Science Will Win Season 6

Ep 3 Transcript

> **[KATRINA]** I was 28 during my first breast cancer diagnosis; I was 28 years old.

RAVEN: This is Katrina Johnson. Today, she's a trained yogi and a mother of two living in the Austin, Texas area. But in 2002…

> **[KATRINA]** I was just like, I guess most 28-year-olds living my best life, hiking, living up in the Austin area, uh, biking, doing all the fun things, going to the lake, right, hanging out with my friends and my family, and I found a lump on my left breast.

RAVEN: Katrina knew she should be checking herself regularly for breast cancer. But knowing what to do didn't prepare her for the day she actually found something. Or for hearing the words, "you have cancer".

She's heard them five times now.

[theme music in]

I'm Dr. Raven Baxter, aka Raven the Science Maven — I'm a molecular biologist and science educator. And this is Science Will Win.

In this episode, we're exploring the complicated past, present, and future of cancer care for women – through the lens of the cancer that disproportionately affects women the most: breast cancer.

[theme music out]

In the United States alone, one in eight women receives a breast cancer diagnosis in her lifetime.[1] In the most recent data available, from 2018 to 2022, overall breast cancer incidence rates have increased by more than 1% per year. ￼

Today, breast cancer is an incredibly visible disease. During October, you'd be hard-pressed *not* to see someone wearing a pink ribbon in support of Breast Cancer Awareness Month.

But it wasn't always that way. For decades, social taboos and fear pushed breast cancer into silence - earning it the label of a "hidden disease".

To understand how that silence was broken, and how women led awareness and education — ultimately playing a major role in changing the treatment paradigm for breast cancer — we're going back to the early 20th century.

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[1] https://www.nationalbreastcancer.org/what-is-breast-cancer/?&utm_source=google&utm_medium=cpc&utm_campaign=85386326&utm_term=about%20breast%20cancer&gad_source=1&gad_campaignid=85386326&gbraid=0AAAADymHrIe-AVTbLmtCrvAWYEtV4Z3I&gclid=CjwKCAiAs4HMBhBJEiwACrfNZY5tKIiWB4-EYTlCJku4BtAI2cZMDGWG2vm6lG3ZHm4bTkKuXMZ_7hoCrnEQAvD_BwE

We'll trace the generations of women who pushed for knowledge, shared information, and demanded better care. They paved the way for people like Katrina, who now have a better understanding of their cancer, more support, and more decision-making power when it comes to treatments.

After her first diagnosis and treatment, Katrina decided to get genetic testing done in 2005. The results showed she was a carrier of the BRCA gene — a gene that makes people much more likely to get breast cancer. Once again, Katrina was faced with a life-altering choice. She decided to get a double mastectomy. This means that she had both of her breasts surgically removed: skin, areola, and the breast tissue.[2] The procedure has been clinically proven to decrease a person's chances of getting breast cancer again.[3]

> **[KATRINA]** There are varying degrees of how women maybe connect with their breasts. I, I don't know. It's, I don't know that I was so connected to them.
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> When the BRCA thing came up, and I thought, oh my gosh, I might have to go through cancer again, it was a no-brainer to just, I didn't want 'em anymore. Like, it was almost like this part of my body that I just didn't want attached to me anymore, 'cause it had already caused me so many things. Right?
>
> So for me, I mean, it was definitely a challenging decision, but in that moment, it was like, let's do it.

RAVEN: The important thing to hold onto here is the fact that she made this decision. Katrina consulted with her doctors. Using books and other resources, she got educated on her options – and she *had* options. Just a few decades earlier, most women facing breast cancer simply didn't.

And Katrina understood that history firsthand.

> **[KATRINA]** I mean, I knew my grandmother had died at 58 of cancer of the female type, which, it was probably ovarian. But you know, back then, it was–they don't really know where it started.
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> **[RAVEN]** Wow, that's really how they classified it back then?
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> **[KATRINA]** It was on her death certificate, "cancer of the female type".
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> **[RAVEN]** I don't even know what to think about that! I… okay!

RAVEN: "Cancer of the female type." It's kind of hard to believe today, when we have so much more information and research that has helped us understand uterine, ovarian, cervical, breast cancer, and of course, all types and subtypes.

But that lack of clarity was once the norm. When you look back into the history of cancer, and breast cancer specifically, you'll find generations of women who pushed that research and education forward and advocated for better care.

