WEBVTT

00:00:00.000 --> 00:00:03.186 Funding for Yale Cancer Answers is

NOTE Confidence: 0.9380176

00:00:03.186 --> 00:00:06.200 provided by Smilow Cancer Hospital.

NOTE Confidence: 0.9380176

00:00:06.200 --> 00:00:08.400 Welcome to Yale Cancer Answers

NOTE Confidence: 0.9380176

00:00:08.400 --> 00:00:10.160 with Doctor Anees Chagpar.

NOTE Confidence: 0.9380176

00:00:10.160 --> 00:00:11.656 Yale Cancer Answers features

NOTE Confidence: 0.9380176

00:00:11.656 --> 00:00:13.526 the latest information on cancer

NOTE Confidence: 0.9380176

00:00:13.526 --> 00:00:15.430 care by welcoming oncologists and

NOTE Confidence: 0.9380176

00:00:15.430 --> 00:00:17.638 specialists who are on the forefront

NOTE Confidence: 0.9380176

00:00:17.699 --> 00:00:19.397 of the battle to fight cancer.

NOTE Confidence: 0.9380176

00:00:19.400 --> 00:00:21.752 This week it's a conversation about new

NOTE Confidence: 0.9380176

00:00:21.752 --> 00:00:24.026 research into the early detection of

NOTE Confidence: 0.9380176

00:00:24.026 --> 00:00:26.426 ovarian cancer with Doctor Stacy Malaker.

NOTE Confidence: 0.9380176

00:00:26.430 --> 00:00:28.434 Dr. Malaker is an assistant professor

NOTE Confidence: 0.9380176

00:00:28.434 --> 00:00:30.238 in the Department of Chemistry

NOTE Confidence: 0.9380176

00:00:30.238 --> 00:00:32.084 at Yale University, and Dr.

NOTE Confidence: 0.9380176

00:00:32.084 --> 00:00:33.926 Chagpar is a professor of Surgical

NOTE Confidence: 0.9380176

00:00:33.926 --> 00:00:36.188 oncology at the Yale School of Medicine.

NOTE Confidence: 0.92948914

00:00:37.390 --> 00:00:39.084 So, Stacy, maybe we can start off

NOTE Confidence: 0.92948914

00:00:39.084 --> 00:00:41.048 by you telling us a little bit more

NOTE Confidence: 0.92948914

00:00:41.048 --> 00:00:42.789 about yourself and what it is you do.

NOTE Confidence: 0.92948914

00:00:43.870 --> 00:00:46.685 I got my PhD at the University of Virginia

NOTE Confidence: 0.92948914

00:00:46.685 --> 00:00:49.793 where I was in the lab of Professor

NOTE Confidence: 0.92948914

00:00:49.793 --> 00:00:53.032 Donald Hunt and he is one of

NOTE Confidence: 0.92948914

00:00:53.032 --> 00:00:55.078 the founding fathers of biological mass

NOTE Confidence: 0.92948914

00:00:55.078 --> 00:00:57.766 spectrometry and mass spec is kind

NOTE Confidence: 0.92948914

00:00:57.766 --> 00:01:00.415 of what I do or what I'm known for.

NOTE Confidence: 0.92948914

00:01:00.420 --> 00:01:03.280 And then I did my postdoc in the

NOTE Confidence: 0.92948914

00:01:03.361 --> 00:01:06.396 the lab of Carolyn Bertozzi, who just

NOTE Confidence: 0.92948914

00:01:06.396 --> 00:01:09.812 recently won the Nobel Prize in Chemistry.

NOTE Confidence: 0.92948914

00:01:09.820 --> 00:01:13.008 And there I got really interested in

NOTE Confidence: 0.92948914

00:01:13.008 --> 00:01:16.580 a class of of proteins called mucins

NOTE Confidence: 0.92948914

00:01:16.580 --> 00:01:19.408 which have tons and tons of sugar

NOTE Confidence: 0.92948914

00:01:19.408 --> 00:01:20.620 units on them.

NOTE Confidence: 0.92948914

00:01:20.620 --> 00:01:22.336 And so I spent

NOTE Confidence: 0.92948914

00:01:22.340 --> 00:01:24.180 five years there researching those.

NOTE Confidence: 0.92948914

00:01:24.180 --> 00:01:27.260 And so now in my own laboratory,

NOTE Confidence: 0.92948914

00:01:27.260 --> 00:01:30.152 I combine the expertise of the

NOTE Confidence: 0.92948914

00:01:30.152 --> 00:01:32.636 instrumentation or the mass spec

NOTE Confidence: 0.92948914

00:01:32.636 --> 00:01:35.414 and the sugars or glycobiology

NOTE Confidence: 0.92948914

00:01:35.420 --> 00:01:37.436 and we do something

NOTE Confidence: 0.92948914

00:01:37.436 --> 00:01:38.300 that's called glycoproteomics,

NOTE Confidence: 0.92948914

00:01:38.300 --> 00:01:40.036 which is studying sugars

NOTE Confidence: 0.92948914

00:01:40.036 --> 00:01:41.338 that modify proteins.

NOTE Confidence: 0.9306428

00:01:41.580 --> 00:01:43.848 So now everybody wants to know, what

NOTE Confidence: 0.9306428

00:01:43.848 --> 00:01:46.815 does any of this have to do with cancer?

NOTE Confidence: 0.9366184

00:01:47.920 --> 00:01:50.110 Sure. So sugars are altered in

NOTE Confidence: 0.9366184

00:01:50.110 --> 00:01:51.990 pretty much every disease that's

NOTE Confidence: 0.9366184

00:01:51.990 --> 00:01:54.078 ever been studied and

NOTE Confidence: 0.9366184

00:01:54.080 --> 00:01:55.436 primarily in cancer,

NOTE Confidence: 0.9366184

00:01:55.436 --> 00:01:57.696 but also other diseases like

NOTE Confidence: 0.9366184

00:01:57.696 --> 00:01:59.826 inflammatory bowel disease or cystic

NOTE Confidence: 0.9366184

00:01:59.826 --> 00:02:01.788 fibrosis or even heart disease.

NOTE Confidence: 0.9366184

00:02:01.788 --> 00:02:04.164 And so we try to monopolize

NOTE Confidence: 0.9366184

00:02:04.164 --> 00:02:07.115 on those changes in the sugar

NOTE Confidence: 0.9366184

00:02:07.115 --> 00:02:09.224 structures to identify

NOTE Confidence: 0.9366184

00:02:09.224 --> 00:02:10.472 new biomarkers or potential

NOTE Confidence: 0.9366184

00:02:10.472 --> 00:02:11.720 therapeutics.

NOTE Confidence: 0.9366184

00:02:12.960 --> 00:02:15.935 Tell us more about your

NOTE Confidence: 0.9366184

00:02:15.935 --> 00:02:18.086 research in particular, what are you

NOTE Confidence: 0.9366184

00:02:18.086 --> 00:02:20.130 looking at and how might this make

NOTE Confidence: 0.9366184

00:02:20.194 --> 00:02:22.366 a difference to people with cancer?

NOTE Confidence: 0.934648

00:02:23.490 --> 00:02:26.850 Sure, this project in

NOTE Confidence: 0.934648

00:02:26.850 --> 00:02:29.090 particular regarding ovarian cancer,

NOTE Confidence: 0.934648

00:02:29.090 --> 00:02:32.420 right now more than 70% of women

NOTE Confidence: 0.934648

00:02:32.420 --> 00:02:34.120 are diagnosed with ovarian

NOTE Confidence: 0.934648

00:02:34.120 --> 00:02:35.804 cancer in the late stages,

NOTE Confidence: 0.934648

00:02:35.804 --> 00:02:38.558 so stage 3 or stage 4 and the five

NOTE Confidence: 0.934648

00:02:38.558 --> 00:02:40.778 year survival rate for women diagnosed

NOTE Confidence: 0.934648

00:02:40.778 --> 00:02:43.049 in those stages is really poor.

NOTE Confidence: 0.934648

00:02:43.050 --> 00:02:45.170 It's less than 20%.

NOTE Confidence: 0.934648

00:02:45.170 --> 00:02:47.685 Now if ovarian cancer is caught in

NOTE Confidence: 0.934648

00:02:47.685 --> 00:02:49.590 early stages like stage 1 or two,

NOTE Confidence: 0.934648

00:02:49.590 --> 00:02:52.026 that five year survival rate goes up to 95%.

NOTE Confidence: 0.934648

00:02:52.026 --> 00:02:53.958 But the problem is that we don't

NOTE Confidence: 0.934648

00:02:53.958 --> 00:02:55.784 have a really good biomarker

NOTE Confidence: 0.934648

00:02:55.784 --> 00:02:57.789 for ovarian cancer right now.

NOTE Confidence: 0.934648

00:02:57.790 --> 00:03:00.238 Right now what is currently used

NOTE Confidence: 0.934648

00:03:00.238 --> 00:03:02.251 is something that's called CA-125

NOTE Confidence: 0.934648

00:03:02.251 --> 00:03:04.918 and CA-125 happens to be one of

NOTE Confidence: 0.934648

00:03:04.918 --> 00:03:07.107 those mucin type proteins that

NOTE Confidence: 0.934648

00:03:07.107 --> 00:03:09.347 I was talking about earlier.

NOTE Confidence: 0.934648

00:03:09.350 --> 00:03:11.343 And so it's this really,

NOTE Confidence: 0.934648

00:03:11.343 --> 00:03:12.908 really huge protein that's decorated

NOTE Confidence: 0.934648

00:03:12.908 --> 00:03:15.190 by tons and tons and tons of sugars.

NOTE Confidence: 0.934648

00:03:15.190 --> 00:03:18.700 And so 80% of its mass is actually sugar

NOTE Confidence: 0.934648

00:03:18.700 --> 00:03:22.484 units as opposed to the protein backbone.

NOTE Confidence: 0.934648

00:03:22.490 --> 00:03:26.362 Again, the sugar units

NOTE Confidence: 0.934648

00:03:26.362 --> 00:03:29.322 are perpetually disordered in cancer

NOTE Confidence: 0.934648

00:03:29.322 --> 00:03:33.210 yet when doctors are detecting the CA-125,

NOTE Confidence: 0.934648

00:03:33.210 --> 00:03:35.360 they're usually only detecting the

NOTE Confidence: 0.934648

00:03:35.360 --> 00:03:37.510 unmodified regions of the protein.

