WEBVTT

00:00:00.000 --> 00:00:02.172 Funding for Yale Cancer Answers is

NOTE Confidence: 0.933027577272728

00:00:02.172 --> 00:00:04.240 provided by Smilow Cancer Hospital.

NOTE Confidence: 0.808610485555556

00:00:06.360 --> 00:00:08.560 Welcome to Yale Cancer Answers

NOTE Confidence: 0.808610485555556

00:00:08.560 --> 00:00:10.320 with Doctor Anees Chagpar.

NOTE Confidence: 0.808610485555556

00:00:10.320 --> 00:00:12.170 Yale Cancer Answers features the

NOTE Confidence: 0.808610485555556

00:00:12.170 --> 00:00:14.020 latest information on cancer care

NOTE Confidence: 0.808610485555556

00:00:14.085 --> 00:00:15.545 by welcoming oncologists and

NOTE Confidence: 0.808610485555556

00:00:15.545 --> 00:00:17.735 specialists who are on the forefront

NOTE Confidence: 0.808610485555556

00:00:17.794 --> 00:00:19.480 of the battle to fight cancer.

NOTE Confidence: 0.808610485555556

00:00:19.480 --> 00:00:21.622 This week it's a conversation about

NOTE Confidence: 0.808610485555556

00:00:21.622 --> 00:00:23.523 new research into cancer related

NOTE Confidence: 0.808610485555556

00:00:23.523 --> 00:00:25.558 fatigue with Doctor Rachel Perry.

NOTE Confidence: 0.808610485555556

00:00:25.560 --> 00:00:27.864 Doctor Perry is an assistant professor

NOTE Confidence: 0.808610485555556

00:00:27.864 --> 00:00:30.141 of medicine in endocrinology and of

NOTE Confidence: 0.808610485555556

00:00:30.141 --> 00:00:31.493 cellular and molecular Physiology

NOTE Confidence: 0.808610485555556

00:00:31.493 --> 00:00:33.599 at the Yale School of Medicine,

NOTE Confidence: 0.808610485555556

00:00:33.600 --> 00:00:36.480 where Doctor Chagpar is a professor

NOTE Confidence: 0.808610485555556

00:00:36.480 --> 00:00:37.920 of surgical oncology.

NOTE Confidence: 0.808610485555556

00:00:37.920 --> 00:00:38.320 Rachel,

NOTE Confidence: 0.926080382777778

00:00:38.320 --> 00:00:40.078 maybe we'll start by you telling

NOTE Confidence: 0.926080382777778

00:00:40.078 --> 00:00:41.925 us a little bit more about

NOTE Confidence: 0.926080382777778

00:00:41.925 --> 00:00:43.755 yourself and what you do.

NOTE Confidence: 0.95332111625

00:00:44.640 --> 00:00:46.890 Absolutely. So I am a

NOTE Confidence: 0.95332111625

00:00:46.890 --> 00:00:48.240 metabolism trained scientist.

NOTE Confidence: 0.95332111625

00:00:48.240 --> 00:00:50.816 So I grew up as a scientist

NOTE Confidence: 0.95332111625

00:00:50.816 --> 00:00:51.552 studying metabolism.

NOTE Confidence: 0.95332111625

00:00:51.560 --> 00:00:54.318 That is how our bodies use nutrients

NOTE Confidence: 0.95332111625

00:00:54.318 --> 00:00:57.666 that we either take in from food or

NOTE Confidence: 0.95332111625

00:00:57.666 --> 00:00:59.751 generate in our bodies themselves

NOTE Confidence: 0.95332111625

00:00:59.835 --> 00:01:02.308 and where those nutrients go

NOTE Confidence: 0.95332111625

00:01:02.308 --> 00:01:04.156 and how those nutrients can be

NOTE Confidence: 0.95332111625

00:01:04.156 --> 00:01:06.278 used to either fuel tumor growth,

NOTE Confidence: 0.95332111625

00:01:06.280 --> 00:01:07.960 which is obviously a problem,

NOTE Confidence: 0.95332111625

00:01:07.960 --> 00:01:10.648 or to help our bodies fight tumor growth

NOTE Confidence: 0.95332111625

00:01:10.648 --> 00:01:13.278 and recover from having cancer.

