Our faculty maintain leadership roles in prestigious national and international organizations, including the Institute of Medicine, the Society for Pediatric Research, the American Pediatric Society, and the Association of American Physicians. We are committed to advancing pediatric health through groundbreaking research initiatives. Our research funding has grown significantly—extramural funding in 2011 exceeded $23 million. We continue to expand our research collaborations with the Child Health and Development Institute, directed by Bruce Gelb, MD, Professor of Pediatrics (Cardiology), and Genetics and Genomic Sciences, to specifically address diseases with high prevalence and morbidity, including diabetes and obesity, allergies and asthma, neurodevelopmental disorders, and cardiovascular disease in the community Mount Sinai serves and beyond. Additionally, the new Institute for Genomics and Multiscale Biology, led by Eric E. Schadt, PhD, will serve as a hub for genomics research and computational analysis to provide fundamental insight into the causes of childhood diseases.

In the clinical area, our pediatricians are partnering with internal medicine colleagues to develop disease-focused “Centers of Excellence” that span the generational spectrum, a critical need as children with once fatal childhood conditions survive into adult life. Our robust training programs attract top candidates: In 2011, we matched 19 interns out of more than 1,700 applicants.

In this Report, we spotlight exciting programs at Kravis Children’s Hospital as we continue our long and distinguished tradition of excellence in innovative patient care, community involvement, education, and research.

In 2011, Mount Sinai’s Pediatric Gastroenterology Division began holding “IBD Day” each week to provide patients with pediatric inflammatory bowel disease (IBD) access to medical, nursing, social work, nutrition, psychology, and child-life specialists in one setting. It is a one-of-a-kind program in the New York City area for children and adolescents with Crohn’s disease and ulcerative colitis.

“The psychosocial aspect of the disease is so often overlooked, and it can be tremendously important,” says Keith Benkov, MD, Associate Professor, Gastroenterology, and Chief of the Division of Pediatric Gastroenterology. “The diagnosis of Crohn’s or colitis in a child can have a significant emotional impact on the family, and we try to minimize the disruption that can occur.”

The Center’s social worker, Bambi Fisher, LCSW, meets with families after medical exams to discuss the issues they will face and provide them with the necessary resources. “Sometimes, after a new diagnosis, parents don’t know what they need yet, and they may feel overwhelmed,” says Ms. Fisher. “But a few months later, after the dust has settled, I’ll get a call asking about something we had discussed. They know we’re here for them.”

For a child with Crohn’s disease or ulcerative colitis, there are many practical aspects of school life and social life that have to be managed, such as school attendance, participation in sports, and how to deal with friends, sleepovers, and going off to camp or college. Just deciding what to pack for lunch can be challenging. “Many times people don’t ask their doctor all the questions they have about diet,” says nutritionist Erica Ilton, RD, CDN. “I’m here to help them make sense of the swirl of information out there about food and supplements and form a game plan.”
Treating an Aggressive Form of Nephrotic Syndrome

A 3-year-old boy developed an aggressive form of nephrotic syndrome, focal segmental glomerulosclerosis (FSGS). Protein was leaking from the blood into the urine, causing swelling around the eyes and ankles. Medications failed to control the disease. Five years later, his kidney function had deteriorated, he had high blood pressure, and physicians told his parents kidney failure was imminent.

The family came to the Division of Pediatric Nephrology and Hypertension of the Kravis Children's Hospital at Mount Sinai, where Division Chief Jeffrey Saland, MD, Associate Professor of Pediatrics, leads a multidisciplinary team of pediatric nephrologists, child-life professionals, social workers, dieticians, and dialysis nurses who are experienced with FSGS. The team helped the family understand the disease and the challenges of living with kidney failure. Then, during the months when the young patient required hemodialysis, Jessica Reid-Adam, MD, Instructor of Pediatrics, and Hilary Hotchkiss, MD, Director of Pediatric Dialysis and Assistant Professor of Pediatrics, developed and managed a therapy plan with the family to optimize the child's growth and development. Ultimately, it was determined that a kidney transplant, as well as a bilateral native nephrectomy—to help control the high blood pressure and simplify care of the transplant—was needed. Two transplant surgeons, Michael Goldstein, MD, Associate Professor of Surgery and Director of Renal and Pancreatic Transplantation, and Juan Rocca, MD, Assistant Professor of Surgery, led that effort.

