



IN MARCH, ZULLY BROUSSARD OF FAIR OAKS MADE HEADLINES
AROUND THE COUNTRY WHEN SHE GAVE ONE OF HER KIDNEYS
TO A STRANGER.

THAT ALTRUISTIC DONATION
SET OFF A HISTORY-MAKING SIX-WAY KIDNEY SWAP
AT SAN FRANCISCO'S CALIFORNIA PACIFIC MEDICAL CENTER.

THANKS TO HER, SIX PEOPLE ARE ALIVE TODAY. HERE IS HER STORY.

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By Catherine Warmerdam
Photography by Marc Thomas Kallweit

Zully Broussard was a wife and young mother of three when an idea came to her. "I remember talking to my husband and saying, 'I think I want to give a kidney.' I wouldn't call it an urge, but it was a thought, a desire. I wish I could explain where it came from."

Her husband, Mike, who had always admired her generous spirit, wasn't keen on the idea. "He said, 'What if our family needed a kidney one day and you gave yours when we could have been a match?' It was true. Plus my kids were little. So I left it at that."

Years passed. Life went on with all the splendor of ordinary days. Kids. Work. Laundry. Nights out dancing. Gardening. It was a contented existence. And then, without warning, Broussard's world was turned upside down. Her oldest son, Marcus, an outgoing young man with the smile of a teen idol, became ill with cancer. He died in June 2002, at the age of 21.

"Marcus was full of life. He was that kid who walked into a room and lit it up," says Broussard. "He was such a giver, very happy-go-lucky, athletic. In retrospect, he lived life to the fullest. It's almost like somehow he knew."

Broussard and her husband were grief-stricken, but they carried on the best they could while raising their two other children, Lisette and Tanner. Then, in 2013, the family was dealt another tragic blow. After feeling ill for a week with indigestionlike symptoms, Mike was

diagnosed with colon cancer. He passed away five weeks later, just three days before the couple's 35th wedding anniversary.

"Losing Marcus, I felt like my heart was torn apart. Losing Mike, I feel like half of me is gone," says Broussard, her emotions still raw. She and Mike had been high school sweethearts in Texas, where she spent her teenage years. They moved to the Sacramento area in 1983 and raised their kids on a quiet street in Fair Oaks. Together, they shared life's everyday joys and the indescribable heartache of losing a child. And now Mike—"my rock"—was gone.

Adjusting to life as a widow, Broussard, then 55, was in the throes of mourning when she learned of a friend in need: A former co-worker had end-stage renal failure and needed a kidney transplant. Broussard didn't hesitate. "I reached out on Facebook and said, 'I will give you my kidney if we are a match.' And wouldn't you know? We were."

Before long, Broussard was visiting doctors in Sacramento and San Francisco, where her friend was receiving medical care, for the medical and psychosocial screening required of all transplant donors. "They did a lot of tests to make sure I was in good, clean health," she says.

Broussard, a marathon runner with a fit, petite frame, passed the health screenings with flying colors. But there was one hiccup: The transplant screeners wanted to conduct additional work-ups to

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rule out any potential problems stemming from the removal of a carcinogenic mole when Broussard was 15.

In the meantime, another kidney suddenly became available for Broussard's friend from a 21-year-old man who had been taken off life support. Understandably, the friend jumped at the opportunity.

By then, however, Broussard was fully committed to the idea of being a live donor, even if it meant giving her kidney to a stranger instead. "I was already in this medical process, and I was so excited," recalls Broussard, a mental health nurse at a prison. "I let the medical team know I still want to do this."

This is the story of one woman who saw a chance to help a stranger in need and grabbed it—a hero at once both ordinary and extraordinary. It's also the story of how technology is changing the game for desperately sick people in need of a new kidney.

For those facing end-stage renal disease, the statistics are grim. Roughly 101,000 people are currently awaiting kidney transplants in the United States. The median wait time on the kidney transplant list is 3.6 years. Patients who are difficult to match confront a much longer wait, and many will die before a match becomes available. Last year, 4,270 people died waiting for a kidney transplant, while another 3,617 grew too ill to receive one.

