Supporting Information for

A Metallomic Approach to Assess Associations of Serum Metal Levels With Gallstones and Gallbladder Cancer

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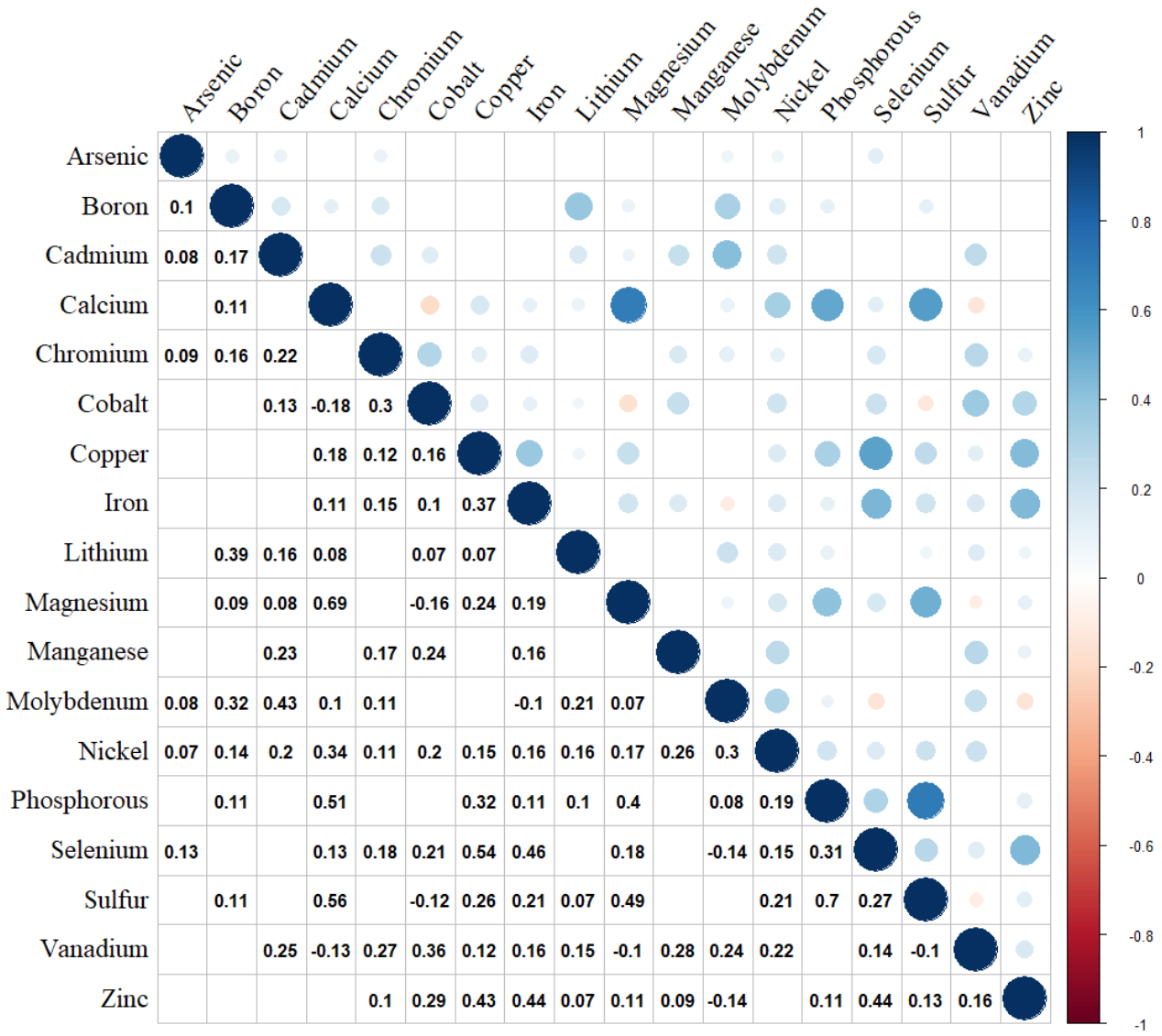
Supporting TABLE S1. Association of 18 Metals With Gallbladder Cancer and Gallstones

