Tab 1

"How I Help Patients Access New Diagnostics" (Joanne Weidhaas, MD, PhD, MSM) [#138]

Brad Power
April 9, 2025

"We take people who have cancer, we look at their DNA, and we find out how they would respond if we gave them radiation, if we gave them immunotherapy, if we gave them chemotherapy." – Joanne Weidhaas

"I'm a physician scientist. I'm a radiation oncologist. My view was that I'm going to do good science and become an expert in cancer, which was always my interest. And if I find something, that will be a dream, and it will make it to patients, and that's all that matters. I had no idea how complicated that was." – Joanne Weidhaas

"There is a lot to still do. We need patient advocacy groups and everyone's involvement to move things forward together." – Joanne Weidhaas

Meeting Summary

Cancer patients want to know whether a treatment will work and whether it might have toxic side effects. More testing is always going to be preferred because it helps the care team choose the best treatments and minimize side effects. However, patients can face problems with accessing new tests.

Trying to bring new tests to market and help patients access them is amazingly hard for diagnostic companies. Randomized clinical trials — the gold standard for evidence in healthcare — are slow and ill-suited for getting new information to patients quickly enough for them to benefit.

Joanne Weidhaas, MD, PhD, MSM, is uniquely qualified to lead a discussion on using new diagnostic tools to help patients make personalized treatment decisions. Holding several patents, Dr. Weidhaas is a leader in translational research; a co-founder of MiraDx, a molecular diagnostics company; and a founder of MiraKind, a nonprofit focused on advancing the application of microRNA discoveries for cancer prevention. She is a frequent speaker at medical conferences around the world. Dr. Weidhaas attended Yale University as an undergraduate, earned her MD and PhD at Tufts Medical School, and completed residency training at Memorial Sloan Kettering Cancer Center. Following concerted efforts to navigate the healthcare system to make new diagnostics accessible to patients, Dr. Weidhaas attended business school to find out why it was so hard, earning a Master's in Business Management from the Stanford Business School. She found that, in addition to raising awareness in patients and doctors about new tests, doctors must be brought on board to order tests and to bring payers on board. She put the new tests in a clinical trial to provide access with oversight and created a nonprofit to pay for tests for people who can't afford them.

What new tests should you know about that can predict adverse reactions or toxic side effects?

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- **Radiation toxicity test**: If you have been diagnosed with prostate cancer and are considering radiation treatment, this test predicts whether you will have an 8- to 10-fold risk of severe toxicity, allowing you to choose safer radiation treatment options or other treatments. (MiraDx offers the PROSTOX test.)
- **Immune checkpoint inhibitor toxicity test**: If you are considering getting an immune checkpoint inhibitor (a type of immunotherapy that enhances the immune system's ability to fight cancer by releasing "brakes" on immune cells, allowing them to recognize and attack cancer cells more effectively), this test predicts whether you will have a 10-fold risk of autoimmune-related adverse reactions or side effects, allowing you to choose safer treatment options. (MiraDx offers the PREVIOTOX test.)

How do these novel toxicity tests work?

- **Test process**: You get a cheek swab, which is analyzed for genetic markers that are compared to known risk patterns to identify whether you are high or low risk for a toxic reaction.
- **Scientific foundation**: Your microRNA and noncoding DNA are analyzed for systemic stress response to detect potential triggers of adverse reactions.

What are the challenges that patients face in accessing new tests?

- **Doctor buy-in**: Doctors are often required to order tests, and your doctor may not have heard of a new one or know how to interpret test results from it. They are often only interested in tests that will provide information to help with the decision immediately in front of them, while you may have bigger and longer-term objectives.
- **Insurance reimbursement**: The test may not have been incorporated into the standard care guidelines. Health insurance companies are slow to reimburse patients for new tests.

What can you do to access new tests?

- **Consider alternative access routes**: Contact the vendor and look into research studies, early-access programs, nonprofit registry studies.
- **Advocate for yourself**: Ask your doctor about new diagnostic options that could provide personalized treatment insights; be persistent.
- **Understand incentives**: Recognize that doctors must see a benefit in ordering the test and that insurance ultimately determines reimbursement.
- **Spread awareness**: Share patient testimonials on the value of tests for predicting outcomes and encourage patient advocacy groups to highlight the potential cost savings and improved patient outcomes from these predictive tests.
- **Donate**: Support nonprofits that help patients access new tests.

What are the challenges that diagnostic companies face in getting a new test to market?

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- **Funding**: Venture capital firms are primarily focused on making money, which can conflict with the goal of helping patients. They want a business that has the potential to become huge, which is more possible in therapeutics — diagnostic services are typically priced much lower. Pharmaceutical companies offer the deepest pockets for funding new ventures, but testing startups must contort themselves to meet the research and development needs of pharmaceutical companies, which may be different than patients' care needs.
- **Insurance reimbursement**: Getting insurance to cover a new test is extremely difficult. Insurance companies are often reluctant to pay for preventive or risk-assessment tests.
- **Multiple customers**: A successful test must align the interests of three key stakeholders: patients, doctors (who must see a benefit in ordering the test), and insurance companies (which pay for the test). The incentives for many players in the medical industry are sometimes optimized for their own profits, not what is best for patients.
- **Market adoption**: Convincing doctors to use a new test and pharmaceutical companies to recognize its value can be challenging.
- **Regulatory hurdles**: Navigating FDA and Clinical Laboratory Improvement Amendments (CLIA) certification requirements is complex and time consuming.
- **Commercialization costs**: Developing and marketing a new diagnostic test requires significant financial investment.

What are some clever ways to provide patients with better access to new tests?

- **Set slow payoff expectations**: Find investors, such as friends and family, who are patient and interested in a mission-focused approach rather than profit alone; apply for government grants, such as Small Business Innovation Research (SBIR) grants; avoid venture capital.
- **Create a foundation**: A nonprofit can enable access for patients who can't afford the full price of the test.
- **Create a study**: Offer the test through a clinical trial to give patients access; gather valuable real-world data; and provide clinical controls, e.g., an institutional review board, or IRB. (Clinical trials often pay patients or for referrals.)
- **Create value propositions for all customers**: Design tests that simultaneously benefit patients (through better outcomes), doctors (through better outcomes and less work), and insurers (through savings); win-win-win.
- **Form research partnerships**: Work with academic medical centers to offer and develop the test through collaborative studies, and leverage their credibility.
- **Be transparent**: Educate patients and doctors about test benefits and build trust through open dialogue.
- **Engage patient advocacy groups**: Speak to cancer support groups and work with them to help organize research that gathers patient insights.
- **Promote awareness**: Help spread information about the test's ability to predict outcomes and its potential to help patients choose the safest treatment option.

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How can you learn more?

- See other conversations we have had on new diagnostic tests and bringing them to market, such as:
    - "Bringing Novel Immune System Tests from Research to Clinical Use" (Keith Wharton) [#28]
    - "The Latest Tests for Personalized Cancer Care" (Tony Magliocco) [#89]
    - "How Do You Choose Your Diagnostics? – A Guide" (Richard Anders and Brad Power) [#100]
- To learn more about toxicity tests, visit the website MiraDx to learn about their research and upcoming presentations at conferences like ASCO, and join their patient registry (through MiraKind) to potentially access tests and participate in their research.
- Contact Joanne Weidhaas at jweidhaas@mednet.ucla.edu.

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Meeting Notes

KEYWORDS

Cancer diagnostics, MiraDx, microRNAs, radiation therapy, immune checkpoint inhibitors, toxicity prediction, patient response, UCLA, clinical trials, nonprofit, patient access, biomarkers, DNA analysis, prostate cancer, autoimmune diseases.

SPEAKERS

Joanne Weidhaas (71%), Rick Davis (7%), Brad Power (5%), Richard Anders (5%), Cindy Ness (3%), Roger Royse (3%), Russ Hollyer (3%), Alane Watkins (2%)

CHAT CONTRIBUTORS

Russ Hollyer, Rick Davis, Michael Nagle, Chris Apfel, Helen, Alane Watkins

SUMMARY

Joanne Weidhaas, a radiation oncologist and co-founder of MiraDx, discussed her journey in developing molecular diagnostics for cancer. She highlighted the company's focus on microRNAs, which constitute 80% of DNA and play crucial roles in cancer biomarkers. MiraDx's first test predicts ovarian cancer risk, and their prostate cancer test identifies risk of radiation toxicity, helping patients choose safer treatment paths. Despite challenges in securing venture capital and insurance reimbursement, MiraDx has successfully validated its prostate cancer test and is expanding into immunotherapy toxicity prediction. The nonprofit MiraKind supports patient education and access.

