

# Personal Journeys

In the following pages, you'll meet people from around MSK and hear their unique stories.



› “I feel morally committed to the institution’s mission and what we’re doing every single day,” says laboratory manager Zari Asgari. Hear more from Ms. Asgari on page 20.

# WHY I CARE FOR PATIENTS ON CLINICAL TRIALS

Asia McCoy  
CLINICAL TRIALS NURSE



**Asia McCoy is part of MSK's Genitourinary Oncology Service. Together with another nurse, she helps oversee all of the trials related to bladder cancer at MSK. At the end of 2018, there were 18 ongoing trials, involving seven doctors and about 50 patients.**

After college I started working at MSK as a physician office assistant. A few years later I became a clinical trials assistant. I helped manage trials for kidney cancer, alongside genitourinary oncologist Robert Motzer. [See sidebar at right.]

When I started, there were no good treatments for kidney cancer. I had the opportunity to be part of the team that led the development of sunitinib (Sutent®), which was one of the first of several targeted drugs that changed the treatment of that cancer.

I was fortunate to be part of this groundbreaking work early in my career. It inspired me to delve deeper into clinical research, but on a patient-care level. In 2006, after nine years of working at MSK, I decided to go back to school and get my nursing degree.

Since 2011, I've been part of the clinical trials team for bladder cancer. The path to new drugs has been similar to what I saw in kidney cancer. When I started, there were few beneficial drug treatments. Now several effective drugs have been approved. Many patients are living a long time, even with advanced cancer.

As a clinical trials nurse, I educate, coordinate care, and triage symptoms for every person enrolled in a trial for bladder cancer. I need to be familiar with all of the trials that are

underway. I develop close relationships with my patients because I'm usually the first person they talk to if they have a question or problem.

I've always been a caring person, and I've always been interested in science. In this role at MSK, I can combine both of those things. ■

## A POWERFUL COMBINATION FOR KIDNEY CANCER

Dr. Motzer has been a pioneer in developing many of the new treatments that have been approved for kidney cancer in the past decade.

In April 2018, the US Food and Drug Administration approved the latest of these treatments: the combination of the immunotherapy drugs ipilimumab (Yervoy®) and nivolumab (Opdivo®). Both drugs are in a class called checkpoint inhibitors. They work by taking the brakes off the immune system and allowing it to recognize and attack cancer.

This drug combination was originally developed at MSK for the treatment of metastatic melanoma. Clinical trials led by Dr. Motzer and published in March 2018 in the *New England Journal of Medicine* showed that it was also effective for kidney cancer that had spread to other parts of the body. The drug combination resulted in an 18-month overall survival rate of 78 percent, compared with 68 percent for treatment with targeted therapy sunitinib.

# WHY I LOOK AT TUMORS CELL BY CELL

Tuomas Tammela  
CANCER BIOLOGIST



**Tuomas Tammela is a scientist in the Sloan Kettering Institute's Cancer Biology and Genetics Program. He studies cellular heterogeneity (the different cell types that make up tumors) in lung and pancreatic cancers. During the 2018 meeting of the American Association for Cancer Research, he presented a study of a novel way that pancreatic cancer maintains the right conditions to survive and grow in the body.**

Early in my career, when I first began studying cancer in mice, I discovered that it takes only a few aggressive cells within a tumor to make the whole tumor more dangerous. Although these bad actors may make up just a small portion of cells, their presence greatly increases the likelihood that cancer will spread and resist treatment. This powerful effect got me interested in the study of heterogeneity in cancer. When tumors are heterogeneous, it means that not all of the cells in the tumor will respond to the same drugs, making them much harder to treat. Intratumor heterogeneity, which is the variation of individual cells within a tumor, is the focus of my lab today.

Tumors are so complex and diverse that it's probably fair to say that no two cells within a tumor are exactly alike. That complexity can be daunting, but with the right tools, we can learn to make sense of it. Once we understand it, we can manipulate it.

