ONLINE TABLES

Supplemental Table 1: Linear Mixed Effects Modeling for 24-Hour Urine or Dietary Measures

	Beta Coefficients					
	Age	Sex	Height	Weight	R^2	P-value[a]
24-Hour Urine Measures						
Calcium, mg	-3.56 ***	-5.50	0.58	0.30	0.254	<0.001
Magnesium, mg	-0.93 ***	-14.70 ***	0.26	0.28 ***	0.228	<0.001
pH	-0.01 *	0.11	0.00	-0.01 ***	0.072	<0.001
OSM, mosm/kg	-4.56 ***	-119.51 ***	-0.94	2.23 ***	0.331	<0.001
Sodium, mEq	0.13	-34.77 ***	-0.15	0.95 ***	0.345	<0.001
Potassium, mEq	0.18 *	-13.73 ***	0.18	0.12 **	0.248	<0.001
Chloride, mEq	0.15	-33.69 ***	-0.18	0.93 ***	0.358	<0.001
Phosphate, mg	-1.69	-226.59 ***	-0.17	3.34 ***	0.392	<0.001
Sulfate, mmol	-0.20 ***	-5.71 ***	-0.02	0.10 ***	0.428	<0.001
Citrate, mg	-5.38 ***	-26.25	4.17 *	1.85 **	0.188	<0.001
Oxalate, mmol	0.0005	-0.0304 **	0.0013 *	0.0012 ***	0.163	<0.001
Uric Acid, mg	-2.28 ***	-106.60 ***	0.59	1.84 ***	0.333	<0.001
Creatinine, mg	-3.51 **	-418.72 ***	3.36	6.04 ***	0.673	<0.001
Net Alkali Absorption, mEq	0.08	-10.90 ***	0.27 *	0.07	0.165	<0.001
Urine Volume, ml	-8.88 **	13.82	4.78	-0.67	0.090	0.004
ULM CaOx, D.G.	0.07	0.62	-0.01	-0.02	0.004	0.04
ULM-SS CaOx, D.G.	0.12 **	0.51	-0.01	-0.03	0.017	<0.001
ln ULM CaP, D.G.	0.0380 ***	0.0338	0.0054	0.0007	0.255	<0.001

ln ULM-SS CaP, D.G.	0.0442 ***	0.0499	0.0053	0.0021	0.241	<0.001
Crystal Growth Inhibitory Activity, %	-0.0024 ***	0.0402 ***	0.0005	-0.0002	0.017	<0.001
Dietary Measures						
Total Protein, g	-0.87 ***	-11.53 **	0.16	0.12	0.145	<0.001
Animal Protein, g	-0.68 ***	-10.70 ***	-0.01	0.14 *	0.146	<0.001
Calcium, mg	-7.06 **	4.94	5.57	-2.21	0.118	0.001
Oxalate, mg	-1.93 **	4.79	1.25	-0.63 *	0.059	0.002
Fructose, g	-0.20 ***	0.46	0.05	-0.01	0.020	0.002
Sucrose, g	-0.21 *	1.90	0.23	-0.15 **	0.038	0.008

* $0.01 < \text{p-value} < 0.05$, ** $0.001 < \text{p-value} < 0.01$, *** $\text{p-value} < 0.001$
Statistical significance of the beta coefficients were assessed using a Wald Test.
[a]P-value for full model (including age, sex, height, and weight as predictors).
R^2 calculated based on likelihood ratio.

Supplemental Table 2: Urinary and dietary characteristics in stone formers and non-stone formers (N=673).

