

RENAL-ELECTROLYTE

DIVISION



DEPARTMENT OF MEDICINE
ANNUAL REPORT | FY20

RENAL-ELECTROLYTE DIVISION ANNUAL REPORT

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RENAL-ELECTROLYTE

DIVISION

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. 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 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.



Thomas Kleyman, MD Chief



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). Our Division is providing support services for health plan members with advanced CKD. These include nurse educators, care managers and pharmacists. We also participate in an end-stage renal disease Seamless Care Organization (ESCO), partnering with DCI 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. The Division is establishing a center focusing on Glomerular Diseases.

Thomas R. Kleyman, MD

Chief, Renal-Electrolyte Division
Sheldon Adler Professor of Medicine
Professor of Cell Biology and
Pharmacology & Chemical Biology

Blaise W. Abramovitz, DO

Clinical Assistant Professor of
Medicine

Mohammad Al-bataineh, DVM, MS, PhD

Assistant Professor of Medicine

Gerard Apodaca, PhD

Professor of Medicine, Cell Biology &
Physiology

Amar D. Bansal, MD

Assistant Professor of Medicine
Associate Program Director,
Nephrology Training Program

Catherine Baty, DVM, PhD

Research Assistant Professor of
Medicine

Filitsa Bender, MD

Associate Professor of Medicine

Lori Birder, PhD

Professor of Medicine

Cary Boyd-Shiowski, MD, PhD

Assistant Professor of Medicine

Marcelo D. Carattino, PhD

Associate Professor of Medicine and
Cell Biology
Director, Cellular Physiology Core,
Pittsburgh Center for Kidney Research

Geetha Chalasani, MD

Associate Professor of Medicine

Robert M. Denshaw, MD

Clinical Assistant Professor of
Medicine
Medical Director, DCI North Versailles
and DCI Harmarville
Medical Director of dialysis services,
UPMC East

Ranil DeSilva, MD

Assistant Professor of Medicine

Yan Dorneich, MD

Clinical Assistant Professor of
Medicine

Linda F. Fried, MD, MPH

Professor of Medicine
Associate Professor of Epidemiology
Chief, Peritoneal Dialysis, VA
Pittsburgh Healthcare System
Staff Physician, VA Pittsburgh
Healthcare System

Laurence Friedman, MD

Clinical Associate Professor of
Medicine

Sundaram Hariharan, MD

Professor of Medicine and Surgery
Medical Director, Kidney and
Pancreas Transplantation

Rebecca P. Hughey, PhD

Professor of Medicine, Cell Biology,
and Microbiology & Molecular
Genetics
Assistant Dean of Medical Student
Research, School of Medicine

Hunter Huston, MD

Clinical Assistant Professor of
Medicine

Youko Ikeda, PhD

Assistant Professor of Medicine

Manisha Jhamb, MD, MPH

Assistant Professor of Medicine
Associate Director, Center for Clinical
Pharmacology

Duncan Johnstone, MD, PhD

Visiting Associate Professor of
Medicine
Clinical Director, Renal-Electrolyte
Division
Associate Division Chief

Hoda Kaldas, MD

Assistant Professor of Medicine

Nitin M. Kamat, MD

Clinical Assistant Professor of
Medicine

Anthony J. Kanai, PhD

Professor of Medicine

Ossama B. Kashlan, PhD

Assistant Professor of Medicine

Kelly V. Liang, MD

Assistant Professor of Medicine

Rajil Mehta, MD

Assistant Professor of Medicine

Nicolas Montalbetti, PhD

Associate Professor Pharmacy & Therapeutics and Medicine

Paul M. Palevsky, MD

Professor of Medicine
Chief, Renal Section, VA Pittsburgh Healthcare System

Christopher J. Passero, MD

Clinical Assistant Professor of Medicine

Beth M. Piraino, MD

Professor of Medicine
Associate Dean of Admissions and Financial Aid

Amogh Puli, MD

Clinical Assistant Professor of Medicine

Chethan Puttarajappa, MD

Assistant Professor of Medicine

Mohan Ramkumar, MD

Clinical Associate Professor of Medicine

Evan C. Ray, MD, PhD

Assistant Professor of Medicine

Helbert Rondon-Berrios, MD, MS

Associate Professor of Medicine
Program Director, Nephrology Fellowship Training Program
Associate Clinical Director, Renal-Electrolyte Division
Chief, Renal Services, UPMC Magee-Womens Hospital

Ramya Sahasranaman, MD

Clinical Assistant Professor of Medicine

Nirav A. Shah, MD

Assistant Professor of Medicine

Akhil Sharma, MD

Assistant Professor of Medicine

Shaohu Sheng, MD

Research Associate Professor of Medicine

Shujie Shi, PhD

Instructor in Medicine

Puneet Sood, MD

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

Sean D. Stocker, PhD

Professor of Medicine

Arohan R. Subramanya, MD

Associate Professor of Medicine and Cell Biology
Staff Physician, VA Pittsburgh Healthcare System

Roderick J. Tan, MD, PhD

Assistant Professor of Medicine

Steven D. Weisbord, MD, MSc

Professor of Medicine and Clinical & Translational Science
Core Investigator, Center for Health Equity Research and Promotion, VA Pittsburgh Healthcare System
Staff Physician, Renal Section, VA Pittsburgh Healthcare System

Ora A. Weisz, PhD

Professor of Medicine and Cell Biology
Vice Chair of Faculty Development, Department of Medicine
Associate Dean for Faculty Development, 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

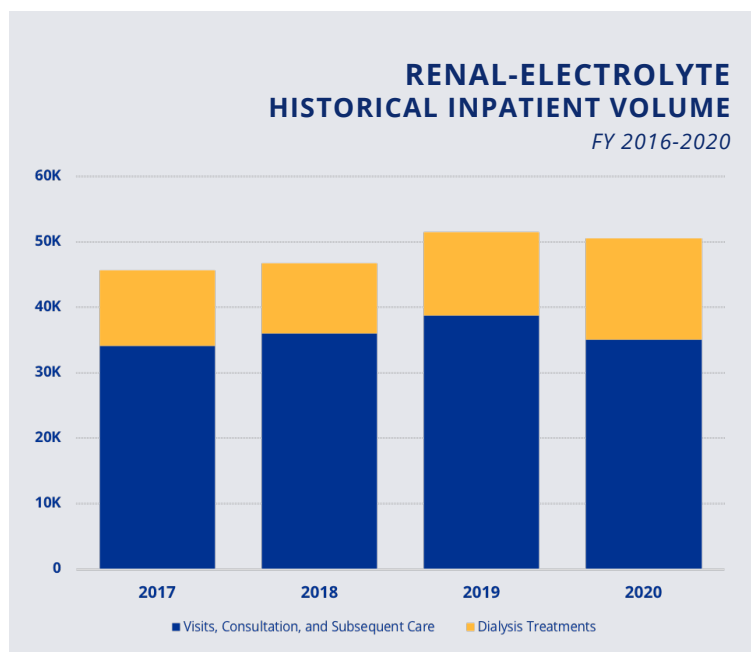
CLINICAL ACTIVITIES

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. With the retirement of Dr. James Johnston, **Dr. Duncan Johnstone** joined our division as Clinical Director and Associate Division Chief.

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, North Versailles, New Kensington, and Parks Bend. We also provide dialysis services at FMC West Penn, Penn Hills, Shaler, Shadyside, and Three Rivers. Our faculty serve as medical directors at eleven dialysis centers. As of June 2020, our faculty were providing care to over 387 patients receiving in-center hemodialysis and over 54 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 1544 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 8,272 inpatient dialysis treatments in FY 2020. The Renal Division also provides consultation services at UPMC Shadyside, UPMC Mercy, UPMC McKeesport, and UPMC East.

The Division's outpatient kidney and multidisciplinary specialty clinics treat patients with a wide variety of kidney and hypertensive disorders, and our nephrologists and staff coordinate all aspects of patient testing and care. Division physicians provide care for patients throughout the metropolitan area, including clinics in Medicals Arts in Oakland, central and eastern suburbs (Shadyside and Monroeville), northern suburbs (Wexford and St. Margaret's), and southern suburbs (Bethel Park). 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**, and **Blaise Abramovitz, DO**, 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 and Monroeville sites. 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 University Center, community clinic locations and via tele visits. The spring of 2020 led to a rapid expansion of telehealth visits, including video visits, telephone visits and eConsults. Currently, approximately 50% of outpatient encounters use telehealth modalities. An increasing number of late-stage patients are expressing interest in home-dialysis modalities or in conservative management once educated on the range of available options. 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.

QUALITY IMPROVEMENT INITIATIVES

***Ranil DeSilva, MD** serves as the Renal-Electrolyte Division's Director of Quality Improvement. Following are formal QI projects with QRC approval for this calendar year.*

ESRD Transition of Care Project. To improve hospital transition of care for ESRD patients receiving dialysis at Presbyterian and Magee Hospitals. Led by **Ranil DeSilva MD**, our primary process was the creation of a Cerner-templated renal transition of care note (similar to ID's Antibiotics Discharge Note), and to then improve our Renal Inpatient service's use of this note from 70% to >80% by the end of 2019. We exceeded our goal, achieving a 92% participation rate by the end of 2019. Additionally, we had hoped to improve our 30-day hospital return rate using available data; however, we unfortunately did not conclusively reach this specific goal. In the future, we will continue to use this communication tool with dialysis facilities at Presbyterian Hospital. Moreover, we will further investigate reasons for recent 30-day returns, using data to potentially add further system interventions to improve 30-day ESRD hospital return rates at Presby. To assist with this process, **Kevin Stephennoff, MD**, a promising PGY1 Internal medicine resident, has begun assessing ways to improve.

Incidence of AKI after Implementation of Pennsylvania's PDMP. Under the supervision of **Evan Ray, MD, PhD**, we are evaluating if there was a relative increase of NSAID use and subsequently associated relative increase AKI incidence as a result of this policy seeking to reduce opiate use. Data has been collected and is currently in the process of being analyzed.

Dosing vancomycin in HD patients at Presbyterian Hospital. **Ranil DeSilva, MD**, and **Chelsea Dahl MD** (PGY3) are working to assess the initial aim of this project: if IV vancomycin was being dosed appropriately in in-patient hemodialysis patients at Presbyterian Hospital. Over the course of this project, with preceding data from UPMC Shadyside Hospital, our efforts shifted more towards assisting the pharmacy and ID teams, led by Rachel Marini and Dr. John Veihman, to develop a process for the PK service to dose IV vancomycin in our dialysis patients at Presbyterian Hospital. The program is now in place, having started successfully in early 2020.

Automated Office Blood Pressure (AOBP)s in Medical Arts CKD Renal Clinic. Led by **Anjuli Jain, MD** (PGY2), with the support of **Ranil DeSilva, MD**, and **Blaise Abramovitz, MD**, this project applies the AHA TARGET BP QI protocol that **Sean Stocker, PhD**, had led in the 6 aforementioned CMI clinics to all our CKD patients in the Medical Arts Renal clinic. However, instead of applying the 3 averaged BPs protocol for only patients with a BP>140/90 as done in the CMI clinics, we instead applied the protocol to *all* the patients in the Medical Arts Renal clinic regardless of blood pressure. Data focused on the primary aim—to assess change in physician inertia for updating medications (including diuretics) related to BP management in advanced CKD patients, inclusive of patients with proteinuric disease—has been collected and is in the process of analysis.

The Renal-Electrolyte Division has also undertaken the following general quality improvement initiatives: 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.

