

Supplemental Table S7: The Z-disc protein compendium.

protein names	murine gene names	identified in this study	identified as phospho protein	MW [kDa]	sarcomeric subunit	additional name	note	references
Protein 3425401B19Rik	<i>3425401 B19Rik</i>	x	x	154.48	Z-disc	CEFIP		Dierck <i>et al</i> , 2013
Alpha-actinin-2	<i>Actn2</i>	x		103.83	Z-disc	Alpha-actinin skeletal muscle isoform 2, F-actin cross-linking protein		Ribeiro <i>et al</i> , 2014
Alpha-actinin-3	<i>Actn3</i>	x	x	103.04	Z-disc	Alpha-actinin skeletal muscle isoform 3		Beggs <i>et al</i> , 1992
Ankyrin-2	<i>Ank2</i>	x		432.86	membrane-associated	Ankyrin-B, Brain ankyrin		Mohler <i>et al</i> , 2005
Ankyrin repeat domain-containing protein 1	<i>Ankrd1</i>	x		36.00	Z-disc	ardiac ankyrin repeat protein, CARP, MCARP		Bang <i>et al</i> , 2001
Ankyrin repeat domain-containing protein 2	<i>Ankrd2</i>	x	x	39.86	Z-disc associated	ARPP, Skeletal muscle ankyrin repeat protein	also shuttling to nucleus	Kojic <i>et al</i> , 2004; Jasnic-Savovic <i>et al</i> , 2015; Tsukamoto <i>et al</i> , 2002
BAG family molecular chaperone regulator 3	<i>Bag3</i>	x	x	61.86	Z-disc	Bcl-2-associated athanogene 3, BIS		Homma <i>et al</i> , 2006
Voltage-dependent L-type calcium channel subunit alpha-1C	<i>Cacna1c</i>	x		240.14	membrane-associated	CACNL1A1, Cav1.2,		Christel <i>et al</i> , 2012
Voltage-dependent L-type calcium channel subunit alpha-1D	<i>Cacna1d</i>			247.06	membrane-associated	Voltage-gated calcium channel subunit alpha Cav1.3, Calcium channel, L type, alpha-1 polypeptide isoform 2		Lu <i>et al</i> , 2007

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Calpain-3	<i>Capn3</i>	x	x	94.24	Z-disc associated	Calcium-activated neutral proteinase 3, LGMD2A, Calpain p94		Goll <i>et al</i> , 1991
F-actin-capping protein subunit alpha-1	<i>Capza1</i>	x		32.94	Z-disc	CapZ alpha-1		Casella <i>et al</i> , 1987
F-actin-capping protein subunit alpha-2	<i>Capza2</i>	x		32.97	Z-disc	CapZ alpha-2		Casella <i>et al</i> , 1987
F-actin-capping protein subunit beta	<i>Capzb</i>	x	x	31.35	Z-disc	CapZ beta		Caldwell <i>et al</i> , 1989
Calsequestrin-1	<i>Casq1</i>	x		46.38	membrane-associated	Calmitin, calcium-sequestering protein	sarcoplasmic reticulum	MacLennan & Wong, 1971; Scott <i>et al</i> , 1988
Caveolin-1	<i>Cav1</i>	x		20.54	membrane-associated	BSCL3	caveolae	Williams & Lisanti, 2004
Alpha-crystallin B chain	<i>Cryab</i>	x	x	20.07	Z-disc associated	Alpha(B)-crystallin, Heat shock protein beta-5, HspB5	also shuttling to nucleus	Koh & Escobedo, 2004
Catenin alpha-1	<i>Ctnna1</i>	x	x	100.11	peripheral	Alpha E-catenin, Cadherin-associated protein	Costamere	Chopra <i>et al</i> , 2012
Catenin beta-1	<i>Ctnnb1</i>	x	x	85.47	peripheral	beta-catenin, CTNNB	Costamere	Kurth <i>et al</i> , 1996
Dystroglycan	<i>Dag1</i>	x		96.90	membrane-associated	Dystrophin-associated glycoprotein 1		Durbeej <i>et al</i> , 1998
Desmin	<i>Des</i>	x		53.50	intermediate filament	CMD11, CSM1, CSM2, Desmin		Richardson <i>et al</i> , 1981; Clemen <i>et al</i> , 2013