OUTLINE

Overview and Founding of MiraDx

- The discussion focused on Joanne Weidhaas's diagnostic company and its novel market approach.
- She is a radiation oncologist who founded MiraDx and the nonprofit MiraKind.
- She collaborates with Frank Slack, a PhD developmental biologist who discovered the first human microRNA, leading to their work on cancer and microRNAs.
- MicroRNAs control messenger RNAs and play a role in cancer biomarkers.
- There were challenges bringing their findings to market, including the complexities of the medical system and the difficulty of securing venture capital funding.

Challenges and Strategic Decisions

- Dr. Weidhaas faced initial challenges in starting MiraDx, including the decision to avoid venture capital funding and focus on patient education and access.
- It was important to align with the medical ecosystem incentives, including those related to insurance and the benefits of using the test that doctors must see. .
- She went to Stanford Business School to learn about the complexities of the medical system and the importance of aligning tests with patient and doctor needs.

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Development and Expansion of MiraDx

- The lab was moved from New Haven to UCLA to focus on translational research, including studies on prostate cancer and radiation therapy.
- Their first product was successful. It identifies patients at risk of different toxicities from radiation treatment.
- They learned the importance of aligning with patient, doctor, and insurer interests.
- COVID-19 impacted their work, including a pivot to COVID testing, and the subsequent validation of their prostate cancer test.

Early Access Program and Nonprofit Initiatives

- Their prostate cancer test has an early-access program, which involves top radiation oncology clinics and gathers patient and doctor feedback.
- The nonprofit MiraKind is enabling patient access and education through such measures as a study that allows patients to join a registry and access the test.
- Holding patient education important, MiraDX takes a two-pronged approach of advancing research and enabling patient access.

Prostate Cancer and Immunotherapy

- The tests are for toxic reactions to radiation for prostate cancer patients and to immune checkpoint inhibitors.
- Patients at risk of toxicity from radiation treatment should be offered viable alternatives.
- Working with pharmaceutical companies on the need for a better understanding of patient responses to immunotherapy is challenging.
- Getting access to patient samples from pharmaceutical companies is challenging.
- Independent validation of tests is important.
- There are no direct competitors in radiation toxicity prediction, but the field is complex.
- Working with insurance is challenging, and a collaborative approach is needed to ensure patient access to meaningful information.

Final Thoughts

- Patient and doctor involvement is important in moving the field forward.

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TRANSCRIPT

Brad Power
This is the Cancer Patient Lab.

We're honored today to have Joanne Weidhaas with us. She's at UCLA. She's got a diagnostic company, or service, that she's going to be describing to us. It's of interest in its own right, but it's also of interest because of the novel ways that she's bringing it to market and getting patients early access to it through things like a clinical trial. This is going to be a fascinating conversation, both about the technology and about how you bring a technology to market.

This is for information purposes only. It's not medical advice. We try to arm patients with information they can bring to their medical team.

We are a 501(c)(3) nonprofit, and we depend on the kindness of strangers, as I think they said in "A Streetcar Named Desire." If you would be interested in donating, it's easy to do through the Cancer Patient Lab website, where there's a Donate button.

Joanne Weidhaas 1:28
I'm going to tell you about a journey that I've taken. It's probably atypical because I'm stubborn. I'll tell you where we ended up, where I have a molecular diagnostics company that I co-founded called MiraDx, but also a nonprofit called MiraKind. I'll tell you about how we got there.

My background: I'm a physician scientist. I'm a radiation oncologist. My view was that I'm going to do good science and become an expert in cancer, which was always my interest. And if I find something, that will be a dream, and it will make it to patients, and that's all that matters. I had no idea how complicated that was.

I'll tell you a little bit about the other co-founder of MiraDx. His name is Frank Slack. Strangely he did his PhD across the hall from me at Tufts. He's a PhD developmental biologist, and he discovered the first human microRNA, which is a new understanding of genetics. The Nobel Prize was just awarded to his boss, Gary Rudkin. Frank discovered let-7 (a microRNA involved in control of stem-cell division and differentiation) during his postdoc work with Gary, but of course, the boss always gets the Nobel Prize. That's just how it goes. Frank and I had known each other and were friends, and then when I went to Yale, Frank was there. We began working together, trying to understand how we could apply microRNAs in cancer. I'm an oncologist, as I mentioned, and Frank is incredibly knowledgeable on the science side.

I'm going to give you one slide about science, so you know what we're talking about, and then I'll go back more to the challenges.

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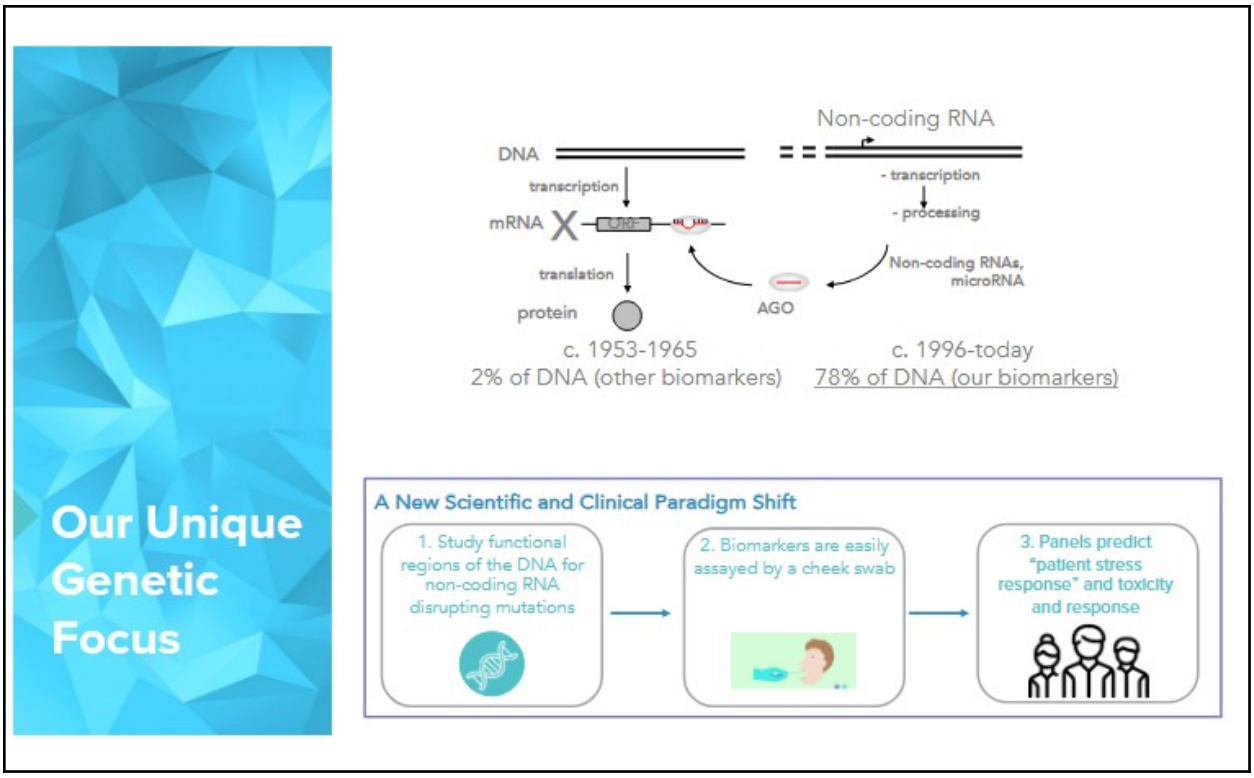

You know that you have the same DNA in every cell in your body, and that the parts in your eye tell your eye how to be an eye, and your liver DNA tells your liver cells how to be liver cells. What we've also known for a very long time is that DNA makes messenger RNA, and that makes protein. That was really the Holy Grail, and what everyone thought. But over the last two and a half decades, it was found that we use a lot of DNA that doesn't turn into messenger RNA. It's called noncoding DNA [note: the reference to noncoding RNA at the top-right of the above slide is a typo] because it doesn't turn into protein, but it turns out that's really important.

