

Supplemental Table S1. Genes reported in literature as associated with cardiomyopathies and channelopathies

DISEASE	Gene OMIM id	GENE	CYTOGENETIC BAND	PROTEIN	CLIN GENE	INHERITANCE
Brugada Syndrome (BrS)	601439	ABCC9	12p12.1	ATP-Binding Cassette, Subfamily C, Member 9	N.R.	AD
	600465	ANK3	10q21.2	Ankyrin 3 (G)	N.R.	AD
	611875	CACNA1C	12p13.33	α subunit α1C of the Cav1.2 calcium channel	Disputed	AD
	114204	CACNA2D1	7q21.11	δ subunit Cava2δ1 of calcium channel	Disputed	AD
	611876	CACNB2	10p12.33-p12.31	β subunit Cavβ2b of calcium channel	Disputed	AD
	601513	FGF12	3q28-q29	Fibroblast growth factor 12	N.R.	AD
	611777	GPD1L	3p22.3	Glycerol-3-phosphate dehydrogenase 1-like	Disputed	AD
	613123	HCN4	15q24.1	Hyperpolarization-activated cyclic nucleotide-gated channel 4	Disputed	AD
	604674	HEY2	6q22	Hairy/Enhancer of Split-related with YRPW motif 2	N.R.	AD
	605410	KCND2	7q31.31	α subunit of the KV4.2 potassium channel	N.R.	AD
	616399	KCND3	1p13.2	α subunit of the KV4.3 potassium channel	Disputed	AD
	613119	KCNE3	11q13.4	β subunit MiRP2 of potassium channel	Disputed	AD
	152427	KCNH2	7q36.1	α subunit of the HERG potassium channel	Disputed	AD
	600935	KCNJ8	12p12.1	α subunit of the KIR6.1 potassium channel	Disputed	AD
	602861	PKP2	12p11.21	Plakophilin 2	Disputed	AD
	607954	RANGRF	17p13.1	RAN guanine nucleotide release factor	Disputed	AD
	604427	SCN10A	3p22.2	α subunit of the Nav1.8 sodium channel	Disputed	AD
	612838	SCN1B	19q13.12	β subunit Navβ1 of sodium channel	Disputed	AD
	601327	SCN2B	11q23.3	β subunit Navβ2 of sodium channel	Disputed	AD
	613120	SCN3B	11q24.1	β subunit Navβ3 of sodium channel	Disputed	AD
	601144	SCN5A	3p22.2	α subunit of the Nav1.5 sodium channel	Definitive	AD
	603961	SEMA3A	7q21.11	Semaphorin family protein	N.R.	AD
	602701	SLMAP	3p14.3	Sarcolemma-associated protein	Disputed	AD
	606936	TRPM4	19q13.33	Calcium-activated non-selective ion channel	Disputed	AD
Long QT Syndrome (LQT)	604001	AKAP9	7q21.2	A-kinase anchor protein 9	Disputed	AD
	106410	ANK2	4q25-q26	Ankyrin 2 (B)	N.R.	AD
	114205	CACNA1C	12p13.33	α subunit α1C of the Cav1.2 calcium channel	Moderate	AD
	114180	CALM1	14q32.11	Calmodulin 1	Definitive	AD
	114182	CALM2	2p21	Calmodulin 2	Definitive	AD
	114183	CALM3	19q13.32	Calmodulin 3	Definitive	AD
	601253	CAV3	3p25.3	Caveolin 3	N.R.	AD
	176261	KCNE1	21q22.11-q22.12	Potassium voltage-gated channel subfamily E regulatory subunit 1	Limited	AD/AR
	603796	KCNE2	21q22.11	Potassium voltage-gated channel subfamily E regulatory subunit 2	Disputed	AD
	152427	KCNH2	7q36.1	α subunit of the HERG potassium channel	Definitive	AD
	600681	KCNJ2	17q24.3	Potassium inwardly-rectifying channel, subfamily J, member 2	Limited	AD/AR
