Kidney disease researchers at Washington University School of Medicine say a new computational pipeline developed in the Division of Nephrology could “revolutionize” the understanding of kidney injury and repair mechanisms. The tool is based on very recent developments in the field of spacial transcriptomics and was developed by Haojia Wu, PhD, assistant professor in the Division of Nephrology. It was published in Nature Communications in February 2024.

CellScopes, a computational tool that enables rapid analysis and visualization of spatially resolved transcriptomic datasets, was developed by Dr. Wu to create a high-resolution spatial “map” of kidney cell types during injury and repair using RNA hybridization-based in situ sequencing. Researchers compared healthy and injured mouse kidneys and identified various cell state dynamics patterns during injury and repair. The computational tool is anticipated to accelerate research into acute kidney injury (AKI) and chronic kidney disease (CKD).

“High-resolution spatial transcriptomics will truly revolutionize our understanding of kidney biology,” notes Dr. Wu. “I am incredibly excited about the potential for this technology to be applied in the study of kidney diseases.”

Dr. Wu conducts research in the laboratory of Benjamin Humphreys, MD, PhD, the Joseph Friedman Professor of Renal Diseases in Medicine and Chief of the Division of Nephrology. “With CellScopes, we were able to visualize 200 distinct genes by measuring messenger RNA at cellular resolution, the first such study in the kidney,” says Dr. Humphreys. “Ongoing, CellScopes will be extremely useful to any investigator analyzing spatial transcriptomic datasets.”

The published research is the first to come out of the new Washington University Kidney O’Brien Center for Chronic Kidney Disease Research. The Center was established as a collaborative, “team science” environment to accelerate research and is funded by a five-year, $4.5 million grant from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

“WashU Kidney O’Brien Center for Chronic Kidney Disease Research Opens First Groundbreaking Research from Center Published in Nature Communications”

Leadership of the O’Brien Center for CKD Research includes (L to R): Jeffrey Miner, PhD; Monica Chang-Panesso, MD; Leslie Gewin, MD; and Benjamin Humphreys, MD, PhD.
Message from the Chief

I am proud that our division continues to build on its legacy of excellence in research with the latest George M. O’Brien Kidney Center grant from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The O’Brien Kidney Consortium is a small, elite group of nephrology divisions across the United States that works together to advance research and treatments for kidney diseases. It enables us to bring together a multidisciplinary team of scientists and physician-scientists to expand our investigations into chronic kidney diseases and integrate our research with ongoing investigations at other O’Brien Centers.

We have added 5,000 square feet of laboratory space to accommodate the expansion of scientific investigations and are launching a dynamic undergraduate research internship to spark continued interest in nephrology research. We also plan to recruit additional researchers into the center.

A hallmark of all our research efforts is the “team science” spirit — the eagerness to share what we learn with others and participate in collaborative programs so that we can build upon the research conducted elsewhere. Locally, we have two long-standing programs that enable us to meet and share with colleagues from Saint Louis University School of Medicine. Earlier this year, City-wide Renal Grand Rounds were held, co-hosted by the Eastern Missouri National Kidney Foundation. In the same tradition of education and sharing, nephrology fellows held their own Renal Rounds and our faculty, along with SLU colleagues, eagerly served as mentors to help guide discussions.

All these efforts serve as pipelines to rapidly translate nephrology research into better patient care practices and outcomes. Along those lines, the division launched a new priority care CKD continuity clinic for late Stage 4 or Stage 5 patients in two locations. Led by renal nurse practitioner Lisa Koester Wiedemann, CS, MSN, ANP, CNN-NP, the clinics enable faster, easier access to care and supplement our busy physician clinics. Lisa, who brought up the need for the additional clinics, is nationally recognized for her expertise in dialysis care. She just returned from the Annual Dialysis Conference, held this year in San Diego where she moderated several national roundtable discussions. Home modalities nurse Cheryl Cress, RN, CNN, also was a panelist for several roundtables.

