RENAL-ELECTROLYTE Division
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The Renal-Electrolyte Division is devoted to its core missions of clinical and academic excellence, and to the training of the next generation of nephrologists. Our nephrologists provide a multidisciplinary approach to ensure the well-being and highest quality of care for patients with the most complex kidney and/or electrolyte disorders.

"The Renal-Electrolyte Division has a large interdisciplinary group of investigators who—using the tools of physiology, cellular and molecular biology, biochemistry, and cell signaling—study kidney/epithelial cell structure and function in health or disease states."

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The Renal-Electrolyte Division has a large interdisciplinary group of investigators who—using the tools of physiology, cellular and molecular biology, biochemistry, and cell signaling—study kidney/epithelial cell structure and function in health or disease states. A growing cadre of investigators is addressing important clinical and translational questions relevant to individuals with kidney disease, covering a range of topics that includes acute kidney injury, renal fibrosis, and transplant rejection and the management of individuals with advanced CKD. Investigators based at the Department of Veterans Affairs (VA) have led or are leading multicenter clinical studies focusing on prevention of contrast-induced nephropathy, on the management of diabetic nephropathy, and on dialysis intensity in the setting of acute kidney injury.

RENAL-ELECTROLYTE Fast Facts

- 53 academic faculty members
- 17% of US adults have chronic kidney disease
- $8 mil in research funding
FACULTY

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Frank & Athena Sarris Chair in Transplantation Biology
Scientific Director, Thomas E. Starzl Transplantation Institute

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Associate Clinical Director, Renal-Electrolyte Division Chief, Renal Services, UPMC Magee-Womens Hospital

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Associate Dean for Faculty Development, School of Medicine
Assistant Vice Chancellor for Faculty Excellence, Health Sciences

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Clinical Instructor of Medicine

Shaohu Sheng, MD
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Associate Professor of Medicine
Medical Director, Living Donor Kidney Transplant Program, Starzl Transplant Institute

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Assistant Professor of Medicine

Steven T. Truschel, PhD
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School of Medicine
Assistant Vice Chancellor for Faculty Excellence, Health Sciences

Christine M. Wu, MD
Assistant Professor of Medicine

Irina V. Zabbarova, PhD
Research Assistant Professor of Medicine
CLINICAL ACTIVITIES

Our clinicians provide state-of-the-art care for patients with kidney and/or electrolyte disorders at UPMC Presbyterian and Montefiore Hospitals, UPMC Magee, Western Psychiatric, VA facilities in Oakland, UPMC Shadyside, UPMC East, UPMC McKeesport, and UPMC Mercy.

The Division continues to provide outpatient dialysis services at Dialysis Centers, Inc. (DCI) Oakland, Banksville, Canterbury Place (part of UPMC Senior Communities located in Lawrenceville), Five Points, Harmar Village, Point Breeze, North Hills, and North Versailles. We also provide dialysis services at FMC West Penn, Penn Hills, Shaler, Shadyside, and Three Rivers. Our faculty serve as medical directors at nine dialysis centers. As of June 2019, our faculty were providing care to over 340 patients receiving in-center hemodialysis, and over 44 patients receiving dialysis at home.

Inpatients at UPMC Presbyterian, Montefiore, and Magee Hospitals with kidney and/or electrolyte disorders are cared for by rounding teams comprised of an attending physician, accompanied by either fellows, physician extenders, residents, and/or medical students. Over the course of the year, we saw more than 1600 new consults. A large number of renal replacement therapies are administered in the various intensive care units under the supervision of nephrology attending physicians and fellows. The Division has continued to enhance its inpatient services, performing 12,651 inpatient dialysis treatments in FY 2019. The Renal Division also provides consultation services at UPMC Shadyside, UPMC Mercy, UPMC McKeesport, and UPMC East.

Inpatient dialysis volume for each year is shown in Figure 1.

After showing staff the correct techniques to measure blood pressure, Sean Stocker, PhD, helped improve control rates by 6-7%, with 2 centers reporting an improvement of >80%.
(Wexford and St. Margaret’s), and southern suburbs (Mount Lebanon). Our physicians also provide care for patients’ pre- and post-kidney transplant at clinics in Oakland, West Mifflin, UPMC Hamot, and UPMC Altoona. Our physicians collaborate with rheumatologists in providing patient care at the UPMC Lupus Center of Excellence clinic in Oakland. **Evan Ray, MD, PhD**, collaborates with cardiology faculty in managing patients with complex hypertension at UPMC Mercy. **Jane Schell, MD**, and **Amar Bansal, MD**, provide palliative renal care at our University Center site. Through the efforts of our nurse education coordinator and our collaboration with the CKD REACH education program directed by DCI, the Division provides outpatient CKD education sessions at both University Center and community clinic locations. An increasing number of late-stage patients are expressing interest in home-dialysis modalities once educated on the range of available therapies. When possible, kidney transplants are performed prior to the need to initiate dialysis.

The Division has an active role at the VA Pittsburgh Healthcare System, with in-center hemodialysis and home peritoneal dialysis, as well as inpatient dialysis and a VA renal outpatient clinic. Division faculty members participate in a growing kidney transplant program and provide consultative support for distant facilities via the electronic medical record.

**New Initiatives**

The Renal-Electrolyte Division is collaborating with the UPMC Health Plan to identify and engage patients with advanced chronic kidney disease who have not seen a nephrologist. To support primary care physicians in managing these complex patients, our physicians are providing assistance in medical management through electronic consults (eConsults). Through the REACH program, our Division is working in partnership with DCI and the UPMC Heath Plan to provide support services for health plan members with advanced CKD. These include nurse educators, care managers, dietitians, and pharmacists. We also participate in an end-stage renal disease Seamless Care Organization, partnering with Dialysis Clinics Incorporated and community nephrologists. The purpose is to improve outcomes and reduce costs for Medicare beneficiaries with ESRD. Objectives include reducing hospitalizations, decreasing the use of dialysis catheters, increasing home dialysis therapies, increasing transplantations, and providing information and support for palliative care options. **Sean Stocker, PhD**, working with the AMA, has initiated a program through CMI to train staff at six CMI clinics to use appropriate techniques to measure blood pressure. Over a 6-month period, hypertension control rates improved 6-7%. Two clinics have achieved >80% control rate.

The Division is also working with departmental leadership and the Division of Rheumatology to establish a center focusing on Glomerular Diseases.

**CLINICAL QUALITY IMPROVEMENT INITIATIVES**

**Ranil DeSilva, MD**, serves as the Renal-Electrolyte Division’s Director of Quality Improvement. While overseeing active QI projects, he is also developing new QI projects.

**ESRD Transitions of Care Project.** A major QI initiative has been focused on improving the hospital transition of care for ESRD patients receiving dialysis. This project’s goal is to lower ESRD hospital readmissions. The project’s current focus is on improving our primary process/intervention: our newly created Cerner templated renal transition of care note (similar to ID’s Antibiotics Discharge Note).

The project’s goals specific to the ESRD Transitions of Care Project over the last fiscal year has been to provide more automatic clinical information to the patient’s dialysis unit and to foster the rapid creation of
post-discharge care plans. A new “Renal Transition of Care Note” has been built into Cerner to achieve this goal, and has been in use as of October 1, 2018. Upon starting, our initial six-month goal was to improve use of prior smart text template note to 70% of all ESRD patients discharged; this was achieved.

Our goals for 2019 are as follows:

1. To maintain this process measure at >70%, using new templated note
2. To improve the timeliness of outpatient-dialysis-unit notification of discharge. This was achieved with a new process in place with the assistance of Swati Bhosale, a member of the Clinical Quality Analytics Team within the Department of Medicine, by faxing notes along with discharge summaries to a patient’s respective out-patient HD unit within 24 hours of discharge. This process began in October 2018 and is ongoing. A long-term process goal is to develop, in Cerner, an automatic fax function triggered by a discharge order, which would fax the Renal Transition of Care Note to the outpatient dialysis unit. This remains in development with the UPMC Cerner team, led by Dr. Kristian Feterik, Pramen Applasamy, and the DCI EMR team.
3. To improve UPP affiliated DCI units’ processes to better utilize the content of these notes by the RN staff at the HD units (primary end-users). This will include involvement from both their local and national management (via ESCO chief medical officer, Dr. Robert Taylor).
4. To re-visit work on identifying more accurately hospitalized ESRD patient on dialysis within the UPMC data systems, (more specific to PUH and Magee) with the aim to more accurately measure hospital return rates that can be attributed to ESRD dialysis patients here at PUH and Magee.

**Evaluate the assessment of hemodialysis adequacy in our AKI patients at UPMC Presbyterian.** Led by Ranil DeSilva, MD, with lead medicine resident, Karim Yatim, MD (graduated July 2019), and Paul Palevsky, MD. Baseline assessments were done, education initiative completed late Fall 2018 with project completed early 2019 with results after intervention (without significant improvements in assessment of adequacy). Results were presented as a poster at Spring 2019 NKF clinical meeting, as well as at the Department of Medicine’s Annual Research Day.

**Establishing inpatient dialysis patient education platform using iPad.** Led by Ranil DeSilva, MD, with lead nephrology fellow, Syeda Ahmed, MD (graduated July 2019), Filitsa Bender, MD, and former fellow Huiwen Chen, MD (graduated July 2019 and now new faculty member). The project focused on creating a CKD education module using an iPad platform during 2018-2019 year and piloting prospectively with our acute in-patient renal consult service 2019 (on-going). While the short-term aim is to improve in-patient education for “crash start” dialysis patients, the primary long-term aim (secondary outcome) is to increase home dialysis and transplant, with this specific project targeting the acute crash starts (approximately 30% of incident dialysis patients). Pilot results were presented at the Department of Medicine’s Annual Research Day, and was accepted to be presented at ASN Kidney Week Fall 2019.

