

**UNMC Chancellor Jeffrey P. Gold, MD:** Hello. This is Dr. Jeff Gold, and I'm the chancellor of the University of Nebraska Medical Center. And I want to welcome you to "Health Care Heart to Heart," providing insights into the medical and the scientific issues of the day. As you may know, I'm a recovering cardiothoracic surgeon, a longtime medical educator and a firm believer in the ability of science to change lives for the better.

Our guest today is Dr. Joann Sweasy, and Dr. Sweasy is the director of the Fred & Pamela Buffett Cancer Center and the Eppley Institute for Research in Cancer and Allied Diseases here at UNMC. And as I'm sure all of you know, Dr. Sweazy is an internationally recognized comprehensive cancer center director who has specific expertise in genetics, cell biology and the biochemistry of DNA repair. We're going to unpack all of that, Joann, in just a few minutes, but our audience always likes to know, how did you get interested in your area of expertise? In this instance, how did you get interested in research in cancer? Was there a moment where you woke up at a cold sweat at four o'clock in the morning and said, "Today I'm going to do this?" Or was it a life experience? Tell us a little bit about that.

**Joann Sweasy, PhD:** It was a couple of experiences. So when I was about 9 years old, my almost 5-year-old cousin died of leukemia. And we were very, very close. We were like sisters. And I wanted to do something to get rid of cancer, to cure cancer. A little later, I was learning about DNA, and I thought DNA was really, really cool.

**Dr. Gold:** Double helix and all that stuff.

**Dr. Sweasy:** The double helix, the way that it was made, and it was the genome and all of that. And fast forward, I found myself working at Merck & Company, developing a drug called Ivermectin. And as part of that...

**Dr. Gold:** Which have been quite popular in the lay press.

**Dr. Sweasy:** Popular in the lay press. And we had to manufacture bacterial systems to have the bacteria make Ivermectin. And in order to do that, we had to think about DNA repair and mutagenesis. And that's when I really got interested in DNA repair and mutagenesis, and then subsequently had an incredible mentor who connected the dots for me. And I got involved in thinking about DNA repair and cancer, because if DNA is repaired improperly, mutations a result, leading to cancer. And that's when I knew that's what I wanted to do.

**Dr. Gold:** Super. Well, you certainly have had an amazing career, and we're just so thrilled to have you here as the director of the Buffett Cancer Center and the Eppley Institute. So, I remember when we first met as part of the search process, we were talking about the University of Nebraska, the med center, the Buffett Cancer Center. But what about it ultimately convinced you and your family this was a good choice for you? Again, was there a unique moment? Was there somebody that you met? Was there great food in our community? Tell me a little bit about that experience.

**Dr. Sweasy:** Well, definitely the great food.

**Dr. Gold:** I would agree on that.

**Dr. Sweasy:** It's definite. There are so many things that attracted me to the Fred & Pamela Buffett Cancer Center and UNMC, but the first thing I noticed was the energy, and everyone is all in. There's commitment at every single level from the scientists, the clinicians, the institution. This is one of the few institutions where cancer is actually in the strategic plan. The science is impactful, cutting-edge clinical research. It's just an incredible place. Community support and state support for cancer research. I don't think there's a better place in the United States, maybe the world, to do cancer research.

**Dr. Gold:** Well, it's certainly how we look at it, and having you here just further reinforces that for us, for building the future. Now, February of course, is National Cancer Prevention Month, and we all know that prevention, early detection and screening is the name of the game for probably all disease, but certainly is true for cancer. Can you talk a little bit about what the Buffett Center is doing in terms of trying to get us to a stage of earlier diagnosis and prevention?

**Dr. Sweasy:** Absolutely. We're building on what we already have here, which of course is this amazing pancreas clinic that we're a big part of the National Pancreatic Cancer Center consortium. And there we longitudinally profile patient samples, especially people who are at risk, families of patients who are at risk for pancreatic cancer. And we're learning a lot about biomarkers and our ability to detect pancreatic cancer early.

**Dr. Gold:** Let's just stop there for a second if you don't mind.

**Dr. Sweasy:** Not at all.

**Dr. Gold:** Because our audience may not have heard the word biomarkers before. It's certainly one that I'm aware of, but maybe you could describe that, because I personally think that these biomarkers, whether they're cellular or acellular, have a huge amount of potential for the future.

**Dr. Sweasy:** Absolutely. So, as you mentioned, they can be cellular, so you can have a blood test to find out if you have some sort of a protein or a different level of some enzyme that would actually correlate with pancreatic cancer.