	600734	KCNJ5	11q24.3	Potassium inwardly-rectifying channel, subfamily J, member 5	Disputed	AD
	607542	KCNQ1	11p15.5-p15.4	Kv7.1 hERG/Kv11.1	Definitive	AD/AR
	602235	KCNQ2	20q13.33	Potassium voltage-gated channel subfamily Q member 2	N.R.	AD
	180902	RYR2	1q43	Ryanodine Receptor 2	N.R.	AD
	600235	SCN1B	19q13.12	Sodium voltage-gated channel beta subunit 1	N.R.	AD
	608256	SCN4B	11q23.3	Sodium voltage-gated channel beta subunit 4	Disputed	AD
	600163	SCN5A	3p22.2	α subunit of the Nav1.5 sodium channel	Definitive	AD
	601017	SNTA1	20q11.21	α1-Syntrophin	Disputed	AD
	603283	TRDN	6q22.31	Triadin	Strong	AR
Short QT Syndrome (SQT)	611875	CACNA1C	12p13.33	α subunit α1C of the Cav1.2 calcium channel	Disputed	AD
	114204	CACNA2D1	7q21.11	δ subunit Cava2δ1 of calcium channel	Disputed	AD
	611876	CACNB2	10p12.33-p12.31	β subunit Cavβ2b of calcium channel	Disputed	AD
	152427	KCNH2	7q36.1	α subunit of the HERG potassium channel	Definitive	AD
	600681	KCNJ2	17q24.3	Potassium inwardly-rectifying channel, subfamily J, member 2	Moderate	AD/AR
	607542	KCNQ1	11p15.5-p15.4	Potassium voltage gated channel, KQT-like subfamily, member 1	Strong	AD
	601144	SCN5A	3p22.2	α subunit of the Nav1.5 sodium channel	Disputed	AD
Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT)	106195	SLC4A3	2q35	Solute carrier family 4 (anion exchanger), member 3	Moderate	AD
	106410	ANK2	4q25-q26	Ankyrin 2 (B)	Disputed	AD
	114180	CALM1	14q32.11	Calmodulin 1	Moderate	AD
	114182	CALM2	2p21	Calmodulin 2	Moderate	AD
	114183	CALM3	19q13.32	Calmodulin 3	Moderate	AD
	114251	CASQ2	1p13.1	Calsequestrin 2	Definitive	AR
	600681	KCNJ2	17q24.3	Potassium inwardly-rectifying channel, subfamily J, member 2	Disputed	AR
	180902	RYR2	1q43	Ryanodine Receptor 2	Definitive	AD
	603283	TRDN	6q22.31	Triadin	Definitive	AR
Ionopathy (ACM)	106410	ANK2	4q25-q26	Ankyrin 2 (B)	N.R.	AD
	114020	CDH2	18q12.1	Cadherin 2 - N-Cadherin	Limited	AD
	607667	CTNNA3	10q22.2	Catenin, alpha 3	Limited	AD
	125660	DES	2q35	Desmin	Moderate	AD
	125645	DSC2	18q12.1	Desmocollin 2	Definitive	AD/AR
	125671	DSG2	18q12.1	Desmoglein 2	Definitive	AD
	125647	DSP	6p24	Desmoplakin	Definitive	AD
	102565	FLNC	7q32.1	Filamin C	N.R.	AD
Ionopathy (ACM)	173325	JUP	17q21	Junction plakoglobin	Definitive	AD

Arrhythmicogenic Cardi	150330	LMNA	1q22	Lamin A/C	Limited	AD
	602861	PKP2	12p11.21	Plakophilin 2	Definitive	AD
	172405	PLN	6q22.31	Phospholamban	Moderate	AR
	180902	RYR2	1q43	Ryanodine receptor 2	Refuted	AD
	601144	SCN5A	3p22.2	α subunit of the Nav1.5 sodium channel	Limited	AD
	190230	TGFB3	14q24.3	Transforming Growth Factor β 3	Limited	AD