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

Duncan Johnstone, MD, PhD, made our in-patient urine microscopy lab CLIA-certified and obtained a new microscope capable of up-loading microscopy pictures into Cerner.

Our inpatient dialysis unit, led by **Ranil DeSilva, MD**, and **Patricia Seddon, RN**, has been involved with internal quality improvements including the process to assess 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, we continue to improve our weight measurements of our dialysis patients and are better reviewing weight comparisons of ESRD patients with hospitalizations >7 days. We are also improving processes to better document water checks with completed technician and RN verifications. As positive water cultures have been a problem recently with our portal reverse osmosis purification machines, we have sought assistance from Infection Control, led by Dr. Elise Martin (Division of Infectious Diseases), assisting with improving this process and ultimately leading us to updating our portable RO fleet.

Ranil DeSilva, MD, also developed a new Cerner/EMR based order entry for CRRT in late 2019 and successfully implemented electronic order entry at Presby, Magee, and Susquehanna.

All COVID-19 related preparations were facilitated by our entire clinical leadership, inclusive of the UPMC dialysis service line organizing a weekly city-wide dialysis conference/emergency planning group.

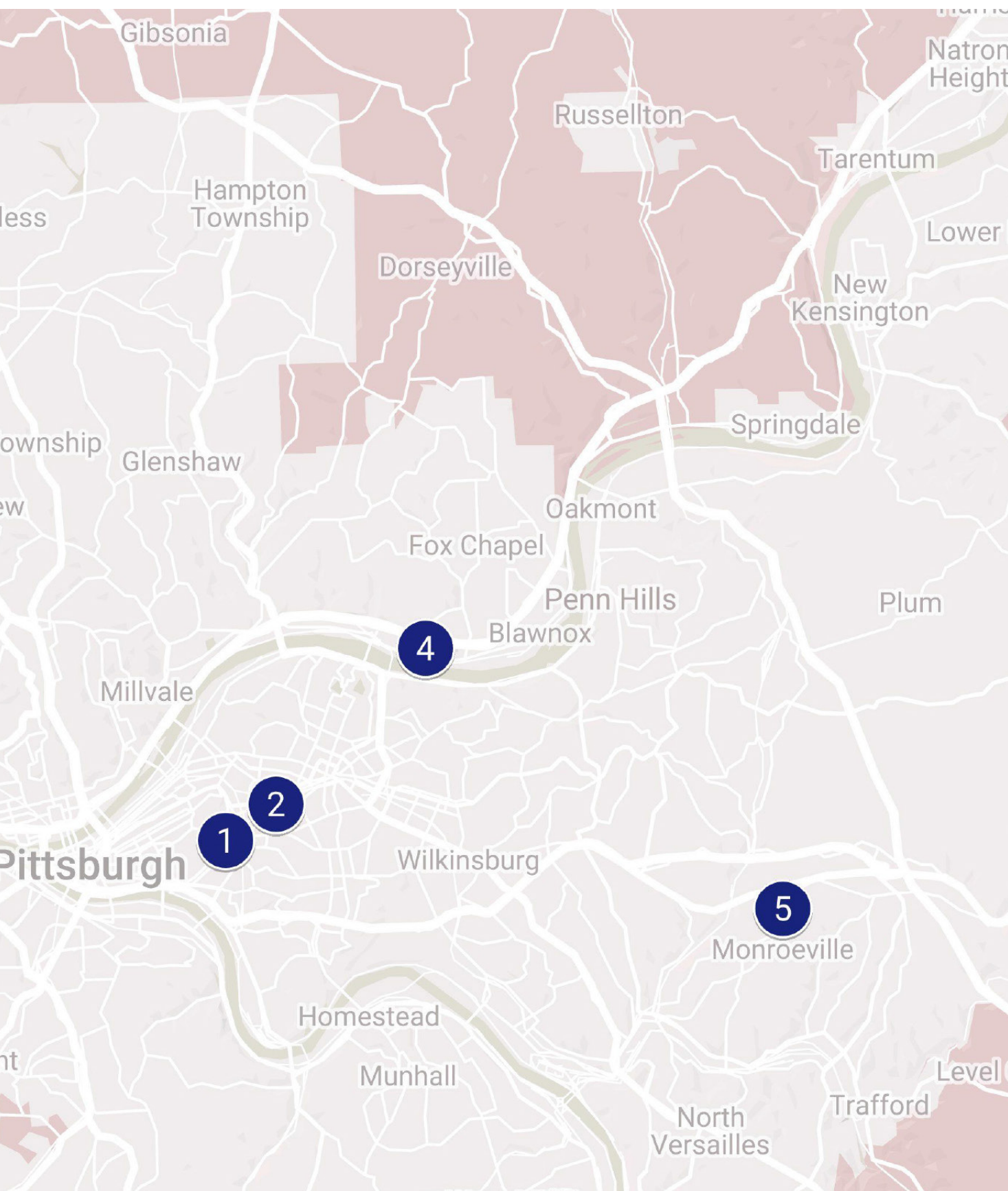
Quality Improvement Outlook for 2020-2021:

- Renal CKD/ESRD IDFS, led by **Thomas Kleyman, MD**, **Duncan Johnstone, MD, PhD**, and **Christopher Passero, MD**
 - CKD Program for UPMC Health Plan Population (**Manisha Jhamb, MD, MPH**, and **Christopher Passero, MD**)
 - Renal Conservative management Program (**Jane Schell, MD**)
 - UPMC Presby Transition Care Dialysis Unit (**Ranil DeSilva, MD**, and **Christopher Passero, MD**)
- ED-U-turn project, led by **Duncan Johnstone, MD, PhD**
- Reducing 30- and 90-day hospital returns in our advanced CKD population, led by **Duncan Johnstone, MD, PhD**
- Introducing Tablo Hemodialysis technology to dialysis service line, with aim to use in the UPMC Presby based Transition Care Dialysis Unit
- Offering CVVHD, SCUF modes of CRRT, and potentially offering new dialysate options. (**Ranil DeSilva, MD**, and **Duncan Johnstone, MD, PhD**)
- Electronic order entry for peritoneal dialysis. (**Filitsa Bender, MD**)
- To introduce Amia peritoneal dialysis technology to service line, with aim to offer overnight PD at direction of appropriate patients, similar to self-directed insulin pump care of patients (**Ranil DeSilva, MD**, and **Filitsa Bender, MD**)

CLINICAL LOCATIONS

- 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





RESEARCH 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 \$8.5 million in FY20.

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:

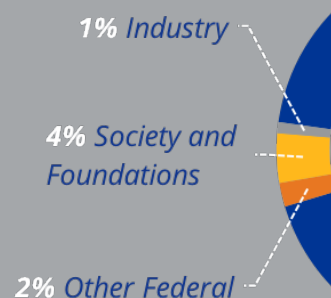
- Electronic medical record and CKD management
- Exercise in ESRD
- Novel approaches to manage electrolyte disorders
- Opioid use in ESRD
- Sleep disorders and quality of life in the setting of CKD and ESRD
- Acute kidney injury
- Contrast nephropathy
- Depression in the setting of kidney disease
- Diabetic nephropathy
- Health literacy
- Optimization of peritoneal dialysis
- Palliative care in the setting of advanced CKD and ESRD

Over the past year, the Division received major grants from the NIH and private foundations

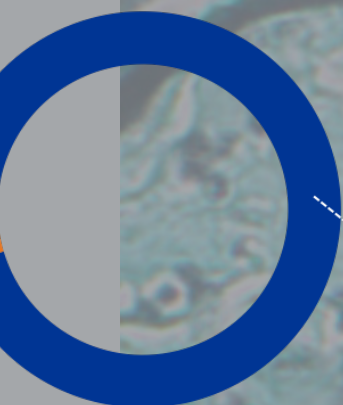
RESEARCH BY THE NUMBERS

In FY20, the Renal-Electrolyte Division received a total of \$11.9m in research funding from the Public Health Service, the Department of Defense, various societies and foundations, and industry—an increase of nearly 44%. Research expenditures exceeded \$8.6m, a slight increase from FY19.

GRANTS & CONTRIBUTIONS FY20



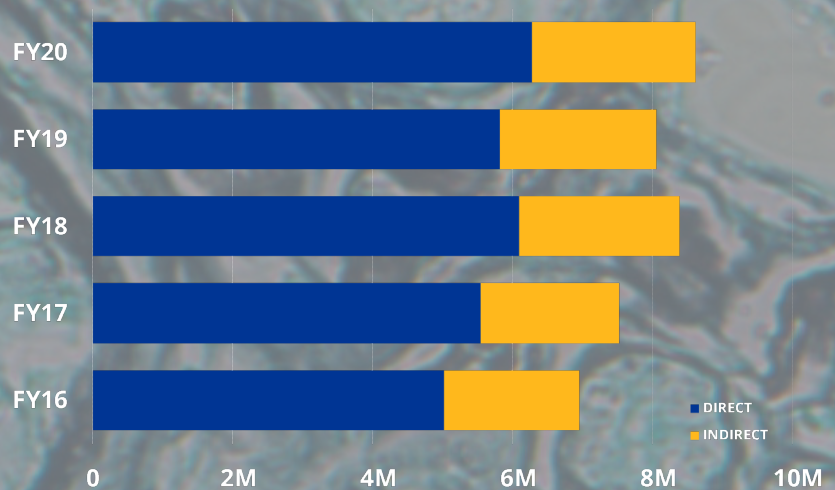
TRACTS AWARDED



93% *Public Health Service*

RESEARCH EXPENDITURES

FY16-FY20



that support research on a diverse array of topics, including protein trafficking, ion transport physiology, kidney pathophysiology, and transplant immunology. Grants also support a range of clinical research activities. Funding Our NIDDK-funded P30 O'Brien Kidney Research Core Center—one of eight such centers nationwide—supports the research activities of more than 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. Our VA physicians recently completed a multicenter cooperative study focused on strategies to prevent contrast-induced kidney injury. And, several faculty members—**Lori Birder, PhD**; **Gerard Apodaca, PhD**; and **Thomas Kleyman, MD**—have held NIH MERIT awards.

Likewise, our trainees and junior faculty continue to be successful in obtaining extramural support. **Evan Ray, MD, PhD**; **Cary Boyd-Shiwerski, MD, PhD**; and **Chethan Puttarajappa, MD** are recipients of NIDDK K08 awards while **Shujie Shi, PhD**, and **Mohammad Al-Bataineh, DVM, PhD**, are recipients of NIDDK K01 awards. **Roderick Tan, MD, PhD**, was a recipient an American Society of Nephrology Carl W. Gottschalk Award. 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. Predoctoral and postdoctoral trainees in the division have also been successful in obtaining individual NRSA funding, including **Katherine Shipman**, a recipient of an NIH F31 predoctoral fellowship award, and **Leon DeLalio**, a recipient of an NIH F32 postdoctoral Fellowship Award. Other postdoctoral trainees have received foundation funding. **Corry Bondi, PhD**, was awarded an American Heart Association Postdoctoral Fellowship Award while **Stephanie Mutchler, PhD**, received a Relypsa Postdoctoral Fellowship Award.

