

Division of Nephrology and Hypertension

DIVISION PROFILE	
Number of Faculty	11
Number of Joint Appointment Faculty	1
Number of Fellows	
Clinical Fellows	2
Research Fellows	3
Number of Graduate Students	1
Number of Other Students (full and part-time)	0
Number of Support Personnel	12
Annual Total Grant Support (direct)	\$1,132,410
Annual Total Industry Contracts (direct)	\$167,003
Number of Peer Reviewed Publications	19
Patient Encounters	
Outpatient	2,860
Inpatient	2,462

FACULTY LISTING

Prasad Devarajan, MD, Professor of Pediatrics, Director, Louise M. Williams Endowed Chair, Professor of Pediatrics and Developmental Biology
John Bissler, MD, Associate Professor of Pediatrics, Clark D. West Endowed Chair, Associate Director of Residency Training Program Director, Nephrology Fellowship Program
Virginia H. Donaldson, MD, Professor of Pediatrics Emerita
Jens Goebel, MD, Associate Professor of Pediatrics, Medical Director of Kidney Transplantation
Elizabeth Jackson, MD, Associate Professor of Pediatrics
Paul T. McEnery, MD, Professor of Pediatrics Emeritus
Mark Mitsnefes, MD, Assistant Professor of Pediatrics
Larry T. Patterson, MD, Research Assistant Professor
C. Frederic Strife, MD, Professor of Pediatrics, Medical Director of the Dialysis Unit
Clark D. West, MD, Professor of Pediatrics Emeritus
Kamyar A. Zahedi, PhD, Research Assistant Professor

OVERVIEW

The Division of Nephrology and Hypertension continues its missions to provide the best possible clinical care for children and adolescents with renal, electrolyte, and hypertensive disorders, to pursue state-of-the-art research in clinical nephrology and the basic sciences, to actively participate in the education of medical students, residents and fellows, and to provide specialized clinical laboratory services. The busy clinical service has focused primarily on out-patient consultations and follow-up, transplant evaluations and follow-up, kidney biopsies, acute and chronic dialysis, and in-patient consultations. Specialized multidisciplinary clinics staffed by our faculty in conjunction with other divisions include the Hypertension clinic, Lupus clinic, Tuberos Sclerosis clinic, Voiding Dysfunction clinic, Myelomeningocele clinic, and Complex Bladder clinic. Additional out-patient consultative services are provided at several satellite centers, including Mason, University Pointe at West Chester, Fairfield, Northern Kentucky, and University of Kentucky at Lexington. Fields of clinical research interest include complement alterations in glomerulonephritides (West), outcomes measures in renal transplantation (McEnery, Goebel), management of osteodystrophy and anemia in chronic renal failure (Strife), novel biomarkers for acute renal injury (Devarajan), innovations in renal replacement therapy (Bissler), treatment of tuberous sclerosis (Bissler), management of complex bladder conditions (Jackson), and cardiovascular abnormalities in chronic renal disease (Mitsnefes). Areas of basic research expertise include complement biology (West, Zahedi), molecular and cell biology of acute renal injury (Devarajan, Zahedi), mechanisms of DNA replication, damage and repair (Bissler), molecular pathogenesis of polycystic kidney disease (Bissler), T-cell immunobiology (Goebel), and regulation of renal development (Patterson).

Dr. Prasad Devarajan serves as Director of the division, and has the overall administrative responsibility for the division's activities. Dr. Frederic Strife is the Medical Director of the Dialysis Unit. Dr. Jens Goebel is the Medical Director of Kidney Transplantation, and Dr. John Bissler is the Fellowship Director.



Left to Right: P. Devarajan, K. Zahedi, C. West, M. Mitsnefes, J. Goebel, C.F. Strife, J. Bissler, E. Jackson, P. McEnery, L. Patterson

HIGHLIGHTS

Dr. Prasad Devarajan's research is funded by the NIH, (R01, R21, P50), American Heart Association, and the CCHMC Translational Research Initiative. He runs the nephrology outreach clinics at Mason and West Chester.

Dr. Jens Goebel's research is funded by the NIH (K08) and the CCHMC Translational Research Initiative. As Medical Director of Kidney Transplantation, he has the overall responsibility of establishing one of the nation's premier renal transplant centers. He also staffs the nephrology outreach clinic in Northern Kentucky.

Dr. Elizabeth Jackson spearheads a unique joint venture between Nephrology and Urology, and is responsible for the medical management of children with complex urologic problems. She also runs the nephrology clinic at the University of Kentucky in Lexington.

Dr. John Bissler's research is funded by the NIH (R01 and R21), Polycystic Kidney Disease Foundation and the LAM Foundation. He continues to direct the fellowship program, and runs an innovative collaborative clinic with Neurology for the management of patients with tuberous sclerosis.