Identifying a suitable match for a kidney transplant patient is largely a matter of blood type (although the age and health of the donor also play an important role). The patient's blood type—A, B, AB or O—must be compatible with the donor's. In addition, the donor has to be immunologically compatible with the recipient. Tests are run to detect the presence of antibodies in the recipient's blood that could damage the donor kidney. If sufficient numbers of antibodies are identified, the donor will usually be deemed incompatible with the recipient.

Transplants from living donors have better outcomes than those from deceased donors. They last more than 50 percent longer and are less likely to be rejected.

Yet finding a willing donor—let alone a compatible one—is a major hurdle for the majority of patients.

Until the mid-1990s, the most common source of suitable live donors was blood relatives. A patient's parent, sibling, child or cousin might be tested for compatibility. If the relative's blood type was compatible and he or she was healthy and willing to give: bingo!

But drawing from such a limited pool minimizes the number of potential matches, leaving many patients to languish on the wait list.

As transplant research and technology progressed, the emergence of spousal donations paved the way for an array of potential living unrelated donors (a friend, a co-worker, a neighbor), thus giving more

To become an "altruistic donor" like Zully Broussard, you must be in good general health, have normal kidney function, be between the ages of 25 and 70 (exceptions may be made) and have medical insurance. Conditions that may exclude you from being a living donor include hypertension requiring medication, kidney disease, obesity, certain infectious diseases such as AIDS, some forms of diabetes, cancer, heart disease and hepatitis, some forms of psychiatric problems, and kidney stones. For more information on becoming an altruistic donor, go to the National Kidney Foundation's website (kidney.org).

patients a greater shot at staying alive. Even so, incompatibility issues persist under this scenario, especially for hard-to-match recipients. Therefore, a healthy, willing donor might be turned away, even as thousands of people wait in desperation for a kidney.

David Jacobs knows firsthand the agony of waiting for a life-saving donation. The successful San Francisco-based software developer was tethered to dialysis for more than three years before a suitable kidney donor became available to him.

"Let me tell you, being on dialysis—they nearly killed me once. The second day I was there, the guy next to me died while I was sitting there. I don't want anyone to suffer like that," says Jacobs, 59. "I'm glad dialysis is there because it kept me alive and it's keeping other people alive. But it should be a transient stop, not a destination."

In 2003, Jacobs received a kidney transplant at California Pacific Medical Center in San Francisco after an excruciating wait for a match. "I had donors who were willing but incompatible," he says. "I



Zully Broussard (left), an altruistic kidney donor, is the first link in a paired donation chain that involved 12 people. David Jacobs (this page) is a kidney recipient and software developer who created Match Grid, a program that sorts medical data to identify potential donor/recipient matches.

had donors that were compatible but were ruled out for health or other issues. I was looking for options." Finally, there was a breakthrough.

"A person who barely knew me went in and got tested with a person who knew me much better, and she was a match," explains Jacobs. "Without my kidney donor, Breyon Austin, I would not be alive. She's a young black woman who gave to a middle-aged Jewish guy because she didn't want my boys to grow up without a father like she had to."

The experience lit a fire in Jacobs, who pledged to bring his technological acuity and entrepreneurial zeal to bear on solving the kidney match conundrum. "I had 10 or more hours a week hooked up to a machine trying to stay alive," he recalls. "I had time to spend focusing on the problem and the motivation to do it, so I started educating myself." Jacobs pored over all the research on kidney transplants that he could get his hands on.

Then Jacobs sat down with Dr. Steven Katznelson, medical director at CPMC's kidney transplant program. "I had a whole laundry list of issues and concerns and criticisms," recalls Jacobs. "One of my questions was, 'Why aren't you doing kidney paired donations?' The answer was that they wanted to do them but didn't know how. I said, 'I think I can help you figure this out.'"

