

Contents I

Volume I

Normal Structure and Function

Transport Processes and Epithelia

Determinants of Growth, Form, and Function in Epithelia	
<i>Chairpersons:</i> Joseph S. Handler and Marcelino M. Cereiido; <i>Discussants:</i> Maurice Burg, Mary Taub, Michael F. Horster, and John D. Valentich	3
Basolateral Membrane Properties of Sodium-absorbing Epithelia	
Stanley G. Schultz	7
Sodium-Glucose Cotransport Mechanisms	
R. James Turner	21
Cell Volume Regulation in Epithelia	
<i>Chairpersons:</i> Jared J. Grantham and Kenneth R. Spring; <i>Discussants:</i> Michael A. Linshaw, Guillermo Whitembury, Paola Carpi-Medina, Ernesto Gonzalez, Henry Linares, William B. Guggino, Kevin L. Kirk, James A. Schafer, Donald R. DiBona, and Peter M. Andrews	34
Role of Cytosolic Calcium in Vasopressin-sensitive Epithelia	
Ann Taylor, Mirilee Pearl, Barbara Barber, and Beth Crutch. . . .	39
Role of Cytosolic Calcium in Renal Tubular Transport	
Erich E. Windhager and Gustavo Frindt.	51
Sodium Phosphate Cotransport: Studies with Vesicles and LLC-PK ₁ Cells	
Heini Murer, Martin Amstutz, Jürg Biber, Piotr Gmaj, and Kerstin Malmström	57

Two tables of contents have been provided. Contents I organizes the papers in a manner that provides the best sequential flow of content, irrespective of the order in which they were presented at the Congress or the type of presentation: State-of-the-Art lecture, Symposium manuscript, or Workshop summary. Contents II (see p. xxvii) is organized by the type of presentation.

Regulation of the Na^+/H^+ Antiporter in Cells of the Proximal Tubule David G. Warnock and Harlan E. Ives	70
--	----

Renal Nerves

Functions of the Renal Nerves <i>Chairpersons:</i> Gerald F. DiBona and Romulo E. Colindres; <i>Discussants:</i> Luciano Barajas, Roger J. Summers, Nicholas G. Moss, Ulla C. Kopp, and Richard E. Katholi	79
---	----

Renal Circulation

Organization of the Medullary Circulation: Functional Implications Lise Bankir, Nadine Bouby, and Marie-Marcelle Trinh-Trang-Tan . . .	84
Pathophysiology of the Medullary Circulation June Mason	107
Intrarenal Control of Medullary Blood Flow and the Urinary Concentrating Mechanism Leon C. Moore	120

Glomerular Filtration

Intrarenal Control of Glomerular Filtration: Cellular Mechanisms of Tubuloglomerular Feedback P. Darwin Bell and L. Gabriel Navar.	130
Regulatory Role of the Tubuloglomerular Feedback Mechanism Josephine P. Briggs and Jürgen Schnermann	143
Influence of Renal Nerves on the Glomerular Microcirculation Valentina Kon and Iekuni Ichikawa	154

Structure and Transport Along the Nephron

Hydrogen Ion Transport Along the Nephron Floyd C. Rector, Jr.	161
Proximal Tubule Transport <i>Chairperson:</i> Harry R. Jacobson; <i>Co-Chairperson:</i> Jean Cardinal; <i>Discussants:</i> Christine A. Berry, Bruno Corman, Dalon W. Barfuss, Jacques Lapointe, Elsa Bello-Reuss, Sei Sasaki, Keith A. Hruska, and Julian Seiffer	178
Transport Properties of the Pars Recta James A. Schafer and Jack Work	186
Function of the Thin Limb of Henle's Loop Masashi Imai, Matuhiko Hayashi, Masasuke Araki, and Kaoru Tabei. .	196
Regulation of Sodium Chloride Transport by the Loop of Henle John B. Stokes III	208
Sodium Chloride Reabsorption in the Thick Ascending Limb of the Loop of Henle Rainer Greger, Monika Wittner, Eberhard Schlatter, Brigitte Gebler, Claudia Weidtke, and Antonio Di Stefano	224
Structural Heterogeneity of the Distal Nephron <i>Chairpersons:</i> C. Craig Tisher and Brigitte Kaissling; <i>Discussants:</i> Kirsten M. Madsen, Lise Bankir, Bruce Stanton, Dennis Brown, and Michel Bergeron	243

Control of Acid and Electrolyte Excretion

Acidification Mechanisms

- Chairpersons:* Thomas D. DuBose, Jr. and Michel Paillard; *Discussants:*
Eberhard Frömter, Robert J. Alpern, David W. Good, and
Dennis K. Stone 251

Atrial Natriuretic Factor

- Chairpersons:* Adolfo J. de Bold and Harald Sonnenberg; *Discussants:*
Uwe Ackermann, Edward H. Blaine, Josephine P. Briggs,
Barbara R. Cole, Ralph Keeler, Sidney Solomon, Frank Spinelli,
Nick C. Trippodo, and Thomas Maack 257

Regulation of Potassium Excretion

- Chairpersons:* Gerhard Giebisch and Lawrence Rabinowitz; *Discussants:*
Fred S. Wright, Karol Bomszyk, Stephen C. Hebert, Bruce Stanton,
John B. Stokes III, Bruce Koeppen, and Roger G. O'Neil 260

Renal Metabolism, Prostaglandins, and Renin

Contemporary Issues in Renal Metabolism

- Chairpersons:* Richard L. Tannen and Brian A. Ross; *Discussants:*
Anton C. Schoolwerth and Norman J. Siegel 269

Biochemistry of Renal Prostaglandins

- Aubrey R. Morrison 277

From Molecular Biology to Antihypertensive Drugs: Current Research on Renin Inhibitors

- Edgar Haber 284

Inactive Renin

- Jean E. Sealey 302

The Renin Gene: Structure and Processing of Renin

- Florent Soubrier, Joël Menard, and Pierre Corvol 318

Intracellular Actions of Renin

- Tadashi Inagami, James C. McKenzie, Kailash Pandey,
Mitsuaki Nakamaru, Daniel L. Clemens, Tomio Okamura,
Mitsuhide Naruse, and Kiyoko Naruse 327

The Endocrine System and the Kidney

Similarity of the Effects of Antidiuretic Hormone, Parathyroid Hormone, Calcitonin, and Glucagon on Rat Kidney

