

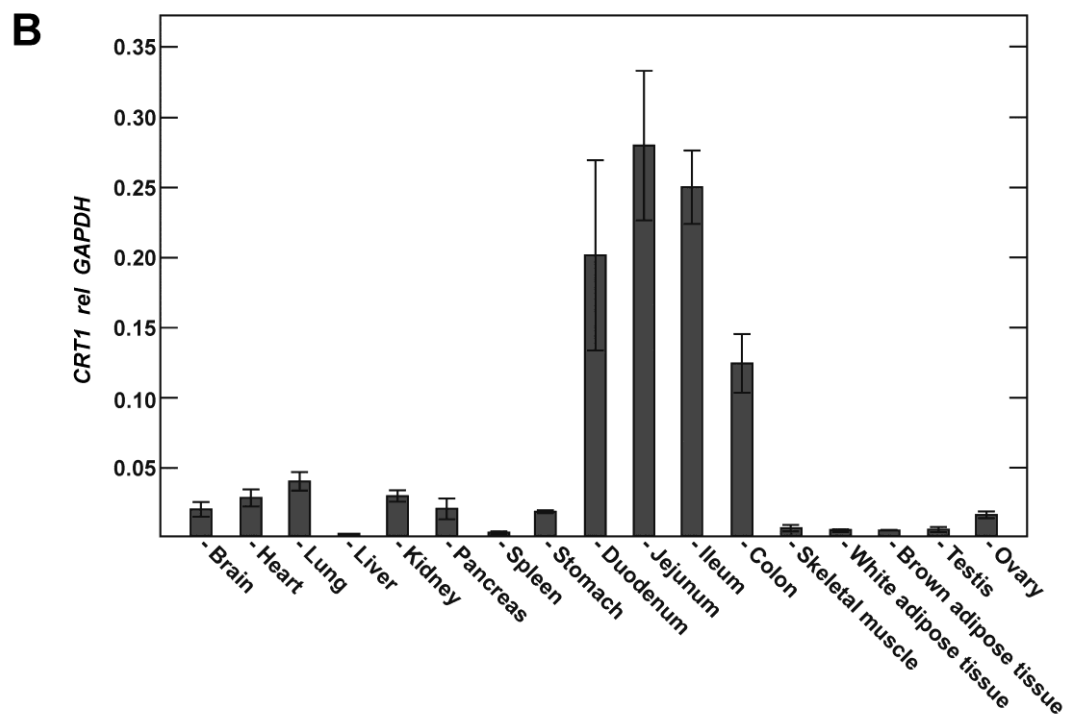
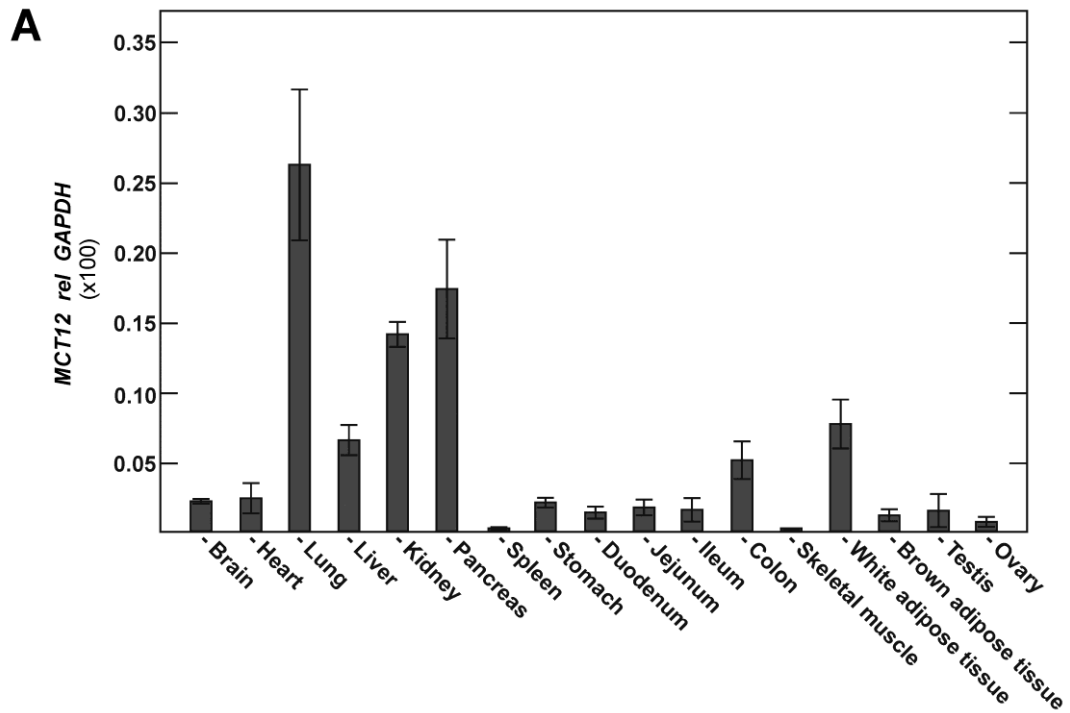
SUPPLEMENTAL INFORMATION**SUPPLEMENTAL METHODS*****SGLT2* sequencing primers**

