

When Tom Starzl came to Pittsburgh, he put himself in the riskiest, bloodiest, and most difficult situations a surgeon could, and he trained others to do the same. Here we tell the first part of the story of how he built a new field of medicine.



A “MONOMANIACAL” EFFORT
LED TO A CURE FOR LIVER DISEASE
AND A NEW FIELD OF MEDICINE
BY CHUCK STARESINIC

ONLY STARZL DARED TO

John Sassano recalls what it was like to be an anesthesiologist watching the call schedule when Tom Starzl was performing the first liver transplants in Pittsburgh. Starzl was setting up the riskiest, bloodiest, most difficult situation a surgeon could get himself into—evidenced by the fact that he was the only one in the world to attempt it.

“It was like being up at bat,” says Sassano (Res ’80). “It’s the bottom of the ninth, and are you going to be able to hit the ball? I mean you had to be the best. You had to be at the top of your game. This was not routine. This was doing things that had never been done before.”

A professor of music had come to Pittsburgh from North Dakota in 1981, desperately ill, descending into a mental fog. Eventually, his hands began to move like a metronome—doctors call that the “liver flap.” He staked out a hospital elevator where, sitting on a chair, he would grasp white coats and the hands of startled nurses as they passed and demand a liver.

ILLUSTRATION | JACOB THOMAS AT DECO ZONE

By the time an organ became available, it seemed like an exercise in futility. His kidneys had failed, and his liver had ceased to make clotting factors.

Sassano remembers the date and the experience like it was yesterday.

"It was a bloodbath," he says. In his critical care training, he had seen people bleed like this—people shot in the liver, for example—and back then, these were considered "acceptable deaths." Here, doctors were deliberately creating the same situation, and Starzl expected them to solve it. Sassano pumped close to 200 units of blood by hand.

"It was close to a 24-hour nonstop operation that was physically and emotionally the most demanding thing I've ever been through," he says.

"It was a marathon, and you couldn't stumble. You couldn't slow down or stop what you were doing, because we were just barely keeping up. There was a point where we were just doing it on faith, because we weren't sure whether his brain was dead or not because his blood pressure was so low. We just refused to let him die. That was it."

Without ever explicitly saying so, Starzl challenged those around him to work harder than they had ever worked and to do things that had never been done. That was the job description, and you could either keep up with him or get out of the way. If it was to be the latter, there was no shame in that, but you would not be long remembered around here. Starzl was busy creating a cure for liver disease.

Starzl describes Sassano the next day with his head in his hands, sobbing from the effort. Sassano doesn't know whether he was sobbing, but his arms and hands were cramped, and he still didn't believe the patient would live. He recalls telling Starzl that he was so frustrated he had to either fix the problem or leave the field.

By the next case, Sassano had devised a rapid infusion pump that he later patented. Today, rapid infusion is part of every emergency room setup; as a result, such massive bleeding presents a much more tenable situation.

The professor lay in the ICU for six weeks with an open incision—his liver and intestines remained exposed because of an infection. Ten years later, he wrote to Starzl describing his return to music, how he became the academic dean of his college, and how he thought of Starzl with gratitude every day.

To begin to locate Tom Starzl in the pantheon of great scientists and surgeons of the past century, one must first locate the Distinguished Service Professor of Surgery on the University of Pittsburgh's bustling Oakland campus. (Although his other title, director of the Thomas E. Starzl Transplantation Institute, includes the term "emeritus," you are excused if you start to think this Latin term means "eternal" based on Starzl's work habits. He turned 80 in March, and he is in his office today, as usual.) Don't bother looking for him at the transplantation institute, the headquarters of which are located in Pitt's Biomedical Science Tower (renamed for Starzl as an 80th birthday surprise). Nor should you attempt to navigate the maze of its clinical area, which sprawls over multiple levels of UPMC Montefiore. Though Starzl is largely responsible for the busiest and most important transplant center in the country, you won't find him there.

