DISCOVERing Peace of Mind
CUMC Debuts Program for those with Undiagnosed Disorders

Parents sometimes know there’s something wrong with their child, but the child’s constellation of symptoms doesn’t add up to a recognized diagnosis. The symptoms can make life difficult, but so can the lack of a diagnosis—and the treatment and support that go with it. Families who travel from specialist to specialist spending a lot of time, energy, and money seeking a diagnosis often say they’re on a “diagnostic odyssey.”

To ease, speed, and centralize the process of identifying undiagnosed disorders, NewYork-Presbyterian/Morgan Stanley Children’s Hospital and Columbia Doctors recently established the DISCOVER Program under the leadership of clinical geneticist Wendy Chung, MD, PhD, Kennedy Family Associate Professor of Pediatrics in Medicine. Dr. Chung and other physician-scientists at CUMC have been diagnosing and treating patients with rare diseases and complex conditions for decades. The DISCOVER Program brings her longstanding expertise together with a case management team that includes a second clinical geneticist, Jasmin Roohi, MD, PhD, Assistant Professor of Pediatrics in Clinical Genetics; Ilana Chilton, MS, CGC (Genetic Counselor).

Families who participate in the program not only have access to advanced genetic and genomic diagnostic technologies, but also to leading specialists in a range of fields—from allergy/immunology, to cardiology, endocrinology, gastroenterology, infectious diseases, neurology, rheumatology, and pathology—who can weigh in to diagnose and help develop an individualized treatment plan for each patient. Access to a spectrum of specialists can be particularly helpful if a patient is diagnosed with a rare

Outcomes Research in Obstetrics and Gynecology
Changing Policy in Women’s Health Care

Members of the Department of Obstetrics and Gynecology at CUMC recently began participating in a new initiative that may one day change policy issues in women’s health care.

Titled “Outcomes Research in Obstetrics and Gynecology,” the program uses large scale data sets that often include thousands—or even hundreds of thousands—of women facing obstetric or gynecologic issues. The researchers analyze the data to determine how women are treated in the real world and how women actually respond to various treatments.

What is outcomes research? It is applied clinical and population-based research that seeks to identify shortfalls in practice and to develop strategies to improve care.

“We’re really studying large population-based problems,” says Director of Outcomes Research in OB/GYN Jason D. Wright, MD, Solomon Goldman Associate Professor of Obstetrics and Gynecology and Division Chief of Gynecologic Oncology. “We look at problems and we look at how we can use data sources and methodology to address these real world problems.”

Using large data sets, researchers study women who have been treated for various conditions or diseases, paying particular attention to the outcomes of these patients. Researchers also identify patterns of care and what type of care women receive, compare different treatments (such as a novel treatment as compared to an older treatment), distinguish how well these treatments work within society, and pinpoint factors that predict how these treatments may work.

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CONTINUED ON PAGE 17
Message from the Editors

In this issue of Connections, we continue our mission to highlight the strengths of our clinical and research programs in women’s and children’s health; but you may notice a slightly different look and a few reader-friendly changes. We’ve shortened our main feature stories and are streamlining some other sections as well. And the new color-scheme and design modifications throughout the newsletter symbolize our close connection to our partner in care, NewYork-Presbyterian Hospital. As always, we bring you stories that highlight the strong association between Pediatrics and OB/GYN. Clinical geneticist Dr. Wendy Chung (Pediatrics) works closely with Dr. Ron Wapner, Director of Reproductive Genetics (OB/GYN) to help prospective parents come to terms with a prenatal diagnosis; Dr. Chung is also spearheading a new program called DISCOVER to bring clarity to families who find themselves on a diagnostic odyssey (page 1). Dr. Wright (Director of Outcomes Research in OB/GYN) highlights the critical need for systematic evaluation of policies and procedures to improve women’s health care through population-based research (page 1). Prenatal diagnosis is also a strength of Pediatric and OB/GYN specialists who collaborate to provide safe births when life-threatening vascular anomalies are discovered in utero (page 8). We also feature a new collaborative learning approach adopted by Pediatrics for students doing their six-week rotation in the department as part of their Major Clinical Year (page 9). On page 10, meet Dr. Lena Sun, head of pediatric anesthesia, whose team ensures that infants and children are comfortable and safe as they undergo minor to major procedures. Finally, CUMC was recently designated a newborn screening Specialized Center for Severe Combined Immunodeficiency (page 11), one of only four in New York. Let us know what you think about our modifications—we welcome your input.

Michael Weiner, MD
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CO-EDITORS-IN-CHIEF
Connections
History

A Century of Caring for Children

A History of The Babies Hospital

With a legacy that stretches back more than a century, the NewYork-Presbyterian Morgan Stanley Children’s Hospital is recognized as one of the nation’s top pediatric hospitals. Founded in 1887 as The Babies Hospital, it enjoys much of its preeminence thanks to its relationship with Columbia University’s medical school, the College of Physicians & Surgeons.

Established in 1767 as King’s College, Columbia University is one of the oldest institutions of higher learning in the United States and its medical school, Columbia University College of Physicians and Surgeons, is the second oldest medical school. Samuel Bard, MD, Professor of Medicine and Diseases of Children, was the first Dean. Among his accomplishments, he wrote the first textbook of obstetrics and pediatrics and described “blue babies” and diseases of infants in the first year of life.

Drs. Sarah and Julia McNutt, who were sisters, originally established the Babies Hospital in a brownstone on the Upper East Side of Manhattan, and in 1887 affiliated it with the College of Physicians & Surgeons. Dr. McNutt recorded her activities in an article titled “The Babies Hospital - A Summer’s Work,” in an 1889 issue of the Medical Record. In addition to describing milk sterilization procedures, nutrition, and sanitary practices, she elaborated on the Babies Hospital philosophy: “We ... put the patients’ welfare ahead of every other consideration.” In 1894, Dr. Emmett Holt, who subsequently became the Physician-in-Chief of the hospital, published the first modern textbook of pediatrics, “Diseases of Infancy and Childhood.”