2019 goals specific to this project are as follows:

- To further improve the education platform by adding remote video CKD nurse education via REACH program.
- To better quantify effectiveness from patient feedback of education material/process (qualitative survey nearly completed and must still be implemented).
- To better assess baseline primary outcome measures of incident home dialysis starts and maintain data with continued enrollment (anticipate project to last for a few years given education process/enrollment is averaging 2-3 patients/month).
**Association of Nephrology In-patient Service Size on Medication Safety Recommendations.** Led by Ranil DeSilva, MD, with lead nephrology fellow, Huiwen Chen, MD; James Johnston, MD; and Syeda Ahmed, MD (graduated fellow). Retrospective medical chart review was done on nephrology consult notes when our consult service was high (defined >40 pts) vs low (defined <26 patients) based on 10% peak and low distribution during 2017-2018 calendar year. Reviewed specific categorized renal-related medication recommendations and identified errors defined by patients who experienced incorrect dosing of renal related medications. Results presented at the Department of Medicine Research Day in 2019 and accepted to be presented at ASN Kidney Week Fall 2019.

**Medicare's Patient Quality Reporting.** Under the direction of Nirav Shah, MD, the Division continues to report data quantifying its satisfaction of selected quality measures for covered services that are furnished to Medicare beneficiaries in Division outpatient clinics. This is in conjunction with the department’s response to Medicare’s Patient Quality Reporting Initiative. The measures tracked include blood pressure management and lab testing in CKD stage 4/5 patients, as well as urine protein screening in patients with diabetes mellitus. All patients with advanced CKD are receiving dedicated education sessions to discuss all treatment options, including in-center and home dialysis modalities, transplantation, and palliative care options when appropriate.

**Kidney Transplant-Recipient Evaluation.** Sundaram Hariharan, MD, and the Starzl Transplant Institute nephrology physicians continue to monitor the transplant-recipient evaluation checklists and selection outcomes documentation forms, utilizing the UNOS administrative scorecard for each transplant program.

**Inpatient Dialysis Unit.** Our inpatient dialysis unit is also involved with several unit specific quality initiatives, including assessing current hepatitis status of our hemodialysis patients and monitoring CLABS across service line where we are assessing impact of changes in on/off and dressing kits. Additionally, they are working to improve our weight measurements of our dialysis patients and are improving their reviews of weight comparisons of ESRD patients with hospitalizations >7 days. Based on feedback received during a prior Joint Commission visit, they have also developed a process to better document water checks with completed technician and RN verifications.

**Acute Kidney Injury.** Hoda Kaldas, MD, is continuing to work to improve patient education in the setting of acute kidney injury, with a focus on post-discharge education using Healthwise, a UPMC educational system. Her goal is to determine whether patients are receiving appropriate follow-up to help them prevent the recurrence of AKI.

**Improving in-patient EMR laboratory reporting of peritoneal fluid cell count with aim to better identify PD associated peritonitis.** Led by Filitsa Bender, MD, with lead nephrology fellow, Naveen Reddy, MD (graduated 7/2019), and Beth Piraino, MD, the main focus was changing laboratory reporting of cell count from nucleated cells to specific % of polys for Cerner laboratory reporting.

**Incidence of AKI after Implementation if Pennsylvania's PDMP.** Headed by Evan Ray, MD, PhD, this project’s aim was to evaluate if there was a relative increase of NSAID use and subsequently associated relative increase AKI incidence, as this policy was intended for reduction in opiate use.

**New QI projects in development for 2019**

**Dosing vancomycin in HD patients at Presby.** Ranil DeSilva, MD, led by medicine resident Chelsea Leah, as well as Tom Nolin, PharmD, and Morgan Casal, PharmD. This project’s aim will be to first assess if IV
vancomycin is being dosed appropriately in in-patient hemodialysis patients at Presbyterian, and, if not, the potential to implement a PK service to assist with dosing of IV vancomycin in hemodialysis patients at UPMC Presbyterian.

**Automated Office Blood Pressure (AOBP)s in Medical Arts CKD Renal Clinic.** Ranil DeSilva, MD, Blaise Abramovitz, DO; Courtney Stocker, RN, and likely lead by Anjuli Jain, MD (PGY2 medicine resident). This project will apply the process done by a national QI by AHA, but will be modified so that all patients have the specific AOBP protocol done in renal clinic, rather than just those with BPs>140/90, with the primary aim to assess change in physician inertia for change of medications BP management. By including all patients, a better assessment can be made regarding medication adjustments to better control hypertension, as well as medication adjustments to avoid clinically significant hypotension in our advancing CKD population.
1. **UPMC Kidney Clinic—University Center**
   
   University Center  
   120 Lytton Avenue, Suite 204  
   Pittsburgh (Oakland), PA 15213

2. **UPMC Kidney Clinic—UPMC Shadyside**
   
   Shadyside Medical Building  
   5200 Centre Avenue, Suite 509  
   Pittsburgh (Shadyside), PA 15232

3. **UPMC Kidney Clinic—Wexford**
   
   117 VIP Drive, Suite 120  
   Wexford, PA 15090

4. **UPMC Kidney Clinic—UPMC St. Margaret**
   
   Nitin Kamat, MD  
   Medical Arts Building  
   200 Delafield Road, Suite 4040  
   Pittsburgh, PA 15215

5. **UPMC Kidney Clinic—UPMC Monroeville**
   
   400 Oxford Drive, Suite 203  
   Monroeville, PA 15146

6. **UPMC Kidney Clinic—Mt. Lebanon**
   
   733 Washington Road, Suite 204  
   Mt. Lebanon, PA 15228

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RESEARCH AND OTHER SCHOLARLY ACTIVITIES

Working in conjunction with groups at UPMC, the University of Pittsburgh, and the VA, the Renal-Electrolyte Division has developed a dynamic research program with expected total cost expenditures of approximately $8 million. The division’s research interests include basic and clinical with the following specific areas of interest:

Basic research
- Structure, function, and regulation of epithelial sodium, potassium, and chloride transporters
- Protein trafficking in epithelia
- Response of epithelia to biomechanical forces
- Regulation of protein folding and maturation
- Mechanisms of bladder epithelial injury
- Neural-epithelial interactions in the urinary bladder
- Biology of immune cell memory
- Genetics of complex diseases
- Pathogenesis of acute kidney injury
- Pathogenesis of chronic kidney disease
- Central mechanisms of blood pressure control

Clinical research
- Electronic medical record and CKD management
- Exercise in ESRD
- Sleep disorders and quality of life in the setting of CKD and ESRD
- ICU nephrology
- Acute kidney injury
- Contrast nephropathy
- Depression in the setting of kidney disease
- Diabetic nephropathy
- Health literacy
- Optimization of peritoneal dialysis
- Palliative care in the setting of advanced CKD and ESRD

Over the past fiscal year, the Division received major grants from the NIH, the VA, and private foundations that support research on a diverse array of topics, including protein trafficking, ion transport physiology, kidney pathophysiology, and transplant immunology, and clinical issues related to CKD and ESRD. Grants
also support a range of clinical research activities. Funding for the successfully renewed NIDDK-funded P30 O’Brien Kidney Research Core Center—one of eight such centers nationwide—began this year. The O’Brien Kidney Research Core Center supports the research activities of 100 investigators with core facilities, pilot project grants, and educational opportunities, including a series of symposia and a summer research program for college undergraduate students. Division faculty lead an NIDDK-funded program project grant that is focused on spinal cord injury and associated urinary bladder disorders, and our VA physicians direct a multicenter cooperative study focused on strategies to prevent contrast-induced kidney injury, recently completing a multicenter cooperative study on therapeutics for diabetic nephropathy. Additionally, several faculty members—Lori Birder, PhD; Gerard Apodaca, PhD; and Thomas Kleyman, MD—hold or have recently held NIH MERIT awards.

Likewise, our trainees and junior faculty continue to be successful in obtaining extramural support. Manisha Jhamb, MD, MPH, was awarded $3.2 million from NIH to conduct a 5-year study to improve kidney health in patients with chronic kidney disease. The “Kidney-CHAMP” study is a collaboration between UPMC and UPMC Health Plan and will provide population health management and a multi-pronged intervention to about 1700 patients in Western Pennsylvania. To support the training of graduate students, postdoctoral fellows, and medical students in renal research, the Division hosts an NIDDK-funded T32 training grant, which was recently renewed, and an NIDDK-funded T35 training grant.

Other new research funding within the Division includes:

- **Lori Birder, PhD**, was awarded a five-year NIDDK grant, “Contribution of Stress Induced Autonomic and Urotheelial Dysregulation to IC/BPS.”
- **Cary Boyd-Shwarski, MD, PhD**, was awarded a five-year NIDDK grant for “The Function of Kidney Specific (KS)-WNK1 Condensates During Potassium Stress.”
- **Linda Fried, MD, MPH**, was awarded a one-year grant from the National Institute of Diabetes and Digestive and Kidney Diseases, from the CKD Pilot Trials Clinical Consortium.
- **Manisha Jhamb, MD, MPH**, received a one-year grant from Arbor Research for the CKDopps Coordinating Center (CKDCC).
- **Manisha Jhamb, MD, MPH**, was awarded a three-year NIDDK grant in conjunction with Vanderbilt University, “Population Health Management to Optimize Care for Patients with High Risk Chronic Kidney Disease.”
- **Manisha Jhamb, MD, MPH**, received a five-year grant from NIDDK in conjunction with Vanderbilt University for “OPTIMIZing care in Chronic Kidney Disease (OPTIMIZE CKD)”.
- **Sean Stocker, PhD**, was awarded a three-year grant from Aerpio Pharmaceuticals for “Preclinical Evaluation of Acute Pulmonary Vasodilatory Properties of Aerpio’s Proprietary Drug in Normal and Chronic Model of Pulmonary Arterial Hypertension in Rats.”
- **Anthony Kanai, PhD**, received a Department of Defense grant for “Enhancing Recovery of SCI-Induced Bladder Dysfunction Using Small Molecules.”
• **Anthony Kanai, PhD**, was awarded a two-year grant from the NIA for “A Novel Combination Drug Treatment for Detrusor Hyperactivity with Impaired Contractile Function (DHIC).”

