

BY TIMOTHY DUMAS  
PHOTOGRAPHY BY HULYA KOLABAS

# *the* match game

**DR. ADAM BINGAMAN**  
has created a groundbreaking  
program that, for the  
30 million people suffering  
from kidney disease,  
is very good news



For patients like Sandy Eckles, Adam Bingaman is "not just a doctor or just a surgeon. This is his passion. This is his life."

**L**ong-haired, cowboy-booted, breezily self-possessed, Adam Bingaman might be a noted musician enjoying a weekend's repose here at his mother's house in Bedford, New York. In fact, he's among the leading transplant surgeons in the United States.

Bingaman's specialty is kidneys. "When I was in medical school at Boston University, I saw a kidney transplanted—taken from one person and put into another—and shortly after the clamps came off the blood vessels, the kidney was making urine, right then and there," says Bingaman, who heads the abdominal transplant program—livers, pancreases and kidneys—at Methodist Specialty and Transplant Hospital in San Antonio. "Watching that organ come back to life again was almost like science fiction to me." He grins. "It's incredible, right? And I thought, This is something that I should be involved in—this is giving life to somebody."

Bingaman himself performs about 100 kidney transplants a year, and his center does more than 300, an astonishing number for a small private hospital not well known outside of Texas. More remarkable still, Methodist leads the country in kidney transplants from live donors, which are desirable for their longevity: live donor transplants statistically last about five years longer than transplants from deceased donors. Bingaman and his colleagues perform about 200 live-donor kidney transplants annually, outpacing such transplantation giants as New York Presbyterian/Cornell Medical Center, the Mayo Clinic, and UCLA Medical Center. "I never set out to grow the biggest program in the country," says Bingaman, who moved to San Antonio in 2008. "But the average person in south Texas was waiting on the list for more than six years. There was a huge need."

Bingaman, a fifty-two-year-old father of three, is sitting on his mother's terrace as the late-summer light filters through the maples. He looks relaxed; he looks happy. But when he talks about kidneys, any listener can detect his quiet urgency. This is because he knows that chronic kidney disease is the most invisible of the Big Diseases. Thirty million people in the United States suffer from it, 475,000 of them so badly that they're on a grueling, thrice-weekly dialysis regimen. (Dialysis does what the kidneys would normally do: cleans the blood of toxic waste and removes the body's excess fluid.) But the gravest statistics are these: The waiting list for

a new kidney exceeds 100,000 people, with 35,000 added each year, while fewer than 20,000 kidneys become available for transplant. Two-thirds of those kidneys come from deceased donors; if one is lucky enough to have a friend or relative offer up a kidney—we have two, but need only one—the chances of that person being a match are slim.

"About 4,500 people die while waiting for a kidney transplant," reports Bingaman. "And another 4,800 get a letter in the mail telling them they're no longer healthy enough to qualify for the list. This is a tragedy. Time is against all of us, but when you have kidney disease, time is really against you." (And being wealthy won't help: Buying and selling organs is illegal.)

## THE GIFT OF LIFE AND LIVING

**T**hose on the deceased donor list must often wait four, five or six years for a suitable kidney to come their way. But in San Antonio, Bingaman has pioneered a way of getting live donor kidneys to patients in record time. Consider the case of Sandy Eckles, a patient of Bingaman's from Houston. She suffered from lupus and medullary sponge kidney—"which means your kidneys have

holes in them"—and in 2006 started nightly home dialysis treatments. She wanted a new kidney and had a willing donor, but the donor proved incompatible. Worse, the doctors in Houston—"the medical center of the world," Eckles notes—told her that finding a match would be nearly impossible: Her antibody-rich immune system would probably kill off any kidney they transplanted.

She met Adam Bingaman in 2009. "He kept telling me, 'I can get you transplanted within a year.' As we left, I said to my husband, 'You know, this guy's gonna do what he says he's gonna do.' He had that cocky attitude. Well, ten months later I get the call." She was transplanted on September 1, 2010. "I'm just like anyone else now," she says. "I can just pick up and go and do whatever I want."