For *SGLT2*, the following primers (5' – 3') were employed:

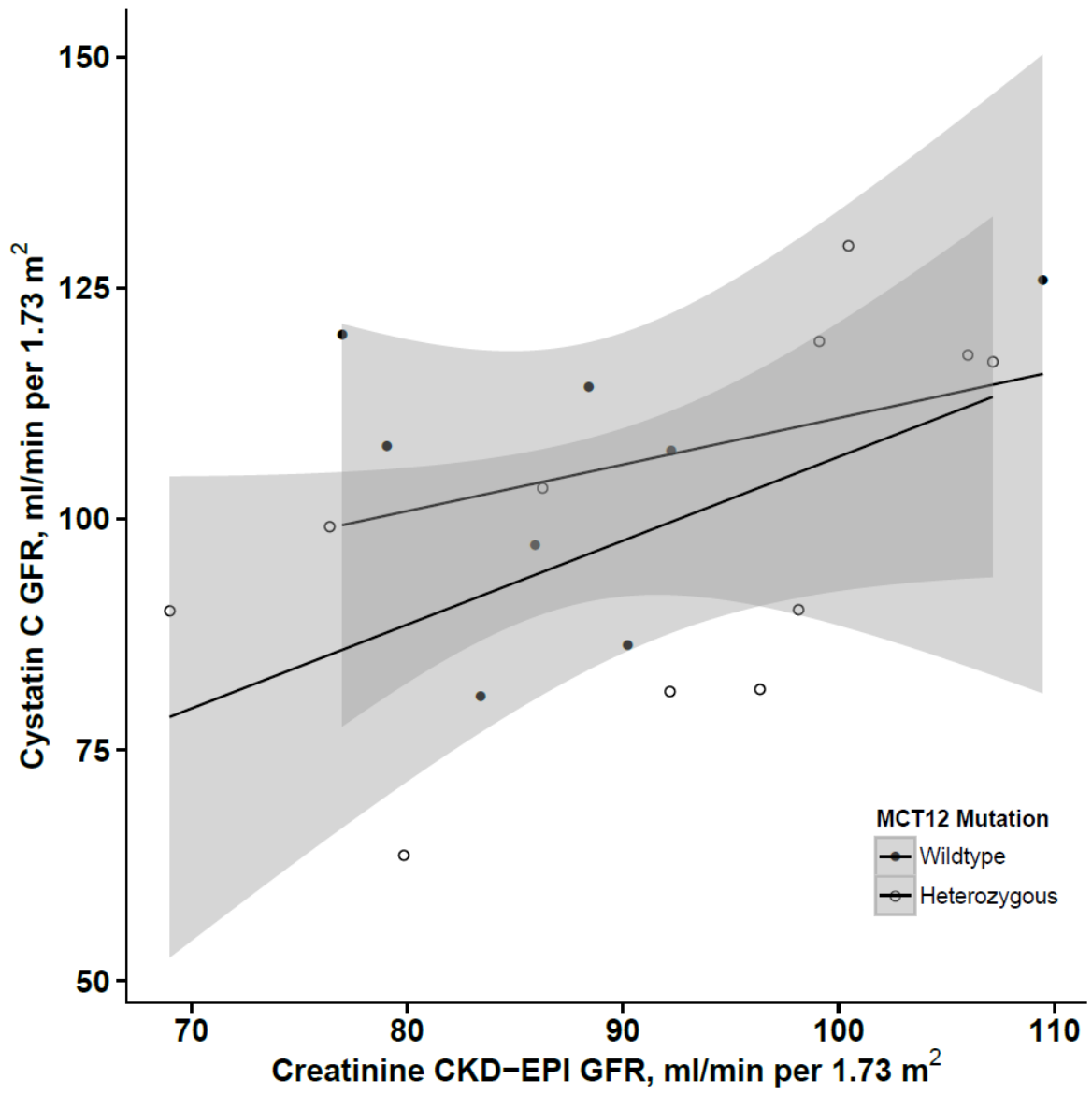
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5A2ex2_3_R	cctctgcttctggctagat
5A2ex4_5_F	gagggtgcagctctgttc
5A2ex4_5_R	ttccagaccttccagctg
5A2ex6_7_F	cccgagaacaggctatcgtt
5A2ex6_7_R	tgcacgcttggagtagatgg
5A2ex8_9_F	aaggctccatctactccaagc
5A2ex8_9_R	ggctgccttaccgttg
5A2ex9_10_11_F	ccagttccgtcacctccta
5A2ex9_10_11_R	gccaggtagctagagactgc
5A2ex11_12_F	tctgggtgggttcatcgtg
5A2ex11_12_R	cccattccaaccctcagtc
5A2ex13_14_F	actggacagaggtggtagg
5A2ex13_14_R	ctgccccctccccctttctg
5A2ex10_11_12_F	gctggcctccatcttcaaca
5A2ex10_11_12_R	cagagggtaggtgctgtgctc

