



University Hospitals
Case Medical Center

Cleveland | Ohio



Rainbow Babies
& Children's Hospital

FORGING MEDICINE'S FUTURE

DEPARTMENT OF PEDIATRICS



DEAR COLLEAGUE:

Ranked **one of America's Best Children's Hospitals** by U.S. News & World Report, University Hospitals Rainbow Babies & Children's Hospital is committed to building upon a legacy of medical discovery that began more than 125 years ago and continues today. In addition, UH Rainbow Babies & Children's Hospital is among an elite group of 13 children's hospitals **designated as a Top Children's Hospital by The Leapfrog Group**. This prestigious honor, which is the nation's most competitive pediatric hospital quality award, recognizes exemplary performance in safety, quality and utilization of resources.

UH Rainbow Babies & Children's Hospital's pediatric medical and surgical specialists – many of whom also are faculty at Case Western Reserve University School of Medicine – are forging the future of medicine through clinical innovation and groundbreaking research. Several highlights include:

- Changing the face of cancer care for children, teens and young adults through our Angie Fowler Adolescent & Young Adult Cancer Institute by offering access to nationally recognized experts, a FACT-accredited Pediatric Blood and Bone Marrow Transplant program and the only regional center for Phase I and Phase II pediatric clinical trials. A major referral center for children and young adults with cancer and nonmalignant

blood disorders, the Angie Fowler Adolescent & Young Adult Cancer Institute is one of only a few programs in the nation with dedicated inpatient and outpatient facilities and services for teens and young adults.

- Improving the quality of outpatient care, increasing access to pediatricians and decreasing unnecessary emergency department visits for children with the launch of the HealthSpotSM station. This leading-edge telehealth system connects patients to a pediatrician through a private, walk-in kiosk with high-definition videoconferencing and interactive digital medical devices.
- Leading the pediatric component of the Ohio Perinatal Quality Collaborative to improve perinatal care and outcomes in Ohio. Initial

projects focusing on reducing bloodstream infections in hospitalized premature infants and near-term deliveries without medical indications have reduced infections and NICU admissions, saving Ohio at least \$11 million annually.

- Advancing the search for a cure for cystic fibrosis through clinical trials aimed at discovering new therapies and extending the lives of cystic fibrosis patients.

I welcome your feedback on how we can work together to further enhance pediatric medicine at Peds.Innovations@UHhospitals.org. I look forward to seeing you at the 2014 PAS Annual Meeting in May.



A handwritten signature in black ink, reading "Michael W. Konstan, MD".

Michael W. Konstan, MD

Chairman, Department of Pediatrics,
UH Case Medical Center and Case Western Reserve University School of Medicine
The Austin Ricci Chair in Pediatric Pulmonary Care and Research,
UH Rainbow Babies & Children's Hospital
The Gertrude Lee Chandler Tucker Professor,
Case Western Reserve University School of Medicine

UH CASE MEDICAL CENTER

Among the nation's leading academic medical centers, UH Case Medical Center is the **primary affiliate of Case Western Reserve University School of Medicine.**

TO HEAL. TO TEACH. TO DISCOVER.

With more than 1,000 registered beds, UH Case Medical Center provides primary, specialty and subspecialty medical and surgical care. Located in the heart of Cleveland's University Circle on a beautiful 35-acre campus, UH Case Medical Center includes general medical, intensive care and surgical units, as well as three major specialty hospitals:

University Hospitals Rainbow Babies & Children's Hospital

University Hospitals MacDonald Women's Hospital

University Hospitals Seidman Cancer Center

Our physicians and researchers – who also serve as faculty at Case Western Reserve University School of Medicine – are leaders in their respective fields, and their ongoing clinical research programs push the boundaries of medical progress.

Our dedication to clinical research and education has played a major role in building UH Case Medical Center's rich legacy of medical innovation, and continues to this day. Coupled with a commitment to implementing the latest therapies and integrating with the most technologically advanced hospitals and community facilities, UH Case Medical Center offers a depth of care and scope of services unmatched by any other medical center in Ohio.

1,000+
registered
beds

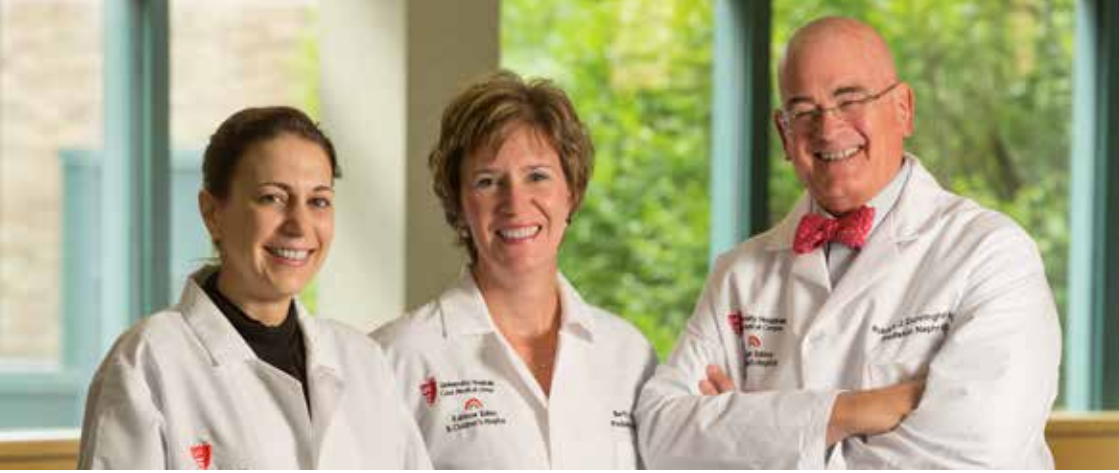


THE PRIMARY AFFILIATE OF Case Western Reserve University School of Medicine

The commitment to exceptional patient care begins with revolutionary discovery. **University Hospitals Case Medical Center is the primary affiliate of Case Western Reserve University School of Medicine**, a national leader in medical research and education, and consistently ranked among the top research medical schools in the country by U.S. News & World Report. Through their faculty appointments at Case Western Reserve University School of Medicine, physicians at UH Case Medical Center are advancing medical care through innovative research and discovery that bring the latest treatment options to patients.

35
acre
campus

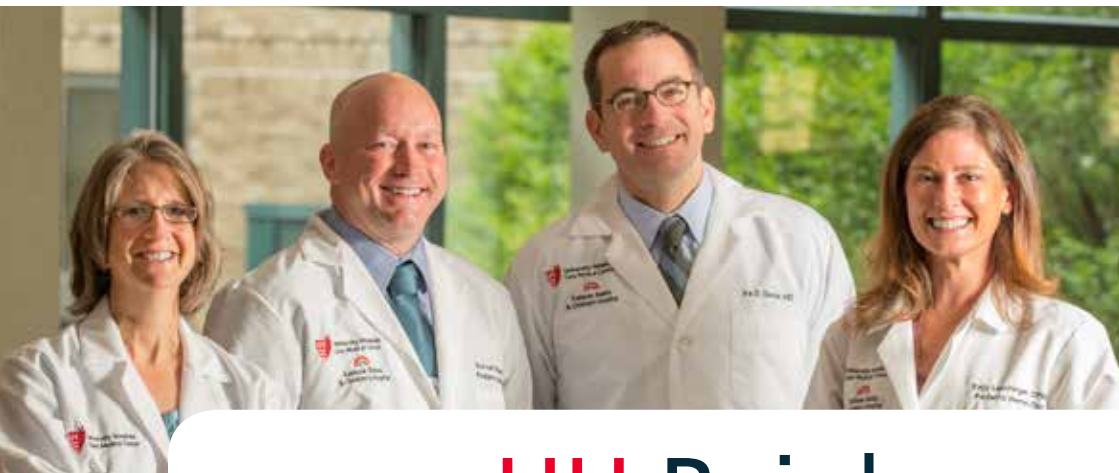
3
major
specialty
hospitals



Top: Drs. Tamar Springel, Beth Vogt and Robert Cunningham

Middle: Amelia Baffa, RN, MSN, Dr. Henry Koon, Dr. Joseph Matloub and Dr. Rachel Egler

Bottom: Drs. Deborah Gold, Duncan Stearns and Peter DeBlank; and Kelly Laschinger, CNP



UH Rainbow Babies & Children's Hospital

Internationally renowned, UH Rainbow Babies & Children's Hospital is a pediatric academic medical center with experts in 16 medical divisions and 11 surgical specialties who offer nationally ranked care not available at other institutions in the region, including a center dedicated to adolescent and young adult cancer treatment and Northeast Ohio's only single-site provider of advanced maternal fetal medicine and neonatology services. As a leading academic medical center that is the primary pediatric affiliate of Case Western Reserve University School of Medicine and the only Level I Pediatric Trauma Center in the region, UH Rainbow Babies & Children's Hospital offers novel therapies, advanced technologies and clinical discoveries to children long before they are available nationwide, including single-site surgery, a combined PET/MRI scanner and a team leading the search to cure cystic fibrosis. When a child's life is in the balance, there is simply no better facility.

UH Rainbow Babies & Children's Hospital is ranked one of America's Best Children's Hospitals in nine children's specialties by U.S. News & World Report, including the nation's #2 NICU and among the top 10 in Pulmonology. Learn more at RainbowBabies.org/USNews.

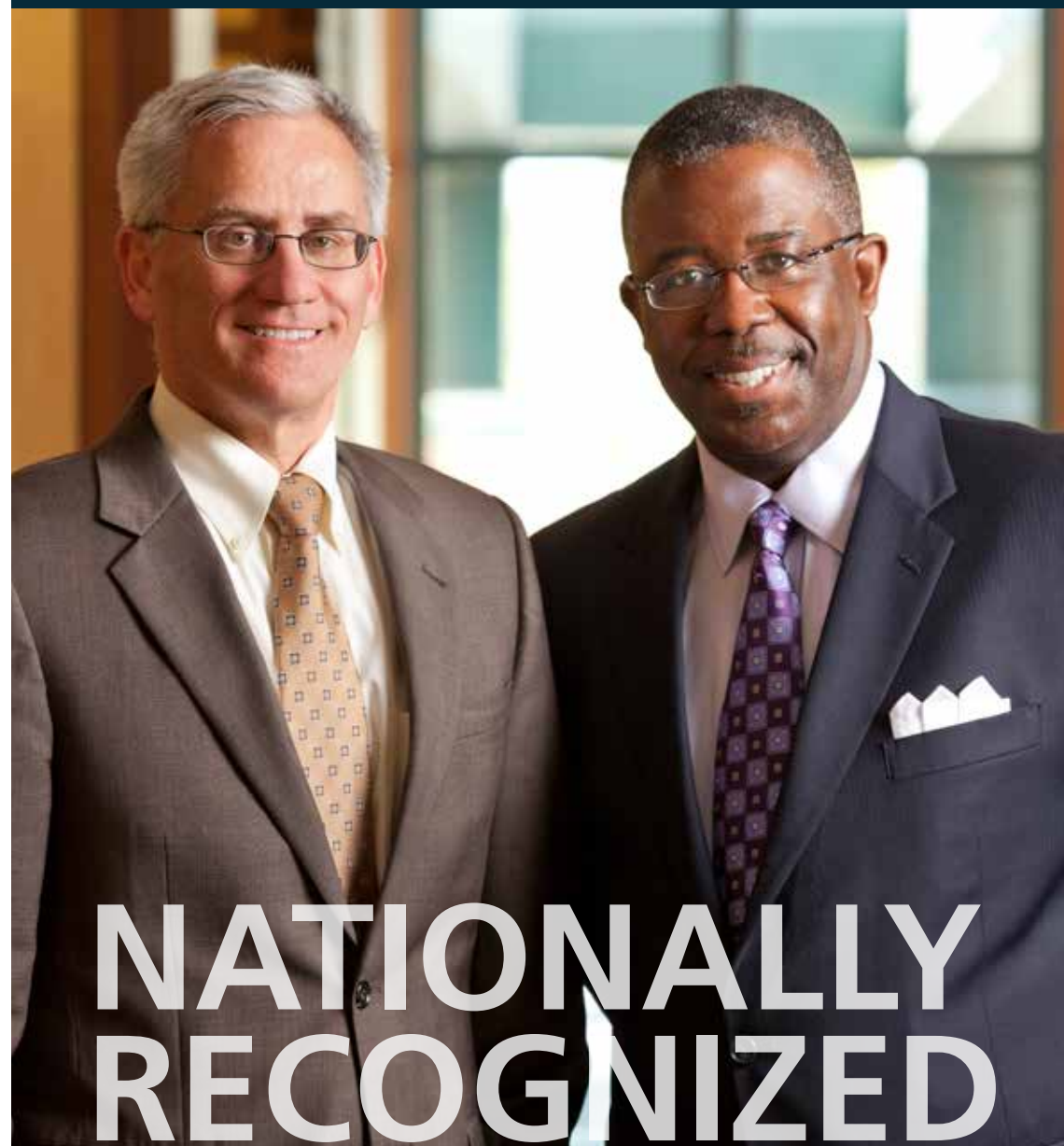
As a full-service children's hospital, UH Rainbow Babies & Children's Hospital has a multidisciplinary team of 1,300 physicians, nurses, child life specialists, social workers and other professionals devoted solely to pediatric medicine and surgery – including more nationally recognized pediatric specialists than any other hospital in the region.

Experts at UH Rainbow Babies & Children's Hospital are engaged in today's most advanced clinical research and are regarded by pediatricians across the country as among the best in the nation – and in some specialties, the best in the world. Our comprehensive pediatric surgery center features experts in anesthesiology, neurosurgery, ophthalmology, otolaryngology, urology, cardiothoracic surgery, nephrology, plastic surgery, orthopaedic surgery, dentistry/oral surgery, pediatric surgery and the region's only Level I Pediatric Trauma Center.

UH Rainbow Babies & Children's Hospital's medical staff is led by *Chairman Michael W. Konstan, MD*, who also holds the *Austin Ricci Chair in Pediatric Pulmonary Care and Research at UH Rainbow Babies & Children's Hospital*, and is the *Gertrude Lee Chandler Tucker Professor and Chairman of the Department of Pediatrics at Case Western Reserve University School of Medicine*. A pioneer in his field, Dr. Konstan's academic career has focused on developing new therapies for cystic fibrosis, with a special interest in anti-inflammatory treatments and clinical trial design. An international expert in cystic fibrosis, Dr. Konstan also leads Case Western Reserve University's cystic fibrosis clinical and translational research programs. His team's efforts in developing new treatments and leading the search for a cure for cystic fibrosis have led to novel therapies as well as significantly extending the lives of children – and now, adults – with the disease.

