Supplementary Information

Cell surface flip-flop of phosphatidylserine is critical for PIEZO1-mediated myotube formation

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Supplementary Figures 1-8 Supplementary Tables 1-4



Supplementary Figure 1. Supporting data for defective myotube formation by CDC50A- and ATP11A-deficient C2C12 myoblasts. (a-c) Expression of phospholipid flippase complex components in C2C12 cells. (a) Semi-quantitative RT-PCR analysis of CDC50 family members and P4-ATPases in proliferating myoblasts and differentiated myotubes from C2C12 cells. Red arrowheads denote specific bands. (b) Immunoblot analysis of CDC50A in differentiated C2C12 cells. MyHC and α tubulin were detected as a differentiation marker and a loading control, respectively. (c) Quantitative RT-PCR analysis of P4-ATPases (compared to AP3D1) in differentiated C2C12 cells. (d-g) Defective myotube formation by C2C12 myoblasts deficient in the PS flippase complex of ATP11A and CDC50A. (d) CRISPR/Cas9 target sites in the indicated genes of C2C12 cells. The guide sequence and the protospacer-adjacent motif in each gene are underlined in green and blue, respectively. CRISPR/Cas9-introduced insertions or deletions are shown in red characters. (e) Characterization of myotube formation in control and flippase-deficient C2C12 clones by immunofluorescence imaging of MyHC. Quantification of cell fusion (left), polarized elongation (middle) and differentiation (right). (f) Immunoblot analysis (IB) of CDC50A-associated P4-ATPases in anti-FLAG immunoprecipitates (IP) of HEK293 cells co-expressing FLAG-tagged CDC50A and one of the GFP-tagged P4-ATPases visualized with anti-FLAG and anti-GFP antibodies. (g) Time-lapse images of myotube formation in WT, CDC50Aand ATP11A-deficient C2C12 cells, began at 2 days (0 hrs) after induction of differentiation. These images were selected from Supplementary Movies 1-3. Syncytia are pseudo-coloured and the cell periphery is indicated by a black line. (h) Increased anionic phospholipids on the cell surface of PS flippase-deficient myoblasts. Fluorescent spectra of F2N12S (a membrane asymmetry probe sensitive to anionic phospholipids in the plasma membrane outer leaflet) in WT, CDC50A- and ATP11Adeficient C2C12 myoblasts. (i) Normal PS content in PS flippase-deficient myoblasts. Thin-layer chromatography analysis of total PS levels in WT, CDC50A- and ATP11A-deficient C2C12 myoblasts. (j) Transient ATP11A degradation by caspases during myotube formation. Immunoblot analysis of differentiated C2C12 cells stably expressing ATP11A-GFP in the presence or absence of Z-VAD-FMK using anti-GFP, anti-MyHC and anti- α -tubulin antibodies. *P < 0.05 (Student's t-test). NS, not significant. n, sample number. Error bars represent the S.E.M. Scale bar, 50 µm (g).



Supplementary Figure 2. Supporting data for defective myotube formation by PS flippase- and PIEZO1-depleted human primary myoblasts. (a) Semi-quantitative RT-PCR analysis of CDC50 family members, P4-ATPases and a series of Ca²⁺-permeable mechanosensitive channels in human primary myoblasts. Red arrowheads denote specific bands. (b) Quantitative RT-PCR analysis of PIEZO1, CDC50A and ATP11A in human primary myoblasts transfected with non-targeting negative control siRNA or siRNA against the corresponding genes. *GAPDH* was used as the reference gene. (c) Quantification of differentiation in Fig. 1c and 2c. **P < 0.01 and ****P < 0.0001 (Student's t-test). NS, not significant. *n*, sample number. Error bars represent the S.E.M.



Supplementary Figure 3. Supporting data for rescue of morphologies in PS flippase-deficient C2C12 myotubes by overexpression of PS flippase complex components. (a) Immunoblot analysis of WT, CDC50A- and ATP11A-deficient C2C12 cells infected with retroviruses expressing FLAG-tagged proteins. (b) Syncytia formed by WT, CDC50A- or ATP11A-deficient C2C12 myoblasts expressing FLAG-tagged proteins were visualized by immunofluorescent staining with anti-MyHC antibody (differentiated cells, red) and DAPI (nuclei, cyan). (c) Quantification of differentiation in b. *P < 0.05 (Student's t-test). NS, not significant. *n*, sample number. Error bars represent the S.E.M. Scale bar, 100 µm (b).



Supplementary Figure 4. Supporting data for defective myotube formation by PIEZO1-deficient C2C12 myoblasts. (a) Quantitative RT-PCR analysis of the Ca²⁺-permeable mechanosensitive channels (compared to AP3D1) in differentiated C2C12 cells. (b) Defective myotube formation by PIEZO1-depleted C2C12 myoblasts. Morphologies of C2C12 myotubes transfected with siRNA against PIEZO1, PIEZO2, TRPM7 and TRPP2, stained for MyHC and nuclei. (c) CRISPR/Cas9 target sites in the PIEZO1 gene of C2C12 cells. The guide sequence and the protospacer-adjacent motif are underlined in green and blue, respectively. CRISPR/Cas9-induced insertions or deletions are shown in red characters. (d) Suppression of Yoda1induced Ca²⁺ influx in PIEZO1-deficient C2C12 clones. Representative traces (left) and quantification (right) of Yoda1induced Ca2+ influx in WT C2C12 cells and PIEZO1-deficient clones. (e, f) Impaired channel function of the PIEZO1 mutants identified in the PIEZO1-deficient C2C12 clones. (e) Representative traces (left) and quantification (right) of Yoda1-induced Ca^{2+} influx in HEK293 cells transfected with PIEZO1 (full-length or $\Delta 838-849$). (f) Left: Quantification of Yoda1-induced Ca²⁺ influx in WT C2C12 cells transfected with an empty vector or truncated PIEZO1 (13 bp deletion). Right: Quantification of Yoda1-induced Ca2+ influx in WT and the PIEZO1-deficient C2C12 cells transfected with truncated PIEZO1 (13 bp deletion). (g, h) Aberrant myotube morphologies in PIEZO1-deficient C2C12 clones. (g) Syncytia formed by WT C2C12 cells, control clones and PIEZO1-deficient clones were visualized by anti-MyHC antibody (differentiated cells, red) and DAPI (nuclei, cyan). (h) Quantification of cell fusion (left), polarized elongation (middle) and differentiation (right) in g. *P < 0.05, ***P < 0.001 and ****P < 0.0001 (Student's t-test). NS, not significant. n, sample number. Bar graphs represent mean \pm S.E.M. Box and whiskers graph—line: median, box; upper and lower quartiles, whiskers; maxima and minima. Scale bars; 100 µm (b, g).



Supplementary Figure 5. Supporting data for suppression of PIEZO1 activation by PS flippase deficiency and cell surface-inserted LysoPS. (a) Dysfunction of the ATP11A mutant identified in the ATP11A-deficient C2C12 clones. Quantification of Yoda1-induced Ca²⁺ influx in WT (left) or the ATP11A-deficient (right) C2C12 cells expressing truncated ATP11A (1 bp insertion). (b) Failed rescue of impaired PIEZO1 activation in PS flippase-deficient myoblasts by overexpression of PIEZO1. Quantification of Yoda1-induced Ca²⁺ influx in WT, the PIEZO1-deficient and CDC50A-deficient C2C12 cells expressing PIEZO1. (c) Force-extension curves for WT, CDC50A-deficient and cytochalasin D-treated WT C2C12 cells. Membrane tension is obtained by linear fitting of the first linear part of the force-extension curve. (d) Stereospecific inhibition of agonist-induced Ca²⁺ influx in WT C2C12 cells treated with LysoPS analogues 1-3 (right). (e) Inhibition of negative suction-induced PIEZO1 activation by cell surface-inserted LysoPS. Traces (left) and quantification (right) of currents recorded with negative pipette pressure (-20 mm Hg) from PIEZO1-expressing HEK293 cells in the presence of LysoPS. **P* < 0.05, ***P* < 0.01, ****P* < 0.001 and *****P* < 0.0001 (Student's *t*-test). NS, not significant. *n*, sample number. Box and whiskers graph—line: median, box: upper and lower quartiles, whiskers: maxima and minima.



Supplementary Figure 6. Supporting data for RhoA/ROCK-mediated actomyosin formation via the PS flippase/PIEZO1 pathway. (a) Colocalization of PIEZO1 with F-actin, NMIIA, MLC2, ROCK1 and active RhoA at the cell cortex of bipolar C2C12 myoblasts. Immunofluorescent analysis of WT C2C12 cells expressing PIEZO1-FLAG alone or with NMIIA-GFP, MLC2-GFP, GFP-AHD or GFP, visualized by phalloidin, anti-FLAG, anti-GFP and anti-ROCK1 antibodies. Fluorescence profiles at yellow lines are shown at the bottom. (b) Immunoblot analysis of WT C2C12 cells and PIEZO1-deficient cells untreated or stably expressing MLC2-WT-GFP or MLC2-DD-GFP, visualized by anti-GFP and anti- α -tubulin antibodies. (c) Rescue of myotube formation by activation of the RhoA/ROCK/actomyosin pathway in PS flippase- or PIEZO1-deficient C2C12 syncytia. Morphology of myotubes formed by WT, PIEZO1-, CDC50A- and ATP11A-deficient C2C12 cells treated with DMSO, calyculin A and CN03, stained for MyHC and nuclei. (d) Quantification of differentiation in c. ****P < 0.0001 (Student's *t*-test). NS, not significant. *n*, sample number. Bar graphs represent mean ± S.E.M. Scale bars: 10 µm (a), 100 µm (c).



Supplementary Figure 7. Supporting data for a role of ATP11A in morphogenesis during myofibre regeneration. (a) The strategy for generation of *Atp11a*-deficient mice. *Atp11a*^{tm1c} was crossed with the *Myf5*-cre transgenic mice, resulting in the removal of exons 7 and 8 in myoblasts. (b) Quantification of differentiation in Fig. 8a. (c) Semi-quantitative RT-PCR analysis of CDC50 family members, P4-ATPases, mechanosensitive cation channels and differentiation markers in mouse primary myoblasts, tongue (E16 and P2) and adult skeletal muscle. Red arrowheads denote specific bands. (d) *In silico* analysis of *Myog* (a myogenic marker), *Piezo1* and *Trpm7* expression during myofibre regeneration after muscle injury. *P < 0.05, ***P < 0.001 and ****P < 0.0001 (Student's *t*-test). NS, not significant. *n*, sample number. Bar graphs represent mean \pm S.E.M.



Supplementary Figure 8. Uncropped images of the scans and flow cytometry gating strategies.

Supplementary Table 1. siRNA information.

Target	Species	siRNA ID	Supplier
Non-targeting control	human, mouse	MISSION siRNA universal Negative Control	Sigma-Aldrich
Piezo1 (Fam38a)	mouse	SASI_Mm01_00281158	Sigma-Aldrich
Piezo2 (Fam38b)	mouse	SASI_Mm02_00405285	Sigma-Aldrich
Trpp2 (Pkd2)	mouse	SASI_Mm01_00024215	Sigma-Aldrich
Trpm7	mouse	s81668	Ambion
PIEZO1 (FAM38A)	human	SASI_Hs01_00208584	Sigma-Aldrich
CDC50A (TMEM30A)	human	SASI_Hs01_00054522	Sigma-Aldrich
ATP11A	human	SASI_Hs01_00106358	Sigma-Aldrich

Supplementary Table 2. Antibody information.