SUPPLEMENTAL FIGURES

Supplemental Figure 1



Supplemental Figure 2



Supplemental Figure Legends

Figure 1. Expression of creatine transporters MCT12 and CRT1 in different murine tissues. Indicated tissues were harvested, total RNA isolated and reverse transcribed.

Expression of MCT12 (A) or CRT1 (B) transcripts was quantified by taqman-based real-time PCR and normalized to GAPDH transcript levels. N=3 male (or female in the case of ovarian tissue) 10-12 week old mice were used. Data are means \pm SD.

Figure 2. Association of creatinine based eGFR with cystatin C based eGFR. Lower regression line with open circles: individuals with *MCT12* mutation. Upper regression line with filled circles: individuals without *MCT12* mutation. Grey shaded bands around the regression lines represent the lower and upper limits of the 95% confidence intervals.

MCT12 Mutation	Yes													No													MCT12 Mutation yes Median (IQR)	MCT12 Mutation no Median (IQR)	Mann-Whitney U test p-value	SGLT2 Mutation yes Median (IQR)	SGLT2 Mutation no Median (IQR)	Mann-Whitney U test p-value
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No						
SGLT2 Mutation	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No				
Patient	II-1	II-3	II-7	III-4	III-7	II-5	II-9	III-1	III-2	III-5	III-8	II-2	II-4	II-8	II-10	II-11	III-6	III-10	III-11	III-12	III-13											
Urinary parameters	Normal range	Unit																														
24 hr urinary volume		ml	1500	1326	852	1320	1971	1950	1108	1224	2114	1780	1214	1472	1402	861	626	1958	968	1192	1478	2640	2620	1326 (1219-1865)	1437 (1024-1838)	0.92	1326 (1320-1500)	1437 (1171-1952)	0.90			
pH			4.68	5.09	ND	5.07	ND	ND	4.88	6.67	6.33	ND	ND	5.71	5.44	ND	5.75	5.46	6.32	5.14	5.76	ND	5.23	5.08 (4.93-6.02)	5.59 (5.39-5.75)	0.34	5.07 (4.88-5.08)	5.71 (5.34-6.04)	0.022			
Na	100 - 300	mmol/ 24 hr	142.50	164.42	145.69	147.84	416.19	101.40	116.34	149.33	234.65	112.14	120.19	144.26	133.19	180.81	75.75	225.17	81.31	107.28	292.64	208.56	86.46	146 (118-157)	139 (92-202)	0.60	148 (146-164)	127 (106-188)	0.21			
