3.40333092	3.067885117
ATXN1	34	1.077897332	0.823786552	1.410392845	0.630178289	NA	30	36	2.172338885	2.349869452
ATXN1	35	1.145259632	0.836430874	1.568114789	0.421268855	NA	26	25	1.8826937	1.631853786
ATXN1	36	1.134490557	0.780055516	1.649970802	0.564483693	NA	41	48	2.968863143	3.133159269
ATXN1	37	2.167208736	0.944321304	4.973724181	0.065808937	Â°	5	3	0.362056481	0.195822454
ATXN1	38	2.330436801	0.841398372	6.454654375	0.129818369	NA	6	1	0.434467777	0.065274151
ATXN1	39	1.3571861	0.389624753	4.727507926	0.743539155	NA	2	2	0.144822592	0.130548303
ATXN1	40	1.554370693	0.306176245	7.891102883	0.672819523	NA	1	1	0.072411296	0.065274151
ATXN1	41	1.850308083	0.244086127	14.02636048	0.606472734	NA	2	0	0.144822592	0
ATXN1	42	0.369525878	0.015040221	9.078947204	1	NA	0	1	0	0.065274151
ATXN2	22	0.890410959	0.017656019	44.90432874	1	NA	1119	1310	73.28094303	76.38483965
ATXN2	23	1.179272387	1.00604218	1.382331071	0.042515231	*	273	301	17.87819253	17.55102041
ATXN2	24	1.500576396	1.151184552	1.956010891	0.00298938	**	9	20	0.589390963	1.166180758
ATXN2	25	1.742720711	1.311237234	2.316190693	0.000141054	***	5	4	0.327439424	0.233236152
ATXN2	26	1.755056934	1.31252139	2.346799728	0.000139253	***	5	3	0.327439424	0.174927114
ATXN2	27	1.744977318	1.297904542	2.346047603	0.000194661	***	47	53	3.077930583	3.090379009

ATXN2	28	3.289912057	2.064834015	5.241836033	1.22E-07	***	1	1	0.065487885	0.058309038
ATXN2	29	3.380238059	2.104711194	5.428777766	8.74E-08	***	8	8	0.523903078	0.466472303
ATXN2	30	4.522954333	2.577529439	7.936714744	5.49E-09	***	17	2	1.113294041	0.116618076
ATXN2	31	3.695408106	1.998709688	6.832428518	8.73E-06	***	28	8	1.833660773	0.466472303
ATXN2	32	3.187107438	1.201857527	8.451628912	0.013369425	*	7	1	0.458415193	0.058309038
ATXN2	33	2.127563892	0.677222224	6.683962738	0.247124284	NA	3	1	0.196463654	0.058309038
ATXN2	34	1.7675346	0.461918037	6.763491167	0.487297321	NA	1	0	0.065487885	0
ATXN2	36	1.445215434	0.356888631	5.852379347	0.713323913	NA	0	2	0	0.116618076
ATXN2	38	3.376107647	0.531277734	21.45413238	0.194475351	NA	1	0	0.065487885	0
ATXN2	43	2.624139062	0.38702914	17.79221538	0.348367022	NA	1	1	0.065487885	0.058309038
ATXN2	52	5.62274664	0.269717006	117.2164864	0.221769353	NA	1	0	0.065487885	0
ATXN2	69	3.37143793	0.137233677	82.82656248	0.471005552	NA	1	0	0.065487885	0
ATXN3	14	0.933482571	0.018509298	47.07848443	1	NA	33	25	2.261823167	1.599488164
ATXN3	15	0.70578049	0.419554367	1.187274258	0.187962752	NA	31	41	2.124742975	2.623160589
ATXN3	18	0.960782182	0.676910312	1.363699718	0.85782894	NA	4	3	0.274160384	0.19193858
ATXN3	19	0.944673047	0.671317962	1.329336046	0.793108232	NA	2	1	0.137080192	0.063979527
ATXN3	20	0.930364915	0.663458755	1.304646096	0.729204081	NA	77	66	5.277587389	4.222648752
ATXN3	21	0.850871204	0.66627819	1.086605892	0.211465012	NA	81	98	5.551747772	6.269993602
ATXN3	22	0.950610741	0.779853775	1.158756692	0.648998868	NA	17	16	1.165181631	1.023672425
ATXN3	23	0.943460399	0.778224075	1.143780504	0.555530417	NA	497	564	34.06442769	36.08445298
ATXN3	24	1.050134433	0.910459731	1.211236797	0.512204883	NA	114	101	7.813570939	6.461932182
ATXN3	25	0.994714103	0.860610909	1.149713693	0.970522317	NA	5	2	0.34270048	0.127959053
ATXN3	26	0.985930761	0.852904764	1.139704579	0.853357542	NA	29	40	1.987662783	2.559181062
ATXN3	27	1.009642869	0.872222933	1.168713506	0.910834116	NA	392	423	26.86771761	27.06333973
ATXN3	28	1.041217182	0.835679704	1.297307107	0.736195026	NA	94	87	6.44276902	5.56621881
ATXN3	29	0.922488703	0.682007139	1.247766128	0.643767159	NA	24	34	1.644962303	2.175303903
ATXN3	30	1.02065548	0.710382093	1.466446888	0.926281107	NA	28	38	1.919122687	2.431222009
ATXN3	31	1.385619281	0.813252867	2.360816506	0.275928674	NA	2	0	0.137080192	0

ATXN3	32	1.295829202	0.754719815	2.224896296	0.405756771	NA	1	0	0.068540096	0
ATXN3	33	1.251028249	0.725566908	2.157032886	0.484533628	NA	2	7	0.137080192	0.447856686
ATXN3	34	1.633653894	0.889434594	3.000586061	0.124538118	NA	6	4	0.411240576	0.255918106
ATXN3	35	1.635611645	0.81978707	3.263317454	0.164883057	NA	1	2	0.068540096	0.127959053
ATXN3	36	1.827490455	0.878699637	3.800754231	0.102206797	NA	3	3	0.205620288	0.19193858
ATXN3	37	2.091790786	0.911570283	4.800056317	0.099129384	Â°	5	4	0.34270048	0.255918106
ATXN3	38	2.751390327	0.923048627	8.201245859	0.06851771	Â°	7	1	0.479780672	0.063979527
ATXN3	39	1.378465917	0.340364252	5.582749284	0.717858613	NA	1	3	0.068540096	0.19193858
ATXN3	40	7.514246481	0.387786547	145.6056191	0.112413958	NA	2	0	0.137080192	0
ATXN3	41	3.215975317	0.130898754	79.01142611	0.482792852	NA	1	0	0.068540096	0
ATXN7	6	0.898571845	0.017817894	45.3157585	1	NA	1	0	0.064892927	0
ATXN7	7	0.299329642	0.012184194	7.353644709	0.473280098	NA	1	1	0.064892927	0.058309038
ATXN7	9	0.538757655	0.071080788	4.083519874	0.605954931	NA	7	11	0.454250487	0.641399417
ATXN7	10	1.183708464	0.507736566	2.759631318	0.827261435	NA	839	959	54.44516548	55.91836735
ATXN7	11	1.06652913	0.928591148	1.22495717	0.376924201	NA	206	234	13.36794289	13.64431487
ATXN7	12	1.091690433	0.940458997	1.267240788	0.25349728	NA	330	338	21.4146658	19.70845481
ATXN7	13	1.017900042	0.810480046	1.278403462	0.907327123	NA	130	144	8.436080467	8.396501458
ATXN7	14	1.07513336	0.633785793	1.823820848	0.891829863	NA	17	19	1.103179753	1.10787172
ATXN7	15	1.231558328	0.510653769	2.97018451	0.653478901	NA	7	6	0.454250487	0.349854227
ATXN7	16	1.113097173	0.252568399	4.905543686	1	NA	1	1	0.064892927	0.058309038
ATXN7	17	1.113023709	0.192559989	6.433432947	1	NA	0	1	0	0.058309038
ATXN7	18	1.856122118	0.244886772	14.06849904	0.605954931	NA	1	0	0.064892927	0
ATXN7	19	1.112950341	0.11564336	10.711021	1	NA	1	0	0.064892927	0
ATXN7	35	0.370742783	0.015091062	9.108054111	1	NA	0	1	0	0.058309038
ATXN8	8	0.884745763	0.017543036	44.62027472	1	NA	40	47	2.787456446	2.897657213
ATXN8	9	1.038843244	0.678927717	1.589558444	0.913373735	NA	3	2	0.209059233	0.123304562
ATXN8	10	1.007034614	0.665872091	1.52299327	1	NA	1	2	0.069686411	0.123304562
ATXN8	11	1.024745555	0.6817153	1.540384165	0.917236856	NA	0	4	0	0.246609125

ATXN8	12	1.107155529	0.741446845	1.653245103	0.682422892	NA	239	271	16.65505226	16.70776819
ATXN8	13	1.023760892	0.857000039	1.222971197	0.820579104	NA	161	177	11.2195122	10.91245376
ATXN8	14	1.003220343	0.860417664	1.169723844	0.968764214	NA	241	272	16.79442509	16.76942047
ATXN8	15	1.001809931	0.869052812	1.154847122	1	NA	256	249	17.83972125	15.351418
ATXN8	16	0.899070565	0.77508982	1.042882852	0.16194086	NA	166	217	11.56794425	13.37854501
ATXN8	17	0.965258913	0.815735142	1.142190304	0.699263521	NA	149	170	10.38327526	10.48088779
ATXN8	18	0.953394124	0.770536012	1.179646819	0.664329391	NA	92	104	6.411149826	6.411837238
ATXN8	19	0.914754551	0.683391509	1.224445836	0.553107981	NA	40	48	2.787456446	2.959309494
ATXN8	20	0.898935736	0.609754604	1.325263396	0.6211322	NA	10	18	0.696864111	1.10974106
ATXN8	21	1.021856464	0.653245674	1.59846544	1	NA	6	10	0.418118467	0.616522811
ATXN8	22	1.133143467	0.687933118	1.866481034	0.700129339	NA	8	8	0.557491289	0.493218249
ATXN8	23	1.132389381	0.636403862	2.01492446	0.766354621	NA	7	5	0.487804878	0.308261406
ATXN8	24	1.008130004	0.517151294	1.96523941	1	NA	3	5	0.209059233	0.308261406
ATXN8	25	1.131458699	0.530327265	2.413978825	0.844415689	NA	2	3	0.139372822	0.184956843
ATXN8	26	1.239783383	0.535419387	2.87076425	0.665098121	NA	2	2	0.139372822	0.123304562
ATXN8	28	1.264942991	0.500027761	3.199983873	0.635387565	NA	1	3	0.069686411	0.184956843
ATXN8	29	1.751154275	0.597702044	5.13055179	0.405111735	NA	1	1	0.069686411	0.061652281
ATXN8	30	1.888344417	0.585562893	6.089601445	0.366655875	NA	1	2	0.069686411	0.123304562
ATXN8	32	2.947394194	0.684230938	12.69619957	0.158225971	NA	1	0	0.069686411	0
ATXN8	35	2.492205523	0.557913531	11.13270789	0.264131546	NA	1	0	0.069686411	0
ATXN8	44	2.037652812	0.433482449	9.578309327	0.428607527	NA	2	0	0.139372822	0
ATXN8	58	1.130449948	0.195557381	6.534742268	1	NA	1	0	0.069686411	0
ATXN8	66	0.677797142	0.08941801	5.137767748	1	NA	1	0	0.069686411	0
ATXN8	69	0.225774991	0.010829664	4.706918651	0.50170795	NA	0	1	0	0.061652281
ATXN8	70	0.376523859	0.015325632	9.250529586	1	NA	0	1	0	0.061652281
ATXN10	11	0.90107652	0.017867594	45.44198351	1	NA	1	0	0.064599483	0
ATXN10	12	0.300164872	0.012218221	7.374146372	0.47397428	NA	31	39	2.002583979	2.27008149
ATXN10	13	1.097428264	0.686348516	1.754719018	0.719835806	NA	233	244	15.05167959	14.20256112

ATXN10	14	0.954731417	0.794635947	1.147081355	0.639239735	NA	583	638	37.66149871	37.13620489
ATXN10	15	0.953939739	0.831115726	1.09491494	0.50426752	NA	258	310	16.66666667	18.04423749
ATXN10	16	1.010233237	0.867638488	1.176263165	0.907275898	NA	173	183	11.17571059	10.65192084
ATXN10	17	0.978439854	0.816833492	1.172019214	0.81798334	NA	130	158	8.397932817	9.196740396
ATXN10	18	1.062336631	0.833365569	1.354218556	0.663922882	NA	69	69	4.457364341	4.016298021
ATXN10	19	1.009966509	0.725980651	1.405040684	1	NA	32	35	2.067183463	2.037252619
ATXN10	20	1.005436455	0.646504989	1.563642171	1	NA	20	16	1.291989664	0.931315483
ATXN10	21	0.772006928	0.424607071	1.403638184	0.448236523	NA	6	13	0.387596899	0.75669383
ATXN10	22	1.027768738	0.474716759	2.225134375	1	NA	9	9	0.581395349	0.523864959
ATXN10	23	0.862827564	0.21307383	3.493959844	1	NA	2	3	0.129198966	0.174621653
ATXN10	24	1.109854604	0.115322078	10.68119183	1	NA	1	0	0.064599483	0
ATXN10	32	0.369712625	0.015049165	9.082724645	1	NA	0	1	0	0.058207218
CACNA1A	3	0.943581616	0.018709719	47.58736774	1	NA	0	1	0	0.063411541
CACNA1A	5	2.832540438	0.115293255	69.59024051	1	NA	0	1	0	0.063411541
CACNA1A	7	4.723897175	0.226590422	98.48255845	0.500258541	NA	4	6	0.268817204	0.380469245
CACNA1A	8	1.786591625	0.568622523	5.613406973	0.389198357	NA	11	14	0.739247312	0.887761573
CACNA1A	9	1.375089433	0.71721994	2.636389263	0.408459772	NA	2	2	0.134408602	0.126823082
CACNA1A	11	1.32610235	0.715098707	2.45916742	0.432222711	NA	214	252	14.38172043	15.97970831
CACNA1A	12	1.15400572	0.953327603	1.396927141	0.144754895	NA	333	313	22.37903226	19.8478123
CACNA1A	13	0.976675076	0.84386367	1.130388993	0.765430435	NA	758	837	50.94086022	53.07545973
CACNA1A	14	1.185434876	0.93957402	1.495630802	0.154748468	NA	146	130	9.811827957	8.243500317
CACNA1A	15	1.010626252	0.549548948	1.858552228	1	NA	10	8	0.672043011	0.507292327
CACNA1A	16	0.823018825	0.366265972	1.849366413	0.679484084	NA	9	9	0.60483871	0.570703868
CACNA1A	17	0.352605042	0.055483405	2.24085591	0.375646741	NA	1	3	0.067204301	0.190234623
CACNA1A	18	0.353039973	0.014369831	8.673534299	1	NA	0	1	0	0.063411541
CNBP	12	0.88281486	0.017504961	44.52235541	1	NA	1	0	0.06844627	0
CNBP	13	0.294070271	0.011969705	7.224683216	0.468870347	NA	4	12	0.273785079	0.725075529
CNBP	14	2.01413281	0.736987244	5.504479225	0.222214002	NA	8	4	0.547570157	0.241691843

CNBP	15	1.079834638	0.524163089	2.224580231	0.85399451	NA	61	63	4.17522245	3.806646526
CNBP	16	0.939182243	0.679141578	1.298791464	0.73994723	NA	156	168	10.67761807	10.1510574
CNBP	17	0.938818931	0.772473182	1.14098587	0.549774851	NA	638	726	43.66872005	43.86706949
CNBP	18	0.974729703	0.844786149	1.124660952	0.742527396	NA	413	489	28.26830938	29.54682779
CNBP	19	1.064568229	0.85755225	1.321558558	0.580664433	NA	93	106	6.36550308	6.404833837
CNBP	20	1.141142234	0.841125212	1.548170925	0.434480629	NA	32	43	2.19028063	2.598187311
CNBP	21	1.428971429	0.957077548	2.133535939	0.082533354	Â°	40	33	2.737850787	1.993957704
CNBP	22	1.532319392	0.712265616	3.296526835	0.324995299	NA	6	5	0.410677618	0.302114804
CNBP	23	1.659764332	0.610480816	4.512537602	0.437785721	NA	6	5	0.410677618	0.302114804
CNBP	25	2.646897497	0.390365822	17.94743793	0.346627478	NA	1	0	0.06844627	0
CNBP	26	1.889345666	0.249256692	14.3210881	0.603054516	NA	0	1	0	0.060422961
CNBP	29	5.67146283	0.272045133	118.2358612	0.219759456	NA	1	0	0.06844627	0
CNBP	40	3.400547758	0.138414373	83.5442503	0.468870347	NA	1	0	0.06844627	0
CSTB	2	0.892992149	0.017707243	45.03439559	1	NA	123	146	8.013029316	8.493310064
CSTB	3	1.064859663	0.829330539	1.367278847	0.65546994	NA	1411	1565	91.9218241	91.04130308
CSTB	4	0.196825944	0.034644795	1.118218563	0.041506332	*	0	6	0	0.34904014
CSTB	5	0.671554252	0.088601165	5.090058514	1	NA	1	1	0.06514658	0.058173357
CSTB	6	0.373059807	0.015185366	9.16498301	1	NA	0	1	0	0.058173357
C9ORF72	2	0.894981143	0.01774672	45.13460715	1	NA	567	572	36.77042802	33.19791062
C9ORF72	3	0.854619812	0.739959072	0.987047867	0.03298969	*	2	1	0.129701686	0.058038305
C9ORF72	4	0.852096981	0.737837431	0.984050462	0.030155494	*	69	65	4.474708171	3.772489843
C9ORF72	5	0.833256564	0.723832573	0.959222515	0.011907642	*	232	316	15.04539559	18.34010447
C9ORF72	6	0.958276464	0.83445569	1.100470393	0.548652134	NA	88	112	5.706874189	6.500290192
C9ORF72	7	0.989139399	0.858618671	1.139500902	0.88520763	NA	271	272	17.57457847	15.78641904
C9ORF72	8	0.885325565	0.748436199	1.047252066	0.158444324	NA	48	66	3.112840467	3.830528149
C9ORF72	9	0.913596648	0.76344945	1.093273217	0.33691313	NA	88	106	5.706874189	6.15206036
C9ORF72	10	0.919664671	0.743890562	1.136972492	0.449583245	NA	66	64	4.280155642	3.714451538
C9ORF72	11	0.820323187	0.635372432	1.059111313	0.136474369	NA	28	34	1.815823606	1.97330238

C9ORF72	12	0.796748872	0.595984804	1.065142534	0.123816669	NA	29	44	1.880674449	2.553685432
C9ORF72	13	0.846219618	0.590779577	1.212106292	0.36291481	NA	17	29	1.102464332	1.683110853
C9ORF72	14	0.985504132	0.631787329	1.537255258	1	NA	8	15	0.518806744	0.870574579
C9ORF72	15	1.202432652	0.711918704	2.030912059	0.502813296	NA	9	15	0.583657588	0.870574579
C9ORF72	16	1.843586207	0.909342002	3.737658764	0.108145057	NA	10	3	0.648508431	0.174114916
C9ORF72	17	1.236524427	0.51271645	2.98214083	0.652838975	NA	4	5	0.259403372	0.290191526
C9ORF72	18	1.616480457	0.484966669	5.388017849	0.531383198	NA	3	4	0.194552529	0.232153221
C9ORF72	19	7.836635271	0.404449278	151.8431501	0.105234302	NA	2	0	0.129701686	0
C9ORF72	31	3.354200454	0.136532773	82.40263819	0.472281776	NA	1	0	0.064850843	0
DIP2B	6	0.893364242	0.017714661	45.05306001	1	NA	1	0	0.064892927	0
DIP2B	7	0.2975949	0.012113606	7.311012419	0.471830986	NA	588	652	38.15704088	37.79710145
DIP2B	8	0.98210889	0.852543627	1.131364825	0.828489729	NA	162	159	10.51265412	9.217391304
DIP2B	9	0.933421293	0.813508473	1.071009509	0.32620804	NA	9	13	0.58403634	0.753623188
DIP2B	10	0.939841662	0.819159442	1.078303324	0.380824792	NA	4	5	0.259571707	0.289855072
DIP2B	11	0.940998659	0.820184162	1.079609332	0.400090294	NA	12	5	0.77871512	0.289855072
DIP2B	12	0.922802428	0.804335602	1.058717678	0.261981046	NA	63	66	4.08825438	3.826086957
DIP2B	13	0.912834967	0.795399338	1.047609216	0.206030424	NA	79	105	5.126541207	6.086956522
DIP2B	14	0.947338935	0.823882507	1.089294955	0.454606439	NA	137	171	8.890330954	9.913043478
DIP2B	15	0.986844765	0.851407082	1.143827215	0.880246876	NA	87	110	5.64568462	6.376811594
DIP2B	16	1.023555712	0.874680192	1.197770688	0.778899941	NA	116	131	7.527579494	7.594202899
DIP2B	17	1.035065284	0.866091205	1.237006144	0.715861943	NA	94	100	6.099935107	5.797101449
DIP2B	18	1.019752036	0.826655688	1.257953256	0.87225488	NA	54	58	3.50421804	3.362318841
DIP2B	19	1.00851292	0.790951976	1.285916643	0.950571298	NA	37	38	2.401038287	2.202898551
DIP2B	20	0.97866913	0.739938781	1.294422309	0.886626999	NA	30	32	1.9467878	1.855072464
DIP2B	21	0.950259976	0.683324731	1.321471301	0.800632457	NA	20	21	1.297858533	1.217391304
DIP2B	22	0.90954641	0.618559884	1.337420503	0.693906068	NA	9	16	0.58403634	0.927536232
DIP2B	23	1.016830187	0.657264997	1.573100095	1	NA	15	20	0.9733939	1.15942029
DIP2B	24	1.169651933	0.661374918	2.06854782	0.659627289	NA	14	8	0.908500973	0.463768116

DIP2B	25	0.756595368	0.344606238	1.661132295	0.548896372	NA	8	10	0.519143413	0.579710145
DIP2B	26	0.507986654	0.113732064	2.268933068	0.457823966	NA	2	3	0.129785853	0.173913043
DIP2B	27	0.223613364	0.010726553	4.661603454	0.501434333	NA	0	2	0	0.115942029
DMPK	5	0.894189072	0.017731046	45.09458087	1	NA	212	254	13.71280724	14.69057259
DMPK	6	1.083198916	0.8898607	1.318543331	0.452403077	NA	3	2	0.194049159	0.1156738
DMPK	7	1.07555129	0.884387805	1.308035424	0.485114501	NA	1	0	0.064683053	0
DMPK	8	1.069779343	0.879822034	1.30074924	0.51722799	NA	18	24	1.164294955	1.388085599
DMPK	9	1.083106372	0.896737805	1.308207825	0.41371652	NA	1	3	0.064683053	0.1735107
DMPK	10	1.091470516	0.904158348	1.317587667	0.362674926	NA	16	14	1.034928849	0.809716599
DMPK	11	1.069773332	0.890034067	1.285810313	0.482094262	NA	162	192	10.47865459	11.10468479
DMPK	12	1.081687817	0.92757673	1.261403499	0.327434498	NA	205	223	13.26002587	12.89762869
DMPK	13	1.051217676	0.914159803	1.208824321	0.498378555	NA	427	413	27.61966365	23.88663968
DMPK	14	0.893091785	0.772337065	1.032726476	0.129243374	NA	168	205	10.86675291	11.85656449
DMPK	15	0.91528038	0.776147248	1.079354692	0.293957882	NA	17	19	1.099611902	1.098901099
DMPK	16	0.912242547	0.771216833	1.079056408	0.285189367	NA	21	29	1.358344114	1.677270098
DMPK	17	0.925993786	0.779210809	1.100426845	0.403367921	NA	6	9	0.388098318	0.520532099
DMPK	18	0.93263775	0.783616523	1.10999851	0.450676573	NA	2	5	0.129366106	0.2891845
DMPK	19	0.941805243	0.79076668	1.121692578	0.504198129	NA	30	21	1.940491591	1.214574899
DMPK	20	0.891821597	0.744182845	1.068750465	0.231024484	NA	40	48	2.587322122	2.776171197
DMPK	21	0.890482624	0.733732766	1.080719493	0.257085352	NA	66	89	4.269081501	5.147484095
DMPK	22	0.937756557	0.746562121	1.177915858	0.600980313	NA	31	30	2.005174644	1.735106998
DMPK	23	0.893035202	0.695217945	1.147139365	0.407359207	NA	18	26	1.164294955	1.503759398
DMPK	24	0.923039086	0.703671985	1.210793057	0.580334335	NA	19	21	1.228978008	1.214574899
DMPK	25	0.905922155	0.672842755	1.219742569	0.544471522	NA	24	20	1.552393273	1.156737999
DMPK	26	0.798787879	0.568182819	1.122987274	0.197075514	NA	15	15	0.970245796	0.867553499
DMPK	27	0.72946324	0.496439023	1.071867025	0.121458622	NA	14	23	0.905562743	1.330248699
DMPK	28	0.761774044	0.478050259	1.213888462	0.289218745	NA	8	11	0.517464424	0.636205899
DMPK	29	0.747419022	0.436124106	1.280908774	0.340517113	NA	6	7	0.388098318	0.4048583

DMPK	30	0.693021765	0.373362856	1.286360332	0.276915511	NA	3	7	0.194049159	0.4048583
DMPK	31	0.772215395	0.384482275	1.550959966	0.482015573	NA	3	9	0.194049159	0.520532099
DMPK	32	1.119101855	0.474425579	2.639800671	0.825866885	NA	2	2	0.129366106	0.1156738
DMPK	33	1.118947026	0.431350162	2.902612673	1	NA	2	2	0.129366106	0.1156738
DMPK	34	1.1187926	0.376389007	3.325540485	1	NA	1	1	0.064683053	0.0578369
DMPK	35	1.118715537	0.3424128	3.655016552	1	NA	1	1	0.064683053	0.0578369
DMPK	36	1.118638574	0.302293173	4.139531983	1	NA	1	0	0.064683053	0
DMPK	37	0.869488536	0.214719595	3.520919059	1	NA	0	1	0	0.0578369
DMPK	40	1.11856171	0.253810584	4.929582845	1	NA	0	1	0	0.0578369
DMPK	45	1.566893424	0.308698437	7.953247271	0.671875077	NA	2	0	0.129366106	0
DMPK	46	0.670656745	0.088483425	5.083217237	1	NA	0	1	0	0.0578369
DMPK	63	1.118408282	0.116211152	10.76348586	1	NA	1	0	0.064683053	0
DMPK	67	0.372561698	0.015165163	9.152702026	1	NA	0	1	0	0.0578369
FMR1	-9	0.891255962	0.017671806	44.94940651	1	NA	1	0	0.071377587	0
FMR1	-4	0.296873344	0.012083356	7.293816667	0.471241171	NA	2	0	0.142755175	0
FMR1	-3	0.127049739	0.006556531	2.46191729	0.104529174	NA	1	0	0.071377587	0
FMR1	0	0.098745805	0.005311451	1.835794709	0.049202621	*	1	0	0.071377587	0
FMR1	2	0.08073421	0.004460022	1.461430659	0.02315125	*	1	0	0.071377587	0
FMR1	3	0.068264645	0.003842009	1.212923198	0.0108892	*	0	1	0	0.063613232
FMR1	4	0.204924252	0.034666261	1.211378092	0.056988845	Â°	1	1	0.071377587	0.063613232
FMR1	5	0.295977926	0.070604061	1.240763373	0.093334706	Â°	4	0	0.28551035	0
FMR1	6	0.192475396	0.048927175	0.757182033	0.009463218	**	12	8	0.856531049	0.508905852
FMR1	7	0.39419234	0.189745966	0.8189244	0.01290499	*	34	21	2.426837973	1.335877863
FMR1	8	0.477815228	0.307550357	0.742341496	0.001035163	**	15	14	1.070663812	0.890585242
FMR1	9	0.546236244	0.374328029	0.797092419	0.001723577	**	19	29	1.356174161	1.844783715
FMR1	10	0.712058142	0.51980081	0.975425177	0.036847766	*	41	27	2.926481085	1.717557252
FMR1	11	0.66087999	0.504897007	0.865052388	0.002598709	**	37	49	2.640970735	3.117048346
FMR1	12	0.769310129	0.609780617	0.970575412	0.02807876	*	50	50	3.568879372	3.180661578

FMR1	13	0.786988976	0.64005349	0.967656075	0.023275234	*	163	172	11.63454675	10.94147583
FMR1	14	0.82702741	0.701020041	0.975684426	0.025248962	*	48	31	3.426124197	1.972010178
FMR1	15	0.778597423	0.663304221	0.913930484	0.002458765	**	44	41	3.140613847	2.608142494
FMR1	16	0.769924081	0.658824056	0.89975933	0.001106372	**	55	58	3.925767309	3.68956743
FMR1	17	0.773479603	0.664875131	0.899824144	0.000902206	***	56	59	3.997144897	3.753180662
FMR1	18	0.77412869	0.667628637	0.897617621	0.000778191	***	103	118	7.351891506	7.506361323
FMR1	19	0.78810655	0.681984246	0.91074235	0.001339406	**	215	283	15.3461813	18.00254453
FMR1	20	0.869865438	0.749346018	1.009768335	0.068282556	Â°	59	59	4.211277659	3.753180662
FMR1	21	0.845767505	0.725660691	0.985753648	0.032129585	*	85	74	6.067094932	4.707379135
FMR1	22	0.776428045	0.660690312	0.912440364	0.002138938	**	73	105	5.210563883	6.679389313
FMR1	23	0.809659518	0.679745503	0.964402901	0.018675006	*	30	20	2.141327623	1.272264631
FMR1	24	0.756885227	0.631748973	0.906808356	0.002558822	**	5	17	0.356887937	1.081424936
FMR1	25	0.786863965	0.655320199	0.944812781	0.010802905	*	4	6	0.28551035	0.381679389
FMR1	26	0.789280477	0.656546818	0.948848817	0.011807825	*	6	4	0.428265525	0.254452926
FMR1	27	0.777693427	0.646002117	0.936230781	0.008521358	**	56	85	3.997144897	5.407124682
FMR1	28	0.81872089	0.664938138	1.00806956	0.064802957	Â°	109	178	7.780157031	11.32315522
FMR1	29	1.298768884	0.9176914	1.838091338	0.155008217	NA	48	41	3.426124197	2.608142494
FMR1	30	1.230196287	0.682327971	2.217969904	0.544121331	NA	8	10	0.5710207	0.636132316
FMR1	31	1.517944778	0.7054738	3.266111866	0.325987965	NA	2	1	0.142755175	0.063613232
FMR1	32	1.446833685	0.643812498	3.251455535	0.40628413	NA	2	0	0.142755175	0
FMR1	33	1.230715227	0.53145817	2.850007877	0.665959433	NA	2	0	0.142755175	0
FMR1	34	1.015217577	0.420840731	2.449066009	1	NA	0	1	0	0.063613232
FMR1	35	1.122800718	0.455491274	2.767740074	0.817685455	NA	0	1	0	0.063613232
FMR1	36	1.255697539	0.496335149	3.176837894	0.636621993	NA	0	2	0	0.127226463
FMR1	38	1.644165171	0.604671513	4.470657292	0.437985486	NA	1	1	0.071377587	0.063613232
FMR1	39	1.738428418	0.59331944	5.093602465	0.405513841	NA	0	1	0	0.063613232
FMR1	40	2.126101344	0.676628642	6.680631948	0.247122667	NA	0	1	0	0.063613232
FMR1	41	2.735301656	0.78611091	9.517582122	0.128863789	NA	3	1	0.214132762	0.063613232

FMR1	42	2.474113856	0.553837408	11.05241228	0.265247528	NA	1	0	0.071377587	0
FMR1	45	2.022826476	0.430308782	9.509048199	0.429768316	NA	1	0	0.071377587	0
FMR1	51	1.572184483	0.309695055	7.98128356	0.67146508	NA	1	0	0.071377587	0
FMR1	63	1.122186495	0.194120103	6.487233976	1	NA	0	1	0	0.063613232
FMR1	72	1.871501727	0.246888234	14.18665709	0.60459537	NA	1	0	0.071377587	0
FMR1	75	1.12209925	0.116582329	10.80015071	1	NA	0	1	0	0.063613232
FMR1	79	3.368439843	0.137102431	82.75846644	0.471241171	NA	1	0	0.071377587	0
FRA10C1	6	0.892680082	0.017701022	45.0187421	1	NA	3	12	0.196078431	0.700116686
FRA10C1	7	3.204321376	0.97745082	10.50454434	0.039047568	*	181	260	11.83006536	15.16919487
FRA10C1	8	1.3786711	1.127535551	1.685741972	0.001699172	**	573	628	37.45098039	36.63943991
FRA10C1	9	1.128938566	0.98350059	1.295883601	0.084915229	Â°	466	493	30.45751634	28.76312719
FRA10C1	10	1.089349259	0.915212131	1.296619403	0.350020877	NA	4	7	0.261437908	0.4084014
FRA10C1	11	1.101031282	0.923951283	1.312049569	0.282644668	NA	1	3	0.065359477	0.175029172
FRA10C1	12	1.109441952	0.930608764	1.322641149	0.261436355	NA	11	10	0.718954248	0.583430572
FRA10C1	13	1.102555663	0.922637098	1.317559193	0.295092407	NA	27	27	1.764705882	1.575262544
FRA10C1	14	1.095951653	0.910864884	1.318647855	0.344462346	NA	42	39	2.745098039	2.27537923
FRA10C1	15	1.068268313	0.876582015	1.301871551	0.5441585	NA	16	36	1.045751634	2.100350058
FRA10C1	16	1.184352917	0.961868525	1.45829892	0.122781056	NA	67	71	4.379084967	4.14235706
FRA10C1	17	1.23773578	0.963725581	1.589653625	0.096516042	Â°	21	22	1.37254902	1.283547258
FRA10C1	18	1.267072168	0.966010502	1.6619611	0.095857685	Â°	11	16	0.718954248	0.933488915
FRA10C1	19	1.355570563	1.015819103	1.808955498	0.039377021	*	3	9	0.196078431	0.525087515
FRA10C1	20	1.468270403	1.08964557	1.978457984	0.01222474	*	22	21	1.437908497	1.225204201
FRA10C1	21	1.557567389	1.109550604	2.18648538	0.01242527	*	21	21	1.37254902	1.225204201
FRA10C1	22	1.775222779	1.183152456	2.663575516	0.005796646	**	14	5	0.91503268	0.291715286
FRA10C1	23	1.559644007	1.000495949	2.431283636	0.054990114	Â°	9	10	0.588235294	0.583430572
FRA10C1	24	1.779899497	1.067432662	2.967908266	0.028561746	*	7	7	0.45751634	0.4084014
FRA10C1	25	2.037679226	1.131267226	3.67034113	0.018981855	*	9	5	0.588235294	0.291715286
FRA10C1	26	2.031488233	1.013977773	4.070054151	0.055925151	Â°	8	3	0.522875817	0.175029172

FRA10C1	27	1.716539122	0.755234212	3.901447405	0.212103059	NA	4	5	0.261437908	0.291715286
FRA10C1	28	2.624904089	0.868099277	7.937020176	0.104639192	NA	4	1	0.261437908	0.058343057
FRA10C1	29	2.084945884	0.567476238	7.660231475	0.321723234	NA	2	1	0.130718954	0.058343057
FRA10C1	30	2.019325254	0.42962437	9.491255068	0.430066051	NA	1	2	0.065359477	0.116686114
FRA10C1	31	7.85695581	0.405495881	152.2376861	0.104804871	NA	1	0	0.065359477	0
FRA10C1	32	5.608439647	0.269030876	116.9181609	0.222367402	NA	1	0	0.065359477	0
FRA10C1	140	3.362863681	0.136884742	82.61587093	0.471639951	NA	1	0	0.065359477	0
FRA11A	8	0.889309642	0.01763418	44.84879015	1	NA	126	117	8.256880734	6.818181818
FRA11A	9	0.813291456	0.62635898	1.056012628	0.124684287	NA	929	1104	60.87811271	64.33566434
FRA11A	10	1.101217925	0.947243373	1.280221063	0.218390638	NA	408	439	26.73656619	25.58275058
FRA11A	11	1.275179818	0.884978288	1.837427642	0.223727545	NA	29	26	1.900393185	1.515151515
FRA11A	12	1.278177774	0.781407374	2.090764021	0.376297631	NA	21	21	1.376146789	1.223776224
FRA11A	13	1.603202754	0.697047871	3.687349434	0.288732547	NA	4	5	0.262123198	0.291375291
FRA11A	14	2.382390628	0.774406565	7.32920582	0.162294023	NA	2	0	0.131061599	0
FRA11A	15	1.878359109	0.582538989	6.056646865	0.367163889	NA	1	1	0.065530799	0.058275058
FRA11A	17	2.092873585	0.569633106	7.689370227	0.321243298	NA	1	0	0.065530799	0
FRA11A	18	1.769729121	0.462491481	6.771889406	0.487144505	NA	0	2	0	0.116550117
FRA11A	19	4.134187753	0.678787259	25.17947729	0.105954589	NA	1	0	0.065530799	0
FRA11A	22	3.380295567	0.531936712	21.48074736	0.194255367	NA	0	1	0	0.058275058
FRA11A	23	10.14679803	0.545827673	188.6264022	0.04898479	*	2	0	0.131061599	0
FRA11A	24	5.629714661	0.270051239	117.3617543	0.221478889	NA	1	0	0.065530799	0
FRA11A	64	3.375614553	0.137403678	82.92917459	0.470697101	NA	1	0	0.065530799	0
FXN	8	0.93887297	0.01861627	47.35011152	1	NA	80	95	5.427408412	6.050955414
FXN	9	1.12120957	0.82608899	1.521762081	0.483708579	NA	128	139	8.68385346	8.853503185
FXN	10	1.065793381	0.871047106	1.304080483	0.537324923	NA	748	744	50.74626866	47.38853503
FXN	11	0.895233369	0.772257001	1.037792838	0.152232817	NA	10	12	0.678426052	0.76433121
FXN	12	0.897720938	0.773904625	1.041346514	0.161515547	NA	2	3	0.13568521	0.191082803
FXN	13	0.89969583	0.775491469	1.043793024	0.172686554	NA	25	20	1.696065129	1.27388535

FXN	14	0.881063685	0.758272017	1.023739766	0.100099688	NA	4	1	0.271370421	0.063694268
FXN	15	0.87266459	0.750893539	1.014183034	0.07816227	Â°	11	4	0.746268657	0.25477707
FXN	16	0.852716166	0.733283497	0.991601287	0.041611298	*	18	21	1.221166893	1.337579618
FXN	17	0.854524893	0.733719898	0.995220103	0.043601445	*	73	73	4.952510176	4.649681529
FXN	18	0.828658114	0.706232285	0.972306542	0.022716267	*	82	89	5.563093623	5.668789809
FXN	19	0.807762546	0.679428709	0.960336709	0.01565386	*	70	82	4.748982361	5.222929936
FXN	20	0.797268669	0.658422078	0.965394922	0.022415162	*	40	51	2.713704206	3.248407643
FXN	21	0.801731765	0.651536068	0.986551405	0.040015184	*	31	47	2.10312076	2.993630573
FXN	22	0.840651201	0.670494923	1.053989251	0.135221114	NA	35	32	2.37449118	2.038216561
FXN	23	0.776807273	0.604816957	0.997706053	0.049526561	*	25	27	1.696065129	1.719745223
FXN	24	0.73854905	0.560179235	0.973714599	0.030818956	*	19	32	1.289009498	2.038216561
FXN	25	0.783995031	0.574539527	1.069810133	0.134552463	NA	16	25	1.085481682	1.592356688
FXN	26	0.826464625	0.580866249	1.17590543	0.323905457	NA	17	17	1.153324288	1.082802548
FXN	27	0.756789853	0.502267178	1.140291277	0.212879565	NA	13	20	0.881953867	1.27388535
FXN	28	0.798708212	0.484391951	1.316980611	0.444967148	NA	10	10	0.678426052	0.636942675
FXN	29	0.69979611	0.381013269	1.285295381	0.282764514	NA	2	12	0.13568521	0.76433121
FXN	30	1.140010159	0.555101701	2.341234337	0.852336545	NA	5	3	0.339213026	0.191082803
FXN	31	0.97227129	0.419888378	2.251339909	1	NA	6	4	0.407055631	0.25477707
FXN	32	0.637946277	0.197822281	2.057278124	0.550334163	NA	0	1	0	0.063694268
FXN	33	0.736562655	0.220948455	2.45543489	0.754727725	NA	0	1	0	0.063694268
FXN	34	0.871039535	0.250084274	3.033816794	1	NA	2	0	0.13568521	0
FXN	36	0.483253589	0.108182536	2.15870361	0.454219236	NA	1	0	0.067842605	0
FXN	38	0.289755375	0.047570675	1.764914568	0.219687309	NA	0	1	0	0.063694268
FXN	46	0.354371677	0.055760856	2.252104717	0.375833298	NA	0	1	0	0.063694268
FXN	53	0.455911581	0.067236285	3.091416631	0.625499979	NA	0	1	0	0.063694268
FXN	58	0.638683407	0.084257791	4.841291079	1	NA	0	1	0	0.063694268
FXN	91	1.065151001	0.110668843	10.251726	1	NA	0	1	0	0.063694268
FXN	97	3.197488972	0.130147078	78.55678252	0.484231275	NA	1	0	0.067842605	0

GIPC1	5	0.893547428	0.017718015	45.06300476	1	NA	1	0	0.066577896	0
GIPC1	6	0.297650907	0.012115653	7.312528849	0.471881872	NA	1	0	0.066577896	0
GIPC1	8	0.178471603	0.008560965	3.720621962	0.222594183	NA	13	7	0.86551265	0.416418798
GIPC1	9	0.429834616	0.179252378	1.030713227	0.054679768	Â°	142	147	9.454061252	8.744794765
GIPC1	10	0.864072948	0.683984505	1.091577448	0.23192184	NA	609	678	40.54593875	40.33313504
GIPC1	11	0.941632525	0.81930653	1.082222318	0.414143346	NA	519	607	34.5539281	36.10945866
GIPC1	12	1.004354678	0.82403119	1.224138517	1	NA	183	196	12.18375499	11.65972635
GIPC1	13	0.826309489	0.528981228	1.290759169	0.42828977	NA	11	24	0.732356858	1.427721594
GIPC1	14	1.171514401	0.654394959	2.097274698	0.653011219	NA	5	6	0.332889481	0.356930399
GIPC1	15	1.257917675	0.645387244	2.451794471	0.605066682	NA	1	0	0.066577896	0
GIPC1	16	1.1891211	0.604726814	2.338260777	0.726565249	NA	2	5	0.133155792	0.297441999
GIPC1	17	1.513642674	0.703634462	3.256114175	0.326471298	NA	11	8	0.732356858	0.475907198
GIPC1	18	1.44015444	0.355627718	5.832067371	0.713621548	NA	2	2	0.133155792	0.1189768
GIPC1	20	1.866600022	0.246262472	14.14830129	0.605026735	NA	1	0	0.066577896	0
GIPC1	25	1.119214119	0.116291383	10.77156543	1	NA	0	1	0	0.0594884
GIPC1	38	3.35964036	0.136751597	82.53785384	0.471881872	NA	1	0	0.066577896	0
HTT	12	0.901715615	0.017880277	45.47418745	1	NA	0	1	0	0.058173357
HTT	15	2.706720978	0.11017725	66.49592785	1	NA	0	2	0	0.116346713
HTT	16	6.323041072	0.326333053	122.5154733	0.25177561	NA	4	10	0.258064516	0.581733566
HTT	17	2.718722531	0.933379301	7.919023052	0.053519741	Â°	77	118	4.967741935	6.864456079
HTT	18	1.492624326	1.122164827	1.985383365	0.005529515	**	132	162	8.516129032	9.42408377
HTT	19	1.288938633	1.064370386	1.560887847	0.01023107	*	109	144	7.032258065	8.376963351
HTT	20	1.299469604	1.10318638	1.530676305	0.001854018	**	281	282	18.12903226	16.40488656
HTT	21	1.129056433	0.981558235	1.298719102	0.093508432	Â°	299	292	19.29032258	16.98662013
HTT	22	1.025861668	0.892478489	1.179179302	0.722378262	NA	213	228	13.74193548	13.26352531
HTT	23	1.007097978	0.864361211	1.173405659	0.937836825	NA	138	141	8.903225806	8.202443281
HTT	24	0.965070997	0.811413451	1.147826707	0.690757763	NA	90	85	5.806451613	4.944735311
HTT	25	0.889361789	0.729817325	1.083784072	0.247540003	NA	40	50	2.580645161	2.90866783

HTT	26	0.897218617	0.722293282	1.114507452	0.347954504	NA	31	53	2	3.0831879
HTT	27	0.999083047	0.784171476	1.272893704	1	NA	33	27	2.129032258	1.570680628
HTT	28	0.916324365	0.699328638	1.200652019	0.535872637	NA	20	42	1.290322581	2.443280977
HTT	29	1.129368644	0.826423007	1.54336644	0.471889424	NA	31	26	2	1.512507272
HTT	30	1.031518244	0.703899945	1.511620928	0.92204946	NA	10	20	0.64516129	1.163467132
HTT	31	1.299462861	0.83045126	2.033356812	0.253745683	NA	12	10	0.774193548	0.581733566
HTT	32	1.281895851	0.758247297	2.167178149	0.418299627	NA	12	7	0.774193548	0.407213496
HTT	33	1.05272096	0.555167676	1.996192264	1	NA	5	8	0.322580645	0.465386853
HTT	34	1.30447508	0.592305804	2.872933578	0.54342873	NA	6	4	0.387096774	0.232693426
HTT	35	1.109491416	0.402293672	3.059882086	1	NA	3	1	0.193548387	0.058173357
HTT	36	0.767067075	0.230131612	2.556762594	0.756813139	NA	1	2	0.064516129	0.116346713
HTT	37	0.862215042	0.212922913	3.49147384	1	NA	1	2	0.064516129	0.116346713
HTT	38	1.109137875	0.191888794	6.410936246	1	NA	0	1	0	0.058173357
HTT	40	1.849639436	0.24403267	14.01929524	0.6065352	NA	0	1	0	0.058173357
HTT	41	5.552147239	0.266332298	115.7439002	0.224742986	NA	1	0	0.064516129	0
HTT	42	3.329138432	0.135512786	81.7868414	0.474151117	NA	1	0	0.064516129	0
JPH3	11	0.898807793	0.017822599	45.32759017	1	NA	1	0	0.064724919	0
JPH3	13	0.299408743	0.012187436	7.355574592	0.473345588	NA	16	16	1.035598706	0.930773706
JPH3	14	0.845997736	0.430271153	1.663397986	0.726752745	NA	474	485	30.67961165	28.21407795
JPH3	15	0.883015782	0.760597842	1.025136845	0.109444636	NA	175	164	11.32686084	9.540430483
JPH3	16	0.832793191	0.724131905	0.957759897	0.011312938	*	622	764	40.25889968	44.44444444
JPH3	17	0.983401425	0.818225256	1.181921918	0.888051048	NA	218	264	14.11003236	15.35776614
JPH3	18	1.675588175	1.019317083	2.75438897	0.044407966	*	31	21	2.006472492	1.221640489
JPH3	19	1.723370288	0.588308302	5.048382187	0.406205417	NA	2	1	0.129449838	0.058173357
JPH3	20	1.609577424	0.482895595	5.36500956	0.531803519	NA	2	0	0.129449838	0
JPH3	22	1.112877068	0.300734546	4.118234445	1	NA	2	1	0.129449838	0.058173357
JPH3	24	0.794344949	0.156495627	4.031958658	1	NA	1	0	0.064724919	0
JPH3	25	0.476298386	0.070248964	3.229373617	0.626900998	NA	0	1	0	0.058173357

JPH3	26	0.667206216	0.088027861	5.057082251	1	NA	1	0	0.064724919	0
JPH3	28	0.222258169	0.010661543	4.633353119	0.501268118	NA	0	1	0	0.058173357
JPH3	29	0.370645961	0.015087149	9.105658901	1	NA	0	1	0	0.058173357
LRP12	4	0.899564586	0.017837629	45.36569622	1	NA	0	3	0	0.174216028
LRP12	5	6.307938354	0.325553726	122.222795	0.25186922	NA	6	10	0.387346675	0.580720093
LRP12	6	1.875244673	0.733805265	4.792201356	0.248749933	NA	7	2	0.451904454	0.116144019
LRP12	7	1.03316523	0.496444474	2.150150618	1	NA	2	0	0.129115558	0
LRP12	8	0.898682284	0.442973143	1.823202738	0.854971938	NA	2	6	0.129115558	0.348432056
LRP12	9	1.106544645	0.586518007	2.087644433	0.870485108	NA	52	61	3.357004519	3.542392567
LRP12	10	1.071275866	0.772660187	1.485299748	0.738669073	NA	178	235	11.4912847	13.64692218
LRP12	11	1.188818099	0.990511604	1.426826771	0.063857125	Â°	284	269	18.3344093	15.6213705
LRP12	12	0.988909026	0.855709203	1.142842753	0.882654734	NA	78	96	5.035506779	5.574912892
LRP12	13	1.012151822	0.879582727	1.164701487	0.886071473	NA	491	587	31.69786959	34.08826945
LRP12	14	1.143391773	0.980777509	1.332967706	0.092030559	Â°	346	340	22.33699161	19.74448316
LRP12	15	1.014651803	0.770167883	1.336745278	0.943850026	NA	79	83	5.100064558	4.819976771
LRP12	16	0.891215457	0.521316144	1.523576432	0.682846405	NA	21	21	1.355713363	1.219512195
LRP12	17	0.408205285	0.119616535	1.39304783	0.152016352	NA	2	2	0.129115558	0.116144019
LRP12	18	0.221569261	0.03833304	1.280695115	0.073040079	Â°	0	1	0	0.058072009
LRP12	19	0.255805867	0.043279539	1.511953308	0.128271137	NA	0	2	0	0.116144019
LRP12	22	0.369927887	0.058214047	2.350749485	0.378113504	NA	1	0	0.064557779	0
LRP12	23	0.123229716	0.006628961	2.290790913	0.126869593	NA	0	2	0	0.116144019
LRP12	25	0.222071636	0.010652613	4.629456658	0.501246147	NA	0	1	0	0.058072009
LRP12	26	0.370334517	0.015074495	9.097992982	1	NA	0	1	0	0.058072009
NIPA1	7	0.899912715	0.017844509	45.38331046	1	NA	42	56	2.716688228	3.259604191
NIPA1	8	1.203067669	0.803189594	1.80203009	0.411485644	NA	1240	1423	80.20698577	82.82887078
NIPA1	9	1.274024425	1.053410824	1.540840667	0.013264295	*	213	202	13.7774903	11.75785797
NIPA1	10	1.544139084	1.008012536	2.365412557	0.051027805	Â°	48	34	3.104786546	1.979045402
NIPA1	11	1.11143505	0.252192275	4.898198693	1	NA	2	3	0.129366106	0.174621653

NIPA1	15	3.335813653	0.135784337	81.95093011	0.473651961	NA	1	0	0.064683053	0
NOP56	3	0.892205158	0.01769167	44.99462505	1	NA	48	53	3.118908382	3.072463768
NOP56	4	0.98371473	0.66282525	1.459954446	1	NA	153	195	9.941520468	11.30434783
NOP56	5	1.117229073	0.914722805	1.364567271	0.285336898	NA	42	51	2.729044834	2.956521739
NOP56	6	1.117888803	0.928995865	1.345189385	0.239277837	NA	934	991	60.68875893	57.44927536
NOP56	7	0.912256454	0.777232917	1.070736737	0.270585848	NA	107	118	6.952566602	6.84057971
NOP56	8	0.882408977	0.736125626	1.057761847	0.181247683	NA	213	273	13.84015595	15.82608696
NOP56	9	1.07240532	0.700329291	1.642160602	0.826864511	NA	18	26	1.169590643	1.507246377
NOP56	10	1.492104113	0.812643374	2.739670015	0.214705855	NA	20	13	1.299545159	0.753623188
NOP56	11	0.916757941	0.263245474	3.192628955	1	NA	2	4	0.129954516	0.231884058
NOP56	12	1.869376694	0.246636103	14.16892816	0.604783512	NA	1	1	0.064977258	0.057971014
NOP56	14	3.364640884	0.136957702	82.6591576	0.471507353	NA	1	0	0.064977258	0
NOTCH2NCL	6	0.891196256	0.017671558	44.94401497	1	NA	1	0	0.065659882	0
NOTCH2NCL	8	0.29687043	0.012084022	7.293271684	0.471225248	NA	1	0	0.065659882	0
NOTCH2NCL	9	0.178005265	0.008538697	3.710855702	0.221976115	NA	59	97	3.873933027	5.675833821
NOTCH2NCL	10	1.43788996	1.0369244	1.993903835	0.033333277	*	29	30	1.904136573	1.755412522
NOTCH2NCL	11	1.276190726	0.965757153	1.686410256	0.091087734	Â°	3	16	0.196979645	0.936220012
NOTCH2NCL	12	1.401515009	1.069699273	1.836258442	0.014683387	*	35	28	2.298095863	1.63838502
NOTCH2NCL	13	1.21057956	0.952383674	1.538773618	0.128374587	NA	91	117	5.975049245	6.846108836
NOTCH2NCL	14	1.206169972	0.996498725	1.459957715	0.058764104	Â°	166	172	10.89954038	10.06436513
NOTCH2NCL	15	1.088433817	0.929971448	1.273897362	0.297341216	NA	220	254	14.445174	14.86249269
NOTCH2NCL	16	1.08874452	0.94596075	1.25308014	0.237049129	NA	298	285	19.56664478	16.67641896
NOTCH2NCL	17	0.966122831	0.839626859	1.111676352	0.641685208	NA	173	225	11.35915955	13.16559391
NOTCH2NCL	18	1.04845202	0.900314682	1.220963802	0.559663211	NA	124	134	8.141825345	7.840842598
NOTCH2NCL	19	1.041469208	0.878826517	1.234211861	0.664545875	NA	72	73	4.72751149	4.271503803
NOTCH2NCL	20	1.015889218	0.843069332	1.22413527	0.886443138	NA	63	71	4.136572554	4.154476302
NOTCH2NCL	21	1.022030466	0.82799492	1.261537055	0.871823655	NA	90	86	5.909389363	5.032182563
NOTCH2NCL	22	0.903399717	0.686063283	1.189585667	0.483805646	NA	62	76	4.070912672	4.447045056

NOTCH2NCL	23	0.8976526	0.577484453	1.395327936	0.653379482	NA	15	26	0.984898227	1.521357519
NOTCH2NCL	24	1.240522207	0.669432252	2.298806699	0.526530314	NA	10	10	0.656598818	0.585137507
NOTCH2NCL	25	1.360991736	0.574707363	3.223029011	0.508064844	NA	6	3	0.393959291	0.175541252
NOTCH2NCL	26	0.949241407	0.304296303	2.961124541	1	NA	3	4	0.196979645	0.234055003
NOTCH2NCL	27	1.122247782	0.194153741	6.486818519	1	NA	1	2	0.065659882	0.117027501
NOTCH2NCL	28	3.368472906	0.137112676	82.75390739	0.471225248	NA	1	0	0.065659882	0
NUTM2B-AS1	5	0.892722528	0.017701926	45.02072387	1	NA	0	1	0	0.05800464
NUTM2B-AS1	6	2.679721497	0.109078043	65.83274782	1	NA	28	19	1.819363223	1.102088167
NUTM2B-AS1	7	0.637852331	0.360064112	1.129953203	0.144796144	NA	3	1	0.194931774	0.05800464
NUTM2B-AS1	8	0.604409223	0.3477864	1.050387562	0.091983769	Â°	51	45	3.313840156	2.610208817
NUTM2B-AS1	9	0.708371018	0.508967764	0.985896426	0.043097248	*	1076	1209	69.91552956	70.12761021
NUTM2B-AS1	10	0.934435375	0.797918051	1.094309708	0.420690599	NA	110	136	7.147498376	7.88863109
NUTM2B-AS1	11	0.963657486	0.805466666	1.152916428	0.714441923	NA	11	8	0.714749838	0.464037123
NUTM2B-AS1	12	0.946001053	0.788790373	1.134544769	0.578178883	NA	62	83	4.028589994	4.814385151
NUTM2B-AS1	13	0.999204312	0.813970858	1.226590911	1	NA	161	168	10.46133853	9.744779582
NUTM2B-AS1	14	0.765009388	0.501819198	1.1662355	0.241371881	NA	23	42	1.494476933	2.436194896
NUTM2B-AS1	15	1.302196001	0.609222843	2.783405853	0.556648572	NA	10	5	0.64977258	0.290023202
NUTM2B-AS1	16	0.6711169	0.208137649	2.163942443	0.555368905	NA	2	4	0.129954516	0.232018561
NUTM2B-AS1	17	0.799767712	0.157563821	4.059487687	1	NA	0	3	0	0.174013921
NUTM2B-AS1	21	5.608130081	0.269017254	116.9111742	0.222379078	NA	1	0	0.064977258	0
NUTM2B-AS1	31	3.362690933	0.136878302	82.61126979	0.471651854	NA	1	0	0.064977258	0
PABPN1	5	0.894005213	0.017727381	45.08535868	1	NA	62	65	4.018146468	3.765932793
PABPN1	6	0.934464039	0.656150271	1.330827827	0.717818613	NA	1444	1651	93.58392741	95.65469293
PABPN1	7	4.069271253	2.045501873	8.095308418	1.13E-05	***	37	10	2.397926118	0.579374276
PPP2R2B	9	0.893820714	0.017723703	45.07610437	1	NA	1	5	0.064935065	0.290191526
PPP2R2B	10	3.284744448	0.539323186	20.00571526	0.222741331	NA	591	674	38.37662338	39.11781776
PPP2R2B	11	1.041429792	0.904520694	1.199061579	0.589677888	NA	98	108	6.363636364	6.26813697
PPP2R2B	12	1.03574636	0.902182781	1.189083349	0.622057624	NA	1	4	0.064935065	0.232153221

PPP2R2B	13	1.042733383	0.908300992	1.197062335	0.573137927	NA	252	268	16.36363636	15.55426582
PPP2R2B	14	1.009722377	0.876848683	1.16273115	0.913982454	NA	198	193	12.85714286	11.20139292
PPP2R2B	15	0.929687315	0.795759582	1.08615532	0.362027327	NA	331	386	21.49350649	22.40278584
PPP2R2B	16	0.8914882	0.64378683	1.23449436	0.507679727	NA	16	30	1.038961039	1.741149158
PPP2R2B	17	1.060336453	0.722399113	1.55636043	0.768843078	NA	11	10	0.714285714	0.580383053
PPP2R2B	18	1.020966696	0.666517483	1.563909457	1	NA	28	31	1.818181818	1.799187464
PPP2R2B	19	1.041966251	0.494910223	2.193718412	1	NA	1	2	0.064935065	0.116076611
PPP2R2B	20	1.119725221	0.509693759	2.459878205	0.839133532	NA	7	5	0.454545455	0.290191526
PPP2R2B	21	0.819776403	0.272208424	2.46881908	0.778242804	NA	2	3	0.12987013	0.174114916
PPP2R2B	22	0.869846432	0.214806635	3.522390341	1	NA	1	1	0.064935065	0.058038305
PPP2R2B	23	0.798783602	0.157369956	4.0544921	1	NA	0	2	0	0.116076611
PPP2R2B	25	1.865995017	0.246189883	14.14330012	0.605080507	NA	1	0	0.064935065	0
PPP2R2B	27	1.118869763	0.116258655	10.76796856	1	NA	1	0	0.064935065	0
PPP2R2B	30	0.372714487	0.015171341	9.156480472	1	NA	0	1	0	0.058038305
TBP	30	0.898118669	0.017808979	45.29272179	1	NA	0	1	0	0.05790388
TBP	33	2.695916594	0.109737662	66.23037325	1	NA	0	1	0	0.05790388
TBP	34	4.495798319	0.215660487	93.72232636	0.501289238	NA	4	1	0.25789813	0.05790388
TBP	35	0.697947875	0.172358064	2.826274708	0.714080428	NA	16	16	1.031592521	0.926462073
TBP	36	0.852673505	0.456939999	1.591132551	0.632197407	NA	100	143	6.447453256	8.280254777
TBP	37	1.233117891	0.963922941	1.577490967	0.104709822	NA	327	384	21.08317215	22.23508975
TBP	38	1.141639853	0.983131708	1.325703914	0.086730824	Â°	866	889	55.8349452	51.47654893
TBP	39	0.891118854	0.739384493	1.073991706	0.235029531	NA	188	243	12.12121212	14.07064273
TBP	40	1.140465595	0.765889499	1.698236855	0.540791865	NA	41	38	2.643455835	2.200347423
TBP	41	0.919272779	0.388198113	2.176884464	1	NA	6	9	0.386847195	0.521134916
TBP	42	1.560025831	0.307345948	7.918375398	0.672398063	NA	3	2	0.193423598	0.115807759
TCF4	9	0.931144405	0.018462959	46.96050562	1	NA	2	0	0.136986301	0
TCF4	11	0.18597386	0.008920485	3.877174664	0.232401997	NA	163	182	11.16438356	11.60714286
TCF4	12	1.030344398	0.823897436	1.288521522	0.819452887	NA	2	1	0.136986301	0.06377551

TCF4	13	1.022777488	0.818552965	1.27795492	0.864601437	NA	10	13	0.684931507	0.829081633
TCF4	14	1.035255907	0.833508346	1.285835707	0.782114646	NA	228	221	15.61643836	14.09438776
TCF4	15	0.943756415	0.804088206	1.10768466	0.487150425	NA	100	105	6.849315068	6.696428571
TCF4	16	0.943749194	0.811904987	1.097003411	0.465568423	NA	36	42	2.465753425	2.678571429
TCF4	17	0.954261226	0.822990148	1.106470703	0.545702523	NA	357	412	24.45205479	26.2755102
TCF4	18	1.031782929	0.890993313	1.194819308	0.680590358	NA	16	13	1.095890411	0.829081633
TCF4	19	1.020396158	0.880504792	1.182512951	0.792337483	NA	3	3	0.205479452	0.191326531
TCF4	20	1.019822711	0.879867331	1.18203998	0.821176129	NA	6	9	0.410958904	0.573979592
TCF4	21	1.027132939	0.885806943	1.191006778	0.733915489	NA	19	11	1.301369863	0.701530612
TCF4	22	1.000915155	0.862411566	1.161662467	1	NA	14	15	0.95890411	0.956632653
TCF4	23	1.000828274	0.861523927	1.162657474	1	NA	39	35	2.671232877	2.232142857
TCF4	24	0.980907172	0.84201324	1.142712292	0.815232564	NA	150	161	10.2739726	10.26785714
TCF4	25	0.975349335	0.820736196	1.159089035	0.791651095	NA	74	72	5.068493151	4.591836735
TCF4	26	0.938027168	0.775773839	1.134215829	0.528979418	NA	48	61	3.287671233	3.890306122
TCF4	27	0.974526975	0.790512592	1.201375962	0.830864807	NA	25	25	1.712328767	1.594387755
TCF4	28	0.960547776	0.769740341	1.198653598	0.734731061	NA	15	20	1.02739726	1.275510204
TCF4	29	0.982301875	0.779220281	1.238310908	0.905881104	NA	13	15	0.890410959	0.956632653
TCF4	30	0.988290575	0.776521641	1.25781203	0.950908344	NA	20	19	1.369863014	1.211734694
TCF4	31	0.966589693	0.747312526	1.250207379	0.843756835	NA	17	26	1.164383562	1.658163265
TCF4	32	1.036551458	0.783533063	1.371274521	0.830130196	NA	22	17	1.506849315	1.084183673
TCF4	33	0.965180754	0.709206521	1.313543885	0.874867085	NA	6	12	0.410958904	0.765306122
TCF4	34	1.034672116	0.748103183	1.431014347	0.868303179	NA	7	9	0.479452055	0.573979592
TCF4	35	1.061346112	0.754241606	1.493494339	0.793064063	NA	3	10	0.205479452	0.637755102
TCF4	36	1.190769249	0.832029475	1.704184103	0.359504706	NA	6	2	0.410958904	0.12755102
TCF4	37	1.115999938	0.771111939	1.615142755	0.571110268	NA	4	3	0.273972603	0.191326531
TCF4	38	1.097324077	0.749849732	1.605815245	0.696376068	NA	5	1	0.342465753	0.06377551
TCF4	39	1.014192621	0.685756781	1.499929275	1	NA	2	1	0.136986301	0.06377551
TCF4	40	0.991828066	0.666818342	1.47524873	1	NA	3	1	0.205479452	0.06377551

TCF4	41	0.947159225	0.631541926	1.42050838	0.835872649	NA	2	1	0.136986301	0.06377551
TCF4	42	0.9227618	0.611256628	1.393014489	0.752214122	NA	3	2	0.205479452	0.12755102
TCF4	43	0.893837294	0.585281614	1.365061006	0.665291294	NA	1	1	0.068493151	0.06377551
TCF4	44	0.890079049	0.580045211	1.365825798	0.661738487	NA	3	1	0.205479452	0.06377551
TCF4	45	0.838947452	0.540629597	1.301876241	0.435694358	NA	1	2	0.068493151	0.12755102
TCF4	47	0.853156196	0.54566259	1.333929626	0.495913282	NA	0	1	0	0.06377551
TCF4	48	0.873341477	0.557338059	1.368514716	0.567952843	NA	0	1	0	0.06377551
TCF4	49	0.894476654	0.569511363	1.404868344	0.64564726	NA	1	0	0.068493151	0
TCF4	50	0.868670749	0.551171248	1.369064285	0.562792585	NA	1	1	0.068493151	0.06377551
TCF4	51	0.863777351	0.544785808	1.369549832	0.557464619	NA	1	3	0.068493151	0.191326531
TCF4	53	0.904431585	0.563903386	1.45059688	0.717415403	NA	0	1	0	0.06377551
TCF4	56	0.929156458	0.577695731	1.494440199	0.807997021	NA	1	0	0.068493151	0
TCF4	57	0.899937041	0.557334245	1.453143577	0.713442516	NA	1	1	0.068493151	0.06377551
TCF4	58	0.895199016	0.550507559	1.455713485	0.709313505	NA	0	2	0	0.12755102
TCF4	59	0.948330623	0.579558497	1.551751853	0.899601819	NA	2	2	0.136986301	0.12755102
TCF4	60	0.940587998	0.565886193	1.563398778	0.896350504	NA	1	1	0.068493151	0.06377551
TCF4	61	0.936352916	0.558602387	1.569554307	0.89461206	NA	0	3	0	0.191326531
TCF4	63	1.03693573	0.611060064	1.759623597	1	NA	0	1	0	0.06377551
TCF4	64	1.075340077	0.630775219	1.833230357	0.890878319	NA	1	2	0.068493151	0.12755102
TCF4	66	1.118180141	0.646142499	1.935063595	0.777833839	NA	1	1	0.068493151	0.06377551
TCF4	67	1.119847312	0.640230534	1.958760066	0.77361438	NA	1	1	0.068493151	0.06377551
TCF4	68	1.121660952	0.634031813	1.984322024	0.769162999	NA	1	3	0.068493151	0.191326531
TCF4	69	1.234858961	0.67996227	2.242590096	0.54010742	NA	1	0	0.068493151	0
TCF4	70	1.181489865	0.646647165	2.158701648	0.642291136	NA	0	3	0	0.191326531
TCF4	71	1.386712349	0.73942963	2.600614125	0.335455095	NA	1	1	0.068493151	0.06377551
TCF4	72	1.405317503	0.736962458	2.679807178	0.323540712	NA	3	0	0.205479452	0
TCF4	73	1.206711832	0.619002776	2.352418282	0.608311934	NA	3	0	0.205479452	0
TCF4	75	1.008930537	0.502528101	2.025639613	1	NA	5	2	0.342465753	0.12755102

TCF4	77	0.776058196	0.349596233	1.722748324	0.545895853	NA	1	2	0.068493151	0.12755102
TCF4	78	0.814977609	0.349501345	1.900388977	0.666801855	NA	1	0	0.068493151	0
TCF4	79	0.728688468	0.303976407	1.746802947	0.507529075	NA	0	1	0	0.06377551
TCF4	81	0.792561551	0.325649906	1.928923669	0.650601429	NA	3	1	0.205479452	0.06377551
TCF4	82	0.56087746	0.199410067	1.577570933	0.30521593	NA	1	0	0.068493151	0
TCF4	83	0.45858467	0.151638932	1.386846346	0.182445438	NA	1	0	0.068493151	0
TCF4	84	0.356432247	0.106091249	1.197496943	0.094258613	Â°	1	1	0.068493151	0.06377551
TCF4	85	0.281381376	0.06973332	1.135403827	0.06679551	Â°	1	0	0.068493151	0
TCF4	86	0.16871315	0.030104485	0.945511178	0.022063343	*	1	3	0.068493151	0.191326531
TCF4	87	0.082295315	0.004631756	1.462192373	0.031691388	*	0	1	0	0.06377551
TCF4	88	0.097320345	0.005376393	1.76163637	0.063088697	Â°	0	1	0	0.06377551
TCF4	89	0.119023166	0.006402269	2.212733321	0.12570658	NA	0	1	0	0.06377551
TCF4	90	0.153127598	0.007902446	2.967190364	0.250706652	NA	0	1	0	0.06377551
TCF4	91	0.214515577	0.010289527	4.47221073	0.500471101	NA	0	1	0	0.06377551
TCF4	114	0.357754194	0.01456157	8.789441042	1	NA	0	1	0	0.06377551
TK2-BEAN1	5	0.892929881	0.017706001	45.03127218	1	NA	1	0	0.065189048	0
TK2-BEAN1	8	0.297449326	0.012107642	7.307459443	0.471709717	NA	10	18	0.651890482	1.047729919
TK2-BEAN1	9	1.441251294	0.688158682	3.018497548	0.354311284	NA	4	7	0.260756193	0.407450524
TK2-BEAN1	10	1.476127889	0.782210808	2.78563467	0.264965303	NA	1	0	0.065189048	0
TK2-BEAN1	11	1.385753013	0.743138907	2.584054468	0.345793867	NA	32	45	2.086049544	2.619324796
TK2-BEAN1	12	1.310760485	0.903299475	1.902019315	0.159487962	NA	48	49	3.129074316	2.852153667
TK2-BEAN1	13	1.113694856	0.843784919	1.469943589	0.47977705	NA	73	94	4.758800522	5.471478463
TK2-BEAN1	14	1.142455049	0.921871233	1.415819795	0.230340998	NA	136	114	8.865710561	6.635622817
TK2-BEAN1	15	0.947208119	0.796132549	1.126952067	0.563952024	NA	411	432	26.79269883	25.14551804
TK2-BEAN1	16	0.904243276	0.787477312	1.038323124	0.158247507	NA	301	392	19.62190352	22.81722934
TK2-BEAN1	17	1.031986492	0.891834451	1.194163467	0.682016937	NA	225	258	14.66753585	15.01746217
TK2-BEAN1	18	1.072096553	0.898093847	1.279811708	0.442186872	NA	80	90	5.215123859	5.238649593
TK2-BEAN1	19	1.097678604	0.896370358	1.34419697	0.378764896	NA	62	74	4.041720991	4.307334109

TK2-BEAN1	20	1.17556675	0.925613277	1.493017892	0.199049909	NA	34	39	2.21642764	2.27008149
TK2-BEAN1	21	1.243502609	0.947101369	1.632664453	0.12549007	NA	17	24	1.10821382	1.396973225
TK2-BEAN1	22	1.374934296	1.018241365	1.856577806	0.038676745	*	19	17	1.238591917	0.989522701
TK2-BEAN1	23	1.397156495	1.00076797	1.95054831	0.050522026	Â°	12	6	0.782268579	0.349243306
TK2-BEAN1	24	1.302773138	0.914041925	1.856827136	0.147662622	NA	11	4	0.717079531	0.232828871
TK2-BEAN1	25	1.166460877	0.801361877	1.697898312	0.441928922	NA	4	1	0.260756193	0.058207218
TK2-BEAN1	26	1.102908347	0.751481297	1.61867877	0.624040179	NA	6	3	0.391134289	0.174621653
TK2-BEAN1	27	1.03393979	0.692762079	1.543143773	0.918305256	NA	4	4	0.260756193	0.232828871
TK2-BEAN1	28	1.026310496	0.676219521	1.55764985	0.915158805	NA	6	7	0.391134289	0.407450524
TK2-BEAN1	29	1.037840846	0.662013286	1.627027198	0.908337368	NA	6	6	0.391134289	0.349243306
TK2-BEAN1	30	1.022960917	0.627948822	1.666455931	1	NA	4	1	0.260756193	0.058207218
TK2-BEAN1	31	0.917823816	0.551637875	1.527089774	0.794662623	NA	2	8	0.130378096	0.465657742
TK2-BEAN1	32	1.121894667	0.645159314	1.950909825	0.775621791	NA	2	1	0.130378096	0.058207218
TK2-BEAN1	33	1.075313751	0.608020739	1.901743789	0.883300984	NA	1	0	0.065189048	0
TK2-BEAN1	34	1.028875021	0.578088952	1.831178067	1	NA	4	2	0.260756193	0.116414435
TK2-BEAN1	35	0.919815364	0.49529323	1.708200826	0.873806308	NA	3	2	0.195567145	0.116414435
TK2-BEAN1	36	0.845167297	0.435365905	1.640706707	0.734074135	NA	1	1	0.065189048	0.058207218
TK2-BEAN1	37	0.831128424	0.419728428	1.645765244	0.604370223	NA	0	2	0	0.116414435
TK2-BEAN1	38	0.927204397	0.460685455	1.866149635	0.858409609	NA	0	1	0	0.058207218
TK2-BEAN1	39	0.983976563	0.484296772	1.999207784	1	NA	0	1	0	0.058207218
TK2-BEAN1	40	1.048074169	0.510448577	2.151949312	1	NA	1	1	0.065189048	0.058207218
TK2-BEAN1	42	1.043015627	0.495403159	2.195952079	1	NA	1	1	0.065189048	0.058207218
TK2-BEAN1	43	1.037219485	0.479074841	2.2456288	1	NA	0	1	0	0.058207218
TK2-BEAN1	44	1.120853859	0.510202168	2.462383446	0.839079149	NA	1	0	0.065189048	0
TK2-BEAN1	45	1.030508697	0.46126443	2.30225464	1	NA	0	1	0	0.058207218
TK2-BEAN1	47	1.120774532	0.493481432	2.54545657	0.832769359	NA	1	0	0.065189048	0
TK2-BEAN1	48	1.02264463	0.441726101	2.367535082	1	NA	1	2	0.065189048	0.116414435
TK2-BEAN1	49	1.120616191	0.454718564	2.761665672	0.817897886	NA	1	1	0.065189048	0.058207218

TK2-BEAN1	50	1.120537177	0.431955461	2.906789422	1	NA	1	0	0.065189048	0
TK2-BEAN1	51	0.988062001	0.369224363	2.644101026	1	NA	1	1	0.065189048	0.058207218
TK2-BEAN1	52	0.970428525	0.338704593	2.780391939	1	NA	0	2	0	0.116414435
TK2-BEAN1	53	1.324858001	0.424712463	4.132793071	0.765050237	NA	1	0	0.065189048	0
TK2-BEAN1	54	1.120300752	0.342893095	3.660248025	1	NA	1	1	0.065189048	0.058207218
TK2-BEAN1	55	1.12022215	0.302717197	4.145445579	1	NA	2	1	0.130378096	0.058207218
TK2-BEAN1	60	0.799580517	0.157526168	4.058557451	1	NA	0	1	0	0.058207218
TK2-BEAN1	61	1.120065253	0.193777806	6.474147858	1	NA	1	0	0.065189048	0
TK2-BEAN1	65	0.671600913	0.088607257	5.090415869	1	NA	1	0	0.065189048	0
TK2-BEAN1	70	0.223721082	0.010731684	4.663864732	0.501447374	NA	0	1	0	0.058207218
TK2-BEAN1	75	0.373085696	0.015186413	9.16562322	1	NA	0	1	0	0.058207218
ZNF713	3	0.873594652	0.017322009	44.05768525	1	NA	2	1	0.139178845	0.060790274
ZNF713	4	0.523745819	0.069095497	3.970008123	0.601369349	NA	34	36	2.366040362	2.188449848
ZNF713	5	0.895180143	0.564363938	1.419912639	0.721968323	NA	6	7	0.417536534	0.425531915
ZNF713	6	0.912376265	0.595612305	1.397604519	0.742492487	NA	152	195	10.57759221	11.85410334
ZNF713	7	1.088659245	0.887769563	1.335007419	0.435860518	NA	49	59	3.409881698	3.58662614
ZNF713	8	1.086682692	0.90195984	1.309237088	0.393143765	NA	313	354	21.78148921	21.51975684
ZNF713	9	1.040326814	0.899935637	1.202619206	0.604715541	NA	210	277	14.61377871	16.83890578
ZNF713	10	1.136493764	0.985826258	1.310188348	0.081537463	Â°	110	119	7.654836465	7.234042553
ZNF713	11	1.124160614	0.971445675	1.30088292	0.117589506	NA	365	401	25.40013918	24.3768997
ZNF713	12	1.167539267	0.944719021	1.442913618	0.158984481	NA	78	74	5.427974948	4.498480243
ZNF713	13	1.116902661	0.858540455	1.453014295	0.419464009	NA	12	13	0.835073069	0.790273556
ZNF713	14	1.122346308	0.851090363	1.480055809	0.435916346	NA	6	5	0.417536534	0.303951368
ZNF713	15	1.108407638	0.834820965	1.471653854	0.513512506	NA	16	9	1.113430759	0.547112462
ZNF713	16	1.013600574	0.749640785	1.370504573	0.938632536	NA	14	16	0.974251914	0.972644377
ZNF713	17	1.015839398	0.73122697	1.411230337	0.933138391	NA	25	21	1.73973556	1.276595745
ZNF713	18	0.886694594	0.597914358	1.314949696	0.615687626	NA	22	31	1.530967293	1.88449848
ZNF713	19	0.977788489	0.561204309	1.703604755	1	NA	8	10	0.556715379	0.607902736

ZNF713	20	1.013979413	0.509946732	2.016199311	1	NA	3	5	0.208768267	0.303951368
ZNF713	21	1.145913714	0.521518964	2.517872466	0.838135759	NA	7	4	0.487125957	0.243161094
ZNF713	22	0.739657119	0.252463461	2.167017166	0.591614926	NA	0	5	0	0.303951368
ZNF713	23	1.801795064	0.470826902	6.895242053	0.485062739	NA	4	2	0.27835769	0.121580547
ZNF713	37	1.14479638	0.11894514	11.01817821	1	NA	1	0	0.069589422	0
ZNF713	69	0.381333333	0.015521482	9.368635982	1	NA	0	1	0	0.060790274

Supplementary Table S 3-3 ALS long allele statistical information: Site of onset.