Antibodies	Host	Clonality	Usage	Dilution	Catalog number	Supplier
Anti-FLAG	Mouse	Monoclonal, M2	WB	1:1000	F1804	Sigma-Aldrich
			IF	1:500		-
Anti-GFP	Rabbit	Polyclonal	WB	1:1000	598	MBL
			IF	1:1000		
Anti-CDC50A	Rabbit	Polyclonal	WB	1:100		In house
Anti-NMIIA	Rabbit	Polyclonal	IF	1:50	M8064	Sigma-Aldrich
Anti-myosin-heavy-chain	Mouse	Monoclonal, MF20	IF	1:500	14-6503-82	eBioscience
Anti-phospho(S19)-MLC2	Rabbit	Polyclonal	IF	1:50	3671	CST
Anti-ROCK1	Rabbit	Polyclonal	IF	1:100	GTX113266	GeneTex
Anti-α-tubulin	Rabbit	Polyclonal	WB	1:1000	PM054	MBL
Anti-PIEZO1	Rabbit	Polyclonal	IF	1:200	NBP1-78446	Novus Biologicals
Anti-PAX7	Mouse	Monoclonal	IF	1:3	528428	DSHB
Anti-laminin	Rabbit	Polyclonal	IF	1:500	L9393	Sigma-Aldrich
HRP-linked-anti-mouse IgG	Sheep	Polyclonal	WB	1:2000-1:4000	NA931V	GE Healthcare
HRP-linked-anti-rabbit IgG	Sheep	Polyclonal	WB	1:2000-1:4000	NA934V	GE Healthcare
Anti-mouse IgG, Alexa Fluor 555	Goat	Polyclonal	IF	1:500	A-21424	Thermo
Anti-rabbit IgG, Alexa Fluor 488	Goat	Polyclonal	IF	1:500	A-11034	Thermo
Anti-goat IgG, Alexa Fluor 488	Donkey	Polyclonal	IF	1:500	A-11055	Thermo

Supplementary Table 3. Mouse qPCR primers.

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Target		Test	Sequence	bp
Cdc50a	F	semi-aPCR	CAGTCATTTGAGGGCAATGTGT	470
	R		GCTGCAGTACGCATCCAAAC	
CdoE0b	E	aomi aDCD	000000000000000000000000000000000000000	694
Cucoub	F	semi-qPCR		004
	R		AAAGCCCATGACGATGCAGA	
Cdc50c	F	semi-qPCR	ATCCGTTCCAAGTGTCCCAC	531
	R		CCCCCGTCACTGTGTAAGTC	
Atp8a1	F	semi-qPCR	TTGTCTACACTGGCCACGAC	551
	R		TGAGCTCTGCCATTCATCGG	
Atp8a2	F	semi-aPCR	TCATCGAGCTATGGTTCGCC	400
4	R		GTCCAAGCTGTCGTCTCCAA	
Atn8h1	F	semi-aPCR	CTGGATCAGGACGTGAGTGAC	301
Лірові		semi-qr or		351
Atm Oh O				471
Alponz		semi-qPCR		4/1
	ĸ		GIIGGIUIUUAIUUAGUIU	
Atp8b3	F	semi-qPCR	ACGATGAACATGGGACGCTT	386
	R		CTCTGGGTTTCGGACCAACA	
Atp8b4	F	semi-qPCR	GCAGACACGAGGAGTGAACA	612
	R		GGTTTGTTTCCCCGTCAAGC	
Atp9a	F	semi-gPCR	GAAGCGGGTGGACAGTAGGC	517
	R		GCAAGAGCCGTTTTTCTCTGAC	
Atn9h	F	semi-aPCR	GTATCCATGACCGGGCTCTG	561
1400	R	sound of the	AAGCCTGTTTGCCCTCCTTT	
Ato10a	E	somi aPCP	CTEACTETETETETETE	508
Alpilla		Semi-qr Civ		590
A + 4 O	r F			500
AlpTub	F	semi-qPCR		506
	ĸ		ATTUGUTGUUAUAATGGTA	
Atp10d	F	semi-qPCR	GAACAGTTTCACAGGGCTGC	491
	R		CGGAATCGGCTGAGGTCATT	
Atp11a	F	semi-qPCR	TGACCATCAACGGACAGATGTT	480, 565, 584
	R		TGGAGCACACACTCTCCCA	
Atp11b	F	semi-gPCR	GTCTCTTGCTTCGTGGAGCC	487
·	R	·	TATTCCACCTGCCCAAGCTCT	
Atp11c	F	semi-aPCR	GCGAGCTAGCTGTCCGCTT	450
	R		AAGCCAATCTTCATACCCCTGC	
Trnc1	F	semi-aPCR	CGTGCGACAAGGGTGACTAT	643
iipoi	R			040
Trov1	E	somi aPCP		504
lipvi		Semi-qr Civ	CTTCCCCTCTCCCCTCTT	554
Trou/2	E	aomi aBCB		509
11pvz		semi-qrCR		598
T	r F			100
irpm/	F	semi-qPCR		496
	ĸ		CAGCITICIGCITGCACCG	
Trpp2	F	semi-qPCR	GTGTGGTCAGGTTATTGGCG	573
	R		TGCTGAAGTCATCGACCTGG	
Piezo1	F	semi-qPCR	ACATTGCATCCTCGCTGTCA	522
	R		CCTTGGGCTGGGGGTATTTC	
Piezo2	F	semi-qPCR	TTGTTTCAAGGGTTCCGCCT	583
	R		AGCAACTATTGGGGTCGGTG	
Pax7	F	semi-gPCR	CTGGAAGTGTCCACCCCTCT	532
	R		CCACATCTGAGCCCTCATCC	
Mvoa	F	semi-aPCR	CCCAACCCAGGAGATCATTTG	506
5-5	R		AGGTCAGGGCACTCATGTCT	
Gandh	F	semi-aPCR	TGAAGGGTGGAGCCAAAAGG	545
oupun	R	oom di ort	GGAAGAGTGGGAGTTGCTGTTG	0.10
Atn8h1	E	aPCP		208
Alboni		4F CIX		200
Atm0h0		~DCD		100
Atp8b2	F	dPCK	CAGGULAGTIGAAULTULTA	198
	ĸ		GCACACIGACCACAAIGACC	
АГРУР	F	dh.r.k	CGAGTTIGTCCATGTIGTGG	193
	к		GAAAGUGUUAAAAGAUACTC	
Atp10d	F	qPCR	CCGTGTTTCCATCTCCAGTT	171
	R		CAGAAGACCCAGGTGTTGGT	
Atp11a	F	qPCR	CTGGCGGGTGTTCATTTACT	167
	R		TGACAGTGAGCACCATCACA	
Atp11b	F	qPCR	TTTTGGGCTCCCAGAATATG	246
	R		TTCTTCCAACAGACGCACAC	
Atp11c	F	gPCR	TTACAGTTGGGGCCCTTCTT	193
·	R		TATCCAAGGCGAGCTTCAGA	
Piezo1	F	aPCR	ATCCTGCTGTATGGGCTGAC	127
1.0201	R	4. 0.1	AAGGGTAGCGTGTGTGTGTCC	
Piezo2	F	aPCR	CGCTCAGAAATGGTGTGCTA	88
1 10202	D	4 01		00
Treat		~DCD		171
прет		4FUK		17.1
T === == 7	к г	~DCD		100
irpm/	F	dhr:r		128
T 0	ĸ	505		70
1 rpp2	F	qPCR	AGGIGIIAGGACGGCIGCI	/2
	ĸ		CCCTGTGGATCTCACTGTCC	
Ap3d1	F	qPCR	AGGUTCAGAAAAAGGTCCCA	214
	R		AAGGGGITGTTGGCTTGTTC	
Gapdh	F	qPCR	AAGGTCATCCCAGAGCTGAA	138
	R		CTGCTTCACCACCTTCTTGA	
18S rRNA	F	qPCR	CGCCGCTAGAGGTGAAATTCT	101
	R		CGAACCTCCGACTTTCGTTCT	

Supplementary Table 4. Human qPCR primers.