Ralph Andrew Gonzales (who goes by Andrew), a thirty-nine-year-old accountant from McAllen, Texas, learned he had severe kidney disease when he was seven. "My mother saw my urine after I went to the restroom—it looked almost like coffee," he says. "She was like, 'What did you pour in there?'" Gonzales underwent a deceased donor transplant in 1990 at Texas Children's Hospital in Houston. But ten years later the kidney failed, and at age twenty he found himself back on dialysis. Apparent matches fell apart in 2000 and again in 2005, when his antibody production accelerated shortly before surgery. His wife, Elizabeth, whom he married in 2006, offered a kidney, but it wasn't a match, either. ("Matching" is actually sort of a misnomer, Bingaman says. One produces antibodies against all transplanted organs, but fewer against the genetic makeup of a given organ; this is what's deemed a match. A compatible kidney, along with immunosuppressant drugs, all but guarantees the success of a transplant.)

"It was sad," Gonzales says of his string of misfortune, "but, you know, luck of the draw."

By 2010 Bingaman had started his "paired exchange" transplant program. "Dr. B has this miraculous computer system that has everybody that wants to be a transplant person and everybody that wants to be a



Adam in the operating room at Methodist Specialty and Transplant Hospital in San Antonio

donor," Eckles explains. "Houston was not on board with any of that kind of stuff. It was totally foreign to them."

As Bingaman puts it, his kidney exchange circumvents the problem of patient and donor not being compatible by extending the pool of donors far beyond one's tiny circle of the willing. Your donor still donates her kidney, but to a stranger; a compatible stranger's kidney comes to you in return. "We'll know all the genes of the donors, and we'll know all the antibodies of the recipients," Bingaman says. "When I have somebody that has a lot of antibodies, my computer system can look to try to find a kidney that that person matches to."

In Gonzales's case, seven people in his circle volunteered to list themselves on Bingaman's exchange, including his parents, wife and pastor. It was Elizabeth who turned out to match another recipient-in-waiting. On July 17, 2012, in San Antonio, she had a kidney removed for donation and Andrew had one put in. He hadn't urinated in years—dialysis effectively did it for him—but now? "I woke up and I heard the nurse tell my mom, 'Oh, he's peeing a lot—that's good!' And then I conked out again."

Thereafter Gonzales's life changed dramatically. "I was free," he says. "I wasn't tied down to that machine anymore. I could eat and drink what I wanted." (Dialysis patients must be excruciatingly careful about their diets; too much potassium, for example, can be life-threatening.) Elizabeth, who'd never had surgery before, felt a little nauseous when she came to. "But what made me feel better was they told me that Andrew was walking around the ICU, eating a burger. I'm like, 'Are you kidding me?'"

In due course Andrew and Elizabeth were able to adopt three daughters; before the transplant, their agency had balked at letting them adopt because of his condition.

Bingaman laughs as he remembers his system's modest beginnings—on file cards. "We started in 2008 by putting everybody's antibodies and gene types on three-by-five cards, and trying to find three-by-five cards

that matched each other.” Today Bingaman uses state-of-the-art matching software that he developed in concert with an MIT software whiz who studied with Alvin E. Roth, an economist who won a Nobel Prize for using game theory to design “matching markets.” Though other hospitals now use so-called kidney swaps, Bingaman says, “we run the biggest exchange program in the entire world.”

“He’s not just a doctor or just a surgeon,” observes Eckles. “This is his passion. This is his life.”

“My favorite story,” she adds, “is of a boy in Vermont that was like eighteen years old. He had kidney failure. He kept going to doctors, they all kept saying, ‘You’re going to have to be on dialysis for the rest of your life.’ Well, of course his mother got on the internet and started researching. She found Dr. Bingaman, and, lo and behold, the boy got a transplant. An eighteen-year-old kid—he’s living la vida loca now.”

Adam Bingaman does not come from a medical family. He grew up in Riverside, one of four tennis-adept children of the late Harold “Hal” Bingaman, a marketing executive and entrepreneur, and his wife, Helen, a beloved longtime musical director of the Grace Notes, a Greenwich-based women’s cappella singing group.

Adam traces his love of medicine to Helen’s father, the Rev. Dr. Luke Rhoads, a Lutheran minister who suffered from emphysema. “We were very close when I was a child,” Bingaman says. “He was on oxygen and always short of breath. And I thought to myself, I wish I knew something about his illness. I wish I could help make him better. Thinking back, I distinctly remember that that’s what lead me into medicine.”