Edward M. Barksdale Jr., MD, FACS, FAAP, is *Vice Chairman of the Department of Surgery at UH Case Medical Center and Case Western Reserve University School of Medicine*. He is *Surgeon-in-Chief, Chief of the Division of Pediatric Surgery and the Robert J. Izant, Jr., MD, Chair of Pediatric Surgery at UH Rainbow Babies & Children's Hospital*, and *Professor of Pediatrics and Surgery at the School of Medicine*. Under his leadership, the Rainbow Surgical Specialists are recognized for novel minimally invasive surgical approaches, family-centered care and a comprehensive focus on quality and safety. Dr. Barksdale is co-chair of Project Focus, a youth violence prevention program, and a member of the strategic planning committee for the U.S. Attorney General's Defending Childhood Initiative in Cuyahoga County, Ohio. He is a member of the American Board of Surgery Review Board (Pediatric Surgery), Lilliputian Society and the American Pediatric Surgery Association. He is a Diplomate of the American Board of Medical Specialties and a Fellow of the American Academy of Pediatrics – Surgical Section and the American College of Surgeons. Dr. Barksdale is an ad hoc reviewer for the Journal of Pediatric Surgery, Surgery, Journal of Surgical Research, Canadian Institute of Health Research and the Journal of Immunotherapy.

Drs. Michael Konstan and Edward Barksdale Jr.



NATIONALLY RECOGNIZED EXPERTS

DEPARTMENT OF PEDIATRICS

NATIONALLY RECOGNIZED EXPERTS

Robert Cunningham, MD, is *Chief of Pediatric Nephrology and Vice Chairman of the Department of Pediatric Medicine at UH Rainbow Babies & Children's Hospital, and Clinical Professor of Pediatrics at the School of Medicine.*

Dr. Cunningham is widely published in respected peer-reviewed journals, has contributed numerous book chapters and is co-editor of the board-review textbook, *An Intensive Review of Pediatrics*. He has served on the AAP committee on Nephrology and serves on the ACGME appeals committee for Pediatric Nephrology. He is a member of several scientific societies, including the American Transplantation Society, American Society of Pediatric Nephrology and the International Society of Nephrology.

Benjamin Gaston, MD, is *Chief of Pediatric Pulmonology at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics at the School of Medicine.* He is leading UH Rainbow Babies & Children's Hospital's clinical care and research for patients with primary ciliary dyskinesia (PCD), a genetic disorder of cilia. As a designated PCD Foundation Clinical Center site, UH Rainbow Babies & Children's Hospital serves as a focal point for diagnosis, research, treatment and data collection to better understand PCD. Dr. Gaston is widely published in peer-reviewed journals and is a frequent guest lecturer at international and national conferences. He serves on numerous national editorial and advisory boards, and is a reviewer for several national journals, including *Nature* and the *New England Journal of Medicine*.

Peter C. Kouretas, MD, PhD, *Chief of the Division of Pediatric Cardiothoracic Surgery at UH Rainbow Babies & Children's Hospital, and Associate Professor of Pediatrics and Surgery at the School of Medicine*, is a leader in performing complex neonatal reconstructions, hypoplastic left heart syndrome and transposition of the great arteries. He also has expertise in adult congenital cardiac care using innovative techniques, such as valve sparing aortic root procedures in the Marfan population, and pediatric heart failure, with a focus on pediatric ventricular-assist devices and cardiac transplantation.

John J. Letterio, MD, *holds the Jane and Lee Seidman Chair in Pediatric Cancer Innovation and is Chief of the Division of Pediatric Hematology and Oncology and Director of the Cancer Survivorship Program at the Angie Fowler Adolescent & Young Adult Cancer Institute at UH Rainbow Babies & Children's Hospital.* He also is *Professor of Pediatrics at Case Western Reserve University School of Medicine.* Under Dr. Letterio's leadership, the division has cemented UH Rainbow Babies & Children's Hospital's national reputation as a leader

in pediatric hematology and oncology, elevating the standard of care and expanding programs in basic, translational and clinical research to increase clinical trial opportunities for patients, with a focus on the adolescent and young adult population. Dr. Letterio is a member of the American Association for Cancer Research, the American Academy of Pediatrics, the American Society of Hematology and the Society for Pediatric Research, and he serves on the editorial board of the *Journal of Biological Chemistry*.

Shawn E. McCandless, MD, *Chief of the Division of Pediatric Genetics at UH Rainbow Babies & Children's Hospital, Director of the Center for Human Genetics and Associate Professor of Genetics, Pediatrics and Pathology at Case Western Reserve University School of Medicine*, is interested in developing better treatments for individuals with inborn errors of metabolism and Prader-Willi syndrome. He and his team are involved in clinical trials and developing protocols for managing infants with urea cycle disorders and mitochondrial energy metabolism disorders diagnosed by newborn screening, and the long-term outcomes for these patients. Dr. McCandless is part of the Center for Inherited Disorders of Energy Metabolism at Case Western Reserve University. He is on the Board of Directors and is Program Chair of the Society for Inherited Disorders of Metabolism, a Fellow in the American College of Medical Genetics and the American Academy of Pediatrics, and a member of the American Society of Human Genetics.

Faruk H. Öрге, MD, is the *William R. and Margaret E. Althans Chair in Pediatric Ophthalmology and Director, Center for Pediatric Ophthalmology & Adult Strabismus, UH Eye Institute and UH Rainbow Babies & Children's Hospital, and Associate Professor of Ophthalmology & Visual Sciences, and Pediatrics at the School of Medicine.* He has an international reputation for successfully treating complex and technically difficult pediatric vision procedures. Dr. Öрге was the first in the nation and second in the world to perform an endoscopic goniotomy, a complicated pediatric procedure for congenital glaucoma.

Todd Otteson, MD, MPH, *Chief of Pediatric Otolaryngology and Associate Medical Director of Pediatric Surgery at UH Rainbow Babies & Children's Hospital, and Associate Professor of Otolaryngology at the School of Medicine*, is nationally known for ENT disorders as they pertain to children with congenital anomalies, such as cleft lip and palate and cranial facial syndromes. He also is a noted expert on airway disorders and has a clinical interest in patients with Down syndrome, who have a variety of ENT issues that require careful follow-up.

NATIONALLY RECOGNIZED EXPERTS

Jonathan H. Ross, MD, *Director, Pediatric Urology Center, UH Urology Institute and UH Rainbow Babies & Children's Hospital, and Professor of Urology at the School of Medicine*, is a national expert in the treatment of pediatric tumors of the kidney, bladder and testicles. Dr. Ross has been involved in groundbreaking pediatric urological oncology research including studies supporting organ-preserving approaches to pediatric genitourinary tumors. Dr. Ross is a member of the American Urological Association and the American Association of Pediatric Urologists, among others, and has published many book chapters and in several journals, including *Biochemistry*, the *British Journal of Urology* and the *Journal of Urology*. Dr. Ross has served as guest editor for *Pediatric Urologic Oncology* in the *Urologic Clinics of North America*, and he contributed to the Strategic Plan for Pediatric Urology in the U.S. Department of Health and Human Services' Research Progress Report. He currently is a member of the Children's Oncology Group's Germ Cell Tumor Committee and Surgical Committee.

Alexandre T. Rotta, MD, FCCM, FAAP, *Chief of the Division of Pediatric Critical Care at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics at the School of Medicine*, received the Annual Scientific Award from the Society of Critical Care Medicine for the second time in two years. Dr. Rotta serves on the editorial boards of the *American Academy of Pediatrics* and is a reviewer for and an author in numerous peer-reviewed publications. He authored several book chapters and is the associate editor for *Fuhrman and Zimmerman's Pediatric Critical Care*, the premier textbook in the specialty. He also is a frequent invited lecturer, internationally and nationally. His special interests are in mechanical ventilation, glycemic control in critical illness, cardiac critical care and acute lung injury.

Thomas Sferra, MD, *Division Chief of Pediatric Gastroenterology and the Martin and Betty Rosskamm Endowed Chair in Pediatric Gastroenterology in honor of Fred C. Rothstein, MD, at UH Rainbow Babies & Children's Hospital, and Associate Professor of Pediatrics at the School of Medicine*, is internationally renowned for his work on the discovery and development of novel gene- and small molecular-based therapies for inflammatory bowel disease and colon cancer. Dr. Sferra is on the Technology Committee and Training Guidelines Steering Committee of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition, and a member of the medical advisory board of the Batten Disease Support & Research Association, the American Gastroenterological Association, the American Society of Gene Therapy and the Society for Pediatric Research.

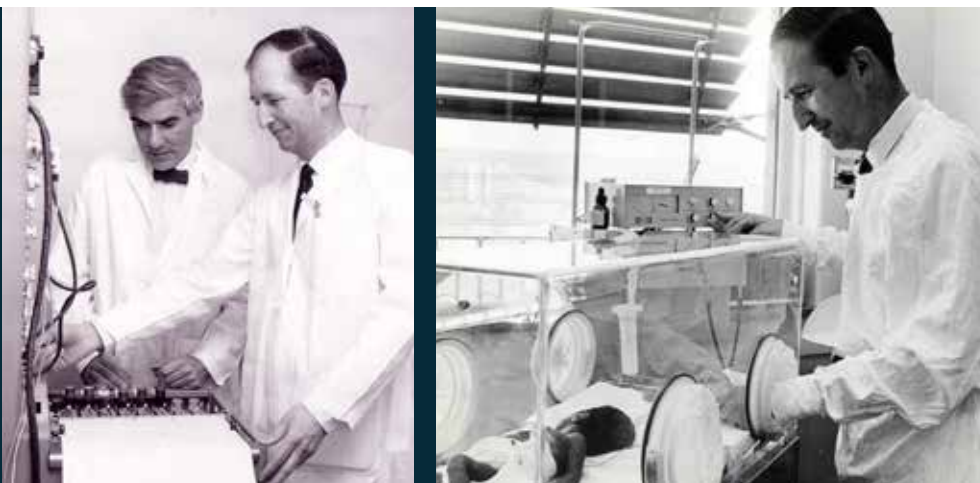
Christopher Snyder, MD, *is Chief of the Division of Pediatric Cardiology at UH Rainbow Babies & Children's Hospital, and Associate Professor of Pediatrics at the School of Medicine*. Dr. Snyder is a leader in the field of pediatric electrophysiology, performing radiofrequency and cryoablations, as well as pacemaker and defibrillator implants in children and adults with congenital heart disease. He is on the executive committee of the American Academy of Pediatrics Section of Cardiology and Cardiovascular Surgery, the board of the Pediatric Cardiology National Review Course and the advisory board of the AED Petition Now Alliance. He also serves on the editorial board for *Congenital Heart Disease and Case Reports in Cardiology*, and as an editor for the *Journal of Invasive Electrophysiology and Congenital Heart Disease and Cardiology in the Young*, and has been published in numerous journals.

George H. Thompson, MD, *Chief of the Division of Pediatric Orthopaedics at UH Rainbow Babies & Children's Hospital, and Professor of Orthopaedic Surgery and Pediatrics at the School of Medicine*, specializes in correcting spine deformities, including scoliosis and kyphosis, using innovative surgical techniques that minimize the invasiveness of – and potentially the need for – major spine surgery. Dr. Thompson was honored by the Scoliosis Research Society with the 2013 Lifetime Achievement Award for his work in pediatric spinal disorders. This prestigious award recognizes Dr. Thompson's extensive career, which has led to innovations in surgical techniques to prevent or decrease blood loss, decrease postoperative pain and improve safety.

Ingrid Tuxhorn, MD, *is Chief of the Division of Pediatric Epilepsy at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics at the School of Medicine*. A distinguished expert in refractory epilepsy in children and adolescents, she leads an interdisciplinary team, one of the most experienced in the nation, in using the most advanced medical and surgical options to accurately diagnose, localize and treat the complete range of seizure disorders. Dr. Tuxhorn has published in numerous journals, including *Epilepsia*, *Neuropediatrics*, *Seizure* and *Epilepsy Research*.

Michele C. Walsh, MD, MS, *is Chief of the Division of Neonatology and the William and Lois Briggs Chair in Neonatology at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics at the School of Medicine*. She is principal investigator of the NIH's National Institute of Child Health and Human Development Neonatal Research Network. She also leads the Statewide Quality Collaborative, which seeks to improve the outcomes of premature infants in Ohio. She has dedicated her work to the serious challenges facing premature babies.

Max Wiznitzer, MD, FAAP, *is a child neurologist at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics at the School of Medicine*. He is a nationally recognized expert and speaker on autism spectrum disorders and attention deficit hyperactivity disorder (ADHD). He also serves as a liaison to the American Academy of Pediatrics Council on Children with Disabilities and Autism Subcommittee.



John Hawks Kennell, MD 1922 – 2013

Dr. John H. Kennell's pioneering research in the area of parent-infant bonding revolutionized delivery room and hospital practice throughout the world by revealing the positive health impact to the family in allowing mothers to hold their newborns immediately after birth, bringing fathers into the delivery room and opening the doors to young children to visit their new siblings.

Dr. Kennell, described as "kind, gracious and wise" by those who worked alongside him, was born in 1922 in Reading, Pa., and grew up in Buffalo, N.Y. After graduating from medical school in 1946 from the University of Rochester School of Medicine, he served two years in the U.S. Navy prior to entering residency at Harvard Medical School. There he was selected chief resident at Children's Hospital in Boston.

Dr. Kennell came to Cleveland in 1952 to run the renovated premature suite (precursor to the Neonatal Intensive Care Unit) at UH Rainbow Babies & Children's Hospital. He later became a professor of pediatrics at Case Western Reserve University School of Medicine. There he laid the groundwork for his successors, building University Hospitals' reputation for pre-eminence in neonatology.