- Christian de Rouffignac, Jean-Marc Elalouf, Nicole Roinel, Claire Bailly,
and Claude Amiel 340

Brush Border and Basal-Lateral Membranes in the Action of Thyroid Hormone on the Proximal Tubule

- Giovambattista Capasso and Rolf Kinne 358

Binding of Aldosterone and Corticosterone Along the Nephron and Effects on Na-K-ATPase

- Adrian I. Katz, Marcia A. Chekal, and Salim K. Mujais 364

Localization of Aldosterone Receptors Along the Nephron

- Nicolette Farman and Jean-Pierre Bonvalet 372

Mechanism of Action of Aldosterone: Effects on Sodium, Potassium, and Hydrogen Transport

- Juha P. Kokko 380

Mechanism of Action of Aldosterone: Role of Na-K-ATPase	
Bernard C. Rossier, Käthi Geering, and Jean-Pierre Kraehenbuhl . . .	388
Renal Actions by Which Vasopressin May Aid the Concentration of Urine	
Heinz Valtin	397
Cellular Modes of Action of Vasopressin	
Rui C. de Sousa	407
Specificity of Agonistic and Antagonistic Analogues of Vasopressin	
Wilbur H. Sawyer and Maurice Manning	417
Cardiovascular Effects of Vasopressin	
Colin I. Johnston, Masao Hiwatari, and Josephine M. Abrahams . . .	426

Alterations of Extracellular Fluid Volume

Edema

Newer Concepts of Starling Equilibrium at the Capillary Level in the Production of Edema	
Knut Aukland	435
Pathogenesis of Edema in Cirrhosis	
Murray Epstein	449
Renal Handling of Sodium in Hepatic Diseases Other than Cirrhosis	
J. Rapaport and Cidio Chaimovitz	461
Primary Renal Sodium Retention in the Nephrotic Syndrome	
David B. Bernard	469

Causes and Mechanisms of Renal Injury

Immunologic Mechanisms in Renal Disease	
Alfred F. Michael	485
Cellular and Humoral Mediators of Renal Injury	
<i>Chairpersons:</i> D. Keith Peters and Curtis B. Wilson; <i>Discussants:</i>	
David J. Salant, Roland C. Blantz, Robert C. Atkins,	
Kym M. Bannister, Andrew J. Rees, George F. Schreiner,	
R. Bernd Sterzl, Michael J. Dunn, Raymond Ardaillou, and	
Roger C. Wiggins	504
Mechanisms of Immune Complex Formation and Deposition in Glomeruli	
William G. Couser, Stephen Adler, Patricia J. Baker, Richard J. Johnson,	
and Diana A. Perkinson	508
Characteristics of Circulating Immune Complexes That Deposit in Renal Glomeruli	
Mart Mannik and V. Joyce Gauthier	527
Etiologic Factors in Immunologically Mediated Glomerulonephritis	
Philip J. Hoedemaeker, Gert J. Fleuren, and Jan J. Weening	540
Role of Antigen and Antibody Charge in Immune Complex Disease	
Wayne A. Border	550
Pathogenic Antigen of Heymann Nephritis (gp330): Identification, Isolation, and Localization	
Dontscho Kerjaschki and Marilyn Gist Farquhar	560
Monoclonal Antibodies as Probes of Normal and Abnormal Renal Structure	
<i>Chairpersons:</i> Gary E. Striker and Robert C. Atkins; <i>Discussants:</i>	
Wayne Hancock, John Hunt, Steven R. Holdsworth, Akira Y. T. Wu,	
Alfred F. Michael, Pierre Verroust, Dontscho Kerjaschki,	
Charles D. Pusey, Donna L. Mendrick, and Pierre Ronco	575

Role of Proteoglycans in Glomerular Function and Pathology Marilyn Gist Farquhar, Margaret C. Lemkin, and Jennifer L. Stow	580
Glomerular Arachidonic Acid Metabolism in Nephrotoxic Serum Nephritis Michael J. Dunn, Elias A. Lianos, and John E. Stork	601
Effects of Dexamethasone on Cultured Mesangial Cell Function During Phagocytosis Laurent Baud, Joelle Perez, Diego Pujol, and Raymond Ardaillou	609

Diseases of the Kidneys

Primary Glomerular Diseases

Poststreptococcal Glomerulonephritis Bernardo Rodríguez-Iturbe	623
Minimal Change Disease, Mesangial Proliferative Glomerulonephritis and Focal Sclerosis: Individual Entities or a Spectrum of Disease? <i>Chairpersons:</i> Renée Habib and Jacob Churg; <i>Discussants:</i> Jay Bernstein, J. Stewart Cameron, Arthur H. Cohen, Marie-France Gagnadoux, and Edmund J. Lewis	634
Pathogenetic Mechanisms of IgA Nephropathy from Studies of Experimental Models Andrew J. Woodroffe and Jane D. Lomax-Smith	645
Immunologic Aspects of IgA Nephropathy in Humans Jesus Egido, Jaime Sancho, R. Blasco, L. Lozano, and Luis Hernando	652
Clinicopathologic Correlations in IgA Nephropathy Raja Sinniah and Gordon Ku	665
Natural History and Treatment of Idiopathic IgA Nephropathy Giuseppe D'Amico	686

Acute Renal Failure

Principles of Acute Renal Failure Michael Steinhausen and Niranjana Parekh	702
Pathology of Acute Renal Failure Ruth E. Bulger and Dennis C. Dobyan	711
Experimental Acute Renal Failure: Pathophysiology and Methods of Protection Terrance A. Fried and Jay H. Stein	731
Control of Renal Regeneration After Acute Tubular Necrosis F. Gary Toback	748
Contribution of Proteases to Hypercatabolism in Acute Renal Failure August Heidland and Walter H. Hörl	763
Cellular Mechanisms of Protection in Nephrotoxic and Ischemic Acute Renal Failure H. David Humes, Deborah A. Hunt, Mary J. Clark, Michael P. White, and Joel M. Weinberg	776
Clonidine, Propranolol, and the Prevention of Acute Renal Failure Kim Solez, Lorraine C. Racusen, and Andrew Whelton	784
The Role of Calcium Channel Blockers Thomas J. Burke, Patricia E. Arnold, and Robert W. Schrier	791
Adenine Nucleotides in the Prevention of Ischemic Acute Renal Failure Norman J. Siegel, Karen M. Gaudio, and Michael Kashgarian	800