**Dr. Gold:** Or any cancer for that matter.

**Dr. Sweasy:** Any cancer. And also DNA, just different kinds of DNA testing. We're also working on imaging, really, really interesting imaging systems to image it at an early stage. So, I think pancreatic cancer is just an incredible foundation to build on here. But what we're doing in the cancer center, because part of our quest is to become a National Cancer Institute Comprehensive Cancer Center, is to, I'm developing, in partnership with my colleagues, a cancer prevention and control program. And so what we can do there is do research into cancer, where we'll focus into cancer prevention, essentially, we'll focus on developing methods of detection for early detection. Again, imaging. We'll also look at different prevention methods, especially behavioral interventions. So I've just been here for a couple of months, but we're getting all of the data together from the state. And what we've really learned is that the smoking rate is higher in Nebraska than the U.S. Nebraskans have higher rates of obesity than the

U.S., and so we can do something about that. We can develop programs.

**Dr. Gold:** Both of which of course are risk factors for many diseases, but of course including cancer.

**Dr. Sweasy:** That's right. And so our cancer prevention and control program will work on the best methods of decreasing the smoking rate, best methods of smoking cessation and look at metabolism for Nebraskans. Also, best behavioral interventions, which I think is really going to be interesting. The other thing is to build infrastructure through community outreach and engagement and cancer prevention and control program, in partnership with the Rural Health Institute, to make sure that all Nebraskans have access to cancer prevention, education, behavioral interventions and cancer care.

**Dr. Gold:** Yes. So as I'm sure you're well aware by this time, we have a tremendous focus not only here in eastern Nebraska and in the Omaha-Lincoln corridor, but even more so perhaps in some instances in rural Nebraska. I mean, certainly we care for the overwhelming majority of farming and ranching trauma that occurs in the state. There's not a day that goes by that there isn't a helicopter that lands here from some part where somebody has had a serious farming or ranching injury. But equally importantly, we are very responsible for the overall health and wellness of Nebraskans. And a lot of that has to do with cancer. One of the things that I've learned about the not-so-distant future is that, based on last year's statistics, cancer deaths have now exceeded cardiovascular deaths here in the state of Nebraska, which, for our audience's benefit, is not true on the national level. And there may be a lot of reasons for that, but to me, I don't look at the causation as much as I'm concerned about what can we do about it.

**Dr. Sweasy:** What can we do about it? And that's the opportunity, because we are partnered with so many people in the rural setting that we can continue to expand and build on that. And that's why I think we can be very successful at achieving comprehensive status.

**Dr. Gold:** I think there's also a very important message for our audience is that during the COVID pandemic, and to some extent following the peaks of the COVID pandemic -- I was going to say following the COVID pandemic, but it ain't over until it's over as Yogi used to say -- that people put off getting their routine chest X-rays, mammography and other such things, and we really haven't caught up.

**Dr. Sweasy:** Not at all.

**Dr. Gold:** That has resulted on the national level in more delayed diagnosis of cancer, which means worse prognosis, it's harder to treat and all that. So if we were talking to a family out in western Nebraska, one of our farming and ranching communities, and you had a message to share with them about screening, how would you share that? What would be the most important part of the message?

**Dr. Sweasy:** That it's very important to keep up with cancer screening, to be screened, to have your annual mammography, to be screened for colonoscopies, to visit your primary care physician and make sure that all of your cancer screenings are up-to-date and your vaccinations are up to date. I'd also like them to know that cancer is not a death sentence the way that it used to be. We can treat cancer. And the good news is, there are so many cancer survivors now. There weren't cancer survivors when I was growing up. Cancer was a death sentence. One of the big things we do here is we have incredible

survivorship programs. So we continue along the life journey of our cancer patients in survivorship, and that's amazing.

**Dr. Gold:** Absolutely. I can just recall in the days the dinosaurs roamed the earth, which was when I went to med school, eight out of 10 children that were diagnosed with cancer, that was a death sentence. And now it's even better than just the opposite of that, less than 20%, meaning well over 80 or 85%, not only are successfully treated but are cured, and we need to be able to move that forward. So, before we finish, I thought our audience might be interested in your own research. It's not just that you are coming here as an institute leader, which of course you're very capable and have demonstrated tremendous expertise in your leadership skills, but you're also a very accomplished research scientist. And maybe you could share with our audience a little bit about what you study in the lab.

**Dr. Sweasy:** Absolutely. I study DNA repair. So DNA is damaged about 50,000 times per cell per day just because we metabolize oxygen, and that DNA damage has to be repaired correctly. If it's repaired incorrectly, mutations result, which can lead to cancer. And that's been very well documented. So I study the ways that DNA is repaired, and I study the enzymes, actually, that repair the DNA, how they work. So I'm a very, very basic researcher. Lately, my research has led into immunology, so there's a link between DNA repair and the lack of DNA repair and the immune response, and I'm working on that as well.

**Dr. Gold:** Super. Well, I can tell you that we're thrilled that you're here. I look forward to having you back as a guest in the future. Maybe we can talk a little bit about what the future for the Buffett Cancer Center is going to look like at the time that we're together again.

Thank you for tuning into this episode of "Health Care Heart to Heart" with Dr. Jeff Gold. And until next time, stay healthy.