He and colleague Marshall H. Klaus, MD, gained worldwide attention for their 1976 book, *Maternal-Infant Bonding: The Impact of Early Separation or Loss on Family Development*, where they encouraged

mothers to hold their newborns after birth – now the standard of care. The two went on to collaborate on additional books on the mother-infant bonding process and the benefits of doulas. Dr. Kennell also was one of the first to use his developmental behavioral pediatrics background to provide insight into the emotional benefits of allowing grieving parents to hold their infant who died in delivery or soon after being born.

Dr. Kennell won many awards, including the C. Anderson Aldrich Award from the American Academy of Pediatrics for his contributions to the field of child development. In 2009, the Rainbow Babies & Children's Foundation John Kennell, MD Chair of Excellence in Pediatrics was created in his honor. He continued to work with UH Rainbow Babies & Children's Hospital medical students and work on research projects into his late 80s.

During his tenure at University Hospitals, Dr. Kennell served as attending pediatrician of the newborn nursery at UH MacDonald Women's Hospital, director of the

family and pediatric clinics at UH Rainbow Babies & Children's Hospital, and served as faculty in the Division of Developmental Behavioral Pediatrics at UH Rainbow Babies & Children's Hospital.

Richard J. Martin, MD, *Drusinsky-Fanaroff Chair in Neonatology at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics at the School of Medicine*, called Dr. Kennell "an imposing presence in neonatology."

"John always remained humble, approachable and courteous to all with whom he worked," Dr. Martin said. "He was an extraordinary role model and mentor for students and faculty alike."

"John Kennell was of small stature, but a giant in his field," said **Avroy Fanaroff, MD**, *the Eliza Henry Barnes Emeritus Chair in Neonatology and Professor Emeritus at the School of Medicine*. "He added the caring to curing and practiced family-centered care before the term had been coined."

Leona Cuttler, MD

1951 – 2013



Renowned for excellence in research, policy and advancing care for children, Leona Cuttler, MD, was a master clinician, respected educator and nationally recognized innovator of child health policy.

Dr. Cuttler held the inaugural William T. Dahms Chair in Pediatric Endocrinology, Diabetes & Metabolism at UH Rainbow Babies & Children's Hospital, where she served as Chief of the Division of Pediatric Endocrinology, Diabetes & Metabolism, Vice Chair of Child Health Policy and Community Health, and was founder and Director of the Center for Child Health and Policy. She also was Professor of Pediatrics at Case Western Reserve University School of Medicine.

Dr. Cuttler joined UH Rainbow Babies & Children's Hospital and the School of Medicine in 1990. Her work brought national recognition to the hospital, including the creation of Rainbow Care Connection, an innovative initiative to transform health care delivery to children, and Healthy Kids, Healthy Weight™, one of the first programs in the nation

designed to address the growing obesity epidemic in children. She dedicated her career to delivering quality care to patients and their families, identifying the most effective treatments for children, and educating the next generation of physicians. Her research expertise included childhood health conditions, such as diabetes and growth hormone disorders, and the ethical and policy implications of health care for children.

Dr. Cuttler earned numerous awards from federal and state agencies and foundations for her work, and held leadership roles on key state and federal committees. In 2005, Dr. Cuttler was selected for the prestigious Robert Wood Johnson Fellowship, an honor given to seven health professionals nationally. From 2006 – 2007, she served on the U.S. Senate Finance Committee

in Washington, D.C., and advised on matters such as Medicare, Medicaid, the State Children's Health Insurance Program, health quality indicators, obesity and other pediatric health conditions.

Dr. Cuttler's unwavering energy and dedication, pursuit of excellence, wide-ranging intellectual curiosity, and especially her brilliance and creative vision, contributed to her legacy as a clinician, researcher and mentor. Her contributions continue to inspire efforts to improve the health and well-being of all children.

UH Rainbow Babies & Children's Hospital has teamed up with HealthSpot to provide patients with better access to board-certified pediatricians after hours and closer to home. The HealthSpot station, a leading-edge telehealth system, connects patients to UH Rainbow Babies & Children's Hospital pediatric experts seven days a week through a private, walk-in kiosk with high-definition videoconferencing and interactive digital medical devices.

The HealthSpot station offers children, ages 3 to 19, with minor ailments an alternative to an emergency room visit.

"The HealthSpot stations are an innovative step in providing better care for children at a more appropriate level," says **Andrew Hertz, MD**, *Medical Director for Rainbow Care Connection, and Clinical Assistant Professor of Pediatrics at the School of Medicine.* "Our goal is to improve the quality

of outpatient care for children, increase their access to pediatricians, and decrease unnecessary emergency visits."

The HealthSpot station is free for pediatric patients and is supported by a \$12.7 million Healthcare Innovation Award to UH Rainbow Babies & Children's Hospital from The Centers for Medicare & Medicaid Innovation, aimed at improving the delivery of health care to children in Northeast Ohio while reducing costs. Rainbow Care Connection, UH's pediatric accountable care organization, targets approximately 68,000 children receiving Medicaid benefits and who have high rates of emergency department visits, complex chronic conditions, and significant behavioral health problems.

"The station is one example of how UH Rainbow is leading the way to improve care for children in the changing health care environment," says **Ethan Chernin**, *Director, Rainbow Care Connection.*

The HealthSpot station is an 8- by 5-foot enclosed kiosk furnished with touch-screen computers, digital medical instruments, an audio system and a two-way high-definition video screen. The kiosk provides a true-to-life virtual visit that brings patients a face-to-face experience with a board-certified pediatrician. Each station is supported by an accredited medical attendant who can assist the patient as needed.

Inside the HealthSpot station, a scale built into the floor records weight. With the push of a button, the doctor can unlock small cabinets that hold high-tech, digital medical devices that transmit information, audio and video back to them through a secured connectivity data system. The station is equipped with a blood pressure cuff, thermometer, stethoscope and other medical devices to monitor a patient's oxygen level and view their throat and eardrums.

The pediatrician is easily able to review medical information with the patient, discuss symptoms, diagnose and treat, and recommend follow-up care. The doctor can capture, save and even annotate patient images with notes that can be shared with the patient's primary care physician, specialist, or saved for the patient's own records. The HealthSpot station allows the doctor to create a complete medical record of each visit, supporting continuity of care and collaboration among the health care providers.

The project is supported by Funding Opportunity Number CMS-1C1-12-0001 from Centers for Medicare and Medicaid Services, Center for Medicare and Medicaid Innovation.

HealthSpotSM Station

One of the Nation's First
Pediatric Accountable Care
Organizations Uses Telehealth
to Improve Care



PEDIATRIC HEMATOLOGY AND ONCOLOGY:

UH Rainbow Babies & Children's Hospital's Angie Fowler Adolescent & Young Adult Cancer Institute is changing the face of cancer care by offering nationally recognized care from pediatric cancer specialists who are distinguished in basic, clinical and translational research; a FACT-accredited Pediatric Blood and Bone Marrow Transplant program that is nationally recognized for delivery of expert, multidisciplinary care and outcomes; and the only regional access to Phase I and Phase II pediatric clinical trials through the Center for Developmental Therapeutics.

As a major referral center for children and young adults with cancer and nonmalignant blood disorders, the Angie Fowler Adolescent & Young Adult Cancer Institute is one of the only programs in the nation with dedicated inpatient and outpatient facilities and services for teens and young adults. With a focus on improving outcomes for an age group with very specific needs, the Angie Fowler Adolescent & Young Adult Cancer Institute's team of pediatric hematologists and oncologists serve as senior investigators on NIH-funded clinical trials and participate on national

committees on solid tumors, leukemia and bone marrow transplantation. The mission of this team is to improve outcomes and increase adolescent and young adult cancer patient participation in clinical trials, while managing other aspects of cancer care that are highly specific to and critical for patients, ages 15 to 30.

OHIO PERINATAL QUALITY

COLLABORATIVE: Dr. Michele Walsh is the state lead for the pediatric component of the Ohio Perinatal Quality Collaborative (OPQC), a statewide, multi-stakeholder network dedicated to improving perinatal health in Ohio. The OPQC partners with physicians in obstetrics and gynecology to improve care and outcomes for infants and women across the state. Initial projects focusing on reducing bloodstream infections in hospitalized premature infants and near-term deliveries without medical indications reduced infections and NICU admissions, saving Ohio at least \$11 million annually. The group works closely with the Ohio Department of Health and Best Evidence for Advancement of Child Health in Ohio Now (BEACON), a public/private partnership that supports initiatives that achieve measurable improvements in

child and adolescent health care and outcomes through science and a quality improvement infrastructure. In 2014, the obstetrical team will focus on a statewide rollout of the use of progesterone in selected women at high risk of premature birth, and the neonatal team will focus on identification and treatment of infants born to narcotic-addicted women.

PEDIATRIC NEUROSURGERY:

Jonathan Miller, MD, *Director of the Functional & Restorative Neurosurgery Center at UH Neurological Institute, and Assistant Professor of Neurological Surgery at the School of Medicine*, used a novel surgical technique on a 3-month-old infant – the youngest patient to undergo this procedure to date – with intractable epilepsy to spare most of the brain and immediately stop her seizures. While traditional surgical techniques, such as hemispherectomy and multilobar resection, involve removal of large amounts of brain tissue, temporoparietoccipital (TPO) disconnection spares much of the brain by separating the region responsible for seizure onset from the surrounding healthy brain tissue. Strategic incisions prevent the disease from spreading, and the healthy brain tissue picks up important functions no longer tied to the diseased region. TPO disconnection offers lower risk of complications, quicker recovery time and superior long-term results. Watch a video to learn more about this pioneering technique at RainbowBabies.org/Finnegan.

NEONATOLOGY AND MATERNAL FETAL MEDICINE:

The Quentin & Elisabeth Alexander Level IV Neonatal Intensive Care Unit (NICU) has a 96 percent survival rate – one of the best in the nation – making UH Rainbow Babies & Children's Hospital's Division of Neonatology one of the foremost in the nation. An international leader in the treatment of critically ill and extremely low birth-weight babies and ranked second in the nation by U.S. News & World Report, the NICU team combines innovative technologies, advanced clinical research and comprehensive services in a patient- and family-centered environment. The NICU's Extracorporeal Membrane Oxygenation Center is among a select group in the nation recognized with the Excellence in Life Support Award by the Extracorporeal Life Support Organization.

As the only facility in Northeast Ohio with a modern labor and delivery suite immediately adjacent to a Level IV NICU, UH MacDonald Women's Hospital and UH Rainbow Babies & Children's Hospital can provide the highest level of care for both high-risk mothers and infants presenting with a wide range of neonatal conditions and disorders. Nationally recognized maternal fetal medicine specialists led by **Honor Wolfe, MD**, *Division Chief and the Mary D. Fergus Endowed Chair in Maternal and Fetal Medicine, and Professor of Reproductive Biology at the School of Medicine*, work in tandem with the NICU team to ensure the best outcomes for mothers and newborns.



Dr. Michele Walsh



Dr. Jonathan Miller

CYSTIC FIBROSIS: Physician-scientists at UH Rainbow Babies & Children's Hospital, ranked seventh in the nation in pediatric pulmonology by U.S. News & World Report, and Case Western Reserve University School of Medicine are leading the search for a cure for cystic fibrosis, developing new therapies and setting the standard of care for cystic fibrosis centers across the nation. This includes developing and testing drugs aimed at improving gene and protein function in patients, and devising successful strategies to treat cystic fibrosis lung disease by using anti-inflammatory therapy to decrease inflammation in the lungs.

The Leroy W. Matthews Cystic Fibrosis Center at UH Rainbow Babies & Children's Hospital is nationally recognized as a pioneer in the treatment of patients with cystic fibrosis and for research into the basic science and clinical aspects of the disease, developing new therapies, and training cystic fibrosis clinicians, physician-scientists and basic science investigators.

PULMONOLOGY: Dr. Benjamin Gaston is leading UH Rainbow Babies & Children's Hospital's clinical research into primary ciliary dyskinesia (PCD). The hospital was selected by the PCD Foundation as one of the first PCD

Clinical Center sites in the PCD Research Network. The only PCD Foundation site in Ohio, UH Rainbow Babies & Children's Hospital serves as a focal point for PCD diagnosis, treatment and research. This work will help patients by establishing and implementing the highest standards of care, and by contributing to evidence-based knowledge of PCD. The hospital established the first cystic fibrosis (CF) center and has been a leader in CF clinical care and research for more than 50 years. This experience and level of expertise is now being applied to the management of PCD.

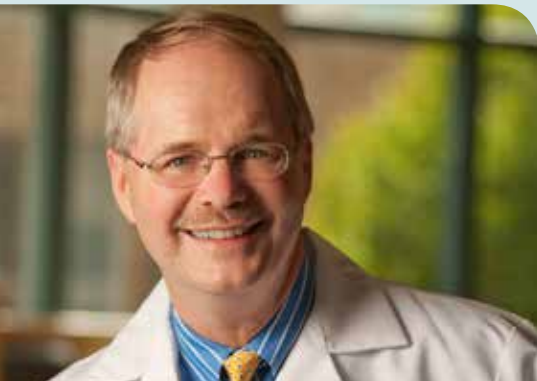
PEDIATRIC EPILEPSY: As a Comprehensive Level IV Pediatric Epilepsy Center and a regional, national and international center of excellence, our interdisciplinary pediatric epilepsy team provides novel programs and intensive neurodiagnostic monitoring and brain imaging, as well as more extensive medical, neuropsychological, psychosocial and surgical treatment, for the full range of seizure disorders. The New Onset Seizure Clinic, the first outpatient rapid access seizure clinic in northern Ohio, offers expert diagnostic services, referrals, treatment and follow-up care from a multidisciplinary team for children who suffer a first seizure. Through close collaboration with the Epilepsy Center at UH Case Medical Center, UH Rainbow Babies & Children's Hospital's Epilepsy Transition Clinic – one of only a few programs in the nation and the only in Ohio – ensures continuity of care for adolescent epilepsy patients as they transition to adult care.

GASTROENTEROLOGY: UH Rainbow Babies & Children's Hospital is a care center partner in the ImproveCareNow network, which seeks to accelerate innovation, discovery and the application of new knowledge to improve the care and health of children with Crohn's disease and ulcerative colitis. Bringing together families, clinicians and researchers in one of the nation's leading collaborative learning health systems, the ImproveCareNow network formulated an algorithm, the Model IBD Care: Guidelines for Consistent Reliable Care, to improve the management of IBD patients. As a result, participating centers have seen remission in Crohn's disease patients increase from 49 percent to 76 percent, and remission in ulcerative colitis from 53 percent to 79 percent.