Gene	*Repeat count*	*Bulbar onset*	*Limb onset*	*Respiratory onset*	*Cognitive-behaviour onset*	*bothrlower*	*lothrlower*	*rothrlower*	*cothrlower*	*bothrhigher*	*lothrhigher*	*rothrhigher*	*cothrhigher*	*bo_th_low_pc*	*lo_th_low_pc*	*ro_th_low_pc*	*co_th_low_pc*	*bo_th_hi_pc*	*lo_th_hi_pc*	*ro_th_hi_pc*	*co_th_hi_pc*	*sitepval*	*sitesignif*
AFF2	4	0	0	0	0	0	0	0	0	372	881	26	44	NA	NA	NA	NA	28.12	66.59	1.97	3.33	1.00	NA
AFF2	6	0	1	0	0	0	0	0	0	372	881	26	44	NA	NA	NA	NA	28.12	66.59	1.97	3.33	1.00	NA
AFF2	7	1	0	0	0	0	1	0	0	372	880	26	44	0.00	100.00	0.00	0.00	28.14	66.57	1.97	3.33	1.00	NA
AFF2	10	0	2	0	0	1	1	0	0	371	880	26	44	50.00	50.00	0.00	0.00	28.08	66.62	1.97	3.33	0.56	NA
AFF2	11	0	0	0	0	1	3	0	0	371	878	26	44	25.00	75.00	0.00	0.00	28.13	66.57	1.97	3.34	1.00	NA
AFF2	12	1	9	1	0	1	3	0	0	371	878	26	44	25.00	75.00	0.00	0.00	28.13	66.57	1.97	3.34	1.00	NA
AFF2	13	6	10	0	1	2	12	1	0	370	869	25	44	13.33	80.00	6.67	0.00	28.29	66.44	1.91	3.36	0.27	NA
AFF2	14	87	217	5	17	8	22	1	1	364	859	25	43	25.00	68.75	3.13	3.13	28.20	66.54	1.94	3.33	0.75	NA
AFF2	15	72	162	9	3	95	239	6	18	277	642	20	26	26.54	66.76	1.68	5.03	28.70	66.53	2.07	2.69	0.19	NA
AFF2	16	24	65	1	2	167	401	15	21	205	480	11	23	27.65	66.39	2.48	3.48	28.51	66.76	1.53	3.20	0.64	NA
AFF2	17	50	145	6	4	191	466	16	23	181	415	10	21	27.44	66.95	2.30	3.30	28.87	66.19	1.59	3.35	0.78	NA
AFF2	18	39	91	1	4	241	611	22	27	131	270	4	17	26.75	67.81	2.44	3.00	31.04	63.98	0.95	4.03	0.08	Â°
AFF2	19	21	42	1	1	280	702	23	31	92	179	3	13	27.03	67.76	2.22	2.99	32.06	62.37	1.05	4.53	0.11	NA
AFF2	20	8	20	0	0	301	744	24	32	71	137	2	12	27.34	67.57	2.18	2.91	31.98	61.71	0.90	5.41	0.07	Â°
AFF2	21	4	14	0	2	309	764	24	32	63	117	2	12	27.37	67.67	2.13	2.83	32.47	60.31	1.03	6.19	0.03	*
AFF2	22	10	16	1	0	313	778	24	34	59	103	2	10	27.24	67.71	2.09	2.96	33.91	59.20	1.15	5.75	0.04	*
AFF2	23	16	26	1	2	323	794	25	34	49	87	1	10	27.47	67.52	2.13	2.89	33.33	59.18	0.68	6.80	0.02	*
AFF2	24	14	20	0	2	339	820	26	36	33	61	0	8	27.76	67.16	2.13	2.95	32.35	59.80	0.00	7.84	0.02	*
AFF2	25	5	12	0	2	353	840	26	38	19	41	0	6	28.08	66.83	2.07	3.02	28.79	62.12	0.00	9.09	0.07	Â°

AFF2	26	3	8	0	1	358	852	26	40	14	29	0	4	28.06	66.77	2.04	3.13	29.79	61.70	0.00	8.51	0.20	NA
AFF2	27	5	7	0	0	361	860	26	41	11	21	0	3	28.03	66.77	2.02	3.18	31.43	60.00	0.00	8.57	0.27	NA
AFF2	28	1	4	0	0	366	867	26	41	6	14	0	3	28.15	66.69	2.00	3.15	26.09	60.87	0.00	13.04	0.13	NA
AFF2	29	2	3	0	2	367	871	26	41	5	10	0	3	28.12	66.74	1.99	3.14	27.78	55.56	0.00	16.67	0.06	Â°
AFF2	30	0	0	0	0	369	874	26	43	3	7	0	1	28.13	66.62	1.98	3.28	27.27	63.64	0.00	9.09	0.56	NA
AFF2	31	2	2	0	0	369	874	26	43	3	7	0	1	28.13	66.62	1.98	3.28	27.27	63.64	0.00	9.09	0.56	NA
AFF2	32	0	0	0	0	371	876	26	43	1	5	0	1	28.19	66.57	1.98	3.27	14.29	71.43	0.00	14.29	0.28	NA
AFF2	33	0	1	0	0	371	876	26	43	1	5	0	1	28.19	66.57	1.98	3.27	14.29	71.43	0.00	14.29	0.28	NA
AFF2	34	0	1	0	0	371	877	26	43	1	4	0	1	28.17	66.59	1.97	3.26	16.67	66.67	0.00	16.67	0.33	NA
AFF2	35	0	1	0	0	371	878	26	43	1	3	0	1	28.15	66.62	1.97	3.26	20.00	60.00	0.00	20.00	0.26	NA
AFF2	36	1	1	0	1	371	879	26	43	1	2	0	1	28.13	66.64	1.97	3.26	25.00	50.00	0.00	25.00	0.20	NA
AFF2	54	0	1	0	0	372	880	26	44	0	1	0	0	28.14	66.57	1.97	3.33	0.00	100.00	0.00	0.00	1.00	NA
AFF3	0	0	0	0	0	0	0	0	0	408	942	35	44	NA	NA	NA	NA	28.55	65.92	2.45	3.08	1.00	NA
AFF3	1	0	0	0	0	0	0	0	0	408	942	35	44	NA	NA	NA	NA	28.55	65.92	2.45	3.08	1.00	NA
AFF3	2	5	4	0	0	0	0	0	0	408	942	35	44	NA	NA	NA	NA	28.55	65.92	2.45	3.08	1.00	NA
AFF3	3	20	55	2	3	5	4	0	0	403	938	35	44	55.56	44.44	0.00	0.00	28.38	66.06	2.46	3.10	0.39	NA
AFF3	4	26	77	3	4	25	59	2	3	383	883	33	41	28.09	66.29	2.25	3.37	28.58	65.90	2.46	3.06	0.99	NA
AFF3	5	6	12	1	1	51	136	5	7	357	806	30	37	25.63	68.34	2.51	3.52	29.02	65.53	2.44	3.01	0.75	NA
AFF3	6	25	73	3	8	57	148	6	8	351	794	29	36	26.03	67.58	2.74	3.65	29.01	65.62	2.40	2.98	0.74	NA
AFF3	7	219	463	18	24	82	221	9	16	326	721	26	28	25.00	67.38	2.74	4.88	29.61	65.49	2.36	2.54	0.09	Â°
AFF3	8	6	15	0	0	301	684	27	40	107	258	8	4	28.61	65.02	2.57	3.80	28.38	68.44	2.12	1.06	0.04	*
AFF3	9	4	9	0	0	307	699	27	40	101	243	8	4	28.61	65.14	2.52	3.73	28.37	68.26	2.25	1.12	0.07	Â°
AFF3	10	6	10	0	0	311	708	27	40	97	234	8	4	28.64	65.19	2.49	3.68	28.28	68.22	2.33	1.17	0.10	Â°
AFF3	11	2	20	0	1	317	718	27	40	91	224	8	4	28.77	65.15	2.45	3.63	27.83	68.50	2.45	1.22	0.13	NA
AFF3	12	33	84	2	0	319	738	27	41	89	204	8	3	28.36	65.60	2.40	3.64	29.28	67.11	2.63	0.99	0.09	Â°
AFF3	13	1	2	1	0	352	822	29	41	56	120	6	3	28.30	66.08	2.33	3.30	30.27	64.86	3.24	1.62	0.51	NA
AFF3	14	1	6	0	0	353	824	30	41	55	118	5	3	28.29	66.03	2.40	3.29	30.39	65.19	2.76	1.66	0.65	NA
AFF3	15	1	5	0	1	354	830	30	41	54	112	5	3	28.21	66.14	2.39	3.27	31.03	64.37	2.87	1.72	0.62	NA

AFF3	16	17	25	3	1	355	835	30	42	53	107	5	2	28.13	66.16	2.38	3.33	31.74	64.07	2.99	1.20	0.36	NA
AFF3	17	18	36	1	0	372	860	33	43	36	82	2	1	28.44	65.75	2.52	3.29	29.75	67.77	1.65	0.83	0.52	NA
AFF3	18	8	18	1	1	390	896	34	43	18	46	1	1	28.61	65.74	2.49	3.15	27.27	69.70	1.52	1.52	0.95	NA
AFF3	19	3	8	0	0	398	914	35	44	10	28	0	0	28.61	65.71	2.52	3.16	26.32	73.68	0.00	0.00	0.74	NA
AFF3	20	0	9	0	0	401	922	35	44	7	20	0	0	28.60	65.76	2.50	3.14	25.93	74.07	0.00	0.00	0.96	NA
AFF3	21	4	3	0	0	401	931	35	44	7	11	0	0	28.42	65.98	2.48	3.12	38.89	61.11	0.00	0.00	0.80	NA
AFF3	22	1	0	0	0	405	934	35	44	3	8	0	0	28.56	65.87	2.47	3.10	27.27	72.73	0.00	0.00	1.00	NA
AFF3	23	1	7	0	0	406	934	35	44	2	8	0	0	28.61	65.82	2.47	3.10	20.00	80.00	0.00	0.00	0.85	NA
AFF3	24	1	0	0	0	407	941	35	44	1	1	0	0	28.52	65.94	2.45	3.08	50.00	50.00	0.00	0.00	0.57	NA
AFF3	25	0	1	0	0	408	941	35	44	0	1	0	0	28.57	65.90	2.45	3.08	0.00	100.00	0.00	0.00	1.00	NA
AFF3	27	0	0	0	0	408	942	35	44	0	0	0	0	28.55	65.92	2.45	3.08	NA	NA	NA	NA	1.00	NA
AR	9	0	1	0	0	0	0	0	0	405	927	32	44	NA	NA	NA	NA	28.76	65.84	2.27	3.13	1.00	NA
AR	10	0	0	0	0	0	1	0	0	405	926	32	44	0.00	100.00	0.00	0.00	28.78	65.81	2.27	3.13	1.00	NA
AR	14	0	1	0	0	0	1	0	0	405	926	32	44	0.00	100.00	0.00	0.00	28.78	65.81	2.27	3.13	1.00	NA
AR	15	0	2	0	0	0	2	0	0	405	925	32	44	0.00	100.00	0.00	0.00	28.81	65.79	2.28	3.13	1.00	NA
AR	16	1	3	1	1	0	4	0	0	405	923	32	44	0.00	100.00	0.00	0.00	28.85	65.74	2.28	3.13	0.46	NA
AR	17	2	7	0	0	1	7	1	1	404	920	31	43	10.00	70.00	10.00	10.00	28.90	65.81	2.22	3.08	0.09	Â°
AR	18	7	33	2	1	3	14	1	1	402	913	31	43	15.79	73.68	5.26	5.26	28.94	65.73	2.23	3.10	0.24	NA
AR	19	21	52	5	3	10	47	3	2	395	880	29	42	16.13	75.81	4.84	3.23	29.35	65.38	2.15	3.12	0.05	Â°
AR	20	44	94	2	8	31	99	8	5	374	828	24	39	21.68	69.23	5.59	3.50	29.57	65.45	1.90	3.08	0.02	*
AR	21	53	155	6	5	75	193	10	13	330	734	22	31	25.77	66.32	3.44	4.47	29.54	65.71	1.97	2.78	0.13	NA
AR	22	39	118	3	3	128	348	16	18	277	579	16	26	25.10	68.24	3.14	3.53	30.85	64.48	1.78	2.90	0.06	Â°
AR	23	56	126	4	7	167	466	19	21	238	461	13	23	24.81	69.24	2.82	3.12	32.38	62.72	1.77	3.13	0.01	*
AR	24	73	114	3	5	223	592	23	28	182	335	9	16	25.75	68.36	2.66	3.23	33.58	61.81	1.66	2.95	0.01	*
AR	25	41	99	2	7	296	706	26	33	109	221	6	11	27.90	66.54	2.45	3.11	31.41	63.69	1.73	3.17	0.58	NA
AR	26	24	49	2	1	337	805	28	40	68	122	4	4	27.85	66.53	2.31	3.31	34.34	61.62	2.02	2.02	0.28	NA
AR	27	18	31	1	1	361	854	30	41	44	73	2	3	28.07	66.41	2.33	3.19	36.07	59.84	1.64	2.46	0.34	NA
AR	28	11	17	1	0	379	885	31	42	26	42	1	2	28.35	66.19	2.32	3.14	36.62	59.15	1.41	2.82	0.53	NA

AR	29	9	10	0	1	390	902	32	42	15	25	0	2	28.55	66.03	2.34	3.07	35.71	59.52	0.00	4.76	0.49	NA
AR	30	2	7	0	1	399	912	32	43	6	15	0	1	28.79	65.80	2.31	3.10	27.27	68.18	0.00	4.55	0.81	NA
AR	31	1	4	0	0	401	919	32	44	4	8	0	0	28.72	65.83	2.29	3.15	33.33	66.67	0.00	0.00	0.88	NA
AR	32	0	0	0	0	402	923	32	44	3	4	0	0	28.69	65.88	2.28	3.14	42.86	57.14	0.00	0.00	0.62	NA
AR	33	0	2	0	0	402	923	32	44	3	4	0	0	28.69	65.88	2.28	3.14	42.86	57.14	0.00	0.00	0.62	NA
AR	34	0	0	0	0	402	925	32	44	3	2	0	0	28.65	65.93	2.28	3.14	60.00	40.00	0.00	0.00	0.37	NA
AR	35	1	0	0	0	402	925	32	44	3	2	0	0	28.65	65.93	2.28	3.14	60.00	40.00	0.00	0.00	0.37	NA
AR	43	1	1	0	0	403	925	32	44	2	2	0	0	28.70	65.88	2.28	3.13	50.00	50.00	0.00	0.00	0.67	NA
AR	45	1	0	0	0	404	926	32	44	1	1	0	0	28.73	65.86	2.28	3.13	50.00	50.00	0.00	0.00	0.57	NA
AR	52	0	1	0	0	405	926	32	44	0	1	0	0	28.78	65.81	2.27	3.13	0.00	100.00	0.00	0.00	1.00	NA
ARX	3	0	1	0	0	0	0	0	0	344	811	26	41	NA	NA	NA	NA	28.15	66.37	2.13	3.36	1.00	NA
ARX	4	0	1	0	0	0	1	0	0	344	810	26	41	0.00	100.00	0.00	0.00	28.17	66.34	2.13	3.36	1.00	NA
ARX	8	3	0	0	0	0	2	0	0	344	809	26	41	0.00	100.00	0.00	0.00	28.20	66.31	2.13	3.36	1.00	NA
ARX	9	91	240	6	18	3	2	0	0	341	809	26	41	60.00	40.00	0.00	0.00	28.02	66.47	2.14	3.37	0.37	NA
ARX	10	239	548	19	23	94	242	6	18	250	569	20	23	26.11	67.22	1.67	5.00	29.00	66.01	2.32	2.67	0.16	NA
ARX	11	11	18	1	0	333	790	25	41	11	21	1	0	28.01	66.44	2.10	3.45	33.33	63.64	3.03	0.00	0.57	NA
ARX	13	0	2	0	0	344	808	26	41	0	3	0	0	28.22	66.28	2.13	3.36	0.00	100.00	0.00	0.00	0.63	NA
ARX	17	0	1	0	0	344	810	26	41	0	1	0	0	28.17	66.34	2.13	3.36	0.00	100.00	0.00	0.00	1.00	NA
ARX	89	0	0	0	0	344	811	26	41	0	0	0	0	28.15	66.37	2.13	3.36	NA	NA	NA	NA	1.00	NA
ATN1	0	0	1	0	0	0	0	0	0	413	961	34	45	NA	NA	NA	NA	28.42	66.14	2.34	3.10	1.00	NA
ATN1	8	6	14	1	1	0	1	0	0	413	960	34	45	0.00	100.00	0.00	0.00	28.44	66.12	2.34	3.10	1.00	NA
ATN1	9	0	1	0	0	6	15	1	1	407	946	33	44	26.09	65.22	4.35	4.35	28.46	66.15	2.31	3.08	0.53	NA
ATN1	10	26	32	2	2	6	16	1	1	407	945	33	44	25.00	66.67	4.17	4.17	28.48	66.13	2.31	3.08	0.58	NA
ATN1	11	1	4	0	0	32	48	3	3	381	913	31	42	37.21	55.81	3.49	3.49	27.87	66.79	2.27	3.07	0.15	NA
ATN1	12	2	9	0	0	33	52	3	3	380	909	31	42	36.26	57.14	3.30	3.30	27.90	66.74	2.28	3.08	0.23	NA
ATN1	13	1	7	0	1	35	61	3	3	378	900	31	42	34.31	59.80	2.94	2.94	27.98	66.62	2.29	3.11	0.47	NA
ATN1	14	5	23	0	3	36	68	3	4	377	893	31	41	32.43	61.26	2.70	3.60	28.09	66.54	2.31	3.06	0.63	NA
ATN1	15	170	372	15	16	41	91	3	7	372	870	31	38	28.87	64.08	2.11	4.93	28.38	66.36	2.36	2.90	0.56	NA

ATN1	16	95	274	7	11	211	463	18	23	202	498	16	22	29.51	64.76	2.52	3.22	27.37	67.48	2.17	2.98	0.74	NA
ATN1	17	66	143	8	8	306	737	25	34	107	224	9	11	27.77	66.88	2.27	3.09	30.48	63.82	2.56	3.13	0.74	NA
ATN1	18	12	19	1	0	372	880	33	42	41	81	1	3	28.03	66.31	2.49	3.17	32.54	64.29	0.79	2.38	0.55	NA
ATN1	19	9	13	0	0	384	899	34	42	29	62	0	3	28.26	66.15	2.50	3.09	30.85	65.96	0.00	3.19	0.49	NA
ATN1	20	8	18	0	2	393	912	34	42	20	49	0	3	28.46	66.04	2.46	3.04	27.78	68.06	0.00	4.17	0.61	NA
ATN1	21	3	12	0	1	401	930	34	44	12	31	0	1	28.46	66.00	2.41	3.12	27.27	70.45	0.00	2.27	0.93	NA
ATN1	22	8	13	0	0	404	942	34	45	9	19	0	0	28.35	66.11	2.39	3.16	32.14	67.86	0.00	0.00	0.97	NA
ATN1	23	1	4	0	0	412	955	34	45	1	6	0	0	28.49	66.04	2.35	3.11	14.29	85.71	0.00	0.00	0.78	NA
ATN1	24	0	1	0	0	413	959	34	45	0	2	0	0	28.46	66.09	2.34	3.10	0.00	100.00	0.00	0.00	1.00	NA
ATN1	25	0	0	0	0	413	960	34	45	0	1	0	0	28.44	66.12	2.34	3.10	0.00	100.00	0.00	0.00	1.00	NA
ATN1	27	0	1	0	0	413	960	34	45	0	1	0	0	28.44	66.12	2.34	3.10	0.00	100.00	0.00	0.00	1.00	NA
ATXN1	28	2	5	0	0	0	0	0	0	373	864	33	37	NA	NA	NA	NA	28.54	66.11	2.52	2.83	1.00	NA
ATXN1	29	77	167	8	6	2	5	0	0	371	859	33	37	28.57	71.43	0.00	0.00	28.54	66.08	2.54	2.85	1.00	NA
ATXN1	30	149	361	12	17	79	172	8	6	294	692	25	31	29.81	64.91	3.02	2.26	28.21	66.41	2.40	2.98	0.81	NA
ATXN1	31	40	97	5	2	228	533	20	23	145	331	13	14	28.36	66.29	2.49	2.86	28.83	65.81	2.58	2.78	1.00	NA
ATXN1	32	64	130	6	10	268	630	25	25	105	234	8	12	28.27	66.46	2.64	2.64	29.25	65.18	2.23	3.34	0.84	NA
ATXN1	33	11	32	0	1	332	760	31	35	41	104	2	2	28.67	65.63	2.68	3.02	27.52	69.80	1.34	1.34	0.56	NA
ATXN1	34	8	17	1	0	343	792	31	36	30	72	2	1	28.54	65.89	2.58	3.00	28.57	68.57	1.90	0.95	0.77	NA
ATXN1	35	10	14	1	0	351	809	32	36	22	55	1	1	28.58	65.88	2.61	2.93	27.85	69.62	1.27	1.27	0.89	NA
ATXN1	36	10	29	0	1	361	823	33	36	12	41	0	1	28.81	65.68	2.63	2.87	22.22	75.93	0.00	1.85	0.49	NA
ATXN1	37	0	5	0	0	371	852	33	37	2	12	0	0	28.69	65.89	2.55	2.86	14.29	85.71	0.00	0.00	0.65	NA
ATXN1	38	1	5	0	0	371	857	33	37	2	7	0	0	28.58	66.02	2.54	2.85	22.22	77.78	0.00	0.00	0.84	NA
ATXN1	39	0	1	0	0	372	862	33	37	1	2	0	0	28.53	66.10	2.53	2.84	33.33	66.67	0.00	0.00	1.00	NA
ATXN1	40	1	0	0	0	372	863	33	37	1	1	0	0	28.51	66.13	2.53	2.84	50.00	50.00	0.00	0.00	0.56	NA
ATXN1	41	0	1	0	0	373	863	33	37	0	1	0	0	28.56	66.08	2.53	2.83	0.00	100.00	0.00	0.00	1.00	NA
ATXN1	42	0	0	0	0	373	864	33	37	0	0	0	0	28.54	66.11	2.52	2.83	NA	NA	NA	NA	1.00	NA
ATXN2	22	315	680	29	31	0	0	0	0	414	949	34	45	NA	NA	NA	NA	28.71	65.81	2.36	3.12	1.00	NA
ATXN2	23	71	172	4	12	315	680	29	31	99	269	5	14	29.86	64.45	2.75	2.94	25.58	69.51	1.29	3.62	0.12	NA

ATXN2	24	1	7	0	0	386	852	33	43	28	97	1	2	29.38	64.84	2.51	3.27	21.88	75.78	0.78	1.56	0.09	Â°
ATXN2	25	1	4	0	0	387	859	33	43	27	90	1	2	29.27	64.98	2.50	3.25	22.50	75.00	0.83	1.67	0.17	NA
ATXN2	26	1	4	0	0	388	863	33	43	26	86	1	2	29.24	65.03	2.49	3.24	22.61	74.78	0.87	1.74	0.22	NA
ATXN2	27	10	34	0	2	389	867	33	43	25	82	1	2	29.20	65.09	2.48	3.23	22.73	74.55	0.91	1.82	0.28	NA
ATXN2	28	0	0	0	0	399	901	33	45	15	48	1	0	28.96	65.38	2.39	3.27	23.44	75.00	1.56	0.00	0.35	NA
ATXN2	29	3	4	0	0	399	901	33	45	15	48	1	0	28.96	65.38	2.39	3.27	23.44	75.00	1.56	0.00	0.35	NA
ATXN2	30	5	12	0	0	402	905	33	45	12	44	1	0	29.03	65.34	2.38	3.25	21.05	77.19	1.75	0.00	0.27	NA
ATXN2	31	6	21	0	0	407	917	33	45	7	32	1	0	29.03	65.41	2.35	3.21	17.50	80.00	2.50	0.00	0.23	NA
ATXN2	32	0	6	1	0	413	938	33	45	1	11	1	0	28.90	65.64	2.31	3.15	7.69	84.62	7.69	0.00	0.16	NA
ATXN2	33	0	1	0	0	413	944	34	45	1	5	0	0	28.76	65.74	2.37	3.13	16.67	83.33	0.00	0.00	0.77	NA
ATXN2	34	0	1	0	0	413	945	34	45	1	4	0	0	28.74	65.76	2.37	3.13	20.00	80.00	0.00	0.00	1.00	NA
ATXN2	36	0	0	0	0	413	946	34	45	1	3	0	0	28.72	65.79	2.36	3.13	25.00	75.00	0.00	0.00	1.00	NA
ATXN2	38	0	1	0	0	413	946	34	45	1	3	0	0	28.72	65.79	2.36	3.13	25.00	75.00	0.00	0.00	1.00	NA
ATXN2	43	0	1	0	0	413	947	34	45	1	2	0	0	28.70	65.81	2.36	3.13	33.33	66.67	0.00	0.00	1.00	NA
ATXN2	52	1	0	0	0	413	948	34	45	1	1	0	0	28.68	65.83	2.36	3.13	50.00	50.00	0.00	0.00	0.57	NA
ATXN2	69	0	1	0	0	414	948	34	45	0	1	0	0	28.73	65.79	2.36	3.12	0.00	100.00	0.00	0.00	1.00	NA
ATXN3	14	11	19	1	0	0	0	0	0	391	914	34	44	NA	NA	NA	NA	28.27	66.09	2.46	3.18	1.00	NA
ATXN3	15	6	22	0	0	11	19	1	0	380	895	33	44	35.48	61.29	3.23	0.00	28.11	66.20	2.44	3.25	0.61	NA
ATXN3	18	1	2	0	0	17	41	1	0	374	873	33	44	28.81	69.49	1.69	0.00	28.25	65.94	2.49	3.32	0.65	NA
ATXN3	19	1	1	0	0	18	43	1	0	373	871	33	44	29.03	69.35	1.61	0.00	28.24	65.93	2.50	3.33	0.62	NA
ATXN3	20	17	53	1	1	19	44	1	0	372	870	33	44	29.69	68.75	1.56	0.00	28.20	65.96	2.50	3.34	0.59	NA
ATXN3	21	15	55	3	5	36	97	2	1	355	817	32	43	26.47	71.32	1.47	0.74	28.47	65.52	2.57	3.45	0.26	NA
ATXN3	22	3	14	0	0	51	152	5	6	340	762	29	38	23.83	71.03	2.34	2.80	29.08	65.18	2.48	3.25	0.43	NA
ATXN3	23	142	310	13	15	54	166	5	6	337	748	29	38	23.38	71.86	2.16	2.60	29.25	64.93	2.52	3.30	0.26	NA
ATXN3	24	30	69	4	1	196	476	18	21	195	438	16	23	27.57	66.95	2.53	2.95	29.02	65.18	2.38	3.42	0.88	NA
ATXN3	25	0	4	0	0	226	545	22	22	165	369	12	22	27.73	66.87	2.70	2.70	29.05	64.96	2.11	3.87	0.51	NA
ATXN3	26	6	22	0	1	226	549	22	22	165	365	12	22	27.59	67.03	2.69	2.69	29.26	64.72	2.13	3.90	0.46	NA
ATXN3	27	110	237	8	14	232	571	22	23	159	343	12	21	27.36	67.33	2.59	2.71	29.72	64.11	2.24	3.93	0.41	NA

ATXN3	28	27	53	1	2	342	808	30	37	49	106	4	7	28.10	66.39	2.47	3.04	29.52	63.86	2.41	4.22	0.78	NA
ATXN3	29	7	15	2	4	369	861	31	39	22	53	3	5	28.38	66.23	2.38	3.00	26.51	63.86	3.61	6.02	0.32	NA
ATXN3	30	5	19	1	0	376	876	33	43	15	38	1	1	28.31	65.96	2.48	3.24	27.27	69.09	1.82	1.82	0.99	NA
ATXN3	31	1	1	0	0	381	895	34	43	10	19	0	1	28.16	66.15	2.51	3.18	33.33	63.33	0.00	3.33	0.87	NA
ATXN3	32	0	1	0	0	382	896	34	43	9	18	0	1	28.19	66.13	2.51	3.17	32.14	64.29	0.00	3.57	0.88	NA
ATXN3	33	0	2	0	0	382	897	34	43	9	17	0	1	28.17	66.15	2.51	3.17	33.33	62.96	0.00	3.70	0.84	NA
ATXN3	34	3	3	0	0	382	899	34	43	9	15	0	1	28.13	66.20	2.50	3.17	36.00	60.00	0.00	4.00	0.68	NA
ATXN3	35	1	0	0	1	385	902	34	43	6	12	0	1	28.23	66.13	2.49	3.15	31.58	63.16	0.00	5.26	0.73	NA
ATXN3	36	2	1	0	0	386	902	34	44	5	12	0	0	28.26	66.03	2.49	3.22	29.41	70.59	0.00	0.00	1.00	NA
ATXN3	37	1	3	0	0	388	903	34	44	3	11	0	0	28.34	65.96	2.48	3.21	21.43	78.57	0.00	0.00	0.81	NA
ATXN3	38	1	5	0	0	389	906	34	44	2	8	0	0	28.33	65.99	2.48	3.20	20.00	80.00	0.00	0.00	0.85	NA
ATXN3	39	0	1	0	0	390	911	34	44	1	3	0	0	28.28	66.06	2.47	3.19	25.00	75.00	0.00	0.00	1.00	NA
ATXN3	40	1	1	0	0	390	912	34	44	1	2	0	0	28.26	66.09	2.46	3.19	33.33	66.67	0.00	0.00	1.00	NA
ATXN3	41	0	1	0	0	391	913	34	44	0	1	0	0	28.29	66.06	2.46	3.18	0.00	100.00	0.00	0.00	1.00	NA
ATXN7	6	0	1	0	0	0	0	0	0	415	956	36	45	NA	NA	NA	NA	28.58	65.84	2.48	3.10	1.00	NA
ATXN7	7	0	1	0	0	0	1	0	0	415	955	36	45	0.00	100.00	0.00	0.00	28.60	65.82	2.48	3.10	1.00	NA
ATXN7	9	3	3	0	1	0	2	0	0	415	954	36	45	0.00	100.00	0.00	0.00	28.62	65.79	2.48	3.10	1.00	NA
ATXN7	10	229	517	17	24	3	5	0	1	412	951	36	44	33.33	55.56	0.00	11.11	28.55	65.90	2.49	3.05	0.44	NA
ATXN7	11	54	138	4	5	232	522	17	25	183	434	19	20	29.15	65.58	2.14	3.14	27.90	66.16	2.90	3.05	0.78	NA
ATXN7	12	84	201	8	8	286	660	21	30	129	296	15	15	28.69	66.20	2.11	3.01	28.35	65.05	3.30	3.30	0.56	NA
ATXN7	13	36	81	3	5	370	861	29	38	45	95	7	7	28.51	66.33	2.23	2.93	29.22	61.69	4.55	4.55	0.18	NA
ATXN7	14	5	10	2	2	406	942	32	43	9	14	4	2	28.53	66.20	2.25	3.02	31.03	48.28	13.79	6.90	0.00	**
ATXN7	15	3	2	2	0	411	952	34	45	4	4	2	0	28.50	66.02	2.36	3.12	40.00	40.00	20.00	0.00	0.03	*
ATXN7	16	0	1	0	0	414	954	36	45	1	2	0	0	28.57	65.84	2.48	3.11	33.33	66.67	0.00	0.00	1.00	NA
ATXN7	17	0	0	0	0	414	955	36	45	1	1	0	0	28.55	65.86	2.48	3.10	50.00	50.00	0.00	0.00	0.57	NA
ATXN7	18	0	1	0	0	414	955	36	45	1	1	0	0	28.55	65.86	2.48	3.10	50.00	50.00	0.00	0.00	0.57	NA
ATXN7	19	1	0	0	0	414	956	36	45	1	0	0	0	28.53	65.89	2.48	3.10	100.00	0.00	0.00	0.00	0.34	NA
ATXN7	35	0	0	0	0	415	956	36	45	0	0	0	0	28.58	65.84	2.48	3.10	NA	NA	NA	NA	1.00	NA

ATXN8	8	15	22	1	0	0	0	0	0	388	896	30	41	NA	NA	NA	NA	28.63	66.13	2.21	3.03	1.00	NA
ATXN8	9	1	1	0	0	15	22	1	0	373	874	29	41	39.47	57.89	2.63	0.00	28.32	66.36	2.20	3.11	0.35	NA
ATXN8	10	1	0	0	0	16	23	1	0	372	873	29	41	40.00	57.50	2.50	0.00	28.29	66.39	2.21	3.12	0.30	NA
ATXN8	11	0	0	0	0	17	23	1	0	371	873	29	41	41.46	56.10	2.44	0.00	28.23	66.44	2.21	3.12	0.22	NA
ATXN8	12	61	144	7	9	17	23	1	0	371	873	29	41	41.46	56.10	2.44	0.00	28.23	66.44	2.21	3.12	0.22	NA
ATXN8	13	41	95	3	5	78	167	8	9	310	729	22	32	29.77	63.74	3.05	3.44	28.36	66.70	2.01	2.93	0.58	NA
ATXN8	14	68	153	3	5	119	262	11	14	269	634	19	27	29.31	64.53	2.71	3.45	28.35	66.81	2.00	2.85	0.69	NA
ATXN8	15	64	162	5	6	187	415	14	19	201	481	16	22	29.45	65.35	2.20	2.99	27.92	66.81	2.22	3.06	0.94	NA
ATXN8	16	43	114	3	6	251	577	19	25	137	319	11	16	28.78	66.17	2.18	2.87	28.36	66.05	2.28	3.31	0.97	NA
ATXN8	17	41	92	3	3	294	691	22	31	94	205	8	10	28.32	66.57	2.12	2.99	29.65	64.67	2.52	3.15	0.89	NA
ATXN8	18	29	61	2	3	335	783	25	34	53	113	5	7	28.46	66.53	2.12	2.89	29.78	63.48	2.81	3.93	0.65	NA
ATXN8	19	12	23	1	2	364	844	27	37	24	52	3	4	28.62	66.35	2.12	2.91	28.92	62.65	3.61	4.82	0.45	NA
ATXN8	20	4	6	0	1	376	867	28	39	12	29	2	2	28.70	66.18	2.14	2.98	26.67	64.44	4.44	4.44	0.45	NA
ATXN8	21	1	4	1	0	380	873	28	40	8	23	2	1	28.77	66.09	2.12	3.03	23.53	67.65	5.88	2.94	0.33	NA
ATXN8	22	2	4	1	0	381	877	29	40	7	19	1	1	28.71	66.09	2.19	3.01	25.00	67.86	3.57	3.57	0.61	NA
ATXN8	23	1	5	0	1	383	881	30	40	5	15	0	1	28.71	66.04	2.25	3.00	23.81	71.43	0.00	4.76	0.75	NA
ATXN8	24	3	0	0	0	384	886	30	41	4	10	0	0	28.64	66.07	2.24	3.06	28.57	71.43	0.00	0.00	1.00	NA
ATXN8	25	0	2	0	0	387	886	30	41	1	10	0	0	28.79	65.92	2.23	3.05	9.09	90.91	0.00	0.00	0.50	NA
ATXN8	26	0	2	0	0	387	888	30	41	1	8	0	0	28.75	65.97	2.23	3.05	11.11	88.89	0.00	0.00	0.56	NA
ATXN8	28	0	1	0	0	387	890	30	41	1	6	0	0	28.71	66.02	2.23	3.04	14.29	85.71	0.00	0.00	0.78	NA
ATXN8	29	0	1	0	0	387	891	30	41	1	5	0	0	28.69	66.05	2.22	3.04	16.67	83.33	0.00	0.00	0.76	NA
ATXN8	30	0	1	0	0	387	892	30	41	1	4	0	0	28.67	66.07	2.22	3.04	20.00	80.00	0.00	0.00	1.00	NA
ATXN8	32	0	0	0	0	387	893	30	41	1	3	0	0	28.65	66.10	2.22	3.03	25.00	75.00	0.00	0.00	1.00	NA
ATXN8	35	0	1	0	0	387	893	30	41	1	3	0	0	28.65	66.10	2.22	3.03	25.00	75.00	0.00	0.00	1.00	NA
ATXN8	44	1	0	0	0	387	894	30	41	1	2	0	0	28.62	66.12	2.22	3.03	33.33	66.67	0.00	0.00	1.00	NA
ATXN8	58	0	1	0	0	388	894	30	41	0	2	0	0	28.68	66.08	2.22	3.03	0.00	100.00	0.00	0.00	1.00	NA
ATXN8	66	0	1	0	0	388	895	30	41	0	1	0	0	28.66	66.10	2.22	3.03	0.00	100.00	0.00	0.00	1.00	NA
ATXN8	69	0	0	0	0	388	896	30	41	0	0	0	0	28.63	66.13	2.21	3.03	NA	NA	NA	NA	1.00	NA

ATXN8	70	0	0	0	0	388	896	30	41	0	0	0	0	28.63	66.13	2.21	3.03	NA	NA	NA	NA	NA
ATXN10	11	0	1	0	0	0	0	0	0	415	962	36	45	NA	NA	NA	NA	28.46	65.98	2.47	3.09	1.00	NA
ATXN10	12	8	19	1	2	0	1	0	0	415	961	36	45	0.00	100.00	0.00	0.00	28.48	65.96	2.47	3.09	1.00	NA
ATXN10	13	70	140	6	7	8	20	1	2	407	942	35	43	25.81	64.52	3.23	6.45	28.52	66.01	2.45	3.01	0.45	NA
ATXN10	14	156	351	17	11	78	160	7	9	337	802	29	36	30.71	62.99	2.76	3.54	27.99	66.61	2.41	2.99	0.68	NA
ATXN10	15	65	167	5	7	234	511	24	20	181	451	12	25	29.66	64.77	3.04	2.53	27.06	67.41	1.79	3.74	0.16	NA
ATXN10	16	42	111	2	6	299	678	29	27	116	284	7	18	28.94	65.63	2.81	2.61	27.29	66.82	1.65	4.24	0.22	NA
ATXN10	17	43	75	2	7	341	789	31	33	74	173	5	12	28.56	66.08	2.60	2.76	28.03	65.53	1.89	4.55	0.46	NA
ATXN10	18	14	49	1	3	384	864	33	40	31	98	3	5	29.07	65.40	2.50	3.03	22.63	71.53	2.19	3.65	0.41	NA
ATXN10	19	6	24	1	1	398	913	34	43	17	49	2	2	28.67	65.78	2.45	3.10	24.29	70.00	2.86	2.86	0.81	NA
ATXN10	20	7	12	0	1	404	937	35	44	11	25	1	1	28.45	65.99	2.46	3.10	28.95	65.79	2.63	2.63	0.98	NA
ATXN10	21	1	5	0	0	411	949	35	45	4	13	1	0	28.54	65.90	2.43	3.13	22.22	72.22	5.56	0.00	0.56	NA
ATXN10	22	3	5	1	0	412	954	35	45	3	8	1	0	28.49	65.98	2.42	3.11	25.00	66.67	8.33	0.00	0.50	NA
ATXN10	23	0	2	0	0	415	959	36	45	0	3	0	0	28.52	65.91	2.47	3.09	0.00	100.00	0.00	0.00	0.63	NA
ATXN10	24	0	1	0	0	415	961	36	45	0	1	0	0	28.48	65.96	2.47	3.09	0.00	100.00	0.00	0.00	1.00	NA
ATXN10	32	0	0	0	0	415	962	36	45	0	0	0	0	28.46	65.98	2.47	3.09	NA	NA	NA	NA	1.00	NA
CACNA1A	3	0	0	0	0	0	0	0	0	401	932	34	44	NA	NA	NA	NA	28.42	66.05	2.41	3.12	1.00	NA
CACNA1A	5	0	0	0	0	0	0	0	0	401	932	34	44	NA	NA	NA	NA	28.42	66.05	2.41	3.12	1.00	NA
CACNA1A	7	2	1	1	0	0	0	0	0	401	932	34	44	NA	NA	NA	NA	28.42	66.05	2.41	3.12	1.00	NA
CACNA1A	8	3	6	0	0	2	1	1	0	399	931	33	44	50.00	25.00	25.00	0.00	28.36	66.17	2.35	3.13	0.04	*
CACNA1A	9	1	0	0	0	5	7	1	0	396	925	33	44	38.46	53.85	7.69	0.00	28.33	66.17	2.36	3.15	0.32	NA
CACNA1A	11	53	134	4	8	6	7	1	0	395	925	33	44	42.86	50.00	7.14	0.00	28.27	66.21	2.36	3.15	0.24	NA
CACNA1A	12	72	228	7	11	59	141	5	8	342	791	29	36	27.70	66.20	2.35	3.76	28.55	66.03	2.42	3.01	0.91	NA
CACNA1A	13	224	458	17	20	131	369	12	19	270	563	22	25	24.67	69.49	2.26	3.58	30.68	63.98	2.50	2.84	0.09	Â°
CACNA1A	14	40	93	4	5	355	827	29	39	46	105	5	5	28.40	66.16	2.32	3.12	28.57	65.22	3.11	3.11	0.90	NA
CACNA1A	15	4	6	0	0	395	920	33	44	6	12	1	0	28.38	66.09	2.37	3.16	31.58	63.16	5.26	0.00	0.58	NA
CACNA1A	16	2	5	1	0	399	926	33	44	2	6	1	0	28.46	66.05	2.35	3.14	22.22	66.67	11.11	0.00	0.34	NA
CACNA1A	17	0	1	0	0	401	931	34	44	0	1	0	0	28.44	66.03	2.41	3.12	0.00	100.00	0.00	0.00	1.00	NA

CACNA1A	18	0	0	0	0	401	932	34	44	0	0	0	0	28.42	66.05	2.41	3.12	NA	NA	NA	NA	1.00	NA
CNBP	12	0	1	0	0	0	0	0	0	400	919	32	44	NA	NA	NA	NA	28.67	65.88	2.29	3.15	1.00	NA
CNBP	13	1	2	0	0	0	1	0	0	400	918	32	44	0.00	100.00	0.00	0.00	28.69	65.85	2.30	3.16	1.00	NA
CNBP	14	4	4	0	1	1	3	0	0	399	916	32	44	25.00	75.00	0.00	0.00	28.68	65.85	2.30	3.16	1.00	NA
CNBP	15	14	36	1	1	5	7	0	1	395	912	32	43	38.46	53.85	0.00	7.69	28.58	65.99	2.32	3.11	0.37	NA
CNBP	16	52	91	4	6	19	43	1	2	381	876	31	42	29.23	66.15	1.54	3.08	28.65	65.86	2.33	3.16	1.00	NA
CNBP	17	170	400	17	15	71	134	5	8	329	785	27	36	32.57	61.47	2.29	3.67	27.95	66.69	2.29	3.06	0.47	NA
CNBP	18	108	272	6	13	241	534	22	23	159	385	10	21	29.39	65.12	2.68	2.80	27.65	66.96	1.74	3.65	0.46	NA
CNBP	19	28	58	2	3	349	806	28	36	51	113	4	8	28.63	66.12	2.30	2.95	28.98	64.20	2.27	4.55	0.67	NA
CNBP	20	6	24	1	2	377	864	30	39	23	55	2	5	28.78	65.95	2.29	2.98	27.06	64.71	2.35	5.88	0.48	NA
CNBP	21	13	23	1	3	383	888	31	41	17	31	1	3	28.52	66.12	2.31	3.05	32.69	59.62	1.92	5.77	0.46	NA
CNBP	22	1	4	0	0	396	911	32	44	4	8	0	0	28.63	65.87	2.31	3.18	33.33	66.67	0.00	0.00	0.88	NA
CNBP	23	3	1	0	0	397	915	32	44	3	4	0	0	28.60	65.92	2.31	3.17	42.86	57.14	0.00	0.00	0.62	NA
CNBP	25	0	1	0	0	400	916	32	44	0	3	0	0	28.74	65.80	2.30	3.16	0.00	100.00	0.00	0.00	0.63	NA
CNBP	26	0	0	0	0	400	917	32	44	0	2	0	0	28.72	65.83	2.30	3.16	0.00	100.00	0.00	0.00	1.00	NA
CNBP	29	0	1	0	0	400	917	32	44	0	2	0	0	28.72	65.83	2.30	3.16	0.00	100.00	0.00	0.00	1.00	NA
CNBP	40	0	1	0	0	400	918	32	44	0	1	0	0	28.69	65.85	2.30	3.16	0.00	100.00	0.00	0.00	1.00	NA
CSTB	2	27	78	2	3	0	0	0	0	414	956	34	45	NA	NA	NA	NA	28.57	65.98	2.35	3.11	1.00	NA
CSTB	3	387	877	32	42	27	78	2	3	387	878	32	42	24.55	70.91	1.82	2.73	28.90	65.57	2.39	3.14	0.79	NA
CSTB	4	0	0	0	0	414	955	34	45	0	1	0	0	28.59	65.95	2.35	3.11	0.00	100.00	0.00	0.00	1.00	NA
CSTB	5	0	1	0	0	414	955	34	45	0	1	0	0	28.59	65.95	2.35	3.11	0.00	100.00	0.00	0.00	1.00	NA
CSTB	6	0	0	0	0	414	956	34	45	0	0	0	0	28.57	65.98	2.35	3.11	NA	NA	NA	NA	1.00	NA
C9ORF72	2	164	333	16	12	0	0	0	0	416	958	35	45	NA	NA	NA	NA	28.61	65.89	2.41	3.09	1.00	NA
C9ORF72	3	0	2	0	0	164	333	16	12	252	625	19	33	31.24	63.43	3.05	2.29	27.13	67.28	2.05	3.55	0.12	NA
C9ORF72	4	19	46	0	1	164	335	16	12	252	623	19	33	31.12	63.57	3.04	2.28	27.18	67.21	2.05	3.56	0.13	NA
C9ORF72	5	57	148	7	6	183	381	16	13	233	577	19	32	30.86	64.25	2.70	2.19	27.06	67.02	2.21	3.72	0.16	NA
C9ORF72	6	28	54	2	4	240	529	23	19	176	429	12	26	29.59	65.23	2.84	2.34	27.37	66.72	1.87	4.04	0.14	NA
C9ORF72	7	78	166	5	11	268	583	25	23	148	375	10	22	29.81	64.85	2.78	2.56	26.67	67.57	1.80	3.96	0.17	NA

C9ORF72	8	12	30	1	2	346	749	30	34	70	209	5	11	29.85	64.62	2.59	2.93	23.73	70.85	1.69	3.73	0.12	NA
C9ORF72	9	15	60	1	5	358	779	31	36	58	179	4	9	29.73	64.70	2.57	2.99	23.20	71.60	1.60	3.60	0.13	NA
C9ORF72	10	17	44	2	1	373	839	32	41	43	119	3	4	29.03	65.29	2.49	3.19	25.44	70.41	1.78	2.37	0.67	NA
C9ORF72	11	4	23	0	0	390	883	34	42	26	75	1	3	28.91	65.46	2.52	3.11	24.76	71.43	0.95	2.86	0.65	NA
C9ORF72	12	11	17	1	1	394	906	34	42	22	52	1	3	28.63	65.84	2.47	3.05	28.21	66.67	1.28	3.85	0.93	NA
C9ORF72	13	5	11	0	0	405	923	35	43	11	35	0	2	28.81	65.65	2.49	3.06	22.92	72.92	0.00	4.17	0.57	NA
C9ORF72	14	3	3	0	1	410	934	35	43	6	24	0	2	28.83	65.68	2.46	3.02	18.75	75.00	0.00	6.25	0.32	NA
C9ORF72	15	0	8	0	0	413	937	35	44	3	21	0	1	28.90	65.57	2.45	3.08	12.00	84.00	0.00	4.00	0.19	NA
C9ORF72	16	2	5	0	1	413	945	35	44	3	13	0	1	28.74	65.76	2.44	3.06	17.65	76.47	0.00	5.88	0.50	NA
C9ORF72	17	1	2	0	0	415	950	35	45	1	8	0	0	28.72	65.74	2.42	3.11	11.11	88.89	0.00	0.00	0.58	NA
C9ORF72	18	0	3	0	0	416	952	35	45	0	6	0	0	28.73	65.75	2.42	3.11	0.00	100.00	0.00	0.00	0.42	NA
C9ORF72	19	0	2	0	0	416	955	35	45	0	3	0	0	28.67	65.82	2.41	3.10	0.00	100.00	0.00	0.00	0.63	NA
C9ORF72	31	0	1	0	0	416	957	35	45	0	1	0	0	28.63	65.86	2.41	3.10	0.00	100.00	0.00	0.00	1.00	NA
DIP2B	6	1	0	0	0	0	0	0	0	418	957	35	45	NA	NA	NA	NA	28.73	65.77	2.41	3.09	1.00	NA
DIP2B	7	162	352	16	19	1	0	0	0	417	957	35	45	100.00	0.00	0.00	0.00	28.68	65.82	2.41	3.09	0.34	NA
DIP2B	8	49	100	4	5	163	352	16	19	255	605	19	26	29.64	64.00	2.91	3.45	28.18	66.85	2.10	2.87	0.56	NA
DIP2B	9	1	6	0	0	212	452	20	24	206	505	15	21	29.94	63.84	2.82	3.39	27.58	67.60	2.01	2.81	0.41	NA
DIP2B	10	2	1	0	1	213	458	20	24	205	499	15	21	29.79	64.06	2.80	3.36	27.70	67.43	2.03	2.84	0.50	NA
DIP2B	11	3	8	0	0	215	459	20	25	203	498	15	20	29.90	63.84	2.78	3.48	27.58	67.66	2.04	2.72	0.39	NA
DIP2B	12	17	41	1	0	218	467	20	25	200	490	15	20	29.86	63.97	2.74	3.42	27.59	67.59	2.07	2.76	0.46	NA
DIP2B	13	19	51	3	1	235	508	21	25	183	449	14	20	29.78	64.39	2.66	3.17	27.48	67.42	2.10	3.00	0.65	NA
DIP2B	14	33	91	2	4	254	559	24	26	164	398	11	19	29.43	64.77	2.78	3.01	27.70	67.23	1.86	3.21	0.59	NA
DIP2B	15	24	57	1	4	287	650	26	30	131	307	9	15	28.90	65.46	2.62	3.02	28.35	66.45	1.95	3.25	0.88	NA
DIP2B	16	36	68	3	3	311	707	27	34	107	250	8	11	28.82	65.52	2.50	3.15	28.46	66.49	2.13	2.93	0.98	NA
DIP2B	17	24	58	1	3	347	775	30	37	71	182	5	8	29.18	65.18	2.52	3.11	26.69	68.42	1.88	3.01	0.79	NA
DIP2B	18	13	36	1	1	371	833	31	40	47	124	4	5	29.10	65.33	2.43	3.14	26.11	68.89	2.22	2.78	0.85	NA
DIP2B	19	7	27	1	1	384	869	32	41	34	88	3	4	28.96	65.54	2.41	3.09	26.36	68.22	2.33	3.10	0.93	NA
DIP2B	20	8	19	0	1	391	896	33	42	27	61	2	3	28.71	65.79	2.42	3.08	29.03	65.59	2.15	3.23	0.99	NA

DIP2B	21	5	13	0	0	399	915	33	43	19	42	2	2	28.71	65.83	2.37	3.09	29.23	64.62	3.08	3.08	0.90	NA
DIP2B	22	3	5	0	1	404	928	33	43	14	29	2	2	28.69	65.91	2.34	3.05	29.79	61.70	4.26	4.26	0.53	NA
DIP2B	23	5	11	0	1	407	933	33	44	11	24	2	1	28.72	65.84	2.33	3.11	28.95	63.16	5.26	2.63	0.50	NA
DIP2B	24	4	10	0	0	412	944	33	45	6	13	2	0	28.73	65.83	2.30	3.14	28.57	61.90	9.52	0.00	0.23	NA
DIP2B	25	2	2	2	0	416	954	33	45	2	3	2	0	28.73	65.88	2.28	3.11	28.57	42.86	28.57	0.00	0.02	*
DIP2B	26	0	1	0	0	418	956	35	45	0	1	0	0	28.75	65.75	2.41	3.09	0.00	100.00	0.00	0.00	1.00	NA
DIP2B	27	0	0	0	0	418	957	35	45	0	0	0	0	28.73	65.77	2.41	3.09	NA	NA	NA	NA	1.00	NA
DMPK	5	62	133	2	6	0	0	0	0	417	962	35	45	NA	NA	NA	NA	28.58	65.94	2.40	3.08	1.00	NA
DMPK	6	2	0	0	0	62	133	2	6	355	829	33	39	30.54	65.52	0.99	2.96	28.26	66.00	2.63	3.11	0.55	NA
DMPK	7	0	1	0	0	64	133	2	6	353	829	33	39	31.22	64.88	0.98	2.93	28.15	66.11	2.63	3.11	0.48	NA
DMPK	8	4	13	0	0	64	134	2	6	353	828	33	39	31.07	65.05	0.97	2.91	28.17	66.08	2.63	3.11	0.49	NA
DMPK	9	0	1	0	0	68	147	2	6	349	815	33	39	30.49	65.92	0.90	2.69	28.24	65.94	2.67	3.16	0.43	NA
DMPK	10	4	12	0	1	68	148	2	6	349	814	33	39	30.36	66.07	0.89	2.68	28.26	65.91	2.67	3.16	0.43	NA
DMPK	11	49	101	1	5	72	160	2	7	345	802	33	38	29.88	66.39	0.83	2.90	28.33	65.85	2.71	3.12	0.37	NA
DMPK	12	46	132	5	3	121	261	3	12	296	701	32	33	30.48	65.74	0.76	3.02	27.87	66.01	3.01	3.11	0.06	Â°
DMPK	13	118	250	15	16	167	393	8	15	250	569	27	30	28.64	67.41	1.37	2.57	28.54	64.95	3.08	3.42	0.14	NA
DMPK	14	49	107	4	4	285	643	23	31	132	319	12	14	29.02	65.48	2.34	3.16	27.67	66.88	2.52	2.94	0.94	NA
DMPK	15	2	8	2	0	334	750	27	35	83	212	8	10	29.14	65.45	2.36	3.05	26.52	67.73	2.56	3.19	0.82	NA
DMPK	16	7	12	0	0	336	758	29	35	81	204	6	10	29.02	65.46	2.50	3.02	26.91	67.77	1.99	3.32	0.84	NA
DMPK	17	2	3	0	2	343	770	29	35	74	192	6	10	29.14	65.42	2.46	2.97	26.24	68.09	2.13	3.55	0.74	NA
DMPK	18	0	1	0	0	345	773	29	37	72	189	6	8	29.14	65.29	2.45	3.13	26.18	68.73	2.18	2.91	0.79	NA
DMPK	19	11	19	0	2	345	774	29	37	72	188	6	8	29.11	65.32	2.45	3.12	26.28	68.61	2.19	2.92	0.81	NA
DMPK	20	10	25	1	1	356	793	29	39	61	169	6	6	29.25	65.16	2.38	3.20	25.21	69.83	2.48	2.48	0.55	NA
DMPK	21	17	42	1	0	366	818	30	40	51	144	5	5	29.19	65.23	2.39	3.19	24.88	70.24	2.44	2.44	0.58	NA
DMPK	22	9	17	1	1	383	860	31	40	34	102	4	5	29.15	65.45	2.36	3.04	23.45	70.34	2.76	3.45	0.48	NA
DMPK	23	1	14	0	0	392	877	32	41	25	85	3	4	29.21	65.35	2.38	3.06	21.37	72.65	2.56	3.42	0.31	NA
DMPK	24	5	14	0	2	393	891	32	41	24	71	3	4	28.96	65.66	2.36	3.02	23.53	69.61	2.94	3.92	0.55	NA
DMPK	25	9	13	1	2	398	905	32	43	19	57	3	2	28.88	65.67	2.32	3.12	23.46	70.37	3.70	2.47	0.58	NA

DMPK	26	2	12	1	0	407	918	33	45	10	44	2	0	29.01	65.43	2.35	3.21	17.86	78.57	3.57	0.00	0.10	NA
DMPK	27	3	11	0	0	409	930	34	45	8	32	1	0	28.84	65.59	2.40	3.17	19.51	78.05	2.44	0.00	0.36	NA
DMPK	28	3	4	0	0	412	941	34	45	5	21	1	0	28.77	65.71	2.37	3.14	18.52	77.78	3.70	0.00	0.42	NA
DMPK	29	0	5	0	0	415	945	34	45	2	17	1	0	28.84	65.67	2.36	3.13	10.00	85.00	5.00	0.00	0.15	NA
DMPK	30	0	2	1	0	415	950	34	45	2	12	1	0	28.74	65.79	2.35	3.12	13.33	80.00	6.67	0.00	0.30	NA
DMPK	31	0	3	0	0	415	952	35	45	2	10	0	0	28.68	65.79	2.42	3.11	16.67	83.33	0.00	0.00	0.76	NA
DMPK	32	1	1	0	0	415	955	35	45	2	7	0	0	28.62	65.86	2.41	3.10	22.22	77.78	0.00	0.00	0.84	NA
DMPK	33	0	2	0	0	416	956	35	45	1	6	0	0	28.65	65.84	2.41	3.10	14.29	85.71	0.00	0.00	0.79	NA
DMPK	34	0	1	0	0	416	958	35	45	1	4	0	0	28.61	65.89	2.41	3.09	20.00	80.00	0.00	0.00	1.00	NA
DMPK	35	0	1	0	0	416	959	35	45	1	3	0	0	28.59	65.91	2.41	3.09	25.00	75.00	0.00	0.00	1.00	NA
DMPK	36	1	0	0	0	416	960	35	45	1	2	0	0	28.57	65.93	2.40	3.09	33.33	66.67	0.00	0.00	1.00	NA
DMPK	37	0	0	0	0	417	960	35	45	0	2	0	0	28.62	65.89	2.40	3.09	0.00	100.00	0.00	0.00	1.00	NA
DMPK	40	0	0	0	0	417	960	35	45	0	2	0	0	28.62	65.89	2.40	3.09	0.00	100.00	0.00	0.00	1.00	NA
DMPK	45	0	1	0	0	417	960	35	45	0	2	0	0	28.62	65.89	2.40	3.09	0.00	100.00	0.00	0.00	1.00	NA
DMPK	46	0	0	0	0	417	961	35	45	0	1	0	0	28.60	65.91	2.40	3.09	0.00	100.00	0.00	0.00	1.00	NA
DMPK	63	0	1	0	0	417	961	35	45	0	1	0	0	28.60	65.91	2.40	3.09	0.00	100.00	0.00	0.00	1.00	NA
DMPK	67	0	0	0	0	417	962	35	45	0	0	0	0	28.58	65.94	2.40	3.08	NA	NA	NA	NA	1.00	NA
FMR1	-9	0	1	0	0	0	0	0	0	372	892	31	43	NA	NA	NA	NA	27.80	66.67	2.32	3.21	1.00	NA
FMR1	-4	1	1	0	0	0	1	0	0	372	891	31	43	0.00	100.00	0.00	0.00	27.82	66.64	2.32	3.22	1.00	NA
FMR1	-3	0	1	0	0	1	2	0	0	371	890	31	43	33.33	66.67	0.00	0.00	27.79	66.67	2.32	3.22	1.00	NA
FMR1	0	1	0	0	0	1	3	0	0	371	889	31	43	25.00	75.00	0.00	0.00	27.81	66.64	2.32	3.22	1.00	NA
FMR1	2	0	1	0	0	2	3	0	0	370	889	31	43	40.00	60.00	0.00	0.00	27.76	66.69	2.33	3.23	0.73	NA
FMR1	3	0	0	0	0	2	4	0	0	370	888	31	43	33.33	66.67	0.00	0.00	27.78	66.67	2.33	3.23	1.00	NA
FMR1	4	0	0	0	0	2	4	0	0	370	888	31	43	33.33	66.67	0.00	0.00	27.78	66.67	2.33	3.23	1.00	NA
FMR1	5	1	2	0	0	2	4	0	0	370	888	31	43	33.33	66.67	0.00	0.00	27.78	66.67	2.33	3.23	1.00	NA
FMR1	6	2	7	1	1	3	6	0	0	369	886	31	43	33.33	66.67	0.00	0.00	27.77	66.67	2.33	3.24	0.84	NA
FMR1	7	11	20	1	1	5	13	1	1	367	879	30	42	25.00	65.00	5.00	5.00	27.85	66.69	2.28	3.19	0.47	NA
FMR1	8	2	11	0	0	16	33	2	2	356	859	29	41	30.19	62.26	3.77	3.77	27.70	66.85	2.26	3.19	0.64	NA

FMR1	9	2	14	0	0	18	44	2	2	354	848	29	41	27.27	66.67	3.03	3.03	27.83	66.67	2.28	3.22	0.91	NA
FMR1	10	5	33	0	3	20	58	2	2	352	834	29	41	24.39	70.73	2.44	2.44	28.03	66.40	2.31	3.26	0.87	NA
FMR1	11	10	23	1	0	25	91	2	5	347	801	29	38	20.33	73.98	1.63	4.07	28.56	65.93	2.39	3.13	0.21	NA
FMR1	12	14	30	3	1	35	114	3	5	337	778	28	38	22.29	72.61	1.91	3.18	28.54	65.88	2.37	3.22	0.39	NA
FMR1	13	44	107	3	5	49	144	6	6	323	748	25	37	23.90	70.24	2.93	2.93	28.51	66.02	2.21	3.27	0.50	NA
FMR1	14	13	31	2	0	93	251	9	11	279	641	22	32	25.55	68.96	2.47	3.02	28.64	65.81	2.26	3.29	0.70	NA
FMR1	15	17	25	1	2	106	282	11	11	266	610	20	32	25.85	68.78	2.68	2.68	28.66	65.73	2.16	3.45	0.56	NA
FMR1	16	16	30	0	2	123	307	12	13	249	585	19	30	27.03	67.47	2.64	2.86	28.20	66.25	2.15	3.40	0.85	NA
FMR1	17	18	29	4	0	139	337	12	15	233	555	19	28	27.63	67.00	2.39	2.98	27.90	66.47	2.28	3.35	0.98	NA
FMR1	18	25	66	2	3	157	366	16	15	215	526	15	28	28.34	66.06	2.89	2.71	27.42	67.09	1.91	3.57	0.53	NA
FMR1	19	56	143	3	7	182	432	18	18	190	460	13	25	28.00	66.46	2.77	2.77	27.62	66.86	1.89	3.63	0.59	NA
FMR1	20	16	35	1	5	238	575	21	25	134	317	10	18	27.71	66.94	2.44	2.91	27.97	66.18	2.09	3.76	0.82	NA
FMR1	21	21	57	3	3	254	610	22	30	118	282	9	13	27.73	66.59	2.40	3.28	27.96	66.82	2.13	3.08	1.00	NA
FMR1	22	20	50	2	2	275	667	25	33	97	225	6	10	27.50	66.70	2.50	3.30	28.70	66.57	1.78	2.96	0.89	NA
FMR1	23	9	19	0	1	295	717	27	35	77	175	4	8	27.47	66.76	2.51	3.26	29.17	66.29	1.52	3.03	0.82	NA
FMR1	24	2	2	0	0	304	736	27	36	68	156	4	7	27.56	66.73	2.45	3.26	28.94	66.38	1.70	2.98	0.93	NA
FMR1	25	2	2	0	0	306	738	27	36	66	154	4	7	27.64	66.67	2.44	3.25	28.57	66.67	1.73	3.03	0.96	NA
FMR1	26	2	5	0	0	308	740	27	36	64	152	4	7	27.72	66.61	2.43	3.24	28.19	66.96	1.76	3.08	0.98	NA
FMR1	27	14	33	0	1	310	745	27	36	62	147	4	7	27.73	66.64	2.42	3.22	28.18	66.82	1.82	3.18	0.98	NA
FMR1	28	31	66	3	5	324	778	27	37	48	114	4	6	27.79	66.72	2.32	3.17	27.91	66.28	2.33	3.49	0.98	NA
FMR1	29	10	32	1	1	355	844	30	42	17	48	1	1	27.93	66.40	2.36	3.30	25.37	71.64	1.49	1.49	0.90	NA
FMR1	30	3	5	0	0	365	876	31	43	7	16	0	0	27.76	66.62	2.36	3.27	30.43	69.57	0.00	0.00	1.00	NA
FMR1	31	0	2	0	0	368	881	31	43	4	11	0	0	27.82	66.59	2.34	3.25	26.67	73.33	0.00	0.00	1.00	NA
FMR1	32	0	2	0	0	368	883	31	43	4	9	0	0	27.77	66.64	2.34	3.25	30.77	69.23	0.00	0.00	1.00	NA
FMR1	33	2	0	0	0	368	885	31	43	4	7	0	0	27.73	66.69	2.34	3.24	36.36	63.64	0.00	0.00	0.86	NA
FMR1	34	0	0	0	0	370	885	31	43	2	7	0	0	27.84	66.59	2.33	3.24	22.22	77.78	0.00	0.00	1.00	NA
FMR1	35	0	0	0	0	370	885	31	43	2	7	0	0	27.84	66.59	2.33	3.24	22.22	77.78	0.00	0.00	1.00	NA
FMR1	36	0	0	0	0	370	885	31	43	2	7	0	0	27.84	66.59	2.33	3.24	22.22	77.78	0.00	0.00	1.00	NA

FMR1	38	0	1	0	0	370	885	31	43	2	7	0	0	27.84	66.59	2.33	3.24	22.22	77.78	0.00	0.00	1.00	NA
FMR1	39	0	0	0	0	370	886	31	43	2	6	0	0	27.82	66.62	2.33	3.23	25.00	75.00	0.00	0.00	1.00	NA
FMR1	40	0	0	0	0	370	886	31	43	2	6	0	0	27.82	66.62	2.33	3.23	25.00	75.00	0.00	0.00	1.00	NA
FMR1	41	1	2	0	0	370	886	31	43	2	6	0	0	27.82	66.62	2.33	3.23	25.00	75.00	0.00	0.00	1.00	NA
FMR1	42	1	0	0	0	371	888	31	43	1	4	0	0	27.83	66.62	2.33	3.23	20.00	80.00	0.00	0.00	1.00	NA
FMR1	45	0	1	0	0	372	888	31	43	0	4	0	0	27.89	66.57	2.32	3.22	0.00	100.00	0.00	0.00	0.46	NA
FMR1	51	0	1	0	0	372	889	31	43	0	3	0	0	27.87	66.59	2.32	3.22	0.00	100.00	0.00	0.00	0.63	NA
FMR1	63	0	0	0	0	372	890	31	43	0	2	0	0	27.84	66.62	2.32	3.22	0.00	100.00	0.00	0.00	1.00	NA
FMR1	72	0	1	0	0	372	890	31	43	0	2	0	0	27.84	66.62	2.32	3.22	0.00	100.00	0.00	0.00	1.00	NA
FMR1	75	0	0	0	0	372	891	31	43	0	1	0	0	27.82	66.64	2.32	3.22	0.00	100.00	0.00	0.00	1.00	NA
FMR1	79	0	1	0	0	372	891	31	43	0	1	0	0	27.82	66.64	2.32	3.22	0.00	100.00	0.00	0.00	1.00	NA
FRA10C1	6	0	3	0	0	0	0	0	0	410	956	33	45	NA	NA	NA	NA	28.39	66.20	2.29	3.12	1.00	NA
FRA10C1	7	51	113	3	8	0	3	0	0	410	953	33	45	0.00	100.00	0.00	0.00	28.45	66.13	2.29	3.12	0.63	NA
FRA10C1	8	144	370	11	15	51	116	3	8	359	840	30	37	28.65	65.17	1.69	4.49	28.36	66.35	2.37	2.92	0.64	NA
FRA10C1	9	124	286	10	15	195	486	14	23	215	470	19	22	27.16	67.69	1.95	3.20	29.61	64.74	2.62	3.03	0.58	NA
FRA10C1	10	2	2	0	0	319	772	24	38	91	184	9	7	27.67	66.96	2.08	3.30	31.27	63.23	3.09	2.41	0.35	NA
FRA10C1	11	1	0	0	0	321	774	24	38	89	182	9	7	27.74	66.90	2.07	3.28	31.01	63.41	3.14	2.44	0.39	NA
FRA10C1	12	4	6	1	1	322	774	24	38	88	182	9	7	27.81	66.84	2.07	3.28	30.77	63.64	3.15	2.45	0.43	NA
FRA10C1	13	8	15	0	1	326	780	25	39	84	176	8	6	27.86	66.67	2.14	3.33	30.66	64.23	2.92	2.19	0.50	NA
FRA10C1	14	11	28	0	1	334	795	25	40	76	161	8	5	27.97	66.58	2.09	3.35	30.40	64.40	3.20	2.00	0.40	NA
FRA10C1	15	6	10	0	0	345	823	25	41	65	133	8	4	27.96	66.69	2.03	3.32	30.95	63.33	3.81	1.90	0.22	NA
FRA10C1	16	18	41	2	1	351	833	25	41	59	123	8	4	28.08	66.64	2.00	3.28	30.41	63.40	4.12	2.06	0.21	NA
FRA10C1	17	5	12	1	0	369	874	27	42	41	82	6	3	28.13	66.62	2.06	3.20	31.06	62.12	4.55	2.27	0.24	NA
FRA10C1	18	4	6	0	1	374	886	28	42	36	70	5	3	28.12	66.62	2.11	3.16	31.58	61.40	4.39	2.63	0.32	NA
FRA10C1	19	0	2	1	0	378	892	28	43	32	64	5	2	28.19	66.52	2.09	3.21	31.07	62.14	4.85	1.94	0.25	NA
FRA10C1	20	7	13	0	0	378	894	29	43	32	62	4	2	28.13	66.52	2.16	3.20	32.00	62.00	4.00	2.00	0.43	NA
FRA10C1	21	6	12	3	1	385	907	29	43	25	49	4	2	28.23	66.50	2.13	3.15	31.25	61.25	5.00	2.50	0.30	NA
FRA10C1	22	5	8	0	0	391	919	32	44	19	37	1	1	28.21	66.31	2.31	3.17	32.76	63.79	1.72	1.72	0.91	NA

FRA10C1	23	2	6	0	0	396	927	32	44	14	29	1	1	28.31	66.26	2.29	3.15	31.11	64.44	2.22	2.22	0.96	NA
FRA10C1	24	1	5	0	0	398	933	32	44	12	23	1	1	28.29	66.31	2.27	3.13	32.43	62.16	2.70	2.70	0.84	NA
FRA10C1	25	3	7	0	0	399	938	32	44	11	18	1	1	28.24	66.38	2.26	3.11	35.48	58.06	3.23	3.23	0.51	NA
FRA10C1	26	3	4	1	1	402	945	32	44	8	11	1	1	28.25	66.41	2.25	3.09	38.10	52.38	4.76	4.76	0.25	NA
FRA10C1	27	1	3	0	0	405	949	33	45	5	7	0	0	28.28	66.27	2.30	3.14	41.67	58.33	0.00	0.00	0.67	NA
FRA10C1	28	2	2	0	0	406	952	33	45	4	4	0	0	28.27	66.30	2.30	3.13	50.00	50.00	0.00	0.00	0.52	NA
FRA10C1	29	0	1	0	0	408	954	33	45	2	2	0	0	28.33	66.25	2.29	3.13	50.00	50.00	0.00	0.00	0.67	NA
FRA10C1	30	1	0	0	0	408	955	33	45	2	1	0	0	28.31	66.27	2.29	3.12	66.67	33.33	0.00	0.00	0.34	NA
FRA10C1	31	0	0	0	0	409	955	33	45	1	1	0	0	28.36	66.23	2.29	3.12	50.00	50.00	0.00	0.00	0.56	NA
FRA10C1	32	1	0	0	0	409	955	33	45	1	1	0	0	28.36	66.23	2.29	3.12	50.00	50.00	0.00	0.00	0.56	NA
FRA10C1	140	0	1	0	0	410	955	33	45	0	1	0	0	28.41	66.18	2.29	3.12	0.00	100.00	0.00	0.00	1.00	NA
FRA11A	8	37	78	1	4	0	0	0	0	413	953	34	45	NA	NA	NA	NA	28.58	65.95	2.35	3.11	1.00	NA
FRA11A	9	254	573	19	29	37	78	1	4	376	875	33	41	30.83	65.00	0.83	3.33	28.38	66.04	2.49	3.09	0.72	NA
FRA11A	10	111	257	10	12	291	651	20	33	122	302	14	12	29.25	65.43	2.01	3.32	27.11	67.11	3.11	2.67	0.46	NA
FRA11A	11	6	23	0	0	402	908	30	45	11	45	4	0	29.03	65.56	2.17	3.25	18.33	75.00	6.67	0.00	0.02	*
FRA11A	12	4	12	2	0	408	931	30	45	5	22	4	0	28.85	65.84	2.12	3.18	16.13	70.97	12.90	0.00	0.01	**
FRA11A	13	0	3	1	0	412	943	32	45	1	10	2	0	28.77	65.85	2.23	3.14	7.69	76.92	15.38	0.00	0.04	*
FRA11A	14	0	2	0	0	412	946	33	45	1	7	1	0	28.69	65.88	2.30	3.13	11.11	77.78	11.11	0.00	0.23	NA
FRA11A	15	0	0	1	0	412	948	33	45	1	5	1	0	28.65	65.92	2.29	3.13	14.29	71.43	14.29	0.00	0.21	NA
FRA11A	17	0	1	0	0	412	948	34	45	1	5	0	0	28.63	65.88	2.36	3.13	16.67	83.33	0.00	0.00	0.77	NA
FRA11A	18	0	0	0	0	412	949	34	45	1	4	0	0	28.61	65.90	2.36	3.13	20.00	80.00	0.00	0.00	1.00	NA
FRA11A	19	0	1	0	0	412	949	34	45	1	4	0	0	28.61	65.90	2.36	3.13	20.00	80.00	0.00	0.00	1.00	NA
FRA11A	22	0	0	0	0	412	950	34	45	1	3	0	0	28.59	65.93	2.36	3.12	25.00	75.00	0.00	0.00	1.00	NA
FRA11A	23	0	2	0	0	412	950	34	45	1	3	0	0	28.59	65.93	2.36	3.12	25.00	75.00	0.00	0.00	1.00	NA
FRA11A	24	0	1	0	0	412	952	34	45	1	1	0	0	28.55	65.97	2.36	3.12	50.00	50.00	0.00	0.00	0.57	NA
FRA11A	64	1	0	0	0	412	953	34	45	1	0	0	0	28.53	66.00	2.35	3.12	100.00	0.00	0.00	0.00	0.34	NA
FXN	8	27	41	2	1	0	0	0	0	399	921	34	44	NA	NA	NA	NA	28.54	65.88	2.43	3.15	1.00	NA
FXN	9	28	87	5	6	27	41	2	1	372	880	32	43	38.03	57.75	2.82	1.41	28.03	66.31	2.41	3.24	0.27	NA

FXN	10	209	469	14	19	55	128	7	7	344	793	27	37	27.92	64.97	3.55	3.55	28.64	66.03	2.25	3.08	0.65	NA
FXN	11	3	5	2	0	264	597	21	26	135	324	13	18	29.07	65.75	2.31	2.86	27.55	66.12	2.65	3.67	0.76	NA
FXN	12	1	1	0	0	267	602	23	26	132	319	11	18	29.08	65.58	2.51	2.83	27.50	66.46	2.29	3.75	0.74	NA
FXN	13	8	16	1	0	268	603	23	26	131	318	11	18	29.13	65.54	2.50	2.83	27.41	66.53	2.30	3.77	0.72	NA
FXN	14	2	3	0	0	276	619	24	26	123	302	10	18	29.21	65.50	2.54	2.75	27.15	66.67	2.21	3.97	0.55	NA
FXN	15	1	8	0	2	278	622	24	26	121	299	10	18	29.26	65.47	2.53	2.74	27.01	66.74	2.23	4.02	0.51	NA
FXN	16	6	10	1	0	279	630	24	28	120	291	10	16	29.03	65.56	2.50	2.91	27.46	66.59	2.29	3.66	0.82	NA
FXN	17	16	45	1	4	285	640	25	28	114	281	9	16	29.14	65.44	2.56	2.86	27.14	66.90	2.14	3.81	0.67	NA
FXN	18	18	53	1	2	301	685	26	32	98	236	8	12	28.83	65.61	2.49	3.07	27.68	66.67	2.26	3.39	0.96	NA
FXN	19	24	40	0	2	319	738	27	34	80	183	7	10	28.53	66.01	2.42	3.04	28.57	65.36	2.50	3.57	0.96	NA
FXN	20	14	20	5	0	343	778	27	36	56	143	7	8	28.97	65.71	2.28	3.04	26.17	66.82	3.27	3.74	0.61	NA
FXN	21	5	22	0	2	357	798	32	36	42	123	2	8	29.19	65.25	2.62	2.94	24.00	70.29	1.14	4.57	0.20	NA
FXN	22	7	25	0	1	362	820	32	38	37	101	2	6	28.91	65.50	2.56	3.04	25.34	69.18	1.37	4.11	0.58	NA
FXN	23	5	18	1	1	369	845	32	39	30	76	2	5	28.72	65.76	2.49	3.04	26.55	67.26	1.77	4.42	0.77	NA
FXN	24	7	8	0	0	374	863	33	40	25	58	1	4	28.55	65.88	2.52	3.05	28.41	65.91	1.14	4.55	0.76	NA
FXN	25	4	10	0	2	381	871	33	40	18	50	1	4	28.75	65.74	2.49	3.02	24.66	68.49	1.37	5.48	0.53	NA
FXN	26	2	13	0	0	385	881	33	42	14	40	1	2	28.71	65.70	2.46	3.13	24.56	70.18	1.75	3.51	0.91	NA
FXN	27	5	8	0	1	387	894	33	42	12	27	1	2	28.54	65.93	2.43	3.10	28.57	64.29	2.38	4.76	0.81	NA
FXN	28	3	6	0	0	392	902	33	43	7	19	1	1	28.61	65.84	2.41	3.14	25.00	67.86	3.57	3.57	0.66	NA
FXN	29	0	2	0	0	395	908	33	43	4	13	1	1	28.64	65.84	2.39	3.12	21.05	68.42	5.26	5.26	0.40	NA
FXN	30	2	2	1	1	395	910	33	43	4	11	1	1	28.60	65.89	2.39	3.11	23.53	64.71	5.88	5.88	0.35	NA
FXN	31	0	6	0	0	397	912	34	44	2	9	0	0	28.62	65.75	2.45	3.17	18.18	81.82	0.00	0.00	0.75	NA
FXN	32	0	0	0	0	397	918	34	44	2	3	0	0	28.50	65.90	2.44	3.16	40.00	60.00	0.00	0.00	0.73	NA
FXN	33	0	0	0	0	397	918	34	44	2	3	0	0	28.50	65.90	2.44	3.16	40.00	60.00	0.00	0.00	0.73	NA
FXN	34	1	1	0	0	397	918	34	44	2	3	0	0	28.50	65.90	2.44	3.16	40.00	60.00	0.00	0.00	0.73	NA
FXN	36	1	1	0	0	398	919	34	44	1	2	0	0	28.53	65.88	2.44	3.15	33.33	66.67	0.00	0.00	1.00	NA
FXN	38	0	0	0	0	399	920	34	44	0	1	0	0	28.56	65.86	2.43	3.15	0.00	100.00	0.00	0.00	1.00	NA
FXN	46	0	0	0	0	399	920	34	44	0	1	0	0	28.56	65.86	2.43	3.15	0.00	100.00	0.00	0.00	1.00	NA

FXN	53	0	0	0	0	399	920	34	44	0	1	0	0	28.56	65.86	2.43	3.15	0.00	100.00	0.00	0.00	1.00	NA
FXN	58	0	0	0	0	399	920	34	44	0	1	0	0	28.56	65.86	2.43	3.15	0.00	100.00	0.00	0.00	1.00	NA
FXN	91	0	0	0	0	399	920	34	44	0	1	0	0	28.56	65.86	2.43	3.15	0.00	100.00	0.00	0.00	1.00	NA
FXN	97	0	1	0	0	399	920	34	44	0	1	0	0	28.56	65.86	2.43	3.15	0.00	100.00	0.00	0.00	1.00	NA
GIPC1	5	0	1	0	0	0	0	0	0	406	940	32	45	NA	NA	NA	NA	28.53	66.06	2.25	3.16	1.00	NA
GIPC1	6	0	1	0	0	0	1	0	0	406	939	32	45	0.00	100.00	0.00	0.00	28.55	66.03	2.25	3.16	1.00	NA
GIPC1	8	7	3	0	0	0	2	0	0	406	938	32	45	0.00	100.00	0.00	0.00	28.57	66.01	2.25	3.17	1.00	NA
GIPC1	9	36	94	1	6	7	5	0	0	399	935	32	45	58.33	41.67	0.00	0.00	28.28	66.27	2.27	3.19	0.21	NA
GIPC1	10	166	387	14	18	43	99	1	6	363	841	31	39	28.86	66.44	0.67	4.03	28.49	66.01	2.43	3.06	0.53	NA
GIPC1	11	144	318	13	12	209	486	15	24	197	454	17	21	28.47	66.21	2.04	3.27	28.59	65.89	2.47	3.05	0.95	NA
GIPC1	12	45	116	3	8	353	804	28	36	53	136	4	9	28.91	65.85	2.29	2.95	26.24	67.33	1.98	4.46	0.59	NA
GIPC1	13	2	6	1	0	398	920	31	44	8	20	1	1	28.57	66.04	2.23	3.16	26.67	66.67	3.33	3.33	0.78	NA
GIPC1	14	0	5	0	0	400	926	32	44	6	14	0	1	28.53	66.05	2.28	3.14	28.57	66.67	0.00	4.76	0.84	NA
GIPC1	15	0	0	0	0	400	931	32	44	6	9	0	1	28.43	66.17	2.27	3.13	37.50	56.25	0.00	6.25	0.50	NA
GIPC1	16	1	1	0	0	400	931	32	44	6	9	0	1	28.43	66.17	2.27	3.13	37.50	56.25	0.00	6.25	0.50	NA
GIPC1	17	3	7	0	1	401	932	32	44	5	8	0	1	28.46	66.15	2.27	3.12	35.71	57.14	0.00	7.14	0.51	NA
GIPC1	18	1	1	0	0	404	939	32	45	2	1	0	0	28.45	66.13	2.25	3.17	66.67	33.33	0.00	0.00	0.34	NA
GIPC1	20	0	0	0	0	405	940	32	45	1	0	0	0	28.48	66.10	2.25	3.16	100.00	0.00	0.00	0.00	0.34	NA
GIPC1	25	0	0	0	0	405	940	32	45	1	0	0	0	28.48	66.10	2.25	3.16	100.00	0.00	0.00	0.00	0.34	NA
GIPC1	38	1	0	0	0	405	940	32	45	1	0	0	0	28.48	66.10	2.25	3.16	100.00	0.00	0.00	0.00	0.34	NA
HTT	12	0	0	0	0	0	0	0	0	416	963	36	45	NA	NA	NA	NA	28.49	65.96	2.47	3.08	1.00	NA
HTT	15	0	0	0	0	0	0	0	0	416	963	36	45	NA	NA	NA	NA	28.49	65.96	2.47	3.08	1.00	NA
HTT	16	1	2	0	0	0	0	0	0	416	963	36	45	NA	NA	NA	NA	28.49	65.96	2.47	3.08	1.00	NA
HTT	17	14	54	0	5	1	2	0	0	415	961	36	45	33.33	66.67	0.00	0.00	28.48	65.96	2.47	3.09	1.00	NA
HTT	18	31	80	1	5	15	56	0	5	401	907	36	40	19.74	73.68	0.00	6.58	28.97	65.53	2.60	2.89	0.05	*
HTT	19	33	66	5	3	46	136	1	10	370	827	35	35	23.83	70.47	0.52	5.18	29.20	65.27	2.76	2.76	0.03	*
HTT	20	79	176	4	8	79	202	6	13	337	761	30	32	26.33	67.33	2.00	4.33	29.05	65.60	2.59	2.76	0.40	NA
HTT	21	75	192	11	6	158	378	10	21	258	585	26	24	27.87	66.67	1.76	3.70	28.89	65.51	2.91	2.69	0.36	NA

HTT	22	56	126	8	6	233	570	21	27	183	393	15	18	27.38	66.98	2.47	3.17	30.05	64.53	2.46	2.96	0.73	NA
HTT	23	36	89	3	3	289	696	29	33	127	267	7	12	27.60	66.48	2.77	3.15	30.75	64.65	1.69	2.91	0.48	NA
HTT	24	32	50	2	3	325	785	32	36	91	178	4	9	27.59	66.64	2.72	3.06	32.27	63.12	1.42	3.19	0.30	NA
HTT	25	10	23	0	0	357	835	34	39	59	128	2	6	28.22	66.01	2.69	3.08	30.26	65.64	1.03	3.08	0.58	NA
HTT	26	13	15	1	0	367	858	34	39	49	105	2	6	28.27	66.10	2.62	3.00	30.25	64.81	1.23	3.70	0.68	NA
HTT	27	9	20	1	3	380	873	35	39	36	90	1	6	28.64	65.79	2.64	2.94	27.07	67.67	0.75	4.51	0.42	NA
HTT	28	4	16	0	0	389	893	36	42	27	70	0	3	28.60	65.66	2.65	3.09	27.00	70.00	0.00	3.00	0.41	NA
HTT	29	6	24	0	1	393	909	36	42	23	54	0	3	28.48	65.87	2.61	3.04	28.75	67.50	0.00	3.75	0.56	NA
HTT	30	4	5	0	0	399	933	36	43	17	30	0	2	28.28	66.12	2.55	3.05	34.69	61.22	0.00	4.08	0.54	NA
HTT	31	6	6	0	1	403	938	36	43	13	25	0	2	28.38	66.06	2.54	3.03	32.50	62.50	0.00	5.00	0.61	NA
HTT	32	5	5	0	0	409	944	36	44	7	19	0	1	28.54	65.88	2.51	3.07	25.93	70.37	0.00	3.70	0.87	NA
HTT	33	0	4	0	0	414	949	36	44	2	14	0	1	28.69	65.77	2.49	3.05	11.76	82.35	0.00	5.88	0.28	NA
HTT	34	1	5	0	0	414	953	36	44	2	10	0	1	28.61	65.86	2.49	3.04	15.38	76.92	0.00	7.69	0.41	NA
HTT	35	1	2	0	1	415	958	36	44	1	5	0	1	28.56	65.93	2.48	3.03	14.29	71.43	0.00	14.29	0.30	NA
HTT	36	0	1	0	0	416	960	36	45	0	3	0	0	28.55	65.89	2.47	3.09	0.00	100.00	0.00	0.00	0.63	NA
HTT	37	0	1	0	0	416	961	36	45	0	2	0	0	28.53	65.91	2.47	3.09	0.00	100.00	0.00	0.00	1.00	NA
HTT	38	0	0	0	0	416	962	36	45	0	1	0	0	28.51	65.94	2.47	3.08	0.00	100.00	0.00	0.00	1.00	NA
HTT	40	0	0	0	0	416	962	36	45	0	1	0	0	28.51	65.94	2.47	3.08	0.00	100.00	0.00	0.00	1.00	NA
HTT	41	0	1	0	0	416	962	36	45	0	1	0	0	28.51	65.94	2.47	3.08	0.00	100.00	0.00	0.00	1.00	NA
HTT	42	0	0	0	0	416	963	36	45	0	0	0	0	28.49	65.96	2.47	3.08	NA	NA	NA	NA	1.00	NA
JPH3	11	0	1	0	0	0	0	0	0	416	960	36	45	NA	NA	NA	NA	28.55	65.89	2.47	3.09	1.00	NA
JPH3	13	3	13	0	1	0	1	0	0	416	959	36	45	0.00	100.00	0.00	0.00	28.57	65.87	2.47	3.09	1.00	NA
JPH3	14	122	298	13	12	3	14	0	1	413	946	36	44	16.67	77.78	0.00	5.56	28.70	65.74	2.50	3.06	0.44	NA
JPH3	15	49	107	7	7	125	312	13	13	291	648	23	32	27.00	67.39	2.81	2.81	29.28	65.19	2.31	3.22	0.73	NA
JPH3	16	161	392	9	17	174	419	20	20	242	541	16	25	27.49	66.19	3.16	3.16	29.37	65.66	1.94	3.03	0.45	NA
JPH3	17	67	128	6	6	335	811	29	37	81	149	7	8	27.64	66.91	2.39	3.05	33.06	60.82	2.86	3.27	0.30	NA
JPH3	18	11	17	1	0	402	939	35	43	14	21	1	2	28.33	66.17	2.47	3.03	36.84	55.26	2.63	5.26	0.32	NA
JPH3	19	0	2	0	0	413	956	36	43	3	4	0	2	28.52	66.02	2.49	2.97	33.33	44.44	0.00	22.22	0.05	*

JPH3	20	1	0	0	1	413	958	36	43	3	2	0	2	28.48	66.07	2.48	2.97	42.86	28.57	0.00	28.57	0.01	*
JPH3	22	1	1	0	0	414	958	36	44	2	2	0	1	28.51	65.98	2.48	3.03	40.00	40.00	0.00	20.00	0.18	NA
JPH3	24	1	0	0	0	415	959	36	44	1	1	0	1	28.54	65.96	2.48	3.03	33.33	33.33	0.00	33.33	0.14	NA
JPH3	25	0	0	0	0	416	959	36	44	0	1	0	1	28.59	65.91	2.47	3.02	0.00	50.00	0.00	50.00	0.11	NA
JPH3	26	0	1	0	1	416	959	36	44	0	1	0	1	28.59	65.91	2.47	3.02	0.00	50.00	0.00	50.00	0.11	NA
JPH3	28	0	0	0	0	416	960	36	45	0	0	0	0	28.55	65.89	2.47	3.09	NA	NA	NA	NA	1.00	NA
JPH3	29	0	0	0	0	416	960	36	45	0	0	0	0	28.55	65.89	2.47	3.09	NA	NA	NA	NA	1.00	NA
LRP12	4	0	0	0	0	0	0	0	0	415	966	35	45	NA	NA	NA	NA	28.41	66.12	2.40	3.08	1.00	NA
LRP12	5	4	2	0	0	0	0	0	0	415	966	35	45	NA	NA	NA	NA	28.41	66.12	2.40	3.08	1.00	NA
LRP12	6	2	4	0	0	4	2	0	0	411	964	35	45	66.67	33.33	0.00	0.00	28.25	66.25	2.41	3.09	0.24	NA
LRP12	7	0	1	0	0	6	6	0	0	409	960	35	45	50.00	50.00	0.00	0.00	28.23	66.25	2.42	3.11	0.50	NA
LRP12	8	1	0	0	0	6	7	0	0	409	959	35	45	46.15	53.85	0.00	0.00	28.25	66.23	2.42	3.11	0.63	NA
LRP12	9	13	35	1	1	7	7	0	0	408	959	35	45	50.00	50.00	0.00	0.00	28.20	66.28	2.42	3.11	0.35	NA
LRP12	10	54	107	4	6	20	42	1	1	395	924	34	44	31.25	65.63	1.56	1.56	28.27	66.14	2.43	3.15	0.94	NA
LRP12	11	79	180	2	3	74	149	5	7	341	817	30	38	31.49	63.40	2.13	2.98	27.81	66.64	2.45	3.10	0.73	NA
LRP12	12	21	49	1	3	153	329	7	10	262	637	28	35	30.66	65.93	1.40	2.00	27.23	66.22	2.91	3.64	0.06	Â°
LRP12	13	129	309	13	15	174	378	8	13	241	588	27	32	30.37	65.97	1.40	2.27	27.14	66.22	3.04	3.60	0.06	Â°
LRP12	14	94	209	13	13	303	687	21	28	112	279	14	17	29.16	66.12	2.02	2.69	26.54	66.11	3.32	4.03	0.20	NA
LRP12	15	14	53	0	3	397	896	34	41	18	70	1	4	29.02	65.50	2.49	3.00	19.35	75.27	1.08	4.30	0.13	NA
LRP12	16	3	15	1	1	411	949	34	44	4	17	1	1	28.58	65.99	2.36	3.06	17.39	73.91	4.35	4.35	0.36	NA
LRP12	17	1	1	0	0	414	964	35	45	1	2	0	0	28.40	66.12	2.40	3.09	33.33	66.67	0.00	0.00	1.00	NA
LRP12	18	0	0	0	0	415	965	35	45	0	1	0	0	28.42	66.10	2.40	3.08	0.00	100.00	0.00	0.00	1.00	NA
LRP12	19	0	0	0	0	415	965	35	45	0	1	0	0	28.42	66.10	2.40	3.08	0.00	100.00	0.00	0.00	1.00	NA
LRP12	22	0	1	0	0	415	965	35	45	0	1	0	0	28.42	66.10	2.40	3.08	0.00	100.00	0.00	0.00	1.00	NA
LRP12	23	0	0	0	0	415	966	35	45	0	0	0	0	28.41	66.12	2.40	3.08	NA	NA	NA	NA	1.00	NA
LRP12	25	0	0	0	0	415	966	35	45	0	0	0	0	28.41	66.12	2.40	3.08	NA	NA	NA	NA	1.00	NA
LRP12	26	0	0	0	0	415	966	35	45	0	0	0	0	28.41	66.12	2.40	3.08	NA	NA	NA	NA	1.00	NA
NIPA1	7	10	29	0	2	0	0	0	0	418	963	35	45	NA	NA	NA	NA	28.61	65.91	2.40	3.08	1.00	NA

NIPA1	8	330	773	28	36	10	29	0	2	408	934	35	43	24.39	70.73	0.00	4.88	28.73	65.77	2.46	3.03	0.61	NA
NIPA1	9	66	127	7	5	340	802	28	38	78	161	7	7	28.15	66.39	2.32	3.15	30.83	63.64	2.77	2.77	0.77	NA
NIPA1	10	11	33	0	2	406	929	35	43	12	34	0	2	28.73	65.75	2.48	3.04	25.00	70.83	0.00	4.17	0.70	NA
NIPA1	11	0	1	0	0	417	962	35	45	1	1	0	0	28.58	65.94	2.40	3.08	50.00	50.00	0.00	0.00	0.57	NA
NIPA1	15	1	0	0	0	417	963	35	45	1	0	0	0	28.56	65.96	2.40	3.08	100.00	0.00	0.00	0.00	0.34	NA
NOP56	3	16	28	1	2	0	0	0	0	416	956	36	45	NA	NA	NA	NA	28.63	65.79	2.48	3.10	1.00	NA
NOP56	4	55	92	3	7	16	28	1	2	400	928	35	43	34.04	59.57	2.13	4.26	28.45	66.00	2.49	3.06	0.65	NA
NOP56	5	10	23	2	2	71	120	4	9	345	836	32	36	34.80	58.82	1.96	4.41	27.62	66.93	2.56	2.88	0.09	Â°
NOP56	6	243	578	24	28	81	143	6	11	335	813	30	34	33.61	59.34	2.49	4.56	27.64	67.08	2.48	2.81	0.09	Â°
NOP56	7	24	70	1	1	324	721	30	39	92	235	6	6	29.08	64.72	2.69	3.50	27.14	69.32	1.77	1.77	0.22	NA
NOP56	8	55	139	5	5	348	791	31	40	68	165	5	5	28.76	65.37	2.56	3.31	27.98	67.90	2.06	2.06	0.76	NA
NOP56	9	6	11	0	0	403	930	36	45	13	26	0	0	28.50	65.77	2.55	3.18	33.33	66.67	0.00	0.00	0.74	NA
NOP56	10	5	13	0	0	409	941	36	45	7	15	0	0	28.58	65.76	2.52	3.14	31.82	68.18	0.00	0.00	0.95	NA
NOP56	11	1	1	0	0	414	954	36	45	2	2	0	0	28.57	65.84	2.48	3.11	50.00	50.00	0.00	0.00	0.67	NA
NOP56	12	1	0	0	0	415	955	36	45	1	1	0	0	28.60	65.82	2.48	3.10	50.00	50.00	0.00	0.00	0.57	NA
NOP56	14	0	1	0	0	416	955	36	45	0	1	0	0	28.65	65.77	2.48	3.10	0.00	100.00	0.00	0.00	1.00	NA
NOTCH2NCL	6	1	1	0	0	0	0	0	0	410	951	35	44	NA	NA	NA	NA	28.47	66.04	2.43	3.06	1.00	NA
NOTCH2NCL	8	0	1	0	0	1	1	0	0	409	950	35	44	50.00	50.00	0.00	0.00	28.44	66.06	2.43	3.06	0.56	NA
NOTCH2NCL	9	18	37	2	2	1	2	0	0	409	949	35	44	33.33	66.67	0.00	0.00	28.46	66.04	2.44	3.06	1.00	NA
NOTCH2NCL	10	8	18	1	0	19	39	2	2	391	912	33	42	30.65	62.90	3.23	3.23	28.37	66.18	2.39	3.05	0.82	NA
NOTCH2NCL	11	0	3	0	0	27	57	3	2	383	894	32	42	30.34	64.04	3.37	2.25	28.35	66.17	2.37	3.11	0.82	NA
NOTCH2NCL	12	10	22	0	3	27	60	3	2	383	891	32	42	29.35	65.22	3.26	2.17	28.41	66.10	2.37	3.12	0.88	NA
NOTCH2NCL	13	24	52	1	1	37	82	3	5	373	869	32	39	29.13	64.57	2.36	3.94	28.41	66.18	2.44	2.97	0.88	NA
NOTCH2NCL	14	47	99	5	5	61	134	4	6	349	817	31	38	29.76	65.37	1.95	2.93	28.26	66.15	2.51	3.08	0.97	NA
NOTCH2NCL	15	55	138	4	8	108	233	9	11	302	718	26	33	29.92	64.54	2.49	3.05	27.99	66.54	2.41	3.06	0.90	NA
NOTCH2NCL	16	85	186	7	11	163	371	13	19	247	580	22	25	28.80	65.55	2.30	3.36	28.26	66.36	2.52	2.86	0.93	NA
NOTCH2NCL	17	51	102	4	2	248	557	20	30	162	394	15	14	29.01	65.15	2.34	3.51	27.69	67.35	2.56	2.39	0.59	NA
NOTCH2NCL	18	25	90	4	6	299	659	24	32	111	292	11	12	29.49	64.99	2.37	3.16	26.06	68.54	2.58	2.82	0.58	NA

NOTCH2NCL	19	20	46	2	1	324	749	28	38	86	202	7	6	28.45	65.76	2.46	3.34	28.57	67.11	2.33	1.99	0.73	NA
NOTCH2NCL	20	15	45	0	2	344	795	30	39	66	156	5	5	28.48	65.81	2.48	3.23	28.45	67.24	2.16	2.16	0.90	NA
NOTCH2NCL	21	26	48	2	2	359	840	30	41	51	111	5	3	28.27	66.14	2.36	3.23	30.00	65.29	2.94	1.76	0.70	NA
NOTCH2NCL	22	14	38	3	1	385	888	32	43	25	63	3	1	28.56	65.88	2.37	3.19	27.17	68.48	3.26	1.09	0.66	NA
NOTCH2NCL	23	4	11	0	0	399	926	35	44	11	25	0	0	28.42	65.95	2.49	3.13	30.56	69.44	0.00	0.00	0.86	NA
NOTCH2NCL	24	3	8	0	0	403	937	35	44	7	14	0	0	28.40	66.03	2.47	3.10	33.33	66.67	0.00	0.00	0.94	NA
NOTCH2NCL	25	2	3	0	0	406	945	35	44	4	6	0	0	28.39	66.08	2.45	3.08	40.00	60.00	0.00	0.00	0.72	NA
NOTCH2NCL	26	0	3	0	0	408	948	35	44	2	3	0	0	28.43	66.06	2.44	3.07	40.00	60.00	0.00	0.00	0.73	NA
NOTCH2NCL	27	1	0	0	0	408	951	35	44	2	0	0	0	28.37	66.13	2.43	3.06	100.00	0.00	0.00	0.00	0.19	NA
NOTCH2NCL	28	1	0	0	0	409	951	35	44	1	0	0	0	28.42	66.09	2.43	3.06	100.00	0.00	0.00	0.00	0.34	NA
NUTM2B-AS1	5	0	0	0	0	0	0	0	0	415	958	35	45	NA	NA	NA	NA	28.56	65.93	2.41	3.10	1.00	NA
NUTM2B-AS1	6	9	15	0	0	0	0	0	0	415	958	35	45	NA	NA	NA	NA	28.56	65.93	2.41	3.10	1.00	NA
NUTM2B-AS1	7	1	2	0	0	9	15	0	0	406	943	35	45	37.50	62.50	0.00	0.00	28.41	65.99	2.45	3.15	0.80	NA
NUTM2B-AS1	8	17	28	1	2	10	17	0	0	405	941	35	45	37.04	62.96	0.00	0.00	28.40	65.99	2.45	3.16	0.81	NA
NUTM2B-AS1	9	290	668	24	30	27	45	1	2	388	913	34	43	36.00	60.00	1.33	2.67	28.16	66.26	2.47	3.12	0.54	NA
NUTM2B-AS1	10	27	70	3	4	317	713	25	32	98	245	10	13	29.16	65.59	2.30	2.94	26.78	66.94	2.73	3.55	0.73	NA
NUTM2B-AS1	11	5	5	0	0	344	783	28	36	71	175	7	9	28.88	65.74	2.35	3.02	27.10	66.79	2.67	3.44	0.89	NA
NUTM2B-AS1	12	16	41	0	2	349	788	28	36	66	170	7	9	29.06	65.61	2.33	3.00	26.19	67.46	2.78	3.57	0.72	NA
NUTM2B-AS1	13	40	103	7	4	365	829	28	38	50	129	7	7	28.97	65.79	2.22	3.02	25.91	66.84	3.63	3.63	0.48	NA

NUTM2B-AS1	14	4	17	0	2	405	932	35	42	10	26	0	3	28.64	65.91	2.48	2.97	25.64	66.67	0.00	7.69	0.32	NA
NUTM2B-AS1	15	4	7	0	1	409	949	35	44	6	9	0	1	28.46	66.04	2.44	3.06	37.50	56.25	0.00	6.25	0.47	NA
NUTM2B-AS1	16	1	1	0	0	413	956	35	45	2	2	0	0	28.50	65.98	2.42	3.11	50.00	50.00	0.00	0.00	0.67	NA
NUTM2B-AS1	17	0	0	0	0	414	957	35	45	1	1	0	0	28.53	65.95	2.41	3.10	50.00	50.00	0.00	0.00	0.57	NA
NUTM2B-AS1	21	1	0	0	0	414	957	35	45	1	1	0	0	28.53	65.95	2.41	3.10	50.00	50.00	0.00	0.00	0.57	NA
NUTM2B-AS1	31	0	1	0	0	415	957	35	45	0	1	0	0	28.58	65.91	2.41	3.10	0.00	100.00	0.00	0.00	1.00	NA
PABPN1	5	16	38	3	4	0	0	0	0	418	958	35	45	NA	NA	NA	NA	28.71	65.80	2.40	3.09	1.00	NA
PABPN1	6	388	900	31	40	16	38	3	4	402	920	32	41	26.23	62.30	4.92	6.56	28.82	65.95	2.29	2.94	0.15	NA
PABPN1	7	14	20	1	1	404	938	34	44	14	20	1	1	28.45	66.06	2.39	3.10	38.89	55.56	2.78	2.78	0.42	NA
PPP2R2B	9	0	1	0	0	0	0	0	0	415	959	36	45	NA	NA	NA	NA	28.52	65.91	2.47	3.09	1.00	NA
PPP2R2B	10	162	371	12	19	0	1	0	0	415	958	36	45	0.00	100.00	0.00	0.00	28.54	65.89	2.48	3.09	1.00	NA
PPP2R2B	11	28	60	3	1	162	372	12	19	253	587	24	26	28.67	65.84	2.12	3.36	28.43	65.96	2.70	2.92	0.89	NA
PPP2R2B	12	0	0	0	0	190	432	15	20	225	527	21	25	28.92	65.75	2.28	3.04	28.20	66.04	2.63	3.13	0.97	NA
PPP2R2B	13	64	163	3	9	190	432	15	20	225	527	21	25	28.92	65.75	2.28	3.04	28.20	66.04	2.63	3.13	0.97	NA
PPP2R2B	14	46	128	8	7	254	595	18	29	161	364	18	16	28.35	66.41	2.01	3.24	28.80	65.12	3.22	2.86	0.51	NA
PPP2R2B	15	96	194	9	5	300	723	26	36	115	236	10	9	27.65	66.64	2.40	3.32	31.08	63.78	2.70	2.43	0.52	NA
PPP2R2B	16	5	8	0	1	396	917	35	41	19	42	1	4	28.51	66.02	2.52	2.95	28.79	63.64	1.52	6.06	0.49	NA
PPP2R2B	17	2	8	0	2	401	925	35	42	14	34	1	3	28.58	65.93	2.49	2.99	26.92	65.38	1.92	5.77	0.61	NA
PPP2R2B	18	9	18	1	1	403	933	35	44	12	26	1	1	28.48	65.94	2.47	3.11	30.00	65.00	2.50	2.50	0.98	NA
PPP2R2B	19	0	0	0	0	412	951	36	45	3	8	0	0	28.53	65.86	2.49	3.12	27.27	72.73	0.00	0.00	1.00	NA
PPP2R2B	20	1	5	0	0	412	951	36	45	3	8	0	0	28.53	65.86	2.49	3.12	27.27	72.73	0.00	0.00	1.00	NA
PPP2R2B	21	2	0	0	0	413	956	36	45	2	3	0	0	28.48	65.93	2.48	3.10	40.00	60.00	0.00	0.00	0.73	NA