Nephrotoxicity

Mechanisms of Drug Nephrotoxicity
William M. Bennett. 807

Nephrotoxicity of Nonsteroidal Anti-Inflammatory Drugs
William L. Henrich. 819

Renal Damage Induced by Radiologic Contrast Media
Carl M. Kjellstrand, Robert O. Berkseth, and Paul A. Abraham . . . 835

Antibiotic-Induced Nephrotoxicity
Carlos A. Vaamonde 844

Nephrotoxicity Caused by Cancer Chemotherapy
Richard E. Rieselbach 869

Volume II

The Kidney in Systemic Disease

Renal Involvement in Multiple Myeloma
Manuel Martínez-Maldonado and Luis Báez-Díaz 885

Pathology of Light Chain Nephropathies
Arthur H. Cohen 895

Glomerular Lesions in Lymphomas and Leukemias
Liliane Morel-Maroger Striker, Françoise Mignon, David Dabbs, and
Gary E. Striker 905

Sickle Cell Nephropathy
Vardaman M. Buckalew, Jr. 916

Tubular Defects

Isolated Tubular Defects
Chairpersons: Russell W. Chesney and Bernard S. Kaplan; *Discussants:*
James C. M. Chan, Guido O. Perez, Juan Rodríguez-Soriano, and
Robert L. Chevalier. 926

Obstructive Uropathy and Urinary Reflux

Pathophysiology of Obstructive Uropathy
Chairpersons: Wadi N. Suki and Douglas R. Wilson; *Discussants:*
A. Erik G. Persson, George A. Tanner, William E. Yarger, Saulo Klahr,
Michael H. Humphreys, Adrian Spitzer, Ulla C. Kopp, and
Elsa Bello-Reuss 932

Vesicoureteral Reflux and Renal Damage
C. John Hodson 936

Renal Scars and Vesicoureteric Reflux: Pathology and Pathogenesis of
Segmental Atrophy
Jay Bernstein and Billy S. Arant, Jr. 948

Natural History and Treatment of Reflux Nephropathy
Priscilla S. Kincaid-Smith. 959

Urolithiasis

Pathogenesis of Calcium Renal Stones
Fredric L. Coe and Joan H. Parks. 980

Physicochemical Factors in Calcium Oxalate Urolithiasis	
Lynwood H. Smith	990
Use of Thiazide Diuretics in Calcium Oxalate Nephrolithiasis	
Roger A. L. Sutton	999
Agents Other Than Thiazide Diuretics in the Treatment of Calcium Oxalate Nephrolithiasis	
Ulla Backman.	1011
Urinary Inhibitors of Calcium Oxalate Crystallization	
<i>Chairpersons:</i> Charles Y. C. Pak and John L. Meyer; <i>Discussants:</i>	
Peter G. Werners, William B. Gill, Lawrence Resnick,	
William C. Thomas, and Michael J. Nicar	1025

Kidney Diseases in the Tropics

Nephrotic Syndrome in Tropical Africa: Glomerulonephritis in Zimbabwe	
Janet L. Seggie	1030
Renal Involvement in Leptospirosis	
Visith Sitprija.	1041

Diabetes Mellitus and the Kidney

Clinical and Renal Functional Studies of Diabetic Nephropathy in Humans	
Carl Erik Mogensen	1053
Altered Glomerular Metabolism in Diabetes Mellitus	
Pedro Cortes, Francis Dumler, and Nathan W. Levin	1074
Pathophysiology of Proteinuria in Diabetic Nephropathy	
Ovadia Shemesh, Henry W. Jones III, and Bryan D. Myers	1081
Early Markers of Diabetic Nephropathy: A Road to Prevention	
GianCarlo Viberti and Martin J. Wiseman	1094
Can the Insulin-Dependent Diabetic Patient Be Managed Without Kidney Biopsy?	
S. Michael Mauer, Michael W. Steffes, Eileen N. Ellis, and	
David M. Brown.	1103
Pathogenesis as a Determinant of Therapy in Diabetic Nephropathy	
Eli A. Friedman	1109

Hypertension

Hypertension: Current Concepts of Mechanism and Management	
Austin E. Doyle	1115
Effect of Dietary Fish Oils on Eicosanoid Formation in Platelets, Neutrophils, and the Cardiovascular-Renal System	
Peter C. Weber, Sven Fischer, Reinhard Lorenz, Thomas Strasser,	
Clemens von Schacky, and Wolfgang Siess	1136
Calcium, Phosphate, and Parathyroid Hormone in Blood Pressure Regulation	
<i>Chairpersons:</i> David A. McCarron and Kai Lau; <i>Discussants:</i>	
Roger L. Niser, Lawrence Resnick, Vito Campese, Johannes Mann,	
and David Bushinsky	1141
Role of Sodium and Other Dietary Factors in Hypertension	
Herbert G. Langford	1148

Hypertension in the Elderly	
Robert C. Tarazi	1154
Mechanisms of Action and Use of Newer Antihypertensive Agents	
<i>Chairpersons:</i> David B. Case and Norman M. Kaplan; <i>Discussants:</i>	
Trefor O. Morgan, Richard de Zeeuw, Michael Weber, Keishi Abe,	
and Peter Weidmann	1163
An Analysis for and Against Treatment of Mild Hypertension	
Nemat O. Borhani	1168

Phosphate Depletion

Clinical Spectrum of Phosphate Depletion and Its Effects on Urinary Acidification	
Sandra Sabatini	1183
Effect of Phosphate Depletion on Renal Tubular Transport	
Zalman S. Agus and Renée E. Garrick	1198
Phosphate Depletion and Renal Cell Metabolism	
Kiyoshi Kurokawa	1209
Mechanisms of Myocardial Injury in Phosphate Depletion	
Nachman Brautbar	1217

Pathogenesis and Consequences of Chronic Renal Failure

Mechanisms of Progression of Renal Disease	
Barry M. Brenner and Timothy W. Meyer	1233
Pathogenesis of Uremia	
Eberhard Ritz.	1247