NOTE Confidence: 0.934648

00:03:37.510 --> 00:03:40.331 And so we want to identify altered

NOTE Confidence: 0.934648

00:03:40.331 --> 00:03:43.030 sugar units on this huge protein

NOTE Confidence: 0.934648

00:03:43.030 --> 00:03:45.870 to ideally detect cancer earlier.

NOTE Confidence: 0.934648

00:03:45.870 --> 00:03:48.318 So that if we can do that and identify

NOTE Confidence: 0.934648

00:03:48.318 --> 00:03:49.658 something that's changed early

NOTE Confidence: 0.934648

00:03:49.658 --> 00:03:51.662 on in the progression of cancer,

NOTE Confidence: 0.934648

00:03:51.670 --> 00:03:54.166 then we could ostensibly develop a

NOTE Confidence: 0.934648

00:03:54.166 --> 00:03:56.989 better biomarker and early stage detection.

NOTE Confidence: 0.9350412

00:03:58.070 --> 00:04:01.146 Yeah, I think

NOTE Confidence: 0.9350412

00:04:01.146 --> 00:04:03.210 the problem though is

NOTE Confidence: 0.9350412

00:04:03.210 --> 00:04:05.274 that for ovarian cancer,

NOTE Confidence: 0.9350412

00:04:05.280 --> 00:04:07.720 it's not incredibly common.

NOTE Confidence: 0.9350412

00:04:07.720 --> 00:04:09.757 You're quite right, when it is diagnosed,

NOTE Confidence: 0.9350412

00:04:09.760 --> 00:04:11.460 it's diagnosed late because we

NOTE Confidence: 0.9350412

00:04:11.460 --> 00:04:13.160 don't have a screening test.

NOTE Confidence: 0.9350412

00:04:13.160 --> 00:04:16.198 But one of the questions always is,

NOTE Confidence: 0.9350412

00:04:16.200 --> 00:04:18.380 you know, are there blood

NOTE Confidence: 0.9350412

00:04:18.380 --> 00:04:20.560 tests for detection of cancer?

NOTE Confidence: 0.9350412

00:04:20.560 --> 00:04:22.756 Are there blood tests for screening?

NOTE Confidence: 0.9350412

00:04:22.760 --> 00:04:25.476 And while CA-125 is a biomarker that

NOTE Confidence: 0.9350412

00:04:25.476 --> 00:04:29.128 might be used to help doctors in terms

NOTE Confidence: 0.9350412

00:04:29.128 --> 00:04:31.533 of monitoring progression of disease,

NOTE Confidence: 0.9350412

00:04:31.540 --> 00:04:34.340 it's really not a widespread

NOTE Confidence: 0.9350412

00:04:34.340 --> 00:04:37.140 screening tool like for example,

NOTE Confidence: 0.9350412

00:04:37.140 --> 00:04:39.036 a colaguard would be or

NOTE Confidence: 0.9350412

00:04:39.036 --> 00:04:40.300 a mammogram would be.

NOTE Confidence: 0.9350412

00:04:40.300 --> 00:04:42.939 So is your research trying to look

NOTE Confidence: 0.9350412

00:04:42.939 --> 00:04:45.260 at these altered sugar moieties,

NOTE Confidence: 0.9350412

00:04:45.260 --> 00:04:47.780 really trying to find a screening modality?

NOTE Confidence: 0.9350412

00:04:47.780 --> 00:04:48.896 And if so,

NOTE Confidence: 0.9350412

00:04:48.896 --> 00:04:50.756 would that be administered on

NOTE Confidence: 0.9350412

00:04:50.756 --> 00:04:52.760 a population basis like to all

NOTE Confidence: 0.9350412

00:04:52.760 --> 00:04:55.007 women or would it be for women

NOTE Confidence: 0.9350412

00:04:55.007 --> 00:04:57.419 who are particularly at high risk?

NOTE Confidence: 0.9268508

00:04:58.540 --> 00:05:00.654 So that's a great question and I

NOTE Confidence: 0.9268508

00:05:00.654 --> 00:05:02.820 think that as a basic scientist,

NOTE Confidence: 0.9268508

00:05:02.820 --> 00:05:05.660 I can only say that I'm

NOTE Confidence: 0.9268508

00:05:05.660 --> 00:05:07.346 hopeful that we'll be able

NOTE Confidence: 0.9268508

00:05:07.346 --> 00:05:08.782 to identify something that has

NOTE Confidence: 0.9268508

00:05:08.782 --> 00:05:10.057 changed early on in cancer.

NOTE Confidence: 0.9268508

00:05:10.060 --> 00:05:13.580 So we're using serum from high risk patients,

NOTE Confidence: 0.9268508

00:05:13.580 --> 00:05:17.048 some of whom developed ovarian cancer.

NOTE Confidence: 0.9268508

00:05:17.050 --> 00:05:18.986 And so the idea would be that we

NOTE Confidence: 0.9268508

00:05:18.986 --> 00:05:20.502 do identify something that could

NOTE Confidence: 0.9268508

00:05:20.502 --> 00:05:22.446 be used as a screening modality,

NOTE Confidence: 0.9268508

00:05:22.450 --> 00:05:24.442 but I don't want to make any early

NOTE Confidence: 0.9268508

00:05:24.442 --> 00:05:26.010 promises since we haven't actually,

NOTE Confidence: 0.9268508

00:05:26.010 --> 00:05:27.930 you know, identified anything quite yet.

NOTE Confidence: 0.93441564

00:05:28.210 --> 00:05:29.715 Tell us a little bit

NOTE Confidence: 0.93441564

00:05:29.715 --> 00:05:30.810 more about your project.

NOTE Confidence: 0.93441564

00:05:30.810 --> 00:05:32.736 I mean, when you say you're

NOTE Confidence: 0.93441564

00:05:32.736 --> 00:05:34.490 looking at high risk women,

NOTE Confidence: 0.93441564

00:05:34.490 --> 00:05:37.208 you tell us more about who those women are.

NOTE Confidence: 0.93441564

00:05:37.210 --> 00:05:39.964 And the concept that you kind of laid out,

NOTE Confidence: 0.93441564

00:05:39.970 --> 00:05:41.490 if I've understood it correctly,

NOTE Confidence: 0.93441564

00:05:41.490 --> 00:05:42.890 is that you're looking

NOTE Confidence: 0.93441564

00:05:42.890 --> 00:05:44.290 at these high-risk women.

NOTE Confidence: 0.93441564

00:05:44.290 --> 00:05:47.220 You're taking blood samples from

NOTE Confidence: 0.93441564

00:05:47.220 --> 00:05:49.615 them and comparing those of them

NOTE Confidence: 0.93441564

00:05:49.615 --> 00:05:51.958 who went on to truly develop

NOTE Confidence: 0.93441564

00:05:51.958 --> 00:05:54.730 ovarian cancer to those who didn't?

NOTE Confidence: 0.93441564

00:05:54.730 --> 00:05:56.370 Is that right?

NOTE Confidence: 0.928521

00:05:56.370 --> 00:05:57.930 That's basically correct.

NOTE Confidence: 0.928521

00:05:57.930 --> 00:06:01.570 So we have access to approximately 4000

NOTE Confidence: 0.928521

00:06:01.650 --> 00:06:04.370 serum samples from high-risk women.

NOTE Confidence: 0.928521

00:06:04.370 --> 00:06:05.855 These are women that have

NOTE Confidence: 0.928521

00:06:05.855 --> 00:06:07.496 been diagnosed with the BRCA,

NOTE Confidence: 0.928521

00:06:07.496 --> 00:06:09.280 one or two mutations.

NOTE Confidence: 0.928521

00:06:09.280 --> 00:06:12.836 So from the point of genetic diagnosis,

NOTE Confidence: 0.928521

00:06:12.840 --> 00:06:15.759 you know throughout the years many,

NOTE Confidence: 0.928521

00:06:15.760 --> 00:06:17.315 many samples have been collected

NOTE Confidence: 0.928521

00:06:17.315 --> 00:06:18.559 from these various women.

NOTE Confidence: 0.928521

00:06:18.560 --> 00:06:21.185 And so to kind of develop our

NOTE Confidence: 0.928521

00:06:21.185 --> 00:06:23.164 technology we're using women that

NOTE Confidence: 0.928521

00:06:23.164 --> 00:06:25.109 have not actually been diagnosed

NOTE Confidence: 0.928521

00:06:25.109 --> 00:06:27.800 just to be able to identify the

NOTE Confidence: 0.928521

00:06:27.800 --> 00:06:29.905 CA-125 modifications or sugar units

NOTE Confidence: 0.928521

00:06:29.905 --> 00:06:32.493 and then we'd basically be given

NOTE Confidence: 0.928521

00:06:32.493 --> 00:06:34.533 a blinded sample and hopefully

NOTE Confidence: 0.928521

00:06:34.533 --> 00:06:36.596 identify those biomarkers

NOTE Confidence: 0.928521

00:06:36.596 --> 00:06:39.476 or what have you that could indicate

NOTE Confidence: 0.928521

00:06:39.476 --> 00:06:42.010 cancer versus non cancerous samples.

NOTE Confidence: 0.91922235

00:06:42.770 --> 00:06:46.970 And so that sounds really interesting

NOTE Confidence: 0.91922235

00:06:46.970 --> 00:06:49.730 when we think about BRC A1 and two

NOTE Confidence: 0.91922235

00:06:49.730 --> 00:06:52.255 often times we think not only of

NOTE Confidence: 0.91922235

00:06:52.255 --> 00:06:54.520 ovarian cancer but also of breast

NOTE Confidence: 0.91922235

00:06:54.520 --> 00:06:57.125 cancer and one of the questions that

NOTE Confidence: 0.91922235

00:06:57.125 --> 00:07:00.565 is often asked is, is there a

NOTE Confidence: 0.91922235

00:07:00.565 --> 00:07:03.369 blood test for breast cancer as well.

NOTE Confidence: 0.91922235

00:07:03.370 --> 00:07:05.520 You mentioned earlier that the

NOTE Confidence: 0.91922235

00:07:05.520 --> 00:07:08.454 sugar moieties tend to be, you know,

NOTE Confidence: 0.91922235

00:07:08.454 --> 00:07:10.414 involved or disrupted or altered

NOTE Confidence: 0.91922235

00:07:10.414 --> 00:07:12.589 in a variety of processes.

NOTE Confidence: 0.91922235

00:07:12.590 --> 00:07:14.510 Do you think that your technology

NOTE Confidence: 0.91922235

00:07:14.510 --> 00:07:17.141 might have a role to play in breast

NOTE Confidence: 0.91922235

00:07:17.141 --> 00:07:19.061 cancer as well as ovarian cancer?