CDC560A F semi-pCR GAAAAAGAAAGGTATTGCTTGCTG 483 CDC50B F semi-pCR CCGACTACCAGTCAAGTTCC 402 CDC50C F semi-pCR CCGACTACCAGTCAAGTTCC 403 CDC50C F semi-pCR GGACAGATAAGTATGTACTAATTC 483 ATPBA1 F semi-pCR GGACAGATAAGTAGTACAGAATTC 483 ATPBA2 F semi-pCR GTAGTCAAGTACTAAGTATTC 483 ATPBA2 F semi-pCR GTAGTCAACCAGCAGTTGC 481 ATPBA2 F semi-pCR GTAGTCAACCAGACCGG 296 ATPBA2 F semi-pCR GGGAAGACGCTGGACCGGG 331 ATPBA2 F semi-pCR GGGAAGAGACGTGAGCACCGGG 310 ATPBA3 F semi-pCR GGCAGTCACCCAGGG 310 ATPBA4 F semi-pCR GCACTCACCAGTGGACGCC 271 CCGAGTCACCCAGTCGACCGGG 373 GATGGGGAACCCCCCAGGGC 373 ATPBA F semi-pCR CCAGTCACCCAGTCGACCGGGGGCGAGGGCGCCGGGGGGGG	Target		Test	Sequence	bp
CCCS0BFSemi-PCRCCGACTACCACGTCACACT402CCCS0CFsemi-PCRCGACACACATACACTTCAAATTC483ATP8A1Fsemi-PCRGGCCACACATACACTCACACT347ATP8A1Fsemi-PCRGGCCACACATACACTCACACT481ATP8A2Fsemi-PCRGTGTGAAGTCCAGCAGCAGC298ATP8A2Fsemi-PCRGTGTGAAGTCCAGCAGCGGGT298ATP8A2Fsemi-PCRGGCACCACACACCGGG298ATP8A2Fsemi-PCRGGCAGCCAGCAACCAGCGGG311ATP8A2Fsemi-PCRGGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCA	CDC50A	F	semi-aPCR	GAAAAAGAAAGGTATTGCTTGGTG	483
CDCS0BFsemi-pCRCCGACTACCACGTCAACTTC42CDC50CFsemi-pCRGGACCACATAACTACTCACAGT77ATPBA1Fsemi-pCRGGCCTGCAGGCACCTAATCC347ATPBA2Fsemi-pCRGGCCTGCAGCACCCCTAGT78ATPBA2Fsemi-pCRGTGCTCAACCCCCTGGG35ATPBA2Fsemi-pCRGGCCTGCAGCAGTGGCAGT31ATPBA2Fsemi-pCRGGCCTGCAGCAGCGCTTT31ATPBA2Fsemi-pCRGGAGTCCAGCAGTGGCCAGCAGT31ATPBA2Fsemi-pCRGGAGTCCAGCAGCAGGCTGG31ATPBA2Fsemi-pCRGGAGTCCAGCAGCAGGCGCCC310ATPBA2Fsemi-pCRGGAGTCCAGCAGCAGCCTGG310ATPBA3Fsemi-pCRGGAGTCCAGCAGCAGCCCCCCCGG310ATPBA4Fsemi-pCRGGAGTCCACTGGACCCAGCGGC310ATPBA4Fsemi-pCRGGAGTCCACTGGACCCAGCGGC311ATPBA5Fsemi-pCRCCTACTACCACGCCCAGCTGG313ATP10AFsemi-pCRCCTACGCCACCTGGACCGCGCCGC318ATP10AFsemi-pCRCCGAGCCAACCCAGCTGGAGCTGGG316ATP10AFsemi-pCRCCGAGCCAACCCAGCGCTGCAG316ATP10AFsemi-pCRCCGAGCCAACCCAGCTGCAGGCTGGG318ATP10AFsemi-pCRCCGAGCCAACCACCGCTGGAGCGCC316ATP10AFsemi-pCRCCGAGCCACCACCAGCTGCAGGGGGGGGGGGGGGGGGGG		R		GTAATGTCAGCTGTATTACTACTG	
RRAMAGCCGOTGAGCATCACAGAGAMAGCCCOTGAGCATACTCCACCCSDCFsemi-qPCRGCACAGATAATCATCATATTCC43ATPBA1Fsemi-qPCRGTGTTGAAGTCAGGGCATCC47ATPBA2Fsemi-qPCRGTGTTGAAGTCAGGGCATCC298ATPBA1Fsemi-qPCRGTGCATGCACCAGCCTTGC298ATPBB3Fsemi-qPCRGGGCAGAGGCCTGAGCCCCTTGC298ATPBB3Fsemi-qPCRGGGCAGAGGGCCTGACCTGG311ATPBB4Fsemi-qPCRGGGCAGAGGGCCTGACCTGG316ATPBB4Fsemi-qPCRGGAAGGCCTGCAGCTGGGCCAGCAG316ATPBB4Fsemi-qPCRGGAAGGCCTTGCACCTGGGC316ATPBA4Fsemi-qPCRGGAAGGCCTGCAGCTGGAGGCCGC316ATPBA4Fsemi-qPCRGGAAGGCCTGCAGCTGGAGGCCGC316ATPBA4Fsemi-qPCRGGAAGGCCTGCGCCTGGGCCTTGGGCCTGGGC373ATPBA4Fsemi-qPCRGGAAGGCCTGCGCAGCAGC318ATP10ARsemi-qPCRCGGAGTCGCGCACCTGGGGC351ATP10ARsemi-qPCRCGGAGTCGCGCAGCAGC351ATP10BFsemi-qPCRCGGGCAGCTGGCAGGCGCGGGG351ATP10DFsemi-qPCRCGGGCAGCTGGCGCGGGGC351ATP10DFsemi-qPCRCGGGCGCGCGCGCGGGGGC351ATP10DFsemi-qPCRCGGGCGCGCGCGCGCGGGGGGC351ATP10DFsemi-qPCRCGGGCGCGCGCGCGCGGGGGGGCGGGGGGGGGGGGGG	CDC50B	F	semi-aPCR	CCGACTACCACGTCAAGTTCC	402
CDC50C F semi-qPCR GGACAGATAAGTAGTAGTAGTAGTAGTAGTTC 483 ATPBA1 F semi-qPCR GGCCTGCAGGCAGGCAGTATTCC 347 ATPBA2 F semi-qPCR GTCACTGCATCAACCGGGCATTCC 481 ATPBA2 F semi-qPCR GTCACTGCATCCAACCAGGGACTTCC 288 ATPBB1 F semi-qPCR GGGACAGAGCCTGGTTTCC 31 ATPBB2 F semi-qPCR GGGAGGAGGGCCTTGGGTTCAACCAGCGGG 31 ATPBB2 F semi-qPCR GGGAGGACCTGGGTCAACCAGGGGC 31 ATPBB2 F semi-qPCR GGGAGGACTTGGGGCCTTGG 31 ATPBB4 F semi-qPCR GGGAGGACCTGGGGCCTTGG 31 ATPBA R semi-qPCR GGGCGTCAGGACCTGGGCCTGG 373 ATPBA R semi-qPCR CCACCCCGCGCGCTCGGC 373 ATP10A F semi-qPCR CCACGCCGCGCACTGGGCCTGG 373 ATP10A F semi-qPCR CCACGCCGCGCTGCGCCTGG 361 ATP10A F semi-qPCR CCACGCCGCGCTGCGCCCCG 373 ATP10A F semi-qPCR<		R		AAAGCCGGTGAGGATGCAGAG	
RBerni-APCRTITTITGAAAGTICGGAAAGCAGAATPBA1FSemi-APCRGCGCTGAAGCAGCTAATTCC347ATPBA2Fsemi-APCRGTGCTGAAGCAGCGCTGC481ATPBB1Fsemi-APCRGTGGCTCCACCACCGGG298ATPBB2Fsemi-APCRGGAACAAGCGCTCCAACCTGG331ATPBB3Fsemi-APCRGGAACAAGCGCTCCAACCTGG354ATPBB4Fsemi-APCRGCACTCTCATCACCATGG354ATPBB4Fsemi-APCRGCAAGCGCTCCACCATGG310ATPBB4Fsemi-APCRGCAAGCGCCTCGGACCTCC271ATPBB4Fsemi-APCRGCAAGCGCCTCGGCCTCCG373ATPBB4Fsemi-APCRGCACGCGCGCATCTGGAGCCC373ATPBB4Fsemi-APCRGCACGCGCGCCTCGGGCCTCG373ATPBB4Fsemi-APCRGCACGCGCGCCTCGGGCCTCG373ATPBB4Fsemi-APCRCCAGGCGCCGCTCGGGGCCTCG373ATP10AFsemi-APCRCCAGGCCCCATGCAGCCGG374ATP10BFsemi-APCRCCGCAGCCCAGGCCCGGGG351ATP10DRsemi-APCRCCGCGGCCCCCGGCGCCGGG351ATP10DRsemi-APCRCCGCGGCCCCCGCGCCAGG351ATP10DRsemi-APCRCCGCGGCCCCGCGCCCGG351ATP10DRsemi-APCRCCGCGGCCCCCGCGCCCGG351ATP10DRsemi-APCRCCGCGGCCGCCCGCGGCG351ATP10DRsemi-APCRCCGCGGCGCCCCGCGCCGG351ATP10DR <td>CDC50C</td> <td>F</td> <td>semi-aPCR</td> <td>GGACAGATAAGTATGTCAAATTTC</td> <td>483</td>	CDC50C	F	semi-aPCR	GGACAGATAAGTATGTCAAATTTC	483
ATPBA1 F semi_aPCR GCCCTCAGGCAGCTATCC 947 ATPBA2 F semi_aPCR GTACTGCATGCAGGCATTC 481 ATPBA2 F semi_aPCR GTACTGCATCGACGGACCGCGTTT 989 ATPBB1 F semi_aPCR GTGGCTCCATCCAACCGGGG 298 ATPBB2 F semi_aPCR GGGGAGAGAGGCCTCGGCTTGG 311 ATPBB3 F semi_aPCR GGGAGAGAGGCCTCGGGCAGGCAGG 314 ATPBB4 F semi_aPCR GCAGGCCTGGACTGGCAGGCAGGCAGGCAGG 316 ATPBB4 F semi_aPCR GCAGGCCGCACTGGGCAGGCAGGCAGGCAGGCAGGCAGGC		R		TTTTTGAAAGTGGGAAAGGCAG	
Rsemi-qPCRGTGTTGAAGTCCAGGCATTCdiaATP8A2Fsemi-qPCRGTCACTGACACACGCATTC481ATP8B1Fsemi-qPCRGTGACTCACACGCCGTT298ATP8B2Fsemi-qPCRGGAAGAGGCCTGAACTG331ATP8B3Fsemi-qPCRGGAAGAGGCCCGAACCGG364ATP8B4Fsemi-qPCRGGAAGAGCGCCGACGCGG310ATP8B4Fsemi-qPCRGTAAGTCAGCATGGCACGGGC310ATP9AFsemi-qPCRGTGAGTCAGCATGTGCAGCGGC310ATP9BFsemi-qPCRGTGAGTCAGCATGTGCAGCGGC373ATP9BFsemi-qPCRGTGAGTCAGCATGTGCAGCGC373ATP9DRsemi-qPCRCCGAGTCGGCCTTGGCGC348ATP10AFsemi-qPCRCCGAGTCGGCGCTTGGCGC310ATP9DFsemi-qPCRCCGAGTCGCGCCTTGGTAGCG310ATP10BFsemi-qPCRCCGAGTCGCGCCTTGGTAGCG316ATP10DRsemi-qPCRCCGAGTCGCGCCTTGGTAGGG351ATP10DRsemi-qPCRCCGAGTGCGCAGCGCGCGCGGGGGGGGGGGGGGGGGGGG	ATP8A1	F	semi-aPCR	GGCCTGCAGGCAGCTAATTCC	347