In 1929, the Babies Hospital relocated to its present location on Broadway and 167th Street, a site that was the one-time home of the New York Highlanders, later renamed the New York Yankees. Dr. Rustin McIntosh became Physician-in-Chief, and under his guidance the hospital became integrally related to Columbia Presbyterian Medical Center, and expanded to 191 beds entirely focused on children. During Dr. McIntosh’s tenure, numerous pediatric subspecialty divisions led by prominent new department heads emerged:

- Neurology: Dr. Sidney Carter
- Surgery: Drs. Thomas Santulli and John Schullinger
- Ophthalmology: Dr. Algeron Reece
- Radiology: Dr. John Caffey
- Hematology-Oncology: Dr. James Wolff
- Neonatology: Dr. L. Stanley James
- Psychiatry: Dr. William Langford

The Babies Hospital has always been at the forefront of discovery and innovation. Physi-
Physicians here have made many major breakthroughs that have influenced the care and well-being of infants and children, including:

- Dr. Dorothy Anderson described cystic fibrosis
- Dr. Paul Sant Agnese developed the sweat test for cystic fibrosis
- Dr. Hattie Alexander worked with Haemophilus influenzae, paving the way for routine vaccine use
- Drs. Virginia Apgar and L. Stanley James developed the Apgar Score, used to this day, to assess newborn health
- Drs. Vincent Freda and James Wolff developed the treatment for Rh disease in infants
- Drs. L. Stanley James, Jen Wung, and John Driscoll developed and perfected continuous positive airway pressure (CPAP), a noninvasive procedure that helps premature infants breathe
- Dr. Eric Rose performed the first heart transplant in a child

In 2003 the Babies Hospital expanded into a new, 10-story, 265,000 square-foot, state of the art, innovative facility. With the new building came a new name: NewYork-Presbyterian Morgan Stanley Children’s Hospital (NYP/MSCH). The hospital remains the largest children’s facility in New York, and is currently led by Lawrence R. Stanberry, MD, PhD, Reuben S. Carpenter Professor and Chairman of the Department of Pediatrics, and Physician-in-Chief of NYP/MSCH. Faculty members are now focusing their efforts in areas including molecular genetics, precision medicine, neonatal and cardiac care, transplantation, and global health; and doctors are seeing promising developments in these fields each and every day.

What’s next? The possibilities are endless. What is certain is that the hospital will continue to be at the forefront of cutting-edge research, working to ensure the health of all children. — Michael Weiner & Cecilia Martinez

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**TOP:** SUMMER HOSPITAL, Circa 1895. A nurse oversees a ward at the Babies Hospital’s “SUMMER HOSPITAL” on the New Jersey Shore.

**CENTER, LEFT:** PEDIATRIC HEART TRANSPLANT, 1984. The first successful pediatric heart transplant was performed by Drs. Eric Rose and Keith Reemtsma during a six-hour operation in June 1984.

**RIGHT:** P&S GRADUATES, 1894. The P&S all-male graduating class of 1894 poses on the steps of the College Building on West 59th Street. Women would not be admitted to P&S until 1917.

**BOTTOM:** The birth of the Kienast quintuplets at the Medical Center in February, 1970 - only the second set in the United States - caused a worldwide sensation. A team of six physicians and numerous nurses assisted at the delivery and then tended them in the neonatal intensive care unit. Delivering physician, Dr. Raphael Jewelewicz, photographed above.
Researchers Develop Method to Create Cells for Study of Hypothalamus

The hypothalamus, a small region at the center of the brain, produces the hormones that control body temperature, hunger, thirst, fatigue, sleep, and circadian rhythms. It is a crucial link between the nervous and endocrine systems, and is the central regulator of energy equilibrium throughout the body. People whose hypothalamus stops functioning properly can undergo extreme weight gain. Because of the hypothalamus’s location in the brain, researchers do not have access to human hypothalamic cells for study and have little insight into the complex cellular physiology of this region. While scientists studying neurodegenerative diseases including Alzheimer’s, Parkinson’s, and ALS have developed techniques to generate related neuronal cell types by differentiating human pluripotent stem cells, until very recently there has been no published protocol for differentiating human hypothalamic neurons. A collaborative research group, including Dieter Egli, PhD, whose laboratory uses stem cells to investigate the cellular and molecular biology of diabetes, and Rudolph Leibel, MD, Director of the Division of Molecular Genetics and co-Director of the Naomi Berrie Diabetes Center, recently developed a method using human embryonic stem cells and induced pluripotent stem cells obtained from obese patients to generate hypothalamic neurons for research. They published their results in *The Journal of Clinical Investigation*. They created differentiated neurons that display key functional properties of hypothalamic neurons, including the ability to accurately process and secrete neuropeptides, molecules that neurons use to communicate with each other, and to respond to metabolic signals such as insulin and leptin, hormones key to regulating food intake and energy balance. The ability to create and examine hypothalamic cells should enable researchers to learn more about the molecular origins of obesity and assess the responses of these cells to therapeutic agents.

Survey Tracks Global Use of Complementary and Alternative Medicine

Around the world, many children with cancer use therapies that fall outside the context of conventional medical care, among them acupuncture, massage, energy medicine, and herbal remedies. These and other non-conventional therapies are categorized as traditional complementary/alternative medicine (TCAM). While access to conventional care has improved worldwide for children with cancer, their use of TCAM may affect how quickly they seek treatment for their disease, and whether they adhere to or abandon conventional treatments; so understanding the global use of TCAM is crucial. CUMC researchers Elena Ladas, PhD, RD, and Kara Kelly, MD, co-directors of the Integrative Therapies Program for Children with Cancer in the Division of Pediatric Oncology, collaborated with several Latin American researchers to develop and test an international survey documenting the use of TCAM among children with cancer. The survey was administered to 300 children and adolescents (or their parents) who were undergoing treatment for cancer at hospitals in Mexico, Uruguay, and Nicaragua. Their results, published in Cancer, demonstrate that the group succeeded in developing the first systematic and international approach for measuring TCAM use in pediatric patients with cancer. The survey is adaptable to multiple cultures and ethnicities, so it could allow comparisons of different populations and help explain some of the variability documented in medical literature, the authors wrote. It could also provide information that would enable researchers to design interventions that are culturally and ethnically appropriate. “The results of this survey also may pave the way for international forums to discuss TCAM in a more formalized manner, thereby promoting the identification of research needs and educational opportunities for both clinicians and families,” they concluded.