Endocrine and Metabolic Abnormalities

Regulation of Parathyroid Gland Activity	
Joel F. Habener	1264
The Status of Parathyroid Hormone Measurements in Humans	
Jan A. Fischer, Ulrich Binswanger, Walter Born,	
Maximilian A. Dambacher, and Fritz A. Tschopp	1277
Parathyroid Hormone: Alterations in Chronic Renal Failure	
Eduardo Slatopolsky, Kevin J. Martin, Jeremiah J. Morrissey, and	
Keith A. Hruska.	1292
Vitamin D and Kidney Disease	
Jacob Lemann, Jr., Richard W. Gray, and Adel B. Korkor	1305
Endocrine and Metabolic Abnormalities in Acute Renal Failure	
Garabed Eknoyan	1322
Insulin, Glucose, Amino Acid, and Lipid Metabolism in Chronic Renal Insufficiency	
Ralph A. DeFronzo, Anders Alvestrand, and Douglas J. Smith	1334
Endocrine and Metabolic Abnormalities in the Nephrotic Syndrome:	
Calcium and Carbohydrate Metabolism	
Giuseppe Maschio, Nicola Tessitore, Carmelo Loschiavo,	
Angela D'Angelo, Ermanno Bonucci, Bjarne Lund, and Birger Lund	1349

Osteodystrophy

Renal Osteodystrophy: General Concepts and Current Issues
Albert Fournier, Philippe Morinière, J. L. Sebert, B. Boudailliez,
I. Grégoire, M. Garabédian, J. Guéris, and P. Meunier. 1357

Prevalence of Various Types of Bone Disease in Dialysis Patients
Francisco Llach, Arnold J. Felsenfeld, Michael D. Coleman, and
James A. Pederson 1374

Role of Aluminum Accumulation in Renal Osteodystrophy
Jack W. Coburn, Henry G. Nebeker, Gavril Hercz, Dawn S. Milliner,
Susan M. Ott, Dennis L. Andress, Donald J. Sherrard, and
Allen C. Alfrey 1383

Treatment of Renal Osteodystrophy in Chronic Renal Failure
Joseph M. Letteri 1396

Hematopoietic System

Prostanoid-Related Platelet Abnormalities in Renal Disease
Ariela Benigni, Manuela Livio, and Giuseppe Remuzzi 1406

Gastrointestinal

Intestinal Transport of Minerals in Renal Failure
Chairpersons: David B. N. Lee and Carlo Gennari; *Discussants:*
Zachariah Varghese, Herta C. Spencer, and Allen C. Alfrey 1412

Evaluation and Management of Kidney Diseases and Renal Failure

Microscopic and Biochemical Analysis of the Urine in the Evaluation of
Kidney Disease
Chairpersons: Robert G. Narins and Kenneth F. Fairley; *Discussant:*
Richard A. Zager 1425

Newer Imaging Techniques in Nephrology
Chairpersons: Hedvig Hricak and Zoran L. Barbaric; *Discussants:*
Richard M. Friedenberg, Hooshang Kangarloo, Bruce Hillman, and
Bruce L. McClennan 1430

Are Randomized Trials in Kidney Disease Worthwhile?
Chairpersons: Edmund J. Lewis and Cecil H. Coggins; *Discussants:*
Clark D. West, Adrian Spitzer, Stephen W. Zimmerman, John Lachin,
William Winslade, and Daniel C. Cattran 1437

Infections

Current Concepts in the Management of Urinary Tract Infections
Chairpersons: A. William Asscher and Jan Winberg; *Discussants:*
M. P. Glauser, Renée Kuytens, Roland Möllby, James A. Roberts,
and Kate Verrier-Jones 1441

Treatment of Glomerular Diseases

Treatment of Glomerulonephritis Based on Knowledge of Its Pathogenesis
J. Stewart Cameron 1445

Use of Pulse Methylprednisolone in Primary and Multisystem Glomerular Diseases
W. Kline Bolton 1464

Plasma Exchange for Glomerular Disease
Charles D. Pusey and C. Martin Lockwood 1474

Treatment of Glomerular Disease with Anticoagulant, Antiplatelet, and Nonsteroidal Anti-inflammatory Agents
James V. Donadio, Jr. 1486

Nutrition in Renal Failure

Causes of Catabolism and Wasting in Acute or Chronic Renal Failure
Joel D. Kopple 1498

Influence of Nutritional Therapy on Progression of Renal Insufficiency
William E. Mitch 1516

Dialysis

Advantages and Disadvantages of Current Dialysis Techniques
Horst Klinkmann and Peter Ivanovich 1528

Vascular Access for Hemodialysis
Chairpersons: Fred L. Shapiro and Robert Uldall; *Discussants:*
Robert J. Anderson, Allan J. Collins, Howard Silberman,
Raymond Vanholder, and Alex Heaton 1553

Anatomic and Physiologic Aspects of Peritoneal Dialysis
Karl D. Nolph 1561

Efficacy and Adequacy of Continuous Ambulatory Peritoneal Dialysis
George Wu, Donald Kim, and Dimitrios G. Oreopoulos 1581

Continuous Ambulatory Peritoneal Dialysis in Diabetic Patients
Marcel C. Legrain, Jacques B. Rottembourg, Belkacem Issad,
Pierre-Yves Cossette, and Amar Boudjemaa 1599

Long-Term Metabolic Consequences of Continuous Ambulatory Peritoneal Dialysis
Bengt Lindholm, Anders Alvestrand, Hans Erik Norbeck, Anders
Tranaeus, and Jonas Bergström 1611

Transplantation

Renal Transplantation: Current Status
Peter J. Morris 1627

Endocrine and Metabolic Dysfunctions Following Kidney Transplantation
Jacob Green and Ori S. Better 1644

Cyclosporine in Renal Transplantation
Rolf Loertscher, Mario Abbud-Filho, and Terry B. Strom 1662

The Transfusion Effect in Renal Allograft Recipients
Sondra Perdue and Paul I. Terasaki 1674

Antilymphocyte Globulin and Monoclonal Antibodies: Present Status as Therapy
A. Benedict Cosimi 1681

Total Lymphoid Irradiation in Renal Transplantation: Reduction and Elimination of Maintenance Immunosuppressive Drugs
Samuel Strober, Richard T. Hoppe, Barry Levin, and Derek Sampson. 1695

Adjuvant Methods of Immunomodulation for Transplantation
Tadeusz Orłowski 1708

Immunological Monitoring and Renal Transplantation
Chairpersons: Ronald D. Guttman and Vittorio Bonomini; *Discussants:*
Takahiro Oka, William E. Braun, Marvin R. Garovoy, Terry B. Strom,
Fernando Valderrobano, Mark Waer, Louis Lanier, Wayne Hancock,
and Mohammad Allajani 1715