ATP8A2 F semi-qPCR GTGATCGATCGAACGACTTGG 481 ATP8B1 F semi-qPCR GTGACTCCACGAGCACCGGGC 298 ATP8B2 F semi-qPCR GGGGAGAGGGCCTGACCTGG 311 ATP8B3 F semi-qPCR GGGGAGAGGGCCTGACCTGG 364 ATP8B3 F semi-qPCR GCCTCCTCGCACCTGGC 364 ATP8B4 F semi-qPCR GCCACGTGGCACAGGGC 370 ATP8B4 F semi-qPCR GGGAGGCTTGGACAGGGCTCG 371 ATP8B4 F semi-qPCR GGAGGCTCACCTGGACCTGGAC 271 CCACGCCGCACGTGGACATGTGCCAGGC 373 373 373 ATP9A F semi-qPCR CACGCAGCGCGACGTGACATGGCC 373 ATP10A F semi-qPCR CCGTACCTGGACCTGGACGTGGAC 374 ATP10A F semi-qPCR CCGAACCTGGCAGCAGGGC 388 ATP10A F semi-qPCR CCGGACGTGCACAGGGCCCAAGGGGC 351 ATP10A R semi-qPCR CCGGGACGGCGCAAGG 393 ATP10A R semi-qPCR CCGGACGTGCCAAGG 393 ATP10A R semi-qPCR CCGGGACGTGCCAAGG 393 ATP10A R semi-qPCR CCGGG		R		GTGTTGAAGTCCAGGGCATTC	011
ATP8B1 R semi-qPCR GGGACGACGCACCGGGCTTT 298 ATP8B1 F semi-qPCR GGGACGACGCCCAACCGGG 298 ATP8B2 F semi-qPCR GGACGCCCCAACCTG 331 ATP8B3 F semi-qPCR GCACCTCATTCCCTGGCCCGAC 364 ATP8B4 F semi-qPCR GCAAGCCTCAGCACCTGA 310 ATP8B4 F semi-qPCR GCAAGCCTCGACCTCGACCTCGAC 271 ATP8B4 F semi-qPCR GCAAGCCTCGACCTGACCCC 373 ATP9A F semi-qPCR CCACACGCTCGACCTGACC 271 ATP9A F semi-qPCR CCACACGCTCGACCTGACC 271 ATP9A F semi-qPCR CCACACGCTCGACCTGACC 373 ATP10A F semi-qPCR CCACACGCTCGACCTGACC 348 CCAACGCTCGCACGTTCGCACCTGACC R CCGACCACACCATGCACCACCC 348 ATP10D F semi-qPCR CCGACCCACGCTCGCACC 348 CCTACTCGGACCTCGACCCTGACC R CCGACCACCACCGCTGCACGACC 311 ATP10D F semi-qPCR CCGACCACCACGCGCTCGCACC 351 ATP10D F semi-qPCR CCGACCACCACCGCGCTCGACGACC 351 ATP10D F semi-qPCR	ATP8A2	F	semi-aPCR	GTCACTGCATCAACGCCTTGG	481
ATP8B1Fsemi-qPCRGTGGCCTCACCACGGGG298ATP8B2Fsemi-qPCRGGACGAGAGGGCTGCGCGGG331ATP8B3Fsemi-qPCRGCACTGCTATCCATCACCATGG354ATP8B4Fsemi-qPCRGCACGCAGGCCACGGGC310ATP8B4Fsemi-qPCRGGAAGGCAGGCATGGCCACGGC310ATP9AFsemi-qPCRGGAAGTCACCATGGCAAGGCC271ATP9AFsemi-qPCRGCACGCAGCATGTCGACATGCC373ATP9BFsemi-qPCRCACACGCTGCCCGCGCTGTAGC348ATP10AFsemi-qPCRCCACGCCGCAGTCACATGCAGGC348ATP10BFsemi-qPCRCCAGGCACAGGCGCAGGGGG316ATP10BFsemi-qPCRCCAGGCACAGCGCGCAGGGGG351ATP10DFsemi-qPCRCCAGGCACACGCGCCAAGGG351ATP10DFsemi-qPCRCCGCAGCTCGCGCAAGGGGCAAAGG353ATP10DFsemi-qPCRCCGCAGCTCGCGCAAGGGGCCAAAG353ATP11AFsemi-qPCRCCGCAGCTCGGGCAAGGGGCCAAAG353ATP11CFsemi-qPCRCCGTGTGAGGCCCAAGGGGCGCAAGG353TRP11AFsemi-qPCRCCGTGTGAGGCCCATGGGGGGGGGGGGGGGGGGGGGGGG	7111 0712	R		TIGCTATCCCGCAGCACCGCTTT	401
ATP882 F semi-qPCR GGACGAGGCTGAACCTG 331 ATP883 F semi-qPCR GGAAGGCCTGAACCTG 334 ATP884 F semi-qPCR GCATCATCATCATCAGGCAGGGCTCC 310 ATP844 F semi-qPCR GCAAGCCTCGGAGCTG 211 ATP845 F semi-qPCR GCAAGCCTCGCAGCAGCG 211 ATP846 F semi-qPCR CCACCATGGCGAGCG 310 ATP94 F semi-qPCR CCACCATGGCGAGCG 313 ATP104 F semi-qPCR CCACCCTGGAGCTGGACC 318 CCACCCCCGCGCGCTCGGACCTGG 318 CCACGCCCCAGTCAGCGGGC 318 CCACGCCCCAGTCAGCGGGC 318 CCACGCCCCAGTCAGCGGC 318 CCACGCCCCAGTCAGCGGC 318 CCCAGTCCGCGCGCTGGACC 318 CCCAGTCCGCGCGCTGGACC 318 CCCAGTCCGCGCGCGGCCGG 318 CCCAGTCCGCGCGGCTGGACC 318 CCCAGTCCGCGCGGCTGGACC 318 CCCAGTCCGCGCGCGGCGGCGGCGC 318 CCCAGTCCGCGCGGGGGCGGCGGGGCG 318 CCCAGTCCGCGCGGGGGGGGGGGGGGGGGGGGGGGGGGG	ATP8B1	F	semi-aPCR	GTGGCCTCCACCAACCGGG	298
ATP8B2Fsemi-qPCRGGAAGAGAGGCCTGACACTC331ATP8B3Fsemi-qPCRGCACTGCGACGGCAGGGCAGG354ATP8B4Fsemi-qPCRGGAAGGCAAGGCATGCC310ATP8B4Fsemi-qPCRGGAAGCACGCATGTGCACCATGG310ATP9AFsemi-qPCRGGAAGCCAGGCTTGGAAGGCC271ATP9BFsemi-qPCRGAAGTCACCTGACATTGC373ATP9BFsemi-qPCRCACACGCTGCCAGTGTACCATGGACGC373ATP10AFsemi-qPCRCCTCATGCACAGTGGACGC388ATP10BFsemi-qPCRCCGAGTCGCAGCTGACGC381ATP10DFsemi-qPCRCCGAGTCGCAGCTGAGGC351ATP10DFsemi-qPCRCCGAGTCGCAGCGCAAGGGGCAAGGG355ATP10DFsemi-qPCRCCGAGTCGCAGCGCCAAGG355ATP111AFsemi-qPCRCCTGCTGCTGAGGCCCAAGG359ATP111AFsemi-qPCRCCTGCTGCAGGCGCAAGGGGCCAAGG359ATP111CFsemi-qPCRCCTGTGCAGGCCCAAGGGGCCCAAG359TRP11Fsemi-qPCRCCTGTGCAGCTGCCATGG399TRP11Fsemi-qPCRCCTGTGGAGTGGGGGGGGGGGGGGGGGGGGGGGGGGGGG		R		CACCTCTATTCCTCTGGTTTTCC	200
ATPENDE R Semi-qPCR GAAGTCAGGATCGCAGCAG SCACCAG ATP883 R semi-qPCR GAAGTCAGAGATCGCATGG 354 ATP884 R semi-qPCR GAAGCCTTGGAGCCTTGG ATP9A R GACGCCGCACCTGAGCCTGGACCATGG ATP9A R GACGCGCCACCTGAGCCGCAGCTGACCATGG ATP9B F semi-qPCR CAACAGCGCGCAGCTGACCATGGACCG ATP10A F semi-qPCR CCTTATCCCAGTGGACCGC ATP10B F semi-qPCR CCGAGCCGCGCCGCGCGCGCGCGCGCGCGCGCGCGCGCG	ATP8B2	F	semi-qPCR	GGGAGAGAGGGCCTGAACCTG	331
ATP8B3 r semi-qPCR GCCTGCTGTCATCACCATGG 354 ATP8B4 F semi-qPCR GGAAGGCTTCGGACCTTGG 310 ATP9A F semi-qPCR GGACGCTTGCAGCATGGCAGCCT 271 ATP9A F semi-qPCR GAGGCTCCCCCGCGCTGGAAC 271 ATP9A F semi-qPCR CACACGCGCGGCTGCTGAAC 271 ATP9B F semi-qPCR CACACGCGCGGCTGTGAAC 271 ATP9DA F semi-qPCR CCACGCGCGGCTGCTGAAC 271 ATP10A F semi-qPCR CCACGCGCGCGCTGTGAAC 373 ATP10B F semi-qPCR CCGAGTCTGCTGCTGGCAGCTGGCAAGCG 381 ATP10D F semi-qPCR CCGAGTCTGCCAGCTGCCAGC 371 ATP10A R semi-qPCR CCGAGTCTGGCTGCAAGGGTGCCAAGG 381 ATP10A R semi-qPCR CCGAGTCTGCAGGCTGCCAGG 352 ATP10A R semi-qPCR CCTGTGTCAGGCTGCCGCG 392 ATP10A R semi-qPCR CCTGTGCAGGCTGCCAGG 392 TTTTACAGTGATGGCTGCCTGC R GGTGTGTGTGTGGTGGCCGAGG 392 TRP11A R semi-qPCR CCTGTGCAGGTGCCAGGCTCCGCTGGCCAGG 392 TRPV1 F		P	Semi-qr Ort	GAAGTCCAGGATGGCCAGCAG	551
ATP302 R semi-qPCR GGACGCTTCGGACCTTGG 310 ATP884 F semi-qPCR GGACGCTTCGGACCTTGG 310 ATP9A F semi-qPCR GAGCCTCGCGAGTGAGCTGG ATP9B F semi-qPCR CACACGCGAGTGAGCTGG ATP10A F semi-qPCR CCTTATCCCAGTGCTCTGG 373 ATP10B F semi-qPCR CCTTATCCCAGTGCACCGGAGTGAAC ATP10B F semi-qPCR CCGAGTCGACGCTGGCG ATP10B F semi-qPCR CCGAGTCGACGCGCG ATP10B F semi-qPCR CCGAGTCGACGTGGACG ATP10D F semi-qPCR CCGAGTCGACGTGGAGG ATP10B F semi-qPCR CCGAGTCGACGTGGAGG ATP10B F semi-qPCR CCGAGTCGACGTGGAGG ATP10B F semi-qPCR CCGAGTCGACGTGGAGG ATP10B F semi-qPCR CCGGAGTCGACGGCG ATP11B F semi-qPCR CCGGAGTCGACGGCG ATP11B F semi-qPCR CCGGAGCGACAGGGCGCG ATP11B F semi-qPCR CCTGGCAGGTGCCAAGG ATP11C F semi-qPCR CCGGAGCGCACGCGCG ATP11B F semi-qPCR CCTGGCAGGCGCCAGG ATP11B F semi-qPCR CCTGGCAGGCGCCAGG ATP11B F semi-qPCR CCTGGCAGGCGCCGGC TGCGCGGGCGACGCGCGCGG ATP11C F semi-qPCR CGGAACGCACGCGCGC TGCGCGGGCGCGACGCGCGGG TGCCTGGGAGCGCTAGTCGGGG TGCGCGGCGCGGGGGGGGGGGGGGGG TGCGCGGCGACGCGCGGG TRPV1 F semi-qPCR CGGGAACGCACGCGCG TGCGCGGCGGCGGGGGGGGGGGGGGGG TRPV1 F semi-qPCR CGGGCGCGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	ATD8B3	E	somi aPCP	CCCTCCTCCATCACCATCC	354