K	25 - 125	mmol/ 24 hr	46.50	66.30	49.42	38.28	49.59	31.20	64.26	35.50	93.02	28.48	54.63	48.58	68.70	54.24	38.19	86.15	36.78	61.98	110.85	71.28	49.78	49 (37-60)	58 (49-71)	0.25	49 (47-55)	54 (38-69)	0.78			
Cl	110 - 250	mmol/ 24 hr	130.50	152.49	149.95	145.20	357.74	85.80	118.56	135.86	232.54	92.56	120.19	128.06	120.57	169.62	82.63	203.63	73.57	120.39	232.05	163.68	65.50	136 (119-151)	124 (92-168)	0.65	150 (145-152)	120 (91-165)	0.13			
Ca	2.50 - 7.50	mmol/ 24 hr	4.01	4.71	6.99	6.85	3.75	2.75	5.40	3.08	6.68	3.54	2.73	5.28	2.96	3.68	4.58	6.52	2.20	2.72	6.53	3.27	8.28	4.18 (3.31-6.04)	4.13 (3.04-6.21)	0.70	4.71 (4.18-6.85)	3.61 (2.91-5.68)	0.15			
Pi	13.0 - 42.0	mmol/ 24 hr	26.13	37.01	23.82	14.47	33.03	9.95	30.57	11.13	38.31	19.19	19.97	14.53	24.20	18.43	18.92	35.99	15.71	27.94	52.34	27.03	48.00	24 (17-34)	26 (19-34)	0.65	26 (24-37)	22 (18-32)	0.72			
Glucose	< 1.0	mmol/ 24 hr	6.71	11.77	5.54	6.53	1.10	0	32.48	0	0.36	0	0.55	0	0.27	0.33	0.19	0.39	0.36	0.41	0.64	0	0	1.104 (0.248-6.62)	0.297 (0.187-0.383)	0.11	6.53 (5.54-6.71)	0.27 (0.16-0.38)	0.00013			
Uric acid	< 5900	µmol/ 24 hr	1605	2466	3096	1746	6165	1576	3597	1412	4444	1760	2750	841	2332	3748	2479	3963	2154	2539	4598	4060	3039	2466 (1676-3346)	2789 (2368-3909)	0.47	2466 (1746-3096)	2644 (2055-3802)	0.90			
Urea	91.0 - 435.0	mmol/ 24 hr	287	369	337	224	583	199	394	155	602	234	337	268	322	361	247	472	255	311	552	399	488	341 (279-454)	329 (253-417)	0.51	341 (279-454)	329 (253-417)	0.90			
Creatinine	6300 - 13400	µmol/ 24hr	7658	10011	12204	8987	20939	7092	16148	5062	17717	8816	9695	9334	10662	12397	6540	18139	8725	11472	18006	15019	21877	9695 (8237-14176)	11934 (9666-17260)	0.35	10011 (8987-12204)	11067 (8793-16540)	1.00			
Protein		g/ 24 hr	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.07 (0.07-0.07)	0.07 (0.07-0.07)	1.00	0.07 (0.07-0.07)	0.07 (0.07-0.07)	1.00			
Mg	2.50 - 8.50	mmol/ 24 hr	4.11	8.00	3.97	2.65	3.58	1.93	6.18	2.24	4.33	3.26	3.23	2.30	3.72	6.93	3.26	3.78	1.42	4.18	6.59	3.64	7.02	2.05 (1.92-3.7)	2.67 (1.65-4.22)	1.00	2.74 (2.02-4.66)	2.35 (1.76-3.75)	0.28			
Albumin	< 30.0	mg/ 24 hr	0	7.96	16.19	11.88	19.48	0	4.43	6.12	0	0	0	22.08	14.02	ND	5.63	0	4.84	0.00	10.35	0	13.10	4.43 (0-9.92)	5.63 (0-13.1)	0.58	11.88 (7.96-16.19)	4.43 (0-8.23)	0.13			