NOTE Confidence: 0.91922235

00:07:19.070 --> 00:07:21.632 Or is it really something specific about

NOTE Confidence: 0.91922235

00:07:21.632 --> 00:07:23.828 ovarian cancer that you're looking at?

NOTE Confidence: 0.93097055

00:07:24.510 --> 00:07:27.149 It's pretty much any epithelial cancer,

NOTE Confidence: 0.93097055

00:07:27.150 --> 00:07:29.035 you know, has these altered

NOTE Confidence: 0.93097055

00:07:29.035 --> 00:07:30.994 mucin structures and so

NOTE Confidence: 0.93097055

00:07:30.994 --> 00:07:35.390 CA-125 is known as Mucin 16 or Mach 16.

NOTE Confidence: 0.93097055

00:07:35.390 --> 00:07:38.742 Mucin one or Mach one is dysregulated or

NOTE Confidence: 0.93097055

00:07:38.742 --> 00:07:41.557 upregulated in over 90% of breast carcinomas.

NOTE Confidence: 0.93097055

00:07:41.557 --> 00:07:44.131 So this could ostensibly be extended

NOTE Confidence: 0.93097055

00:07:44.131 --> 00:07:46.158 to other cancers.

NOTE Confidence: 0.93097055

00:07:46.158 --> 00:07:48.224 Pancreatic cancer is another one that

NOTE Confidence: 0.93097055

00:07:48.224 --> 00:07:50.065 would be really interesting to look at.

NOTE Confidence: 0.93097055

00:07:50.070 --> 00:07:52.326 Pretty much any epithelial cancer is

NOTE Confidence: 0.93097055

00:07:52.326 --> 00:07:53.830 associated with dysregulated mucins.

NOTE Confidence: 0.93529564

00:07:54.830 --> 00:07:58.350 And so presumably in this population

NOTE Confidence: 0.93529564

00:07:58.350 --> 00:08:02.287 of BRCA one and two gene mutation carriers,

NOTE Confidence: 0.93529564

00:08:02.290 --> 00:08:05.134 you'd be able to see not only the

NOTE Confidence: 0.93529564

00:08:05.134 --> 00:08:07.102 comparison between those who developed

NOTE Confidence: 0.93529564

00:08:07.102 --> 00:08:09.810 ovarian cancer and those who did not,

NOTE Confidence: 0.93529564

00:08:09.810 --> 00:08:11.987 but also those who developed breast cancer

NOTE Confidence: 0.93529564

00:08:11.987 --> 00:08:14.114 or in fact pancreatic cancer because

NOTE Confidence: 0.93529564

00:08:14.114 --> 00:08:16.746 that's another cancer that tends to be

NOTE Confidence: 0.93529564

00:08:16.808 --> 00:08:18.970 associated with those mutations, right?

NOTE Confidence: 0.93121064

00:08:19.410 --> 00:08:21.622 Yeah, absolutely. I would have to talk

NOTE Confidence: 0.93121064

00:08:21.622 --> 00:08:23.740 to my collaborators to see how many

NOTE Confidence: 0.93121064

00:08:23.740 --> 00:08:25.408 of these women actually did develop

NOTE Confidence: 0.93121064

00:08:25.465 --> 00:08:27.210 breast and or pancreatic cancer.

NOTE Confidence: 0.93121064

00:08:27.210 --> 00:08:28.645 But that could be done.

NOTE Confidence: 0.93182003

00:08:29.600 --> 00:08:32.048 So you know one of the things when we

NOTE Confidence: 0.93182003

00:08:32.048 --> 00:08:34.477 think about that kind of an experiment,

NOTE Confidence: 0.93182003

00:08:34.480 --> 00:08:35.775 one would think that time

NOTE Confidence: 0.93182003

00:08:35.775 --> 00:08:37.280 has something to do with it,

NOTE Confidence: 0.93182003

00:08:37.280 --> 00:08:41.072 right that it takes time to develop

NOTE Confidence: 0.93182003

00:08:41.072 --> 00:08:43.837 these alterations in the protein

NOTE Confidence: 0.93182003

00:08:43.837 --> 00:08:46.435 structure or in the sugar structure

NOTE Confidence: 0.93182003

00:08:46.440 --> 00:08:48.358 and it takes time to develop cancer.

NOTE Confidence: 0.93182003

00:08:48.360 --> 00:08:53.328 So have you found any correlation

NOTE Confidence: 0.93182003

00:08:53.328 --> 00:08:56.520 between the the timing of things,

NOTE Confidence: 0.93182003

00:08:56.520 --> 00:08:59.131 I mean presumably if somebody just gets

NOTE Confidence: 0.93182003

00:08:59.131 --> 00:09:02.856 a blood sample today and you know

NOTE Confidence: 0.93182003

00:09:02.856 --> 00:09:05.187 and then isn't followed for very long,

NOTE Confidence: 0.93182003

00:09:05.190 --> 00:09:07.188 you may not find an association.

NOTE Confidence: 0.9339164

00:09:08.350 --> 00:09:10.445 Yeah, that's a really great point.

NOTE Confidence: 0.9339164

00:09:10.445 --> 00:09:12.790 And you know this is we're very,

NOTE Confidence: 0.9339164

00:09:12.790 --> 00:09:14.750 very, very early on in this project.

NOTE Confidence: 0.9339164

00:09:14.750 --> 00:09:17.190 It was just awarded a few months ago.

NOTE Confidence: 0.9339164

00:09:17.190 --> 00:09:19.254 And so I anticipate we will

NOTE Confidence: 0.9339164

00:09:19.254 --> 00:09:21.030 actually see changes over time.

NOTE Confidence: 0.9339164

00:09:21.030 --> 00:09:22.986 But because again

NOTE Confidence: 0.9339164

00:09:22.986 --> 00:09:24.677 we haven't actually done much

NOTE Confidence: 0.9339164

00:09:24.677 --> 00:09:26.267 of the research quite yet,

NOTE Confidence: 0.9339164

00:09:26.270 --> 00:09:27.827 I can't give you a straight answer to that.

NOTE Confidence: 0.9314148

00:09:28.310 --> 00:09:32.896 But of these 4000 women,

NOTE Confidence: 0.9314148

00:09:32.896 --> 00:09:36.794 are you kind of looking at these women

NOTE Confidence: 0.9314148

00:09:36.794 --> 00:09:40.224 going forward as well or is this kind of

NOTE Confidence: 0.9314148

00:09:40.224 --> 00:09:42.606 a deidentified mass sample that you've

NOTE Confidence: 0.9314148

00:09:42.606 --> 00:09:45.602 got where you've got some clinical

NOTE Confidence: 0.9314148

00:09:45.602 --> 00:09:48.085 correlation data and would have to

NOTE Confidence: 0.9314148

00:09:48.085 --> 00:09:50.762 use covariates to see whether a

NOTE Confidence: 0.9314148

00:09:50.762 --> 00:09:52.389 relationship existed. Fo example,

NOTE Confidence: 0.9314148

00:09:52.389 --> 00:09:54.147 looking at age as a surrogate.

NOTE Confidence: 0.9352205

00:09:55.610 --> 00:09:57.050 OK. So just to clarify,

NOTE Confidence: 0.9352205

00:09:57.050 --> 00:09:58.494 it's not 4000 women,

NOTE Confidence: 0.9352205

00:09:58.494 --> 00:10:00.660 it's 4000 samples that have been

NOTE Confidence: 0.9352205

00:10:00.729 --> 00:10:02.969 collected from I think 50 to 100

NOTE Confidence: 0.9352205

00:10:02.969 --> 00:10:05.089 women over the course of their life.

NOTE Confidence: 0.9352205

00:10:07.890 --> 00:10:09.265 I see, so then you're comparing samples

NOTE Confidence: 0.9352205

00:10:09.265 --> 00:10:10.970 as you go along in time.

NOTE Confidence: 0.9352205

00:10:10.970 --> 00:10:14.102 So there might be out of the

NOTE Confidence: 0.9352205

00:10:14.102 --> 00:10:17.690 4000, say 100 people,

NOTE Confidence: 0.9352205

00:10:17.690 --> 00:10:19.888 then that would be like 40 time

NOTE Confidence: 0.9352205

00:10:19.888 --> 00:10:21.609 points per person on average,

NOTE Confidence: 0.9352205

00:10:21.850 --> 00:10:22.770 something like that.

NOTE Confidence: 0.94081473

00:10:24.060 --> 00:10:25.544 So then that's very cool, right,

NOTE Confidence: 0.94081473

00:10:25.544 --> 00:10:27.488 because then you could see whether

NOTE Confidence: 0.94081473

00:10:27.488 --> 00:10:29.720 these people are

NOTE Confidence: 0.94081473

00:10:29.720 --> 00:10:32.380 acquiring these mutations.

NOTE Confidence: 0.94081473

00:10:32.380 --> 00:10:35.430 Exactly, exactly.

NOTE Confidence: 0.94081473

00:10:35.430 --> 00:10:37.970 So now that makes a lot more

NOTE Confidence: 0.94081473

00:10:37.970 --> 00:10:40.455 sense because now you can actually see,

NOTE Confidence: 0.94081473

00:10:40.460 --> 00:10:43.228 you know, how long does it take for

NOTE Confidence: 0.94081473

00:10:43.228 --> 00:10:45.933 people to develop these alterations and

NOTE Confidence: 0.94081473

00:10:45.933 --> 00:10:49.380 do these alterations once they do occur,

NOTE Confidence: 0.94081473

00:10:49.380 --> 00:10:53.324 how quickly or not do people develop cancer?

NOTE Confidence: 0.94081473

00:10:53.330 --> 00:10:54.968 Is that kind of the idea?

NOTE Confidence: 0.94081473

00:10:54.970 --> 00:10:56.410 Yes, precisely.

NOTE Confidence: 0.94081473

00:10:56.410 --> 00:10:57.874 Yeah, that's very cool.

NOTE Confidence: 0.94081473

00:10:57.874 --> 00:10:59.610 So tell us a little bit more.

NOTE Confidence: 0.94081473

00:10:59.610 --> 00:11:01.170 I realized that this is

NOTE Confidence: 0.94081473

00:11:01.170 --> 00:11:03.170 a fresh project,

NOTE Confidence: 0.94081473

00:11:03.170 --> 00:11:05.690 hot off the presses, just awarded.

