

NEPHROLOGY UPDATE

Home Dialysis— A Growing Option

With one of the largest home dialysis programs in the Midwest, Washington University nephrology specialists are pioneering new patient educational methods and researching state-of-the-art dialysis systems to increase patient success with home dialysis options.

“The reality is that outpatient dialysis centers across the country cannot handle the growing volume of people needing dialysis treatments and especially those patients requiring three or more treatments a week,” says Brent Miller, MD, medical director of home dialysis in Washington University’s Renal Division. “We need to make it easier and less intimidating for patients to start and then continue with home dialysis options.”

Only about 11 percent of dialysis patients nationwide use home options. At Washington University, that number is consistently above 20 percent — and growing — thanks to a strong emphasis on patient education, support and innovation.

“When you are trying to teach people to take care of themselves, they don’t always learn at the same pace or in the same way. So one of our nurses has become an expert at learning patterns and how to apply those differences when educating patients,” says Miller. “We also have a team that is willing to troubleshoot any problem or concern over the phone 24/7 or travel to patients’ homes. These low-tech but labor-intensive processes have made all the difference in our success rate.”

So, too, has the evolution in home dialysis machines. A year ago, Washington



Brent Miller, MD, and Shawna McMichael, RN, review home hemodialysis with a patient at the Washington University and Barnes-Jewish Dialysis Center.

University piloted the use of iPads connected to dialysis machines to transmit treatment data to the dialysis staff. Remarkably, 90 percent of the home dialysis patients successfully use the system, enabling the medical team to identify and address any concerns on a daily basis and dialysis nurses are reviewing patient results almost on a daily basis. Other advances that have been recently pioneered at Washington University include the use of a single dialysis needle, hemodialysis at night while the patient sleeps, and placement of peritoneal dialysis catheters by interventional radiologists.

A steady improvement in patient outcomes has been the result. Compared to the national average, patient mortality is at about half, technique failure is almost 40 percent less, and infection rates of peritoneal dialysis catheters are at three times less. The kidney transplantation rate also is four times higher than the national average.

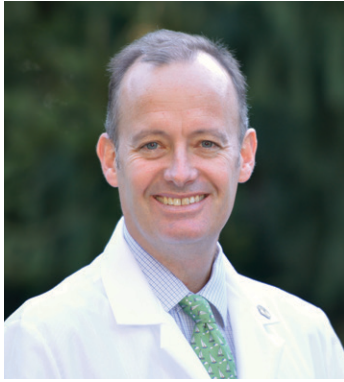
Seven new dialysis machines, three for peritoneal dialysis and four for home

hemodialysis, also will undergo evaluations and possibly come to market over the next several years. One innovative design uses dialysate solution cartridges that plug into dialysis machines like an ink-jet printer cartridge. “This could address the question of how to better customize dialysate solution for each patient instead of simply offering the four or five general solutions now on the market today,” says Miller. Another machine is focused on an environmentally friendly dialysis option that uses far less water (6 liters versus 100+ liters for current machines).

“The advantages of combining a staff committed to service with evolving home technologies are huge,” he says. “My grandfather was a stubborn, independent farmer and one of the early patients in the country on outpatient peritoneal dialysis. He and my grandmother did reasonably well while he was on dialysis at home, but were

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Message from the Chief



growing the clinical programs dramatically and for maintaining the highest standards of scholarship, teaching and clinical care.

My family and I moved to St. Louis in late June and I assumed the chief position on July 1. Since then I have had many conversations with faculty, trainees and staff over the future direction of the division. I am happy to say that the division is in great shape and we all hope to build on that success in the future.

Through this newsletter, we aim to keep our alumni and friends updated regarding news and events in the division. In July, we welcomed Andrew Malone, MD, as a new faculty member in the division. He investigates the pathogenesis of focal segmental glomerulosclerosis, particularly as it relates to recurrent disease in transplant recipients. Next April we will celebrate Eduardo Slatopolsky, MD, and his over fifty years in the division, as well as his numerous seminal contributions to the under-

standing of mineral metabolism. Tingting Li, MD, has an exciting collaborative effort with renal pathologist Joe Gaut, MD, PhD, to provide expedited biopsy services to referring nephrologists.