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Dystrophin	<i>Dmd</i>			425.83	membrane-associated	Duchenne muscular dystrophy		Belkin & Burridge, 1994
DnaJ homolog subfamily B member 6	<i>Dnajb6</i>	x		39.81	Z-disc associated	DJ4, DnaJ homolog subfamily B member 6, Heat shock protein J2, MSJ1		Sarparanta <i>et al</i> , 2012
Dystonin	<i>Dst</i>	x	x	870.52	peripheral	BPAG1, Bullous pemphigoid antigen 1, Dystonia musculorum protein, Hemidesmosomal plaque protein		Steiner-Champlaud <i>et al</i> , 2010, Boyer <i>et al</i> , 2010
Dystrobrevin alpha	<i>Dtna</i>	x	x	84.07	membrane-associated	Dystrophin-related protein 3		Peters <i>et al</i> , 1998
Dystrobrevin beta	<i>Dtnb</i>	x	x	74.40	membrane-associated	-		Peters <i>et al</i> , 1998
Dysferlin	<i>Dysf</i>	x		237.91	membrane-associated	Fer-1-like protein 1, LGMD2B		Matsuda <i>et al</i> , 2001; Minetti <i>et al</i> , 1992
Protein enabled homolog	<i>Enah</i>	x	x	83.98	Z-disc	ENA, MENA, Protein enabled homolog		Benz <i>et al</i> , 2013
Protein 4.1	<i>Epb41</i>			95.91	peripheral	4.1R, Band 4.1		Pinder <i>et al</i> , 2012
Band 4.1-like protein 1	<i>Epb41l1</i>	x	x	98.31	peripheral	4.1N, Band 4.1-like protein 1		Pinder <i>et al</i> , 2012
Ena/VASP-like protein	<i>Evl</i>	x	x	44.34	Z-disc	Ena/vasodilator-stimulated phosphoprotein-like		van der Ven <i>et al</i> , 2006
F-box and leucine-rich protein 22	<i>Fbxl22</i>			26.32	Z-disc associated	F-box/LRR-repeat protein 22		Spaich <i>et al</i> , 2012
Filamin-C	<i>Flnc</i>	x	x	291.12	Z-disc	ABP-280-like protein, FLN2, gamma filamin		Thompson <i>et al</i> , 2000

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Glutamate receptor ionotropic, NMDA 2B	<i>Grin2b</i>			165.96	membrane-associated	N-methyl D-aspartate receptor subtype 2B, NR3, NR2B		Seeber et al, 2000
Homer protein homolog 1	<i>Homer1</i>			41.41	membrane-associated	Homer-1		Stiber et al, 2008
Heat shock protein beta-1	<i>Hspb1</i>	x	x	23.014	Z-disc associated	Stress-responsive protein 27, Hsp25, HSP27		Koh & Escobedo, 2004
Heat shock protein beta-8	<i>Hspb8</i>	x	x	21.53	Z-disc associated	Alpha-crystallin C chain, Protein kinase H11, Small stress protein-like protein HSP22		Baker et al, 2010
Immunoglobulin-like and fibronectin type III domain-containing protein 1	<i>Igfn1</i>			303.65	membrane-associated	KY-interacting protein 1		Baker et al, 2010
Integrin beta-1-binding protein 2	<i>Itgb1bp2</i>	x		38.77	membrane-associated	Melusin		Brancaccio et al, 1999
Integrin beta-1-binding protein 2	<i>Itgb1bp2</i>	x		38.77	membrane-associated	CHORDC3, ITGB1BP, Melusin	costamere region	Brancaccio et al, 1999
Junctophilin-1	<i>Jph1</i>	x	x	71.90	membrane-associated	JP1, Junctophilin type 1		Ito et al, 2001; Takeshima et al, 2015
Junctophilin-2	<i>Jph2</i>	x	x	74.69	membrane-associated	JP2, Junctophilin type 2		Takeshima et al, 2000; Minamisawa et al, 2004; Takeshima et al, 2015
Junction plakoglobin	<i>Jup</i>	x	x	81.8	membrane-associated	Catenin gamma, CTNNG, Desmoplakin-3, Desmoplakin III, DP3	can shuttle to the nucleus	Butz & Larue, 1995; Cifuentes-Diaz et al, 1998; Zhou et al, 2007; Cohen et al, 2014

