

## **SIGNIFICANCE STATEMENT**

The kidney is a central organ for metabolite handling. Genetic studies of metabolite concentrations in blood and urine from patients with CKD may reveal aspects of metabolite handling. The authors carried out genome-wide association studies of 139 serum and 41 urine metabolites and their pairwise ratios among 1168 patients with CKD. Of particular interest was an association between genetic variants in *SLC7A9* and several urinary lysine-to-neutral amino acid ratios. The associations match the biologic function of *SLC7A9* as a renal exchanger of cationic against neutral amino acids, and provide a direct human readout of its substrates *in vivo*. The study highlights the potential of linking genomics to metabolomics to generate insights into human renal physiology.