Guidelines Needed for Use of a Common Obstetric Procedure

Cervical cerclage is a procedure in which an obstetrician stitches closed the cervix of a pregnant woman to help prevent pregnancy loss or premature birth. For more than a century, obstetricians have used cerclage in women with a history of midtrimester loss or spontaneous preterm birth secondary to cervical “incompetence” or insufficiency. But the use of cerclage has recently expanded to women with multiple gestations, short cervical length, uterine anomalies, and a history of cervical trauma. Despite the relatively long history of prophylactic cerclage, research has demonstrated the procedure to be beneficial in only two small subgroups of woman at particularly high risk for preterm delivery: those with three or more prior preterm births and those with a prior preterm birth and short cervical length. To evaluate trends in the use of cerclage, CUMC researchers led by Maternal-Fetal Medicine specialist Alexander Friedman, MD, MPH, conducted a population-based study of US birth records in 21,312,920 pregnancies over seven years. Among the 71,582 women in the study who underwent cerclage, 0.3 percent were singleton pregnancies, 1.3 percent were twins, 7.9 percent were triplets, and 18.0 percent were higher-order pregnancies. While research is less supportive of cerclage use in high-risk groups such as multiple gestations, these findings have not been translated into clinical practice. This study, published in Obstetrics & Gynecology, underscores the importance of society guidelines and other tools to encourage best clinical practices, the researchers conclude.

While cfDNA testing for fetal trisomy is highly effective among high-risk women, few studies have compared cfDNA testing with standard screening during the first trimester in routine prenatal populations. CUMC researcher Ron Wapner, MD, Director of Reproductive Genetics, led a team of collaborators at 35 centers, who analyzed results from 15,841 pregnant women. At 10 to 14 weeks of gestation, the women underwent both standard screening (with measurement of nuchal translucency and biochemical analytes) and cfDNA testing for trisomy 21 (Down’s syndrome), and trisomies 18 and 13. The researchers found that, in this large, routine prenatal-screening population, cfDNA testing for trisomy 21 had higher sensitivity, lower false positive rate, and higher positive predictive value than did standard screening. Their study was published in the *New England Journal of Medicine*.

CUMC Offers Team Expertise in Complex Vascular Problems

Strawberry birthmarks, port wine stains, and more serious venous, arterial, and lymphatic malformations all belong to a group of defects called vascular anomalies. This umbrella term encompasses tangled arteries, extraneous veins, dysfunctional lymphatics, and other defects in any of the tens of thousands of miles of vessels that carry blood and lymphatic fluid throughout the body.

Many vascular anomalies arise in the head and neck region, but they can develop in any part of the body reached by blood or lymphatic vessels, “and that’s everywhere,” notes June Wu, MD, a pediatric plastic surgeon with special expertise in vascular anomalies. Anomalies are often uncomplicated and don’t require medical intervention, but others are more serious and very tricky to treat, she says.

The most common form of vascular anomaly—and the most common type of benign tumor in children—hemangioma, is a proliferation of endothelial cells that make up blood vessels. Most hemangiomas do not require treatment, according to Maria Garzon, MD, Director of Pediatric Dermatology. Those that do may respond to medication, laser treatment, or surgery.

Other anomalies, vascular malformations in capillaries, veins, arteries, and lymphatic vessels, can cause enlarged limbs, growths on the neck or face or that press inward on internal organs, and interference with vision, eating, and breathing. CUMC specialists treat these malformations using a number of different approaches.

Drs. Wu and Garzon are co-directors of CUMC’s Vascular Anomalies Clinic, and may call on the expertise of specialists from plastic, orthopedic, and pediatric surgeons, to cardiologists, clinical geneticists, diagnostic and interventional radiologists, hematologists, neurologists, ophthalmologists, and otolaryngologists.

When serious anomalies are diagnosed during a routine prenatal ultrasound, the team expands to include specialists from CUMC’s Maternal-Fetal Medicine division, who work closely with the rest of the team to determine the best course of action. “Our Maternal-Fetal Medicine team is quite familiar with prenatal anomalies—we’re one of the tri-state referral centers for these cases,” Carrie Shawber, PhD, a vascular biologist in OB/GYN, says. “The collaborative enterprise between Pediatrics and OB/GYN starts before the baby is even born,” adds Dr. Garzon.

Nowhere is the collaboration more crucial than in rare cases where a complex mass of vessels grows large enough to impinge on a fetus’s airway, a high-risk, life-threatening situation. “This is a very tricky birth, because the baby will not be able to breathe once born,” says Dr. Wu. “In these emergency situations, we sometimes have to perform a very complicated birth called an EXIT procedure.” Before an EXIT (ex utero intrapartum treatment) procedure, the team carefully maps out the birth. The infant is partially delivered by caesarean section, a surgeon establishes an airway so the fetus can breathe, then the infant is fully delivered. A team of OB/GYN, pediatric surgery, and neonatal specialists is present and available to support the infant and mother.

Another unique collaborative effort at CUMC is the team that includes Dr. Shawber, Dr. Kitajewski, Director of the Division of Reproductive Sciences in OB/GYN, and Dr. Wu, who are collaborating on research to identify and characterize the causes of vascular anomalies. “Our big research question is: What can we do to stop the natural history of these conditions in-utero?” says Dr. Shawber.

From before birth to the teen years and beyond, “we think about the lifelong impact of these disorders for the children and the family, and we have the expertise here to handle the entire range of them,” says Dr. Garzon. And, adds Dr. Shawber, “we can make a positive impact on the quality of their lives through proper care.” — Beth Hanson
Better Together

Pediatrics Adopts Collaborative Learning Approach

Pediatricians in training are routinely faced with situations like this: Parents bring their nine-month-old daughter to the ER with a fever that has lasted two days. There is no obvious cause, the child is fully immunized and appears well. A urinalysis is negative. This set of symptoms prompts the young doctor to ask herself the likelihood that the febrile child’s illness represents a serious infection, and what further work-up is warranted.

It turns out that doctors who learned about fever management in small groups working together are likely to be better able to remember the answer to this and other questions than those who did not. Recent studies of educational practices show that students are more likely to absorb and recall information if they absorb it while they actively learn from discussions with each other, have to defend their positions, and come to a consensus—in other words through collaboration.

For the past six years, during much of the first 18 months of medical student education here at the College of Physicians & Surgeons, students learn the skills fundamental to their future medical practice through a new collaborative learning approach called team-based learning (TBL). Three years ago, under the stewardship of Andrew Mutnick, MD, a general pediatrician and director of pediatric medical student education, Pediatrics also adopted this approach for students doing their six-week rotation, or “clerkship,” in the department as part of their year-long Major Clinical Year.