• **Ossama Kashlan, PhD**, received a one-year grant, “ENaC Regulation by Biliary Factors, from Pittsburgh Liver Research.”

• **Thomas Kleyman, MD**, is a co-investigator on a five-year NIDDK grant led by faculty in the Department of Biological Sciences, titled “Role of GRP170 in ENaC Biogenesis and Renal Physiology.”

• **Thomas Kleyman, MD**, was awarded funding for a two-year pilot grant from NIDDK in conjunction with the University of Southern California to assess the “Physiological Properties of Human Kidney Organoids.”

• **Thomas Kleyman, MD**, was awarded a four-year grant though NHLBI for “ENaC Regulation and its Role in Blood Pressure Homeostasis.”

• **Shujie Shi, PhD**, was awarded a two-year grant from the NIDDK for “Regulation of ENaC expression by paraoxonase-2.”

• **Kate Shipman** received an ASN Pre-Doctoral Fellowship Award.

• **Roderic Tan, MD, PhD**, received an NIDDK award, “Tubular to Glomerular Crosstalk in Proteinuric Chronic Kidney Disease.”

• **Roderic Tan, MD, PhD**, received an NKF award for “Super-Resolution Ultrasound for Assessment of Kidney Vasculature.”

• **Ora Weisz, PhD**, was awarded a four-year NIDDK grant focusing on “Proximal Tubule Endocytosis in Normal and Nephrotic Kidneys.”

To provide additional venues for researchers to present their research, the Renal-Electrolyte Division supports numerous annual research conferences. In conjunction with the Pittsburgh Center for Kidney Research, the Department of Critical Care Medicine, the Starzl Transplant Institute, and the Division of Pediatric Nephrology, the Renal-Electrolyte Division co-hosted the eighth annual University-wide retreat exploring acute kidney injury. Additionally, the Renal-Electrolyte Division co-hosts an annual nephrotic syndrome symposium in conjunction with the Division of Pediatric Nephrology and the Pittsburgh Center for Kidney Research, as well as the annual Local Traffic Symposium, which focuses on protein trafficking, highlighting work by investigators at the University of Pittsburgh and Carnegie Mellon University.

**Faculty Research Interests and Activities**

**Thomas R. Kleyman, MD  Division Chief**

Dr. Kleyman’s research efforts are primarily directed at the study of epithelial Na channels (ENaCs) and large conductance Ca2+ activated K (BK) channels. Recent work has focused on elucidating mechanisms by which extracellular proteases, small ions, and mechanical forces modulate ENaC gating. He is studying how ENaC modification by glycans and palmitate affect channel trafficking and activity. Moreover, his group has identified novel functional human ENaC variants and is assessing how these variants affect blood pressure in rodent models and humans. Further studies are directed at examining the regulation of BK channels in renal collecting tubules by WNK kinases and by dietary potassium. In addition to research, Dr. Kleyman also serves as the director of the Division’s Pittsburgh Center for Kidney Research, and he directs T32 and T35 training grants.

**Advisory Committee Memberships and Leadership Positions**

- Member, Scientific Advisory Board, Telluride Science Research Center, 2013-present
Dr. Kleyman also serves as the director of the Division’s Pittsburgh Center for Kidney Research, and he directs T32 and T35 training grants. In addition to research, Dr. Kleyman also serves as the director of the Division’s Pittsburgh Center for Kidney Research. He has been involved in several major studies, including the identification of novel functional human ENaC variants and the assessment of how these variants affect blood pressure in rodent models and humans. Further studies are directed at examining the regulation of BK channels in renal transport. Moreover, his group has studied how modifications by glycans and palmitate affect channel trafficking and activity. They are also investigating how extracellular proteases, small ions, and mechanical forces modulate ENaC gating. Dr. Kleyman is also studying how ENaC is modified by glycans and palmitate, and how these modifications affect channel trafficking and activity. Additionally, his group has studied the role of extracellular proteases, small ions, and mechanical forces in modulating ENaC gating.

**Professional Affiliations and Society Memberships**
- Member, Society of General Physiologists, 1988-present
- Member, American Physiological Society, 1992-present
- Member, American Society of Nephrology, 1992-present
- Member, American Heart Association, 1995-present
- Member, Association of Subspecialty Professors, 2000-present
- Member, American Society for Biochemistry and Molecular Biology, 2001-present
- Member, Biophysical Society, 2002-present
- Member, Association of American Physicians, 2004-present
- Member, National Kidney Foundation, 2006-present

**Editorships**
- Editor-in-Chief, *Physiological Reports*, 2018

**Honors and Awards**
- Member, American Society for Clinical Investigation, 1996-present

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**Mohammad M. Al-Bataineh, DVM, MS, PhD**

Dr. Al-Bataineh’s primary research focus is the role of the cell surface sensor Mucin 1 (human MUC1 or rodent Muc1) during acute and chronic metabolic stress conditions, such as ischemia-reperfusion injury (IRI) and acid-base disorders.

**Professional Affiliations and Society Memberships**
- Member, American Academy of Veterinary Pharmacology & Therapeutics, 2006-present
- Member, American Physiological Society, 2010-present
- Member, American Society of Nephrology, 2011-present

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**Gerard L. Apodaca, PhD**

Dr. Apodaca’s lab studies the biology of the epithelial cells that line the inner surface of the bladder and ureters (urothelium), as well as the cells that line the tubules comprising the kidney nephron. His lab focuses on three major projects: 1) Studies of stretch-regulated membrane traffic in umbrella cells; 2) Analysis of tight junction morphology and function in response to stretch; and 3) Exploration of the role of uroplakins in urinary tract development and congenital anomalies of the kidney and urinary tract.

**Editorships**
- Editorial Board, *Traffic*, 2004-present
- Specialty Editor, *Frontiers in Cell and Developmental Biology (Membrane Traffic)*, 2013-present

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The Apodaca lab studies umbrella cells, shown here in a 3D reconstruction stained with TRITC-phalloidin (red) and nuclei (blue).
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Dr. Birder’s laboratory conducts research aimed at understanding the complexities of urinary bladder dysfunction, focusing on the role of the urothelial barrier in interstitial cystitis/bladder pain syndrome (IC/BPS), a chronic voiding disorder with symptoms that include urinary frequency and pain in the bladder and/or pelvis. Although the precise cause of IC/BPS is unknown, the lab’s research program goals are to elucidate the molecular basis underlying the function of ASICs and to identify targets in these proteins that can be used to develop inhibitors. A second research area examines the role of the urothelial barrier in IC/BPS.

Dr. Bender studies the outcomes of patients with chronic kidney disease, primarily those who receive peritoneal dialysis (PD). She also researches outcomes in incident PD patients after renal transplant. In addition, Dr. Bender is participating in a study to assess depression in hemodialysis patients.

Dr. Baty’s research interests focus on the role of lymphatic vasculature in health and disease, having collaborated with geneticists Robert Ferrell and David Finegold to first identify connexin mutations as a cause of lymphedema in humans. She uses a high-speed confocal imaging perfusion system for studies of renal lymphatics, ex vivo kidney slice cultures, perfused renal proximal tubules, and renal blood flow imaging.

Dr. Boyd-Shiwarski’s research interests are potassium homeostasis and ion transport, with a focus on the role of electroneutral sodium-chloride cotransporters in the kidney. Her recent studies have shown that the labilization of the chloride conductance is important for the regulation of the NCC (sodium-chloride cotransporter) by WNK (With-No-Lysine) kinases—the only known protein kinases that directly bind chloride and act as regulators of potassium homeostasis. Her recent studies have identified targets in these proteins that can be used to develop inhibitors. A second research area examines the role of the urothelial barrier in IC/BPS.

Dr. Bansal’s research interests include communication strategies, directed interventions, and epidemiology of patients with advanced CKD who opt for renal supportive care. He is also interested in decision-making related to dialysis initiation.

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epithelial (urothelial) cell function and urothelial cell-neuronal interactions. Her investigations have revealed that the urothelium, a stratified epithelial layer that lines the bladder lumen, has the capacity to send signals to neighboring cells via the release of chemical mediators. This arrangement is a departure from the conventional view of the urothelium as a simple barrier. Dr. Birder is addressing how pathology impacts mechanisms of urothelial communication, which may provide important insight into targets for new therapies for the clinical management of lower urinary tract disorders.

Advisory Committee Memberships and Leadership Positions

- Appointed Member, AUA Research Grants and Investigator Support Committee, 2017-2019
- Co-Chair, Basic Science Committee, International Continence Society, 2018
- Elected Representative, UPSOM Executive Committee of the Faculty, 2018-2021
- Member, AUA Research Advocacy Committee, 2019-2022

Professional Affiliations and Society Memberships

- Member, American Physiological Society, 1998-present
- Member, Society for Neuroscience, 1998-present
- Member, American Society for Pharmacology and Experimental Therapeutics, 1998-present
- Member, International Continence Society, 2002-present
- Member, Society for Urodynamics and Female Urology, 2002-present
- Member, UCLA Center for Neurovisceral Sciences and Women’s Health, 2007-present
- Member, International Association for the Study of Pain, 2010-present
- Member, International Society for the Study of Bladder Pain Syndrome, 2012-present
- Member, International Neuro-Urology Society, 2016-present
- Associate Member, UPMC-UPSOM Aging Institute, 2019

Editorships

- Associate Editor, Neurology and Urodynamics, 2003-present
- Editorial Advisory Board, Lower Urinary Tract Symptoms, 2008-present
- Editorial Board, Autonomic Neuroscience: Basic and Clinical, 2014-present
- Co-Editor in Chief, Bladder, 2014-present

Cary Boyd-Shiwarski, MD, PhD

Dr. Boyd-Shiwarski’s research interests are potassium homeostasis and ion transport, with a focus on the regulation of the NCC (sodium-chloride cotransporter) by WNK (With-No-Lysine) kinases—the only known kinases that directly bind chloride and act as regulators of potassium homeostasis. Her recent studies have focused on the role of a kidney specific isoform of WNK1 in localizing WNK kinases to a protein complex.