NOTE Confidence: 0.95332111625

00:01:13.280 --> 00:01:14.592 So as I said,

NOTE Confidence: 0.95332111625

00:01:14.592 --> 00:01:16.560 my training was in pure metabolism,

NOTE Confidence: 0.95332111625

00:01:16.560 --> 00:01:18.024 just kind of looking at where

NOTE Confidence: 0.95332111625

00:01:18.024 --> 00:01:19.430 nutrients go and how they're

NOTE Confidence: 0.95332111625

00:01:19.430 --> 00:01:20.918 regulated throughout our body.

NOTE Confidence: 0.95332111625

00:01:20.920 --> 00:01:23.400 But when I started my lab in 2018,

NOTE Confidence: 0.95332111625

00:01:23.400 --> 00:01:25.986 I was really excited about getting

NOTE Confidence: 0.95332111625

00:01:25.986 --> 00:01:27.710 into the intersection between

NOTE Confidence: 0.95332111625

00:01:27.784 --> 00:01:29.535 metabolism and cancer because

NOTE Confidence: 0.95332111625

00:01:29.535 --> 00:01:31.880 there's been a lot of interest in

NOTE Confidence: 0.95332111625

00:01:31.880 --> 00:01:33.520 cancer metabolism in recent years.

NOTE Confidence: 0.95332111625

00:01:33.520 --> 00:01:35.781 And I thought that there was

NOTE Confidence: 0.95332111625

00:01:35.781 --> 00:01:37.485 really a place for metabolism

NOTE Confidence: 0.95332111625

00:01:37.485 --> 00:01:39.710 focused scientists to apply

NOTE Confidence: 0.95332111625

00:01:39.710 --> 00:01:43.025 the tools and sort of ways that we

NOTE Confidence: 0.95332111625

00:01:43.025 --> 00:01:45.071 think about science to really

NOTE Confidence: 0.95332111625

00:01:45.071 --> 00:01:47.290 try to make a difference again in

NOTE Confidence: 0.95332111625

00:01:47.367 --> 00:01:50.500 terms of coming up with metabolism

NOTE Confidence: 0.95332111625

00:01:50.500 --> 00:01:52.821 targeting therapies and potentially

NOTE Confidence: 0.95332111625

00:01:52.821 --> 00:01:54.726 dietary and other recommendations for

NOTE Confidence: 0.95332111625

00:01:54.726 --> 00:01:56.920 patients who are dealing with cancer.

NOTE Confidence: 0.804454195714286

00:01:58.200 --> 00:02:00.517 So let's take a a step back.

NOTE Confidence: 0.804454195714286

00:02:00.520 --> 00:02:02.638 You know, I think when many

NOTE Confidence: 0.804454195714286

00:02:02.638 --> 00:02:05.000 of us think about metabolism,

NOTE Confidence: 0.804454195714286

00:02:05.000 --> 00:02:07.373 we we think about

NOTE Confidence: 0.804454195714286

00:02:07.373 --> 00:02:09.984 diet and exercise and

NOTE Confidence: 0.804454195714286

00:02:09.984 --> 00:02:12.114 revving up our metabolism to

NOTE Confidence: 0.804454195714286

00:02:12.114 --> 00:02:14.557 burn off a few extra calories,

NOTE Confidence: 0.804454195714286

00:02:14.560 --> 00:02:16.455 building muscle that builds your

NOTE Confidence: 0.804454195714286

00:02:16.455 --> 00:02:18.800 metabolism and that kind of thing.

NOTE Confidence: 0.804454195714286

00:02:18.800 --> 00:02:21.840 Can you talk a little bit more about

NOTE Confidence: 0.804454195714286

00:02:21.840 --> 00:02:24.929 what exactly is metabolism and what is

NOTE Confidence: 0.804454195714286

00:02:24.929 --> 00:02:27.800 the Nexus between metabolism and cancer?

NOTE Confidence: 0.932927646

00:02:28.600 --> 00:02:30.092 Sure. So metabolism is

NOTE Confidence: 0.932927646

00:02:30.092 --> 00:02:33.124 really the study of what's coming in

NOTE Confidence: 0.932927646

00:02:33.124 --> 00:02:35.996 and what's going out as far as nutrition,

NOTE Confidence: 0.932927646

00:02:36.000 --> 00:02:37.700 as far as nutrients.

NOTE Confidence: 0.932927646

00:02:37.700 --> 00:02:40.426 So what comes in boils down to

NOTE Confidence: 0.932927646

00:02:40.426 --> 00:02:42.990 both the foods that we eat as well

NOTE Confidence: 0.932927646

00:02:42.990 --> 00:02:44.520 as what our body does itself.