NOTE Confidence: 0.94081473

00:11:05.690 --> 00:11:07.573 Tell us about some of the research

NOTE Confidence: 0.94081473

00:11:07.573 --> 00:11:09.650 that kind of led up to this award.

NOTE Confidence: 0.94081473

00:11:09.650 --> 00:11:12.368 What have you found in your

NOTE Confidence: 0.94081473

00:11:12.368 --> 00:11:13.727 more earlier studies?

NOTE Confidence: 0.924282204

00:11:15.690 --> 00:11:18.510 When I was a post doc,

NOTE Confidence: 0.924282204

00:11:18.510 --> 00:11:21.079 when we do mass spectrometry we

NOTE Confidence: 0.924282204

00:11:21.079 --> 00:11:24.161 usually take a protein and we digest

NOTE Confidence: 0.924282204

00:11:24.161 --> 00:11:26.903 it using enzymes into short peptides

NOTE Confidence: 0.924282204

00:11:26.903 --> 00:11:30.065 and then you know we basically blast

NOTE Confidence: 0.924282204

00:11:30.065 --> 00:11:32.825 those apart by bombarding them

NOTE Confidence: 0.924282204

00:11:32.825 --> 00:11:35.444 with gas molecules and/or radical

NOTE Confidence: 0.924282204

00:11:35.444 --> 00:11:37.796 anions and by the way that they

NOTE Confidence: 0.924282204

00:11:37.796 --> 00:11:40.216 fall apart we can kind of piece back

NOTE Confidence: 0.924282204

00:11:40.216 --> 00:11:42.210 what was present there previously.

NOTE Confidence: 0.924282204

00:11:42.210 --> 00:11:43.930 But one of the problems with these really,

NOTE Confidence: 0.924282204

00:11:43.930 --> 00:11:45.830 really densely like oscillated proteins

NOTE Confidence: 0.924282204

00:11:45.830 --> 00:11:48.074 or you know sugar modified proteins

NOTE Confidence: 0.924282204

00:11:48.074 --> 00:11:50.290 is that they can't be chopped up by

NOTE Confidence: 0.924282204

00:11:50.290 --> 00:11:52.527 the normal enzymes that we would use.

NOTE Confidence: 0.924282204

00:11:52.530 --> 00:11:55.806 And so when I was in my postdoc I

NOTE Confidence: 0.924282204

00:11:55.806 --> 00:11:57.810 characterized a series of enzymes that

NOTE Confidence: 0.924282204

00:11:57.810 --> 00:12:00.248 we call mucineases that are actually able

NOTE Confidence: 0.924282204

00:12:00.248 --> 00:12:02.810 to create short segments of the protein

NOTE Confidence: 0.924282204

00:12:02.810 --> 00:12:05.448 that are amenable to mass spec analysis.

NOTE Confidence: 0.924282204

00:12:05.450 --> 00:12:07.515 So before we couldn't look at these

NOTE Confidence: 0.924282204

00:12:07.515 --> 00:12:10.170 at all by my instrumentation method,

NOTE Confidence: 0.924282204

00:12:10.170 --> 00:12:12.242 but now we can actually get pieces and

NOTE Confidence: 0.924282204

00:12:12.242 --> 00:12:14.580 see them in the in the mass spectrometer.

NOTE Confidence: 0.93528324

00:12:14.740 --> 00:12:17.511 So why is that important?

NOTE Confidence: 0.93528324

00:12:17.511 --> 00:12:20.430 Why is looking at these with mass

NOTE Confidence: 0.93528324

00:12:20.529 --> 00:12:22.415 spec so important as opposed to

NOTE Confidence: 0.93528324

00:12:22.415 --> 00:12:24.620 looking at them with other techniques?

NOTE Confidence: 0.93528324

00:12:24.620 --> 00:12:26.040 Or are there no other

NOTE Confidence: 0.93528324

00:12:26.040 --> 00:12:27.460 techniques to look at them?

NOTE Confidence: 0.93528324

00:12:28.380 --> 00:12:32.068 I mean, you could potentially

NOTE Confidence: 0.93528324

00:12:32.068 --> 00:12:36.450 use staining techniques, or NOTE Confidence: 0.93528324

00:12:36.450 --> 00:12:38.430 certain other techniques.

NOTE Confidence: 0.93528324

00:12:38.430 --> 00:12:39.470 I'm not saying that mass

NOTE Confidence: 0.93528324

00:12:39.470 --> 00:12:40.510 spec is the only technique.

NOTE Confidence: 0.93528324

00:12:40.510 --> 00:12:43.667 However, in my opinion,

NOTE Confidence: 0.93528324

00:12:43.670 --> 00:12:45.070 and of course I'm biased,

NOTE Confidence: 0.93528324

00:12:45.070 --> 00:12:47.401 it's the best way of actually digging

NOTE Confidence: 0.93528324

00:12:47.401 --> 00:12:49.711 into what sugar structures are modifying

NOTE Confidence: 0.93528324

00:12:49.711 --> 00:12:52.189 what amino acids in what patterns.

NOTE Confidence: 0.93528324

00:12:52.190 --> 00:12:54.006 And you're not going to get that molecular

NOTE Confidence: 0.93528324

00:12:54.006 --> 00:12:55.707 level of detail using other methods.

NOTE Confidence: 0.9232246

00:12:57.280 --> 00:13:00.112 So one of the things

NOTE Confidence: 0.9232246

00:13:00.112 --> 00:13:02.513 that you did before embarking on

NOTE Confidence: 0.9232246

00:13:02.513 --> 00:13:05.384 this was to figure out how you

NOTE Confidence: 0.9232246

00:13:05.384 --> 00:13:07.604 could actually use mass spec to

NOTE Confidence: 0.9232246

00:13:07.604 --> 00:13:10.025 look at at these sugar moieties

NOTE Confidence: 0.9232246

00:13:10.025 --> 00:13:12.200 in these proteins going forward.

NOTE Confidence: 0.9232246

00:13:12.760 --> 00:13:14.596 Precisely, yes. And so my lab,

NOTE Confidence: 0.9232246

00:13:14.600 --> 00:13:16.796 you know, I have kind of two arms in

NOTE Confidence: 0.9232246

00:13:16.796 --> 00:13:19.872 my laboratory, one being, you know,

NOTE Confidence: 0.9232246

00:13:19.872 --> 00:13:21.426 instrumentation development and

NOTE Confidence: 0.9232246

00:13:21.426 --> 00:13:24.038 method development so that we can

NOTE Confidence: 0.9232246

00:13:24.038 --> 00:13:25.966 better see these altered sugar

NOTE Confidence: 0.9232246

00:13:25.966 --> 00:13:27.858 structures and various diseases.

NOTE Confidence: 0.9232246

00:13:27.860 --> 00:13:30.276 And then another arm where we study

NOTE Confidence: 0.9232246

00:13:30.276 --> 00:13:32.060 the biological role of the altered,

NOTE Confidence: 0.9232246

00:13:32.060 --> 00:13:34.220 glycosylation patterns in

NOTE Confidence: 0.9232246

00:13:34.220 --> 00:13:35.540 cellular systems.

NOTE Confidence: 0.9379816

00:13:36.220 --> 00:13:37.966 Fantastic. Well, we're going to take

NOTE Confidence: 0.9379816

00:13:37.966 --> 00:13:40.099 a short break for a medical minute,

NOTE Confidence: 0.9379816

00:13:40.100 --> 00:13:41.840 but please stay tuned to learn

NOTE Confidence: 0.9379816

00:13:41.840 --> 00:13:43.407 more about the early detection

NOTE Confidence: 0.9379816

00:13:43.407 --> 00:13:45.459 of ovarian cancer with my guest,

NOTE Confidence: 0.9379816

00:13:45.460 --> 00:13:46.900 Doctor Stacy Malaker.

NOTE Confidence: 0.9379816

00:13:47.500 --> 00:13:49.545 Funding for Yale Cancer Answers

NOTE Confidence: 0.9379816

00:13:49.545 --> 00:13:51.590 comes from Smilow Cancer Hospital,

NOTE Confidence: 0.9379816

00:13:51.590 --> 00:13:53.782 where their Oncodermatology program

NOTE Confidence: 0.9379816

00:13:53.782 --> 00:13:55.426 treats dermatologic concerns,

NOTE Confidence: 0.9379816

00:13:55.430 --> 00:13:57.435 including very dry skin, itching,

NOTE Confidence: 0.9379816

00:13:57.435 --> 00:13:59.440 and skin changes that arise as

NOTE Confidence: 0.9379816

00:13:59.514 --> 00:14:01.590 side effects from chemotherapy.

NOTE Confidence: 0.9379816

00:14:01.590 --> 00:14:05.590 Smilowcancerhospital.org.

NOTE Confidence: 0.9379816

00:14:05.590 --> 00:14:07.486 The American Cancer Society

NOTE Confidence: 0.9379816

00:14:07.486 --> 00:14:09.590 estimates that over 200,000 cases

NOTE Confidence: 0.9379816

00:14:09.590 --> 00:14:11.290 of Melanoma will be diagnosed

NOTE Confidence: 0.9379816

00:14:11.290 --> 00:14:13.389 in the United States this year,

NOTE Confidence: 0.9379816

00:14:13.390 --> 00:14:16.659 with over 1000 patients in Connecticut alone.

NOTE Confidence: 0.9379816

00:14:16.660 --> 00:14:18.830 While Melanoma accounts for only

NOTE Confidence: 0.9379816

00:14:18.830 --> 00:14:21.308 about 1% of skin cancer cases,

NOTE Confidence: 0.9379816

00:14:21.308 --> 00:14:24.340 it causes the most skin cancer deaths,

NOTE Confidence: 0.9379816

00:14:24.340 --> 00:14:25.744 but when detected early,

NOTE Confidence: 0.9379816

00:14:25.744 --> 00:14:28.420 it is easily treated and highly curable.

NOTE Confidence: 0.9379816

00:14:28.420 --> 00:14:30.448 Clinical trials are currently

NOTE Confidence: 0.9379816

00:14:30.448 --> 00:14:32.476 underway at federally designated

NOTE Confidence: 0.9379816

00:14:32.476 --> 00:14:34.226 comprehensive Cancer centers such

NOTE Confidence: 0.9379816

00:14:34.226 --> 00:14:36.578 as Yale Cancer Center and Smilow

NOTE Confidence: 0.9379816

00:14:36.578 --> 00:14:38.685 Cancer Hospital to test innovative

NOTE Confidence: 0.9379816

00:14:38.685 --> 00:14:40.393 new treatments for Melanoma.