Dr. Rocca conducted the first stage of an innovative procedure—one that the surgical team pioneered—by performing a laparoscopic, bilateral native nephrectomy. A second group of surgeons began a laparoscopic nephrectomy on the boy's mother. Dr. Goldstein transplanted the mother's kidney into the boy through the same 5-cm mini-incision that was used to remove his damaged kidneys. Within minutes, the boy's body began producing healthy urine. Five days later, both were safely home.

Jeffrey Stock, MD, Director of Pediatric Urology, later removed the boy's internal stent and dialysis catheter as outpatient procedures.

Finally, by participating in a clinical research study aimed at preventing serious viral infections after transplant, led by Corinne Benchimol, DO, Clinical Director of Pediatric Nephrology and Assistant Professor of Pediatrics, the family took an active role in advancing care for future kidney patients. Today, the boy is doing well, attends fourth grade, and will be closely monitored by the Mount Sinai team as he grows up.

Understanding Growth Failure

During the past 40 years, research of growth and growth hormone deficiency has rapidly increased, and studies have shown growth hormone therapy is safe and effective. However, challenges remain in diagnosing underlying problems leading to growth failure. The tools available for diagnosis can be invasive, time-consuming, and difficult to administer and interpret. The Kravis Children's Hospital at Mount Sinai offers patients and their families the expertise and patient-centered approach of a pediatric endocrinology center and subspecialty team able to provide age-adjusted diagnostic and therapeutic care to children with growth issues.

One example is the case of a 2-year-old patient with growth failure who came to Robert Rapaport, MD, Chief of Mount Sinai's Division of Pediatric Endocrinology and Diabetes. The patient, who started failing to grow sufficiently at 3 months of age, was more than four standard deviations below the mean, or 0.05 percent for height. Baseline blood work revealed low indices of growth hormone production, which were suggestive of growth hormone deficiency.

The patient underwent a three-hour growth hormone stimulation test that required placement of an intravenous line and the administration of medications to stimulate his pituitary gland to make growth hormone. The test, which is challenging to administer to a toddler, revealed he was growth-hormone deficient. He received an MRI that required sedation and expert neuroradiological interpretation, which showed an abnormally developed pituitary gland with a thinning of the infundibulum.

The growth hormone treatment, its potential side effects, the expectations from the treatment, and course of monitoring were reviewed. The family was instructed in the administration of the growth hormone—daily injections—and the patient started treatment. He has responded beautifully: At his last visit, he was 4 years old and had just reached the 25th percentile for height. Michelle Klein, MD, a Fellow in Pediatric Endocrinology and Diabetes, who is now a Clinical Instructor, participated in the patient's care with Dr. Rapaport.
The patient, a 14-year-old girl with a history of multiple cardiac surgeries, including a Ross procedure five years prior, was referred to Kravis Children’s Hospital at Mount Sinai with progressive dyspnea with minimal physical exertion. Her echocardiogram showed severe stenosis (85 mmHg) across the right ventricle to pulmonary artery conduit.

Barry Love, MD, Associate Professor of Pediatrics, and of Medicine (Cardiology), and Director of the Congenital Cardiac Catheterization Laboratory, decided that rather than submit the patient to another surgery, he would address her problem in the catheterization laboratory. The conduit would first need to be rehabilitated with multiple telescoping stents, and then the pulmonary valve replaced—without the need for surgery.

The Melody® Transcatheter Pulmonary Valve, recently approved by the U.S. Food and Drug Administration, is a specially treated bovine venous valve mounted on a stent. The valved stent is crimped onto a special balloon expandable delivery system to allow for transcatheter placement. Initial results show promising effectiveness of this therapy for limiting the adverse effects of chronic pulmonary regurgitation.

From a femoral venous approach, three high-strength Palmaz large-diameter stents were expanded across the stenotic conduit to a maximum diameter of 22mm. Multiple stents were used to improve the radial strength of the scaffold and minimize the risk of stent fracture.

After stenting, the gradient across the conduit was eliminated and the recoil (the difference in diameter between maximum and minimum diameter) was reduced to less than 10 percent. At this point, the Melody® Transcatheter Pulmonary Valve was expanded across the rehabilitated right ventricular outflow tract completing the procedure. The patient was discharged from the hospital the next day and was back to school in four days. At follow-up, she is asymptomatic, and the echocardiogram continues to show absence of significant gradient and only trivial pulmonary regurgitation.

