Technological Advances in Kidney Disease Research
Friday, June 2, 2006

Organized by
The Division of Nephrology and the Graduate Program in Systems Biology and Disease of University of Southern California Keck School of Medicine
and University Kidney Disease Research Associates

Overview
Chronic kidney disease is beginning to assume epidemic proportions worldwide. Knowledge of the causes of kidney disease is limited to current therapeutic interventions which are inadequate to prevent and stop the progression of many of these diseases.

This conference will address the areas of basic science and clinical research that will lead to improved treatments and cures, and to the prevention of all forms of kidney disease.

The basic principles of proteomics will be reviewed and applications of proteomics to the study of kidney function and disease will be examined. New technology for evaluating renal function and disease processes, including in vivo imaging of the kidney and use of RNA in vivo will be explored. Current advances in stem cell research for the treatment and potential prevention of kidney disease will be presented. These advances will be covered by investigators already working in these areas.

Objectives
• Understand the basics of stem cell biology, proteomics, and other novel technologies in the diagnosis and treatment of kidney disease
• Identify, evaluate, and differentiate different approaches to stem cell therapy and their applications to kidney disease
• Understand the application of proteomics in evaluation of renal function
• Discuss the potential role of biomarkers in kidney disease detection
• Understand the application of proteomic and stem cell research to advance understanding of the basis of human disease

Program
8:45 Welcome and Introductory Remarks
Vito M. Campese, M.D.

Session I: Proteomics: Basic Principles and Clinical Applications
Moderators: Alan Yu, M.D. and Alicia McDonough, Ph.D.

9:00 Applications of Expression and Functional Proteomics in Renal Research
Jon B. Klein, M.D., Ph.D.

9:35 The Role of Intact Protein Measurements in Proteomics
Julian Whitelegge, Ph.D.

10:10 Discovery of Urinary Biomarkers
Mark Knepper, M.D., Ph.D.

10:45 Exploring the Unknown: Proteomics and Glomerulosclerosis
Agnes Fogo, M.D.

Session II: Exploring New Technology in Evaluating Kidney Function and Disease
Moderators: Donald J. Marsh, M.D. and Laurence H. Kedes, M.D.

11:35 RNA Interference: A Tailor Made Technique to Study Function of New Pathways?
Christopher Wilcox, M.D., Ph.D.

12:10 Proteomics Approach to Elucidating Mechanisms of Renal Sodium Transport Regulation
Alicia McDonough, Ph.D.

12:45 In Vivo Imaging of Kidney Function in Diabetes
Janos Peti-Peterdi, Ph.D.

Session III: Stem Cell Research in Kidney Disease
Moderators: Martin Pera, Ph.D. and Laurie DeLeve, M.D., Ph.D.

2:20 Role of Stem Cells in Ischemic Tubular Injury
Joseph V. Bonventre, M.D., Ph.D.

2:55 Using Developmental Biology and Stem Cells to Construct and Deconstruct the Endocrine Pancreas
Seung K. Kim, M.D., Ph.D.

3:30 Engineering Constructs of Renal Tubules Using Stem Cells
Roger DeFilippo, M.D.

4:05 Use of Renal Tubular Cells in Clinical Nephrology
David Humes, M.D.

Speakers

Janos Peti-Peterdi, M.D., Ph.D.
Associate Professor of Physiology, Biophysics and Medicine
Keck School of Medicine, USC

Julian P. Whitelegge, Ph.D.
Associate Professor of Psychiatry & Biobehavioral Sciences
David Geffen School of Medicine, UCLA

Christopher Wilcox, M.D., Ph.D.
George E. Schreiner Professor of Medicine
Chief, Division of Nephrology and Hypertension
Georgetown University Medical Center

Organizing Committee
Vito M. Campese, M.D.
Alicia McDonough, Ph.D.
Donald J. Marsh, M.D.
Manfred Mosk, Ph.D.
Janos Peti-Peterdi, M.D., Ph.D.
Alan S.L. Yu, M.D.