NOTE Confidence: 0.9379816

00:14:40.400 --> 00:14:42.560 The goal of the Specialized Programs

NOTE Confidence: 0.9379816

00:14:42.560 --> 00:14:44.709 of Research Excellence in Skin Cancer

NOTE Confidence: 0.9379816

00:14:44.709 --> 00:14:46.659 grant is to better understand the

NOTE Confidence: 0.9379816

00:14:46.659 --> 00:14:49.024 biology of skin cancer with a focus

NOTE Confidence: 0.9379816

00:14:49.024 --> 00:14:51.166 on discovering targets that will lead

NOTE Confidence: 0.9379816

00:14:51.166 --> 00:14:53.596 to improve diagnosis and treatment.

NOTE Confidence: 0.9379816

00:14:53.600 --> 00:14:56.032 More information is available

NOTE Confidence: 0.9379816

00:14:56.032 --> 00:14:57.062 at yalecancercenter.org.

NOTE Confidence: 0.9379816

00:14:57.062 --> 00:14:59.594 You're listening to Connecticut Public Radio.

NOTE Confidence: 0.93090713

00:15:01.760 --> 00:15:03.960 Welcome back to Yale Cancer Answers.

NOTE Confidence: 0.93090713

00:15:03.960 --> 00:15:05.560 This is Dr. Anees Chagpar,

NOTE Confidence: 0.93090713

00:15:05.560 --> 00:15:07.582 and I'm joined tonight by my

NOTE Confidence: 0.93090713

00:15:07.582 --> 00:15:09.054 guest doctor Stacy Malaker.

NOTE Confidence: 0.93090713

00:15:09.054 --> 00:15:10.944 We're talking about the early

NOTE Confidence: 0.93090713

00:15:10.944 --> 00:15:12.640 detection of ovarian cancer.

NOTE Confidence: 0.93090713

00:15:12.640 --> 00:15:13.960 As all of you know,

NOTE Confidence: 0.93090713

00:15:13.960 --> 00:15:15.910 this has been widely talked

NOTE Confidence: 0.93090713

00:15:15.910 --> 00:15:18.332 about as the silent cancer and

NOTE Confidence: 0.93090713

00:15:18.332 --> 00:15:20.317 the cancer that whispers.

NOTE Confidence: 0.93090713

00:15:20.320 --> 00:15:22.992 And Stacy in her lab is trying to

NOTE Confidence: 0.93090713

00:15:22.992 --> 00:15:25.557 figure out whether we can actually,

NOTE Confidence: 0.93090713

00:15:25.560 --> 00:15:27.680 well, make ovarian cancer speak

NOTE Confidence: 0.93090713

00:15:27.680 --> 00:15:30.295 a little bit more loudly by

NOTE Confidence: 0.93090713

00:15:30.295 --> 00:15:32.770 looking at sugar molecules and

NOTE Confidence: 0.93090713

00:15:32.770 --> 00:15:35.520 how they're disrupted or altered.

NOTE Confidence: 0.93090713

00:15:35.520 --> 00:15:37.116 And Stacy, right before the break,

NOTE Confidence: 0.93090713

00:15:37.120 --> 00:15:39.451 one of the things that you were

NOTE Confidence: 0.93090713

00:15:39.451 --> 00:15:41.916 talking about is that in the work

NOTE Confidence: 0.93090713

00:15:41.916 --> 00:15:44.148 up to your current project which

NOTE Confidence: 0.93090713

00:15:44.148 --> 00:15:46.480 is looking at how these alterations

NOTE Confidence: 0.93090713

00:15:46.480 --> 00:15:49.176 over time are changing and how that

NOTE Confidence: 0.93090713

00:15:49.176 --> 00:15:51.352 might affect people with a BRCA 1 or 2

NOTE Confidence: 0.93090713

00:15:51.352 --> 00:15:54.390 mutation both in the

NOTE Confidence: 0.93090713

00:15:54.390 --> 00:15:55.710 development of ovarian cancer

NOTE Confidence: 0.93090713

00:15:55.710 --> 00:15:57.280 your primary of interest,

NOTE Confidence: 0.93090713

00:15:57.280 --> 00:15:58.944 but also other cancers.

NOTE Confidence: 0.93090713

00:15:58.944 --> 00:16:01.861 One of the things that your lab

NOTE Confidence: 0.93090713

00:16:01.861 --> 00:16:04.470 did was to really look at how

NOTE Confidence: 0.93090713

00:16:04.470 --> 00:16:07.370 you can use mass spectrometry

NOTE Confidence: 0.93090713

00:16:07.370 --> 00:16:10.690 to look at these alterations,

NOTE Confidence: 0.93090713

00:16:10.690 --> 00:16:13.810 which is something that you really

NOTE Confidence: 0.93090713

00:16:13.810 --> 00:16:17.538 couldn't do otherwise and you couldn't

NOTE Confidence: 0.93090713

00:16:17.538 --> 00:16:20.610 do and look at at the molecular

NOTE Confidence: 0.93090713

00:16:20.610 --> 00:16:22.210 level with mass spectrometry.

NOTE Confidence: 0.93090713

00:16:22.210 --> 00:16:25.730 So I guess the other question that I have is,

00:16:26.002 --> 00:16:27.906 can you tell us a little bit

NOTE Confidence: 0.93090713

00:16:27.906 --> 00:16:29.529 more about this technology?

NOTE Confidence: 0.93090713

00:16:29.530 --> 00:16:32.029 I mean presumably if you can now

NOTE Confidence: 0.93090713

00:16:32.029 --> 00:16:34.885 look at the sugar moieties and as

NOTE Confidence: 0.93090713

00:16:34.885 --> 00:16:37.868 you said before the break that these

NOTE Confidence: 0.93090713

00:16:37.868 --> 00:16:40.442 alterations are seen in not just

NOTE Confidence: 0.93090713

00:16:40.442 --> 00:16:43.608 cancer but a variety of other diseases.

NOTE Confidence: 0.93090713

00:16:43.610 --> 00:16:47.486 How is this being utilized now

NOTE Confidence: 0.93090713

00:16:47.490 --> 00:16:50.535 in terms of of looking at other

NOTE Confidence: 0.93090713

00:16:50.535 --> 00:16:52.730 cancers and other diseases?

NOTE Confidence: 0.93090713

00:16:52.730 --> 00:16:54.926 I mean, how do you see this moving forward?

NOTE Confidence: 0.92526495

00:16:56.330 --> 00:16:58.346 Yeah, I mean, the world

NOTE Confidence: 0.92526495

00:16:58.346 --> 00:16:59.690 is our oyster really.

NOTE Confidence: 0.92526495

00:16:59.690 --> 00:17:01.524 We have this is 1 project of

NOTE Confidence: 0.92526495

00:17:01.524 --> 00:17:03.529 of many in my lab right now.

NOTE Confidence: 0.92526495

00:17:03.530 --> 00:17:06.754 We're looking at cardiovascular disease.

NOTE Confidence: 0.92526495

00:17:06.754 --> 00:17:08.170 We're looking at

NOTE Confidence: 0.92526495

00:17:08.170 --> 00:17:09.490 breast cancer,

NOTE Confidence: 0.92526495

00:17:09.490 --> 00:17:12.400 but in a different fashion.

NOTE Confidence: 0.92526495

00:17:12.400 --> 00:17:14.885 And we also look at changes in

NOTE Confidence: 0.92526495

00:17:14.885 --> 00:17:16.692 intestinal linings and stress and

NOTE Confidence: 0.92526495

00:17:16.692 --> 00:17:19.037 depression and so on and so forth.

NOTE Confidence: 0.92526495

00:17:19.040 --> 00:17:21.158 And so we're really trying to

NOTE Confidence: 0.92526495

00:17:21.158 --> 00:17:22.570 monopolize on these developments

NOTE Confidence: 0.92526495

00:17:22.631 --> 00:17:24.941 that we've made in order to study

NOTE Confidence: 0.92526495

00:17:24.941 --> 00:17:26.612 altered sugar structures in a

NOTE Confidence: 0.92526495

00:17:26.612 --> 00:17:28.157 whole host of different diseases.

NOTE Confidence: 0.93757594

00:17:29.520 --> 00:17:32.184 And so tell us a little bit more about,

NOTE Confidence: 0.93757594

00:17:32.190 --> 00:17:34.190 you know, these sugar moieties.

NOTE Confidence: 0.93757594

00:17:34.190 --> 00:17:36.734 I mean, I know that you became very

NOTE Confidence: 0.93757594

00:17:36.734 --> 00:17:38.963 interested in these during your postdoc

NOTE Confidence: 0.93757594

00:17:38.963 --> 00:17:41.255 working with a Nobel Prize winner

NOTE Confidence: 0.93757594

00:17:41.328 --> 00:17:43.470 whose lab really looked at these,

NOTE Confidence: 0.93757594

00:17:43.470 --> 00:17:46.070 these molecules. But you know,

NOTE Confidence: 0.93757594

00:17:46.070 --> 00:17:49.490 these days I think a lot of people think

NOTE Confidence: 0.93757594

00:17:49.490 --> 00:17:52.436 about cancer from the perspective of

NOTE Confidence: 0.93757594

00:17:52.436 --> 00:17:56.733 genetics and they think about it from the

NOTE Confidence: 0.93757594

00:17:56.733 --> 00:17:59.045 perspective of environmental factors.

NOTE Confidence: 0.93757594

00:17:59.050 --> 00:18:01.703 But we really don't think about how

NOTE Confidence: 0.93757594

00:18:01.703 --> 00:18:04.528 these two things affect sugars.

NOTE Confidence: 0.93757594

00:18:04.530 --> 00:18:06.778 So can you tell us a little bit

NOTE Confidence: 0.93757594

00:18:06.778 --> 00:18:08.253 more about those interactions

NOTE Confidence: 0.93757594

00:18:08.253 --> 00:18:10.767 and how prevalent they are?

NOTE Confidence: 0.93757594

00:18:10.770 --> 00:18:13.087 I mean, do you really think that

NOTE Confidence: 0.93757594

00:18:13.087 --> 00:18:15.517 by looking at these sugar muleides

NOTE Confidence: 0.93757594

00:18:15.517 --> 00:18:18.186 that we might actually, you know,

NOTE Confidence: 0.93757594

00:18:18.186 --> 00:18:21.182 kind of unlock a portion of cancer

NOTE Confidence: 0.93757594

00:18:21.182 --> 00:18:23.805 biology that had heretofore been

NOTE Confidence: 0.93757594

00:18:23.805 --> 00:18:26.967 largely well overlooked to some degree?

