**Science Will Win Season 6**
Ep 2 Transcript

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**RAVEN BAXTER**
In June 2022, Dr. Ross Camidge had spent a few weeks feeling an ache in his left shoulder and had been wheezing.

*Dr. Ross Camidge*
*I went to see my primary care physician predominantly about the wheeze um, and as they were writing me a prescription for an inhaler that sort of said, you know, oh, we will try this and we'll see what you're like in a couple of weeks time. I said, by the way, I'm a thoracic oncologist. Can I have a chest x-ray please?*

**RAVEN BAXTER**
As a thoracic oncologist, Dr. Camidge specializes in cancers of the chest, primarily lung cancer.

*Dr. Ross Camidge*
*I am the Joyce Zeff Chair in Lung Cancer Research and the director of thoracic oncology at the University of Colorado.*

**RAVEN BAXTER**
Dr. Camidge has a smile that makes you immediately feel comfortable, probably a skill developed from his 20 plus years of treating lung cancer patients. After Dr. Camidge got the chest x-ray, he walked back to his office in the building next door. And by the time he got there, his physician called to say they had found something.

*Dr. Ross Camidge*
*And I instantly pulled it up on my computer, and I went, oh my goodness, I have lung cancer.*

**RAVEN BAXTER**
Dr. Camidge and his physicians moved quickly. Over the course of a few days, he got a series of scans and tests done. They saw that the cancer had spread. And thanks to a biopsy, they also found that there was a molecular abnormality in his cancer – called a biomarker. This realization changed the course of Dr. Camidge's experience. He knew that his biomarker had a matching treatment that might drastically improve his cancer.

*Dr. Ross Camidge*
*yeah… biomarkers have kept me alive.*

**RAVEN BAXTER**
What's up listeners? I'm Dr. Raven Baxter, aka Raven the Science Maven—I'm a molecular biologist and science educator. And I'm the host of Science Will Win. For our sixth season, we're looking at cancer. The innovations, new frontiers and big unanswered questions.

Today, we're talking about the role of biomarkers and precision medicine in oncology. You can think of a biomarker as a tiny molecular indicator that informs doctors about what is driving a patient's cancer.

Thanks to these clues, cancer care has shifted from a “one-size-fits-all” approach to treatments tailored to each person's unique biology.

These advances have largely improved the way we treat cancers such as breast cancer, colorectal cancer, and lung cancer. Today, we’ll focus on the third type, lung cancer, where biomarkers have led to some of the most powerful advancements in oncology – in particular, the development of targeted therapies. Researchers have been able to develop new drugs that target and match the unique genetic profiles and tumor biomarkers of some lung cancer patients. These targeted therapies have shown great promise in improving tolerability and outcomes and became the foundation of precision medicine in oncology.

A biomarker, sometimes called a tumor marker or a mutation, is an incredibly important tool for oncologists and researchers. Simply put, it’s a biological molecule found in tissue or blood or other bodily fluids. Yet this tiny molecule can reveal a wealth of information about how a patient’s specific cancer is likely to progress, and which treatments may be most effective in slowing it down.[1]

The very first biomarker was discovered back in the 1800s, but[2] it took more than a century of research and innovation to truly understand their role in cancer and to develop therapies that specifically target them. In lung cancer, the first breakthrough came in the 1990s, when scientists identified a protein called EGFR – a discovery that paved the way for treatments designed to block its effects.

> *Dr. Ross Camidge*
> *EGFR stands for epidermal growth factor receptor.*

**RAVEN BAXTER**
That’s Dr. Camidge again, the voice you heard from at the top.

Think of EGFR like an antenna sitting on the surface of cancer cells. When it’s switched on, it sends out signals that control vital functions like cell growth, division, and survival. But when this antenna becomes stuck in the “on” position, it starts blasting growth and division signals nonstop.[3] And this leads to the formation of a tumor or, eventually, cancer.