One of the tools used in my lab is called single-cell RNA sequencing. Before this technology was developed, it wasn't possible to study the diversity of cells in a tumor the way we study it today. MSK is one of the best places where this kind of research can be done. I'm able to collaborate with colleagues who have expertise in single-cell analysis techniques as well as those with a deep understanding of how heterogeneity affects patients.

A goal of my research is to develop drugs and other therapies that make tumors less heterogeneous. We want to push the cells into a state that makes them all respond to the same therapy, so they are easier to treat and less likely to spread. If we can gain therapeutic control over these different cell types, we can have a significant impact on the treatment of cancer in the future. ■



▲ Tuomas Tammela's lab uses this gene synthesizer to assemble synthetic DNA fragments for use in their molecular biology research.





## WHY I AM EXCITED ABOUT THE FUTURE OF LEUKEMIA TREATMENT AT MSK

Martin Tallman  
CHIEF, LEUKEMIA SERVICE

**Martin Tallman is a hematologic oncologist who specializes in treating people with acute myeloid leukemia (AML) and acute lymphoblastic leukemia (ALL). He also participates in clinical research.**

The first successful treatment for AML, a combination of two chemotherapy drugs, was developed in 1973. It doesn't work for all patients and has numerous side effects. With the exception of one drug that was approved in 2000 but later removed from the market, there were no new approved agents for more than 40 years.

In the past 18 months, though, eight new drugs have been approved for AML, a relatively common blood cancer in adults. MSK has been involved in much of this research. One of the drugs is an updated version of a standard leukemia drug. Another is made from an antibody linked to a potent toxin. Three more new drugs target mutated proteins that are commonly found in AML.

For ALL, there also have been recent advances, including the ability to diagnose its different subtypes and to determine which ones have an unfavorable prognosis and need more aggressive treatment. Immunotherapy, including chimeric antigen receptor (CAR) T therapy, also has made a big difference for ALL. There are now clinical trials under way looking at CAR T therapy and other types of immunotherapy for AML.

We are looking at new ways to combine drugs as well. And many new leukemia drugs have allowed people to avoid chemotherapy and the toxic side effects that go with it.

It's still early. These therapies are new, and we need to do more studies. But they provide fertile ground for continuing

collaborations between those of us in clinical trials and those in the laboratory. Because MSK has strengths in both of these areas, we have many opportunities to work together and bring scientific advances to people with cancer.

It's an amazing, exciting time to be doing leukemia research at MSK. ■

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Martin Tallman  
CHIEF, LEUKEMIA SERVICE

# WHY I RUN A CLINICAL RESEARCH LABORATORY AT MSK

Zari Asgari  
LABORATORY MANAGER

**Zari Asgari has been managing the lab of Anas Younes, Chief of the Lymphoma Service, since it was established in 2012. She helps lead a team of five scientists who are working to develop new treatments for people with lymphoma. In 2018, the lab made an important discovery about a new combination drug strategy that could be effective in treating an aggressive form of non-Hodgkin lymphoma.**



When I started working in research, it was just a job. But the more I became involved, the more I became attached, and the more my life outside of work felt connected. I've worked at several leading healthcare organizations, but MSK stands out. The design of this institution is based on the directive that diversity is a positive force. I see that in my work environment every day, as we collaborate with people from all sorts of backgrounds and cultures, and who have all sorts of ideas – scientific and otherwise.

As a lab manager, I need to be highly organized so that the flow of work is as efficient as possible, and so that all of our policies and procedures meet the highest standards. It can be challenging to make sure we're on target, but I work hard for our team – and we really are a team – to function smoothly so that Dr. Younes can have all the support that he needs, as far as data and research, to focus on caring for his patients.

I also really enjoy working with new fellows and postdocs. I make sure that all of the details are taken care of so that they can jump right in and start on their science.