NOTE Confidence: 0.932927646

00:02:44.520 --> 00:02:46.506 So many people aren't aware that

NOTE Confidence: 0.932927646

00:02:46.506 --> 00:02:49.022 our bodies do quite a bit in

NOTE Confidence: 0.932927646

00:02:49.022 --> 00:02:50.514 terms of generating metabolites.

NOTE Confidence: 0.932927646

00:02:50.520 --> 00:02:54.030 So that is generating nutrients and then

NOTE Confidence: 0.932927646

00:02:54.030 --> 00:02:57.120 using those nutrients in various pathways.

NOTE Confidence: 0.932927646

00:02:57.120 --> 00:02:59.336 And there are a lot of places

NOTE Confidence: 0.932927646

00:02:59.336 --> 00:03:01.818 that we can intervene in that process

NOTE Confidence: 0.932927646

00:03:01.818 --> 00:03:04.137 and change what nutrients our

NOTE Confidence: 0.932927646

00:03:04.137 --> 00:03:06.780 bodies are generating in a way that

NOTE Confidence: 0.932927646

00:03:06.780 --> 00:03:08.240 could potentially be beneficial.

NOTE Confidence: 0.932927646

00:03:08.240 --> 00:03:08.936 And in addition,

NOTE Confidence: 0.932927646

00:03:08.936 --> 00:03:10.560 I mentioned it's the study of what's

NOTE Confidence: 0.932927646

00:03:10.603 --> 00:03:11.959 coming in and what's going out.

NOTE Confidence: 0.932927646

00:03:11.960 --> 00:03:13.690 What's going out is where

NOTE Confidence: 0.932927646

00:03:13.690 --> 00:03:15.074 those nutrients are going.

NOTE Confidence: 0.932927646

00:03:15.080 --> 00:03:16.490 So for instance,

NOTE Confidence: 0.932927646

00:03:16.490 --> 00:03:18.840 if our liver makes glucose,

NOTE Confidence: 0.932927646

00:03:18.840 --> 00:03:21.252 so that's sugar that our liver can make when

NOTE Confidence: 0.932927646

00:03:21.252 --> 00:03:23.793 we haven't had anything to eat in a while,

NOTE Confidence: 0.932927646

00:03:23.800 --> 00:03:25.120 where does that sugar go?

NOTE Confidence: 0.932927646

00:03:25.120 --> 00:03:26.398 Does it go to our muscle?

NOTE Confidence: 0.932927646

00:03:26.400 --> 00:03:27.720 Does it go to our brain?

NOTE Confidence: 0.932927646

00:03:27.720 --> 00:03:28.712 If we have cancer,

NOTE Confidence: 0.932927646

00:03:28.712 --> 00:03:30.200 does it go to our tumor?

NOTE Confidence: 0.932927646

00:03:30.200 --> 00:03:32.512 And how can we intervene to send those

NOTE Confidence: 0.932927646

00:03:32.512 --> 00:03:34.393 nutrients to a place where they're

NOTE Confidence: 0.932927646

00:03:34.393 --> 00:03:36.608 more beneficial like to our brain or

NOTE Confidence: 0.932927646

00:03:36.608 --> 00:03:38.589 to our heart as opposed to somewhere

NOTE Confidence: 0.932927646

00:03:38.589 --> 00:03:40.440 where they would cause us a problem,

NOTE Confidence: 0.932927646

00:03:40.440 --> 00:03:41.252 for instance,

NOTE Confidence: 0.932927646

00:03:41.252 --> 00:03:42.876 going to a tumor.

NOTE Confidence: 0.932927646

00:03:42.880 --> 00:03:45.778 And when you ask about the intersection

NOTE Confidence: 0.932927646

00:03:45.778 --> 00:03:47.560 between metabolism and cancer,

NOTE Confidence: 0.932927646

00:03:47.560 --> 00:03:48.571 this is really,

NOTE Confidence: 0.932927646

00:03:48.571 --> 00:03:50.593 I wouldn't say an open question,

NOTE Confidence: 0.932927646

00:03:50.600 --> 00:03:54.560 but an an area of a lot of active study.

NOTE Confidence: 0.932927646

00:03:54.560 --> 00:03:57.872 So there's been for the last 100 years a

NOTE Confidence: 0.932927646

00:03:57.872 --> 00:04:00.680 knowledge that tumors really like glucose.