To see where that movement began, I want to take us back to the 1920s…

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[2] https://www.cancercenter.com/cancer-types/breast-cancer/treatments/surgery/double-mastectomy

[3] https://www.cancer.gov/about-cancer/causes-prevention/genetics/brca-fact-sheet

[musical transition]

During the 1920s, the five-year survival rate for breast cancer — meaning, the likelihood that a patient would survive 5 years beyond their diagnosis — was just 5%.[4]

And survival wasn't the only thing at stake.

At the time, breast cancer carried an enormous stigma. Doctors often blamed women's own bodies — breastfeeding, menstruation, menopause—suggesting that fertility itself was somehow at fault.[5]

For women, this created fear and lasting shame. A diagnosis didn't just threaten their lives; it threatened their identities. And questioning a doctor's explanation felt nearly impossible.

So, women turned to each other.

They gathered in living rooms and kitchens, swapping stories, comparing symptoms, and encouraging one another to get screened. They were talking about early detection long before it was widely accepted in medicine. This grassroots organizing *worked*—and large cancer advocacy groups took notice. The American Society for the Control of Cancer—now known as the American Cancer Society—started recruiting these women to support their own educational efforts.

> **[KIRSTEN]** Women almost immediately begin to play a role in terms of expanding that membership and saying, 'teach us the message, and we will send it out to the public.'

RAVEN: That was Kirsten Gardner. She's the Director of Medical Humanities at the University of Texas, San Antonio. She's also the author of the book *Early Detection: Women, Cancer, and Awareness Campaigns in the Twentieth-Century United States.*

> **[KIRSTEN]** The movement for women to teach one another about cancer and to educate one another about their bodies and the risk of cancer is a very long history in the 20th century.

RAVEN: In her research, Kirsten found that women weren't just quietly learning – they were speaking out.

> **[KIRSTEN]** And I was really surprised to find, without a whole lot of digging, that in the early 20th century, there was a lot of discussion about female cancers, particularly evident in women's magazines…

RAVEN: Even in the face of stigma, women were writing, organizing, and sharing information about the cancers that affected them.

Through the ASCC and later the Women's Field Army, women went door to door - publishing articles, hosting health fairs, and spreading information about reproductive cancers like cervical and breast cancer.

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[4] https://www.lmh.org/news/2025-news/from-fear-to-hope-the-evolution-of-breast-cancer-treatment/

[5] https://time.com/3822628/breast-cancer-history/

As the feminist movement gained momentum, books like *Our Bodies Ourselves* helped push these conversations into the open. By the 1970s, women were learning from one another, building community, and taking action.

> **[KIRSTEN]** Women would get together in community groups, and they would choose a health issue, and then they would often assign people to research different aspects of it. They would dive into medical periodicals, scientific periodicals, and they would come back together and talk about it…

RAVEN: Breast cancer quickly became a focus in these groups – because it was visible. It often showed up as ulcers or lumps on the breasts. This made it something women could check for themselves, and potentially identify early on. Early detection offered something rare at the time: a sense of control.

The message was simple and powerful - catch it early, and you could treat the cancer more effectively.

But that message also carried weight. Over time, it placed responsibility squarely on the individual.

> **[KIRSTEN]** They believed that if we share messages of early detection, if you say, go see your doctor, see if this can be taken care of, see if there's any problems, and if there's tools that you can use, whether it be a breast self-exam or later mammography, then use these tools and then early detection will work. So, it puts, it puts a lot of onus on the idea of self-detection.
>
> It also really emphasizes that early detection works.

RAVEN: While self-advocacy is important and we all have an individual responsibility to perform self-checks and discuss any symptoms with our doctor, it can be more nuanced than this.

As women pushed for answers, many began to notice something else: medical research wasn’t centered on them.

Treatment options were limited - and for decades, they barely changed. Because breast cancer often appeared externally, surgery became the default solution.

> **[KIRSTEN]** As we began to tackle cancer, particularly in the 20th century, the primary cure for it was surgery. If you can cut it out, then you can stop its growth.

RAVEN: That thinking shaped generations of care. The radical mastectomy - first described in 1894 - became a standard practice. It was seen as the best chance at survival.

But it involved removing the *whole* breast, all of the lymph nodes under the arm, *and* the chest wall muscles under the breast. It came with lasting consequences: nerve damage, limited mobility, and chronic swelling.

Change came slowly. In the 1970s, a less aggressive approach - breast-conserving surgery, paired with early chemotherapy - proved just as effective. Still, it took time for the medical community to let go of the idea that more surgery was always better.

> **[KIRSTEN]** How do you change a belief system overnight?