I encourage you to keep in touch with the division. Please send us an email at renal_alumni@dom.wustl.edu to update your contact information and let us know about your career accomplishments. We hope to see many of you at our Alumni Reception at ASN in San Diego. Best wishes to you and your family and I look forward to hearing from you.

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

We are pleased to send you this inaugural issue of the Washington University Alumni Newsletter and Nephrology Update. Much has been happening in the Division of Renal Diseases over the last several months. After 25 years as Chief, Marc Hammerman, MD, retired this summer. During his tenure, the division grew to become one of the premier nephrology programs in the country. I am very grateful to Marc for assembling and leading such a talented faculty, for

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Patient Appointments
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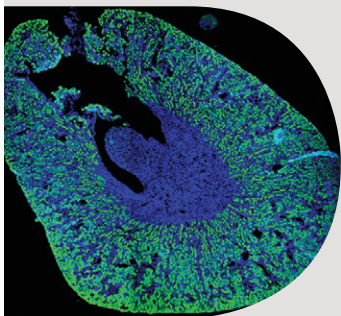
Patient referrals
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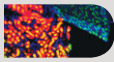
Home Dialysis

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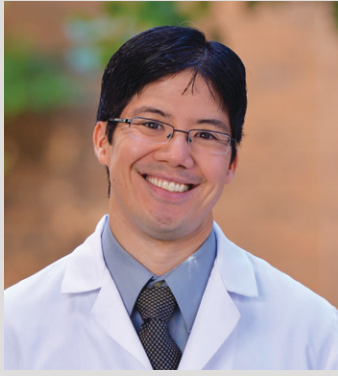
miserable 18 months later when he had to switch to center-based hemodialysis and travel back and forth to a treatment center. Home hemodialysis options would have kept him more in control of his own health and given him more of the independence and flexibility he craved.”

On Miller’s wish list now is the creation of the nation’s first dedicated home dialysis fellowship program to train experts committed to advancement of this specialized field. “With appropriate funding, we could get that up and running within two years here,” he stresses. “We need to create more leaders and advocates for home dialysis options who understand both the business of home dialysis and how best to develop and apply advances for patients. We’ve pioneered many advances in the field of home dialysis and I’m on a mission to spread our experience beyond Washington University and my time here.”





Fellowship Notes



By Steven Cheng, MD, Director, Nephrology Fellowship Program

Our nephrology fellowship program at Washington University has a long legacy of training some of the most renowned physicians and researchers at the forefront of nephrology. Today, despite increasingly fierce competition over the best and brightest applicants, our

program continues to operate with a full complement of incredibly accomplished fellows.

Over the last few years, we have taken the successful foundation of our fellowship program and added to it, building this great program into something even better. We have designed a new monthly biopsy round table in conjunction with our colleagues in renal pathology. We have added an illustrious cast of visiting professors to speak to our fellows about the most recent discoveries in nephrology. And we now have a partnership with colleagues in Guatemala through the International Society of Nephrology, offering trainees an opportunity to study Mesoamerican Nephropathy abroad.

We also are putting a much-deserved spotlight on the scholarly achievements of our fellows. In 2014-2015, our fellows presented seven posters at national nephrology meetings, and four of our senior fellows had their work published in peer-reviewed journals. This year, we've increased funding for their academic pursuits, supporting additional training through our Clinical Research Training Center and the Mount Desert Island: Origins of Renal Physiology course. We'll also hold our first annual Fellows Research Symposium at the end of the academic year.

From a clinical perspective, we have restructured consult services to include a non-teaching service (staffed by a faculty

member and new nurse practitioner) and a procedure team, both designed to streamline the work flow to provide fellows with an environment that is maximally conducive to their education. We also redesigned curricular assessment in the new Milestone format from the American College of Graduate Medical Education (ACGME), which gives trainees with better feedback about the steps they have taken — and still need to take — as they progress through the program. Fellows now receive feedback from patients, peers, and ancillary staff as part of the ACGME's initiative to provide 360-degree assessments from every angle of patient care.