NOTE Confidence: 0.932927646

00:04:00.680 --> 00:04:03.056 So tumors take sugar and this

NOTE Confidence: 0.932927646

00:04:03.056 --> 00:04:05.159 fuels tumor growth quite a bit.

NOTE Confidence: 0.932927646

00:04:05.160 --> 00:04:07.799 But what we've learned in recent years

NOTE Confidence: 0.932927646

00:04:07.799 --> 00:04:10.314 through work from our lab as well

NOTE Confidence: 0.932927646

00:04:10.314 --> 00:04:12.724 as many other wonderful labs is that

NOTE Confidence: 0.932927646

00:04:12.724 --> 00:04:15.900 there this is a lot more nuanced than

NOTE Confidence: 0.932927646

00:04:15.900 --> 00:04:18.400 simply glucose fuels tumor growth.

NOTE Confidence: 0.932927646

00:04:18.400 --> 00:04:19.603 So number one,

NOTE Confidence: 0.932927646

00:04:19.603 --> 00:04:21.207 there are various nutrients

NOTE Confidence: 0.932927646

00:04:21.207 --> 00:04:23.680 that are fuels for immune cells.

NOTE Confidence: 0.932927646

00:04:23.680 --> 00:04:25.738 We know that our immune cells are

NOTE Confidence: 0.932927646

00:04:25.738 --> 00:04:27.721 quite important in the anti cancer

NOTE Confidence: 0.932927646

00:04:27.721 --> 00:04:29.797 response and immune cells like glucose,

NOTE Confidence: 0.932927646

00:04:29.800 --> 00:04:32.260 they like amino acids and potentially

NOTE Confidence: 0.932927646

00:04:32.260 --> 00:04:33.900 there are additional

NOTE Confidence: 0.932927646

00:04:33.964 --> 00:04:35.704 mechanisms of metabolic regulation

NOTE Confidence: 0.932927646

00:04:35.704 --> 00:04:38.314 of the immune response to cancer.

NOTE Confidence: 0.932927646

00:04:38.320 --> 00:04:39.400 And in addition,

NOTE Confidence: 0.932927646

00:04:39.400 --> 00:04:41.560 it's not just glucose for tumors.

NOTE Confidence: 0.932927646

00:04:41.560 --> 00:04:44.092 So tumors are really good at

NOTE Confidence: 0.932927646

00:04:44.092 --> 00:04:45.358 using whatever metabolites,

NOTE Confidence: 0.932927646

00:04:45.360 --> 00:04:47.880 whatever nutrients we provide to them.

NOTE Confidence: 0.932927646

00:04:47.880 --> 00:04:52.524 And so in my view being able to

NOTE Confidence: 0.932927646

00:04:52.524 --> 00:04:54.396 intervene effectively in this

NOTE Confidence: 0.932927646

00:04:54.396 --> 00:04:55.800 intersection between metabolism

NOTE Confidence: 0.932927646

00:04:55.872 --> 00:04:58.272 and cancer is really going to

NOTE Confidence: 0.932927646

00:04:58.272 --> 00:04:59.872 require thoughtful approaches that

NOTE Confidence: 0.932927646

00:04:59.936 --> 00:05:01.960 combine metabolic interventions with

NOTE Confidence: 0.932927646

00:05:01.960 --> 00:05:03.984 additional anti cancer interventions

NOTE Confidence: 0.932927646

00:05:03.984 --> 00:05:07.185 so that we can potentially boost the

NOTE Confidence: 0.932927646

00:05:07.185 --> 00:05:09.370 effectiveness of anti cancer treatments

NOTE Confidence: 0.932927646

00:05:09.442 --> 00:05:11.758 like chemotherapy and immunotherapy.

NOTE Confidence: 0.9506241

00:05:12.840 --> 00:05:15.240 You know, when you talk about

NOTE Confidence: 0.9506241

00:05:15.240 --> 00:05:17.410 tumor cells being fed by

NOTE Confidence: 0.9506241

00:05:17.410 --> 00:05:19.835 metabolites like glucose or sugar,

NOTE Confidence: 0.9506241

00:05:19.840 --> 00:05:22.638 this brings up one of the

NOTE Confidence: 0.9506241

00:05:22.640 --> 00:05:25.320 common questions that we get asked,

NOTE Confidence: 0.9506241

00:05:25.320 --> 00:05:28.530 which is if you've been diagnosed

NOTE Confidence: 0.9506241

00:05:28.530 --> 00:05:32.120 with cancer and cancer feeds on sugar,

NOTE Confidence: 0.9506241

00:05:32.120 --> 00:05:34.784 should you cut out all sugar from your

NOTE Confidence: 0.9506241

00:05:34.784 --> 00:05:37.440 diet in order to starve cancer cells?

