SUPPLEMENTAL MATERIAL

Table S1. SNPs with significant difference in genotype and allele frequencies.

Gene	Region	mRNA	AA change	dbSNP	Type of variant	OR	Prior allele in SUNDS	Ref
SCN5A (NM_198056.2)	Intron 9	C1141-3>A	-	rs41312433	Intron	0.367	C	(1)
	Exon 18	C3269>T	P1090L	rs1805125	Missense	0.211	C	(1)
SCN10A (NM_006514)	Exon16	A2884>G	I962V	rs57326399	Missense	1.551	G	(2)
VCL (NM_014000.2)	Exon17	G2521>C	D841H	rs150385900	Missense	5.226	C	(3)
NOS1AP	5' UTR	-	-	rs12567209	-	0.656	G	(4)

AA = amino acid, OR = odds ratio. Ref = references

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Table S2. Mutation/rare variants detected in SUNDS*.

Gene	Genomic region	mRNA	AA change	Protein region	Rate	dbSNP	Type of variant	Category†	ACMG definition	Ref
SCN5A (NM_198056.2)	Exon3	G283>A	V95I	N-terminus	1/123	rs199473054	Missense	RV	VUS	[1]
	Exon3	G362>A	R121Q	C-terminus	2/123	rs199473058	Missense	RV	LP	[1]
	Exon9	G1100>A	R367H	DIS5-S6	1/123	rs28937318	Missense	RV	LP	[1]
	Exon12	G1538>A	R513H	DI–DII	1/123	novel	Missense	Mutation	VUS	[1]
	Exon16	G2608>C	D870H	DIIS5-S6	1/123	novel	Missense	Mutation	VUS	[1]
	Exon18	G3292>T	V1098L	DII-DIII	1/123	rs199473191	Missense	RV	VUS	[1]
	Exon20	G3604>A	V1202M	DII-DIII	1/123	-	Missense	RV	VUS	[1]
	Exon23	G4018>A	V1340I	DIIIS4	1/44	rs199473605	Missense	RV	VUS	[5]
	Exon26	C4534>T	R1512W	DIII-DIV	1/123	-	Missense	RV	VUS	[1].

	Exon28	T5291>A	V1764D	DIVS6	1/123	novel	Missense	Mutation	VUS	[1]
	Exon28	C5810>T	S1937F	C-terminus	1/123	novel	Missense	Mutation	VUS	[1]
SCN1B (NM_001037.4)	Exon3	G412>A	V138I	N-terminus	3/123	rs72558029	Missense	RV	VUS	[1]
	Exon4	C566>T	T189M	C-terminus	2/123	rs2305748	Missense	RV	VUS	[1]
SCN3B (NM_001040151.1)	Exon4	G583>A	A195T	C-terminus	1/123	rs375755770	Missense	RV	VUS	[1]
SCN10A (NM_006514)	Exon1	G 41>A	R14H	N-terminus	1/105	rs141207048	Missense	RV	VUS	[2]
	Exon9	T1157>G	F386C	DIS6	1/105	rs78555408	Missense	RV	VUS	[2]
	Exon15	G450>A	R817Q	DIIS5-S6	1/105	rs201068959	Missense	RV	VUS	[2]
	Exon20	C3542>T	T1181M	DIIIS1-S2	1/105	rs150773437	Missense	RV	VUS	[2]
	Exon21	C3787>T	R1263*	DIIIS4	1/105	novel	Nonsense	Mutation	LP	[2]

KCNQ1 (NM_000218.2)	Intron 8	1128+5G>A	-	-	1/44	rs76735093	Intron	RV	VUS	[5]
	Exon16	1876_1893del	G626_P631del	C-terminus	1/44	novel	Deletion	Mutation	LP	[5]
KCNH2 (NM_000238.3)	Intron 5	1128 + 6C > T	-	-	1/108	novel	Intron	Mutation	VUS	[6]
	Intron 11	2692 + 8G > A	-	-	1/104	novel	Intron	Mutation	VUS	[6]
	Exon 13	A3110>T	D1037V	C-terminus	1/44	novel	Missense	Mutation	VUS	[5]
KCNE1 (NM_000219.4)	Exon 3	T160 > G	F54V	Transmembrane	1/105	novel	Missense	Mutation	VUS	[6]
KCNE2 (NM_172201.1)	Exon 2	T370 > C	*124R	C-terminus	1/104	Novel	Terminator codon mutation	Mutation	LP	[6]
KCNJ5 (NM_000890.3)	Exon 3	A536>G	N179S	-	1/44	rs147070381	Missense	RV	VUS	[5]
CACNA1C (NM_000719.6)	Exon 37	T4393>C	F1465L	DIVS5-S6	1/44	rs886038809	Missense	RV	VUS	[5]
	Exon 44	C5329>T	R1777C	C-terminus	1/44	rs775251529	Missense	RV	VUS	[5]