Professional Affiliations and Society Memberships

- Member, American Physiological Society, 2004-present
- Member, American Society of Nephrologists, 2004-present
- Member, American Physiological Society, 2004-present
- Member, American Physiological Society, 2004-present

Marcelo D. Carattino, PhD

Dr. Carattino’s lab studies the function of acid-sensing ion channels (ASICs). These channels are expressed in the nervous system where they contribute to sensory processes such as mechanosensation and nociception. The lab’s research program goals are to elucidate the molecular basis underlying the function of ASICs and to identify targets in these proteins that can be used to develop inhibitors. A second research area examines the role of the urothelial barrier in interstitial cystitis/bladder pain syndrome (IC/BPS), a chronic voiding disorder with symptoms that include urinary frequency and pain in the bladder and/or pelvis. Although the
Dr. Fried’s research is concentrated in two areas: 1) the association of decreased kidney function with adverse vascular outcomes and strategy in the geriatric population. Dr. DeSilva is interested in the use of more national registry/database tools to learn about population-based hemodialysis hospitalized ESRD dialysis patients who are moved to outpatient settings. In addition, Dr. DeSilva is inpatients and outpatients with chronic kidney disease and for end-stage renal disease dialysis-dependent patients. He also researches how to optimize the transition of care—and reduce readmissions—for hospitalized ESRD dialysis patients who are moved to outpatient settings. In addition, Dr. DeSilva is interested in the use of more national registry/database tools to learn about population-based hemodialysis vascular outcomes and strategy in the geriatric population.

**Professional Affiliations and Society Memberships**
- Member, American Society of Nephrology, 2010-present
- Member, The Biophysical Society, 2010-present
- Member, Society for Neuroscience, 2016-present

**Honors and Awards**
- Mentored Trainee Award, ASN Postdoctoral Research Fellowship, 2016-2018

Dr. Hariharan’s research centers on enhancing long-term kidney transplant allograft survival. Areas of focus include: recurrent and de novo diseases after renal transplantation, BKV infection after renal transplantation and long-term kidney transplant survival, and identification of clinical and biomarkers predicting long-term kidney transplant outcome. He is also exploring mechanistic aspects of subclinical acute rejection and serum markers of chronic rejection.

**Professional Affiliations and Society Memberships**
- Member, American Society of Transplantation, 2000-present
- Member, American Society of Nephrology, 2000-present
- Member, National Kidney Foundation, 2000-present
- Member, American Society of Transplantation, 2000-present
- Member, American Association of Immunology, 2007-present

**Honors and Awards**
- Mentored Trainee Award, ASN Postdoctoral Research Fellowship, 2016-2018

Dr. Hariharan’s research centers on the characterization of the assembly, processing, and membrane trafficking of the epithelial sodium channel (ENaC) in the renal proximal tubule cell membrane. Dr. Hariharan is also exploring the mechanisms that mediate voiding symptoms and pain in an animal model with reduced urothelial barrier function, providing a rational foundation to treat hypersensitive bladder disorders.

**Professional Affiliations and Society Memberships**
- Member, American Physiological Society, 2004-present
- Member, American Society of Nephrology, 2008-present
- Member, The Biophysical Society, 2010-present
- Member, Society for Neuroscience, 2016-present

**Editorships**

**Geetha Chalasani, MD**
Dr. Chalasani’s primary research interests include memory T cell biology, antibody-independent functions of B cells, and pathogenesis of chronic rejection. Her laboratory focuses on understanding how memory T cells are generated in transplantation. Her group investigates how B cells function; how their innate activation pathways contribute to T cell memory and chronic rejection; and how different B cell populations impact these processes. Other relevant translational areas of research include changes in B cell subpopulations and functions under depletional and non-depletional induction regimens in kidney transplant recipients; the impact of circulating BAFF levels and concomitant donor specific B and T cell memory in kidney transplant recipients undergoing early rejection; and immune exhaustion in pediatric liver transplant recipients as a mechanism of operational tolerance off immunosuppression.

**Professional Affiliations and Society Memberships**
- Member, American Society of Nephrology, 2000-present
- Member, American Society of Transplantation, 2000-present
- Member, National Kidney Foundation, 2000-present
- Member, American Association of Immunology, 2007-present

**Honors and Awards**
- Mentored Trainee Award, ASN Postdoctoral Research Fellowship, 2016-2018

**Ranil N. DeSilva, MD**
Dr. DeSilva studies the use of quality improvement initiatives to optimize quality and safety outcomes for inpatients and outpatients with chronic kidney disease and for end-stage renal disease dialysis-dependent patients. He also researches how to optimize the transition of care—and reduce readmissions—for hospitalized ESRD dialysis patients who are moved to outpatient settings. In addition, Dr. DeSilva is interested in the use of more national registry/database tools to learn about population-based hemodialysis vascular outcomes and strategy in the geriatric population.

**Professional Affiliations and Society Memberships**
- Member, American Society of Nephrology, 2010-present
- Member, Renal Physician Association, 2011-present

**Linda F. Fried, MD, MPH**
Dr. Fried’s research is concentrated in two areas: 1) the association of decreased kidney function with adverse

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**Renal-Electrolyte Division**

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The exact cause of IC/BPS is unknown, numerous lines of evidence suggest that an increase in the permeability of the urothelium contributes to the symptoms in this condition. This project’s goal is to examine the mechanisms that mediate voiding symptoms and pain in an animal model with reduced urothelial barrier function, providing a rational foundation to treat hypersensitive bladder disorders.
outcomes in older individuals, including cardiovascular disease, functional decline, and change in body composition, and 2) the progression of kidney disease, in particular, diabetic nephropathy. Dr. Fried was previously the Chair of a VA-sponsored multi-center study on the effects of combination ACEI/ARB vs. ARB monotherapy on the progression of diabetic nephropathy. Currently, she chairs the steering committee for the NIDDK CKD pilot study consortium.

Advisory Committee Memberships and Leadership Positions
- Member, NIDDK: External Expert Panel for the Chronic Renal Insufficiency Cohort Study, Phase III, 2012-present
- Chair, Data Safety and Monitoring Board for the NIDDK: Data Monitoring Board, Preventing Early Renal Loss in Diabetes (PERL) Study, 2013-present
- Member, Grant Review Committee, American Society of Nephrology, 2015-present
- Member, Postgraduate Education Committee, American Society of Nephrology, 2015-present
- Member, NIDDK: External Expert Panel for the CKiD: Chronic Kidney Disease in Children Study, 2019

Professional Affiliations and Society Memberships
- Member, American Society of Nephrology, 1995-present
- Member, National Kidney Foundation, 1996-present
- Member, Women in Nephrology, 2005-present

Sundaram Hariharan, MD
Dr. Hariharan’s research centers on enhancing long-term kidney transplant allograft survival. Areas of focus include: recurrent and de novo diseases after renal transplantation, BKV infection after renal transplantation and long-term kidney transplant survival, and identification of clinical and biomarkers predicting long-term kidney transplant outcome. He is also exploring mechanistic aspects of subclinical acute rejection and seeking to identify the rejection through non-invasive methods. Finally, Dr. Hariharan is assessing the impact of subclinical rejection in two categories of patients: those who are developing delayed graft function after deceased donor transplantation and those developing de novo DSA after both living and deceased donor transplantation.

Editorships
- Associate Editor, Clinical Transplantation, 2014-present
- Associate Editor, Transplantation, 2015-present

Honors and Awards
- Honoree, Castle Connolly America’s Best Doctors, 2018
- Honoree, Pittsburgh’s Best Doctors, Pittsburgh Magazine, 2018-2019

Rebecca P. Hughey, PhD
Dr. Hughey’s research centers on the characterization of the assembly, processing, and membrane trafficking of apically expressed glycoproteins in polarized kidney epithelial cells. She uses biochemistry and electrophysiology techniques to study the function of glycosylation, palmitoylation, and proteolytic processing of model proteins, such as the epithelial sodium channel (ENaC), gamma-glutamyltranspeptidase, and the cell surface sensor Mucin 1 (MUC1/Muc1). Her recent studies revealed that ENaC is activated by a very novel mechanism of proteolytic release of inhibitory peptides in the biosynthetic pathway and post-Golgi compartments—and in pathological states, such as proteinuria (kidney) and Cystic Fibrosis (lung). Her
current studies of MUC1 function in normal kidney epithelia focus on its role in epithelial survival and recovery from acute kidney injury and stabilization of V-ATPase and other channels/pumps at the cell surface.

Advisory Committee Memberships and Leadership Positions
- Member, Admissions Committee, University of Pittsburgh School of Medicine, 2009-present
- Member, Executive Committee, University of Pittsburgh School of Medicine, 2014-2020
- Assistant Dean, Medical Student Research Scholarly Project, 2019

Professional Affiliations and Society Memberships
- Member, American Society for Biochemistry and Molecular Biology, 1984-present
- Member, University of Pittsburgh Cancer Institute, 1986-present
- Member, American Physiological Society, 2003-present
- Member, American Society of Nephrology, 2005-present
- Member, Consortium for Functional Glycomics, 2006-present

Editorships
- Editorial Board, American Journal of Physiology-Renal Physiology, 2005-present

Youko Ikeda, PhD
Dr. Ikeda investigates the cellular mechanisms that regulate urinary bladder contractile and storage functions with her current research interests focused on the consequences of neurogenic injury on lower urinary tract function and the role of neurotrophin signaling in various urinary bladder pathologies.