Index 1723

Contents II

State-of-the-Art Lectures

Hydrogen Ion Transport Along the Nephron	
Floyd C. Rector, Jr.	161
Similarity of the Effects of Antidiuretic Hormone, Parathyroid Hormone, Calcitonin, and Glucagon on Rat Kidney	
Christian de Rouffignac, Jean-Marc Elalouf, Nicole Roinel, Claire Bailly, and Claude Amiel	340
Immunologic Mechanisms in Renal Disease	
Alfred F. Michael	485
Mechanisms of Progression of Renal Disease	
Barry M. Brenner and Timothy W. Meyer	1233
Pathogenesis of Uremia	
Eberhard Ritz.	1247
Hypertension: Current Concepts of Mechanism and Management	
Austin E. Doyle	1115
Advantages and Disadvantages of Current Dialysis Techniques	
Horst Klinkmann and Peter Ivanovich	1528
Renal Transplantation: Current Status	
Peter J. Morris	1627

Symposia

Second Messengers and Epithelial Transport

Role of Cytosolic Calcium in Vasopressin-sensitive Epithelia	
Ann Taylor, Mirilee Pearl, Barbara Barber, and Beth Crutch.	39
Role of Cytosolic Calcium in Renal Tubular Transport	
Erich E. Windhager and Gustavo Frindt.	51
Basolateral Membrane Properties of Sodium-absorbing Epithelia	
Stanley G. Schultz	7

Brush Border Transport Mechanisms

Sodium Phosphate Cotransport: Studies with Vesicles and LLC-PK ₁ Cells Heini Murer, Martin Amstutz, Jürg Biber, Piotr Gmaj, and Kerstin Malmström	57
Brush Border and Basal-Lateral Membranes in the Action of Thyroid Hormone on the Proximal Tubule Giovambattista Capasso and Rolf Kinne	358
Sodium-Glucose Cotransport Mechanisms R. James Turner	21
Regulation of the Na ⁺ /H ⁺ Antiporter in Cells of the Proximal Tubule David G. Warnock and Harlan E. Ives	70

Regulation of Medullary Circulation

Organization of the Medullary Circulation: Functional Implications Lise Bankir, Nadine Bouby, and Marie-Marcelle Trinh-Trang-Tan	84
Intrarenal Control of Medullary Blood Flow and the Urinary Concentrating Mechanism Leon C. Moore	120
Pathophysiology of the Medullary Circulation June Mason	107

Intrarenal Control of Glomerular Filtration Rate

Influence of Renal Nerves on the Glomerular Microcirculation Valentina Kon and Iekuni Ichikawa	154
Intrarenal Control of Glomerular Filtration: Cellular Mechanisms of Tubuloglomerular Feedback P. Darwin Bell and L. Gabriel Navar	130
Regulatory Role of the Tubuloglomerular Feedback Mechanism Josephine P. Briggs and Jürgen Schnermann	143

Transport Mechanisms in the Loop of Henle

Transport Properties of the Pars Recta James A. Schafer and Jack Work	186
Function of the Thin Limb of Henle's Loop Masashi Imai, Matuhiko Hayashi, Masasuke Araki, and Kaoru Tabei	196
Sodium Chloride Reabsorption in the Thick Ascending Limb of the Loop of Henle Rainer Greger, Monika Wittner, Eberhard Schlatter, Brigitte Gebler, Claudia Weidtke, and Antonio Di Stefano	224
Regulation of Sodium Chloride Transport by the Loop of Henle John B. Stokes III	208

Aldosterone and the Kidney

Binding of Aldosterone and Corticosterone Along the Nephron and Effects on Na-K-ATPase Adrian I. Katz, Marcia A. Chekal, and Salim K. Mujais	364
Localization of Aldosterone Receptors Along the Nephron Nicolette Farman and Jean-Pierre Bonvalet	372

Mechanism of Action of Aldosterone: Effects on Sodium, Potassium, and Hydrogen Transport	
Juha P. Kokko	380
Mechanism of Action of Aldosterone: Role of Na-K-ATPase	
Bernard C. Rossier, Käthi Geering, and Jean-Pierre Kraehenbuhl	388

Vasopressins: Diverse Action

Renal Actions by Which Vasopressin May Aid the Concentration of Urine	
Heinz Valtin	397
Cellular Modes of Action of Vasopressin	
Rui C. de Sousa	407
Specificity of Agonistic and Antagonistic Analogues of Vasopressin	
Wilbur H. Sawyer and Maurice Manning	417
Cardiovascular Effects of Vasopressin	
Colin I. Johnston, Masao Hiwatari, and Josephine M. Abrahams	426

Renin: Recent Advances

From Molecular Biology to Antihypertensive Drugs: Current Research on Renin Inhibitors	
Edgar Haber	284
Inactive Renin	
Jean E. Sealey.	302
The Renin Gene: Structure and Processing of Renin	
Florent Soubrier, Joël Menard, and Pierre Corvol	318
Intracellular Actions of Renin	
Tadashi Inagami, James C. McKenzie, Kailash Pandey, Mitsuaki Nakamaru, Daniel L. Clemens, Tomio Okamura, Mitsuhide Naruse, and Kiyoko Naruse	327

Prostaglandins and the Kidney

Glomerular Arachidonic Acid Metabolism in Nephrotoxic Serum Nephritis	
Michael J. Dunn, Elias A. Lianos, and John E. Stork	601
Biochemistry of Renal Prostaglandins	
Aubrey R. Morrison	277
Effect of Dietary Fish Oils on Eicosanoid Formation in Platelets, Neutrophils, and the Cardiovascular-Renal System	
Peter C. Weber, Sven Fischer, Reinhard Lorenz, Thomas Strasser, Clemens von Schacky, and Wolfgang Siess	1136
Prostanoid-Related Platelet Abnormalities in Renal Disease	
Ariela Benigni, Manuela Livio, and Giuseppe Remuzzi.	1406

Recent Advances in the Structure, Biochemistry and Function of the Glomerulus

Role of Proteoglycans in Glomerular Function and Pathology	
Marilyn Gist Farquhar, Margaret C. Lemkin, and Jennifer L. Stow	580
Effects of Dexamethasone on Cultured Mesangial Cell Function During Phagocytosis	
Laurent Baud, Joelle Perez, Diego Pujol, and Raymond Ardaillou	609
Pathogenic Antigen of Heymann Nephritis (gp330): Identification, Isolation, and Localization	
Dontscho Kerjaschki and Marilyn Gist Farquhar.	560

