SPRING 2021

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• ST.JUDE

HAYLEY'S Comet

'Hope' launches St. Jude cancer survivor's childhood dream

Garden of Hope

This bird's eye view of the Hope Garden on the campus of St. Jude Children's Research Hospital reveals an outdoor sanctuary for patients and families. The maze-like garden, in the shape of a child's head with a heart at the center, was the idea of a former St. Jude patient.

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e's a pilot and adventurer who's seen the world at the speed of sound, and beyond. She's a childhood cancer survivor and world traveler who's visited five continents, while she's not working as a physician assistant at St. Jude Children's Research Hospital.

Now they're bound for the cosmos, in the world's first all-civilian mission to space – Inspiration4, benefiting St. Jude and its remarkable work treating some of the sickest children here on Earth.

So I'd like to introduce you to Jared Isaacman, the Founder and Chief Executive Officer of Shift4 Payments, a St. Jude partner. You'll be reading all about him in this special Inspiration4-themed issue of *St. Jude Inspire*. He's the commander, representing the mission pillar of Leadership.

And I'd like you to meet Hayley Arceneaux. She represents the mission's Hope pillar as a St. Jude cancer survivor who's made the cause her career. They'll be joined by a member of the public, chosen as part of a \$200 million St. Jude fundraising initiative representing the Generosity mission pillar, and a deserving entrepreneur representing the Prosperity pillar.

Together, the Inspiration4 crew will make history.

More importantly, they'll make a difference.

That's the mission of this mission, and it all begins with our friend Jared. He dreamed of going to space as a little boy, but in realizing that lifelong dream he's made it about other children – the kids of St. Jude.



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Hayley during treatment in 2002.

Together, the Inspiration4 crew will make history. Jared is a man of courage and compassion. He's a boundaries pusher and a believer in a world of infinite possibilities.

He's the kind of leader you'd follow almost anywhere – even to space.

Or maybe I should say, *especially* to space.

Because by traveling to space, we have one of the most extraordinary opportunities in the 59-year history of St. Jude. The hundreds of millions of dollars raised – Jared has pledged \$100 million himself – will support the multibillion-dollar effort of St. Jude to save more kids worldwide. The priceless publicity will give St. Jude the opportunity to reach and create new generations of supporters when they see our story written in the stars.

As Jared says, "I've been able to experience a lot of really amazing things in life. I've gone on some great adventures. I've been very fortunate. And I just think about all the families that are not as fortunate. You can't even imagine what they're going through. We've just got to do something about it."

In this meeting of two missions– Jared's, to explore and inspire through space travel; and that of St. Jude, to seek cures through innovative science – the commander couldn't ask for a better crew mate than Hayley.

She had childhood dreams, too. She'd visited NASA and wanted to be an astronaut. "Who doesn't?"

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she said. But at 10, a tumor above her left knee was diagnosed as osteosarcoma.

Treatment at St. Jude wasn't just lifesaving. It was life-changing. Because now Hayley had a new career goal.

"All I knew is, I wanted to work at St. Jude," she said. "And I'm very happy to say that now I do."

Hayley, as a physician assistant working with leukemia and lymphoma patients, is able to provide not just healing but a special brand of hope. As a former patient, she's a living example of what's possible at St. Jude. She travels the world. She works at her "dream job." And now, astoundingly, she's about to be a civilian astronaut in a flight the world will be watching.

When she was asked what part of the mission she's most excited about, the answer was pure Hayley. It was the chance to interact, from space, she said, with her patients back on Earth.

"I think they're just going to get such a kick out of it," she said.

That's Hayley. That's Jared, too. They're about to take the trip of a lifetime, poised to make history in space, but their hearts will be here with us. Inspiration4 is so wellnamed. It's inspiring us all. It's saying to the world: Dream large, but do good along the way. And don't forget to make your purpose as high as your aim.

Richard C. Shadyac Jr. President and Chief Executive Officer, ALSAC

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🎽 You can help ensure families never receive a bill from St. Jude for treatment, travel, housing or food. stjude.org/donate



TREATING THE DISORDERS That medicine can't cure

Patients suffering from everything from sleep disruption to anxiety turn to Valerie Crabtree, Ph.D., and her team.

BY THOMAS CHARLIER · ALSAC

edical professionals may handle the surgeries, infusions and diagnostics at St. Jude Children's Research Hospital, but they leave some other vitally important matters to Valerie Crabtree, Ph.D., and her team.

Matters like emotionally preparing a young patient for an amputation.

Or helping patients restore sleep cycles that have been disrupted by tumors and chemotherapy.

"Our job is to take care of almost anything that isn't a medical need for the child," said Crabtree, Chief of Psychosocial Services at St. Jude, during a donor video call with Richard C. Shadyac Jr., President and CEO of ALSAC, the fundraising and awareness organization for the research hospital.

"If I'm working with a child who has cancer, or a child who has sickle cell disease, I know that I can be confident that the doctors and nurses are doing everything they can to treat that child's medical needs, and they can feel confident that I'm doing everything I can to treat that child's psychological needs."

Crabtree, who oversees a team of psychologists, social workers, chaplains and other professionals, has done considerable research of her own, with the science of sleep being a major focus. Childhood cancer patients often suffer significant sleep disruption, resulting in excessive daytime sleepiness and fatigue that impairs their ability to learn or play.