Welcome New Fellows

The following physicians began our nephrology fellowship program in July 2015:

Renal Fellows

Nurelign Abebe, MD

Residency: St. Luke's Hospital, Chesterfield, MO

MS: Gondar College of Medicine and Health, Ethiopia

Fahad Edress, MBBS

Residency: Saint Vincent Hospital, Worcester, MA

MS: King Abdulaziz College of Medicine and Allied Sciences, Saudia Arabia

Karthikeyan Venkatachalam, MBBS

Residency: Wayne State University, Rochester, MI

MS: P.S.G. Institute of Medical Sciences and Research, India

Usman Younus, MBBS

Residency: State University of New York, Buffalo, NY

MS: King Edward Medical University, Pakistan

Yifei Frank Zhang, MD

Residency: University of Iowa Hospitals and Clinics, Iowa City, IA

MS: University of Louisville, KY

Egress

Best wishes to our fellows moving on to the next phase of their careers:

Laura Hesemann, MD

University of Missouri-Columbia, MO

Giselle Kohler, MD

Springfield Nephrology Associates, Springfield, MO

Andrew Malone, MB, BCh, BAO, MRCPi

Renal Division, Washington University School of Medicine, St. Louis, MO

Anubha Mutneja, MBBS

Iowa Kidney Physicians, Des Moines, IA

Richa Pandey, MBBS

Springfield Clinic, Springfield, IL

Mansumeet Singh, MBBS

Premier Renal Care, Cuyahogri Falls, OH

Zaid Brifkani, MBBS

Cookeville Regional Medical Center, Cookeville, TN

Transplant Fellows

Salwa Rhazouani, MD

Fellowship-Nephrology: Elmhurst Hospital, NY

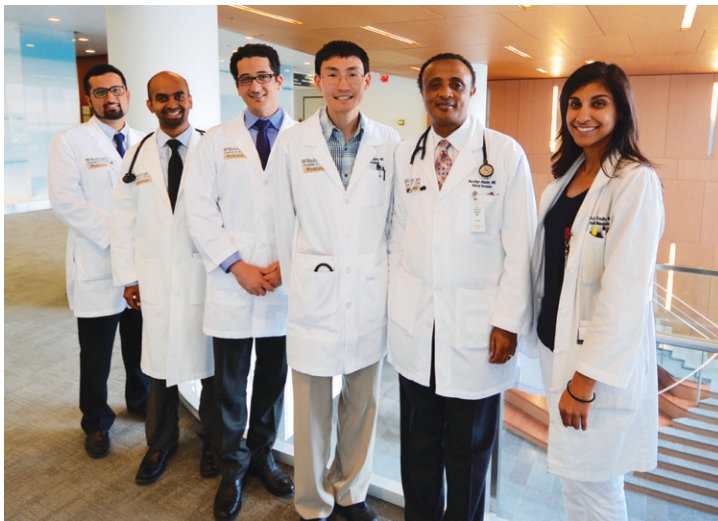
MS: University Hassan II, Morocco

Rupinder Sodhi, MD

Fellowship-Nephrology:

Saint Louis University, St. Louis, MO

MS: Saint Louis University, MO



Incoming nephrology fellows (left to right): Usman Younas, MBBS, Karthikeyan Venkatachalam, MBBS, Fahad Edrees, MBBS, Yifei Frank Zhang MD, Nurelign Abebe, MD. Far right: Transplant fellow Rupinder Sodhi MD. Not pictured: Transplant fellow Salwa Rhazouani MD

Alumni Connections

James Shayman, MD

Fellow, Pharmacology and Nephrology, Washington University School of Medicine, 1983-1986

“Incredible physician-scientist role models” in the Renal Division at Washington University School of Medicine have been instrumental in shaping the acclaimed research career of James Shayman, MD, currently professor of pharmacology and internal medicine and past Associate Vice President for Research at the University of Michigan in Ann Arbor.

Shayman, who notes that his time at Washington University ignited a lifelong passion for both science and medicine, is credited, along with his research team, with the discovery of a breakthrough therapy to treat Gaucher disease. The FDA approved that therapy, a first-line oral medication called Cerelega, last fall after clinical trials found it to be as effective, or even more effective, than traditional enzyme replacement therapy for patients with Gaucher disease type 1. In the pipeline now for approval is a second drug to treat a similar lysosomal storage disorder called Fabry disease.