Other new research funding within the Division includes:

- **Gerard Apodaca, PhD**, and **Marcelo Carattino, PhD**, were awarded a 5-year NIDDK R01 grant, "Role of Piezo Channels in Bladder Function and Dysfunction."
- **Lori Birder, PhD**, was awarded an R56 grant from the NIA for the "Role of Purine Dysregulation in the Underactive Bladder."
- **Linda Fried, MD, PhD**, was received support from NIDDK for her role on the CKD Pilot Trials Clinical Consortium.
- **Manish Jhamb, MD, MPH**, received a 5-year NIDDK U01 grant, "Pain Reduction and Opioid Medication Safety in ESRD."
- **Chethan Puttarajappa, MD**, received a 5 year NIDDK K08 award, "Utility of Virtual Crossmatch in Deceased Donor Kidney Transplantation."
- **Katherine Shipman** received a predoctoral F31 award from NIDDK to study "Megalin Traffic in Dent Disease."
- **Sean Stocker, PhD**, was awarded a 4-year R01 grant from NHLBI for "Identification of Mechano versus Chemo-Sensitive Renal Sensory Neurons in Hypertension."
- **Sean Stocker, PhD**, was awarded a 4-year R01 grant from NHLBI for "Brain NaCl-sensing in salt-sensitive hypertension."
- **Arohan Subramanya, MD**, received a 5-year R01 grant from NIDDK for "Regulation of Renal WNK Signaling in Intercalated Cells."
- **Roderick Tan, MD, PhD**, received an Samuel and Emma Winters Foundation Award for his study, "The Unraveling Podocyte Injury and Repair in CKD."
- **Ora Weisz, PhD**, received a 5-year R01 grant from NIDDK for "Endocytic Pathway Dysfunction in Dent Disease."

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 calcium-activated K (BK) channels. Recent work has focused on elucidating mechanisms by which extracellular proteases, small ions, and mechanical forces modulate ENaC gating. His group has identified novel functional human ENaC variants and is assessing how these variants affect blood pressure in rodent models and humans. Studies are also directed at examining the regulation of BK channels in renal collecting tubules by WNK kinases and by dietary potassium. His group is exploring the role of the mechanosensitive channel Piezo1 in sensing mechanical forces in intercalated and principal cells in the distal nephron. They are studying the role of the mucin Muc1 in regulating proton secretion in the distal nephron. His group is characterizing physiologic properties of human kidney organoids. Dr. Kleyman serves as the director of the Division's Pittsburgh Center for Kidney Research, and he directs T32 and T35 training grants.

Study Sections

- Chair, Basic Science Review Committee, American Heart Association, 2019

Advisory Committee Memberships and Leadership Positions

- Member, External Evaluation Committee, NIDDK Cooperative Centers of Excellence in Hematology, 2019
- Member, Established Investigatorship Award Review Committee, American Heart Association, 2019
- External member, Ad hoc tenure review subcommittee, Weill Cornell Medicine College, 2020

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, American Society for Clinical Investigation, 1996-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
- Member, Scientific Advisory Board, Telluride Science Research Center, 2013-present

Editorships

- Editorial board member, *Journal of the American Society of Nephrology*, 2017-present
- Editor-in-Chief, *Physiological Reports*, 2018-present

Major Lectureships and Seminars

- Speaker, American Physiological Society, Aldosterone and ENaC in Health and Disease: The Kidney and Beyond Conference, Estes Park, CO, October 2019
- Speaker, Division of Nephrology and Hypertension, Oregon Health & Science University and the Vollum Institute, Portland, OR, March 2020

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

Dr. Al-bataineh is a DVM-PhD scientist, who studies epithelial transport physiology and kidney pathophysiology. His research studies the mechanism of metabolic regulation of cellular, organ and body homeostasis through cell surface expression of epithelial membrane transporters. Presently, Dr. Al-bataineh is interested in understanding the acute and chronic effects of the cell surface sen-

sor Mucin 1 (MUC1) during metabolic stress conditions, such as ischemia-reperfusion injury (IRI) and acid-base disorders. In his training and research projects, Dr. Al-bataineh has employed both animal and cell culture model systems and developed expertise in renal physiology, and kidney histology, microscopy, and pathophysiology. He has spearheaded several significant research projects resulting in publications in high-impact journals such as *Nature Chemical Biology*, *Journal of Proteome Research*, and *American Journal of Physiology*. Dr. Al-bataineh has been PI on two NIH grants (NRSA, and K01), and one pharmaceutical fellowship award (SANOFI). He has received several awards from national societies, including the Epithelial Transport Group of the American Physiological Society (APS), and the Steve Hebert Award Session of the Experimental Biology (EB). Beyond his research success, Dr. Al-bataineh has been fortunate to obtain a wide-range of teaching experiences. He has had the opportunity to teach a variety of courses (with Labs) including Human Physiology, Animal Physiology, and Pharmacology. Moreover, he has supervised many students and provides them with an appropriate feedback after evaluating their progress.

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

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 the cells that line the tubules comprising the kidney nephron. His lab focuses on four major projects: 1) Studies of stretch-regulated membrane traffic in umbrella cells; 2) Analysis of tight junction morphology and function in response to stretch; 3) Exploration of the role of PIEZO channels in lower urinary tract function; and (4) effects of aging on urinary tract function.

Professional Affiliations and Society Memberships

- Member, American Society of Cell Biology, 1993-present
- Member, American Physiological Society, 2002-present
- Appointment, Academy of Master Educators, University of Pittsburgh School of Medicine, 2006-present

Editorships

- Editorial Board Member, *American Journal of Physiology (Renal Physiology)*, 2001-present
- Editorial Board Member, *Traffic*, 2004-present
- Editorial Board Member, *American Journal of Physiology (Cell Physiology)*, 2009-present

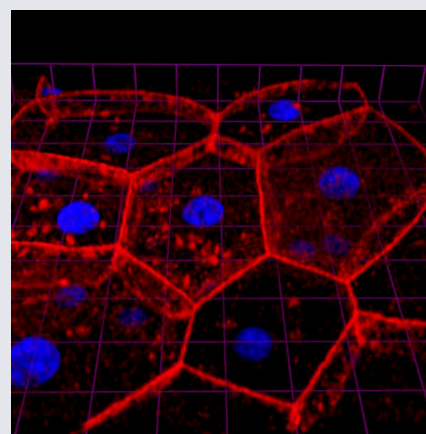


Photo
The Apodaca lab studies umbrella cells, shown here in a 3D reconstruction stained with TRITC-phalloidin (red) and nuclei (blue).

Amar D. Bansal, MD

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.

Major Lectureships and Seminars

- Conference Co-Chair, East by Southwest Third Annual Update in Nephrology, Sheraton Station Square, Pittsburgh, PA, September 2019

Catherine J. Baty, DVM, PhD

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.

Professional Affiliations and Society Memberships

- Member, American College of Internal Medicine, Small Animal Internal Medicine, 1995-present

Filitsa H. Bender, MD

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.

Advisory Committee Memberships and Leadership Positions

- Member, National PD Continuous Quality Improvement Committee, Dialysis Clinic, Inc., 2007-present
- Member, Pharmacy and Therapeutics Hospital Committee, UPMC Presbyterian, 2011-present
- Chair, National PD Continuous Quality Improvement Committee, Dialysis Clinic, Inc., 2013-present

Professional Affiliations and Society Memberships

- Member, National Kidney Foundation, 1990-present
- Member, American Society of Nephrology, 1992-present
- Member, International Society of Nephrology, 1993-present
- Fellow, American College of Physicians, 1998-present
- Member, International Society of Peritoneal Dialysis, 1998-present
- Core Faculty Member, Interprofessional Healthcare Teams Course, 2007-present

Lori A. Birder, PhD

Dr. Birder's laboratory conducts research aimed at understanding the complexities of urinary bladder 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

- 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, American Society for Pharmacology and Experimental Therapeutics, 1998-present
- Member, Society for Neuroscience, 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
- Co-Editor in Chief, *Bladder*, 2014-present
- Editorial Board, *Autonomic Neuroscience: Basic and Clinical*, 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.

Marcelo D. Carattino, PhD

Dr. Carattino's lab uses electrophysiological and genetic approaches to investigate how acid-sensing ion channels (ASICs) regulate bladder function and nociception. 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 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 gain understanding of 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

- Editorial Board Member, *American Journal of Physiology-Renal Physiology*, 2007-present

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 depletion 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

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. Including how to optimize the transition of care—and reduce readmissions—for hospitalized ESRD dialysis patients who are moved to outpatient settings. In addition, to improve the transition from acute or advanced chronic kidney disease to end stage renal disease via a transitional care unit. Dr. DeSilva is also interested researching hemodialysis vascular access outcomes, in particular optimal strategies in the geriatric hemodialysis population.

Professional Affiliations and Society Memberships

- Member, American Society of Nephrology, 2010-present

Linda F. Fried, MD, MPH

Dr. Fried's research is concentrated in two areas: 1) the association of decreased kidney function with adverse 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

- 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

Professional Affiliations and Society Memberships

- Member, NIDDK: External Expert Panel for the CKiD: Chronic Kidney Disease in Children Study, 2019
- Member, American Society of Nephrology, 1995-present
- Member, National Kidney Foundation, 1996-present
- Member, Women in Nephrology, 2005-present
- Member, NIDDK: External Expert Panel for the Chronic Renal Insufficiency Cohort Study, Phase III, 2012-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, T cell mediated rejection and long-term kidney transplant survival. Currently he is focused on identification of clinical and biomarkers predicting long-term kidney transplant outcome. He is exploring the importance of kidney allograft inflammation occurring within 1 year after transplantation with special emphasis on T-cell mediated rejection. He is working specifically on sub-clinical rejection and sub-clinical inflammation impacting kidney transplant outcome. His next step is to initiate an interventional trial to alter the natural course of patients with allograft inflammation.

Professional Affiliations and Society Memberships

- Member, American Society of Nephrology, 2019-present
- Member, American Society of Transplant Physicians, 2019-present
- Member, International Transplant Society, 2019-present

Editorships

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

Honors and Awards

- Honoree, Pittsburgh's Best Doctors, *Pittsburgh Magazine*, 2005-present

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). 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-AT-Pase and other channels/pumps at the cell surface. One type of autosomal dominant tubulointerstitial kidney disease is caused by a frameshift mutation in the mucin-like repeats of MUC1, and the Hughey lab is studying the basis for the variable age of disease onset in these patients.

Advisory Committee Memberships and Leadership Positions

- Member, University of Pittsburgh Cancer Institute, 1986-present
- Member, Admissions Committee, University of Pittsburgh School of Medicine, 2009-present
- Member, Executive Committee, University of Pittsburgh School of Medicine, 2014-present

Professional Affiliations and Society Memberships

- Member, American Society for Biochemistry and Molecular Biology, 1984-present
- Member, American Physiological Society, 2003-present
- Member, American Society of Nephrology, 2005-present
- Member, Consortium for Functional Glycomics, 2006-present

Editorships

- Editorial Board Member, *American Journal of Physiology-Renal Physiology*, 2005-present

Youko Ikeda, PhD

Dr. Ikeda's research interests center on building more knowledge about the cellular mechanisms that regulate urinary bladder contractile and storage functions. And in an effort to elucidate novel therapeutic agents, she is studying the impact of neurogenic injury, chemical cystitis, and ionizing radiation exposure on the lower urinary tract.

Professional Affiliations and Society Memberships

- Member, International Continence Society, 2007-present
- Member, American Society for Biochemistry and Molecular Biology, 2008-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 Member, *International Neurourology Journal*, 2018-present
- Editorial Board Member, *American Journal of Physiology-Renal Physiology*, 2019-present

Honors and Awards

- Awardee, Best Non-Clinical Abstract, International Continence Society 2020 Annual Meeting, 2020

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.