For me personally, working in cancer research has a lot to do with respect and responsibility. When I introduce myself to someone outside of MSK, the response I get is one of respect, and that's priceless to me. But at the same time, I feel a huge sense of responsibility. I feel morally committed to the institution's mission and what we're doing every single day. ■

**“WHEN I INTRODUCE MYSELF TO SOMEONE OUTSIDE OF MSK, THE RESPONSE I GET IS ONE OF RESPECT, AND THAT'S PRICELESS. BUT AT THE SAME TIME, I FEEL A HUGE SENSE OF RESPONSIBILITY.”**

Zari Asgari  
LABORATORY MANAGER

# WHY I BELIEVE GSK OFFERS A GRADUATE SCIENCE EDUCATION UNLIKE ANY OTHER

Kenneth Marians

FOUNDING DEAN, GERSTNER SLOAN KETTERING  
GRADUATE SCHOOL OF BIOMEDICAL SCIENCES (GSK)

**Kenneth Marians, a molecular biologist, stepped down as Dean of GSK at the end of 2018. He was a driving force behind the school's creation. He has advised 13 classes of students, close to 60 graduates.**

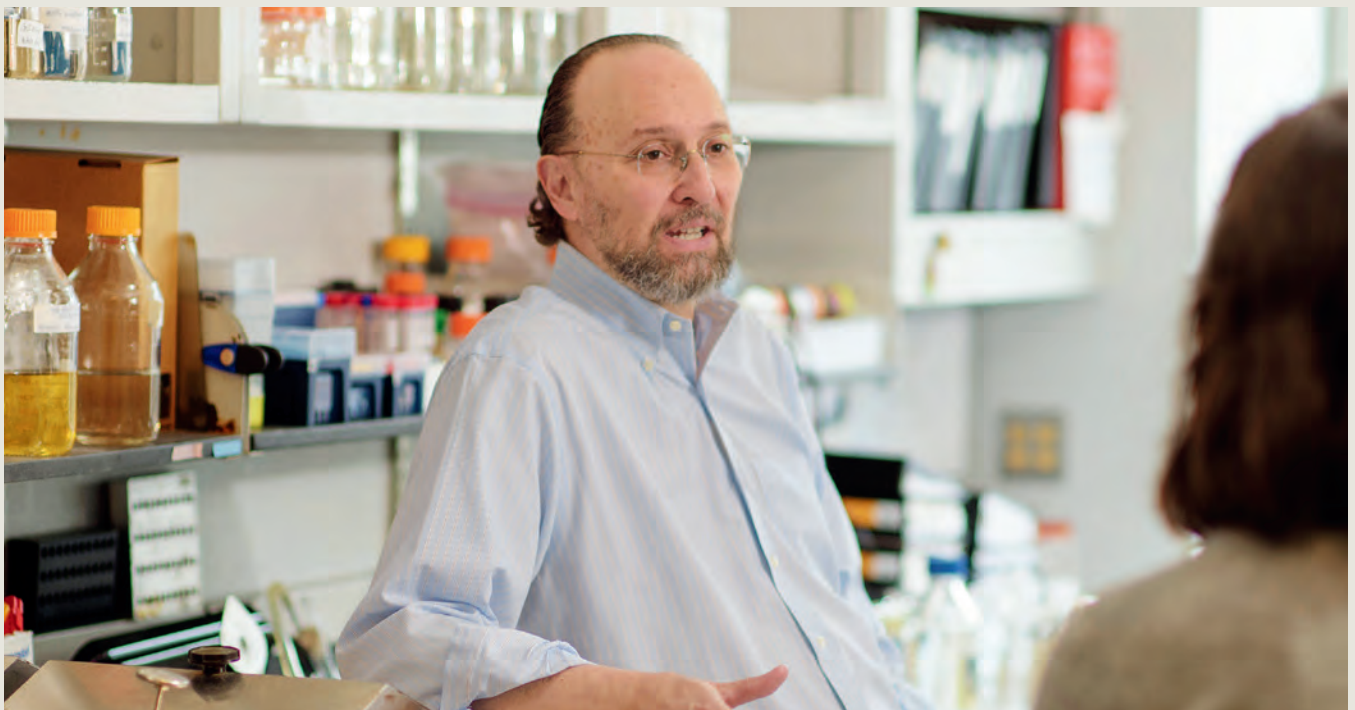
I went to a very large graduate school, Cornell University in Ithaca. The only time I interacted with the dean's office was when I handed in my dissertation.