PEDIATRIC SURGERY: Under the leadership of **Dr. Edward M. Barksdale Jr.**, UH Rainbow Babies & Children's Hospital's Minimally Invasive Pediatric Surgery (MIPS) Center is a leader in the evolution of minimally invasive surgical technologies and techniques for pediatric patients, setting the standard for pediatric hospitals nationally and internationally. Dr. Barksdale leads a team of pediatric surgical experts in 11 specialty areas in achieving highly successful outcomes and performing complex surgeries on the tiniest infants with complex medical conditions. Dr. Barksdale led a team of pediatric specialists from UH Rainbow Babies & Children's Hospital

and maternal fetal medicine specialists from UH MacDonald Women's Hospital in a complex surgery on a premature infant delivered by Cesarean section at 28 weeks. At 22 weeks, the infant was diagnosed with sacrococcygealteratoma with hydrozoa fetalis, a rare diagnosis that occurs in one in 70,000 births. One tumor the size of a grapefruit was growing in the child's abdomen, the other the size of a lemon on the child's backside. The tumors were leading to organ failure, so an emergency C-section was performed. The chance of survival was less than 5 percent. Through strong collaboration, the team successfully removed a one-pound tumor from the four-pound, premature infant.

PEDIATRIC TRAUMA: As Northern Ohio's only verified Level I Pediatric Trauma Center – the highest level given by the American College of Surgeons – UH Rainbow Babies & Children's Hospital can treat the most seriously injured children at a moment's notice. The pediatric trauma team is comprised of board-certified pediatric general and trauma surgeons, as well as board-certified surgeons in all pediatric specialties, including neurosurgery, ophthalmology, otolaryngology, urology, cardiothoracic surgery and orthopaedic surgery, and other skilled pediatric trauma professionals.



Dr. Benjamin Gaston

CLINICAL ADVANCES



Dr. James Hill

PEDIATRIC CARDIOLOGY: **James Hill, MD**, an *interventional pediatric cardiologist in the Division of Pediatric Cardiology at UH Rainbow Babies & Children's Hospital, and Assistant Professor of Pediatrics at the School of Medicine*, reported the first known uses of optical coherence tomography (OCT) in congenital heart disease in pediatric patients. Dr. Hill used the innovative imaging technology for anatomic definition of two patent ductus arteriosus (PDA) patients – ages 2 and 5. The technology uses near infrared light that produces images with unprecedented resolution. OCT potentially could replace standard angiography and decrease overall radiation use in selected interventional procedures.

PROTON THERAPY: UH Seidman Cancer Center broke ground last fall on a \$30 million proton therapy center, becoming one of an elite group of cancer centers in the country – and the first in Ohio – to offer this revolutionary technology to treat brain tumors and other specific cancers in children and young adults at risk for complications from radiation. This external-beam radiation therapy technique limits exposure to healthy tissue. Scheduled to open in 2015, the proton therapy center will be housed in an



Dr. Robyn Strosaker

11,000-square-foot facility on the UH Case Medical Center campus.

PEDIATRIC PLASTIC SURGERY: The Commission on Approval of Teams granted a full four-year approval to UH Rainbow Babies & Children's Hospital's Cleft and Craniofacial Center as a Cleft Palate and Craniofacial Team that meets the standards of the American Cleft Palate-Craniofacial Association and Cleft Palate Foundation. **Gregory E. Lakin, MD**, *Chief of the Division of Pediatric Plastic Surgery and Director of the Cleft & Craniofacial Center at UH Rainbow Babies & Children's Hospital, and Assistant Professor of Plastic Surgery at the School of Medicine*, leads the multidisciplinary, nationally approved team in delivering world-class, individualized cleft and craniofacial care.

BRONCHIOLITIS: **Robyn Strosaker, MD**, *Medical Director of Inpatient Services at UH Rainbow Babies & Children's Hospital, and Associate Professor of Pediatrics at the School of Medicine*, is part of an interdisciplinary team studying inpatient pediatric bronchiolitis management to improve outcomes through standardization of care. By decreasing the use of therapies with no proven clinical effect, patients are expected to have less exposure to unnecessary medications

and treatments, which will safely reduce length of hospital stay by 32 percent. Preliminary data shows use of steroids decreased by 83 percent and use of chest radiography decreased by 89 percent without a subsequent increase in readmissions. These reductions are projected to result in an annual direct variable cost reduction of more than \$500,000.

QUALITY AND SAFETY: As part of a state and national children's hospital collaborative, UH Rainbow Babies & Children's Hospital set out to eliminate serious harm to patients. Through its quality and safety program, the hospital achieved a significant reduction in its

Serious Safety Event (SSE) rate in 2013 – posting only two SSEs in 2012 and one in 2013, and going more than 200 days since its last SSE. These efforts earned UH Rainbow Babies & Children's Hospital the Ohio Patient Safety Institute 2013 Best Practices Acute Care Award for its harm reduction work. UH Rainbow Babies & Children's Hospital is a leader, regionally and nationally, in the Ohio Children's Hospital Solutions for Patient Safety program. The multifaceted program includes ongoing work to achieve a culture of high reliability, coupled with evidence-based bundles to reduce hospital-acquired conditions.

ABOUT UH RAINBOW BABIES & CHILDREN'S HOSPITAL

Located on the campus of University Hospitals Case Medical Center, UH Rainbow Babies & Children's Hospital is a 244-bed, full-service children's hospital and academic medical center. A trusted leader in pediatric health care for more than 125 years, UH Rainbow Babies & Children's Hospital consistently ranks among the top children's hospitals in the nation. As the region's premier resource for pediatric referrals, UH Rainbow Babies & Children's Hospital's dedicated team of more than 1,300 pediatric specialists uses the most advanced treatments and latest innovations to deliver the complete range of pediatric specialty services for 700,000 patient encounters annually. Learn more at RainbowBabies.org.

EARN CME CREDIT ONLINE

Join us via live webcast for weekly Pediatric Grand Rounds. Learn more at RainbowBabies.org/GrandRounds.

Case Western Reserve University School of Medicine is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. Case Western Reserve University School of Medicine designates this continuing medical education activity as meeting the criteria for 1 *AMA PRA Category 1 Credit™*. Physicians should only claim credit commensurate with the extent of their participation in the activity.



ACADEMIC MISSION

AS ONE OF THE NATION'S LEADING ACADEMIC MEDICAL CENTERS, UH CASE MEDICAL CENTER IS COMMITTED TO ADVANCING THE FIELD OF MEDICINE THROUGH A PASSIONATE COMMITMENT TO TRAINING TOMORROW'S CLINICIANS.

In its teaching role, UH Case Medical Center helps provide medical education in a wide variety of forums through Case Western Reserve University School of Medicine, one of the nation's leading medical schools. Our physicians – who also serve as members of the school's faculty – are leaders in their respective fields and their ongoing clinical research programs push the boundaries of medical progress. UH Rainbow Babies & Children's Hospital is the primary pediatric affiliate of Case Western Reserve University School of Medicine and annually trains pediatric residents and fellows – many of whom go on to serve at leading children's hospitals around the world.

Students benefit from hands-on instruction from these leading medical experts and have access to a broad spectrum of programs from which to pursue.

Because UH Case

Medical Center is the primary affiliate of Case Western Reserve University School of Medicine, we offer an unrivaled depth of resources and services – giving students unparalleled access and exposure to the latest technologies and medical breakthroughs.

This multidimensional approach and dedication to education by UH Case Medical Center and Case Western Reserve University School of Medicine play a major role in further enhancing our rich tradition of developing medicine's future leaders.

PREPARING TOMORROW'S LEADERS IN PEDIATRIC MEDICINE

UH Rainbow Babies & Children's Hospital and Case Western Reserve University School of Medicine provides comprehensive training that produces pediatric leaders at local, national and international levels by recognizing the critical role of the pediatrician as practitioner, educator, investigator, consultant and family counselor.

The Pediatric Residency Program, directed by **Martha Wright, MD, MEd**, *Vice Chair for Education at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics at the School of Medicine*, augments “at the bedside” clinical experience with a variety of interactive and didactic experiences, including daily conferences, workshops, seminars and research opportunities. Integrated into pediatric residency training is the hospital's Global Child Health Program, the oldest of its kind in the nation, which educates residents about the health needs of children in developing countries and equips them to address those needs.

The Pediatric Fellowship Training programs are led by **Katherine Mason, MD**, *Assistant Professor of Pediatrics at the School of Medicine*. The 16 ACGME-accredited pediatric subspecialty training programs prepare academic physicians to become leaders in their respective fields by providing a solid foundation in clinical medicine and research. A comprehensive research curriculum provides opportunities for fellows to engage in scientific investigation and present results at local, regional and national scientific meetings. The Fellows Research Award Program, funded by Rainbow Babies & Children's Foundation, provides startup funds for fellow research projects.



THE ANGIE FOWLER ADOLESCENT & YOUNG ADULT CANCER INSTITUTE: CHANGING THE FACE OF CANCER CARE FOR CHILDREN, TEENS AND YOUNG ADULTS

The Angie Fowler Adolescent & Young Adult Cancer Institute at UH Rainbow Babies & Children's Hospital is continuously expanding programs in basic, translational and clinical research to increase clinical trial opportunities for patients, with a focus on the specialized needs of the adolescent and young adult (AYA) population.

UH Rainbow Babies & Children's Hospital is fully integrated with UH Seidman Cancer Center, a founding member of Case Comprehensive Cancer Center at Case Western Reserve University School of Medicine, a National Cancer Institute-designated Comprehensive Cancer Center.

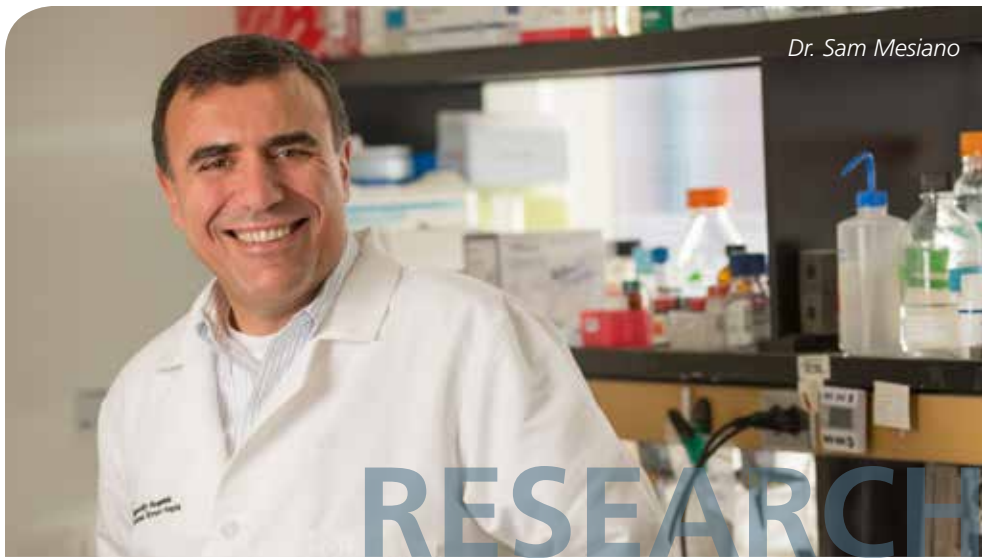
As a full member of the Children's Oncology Group (COG), the Angie Fowler Adolescent & Young Adult Cancer Institute not only affords patients access to major Phase III clinical trials for newly diagnosed cancers, but also provides access to novel investigational therapies through Phase I and II clinical trials for relapsed and refractory cancers.

With more than 50 clinical trials in progress last year alone, the Angie Fowler Adolescent & Young Adult Cancer Institute offers the best chance for a cure to children, adolescents and young adults affected by cancer or blood disorders. Recent studies include:

- National cooperative group trials evaluating modifications of post-remission induction therapy and maintenance therapy to enhance survival and reduce late effects of chemotherapy in children with newly diagnosed B-lymphoblastic leukemia.

- NIH-funded basic laboratory research focused on the development of a new class of drugs, known as antioxidant inflammation modulators (AIMs), that show promise as safe, nontoxic oral agents for the chemoprevention of cancer relapse.
- A Phase II clinical trial assessing the ability of the anti-inflammatory Enbrel to treat serious lung injury following stem cell transplant procedures in children (closed early due to better than expected results). The results may well change the way pediatric patients with idiopathic pneumonia syndrome are treated.
- A Phase I dose-finding clinical study of Panabinstat, a novel inhibitor of histone deacetylase, in children with refractory hematologic malignancies.
- NIH-funded translational research studies focused on developing immunomodulatory strategies against primary and metastatic tumors in the central nervous system.
- Preclinical studies focused on the expression of "anti-cell death" proteins in childhood medulloblastoma that are establishing a rationale for new targeted therapies for children at the highest risk of treatment failure.
- NIH-funded basic research into the cellular and molecular mechanisms that govern the activation, dynamic recruitment and interaction of T cells with the tumor microenvironment.
- Preclinical testing of the efficacy of genetically modified tumor vaccines in the setting of sarcomas and other childhood cancers.
- Development of novel high-throughput drug-screening strategies to identify novel agents specifically selected or designed to inhibit cancer metastasis.
- A Phase III, NIH NHLBI-funded, multicenter study investigating alternate therapies in patients with sickle cell disease and elevated stroke risk called TWiCH (TCD With Transfusions Changing to Hydroxyurea).
- A pilot study led by a UH Rainbow Babies & Children's Hospital investigator in collaboration with adult hematology, nephrology and radiology examining the use of novel, quantitative MRI techniques to assess renal damage in pediatric and adult patients with sickle cell disease.

All National Institutes of Health (NIH) funding for basic and clinical research is awarded to the School of Medicine at Case Western Reserve University.



Dr. Sam Mesiano

More than one in 10 babies is born premature every year and more than 1 million children die each year from complications of preterm birth. And preterm birth rates are increasing.