Professional Affiliations and Society Memberships
- Member, International Continence Society, 2007-present
- Member, American Physiological Society, 2008-present
- Member, International Consultation on Incontinence Research Society, 2013-present
- Member, Society for Neuroscience, 2014-present

Editorships
- Editorial Board, International Neurourology Journal, 2018-present
- Editorial Board, American Journal of Physiology-Renal Physiology, 2019-present

Manisha Jhamb, MD, MPH
Dr. Jhamb’s clinical research focuses on understanding and improving patient-centered outcomes, such as fatigue, pain, sleep, and depression in patients with chronic kidney disease and end-stage renal disease. She is particularly interested in testing the effectiveness of clinical interventions to improve patient symptoms and quality of life in these patients. Her ongoing R01 is testing the effectiveness of technology-based collaborative care interventions on patient symptoms and inflammatory mediators in dialysis patients. Other studies are exploring alternative interventions, such as intradialytic exercise or hypertension control in improving patient symptoms. Dr. Jhamb’s second research focus has been on using electronic health record (EHR) to improve delivery and safety of chronic kidney disease (CKD) care, to conduct electronic consults, to reduce health disparities in CKD, and to develop predictive modeling to identify high-risk CKD patients.

Advisory Committee Memberships and Leadership Positions
- Member, Renal-Electrolyte Fellowship Interviewing Committee, University of Pittsburgh, 2010-present
- Member, MRI Research Center Pilot Imaging Grant, 2011-2018
- Member, Dean’s Admissions Interview Committee, University of Pittsburgh School of Medicine,
2012-present
• Member, Internal Medicine Residency Interviewing Committee, University of Pittsburgh, 2012-present
• Member, NIDDK Health Information Technology CKD Care Plan Working Group, 2015-present

**Professional Affiliations and Society Memberships**
• Member, American Society of Nephrology, 2009-present
• Member, National Kidney Foundation, 2010-present

**James R. Johnston, MD**
Dr. Johnston collaborates with colleagues in the Division on clinical studies in peritoneal dialysis and hemodialysis-based renal replacement therapy.

**Advisory Committee Memberships and Leadership Positions**
• Chairman, Membership Committee, Academy of Master Educators, University of Pittsburgh School of Medicine, 2005-present
• Member, Steering Committee, Academy of Master Educators, University of Pittsburgh School of Medicine, 2005-present
• Member, Program Director Development Subcommittee, Graduate Medical Education Committee, 2007-present
• Member, UPMC Patient Safety Committee, 2007-present
• Member, Academy of Master Educators Committee on Teaching Residents to Teach, 2007-present
• Member, Medicine Test Committee, National Board of Medical Examiners, 2009-present
• Member, Question Author, American Society of Nephrology In-Service Training Examination Committee, 2012-present
• Co-Course Director, Update in Internal Medicine, University of Pittsburgh School of Medicine, 2014-present
• Co-Chair, American Society of Nephrology In-Service Training Examination Clinic, 2016-present

**Professional Affiliations and Society Memberships**
• Member, American Society of Nephrology, 1988-present
• Member, National Kidney Foundation, 1999-present

**Editorships**
• Reviewer, Clinical Journal of American Society of Nephrology, 2011-present

**Honors and Awards**
• Honoree, Pittsburgh’s Best Doctors, *Pittsburgh Magazine*, 2018-2019
• Honoree, Castle Connolly America’s Top Doctors, 2005-2018

**Anthony J. Kanai, PhD**
Dr. Kanai’s lab studies lower urinary tract (e.g., urinary bladder, urethra, prostate) pathologies and their treatment through novel drug design and development, unique animal models, and the use of electrophysiological, molecular, and optical approaches. His work has resulted in several U.S. patents. The lab was the first to demonstrate that the bladder urothelium is more than a barrier and it produces nitric oxide in response to adrenergic agonists through direct microsensor measurements. There are four major projects funded through Dr. Kanai’s ongoing NIH P01, two R01, and DOD grants: 1) The study of spinal cord injury and its consequences on lower urinary tract dysfunction; 2) Radiation-induced damage—mechanisms,
Dr. Montalbetti is examining the role of the umbrella cell layer in health and disease states. The interior of the bladder is covered by the urothelium, a stratified epithelium. Umbrella cells, the outer most cell layer in the interstitium. The goals of this project are to understand how umbrella cells maintain an impermeable barrier and regenerate after spinal cord injury in mice and changes in urothelial cell properties in animal models of bladder dysfunction using small molecules that promote neural regeneration.

Advisory Committee Memberships and Leadership Positions
- Member, Graduate Curriculum Committee, Department of Pharmacology, 2006-present

Professional Affiliations and Society Memberships
- Member, American Physiological Society, 1998-present
- Member, Society for Neuroscience, 1998-present
- Member, American Society for Pharmacology and Experimental Therapeutics, 1998-present
- Member, International Continence Society, 2002-present
- Member, International Society for the Study of Interstitial Cystitis, 2006-present
- Member, Society for Basic Urological Research, 2006-present
- Member, Society for Urodynamics and Female Urology, 2006-present
- Member, International Consultation on Incontinence—Research Society, 2009-present

Editorships
- Editorial Board, Frontiers in Autonomic Neuroscience, 2008-present
- Editorial Board, Neurourology & Urodynamics, 2008-present

Ossama B. Kashlan, PhD
Dr. Kashlan’s research team seeks a structural and mechanistic based understanding of the functional regulation of epithelial ion channels. Recent work has focused on regulation by proteases, specifically the mechanism of action and its evolution. He has also focused on regulation by biliary factors: the molecular determinants, sites of interaction, mechanism, and contribution to electrolyte imbalances in the context of liver disease.

Professional Affiliations and Society Memberships
- Member, American Association for the Advancement of Science, 2011-present
- Member, Biophysical Society, 2012-present
- Member, American Heart Association, 2013-present
- Member, American Society for Biochemistry and Molecular Biology, 2014-present

Florenta A. Kullmann, PhD
Dr. Kullmann focuses on understanding the cellular mechanisms underlying various voiding dysfunctions, finding new targets for treatment of these conditions, as well as developing and characterizing animal models for voiding dysfunctions. She utilizes a combination of in vivo and in vitro methodologies—including cystometry, metabolism cages, electrophysiology, single cell imaging, confocal microscopy, and immunohistochemistry—to investigate how different components of the urinary bladder, the urothelium, smooth muscle, and neurons are affected by pathology. Recent projects are focused on urothelial hyperplasia and regeneration after spinal cord injury in mice and changes in urothelial cell properties in animal models of interstitial cystitis.

Professional Affiliations and Society Memberships
Nicolas Montalbetti, PhD
Dr. Montalbetti is examining the role of the umbrella cell layer in health and disease states. The interior of the bladder is covered by the urothelium, a stratified epithelium. Umbrella cells, the outer most cell layer in the urothelium, form an impermeable barrier that prevents the diffusion of urine constituents into the bladder interstitium. The goals of this project are to understand how umbrella cells maintain an impermeable barrier as bladders fill and deflate, and to understand how changes in urothelial permeability lead to disease states.

Professional Affiliations and Society Memberships
- Member, Argentinean Biophysical Society, 2007-present
- Member, American Physiological Society, 2015-present

Kelly V. Liang, MD
Dr. Liang’s research focuses primarily on various aspects of lupus nephritis, acute kidney injury (AKI), and cardiorenal failure. She is investigating whether AKI biomarkers will be detectable in the kidneys of patients with biopsy-proven lupus nephritis (LN) during the time of an LN flare, as well as analyzing the associations between traditional clinical LN biomarkers and renal pathology. She has performed a retrospective study using the Acute Renal Failure Trial Network (ATN) Study database assessing whether urea reduction ratio (URR) can be used as a simpler method of determining adequacy of intermittent hemodialysis in the critical care setting. Dr. Liang has also analyzed associations between modality of renal replacement therapy (RRT) and renal recovery and mortality in critically ill patients with AKI who survived to hospital discharge. She performed a pilot trial investigating whether a protocolized diuretic treatment strategy results in improved clinical decongestion, clinical outcomes, and health-related quality of life (HRQOL) in patients with cardiorenal failure.

Professional Affiliations and Society Memberships
- Member, American College of Physicians-American Society of Internal Medicine, 1998-present
- Member, American Medical Association, 1998-present
- Member, American Society for Nephrology, 2004-present
- Member, American Society of Nephrology, 2005-present
- Member, National Kidney Foundation, 2005-present

Rajil B. Mehta, MD
Dr. Mehta’s research interests include clinical and translational aspects of subclinical organ rejection. He is interested in following long-term outcomes in patients with subclinical rejection—and in exploring alternative pathways that may be playing a contributory role in subclinical rejection, including the role of Th17 cells and the IL17 pathway.

Advisory Committee Memberships and Leadership Positions
- Member, Outpatient Quality Improvement Program, Starzl Transplant Institute, 2015-present

Professional Affiliations and Society Memberships
- Member, American Society of Nephrology, 2004-present
- Member, American Society of Transplantation, 2013-present

Department of Medicine 2019 Annual Report
Renal-Electrolyte Division
Dr. Palevsky is a clinical researcher who focuses on acute and chronic kidney disease. He was co-chair of VA PRESERVE study (Prevention of Serious Adverse Events Following Angiography), a multicenter randomized controlled trial that enrolled nearly 5,200 patients and evaluated comparative effectiveness of 0.9% saline and 1.3% sodium bicarbonate and the efficacy of N-acetylcysteine in preventing major adverse kidney events following radiocontrast administration. Dr. Palevsky is also a Co-Principal Investigator in the PreCISE AKI study, which will be obtaining kidney biopsies from patients with early acute kidney injury as part of the NIDDK’s Kidney Precision Medicine Project (KPMP) consortium. He is a member of the steering committee for the VA Stop Gout study, a VA cooperative study comparing the effectiveness of allopurinol and febuxostat in patients with gout. He previously served as the Principal Investigator and study chair of the VA/NIH Acute Renal Failure Trial Network (ATN) study, comparing more-intensive to less-intensive renal replacement therapy in critically ill patients with acute kidney injury. In addition, Dr. Palevsky was a member of the steering committees of the VA NEPRON-D study, comparing mono-therapy with losartan to combination therapy with losartan and lisinopril in diabetic kidney disease and the EUPHRATES trial, evaluating the efficacy of extracorporeal endotoxin adsorption in sepsis. Other areas of research include progression of CKD, management of symptoms in patients with CKD and ESRD, and implementation of quality improvement in CKD and ESRD.