NOTE Confidence: 0.92885274

00:05:38.120 --> 00:05:40.955 Well, I think my first response is that,

NOTE Confidence: 0.92885274

00:05:40.960 --> 00:05:43.662 you know, we can never blame patients

NOTE Confidence: 0.92885274

00:05:43.662 --> 00:05:45.991 for having done the wrong thing

NOTE Confidence: 0.92885274

00:05:45.991 --> 00:05:48.539 from a dietary standpoint or a

NOTE Confidence: 0.92885274

00:05:48.619 --> 00:05:51.253 lifestyle standpoint in any way because

NOTE Confidence: 0.92885274

00:05:51.253 --> 00:05:53.782 there's no way to predict that

NOTE Confidence: 0.92885274

00:05:53.782 --> 00:05:55.437 one will eventually develop cancer.

NOTE Confidence: 0.92885274

00:05:55.440 --> 00:05:57.744 And in addition, if one were to have

NOTE Confidence: 0.92885274

00:05:57.744 --> 00:05:59.918 cancer and completely cut out sugar,

NOTE Confidence: 0.92885274

00:05:59.920 --> 00:06:01.436 unfortunately there's no guarantee

NOTE Confidence: 0.92885274

00:06:01.436 --> 00:06:03.710 that will have a beneficial

NOTE Confidence: 0.92885274

00:06:03.769 --> 00:06:05.237 effect on their prognosis.

NOTE Confidence: 0.92885274

00:06:05.240 --> 00:06:06.359 But that said,

NOTE Confidence: 0.92885274

00:06:06.359 --> 00:06:08.597 there is literature that reducing sugar

NOTE Confidence: 0.92885274

00:06:08.597 --> 00:06:11.478 one doesn't have to cut it out completely,

NOTE Confidence: 0.92885274

00:06:11.480 --> 00:06:13.095 but really reducing sugar

NOTE Confidence: 0.92885274

00:06:13.095 --> 00:06:15.280 and consuming a high protein,

NOTE Confidence: 0.92885274

00:06:15.280 --> 00:06:18.120 high fat diet that is low in

NOTE Confidence: 0.92885274

00:06:18.120 --> 00:06:19.752 sugar may have beneficial effects

NOTE Confidence: 0.92885274

00:06:19.752 --> 00:06:22.160 in a number of types of cancer.

NOTE Confidence: 0.92885274

00:06:22.160 --> 00:06:25.280 And there is ongoing research,

NOTE Confidence: 0.92885274

00:06:25.280 --> 00:06:28.556 this isn't a sort of conclusive study yet,

NOTE Confidence: 0.92885274

00:06:28.560 --> 00:06:30.872 but there is quite a bit of

NOTE Confidence: 0.92885274

00:06:30.872 --> 00:06:32.705 evidence from both animal models

NOTE Confidence: 0.92885274

00:06:32.705 --> 00:06:35.066 and also human clinical trials

NOTE Confidence: 0.92885274

00:06:35.066 --> 00:06:36.996 that reducing sugar, lowering

NOTE Confidence: 0.92885274

00:06:36.996 --> 00:06:39.344 the carbohydrates in our diet, may

NOTE Confidence: 0.92885274

00:06:39.344 --> 00:06:41.194 have beneficial effects on cancer.

NOTE Confidence: 0.9116423

00:06:42.680 --> 00:06:46.753 OK. But just to kind of delve into

NOTE Confidence: 0.9116423

00:06:46.753 --> 00:06:50.000 that just a tad more because that brings

NOTE Confidence: 0.9116423

00:06:50.000 --> 00:06:52.940 up a couple of other key questions.

NOTE Confidence: 0.9116423

00:06:52.940 --> 00:06:56.640 One is that people will say, I'm going

NOTE Confidence: 0.9116423

00:06:56.640 --> 00:06:59.520 to avoid eating fruits and vegetables,

NOTE Confidence: 0.9116423

00:06:59.520 --> 00:07:03.678 especially fruit because fruit has sugar.