So, researchers started asking: what if we could just turn that antenna off? That simple idea sparked the development of drugs designed specifically to block the EGFR protein signals and slow the cancer’s growth.

> *Dr. Ross Camidge*
> *With advances in molecular biology they developed drugs that could inhibit the signaling that came from them; a class of drugs that were called EGFR inhibitors.*

**RAVEN BAXTER**
Researchers started clinical trials of these EGFR-blocking drugs across many different types of cancer. Unfortunately, for most patients, the results weren’t what doctors had hoped. However, in about 10% of

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[1]Henry NL, Hayes DF. Cancer biomarkers. Mol Oncol. 2012 Apr;6(2):140-6. doi: 10.1016/j.molonc.2012.01.010. Epub 2012 Feb 6. PMID: 22356776; PMCID: PMC5528374.
[2]https://oxfordglobal.com/precision-medicine/resources/biomarker-discovery-and-the-identification-of-the-first-cancer-biomarker
[3] https://lcfamerica.org/about-lung-cancer/diagnosis/biomarkers/egfr/

patients with a specific type of lung cancer called non-small cell lung cancer, they noticed there had been significant improvements.

*Dr. Ross Camidge*
*Every physician who you talk to at the time, you know, had at least one patient where they would phone them up to sort of say, how are you doing on the new drug? And they'd say something like, 'I'm sorry, my husband's not here. They're out mowing the garden.' You know? And so that realization that there was a… subpopulation of patients who were incredibly sensitive to this class of drugs was the turning point.*

**RAVEN BAXTER**
But here's the challenge: researchers didn't yet know what these patients had in common. The missing piece didn't arrive until 2001, with the completion of the first draft of the human genome project.[4] We explored the human genome project in Season 4 of *Science Will Win*, but let me provide a refresher. This massive 13-year effort mapped out the entire set of DNA instructions inside a cell. Suddenly, scientists had a reference guide that helped identify cancerous mutations and genetic changes.

Then came the big moment in 2004. Academic researchers at Harvard and Memorial Sloan Kettering dug into the data and discovered something remarkable: the non-small cell lung cancer patients who had responded to the EGFR inhibitor all shared a common trait. They had a specific acquired mutation in their EGFR gene.[5]

That discovery connected the dots. It explained why only a subset of patients were experiencing these incredible responses, and it marked the beginning of a more personalized cancer treatment.

*Dr. Ross Camidge*
*So their EGFR wasn't the same as everyone else's EGFR. And this mutation wasn't something they were born with, it was something that acquired. And the mutation takes this thing, which is, sometimes on, sometimes off, and sticks it in the on position. So it's constantly active. It's constantly shouting out these orders to grow and divide and spread, which would be fine if you were trying to repair a piece of tissue that had been injured, but not useful if it's just normal tissue - and you start to make it grow and divide and spread, and that's what turns it into a cancer. If you had one of these mutations, you were very likely to respond to the drug.*

**RAVEN BAXTER**
EGFR was the very first biomarker in lung cancer to have a therapy developed specifically to target it. Even though the EGFR mutation is present in a smaller percentage of the overall non-small cell lung cancer population, this was a crucial breakthrough! Because, in general, non-small cell lung cancer is still the most common type of lung cancer.

*Dr. Ross Camidge*

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[4]Prathyusha Konda, Simon Garinet, Eliezer M. Van Allen, Srinivas R. Viswanathan, Genome-guided discovery of cancer therapeutic targets,Cell Reports,Volume 42, Issue 8,2023,112978,ISSN 2211-1247,
[5]Honey K. Young cancer researchers rewarded. J Clin Invest. 2009 Dec;119(12):3500. doi: 10.1172/JCI41648. Epub 2009 Dec 1. PMID: 19955660; PMCID: PMC2786813.