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Potassium voltage-gated channel subfamily E member 1	<i>Kcne1</i>			14.58	membrane-associated	MinK, Delayed rectifier potassium channel subunit IsK		Furukawa et al, 2001
Keratin, type I cytoskeletal 19	<i>Krt19</i>			44.54	intermediate filament	cytokeratin19		Ursitti et al, 2004
Keratin, type II cytoskeletal 8	<i>Krt8</i>			54.56	intermediate filament	cytokeratin8		Ursitti et al, 2004
Kyphoscoliosis peptidase	<i>Ky</i>			75.09	Z-disc associated	-		Baker et al, 2010
LIM and SH3 domain protein 1	<i>Lasp1</i>	x	x	29.99	peripheral	Metastatic lymph node gene 50 protein, MLN50		Li et al, 2004
LIM domain-binding protein 3	<i>Ldb3</i>	x	x	76.43	Z-disc	ORACLE, PDLIM6, Protein cypher, ZASP, Z-band alternatively spliced PDZ-motif protein		Faulkner et al. 1999
LIM and senescent cell antigen-like-containing domain protein 1	<i>Lims1</i>	x		44.34	peripheral	Particularly interesting new Cys-His protein 1, PINCH1		Meder et al, 2011
Myotilin	<i>Myot</i>	x	x	55.32	Z-disc	57 kDa cytoskeletal protein, LGMD1A, Myofibrillar titin-like Ig domains protein		Salmikangas et al, 1999
Myozenin1	<i>Myoz1</i>			31.46	Z-disc	Calsarcin-2, FATZ, Filamin-, actinin-and telethonin-binding protein		Faulkner et al, 2000; Frey et al, 2000

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Myozenin-2	<i>Myoz2</i>	x	x	29.76	Z-disc	Calsarcin-1, FATZ-related protein 2,		Frey et al, 2000
Myozenin-3	<i>Myoz3</i>			26.98	Z-disc	Calsarcin-3, FATZ-related protein 3		Frey & Olson, 2002
Myopalladin	<i>Mypn</i>	x	x	144.11	Z-disc	145 kDa sarcomeric protein		Bang et al, 2001
Protein Neb	<i>Neb</i>	x	x	828.65	Z-disc	NEM2		Wang & Wright, 1988
Nebulette	<i>Nebi</i>			52.20	Z-disc	LIM-nebulette, LASP2, LIM and SH3 domain protein 2, Actin-binding Z-disk protein		Zieseniss et al, 2008)
Nexilin	<i>Nexn</i>	x	x	72.11	Z-disc	F-actin-binding protein, Nelin		Hassel et al, 2009
Nebulin-related-anchoring protein	<i>Nrap</i>	x		195.75	intercalated disc			Zhang et al, 2001
Obscurin	<i>Obscn</i>	x	x	815.63	Z-disc	Obscurin-myosin light chain kinase, Obscurin-RhoGEF		Young et al, 2001
Protein Obsl1	<i>Obsl1</i>	x	x	197.93	Z-disc			Geisler et al, 2007
p21 protein (Cdc42/Rac)-activated kinase 1	<i>Pak1</i>	x	x	60.607	membrane-associated	Alpha-PAK, p21-activated kinase 1, p65-PAK, PAKalpha, Serine/threonine-protein kinase PAK 1	also Z-disc	Ke <i>et al</i> , 2004