According to Pitt's directory, Starzl's campus address is PZHUT 3.

No joke. To meet the most-cited scientist in clinical medicine, author of some 2,400 publications, recipient of the National Medal of Science (in February), without whom the field of organ transplantation would be either unrecognizable or nonexistent today, you need to go to the third floor of the Pizza Hut Building. (Never mind that the pizza shop closed years ago—this is Pittsburgh, and we regularly give directions using landmarks that no longer exist.) You'll know you have the correct door—on Fifth Avenue, tucked between the Indian restaurant and the bookstore—when you see the torn piece of paper Scotch-taped to the window that reads, "Thomas E. Starzl Transplantation Institute." You'll take the stairs because there is no elevator. It helps if you're fond of dogs, by the way, because Starzl has five, any number of which are likely to be present. Don't trip over their dishes as you squeeze through the second-floor hall, and help yourself to a cookie from the torn package on the file cabinet on your way up. Don't worry about the crumbs.

This building, every room of which smelled like pizza when Starzl moved in nearly 20 years ago, says a lot about the man. He is unorthodox. He is not especially concerned with appearances. He is most comfortable residing outside the mainstream with his dogs nearby. Perhaps he is even shy. Years ago, the mother of a boy awaiting a liver transplant commented that Starzl seemed more comfortable with the

children under his care than with adults.

Starzl's office is more thoughtfully furnished than the other rooms. He often works standing at a sloped drafting table with a view of a weathered wooden patio, empty but for an old picnic bench. He never goes out there, he says, unless visitors want to look at the rooftops of the neighborhood. At the opposite end of the room is a long sofa, large enough to serve as a daybed, and an open closet holding shirts, jackets, and clean white coats. These are vestiges of the days when Starzl worked around the clock, catching bits of sleep where and when he could, taking cross-country flights to procure organs, transplanting those organs in marathon procedures, checking on patients who awaited organs and others who battled rejection. Today, a patchwork mutt snoozes contentedly on the couch, and a golden retriever rests its muzzle on the floor. Starzl's daily excursion involves taking any dogs present—barking with excitement—down the back stairs to the alley just before lunch. They walk down the hill, cross Forbes Avenue, and circuit the block.

Starzl's appearance is somewhat in opposition to his larger-than-life reputation forged in the 1980s, when he made liver transplantation a reality with Pittsburgh as its crucible. He is of average height and trim. Today, he wears a dark, zippered sweater and a Giorgio Benelli tie dominated by an ornate crest that includes the initials "HB."

"I had someone put that on," says Starzl of the monogram.

It honors the late Henry Bahnson, legendary heart surgeon who had been Starzl's friend beginning in their residency days at Johns Hopkins University. Bahnson was chair of surgery at Pitt, and his unimpeachable character was the major reason that Starzl, who battled academic politics at the University of Colorado earlier in his career, decided that Pitt was a place he could work.

Starzl speaks in a reedy voice that is both friendly and, given his current age, grandfatherly.

"It was a nightmare," he says simply and honestly about how he built a new field of medicine, with the distance of a historian talking about a bygone war.

"That period was basically, for many of the people that were involved for a dozen years from 1980 until 1992, a life-ruining experience. ... It was so monolithic—you could even call it monomaniacal. It required such intense focus."

This was the monumental struggle to make

liver transplantation a viable, accepted therapy for liver disease. The patients who came to Pittsburgh from all over the world were facing death. They were gray. They were yellow. They swamped the halls of what was then Presbyterian University Hospital. Starzl was the court of last appeal. No one else could help them. No one else would try. It was more terminally ill people than should be in any one hospital, some thought—especially for a pie-in-the-sky experimental therapy like liver transplantation. Some said that the patients, wasting away as they awaited organs, deserved to die with more dignity than this. (“The liver was sort of a taboo organ then,” says one Starzl colleague. “It was frightening, because operating on the liver itself was something that you just couldn’t imagine. It was so bloody.”) Following lengthy and sometimes multiple surgical procedures, patients and their doctors still faced gargantuan challenges. Even successful transplants threatened to drain the life out of those involved; the failures were almost too much to bear. This went on without pause for years, contributing to the ending of more than a few marriages, including Starzl’s first.