The FDA approval comes after more than three decades of research investigating the mechanisms that trigger certain lysosomal storage diseases. Initial research began while Shayman was a nephrology fellow at Washington University.

“Several physician researchers — in particular Aubrey Morrison, Eduardo Slatopolsky and Saulo Klahr — drew me to both science and medicine,” says Shayman. “The role models that these physician scientists provided and Washington University’s overall valuation of fundamental science was something quite special.”

He worked side by side with Morrison to study certain membrane lipids and their role in hormone signaling. When he moved to the University of Michigan in 1986, Shayman turned his attention to a specific group of lipids called glycosphingolipids and to two common lysosomal storage diseases, Fabry disease and Gaucher disease. Says Shayman: “These are the most common lysosomal storage diseases that lead to renal failure and stroke.” His lab succeeded in developing small molecule inhibitors of glycosphingolipid synthases that then led to the creation of Cerelega.

“As time goes on, I value the extensive training and research opportunities I received at Washington University, from the medical school through residency and fellowship,” says Shayman. “There was no ‘eureka’ moment when I decided to become a physician scientist. I just came to the realization after watching all the extraordinary doctors around me that physicians could actually do research in addition to having a practice. I still see patients each week, but the bulk of my time is spent on translational research to find better treatments for patients.”



Above and right: James Shayman, MD



New Renal Fellows Fund

It is with deep appreciation that we acknowledge a gift from the family of Paul A. Mennes, MD. Mennes established a Renal Fellows Fund to enhance educational opportunities for our trainees and help strengthen contacts with alumni. Mennes is a 1970 graduate of Washington University School of Medicine, a 1976 graduate of the WU Nephrology Fellowship Program and a Clinical Professor of Medicine at Washington University School of Medicine. He joined the medical staff at St. Luke’s Hospital in Chesterfield, MO, in 1977 and became section chief of nephrology. In 1989 he became chief of medicine at St. Luke’s and in 1995, Chairman of the Medical Executive Committee, positions he held until his death last year at age 70. He also was one of the founders and president of the Affiliated Hospitals Dialysis Center. This gift will be used to bring visiting professors to the division, to enhance educational opportunities for the fellows and support their travel to national conferences.



Paul Mennes, MD

Support the Renal Division

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

Washington University in St. Louis
Office of Medical Alumni and Development
Attn: Helen Z. Liu
7425 Forsyth Blvd., Campus Box 1247
St. Louis, MO 63105

You may also contact Helen Liu directly at 314-935-9715 or by email at helen.liu@wustl.edu if you would like to consider supporting The Division of Renal Diseases through appreciated stocks, deferred giving, beneficiary plans or other assets.

Program Spotlight

First Midwest Transplant Symposium a Success

In an effort to share best practices and build collaborative relationships, Washington University School of Medicine hosted the first Midwest Transplant Symposium in mid-October. The symposium, presented by the Renal Division in the Department of Internal Medicine, brought in three keynote speakers:

Milagros D. Samaniego, MD:

Professor of Medicine and Medical Director of Kidney and Pancreas Transplantation at the University of Michigan. Samaniego's lecture focused on "Antibody Mediated Rejection: Where are we?"

Krista L. Lentine, MD, PhD, MSC:

Professor of Medicine at Saint Louis University and the Saint Louis University Center for Outcomes Research as well as Co-Chair of the new Kidney Disease: Improving Global Outcomes (KDIGO) Guidelines for Living Kidney Donation. Lentine presented on the "Management of Living Donor."

Anil Chandraker, MD: Associate Professor of Medicine and Medical Director of Kidney and Pancreas Transplantation at Brigham and Women's Hospital, Harvard Medical School. Chandraker is the President-Elect of the American Society of Transplantation (AST) and discussed "Immuno-suppression: Standard and Alternatives."

Course co-directors were Tarek Alhamad, MD, MS, Director of Transplant Epidemiology Research Collaboration (TERC) of Washington University's Institute of Public Health, and Daniel Brennan, MD, FACP, Medical Director of Transplant Nephrology.

"It was an opportunity to present an in-depth review of the most clinically encountered topics in transplantation," says Alhamad. "It was the first transplant symposium organized by Washington University and it provided a wonderful forum for the exchange of new scientific a

nd clinical information relevant to kidney and pancreas transplantation."