PPP2R2B	22	0	1	0	0	415	956	36	45	0	3	0	0	28.58	65.84	2.48	3.10	0.00	100.00	0.00	0.00	0.63	NA
PPP2R2B	23	0	0	0	0	415	957	36	45	0	2	0	0	28.56	65.86	2.48	3.10	0.00	100.00	0.00	0.00	1.00	NA
PPP2R2B	25	0	1	0	0	415	957	36	45	0	2	0	0	28.56	65.86	2.48	3.10	0.00	100.00	0.00	0.00	1.00	NA
PPP2R2B	27	0	1	0	0	415	958	36	45	0	1	0	0	28.54	65.89	2.48	3.09	0.00	100.00	0.00	0.00	1.00	NA
PPP2R2B	30	0	0	0	0	415	959	36	45	0	0	0	0	28.52	65.91	2.47	3.09	NA	NA	NA	NA	1.00	NA
TBP	30	0	0	0	0	0	0	0	0	418	965	36	45	NA	NA	NA	NA	28.55	65.92	2.46	3.07	1.00	NA
TBP	33	0	0	0	0	0	0	0	0	418	965	36	45	NA	NA	NA	NA	28.55	65.92	2.46	3.07	1.00	NA
TBP	34	2	2	0	0	0	0	0	0	418	965	36	45	NA	NA	NA	NA	28.55	65.92	2.46	3.07	1.00	NA
TBP	35	4	11	0	0	2	2	0	0	416	963	36	45	50.00	50.00	0.00	0.00	28.49	65.96	2.47	3.08	0.67	NA
TBP	36	28	61	2	1	6	13	0	0	412	952	36	45	31.58	68.42	0.00	0.00	28.51	65.88	2.49	3.11	1.00	NA
TBP	37	97	190	11	7	34	74	2	1	384	891	34	44	30.63	66.67	1.80	0.90	28.38	65.85	2.51	3.25	0.60	NA
TBP	38	227	547	20	27	131	264	13	8	287	701	23	37	31.49	63.46	3.13	1.92	27.39	66.89	2.19	3.53	0.12	NA
TBP	39	49	122	3	9	358	811	33	35	60	154	3	10	28.94	65.56	2.67	2.83	26.43	67.84	1.32	4.41	0.32	NA
TBP	40	9	25	0	1	407	933	36	44	11	32	0	1	28.66	65.70	2.54	3.10	25.00	72.73	0.00	2.27	0.89	NA
TBP	41	2	4	0	0	416	958	36	45	2	7	0	0	28.59	65.84	2.47	3.09	22.22	77.78	0.00	0.00	0.84	NA
TBP	42	0	3	0	0	418	962	36	45	0	3	0	0	28.61	65.85	2.46	3.08	0.00	100.00	0.00	0.00	0.63	NA
TCF4	9	1	1	0	0	0	0	0	0	392	919	33	44	NA	NA	NA	NA	28.24	66.21	2.38	3.17	1.00	NA
TCF4	11	38	116	5	1	1	1	0	0	391	918	33	44	50.00	50.00	0.00	0.00	28.21	66.23	2.38	3.17	0.56	NA
TCF4	12	0	2	0	0	39	117	5	1	353	802	28	43	24.07	72.22	3.09	0.62	28.79	65.42	2.28	3.51	0.08	Â°
TCF4	13	4	3	0	0	39	119	5	1	353	800	28	43	23.78	72.56	3.05	0.61	28.84	65.36	2.29	3.51	0.06	Â°
TCF4	14	61	146	4	7	43	122	5	1	349	797	28	43	25.15	71.35	2.92	0.58	28.68	65.49	2.30	3.53	0.09	Â°
TCF4	15	29	61	1	3	104	268	9	8	288	651	24	36	26.74	68.89	2.31	2.06	28.83	65.17	2.40	3.60	0.38	NA
TCF4	16	9	22	1	0	133	329	10	11	259	590	23	33	27.54	68.12	2.07	2.28	28.62	65.19	2.54	3.65	0.46	NA
TCF4	17	101	216	7	15	142	351	11	11	250	568	22	33	27.57	68.16	2.14	2.14	28.64	65.06	2.52	3.78	0.32	NA
TCF4	18	2	14	0	1	243	567	18	26	149	352	15	18	28.45	66.39	2.11	3.04	27.90	65.92	2.81	3.37	0.83	NA
TCF4	19	2	1	0	0	245	581	18	27	147	338	15	17	28.13	66.70	2.07	3.10	28.43	65.38	2.90	3.29	0.77	NA
TCF4	20	2	2	0	0	247	582	18	27	145	337	15	17	28.26	66.59	2.06	3.09	28.21	65.56	2.92	3.31	0.76	NA
TCF4	21	3	12	1	2	249	584	18	27	143	335	15	17	28.36	66.51	2.05	3.08	28.04	65.69	2.94	3.33	0.74	NA

TCF4	22	2	10	1	0	252	596	19	29	140	323	14	15	28.13	66.52	2.12	3.24	28.46	65.65	2.85	3.05	0.84	NA
TCF4	23	10	24	1	2	254	606	20	29	138	313	13	15	27.94	66.67	2.20	3.19	28.81	65.34	2.71	3.13	0.90	NA
TCF4	24	52	89	2	2	264	630	21	31	128	289	12	13	27.91	66.60	2.22	3.28	28.96	65.38	2.71	2.94	0.89	NA
TCF4	25	18	44	3	4	316	719	23	33	76	200	10	11	28.96	65.90	2.11	3.02	25.59	67.34	3.37	3.70	0.38	NA
TCF4	26	14	29	3	1	334	763	26	37	58	156	7	7	28.79	65.78	2.24	3.19	25.44	68.42	3.07	3.07	0.65	NA
TCF4	27	2	19	1	1	348	792	29	38	44	127	4	6	28.83	65.62	2.40	3.15	24.31	70.17	2.21	3.31	0.63	NA
TCF4	28	1	12	1	1	350	811	30	39	42	108	3	5	28.46	65.93	2.44	3.17	26.58	68.35	1.90	3.16	0.95	NA
TCF4	29	2	8	0	0	351	823	31	40	41	96	2	4	28.19	66.10	2.49	3.21	28.67	67.13	1.40	2.80	0.95	NA
TCF4	30	6	12	1	1	353	831	31	40	39	88	2	4	28.13	66.22	2.47	3.19	29.32	66.17	1.50	3.01	0.96	NA
TCF4	31	6	10	0	1	359	843	32	41	33	76	1	3	28.16	66.12	2.51	3.22	29.20	67.26	0.88	2.65	0.85	NA
TCF4	32	7	12	0	0	365	853	32	42	27	66	1	2	28.25	66.02	2.48	3.25	28.13	68.75	1.04	2.08	0.89	NA
TCF4	33	2	3	0	0	372	865	32	42	20	54	1	2	28.38	65.98	2.44	3.20	25.97	70.13	1.30	2.60	0.95	NA
TCF4	34	2	5	0	0	374	868	32	42	18	51	1	2	28.42	65.96	2.43	3.19	25.00	70.83	1.39	2.78	0.93	NA
TCF4	35	1	2	0	0	376	873	32	42	16	46	1	2	28.42	65.99	2.42	3.17	24.62	70.77	1.54	3.08	0.91	NA
TCF4	36	0	5	0	2	377	875	32	42	15	44	1	2	28.43	65.99	2.41	3.17	24.19	70.97	1.61	3.23	0.91	NA
TCF4	37	2	2	0	0	377	880	32	44	15	39	1	0	28.28	66.02	2.40	3.30	27.27	70.91	1.82	0.00	0.66	NA
TCF4	38	1	4	0	0	379	882	32	44	13	37	1	0	28.35	65.97	2.39	3.29	25.49	72.55	1.96	0.00	0.65	NA
TCF4	39	2	0	0	0	380	886	32	44	12	33	1	0	28.32	66.02	2.38	3.28	26.09	71.74	2.17	0.00	0.73	NA
TCF4	40	0	3	0	0	382	886	32	44	10	33	1	0	28.42	65.92	2.38	3.27	22.73	75.00	2.27	0.00	0.54	NA
TCF4	41	0	2	0	0	382	889	32	44	10	30	1	0	28.36	66.00	2.38	3.27	24.39	73.17	2.44	0.00	0.68	NA
TCF4	42	1	1	0	0	382	891	32	44	10	28	1	0	28.32	66.05	2.37	3.26	25.64	71.79	2.56	0.00	0.76	NA
TCF4	43	0	1	0	0	383	892	32	44	9	27	1	0	28.35	66.03	2.37	3.26	24.32	72.97	2.70	0.00	0.72	NA
TCF4	44	0	2	0	0	383	893	32	44	9	26	1	0	28.33	66.05	2.37	3.25	25.00	72.22	2.78	0.00	0.71	NA
TCF4	45	0	1	0	0	383	895	32	44	9	24	1	0	28.29	66.10	2.36	3.25	26.47	70.59	2.94	0.00	0.77	NA
TCF4	47	0	0	0	0	383	896	32	44	9	23	1	0	28.27	66.13	2.36	3.25	27.27	69.70	3.03	0.00	0.78	NA
TCF4	48	0	0	0	0	383	896	32	44	9	23	1	0	28.27	66.13	2.36	3.25	27.27	69.70	3.03	0.00	0.78	NA
TCF4	49	0	1	0	0	383	896	32	44	9	23	1	0	28.27	66.13	2.36	3.25	27.27	69.70	3.03	0.00	0.78	NA
TCF4	50	0	1	0	0	383	897	32	44	9	22	1	0	28.24	66.15	2.36	3.24	28.13	68.75	3.13	0.00	0.79	NA

TCF4	51	1	0	0	0	383	898	32	44	9	21	1	0	28.22	66.18	2.36	3.24	29.03	67.74	3.23	0.00	0.78	NA
TCF4	53	0	0	0	0	384	898	32	44	8	21	1	0	28.28	66.13	2.36	3.24	26.67	70.00	3.33	0.00	0.77	NA
TCF4	56	0	1	0	0	384	898	32	44	8	21	1	0	28.28	66.13	2.36	3.24	26.67	70.00	3.33	0.00	0.77	NA
TCF4	57	0	1	0	0	384	899	32	44	8	20	1	0	28.26	66.15	2.35	3.24	27.59	68.97	3.45	0.00	0.78	NA
TCF4	58	0	0	0	0	384	900	32	44	8	19	1	0	28.24	66.18	2.35	3.24	28.57	67.86	3.57	0.00	0.79	NA
TCF4	59	0	2	0	0	384	900	32	44	8	19	1	0	28.24	66.18	2.35	3.24	28.57	67.86	3.57	0.00	0.79	NA
TCF4	60	1	0	0	0	384	902	32	44	8	17	1	0	28.19	66.23	2.35	3.23	30.77	65.38	3.85	0.00	0.71	NA
TCF4	61	0	0	0	0	385	902	32	44	7	17	1	0	28.25	66.18	2.35	3.23	28.00	68.00	4.00	0.00	0.75	NA
TCF4	63	0	0	0	0	385	902	32	44	7	17	1	0	28.25	66.18	2.35	3.23	28.00	68.00	4.00	0.00	0.75	NA
TCF4	64	1	0	0	0	385	902	32	44	7	17	1	0	28.25	66.18	2.35	3.23	28.00	68.00	4.00	0.00	0.75	NA
TCF4	66	1	0	0	0	386	902	32	44	6	17	1	0	28.30	66.13	2.35	3.23	25.00	70.83	4.17	0.00	0.65	NA
TCF4	67	0	1	0	0	387	902	32	44	5	17	1	0	28.35	66.08	2.34	3.22	21.74	73.91	4.35	0.00	0.61	NA
TCF4	68	1	0	0	0	387	903	32	44	5	16	1	0	28.33	66.11	2.34	3.22	22.73	72.73	4.55	0.00	0.57	NA
TCF4	69	0	1	0	0	388	903	32	44	4	16	1	0	28.38	66.06	2.34	3.22	19.05	76.19	4.76	0.00	0.47	NA
TCF4	70	0	0	0	0	388	904	32	44	4	15	1	0	28.36	66.08	2.34	3.22	20.00	75.00	5.00	0.00	0.52	NA
TCF4	71	1	0	0	0	388	904	32	44	4	15	1	0	28.36	66.08	2.34	3.22	20.00	75.00	5.00	0.00	0.52	NA
TCF4	72	0	3	0	0	389	904	32	44	3	15	1	0	28.41	66.03	2.34	3.21	15.79	78.95	5.26	0.00	0.34	NA
TCF4	73	2	1	0	0	389	907	32	44	3	12	1	0	28.35	66.11	2.33	3.21	18.75	75.00	6.25	0.00	0.41	NA
TCF4	75	0	5	0	0	391	908	32	44	1	11	1	0	28.44	66.04	2.33	3.20	7.69	84.62	7.69	0.00	0.16	NA
TCF4	77	0	1	0	0	391	913	32	44	1	6	1	0	28.33	66.16	2.32	3.19	12.50	75.00	12.50	0.00	0.23	NA
TCF4	78	0	0	1	0	391	914	32	44	1	5	1	0	28.31	66.18	2.32	3.19	14.29	71.43	14.29	0.00	0.21	NA
TCF4	79	0	0	0	0	391	914	33	44	1	5	0	0	28.29	66.14	2.39	3.18	16.67	83.33	0.00	0.00	0.77	NA
TCF4	81	0	2	0	0	391	914	33	44	1	5	0	0	28.29	66.14	2.39	3.18	16.67	83.33	0.00	0.00	0.77	NA
TCF4	82	0	1	0	0	391	916	33	44	1	3	0	0	28.25	66.18	2.38	3.18	25.00	75.00	0.00	0.00	1.00	NA
TCF4	83	0	1	0	0	391	917	33	44	1	2	0	0	28.23	66.21	2.38	3.18	33.33	66.67	0.00	0.00	1.00	NA
TCF4	84	0	0	0	0	391	918	33	44	1	1	0	0	28.21	66.23	2.38	3.17	50.00	50.00	0.00	0.00	0.56	NA
TCF4	85	1	0	0	0	391	918	33	44	1	1	0	0	28.21	66.23	2.38	3.17	50.00	50.00	0.00	0.00	0.56	NA
TCF4	86	0	1	0	0	392	918	33	44	0	1	0	0	28.26	66.19	2.38	3.17	0.00	100.00	0.00	0.00	1.00	NA

TCF4	87	0	0	0	0	392	919	33	44	0	0	0	0	28.24	66.21	2.38	3.17	NA	NA	NA	NA	1.00	NA
TCF4	88	0	0	0	0	392	919	33	44	0	0	0	0	28.24	66.21	2.38	3.17	NA	NA	NA	NA	1.00	NA
TCF4	89	0	0	0	0	392	919	33	44	0	0	0	0	28.24	66.21	2.38	3.17	NA	NA	NA	NA	1.00	NA
TCF4	90	0	0	0	0	392	919	33	44	0	0	0	0	28.24	66.21	2.38	3.17	NA	NA	NA	NA	1.00	NA
TCF4	91	0	0	0	0	392	919	33	44	0	0	0	0	28.24	66.21	2.38	3.17	NA	NA	NA	NA	1.00	NA
TCF4	114	0	0	0	0	392	919	33	44	0	0	0	0	28.24	66.21	2.38	3.17	NA	NA	NA	NA	1.00	NA
TK2-BEAN1	5	0	1	0	0	0	0	0	0	412	953	36	45	NA	NA	NA	NA	28.49	65.91	2.49	3.11	1.00	NA
TK2-BEAN1	8	4	6	0	0	0	1	0	0	412	952	36	45	0.00	100.00	0.00	0.00	28.51	65.88	2.49	3.11	1.00	NA
TK2-BEAN1	9	2	2	0	1	4	7	0	0	408	946	36	45	36.36	63.64	0.00	0.00	28.43	65.92	2.51	3.14	0.86	NA
TK2-BEAN1	10	0	1	0	0	6	9	0	1	406	944	36	44	37.50	56.25	0.00	6.25	28.39	66.01	2.52	3.08	0.47	NA
TK2-BEAN1	11	10	19	1	0	6	10	0	1	406	943	36	44	35.29	58.82	0.00	5.88	28.41	65.99	2.52	3.08	0.57	NA
TK2-BEAN1	12	10	34	3	1	16	29	1	1	396	924	35	44	34.04	61.70	2.13	2.13	28.31	66.05	2.50	3.15	0.85	NA
TK2-BEAN1	13	16	50	2	2	26	63	4	2	386	890	32	43	27.37	66.32	4.21	2.11	28.57	65.88	2.37	3.18	0.63	NA
TK2-BEAN1	14	38	87	2	4	42	113	6	4	370	840	30	41	25.45	68.48	3.64	2.42	28.88	65.57	2.34	3.20	0.56	NA
TK2-BEAN1	15	121	242	8	13	80	200	8	8	332	753	28	37	27.03	67.57	2.70	2.70	28.87	65.48	2.43	3.22	0.88	NA
TK2-BEAN1	16	80	191	7	9	201	442	16	21	211	511	20	24	29.56	65.00	2.35	3.09	27.55	66.71	2.61	3.13	0.86	NA
TK2-BEAN1	17	63	134	6	7	281	633	23	30	131	320	13	15	29.06	65.46	2.38	3.10	27.35	66.81	2.71	3.13	0.89	NA
TK2-BEAN1	18	19	48	2	2	344	767	29	37	68	186	7	8	29.23	65.17	2.46	3.14	25.28	69.14	2.60	2.97	0.61	NA
TK2-BEAN1	19	12	42	2	4	363	815	31	39	49	138	5	6	29.09	65.30	2.48	3.13	24.75	69.70	2.53	3.03	0.65	NA
TK2-BEAN1	20	6	26	0	0	375	857	33	43	37	96	3	2	28.67	65.52	2.52	3.29	26.81	69.57	2.17	1.45	0.68	NA
TK2-BEAN1	21	5	9	1	1	381	883	33	43	31	70	3	2	28.43	65.90	2.46	3.21	29.25	66.04	2.83	1.89	0.91	NA
TK2-BEAN1	22	7	9	1	0	386	892	34	44	26	61	2	1	28.47	65.78	2.51	3.24	28.89	67.78	2.22	1.11	0.82	NA
TK2-BEAN1	23	2	6	1	0	393	901	35	44	19	52	1	1	28.62	65.62	2.55	3.20	26.03	71.23	1.37	1.37	0.81	NA
TK2-BEAN1	24	1	8	0	0	395	907	36	44	17	46	0	1	28.58	65.63	2.60	3.18	26.56	71.88	0.00	1.56	0.67	NA
TK2-BEAN1	25	1	3	0	0	396	915	36	44	16	38	0	1	28.47	65.78	2.59	3.16	29.09	69.09	0.00	1.82	0.86	NA
TK2-BEAN1	26	2	4	0	0	397	918	36	44	15	35	0	1	28.46	65.81	2.58	3.15	29.41	68.63	0.00	1.96	0.90	NA
TK2-BEAN1	27	2	1	0	1	399	922	36	44	13	31	0	1	28.48	65.81	2.57	3.14	28.89	68.89	0.00	2.22	0.93	NA
TK2-BEAN1	28	3	3	0	0	401	923	36	45	11	30	0	0	28.54	65.69	2.56	3.20	26.83	73.17	0.00	0.00	0.71	NA

TK2-BEAN1	29	0	5	0	0	404	926	36	45	8	27	0	0	28.63	65.63	2.55	3.19	22.86	77.14	0.00	0.00	0.63	NA
TK2-BEAN1	30	1	3	0	0	404	931	36	45	8	22	0	0	28.53	65.75	2.54	3.18	26.67	73.33	0.00	0.00	0.92	NA
TK2-BEAN1	31	0	2	0	0	405	934	36	45	7	19	0	0	28.52	65.77	2.54	3.17	26.92	73.08	0.00	0.00	0.96	NA
TK2-BEAN1	32	1	0	0	0	405	936	36	45	7	17	0	0	28.48	65.82	2.53	3.16	29.17	70.83	0.00	0.00	1.00	NA
TK2-BEAN1	33	0	1	0	0	406	936	36	45	6	17	0	0	28.53	65.78	2.53	3.16	26.09	73.91	0.00	0.00	0.95	NA
TK2-BEAN1	34	1	2	0	0	406	937	36	45	6	16	0	0	28.51	65.80	2.53	3.16	27.27	72.73	0.00	0.00	1.00	NA
TK2-BEAN1	35	0	3	0	0	407	939	36	45	5	14	0	0	28.52	65.80	2.52	3.15	26.32	73.68	0.00	0.00	0.94	NA
TK2-BEAN1	36	0	1	0	0	407	942	36	45	5	11	0	0	28.46	65.87	2.52	3.15	31.25	68.75	0.00	0.00	1.00	NA
TK2-BEAN1	37	0	0	0	0	407	943	36	45	5	10	0	0	28.44	65.90	2.52	3.14	33.33	66.67	0.00	0.00	0.91	NA
TK2-BEAN1	38	0	0	0	0	407	943	36	45	5	10	0	0	28.44	65.90	2.52	3.14	33.33	66.67	0.00	0.00	0.91	NA
TK2-BEAN1	39	0	0	0	0	407	943	36	45	5	10	0	0	28.44	65.90	2.52	3.14	33.33	66.67	0.00	0.00	0.91	NA
TK2-BEAN1	40	0	1	0	0	407	943	36	45	5	10	0	0	28.44	65.90	2.52	3.14	33.33	66.67	0.00	0.00	0.91	NA
TK2-BEAN1	42	0	1	0	0	407	944	36	45	5	9	0	0	28.42	65.92	2.51	3.14	35.71	64.29	0.00	0.00	0.90	NA
TK2-BEAN1	43	0	0	0	0	407	945	36	45	5	8	0	0	28.40	65.95	2.51	3.14	38.46	61.54	0.00	0.00	0.79	NA
TK2-BEAN1	44	1	1	0	0	407	945	36	45	5	8	0	0	28.40	65.95	2.51	3.14	38.46	61.54	0.00	0.00	0.79	NA
TK2-BEAN1	45	0	0	0	0	408	946	36	45	4	7	0	0	28.43	65.92	2.51	3.14	36.36	63.64	0.00	0.00	0.86	NA
TK2-BEAN1	47	0	0	0	0	408	946	36	45	4	7	0	0	28.43	65.92	2.51	3.14	36.36	63.64	0.00	0.00	0.86	NA
TK2-BEAN1	48	0	1	0	0	408	946	36	45	4	7	0	0	28.43	65.92	2.51	3.14	36.36	63.64	0.00	0.00	0.86	NA
TK2-BEAN1	49	1	1	0	0	408	947	36	45	4	6	0	0	28.41	65.95	2.51	3.13	40.00	60.00	0.00	0.00	0.72	NA
TK2-BEAN1	50	0	1	0	0	409	948	36	45	3	5	0	0	28.44	65.92	2.50	3.13	37.50	62.50	0.00	0.00	0.81	NA
TK2-BEAN1	51	1	0	0	0	409	949	36	45	3	4	0	0	28.42	65.95	2.50	3.13	42.86	57.14	0.00	0.00	0.62	NA
TK2-BEAN1	52	0	0	0	0	410	949	36	45	2	4	0	0	28.47	65.90	2.50	3.13	33.33	66.67	0.00	0.00	1.00	NA
TK2-BEAN1	53	1	0	0	0	410	949	36	45	2	4	0	0	28.47	65.90	2.50	3.13	33.33	66.67	0.00	0.00	1.00	NA
TK2-BEAN1	54	0	1	0	0	411	949	36	45	1	4	0	0	28.52	65.86	2.50	3.12	20.00	80.00	0.00	0.00	1.00	NA
TK2-BEAN1	55	0	2	0	0	411	950	36	45	1	3	0	0	28.50	65.88	2.50	3.12	25.00	75.00	0.00	0.00	1.00	NA
TK2-BEAN1	60	0	0	0	0	411	952	36	45	1	1	0	0	28.46	65.93	2.49	3.12	50.00	50.00	0.00	0.00	0.57	NA
TK2-BEAN1	61	1	0	0	0	411	952	36	45	1	1	0	0	28.46	65.93	2.49	3.12	50.00	50.00	0.00	0.00	0.57	NA
TK2-BEAN1	65	0	1	0	0	412	952	36	45	0	1	0	0	28.51	65.88	2.49	3.11	0.00	100.00	0.00	0.00	1.00	NA

TK2-BEAN1	70	0	0	0	0	412	953	36	45	0	0	0	0	28.49	65.91	2.49	3.11	NA	NA	NA	NA	NA
TK2-BEAN1	75	0	0	0	0	412	953	36	45	0	0	0	0	28.49	65.91	2.49	3.11	NA	NA	NA	NA	NA
ZNF713	3	0	2	0	0	0	0	0	0	391	896	33	40	NA	NA	NA	NA	28.75	65.88	2.43	2.94	1.00	NA
ZNF713	4	7	22	0	2	0	2	0	0	391	894	33	40	0.00	100.00	0.00	0.00	28.79	65.83	2.43	2.95	1.00	NA
ZNF713	5	0	4	1	0	7	24	0	2	384	872	33	38	21.21	72.73	0.00	6.06	28.94	65.71	2.49	2.86	0.40	NA
ZNF713	6	34	96	3	4	7	28	1	2	384	868	32	38	18.42	73.68	2.63	5.26	29.05	65.66	2.42	2.87	0.31	NA
ZNF713	7	9	31	4	4	41	124	4	6	350	772	29	34	23.43	70.86	2.29	3.43	29.54	65.15	2.45	2.87	0.38	NA
ZNF713	8	83	201	7	10	50	155	8	10	341	741	25	30	22.42	69.51	3.59	4.48	29.99	65.17	2.20	2.64	0.04	*
ZNF713	9	58	134	3	8	133	356	15	20	258	540	18	20	25.38	67.94	2.86	3.82	30.86	64.59	2.15	2.39	0.07	Â°
ZNF713	10	35	62	4	3	191	490	18	28	200	406	15	12	26.27	67.40	2.48	3.85	31.60	64.14	2.37	1.90	0.04	*
ZNF713	11	98	240	5	7	226	552	22	31	165	344	11	9	27.20	66.43	2.65	3.73	31.19	65.03	2.08	1.70	0.07	Â°
ZNF713	12	33	37	4	0	324	792	27	38	67	104	6	2	27.43	67.06	2.29	3.22	37.43	58.10	3.35	1.12	0.01	*
ZNF713	13	2	7	1	0	357	829	31	38	34	67	2	2	28.45	66.06	2.47	3.03	32.38	63.81	1.90	1.90	0.84	NA
ZNF713	14	2	4	0	0	359	836	32	38	32	60	1	2	28.38	66.09	2.53	3.00	33.68	63.16	1.05	2.11	0.68	NA
ZNF713	15	4	10	0	0	361	840	32	38	30	56	1	2	28.40	66.09	2.52	2.99	33.71	62.92	1.12	2.25	0.72	NA
ZNF713	16	8	4	0	0	365	850	32	38	26	46	1	2	28.40	66.15	2.49	2.96	34.67	61.33	1.33	2.67	0.72	NA
ZNF713	17	4	16	0	1	373	854	32	38	18	42	1	2	28.76	65.84	2.47	2.93	28.57	66.67	1.59	3.17	0.98	NA
ZNF713	18	7	13	0	0	377	870	32	39	14	26	1	1	28.60	66.01	2.43	2.96	33.33	61.90	2.38	2.38	0.88	NA
ZNF713	19	2	4	0	0	384	883	32	39	7	13	1	1	28.70	65.99	2.39	2.91	31.82	59.09	4.55	4.55	0.44	NA
ZNF713	20	1	2	0	0	386	887	32	39	5	9	1	1	28.72	66.00	2.38	2.90	31.25	56.25	6.25	6.25	0.27	NA
ZNF713	21	4	2	1	0	387	889	32	39	4	7	1	1	28.73	66.00	2.38	2.90	30.77	53.85	7.69	7.69	0.21	NA
ZNF713	22	0	0	0	0	391	891	33	39	0	5	0	1	28.88	65.81	2.44	2.88	0.00	83.33	0.00	16.67	0.13	NA
ZNF713	23	0	4	0	1	391	891	33	39	0	5	0	1	28.88	65.81	2.44	2.88	0.00	83.33	0.00	16.67	0.13	NA
ZNF713	37	0	1	0	0	391	895	33	40	0	1	0	0	28.77	65.86	2.43	2.94	0.00	100.00	0.00	0.00	1.00	NA
ZNF713	69	0	0	0	0	391	896	33	40	0	0	0	0	28.75	65.88	2.43	2.94	NA	NA	NA	NA	1.00	NA

Supplementary Table S 3-4 ALS long allele statistical information: Disease duration and age of onset.

Gene	Repeat count	Duration *p*-value	Duration significance	Duration lower median	Duration lower IQR	Duration higher median	Duration higher IQR	Age onset *p*-value	Age onset significance	Age onset lower median	Age onset lower IQR	Age onset higher median	Age onset higher IQR
AFF2	4	NA	NA	NA	NA	32.170	28.830	NA	NA	NA	NA	62.500	15.000
AFF2	6	NA	NA	NA	NA	32.170	28.830	NA	NA	NA	NA	62.500	15.000
AFF2	7	0.444	NA	22.500	0.000	32.170	28.830	0.446	NA	56.000	0.000	63.000	15.000
AFF2	10	0.430	NA	25.085	2.585	32.170	28.830	0.682	NA	56.000	14.500	63.000	15.000
AFF2	11	0.266	NA	25.085	12.203	32.170	28.830	0.549	NA	58.000	6.000	63.000	15.000
AFF2	12	0.266	NA	25.085	12.203	32.170	28.830	0.310	NA	57.000	8.750	63.000	15.000
AFF2	13	0.376	NA	26.730	15.840	32.185	29.220	0.287	NA	58.000	9.000	63.000	15.000
AFF2	14	0.319	NA	28.385	17.963	32.270	29.420	0.685	NA	61.000	14.250	63.000	15.000
AFF2	15	0.438	NA	32.030	29.133	32.170	28.700	0.407	NA	62.000	14.000	63.000	15.000
AFF2	16	0.438	NA	32.435	29.600	31.830	28.165	0.631	NA	63.000	15.000	62.000	15.000
AFF2	17	0.425	NA	32.170	29.740	32.130	28.000	0.873	NA	62.000	15.000	63.000	15.000
AFF2	18	0.345	NA	32.315	29.455	31.830	26.870	0.709	NA	63.000	15.000	62.000	15.000
AFF2	19	0.516	NA	32.330	29.060	31.530	27.145	0.780	NA	63.000	15.000	62.000	15.000
AFF2	20	0.477	NA	32.485	29.958	30.330	26.030	0.799	NA	62.000	15.000	63.000	15.000
AFF2	21	0.374	NA	32.500	30.013	30.230	25.085	0.595	NA	63.000	15.000	62.000	14.000
AFF2	22	0.483	NA	32.470	29.980	30.230	24.770	0.245	NA	63.000	15.000	62.000	14.500
AFF2	23	0.525	NA	32.400	29.903	30.530	24.970	0.165	NA	63.000	15.000	61.500	14.000
AFF2	24	0.957	NA	32.270	29.540	30.730	25.388	0.067	Â°	63.000	15.000	60.000	12.500
AFF2	25	0.713	NA	32.300	29.300	29.335	25.673	0.121	NA	63.000	15.000	61.000	13.250
AFF2	26	0.821	NA	32.200	28.830	30.200	25.395	0.186	NA	63.000	15.000	60.500	14.000
AFF2	27	0.443	NA	32.130	28.900	35.385	24.050	0.295	NA	63.000	15.000	60.000	16.500

AFF2	28	0.198	NA	32.130	29.000	38.570	19.463	0.472	NA	63.000	15.000	60.500	17.500
AFF2	29	0.473	NA	32.130	28.883	36.670	14.315	0.856	NA	63.000	15.000	62.000	18.000
AFF2	30	0.458	NA	32.130	28.830	40.470	12.200	0.720	NA	63.000	15.000	62.000	17.000
AFF2	31	0.458	NA	32.130	28.830	40.470	12.200	0.720	NA	63.000	15.000	62.000	17.000
AFF2	32	0.123	NA	32.130	28.848	43.000	6.860	0.624	NA	62.500	15.000	61.500	13.750
AFF2	33	0.123	NA	32.130	28.848	43.000	6.860	0.624	NA	62.500	15.000	61.500	13.750
AFF2	34	0.141	NA	32.130	28.830	45.165	24.198	0.354	NA	63.000	15.000	58.000	13.000
AFF2	35	0.086	Â°	32.130	28.823	47.330	36.315	0.619	NA	62.500	15.000	61.500	10.750
AFF2	36	0.119	NA	32.130	28.815	79.315	36.315	0.798	NA	62.000	15.000	65.000	11.000
AFF2	54	0.545	NA	32.150	28.830	43.000	0.000	0.778	NA	62.000	15.000	65.000	0.000
AFF3	0	NA	NA	NA	NA	31.915	29.048	NA	NA	NA	NA	63.000	15.000
AFF3	1	NA	NA	NA	NA	31.915	29.048	NA	NA	NA	NA	63.000	15.000
AFF3	2	NA	NA	NA	NA	31.915	29.048	NA	NA	NA	NA	63.000	15.000
AFF3	3	0.391	NA	27.470	16.365	32.030	29.070	0.135	NA	66.500	3.250	62.000	15.000
AFF3	4	0.794	NA	29.130	30.680	32.170	29.030	0.008	**	67.000	11.000	62.000	15.000
AFF3	5	0.317	NA	33.230	30.315	31.830	28.730	0.019	*	65.000	13.000	62.000	15.000
AFF3	6	0.729	NA	32.370	28.823	31.900	29.123	0.040	*	65.000	12.000	62.000	15.000
AFF3	7	0.906	NA	31.885	27.448	32.030	29.545	0.084	Â°	64.000	13.000	62.000	15.000
AFF3	8	0.646	NA	32.185	28.010	31.685	31.413	0.458	NA	63.000	15.000	62.000	16.000
AFF3	9	0.544	NA	32.150	27.870	31.650	31.795	0.655	NA	63.000	15.000	62.000	16.000
AFF3	10	0.520	NA	31.930	27.900	31.870	31.565	0.590	NA	63.000	15.000	62.000	16.000
AFF3	11	0.316	NA	31.900	27.885	32.400	33.230	0.659	NA	63.000	15.000	62.000	16.000
AFF3	12	0.298	NA	31.900	27.973	32.230	33.480	0.691	NA	63.000	15.000	62.000	15.500
AFF3	13	0.900	NA	31.930	28.820	31.870	29.760	0.622	NA	63.000	15.000	62.000	15.000
AFF3	14	0.854	NA	31.900	28.820	32.130	29.760	0.522	NA	63.000	15.000	62.000	15.000
AFF3	15	0.959	NA	31.915	28.870	32.000	29.500	0.444	NA	63.000	15.000	62.000	15.000
AFF3	16	0.870	NA	32.030	28.968	31.650	28.395	0.417	NA	63.000	15.000	62.000	16.000
AFF3	17	0.717	NA	32.185	29.498	30.330	24.970	0.193	NA	63.000	15.000	61.000	15.750

AFF3	18	0.666	NA	31.900	29.065	33.600	27.470	0.125	NA	63.000	15.000	60.000	13.250
AFF3	19	0.878	NA	31.915	29.053	32.065	24.775	0.264	NA	63.000	15.000	60.000	12.500
AFF3	20	0.791	NA	31.915	29.108	32.300	22.105	0.145	NA	63.000	15.000	58.000	14.500
AFF3	21	0.570	NA	31.915	29.108	34.965	26.960	0.211	NA	63.000	15.000	59.000	11.000
AFF3	22	0.777	NA	32.130	29.115	29.400	20.760	0.168	NA	63.000	15.000	58.000	12.000
AFF3	23	0.952	NA	32.130	29.108	28.965	19.335	0.688	NA	63.000	15.000	58.000	12.000
AFF3	24	0.553	NA	32.030	29.083	26.535	2.865	0.446	NA	63.000	15.000	58.000	0.000
AFF3	25	0.848	NA	31.930	29.065	29.400	0.000	0.591	NA	63.000	15.000	58.000	0.000
AFF3	27	NA	NA	31.915	29.048	NA	NA	NA	NA	63.000	15.000	NA	NA
AR	9	NA	NA	NA	NA	31.870	29.100	NA	NA	NA	NA	63.000	15.000
AR	10	0.274	NA	18.070	0.000	31.885	29.070	0.384	NA	70.000	0.000	63.000	15.000
AR	14	0.274	NA	18.070	0.000	31.885	29.070	0.384	NA	70.000	0.000	63.000	15.000
AR	15	0.061	Â°	14.320	3.750	31.900	29.060	0.704	NA	65.000	5.000	63.000	15.000
AR	16	0.064	Â°	15.070	11.633	31.900	29.060	0.922	NA	65.000	18.250	63.000	15.000
AR	17	0.492	NA	28.550	26.648	31.870	29.060	0.447	NA	68.000	14.000	63.000	15.000
AR	18	0.402	NA	36.370	24.150	31.870	29.045	0.439	NA	66.500	16.500	63.000	15.000
AR	19	0.905	NA	33.370	30.665	31.870	29.000	0.949	NA	61.500	16.500	63.000	15.000
AR	20	0.749	NA	31.170	27.400	31.900	29.565	0.321	NA	63.000	16.000	62.000	15.000
AR	21	0.401	NA	29.615	26.663	32.270	29.900	0.874	NA	62.000	15.500	63.000	15.000
AR	22	0.640	NA	31.765	30.095	31.930	28.615	0.395	NA	62.000	15.000	63.000	15.000
AR	23	0.472	NA	31.270	28.250	32.385	29.880	0.257	NA	62.000	15.250	63.000	14.000
AR	24	0.859	NA	31.870	28.815	31.915	29.360	0.243	NA	62.000	15.000	63.000	15.000
AR	25	0.671	NA	31.470	28.200	32.435	31.800	0.330	NA	62.000	15.000	63.000	14.000
AR	26	0.555	NA	31.600	29.345	33.230	28.400	0.480	NA	62.000	15.000	63.000	15.000
AR	27	0.514	NA	31.885	29.583	31.830	28.530	0.307	NA	62.000	15.000	63.500	14.000
AR	28	0.494	NA	31.870	29.030	29.835	33.043	0.946	NA	63.000	15.000	63.000	16.000
AR	29	0.210	NA	31.900	29.060	26.000	30.420	0.855	NA	63.000	15.000	61.000	13.500
AR	30	0.154	NA	31.900	29.030	23.265	31.490	0.212	NA	63.000	15.000	59.500	13.500

AR	31	0.479	NA	31.900	29.045	21.565	36.965	0.522	NA	63.000	15.000	59.000	10.500
AR	32	0.596	NA	31.870	29.048	46.030	79.560	0.752	NA	63.000	15.000	61.500	8.750
AR	33	0.596	NA	31.870	29.048	46.030	79.560	0.752	NA	63.000	15.000	61.500	8.750
AR	34	0.535	NA	31.885	29.053	17.570	90.835	0.803	NA	63.000	15.000	60.000	15.500
AR	35	0.535	NA	31.885	29.053	17.570	90.835	0.803	NA	63.000	15.000	60.000	15.500
AR	43	0.973	NA	31.870	29.065	98.535	90.835	0.245	NA	63.000	15.000	55.000	9.500
AR	45	0.097	Â°	31.885	29.070	7.700	0.000	0.423	NA	63.000	15.000	55.500	9.500
AR	52	0.097	Â°	31.885	29.070	7.700	0.000	0.782	NA	63.000	15.000	65.000	0.000
ARX	3	NA	NA	NA	NA	32.185	28.770	NA	NA	NA	NA	63.000	15.000
ARX	4	NA	NA	NA	NA	32.185	28.770	0.510	NA	57.000	0.000	63.000	15.000
ARX	8	0.335	NA	20.270	0.000	32.200	28.815	0.951	NA	57.000	16.500	63.000	15.000
ARX	9	0.139	NA	20.685	8.240	32.235	29.003	0.714	NA	54.000	22.500	63.000	15.000
ARX	10	0.354	NA	33.800	31.745	31.780	27.215	0.516	NA	64.000	15.000	62.000	15.000
ARX	11	0.011	*	32.350	29.220	22.035	18.150	0.124	NA	62.000	15.000	64.000	10.000
ARX	13	0.606	NA	32.200	28.760	31.070	53.985	0.834	NA	63.000	15.000	67.000	14.000
ARX	17	0.098	Â°	32.170	28.710	131.600	0.000	0.117	NA	63.000	15.000	40.000	0.000
ARX	89	NA	NA	32.185	28.770	NA	NA	NA	NA	63.000	15.000	NA	NA
ATN1	0	NA	NA	NA	NA	32.030	29.070	NA	NA	NA	NA	62.000	15.000
ATN1	8	0.866	NA	34.470	0.000	31.930	29.080	0.381	NA	55.000	0.000	62.000	15.000
ATN1	9	0.301	NA	28.100	19.270	32.130	29.465	0.983	NA	59.000	16.000	62.000	15.000
ATN1	10	0.301	NA	28.100	19.270	32.130	29.465	0.779	NA	62.000	16.000	62.000	15.000
ATN1	11	0.033	*	29.465	19.478	32.185	29.980	0.986	NA	63.000	14.000	62.000	15.000
ATN1	12	0.016	*	28.100	17.870	32.270	30.100	0.961	NA	63.000	14.000	62.000	15.000
ATN1	13	0.026	*	29.465	19.218	32.235	30.105	0.579	NA	62.500	15.250	62.000	15.000
ATN1	14	0.051	Â°	29.465	20.693	32.235	30.005	0.579	NA	62.000	16.500	62.000	15.000
ATN1	15	0.159	NA	31.415	25.438	32.170	29.780	0.525	NA	62.000	15.750	62.000	15.000
ATN1	16	0.200	NA	30.530	28.278	33.565	29.440	0.813	NA	63.000	15.000	62.000	15.000
ATN1	17	0.068	Â°	31.565	28.583	34.115	29.693	0.907	NA	62.500	14.750	62.000	16.000

ATN1	18	0.719	NA	32.130	28.500	31.270	32.985	0.430	NA	63.000	15.000	61.000	14.000
ATN1	19	0.382	NA	31.930	28.815	33.030	31.200	0.428	NA	63.000	15.000	60.000	13.500
ATN1	20	0.548	NA	32.130	28.770	31.270	32.050	0.531	NA	63.000	15.000	60.000	12.500
ATN1	21	0.593	NA	32.130	29.030	31.270	29.970	0.942	NA	63.000	15.000	61.000	14.750
ATN1	22	0.881	NA	32.130	29.300	31.270	25.700	0.318	NA	63.000	15.000	59.500	9.250
ATN1	23	0.658	NA	32.130	29.115	26.800	22.970	0.264	NA	62.500	15.000	58.000	5.500
ATN1	24	0.682	NA	32.130	29.080	26.800	0.000	0.938	NA	62.000	15.000	62.000	5.000
ATN1	25	NA	NA	32.030	29.070	NA	NA	0.518	NA	62.000	15.000	57.000	0.000
ATN1	27	NA	NA	32.030	29.070	NA	NA	0.518	NA	62.000	15.000	57.000	0.000
ATXN1	28	NA	NA	NA	NA	31.850	28.758	NA	NA	NA	NA	62.000	15.000
ATXN1	29	0.308	NA	20.530	22.230	31.870	28.900	0.285	NA	59.000	8.750	62.000	15.000
ATXN1	30	0.891	NA	32.535	26.053	31.615	29.498	0.279	NA	63.000	15.000	62.000	15.000
ATXN1	31	0.329	NA	32.435	28.863	30.315	28.653	0.433	NA	62.000	16.000	63.000	14.000
ATXN1	32	0.653	NA	31.915	28.625	31.035	28.953	0.195	NA	62.000	16.000	63.000	13.250
ATXN1	33	0.735	NA	31.830	29.040	32.670	25.170	0.014	*	62.000	15.000	65.000	13.000
ATXN1	34	0.709	NA	31.870	29.248	30.565	22.525	0.208	NA	62.000	15.000	64.500	13.000
ATXN1	35	0.622	NA	31.830	29.425	32.515	19.480	0.141	NA	62.000	15.000	65.000	14.000
ATXN1	36	0.823	NA	31.870	29.200	30.900	18.930	0.242	NA	62.000	15.000	65.000	14.000
ATXN1	37	0.620	NA	31.870	28.850	26.950	21.058	0.234	NA	62.000	15.000	67.000	15.750
ATXN1	38	0.322	NA	31.870	28.900	26.670	19.130	0.199	NA	62.000	15.000	71.000	16.000
ATXN1	39	0.284	NA	31.830	28.765	47.600	31.150	0.472	NA	62.000	15.000	52.000	10.000
ATXN1	40	0.453	NA	31.850	28.733	57.820	31.150	0.904	NA	62.000	15.000	61.000	10.000
ATXN1	41	0.145	NA	31.830	28.700	88.970	0.000	0.252	NA	62.000	15.000	51.000	0.000
ATXN1	42	NA	NA	31.850	28.758	NA	NA	NA	NA	62.000	15.000	NA	NA
ATXN2	22	NA	NA	NA	NA	31.900	29.193	NA	NA	NA	NA	62.000	15.000
ATXN2	23	0.485	NA	31.930	29.985	31.830	27.800	0.119	NA	62.000	15.000	63.000	14.000
ATXN2	24	0.416	NA	31.900	30.320	32.050	24.510	0.157	NA	62.000	15.000	63.000	15.250
ATXN2	25	0.511	NA	31.900	30.200	32.270	24.535	0.241	NA	62.000	15.000	63.000	16.000

ATXN2	26	0.399	NA	31.915	30.190	31.250	24.095	0.410	NA	62.000	15.000	62.500	16.000
ATXN2	27	0.456	NA	31.900	30.160	31.830	24.420	0.437	NA	62.000	15.000	62.000	16.000
ATXN2	28	0.237	NA	31.900	29.900	31.830	22.850	0.051	Â°	62.000	15.000	63.000	15.000
ATXN2	29	0.237	NA	31.900	29.900	31.830	22.850	0.051	Â°	62.000	15.000	63.000	15.000
ATXN2	30	0.456	NA	31.885	29.725	34.150	23.638	0.073	Â°	62.000	15.000	63.000	15.250
ATXN2	31	0.769	NA	31.900	29.748	33.100	18.240	0.215	NA	62.000	15.000	63.000	15.000
ATXN2	32	0.300	NA	31.830	29.470	37.170	6.885	0.982	NA	62.000	15.000	61.000	7.000
ATXN2	33	0.965	NA	31.900	29.480	38.035	10.048	0.776	NA	62.000	15.000	61.500	12.750
ATXN2	34	0.768	NA	31.900	29.440	37.170	17.500	0.803	NA	62.000	15.000	60.000	5.000
ATXN2	36	0.391	NA	31.900	29.345	23.620	13.550	0.906	NA	62.000	15.000	60.500	13.000
ATXN2	38	0.391	NA	31.900	29.345	23.620	13.550	0.906	NA	62.000	15.000	60.500	13.000
ATXN2	43	0.721	NA	31.900	29.285	37.170	0.000	0.865	NA	62.000	15.000	63.000	18.500
ATXN2	52	NA	NA	31.900	29.193	NA	NA	0.336	NA	62.000	15.000	54.000	9.000
ATXN2	69	NA	NA	31.900	29.193	NA	NA	0.153	NA	62.000	15.000	45.000	0.000
ATXN3	14	NA	NA	NA	NA	31.885	29.130	NA	NA	NA	NA	63.000	15.000
ATXN3	15	0.524	NA	36.770	22.915	31.870	29.163	0.040	*	56.000	14.750	63.000	15.000
ATXN3	18	0.038	*	38.570	26.998	31.715	28.925	0.293	NA	59.000	17.000	63.000	15.000
ATXN3	19	0.050	Â°	38.530	26.765	31.700	28.930	0.397	NA	60.000	16.500	63.000	15.000
ATXN3	20	0.067	Â°	37.850	27.368	31.715	29.023	0.465	NA	60.000	16.500	63.000	15.000
ATXN3	21	0.013	*	38.530	26.940	31.170	29.370	0.064	Â°	59.000	15.250	63.000	15.000
ATXN3	22	0.111	NA	35.550	28.565	31.220	29.338	0.038	*	61.000	15.000	63.000	15.000
ATXN3	23	0.161	NA	34.785	27.905	31.330	29.353	0.035	*	61.000	15.000	63.000	15.000
ATXN3	24	0.683	NA	31.850	30.715	32.015	26.613	0.532	NA	62.000	15.000	63.000	15.000
ATXN3	25	0.619	NA	32.030	30.335	31.485	26.420	0.884	NA	63.000	15.000	62.000	15.000
ATXN3	26	0.472	NA	32.200	30.415	31.330	26.230	0.734	NA	63.000	15.000	63.000	15.000
ATXN3	27	0.376	NA	32.300	30.330	31.330	26.695	0.926	NA	63.000	15.000	62.000	15.000
ATXN3	28	0.228	NA	31.930	29.800	30.970	27.195	0.430	NA	62.000	15.000	63.000	16.000
ATXN3	29	0.219	NA	32.030	29.598	28.385	25.255	0.608	NA	63.000	15.000	62.500	17.000

ATXN3	30	0.264	NA	32.030	29.658	28.385	22.073	0.534	NA	63.000	15.000	62.500	18.250
ATXN3	31	0.934	NA	31.885	29.155	31.985	25.463	0.628	NA	63.000	15.000	62.000	16.000
ATXN3	32	0.739	NA	31.870	29.123	34.250	24.948	0.879	NA	63.000	15.000	61.000	16.000
ATXN3	33	0.492	NA	31.870	29.130	36.230	22.060	0.986	NA	63.000	15.000	61.000	16.250
ATXN3	34	0.588	NA	31.870	29.130	34.250	24.850	0.861	NA	63.000	15.000	61.000	17.250
ATXN3	35	0.514	NA	31.870	29.123	36.135	26.530	0.634	NA	63.000	15.000	59.500	13.750
ATXN3	36	0.698	NA	31.870	29.130	32.270	18.160	0.682	NA	63.000	15.000	59.000	15.000
ATXN3	37	0.851	NA	31.885	29.123	30.535	21.915	0.464	NA	63.000	15.000	58.500	13.000
ATXN3	38	0.735	NA	31.870	29.130	32.270	22.380	0.733	NA	63.000	15.000	59.000	20.000
ATXN3	39	0.864	NA	31.870	29.130	41.130	13.500	0.545	NA	63.000	15.000	67.000	21.000
ATXN3	40	0.555	NA	31.885	29.123	27.830	13.300	0.788	NA	63.000	15.000	59.000	14.000
ATXN3	41	0.601	NA	31.870	29.130	41.130	0.000	0.181	NA	63.000	15.000	75.000	0.000
ATXN7	6	NA	NA	NA	NA	31.900	29.100	NA	NA	NA	NA	63.000	15.000
ATXN7	7	0.957	NA	32.500	0.000	31.885	29.115	0.103	NA	81.000	0.000	62.500	15.000
ATXN7	9	0.789	NA	34.450	1.950	31.870	29.130	0.150	NA	73.500	7.500	62.000	15.000
ATXN7	10	0.167	NA	37.465	25.943	31.870	29.115	0.979	NA	61.500	8.250	63.000	15.000
ATXN7	11	0.184	NA	32.500	30.270	30.685	28.328	0.020	*	63.000	14.000	62.000	15.000
ATXN7	12	0.148	NA	32.500	29.880	30.135	29.413	0.154	NA	63.000	15.000	62.000	13.000
ATXN7	13	0.469	NA	32.170	29.045	30.000	29.103	0.090	Â°	63.000	15.000	61.000	14.000
ATXN7	14	0.670	NA	31.900	28.778	24.800	31.115	0.377	NA	63.000	15.000	59.000	13.500
ATXN7	15	0.559	NA	31.900	29.115	25.530	16.470	0.464	NA	63.000	15.000	58.500	12.500
ATXN7	16	0.975	NA	31.885	29.085	38.800	17.550	0.885	NA	62.500	15.000	67.000	12.000
ATXN7	17	0.795	NA	31.900	29.070	33.280	17.550	0.580	NA	63.000	15.000	56.000	12.000
ATXN7	18	0.795	NA	31.900	29.070	33.280	17.550	0.580	NA	63.000	15.000	56.000	12.000
ATXN7	19	0.209	NA	31.900	29.083	15.730	0.000	0.503	NA	62.500	15.000	68.000	0.000
ATXN7	35	NA	NA	31.900	29.100	NA	NA	NA	NA	63.000	15.000	NA	NA
ATXN8	8	NA	NA	NA	NA	32.030	29.060	NA	NA	NA	NA	63.000	15.000
ATXN8	9	0.159	NA	26.070	20.730	32.170	29.400	0.486	NA	64.000	15.000	63.000	15.000

ATXN8	10	0.242	NA	26.400	19.680	32.170	29.465	0.578	NA	64.000	14.500	63.000	15.000
ATXN8	11	0.267	NA	28.835	19.105	32.150	29.498	0.699	NA	63.000	14.500	63.000	15.000
ATXN8	12	0.267	NA	28.835	19.105	32.150	29.498	0.699	NA	63.000	14.500	63.000	15.000
ATXN8	13	0.248	NA	31.270	24.050	32.200	30.115	0.810	NA	63.000	13.000	63.000	15.000
ATXN8	14	0.165	NA	31.685	28.593	32.185	29.653	0.603	NA	63.000	15.000	62.000	15.000
ATXN8	15	0.620	NA	31.900	27.970	32.170	30.530	0.983	NA	63.000	15.000	62.000	15.000
ATXN8	16	0.509	NA	31.715	28.103	32.700	30.300	0.017	*	63.000	15.000	62.000	14.000
ATXN8	17	0.901	NA	31.885	30.065	32.400	26.795	0.046	*	63.000	15.000	62.000	13.000
ATXN8	18	0.992	NA	31.900	29.030	32.630	30.430	0.167	NA	63.000	15.000	62.000	14.000
ATXN8	19	0.647	NA	31.915	29.700	32.400	21.025	0.842	NA	63.000	15.000	63.000	12.500
ATXN8	20	0.430	NA	32.130	29.400	28.030	23.370	0.236	NA	63.000	15.000	62.000	14.250
ATXN8	21	0.204	NA	32.200	29.000	26.800	20.700	0.231	NA	63.000	15.000	61.500	15.500
ATXN8	22	0.104	NA	32.200	29.170	25.800	20.570	0.445	NA	63.000	15.000	62.500	15.500
ATXN8	23	0.117	NA	32.170	29.000	25.800	23.000	0.422	NA	63.000	15.000	62.000	12.000
ATXN8	24	0.243	NA	32.170	29.060	25.800	22.240	0.462	NA	63.000	15.000	62.500	9.750
ATXN8	25	0.294	NA	32.150	29.060	23.600	30.768	0.267	NA	63.000	15.000	62.000	13.000
ATXN8	26	0.175	NA	32.150	29.045	19.115	20.673	0.409	NA	63.000	15.000	62.000	10.000
ATXN8	28	0.726	NA	32.130	29.060	24.100	38.430	0.503	NA	63.000	15.000	62.000	14.000
ATXN8	29	0.280	NA	32.130	29.060	21.400	9.970	0.928	NA	63.000	15.000	63.500	9.750
ATXN8	30	0.315	NA	32.130	29.060	19.115	15.978	0.735	NA	63.000	15.000	62.000	10.000
ATXN8	32	0.315	NA	32.130	29.060	19.115	15.978	0.800	NA	63.000	15.000	63.500	6.750
ATXN8	35	0.315	NA	32.130	29.060	19.115	15.978	0.800	NA	63.000	15.000	63.500	6.750
ATXN8	44	0.659	NA	32.130	29.060	21.400	24.720	0.429	NA	63.000	15.000	65.000	5.500
ATXN8	58	0.974	NA	32.030	29.060	41.550	24.720	0.303	NA	63.000	15.000	69.000	4.000
ATXN8	66	0.240	NA	32.130	29.060	16.830	0.000	0.244	NA	63.000	15.000	73.000	0.000
ATXN8	69	NA	NA	32.030	29.060	NA	NA	NA	NA	63.000	15.000	NA	NA
ATXN8	70	NA	NA	32.030	29.060	NA	NA	NA	NA	63.000	15.000	NA	NA
ATXN10	11	NA	NA	NA	NA	31.900	28.815	NA	NA	NA	NA	62.000	15.000

ATXN10	12	0.509	NA	44.000	0.000	31.900	28.900	0.748	NA	60.000	0.000	62.500	15.000
ATXN10	13	0.751	NA	31.400	25.730	31.900	28.815	0.563	NA	65.500	13.750	62.000	15.000
ATXN10	14	0.304	NA	32.330	29.670	31.870	28.735	0.470	NA	62.000	14.250	63.000	15.000
ATXN10	15	0.397	NA	31.170	27.735	33.030	30.600	0.657	NA	62.000	15.000	63.000	15.000
ATXN10	16	0.432	NA	31.430	28.030	33.170	31.540	0.248	NA	63.000	15.000	62.000	14.000
ATXN10	17	0.445	NA	31.450	28.875	33.880	28.968	0.303	NA	62.000	15.000	63.000	13.000
ATXN10	18	0.901	NA	31.830	29.145	33.750	25.230	0.365	NA	62.000	15.000	63.000	13.000
ATXN10	19	0.603	NA	31.870	28.993	33.135	27.368	0.646	NA	62.000	15.000	63.000	14.000
ATXN10	20	0.456	NA	31.900	28.940	31.485	25.055	0.722	NA	62.000	15.000	63.000	14.750
ATXN10	21	0.899	NA	31.900	28.615	29.870	43.770	0.089	Â°	63.000	15.000	58.000	21.000
ATXN10	22	0.465	NA	31.900	28.715	21.570	35.440	0.134	NA	63.000	15.000	56.000	22.500
ATXN10	23	0.978	NA	31.900	28.723	39.735	23.335	0.223	NA	63.000	15.000	53.000	7.000
ATXN10	24	0.222	NA	31.900	28.880	16.400	0.000	0.748	NA	62.500	15.000	60.000	0.000
ATXN10	32	NA	NA	31.900	28.815	NA	NA	NA	NA	62.000	15.000	NA	NA
CACNA1A	3	NA	NA	NA	NA	31.900	28.770	NA	NA	NA	NA	63.000	15.000
CACNA1A	5	NA	NA	NA	NA	31.900	28.770	NA	NA	NA	NA	63.000	15.000
CACNA1A	7	NA	NA	NA	NA	31.900	28.770	NA	NA	NA	NA	63.000	15.000
CACNA1A	8	0.911	NA	27.630	25.815	31.900	28.785	0.383	NA	54.000	12.750	63.000	15.000
CACNA1A	9	0.202	NA	26.650	15.450	31.900	29.060	0.372	NA	57.000	17.000	63.000	15.000
CACNA1A	11	0.202	NA	26.650	15.450	31.900	29.060	0.193	NA	55.500	17.750	63.000	15.000
CACNA1A	12	0.355	NA	31.170	29.870	32.030	29.043	0.462	NA	61.500	17.750	63.000	15.000
CACNA1A	13	0.568	NA	31.270	30.270	32.150	28.028	0.729	NA	62.000	15.000	63.000	15.000
CACNA1A	14	0.346	NA	31.870	29.040	32.035	26.728	0.619	NA	63.000	15.000	62.000	15.000
CACNA1A	15	0.175	NA	31.870	28.550	38.165	39.468	0.559	NA	63.000	15.000	62.000	11.750
CACNA1A	16	0.355	NA	31.870	28.770	37.435	46.005	0.674	NA	63.000	15.000	62.000	12.000
CACNA1A	17	0.141	NA	31.885	28.755	90.400	0.000	0.086	Â°	63.000	15.000	29.000	0.000
CACNA1A	18	NA	NA	31.900	28.770	NA	NA	NA	NA	63.000	15.000	NA	NA
CNBP	12	NA	NA	NA	NA	31.900	29.770	NA	NA	NA	NA	62.500	15.000

CNBP	13	NA	NA	NA	NA	31.900	29.770	0.087	Â°	29.000	0.000	63.000	15.000
CNBP	14	0.323	NA	15.100	31.870	31.915	29.658	0.495	NA	63.000	14.000	62.000	15.000
CNBP	15	0.409	NA	25.750	24.705	31.930	29.735	0.278	NA	60.000	13.000	63.000	15.000
CNBP	16	0.391	NA	27.235	26.475	32.130	29.700	0.139	NA	60.000	14.750	63.000	15.000
CNBP	17	0.666	NA	31.270	27.313	32.130	30.065	0.312	NA	62.000	15.000	63.000	15.000
CNBP	18	0.555	NA	32.200	30.730	31.665	28.648	0.233	NA	62.000	14.750	63.000	14.250
CNBP	19	0.460	NA	31.900	30.123	32.500	28.700	0.031	*	62.000	15.000	65.000	14.000
CNBP	20	0.730	NA	31.930	29.770	31.635	26.343	0.284	NA	62.000	15.000	63.500	13.750
CNBP	21	0.476	NA	32.030	30.065	29.500	22.360	0.921	NA	62.000	15.000	63.000	15.000
CNBP	22	0.507	NA	31.930	30.170	30.435	17.415	0.985	NA	62.000	15.000	63.000	15.000
CNBP	23	0.702	NA	31.915	29.948	31.370	18.955	0.581	NA	62.000	15.000	66.500	13.500
CNBP	25	0.925	NA	31.915	29.753	31.370	14.435	0.255	NA	63.000	15.000	50.000	17.000
CNBP	26	0.579	NA	31.900	29.770	40.135	8.765	0.588	NA	62.500	15.000	53.000	17.000
CNBP	29	0.579	NA	31.900	29.770	40.135	8.765	0.588	NA	62.500	15.000	53.000	17.000
CNBP	40	0.969	NA	31.915	29.770	31.370	0.000	0.382	NA	62.000	15.000	70.000	0.000
CSTB	2	NA	NA	NA	NA	31.885	29.108	NA	NA	NA	NA	63.000	15.000
CSTB	3	0.272	NA	32.215	35.858	31.850	28.343	0.065	Â°	65.000	14.000	62.000	15.000
CSTB	4	0.805	NA	31.900	29.115	28.700	0.000	0.590	NA	63.000	15.000	58.000	0.000
CSTB	5	0.805	NA	31.900	29.115	28.700	0.000	0.590	NA	63.000	15.000	58.000	0.000
CSTB	6	NA	NA	31.885	29.108	NA	NA	NA	NA	63.000	15.000	NA	NA
C9ORF72	2	NA	NA	NA	NA	31.900	29.060	NA	NA	NA	NA	62.000	15.000
C9ORF72	3	0.802	NA	32.400	26.770	31.600	31.335	0.175	NA	62.000	14.000	63.000	15.000
C9ORF72	4	0.851	NA	32.400	26.840	31.600	31.328	0.206	NA	62.000	14.000	63.000	15.000
C9ORF72	5	0.842	NA	32.250	26.453	31.830	31.785	0.573	NA	62.000	15.000	63.000	15.000
C9ORF72	6	0.184	NA	31.600	26.230	32.630	33.670	0.440	NA	62.000	15.000	63.000	14.000
C9ORF72	7	0.784	NA	32.130	27.230	31.850	32.718	0.860	NA	62.000	15.000	63.000	15.000
C9ORF72	8	0.761	NA	31.870	28.220	32.250	32.685	0.694	NA	62.000	15.000	63.000	16.000
C9ORF72	9	0.590	NA	31.830	28.410	32.670	32.070	0.785	NA	62.000	15.000	63.000	14.000

C9ORF72	10	0.389	NA	31.830	28.358	33.770	33.520	0.571	NA	63.000	15.000	62.000	14.750
C9ORF72	11	0.314	NA	31.830	28.535	35.070	32.855	0.275	NA	63.000	15.000	62.000	16.000
C9ORF72	12	0.839	NA	31.885	29.060	33.770	27.335	0.436	NA	63.000	15.000	62.000	16.000
C9ORF72	13	0.417	NA	31.870	28.770	34.420	43.863	0.750	NA	62.000	15.000	64.000	14.500
C9ORF72	14	0.386	NA	31.885	28.815	35.070	42.900	0.392	NA	62.500	15.000	61.000	15.500
C9ORF72	15	0.241	NA	31.870	28.770	36.650	44.015	0.069	Â°	63.000	15.000	58.000	18.750
C9ORF72	16	0.026	*	31.870	28.785	40.835	68.325	0.099	Â°	63.000	15.000	58.500	22.500
C9ORF72	17	0.280	NA	31.885	29.083	39.100	25.240	0.646	NA	62.000	15.000	66.000	23.000
C9ORF72	18	0.137	NA	31.900	29.100	40.835	19.978	0.264	NA	62.500	15.000	57.000	24.000
C9ORF72	19	0.411	NA	31.900	29.090	39.100	2.170	0.169	NA	62.500	15.000	43.000	18.500
C9ORF72	31	0.696	NA	31.900	29.070	38.230	0.000	0.137	NA	62.500	15.000	43.000	0.000
DIP2B	6	NA	NA	NA	NA	31.900	28.955	NA	NA	NA	NA	62.000	15.000
DIP2B	7	0.331	NA	19.670	0.000	31.900	29.030	0.941	NA	62.000	0.000	62.000	15.000
DIP2B	8	0.998	NA	31.870	28.685	32.170	28.750	0.068	Â°	62.000	15.000	63.000	15.000
DIP2B	9	0.475	NA	31.330	28.730	32.500	29.640	0.159	NA	62.000	15.000	63.000	16.000
DIP2B	10	0.505	NA	31.415	28.485	32.450	29.655	0.174	NA	62.000	14.750	63.000	16.000
DIP2B	11	0.455	NA	31.330	28.535	32.500	29.640	0.158	NA	62.000	15.000	63.000	16.000
DIP2B	12	0.399	NA	31.330	28.808	32.500	29.613	0.180	NA	62.000	15.000	63.000	16.000
DIP2B	13	0.123	NA	31.220	28.630	33.050	30.443	0.163	NA	62.000	15.000	63.000	15.000
DIP2B	14	0.532	NA	31.830	29.305	32.550	29.125	0.119	NA	62.000	15.000	63.000	14.000
DIP2B	15	0.404	NA	31.370	29.480	33.270	27.315	0.059	Â°	62.000	14.750	63.000	15.000
DIP2B	16	0.334	NA	31.350	29.455	34.550	26.983	0.086	Â°	62.000	15.000	63.000	15.000
DIP2B	17	0.518	NA	31.765	29.503	34.230	27.180	0.115	NA	62.000	14.000	63.000	15.000
DIP2B	18	0.782	NA	31.870	30.185	33.070	23.815	0.088	Â°	62.000	15.000	64.000	14.750
DIP2B	19	0.580	NA	31.900	30.200	32.830	21.940	0.120	NA	62.000	15.000	65.000	14.000
DIP2B	20	0.638	NA	31.900	29.700	31.430	23.370	0.185	NA	62.000	15.000	65.000	14.000
DIP2B	21	0.353	NA	31.930	29.700	30.330	18.800	0.017	*	62.000	15.000	66.500	13.250
DIP2B	22	0.605	NA	31.885	29.215	34.020	17.443	0.071	Â°	62.000	15.000	66.500	13.750

DIP2B	23	0.902	NA	31.900	29.300	33.070	15.550	0.074	Â°	62.000	15.000	67.000	13.000
DIP2B	24	0.831	NA	31.900	29.385	33.785	10.980	0.887	NA	62.000	15.000	62.000	16.500
DIP2B	25	0.719	NA	31.900	29.070	31.800	8.530	0.049	*	62.000	15.000	70.000	8.000
DIP2B	26	0.447	NA	31.900	29.030	47.000	0.000	0.158	NA	62.000	15.000	76.000	0.000
DIP2B	27	NA	NA	31.900	28.955	NA	NA	NA	NA	62.000	15.000	NA	NA
DMPK	5	NA	NA	NA	NA	31.900	28.700	NA	NA	NA	NA	63.000	15.000
DMPK	6	0.972	NA	32.230	26.508	31.900	29.130	0.253	NA	62.000	16.750	63.000	14.250
DMPK	7	0.985	NA	32.130	26.415	31.900	29.130	0.200	NA	62.000	17.000	63.000	14.000
DMPK	8	0.975	NA	31.650	26.323	31.900	29.130	0.173	NA	62.000	17.000	63.000	14.000
DMPK	9	0.556	NA	30.670	24.885	32.030	29.643	0.297	NA	62.000	16.750	63.000	14.250
DMPK	10	0.589	NA	30.835	24.608	31.930	29.700	0.243	NA	62.000	17.000	63.000	14.000
DMPK	11	0.792	NA	31.170	25.543	31.900	29.530	0.202	NA	62.000	16.000	63.000	14.500
DMPK	12	0.767	NA	30.550	28.033	32.370	28.970	0.227	NA	62.000	16.000	63.000	14.000
DMPK	13	0.651	NA	30.330	27.300	32.485	29.665	0.113	NA	62.000	15.000	63.000	14.000
DMPK	14	0.873	NA	31.415	27.835	32.400	30.280	0.061	Â°	62.000	15.000	64.000	15.000
DMPK	15	0.568	NA	31.500	28.770	32.850	27.955	0.234	NA	62.000	15.000	64.000	14.250
DMPK	16	0.324	NA	31.350	28.370	33.570	29.100	0.524	NA	62.000	15.000	63.000	13.750
DMPK	17	0.263	NA	31.330	28.455	33.700	28.860	0.477	NA	62.000	15.000	63.000	13.000
DMPK	18	0.240	NA	31.330	28.400	34.035	28.880	0.501	NA	62.000	15.000	63.000	13.000
DMPK	19	0.235	NA	31.250	28.383	34.370	28.930	0.499	NA	62.000	15.000	63.000	13.000
DMPK	20	0.144	NA	31.170	28.635	34.685	28.513	0.502	NA	62.000	15.000	63.000	13.000
DMPK	21	0.570	NA	31.700	28.850	33.585	27.018	0.336	NA	62.000	15.000	63.000	16.000
DMPK	22	0.401	NA	31.780	28.123	34.800	31.170	0.485	NA	62.000	15.000	63.000	15.750
DMPK	23	0.222	NA	31.730	28.100	35.500	31.938	0.441	NA	62.000	15.000	63.500	15.500
DMPK	24	0.209	NA	31.780	28.108	35.530	31.940	0.169	NA	62.000	15.000	64.500	16.000
DMPK	25	0.251	NA	31.830	28.215	35.250	31.280	0.050	Â°	62.000	15.000	65.000	13.000
DMPK	26	0.265	NA	31.830	28.685	35.685	26.818	0.028	*	62.000	15.000	66.000	13.000
DMPK	27	0.681	NA	31.900	28.755	33.700	24.460	0.027	*	62.000	15.000	67.000	13.500

DMPK	28	0.724	NA	31.900	28.730	35.685	24.763	0.081	Â°	62.000	15.000	67.000	17.000
DMPK	29	0.801	NA	31.900	29.045	35.685	20.895	0.036	*	62.000	15.000	68.000	13.000
DMPK	30	0.447	NA	31.900	29.045	30.270	19.253	0.022	*	62.000	15.000	67.500	10.500
DMPK	31	0.679	NA	31.900	28.985	35.470	14.570	0.073	Â°	62.000	15.000	67.000	13.000
DMPK	32	0.839	NA	31.900	28.730	36.170	19.075	0.304	NA	63.000	15.000	66.500	13.750
DMPK	33	0.695	NA	31.900	28.880	36.170	18.005	0.652	NA	63.000	15.000	64.500	15.000
DMPK	34	0.938	NA	31.900	28.730	37.820	10.000	0.911	NA	63.000	15.000	63.500	17.500
DMPK	35	0.437	NA	31.885	28.753	40.170	3.530	0.517	NA	63.000	15.000	67.000	12.000
DMPK	36	0.595	NA	31.900	28.735	37.820	2.350	0.646	NA	63.000	15.000	66.000	15.000
DMPK	37	0.793	NA	31.900	28.718	35.470	0.000	0.929	NA	63.000	15.000	60.000	12.000
DMPK	40	0.793	NA	31.900	28.718	35.470	0.000	0.929	NA	63.000	15.000	60.000	12.000
DMPK	45	0.793	NA	31.900	28.718	35.470	0.000	0.929	NA	63.000	15.000	60.000	12.000
DMPK	46	0.793	NA	31.900	28.718	35.470	0.000	0.742	NA	63.000	15.000	60.000	0.000
DMPK	63	0.793	NA	31.900	28.718	35.470	0.000	0.742	NA	63.000	15.000	60.000	0.000
DMPK	67	NA	NA	31.900	28.700	NA	NA	NA	NA	63.000	15.000	NA	NA
FMR1	-9	NA	NA	NA	NA	32.170	28.730	NA	NA	NA	NA	63.000	15.000
FMR1	-4	NA	NA	NA	NA	32.170	28.730	0.331	NA	71.000	0.000	63.000	15.000
FMR1	-3	0.270	NA	21.015	12.415	32.170	28.880	0.702	NA	62.000	5.000	63.000	15.000
FMR1	0	0.183	NA	22.670	12.415	32.170	28.955	0.704	NA	61.500	7.250	63.000	15.000
FMR1	2	0.090	Â°	20.450	9.538	32.170	29.030	0.392	NA	61.000	11.000	63.000	15.000
FMR1	3	0.232	NA	22.670	15.200	32.170	29.038	0.273	NA	58.500	9.500	63.000	15.000
FMR1	4	0.232	NA	22.670	15.200	32.170	29.038	0.273	NA	58.500	9.500	63.000	15.000
FMR1	5	0.232	NA	22.670	15.200	32.170	29.038	0.494	NA	61.000	12.500	63.000	15.000
FMR1	6	0.041	*	19.570	14.635	32.185	28.993	0.825	NA	61.500	12.000	63.000	15.000
FMR1	7	0.681	NA	33.430	26.400	32.150	28.805	0.733	NA	63.000	13.000	63.000	15.000
FMR1	8	0.647	NA	33.515	30.750	32.130	28.480	0.248	NA	65.000	13.750	62.000	15.000
FMR1	9	0.544	NA	33.515	31.480	32.130	28.400	0.155	NA	64.500	12.250	62.000	15.000
FMR1	10	0.621	NA	33.600	30.600	32.130	28.380	0.448	NA	63.000	13.000	62.000	15.000

FMR1	11	0.897	NA	31.135	31.885	32.170	28.430	0.540	NA	63.000	15.000	62.000	15.000
FMR1	12	0.469	NA	30.265	30.655	32.330	28.470	0.712	NA	63.000	15.000	62.000	15.000
FMR1	13	0.844	NA	31.700	30.160	32.185	28.535	0.616	NA	63.000	15.250	62.000	15.000
FMR1	14	0.880	NA	31.270	32.230	32.285	27.950	0.818	NA	63.000	15.750	62.000	15.000
FMR1	15	0.488	NA	31.220	29.430	32.400	28.880	0.746	NA	63.000	15.000	62.000	15.000
FMR1	16	0.434	NA	31.700	29.035	32.400	29.133	0.799	NA	63.000	14.000	62.000	15.000
FMR1	17	0.487	NA	31.700	29.915	32.400	28.225	0.381	NA	63.000	14.000	62.000	15.000
FMR1	18	0.723	NA	32.015	31.110	32.270	27.665	0.063	Â°	64.000	14.000	62.000	15.000
FMR1	19	0.973	NA	32.200	30.035	32.030	28.150	0.106	NA	64.000	14.000	62.000	15.000
FMR1	20	0.799	NA	32.470	28.930	31.350	28.395	0.475	NA	63.000	15.000	62.000	15.000
FMR1	21	0.656	NA	32.335	28.813	31.370	28.230	0.846	NA	63.000	15.000	62.000	16.000
FMR1	22	0.438	NA	32.385	28.848	31.070	28.000	0.786	NA	63.000	15.000	62.000	16.000
FMR1	23	0.991	NA	32.130	28.240	32.335	31.308	0.576	NA	63.000	15.000	62.000	17.000
FMR1	24	0.814	NA	31.930	28.020	32.565	32.223	0.399	NA	63.000	15.000	62.000	16.750
FMR1	25	0.997	NA	32.130	28.155	32.335	32.103	0.368	NA	63.000	15.000	62.000	16.000
FMR1	26	0.950	NA	32.130	28.240	32.335	31.560	0.463	NA	63.000	15.000	62.000	17.000
FMR1	27	0.899	NA	32.150	28.180	32.270	31.860	0.529	NA	63.000	15.000	62.000	16.500
FMR1	28	0.723	NA	32.250	28.195	31.070	32.460	0.629	NA	63.000	15.000	62.000	15.000
FMR1	29	0.777	NA	32.130	28.455	32.630	33.270	0.675	NA	63.000	15.000	62.000	13.000
FMR1	30	0.939	NA	32.030	29.053	33.530	25.500	0.823	NA	63.000	15.000	63.000	9.500
FMR1	31	0.688	NA	32.130	28.680	32.630	27.900	0.338	NA	62.000	15.000	65.000	8.500
FMR1	32	0.978	NA	32.150	28.805	32.500	27.830	0.602	NA	62.000	15.000	65.000	8.000
FMR1	33	0.939	NA	32.150	28.955	32.500	26.850	0.641	NA	63.000	15.000	67.000	12.500
FMR1	34	0.581	NA	32.130	28.805	32.630	18.760	0.387	NA	62.000	15.000	68.000	9.000
FMR1	35	0.581	NA	32.130	28.805	32.630	18.760	0.387	NA	62.000	15.000	68.000	9.000
FMR1	36	0.581	NA	32.130	28.805	32.630	18.760	0.387	NA	62.000	15.000	68.000	9.000
FMR1	38	0.581	NA	32.130	28.805	32.630	18.760	0.387	NA	62.000	15.000	68.000	9.000
FMR1	39	0.753	NA	32.130	28.730	32.565	30.763	0.496	NA	62.500	15.000	68.500	11.750

FMR1	40	0.753	NA	32.130	28.730	32.565	30.763	0.496	NA	62.500	15.000	68.500	11.750
FMR1	41	0.753	NA	32.130	28.730	32.565	30.763	0.496	NA	62.500	15.000	68.500	11.750
FMR1	42	0.933	NA	32.150	28.805	32.500	2.460	0.583	NA	63.000	15.000	67.000	9.000
FMR1	45	0.941	NA	32.170	28.730	31.400	19.688	0.899	NA	63.000	15.000	64.500	9.500
FMR1	51	0.956	NA	32.170	28.680	30.170	35.685	0.383	NA	63.000	15.000	67.000	5.000
FMR1	63	0.350	NA	32.170	28.630	58.870	28.700	0.259	NA	62.500	15.000	69.500	2.500
FMR1	72	0.350	NA	32.170	28.630	58.870	28.700	0.259	NA	62.500	15.000	69.500	2.500
FMR1	75	0.889	NA	32.170	28.805	30.170	0.000	0.287	NA	63.000	15.000	72.000	0.000
FMR1	79	0.889	NA	32.170	28.805	30.170	0.000	0.287	NA	63.000	15.000	72.000	0.000
FRA10C1	6	NA	NA	NA	NA	32.150	29.145	NA	NA	NA	NA	63.000	15.000
FRA10C1	7	0.804	NA	32.435	14.365	32.150	29.315	0.499	NA	61.000	15.500	63.000	15.000
FRA10C1	8	0.819	NA	34.100	34.098	31.885	28.428	0.419	NA	62.000	15.000	63.000	15.000
FRA10C1	9	0.463	NA	32.500	30.955	31.470	27.630	0.126	NA	62.000	14.000	63.000	14.500
FRA10C1	10	0.101	NA	32.500	30.755	29.630	25.960	0.093	Â°	62.000	15.000	64.000	14.750
FRA10C1	11	0.109	NA	32.500	30.670	29.630	25.960	0.103	NA	62.000	15.000	64.000	14.750
FRA10C1	12	0.122	NA	32.500	30.635	29.665	26.020	0.111	NA	62.000	15.000	64.000	15.000
FRA10C1	13	0.055	Â°	32.535	30.560	29.250	25.898	0.106	NA	62.000	15.000	64.000	14.750
FRA10C1	14	0.134	NA	32.500	30.213	29.150	26.303	0.200	NA	62.000	15.000	63.000	14.500
FRA10C1	15	0.382	NA	32.400	30.348	30.020	25.385	0.169	NA	62.000	15.000	64.000	15.000
FRA10C1	16	0.302	NA	32.400	30.330	29.630	26.095	0.077	Â°	62.000	15.000	64.000	15.000
FRA10C1	17	0.913	NA	32.130	29.470	32.200	26.965	0.246	NA	62.000	15.000	63.500	15.000
FRA10C1	18	0.813	NA	32.170	29.130	31.900	27.835	0.170	NA	62.000	15.000	64.000	15.750
FRA10C1	19	0.784	NA	32.130	29.300	32.200	26.900	0.405	NA	63.000	15.000	63.000	15.000
FRA10C1	20	0.901	NA	32.150	29.378	32.050	26.715	0.369	NA	62.500	15.000	63.000	15.000
FRA10C1	21	0.680	NA	32.170	29.465	29.200	27.700	0.567	NA	62.000	15.000	63.000	16.000
FRA10C1	22	0.935	NA	32.130	29.465	32.200	27.700	0.677	NA	63.000	15.000	60.000	17.250
FRA10C1	23	0.810	NA	32.130	29.230	32.200	28.060	0.331	NA	63.000	15.000	60.000	17.000
FRA10C1	24	0.717	NA	32.170	29.483	30.550	27.600	0.438	NA	63.000	15.000	60.000	15.500

FRA10C1	25	0.719	NA	32.170	29.315	30.550	26.910	0.508	NA	63.000	15.000	60.000	15.000
FRA10C1	26	0.847	NA	32.130	29.230	36.370	24.670	0.493	NA	63.000	15.000	59.500	17.000
FRA10C1	27	0.433	NA	32.170	29.483	29.700	20.443	0.754	NA	63.000	15.000	59.500	18.000
FRA10C1	28	0.278	NA	32.170	29.530	27.500	18.715	0.969	NA	63.000	15.000	59.500	15.750
FRA10C1	29	0.441	NA	32.150	29.433	27.665	28.508	0.811	NA	63.000	15.000	59.500	5.250
FRA10C1	30	0.900	NA	32.130	29.400	40.430	18.720	0.818	NA	63.000	15.000	60.000	7.000
FRA10C1	31	0.353	NA	32.130	29.315	44.500	4.070	0.590	NA	63.000	15.000	59.500	0.500
FRA10C1	32	0.353	NA	32.130	29.315	44.500	4.070	0.590	NA	63.000	15.000	59.500	0.500
FRA10C1	140	0.621	NA	32.130	29.230	40.430	0.000	0.744	NA	63.000	15.000	60.000	0.000
FRA11A	8	NA	NA	NA	NA	31.900	28.730	NA	NA	NA	NA	62.000	15.000
FRA11A	9	0.672	NA	32.400	24.270	31.885	29.658	0.440	NA	62.500	13.000	62.000	15.000
FRA11A	10	0.115	NA	31.850	26.658	32.170	33.500	0.331	NA	63.000	15.000	62.000	14.000
FRA11A	11	0.045	*	31.830	28.100	41.300	41.055	0.858	NA	62.000	15.000	64.000	16.500
FRA11A	12	0.069	Â°	31.830	28.320	43.730	41.200	0.525	NA	62.000	15.000	60.000	20.000
FRA11A	13	0.271	NA	31.870	28.600	39.565	40.973	0.505	NA	62.000	15.000	55.500	23.000
FRA11A	14	0.888	NA	31.900	28.755	30.170	36.800	0.987	NA	62.000	15.000	56.000	22.000
FRA11A	15	0.746	NA	31.900	28.688	30.170	41.280	0.257	NA	62.500	15.000	55.000	14.000
FRA11A	17	0.498	NA	31.900	28.635	45.535	40.105	0.065	Â°	63.000	15.000	54.000	6.500
FRA11A	18	0.854	NA	31.900	28.718	30.170	35.930	0.119	NA	62.500	15.000	55.000	8.000
FRA11A	19	0.854	NA	31.900	28.718	30.170	35.930	0.119	NA	62.500	15.000	55.000	8.000
FRA11A	22	0.788	NA	31.900	28.700	42.935	45.908	0.174	NA	62.000	15.000	51.500	15.750
FRA11A	23	0.788	NA	31.900	28.700	42.935	45.908	0.174	NA	62.000	15.000	51.500	15.750
FRA11A	24	0.789	NA	31.900	28.715	36.015	24.885	0.915	NA	62.000	15.000	60.500	12.500
FRA11A	64	0.125	NA	31.900	28.805	11.130	0.000	0.244	NA	62.000	15.000	73.000	0.000
FXN	8	NA	NA	NA	NA	31.900	28.815	NA	NA	NA	NA	63.000	15.000
FXN	9	0.104	NA	26.085	27.420	32.030	28.915	0.736	NA	64.000	14.000	62.000	15.000
FXN	10	0.275	NA	30.530	29.265	32.170	28.800	0.043	*	64.000	14.000	62.000	15.000
FXN	11	0.730	NA	32.170	28.695	31.830	29.270	0.753	NA	62.000	15.000	63.000	15.000

FXN	12	0.899	NA	32.130	28.170	31.870	29.620	0.566	NA	62.000	15.000	63.000	15.000
FXN	13	0.962	NA	31.900	28.170	31.900	29.940	0.619	NA	62.000	15.000	63.000	15.000
FXN	14	0.897	NA	31.900	28.485	31.870	29.270	0.604	NA	62.000	15.000	63.000	15.000
FXN	15	0.972	NA	31.865	28.193	31.915	29.725	0.656	NA	62.000	15.000	63.000	15.000
FXN	16	0.927	NA	31.900	28.823	31.885	29.075	0.557	NA	62.000	15.000	63.000	15.000
FXN	17	0.815	NA	32.015	28.815	31.870	29.145	0.327	NA	62.000	15.000	63.000	15.000
FXN	18	0.854	NA	31.865	28.410	31.915	30.320	0.532	NA	62.000	15.000	63.000	15.000
FXN	19	0.977	NA	31.900	28.490	31.885	30.125	0.210	NA	62.000	15.000	64.000	14.000
FXN	20	0.521	NA	32.185	28.275	31.250	31.460	0.210	NA	62.000	15.000	64.000	15.000
FXN	21	0.378	NA	32.200	29.235	31.070	28.870	0.625	NA	62.000	15.000	63.000	14.500
FXN	22	0.586	NA	32.130	29.060	31.430	29.770	0.718	NA	63.000	15.000	62.000	16.000
FXN	23	0.898	NA	31.900	29.115	31.930	27.330	0.617	NA	62.500	15.000	63.000	15.500
FXN	24	0.866	NA	31.900	29.193	31.880	26.280	0.700	NA	63.000	15.000	63.000	14.500
FXN	25	0.518	NA	31.900	29.485	31.070	25.930	0.885	NA	63.000	15.000	61.500	13.750
FXN	26	0.996	NA	31.900	29.130	33.070	26.100	0.965	NA	63.000	15.000	61.000	12.500
FXN	27	0.351	NA	31.930	29.250	27.030	25.930	0.905	NA	63.000	15.000	61.000	15.000
FXN	28	0.133	NA	32.130	29.060	23.800	30.920	0.599	NA	63.000	15.000	62.500	17.250
FXN	29	0.075	Â°	32.130	29.015	22.435	18.648	0.646	NA	63.000	15.000	62.000	10.000
FXN	30	0.130	NA	32.030	29.038	22.435	26.613	0.691	NA	63.000	15.000	62.000	14.000
FXN	31	0.320	NA	31.900	29.045	26.300	30.970	0.540	NA	63.000	15.000	60.500	12.750
FXN	32	0.687	NA	31.900	28.730	48.500	17.900	0.115	NA	63.000	15.000	56.000	10.750
FXN	33	0.687	NA	31.900	28.730	48.500	17.900	0.115	NA	63.000	15.000	56.000	10.750
FXN	34	0.687	NA	31.900	28.730	48.500	17.900	0.115	NA	63.000	15.000	56.000	10.750
FXN	36	0.833	NA	31.900	28.955	33.150	15.350	0.355	NA	63.000	15.000	56.500	4.500
FXN	38	0.411	NA	31.900	28.900	48.500	0.000	0.833	NA	63.000	15.000	61.000	0.000
FXN	46	0.411	NA	31.900	28.900	48.500	0.000	0.833	NA	63.000	15.000	61.000	0.000
FXN	53	0.411	NA	31.900	28.900	48.500	0.000	0.833	NA	63.000	15.000	61.000	0.000
FXN	58	0.411	NA	31.900	28.900	48.500	0.000	0.833	NA	63.000	15.000	61.000	0.000

FXN	91	0.411	NA	31.900	28.900	48.500	0.000	0.833	NA	63.000	15.000	61.000	0.000
FXN	97	0.411	NA	31.900	28.900	48.500	0.000	0.833	NA	63.000	15.000	61.000	0.000
GIPC1	5	NA	NA	NA	NA	32.130	29.400	NA	NA	NA	NA	63.000	15.000
GIPC1	6	NA	NA	NA	NA	32.130	29.400	0.174	NA	47.000	0.000	63.000	15.000
GIPC1	8	0.293	NA	56.030	0.000	32.030	29.145	0.203	NA	53.000	6.000	63.000	15.000
GIPC1	9	0.768	NA	28.100	33.133	32.130	29.230	0.629	NA	65.000	10.250	63.000	15.000
GIPC1	10	0.395	NA	31.170	27.670	32.185	29.590	0.929	NA	62.000	13.250	63.000	15.000
GIPC1	11	0.263	NA	31.370	29.115	32.785	28.620	0.257	NA	63.000	15.000	62.000	15.000
GIPC1	12	0.864	NA	32.200	29.400	31.130	28.218	0.936	NA	63.000	15.000	62.000	12.500
GIPC1	13	0.177	NA	31.900	29.470	40.600	23.373	0.822	NA	63.000	15.000	62.000	8.750
GIPC1	14	0.323	NA	31.900	29.480	39.530	21.670	0.826	NA	63.000	15.000	61.500	8.750
GIPC1	15	0.671	NA	32.130	29.400	36.150	24.783	0.338	NA	63.000	15.000	62.000	14.000
GIPC1	16	0.671	NA	32.130	29.400	36.150	24.783	0.338	NA	63.000	15.000	62.000	14.000
GIPC1	17	0.790	NA	32.130	29.315	29.700	26.465	0.251	NA	63.000	15.000	63.000	15.000
GIPC1	18	0.115	NA	32.150	29.483	18.700	6.150	0.009	**	63.000	15.000	80.000	2.500
GIPC1	20	0.718	NA	32.130	29.433	27.230	0.000	0.109	NA	63.000	15.000	80.000	0.000
GIPC1	25	0.718	NA	32.130	29.433	27.230	0.000	0.109	NA	63.000	15.000	80.000	0.000
GIPC1	38	0.718	NA	32.130	29.433	27.230	0.000	0.109	NA	63.000	15.000	80.000	0.000
HTT	12	NA	NA	NA	NA	31.900	28.955	NA	NA	NA	NA	63.000	15.000
HTT	15	NA	NA	NA	NA	31.900	28.955	NA	NA	NA	NA	63.000	15.000
HTT	16	NA	NA	NA	NA	31.900	28.955	NA	NA	NA	NA	63.000	15.000
HTT	17	0.956	NA	26.570	37.435	31.900	28.880	0.643	NA	60.000	13.500	63.000	15.000
HTT	18	0.831	NA	31.020	24.995	31.915	29.083	0.872	NA	62.000	16.000	63.000	15.000
HTT	19	0.918	NA	31.870	26.650	31.900	29.080	0.710	NA	62.000	15.000	63.000	15.000
HTT	20	0.364	NA	32.370	29.370	31.830	28.630	0.776	NA	62.000	16.250	63.000	15.000
HTT	21	0.544	NA	32.935	30.748	31.170	27.690	0.409	NA	62.000	15.000	63.000	15.000
HTT	22	0.897	NA	31.885	28.238	31.915	29.815	0.375	NA	62.000	15.000	63.000	14.000
HTT	23	0.192	NA	31.400	28.500	33.415	31.028	0.564	NA	63.000	15.000	62.500	14.000