Although Starzl had demonstrated as early as 1967 that liver transplantation was possible, that wasn’t enough, he says.

“It was imagined that it was so difficult that only a single person in the world could do it. So how in the world were you going to train people—ever—to get this complex technology into the healthcare system? That was the problem. And that was a problem that was solved here in Pittsburgh, and it was made possible, I think, by the environment at the University of Pittsburgh.”

Those who worked with Starzl in Pittsburgh can’t imagine anyone else who could have made transplantation viable.

“He was the person that was necessary to do this,” says Sassano. “He did what he had to do to accomplish it. And I don’t mean that in a bad way. This was his mission, and if left in anyone else’s hands, it wouldn’t have been accomplished.”

Starzl seems a bit embarrassed by the recent attention brought his way by honors such as the National Medal of Science. There are more television interviews and photo shoots than he cares to count. To hear Starzl talk about it, he is withdrawing from active engagement with the institute that bears his name, so the time

for such indulgences is past.

“There’s no reason to be fixated on a fossil when you’ve got these lively crustaceans coming up,” he says.

The chief crustaceans Starzl jokingly refers to are the two men who recently assumed leadership of the institute—responsibilities that Starzl once handled by himself. (Incidentally, both insist that Starzl continues to provide valuable and regular input in their respective areas. Emeritus, indeed.) Amadeo Marcos is a transplant surgeon who heads up what is a very large and growing clinical transplant program. Fadi Ikkis is an MD and longtime lab researcher who left clinical nephrology and Yale University last year to devote himself entirely to research; now at Pitt, he is in charge of the institute’s broad scientific research program.

Today, if you see Starzl on television accepting the congratulations of the president of the United States for his accomplishments, it’s easy to forget that he built his career on the fringe. Less charitable observers and even some of his

“It was a marathon, and you couldn’t stumble. You couldn’t slow down or stop what you were doing, because we were just barely keeping up.”

peers believed him to be on the *lunatic* fringe. Though Starzl never doubted that developing liver transplantation was the correct thing to do, there was a time when he was filled with doubts about his own abilities to simply make it as a surgeon.

Starzl graduated from Northwestern University’s medical school in Chicago with an MD and a PhD. He spent four years in surgical residency at Johns Hopkins and two more at the University of Miami. By the time he returned to Northwestern in 1958 for a final year of training—a fellowship in thoracic surgery—he felt like an eternal student and a highly skilled financial liability. He and his wife had two young children (soon they’d have three) and growing debts, yet he was a student again. His family wondered whether he was simply putting off the responsibilities of adulthood.

The truth was much worse, Starzl wrote in his 1992 memoir, *The Puzzle People*:

“I harbored anxieties which I was unable to discuss openly until more than three decades later, after I had stopped operating. I had an intense fear of failing the patients who had placed their health or life in my hands. Far

from being relieved by each new layer of skill or experience, the anxieties grew worse. Even for simple operations, I would review books to be sure that no mistakes would be made or old lessons forgotten. Then, sick with apprehension, I would go to the operating room, almost unable to function until the case began.”

Starzl was 32 years old. He believed himself ill-equipped to be a surgeon but too far along the path to turn back. To add to his consternation, he had committed to a year of training in thoracic surgery when he knew that his main interest was below the chest, in the liver.