Advisory Committee Memberships and Leadership Positions

- Consultant, FDA Gastroenterology and Urology Devices Panel, Medical Devices Advisory
- Member, Kidney in Cardiovascular Disease Council, American Heart Association, 1989-present
- Member, Quality, Safety and Accountability Committee, Renal Physicians Association, 2003-present
- Member, Dialysis Steering Committee, U.S. Department of Veterans Affairs, 2010-present
- Member, Kidney Health Committee, U.S. Department of Veterans Affairs, 2010-present
- Member, Renal Field Advisory Committee, U.S. Department of Veterans Affairs, 2011-present
- Member, NIDDK Observational Study Monitoring Board for the Chronic Renal Insufficiency Cohort (CRIC) Study, 2012-present
- Member, Medical Review Board, Quality Insights Renal Network 4, 2013-present
- Member, Scientific Advisory Board, National Kidney Foundation, 2013-present
- Committee, Centers for Devices and Radiological Health, 2013-present
- Chair, NIDDK Novel Interventions Hemodialysis Patients Cooperative Agreement Protocol Review Committee and Data Safety Monitoring Board, 2014-present
- Member, Water Safety Committee, U.S. Department of Veterans Affairs, 2014-present
- Co-Chair, Kidney Care Quality Alliance Steering Committee, 2016-present
- Acting Chair, NIDDK Observational Study Monitoring Board for the Chronic Renal Insufficiency Cohort (CRIC) Study, 2016-present
- Chair, Board of Directors, Quality Insights Renal Network 4, 2018-present
- Ad hoc Voting Member, Antimicrobial Drugs Advisory Committee, Center for Drug Evaluation and
• Member, NIDDK Optimal Management of HIV Positive Adults at Risk for Kidney Disease in Nigeria Cooperative Agreement Protocol Review Committee and Data Safety Monitoring Board, 2018-present
• Chair, Medical Review Board, Quality Insights Renal Network 4, 2019-present

Professional Affiliations and Society Memberships
• Member, American College of Physicians, 1986-present
• Member, International Society of Nephrology, 1986-present
• Member, American Society of Nephrology, 1988-present
• Member, National Kidney Foundation, 1990-present
• Member, Renal Physicians Association, 1993-present
• Member, American Federation for Medical Research, 1994-present
• Member, American Medical Association, 2001-present
• Member, Pennsylvania Medical Society, 2001-present
• Member, Allegheny County Medical Society, 2001-present

Editorships
• Editorial Board, Journal of Intensive Care Medicine, Nephrology, 2003-present
• Section Editor, UpToDate, Acute Renal Failure, 2005-present
• Editorial Board, Blood Purification, 2008-present
• Editorial Board, Clinical Journal of the American Society of Nephrology, 2017-present
• Deputy Editor, Journal of the American Society of Nephrology, 2018-present

Major Lectureships and Seminars
• Invited Presenter, American Society of Nephrology Critical Care Nephrology 2018 Update, San Diego, CA, 2018
• Invited Presenter, American Society of Nephrology Kidney Week 2018, San Diego, CA, 2018
• Invited Presenter, Nephrologists Transforming Dialysis Safety Webinar, 2018
• Invited Presenter, New York State Thoracic Society 2018 Annual Assembly, Valhalla, NY, 2018
• Visiting Professor, University of Massachusetts, Worcester, MA, 2018
• Visiting Professor, University of Wisconsin, Madison, WI, 2018
• Invited Presenter, 36th Vicenza Course on AKI & CRRT, Vicenza, Italy, 2018
• Invited Presenter, Kidney Disease Clinical Trialists 2019, Washington, DC, 2019
• Invited Presenter, Improving Care for Patients after Hospitalization with AKI, NIDDK, Bethesda, MD, 2019
• Invited Presenter, National Kidney Foundation 2019 Spring Clinical Meetings, Boston, MA, 2019
• Invited Presenter, University of Florida Nephrocardiology Conference 2019, Orlando, FL, 2019
• Visiting Professor, Baylor University Medical Centyer, Dallas, TX, 2019

Honors and Awards
• Fellow, American College of Physicians, 1992-present
• Fellow, American College of Chest Physicians, 1996-2018
• Fellow, American Society of Nephrology, 2004-present
• Fellow, National Kidney Foundation, 2011-present
• Honoree, Best Doctors, Pittsburgh Magazine, 2016-2019

Beth M. Piraino, MD
Dr. Piraino’s research interests center on improving outcomes in patients with CKD.

**Advisory Committee Memberships and Leadership Positions**
- Board Member, National Kidney Foundation Serving the Alleghenies, 2014-present

**Professional Affiliations and Society Memberships**
- Member, American Society of Nephrology, 1982-present
- Member, International Society for Peritoneal Dialysis, 1984-present
- Member, National Kidney Foundation, 1984-present
- Member, International Society of Nephrology, 1986-present
- Member, Women in Nephrology, 1999-present

**Editorships**
- Editorial Board, *Clinical Journal of the American Society of Nephrology*, 2017-present
- Editorial Board, *Nephrology Dialysis Transplant*, 2017-present

**Honors and Awards**
- Member, Alpha Omega Alpha, 1976-present
- Fellow, American College of Physicians, 2012-present
- Honoree, Castle Connolly America’s Best Doctors, 2018
- Honoree, J. Michael Lazarus Award, National Kidney Foundation, May 2019

**Chethan M. Puttarajappa, MD**
Dr. Puttarajappa’s research interests include pre-transplant assessment of kidney transplant candidates, particularly in the area of cardiovascular risk and functional status assessment. His other areas of interest are Cytomegalovirus (CMV) infections in kidney transplant recipients and a cost-effectiveness analysis in transplantation.

**Advisory Committee Memberships and Leadership Positions**
- Member, Protocol Review Committee/Data Safety Monitoring Board, Starzl Transplant Institute, 2013-present

**Professional Affiliations and Society Memberships**
- Member, American Society of Nephrology, 2010-present
- Member, American Society of Transplantation, 2013-present

**Editorships**
- Invited Reviewer, *Clinical Transplantation*, 2014-present
- Invited Reviewer, *Transplantation*, 2015-present

**Evan C. Ray, MD, PhD**
Dr. Ray studies electrolyte balance in the body, including sodium, potassium, magnesium, calcium, and acid/base. He is exploring the influence of these electrolytes on body fluid, blood pressure, bone health, and immune function.

**Professional Affiliations and Society Memberships**
- Member, American Heart Association, 2013-present
- Member, American Society of Nephrologists, 2013-present
- Member, National Kidney Foundation, 2013-present
Helbert Rondon-Berrios, MD, MS
Dr. Rondon’s research interests are in the areas of hyponatremia and medical education. He is interested the effects of a new American formulation of oral urea on patient-centered clinical outcomes related to hyponatremia (neurocognition and gait disturbances). He is also interested in medical education and the development of innovative curriculum for trainees to improve the application of sodium and water physiology into clinical care.

Advisory Committee Memberships and Leadership Positions
- Member, Kidney Health Committee, U.S. Department of Veterans Affairs, 2010-present

Professional Affiliations and Society Memberships
- Member, American College of Physicians, 2003-present
- Member, American Society of Nephrology, 2005-present
- Member, National Kidney Foundation, 2018-present

Editorships
- Ad hoc Reviewer, *Physiological Reports*, 2015-present
- Ad hoc Reviewer, *ASN Kidney Self Assessment Program*, 2015-present
- Ad hoc Reviewer, *ASN Nephrology Self Assessment Program*, 2015-present
- Ad hoc Reviewer, *Clinical Kidney Journal*, 2016-present
- Ad hoc Reviewer, *Nephron*, 2016-present
- Associate Editor, *Frontiers in Medicine - Nephrology*, 2016-present
- Ad hoc Reviewer, *Clinical Journal of the American Society of Nephrology*, 2019-present
- Ad hoc Reviewer, *Kidney Medicine*, 2019

Major Lectureships and Seminars
- Visiting Professor, Division of Nephrology, Drexel University, 2018
- Visiting Professor, Division of Nephrology, Hofstra/Northwell, 2018
- Invited speaker, East by Southwest Second Annual Update in Nephrology, 2018
- Visiting Professor, Division of Nephrology at Icahn School of Medicine at Mount Sinai, 2019
- Invited speaker, National Kidney Foundation, Spring Clinical Meeting, 2019

Nirav A. Shah, MD
Dr. Shah is collaborating on several topics in clinical transplantation, including immunosuppression, immune monitoring, and the management of medical complications of kidney transplantation. He is a co-investigator of an NIH study examining the effects of drug metabolism, based on Vitamin D levels, in CKD patients.

Professional Affiliations and Society Memberships
Shaohu Sheng, MD
Dr. Sheng’s research focuses on the structure-function relationship and regulation of epithelial sodium channels. He and his colleagues continued to investigate the functional roles of individual subdomains within the extracellular regions of the sodium channels. His group is interested in characterizing the genetic variants of human epithelial sodium channel genes and examining the roles of specific variants in blood pressure regulation using knock-in mouse models.

Professional Affiliations and Society Memberships
- Member, American Physiological Society, 2001-present
- Member, Biophysical Society, 2001-present
- Member, American Society for Biochemistry and Molecular Biology, 2012-present

Editorships
- Editorial Board, American Journal of Physiology-Renal Physiology, 2007-present
- Editorial Board, Frontiers in Renal and Epithelial Physiology, 2012-present

Shujie Shi, PhD
Mechanically gated ion channels play essential roles in transforming mechanical forces into cellular signals, a biological process referred to as mechanosensation. The focus of Dr. Shi’s research is the exploration of the mechanisms by which ion channels of the epithelial sodium channel (ENaC)/degenerin family are regulated by mechanical forces. She uses the two expression systems, Xenopus oocytes and C. elegans worms, to perform systematic structure-function studies and then translates her findings into a whole animal setting. She discovered that the C. elegans degenerin channel was activated by shear stress and the two pore-forming subunits, MEC-4 and MEC-10, had distinct roles in this response. She is currently working on identifying key domain or sites within the degenerin channel required for the channel's activation by shear stress. She is also studying how accessory proteins, such as MEC-6 and its mammalian homology PON-2, regulate the channel activity and gating.