*thoracic oncology, 80% of it is non-small cell lung cancer.*[6]

**RAVEN BAXTER**
Unfortunately, most cases of non-small cell lung cancer are diagnosed at an advanced stage, when the disease has already spread.[7]

*Dr. Ross Camidge*
*We have people who by chance get picked up at an earlier stage when their cancer hasn't spread, or for those who have at least smoking as a risk factor, we have lung cancer screening as an option. And so we do pick up some with earlier stage disease.*
*Unfortunately, for people with lung cancer, the majority of people, something like two thirds when they're first diagnosed, the cancer is already spread to the point where you can't cut it out or even try and cure it, you know, with, with focused radiation. The majority of people have advanced or stage four disease.*

**RAVEN BAXTER**
That was the case for Kelly Huffman. Kelly had been experiencing strange symptoms for a few months before she was diagnosed with lung cancer. And by then, she learned her cancer had significantly progressed.

*Kelly Huffman*
*I was getting multiple tests done and really with no explanation. Mm-hmm. So, you know, they're, they're telling me in the middle of the night that I'm going for a brain MRI. And of course you're like, I have lung cancer. Why are you looking at my brain... I had no idea that it had metastasized everywhere. A resident doctor had come in and started discussing my diagnosis. She's like, oh yeah, you have stage four cancer. It has metastasized to your brain, to your liver, to your bones, to your adrenal gland, and to your pleural space.*

**RAVEN BAXTER**
Kelly has spent the past 26 years working at Pfizer as a retail account manager, partnering with pharmacies to educate their teams about vaccinations. Before that, she was a nurse – someone who dedicated her time to caring for others. She lived an active life, and she wasn't a smoker. Lung cancer didn't fit the picture she had of herself, and it certainly wasn't the future she imagined.

*Kelly Huffman*
*I started my day every morning at five thirty and would go to a boot camp at six thirty.*
*That's really early in the morning, especially in these cold winters in St. Louis*
*And then, I came back and my workday would either be at home… doing virtual education or virtual meetings with my customers, or it would be out in the field and traveling. I cover six states, so that means, you know, hopping on a plane or in my car and getting in front of my customers to plan. traveling.*

Raven Baxter
*And then your body started sending some signals.*

*Kelly Huffman*

[6] https://www.yalemedicine.org/conditions/non-small-cell-lung-cancer
[7] https://www.yalemedicine.org/conditions/non-small-cell-lung-cancer

*Yeah, I can vividly remember when my symptoms first started.*

**RAVEN BAXTER**
This was the summer of 2022.

*Kelly Huffman*
*It started with a cough. And you know, at first you just think it's something respiratory, maybe some allergies. And so for the first three weeks of this cough, I just treat it like that. And then finally I decided to go to urgent care and they did a workup, um, which included an X-ray, which was read as clear. Spoiler. It was not clear.*

**RAVEN BAXTER**
After going to urgent care, Kelly's symptoms didn't let up. She had a cough that wouldn't go away, a drop in her energy levels, and eventually, shortness of breath. In the span of six months, she went back to her primary care physician over and over again, searching for answers. Each time, she left with a different diagnosis - first, acid reflux, then asthma and finally, long covid.

*Kelly Huffman*
*I think I was taking 20, 25 pills a day, so, um, didn't get better, um, after a month of being on this treatment.*

**RAVEN BAXTER**
None of the treatments she'd been prescribed were making her feel any better. Her symptoms kept getting worse. Her primary care doctor never suspected that it could be lung cancer, but Kelly had a nagging feeling that something more serious was happening as her symptoms grew more severe and harder to ignore.

