# KidneyCurrent

*The Quarterly KidneyCure e-Newsletter*

**May 2020**

**In This Issue:**



## Recent News

**KidneyCure holds 2020 Grants Review Meeting**

The Grants Review Committee, chaired by Paul W. Sanders, MD, met virtually on Thursday, March 19, to review more than 100 research applications received in December 2019. Normally held in person over two days, the meeting was moved online to prioritize the health and safety of the volunteers and staff during the COVID-19 pandemic. The committee's recommendations were reviewed by the KidneyCure Board of Directors in early-April. Up to 27 new investigators will join the esteemed roster of KidneyCure grant recipients this year and we look forward to announcing the new recipients soon.

## Grant Recipient Spotlight

Kirk N. Campbell, MD, FASN, is an Associate Professor in the Division of Nephrology and the Vice Chair of Diversity and Inclusion at Icahn School of Medicine at Mount Sinai. He has committed to improving care for patients through his research in podocyte cell biology and glomerular disease. Dr. Campbell credits receiving a 2014 Carl W. Gottschalk Research Scholar Grant with providing "crucial funding at a very crucial time" that positioned him well to continue to build his vital research.

**Kirk N. Campbell, MD, FASN**

Learn more about Dr. Campbell's work, inspirations, and what excites him most about the field here.

## Grant Recipients at Work

Past KidneyCure grant recipients, working across the research spectrum, advance our understanding and treatment of kidney diseases. This talented and prolific group of investigators have published hundreds of articles, reviews, and editorials in the past year alone. Find highlights of recent works and publications as submitted by former KidneyCure grant recipients here.

If you have any questions, please contact us at kidneycure@asn-online.org or 202-640-4660.

## Make a Donation

# Kirk N. Campbell, MD, FASN

Icahn School of Medicine at Mount Sinai

2014 Carl W. Gottschalk Research Scholar Grant Recipient
Project Title: *Role of Dendrin in Glomerular Disease Progression*

**How did you develop your interest in medicine and then the kidney in particular?**

I developed my interest in medicine largely through a love for science and scientific discovery. That started for me in high school and ultimately it was quite fruitful to merge that passion for science and physiology with clinical practice. I felt that nephrology really merged those interests more than any other specialty. I also like the challenge of taking care of complex patients and not losing sight of core internal medicine principles. I really think nephrology is the most exciting specialty in that regard.

**Do you remember your first experience with a kidney patient?**

During medical school, one of the first things that interested me was managing patients with complex acid-base disorders. The first two years of medical school – at least back then – were more of a classroom didactic experience based on textbook learning without much patient contact. It was really going in the medical wards that third year that put everything in full perspective. For the first time I was applying some of the correction formulas I had learned in the classroom to figure out what acid-base disorder the patients had and the best way to manage them. It completed the circle from the first two years of medical school through actual clinical practice.

**What inspired you to apply for the Carl W. Gottschalk Research Scholar Grant?**

At the time I applied for a Gottschalk I was coming to the end of my NIH K08 Career Development Grant. It was a transition point in my career as it is for a lot of investigators. I was trying to position myself to become competitive for independent R01 funding, but did not have all the resources, including all the preliminary data, that I needed to get to that next level. ***For me it was very much crucial funding at an extremely important time.*** I was familiar with some colleagues who had successfully applied through this mechanism.

**Describe your research at the time of your application.**

My research was an extension of what I had been doing for my K award. My main interest is in podocyte cell biology and experimental glomerular disease. I was trying to understand the mechanistic basis of proteinuria and how patients progress from having podocyte injury to ultimately requiring renal replacement therapy. Our lab is interested in identifying targets that could be amenable to pharmacologic intervention, so I was working on this protein dendrin at the time, which we found to be an important mediator of podocyte injury. The project was centered on determining how dendrin shuttles to the nucleus to promote podocyte injury and glomerular disease progression. The K award had its foundation in basic cell biology while the Gottschalk award and eventual R01 were more translational in understanding the impact of dendrin shuttling on clinically relevant outcomes.