Researchers at Mount Sinai School of Medicine continue to build upon their pioneering research in pediatric asthma to deliver multidisciplinary, evidence-based care to the youngest residents of East Harlem, a community that has the second highest asthma hospitalization rate in New York City for children aged 14 and younger. The Mount Sinai Medical Center is located in the heart of East Harlem.

Mount Sinai participated in the large-scale, multi-center National Cooperative Inner-City Asthma Study, a first-of-its-kind investigation funded by the National Institutes of Health during the 1990s to determine factors that contribute to asthma morbidity in inner-city children. The study, which assessed more than 1,500 children 4 to 9 years of age, uncovered four major factors associated with increased asthma morbidity: access to care, adherence to medical treatment plans, environmental exposures, and psychosocial stressors. Study participants who received individualized asthma counseling from a social worker, however, experienced significant decreases in asthma symptom days, unscheduled medical care visits, and hospitalizations.

Mount Sinai has since partnered with the New York City Department of Health and Mental Hygiene (DOHMH) to provide an asthma counselor program to children in the community who are Mount Sinai patients. “This partnership reflects Mount Sinai’s long-standing commitment to asthma counseling and social work programs in an effort to improve health outcomes,” says Melissa Saperstein, LCSW. Adds Andrew S. Ting, MD, Assistant Professor, Department of Pediatrics: “Mount Sinai’s Division of Pediatric Pulmonology also has advised the DOHMH on the creation of the East Harlem Center of Excellence, the content of the Department of Education’s Medication Administration Form, and on the use of inhaled corticosteroids in school nursing offices and school-based health clinics. We also work closely with local primary care providers, all in an effort to lessen the impact of asthma in this community.”

(A) Angiogram in the conduit showing severe stenosis (arrows). (B) After initial dilation with a high-pressure balloon, the first of three Palmaz stents is positioned. The image shows the unexpanded stent mounted on the balloon catheter prior to expansion. (C) The first stent is expanded across the conduit with a 22mm balloon. Subsequently, two additional stents are delivered. (D) The Melody® Transcatheter Pulmonary Valve is shown mounted on the Ensemble delivery system and fully expanded. (E) After the conduit is rehabilitated, the Melody® valve (darker stent struts) is expanded within the scaffold (angiogram in the pulmonary artery shows no pulmonary regurgitation).
Researchers at Mount Sinai School of Medicine’s Jaffe Food Allergy Institute have found that introducing increasing amounts of foods that contain baked milk into the diets of children who have milk allergies helped a majority of them outgrow their allergies. The study was funded by the National Institute of Allergy and Infectious Diseases of the National Institutes of Health.

Hugh A. Sampson, MD, Dean for Translational Biomedical Research, and Professor of Pediatrics, and Immunology, was the principal investigator on this study, which was carried out in the Division of Pediatric Allergy and Immunology, headed by Scott H. Sicherer, MD, Professor of Pediatrics.

In this study, 88 children, 2 to 17 years old with suspected milk allergy, were recruited from the pediatric allergy practice. The children underwent sequential food challenges for tolerance to baked milk in a muffin or waffle, to baked cheese in a pizza, and to unheated milk. Among the 65 children initially tolerant to baked milk, 39 (60 percent) now tolerate unheated milk; 18 (28 percent) tolerate baked milk/baked cheese; and eight (12 percent) continued to avoid milk strictly. Among the remaining 23 children who were in the baked milk-reactive subgroup, two (9 percent) now tolerate unheated milk; three (13 percent) tolerate baked milk/baked cheese; and the majority (78 percent) need to avoid milk strictly.

Overall, the outcomes show that tolerance to baked-milk products is a marker of mild, transient IgE-mediated cow’s milk allergy, however a positive response to a baked-milk challenge indicates a more severe, persistent form of milk allergy. Additionally, the findings reveal that 60 percent of baked-milk-tolerant children ingesting baked-milk products will develop tolerance to regular (unheated) milk products at a significantly accelerated rate compared to children prescribed a strict milk avoidance diet.

The study was published in 2011 in the *Journal of Allergy and Clinical Immunology*. Jennifer S. Kim, MD, left, and Anna Nowak-Wegrzyn, MD, introduced foods that contain baked milk, such as muffins, into the diets of children who have milk allergies.