"We didn't really know anything about sleep in children with cancer when I arrived (at St. Jude) in 2007," she said. "Now, being able to do something about it ... that's been a really exciting aspect of the research I do here."

To underscore the non-medical challenges associated with catastrophic childhood diseases, Crabtree drew parallels between the stresses facing St. Jude families and those accompanying the COVID-19 pandemic.

Asked about patients who stand out in her memory, Crabtree recalled a particularly uplifting success story. She had been called to help support parents whose baby wasn't expected to survive. A dozen years later, the boy is in middle school.

"Truly the best part of my job is watching kids get healthy."



NEW ADVANCED RESEARCH CENTER An "Incredible space" for breakthroughs

At 625,000 square feet, the \$412 million facility will solve a longtime space crunch while offering stateof-the-art digs for scientists.

BY THOMAS CHARLIER · ALSAC

scientist with his own hardhat, Michael Dyer, Ph.D., clambered into the advanced research center at St. Jude Children's Research Hospital more than a few times during construction, mainly to help plan and visualize lab space. But he also found himself just marveling at the \$412 million facility. For Dyer, who chairs the St. Jude Department of Developmental Neurobiology, a favorite feature is the central atrium, a three-sided open space that lies in the middle of the research center and floods it with natural light.

"You can stand on one side of that triangle and see all the way through the entire building out the windows on the other side...," Dyer said in a video call with Richard C. Shadyac Jr., the President and CEO of ALSAC, the fundraising and awareness organization for St. Jude.

"It's beautiful."

Aesthetics aside, the research center will be a state-of-the-art scientific hub when it opens this spring. At 625,000 square feet, it will more than solve a longtime space crunch challenging scientists at St. Jude.

"To move forward and to bring in more scientists and expand, we needed more space," Dyer said.

Upon opening, the research center will house 300-400 people and 56 labs, including one for Dyer's team, as well as those for the disciplines ranging from immunology to cellular and molecular biology. It also will feature expansive space for computational biology, artificial intelligence and one of the most advanced microscopes in the world. Even with all those functions, the facility won't be fully occupied.

As massive as it is, the research center is just "one small part of our multibillion-dollar expansion of the St. Jude campus and of the St. Jude mission," Shadyac said. "All of this is going to ensure that our research is more freely available to scientists around the globe, and that more and more kids are going to benefit from the research and treatment that's done at St. Jude."

If there's a single word most commonly applied to the research center's design, it's 'collaborative.' The term refers to an open layout that invites researchers, specialists



Michael Dyer, Ph.D., is chairman of the St. Jude Department of Developmental Neurobiology.

and clinicians from across different disciplines to work together.

"This is an incredible space," Dyer said. "It's more collaborative, and it really reflects the way we do science today."

By that, Dyer means scientists today must be at least somewhat knowledgeable in several disciplines, as opposed to the more singular focus they generally pursued in the past. And the goal, he said, is to bring together scientists who have "very different expertise and very different ways of thinking" to drive creativity and innovation.

"That is the only way to tackle these complicated diseases like childhood cancer."

It was just that kind of collaboration that enabled Dyer to team up with St. Jude associate faculty member Sara Federico, M.D., a decade ago to launch the Childhood Solid Tumor Network, a research initiative devoted to developing new treatments for some of the deadliest forms of pediatric cancer. The tumor studies, now the world's largest and most comprehensive collection of scientific resources for researchers studying pediatric solid tumors and related biology, will be moved to the new research center.

As for artificial intelligence, Dyer noted that computer search engines use it to target potential customers with advertising for products they've shown interest in.

"While it's annoying on your browser, that is incredibly powerful in biomedical research because the kind of data we have is just too big for the average person to get their head around."

One less tangible benefit of the new center will be its potential in attracting more world-class scientists and specialists to St. Jude.

Shadyac is particularly upbeat about the promise of the facility funded by donors.

"Just think of the great leaps in science that can be made in these labs for the treatment of kids everywhere," he said.

COVER STORY

ST. JUDE IS GOING TO SPACE On a mission guided by Hope and Possibility

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JOURNEY. ORTUNITY.

By David Williams · ALSAC

f you've ever wondered how far St. Jude Children's Research Hospital would go in its fight against pediatric cancer and other catastrophic diseases, we have a new answer.

To the heavens and back.

Yes, St. Jude is going to space, in a mission meant to inspire support for the cause and send a humanitarian message of hope and possibility.

Inspiration4, the first all-civilian mission to space, will carry a crew of four, each representing a mission pillar. Hayley Arceneaux, symbolizing Hope, was treated at St. Jude for osteosarcoma, a type of bone cancer, and has achieved a dream by returning to St. Jude to work as a physician assistant. Now she's telling her story of hope and healing – a story of lifesaving treatments and ground-breaking research – to a global audience, thanks to this historic flight at St. Jude.

The Generosity pillar is being awarded to a member of the public as part of a \$200 million St. Jude fundraising campaign in support of our multibillion-dollar expansion to accelerate research advancements and save more children worldwide. The Leadership pillar is embodied by mission commander Jared Isaacman, Founder and Chief Executive Officer of Shift4 Payments, a St. Jude partner. He didn't just give St. Jude two seats on the flight – he's also committed \$100 million to the cause.