Dr. Mark Mitsnefes' research is funded by the NIH (K23 and U01), National Kidney Foundation (Clinical Investigator Award), and several industry-sponsored clinical trials. He runs a highly successful hypertension clinic in collaboration with Preventive Cardiology.

Dr. Frederic Strife is a co-investigator on a NIH grant to study renal osteodystrophy, and on industry-sponsored clinical trials. He is the Medical Director of the Dialysis Unit, and runs a novel Lupus clinic in conjunction with Rheumatology.

Dr. Larry Patterson has established a very successful outreach clinic in Fairfield. His NIH-funded research has opened up several new avenues for furthering his research interests in developmental nephrology.

TRAINING

Hsiao Lai, MD	PL-IV	University of Tennessee Memphis
Kimberly Czech, MD, PhD	PL-V	Rush University Medical Center
Mai Nguyen, MD	PL-VI	Orlando Regional Healthcare
Rene VanDeVoorde, MD	PL -VI	Cincinnati Children's Hospital Medical Center
Bradley P. Dixon, MD	PL-VII	Cincinnati Children's Hospital Medical Center

GRANTS, CONTRACTS AND INDUSTRY AGREEMENTS

Grant and Contract Awards Annual Direct/Project Period Direct

Bissler, J

DNA Replication Fork: Pausing, Recombination and Disease		
National Institutes of Health		
R01 DK 061458	05/01/03 – 02/29/08	\$191,944/\$1,025,002
Tuberous Sclerosis Complex Natural History Study		
Department of Defense		
W81XWH-06-0538	05/01/06 – 04/30/09	\$191,252/\$550,299

Devarajan, P

Mechanisms of N, K-ATPase Polarity During Nephrogenesis		
National Institutes of Health (University of Iowa subcontract)		
P50 DK 052612	09/01/03 – 08/31/08	\$47,697/\$277,900
A Novel Biomarker for Early Ischemic Renal Injury		
American Heart Association – Ohio Valley Affiliate		
	07/01/04 – 06/30/06	\$55,000/\$110,000
NGAL: A Novel Early Biomarker of Acute Renal Injury		
National Institutes of Health		
R21 DK 070163	09/30/04 – 08/31/06	\$125,000/\$275,000
Implications of the Ask1/JNK Pathway in ARFs		
National Institutes of Health		
R21 DK 069749	04/01/05 – 03/31/10	\$214,830/\$1,100,000

Goebel, J

Noninvasive Monitoring to Predict Outcome in DeNova Kidney Transplant Recipients		
National Institutes of Health (The Cleveland Clinic Lerner College of Medicine subcontract)		
U01 AI 063594	09/01/05 – 08/31/07	\$41,053/\$94,673

Mitsnefes, M

Cardiac Disease in Children with Chronic Renal Failure		
National Institutes of Health		
K23 HL 069296	08/20/02 – 06/30/07	\$115,750/\$578,750
ABPM and End-Organ Damage in Pediatric Transplantation		
National Kidney Foundation		
	07/01/03 – 06/30/06	\$25,000/\$75,000
Chronic Renal Insufficiency in NAPRTCS Patients		
National Institutes of Health (Children's Mercy Hospital subcontract)		
U01 DK 066143	08/01/04 – 07/31/06	\$14,944

Nguyen, M

Early Prediction of Acute Renal Injury Following Cardiac Surgery Using Urinary Proteomics		
American Heart Association - Ohio		
	07/01/05 – 06/30/07	\$41,000/\$84,000

Strife, CF		
Novel Therapies for Resistant FSGS National Institutes of Health (Feinstein Institute for Medical Research subcontract) U01 DK 063385	09/01/03 – 08/31/05	\$16,700
Chronic Renal Insufficiency in NAPRTCS Patients National Institutes of Health (Children's Memorial Hospital subcontract) U01 DK 066143	08/01/04 – 07/31/06	\$52,240/\$104,480
Current Year Direct		\$1,132,410
Industry Contracts		
Bissler, J		
Novartis Pharmaceuticals Corporation		\$157,858
Devarajan, P		
Biosite, Inc.		\$6,906
Goebel, J		
Hoffman LaRoche		\$522
Mitsnefes, M		
Novartis Pharmaceuticals Corporation		\$1,717
Current Year Direct Receipts		\$167,003
TOTAL		\$1,299,413