Rather than filing into a lecture hall for a two-hour talk on managing fever in infants and children, for example, students come to the session having read a number of articles on the topic. They first take a quiz on the readings, “to get their engines going and show that they’ve prepared,” Dr. Mutnick says. “Then we break them into several groups of five to seven people. Group members work together on a series of clinical vignettes and problems about theoretical patients. By the end of the session, they’ll have some fluency in the issue.”

Dr. Mutnick’s mentor as an educator is Boyd Richards, PhD, a leading thinker in collaborative learning, and professor of medical education in Pediatrics. “There’s a growing recognition that learning is usually more ‘sticky’—deeper, and longer lasting—if it’s collaborative rather than passive as it is in a lecture,” Dr. Richards says.

Some of the stickiest learning comes about when the groups compare notes with each other and have to explain and defend their conclusions. “This is very, very powerful and helps the group as a whole really remember the core principles,” says Dr. Mutnick. “TBL requires students to verbalize, share, and explain,” adds Dr. Richards. “It’s not only coming up with the right answer, but it’s using the information to explain the answer in a way that’s very public, so it fosters this really deep learning.”

The emphasis on group learning parallels bigger changes in the practice of medicine: “Medical decision-making is now a group activity,” Dr. Mutnick says. “Decisions are made publicly and in groups. So we not only focus on the content—how to manage fever, for example—but we’re also teaching some very important lessons about how to collaborate, build consensus, and defend your decision-making.”

Collaborative learning reflects another widespread trend in teaching called the “flipped classroom.” “There’s a concept in education that we need to reverse the sequence in which various learning activities occur,” says Dr. Richards. Instead of coming to a lecture, taking notes, then studying them to prepare for a test, in the flipped classroom learners get their assignments ahead of class and use class time for collaborative learning methods. Digital media have dramatically improved schools’ ability to present content to students ahead of class, he says. Faculty members can easily record a lecture and make it available via the internet ahead of class, so the students still get the benefit of the teacher’s dynamic explanation of a topic.

In Pediatrics, the only department at CUMC to have implemented TBL for its clerkship to date, this very student-centered, active, and engaging instructional method has really caught fire, according to Dr. Mutnick. “It’s been incredibly fun and successful for us as faculty and remains really highly rated by the students.”

— Beth Hanson
Sleep Before Surgery

Division of Pediatric Anesthesia Helps Children and their Families Prepare for Procedures

The thought of getting anesthesia for a procedure can be nerve-racking for an adult patient. But when the patient is a child, the idea of anesthesia can sometimes be frightening. To alleviate these fears, the Department of Anesthesiology at CUMC created the Division of Pediatric Anesthesia, the only such practice of its kind in the metropolitan area. The division provides care for children of all ages, from neonates to young adults.

“Pediatric anesthesia differs from adult anesthesia because children are not small adults,” says Lena Sun, MD, the Emanuel M. Papper Professor of Anesthesiology and Pediatrics. “They have important differences with respect to physiology and pharmacology. Also, when you provide anesthesia for children, you interact with the family as well as the child—and have to help them manage separation anxiety and other psychosocial and developmental issues.”

The division’s major area of focus is providing anesthesia to infants and children undergoing solid organ transplantation and treatment for congenital cardiac diseases, and other congenital anomalies or significant comorbid conditions. But members of the division also work with other subspecialists throughout the hospital including orthopedics, neurosurgery, cardiothoracic surgery, dentistry, neurosurgery, and eye surgery. Division members also provide pain consults for children who have been admitted to the hospital.

“To make the fidgety child comfortable while going under,” says Dr. Sun, “we can give them sedative medications before anesthesia or have the parents present, if the anesthesiologist thinks this will be helpful, as we start anesthesia.”

The division uses a team-based approach when handling each patient’s case, and has some of the best doctors in the field working in collaboration to care for a child. “Our areas of clinical expertise include providing the best care for patients with cardiac diseases, managing perioperative pain, and caring for neonates, infants, and children who have significant coexisting diseases,” says Dr. Sun.

“Faculty is committed to mentorship, scholarship, and clinical excellence. Faculty in the division have played a key leadership role in advancing the field through scientific discovery,” says Dr. Sun.

Research is another major focus in the division. “We are the coordinating center for a large multi-site epidemiological study of the long-term neurocognitive outcomes in children with early childhood anesthesia exposure,” says Dr. Sun. The study, known as PANDA (Pediatric Anesthesia and Neurodevelopment Assessment) will provide important information on whether early childhood anesthesia exposure could adversely affect neurocognitive development.

In addition, the division participates in Wake-Up Safe, a Patient Safety Organization affiliated with the Society of Pediatric Anesthesia. The program works to collect data for major perioperative events, trains pediatric anesthesiologists to conduct QA/CQI projects, and has already undertaken a number of quality improvement initiatives that are benefiting patients.

— Cecilia Martinez
Outside the Bubble

SCID Specialty Care Center Helps Children Live a Normal Life

What many people know about severe combined immunodeficiency (SCID) doesn’t go beyond what they watched in the 1976 Emmy-nominated “The Boy in the Plastic Bubble,” where the star, played by John Travolta, must live out his life in incubator-like conditions. While the film occurred almost four decades ago, SCID still does exist. And it’s an illness that is much more complex and debilitating than any Hollywood screenplay could depict.

For children born with this rare genetic disorder, NewYork-Presbyterian/Morgan Stanley Children’s Hospital has one of the few New York State-designated SCID Specialty Care Centers. Patients cared for at the facility are born with few or no T cells (the white blood cells that combat infections), making them susceptible to contagious diseases that can be both reoccurring and life-threatening. As a health care requirement, all infants born in New York State are screened for SCID.

Yesim Yilmaz Demirdag, MD, Director of the SCID Specialty Care Center, and her team of highly qualified allergists and immunologists, genetic counselors, hematologists with expertise in bone marrow transplantation, nurses, social workers, and other support staff, evaluate newborns with abnormal screening for SCID, the most severe form of primary immunodeficiencies. The doctors, who have specialty training in immunodeficiency syndromes, also diagnose and treat newborns with abnormal SCID screening who do not have SCID but other forms of primary immunodeficiencies, such as Di George Syndrome.” Our initial testing includes a complete blood count and differential of white blood cells and flow cytometric analysis to assess lymphocyte subsets,” says Dr. Demirdag. “If these are abnormal, we perform further testing such as a lymphocyte function testing and genetic testing.”