The DNA that we've been studying for the past 70 years, the type that makes messenger RNA, accounts for only 2% of all of our DNA. Any tumor biomarker that you can name — HER-2, EGFR, BRCA — falls in this little slice of our DNA, and that's where all the studies were taking place. All the drugs are targeting these proteins. It turns out the products of the noncoding DNA, these noncoding RNAs — and microRNAs were the first example — are really the boss of the messenger RNAs. They control things; messenger RNAs are just the tools.

This is new. The first microRNA, or non-coding RNA, was found in 1996 in humans, shown in 1999 by Frank Slack and Gary Rudkin. We now know that non-coding RNA makes up about 80% of our DNA. 78% of our DNA makes these biomarkers, and there's a wealth of data in them, because they're really in charge in the cell.

With this information, there's so much more that we can learn from patients themselves. Our concept was that we can look in the normal DNA of a person — not just a tumor cell. It's easy to test somebody's DNA, because you can do a cheek swab, and then using these important parts of the DNA, we can find the answers that we need about cancer.

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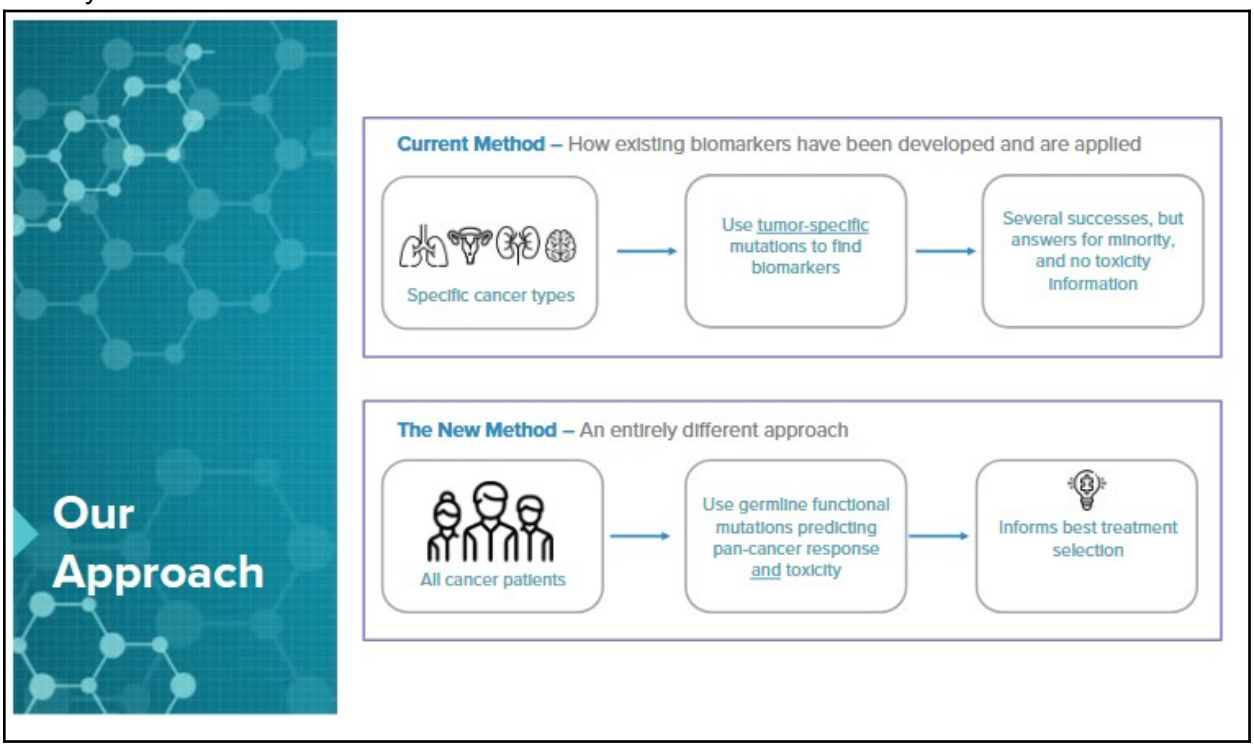
I'll tell you a little bit more about what we've done with that.



This is a little different with immunotherapy, but historically the way that cancer therapies develop is that, whatever the cancer type — lung cancer, ovarian cancer, breast cancer — we'd look at the tumor and find a difference that we could target with a drug: estrogen receptors, EGFR mutations, HER-2 mutations, PSA for prostate. And then we'd develop drugs specifically for a patient with that tumor type, with those biomarkers. This is a subset of people, and some of these targeted therapies can be very successful for some of them. But this process doesn't really tell us about the patients themselves and how they're going to respond.

With our concept and what we have been working toward, we take people who have cancer, we look at their DNA, and we find out how they would respond if we gave them radiation, if we gave them immunotherapy, if we gave him chemotherapy, as a whole group, as people.

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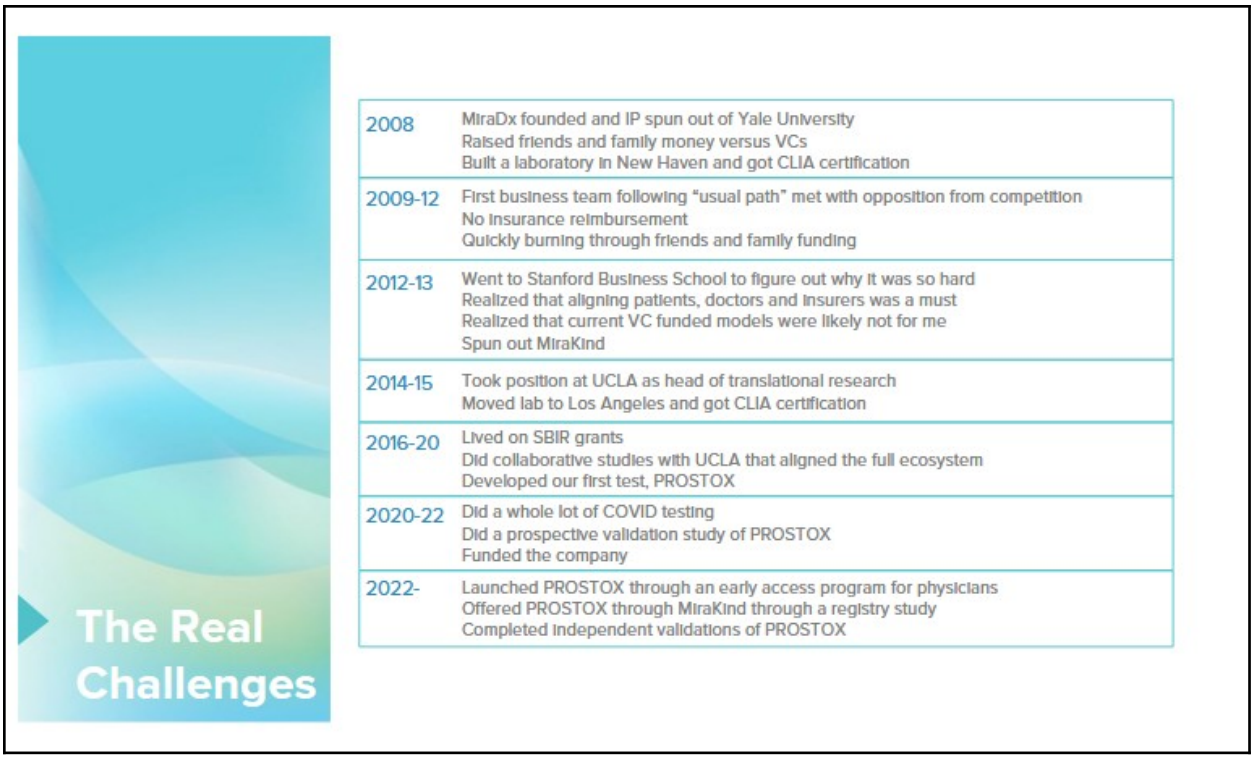