"Because for as much as we like to conquer and drive progress in space, you can't ignore the problems of the world we live in today," said Jared, who is awarding the fourth crew seat, representing Prosperity, to a deserving entrepreneur.

"If this turns out to be, which I sure hope it does, the single largest fundraising campaign for St. Jude Children's Research Hospital, think about all the good we're going to be able to accomplish with those dollars here on Earth." +



HAYLEY ARCENEAUX AISSION OF A LIFETIME

and the second

By Thomas Charlier · ALSAC

ayley Arceneaux remembers that first email for what it didn't say. Sure, there was a cryptic mention of some "new opportunity" headed her way, but little else. Certainly nothing hinting at the cosmic revelation to come.

"They were being very vague," she would say weeks later, "and I remember going into it being a little suspicious."

Suspicion gave way to shock, then exhilaration, however, when Hayley sat in on a conference call and learned the basic thrust of the opportunity being laid before her. Would she like to be launched into orbit around the Earth?

"I remember I laughed. I said, 'What, are you serious?'"

But hadn't she once dreamed of exactly this, as a little girl visiting NASA on a family vacation? Wanting to be an astronaut? Growing up as a childhood cancer survivor given a second chance to wring the most out of life? A woman with a zest for adventure?

Her answer was, of course, quick and emphatic, vintage Hayley.

"Yes, yes, thank you. Please send me to space."

And just like that, Hayley figuratively climbed aboard for a historic mission called Inspiration4. She'll be part of the world's first allcivilian crew as it blasts into orbit later this year on an endeavor to raise money – an astronomical sum, in the truest sense – and awareness for St. Jude Children's Research Hospital, the place that saved her from pediatric cancer and where she later found her dream job as a physician assistant.

Rocketing into space may be one of the few adventures totally new to Hayley. She's packed a veritable lifetime's worth of travel and experience into her 29 years. She's studied in Spain, worked mission trips in Nicaragua and Peru, and checked off five continents on her travel to-do list. And she's done it all with a titanium prosthesis in one leg – legacy of treatment for bone cancer nearly 20 years ago at St. Jude. But after getting that vague email, and then finding out about the still-secret mission, it was Hayley's turn to be cryptic.

She texted her brother about a "life-changing opportunity."

She told her surgeon she had a "big surprise."

Soon, people were wondering if she was changing careers or maybe getting married.

The truth, of course, was more otherworldly – unbelievable, almost.

Still, Hayley insists she has only the "good butterflies" about the multi-day journey that awaits. "Honestly, I'm not nervous at all. I am just so excited." Which is hardly surprising because, as she said, space travel is "pretty on-brand" for her. It's not like there was much of a question she would go.

Things to do: request time off from work; find someone to look after Scarlett, her dog.

EARLY INTEREST

Viewed through the clarifying

lens of hindsight, that vacation to the NASA space complex nearly two decades ago stands out as something of a turning point. Hayley was 9 and her brother, Hayden, 7, when the Arceneaux family traveled from their small town in Louisiana to Houston. Both kids were mesmerized.

Top: Jared Isaacman flew to Memphis in January to pick up Hayley Arceneaux for her first trip to SpaceX for medical evaluations and space suit fitting.

(4)

Middle: Hayley and her brother, Hayden, dream of being astronauts during a family trip to NASA's Kennedy Space Center shortly after her treatment at St. Jude. It was one of numerous trips the family took to NASA sites.

Bottom: The Inspiration4 mission patch.

VES, YES, THANK YOU. PLEASE SEND ME TO SPACE.

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Spring 2021 13



"I got to see where the astronauts trained and of course wanted to be an astronaut after that – who doesn't?" Hayley recalled.

Hayden got the space bug, too, but in a different way. When his mom, Colleen, asked if he wanted to be an astronaut, he said, no, he wanted to build the rockets.

Hayden followed his childhood dream, becoming an aerospace engineer for a major contractor in Huntsville, Alabama.

But for Hayley, any thoughts of a space-related career got abruptly shelved just a few months after that NASA trip.

She had just turned 10 when she started complaining about pain in her left leg. This was right around the time Hayley and her dad had gotten their black belts in Taekwondo, a rigorous activity initially suspected as a cause. But then she started limping, and the problem became more obvious on the first hot day of the year when Hayley wore shorts.

"I could just see this huge bump above her knee," Colleen recalled. "It was like an egg under the skin."

The diagnosis was as shocking as it was shattering – osteosarcoma, or bone cancer, of the left femur.

"We just all burst into tears," Hayley said. "I was with my two parents, and I just said, 'I don't want to die."

When her dad did an Internet search of the disease, the St. Jude website immediately popped up. Just a couple days later, after a doctor's referral, Hayley and her family were en route to Memphis where entertainer Danny Thomas founded St. Jude in 1962. Hayley's treatment included about a dozen rounds of chemotherapy bracketed around surgery to remove her knee and part of her thigh bone. The location of the cancer, however, complicated the treatment. "Her tumor was in the end of the thigh bone, just above the knee joint all the way to the knee joint, so it involved the growth plate," said Dr. Michael Neel, who performed the surgery.