HTT	24	0.275	NA	31.830	28.300	34.700	31.030	0.922	NA	63.000	15.000	62.000	14.000
HTT	25	0.851	NA	31.900	28.358	31.270	31.095	0.837	NA	63.000	15.000	62.000	16.000
HTT	26	0.677	NA	31.900	28.145	32.270	32.315	0.769	NA	63.000	15.000	62.500	14.500
HTT	27	0.999	NA	31.900	28.343	31.270	32.593	0.843	NA	63.000	15.000	62.000	13.750
HTT	28	0.835	NA	31.900	28.455	31.270	32.058	0.587	NA	63.000	15.000	62.000	15.000
HTT	29	0.638	NA	32.130	29.045	30.570	27.450	0.878	NA	63.000	15.000	62.000	15.250
HTT	30	0.875	NA	31.900	28.615	31.000	30.915	0.837	NA	63.000	15.000	62.000	15.000
HTT	31	0.511	NA	31.885	28.583	32.420	34.708	0.398	NA	63.000	15.000	60.000	13.500
HTT	32	0.828	NA	31.900	28.815	31.570	28.155	0.314	NA	63.000	15.000	60.000	16.000
HTT	33	0.452	NA	31.900	29.030	24.500	32.140	0.220	NA	63.000	15.000	61.000	15.000
HTT	34	0.529	NA	31.900	28.880	24.500	35.355	0.314	NA	63.000	15.000	59.500	13.250
HTT	35	0.740	NA	31.900	28.805	28.535	30.195	0.445	NA	62.500	15.000	66.500	10.500
HTT	36	0.114	NA	31.900	29.045	15.130	10.170	0.979	NA	63.000	15.000	57.000	10.500
HTT	37	0.314	NA	31.900	29.038	22.400	10.170	0.565	NA	63.000	15.000	67.000	10.000
HTT	38	0.138	NA	31.900	29.030	12.230	0.000	0.516	NA	63.000	15.000	57.000	0.000
HTT	40	0.138	NA	31.900	29.030	12.230	0.000	0.516	NA	63.000	15.000	57.000	0.000
HTT	41	0.138	NA	31.900	29.030	12.230	0.000	0.516	NA	63.000	15.000	57.000	0.000
HTT	42	NA	NA	31.900	28.955	NA	NA	NA	NA	63.000	15.000	NA	NA
JPH3	11	NA	NA	NA	NA	31.900	28.880	NA	NA	NA	NA	63.000	15.000
JPH3	13	0.462	NA	46.270	0.000	31.900	28.955	0.380	NA	55.000	0.000	63.000	15.000
JPH3	14	0.897	NA	38.230	24.440	31.900	29.038	0.582	NA	62.000	13.000	63.000	15.000
JPH3	15	0.703	NA	30.685	30.343	32.330	28.300	0.795	NA	62.500	14.750	63.000	15.000
JPH3	16	0.086	Â°	30.230	27.015	33.120	29.758	0.313	NA	63.000	14.500	62.000	15.000
JPH3	17	0.573	NA	31.830	28.810	32.800	28.580	0.382	NA	63.000	15.000	62.000	15.000
JPH3	18	0.910	NA	31.900	29.470	30.735	20.023	0.857	NA	63.000	15.000	62.000	14.250
JPH3	19	0.067	Â°	31.870	28.755	45.630	28.485	0.276	NA	62.500	15.000	70.000	14.000
JPH3	20	0.243	NA	31.885	28.753	40.000	15.970	0.296	NA	62.500	15.000	70.000	12.000
JPH3	22	0.401	NA	31.900	28.900	38.050	16.818	0.466	NA	63.000	15.000	65.000	13.000

JPH3	24	0.182	NA	31.900	28.730	60.500	20.500	0.699	NA	63.000	15.000	65.000	6.000
JPH3	25	0.162	NA	31.900	28.723	81.000	0.000	0.666	NA	63.000	15.000	59.000	0.000
JPH3	26	0.162	NA	31.900	28.723	81.000	0.000	0.666	NA	63.000	15.000	59.000	0.000
JPH3	28	NA	NA	31.900	28.880	NA	NA	NA	NA	63.000	15.000	NA	NA
JPH3	29	NA	NA	31.900	28.880	NA	NA	NA	NA	63.000	15.000	NA	NA
LRP12	4	NA	NA	NA	NA	32.030	29.315	NA	NA	NA	NA	63.000	15.000
LRP12	5	NA	NA	NA	NA	32.030	29.315	NA	NA	NA	NA	63.000	15.000
LRP12	6	0.730	NA	27.885	14.908	32.130	29.443	0.563	NA	61.000	5.750	63.000	15.000
LRP12	7	0.906	NA	30.185	15.565	32.150	29.443	0.609	NA	62.000	16.000	63.000	15.000
LRP12	8	0.726	NA	31.170	47.050	32.130	29.250	0.313	NA	64.500	15.250	63.000	15.000
LRP12	9	0.479	NA	31.500	53.188	32.130	29.090	0.314	NA	64.500	17.250	63.000	15.000
LRP12	10	0.417	NA	32.770	51.415	31.930	28.615	0.957	NA	63.000	15.000	62.000	15.000
LRP12	11	0.588	NA	32.520	31.173	31.915	28.753	0.862	NA	63.500	15.000	62.000	15.000
LRP12	12	0.201	NA	33.100	31.600	31.330	27.700	0.790	NA	63.000	15.000	62.000	15.000
LRP12	13	0.560	NA	32.615	31.238	31.485	28.655	0.312	NA	63.000	14.500	62.000	15.000
LRP12	14	0.864	NA	32.315	30.935	31.830	25.565	0.553	NA	62.000	15.000	63.000	15.000
LRP12	15	0.225	NA	31.900	28.558	35.465	34.203	0.196	NA	62.000	15.000	65.000	17.000
LRP12	16	0.113	NA	31.915	29.018	42.685	42.400	0.650	NA	63.000	15.000	63.000	13.250
LRP12	17	0.201	NA	31.930	29.250	48.500	46.015	0.871	NA	62.500	15.000	66.000	5.000
LRP12	18	0.841	NA	32.130	29.400	29.270	0.000	0.516	NA	63.000	15.000	57.000	0.000
LRP12	19	0.841	NA	32.130	29.400	29.270	0.000	0.516	NA	63.000	15.000	57.000	0.000
LRP12	22	0.841	NA	32.130	29.400	29.270	0.000	0.516	NA	63.000	15.000	57.000	0.000
LRP12	23	NA	NA	32.030	29.315	NA	NA	NA	NA	63.000	15.000	NA	NA
LRP12	25	NA	NA	32.030	29.315	NA	NA	NA	NA	63.000	15.000	NA	NA
LRP12	26	NA	NA	32.030	29.315	NA	NA	NA	NA	63.000	15.000	NA	NA
NIPA1	7	NA	NA	NA	NA	32.130	29.053	NA	NA	NA	NA	62.500	15.000
NIPA1	8	0.207	NA	33.070	15.465	31.930	29.750	0.605	NA	61.500	14.250	63.000	15.000
NIPA1	9	0.473	NA	32.130	28.130	31.470	31.560	0.169	NA	63.000	15.000	62.000	13.000

NIPA1	10	0.113	NA	32.350	29.528	27.220	15.820	0.172	NA	63.000	15.000	59.000	18.000
NIPA1	11	0.627	NA	32.130	29.060	39.020	8.350	0.618	NA	62.500	15.000	59.500	3.500
NIPA1	15	0.438	NA	32.130	29.060	47.370	0.000	0.951	NA	62.000	15.000	63.000	0.000
NOP56	3	NA	NA	NA	NA	31.900	29.038	NA	NA	NA	NA	63.000	15.000
NOP56	4	0.081	Â°	26.330	23.735	31.915	29.253	0.349	NA	63.000	17.500	63.000	15.000
NOP56	5	0.202	NA	29.070	25.430	32.330	29.800	0.793	NA	62.000	15.000	63.000	15.000
NOP56	6	0.444	NA	31.070	26.170	32.200	29.805	0.957	NA	63.000	15.250	63.000	15.000
NOP56	7	0.813	NA	31.885	30.233	32.030	26.108	0.436	NA	63.000	15.000	63.000	15.000
NOP56	8	0.356	NA	32.200	29.570	31.000	26.185	0.143	NA	63.000	15.000	63.000	14.000
NOP56	9	0.208	NA	32.235	29.573	27.615	18.623	0.787	NA	63.000	15.000	61.000	14.000
NOP56	10	0.445	NA	32.030	29.015	30.100	26.143	0.828	NA	63.000	15.000	59.000	11.000
NOP56	11	0.817	NA	31.900	29.030	31.000	36.670	0.476	NA	63.000	15.000	67.000	8.000
NOP56	12	0.310	NA	31.900	29.045	19.130	0.000	0.589	NA	63.000	15.000	58.000	0.000
NOP56	14	NA	NA	31.900	29.038	NA	NA	NA	NA	63.000	15.000	NA	NA
NOTCH2NCL	6	NA	NA	NA	NA	31.830	29.100	NA	NA	NA	NA	62.000	15.000
NOTCH2NCL	8	NA	NA	NA	NA	31.830	29.100	0.179	NA	75.000	0.000	62.000	15.000
NOTCH2NCL	9	0.441	NA	47.300	0.000	31.830	29.108	0.857	NA	63.500	11.500	62.000	15.000
NOTCH2NCL	10	0.475	NA	32.770	22.730	31.780	29.278	0.041	*	60.000	14.500	63.000	15.000
NOTCH2NCL	11	0.948	NA	31.580	23.285	31.870	29.465	0.246	NA	62.000	14.000	63.000	15.000
NOTCH2NCL	12	0.812	NA	31.830	23.760	31.870	29.330	0.392	NA	62.000	13.250	62.000	15.000
NOTCH2NCL	13	0.885	NA	31.830	24.000	31.870	29.445	0.600	NA	63.000	13.000	62.000	15.000

NOTCH2NCL	14	0.852	NA	31.830	25.500	31.870	29.353	0.847	NA	63.000	13.000	62.000	15.000
NOTCH2NCL	15	0.438	NA	32.315	28.828	31.430	28.655	0.758	NA	62.000	14.000	63.000	15.000
NOTCH2NCL	16	0.975	NA	31.730	29.100	31.900	28.800	0.545	NA	63.000	14.000	62.000	15.000
NOTCH2NCL	17	0.583	NA	30.670	28.550	32.930	30.898	0.401	NA	63.000	14.250	62.000	15.000
NOTCH2NCL	18	0.746	NA	31.170	29.900	33.480	27.428	0.521	NA	63.000	15.000	62.000	16.000
NOTCH2NCL	19	0.436	NA	31.120	29.385	33.830	27.780	0.136	NA	63.000	14.000	61.000	17.000
NOTCH2NCL	20	0.126	NA	30.900	28.850	34.930	29.865	0.089	Â°	63.000	14.000	60.000	18.000
NOTCH2NCL	21	0.031	*	30.685	28.805	36.570	27.870	0.097	Â°	63.000	15.000	60.000	18.000
NOTCH2NCL	22	0.084	Â°	31.270	29.008	35.530	26.830	0.398	NA	63.000	15.000	61.000	16.500
NOTCH2NCL	23	0.207	NA	31.485	28.890	43.900	24.730	0.028	*	63.000	15.000	57.500	14.750
NOTCH2NCL	24	0.324	NA	31.780	28.778	44.900	26.830	0.256	NA	62.000	15.000	59.000	10.000
NOTCH2NCL	25	0.703	NA	31.830	28.800	41.265	23.113	0.325	NA	62.000	15.000	62.000	11.500
NOTCH2NCL	26	0.497	NA	31.830	28.800	49.430	14.875	0.993	NA	62.000	15.000	65.000	12.000
NOTCH2NCL	27	0.616	NA	31.830	28.935	29.930	20.000	0.539	NA	62.000	15.000	58.000	7.000

NOTCH2NCL	28	0.385	NA	31.830	28.875	49.930	0.000	0.774	NA	62.000	15.000	65.000	0.000
NUTM2B-AS1	5	NA	NA	NA	NA	31.900	29.108	NA	NA	NA	NA	62.000	15.000
NUTM2B-AS1	6	NA	NA	NA	NA	31.900	29.108	NA	NA	NA	NA	62.000	15.000
NUTM2B-AS1	7	0.726	NA	32.800	18.800	31.900	29.300	0.255	NA	64.500	15.750	62.000	15.000
NUTM2B-AS1	8	0.973	NA	32.600	18.805	31.885	29.215	0.165	NA	66.000	17.000	62.000	15.000
NUTM2B-AS1	9	0.563	NA	31.700	16.885	31.900	29.900	0.264	NA	64.500	15.000	62.000	15.000
NUTM2B-AS1	10	0.662	NA	31.900	28.700	31.900	30.900	0.790	NA	63.000	15.000	62.000	14.000
NUTM2B-AS1	11	0.894	NA	31.930	29.605	31.830	27.900	0.144	NA	63.000	15.000	62.000	16.000
NUTM2B-AS1	12	0.707	NA	31.900	29.545	32.015	27.275	0.181	NA	63.000	15.000	62.000	16.000
NUTM2B-AS1	13	0.759	NA	31.900	29.885	32.130	25.800	0.642	NA	62.000	15.000	62.000	14.500
NUTM2B-AS1	14	0.471	NA	32.030	29.215	29.670	25.628	0.501	NA	62.000	15.000	65.500	17.750
NUTM2B-AS1	15	0.340	NA	32.030	29.378	26.220	19.123	0.938	NA	62.000	15.000	66.500	15.250
NUTM2B-AS1	16	0.392	NA	31.930	29.130	23.670	4.900	0.784	NA	62.000	15.000	61.000	13.500
NUTM2B-AS1	17	0.628	NA	31.915	29.123	27.520	3.850	0.885	NA	62.000	15.000	61.000	9.000

NUTM2B-AS1	21	0.628	NA	31.915	29.123	27.520	3.850	0.885	NA	62.000	15.000	61.000	9.000
NUTM2B-AS1	31	0.969	NA	31.900	29.115	31.370	0.000	0.379	NA	62.000	15.000	70.000	0.000
PABPN1	5	NA	NA	NA	NA	31.900	28.955	NA	NA	NA	NA	62.000	15.000
PABPN1	6	0.095	Â°	27.335	26.335	32.185	29.138	0.357	NA	61.000	12.500	63.000	15.000
PABPN1	7	0.070	Â°	32.170	29.438	27.215	20.055	0.500	NA	63.000	15.000	60.000	14.500
PPP2R2B	9	NA	NA	NA	NA	31.900	28.900	NA	NA	NA	NA	63.000	15.000
PPP2R2B	10	NA	NA	NA	NA	31.900	28.900	0.382	NA	55.000	0.000	63.000	15.000
PPP2R2B	11	0.384	NA	32.600	29.450	31.220	28.633	0.470	NA	62.000	15.000	63.000	15.000
PPP2R2B	12	0.534	NA	32.435	29.250	31.430	28.730	0.693	NA	62.000	15.000	63.000	15.000
PPP2R2B	13	0.534	NA	32.435	29.250	31.430	28.730	0.693	NA	62.000	15.000	63.000	15.000
PPP2R2B	14	0.748	NA	32.130	29.605	31.885	28.885	0.651	NA	62.000	15.000	63.000	15.000
PPP2R2B	15	0.146	NA	32.400	29.830	30.300	27.120	0.277	NA	62.000	15.000	63.000	14.000
PPP2R2B	16	0.370	NA	32.130	28.970	30.765	30.315	0.384	NA	62.000	15.000	64.500	15.000
PPP2R2B	17	0.806	NA	31.900	28.730	33.150	29.868	0.539	NA	62.000	15.000	65.000	15.000
PPP2R2B	18	0.826	NA	31.900	29.115	33.150	21.825	0.812	NA	62.000	15.000	64.000	14.000
PPP2R2B	19	0.311	NA	31.930	29.045	28.300	16.585	0.565	NA	63.000	15.000	62.000	11.000
PPP2R2B	20	0.311	NA	31.930	29.045	28.300	16.585	0.565	NA	63.000	15.000	62.000	11.000
PPP2R2B	21	0.384	NA	31.900	28.853	31.830	35.570	0.049	*	63.000	15.000	52.000	10.000
PPP2R2B	22	0.988	NA	31.900	28.985	31.830	0.000	0.117	NA	63.000	15.000	52.000	10.500
PPP2R2B	23	0.988	NA	31.900	28.985	31.830	0.000	0.063	Â°	63.000	15.000	46.500	5.500
PPP2R2B	25	0.988	NA	31.900	28.985	31.830	0.000	0.063	Â°	63.000	15.000	46.500	5.500
PPP2R2B	27	0.988	NA	31.900	28.985	31.830	0.000	0.278	NA	63.000	15.000	52.000	0.000
PPP2R2B	30	NA	NA	31.900	28.900	NA	NA	NA	NA	63.000	15.000	NA	NA
TBP	30	NA	NA	NA	NA	31.900	29.030	NA	NA	NA	NA	63.000	15.000
TBP	33	NA	NA	NA	NA	31.900	29.030	NA	NA	NA	NA	63.000	15.000
TBP	34	NA	NA	NA	NA	31.900	29.030	NA	NA	NA	NA	63.000	15.000

TBP	35	0.882	NA	42.185	40.798	31.900	28.730	0.189	NA	71.500	13.500	62.000	15.000
TBP	36	0.513	NA	30.170	44.845	31.915	28.505	0.928	NA	64.000	17.500	62.000	15.000
TBP	37	0.735	NA	30.330	31.630	32.150	28.573	0.904	NA	62.500	14.000	63.000	15.000
TBP	38	0.383	NA	32.470	30.300	31.850	28.445	0.353	NA	63.000	14.000	62.000	15.000
TBP	39	0.738	NA	31.780	29.108	32.670	28.230	0.328	NA	63.000	15.000	62.000	16.000
TBP	40	0.164	NA	32.150	29.658	28.970	17.620	0.248	NA	62.000	15.000	65.500	13.750
TBP	41	0.502	NA	31.915	29.155	30.300	10.540	0.132	NA	62.000	15.000	68.000	15.000
TBP	42	0.529	NA	31.915	29.053	30.300	18.265	0.396	NA	62.500	15.000	68.000	8.500
TCF4	9	NA	NA	NA	NA	31.870	29.123	NA	NA	NA	NA	63.000	15.000
TCF4	11	0.227	NA	61.120	25.850	31.850	29.140	0.807	NA	53.000	22.000	63.000	15.000
TCF4	12	0.780	NA	31.350	26.843	31.885	29.728	0.480	NA	64.000	12.250	62.000	15.000
TCF4	13	0.887	NA	31.370	27.700	31.870	29.600	0.442	NA	64.000	12.750	62.000	15.000
TCF4	14	0.814	NA	31.350	28.868	31.885	29.385	0.291	NA	64.000	12.500	62.000	15.000
TCF4	15	0.463	NA	32.250	30.400	31.715	28.728	0.923	NA	63.000	14.000	62.000	15.000
TCF4	16	0.899	NA	31.370	30.428	32.150	28.368	0.583	NA	62.000	15.000	63.000	15.000
TCF4	17	0.848	NA	31.370	30.370	32.170	28.270	0.582	NA	62.000	15.000	63.000	15.000
TCF4	18	0.240	NA	31.470	29.540	32.470	28.270	0.851	NA	62.000	14.750	63.000	15.000
TCF4	19	0.365	NA	31.600	29.875	32.385	27.150	0.802	NA	62.000	14.750	63.000	15.000
TCF4	20	0.443	NA	31.715	29.943	32.320	26.975	0.725	NA	62.000	14.000	63.000	15.000
TCF4	21	0.488	NA	31.780	29.943	32.220	26.975	0.948	NA	62.000	15.000	63.000	15.000
TCF4	22	0.514	NA	31.830	29.730	32.130	27.400	0.690	NA	62.000	15.000	63.000	15.000
TCF4	23	0.383	NA	31.830	29.730	32.170	27.970	0.870	NA	62.000	15.000	63.000	15.000
TCF4	24	0.195	NA	31.485	29.028	32.435	28.885	0.532	NA	62.000	15.000	63.000	14.500
TCF4	25	0.432	NA	31.830	29.040	32.270	29.760	0.525	NA	62.000	15.000	63.000	15.000
TCF4	26	0.707	NA	31.850	29.083	32.085	30.138	0.851	NA	62.500	15.000	63.000	14.000
TCF4	27	0.679	NA	31.870	28.930	32.270	31.330	0.737	NA	63.000	15.000	62.000	15.000
TCF4	28	0.727	NA	31.850	29.025	32.435	30.053	0.780	NA	63.000	15.000	62.000	15.750
TCF4	29	0.812	NA	31.870	29.025	31.365	30.053	0.897	NA	63.000	15.000	63.000	16.000

TCF4	30	0.887	NA	31.870	29.163	31.365	28.155	0.919	NA	63.000	15.000	62.000	16.500
TCF4	31	0.600	NA	31.900	29.475	29.885	28.103	0.890	NA	63.000	15.000	62.000	15.500
TCF4	32	0.199	NA	32.030	29.850	28.850	27.010	0.942	NA	63.000	15.000	62.000	16.000
TCF4	33	0.244	NA	31.900	29.770	29.770	26.250	0.911	NA	63.000	15.000	61.000	17.000
TCF4	34	0.139	NA	32.030	29.850	28.300	25.385	0.940	NA	63.000	15.000	61.000	17.750
TCF4	35	0.227	NA	31.930	29.770	28.630	25.970	0.369	NA	63.000	15.000	61.000	18.000
TCF4	36	0.203	NA	31.915	29.748	27.485	27.065	0.350	NA	63.000	15.000	61.000	18.250
TCF4	37	0.257	NA	31.900	29.620	28.300	27.065	0.389	NA	63.000	15.000	61.000	19.000
TCF4	38	0.369	NA	31.900	29.643	29.200	26.150	0.270	NA	63.000	15.000	60.000	18.500
TCF4	39	0.329	NA	31.900	29.643	28.300	26.150	0.196	NA	63.000	15.000	60.000	19.250
TCF4	40	0.532	NA	31.885	29.568	29.315	25.865	0.159	NA	63.000	15.000	59.500	20.250
TCF4	41	0.297	NA	31.900	29.770	28.630	25.970	0.347	NA	63.000	15.000	60.000	20.000
TCF4	42	0.333	NA	31.900	29.685	28.630	24.250	0.345	NA	63.000	15.000	60.000	19.500
TCF4	43	0.215	NA	31.900	29.770	27.970	23.700	0.470	NA	63.000	15.000	60.000	19.000
TCF4	44	0.247	NA	31.900	29.720	28.300	24.475	0.306	NA	63.000	15.000	60.000	19.250
TCF4	45	0.331	NA	31.900	29.643	28.300	25.110	0.141	NA	63.000	15.000	59.000	18.000
TCF4	47	0.220	NA	31.900	29.770	27.970	23.700	0.212	NA	63.000	15.000	59.500	17.750
TCF4	48	0.220	NA	31.900	29.770	27.970	23.700	0.212	NA	63.000	15.000	59.500	17.750
TCF4	49	0.220	NA	31.900	29.770	27.970	23.700	0.212	NA	63.000	15.000	59.500	17.750
TCF4	50	0.159	NA	31.900	29.720	25.985	21.358	0.243	NA	63.000	15.000	60.000	18.500
TCF4	51	0.108	NA	31.900	29.670	24.000	19.285	0.166	NA	63.000	15.000	59.500	17.000
TCF4	53	0.106	NA	31.900	29.620	23.565	20.208	0.171	NA	63.000	15.000	59.000	18.000
TCF4	56	0.106	NA	31.900	29.620	23.565	20.208	0.171	NA	63.000	15.000	59.000	18.000
TCF4	57	0.057	Â°	31.900	29.740	23.130	18.270	0.183	NA	63.000	15.000	58.000	18.750
TCF4	58	0.072	Â°	31.900	29.688	22.700	19.310	0.118	NA	63.000	15.000	57.000	17.000
TCF4	59	0.072	Â°	31.900	29.688	22.700	19.310	0.118	NA	63.000	15.000	57.000	17.000
TCF4	60	0.100	Â°	31.900	29.635	24.000	20.350	0.170	NA	63.000	15.000	57.000	19.000
TCF4	61	0.103	NA	31.900	29.583	22.700	21.390	0.190	NA	63.000	15.000	56.500	20.000

TCF4	63	0.103	NA	31.900	29.583	22.700	21.390	0.190	NA	63.000	15.000	56.500	20.000
TCF4	64	0.103	NA	31.900	29.583	22.700	21.390	0.190	NA	63.000	15.000	56.500	20.000
TCF4	66	0.064	Â°	31.900	29.530	21.400	19.570	0.113	NA	63.000	15.000	56.000	18.500
TCF4	67	0.092	Â°	31.900	29.528	22.700	20.485	0.103	NA	63.000	15.000	56.000	19.750
TCF4	68	0.171	NA	31.900	29.520	24.000	20.350	0.154	NA	63.000	15.000	56.000	21.000
TCF4	69	0.171	NA	31.900	29.520	24.000	20.350	0.188	NA	63.000	15.000	56.000	22.000
TCF4	70	0.171	NA	31.900	29.520	24.000	20.350	0.286	NA	63.000	15.000	56.000	23.000
TCF4	71	0.171	NA	31.900	29.520	24.000	20.350	0.286	NA	63.000	15.000	56.000	23.000
TCF4	72	0.171	NA	31.900	29.520	24.000	20.350	0.286	NA	63.000	15.000	56.000	23.000
TCF4	73	0.563	NA	31.870	29.385	30.235	21.683	0.129	NA	63.000	15.000	55.500	24.000
TCF4	75	0.377	NA	31.885	29.215	25.985	21.183	0.134	NA	63.000	15.000	54.000	25.000
TCF4	77	0.251	NA	31.870	29.130	19.230	20.370	0.231	NA	63.000	15.000	51.000	25.250
TCF4	78	0.502	NA	31.870	29.130	27.950	19.995	0.115	NA	63.000	15.000	48.000	20.000
TCF4	79	0.333	NA	31.870	29.130	19.230	13.830	0.024	*	63.000	15.000	47.000	8.750
TCF4	81	0.333	NA	31.870	29.130	19.230	13.830	0.024	*	63.000	15.000	47.000	8.750
TCF4	82	0.333	NA	31.870	29.130	19.230	13.830	0.127	NA	63.000	15.000	47.000	13.250
TCF4	83	0.333	NA	31.870	29.130	19.230	13.830	0.321	NA	63.000	15.000	46.000	23.500
TCF4	84	0.789	NA	31.870	29.130	31.080	11.850	0.999	NA	63.000	15.000	61.000	15.000
TCF4	85	0.789	NA	31.870	29.130	31.080	11.850	0.999	NA	63.000	15.000	61.000	15.000
TCF4	86	0.536	NA	31.870	29.130	42.930	0.000	0.158	NA	63.000	15.000	46.000	0.000
TCF4	87	NA	NA	31.870	29.123	NA	NA	NA	NA	63.000	15.000	NA	NA
TCF4	88	NA	NA	31.870	29.123	NA	NA	NA	NA	63.000	15.000	NA	NA
TCF4	89	NA	NA	31.870	29.123	NA	NA	NA	NA	63.000	15.000	NA	NA
TCF4	90	NA	NA	31.870	29.123	NA	NA	NA	NA	63.000	15.000	NA	NA
TCF4	91	NA	NA	31.870	29.123	NA	NA	NA	NA	63.000	15.000	NA	NA
TCF4	114	NA	NA	31.870	29.123	NA	NA	NA	NA	63.000	15.000	NA	NA
TK2-BEAN1	5	NA	NA	NA	NA	31.900	29.053	NA	NA	NA	NA	63.000	15.000
TK2-BEAN1	8	0.117	NA	111.200	0.000	31.900	29.030	0.745	NA	60.000	0.000	63.000	15.000

TK2-BEAN1	9	0.647	NA	33.770	29.200	31.900	29.070	0.959	NA	61.500	13.750	63.000	15.000
TK2-BEAN1	10	0.211	NA	37.785	43.803	31.870	29.018	0.624	NA	61.000	15.500	63.000	15.000
TK2-BEAN1	11	0.211	NA	37.785	43.803	31.870	29.018	0.712	NA	61.000	14.000	63.000	15.000
TK2-BEAN1	12	0.841	NA	33.770	25.615	31.870	29.115	0.712	NA	66.000	18.000	62.000	15.000
TK2-BEAN1	13	0.866	NA	31.550	24.608	31.900	29.643	0.564	NA	62.000	14.000	63.000	15.000
TK2-BEAN1	14	0.587	NA	30.600	26.808	32.030	29.730	0.433	NA	61.000	14.000	63.000	15.000
TK2-BEAN1	15	0.555	NA	32.130	26.100	31.900	29.730	0.050	*	61.000	13.000	63.000	15.000
TK2-BEAN1	16	0.434	NA	32.130	28.115	31.900	29.560	0.326	NA	62.000	15.000	63.000	15.000
TK2-BEAN1	17	0.784	NA	31.830	28.300	31.900	30.400	0.454	NA	63.000	15.000	63.000	15.000
TK2-BEAN1	18	0.442	NA	31.830	28.220	32.250	30.748	0.238	NA	62.000	15.000	63.000	15.000
TK2-BEAN1	19	0.982	NA	31.900	28.880	31.870	29.885	0.112	NA	62.000	15.000	65.000	15.500
TK2-BEAN1	20	0.464	NA	32.200	29.530	29.270	23.900	0.054	Â°	62.000	15.000	65.000	15.750
TK2-BEAN1	21	0.711	NA	32.170	29.090	29.585	24.460	0.094	Â°	62.000	15.000	65.000	16.000
TK2-BEAN1	22	0.775	NA	32.130	29.080	29.300	25.300	0.233	NA	62.000	15.000	65.000	16.000
TK2-BEAN1	23	0.411	NA	32.170	29.230	28.770	23.385	0.469	NA	62.000	15.000	65.000	16.500
TK2-BEAN1	24	0.859	NA	32.030	29.053	29.285	27.780	0.574	NA	62.000	15.000	65.000	16.000
TK2-BEAN1	25	0.797	NA	31.930	29.030	28.770	31.830	0.676	NA	62.500	15.000	64.500	15.500
TK2-BEAN1	26	0.971	NA	31.900	28.805	30.585	32.858	0.565	NA	62.000	15.000	65.000	15.500
TK2-BEAN1	27	0.982	NA	31.900	29.030	31.870	30.630	0.240	NA	62.000	15.000	65.500	16.750
TK2-BEAN1	28	0.953	NA	31.900	28.880	31.870	32.115	0.299	NA	62.000	15.000	65.000	16.000
TK2-BEAN1	29	0.526	NA	31.900	29.060	28.270	27.630	0.298	NA	62.000	15.000	65.000	17.500
TK2-BEAN1	30	0.495	NA	31.915	29.060	28.185	25.973	0.313	NA	62.000	15.000	65.000	15.000
TK2-BEAN1	31	0.568	NA	31.900	29.045	28.270	30.130	0.405	NA	62.500	15.000	65.000	15.000
TK2-BEAN1	32	0.498	NA	31.900	29.060	28.270	28.430	0.249	NA	62.000	15.000	66.500	15.000
TK2-BEAN1	33	0.531	NA	31.900	29.053	30.750	30.365	0.488	NA	62.500	15.000	65.000	15.000
TK2-BEAN1	34	0.374	NA	31.900	29.060	26.730	27.485	0.358	NA	62.000	15.000	65.000	14.000
TK2-BEAN1	35	0.809	NA	31.900	29.053	30.750	29.855	0.383	NA	62.000	15.000	66.500	17.000
TK2-BEAN1	36	0.529	NA	31.900	29.060	26.730	24.715	0.101	NA	62.000	15.000	68.000	12.500

TK2-BEAN1	37	0.529	NA	31.900	29.060	26.730	24.715	0.053	Â°	62.000	15.000	68.500	8.750
TK2-BEAN1	38	0.529	NA	31.900	29.060	26.730	24.715	0.053	Â°	62.000	15.000	68.500	8.750
TK2-BEAN1	39	0.529	NA	31.900	29.060	26.730	24.715	0.053	Â°	62.000	15.000	68.500	8.750
TK2-BEAN1	40	0.529	NA	31.900	29.060	26.730	24.715	0.053	Â°	62.000	15.000	68.500	8.750
TK2-BEAN1	42	0.728	NA	31.900	29.070	30.750	24.983	0.097	Â°	62.000	15.000	68.000	8.000
TK2-BEAN1	43	0.915	NA	31.900	29.060	34.770	26.430	0.100	NA	62.000	15.000	68.500	10.500
TK2-BEAN1	44	0.915	NA	31.900	29.060	34.770	26.430	0.100	NA	62.000	15.000	68.500	10.500
TK2-BEAN1	45	0.915	NA	31.900	29.060	34.770	26.430	0.190	NA	62.000	15.000	68.000	11.000
TK2-BEAN1	47	0.915	NA	31.900	29.060	34.770	26.430	0.190	NA	62.000	15.000	68.000	11.000
TK2-BEAN1	48	0.915	NA	31.900	29.060	34.770	26.430	0.287	NA	62.000	15.000	68.000	13.000
TK2-BEAN1	49	0.718	NA	31.885	29.083	38.670	25.485	0.463	NA	62.000	15.000	68.000	12.000
TK2-BEAN1	50	0.300	NA	31.870	29.100	42.570	23.100	0.832	NA	62.500	15.000	66.500	12.250
TK2-BEAN1	51	0.300	NA	31.870	29.100	42.570	23.100	0.904	NA	63.000	15.000	68.000	13.500
TK2-BEAN1	52	0.148	NA	31.870	29.085	45.285	20.055	0.640	NA	63.000	15.000	62.500	14.000
TK2-BEAN1	53	0.148	NA	31.870	29.085	45.285	20.055	0.640	NA	63.000	15.000	62.500	14.000
TK2-BEAN1	54	0.281	NA	31.870	29.100	42.570	13.230	0.417	NA	63.000	15.000	57.000	15.000
TK2-BEAN1	55	0.366	NA	31.885	29.083	41.385	19.623	0.194	NA	63.000	15.000	55.000	10.250
TK2-BEAN1	60	0.782	NA	31.900	29.070	37.365	10.635	0.990	NA	63.000	15.000	62.500	5.500
TK2-BEAN1	61	0.782	NA	31.900	29.070	37.365	10.635	0.990	NA	63.000	15.000	62.500	5.500
TK2-BEAN1	65	0.423	NA	31.900	29.060	48.000	0.000	0.517	NA	63.000	15.000	57.000	0.000
TK2-BEAN1	70	NA	NA	31.900	29.053	NA	NA	NA	NA	63.000	15.000	NA	NA
TK2-BEAN1	75	NA	NA	31.900	29.053	NA	NA	NA	NA	63.000	15.000	NA	NA
ZNF713	3	NA	NA	NA	NA	31.870	29.100	NA	NA	NA	NA	63.000	15.000
ZNF713	4	0.092	Â°	6.830	0.000	31.885	29.108	0.684	NA	56.000	15.000	63.000	15.000
ZNF713	5	0.903	NA	29.000	36.535	31.900	28.550	0.226	NA	64.500	12.500	63.000	15.000
ZNF713	6	0.982	NA	29.000	44.620	31.900	28.385	0.501	NA	64.000	12.500	63.000	15.000
ZNF713	7	0.423	NA	31.850	33.373	31.900	28.330	0.591	NA	64.000	13.000	62.000	15.000
ZNF713	8	0.540	NA	31.430	33.815	31.900	28.038	0.816	NA	63.000	14.000	63.000	15.000

ZNF713	9	0.582	NA	31.380	31.050	32.370	27.930	0.398	NA	63.000	14.000	63.000	14.000
ZNF713	10	0.304	NA	31.830	29.545	32.335	29.165	0.143	NA	62.000	14.000	63.000	14.000
ZNF713	11	0.295	NA	31.830	30.560	32.335	28.495	0.375	NA	63.000	15.000	63.000	14.000
ZNF713	12	0.676	NA	31.780	29.483	33.530	27.880	0.692	NA	63.000	15.000	62.000	15.000
ZNF713	13	0.889	NA	31.780	29.480	34.370	26.160	0.330	NA	63.000	15.000	64.500	14.250
ZNF713	14	0.826	NA	31.830	29.480	34.130	26.160	0.287	NA	63.000	15.000	65.000	15.000
ZNF713	15	0.718	NA	31.830	29.440	33.380	26.413	0.263	NA	63.000	15.000	65.000	15.000
ZNF713	16	0.511	NA	31.830	29.670	33.380	24.190	0.134	NA	63.000	15.000	65.500	15.000
ZNF713	17	0.899	NA	31.830	29.470	34.585	24.383	0.328	NA	63.000	15.000	64.000	14.750
ZNF713	18	0.784	NA	31.830	29.285	33.680	24.190	0.431	NA	63.000	15.000	63.000	14.000
ZNF713	19	0.783	NA	31.870	29.130	34.130	24.400	0.112	NA	63.000	15.000	67.000	8.000
ZNF713	20	0.121	NA	31.900	29.100	24.900	15.953	0.096	Â°	63.000	15.000	67.000	9.000
ZNF713	21	0.149	NA	31.900	29.090	25.600	18.145	0.300	NA	63.000	15.000	64.500	9.750
ZNF713	22	0.589	NA	31.870	29.100	27.250	22.428	0.931	NA	63.000	15.000	62.000	12.000
ZNF713	23	0.589	NA	31.870	29.100	27.250	22.428	0.931	NA	63.000	15.000	62.000	12.000
ZNF713	37	0.251	NA	31.870	28.875	60.700	0.000	0.286	NA	63.000	15.000	72.000	0.000

Supplementary Table S 3-5 FTD long allele statistical information: Population proportions and ORs

Gene	Repeat count	OR	Lower CI	Upper CI	*p*-Value	Significance	FTD (n)	Controls (n)	FTD proportion	Control proportion
AFF2	4	0.0113	0.0002	0.5855	1.0000	NA	0	2	0.0000	0.1291
AFF2	7	0.0565	0.0026	1.2214	1.0000	NA	1	0	5.8824	0.0000
AFF2	10	0.0178	0.0022	0.1425	0.0322	*	0	1	0.0000	0.0646
AFF2	11	0.0249	0.0035	0.1791	0.0428	*	0	6	0.0000	0.3873
AFF2	12	0.0678	0.0113	0.4059	0.1037	NA	0	17	0.0000	1.0975
AFF2	13	0.1913	0.0344	1.0632	0.2571	NA	0	17	0.0000	1.0975
AFF2	14	0.3176	0.0581	1.7360	0.3855	NA	1	319	5.8824	20.5939
AFF2	15	1.8926	0.4951	7.2354	0.3884	NA	7	341	41.1765	22.0142
AFF2	16	0.7436	0.2932	1.8861	0.6271	NA	2	103	11.7647	6.6495
AFF2	17	0.6131	0.2331	1.6124	0.3375	NA	0	232	0.0000	14.9774
AFF2	18	1.1476	0.4361	3.0200	0.8010	NA	3	130	17.6471	8.3925
AFF2	19	0.7393	0.2288	2.3892	0.7768	NA	1	76	5.8824	4.9064
AFF2	20	0.6570	0.1718	2.5135	0.5502	NA	1	41	5.8824	2.6469
AFF2	21	0.4418	0.0826	2.3629	0.3348	NA	1	27	5.8824	1.7431
AFF2	22	0.1579	0.0095	2.6346	0.0928	Â°	0	45	0.0000	2.9051
AFF2	23	0.2015	0.0121	3.3642	0.2523	NA	0	47	0.0000	3.0342
AFF2	24	0.2758	0.0165	4.6102	0.3935	NA	0	50	0.0000	3.2279
AFF2	25	0.4352	0.0260	7.2917	0.6191	NA	0	30	0.0000	1.9367
AFF2	26	0.6475	0.0385	10.8861	1.0000	NA	0	26	0.0000	1.6785
AFF2	27	1.0926	0.0645	18.4935	1.0000	NA	0	16	0.0000	1.0329
AFF2	28	1.8559	0.1084	31.7830	1.0000	NA	0	8	0.0000	0.5165
AFF2	29	2.8286	0.1627	49.1624	1.0000	NA	0	4	0.0000	0.2582
AFF2	30	3.8224	0.2166	67.4429	1.0000	NA	0	5	0.0000	0.3228
AFF2	31	6.7846	0.3678	125.1466	1.0000	NA	0	3	0.0000	0.1937
AFF2	32	12.6245	0.6282	253.6882	1.0000	NA	0	2	0.0000	0.1291
AFF2	35	29.4952	1.1608	749.4877	1.0000	NA	0	1	0.0000	0.0646

AFF3	0	0.0261	0.0005	1.3300	1.0000	NA	0	2	0.0000	0.1173
AFF3	1	0.1306	0.0062	2.7606	1.0000	NA	0	1	0.0000	0.0587
AFF3	2	0.1830	0.0093	3.5956	1.0000	NA	0	15	0.0000	0.8798
AFF3	3	0.9757	0.0579	16.4479	1.0000	NA	4	96	9.0909	5.6305
AFF3	4	0.6475	0.2401	1.7465	0.5349	NA	4	125	9.0909	7.3314
AFF3	5	0.7013	0.3283	1.4978	0.3862	NA	0	13	0.0000	0.7625
AFF3	6	0.7460	0.3494	1.5924	0.5195	NA	0	138	0.0000	8.0938
AFF3	7	1.2747	0.5991	2.7119	0.5855	NA	26	879	59.0909	51.5543
AFF3	8	0.8852	0.4399	1.7813	0.8609	NA	0	26	0.0000	1.5249
AFF3	9	0.9605	0.4771	1.9336	1.0000	NA	0	6	0.0000	0.3519
AFF3	10	0.9793	0.4864	1.9715	1.0000	NA	0	13	0.0000	0.7625
AFF3	11	1.0219	0.5075	2.0577	1.0000	NA	0	26	0.0000	1.5249
AFF3	12	1.1162	0.5541	2.2487	0.8525	NA	5	135	11.3636	7.9179
AFF3	13	0.8913	0.3614	2.1984	0.8251	NA	0	6	0.0000	0.3519
AFF3	14	0.9189	0.3725	2.2669	1.0000	NA	0	10	0.0000	0.5865
AFF3	15	0.9682	0.3923	2.3896	1.0000	NA	1	10	2.2727	0.5865
AFF3	16	0.8158	0.3047	2.1842	0.8125	NA	1	45	2.2727	2.6393
AFF3	17	0.8177	0.2714	2.4641	0.7927	NA	0	74	0.0000	4.3402
AFF3	18	1.5985	0.5255	4.8620	0.4832	NA	2	28	4.5455	1.6422
AFF3	19	0.9886	0.1901	5.1414	1.0000	NA	1	20	2.2727	1.1730
AFF3	20	0.4999	0.0302	8.2715	1.0000	NA	0	12	0.0000	0.7038
AFF3	21	0.7405	0.0444	12.3570	1.0000	NA	0	6	0.0000	0.3519
AFF3	22	0.9718	0.0578	16.3507	1.0000	NA	0	9	0.0000	0.5279
AFF3	23	1.8143	0.1047	31.4494	1.0000	NA	0	5	0.0000	0.2933
AFF3	24	3.4740	0.1892	63.7943	1.0000	NA	0	3	0.0000	0.1760
AFF3	25	7.6562	0.3622	161.8199	1.0000	NA	0	1	0.0000	0.0587
AFF3	27	12.7678	0.5130	317.7931	1.0000	NA	0	1	0.0000	0.0587
AR	9	0.0262	0.0005	1.3331	1.0000	NA	0	4	0.0000	0.2352
AR	10	0.2359	0.0125	4.4492	1.0000	NA	0	1	0.0000	0.0588

AR	14	0.2885	0.0157	5.2986	1.0000	NA	0	1	0.0000	0.0588
AR	15	0.3412	0.0189	6.1507	1.0000	NA	0	2	0.0000	0.1176
AR	16	0.4467	0.0254	7.8606	1.0000	NA	0	6	0.0000	0.3527
AR	17	0.7647	0.0449	13.0227	1.0000	NA	0	14	0.0000	0.8230
AR	18	1.5157	0.0911	25.2226	1.0000	NA	3	42	6.8182	2.4691
AR	19	0.5124	0.1677	1.5652	0.4275	NA	3	102	6.8182	5.9965
AR	20	0.6680	0.2867	1.5566	0.4452	NA	5	152	11.3636	8.9359
AR	21	0.6862	0.3474	1.3555	0.3322	NA	2	259	4.5455	15.2263
AR	22	1.2173	0.6384	2.3210	0.6296	NA	3	220	6.8182	12.9336
AR	23	1.5446	0.8362	2.8535	0.1705	NA	7	216	15.9091	12.6984
AR	24	1.3666	0.7554	2.4726	0.3509	NA	3	233	6.8182	13.6978
AR	25	1.9452	1.0638	3.5570	0.0383	*	11	196	25.0000	11.5226
AR	26	1.1428	0.5159	2.5314	0.8302	NA	2	126	4.5455	7.4074
AR	27	1.7195	0.6921	4.2722	0.3768	NA	3	56	6.8182	3.2922
AR	28	1.3414	0.3666	4.9091	0.7064	NA	0	22	0.0000	1.2934
AR	29	1.9638	0.5317	7.2526	0.3709	NA	0	26	0.0000	1.5285
AR	30	4.2015	1.1013	16.0289	0.1294	NA	1	10	2.2727	0.5879
AR	31	4.3129	0.7773	23.9304	0.3015	NA	0	8	0.0000	0.4703
AR	32	10.6364	1.7057	66.3279	0.1423	NA	1	2	2.2727	0.1176
AR	33	5.4526	0.2775	107.1526	1.0000	NA	0	2	0.0000	0.1176
AR	34	12.7378	0.5118	317.0476	1.0000	NA	0	1	0.0000	0.0588
ARX	3	0.0286	0.0006	1.4606	1.0000	NA	0	1	0.0000	0.0659
ARX	4	0.0860	0.0035	2.1412	1.0000	NA	0	1	0.0000	0.0659
ARX	5	0.1434	0.0068	3.0325	1.0000	NA	1	0	2.3256	0.0000
ARX	8	0.0467	0.0060	0.3618	0.0804	Â°	0	1	0.0000	0.0659
ARX	9	0.0654	0.0094	0.4539	0.1058	NA	0	347	0.0000	22.8590
ARX	10	8.4988	1.6607	43.4940	0.0003	***	42	1149	97.6744	75.6917
ARX	11	0.8839	0.0525	14.8779	1.0000	NA	0	18	0.0000	1.1858
ARX	89	11.6284	0.4670	289.5341	1.0000	NA	0	1	0.0000	0.0659

ATN1	8	0.0259	0.0005	1.3184	1.0000	NA	0	19	0.0000	1.1047
ATN1	9	1.0200	0.0606	17.1619	1.0000	NA	0	6	0.0000	0.3488
ATN1	10	1.3385	0.0802	22.3375	1.0000	NA	6	100	13.6364	5.8140
ATN1	11	0.4659	0.1990	1.0909	0.1347	NA	0	3	0.0000	0.1744
ATN1	12	0.4779	0.2042	1.1186	0.1410	NA	1	7	2.2727	0.4070
ATN1	13	0.4273	0.1914	0.9542	0.0818	Â°	0	8	0.0000	0.4651
ATN1	14	0.4548	0.2039	1.0147	0.0929	Â°	3	44	6.8182	2.5581
ATN1	15	0.4017	0.1981	0.8149	0.0248	*	14	604	31.8182	35.1163
ATN1	16	0.7125	0.3933	1.2909	0.2858	NA	12	493	27.2727	28.6628
ATN1	17	0.6853	0.3223	1.4570	0.3785	NA	6	272	13.6364	15.8140
ATN1	18	0.5566	0.1539	2.0132	0.4284	NA	0	40	0.0000	2.3256
ATN1	19	0.7543	0.2079	2.7362	0.7660	NA	0	35	0.0000	2.0349
ATN1	20	1.0723	0.2942	3.9078	1.0000	NA	0	44	0.0000	2.5581
ATN1	21	2.1661	0.5850	8.0209	0.3288	NA	1	16	2.2727	0.9302
ATN1	22	1.9772	0.3730	10.4812	0.5343	NA	0	21	0.0000	1.2209
ATN1	23	6.9473	1.1932	40.4491	0.2038	NA	0	4	0.0000	0.2326
ATN1	24	13.1533	2.0227	85.5341	0.1188	NA	1	3	2.2727	0.1744
ATN1	25	12.8801	0.5175	320.5887	1.0000	NA	0	1	0.0000	0.0581
ATXN1	28	0.0264	0.0005	1.3486	1.0000	NA	1	17	2.5000	1.1097
ATXN1	29	0.3041	0.0557	1.6598	0.3728	NA	5	305	12.5000	19.9086
ATXN1	30	1.4141	0.6062	3.2986	0.4340	NA	19	616	47.5000	40.2089
ATXN1	31	0.9596	0.5062	1.8190	1.0000	NA	1	203	2.5000	13.2507
ATXN1	32	1.5954	0.8325	3.0574	0.1991	NA	5	227	12.5000	14.8172
ATXN1	33	2.5089	1.1931	5.2760	0.0345	*	3	47	7.5000	3.0679
ATXN1	34	2.2697	0.9615	5.3579	0.1233	NA	6	36	15.0000	2.3499
ATXN1	35	0.2199	0.0134	3.6079	0.2642	NA	0	25	0.0000	1.6319
ATXN1	36	0.3226	0.0196	5.3137	0.3980	NA	0	48	0.0000	3.1332
ATXN1	37	2.2142	0.1256	39.0227	1.0000	NA	0	3	0.0000	0.1958
ATXN1	38	3.4287	0.1864	63.0589	1.0000	NA	0	1	0.0000	0.0653

ATXN1	39	4.1934	0.2220	79.1960	1.0000	NA	0	2	0.0000	0.1305
ATXN1	40	7.5580	0.3571	159.9753	1.0000	NA	0	1	0.0000	0.0653
ATXN1	42	12.6049	0.5057	314.1684	1.0000	NA	0	1	0.0000	0.0653
ATXN2	22	0.0254	0.0005	1.2928	1.0000	NA	32	1310	74.4186	76.3848
ATXN2	23	1.1436	0.5784	2.2610	0.7194	NA	10	301	23.2558	17.5510
ATXN2	24	0.5443	0.1055	2.8067	0.5131	NA	0	20	0.0000	1.1662
ATXN2	25	0.6814	0.1318	3.5233	0.7200	NA	0	4	0.0000	0.2332
ATXN2	26	0.7171	0.1386	3.7100	0.7194	NA	0	3	0.0000	0.1749
ATXN2	27	0.7462	0.1441	3.8629	1.0000	NA	1	53	2.3256	3.0904
ATXN2	28	0.7936	0.0475	13.2622	1.0000	NA	0	1	0.0000	0.0583
ATXN2	29	0.8278	0.0495	13.8511	1.0000	NA	0	8	0.0000	0.4665
ATXN2	30	1.2610	0.0743	21.4168	1.0000	NA	0	2	0.0000	0.1166
ATXN2	31	1.4496	0.0848	24.7785	1.0000	NA	0	8	0.0000	0.4665
ATXN2	32	3.5747	0.1946	65.6669	1.0000	NA	0	1	0.0000	0.0583
ATXN2	33	4.3716	0.2317	82.4664	1.0000	NA	0	1	0.0000	0.0583
ATXN2	36	5.6240	0.2861	110.5558	1.0000	NA	0	2	0.0000	0.1166
ATXN2	43	13.1379	0.5277	327.1062	1.0000	NA	0	1	0.0000	0.0583
ATXN3	14	0.0285	0.0006	1.4508	1.0000	NA	0	25	0.0000	1.5995
ATXN3	15	1.4751	0.0884	24.6180	1.0000	NA	1	41	2.2727	2.6232
ATXN3	18	1.2878	0.2483	6.6797	1.0000	NA	1	3	2.2727	0.1919
ATXN3	19	0.7906	0.2159	2.8951	1.0000	NA	0	1	0.0000	0.0640
ATXN3	20	0.8025	0.2192	2.9378	1.0000	NA	3	66	6.8182	4.2226
ATXN3	21	0.6867	0.2767	1.7046	0.5838	NA	3	98	6.8182	6.2700
ATXN3	22	0.7574	0.3545	1.6183	0.5232	NA	0	16	0.0000	1.0237
ATXN3	23	0.8189	0.3835	1.7487	0.6775	NA	17	564	38.6364	36.0845
ATXN3	24	0.8310	0.4570	1.5111	0.5455	NA	2	101	4.5455	6.4619
ATXN3	25	0.8984	0.4892	1.6496	0.7582	NA	0	2	0.0000	0.1280
ATXN3	26	0.9031	0.4918	1.6584	0.7586	NA	0	40	0.0000	2.5592
ATXN3	27	1.0046	0.5470	1.8451	1.0000	NA	13	423	29.5455	27.0633

ATXN3	28	0.8359	0.3118	2.2407	0.8114	NA	2	87	4.5455	5.5662
ATXN3	29	0.8945	0.2457	3.2564	1.0000	NA	0	34	0.0000	2.1753
ATXN3	30	1.4132	0.3850	5.1875	0.6937	NA	0	38	0.0000	2.4312
ATXN3	33	3.6963	0.9712	14.0674	0.1576	NA	1	7	2.2727	0.4479
ATXN3	34	3.0473	0.5598	16.5895	0.3949	NA	0	4	0.0000	0.2559
ATXN3	35	3.9604	0.7137	21.9759	0.3231	NA	1	2	2.2727	0.1280
ATXN3	36	1.5169	0.0880	26.1475	1.0000	NA	0	3	0.0000	0.1919
ATXN3	37	2.0562	0.1168	36.1831	1.0000	NA	0	4	0.0000	0.2559
ATXN3	38	3.8939	0.2065	73.4318	1.0000	NA	0	1	0.0000	0.0640
ATXN3	39	5.0096	0.2549	98.4499	1.0000	NA	0	3	0.0000	0.1919
ATXN7	7	0.0259	0.0005	1.3222	1.0000	NA	0	1	0.0000	0.0583
ATXN7	9	0.0779	0.0031	1.9381	1.0000	NA	0	11	0.0000	0.6414
ATXN7	10	0.6531	0.0381	11.2044	1.0000	NA	22	959	50.0000	55.9184
ATXN7	11	1.3049	0.7218	2.3590	0.4420	NA	3	234	6.8182	13.6443
ATXN7	12	1.8058	0.9924	3.2859	0.0663	Â°	13	338	29.5455	19.7085
ATXN7	13	1.5107	0.6483	3.5200	0.4429	NA	6	144	13.6364	8.3965
ATXN7	14	0.6653	0.0400	11.0710	1.0000	NA	0	19	0.0000	1.1079
ATXN7	15	2.0183	0.1157	35.2220	1.0000	NA	0	6	0.0000	0.3499
ATXN7	16	5.4976	0.2798	108.0354	1.0000	NA	0	1	0.0000	0.0583
ATXN7	17	7.7011	0.3644	162.7695	1.0000	NA	0	1	0.0000	0.0583
ATXN7	35	12.8427	0.5160	319.6569	1.0000	NA	0	1	0.0000	0.0583
ATXN8	8	0.0225	0.0004	1.1495	1.0000	NA	1	47	2.7778	2.8977
ATXN8	9	0.7135	0.1358	3.7493	1.0000	NA	0	2	0.0000	0.1233
ATXN8	10	0.7445	0.1418	3.9083	1.0000	NA	0	2	0.0000	0.1233
ATXN8	11	0.7756	0.1479	4.0677	1.0000	NA	0	4	0.0000	0.2466
ATXN8	12	0.8380	0.1600	4.3877	1.0000	NA	6	271	16.6667	16.7078
ATXN8	13	0.9905	0.4404	2.2281	1.0000	NA	2	177	5.5556	10.9125
ATXN8	14	1.3019	0.6180	2.7426	0.5844	NA	8	272	22.2222	16.7694
ATXN8	15	1.0196	0.5309	1.9584	1.0000	NA	4	249	11.1111	15.3514

ATXN8	16	1.2341	0.6373	2.3897	0.6018	NA	7	217	19.4444	13.3785
ATXN8	17	0.9706	0.4474	2.1057	1.0000	NA	4	170	11.1111	10.4809
ATXN8	18	0.9241	0.3412	2.5028	1.0000	NA	1	104	2.7778	6.4118
ATXN8	19	1.4729	0.4814	4.5064	0.7290	NA	3	48	8.3333	2.9593
ATXN8	20	0.3600	0.0218	5.9358	0.6367	NA	0	18	0.0000	1.1097
ATXN8	21	0.5220	0.0315	8.6514	1.0000	NA	0	10	0.0000	0.6165
ATXN8	22	0.6921	0.0415	11.5301	1.0000	NA	0	8	0.0000	0.4932
ATXN8	23	0.9324	0.0556	15.6478	1.0000	NA	0	5	0.0000	0.3083
ATXN8	24	1.1881	0.0702	20.0956	1.0000	NA	0	5	0.0000	0.3083
ATXN8	25	1.6332	0.0953	28.0014	1.0000	NA	0	3	0.0000	0.1850
ATXN8	26	2.1037	0.1210	36.5872	1.0000	NA	0	2	0.0000	0.1233
ATXN8	28	2.6019	0.1474	45.9374	1.0000	NA	0	3	0.0000	0.1850
ATXN8	29	4.0286	0.2187	74.2226	1.0000	NA	0	1	0.0000	0.0617
ATXN8	30	4.9269	0.2604	93.2117	1.0000	NA	0	2	0.0000	0.1233
ATXN8	69	8.8795	0.4188	188.2609	1.0000	NA	0	1	0.0000	0.0617
ATXN8	70	14.8082	0.5932	369.6723	1.0000	NA	0	1	0.0000	0.0617
ATXN10	12	0.0253	0.0005	1.2906	1.0000	NA	3	39	6.9767	2.2701
ATXN10	13	0.2721	0.0873	0.8481	0.0805	Â°	4	244	9.3023	14.2026
ATXN10	14	0.9611	0.4336	2.1306	1.0000	NA	18	638	41.8605	37.1362
ATXN10	15	0.8383	0.4573	1.5367	0.6431	NA	6	310	13.9535	18.0442
ATXN10	16	1.0024	0.5163	1.9464	1.0000	NA	2	183	4.6512	10.6519
ATXN10	17	1.4560	0.7200	2.9443	0.3187	NA	5	158	11.6279	9.1967
ATXN10	18	1.5334	0.6176	3.8070	0.4101	NA	3	69	6.9767	4.0163
ATXN10	19	1.2759	0.3489	4.6658	0.7191	NA	2	35	4.6512	2.0373
ATXN10	20	0.4534	0.0275	7.4885	0.6234	NA	0	16	0.0000	0.9313
ATXN10	21	0.7341	0.0440	12.2428	1.0000	NA	0	13	0.0000	0.7567
ATXN10	22	1.4521	0.0849	24.8221	1.0000	NA	0	9	0.0000	0.5239
ATXN10	23	4.3793	0.2322	82.6109	1.0000	NA	0	3	0.0000	0.1746
ATXN10	32	13.1609	0.5286	327.6784	1.0000	NA	0	1	0.0000	0.0582

CACNA1A	3	0.0282	0.0006	1.4379	1.0000	NA	0	1	0.0000	0.0634
CACNA1A	5	0.0847	0.0034	2.1078	1.0000	NA	0	1	0.0000	0.0634
CACNA1A	7	0.1412	0.0067	2.9850	1.0000	NA	0	6	0.0000	0.3805
CACNA1A	8	0.4820	0.0274	8.4819	1.0000	NA	0	14	0.0000	0.8878
CACNA1A	9	1.2874	0.0769	21.5610	1.0000	NA	0	2	0.0000	0.1268
CACNA1A	11	1.4036	0.0840	23.4497	1.0000	NA	5	252	11.3636	15.9797
CACNA1A	12	1.5258	0.6194	3.7581	0.4176	NA	6	313	13.6364	19.8478
CACNA1A	13	1.7372	0.8822	3.4208	0.1132	NA	28	837	63.6364	53.0755
CACNA1A	14	1.3111	0.5290	3.2494	0.6068	NA	5	130	11.3636	8.2435
CACNA1A	15	0.8134	0.0485	13.6426	1.0000	NA	0	8	0.0000	0.5073
CACNA1A	16	1.3021	0.0762	22.2513	1.0000	NA	0	9	0.0000	0.5707
CACNA1A	17	3.9288	0.2083	74.0908	1.0000	NA	0	3	0.0000	0.1902
CACNA1A	18	11.8090	0.4744	293.9367	1.0000	NA	0	1	0.0000	0.0634
CNBP	13	0.0269	0.0005	1.3702	1.0000	NA	0	12	0.0000	0.7251
CNBP	14	0.6769	0.0395	11.6136	1.0000	NA	0	4	0.0000	0.2417
CNBP	15	0.8957	0.0529	15.1668	1.0000	NA	1	63	2.2727	3.8066
CNBP	16	1.4624	0.2828	7.5632	0.7198	NA	12	168	27.2727	10.1511
CNBP	17	0.4100	0.2137	0.7868	0.0168	*	16	726	36.3636	43.8671
CNBP	18	0.7495	0.4021	1.3968	0.4378	NA	10	489	22.7273	29.5468
CNBP	19	1.0524	0.4259	2.6003	1.0000	NA	3	106	6.8182	6.4048
CNBP	20	1.0545	0.2892	3.8444	1.0000	NA	1	43	2.2727	2.5982
CNBP	21	1.2487	0.2387	6.5329	1.0000	NA	0	33	0.0000	1.9940
CNBP	22	4.9310	0.8760	27.7569	0.2709	NA	0	5	0.0000	0.3021
CNBP	23	8.7507	1.4454	52.9785	0.1681	NA	1	5	2.2727	0.3021
CNBP	26	12.3933	0.4979	308.4742	1.0000	NA	0	1	0.0000	0.0604
CSTB	2	0.0259	0.0005	1.3191	1.0000	NA	4	146	9.0909	8.4933
CSTB	3	0.8379	0.3118	2.2518	0.7853	NA	40	1565	90.9091	91.0413
CSTB	4	2.2624	0.1286	39.8103	1.0000	NA	0	6	0.0000	0.3490
CSTB	5	7.7191	0.3652	163.1493	1.0000	NA	0	1	0.0000	0.0582

CSTB	6	12.8727	0.5172	320.4024	1.0000	NA	0	1	0.0000	0.0582
C9ORF72	2	0.0258	0.0005	1.3161	1.0000	NA	8	572	18.1818	33.1979
C9ORF72	3	2.1349	1.0053	4.5340	0.0353	*	0	1	0.0000	0.0580
C9ORF72	4	2.1405	1.0079	4.5458	0.0352	*	2	65	4.5455	3.7725
C9ORF72	5	1.9327	0.9620	3.8830	0.0574	Â°	7	316	15.9091	18.3401
C9ORF72	6	1.9492	1.0625	3.5760	0.0315	*	4	112	9.0909	6.5003
C9ORF72	7	1.7729	0.9799	3.2078	0.0610	Â°	13	272	29.5455	15.7864
C9ORF72	8	1.0567	0.5247	2.1281	1.0000	NA	0	66	0.0000	3.8305
C9ORF72	9	1.3379	0.6634	2.6980	0.4380	NA	2	106	4.5455	6.1521
C9ORF72	10	1.6476	0.7705	3.5233	0.2474	NA	1	64	2.2727	3.7145
C9ORF72	11	2.1064	0.9448	4.6960	0.1029	NA	1	34	2.2727	1.9733
C9ORF72	12	2.3512	1.0026	5.5138	0.1179	NA	1	44	2.2727	2.5537
C9ORF72	13	3.2181	1.2787	8.0988	0.0377	*	0	29	0.0000	1.6831
C9ORF72	14	5.5090	2.1465	14.1390	0.0053	**	2	15	4.5455	0.8706
C9ORF72	15	5.2028	1.6405	16.5004	0.0366	*	1	15	2.2727	0.8706
C9ORF72	16	8.0541	2.0028	32.3885	0.0456	*	2	3	4.5455	0.1741
C9ORF72	17	2.0278	0.1162	35.3870	1.0000	NA	0	5	0.0000	0.2902
C9ORF72	18	4.2934	0.2277	80.9626	1.0000	NA	0	4	0.0000	0.2322
DIP2B	7	0.0258	0.0005	1.3146	1.0000	NA	17	652	38.6364	37.7971
DIP2B	8	0.9552	0.5204	1.7530	1.0000	NA	6	159	13.6364	9.2174
DIP2B	9	0.8118	0.4489	1.4683	0.5421	NA	0	13	0.0000	0.7536
DIP2B	10	0.8367	0.4627	1.5133	0.6472	NA	1	5	2.2727	0.2899
DIP2B	11	0.7742	0.4273	1.4026	0.4462	NA	0	5	0.0000	0.2899
DIP2B	12	0.7832	0.4323	1.4189	0.4477	NA	2	66	4.5455	3.8261
DIP2B	13	0.7615	0.4174	1.3894	0.4452	NA	3	105	6.8182	6.0870
DIP2B	14	0.7333	0.3936	1.3662	0.3545	NA	3	171	6.8182	9.9130
DIP2B	15	0.8235	0.4256	1.5935	0.6236	NA	1	110	2.2727	6.3768
DIP2B	16	1.0049	0.5098	1.9806	1.0000	NA	3	131	6.8182	7.5942
DIP2B	17	1.0700	0.5021	2.2801	1.0000	NA	4	100	9.0909	5.7971

DIP2B	18	0.8087	0.3021	2.1647	0.8130	NA	1	58	2.2727	3.3623
DIP2B	19	0.8829	0.2928	2.6621	1.0000	NA	0	38	0.0000	2.2029
DIP2B	20	1.2096	0.3996	3.6614	0.7611	NA	1	32	2.2727	1.8551
DIP2B	21	1.2024	0.3293	4.3901	1.0000	NA	1	21	2.2727	1.2174
DIP2B	22	0.9658	0.1858	5.0194	1.0000	NA	1	16	2.2727	0.9275
DIP2B	23	0.4346	0.0263	7.1723	0.6244	NA	0	20	0.0000	1.1594
DIP2B	24	0.8140	0.0487	13.6150	1.0000	NA	0	8	0.0000	0.4638
DIP2B	25	1.2399	0.0730	21.0512	1.0000	NA	0	10	0.0000	0.5797
DIP2B	26	3.5148	0.1914	64.5443	1.0000	NA	0	3	0.0000	0.1739
DIP2B	27	7.7461	0.3665	163.7191	1.0000	NA	0	2	0.0000	0.1159
DMPK	5	0.0257	0.0005	1.3115	1.0000	NA	3	254	6.8182	14.6906
DMPK	6	2.0452	0.6814	6.1381	0.1917	NA	0	2	0.0000	0.1157
DMPK	8	2.0640	0.6878	6.1944	0.1922	NA	0	24	0.0000	1.3881
DMPK	9	2.2945	0.7650	6.8822	0.1404	NA	0	3	0.0000	0.1735
DMPK	10	2.3239	0.7748	6.9698	0.0982	Â°	0	14	0.0000	0.8097
DMPK	11	2.4625	0.8213	7.3834	0.0996	Â°	4	192	9.0909	11.1047
DMPK	12	1.9730	0.8946	4.3514	0.0878	Â°	5	223	11.3636	12.8976
DMPK	13	1.8206	0.9416	3.5202	0.0864	Â°	10	413	22.7273	23.8866
DMPK	14	1.8619	1.0293	3.3677	0.0539	Â°	5	205	11.3636	11.8566
DMPK	15	2.1194	1.1519	3.8993	0.0286	*	0	19	0.0000	1.0989
DMPK	16	2.2570	1.2263	4.1540	0.0156	*	1	29	2.2727	1.6773
DMPK	17	2.2705	1.2244	4.2102	0.0137	*	1	9	2.2727	0.5205
DMPK	18	2.1285	1.1380	3.9812	0.0337	*	0	5	0.0000	0.2892
DMPK	19	2.1679	1.1589	4.0552	0.0216	*	2	21	4.5455	1.2146
DMPK	20	1.9140	1.0001	3.6632	0.0745	Â°	4	48	9.0909	2.7762
DMPK	21	1.4566	0.7036	3.0156	0.3979	NA	0	89	0.0000	5.1475
DMPK	22	2.3115	1.1112	4.8084	0.0437	*	2	30	4.5455	1.7351
DMPK	23	2.1144	0.9484	4.7138	0.1019	NA	1	26	2.2727	1.5038
DMPK	24	2.1962	0.9377	5.1437	0.1296	NA	1	21	2.2727	1.2146

DMPK	25	2.2109	0.8863	5.5150	0.1842	NA	2	20	4.5455	1.1567
DMPK	26	1.6842	0.5533	5.1265	0.4658	NA	1	15	2.2727	0.8676
DMPK	27	1.4488	0.3954	5.3084	0.6882	NA	0	23	0.0000	1.3302
DMPK	28	2.2280	0.6013	8.2560	0.3173	NA	0	11	0.0000	0.6362
DMPK	29	2.9789	0.7953	11.1580	0.2148	NA	1	7	2.2727	0.4049
DMPK	30	2.2167	0.4163	11.8024	0.4952	NA	1	7	2.2727	0.4049
DMPK	31	0.9856	0.0586	16.5832	1.0000	NA	0	9	0.0000	0.5205
DMPK	32	1.8400	0.1062	31.8944	1.0000	NA	0	2	0.0000	0.1157
DMPK	33	2.2756	0.1293	40.0429	1.0000	NA	0	2	0.0000	0.1157
DMPK	34	2.9793	0.1653	53.7057	1.0000	NA	0	1	0.0000	0.0578
DMPK	35	3.5230	0.1918	64.6943	1.0000	NA	0	1	0.0000	0.0578
DMPK	37	4.3084	0.2285	81.2450	1.0000	NA	0	1	0.0000	0.0578
DMPK	40	5.5425	0.2820	108.9183	1.0000	NA	0	1	0.0000	0.0578
DMPK	46	7.7640	0.3673	164.0989	1.0000	NA	0	1	0.0000	0.0578
DMPK	67	12.9476	0.5202	322.2662	1.0000	NA	0	1	0.0000	0.0578
FMR1	3	0.0162	0.0003	0.8334	1.0000	NA	0	1	0.0000	0.0636
FMR1	4	0.0487	0.0019	1.2238	1.0000	NA	1	1	4.0000	0.0636
FMR1	6	0.0260	0.0033	0.2047	0.0463	*	0	8	0.0000	0.5089
FMR1	7	0.1098	0.0189	0.6359	0.1598	NA	0	21	0.0000	1.3359
FMR1	8	0.3338	0.0618	1.8015	0.3994	NA	1	14	4.0000	0.8906
FMR1	9	0.2800	0.0736	1.0659	0.1661	NA	2	29	8.0000	1.8448
FMR1	10	0.2375	0.0838	0.6736	0.0305	*	2	27	8.0000	1.7176
FMR1	11	0.2069	0.0833	0.5142	0.0049	**	1	49	4.0000	3.1170
FMR1	12	0.2610	0.1099	0.6198	0.0081	**	3	50	12.0000	3.1807
FMR1	13	0.2156	0.0972	0.4786	0.0007	***	0	172	0.0000	10.9415
FMR1	14	0.4580	0.2075	1.0112	0.0937	Â°	1	31	4.0000	1.9720
FMR1	15	0.4350	0.1990	0.9511	0.0618	Â°	1	41	4.0000	2.6081
FMR1	16	0.4254	0.1956	0.9253	0.0423	*	4	58	16.0000	3.6896
FMR1	17	0.2703	0.1208	0.6047	0.0018	**	1	59	4.0000	3.7532

FMR1	18	0.2696	0.1181	0.6158	0.0013	**	2	118	8.0000	7.5064
FMR1	19	0.2535	0.1038	0.6193	0.0017	**	4	283	16.0000	18.0025
FMR1	20	0.1677	0.0454	0.6202	0.0013	**	1	59	4.0000	3.7532
FMR1	21	0.1134	0.0217	0.5916	0.0005	***	0	74	0.0000	4.7074
FMR1	22	0.1405	0.0269	0.7329	0.0031	**	1	105	4.0000	6.6794
FMR1	23	0.0632	0.0038	1.0405	0.0028	**	0	20	0.0000	1.2723
FMR1	24	0.0679	0.0041	1.1180	0.0028	**	0	17	0.0000	1.0814
FMR1	25	0.0723	0.0044	1.1911	0.0048	**	0	6	0.0000	0.3817
FMR1	26	0.0740	0.0045	1.2187	0.0048	**	0	4	0.0000	0.2545
FMR1	27	0.0751	0.0046	1.2377	0.0049	**	0	85	0.0000	5.4071
FMR1	28	0.1086	0.0066	1.7906	0.0241	*	0	178	0.0000	11.3232
FMR1	29	0.4739	0.0285	7.8736	0.6217	NA	0	41	0.0000	2.6081
FMR1	30	1.4150	0.0834	24.0030	1.0000	NA	0	10	0.0000	0.6361
FMR1	31	2.6624	0.1527	46.4146	1.0000	NA	0	1	0.0000	0.0636
FMR1	34	2.9178	0.1664	51.1512	1.0000	NA	0	1	0.0000	0.0636
FMR1	35	3.2270	0.1828	56.9529	1.0000	NA	0	1	0.0000	0.0636
FMR1	36	3.6090	0.2028	64.2231	1.0000	NA	0	2	0.0000	0.1272
FMR1	38	4.7255	0.2592	86.1384	1.0000	NA	0	1	0.0000	0.0636
FMR1	39	5.5882	0.3010	103.7617	1.0000	NA	0	1	0.0000	0.0636
FMR1	40	6.8344	0.3585	130.3015	1.0000	NA	0	1	0.0000	0.0636
FMR1	41	8.7927	0.4426	174.6679	1.0000	NA	0	1	0.0000	0.0636
FMR1	63	12.3176	0.5767	263.1063	1.0000	NA	0	1	0.0000	0.0636
FMR1	75	20.5425	0.8171	516.4555	1.0000	NA	0	1	0.0000	0.0636
FRA10C1	6	0.0260	0.0005	1.3230	1.0000	NA	0	12	0.0000	0.7001
FRA10C1	7	0.6535	0.0381	11.2109	1.0000	NA	0	260	0.0000	15.1692
FRA10C1	8	16.8128	1.0323	273.8373	0.0010	**	27	628	61.3636	36.6394
FRA10C1	9	0.7036	0.3835	1.2907	0.2854	NA	13	493	29.5455	28.7631
FRA10C1	10	0.4816	0.1805	1.2851	0.1173	NA	0	7	0.0000	0.4084
FRA10C1	11	0.4948	0.1854	1.3204	0.1623	NA	0	3	0.0000	0.1750

FRA10C1	12	0.5006	0.1876	1.3361	0.1617	NA	1	10	2.2727	0.5834
FRA10C1	13	0.3954	0.1319	1.1855	0.0686	Â°	0	27	0.0000	1.5753
FRA10C1	14	0.4426	0.1475	1.3277	0.1390	NA	0	39	0.0000	2.2754
FRA10C1	15	0.5298	0.1764	1.5911	0.2628	NA	0	36	0.0000	2.1004
FRA10C1	16	0.6407	0.2131	1.9264	0.4716	NA	1	71	2.2727	4.1424
FRA10C1	17	0.7263	0.2003	2.6335	0.7678	NA	1	22	2.2727	1.2835
FRA10C1	18	0.5208	0.1011	2.6834	0.5168	NA	0	16	0.0000	0.9335
FRA10C1	19	0.6190	0.1199	3.1954	0.7252	NA	0	9	0.0000	0.5251
FRA10C1	20	0.6911	0.1337	3.5730	0.7197	NA	0	21	0.0000	1.2252
FRA10C1	21	0.9430	0.1815	4.8993	1.0000	NA	1	21	2.2727	1.2252
FRA10C1	22	0.4766	0.0288	7.8783	0.6232	NA	0	5	0.0000	0.2917
FRA10C1	23	0.5473	0.0330	9.0698	1.0000	NA	0	10	0.0000	0.5834
FRA10C1	24	0.7753	0.0464	12.9520	1.0000	NA	0	7	0.0000	0.4084
FRA10C1	25	1.0899	0.0645	18.4113	1.0000	NA	0	5	0.0000	0.2917
FRA10C1	26	1.5303	0.0892	26.2553	1.0000	NA	0	3	0.0000	0.1750
FRA10C1	27	2.0171	0.1156	35.2013	1.0000	NA	0	5	0.0000	0.2917
FRA10C1	28	4.2709	0.2265	80.5390	1.0000	NA	0	1	0.0000	0.0583
FRA10C1	29	5.4944	0.2796	107.9724	1.0000	NA	0	1	0.0000	0.0583
FRA10C1	30	7.6966	0.3642	162.6745	1.0000	NA	0	2	0.0000	0.1167
FRA11A	8	0.0259	0.0005	1.3214	1.0000	NA	11	117	25.0000	6.8182
FRA11A	9	0.2140	0.1067	0.4290	0.0002	***	24	1104	54.5455	64.3357
FRA11A	10	0.6597	0.3200	1.3601	0.3101	NA	9	439	20.4545	25.5828
FRA11A	11	0.3302	0.0201	5.4302	0.3989	NA	0	26	0.0000	1.5152
FRA11A	12	0.6213	0.0374	10.3227	1.0000	NA	0	21	0.0000	1.2238
FRA11A	13	2.0195	0.1157	35.2426	1.0000	NA	0	5	0.0000	0.2914
FRA11A	15	4.2759	0.2267	80.6331	1.0000	NA	0	1	0.0000	0.0583
FRA11A	18	5.5008	0.2799	108.0985	1.0000	NA	0	2	0.0000	0.1166
FRA11A	22	12.8502	0.5163	319.8432	1.0000	NA	0	1	0.0000	0.0583
FXN	8	0.0283	0.0006	1.4443	1.0000	NA	1	95	2.2727	6.0510

FXN	9	1.8770	0.3638	9.6839	0.5142	NA	2	139	4.5455	8.8535
FXN	10	2.0804	0.6927	6.2483	0.1920	NA	20	744	45.4545	47.3885
FXN	11	1.5109	0.8344	2.7360	0.2076	NA	1	12	2.2727	0.7643
FXN	12	1.4277	0.7870	2.5899	0.2698	NA	0	3	0.0000	0.1911
FXN	13	1.4395	0.7935	2.6113	0.2683	NA	1	20	2.2727	1.2739
FXN	14	1.3902	0.7640	2.5296	0.3385	NA	0	1	0.0000	0.0637
FXN	15	1.3941	0.7661	2.5366	0.3382	NA	0	4	0.0000	0.2548
FXN	16	1.4097	0.7747	2.5652	0.2683	NA	2	21	4.5455	1.3376
FXN	17	1.2446	0.6773	2.2869	0.5207	NA	2	73	4.5455	4.6497
FXN	18	1.2749	0.6828	2.3804	0.5028	NA	4	89	9.0909	5.6688
FXN	19	1.1163	0.5655	2.2032	0.8570	NA	0	82	0.0000	5.2229
FXN	20	1.5325	0.7749	3.0310	0.2420	NA	2	51	4.5455	3.2484
FXN	21	1.5100	0.7283	3.1309	0.2926	NA	1	47	2.2727	2.9936
FXN	22	1.6977	0.7926	3.6365	0.2386	NA	4	32	9.0909	2.0382
FXN	23	0.9972	0.3714	2.6776	1.0000	NA	0	27	0.0000	1.7197
FXN	24	1.2265	0.4556	3.3017	0.7809	NA	1	32	2.2727	2.0382
FXN	25	1.2608	0.4156	3.8251	0.7528	NA	2	25	4.5455	1.5924
FXN	26	0.7026	0.1357	3.6379	0.7192	NA	0	17	0.0000	1.0828
FXN	27	0.9243	0.1777	4.8091	1.0000	NA	1	20	2.2727	1.2739
FXN	28	0.4724	0.0285	7.8198	0.6227	NA	0	10	0.0000	0.6369
FXN	29	0.6549	0.0393	10.9177	1.0000	NA	0	12	0.0000	0.7643
FXN	30	1.2061	0.0708	20.5397	1.0000	NA	0	3	0.0000	0.1911
FXN	31	1.5237	0.0884	26.2653	1.0000	NA	0	4	0.0000	0.2548
FXN	32	2.3423	0.1317	41.6529	1.0000	NA	0	1	0.0000	0.0637
FXN	33	2.7044	0.1500	48.7531	1.0000	NA	0	1	0.0000	0.0637
FXN	38	3.1982	0.1742	58.7318	1.0000	NA	0	1	0.0000	0.0637
FXN	46	3.9114	0.2074	73.7613	1.0000	NA	0	1	0.0000	0.0637
FXN	53	5.0321	0.2561	98.8913	1.0000	NA	0	1	0.0000	0.0637
FXN	58	7.0494	0.3335	149.0006	1.0000	NA	0	1	0.0000	0.0637

FXN	91	11.7566	0.4723	292.6320	1.0000	NA	0	1	0.0000	0.0637
GIPC1	8	0.0259	0.0005	1.3190	1.0000	NA	0	7	0.0000	0.4164
GIPC1	9	0.3897	0.0219	6.9316	1.0000	NA	2	147	4.6512	8.7448
GIPC1	10	1.6790	0.4635	6.0818	0.4246	NA	19	678	44.1860	40.3331
GIPC1	11	1.0256	0.5635	1.8665	1.0000	NA	14	607	32.5581	36.1095
GIPC1	12	1.4213	0.6642	3.0413	0.3872	NA	7	196	16.2791	11.6597
GIPC1	13	1.2414	0.2374	6.4911	1.0000	NA	0	24	0.0000	1.4277
GIPC1	14	2.6031	0.4849	13.9761	0.4427	NA	1	6	2.3256	0.3569
GIPC1	16	1.1602	0.0685	19.6527	1.0000	NA	0	5	0.0000	0.2974
GIPC1	17	1.6697	0.0968	28.7908	1.0000	NA	0	8	0.0000	0.4759
GIPC1	18	5.5123	0.2804	108.3617	1.0000	NA	0	2	0.0000	0.1190
GIPC1	25	12.8774	0.5172	320.6217	1.0000	NA	0	1	0.0000	0.0595
HTT	12	0.0259	0.0005	1.3191	1.0000	NA	0	1	0.0000	0.0582
HTT	15	0.0777	0.0031	1.9336	1.0000	NA	0	2	0.0000	0.1163
HTT	16	0.1815	0.0092	3.5662	1.0000	NA	0	10	0.0000	0.5817
HTT	17	0.7041	0.0412	12.0311	1.0000	NA	2	118	4.5455	6.8645
HTT	18	1.4073	0.3882	5.1017	0.7693	NA	6	162	13.6364	9.4241
HTT	19	0.8835	0.4144	1.8834	0.8392	NA	6	144	13.6364	8.3770
HTT	20	0.7176	0.3804	1.3534	0.3809	NA	8	282	18.1818	16.4049
HTT	21	0.7191	0.3978	1.3001	0.2833	NA	7	292	15.9091	16.9866
HTT	22	0.7501	0.4026	1.3977	0.4380	NA	4	228	9.0909	13.2635
HTT	23	0.8855	0.4495	1.7446	0.7364	NA	2	141	4.5455	8.2024
HTT	24	1.0882	0.5266	2.2484	0.8493	NA	1	85	2.2727	4.9447
HTT	25	1.3410	0.6282	2.8623	0.5194	NA	1	50	2.2727	2.9087
HTT	26	1.4822	0.6677	3.2903	0.4765	NA	3	53	6.8182	3.0832
HTT	27	1.1503	0.4283	3.0900	0.7916	NA	1	27	2.2727	1.5707
HTT	28	1.0808	0.3576	3.2667	1.0000	NA	1	42	2.2727	2.4433
HTT	29	1.1676	0.3199	4.2610	1.0000	NA	1	26	2.2727	1.5125
HTT	30	1.0153	0.1951	5.2819	1.0000	NA	1	20	2.2727	1.1635

HTT	31	0.5182	0.0313	8.5788	1.0000	NA	0	10	0.0000	0.5817
HTT	32	0.7180	0.0431	11.9705	1.0000	NA	0	7	0.0000	0.4072
HTT	33	0.9798	0.0582	16.4863	1.0000	NA	0	8	0.0000	0.4654
HTT	34	1.6693	0.0968	28.7737	1.0000	NA	0	4	0.0000	0.2327
HTT	35	2.5655	0.1443	45.6207	1.0000	NA	0	1	0.0000	0.0582
HTT	36	2.9620	0.1643	53.3942	1.0000	NA	0	2	0.0000	0.1163
HTT	37	4.2834	0.2271	80.7743	1.0000	NA	0	2	0.0000	0.1163
HTT	38	7.7191	0.3652	163.1493	1.0000	NA	0	1	0.0000	0.0582
HTT	40	12.8727	0.5172	320.4024	1.0000	NA	0	1	0.0000	0.0582
JPH3	13	0.0259	0.0005	1.3191	1.0000	NA	0	16	0.0000	0.9308
JPH3	14	0.8620	0.0509	14.5967	1.0000	NA	6	485	13.6364	28.2141
JPH3	15	2.4378	1.0549	5.6334	0.0272	*	9	164	20.4545	9.5404
JPH3	16	1.2011	0.6445	2.2384	0.6387	NA	21	764	47.7273	44.4444
JPH3	17	1.1459	0.5375	2.4431	0.8382	NA	6	264	13.6364	15.3578
JPH3	18	3.7592	0.9922	14.2422	0.1531	NA	2	21	4.5455	1.2216
JPH3	19	3.5026	0.1907	64.3193	1.0000	NA	0	1	0.0000	0.0582
JPH3	22	4.2834	0.2271	80.7743	1.0000	NA	0	1	0.0000	0.0582
JPH3	25	5.5104	0.2804	108.2877	1.0000	NA	0	1	0.0000	0.0582
JPH3	28	7.7191	0.3652	163.1493	1.0000	NA	0	1	0.0000	0.0582
JPH3	29	12.8727	0.5172	320.4024	1.0000	NA	0	1	0.0000	0.0582
LRP12	4	0.0258	0.0005	1.3168	1.0000	NA	0	3	0.0000	0.1742
LRP12	5	0.1812	0.0092	3.5600	1.0000	NA	0	10	0.0000	0.5807
LRP12	6	0.7028	0.0411	12.0100	1.0000	NA	1	2	2.2727	0.1161
LRP12	8	0.2633	0.0480	1.4450	0.3333	NA	0	6	0.0000	0.3484
LRP12	9	0.3664	0.0681	1.9708	0.4279	NA	0	61	0.0000	3.5424
LRP12	10	1.4584	0.2822	7.5382	0.7199	NA	5	235	11.3636	13.6469
LRP12	11	1.3380	0.5776	3.0994	0.5537	NA	9	269	20.4545	15.6214
LRP12	12	0.9822	0.5268	1.8311	1.0000	NA	1	96	2.2727	5.5749
LRP12	13	1.1330	0.6132	2.0934	0.7556	NA	24	587	54.5455	34.0883

LRP12	14	0.3110	0.1168	0.8286	0.0082	**	2	340	4.5455	19.7445
LRP12	15	0.8342	0.2297	3.0293	1.0000	NA	2	83	4.5455	4.8200
LRP12	16	0.6235	0.0375	10.3594	1.0000	NA	0	21	0.0000	1.2195
LRP12	17	2.0266	0.1161	35.3664	1.0000	NA	0	2	0.0000	0.1161
LRP12	18	2.5700	0.1445	45.7006	1.0000	NA	0	1	0.0000	0.0581
LRP12	19	2.9672	0.1646	53.4877	1.0000	NA	0	2	0.0000	0.1161
LRP12	23	4.2909	0.2275	80.9155	1.0000	NA	0	2	0.0000	0.1161
LRP12	25	7.7326	0.3659	163.4342	1.0000	NA	0	1	0.0000	0.0581
LRP12	26	12.8951	0.5181	320.9615	1.0000	NA	0	1	0.0000	0.0581
NIPA1	7	0.0259	0.0005	1.3199	1.0000	NA	0	56	0.0000	3.2596
NIPA1	8	3.0247	0.1839	49.7380	0.3989	NA	43	1423	97.7273	82.8289
NIPA1	9	0.2130	0.0416	1.0909	0.0234	*	0	202	0.0000	11.7579
NIPA1	10	1.5462	0.2941	8.1283	0.6214	NA	1	34	2.2727	1.9790
NIPA1	11	5.5072	0.2802	108.2246	1.0000	NA	0	3	0.0000	0.1746
NOP56	3	0.0258	0.0005	1.3146	1.0000	NA	1	53	2.2727	3.0725
NOP56	4	0.9277	0.1781	4.8317	1.0000	NA	2	195	4.5455	11.3043
NOP56	5	1.9942	0.6644	5.9862	0.1916	NA	0	51	0.0000	2.9565
NOP56	6	2.4895	0.8303	7.4641	0.0690	Â°	27	991	61.3636	57.4493
NOP56	7	1.4088	0.7469	2.6572	0.3795	NA	3	118	6.8182	6.8406
NOP56	8	1.5229	0.7709	3.0085	0.2444	NA	10	273	22.7273	15.8261
NOP56	9	1.3030	0.2491	6.8165	1.0000	NA	0	26	0.0000	1.5072
NOP56	10	3.1827	0.5867	17.2646	0.3819	NA	0	13	0.0000	0.7536
NOP56	11	10.7868	1.7298	67.2657	0.1404	NA	1	4	2.2727	0.2319
NOP56	12	12.9176	0.5190	321.5206	1.0000	NA	0	1	0.0000	0.0580
NOTCH2NCL	9	0.0260	0.0005	1.3269	1.0000	NA	1	97	2.2727	5.6758
NOTCH2NCL	10	1.7535	0.3400	9.0438	0.5118	NA	0	30	0.0000	1.7554
NOTCH2NCL	11	2.3365	0.4543	12.0169	0.3695	NA	0	16	0.0000	0.9362
NOTCH2NCL	12	2.6566	0.5171	13.6491	0.2574	NA	1	28	2.2727	1.6384
NOTCH2NCL	13	1.8950	0.5241	6.8518	0.3098	NA	5	117	11.3636	6.8461