The idea for GSK was that it would be much smaller and much more interactive. We have about ten students each year. There's much more of a direct role for the dean in responding to students' concerns. The students have easy access to the administrators, and we get a lot of feedback from them.

The school's approach is unique as well. Early on, it became clear that if we really wanted to do something different and special, we had to take advantage of what was special about Memorial Sloan Kettering, rather than duplicate what was going on at neighboring institutions. That's where the idea of driving the learning through the lens of human disease, namely cancer, came from.

We try to integrate basic science with the clinical picture so that students get a broader view. They are encouraged to think about how what they do in the lab could ultimately benefit patients. But what makes GSK great is that it is focused on fundamentals in basic science.

We now have a fair number of alumni in the New York City area. A lot of them come back, and it's fun to see them. Two years ago at our annual retreat, for the tenth anniversary, we brought back as many alumni as could come. For me, it's all about the students and their success. ■





# WHY I CHOSE MSK FOR MY POSTDOCTORAL RESEARCH

Suleman Hussain  
RESEARCH FELLOW



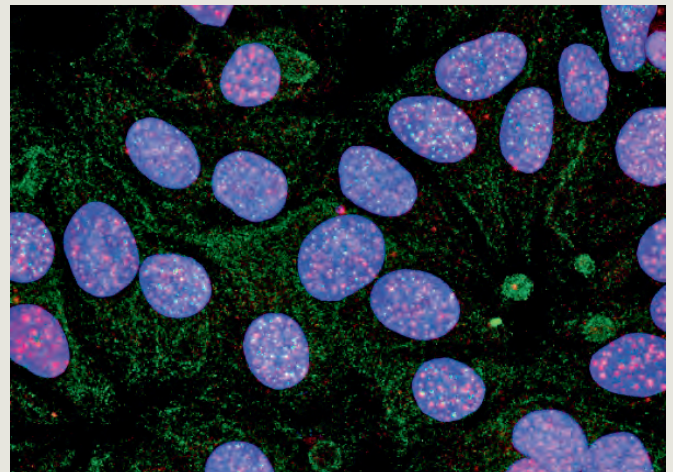
**Suleman Hussain is a third-year postdoctoral fellow working in the lab of Daniel Higginson at MSK. He is studying pathways of DNA repair and their role in cancer therapies. He was awarded an AACR AstraZeneca START Fellowship from the American Association for Cancer Research in early 2019.**

I'm very motivated by the idea of translational research. Whatever I'm doing in the lab ideally should have a clinical impact, either in helping doctors make treatment decisions or in improving diagnostics. That's what really pushes me.

In my current research, I'm focused on understanding how cells repair their DNA and how these processes affect cancer treatment. We know that cancers that are deficient in one specific method of DNA repair can be treated with certain drugs, called PARP inhibitors. But sometimes cancers compensate for this deficiency by repairing DNA in a different way, which makes the drugs less effective. The laboratory tests that are currently available for measuring DNA repair don't capture that balance.

We recently developed an approach using the genome-editing tool CRISPR-Cas9 and next-generation sequencing that detects a cell's usage of three major DNA repair pathways at the same time. This has significance for both scientists and patients. It can help basic scientists who are exploring the mechanisms of DNA repair. And it may help doctors determine which treatments might be better for patients based on the specific repair pathways their tumors are using.

MSK has this very nice balance between basic science and translational science. It allows researchers to move easily between them. ■



▲ In this image from Suleman Hussain's lab, the red dots represent proteins gathering at a break in a cell's DNA. The proteins act like lifeguards, springing into action only when DNA needs repairing. Image courtesy of Gesa Junge.