Newborns with abnormal SCID screening are evaluated further by an allergist/immunologist who performs comprehensive diagnostic testing, such as blood tests to confirm or rule out an SCID diagnosis. If the SCID diagnosis is made, the newborn is referred for bone marrow transplantation or treated with enzyme replacement, depending on the type of the SCID.

Also known as stem cell transplantation, bone marrow transplantation is the only cure for many types of SCID. “The survival rate is 96 percent if the infant receives bone marrow transplantation before 3.5 months of age and before he/she develops severe infections,” says Dr. Demirdag. “The survival rate is only 66 percent if the transplant is delayed.”

The ideal donor is a perfectly HLA-type matched sibling who has a normal immune system. But if a matched sibling donor is not available, success has been had with matched unrelated donors and even half-matched related donors, such as parents.

Through comprehensive screening tests for SCID, infants may be diagnosed with other conditions in which T lymphocytes are deficient—these are often milder forms of primary immunodeficiencies. The team at the SCID Specialty Care Center cares for these infants with treatments including prophylactic antibiotics and immunoglobulin replacement treatments.

Testing for SCID, including genetic testing, is available onsite at the SCID Specialty Care Center, and patients are seen within 24 hours of referral. With initial testing, many results are available within 24 hours. And the quick response is a relief for parents waiting on the results.

“As one of the top children’s hospitals in the nation, our hospital is fully equipped to offer the best diagnostic and therapeutic services to these patients,” says Dr. Demirdag.

To refer a patient for the evaluation of SCID or other immunological disorders, call (212) 305-2300. — Cecilia Martinez
Fulfilling the Dream of a Cancer-Free Childhood for All

Precision Medicine Offers New Options for Treatment

In the last few years, advances in genomic research have yielded successful therapies for cancer patients who, in the past, would have run out of treatment options. This emerging potential to assess disease and recommend new therapies based on DNA sequencing is often referred to as “precision medicine,” and in the field of pediatric oncology, Columbia University Medical Center (CUMC) is already leading the way in translating genomic insights into improved care for children with cancer.

“Our vision is to use precision medicine to find new and, ideally more effective, options for the 20 percent of patients that currently are not cured,” says Andrew Kung, MD, PhD, Robert and Ellen Kapito Professor of Pediatrics and Chief of the Division of Hematology, Oncology, & Stem Cell Transplantation.

To do so, the Division now sequences the tumors of all its patients and uses this information to pinpoint new therapeutic targets. Dr. Kung believes that sequencing will hold benefits for every patient, including those who currently do respond to treatment, by fine-tuning drug regimens to reduce toxicity and long-term side effects.

All of this comes at a hefty price, though.

“Currently, the cost of sequencing the tumor for a patient is still in the range of about $5,000,” says Dr. Kung. And this expense is not covered by insurance. “We need philanthropic support to be able to make these technologies available to all of the patients that we treat in our clinic.”

Enter Sue and Bob Matthews, members of the Children’s Board at Columbia, and parents of former CUMC patient, Taylor. When Taylor was diagnosed with bone cancer at the age of 11, the Matthews family was shocked to learn of the gaps in funding for pediatric cancer research. Taylor was determined to help other children avoid the painful surgeries and chemotherapy she endured as part of her treatment, and began raising money for pediatric cancer research. She continued until 2008 when, sadly, she lost her own battle with cancer.

“If Taylor had had access to this new approach to cancer treatment, she might still be here with us,” says Mrs. Matthews. “That is why we are determined to provide medical researchers with the resources they need to advance care and to provide state-of-the-art therapies to every child with a cancer diagnosis.”

Today, Taylor’s mission continues through Conquering Kidz Cancer (a tay-bandz organization), a non-profit organization dedicated to raising awareness and funds for pediatric cancer research. The foundation has previously supported research into solid tumors led by Darrell Yamashiro, MD, PhD, Associate Professor of Pediatrics, Pathology & Cell Biology, and its fundraising proceeds for the next five years will go directly to Columbia’s precision medicine program in pediatric oncology.

In September, Sue and her husband, Bob, hosted a special event to help generate support for Conquering Kidz Cancer and the pediatric precision medicine program at Columbia. The event featured remarks by Columbia faculty as well as a performance by opera singer James Valenti.

“We’re really trying to make Taylor’s dream a reality,” says Julia Glade Bender, MD, Associate Professor of Pediatrics and Director of the Division’s Developmental Therapeutics Program.

Dr. Glade Bender recalls a recent leukemia patient whose cancer was resistant to therapy. Using next-generation sequencing, the girl’s cancer was analyzed and a new medicine added to her drug regimen. The response was immediate, and the girl soon entered a sustained remission.

“This is, to me, amazing, considering that two or three prior attempts to get her into remission had failed,” says Dr. Glade Bender.

Since the Division began sequencing tumors, the data it gathered has been incorporated into clinical use 65 percent of the time—a much higher rate than anticipated. With the continued efforts of Columbia faculty to translate this technology into beneficial therapies for patients, and the generous support of advocates like the Matthews family, perhaps Taylor’s wish for a world in which no child has to face the devastating effects of cancer will come true. — John Uhl
Eight Samberg Scholars in Children’s Health Selected for 2015

Award Will Support Clinical Research and Patient Care

Eight exceptional physicians at NewYork-Presbyterian/Morgan Stanley Children’s Hospital have been named the 2015 Samberg Scholars in Children’s Health. Now in its third year, the Samberg Scholars program is designed to foster the work of leaders in the field and raise pediatric health care at NYP/Morgan Stanley Children’s Hospital to new levels of excellence.

The Samberg Scholars selection committee chooses physicians who have made outstanding contributions to research and the teaching of medicine. The funding allows the recipients to recruit a clinical fellow or nurse or to devote additional resources to clinical research, for example. These endowed appointments are possible through a generous $25 million donation made in 2013 by hospital trustee Arthur Samberg, a member of the Hospital Board of Trustees, and his wife, Rebecca. The Sambergs, longtime philanthropists who led in the construction of NYP/Morgan Stanley Children’s Hospital, established the Scholars program to enable the hospital to recruit, retain, and sustain top talent in pediatric medicine. They remain invested in creating vital programs that benefit children throughout the community.