NOTE Confidence: 0.9116423

00:07:03.680 --> 00:07:05.078 What do you think about that?

NOTE Confidence: 0.9116423

00:07:05.080 --> 00:07:07.855 Many nutritionists will say to a

NOTE Confidence: 0.9116423

00:07:07.855 --> 00:07:10.630 cancer patients that they should

NOTE Confidence: 0.9116423

00:07:10.724 --> 00:07:13.290 eat a predominantly plant based

NOTE Confidence: 0.9116423

00:07:13.290 --> 00:07:15.515 diet with fruits and vegetables.

NOTE Confidence: 0.9116423

00:07:15.520 --> 00:07:18.052 But if fruits have sugar and

NOTE Confidence: 0.9116423

00:07:18.052 --> 00:07:19.318 sugar feeds cancer,

NOTE Confidence: 0.9116423

00:07:19.320 --> 00:07:20.960 isn't that a disconnect?

NOTE Confidence: 0.941419021666667

00:07:21.640 --> 00:07:23.530 So that's a great question and

NOTE Confidence: 0.941419021666667

00:07:23.530 --> 00:07:25.240 the answer really is that there

NOTE Confidence: 0.941419021666667

00:07:25.240 --> 00:07:26.640 are different types of sugar.

NOTE Confidence: 0.941419021666667

00:07:26.640 --> 00:07:28.476 So evidence has shown that

NOTE Confidence: 0.941419021666667

00:07:28.480 --> 00:07:31.657 the worst type of sugar to consume in

NOTE Confidence: 0.941419021666667

00:07:31.657 --> 00:07:34.673 general for our health as well in cancer

NOTE Confidence: 0.941419021666667

00:07:34.680 --> 00:07:37.039 is what's called high fructose corn syrup.

NOTE Confidence: 0.941419021666667

00:07:37.040 --> 00:07:40.400 And so this is added sugar that's in,

NOTE Confidence: 0.941419021666667

00:07:40.400 --> 00:07:43.052 you know, cereals and cake and

NOTE Confidence: 0.941419021666667

00:07:43.052 --> 00:07:45.320 cookies and things like that.

NOTE Confidence: 0.941419021666667

00:07:45.320 --> 00:07:49.860 The sugar that's in that high

NOTE Confidence: 0.941419021666667

00:07:49.860 --> 00:07:52.528 fructose corn syrup causes a host of

NOTE Confidence: 0.941419021666667

00:07:52.528 --> 00:07:54.460 metabolic problems and it seems to

NOTE Confidence: 0.941419021666667

00:07:54.523 --> 00:07:56.719 be more efficient at fueling tumor

NOTE Confidence: 0.941419021666667

00:07:56.719 --> 00:07:58.879 growth than other types of sugars.

NOTE Confidence: 0.941419021666667

00:07:58.880 --> 00:08:00.497 The sugar that is in fruit is

NOTE Confidence: 0.941419021666667

00:08:00.497 --> 00:08:02.437 sort of a more quote UN quote,

NOTE Confidence: 0.941419021666667

00:08:02.440 --> 00:08:04.798 natural sugar that has less of

NOTE Confidence: 0.941419021666667

00:08:04.798 --> 00:08:06.847 a detrimental effect when it

NOTE Confidence: 0.941419021666667

00:08:06.847 --> 00:08:08.837 comes to fueling cancer growth.

NOTE Confidence: 0.941419021666667

00:08:08.840 --> 00:08:11.134 But that said, the

NOTE Confidence: 0.941419021666667

00:08:11.134 --> 00:08:13.378 evidence would suggest that it is

NOTE Confidence: 0.941419021666667

00:08:13.378 --> 00:08:16.008 absolutely fine to consume sugar and

NOTE Confidence: 0.941419021666667

00:08:16.008 --> 00:08:17.920 absolutely healthier to consume,

NOTE Confidence: 0.941419021666667

00:08:17.920 --> 00:08:20.596 sorry, absolutely fine to consume fruit.

NOTE Confidence: 0.941419021666667

00:08:20.600 --> 00:08:22.679 I didn't mean to say sugar,

NOTE Confidence: 0.941419021666667

00:08:22.680 --> 00:08:25.137 absolutely fine to consume fruit and better

NOTE Confidence: 0.941419021666667

00:08:25.137 --> 00:08:28.318 to use fruit rather than for instance,

NOTE Confidence: 0.941419021666667

00:08:28.320 --> 00:08:31.920 cake if we want to satisfy our sweet tooth.