NOTCH2NCL	14	1.0148	0.4586	2.2452	1.0000	NA	6	172	13.6364	10.0644
NOTCH2NCL	15	0.8599	0.4505	1.6415	0.7312	NA	3	254	6.8182	14.8625
NOTCH2NCL	16	1.2397	0.6710	2.2905	0.5372	NA	9	285	20.4545	16.6764
NOTCH2NCL	17	1.0758	0.5919	1.9551	0.8774	NA	6	225	13.6364	13.1656
NOTCH2NCL	18	1.0809	0.5664	2.0627	0.8663	NA	4	134	9.0909	7.8408
NOTCH2NCL	19	1.0343	0.5007	2.1365	1.0000	NA	2	73	4.5455	4.2715
NOTCH2NCL	20	1.0280	0.4645	2.2752	1.0000	NA	3	71	6.8182	4.1545
NOTCH2NCL	21	0.8046	0.3005	2.1538	0.8132	NA	4	86	9.0909	5.0322
NOTCH2NCL	22	0.1469	0.0090	2.4000	0.0695	Â°	0	76	0.0000	4.4470
NOTCH2NCL	23	0.4110	0.0249	6.7790	0.6267	NA	0	26	0.0000	1.5214
NOTCH2NCL	24	0.9741	0.0579	16.3894	1.0000	NA	0	10	0.0000	0.5851
NOTCH2NCL	25	2.0112	0.1153	35.0982	1.0000	NA	0	3	0.0000	0.1755
NOTCH2NCL	26	2.9447	0.1634	53.0828	1.0000	NA	0	4	0.0000	0.2341
NOTCH2NCL	27	7.6742	0.3631	162.1997	1.0000	NA	0	2	0.0000	0.1170
NUTM2B-AS1	5	0.0258	0.0005	1.3153	1.0000	NA	0	1	0.0000	0.0580
NUTM2B-AS1	6	0.0775	0.0031	1.9280	1.0000	NA	1	19	2.2727	1.1021
NUTM2B-AS1	7	0.3488	0.0647	1.8807	0.4127	NA	0	1	0.0000	0.0580
NUTM2B-AS1	8	0.3660	0.0681	1.9685	0.4275	NA	1	45	2.2727	2.6102
NUTM2B-AS1	9	0.6816	0.1860	2.4984	0.6854	NA	32	1209	72.7273	70.1276
NUTM2B-AS1	10	0.8636	0.4292	1.7376	0.7290	NA	2	136	4.5455	7.8886
NUTM2B-AS1	11	1.0485	0.4921	2.2340	1.0000	NA	0	8	0.0000	0.4640
NUTM2B-AS1	12	1.0821	0.5078	2.3059	0.8439	NA	3	83	6.8182	4.8144
NUTM2B-AS1	13	0.9403	0.3811	2.3198	1.0000	NA	4	168	9.0909	9.7448
NUTM2B-AS1	14	1.0569	0.2030	5.5029	1.0000	NA	0	42	0.0000	2.4362
NUTM2B-AS1	15	4.7241	0.8458	26.3863	0.2802	NA	1	5	2.2727	0.2900
NUTM2B-AS1	16	2.5730	0.1447	45.7538	1.0000	NA	0	4	0.0000	0.2320
NUTM2B-AS1	17	5.5265	0.2812	108.6030	1.0000	NA	0	3	0.0000	0.1740
PABPN1	5	0.0258	0.0005	1.3138	1.0000	NA	0	65	0.0000	3.7659
PABPN1	6	3.5086	0.2137	57.5994	0.4062	NA	44	1651	100.0000	95.6547

PABPN1	7	1.8368	0.1060	31.8388	1.0000	NA	0	10	0.0000	0.5794
PPP2R2B	9	0.0258	0.0005	1.3161	1.0000	NA	0	5	0.0000	0.2902
PPP2R2B	10	0.2848	0.0155	5.2307	1.0000	NA	17	674	38.6364	39.1178
PPP2R2B	11	1.0223	0.5571	1.8760	1.0000	NA	1	108	2.2727	6.2681
PPP2R2B	12	1.2045	0.6602	2.1977	0.5448	NA	0	4	0.0000	0.2322
PPP2R2B	13	1.2158	0.6664	2.2183	0.5433	NA	6	268	13.6364	15.5543
PPP2R2B	14	1.3341	0.7361	2.4179	0.3519	NA	8	193	18.1818	11.2014
PPP2R2B	15	1.0217	0.5276	1.9785	1.0000	NA	11	386	25.0000	22.4028
PPP2R2B	16	0.6608	0.1279	3.4140	0.7211	NA	1	30	2.2727	1.7411
PPP2R2B	17	0.3378	0.0205	5.5558	0.3992	NA	0	10	0.0000	0.5804
PPP2R2B	18	0.4145	0.0251	6.8360	0.6263	NA	0	31	0.0000	1.7992
PPP2R2B	19	1.3247	0.0778	22.5578	1.0000	NA	0	2	0.0000	0.1161
PPP2R2B	20	1.5384	0.0897	26.3940	1.0000	NA	0	5	0.0000	0.2902
PPP2R2B	21	2.5715	0.1446	45.7272	1.0000	NA	0	3	0.0000	0.1741
PPP2R2B	22	4.2934	0.2277	80.9626	1.0000	NA	0	1	0.0000	0.0580
PPP2R2B	23	5.5233	0.2811	108.5399	1.0000	NA	0	2	0.0000	0.1161
PPP2R2B	30	12.9026	0.5184	321.1479	1.0000	NA	0	1	0.0000	0.0580
TBP	30	0.0258	0.0005	1.3130	1.0000	NA	0	1	0.0000	0.0579
TBP	33	0.0773	0.0031	1.9246	1.0000	NA	0	1	0.0000	0.0579
TBP	34	0.1289	0.0061	2.7254	1.0000	NA	0	1	0.0000	0.0579
TBP	35	0.1806	0.0092	3.5497	1.0000	NA	0	16	0.0000	0.9265
TBP	36	1.0158	0.0604	17.0915	1.0000	NA	1	143	2.2727	8.2803
TBP	37	3.0102	0.5864	15.4514	0.1785	NA	6	384	13.6364	22.2351
TBP	38	2.3127	1.0491	5.0986	0.0310	*	30	889	68.1818	51.4765
TBP	39	0.9815	0.4437	2.1714	1.0000	NA	5	243	11.3636	14.0706
TBP	40	1.9947	0.5401	7.3667	0.3639	NA	2	38	4.5455	2.2003
TBP	41	1.6771	0.0973	28.9084	1.0000	NA	0	9	0.0000	0.5211
TBP	42	7.7551	0.3669	163.9090	1.0000	NA	0	2	0.0000	0.1158
TCF4	11	0.0284	0.0006	1.4462	1.0000	NA	3	182	6.8182	11.6071

TCF4	12	1.5607	0.5186	4.6971	0.4711	NA	0	1	0.0000	0.0638
TCF4	13	1.5704	0.5218	4.7260	0.4714	NA	2	13	4.5455	0.8291
TCF4	14	1.0282	0.4162	2.5404	1.0000	NA	6	221	13.6364	14.0944
TCF4	15	1.0562	0.5355	2.0830	1.0000	NA	0	105	0.0000	6.6964
TCF4	16	1.4544	0.7383	2.8653	0.3294	NA	1	42	2.2727	2.6786
TCF4	17	1.4611	0.7549	2.8282	0.2668	NA	12	412	27.2727	26.2755
TCF4	18	1.3790	0.7602	2.5014	0.3449	NA	0	13	0.0000	0.8291
TCF4	19	1.4287	0.7876	2.5918	0.2696	NA	0	3	0.0000	0.1913
TCF4	20	1.4405	0.7941	2.6133	0.2682	NA	0	9	0.0000	0.5740
TCF4	21	1.4766	0.8139	2.6789	0.2079	NA	1	11	2.2727	0.7015
TCF4	22	1.3913	0.7646	2.5317	0.3384	NA	1	15	2.2727	0.9566
TCF4	23	1.3247	0.7249	2.4207	0.4225	NA	2	35	4.5455	2.2321
TCF4	24	1.2145	0.6563	2.2474	0.6244	NA	4	161	9.0909	10.2679
TCF4	25	1.3620	0.7017	2.6436	0.4605	NA	4	72	9.0909	4.5918
TCF4	26	1.1031	0.5170	2.3534	0.8415	NA	2	61	4.5455	3.8903
TCF4	27	1.0777	0.4636	2.5055	1.0000	NA	2	25	4.5455	1.5944
TCF4	28	0.8187	0.3055	2.1940	0.8121	NA	0	20	0.0000	1.2755
TCF4	29	0.9297	0.3465	2.4946	1.0000	NA	1	15	2.2727	0.9566
TCF4	30	0.7834	0.2598	2.3620	0.7939	NA	0	19	0.0000	1.2117
TCF4	31	0.9069	0.3003	2.7388	1.0000	NA	0	26	0.0000	1.6582
TCF4	32	1.1466	0.3785	3.4736	1.0000	NA	2	17	4.5455	1.0842
TCF4	33	0.5633	0.1091	2.9084	0.5115	NA	0	12	0.0000	0.7653
TCF4	34	0.6547	0.1266	3.3869	0.7212	NA	0	9	0.0000	0.5740
TCF4	35	0.7440	0.1435	3.8560	1.0000	NA	0	10	0.0000	0.6378
TCF4	36	0.8748	0.1683	4.5469	1.0000	NA	0	2	0.0000	0.1276
TCF4	37	0.9064	0.1743	4.7145	1.0000	NA	0	3	0.0000	0.1913
TCF4	38	0.9582	0.1840	4.9894	1.0000	NA	0	1	0.0000	0.0638
TCF4	39	0.9768	0.1875	5.0880	1.0000	NA	0	1	0.0000	0.0638
TCF4	40	0.9961	0.1911	5.1905	1.0000	NA	0	1	0.0000	0.0638

TCF4	41	1.0161	0.1949	5.2971	1.0000	NA	0	1	0.0000	0.0638
TCF4	42	1.0369	0.1988	5.4079	1.0000	NA	0	2	0.0000	0.1276
TCF4	43	1.0811	0.2071	5.6437	1.0000	NA	0	1	0.0000	0.0638
TCF4	44	1.1045	0.2115	5.7692	1.0000	NA	0	1	0.0000	0.0638
TCF4	45	1.1290	0.2160	5.9003	1.0000	NA	0	2	0.0000	0.1276
TCF4	47	1.1813	0.2258	6.1805	1.0000	NA	0	1	0.0000	0.0638
TCF4	48	1.2093	0.2310	6.3305	1.0000	NA	0	1	0.0000	0.0638
TCF4	50	1.2385	0.2364	6.4878	1.0000	NA	0	1	0.0000	0.0638
TCF4	51	1.2692	0.2421	6.6528	1.0000	NA	0	3	0.0000	0.1913
TCF4	53	1.3708	0.2610	7.2009	1.0000	NA	0	1	0.0000	0.0638
TCF4	57	1.4083	0.2679	7.4037	1.0000	NA	0	1	0.0000	0.0638
TCF4	58	1.4478	0.2752	7.6180	1.0000	NA	0	2	0.0000	0.1276
TCF4	59	1.5337	0.2910	8.0849	1.0000	NA	0	2	0.0000	0.1276
TCF4	60	1.6302	0.3086	8.6114	0.6025	NA	0	1	0.0000	0.0638
TCF4	61	1.6831	0.3183	8.9005	0.5911	NA	0	3	0.0000	0.1913
TCF4	62	1.8639	0.3511	9.8946	0.5550	NA	1	0	2.2727	0.0000
TCF4	63	0.6073	0.0365	10.1070	1.0000	NA	0	1	0.0000	0.0638
TCF4	64	0.6298	0.0378	10.4905	1.0000	NA	0	2	0.0000	0.1276
TCF4	66	0.6801	0.0408	11.3500	1.0000	NA	0	1	0.0000	0.0638
TCF4	67	0.7083	0.0424	11.8338	1.0000	NA	0	1	0.0000	0.0638
TCF4	68	0.7389	0.0442	12.3600	1.0000	NA	0	3	0.0000	0.1913
TCF4	70	0.8487	0.0505	14.2566	1.0000	NA	0	3	0.0000	0.1913
TCF4	71	0.9961	0.0590	16.8284	1.0000	NA	0	1	0.0000	0.0638
TCF4	75	1.0572	0.0624	17.9019	1.0000	NA	0	2	0.0000	0.1276
TCF4	77	1.2046	0.0707	20.5133	1.0000	NA	0	2	0.0000	0.1276
TCF4	79	1.3991	0.0815	24.0046	1.0000	NA	0	1	0.0000	0.0638
TCF4	81	1.5217	0.0883	26.2316	1.0000	NA	0	1	0.0000	0.0638
TCF4	84	1.6677	0.0962	28.9092	1.0000	NA	0	1	0.0000	0.0638
TCF4	86	1.8445	0.1057	32.1891	1.0000	NA	0	3	0.0000	0.1913

TCF4	87	2.7010	0.1498	48.6908	1.0000	NA	0	1	0.0000	0.0638
TCF4	88	3.1941	0.1739	58.6568	1.0000	NA	0	1	0.0000	0.0638
TCF4	89	3.9064	0.2071	73.6672	1.0000	NA	0	1	0.0000	0.0638
TCF4	90	5.0257	0.2557	98.7652	1.0000	NA	0	1	0.0000	0.0638
TCF4	91	7.0404	0.3331	148.8107	1.0000	NA	0	1	0.0000	0.0638
TCF4	114	11.7416	0.4717	292.2593	1.0000	NA	0	1	0.0000	0.0638
TK2-BEAN1	8	0.0259	0.0005	1.3199	1.0000	NA	0	18	0.0000	1.0477
TK2-BEAN1	9	0.9682	0.0574	16.3221	1.0000	NA	0	7	0.0000	0.4075
TK2-BEAN1	11	1.3401	0.0803	22.3639	1.0000	NA	1	45	2.2727	2.6193
TK2-BEAN1	12	1.2402	0.2394	6.4259	1.0000	NA	2	49	4.5455	2.8522
TK2-BEAN1	13	0.8859	0.2929	2.6791	1.0000	NA	2	94	4.5455	5.4715
TK2-BEAN1	14	1.0185	0.4126	2.5138	1.0000	NA	1	114	2.2727	6.6356
TK2-BEAN1	15	1.3940	0.6019	3.2285	0.4399	NA	19	432	43.1818	25.1455
TK2-BEAN1	16	0.6053	0.3331	1.0999	0.1236	NA	6	392	13.6364	22.8172
TK2-BEAN1	17	0.8696	0.4560	1.6582	0.7458	NA	8	258	18.1818	15.0175
TK2-BEAN1	18	0.6341	0.2577	1.5604	0.3211	NA	0	90	0.0000	5.2386
TK2-BEAN1	19	0.9512	0.3855	2.3471	1.0000	NA	2	74	4.5455	4.3073
TK2-BEAN1	20	0.9121	0.3024	2.7512	1.0000	NA	2	39	4.5455	2.2701
TK2-BEAN1	21	0.5221	0.1013	2.6901	0.5166	NA	0	24	0.0000	1.3970
TK2-BEAN1	22	0.6840	0.1323	3.5355	0.7200	NA	0	17	0.0000	0.9895
TK2-BEAN1	23	0.8705	0.1678	4.5160	1.0000	NA	0	6	0.0000	0.3492
TK2-BEAN1	24	0.9618	0.1851	4.9983	1.0000	NA	0	4	0.0000	0.2328
TK2-BEAN1	25	1.0336	0.1986	5.3791	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	26	1.0531	0.2023	5.4832	1.0000	NA	0	3	0.0000	0.1746
TK2-BEAN1	27	1.1165	0.2142	5.8203	1.0000	NA	1	4	2.2727	0.2328
TK2-BEAN1	28	0.3954	0.0240	6.5168	0.6292	NA	0	7	0.0000	0.4075
TK2-BEAN1	29	0.4657	0.0282	7.6943	0.6232	NA	0	6	0.0000	0.3492
TK2-BEAN1	30	0.5486	0.0331	9.0914	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	31	0.5653	0.0341	9.3738	1.0000	NA	0	8	0.0000	0.4657

TK2-BEAN1	32	0.7462	0.0447	12.4525	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	34	0.7771	0.0465	12.9826	1.0000	NA	0	2	0.0000	0.1164
TK2-BEAN1	35	0.8472	0.0506	14.1883	1.0000	NA	0	2	0.0000	0.1164
TK2-BEAN1	36	0.9309	0.0554	15.6370	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	37	0.9793	0.0582	16.4766	1.0000	NA	0	2	0.0000	0.1164
TK2-BEAN1	38	1.0925	0.0647	18.4547	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	39	1.1593	0.0685	19.6308	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	40	1.2349	0.0727	20.9651	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	42	1.3208	0.0776	22.4918	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	43	1.4195	0.0831	24.2558	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	45	1.5339	0.0894	26.3169	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	48	1.6683	0.0968	28.7569	1.0000	NA	0	2	0.0000	0.1164
TK2-BEAN1	49	2.0219	0.1159	35.2839	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	51	2.2611	0.1285	39.7871	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	52	2.5640	0.1442	45.5941	1.0000	NA	0	2	0.0000	0.1164
TK2-BEAN1	54	3.5005	0.1906	64.2818	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	55	4.2809	0.2270	80.7272	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	60	5.5072	0.2802	108.2246	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	70	7.7146	0.3650	163.0543	1.0000	NA	0	1	0.0000	0.0582
TK2-BEAN1	75	12.8652	0.5169	320.2160	1.0000	NA	0	1	0.0000	0.0582
ZNF713	3	0.0264	0.0005	1.3478	1.0000	NA	0	1	0.0000	0.0608
ZNF713	4	0.0794	0.0032	1.9758	1.0000	NA	1	36	2.3256	2.1884
ZNF713	5	0.6606	0.1256	3.4748	1.0000	NA	0	7	0.0000	0.4255
ZNF713	6	0.7873	0.1504	4.1214	1.0000	NA	4	195	9.3023	11.8541
ZNF713	7	1.1920	0.4827	2.9432	0.8255	NA	0	59	0.0000	3.5866
ZNF713	8	1.5506	0.6291	3.8224	0.3208	NA	3	354	6.9767	21.5198
ZNF713	9	2.7430	1.2893	5.8356	0.0064	**	11	277	25.5814	16.8389
ZNF713	10	1.6299	0.8921	2.9781	0.1206	NA	5	119	11.6279	7.2340
ZNF713	11	1.3967	0.7640	2.5532	0.3357	NA	12	401	27.9070	24.3769

ZNF713	12	1.5157	0.6812	3.3726	0.3461	NA	0	74	0.0000	4.4985
ZNF713	13	2.5555	1.1402	5.7276	0.0409	*	0	13	0.0000	0.7903
ZNF713	14	2.8833	1.2835	6.4771	0.0245	*	1	5	2.3256	0.3040
ZNF713	15	2.5569	1.0863	6.0181	0.0564	Â°	0	9	0.0000	0.5471
ZNF713	16	2.8142	1.1932	6.6370	0.0396	*	2	16	4.6512	0.9726
ZNF713	17	2.2448	0.8251	6.1073	0.1574	NA	1	21	2.3256	1.2766
ZNF713	18	2.3452	0.7631	7.2073	0.2010	NA	2	31	4.6512	1.8845
ZNF713	19	2.0772	0.3905	11.0498	0.5173	NA	0	10	0.0000	0.6079
ZNF713	20	3.2844	0.6030	17.8904	0.3730	NA	1	5	2.3256	0.3040
ZNF713	21	1.5021	0.0875	25.7797	1.0000	NA	0	4	0.0000	0.2432
ZNF713	22	2.2143	0.1258	38.9789	1.0000	NA	0	5	0.0000	0.3040
ZNF713	23	5.3941	0.2744	106.0385	1.0000	NA	0	2	0.0000	0.1216
ZNF713	69	12.6015	0.5061	313.7557	1.0000	NA	0	1	0.0000	0.0608

Chapter 5

Supplementary Table S 4-1 CHOP CHOP

Probe name	Gene	sense	xsome	location_NA12878	GC	self_comp	MM0	MM1	MM2	MM3	Efficiency	PAM	Target Sequence	crRNA Probes
AFF2_101	AFF3	+	X	148494353	45	0	0	0	0	0	0.51	AGG	TTCTATTAATGACACCGCCG	AFF2_101= TTCTATTAATGACACCGCCG
AFF2_110	AFF3	+	X	148494685	50	0	0	0	0	5	0.55	TGG	GCACTGCTGATGTCACCTAA	AFF2_110= GCACTGCTGATGTCACCTAA
AFF2_7	AFF3	-	X	148501502	60	0	0	0	0	2	0.34	CGG	GTTGAGACATTTCGGGCGGG	AFF2_7= GTTGAGACATTTCGGGCGGG
AFF2_103	AFF3	-	X	148511354	45	0	0	0	0	2	0.87	CGG	GAGACAACGTTACAAAAGCG	AFF2_103= GAGACAACGTTACAAAAGCG
ARX_10	ARX	+	X	25011509	45	0	0	0	0	2	0.59	TGG	GTACGATAAACGCAAAACGC	ARX_10= GTACGATAAACGCAAAACGC
ARX_40	ARX	-	X	25013798	65	0	0	0	0	5	0.48	AGG	GATAGCTCTCCCTTGCCCGC	ARX_40= GATAGCTCTCCCTTGCCCGC
ATN1_31	ATN1	+	12	6932181	55	0	0	0	0	4	0.36	TGG	CCTGCATCAGTATGGTTCCG	ATN1_31= CCTGCATCAGTATGGTTCCG
ATN1_2	ATN1	-	12	6944829	40	0	0	0	0	0	0.62	CGG	CTACTGTACAAAACGCAACT	ATN1_2= CTACTGTACAAAACGCAACT
ATXN1_4	ATXN1	+	6	16321227	55	0	0	0	0	1	0.4	CGG	CCACGTTGATGCTATCGCCT	ATXN1_4= CCACGTTGATGCTATCGCCT
ATXN1_16	ATXN1	+	6	16320778	45	0	0	0	0	3	0.45	AGG	ACAGATTGATATGCTCACGC	ATXN1_16= ACAGATTGATATGCTCACGC
ATXN1_2	ATXN1	-	6	16339159	55	0	0	0	0	0	0.34	TGG	GCGCTTTGCATCGTGTTGTG	ATXN1_2= GCGCTTTGCATCGTGTTGTG
ATXN1_26	ATXN1	-	6	16326884	55	0	0	0	0	3	0.34	CGG	CAGCAAGCAATCACCTACGC	ATXN1_26= CAGCAAGCAATCACCTACGC
ATXN7_1	ATXN7	+	3	63912003	55	0	0	0	0	0	0.43	CGG	GCTTGACGTGCAAACTTCGC	ATXN7_1= GCTTGACGTGCAAACTTCGC
ATXN7_8	ATXN7	-	3	63915314	50	0	0	0	0	3	0.74	TGG	AGACAGGTGTACGTTCCAAG	ATXN7_8= AGACAGGTGTACGTTCCAAG
ATXN10_1	ATXN10	+	22	45789518	40	0	0	0	0	0	0.67	AGG	CTATACAGCTCAACTCAAAG	ATXN10_1= CTATACAGCTCAACTCAAAG
ATXN10_3	ATXN10	-	22	45803500	55	0	0	0	0	2	0.37	TGG	TCTCCACGCCAGATTGAGGT	ATXN10_3= TCTCCACGCCAGATTGAGGT
C9orf72_1	C9orf72	+	9	27573258	55	0	0	0	0	0	0.38	AGG	GCAATTCCACCAGTCGCTAGAGG	C9orf72_1= GCAATTCCACCAGTCGCTAG
C9orf72_115	C9orf72	-	9	27579489	40	0	0	0	0	5	0.31	AGG	GTTATCATCAACTTGGTACCAGG	C9orf72_115= GTTATCATCAACTTGGTACC
CACNA1A_1	CACNA1A	+	19	13205662	55	0	0	0	0	0	0.36	TGG	GGGATGGCTGAAACACTTCG	CACNA1A_1= GGGATGGCTGAAACACTTCG
CACNA1A_13	CACNA1A	+	19	13204550	45	0	0	0	0	4	0.42	AGG	TAGTGAACTTCATTCCTGGG	CACNA1A_13= TAGTGAACTTCATTCCTGGG
CACNA1A_18	CACNA1A	-	19	13211013	55	0	0	0	0	5	0.4	CGG	TGGAAGCTTTGAGCATCGGC	CACNA1A_18= TGGAAGCTTTGAGCATCGGC

CACNA1A_4	CACNA1A	-	19	13224614	70	0	0	0	0	2	0.47	GGG	GGCGTGACAGGGTGGAACCG	CACNA1A_4= GGCGTGACAGGGTGGAACCG
CNBP_1	CNBP	+	3	129171623	45	0	0	0	0	0	0.58	CGG	TGCCGCTACTCTAATCCCAC	CNBP_1= TGCCGCTACTCTAATCCCAC
CNBP_20	CNBP	-	3	129187713	45	0	0	0	0	5	0.76	AGG	GCTTCAGAAGCAAATACGAG	CNBP_20= GCTTCAGAAGCAAATACGAG
CSTB_21	CSTB	+	21	43871001	45	0	0	0	0	2	0.73	AGG	TTAGTCTTCCGAGAGAAACC	CSTB_21= TTAGTCTTCCGAGAGAAACC
CSTB_5	CSTB	-	21	43890270	65	0	0	0	0	2	0.42	CGG	CAAAGCGGGAAGCAGACGCG	CSTB_5= CAAAGCGGGAAGCAGACGCG
DAB1_12	DAB1	+	1	57359850	40	0	0	0	0	4	0.34	TGG	TATATCCCCTCACTAACATG	DAB1_12= TATATCCCCTCACTAACATG
DAB1_1	DAB1	-	1	57371254	50	0	0	0	0	2	0.82	CGG	GTTGGATGTGGGATACTCGA	DAB1_1= GTTGGATGTGGGATACTCGA
DIB2B_13	DIB2B	+	12	50495724	60	0	0	0	0	5	0.42	AGG	CTGGCTGTAATGCCCCCCAT	DIB2B_13= CTGGCTGTAATGCCCCCCAT
DIB2B_12	DIB2B	-	12	50512682	45	0	0	0	0	5	0.46	AGG	TGATGAAACTCATACCTGGG	DIB2B_12= TGATGAAACTCATACCTGGG
DMPK_10	DMPK	+	19	45769675	70	0	0	0	0	2	0.62	CGG	CCGGCCCACAACGCAAACCG	DMPK_10= CCGGCCCACAACGCAAACCG
DMPK_20	DMPK	+	19	45767880	75	0	0	0	0	3	0.72	CGG	CACTTAGTCCCCGCGCCCCG	DMPK_20= CACTTAGTCCCCGCGCCCCG
DMPK_5	DMPK	-	19	45778611	55	0	0	0	0	1	0.61	GGG	CATGGAGTATTACGTGGGCG	DMPK_5= CATGGAGTATTACGTGGGCG
DMPK_8	DMPK	-	19	45777103	55	0	0	0	0	1	0.54	GGG	GTAAGGCCCCAGAGTGATCA	DMPK_8= GTAAGGCCCCAGAGTGATCA
FRA10AC1_4	FRA10AC1	+	10	93699495	45	0	0	0	0	2	0.65	AGG	GTATCCTGCTTATAACGCAC	FRA10AC1_4= GTATCCTGCTTATAACGCAC
FRA10AC1_7	FRA10AC1	+	10	93699012	55	0	0	0	0	3	0.51	TGG	GTGTGCTCCACTGTAGTACG	FRA10AC1_7= GTGTGCTCCACTGTAGTACG
FRA10AC1_3	FRA10AC1	-	10	93702632	70	0	0	0	0	1	0.32	GGG	CACAAGGTCGGCGCACTCGG	FRA10AC1_3= CACAAGGTCGGCGCACTCGG
FRA10AC1_2	FRA10AC1	-	10	93717524	45	0	0	0	0	1	0.48	AGG	GGGATAACGCTCTATAAAGG	FRA10AC1_2= GGGATAACGCTCTATAAAGG
FXN_4	FXN	+	9	69036754	50	0	0	0	0	2	0.84	CGG	TATCTGACCCAGTTACGCCA	FXN_4=TATCTGACCCAGTTACGCCA
FXN_8	FXN	-	9	69049501	50	0	0	0	0	5	0.44	GGG	GGCCTAAAGTAAGACACCAG	FXN_8= GGCCTAAAGTAAGACACCAG
GIPC1_6	GIPC1	+	19	14495621	40	0	0	0	0	2	0.37	TGG	GACGATTATTATTCAGACCG	GIPC1_6= GACGATTATTATTCAGACCG
GIPC1_15	GIPC1	-	19	14505521	60	0	0	0	0	4	0.56	AGG	AAGCCATTCACCGCACCACC	GIPC1_15= AAGCCATTCACCGCACCACC
HTT_2561	HTT	+	4	3072436	45	0	1	0	0	1	0.66	AGG	TTTGCCCATTGGTTAGAAGC	HTT_2561 = TTTGCCCATTGGTTAGAAGC
HTT_2662	HTT	+	4	3072537	50	0	1	0	0	2	0.6	AGG	TCTTATGAGTCTGCCCACTG	HTT_2662 = TCTTATGAGTCTGCCCACTG
HTT_7412	HTT	-	4	3077287	45	0	1	0	0	2	0.64	AGG	GGACAAAGTTAGGTACTCAG	HTT_7412 = GGACAAAGTTAGGTACTCAG
HTT_9569	HTT	-	4	3079444	45	0	1	0	0	1	0.51	AGG	CTAGACTCTTAACTCGCTTG	HTT_9569 = CTAGACTCTTAACTCGCTTG
JPH3_3	JPH3	+	16	87601570	55	0	0	0	0	1	0.45	AGG	TTTCCCGCACGCATTTCAGG	JPH3_3= TTTCCCGCACGCATTTCAGG
JPH3_14	JPH3	+	16	87601467	65	0	0	0	0	3	0.63	CGG	GTTTCTGGCTCACCGCGCTG	JPH3_14= GTTTCTGGCTCACCGCGCTG
JPH3_7	JPH3	-	16	87605848	55	0	0	0	0	2	0.48	AGG	AGAACCGCATACCCCTTGAG	JPH3_7= AGAACCGCATACCCCTTGAG

JPH3_15	JPH3	-	16	87607086	40	0	0	0	0	3	0.53	AGG	GAACGAGAGATATAAACGAG	JPH3_15= GAACGAGAGATATAAACGAG
NIPA1_6	NIPA1	+	15	22786354	60	0	0	0	0	1	0.33	TGG	GTATGCGTGTTTCTCCGCGC	NIPA1_6= GTATGCGTGTTTCTCCGCGC
NIPA1_7	NIPA1	-	15	22795028	60	0	0	0	0	2	0.59	CGG	GGTTCGCCATCCTCACTCTG	NIPA1_7= GGTTCGCCATCCTCACTCTG
NOP56_15	NOP56	+	20	2652044	65	0	0	0	0	2	0.33	AGG	GCGCGAGCTACATTCCCAGC	NOP56_15= GCGCGAGCTACATTCCCAGC
NOP56_25	NOP56	-	20	2654929	45	0	0	0	0	3	0.44	AGG	TTACCTGACACGCATAGAGA	NOP56_25= TTACCTGACACGCATAGAGA
NOP56_33	NOP56	-	20	2656526	45	0	0	0	0	4	0.42	AGG	AGAGAAGCAATCGATTCGTG	NOP56_33= AGAGAAGCAATCGATTCGTG
PABPN1_3	PABPN1	+	14	23320347	45	0	0	0	0	1	0.44	TGG	TAAAACAATTAAGCGCGCCG	PABPN1_3= AAAACAATTAAGCGCGCCG
PABPN1_1	PABPN1	+	14	23310488	55	0	0	0	0	0	0.42	TGG	TAGTTGTGCTCGCCAGAACG	PABPN1_1= TAGTTGTGCTCGCCAGAACG
PABPN1_2	PABPN1	-	14	23326726	45	0	0	0	0	3	0.5	CGG	GCGCCATTAGGTCAGTAATT	PABPN1_2= GCGCCATTAGGTCAGTAATT
PPP2R2B_15	PPP2R2B	+	5	146875444	45	0	0	0	0	5	0.37	TGG	GCATTTGCATTGCTCTTAGC	PPP2R2B_15= GCATTTGCATTGCTCTTAGC
PPP2R2B_3	PPP2R2B	+	5	146870093	50	0	0	0	0	2	0.46	TGG	GCTGATCCTTCTACGTCAAG	PPP2R2B_3= GCTGATCCTTCTACGTCAAG
PPP2R2B_6	PPP2R2B	-	5	146889969	45	0	0	0	0	3	0.41	AGG	TCGTCTGTCACCAAATTACC	PPP2R2B_6= TCGTCTGTCACCAAATTACC
PPP2R2B_5	PPP2R2B	-	5	146907754	35	0	0	0	0	2	0.32	AGG	GCTAAACAGTAAAGTAGTGT	PPP2R2B_5= GCTAAACAGTAAAGTAGTGT
TCF4_14	TCF4	+	18	55588520	50	0	0	0	0	5	0.29	CGG	TTTTTGCCCGTTGCATCCCT	TCF4_14= TTTTTGCCCGTTGCATCCCT
TCF4_7	TCF4	+	18	55578413	50	0	0	0	0	5	0.32	TGG	CTTTTAACCCTCCCGAACCT	TCF4_7= CTTTTAACCCTCCCGAACCT
TCF4_4	TCF4	-	18	55586444	50	0	0	0	0	1	0.5	CGG	GTCGTAGGATCAGCACAAAG	TCF4_4= GTCGTAGGATCAGCACAAAG
TCF4_17	TCF4	-	18	55593153	45	0	0	0	0	4	0.63	AGG	GGTGGCACAATGAATCAGAT	TCF4_17= GGTGGCACAATGAATCAGAT
TK2BEAN1_8	TK2/BEAN1	+	16	66487905	55	0	0	0	0	3	0.4	AGG	CGAAATCAGTCACTCCCCCA	TK2BEAN1_8= CGAAATCAGTCACTCCCCCA
TK2BEAN1_80	TK2/BEAN1	-	16	66503722	40	0	0	0	0	5	0.45	GGG	GTTAGAATAACGCCCTTCAT	TK2BEAN1_80= GTTAGAATAACGCCCTTCAT

Supplementary Table S 4-2 IDT

Design ID	Gene Symbol	Position	Strand	Sequence	PAM	On-Target Score	Off-Target Score
CD.Cas9.YBBL6158.AA	AFF3	740	+	CCAACAAGGCGTATGCTAAG	GGG	74	85
CD.Cas9.XHJY3431.AA	AFF3	612	+	CCTCAGGTCACAAGCACTAT	AGG	76	65
CD.Cas9.VFYM3391.AA	AFF3	526	-	GTCAACTACACGGTGACCTT	CGG	71	56
CD.Cas9.ZYYF8484.AB	AFF3	75	-	TAGACCCATTGTAGTTAACA	AGG	75	52
CD.Cas9.JWPM7565.AA	AR	232	+	ACGGTCCGGAGCAAGCCCAG	AGG	71	77
CD.Cas9.KSLF7553.AB	AR	760	+	CTAATCTGAGAGAACACCTC	TGG	80	58
Hs.Cas9.AR.1.AL	AR	160	-	AACCTTTGCATTCGGCCAAT	GGG	67	77
CD.Cas9.BDML3353.AC	AR	322	-	TCTTCGTCAACTCACAAGAC	AGG	75	75
CD.Cas9.KZKD4817.AD	ARX	63	+	GACCCAACATCAGTTGGAGT	TGG	68	70
CD.Cas9.PSFG5472.AA	ARX	434	-	TCGGTCAATTACTTCCAAGT	CGG	87	82
Hs.Cas9.ATN1.1.AO	ATN1	724	+	GTTTTGTCTGGACCCCCAAT	GGG	75	66
Hs.Cas9.ATN1.1.AP	ATN1	247	+	CAACAAGCAGGGTCGGAGTG	AGG	69	64
CD.Cas9.VBVY8524.AE	ATN1	836	-	GTACCTGTAGTAGTCCTCCT	GGG	67	74
CD.Cas9.PHPB8497.AB	ATN1	391	-	AATAATCACACCAACGGGGC	AGG	76	76
CD.Cas9.GFBT1611.AB	ATXN2	103	+	CAAACTGCCCACCATCGTGA	AGG	68	60
CD.Cas9.PHMD0700.AB	ATXN2	181	+	TCTATTAACTGAACGAGACA	GGG	70	55
CD.Cas9.KSCT9513.AA	ATXN2	55	-	AGTAGTGCCTACAACACGGA	TGG	80	78
CD.Cas9.KSCT9513.AG	ATXN2	422	-	AACTGAAGTTACCCTACTTG	GGG	67	65
CD.Cas9.BQFG5526.AD	ATXN3	512	+	AAGGTCTTACACCTACACAC	AGG	65	59
CD.Cas9.NPMP6705.AC	ATXN3	667	+	GAGCCACCACTTCAGTGATA	TGG	77	61
CD.Cas9.NHVF2109.AA	ATXN3	694	-	GGATTACTGCTGAACGCACA	TGG	72	80
CD.Cas9.NHVF2109.AC	ATXN3	773	-	TGCCACCTCGCTACAACCAG	AGG	69	71

CD.Cas9.RVDH4447.AE	ATXN7	321	+	TCCAATTGAAGACGGTTGTG	TGG	75	76
CD.Cas9.THVF2927.AA	ATXN7	176	-	AGACAGGTGTACGTTCCAAG	TGG	82	77
CD.Cas9.VMLZ0918.AG	ATXN8	254	+	TGCAGTCACAAGGTCCCTAA	GGG	70	53
CD.Cas9.MWLT6708.AB	ATXN8	513	+	TTGAGCAGAACTCCATGCAC	TGG	79	61
CD.Cas9.DTKB7000.AE	ATXN8	64	-	TCACTAATCCCAACACATAC	AGG	70	61
CD.Cas9.ZXPN9878.AA	ATXN8	690	-	AGTTTGAGGGCACACCTTGC	AGG	70	66
CD.Cas9.ZNHF0609.AD	ATXN10	573	+	TGGTGTCATGCCCACTGAAC	AGG	73	61
CD.Cas9.MQBQ8139.AA	ATXN10	520	-	CGGCTGAGATAAACCATCAT	AGG	74	85
CD.Cas9.KVPN8357.AA	CNBP	190	+	ACTGCGATAGGGTTAGCCAA	AGG	70	86
CD.Cas9.FSKF2793.AA	CNBP	881	-	ATTCACCAGTGGCACGGAAA	GGG	80	74
CD.Cas9.PYTB7955.AB	CSTB	197	+	AATCTCGGTCAACACAAGAG	AGG	83	71
Hs.Cas9.CSTB.1.AE	CSTB	295	-	CGTGTCATTCAAGAGCCAGG	TGG	87	61
CD.Cas9.GQQN2264.AI	C9orf72	29	+	GGCAAGCTCACCCTTAGGGA	AGG	62	61
CD.Cas9.LVRZ6927.AB	C9orf72	364	-	AAGCCTGGTGGTGTTCAACG	CGG	71	74
CD.Cas9.TVZH6022.AE	C11orf80	787	+	ATCAAGTTTGATGGTTACGA	TGG	75	75
CD.Cas9.QJRS8863.AA	C11orf80	213	+	ACTAAGGTGACCTTAACCAA	GGG	100	65
CD.Cas9.BDMW5547.AC	C11orf80	232	-	CTCAACGTCCCATTGGGCAC	CGG	66	82
CD.Cas9.HVQR0957.AC	C11orf80	740	-	CTATGAATAAGAGTGGCATC	TGG	69	55
CD.Cas9.NQGP8826.AD	DAB1	167	+	TGTATATCTTGATACTACGT	GGG	72	75
CD.Cas9.TBBG0086.AB	DAB1	510	-	GCGAGCACTGTCCCAACTTT	GGG	67	81
CD.Cas9.VKTC9335.AE	DIP2B	331	+	CGGCCGATTTCACCTTTCAA	TGG	57	73
CD.Cas9.HQKW0251.AE	DIP2B	243	-	GGGGAACTTAAGGTATAACT	GGG	61	71
CD.Cas9.WHMJ4495.AB	FMR1	580	+	AACGGATGAAAGTGCATCAC	AGG	68	71
CD.Cas9.WJVL5971.AA	FMR1	124	+	GACTTGATTGACACCTCAAC	AGG	81	78
CD.Cas9.FZBH8984.AB	FMR1	371	-	GTGACCAAAACCACTAATCT	AGG	70	62
CD.Cas9.VSCB0169.AB	FMR1	339	-	CTTCATATCTTAACACCTGC	AGG	71	56

CD.Cas9.LDPX1589.AA	FXN	433	+	TACACAAGGCATCCGTCTCC	TGG	66	75
CD.Cas9.NFXD6642.AB	FXN	959	-	CGTCACATCCCTCCATCAAA	TGG	77	60
CD.Cas9.KJYK6553.AA	GICP1	616	+	CAATCTCGGTGTTTGCCAGC	TGG	63	75
CD.Cas9.ZBQF1534.AC	GICP1	643	-	GGACGCTGTTGTCATTACTA	TGG	59	75
CD.Cas9.SVNW9313.AA	LRP	156	+	ACCAACTCCGACACATTACT	AGG	67	81
CD.Cas9.SVNW9313.BS	LRP	196	+	GAGAGTTTGCTGTGGTATAG	GGG	59	49
CD.Cas9.KWSF3475.AG	LRP	319	-	ACAGATGTGTACACCCTAAC	AGG	55	74
CD.Cas9.KWSF3475.AJ	LRP	249	-	GCTGCTCCCGGGGAACCAAC	AGG	51	72
CD.Cas9.BBJB7263.AH	NIPA	420	+	AATGTATTTCAGAGCAACGT	GGG	74	55
CD.Cas9.PMWV6717.AE	NIPA	163	-	CGCAAGATGTTCTTCTACTC	CGG	66	79
CD.Cas9.BMQG4283.AA	NOP56	304	+	GAGTACGACTGGTTACCTTT	TGG	83	84
CD.Cas9.CHLJ3849.AA	NOP56	429	-	ACTATCACAAGCTGCCCGAG	AGG	82	81
CD.Cas9.YPVF8682.AW	NOTCH2NLC	497	+	TTCTTAGCCCACTTGTACCC	AGG	58	66
CD.Cas9.FWYC5841.AA	NOTCH2NLC	196	+	TCCTTAAGTTGATCCAGAGT	TGG	85	54
CD.Cas9.SKBQ8130.AB	NOTCH2NLC	937	-	AAGCGCATTTGTACATGAGA	TGG	73	56
CD.Cas9.RVJV9572.AC	NOTCH2NLC	339	-	GGTGATCCATAATCTTGCGT	TGG	62	76
CD.Cas9.WSJB4408.AB	NUTM2B-AS1	103	+	CTTTACGAGAACATGCAATA	TGG	67	63
CD.Cas9.TVGC0533.AJ	NUTM2B-AS1	232	+	CTGCACACCGTCAACACATA	AGG	57	45
CD.Cas9.JCKC5802.AE	NUTM2B-AS1	180	-	TAGCCAAAGCTTTTGTATAC	TGG	63	56
CD.Cas9.TMYW3698.AA	NUTM2B-AS1	434	-	TGGCACGTCACCAATTTTGA	GGG	91	76
CD.Cas9.JRSZ2963.BI	PABPN1	957	-	AGTGATCGCTGACCCATCCC	CGG	54	67
Hs.Cas9.TBP.1.AE	TBP	470	+	CACCAATAGTCTGTCTATTT	TGG	68	62
Hs.Cas9.TBP.1.AF	TBP	640	-	CTGGGACGTTGACTGCTGAA	CGG	54	52
CD.Cas9.PRHZ0840.AA	TBP	863	-	ACTCAAAGGGACTCCTAAGT	GGG	90	68
CD.Cas9.PRHZ0840.AF	TBP	268	+	ATAACCCCATTATTCTCCGA	AGG	64	78
CD.Cas9.HJBY0710.AC	TK2BEAN1	694	-	GGCGACCCTCAACCAACCAA	GGG	68	76

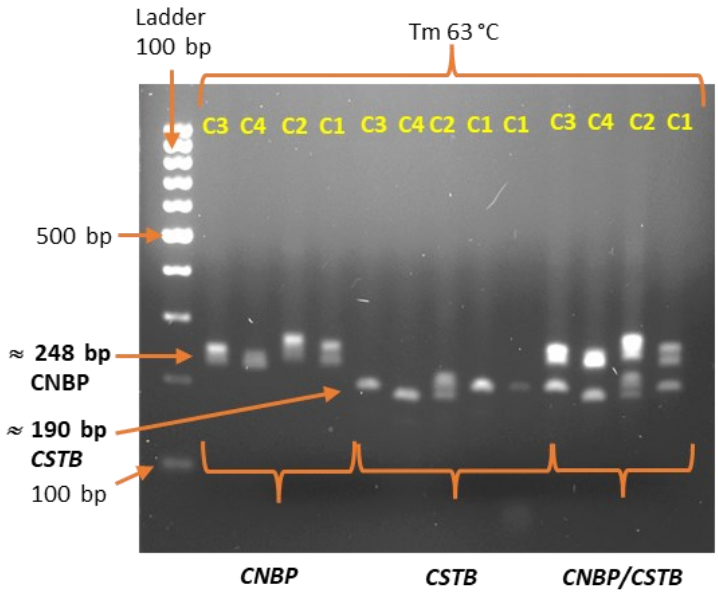
CD.Cas9.HJBY0710.AR	TK2BEAN1	63	+	ATCCCAGCTGTGACGAGCCC	AGG	51	60
CD.Cas9.FHBQ9091.AA	ZNF713	624	+	GTTCTCACCTAACCTTCAAT	TGG	90	52
CD.Cas9.FHBQ9091.AB	ZNF713	516	+	CCAAGCTCAATCTATAGTTC	TGG	69	56
CD.Cas9.JPMG9712.AC	ZNF713	684	-	CACCAAAGATGCATACTCTA	AGG	72	50
CD.Cas9.JMFY9225.AF	ZNF713	118	-	TGACTCAACGGATAACAGCA	AGG	64	68

Supplementary Figures

Chapter 2

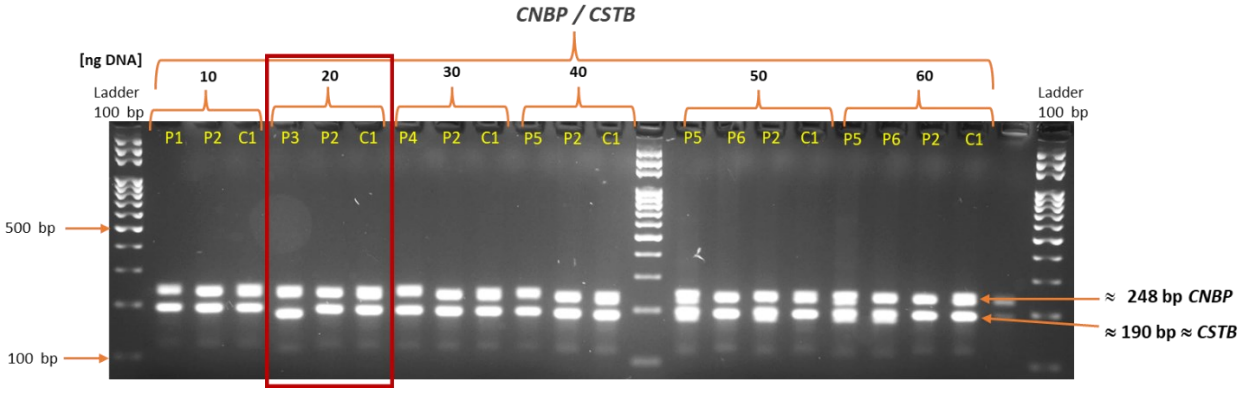
2.1 Panel 3: *AFF3*, *CNBP*, *CSTB* and *ZNF713* genes

Multiplex 3: *CNBP* and *CSTB* genes



Supplementary Figure S 2-1 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *CNBP* and *CSTB* genes.

PCR products for *CNBP* using a TM of 63°C and four different controls, expected amplicon of ≈248 bp. PCR products for *CSTB* using a TM of 63°C and four different controls, expected amplicon of ≈190 bp. Multiplex PCR products for *CNBP* and *CSTB* using a TM of 63°C and four different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1, C2, C3, C4; Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).



Supplementary Figure S 2-2 Photographic recording of the electrophoretic run on 2.5% agarose gel of the multiplex PCR products from a gDNA gradient of CNBP and CSTB genes.

The multiplex PCR was set up having the same conditions obtained from the optimized multiplex PCR but only changing the amount of initial gDNA added to the mix. Two patients and one control (C1) were selected per each concentration of gDNA PCR. The lowest optimum initial concentration of gDNA for this multiplex is 20ng (marked

by the red square). (gDNA Patients: P1, P2, P3, P4, P5, P6, P7; NC: negative control, no gDNA; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***CNBP* gene**

(Primers were taken from(C L Liquori et al. 2001)

CNBP F: 5'- GCCTAGGGGACAAAGTGAGA - 3'

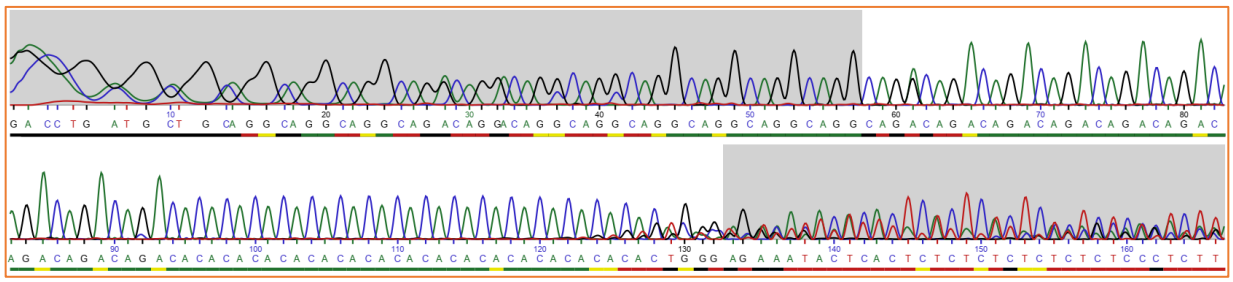
CNBP R: 5'- GGCCTTATAACCATGCAAATG - 3'

PCR *in silico*: 248bp → 20 **CAGG** repeats

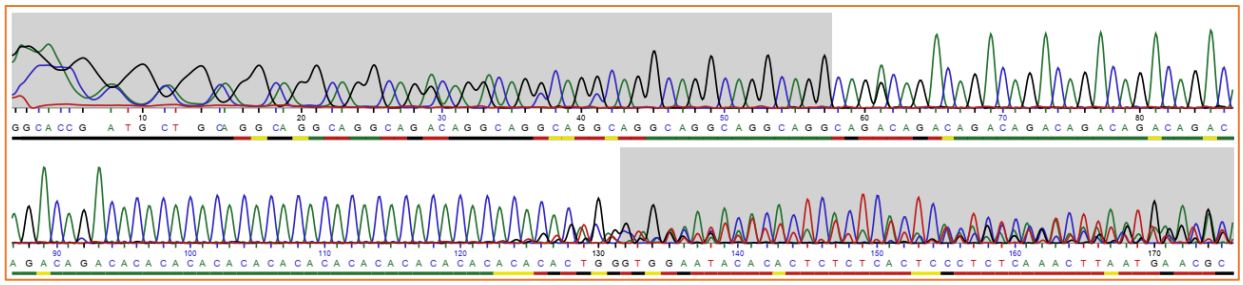
Sequence forward:

GCCTAGGGGACAAAGTGAGACAGA**CAGGCAGGCAGGCAGGCAGGCAGGCAGGCAGACAGGCA GACAGGCAGCCAGGCAGGCAGGCAGGCAGGCAGGCAGG**CAGACAGACAGACAGACAG ACAGACAGACAGACAGACAGACACACACACACACACACACACACACACACACACACACTGGCAGT AATACTCATTCACTCATTCCAAGTCCAACTTAATGGACACATTTGCATGGTTATAAGGCC

- Sequencing result of the individual PCR - sequence forward:



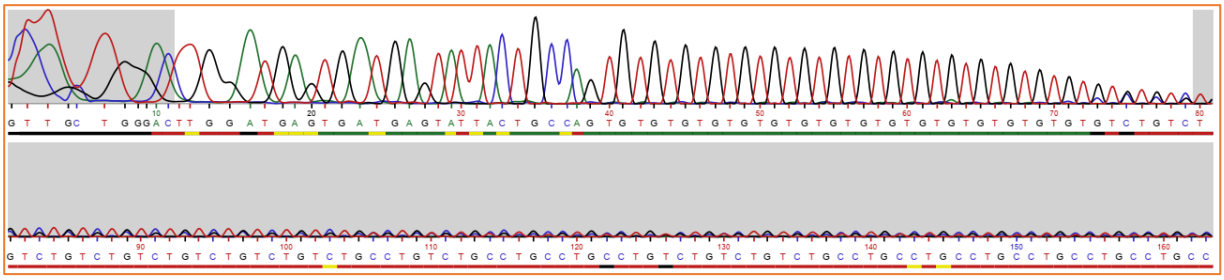
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

GGCCTTATAACCATGCAAATGTGTCCATTAAGTTGGACTTGGAATGAGTGAATGAGTATTACTGCCA GTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTCTGTCTGTCTGTCTGTCTGTCTGTCTG TCTGTCTG**CCTGCCTGCCTGCCTGCCTGCCTGCCTGCCTGGCTGCCTGTCTGCCTGTCTGCCT GCCTGCCTGCCTGCCTG**CCTGCCTGTCTG**TCTCACTTTGTCCCCTAGGC**

- Sequencing result of the individual PCR - sequence reverse:



***CSTB* gene**

(Primers designed using primer3 tool)

CSTB P1A-F: 5'- CGCCCGGAAAGACGATACC - 3'

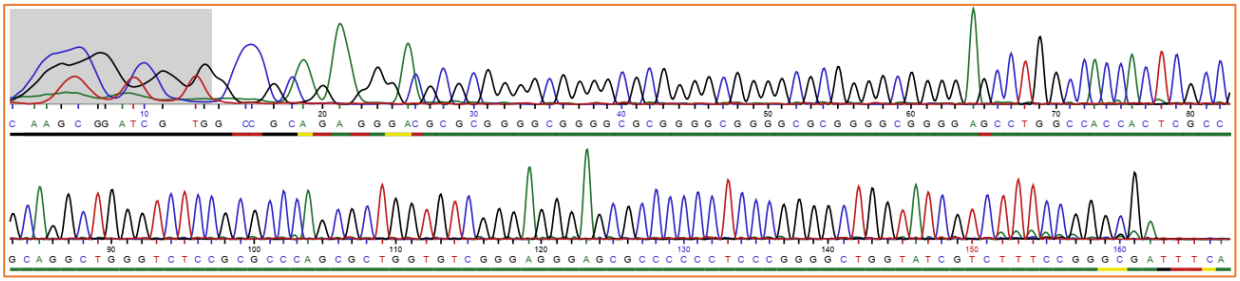
CSTB P1A-R: 5'- GGCACTTTGGCTTCGGAGT - 3'

PCR *in silico*: 190bp → 3 **CCCCGCCCCGCG** repeats

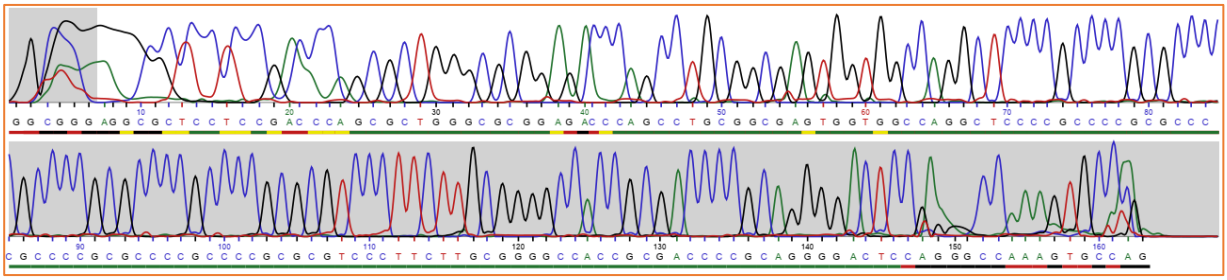
Sequence forward:

CGCCCGGAAAGACGATACCAGCCCCGGGAGGGGGGCGCTCCCTCCCGACACCAGCGCTGGGCGCG
GAGACCCAGCCTGCGGCGAGTGGTGGCCAGGCTCCCCGCCCCCGCCCCCGCCCCCGCCCCCGC
CCCGCGCGTCCCTTCTTGCGGGGCCACCGCGACCCCGCAGGGGACTCCGAAGCCAAAGTGCC

- Sequencing result of the individual PCR - sequence forward:



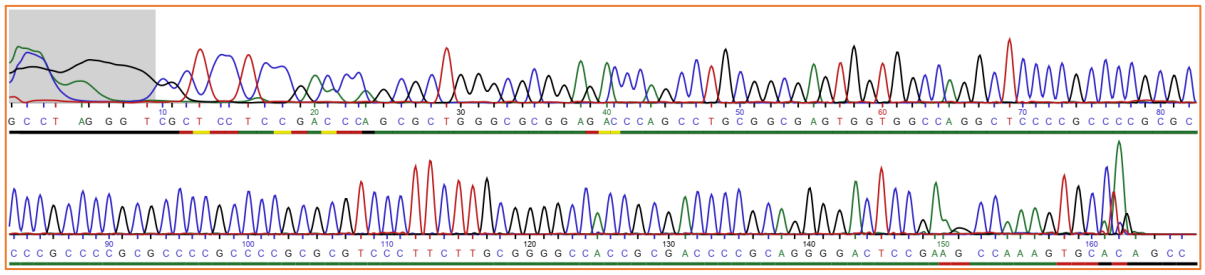
- Sequencing result multiplex PCR - sequence forward:



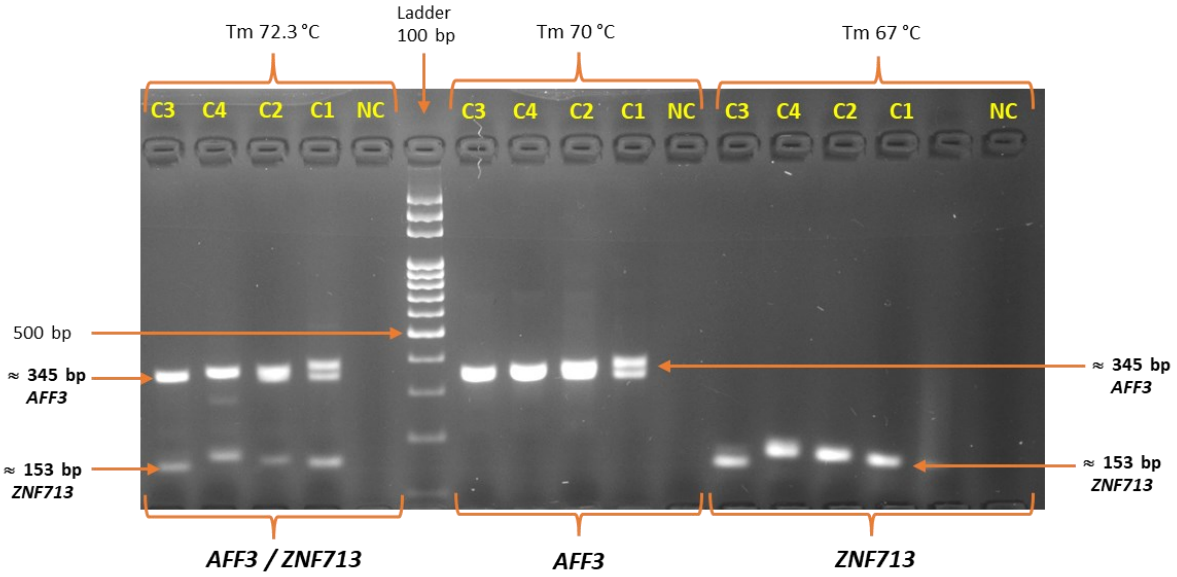
Reverse complement sequence:

GGCACTTTGGCTTCGGAGTCCCCTGCGGGGTCGCGGTGGCCCCGCAAGAAGGGACGCGCGGGGCG
GGGCGCGGGGCGGGGCGCGGGGCGGGGAGCCTGGCCACCACTCGCCGCAGGCTGGGTCTCCGC
GCCCAGCGCTGGTGTCGGGAGGGAGCGCCCCCCTCCCGGGGCTGGTATCGTCTTTCCGGGCG

- Sequencing result of the individual PCR - sequence reverse:

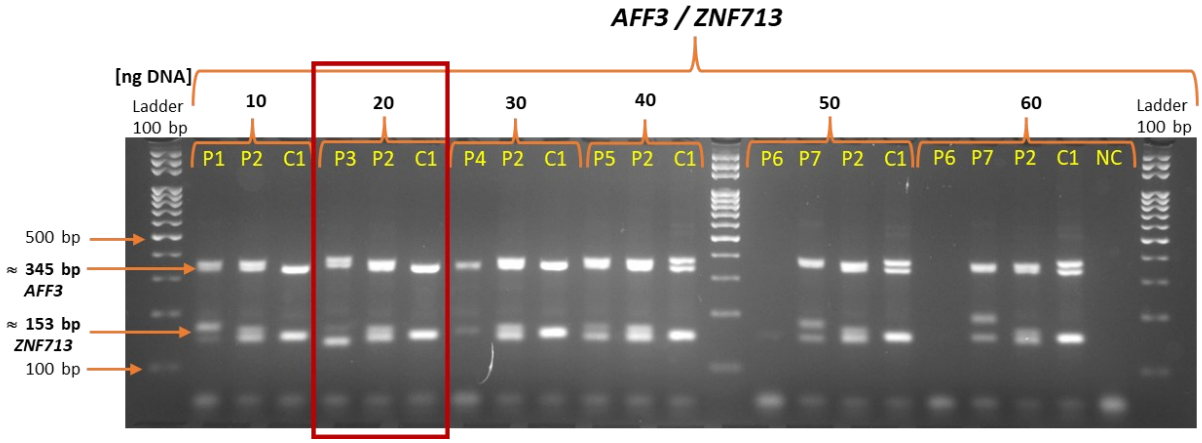


Multiplex 4: *AFF3* and *ZNF713* genes



Supplementary Figure S 2-3 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of AFF3 and ZNF713 genes.

PCR products for *AFF3* using a TM of 70°C and four different controls, expected amplicon of ≈345 bp. PCR products for *ZNF713* using a TM of 67°C and four different controls, expected amplicon of ≈153 bp. Multiplex PCR products for *AFF3* and *ZNF713* using a TM of 72.3°C and four different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1, C2, C3, C4; NC: negative control, no gDNA; Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).



Supplementary Figure S 2-4 Photographic recording of the electrophoretic run on 2.5% agarose gel of the multiplex PCR products from a gDNA gradient of AFF3 and ZNF713 genes.

The multiplex PCR was set up having the same conditions obtained from the optimized multiplex PCR but only changing the amount of initial gDNA added to the mix. Two patients and one control (C1) were selected per each concentration of gDNA PCR. The lowest optimum initial concentration of gDNA for this multiplex is 20ng (marked by the red square). (gDNA Patients: P1, P2, P3, P4, P5, P6, P7; NC: negative control, no gDNA; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***AFF3* gene**

(Primers were taken from(Metsu, Rooms, et al. 2014)

AFF3 F: 5'- GGCCGTAAAAGCCACGAGAGAGGG- 3'

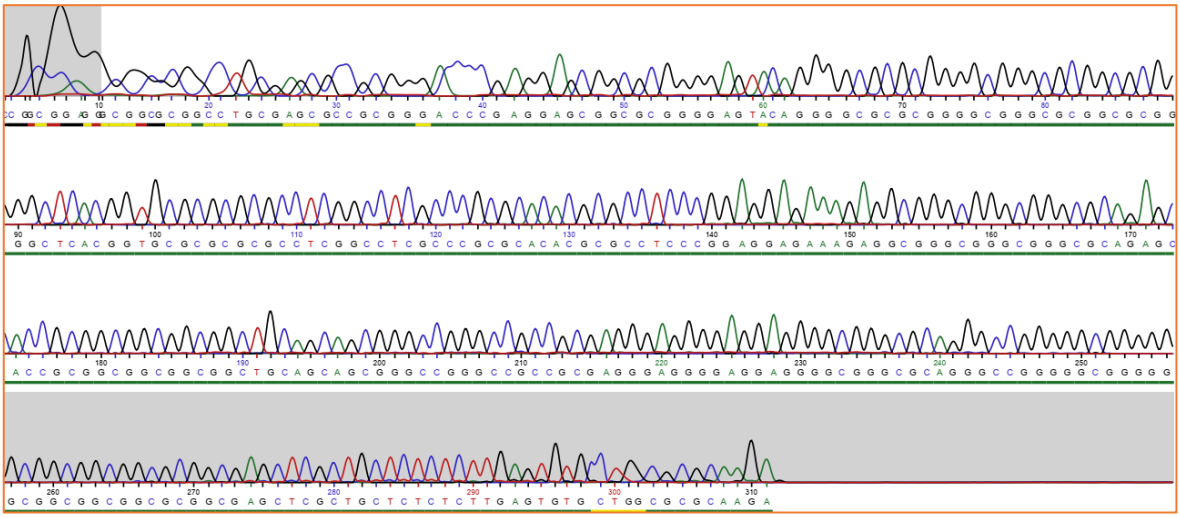
AFF3 R: 5'- CTTGCGCGCAGGCACACTCAAGAG- 3'

PCR *in silico*: 345bp → 8 **CGG** repeats

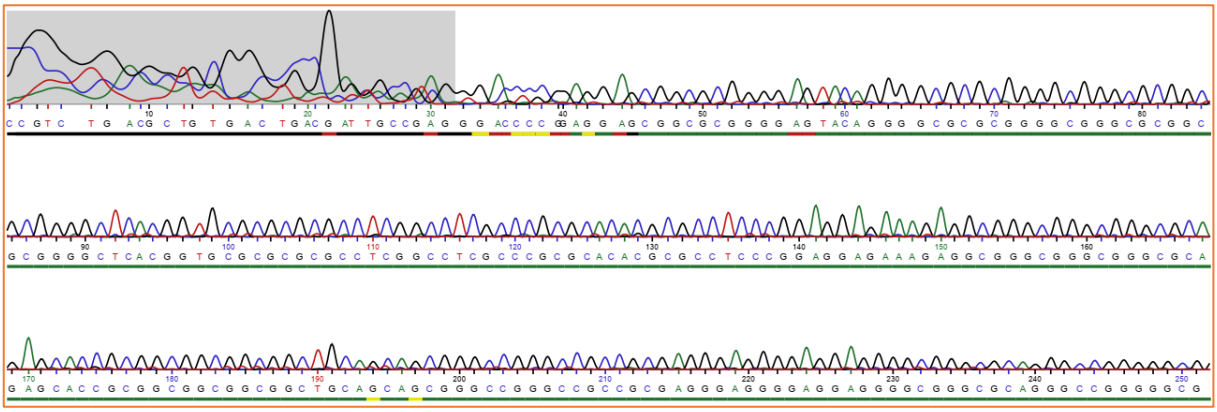
Sequence forward:

GGCCGTAAAAGCCACGAGAGAGGGGCGGCAGGGCGGCGCGGCCTGCGAGCGCCGCGGGACCCCGA
GGAGCGGCGCGGGGAGTACAGGGGCGCGCGGGGCGGGCGCGGCGCGGGGCTCACGGTGCGCGCGC
GCCTCGGCCTCGCCCGCGCACACGCGCCTCCCGGAGGAGAAAGAGGCGGGCGGGCGGGCGCAGAG
CACCGCGGCGGCGGCGGCGGCGGCGGCGGCTGCAGCAGCGGGCCGGGCCGCCGCGAGGGAGGG
GAGGAGGGGCGGGCGCAGGGCCGGGGGCGGGGGGCGGCGGCGGCGCGGCGAGCTCGCTGCTCTCT
CTTGAGTGTGCCTGCGCGCAAG

- Sequencing result of the individual PCR - sequence forward:



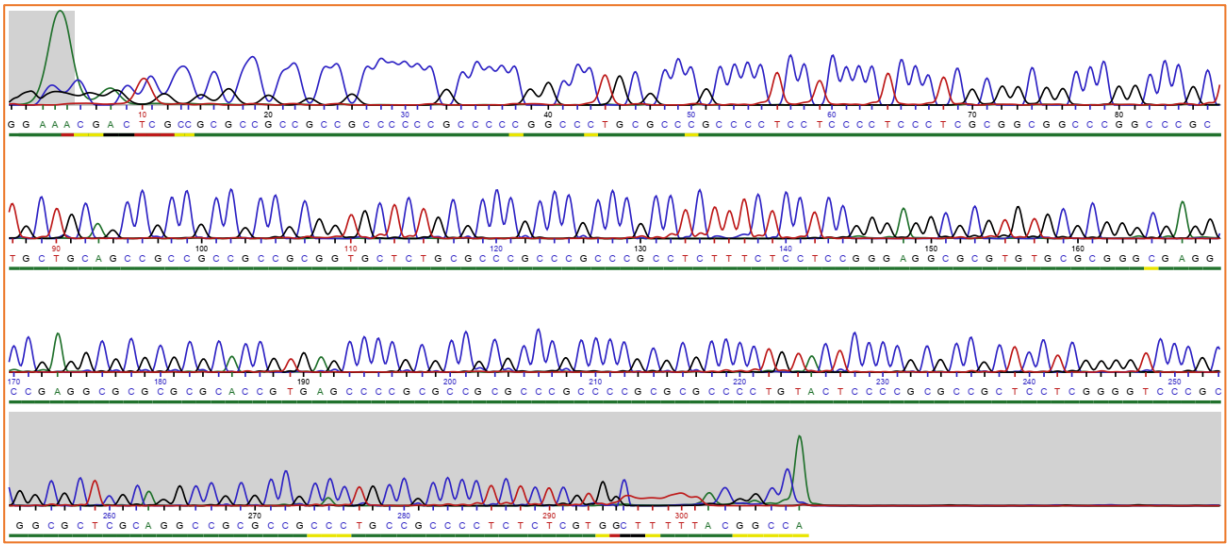
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

CTTGCGCGCAGGCACACTCAAGAGAGAGCAGCGAGCTCGCCGCGCCGCCGCCGCCCCCCGCCCCCG
GCCCTGCGCCCGCCCCTCCTCCCCTCCCTCGCGGCGGCCCGGCCCGCTGCTGCAGCCGCCGCCGCC
GCCGCCGCCGCCGCGGTGCTCTGCGCCCGCCCGCCCGCCTCTTTCTCCTCCGGGAGGCGCGTGTGC
GCGGGCGAGGCCGAGGCGCGCGCGCACCGTGAGCCCCGCGCCGCGCCCGCCCCGCGCGCCCCTGTA
CTCCCCGCGCCGCTCCTCGGGGTCCCGCGGCGCTCGCAGGCCGCGCCGCCCTGCCGCCCCTCTCTCG
TGGCTTTTACGGCC

- Sequencing result of the individual PCR - sequence reverse:



***ZNF713* gene**

(Primers were taken from(Metsu, Rainger, et al. 2014)

ZNF713 F: 5'- AGTCACCGGGCGTCATTGGCT- 3'

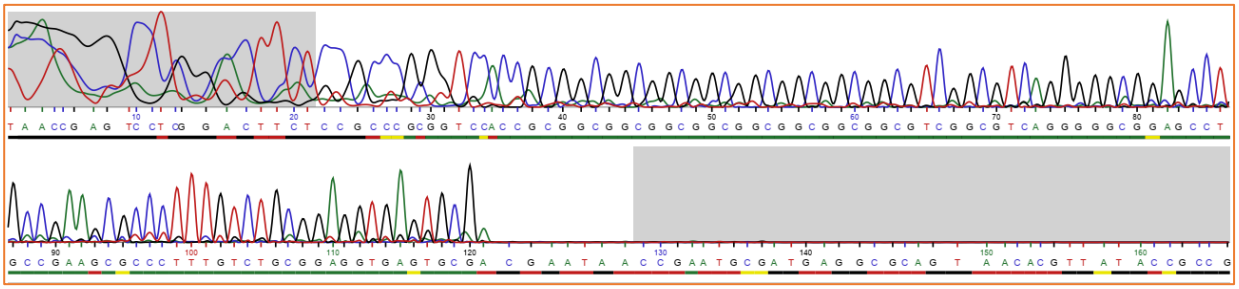
ZNF713 R: 5'- CGCACTCACCTCCGCAGACA- 3'

PCR *in silico*: 153bp → 12 **CGG** repeats

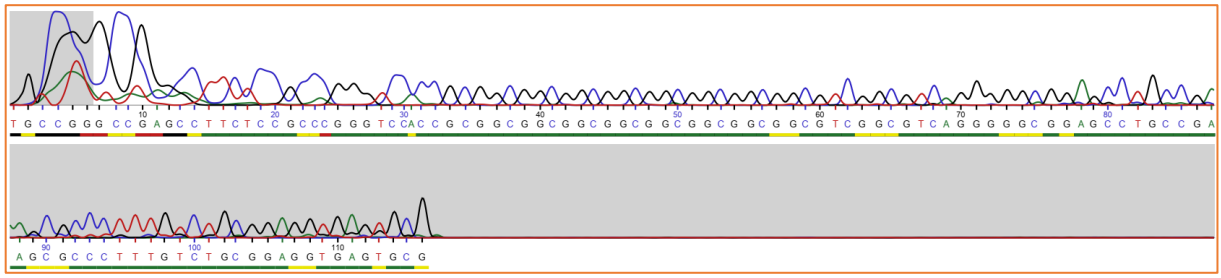
Sequence forward:

AGTCACCGGGCGTCATTGGCTCAGGCTGCGGGGCCCTCGGCACCTTCTCCCTCCCGGGTCCACCGC
GGCGGCGGCGGCGGCGGCGGCGGCGGCGGCGGCGGCGGCGTCAGGGGGCGGAGCCTGCCGAAGCG
CCCTTTGTCTGCGGAGGTGAGTGCG

- Sequencing result of the individual PCR - sequence forward:



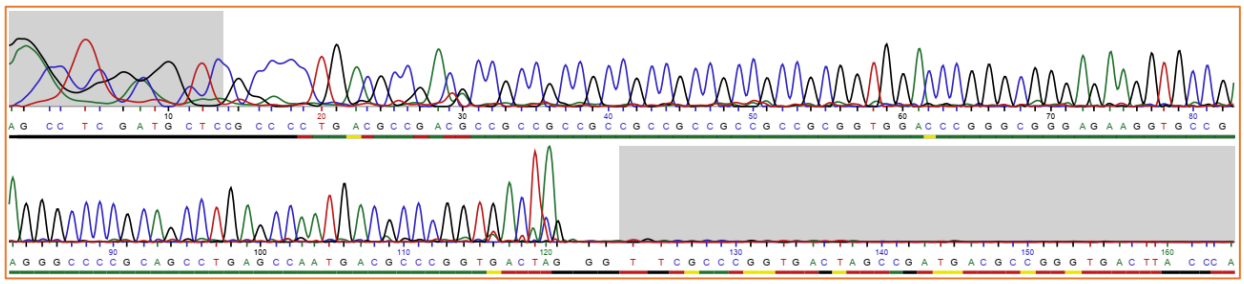
- Sequencing result multiplex PCR - sequence forward:



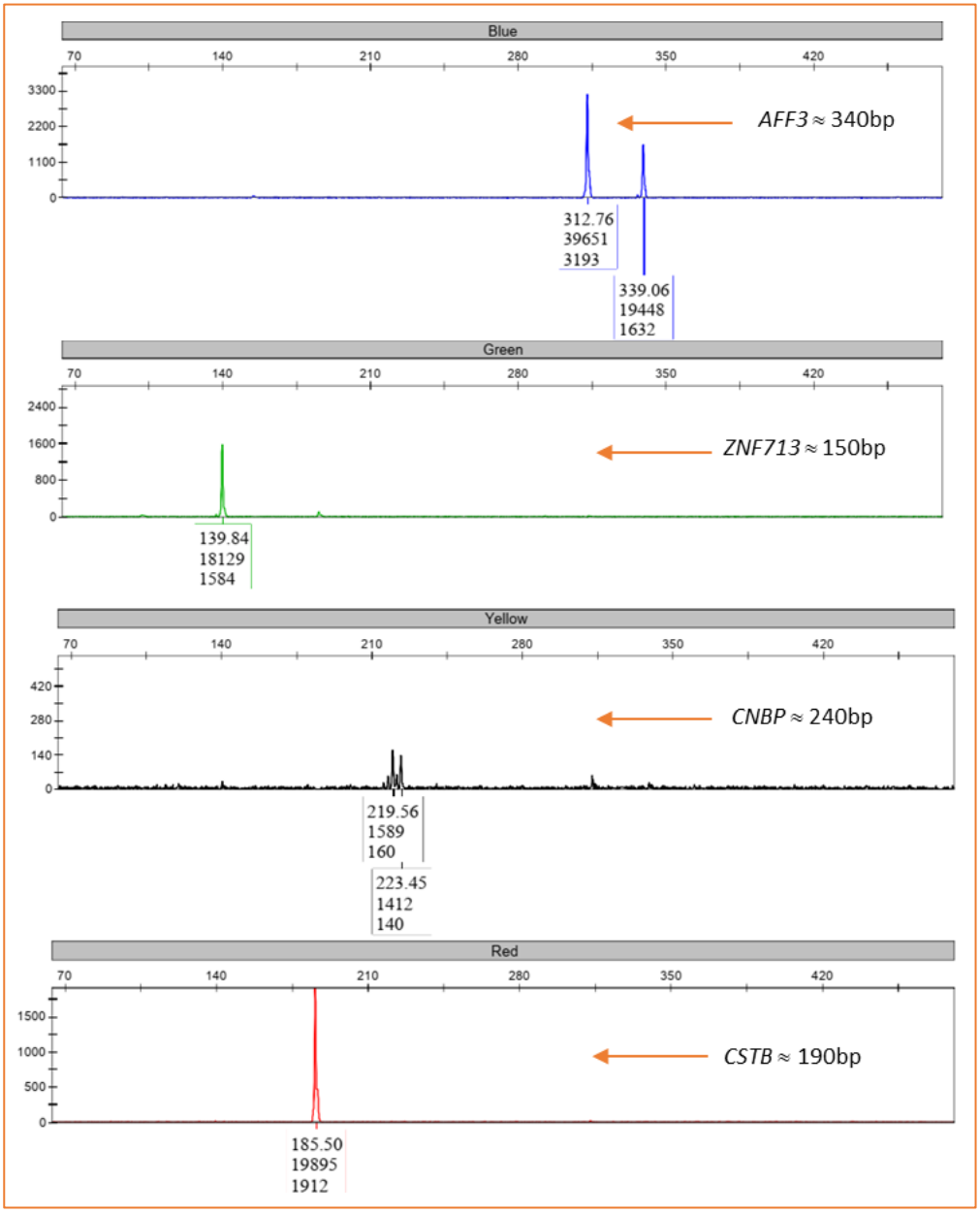
Reverse complement sequence:

CGCACTCACCTCCGCAGACAAAGGGCGCTTCGGCAGGCTCCGCCCCCTGACGCCGCCGCCGCCGC
CGCCGCCGCCGCCGCCGCCGCCGCCGCGGTGGACCCGGGAGGGAGAAGGTGCCGAGGGCCCCGCAG
CCTGAGCCAATGACGCCCGGTGACT

- Sequencing result of the individual PCR - sequence reverse:



FLA results

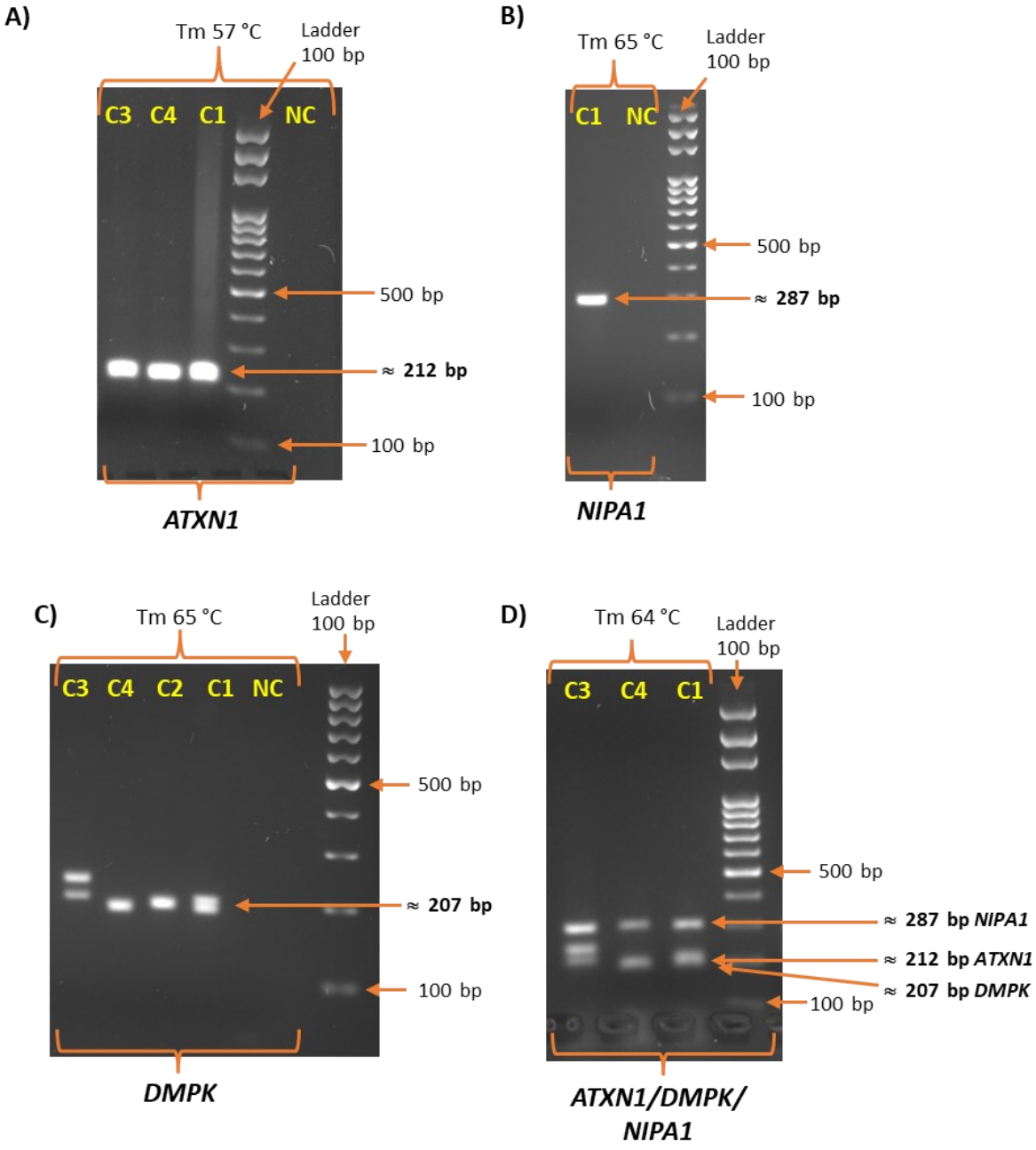


Supplementary Figure S 2-5 Capillary electropherogram of Multiplexes 3 and 4: CNBP, CSTB, AFF3 and ZNF713 genes.

Panel 3: Filter-set MWGG5, dilution 1:20, Control 1 gDNA. Blue traces correspond to *AFF3* gene with Fluorescin label; C1 is heterozygote with 312.76bp and 339.06bp alleles. Green trace corresponds to *ZNF713* gene with Yakima Yellow label; C1 is homozygote with 139.384 bp alleles. Yellow traces correspond to *CNBP* gene with Atto550 label; C1 is heterozygote with 219.56bp and 223.45bp alleles. Red traces correspond to *CSTB* gene with Atto565 label; C1 is homozygote with 185.50bp alleles. 20µL FLA mix of PCR products = 10 µL *CNBP / CSTB* + 10 µL *AFF3 / ZNF713*.

2.2 Panel 4: *ATXN1*, *DMPK* and *NIPA1* genes

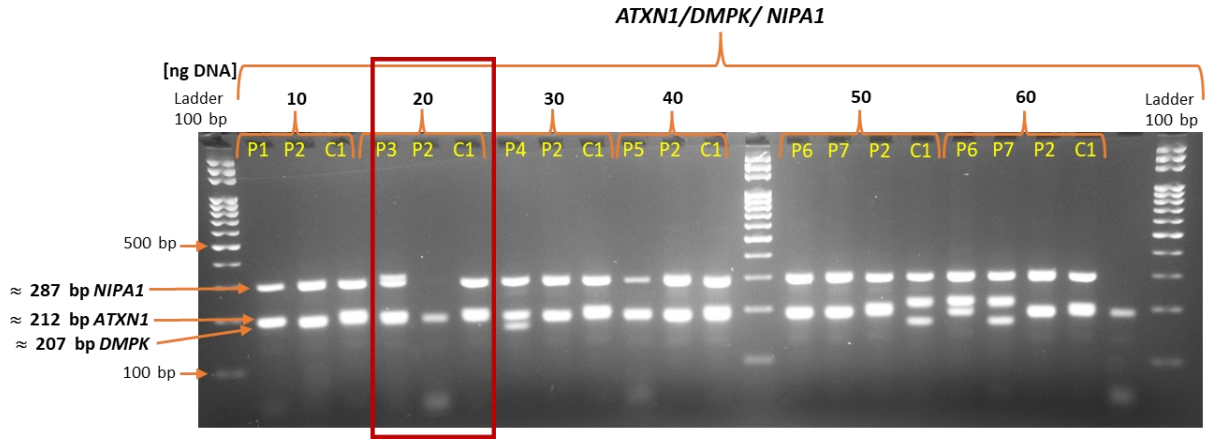
Multiplex 5



Supplementary Figure S 2-6 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *ATXN1*, *NIPA1* and *DMPK* genes

A) *ATXN1* PCR products using a TM of 57°C and three different controls, expected amplicon of ≈212bp. **B)** *NIPA1* PCR products using a TM of 65°C and one control, expected amplicon of ≈287bp. **C)** *NIPA1* PCR products using a TM of 65°C and four different controls, expected amplicon of ≈207bp. **D)** Multiplex PCR products for *ATXN1, NIPA1* and *DMPK* genes using a TM of 64°C and three different controls. All PCRs used Hot FirePol® DNA

Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1, C2, C3, C4; NC: negative control, no gDNA Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).



Supplementary Figure S 2-7 Photographic recording of the electrophoretic run on 2.5% agarose gel of the multiplex PCR products from a gDNA gradient of *ATXN1*, *NIPA1* and *DMPK* genes.