Professional Affiliations and Society Memberships
- Member, American Society of Nephrology, 2007-present
- Member, American Physiological Society, 2016-present

Puneet Sood, MD
D. Sood’s clinical research interests are living donor transplantation; strategies for transplanting highly sensitized patients, including local or national donor exchange programs; strategies for living donor desensitization; and wait list desensitization. He is interested in transplant outcomes in highly sensitized patients, the mechanism and treatment of antibody mediated rejection, and HLA matching. Dr. Sood is also the center PI for two industry-sponsored multicentric translational studies. In addition, he collaborates with the School of Pharmacy to study drug disposition after kidney transplantation and in living donors.
Sean D. Stocker, PhD
Dr. Stocker’s laboratory investigates how the central nervous system contributes to cardiovascular disease, including obesity-induced and salt-sensitive hypertension. The lab employs a variety of approaches, including in vivo cardiovascular monitoring, in vivo and in vitro electrophysiology, functional neuroanatomy, and translational studies in humans (microneurography, blood flow). A major goal of Dr. Stocker’s laboratory is to identify the cellular mechanisms that permit specialized “sodium-sensing neurons” or osmoreceptors in the brain to sense changes in sodium concentration and how it causes salt-sensitive hypertension. Additionally, he is evaluating the impact of dietary salt intake on sympathetic reflexes and blood pressure variability in normotensive humans and, through the use of salt-resistant rodents, attempting to identify the novel mechanisms underlying these adverse neurogenic effects of dietary salt.

Study Sections
- Member, IH Special Emphasis Panel – Neuroscience AREA R15 Grant, 2012-present
- Committee Member, Mentored Transition to Independence Review Committee, NIH NHLBI, 2015-present
- Chair, Vascular Biology/Blood Pressure Integration Study Section, American Heart Association, 2015-present

Advisory Committee Memberships and Leadership Positions
- Member, American Heart Association Hypertension Council, 2002-present
- Committee Member, Strategically Focused Network Hypertension Oversight Committee, American Heart Association, 2015-present
- Committee Member, Hypertension Council Leadership Committee, American Heart Association, 2016-present
- Committee Member, Research Funding Committee, American Heart Association, 2016-present
- Director of Research, University of Pittsburgh Hypertension Center, University of Pittsburgh School of Medicine, 2016-present

One of the techniques employed by the Stocker lab in his investigation of hypertension is in vivo electrophysiology.
Arohan R. Subramanya, MD
The goal of Dr. Subramanya’s research is to define and understand new molecular pathways that coordinate sodium, chloride, and potassium transport in the kidney and other organs. His work has provided insights into the pathogenesis of renal salt wasting nephropathies, and has identified novel mechanisms involved in the regulation of cell volume, blood pressure, and potassium balance.

Advisory Committee Memberships and Leadership Positions
- Member, Epithelial Transport Group Steering Committee, American Physiological Society, 2014-2018
- Member, KCVD Membership and Communications Committee, American Heart Association, 2014-present
- Member-at-Large, KCVD Leadership Committee, American Heart Association, 2014-present

Professional Affiliations and Society Memberships
- Member, American Society of Nephrology, 2002-present
- Member, American Heart Association, 2006-present
- Member, American Physiological Society, 2006-present
- Member, National Kidney Foundation, 2006-present
- Member, The Salt and Water Club, 2006-present
- Member, American Society for Cell Biology, 2010-present

Editorships
- Editorial Board, American Journal of Physiology-Renal Physiology, 2010-present
- Editorial Board, Frontiers in Renal and Epithelial Physiology, 2010-present

Roderick J. Tan, MD, PhD
Dr. Tan is interested in unraveling the molecular mechanisms underlying the development of acute kidney injury as well as chronic kidney disease and fibrosis utilizing both in vivo and in vitro approaches. In particular, he is assessing novel ways in which the glomerular and tubular compartment cross-talk in disease, and how the Nrf2/Keap1 pathway can be leveraged to prevent CKD. He is also studying how the Wnt/beta-catenin pathway and matrix metalloproteinases affect renal injury.

Advisory Committee Memberships and Leadership Positions
Dr. Tan is interested in unraveling the molecular mechanisms underlying the development of acute kidney injury as well as chronic kidney disease and fibrosis utilizing both in vivo and in vitro approaches. In particular, Dr. Tan has focused on the regulation of cell volume, blood pressure, and potassium balance. His work has provided insights into the pathogenesis of renal salt wasting nephropathies, and he has identified novel mechanisms involved in sodium, chloride, and potassium transport in the kidney and other organs.

The goal of Dr. Subramanya’s research is to define and understand new molecular pathways that coordinate the transport of sodium, chloride, and potassium in kidney cells. His work has contributed to the development of therapeutic strategies for the management of symptoms in patients receiving chronic hemodialysis.

Steven T. Truschel, PhD
Age-related changes in cellular function can lead to various human pathologies, including cancer, diabetes, and neurodegenerative diseases. A common biomarker of aging cells is a change in the function of lysosomes, which are intracellular organelles responsible for the degradation and recycling of waste material from cellular metabolism and from normal organelle turnover. Impaired lysosomal function can lead to the accumulation of waste products within cells, a progressive loss of lysosomal activity and ultimately cell death. Dr. Truschel is interested in understanding how aging affects the lysosomal network within the cells lining the inner surface of the urinary bladder and how these changes affect bladder function.

Steven D. Weisbord, MD, MSc
Dr. Weisbord’s main research interests include the processes of care related to acute kidney injury and quality of life and symptom burden in maintenance hemodialysis patients. He is the Principal Investigator and study Chairman of the ‘PRESERVE’ study, a multicenter, randomized clinical trial study sponsored by a VA Cooperative Studies Program which is investigating interventions to prevent serious adverse outcomes related to contrast-induced acute kidney injury. Dr. Weisbord is also a Principal Investigator of an NIH-funded study establishing a biorepository of blood and urine samples collected from PRESERVE trial participants. He was also the Principal Investigator of the SMILE study, a multicenter clinical trial that compared two strategies for the management of symptoms in patients receiving chronic hemodialysis.

Ora A. Weisz, PhD
Research in the Weisz lab focuses broadly on understanding how membrane traffic in proximal tubule cells responds to physiologic cues to maintain kidney function. Her team is developing kinetic and imaging approaches to define the apical endocytic pathway in these cells and to elucidate the mechanisms by which the proximal tubule efficiently recovers filtered proteins and small molecules. Additionally, she has been generating new in vitro and ex vivo systems, including disease models, to try to unravel how proximal tubule cells in the kidney alter endocytic and ion transport capacity in response to changes in tubular flow. Her
studies have direct implications for the understanding and treatment of genetic and other disorders that result in tubular proteinuria and eventually lead to kidney failure, including Lowe syndrome, Dent disease, and sickle cell disease.

**Advisory Committee Memberships and Leadership Positions**
- Member, Board of Scientific Counselors, NIH NHLBI, 2014-present
- Member, American Society for Cell Biology Council, 2016-present
- Member, Scientific Tracks Task Force, ASCB Meeting, 2018

**Professional Affiliations and Society Memberships**
- Member, American Society for Cell Biology, 1985-present
- Member, American Society of Nephrology, 2000-present
- Member, American Physiological Society, 2004-present

**Editorships**
- Editorial Board, *Traffic*, 2012-present
- Review Editor, *Frontiers in Membrane Traffic*, 2013-present
- Editorial Board, *Journal of the American Society of Nephrology*, 2018-present

**Honors and Awards**
- Member, Academy of Master Educators, 2009-present
- Member, Sigma Xi, 2017-present

**Christine M. Wu, MD**
Dr. Wu's clinical and research interests lie in the selection of kidney transplant recipients and wait-list management, kidney transplantation in the elderly, and the impact of co-morbidity on transplant outcomes.

**Advisory Committee Memberships and Leadership Positions**
- Member, Admissions Interview Committee, University of Pittsburgh School of Medicine, 2014-present
- Program Director, Transplant Nephrology Fellowship, 2014-present

**Professional Affiliations and Society Memberships**
- Member, American College of Physicians, 2000-present
- Member, American Society of Nephrology, 2002-present
- Member, American Transplant Society, 2005-present

**Honors and Awards**

**Irina V. Zabbarova, PhD**
Dr. Zabbarova’s research interests focus on the mechanisms for the development of bladder dysfunction, especially those caused by spinal cord injury (SCI) and pelvic organ irradiation (radiation cystitis). She also examines potential therapeutic options.

**Professional Affiliations and Society Memberships**
- Member, International Continence Society, 2007-present
- Member, American Society of Pharmacology and Experimental Therapeutics, 2009-present
- Member, International Consultation on Incontinence Research Society, 2011-present
- Member, Society for Neuroscience, 2014-present
TEACHING ACTIVITIES

Teaching medical students, graduate students, medical residents, and renal fellows continues to be a Division strength. Our faculty are consistently recognized as some of the best educators in the School of Medicine, as evidenced by their consistently high scores on teaching evaluations and by the teaching awards they receive.

The Renal-Electrolyte Division offers our clinical trainees a broad-based didactic curriculum. All clinical trainees meet with the faculty for a series of lectures and discussions to provide an introduction to important areas of nephrology, and highlight areas pertinent to certification examination requirements. Throughout the year the Division hosts a regular series of clinical and research conferences, including Renal Grand Rounds, Biopsy Conference, Journal Club, Research Seminar Series, and a Clinical Lecture Series. Fellows present at Renal Grand Rounds and Journal Club, and participate in the teaching of University of Pittsburgh medical students. Weekly Research Seminar is designed to allow research trainees to present progress reports of ongoing work, and hear about current research from our faculty. In addition, weekly research conferences are held by the Departments of Cell Biology and Physiology, Pharmacology, Molecular Genetics and Biochemistry, Pathology and Biological Sciences.