*Kelly Huffman*
*So ultimately I decided to call an old friend who was a pulmonologist/ We had a virtual visit, and at this time, my symptoms, of course, had progressed. So it went from a cough to severe shortness of breath. Um, not being able to even walk up a couple of flights of stairs. I also had coughed up blood and was starting to have some back pain. So he decided it was time for a CT scan, which I agreed.*

*It happened to be the week of Christmas of 2022 when I went in to get the CT scan.*
*I was there alone because I thought I was just getting a scan. So they told me to have a seat and they were trying to connect with my pulmonologist. He called me and told me my CT was not good and that I had lung cancer.*

*Scared. I think that was probably the word that came to mind. I was terrified.*
*So my husband came and picked me up. I don't think I could have driven at that moment.*

**RAVEN BAXTER**
Kelly's family came over to her house and she told them about her diagnosis.

*Kelly Huffman*
*So I said, we're gonna have a great Christmas, we're gonna put this aside and we're gonna tackle this after the holidays. And that's what we did.*

**RAVEN BAXTER**
Kelly's lung cancer diagnosis came as a shock to both her and her primary care doctor. She didn't smoke, and in our society, that still doesn't fit the picture of who gets lung cancer.

> Kelly Huffman
> *It never, never crossed my mind. And I can tell you it did not cross the mind of my primary care doctor either.*

**RAVEN BAXTER**
That assumption isn't baseless. Smoking *does* dramatically increase the risk, raising the likelihood of developing lung cancer by roughly 15 to 30 times.[8] But here's something that often surprises people: a significant number of lung cancer cases happen in people who've never smoked, or who've smoked only occasionally. In the U.S. that group makes up about 10-20% of lung cancer cases.[9]

> *Kelly Huffman*
> *I tell somebody that I have lung cancer, a lot of the time the next question is, oh, do you smoke? And I'm like, no. And, and again, I, it can be frustrating that that question's being asked, but at the same time, again, I think it's the stigma. I think it's what they've heard, you know, from TV and from news sources that lung, you know, smoking causes lung cancer, which it does. Um, but I definitely think it's a stigma that we are really trying to overcome.*

**RAVEN BAXTER**
Non-smokers are also more likely to get non-small cell lung cancer than small cell lung cancer.[10] And though non-small cell lung cancer is characterized by its slower and less aggressive metastasis, historically, this type of cancer has been deemed as a disease with very short life expectancy. Partially, because it's often diagnosed after it's already spread. Here's Dr. Ross Camidge again:

> *Dr. Ross Camidge*
> *So generally speaking, lung cancer has had the reputation of just being, a pretty awful disease. 20 years ago, you know, people with advanced stage disease, the majority of people would not live more than a year. It was very aggressive, and our treatments were relatively blunt instruments. So chemotherapy for controlling lung cancer throughout the 1990s was debated as to whether it was even worthwhile.*

**RAVEN BAXTER**
But advancements in biomarker testing have changed this prognosis. Since the development of EGFR therapy in the early 2000s, researchers have continued discovering new biomarkers and treatments.[11][12]

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[8] https://www.cdc.gov/lung-cancer/risk-factors/index.html
[9]https://www.cdc.gov/lung-cancer/nonsmokers/index.html#:~:text=In%20the%20United%20States%2C%20about%2010%25%20to,pain%20*%20Wheezing%20*%20Shortness%20of%20breath
[10]Dubin S, Griffin D. Lung Cancer in Non-Smokers. Mo Med. 2020 Jul-Aug;117(4):375-379. PMID: 32848276; PMCID: PMC7431055.
[11]Sandy B, Morrissette J. Lung Cancer Biomarker Speak: Teach Me the Language. J Adv Pract Oncol. 2022 Apr;13(3):302-305. doi: 10.6004/jadpro.2022.13.3.24. Epub 2022 May 23. PMID: 35663172; PMCID: PMC9126343.
[12]Dr. Camidge Interview (1:31:14)

Today, researchers have discovered 9-10 biomarkers in lung cancer. Roughly 40-50% of non-small cell lung cancer patients have an actionable biomarker – meaning there is a specific therapy available for their disease.[13]

So how do you test for biomarkers?

First, a doctor takes a sample: either a tissue biopsy or a liquid biopsy, like a blood sample. From there, the sample is sent to a lab for analysis, where specialists look for clues hidden in the DNA or proteins.