The multiplex PCR was set up having the same conditions obtained from the optimized multiplex PCR but only changing the amount of initial gDNA added to the mix. Two patients and one control (C1) were selected per each concentration of gDNA PCR. The lowest optimum initial concentration of gDNA for this multiplex 5 is 20ng (marked by the red square). (gDNA Patients: P1, P2, P3, P4, P5, P6, P7; NC: negative control, no gDNA; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***ATXN1* gene**

(Primers were taken from(Lai et al. 2009)

SCA1-F: 5'- CAACATGGGCAGTCTGAG - 3'

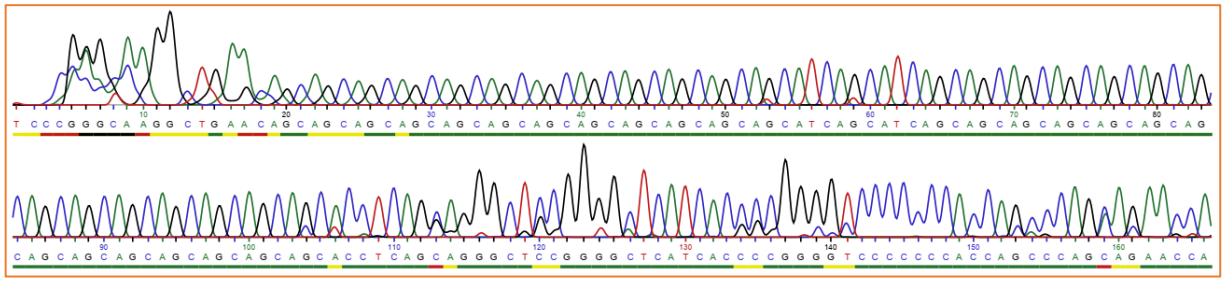
SCA1-R: 5'- AACTGGAAATGTGGACGTAC - 3'

PCR *in silico*: 212bp → 8 **CAG** repeats, 2 **CAT**

Sequence forward:

CAACATGGGCAGTCTGAGCCAGACGCCGGGACACAAGGCTGAG**CAGCAGCAGCAGCAGCAGCAGCAG**
CAGCAGCAGCAGCAGCATCAGCATCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGC
AGCAGCACCTCAGCAGGGCTCCGGGGCTCATCACCCCGGGGTCCCCCCCACCAGCCCAGCAGAACC
AGTACGTCCACATTTCCAGTT

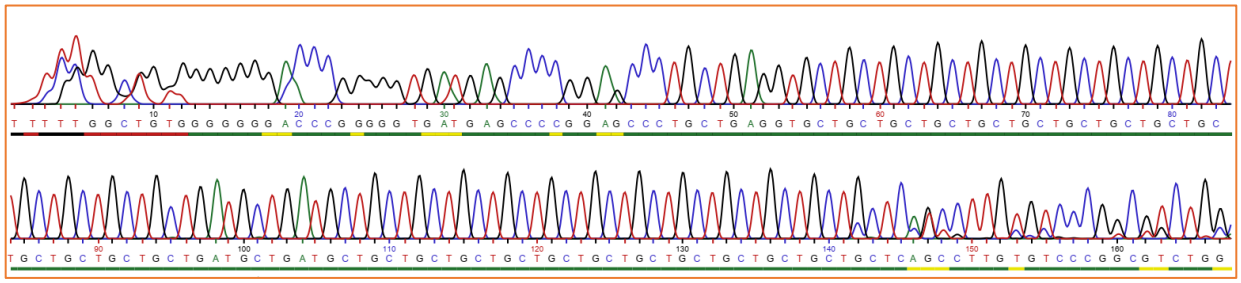
- Sequencing result of the individual PCR - sequence forward:



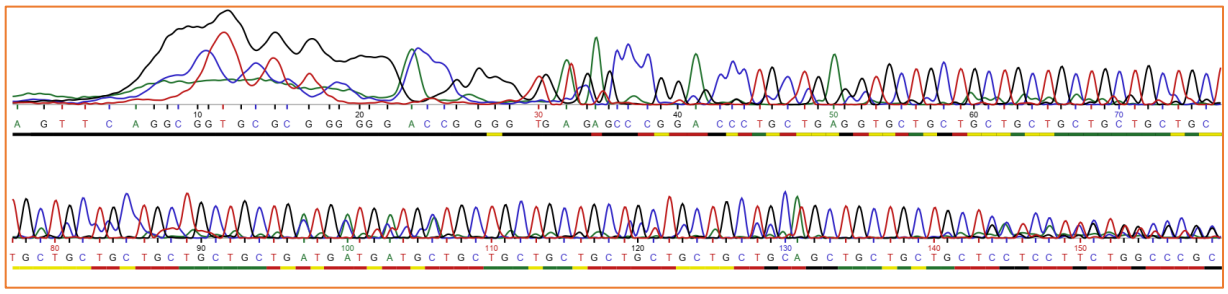
Reverse complement sequence:

AACTGGAAATGTGGACGTACTGGTTCTGCTGGGCTGGTGGGGGGGACCCCGGGGTGATGAGCCCCG
GAGCCCTGCTGAGGTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGATGCT
GATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTCAGCCTTGTGTCCCGGCGTCTG
GCTCAGACTGCCCATGTTG

- Sequencing result of the individual PCR - sequence reverse:



- Sequencing result multiplex PCR - sequence reverse:



***DMPK* gene**

(Primers were taken from (Singh et al. 2014)

DMPK-TP-PCR P1-F: 5'- GGGGCTCGAAGGGTCCTTGT - 3'

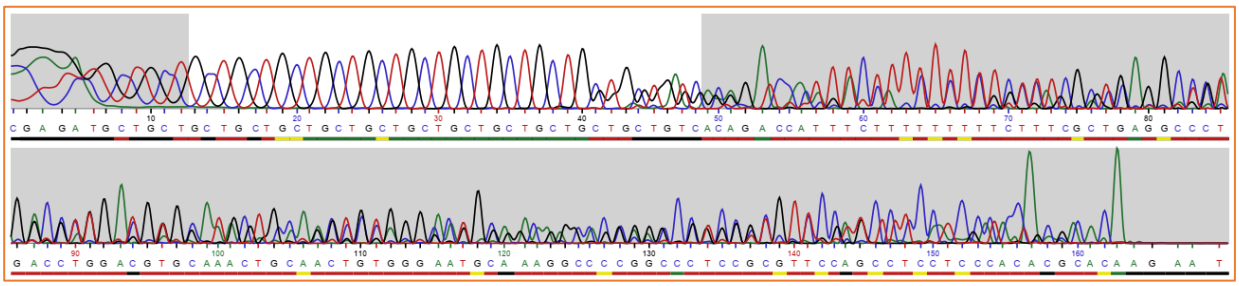
DMPK- P2-R: 5'- GTGCGTGGAGGATGGAACACG - 3'

PCR *in silico*: 207bp → 20 **CTG (CAG)** repeats

Sequence forward:

GGGGCTCGAAGGGTCCTTGTAGCCGGGAATGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGGGGGGATCACAGACCATTTCTTTCTTTCGGCCAGGCTGAGGCCCTGACGTGGATGGGCAAACTGCAGGCCTGGGAAGGCAGCAAGCCGGGCCGTCCGTGTTCCATCCTCCACGCAC

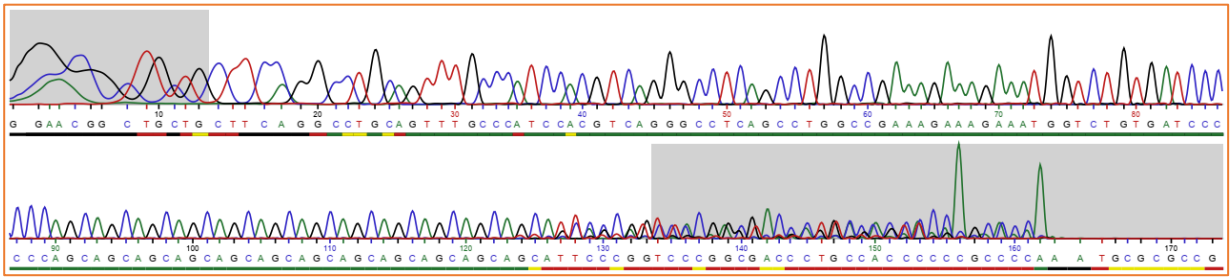
- Sequencing result of the individual PCR - sequence forward:



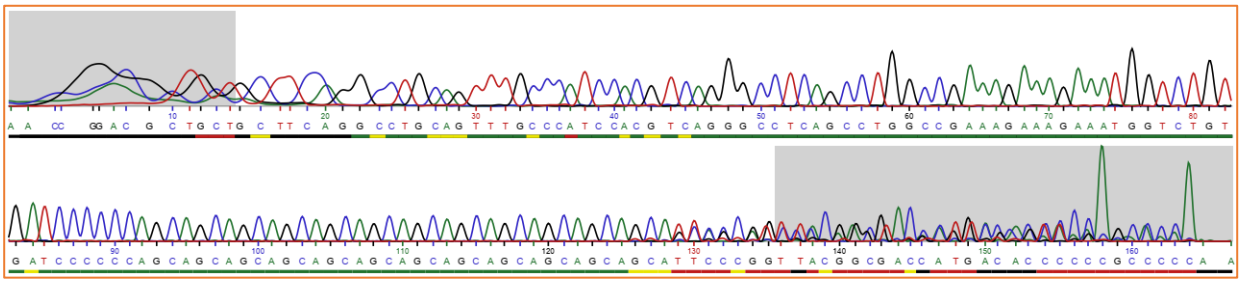
Reverse complement sequence:

GTGCGTGGAGGATGGAACACGGACGGCCCGGCTTGCTGCCTTCCCAGGCCTGCAGTTTGCCCATCCACGTCAGGGCCTCAGCCTGGCCGAAAGAAAGAAATGGTCTGTGATCCCCCCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCATTCCCGGCTACAAGGACCCTTCGAGCCCC

- Sequencing result of the individual PCR - sequence reverse:



- Sequencing result multiplex PCR - sequence reverse:



***NIPA1* gene**

(Primers were taken from(Blauw et al. 2012)

NIPA1 F: 5'- GCCCCTCTTCCTGCTCC - 3'

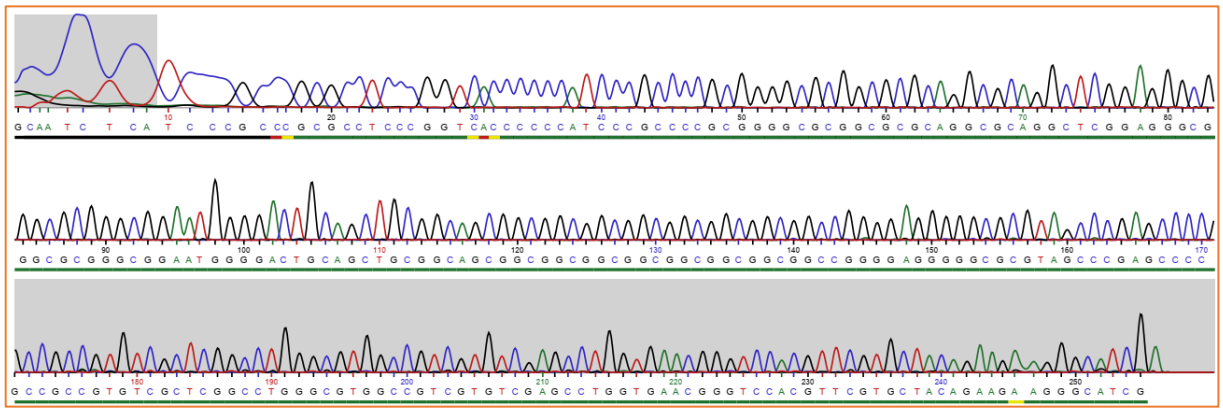
NIPA1 R: 5'- CGATGCCCTTCTTCTGTAGC - 3'

PCR *in silico*: 287bp → 8 **CGC (GCG)** repeats

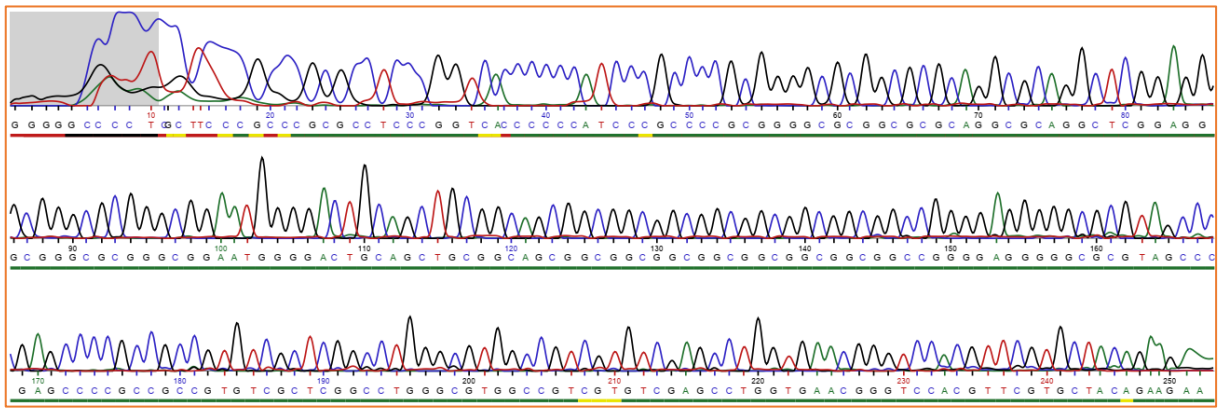
Sequence forward:

GCCCCTCTTCCTGCTCCTCCCCCACCCGTCCCCCTCCCCTCCCCCGCCCGCGCCTCCCGGTCACCCCC
CATCCCGCCCCGCGGGGCGCGGCGCGCAGGCGCAGGCTCGGAGGGCGGGCGCGGGCGGAATGGGG
ACTGCAGCTGCGGCAGCGGCGGCGGCGGCGGCGGCGGCGGCCGGGGAGGGGGCGCGTAGCCCG
AGCCCCGCCGCCGTGTCGCTCGGCCTGGGCGTGGCCGTCGTGTCGAGCCTGGTGAACGGGTCCACG
TTCGTGCTACAGAAGAAGGGCATCG

- Sequencing result of the individual PCR - sequence forward:



- Sequencing result multiplex PCR - sequence forward:

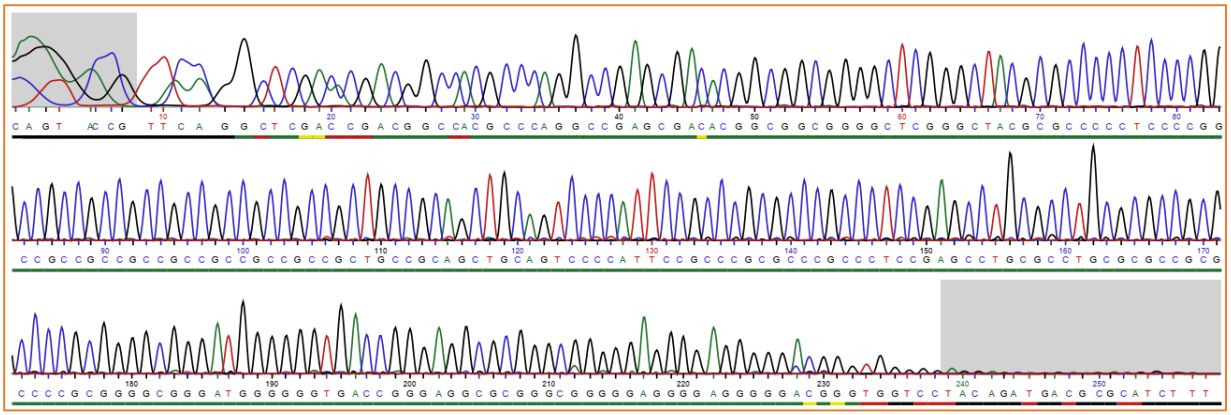


Reverse complement sequence:

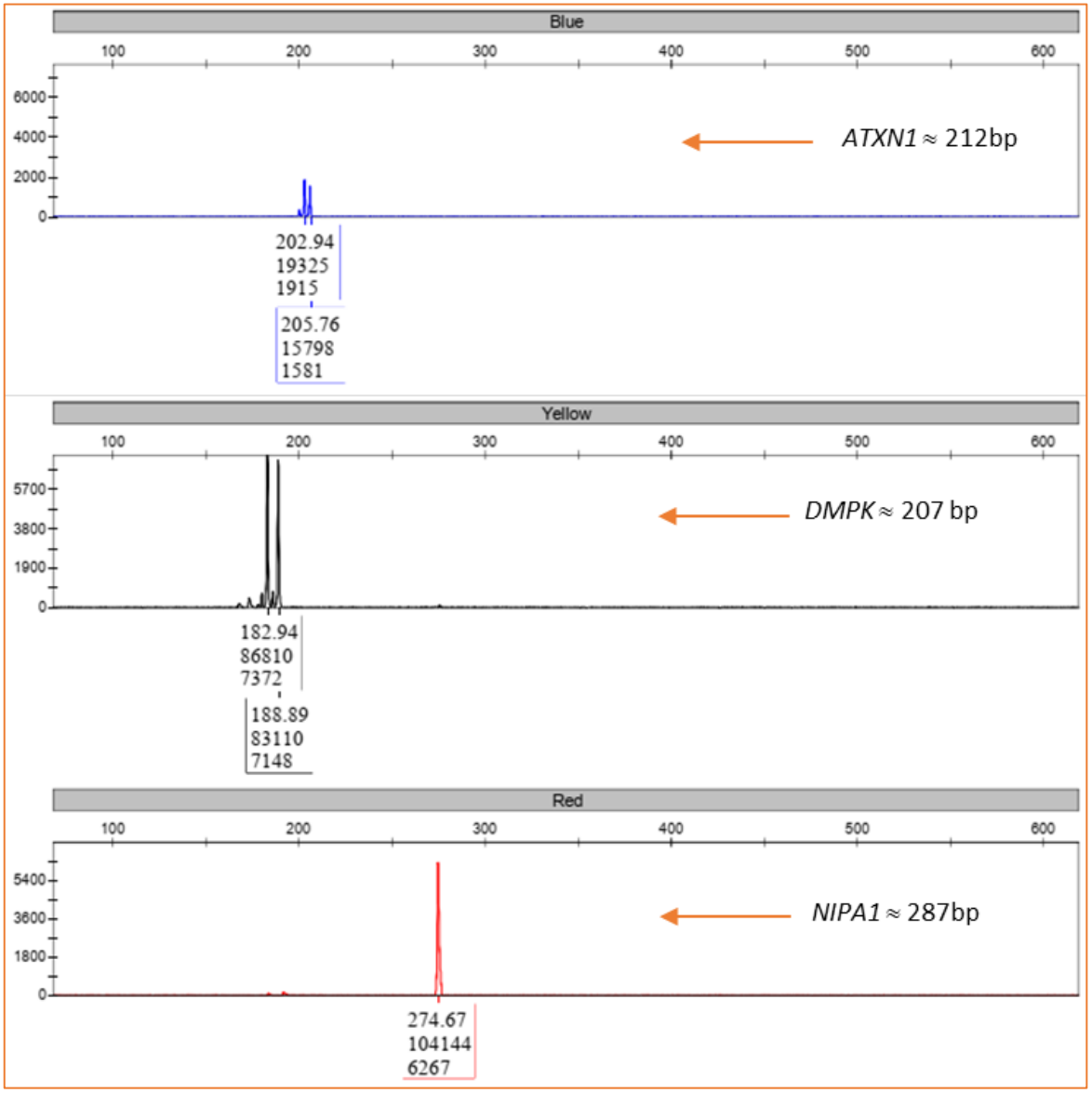
CGATGCCCTTCTTCTGTAGCACGAACGTGGACCCGTTCACCAGGCTCGACACGACGGCCACGCCCA
GGCCGAGCGACACGGCGGCGGGGCTCGGGCTACGCGCCCCCTCCCCGGCCGCCGCCGCCGCCGCC
CGCCGCCGCTGCCGCAGCTGCAGTCCCCATTCCGCCCGCGCCCGCCCTCCGAGCCTGCGCCTGCGC

GCCGCGCCCCGCGGGGCGGGATGGGGGGTGACCGGGAGGCGCGGGCGGGGGAGGGGAGGGGGAC
GGGTGGGGGAGGAGCAGGAAGAGGGGC

- Sequencing result of the individual PCR - sequence reverse:



FLA results

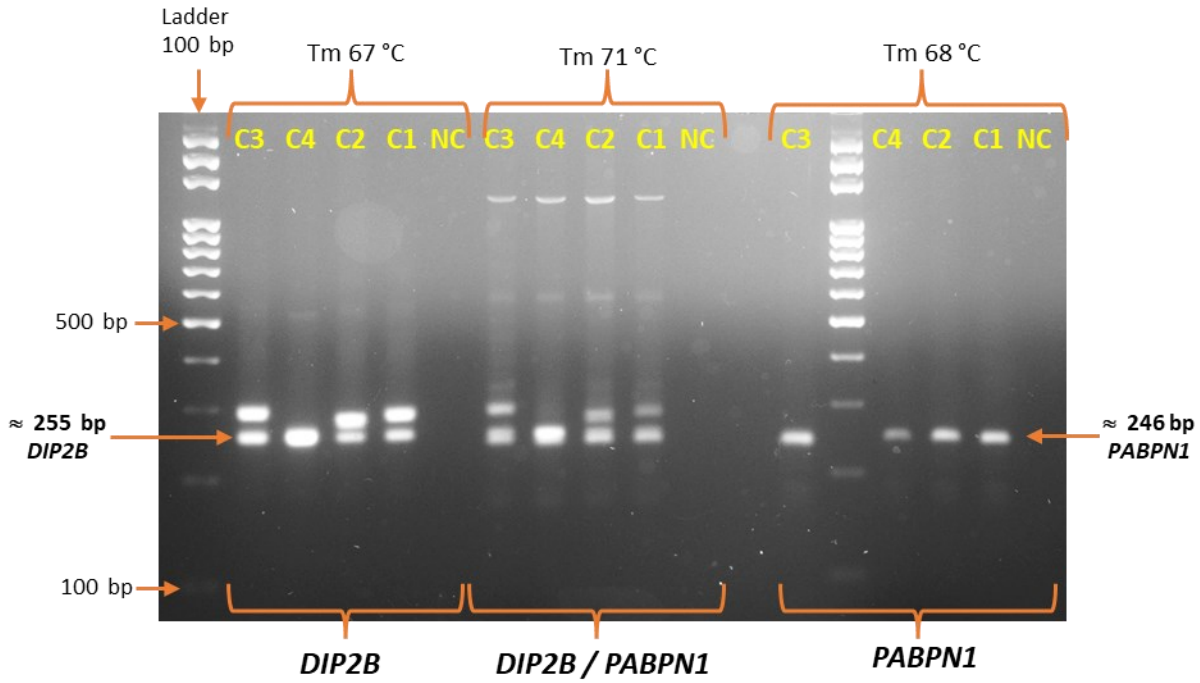


Supplementary Figure S 2-8 Capillary electropherogram of Multiplex 5: *ATXN1*, *NIPA1* and *DMPK* genes.

Panel 4: Filter-set MWGG5, dilution 1:20, Control 1 gDNA. Blue traces correspond to *ATXN1* gene with Fluorescin label; C1 is heterozygote with 202.946 bp and 205.76 bp alleles. Yellow traces correspond to *DMPK* gene with Atto550 label; C1 is heterozygote with 182.94 bp and 188.89 bp alleles. Red traces correspond to *NIPA1* gene with Atto565 label; C1 is homozygote with 274.67 bp alleles.

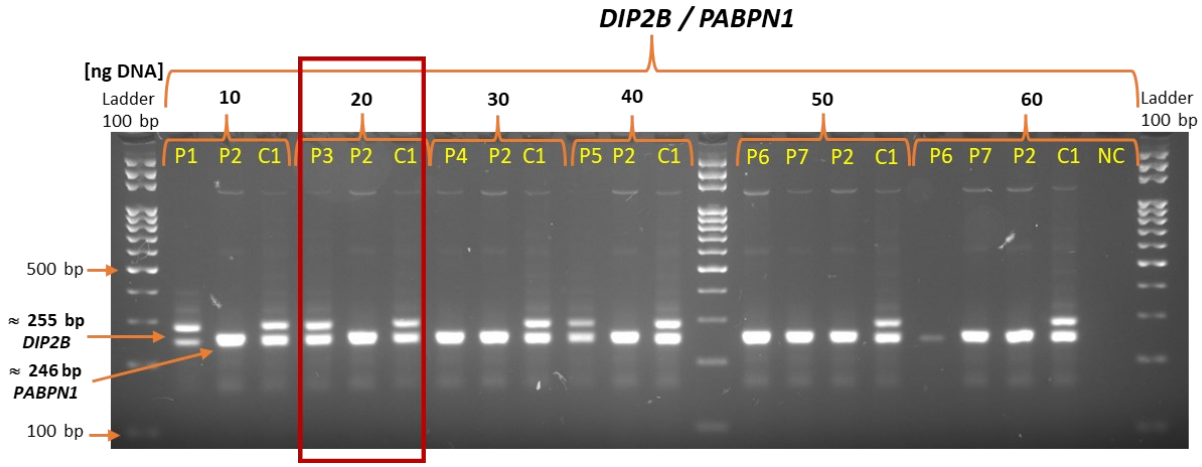
2.3 Panel 5: *DIP2B* and *PABPN1* genes

Multiplex 6



Supplementary Figure S 2-9 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *DIP2B* and *PABPN1* genes.

PCR products for *DIP2B* using a TM of 67°C and four different controls, expected amplicon of ≈255 bp. PCR products for *PABN1* using a TM of 68°C and four different controls, expected amplicon of ≈246 bp. Multiplex PCR products for *DIP2B* and *DMPK* using a TM of 71°C and four different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1x), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1, C2, C3, C4; NC: negative control, no gDNA; Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).



Supplementary Figure S 2-10 Photographic recording of the electrophoretic run on 2.5% agarose gel of the multiplex PCR products from a gDNA gradient of DIP2B and PABPN1 genes.

The multiplex PCR was set up having the same conditions obtained from the optimized multiplex PCR but only changing the amount of initial gDNA added to the mix. Two patients and one control (C1) were selected per each concentration of gDNA PCR. The lowest optimum initial concentration of gDNA for this multiplex 5 is 20ng (marked by the red square). (gDNA Patients: P1, P2, P3, P4, P5, P6, P7; NC: negative control, no gDNA; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***DIP2B* gene**

(Primers taken from (Winnepenninckx et al. 2007))

DIP2B-CGG-F: 5'- GTCTTCAGCCTGACTGGGCTGG - 3'

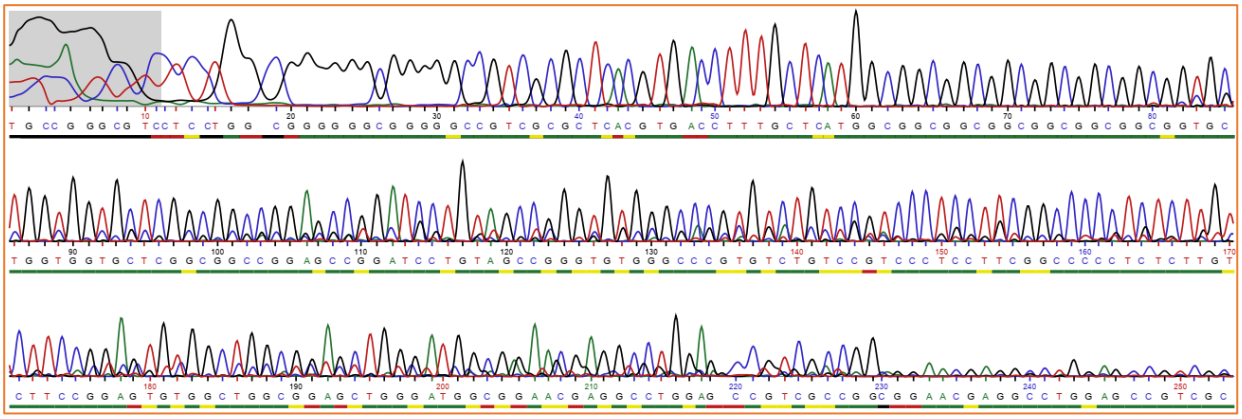
DIP2B-CGG-R: 5'- CCGGCGACGGCTCCAGGCCTCG- 3'

PCR *in silico*: 255bp → 7 **CGG** repeats

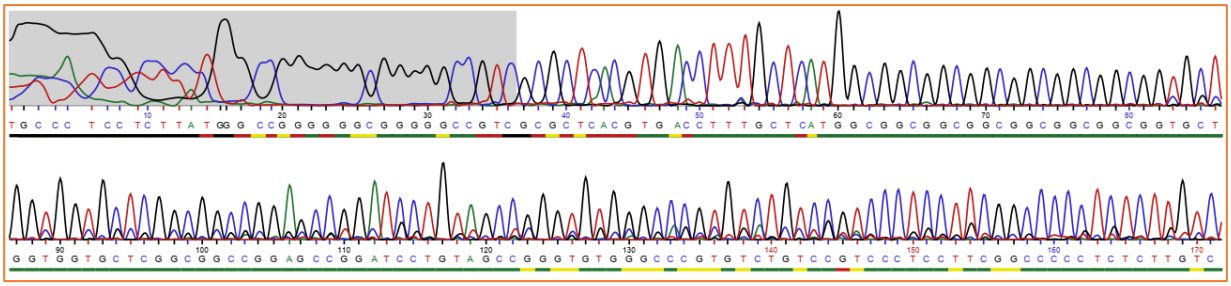
Sequence forward:

GTCTTCAGCCTGACTGGGCTGGAGAGGCGGTGCGTCCTCCTGGCCGGGGGGCGGGGGCCGTCGCGC
TCACGTGACCTTTGCTCATGGCGGCGGCGGCGGCGGCGGCGGTGCTGGTGGTGCTCGGCGGCCG
GAGCCGGATCCTGTAGCCGGGTGTGGGCCCGTGTCTGTCCGTCCCTCCTTCGGCCCCCTCTCTTGTCT
TCCGGAGTGTGGCTGGCGGAGCTGGGATGGCGGAACGAGGCCTGGAGCCGTCGCCGG

- Sequencing result of the individual PCR - sequence forward:



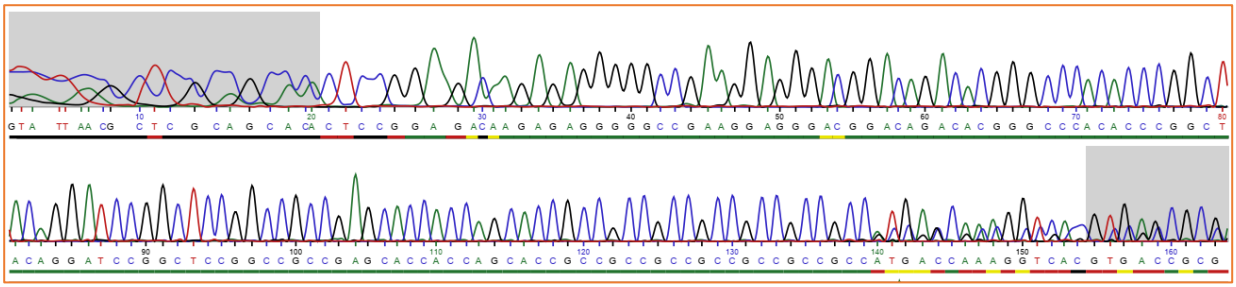
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

CCGGCGACGGCTCCAGGCCTCGTTCCGCCATCCCAGCTCCGCCAGCCACACTCCGGAAGACAAGAG
AGGGGGCCGAAGGAGGGACGGACAGACACGGGCCCACACCCGGCTACAGGATCCGGCTCCGGCCG
CCGAGCACCACCAGCACCGCCGCCGCCGCCGCCGCCGCCATGAGCAAAGGTCACGTGAGCGCGA
CGGCCCCCGCCCCCCGGCCAGGAGGACGCACCGCCTCTCCAGCCCAGTCAGGCTGAAGAC

- Sequencing result of the individual PCR - sequence reverse:



***PABPN1* gene**

(Primers taken from (Richard et al. 2017))

PABPN1 F: 5'- CGCAGTGCCCCGCCTTAGA - 3'

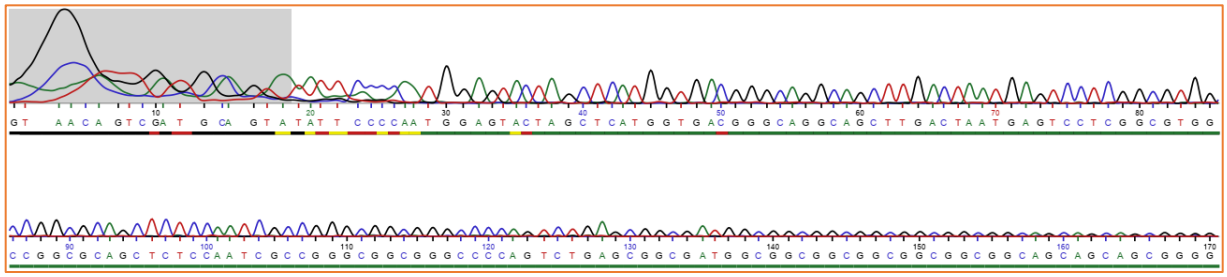
PABPN1 R: 5'- ACAAGATGGCGCCGCCGCCCCGGC - 3'

PCR *in silico*: 246bp → 6 **GCG** repeats

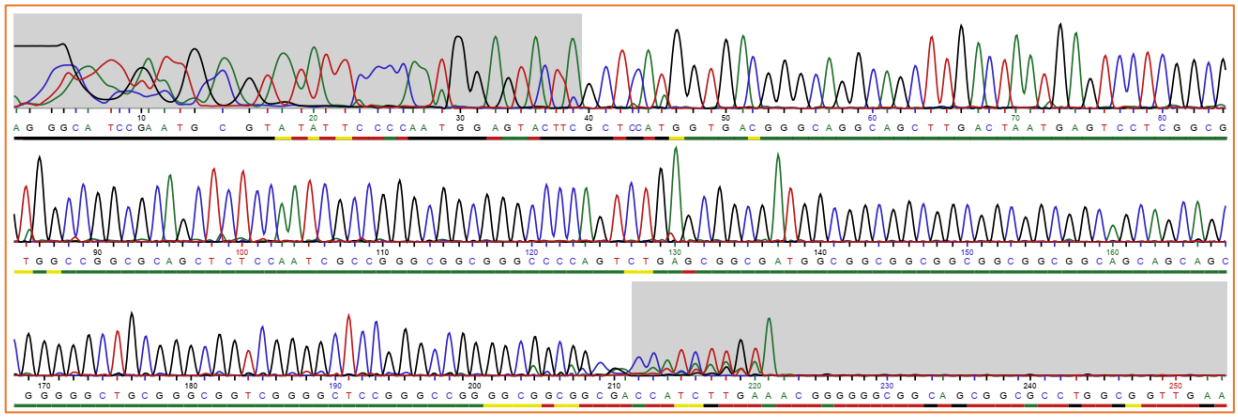
Sequence forward:

CGCAGTGCCCCGCCTTAGAGGTGGGGCCTTATTTGATTGCCAAGTAATATTCCCCAATGGAGTACTA
GCTCATGGTGACGGGCAGGCAGCTTGACTAATGAGTCCTCGGCGTGGCCGGCGCAGCTCTCCAATC
GCCGGGCGGCGGGCCCCAGTCTGAGCGGCGATGGCGGCGGCGGCGGCGGCGGCAGCAGCAGCG
GGGGCTGCGGGCGGTCGGGGCTCCGGGCCGGGGCGGCGGCGCCATCTTGT

- Sequencing result of the individual PCR - sequence forward:



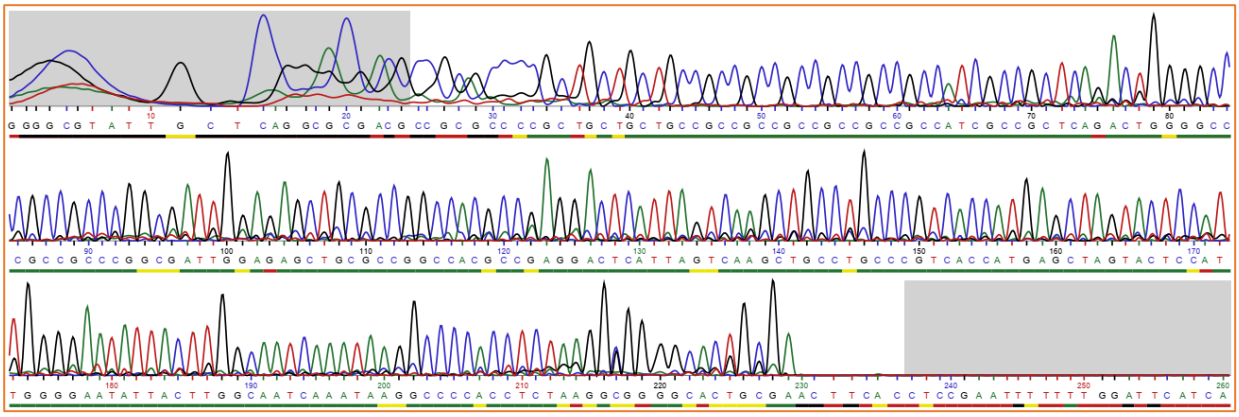
- Sequencing result multiplex PCR - sequence forward:



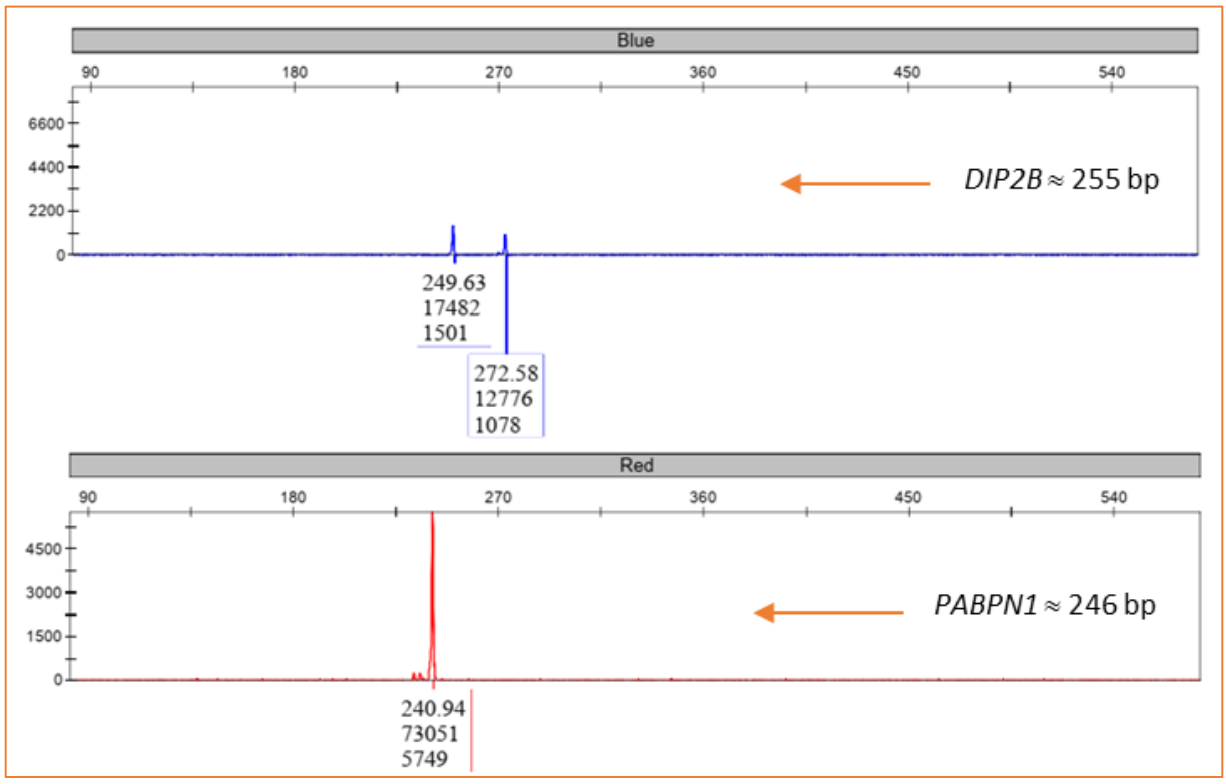
Reverse complement sequence:

ACAAGATGGCGCCGCCGCCCCGGCCCGGAGCCCCGACCGCCCGCAGCCCCCGCTGCTGCTGCCGCC
GCCGCCGCCGCCGCCGCATCGCCGCTCAGACTGGGGCCCGCCGCCCGGCGATTGGAGAGCTGCGCCG
GCCACGCCGAGGACTCATTAGTCAAGCTGCCTGCCCGTCACCATGAGCTAGTACTCCATTGGGGAA
TATTACTTGGCAATCAAATAAGGCCCCACCTCTAAGGCGGGGCACTGCG

- Sequencing result of the individual PCR - sequence reverse:



FLA results

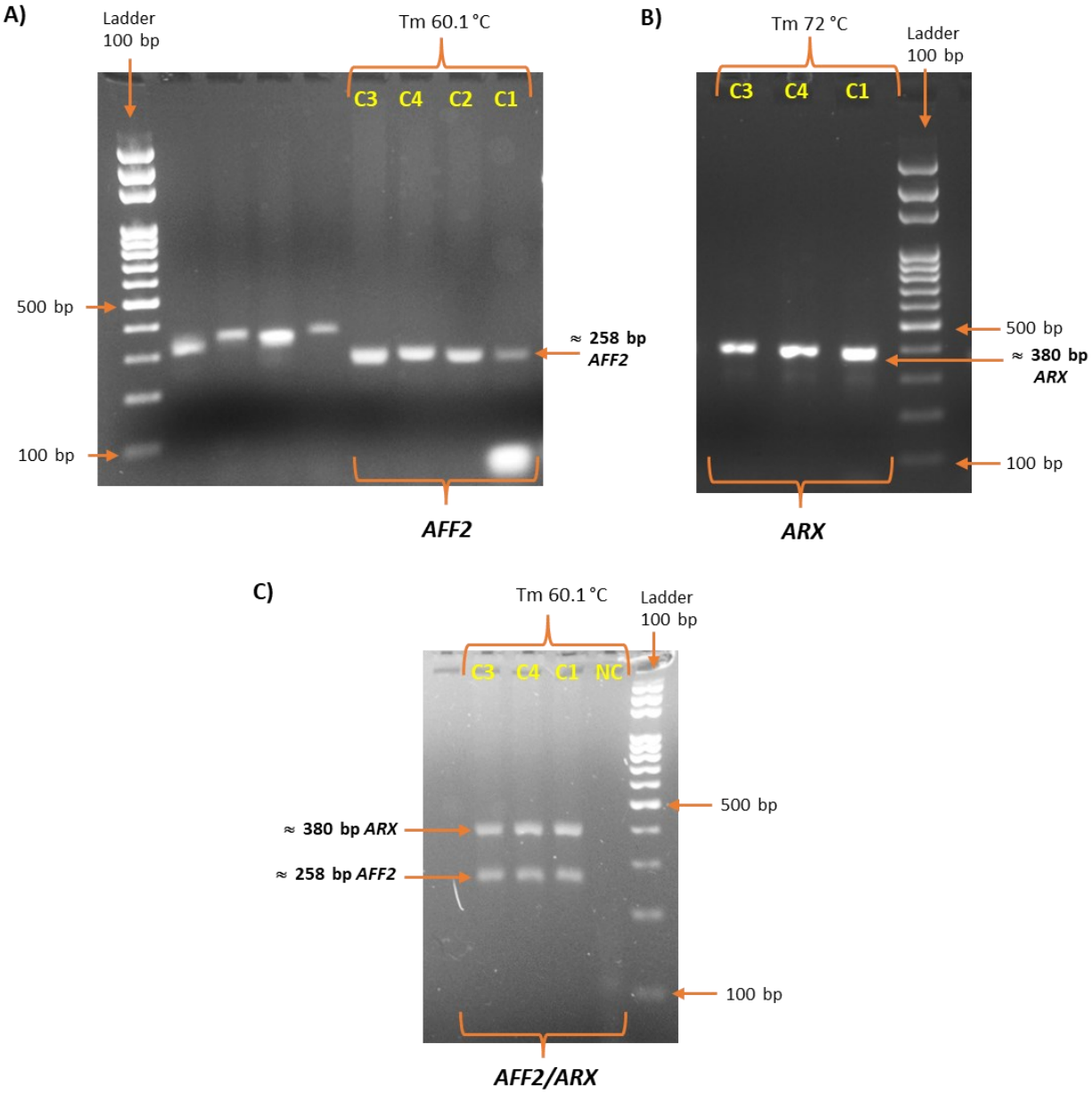


Supplementary Figure S 2-11 Capillary electropherogram of Multiplex 6: *DIP2B* and *PABPN1* genes.

Panel 5: Filter-set MWGG5, dilution 1:20, Control 1 gDNA. Blue traces correspond to *DIP2B* gene with Fluorescin label; C1 is heterozygote with 249.63 bp and 272.58 bp alleles. Red traces correspond to *PABPN1* gene with Atto565 label; C1 is homozygote with 240.94 bp alleles.

2.4 Panel 6: *AFF2*, *ARX* and *FMR1* genes

Multiplex 7: *AFF2* and *ARX* genes



Supplementary Figure S 2-12 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *AFF2* and *ARX* genes.

A) *ATXN1* PCR products using a TM of 60.1°C and four different controls, expected amplicon of ≈258bp. **B)** *ARX* PCR products using a TM of 72°C and three different controls, expected amplicon of ≈380 bp. **C)** Multiplex PCR products for *AFF2* and *ARX* genes using a TM of 60.1°C and three different controls. Both PCRs used AccuPrime™ GC-Rich DNA Polymerase (Invitrogen™), $MgSO_4$ $[0.8]_f$, Betaine $[1M]_f$, 7-Deaza dGTP $[0.4\ mM]_f$, DMSO

$[4.8\%]_f$. (gDNA controls: C1, C2 , C3, C4; NC: negative control, no gDNA Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***AFF2* gene**

(Primers taken from (Jorge et al. 2013))

AFF2 F: 5'- TGTGAGTGTGTAAGTGTGTGATGCTGCC - 3'

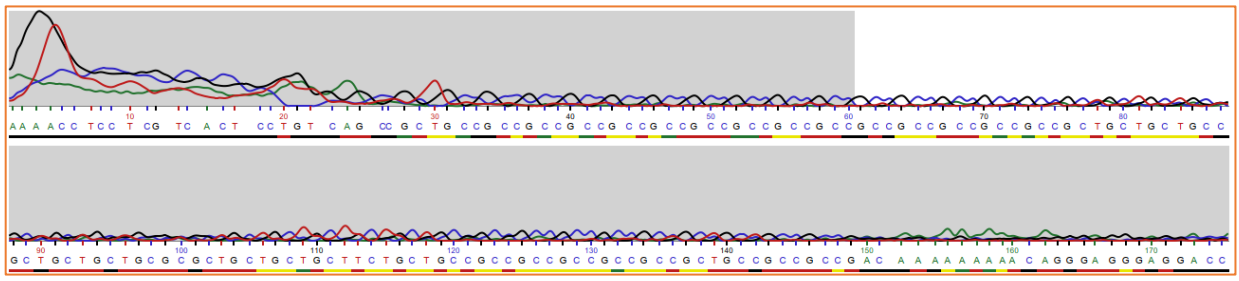
AFF2 R: 5'- CCGCGCGCACCCAGCGAC - 3'

PCR *in silico*: 258 bp → 17 **CCG** repeats

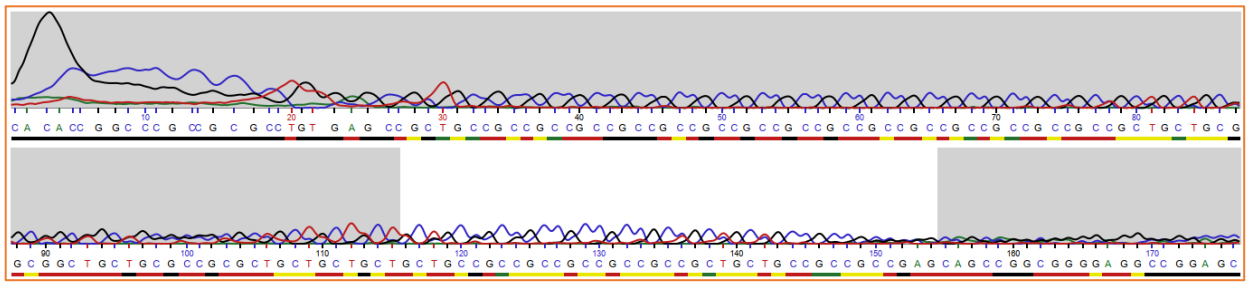
Sequence forward:

TGTGAGTGTGTAAGTGTGTGATGCTGCCGCGGCCGCCGCCGCCGCCTGTGCAGCCGCTG**CCGCCGC**
CGCCGCCGCCGCCGCCGCCGCCGCCGCCGCCGCCGCCGCTGCCGCCCCGGCTGCCGCGCCGCG
CCGCTGCCTCTGCCCCGGCCGCCCCCGCCGCCGCTGCCGCCGCCGGCCCGCAGCCAGCCAGGCGGG
CGGCCCAGCCCGCCTGAGCCCGCAGCGGCTGCCGCCGCAGCGTCGGGTCGCTGGGTGCGCGGGC

- Sequencing result of the individual PCR - sequence forward:



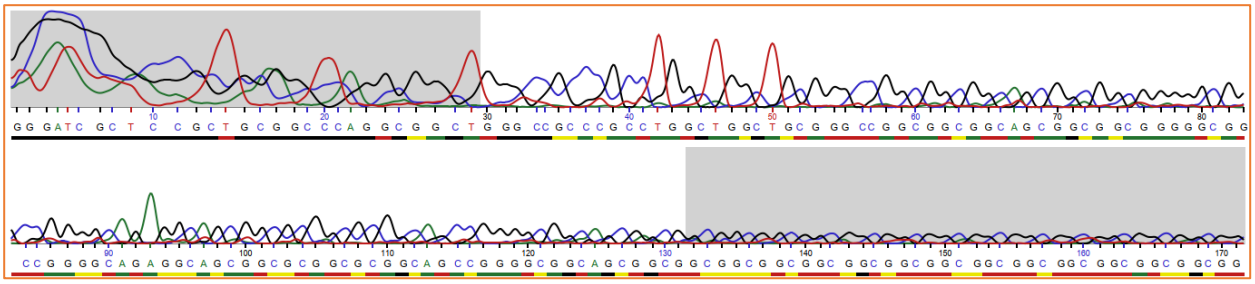
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

CCCGCGCACCCAGCGACCCGACGCTGCGGCGGCAGCCGCTGCGGGCTCAGGCGGGCTGGGCCGCCC
GCCTGGCTGGCTGCGGGCCGGCGGCGGCAGCGGCGGCGGGGGCGGCCGGGGCAGAGGCAGCGGCG
CGGCGCGGCAGCCGGGGCGGCAG**CGGCGGCGGCGGCGGCGGCGGCGGCGGCGGCGGCGGCGGCG**
GCGGCGGCAGCGGCTGCACAGGCGGCGGCGGCGGCCGCGGCAGCATCACACACTTACACACTCAC
A

- Sequencing result of the individual PCR - sequence reverse:



***ARX* gene**

(Primers taken from (Jorge et al. 2013))

ARX F: 5'- CAGCAGCCCTGGCTGGGACTC - 3'

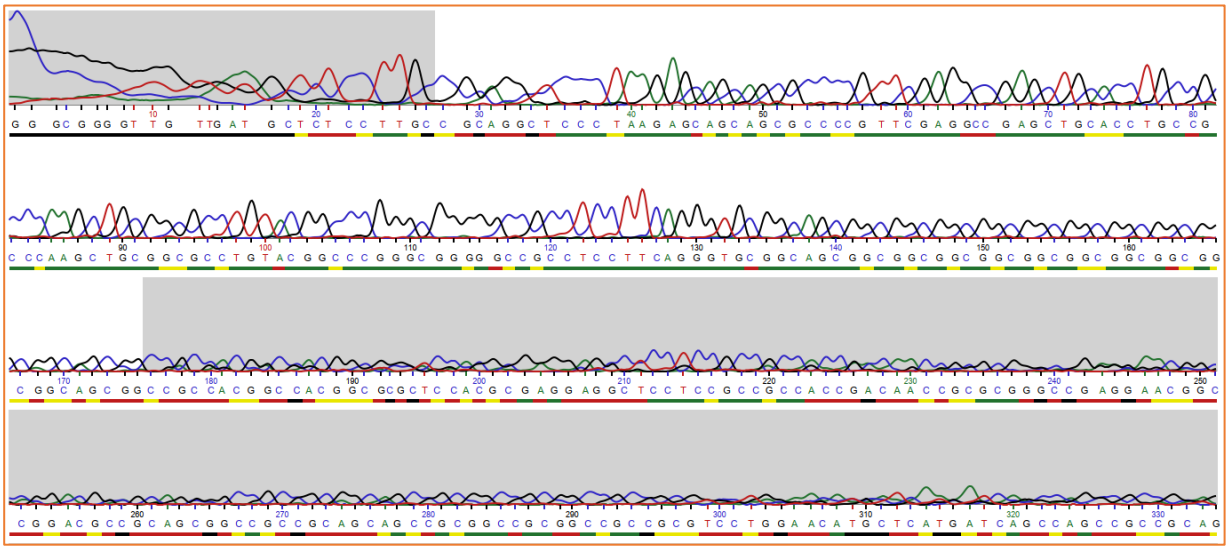
ARX R: 5'- CGGTACGACTTGCTGCGGCTG - 3'

PCR *in silico*: 393 bp → 10 **CGC** repeats

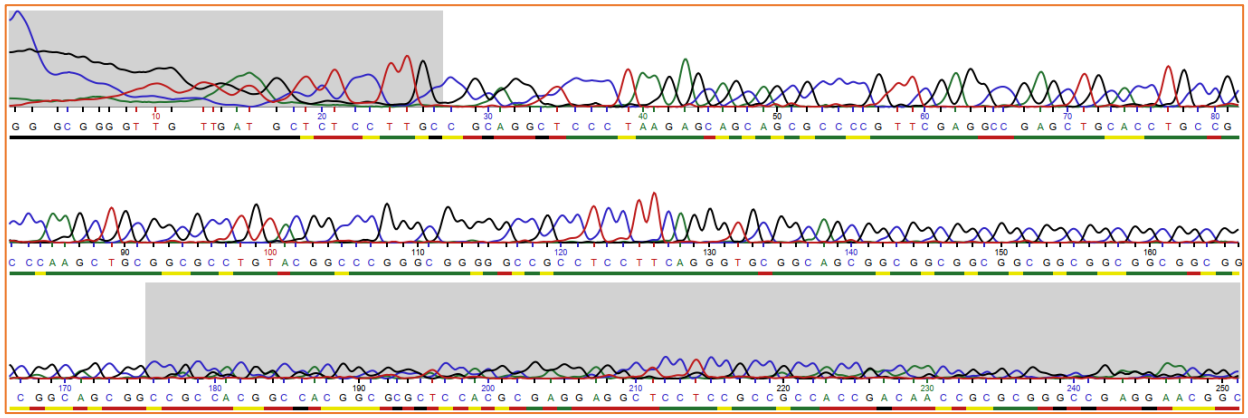
Sequence forward:

CAGCAGCCCTGGCTGGGACTCCCCGGCCGGCCGGCTGGCTGATAGCTCTCCCTTGCCCGCAGGCTCC
CCTAAGAGCAGCAGCGCCCCGTTCGAGGCCGAGCTGCACCTGCCGCCCAAGCTGCGGCGCCTGTAC
GGCCCGGGCGGGGGCCGCCTCCTTCAGGGTGCGGCAGCGGCGGCGGCGGCGGCGGCGGCGGCG
GCGGCAGCGGCCGCCACGGCCACGGCGGGTCCACGCGGGGAGGCCCCTCCGCCGCCACCGCCAAC
CGCGCGGCCCGGGGAACGGCCGGACGGCGCAGGGGCCGCCGCGGCAGCCGCGGCCGCGGCCGCCG
CGGCCTGGGACACGCTCAAGATCAGCCAGGCGCCGCAGGTGAGCATCAGCCGCAGCAAGTCGTAC
CG

- Sequencing result of the individual PCR - sequence forward:



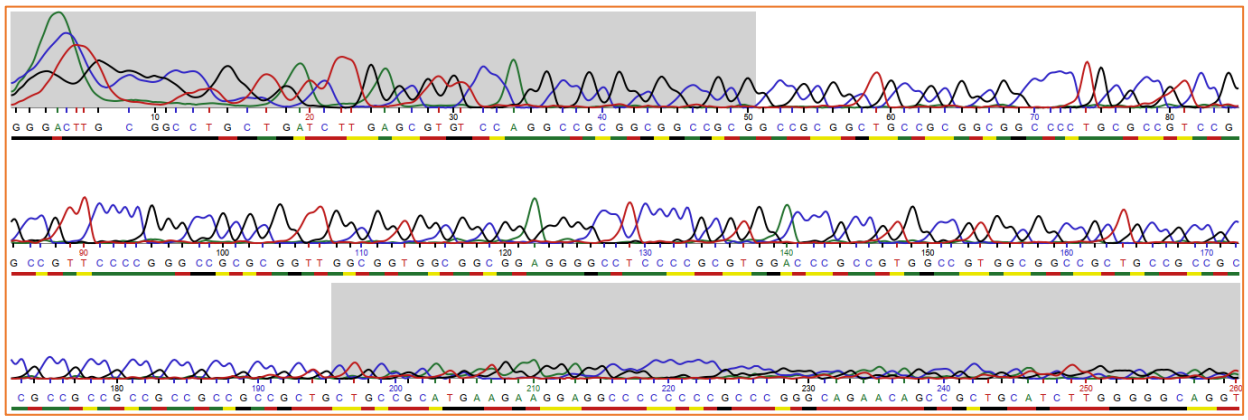
- Sequencing result multiplex PCR - sequence forward:



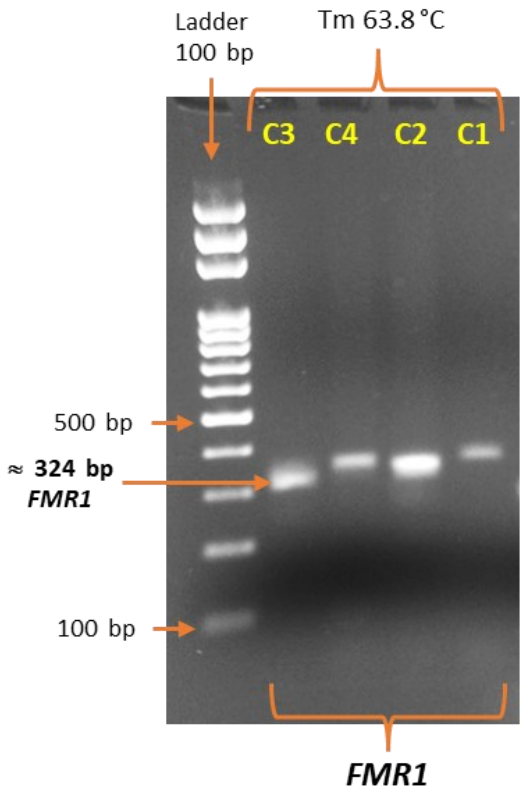
Reverse complement sequence:

CGGTACGACTTGCTGCGGCTGATGCTCACCTGCGGCGCCTGGCTGATCTTGAGCGTGTCCCAGGCCG
CGGCGGCCGCGGCCGCGGCTGCCGCGGCGGCCCCTGCGCCGTCCGGCCGTTCCCCGGGCCGCGCGG
TTGGCGGTGGCGGCGGAGGGGCCTCCCCGCGTGGACCCGCCGTGGCCGTGGCGGCCGCTGCCGCC
GCCGCCGCCGCCGCCGCCGCCGCCGCTGCCGCACCCTGAAGGAGGCGGCCCCCGCCCGGGCCGT
ACAGGCGCCGCAGCTTGGGCGGCAGGTGCAGCTCGGCCTCGAACGGGGCGCTGCTGCTCTTAGGGG
AGCCTGCGGGCAAGGGAGAGCTATCAGCCAGCCGGCCGGCCGGGGAGTCCCAGCCAGGGCTGCTG

- Sequencing result of the individual PCR - sequence reverse:



Individual 8: *FMR1* gene



Supplementary Figure S 2-13 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual PCR products of FMR1 gene.

PCR products for *FMR1* using a TM of 63.8°C and four different controls, expected amplicon of ≈325 bp. Successful PCR used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1, C2, C3, C4; Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***FMR1* gene**

(Designed primers using primer3 tool)

FMR1-F1: 5'- CGTGACGTGGTTTCAGTGTT - 3'

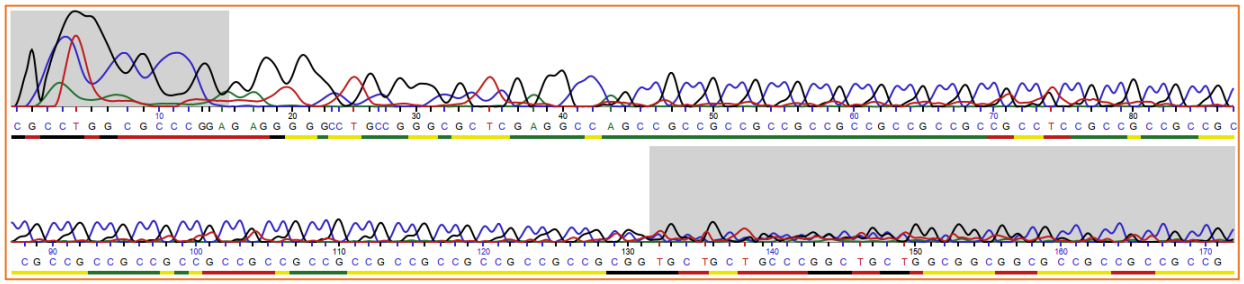
FMR1-R1: 5'- CACCAGCTCCTCCATCTTCT - 3'

PCR *in silico*: 324 bp → 20 **CGG** repeats 1 **AGG**

Sequence forward:

CGTGACGTGGTTTCAGTGTTTACACCCGCAGCGGGCCGGGGGTTCGGCCTCAGTCAGGCGCTCAGC
TCCGTTTCGGTTTCACTTCCGGTGGAGGGCCGCCTCTGAGCGGGCGGCGGGCCGACGGCGAGCGCG
GGCGGCGGCGGTGACGGAGGCGCCGCTGCCAGGGGGCGTGCGGCAGCGCGGCGGCGGCGGCGG
CGGCGGCGGCGGCGGAGGCGGCGGCGGCGGCGGCGGCGGCGGCGGCTGGGCCTCGAGCGCC
CGCAGCCCACCTCTCGGGGGCGGGCTCCCGGCGCTAGCAGGGCTGAAGAGAAGATGGAGGAGCTG
GTG

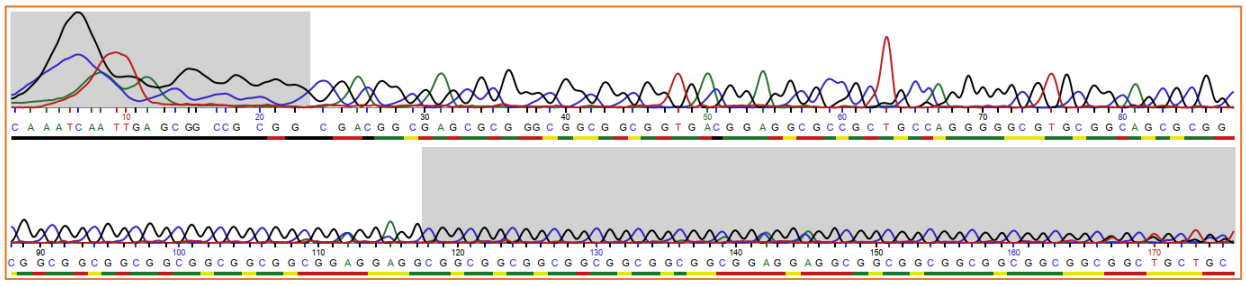
- Sequencing result of the individual PCR - sequence forward:



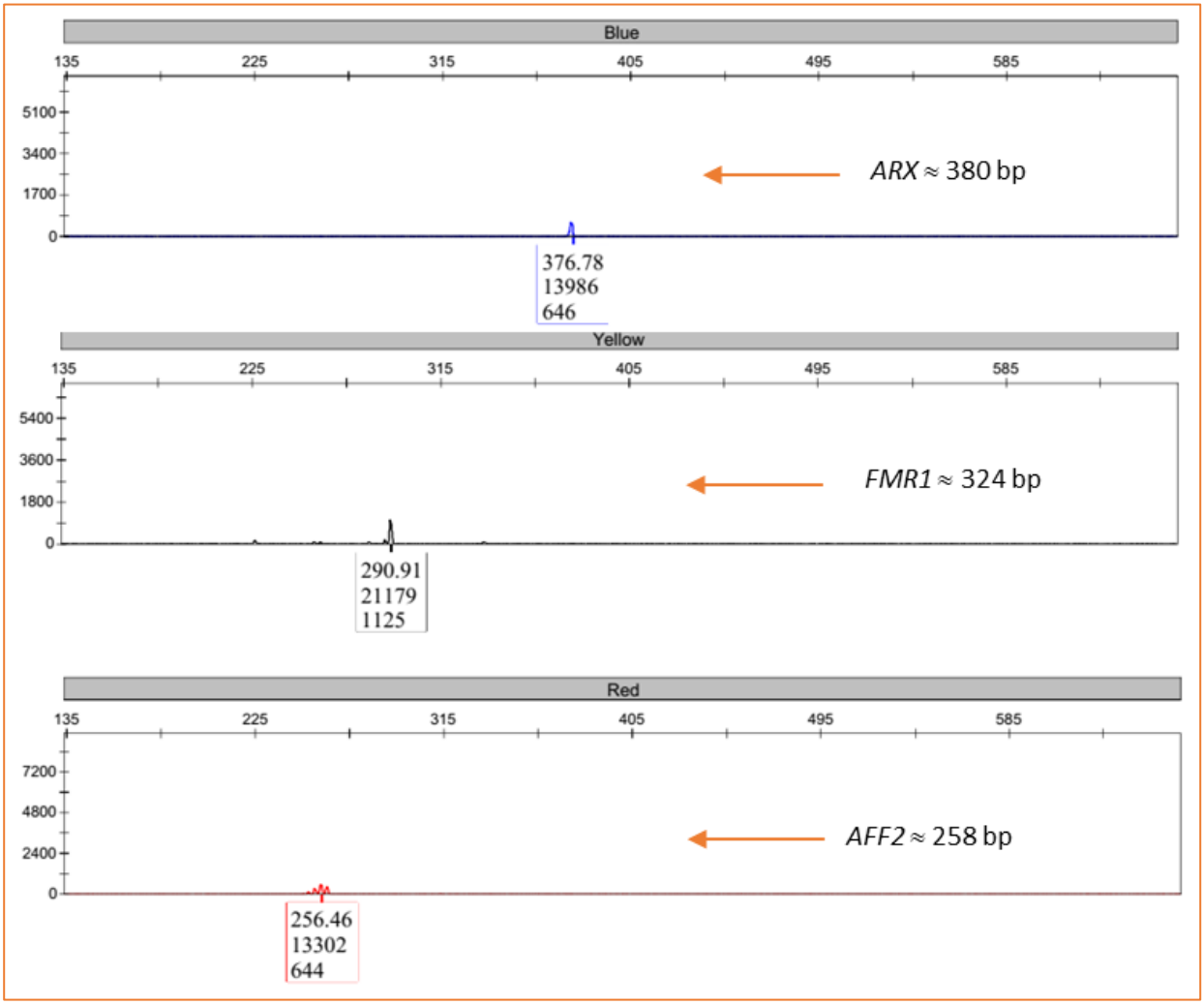
Reverse complement sequence:

CACCAGCTCCTCCATCTTCTCTTCAGCCCTGCTAGCGCCGGGAGCCCGCCCCCGAGAGGTGGGCTGC
GGGCGCTCGAGGCCCAGCCGCCGCCGCCGCCGCCGCCGCCGCCGCCTCCGCCGCCGCCGCCGCCG
CCGCCGCCGCCGCCGCCGCGCTGCCGCACGCCCCCTGGCAGCGGCGCCTCCGTCACCGCCGCCGCCCG
CGCTCGCCGTCGGCCCGCCGCCCGCTCAGAGGCGGCCCTCCACCGGAAGTGAAACCGAAACGGAGC
TGAGCGCCTGACTGAGGCCGAACCCCCGGCCCGCTGCGGGTGTAAACACTGAAACCACGTCACG

- Sequencing result of the individual PCR - sequence reverse:



FLA results

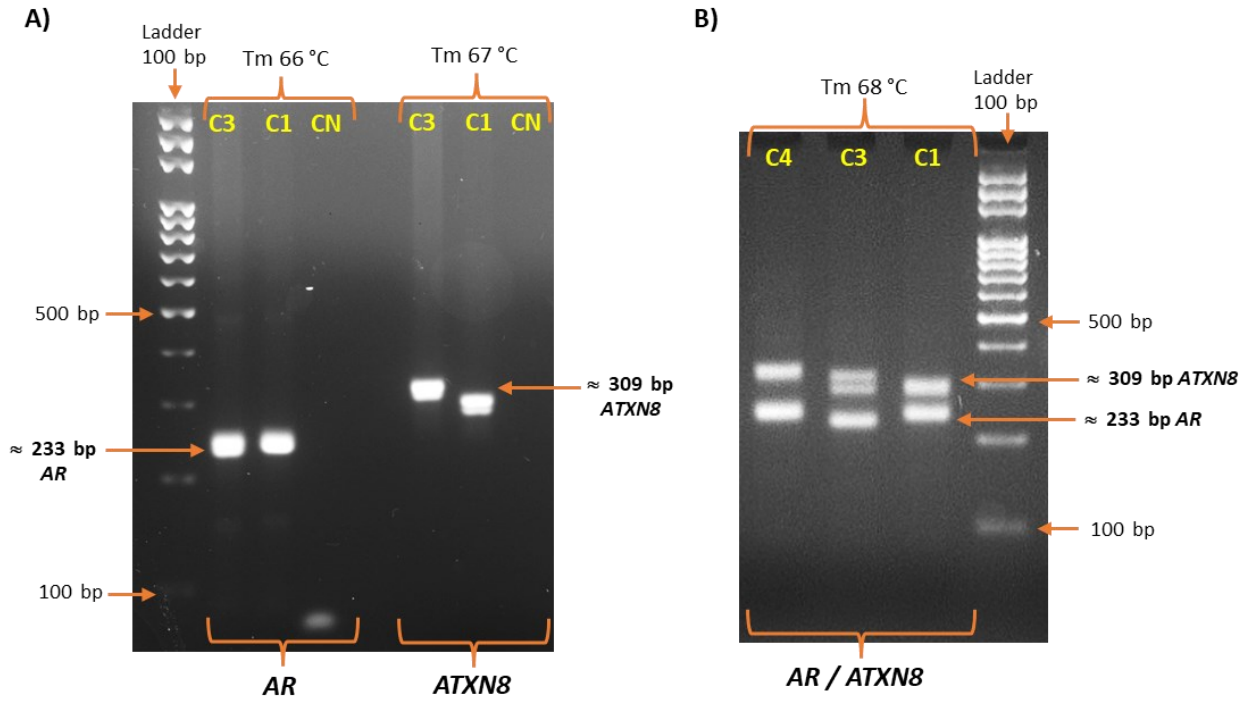


Supplementary Figure S 2-14 Capillary electropherogram of Multiplex 7 and individual PCR 8: *AFF2*, *ARX* and *FMR1* genes.

Panel 6: Filter-set MWGG5, dilution 1:20, Control 1 gDNA. Blue traces correspond to *ARX* gene with Fluorescin label; C1 is homozygote with 376.78 bp allele. Yellow traces correspond to *FMR1* gene with Atto550 label; C1 is homozygote with 290.91 bp allele. Red traces correspond to *AFF2* gene with Atto565 label; C1 is homozygote with 256.46 bp allele. 20µL FLA mix of PCR products = 14 µL *AFF2 / ARX* + 6 µL *FMR1*.

2.5 Panel 7: *AR*, *ATXN8*, *FRA11A* and *NOTCH2NLC* genes

Multiplex 9: *AR* and *ATXN8* genes



Supplementary Figure S 2-15 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *AR* and *ATXN8* genes.

A) *AR* PCR products using a TM of 66°C and two different controls, expected amplicon of ≈233bp. *ATXN8* PCR products using a TM of 67°C and two different controls, expected amplicon of ≈309bp. **B)** Multiplex PCR products for *AR* and *ATXN8* genes using a TM of 68°C and three different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1,C3,C4; NC: negative control, no gDNA Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***AR* gene**

(Primers taken from (Ackerman et al. 2012))

AR F: 5'- GTGCGCGAAGTGATCCAGAA - 3'

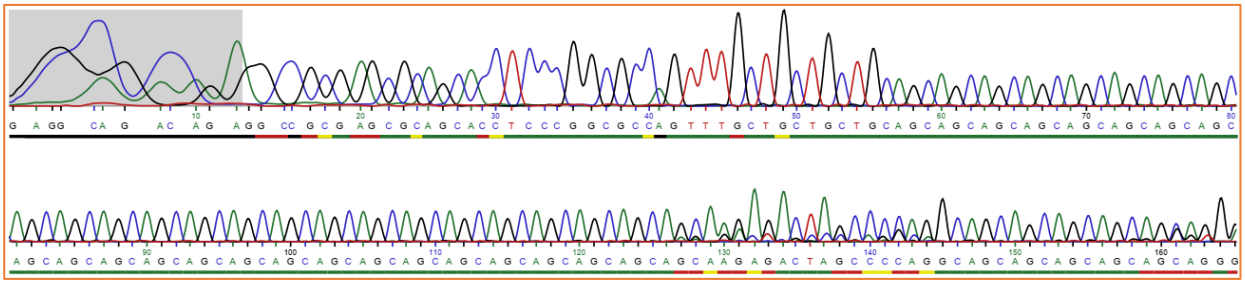
AR R: 5'- TAGCCTGTGGGGCCTCTACG - 3'

PCR *in silico*: 233bp → 22 **CAG** repeats

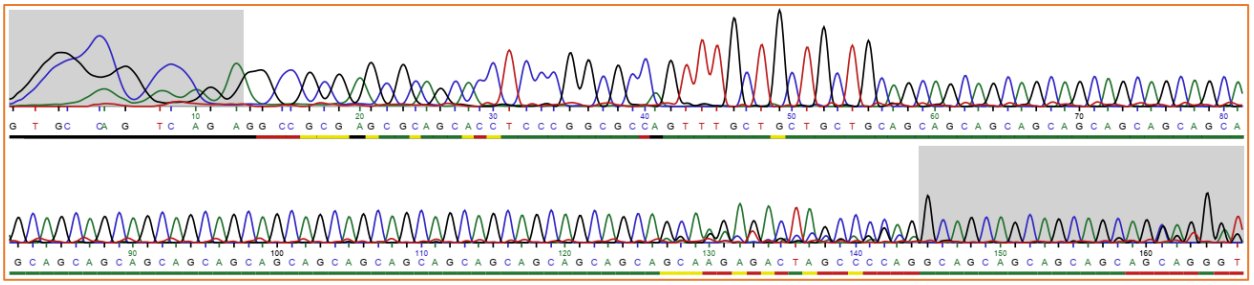
Sequence forward:

GTGCGCGAAGTGATCCAGAACCCGGGCCCCAGGCACCCAGAGGCCGCGAGCGCAGCACCTCCCGG
CGCCAGTTTGCTGCTGCTG**CAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCA**
GCAGCAGCAGCAGCAGCAGCAGCAAGAGACTAGCCCCAGGCAGCAGCAGCAGCAGGGTGA
GGATGGTTCTCCCCAAGCCCATCGTAGAGGCCCCACAGGCTA

- Sequencing result of the individual PCR - sequence forward:



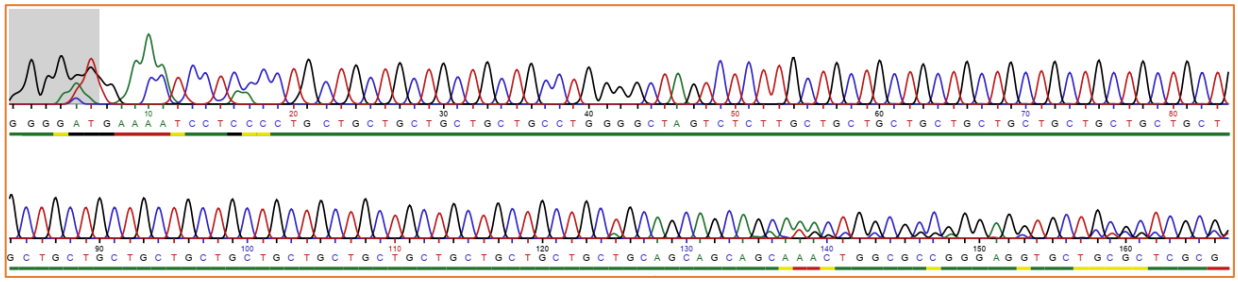
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

TAGCCTGTGGGGCCTCTACGATGGGCTTGGGGAGAACCATCCTCACCCTGCTGCTGCTGCTGCTGCC
TGGGGCTAGTCTCTTG**CTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTG**
CTGCTGCTGCTGCTGCTGCAGCAGCAGCAAACTGGCGCCGGGAGGTGCTGCGCTCGCGGCCTCTG
GGTGCCTGGGGCCCGGGTTCTGGATCACTTCGCGCAC

- Sequencing result of the individual PCR - sequence reverse:



***ATXN8* gene**

(Primers taken from (Koob et al. 1998))

ATXN8 F3: 5'- TTTGAGAAAGGCTTGTGAGGACTGAGAATG- 3'

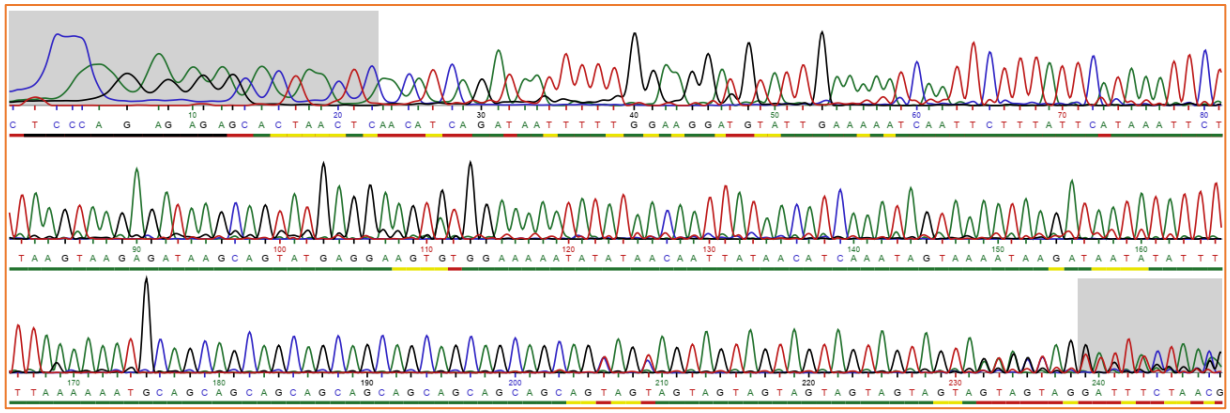
ATXN8 R4: 5'- GGTCCTTCATGTTAGAAAACCTGGCT- 3'

PCR *in silico*: 309bp → 15 **CAG** repeats

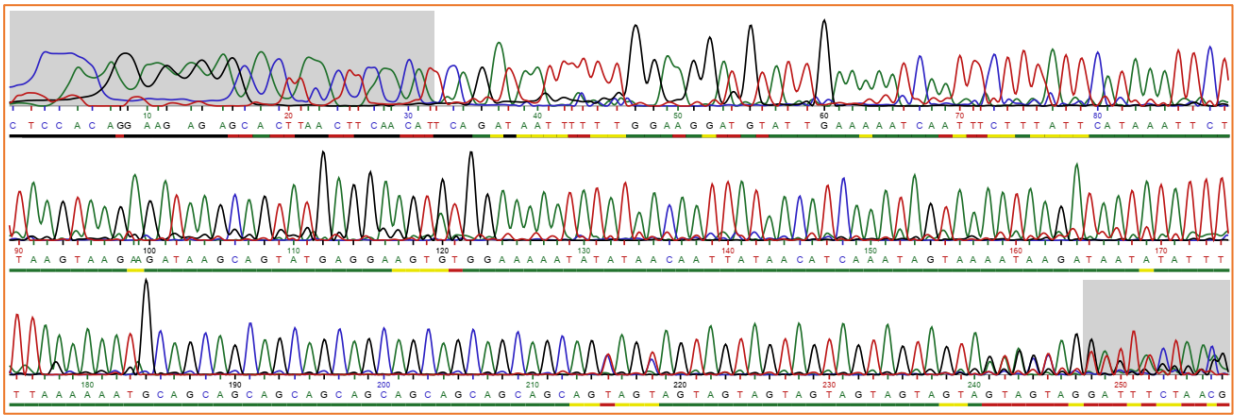
Sequence forward:

TTTGAGAAAGGCTTGTGAGGACTGAGAATGCACAAGAGAGAGCAACTAACTCAACATCAGATAATT
TTTGGAAGGATGTATTGAAAAATCAATTCTTTATTCATAAATTCTTAAGTAAGAGATAAGCAGTATG
AGGAAGTGTGGAAAAATATATAACAATTATAACATCAAATAGTAAAATAAGATAATATATTTTTAA
AAAATG**CAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAG**TAGTAGTAGTA
GTAGTAGTAGTAGTAGTAAAGCCAGGTTTTCTAACATGAAGGACC

- Sequencing result of the individual PCR - sequence forward:



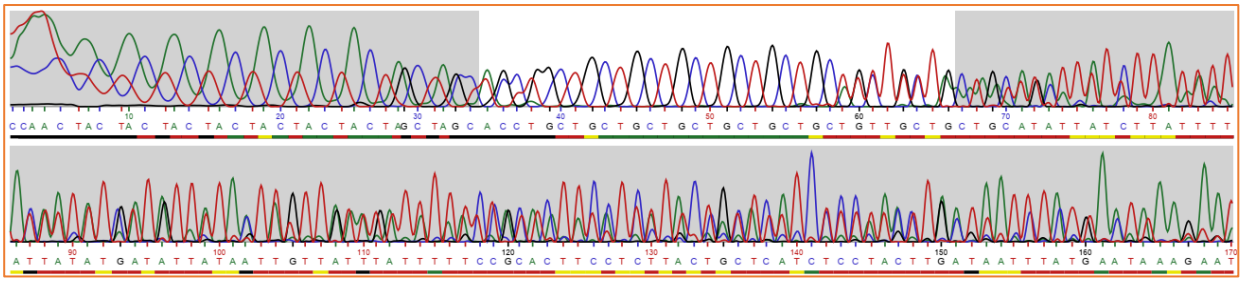
- Sequencing result multiplex PCR - sequence forward:



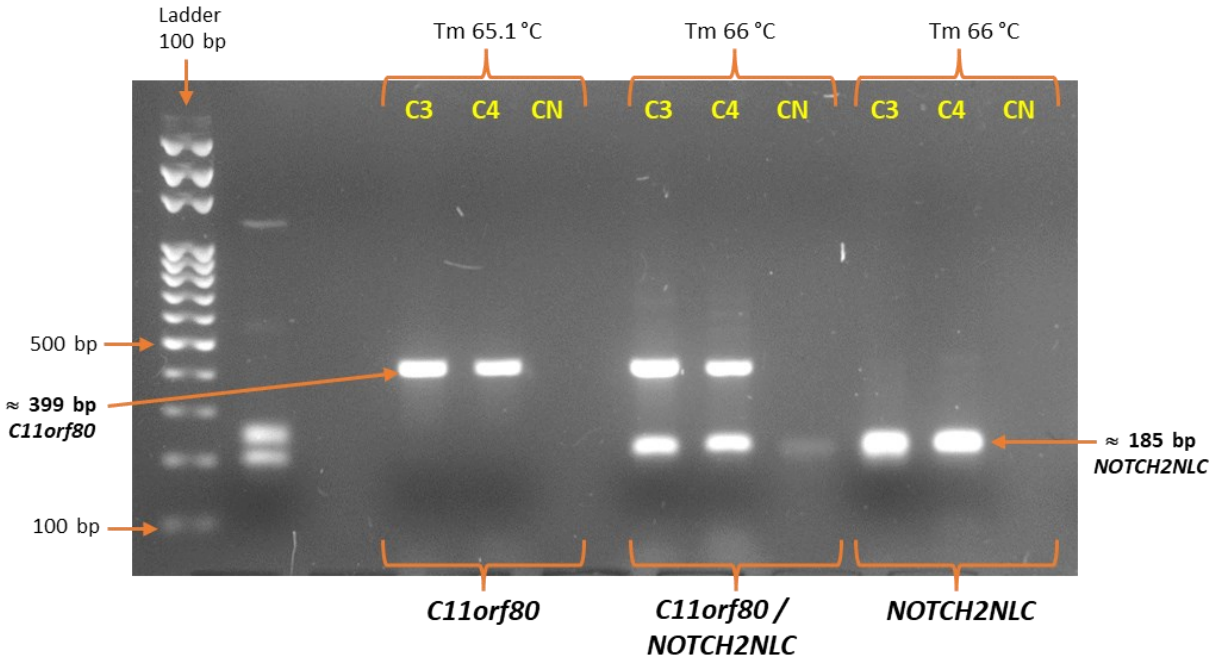
Reverse complement sequence:

GGTCCTTCATGTTAGAAAACCTGGCTTTACTACTACTACTACTACTACTACTACTACTACTGCTGCT
GCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCATTTTTTAAAAATATATTATCTTATTT
TACTATTTGATGTTATAATTGTTATATATTTTTCCACACTTCCTCATACTGCTTATCTCTTACTTAAGA
ATTTATGAATAAAGAATTGATTTTTCAATACATCCTTCCAAAAATTATCTGATGTTGAGTTAGTTGCT
CTCTCTTGTGCATTCTCAGTCCTCACAAGCCTTTCTCAAA

- Sequencing result of the individual PCR - sequence reverse:



Multiplex 10: *FRA11A* and *NOTCH2NLC* genes



Supplementary Figure S 2-16 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of FRA11A and NOTCH2NLC genes.

PCR products for *C11orf80* using a TM of 65.1°C and two different controls, expected amplicon of ≈345 bp. PCR products for *NOTCH2NLC* using a TM of 66°C and four different controls, expected amplicon of ≈153 bp. Multiplex PCR products for *FRA11A* and *NOTCH2NLC* using a TM of 66°C and two different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1,C3,C4; NC: negative control, no gDNA; Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***FRA11A* gene**

(Designed primers using primer3 tool)

FRA11A F4: 5'- CCTCATTCCCGCTCACCT - 3'

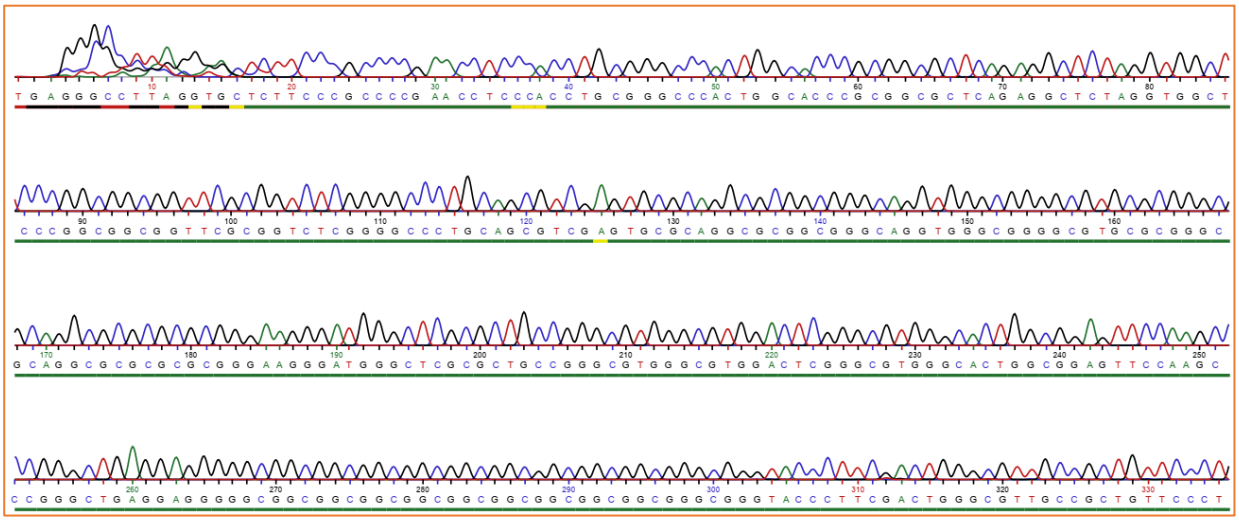
FRA11A R4: 5'- ATCACCTCGAACACGGCC - 3'

PCR *in silico*: 399bp → 8 **CGG** repeats

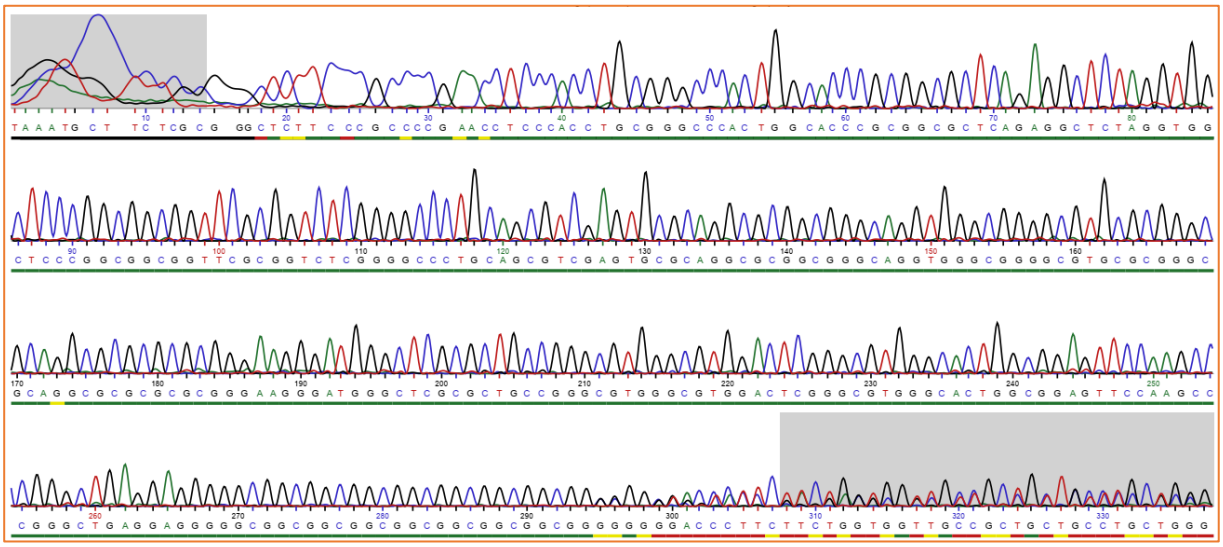
Sequence forward:

CCTCATTCCCGCTCACCTCCAGCCTTGGCCGCCTCTCGCGGGCTCTTCCCCGCCCCGAACCTCCCACC
TGCGGGCCCACTGGCACCCGCGGCGCTCAGAGGCTCTAGGTGGCTCCCGGCGGCGGTTCGCGGTCT
CGGGGCCCTGCAGCGTCGAGTGCGCAGGCGCGGCGGGCAGGTGGGCGGGGCGTGCGCGGGCGCAG
GCGCGCGCGCGGGAAGGGATGGGCTCGCGCTGCCGGGCGTGGGCGTGGACTCGGGCGTGGGCACT
GGCGGAGTTCCAAGCCCGGGCTGAGGAGGGGGCGGCGGCGGCGGCGGCGGCGGCGGCGGGCGGGTA
CCCTTCGACTGGGCGTTGCCGCTGTTCCCTGCGCGGCATGGAGGGGACGGCCGTGGCCGTGTTCGA
GGTGAT

- Sequencing result of the individual PCR - sequence forward:



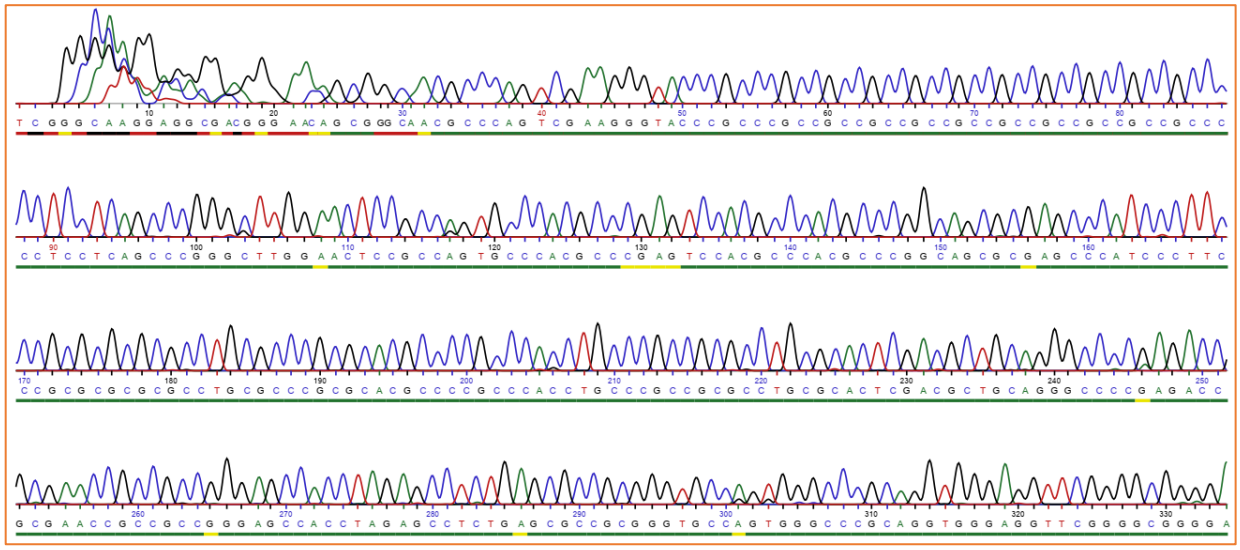
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

ATCACCTCGAACACGGCCACGGCCGTCCCCTCCATGCCGCGCAGGGAACAGCGGCAACGCCCAGTC
GAAGGGTACCCGCCCGCCGCCGCCGCCGCCGCCGCCGCCCCTCCTCAGCCCGGGCTTGGAACT
CCGCCAGTGCCCACGCCCGAGTCCACGCCCACGCCCGGCAGCGCGAGCCCATCCCTTCCCGCGCGC
GCGCCTGCGCCCGCGCACGCCCCGCCCACCTGCCCGCCGCGCCTGCGCACTCGACGCTGCAGGGCC
CCGAGACCGCGAACCGCCGCCGGGAGCCACCTAGAGCCTCTGAGCGCCGCGGGTGCCAGTGGGCC
CGCAGGTGGGAGGTTCGGGGCGGGGAAGAGCCCGCGAGAGGCGGCCAAGGCTGGAGGTGAGCGG
GAATGAGG

- Sequencing result of the individual PCR - sequence reverse:



***NOTCH2NLC* gene**

(Primers taken from (Sone et al. 2019))

NOTCH2NLC-AL-F: 5'- CATTTGCGCCTGTGCTTCGGAC - 3'

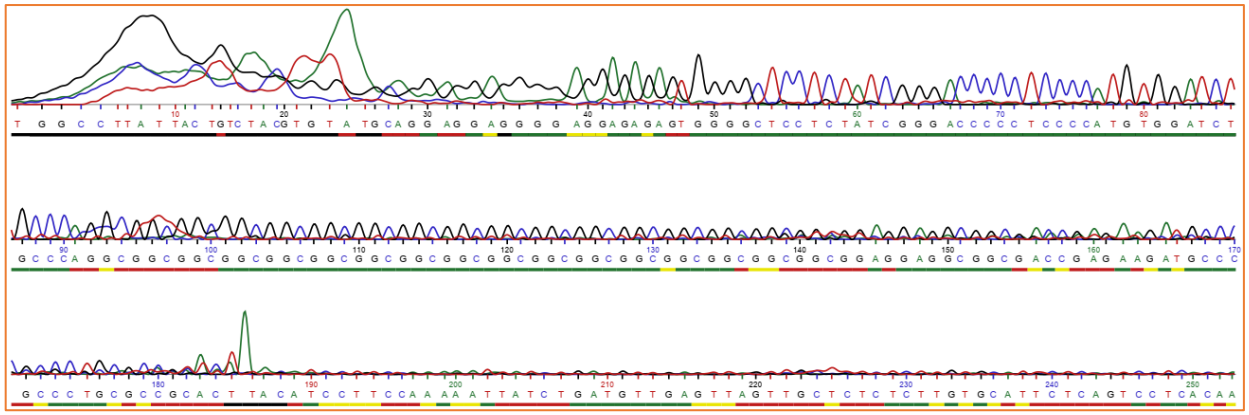
NOTCH2NLC-AL-R: 5'- AGAGCGGCGCAGGGCGGGCATCTT - 3'

PCR *in silico*: 185bp → 9 **GCC** repeats

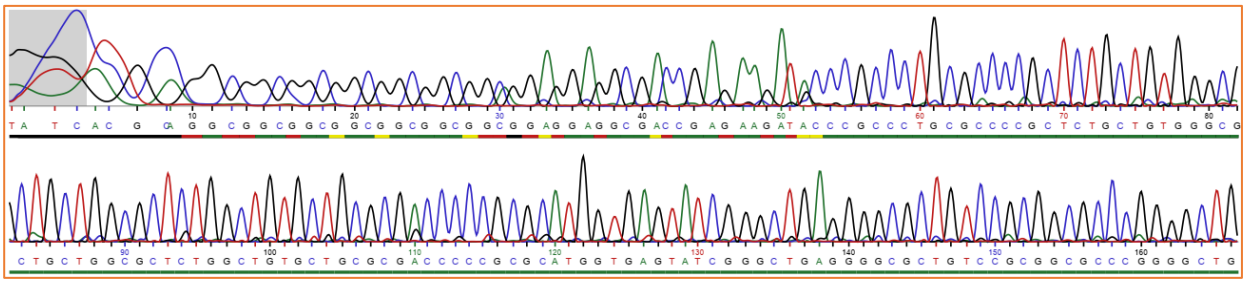
Sequence forward:

CATTTGCGCCTGTGCTTCGGACCGTAGCGCCAGGGCCTGAGCCTTTGAAGCAGGAGGAGGGGAGGA
GAGAGTGGGGCTCCTCTATCGGGACCCCCTCCCCATGTGGATCTGCCCA**GGCGGCGGCGGCGGCG**
GCGGCGGCGGCGGAGGAGGCGGCGACCGAG**AAGATGCCCGCCCTGCGCCGCTCT**

- Sequencing result of the individual PCR - sequence forward:



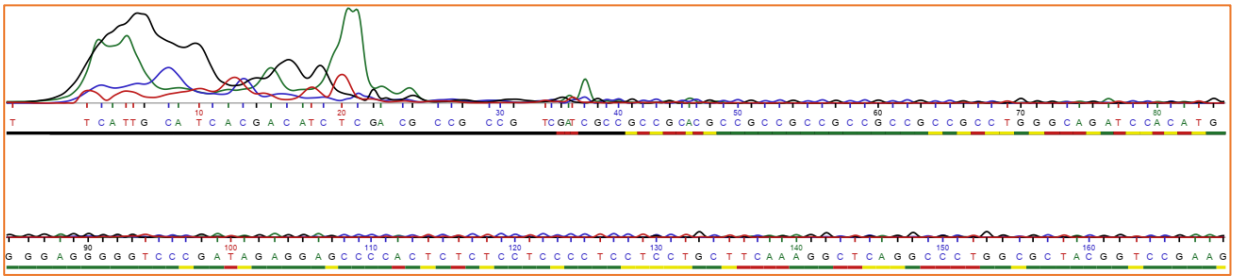
- Sequencing result multiplex PCR - sequence forward:



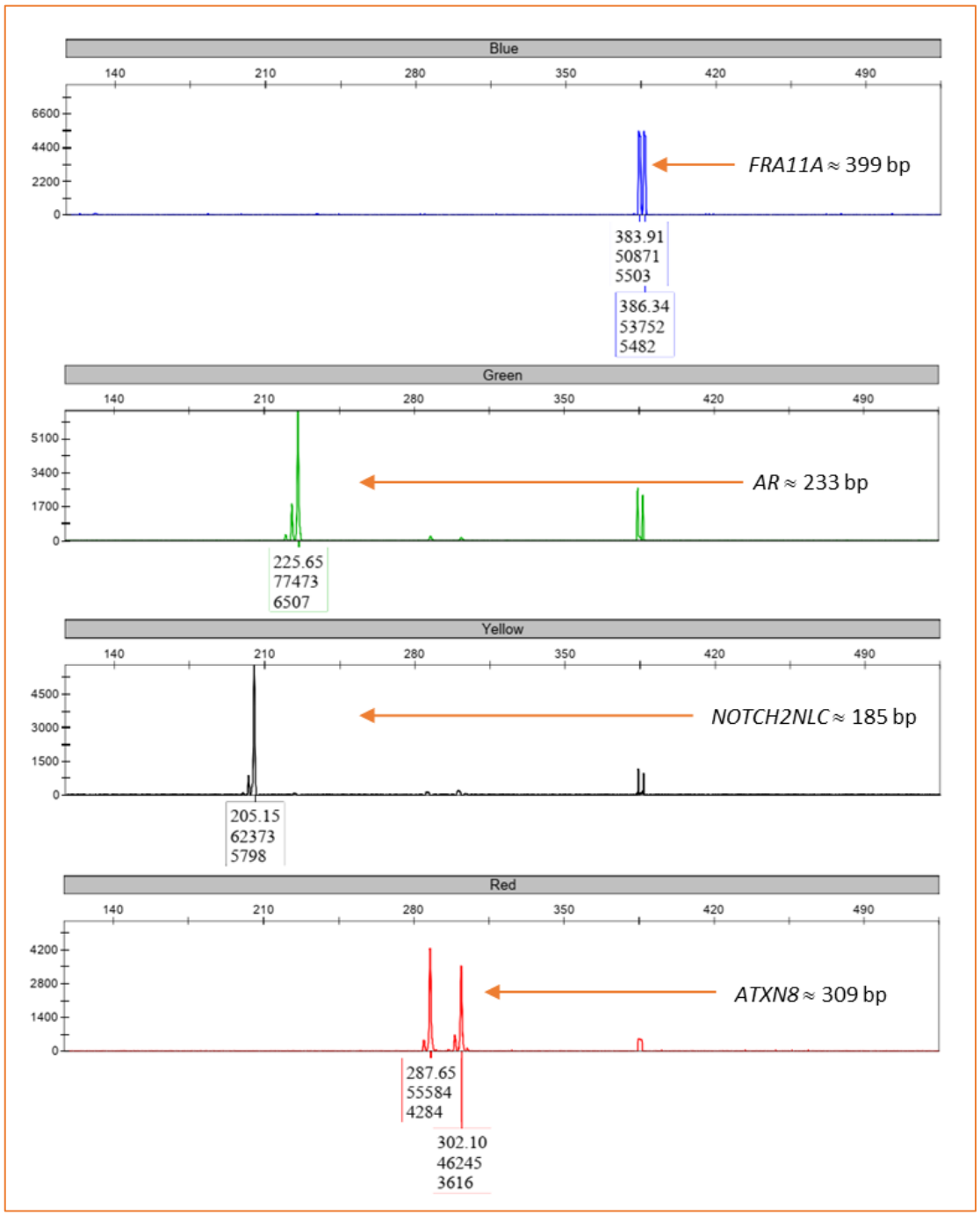
Reverse complement sequence:

AGAGCGGCGCAGGGCGGGCATCTTCTCGGTCGCCGCCTCCTCCGCCGCCGCCGCCGCCGCCGCCGCC
GCCGCCTGGGCAGATCCACATGGGGAGGGGGTCCCGATAGAGGAGCCCCACTCTCTCCTCCCCTCC
TCCTGCTTCAAAGGCTCAGGCCCTGGCGCTACGGTCCGAAGCACAGGCGCAAATG

- Sequencing result of the individual PCR - sequence reverse:



FLA results

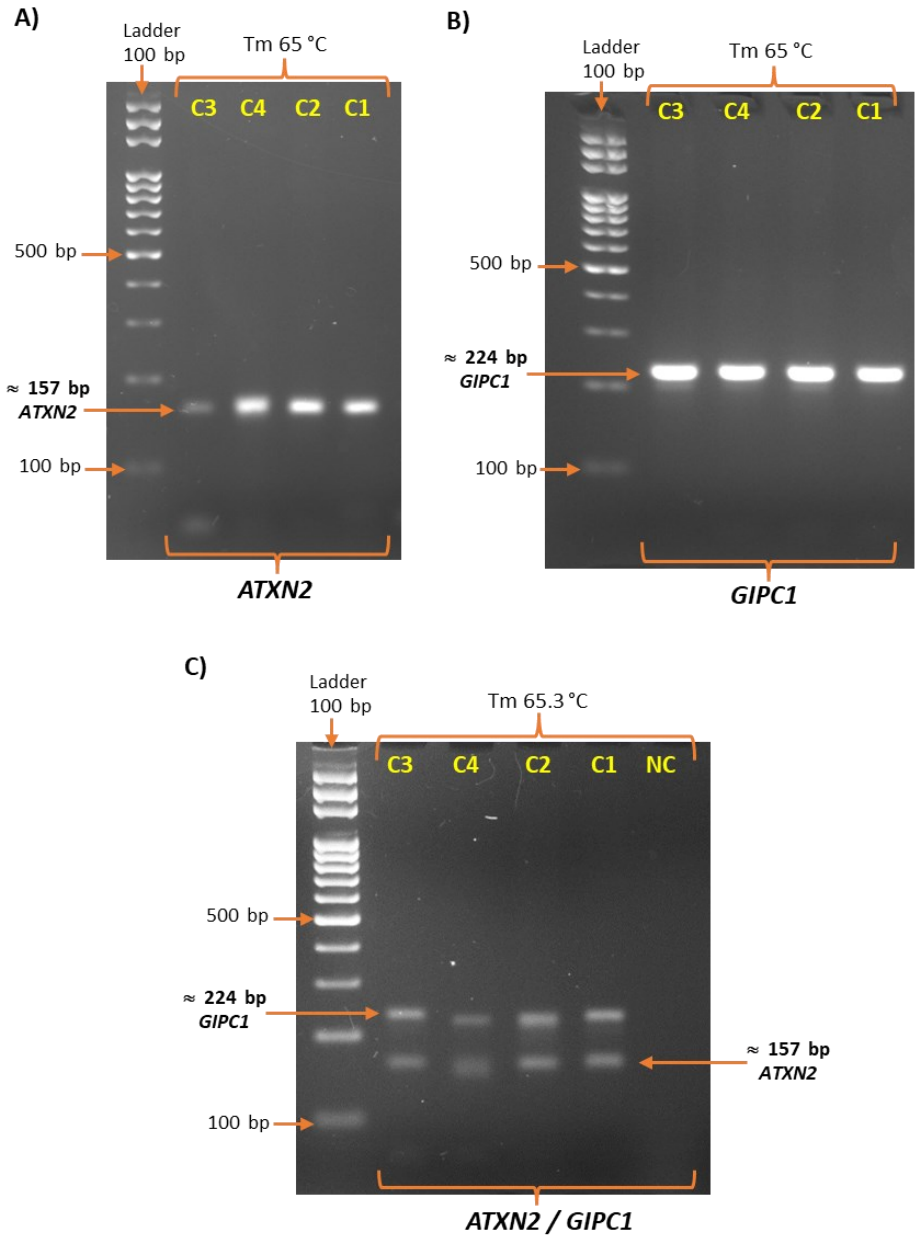


Supplementary Figure S 2-17 Capillary electropherogram of Multiplexes 9 and 10: *AR*, *ATXN8*, *FRA11A* and *NOTCH2NLC* genes.