## WHY I MENTOR THE NEXT GENERATION OF SCIENTISTS

Michael Overholtzer

DEAN, GERSTNER SLOAN KETTERING GRADUATE  
SCHOOL OF BIOMEDICAL SCIENCES (GSK)

**A renowned cell biologist, Michael Overholtzer became Dean of GSK on January 1. His lab in the Sloan Kettering Institute is working to uncover how inducing cell death may be used as a form of cancer therapy.**

I've had many mentors throughout my career, and they've all played different, important roles. They showed me everything from the fundamentals, like how to design a sound experiment, to demonstrating passion for science. I learned that the process of discovery isn't really a career; it's a lifestyle — one that you can fall in love with. My mentors opened my eyes to how amazing life as a scientist can be.

Part of the fun of running a lab is to have the chance to see some of your ideas play out as success for other people. In a similar way, I'm excited to contribute new ideas to GSK and to have the opportunity to witness and support the successes of our students.

As a school, GSK has always been innovative, from its concept to its structure. This applies to our students, too, and their passion for science, dedication to their work, and sense of ownership of our special community. We have a unique opportunity to think about graduate education in a novel way, to help shape young scientists into future leaders. I look forward to continuing this exemplary tradition. ■



# WHY I BROUGHT MY CHILD TO MSK

Ana and Enrique Plaza  
PARENTS OF RIHANNA, AGE 2

**Rihanna Plaza was born with a massive tumor on her upper arm. Chemotherapy at a local hospital didn't shrink it. At MSK, doctors tested the tumor and found it was caused by a mutation in a gene called NTRK. Researchers, including Rihanna's doctor, Neerav "Neal" Shukla, had seen promising results with larotrectinib (Vitrakvi®), which targets the NTRK gene. Ana and Enrique Plaza enrolled their daughter in a clinical trial of the drug in 2018, and the tumor shrank almost immediately. After several months, Rihanna had surgery to remove the remaining tumor. Today, she is a healthy, happy big sister.**

It was a normal pregnancy, but after 27 hours of labor, the doctors opted for a C-section. They told me there was something wrong with her arm and that they were going to transfer us. Her arm had a tumor the size of her head. I was in shock. I couldn't believe it. I used to go to the NICU, and I couldn't even hold her for too long because I would faint or get sick.

We came to MSK because we had heard it was the best. We were willing to do anything. I thought the cancer would spread or that we would lose her. The way that the doctors here spoke gave me confidence that they knew what they were doing and that there was definitely hope.

The drug was like liquid Tylenol — Rihanna didn't even fight me on it. It worked in three days, and she had no side effects. We started on a Monday, and by Wednesday, the tumor had shriveled like a raisin. I called the doctor right away because I could not believe it. Rihanna was hyper and happy, like nothing was happening.

She started the medicine on June 6 and was able to have the remaining tumor removed by November. A year has gone by, and nothing has come back. She loves to dance, she loves Minnie Mouse, and she loves to hug and kiss her little brother, Ricky.

I would tell another family, "Run to MSK. Don't wait, and don't give up." MSK made it a lot easier and smoother. From the bottom of my heart, I can honestly say it was the best care that I think anybody could have ever gotten. I am forever grateful. ■

▼ From left: Ana and Enrique Plaza with infant Rihanna; the Plaza family at Rihanna's second birthday; and Rihanna playing. Photos courtesy of Ana Plaza.





## WHY I DECIDED TO JOIN A REVOLUTIONARY CLINICAL TRIAL AT MSK

Sharon Belvin  
FORMER MSK PATIENT AND  
MOTHER OF TWO

▲ Sharon with her children, James, age 8, and Lillybeth, age 11. Photos courtesy of Sharon Belvin.