This all sounded like a great concept. But to be honest, I had never planned to start a company. I'd never even taken an economics class. I really believed that if I found anything important for my patients, someone else would take it and do great things to make sure it got to the patients. My heart was always in solving the pain points patients have. When I did my residency at Sloan Kettering, one thing I saw is that no one expected they were going to get cancer. We clearly didn't understand why people got cancer. Of our healthy cancer patients, two would be treated the same way, and they would have incredibly different responses. So there'll be people that do wonderfully and procured and have no side effects. There'll be people that do poorly and don't respond, and they'll even be people that respond, would have terrible side effects, and they're all treated the same, but there so there has to be answers. And I just really believe they were in the patient, and we weren't seeing them because we're looking at the tumor. So, you know, we found these examples with these new biomarkers, and I could see we have to get this information to patients. This is a real change in how we even think about identifying the best way to treat people. So with that, we started a company, Frank and I started this company, 2008 which is forever ago now, very naively, and I would say my husband is a lawyer and does private equity. So he, you know, knew people that could raise VC money and all that. And we started kind of quickly realized, you know, so that's a normal path. You have concept. You spin it out of a university, which we did, to start a company. You find a management team who goes and raises venture capital money, because they have to build it up for someone to buy it like that's generally the path. I felt very uncomfortable with that Frank and I really our goal was to get the information to people, to help them. And it was pretty clear that the job of the venture capitalist was to make money. That is their job in general. And that wasn't what was motivating us. It was really we wanted to get the information to people. So we ended up not taking venture capital money. We raised friends and family money, we built this lab in New Haven, got it CLIA certified, and still I thought. So you know, our first marker actually predicts ovarian cancer risk. I

thought this would be great. We're going to get this to patients. This will be really meaningful. But we needed business people. I wasn't a business person, and maybe it's just it's hard to get business people in New Haven, Connecticut, where the company was outside of Yale, but they went the standard path. They said, Okay, we're going to get a lot of orders in. We'll submit them to maturance. We'll build up so somebody can buy us. And it was very expensive to do it that way. And we were just completely naive, and they were naive, and we ran into a lot of there was a huge competitor, which was myriad at the time. Of course, insurance wasn't going to reimburse us, and we kind of hit a wall in in late 2011 and I said, God, why is this so hard? I know we have something that could actually help people, and I can't get it to them, you know, it was so baffling to me. I had never experienced that not being a business person, so I actually took a leave from Yale to go to the Stanford has a one year program. It's called x now, I think,

Joanne Weidhaas 11:16
but it to Stanford Business School, picked up the family and moved to California just to figure out why it was so difficult. And I learned a lot of really important things in that year. The main thing was that even though our first test predicting ovarian cancer, it was really for the patients. Medicine is complicated. You cannot have something that's only for patients, even though that's where my heart lies. It actually has to. It can be for patients, but you need a doctor to order it. So the doctor has to see a benefit and know how to use it, and then neither of them pay for it. Insurance pays for it. So it's very hard to have an aligned system and for cancer prevention, which was our first test that is just inherently misaligned. You know, insurance doesn't want to pay for a test that tells a patient they're at risk of cancer, because then they're probably never going to leave. And that's a bad patient to have stuck on their insurance plan. So, you know, with that, I actually, in 2013 spun out the nonprofit, which I'll tell you a little bit about MiraKind. And I have to say, at the time, I realized that maybe I probably should have just started a nonprofit, because it really wasn't about money. For me. It was about trying to help as many people as possible, but through MiraKind that really enabled us to just focus on patient education and access for that first test about cancer prevention for women, I also realized that I would never be compatible with a VC funding model, which is diagnostic companies. What they do, what the you know, formula has been, is they raise a lot of money because they hire a lot of sales people, you know, 100 sales people. They spend $100 million to build business. Finally get insurance to pay, and then they go public, or they sell. And I thought, God, for money like that. Think of all the tests we could give away. So I'd rather like take the slow path and try to get people involved, find ways for them to get it with something that's useful for the patient. We can find something that doctors want to that ultimately could even save insurance money. So, you know, I left Business School, which much with a much better understanding of the complexities of our medical system, and it's not for want. You know, people have great ideas and great findings, but it is so hard to cross that they call it the valley of death, which is appropriate. It's just so hard to get out there. You know, it requires a ton of money, so you're kind of selling your soul to venture capitalists, which do get things to patients. So I'm not trying to say bad things, but so very challenging. So, you know, with that, you know, I had the nonprofit, I had this understanding that if I was going to have tests, they needed to align the whole system, the ecosystem. I came to UCLA, left Yale, came to UCLA has had translational research and made very clear to them, this is what we have. I have this new class of biomarkers. I want to apply it

for patients. I think it'd be really useful. I'm a radiation oncologist in radiation you know, we have patients with very different responses and very different toxicity from treatment. That's a great use of these markers. Came moved the lab from New Haven to Los Angeles, got it set up here. Then for the next four years, we just lived on government funding, SBIR grants, which are actually a nice way to survive. So we survived it. We had wonderful collaborative studies with UCLA, which I still do. Our first product, actually is in prostate cancer, and it identifies patients who will have different toxicity to different types of radiation treatment versus not. So you can choose the safest path, which is a great alignment of of course, the patient wants to know get a non toxic treatment. The doctors actually want that too. And actually insurers want that too, because paying for a treatment and then paying for toxicity is more expensive. So it was our first aligned ecosystem aligned test. We took a detour in 2020 because of COVID, and actually ended up doing an enormous amount of COVID testing, and only pivoted to do that to help and it ended up being something that was all encompassing for a couple of years. Meanwhile, our first test prospects went through a nice perspective validation study. This fully funded the company, which is wonderful, so we're secure. And then since 2022 we have done a few things. And this is where it ties it all together. And then I'd love to look at some of the questions here, so we you know, and I'm like, let's I don't want sales people. I only want people asking for offering the test to their patients because they think it's useful. And I want to know if they think it's useful, I think a patient will think it's useful. So we started an early access program, which I don't think anyone does unless insurance makes them. But I'm like, This is great way to work with smart people, to see smart physicians, to see how they like using this, and have them talk to their patients about it. So we have about 15 centers, the leading centers, actually radiation oncology clinics, that are able to offer this test to their patient, prosthox, and get back the information, share that information, and do joint decision making with the patient, which I think is ideal. UCLA orders this test on every patient coming for prostate cancer, but it's also used at the Mayo Clinic and UCSF and just all over the country at this point. But it was great, and we didn't bill insurance, so it was great for everybody, great for the doctors, great for the patients. Most importantly, and at this point, we're just building our data and not fighting with insurance, so no one's being stuck with anything. However, about a year ago, we had a lot of patients prostate cancer is interesting, because patients are diagnosed by the surgeon, and they don't all get to go to the radiation oncologist. Half of people get surgery, half of people get radiation. And many patients were reaching out saying, I really want to get this information. I haven't seen a radiation oncologist. So that's where we actually, really were able to pull in the nonprofit MiraKind which is all about this enabling access, because we have a study through and I'm again, I'm like, let's figure out how to make this work. We have a study through marikind where a patient can come to American join a study. There's a cost to it, but pay for their their tests and by joining a registry so it allows access. And then I'll end with just a brief so, mirror dx, you know, I told you a little bit about, if you just looked at mirror dx, I'd say it's, you know, Frank and I founded this company to really advance and improve human health in this new class of biomarkers. But, you know, we're really partnered with MiraKind which has a very clear mission, which is to really educate people about this new understanding of DNA, to advance research. There's a lot of research studies and many cancer types that goes on through maritimes, but actually really to enable access so patients actually can get meaningful information. And so it's just this two pronged model, and to me, it was never planned this way. It was. The goal was to make sure we can get important

things to patients and do it above board so we don't get in trouble responsibly, of course. And so it's been a fantastic partnership. And of course, we have great legal counsel to make sure we're following all the rules to do it. But I'm feeling like it's, we're we're getting there, which is incredibly rewarding. It's been a long, long journey, and that's, that's it.