Metals	*P* value for GBC	Bonferroni corrected *P* value for GBC	*P* value for gallstones	Bonferroni corrected *P* value for gallstones
Arsenic	<0.0001	**<0.0001**	<0.0001	**<0.0001**
Boron	<0.0001	**<0.0001**	<0.0001	**<0.0001**
Cadmium	<0.0001	**<0.0001**	0.1052	1.0000
Calcium	0.0899	1.0000	0.0003	**0.0055**
Chromium	0.0002	**0.0039**	0.2133	1.0000
Cobalt	0.3754	1.0000	0.4433	1.0000
Copper	<0.0001	**<0.0001**	0.1294	1.0000
Iron	<0.0001	**<0.0001**	0.0028	0.0504
Lithium	0.0022	**0.0391**	<0.0001	**<0.0001**
Magnesium	0.0001	**0.0021**	0.9341	1.0000
Manganese	0.0030	0.0536	0.1535	1.0000
Molybdenum	<0.0001	**0.0001**	0.0002	**0.0028**
Nickel	0.3980	1.0000	0.0124	0.2225
Phosphorous	0.0249	0.4490	<0.0001	**0.0004**
Selenium	<0.0001	**<0.0001**	0.3790	1.0000
Sulfur	<0.0001	**<0.0001**	0.0180	0.3248
Vanadium	<0.0001	**<0.0001**	0.4040	1.0000
Zinc	0.8736	1.0000	0.1944	1.0000

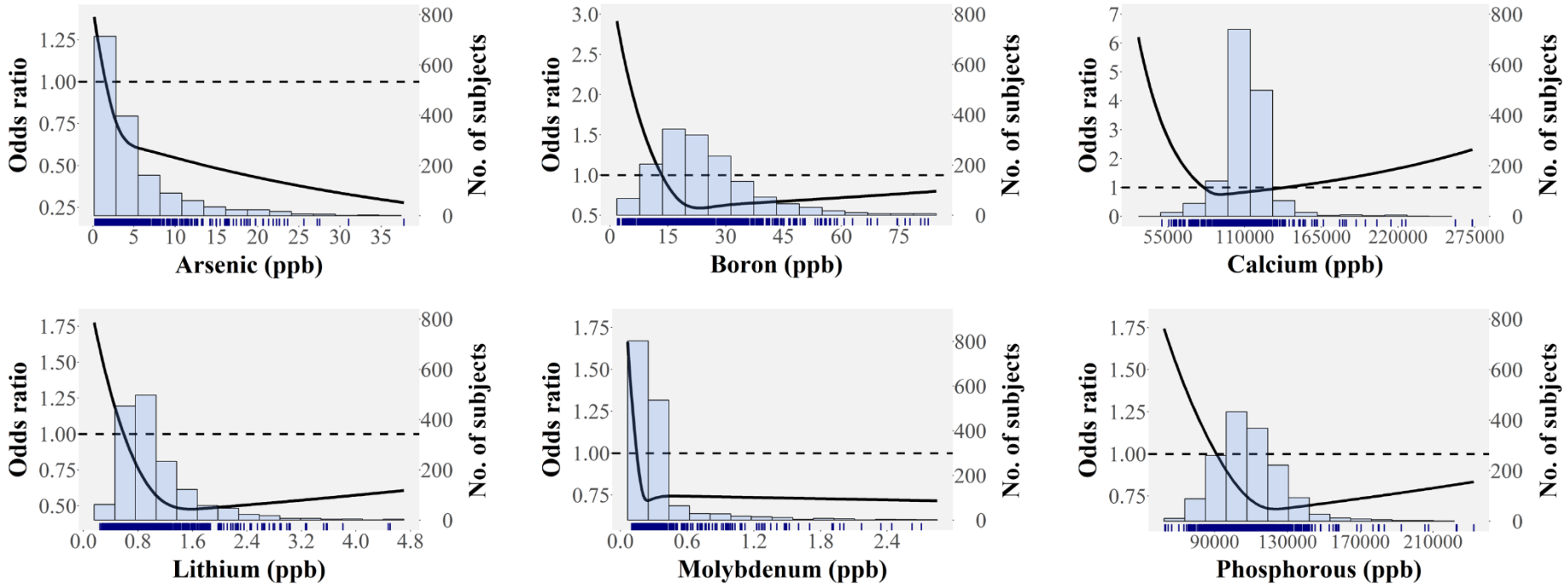
P values statistically significant after Bonferroni correction are indicated in bold.
Abbreviation: GBC, gallbladder cancer.