	612658	TJP1	15q13.1	Tight Junction Protein	Limited	AD
	612048	TMEM43	3p25.1	Transmembrane protein 43	Definitive	AD
	603273	TP63	3q28	Tumor Protein p63	N.R.	AD
	188840	TTN	2q31.2	Titin	Limited	AD
	601439	ABCC9	12p12.1	ATP-Binding Cassette, Subfamily C, Member 9	Limited	AD
	602330	ABLM1	10q25.3	Limatin (actin-binding LIM domain protein)	N.R.	AD
	102540	ACTC1	15q14	Actin, alpha, cardiac muscle	Moderate	AD
Dilated Cardiomyopathy (DCM)	102573	ACTN2	1q43	Alpha-actinin 2	N.R.	AD
	606844	ALMS1	2p13.1	ALMS1 centrosome and basal body associated protein	N.R.	AR
	609599	ANKRD1	10q23.31	Ankyrin repeat domain-containing protein 1	Limited	AD
	608662	ANOS	11p14.3	Anoctamin 5	N.R.	AR
	603883	BAG3	10q26.1	BCL2-associated athanogene	Definitive	AD
	611414	CALR3	19p13.11	Calreticulin 3	N.R.	AD
	114251	CASQ2	1p13.1	Calsequestrin 2	N.R.	AD
	601253	CAV3	3p25.3	Caveolin 3	N.R.	AD
	123590	CRYAB	11q23.1	Alpha B crystallin	N.R.	AD
	600824	CSRP3	11p15.1	Cysteine- and glycine-rich protein 3	Limited	AD
	600435	CTF1	16p11.2	Cardiotrophin 1	Limited	AD
	128239	DAG1	3p21.31	Dystroglycan, alpha	N.R.	AR
	125660	DES	2q35	Desmin	Definitive	AD
	300377	DMD	Xp21.2-p21.1	Dystrophin	N.R.	XLR
	605377	DMPK	19q13.32	Dystrophia myotonica protein kinase gene	N.R.	AD
	610746	DOLK	9q34.11	Dolichol Kinase	N.R.	AR
	125645	DSC2	18q12.1	Desmocollin 2	N.R.	AD
	125671	DSG2	18q12.1	Desmoglein 2	Limited	AD
	125647	DSP	6p24	Desmoplakin	Strong	AD
	601239	DTNA	18q12.1	Dystrobrevin, alpha	Limited	AD/AR
	300384	EMD	Xq28	Emerin	N.R.	XLR
	603550	EYA4	6q23.2	Eyes absent 4	Limited	AD
	300163	FHL1	Xq26.3	Four-and –a-half LIM domains 1	N.R.	XLD/XLR
	602633	FHL2	2q12.2	Four-and –a-half LIM domains 2	N.R.	AD
	102565	FLNC	7q32.1	Filamin C	Definitive	AD
	614518	GATAD1	7q21.2	GATA Zinc Finger Domain Containing Protein 1	Limited	AD
	300644	GLA	Xq22.1	Galactosidase, alpha	N.R.	XLR
	602366	ILK	11p15.4	Integrin-linked kinase	Limited	AD
	173325	JUP	17q21	Junction plakoglobin	N.R.	AD
	156225	LAMA2	6q22.33	Laminin Alpha, 2	N.R.	AR
	600133	LAMA4	6q21	Laminin Alpha, 4	Limited	AD
	309060	LAMP2	Xq24	Lysosome-associated membrane protein 2	N.R.	XLR
	605906	LDB3	10q23.2	LIM domain-binding 3	Limited	AD
	150330	LMNA	1q22	Lamin A/C	Definitive	AD
	600958	MYBPC3	11p11.2	Myosin-binding protein C, cardiac	Limited	AD
	160710	MYH6	14q11.2	Alpha-myosin heavy chain 6	Limited	AD
	160760	MYH7	14q11.2	Myosin, heavy chain 7, cardiac muscle, beta	Definitive	AD
	160781	MYL2	12q24.11	Myosin light chain 2	Limited	AD
	160790	MYL3	3p21.31	Myosin light chain 3	Disputed	AD/AR
	603508	MYOM1	18p11.31	Myomesin 1	N.R.	Unknown
	605603	MYOZ1	10q22.2	Myozenin 1	N.R.	AD/AR
	605602	MYOZ2	4q26	Myozenin 2	N.R.	AD