## THE ANATOMY OF TRANSPLANTATION

All signs indicate that kidney disease is getting more prevalent in the United States, not less. “The leading cause is diabetes,” Bingaman notes. “In about 50 percent of patients with kidney disease, diabetes is the underlying cause, and diabetes is on the rise, fueled a lot by the obesity epidemic in the United States.” (Other causes of kidney disease include autoimmune disorders, high blood pressure and long-term use of certain drugs, notably over-the-counter pain relievers.) Bingaman adds that kidney disease “discriminates”—it’s three times more common in African Americans and one and a half times more common in Hispanics. “And as the Hispanic population grows—more kidney disease.”

Putting a new kidney in someone is a major operation, but not a terribly long one: It takes about two hours. We should imagine Bingaman and his team in the operating room, country music playing as they work: They make an incision in the stomach, connect the blood vessels of the new kidney with blood vessels inside the recipient, and stitch the kidney to the bladder. “It’s three connections,” Bingaman says brightly. “We use

magnifying glasses, because they’re small blood vessels.” The old kidneys usually stay put; the patient is receiving a third kidney, situated due south of one of the existing ones.

“Some people say to me, ‘Oh, isn’t it boring, doing the same operation?’ And I say, ‘Every operation is different, every one has its own nuances.’” The anatomy of both the kidney and the transplantee always varies. Excess belly fat can make the operation more complicated. So can an extra blood vessel in the new kidney, a circumstance that occurs 20 percent of the time. “And it’s more complicated when the recipient has blood vessel disease, and the blood vessel we’re sewing it to is a little damaged.” Some recipients have been on dialysis for more than a decade and “their bladder has shrunk to the size of a walnut, from disuse. So we’ll transplant people who haven’t urinated in ten years. This, too, can make it a little more technically challenging.”

Up to this point, though, transplantation sounds like installing a new part in an old Corvette. What makes it utterly different, though, is the phenomenon of immune cells. “The immune system is well designed to recognize anything that is not you, like bacteria, viruses, fungi—and that’s good,” Bingaman says. “It also recognizes that transplanted parts are not you—and that’s bad.” Immune cells make antibodies that attack and destroy transplants, or would, without potent drugs to suppress the rejection response.

“Before the mid-1950s, you just died with kidney disease,” Bingaman notes. Indeed, old obituary pages are rife with the dreaded “Bright’s Disease,” an archaic term for kidney failure. One essentially drowned in his own fluids or was poisoned by his own blood. Physicians had experimented with transplantation as early as 1905, when a French surgeon tried putting slices of rabbit kidney into a child, with predictably dismal results. Various other forms of transplantation followed—from teeth to testicles—but these too fared poorly, with strange side effects to boot (syphilis contracted from cadavers’ teeth, for example). Transplantation took on a dark cast in the public imagination; many regarded it as immoral, akin to desecration.

In 1954 Joseph E. Murray, a plastic and burn surgeon in Boston (and future Nobel laureate), performed the first successful organ transplant, a kidney, on a twenty-three-year-old Coast Guard veteran named Richard Herrick. But it worked only because the new kidney came from Herrick’s identical twin, Ronald, whose shared genetic code eliminated the rejection response. Richard Herrick died eight years later, when disease re-occurred in the transplanted kidney. (During his eight-year bonus, though, He married his post-op nurse and fathered two children.)

Though heartened by the advance, surgeons remained stymied by the problem of rejection; to many it seemed insurmountable. “The first immune suppression that was ever tried, believe it or not, was total body irradiation,” Bingaman reports. Physicians had stumbled upon the immunosuppressive properties of radiation after the atomic bombings in Hiroshima and Nagasaki. Once the transplant patient’s immune system was knocked out with radiation, doctors—Murray was again a chief figure—would inject the patient with the donor’s bone marrow cells in the

# Becoming Part of the Future

## WANT TO SAVE A LIFE?

What you should know about kidney donation

Of the **nearly 20,000 kidneys transplanted last year, about 14,000 came from deceased donors—the traditional source—and about 5,700 from live donors—the preferred source**, since the kidney is likelier to work immediately and last longer. But we need more of both. “As there are so many people waiting and dying on the list, we need to do a better job as a country of educating folks about registering to be deceased donors,” Dr. Adam Bingaman says. “Today it’s easier than ever, because people can go on the internet to Donate Life America—each state has a Donate Life website—and legally register to be an organ donor.”