As he describes it, he seemed perpetually on the edge of calamity. When it was time to take his general surgery board examinations at the University of Pennsylvania, he could not afford a hotel and slept in a movie theater until closing time at 3 a.m. He spent the rest of the night beneath his coat on a Philadelphia park bench. He had recently developed an ulcer that was eating away at his duodenum; abdominal pain and antacids were his constant companions. While weathering a bout of pain

in a bathroom stall following his exam the next day, he overheard his examiners reveal that he had placed first in his group.

Starzl was still not the horse that everyone was betting on; his financial and directional struggles would continue. He became an associate professor of surgery at Northwestern, bringing some of his own funding with him, thanks to a scholarship for young physician-scientists. In the lab, he worked on animal models of liver transplantation at a time when the only successful organ transplants were of the kidney, a much simpler organ, between identical twins. With no clinical position, however, he was still living on a pittance. Just a few months out of training, he was visited by colleagues starting up a medical school at West Virginia University. Starzl smuggled a live rabbit out of his lab so that he and his wife could serve meat to their dinner guests. He told them that he would accept nothing less than the chair of surgery. They declined his offer.

In the lab, Starzl began to find his trajectory. In 1960, he attended the annual meeting of the prestigious American Surgical Association (ASA) as an invited guest. He was an unknown, but he went to offer discussion of his lab results

following a presentation by Francis Moore, a superstar from Harvard University's Peter Bent Brigham Hospital. These were the only research programs in the country for liver transplantation, and as Starzl offered his own results, he realized that his animals were living longer. He was ahead of the Boston team. After that, he was no longer an unknown.

He was given hospital privileges at a suburban hospital to make ends meet. To allow time for travel and lab work, he began scheduling operations at 6 a.m. He learned to catch moments of sleep where he could, in hard

tion was the same in kidneys, livers, and other organs. If rejection could be solved in the kidney, then transplanting the liver, a complex organ through which half the blood in the body can circulate in one minute, might be attempted.

The few examples worldwide of successful kidney transplants involved living related donors and required suppression of the immune system using drugs or radiation.

In his first few years at Colorado, Starzl could claim more kidney transplant survivors than anyone in the world. He prescribed a

reversed with a high degree of regularity and completeness. Furthermore, the subsequent behavior of patients who have been brought through a successfully treated rejection crisis suggests the early development of some degree of host-graft adaptation."

This was one of the first of Starzl's many contributions through which he changed our understanding of the immune system, eventually making it possible to conceive of and achieve acceptance of donor organs in transplant recipients.

While controversy raged over these conclusions, Starzl moved ahead with a liver transplantation trial in 1963. He made five attempts, all of which failed. He would not attempt another liver transplant until 1967.

"Most surgeons whom I know have been able to protect themselves, either by rationalizing errors which they had committed or by promptly erasing the bad memories. I could not do this," wrote Starzl.

"Instead of blotting out the failures, I remembered these forever. With growing concern, I came to believe that I was not emotionally equipped to be a surgeon or to deal with its brutality."

In the meantime, he became terribly ill with hepatitis contracted from one of his many infected patients. Yellow and feverish and clutching his newly released book, *Experience in Renal Transplantation*, he went to see his father in Iowa and wondered if his career was coming to an end.

In April of 1968, recovered from his bout with hepatitis, Starzl reported to the ASA on his second series of attempts at liver transplantation. In Colorado, the pediatric department had supported the liver trials while Starzl's own surgery department was against it.

All seven patients were children. All had been dying from the diseases they suffered when they entered the hospital. Now three were still alive. Although four had lived only two to six months, their livers had functioned long enough to offer hope that liver transplantation could work if rejection could be controlled. Moore, still the leader of Harvard's liver program, remarked that "liver surgery as of this day has a new look."

To this day, Starzl's dearest possession is a painting of a child bathed in sunlight picking flowers; she lived 400 days postop. Another



One of the greatest surgeons and medical scientists of the last century can be found in the former Pizza Hut building.

office chairs and empty rooms. For a time, he left the house at 4 a.m. and returned around 2 a.m. He was 35 years old and wondered whether he would make 40.