	608517	MYPN	10q21.3	Myopalladin	Limited	AD
	605491	NEBL	10p12.31	Nebulette	Limited	AD
	613121	NEXN	1p31.1	Nexilin	Moderate	AD
	600584	NKX2-5	5q35.1	NK2 homeobox 5; cardiac specific homeobox 1	Limited	AD
	605900	PDLIM1	10q23.33	C-terminal LIM domain protein 1	N.R.	AD
	605889	PDLIM3	4q35.1	PDZ and LIM domain protein 3	Disputed	AD
	603422	PDLIM4	5q31.1	PDZ and LIM domain protein 4	N.R.	AD
	602861	PKP2	12p11.21	Plakophilin 2	Disputed	AD
	172405	PLN	6q22.31	Phospholamban	N.R.	AR
	605557	PRDM16	1p36.32	PR domain containing 16	Limited	AD
	602743	PRKAG2	7q36.1	Protein Kinase, AMP-Activated, Non-Catalytic, Gamma 2	N.R.	AD
	104311	PSEN1	14q24.2	Presenilin 1	Disputed	AD
	600759	PSEN2	1q42.13	Presenilin 2	Limited	AD
	176876	PTPN11	12q24.13	Protein-Tyrosine Phosphatase, Non-Receptor Type, 11	N.R.	AD
	613171	RBM20	10q25.2	RNA-binding motif protein 20	Definitive	AD
	609591	RIT1	1q22	RIC-like protein without CAAX motif 1	N.R.	AD
	180902	RYR2	1q43	Ryanodine Receptor 2	N.R.	AD
	601144	SCN5A	3p22.2	α subunit of the Nav1.5 sodium channel	Definitive	AD
	601411	SGCD	5q33.2-q33.3	Delta-sarcoglycan	Limited	AD
	603377	SLC22A5	5q31.1	Solute Carrier Family 22 (Organic Cation Transporter), Member 5	N.R.	AR

Hypertrophic Cardiomyopathy (HCM)	601017	SNTA1	20q11.21	α1-Syntrophin	N.R.	AD
	182530	SOS1	2p22.1	SOS Ras/Rac guanine nucleotide exchange factor 1	N.R.	AD
	607723	SUN1	7p22.3	SAD1 and UNC84 domain-containing protein 1	N.R.	AD
	613569	SUN2	22q13.1	SAD1 and UNC84 domain-containing protein 2	N.R.	AD
	608441	SYNE1	6q25.2	Nesprin 1, Synaptic nuclear envelop protein 1	N.R.	AD
	608442	SYNE2	14q23.2	Nesprin 2, Synaptic nuclear envelop protein 2	N.R.	AD
	300394	TAZ	Xq28	Tafazzin	N.R.	XLR
	601620	TBX5	12q24.21	T-box 5	N.R.	AD
	604488	TCAP	17q12	Titin-cap; telethonin	Limited	AD/AR
	603306	TCF21	6q23.2	Transcription factor 21, epicardin	N.R.	AD
	190230	TGFB3	14q24.3	Transforming Growth Factor β 3	N.R.	AD
	612048	TMEM43	3p25.1	Transmembrane protein 43	N.R.	AD
	188380	TMPO	12q23.1	Thymopoietin	N.R.	AD
	191040	TNNC1	3p21.1	Cardiac troponin C	Definitive	AD
	191044	TNNI3	19q13.42	Cardiac troponin I3	Moderate	AD
	191045	TNNT2	1q32.1	Cardiac troponin T2	Definitive	AD
	191010	TPM1	15q22.2	Tropomyosin 1	Moderate	AD
	188840	TTN	2q31.2	Titin	Definitive	AD
	176300	TTR	18q12.1	Transthyretin	N.R.	AD
	193065	VCL	10q22.2	Vinculin	Moderate	AD
	102540	ACTC1	15q14	Actin, alpha, cardiac muscle	Definitive	AD
	102573	ACTN2	1q43	Alpha-actinin 2	Moderate	AD
	617608	ALPK3	15q25.3	Alpha kinase 3	Strong	AR
	603883	BAG3	10q26.1	BCL2-associated athanogene	N.R.	AD
	611414	CALR3	19p13.11	Calreticulin 3	Limited	AD
	601253	CAV3	3p25.3	Caveolin 3	N.R.	AD