To allow for Hayley's continued growth through childhood, while at the same time eliminating the need for multiple surgeries, Dr. Neel implanted what was then a new type of temporary prosthesis that doctors could expand remotely. Although the process has been improved in the years since – today patients are sedated to keep them comfortable – it often proved painful when Hayley was a patient. In a moment captured by a St. Jude video production crew, she briefly dissolves in tears, but then hops from the table under her own power.

A I REMEMBER HOLDING BACK TEARS, THINKING, 'SHE'S GOT TO LIVE THROUGH THE SURGERY.



What jumps off the screen in that old promotional video isn't just Hayley's steely determination; it's the NASA t-shirt she's wearing.

During extensive therapy, Hayley worked to build up her muscle and balance, walking on a treadmill and pedaling exercise bikes. Within weeks, she progressed from not even being able to lift her leg to walking without crutches.

And none of that unrelenting rehab or pain stopped her from showering caregivers with gratitude and radiating positivity.

"I just remember her smiling through it all," said Elizabeth Barnwell, a nurse practitioner who helped treat Hayley and now, decades later, is a coworker. "Everybody really wanted to take care of her. She just made you a better person."

Even on days Hayley felt poorly, "She'd perk up and say, 'Time for a dance party.' And so she taught us all that we need to embrace having fun with these kids," Barnwell said.

BONDED TO A DIFFERENT TYPE OF MISSION

With wide eyes and a ready

smile framed by her long, light-brown hair, Hayley gestures excitedly as she speaks. And she tends to be especially animated when the subject is St. Jude and her experiences there.

She's the first to say cancer helped make her who she is.

"It taught me to kind of expect the unexpected, and go with it. Also, I think having cancer made me tough."

But she is just as quick to add it wasn't just cancer. Her St. Jude experience was formative, as well.

Hayley's connection to the place took hold the day she and her family arrived. She remembers her mom walking up to the front desk, so overcome with emotion that when she tried to utter Hayley's name, she couldn't – she just burst out crying **Top:** Hayley helps raise awareness as a St. Jude ambassor during an event in 2011.

Bottom: Dr. Jane Hankins hugs Hayley during her *No More Chemo* party in 2002.

Left: Hayley shows her infectious smile during a clinical appointment in 2002.



Meet the rest of the Inspiration4 crew instead. The receptionist walked around the desk and gave her a hug, telling her not to worry, they were all part of the St. Jude family now.

"And honestly, truer words were never spoken," Hayley said. "We really became a family."

St. Jude was a safe place, a place of hope and comfort, so much so that ...

"I remember when my doctor came in at the very end and told me I was cancer-free and I could go home," she said, "I remember crying because I didn't want to leave."

Colleen, her mom, thinks Hayley endured cancer so well because she loved meeting new people and forming intense and enduring bonds with her caregivers and other patients.

She remembers taking Hayley for a quick trip home to Louisiana

right before her limb-sparing surgery. Hayley couldn't wait to get back. In fact, during the drive to Memphis, she told her mom of her plans to raise money for St. Jude and then proceeded to recite the speech she would give to donors, telling them about Danny Thomas, about how no patient families ever get a bill, and the whole St. Jude story.

"I remember holding back tears, thinking, 'She's got to live through the surgery. She's got to live to be able to do this."

And live she does, not dwelling on the "rough time" she endured, Colleen said, but using her experience to spur her on. It's why she's so eager to see the world – and beyond.

"She kind of has the mentality of live now, because you don't know the future," Colleen said. "The truth is, bad things do happen. And it happened in her life. Instead of being all depressed about it, she lives it to the fullest."

COMING FULL CIRCLE

From the time she was

discharged as a patient, Hayley always planned to come back to St. Jude – to wear a name badge instead of a wrist band, as she puts it.

"All I knew is that I wanted to work at St. Jude."

She studied to become a physician assistant, while also majoring in Spanish to help in working with Spanish-speaking families. Nearly a year after it happened, Hayley still talks about receiving the email confirming she had been hired at St. Jude: "It was the happiest moment of my life."

On social media, she announced the new job as her "ultimate life dream come true."

"I told myself over and over when I was going through treatment that God had a plan. I'm overwhelmingly grateful for His faithfulness and my wild journey."

These creative St. Jude patients have distinct opinions about space travel





14 years old, retinoblastoma

Who would you take with you to space? I would take my sister with me because we do everything together and she is my best friend. Who flies the ship? My sister Skylar would fly the ship because she is practicing driving right now and she is older than me.

Who doesn't come with you?

I don't think I would take my dog because he gets very hyper and he will shake the whole rocket and make us crash. My mom might come with me but not my dad. He might get bored since he works at the space station every day already. (Ty's dad works at the John C. Stennis Space Center.) She works with leukemia and lymphoma patients, but she's more than a caregiver – she's been one of them, a child with a catastrophic disease and all the emotional side effects that come with it, the fear, the doubt.

"I especially tell the new patients that I had cancer, as well, almost two decades ago. I kind of know what they're feeling. I know it's scary, and overwhelming, especially at first," she said.

"A couple of days ago, I was talking to one of my new patients. I said, 'Cancer's going to change you. But it's going to make you who you are. And you're going to be so much stronger because of it.'

"And I really believe cancer and St. Jude made me who I am. But in the best way possible."

