

CONTENTS

Foreword	v
Preface	vii

ION CHANNEL FLUXES

Ionic energetics in narrow channels	1
<i>Peter C. Jordan</i>	
The physical basis of ion channel kinetics: the importance of dynamics	27
<i>Larry S. Liebovitch* and Piotr Krekora</i>	
The use of streaming potential measurements to characterize biological ion channels	53
<i>David G. Levitt</i>	

COTRANSPORTER FLUXES

A kinetic model for secondary active transport	65
<i>Donald D.F. Loo,* Sepehr Eskandari, Bruce A. Hirayama, and Ernest M. Wright</i>	
Asymmetry of the AE1 anion exchange system: implications for modeling the physiological rates of chloride-bicarbonate exchange	85
<i>Philip A. Knauf</i>	
Epithelial ion transport: perspectives on a working mechanism of the sodium pump	101
<i>Bruce A. Benjamin* and Edward A. Johnson</i>	

EPITHELIAL TRANSPORT

Assessing homeostatic properties of epithelial cell models: application to kidney proximal tubule	119
<i>Alan M. Weinstein</i>	

FIBER MATRIX THEORY / CAPILLARY MEMBRANE TRANSPORT

Limitations in the application of fiber-matrix models to glomerular basement membrane	141
<i>Glen R. Bolton and William M. Deen*</i>	

Transport of macromolecules across the peritoneum	157
<i>Michael F. Flessner</i>	

THE URINE CONCENTRATING MECHANISM

Urinary concentrating mechanism	177
<i>Rex L. Jamison</i>	

Urine concentrating mechanism: measured permeability values in medullary nephron segments and urea transport processes	193
<i>Jeff M. Sands</i>	

Transport processes in the microcirculation of the renal medulla	211
<i>Thomas L. Pallone* and Aurélie Edwards</i>	

Mathematical models of the mammalian urine concentrating mechanism	233
<i>Harold E. Layton</i>	

Lactate accumulation in kidney inner medulla: a vasa recta model	273
<i>S. Randall Thomas</i>	

RENAL HEMODYNAMICS AND TUBULOGLOMERULAR FEEDBACK

Kidney-specific responses of myogenic autoregulation to inhibition of nitric oxide synthase	293
<i>William A. Cupples,* David O. Ajikobi, and Xuemei Wang</i>	

TGF gain and effector mechanism: technical and theoretical considerations	311
<i>Scott C. Thomson</i>	

Analysis of generative and dissipative flow-dependent mechanisms in tubuloglomerular feedback	331
<i>Roland C. Blantz</i>	

A reduced model for nephron flow dynamics mediated by tubuloglomerular feedback	345
<i>E. Bruce Pitman,* Roman M. Zaritski, Leon C. Moore,* and Harold E. Layton</i>	
Dynamic model of nephron-nephron interaction	365
<i>M.D. Andersen, N. Carlsson, E. Mosekilde, and N.-H. Holstein-Rathlou*</i>	
List of workshop participants	393

* In the case of multiple authors, an asterisk identifies a workshop speaker.