**What does it mean to donate a kidney when you’re alive?** “It used to be a big operation,” Bingaman says. “There was a very large incision, a very painful incision—what we used to call

an ‘open nephrectomy.’ It was a bigger operation for the donor than for the recipient.” Surgeons now remove kidneys laparoscopically—small tools, small incisions. Bingaman counts this as one of the great advances he has seen during his career. “Donors are in the hospital for one night.” (It’s all paid for by the recipient’s insurance, and there are no long-term health repercussions; we need only one kidney to function perfectly.)

Living donors need only be healthy and motivated. “If you’re healthy, it’s very safe to donate a kidney to someone,” Bingaman says. “It doesn’t have zero risk; everything has some risk. But it’s very safe if you don’t have diabetes, you don’t have pre-diabetes, or high blood pressure, etc.” Donors typically seek to donate to a friend or loved one in need—but also typically, donors are not a suitable match. They can then donate their kidney to an exchange wherein the friend or loved one receives a matching kidney

from a stranger in return.

That is what Elizabeth Gonzales did for her husband, Andrew, who had been on dialysis for twelve years. She would like potential donors to know that having a kidney removed is anything but a terrible ordeal. “I knew things were going to go smoothly,” she says. “There have been such advances that I was totally at peace, especially at a place like San Antonio.”

She adds, “If you’re scared, just think about the outcome. Think about the lives that are going to change—what a testament it’s going to be.”

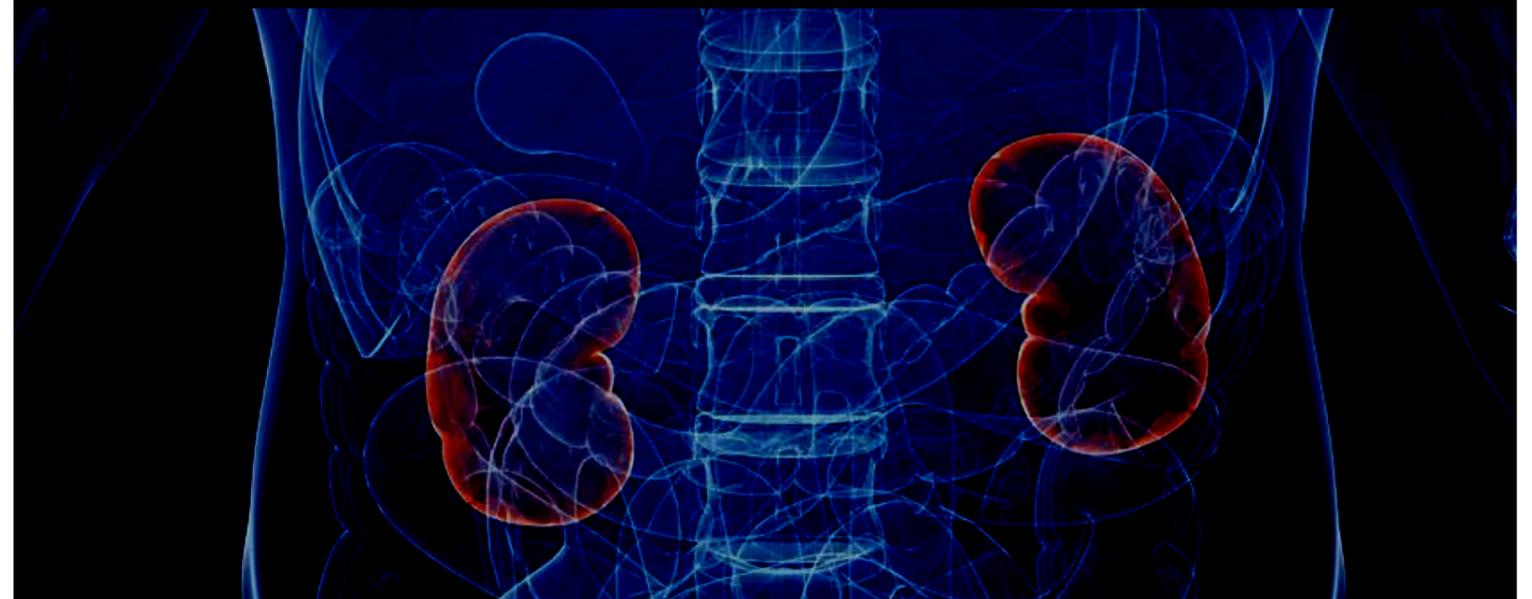
## THE GREENWICH CONNECTION

Two organizations that are instrumental in helping those with kidney disease have roots right here in town.