Mechanisms of Immune Complex Formation and Deposition in Glomeruli

Mechanisms of Immune Complex Formation and Deposition in Glomeruli William G. Couser, Stephen Adler, Patricia J. Baker, Richard J. Johnson, and Diana A. Perkinson	508
Etiologic Factors in Immunologically Mediated Glomerulonephritis Philip J. Hoedemaeker, Gert J. Fleuren, and Jan J. Weening	540
Role of Antigen and Antibody Charge in Immune Complex Disease Wayne A. Border	550
Characteristics of Circulating Immune Complexes That Deposit in Renal Glomeruli Mart Mannik and V. Joyce Gauthier	527

Pathogenesis of Edema in Cirrhosis and Nephrotic Syndrome

Pathogenesis of Edema in Cirrhosis Murray Epstein	449
Renal Handling of Sodium in Hepatic Diseases Other than Cirrhosis J. Rapaport and Cidio Chaimovitz	461
Newer Concepts of Starling Equilibrium at the Capillary Level in the Production of Edema Knut Aukland	435
Primary Renal Sodium Retention in the Nephrotic Syndrome David B. Bernard	469

IgA Nephropathy

Clinicopathologic Correlations in IgA Nephropathy Raja Sinniah and Gordon Ku	665
Natural History and Treatment of Idiopathic IgA Nephropathy Guiseppe D'Amico	686
Immunologic Aspects of IgA Nephropathy in Humans Jesus Egido, Jaime Sancho, R. Blasco, L. Lozano, and Luis Hernando Pathogenetic Mechanisms of IgA Nephropathy from Studies of Experimental Models Andrew J. Woodroffe and Jane D. Lomax-Smith	652 645

Acute Renal Failure: Structure-Function Relationships

Principles of Acute Renal Failure Michael Steinhausen and Niranjan Parekh	702
Pathology of Acute Renal Failure Ruth E. Bulger and Dennis C. Dobyan	711
Experimental Acute Renal Failure: Pathophysiology and Methods of Protection Terrance A. Fried and Jay H. Stein	731
Control of Renal Regeneration After Acute Tubular Necrosis F. Gary Toback	748

New Frontiers in the Prevention of Acute Renal Failure

Cellular Mechanisms of Protection in Nephrotoxic and Ischemic Acute Renal Failure H. David Humes, Deborah A. Hunt, Mary J. Clark, Michael P. White, and Joel M. Weinberg	776
---	-----

Clonidine, Propranolol, and the Prevention of Acute Renal Failure	
Kim Solez, Lorraine C. Racusen, and Andrew Whelton	784
The Role of Calcium Channel Blockers	
Thomas J. Burke, Patricia E. Arnold, and Robert W. Schrier.	791
Adenine Nucleotides in the Prevention of Ischemic Acute Renal Failure	
Norman J. Siegel, Karen M. Gaudio, and Michael Kashgarian	800

Reflux Nephropathy: Current Status

Vesicoureteral Reflux and Renal Damage	
C. John Hodson	936
Renal Scars and Vesicoureteric Reflux: Pathology and Pathogenesis of Segmental Atrophy	
Jay Bernstein and Billy S. Arant, Jr.	948
Natural History and Treatment of Reflux Nephropathy	
Priscilla S. Kincaid-Smith.	959

Pathogenesis and Treatment of Calcium Nephrolithiasis

Pathogenesis of Calcium Renal Stones	
Fredric L. Coe and Joan H. Parks.	980
Use of Thiazide Diuretics in Calcium Oxalate Nephrolithiasis	
Roger A. L. Sutton.	999
Agents Other Than Thiazide Diuretics in the Treatment of Calcium Oxalate Nephrolithiasis	
Ulla Backman.	1011
Physicochemical Factors in Calcium Oxalate Urolithiasis	
Lynwood H. Smith	990

Tropical Nephrology

Nephrotic Syndrome in Tropical Africa: Glomerulonephritis in Zimbabwe	
Janet L. Seggie	1030
Renal Involvement in Leptospirosis	
Visith Sitprija.	1041
Poststreptococcal Glomerulonephritis	
Bernardo Rodríguez-Iturbe	623
Sickle Cell Nephropathy	
Vardaman M. Buckalew, Jr.	916

The Kidney and Malignant Disease

Nephrotoxicity Caused by Cancer Chemotherapy	
Richard E. Rieselbach	869
Glomerular Lesions in Lymphomas and Leukemias	
Liliane Morel-Maroger Striker, Françoise Mignon, David Dabbs, and Gary E. Striker	905
Renal Involvement in Multiple Myeloma	
Manuel Martínez-Maldonado and Luis Báez-Díaz	885
Pathology of Light Chain Nephropathies	
Arthur H. Cohen	895

Nephrotoxicity and Drugs

Mechanisms of Drug Nephrotoxicity	
William M. Bennett	807
Nephrotoxicity of Nonsteroidal Anti-Inflammatory Drugs	
William L. Henrich	819
Renal Damage Induced by Radiologic Contrast Media	
Carl M. Kjellstrand, Robert O. Berkseth, and Paul A. Abraham . . .	835
Antibiotic-Induced Nephrotoxicity	
Carlos A. Vaamonde	844

Diabetic Nephropathy: Concepts of Pathogenesis and Treatment

Pathogenesis as a Determinant of Therapy in Diabetic Nephropathy	
Eli A. Friedman	1109
Clinical and Renal Functional Studies of Diabetic Nephropathy in Humans	
Carl Erik Mogensen	1053
Can the Insulin-Dependent Diabetic Patient Be Managed Without Kidney Biopsy?	
S. Michael Mauer, Michael W. Steffes, Eileen N. Ellis, and David M. Brown	1103
Pathophysiology of Proteinuria in Diabetic Nephropathy	
Ovadia Shemesh, Henry W. Jones III, and Bryan D. Myers	1081
Altered Glomerular Metabolism in Diabetes Mellitus	
Pedro Cortes, Francis Dumler, and Nathaán W. Levin	1074
Early Markers of Diabetic Nephropathy: A Road to Prevention	
GianCarlo Viberti and Martin J. Wiseman	1094

Controversies in the Therapy of Hypertension

Hypertension in the Elderly	
Robert C. Tarazi	1154
An Analysis for and Against Treatment of Mild Hypertension	
Nemat O. Borhani	1168
Role of Sodium and Other Dietary Factors in Hypertension	
Herbert G. Langford	1148