RAVEN: You don't. And in many cases, it was women themselves – writing and sharing their experiences throughout the 1980s and 90s – who helped push that shift forward.

Those voices still shape the conversation today.

At the very start of Katrina Johnson's breast cancer diagnosis, she relied on the same tools women had leaned on for generations: self-education and trusted support. And one pioneer from the past had a lasting impression early on.

> **[KATRINA]** I remember a friend gave me a book called the Dr. Susan Love Breast Book…

RAVEN: Doctor Susan Love wrote the first edition of her "breast book" in 1990. It quickly became a trusted guide - covering prevention, diagnosis, and treatment - and was used by patients, survivors, and even clinicians.

The book is now in its *seventh* edition.[6]

> **[KATRINA]** I read that book cover to cover, and if you've ever seen it, Raven, it's like, it is a thick book. And I remember, you know, by the time I got to the end of it, I felt confident, and I really felt like I understood kind of where breast cancer treatments had been and where they were going at that time. And I knew what I wanted my treatment to be.

RAVEN: Just as earlier generations of women sought out information for themselves, Katrina learned directly from one of the pioneers who helped change how breast cancer was understood.

That foundation mattered - especially early on.

When Katrina first found the lump in her breast, her doctor wasn't concerned.

> **[KATRINA]** My gynecologist was like, I really think it's nothing. You have very dense breast tissue.

RAVEN: But Katrina trusted her instincts – and asked for a follow-up visit when the lump didn't go away.

> **[KATRINA]** I pushed for that next step, And I think that takes a lot of courage to do.

RAVEN: That instinct - to question, to push, to seek clarity - would shape Katrina's care. When she was first diagnosed, she didn't stop at one opinion. Or two. She got five.
She wanted to be sure she understood her options and was choosing the best path forward.

After her third breast cancer diagnosis in 2016, she kept up with every yearly screening, every appointment, every follow-up. But between 2016 and 2023, Katrina was also diagnosed with two cases of melanoma, a kind of skin cancer. And she still couldn't find a doctor who could explain why she kept getting cancer. So, she kept searching until she found a doctor who really seeks the *full* picture.

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[6] https://cancerhistoryproject.com/article/how-dr-susan-loves-breast-book-has-remained-the-bible-for-women-with-breast-cancer-since-1990/

> **[KATRINA]** What I love about Dr. Isaac Chan at UT Southwestern is that he's a researcher. I need someone that wants–that has this quest for knowledge–that wants to understand me. Katrina Marvin Johnson. Me, my breast cancer, my story.

RAVEN: Isaac Chan is a physician-scientist and assistant professor in the Department of Internal Medicine at the University of Texas, Southwestern. He's adamant that medicine works best as a partnership.

Today, patients often arrive deeply informed, building on decades of shared knowledge. His role is to listen, guide, and decide together.

> **[DR CHAN]** When I meet people in the clinic…I think we can kind of talk through it and say, is the answer investigate, or wait, or reassure?

RAVEN: Doctors like Isaac reflect how care has evolved - toward collaboration, context, and quality of life.

For Katrina, that evolution became personal. After living with cancer multiple times, she turned her experience into purpose – joining Pfizer Oncology as a director of advocacy and professional relations, working to improve the system for others.

[musical transition]

She's also helped bring attention to what's often left unsaid: how breast cancer reshapes body image and sexuality. For many women, those changes can be just as overwhelming as the diagnosis itself.

Katrina says she's grateful for the cosmetic outcome of her surgery. But even with a good result, surgery leaves marks - both physical and emotional.

A prosthesis or plastic surgery isn't a perfect replacement for natural breasts.

> **[KATRINA]** I still think the mastectomy was the right decision. I believe in not living life with regret.
>
> I will tell you that some of my friends say you're so lucky. Look, you don't have to wear a bra. And I'm like, hold on a minute. Lucky is not what—the word I'm gonna go with.

RAVEN: It's understandable to focus on appearance after radical surgery or cancer treatment. But even today, when women have more choices than ever before, those choices can be complicated.

Katrina's double mastectomy in 2005 is a great example of these complex decisions. Following that surgery, she also went through a breast reconstruction procedure. And both decisions ended up impacting each other.

> **[KATRINA]** But I think there's always a balance with the breast surgeon wanting to get out all the breast tissue and the plastic surgeon wanting the best cosmetic result. But on the right side, since

I hadn't had a tumor there, I think they were trying to give me a better cosmetic result. So tissue apparently was left behind.

RAVEN: Because some tissue was left behind, Katrina would face breast cancer again. She needed another surgery.