Supporting FIG. S1. Correlations of metals in population-based controls (N = 851).
Supporting FIG. S2. Odds ratios of gallstones by metal levels. The bar histograms represent the frequency distribution of each metal in the study sample, including gallstone patients and population-based controls. The tick marks at the bottom of the histogram in each figure represent the metal levels of gallstone patients.

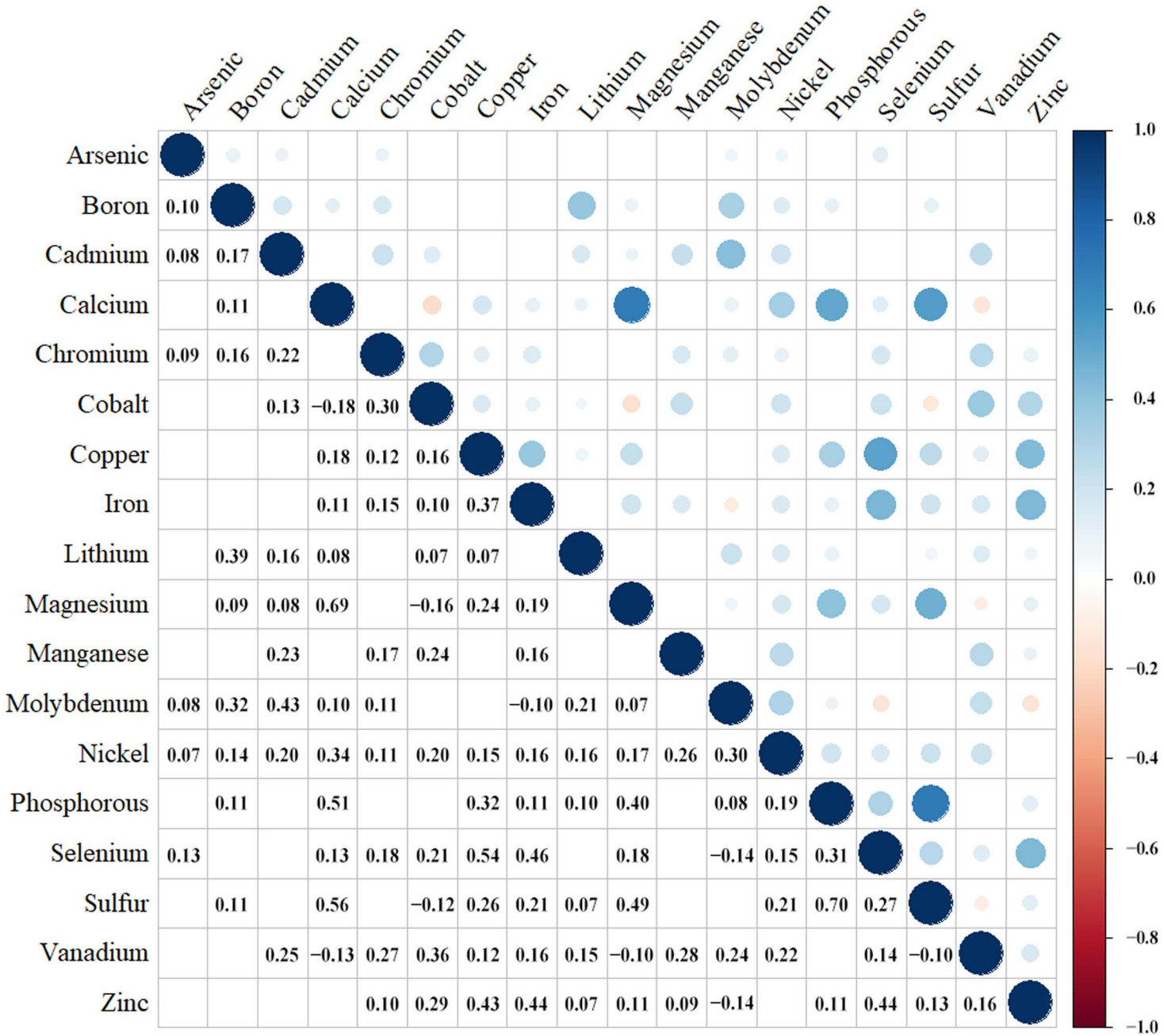


All of the correlations were significant ($P < 0.05$).