“This is a wonderful opportunity to jump-start some of our research and educational programs,” says Samberg Scholar Rachel Miller, MD. “Importantly, the gift can help defray some of the costs associated with recruitment of the highest caliber specialists.”

The 2015 Samberg Scholars

Steven Brooks, MD. Chief of Pediatric Ophthalmology, is a national leader in strabismus, pediatric ophthalmology, and retinopathy of prematurity. His contributions to the field include work on restricted eye movement following orbital trauma, innovative surgical treatments for paralytic strabismus, and research on the molecular and cellular mechanisms of retinal vascularization in retinopathy and prematurity.

Maria G. Garzon, MD. Chief of Pediatric Dermatology, is an expert in the diagnosis and treatment of vascular anomalies. Her clinical and research interests also include the care of children with genetic skin diseases, inflammatory skin diseases, and skin diseases associated with organ transplantation and cancer.

Joseph Haddad Jr., MD, is the Lawrence Savetsky Chair and Chief of Pediatric Otolaryngology/Head & Neck Surgery. Dr. Haddad is researching the genetics of cleft lip and palate and the role of folate metabolism in cleft patients. He is president of the Honduran Medical Institute and has participated in biannual humanitarian missions to Honduras to teach and perform surgeries on children with cleft lip, cleft palate, and other facial deformities.

Rachel L. Miller, MD. Director of the Division of Pediatric Allergy, Immunology, and Rheumatology, is researching the mechanisms that lead to asthma; she is very interested in the role of prenatal and early postnatal exposure on later pediatric and adolescent asthma risk. Through a birth cohort from Northern Manhattan, she hopes to determine the importance of environmental allergens, traffic-related pollutants, and phthalate exposure to the onset of allergies, asthma, and acquired immune responses.

Susan Rosenthal, PhD. Director of the Division of Child and Adolescent Health, works with adolescents and their families to help those dealing with mood disorders and chronic conditions manage the developmental challenges of adolescence. She is also researching ways to promote sexual health and vaccine acceptability among adolescents.

Moira A. Rynn, MD, is Director of the Child and Adolescent Psychiatric Division and Ruane Professor for the Implementation of Science for Child and Adolescent Mental Health at CUMC. Dr. Rynn is investigating ways to improve treatments for children and adolescents with treatment refractory mood and anxiety disorders. She is examining the efficacy and safety of experimental pharmacologic treatments and is studying treatments that combine medication and psychotherapy.

Hossein Sadeghi, MD. Director of the Pediatric Cystic Fibrosis Program, has implemented public health measures to reduce the length of stay of inpatient admissions for children admitted for asthma treatment, and to improve care in the emergency department and health delivery to the underserved population in Stamford, Connecticut.

Julie A. Vincent, MD. Chief of the Division of Pediatric Cardiology and Welton M. Gersony Associate Professor of Pediatric Cardiology, cares for children with congenital cardiac defects. Her clinical expertise is in transcatheter therapies for congenital heart disease (CHD), balloon angioplasty and valvuloplasty procedures, and using intravascular stents to treat non-coronary vascular lesions.
Binge Drinking in Adolescents

“When I talk to my patients, it’s not unusual to hear about someone having 10 to 15 drinks,” Karen Soren, MD, Director of Adolescent Medicine, told the New York Times in an article, “The Conversation about Alcohol that Families Aren’t Having: Binge Drinking.” “I worry about ‘pre-gaming’—getting together with a group in secret and drinking a lot because wherever they’re going won’t have alcohol, or they’re going to be searched before they go in. Parents need to say; ‘I know this is happening, I think it’s a bad idea. I expect you not to do it,’” she said. [Source](http://nyti.ms/1JwHxBF)

Obesity Gene Identified

Since 2007, researchers have known that the gene FTO was related to obesity, but they didn’t know how. New research in the New England Journal of Medicine has revealed that a faulty version of the gene causes energy from food to be stored as fat rather than burned. The FTO gene is a master switch that affects two other genes that control thermogenesis, or burning off energy. The body constantly makes fat cells, and the two genes determine whether they become brown cells, which burn calories, or white cells, which store them. Dr. Rudolph L. Leibel, Director of Molecular Genetics, told the Associated Press that the research is a tour de force. “It’s possible there are several mechanisms being affected,” he added, though, and that fat-burning is not the whole story, he said. [Source](http://apne.ws/1Jz7iBD)

NYS Program to Eliminate Mother-to-Child HIV Transmission Could Work Worldwide

“New York State went from having the highest rates of mother-to-child transmission in the US and one of the highest in the world to eliminating it by identifying HIV-infected women prenatally or HIV-exposed babies shortly after birth and ensuring that they immediately received AIDS medications. New York State’s elimination of mother-to-child transmission is a blueprint for countries trying to achieve the same thing,” Stephen Nicholas, MD, Professor of Pediatrics and Population and Family Health, wrote in an article in TheConversation.com. [Source](http://bit.ly/1RCo7cl)

Colorado Dramatically Lowers Teen Pregnancy Rate

“Teens are complicated,” Jenny Francis, MD, Adolescent Medicine specialist, told CBS News in a report about Colorado’s drop in teen pregnancy rates. “They’re forgetful, nervous, anxious, awkward, transitioning. Give them the option of an IUD or contraceptive implant and now their worries and quirks around sex and preventing pregnancy are taken care of in one setting for the next five to 10 years.” [Source](http://cbsn.ws/1dL7mlr)

Lessening the After-Effects of Childhood Cancer Therapies

“The agents that we use to cure our cancers by any other names would be carcinogens, since they increase the likelihood that you would develop a second cancer,” Julia Glade Bender, MD, Director of the Developmental Therapeutics Program, told FoxNews.com. “Now the way we manage our protocols is, for those kids who are likely to be cured, can we do it with less? Can we give them less; can we give them therapy that’s more targeted perhaps to their tumor and less the general approach of trying to damage all DNA?” Dr. Bender asked. [Source](http://fxn.ws/1jJQlez)
Jennifer Woo Baidal, MD (GI, Hepatology, & Nutrition) received funding from the New York Nutrition Obesity Research Center (NYONRC) for her project to accelerate the use of non-invasive methods to diagnose nonalcoholic fatty liver disease (NAFLD) and to study mechanisms that link adiposity, NAFLD, and adverse cardio-metabolic outcomes in children.