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Palladin	<i>Palld</i>	x	x	152.13	Z-disc	PNCA1, Sarcoma antigen NY-SAR-77	embryonic Z-disc	Parast & Otey, 2000
Alpha-parvin	<i>Parva</i>	x	x	42.33	membrane-associated	Actopaxin, Calponin-like integrin-linked kinase-binding protein, Matrix-remodeling-associated protein 2, MXRA2		Olski <i>et al</i> , 2001; Chen <i>et al</i> , 2005; Sepulveda & Wu, 2006
Beta-parvin	<i>Parvb</i>	x		41.67	membrane-associated	Affixin	also costamere	Yamaji <i>et al</i> , 2001; Sepulveda & Wu, 2006
PDZ and LIM domain protein 1	<i>Pdlim1</i>	x	x	35.77	Z-disc	CLIM1, C-terminal LIM domain protein 1, Elfin, hCLIM1, LIM domain protein CLP-36		Kotaka <i>et al</i> . 2000
PDZ and LIM domain protein 3	<i>Pdlim3</i>	x	x	34.30	Z-disc	Actinin-associated LIM protein, ALP, Alpha-actinin-2-associated LIM protein		Xia <i>et al</i> , 1997
PDZ and LIM domain protein 5	<i>Pdlim5</i>	x	x	63.30	Z-disc	ENH1, Enigma homolog, Enigma-like PDZ and LIM domains protein		Nakagawa <i>et al</i> , 2000
Phosphoglucomutase-like protein 5	<i>Pgm5</i>	x	x	62.22	Z-disc	Aciculin, Phosphoglucomutase-related protein		Molt <i>et al</i> , 2014; Belkin & Burridge, 1995
Phosphatidylinositol 4,5-bisphosphate 3-	<i>Pik3ca</i>	x		124.41	Z-disc	-		Waardenberg <i>et al</i> , 2011

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kinase catalytic subunit alpha isoform								
Plakophilin 2	<i>Pkp2</i>	x		88.10	intercalated disc	-	also peripherhy	Goossens et al, 2007
Plectin	<i>Plec</i>	x	x	517.28	peripheral	Hemidesmosomal protein 1		Hijikata et al, 1999
Serine/threonine-protein phosphatase 2B catalytic subunit alpha isoform	<i>Ppp3ca</i>	x		57.61	Z-disc	Calmodulin-dependent calcineurin A subunit alpha isoform, CAM-PRP catalytic subunit		Frey et al. 2000
Presenilin-1	<i>Psen1</i>	x	x	52.64	membrane-associated	AD3, FAD, PSNL1		Sakuma et al, 2006
Presenilin-2	<i>Psen2</i>			49.98	membrane-associated	Ad4h, Ps-2, Psnl2		Takeda et al, 2005
Paxillin	<i>Pxn</i>	x	x	64.51	peripheral	-		Gehmlich et al, 2007
Ryanodine receptor 2	<i>Ryr2</i>			564.82	membrane-associated	-		Lanner et al, 2010
Sodium channel protein	<i>Scn1a</i>			19.37	intercalated disc	Nav1.1	also membrane associated	Haufe et al, 2005
Alpha-sarcoglycan	<i>Sgca</i>	x		43.29	membrane-associated	50 kDa dystrophin-associated glycoprotein, Adhalin		Wakayama et al, 1996
Beta-sarcoglycan	<i>Sgcb</i>	x		34.87	membrane-associated	43 kDa dystrophin-associated glycoprotein, LGMD2E		Durbeej et al, 2000
Delta-sarcoglycan	<i>Sgcd</i>	x		32.13	membrane-associated	35 kDa dystrophin-associated		Nigro et al, 1996