[KATRINA] You know, I said, go for it. Just do it. Do what you need to do.

RAVEN: After that third diagnosis, vigilance became part of Katrina's life.

[KATRINA]
And now I just make sure that I am very diligent about my screening. I just really prioritize those appointments to make sure that I'm putting myself first and doing what I need to do to be organized and see my providers and make sure I'm being checked.

RAVEN: While the medical community has made real progress in centering patients, self-advocacy remains essential - not just physically, but emotionally.

Cancer treatment can have impacts that go beyond the physical—like the mental and emotional shifts that come with seeing your body in an entirely new way. Patients, advocates, and researchers have been deepening the conversation around these shifts in recent years.

In a 2024 study, women undergoing breast cancer treatment reported higher levels of distress than men.[7] This stress can surface in families, in social roles, and intimate relationships.

[KATRINA] So I think you have to have so much trust with your partner. Not only maybe do you not feel it, but sometimes that area, because there's like a dissociation maybe from all the trauma that's been in this area, sometimes you just don't want anyone anywhere near it.

RAVEN: The same year that Katrina got her mastectomy, she also got an oophorectomy — surgical removal of the ovaries — to reduce her cancer risk. This procedure puts patients into immediate menopause, no matter their age.

[KATRINA] I was in surgically induced menopause after having my ovaries removed; but this last year it just hit me like a ton of bricks.

All of a sudden it was like I couldn't focus, I was feeling so stressed and anxious and all these things, like, were happening and I was trying to find answers. I mean, menopause does a lot of things to our body.

RAVEN: Even treatments that don't specifically target reproductive anatomy can impact fertility for people living with breast cancer. For example, certain therapies can temporarily block a patient's ability to become pregnant, or cause ovulation to slow down or stop. Studies show that up to 73% of breast cancer patients have concerns about their fertility.[8]

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[7] https://pmc.ncbi.nlm.nih.gov/articles/PMC11164259/

[8] https://pmc.ncbi.nlm.nih.gov/articles/PMC10807590/

Talking openly about these effects matters. When conversations include both the physical and emotional realities of treatment, patients are better equipped to navigate what comes next.

[music transition]

These conversations move alongside scientific progress – with the goal of advancing care that also prioritizes quality of life.

Historically, breast cancer has been less responsive to immunotherapy. But new approaches are beginning to change that, showing promising results for specific breast cancer types – like triple negative breast cancer, one of the most aggressive [9].

Dr. Isaac Chan is particularly encouraged by emerging immunotherapy research his team is conducting which focuses on metastasis — when breast cancer spreads to other parts of the body. Their work centers on breast cancer which has spread to the liver.

> **[DR CHAN]** We developed a new gene therapy to treat liver metastases…
>
> The concept was how do cells create space? And one of the things that I thought about when you think about metastasis is when cancer cells, let's say, go to the liver; they don't just grow from small to big... they actually have to create space in an organ that's full of stuff. They're not entering an empty vessel.
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> So we actually figured out that these cancer cells create space by killing the neighboring liver cells. Then, what we were able to do from that was that we were able to figure out the protein that regulates this, and then we said, what if we just arm liver cells with this protein? What would happen next? And what happens next is they were able to use the protein to kill the cancer cells, to block them from creating space.

RAVEN: This work is still in development. But other advancements are already changing care – some even aimed at stopping breast cancer before it starts.

That brings us back to something Katrina mentioned early on: the BRCA gene:

> **[KATRINA]** I found out three years after my first breast cancer that I carried this BRCA gene.

RAVEN: That's B-R-C-A, and it stands for "Breast Cancer" gene. To understand how serious this gene is — women *without* the harmful BRCA gene mutation will have a 13% chance of getting breast cancer. In contrast, more than *60%* of women who inherit a *BRCA1* or *BRCA2* mutation will develop breast cancer during their lifetime.[10]

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[9] https://pubmed.ncbi.nlm.nih.gov/39062758/

[10] https://www.cancer.gov/about-cancer/causes-prevention/genetics/brca-fact-sheet#r2

Today, the FDA has approved three types of immunotherapy drugs for breast cancer,[11] including treatments that target the BRCA gene.[12] And scientists are now working to expand these approaches beyond a single subtype.[13]

Screening is advancing, too. New imaging technologies - like 3D mammography - offer more detailed, layer-by-layer views of breast tissue, helping detect cancer earlier, especially in women with denser breast tissue.[14]

And finally, AI is beginning to play a role across every stage of cancer research, including breast cancer.[15] We'll talk more about those emerging technologies in our final episode of this season.