The Division is also supportive of those engaged in research. Thomas Kleyman, MD, is the director of two NIH training grants: a T32 for pre- and post-doctoral research focused on renal and epithelial cell biology, and a T35 for medical students interested in renal, gastroentrology, endocrinology, and epithelial biology.

Overall, our faculty are consistently active in many educational forums, including:

- Directors of medical school and CME courses
- Invited lectureships nationally and internationally
- Leading and participating in courses at national specialty meetings
- Coordinator of the second-year medical student curriculum
- Scholarly project and career mentors
- Membership in the Academy of Master Educators

In the past year, the Division has also been recognized for our educational efforts, receiving CCE funding from Otsuka for Renal Grand Rounds seminars related to Autosomal Dominant Polycystic Kidney Disease (ADPKD) and CCE funding from Relypsa to establish a speaker series program titled “The Electrolyte Club Speaker Series” to bring recent advances in the field of fluid, electrolyte and acid-base physiology to our clinicians and researchers. Additionally, James Johnston, MD, received an Excellence in Education Award from the Class of 2020 for contributions as a Small Group Facilitator as well as Pre-Clinical Course Director.
Clinical Fellows, FY2019

Current Fellows

Narwas Alshoubaki, MD
Medical School: Jordan University of Science and Technology Medical School, Irbid, Jordan
Residency: Hamad Medical Corporation, Doha, Qatar, and Unity Health System, Rochester, NY

Aravind Cherukuri, MD, PhD
Medical School: Guntur Medical College, NTR University of Health Sciences, Andhra Pradesh, India
Residency: Western General Hospital, Edinburgh, Monklands Hospital, Airdrie, Scotland

Kartik Kalra, MD
Medical School: Kasturba Medical College, Mangalore, Manipal University, India
Residency: Maulana Azad Medical College (GB Pant Hospital), New Delhi, India, and Saint Peter’s University Hospital, Rutgers, New Brunswick, New Jersey

Ivy Melgarejo, MD
Medical School: University of Santo Tomas, Philippines
Residency: University of Hawai’i

Ripudaman Munjal, MD
Medical School: Shri Ram Murti Smarak Institute of Medical Sciences, India
Residency: The Wright Center for Graduate Medical Education, PA

Siddharth Verma, MD
Medical School: Kasturba Medical College Manipal, India
Residency: AtlantiCare Regional Medical Center, NJ

Departing Fellows

Syeda Ahmad, MD  Chief Fellow
Medical School: St. George’s University
Residency: St. Elizabeth Hospital
Current Position: GN fellow, Columbia University

Ayham M. Bataineh, MD
Medical School: Jordan University of Science and Technology
Residency: New York Medical College, St. Michael’s Medical Center
Current Position: CCM Fellowship, Memorial Sloan Kettering Cancer Center, New York

Dean Campbell, MD
Medical School: University of Maryland
Residency: University of Maryland
Current Position: Private Practice, Lancaster, PA

Winn Cashion, MD
Medical School: Emory University
Residency: University of Pittsburgh Medical Center
*Current Position:* T32 Postdoctoral Scholar, Department of Medicine, University of Pittsburgh

**Huiwen Chen, MD**
*Medical School:* Ross University of Medicine
*Residency:* West Suburban Medical Center
*Current Position:* Faculty, Department of Medicine, University of Pittsburgh

**M. Naveen K. Reddy, MD**
*Medical School:* Stanley Medical College, India
*Residency:* UPMC McKeesport
*Current Position:* Hospitalist, Philadelphia, PA

**Itunu Owoyemi, MD**  *Transplant Nephrology*
*Medical School:* Igbinedion University, Okada
*Residency:* Brody School of Medicine, East Carolina University
*Current Position:* Mayo Clinic Rochester, MN for fellowship in Onco-nephrology

**Srijan Tandukar, MD**  *Transplant Nephrology*
*Medical School:* Kathmandu Medical College (KMC), Kathmandu, Nepal
*Residency:* Western Reserve Health Education, Youngstown, OH
*Current Position:* Private Practice in Louisiana

**Fellow Activities**

**Syeda Ahmad, MD**
*Presentations and Abstracts*
- **Ahmad S,** Chen H, Donahoe M, Bender F, DeSilva R, “Improving patient comprehension of dialysis modalities via in-patient education program for new start hemodialysis patients using iPad,” Department of Medicine Research Day, University of Pittsburgh, Pittsburgh, PA, April 2019

**Dean Campbell, MD**
*Presentations and Abstracts*
- **Campbell DJ,** Rush BM, Bondi CD, Tan RJ, “The HDAC inhibitor UPHD 186 may protect against proteinuric CKD,” Department of Medicine Research Day, University of Pittsburgh, Pittsburgh, PA, April 2019

**Winn Cashion, MD**
*Presentations and Abstracts*

**Aravind Cherukuri, MD**
*Publications*
- Mohib K, **Cherukuri A,** Zhou Y, Ding Q, Watkins SC, Rothstein DM. Antigen-dependent
interactions between regulatory B cells and T cells at the T:B border inhibit subsequent T cell interactions with DCs. Am J Transplant. 2019 Jul 29. [Epub ahead of print]


**Presentations and Abstracts**

- Prospective Multicenter Validation of Human Transitional B Cell Cytokines as a Predictive Biomarker in Renal Transplantation, Oral Presenter, Department of Medicine Research Day, University of Pittsburgh, Pittsburgh, PA, April 2019

**Awards**

- Best Abstract in Translational Research, Department of Medicine Research Day, University of Pittsburgh, Pittsburgh, PA, April 2019
- Frank Bruns Fellow Teaching Award, Renal-Electrolyte Division, 2018-2019
- Poster of Distinction, “Micro-circulation Inflammation with TCMR is Associated with Poor Graft Outcomes in Kidney Transplant Recipients (KTRs) without ABMR,” American Transplant Congress

**Ripudaman Munjal, MD**

**Presentations and Abstracts**

- Oxalate Nephropathy in Transplanted Kidney, NKF National Symposium, Foster City, CA, September 2018

**Vaishnavi Pochineni, MD**

**Publications**


**Akhil Sharma, MD**

**Publications**

- Cherukuri A, Mehta R, **Sharma A**, Sood P, Zeevi A, Tevar AD, Rothstein DM, Hariharan S. Post-transplant donor specific antibody is associated with poor kidney transplant outcomes only when


Presentations and Abstracts


Postdoctoral Fellows, FY2019

Corry Bondi, PhD
Mentor: Roderick J. Tan, MD, PhD
Dr. Bondi is evaluating the pathomechanisms of acute and chronic kidney disease focusing on contributions by the HIF-1 and Keap1/Nrf2 signaling pathways.

Marianela Dalghi, PhD
Mentor: Gerard L. Apodaca, PhD
Dr. Dalghi is studying how bladder umbrella cells sense mechanical stretch upon bladder filling—with special focus on the newly identified mechanosensitive Piezo channels.

Samuel Getchell, PhD
Mentor: Anthony J. Kanai, PhD
Dr. Getchell is investigating signal transduction pathways that mediate the benefits of relaxin therapy in treating fibrosis. He is pursuing the development of small molecule agonists of the relaxin receptors 1 and 2 using a screen that he developed.

Bronagh McDonnell, PhD
Mentor: Lori Birder, PhD
Dr. McDonnell is examining how changes with stress—or aging—can impact the nervous system, including peripheral nerve sensitivity, and the mechanisms underlying these changes.

Xueping Wang, PhD
Mentor: Ossama B. Kashlan, PhD
Dr. Wang’s research focuses on the biliary compounds’ effect on the activity of the epithelial sodium channel.
THREE-YEAR BIBLIOGRAPHY

Thomas R. Kleyman, MD  Division Chief


Blaise W. Abramovitz, DO

Mohammad Al-Bataineh, DVM, PhD


Gerard L. Apodaca, PhD


Kullmann FA, McDonnell BM, Wolf-Johnston AS, Lynn AM, Giglio D, Getchell SE, Ruiz WG, Zabbarova IV,


Amar D. Bansal, MD


Catherine J. Baty, DVM, PhD


Sehrawat A, Croix CS, Baty CJ, Watkins S, Tailor D, Singh RP, Singh SV. Inhibition of mitochondrial fusion is an early and critical event in breast cancer cell apoptosis by dietary chemopreventative benzyl isothiocyanate.

Filitsa H. Bender, MD


Lori A. Birder, PhD


Cary Boyd-Shiwarski, MD, PhD


Marcelo D. Carattino, PhD


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Physiol Renal Physiol. 2018 Oct 1;315(4):F870-F879.


Geetha Chalasani, MD


Linda F. Fried, MD, MPH


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Sundaram Hariharan, MD


Rebecca P. Hughey, PhD


Youko Ikeda, PhD


**Manisha Jhamb, MD, MPH**


Anthony J. Kanai, PhD


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Yoshimura N. The role of capsaicin-sensitive C-fiber afferent pathways in the control of micturition in spinal-intact and spinal cord-injured mice. Am J Physiol Renal Physiol. 2017 Sep 1;313(3):F796-F804.


Ossama B. Kashlan, PhD


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Kelly V. Liang, MD


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Mar 8;7(3):e74.


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Nirav A. Shah, MD


Akhil Sharma, MD


Shaohu Sheng, MD


Shujie Shi, PhD


Puneet Sood, MD


Sean D. Stocker, PhD


Kinsman BJ, Browning KN, Stocker SD. NaCl and osmolarity produce different responses in organum vasculosum of the lamina terminalis neurons, sympathetic nerve activity and blood pressure. J Physiol. 2017
Sep 15;595(18):6187-6201.


**Arohan R. Subramanya, MD**


**Roderick J. Tan, MD, PhD**


Steven T. Truschel, PhD


Steven D. Weisbord, MD, MSc


Nephrol. 2018 Dec;29(12):2782-2786.


Ora A. Weisz, PhD


Renal Physiol. 2017 Sep 1;313(3):F585-F595.


Christine M. Wu, MD


Irina V. Zabbarova, PhD


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