The Division of Pediatric Nephrology at UT Southwestern is among the largest pediatric nephrology programs in the United States and is the main provider of clinical services at Children's Medical Center for children with kidney disease, bone disease, and hypertension. The clinical service of the Division consists of the following components: hemodialysis and peritoneal dialysis, kidney transplantation, inpatient services, ambulatory services, and testing services including bone density and GFR measurement. Each of these services is coordinated to provide outstanding state-of-the-art care to children who have kidney disease, bone disease, and/or hypertension.

Concurrently, we are also committed to the training of outstanding physicians and scientists, as well as the discovery of new knowledge that will improve the current standard of care for future patients. Division faculty are devoted to improving the lives of children with renal disease by performing cutting edge research.

**Faculty**

There are eleven pediatric nephrologists in the Division, each with a special area of expertise, including renal development, chronic and congenital kidney disease, X-linked hypophosphatemia, bone disease, nephrotic syndrome, hypertension, and renal tubular disorders.

**Alexandra Idrovo, M.D.**
Assistant Professor

M.D.
Universidad de Guayaquil, Guayas Province, Ecuador, 2010

Postdoctoral Training
Residency, Pediatrics
John H. Stroger Hospital of Cook County, Chicago, IL, 2013-2016
Fellowship, Pediatric Nephrology
Baylor College of Medicine, Houston, TX, 2017-2020

**Interests:** Dialysis, cardiorenal syndrome, hypertension

**Ahmad Mashmoushi, M.D., Ph.D**
Clinical Instructor

M.D.
Medical University of South Carolina, Charleston, SC, 2015
Ph.D.
Medical University of South Carolina, Charleston, SC, 2015

Postdoctoral Training
Residency, Pediatrics
UT Southwestern Medical Center, 2015-2018
Fellowship, Pediatric Nephrology
UT Southwestern Medical Center, 2018-2021

**Interests:** Medical education, CKD, nephrotic syndrome, HUS
Honors/Awards

Best Pediatric Specialists in Dallas, *D Magazine*  
- Elizabeth Brown  
- Jyothsna Gattineni  
- Raymond Quigley  
- Mouin Seikaly  
- Matthias Wolf

Texas Super Doctors, *Texas Monthly*  
- Michel Baum  
- Mouin Seikaly

Best Doctors in American  
- Michel Baum

DFW Child Mom-Approved Pediatric Specialists – DFW Child Magazine  
- Jyothsna Gattineni

Invited Lectures

Jyothsna Gattineni  
- World Congress of Nephrology/International Pediatric Nephrology Association, Kuala Lumpur, Malaysia, February 2022  
  - “Hypophosphatemic Rickets”  
- Children’s Health Grand Rounds, Children’s Health, Dallas, TX, January 2022  
  - “FGF23: A friend, foe or a mere biomarker”

Matt Wolf  
- Drug Development in Nephrology – New Opportunities for our Patients, Nationwide Children’s Hospital, Columbus, July, 2022.  
- Uromodulin – from Diagnosis to Physiology and Therapy, C. S. Mott Children’s Hospital, University of Michigan Health, Ann Arbor, September 2022  
- UMOD, Renal Magnesium Homeostasis, and TRPM6”, 3rd Annual ADTKD, International Summit, Boston, USA (virtual), October 2022  
- New Therapeutic Opportunities for Autosomal Dominant Tubulo-Interstitial Kidney Disease, University of South Florida Morsani College of Medicine, Department of Pediatrics, Tampa, October 2022

Conference Presentations

Pediatric Academic Society Meeting, Denver CO, April 2022

Gattineni J  
Oral Presentation, “The Kidney and FGF23: Molecular mechanisms and Homeostatic Impact”

Wolf M  
Oral Presentation, “Autosomal Dominant Tubulointerstitial Kidney Disease”
Other Conferences

Wolf M

International Pediatric Nephrology Association, Calgary, Canada, September 2022
Oral Presentation, “Overview of autosomal dominant tubulointerstitial kidney disease (ADTKD) – including Mucin-1”

American Society of Nephrology, Orlando, Florida, November 2022
Presentation, “Insulin receptor substrate 4 (IRS4) contributes to hypomagnesemia by mediating the insulin effect on the renal magnesium channel TRPM6.”

