



Dr. Jessica Winter: Fighting Breast Cancer As a Patient and Researcher

Jessica Winter, PhD
Biomedical Engineer and Patient Advocate

Please remember the opinions expressed on Patient Power are not necessarily the views of our sponsors, contributors, partners or Patient Power. Our discussions are not a substitute for seeking medical advice or care from your own doctor. That's how you'll get care that's most appropriate for you.

Andrew Schorr:

Hello and welcome to Patient Power. I'm Andrew Schorr. Biomedical engineer Jessica Winter was in the midst of a breast cancer project in her laboratory, when she discovered a lump under her arm...leading to her own breast cancer diagnosis. Jessica joins us to tell her story and explain how her personal experience with cancer caused her to challenge her lab to turn its discoveries into tools for patients more quickly.

Dr. Winter:

So my role at the Ohio State University, I am a professor in chemical engineering and biomedical engineering. I work very closely with physicians at the Medical Center to develop technologies that will enhance cancer detection and prognosis.

I was diagnosed with breast cancer at the age of 35. It was a very surreal experience for me. My gynecologist had always told me to do those self-exams every month. And I never did them every month, but I did actually do them every maybe two to three months. And so I was doing a self-exam, and I found something—I wouldn't even really call it a lump, but it just looked odd.

I went and had a mammogram, and I was very fortunate that the Spielman Center that's part of our genes cancer research hospital was opening at that time. I was like patient zero for that hospital. So, I came in, I had a mammogram, I had an ultrasound and a biopsy all in the same day, and that's a testament to the Spielman Center's resources. And then it came back positive that I indeed had breast cancer, which was very surprising to me. I had started working with the breast cancer team here at the James on research about three months before my diagnosis. So I, unfortunately, had a deeper understanding of what that meant than probably most patients do.

Obviously, I would never recommend that anyone get cancer. But I will say that it was an extremely positive experience for me overall, and it has really shaped the way that I do research. It's most importantly given me the perspective of what it means to be a patient, and I see things through that lens as well as the research lens, now. So when someone comes to me and says I have this great idea, I'm asking myself not just can I get this idea published, will it make me more famous, will it advance my career; I'm asking myself is this actually going to help anybody? Is this going to cure anything? Is this going to progress the field forward?

And I'm also mentoring students who are working in this field, and it's helping me to teach them the patient side. Sometimes we write these research proposals that are very insensitive to patients. They're not really thinking from that perspective. And I'm trying to teach them that, as well. In my own research, it basically pushed me to go beyond simple publication. For most researchers, that is the end goal; publication. Write a paper and then whether or not the research in that paper ever reaches the clinic is often irrelevant. But this experience made me look at what I was doing. And I'm so gifted to have the opportunity to actually make a direct impact on the disease that I had, other than just fighting the disease as a patient but to impact as a researcher. So shortly after my diagnosis, I went to my laboratory.

And I explained that our new mission was going to be translational medicine, which means publishing that paper but then trying to take it directly from that point to the clinic. And, unfortunately, that is very, very difficult work. But that is what we've been focused on for the last five years. And we have made progress. Some of the things we've invented we've done pilot trials on. I was able to start a company that is focused on trying to develop some of these technologies all the way to the patient. We're in the process of establishing our manufacturing process and filing FDA, which is all precursor to doing the actual clinical trials that will allow those products to be used. So my focus shifted pretty much entirely from my own career to advancing this field and taking technologies basically all the way to completion.

Some of the projects that we're currently working on are very exciting. So they range from the more translational to the earlier stage. So for the translational, as I mentioned before, we're working on taking some of our previous inventions. And one of the most important is a type of nanoparticle that can be used as a stain on pathology samples; either blood or solid tissue. So what this does is it allows a physician to analyze these proteins to see if you have a certain type of cancer or you're a candidate for a certain drug. And the particles we invented allow us to image many, many proteins at the same time. So the previous standard practice has been to image one at a time, which requires a lot of biopsy samples, because each slide is one target.

But it also means that I don't know whether the proteins are interacting. Because I can only look at one protein per slide so I can't see if A is also in the same place as B because they're different slides. So we're working with pathologists here at the James, and also at Nationwide Children's Hospital to try to develop this technology initially for leukemia and lymphoma, and ultimately for solid tumors. So that's sort of a translational project. And we just kicked off; it's brand new. But I'm really, really excited about a new project that we're working on in breast cancer, which is trying to understand what are the molecular events involved in having a breast tumor metastasized to the brain, and specifically can we stop those events so that it doesn't occur? So we're working very closely with molecular oncologists here and the chemotherapy docs.

We're trying to look at this very important problem in breast cancer. Nearly 30 percent of mets are to brain. And if we could lock that down, that would be a huge improvement in patient treatment.

So getting involved in research. I would say one of the most important things that a patient can do is to participate in fundraising events.

And I'll cite, for example, [Susan G.] Komen is a national organization for breast cancer research. I am 100 percent sure that without the research that Komen has done in the last 20 years, I wouldn't be alive; I just wouldn't. And that is very sobering for me. So getting involved doesn't necessarily mean contributing money. If you don't have money, you can volunteer at these events. It takes hundreds of volunteers to organize. Also, each university that is engaged in research, I would say participate in clinical trials if you're given the opportunity. I participated in every clinical trial that was offered to me. That's the only way the technology is going to push forward is on the backs of patients who try these new therapies, so we can find out whether they work or not; which patients they're most effective in.

Alongside that, patients can get involved in research by interacting with clinicians. Every institution that does research has something called an institutional review board, or IRB which reviews all research that's proposed for human subjects. Each IRB requires at least one member that is not a scientist. So patient advocates can get involved in reviewing research and providing that patient perspective. Often, fundraising organizations include patients in review of grant proposals to gain a patient perspective. So there are several ways to get involved without running off and getting your own MD or PhD, which takes quite a while. And I would encourage patients to do all of those. But the most important thing is to think positively and never give up.

So after my diagnosis, I realized immediately that I did not have the easy type of breast cancer that was necessarily going to be easily cured. I knew that I was going to require surgery, chemo and radiation. And even with that, I might not survive. And that's pretty sobering. So the first two weeks after that, I walked around, and it was hard. My family tried really hard to distract me, but there's always that quiet moment in between where it comes crashing back, and you realize that this could really be it. But after a while, I realized there were two outcomes that were possible, here. I was either going to die, or I wasn't going to die.

And I decided if I was going to die, I wanted to enjoy every moment that I had and make as much progress as I could. And if I wasn't going to die, then I'm wasting all this energy worrying about it. So I decided, and I gave myself the power to decide that I was going to be okay, and I was going to live my life that way until someone told me differently. And that is what gave

me the power and the energy to go into my lab and do the research, and focus on fighting my disease both as a patient and as a researcher.

Andrew Schorr:

Thank you to Jessica for sharing her story. Be sure to sign up for the Patient Power community so that you can stay informed whenever we post something new. I'm Andrew Schorr. Remember, knowledge can be the best medicine of all!

Please remember the opinions expressed on Patient Power are not necessarily the views of our sponsors, contributors, partners or Patient Power. Our discussions are not a substitute for seeking medical advice or care from your own doctor. That's how you'll get care that's most appropriate for you.