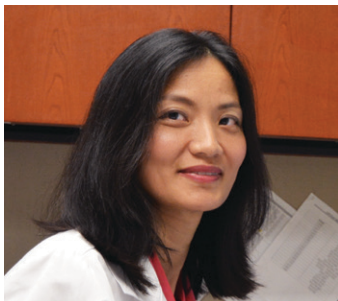
Washington University and Barnes-Jewish Hospital transplant specialists have been pioneers in the field of kidney and pancreas transplants and oversee the largest kidney transplant program in Missouri. The team is recognized for having one of the lowest acute rejection rates — less than five percent — in the country.



Multi-specialty Lupus Clinic and Renal Biopsy Outreach Program

The Renal Biopsy Outreach Program led by nephrologist Tingting Li, MD, is now working to establish a regional consulting service for physicians and patients focused on the evaluation and treatment of glomerular diseases. This program is a collaborative effort between the divisions of nephrology and renal pathology. It is a unique service that has grown out of the university's comprehensive Lupus Clinic.

"Glomerular diseases are rare and require accurate diagnosis and specialized care. We have a team of nephrologists performing the renal biopsy procedure and a dedicated renal pathologist interpreting



Tingting Li, MD

the pathology. An experienced nephrologist is available to provide consultation on the management of the disease upon request," says Li, co-director of the Lupus Clinic. "In addition, patients will have the opportunity to participate in a number of clinical trials while remaining under the care of their nephrologist."

Glomerulonephritis can result in chronic kidney disease and end-stage kidney disease. One of the triggers that can lead to glomerulonephritis is systemic lupus erythematosus. For the past two years, Washington University has had a multidisciplinary Lupus Clinic where patients are scheduled to see a variety of specialists during a single appointment. The team includes nephrologists, rheumatologists, and dermatologists. The clinic also collaborates with orthopedic surgery, high risk-obstetrics, gynecology, and ophthalmology to improve coordination of care. Last year, to accommodate growing volume, a second Lupus clinic was added in west St. Louis County.

"Treatment depends upon the histopathologic classification and severity of disease," says Li. "Immunosuppressive therapies are the standard options. Current therapies may not be effective for some patients or result in significant side effects. For these reasons, patients are monitored closely."

Li is the principal investigator at Washington University of several multi-center clinical trials evaluating new treatment options for lupus nephritis, anti-neutrophil cytoplasmic antibody-associated vasculitis and idiopathic membranous nephropathy.

"We are hoping that the development of a regional renal biopsy registry and further collaboration with nephrologists in the community will allow us to pursue more translational research and clinical trials," says Li. "The exciting news is that new therapies now under evaluation may be less toxic and more targeted and I am hopeful that within the next five years, we will have more effective medications."

Research Highlights



New Renal Division faculty member Andrew Malone, MD

Collagen Abnormalities Identified by Hair Samples?

Could analysis of hair follicles become a noninvasive way to characterize collagen abnormalities? In a novel research effort under way in the Renal Division, scientists are developing assays that can analyze collagen types in samples of hair. Researcher Jeffrey Miner, PhD, and new Renal Division faculty member Andrew Malone, MD, have been studying a new collagen mutation found in a family diagnosed with Alport syndrome (hereditary glomerulonephritis). Now, Malone is focused on determining if collagen types can effectively be analyzed from their hair follicles, rather than having patients undergo a kidney or skin biopsy.

“We’re looking at protein and RNA to see if there are abnormalities that can be identified in the hair samples,” says Malone. “We’re in the very early stages of this research, but the possibility exists that this might lead to a noninvasive option.”

Malone, a former Washington University transplant nephrology fellow who joined the Renal Division faculty in July, has a specific interest in focal segmental glomerulosclerosis (FSGS), which is a leading cause of primary kidney failure. During his fellowship at Duke University, he began looking at collagen variants that were unexpectedly associated with FSGS. “I

noticed that Jeff Miner’s name kept coming up in the literature, so when the opportunity arose to be a fellow here, I was excited to be able to work in Dr. Miner’s research lab.”