Education and Training

The Division of Pediatric Nephrology is one of a handful of nephrology programs to be funded by an National Institutes of Health (NIH) T32 grant. This grant has funded the training of some of the most successful and productive pediatric nephrologists in the country. Fellows spend a total of 12 months on inpatient clinical service during the three years of training. All fellows spend one day a week seeing outpatients in the nephrology clinic. They also spend time in the metabolic bone clinic at Texas Scottish Rite Hospital for Children. The rest of their training is devoted to clinical or basic research. The trainees may go into one of the Division’s basic science laboratories or other laboratories on campus who study renal disease. Some trainees have elected to spend a fourth year of training in renal transplantation.

Research Activities

The Division of Pediatric Nephrology has four basic research laboratories devoted to research into clinically important issues.

Baum Laboratory

The laboratory has published more than 140 research papers and 70 reviews in chapters in areas related to understanding how ions are transported across the renal epithelia in both children and adults. The Baum laboratory has been funded by the NIH for more than 25 years and has investigated the regulation of salt transport by the neonatal and adult kidneys as well as the transporters involved in salt transport. The laboratory has shown that some of the mechanisms involved in both active and passive salt transport are different in neonates than adults. Recently, the laboratory has focused on the mechanism of hypertension with prenatal programming. Small for gestational age infants and very premature infants develop hypertension and chronic kidney disease. The Baum laboratory uses a rat model to explore the pathophysiology of the increase in blood pressure and kidney injury with programming. Most recently, they have made significant discoveries that have shown that hypertension and kidney injury can be prevented by changes in the postnatal environment.

Drake Laboratory

Research in the Drake laboratory uses genetically engineered mouse models to understand how disruptions in normal kidney development lead to Wilms tumor, a rare kidney cancer that primarily affects children in the first years of life. During normal development, nephron progenitor cells are exhausted prior to birth, whereas in Wilms tumor, these specialized cells are abnormally maintained and are thought to drive the development of tumors. Despite this long-recognized link to renal development, the underlying mechanisms of how Wilms tumors originate from renal progenitor cells and can “hijack” developmental programs to result in this rare childhood cancer remain poorly understood, and Dr. Drake’s work is aimed at better understanding how fundamental processes in development contribute to the biology of this rare kidney cancer.
Gattineni Laboratory

FGF23 is a phosphaturic hormone that is elevated in many metabolic bone diseases. It is the first hormone to increase in the blood in patients with chronic kidney disease and the levels increase progressively as renal disease worsens. The Gattineni laboratory has characterized the receptors for this hormone and, in so doing, has generated a mouse that has a 25-50-fold increase in FGF23 levels. Dr. Gattineni is using this mouse model to determine if elevated FGF23 contributes to the bone, vascular, and cardiac disease that is seen in patients with chronic kidney disease.

Wolf Laboratory

The Wolf laboratory studies the mechanism and regulation of magnesium and calcium transport. Calcium and magnesium are transported in the distal tubule by channels. His laboratory has made seminal contributions showing how these channels traffic to and stay in the membrane to transport calcium and magnesium. Several diseases, including diabetes, have dysregulated magnesium transport that can make the disease much worse. Dr. Wolf is examining why there is dysregulation of magnesium transport in diabetes and if there are factors that can normalize magnesium transport and improve the outcome of patients with diabetes.

Clinical Research

Pediatric Nephrology faculty members perform clinical research to study pathogenesis and therapy for children with nephrotic syndrome, chronic kidney disease, end-stage renal disease, hypertension, and transplantation. Dr. Brown is a co-investigator along with one of the adult nephrologists at UT Southwestern on two NIH-funded multicenter observational cohort studies of nephrotic syndrome. She is also a site-principal investigator for the DUPLEX study, a randomized multicenter, double-blind study of Sparsentan in primary focal segmental glomerulosclerosis. Dr. Quigley is a site investigator for an NIH-funded multicenter grant studying the role of ferric citrate as a phosphate binder in children with chronic kidney disease. Patients with end-stage renal disease are at risk for developing metabolic bone disease and secondary hyperparathyroidism. The Division has made significant contributions examining therapy for these complications. Dr. Seikaly cares for many children with metabolic bone disease, and he has made significant strides in improving the care and outcome for patients with X-linked hypophosphatemic rickets.