The first kidney paired donation transplant was performed in the United States in 2000, revolutionizing the manner in which transplant matching is conducted and opening up a new universe of potential matches for transplant patients. In short, kidney paired donation takes a group of incompatible donor-recipient pairs and matches them to another group of incompatible pairs.

For example, imagine your husband needs a kidney and you are medically able to donate to him, but your blood types are incompatible. Another donor-recipient pair—let's call them Sue and Bob—shares the same problem: a healthy, willing donor, but not a suitable match. Then imagine discovering that you and Bob are an ideal match, as are Sue and your husband. You donate to Bob, Sue donates to your husband, and two lives are saved.

Paired donation is not limited to two donor-recipient pairs. Transplant centers across the country have recently made tremendous strides building entire transplant chains in procedures involving as many as 34 donor-recipient pairs, as was the case in a cross-country, multifacility procedure completed over several weeks earlier this year.

Paired donation is most impactful when an altruistic, or non-directed, donor kicks off a so-called domino chain. That's because the altruistic donor, who enters the chain without a recipient partner, functions like a wild card: He or she can be matched with a wide variety of people, therefore greatly increasing the number and suitability of potential matches in the chain. Altruistic donors are a godsend for hard-to-match patients.

The dream is for these dominolike swaps to become the norm for kidney transplants. "They should become the new normal because it gives some people their only hope," says Katznelson. "Every time you do a kidney paired donation transplant, you take someone off the waiting list and you therefore make that scarce resource more available to people who don't have living donor options."

Identifying appropriate paired donation matches used to be painstaking work that took months to complete—too long for a dying patient. Making good on his pledge, Jacobs set out to build a powerful computer program that could efficiently facilitate paired donation chains.

In collaboration with the transplant team at CPMC, Jacobs led the development of MatchGrid, a software program that uses



Dr. Steven Katznelson, medical director at California Pacific Medical Center, coordinated surgery and care for the 12 people in Zully Broussard's kidney donation chain.

complex algorithms to sort through medical data, allowing physicians and caseworkers to quickly identify suitable matches based on layers of variables: blood type, antigens, antibodies, age, weight and more. Similar software programs developed by the National Kidney Registry and United Network for Organ Sharing have powered donation chains across the country, saving hundreds of lives.

Today's software can quickly determine both the maximum number of potential matches and the highest quality matches for a given patient. "With a click of a button, I can run the matches," says Katznelson. "It allows you to look at the most and the best that you can do." Today, more than two-thirds of CPMC's donations are facilitated by MatchGrid.

"I'd like to think that I'm part of a wave, if not a pioneer, in helping make Silicon Valley mean more than social networking and cellphones," says Jacobs, who is chief technology officer for BiologicTx, the company behind MatchGrid. "It could actually mean saving lives."

On the morning of March 5, 2015, Zully Broussard was prodding her friends Pam and Danielle, concerned that they were running late to her surgical appointment at CPMC. Not to worry, they assured her. "We have the golden egg," the women joked. "They can't get started without you, so we can take our time."