NOTE Confidence: 0.9343778

00:18:28.090 --> 00:18:28.890 Yeah, absolutely.

NOTE Confidence: 0.9343778

00:18:28.890 --> 00:18:31.874 I think that sugar structures,

NOTE Confidence: 0.9343778

00:18:31.874 --> 00:18:33.626 sugar structures, excuse me,

NOTE Confidence: 0.9343778

00:18:33.626 --> 00:18:35.766 are extremely difficult to study.

NOTE Confidence: 0.9343778

00:18:35.770 --> 00:18:37.978 One of the issues is that

NOTE Confidence: 0.9343778

00:18:37.978 --> 00:18:39.450 you just mentioned genetics,

NOTE Confidence: 0.9343778

00:18:39.450 --> 00:18:41.090 glycobiology or the sugar

NOTE Confidence: 0.9343778

00:18:41.090 --> 00:18:42.730 structures are not templated,

NOTE Confidence: 0.9343778

00:18:42.730 --> 00:18:45.298 meaning that there are 200 different

NOTE Confidence: 0.9343778

00:18:45.298 --> 00:18:47.648 enzymes that build these sugar

NOTE Confidence: 0.9343778

00:18:47.648 --> 00:18:49.848 structures on the surface of our cells.

NOTE Confidence: 0.9343778

00:18:49.850 --> 00:18:51.600 And so you can't necessarily

NOTE Confidence: 0.9343778

00:18:51.600 --> 00:18:53.760 look at changes in those enzyme

NOTE Confidence: 0.9343778

00:18:53.760 --> 00:18:55.818 levels via genetics in order to

NOTE Confidence: 0.9343778

00:18:55.818 --> 00:18:57.623 build back up what's possibly

NOTE Confidence: 0.9343778

00:18:57.623 --> 00:19:00.087 going to be on the cell surface.

NOTE Confidence: 0.9343778

00:19:00.090 --> 00:19:01.608 And so because of that it's

00:19:02.404 --> 00:19:04.786 much more difficult to study and

NOTE Confidence: 0.9343778

00:19:04.786 --> 00:19:07.688 so it's lagged behind in you know,

NOTE Confidence: 0.9343778

00:19:07.690 --> 00:19:11.365 in comparison to more general fields like

NOTE Confidence: 0.9343778

00:19:11.365 --> 00:19:14.089 genomics or transcriptomics or proteomics.

NOTE Confidence: 0.9343778

00:19:14.090 --> 00:19:15.286 And so

NOTE Confidence: 0.9343778

00:19:15.286 --> 00:19:17.424 we really want to monopolize on these

NOTE Confidence: 0.9343778

00:19:17.424 --> 00:19:19.391 changes in order to break open a

NOTE Confidence: 0.9343778

00:19:19.391 --> 00:19:21.368 whole new area of cancer biology.

NOTE Confidence: 0.9391263

00:19:22.130 --> 00:19:25.522 I mean, do you think that there's an

NOTE Confidence: 0.9391263

00:19:25.522 --> 00:19:28.509 interplay between genomics and

NOTE Confidence: 0.9391263

00:19:28.509 --> 00:19:30.648 these sugar structures?

NOTE Confidence: 0.9391263

00:19:30.650 --> 00:19:33.426 Or do you think that these are two

NOTE Confidence: 0.9391263

00:19:33.426 --> 00:19:35.924 separate issues that they cause or

NOTE Confidence: 0.9391263

00:19:35.924 --> 00:19:38.084 are affected by cancer independently?

NOTE Confidence: 0.9391263

00:19:38.090 --> 00:19:38.970 In other words, I mean,

NOTE Confidence: 0.9391263

00:19:38.970 --> 00:19:40.512 do you think that these two

NOTE Confidence: 0.9391263

00:19:40.512 --> 00:19:41.970 play together or not really?

NOTE Confidence: 0.933372370000001

00:19:42.450 --> 00:19:43.570 Oh, they definitely do.

NOTE Confidence: 0.933372370000001

00:19:43.570 --> 00:19:45.942 It's just that you can't look at enzyme

NOTE Confidence: 0.933372370000001

00:19:45.942 --> 00:19:47.844 changes and then immediately know how

NOTE Confidence: 0.933372370000001

00:19:47.844 --> 00:19:49.912 that's going to change the sugar

NOTE Confidence: 0.933372370000001

00:19:49.912 --> 00:19:52.066 structures on the outside of the cell.

NOTE Confidence: 0.933372370000001

00:19:52.066 --> 00:19:55.042 But you can kind of gain hypothesis by

NOTE Confidence: 0.933372370000001

00:19:55.042 --> 00:19:57.450 looking at changes in the enzyme levels.

NOTE Confidence: 0.933372370000001

00:19:57.450 --> 00:20:00.450 So if for instance,

NOTE Confidence: 0.933372370000001

00:20:00.450 --> 00:20:02.005 there's a capping structure called

NOTE Confidence: 0.933372370000001

00:20:02.005 --> 00:20:04.674 sialic acid and you can look at the sial

NOTE Confidence: 0.933372370000001

00:20:04.674 --> 00:20:06.740 transferases and if those are up or down

NOTE Confidence: 0.933372370000001

00:20:06.740 --> 00:20:08.498 you could then gather that your

NOTE Confidence: 0.933372370000001

00:20:08.498 --> 00:20:10.593 structures will have more or less of a

NOTE Confidence: 0.933372370000001

00:20:10.593 --> 00:20:12.460 certain type of of that sugar structure,

NOTE Confidence: 0.933372370000001

00:20:12.460 --> 00:20:14.272 but it won't tell you exactly

NOTE Confidence: 0.933372370000001

00:20:14.272 --> 00:20:15.178 what it's modifying.

NOTE Confidence: 0.933372370000001

00:20:15.180 --> 00:20:16.979 So what protein it's on or

NOTE Confidence: 0.933372370000001

00:20:16.979 --> 00:20:18.684 it won't tell you exactly what

NOTE Confidence: 0.933372370000001

00:20:18.684 --> 00:20:20.430 type of sugar structure it's

NOTE Confidence: 0.933372370000001

00:20:20.430 --> 00:20:22.099 on and so on and so forth.

NOTE Confidence: 0.92736816

00:20:22.660 --> 00:20:25.188 And so going back to

NOTE Confidence: 0.92736816

00:20:25.188 --> 00:20:27.570 the project for which you were just

NOTE Confidence: 0.92736816

00:20:27.570 --> 00:20:29.708 awarded a grant where you're looking

NOTE Confidence: 0.92736816

00:20:29.708 --> 00:20:32.392 at these BRCA mutation carriers,

NOTE Confidence: 0.92736816

00:20:32.392 --> 00:20:36.090 is it possible that BRCA in and of itself,

NOTE Confidence: 0.92736816

00:20:36.090 --> 00:20:41.090 I mean we know BRCA as being a gene which

NOTE Confidence: 0.92736816

00:20:41.090 --> 00:20:44.210 is largely responsible for DNA repair.

NOTE Confidence: 0.92736816

00:20:44.210 --> 00:20:47.207 And so when you get a mutation in that,

NOTE Confidence: 0.92736816

00:20:47.210 --> 00:20:50.275 it's difficult to correct those

NOTE Confidence: 0.92736816

00:20:50.275 --> 00:20:52.702 mistakes that your DNA may have and

NOTE Confidence: 0.92736816

00:20:52.702 --> 00:20:54.940 the thinking is that

NOTE Confidence: 0.92736816

00:20:54.940 --> 00:20:57.187 really leads to the higher risk of

NOTE Confidence: 0.92736816

00:20:57.260 --> 00:20:59.690 developing a variety of malignancies.

NOTE Confidence: 0.92736816

00:20:59.690 --> 00:21:03.452 So if genetics and these altered

NOTE Confidence: 0.92736816

00:21:03.452 --> 00:21:05.960 sugar structures are related,

NOTE Confidence: 0.92736816

00:21:05.960 --> 00:21:08.046 do you think that

NOTE Confidence: 0.92736816

00:21:08.046 --> 00:21:10.790 BRCA might be doing something to the sugar

NOTE Confidence: 0.92736816

00:21:10.863 --> 00:21:13.439 structures and are you looking at that?

NOTE Confidence: 0.92736816

00:21:13.440 --> 00:21:14.416 For example,

NOTE Confidence: 0.92736816

00:21:14.416 --> 00:21:17.506 are you comparing BRCA carriers to

NOTE Confidence: 0.92736816

00:21:17.506 --> 00:21:20.396 people who are not BRCA carriers

NOTE Confidence: 0.92736816

00:21:20.396 --> 00:21:22.186 and seeing whether there's a

NOTE Confidence: 0.92736816

00:21:22.186 --> 00:21:23.870 difference in terms of

NOTE Confidence: 0.92736816

00:21:23.870 --> 00:21:25.590 these sugar structures between

NOTE Confidence: 0.92736816

00:21:25.590 --> 00:21:26.880 these two populations?

NOTE Confidence: 0.92099065

00:21:27.760 --> 00:21:29.080 That's not something that we're currently

NOTE Confidence: 0.92099065

00:21:29.080 --> 00:21:31.880 looking at simply because we

NOTE Confidence: 0.92099065

00:21:31.880 --> 00:21:34.896 only have access to these BRCA1 and 2 samples.

00:21:37.372 --> 00:21:40.276 But we could ostensibly look at healthy,

NOTE Confidence: 0.92099065

00:21:40.280 --> 00:21:42.080 you know, healthy samples or healthy

NOTE Confidence: 0.92099065

00:21:42.080 --> 00:21:44.160 patient serum in order to compare them.

NOTE Confidence: 0.92099065

00:21:44.160 --> 00:21:45.678 So definitely something we could do,

NOTE Confidence: 0.92099065

00:21:45.680 --> 00:21:46.600 but not something that's

NOTE Confidence: 0.92099065

00:21:46.600 --> 00:21:49.480 currently on our docket.

NOTE Confidence: 0.92099065

00:21:49.480 --> 00:21:51.209 And then the other thing that I

NOTE Confidence: 0.92099065

00:21:51.209 --> 00:21:53.291 kind of wonder about is one of the

NOTE Confidence: 0.92099065

00:21:53.291 --> 00:21:54.800 questions I always get asked is,

NOTE Confidence: 0.92099065

00:21:54.800 --> 00:21:57.596 well, why did I get cancer?