Clinical Activities

Dialysis

The Division of Pediatric Nephrology cares for 50-60 patients with end-stage renal disease, which places it among the three largest providers of such care for children in the United States. Approximately half of these patients are treated with peritoneal dialysis and the other half with hemodialysis. Under the direction of Dr. Jyothsna Gattineni, the Dialysis Program has met all the federal and state requirements necessary to provide services for the children under its care. The hemodialysis unit provides outpatient dialysis six days a week and two shifts a day. The Division provides 24-hour a day and seven-day a week on-call services for emergency dialysis to support children with acute kidney injuries hospitalized at Children’s.

Inpatient Services

The Division provides care to all hospitalized children with all forms of kidney disease at Children’s. The average inpatient census is 10-14 patients. The Division also provides inpatient consultation and manages acute dialysis and continuous renal replacement therapy in the intensive care unit.

Two separate inpatient teams (primary nephrology and consult teams) provide care on the Dallas campus. An attending on the primary service staffs a team of two second-year residents, medical students, pharmacists, dietician, social work, and a nurse case manager. The consult team is staffed by an attending who oversees a team of advanced practice providers (APPs) and fellows and provides consultation services on the Dallas campus, Plano campus, Parkland hospital, UT Southwestern hospitals, and telephone consults to pediatricians in town. We currently have three fellows; they rotate between the primary and consult
teams on a pre-determined schedule. There is an Attending Physician on call for consultation 24 hours a day and seven days a week. All consultations are provided within 24 hours of the time requested.

In addition to providing inpatient services for patients with chronic kidney disease and dialysis requiring hospitalization, the Division also admits and cares for patients who have received renal transplants. This includes patients who have new renal transplants and those who have complications from a transplant such as rejection or opportunistic infection.

**Clinic Services**

Division faculty provide outpatient treatment for children with kidney disease in Dallas and the surrounding areas. Attending Physicians staff clinics five days a week. The Division also provides outpatient care for those patients who have received renal transplants in the Solid Organ Transplant Program clinic.

24 Hour Ambulatory Blood Pressure Monitoring

The measurement of blood pressure in an outpatient and inpatient setting has been found to be unreliable to assess whether the patient has hypertension. The Division offers 24-hour blood pressure monitoring devices, which are the gold standard for assessment of hypertension.

**Testing Services**

The Division provides testing services for children with chronic kidney disease and disorders of bone and mineral metabolism. These services are directed by Dr. Mouin Seikaly and include:

- **Bone Mineral Density**
  - The Division oversees a service dedicated to the quantification of bone mineral density. Many patients suffering from endocrine, rheumatologic, orthopedic, and kidney diseases have decreased bone mineral density, which may require therapy to improve bone strength.

- **Renal Function**
  - Renal function has traditionally been assessed using serum creatinine levels. Unfortunately, serum creatinine has been found to be an inaccurate measure of renal function in children. Creatinine levels not only reflect renal function but also muscle mass, which can be quite low in children with chronic disease. To circumvent this limitation, the Division has been providing an accurate measure of renal function using the Glofil technique, which is the gold standard for assessment of glomerular filtration rate in children.

**Metabolic Bone Disease**

Dr. Mouin Seikaly runs the Metabolic Bone Disease clinic at Texas Scottish Rite Hospital for Children and consults for disorders of metabolic bone disease at Children’s Medical Center. Metabolic bone disease comprises several inherited disorders that can often be treated. Dr. Seikaly is a world’s expert on the diagnosis and treatment of metabolic bone disease and has made research discoveries that have translated to improved patient care.
Patient Statistics
Nephrology Patient Stats by Type of Visit by Location By Year; Along With Patient Treated By Type.

