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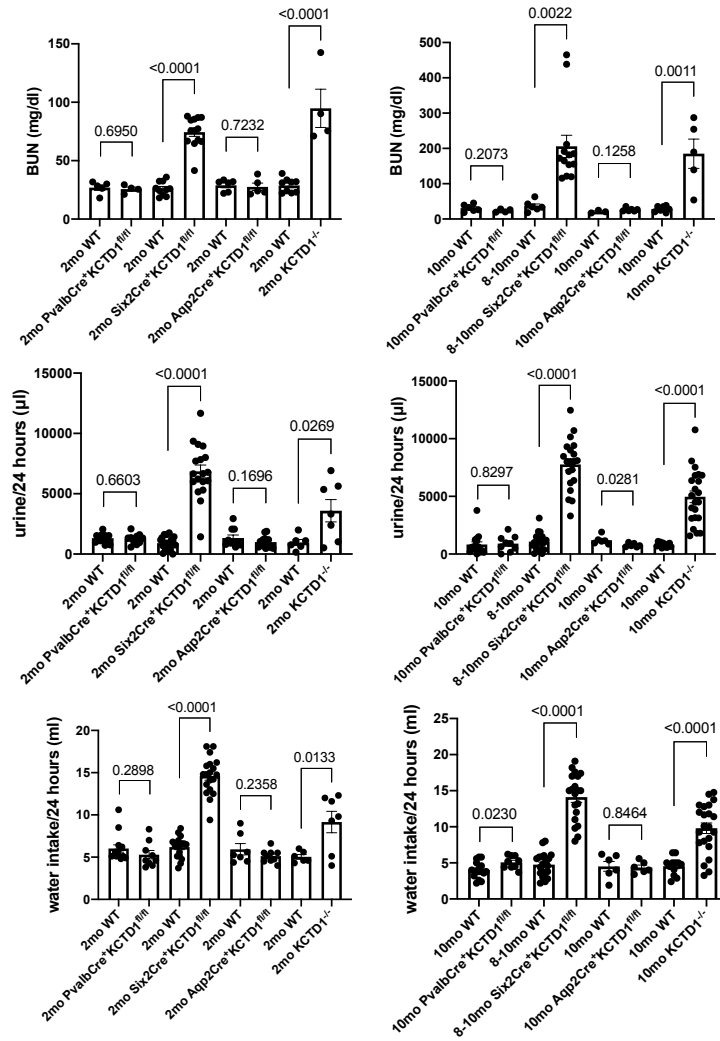
**Supplemental Information**