ATP884 F semi-qPCR GGAAGCCTTGGACCTTGGACCTGG 310 ATP9A F semi-qPCR GGAGCTGACCTGGACGCGCGACCTGGC 271 ATP9B F semi-qPCR CACCACGCGACGTGAACTCC 373 ATP90A F semi-qPCR CAACACATGGACCC 348 ATP10A F semi-qPCR CCGACGCGACTCGGCGCTGGC 348 ATP10B F semi-qPCR CCGACGCCACCTGGACGCC 351 ATP10D F semi-qPCR CCGACGCCCACACGCGCGCACAC 351 ATP10D F semi-qPCR CCGAGCCCACACGCGCCCACACG 351 ATP11A F semi-qPCR CCGAGCCTACGCTGCCACACGC 39 ATP11A F semi-qPCR CCTTTACACGATAGGCTCCCGC 39 ATP11A F semi-qPCR CCTTGCCAGCTGCCCACACGC 39 ATP11A F semi-qPCR CCTTGCAAGTGCTCGCGC 39 TRP11A F semi-qPCR CCTGTGCAGGCTCACGC 411 TRP11A F semi-qPCR CCTGTGCAGGCTCACGCGC 39 TRP11A F semi-qPCR CCTGTGCAGGCTCACGCGC 422 ATP11C F semi-qPCR CCTGTGCAGGCTCACGCTGGCG 39 TRPV1 F semi-qPC	AIF0D5	P	semi-qr Civ	GTACATGAGGCAAGGGCTCC	554
ATTODY R GTGAGTCARGATGTTGAGC J10 ATP9A F semi-qPCR GTGAGTCARGATGTTGAGCA 271 ATP9BA F semi-qPCR CCACCGCGCTGAGC 373 ATP10A F semi-qPCR CCATCCGGTACCAGCATCAGACTTCC 348 ATP10B F semi-qPCR CCGAGTCTGCGCTCACAGCAGCAGC 348 ATP10D F semi-qPCR CCGAGTCTCACCACGACATGAGAGG 318 ATP10D F semi-qPCR CCGAGCCCACACGCACACGCGCAGCAGC 351 ATP10D F semi-qPCR CCGAGCCCCACACGCTGCAAGG 355 ATP11A F semi-qPCR CCGTGTCGAGGCTGCCAAGG 356 ATP11A F semi-qPCR CCTGTCAGTGTGTCTCCCCC 339 ATP11C F semi-qPCR CCTGTCAAGTGTGTCCCTGG 339 TRPC1 F semi-qPCR CCTGTCAAGTGTGTCGCTGG 349 TRPV1 F semi-qPCR CGTGTCAAGTGATGACACCTGCG 451 R TCTGCAGCAGCACACCATCCT 451 451 R TCTGCAGCAGCACCACCTGCCAAGG 550 550 TRPV1 F semi-qPCR CCTGTGTCAGCAGCGCCCCCCC 550 R TCTGCGAGCAGCACCTCTCTCCCC TCTGCGCAGCGCTCCCCC 550			somi aPCP	COMPOCITICOCACOULTEC	310
ATP9A F semi-qPCR GAGCICACCTCACCTCAGATCO 271 ATP98 F semi-qPCR CACCGCCCACTCAGATCO 373 ATP10A F semi-qPCR CACACGCCAGTCAGATCO 373 ATP10B F semi-qPCR CCTATCCCCAGTCACACTGAGATCO 388 ATP10B F semi-qPCR CCGAGTCTGCCATGGACCC 373 ATP10D R cCGAGTCTGCCATGGACCATGGACCC 388 ATP10D R semi-qPCR CCGAGCCAACACATGGACGAC 351 ATP10D R semi-qPCR CCGTGTCAGGCTGCAAG 351 ATP11A F semi-qPCR CCTGTCAGTGGAGCTCCCAGC 351 ATP11A F semi-qPCR CCTGTCAAGTGGAGCTCCCCGC 351 ATP11A F semi-qPCR CCTGCAGCGGACCCACTCCCGC 351 ATP11C F semi-qPCR CCTGTCAAGTGGAGCCCATCCCGC 361 TRPC1 F semi-qPCR CGTAGCTGACCATGGAGCCCAGGC 361 TRPV1 F semi-qPCR CGTGCAGGGCACCACCTCAGTGGG 361 TRPV1 F semi-qPCR CCTGCAGGGGCACTCACCT 451 TRPV1 F semi-qPCR CCTGCAGCTGGAGCTCACCT 422 TRPV1 F semi-qPCR	ATF 0D4		semi-qr Civ	CTCACTCACCATCTTCCACCC	510
ATPSA F SellingPCR GARGECICAGATICA 2/1 ATP9B F semi-qPCR CAACAGCTGCOGGAGTCAGATTCC 373 ATP10A F semi-qPCR CCATATCCGGTACCATGGACCC 348 ATP10B F semi-qPCR CCGAGTCTGCCTGGTACCATGGACCC 348 ATP10D F semi-qPCR CCGAGCCACACGACTATGAGAAGC 318 ATP10D F semi-qPCR CCGAGCCACACGGCTGCAG 351 ATP11A F semi-qPCR CCGAGCCACACGGCTGCCAGA 355 ATP11B F semi-qPCR CCTGTCAGCGGCTGCCGC 339 ATP11C F semi-qPCR CCTGTCAGTGGTCTGCCCGC 339 ATP11C F semi-qPCR CGTGTCAGCAGCTGCCGGG 349 TRPC1 F semi-qPCR CGGTAGTGTCAGCGGTGGGGGG 349 TRPV1 F semi-qPCR CGGTAGTGTGCAGGGGG 349 TRPV1 F semi-qPCR CGGGTAGTGTCAGGGGGG 349 TRPV1 F semi-qPCR CGGGTAGTGTCAGGGGGG 349 TRPV1 F semi-qPCR CGGGTAGTGTCAGGGGGGG 349 TRPV1 F semi-qPCR CTGGGAGCTGATCACT 422 R CCTGTGGAGGTGTGTGAGAGGGGGGG <td< td=""><td></td><td>E R</td><td>aomi aBCB</td><td>CACCCTCACCTCCACCTCAAC</td><td>271</td></td<>		E R	aomi aBCB	CACCCTCACCTCCACCTCAAC	271
ATP9B F semi-qPCR CAACGCTGCGGCTCTGG 373 ATP10A F semi-qPCR CCTATCCCCAGTCACAGCTG 348 ATP10B F semi-qPCR CCGAGTCTGCGCGCGCGCAG 318 ATP10D F semi-qPCR CCGAGCTCACGCAGCTGCAGG 351 ATP10B F semi-qPCR CCGAGCCACACCGCGCGCAG 351 ATP10D F semi-qPCR CCGGAGCCCACACCGCGCGCAAGG 355 ATP11B F semi-qPCR CCTGTCAAGTCATGGATGGCGCCAAGG 399 ATP11C F semi-qPCR CCTGTCAAGTCAGCACCGTTGGG 399 TRP11B F semi-qPCR CGTGTCAGGCTCAGGC 316 TRP11C F semi-qPCR CGTGTCAGGCTCAGGC 399 TRP11C F semi-qPCR CGTGTGCAGGCTCAGGC 399 TRP2 F semi-qPCR CGTGTGCAGGCTCATGC 421 TRPV1 F semi-qPCR CCTGTGCAAGTGCAGCTCATGC 422 TRPV1 F semi-qPCR CCTGTGCAAGCTCAGCGCAGTG 575 TRPV1 F semi-qPCR CCTGTGCAAGCTGCAGCAGCTCCT 422 TRPV1 F semi-qPCR CCTGTGCATGCGCGCAGTG 530 TRPV2 F semi-qPCR <td>AIFSA</td> <td>F</td> <td>semi-qrCR</td> <td>CACCCCCACTCACATTCC</td> <td>271</td>	AIFSA	F	semi-qrCR	CACCCCCACTCACATTCC	271
APP36 F Selfind/PCR CARCHACTIGGUEGACC 373 ATP10A F semi-qPCR CCCTATCCCACTGGACCC 348 ATP10B F semi-qPCR CCGAGTCTGCCTTGGTACC 318 ATP10D F semi-qPCR CCGAGCCACAGCAGCTGCAGA 351 ATP11A F semi-qPCR CCGAGCCACACCGCTGCAGA 351 ATP11A F semi-qPCR CCTGTCAGGCTGCCAGA 351 ATP11A F semi-qPCR CCTGTCAGCTCCCGC 351 ATP11A F semi-qPCR CCTGTCAAGTGATGGATGGAT 359 ATP11A F semi-qPCR CCTGTCAAGTGATGGATGGAT 361 ATP11A F semi-qPCR CCTGTCAAGTGATGGATGGAT 370 ATP11C R semi-qPCR CCTGTCAAGTGATGGATGGAT 371 TRPC1 R semi-qPCR CAGTGGGAACGATCGATGGATGG 349 TRPV1 F semi-qPCR CAGTGGGAACGACTCATGGATGG 341 TRPV2 F semi-qPCR CAGTGCGGAGGACGCACC 371 TRPV2 F semi-qPCR CCTGTTCGAAGCACTGCTCCC 372 TRPV2 F semi-qPCR CCTGTCGATGGCTGGCTGG 370 TRPV2 F semi-qPCR <		к г			272
ATP10A F semi-qPCR CCTATCCCCAGTCACAGCTG 348 ATP10B F semi-qPCR CCAGATCTCACCACACTGACAGAG 318 ATP10D F semi-qPCR CCAGAGTCACAGCAGCTGCAGA 351 ATP11A F semi-qPCR CCGAGCCCACACCGCACAGAG 351 ATP11A F semi-qPCR CCGTCTGCAGCAGCTCCCAAAG 356 ATP11B F semi-qPCR CCTCTTGGTCAGGGTCCCAGG 339 ATP11C F semi-qPCR CCTGTCAGATGGATGGAGCTCCATGG 349 ATP11C F semi-qPCR CGTAGTGACAGTGGATGGAGG 349 TRPC1 F semi-qPCR CAGTGGGAACGACTCATTGC 451 TRPV1 F semi-qPCR CAGTGGGAACGACTCATGG 349 TRPV1 F semi-qPCR CAGTGGGAACGACTCATGG 349 TRPV1 F semi-qPCR CAGTGGGAACGACTCATGGG 349 TRPV1 F semi-qPCR CTGCAGCTGACTGTGAGG 422 R TCTCGCAGACTGACTGTGAGG 422 R CCTCGTCTGCTTGCTTGGAACGACGCACA 477.410 R CCTCGTCGCTTGCTTGGAACGACGCACA 477.410 R CCTCGTCGCTGCTCCCCCCCCCCCCCCCCCCCCCCCCC	ATP9B	F	semi-qPCR		3/3
AIPTIDA F semi-qPCR CCTATUCCUCAGITACAGETIG 348 CCGAGTCTGCCTTTGGTACC CCGAGTCTGCCACCACTATGAGAAG 318 ATP10B F semi-qPCR CCGAGCTCCGCACACCATTGGGAGG 351 ATP11D F semi-qPCR CCGAGCTCTGCATGAGATGTTCCAG 351 ATP11A F semi-qPCR CCGAGCTCTGCAGGCTCCCGC 351 ATP11B F semi-qPCR CCTGTCAAGGTGTCTCGCGC 359 ATP11C R semi-qPCR CCTGTCAAGTGAGCTCCCGC 361 R CTTTAACAGTAGAGCACTCATGG 349 TRPC1 R semi-qPCR CCTGTCAAGTGAGCTCATGG 349 TRPC1 R semi-qPCR CGGACACTATGAGAGCCATTGG 411 TRPV1 F semi-qPCR CAGTGCGGACACCGTAGG 422 TRPV1 F semi-qPCR CTGTCACAGCACTGTGGAGGAGCC 407, 410 TRPV2 F semi-qPCR CTGTGCAGGCTGCGCTGGGGGGGCTG 530 TRPV2 F semi-qPCR CCGGCTGCAGGGGGGCGCTGCC 530 TRPP2 F semi-qPCR CGGGCCGGGGCGCTGCC 530 TRPP2 F semi-qPCR CGGGCGCGGCGCTGCC 530 TPP2 F semi-qPCR CGGGCGCGGCGCTGCC 53		R		GATTGEGGTACCATGGACCC	0.40