NOTE Confidence: 0.92099065

00:21:57.600 --> 00:22:00.016 Can you tell us a little bit more

NOTE Confidence: 0.92099065

00:22:00.016 --> 00:22:02.112 about whether you think that

NOTE Confidence: 0.92099065

00:22:02.112 --> 00:22:04.352 having these altered sugar moides

NOTE Confidence: 0.92099065

00:22:04.352 --> 00:22:06.678 might have something to do with

NOTE Confidence: 0.92099065

00:22:06.680 --> 00:22:09.000 people's risk of developing cancer?

NOTE Confidence: 0.92099065

00:22:09.000 --> 00:22:10.720 And secondary to that,

NOTE Confidence: 0.92099065

00:22:10.720 --> 00:22:13.300 why do people have these alterations

NOTE Confidence: 0.92099065

00:22:13.373 --> 00:22:15.558 in these sugar moides anyways?

NOTE Confidence: 0.92099065

00:22:15.560 --> 00:22:17.440 I mean what causes that?

NOTE Confidence: 0.8961784

00:22:17.680 --> 00:22:19.399 Again, that's a very,

NOTE Confidence: 0.8961784

00:22:19.399 --> 00:22:21.118 very loaded question.

NOTE Confidence: 0.8961784

00:22:21.120 --> 00:22:22.560 So what was the first part

NOTE Confidence: 0.8961784

00:22:22.560 --> 00:22:23.600 of the question?

NOTE Confidence: 0.8961784

00:22:23.640 --> 00:22:26.270 Could these altered sugar Moides

NOTE Confidence: 0.8961784

00:22:26.270 --> 00:22:28.692 be part of the explanation of why

NOTE Confidence: 0.8961784

00:22:28.692 --> 00:22:30.645 some people develop cancer even

NOTE Confidence: 0.8961784

00:22:30.645 --> 00:22:32.745 though they did everything right?

NOTE Confidence: 0.934395

00:22:33.030 --> 00:22:36.960 Sure. So I mean there are many,

NOTE Confidence: 0.934395

00:22:36.960 --> 00:22:38.670 many possible answers to that question,

NOTE Confidence: 0.934395

00:22:38.670 --> 00:22:40.080 but I'll probably lean into the

NOTE Confidence: 0.934395

00:22:40.080 --> 00:22:41.750 one that I'm most familiar with.

NOTE Confidence: 0.934395

00:22:41.750 --> 00:22:43.755 So you know, cancer immunotherapies

NOTE Confidence: 0.934395

00:22:43.755 --> 00:22:46.541 are the the new pillar of

NOTE Confidence: 0.934395

00:22:46.541 --> 00:22:48.665 treatment as I'm sure you're aware.

NOTE Confidence: 0.934395

00:22:48.670 --> 00:22:50.325 And so altered sugar structures

NOTE Confidence: 0.934395

00:22:50.325 --> 00:22:52.763 are a way that cancer cells can

NOTE Confidence: 0.934395

00:22:52.763 --> 00:22:54.899 actually avoid the immune system and

NOTE Confidence: 0.934395

00:22:54.899 --> 00:22:57.212 the immune system is really key in

NOTE Confidence: 0.934395

00:22:57.212 --> 00:22:59.640 getting rid of cells that have become

NOTE Confidence: 0.934395

00:22:59.640 --> 00:23:02.310 transformed or cancerous.

NOTE Confidence: 0.934395

00:23:02.310 --> 00:23:04.326 And so there's this really fine-tuned

NOTE Confidence: 0.934395

00:23:04.326 --> 00:23:06.308 balance there where you want your

NOTE Confidence: 0.934395

00:23:06.308 --> 00:23:08.030 immune system to be active and

NOTE Confidence: 0.934395

00:23:08.030 --> 00:23:09.708 killing off these cancer cells.

NOTE Confidence: 0.934395

00:23:09.710 --> 00:23:11.822 Now the sugar moieties can actually

NOTE Confidence: 0.934395

00:23:11.822 --> 00:23:14.356 act as a mechanism to shield the

NOTE Confidence: 0.934395

00:23:14.356 --> 00:23:16.116 cancer cell from immune cells

NOTE Confidence: 0.934395

00:23:16.116 --> 00:23:18.257 that would normally kill it off.

NOTE Confidence: 0.934395

00:23:18.260 --> 00:23:19.252 For instance,

NOTE Confidence: 0.934395

00:23:19.252 --> 00:23:22.948 my lab studies what's called a checkpoint

NOTE Confidence: 0.934395

00:23:22.948 --> 00:23:24.932 inhibitor where when that

NOTE Confidence: 0.934395

00:23:24.932 --> 00:23:27.080 checkpoint inhibitor is bound to one

NOTE Confidence: 0.934395

00:23:27.148 --> 00:23:29.578 of its ligands through sugar structures,

NOTE Confidence: 0.934395

00:23:29.580 --> 00:23:31.980 it shuts down T cell function.

NOTE Confidence: 0.934395

00:23:31.980 --> 00:23:35.244 And it's so important that antibodies

NOTE Confidence: 0.934395

00:23:35.244 --> 00:23:37.788 that block that interaction are currently

NOTE Confidence: 0.934395

00:23:37.788 --> 00:23:39.749 being investigated in the clinic.

NOTE Confidence: 0.934395

00:23:39.750 --> 00:23:41.822 And so we're trying to again monopolize

NOTE Confidence: 0.934395

00:23:41.822 --> 00:23:43.473 on the altered sugar structures

NOTE Confidence: 0.934395

00:23:43.473 --> 00:23:45.228 in order to potentially develop

NOTE Confidence: 0.934395

00:23:45.228 --> 00:23:47.110 a better cancer immunotherapy.

NOTE Confidence: 0.934395

00:23:47.110 --> 00:23:49.162 But basically kind of summarizing that

NOTE Confidence: 0.934395

00:23:49.162 --> 00:23:51.567 is that these sugar moieties can serve

NOTE Confidence: 0.934395

00:23:51.567 --> 00:23:53.835 to shut down various types of immune

NOTE Confidence: 0.934395

00:23:53.903 --> 00:23:56.255 cells which then allow the tumor cells

NOTE Confidence: 0.934395

00:23:56.255 --> 00:23:58.503 to proliferate and become

NOTE Confidence: 0.934395

00:23:58.503 --> 00:24:01.389 a solid tumor or various cancers.

NOTE Confidence: 0.9340521

00:24:02.430 --> 00:24:06.502 So why do some people get these

NOTE Confidence: 0.9340521

00:24:06.502 --> 00:24:08.757 altered sugar moieties that can

NOTE Confidence: 0.9340521

00:24:08.757 --> 00:24:11.049 essentially shut down your immune

NOTE Confidence: 0.9340521

00:24:11.049 --> 00:24:13.748 system or at least its ability to

NOTE Confidence: 0.9340521

00:24:13.748 --> 00:24:16.319 detect cancer and other people don't?

NOTE Confidence: 0.9340521

00:24:16.320 --> 00:24:19.600 I mean, are there factors that drive that?

NOTE Confidence: 0.9340521

00:24:19.600 --> 00:24:21.196 You know, some people might be wondering,

NOTE Confidence: 0.9340521

00:24:21.200 --> 00:24:22.943 is it the sugar that I'm eating

NOTE Confidence: 0.9340521

00:24:22.943 --> 00:24:24.998 or is it how I metabolize it?

NOTE Confidence: 0.9340521

00:24:25.000 --> 00:24:26.780 Or is it, you know, diabetes?

NOTE Confidence: 0.9340521

00:24:26.780 --> 00:24:30.200 Or is it something to do with my genetics?

NOTE Confidence: 0.9360402

00:24:31.210 --> 00:24:32.554 Yeah. So I mean that's a great question

NOTE Confidence: 0.9360402

00:24:32.554 --> 00:24:33.890 that I don't have the answer for.

NOTE Confidence: 0.9360402

00:24:33.890 --> 00:24:35.530 I will specify that the

NOTE Confidence: 0.9360402

00:24:35.530 --> 00:24:37.364 sugars that you're eating are very,

NOTE Confidence: 0.9360402

00:24:37.370 --> 00:24:38.970 very, very different than the

NOTE Confidence: 0.9360402

00:24:38.970 --> 00:24:40.250 sugars I'm talking about.

NOTE Confidence: 0.9360402

00:24:40.250 --> 00:24:42.140 I mean, essentially they can get

NOTE Confidence: 0.9360402

00:24:42.140 --> 00:24:44.043 metabolized and turned into the sugar

NOTE Confidence: 0.9360402

00:24:44.043 --> 00:24:46.087 structures that are on the cell surface.

NOTE Confidence: 0.9360402

00:24:46.090 --> 00:24:47.776 But I'm not looking at glucose

NOTE Confidence: 0.9360402

00:24:47.776 --> 00:24:49.489 or sucrose or anything like that.

NOTE Confidence: 0.9360402

00:24:49.490 --> 00:24:51.330 These are very different structures.

NOTE Confidence: 0.9360402

00:24:52.530 --> 00:24:53.698 And so, you know,

NOTE Confidence: 0.9360402

00:24:53.698 --> 00:24:56.529 I think a lot of people may be asking,

NOTE Confidence: 0.9360402

00:24:56.530 --> 00:25:00.606 especially now that the WHO is

NOTE Confidence: 0.9360402

00:25:00.606 --> 00:25:02.971 coming out with their statement

NOTE Confidence: 0.9360402

00:25:02.971 --> 00:25:05.495 against some artificial sweeteners of

NOTE Confidence: 0.9360402

00:25:05.495 --> 00:25:08.573 thinking that they may be carcinogenic.

NOTE Confidence: 0.9360402

00:25:08.580 --> 00:25:11.928 Do do those have anything to do with the

NOTE Confidence: 0.9360402

00:25:11.928 --> 00:25:15.216 sugar moieties that you're talking about?

NOTE Confidence: 0.9360402

00:25:15.220 --> 00:25:18.739 I don't know, my understanding

NOTE Confidence: 0.9337291

00:25:18.740 --> 00:25:20.284 for those those altered

NOTE Confidence: 0.9337291

00:25:20.284 --> 00:25:22.214 sugar moieties that are in,

NOTE Confidence: 0.9337291

00:25:22.220 --> 00:25:23.920 you know artificial sweeteners and

NOTE Confidence: 0.9337291

00:25:23.920 --> 00:25:25.938 so on is that they can't be broken

NOTE Confidence: 0.9337291

00:25:25.938 --> 00:25:27.329 down or metabolized in the same

NOTE Confidence: 0.9337291

00:25:27.329 --> 00:25:28.673 way that normal sugars would be.