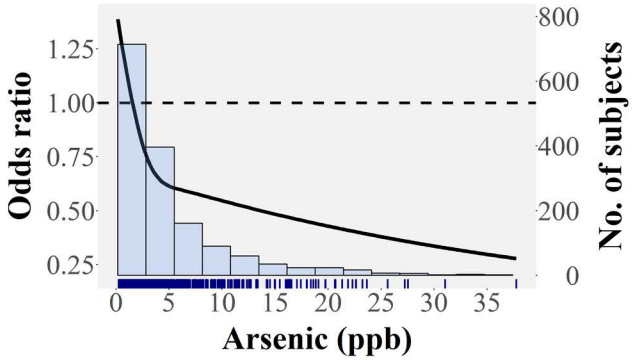
Supporting FIG. S1

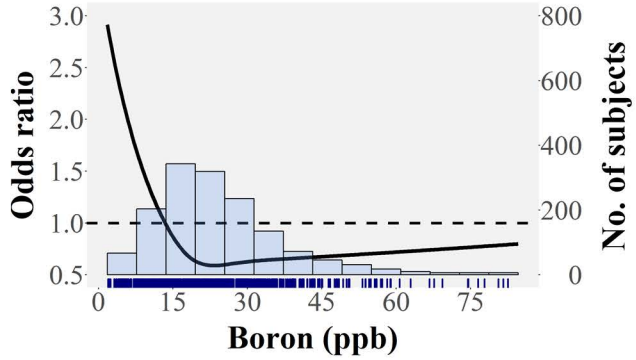


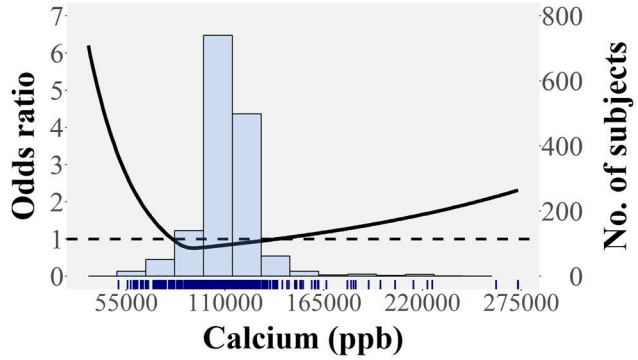
Supporting FIG. S2

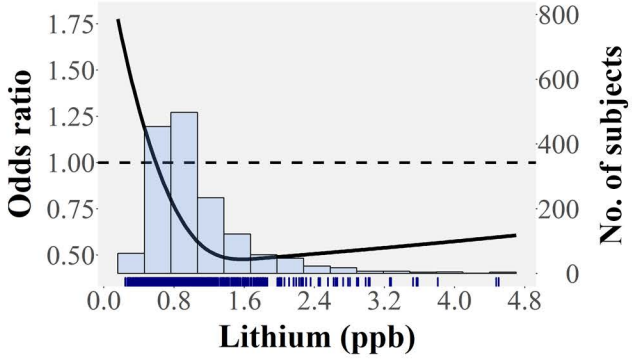


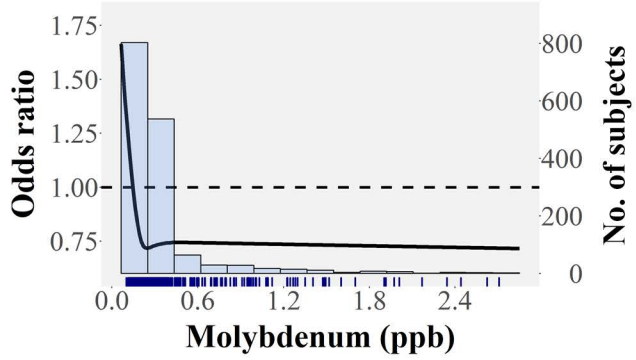
	Arsenic	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lithium	Magnesium	Manganese	Molybdenum	Nickel	Phosphorous	Selenium	Sulfur	Vanadium	Zinc
Arsenic																		
Boron	0.10																	
Cadmium	0.08	0.17																
Calcium		0.11																
Chromium	0.09	0.16	0.22															
Cobalt			0.13	−0.18	0.30													
Copper				0.18	0.12	0.16												
Iron				0.11	0.15	0.10	0.37											
Lithium		0.39	0.16	0.08		0.07	0.07											
Magnesium		0.09	0.08	0.69		−0.16	0.24	0.19										
Manganese			0.23		0.17	0.24		0.16										