I hope you keep us informed of your career pathways and accomplishments. As you can see in this issue’s alumni profile of Dr. Gopa Green, our former fellows and faculty are in many facets of nephrology care and leadership!

Benjamin D. Humphreys, MD, PhD
Joseph P. Friedman Professor and Chief Division of Nephrology
Washington University School of Medicine

Thank You!

We thank the following individuals and organizations that generously donated to our division September 1, 2023 – January 5, 2024.

American Heart Association–Dallas
Children’s Discovery Institute
Foundation for Barnes-Jewish Hospital

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Mr. William H. Gebhard
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Mr. and Mrs. Terrace Dwaine and
Karen Lee Sell

Support the Division of Nephrology

If you would like to support our research and teaching mission or contribute to the Division of Nephrology’s programs and services, please send your contribution to:

Washington University in St. Louis
Office of Medical Alumni and Development
Attn: Rachel A. Hartmann
7425 Forsyth Blvd.
Campus Box 1247
St. Louis, MO 63105

You may also contact Rachel A. Hartmann directly at 314-935-9715 or by email at rachel_hartmann@wustl.edu if you are considering supporting the Division through appreciated stocks, deferred giving, beneficiary plans or other assets.

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The Division of Nephrology is pleased to welcome these fellows who join our program this summer:

Maheen Khan, MBBS
Louisiana State University
Shreveport, LA

Yazan Kharabsheh, MD
Thomas Hospital
Mobile, AL

Ramayee Nadarajan, MBBS
University of South Alabama
Mobile, AL

AbdulMoid Shehzad, MBBS
The Jewish Hospital
Mercy Health
Cincinnati, OH

In the research realm, our fellows have excelled, with the range of topics spanning the full breadth of General and Transplant Nephrology. While most of our fellows work on clinical research, second-year fellow Swathi Velagapudi, MD, is conducting translational research by working in the lab on a model of Eiken Syndrome with abnormally regulated bone-mineral metabolism. Significantly, our fellows had numerous publications and posters presented at the recent American Society of Nephrology national meeting.

We are extremely proud of our fellows’ achievements and the paths they continue to forge. Whether it be in education, research, or in leadership roles at the highest levels, we are committed to providing and supporting the full depth and breadth of experiences as fellows forge their career pathways.
As Associate Chief Medical Officer of U.S. Renal Care, Gopa Green, MD, has a broad perspective on how best to deliver quality nephrology care across the United States. But it was a personal moment that pushed Dr. Green to think more globally about the challenges of offering such care during disasters.

“We lost our home in 2017 during the Tubbs Fire in Sonoma County in California while I was still in private practice and serving as a medical director at a regional dialysis center for Satellite Healthcare,” she recalls. “It changed my perspective on my role in my community and in the world. I have spoken about my experiences in leading through disasters and I am passionate about working with the nephrology community — including patients, physicians, practices, and community resources — to engage in emergency preparedness.”

After completing her Internal Medicine and Nephrology Fellowship training at Washington University, Dr. Green joined a busy private practice, Nephrology Associates in Santa Rosa, California. She was a partner and leader in this practice for more than 16 years, working closely with Satellite Healthcare as a Medical Director and advising in Medical-Clinical Affairs prior to joining Satellite Healthcare full-time in 2021. Satellite Healthcare is a mid-size nonprofit dialysis provider that serves more than 8000 patients. She served as Chief Medical Officer of In-Center Dialysis Services and Clinical Programs for Satellite Healthcare for the past one and a half years before joining U.S. Renal Care in January 2024. Today, she collaboratively oversees quality and medical affairs for both U.S. Renal Care and Satellite Healthcare as part of the Chief Medical Office. This role gives her the opportunity to work with a broad cross-functional team to enhance quality of care for the nearly 40,000 patients that are served by both organizations.

Dr. Green is passionate about care quality and patient safety. “I help to develop quality strategy with data analytics, clinical services, and operations teams,” she says. “Currently, I am providing medical leadership for a company-wide initiative to reduce reliance on central venous catheters for hemodialysis, the end result of which we expect will make a positive impact on patients’ quality of life, morbidity and mortality, as well as provide value for the healthcare industry.”