Endocrine and Metabolic Abnormalities in Renal Diseases

Endocrine and Metabolic Abnormalities in Acute Renal Failure	
Garabed Eknoyan	1322
Insulin, Glucose, Amino Acid, and Lipid Metabolism in Chronic Renal Insufficiency	
Ralph A. DeFronzo, Anders Alvestrand, and Douglas J. Smith . . .	1334
Endocrine and Metabolic Abnormalities in the Nephrotic Syndrome:	
Calcium and Carbohydrate Metabolism	
Giuseppe Maschio, Nicola Tessitore, Carmelo Loschiavo, Angela D'Angelo, Ermanno Bonucci, Bjarne Lund, and Birger Lund .	1349
Endocrine and Metabolic Dysfunctions Following Kidney Transplantation	
Jacob Green and Ori S. Better	1644

Parathyroid Hormone and Vitamin D in Uremia

Vitamin D and Kidney Disease	
Jacob Lemann, Jr., Richard W. Gray, and Adel B. Korkor	1305

Regulation of Parathyroid Gland Activity
Joel F. Habener 1264

The Status of Parathyroid Hormone Measurements in Humans
Jan A. Fischer, Ulrich Binswanger, Walter Born,
Maximilian A. Dambacher, and Fritz A. Tschoopp 1277

Parathyroid Hormone: Alterations in Chronic Renal Failure
Eduardo Slatopolsky, Kevin J. Martin, Jeremiah J. Morrissey, and
Keith A. Hruska. 1292

Renal Osteodystrophy: Recent Advances

Renal Osteodystrophy: General Concepts and Current Issues
Albert Fournier, Philippe Morinière, J. L. Sebert, B. Boudailliez,
I. Grégoire, M. Garabédian, J. Guéris, and P. Meunier. 1357

Role of Aluminum Accumulation in Renal Osteodystrophy
Jack W. Coburn, Henry G. Nebeker, Gavril Hercz, Dawn S. Milliner,
Susan M. Ott, Dennis L. Address, Donald J. Sherrard, and
Allen C. Alfrey 1383

Prevalence of Various Types of Bone Disease in Dialysis Patients
Francisco Llach, Arnold J. Felsenfeld, Michael D. Coleman, and
James A. Pederson 1374

Treatment of Renal Osteodystrophy in Chronic Renal Failure
Joseph M. Letteri 1396

Renal and Vascular Consequences of Phosphate Depletion

Clinical Spectrum of Phosphate Depletion and Its Effects on Urinary
Acidification
Sandra Sabatini 1183

Effect of Phosphate Depletion on Renal Tubular Transport
Zalman S. Agus and Renée E. Garrick 1198

Phosphate Depletion and Renal Cell Metabolism
Kiyoshi Kurokawa 1209

Mechanisms of Myocardial Injury in Phosphate Depletion
Nachman Brautbar 1217

Nutritional Aspects of Renal Disease

Causes of Catabolism and Wasting in Acute or Chronic Renal Failure
Joel D. Kopple 1498

Influence of Nutritional Therapy on Progression of Renal Insufficiency
William E. Mitch 1516

Contribution of Proteases to Hypercatabolism in Acute Renal Failure
August Heidland and Walter H. Hörl 763

The Treatment of Glomerulonephritis

Treatment of Glomerulonephritis Based on Knowledge of Its Pathogenesis
J. Stewart Cameron 1445

Use of Pulse Methylprednisolone in Primary and Multisystem Glomerular
Diseases
W. Kline Bolton 1464

Plasma Exchange for Glomerular Disease
Charles D. Pusey and C. Martin Lockwood 1474

Treatment of Glomerular Disease with Anticoagulant, Antiplatelet, and Nonsteroidal Anti-inflammatory Agents	
James V. Donadio, Jr.	1486

Continuous Ambulatory Peritoneal Dialysis

Anatomic and Physiologic Aspects of Peritoneal Dialysis	
Karl D. Nolph	1561
Continuous Ambulatory Peritoneal Dialysis in Diabetic Patients	
Marcel C. Legrain, Jacques B. Rottembourg, Belkacem Issad, Pierre-Yves Cossette, and Amar Boudjemaa	1599
Efficacy and Adequacy of Continuous Ambulatory Peritoneal Dialysis	
George Wu, Donald Kim, and Dimitrios G. Oreopoulos	1581
Long-Term Metabolic Consequences of Continuous Ambulatory Peritoneal Dialysis	
Bengt Lindholm, Anders Alvestrand, Hans Erik Norbeck, Anders Tranaeus, and Jonas Bergström	1611

Immunomodulation for Transplantation: New Approaches

Cyclosporine in Renal Transplantation	
Rolf Loertscher, Mario Abbud-Filho, and Terry B. Strom	1662
The Transfusion Effect in Renal Allograft Recipients	
Sondra Perdue and Paul I. Terasaki	1674
Antilymphocyte Globulin and Monoclonal Antibodies: Present Status as Therapy	
A. Benedict Cosimi	1681
Total Lymphoid Irradiation in Renal Transplantation: Reduction and Elimination of Maintenance Immunosuppressive Drugs	
Samuel Strober, Richard T. Hoppe, Barry Levin, and Derek Sampson	1695
Adjuvant Methods of Immunomodulation for Transplantation	
Tadeusz Orłowski	1708

Workshops

Determinants of Growth, Form, and Function in Epithelia	
<i>Chairpersons:</i> Joseph S. Handler and Marcelino M. Cereijido; <i>Discussants:</i> Maurice Burg, Mary Taub, Michael F. Horster, and John D. Valentich	3
Cell Volume Regulation in Epithelia	
<i>Chairpersons:</i> Jared J. Grantham and Kenneth R. Spring; <i>Discussants:</i> Michael A. Linshaw, Guillermo Whittembury, Paola Carpi-Medina, Ernesto Gonzalez, Henry Linares, William B. Guggino, Kevin L. Kirk, James A. Schafer, Donald R. DiBona, and Peter M. Andrews	34
Functions of the Renal Nerves	
<i>Chairpersons:</i> Gerald F. DiBona and Romulo E. Colindres; <i>Discussants:</i> Luciano Barajas, Roger J. Summers, Nicholas G. Moss, Ulla C. Kopp, and Richard E. Katholi	79
Proximal Tubule Transport	
<i>Chairperson:</i> Harry R. Jacobson; <i>Co-Chairperson:</i> Jean Cardinal; <i>Discussants:</i> Christine A. Berry, Bruno Corman, Dalon W. Barfuss, Jacques Lapointe, Elsa Bello-Reuss, Sei Sasaki, Keith A. Hruska, and Julian Seiffer	178