APP10BFsemi-qPCRCCAGGATCCAGCAACTATGGAAGA318ATP10DFsemi-qPCRCCGAGCCATGACAGAGTTGCAG351ATP11AFsemi-qPCRGCTGCTGCAGGCTGCCAG351ATP11BFsemi-qPCRGCTGCTGCAGGCTGCCAAG399ATP11CFsemi-qPCRCCTGTCAAGTGGTCGCCATGG391ATP11CFsemi-qPCRGGTACTAAGGAGTGATGGTGG349TRPC1Fsemi-qPCRGGTACTAAGGAGCTCACGTG451TRPC1Fsemi-qPCRCAGTGAACGACGAAGGAGTCATCGT451TRPC1Fsemi-qPCRCAGTGGGAACGGACGCAGG222RRTCTGCAAGCTGAACACCGTAGG422RRCTCTGGGAAGCTGAAGGAGTCATCGT451TRPV1Fsemi-qPCRCTGGGGAAGCTGATGGGAGAGTC422RRCTCTGGGAAGCTGCAAGGAGAGCA407, 410RCTCTGGAAGCTGCAAGGAGCACCTCG75575TRPM7Fsemi-qPCRCCTGTTCGATGAGCGAGCAC407, 410RCTGGGAGGTTCCCGAGGCTGGCTGG530530TRPM7Fsemi-qPCRCGGCTGATGCTGGCTG414PIEZ01Fsemi-qPCRCCGGCTGATGCTGGCTGG414PIEZ02Fsemi-qPCRCCGCGCGGCAGCACCGGGCTGG414PIEZ01Fsemi-qPCRCCGCGCGGCAGCTGCTGG414CCGGGGAAGTGCTGGCGTGGGAGGGGGGGGGGGGGGGGG	ATP10A	F	semi-qPCR	CCTTATCCCCAGTCACAGCTG	348
AIP10B R Semi-qPCR CAGACCA CACCACCACTGACAAGA TICAGAAG 318 GGACACCATGACACAGATICGAG 351 ATP10D F semi-qPCR CCGACCACCGCTGCAG 351 ATP11A F semi-qPCR CCTGTCAGGCTCCCGC 339 ATP11B F semi-qPCR CTGTCAAGGTGATGGGG 339 ATP11C F semi-qPCR CGTGTCAGGCTCCGCTIGG 339 TRPC1 F semi-qPCR CGGACGTAATGCATGGGG 349 TRPC1 F semi-qPCR CAGGACGTAGTGGGGGGCGCAGTG TRPV1 F semi-qPCR CAGGACGTAGTGGGGGGGCGGCGGGGCGGCG TRPV1 F semi-qPCR CAGGGGAGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	470400	R		CCGAGICIGCCICIIGGIACC	0.10
ATP10D F semi-qPCR CCGACCATCACCGCTGCAG 351 ATP11A F semi-qPCR CCGACCACCACCGCTGCAG 355 ATP11B F semi-qPCR CCTGTCAGCGGCTGCCAGC 339 ATP11C F semi-qPCR CCTGTCAGCGGACGATCG R Semi-qPCR GGAACGTAATGCATGGATGGG 349 TRPV1 F semi-qPCR CAGTGGGACGCACTCCT 451 TRPV1 F semi-qPCR ATGCAGCTGCAGTGG TRPV2 F semi-qPCR CCTGTCTGCTGCGAGGG TRPV2 F semi-qPCR CCTGTCAGTGGAGGGC TRPV2 F semi-qPCR CCTGTCAGTGGAGAGTC 451 TCTGCAGCGTGACGCTCCCT 575 TRPV2 F semi-qPCR CCTGTCAGTGGAGAGTC 575 TRPV2 F semi-qPCR CCTGTCATTCAAAACAAGCGAGAAA TCTGCAGCGTGACTGCACCGT TRPV2 F semi-qPCR CCTGTCATTCGAAGGACACC TRPV2 F semi-qPCR CCTGTCATTCAAAACAAGCAGCACAC TRPV2 F semi-qPCR CCTGTCATTCAAAACAAGCAGCACAC TRPV2 F semi-qPCR CCTGTCATTCGAAGGACACC TRPV2 F semi-qPCR CCTGTCATTCGAAGGACACC TRPV2 F semi-qPCR CCTGTCATTCGAAGCACCGT TRPV2 F semi-qPCR CCTGTCATTCGAAGCACACC TRPP2 F semi-qPCR CGGCTGACTGCGCC TRPP2 F semi-qPCR CGGCTGACTGCGCCC TRPP2 F semi-qPCR CGGCGGAGCTCC 414 AGCGGCCAGCTCTCTCGAAACCAGCGAAA PIEZO1 F semi-qPCR CGGCGGAGGCTGC 330 PIEZO1 F semi-qPCR CGGCGGCGCGCTGC 330 TCTCGCAAGGGCGCGCTCCCC 252 R CCGCTATCCCCAGGAGCTCG 414 AGCGCACACCTCATCAGGGAGCTCG 414 AGCGCACACCTCATCAGGGAGCTCG 414 AGCGACACCTCATCAGGGAGCTCG 422 AGCGCAAGCTCGTCGCCGC 252 CCGCATAATCAATCTCGGAGGCCGCCTCG 30 CCCS0A F qPCR CGATGGGCGCGCGCTCG 252 ATP11A F QPCR CGATGGGCGGCGGCTTCGATGGAGGCCGCCGCCG ATP11A F QPCR CGATGGCAGCACCACC CGGTGATGGCAACCACACACGGGGCGCGCGCGCGCGCGCG	ATP10B	F	semi-qPCR	CAGGATCCAGCAACTATGAGAAG	318
ATP10D F semi-qPCR CCGAGCCAACCGCTGCAG 351 ATP11A F semi-qPCR GCTCCTGCTCAGGCTGCCAAGG 355 R GTCTCTGGTCAGGCTCCCGC 339 ATP11B F semi-qPCR CCTGTCAAGTGGTCTTGCTTGG 339 ATP11C F semi-qPCR CCTGTCAAGTGGTCCTGCTGG 349 R CTTAACAAGTAGATGAGTCGATGG 349 TRPC1 F semi-qPCR CAGTAGGCAACGTAAGTCCATTG 451 TRPC1 F semi-qPCR CAGTAGGGAACGTAAGCGTAAG 422 R TCTGCAAGAGTGAAGGTGATGGAGGGG 422 TRPV1 F semi-qPCR CTGTGCAGAGTGGAGGGGAGGG 422 TRPV2 F semi-qPCR CTGTGTTCGAGGAGACG 575 R CTGTGTTCGTAAGCCGACCGTGGAGGG 575 575 R CTGTGTTCCAAGAGCAGACA 407, 410 R GCTCTTCGTAAACCACCAGCAGAAA 407, 410 R GCTGTTCGTGAGGAGCGGGGGG 530 R GCTGTGGGCGGGGTG 530 R GCTGCTGGGGAGGCGGGGGGGGGGGGGGGGGGGGGGGGG		R		GGACACCATGACAGAGTTGCAG	
RCATATCAGTCATCGGATGTTCCATP11AFsemiqPCRGCTGCTGCAGGCTCCCGCAAAG355ATP11BFsemiqPCRCTTTAACAGTGGATGAGCTCCCGC339ATP11CFsemiqPCRGGAACGTAATGCAATGAGTGCATTG349TRPC1FsemiqPCRCAGTGGGAACGACTCATCCT451RTTTCACAGTGGATGGAGGAGCACTCATCCT451422RTTCCCAGACTGAACGAGCTAGGG422RAACAGGGCTGACTGGCAGAGAGCCC57TRPV1FsemiqPCRCTCTGCAGACTGACAACCGTAGGRTTRPV2FsemiqPCRCTCTGCAGACTGACAACCGCTAGGTRPV2FsemiqPCRCTCTGCAGACTGACGGGACAC407,410RTTRP2FsemiqPCRCCTGTTCATTCAAACCAGCAGAAAA407,410RRTTCTGCGGAGGCCGCTG53075PIEZO1Fsemi-qPCRCGGCTGATGGCTGGCTG530RRCTTCGGGAGGCCACTTCTTCGGA414PIEZO1Fsemi-qPCRCGGCCCAAGTGTTCTTGGA432PIEZO1Fgemi-qPCRCGGCCCAGTGGCTG432PIEZO1FqPCRCGGCCAGTGATGGAGGCGACACT432RGGCCCCCTCTCGCAGAGGCATGTTCTTGGAGGCCCCCCCCCCCC76PIEZO1FqPCRCGATGAGCATCATCACCCC252RGGCCCCCTCGCAGGAGCACTCTTCGGAGG13176GGCAGGATACCCCAGACAAATGGGTGAAGGGGGCGTATATCAATGTCGATCACC73GAPDHRqPCRCGGGGTATCTCTCGCAGGCAGCAATAGGGTCG108RGGGGTATCTCACGCACCAAATGGGTCAATAACGCC	ATP10D	F	semi-qPCR	CCGAGCCACACCGCTGCAG	351
ATP11A F semi-qPCR GCTCCTGCAGGCTGCCAAAG 355 ATP11B F semi-qPCR GCTCCTGGTCAGGCTCCCGCG 339 R CTTTAACAAGTAGATGCATTCGCTTGG 349 ATP11C F semi-qPCR GGAACGTAATGCAATGGATGGAGTCCATTG 451 R GGTTAGTTCTAAGAGACGCACCGTAG 451 TRPC1 F semi-qPCR CAGTGGGAACGACTCATCCT 451 R TCTGCAGAGCTGACACCGTAG 422 R CTCTCGAGACTGACACCGTAG 422 R AACAGGGCTGACTGGAGTGGATGGA 407, 410 R CTCCGAGAGTTCCAAGCGGACACA 407, 410 R CTCGCAGAGCTGCACGCG 530 R CTGTCGAGGGCGCACAC 530 R CTGTCGCAGGGGCGCGCG 530 R CTGTCGCAGGGCGCGCGCG 530 R CTGCGCAGGCGCGCGCGCG 530 R CTGCGCAGGCGCGCGCGCGCGCGCGCGCGCG 414 PIEZO1 F semi-qPCR CTGCGCGAGGCGGCGCGCGCGCGCGCGCGCGCGCGCGCGC		R		CAGTAATCAGTCATGGATGTTCC	
R GTCTCTGGTCAGGCTCCCGC ATP11B F semi-qPCR CTTTAACAAGTAGATGCAATGGATCAGTTGG 339 ATP11C F semi-qPCR GGTAGGTAAGCGAATGGATGGG 349 TRPC1 F semi-qPCR CAGTGGGAACGACTCATCCT 451 TRPV1 F semi-qPCR CAGTGGGAACGACTCATCCT 451 TRPV1 F semi-qPCR CAGGGGGACGGCGACTGTGGAGGG 422 ACACAGGGCTGACTGTGATGGGAGAGTC 422 4ACAGGGCTGACTGTGATGG 422 R AACAGGGCTGACTGTGATGGAGAGACC 75 75 TRPV2 F semi-qPCR CTCCGAGAGTCCAAGCGACAC 407, 410 TRPP2 F semi-qPCR CTGCTGAGAGGCACGCACC 530 TRPP2 F semi-qPCR CGGCTGATGGCTGGCTG 530 R CTTGCCCAAGGACACCACTCC CTGCTGCAAGGCCCCCCC 141 R AGCGACACCTCATCAGGACACCTCT 432 432 PIEZO1 F semi-qPCR CGCGCTGTGTGTTTCGGAGGACTACC 432 PIEZO1 F gemi-qPCR CACCACCTCATCAGGACTACCC 432 R CACCAGCGCGCGCGCGCCGCCGCCGCCCCC </td <td>ATP11A</td> <td>F</td> <td>semi-qPCR</td> <td>GCTGCTGCAGGCTGCCAAAG</td> <td>355</td>	ATP11A	F	semi-qPCR	GCTGCTGCAGGCTGCCAAAG	355