PUBLICATIONS

1. VanDeVoorde III RG, Bissler JJ. Hematuria and proteinuria. In: Burg FD, Ingelfinger JR, Polin RA, Gershon AA, editors. Current pediatric therapy; 18th ed. Philadelphia: Saunders Elsevier; 2006. p. 606-612.
2. Williams JM, Racadio JM, Johnson ND, Donnelly LF, Bissler JJ. Embolization of renal angiomyolipomata in patients with tuberous sclerosis complex. Am J Kidney Dis 2006;47(1):95-102.
3. Devarajan P. Update on mechanisms of ischemic acute kidney injury. J Am Soc Nephrol 2006;17(6):1503-20.
4. Eichler T, Ma Q, Kelly C, Mishra J, Parikh S, Ransom RF, Devarajan P, Smoyer WE. Single and combination toxic metal exposures induce apoptosis in cultured murine podocytes exclusively via the extrinsic caspase 8 pathway. Toxicol Sci 2006;90(2):392-9.
5. Nguyen MT, Ross GF, Dent CL, Devarajan P. Early prediction of acute renal injury using urinary proteomics. Am J Nephrol 2005;25(4):318-26.
6. Goebel J, Forrest K, Wills-Karp M, Roszman TL. Tubulin polymerization modulates interleukin-2 receptor signal transduction in human T cells. J Recept Signal Transduct Res 2006;26(1-2):87-106.
7. Goebel J, Logan B, Forrest K, Mieczkowski A, Roszman TL, Wills-Karp M. Atorvastatin affects interleukin-2 signaling by altering the lipid raft enrichment of the interleukin-2 receptor beta chain. J Investig Med 2005;53(6):322-8.
8. Blaszak RT, Mitsnefes MM, Ilyas M, Salman SD, Belcher SM, Brady DR. Hyperphosphatemia in children receiving peritoneal dialysis--an educational program. Pediatr Nephrol 2005;20(7):967-71.
9. Mishra J, Ma Q, Kelly C, Mitsnefes M, Mori K, Barasch J, Devarajan P. Kidney NGAL is a novel early marker of acute injury following transplantation. Pediatr Nephrol 2006;21(6):856-63.
10. Mitsnefes M. Systemic hypertension and the child at risk for cardiovascular disease. In: Burg FD, Ingelfinger JR, Polin RA, Gershon AA, editors. Current pediatric therapy. Philadelphia: Saunders Elsevier; 2006. p. 510-516.

11. Mitsnefes MM. Hypertension in children and adolescents. *Pediatr Clin North Am* 2006;53(3):493-512, viii.
12. Mitsnefes MM, Kimball TR, Kartal J, Witt SA, Glascock BJ, Khoury PR, Daniels SR. Cardiac and vascular adaptation in pediatric patients with chronic kidney disease: role of calcium-phosphorus metabolism. *J Am Soc Nephrol* 2005;16(9):2796-803.
13. Mitsnefes MM, Subat-Dezulovic M, Khoury PR, Goebel J, Strife CF. Increasing incidence of post-kidney transplant anemia in children. *Am J Transplant* 2005;5(7):1713-8.
14. Schwab K, Hartman HA, Liang HC, Aronow BJ, Patterson LT, Potter SS. Comprehensive microarray analysis of Hoxa11/Hoxd11 mutant kidney development. *Dev Biol* 2006;293(2):540-54.
15. Braun MC, Stablein DM, Hamiwka LA, Bell L, Bartosh SM, Strife CF. Recurrence of membranoproliferative glomerulonephritis type II in renal allografts: The North American Pediatric Renal Transplant Cooperative Study experience. *J Am Soc Nephrol* 2005;16(7):2225-33.
16. Brunner HI, Bishnoi A, Barron AC, Houk LJ, Ware A, Farhey Y, Mongey AB, Strife CF, Graham TB, Passo MH. Disease outcomes and ovarian function of childhood-onset systemic lupus erythematosus. *Lupus* 2006;15(4):198-206.
17. Tarabishi R, Zahedi K, Mishra J, Ma Q, Kelly C, Tehrani K, Devarajan P. Induction of Zf9 in the kidney following early ischemia/reperfusion. *Kidney Int* 2005;68(4):1511-9.
18. Thakar CV, Zahedi K, Revelo MP, Wang Z, Burnham CE, Barone S, Bevans S, Lentsch AB, Rabb H, Soleimani M. Identification of thrombospondin 1 (TSP-1) as a novel mediator of cell injury in kidney ischemia. *J Clin Invest* 2005;115(12):3451-9.
19. Zahedi K, Revelo MP, Barone S, Wang Z, Tehrani K, Citron DP, Bissler JJ, Rabb H, Soleimani M. Stathmin-deficient mice develop fibrosis and show delayed recovery from ischemic-reperfusion injury. *Am J Physiol Renal Physiol* 2006;290(6):F1559-67.

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