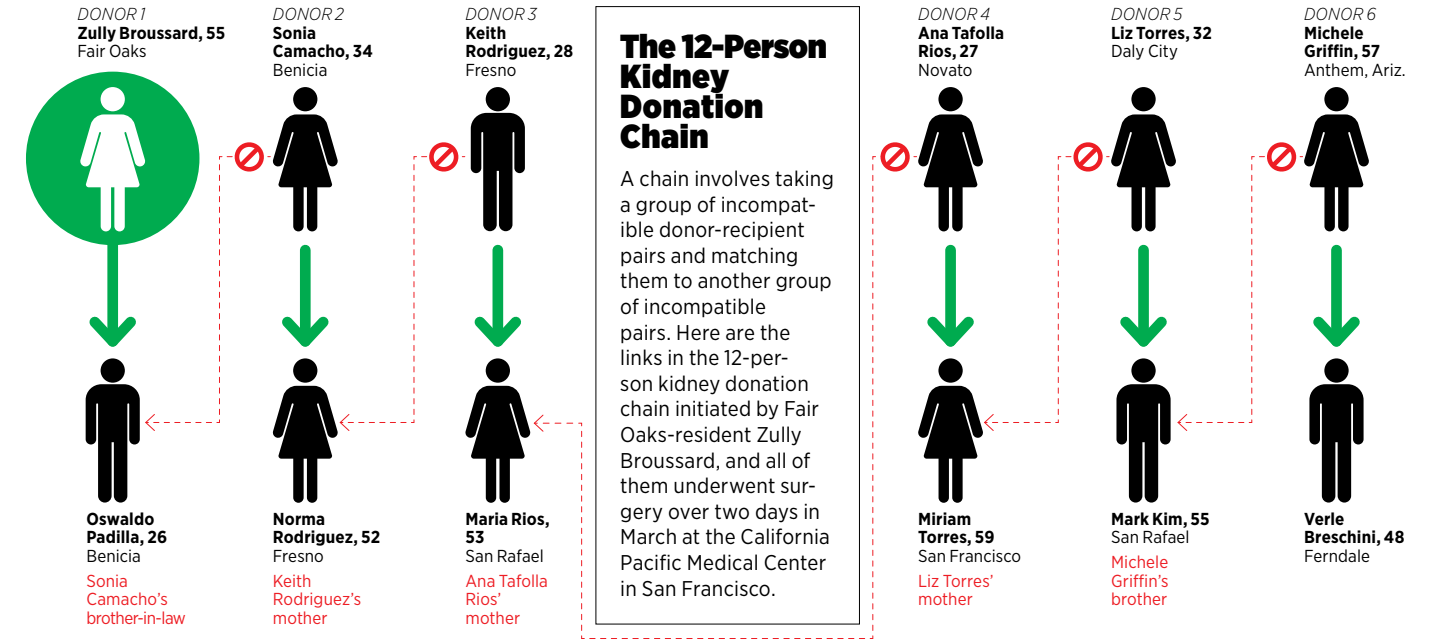
Broussard would be making history that day as the altruistic donor in a six-way kidney transplant chain—the longest chain thus far at a single facility on the West Coast. The chain worked like this: Broussard's kidney would be transplanted into Oswaldo Padilla, a 26-year-old man from Benicia. Padilla's sister-in-law would donate a kidney on his behalf to a 52-year-old woman from Fresno. That woman's son would donate his kidney to a woman from San Rafael, and so on. Verle Breschini of Ferndale would receive the last kidney, closing the chain.

The morning of the procedure, the hospital was abuzz with activity. Broussard was giddy with anticipation. "I could feel the positive excitement when I arrived. It was very uplifting," she recalls. "When I walked into the surgery room, I was like, I can't wait for somebody's life to change. I wasn't nervous." After months of screening and waiting, the surgery was finally happening. Broussard and her friends, who accompanied her for moral support, had enjoyed a relaxing dinner in San Francisco the night before. Now it was game day. She was ready.

Dr. Katznelson, meanwhile, was stirring about, conducting last-minute check-ins with the dozens of doctors, nurses and support personnel who would be operating on and caring for the 12 people in the chain. "It's a little nerve-racking because there are a lot of cogs that go into this. They all have to be lined up the right way. So there's a little anxiety about making sure everything goes well," he says.

The laparoscopic surgery to remove a kidney takes about two and a half hours. Typically, three 1-centimeter-wide incisions are made on the side of the abdomen from which the kidney will be removed. Once the kidney is dissected, it is pulled down from its usual position behind the lower ribs and removed from the body through a 3- to 4-inch abdominal incision above the pubic bone, not unlike a cesarean section.