Brad Power 19:50
I recall when you and I spoke, you also had a technology for predicting toxic reactions to immune checkpoint inhibitors. Can you also speak to that? Because that's a pretty big area, and it's wider than prostate cancer patients.

Joanne Weidhaas 20:14
When I came to UCLA, I proposed that I apply these markers for radiation to look at different responses. And, you know, we treat every cancer type, and we have programs going on and all the different cancer types, but when I first came, I met with Tony Rebus, who's one of the leaders in immune therapy and friendly with our department. He actually did his postdoctoral research in our department in radiation oncology, and he's big leader in checkpoint therapy and developing those treatments. And we were talking, and I was explaining how this class of genetics predicted different patient responses, and how our problem in radiation was it would have people that, you know, 15 to 20% of people would have this bad toxicity. And he's like, oh, you know, this is just like, PD, one. This happens, people look the same. I give them, and one in four of them have these really bad autoimmunities, and I have no idea who they are. And it's interesting, because before immune therapy, toxicity in medical oncology was, you know, you're giving someone chemo, which is a poison, but they had medicines right to help with it. The rare you know, they for your blood counts, for your nausea, for they had things to help people through chemotherapy, but immune therapy was a whole new thing, where people look the same, but you're poking people's immune systems, and they're different. And what's interesting is that's kind of what the toxicity from radiation is actually, you know, we're predicting this late toxicity, which is probably immune based. We set something off. People look the same, but you don't know, they have a different immune system, and it builds up over time these immunities against themselves. So we started that was our first study with these markers. Was in checkpoint therapy, where we predict about it, we can identify people with about a 10 fold increased risk of an autoimmunity, immune related adverse event. They're called grade two or higher from checkpoint therapy. Yes, so that is obviously very broad. I would say there was one interesting lesson I had there. You know, we had this great panel. There were all these companies with checkpoint therapy, and I'm like, it's a no brainer, like, one of them should be like, Oh, we're the safest one. We're going to test people and just the people that are highest risk of toxicity. We won't recommend our drug for them. Insurance will make us first in the formulary. It seemed like a great potential partnership with with pharma, and we spent years trying to get pharma to work with us, and pharma was like, nope. I mean, they you know, what I've learned about Pharma is it's about the bottom line. It is about money, and it's not being creative. Doesn't pay off because they fire whole departments at pharmaceutical companies all the time. So there's a real fear, I think, of job security. So, you know, we in, I just realized that the timing wasn't right, so we still have that program, and actually it's coming around that patients want to know, doctors want to know, in pharma isn't, doesn't have 1000 sales people

on the street saying toxicity is good, so that that program is coming around too. Timing is important for a product. And radiation oncologists are really ready to know why people are radio sensitive, because we've been treating for 120 years, and we don't know an answer, but they weren't quite ready for checkpoint. Go

Brad Power 23:43
We had a session last week with Karen Merritt, who's an advocate for DPYD testing. It's a pharmacogenomic analysis that predicts a toxic reaction to chemotherapy.

How does your thinking fit more broadly within pharmacogenomics, understanding genetics and then predicting how people will respond to all kinds of therapies?

Joanne Weidhaas 24:16
Yeah, no, it's super interesting. We've really had to think a lot about this, because just for I just had to submit, that's a whole nother conversation. But if anyone's interested, we could talk about it, how you get things reimbursed? And we had to submit a new foundational policy to Medicare, because there this test doesn't fit into anything. And we looked at pharmacogenomics, and generally those are they identify like a metabolizing enzyme, that someone has a difference in that then you build up too much. Either the medicine won't work because it's not changed in a way that makes it work, or it builds up and it's toxic. What's different about our markers? They're not we're not looking at specific enzymes. We're actually looking at more of a stressor. Response circuit. So it's the it's not tied to, like, a single enzyme, a single drug, so it doesn't, it's they're both looking at toxicity. But it's very concrete with pharmacogenomics, because they're like, well, that you it's because they have a mutation and that protein that you need to metabolize this, right? Ours is more about just systemic stress response, but the concept of toxicity is similar.

Cindy Ness 25:28
I really appreciate your presentation, and especially your thoughtfulness in how you formed your company and made decisions who to go with and who not to go with, first of all, I would love to speak with you, you know, offline, to share your contact information. I have missed it, but so this is wonderful for folks with prostate cancer. And I guess my question is, if you can, you can identify those that will have a toxicity reaction. It's not clear to me if there's a next step with patients, because I always think about this like, you know, it's really interesting. What are we offering to the patient, though? Okay, so what we can offer the patient is they're not going to have a negative reaction. Can we then say, for those who will have a negative reaction, you know, but these are the things you can do. It's not what you just can't do. These are the things that you can do. And then the last part of this is, is there a generalization, an application for this to other kinds of cancer? Is it only do you have, in a sense, the model for now trying this with other cancers as well?

Joanne Weidhaas 26:49
That's all great questions. And thank you for bringing those up. So you know, one of the reasons we started with prostate cancer, radiation, or prostate cancer in general, is there are

many options. So you know, our leading thing is toxicity to an accelerated course of radiation five days. Turns out that the people that are at risk of toxicity, that form of radiation are not 95% are not sensitive to a different form of radiation, which is a slow course. So there's they inherently still could get radiation, 99% of them, and it just tells you what type to get. They can also, many of them still get surgery, so they have several treatment options, which is great. So that's a great point. Thank you for for bringing that up. And the next point is, yes, absolutely. We think, you know, we have numerous programs going on looking at pre operative therapy and sarcoma, looking at toxicity in breast cancer, or looking at responsive neoadjuvant therapy and breast cancer and head and neck cancer, which is a very, very toxic radiation treatment. We have panels predicting toxicity, but in parallel, also response, because they don't have a lot of great alternatives to radiation. So it's, it's each cancer's nuance, each treatment has its interesting complications to think about. All right, I never want to just give a patient bad news. I mean, that that's not helpful, right? I totally agree, and that's been a struggle. Like, you know, someone be like, Oh, we should do a test for that, but it's just bad news. I mean, there's no option for them. So I've, we've been very thoughtful in bringing forward things where there really is a viable alternative for them.

Cindy Ness 28:33
With chemotherapy, there are more companies out there now that are trying to match the right chemotherapy for the right patient or tumor, but I've not heard this, and it just may be me with regard to radiation.

Are there competitor companies out there? Is anyone else doing this, or is this really your own lane?

Joanne Weidhaas 29:02
It's a bit of our own lane. Radiation is interesting because it is not FDA regulated, but it's been so competitive to develop the safest way to deliver radiation with the most advanced technology. So radiation is incredibly targeted. It's all about, oh, if we are so focused into this spot, so we use MRI guidance, we use all different types of guidance so we can see exactly what we're treating in very focused fields. The reality is, so we've been doing it for 100 years. We still have people that are just radio sensitive, and I think that we're, you know, finally accepting, you know, it's a very physics-driven field, but the biologists are, like people are just radio sensitive, like you can do all you want, but if you treat even a tiny little spot with radiation, they're going to respond negatively. There have been no biomarkers for radiation. We can be smarter than biology, which is impossible, and just focus better. So that's how radiations try to solve it.

Roger Royse 30:27
Joanne, you might not remember, but I talked to you about a year ago.

Joanne Weidhaas 30:35
I do.

Roger Royse 30:42
For everybody else, I had an experimental neoantigen peptide vaccine about a year ago. My doctor pushed me really hard to get a checkpoint inhibitor along with it. Yes, I mean, really hard. He said, this does not work without this checkpoint inhibitor. And I got your test, and it turns out I'm one of those people that would have had a grade four adverse reaction, and I took it to the doctor, and he never mentioned it again. Since then, I've talked to several other oncologists, and it feels like nobody knows about this. And recently I was up at U S F, U C, S, F, I. Yeah, Oncology Group and and I talked to somebody there. They gave a presentation on checkpoints, and I said, Well, what about adverse reactions? And they were like, well, that hardly ever happens, and even if it does, we can treat it. And I said, Why don't you test for it? She says, There's no such thing. And I connected with your website, and she mowed me back, and she said, Holy cow, this is real. You know,

Joanne Weidhaas 31:44
I know it's, it's, thank you, Roger for bringing that up. That was part of the battle. So we had this great panel, and no one wanted to hear, you know, it's like, I was like, we can't pursue this right now. We're gonna lose. I mean, when we started with this ovarian cancer predict risk prediction test, that was my experience. I test. That was my experience. Our timing was terrible. Period was going off patent. There was all this animosity, and they had 300 sales. People like saying bad things. I'm like, that will be a losing fight right now. The time will come. We'll continue to publish on it. We'll continue we have another independent validation that we're show presenting at ASCO. Actually, the time will come and it will continue to mature, the numbers will increase, and we're just about to start an early access, EAP, early access provider, testing at UCLA for this. So I'm letting it do the groundswell. I mean, that's what we did with the prostate test, too. But I love if a patient knows about it and asks for it. I want to make sure they can get it so it's a developed test in the lab. They can get it through marikind, you know, which is basically how we got that to you. So thank you bringing up that's part of the the challenge and the the battle.