Malone also is working to expand the transplant tissue biobank at Washington University to facilitate FSGS research. “FSGS frequently returns in transplant patients and we want to know why,” he says. “Right now, we treat patients with plasmapheresis, thinking it somehow prevents attacks on the kidney. Stored plasma samples and biopsy tissue from patients with recurrent FSGS will enable us to jumpstart more research efforts here.”

New Grants

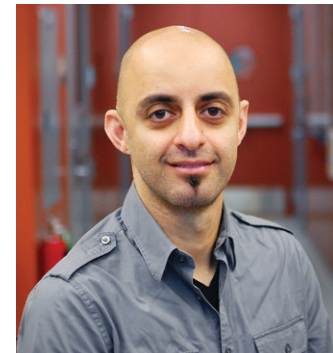
Ying (Maggie) Chen, MD, PhD, has received several significant research awards in the past year to further studies focused



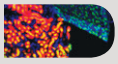
Ying (Maggie) Chen, MD, PhD

on defining the molecular mechanism underlying genetic determinants of primary nephrotic syndromes (NS). Specifically, Chen is employing functional genomics approaches to dissect the role of podocyte endoplasmic reticulum (ER) stress in podocytopathies. Her research also aims to discover urinary podocyte ER stress biomarkers in NS patients and to develop highly-targeted treatments. Chen received a prestigious three-year, \$486,000 Clinical Scientist Development Award from the Doris Duke Charitable Foundation as well as Career Development Awards from both the Central Society for Clinical and Translational Research and the Nephrotic Syndrome Study Network (NEPTUNE) to support her ongoing research.

Moe Mahjoub, PhD, along with co-investigators Steven Brody, MD, PhD (Pulmonary Division), and Susan Dutcher, PhD (Genetics), was awarded a four-year, \$2.35 million grant from the National Heart, Lung and Blood Institute (NHLBI) to fund a research project titled “Regulation of Motile Cilia Assembly in Lung Disease.” Clearance of pathogens and particulates from the airway is an essential function for host defense, and dependent on the combined actions of airway mucus and beating of cilia. Failed ciliary function results in lung infection and the development of chronic lung disease. Mahjoub and his colleagues aim to identify key mechanisms for the assembly of motile cilia that provide critical points of regulation that can be modified as targets for therapy of lung disease with defective cilia.



Moe Mahjoub, PhD



Faculty News and Awards



Eduardo Slatopolsky, MD

April 8, 2016 Slatopolsky Scientific Conference

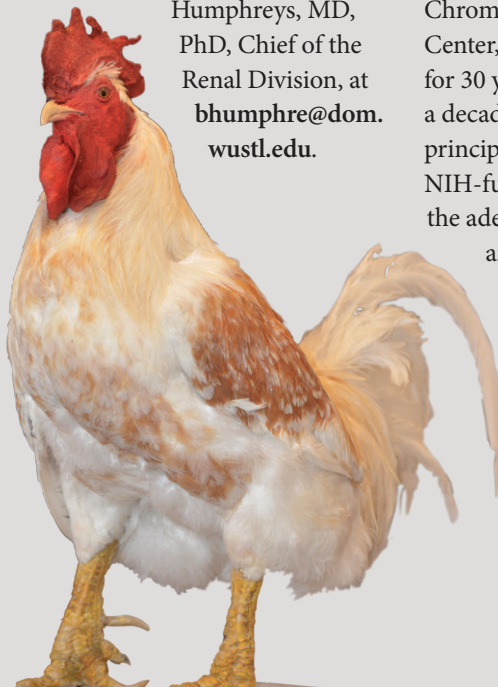
To celebrate the seminal research accomplishments of Eduardo Slatopolsky, MD, over 50+ years at Washington University School of Medicine, the Renal Division is hosting a scientific conference in his honor on April 8, 2016. Slatopolsky, the Joseph Friedman Professor of Renal Diseases and Director of the Parathyroid Hormone/Vitamin D Laboratory, is known worldwide for his contributions to the understanding of the pathophysiology of renal diseases. His lab was one of the first to demonstrate that phosphate retention in both humans and animals increases secretion of parathyroid hormone (PTH). Elevated levels of PTH are found in many patients with chronic renal disease and are linked to significant bone resorption and pathological bone fractures. The team also was the first to demonstrate that vitamin D has a direct effect on the suppression of PTH in patients with renal failure. Other research has found that a low phosphate diet can reduce both vascular calcification and mortality in rats with advanced renal insufficiency.