At the same time, the patients can surprise her.

"Our kids ask tough questions. They're incredibly wise. They pick up on things way faster than imaginable. But they're incredibly brave." The death of her father, Howard, from cancer two years ago also imparted lessons for Hayley's work. "Whenever I saw him suffer and just feeling so helpless I realized what a hard experience it was for the families," she said. "I think, and I hope, that I have more compassion for the families that I treat now. I understand how helpless that feeling is."

"This is all I ever wanted."

SELECTION FOR THE MISSION

Inspiration4 will be commanded

by Jared Isaacman, the 38-yearold founder and CEO of Shift4 Payments and also an accomplished pilot. In addition to committing \$100 million to St. Jude – half the total hoped to be generated by the mission – Isaacman allotted two of the four seats of the spacecraft for crew members representing pillars of the mission.

Hayley will occupy the seat representing the Hope pillar.

Richard C. Shadyac Jr., President and CEO of ALSAC, the fundraising and awareness organization for St. Jude, called Hayley "the perfect person" for her seat.

"Hayley radiates light and hope, and has always been a big inspiration to anyone who meets her, including me," he said.

After receiving the offer to go on the mission, Hayley contacted her mother, who despite acknowledging some mixed feelings, told her it was a once-in-a-lifetime opportunity that she shouldn't pass up.

"I wasn't about to say anything to influence her not to do what she wanted to do," Colleen said.

Memories of Hayley's father helped guide her, as well. "Her father loved space. He would've been so excited for her," Colleen said.

Hayley's brother was excited for her, too, even though, as the one sibling with a true space career, he jokingly pushed back. "Hayley had to take my one thing," Hayden told his wife after hearing the news.

Trickiest food to eat in space? It would be hard

to eat soup because it will spill everywhere.

Favorite celestial body? I love the Milky Way because it reminds me of the Milky Way candy bar!

You get to name a brand new comet. What do you call it? I would name it Jude after St. Jude because it would be a beautiful comet like the hospital is.





13 years old, acute lymphoblastic leukemia

Who would you take with you to space? My mom because she could cook really good things for me. Who flies the ship? Me. I think it's cool to know how to fly a spaceship.

Trickiest food to eat in space? I think hamburgers because they would fly everywhere!

Favorite celestial body? I like Jupiter. It's cool that you can see the storm in the Great Red Spot.

You get to name a brand new comet. What do you call it? Caleb's Comet. In the mission, Hayley and the others will be riding in a spacecraft and propelled by a launch vehicle developed by SpaceX, a California-based private firm.

Her brother, the aerospace engineer whose job includes predicting the forces affecting rockets, has told Hayley what sensations to expect – the launch will feel like a thrill ride at an amusement park, only "it's going to be sustained for a while."

And he's advised her about some of the mundane aspects of the zero-gravity environment she'll encounter. "She was talking about how she didn't want to sleep sitting up. I was like, 'Hayley, there's not an up in space," he said.

All in all, Hayden thinks he has a good idea what kind of experience Hayley will have. Not just because he knows space – because he knows his sister.

Left: No longer a patient, Hayley now works as a physician assistant at St. Jude.

Right: Hayley poses in a lab coat while participating in the St. Jude Pediatric Oncology Education Program in 2013.

KAYLEY'S STORY WILL SHOW PEOPLE THAT NOT EVEN THE SKY IS THE LIMIT...

- DR. MICHAEL NEEL, HAYLEY'S DOCTOR AT ST. JUDE

ght: Hayley poses in a lab coat while





9 years old, osteosarcoma

Who would you take with you to space? My mom took care of me when I had cancer so I know she would take care of me in outer space, which is a crazy place! I've never been there and don't know what to expect, so I'd like her to be with me to make me feel comfortable and safe.

Who flies the ship? My mom, of course. I'm only 9 and don't know how to drive.

Who doesn't come with you?

My brother because he's a teenage boy and you could imagine why I wouldn't want him on the spaceship. Sometimes he's stinky and mean.

Trickiest food to eat in space?

Ice cream. The gravity would make it runny and ice cream would go up your nose. That would be so gross, like boogers.

Favorite celestial body?

I have two. My favorite constellation is Canis Major, the great dog. I have a service dog named Reed. He helps me with my balance because I had my leg amputated from cancer. My other favorite is Pluto. I think it's terrible that they kicked Pluto out of the solar system and not fair, just because he's different.

You get to name a brand new comet. What do you call it? I'd name it St. Jude because it's the best place in the universe. "She's a very adventurous person and this is like the ultimate adventure," he said, "so she's going to have a blast."

PREPARING FOR LIFT-OFF

The mission isn't set for launch

until sometime later this year, but Hayley's adventure is already underway. During visits to SpaceX, she's toured the complex, gotten fitted for her space suit and her seat. She's seen SpaceX's first Dragon spacecraft to go to orbit on display in SpaceX headquarters in Hawthorne, California. She watched a launch from behind mission control.

The mission will take the crew on a 'low-earth' orbit along which they will circle the globe every 90 minutes or so. The duration of the mission and the nature of the scientific work to be done are undecided.

As preparations for the mission continue, Isaacman will begin

putting the crew through more intensive training.