NOTE Confidence: 0.941419021666667

00:08:31.920 --> 00:08:32.826 But you know,

NOTE Confidence: 0.941419021666667

00:08:32.826 --> 00:08:34.940 it's probably a good idea for cancer

NOTE Confidence: 0.941419021666667

00:08:35.001 --> 00:08:37.115 patients to try to some degree

NOTE Confidence: 0.941419021666667

00:08:37.115 --> 00:08:39.213 limit the amount of fruit intake as

NOTE Confidence: 0.941419021666667

00:08:39.213 --> 00:08:41.236 well because it does have some

NOTE Confidence: 0.941419021666667

00:08:41.236 --> 00:08:43.448 degree of sugar that can be broken

NOTE Confidence: 0.941419021666667

00:08:43.448 --> 00:08:46.191 down and metabolized in a way that

NOTE Confidence: 0.941419021666667

00:08:46.191 --> 00:08:48.231 could potentially fuel tumor growth.

NOTE Confidence: 0.941419021666667

00:08:48.240 --> 00:08:50.856 But with all that said, you know,

NOTE Confidence: 0.941419021666667

00:08:50.856 --> 00:08:52.008 dietary recommendations have to

NOTE Confidence: 0.941419021666667

00:08:52.008 --> 00:08:53.720 be what we call palatable.

NOTE Confidence: 0.941419021666667

00:08:53.720 --> 00:08:55.520 They have to be doable for the patient.

00:08:56.824 --> 00:08:58.932 I think it's much better,

NOTE Confidence: 0.941419021666667

00:08:58.932 --> 00:09:01.836 per what all the research says,

NOTE Confidence: 0.941419021666667

00:09:01.840 --> 00:09:04.157 to consume a little bit of fruit

NOTE Confidence: 0.941419021666667

00:09:04.157 --> 00:09:06.772 amidst a high protein diet that you

NOTE Confidence: 0.941419021666667

00:09:06.772 --> 00:09:09.256 can actually stick to rather than

00:09:10.192 --> 00:09:13.000 making no dietary modifications at all.

NOTE Confidence: 0.941419021666667

00:09:13.000 --> 00:09:15.296 And if that fruit makes the

NOTE Confidence: 0.941419021666667

00:09:15.296 --> 00:09:16.280 diet more palatable,

NOTE Confidence: 0.941419021666667

00:09:16.280 --> 00:09:18.104 it's absolutely worth it.

00:09:18.560 --> 00:09:21.014 Then the final question on

NOTE Confidence: 0.8859448

00:09:21.014 --> 00:09:23.313 this kind of line is, you know,

NOTE Confidence: 0.8859448

00:09:23.313 --> 00:09:25.280 if we're trying to avoid sugar

NOTE Confidence: 0.921583791428572

00:09:25.680 --> 00:09:26.954 but we still have a sweet tooth,

NOTE Confidence: 0.95790858

00:09:27.920 --> 00:09:30.320 what are the current thoughts

NOTE Confidence: 0.95790858

00:09:30.320 --> 00:09:31.893 about artificial sweeteners?

NOTE Confidence: 0.95790858

00:09:31.893 --> 00:09:34.358 We've seen that, you know,

NOTE Confidence: 0.95790858

00:09:34.360 --> 00:09:36.492 some organizations have said

NOTE Confidence: 0.95790858

00:09:36.492 --> 00:09:38.091 that artificial sweeteners

NOTE Confidence: 0.95790858

00:09:38.091 --> 00:09:40.720 might actually be carcinogenic,

NOTE Confidence: 0.95790858

00:09:40.720 --> 00:09:43.840 but if sugar also fuels cancer,

NOTE Confidence: 0.95790858

00:09:43.840 --> 00:09:45.920 then isn't that carcinogenic

NOTE Confidence: 0.95790858

00:09:45.920 --> 00:09:48.918 too and if so, which is worse?

NOTE Confidence: 0.965311816666667

00:09:49.640 --> 00:09:52.400 Absolutely. And so to my knowledge,

NOTE Confidence: 0.965311816666667

00:09:52.400 --> 00:09:55.469 most if not all of the research on artificial

NOTE Confidence: 0.965311816666667

00:09:55.469 --> 00:09:57.637 sweeteners and cancer has been in vitro.