There are a couple of different approaches – they might test for one specific biomarker that doctors suspect might be driving the cancer. Other times, they'll use a more advanced method called next generation sequencing, which makes it possible to test for multiple biomarkers at one time. This gives a much broader picture of what's happening inside the cancer cells.

> *Dr. Ross Camidge*
> *There was a move again, probably in the early 2010s to say, don't just test for A and then test for B and then test for C, test everybody for everything. And that was helped by a technology called Next Generation sequencing that meant you could look at multiple different genes all at the same time. And that's what really, you know, I think changed not just lung cancer, but many, many aspects of oncology…*

**RAVEN BAXTER**
Next-generation sequencing gives doctors a clearer picture of what's driving a patient's cancer and what therapies might work. It also reveals how advanced or aggressive that disease might be.

When Kelly received her diagnosis, she was also tested for biomarkers. But her results were mislabeled, which caused a delay. While she waited for a second round of testing, her doctor scheduled her for chemotherapy. Chemotherapy has long been a cornerstone of cancer treatment, but its biggest drawback is that it isn't very specific. It attacks *all* rapidly dividing cells – not just cancer cells, but also the healthy cells that upkeep your immune system.

Targeted therapies, on the other hand, are different. When a biomarker is identified, doctors can use treatments that address the mutation causing the cancer. This precision means healthy cells are more likely to be spared unlike in chemotherapy.

For patients with non-small cell lung cancer, this is especially important because precision medicine tends to be more effective and less toxic than traditional chemotherapy. It's also worth noting that non-smell cell lung cancer generally responds less to chemotherapy than small cell lung cancer,[14] with advanced cases often seeing response rates in the 15–30% range.[15]

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[13]https://www.accc-cancer.org/docs/documents/oncology-issues/articles/2024/v39-n1/v39-n1-a-model-for-achieving-comprehensive-biomarker-testing-in-non-small-cell-lung-cancer.pdf?sfvrsn=8b01c44e_10&
[14]https://www.ncbi.nlm.nih.gov/books/NBK65865/#:~:text=As%20a%20class%2C%20NSCLC%20is,agents%2C%20and%20other%20supportive%20measures.
[15] Malhotra J, Jabbour SK, Aisner J. Current state of immunotherapy for non-small cell lung cancer. Transl Lung Cancer Res. 2017 Apr;6(2):196-211. doi: 10.21037/tlcr.2017.03.01. Erratum in: Transl Lung Cancer Res. 2017 Oct;6(5):612. doi: 10.21037/tlcr.2017.08.08. PMID: 28529902; PMCID: PMC5420529.

Feeling uncertain about starting chemotherapy, Kelly decided to take matters into her own hands. She traveled to Texas to seek a second opinion from a specialist.

*Kelly Huffman*
*He did a really thorough job sharing what biomarkers are, um, talking about the different types of lung cancer he had drawings–he upskilled me significantly on lung cancer. So we waited a good three, three and a half weeks to get the testing back and found out that I did indeed have a biomarker, and I was ALK positive. It was, um, it was definitely a blessing during a very dark time.*

**RAVEN BAXTER**
ALK stands for anaplastic lymphoma kinase. As Dr. Camidge mentioned earlier, ALK was the second example of a molecular mutation discovered in lung cancer after EGFR.

*Karin Tollefson*
*So when a patient is ALK positive, that means they have the rearrangement on the ALK gene.*

**RAVEN BAXTER**
Karin Tollefson, the Chief Oncology Medical Officer at Pfizer. Over her career, she has dedicated over 30 years to advancing cancer care.

*Karin Tollefson*
*Now the ALK mutation is not incredibly common. But the reality is, if you have this mutation and we know that, your treating physician can select a therapy that targets that specific mutation. And what that does is it allows you not to have to be taking chemotherapy…*

**RAVEN BAXTER**
In August of 2011, Pfizer developed the first targeted therapy for the ALK biomarker in non-small cell lung cancer. The mutation shows in about 5% of all non-small cell lung cancer cases.