**Has your research stayed on this path?**
I received an R01 on dendrin after a year of support through the Gottschalk grant. It was a crucial time and the grant really positioned me well. The research has certainly stayed on the theme of podocyte biology and experimental glomerular disease, but, like all things in biomedical research, the line is increasingly blurred between basic science and clinical investigation. I have become a lot more involved in clinical trials, identifying biomarkers, and using patient-derived samples. Our lab has also been working on a number of other targets for drug development in the glomerular disease space. Starting with that initial mechanistic story, the work has expanded significantly with a number of collaborators across a lot of different fields, including medicinal chemistry, systems biology, biomarker research, and clinical epidemiology. ***I think we have gotten more involved in cross-disciplinary initiatives than ever imagined.***

**What do you ultimately hope to accomplish or discover with your research?**
Ultimately, I work in an area of significant unmet clinical need. It is a rare kidney disease space. It is an area where the disorders we treat, like focal segmental glomerulosclerosis, need to be much better defined using histologic, serologic urinary biomarkers that have not yet been fully developed. ***We need much better treatment options for patients. If our work can contribute to increased understanding of glomerular disease pathomechanisms and developing new therapeutic approaches, that would be extremely fulfilling.***

**You work closely with fellows and students now, how does this contribute to your own work?**
I am the fellowship director and co-PI for the NIH T32 training grant in my Division. From an administrative standpoint I guide trainees in identifying research mentors, selecting research projects and navigating the pitfalls of early academic career development. One of the most fulfilling experiences is to directly mentor students and trainees in my own group.. About ten years ago, during the first year of my Kaward , the very first student I had was supported by an ASN Foundation Student Scholar Grant. She did the lion's share of the project's animal studies through that grant, and my first senior publication was derived from her work. I've been very fortunate to have worked with some of the best students and trainees around – they contribute to scientific discovery in often intangible ways by challenging existing paradigms, drafting hypotheses for research grants and contributing to manuscript development.

**You joined the Grants Review Committee in 2020. What are you most excited about in this role?**
Things have certainly come full circle from getting the award six years ago to now being invited to be a part of the Grants Review Committee. There are a few things I am looking forward to. The biggest goal is to support the best science and most promising young investigators in nephrology who need all the resources they can get to drive the field forward. That is really the primary goal, but I also look forward to learning, to hearing about new technology, new initiatives, and the exciting scientific approaches that nephrology seems to be adopting from other fields in biomedical research. ***I think that we are on the cusp of a lot of important discoveries and, ultimately, that tends to be reflected in the quality of the applications and applicants.*** Grant committees, like KidneyCure's, are where individuals who are transitioning to independence are looking for the resources that will help get them established. These are awardees who have a high likelihood of making a big impact on the field, so we need to support them. I think it is exciting and I really look forward to it.

KidneyCure
The ASN Foundation CureKidneyDiseases.org

# Grant Recipients at Work

Highlights of recent works and publications as submitted by former KidneyCure grant recipients. Grant award year is indicated in parentheses.

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Matthew K. Abramowitz, MD, MS (2013)

- Gait abnormalities and the risk of falls in chronic kidney disease
- Walking while talking in older adults with chronic kidney disease
- Intradialytic acid-base changes and organic anion production during high versus low bicarbonate hemodialysis. American Journal of Physiology - Renal Physiology [in press]

Massimo Attanasio, MD (2010)

- Innate Immune Signaling Contributes to Tubular Cell Senescence in the Glis2 Knockout Mouse Model of Nephronophthisis
- Epithelial innate immunity mediates tubular cell senescence after kidney injury
- Prominin-1 controls stem cell activation by orchestrating ciliary dynamics

Evren Azeloglu, PhD (2015)

- Disruption of podocyte cytoskeletal biomechanics by dasatinib leads to nephrotoxicity

Vivek Bhalla, MD, FASN (2010)

- Screening Rates for Primary Aldosteronism in Resistant Hypertension- A Cohort Study
- Hypertension Hot Potato - Anatomy of the Angiotensin Receptor Blocker Recalls

Tammy M. Brady, MD, PhD (2008)

- The association of obstructive sleep apnea and left ventricular hypertrophy in obese and overweight children with history of elevated blood pressure
- Pediatrician Communication about High Blood Pressure in Children with Overweight/Obesity during Well-Child Visits
- Adiposity, Sex, and Cardiovascular Disease Risk in Children with CKD: A longitudinal study of youth enrolled in the CKiD (Chronic Kidney Disease in Children) study

Melissa Cadnapaphornchai, MD, FASN (2010)

- International consensus statement on the diagnosis and management of autosomal dominant polycystic kidney disease in children and young people
- Tolvaptan use in children and adolescents with autosomal dominant polycystic kidney disease: rationale and design of a two-part, randomized, double-blind, placebo-controlled trial
- “Neonatal Nephrology” in Merenstein & Gardner’s Handbook of Neonatal Intensive Care: An Interprofessional Approach

Ying Maggie Chen, MD, PhD (2013)

- Discovery of endoplasmic reticulum calcium stabilizers to rescue ER-stressed podocytes in nephrotic syndrome