"We're going to learn how the rocket and Dragon spacecraft work, some of the mechanics behind it," she said. "We're going to learn physiology in space. We're going to be prepared for any situation that could arise."

What excites Hayley and others most about the mission is the impact it will have for St. Jude.

To begin with, there's the money to be raised for the research hospital.

"I know that the money raised and the awareness raised from this mission is going to change lives..." Hayley said. "And it means so much to me both as a former patient and now an employee to know that we're going to be able to help so many more kids because of this mission."

After her selection for the flight, Hayley rushed to see Dr. Neel, the surgeon who operated on her, to talk about another 'first' involving the mission.

"I said, 'In a few weeks, you'll be able to brag that you put the first artificial joint in space," she said. For Hayley, her metal knee helps signal that "space travel is now being open to anyone."

Dr. Neel sees it similarly: "Hayley's story will show people that not even the sky is the limit for what you can do, whether it's in medicine, or commerce or life in general."

Hayley plans to devote considerable time on the mission to interacting with St. Jude patients, through either video chats or video messages.

"They'll be able to see a cancer survivor in space, someone just like them."

Just recently, amid the whirlwind of preparation for the mission, and a crush of media attention, Hayley and her mom had a talk in which they speculated on how her life would have turned out – what she would have done with it – had she not gotten cancer. Both said they had no idea.

One thing is certain, though: Hayley wouldn't be headed toward the stars. +



20 years old, osteosarcoma pictured at age 10 in 2011

Who would you take with you to space? My dog, Casper! He loves being outside and exploring new things so he would absolutely love being in space. Maybe he will discover new treats while he's up there.

Who flies the ship? I would definitely be the one flying the ship, while Casper eats all the snacks.

Who doesn't come with you? My dad because he is terrified of flying. It would not be an enjoyable trip for him!

Trickiest food to eat in space? That would be cereal. It would be hard to keep the milk and cereal in one bowl and it would just fly everywhere.

Favorite celestial body? Saturn! I love the fact

that it has rings around it so it makes the planet stand out and look unique.

You get to name a brand new comet. What do you call it?

I would name it Casper. He runs as fast as a comet and he is a Pomeranian so when the wind blows in his hair he looks like one, too.



MAKING HISTORY

Facts and figures of a special mission benefiting St. Jude

. (

"The view of Earth is absolutely spectacular, and the feeling of looking back and seeing your planet as a planet is just an amazing feeling. It's a totally different perspective, and it makes you appreciate, actually, how fragile our existence is."

– Sally Ride

WHO

A four-person crew representing the values of Leadership, Hope, Prosperity and Generosity

> The crew will undergo commercial astronaut training with a focus on orbital mechanics, operating in microgravity, zero gravity and other forms of stress testing.

WHAT

Inspiration4, the first allcivilian mission to space

> The crew will travel in the Dragon spacecraft via the SpaceX Falcon 9 launch vehicle.

WHEN Late 2021, dependent on flight conditions

WHERE

Historic Launch Complex 39A at NASA's Kennedy Space Center in Cape Canaveral, Florida

> The Dragon will orbit Earth every 90 minutes along a customized flight path, monitored by mission control at SpaceX.

HOW

The spacecraft will travel weightless at over 17,000 miles per hour

> The multi-day journey will end with a soft water landing off the coast of Florida.

WHY

The historic flight is part of a \$200 million fundraising initiative to inspire support for St. Jude Children's Research Hospital while sending a humanitarian message of hope and possibility.

FIRSTS

This ground-breaking flight will record a number of historymaking events.

- First all-civilian mission to space
- First person with prosthetic in space
- First childhood cancer survivor in space
- Youngest American in space



JARED ISAACMAN Is taking st. Jude on an

EPIC ADVENTURE

TO SPACE, BUT IT WILL BE GROUNDED In the good it can Do on earth

By David Williams · ALSAC

e started his business in his parents' basement at age 16. At 26, he set a world record for an around-theworld flight in a light jet.

But you should have seen Jared Isaacman as a kindergartener, growing up in New Jersey.

"I was always really interested in space," he said, recalling being inspired by a picture book about the Space Shuttle in his school library, remembering exactly where the book was and wanting to go back, all these years later, to see if it's still there. "I told my kindergarten teacher I was going to go to space someday." Now, he *is*. And he's taking St. Jude Children's Research Hospital with him as the 38-year-old commander of the world's first all-civilian mission to space. His crew will include former St. Jude patient and now St. Jude physician assistant Hayley Arceneaux, representing the mission pillar of Hope, and a member of the public, representing the pillar of Generosity, chosen as part of a \$200 million St. Jude fundraising initiative.

Isaacman, founder and chief executive officer of Shift4 Payments, a St. Jude partner of several years, made a gift of the two crew positions to St. Jude, and made the mission's name – Inspiration4 – its vow: to inspire support for St. Jude while sending a humanitarian message of possibility. He's also pledged \$100 million to the fundraising campaign.

So if it's a partnership made for the heavens – the intrepid explorer who's always dreamed of space and the children's research hospital renowned for its scientific advances – it's rooted in making things better here on Earth.

"We do firmly believe that there is going to be a world, 50 or 100 years from now, where people are going to be jumping in their rockets like the Jetsons, and you're going to have families bouncing around on the moon with their kids at a lunar base," Isaacman said.