David Bell, MD and Melanie Gold, DO (Child and Adolescent Health, Co-Principal Investigators) received a five-year grant from the Centers for Disease Control (CDC) and Office of Adolescent Health for their Health Teen Pregnancy Prevention Program, which focuses primarily on males.

Erika Berman Rosenzweig, MD, was elected to the ColumbiaDoctors Board of Governance for the 2015-2018 term.

Monica Bhatia, MD (Hematology, Oncology, & Stem Cell Transplantation) has been promoted to Associate Professor of Pediatrics.

Jocelyn Brown, MD’s (Child and Adolescent Health) partnership project “The Role of School Health in Child Abuse Screening: A Comparative Analysis of Physician Training, Knowledge, and Attitudes in the US and France” has received a three-year grant from the 2015 Partner University Fund’s Grant Review Committee and the FACE Foundation. Dr. Brown also received the 2015 Lydia Martinez Awards, and has been recognized by the NYC Alliance Against Sexual Assault for her outstanding work at the Manhattan Child Advocacy Center.

Wendy Chung, MD, PhD (Clinical Genetics) has been selected as one of 13 Provost Leadership Fellows for the 2015-2017 program. This program is designed for Columbia faculty members who seek to complement their research and scholarly activities with administrative and leadership responsibilities. Dr. Chung is also the inaugural recipient of the Kennedy Family Professorship of Pediatrics in Medicine.

Tom Diacovo, MD (Neonatology) received the 2015 Precision Medicine Pilot Award for his project, “Personalized Pharmacology for Neonatal Cardiac Patients at Risk for Arterial Thrombotic Events.” Dr. Diacovo also received a grant from the National Institute of Child Health and Human Development (NICHD) for “Neonatal and Pediatric Platelet Function and Pharmacology.” Dr. Diacovo and Samuel Sia, PhD, (Biomedical Engineering) have received Columbia-Coulter funding to further develop their “MicroClot” technology.

Dieter Egli, PhD (Molecular Genetics) was recently appointed as the Maimonides Assistant Professor of Diabetes Research at Columbia. He is the inaugural recipient of this professorship.

Marianne Garland, MD (Neonatology) was recognized by her nursing colleagues as the 2015 Attending Physician of the Year.

Honors & Awards

EXCEPTIONAL ACHIEVEMENT—MARY E. D’ALTON, MD (CHAIR OF THE DEPARTMENT OF OBSTETRICS AND GYNECOLOGY) WAS HONORED AT THE FIGO AWARDS IN RECOGNITION OF WOMEN OBSTETRICIANS/GYNECOLOGISTS ON OCTOBER 6, 2015. SHE IS PICTURED ACCEPTING THE AWARD FROM FORMER FIGO PRESIDENT PROFESSOR SIR SABARATNAM ARULKUMARAN.
HONORS & AWARDS

David Kessler, MD (Emergency Medicine) received a grant from RBaby Foundation to support INSPIRE network training for Pediatric Emergency Care.

Julie Klevner, MD (GI, Hepatology, & Nutrition) has been elected to serve on the Medical Advisory Council for Make-A-Wish Foundation.

Jan Kitajewski, PhD (OB/GYN) has been elected President of the North American Vascular Biology Organization (NAVBO).

Ganga Krishnamurthy, MD (Neonatology) has been promoted to Associate Professor of Pediatrics.

Esi Lamouss-Smith, MD (GI, Hepatology, & Nutrition) was an invited keynote speaker on “Building a Life in Science” at The City College of New York Collaborative Program’s Second Annual Science, Technology, Engineering, Arts, and Mathematics (STEAM) Young Women’s Leadership Conference; she also spoke on “Work Life Balance in Academic Medicine” at the Student National Medical Association Annual Medical Education Conference.

Joel Lavine, MD, PhD (Gastroenterology, Hepatology, & Nutrition) has been promoted to Professor of Pediatrics with Tenure.

Kara Gross Margolis, MD (Gastroenterology, Hepatology, & Nutrition) has been promoted to Associate Professor of Pediatrics, Tenure Track. Dr. Margolis also received the William F. Balisterri Prize for Excellence in Pediatric Gastroenterology, Hepatology, & Nutrition from NASPGHAN (North American Society for Pediatric Gastroenterology, Hepatology, & Nutrition) for her abstract, “Selective Serotonin Reuptake Inhibitors Have Critical and Long Lasting Effects on Enteric Nervous System Development.”

Luz Adriana Matiz-Zanoni, MD (Child and Adolescent Health) has been promoted to Associate Professor of Pediatrics.

Rachel L. Miller, MD (Allergy, Immunology, & Rheumatology), with co-Principal Investigator Mary Beth Terry, MD is the recipient of a NIH five year U01 grant “Pregnancy and Prenatal Polycyclic Aromatic Hydrocarbons and Other Environmental Exposures and Breast Cancer.”

Sharon E. Oberfield, MD (Endocrinology) is the recipient of an NIH Training Grant (T32) in Pediatric Endocrinology.

Ehira Parravicini, MD (Neonatology) received the Cardinal John O’Connor Award by the Sisters of Life for her diligence in promoting programs and activities in the support of families.

Dane Parker, MD (Infectious Diseases) received an NIH grant for his project, “Role of interferons in Staphylococcus aureus upper respiratory tract infection.”

Betsy Pfeffer, MD (Child and Adolescent Health) has been promoted to Associate Professor of Pediatrics.

Alice S. Prince, MD is the recipient of the John M. Driscoll, Jr., MD and Yvonne T. Driscoll, MD Professorship of Pediatrics in the Division of Infectious Diseases.

John Rausch, MD (Child and Adolescent Health) was elected to serve a three-year term on the American Academy of Pediatrics Section on Obesity Executive Committee.

Michael Rosenbaum, MD’s (Molecular Genetics) pediatric obesity research project, “Improving Population Health through Care Coordination,” received an award from the Empire Clinical Research Investigator Program (ECRIP).

Lisa Saiman, MD (Infectious Diseases) received a grant from the Cystic Fibrosis Foundation for her study, “Improving implementation of infection prevention and control in CF.” She also received a grant from the CDC, with Natalie Neu, MD as co-investigator, for “Influenza and other respiratory diseases in pediatric chronic care facilities.”

Minna Saslow, MD (Child and Adolescent Health) was selected as the winner of the 2014 Patient Centered Care Physician Champion Award for the Ambulatory Care Network (ACN).