Study Sections

- Grant Reviewer, National Kidney Foundation of Louisiana, 2019
- Grant Reviewer, Agency for Healthcare Research and Quality (AHRQ), Special Emphasis Panel, 2019

Advisory Committee Memberships and Leadership Positions

- Member, Renal-Electrolyte Fellowship Interviewing Committee, University of Pittsburgh, 2010-present

Professional Affiliations and Society Memberships

- Member, National Kidney Foundation, 2010-present

Editorships

- Editorial Board Member, *American Journal of Physiology-Renal Physiology*, 2019-present

Honors and Awards

- Awardee, Global Renal Exercise (GREX) Inaugural Meet Travel support, Calgary, Canada, 2019

Duncan Johnstone, MD, PhD

Dr. Johnstone's research focuses on clinical studies of glomerular diseases including Alport's, focal segmental glomerulosclerosis (FSGS), and amyloidosis.

Study Sections

- Reviewer, NIH/NIDDK, 2015-present
- Reviewer, Neptune Consortium (NIH/NIDDK), 2015-present
- Reviewer, Medical Research Council (Great Britain), 2015-present

Professional Affiliations and Society Memberships

- Member, American Society of Nephrology, 2005-present
- Member, National Kidney Foundation, 2010-present
- Fellow, American College of Physicians, Fellow, 2012-present
- Member, Association of Specialty Professors, 2015-present

Editorships

- Reviewer, *Translational Research*, 2008-present
- Reviewer, *Clinical Nephrology*, 2011-present
- Reviewer, *American Journal of Physiology Renal-Physiology*, 2012-present
- Editor, *Journal of Clinical Nephrology and Research*, 2014-present
- Reviewer, *Molecular Endocrinology*, 2014-present
- Reviewer, *Cancer biomarkers*, 2014-present
- Reviewer, *American Journal of Transplantation*, 2014-present
- Reviewer, *BMC nephrology*, 2015-present
- Reviewer, *Clinical and Translational Medicine*, 2015-present
- Editor, *Annals of Clinical Case Reports, Nephrology*, 2016-present

- Editor, *SM Journal of Nephrology and Therapeutics*, 2016-present
- Reviewer, *BMC Medical Genetics*, 2016-present
- Reviewer, *AJKD*, 2016-present
- Reviewer, *International Journal of Medicine and Clinical Research*, 2017-present
- Editor, *Annals of Hypertension*, 2018-present

Anthony J. Kanai, PhD

Dr. Kanai's lab studies spinal cord injury (contusion and transection), radiation cystitis and age-related lower urinary tract (e.g., prostate, urinary bladder, and urethra) 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 produces nitric oxide in response to adrenergic agonists utilizing direct microsensor measurements of the free radical. There are three major projects funded through Dr. Kanai's ongoing NIH R01 and DOD grants that are investigating novel therapeutic approaches for treating: 1) Spinal cord injury-induced paraplegia and bladder dysfunction using Trk receptor modulators that promote neuronal cell survival and regeneration; 2) radiation-induced cystitis and fibrosis using free radical scavengers and p75 neurotrophin receptor modulators that are anti-apoptotic; and 3) benign prostatic hyperplasia (BPH) and obstruction (BPO) using phosphodiesterase type-5 (PDE5) inhibitors and soluble guanylate cyclase (sGC) activators that can increase cGMP levels in situations with decreased nitric oxide production due to nitrergic nerve damage and/or inactivation of sGC.

Study Sections

- Chair, NIH/NIDDK Special Emphases Panel ZDK1 GRB-M (03) P, 2019

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, American Society for Pharmacology and Experimental Therapeutics, 1998-present
- Member, Society for Neuroscience, 1998-present
- Member, International Continence Society, 2002-present
- Member, Molecular Pharmacology Graduate Training Program, 2006-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 Member, *Frontiers in Autonomic Neuroscience*, 2008-present
- Editorial Board Member, *Neurourology & Urodynamics*, 2008-present

Ossama B. Kashlan, PhD

Dr. Kashlan's research efforts are focused on the study of epithelial ion channels. His research team seeks a structural and mechanistic based understanding of the functional regulation of the channel. Recent work has focused on regulation by proteases: 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.

Study Sections

- Ad Hoc Reviewer, KMBD NIH study section, 2020
- Reviewer, Cell Transport Committee for Predoctoral and Postdoctoral applications, American Heart Association, 2019

- Member, COVID Grant Review Committee, American Heart Association, 2020

Advisory Committee Memberships and Leadership Positions

- Interviewer, Interdisciplinary Biomedical Graduate Program (IBGP), University of Pittsburgh School of Medicine, 2019
- Poster judge, American Society for Biochemistry and Molecular Biology, 23rd annual American Society for Biochemistry and Molecular Biology Undergraduate Poster Competition, Orlando, FL, 2019
- Mentor, American Physiological Society, Renal Section trainee mixer, "Posters and Professors", Orlando, FL, 2019

Professional Affiliations and Society Memberships

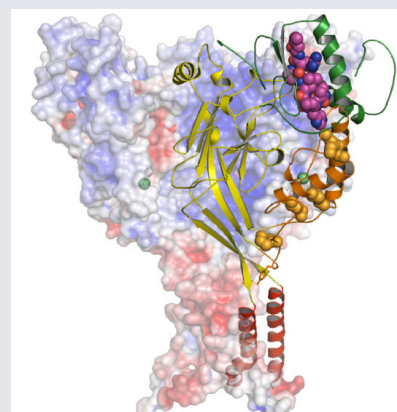
- Member, American Association for the Advancement of Science, 2011-present
- Member, Biophysical Society, 2012-present
- Member, American Society for Biochemistry and Molecular Biology, 2014-present
- Member, American Physiological Society, 2019-present

Editorships

- Reviewer, *Biochemical Journal*, 2019-present
- Reviewer, *Pharmaceutical Biotechnology*, 2019-present
- Reviewer, *Pediatric Nephrology*, 2019-present
- Reviewer, *Physiological Reports*, 2019-present
- Reviewer, *Nature*, 2019-present
- Reviewer, *Journal of the Royal Society Interface*, 2019-present
- Reviewer, *Scientific Reports*, 2019-present
- Reviewer, *Journal of Biological Chemistry*, 2019-present
- Reviewer, *BMC Biochemistry*, 2019-present
- Reviewer, *American Journal of Physiology – Renal Physiology*, 2019-present
- Reviewer, *Nucleosides*, 2019-present
- Reviewer, *Nucleotides and Nucleic Acids*, 2019-present

Major Lectureships and Seminars

- Speaker, 137th Meeting of the Salt and Water Club, Georgetown University, Washington, DC, October 2019
- Speaker, American Physiological Society, Aldosterone and ENaC in Health and Disease Conference, Estes Park, Colorado, October 2019



Photo

Dr. Kashlan investigates the regulation of epithelial ion channels by proteases.

Kelly V. Liang, MD

Dr. Liang's research primarily focuses on various aspects of lupus nephritis (LN), acute kidney injury (AKI), and cardiorenal failure. She is investigating whether AKI biomarkers and clinical biomarkers of systemic lupus erythematosus (SLE) are present in the kidneys, urine, and blood of patients with biopsy-proven LN during the time of an LN flare. She 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. 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 of Nephrology, 2005-present
- Member, National Kidney Foundation, 2005-present
- Participant, National Kidney Foundation (NKF) Kidney Walk Participant/Fundraiser, 2007-2019
- Presenter, National Kidney Foundation, 2016-2019

Editorships

- Ad hoc reviewer, *BMC Nephrology*, 2019
- Ad hoc reviewer, *Renal Failure*, 2019

Rajil B. Mehta, MD

Dr. Mehta's research interests include clinical and translational aspects of subclinical organ rejection. He is interested in following short and long-term outcomes in patients with subclinical inflammation and rejection. He is also interested in exploring the impact of T cell mediated processes on outcomes in kidney transplantation.

Study Sections

- Abstract Reviewer, American Transplant Congress, 2018-2019

Advisory Committee Memberships and Leadership Positions

- Reviewer, Clinical and Human Translational Research Fellowship, University of Pittsburgh, 2019
- *Professional Affiliations and Society Memberships*
- Member, American Society of Nephrology, 2004-present
- Member, American Society of Transplantation, 2013-present
- Member, Outpatient Quality Improvement Program, Starzl Transplant Institute, 2015-present

Editorships

- Reviewer, *Clinical Transplantation*, 2019
- Reviewer, *Transplantation*, 2019-present
- Reviewer, *Transplant International*, 2019-present
- Reviewer, *American Journal of Transplantation*, 2019-present
- Reviewer, *Kidney International*, 2019-present

Major Lectureships and Seminars

- Speaker, East by Southwest, Pittsburgh, PA, September 2019
- Speaker, Seoul National University, South Korea, Seoul National University, South Korea, December 2019

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.

Editorships

- Reviewer, *Regulatory Toxicology and Pharmacology*, 2013-present
- Reviewer, *Biochemical Pharmacology*, 2015-present
- Reviewer, *Journal of Neurophysiology*, 2019
- Reviewer, *Scientific Reports*, 2019
- Reviewer, *American Journal of Physiology-Renal Physiology*, 2019
- Reviewer, *International Journal of Developmental Neuroscience*, 2020
- Reviewer, *Journal of Biological Chemistry*, 2020

- Reviewer, *Applied Medical Research*, 2020
- Reviewer, *Biochemical Journal*, 2020
- Reviewer, *Bioscience Reports*, 2020
- Reviewer, *Bladder*, 2020
- Reviewer, *Clinical Science*, 2020
- Reviewer, *Clinics and Research in Hepatology and Gastroenterology*, 2020
- Reviewer, *Current Pharmaceutical Analysis*, 2020
- Reviewer, *Journal of Animal Science and Biotechnology*, 2020
- Reviewer, *Journal of Mammary Gland Biology and Neoplasia*, 2020
- Reviewer, *World Journal of Gastroenterology*, 2020

Major Lectureships and Seminars

- Speaker, Society for Neuroscience, Society for Neuroscience, Chicago, IL, USA, Oct 2019

Professional Affiliations and Society Memberships

- Member, Biophysical Society of Argentina, 2007-present
- Member, American Physiological Society, 2015-present
- Member, Salt and Water Club, 2016-present
- Member, Society for Neuroscience, 2016-present

Paul M. Palevsky, MD

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

- Member, American College of Physicians, 1986-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, Renal Field Advisory Committee, U.S. Department of Veterans Affairs, 2011-present
- Consultant, FDA Gastroenterology and Urology Devices Panel, Medical Devices Advisory Committee, Centers for Devices and Radiological Health, 2013-present
- Acting Chair, Clinical Systems Improvement Committee, 2014-present
- Member, Water Safety Committee, U.S. Department of Veterans Affairs, 2014-present
- Acting Chair, NIDDK Observational Study Monitoring Board for the Chronic Renal Insufficiency Cohort (CRIC) Study, 2016-present
- Co-Chair, Kidney Care Quality Alliance Steering Committee, 2016-present
- Chair, Board of Directors, Quality Insights Renal Network 4, 2018-present

- Chair, Medical Review Board, Quality Insights Renal Network 4, 2019-present
- Member, Pentoxifylline in Diabetic Kidney Disease (CSP #2008) Data Monitoring Committee, 2020-present