Sam Mesiano, PhD, researcher in the Department of Obstetrics & Gynecology at UH MacDonald Women's Hospital, and Associate Professor of Reproductive Biology at Case Western Reserve University School of Medicine, is part of the Ohio research collaborative that secured a \$10 million grant through the School of Medicine from the March of Dimes – the first statewide collaborative ever to do so – to prevent premature birth. Dr. Mesiano's laboratory, which is running one arm of the grant developed and led out of Cincinnati Children's Hospital Medical Center, is attacking the challenge by exploiting something Mother Nature already provides – the hormone progesterone.

During pregnancy, progesterone is produced in large amounts by the placenta and, as its name implies, is progestational; it functions to promote pregnancy mainly by keeping the uterine muscle relaxed and quiescent. The end of pregnancy, he said, is triggered by

EXPLOITING MOTHER NATURE TO PREVENT PRETERM BIRTHS

Ohio-led Team Takes on Premature Birth Through March of Dimes Prematurity Research Center

the withdrawal of the "progesterone block to labor." Dr. Mesiano said his goal is to understand how progesterone promotes uterine quiescence and how its actions are withdrawn to initiate labor. "We hope to then exploit that process therapeutically to augment its progestational actions as a strategy to prevent or delay preterm birth," he said.

Currently, progesterone-based therapies are used to prevent preterm birth but they are effective in only a small subset of pregnancies and the therapy is limited to women at risk for preterm birth.

"The main thrust of what we do in the lab is to understand the molecular biology of how progesterone promotes pregnancy and causes the muscle cells of the uterus to stay relaxed," he said. "If we understand that mechanism, then we can identify targets for therapies to make it work even better."

Dr. Mesiano's lab developed cell line models for muscle cells of the uterus and is using those cells to tease out signaling pathways and genes involved in mediating the effects of progesterone to keep the cells relaxed.

"Our cell models provide excellent screening platforms to test different drugs that could modulate the progesterone

signaling pathways in favor of sustaining pregnancy," he said. "This can open the pipeline to the development of drugs that specifically target the uterine muscle."

Dr. Michele C. Walsh said the March of Dimes' funding of the statewide collaborative recognizes the unique strengths of perinatal research in Ohio.

"Prematurity is the leading cause of infant mortality – a huge problem in Ohio and across the United States," Dr. Walsh said. "This collaboration, and the work in Dr. Mesiano's lab, is critical to advance our understanding of the triggers behind premature labor. The project has the potential to discover additional treatments to prevent prematurity."

Dr. Mesiano's research is part of the March of Dimes Prematurity Research Center, Ohio Collaborative, a transdisciplinary research program involving investigators at Cincinnati Children's Hospital Medical Center, University of Cincinnati, The Ohio State University, Nationwide Children's Hospital, Case Western Reserve University, UH MacDonald Women's Hospital and MetroHealth Medical Center. Investigators at Vanderbilt University, Dartmouth College, University of Iowa and Washington University in St. Louis are also involved.

The Northeast Ohio portion of the March of Dimes grant is awarded to the School of Medicine at Case Western Reserve University.

UH Case Medical Center's physicians, surgeons and scientists – all members of the faculty of Case Western Reserve University School of Medicine – are leaders in their respective fields, and their ongoing research programs are at the leading edge of medical progress. A strong emphasis on translational, or “bench-to-bedside,” research means that new and innovative treatments and technologies transfer more rapidly from the research laboratory to actual patient care.

TOMORROW'S CURES TODAY.



Dr. Michael Konstan

A pioneer in his field, **Dr. Michael W. Konstan** and his team are among the world's most innovative researchers in pediatric pulmonology, developing new treatments and leading the search for a cure for cystic fibrosis. Their efforts have led to several therapies that are in use today, including the only recommended therapy for treating lung inflammation in cystic fibrosis by using high doses of ibuprofen. This therapy has been shown to extend the lives of patients with cystic fibrosis. Dr. Konstan is also playing a major role in the investigation of several potentially curative therapies for cystic fibrosis.



Drs. Agne Petrosiute and Alex Huang

The St. Baldrick's Foundation, a volunteer-driven and donor-centered charity dedicated to raising funds for childhood cancer research, awarded \$412,594 in pediatric cancer research grants to support the work of **Robin Norris, MD**, *Director of the Pediatric Developmental Therapeutics Program at the Angie Fowler Adolescent & Young Adult Cancer Institute at*

UH Rainbow Babies & Children's Hospital, and Assistant Professor of Pediatrics at the School of Medicine, and Agne Petrosiute, MD, a pediatric hematologist/oncologist at UH Rainbow Babies & Children's Hospital, and Instructor of Pediatrics at the School of Medicine. The funds will support the evaluation of a novel class of therapy, CDK5 inhibitors, that have the potential to offer a new approach to childhood cancer treatment. Dr. Petrosiute is in the third year of a study evaluating the role of CDK5 and related molecules in

controlling the invasion and spread of medulloblastoma, the most common malignant brain tumor diagnosed in children. Dr. Norris is using laboratory and computer models to determine how to optimize therapy with CDK5 inhibitors and how to combine CDK5 inhibitors with traditional chemotherapy. Using information from these evaluations, they will develop a clinical trial of CDK5 inhibitors for adolescents and adults with relapsed cancer.

James Chmiel, MD, MPH, *Associate Director of the LeRoy W. Matthews Cystic Fibrosis Center and Clinical Director of Pediatric Pulmonology and Allergy/Immunology at UH Rainbow Babies & Children's Hospital, and Associate Professor of Pediatrics at the School of Medicine*, was appointed Director and Chief Executive of the Ohio Clinical Trials Collaborative (OCTC) based at Case Western Reserve University. The OCTC is a first-of-its-kind statewide model that leverages Ohio's Clinical and Translational Science Awards (CTSA), which include the Clinical and Translational Science Collaborative of Cleveland, The Ohio State University Center for Clinical and Translational Science, and the University of Cincinnati Center for Clinical and Translational Science and Training. The OCTC will contribute to the statewide “medical corridor” by establishing a statewide clinical trials structure that will facilitate access to and accelerate performance of trials available through commercial clinical research organizations, the pharmaceutical industry and government agencies. UH Case Medical Center is a founding partner of the OCTC.

Mitchell L. Drumm, PhD, *Vice Chair of Research in the Department of Pediatrics at Case Western Reserve University School of Medicine and UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics and Genetics at the School of Medicine*, led a study that examined the effects of genetic variation on the broad spectrum of disease severity in cystic fibrosis. The genes identified by this and subsequent studies, such as genome sequencing efforts, should facilitate the development of individualized treatments based on a patient's genetic profile, resulting in improved quality of life and increased survival rates. This study is funded by the NIH and the Cystic Fibrosis Foundation through the School of Medicine.

RESEARCH

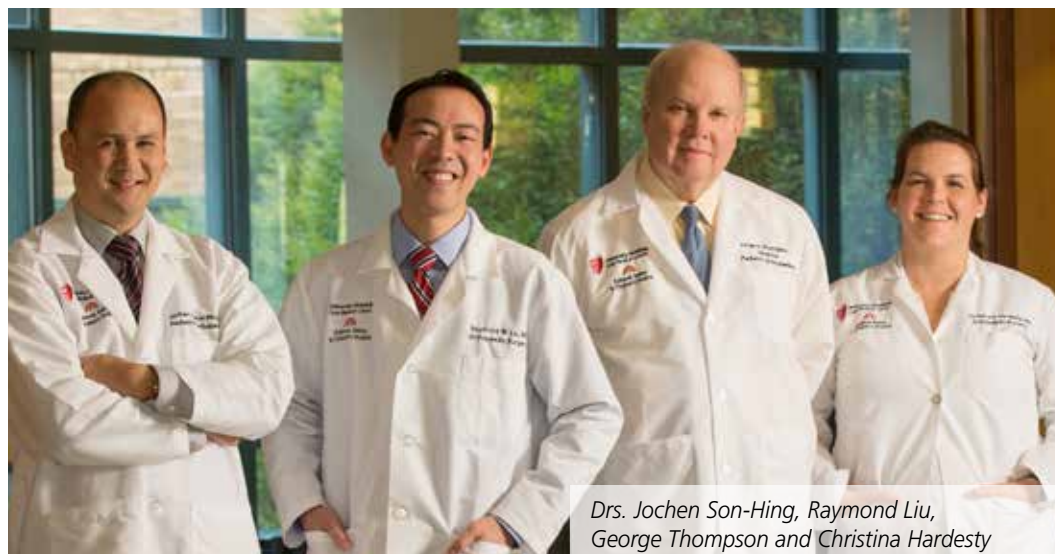
All National Institutes of Health (NIH) funding for basic and clinical research is awarded to the School of Medicine at Case Western Reserve University.

Raymond Liu, MD, a *pediatric orthopaedic surgeon at UH Rainbow Babies & Children's Hospital, and Assistant Professor of Orthopaedics and Pediatrics at the School of Medicine*, is investigating whether limb deformity can increase risk of future arthritis, the mechanisms which lead to slipped capital femoral epiphysis and femoro-acetabular impingement, and methodologies for obtaining better radiographs of the knee. Over the past two years, his work has received research awards from the European Paediatric Orthopaedic Society and the Limb Lengthening and Reconstruction Society.

Christina Hardesty, MD, a *pediatric orthopaedic surgeon at UH Rainbow Babies & Children's Hospital, and Assistant Professor of Orthopaedics and Adjunct Professor of Pediatrics at the School of Medicine*, is investigating treatment for spinal deformity, such as Risser casting for Scheurmann's kyphosis and methods for treating early onset scoliosis. Her work also focuses on the improvement in outcomes in spinal surgery, including decreased blood loss, decreased perioperative pain and improved use of implants.

Veerajalandhar Allareddy, MD, a *pediatric critical care medicine specialist at UH Rainbow Babies & Children's Hospital, and Clinical Assistant Professor at the School of Medicine*, was the lead author on a study that found mechanical ventilation is an independent predictor of higher mortality in hospitalized bone marrow transplant patients with acute respiratory failure. A retrospective analysis of the Nationwide Inpatient Sample, the largest all-payer hospital discharge database in the United States, was used for this study. Study authors reported that mortality was highest in patients needing mechanical ventilation for more than 96 hours, and that hospital resource utilization was significant.

RESEARCH

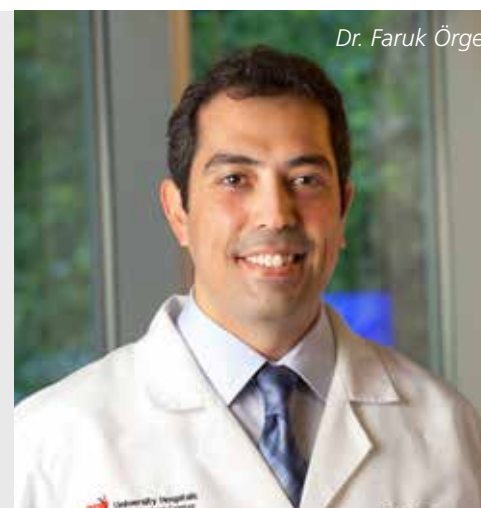


Drs. Jochen Son-Hing, Raymond Liu, George Thompson and Christina Hardesty

Allison Gilmore, MD, a *pediatric orthopaedic surgeon at UH Rainbow Babies & Children's Hospital, and Assistant Professor of Orthopaedics and Pediatrics at the School of Medicine*, is working on a pediatric cervical spine clearance program with lower doses of radiation, as well as research related to the origin of the medial patellofemoral ligament, which helps stabilize the patella in children. Other areas of research include a study involving throwing injuries in youth baseball players, and a protocol for treatment of osteomyelitis and septic arthritis in children.

Nancy Roizen, MD, *Chief of the Division of Developmental Behavioral Pediatrics & Psychology at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics at the School of Medicine*, is part of a study on autism in children with Down syndrome and a member of the national Developmental-Behavioral Pediatrics Research Network, which focuses on autism and ADHD. UH Rainbow Babies & Children's Hospital is part of the Case Western Reserve University Center for Autism Research.

H. Gerry Taylor, PhD, ABPP, in the *Division of Developmental Behavioral Pediatrics & Psychology at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics and Psychiatry at the School of Medicine*, led a study showing that extremely preterm birth impacted achievement, cognitive abilities and behavior across the first three years of school, placing these children at risk for developmental and learning problems. He said the results justify early identification and intervention. These studies were supported by a National Institute of Child Health and Human Development, NIH grant through the School of Medicine. Dr. Taylor also is involved in studies of family interventions for children with traumatic brain injury, which recently confirmed that an online counseling intervention reduces behavior problems in older teens. Additional NIH-funded projects include research on the effects of maternal HIV disease in Kenya on early child development and an upcoming study to identify children at highest risk for persisting problems following mild traumatic brain injury.



Dr. Faruk Öрге

Dr. Faruk H. Öрге led a team of investigators, engineers and entrepreneurs in the development of a novel proprietary strabismus screening and measurement device for preventing the second-leading cause of blindness in the United States, as well as aiding brain development and better functioning. The iStrab screens for eye misalignment and provides specific information about possible surgical interventions. Dr. Öрге is also working on a novel glaucoma device and new drug delivery methods for ocular diseases.

All National Institutes of Health (NIH) funding for basic and clinical research is awarded to the School of Medicine at Case Western Reserve University.

Allison Payne, MD, MS, a neonatologist at UH Rainbow Babies & Children's Hospital, and Instructor at the School of Medicine, led a study suggesting that premature infants with low-grade brain bleeds have similar neurodevelopmental outcomes to preterm infants with no bleeding at 18 to 22 months of age. The study will help physicians counsel parents on a child's long-term prognosis. Dr. Payne plans to follow these children out to early school age to determine if differences in neurodevelopmental outcomes show up later. The research was supported by the NIH through the School of Medicine and Rainbow Babies & Children's Foundation Fellowship Research Award Program. The NIH, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Center for Research Resources and National Center for Advancing Translational Sciences provided grant support for the Neonatal Research Network's generic database and follow-up studies.