She also oversees a high acuity patient admissions program which has shown favorable results in keeping patients in their communities and substantially reducing days spent in the hospital. “Satellite Healthcare has centers with the capability to dialyze patients in a bed rather than a standard dialysis chair or to accommodate patients who require continuous intravenous medications or have an external wearable defibrillator or a left-ventricular assist device,” she explains. “Without this program, these patients would likely be unable to leave an acute hospital setting. By supporting patients with these conditions at outpatient dialysis centers, we demonstrated that they enjoy 94% of their survival days out of the hospital.”

Dr. Green recalls her most memorable moments at WashU occurred while rounding on busy clinical services with world-class attendings and colleagues. “Dr. Daniel Coyne, our fellowship program director and my clinic attending, shared his expertise in groundbreaking and innovative therapies coupled with his dry sense of humor to make those rounds memorable,” she laughs. “Dr. Daniel Brennan remains a world-renowned transplant nephrologist and his energy and laughter were infectious. Dr. Anitha Vijayan’s impactful teaching on acute kidney injury, glomerular disease and many other facets of renal care made her a critical part of my own learning experience.”

She and her husband, Douglas Green, MD, a vascular surgeon at Kaiser Santa Rosa Medical Center, have been married 25 years. They met at Harvard Medical School. Their daughter, Julia, was born in St. Louis during Dr. Green’s last year of fellowship. Now a junior at NYU, Julia recently accompanied Dr. Green to 2023 ASN Kidney Week. “I had the opportunity to introduce her to Dr. Coyne, Dr. Brennan, Dr. Brent Miller, and my lab mentor, Dr. Andrey Shaw, along with several of my co-residents and fellows who now serve in leadership roles at WashU, including Dr. TingTing Li and Dr. Seth Goldberg. It was wonderful for my daughter to hear our fellowship stories and experience the gratitude that I shared with my teachers.”

The Green family’s most meaningful trip was a 2018 visit to Kolkata, India where they brought their extended families together for a long overdue reunion.

Dr. Gopa Green (center) with daughter Julia and husband Dr. Douglas Green at Goatlandia in Santa Rosa, Calif.
Autosomal dominant tubulo-interstitial kidney disease (ADTKD) has been a challenging type of inherited renal fibrosis to both diagnose and then treat. It is estimated, however, that ADTKD represents as many as 25% of patients with inherited kidney disease after exclusion of polycystic kidney disease and Alport syndrome.

To aid in the diagnosis and treatment of ADTKD, WashU Nephrology has established a dedicated clinic led by Ying Maggie Chen, MD, PhD. Chen is a leading expert on ADTKD research, and her laboratory has generated mouse, human kidney cell and human induced pluripotent stem cell (hiPSC) models to recapitulate human ADTKD. Significantly, her lab discovered a biotherapeutic protein MANF to treat ADTKD in mice.

“MANF-based therapy (US patent 11129871, 2021) may offer a unique value proposition by potentially reversing the detrimental effects of ADTKD or CKD through promoting organellar homeostasis,” notes Dr. Chen. “The market potential for this innovative treatment would be immense, considering the involvement of organelle stress in CKD pathogenesis and the global population affected by CKD.”

Within the ADTKD clinic, genetic sequencing and molecular phenotyping technology will be used and blood and urine samples will be collected to identify gene mutations and potential biomarkers for ADTKD. Clinical trials also may be offered in the future. “Our mouse model replicates the most prevalent UMOD mutation, which is a powerful platform for drug development,” notes Dr. Chen. UMOD encoding uromodulin is the leading mutated gene to cause ADTKD, and more than 135 UMOD mutations have been identified to date.

Adds Dr. Chen, “Our ADTKD clinic will be shaped by the voices and inputs from patients, healthcare providers, and patient organizations (Slim Health and Black-Brogan Foundations, etc.). We will use this clinic as a hub to channel all resources, including NIH-, industry- and foundation-funded grants, to keep pushing the boundaries of drug discovery.”