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<td>473</td>
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Current Grant Support

Michel Baum

Grantor: NIH-National Institute of DDK Diseases
Title of Project: George M. O’Brien Kidney Research Core Center
Role: Co-Principal Investigator
Dates: 09/2017 – 06/2023

Elizabeth Brown

Grantor: National Institutes of Diabetes and Digestive and Kidney Disease (NIDDK), and the Office for Rare Diseases Research (ORDR) at the National Institutes of Health (NIH), and The NephCure and Halpin Foundations
Title of Project: Nephrotic Syndrome Study Network (“NEPTUNE”)
Role: Co-Investigator
Dates: 2013 – Present
<table>
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<th>Grantor</th>
<th>Title of Project</th>
<th>Role</th>
<th>Dates</th>
<th>Sponsor</th>
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<td>National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) at the National Institutes for Health (NIH)</td>
<td>Cure Glomerulonephropathy (CureGN)</td>
<td>Co-Investigator</td>
<td>2013 – Present</td>
<td>Retrophin, Inc</td>
<td>A Randomized, Multicenter, Double-Blind, Parallel, Active Control Study of the Effects of Sparsentan, A Dual Endothelinreceptor and Angiotensin Receptor Blocker, on Renal Outcomes in Patients With Primary Focal Segmental Glomerulosclerosis (FSGS)</td>
<td>Principal Investigator</td>
<td>2019 – Present</td>
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<td>Keri Drake</td>
<td>Wilms tumor 1 (Wt1) mutation reveals mechanisms of cell lineage crosstalk in the developing kidney</td>
<td>Principal Investigator</td>
<td>08/2022 – 05/2025</td>
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<td>Raymond Quigley</td>
<td>Ferric Citrate and Chronic Kidney Disease in Children (FIT4KiD)</td>
<td>CO-Principal Investigator</td>
<td>06/2020 – 04/2025</td>
<td>ABBVIE INC</td>
<td>A Phase 3, Prospective, Open-Label, Multicenter Study to Evaluate the Safety, Efficacy and Pharmacokinetics of Paricalcitol Oral Solution for the Treatment of Secondary Hyperparathyroidism in Pediatric Subjects Ages 0 to 9 Years with Stage 5 Chronic Kid</td>
<td>Principal Investigator</td>
<td>08/2021 – Present</td>
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<td>Mouin Seikaly</td>
<td></td>
<td>Principal Investigator</td>
<td>09/2017 – Ongoing</td>
<td>RELYPSA INC</td>
<td>A Phase 2, Open-Label, A Phase 2, Open-Label, Multiple dose Study to Evaluate the Pharmacodynamic Effects, safety, and tolerability of Patiromer for Oral Suspension in Children and Adolescents 2 to &lt; 18 Years of Age with Chronic Kidney Disease and Hyperkalemia (EMERALD)</td>
<td>Principal Investigator</td>
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Matthias Wolf

Grantor: NIH R01DK119631
Title of Project: Assay Development and Optimization for a High Throughput Screen to Detect Compounds Increasing Secretion of C1505 Mutant Uromodulin
Role: Principal Investigator
Dates: 03/2020 – 12/2024

Grantor: NIH R01HL151632 (PI Mizuno)
Title of Project: Targeting insulin resistance to improve abnormal cardiovascular control in diabetes
Role: Co-Investigator
Dates: 06/2020 – 05/2024

Grantor: NIH P30 DK079328-11 (PI Moe)
Title of Project: George M. O’Brien Kidney Research Core Center
Role: Co-Investigator
Dates: 09/2017 – 06/2023

Grantor: Department of Defense W81XWH1910205
Title of Project: Urinary magnesium regulation by Mucin-1 and Uromodulin – an unexpected role in the development of type 2 diabetes mellitus
Role: Principal Investigator
Dates: 09/2019 – 08/2022

Grantor: CTSA Pilot Program 5UL1TR003163-02 NIH/UT Southwestern Medical Center, Pilot and Feasibility grant
Title of Project: Development of New Therapies Against Renal Fibrosis
Role: Principal Investigator
Dates: 2022 – 2023

Peer-Reviewed Publications


Book Chapters