"If we can accomplish all of that, we sure as heck better tackle childhood cancer along the way."

THE GREATER

Grounded.

It's not the word you might associate with a kindergartener who had his head in the cosmos, who grew up to be an accomplished jet pilot rated to fly dozens of commercial, military and experimental aircraft – a guy who has his own MiG-29.

But there you go. Isaacman is grounded – in a good way. His eyes are on the stars, but his heart is attuned to the greater good. He's thankful, citing all the luck he's had and how "the ball bounced my way many times," though he's self-made. He's humble, though his business success has made him a billionaire, profiled by *Forbes* magazine as a savvy entrepreneur who flies fighter jets for fun and "climbs mountains to unwind." **Top:** Jared Isaacman (center) with his brothers Marc (left) and Michael on a mountain climbing expedition in 2018.

Bottom: Isaacman sits inside a simulator during an early visit to SpaceX.

Right: The SpaceX Dragon spacecraft will carry Isaacman and his crew to space.



MY FAMILY, EVEN MY MORE EXTENDED FAMILY, NEVER HAD TO ENDURE WHAT I KNOW A LOT OF THE ST. JUDE FAMILIES ARE HAVING TO GO THROUGH RIGHT NOW.



What could be a billionaire's ego trip to space, then, is instead a mission for a better world. It's not about being great, but doing good, and in Isaacman's calculus, there's no limit to the good that can come of this.

Hope, times infinity.

"That's just Jared's personality," said his older brother Michael Isaacman, Shift4's Chief Commercial Officer. "If he's going to do something, he's going to be all in. And I think *all in* is an understatement, because he's going to do it on a grander scale than not only has anybody ever done it, but anybody has even thought about doing it."

And so he's made this mission more about St. Jude than himself. "Because for as much as we like to conquer and drive progress in space," Jared Isaacman said, "you can't ignore the problems of the world we live in today."

It's why, instead of playing the part of the dashing young commander and musing on the history he'll make, he talks about the hope this mission can instill and generosity it can inspire.

Oh, sure, he knows how "incredibly cool" little Jared, the kindergartener, would consider all this. But there's no doubt the childhood version of Jared would have totally embraced the charitable thrust of this mission. Heck, he might even have suggested it.

How do we know this?

"We did a family trip to Mexico, probably when Jared was maybe 4 or 5," said his oldest brother, Marc Harris, a physician specializing in emergency medicine. "All the siblings got an allowance while we were there, to spend on something. Each one of us bought something, obviously, for ourselves, being kids.

"But Jared ended up giving his money away to a lady that was homeless on the street with a baby."

DRIVEN

BY EMPATHY

As a kindergartener, he imagined someday going to space. As a teenager, he went down to his parents' basement – that place where millions of teenagers have gone, before and since, to escape the watchful gaze of adults – and created a business.

Today, that company, known now as Shift4 Payments, is one of the tech sector's great successes, annually processing more than \$200 billion in payments for 200,000-plus businesses, including sizable shares of the country's hotels and restaurants.

You may not have heard of Shift4, but you've likely used its technology. Isaacman took the company public in 2020, becoming a billionaire.



The dreamer in him never forgot about going to space. The doer started with prop planes, working his way up to fighter jets, aroundthe-world flights, and air-show performances that always had a charitable cause.

Hobby isn't quite the word for Isaacman's interest in flight – he even co-founded a company, Draken International, which grew into the world's largest private air force, training pilots for the U.S. Armed Forces.

About all that: In the same way a would-be corporate executive might matriculate to the Wharton School, a budding fighter pilot would enter the military. That's most people. Then there's Isaacman, who quit *high school*, and got his GED instead, so he could focus full-time on business. And then, a few years later, looking for a hobby to ward off business burnout, took up aviation – and became an ace.

Retired Air Force fighter pilot and commander Scott 'Kidd' Poteet, a close friend who has known Isaacman for a decade and worked with him at Draken and Shift4, said it's "extremely rare to follow the path that he did, and end up with the amount of experience he has," without a military background.

"Life is just operating at a very fast pace when you're strapped to a jet like that. So it takes a lot of experience and training," said Poteet, Shift4's project director for Inspiration4. "It truly is a testament to his motivation and drive, and his passion for aviation."

And his tirelessness, Poteet said. He joked, "I wish I could say he had a

human side to him, but the man is a robot."

His big brothers marvel at him. Marc, though 15 years older, calls Jared Isaacman a "role model." Michael said he's "always been hard-wired to be strategic and ambitious. It's just who he is."

Now he's on the verge of realizing that childhood dream – commanding a crew of civilian astronauts aboard the SpaceX Dragon spacecraft, launching from Historic Launch Complex 39A at NASA's Kennedy Space Center, and orbiting the Earth in a historymaking, multi-day mission.

The kindergartener's head might be spinning into orbit right about now. The adult, while fully realizing the "cool factor" of what he's about to





The St. Jude cancer survivor asked her 4-year-old daughter, Tayde Sofía, for her take on space.

Who flies the ship? Me, with my fox next to me

Who doesn't come with you? Cinderella's stepsisters

Trickiest food to eat in space? Ice cream, because it would float

Favorite celestial body? I love Neptune because it is blue and striped like a lollipop.