**Magnesium and Calcium Homeostasis**

**Depend on KCTD1 Function in the Distal Nephron**

**Alexander G. Marneros**

**A**



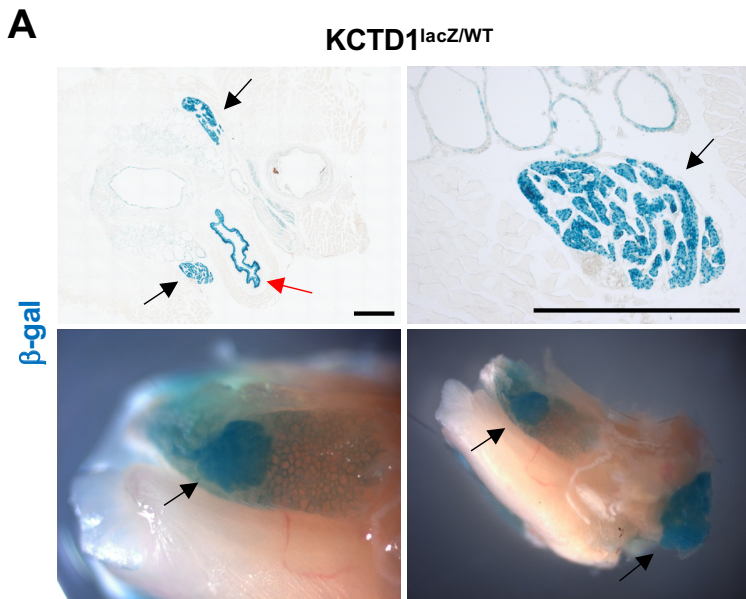
**B**

		Na	K	Cl	Na/K ratio	BUN	Cre	Ca	phosphorous	Mg	albumin	TP
control	2mo (n=5)	150.60	7.70	107.40	19.60	26.94	0.28	11.46	9.88	2.80	2.48	5.08
PvalbCre <sup>+</sup> KCTD1 <sup>fl/fl</sup>	2mo (n=4)	151.50	8.00	108.50	19.25	25.68	0.23	11.40	9.58	2.28	2.45	5.00
<i>ttest control vs KO</i>		0.12687037	0.49325971	0.42469636	0.75408365	0.69502674	0.28740834	0.72943431	0.51613975	<b>0.00039824</b>	0.68452834	0.52988373
control	2mo (n=8)	150.13	7.85	109.13	19.63	26.50	0.26	11.34	9.94	2.79	2.63	5.24
PvalbCre <sup>+</sup> TFAP2B <sup>fl/fl</sup>	2mo (n=4)	148.25	8.05	111.25	18.75	27.20	0.20	10.80	7.90	1.95	3.23	5.90
<i>ttest control vs KO</i>		0.14552826	0.77233899	0.19893743	0.64878761	0.79469171	0.13213259	0.27678437	0.02197912	<b>0.00318728</b>	0.03807475	0.07375455
control	10mo (n=6)	151.00	10.30	114.33	15.00	31.02	0.24	12.12	10.07	3.32	2.65	5.68
PvalbCre <sup>+</sup> KCTD1 <sup>fl/fl</sup>	10mo (n=4)	152.25	8.45	112.25	18.25	23.63	0.23	11.03	7.43	2.48	2.73	5.58
<i>ttest control vs KO</i>		0.41584649	0.0463292	0.18731496	0.02898833	0.20731261	0.24150397	0.07387967	0.04569195	<b>0.00031776</b>	0.48604202	0.39248571
control	10mo (n=6)	151.00	10.30	114.33	15.00	31.02	0.23	12.12	10.07	3.32	2.65	5.68
PvalbCre <sup>+</sup> TFAP2B <sup>fl/fl</sup>	10mo (n=3)	151.00	7.77	111.00	19.67	33.30	0.20	12.57	9.00	2.83	2.93	5.77
<i>ttest control vs KO</i>		1	0.02525945	0.08056513	0.01384075	0.7152906	0.31589066	0.50825974	0.43909094	<b>0.02624803</b>	0.05904942	0.61690303

**Figure S1: Kidney function in PvalbCre+KCTD1<sup>fl/fl</sup> mice.**

- (A) Measurements of BUN serum levels (in mg/dl), 24-hour urine production and 24-hour water intake in 2-month-old and 10-month-old groups of PvalbCre+KCTD1<sup>fl/fl</sup> mice, Six2Cre+KCTD1<sup>fl/fl</sup> mice, Aqp2Cre+KCTD1<sup>fl/fl</sup> mice, KCTD1<sup>-/-</sup> mice and their respective WT controls.
- (B) Serum chemistries in 2-month-old and 10-month-old groups of PvalbCre+KCTD1<sup>fl/fl</sup> mice, PvalbCre+TFAP2B<sup>fl/fl</sup> mice and their control littermates. BUN, creatinine, magnesium, phosphorus and total calcium in mg/dl. Chloride, potassium and sodium in mEq/l. Albumin and total protein in g/dl.

Related to Figure 1.

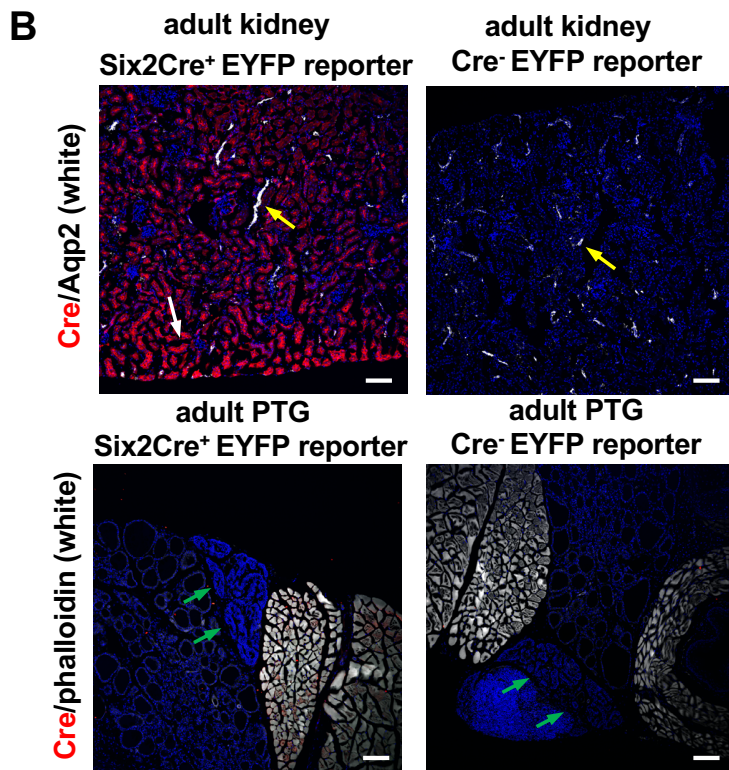


**Figure S2: KCTD1 is expressed in PTGs and Six2Cre<sup>+</sup> mice show Cre activity in the nephron epithelium except the CDs but no activity in PTGs that are targeted by PTHCre<sup>+</sup> mice.**