Professional Affiliations and Society Memberships

- Member, International Society of Nephrology, 1986-present
- Member, American Society of Nephrology, 1988-present
- Member, American Heart Association Council on the Kidney in Cardiovascular Disease, 1989-present
- Member, National Kidney Foundation, 1990-present
- Fellow, American College of Physicians, 1992-present
- Member, Renal Physicians Association, 1993-present
- Member, American Federation for Medical Research, 1994-present
- Fellow, American College of Chest Physicians, 1996-present
- Member, Allegheny County Medical Society, 2001-present
- Member, American Medical Association, 2001-present
- Member, Pennsylvania Medical Society, 2001-present
- Fellow, American Society of Nephrology, 2004-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
- Chair, NIDDK Novel Interventions Hemodialysis Patients Cooperative Agreement Protocol Review Committee and Data Safety Monitoring Board, 2014-present
- Member, Nephrologists Transforming Dialysis Safety, American Society of Nephrology, 2017-present
- 2018-2019, VA/DoD Clinical Practice Guideline in CKD Workgroup, 2018-2019
- President-elect, National Kidney Foundation, 2019-2020
- Member, United States Renal Data System External Expert Panel, 2019-present
- Member, Board of Directors, National Kidney Foundation, 2019-present
- Member, Kidney Health Committee, U.S. Department of Veterans Affairs, 2010-present
- 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

Editorships

- Editorial Board Member, *Journal of Intensive Care Medicine, Nephrology*, 2003-present
- Section Editor, *UpToDate, Acute Renal Failure*, 2005-present
- Associate Editor, *Blood Purification*, 2008-present
- Deputy Editor, *Journal of the American Society of Nephrology*, 2017-2020
- Reviewer, *Critical Care and Resuscitation*, 2019-present
- Editorial Board Member, *Clinical Journal of the American Society of Nephrology*, 2018-present

Major Lectureships and Seminars

- 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, University of Florida Nephrocardiology Conference 2019, Orlando, FL, 2019
- Visiting Professor, Chilean Society of Nephrology, Congress of Nephrology, Hypertension and Transplant, Prevention of Contrast-Associated Acute Kidney Injury, Coquimbo, Chile, 2019
- Visiting Professor, Critical Care Nephrology: 2019 Update, American Society of

- Nephrology, Dosing and Modality of Renal Replacement Therapy, Washington, DC, 2019
- Visiting Professor, American Society of Nephrology, CJASN and JASN: Top Clinical Trials, American Society of Nephrology, 2019
- Visiting Professor, Baylor University Medical Center, Dallas, TX, 2019
- Visiting Professor, Nephrology, Prevention and Treatment of AKI: A Comprehensive Primer Optimizing Renal Support in Acute Kidney Injury, Harvard Medical School, Boston, MA, 2020
- Visiting Professor, New York Medical College/Westchester Medical Center, Valhalla, New York, Mayo Clinic, Rochester, MN (Virtual visit due to COVID-19 Pandemic), 2020

Honors and Awards

- Honoree, Best Doctors, *Pittsburgh Magazine*, 2016-2019

Beth M. Piraino, MD

Dr. Piraino's research interests center on improving outcomes in patients with CKD, and particularly those patients who are on peritoneal dialysis.

Advisory Committee Memberships and Leadership Positions

- Clinical Vice President, Medicine, Hospital Based, Presbyterian Campus of UPMC Hospital, 2013-2019
- Member, Fellowship Competency Committee UPMC Presbyterian, 2013-present
- Member, Medical Alumni Association Executive Committee, 2014-present
- Member, Planning Committee, Kidney Gala, NKF Serving the Alleghenies, 2018-2020
- Member, Education Policy Council, 2018-present
- Member, Peritoneal Dialysis Outcomes and Practice Patterns Study, 2018-present
- Member, Standardized Outcomes in Nephrology - Peritoneal Dialysis (SONG-PD) Expert Working Group, 2019
- President of the Medical Staff, Presbyterian campus, 2019-2020

Professional Affiliations and Society Memberships

- Member, Alpha Omega Alpha, 1976-present
- Member, American Society of Nephrology, 1982-present
- Member, International Society for Peritoneal Dialysis, 1984-present
- Member, National Kidney Foundation, 1984-present
- Member, Women in Nephrology, 1999-present
- Fellow, American College of Physicians, 2012-present
- Member, Kidney Gala, 2019-2020

Editorships

- Editorial Board Member, *Peritoneal Dialysis International*, 1993-present
- Editorial Board Member, *Nephrology Dialysis Transplant*, 2017-2019
- Editorial Board Member, *Clinical Journal of the American Society of Nephrology*, 2017-present

Honors and Awards

- Honoree, Best Doctors, *Pittsburgh Magazine*, 2012-2020

Chethan M. Puttarajappa, MD

Dr. Puttarajappa's research interests include application of decision and cost-effectiveness analysis to kidney transplantation, evaluating utility of virtual crossmatch in kidney transplantation, and research related to non-adherence following kidney transplantation. He is funded through a K08 career development grant to evaluate utility of virtual crossmatch in deceased donor kidney transplantation.

Study Sections

- Reviewer, Mock study section for doctoral students enrolled in Health services research

and policy, University of Pittsburgh, December 2019

- Abstract reviewer, American Society of Nephrology Kidney week 2020, June 2020

Advisory Committee Memberships and Leadership Positions

- Member, Protocol Review Committee/Data Safety Monitoring Board, Starzl Transplant Institute, 2013-present
- Member, Organizing committee for the annual 3-hour CRRT education conference to University of Pittsburgh Critical Care and Nephrology Fellows, 2014-present

Professional Affiliations and Society Memberships

- Member, American Society of Nephrology, 2010-present
- Member, American Society of Transplantation, 2013-present

Editorships

- Ad hoc reviewer, *American Journal of Transplantation*, 2013-present
- Ad hoc reviewer, *BMC Nephrology*, 2013-present
- Ad hoc reviewer, *Clinical Transplantation*, 2013-present
- Ad hoc reviewer, *Transplantation*, 2013-present
- Ad hoc reviewer, *Infection and Drug Resistance*, 2019
- Ad hoc reviewer, *Nephron*, 2020

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.

Advisory Committee Memberships and Leadership Positions

- Data Safety Officer, RESET-BP Clinical Trial, 2017-Present
- Committee Member, Clinical Nephrology Fellowship Program Evaluation Committee, 2018-Present
- Committee Member, Renal-Electrolyte Division Outside Speaker Series, 2019-Present

Professional Affiliations and Society Memberships

- Member, American Heart Association, 2013-present
- Member, American Society of Nephrologists, 2013-present
- Member, National Kidney Foundation, 2013-present
- Member, American Physiological Society, 2017-present
- Member, Salt and Water Club, 2018-Present
- Member, International Society for the Development of Research on Magnesium, 2019-present

Editorships

- Ad hoc Reviewer, *Acta Physiologica*, 2019-present
- Ad hoc Reviewer, *American Journal of Nephrology*, 2019-present
- Ad hoc Reviewer, *Calcified Tissue International*, 2019-present
- Ad hoc Reviewer, *Journal of the American Society of Nephrology*, 2019-present
- Ad hoc Reviewer, *Journal of Hypertension*, 2019-present
- Ad hoc Reviewer, *Physiologic Reports*, 2019-present
- Ad hoc Reviewer, *Nature Communications*, 2019-present

Major Lectureships and Seminars

- Invited Speaker, 17q12 Deletion/Duplication Family Conference, Providence, RI, 2019
- Speaker, Epithelial Transport Conference, Research Center, Telluride, CO, 2019
- Speaker, XV International Magnesium Symposium "Magnesium in Health and Disease," Society for the Development of Research in Magnesium, Bethesda, MD, 2019

Honors and Awards

- Honoree, Castle Connolly America's Best Doctors, 2020
- Honoree, Best Doctors in America, *Pittsburgh Magazine*, 2019-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.

Study Sections

- Abstract reviewer, Kidney Week, American Society of Nephrology, 2019

Advisory Committee Memberships and Leadership Positions

- Member, Kidney Health Committee, U.S. Department of Veterans Affairs, 2010-present
- Ad hoc Reviewer, ASN Kidney Self Assessment Program, 2015-present
- Ad hoc Reviewer, ASN Nephrology Self Assessment Program, 2015-present
- Committee Member, In-Training Exam (ITE) Test Materials Development Committee, 2020
- Program Committee, 2021 Spring Clinical Meeting of National Kidney Foundation, 2020
- Member, 2021 Spring Clinical Meeting of National Kidney Foundation, 2020

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, *Clinical Kidney Journal*, 2016-present
- Ad hoc Reviewer, *Nephron*, 2016-present
- Associate Editor, *Frontiers in Medicine - Nephrology*, 2016-present
- Ad hoc Reviewer, *American Journal of Kidney Disease*, 2017-present
- Ad hoc Reviewer, *New England Journal of Medicine*, 2018-present
- Ad-hoc reviewer, *Kidney Medicine*, 2019
- Ad-hoc reviewer, *Clinical Journal of the American Society of Nephrology*, 2019-present

Major Lectureships and Seminars

- Invited speaker, Hypertension Symposium, Bangkok, Thailand, 2019
- Visiting Professor, Division of Nephrology at Henry Ford Hospital, 2019
- Visiting Professor, Division of Nephrology at Methodist Dallas Medical Center, 2019
- Visiting Professor, Division of Nephrology at Icahn School of Medicine at Mount Sinai, 2019
- Invited speaker, 22nd International Conference on Dialysis Advances in Kidney Disease 2020, 2020

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.

Advisory Committee Memberships and Leadership Positions

- Member, University of Pittsburgh Medical School: Admission interviewing committee, 2005-present
- Member, NKF: CME review board, 2010-present

- Member, UPMC Clinical Leadership and Quality Council and P&T committee reviewer, 2013-present

Professional Affiliations and Society Memberships

- Member, American Society of Nephrology, 2004-present
- Member, American Society of Transplantation, 2004-present
- Member, Renal Physician Association, 2004-present
- Member, National Kidney foundation/KEEP screening and outreach, 2010-present

Editorships

- Abstract reviewer, *American Society of Nephrology*, 2010-present
- Abstract reviewer, *American Society of Transplantation*, 2010-present
- Reviewer, *Clinical Transplantation*, 2010-present
- Reviewer, *American Journal of Transplantation*, 2010-present

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 sub-domains within the extracellular regions of the sodium channels. His group also continued a study to characterize the genetic variants of human epithelial sodium channel genes and to examine 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
- Member, American Association for the Advancement of Science, 2019-present

Editorships

- Editorial Board Member, *American Journal of Physiology-Renal Physiology*, 2007-2020
- Editorial Board Member, *Frontiers in Renal and Epithelial Physiology*, 2012-present

Shujie Shi, PhD

The focus of Dr. Shi's research is to explore mechanisms by which ion channels of the epithelial sodium channel (ENaC)/degenerin family are regulated by endogenous and environmental cues, as well as the physiological consequences of this dysregulation. ENaC is responsible for sodium reabsorption within distal nephron of the kidney, and thus plays a critical role in maintaining extracellular volume and blood pressure. Mutations that alter ENaC function are associated with abnormal blood pressure, such as the hypertension in the Liddle Syndrome and hypotension in Pseudohypoaldosteronism type I (PHA1). Her work employs fundamental tools of molecular genetics, cell biology, and biochemistry, in combination with cutting-edge electrophysiology, microscopy, and animal physiology to answer the key questions in ENaC regulation and its implication in cell physiology and human health.

Professional Affiliations and Society Memberships

- Member, American Society of Nephrology, 2007-present
- Member, American Physiological Society, 2016-present

Editorships

- Reviewer, *Journal of Biological Chemistry*, 2019

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.