You get to name a brand new comet. What do you call it? Lollipop



10 years old, Wilms tumor

Who would you take with you to space? My dad, because he's really brave and makes me feel safe.

Who flies the ship? My dad, but with my help!

Who doesn't come with you? My little brother, Landon. He might accidentally blow up the ship.

Trickiest food to eat in space? Spaghetti



Favorite celestial body? Ursa Major

You get to name a brand new comet. What do you call it? Danny's Comet, for Danny Thomas because he created the best hospital that saved me and many other kids.

WE SURE AS HECK BETTER TACKLE CHILDHOOD CANCER ALONG THE WAY.

do, seems driven by empathy, and the extraordinary good this mission can do.

"My family, even my more extended family, never had to endure what I know a lot of the St. Jude families are having to go through right now," he said. "That heartache that they're going through is definitely not lost on us. It comes up constantly, from when my kids were born and thinking through how fortunate we were, that they were healthy kids."

That heartache. Isaacman thought of it again as he went through the SpaceX health screening process for this mission.

Amid the "ton of tests," he said, "I was sitting there thinking: Imagine all of the kids who are



going through something similar – except it's not for baseline diagnostics; it's to understand what's ravaging your body.

"Those kinds of things serve as constant reminders about what we aim to accomplish from this, to ease some of that suffering."

Maybe that's why, when it was time for Hope seat passenger and St. Jude survivor, Hayley Arceneaux, to undergo her health screening at SpaceX, Isaacman texted her daily.

"I think he knew I was a little nervous, just because, I mean you're not going to be a cancer survivor who likes going to the doctor," she said. "He texted me each morning before my medical evaluations to say, good luck, thinking of you, couldn't be happier that you're part of the team. "I don't know what I had in mind, but he is the most down to earth, kind and thoughtful person."

THE MISSION OF LIFE

He calls it "this epic adventure."

He's talking about this mission to space, but he might also be talking about life and how he lives every precious moment.

"We do only have one crack at this," he said. "We should seek out some of life's greatest challenges."

He's talking about exploration and adventure. He's talking about taking leaps. Starting your own business in your parents' basement. Learning to pilot jets and flying them around the world. Climbing mountains. Commanding a civilian mission to space.

But he's also talking about this other mission he's joined – the mission of St. Jude not just to treat cancer and other catastrophic pediatric diseases, but to cure them through research and science and this enduring belief, first expressed by founder Danny Thomas: No child should die in the dawn of life.

"I think it all kind of gets woven together," Isaacman said. "Aside from going up into space and what we're going to try and do there, which is kind of out of this world, it's everything we hope to accomplish on this planet as a result."

Because dawn is just the beginning. Dawn is that little boy looking up to space and telling his kindergarten teacher he would go there someday. A life, fully realized, fully lived, is putting a rocket to that dream and making it real. +

THIS YEAR, HAYLEY TRAVELS TO SPACE.

WHO'S NEXT TO MAKE THEIR WAY IN THIS WORLD?

FOR OUR ST. JUDE PATIENTS, THE ST. JUDE PATIENTS, IS POSSIBLE

THE NEXT ASTRONAUT

"I want to be an astronomer 'cause I like to look at the stars and the moon, and they're so far away, and they look really close, but they're not. I want to be a lawyer, a scientist, and an artist, and cheerleader, and teacher. I have so many, I can't remember them."

Alana, 9 years old, Hodgkin lymphoma

THE NEXT ENTERTAINER

"She's like a little ham. She's just constantly singing and dancing with her siblings. She's, you know, well ahead for her age in terms of like vocabulary and counting and learning to read. She's just really, really smart. She'll tell you how she feels. She's always laughing."

Janine, mom of Marina, 3 years old, retinoblastoma

THE NEXT RENAISSANCE MAN

"When I grow up I want to work at St. Jude! I want to be an anesthesiologist, or work in triage, be a chef, or do something in entertainment for the kids of St. Jude. I might build a carnival site on campus for the kids. I also think it would be so cool to be the CEO. "

Clayton, 8 years old, acute lymphoblastic leukemia

THE NEXT DOCTOR

"Maelin-Kate is the single, most joyful person I have ever met in my life. She's sassy. She's silly. She's smart. I'm proud of her all the time. Mae wants to be a doctor. And I hope that someday, she'll get to come back here, and be a doctor at St. Jude, and be able to share her journey with somebody, and give hope to another child and another child's family."

Megan, mom of Maelin-Kate, 6 years old, Fanconi anemia

THE NEXT CHILD LIFE SPECIALIST

"When I grow up I really want to either be a child life specialist or a doctor because both of them help a lot of people. It is very important to never ever give up, because if you give up it's going to be a harder and harder and harder journey, and you're going to be like, why did I start giving up? You have to keep fighting and fighting and fighting."

Faith, 11 years old, Ewing sarcoma

THE NEXT ARTIST

"Abraham loves going to all of the arts and crafts St. Jude has for the kids, and it just exceeded my expectations. St. Jude has given us hope, love, a home away from home. And it feels like home. I hope Abraham can grow up and just can be happy for a second. I hope for him that he'll always be himself, that he'll just have a happy life."

Andrea, mom of Abraham, 6 years old, medulloblastoma

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NSPIRATI () N

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