Dr. Thomas Sferra led a study into the possible risk factors and options for reducing *clostridium difficile* infection (CDI) rates in hospitalized children. The study revealed hospitalized children are at increased risk for CDI, leading to longer hospital stays. CDI also was found to be more common in specific diseases, including inflammatory bowel disease, solid organ and hematopoietic stem cell transplant, and neoplastic disease. The underlying cause for increased infections is unknown. The next step will focus on emergency room visits and outpatient clinics to investigate community-acquired CDI. The studies are a multi-institutional collaboration with UH Rainbow Babies & Children's Hospital, Case Western Reserve University School of Medicine and the University of Oklahoma Health Sciences Center. Dr. Sferra is working on the development of novel gene- and small molecule-based therapies for inflammatory bowel disease and colon cancer. He and his team are also collaborating with a Chinese research group to examine the potential use of traditional Chinese medicines as therapies for inflammatory bowel disease and colon cancer.

Pediatric hematologists in the Sickle Cell Anemia Center at UH Rainbow Babies & Children's Hospital are major contributors to a national Phase III multicenter trial – TCD With Transfusions Changing to Hydroxyurea (TWiTCH) – comparing standard transfusion therapy to hydroxyurea, a daily oral pill for pediatric sickle cell anemia patients at high risk for stroke. **Connie Piccone, MD**, *Clinical Director of the Sickle Cell Anemia Center, and Assistant Professor of Pediatrics at the School of Medicine*, is leading the local site. Researchers are hopeful that hydroxyurea could significantly improve quality of life for children with this chronic illness by eliminating the need for chronic blood transfusions in patients at risk for stroke. The TWiTCH trial is funded by the National Heart, Lung, and Blood Institute under the NIH, through Case Western Reserve University School of Medicine.



Drs. Amma Owusu-Ansah, Connie Piccone and Sanjay Ahuja

Dr. Michele C. Walsh was site principal investigator of a randomized study evaluating whether induced whole-body hypothermia initiated between six and 24 hours after birth and continued for 96 hours in infants with hypoxic-ischemic encephalopathy (HIE) will reduce the incidence of death or disability at 18 to 24 months of age. Hypothermia shows promise as a neuroprotective therapy in HIE patients. The National Center for Research Resources collaborated on the study. Dr. Walsh also was part of a National Institute of Child Health and Human Development (NICHD) study examining the relationship between brain injury and outcome following neonatal HIE treated with hypothermia. Fewer areas of infarction and a trend toward more normal scans were noted in brain MRI following whole-body hypothermia. UH Rainbow Babies & Children's Hospital is one of 16 Eunice Kennedy Shriver NICHD Neonatal Research Network sites.

The Angie Fowler Adolescent & Young Adult Cancer Institute at UH Rainbow Babies & Children's Hospital is part of a national study of a novel form of immunotherapy poised to change the standard of care for pediatric high-risk neuroblastoma patients. The randomized Phase III clinical trial, sponsored by the National Cancer Institute through the Children's Oncology Group, is comparing the effectiveness of chemotherapy with or without chimeric antibody 14.18 (Ch14.18), a monoclonal antibody given alternately with the interleukin-2 (IL-2) protein and sargramostim, a granulocyte macrophage colony-stimulating factor (GM-CSF), following stem cell transplantation. Neuroblastoma is the third most common childhood cancer, comprising 6 to 10 percent of childhood cancer diagnoses. This study is trying to determine if Ch14.18 combined with immunotherapy improves event-free survival after meylolabative therapy and stem cell rescue. The study is funded by the Children's Oncology Group through the School of Medicine.

All National Institutes of Health (NIH) funding for basic and clinical research is awarded to the School of Medicine at Case Western Reserve University.

Abigail Glick, MD, a pediatric endocrinologist at UH Rainbow Babies & Children's Hospital, and an Instructor of Pediatrics at the School of Medicine, led a study on the role of regulatory T cells (Tregs), which control immune responses and prevent excessive inflammation in autoimmune thyroid disease. The study found that Tregs from autoimmune thyroid disease patients have impaired function, which would explain their autoimmunity. A subset of patients with Down syndrome also was studied and those without autoimmune disease exhibited normal Treg function. Future work will reveal the diagnostic potential and pathophysiology of Tregs in this disease. The study was funded by an NIH Physician Scientist Award (K12) through the School of Medicine.

Mark S. Scher, MD, Chief of the Division of Pediatric Neurology and Director of the Fetal/Neonatal Program and Neurointensive Care Program at UH Rainbow Babies & Children's Hospital, and Professor of Pediatrics and Neurology at the School of Medicine, contributed to the Handbook of Clinical Neurology through his research into later life consequences of gene-environment interactions. Dr. Scher directs research identifying changes in fetal and neonatal brain development, developing new interventions to prevent disease later in life. A developmental origins perspective helps identify prenatal contributions to childhood neurological problems and provides insight into a life-course approach to adult brain disorders.

Carol L. Rosen, MD, the J.S. Rube Endowed Chair in Pediatric Sleep Medicine and Medical Director of the Pediatric Sleep Center at UH Rainbow Babies & Children's Hospital, and Professor at the School of Medicine, led the UH Rainbow Babies & Children's Hospital site in the first study comparing

the watchful waiting strategy to the usefulness of adenotonsillectomy in reducing symptoms and improving cognition, behavior, quality of life and polysomnographic findings in school-age children with obstructive sleep apnea syndrome. The multisite Childhood Adenotonsillectomy Trial revealed the common surgery did not significantly improve attention or executive function, but it did show big improvements in parents' reports of behavior and quality of life. The study was funded by the NIH Heart, Lung, and Blood Institute through the School of Medicine.

Dr. Alexandre T. Rotta was the lead author on a study of in-flight emergencies involving children treated by the world's busiest global response center providing remote medical support to commercial airlines. The study found that pediatric in-flight medical emergencies rarely result in death, but death is most common in children with pre-existing medical conditions and in infants. Study authors said fatalities involving children under the age of 2 – lap infants – warrants further study in the wake of implications that co-sleeping plays a role in sudden infant death syndrome.

Karen Lidsky, MD, Director of Pediatric Critical Care Transport at UH Rainbow Babies & Children's Hospital, and Associate Professor at the School of Medicine, is leading the UH Rainbow Babies & Children's Hospital site efforts in the THAPCA trial, which is evaluating the efficacy of therapeutic hypothermia in increasing survival rates and reducing the risk of brain injury in infants and children who experience cardiac arrest in the hospital. Therapeutic hypothermia is a controlled lowering of body temperature and then maintaining that lower temperature for a period of time. This study is funded by two awards from the National Heart, Lung, and Blood Institute to the University of Michigan

and University of Utah, and is being done in collaboration with more than 35 children's hospitals (including UH Rainbow Babies & Children's Hospital); the Pediatric Emergency Care Applied Research Network, funded by the Emergency Medical Services for Children program; and the Collaborative Pediatric Critical Care Research Network funded by Eunice Kennedy Shriver National Institute of Child Health and Human Development. The study will follow children up to 12 months after the procedure with a neurologic examination and testing with a psychologist trained in rehabilitation.

Sharon B. Meropol, MD, PhD, a pediatrician and epidemiologist in the Division of General Pediatrics & Adolescent Medicine at UH Rainbow Babies & Children's Hospital, and Assistant Professor of Pediatrics and Epidemiology & Biostatistics at the School of Medicine, is the lead author on a study of the risks and benefits of antibiotic use for acute respiratory infections. In an effort to curb the prescribing of unnecessary antibiotics, Dr. Meropol is looking at how behavioral economics bend the rules on decisions impacting costs and benefits. She is also examining the relationship between colonization with resistant bacteria and antibiotic use. Data will be used to develop a model of possible strategies for antibiotic use decision-making, followed by studies to determine which strategies are most effective in treating illness while minimizing antibiotic resistance. Dr. Meropol's work is supported by grants through the School

of Medicine from the National Institute of Allergy and Infectious Diseases and the Clinical and Translational Science Award program of the NIH.

Rose Gubitosi-Klug, MD, PhD, Interim Chief of the Division of Pediatric Endocrinology, Diabetes & Metabolism and the Mary Blossom Lee Chair in Pediatric Diabetes at UH Rainbow Babies & Children's Hospital, and Associate Professor at the School of Medicine, is the principal investigator of the lead local center at Case Western Reserve University for the NIH-funded Epidemiology of Diabetes Intervention and Complications (EDIC) study. A follow-up to the Diabetes Control and Complications Trial (DCCT), the EDIC study showed that intensive blood glucose control reduces the risk of any cardiovascular disease event by 42 percent and nonfatal heart attack, stroke or death from cardiovascular causes by 57 percent. DCCT was the first large-scale study to definitively show that controlling blood sugar can beneficially affect early markers of heart disease, along with reducing the risk of diabetes-induced eye, kidney and nerve damage. These landmark studies – the longest running in NIH history – continue to shape modern day diabetes management, striving to achieve complication-free lives for children and adults living with the disease. Several new investigations are planned over the next five years, including studying the factors that help preserve insulin secretion in patients with type 1 diabetes and understanding the impact of diabetes on hearing.



The commitment to exceptional patient care begins with revolutionary discovery. University Hospitals Case Medical Center is the primary affiliate of Case Western Reserve University School of Medicine, a national leader in medical research and education and consistently ranked among the top research medical schools in the country by U.S. News & World Report. Through their faculty appointments at Case Western Reserve University School of Medicine, physicians at UH Case Medical Center are advancing medical care through innovative research and discovery that bring the latest treatment options to patients.

All National Institutes of Health (NIH) funding for basic and clinical research is awarded to the School of Medicine at Case Western Reserve University.

RESEARCH AND MEDICAL MILESTONES

1909

Milk distribution



1915

Babies' Dispensary physicians develop S.M.A. (Simulated Milk Adapted), one of the first commercially prepared infant formulas.

1900s

1950

Development of the mist tent at UH Rainbow Babies & Children's Hospital helps to provide moist air to cystic fibrosis patients.

1952

The premature nursery, precursor to the NICUs of today, admits its first infants.



1954

The hospital opens the first metabolic observation unit for babies in northern Ohio.

1957

The first open heart surgery performed at UH Rainbow Babies & Children's Hospital.

1957

The LeRoy W. Matthews Cystic Fibrosis Treatment and Research Center is founded, providing the first comprehensive and effective therapeutic approach to CF treatment.



Dr. LeRoy W. Matthews

1958

Benjamin Spock, MD, begins his groundbreaking child-rearing study.

1950s



Dr. Jerome Liebman

1960

Jerome Liebman, MD, performs the region's first newborn cardiac catheterization.

1964

The Cystic Fibrosis Core Center grant was awarded to the School of Medicine by the National Institutes of Health, and has been funded to the present day.

1968

Carl Doershuk, MD, pioneers the first pulmonary function testing equipment and studies used for infants and children.



1960s

1971

Jerome Liebman, MD, designs the first angiographic equipment for children.

1971

Hospital neonatologists develop silicone nasal prongs for the application of continuous positive airway pressure in treating respiratory distress in preterm and term neonates.

1971



Dr. Fanaroff in the new Preemie Suite

1972

Robert Stern, MD, develops the heparin lock, eliminating the need for continuous intravenous hookup in children needing frequent IV administration and eventually leading to home IV therapy.

1973

LeRoy W. Matthews, MD, establishes Pediatric Clinical Faculty (PCF) as a formally structured organization – the first of its kind in the nation for an academic medical center.

1973

Neonatologists Marshall Klaus, MD, and Avroy Fanaroff, MD, publish Care of the High-Risk Neonate – a textbook that continues to be updated and widely used today.

1974

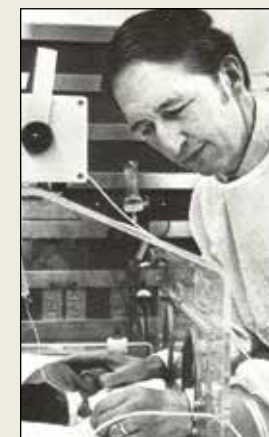
Hospital nursing staff initiates the ideal of family-centered care – a concept that remains a central guiding principle at many hospitals today.

1975

Maureen Hack, MD, establishes a comprehensive, long-term follow-up program evaluating neonates for growth and neuro-developmental issues.

1976

John Kennell, MD, and Marshall Klaus, MD, publish groundbreaking research on infant/parent bonding, laying the foundation for making family-centered care standard practice in newborn nurseries and hospitals.



Dr. John Kennell

1970s



Family-centered care

1976

UH Rainbow Babies & Children's Hospital opens its pediatric intensive care unit (PICU), one of the first in the nation.



1978

The region's first pediatric bone marrow transplant is performed at UH Rainbow Babies & Children's Hospital, curing a boy of aplastic anemia.

1978

Robert Wood, MD, and Robert Fink, MD, adapt the flexible fiberoptic bronchoscope for infants and children.

1979

Surgeons perform the first percutaneous endoscopic gastronomy (PEG) on an infant, safely inserting a feeding tube in the stomach without an incision or anesthesia.

1980

Hospital neonatologist Waldemar Carlo, MD, and respiratory therapist Robert Chatburn build a high frequency jet ventilator to more safely treat premature babies.

1982

Jeffrey Blumer, MD, establishes the hospital's Center for Drug Research – one of the nation's first pediatric clinical pharmacology and basic research programs.

1986

UH Rainbow Babies & Children's Hospital becomes a founding member of the National Institute of Child Health and Human Development (NICHD) Neonatal Research Network.

1987

The hospital becomes one of 21 centers nationwide to offer ECMO for babies with pulmonary and cardiac problems.

1989

The nation's first international health track in a pediatric residency program is offered by the hospital's Center for International Child Health.

1980s

Horvitz Tower



1990

Two children receive revolutionary gene therapy for an immune deficiency disorder at UH Rainbow Babies & Children's Hospital – the first in the world.

1990

Hospital Child Life Specialists, led by Mary Barkey, pioneer the Comfort Measures model to help children and their parents manage their health care experiences.

1991

A 19-day-old infant becomes the youngest donor heart recipient in Ohio after undergoing transplant surgery.

1991 – 1994

Hospital physicians participate in a national clinical study which demonstrates that hydroxyurea is an effective drug in preventing painful episodes of sickle cell disease.

1992

Paula Forsythe, RN, a neonatal nurse, receives a grant to create three semi-private spaces for families to stay with their babies prior to discharge – leading to NICUs with private rooms today.

1992

The Neonatal Transitional Care Center – one of the first step-down units for neonates in the nation – opens at UH Rainbow Babies & Children's Hospital.

1994

Hospital neonatologists pioneer research on surfactant replacement therapy to reduce fatal lung disease in infants.