Advisory Committee Memberships and Leadership Positions

- Member, Transplant Fellowship Selection Committee, 2012-Present
- Member, Abdominal Transplant Quality Assessment and Improvement (QAPI) Committee, Starzl Transplant Institute, 2013-present
- Member, Protocol Review Committee/Data Safety Monitoring Board, Starzl Transplant Institute, 2013-present

Professional Affiliations and Society Memberships

- Member, American Society of Nephrology, 2007-present
- Member, American Society of Transplantation, 2009-present

Editorships

- Ad hoc Reviewer, *Transplantation*, 2014-present
- Ad hoc Reviewer, *Clinical Transplantation*, 2014-present

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). The laboratory has two major projects: 1) to identify how specialized "sodium-sensing neurons" in the brain detect changes in sodium concentration and contribute to salt-sensitive hypertension, and 2) to identify how renal sensory neurons detect changes in renal pressure or local chemokines to produce hemodynamic changes and hypertension.

Advisory Committee Memberships and Leadership Positions

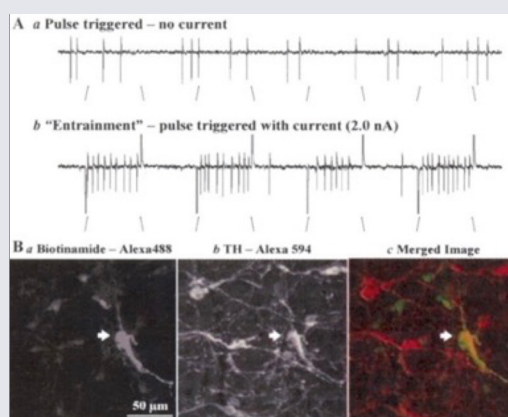
- Member, DLAR Operations Committee, University of Pittsburgh, 2017-present
- Chair, Section Advisor Committee, American Physiological Society, 2018-present

Professional Affiliations and Society Memberships

- Member, Society for Neuroscience, 2019-present
- Member, American Physiological Society, 1998-present

Editorships

- Editorial Board Member, *Hypertension*, 2010-present
- Editorial Board Member, *Physiological Reports*, 2013-present
- Associate Editor, *Journal of Neurophysiology*, 2014-present
- Editorial Board Member, *American Journal of Physiology Regulatory Integrative and Comparative Physiology*, 2014-present
- Editorial Board Member, *American Journal of Physiology, Heart and Circulatory Physiology*, 2020-present



Photo

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, Research Scientific Evaluation Committee (RSEC), VA Pittsburgh Health Care System, 2011-present
- Member, KCVD Membership and Communications Committee, American Heart Association, 2014-present
- Member, Nephrology Fellowship Competency Committee, University of Pittsburgh/UPMC Clinical Nephrology Fellowship Program, 2014-present
- Member, University of Pittsburgh School of Medicine Admissions Interviewing Committee, 2014-present
- Member-at-Large, KCVD Leadership Committee, American Heart Association, 2014-present
- Co-Chair, Pitt/UPMC Nephrology Fellowship Research in Progress Committee, 2015-present
- Member, University of Pittsburgh Integrative Systems Biology (ISB) Graduate Program Admissions Committee, 2017-present
- Member, Pitt/UPMC Nephrology Fellowship Program Evaluation Committee, 2018-present
- Member, Sexual Harassment Awareness and Education Committee, University of Pittsburgh (SHAEC-UP), 2019-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 Member, *American Journal of Physiology-Renal Physiology*, 2010-present
- Editorial Board Member, *Frontiers in Renal and Epithelial Physiology*, 2010-present
- Editorial board member, *Journal of the American Society of Nephrology*, 2017-present
- Referee, *American Journal of Physiology – Cell Physiology*, 2019-present

Major Lectureships and Seminars

- Speaker, 9th International Conference of Aldosterone and ENaC in Health and Disease: The Kidney and Beyond, Estes Park, CO, October 2019
- Presenter, 138th Meeting of the Salt and Water Club, Icahn School of Medicine at Mt Sinai, New York, NY, March 2020
- Speaker, University of Toronto Department of Biochemistry and Hospital for Sick Kids, Toronto, ON, Canada, May 2020

Roderick J. Tan, MD, PhD

Dr. Tan is investigating 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 affects CKD. He is also studying how the Wnt/beta-catenin pathway and matrix metalloproteinases affect renal injury.

Study Sections

- Grant Study Section, Innovative Project Award Basic Sciences, American Heart

Association, 2019-present

Advisory Committee Memberships and Leadership Positions

- Interviewer, Medical School Admissions, University of Pittsburgh School of Medicine, 2013-present
- Co-director, Renal Lab Research Committee, 2020-present

Professional Affiliations and Society Memberships

- Member, National Kidney Foundation, 2010-present
- Member, American Society of Nephrology, 2010-present
- Member, American Heart Association, 2013-present
- Medical Advisory Board, National Kidney Foundation Serving the Alleghenies, 2018-present

Editorships

- Ad hoc Reviewer, *PLoS One*, 2013-present
- Ad hoc Reviewer, *American Journal of Physiology-Renal Physiology*, 2014-present
- Editorial Board Member, *Physiological Reports*, 2015-present
- Ad hoc reviewer, *Oxidative Medicine and Cellular Longevity*, 2016-present
- Ad hoc reviewer, *Scientific Reports*, 2018-present
- Ad hoc reviewer, *Journal of Stem Cells Research, Development and Therapy*, 2020-present
- Ad hoc reviewer, *Journal of Visualized Experiments (JoVE)*, 2020-present

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.

Advisory Committee Memberships and Leadership Positions

- Member, VA Pittsburgh Transfusion Committee, 2016-present
- Member, University of Pittsburgh University School of Medicine Renal-Electrolyte Division Fellow Competency Committee, 2016-present
- Member, University of Pittsburgh Department of Medicine Promotions and Tenure Committee, 2016-present
- Member, Advisory Committee – Reducing Kidney Disease Through AKI Prevention, 2018-present
- Member, University of Pittsburgh Tenured Faculty Promotions and Appointments Committee, 2018-present

Professional Affiliations and Society Memberships

- Member, American Society of Nephrology, 2005-present
- Member, National Kidney Foundation, 2011-present

Editorships

- Editorial Board Member, *Clinical Journal of the American Society of Nephrology*, 2011-present
- Associate Editor, *BMC Nephrology*, 2014-present
- Editorial board member, *Journal of the American Society of Nephrology*, 2019-present

Major Lectureships and Seminars

- Visiting Professor, 2019 At the Limits: Cardiology, Diabetes and Nephrology, Trials and Tribulations in AKI: Do We Know Where We Are Going?, Campinas, Brazil, July 2019

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, Women in Medicine & Science Forum Steering Committee, 2010-present
- Member, Board of Scientific Counselors, NIH NHLBI, 2014-2020
- Member, Organizing committee, UPMC/Pitt Toast to Diversity, 2014-present
- Director, Health Sciences SPRINGBOARD program for new faculty investigators, 2015-present
- Member, PhD Faculty Development Taskforce, Department of Medicine, 2015-present
- Director, Dean's Faculty Advancement Awards, 2016-present
- Member, Planning Committee, Leadership Academy for Early Career Faculty, 2016-present
- Member, APS Publications Committee, 2020-present

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
- Member, Academy of Master Educators, 2009-present
- Member, American Society for Cell Biology Council, 2016-2019
- Member, Sigma Xi, 2017-present

Editorships

- Editorial Board Member, *American Journal of Physiology-Cell Physiology*, 2002-present
- Editorial Board Member, *Traffic*, 2012-present
- Review Editor, *Frontiers in Membrane Traffic*, 2013-present
- Editorial Board Member, *Journal of the American Society of Nephrology*, 2018-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
- Member, Continuous Quality Improvement Committee, 2015-present
- Program Director, Transplant Nephrology Fellowship, 2015-present
- Member, Renal Fellowship Program Evaluation Committee, 2018-present

Professional Affiliations and Society Memberships

- Member, American College of Physicians, 2000-present

- Member, American Society of Nephrology, 2002-present
- Member, American Society of Nephrology, 2005-present

Irina V. Zabbarova, PhD

Dr. Zabbarova's main research interests lie in mechanisms for the development of lower urinary tract and prostate dysfunctions, especially the ones caused by aging (overactive and underactive bladder, BPH and BPO), spinal cord injury (SCI) and pelvic organ irradiation (radiation cystitis) and examination of potential therapeutic options including p75 neurotrophin receptor modulators, relaxin and NO-sGMP pathway mediators.

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 of Neuroscience, 2014-present

GRANTS AND CONTRACTS

AWARDED

July 1, 2019 to June 30, 2020

PUBLIC HEALTH SERVICE

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Al-Bataineh, Mohammad	Role of Muc1 in the B-Catenin Response to Acute Kidney Injury	NIDDK	\$124,627	\$9,971
Apodaca, Gerard	Bladder Mucosal Dysfunction During Aging	NIA	\$61,593	\$34,800
Apodaca, Gerard	Pittsburgh Center for Kidney Research - Core C	NIDDK	\$54,247	\$30,650
Apodaca, Gerard	Role of Piezo Channels in Bladder Function and Dysfunction	NIDDK	\$238,756	\$134,897
Bansal, Amar Deep	Randomized Clinical Trial of a Communication Tool to Palliative Care for Patients with End Stage Renal Disease	NIA/University of Wisconsin	\$22,500	\$13,278
Birder, Lori	Bladder Mucosal Dysfunction During Aging	NIA	\$268,964	\$151,083
Birder, Lori	Contribution of Stress Induced Autonomic and Urothelial Dysregulation to IC/BPS	NIDDK	\$569,122	\$132,736
Birder, Lori	Bladder Mucosal Dysfunction During Aging (Admin Supplement)	NIA	\$102,946	\$58,165
Birder, Lori	Role of Purine Dysregulation in the Underactive Bladder	NIA	\$318,016	\$130,937
Birder, Lori	University of Pittsburgh O'Brien Cooperative Research Center Program-Project 1	NIDDK	\$15,000	\$8,475
Carattino, Marcelo	Pittsburgh Center for Kidney Research - Core A	NIDDK	\$83,777	\$18,604
Carattino, Marcelo	Role of Piezo Channels in Bladder Function and Dysfunction	NIDDK	\$127,118	\$71,823
Chalasani, Geetha	B Cells in Pathogenesis of Allograft Rejection	NIAID	\$213,090	\$120,395
Chalasani, Geetha	Tertiary Lymphoid Organs In Transplantation	NIAID	\$5,191	\$2,933
Delalio, Leon	Functional and molecular identity of renal sensory nerves in hypertension	NIDDK	\$56,078	\$0
Eaton, Amity	Regulation of Bladder Umbrella Cell Paracellular Permeability by Stretch	NIDDK	\$44,893	\$0
Fried, Linda	CKD Pilot Trials Consortium- Chair	NIDDK	\$19,508	\$5,423
Jhamb, Manisha	Technology Assisted Stepped Collaborative Care Intervention (TASCCI) to Improve Patient-Centered Outcomes in Hemodialysis Patients	NIDDK	\$433,463	\$139,973
Jhamb, Manisha	OPTIMIZing carE in Chronic Kidney Disease (OPTIMIZE CKD)	NIDDK	\$59,921	\$23,623
Jhamb, Manisha	Pain Reduction and Opioid Medication Safety in ESRD (PROMISE) study	NIDDK	\$473,946	\$267,322
Jhamb, Manisha	Population Health Management to Optimize Care for Patients with High Risk Chronic Kidney Disease	NIDDK/ Vanderbilt University	\$268,487	\$138,374