Panel 7: Filter-set MWGG5, dilution 1:20, Control 1 gDNA. Blue traces correspond to *C11orf80* gene with Fluorescin label; C1 is heterozygote with 383.91 bp and 386.34 bp alleles. Green trace corresponds to *AR* gene with Yakima Yellow label; C1 is homozygote with 225.65 bp alleles. Yellow traces correspond to *NOTCH2NLC* gene with Atto550 label; C1 is homozygote with 205.15 bp alleles. Red traces correspond to *ATXN8* gene with Atto565 label; C1 is heterozygote with 287.35 bp and 302.10 bp alleles. 20µL FLA mix of PCR products = 13 µL *AR / ATXN8* + 7 µL *FRA11A/ NOTCH2NLC*.

2.6 Panel 8: ATXN2, C9orf72, GIPC1 and NUTM2B-AS1 genes

Multiplex 11: *ATXN2* and *GIPC1* genes



Supplementary Figure S 2-18 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *ATXN2* and *GIPC1* genes.

A) *ATXN2* PCR products using a TM of 65°C and four different controls, expected amplicon of ≈157bp. **B)** *ATXN8* PCR products using a TM of 72°C and four different controls, expected amplicon of ≈224bp. **C)** Multiplex PCR products for *ATXN2* and *ATXN8* genes using a TM of 65.3°C and four different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ [1.5]$_f$, dNTPs [2]$_f$. (gDNA controls: C1, C2, C3, C4; NC: negative control, no gDNA Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***ATXN2* gene**

(Primers taken from (Ackerman et al. 2012))

ATXN2-F: 5'- CCCCGCCCGGCGTGCGAGCCGGTGTATG - 3'

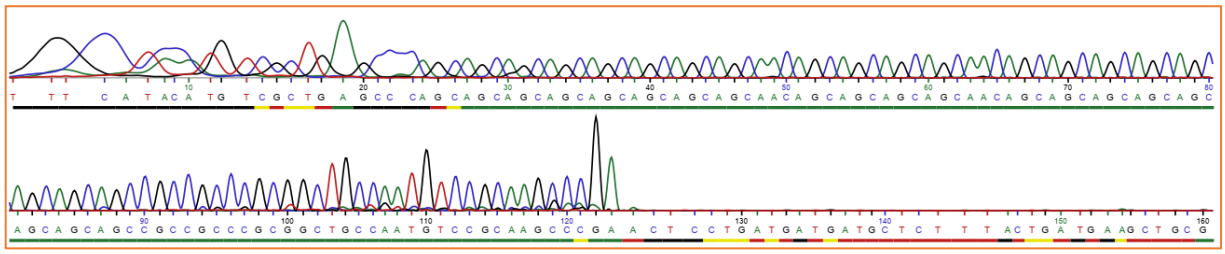
ATXN2-R: 5'- CGGGCTTGCGGACATTGG - 3'

PCR *in silico*: 157bp → 23 **CAG** repeats

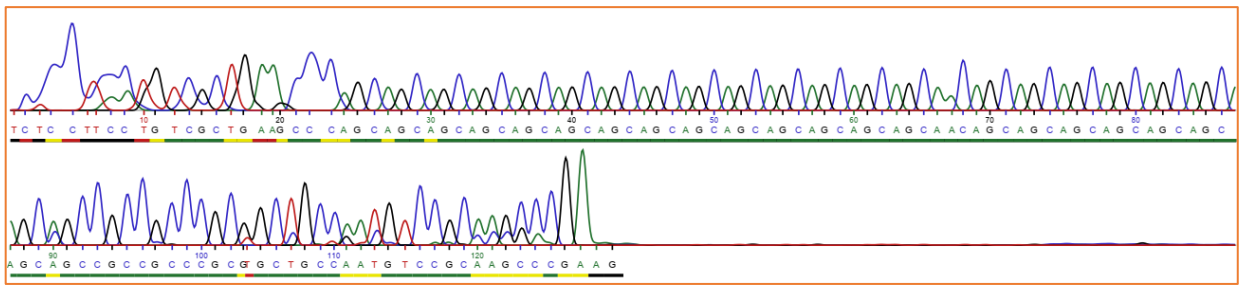
Sequence forward:

CCCCGCCCGGCGTGCGAGCCGGTGTATGGGCCCCTCACCATGTCGCTGAAGCCC**CAGCAGCAGCA**
GCAGCAGCAGCAGCAGCAGCAGCAGCAACAGCAGCAGCAGCAGCAGCAGCAGCCG
CCGCCCGCGGCTGCCAATGTCCGCAAGCCC

- Sequencing result of the individual PCR - sequence forward:



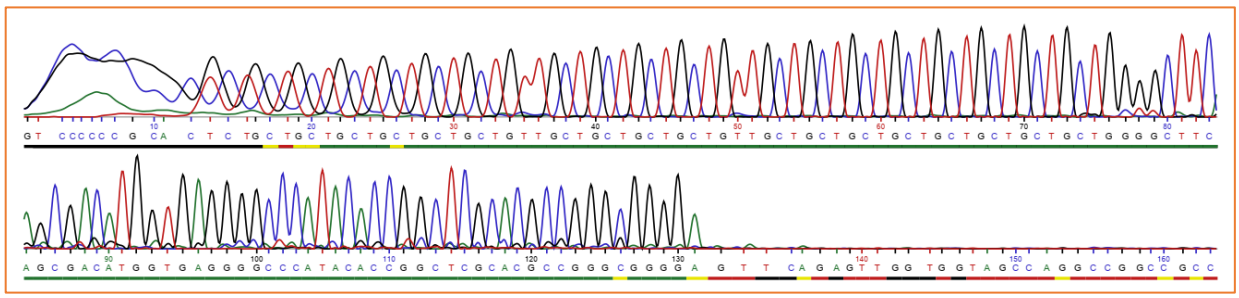
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

CGGGCTTGCGGACATTGCCAGCCGCGGGCGGCGG**CTGCTGCTGCTGCTGCTGCTGCTGCTGTTG**
CTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGGGGCTTCAGCGACATGGTGAGGGGC
CCATACACCGGCTCGCACGCCGGGCGGGG

- Sequencing result of the individual PCR - sequence reverse:



***GIPC1* gene**

(Designed primers using primer3 tool)

GIPC1-F1: 5'- GAAGACGCGGATTGGCTG - 3'

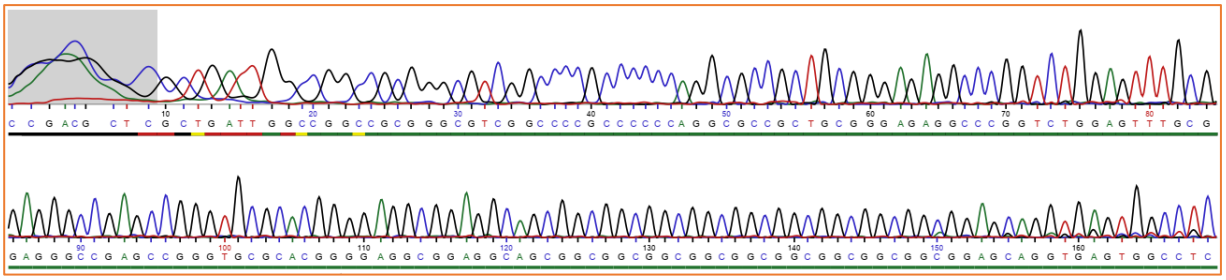
GIPC1-R1: 5'- CGGAGCAGACACATCCTTCT - 3'

PCR *in silico*: 224bp → 10 **GGC** repeats

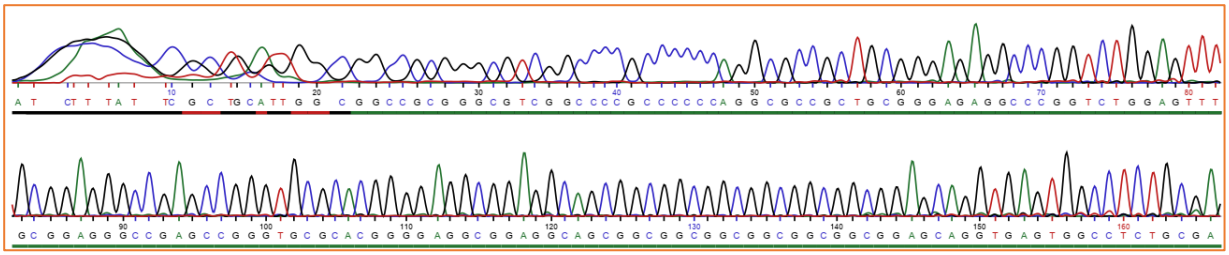
Sequence forward:

GAAGACGCGGATTGGCTGCGAGCACCGAGAGGCAGCCGCTGATTGGCCGGCCGCGGGCGTCGGCC
CCGCCCCCCAGGCGCCGCTGCGGGAGAGGCCCGGTCTGGAGTTTGCGGAGGGCCGAGCCGGGTGC
GCACGGGGAGGCGGAGGCAGCGGCGGCGGCGGCGGCGGCGGCGGCGGCGGAGCAGGTGA
GTGGCCTCTGCGAGAAGGATGTGTCTGCTCCG

- Sequencing result of the individual PCR - sequence forward:



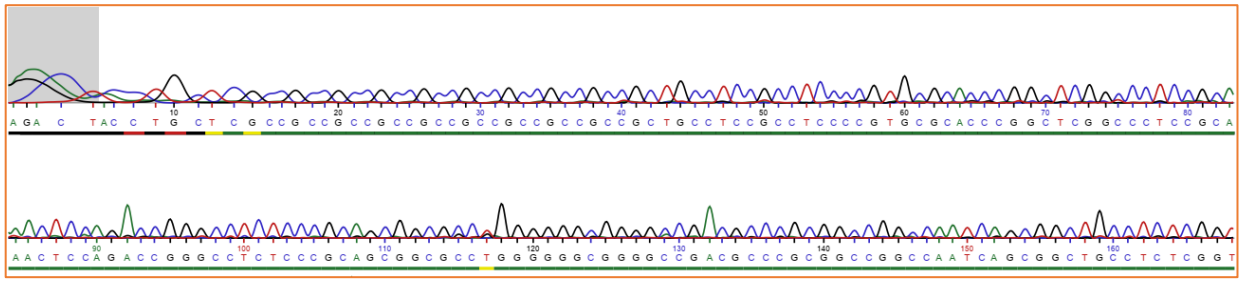
- Sequencing result multiplex PCR - sequence forward:



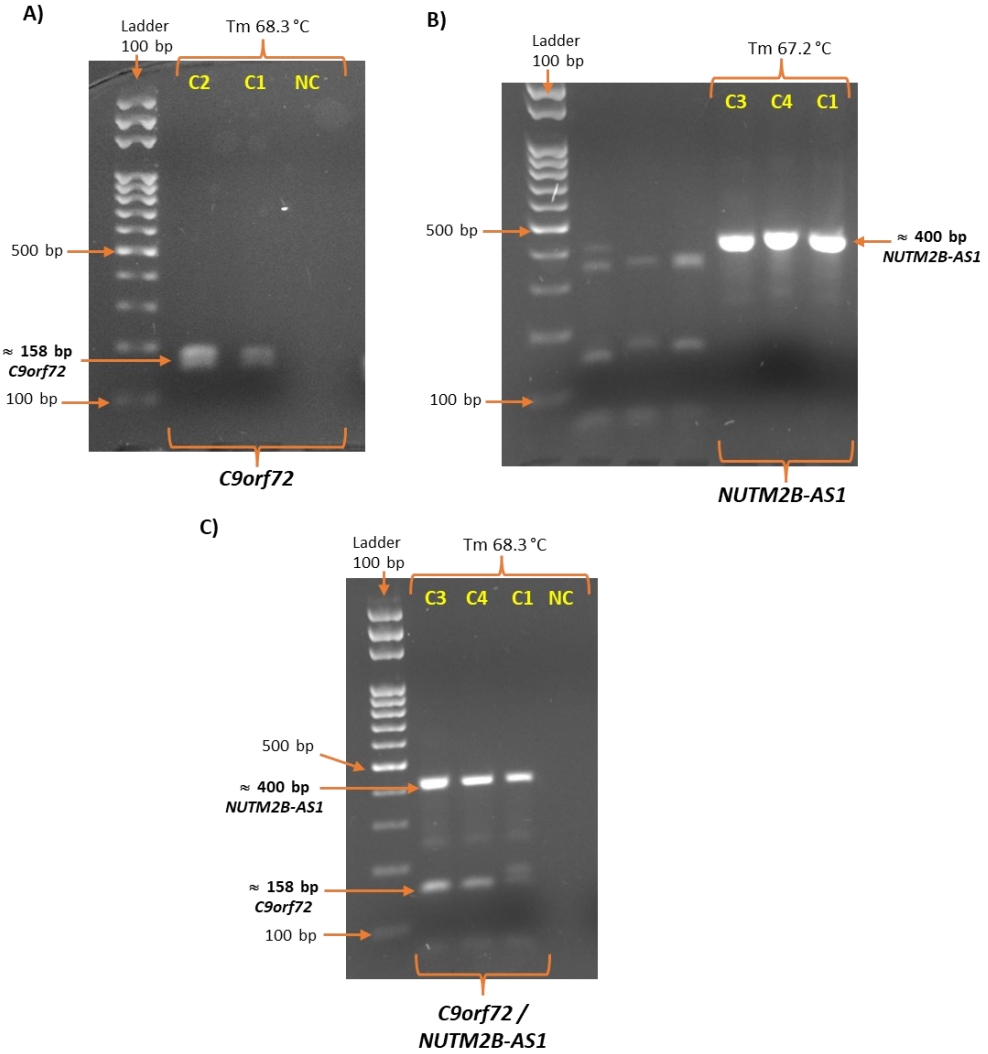
Reverse complement sequence:

CGGAGCAGACACATCCTTCTCGCAGAGGCCACTCACCTGCTCCGCCGCCGCCGCCGCCGCCGCC
GCCGCCGCCGCTGCCTCCGCCTCCCCGTGCGCACCCGGCTCGGCCCTCCGCAAACTCCAGACCGGG
CCTCTCCCGCAGCGGCGCCTGGGGGGCGGGGCCGACGCCCGCGGCCGGCCAATCAGCGGCTGCCTC
TCGGTGCTCGCAGCCAATCCGCGTCTTC

- Sequencing result of the individual PCR - sequence reverse:



Multiplex 12: *C9orf72* and *NUTM2B-AS1* genes



Supplementary Figure S 2-19 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *C9orf72* and *NUTM2N-AS1*.

A) *C9orf72* PCR products using a TM of 68.3°C and two different controls, expected amplicon of ≈158bp. **B)** *NUTM2B-AS1* PCR products using a TM of 67.2°C and two controls, expected amplicon of ≈400bp. **C)** Multiplex PCR products for *C9orf72* and *NUTM2B-AS1* genes using a TM of 68.3°C and three different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1,C2,C3,C4; NC: negative control, no gDNA Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***C9orf72* gene**

(Primers taken from (Cleary et al. 2016))

C9orf72-F3: 5'- AGCAAGCTCTGGAACTCAGGAGTCG - 3'

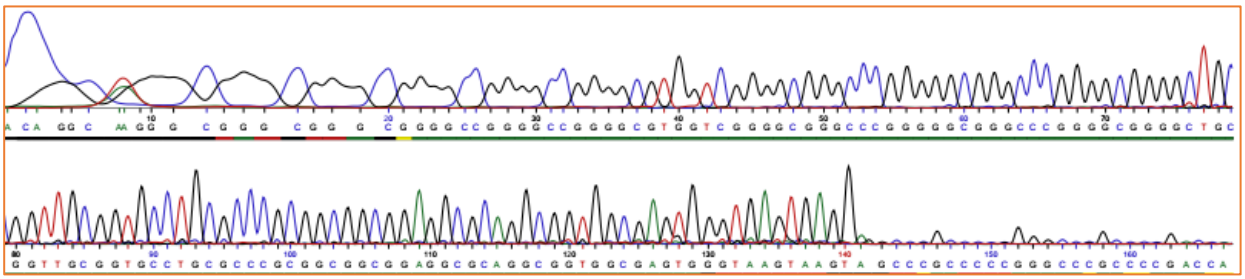
C9orf72-R6: 5'- CCTCACTCACCCACTCGCCAC - 3'

PCR *in silico*: 158bp → 3 **GGGGCC** repeats

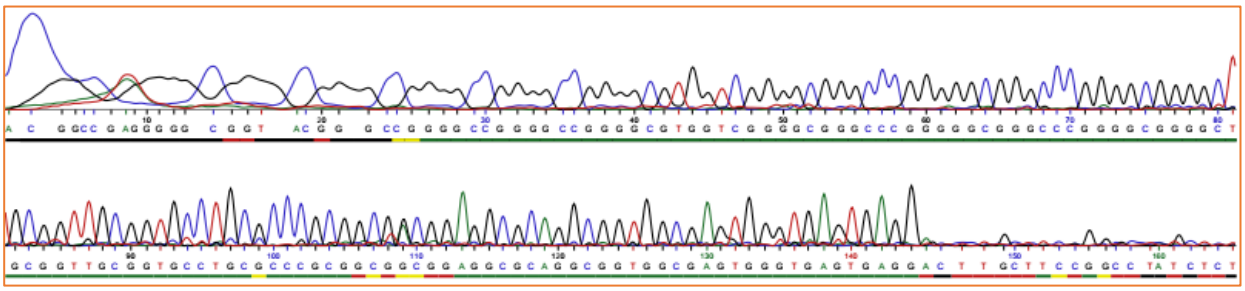
Sequence forward:

AGCAAGCTCTGGAACTCAGGAGTCGCGCGCTA**GGGGCCGGGGCCGGGGCC**GGGGCGTGGTCGGG
GCGGGCCCGGGGGCGGGCCCGGGGCGGGGCTGCGGTTGCGGTGCCTGCGCCCGCGGCGGCGGAGG
CGCAGGCGGTGGCGAGTGGGTGAGTGAGG

- Sequencing result of the individual PCR - sequence forward:



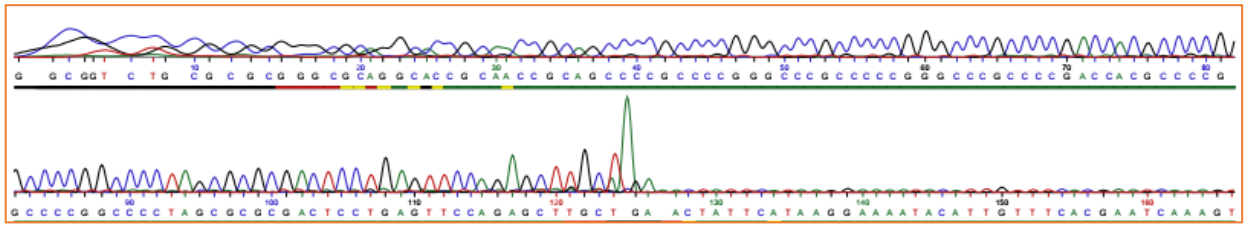
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

CCTCACTCACCCACTCGCCACCGCCTGCGCCTCCGCCGCCGCGGGCGCAGGCACCGCAACCGCAGC
CCCGCCCCGGGCCCGCCCCCGGGCCCGCCCCGACCACGCCCC**GGCCCCGGCCCCGG**CCCCTAGCG
CGCGACTCCTGAGTTCCAGAGCTTGCT

- Sequencing result of the individual PCR - sequence reverse:



***NUTM2B-AS1* gene**

(Primers taken from (Ishiura et al. 2019))

LOC642361_PCR-F3: 5'- CGCAGCCCGAGTTTCCCACCTTTTA - 3'

pGEX3'-LOC642361_PCR-R:

5'- CCGGGAGCTGCATGTGTCAGAGGCTCGCTAGAAGGAGTGTGGTCCACC - 3'

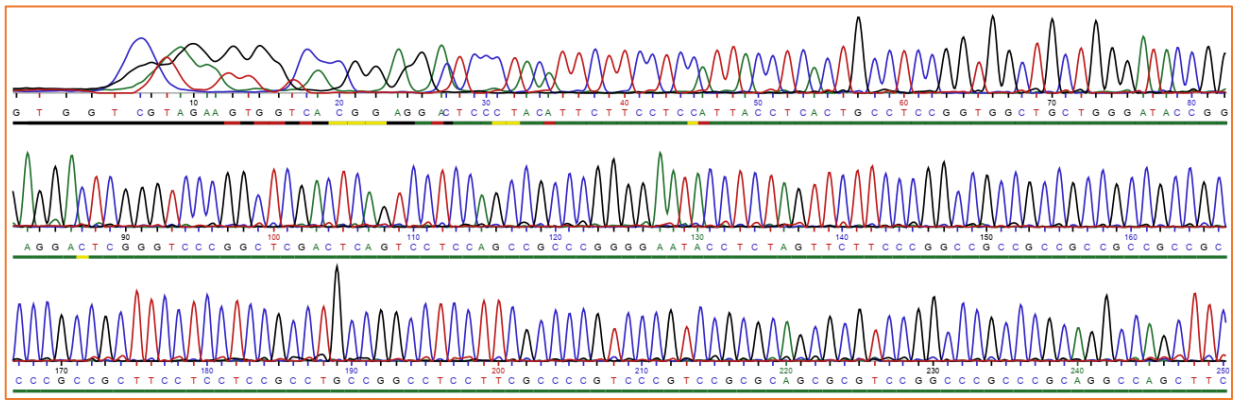
pGEX3': 5'- CCGGGAGCTGCATGTGTCAGAGG - 3'

PCR *in silico*: 400bp → 6 **CCG** repeats

Sequence forward:

CCGGGAGCTGCATGTGTCAGAGGGGCTCGCTAGAAGGAGTGTGGTCCACCGGAGGACTCCCTACAT
TCTTCCTCCATTACCTCACTGCCTCCGGTGGCTGCTGGGATACCGGAGGACTCGGGTCCCGGCTCGA
CTCAGTCCTCCAGCCGCCCGGGGAATACCTCTAGTTCTTCCCGGCCGCCGCCGCCGCCGCCGCCC
CGCCGCTTCCTCCTCCGCCTGCCGGCCTCCTTCGCCCCGTCCCGTCCGCGCAGCGCGTCCGGCCCGC
CCGCAGGCCAGCTTCTCTCGGGAGCCCCCACCCAGGCGCATGGCTCCATGAAGCAAGAGGAGGAG
GCAGAGCGCGAGAGGTCCCGTCCGCCCCAGCCGCGTCTGGGCCAGGATAAAAGGTGGGAAACTCG
GGCTGCG

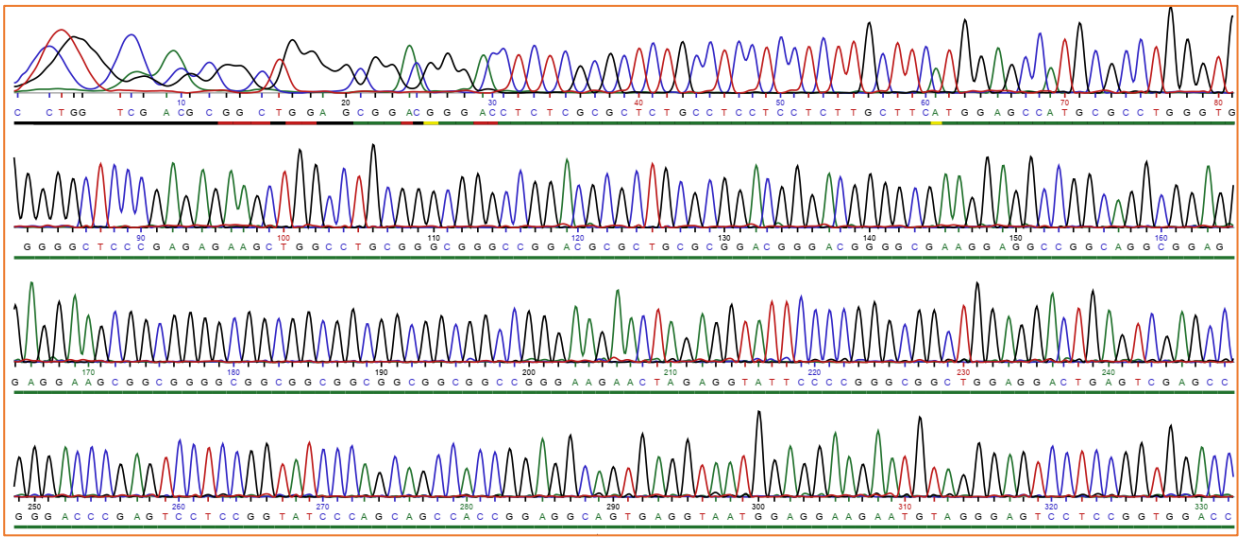
- Sequencing result of the individual PCR - sequence forward:



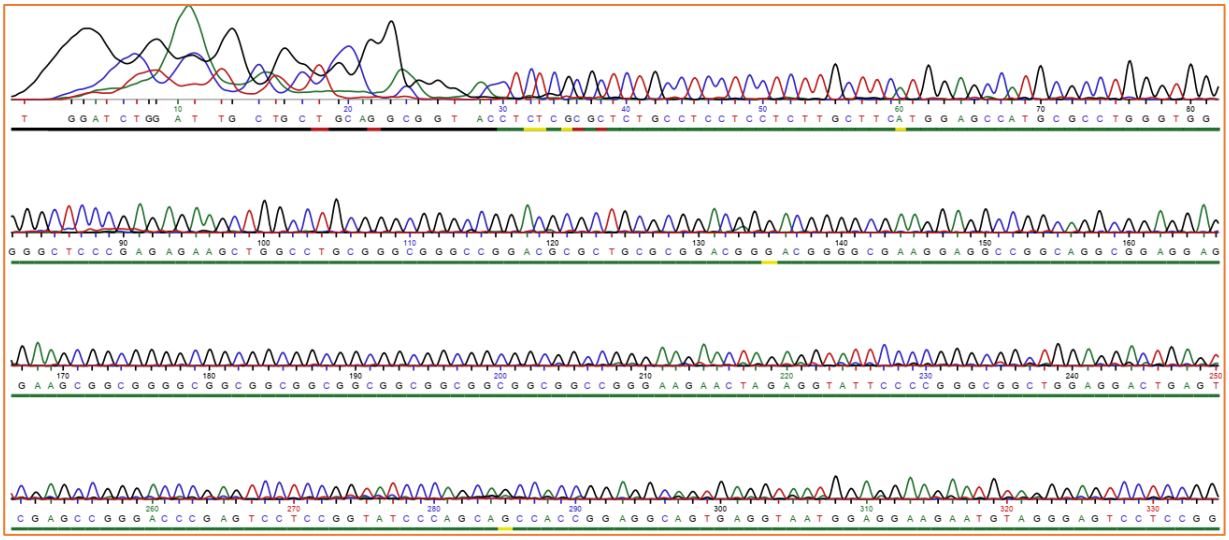
Reverse complement sequence:

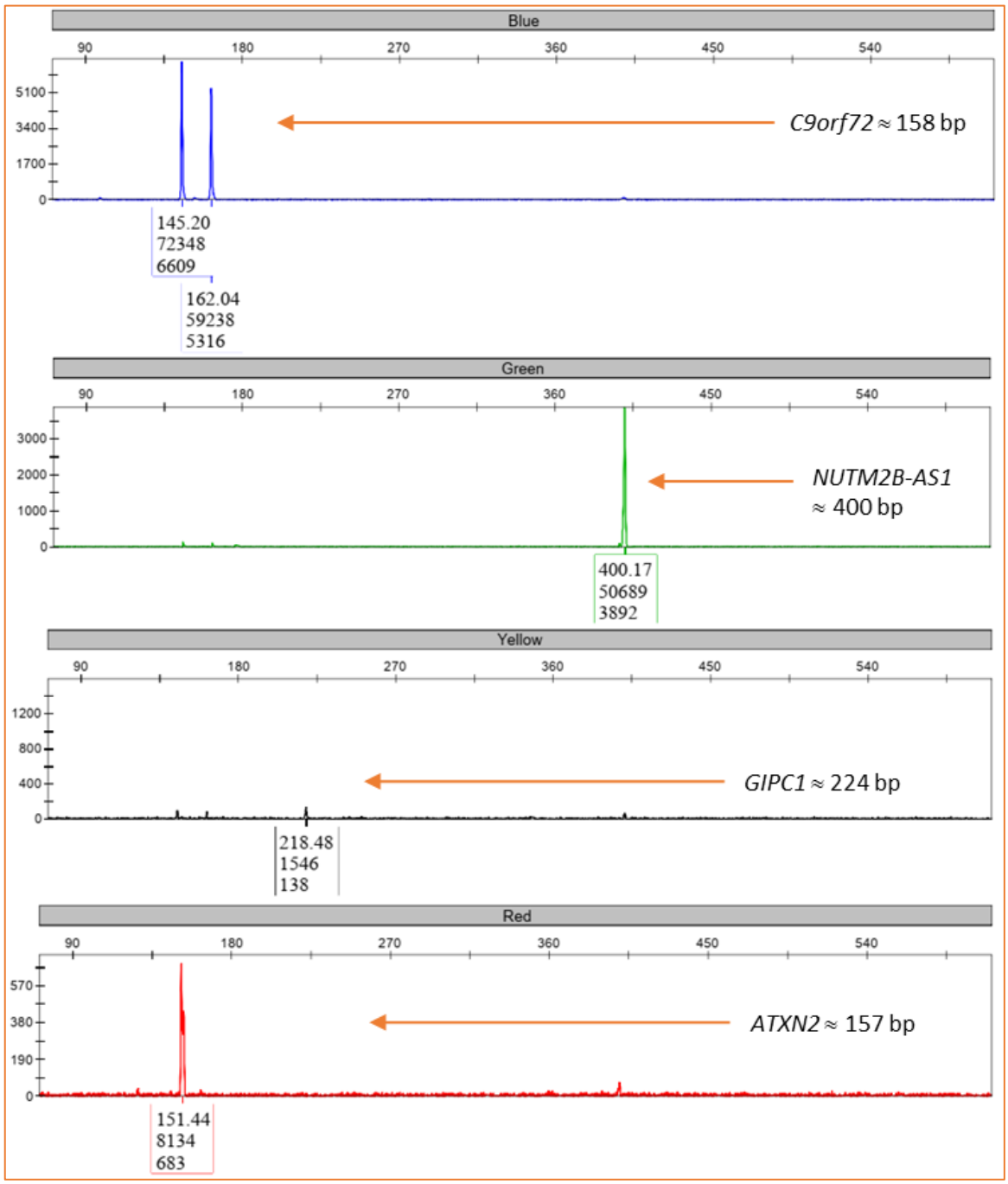
CGCAGCCCGAGTTTCCCACCTTTTATCCTGGCCCAGACGCGGCTGGGGCGGACGGGACCTCTCGCG
CTCTGCCTCCTCCTCTTGCTTCATGGAGCCATGCGCCTGGGTGGGGGCTCCCGAGAGAAGCTGGCCT
GCGGGCGGGCCGGACGCGCTGCGCGGACGGGACGGGGCGAAGGAGGCCGGCAGGCGGAGGAGGA
AGCGGCGGGGCGGCGGCGGCGGCGGCGGCCGGGAAGAACTAGAGGTATTCCCCGGGCGGCTGG
AGGACTGAGTCGAGCCGGGACCCGAGTCCTCCGGTATCCCAGCAGCCACCGGAGGCAGTGAGGTA
ATGGAGGAAGAATGTAGGGAGTCCTCCGGTGGACCACACTCCTTCTAGCGAGCCCCTCTGACACAT
GCAGCTCCCGG

- Sequencing result of the individual PCR - sequence reverse:



- Sequencing result multiplex PCR - sequence reverse:



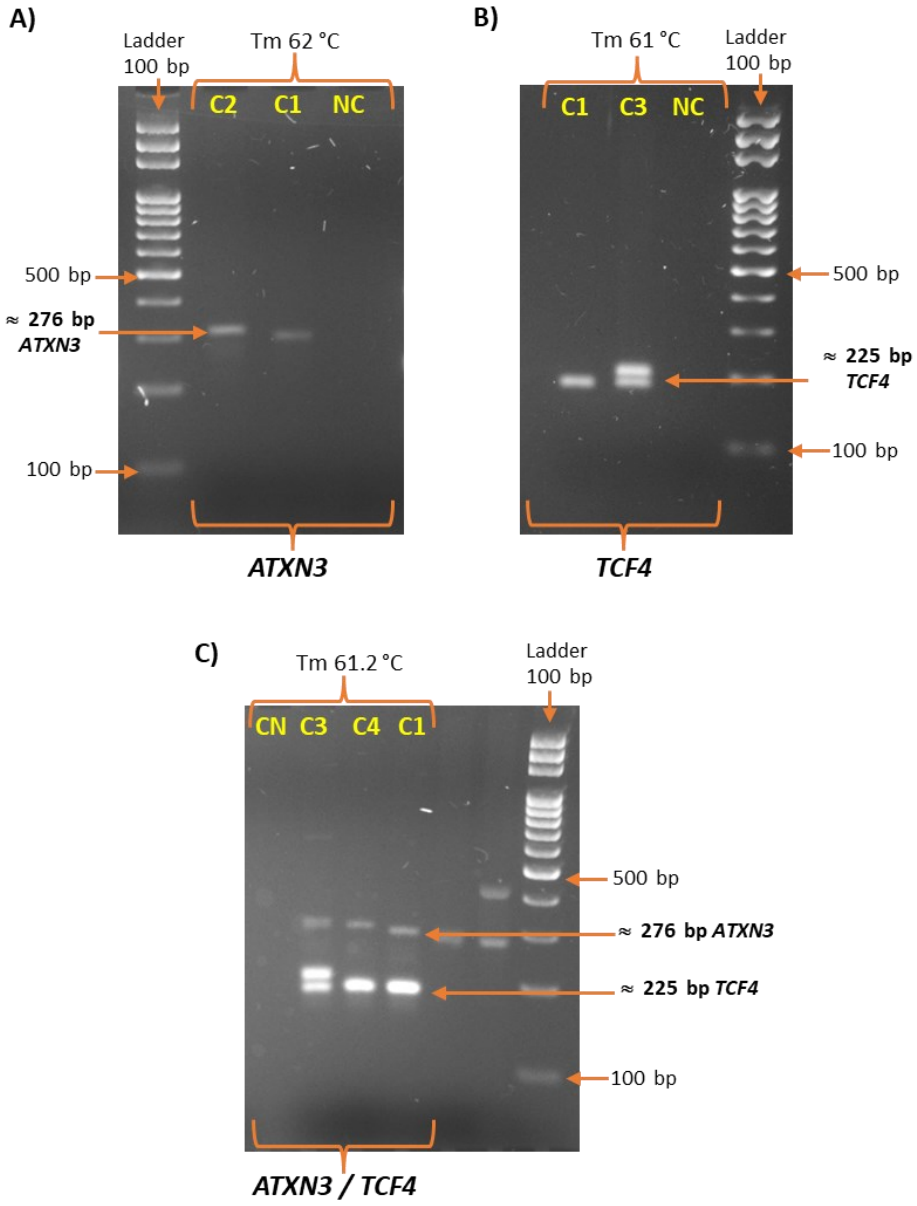


Supplementary Figure S 2-20 Capillary electropherogram of Multiplexes 11 and 12: *ATXN2, GICP1*, *C9orf72* and *NUTM2B-AS1* genes.

Panel 8: Filter-set MWGG5, dilution 1:20, Control 1 gDNA. Blue traces correspond to *C9orf72* gene with Fluorescin label; C1 is heterozygote with 145.20 bp and 162.04 bp alleles. Green trace corresponds to *NUTM2B-AS1* gene with Yakima Yellow label; C1 is homozygote with 400.17 bp alleles. Yellow traces correspond to *GIPC1* gene with Atto550 label; C1 is homozygote with 218.48 bp alleles. Red traces correspond to *ATXN2* gene with Atto565 label; C1 is homozygote with 151.44 bp alleles. 20µL FLA mix of PCR products = 11 µL *ATXN2 / GIPC1* + 9 µL *C9orf72 / NUTM2B-AS1*.

2.7 Panel 9: *ATXN3*, *CACNA1A*, *FXN* and *TCF4* genes

Multiplex 13: *ATXN3* and *TCF4* genes



Supplementary Figure S 2-21 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *ATXN3* and *TCF4*.

A) *ATXN3* PCR products using a TM of 62°C and two different controls, expected amplicon of ≈276bp. **B)** *TCF4* PCR products using a TM of 61°C and two controls, expected amplicon of 225bp. C**)** Multiplex PCR products for *ATXN3* and *TCF4* genes using a TM of 61.2°C and three different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1,C2,C3,C4; NC: negative control, no gDNA Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***ATXN3* gene**

(Designed primers using primer3 tool)

ATXN3 F1: 5'- TTTCCTAAGATCAGCACTTCCA - 3'

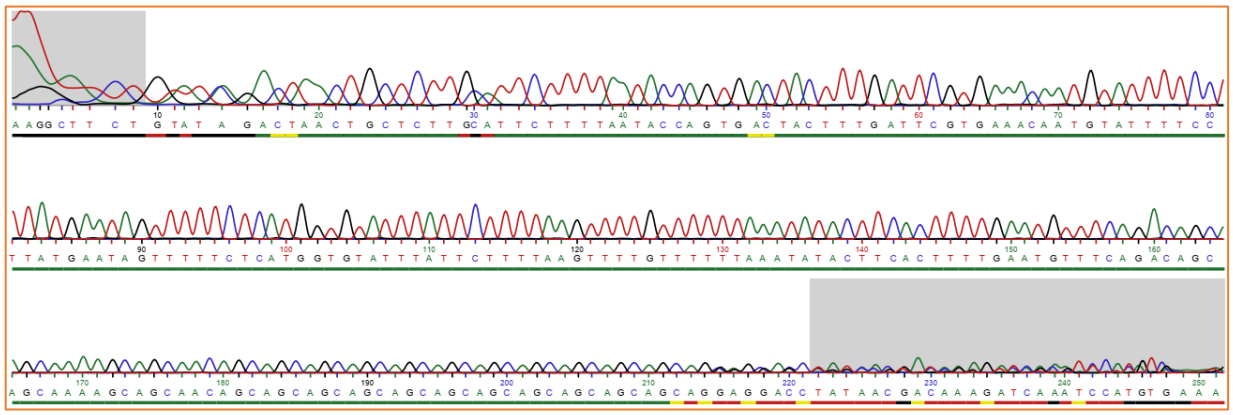
ATXN3 R1: 5'- GCTGGCCTTTCACATGGATG- 3'

PCR *in silico*: 276bp → 14 **CAG** repeats

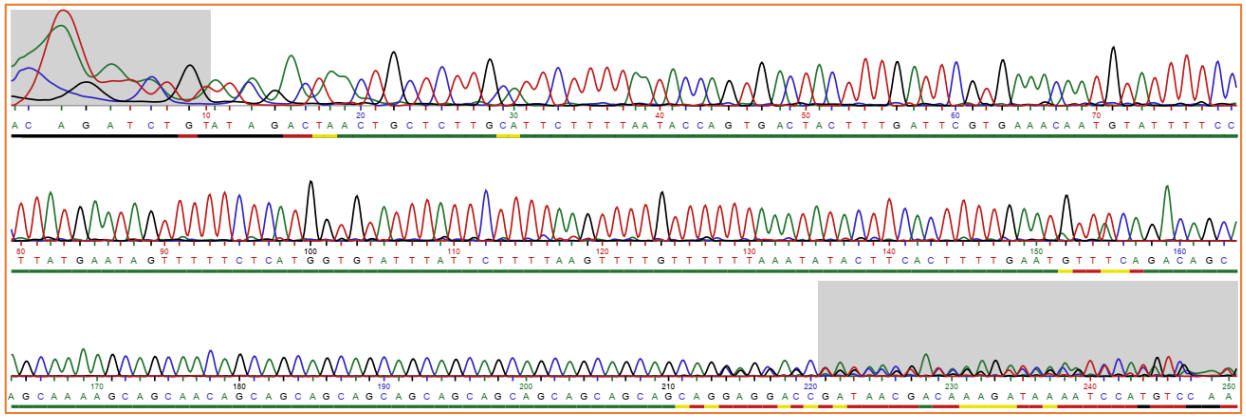
Sequence forward:

TTTCCTAAGATCAGCACTTCCATATTTTAAAGTAATCTGTATCAGACTAACTGCTCTTGCATTCTTTT
AATACCAGTGACTACTTTGATTCGTGAAACAATGTATTTTCCTTATGAATAGTTTTTCTCATGGTGTA
TTTATTCTTTTAAGTTTTGTTTTTTAAATATACTTCACTTTTGAATGTTTCAGACAGCAGCAAAAGCA
GCAA**CAGCAGCAGCAGCAGCAGCAGCAG**GGGGACCTATCAGGACAGAGTTCACATCCATGTGAA
AGGCCAGC

- Sequencing result of the individual PCR - sequence forward:



- Sequencing result multiplex PCR - sequence forward:

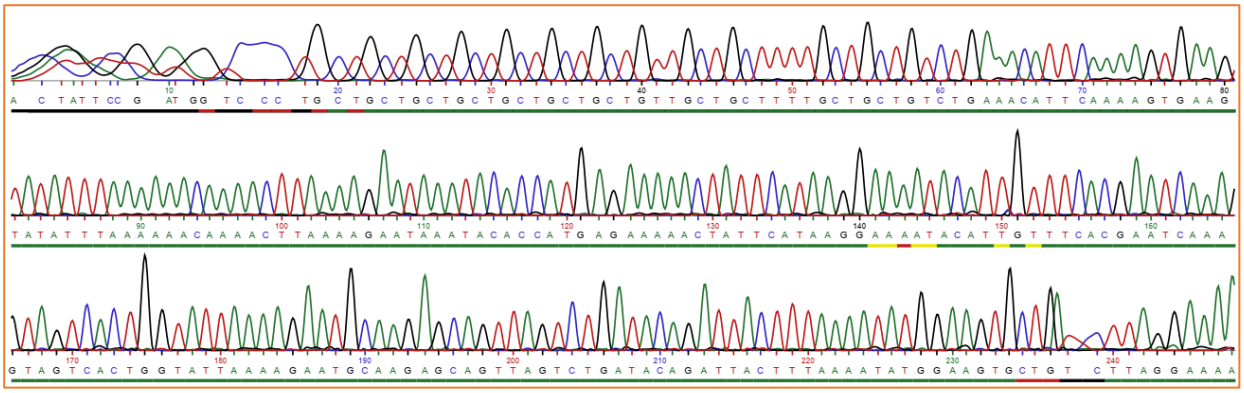


Reverse complement sequence:

GCTGGCCTTTCACATGGATGTGAACTCTGTCCTGATAGGTCCCC**CTGCTGCTGCTGCTGCTGCTGC**
TGTTGCTGCTTTTGCTGCTGTCTGAAACATTCAAAAGTGAAGTATATTTAAAAAACAAAACTTAAAA
GAATAAATACACCATGAGAAAAACTATTCATAAGGAAAATACATTGTTTCACGAATCAAAGTAGTC

ACTGGTATTAAAAGAATGCAAGAGCAGTTAGTCTGATACAGATTACTTTAAAATATGGAAGTGCTG
ATCTTAGGAAA

- Sequencing result of the individual PCR - sequence reverse:



***TCF4* gene**

(Designed primers using primer3 tool)

TCF4 F3: 5'- AGTTTGGTGTAAGATGCATTTGT - 3'

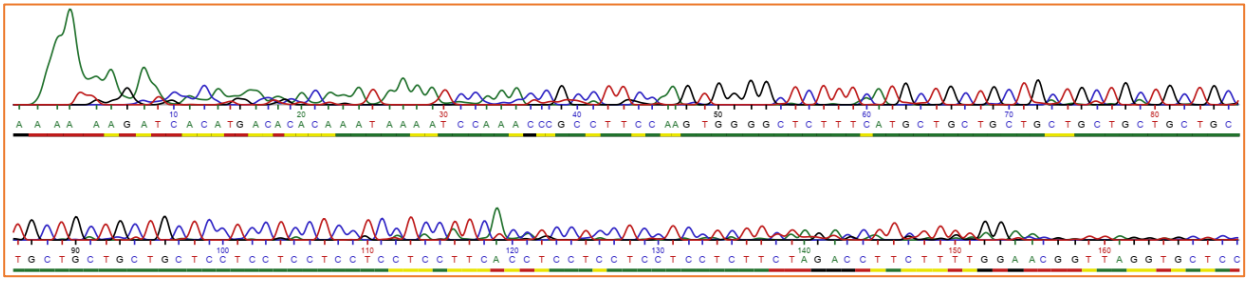
TCF4 R3: 5'- CCAAAAGAAGGTCTAGAAGAGGA - 3'

PCR *in silico*: 225bp → 24 **CTG (CAG)** repeats

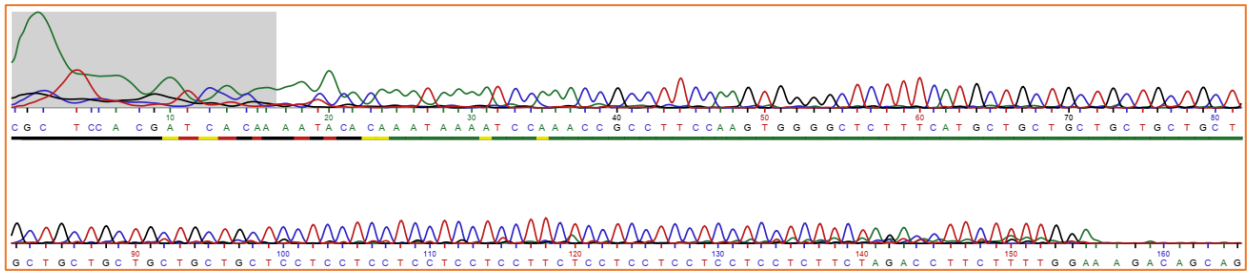
Sequence forward:

AGTTTGGTGTAAGATGCATTTGTAAAGCAAAATAAAAAGAATCCACAAAACACACAAATAAAATCC
AAACCGCCTTCCAAGTGGGGCTCTTTCATG**CTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCT**
GCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTCCTCCTCCTCCTCCTCCTTCTCCTCCT
CCTCC**TCCTCTTCTAGACCTTCTTTTGG**

- Sequencing result of the individual PCR - sequence forward:



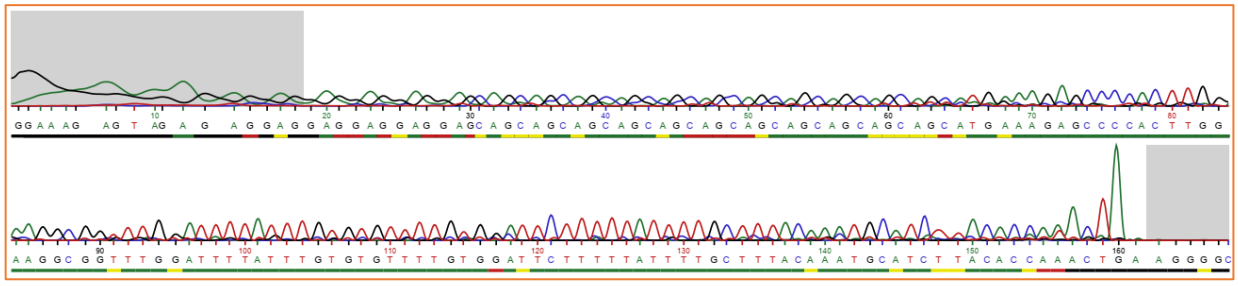
- Sequencing result multiplex PCR - sequence forward:



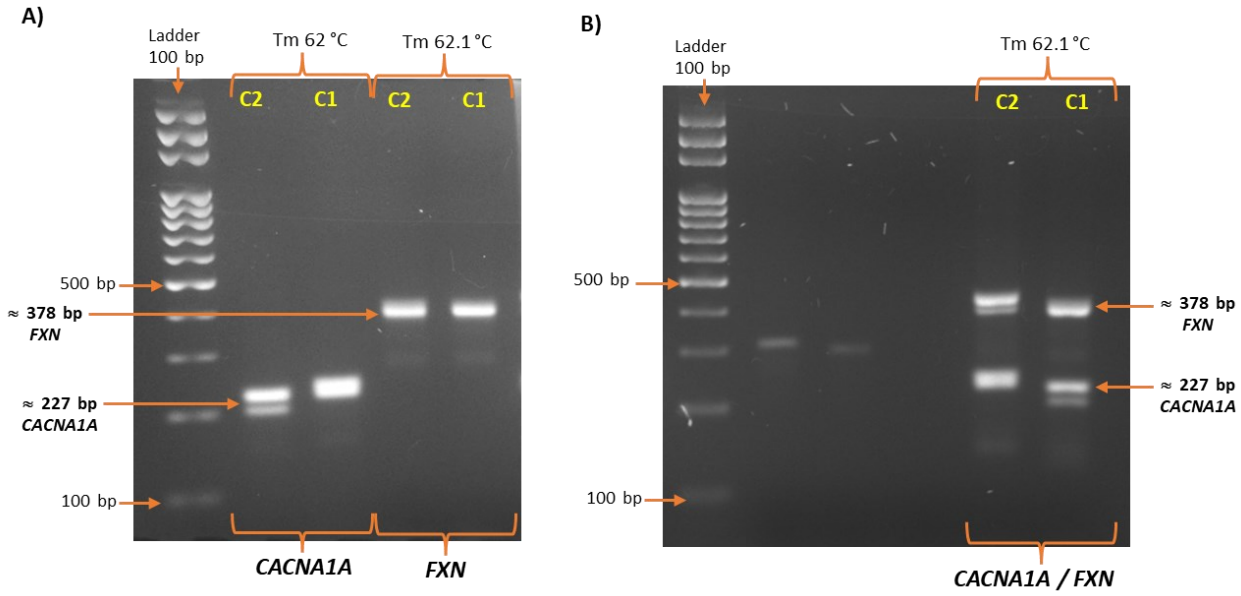
Reverse complement sequence:

CCAAAAGAAGGTCTAGAAGAGGAGGAGGAGGAGGAAGGAGGAGGAGGAGGAGGAGCAGCAG
CAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGC
AGCAGCATGAAAGAGCCCCACTTGGAAGGCGGTTTGGATTTTATTTGTGTGTTTTGTGGATTCTTTT
TATTTTGCTTTACAAATGCATCTTACACCAAACT

- Sequencing result of the individual PCR - sequence reverse:



Multiplex 14: *CACNA1A* and *FXN* genes



Supplementary Figure S 2-22 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *CACNA1A* and *FXN*.

A) *CACNA1A* and *FXN* PCR products using a TMs of 62 and 62.1°C, respectively, and two different controls. Expected amplicon: ≈227bp for *CACNA1A* , and *FXN* ≈378bp. **B)** Multiplex PCR products for *CACNA1A* and *TCF4* genes using a TM of 61.2°C and three different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1,C2; NC: negative control, no gDNA Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***CACNA1A* gene**

(Designed primers using primer3 tool)

SCA6 F1: 5'- ACGTGTCCTATTCCCCTGTG- 3'

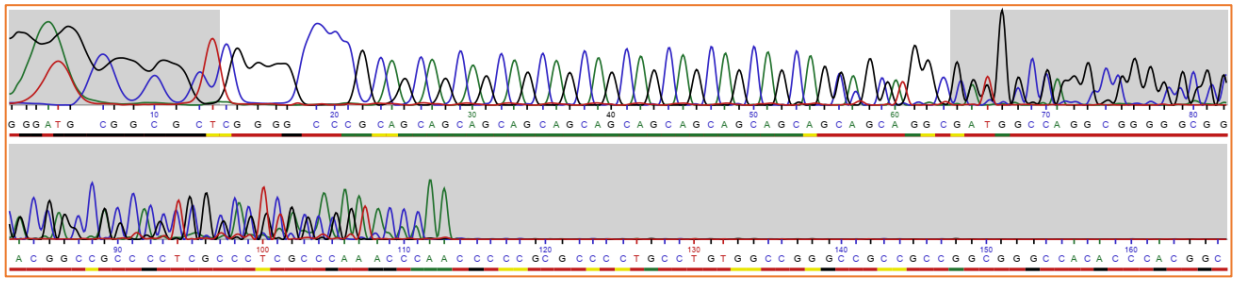
SCA6 R1: 5'- GACCCGCCTCTCCATCCT- 3'

PCR *in silico*: 227bp → 23 **CAG** repeats

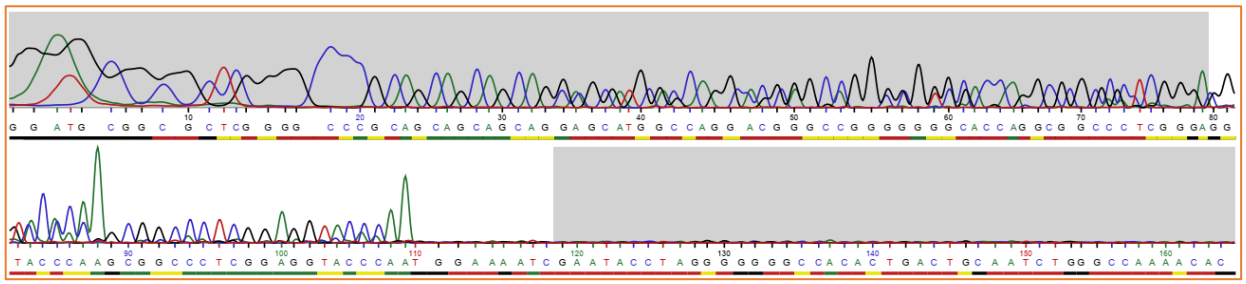
Sequence forward:

ACGTGTCCTATTCCCCTGTGATCCGTAAGGCCGGCGGCTCGGGGCCCCCG**CAGCAGCAGCAGCAG**
CAGCAGCAGCAGCAGCAGCAGGCGGTGGCCAGGCCGGGCCGGGCGGCCACCAGCGGCCCTC
GGAGGTACCCAGGCCCCACGGCCGAGCCTCTGGCCGGAGATCGGCCGCCCACGGGGGGCCACAGC
AGCGGCCGCTCGCCCAGGATGGAGAGGCGGGTC

- Sequencing result of the individual PCR - sequence forward:



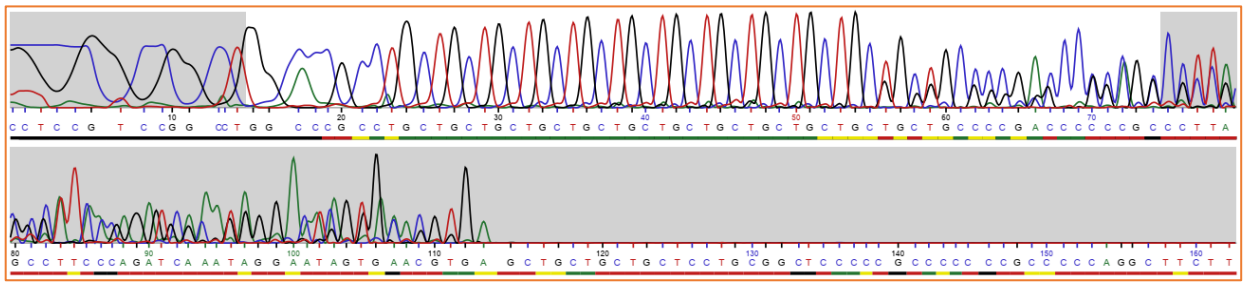
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

GACCCGCCTCTCCATCCTGGGCGAGCGGCCGCTGCTGTGGCCCCCCGTGGGCGGCCGATCTCCGGC
CAGAGGCTCGGCCGTGGGGCCTGGGTACCTCCGAGGGCCGCTGGTGGCCGCCCGGCCCGGCCTGGC
CACCGCCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCTGCGGGGGCCCCGAGCCGCCG
GCCTTACGGATCACAGGGGAATAGGACACGT

- Sequencing result of the individual PCR - sequence reverse:



***FXN* gene**

(Designed primers using primer3 tool)

FXN 2F: 5'- ACACGTGTTATTTGGCCCAC - 3'

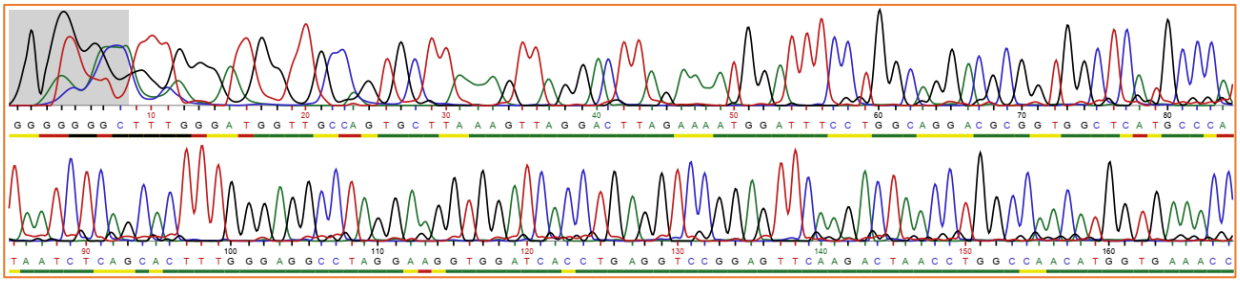
FXN 2R: 5'- GCATTGGGCGATCTTGGC - 3'

PCR *in silico*: 378bp → 6 **GAA** repeats

Sequence forward:

ACACGTGTTATTTGGCCCACATTGTGTTTGAAGAAACTTTGGGATTGGTTGCCAGTGCTTAAAAGTT
AGGACTTAGAAAATGGATTTCCTGGCAGGACGCGGTGGCTCATGCCCATAATCTCAGCACTTTGGG
AGGCCTAGGAAGGTGGATCACCTGAGGTCCGGAGTTCAAGACTAACCTGGCCAACATGGTGAAACC
CAGTATCTACTAAAAAATACAAAAAAAAAAAAAAAAA**GAAGAAGAAGAAGAAGAA**AATAAAGAA
AAGTTAGCCGGGCGTGGTGTCGCGCGCCTGTAATCCCAGCTACTCCAGAGGCTGCGGCAGGAGAAT
CGCTTGAGCCCGGGAGGCAGAGGTTGCATTAAGCCAAGATCGCCCAATGC

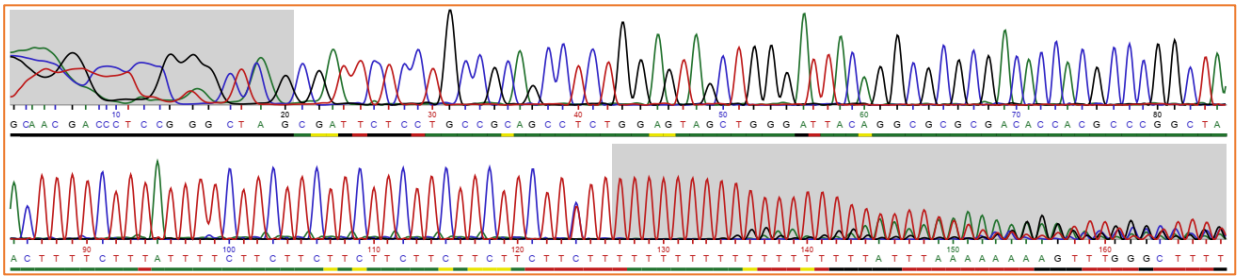
- Sequencing result of the individual PCR - sequence forward:



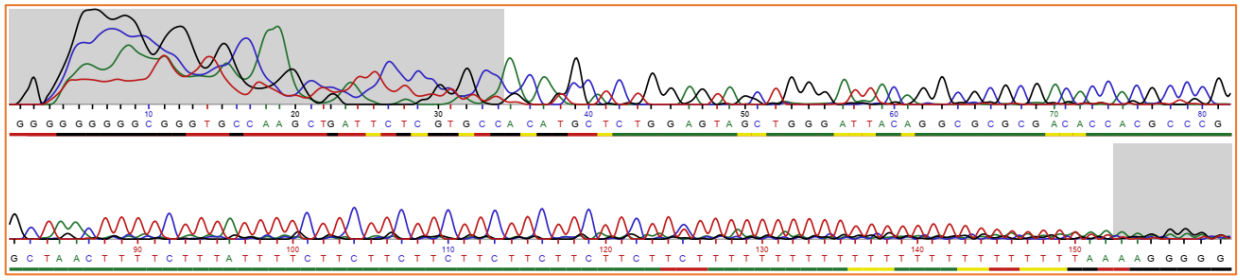
Reverse complement sequence:

GCATTGGGCGATCTTGGCTTAATGCAACCTCTGCCTCCCGGGCTCAAGCGATTCTCCTGCCGCAGCC
TCTGGAGTAGCTGGGATTACAGGCGCGCGACACCACGCCCGGCTAACTTTTCTTTATT**TTCTTCTTC**
TTCTTCTTCTTTTTTTTTTTTTTTTGTATTTTTTAGTAGATACTGGGTTTCACCATGTTGGCCAGGTTA
GTCTTGAACTCCGGACCTCAGGTGATCCACCTTCCTAGGCCTCCCAAAGTGCTGAGATTATGGGCAT
GAGCCACCGCGTCCTGCCAGGAAATCCATTTTCTAAGTCCTAACTTTTAAGCACTGGCAACCAATCC
CAAAGTTTCTTCAAACACAATGTGGGCCAAATAACACGTGT

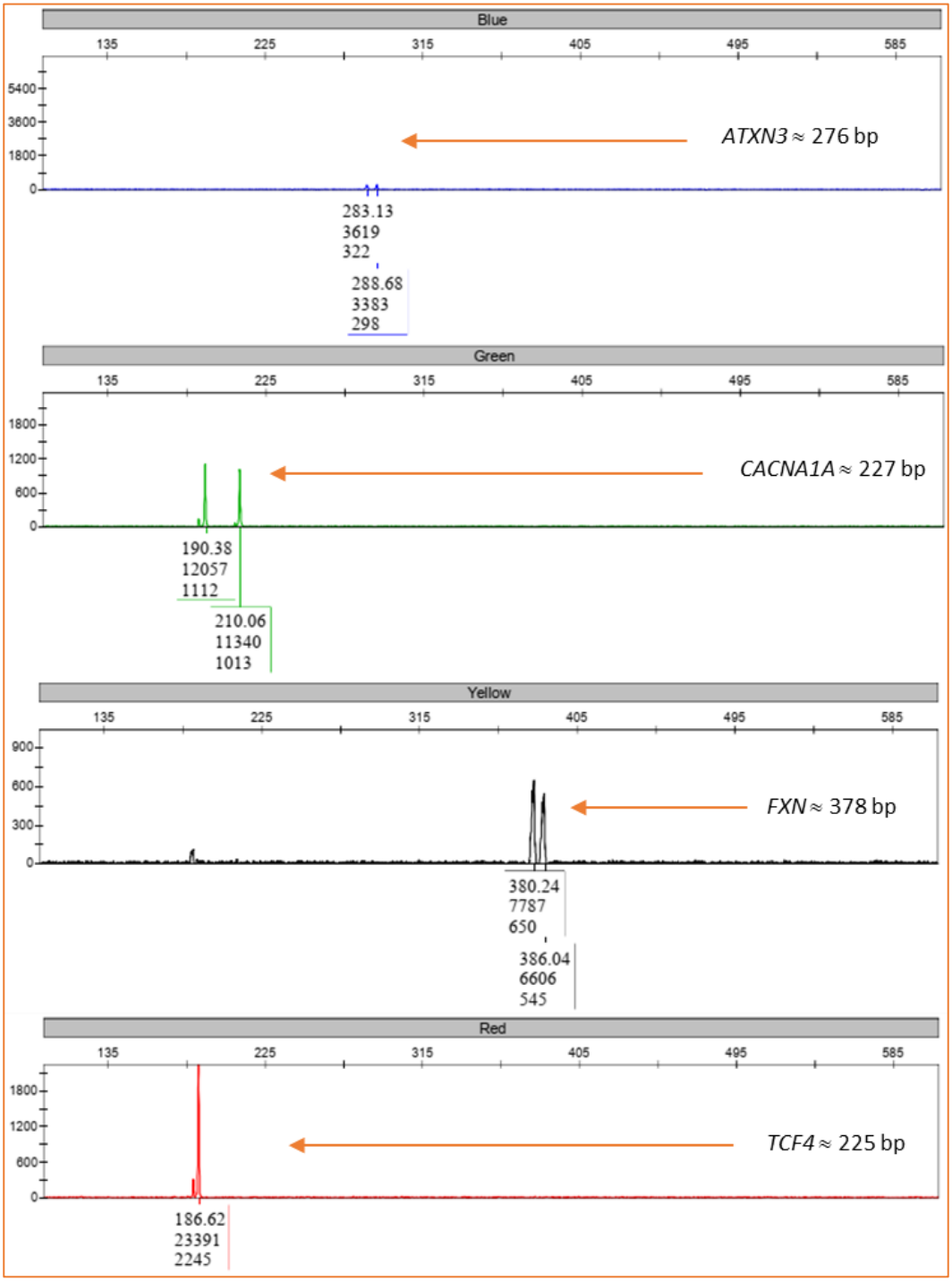
- Sequencing result of the individual PCR - sequence reverse:



- Sequencing result multiplex PCR - sequence forward:



FLA results

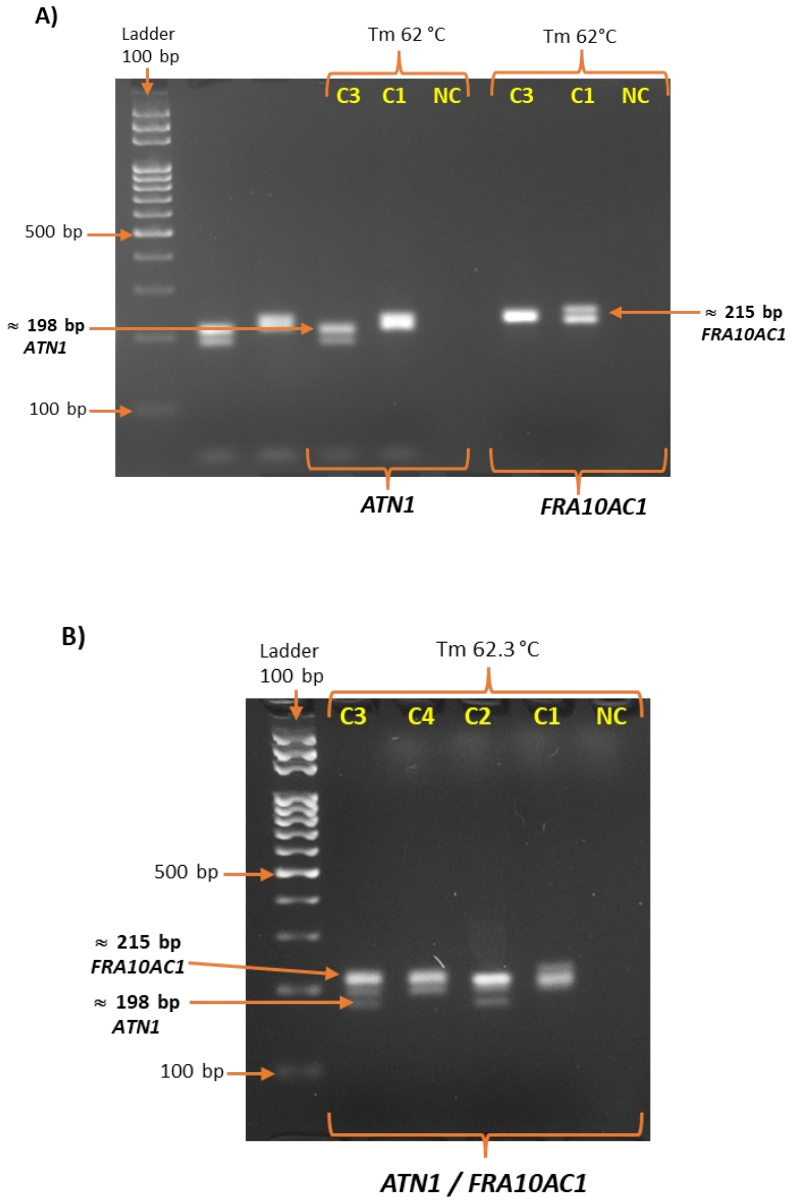


Supplementary Figure S 2-23 Capillary electropherogram of Multiplexes 13 and 14: *ATXN3, TCF4, CACNA1A* and *FXN* genes.

Panel 9: Filter-set MWGG5, dilution 1:20, Control 1 gDNA. Blue traces correspond to *ATXN3* gene with Fluorescin label; C1 is heterozygote with 283.13 bp and 288.68 bp alleles. Green trace corresponds to *CACNA1A* gene with Yakima Yellow label; C1 is heterozygote with 190.38 bp and 210.06 bp alleles. Yellow traces correspond to *FXN* gene with Atto550 label; C1 is heterozygote with 380.24 bp and 386.06 bp alleles. Red traces correspond to *TCF4* gene with Atto565 label; C1 is homozygote with 186.62 bp alleles. 20µL FLA mix of PCR products = 13 µL *ATXN3 / TCF4* + 7 µL *CACNA1A/ FXN*.

2.8 Panel 10: *ATN1*, *FRA10AC1* and *LRP12* genes

Multiplex 15: *ATN1* and *FRA10AC1* genes



Supplementary Figure S 2-24 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual and multiplex PCR products of *ATN1* and *FRA10AC1*.

A) *ATN1* PCR products using a TM of 62°C and two different controls, expected amplicon of ≈198bp. *FRA10AC1* PCR products using a TM of 62°C and two controls, expected amplicon of 215bp. **B)** Multiplex PCR products for *ATN1* and *FRA10AC1* genes using a TM of 62.3°C and four different controls. All PCRs used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1,C2,C3,C4; NC: negative control, no gDNA Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***ATN1* gene**

(Designed primers using primer3 tool)

ATN1 F2: 5'- CAACAGCAATGCCCATCCAG - 3'

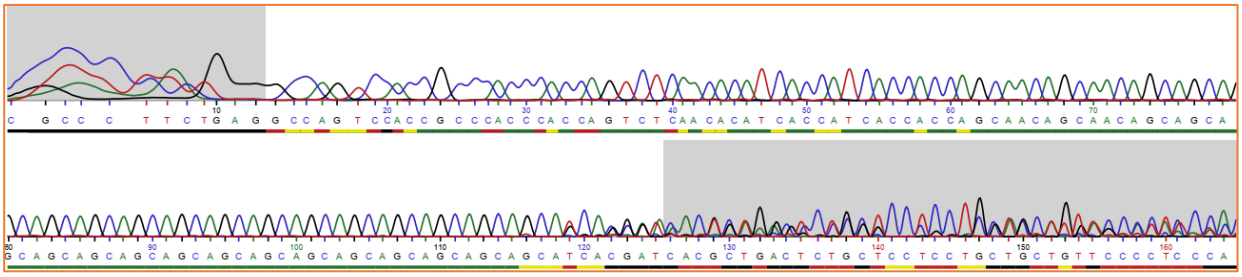
ATN1 R2: 5'- AGTGGGTGGGGAAATGCTC - 3'

PCR *in silico*: 198bp → 15 **CAG** repeats

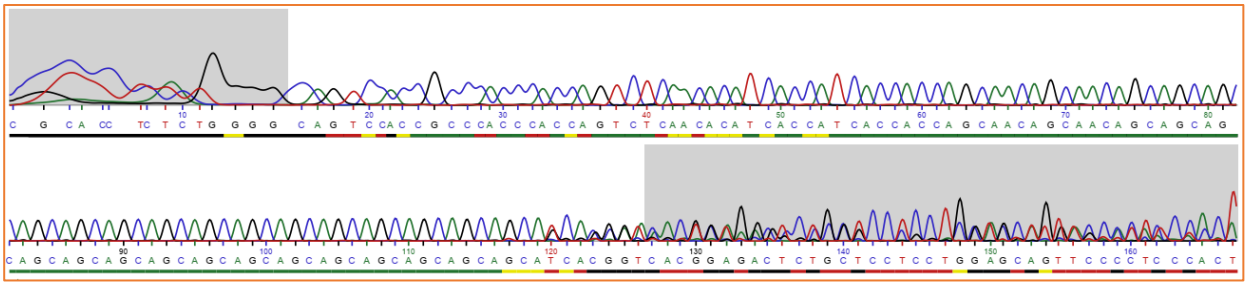
Sequence forward:

CAACAGCAATGCCCATCCAGGCCCCTTCCCTCCCTCTACTGGGGCCCAGTCCACCGCCCACCCACCA
GTCTCAACACATCACCATCACCACCAGCAACAGCAA**CAGCAGCAGCAGCAGCAGCAGCAGCAGC**
AGCAGCAGCAGCAGCAGCATCACGGAAACTCTGGGCCCCCTCCTCCTGGAGCATTTCCCCACCCA
CT

- Sequencing result of the individual PCR - sequence forward:



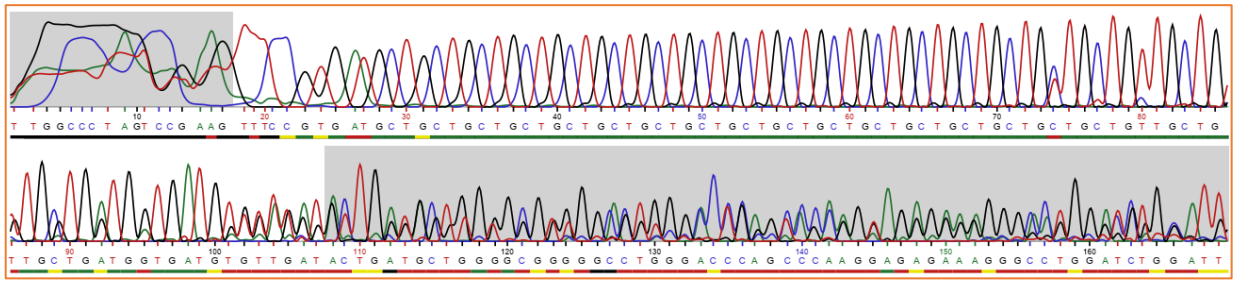
- Sequencing result multiplex PCR - sequence forward:



Reverse complement sequence:

AGTGGGTGGGGAAATGCTCCAGGAGGAGGGGGCCCAGAGTTTCCGTGATG**CTGCTGCTGCTGCTG**
CTGCTGCTGCTGCTGCTGCTGCTGCTGTTGCTGTTGCTGGTGGTGATGGTGATGTGTTGAGA
CTGGTGGGTGGGCGGTGGACTGGGCCCCAGTAGAGGGAGGGAAGGGGCCTGGATGGGCATTGCTG
TTG

- Sequencing result of the individual PCR - sequence reverse:



FRA10AC1 **gene**

(Designed primers using primer3 tool)

FRA10AC1 F1: 5'- GTTTCCTTCTTTCCCGGCAG- 3'

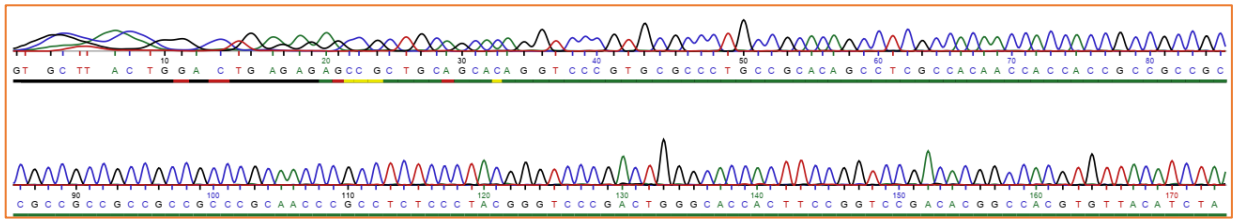
FRA10AC1 R1: 5'- GGGACGGTGCCATTTAGATG - 3'

PCR *in silico*: 215bp → 8 **CGG** repeats

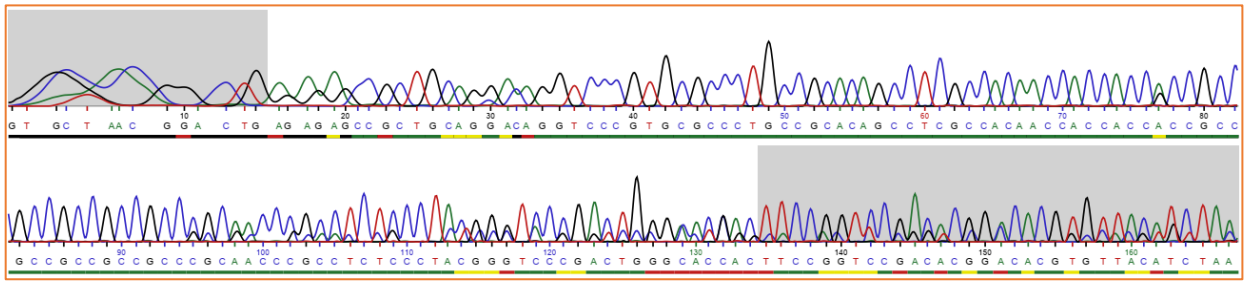
Sequence forward:

GTTTCCTTCTTTCCCGGCAGCTGCAGCGACGACCCACGGCCTGAGAGAGCCGCTGCAGCACAGGTC
CCGTGCGCCCTGCCGCACAGCCTCGCCACAACCACCA**CCGCCGCCGCCGCCGCCGCCGCCG**CCC
GCAACCCGCCTCTCCCTACGGGTCCCGACTGGGCACCACTTCCGGTCCGACACGGCCACGTGTTACA
TCTAAATGGCACCGTCCC

- Sequencing result of the individual PCR - sequence forward:



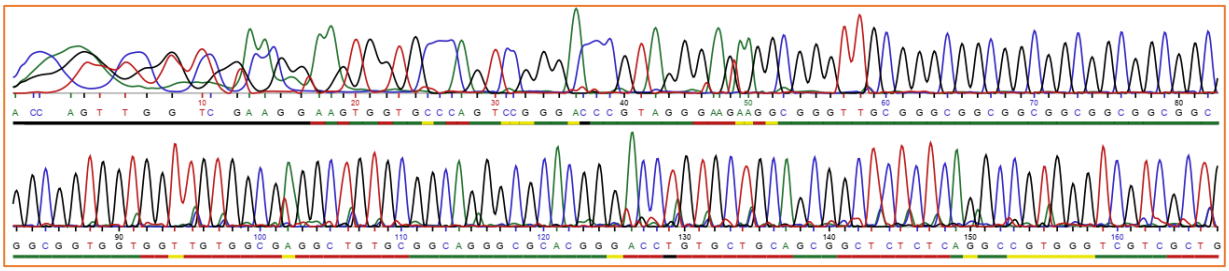
- Sequencing result multiplex PCR - sequence forward:



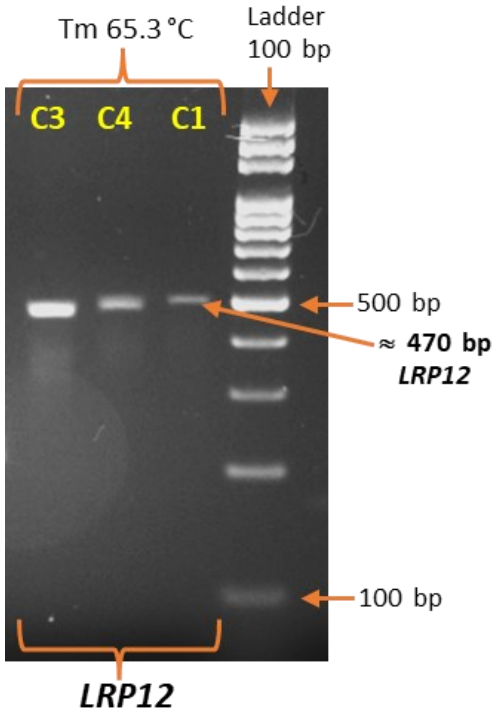
Reverse complement sequence:

GGGACGGTGCCATTTAGATGTAACACGTGGCCGTGTCGGACCGGAAGTGGTGCCCAGTCGGGACCC
GTAGGGAGAGGCGGGTTGCGGG**CGGCGGCGGCGGCGGCGGCGGCGG**TGGTGGTTGTGGCGAGG
CTGTGCGGCAGGGCGCACGGGACCTGTGCTGCAGCGGCTCTCTCAGGCCGTGGGTCGTCGCTGCAG
CTGCCGGGAAAGAAGGAAAC

- Sequencing result of the individual PCR - sequence reverse:



Individual 16: *LRP12* gene



Supplementary Figure S 2-25 Photographic recording of the electrophoretic run on agarose gel 2.5% of the individual PCR products of LRP12 gene.

PCR products for *LRP12MR1* using a TM of 65.3°C and three different controls, expected amplicon of ≈470 bp. Successful PCR used Hot FirePol® DNA Polymerase, Buffer 2 (1X), Solution S (3X), $MgCl_2$ $[1.5]_f$, dNTPs $[2]_f$. (gDNA controls: C1, C3, C4; Tm: melting temperature; Ladder 100 bp: 100 bp DNA Ladder Ready to Load).