Citrate	1.93 - 6.6	mmol/ 24 hr	1.71	4.36	0.34	3.91	2.74	2.73	4.10	1.71	3.72	2.37	4.10	2.46	3.81	0.38	3.42	3.84	2.30	5.63	9.40	2.40	1.68	2.74 (2.04-4)	2.94 (2.33-3.83)	1.00	2.74 (1.71-3.91)	3.07 (2.35-3.9)	0.78			
Oxalate	<500	µmol/ 24 hr	244.50	176.36	17.04	260.04	248.35	120.90	407.74	178.70	181.80	176.22	195.45	189.89	271.99	34.44	197.82	354.40	142.30	251.51	809.94	356.40	345.84	182 (176-246)	262 (192-352)	0.15	245 (176-248)	197 (178-348)	0.55			
Glycolate	150 - 600	µmol/ 24 hr	280.50	433.60	580.21	419.76	1393.50	317.85	221.60	244.80	471.42	341.76	276.79	385.66	308.44	570.84	212.84	372.02	212.96	356.41	1578.50	316.80	209.60	342 (279-453)	337 (237-382)	0.56	434 (420-580)	317 (239-375)	0.08			
Sulfate		µmol/ 24 hr	15.60	17.86	2.73	16.33	32.13	10.12	33.69	7.23	31.73	15.50	16.64	13.87	16.49	2.28	15.27	27.57	11.71	16.24	26.94	24.26	28.51	116 (13-25)	16 (14-26)	0.86	16 (16-18)	16 (13-27)	0.97			
Taurine	< 180	µmol/ 24 hr	70	190	222	53	4325	38	116	20	791	1287	60	114	204	721	107	1620	5	60	202	3078	3459	116 (56-507)	203 (109-1395)	0.47	190 (70-222)	159 (69-915)	0.90			
Asparagic acid	< 10	µmol/ 24 hr	39	9	99	4	12	4	83	15	10	5	5	5	6	63	33	9	5	36	9	8	11	10.14 (4.86-27.05)	9.19 (6.72-7.79)	0.97	11.75 (8.63-38.82)	9.19 (5.07-9.8)	0.49			
Threonine	< 40	µmol/ 24 hr	116	69	148	133	423	69	116	81	142	142	140	67	115	177	254	239	163	742	349	231	154	133 (99-142)	204 (156-250)	0.043	133 (116-148)	148 (116-233)	0.66			
Serine	< 70	µmol/ 24 hr	272	242	433	318	870	169	364	183	426	397	548	29	382	455	467	552	1555	753	493	375	364 (257-429)	461 (376-537)	0.22	318 (272-433)	412 (337-506)	0.72				
Asparagine	< 35	µmol/ 24 hr	54	104	124	124	376	46	116	41	122	104	80	29	153	164	274	202	81	682	257	169	110	104 (67-123)	167 (121-243)	0.07	124 (104-124)	119 (81-178)	0.97			
Glutamic acid	< 20	µmol/ 24 hr	62	9	6	4	12	4	8	3	10	5	5	6	6	38	3	74	5	6	9	62	11	6.18 (4.58-9.38)	10.1 (6.08-55.66)	0.15	8.63 (6.18-11.75)	7.32 (4.92-17.75)	0.72			
Glutamine	< 80	µmol/ 24 hr	225	259	680	372	1246	346	331	255	629	464	708	276	446	721	634	718	346	1375	1047	523	441	372 (295-654)	579 (442-720)	0.15	372 (295-654)	494 (346-710)	0.55			