**WuWIN Takes Off at WashU**

Following in the footsteps of Mabel Purkerson, MD, who co-founded the national Women in Nephrology in 1983, faculty in the Division of Nephrology have formally established Washington University Women in Nephrology (WuWIN). Spearheaded by Leslie Gewin, MD; TingTing Li, MD; Anuja Java, MD, and Anitha Vijayan, MD, WuWIN is designed to be a supportive network for women in the Division.

“Development of professional networks to identify mentors and advocates is so important in academic medicine, and there is data to suggest that many women don’t have these connections,” says Dr. Gewin. “It’s important to feel supported and celebrate successes while also discussing issues that may be particularly challenging to women in medicine and science.”

Several faculty have — or have had — leadership roles in WIN. In addition to Dr. Purkerson, Dr. Gewin was a former WIN Councilor (2018-2021). Dr. Java is a current Councilor and recently was elected Secretary of the national organization. Says Dr. Java, “We are all very passionate about advocating for and uplifting women trainees and faculty and therefore WuWIN was started with the same spirit to bring some of the initiatives, mentoring and networking to our local community here.”

WuWIN, which was formed in 2023, already has held some fun activities, including a Peruvian dinner as well as networking events for faculty, scientific investigators, and trainees. “We are planning several events and informal gatherings annually not only for networking but also to discuss career development, mentorship, work-life balance, and other issues that are relevant to women,” notes Dr. Li. “We have a long history in our division of advocating for women in nephrology and this is another example of how we will continue that legacy.”
Transplant Nephrologist Anuja Java, MD, has received a Clinical and Translational Research Funding Program (CTRFP) award from Washington University's Institute of Clinical and Translational Sciences (ICTS) to further her investigations into the Role of Complement in Hypertensive Disorders of Pregnancy.

Dr. Java is a physician scientist who is nationally recognized for her care of patients with rare complement diseases and for her research into how such diseases lead to kidney damage, including atypical hemolytic uremic syndrome (aHUS), C3 glomerulopathy, and age-related macular degeneration. She and her collaborators recently identified genetic variants in complement factor H that predispose to preeclampsia. Preeclampsia is a leading cause of maternal and fetal morbidity and mortality. Because preeclampsia has a similar phenotype as aHUS, Dr. Java is investigating whether overactivity of the complement system due to underlying genetic variants may lead to preeclampsia.

The earlier preeclampsia research appeared in the BJOG, an International Journal of Obstetrics & Gynaecology in May 2023. The new CTRFP award will fund further studies to identify additional complement variants that lead to preeclampsia, which then could serve as potential therapeutic targets.

By Leslie Gewin, MD, Associate Professor of Medicine, PhD, director of the CKD Center's Metabolism Core, which will advance the use of single cell and 'omics technologies in new models of kidney disease, especially mouse models, and in cutting-edge single cell and 'omics technologies in addition to metabolism and VUS research. The O'Brien grant recognizes that we are an elite institution of nephrology in the United States. It will draw more physician-scientists and investigators into our program and help more rapidly translate discoveries we make into patient care advances.”

**O’Brien Center CKD Research Internship**

Within the WashU Kidney O’Brien Center for Chronic Kidney Disease Research, the Division of Nephrology has established a new Summer Opportunities for Achievement in Research (SOAR) program. The program, funded through the O’Brien grant, enables undergraduates to participate in hands-on basic science research under the mentorship of faculty within the division. The first four interns were announced in March.

“Our division currently has laboratories working in many exciting areas of research that span the spectrum of kidney development, acute and chronic kidney disease, polycystic kidney disease, glomerular diseases and kidney cancer,” notes Monica Chang-Panesso, MD, director of the CKD Center’s SOAR program. “Students will have a great environment for learning, as the labs have expertise in diverse cell culture and animal models as well as cutting-edge approaches such as multi-omics techniques.”