**In 2004, Sharon Belvin was diagnosed with stage IV melanoma. Jedd Wolchok, Chief of the Melanoma and Immunotherapeutics Service, enrolled her in MSK’s first clinical trial of ipilimumab (Yervoy®), an immunotherapy that harnesses the body’s immune system to attack cancer. Ms. Belvin was the first person at MSK to have a complete response to the medication, which the US Food and Drug Administration has since approved for metastatic melanoma. In 2018, immunologist James Allison, who ran clinical trials of ipilimumab with Dr. Wolchok at MSK, received the Nobel Prize in Medicine.**

I had tried every single treatment under the sun. They bought me some time but nothing worked. So when Dr. Wolchok said, “You have the opportunity to participate in a clinical trial,” I jumped on it. This had the possibility to be amazing.

Dr. Wolchok never gave me any false promises. He was calm each and every time. You have no idea what to do, so it’s very reassuring when you’re so scared to trust your care team.

I was really lucky; I didn’t have a whole lot of side effects. I had an immune reaction and was in the hospital for five days, but I didn’t have any GI issues. My thyroid was affected, but that was an easy fix with medicine.

When I had my initial scan after the treatment, my tumors had shrunk 60 percent. It was insane. The radiologist called Dr. Wolchok to make sure he had the correct patient.

Soon after, my scans showed no evidence of disease. My mind went blank. Until that point, every single time I had walked into a doctor’s office it was bad news. Dr. Wolchok said, “Would you like to meet the man who invented this trial?” He called Dr. Allison out of the lab, and I pretty much tackled him. There were tears everywhere. It was a life-changing moment.

Everybody at MSK was fantastic. The doorman at the Rockefeller Outpatient Pavilion, Nick Medley, to this day I still talk to him. He used to get me out of the car when I was in a wheelchair. Now I’m walking in just fine. Every year when I go in, I bring him pictures of my kids.

If I didn’t sign up for the trial, I wouldn’t be alive today. I’m 100 percent sure of that. ■



▲ Sharon Belvin with Jedd Wolchok (left) and James Allison celebrating the Nobel Prize in Stockholm, Sweden. Of being at the ceremony, Ms. Belvin says, “It was such a privilege. If someone had told me this was what my life was going to be like, I’d still say, ‘No way.’”



# WHY I TEACH PEOPLE HOLISTIC WAYS TO HEAL

Jun Mao

CHIEF, INTEGRATIVE MEDICINE SERVICE

**Jun Mao is an integrative medicine specialist and acupuncturist who also researches the use of complementary therapies for people with cancer. In 2018, he published a study on the benefits of acupuncture and cognitive behavioral therapy for cancer survivors dealing with insomnia.**

When I began my career in family medicine, I realized that the tools we have in conventional medicine are often inadequate to help people manage pain, fatigue, sleep, and other issues. I wanted to help find solutions. I've always had a more holistic orientation. I originally studied chemical engineering before I moved into medicine, so I've always seen human beings like a machine, as a whole rather than parts.

Integrative medicine is extremely relevant to people with cancer. When people are diagnosed, they often get a lot of advice about what alternative approaches to try. It's often well-meaning advice from family or friends but can be very misinformed. If they simply pursue that advice, their outcomes and survival can be compromised. At the same time, we have research showing that acupuncture, yoga, meditation, and other therapies can help with challenging physical and psychiatric symptoms caused by cancer treatment. Careful integration of these approaches into cancer care can improve people's quality of life, how well they tolerate their conventional cancer treatment, and their outcomes.

This year [2019] is the 20th anniversary of the Integrative Medicine Service at MSK. We were the first integrative medicine department in a cancer center, and we have a history of robust, ongoing research that has defined the field. We are seen as the flagship of what we do. Our focus is not only on providing the highest standard of care but also setting that standard for everyone else. ■





# WHY I CARE FOR YOUNG PEOPLE WITH CANCER

MaryEliza McEachen  
CLINICAL NURSE

**MaryEliza McEachen has cared for kids and young adults in the Department of Pediatrics at MSK for 20 years. She represents the Department of Nursing on MSK's Ethics Committee and has received the DAISY Award, a prestigious honor given to nurses who go above and beyond for their patients.**

Early on in my career, I had a summer nursing assistant job in Boston on a bone marrow transplant unit. I was really drawn to the breadth of care — to be with these people for their entire stay in the hospital and to see them get well. And even if they didn't get well, it felt important to be with them every step of the way.