Mary E. Choi, MD (2005, 2010)

- Mitophagy Dependent Macrophage Reprogramming Protects against Kidney Fibrosis
- Association of urine mitochondrial DNA with clinical measures of COPD in the SPIROMICS cohort

Francesca Di Sole, PhD (2009)

- Adenosine A2A receptor blocks the A1 receptor inhibition of renal Na+ transport and oxygen consumption

Zheng Dong, PhD, FASN (2001)

- Bif-1 Interacts with Prohibitin-2 to Regulate Mitochondrial Inner Membrane during Cell Stress and Apoptosis
- The deacetylase sirtuin 6 protects against kidney fibrosis by epigenetically blocking β-catenin target gene expression
- Clearance of damaged mitochondria via mitophagy is important to the protective effect of ischemic preconditioning in kidneys

Paul E. Drawz, MD, MS (2015)

- Association of 24-Hour Ambulatory Blood Pressure Patterns with Cognitive Function and Physical Functioning in CKD
- Blood Pressure Measurement: A KDOQI Perspective
- Development and Validation of a Pragmatic Electronic Phenotype for CKD

Nwamaka D. Eneanya, MD, MPH, FASN (2013)

- Longitudinal patterns of health-related quality of life and dialysis modality: a national cohort study
- Palliative care use and patterns of end-of-life care in hospitalized patients with calciphylaxis
- Reconsidering the consequences of using race to estimate kidney function
- Palliative care in nephrology: the work and the workforce *Adv Chronic Kidney Dis*. 2020. [In Press]

Kevin F. Erickson, MD, MS (2017)

- Bundled Payment Reform and Dialysis Facility Closures in ESKD

Anna Greka, MD, PhD (2011)

- Small Molecule Targets TMED9 and Promotes Lysosomal Degradation to Reverse Proteinopathy
- Single cell census of human kidney organoids shows reproducibility and diminished off-target cells after transplantation

Ashima Gulati, MD, PhD (2015)

- Collagen IV Gene Mutations in Adults with Bilateral Renal Cysts and CKD
- Inherited glomerular diseases in the gilded age of genomic advancements

Michelle Gumz, PhD (2013)

- Direct and indirect inhibition of the circadian clock protein Per1: effects on ENaC and blood pressure
- Clock gene expression is altered in veterans with sleep apnea
- *EDN1-AS*, A Novel Long Non-coding RNA Regulating Endothelin-1 in Human Proximal Tubule Cells

Katharina Hopp, PhD (2012)

- Detection and characterization of mosaicism in Autosomal Dominant Polycystic Kidney Disease
- CD8+ T-cells Modulate Autosomal Dominant Polycystic Kidney Disease Progression

Benjamin D. Humphreys, MD, PhD, FASN (2009)

- FOXM1 drives proximal tubule proliferation during repair from acute ischemic kidney injury
- The single-cell transcriptomic landscape of early human diabetic nephropathy

Daria Ilatovskaya, MS, PhD (2013)

- Renal Glomerular Mitochondria Function in Salt-Sensitive Hypertension
- CD8+ T-cells negatively regulate inflammation post-myocardial infarction
- Salt-deficient diet exacerbates cystogenesis in ARPKD via epithelial sodium channel (ENaC)

Pinelopi P. Kapitsinou, MD (2013)

- Inhibition of Endothelial PHD2 Suppresses Post-Ischemic Kidney Inflammation through Hypoxia-Inducible Factor-1

Krzysztof Kiryluk, MD (2014)

- The genetic architecture of membranous nephropathy and its potential to improve non-invasive diagnosis
- Genomic Mismatch at LIMS1 Locus and Kidney Allograft Rejection
- Precision Medicine in Internal Medicine

Matthew B. Lanktree, MD, PhD (2017)

- Intrafamilial Variability of ADPKD
- Evolving role of genetic testing for the clinical management of autosomal dominant polycystic kidney disease
- Does elevated urinary Dkkopf-3 level predict vulnerability to kidney injury during cardiac surgery?

Karel F. Liem, Jr., MD, PhD (2015)

- Cell-Autonomous Hedgehog Signaling Is Not Required for Cyst Formation in Autosomal Dominant Polycystic Kidney Disease.
- Tulp3 Is a Ciliary Trafficking Gene that Regulates Polycystic Kidney Disease.