The four interns will be with the division from late May until early August and have an opportunity to present their research at the end of the summer program.
Jeffrey Miner, PhD, FASN, the Eduardo and Judith Slatopolsky Professor in Medicine in Nephrology and Director of Basic Research for the Division of Nephrology, was elected to a four-year term as Treasurer and Councilor for the American Society of Nephrology (ASN).

Dr. Miner has been with the Division since 1996 and is internationally recognized for his research related to genetic diseases of the kidney glomerular basement, particularly Alport syndrome. In 2021, he was awarded a five-year, $2.25 million R01 grant from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) to further his research into the function of the glomerular basement membrane (GBM) and its type IV collagen alpha345 protein network, the absence of which causes structural GBM abnormalities noted in Alport syndrome. Dr. Miner is a member of the Alport Syndrome Foundation’s Scientific Advisory Research Network and has been active in the ASN for many years. He also is the Past President and a Councilor of the American Society for Matrix Biology.

Schoer Receives 2023 Leadership Award from BJH Foundation

Congratulations to Morgan Schoer, MD, assistant professor of medicine in the Division of Nephrology, who was honored with the 2023 Knowlton Incentive for Excellence Award presented by the Foundation for Barnes-Jewish Hospital. The award recognizes compassionate, skilled residents and fellows at Washington University School of Medicine who exhibit extraordinary care for the patient. The award is named after Norman Knowlton, Jr., MD, a former physician at WashU and BJH. Given annually since 1984, it was awarded to six recipients, including Dr. Schoer, in late 2023.

“It’s a wonderful feeling to be appreciated for my work, and I feel honored to be recognized along with such an impressive group of current and past awardees,” says Dr. Schoer.

Dr. Schoer joined the faculty in 2023 after completing her fellowship training in the Division of Nephrology. Over the past 35 years, more than 200 awards have been given to fellows who have completed internal medicine residency programs, embody the “Knowlton spirit” of care, and are likely to practice in the St. Louis area.

Facility Honored with Distinguished Teaching Awards

Continuing a long-standing record of excellence in education, Steven Cheng, MD, and Timothy Yau, MD, have been honored with 2023 Distinguished Teaching Awards. Dr. Cheng was honored with the Glenn Conroy Module Leader of the Year Award. Dr. Yau received the 2023 Distinguished Service Teaching Award for Clinical Care. The awards were presented this year at a special ceremony in mid-April. Both Drs. Cheng and Yau have received multiple excellence in teaching awards. Dr. Cheng received the ASN’s Distinguished Educator Midcareer Award in 2022 and, in 2023, was named Program Director for WashU’s Internal Medicine Residency Program. He and Dr. Yau were among a group of faculty from the Division honored with inaugural Honor Roll awards from WashU’s Academy of Educators. The two also were among those who were part of a curriculum re-design team that established new, dynamic curriculum for the medical school.
Renal Roundtable!
NKF Event Brings Together Three Regional Academic Institutions

Nephrology faculty and fellows from Washington University School of Medicine, Saint Louis University School of Medicine, and the University of Missouri School of Medicine recently gathered for the 3rd Annual National Kidney Foundation Fellows Renal Roundtable to discuss Current Challenges and Trends for Nephrology Fellows. The event fosters professional education and networking within the region and includes lectures by nephrology fellows.

WashU Nephrology Transplant fellow Farah Abuazzam, MD, says, “I love that they made this program an annual event and I believe it has positively benefitted me as well as other fellows who attended that evening because we discussed many different topics,” she says. “I was able to interact with fellows and faculty from other programs and felt it to be very collegial and supportive.”

Alex Calderon, MD, a nephrology fellow from our Division, notes, “Nephrology is a fascinating discipline, especially when it gives you the tools to heal through the art of transplant. This was an amazing opportunity because these roundtables make us share such experiences.”

Participating faculty members from WashU included Drs. Tarek Alhamad, Seth Goldberg, and Rowena Delos Santos.