Taken together, advances in science and education have given patients more agency than ever before. That includes access to new tools or treatments - *and* being empowered to listen to your body and trust what it's telling you.

That's something Katrina kept coming back to when we spoke.

> **[KATRINA]** Can we just really pay attention? Like, take a moment of silence if you need to, and just do a scan of your body. Do it every day. Like if something feels really off for an extended period, like go to your doctor, ask if they tell you everything's fine, but you still don't feel fine, don't take that as the answer. Go to another doctor…Find your person.

RAVEN: If you or someone you love has been impacted by breast cancer, there are many places to turn for support. One of them is an organization called Reach to Recovery.

Reach to Recovery began as a simple but powerful idea. Women who had already been through breast cancer surgery visited others who were just beginning. They brought exercises. A temporary prosthesis. And something just as important - understanding.

Here's Kirsten Gardner again.

> **[KIRSTEN]** I think it, it created, in sometimes an incredibly valuable space where women who had experienced something similar could talk about it with one another instead of talking to someone who said, well, I can imagine what it feels like. They could say, 'yes, I went through this, and this is what it felt like.

RAVEN*:* That sense of community - listening and being heard - has shaped breast cancer advocacy for generations. It's a legacy that Katrina continues in her own way.

> **[KATRINA]** The way I started my advocacy after my first breast cancer diagnosis is friends or friends of friends or parents of friends, you know, would have an experience with a diagnosis.

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[11] https://pubmed.ncbi.nlm.nih.gov/39062758/
[12] https://www.dana-farber.org/cancer-care/treatment/brca-related-genes/clinical-trials-research
[13] https://pubmed.ncbi.nlm.nih.gov/39062758/
[14] Katrina interview, her and Raven talk about denser breast tissue – https://www.temi.com/editor/t/P9xOPK5WkFUW3RS6Jrvj9khatmTR0L3m7SSZoHfFt0vF2EE_26d3Bllqvy8MrHxtM238vF_p-zit-4lsp3rAgjgBFoM?loadFrom=DocumentDeeplink
[15] https://cancer.pfizer.com/article/ai-and-breast-cancer

> And people who know me would call me and make that connection. And I would just talk with them… and it was me listening. It's peer-to-peer support.

RAVEN: Today, patients have more pathways to information and support than ever before. That gives Katrina's doctor, Isaac, reason to be hopeful.

> **[DR CHAN]** I hope that I can improve myself and everyone else can continue to provide excellent care, but also just kind of a safe harbor in a time of, you know, real duress for people. And I think if we can think of medicine that way, you know, you're not hoping that they're harbored forever, right? You want people to get better, and then sail out <laugh>.

RAVEN: As one of those patients hoping to sail out, Katrina is approaching 24 years since her first breast cancer diagnosis. She is now living her life the best she can. She's fulfilling big goals — like a 30-day yoga challenge that she completed right before we chatted. Katrina's doing what makes her body feel good and living without fear.

> **[KATRINA]** We gotta meet ourselves where we are. We need to meet ourselves where we are, be kind, be compassionate, love ourselves, love us.

RAVEN: Women who live with breast cancer face a particular set of challenges in deciding what works best for their bodies. But the diagnoses and treatment plans are all just small parts of their full lives. After over 20 years of managing cancer, Katrina has been in remission for almost a decade.

> **[KATRINA]** My cancers don't define me. I am still Katrina Marvin Johnson. I am still a mom and a daughter, and a darn good friend and a Pfizer worker for 23 years. I'm still me through all that stuff, you know? … I talk about cancer every day because it's my job too. And I wanna talk about it to people who need support and just wanna talk to someone who's been there. I wanna be that person for them, 'cause I've had people do that for me.

RAVEN: In our next episode, we'll explore survivorship – what it means to live with, through, and beyond cancer, and how new possibilities are opening along the way.

> **[TINA DEIGNAN]** For many patients, cancer is starting to feel like a chronic disease. They're living for five years or more.

RAVEN: Science Will Win is created by Pfizer and hosted by me, Dr. Raven Baxter. It's produced by Acast Creative Studios.

Please take a minute to rate, review and follow Science Will Win wherever you get your podcasts. It helps new listeners find the show. Special thanks to all our guests and the Pfizer oncology team.

And if you want to hear my full conversation with Katrina Johnson where she takes us through the challenges and bright moments that make up her cancer story, you can tune in on Pfizer's YouTube channel.

Thank you for listening!