At the end of 1961, Starzl achieved a measure of professional stability when he moved to the University of Colorado and became the chief of surgery at the Denver Veterans Administration Hospital. His express goal, which was supported by the department chair, was to make liver transplantation a reality. The first step was the kidney. Starzl had shown in the lab that the phenomenon of organ rejection

was the same in kidneys, livers, and other organs. If rejection could be solved in the kidney, then transplanting the liver, a complex organ through which half the blood in the body can circulate in one minute, might be attempted. The few examples worldwide of successful kidney transplants involved living related donors and required suppression of the immune system for life. But in 1963, Starzl took the results of his Colorado kidney trials—the most successful series of organ transplants ever—and published a controversial and seminal paper.

The introduction stated the authors' belief that "the rejection process can almost never be entirely prevented, but that its effects can be

girl, a teenager with liver cancer, lived 14 months before the cancer recurred. A 2-year-old boy lived another 30 months. Before that boy died in 1970, Starzl transplanted a liver into a girl who would live another 20 years with her transplant.

Success required more failure than most people could stomach. For many years after, Starzl would get an occasional letter from a parent that began, "I know you won't remember..." this or that child who was your patient. "They were wrong about one thing," Starzl wrote. "That I would not remember."

Throughout the 1970s, Starzl's program made strong, steady advances in controlling rejection.

"One by one, my patients would save me by letting me help them," Starzl wrote of this period—the same period in which his marriage broke up—a fact he regretfully attributes to "Mistress Surgery" winning out.

By March of 1980, more than 20 of Starzl's kidney recipients had been treated with an experimental drug called cyclosporine. The results were favorable. Of the first 12 liver recipients treated with cyclosporine, 11 lived more than a year. Only a few other centers were licensed to use cyclosporine, and they were meeting with little success. Starzl's special alchemy was in the recipe and regimen of the cyclosporine-steroid cocktail. When the Colorado team published its results with cyclosporine in the *New England Journal of Medicine* in 1981, the genie leapt forth from the bottle, and hospitals scrambled to start liver programs.

Starzl's time in Colorado was coming to an end, however. Political wrangling in the surgery department suddenly made Starzl believe that an aggressive trial of cyclosporine was impossible there. Still, he might have stayed if not for one fact that he shared with almost no one: Amid the relentless pace and emotional exhaustion of transplantation and research, he had begun to fall in love. Her name was Joy. She had worked in his lab but had recently left Colorado for Texas and, for personal reasons, would never return. If they were to be together, it would not be in Colorado.

In the course of a year or more, Starzl worked out the details of moving to the University of California, Los Angeles (UCLA). The details of lab and clinical space and appointments for Starzl's collaborators had been worked out. As the point of no return approached, Starzl learned of a movement in the faculty to oppose his appointment. Then the space for the liver program became limited; UCLA might only

want a kidney program. Kidney transplants were easier, safer, and accepted, not to mention profitable. With no backup plan in place, Starzl announced at a meeting in California that he couldn't come to UCLA.

While Starzl's colleagues in Denver tried to mend fences, Starzl called Bahnson in Pittsburgh and told him what had happened. The next day, he was on a plane to Pittsburgh.

Starzl can't recall whether they ever discussed salary, space, or anything like that. After his experiences elsewhere, the only thing that mattered to him was integrity and honesty, and after 25 years of friendship, Starzl did not need to ask Bahnson about those things.

"I came here for one reason only," Starzl said later, "and that was because Hank was here. I didn't know anything about this school other than the fact that if Hank Bahnson were here, and if I were in his department, then that would be the place to be."

There was a modest kidney transplant program in Pitt's urology department, started

room in Bahnson's basement for six months. On the drive to work, Starzl heard a radio station conduct a poll on whether or not his liver transplant program should be shut down before more patients died. The result was too close to call. Then, just as suddenly, 19 of the next 22 survived and began to thrive.