ATP11BFsemi-qPCRCCTGTCAAGGGTTCTGCTTGG339ATP11CFsemi-qPCRGGAACGTAATGCAATGGATGAGCCATTG349RGGTTAGTTCTAAGAGCTCATGGGGTAGTTCTAAGAGCTCATGG349TRPC1Fsemi-qPCRCAGTGGGAACGACCTCATCT451RTCTGCAGACTGATGGAACGCTGAGGTCTGCAGAGCTGACGGG222TRPV1Fsemi-qPCRATCACGGCTGACGACGACGTGGG575RSemi-qPCRTCTCCTTTTCGGCTTCGCT575RSemi-qPCRCCTGTCATCAAAACAAGCAGGAAA407, 410RSemi-qPCRCCTGTCATCAAAACAAGCAGGAAA407, 410RSemi-qPCRCGGCTGATGGCTGGCTG530TRPP2Fsemi-qPCRCACCAACCTCATCAGCGACT414PIEZ01Fsemi-qPCRCACCAACCTCATCAGCGACT414RCTCGGAAGCATGTTCTTGGAGGGCCAGTGTCTTGGA32PIEZ01Fgemi-qPCRCACTGAGAGCGCGCAGCTGTCTTC432RGCGCCAGTCTGTAGGAGGCGCAGCTGTCTTC432GGGCCAGTCTGTAGGAGGGTGG11PIEZ01FqPCRCGATGAGAGGCGCAGCATGTCTTC432GGGCCAGTCGTAGAGGGCGCAGCCTGTGTAGGAGGGCCAGTCGTGTAGGAGGCCGAGCAGCG25231CDC50AFqPCRCACAGGATACCCAGACAACAGGG131RGGCACTCCTCCAGAAACAACAGGGTCGATGGGGAAGGTGAAGGTGAAGGTGAACGATAAGGTCG31GAPDHFqPCRCACAGGAAGGTGAAGGTGAAGGTGAAGGTGGAAGTAGAGGTGGAAGTGGAAGGTGAAGGTGAAGGTAGAGGTGAAGAGTAGAAGTAGAATAGAACAGAGTAGAGTAGAGTAGAGAGTCAAATAGAACAGGTGGAAGTAGAAGTAGAGAGTGCAAATAGAAGAGTAGAAGTAGAGAGTAGAAGTAGAAGAGTAGAAGTAGAAGTAGAGAGTAGAAGT		R		GTCTCTGGTCAGGCTCCCGC	
ATP11C F semi-qPCR GGAACGTAATGCAATGGATGGG 349 GTTAGTTCTAAGAGCTCAATGGATGGG GGTTAGTTCTAAGAGCTCAGTG 451 TRPC1 F semi-qPCR CAGTGGGAACGACTCATCCT 451 R TCTGCAGACTGACAACCGACGACGACTGA 422 R ATGACAGTGTGATGGAGAGTC 422 R AACAGGGCTGACTGTGATGGAGAGTC 422 R AACAGGGCTGACTGTGATGGAGAGTC 422 R ATGCAGAGCTCAGCGGAGAGT 407, 410 R CTCTGAGAGTCGCAGCGGCGACAC 75 R Semi-qPCR CCTGTTCATTCAAAACAAGCAGAAAA 407, 410 R CCTGTTCATTCAAAACAAGCAGAAAA 407, 410 6CTCTTCGTAAACCTCCTCCC 530 R Semi-qPCR CCTGTTGTTCCCCAGAGACCTCG 530 75 PIEZO1 F semi-qPCR CACCAACCTCATCAGCGACT 432 PIEZO2 F semi-qPCR CTCTGCGAGGAGCACTGTTCTC 432 R GGCCCACTCTTCAGAGGACCTCATCC GGCCCACTCTTCAGAGGACGTGT 432 PIEZO1 F semi-qPCR CCTCGCGAGCTGACTGTT 432 R GGCCCACTCTCTCCCAGTTGAGTGTA GCCCCCCCCAG	ATP11B	F	semi-qPCR	CCTGTCAAGTGGTTCTGCTTGG	339
ATP11C F semi-qPCR GGAACGTAATGCAATGCATGGAG 349 R GGTTAGTTCTAAGAGCTCAGTG GGTTAGTTCTAAGAGCTCAGTG TCTCCAGAGTGACAACCGTAG 451 TRPV1 F semi-qPCR CAGTGGGAACGACTCATCCT 451 R TCTCCCAGACTGACAACCGTAG 422 R ATGACAGTGTGATGGGAACGACTC 422 R AACAGGGCTGACTGTGATGG 422 TRPV1 F semi-qPCR CTCTCCTTTTCGGAGGGACAC 575 TRPV2 F semi-qPCR CCTGTTCATTCAAACAGCAGAAA 407,410 R CCTGTTCATTCAAACCTCTCCC 530 530 TRPP2 F semi-qPCR CGCGTGATGGCTGGCTG 530 R CTTGTTCCCCAGAGACCTCG CTTGTTCCCCAGAGACCTCG 414 PIEZ01 F semi-qPCR CACCAACCTCATCAGCGACT 414 R GGGCCAACTCTTGCAGAGGCGACTAC 432 PIEZ02 F semi-qPCR CACCAGCACCTCTTCAGAGGGAGT 432 R GGGCCACTCTCTCAACAGCGACTAT 432 PIEZ01 F gPCR CAACTGGCGACTACCC 32 R GGCCCACTCTCTCACAGAGGCGACTACC 106 252 R GGCCCACTCCTCGCAGTACACCTTTAACGC 252 R GCACTCCTGCAGACAACTATAACGC <		R		CTTTAACAAGTAGATGAGTCCATTG	
RPC1 F semi-qPCR CAGTGGGAACGACTCATCCT 451 TRPV1 F semi-qPCR ATGACAGTGTGATGGAGAGTC 422 R ACAGGGCTGACAACCGTAG 422 R ACAGGGCTGACGACTGGAGGGTC 422 R CTCCCAGAGTTGGAGGGGC 422 R CTCCGAGAGTTCGACGACGGGC 575 R Semi-qPCR CTCTCATTCAAAACAAGCAGAAA 407,410 GCTCTTCGTTCATTCAAAACAAGCAGAAAA 407,410 607 607 530 TRPV2 F semi-qPCR CGGCTGATGGCTGGCTG 530 530 PIEZ01 F semi-qPCR CACCAACCTCATCAGCGACT 414 <t< td=""><td>ATP11C</td><td>F</td><td>semi-qPCR</td><td>GGAACGTAATGCAATGGATGGG</td><td>349</td></t<>	ATP11C	F	semi-qPCR	GGAACGTAATGCAATGGATGGG	349
TRPC1 F semi-qPCR CAGTGGGAACGACTCATCCT 451 TRPV1 F semi-qPCR ATGACAGTGTGACAACCGTAG 422 R AACAGGCTGACTGGAAGGTC 422 R TTRPV2 F semi-qPCR TCTTCCTTTCGGCTTGGATGG 575 TRPV2 F semi-qPCR CCTGTCATTCAAAACAGGAGAAA 407, 410 R GCTCTTCGTAAACCTCCTCCC 530 TRPP2 F semi-qPCR CGGCTGAGGAGACCTCG 530 PIEZ01 F semi-qPCR CACCAACCTCATCAGGGACACTCT 432 PIEZ02 F semi-qPCR CACCAACCTCATCAGGAGCTTTTGGA 414 R AGCGACACGCATGTTCTTGGA 432 PIEZ01 F semi-qPCR CACCAACCTCATCAGCGACT 432 R GGCCCAGTCTGTAGAAGGTGT 432 PIEZ01 F semi-qPCR CACCAACCTCATCAGCGACT 432 R GGGCCAGTCTGTAGAAGGTGT 432 GGCCAGTCTGTAGAGTGGT 530 CDC50A F gPCR CGATGGCGATGACTATAACGC 252 R GGGCACGTTCGTAGAACGTCC 106 GCACTCCTGCAGACACAGG 131 GAPDH F qPCR CACAGGGAAGGTCACACAATAACGC 252 GGGGTGAAGGGTGAAGGTGAACGTCG GGGGGTGAAGG		R		GGTTAGTTCTAAGAGCTCAGTG	
R TCGCAGACTGACAACCGTAG 422 TRPV1 F semi-qPCR ATGACAGTGTGAGAGAGTC 422 R AACAGGCTGACTGTGATGG 575 TRPV2 F semi-qPCR CTCTCCTTTCGGAGAGGACAC 575 R semi-qPCR CCTGTTCATTCAAAACAGGAGAAA 407, 410 GTTTPP2 F semi-qPCR CGCTGTCATTCAAAACAGGCAGAAA 407, 410 R CTGTTCGTAAAACCTCCTCCC S30 530 PIEZO1 F semi-qPCR CGCCAACCTCATCAGAGACCTGG 530 PIEZO2 F semi-qPCR CACCAACCTCATCAGCGACT 414 R CTCGGGAGGCATGTTCTTGGA 432 PIEZO1 F semi-qPCR CACCAACCTCTCAGCGAGTGT 432 R CCCSOAGCCAGCTGTGAAGAGGGTGT 144 46CGACAGCATGTTCTTGGA 432 PIEZO1 F semi-qPCR CACTGCGAGGCATGTTCTTC 432 CDC50A R qPCR CAATGAGAGAGCGCGACTATAACC 106 CATP11A F qPCR CACAAGAGATATCCAGGACAACAGG 131 CACPAACCTCCCCAGAACAATACCCCAGACAACAGG 131 44CCACCTCCACCAGAACATATAAGG 44CCACCTCCACCAGAACAATATAAGG	TRPC1	F	semi-qPCR	CAGTGGGAACGACTCATCCT	451
TRPV1 F semi-qPCR ATGACAGTGTGATGGAGAGTC 422 R ACAGGGCTGATGGATGG ACAGGGCTGATGG TRPV2 F semi-qPCR CTCCCTTTTCGGCTCGCT 575 R CTCGAGAGTTCGAGGGACAC 407, 410 TRPM7 F semi-qPCR CCTGTTCATTCAAAACAAGCAGCAGAAA 407, 410 R CTCGTTCATTCAAAACAAGCAGCAGCAC 530 TRPP2 F semi-qPCR CGGCTGATGGCTGGCTG 530 PIEZ01 R semi-qPCR CACCAACCTCATCAGCGACTCG 414 PIEZ02 F semi-qPCR CACCAACCTCATCAGCGCACT 414 PIEZ01 R semi-qPCR CCGGCATGTTCTTTGGA 432 GGCCAGTCTGTAGATGGAGGCGTG TCTGCGGAGGCATGTTCTTGGA 432 PIEZ01 F gPCR CAATGAGGAGCGCGATGACT 432 R GGCACTCCTGCAGATCAGTGTGT 432 GGCACTCCTGCAGTGTGATGA 530 PIEZ01 F gPCR CAATGAGGAGCGAGGTGT 432 R GGCACTCCTGCAGATCACC 106 530 GACTGCCAGGAATGCACCTC CGGTTATATCAATCCGATCAC 252 GGGGTATAATCAATCCAGACAATAACGC 252 530 GGGGTTATAATCAATCCAGACAATATCCAGACAAAGG 131 CAACAGGAGAGAGCACCCAGACAATATCCAGGCGC		R		TCTGCAGACTGACAACCGTAG	
R AACAGGGCTGACTGTGATTGG TRPV2 F semi-qPCR TCTTCCTTTCGGCTTCGGCT 575 R CCTCGACAGATTCGAAGCACGACA 407, 410 R GCTCTTCGTAAACCACCTCCCC 530 TRPP2 F semi-qPCR CGCGTGACAGCACGACC PIEZ01 F semi-qPCR CACCAACCTCATCAGCGACGACA 414 PIEZ02 F semi-qPCR CACCAACCTCATCAGCGACTG 414 PIEZ01 F semi-qPCR CACCAACCTCATCAGCGACGACT 432 PIEZ02 F semi-qPCR CACCAGCAGTCTTCTTC 432 CGCCCGAGGAGGCCGACTGTCCTCCC GGCCCAGTCTGTAGACGGTGT 106 CDC500A F qPCR CGATGGCGATGACCATAACGC 252 CGGATTACTCCAGCAGACTATTACGC CGGTATAATCAATCTCGACTCC 252 GAPDH F qPCR CACCAGCACGAGACACGTCG 131 GGGGTCATTCACCAGAGAATATCAATCAGCGCAATAA GGGGGTCATTCATCAGAGGTCG 131	TRPV1	F	semi-qPCR	ATGACAGTGTGATGGAGAGTC	422