	Non- Stone Formers N=585 (86.9%)		Stone Formers N=88 (13.1%)		
	N	**Mean (SD)**	**N**	**Mean (SD)**	**P-value[a]**
Age, years	585	67 (9)	88	67 (9)	0.90
Height, cm	585	168 (10)	88	169 (9)	0.17
Weight, kg	585	87 (19)	88	92 (19)	0.011
24-Hour Urine Measures					
Calcium, mg	582	150 (89)	88	169 (91)	0.065
Magnesium, mg	585	108 (41)	88	104 (41)	0.40
pH	585	6.2 (.5)	88	6.1 (.5)	0.54
OSM, mosm/kg	585	515 (192)	88	534 (196)	0.39
Sodium, mEq	584	135 (57)	88	141 (55)	0.31
Potassium, mEq	585	58 (22)	88	57 (24)	0.87
Chloride, mEq	584	125 (53)	88	132 (54)	0.24
Phosphate, mg	584	650 (281)	88	660 (281)	0.76
Sulfate, mmol	585	19 (7)	88	19 (8)	0.86
Citrate, mg	583	551 (310)	88	537 (333)	0.69
Oxalate, mmol	581	0.30 (.1)	87	0.31 (.11)	0.26
Uric Acid, mg	583	425 (161)	88	413 (167)	0.52
Creatinine, mg	585	1084 (411)	88	1152 (386)	0.14
Urine Volume, ml	585	1948 (696)	88	1905 (672)	0.59
ULM CaOx, D.G.	557	24.0 (8.4)	84	24.9 (8.3)	0.32
ULM-SS CaOx, D.G.	558	21.1 (7.9)	84	21.6 (7.8)	0.58
ULM CaP, D.G.	559	4.8 (5.2)	84	6.1 (6.0)	0.08
ULM-SS CaP, D.G.	540	4.3 (5.9)	82	5.4 (6.1)	0.13
Dietary Measures					
Total Protein, g	494	81 (34)	75	77 (34)	0.37
Animal Protein, g	494	53 (25)	75	51 (28)	0.56
Calcium, mg	494	1084 (550)	76	954 (600)	0.06
Oxalate, mg	485	219 (129)	76	194 (115)	0.92
Fructose, g	491	20 (12)	76	21 (12)	0.94
Sucrose, g	490	38 (22)	76	38 (24)	0.12

Cm: centimeter; D.G: delta Gibbs free energy units; g: gram; kg: kilogram; mEq: milliequivalent; mg: milligram; ml: milliliter; mm: millimole; mOsm: milliosm

[a]P-value from a T-test of means between stone formers and non stone formers.

Supplemental Table 3: Correlation Matrix of 24-hour Urine Measures

	pH	Calcium	Magnesium	Citrate	Oxalate	Uric Acid	Sulfate	Sodium	Potassium	Phos	Osmolality
pH	1.00										
Calcium	0.10**	1.00									
Magnesium	0.08*	0.48***	1.00								
Citrate	0.09**	0.48***	0.34***	1.00							
Oxalate	0.04	0.03	0.40***	0.09**	1.00						
Uric Acid	0.18***	0.34***	0.41***	0.44***	0.42***	1.00					
Sulfate	-0.16***	0.40***	0.46***	0.30***	0.37***	0.52***	1.00				
Sodium	0.04	0.21***	0.35***	0.31***	0.40***	0.63***	0.49***	1.00			
Potassium	0.19***	0.27***	0.44***	0.46***	0.41***	0.60***	0.51***	0.52***	1.00		
Phosphorus	-0.08*	0.31***	0.46***	0.40***	0.38***	0.65***	0.59***	0.66***	0.65***	1.00	
Osmolality	-0.38***	0.17***	0.13***	0.20***	0.02	0.17***	0.38***	0.23***	0.11**	0.26***	1.00
Urine Volume	0.34***	0.20***	0.31***	0.09*	0.39***	0.25***	0.24***	0.23***	0.28***	0.16***	-0.59***

* $0.01 < \text{p-value} < 0.05$, ** $0.001 < \text{p-value} < 0.01$, *** $\text{p-value} < 0.001$

Supplemental Table 4: Heritability table with Benjamini-Hochberg adjusted p-values