After the surgery, Broussard recovered in the hospital for four days—"They gave me a great room!"—before returning home for two months of rest and healing. "It hurt the first two days, but it wasn't as painful as I expected," she says. Broussard filled her recovery days with books and naps. Friends and neighbors stopped by with home-cooked meals. Co-workers donated sick leave.



THE LOCAL CONNECTION

In 2014, 17,105 kidneys were transplanted in the United States—to roughly 16 percent of the number of patients on the donor list. UC Davis Medical Center, Sutter Health's California Pacific Medical Center, UCSF Medical Center and Stanford Medical Center each perform 200 to 300 transplants a year.

When Sutter Medical Center in Sacramento closed the doors on its kidney transplant center in 2012 to focus on heart services, UC Davis became the only local hospital that does kidney transplants. According to the Scientific Registry of Transplant Recipients, UC Davis patients wait, on average, 10 fewer months to receive a transplant than the national average, a statistic that has helped the medical center become one of the nation's top kidney transplantation centers.—Kristopher Hooks

Strangers reached out to Broussard after learning of the six-way donation chain in the news. A woman whose husband had received a kidney transplant from a stranger when he was a child emailed to thank her for her courage and generosity. Broussard replied: "You have moved me to tears. I donated my kidney because I wanted someone out there to have a better quality of life and more time. Thank you for your beautiful words. God always has a plan and I was the plan for now. Give your family my heartfelt gratitude."

It wasn't until the six-week post-surgery checkup that Broussard met her match, so to speak. "They had everybody there, and they had us all meet each other in front of the cameras," she says. "I was trying not to cry but I lost it." The man who now carried her kidney embraced her and thanked her, telling her, "I have a 6-year-old girl who I can play with now." Broussard was deeply touched. "When I sat down, it hit me: He's got his life back."

Almost two years after losing her husband and six months after Broussard gave her kidney to a stranger (she and Padilla are now friends and talk from time to time on the phone), life's predictable routines are returning. Broussard is back at work. She has regained the energy to tinker in her garden amid the lavender and hummingbirds.

She has started to run again—albeit slowly—and plans to run the California International Marathon in December. "It's a little nerve-racking because I don't know what my body can do," she says. "Even

if I have to walk, I will do it. I have to prove to myself that nothing has changed and that my body can handle 26 miles."

Although a handful of friends were skeptical of her decision, Broussard has no regrets about donating her kidney—except maybe the fact that she can no longer take NSAIDs for pain relief. "As a runner, Motrin is my best friend, so I don't know how that's going to work out."

Broussard believes wholeheartedly that her calling to give was part of a higher plan. "I believe in God, I have a lot of faith, and I knew that God put this for me to do," she says. The loss of her son and husband had prepared her for the sacrifice. "I couldn't do anything for Marcus, and I couldn't do anything for Mike. I saw them die in front of me. But I could do this, and that was such a good thing," she says. "I know what it's like to want another five minutes. That's why it was so easy. It was a no-brainer."

Broussard's daughter, Lisette, says donating was only natural for her mom. "It didn't even seem like a decision; it just seemed like it was the right thing, so she did it." The family's intimate relationship with suffering made the experience all the more meaningful. Says Lisette, "I think she would have done it anyway, but losing my brother and my father changed us as people to be more conscious of those who are sick and want to get help."

To the team that helped make the six-way transplant possible, Broussard is nothing short of a hero. "Getting to know someone like Zully Broussard has been a remarkable experience," says Dr. Katznelson. "She has really pushed the envelope by helping get the word out about kidney transplant."

Jacobs, for his part, is awestruck by Broussard's generosity. "A person who's experienced so much personal tragedy and loss was still willing to give, and look what that gift did," he says. "I don't even know how to quantify how highly regarded she is in my soul."

Zully Broussard helped save the lives of six people. But there's still more she wants to accomplish. "I don't know why I want to go to Australia, but I do," she says. "I want to learn how to ride a motorcycle. I want to learn how to play the guitar. And just become a better me. I don't think that we ever stop. There's a lot of work to do. And there are always people who need help." 📧