TRPV2 F semi-qPCR TCTCCTTTCCGGCTTCGCCT 575 RPM7 F semi-qPCR CTCGAGAGTTCGAGGGACAC 407, 410 RPP2 F semi-qPCR CGCTCTTCGTAAACCACCCCCCCC 530 TRPP2 F semi-qPCR CGCCTGTCCCAGGAGACTCG 530 PIEZ01 F semi-qPCR CACCAACCTCATCGCAGGACTG 414 R CTCGCGAGGCATGTTCTTGGA 412 PIEZ01 F semi-qPCR CACCAACCTCATCGAGAGCACGT 414 R GGGCCAGCTGTGTGTTCTTGGA 422 PIEZ01 F semi-qPCR CACCAACCTCATCAGCGAGTGT 432 PIEZ01 F gPCR CAATGAGAGAGCGCGACTGTTCTTC 432 R GGGCCAGTCTGTAGATGGTGT 106 106 CDC50A F qPCR CGGTATGCGAGAGCACGACTATAACGC 252 R GGGTATACAATCTCTGGAACCACTC 106 106 R GGGTATGCCAGAGAGACACAGG 131 GAPDH F qPCR CACAGAGAGTACCCAGAACAAGGG 131 GGGGTATCATCACTCAGCAACAAGGGTCG ATGGGAACGACAATAAGG 108		R		AACAGGGCTGACTGTGATGG	
R CTCGAGAGTTCGAAGAGCACA TRPM7 F semi-qPCR CCTGTTCATTCAAAACAAGCAGAAA 407, 410 R GCTCTTCGTAAACCTCCTCCCC S30 TRPP2 F semi-qPCR CGGCTGATGGCTGGCTG 530 PIEZ01 F semi-qPCR CACCAACCTCATCAGAGACCTCG 141 PIEZ02 F semi-qPCR CACCAACCTCATCAGCGACGTTCTTTGGA 142 PIEZ01 F semi-qPCR CACCAACCTCATCAGCGACGTTCTTTGGA 142 PIEZ01 F gPCR CGGCCAGTCTGTAGATGGTGT 432 CDC50A F qPCR CAATGAGAGAGCATCATAACCC 106 R GCGCATGCGCAGTCGTAGATCGATGA 252 26 ATP11A F qPCR CGACTGCCCAGACACAATACCC 131 GAPDH R GPCR CACGGGAAGGTACCG 131 GGGGTTATCATCAGCGGCAACGAATAGGTGA GGGGTTATCATCAGGCGACGAACAATA 32	TRPV2	F	semi-qPCR	TCTTCCTTTTCGGCTTCGCT	575
TRPM7 F semi-qPCR CCTGTTCATTCAAAACAGCAGCAAA 407,410 R GCTCTTCGTAAACCTCCTCCC GCTCTTCGTAAACCTCCTCCC 530 TRPP2 F semi-qPCR CGCCTGGTGGCTG 530 PIEZ01 F semi-qPCR CACCAACCTCATCAGGACCTCG 414 PIEZ02 F semi-qPCR CACCAACCTCATCAGGACCT 432 PIEZ01 F semi-qPCR TCTGCGGAGGCATGTTCTTCG 432 PIEZ01 F gPCR CGACTCCTGCAGTGACGTGT 106 CDC500A F qPCR CGATGGCGATGACCATACCC 252 CDC500A F qPCR CGATGGCGATGATCATCACGC 252 ATP11A F qPCR CACAGGAGATACCCAGACAACGTCC 131 GAPDH F qPCR CACGGGTATAATCAGGTGC 131 GGGGTCATTCACGGCGACGAATATA GGGGTCATTCACGGCAACAATA 108		R		CTCGAGAGTTCGAGGGACAC	
R GCTCTTCGTAAACCTCCTCCC TRPP2 F semi-qPCR CGGCTGATGGCTGGCTG 530 PIEZ01 F semi-qPCR CACCAACCTCATCAGCGACT 414 R AGCGACAGCATGTTCTTGGA 414 PIEZ02 F semi-qPCR CTGGCGCAGGCATGTTCTTCG 432 PIEZ01 F qPCR CAATGAGGAGGCCGACTACC 106 R GGCCCAGCTGTGTAGATGGAGGC 106 PIEZ01 F qPCR CAATGAGGAGGCCGACTACC 106 R GCACTCCTGCAGTTCGATGGA 252 CDC50A R qPCR CGGTATAACCAGCGCGACAACAAGG 252 ATP11A F qPCR CACAGAGATACCCAGACAACAAGG 131 GAPDH R qPCR ATGGGGAAGGTCGAACAATATAGGT 108 R GGGGTCATTCAGCAGAATATCAATCCCAGACAATA 131	TRPM7	F	semi-qPCR	CCTGTTCATTCAAAACAAGCAGAAA	407, 410
TRPP2 F semi-qPCR CGGCTGATGGCTGG 530 PIEZ01 F semi-qPCR CTTGTTCCCCAGAGACCTCG 414 PIEZ02 F semi-qPCR CCGCAACCTCATCGCAGGCATGTTCTTGGA 432 PIEZ01 F semi-qPCR CCACCAACCTCATCGAGGGCATGTTCTTC 432 PIEZ01 F gPCR CAATGAGGAGGCCGACTATCC 106 CDC50A F qPCR CGATGGCGATGCATAACCC 252 R CGGTATAATCAACTCTGAACAACAGG 131 ATP11A F qPCR CAACGGAAGGTCGCAGAACAACAGG 131 GAPDH R GPCR ATGGGGAAGGTCGAACAATA 108		R		GCTCTTCGTAAACCTCCTCCC	
$\begin{array}{c c c c c c } & R & & & CTIGTICCCCAGAGACCTCG \\ & & & CACCAACCTCATCAGCGACT & 414 \\ & & & AGCGACAGCATGTTCTTGGA & & & & & & & & & & & & & & & & & & $	TRPP2	F	semi-qPCR	CGGCTGATGGCTGGCTG	530
PIEZO1 F semi-qPCR CACCAACCTCATCAGCGACT 414 R AGCGACAGCATGTTCTTGGA AGCGACAGCATGTTCTTGGA PIEZO2 F semi-qPCR TCTGCGGAGGCATGTTCTTC 432 GGGCCAGTCTTGTAGATGGTGT GGGCCAGTCTGTAGATGGTGT 106 PIEZO1 F qPCR CAATGAGGAGGCCGACTACC 106 CDC50A F qPCR CGGTATAATCAACGC 252 CGGTATAATCAACGAGACAACAAGG 131 ATP11A F qPCR CACAGAGATATCCAGACAGG 131 R CACTGCACCACAGAGGTCG 108 GAPDH F qPCR ATGGGGAAGGTCG 108 R GGGGTCATTCATCATCAGCCAG 108		R		CTTGTTCCCCAGAGACCTCG	
R AGCGACAGCATGTTCTTGGA PIEZO2 F semi-qPCR TCTGCGGAGGCATGTTCTTC 432 GGCCCAGTCGTAGATGGTGT GGCCCAGTCGTAGAGTGGTGT 106 PIEZO1 F qPCR CAATGAGGAGGCCGACTACC 106 CDC50A F qPCR CGGTATAACGC 252 ATP11A F qPCR CACAGAGATACCCAGACAACAGG 131 GAPDH F qPCR ATGGGGAAGGTCGAACGATAACGCC 108 GGGGTCATTCATCAACGCC GGGGGCCATCACCAACAAGG 108	PIEZO1	F	semi-qPCR	CACCAACCTCATCAGCGACT	414
PIEZO2 F semi-qPCR TCTGCGGAGGCATGTTCTC 432 R GGCCAGTCTGTAGATGGTGT GGCCAGTCTGTAGATGGTGT 106 PIEZO1 F qPCR CAATGAGGAGGCGAGTACC 106 CDC504 F qPCR CGATGCGATGAATCATATAACGC 252 R GGCTATAATCAATCTCGATCTC 131 CAATGAGGAGGCGCAGGAACTAATAGG 131 GAPDH F qPCR ATGGGGAAGGTCGAACAATA R GGGGTCATTCATCTGGCAACAATA 108		R		AGCGACAGCATGTTCTTGGA	
R GGGCCAGTCTGTAGATGGTGT PIEZ01 F qPCR CAATGAGGAGGCCGACTACC 106 R GCACTCCTGCAGTTCGATGA 106 CDC50A F qPCR CGATGGCGATGAACTATAACGC 252 CGGTATAATCAATCTCGATCTC CGGTATAATCAATCTCGATCACC 131 ATP11A F qPCR CACAGAGATAATCAATATAACGC 131 R CACTGCACCAGAAATATGATAAGG 131 GAPDH F qPCR ATGGGGAAGGTCG 108 R GGGGTCATTCATCATCATCAATAATC 108	PIEZO2	F	semi-qPCR	TCTGCGGAGGCATGTTCTTC	432
PIEZO1 F qPCR CAATGAGGAGGCCGACTACC 106 R GCACTCCTGCAGTTCGATGA GCATGCGCGATGACTATAACGC 252 CDC50A R QPCR CGGTATAATCAACGC 252 ATP11A F qPCR CACAGAGATACCCAGACAACAGG 131 R CACTGCACCACAGAGTCGACTACGG 131 GAPDH F qPCR ATGGGGAAGGTCG 108 R GGGGTCATTCATCATCGCACAACAATA 108		R		GGGCCAGTCTGTAGATGGTGT	
R GCACTCCTGCAGTTCGATGA CDC50A F qPCR CGATGGCGATGACCTATAACGC 252 R CGGTATACCAACTCTGATCTC 252 ATP11A F qPCR CACAGAGATACCCAGACAACAGG 131 R CAACTGCACCAGACAATATGATAAGG 108 GAPDH F qPCR ATGGGGAACGATGA 108 R GGGGTCATTCATCAGCAACAAG 108	PIEZO1	F	qPCR	CAATGAGGAGGCCGACTACC	106
CDC50A F qPCR CGATGGCGATGAACTATAACGC 252 R CGGTATAATCCAATCTCGATCTC CGGTATAATCCAACCGG 131 ATP11A F qPCR CACAGGGATGCACAGACAGGG 131 R CAACTGCACCCAGAAAATATGATAAGG CAACTGCACCCAGAAAATAGGA 108 GAPDH F qPCR GGGGTCATTCATCAGGCAACAAG 108		R		GCACTCCTGCAGTTCGATGA	
R CGGTATAATCAATCTCGATCTC ATP11A F qPCR CACAGAGATACCCAGACAAGG 131 R CAACTGCACCAGAAATATGATAAGG GAPDH F qPCR ATGGGGAAGGTCG 108 R GGGGTCATTCATCAGCAACAATA	CDC50A	F	qPCR	CGATGGCGATGAACTATAACGC	252
ATP11A F qPCR CACAGAGATACCCAGACAACAGG 131 R CAACTGCACCAGAAATATGATAAGG 131 GAPDH F qPCR ATGGGGAAGGTCACCG 108 R GGGGTCATTCATGGCAACAATA GGGGTCATCATCATGATAAGG		R	·	CGGTATAATCAATCTCGATCTC	
R CAACTGCACCAGAAATATGATAAGG GAPDH F qPCR ATGGGGAAGGTGAAGGTCG 108 R GGGGTCATTCATGGCAACAATA	ATP11A	F	aPCR	CACAGAGATACCCAGACAACAGG	131
GAPDH F qPCR ATGGGGAAGGTGAAGGTCG 108 R GGGGTCATTCATGGCAACAATA		R	1	CAACTGCACCAGAAATATGATAAGG	
R GGGGTCATTCATGGCAACAATA	GAPDH	F	aPCR	ATGGGGAAGGTGAAGGTCG	108
		R	1	GGGGTCATTCATGGCAACAATA	