Proline	< 10	µmol/ 24 hr	62	ND	6	4	12	4	8	15	10	5	5	5	ND	6	3	9	5	6	9	8	11	7.23 (4.79-11.35)	6.32 (5.09-9.18)	0.72	8.97 (5.74-24.34)	6.32 (4.87-9.19)	0.47			
Glycine	< 200	µmol/ 24 hr	1786	949	1446	1424	2068	1483	513	708	1196	1552	1465	1601	981	1214	1475	1785	907	3827	3433	1508	991	1446 (1073-1518)	1492 (1047-1739)	0.43	1446 (1424-1786)	1470 (989-1564)	0.72			
Alanine	< 70	µmol/ 24 hr	256	242	445	354	705	261	513	87	406	293	399	391	229	341	374	387	194	789	900	369	353	354 (259-425)	372 (344-390)	0.86	354 (256-445)	372 (285-400)	1.00			
Valine	< 15	µmol/ 24 hr	70	9	62	35	94	23	50	20	10	28	60	5	51	51	27	55	41	60	110	46	11	35 (22-61)	48 (30-54)	0.86	62 (35-70)	43 (22-52)	0.31			
Cystine	< 30	µmol/ 24 hr	85	69	87	44	282	31	83	36	61	38	50	76	64	89	27	9	31	36	73	62	11	61 (41-84)	49 (28-71)	0.25	85 (69-87)	44 (31-66)	0.032			
Methionine	< 20	µmol/ 24 hr	4	9	6	4	12	4	8	3	10	5	50	5	6	6	3	9	5	48	9	8	11	6.18 (4.15-9.38)	7.03 (5.4-9.2)	0.56	6.18 (4.42-8.63)	7.03 (4.76-9.44)	0.78			
Isoleucine	< 6	µmol/ 24 hr	39	9	6	4	12	4	8	15	10	5	5	5	6	6	3	9	5	6	9	8	11	8.28 (4.86-10.95)	6.35 (5.31-8.81)	0.65	8.63 (6.18-11.75)	6.35 (4.93-9.19)	0.40			
Leucine	< 15	µmol/ 24 hr	4	9	37	27	71	4	8	15	10	5	5	5	6	6	20	9	5	6	92	8	11	8.63 (4.86-20.91)	7.03 (6.07-10.56)	1.00	26.54 (8.63-37.07)	7.03 (5.07-10.36)	0.21			
Tyrosine	< 25	µmol/ 24 hr	78	69	173	88	306	54	99	25	122	66	90	76	89	114	167	129	5	287	165	62	66	88 (68-111)	101 (69-156)	0.81	88 (78-173)	89 (65-123)	0.40			
Phenylalanine	< 20	µmol/ 24 hr	31	9	74	53	188	31	66	51	10	28	90	76	64	89	47	92	5	120	110	46	11	51 (30-70)	70 (46-91)	0.43	53 (31-74)	57 (30-89)	1.00			
Histidine	< 160	µmol/ 24 hr	411	207	989	637	2538	369	596	336	1055	748	458	562	624	1088	975	1362	570	2069	1542	739	969	596 (390-868)	972 (653-1293)	0.10	637 (411-989)	743 (568-1063)	0.78			
Tryptophane	< 10	µmol/ 24 hr	62	ND	49	4	94	23	50	3	10	5	5	29	38	38	47	55	5	144	55	8	11	17 (5-50)	38 (15-53)	0.35	38 (15-53)	26 (7-47)	0.34			
Ornithine	< 5	µmol/ 24 hr	4	9	6	4	71	4	8	3	10	5	5	5	6	51	3	9	5	36	9	8	11	4.98 (4.15-8.46)	8.44 (5.41-10.56)	0.20	6.18 (4.42-8.63)	7.03 (4.76-9.44)	0.97			
Lysine	< 60	µmol/ 24 hr	140	173	309	115	1340	61	182	127	122	85	130	95	191	417																