Roger Royse 32:54
I mean, if this were a drug being promoted by big pharma, I'd be seeing commercials on TV and but

Joanne Weidhaas 33:02
the problem is, you have someone that's like, no, no, no. You know pharma, when we started our first paper about that toxicity, it took two years to publish. That's like a record, because there were reviewers that like, no. Pharma is telling me toxicity is good. Toxicity means you're going to respond, which is absolutely not true, and they literally, we couldn't even get the paper published. It took two years. It was, I'm like, This is so political right now. It's so politically charged, so but yeah, thank you. Yeah. So

Roger Royse 33:33
quickly I asked you before, and at that time the answer was, maybe later it was, does this? Do you have a solution for anti Pdl, one antibodies?

Joanne Weidhaas 33:45
No, yeah, we haven't tested that yet. So you do? You mean the next level of of predictors for those? Yeah, yeah, no, we haven't. We haven't done more. Some of it's getting access to those trials. I mean radiation and radiation oncologist is easy. All we need is patient cheek swabs. But when pharma owns it, they won't. It's very hard to get samples from them right, to predict anything they don't want they like, to control the data. So if the newest drugs, it's almost impossible to get access to because they control them so they won't let us do it. And then

Roger Royse 34:24
finally, quickly, you know, I'm, I'm in hearing more about radiation toxicity, and I'm just wondering, and I guess that is pretty much what one of the things you can test for, can you speak a little bit more to that? Because, you know, I didn't, I don't know. I don't hear a lot about it. And I think maybe I should, you

Joanne Weidhaas 34:45
know, I would, compared to how we used to, everyone's scared of radiation, and there's like, the article front page of New York Times, it was like there was a radio a mistake in a treatment, and someone had terrible side effects. In general, we. Radiation these days, it's so high tech and it's generally safe for most people. But you know, as I said, there's a subset of people that will develop late fibrosis. As medical therapy is getting better and people are cured from their cancer, the aspect of long, lasting side effects is really important, and it's been largely ignored. We've been so focused on like, what can we do to cure people? Pharma leads at this drug will cure you. This drug will cure you. There's been very little conversation about people that are cured and forever are affected by their treatment. And I think immune therapy is really also brought it to the front, because these autoimmunities, you could have become diabetic, you know, you can go blind, you can have liver disease, all types of things, cardiomyopathy. From these autoimmunities that the medical oncologists will say, we cured them, but we've killed them, basically. And so I think that's helped bring it to the forefront. Radiation, as I said, in general, severe toxicity is incredibly rare. Like less than 3% of people will have a grade three toxicity that is long lasting, but it really matters for them. And you know, our test for prostate cancer can predict about a four to six fold increased risk of that, so that's meaningful, versus being very low risk for it. And right now, if you tell someone, oh, you're at about a 3% risk of a really bad toxicity, it sounds really low, but they're the people that are really at risk of that. It would be fantastic for them to know and do something else. So I hope that's the future. The problem is, Pharma is never going to be on board with toxicity predictions, because they will lose patience if someone's going to have toxicity. I mean, I remember a conversation I had with like the head of science at BMS about our checkpoint inhibitor toxicity, and he literally said, Wait a minute, if you tell someone they're going to have toxicity to my drug, they're not going to get it. And I'm like, Yeah, right. Like, obviously. And he's like, Yeah, I don't think we want that. So that's a struggle. And so I think it's an incredibly untapped, incredibly important area. So thank you. Sure.

Brad Power 37:27

Russ, you had a number of questions in the chat. Could you choose whichever ones you want to bring forward?

Russ Hollyer 37:33
Okay, first I might admit I was looking at some stuff, and so I might miss this. Is this the prospect Ultra test,

Joanne Weidhaas 37:41
yes. So that's the first test that's out there. Okay. How

Russ Hollyer 37:45
does it compare to the MIR Sentinel?

Joanne Weidhaas 37:49
Mir Sentinel, I'm not sure what that one is. Is that? Can you tell me what that test is?

Russ Hollyer 37:55
I just know it's a micro RNA test too, and it's FDA approved, and it's some of it's now say, like, I assume, similar to yours, but I don't know what the overlap is.

Joanne Weidhaas 38:08
Actually, what's a path to confidence is the same on Oh, so that's diagnosing you with prostate cancer. I mean, there's a lot of efforts, there's been a lot of work in prostate cancer to, one figure out which tests need, which patients actually need treatment and actually to diagnose it. You know, it was all on the PSA before, and PSA is not specific enough, right? So, yeah, so there's a lot of technology looking at that. So that's actually looking at, I think, microRNAs in urine to see if you have prostate cancer.

Russ Hollyer 38:41
Okay, so it's a prediction test, yes, but it

Joanne Weidhaas 38:45
is actually using my RNAs, which is kind of the same concept, okay?

Russ Hollyer 38:49
And I definitely don't need prediction I have it. Can it possibly give you insight into it met to development

Joanne Weidhaas 39:01
for the risk of metastatic disease, yeah, the

Russ Hollyer 39:04
MIS the risk of medicine give you, like, a heads up, crudely, that

Joanne Weidhaas 39:11
the prospects Ultra test doesn't it's really looking at your response to radiation treatment. We do have a lot of work at looking at, you know, tumor aggressiveness. You know, a lot of that's done by looking at the tumor. In our platform, we're mainly looking at the patient, so we're looking at the patient's DNA versus the tumor DNA. But there's a lot of work decipher a lot of things, a lot of tests in prostate cancer, looking at how aggressive is this tumor and what are the chances that it would spread.

Russ Hollyer 39:41
Okay, does it happen to look at AR up, regulations, mutations, activity,

Joanne Weidhaas 39:47
you know? So our test doesn't again, but there's a lot of interesting work doing that right looking, because a lot of that, yeah, looking at the androgen receptor and responsiveness to some of those. Very good targeted drugs. Yeah, nope. So yeah, we're not, since we're not looking at tumor, we're not looking at that, we're looking really more at the patient and their response to things. Okay, okay, so

Russ Hollyer 40:10
I assume with the radio sensitization, I could you, like, say, for example, before I did a sbrt, that's gonna take a get a baseline, and then take a laparab or some PARP inhibitor or whatever I thought would radio sensitize me, or what, and then redo the test. Oh, interesting.

Joanne Weidhaas 40:30
You know, we really looking at the test. Isn't actually looking if, in general prostate cancer, when we treat it with definitive radiation. It works pretty well. You know, the local it's pretty people can fail after radiation, but the control rate is pretty good. So we're not actually looking at sensitivity to radiation in the tumor versus sensitivity of the patient, where they will have side effects from the radiation. Okay, good questions about products that there are, there is work in those areas.

Russ Hollyer 41:07
Okay, okay, um, would it be possible to Yeah, yeah, I guess. Okay, so you're, it's not the tumors you had to extrapolate to the micro environment, whatever. Okay, so, yeah, yeah. Oh, I just had a comment about toxicity. Have you tried, with with the pharmaceutical companies, to have an opposite approach and say, Look, you know what? We could screen people out. We could also screen people in. Like, let's say Russ haulier is, for example, he's really afraid of toxicity. I am. So, hey, look, we're, like, you're, you're on the low end of the toxicity rating. I'd be like, okay, cool. I can do this. This is an option,

Joanne Weidhaas 41:49
I know. I wish if they would talk to us. We may try again. We're actually doing some work with lutetium, which is, you know, the systemic therapy, like a radio radiation labeled your ligand antibody, basically, yeah, in prostate cancer, and we are looking at some of our microRNA signatures, looking at respond. You know, who will respond? There's just not very many side

effects with that, actually, but some blood count side effects. Okay, all right. Well, thank you, of course. Yeah, my pleasure.