*Karin Tollefson*
*And our scientists continued to study that gene alteration and that subtype, and they understood it in more detail. And not only were they able to bring forward the first treatment for that mutation, they were able to bring out a subsequent treatment which actually was more precise and has provided even longer-term benefit.*

**RAVEN BAXTER**
ALK inhibitors have come a long way from that first generation of therapies. Since then, scientists have developed more effective second and third-generation ALK therapies, with fourth-generation currently in trials.

Kelly was able to begin her targeted therapy on January 27th of 2023 after finding out she had the ALK biomarker.

*Kelly Huffman*
*It's a day I, I won't, I won't forget.*

**RAVEN BAXTER**
After three weeks of treatment, her follow-up scans delivered the words every patient longs to hear: no evidence of active disease.

*Kelly Huffman*
*Raven those were amazing words to hear and have a celebration, you know, because it, it was that effective.*

**RAVEN BAXTER**
Nearly three years later, Kelly is still on her original targeted therapy. She acknowledges that cancer is still part of her daily reality — progression is always a possibility — but she chooses to celebrate the present.

*Kelly Huffman*
*And I just celebrated a huge milestone. I turned 50 in October. Don't get me wrong, I still know I have cancer every day. Um, it's something that I think about every day. I don't think that will ever go away, because progression is always lurking. So I celebrate how well I'm doing now, but I'm also always looking over my shoulder and knowing that, you know, progression could happen at any time. Um, so you live life a little bit different when you, when you live according to that.*

**RAVEN BAXTER**
In more than twenty years since the first targeted treatment for lung cancer was approved,[16] the field has made remarkable progress. But lung cancer remains the leading[17] cause of cancer deaths globally. The work is far from finished.

*Karin Tollefson*
*It's a very exciting time to be part of oncology research. There are some very innovative and exciting new targets that we will continue to develop and continue to pursue, but we're also looking at ways that technology can help move this forward.*

**RAVEN BAXTER**
That's Karin Tollefson, again. And like the thoracic oncologist Dr. Ross Camidge, she has a deeply personal connection to cancer.

*Karin Tollefson*
*You could say that, um, cancer has made me very stubborn, resilient, and very determined. It makes me very motivated. 'cause when I go to work now, I know I can see the faces of people that I'm fighting for.*

**RAVEN BAXTER**
Karin is caregiving for her father, who's currently undergoing treatment for gastric cancer. She also lost her husband and her mother to cancer.

*Karin Tollefson*
*If my mother had been diagnosed with the lung cancer that she had, had she been diagnosed five years later, we, she may still be with us today because when we finally did get those biomarkers done and understand the type of lung cancer she had, there's immunotherapy out now, she*

[16]Kanellakis NI, Jacinto T, Psallidas I. Targeted therapies for lung cancer: how did the game begin? Breathe (Sheff). 2016 Jun;12(2):177-9. doi: 10.1183/20734735.006316. PMID: 27408637; PMCID: PMC4933615.
[17] https://www.who.int/news-room/fact-sheets/detail/lung-cancer

*would've been a perfect candidate for immunotherapy. And that really could have given us more time with her. I'm never gonna say that we could have changed the ultimate outcome, 'cause I don't know, you can't look in the rear-view mirror, but what I can say is what we knew 12 years ago when she was diagnosed and what we know today, her journey could have been very, very different.*

**RAVEN BAXTER**
Biomarkers, as Karin explains, are critical in helping doctors identify whether their patients are candidates for a different avenue of precision medicine, and that's immunotherapy. Similar to targeted therapies, immunotherapy tailors cancer treatment to the individual's genetic and molecular profile. The difference is that instead of needing medicine to address the specific genetic mutations or proteins making the cancer grow, immunotherapy harnesses the body's own immune system, helping it recognize and destroy cancer cells. It's like training your body to create its own targeted therapy from within. Here's Dr. Ross Camidge again:

*Dr. Ross Camidge*
*The hope is that we can take what we spent millions of years of evolving, you know, an immune system that goes around our body and ensure it goes after infection. But it also polices our body to trying to wipe out cancer when it starts developing and try and understand why in people who have an established cancer that has failed and how we figure out in that person why it has failed in them. And then try and correct that.*

**RAVEN BAXTER**
Today, while there are promising options like immunotherapy and targeted therapies that can treat *some* biomarkers, there are others that don't yet have targeted therapies. And there's likely thousands of biomarkers we haven't discovered. And pioneers at the forefront of oncology research, like Pfizer, aren't slowing down. Here's Karin again:

*Karin Tollefson*
*We are looking at new targets in lung cancer. We've, found different biomarkers. We've got BRAF and ALK– but there's a new target we're actually exploring called, um, integrin beta-6. This is a new marker that wasn't well known in lung cancer, but yet the more we follow the science, we've been able to send our researchers into designing new treatments that could potentially target that mutation.*

**RAVEN BAXTER**
Another big challenge is acquired resistance. This is something you might have heard Kelly briefly refer to as "progression" earlier, and it's when a therapy that once worked stops being effective as cancer cells evolve.

*Karin Tollefson*
*Acquired resistance is one of the more important questions that we have in cancer care across all types. Why does a patient respond to therapy, and they see great results and why does that therapy stop working?* W*hat we're trying to do is better understand how a tumor is mutating to almost find a work around. We're able to do basic research and understand how biomarkers behave in a patient's early disease, and we're able to take samples in later disease and look at how that tumor has changed.*

**RAVEN BAXTER**

To understand how the tumor has changed, doctors might rebiopsy the tissue or blood and perform a new biomarker test on it, in hopes of finding a targeted treatment that can resolve the acquired resistance.

> *Karin Tollefson*
> *And so when a doctor does take a tissue sample or a blood sample and they're able to identify a biomarker and they're able to identify the specific characteristics of a cancer, when we look at that after treatment or we look at it years down the line, we can look and see the before and after and see what's changed. And in doing that, we better understand how a specific cancer is potentially mutating to work around the therapies that it's facing.*

**RAVEN BAXTER**
Finding a way to outsmart acquired resistance would transform how we think of cancer.

> *Karin Tollefson*
> *Understanding resistance mechanisms is one of the ways that we're going to turn cancer into a chronic illness.*

And this is ultimately the goal in oncology. To turn cancer into a treatable and manageable disease. This reality may become more realistic through the continued development of precision medicine. Biomarkers and targeted therapies have already transformed cancer care, shifting away from a "one-size-fits-all" model toward treatments tailored to each patient. As research continues to advance rapidly, we can expect more targeted medicine to become the standard of care.

In our next episode, we'll turn our focus to one particular group of people who've not only led cancer care innovation and advocacy, but they also find themselves at greater risk of developing cancer today[18]… we're talking about women.

> *Kirsten Gardner:*
> *In the mid-1930s, they begin an organization called the Women's Field Army. And that Women's Field Army welcomed any woman who wanted to join an army of crusaders that were trying to end cancer. And how were they trying to do this? By going into neighborhoods, by knocking on neighbor's door, and by telling women the only way we can work on stopping cancer is by identifying it early.*

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

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Special thanks to all our guests and the Pfizer oncology team.

And if you want to hear my full conversation with Kelly Huffman, all about the twists and turns of her diagnosis and treatment for lung cancer, you can tune in on Pfizer's YouTube channel.

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[18]https://www.dukecancerinstitute.org/blogs/duke-experts-offer-insights-rising-cancer-rates-younger-women-worsening-uterine-cancer

Thank you for listening!

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