1995

Hospital physician performs the region's first bone marrow transplant using umbilical cord blood.

1995

Michael W. Konstan, MD, publishes a study in the New England Journal of Medicine demonstrating ibuprofen's profound effect on cystic fibrosis (CF) patients' pulmonary function, leading to its widespread acceptance as the first effective therapy to suppress inflammation in CF.



Dr. Michael W. Konstan

1996

Hospital behavioral health specialists discover that juvenile migraines can be controlled and relieved by biofeedback more effectively than with drug treatment.

1996

Pediatric neurosurgeons help develop miniaturized tools for performing endoscopic brain surgery, reducing the need for open-skull surgery.

1997

The hospital advances the concept of family-centered care through its new Horvitz Patient Tower, which provides parent sleeping space at every child's bedside.



Dr. Dorr Dearborn

1997

Dorr Dearborn, MD, leads a study linking sudden infant death syndrome and a bleeding lung condition associated with exposure to black mold.

1997

Hospital pediatric pulmonologists release the first study data identifying environmental factors, such as mold, dust and other indoor allergens, as asthma triggers in inner-city children.

1990s

1998

The hospital becomes one of eight founding members of the Cystic Fibrosis Therapeutics Development Network.

1999

The hospital launches the Center for Bloodless Medicine and Surgery, becoming the first freestanding pediatric hospital in the nation to develop a bloodless program for children.

1999

Neonatologist Michele C. Walsh, MD, MS, co-authors the first multicenter clinical study on the use of low-dose inhaled nitric oxide in neonates.

View additional milestones at RainbowBabies.org/Timeline



Dr. Michele Walsh

2000s

2000
The first NIH-designated Polycystic Kidney Disease Research Center is established at the School of Medicine.

2001
The nation's first electrical stimulation therapy program for the treatment of children with swallowing disorders is founded at the hospital.

2002
Cystic fibrosis clinician-researchers, based on the research of Pamela B. Davis, MD, PhD, Professor of Pediatrics at the School of Medicine, conduct a first-of-its-kind gene therapy trial involving compacted DNA technology.



Dr. Maureen Hack

2003
Neonatologist Maureen Hack, MD, releases the first outcomes of a study on extremely low birth-weight premature infants after reaching young adulthood.

2004
The hospital establishes the nation's first No Hitting Zone program to educate staff and parents in the use of appropriate discipline.

2005
The hospital launches the Healthy Kids, Healthy Weight™ program – helping children and families adopt lifelong healthy habits.

2005
The hospital becomes the first institution in the tri-state region to offer TomoTherapy, a state-of-the-art treatment system that provides precise radiation, protecting normal tissue.

2005
The Center for Child Health and Policy is established.

2009
The hospital launches the Virtual Pediatric Surgery Education Series – a virtual symposium that brings surgical innovation and technology to physicians around the globe.

2009
The Quentin & Elisabeth Alexander Level IV Neonatal Intensive Care Unit opens – representing the apex of technologically advanced, family-centered neonatal care with 38 private rooms, allowing parents to stay with babies 24/7.



Surgical bed for newborns

2009
Hospital neonatologists, neonatal nurses and surgeons, in collaboration with NeoForce, develop and introduce the world's first surgical bed for newborns.

2009
Raymond Onders, MD, surgically implants a diaphragm pacer device in a pediatric patient for the first time, allowing the child to breathe without the use of a ventilator.



2010
Pediatric urologists Jonathan Ross, MD, and Edward Cherullo, MD, perform one of the world's first pediatric single-site nephrectomies.



Dr. Jonathan Ross

2011
Michael W. Konstan, MD, co-authors a study published in the New England Journal of Medicine on a new oral medication that provides major, sustained improvements in the treatment of cystic fibrosis.

2012
The hospital receives a \$12.7 million grant from the Centers for Medicare and Medicaid Innovation to establish a sustainable model to improve care, lower costs and improve the overall health and wellness of children.

2013
The opening of the first HealthSpot™ station – a leading-edge telehealth system developed by HealthSpot – brings a free, community-based alternative to the emergency department for children with nonlife-threatening health issues. The after-hours service connects patients to pediatric experts seven days a week through a private, walk-in kiosk with high-definition videoconferencing and interactive digital medical devices.

2010s



Quentin & Elisabeth Alexander Level IV NICU

All National Institutes of Health (NIH) funding for basic and clinical research is awarded to the School of Medicine at Case Western Reserve University.

The Harrington Project for Discovery & Development is a \$250 million national initiative to accelerate the development of medical breakthroughs by physician-scientists into medicines that benefit patients. It is a unique model that aligns, through mission and structure, nonprofit and for-profit resources into a system for drug development. The Harrington Project thereby addresses a set of major challenges in medicine that have created a development gap for promising discoveries.

The Harrington Discovery Institute at University Hospitals Case Medical Center, the nonprofit component of The Harrington Project, enables physician-scientists to translate their clinical insights and research into novel therapies that benefit patients and society. Through an annual competition, the Harrington Discovery Institute selects a group of medical innovators known as Harrington Scholar-Innovators whose projects are funded and actively guided by drug discovery experts toward the clinical realm.

HARRINGTON DISCOVERY INSTITUTE
AT UNIVERSITY HOSPITALS CASE MEDICAL CENTER

A CATALYST FOR A NEW MODEL IN DRUG DEVELOPMENT

2014 SCHOLARS

The 2014 class of Harrington Scholar-Innovators selected by the institute's scientific advisory board are:

Jayakrishna Ambati, MD
University of Kentucky

Darren Carpizo, MD, PhD
Rutgers Cancer Institute of New Jersey

Garret FitzGerald, MD
University of Pennsylvania

Mark Humayun, MD, PhD
University of Southern California

John Kheir, MD
Harvard University

Rahul Kohli, MD, PhD
University of Pennsylvania

Gavril Pasternak, MD, PhD
Memorial Sloan-Kettering Cancer Center

Irina Petrache, MD
Indiana University

David Rowitch, MD, PhD
University of California, San Francisco

Jean Tang, MD, PhD
Stanford University

David Wald, MD, PhD
Case Western Reserve University

To learn more, visit HarringtonDiscovery.org.



THE HARRINGTON SCHOLAR-INNOVATOR GRANT PROGRAM: CHANGING THE STATUS QUO

*Jonathan Powell, MD, PhD
Harrington Scholar-Innovator 2013
The Johns Hopkins University, Baltimore, Md.
Diabetes*

Dr. Powell, an oncologist and associate professor of oncology at The Johns Hopkins University, was conducting research into the role of T cells in the body's immune system using laboratory mice and his team noted that a group of mice with genetically altered immune cells became obese. The mice were generating brown adipose tissue, which plays a role in regulating body weight and metabolism, including glucose tolerance and insulin sensitivity.

Since this initial observation, his team has identified a candidate gene that they believe promotes the creation of brown fat. **"If this turns out to be the case, it might lead to the development of a completely novel approach to treating type 2 diabetes and, potentially, obesity and hyperlipidemia,"** Dr. Powell says.

The Harrington Discovery Institute offers Dr. Powell a unique opportunity to rapidly advance this discovery. "Not only does it provide funding through the Harrington grant," he says, "it also provides the scientific and business resources to develop our findings into a drug."

To read more about the 2013 Harrington Scholar-Innovators, visit HarringtonDiscovery.org/Scholar-Innovator2013.

To be notified of the next Harrington Scholar-Innovator Grant call for proposals, email Natalie.Haynes@UHhospitals.org.

In 1996, UH created a clinical trials office at what is now UH Case Medical Center. At the time of its creation, the focus and management of clinical trials was managed by a small staff. This team was charged with the fiscal management of a handful of clinical trials, as well as regulatory oversight of human subject protections. By 2000, the office became known as the UH Research Institute.

From 1996 to 2003, the clinical research enterprise at the academic medical center continued to expand, resulting in exponential growth of both the staff and the research activity managed. The institute grew into a much broader

support department and became the **Center for Clinical Research and Technology (CCRT)**, which consists of seven offices dedicated to developing a standardized platform ensuring the responsible conduct of research for patients through scientific, regulatory, legal, ethical and fiscal review.

The CCRT now provides infrastructure, programmatic, personnel and administrative support for all research activities performed at UH by UH medical or scientific staff. These medical scientists are national and international leaders in their respective fields and are committed to **identifying standards of excellence** and potential areas for improvement to promote and **facilitate clinical and translational research**.

By 2013, the CCRT activities amounted to over \$42 million at UH and \$167 million of UH activity related to the affiliation between UH and Case Western Reserve University School of Medicine. These funds emanate from nearly 1,200 active grants and contracts at UH and nearly 700 additional grants that annually fund the shared faculty of UH and the School of Medicine through nearly 2,300 active human research protocols.

To learn more about the Center for Clinical Research and Technology directly, visit UHhospitals.org/Clinical-Research, call 216-844-5576 or email ClinicalResearch@UHhospitals.org.

UH Case Medical Center **CENTER FOR CLINICAL RESEARCH AND TECHNOLOGY**

Clinical research has always driven the practice of medicine to new heights and, as such, is deeply embedded within the very mission statement of University Hospitals:

To Heal. To Teach. To Discover.



Department of Pediatrics

Chairman

Michael W. Konstan, MD
Chairman,
Department of Pediatrics
UH Case Medical Center and
Case Western Reserve University
School of Medicine
Austin Ricci Chair in Pediatric
Pulmonary Care and Research,
UH Rainbow Babies &
Children's Hospital
Gertrude Lee Chandler Tucker
Professor,
Case Western Reserve University
School of Medicine

Vice Chairs

Martha Wright, MD, MEd
Vice Chair for Education
Professor
Mitchell Drumm, PhD
Vice Chair for Research
Professor
Ethan Leonard, MD
Vice Chair for Quality
Associate Professor

Adolescent Gynecology

Marjorie Greenfield, MD
Professor
Lisa Perriera, MD
Assistant Professor

Adolescent Medicine

Rina Lazebnik, MD
Professor
Sara Lee, MD
Assistant Professor

Cardiology

Christopher Snyder, MD
Division Chief
KeyBank – Meyer Family Chair
for Excellence in Leadership
Associate Professor
Ravi Ashwath, MD
Assistant Professor
Marcelo Auslender, MD
Associate Professor

James Hill, MD

Assistant Professor

Jerome Liebman, MD

Professor Emeritus

Jill Shivapour, MD

Assistant Professor

James Strainic, MD

Assistant Professor

Child Advocacy and Child
Protection

Lolita McDavid, MD

Director, Professor

Child & Adolescent Psychiatry

John Hertzner, MD

Interim Division Director
Clinical Director, Child &
Adolescent Psychiatry

Assistant Professor

Felipe Amunategui, PhD

Associate Professor

Joseph C. Bedosky, PhD

Assistant Professor

Vincent Caringi, MD

Senior Instructor

Maryellen Davis, MD

Clinical Associate Professor

Aaron Ellington, PhD

Senior Instructor

Marcie Hall Mennes, MD

Assistant Professor

Nora McNamara, MD

Senior Instructor

Molly McVoy, MD

Assistant Professor

Robin Mogul, MD

Senior Instructor

Maria Pagano, PhD

Associate Professor

Robert Stansbrey, MD

Assistant Professor

Libbie Stansifer, MD

Clinical Instructor

Tiffany Thomas, MD

Senior Clinical Instructor

Karen Tien, PhD

Senior Instructor

Cheryl Wills, MD

Assistant Professor

Solomon Zarea, DO

Assistant Professor

Comprehensive Care

Richard Grossberg, MD

Director, Associate Professor

Critical Care

Alexandre T. Rotta, MD

Division Chief, Professor

Veerajalandhar Allareddy, MD

Assistant Professor

Michael Anderson, MD

Chief Medical Officer,
UH Case Medical Center

Associate Professor

Nicole Johnson, MD

Assistant Professor

Karen Lidsky, MD

Associate Professor

Katherine Mason, MD

Assistant Professor

Steve Shein, MD

Assistant Professor

David Speicher, MD

Assistant Professor

Richard Speicher, MD

Assistant Professor

Anne Stormorken, MD

Associate Professor

Philip Toltzis, MD

Professor

Joan Zoltanski, MD

Assistant Professor

Developmental Behavioral
Pediatrics & Psychology

Nancy Roizen, MD

Division Chief, Professor

Christine Barry, PhD

Associate Professor

Denise Bothe, MD

Assistant Professor

Susan Bowen, PhD

Assistant Professor

Howard Hall III, PhD, PsyD
Professor

Rebecca Hazen, PhD

Assistant Professor

Jane Holan, MD

Assistant Professor

Carolyn Ievers-Landis, PhD

Associate Professor

Shanna Kralovic, DO

Assistant Professor

Karen Olness, MD

Professor

Kristine Rork, PhD

Assistant Professor

Sarah Cain Spannagel, PhD

Clinical Instructor

Rachel Tangen, PhD

Assistant Professor

H. Gerry Taylor, PhD

Professor

Emergency Medicine

Deanna Dahl-Grove, MD

Interim Division Chief,

Associate Professor

Elizabeth Allen, MD

Associate Professor

Ann Bacevice, MD

Assistant Professor

Karen Camasso, MD

Assistant Professor

Amy Grube, MD

Assistant Professor

Haitham Haddad, MD

Assistant Professor

Brendan Kilbane, MD

Assistant Professor

Anne Lyren, MD

Associate Professor

Lawrence Quang, MD

Assistant Professor

Sarah Romero, MD

Assistant Professor

Regina Rosace, MD

Assistant Professor

Jerri Anne Rose, MD

Assistant Professor

Erika Tress, DO

Assistant Professor

Martha Wright, MD

Professor

Endocrinology, Diabetes &
Metabolism

Rose Gubitosi-Klug, MD, PhD

Interim Division Chief

Mary Blossom Lee Chair in

Pediatric Diabetes

Associate Professor

Abigail Glick, MD

Instructor

Beth Kaminski, MD

Assistant Professor

Douglas Kerr, MD, PhD

Professor

Michaela Koontz, MD

Assistant Professor

Sarah MacLeish, DO

Assistant Professor

Sumana Narasimhan, MD

Assistant Professor

Naveen Uli, MD

Associate Professor

Teresa Zimmerman, MD

Assistant Professor

Epilepsy

Ingrid Tuxhorn, MD

Division Chief

Professor

Jun Park, MD

Assistant Professor

Asim Shahid, MD

Assistant Professor

Gastroenterology, Hepatology
and Nutrition

Thomas J. Sferra, MD

Division Chief

Martin and Betty Rosskamm

Endowed Chair in Pediatric

Gastroenterology in honor

of Fred C. Rothstein, MD

Associate Professor

Atiye Aktay, MD

Assistant Professor

Virginia Baez-Socorro, MD

Assistant Professor

Ali Khalili, MD

Assistant Professor

Fred C. Rothstein, MD

President, UH Case

Medical Center

Clinical Professor

Judy Splawski, MD

Associate Professor

General Pediatrics

Rina Lazebnik, MD

Division Chief, Professor

Aparna Bole, MD

Assistant Professor

Mireille Boutry, MD

Associate Professor

Laura Caserta, MD

Assistant Professor

Michael Dell, MD

Associate Professor

Amy Edwards, MD

Assistant Professor

Erin Frank, MD

Assistant Professor

Lydia Furman, MD

Associate Professor

Sara Lee, MD

Assistant Professor

Sharon Meropol, MD, PhD

Assistant Professor

Keith Ponitz, MD

Assistant Professor

Allayne Stephans, MD

Assistant Professor

Robyn Strosaker, MD

Associate Professor

Genetics

Shawn McCandless, MD

Division Chief, Associate Professor

Jirair Bedoyan, MD, PhD

Clinical Assistant Professor

Suzanne Debrosse, MD

Clinical Assistant Professor

Laura Konczal, MD

Clinical Instructor

Anna Mitchell, MD, PhD

Assistant Professor

Aditi Parikh, MD

Clinical Instructor

Anthony Wynshaw-Boris, MD

Professor

Arthur Zinn, MD, PhD

Associate Professor

Physicians receive their academic appointments and their accompanying titles from
Case Western Reserve University School of Medicine.