NOTE Confidence: 0.9337291

00:25:28.680 --> 00:25:31.277 But that is just what I understand.

NOTE Confidence: 0.9337291

00:25:31.280 --> 00:25:34.080 I have not studied up on that too much.

NOTE Confidence: 0.92916805

00:25:35.120 --> 00:25:39.440 So for the alterations

NOTE Confidence: 0.92916805

00:25:39.440 --> 00:25:42.518 of sugar moties, I mean the

NOTE Confidence: 0.92916805

00:25:42.518 --> 00:25:44.354 the truth of the matter is,

NOTE Confidence: 0.92916805

00:25:44.360 --> 00:25:46.166 that at least the research

NOTE Confidence: 0.92916805

00:25:46.166 --> 00:25:47.680 that you've done so far,

NOTE Confidence: 0.92916805

00:25:47.680 --> 00:25:52.108 your hypothesis is that these alterations

NOTE Confidence: 0.92916805

00:25:52.110 --> 00:25:54.504 have a role to play in cancer,

NOTE Confidence: 0.92916805

00:25:54.510 --> 00:25:57.385 whether it's the immune system

NOTE Confidence: 0.92916805

00:25:57.385 --> 00:26:00.264 evading cancers or you know,

NOTE Confidence: 0.92916805

00:26:00.264 --> 00:26:03.149 increasing risk or whatever.

NOTE Confidence: 0.92916805

00:26:03.150 --> 00:26:05.257 Do we know of any risk factors

NOTE Confidence: 0.92916805

00:26:05.257 --> 00:26:07.140 that make people more susceptible

NOTE Confidence: 0.92916805

00:26:07.140 --> 00:26:09.425 to having altered sugar moieties,

NOTE Confidence: 0.92916805

00:26:09.430 --> 00:26:10.750 the ones that you're studying?

NOTE Confidence: 0.9343979

00:26:12.310 --> 00:26:15.390 I mean not that I'm aware of.

NOTE Confidence: 0.9343979

00:26:15.390 --> 00:26:17.118 I think that if you did

NOTE Confidence: 0.9343979

00:26:17.118 --> 00:26:17.982 genetic studies again,

NOTE Confidence: 0.9343979

00:26:17.990 --> 00:26:20.395 you could probably create hypothesis

NOTE Confidence: 0.9343979

00:26:20.395 --> 00:26:22.319 and individuals regarding different

NOTE Confidence: 0.9343979

00:26:22.319 --> 00:26:24.665 enzymes that are up or down regulated.

NOTE Confidence: 0.9343979

00:26:24.670 --> 00:26:26.506 But as far as I'm aware,

NOTE Confidence: 0.9343979

00:26:26.510 --> 00:26:29.102 there's not anything like a

NOTE Confidence: 0.9343979

00:26:29.102 --> 00:26:30.582 BRCA1 that would definitely

NOTE Confidence: 0.9343979

00:26:30.582 --> 00:26:32.548 indicate that you're going to have

NOTE Confidence: 0.9343979

00:26:32.548 --> 00:26:33.908 these altered sugar structures.

NOTE Confidence: 0.93575597

00:26:34.990 --> 00:26:37.926 And my perception is from your

NOTE Confidence: 0.93575597

00:26:37.926 --> 00:26:40.029 description of your earlier study,

NOTE Confidence: 0.93575597

00:26:40.030 --> 00:26:42.214 is that it's not like you're born

NOTE Confidence: 0.93575597

00:26:42.214 --> 00:26:44.110 with these altered sugar moieties,

NOTE Confidence: 0.93575597

00:26:44.110 --> 00:26:46.306 it's that they develop over time.

NOTE Confidence: 0.93575597

00:26:46.310 --> 00:26:47.818 Is that right?

NOTE Confidence: 0.9361285

00:26:47.820 --> 00:26:49.737 I mean it would be kind of similar to,

NOTE Confidence: 0.9361285

00:26:49.740 --> 00:26:52.035 you know, genetic mutations that

NOTE Confidence: 0.9361285

00:26:52.035 --> 00:26:55.420 accumulate over time in cancer cells.

NOTE Confidence: 0.9361285

00:26:55.420 --> 00:26:57.742 And again,

NOTE Confidence: 0.9361285

00:26:57.742 --> 00:26:59.308 you were asking if genetics and

NOTE Confidence: 0.9361285

00:26:59.308 --> 00:27:00.980 altered sugar structures are related.

NOTE Confidence: 0.9361285

00:27:00.980 --> 00:27:02.780 If you acquire many,

NOTE Confidence: 0.9361285

00:27:02.780 --> 00:27:05.300 many genetic mutations over time,

NOTE Confidence: 0.9361285

00:27:05.300 --> 00:27:07.340 you tend to develop cancer.

NOTE Confidence: 0.9361285

00:27:07.340 --> 00:27:09.734 Similarly, you would also

NOTE Confidence: 0.9361285

00:27:09.734 --> 00:27:11.734 mutate these various glycan structures

NOTE Confidence: 0.9361285

00:27:11.734 --> 00:27:14.100 on the surface of cells.

NOTE Confidence: 0.9316189

00:27:15.270 --> 00:27:18.086 And so it sounds like there's a lot

NOTE Confidence: 0.9316189

00:27:18.086 --> 00:27:20.757 going on in your laboratory both

NOTE Confidence: 0.9316189

00:27:20.757 --> 00:27:23.886 on the kind of developing the

NOTE Confidence: 0.9316189

00:27:23.886 --> 00:27:26.402 methodologies as well as in terms of

NOTE Confidence: 0.9316189

00:27:26.402 --> 00:27:28.346 looking at the actual clinical impact

NOTE Confidence: 0.9316189

00:27:28.346 --> 00:27:30.547 of these altered sugar moieties.

NOTE Confidence: 0.9316189

00:27:30.550 --> 00:27:33.022 Looking forward, what projects are you

NOTE Confidence: 0.9316189

00:27:33.022 --> 00:27:35.658 most excited about and what do you

NOTE Confidence: 0.9316189

00:27:35.658 --> 00:27:38.115 think we can expect to hear about in

NOTE Confidence: 0.9316189

00:27:38.115 --> 00:27:40.428 the next year or two or five or 10?

NOTE Confidence: 0.93945575

00:27:42.030 --> 00:27:45.140 Oh gosh, my students listen to this and

NOTE Confidence: 0.93945575

00:27:45.140 --> 00:27:46.989 I won't say their individual projects.

NOTE Confidence: 0.93945575

00:27:46.990 --> 00:27:48.826 I don't want to pick favorites.

NOTE Confidence: 0.93945575

00:27:48.830 --> 00:27:50.710 Obviously I'm very excited about

NOTE Confidence: 0.93945575

00:27:50.710 --> 00:27:52.590 this ovarian cancer project simply

NOTE Confidence: 0.93945575

00:27:52.650 --> 00:27:54.460 because I think that, you know,

NOTE Confidence: 0.93945575

00:27:54.460 --> 00:27:56.980 CA-125 is really a black box of information

NOTE Confidence: 0.93945575

00:27:57.044 --> 00:27:59.276 that I think we can monopolize on to

NOTE Confidence: 0.93945575

00:27:59.276 --> 00:28:01.390 develop an improved diagnostic tool.

NOTE Confidence: 0.93945575

00:28:01.390 --> 00:28:03.855 And it's a somewhat selfish project

NOTE Confidence: 0.93945575

00:28:03.855 --> 00:28:07.349 because I am a BRCA 2 carrier.

NOTE Confidence: 0.93945575

00:28:07.350 --> 00:28:09.996 So I would like to identify ovarian

NOTE Confidence: 0.93945575

00:28:09.996 --> 00:28:12.364 cancer earlier for my own self

NOTE Confidence: 0.93945575

00:28:12.364 --> 00:28:14.885 and family in in addition to all

NOTE Confidence: 0.93945575

00:28:14.885 --> 00:28:17.630 of the women that are at risk.

NOTE Confidence: 0.93945575

00:28:17.630 --> 00:28:19.150 But I also, you know,

NOTE Confidence: 0.93945575

00:28:19.150 --> 00:28:21.790 I love all of my projects equally in my lab,

NOTE Confidence: 0.93945575

00:28:21.790 --> 00:28:23.794 and I'm really excited about the

NOTE Confidence: 0.93945575

00:28:23.794 --> 00:28:25.430 instrumentation developments that we have,

NOTE Confidence: 0.93945575

00:28:25.430 --> 00:28:27.908 as well as really cracking open

NOTE Confidence: 0.93945575

00:28:27.910 --> 00:28:30.270 all of the biological underlying

NOTE Confidence: 0.93945575

00:28:30.270 --> 00:28:31.749 of altered glycosylation.

NOTE Confidence: 0.9326976

00:28:32.590 --> 00:28:34.882 Doctor Stacy Malaker is an assistant

NOTE Confidence: 0.9326976

00:28:34.882 --> 00:28:36.845 professor in the Department of

NOTE Confidence: 0.9326976

00:28:36.845 --> 00:28:38.349 Chemistry at Yale University.

NOTE Confidence: 0.9326976

00:28:38.350 --> 00:28:40.528 If you have questions, the address

NOTE Confidence: 0.9326976

00:28:40.528 --> 00:28:42.909 is Cancer Answers at Yale dot Edu.

NOTE Confidence: 0.9326976

00:28:42.910 --> 00:28:45.334 And past editions of the program

NOTE Confidence: 0.9326976

00:28:45.334 --> 00:28:47.730 are available in audio and written

NOTE Confidence: 0.9326976

00:28:47.730 --> 00:28:48.746 form at yalecancercenter.org.

NOTE Confidence: 0.9326976

00:28:48.746 --> 00:28:51.274 We hope you'll join us next week to

NOTE Confidence: 0.9326976

00:28:51.274 --> 00:28:53.199 learn more about the fight against

NOTE Confidence: 0.9326976

00:28:53.199 --> 00:28:55.110 cancer here on Connecticut Public Radio.

NOTE Confidence: 0.9326976

00:28:55.110 --> 00:28:57.618 Funding for Yale Cancer Answers is

NOTE Confidence: 0.9326976

00:28:57.618 --> 00:29:00.000 provided by Smilow Cancer Hospital.