By the end of 1981, Starzl had been voted Pittsburgh's Man of the Year in science and medicine. Equally exciting for him, a huge sports fan, was the chance to meet the Pirates' Willie Stargell and the Steelers' Franco Harris at the awards gala. Starzl's wife, Joy, who had finally moved from Texas after their nuptials, was nervous about the event.

Pittsburghers have reason to be proud of Starzl's recollection of how Joy, who is African American, was received: "In a steel town, people are judged by what they do, not by the color of their skin. When she walked down the center aisle in an orange and yellow gown, there was silence, then thunderous applause. We were in the right city," he wrote.

There were still bumps in the road. All

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by Bernard Fisher and run by Thomas Hakala, who used Starzl's renal book as a bible, achieved good results with the drugs and steroids available then, and knew only rumors of cyclosporine.

As Starzl recalls it, Hakala was unapologetic in wanting to protect his turf; he told Starzl to stay away from Pittsburgh. No one knew or cared what went on here, he said, and he preferred it that way.

"I liked him enormously," says Starzl.

He told Bahnson that Hakala was an honest man with whom he could work. Thus began the Starzl era in Pittsburgh. The experimental drug cyclosporine was only available in four places in the country: Harvard, the University of Minnesota, the University of Houston, and now Pittsburgh. Starzl's program would be the only one where liver transplantation was available, and the medical wards quickly filled with the sickest patients imaginable.

Three of the first four liver patients in Pittsburgh died, and some began to wonder whether the success with cyclosporine in Colorado was a statistical anomaly. Starzl, too busy to find a place to live, occupied a

54 residents and interns in the Department of Medicine signed a resolution denouncing liver transplantation as unrealistic and potentially unethical. Starzl and Bahnson evaded the potential deathblow by having transplant patients admitted to the surgery service and not to the general medical service, which had never been so swamped with deathly ill patients.

George Mazariegos, who was a transplantation fellow under Starzl in the early 1990s and is now a Pitt associate professor of surgery and director of pediatric transplantation at Children's Hospital of Pittsburgh, says that no one ever heard Starzl refer to a patient as "the liver I did yesterday." The patient was always remembered and referred to by name, even years afterward. Starzl can look at a slide of an organ and know the name of the child he removed it from a decade ago. Even in the most hectic and sleep-deprived stretches, he knew the family members, and he knew what they did for a living.

"He was the one person whom everyone would have forgiven if a name or other details



“Do you like dogs?” was the first question Starzl asked a recruit who would become clinical director of the Starzl Institute.

were forgotten,” says Mazariegos, “but he was the one person who never forgot.”

In August of 1981, a 12-year-old boy named David Yomtoob arrived at Children’s Hospital with a rare genetic disease. Until a few months earlier, his parents had a seemingly healthy boy. Now, his liver was failing, and they were being sent to Pittsburgh by a physician who told them David had three months to live without a transplant.

David withered away to an unrecognizable shadow of a boy as he awaited a suitable liver. The child was perhaps hours away from death when Starzl brought another physician into David’s room. There was a brain-dead child in the hospital, David’s mother, Parichehr Yomtoob, later learned, and this

doctor would be the one to talk to the parents about organ donation.

“Dr. Starzl took that other doctor over to the wall where I had placed photographs of David,” Yomtoob wrote in her 1986 book, *The Gift of Life*.

“He showed the doctor David’s soccer-team picture. He made the doctor study the life that had been David’s, not the living corpse lying in the bed. ‘He could play soccer again,’ Dr. Starzl stressed to the doctor. ‘He could be just as healthy as he used to be.’ ... It was the most gentle, loving, hope-filled act anyone could have done for us. Even if David had died, to this day I would love Dr. Starzl for that moment.”