CACNB2 (NM_201590.2)	Exon 14	C1354>T	R452C	-	1/44	rs111250176	Missense	RV	VUS	[5]
PKP2 (NM_004572.3)	Exon 3	G475>A	A159T	-	1/100	novel	Missense	Mutation	VUS	[7]
	Exon 3	G794>A	G265E	-		novel	Missense	Mutation	VUS	[7]
DSP (NM_004415.2)	Exon 2	A269>G	Q90R	-	1/40	rs188516326	Missense	RV	VUS	[8]
	Exon 3	A373>T	I125F	-	1/40	novel	Missense	Mutation	VUS	[8]
	Exon 12	A1562>C	D521A	-	1/40	rs748790273	Missense	RV	VUS	[8]
	Exon 23	G4071>C	E1357D	-	1/40	rs569786610	Missense	RV	VUS	[8]
	Exon 24	G7735>C	D2579H	-	1/40	rs750744914	Missense	RV	VUS	[8]
GJA1 (NM_000165.4)	Exon 2	C169>T	Q57*	-	1/124	novel	Nonsense	Mutation	LP	[9]
VCL (NM_014000.2)	Exon 3	G282>A	M94I	-	1/44	rs774870551	Missense	RV	VUS	[10]

LRRC10 (NM_201550.3)	5' UTR	-2G>T	Noncoding	-	1/88	rs762951776	Noncoding	Mutation	VUS	[11]
	Exon 1	C206>T	P69L	-	1/88	rs140389574	Missense	RV	VUS	[11]
	Exon 1	G385>A	E129K	-	1/113	rs762144273	Missense	Mutation	VUS	[11]
ABCC9 (NM_020297.2)	Exon 29	C3589>T	R197C	-	1/44	rs778849288	Missense	RV	VUS	[5]
ACTN2 (NM_001103.2)	Exon 13	T1162>A	W388R	-	2/44	-	Missense	RV	VUS	[5]
AKAP9 (NM_005751.4)	Exon 46	G11135>A	R3712Q	-	1/44	rs186148498	Missense	RV	VUS	[5]
	Exon 9	A1642>G	R548G	-	1/44	rs147247719	Missense	RV	VUS	[5]
ANKRD (NM_014391.2)	Exon5	G545>A	R182H	-	1/44	rs530739375	Missense	RV	VUS	[5]
DMPK (NM_004409.3)	Exon15	C1868>T	P623L	-	1/44	rs200199039	Missense	RV	VUS	[5]
EYA4 (NM_004100.4)	Exon 18	A1622>T	N541I	-	1/44	-	Missense	Mutation	VUS	[5]

GATA4 (NM_002052.3)	Exon 4	G544>C	G182R	-	2/44	-	Missense	Mutation	VUS	[5]
JUP (NM_002230.2)	Exon 6	C958>T	R320C	-	1/44	rs200740462	Missense	RV	VUS	[5]
LDB3 (NM_001171610.1)	Exon 10	T1333>C	S445P	-	1/44	rs868594949	Missense	RV	VUS	[5]
	Exon 10	C1457>G	P486R	-	1/44	rs12761754	Missense	RV	VUS	[5]
LMNA (NM_170707.3)	Exon 12	C1718>T	S573L	-	1/44	rs60890628	Missense	RV	VUS	[5]
MYBPC3 (NM_000256.3)	Exon 2	G104>A	R35Q	-	1/44	rs397515885	Missense	RV	VUS	[5]
	Exon 7	G787>A	G263R	-	1/44	rs373730381	Missense	RV	VUS	[5]
	Exon 32	C3579>G	I1193M	-	1/44	novel	Missense	Mutation	VUS	[5]
MYH6 (NM_002471.3)	Exon 13	C1154>T	S385L	-	1/44	rs778319108	Missense	RV	VUS	[5]
	Exon 30	G4207>A	E1403K	-	1/44	rs769398160	Missense	RV	VUS	[5]

	Exon 31	C4504>T	R1502W	-	1/44	-	Missense	RV	VUS	[5]
MYH7 (NM_000257.2)	Exon 25	C3235>T	R1079W	-	1/44	rs192722540	Missense	RV	VUS	[5]
	Exon 27	G3341>A	R1114H	-	1/44	rs730880773	Missense	Mutation	VUS	[5]
NUP155 (NM_153485.1)	Exon 13	C1507>T	L503F	-	1/44	rs758699546	Missense	RV	VUS	[5]
SGCD (NM_000337.5)	Exon 8	A848>G	Q283R	-	1//44	rs397516338	Missense	RV	VUS	[5]
TNNT2 (NM_000364.2)	Exon 16	C877>T	R293C	-	1/44	-	Missense	RV	VUS	[5]

*Only nonsynonymous and splice site rare variants with a MAF <0.01in the East Asian (EAS, 4327 and 9345 individuals respectively) in Exome Aggregation Consortium (ExAC) and Genome Aggregation Database (gnomAD).

† Category: mutation: absent in controls and public database; RV = Rare variants.

LP = likely pathogenic, VUS = uncertain significance. Ref = references.

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