Structural Heterogeneity of the Distal Nephron
Chairpersons: C. Craig Tisher and Brigitte Kaissling; *Discussants:*
Kirsten M. Madsen, Lise Bankir, Bruce Stanton, Dennis Brown, and
Michel Bergeron 243

Regulation of Potassium Excretion
Chairpersons: Gerhard Giebisch and Lawrence Rabinowitz; *Discussants:*
Fred S. Wright, Karol Bomszytk, Stephen C. Hebert, Bruce Stanton,
John B. Stokes III, Bruce Koeppen, and Roger G. O'Neil. 260

Contemporary Issues in Renal Metabolism
Chairpersons: Richard L. Tannen and Brian A. Ross; *Discussants:*
Anton C. Schoolwerth and Norman J. Siegel 269

Acidification Mechanisms
Chairpersons: Thomas D. DuBose, Jr. and Michel Paillard; *Discussants:*
Eberhard Frömter, Robert J. Alpern, David W. Good, and
Dennis K. Stone 251

Atrial Natriuretic Factor
Chairpersons: Adolfo J. de Bold and Harald Sonnenberg; *Discussants:*
Uwe Ackermann, Edward H. Blaine, Josephine P. Briggs,
Barbara R. Cole, Ralph Keeler, Sidney Solomon, Frank Spinelli,
Nick C. Trippodo, and Thomas Maack 257

Cellular and Humoral Mediators of Renal Injury
Chairpersons: D. Keith Peters and Curtis B. Wilson; *Discussants:*
David J. Salant, Roland C. Blantz, Robert C. Atkins,
Kym M. Bannister, Andrew J. Rees, George F. Schreiner,
R. Bernd Sterzl, Michael J. Dunn, Raymond Ardaillou, and
Roger C. Wiggins 504

Monoclonal Antibodies as Probes of Normal and Abnormal Renal Structure
Chairpersons: Gary E. Striker and Robert C. Atkins; *Discussants:*
Wayne Hancock, John Hunt, Steven R. Holdsworth, Akira Y. T. Wu,
Alfred F. Michael, Pierre Verroust, Donscho Kerjaschki,
Charles D. Pusey, Donna L. Mendrick, and Pierre Ronco. 575

Minimal Change Disease, Mesangial Proliferative Glomerulonephritis and
Focal Sclerosis: Individual Entities or a Spectrum of Disease?
Chairpersons: Renée Habib and Jacob Churg; *Discussants:* Jay Bernstein,
J. Stewart Cameron, Arthur H. Cohen, Marie-France Gagnadoux, and
Edmund J. Lewis 634

Current Concepts in the Management of Urinary Tract Infections
Chairpersons: A. William Asscher and Jan Winberg; *Discussants:*
M. P. Glauser, Renée Kuytens, Roland Möllby, James A. Roberts, and
Kate Verrier-Jones 1441

Pathophysiology of Obstructive Uropathy
Chairpersons: Wadi N. Suki and Douglas R. Wilson; *Discussants:*
A. Erik G. Persson, George A. Tanner, William E. Yarger, Saulo Klahr,
Michael H. Humphreys, Adrian Spitzer, Ulla C. Kopp, and
Elsa Bello-Reuss 932

Isolated Tubular Defects
Chairpersons: Russell W. Chesney and Bernard S. Kaplan; *Discussants:*
James C. M. Chan, Guido O. Perez, Juan Rodríguez-Soriano, and
Robert L. Chevalier. 926

Urinary Inhibitors of Calcium Oxalate Crystallization
Chairpersons: Charles Y. C. Pak and John L. Meyer; *Discussants:*
Peter G. Werners, William B. Gill, Lawrence Resnick,
William C. Thomas, and Michael J. Nicar 1025

Calcium, Phosphate, and Parathyroid Hormone in Blood Pressure Regulation	
<i>Chairpersons:</i> David A. McCarron and Kai Lau; <i>Discussants:</i> Roger L. Niser, Lawrence Resnick, Vito Campese, Johannes Mann, and David Bushinsky	1141
Mechanisms of Action and Use of Newer Antihypertensive Agents	
<i>Chairpersons:</i> David B. Case and Norman M. Kaplan; <i>Discussants:</i> Trefor O. Morgan, Richard de Zeeuw, Michael Weber, Keishi Abe, and Peter Weidmann	1163
Intestinal Transport of Minerals in Renal Failure	
<i>Chairpersons:</i> David B. N. Lee and Carlo Gennari; <i>Discussants:</i> Zachariah Varghese, Herta C. Spencer, and Allen C. Alfrey	1412
Microscopic and Biochemical Analysis of the Urine in the Evaluation of Kidney Disease	
<i>Chairpersons:</i> Robert G. Narins and Kenneth F. Fairley; <i>Discussant:</i> Richard A. Zager	1425
Newer Imaging Techniques in Nephrology	
<i>Chairpersons:</i> Hedvig Hricak and Zoran L. Barbaric; <i>Discussants:</i> Richard M. Friedenberg, Hooshang Kangarloo, Bruce Hillman, and Bruce L. McClennan	1430
Are Randomized Trials in Kidney Disease Worthwhile?	
<i>Chairpersons:</i> Edmund J. Lewis and Cecil H. Coggins; <i>Discussants:</i> Clark D. West, Adrian Spitzer, Stephen W. Zimmerman, John Lachin, William Winslade, Daniel C. Cattran	1437
Vascular Access for Hemodialysis	
<i>Chairpersons:</i> Fred L. Shapiro and Robert Uldall; <i>Discussants:</i> Robert J. Anderson, Allan J. Collins, Howard Silberman, Raymond Vanholder, and Alex Heaton	1553
Immunological Monitoring and Renal Transplantation	
<i>Chairpersons:</i> Ronald D. Guttman and Vittorio Bonomini; <i>Discussants:</i> Takahiro Oka, William E. Braun, Marvin R. Garovoy, Terry B. Strom, Fernando Valderrobano, Mark Waer, Louis Lanier, Wayne Hancock, and Mohammad Allajani	1715