

The Journal of Physiology Statistical Summary Document

Manuscript Title: ATP-sensitive potassium channels in zebrafish cardiac and vascular smooth muscle

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Animal model used, if applicable: Zebrafish - WT and transgenic (Multiple knockout/knockin mutants of Abcc8, Abcc9, Kcnj8 and Kcnj11) on AB/Tuebingen background.

Underlying hypothesis: This investigation tests the make-up of ATP-sensitive potassium (KATP) channels in zebrafish cardiac, and vascular smooth muscle. We test the hypothesis that subunits specified by the two Abcc8 and Abcc9 genes, as well as the Kcnj8 and Kcnj9 genes are differentially expressed and have different roles generating KATP channels in these tissues. In addition we test the hypothesis that nucleotide sensitivity of the channels is different between WT and mutant channels.

Definitions of 'n':

Question 1: n = individual patches, each from a different cell, recorded from at least 3 fish of the specified genotype (WT, Kv3.1KO or Kv3.3KO), unless noted.

Statistical summary table:

Experimental question	Finding	Location	Mean value	SD	n	p**	Data comparisons	Statistical test	Other variable	Figure
Different K1/2 than WT	ACM less sensitive to ATP than WT	ACM	35.15	1.60	3	0.01	ACM vs VCM	Kruskal-Wallis Test	-Mg	2B
		VCM	18.07	1.14	5	0.01			-Mg	
		ACM	37.04	4.31	7				+Mg	
		VCM	20.44	2.62	6				+Mg	
ACM KATP different from VCM KATP	ACM KATP > VCM KATP	VCM	40.83	21.10	24	0.00	ACM vs VCM	Mann-Whitney Test for Two Independent	Samples	2B
		ACM	124.00	78.35	12					

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Current density different than WT	Sur1, Sur2, and Kir6.2 KO lower than WT	WT VCM	40.83	21.10	24	-	Mutants vs WT	Kruskal-Wallis Test		4C
		GE VCM	32.00	5.66	4	0.69				
		CY VCM	42.00	22.98	4	0.93				
		VM VCM	36.00	14.42	3	0.88				
		6.1- KO VCM	32.00	8.00	3	0.72				
		SUR1-KO VCM	16.00	6.32	5	0.02				
		6.2-KO VCM	0.00	0.00	6	0.00				
		SUR2-KO VCM	0.00	0.00	6	0.00				
Different K1/2 than WT	GE and CY less sensitive than WT	WT VCM	20.44	2.62	6	-	Mutants vs WT	Kruskal-Wallis Test		4D
		GE VCM	108.83	15.17	5	0.00				
		CY VCM	56.83	1.72	4	0.05				
		VM VCM	20.57	2.50	5	0.98				
		6.1- KO VCM	18.71	0.74	3	0.42				
		SUR1-KO VCM	19.49	0.73	3	0.78				
Current density different than WT	Sur2, and Kir6.2 lower than WT	WT ACM	124.00	78.35	12	-	Mutants vs WT	Kruskal-Wallis Test		5C
		GE ACM	108.00	27.76	4	0.86				
		CY ACM	120.00	85.42	4	0.84				
		VM ACM	142.67	51.59	3	0.49				

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		6.1- KO ACM	153.33	41.63	3	0.32				
		SUR1-KO ACM	70.00	24.88	6	0.17				
		6.2-KO ACM	0.00	0.00	6	0.00				
		SUR2-KO ACM	0.00	0.00	6	0.00				
Different K1/2 than WT	GE less sensitive than WT	WT ACM	37.04	4.31	7	-	Mutants vs WT	Kruskal-Wallis Test		5D
		GE ACM	211.52	15.34	3	0.07				
		CY ACM	60.35	3.18	3	0.26				
		VM ACM	28.76	1.42	3	0.23				
		6.1- KO ACM	23.52	0.71	3	0.04				
		SUR1-KO ACM	22.42	4.14	3	0.03				
Current density different in 0.1 versus 0 ATP	Current in 0.1, lower than in 0	WT BA	-3.29	2.93	4	0.03	Current in 0.1 ATP vs in 0 ATP	Mann-Whitney Test for Two Independent Samples	0 ATP	6A
			-0.41	0.34	4				0.1 ATP	
Current density different versus 6.1-KO in 0 ATP	wt/GE, wt/VM, and VM/VM greater than 6.1-KO	6.1-KO BA	-0.80	0.97	4	-	6.1-KO vs WT and other mutants	Kruskal-Wallis Test	0 ATP	6B

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	WT BA	-3.29	2.93	4	0.23			0 ATP
	wt/CY BA	-3.35	4.50	3	0.34			0 ATP
	wt/GE BA	-7.18	3.54	3	0.06			0 ATP
	wt/VM BA	-9.39	5.88	5	0.01			0 ATP
	VM BA	-21.95	20.44	12	0.00			0 ATP
	VM BA	-0.61	0.18	3	0.97			0.1 ATP