Prakash Satwani, MD (Oncology, Hematology, & Stem Cell Transplantation) received the Hyundai Hope on Wheels Scholarship for his research study, “Therapeutic Modulation of Natural Killer Cell Receptor Ligands Through Histone Deacetylase Inhibition”; he was also elected as an Associate Editor for Contemporary Clinical Trials Communications.

Melissa Stockwell, MD, MPH (Child and Adolescent Health) has been promoted to Associate Professor of Pediatrics. Dr. Stockwell and Lisa Saiman, MD received a CDC grant for their research, “Epidemiology of Novel Influenza Virus Infection and Antiviral Effectiveness (AvE) and Vaccine Effectiveness.”

Julie A. Vincent, MD (Cardiology) has been promoted to Professor of Pediatrics.

Meredith Wilkes, MD and Emily Briedbart, MD (Postdoctoral Clinical Fellows, Endocrinology) were selected by their peers for induction into the Gold Humanism Honor Society (GHHS).

Jason D. Wright, MD (Gynecologic Oncology) received a grant from the Cystic Fibrosis Foundation for her study, “Improving implementation of infection prevention and control in CF.” She also received a grant from the CDC, with Natalie Neu, MD as co-investigator, for “Influenza and other respiratory diseases in pediatric chronic care facilities.”

2015-2016 Driscoll Scholars

The Department of Pediatrics created the John M. Driscoll, Jr., MD Children’s Fund in 2005 to support junior physician-scientists at the beginning of their careers, and many donors responded to Dr. Driscoll’s appeal for funds. Each year, the Fund provides junior faculty members stipends for up to two years. The 2015-2016 awardees include:

Nicolino Valerio Dorrello, MD, PhD, Post-Doctoral Clinical Fellow, Pediatric Critical Care Medicine. Dr. Dorrello will receive funding to support his proposal, “Bioengineering a chimeric lung capable of gas exchange.”

Stephanie Lovinsky-Desir, MD, Assistant Professor of Pediatrics at CUMC, Pediatric Pulmonary Medicine. Dr. Lovinsky-Desir will receive funding to support her proposal, “Adolescent Physical Activity in Urban Polylated Environments and Respiratory Measures.”

Brett Anderson, MD, MBA, Assistant Professor of Pediatrics at CUMC, Pediatric Cardiology. Dr. Anderson was awarded a second year of funding to support her proposal, “provider experience: can it predict patient outcomes for children undergoing congenital heart surgery?”

Dieter Egli, PhD, Assistant Professor of Developmental Cell Biology (in Pediatrics), Pediatric Molecular Genetics, received a second year of funding to support his proposal, “Mechanism of Karyotypic Abnormalities in Somatic Cell Reprogramming.”

Thomas Hooven, MD, Clinical and Research Fellow, Neonatology/Pediatrics. Dr. Hooven was awarded a second year of funding to support his proposal titled, “New Approaches to Preventing Perinatal GBS Infections.”
**DISCOVERing Peace of Mind**

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disease for which there is no established standard of care.

“We will use the most advanced genomic methods as well as all other diagnostic methods to identify the causes of undiagnosed disorders and ensure that these children and adults get a comprehensive and coordinated evaluation. The evaluation happens to be led by geneticists, but also includes all the other sub-specialists in the medical center.” Dr. Chung estimates that at least 35 percent of patients in the program will be diagnosed with a genetic condition after the initial evaluation.

“If we can’t make a diagnosis quickly, we’ll keep searching and do whatever studies are necessary to identify a patient’s disorder,” Dr. Chung says. “We’ll help patients establish a medical team that can continue their ongoing care, discuss research studies, and connect patients and families with others who have the same diagnosis.”

The DISCOVER (Diagnosis Initiative: Seeking Care and Opportunities with Vision for Exploration and Research) Program, the only center of its kind in New York State, has been up and running since early September 2015. “One of CUMC’s 10-year goals is to integrate these kinds of precision medicine initiatives into the care of our patients, and Dr. Chung started to do that years ago,” says Ron Wapner, MD, Director of Reproductive Genetics in OB/GYN. As a Maternal-Fetal Medicine specialist, Dr. Wapner also applies personalized medicine to the fetus, identifying those that might have genetic disorders. “The difference is that Dr. Chung does it after babies are born, and I do it before they’re born,” he adds.

Arriving at a diagnosis is key, Dr. Wapner says, because it can have a big impact on the patient’s ability to function later in life. “There now are a lot of disorders in which we really can alter the management not only of the child, but of the fetus. If we know someone has a genetic abnormality that can lead to a learning or developmental disorder, we can start intervening much earlier, which really makes a big difference.”

Through Drs. Chung’s and Wapner’s partnership, CUMC provides a continuum of prenatal to pediatric to adult care for those with serious, complex, and sometimes undiagnosed disorders—a succession of care that families will receive at only a very limited number of medical centers,” Dr. Wapner says. With the DISCOVER program, CUMC adds another dimension to those services. —Beth Hanson

**Outcomes Research**

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“This research is not focused on small groups of women,” says Dr. Wright. “It focuses on the entire population and tries to address these issues and then make inferences that can affect public policy.”

In addition to members from the department, the School of Public Health, biostatisticians, epidemiologists, health economists, and various other departments (such as medicine, surgery, and urology) from across CUMC also participate in this collaborative effort.

“Our team has many different areas of expertise,” says Dr. Wright. “Our group of investigators complement one another.”

While still in its very early stages, one of the long-term goals of this research will be to apply the results to the individual patient.

“We’re just starting to do these large scale population studies to understand what’s happening with patients across the United States,” explains Cande V. Ananth, PhD, MPH, Professor of Reproductive Sciences and Member of the Outcomes Research in Obstetrics and Gynecology team. “So we really need to understand this data. The research has to be so perfect, to the extent where the data is very compelling and the results are so strong that we will start making implications in terms of policy changes. Only then can we start thinking about adapting treatment effectiveness to the individual patient.”

Dr. Wright adds, “What you want to do with this kind of research is instead of ‘one size fits all’ medicine, we want to be able to perform these large scale studies and find treatments that will work the best for particular patients, whether it’s delivered by particular physicians or in certain hospital settings. So the mission of this initiative is ultimately to come up with more nuanced treatment guidelines and really look at how treatments affect various patients.” —Cecilia Martinez