Clinicians and Scientists at UH Rainbow Babies & Children's Hospital and Case Western Reserve University School of Medicine



University Hospitals
Case Medical Center



Rainbow Babies
& Children's Hospital



SCHOOL OF MEDICINE
CASE WESTERN RESERVE
UNIVERSITY

Hematology and Oncology

John J. Letterio, MD

*Division Chief
Jane and Lee Seidman Chair
in Pediatric Cancer Innovation
Professor*

Sanjay Ahuja, MD

Associate Professor

Jennifer Anderson, PhD

Assistant Professor

Peter DeBlank, MD

Assistant Professor

Rachel Egler, MD

Assistant Professor

Alex Huang, MD, PhD

Associate Professor

Yousif Matloub, MD

*Angie Fowler Chair
in Adolescent & Young
Adult Oncology
Professor*

Robin Norris, MD, MPH

Assistant Professor

Amma Owusu-Ansah, MD

Clinical Instructor

Agne Petrosiute, MD

Instructor

Connie Piccone, MD

Assistant Professor

Ayman Saleh, MD

Adjunct Assistant Professor

Duncan Stearns, MD

Assistant Professor

Infectious Diseases and

Rheumatology

Grace McComsey, MD

*Division Chief
Rainbow Babies & Children's
Foundation John Kennell Chair of
Excellence in Pediatrics
Professor*

Elizabeth Brooks, MD, PhD

Assistant Professor

Arlene Dent, MD, PhD

Assistant Professor

Ankita Desai, MD

Assistant Professor

Sahera Dirajlal-Fargo, DO

Instructor

Frank Esper, MD

Assistant Professor

Claudia Hoyen, MD

*Vice Chair,
UH Institutional Review Board
Assistant Professor*

Ethan Leonard, MD

Associate Professor

Angela Robinson, MD

Assistant Professor

Maternal Fetal Medicine

Honor Wolfe, MD

*Division Chief, Mary D. Fergus
Endowed Chair in Maternal
and Fetal Medicine
Professor*

Jane Corteville, MD

Assistant Professor

Method Duchon, MD

Assistant Professor

Stacey Ehrenberg, MD

Assistant Professor

David Hackney, MD

Assistant Professor

Noam Lazebnik, MD

Professor

Elizabeth Ruzga, ND, CNM

Assistant Clinical Professor

George Van Buren, MD

Assistant Professor

Neonatology

Michele Walsh, MD, MS

*Division Chief
William and Lois Briggs Chair in
Neonatology
Professor*

Prasad Achanti, MD

Clinical Associate Professor

Jill Baley, MD

Professor

Monika Bhola, MD

Associate Professor

Maira Crowley, MD

Assistant Professor

Avroy Fanaroff, MD

*Eliza Henry Barnes Emeritus Chair
in Neonatology
Professor Emeritus*

Jonathan Fanaroff, MD, JD

Associate Professor

Katherine Griswold, MD

Assistant Professor

Maureen Hack, MD

Professor

Anna Maria Hibbs, MD,

MSCR

Assistant Professor

Richard Martin, MD

*Drusinsky-Fanaroff Chair in
Neonatology
Professor*

Mary Nock, MD

Associate Professor

Mary Elaine Patrinos, MD

Assistant Professor

Allison Payne, MD

Instructor

Thomas Michael Raffay, MD

Instructor

Eileen Stork, MD

Professor

Andrea Trembath, MD, MPH

Instructor

Sreekanth Viswanathan, MD

Assistant Professor

Deanne Wilson-Costello, MD

Professor

Gulgun Yalcinkaya, MD

Assistant Professor

Qin Yao, MD

Assistant Professor

Nephrology

Robert Cunningham III, MD

*Division Chief
Clinical Professor*

Tamar Springel, MD

Assistant Professor

Beth Vogt, MD

Associate Professor

Neurology

Mark Scher, MD

Division Chief, Professor

Nancy Bass, MD

Associate Professor

Edward Gilmore, MD, PhD

Instructor

Deborah Gold, MD

Assistant Professor

Max Wiznitzer, MD

Professor

Palliative Care

Dianna Yip, DO

Assistant Professor

Pathology

Raymond Redline, MD

Professor

Pulmonology, Allergy and

Immunology

Benjamin Gaston, MD

Division Chief

Professor

James Chmiel, MD

Associate Professor

Daniel Craven, MD

Assistant Professor

Elliott Dasenbrook, MD

*Connie and Jim Brown Chair in
Pediatric Pulmonary Survivorship
Assistant Professor*

Pamela Davis, MD, PhD

*Dean, School of Medicine
Professor*

Dorr Dearborn, PhD, MD

*Mary Ann Svetland Professor
and Chairman, Environmental
Health Sciences*

Amy DiMarino, DO

Assistant Professor

Meeghan Hart, MD

Assistant Professor

Leigh Ann Kerns, MD

Assistant Professor

Michael W. Konstan, MD

Professor and Chairman

Laura Milgram, MD

Associate Professor

Ross Myers, MD

Assistant Professor

Carol Rosen, MD

*J.S. Rube Endowed Chair in
Pediatric Sleep Medicine
Professor*

Kristie Ross, MD

Assistant Professor

Eli Silver, MD

Assistant Professor

Kim Spoonhower, MD

Assistant Professor

Robert Stern, MD

Professor

Steven Strausbaugh, MD

Assistant Professor

Sports Medicine

Amanda Weiss Kelly, MD

Division Chief

Associate Professor

Susannah Briskin, MD

Assistant Professor

Mary Solomon, DO

Assistant Professor

Rainbow Surgical Specialists

Edward M. Barksdale Jr.,

*MD, FACS, FAAP
Surgeon-in-Chief
Chief, Pediatric Surgery
Robert J. Izant, Jr., MD, Endowed
Chair in Pediatric Surgery
UH Rainbow Babies &
Children's Hospital
Vice Chairman, Department of
Surgery, UH Case Medical Center
Professor of Pediatrics*

Anesthesiology

Paul Tripi, MD

Division Chief

Associate Professor

Anjali Adur, MD

Assistant Professor

Maura Berkelhamer, MD

Assistant Professor

Anna Clebone, MD

Clinical Assistant Professor

Sherine Ghafoori, MD

Assistant Professor

Mark Goldfinger, MD

Assistant Professor

Ann Lawrence, MD

Assistant Professor

Sheryl Modlin, MD

Assistant Professor

Kasia Rubin, MD

Assistant Professor

John Stork, MD

Assistant Professor

Judith Van Antwerp, MD

Clinical Assistant Professor

Cardiothoracic Surgery

Peter C. Kouretas, MD, PhD

Division Chief

Associate Professor

Dentistry/Oral Surgery

Gerald Ferretti, DDS

Division Chief

*Anne Hunter Jenkins Endowed
Master Clinician in Pediatric
Dentistry and Orthodontics
Professor*

Margaret Ferretti, DMD

Visiting Assistant Professor

Sharon Freudenberger, DDS

Associate Professor

Pediatric Surgery

Edward M. Barksdale Jr.,

MD, FACS, FAAP

Professor

Scott Boulanger, MD, PhD,

FACS

Assistant Professor

Anne Kim, MD

Clinical Assistant Professor

Physicians receive their academic appointments and their accompanying titles from
Case Western Reserve University School of Medicine.



University Hospitals
Case Medical Center



SCHOOL OF MEDICINE
CASE WESTERN RESERVE
UNIVERSITY

Neurosurgery

Warren R. Selman, MD

*Harvey Huntington Brown, Jr.,
Professor and Chair,
Department of
Neurological Surgery
UH Case Medical Center and
Case Western Reserve University
School of Medicine
Director, University Hospitals
Neurological Institute
Neurosurgeon-in-Chief,
University Hospitals*

Nicholas Bambakidis, MD

Associate Professor

Alan Hoffer, MD

Assistant Professor

Jonathan Miller, MD

Assistant Professor

Orthopaedic Surgery

George H. Thompson, MD

Division Chief, Professor

Robert Anderson, MD

Associate Professor

Daniel Cooperman, MD

Professor

Patrick Getty, MD

Associate Professor

Allison Gilmore, MD

Assistant Professor

Christina Hardesty, MD

Assistant Professor

Stephen Lacey, MD

Associate Professor

Raymond Liu, MD

Assistant Professor

Jochen Son-Hing, MD

Assistant Professor

Ophthalmology

**Faruk H. Öge, MD, FFAO,
FAAP**

*Division Chief
William R. and Margaret E.
Althans Chair in Pediatric
Ophthalmology
Associate Professor*

Florin Grigorian, MD

Clinical Instructor

Paula Grigorian, MD

Clinical Instructor

Sara E. Schoeck, OD

Senior Instructor

Otolaryngology/ENT

Todd Otteson, MD

*Division Chief
Associate Professor*

James E. Arnold, MD

Julius W. McCall Professor

Cliff Megerian, MD

*Chairman of Otolaryngology
– Head and Neck Surgery
Richard W. and Patricia R. Pogue
Chair in Auditory Surgery and
Hearing Sciences
Professor*

Maroun Semaan, MD

Assistant Professor

Jay Shah

Assistant Professor

Plastic Surgery

Gregory E. Lakin, MD

*Division Chief
Clinical Assistant Professor*

Transplant and Pancreatic – Biliary Surgery

James Schulak, MD

Professor

Urology

Jonathan Ross, MD

*Division Chief
Associate Professor*

Edward Cherullo, MD

Assistant Professor

Lynn Woo, MD

Assistant Professor

Physicians in the Community

Catherine Arora, MD

Marcus Baratian, MD

Janet Benish, MD

Eva Bhadra, MD

Anita Bhardwaj, MD

Cynthia M. Brawner, MD

Joann Brewer, MD

Deborah Brindza, MD

Diane Burgin, MD

Elizabeth Carpenter, MD

Michele Carruozzo, MD

Amy Carruthers, MD

Peter Catanzaro, MD

Lisa Cherullo, MD

Jennifer Coliadis, MD

Marcia Columbro, MD

Maria Coutinho, MD

Cathleen Coyne, MD

Naser Danan, MD

Lori D'Avello, MD

**Lyn Hollis Dickert-Leonard,
MD**

Stephen Dutko, MD

Susan Dykeman, MD

Joy Ertel, MD

Ann Failing, MD

Douglas Fall, MD

Elizabeth Feighan, MD

Douglas Fleck, MD

Valerie Fouts-Fowler, DO

Deborah Friedman, MD

Marilee Gallagher, MD

Andrew Garner, MD

**George Bradley Gascoigne,
MD**

Ernesto Gerardo, MD

Cynthia Gherman, MD

Gregory Golonka, MD

Mary Kay Greenberg, MD

Sara Guerrero-Duby, MD

Julie Gunzler, MD

Donald Hackenberg, MD

Elizabeth Hagen, MD

Angela Hardman, MD

Andrew Hertz, MD

Kari Jacono, MD

Steven Johnson, MD

Stephen Jurak, MD

Teresa Kammerman, MD

Jon Kannensohn, MD

Nafisa Kondru, MD

Michelle Levy, MD

Julia Libecco, MD

Mark Malinowski, MD

Laura Mason, MD

Brenda McGhee, MD

Stacey Memberg, MD

Martha Myers, MD

K.C. Nagaprakash, MD

Scot Occhionero, MD

Michael Petrosky, MD

Brian Postma, MD

Justin Rich, MD

Dawn Riebe, MD

Laurel Roach-Armao, MD

Arlene Roble, MD

Barbara Rowane, MD

Michael Saalouke, MD

Zane Saalouke, MD

Avani Shah, MD

Neha Sheth, MD

Algirdas Skrinska, MD

Trisha Snair, DO

Katarina Stopko, MD

Cynthia Strieter-Boland, MD

Dieter Sumerauer, MD

Hurikadale Sundares, MD

Kevin Turner, MD

**James Michael Underwood,
DO**

Eriks Usis, MD

Kathleen Utech, MD

Kimberly Vacca, MD

Susan Vargo, MD

Ryan Vogelgesang, MD

Katherine Wagner, MD

David Walker, MD

Carly Wilbur, MD

Terry Wiseman, MD

Lloyd Yeh, MD

Sarah Youssef, MD

Brian Zack, MD

To refer a patient or learn more about
UH Rainbow Babies & Children's Hospital,
call **216-UH4-PEDS** (844-7337) or visit
RainbowBabies.org.



University Hospitals
Case Medical Center

Cleveland | Ohio



Rainbow Babies
& Children's Hospital