It appeared that the new liver had come too

late. David’s kidneys had failed, too. His skin was a deep yellow with purple blotches from hemorrhaging. He was paralyzed now. After transplant, he lay contorted and remained in that position for weeks. A camera was set up to monitor any progress he might make. Once, he somehow turned to face the camera, looking out from what Starzl described as “a mask of absolute hatred.” Starzl wept when he saw it and privately wished that David had died before any of this had happened. If it had been a wounded animal, Starzl later said, he would have known what to do.

“He was the one person that never quit,” says John Fung, a Pitt transplant fellow under Starzl and former Pitt professor of surgery and chief of the Division of Transplantation at the Starzl Institute.

“Almost everyone I know, including myself, would have given up a long time before he did. Even knowing that the idea was a rational one, people would have just gotten frustrated with all the failures he experienced in the beginning.”

In November of 1982, Starzl showed the frightful video of David at a scientific conference following a rather dry talk filled with charts and graphs.

“This child is here today,” he said. With that introduction, David Yomtoob, 13 months post-transplant, ran down the center aisle with a soccer ball tucked under one arm. He was the picture of health and vigor, and the audience rose to its feet to applaud him.

“Only those who know complete despair can understand the full meaning of jubilation,” Starzl wrote. He leaves it to the reader to decide if he is speaking of himself, the boy, or both.

In the days when organ transplants were still largely experiments conducted at a few centers, Starzl and his team would travel almost anywhere in North America at a moment’s notice to bring back organs for their patients. Prominent Pittsburgh companies made their corporate jets available for these organ runs—Starzl dubbed it the “University of Pittsburgh Air Force.”

In 1982, a patient bled to death on the table during a transplant, and a pall settled over the program. Everything stopped. Starzl huddled with Bahnson and talked about what to do. At the time, liver transplants were performed in a crisis atmosphere as blood flowing to the liver was dammed up for 30 to 60 minutes while surgeons worked. It required incredible speed and skill. Few surgeons could pull it off. For the next procedure, the surgeons decided

to attempt a venous bypass to keep the blood flowing but allow time to sew in the liver. It worked like a dream. Almost overnight, liver transplant became a much easier procedure. The technique, along with the documented success of cyclosporine in Pittsburgh, would spur the growth of liver transplant programs around the world. Those who trained in Pittsburgh would take a lead role in the expansion.

When Andreas Tzakis (Fel '85) first interviewed with Starzl, he waited for the transplant giant at the Falk Clinic, eagerly watching, he says, for a Mercedes or Cadillac to drop off the esteemed surgeon. Surely, Starzl will have a driver, he thought. (Starzl drove a Honda at the time, and he drove it himself.) When he did arrive, he was dressed casually, munching on some candy and wearing the same sneakers he wore while operating. The first question of the interview:

"Do you want some M&Ms?"

This story has a familiar ring for anyone who has come into Starzl's circle. Amadeo Marcos is one of the few transplant surgeons at Pitt not trained here. He was at the University of Rochester when an assistant told him Dr. Starzl was on the telephone for him. He thought it was a joke; he had never met Starzl. The next day he came to Pittsburgh to meet him. In his suit and tie at the institute's main office, Marcos was handed the telephone. Starzl was calling from above the old pizza shop. "Do you like dogs?" "Sure," Marcos replied. (Why not?) The interview began with the two of them walking Starzl's dogs.

Despite his casual introduction to Starzl, Tzakis says the atmosphere was tense in the 1980s; some surgeons were intimidated by Starzl, who exemplified and demanded perfection, and whose brain and body seemed always to work at maximum speed. After a year at Pitt, Tzakis received a dose of uncompromising criticism.

Starzl sat down with Tzakis and told him he would never be allowed to perform liver surgery. He wasn't fast enough or coordinated enough. After that, Tzakis was rarely seen without twirling and turning surgical instruments in his hands. He tied knots on every bedpost and table leg that he came near. Today, he is professor of surgery and codirector of the transplantation division in the University of Miami's medical school. Few surgeons have performed more liver transplants than Tzakis, and none holds Starzl in higher regard.

