



## A New *CJASN* Series: Renal Physiology for the Clinician

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### Introduction

With this issue, *CJASN* begins a new series of review articles designed to reconnect clinical nephrologists and trainees with the fundamentals of renal physiology and pathophysiology. For many of us, our initial interest in nephrology was the result of fascination with clinical fluid and electrolyte disturbances and fascination with the intricate underlying pathophysiologic mechanisms. However, in modern nephrology practice and training, several factors reduce the familiarity of practitioners and fellows with the fundamentals of renal physiology that initially piqued their interest. Increasingly, nephrology consultation in hospitals focuses on the management of AKI or the inpatient management of patients with CKD and ESRD, with fewer consults for electrolyte and acid–base disturbances. Moreover, the intensity of inpatient practice and outpatient care of CKD and ESRD patients often makes it difficult to focus on physiologic mechanisms, even when nephrologists are called on to help manage electrolyte and acid–base disorders. Finally, modern research training of renal fellows does not lend itself to the development of an in-depth understanding of renal physiology. In earlier eras, renal fellows were likely to perform research involving isolated perfused tubules, micropuncture, or other model systems, which emphasized renal physiology. In the current era, there is a greater emphasis on clinically oriented research and a decreased emphasis on basic physiology. Those nephrologists who embark on basic research often focus intently on detailed molecular pathways or genetic studies, which do not emphasize the systems physiology of renal homeostasis (1).

The renal community has made several efforts to reconnect clinicians and trainees with physiology. These efforts included the “Milestones in Nephrology” series, which ran from 1997 to 2001 in the *Journal of the American Society of Nephrology*, didactic and scientific sessions at every one of our national and international meetings, and for renal fellows, the National Course for Renal Fellows: The Origins of Renal

Physiology, which is held annually at the Mount Desert Island Biologic Laboratories, near Acadia National Park in Maine (1).

With this series, we seek to answer the question posed originally by Claude Bernard in the mid 1800s (2): “How does the kidney maintain the constancy of the internal milieu?” How does the kidney maintain constant serum osmolality, potassium, pH, calcium, and overall volume in the face of constant environmental challenges? We have invited a truly distinguished group of renal physiologists to address this overall question, starting with review articles on the control of glomerular filtration and segment by segment tubular function, and ending with articles describing the integrative function of the kidney in achieving homeostasis. The reviews will be brief but comprehensive, and, therefore, they will be accessible to practicing nephrologists, clinician educators, and trainees, but of sufficient heft to provide a focused review for renal physiologists. To enhance clarity, we will try to use a single visual vocabulary for diagrams of tubules and glomerular cells to make sure that the illustrations are consistent across the different review articles in the series. We hope that these reviews will be helpful to practitioners and trainees and useful as they teach physiology to the next generation of residents and medical students.

### Disclosures

None.

### References

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2. Bernard C: *Lecons sur les phenomenes de la vie communs aux animaux et aux vegetaux*, Paris, J-B Bailliere, 1878

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