Dr. Slatopolsky is a 1965 graduate of the Division's nephrology fellowship program and joined the faculty immediately thereafter. Many alumni may remember "Macho the Rooster," which was the only one of 50 roosters in a series of animal studies to develop a sensitive antibody that enabled researchers to measure PTH levels in humans.

"He was a very aggressive and large rooster (17 lbs!); that is why we called him Macho," says Slatopolsky. "The use of this unique antibody was instrumental in developing a radioimmunoassay for PTH, which allowed us to develop a rational therapy to treat bone disease in patients with chronic kidney disease. We also used the antibody to extensively study the effects of PTH on other organs such as the kidney and liver."

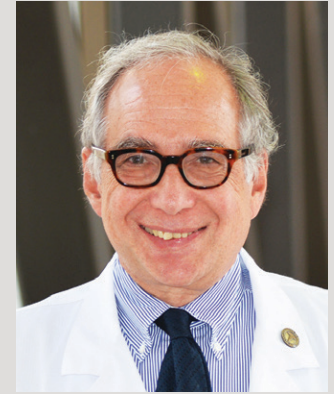
The Slatopolsky Scientific Symposium will include a gala dinner along with a series of lectures highlighting these research accomplishments. Please join us for a wonderful celebration — you may even get to see Macho. If you have questions about the upcoming symposium,

please contact Benjamin Humphreys, MD, PhD, Chief of the Renal Division, at bhumphre@dom.wustl.edu.



James Delmez, MD

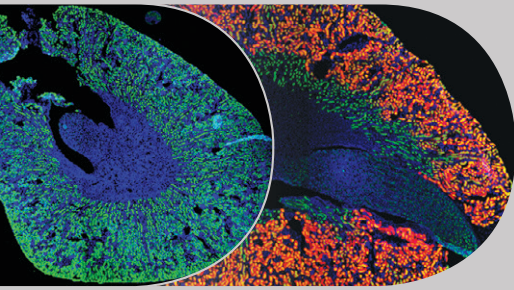
James Delmez, MD, Professor of Medicine and Medical Director of the Chromalloy American Kidney Center, was honored with a Lifetime Achievement Award from Barnes-Jewish Hospital. Delmez completed both his residency in Internal Medicine and fellowship in Nephrology at Washington University Medical Center. From 1983-1985 he was an attending physician at Barnes Hospital on the renal consult service and served as director of the Peritoneal Dialysis Program, while also teaching at St. Luke's Hospital in St. Louis. He returned full-time to Washington University School of Medicine in 1985 to serve as Medical Director of the Chromalloy American Kidney Center, a position he has held for 30 years. For more than a decade, Delmez has been a principal investigator in several NIH-funded studies evaluating the adequacy of hemodialysis and improved vascular outcomes. "I was surprised to be honored with this award," says



Marcos Rothstein, MD

Delmez. "The medical school and Barnes-Jewish are loaded with extremely talented and hard-working physicians. I am honored to be among them. I also would like to acknowledge my patients, whose courage and humor have been a constant inspiration."

Marcos Rothstein, MD, Professor of Medicine and Medical Director of Dialysis Services, has been invited to serve as the Physician Chair of the National Kidney Foundation Gala, to be held on November 14, 2015. Rothstein, a 1982 alumnus of the Nephrology Fellowship Program at the Washington University School of Medicine, has been involved with the NKF since his years of training, first as a research grant recipient and then working on behalf of the organization. Rothstein's current research is focused on understanding and finding potential treatments for a newly identified epidemic of devastating kidney disease in Central America.



This debut of the Renal Division alumni newsletter is for YOU! We want to update you on the programs, research and faculty that make our Division great.

We are proud of our faculty and alumni and invite you to keep us up-to-date on your career paths and accomplishments. Please send any alumni updates to: renal_alumni@dom.wustl.edu.

See Inside!

What does this rooster have to do with our Renal Division? Come join us at the Eduardo Slatopolsky, MD, Scientific Symposium on April 8, 2016 and learn more about Macho the Rooster! See page 7 for details.



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