PUBLIC HEALTH SERVICE

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Jhamb, Manisha	Blood Pressure and Kidney Function - SPRINT vs Electronic Health Record	NHLBI/University of Minnesota	\$2,549	\$1,440
Kanai, Anthony	Mechanisms/Treatments of Lower Urinary Tract Dysfunction After Spinal Cord Injury	NIDDK	\$136,668	\$72,220
Kanai, Anthony	PDE5 Inhibition of Afferents and Interstitial Cells in Overactive Mouse Bladders	NIDDK	\$202,776	\$55,829
Kanai, Anthony	A Novel Combination Drug Treatment for Detrusor Hyperactivity with Impaired Contractile Function (DHIC)	NIA	\$11,248	\$6,355
Kashlan, Ossama	Allosteric ENaC Regulation	NIDDK	\$97,741	\$52,802
Kleyman, Thomas	Pittsburgh Center for Kidney Research	NIDDK	\$174,172	\$85,766
Kleyman, Thomas	Role of GRP170 in ENaC Biogenesis and Renal Physiology	NIDDK	\$50,000	\$28,250
Kleyman, Thomas	ENaC regulation and its role in blood pressure homeostasis	NHLBI	\$630,565	\$134,916
Kleyman, Thomas	Training in Renal, GI, Endocrine, and Epithelial Biology	NIDDK	\$49,776	\$3,360
Kleyman, Thomas	Pittsburgh Center for Kidney Research	NIDDK	\$23,131	\$13,070
Kleyman, Thomas	Renal and Epithelial Biology Training Program	NIDDK	\$245,050	\$16,153
Kleyman, Thomas	Physiological Properties of Human Kidney Organoids	NIDDK/ University of Southern California	\$87,586	\$49,486
Palevsky, Paul M.	Biomarker Effectiveness Analysis in Contrast Nephropathy (BEACON)	NIDDK	\$11,701	\$6,611
Palevsky, Paul M.	Phenotyping REnal Cases in Sepsis and Surgery for Early Acute Kidney Injury (PRECISE AKI)	NIDDK	\$16,808	\$9,497
Puttarajappa, Chethan M.	Utility of Virtual Crossmatch in Deceased Donor Kidney Transplantation	NIDDK	\$151,765	\$12,045
Ray, Evan	Proteolytic Activation of ENaC in Proteinuric Kidney Disease	NIDDK	\$154,480	\$12,358
Ray, Evan	Pittsburgh Center for Kidney Research - Pilot	NIDDK	\$30,000	\$16,950
Rondon-Berrios, Helbert	Primary Outcomes in Glomerulonephritis Study (PROGRESS)	NIDDK/ University of Pennsylvania	\$644	\$365
Shi, Shujie	Regulation of ENaC/Degenerin Channels by Mechanical Forces	NIDDK	\$62,958	\$5,037
Shi, Shujie	Regulation of ENaC expression by paraoxonase-2	NIDDK	\$74,795	\$42,259
Shipman, Katherine	Megalin Traffic in Dent Disease	NIDDK	\$30,543	\$0
Shiwarski, Cary Boyd	The Function of Kidney Specific (KS)-WNK1 Condensates During Potassium Stress	NIDDK	\$150,500	\$12,040
Stocker, Sean	Pittsburgh Center for Kidney Research - Core B	NIDDK	\$39,711	\$22,436
Stocker, Sean	Brain NaCl-sensing in salt-sensitive hypertension-Brain NaCl-sensing in salt-sensitive hypertension	NHLBI	\$360,014	\$199,453
Stocker, Sean	Identification of mechano versus chemo-sensitive renal sensory neurons in hypertension	NHLBI	\$316,635	\$175,639
Stocker, Sean	Adverse Neurogenic Actions of Dietary Salt	NHLBI/University of Delaware	\$200,581	\$97,644
Stocker, Sean	Yr 3 add-on 7/10/20 \$5949 DC, \$3361 IC *KC. Influence of Diet on the Development of Homeostatic Neurocircuits	Penn State University	\$65,374	\$36,938

PUBLIC HEALTH SERVICE

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Subramanya, Arohan	Characterization and Control of the Renal WNK1 Signaling Pathway	NIDDK	\$108,452	\$58,564
Subramanya, Arohan	The Role of Na/H Exchanger in Cerebral Ischemia	NINDS	\$6,606	\$3,732
Subramanya, Arohan	Regulation of Renal WNK Signaling in Intercalated Cells	NIDDK	\$307,903	\$140,178
Subramanya, Arohan	Pittsburgh Center for Kidney Research	NIDDK	\$288	\$163
Weisbord, Steven	Biomarker Effectiveness Analysis in Contrast Nephropathy (BEACON)	NIDDK	\$9,910	\$5,599
Weisbord, Steven	Randomized ESRD Trial Comparing CBT along VER-sus with Buprenorphine (RECOVER)	NIDDK/ University of Washington	\$13,896	\$7,851
Weisz, Ora A.	Proximal Tubule Endocytosis in Normal and Nephrotic Kidneys	NIDDK	\$317,698	\$179,499
Weisz, Ora A.	Endocytic Pathway Dysfunction in Dent Disease	NIDDK	\$280,596	\$158,537
TOTAL PUBLIC HEALTH SERVICE			\$7,984,363	\$3,216,505

OTHER FEDERAL

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Kanai, Anthony	Enhancing Recovery of SCI-Induced Bladder Dysfunction Using Small Molecules	DOD	\$166,666	\$92,508
TOTAL OTHER FEDERAL			\$166,666	\$92,508

SOCIETY AND FOUNDATIONS

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Bondi, Corry	The role of MCP-1 in tubular-to-glomerular crosstalk in proteinuric kidney	American Heart Association	\$66,746	\$0
Carattino, Marcelo	Sensory renal innervation and blood pressure regulation	Dialysis Clinic, Inc.	\$49,863	\$0
Fuschiotti, Patrizia	Single-cell transcriptome analysis of IL-4Ra-positive cells in Mycosis Fungoides skin tumors.	Cutaneous Lymphoma Foundation	\$47,868	\$1,995
Hughey, Rebecca P.	Role of MUC1 in the Kidney	Dialysis Clinic, Inc.	\$99,726	\$0
Jhamb, Manisha	CKDopps Coordinating Center (CKDCC)	Arbor Research	\$19,542	\$11,041
Ray, Evan	The Genome and Microbiome Repository Project	UPMC Enterprises	\$5,475	\$0
Tan, Roderick	Tubular to Glomerular Crosstalk in Proteinuric Chronic Kidney Disease	American Society of Nephrology	\$45,330	\$4,533
Tan, Roderick	Unraveling Podocyte Injury and Repair in Chronic Kidney Disease	Samuel and Emma Winters Foundation	\$10,842	\$0
TOTAL SOCIETY AND FOUNDATIONS			\$345,394	\$17,568

INDUSTRY

INVESTIGATOR	TITLE	AGENCY	ANNUAL DIRECT COSTS	ANNUAL INDIRECT COSTS
Kleyman, Thomas	Platform for Real-Time, Continuous Measurement of Na and K Concentrations	Bionymmer	\$16,987	\$10,447
Mutchler, Sephanie	Role of Piezo1 in Renal K Secretion	Relypsa, Inc.	\$49,863	\$0
Stocker, Sean	Preclinical Evaluation of Acute Pulmonary Vasodilatory Properties of Aerpio's Proprietary Drug in Normal and Chronic Model of Pulmonary Arterial Hypertension in Rats	Aerpio Pharmaceuticals	\$9,973	\$6,133
TOTAL SOCIETY AND FOUNDATIONS			\$76,823	\$16,580
PUBLIC HEALTH SERVICE			\$7,984,363	\$3,216,505
FEDERAL			\$166,666	\$92,508
SOCIETY AND FOUNDATIONS			\$345,394	\$17,568
INDUSTRY			\$76,823	\$16,580
TOTAL			\$8,573,246	\$3,343,160

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, gastroenterology, 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
- Scholarly project and career mentors
- Membership in the Academy of Master Educators

Moreover, the Renal-Electrolyte Division has received 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, this year, 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 seventh annual University-wide retreat exploring acute kidney injury. The Division also supports an annual Local Traffic Symposium, which focuses on protein trafficking, highlighting work by investigators at the University of Pittsburgh and Carnegie Mellon University.



Clinical Fellows

** Indicates departing fellow*

Muhammad Abbas, MD

Medical School: Lahore Medical & Dental College

Residency: Wright Center, Scranton, PA

Shreedhar Adhikari, MD

Medical School: Manipal College of Medical Sciences, Nepal

Residency: Georgetown University/MedStar Washington Hospital Center, Washington DC

***Narwas Alshoubaki, MD**

Medical School: Jordan University of Science and Technology Medical School, Irbid, Jordan

Residency: Unity Health System, Rochester, NY

Current Position: Midwest Nephrology Associates, Milwaukee, WI

***Aravind Cherukuri, MD, PhD**

Medical School: Guntur Medical College, India

Residency: Western General Hospital, Edinburgh, Monklands Hospital, Airdrie, Scotland

Current Position: Assistant Professor of Medicine, University of Pittsburgh

***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

Current Position: Clinical Associate, Geisinger Medical Center, Danville, PA

Sanjana Kapoor, MD

Medical School: DY Patil University, Navi Mumbai, India

Residency: Maimonides Medical Center, New York, NY

***Ivy Melgarejo, MD**

Medical School: University of Santo Tomas, Philippines

Residency: University of Hawaii

Current Position: Transplant Nephrology Fellow, UPMC

***Ripudaman Munjal, MD**

Medical School: Shri Ram Murti Smarak Institute of Medical Sciences, India

Residency: The Wright Center for Graduate Medical Education, PA

Current Position: Private Practice, Stockton, CA

Praveen Ratanasrimetha, MD

Medical School: Faculty of Medicine Siriraj Hospital, Bangkok, Thailand

Residency: Texas Tech University Health Sciences Center, Lubbock, TX

***Siddharth Verma, MD**

Medical School: Kasturba Medical College Manipal, India

Residency: AtlantiCare Reg. Medical Center, NJ

Current Position: Critical Care Medicine Fellow, University of Cincinnati

Vignesh Viswanathan, MD

Medical School: Chettinad Hospital and Research Institute, India

Residency: Canton Medical Education Foundation

Shoaib Wazir, MD

Medical School: Khyber Medical College, Peshawar, Pakistan

Residency: UPMC McKeesport

Clinical Fellow Activities**Aravind Cherukuri, MD, PhD****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 combined with both T-cell-mediated rejection and non-adherence. *Kidney Int.* 2019 Jul;96(1):202-213.
- 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.* 2020 Jan;20(1):52-63.

Honors and Awards

- Poster of Distinction, Micro-circulation Inflammation with TCMR is Associated with Poor Graft Outcomes in Kidney Transplant Recipients (KTRs) without ABMR, American Transplant Congress, June 2020.

Ripudaman Munjal, MD**Presentations and Abstracts**

- Oxalate Nephropathy in Transplanted Kidney, NKF National Symposium, New Orleans, LA, March 2020.
- Preventing Overly Rapid Correction of Hyponatremia Made Ridiculously Simple, Department of Medicine Research Day, University of Pittsburgh, Pittsburgh, PA, April 2020.

Postdoctoral Fellows and Activities

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 chemokine MCP-1 and interactions between the HIF-1 and Keap1/Nrf2 signaling pathways.

Publications

- Dodda BR, **Bondi CD**, Hasan M, Clafshenkel WP, Gallagher KM, Kotlarczyk MP, Sethi S, Buszko E, Latimer JJ, Cline JM, Witt-Enderby PA, Davis VL. Co-administering Melatonin With an Estradiol-Progesterone Menopausal Hormone Therapy Represses Mammary Cancer Development in a Mouse Model of HER2-Positive Breast Cancer. *Front Oncol.* 2019 Jul 9;9:525.
- Rush BM, **Bondi CD**, Stocker SD, Barry KM, Small SA, Ong J, Jobbagy S, Stolz DB, Bastacky SI, Chartoumpekis DV, Kensler TW, Tan RJ. Genetic or Pharmacologic Nrf2 Activation Increases Proteinuria in Chronic Kidney Disease in Mice. *Kidney Int.* 2020 Aug 17:S0085-2538(20)30952-2.