	123590	CRYAB	11q23.1	Alpha B crystallin	N.R.	AD
	600824	CSRP3	11p15.1	Cysteine- and glycine-rich protein 3	Moderate	AD
	125660	DES	2q35	Desmin	N.R.	AD
	300163	FHL1	Xq26.3	Four-and –a-half LIM domains 1	N.R.	XLRD/XLRR
	602633	FHL2	2q12.2	Four-and –a-half LIM domains 2	N.R.	AD
	102565	FLNC	7q32.1	Filamin C	Definitive	AD
	300644	GLA	Xq22.1	Galactosidase, alpha	N.R.	XLR
	602366	ILK	11p15.4	Integrin-linked kinase	N.R.	AD
	605267	JPH2	20q13.12	Junctophilin 2	Moderate	AD
	309060	LAMP2	Xq24	Lysosome-associated membrane protein 2	N.R.	XLR
	605906	LDB3	10q23.2	LIM domain-binding 3	N.R.	AD
	600958	MYBPC3	11p11.2	Myosin-binding protein C, cardiac	Definitive	AD
	160710	MYH6	14q11.2	Alpha-myosin heavy chain 6	Limited	AD
	160760	MYH7	14q11.2	Myosin, heavy chain 7, cardiac muscle, beta	Definitive	AD
	609928	MYH7B	20q11.22	Myosin Heavy Chain 7B	N.R.	AD
	160781	MYL2	12q24.11	Myosin light chain 2	Definitive	AD
	160790	MYL3	3p21.31	Myosin light chain 3	Definitive	AD/AR
	606566	MYLK2	20q11.21	Myosin light chain kinase 2	Limited	AD
	605603	MYOZ1	10q22.2	Myozenin 1	N.R.	AD/AR
	605602	MYOZ2	4q26	Myozenin 2	Limited	AD
	608517	MYPN	10q21.3	Myopalladin	Limited	AD
	613121	NEXN	1p31.1	Nexilin	Limited	AD
	605900	PDLIM1	10q23.33	C-terminal LIM domain protein 1	N.R.	AD
	605889	PDLIM3	4q35.1	PDZ and LIM domain protein 3	Limited	AD
	603422	PDLIM4	5q31.1	PDZ and LIM domain protein 4	N.R.	AD
	172405	PLN	6q22.31	Phospholamban	Definitive	AD
	602743	PRKAG2	7q36.1	Protein Kinase, AMP-Activated, Non-Catalytic, Gamma 2	Definitive	AD
	176876	PTPN11	12q24.13	Protein-Tyrosine Phosphatase, Non-Receptor Type, 11	N.R.	AD
	604488	TCAP	17q12	Titin-cap; telethonin	Limited	AD /AR
	612418	TMEM70	8q21.11	Mitochondrial complex V (ATP synthase) deficiency, nuclear type 2	N.R.	AR
	191040	TNNC1	3p21.1	Cardiac troponin C	Moderate	AD
	191044	TNNI3	19q13.42	Cardiac troponin I3	Definitive	AD
	191045	TNNT2	1q32.1	Cardiac troponin T2	Definitive	AD
	191010	TPM1	15q22.2	Tropomyosin 1	Definitive	AD
	188840	TTN	2q31.2	Titin	Limited	AD
	176300	TTR	18q12.1	Transthyretin	N.R.	AD
	193065	VCL	10q22.2	Vinculin	limited	AD
Restrictive Cardiomyopathy(RCM)	102540	ACTC1	15q14	Actin, alpha, cardiac muscle	N.R.	AD
	123590	CRYAB	11q23.1	Alpha B crystallin	N.R.	AD
	125660	DES	2q35	Desmin	N.R.	AD
	160760	MYH7	14q11.2	Myosin, heavy chain 7, cardiac muscle, beta	N.R.	AD
	160790	MYL3	3p21.31	Myosin light chain 3	N.R.	AD/AR
	608517	MYPN	10q21.3	Myopalladin	N.R.	AD
	191040	TNNC1	3p21.1	Cardiac troponin C	N.R.	AD
	191044	TNNI3	19q13.42	Cardiac troponin I3	N.R.	AD
	191045	TNNT2	1q32.1	Cardiac troponin T2	N.R.	AD
	191010	TPM1	15q22.2	Tropomyosin 1	N.R.	AD