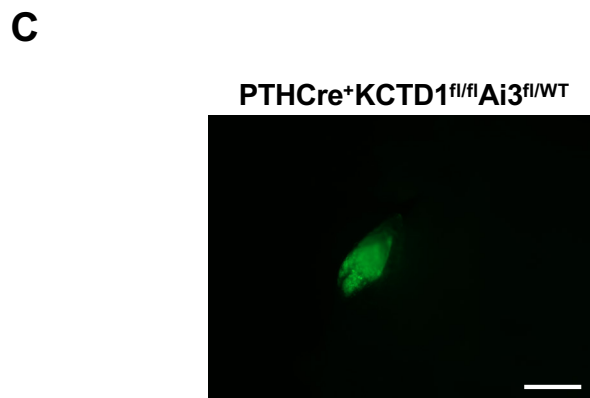
(A) Staining for β-galactosidase in KCTD1<sup>lacZ/WT</sup> mice shows that KCTD1 is strongly expressed in PTGs (black arrows). The epithelium of the esophagus shows KCTD1 expression as well (red arrow). Scale bars, 500μm.

(B) Top: Adult Six2Cre<sup>+</sup>ROSA26Sor<sup>tm3(CAG-EYFP)</sup> (Ai3) reporter mice show strong Cre activity (red, GFP immunolabeling) in the nephron (white arrow) except the CDs (Aqp2, white; yellow arrow). Bottom: No Cre activity is observed in the PTGs (green arrows) of these mice. Scale bars, 100μm.

(C) Adult PTHCre<sup>+</sup>ROSA26Sor<sup>tm3(CAG-EYFP)</sup> (Ai3) reporter mice show strong Cre activity in the PTGs (green). Scale bar, 500μm.



**Related to Figure 3.**



**Figure S2**

Primer Name	Primer Sequence (5' to 3') UP	Primer Sequence (5' to 3') DW
<b>mouse primers</b>		
36b4	TCACTGTGCCAGCTCAGAAC	AA TTTCAA TGGTGCCTCTGG
Trpv6	GTCATGTACTTTGCCAGAGGA	TATAGAAGGCTGAAGCAAATCCCA
Trpv5	GAAACTTCTCAATTGGTGGGTCAG	TTTGCCGGAAGTCACAGTT
Clcnkb	GTGGGTCCTTTTTACAACGC	CTGGAGCAAGTGATCCAAGTC
Pth1rvar2	CAGGCGCAATGTGACAAGC	TTCCCGGTGCCTTCTCTTTC
Kcnj1 (ROMK)	CATCCTTTCTGTCAGTGCCC	GAACAGCACCCTCACTTG
Atp1a1	GGGGTTGGACGAGACAAGTAT	CGGCTCAAATCTGTTCCGTAT
Claudin-19	TCCTCTTGGCAGGTCTCTGT	GTGCAGCAGAGAAAGGAACC
Claudin-16	CAAACGCTTTTGATGGGATTC	TTTGTGGGTCATCAGGTAGG
Slc34a3	AGACAGGCACCAGGTACCAC	CAGCCCTGCAGACATGTTAAT
Slc34a1	TTGTCAGCATGGTCTCCTCC	CAAAAGCCCGCCTGAAGTC
Claudin-14	ACCCTGCTCTGCTTATCC	GCACGGTTGTCCTTGTAG
NKCC2 (Slc12a1)	ATGCCTCGTATGCCAAATCT	CCCACATGTTGTAATCCATA
TRPM6	CCTTGGGGAGTCATTGAGAAC	CAGTCCCATCATCACACAGG
NCX1	TGAGAGGGACCAAGATGATGAGGAA	TGACCCAAGACAAGCAATTGAAGAA
calbindin D28K	ACTCTCAAACCTAGCCGCTGCA	TCAGCGTCGAAATGAAGCC

**Table S1: Primers used for semiquantitative RT-PCR.**

**Related to STAR methods.**