Trait	h^2 unadjusted	h^2 unadjusted p-value	h^2 unadjusted p-value (controlled for multiple testing with FDR)	Proportion of variance of measure explained by covariates	h^2 adjusted for age, gender, height, weight	h^2 adjusted for age, gender, height, weight p-value	h^2 adjusted for age, gender, height, weight p-value (controlled for multiple testing with FDR)
24-Hour Urine Measures							
Calcium, mg	0.41***	<0.001	<0.001	15.9%	0.25**	0.003	0.015
Magnesium, mg	0.34***	<0.001	<0.001	14.3%	0.25***	<0.001	0.0031
pH	0.35***	<0.001	<0.001	8.5%	0.27**	0.001	0.007
OSM, mosm/kg	0.26**	0.002	0.028	21.1%	0.20*	0.019	n/s
Sodium, mEq	0	0.5	n/s	24.0%	0.07	0.23	n/s
Potassium, mEq	0	0.5	n/s	17.6%	0.005	0.47	n/s
Chloride, mEq	0	0.5	n/s	25.1%	0.007	0.47	n/s
Phosphate, mg	0	0.5	n/s	26.1%	0.08	0.18	n/s
Sulfate, mmol	0.15*	0.031	n/s	32.1%	0.04	0.34	n/s
Citrate, mg	0.39***	<0.001	<0.001	8.3%	0.36***	<0.001	<0.001
Oxalate, mmol	0.11	0.097	n/s	17.3%	0.12	0.065	n/s
Uric Acid, mg	0.04	0.33	n/s	21.9%	0.08	0.15	n/s
Creatinine, mg	0	0.5	n/s	50.8%	0	0.5	n/s
Net Alkali Absorption, mEq	0	0.5	n/s	11.7%	0	0.5	n/s
Urine Volume, ml	0.30**	0.002	0.028	2.0%	0.24*	0.011	0.044
ULM CaOx, D.G.	0.18*	0.037	n/s	1.4%	0.14	0.086	n/s
ULM-SS CaOx, D.G.	0.22*	0.019	n/s	3.2%	0.14	0.10	n/s
ln ULM CaP, D.G.	0.68***	<0.001	<0.001	29.2%	0.16	0.075	n/s
ln ULM-SS CaP, D.G.	0.63***	<0.001	<0.001	28.4%	0.12	0.15	n/s
Crystal Growth Inhibitory Activity, %	0.29*	0.023	n/s	11.2%	0.18	0.11	n/s

FDR = false discovery rate-controlled multiple testing, n/s = not significant at $p<0.05$

Supplemental Table 5: Comparison between heritabilities in all GENOA participants versus non-stone formers (for traits with heritability p-value < 0.05 in the full sample)

	All GENOA Participants (N=811)			Non-stone Formers (N=585)		
Trait	**h^2 adjusted for age, gender, height, weight**	**h^2 adjusted for age, gender, height, weight p-value**	**Proportion of variance of measure explained by covariates**	**h^2 adjusted for age, gender, height, weight**	**h^2 adjusted for age, gender, height, weight p-value**	**Proportion of variance of measure explained by covariates**
24-Hour Urine Measures						
Calcium, mg	0.25**	0.003	15.9%	0.24*	0.015	17.5%
Magnesium, mg	0.25***	<0.001	14.3%	0.23*	0.011	15.4%
pH	0.27**	0.001	8.5%	0.20*	0.043	11.4%
OSM, mosm/kg	0.20*	0.019	21.1%	0.23*	0.035	24.0%
Citrate, mg	0.36***	<0.001	8.3%	0.43***	<0.001	9.3%
Urine Volume, ml	0.24*	0.011	2.0%	0.30*	0.010	1.5%

Supplemental Table 6: Comparison between heritabilities adjusted for age, sex, height, and weight to those with additional adjustment for eGFR (for traits with heritability p-value < 0.05 in the full sample)

	All GENOA Participants (N=811)			GENOA Participants with eGFR measured (N=609)		
Trait	h^2 **adjusted for age, gender, height, weight**	h^2 **adjusted for age, gender, height, weight p-value**	**Proportion of variance of measure explained by covariates**	h^2 **adjusted for age, gender, height, weight, and eGFR**	h^2 **adjusted for age, gender, height, weight, and eGFR p-value**	**Proportion of variance of measure explained by covariates**
24-Hour Urine Measures						
Calcium, mg	0.25**	0.003	15.9%	0.28**	0.008	22.3%
Magnesium, mg	0.25***	<0.001	14.3%	0.12	0.097	16.1%
pH	0.27**	0.001	8.5%	0.27**	0.009	13.3%
OSM, mosm/kg	0.20*	0.019	21.1%	0.23*	0.020	21.8%
Citrate, mg	0.36***	<0.001	8.3%	0.50***	<0.001	16.5%
Urine Volume, ml	0.24*	0.011	2.0%	0.29**	0.008	2.2%