Presentations and Abstracts

- Center for Critical Care Nephrology 9th Annual AKI Symposium, Pittsburgh, PA, October 2019.
- Kidney Week: American Society of Nephrology, Washington, DC, November 2019.
- American Heart Association Fellows Research Day, Pittsburgh, PA, January 2020.

Honors and Awards

- AHA postdoctoral fellowship, April 2020.

Winn Cashion, MD

Mentor: Steven Weisbord, MD

Dr. Cashion's research interests includes veteran kidney transplant recipients, dual-use care, veterans, Covid-19, renal care, and nephrology e-consults project.

Presentations and Abstracts

- American Society of Nephrology National Conference, Washington, DC, November 2019.
- UPMC Physician Well-Being Symposium, Pittsburgh, PA, January 2020.
- Source of Post-Transplant Care and Mortality among Kidney Transplant Recipients Dually Enrolled in VA and Medicare, Oral Presentation, VA National Surgical Office, Annual National Conference, Orlando, FL, February 2020.
- Source of Post-Transplant Care and Mortality among Kidney Transplant Recipients Dually Enrolled in VA and Medicare, Oral Presentation, 15th Annual 2020 Mid-Atlantic Nephrology Young Investigator Forum, Baltimore MD, February 2020.

Honors and Awards

- Awardee, 3rd place clinical investigator, 15th Annual 2020 Mid-Atlantic Nephrology Young Investigator Forum, Baltimore MD, February 2020.

Marianela Dalghi, PhD

Mentor: Gerard 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.

Publications

- **Dalghi MG**, Clayton DR, Ruiz WG, Al-Bataineh MM, Satlin LM, Kleyman TR, Ricke WA, Carattino MD, Apodaca G. Expression and distribution of PIEZO1 in the mouse urinary

tract. *Am J Physiol Renal Physiol*. 2019 Aug 1;317(2):F303-F321.

- **Dalghi MG**, Montalbetti N, Carattino MD, Apodaca G. The Urothelium: Life in a Liquid Environment. *Physiol Rev*. 2020 Oct 1;100(4):1621-1705. Epub 2020 Mar 19.

Presentations and Abstracts

- Expression and distribution of PIEZO1 in the mouse urinary tract, Department of Cell Biology Retreat, University of Pittsburgh, Pittsburgh PA, July 2019.
- Honors and Awards
- 2019 Urology Care Foundation Outstanding Graduate Scholar Award, for Regulation of Exocytosis in Bladder Umbrella Cells, September 2019

Leon DeLalio, PhD

Mentor: Sean D. Stocker, PhD

Dr. DeLalio's research interests focus on exploring and comprehensively testing novel mechanisms that regulate blood pressure homeostasis in physiology and pathology. His current and future work aims to extricate molecular targets and develop investigational tools that guide therapeutic efforts in the management and treatment of hypertension and renal disease.

Publications

- **DeLalio LJ**, Hahn S, Katayama PL, Wenner MM, Farquhar WB, Straub AC, Stocker SD. Excessive dietary salt promotes aortic stiffness in murine renovascular hypertension. *Am J Physiol Heart Circ Physiol*. 2020 May 1;318(5):H1346-H1355.
- **DeLalio LJ**, Sved AF, Stocker SD. Sympathetic Nervous System Contributions to Hypertension: Updates and Therapeutic Relevance. *Can J Cardiol*. 2020 May;36(5):712-720.
- Yang Y, **DeLalio LJ**, Best AK, Macal E, Milstein J, Donnelly I, Miller AM, McBride M, Shu X, Koval M, Isakson BE, Johnstone SR. Endothelial Pannexin 1 Channels Control Inflammation by Regulating Intracellular Calcium. *J Immunol*. 2020 Jun 1;204(11):2995-3007.

Presentations and Abstracts

- Effects of sex and anesthetics on renal sensory nerve responses, Experimental Biology 2020, San Diego, CA, January 2020.

Honors and Awards

- Research Recognition Award, American Physiological Society Central Nervous System Section, Experimental Biology 2020, January 2020.

Xueping Wang, PhD

Mentor: Ossama B. Kashlan, PhD

Dr. Wang's research focuses on the biliary compounds' affect on the activity of the epithelial sodium channel. The project is supported by NIH (R01) funding.

Publications

- **Wang XP**, Im SJ, Balchak DM, Montalbetti N, Carattino MD, Ray EC, Kashlan OB. Murine epithelial sodium (Na⁺) channel regulation by biliary factors. *J Biol Chem*. 2019 Jun 28;294(26):10182-10193.

Presentations and Abstracts

- Bile acids directly bind ENaC and allosterically regulate its activity, Department of Medicine Research Day, University of Pittsburgh, Pittsburgh, PA, April 2020. *Cancelled due to Covid-19*.

Honors and Awards

- Travel award, 2020 Experimental Biology meeting, January 2020.

ONE-YEAR BIBLIOGRAPHY

July 1, 2019 to June 30, 2020

Non-original research publications are in italics. Renal faculty are in bold.

Abdel-Kader K, **Jhamb M**. EHR-Based Clinical Trials: The Next Generation of Evidence. *Clin J Am Soc Nephrol*. 2020 Jul 1;15(7):1050-1052. Epub 2020 Feb 24.

Baddour NA, Robinson-Cohen C, Lipworth L, Bian A, Stewart TG, **Jhamb M**, Siew ED, Abdel-Kader K. The Surprise Question and Self-Rated Health Are Useful Screens for Frailty and Disability in Older Adults with Chronic Kidney Disease. *J Palliat Med*. 2019 Dec;22(12):1522-1529. Epub 2019 Jun 28.

Bahrainwala JZ, Gelfand SL, Shah A, **Abramowitz B**, Hoffman B, Leonberg-Yoo AK. Preoperative Risk Assessment and Management in Adults Receiving Maintenance Dialysis and Those With Earlier Stages of CKD. *Am J Kidney Dis*. 2020 Feb;75(2):245-255. Epub 2019 Oct 7.

Basu A, Rosen LM, Tan HP, Fishbein J, **Wu CM**, Donaldson JB, Stuart S, **Shah NA**, McCauley J, Humar A, Shapiro R. Outcomes of Deceased Donor Kidney Transplantation Using Expanded Criteria Donor Kidneys Following Pulsatile Preservation. *Cureus*. 2019 Jul 7;11(7):e5091.

Birder LA, Van Kerrebroeck PEV. Pathophysiological Mechanisms of Nocturia and Nocturnal Polyuria: The Contribution of Cellular Function, the Urinary Bladder Urothelium, and Circadian Rhythm. *Urology*. 2019 Nov;133S:14-23. Epub 2019 Jul 29.

Boudville N, Johnson DW, Zhao J, Bieber BA, Pisoni RL, **Piraino B**, Bernardini J, Nessim SJ, Ito Y, Woodrow G, Brown F, Collins J, Kanjanabuch T, Szeto CC, Perl J. Regional variation in the treatment and prevention of peritoneal dialysis-related infections in the Peritoneal Dialysis Outcomes and Practice Patterns Study. *Nephrol Dial Transplant*. 2019 Dec 1;34(12):2118-2126.

Boyd-Shiwerski CR, Weaver CJ, Beaucham RT, Shiwerski DJ, Connolly KA,

Nkashama LJ, Mutchler SM, Griffiths SE, Knoell SA, Sebastiani RS, **Ray EC**, Marciszyn AL, **Subramanya AR**. Effects of extreme potassium stress on blood pressure and renal tubular sodium transport. *Am J Physiol Renal Physiol*. 2020 Jun 1;318(6):F1341-F1356. Epub 2020 Apr 13.

Briggs JP, **Palevsky PM**. Clinical Trial Data Sharing: The Time Is Now. *J Am Soc Nephrol*. 2019 Sep;30(9):1556-1558. Epub 2019 Aug 13.

Carattino MD, **Montalbetti N**. Acid-sensing ion channels in sensory signaling. *Am J Physiol Renal Physiol*. 2020 Mar 1;318(3):F531-F543. Epub 2020 Jan 27.

Carrisoza-Gaytan R, **Ray EC**, Flores D, Marciszyn AL, Wu P, Liu L, **Subramanya AR**, Wang W, **Sheng S**, Nkashama LJ, Chen J, Jackson EK, Mutchler SM, Heja S, Kohan DE, Satlin LM, **Kleyman TR**. Intercalated cell BKα subunit is required for flow-induced K⁺ secretion. *JCI Insight*. 2020 Apr 7;5(8):e130553.

Chakrabarty B, Ito H, Ximenes M, Nishikawa N, Vahabi B, **Kanai AJ**, Pickering AE, Drake MJ, Fry CH. Influence of sildenafil on the purinergic components of nerve-mediated and urothelial ATP release from the bladder of normal and spinal cord injured mice. *Br J Pharmacol*. 2019 Jul;176(13):2227-2237. Epub 2019 May 11.

Chen Q, Yu J, Rush BM, **Stocker SD**, **Tan RJ**, Kim K. Ultrasound super-resolution imaging provides a noninvasive assessment of renal microvasculature changes during mouse acute kidney injury. *Kidney Int*. 2020 Aug;98(2):355-365. Epub 2020 Mar 3.

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 combined with both T-cell-me-

diated rejection and non-adherence. *Kidney Int*. 2019 Jul;96(1):202-213. Epub 2019 Mar 20.

Clarke AL, **Jhamb M**, Bennett PN. Barriers and facilitators for engagement and implementation of exercise in end-stage kidney disease: Future theory-based interventions using the Behavior Change Wheel. *Semin Dial*. 2019 Jul;32(4):308-319. Epub 2019 Apr 1.

Dalghi MG, Clayton DR, Ruiz WG, **Al-Bataineh MM**, Satlin LM, **Kleyman TR**, Ricke WA, **Carattino MD**, **Apodaca G**. Expression and distribution of PIEZO1 in the mouse urinary tract. *Am J Physiol Renal Physiol*. 2019 Aug 1;317(2):F303-F321. Epub 2019 Jun 5.

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DeLalio LJ, Hahn S, Katayama PL, Wenner MM, Farquhar WB, Straub AC, **Stocker SD**. Excessive dietary salt promotes aortic stiffness in murine renovascular hypertension. *Am J Physiol Heart Circ Physiol*. 2020 May 1;318(5):H1346-H1355. Epub 2020 Apr 17.

DeLalio LJ, Sved AF, **Stocker SD**. Sympathetic Nervous System Contributions to Hypertension: Updates and Therapeutic Relevance. *Can J Cardiol*. 2020 May;36(5):712-720. Epub 2020 Mar 6.

Drew DA, Katz R, Kritchevsky S, Ix JH, Shlipak MG, Newman AB, Hoofnagle AN, **Fried LF**, Sarnak M, Gutiérrez OM. Fibroblast Growth Factor 23 and Blood Pressure in Older Adults: The Health, Aging, and Body Composition Study. *Hypertension*. 2020 Jul;76(1):236-243. Epub 2020 May 18.

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University of
Pittsburgh

Department of Medicine
School of Medicine

1218 Scaife Hall
3550 Terrace Street
Pittsburgh, PA 15261

Phone 412.648.9636

Website www.dom.pitt.edu