Brad Power 42:18
We've had Oliver Sartor speak, and he's a good friend. If that would be useful, he's the lead PI on all of the radioligand therapies.

Rick Davis 42:33
One question just came to mind, which comes up all the time, and you may have the answer to it, or may have researched it: Have you found or have you been able to track whether people with germline BRCA are more sensitive to radiation or not?

Joanne Weidhaas 42:57
Good question. You know, as a breast cancer researcher, we've done, there's been big studies trying to look at that. And this is what I would say. I think that an important thing about radiation, there are really two types of side effects. There's short term side effects you can experience during treatment, and then there's long term side effects that actually don't even develop until nine months. I do think people with braca mutations, ATM mutations, they have, were short term side effects. The studies that looked at it looked at like overall side effects. And, you know, I've treated some ATM patients for with breast you know, they're radio sensitive. I mean, that's how you diagnose ATM mutations, and bradca is involved in the Radiation Response too. So I do think they have worse short term side effects. They do not have, or necessarily have long term side effects. And we actually have genetic panels, microRNA panels, of short term side effects. They're all about DNA repair, which is what ATM and braca do. That's not what our late toxicity panels are about. They're more immune based because that's more fibrosis. So I think I you can quote me, yes, I think they have slight, your higher risk of short term side effects.

Rick Davis 44:13
Thank you. It's, it's, it's an ongoing debate, especially when we get the guys. We don't just do prostate work the prostate. We work with a lot of prostate, and when we get these guys who come in who are like Gleason, three plus threes and three plus fours, and they're deciding what treatment to get, and they need to get treated because they carry braca, and should they do surgery, or should they do radiation? And there's always a discussion of, well, if you did radiation, you'd be more sensitive. So

Joanne Weidhaas 44:44
the good news is, actually, we usually can get people through the short term side effects, and they go away. So, you know, they go on full max or something, just to help through the acute side of it. And with breast two, you know, if they have they'll have worse skin peeling, but it heals. And actually they look fine. It's really the long term ones that are

Rick Davis 45:02

now I have the t shirt, so I got a lot of radiation, and I do have the t shirt, and I do have long term side effects. But as I always say, I'd rather be this side of the grass than the other side of the grass, right? So, like, I would have been the other side of the grass. So

Joanne Weidhaas 45:22
love to get you there without side effects. I think that's the Yeah,

Rick Davis 45:25
yeah. Well, my dog was Matt Roach, and

Joanne Weidhaas 45:32
I love mac. He uses the test all the time process. I

Rick Davis 45:35
love mac too. And he's Yeah. Now the I'm going through a three way conversation here. You Me and the lead moderator of our low intermediate group, prostate cancer group, who lives in LA Dr Mark Perlow, who's a good friend of key Shan's, and he works with keyshan all the time, and he's sending me questions to ask you. And I said, No, I'm just going to give you dr Joanne's, and he can you, he can ask you. He'll be in touch with you, no problem. I just want to tell you we have been using your test for donkeys years. I mean, we've been using both tests, prostocks and immune and immune we we don't, we don't see a lot of immune checkpoint because, as you know, it's a cold tumor. And unless somebody is Lynch or something like that, they're not really a candidate. But we have had people who have been candidates for pembrolizumab or nivolumab, who who have wanted to test whether they're going to be sensitive. And so we love you. We love you. Test when we need it. So happy. Yeah, and the people in our in our low intermediate pro stock we they meet twice a month. Prospects gets talked about at least 50% of the time, at least 50% of the time. And I would love to invite you at some point, maybe we can do a session. And also, I would like to make available to you organize for your own research, so you can ask them questions. You probably know Pamela Munster at UCSF as a she's the braca lady. Yeah, she's the lady who actually has braca, and she runs the braca clinic. She's got a product prostate cancer. Product is working, and she's come in because she wants to talk to the guys directly and ask them questions. If you'd like to do that, we would love to have you and work with you and give you the opportunity to ask these men what's going through their mind when they want to take

Joanne Weidhaas 48:04
I love to talk to patients. I mean, that's why we have MiraKind, and I have people join a registry because I'm going to follow up with you. We have a lot of breast cancer patients on it. I did a big study, and I'd send out communication, I would literally have 1000 emails in my inbox the next day, and I loved it, and I'd answer every single one. That's kind of what I did during business.

Richard Anders 49:19

"How I Help Patients Access New Diagnostics" (Joanne Weidhaas, MD, PhD, MSM) [#138]

This is really interesting and great work, and I am impressed and admiring of the work you're doing. I just have a few questions, because I'm always curious about the science and some of the things like that. First of all, are you a CLIA test, an FDA test, or both?

Joanne Weidhaas 49:39
We are CLIA CAP certified, and we're having our New York state inspection. There's this whole big debate about the FDA, and this whole rule just changed that no longer regulating these tests. But we're a CAP-certified lab. That's kind of like the step up, and then New York State is coming in two weeks.

Richard Anders 49:57
So I put a question in the chat, but it sounds like you've. Kind of answered it, which is the toxicities that you're looking for in radiation, are things like fibrosis and other things like that. So probably it's not like those are not things where, if the cancer happens have the same germ line mutation, you care that the cancer will develop fibrosis. So it's not really relevant to measure susceptibility, or anything you're you're measuring longer term effects that a patient might use to say if there's a little bit of off target radiation, steer clear, because you could get these adhesions, and they could be really bad, unless you can be very focused in the radiation, perhaps. Yeah, so I would say,

Joanne Weidhaas 50:40
I expect we do have studies looking at both response as well as toxicity. They don't seem to be the same pathways. I thought maybe they might be, but they're, they're not. And for prostate, you know, we are. What's interesting about prostate, what we're predicting are your late urinary side effects, because we treat the whole prostate with radiation. I mean, we tend to treat the whole gland, and the ureter runs right through it. So if you get fibrosis in the prostate, you're symptomatic. I mean, you just are up every half an hour. You know, have to go to bed. It hurts. Your urinate, your urinating half an hour, or it could be worse. So that's the fibrosis of that gland. We of course, look at those signatures. Every cancer has different toxicities caused by different things. So in breast cancer, you know, you can have fibrosis that would be misshapen, you know, changes in the look of the breast. And you know, if someone has a reconstruction, it can be very problematic. Sarcoma is something we study. You can get fibrosis of the joint, head and neck. Fibrosis really causes, like, permanent swallowing issues. So it kind of depends where we're treating those tissues, what the side effects are.

Richard Anders 51:59
So it's really the fibrosis seems to be the major thing you're predicting, which,

Joanne Weidhaas 52:05
for late toxicity, we think that's generally, it's a fibrotic response

Richard Anders 52:10
so that, that, you know, it's like telling someone they'll get keloids or something on, you know, whatever. Well, that's, that's really interesting and very, very helpful on the immune checkpoint

stuff that one's really interesting, because I would imagine that a lot of that has to do with the particular immune repertoire of a particular patient. But you seem to be possibly saying, unless you're measuring the immune repertoire, that there are certain people who tend to develop autoantibodies in generals. If that's true, is that, is that test good for autoimmune diseases in general, or is it specific to auto immune checkpoint inhibitors?

