ORIGiNAL RESEARCH ARTiCLES

Antibiotics and Stones
Perturbations in the intestinal and urinary microbiome have been associated with nephrolithiasis, but it is not known whether antibiotics are a risk factor for this condition. In a population-based, case-control study using health records from 13 million adults and children in general practices in Great Britain, Tasian et al. examined the association between 12 oral antibiotic classes and nephrolithiasis. Oral intake of cephalosporins, fluoroquinolones, sulfas, nitrofurantoin/methenamine, or broad-spectrum penicillins was associated with nephrolithiasis among children and adults. The odds of developing nephrolithiasis increased in antibiotic users, were highest in the first 3–6 months after antibiotic exposure, and decreased with age. Oral antibiotics may be a risk factor for nephrolithiasis and may contribute to the rising incidence of kidney stones, particularly among children. See Tasian et al., pages 1731–1740.

Diet and Hemodialysis
Several large clinical trials have demonstrated that healthy diets, including a Mediterranean diet or the Dietary Approaches to Stop Hypertension (DASH), can reduce the risk of cardiovascular disease. It is of interest to know whether these interventions reduce the cardiovascular disease burden of patients with ESRD. Saglimbene et al. used food frequency questionnaires and Cox regression analyses to investigate the association between DASH and Mediterranean diets and cardiovascular and all-cause mortality over 3 years in 9757 adult hemodialysis patients. Neither diet was associated with reduced cardiovascular or all-cause mortality in this patient population. These findings suggest that dietary patterns that are protective in the general population do not predict better cardiovascular outcomes in hemodialysis patients. See Saglimbene et al., pages 1741–1751.

NPHP1 Gene Deletion Causes Adult-Onset ESRD
Homzygous full deletions of the nephrocystin-1-encoding gene, NPHP1, are known to cause nephronophthisis (NPH), a Mendelian kidney disease of childhood, but this condition was not known to present in adulthood. This study undertook to determine the prevalence of NPHP1 gene deletions and NPH in patients with adult-onset ESRD. Using single-nucleotide polymorphism genotyping, Snoek et al. determined the prevalence of NPH in five cohorts of 5606 adult renal transplant recipients. Overall, 0.5% of patients with adult-onset ESRD were found to have homozygous NPHP1 deletions, among which 12% were clinically diagnosed with NPH. Findings have clinical implications for counseling kidney donors, and suggest possible value of wider application of genetic testing in adult-onset ESRD. See Snoek et al., pages 1772–1779.

A NEW PERSPECTIVE SERIES

Translational Methods in Nephrology
In this issue of JASN, the Editors are introducing a new series: Translational Methods in Nephrology. We plan a series of articles designed to give our readers short readable introductions to important novel methods. These articles will focus on a range of methods – lab methods, analytic tools, methods of crunching data – approaches that are being used in the original research articles that we publish. Original research reports are the centerpiece of JASN, and we know our readers are a critical and thoughtful audience of the primary, research literature. But we also know that reading research articles is sometimes tough going, and that understanding methods can be a stumbling block. We want to make it easier.

The two articles included in this issue focus on ‘omic’ methods: proteomics and metabolomics. We asked the authors of these Perspective essays to provide a brief description of each technique and some cautions about its limitations. Modern ‘omic’ methods share powerful advantages. They are generally untargeted, yielding information about hundreds or thousands of molecules, not just the investigator’s favorite, and their sensitivity allows analyses not previously possible, ‘a few thousand proteins from a few thousand cells’. Nevertheless, this power brings special challenges, statistical and experimental, and critical validation is an important component of the work we publish. We hope these short essays help engage our readers in thinking with us about the role of ‘omic’ methods in the translational pipeline in nephrology.

Protein Mass Spectrometry for Biomarker Identification
Protein mass spectrometry has become a powerful tool for identifying biomarkers of kidney disease. In this issue, Klein et al. provide an introduction to mass spectrometry-based studies designed to empower readers to evaluate the validity of conclusions from studies that use this technology. The authors explain the methodology behind “bottom-up” mass spectrometry and provide critical advice for using this technology to identify disease biomarkers. This article should enable readers to more confidently read and understand results mass spectrometry analyses. See Klein et al., pages 1585–1587.

Metabolomics Research in CKD
Metabolomics, the systematic analysis of the small molecules present in biologic specimens, is a useful research tool being applied to a number of clinical conditions. Disturbed kidney function changes the value of many metabolites. Here, Grams et al. review the application of metabolomics to CKD research, and and highlight notable findings from metabolomic studies. The authors caution that thoughtful study design, careful consideration of potential confounders, and rigorous quality control are necessary for metabolomics studies to produce meaningful findings. See Grams et al., pages 1588–1590.