Fangming Lin, MD, PhD, FASN (2006)

- Mitochondrial Heterogeneity Reveals that Lysosomal Repression is Required for the Maintenance of Hematopoietic Stem Cell Quiescence and Potency

- FoxO3 activation in hypoxic tubules prevents chronic kidney disease
- Patent Ductus Arteriosus is Associated with Acute Kidney Injury in the Preterm Infant

Mitchell Lunn, MD, MS, FASN (2015)

- Advancing Equity in Nephrology: Enhancing Care for LGBTQ+ Patients and Our Workforce
- A digital health research platform for community engagement, recruitment, and retention of sexual and gender minority adults in a national longitudinal cohort study--The PRIDE Study
- Ensuring Gender Affirming Care in Nephrology: Improving Care for Transgender and Gender-Expansive Individuals

Mara McAdams-DeMarco, PhD (2013)

- Cognitive Function, Access to Kidney Transplantation, and Waitlist Mortality Among Kidney Transplant Candidates with and Without Diabetes
- Association Between Weight Loss Before Deceased Donor Kidney Transplantation and Posttransplantation Outcomes

Norma Ojeda, MD (2012)

- Renal injury after uninephrectomy in male and female intrauterine growth-restricted aged rats

Michelle M. O'Shaughnessy, MBChB, MS, FASN (2014)

- Cause of kidney disease and cardiovascular events in a national cohort of US patients with end-stage renal disease on dialysis: a retrospective analysis
- Treatment Patterns Among Adults and Children With Membranous Nephropathy in the Cure Glomerulonephropathy Network (CureGN)

Samir Parikh, MD, FASN (2008)

- TFEB-driven lysosomal biogenesis is pivotal for PGC1α-dependent renal stress resistance
- Metabolic Stress Resistance in Acute Kidney Injury: Evidence for a PPAR-Gamma-Coactivator-1 Alpha-Nicotinamide Adenine Dinucleotide Pathway
- An Evolutionarily Conserved uORF Regulates PGC1α and Oxidative Metabolism in Mice, Flies, and Bluefin Tuna

Mark D. Parker, PhD (2015)

- Extrarenal Signs of Proximal Renal Tubular Acidosis Persist in Nonacidemic Nbce1b/c-Null Mice
- Soft drink consumption during and following exercise in the heat elevates biomarkers of acute kidney injury
- Monocarboxylate Transporter 6-Mediated Interactions with Prostaglandin F(2α): In Vitro and In Vivo Evidence Utilizing a Knockout Mouse Model. Pharmaceutics

Yu Leng Phua, PhD (2015)

- Loss of *miR-17~92* Results in Dysregulation of *Cftr* in Nephron Progenitors

Reena Rao, PhD (2007)

- Targeting the vasopressin type-2 receptor for renal cell carcinoma therapy

Hila Milo Rasouly, PhD (2016)

- The Burden of Candidate Pathogenic Variants for Kidney and Genitourinary Disorders Emerging from Exome Sequencing

Timo Rieg, MD, PhD (2010)

- Pharmacological Npt2a Inhibition Causes Phosphaturia and Reduces Plasma Phosphate in Mice with Normal and Reduced Kidney Function
    - Editorial comment: https://pubmed.ncbi.nlm.nih.gov/31604810/

Brad H. Rovin, MD, FASN (1999)

- Establishing Surrogate Kidney End Points for Lupus Nephritis Clinical Trials: Development and Validation of a Novel Approach to Predict Future Kidney Outcomes

Jennifer Sasser, PhD (2015)

- Superimposed Preeclampsia Exacerbates Postpartum Renal Injury Despite Lack of Long-Term Blood Pressure Difference in the Dahl Salt-Sensitive Rat

Jane O. Schell, MD (2014)

- NephroTalk: Evaluation of a Palliative Care Communication Curriculum for Nephrology Fellows

Alexander Staruschenko, PhD, FASN (2008)

- Relationship between renin-angiotensin-aldosterone system and renal $K_{ir}5.1$ channels
- Progression of diabetic kidney disease in T2DN rats
- Salt-deficient diet exacerbates cystogenesis in ARPKD via epithelial sodium channel (ENaC)

Robert F. Spurney, MD, FASN (2000)

- TRPC Channels in Proteinuric Kidney Diseases.
- Knockout of TRPC6 promotes insulin resistance and exacerbates glomerular injury in Akita mice.

Joshua M. Stern, MD (2016)

- Fecal transplant modifies urine chemistry risk factors for urinary stone disease

Alan Yu, MBChB (1998)

- Claudin-2 deficiency associates with hypercalciuria in mice and human kidney stone disease

Abolfazl Zarjou, MD, PhD (2015)

- Dynamic signature of lymphangiogenesis during acute kidney injury and chronic kidney disease
- Ferritin Light Chain Confers Protection Against Sepsis-Induced Inflammation and Organ Injury