Joanne Weidhaas 52:50
Such a good question. And actually, I'll give you an example that I think kind of will explain how the biomarkers work a little and it is in autoimmunity. So one of the first examples of the type of mutations we study was in Crohn's disease, and what they found were people, you know, autoimmunities. They run in families, but not everyone gets it. So it's never clear exactly what it is who will get it and who won't, but it's always been thought probably something sets them off. And we think you know for radiation toxicity, for example, people walk around with these differences, they're fine, but if you radiate them, you set them off. Or with immune therapy, they might have different immune systems, and they're fine. But if you poke their immune system with this pathway affecting, you know, PD one, CTLA four, you set off a bad cascade. So this example in Crohn's disease, they found just a single difference in the parts of the DNA we study, and it was in a calcium channel, basically in the gut lining. And if someone was exposed to a specific strain of E coli bacteria, it would set it would set that off, and it basically got locked on. Basically it got in a vicious cycle, and that channel stayed open, and they developed Crohn's disease. So it was all about the exposure tipping something off. And so I kind of think of it that way. And I do think that even for in the radiation patients, some of these markers are probably important in autoimmunities. A lot of the panels we study are genes that are known to be important in autoimmunity, but we actually we are very bad at predicting who's going to get it, how to treat it, and figure out what the triggers are. So that's a whole other area where I do think these markers are, are very relevant, actually.

Richard Anders 54:45
Well, I mean, there's all these tantalizing clues, like, you know, different HLA types get certain preferential autoimmunities, and then, you know, the MS and EBV is sort of a proven correlation more recently. So do you do look at stuff? Like that. Are you looking at HLA type as part of your test? Don't look at HLA

Joanne Weidhaas 55:03
type, although there is definitely some implication of HLA type in immune related adverse events, but there hasn't been great development of that. There are a few other germline biomarkers. Our real goal with the germline biomarker approach is being able to test somebody before they get any therapy, because once you've gotten the therapy, it's actually too late. And they may say, Oh, if you get immune related adverse events, we can, we can, we can fix it. You kind of can't sometimes, I mean, and radiation toxicity too. Once you start it, you that's, you know, you started down a bad path. So even these autoimmunities, they do check people, and there's a lot of debate about giving immune therapy to people with autoimmunity, and they can measure some of those things in the blood before, but there are a lot of people that don't have those yet, right? But they might have this, the genetics that will get them there, and we're trying

to identify those people so they don't know before treatment that they're going to go down a bad path.

Richard Anders 56:05
And last question, sorry, so you have studies and whatnot that, I mean, there are a lot, there's a lot of and it's not a well kept secret anymore. It's not even a secret, but there are a lot of people who get some level of autoimmunity problem, immune problem, with checkpoint inhibitors, and it's just a question of how well you can control it. But do you have any data? Of course, you do on how well, how much you enrich the patient population of people who are going to have adverse events. And you know, maybe if there are papers I'd be interested in seeing one, you don't need to answer it. Now, I know there's another question, at

Joanne Weidhaas 56:36
least. Yeah, no, we predict about a 10 fold risk. So it's like, wow, yeah, I know they're really the differences we see are, like, eightfold, tenfold. They're not 10% right? They're really, really identified people, like, for a prostate toxicity, we identify people, separate people from the average of 20% to 4% to 80% right? So we really differentiate. And the same with the immunities. That's meaningful information for patients, like a 10% increase or kept I don't think that's very helpful. So we're really happy that there are big differences like that.

Richard Anders 57:11
Honestly, if you were telling me that you do a 10-fold increase, I would say you'd be 180% or something. A ten-fold increase is enormous in a group that has a lot of that. Wow. Well, that's great.

Alane Watkins 57:28
My question is tied to the previous one: for a patient who has any autoimmune tendency, meaning they've either expressed antibodies in the past, or maybe currently, aren't those patients contraindicated for almost all clinical trials? I'm in that category. I had no autoimmune disease until my first chemo treatments that triggered it, and when my symptoms have been triggered, it's poking proton radiation. The problem is I can't get into any trials because of the autoimmune condition. Now, the flip side of your argument that big pharma wants everybody and anybody in their trials is not quite true. I worked in Big Pharma.

Joanne Weidhaas 58:23
I'm sure true. They don't want to have bad side effects if they know, or if it's obvious, yeah. I mean, I wish that they would let us do that. I mean, it's such a no brainer to me. Like, take out the back, well, you'll be approved. There's so many failed

Alane Watkins 58:40
Correct. It's called "cherry picking", by the way. So Patrick Soon-Chiong, or whatever his name is, he's not curious about that. His drugs are remarkable. But you know what? He doesn't touch a patient like me. But I need his treatment.

"How I Help Patients Access New Diagnostics" (Joanne Weidhaas, MD, PhD, MSM) [#138]

My question is: if I go to my clinician at the Mayo Clinic and say, "I want this test." Is it ready for prime time for a patient like me?

Joanne Weidhaas 59:09
The checkpoint inhibitor therapy?

Alane Watkins 59:12
Yes, any immunotherapy, Vax or otherwise.

Joanne Weidhaas 59:17
The studies that we have are in checkpoint therapy, for PD-1. We have a CTLA-4, but no one gets that alone anymore, and we just did our first study, and that was in very advanced melanoma patients. I was worried, because I figured they were pretty genetically pressured, because it was a phase one trial, and they had been through everything. We did a much broader population, about 250 patients who are getting it as first line therapy. And have, you know, expanded our panel, we won't always catch every I mean, someday maybe we will. But as we expand our cohorts, there'll be people that have rarer combinations, which are underrepresented in the people we've studied. Right? We won't catch everybody. But I would say, usually, if we say you'll have toxicity, the chances are really high. It's not 100% you won't, if you know your we say you don't.

I would say our prostate one is further along, mainly because it's been easy to get these validation cohorts. Our immunotherapy is close to coming next in line. We're planning to open this. It is an early access program at UCLA, because there's now, there really is a lot of interest in trying to predict it and figuring out what you do and what patient populations would benefit from knowing right. Because some people really need to get the checkpoint inhibitor. So you know that we'll have to work with the clinicians on that. But always happy to,

Alane Watkins 1:00:45
At this point in time, I could get the test, and it would tell me something, right?

Joanne Weidhaas 1:00:50
Yeah, I'm happy to connect and see what we can do.

My takeaways are: I love talking and connecting. Thank you so much for the invitation. It's been wonderful, and for the great questions from everybody.

There is a lot to still do. We need patient advocacy groups and everyone's involvement to move things forward together.

"How I Help Patients Access New Diagnostics" (Joanne Weidhaas, MD, PhD, MSM) [#138]

CHAT DISCUSSION

00:20:35 Russ: Sorry, you might have mentioned this but I was looking into micro RNA tech. Is this the FDA approved PROSTOX Ultra test?
00:21:15 Russ: How does it compare to the miR Sentinel PCC4 Assay?
00:26:55 Rick Davis: AnCan recommends Prostox to our participants regularly
00:28:03 Russ: So, this is the Ulra test? Is it typically insurance approved? (I know cases vary)
00:28:14 michael nagle (phone): Replying to "AnCan recommends Pro…"
What have you recommended it for? Specifically for radiation?
00:28:25 michael nagle (phone): Replying to "AnCan recommends Pro…"
(re: AnCan)
00:29:31 Dr. Chris Apfel: Joanne, I can very well relate to your experience I am very impressed with what you do. Congratulations. 🙂
Can you also speak to the science and how it predicts a patient response to radiation or systemic therapies?
00:29:59 Rick Davis: Replying to "AnCan recommends Pro..."

Yes .... sensitivity to SBRT
00:30:06 Mass Medical Angels: You mentioned cheek swabs and you are testing RNA. Can you speak to the evidence that your test accurately predicts radiation toxicity for different tissue types with different epigenetics? And do you have thoughts about testing cancer tissue as well to measure susceptibility of those cells>
00:30:30 michael nagle (phone): Reacted to "Yes .... sensitivity…" with 👍
00:32:06 Helen: Thanks so much for your work, persistence and imagination. How would international patients access this service? From France, for example?
00:33:08 Rick Davis: We've used the immuno-toxicity sensitivity test too. But immune -onc drugs rarer for our prostate peeps.
00:33:10 Alane Watkins: How accurate has this testing proven itself to be?
00:37:35 Russ: 1. PROSTOX Ultra Test ?
2. How does it compare to the miR Sentinel PCC4 Assay?
3. What actionable info would it provide for, say A G9 T3 PCa patient. 7 years in.
4. Forecast mets? HSPC->CRPC transition? AR mutations upregulations activity?
5. Could you possibly determine how radiosensitive you are? I could envision some testing to see if agent "x" radiosensitizes you.
00:59:53 Brad Power: Email
jweidhaas@mednet.ucla.edu
Send email