Molybdenum	0.08	0.32	0.43	0.10	0.11			−0.10	0.21	0.07								
Nickel	0.07	0.14	0.20	0.34	0.11	0.20	0.15	0.16	0.16	0.17	0.26	0.30						
Phosphorous		0.11		0.51			0.32	0.11	0.10	0.40		0.08	0.19					
Selenium	0.13			0.13	0.18	0.21	0.54	0.46		0.18		−0.14	0.15	0.31				
Sulfur		0.11		0.56		−0.12	0.26	0.21	0.07	0.49			0.21	0.70	0.27			
Vanadium			0.25	−0.13	0.27	0.36	0.12	0.16	0.15	−0.10	0.28	0.24	0.22		0.14	−0.10		
Zinc					0.10	0.29	0.43	0.44	0.07	0.11	0.09	−0.14		0.11	0.44	0.13	0.16	

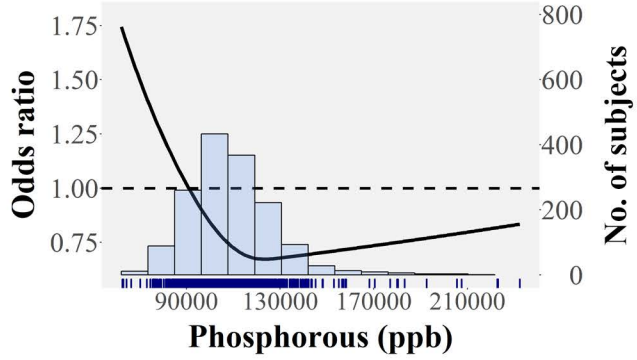

Odds ratio
No. of subjects
Arsenic (ppb)


Odds ratio
No. of subjects
Boron (ppb)


Odds ratio
No. of subjects
Calcium (ppb)


Odds ratio
No. of subjects
Lithium (ppb)


Odds ratio
No. of subjects
Molybdenum (ppb)


Odds ratio
No. of subjects
Phosphorous (ppb)