Sometimes, kids can have treatments that require them to stay in the hospital for up to three months. It can be a tough time, but at the end of the day, they're still kids. Little pieces of normalcy are incredibly important. Last week, I had a patient whose family was preparing Shabbat dinner in the kitchen on our inpatient floor. This little girl was debating about who she wanted to sit next to, her sister or her grandmother. That was her biggest worry in that moment. And those are exactly the moments we want.

It might sound odd to say, but the Department of Pediatrics is actually a really positive place. We have moments of sadness, but you see the best of people and of community here. Not everyone can say they love their job, but I feel lucky because I can. ■



**“I WAS REALLY DRAWN TO THE BREADTH OF CARE — TO BE WITH THESE PEOPLE FOR THEIR ENTIRE STAY IN THE HOSPITAL AND TO SEE THEM GET WELL. AND EVEN IF THEY DIDN'T GET WELL, IT FELT IMPORTANT TO BE WITH THEM EVERY STEP OF THE WAY.”**

MaryEliza McEachen  
CLINICAL NURSE

# WHY I RAISE MONEY FOR PEDIATRIC CANCER RESEARCH

Debbie and Kevin Bhatt  
PARENTS OF CAROLINE, AGE 5

**In 2016, Caroline Bhatt was diagnosed with stage IV Wilms' tumors in both kidneys. At 3 years old, she underwent six months of chemotherapy, radiation, and surgery. Today, Caroline's cancer is in remission, and she and her family are active fundraisers, raising more than \$100,000 to support the work of MSK pediatric oncologist Michael Ortiz, a Wilms' tumor expert working to develop better treatments for this rare childhood disease.**

▼ **Left: Caroline and big brother Andy, age 8, enjoy playing games. Legos are a family favorite. Right: With Caroline in remission, the Bhatt family continues to raise money to help other families affected by rare cancer. Photo credit: Amanda Gentile Photography.**

Caroline was diagnosed at 2 PM on a Wednesday. By the next morning, we were at MSK meeting with [pediatric surgeon] Michael LaQuaglia and [pediatric hematologic oncologist] Peter Steinherz. Caroline started chemotherapy the very next day. Our lives were completely changed in a matter of 48 hours. From the beginning, the doctors gave us confidence that she would get better. In retrospect, that confidence was bold, but it helped us get through those tough months, and maybe even helped us get to the fortunate place we're in now.

Before Caroline was a patient, a pediatric cancer floor sounded like the most depressing place. But when we arrived on the ninth floor [of the Claire Tow Pediatric Pavilion], we saw the exact opposite. Every day we were greeted by warm, cheerful, and supportive faces — the reception team, nurses, the child life team, big-hearted volunteers, and dedicated doctors — and that made an incredible difference.

We participated in our first fundraising event, Kids Walk, while Caroline was still in treatment. Not only did the MSK staff work each day to help kids like Caroline, but they also showed up at the event, on a weekend, to show support. It's remarkable to see how truly committed everyone is.

We remember the exact day we met Dr. Ortiz. He was doing research on Caroline's type of cancer, and he came by the ninth floor to meet us. We felt so grateful to meet this bright, caring person who has chosen to focus his career on new treatments for kids like our daughter. We continue to be grateful for his dedication and progress. In fact, Dr. Ortiz recently published a study about a treatment protocol that Caroline was a part of. Because of the excellent results, this treatment is now standard at MSK and will hopefully be adopted by other hospitals.

Today, Caroline is a healthy, enthusiastic girl and sees Dr. Ortiz for regular checkups. While we are grateful for her recovery, there are still so many more kids who need help. We have a lot more work to do. ■





› Caroline continues to come to MSK for follow-ups. The type of cancer she had, Wilms' tumor, is the most common type of kidney cancer in children, with about 500 kids in the United States diagnosed each year.