The **National Kidney Registry** was founded by Greenwich

resident Garet Hil. After Hil and his wife Jan’s ten-year-old daughter suffered kidney failure in 2007, the Hils embarked on a frustrating search for a compatible transplant (she finally received one from a cousin). Hil started the National Kidney Registry in order to work with transplant centers across the country to match donors and recipients. Last year NKR, which is headquartered in town, facilitated about 640 kidney transplants, making it the most productive organization of its kind in the world. Hil and Bingaman have become friends through their work. [kidneyregistry.org](http://kidneyregistry.org)

The **National Kidney Foundation** focuses on awareness, prevention and treatment of kidney disease, and advocates for ways to get more kidneys transplanted. Greenwich resident Kevin Longino, a kidney transplant recipient himself, is the chief executive officer of NKF’s board of directors. [kidney.org](http://kidney.org)





Faces of hope: Andrew Gonzales with his wife Elizabeth; Sandy Eckles with husband Tom at her sixtieth birthday

hope of creating a more hospitable immune climate for the transplanted kidney. “The patients all died.”

The pharmaceutical approach was far more promising. In 1962 Murray took a kidney from a man who had died during open heart surgery and put it into a twenty-four-year-old accountant named Melvin Doucette. To combat rejection, Murray tried azothiaprine, a new immunosuppressant that had failed to work in six previous kidney transplant patients. But it gave Doucette twenty-seven extra months of life—a leap forward, since no kidney transplant patient aside from identical twins had ever lived longer than a few weeks. Further advances, however, were slow to arrive. “Back in the 1970s, which was not so long ago, they could get about half of the kidneys to last a year,” Bingaman says.

In 1982 cyclosporine—a drug derived from a fungus native to Norway—entered the picture and changed everything. “Now our results are so good that we expect about 92 to 96 percent of the kidneys to last a year, and the average kidney to last more than ten years.” (It was cyclosporine that paved the way for the more exotic transplants—hands and faces.) There have been drug refinements since, helping kidneys to last longer than ever—often more than two decades in live donor cases. Bingaman describes immune suppression as a sort of “trick.” While too little suppression leads to chronic rejection, too much suppression leads to possibly life-threatening infections, and leaves patients vulnerable to certain cancers. “So we try to dose it just right.”

When kidneys don’t last as long as they should, it’s often because patients get lax about their medications. “You can’t skip them,” Bingaman says. “Even if you’ve been three, four, five, ten years with the transplant, if you stop those medicines, the immune system will awaken and destroy the transplant.” He turns somber. “Oftentimes people stop taking

the medicines for financial reasons. Folks can’t afford them. The tragedy is that dialysis is far more expensive than a transplant. The system should recognize that paying for medicine is a lot less expensive than paying for dialysis, but that’s not been the case.” Medicare, Bingaman adds, pays for dialysis but covers transplant-related medications for only three years.

To many, it comes as a surprise to learn that transplanted kidneys don’t last forever, even with a good match and careful adherence to the drug regimen. “The immune system just chips away at that kidney over time,” Bingaman says. “It damages the kidney to the point that it fails. That can be a decades-long process, and most people die from other causes. But ultimately the kidney gets chipped away at by an immune suppression.” The pop singer Selena Gomez, for example, who has lupus, received a kidney from a friend in 2017, at the age of twenty-five; by the age of forty-five, she will likely need a second transplant.

Or will she? Bingaman points out that successful transplantation is really quite new. Who knows what advances will have blessed the field by 2037? There might be further leaps in antirejection medication. Or in stem cell transplants or genetically engineered transplants or bio-artificial organs, which would eliminate the need for medications altogether, and render the immune problem obsolete.

When Bingaman steps back and thinks about his profession, with these advances still in the offing, he is struck by the almost Frankensteinian strangeness of it. “The whole concept of what we do is crazy! In another generation or two, I think that my kids, or my kids’ kids, are going to think that I was crazy. ‘He took kidneys from a deceased person and he put them in a living person! Can you believe he did that?’”



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**June 27**  
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**September**  
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Darien



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