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						glycoprotein, LGMD2F		
Epsilon-sarcoglycan	<i>Sgce</i>	x		53.53	membrane-associated	-		Ettinger et al, 1997
Gamma-sarcoglycan	<i>Sgcg</i>	x		32.08	membrane-associated	35 kDa dystrophin-associated glycoprotein, LGMD2C		Hack et al, 2000
SH3 domain-binding glutamic acid-rich protein	<i>Sh3bgr</i>			23.10	Z-disc	SH3BGR protein		Jang et al, 2015
Band anion transport protein	<i>Slc4a1</i>			103.14	intercalated disc	Solute carrier family 4 member 1		Moura Lima et al, 2003
Sodium/calcium exchanger 1	<i>Slc8a1</i>			108.04	membrane-associated	Ncx1		Mohler et al, 2005
Alpha-1-syntrophin	<i>Snta1</i>	x	x	53.66	membrane-associated	59 kDa dystrophin-associated protein A1 acidic component 1		Peters et al, 1998
Isoform 2 of Sorbin and SH3 domain-containing protein 2	<i>Sorbs2</i>	x	x	145.01	Z-disc associated	Arg/Abl-interacting protein 2, Sorbin and SH3 domain-containing protein 2	also costamere region and membrane-associated	Rönty et al, 2005; Wang et al, 1997; Sanger et al, 2010
Sorcin	<i>Sri</i>	x		21.63	membrane-associated	22 kDa protein, CP22	Sarcoplasmic reticulum	Meyers et al, 1995
Syncoilin	<i>Sync</i>	x	x	53.63	Z-disc	SYNC1, Syncoilin intermediate filament 1	also sarcolemma	Kemp et al, 2009; Moorwood, 2008
Synemin	<i>Synm</i>	x		173.21	intermediate filament			Carlsson et al, 2000

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Synaptopodin	<i>Synpo</i>	x	x	96.25	Z-disc			Linnemann et al, 2010
Synaptopodin-2	<i>Synpo2</i>	x	x	116.53	Z-disc	Myopodin, genethonin-2, fesselin		Linnemann et al, 2010
Synaptopodin 2-like protein	<i>Synpo2l</i>	x	x	103.27	Z-disc	Tritopodin, CHAP		Beqqali et al, 2010
Telethonin	<i>Tcap</i>	x	x	19.07	Z-disc	LGMD2G, T-cap, Titin cap protein		Gregorio et al, 1998
Talin-2	<i>Tln2</i>	x	x	271.66	peripheral	-		Senetar et al, 2007
Tripartite motif-containing protein 54	<i>Trim54</i>	x		41.13	Z-disc	MURF-3, Muscle-specific RING finger protein,		Gregorio et al, 2005
Titin	<i>Ttn</i>	x	x	3716	Z-disc	Connectin, LGMD2J	aa 1-700 in Z-disc	Labeit et al, 1992
Utrophin	<i>Utrn</i>	x	x	392.70	membrane-associated	Dmdl protein, dystrophin-related protein	sarcolemma	Helliwell et al, 1992
Vasodilator-stimulated phosphoprotein	<i>Vasp</i>	x	x	39.67	Z-disc	-		van der Ven et al, 2006
Vinculin	<i>Vcl</i>	x	x	116.72	peripheral	Metavinculin		Shear & Bloch, 1985; Minetti et al, 1992
Vacuolar protein sorting-associated protein 18 homolog	<i>Vps18</i>	x		110.22	Z-disc	hVPS18		van der Ven et al, 2006
Wiskott-Aldrich syndrome protein homolog	<i>Was</i>			54.19	Z-disc	Wasp		Takano et al, 2010

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Xin actin-binding repeat-containing protein 1	<i>Xirp1</i>	x	x	123.43	Z-disc	Cardiomyopathy-associated protein 1, CMYA1, XIN		van der Ven et al, 2006
Xin actin-binding repeat-containing protein 2	<i>Xirp2</i>			428.26	Z-disc	Cardiomyopathy-associated protein 3, CMYA2, Beta-xin, Xeplin, Myomaxin		Huang et al, 2006
Zyxin	<i>Zyx</i>	x	x	60.55	peripheral	-		Crawford et al, 1992

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