***LRP12* gene**

(Primers taken from (Ackerman et al. 2012))

LRP12 F3: 5'- CGCACGCTCTGTCATCGAT - 3'

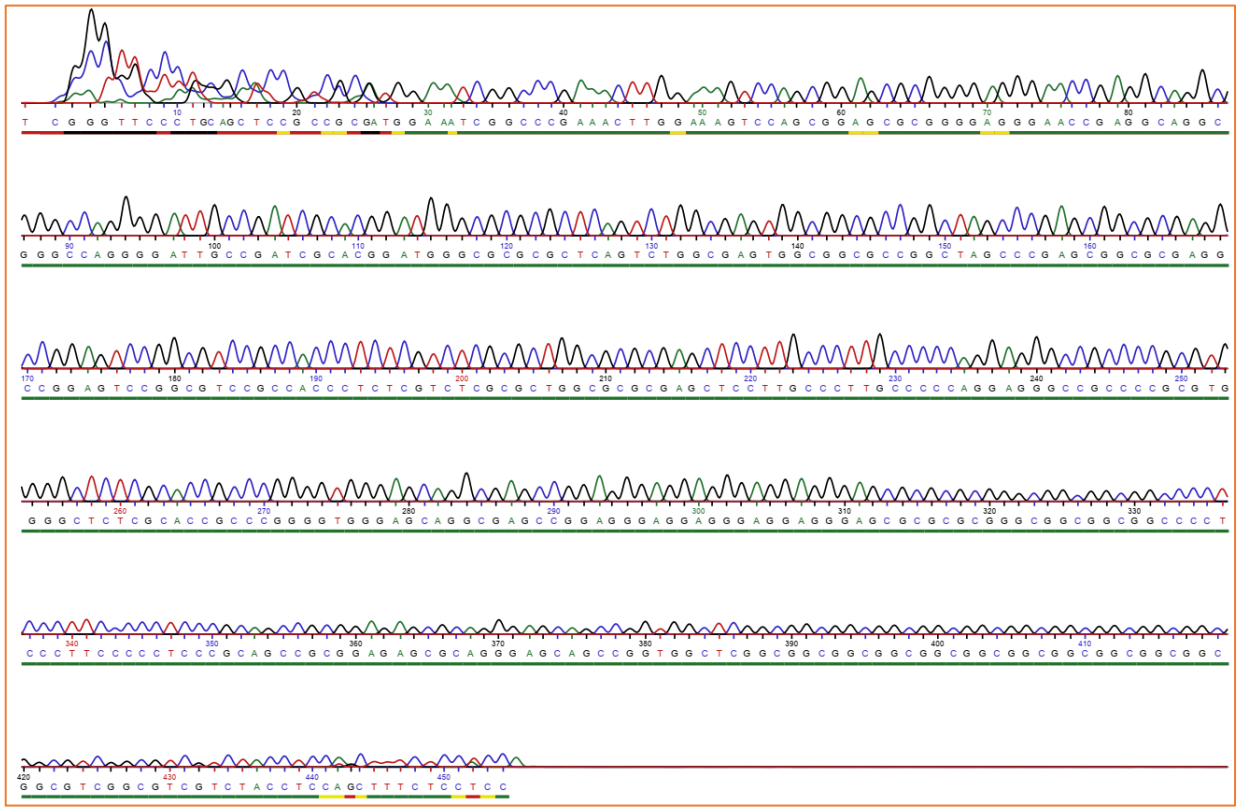
LRP12 R3: 5'- GGAGGAGAAGCTGGAGGTAG - 3'

PCR *in silico*: 470bp → 9 **CCG** repeats

Sequence forward:

CGCACGCTCTGTCATCGATTGGCGCTGCCTTGCTCCTTGGGCTCCCGTCGCGTGGAAATCGGCCCGA
AACTTGGAAAGTCCAGCGGAGCGCGGGGAGGGAACCGAGGCAGGCGGGCCAGGGGATTGCCGATC
GCACGGATGGGCGCGCGCTCAGTCTGGCGAGTGGCGGCGCCGGCTAGCCCGAGCGGCGCGAGGCC
GGAGTCCGGCGTCCGCCACCCTCTCGTCTCGCGCTGGCGCGCGAGCTCCTTGCCCTTGCCCCCAGGA
GGGCCGCCCCGCGTGGGGCTCTCGCACCGCCCGGGGTGGGAGCAGGCGAGCCGGAGGGAGGAGGG
AGGAGGGAGCGCGCGCGGGCGGCGGCGGCCCCTCCCTTCCCCCTCCCGCAGCCGCGGAGAGCGCA
GGGAGCAGCCGGTGGCTCGGCGGCGGCGGCGGCGGCGGCGGCGGCGTCGGCGTCGTCTACCTC
CAGCTTCTCCTCC

- Sequencing result of the individual PCR - sequence forward:

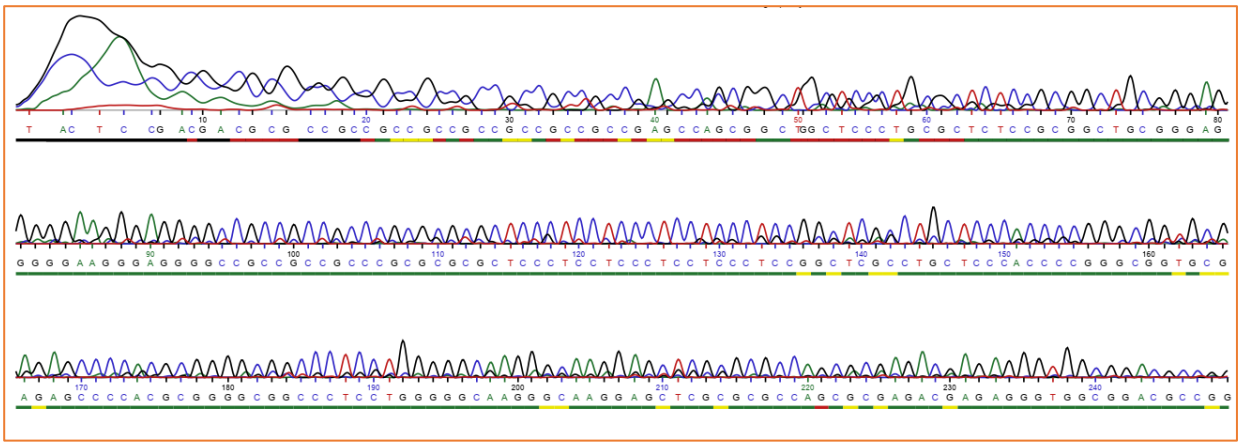


Reverse complement sequence:

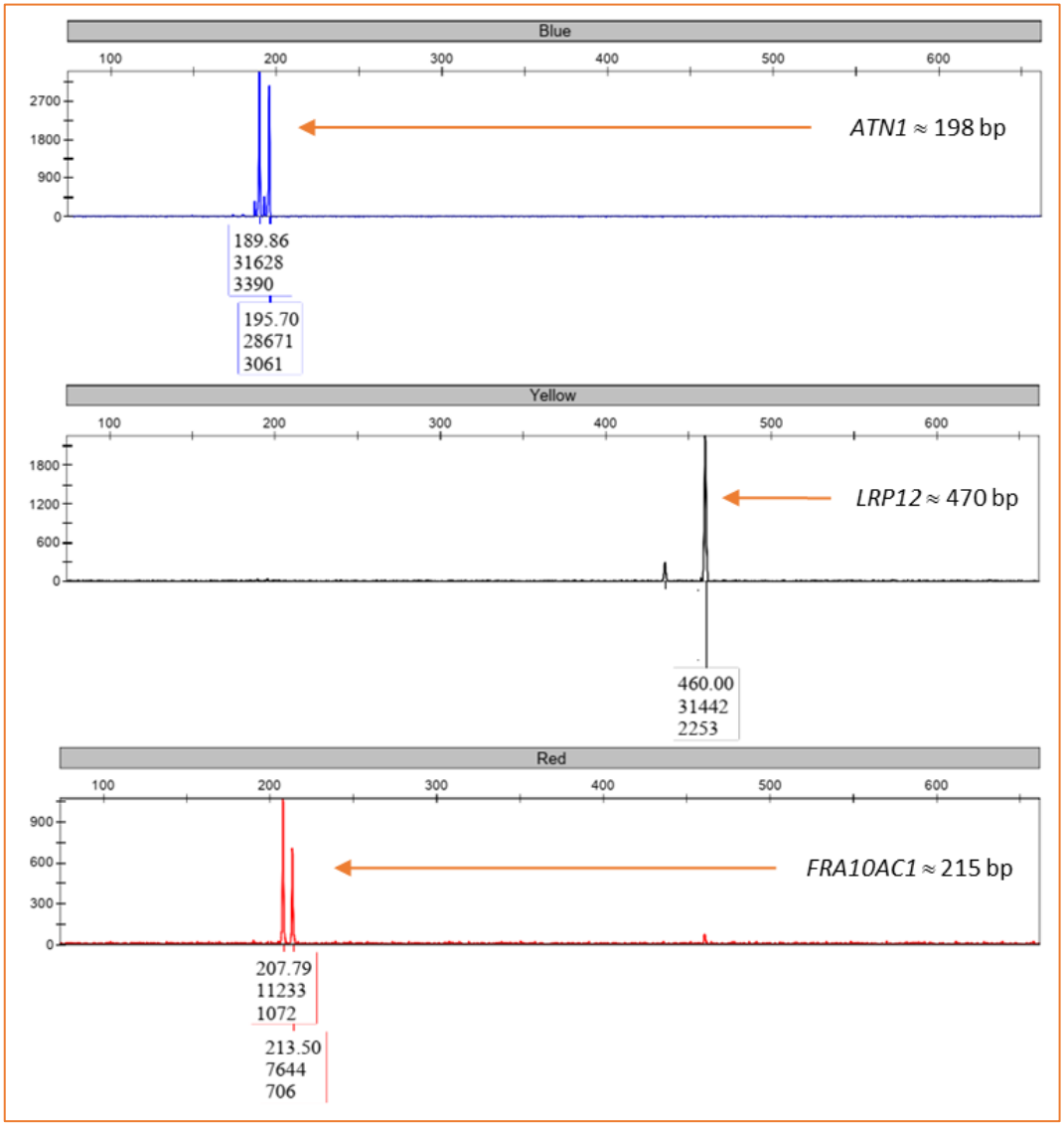
GGAGGAGAAGCTGGAGGTAGACGACGCCGACGCCGCCGCCGCCGCCGCCGCCGCCGAGCC
ACCGGCTGCTCCCTGCGCTCTCCGCGGCTGCGGGAGGGGGAAGGGAGGGGCCGCCGCCGCCCGCGC
GCGCTCCCTCCTCCCTCCTCCCTCCGGCTCGCCTGCTCCCACCCCGGGCGGTGCGAGAGCCCCACGC

GGGGCGGCCCTCCTGGGGGCAAGGGCAAGGAGCTCGCGCGCCAGCGCGAGACGAGAGGGTGGCGG
ACGCCGGACTCCGGCCTCGCGCCGCTCGGGCTAGCCGGCGCCGCCACTCGCCAGACTGAGCGCGCG
CCCATCCGTGCGATCGGCAATCCCCTGGCCCGCCTGCCTCGGTTCCCTCCCCGCGCTCCGCTGGACT
TTCCAAGTTTCGGGCCGATTTCCACGCGACGGGAGCCCAAGGAGCAAGGCAGCGCCAATCGATGAC
AGAGCGTGCG

- Sequencing result of the individual PCR - sequence reverse:



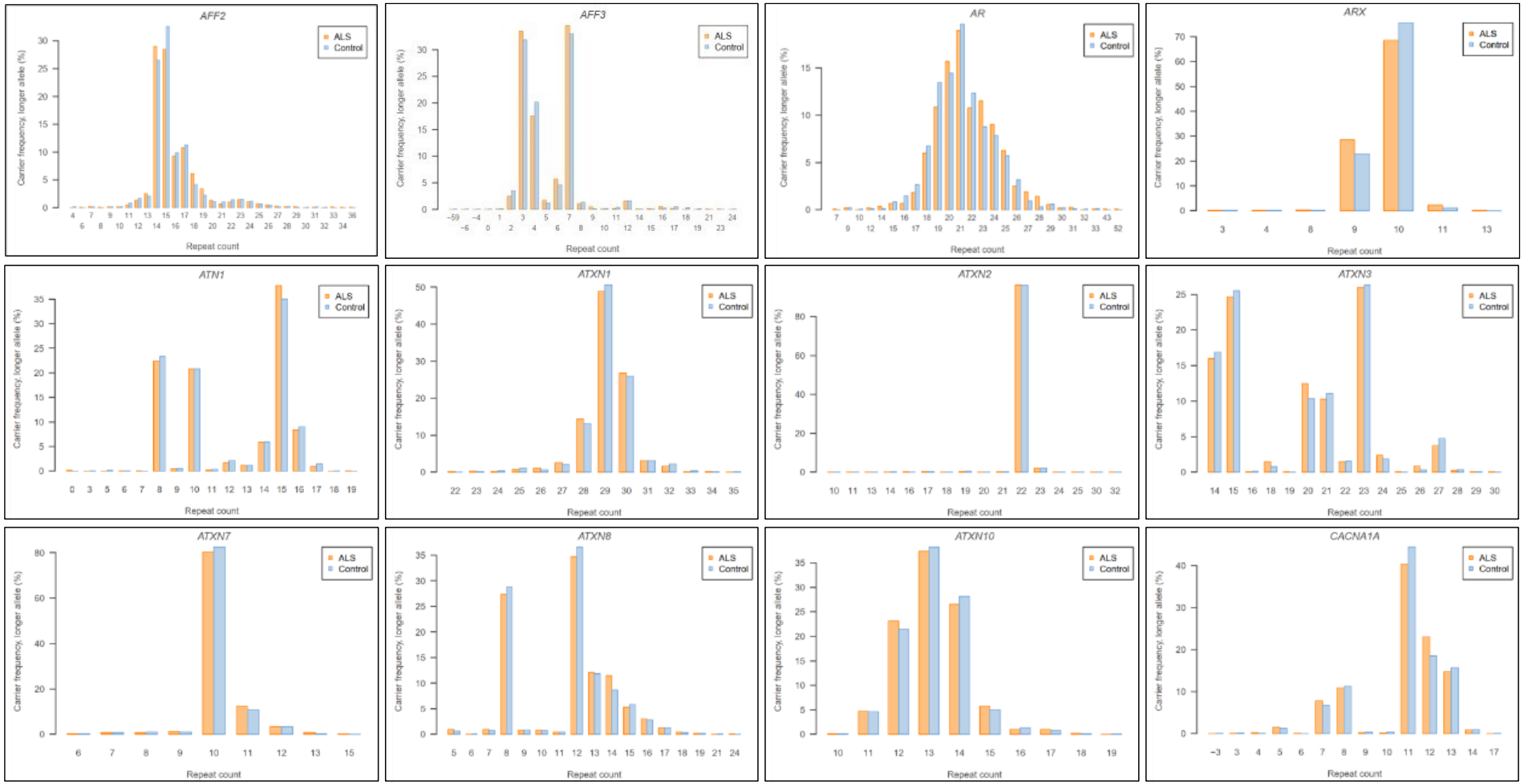
FLA results

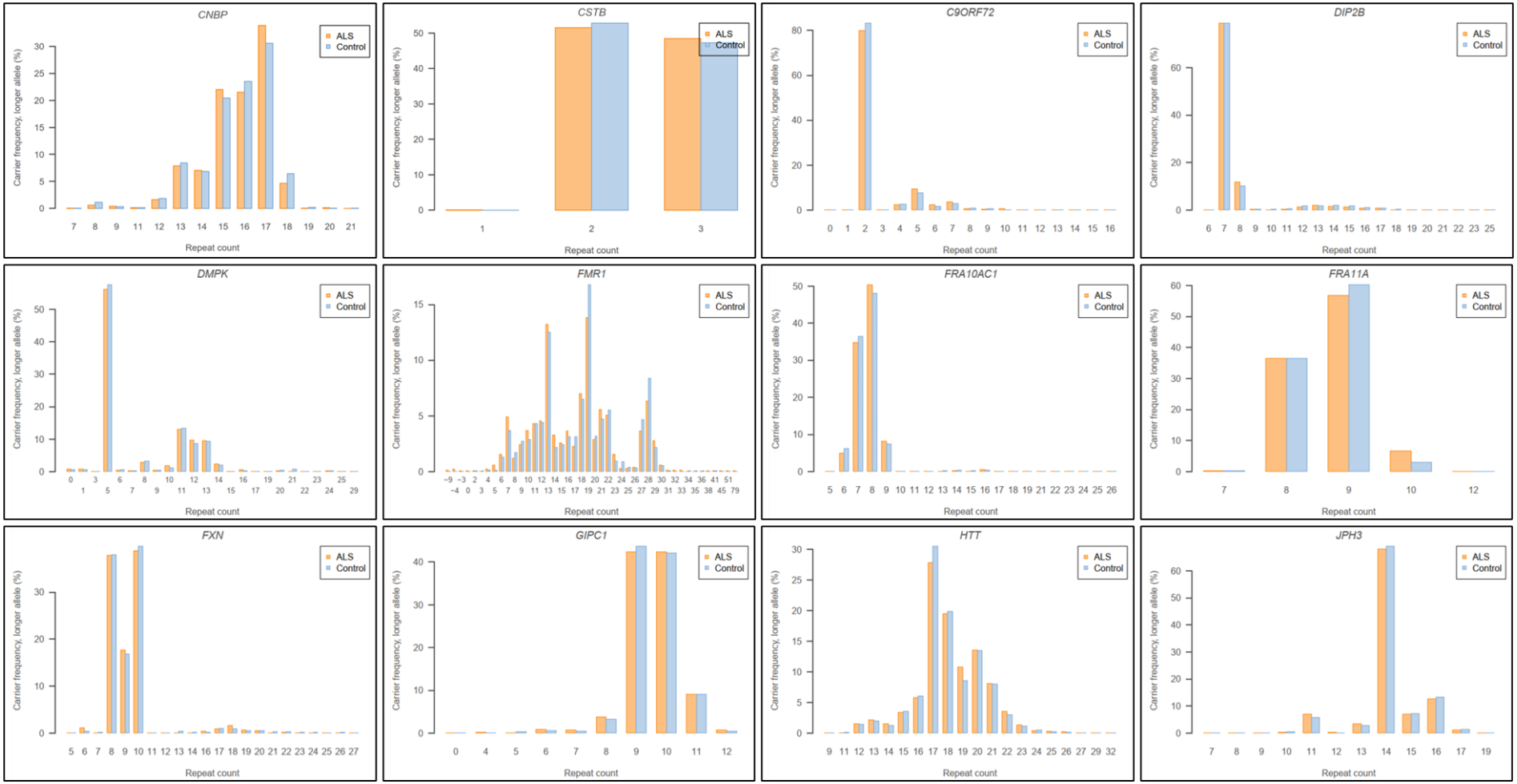


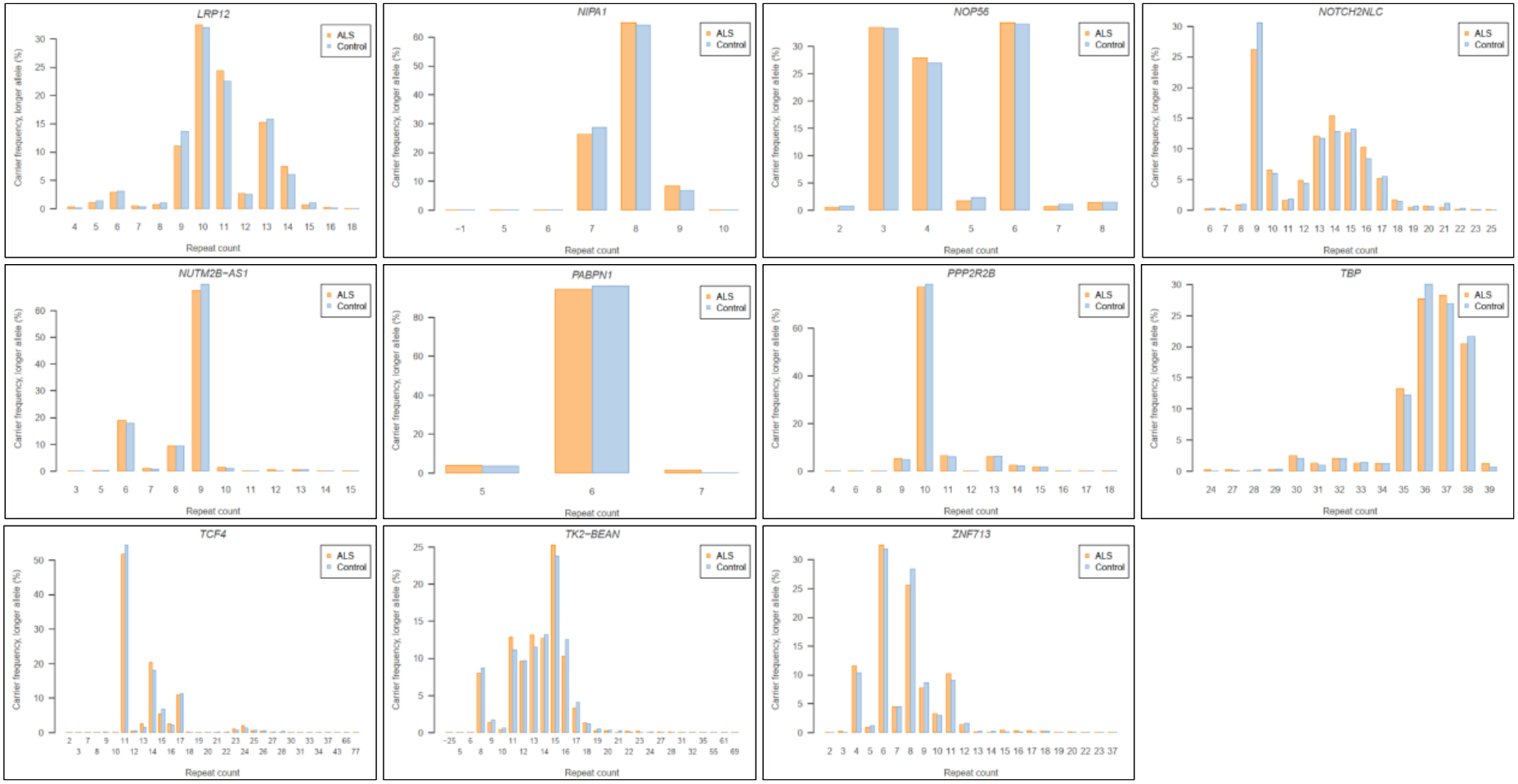
Supplementary Figure S 2-26 Capillary electropherogram of Multiplex 15 and individual PCR 16: *ATN1*, *FRA10AC1* and *LRP12* genes.

Panel 6: Filter-set MWGG5, dilution 1:20, Control 1 gDNA. Blue traces correspond to *ATN1* gene with Fluorescin label; C1 is heterozygote with 189.86bp and 195.70bp alleles. Yellow traces correspond to *LRP12* gene with Atto550 label; C1 is homozygote with 460bp allele. Red traces correspond to *FRA10AC1* gene with Atto565 label; C1 is heterozygote with 207.79 bp and 213.50bp alleles. 20µL FLA mix of PCR products = 10 µL *ATN1/FRA10AC1* + 10 µL *LRP12*.

Chapter 3

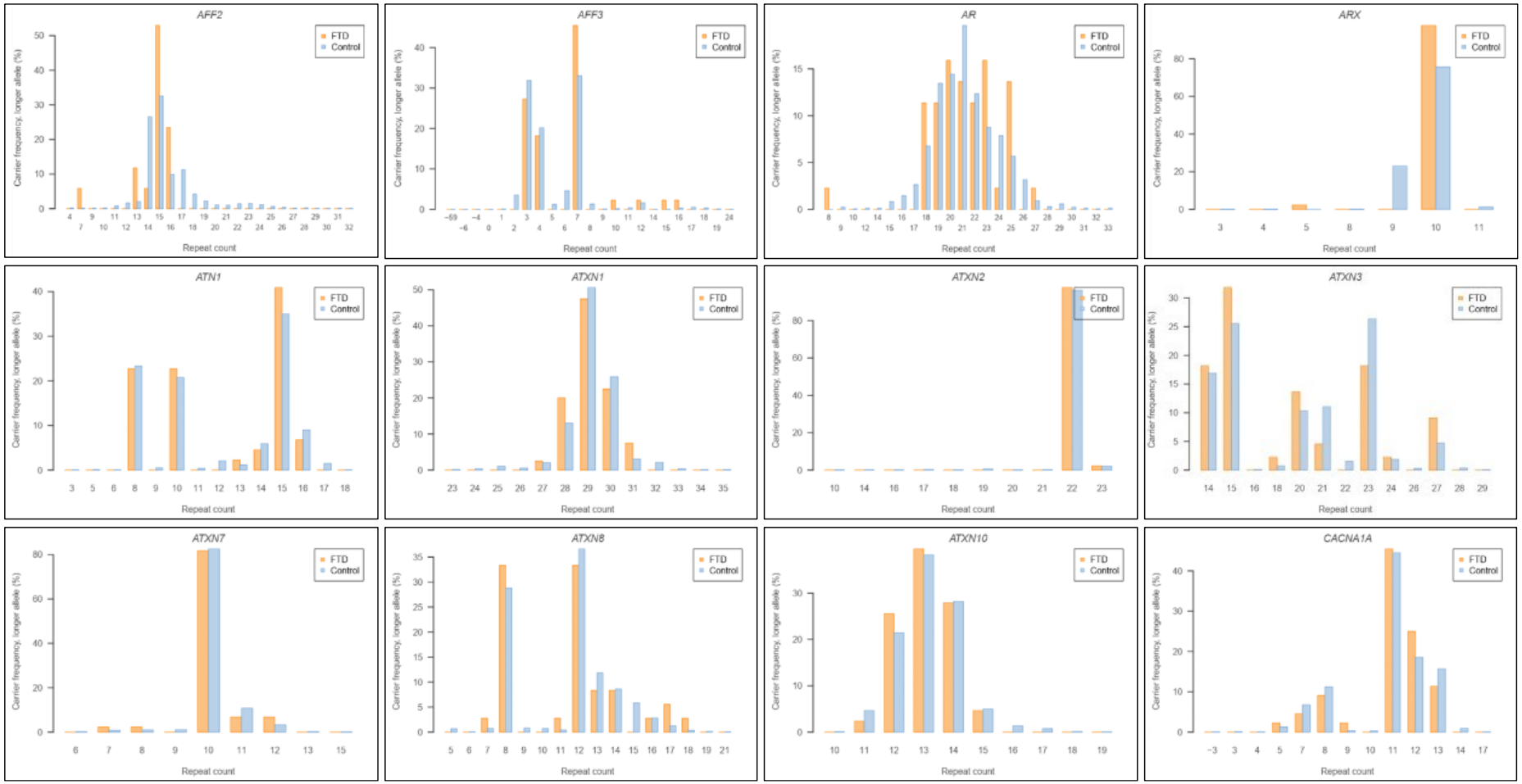

AFF2
AFF3
AR
ARX
ATN1
ATXN1
ATXN2
ATXN3
ATXN7
ATXN8
ATXN10
CACNA1A
ALS
Control
Carrier frequency, longer allele (%)
Repeat count

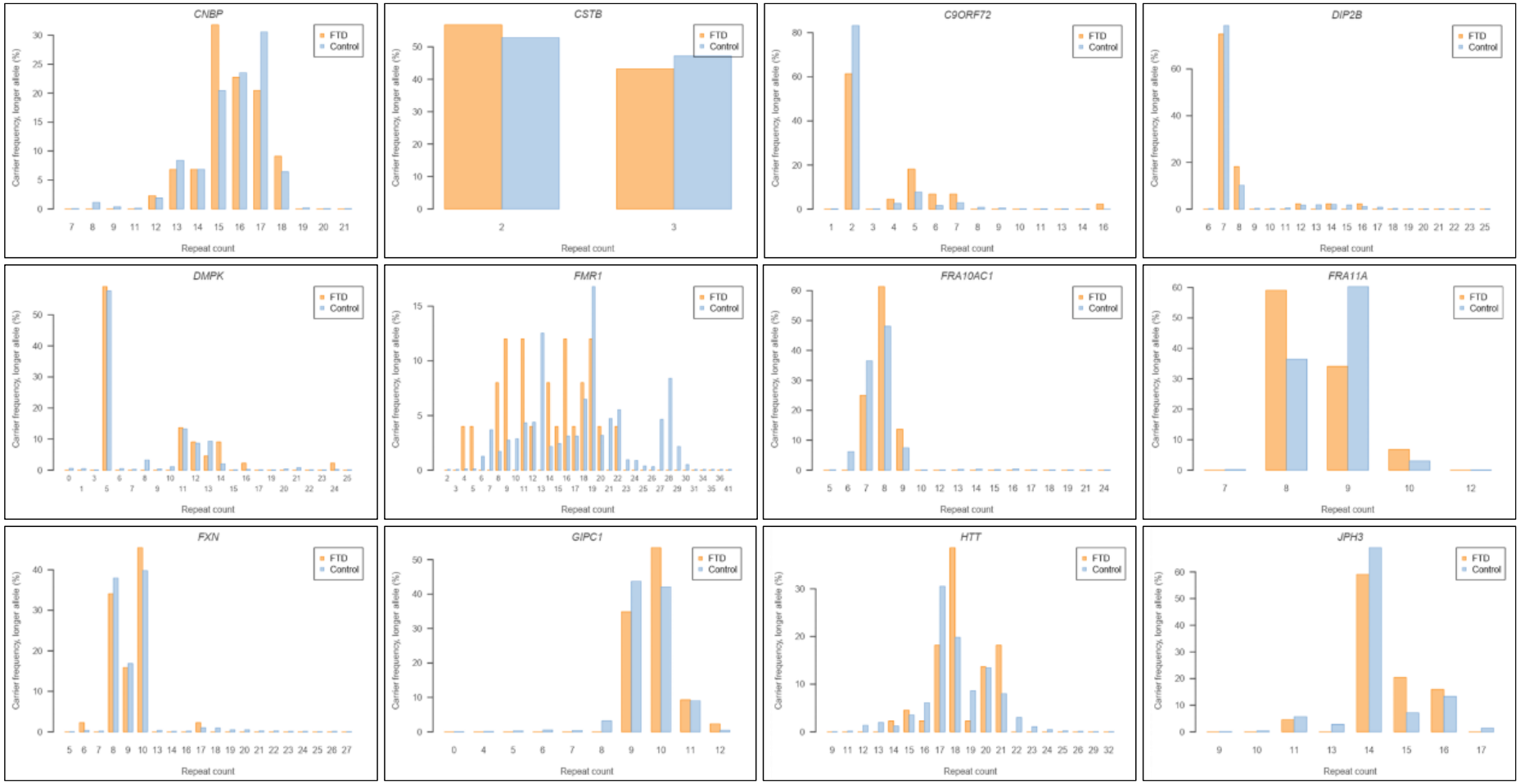

CNBP
CSTB
C9ORF72
DIP2B
DMPK
FMR1
FRA10AC1
FRA11A
FXN
GIPC1
HTT
JPH3
ALS
Control
Carrier frequency, longer allele (%)
Repeat count

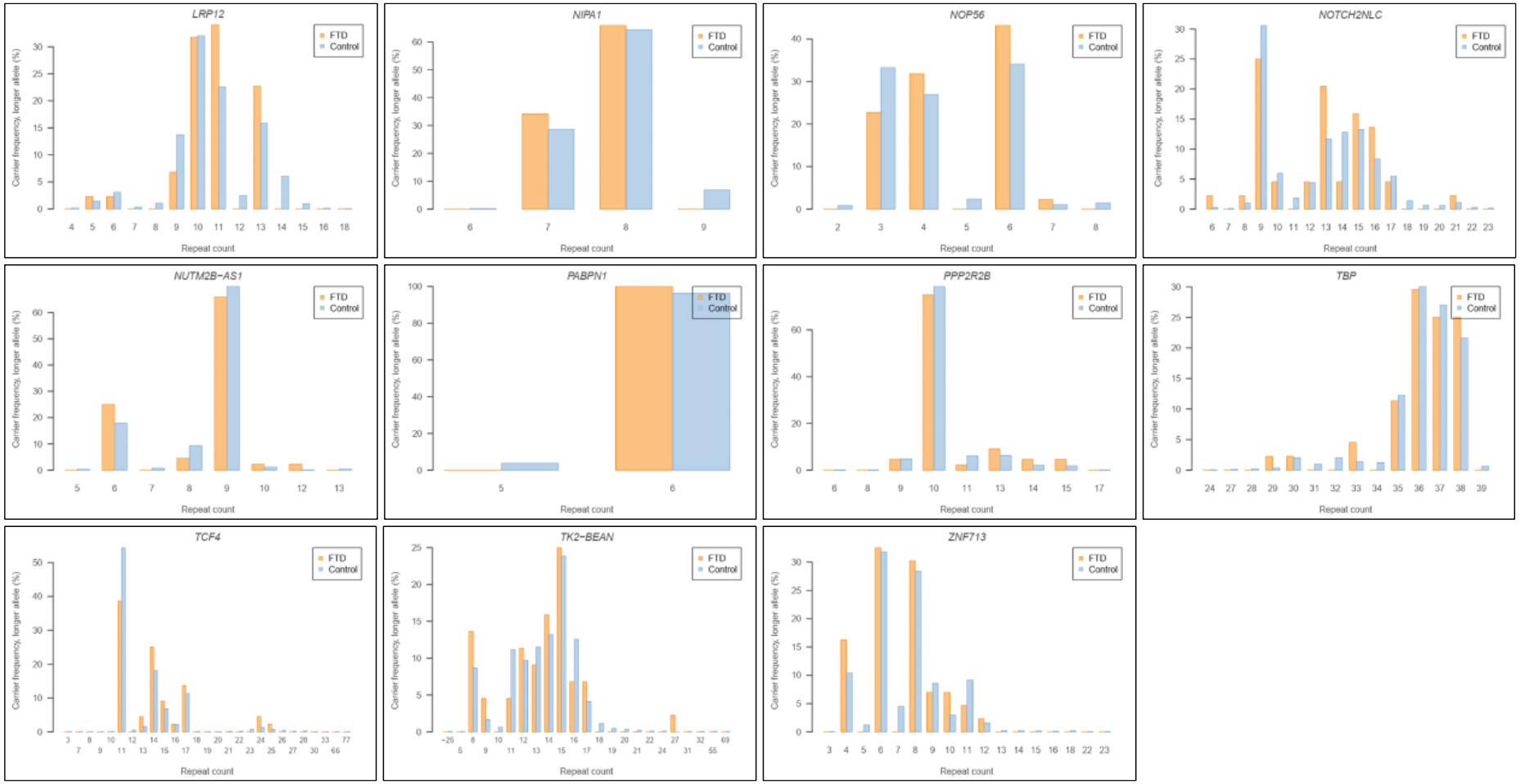


Supplementary Figure S 3-1 The composition of the population of ALS and Control samples for the short alleles of the 35 NDREs genes.

A representative graph of the allele frequencies for ALS cases and controls for the short repeat allele observed per individual for all 35 NDREs genes.

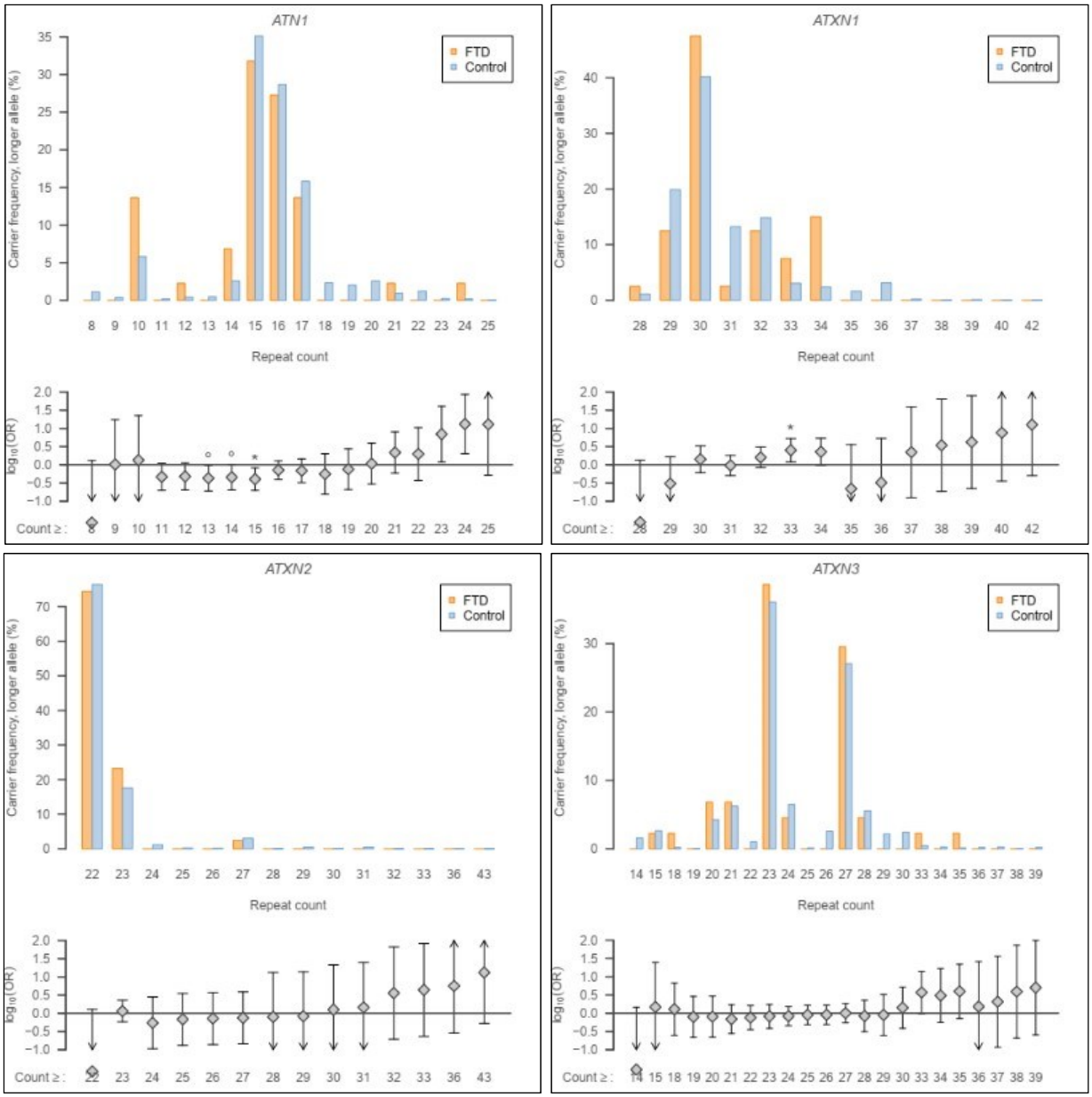

AFF2
AFF3
AR
ARX
ATN1
ATXN1
ATXN2
ATXN3
ATXN7
ATXN8
ATXN10
CACNA1A
FTD
Control
Carrier frequency, longer allele (%)
Repeat count

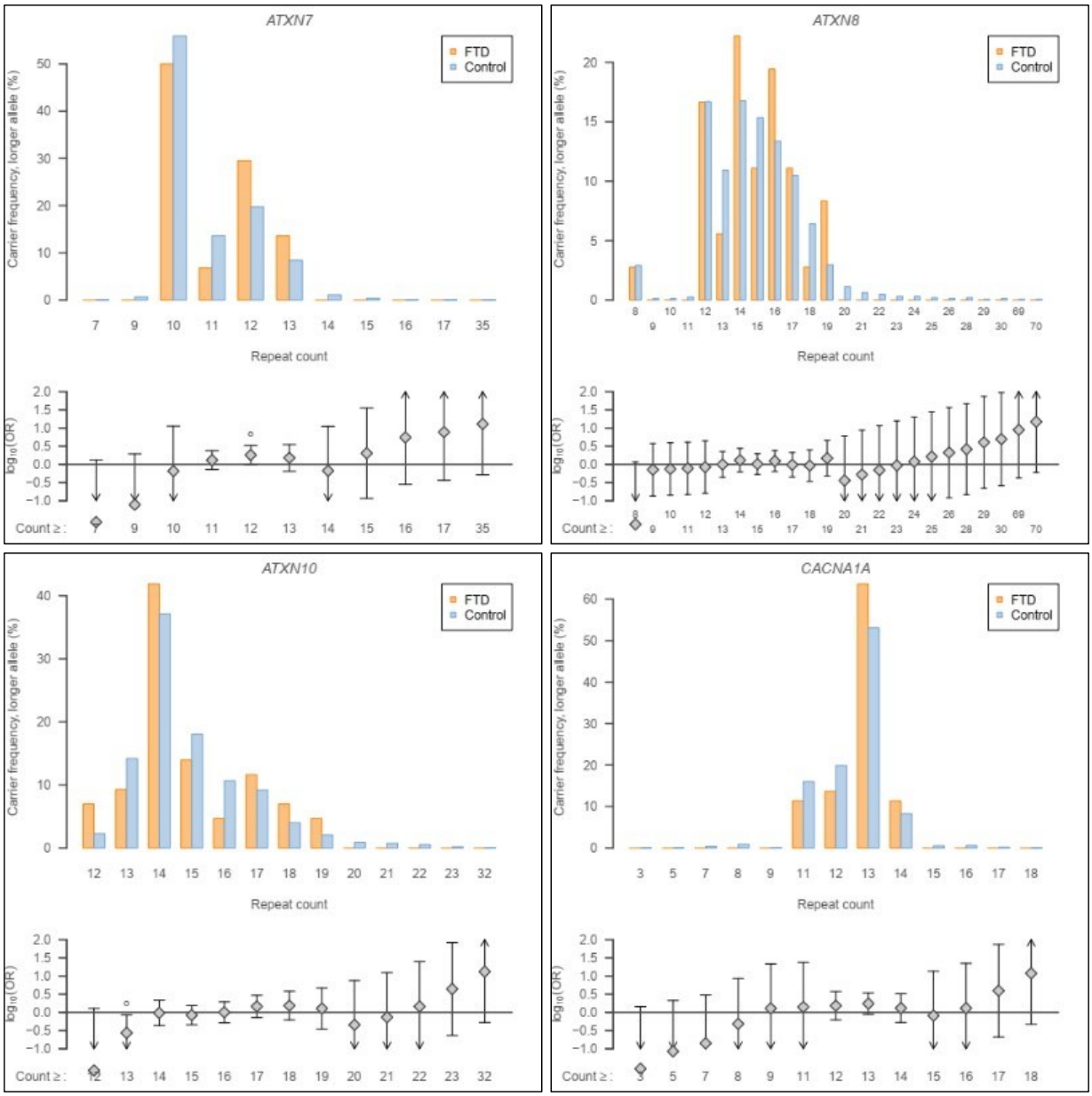

CNBP
CSTB
C9ORF72
DIP2B
DMPK
FMR1
FRA10AC1
FRA11A
FXN
GIPC1
HTT
JPH3
FTD
Control
Carrier frequency, longer allele (%)
Repeat count

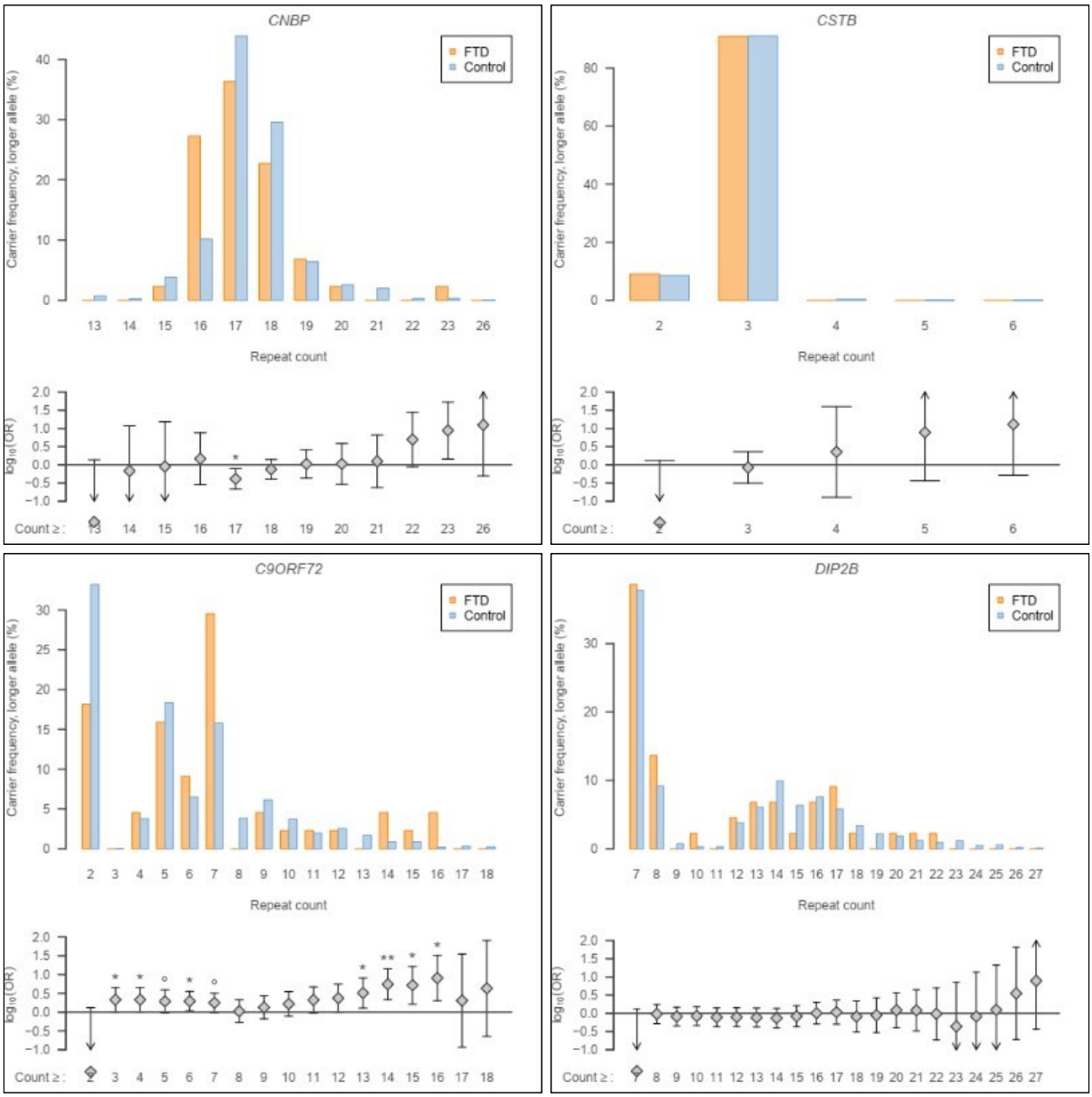


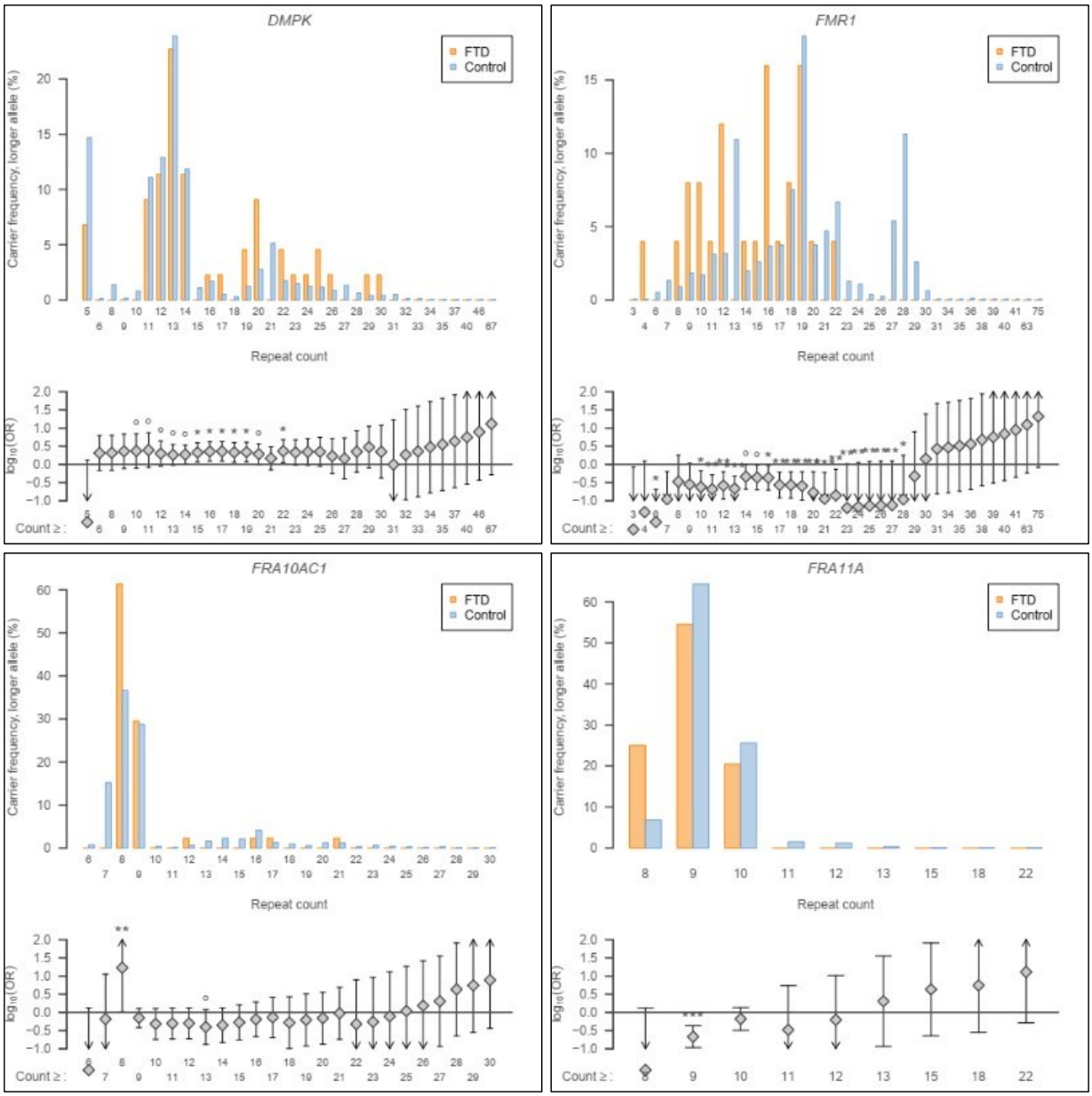
Supplementary Figure S 3-2 The composition of the population of FTD and Control samples for the short alleles of the 35 NDREs genes.

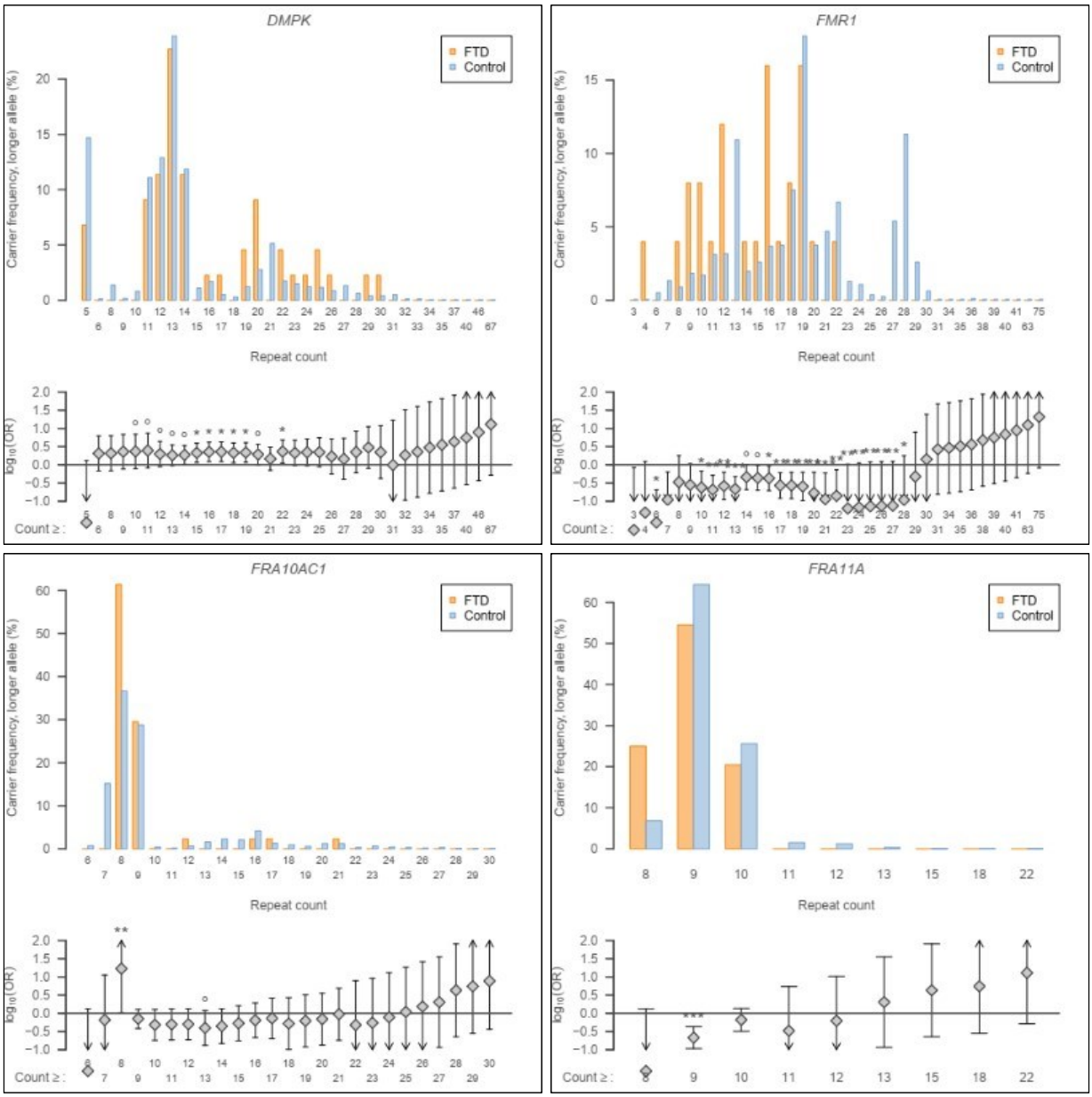
A representative graph of the allele frequencies for 44 FTD cases and controls for the short repeat allele observed per individual for all 35 NDREs genes.

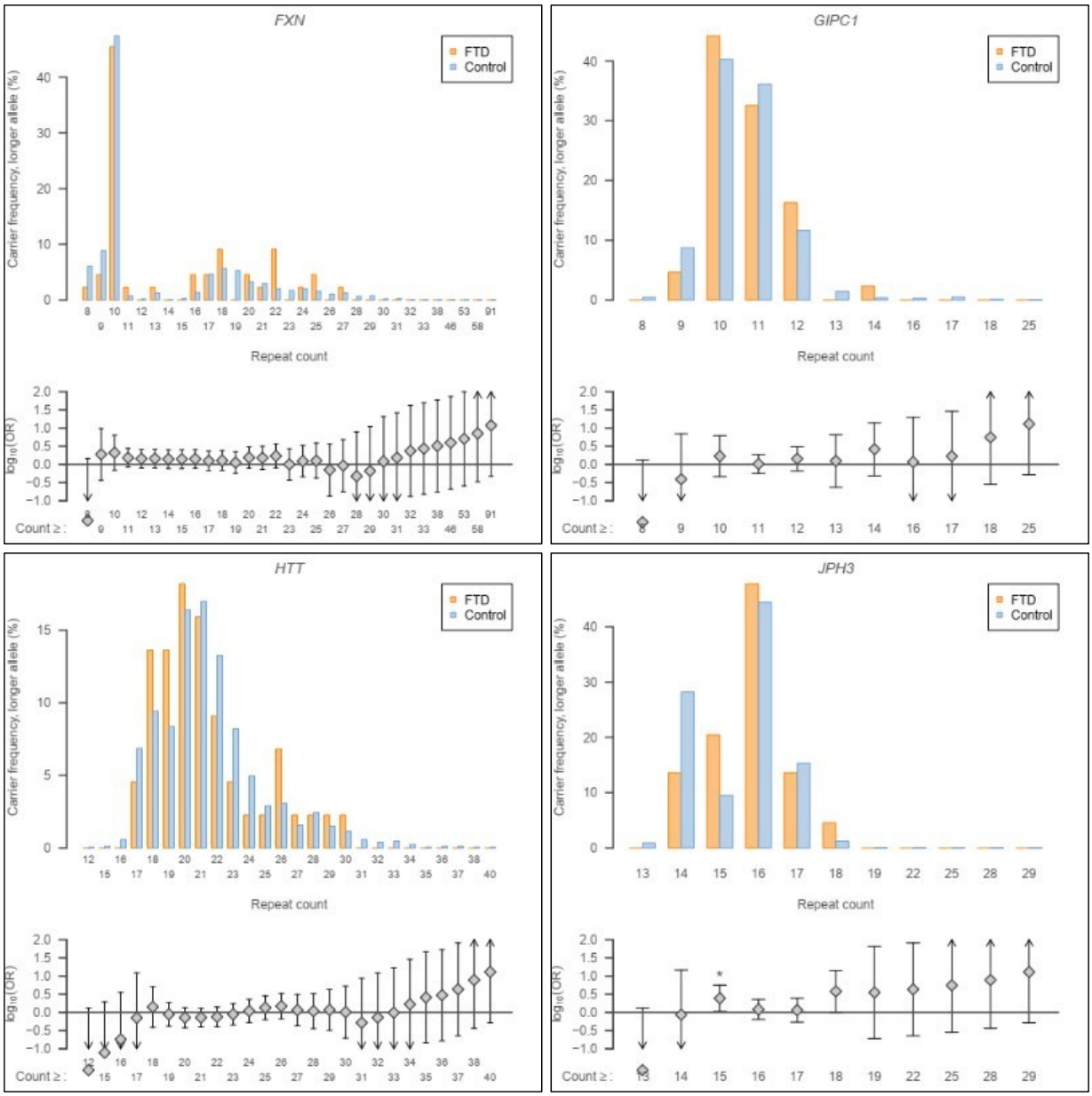

ATN1
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
ATXN1
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
ATXN2
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
ATXN3
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :

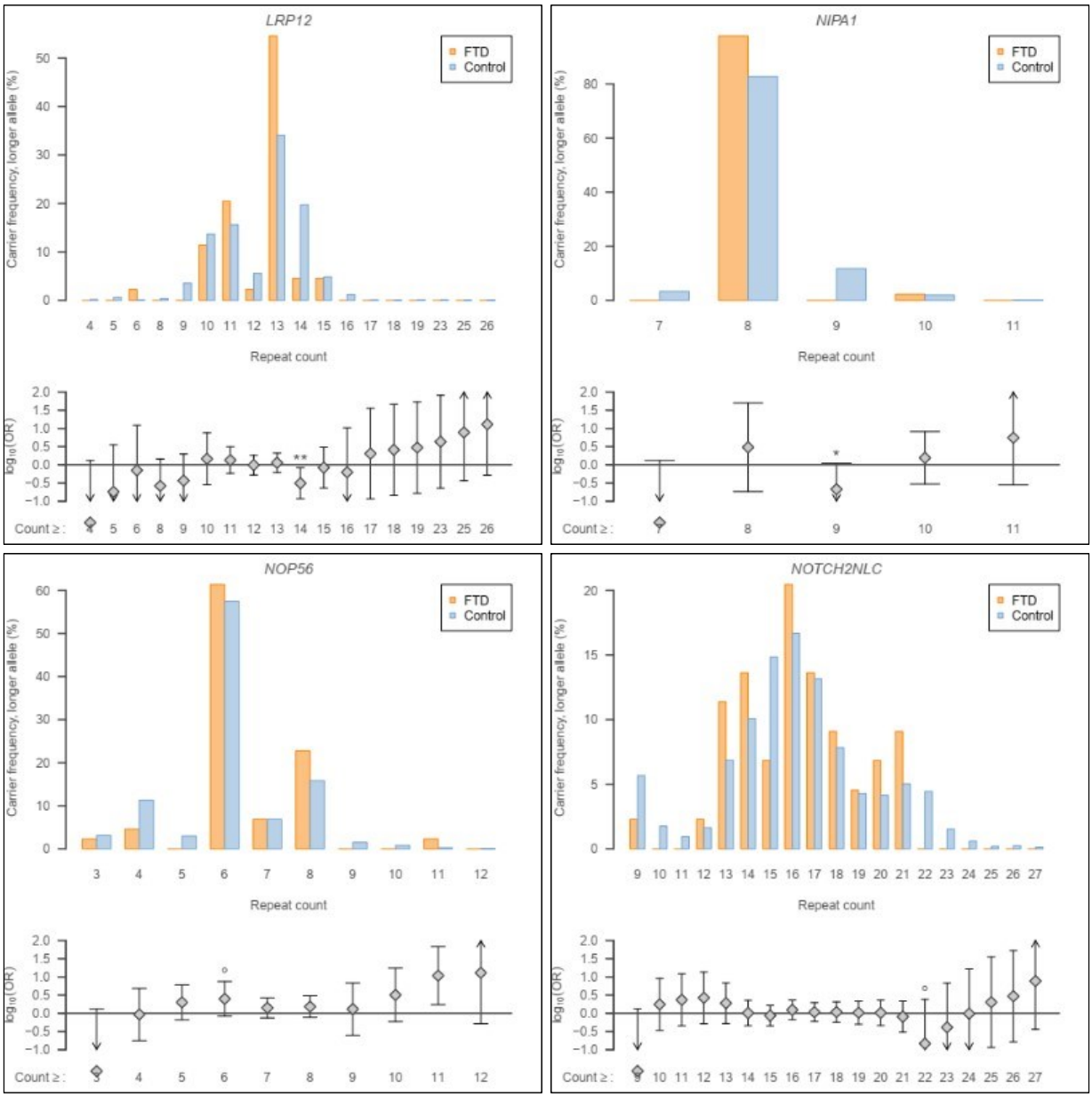

ATXN7
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
ATXN8
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
ATXN10
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
CACNA1A
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :

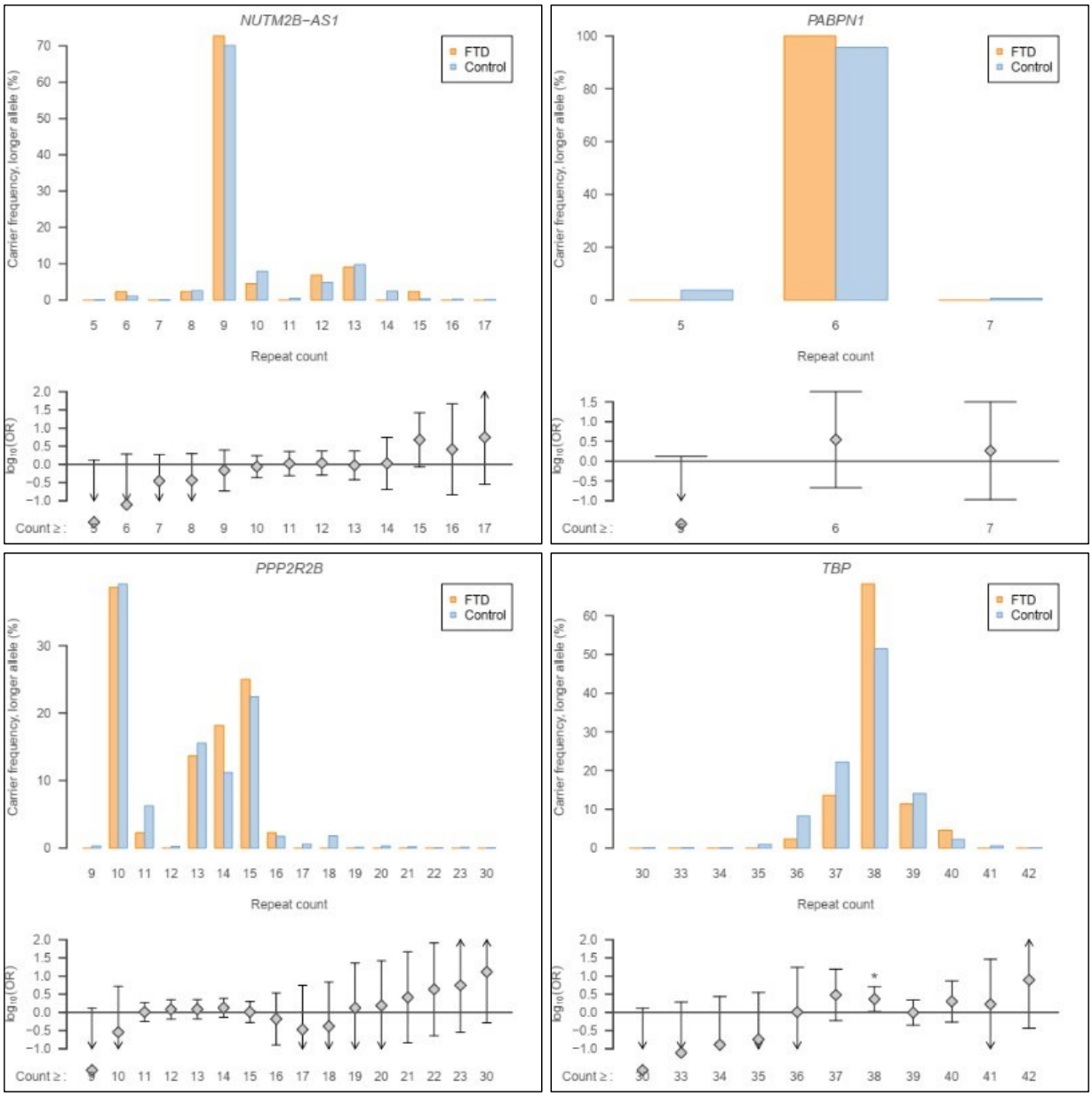

CNBP
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
CSTB
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
C9ORF72
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
DIP2B
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :

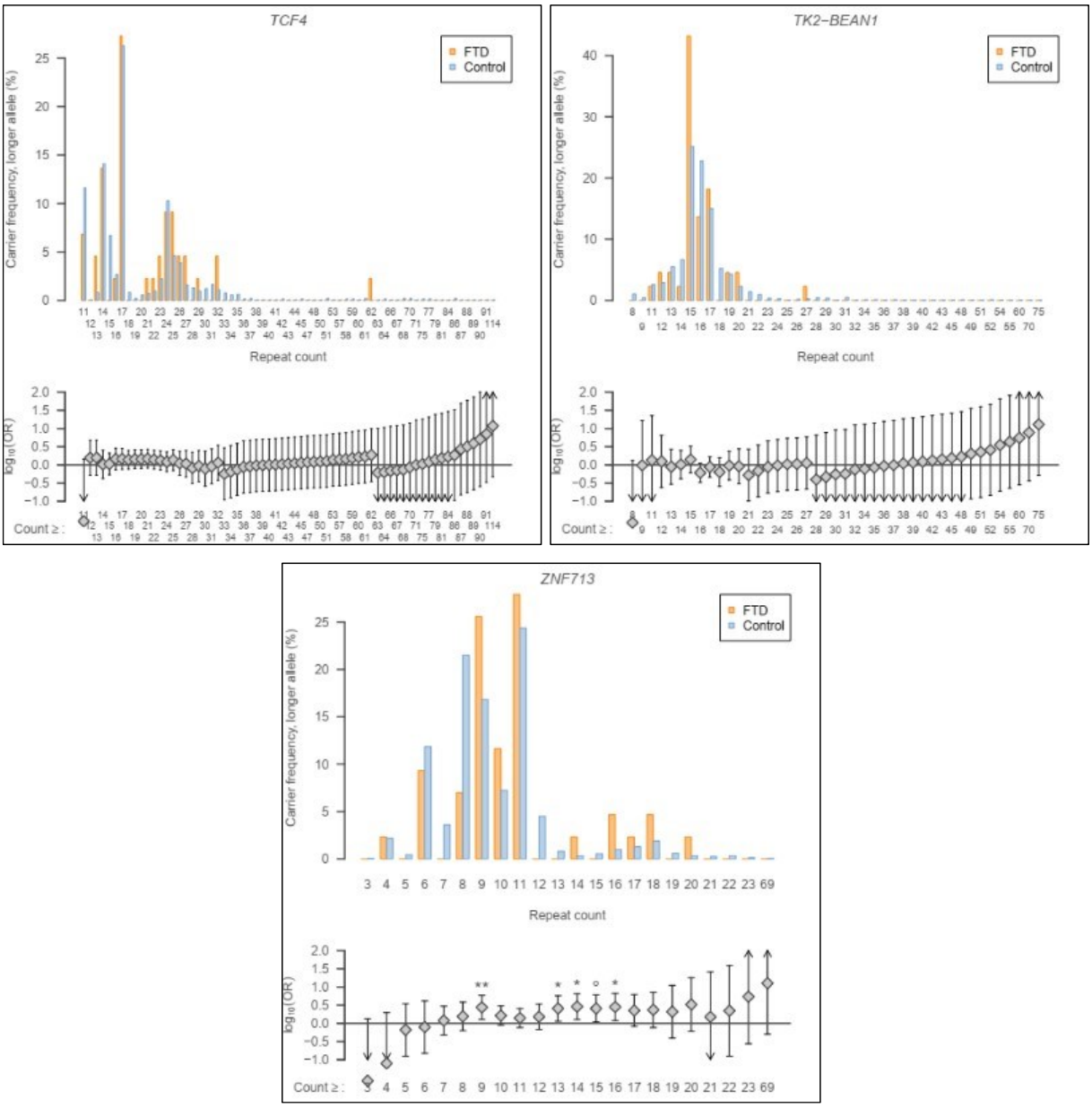

DMPK
FMR1
FRA10AC1
FRA11A
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :


DMPK
FMR1
FRA10AC1
FRA11A
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :


FXN
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
GIPC1
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
HTT
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
JPH3
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :


LRP12
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :
NIPA1
NOP56
NOTCH2NLC


NUTM2B−AS1
PABPN1
PPP2R2B
TBP
FTD
Control
Carrier frequency, longer allele (%)
Repeat count
log10(OR)
Count ≥ :



Supplementary Figure S 3-3 The composition of the population of FTD and Control samples for the long alleles of the 35 NDREs genes.

Appendix B

R-studio script

```
 Setting up #
##############

# specify colour pallettes
ALSborder   <- "#fb8201"
ALSfill     <- "#fdc080"
conborder   <- "#73a3d3"
confill     <- "#b9d1e9"
nicegrey    <- "grey30" # foreground grey colour instead of black
bsrc_onset<- c("#b9d1e9","#fdc080","#fb8201","#73a3d3")

par(fg=nicegrey,lwd=2) # set foreground colour and line width (R barely uses these, but we'll set them anyway)

e<-2.718281828459045    # R doesn't know e (what a dummy)

sigtable<-data.frame(thresh=c(0.1,0.05,0.01,0.001),lab=c("\u00b0","*","**","***"),stringsAsFactors=F) # labels for p-value "significance thresholds"


##############################
# Functions for plotting etc #
##############################

# a function to arrange the x-axis labels nicely and avoid crowding:
formataxis<-function(bp,labs,lines=F)
{
    if( ncol(bp)<=22 )
    {
        for(i in 1:ncol(bp))
        {
            axis(side=1,lwd=2,labels=labs[i],at=colMeans(bp)[i],tick=F,col.axis=nicegrey,line=0.25)
#           if(lines==T)
#           {
#               axis(side=1,labels="|",at=colMeans(bp)[i],tick=F,col.axis=nicegrey,line=-1,cex.axis=0.5,col=NA,col.ticks=nicegrey)
#               axis(side=1,labels="|",at=colMeans(bp)[i],tick=F,col.axis=nicegrey,line=1,cex.axis=0.5,col=NA,col.ticks=nicegrey)
#           }
        }
#       if(lines==T) { axis(side=1,labels=NA,at=colMeans(bp),col=NA,col.ticks=nicegrey,lwd=1,tck=2) }
    }
    else if(ncol(bp)<=44)
    {
        for(i in seq(1,ncol(bp),2))
        {
            axis(side=1,labels=labs[i],at=colMeans(bp)[i],line=-0.5,tick=F,cex.axis=0.85,col.axis=nicegrey)
            if((i+1)<=ncol(bp)) { axis(side=1,lwd=2,labels=labs[i+1],at=colMeans(bp)[i+1],line=0.5,tick=F,cex.axis=0.85,col.axis=nicegrey) }
        }
    }
    else
    {
        for(i in seq(1,ncol(bp),3))
        {
            axis(side=1,labels=labs[i],at=colMeans(bp)[i],line=-0.5,tick=F,cex.axis=0.75,col.axis=nicegrey)
            if((i+1)<=ncol(bp)) { axis(side=1,labels=labs[i+1],at=colMeans(bp)[i+1],line=0.25,tick=F,cex.axis=0.75,col.axis=nicegrey) }
            if((i+2)<=ncol(bp)) { axis(side=1,labels=labs[i+2],at=colMeans(bp)[i+2],line=1,tick=F,cex.axis=0.75,col.axis=nicegrey) }
        }
    }
}

axisthresholdlabel<-function()
{
    mtext("Repeat",side=1,at=par("usr")[1],line=0.25,adj=1,col=nicegrey,cex=0.75)
    mtext("count",side=1,at=par("usr")[1],line=1.25,adj=1,col=nicegrey,cex=0.75)
    mtext("threshold",side=1,at=par("usr")[1],line=2.25,adj=1,col=nicegrey,cex=0.75)
    mtext(expression(paste("">=":")),side=1,at=par("usr")[1],line=1.25,adj=0,col=nicegrey,cex=0.75)
}
```

```r
# function to plot max allele
jennyplot<-function(gene=NA,return=T)
{
    # temporary data frame with only the gene we are plotting
    toplot          <- d[d$Gene==gene,]
    cases           <- toplot[toplot$Affected_Status != "Control",] # extract only cases (for site of onset analysis etc)
    resultsbulbar   <- table(cases$bulbaronset,pmax(cases$Allele2_repeat,cases$Allele1_repeat))
    resultslimb     <- table(cases$limbonset,pmax(cases$Allele2_repeat,cases$Allele1_repeat))
    resultsresp     <- table(cases$responset,pmax(cases$Allele2_repeat,cases$Allele1_repeat))
    resultscogbeh   <- table(cases$cogbehonset,pmax(cases$Allele2_repeat,cases$Allele1_repeat))
    results         <- table(toplot$Affected_Status,pmax(toplot$Allele1_repeat,toplot$Allele2_repeat))
    lengths         <- as.integer(colnames(results))

    # Convert to case/control allele frequencies
    resultsAF <- results/rowSums(results)*100

    # Collate site data into single table
    site            <- data.frame(matrix(ncol=ncol(results),nrow=4))
    for(rep in 1:ncol(results))
    {
        colnames(site)[rep] <- colnames(results)[rep]
        site[1,rep]         <- sum(cases$bulbaronset[pmax(cases$Allele1_repeat,cases$Allele2_repeat)==colnames(results)[rep]])
        site[2,rep]         <- sum(cases$limbonset[pmax(cases$Allele1_repeat,cases$Allele2_repeat)==colnames(results)[rep]])
        site[3,rep]         <- sum(cases$responset[pmax(cases$Allele1_repeat,cases$Allele2_repeat)==colnames(results)[rep]])
        site[4,rep]         <- sum(cases$cogbehonset[pmax(cases$Allele1_repeat,cases$Allele2_repeat)==colnames(results)[rep]])
    }
#   site            <- rbind(resultsbulbar["1",],resultslimb["1",],resultsresp["1",],resultscogbeh["1",])

    # check that R is reporting ALS then control -- if not, reverse rows
    # NB assumes only two rows with ALS and control data
    if(rownames(results)[1] == "Control")
    {
        results     <- results[2:1,]
        resultsAF   <- resultsAF[2:1,]
    }

    # calculate odds ratios
    or<-data.frame(count=NA,or=NA,lci=NA,uci=NA,p=NA,signif=NA,ALS=NA,con=NA,ALSpc=NA,conpc=NA,bulbaronset=0,limbonset=0,responset=0,cogbehonset=0,bothrlower=0,

    # data frame to hold odds ratios and confidence intervals and other information

    for( i in 1:ncol(results) )
    {
        or[i,"count"]   <- colnames(results)[i]
        or[i,"ALS"]     <- results[1,i]
        or[i,"con"]     <- results[2,i]
        or[i,"ALSpc"]   <- resultsAF[1,i]
        or[i,"conpc"]   <- resultsAF[2,i]

        # get counts of below repeat length, and >= repeat length (this is a bit hack-ey, but works)
        ortable     <- as.table(
                            rbind(rowSums(cbind(c(0,0),results[,0:(i-1)])),
                            rowSums(cbind(c(0,0),results[,i:ncol(results)]))
                            ) + 0.5 # (Haldane-Anscombe correction)

        or$or[i]    <- (ortable[2]*ortable[3])/(ortable[4]*ortable[1])  # this is the odds ratio
        if( !is.na(or$or[i]) )
        {
            if( or$or[i] == Inf ) { or$or[i]<-0 }   # reset OR to zero if it is infinity
        }
        or$lci[i]   <- e^(log(or$or[i])-1.96*sqrt(1/ortable[2]+1/ortable[3]+1/ortable[4]+1/ortable[1])) # this is the lower 95% CI
        or$uci[i]   <- e^(log(or$or[i])+1.96*sqrt(1/ortable[2]+1/ortable[3]+1/ortable[4]+1/ortable[1])) # this is the lower 95% CI
        if( !is.na(or$or[i]) )
        {
            or$p[i] <- fisher.test(ortable-0.5)$p # this is the p-value associated with this OR (Fisher's exact test -- undoing the H-A correction)
            for(j in 1:nrow(sigtable)) { if(or$p[i]<sigtable$thresh[j]) { or$signif[i]<-sigtable$lab[j] } } # label p-value if significant
        }

        # extract site of onset data
        # there is undoubtedly a better way, but this works for now

        or$bulbaronset[i]   <- site[1,i]
        or$limbonset[i]     <- site[2,i]
        or$responset[i]     <- site[3,i]
        or$cogbehonset[i]   <- site[4,i]
        or$bothrlower[i]    <- sum(as.matrix(site[1,0:(i-1)]))
        or$lothrlower[i]    <- sum(as.matrix(site[2,0:(i-1)]))
        or$rothrlower[i]    <- sum(as.matrix(site[3,0:(i-1)]))
        or$cothrlower[i]    <- sum(as.matrix(site[4,0:(i-1)]))
        or$bothrhigher[i]   <- sum(site[1,(i:ncol(site))])
        or$lothrhigher[i]   <- sum(site[2,(i:ncol(site))])
        or$rothrhigher[i]   <- sum(site[3,(i:ncol(site))])
        or$cothrhigher[i]   <- sum(site[4,(i:ncol(site))])
        sitetable <- as.table(matrix(c( or$bothrlower[i],or$lothrlower[i],or$rothrlower[i],or$cothrlower[i],
                                        or$bothrhigher[i],or$lothrhigher[i],or$rothrhigher[i],or$cothrhigher[i]),nrow=2,byrow=T))

        # calculate Fisher's exact test for site of onset < or >= threshold
        or$sitepval[i]      <- fisher.test(sitetable)$p
        for(j in 1:nrow(sigtable)) { if(or$sitepval[i]<sigtable$thresh[j]) { or$sitesignif[i]<-sigtable$lab[j] } } # label p-value if significant

    }
    # extract disease duration and age at onset data
    # this works by: 1) making a data frame for all cases (rows) vs all repeat lengths (columns); 2) copying all age data into each column;
    # 3) foreach column, NA-ing out all individuals where their repeat length is shorter than that threshold
    durhigher           <- data.frame(cbind(replicate(length(lengths),cases$Onset_to_Death.months.)))   # 'higher than threshold', for plotting and MWW test
    durhigher[durhigher<0.1]    <- NA                                                                   # remove zeros/unavailable durations
    durlower            <- durhigher                                                                    # 'lower than threshold', just for MWW test
    aaohigher           <- data.frame(cbind(replicate(length(lengths),cases$Age_Onset.Sampling)))
    aaohigher[aaohigher<0.1]    <- NA
    aaolower            <- aaohigher
    for(j in 1:length(lengths))
    {
        durhigher[pmax(cases$Allele1_repeat,cases$Allele2_repeat)<lengths[j],j ]<-NA
        durlower[ pmax(cases$Allele1_repeat,cases$Allele2_repeat)>=lengths[j],j]<-NA
        aaohigher[pmax(cases$Allele1_repeat,cases$Allele2_repeat)<lengths[j],j ]<-NA
        aaolower[ pmax(cases$Allele1_repeat,cases$Allele2_repeat)>=lengths[j],j]<-NA

    }

    # do Mann-Whitney-Wilcoxon test for disease duration and age at onset
    for(j in 2:ncol(durhigher))
    {
        if(min(sum(!is.na(durhigher[,j])),sum(!is.na(durlower[,j])))>0)
        {
            or$durpval[j]<-wilcox.test(durhigher[,j],durlower[,j])$p.value
            for(k in 1:nrow(sigtable)) { if(or$durpval[j]<sigtable$thresh[k]) { or$dursignif[j]<-sigtable$lab[k] } } # label p-value if significant
        }
        if(min(sum(!is.na(aaohigher[,j])),sum(!is.na(aaolower[,j])))>0)
        {
            or$aaopval[j]<-wilcox.test(aaohigher[,j],aaolower[,j])$p.value
            for(k in 1:nrow(sigtable)) { if(or$aaopval[j]<sigtable$thresh[k]) { or$aaosignif[j]<-sigtable$lab[k] } } # label p-value if significant
        }
    }
```

```
    # plot results
#   layout(matrix(c(1,2),nrow=2,byrow=T),heights=c(2,1))    # make a 2-row plot space, top row bigger than bottom
    layout(matrix(c(1,2,3,4,5),nrow=5,byrow=T),heights=c(2,1,1,1,1))    # make a 3-row plot space, top row bigger than bottom 2

    # first, plot the bar plot
    par(mar=c(4,4.1,2,2))
    bp<-barplot(    resultsAF,  # (bp stores plot parameters, eg x-axis positions of bars)
            beside=T, # needed to make barplot non-stacked
            col=c(ALSfill,confill), # fill colour of bars
            border=c(ALSborder,conborder), # border colour of bars
            lwd=1, # line width of bars
            xlab="Repeat count",xaxt="n",
            ylab="Carrier frequency, longer allele (%)",yaxt="n",
            las=1, # make y-axis numbers horizontal
            col.axis=nicegrey,
            col.lab=nicegrey,
            main=gene, font.main=3,col.main=nicegrey
        )
    axis(side=2,lwd=2,col=nicegrey,col.axis=nicegrey,labels=T,las=1) # r doesn't plot the axis in "nicegrey" by default, for some reason

    # some code to arrange the x-axis labels nicely and avoid crowding:
    formataxis(bp,colnames(resultsAF))

    # add legend -- note this takes the row names of results table as sanity check to ensure ALS and control are in correct order
    legend("topright",rownames(results),pch=22,pt.bg=c(ALSfill,confill),col=c(ALSborder,conborder),bty="n",text.col=nicegrey)


    # second, add the odds ratios
    x0<-par("usr")[1] # get x-limits of barplot
    x1<-par("usr")[2] # (annoing hack necessary to line up OR plot)
    topmax <- 2     # upper limit to plot and for truncating OR CIs
    botmax <- -1    # lower limit to plot and for truncating OR CIs
    par(mar=c(2.5,4.1,1.5,2),xpd=T)
    plot(   colMeans(bp),log10(or$or),
            bty="n",
            pch=23,cex=1.5,lwd=1.5,bg="grey80",col.axis=nicegrey,las=1,
            ylab=expression(paste(log[10](OR))),las=1,col.lab=nicegrey,
            xaxt="n",xaxs="i",xlab="",
            xlim=c(x0,x1),
            ylim=c(max(log10(min(or$lci[or$lci>0],na.rm=T)),botmax),min(log10(max(or$uci,na.rm=T)),topmax))
            )
    # add OR CIs
    lci<-log10(or$lci)
    uci<-log10(or$uci)
    segments(colMeans(bp),pmax(botmax,lci),colMeans(bp),pmin(uci,topmax))
    for( i in 1:length(lci) )
    {
        if(lci[i]>=botmax) { segments(bp[1,i],lci[i],bp[2,i],lci[i]) }
        else { arrows(colMeans(bp)[i],botmax+0.01,colMeans(bp)[i],botmax,length=0.1) }
        if(uci[i]<=topmax) { segments(bp[1,i],uci[i],bp[2,i],uci[i]) }
        else { arrows(colMeans(bp)[i],topmax-0.01,colMeans(bp)[i],topmax,length=0.1) }
    }
    # add line at 0
    segments(x0,0,x1,0,lwd=2,col=nicegrey)
    # replot points to cover CIs
    points( colMeans(bp),log10(or$or),pch=23,cex=1.5,lwd=1.5,bg="grey80",col=nicegrey)
    # add significance labels, if any
    text( colMeans(bp),pmin(log10(or$uci),topmax),or$signif,cex=2,col=nicegrey,adj=c(0.5,0.25),font=2 )

    # add axes
    axis(side=2,lwd=2,col=nicegrey,col.axis=nicegrey,labels=F) # r doesn't plot the axis in "nicegrey" by default, for some reason

    # add well-formatted x-axis
    formataxis(bp,colnames(resultsAF),lines=T)
    axisthresholdlabel()
```

```
    # third, plot the site of onset
    # sort out data for plotting
    forplot<-as.matrix(or[,c("bothrhigher","lothrhigher","rothrhigher","cothrhigher")])
    forplot<-t(forplot/rowSums(forplot)*100)

    #stacked barplot of site data
    sitebp<-barplot(forplot,col=bsrc_onset,beside=F,xaxt="n",las=1,ylab="Site of onset (%)",col.lab=nicegrey,col.axis=nicegrey)
    par(xpd=T)
    labpos<-par("usr")[1]+(c(0.05,0.175,0.3,0.425)*(par("usr")[2]-par("usr")[1]))
    points(labpos,rep(-9,4),pch=22,bg=bsrc_onset,cex=2.5)
    text(labpos,rep(-10,4),c(" Bulbar"," Spinal"," Respiratory"," Cognitive/behavioural"),cex=1,pos=4,col=nicegrey)

    # add blank bars for "no data"
    nodata<-rep(0,ncol(forplot))
    nodata[!(colSums(forplot)<99)|is.na(colSums(forplot))]<-100
    barplot(nodata,add=T,col="grey90",yaxt="n")
    if( sum(nodata) > 0)
    {
        points(par("usr")[2]-(0.05*(par("usr")[2]-par("usr")[1])),-9,pch=22,bg="grey90",cex=2.5)
        text(par("usr")[2]-(0.05*(par("usr")[2]-par("usr")[1])),-10,"No data ",font=3,pos=2,col=nicegrey)
    }

    # add Fisher significance labels, if any
    text( sitebp,100,or$sitesignif,cex=2,col=nicegrey,adj=c(0.5,0.25),font=2 )

    # add y axis
    axis(side=2,lwd=2,col=nicegrey,col.axis=nicegrey,labels=F) # r doesn't plot the axis in "nicegrey" by default, for some reason

    # fourth, do the disease duration boxplot
    bxp<-boxplot(durhigher,outline=F,frame=F,xaxt="n",las=1,ylab="Disease duration (months)",col="grey80",col.lab=nicegrey,col.axis=nicegrey)
    text( 1:ncol(durhigher),bxp$stats[5,],or$dursignif,cex=2,col=nicegrey,adj=c(0.5,0.25),font=2 )      # add signifgance labels, if any

    # add well-formatted x-axis
    formataxis(matrix(1:ncol(durhigher),ncol=ncol(durhigher)),colnames(resultsAF))
    axisthresholdlabel()

    # add axes
    axis(side=2,lwd=2,col=nicegrey,col.axis=nicegrey,labels=F) # r doesn't plot the axis in "nicegrey" by default, for some reason

    # fifth, do the age at onset boxplot
    bxp<-boxplot(aaohigher,outline=F,frame=F,xaxt="n",las=1,ylab="Age at onset (years)",col="grey80",col.lab=nicegrey,col.axis=nicegrey,ylim=c(20,100))
    text( 1:ncol(aaohigher),bxp$stats[5,],or$aaosignif,cex=2,col=nicegrey,adj=c(0.5,0.25),font=2 )      # add signifgance labels, if any

    # add y axis
    axis(side=2,lwd=2,col=nicegrey,col.axis=nicegrey,labels=F) # r doesn't plot the axis in "nicegrey" by default, for some reason

    if(return) { return(or) }
}

# function to plot allele frequencies
AFplot<-function(gene=NA)
{
    # temporary data frame with only the gene we are plotting
    toplot <- d[d$Gene==gene,]
    results <- table(rep(toplot$Affected_Status,2),c(toplot$Allele1_repeat,toplot$Allele2_repeat))

    # check that R is reporting ALS then control -- if not, reverse rows
    # NB assumes only two rows with ALS and control data
    if(rownames(results)[1] == "Control")
    {
        results<-results[2:1,]
    }

    # turn results into allele frequencies
    results <- results/rowSums(results) * 100

    # plot results
    barplot(    results,
                beside=T, # needed to make barplot non-stacked
                col=c(ALSfill,confill), # fill colour of bars
                border=c(ALSborder,conborder), # border colour of bars
                lwd=1, # line width of bars
                xlab=substitute(paste(italic(gene)," repeat count")), # annoying hack necessary for italics
                ylab="Allele frequency (%)",
                las=1, # make y-axis numbers horizontal
                col.axis=nicegrey,
                col.lab=nicegrey
            )
    axis(side=2,lwd=2,col=nicegrey,labels=F) # r doesn't plot the axis in "nicegrey" by default, for some reason

    # add legend -- note this takes the row names of results table as sanity check to ensure ALS and control are in correct order
    legend("topright",rownames(results),pch=22,pt.bg=c(ALSfill,confill),col=c(ALSborder,conborder))
}



##################################################
# The actual script (read and clean data, plot etc) #
##################################################

# read results into data frame called "d"
d<-read.table("2023.02.13_NDREs_Master_Results_R_update_AGE_ONSET.csv",h=T,as.is=T,sep=",")

# clean up data
d<-d[d$Affected_Status %in% c("ALS","Control"),] # drop "Adrian" and "Error" rows
d<-d[d$Result_Valid=="Y",] # only keep valid rows
d$Gene[d$Gene=="TK2-BEAN"] <- "TK2-BEAN1" # fix gene name

# clean up onset data
bulbarcategories<-c("Bulbar and Cognitive/Behavioural","Bulbar","Bulbar and Spinal","Cognitive/Behavioural and Bulbar")
limbcategories  <-c("Cognitive/Behavioural and Spinal","Spinal and Cognitive/Behavioural","Thoracic/Respiratory and Spinal","Bulbar and Spinal","Spinal")
respcategories  <-c("Thoracic/Respiratory and Spinal","Thoracic/Respiratory")
cogbehcategories<-c("Bulbar and Cognitive/Behavioural","Cognitive/Behavioural","Cognitive/Behavioural and Spinal","Spinal and Cognitive/Behavioural","Cognitive/Behavioural and Bulbar")
d$bulbaronset   <-0
d$limbonset     <-0
d$responset     <-0
d$cogbehonset   <-0
d$bulbaronset[d$Site_of_onset   %in% bulbarcategories]  <-1
d$limbonset[d$Site_of_onset     %in% limbcategories]    <-1
d$responset[d$Site_of_onset     %in% respcategories]    <-1
d$cogbehonset[d$Site_of_onset   %in% cogbehcategories]  <-1
```