"[Starzl] basically never went home," says Fung, who now chairs the Department of General Surgery and directs the transplant

center at the Cleveland Clinic.

"He carried around this beat-up, old orange sleeping bag. It was on the couch in his office, but if he had to travel somewhere, he'd take it with him. If we were on an airplane or at the donor hospital waiting to get going, he'd just roll out his orange sleeping bag and catch a few hours or minutes of sleep."

If you were Starzl's fellow, "he'd call you up at three, four, five o'clock in the morning and tell you to come down," says Fung. "He wanted you to work on a paper."

His fellows wanted to please him by work-

Success required more failure than most people could stomach.

ing just as hard, or to make his life easier by doing more work. At the very least, they wanted to train with the only person in the world who could teach them about liver transplants, so they never refused.

Starzl had been in surgery for 24 hours one day in 1981 when a doctor in Ohio called him and insisted he come help with a procedure. The doctor had his finger plugging a child's bleeding liver, and he needed Starzl's help to repair it. He sent a helicopter to Trees Hall. After they saved that child, Starzl lay on the floor of the helicopter for the return trip and wondered what was trying to eat its way out of his chest. As the hills of Western Pennsylvania passed by the window, he thought he might never see them again. He didn't have a scare like that again until nine years later. In 1990, while driving to the office, a volcano erupted in his chest. He dragged himself to the second floor landing and lay there panting and sweating. He made his way to the third floor and began going through the correspondence on his desk.

Later, in the emergency department, he declined the last rites offered by the priest. If there was a heaven, he wasn't going to get there on the strength of any last-minute rites. He'd rely on the whole record. His right coronary artery was 99 percent blocked.

Angioplasty provided a temporary fix, and he had a bypass six weeks later.

Tzakis recalls the day in 1990 when he watched Starzl in surgery like so many times before.

"He was a supreme surgeon. A master surgeon. The best I've ever seen," says Tzakis. Where others took two or three moves to get from A to B, Starzl would make a simple acrobatic maneuver that only he could perform.

After surgery, they walked across Fifth Avenue and down to the Kunst Bakery on Forbes. ("That was a great, family-owned

place," Starzl says of the now-closed cake shop. "They were down there baking at 4 a.m., and you could go knock on the window, and they'd let you in for a doughnut.")

On the walk back, sweets in hand, Starzl announced out of the blue that he was finished operating. Tzakis was stunned. He'd watched him work for seven years, but he didn't think it was long enough.

"We were all still learning from him, and we didn't think it was time for him to retire," he says. "But his mind was made up."

"It was an enormous relief," Starzl says now. "I was absolutely exhausted. I was wiped out." ■

To be continued in our August issue.

TRANSPLANTING MOZART

A sing-along of the ditty "Happy Birthday to You" would not do for Tom Starzl's 80th when colleagues, friends, and former patients gathered to honor the distinguished surgeon at a series of seminars and tributes. So at the suggestion of John Harvith (senior associate vice chancellor for University news and magazines), the surgery department and offices of the Chancellor and senior vice chancellor for health sciences commissioned Robert Lord Sutherland, Pitt professor emeritus of music, to "transplant" a theme from Mozart to the organ for the occasion. (Wink, wink.)

For "Mozart Transplantation for Organ," Lord recorded an improvisation on "La ci darem la mano" ("We will give to one another our hands") from *Don Giovanni* on the Heinz Memorial Chapel Organ. The recording was played as a surprise for Starzl at a March 10 celebration in Alumni Hall. (Those who didn't attend can still hear those chapel stones sing at www.pitt.edu/news/060313starzl.html.)

Mozart would have turned 250 this year. Starzl has been known to wonder out loud how much richer the world might have been if the composer had had a renal transplant, rather than dying of glomerulonephritis at age 35.

—Erica Lloyd