NOTE Confidence: 0.965311816666667

00:09:57.640 --> 00:10:00.932 That means in cells in a dish where

NOTE Confidence: 0.965311816666667

00:10:00.932 --> 00:10:03.164 in most cases people are giving

NOTE Confidence: 0.965311816666667

00:10:03.164 --> 00:10:05.505 very very high concentrations of

NOTE Confidence: 0.965311816666667

00:10:05.505 --> 00:10:07.797 the artificial sweeteners.

NOTE Confidence: 0.965311816666667

00:10:07.800 --> 00:10:10.376 And it turns out that if you

NOTE Confidence: 0.965311816666667

00:10:10.376 --> 00:10:12.406 give high concentrations of many

NOTE Confidence: 0.965311816666667

00:10:12.406 --> 00:10:14.118 different chemicals to cells,

NOTE Confidence: 0.965311816666667

00:10:14.120 --> 00:10:16.496 this can have an effect to

NOTE Confidence: 0.965311816666667

00:10:16.496 --> 00:10:18.719 promote cancer, again in a dish.

NOTE Confidence: 0.965311816666667

00:10:18.720 --> 00:10:21.140 I'm not aware of convincing

NOTE Confidence: 0.965311816666667

00:10:21.140 --> 00:10:23.766 clinical trials in people that

NOTE Confidence: 0.965311816666667

00:10:23.766 --> 00:10:27.196 control for other relevant factors.

NOTE Confidence: 0.965311816666667

00:10:27.200 --> 00:10:28.298 So for instance,

NOTE Confidence: 0.965311816666667

00:10:28.298 --> 00:10:30.494 many times people may be shifting

NOTE Confidence: 0.965311816666667

00:10:30.494 --> 00:10:32.250 to using artificial sweeteners

NOTE Confidence: 0.965311816666667

00:10:32.250 --> 00:10:34.878 in an attempt to lose weight.

NOTE Confidence: 0.965311816666667

00:10:34.880 --> 00:10:37.253 So these for instance may be people

NOTE Confidence: 0.965311816666667

00:10:37.253 --> 00:10:40.017 who have obesity at baseline or who

NOTE Confidence: 0.965311816666667

00:10:40.017 --> 00:10:42.117 have metabolic dysfunction at baseline.

NOTE Confidence: 0.965311816666667

00:10:42.120 --> 00:10:44.584 And then you sort of can't de convolve

NOTE Confidence: 0.965311816666667

00:10:44.584 --> 00:10:46.825 the effects of the artificial sweeteners

NOTE Confidence: 0.965311816666667

00:10:46.825 --> 00:10:49.159 from the effects of the underlying

NOTE Confidence: 0.965311816666667

00:10:49.160 --> 00:10:50.704 problems with metabolic health.

NOTE Confidence: 0.965311816666667

00:10:50.704 --> 00:10:53.346 So personally I would say if

NOTE Confidence: 0.965311816666667

00:10:53.346 --> 00:10:55.173 my family or friends ask

NOTE Confidence: 0.965311816666667

00:10:55.173 --> 00:10:56.880 me for a recommendation,

NOTE Confidence: 0.965311816666667

00:10:56.880 --> 00:10:59.319 although I'm not a doctor and so I

NOTE Confidence: 0.965311816666667

00:10:59.319 --> 00:11:01.598 can't give clinical recommendations,

NOTE Confidence: 0.965311816666667

00:11:01.600 --> 00:11:03.920 but I would say absolutely

NOTE Confidence: 0.965311816666667

00:11:03.920 --> 00:11:06.340 artificial sweeteners would be

NOTE Confidence: 0.965311816666667

00:11:06.340 --> 00:11:09.648 expected to be better in terms of

NOTE Confidence: 0.965311816666667

00:11:10.240 --> 00:11:12.880 lowering the cancer risk when substituting

NOTE Confidence: 0.965311816666667

00:11:12.880 --> 00:11:15.080 for sugar as opposed to sugar.

NOTE Confidence: 0.965311816666667

00:11:15.080 --> 00:11:17.060 And frankly for myself that

NOTE Confidence: 0.965311816666667

00:11:17.060 --> 00:11:19.586 is what I do, using artificial

NOTE Confidence: 0.965311816666667

00:11:19.586 --> 00:11:21.838 sweeteners rather than sugar.

NOTE Confidence: 0.965311816666667

00:11:21.840 --> 00:11:23.400 Phew, because that's what I do too,

NOTE Confidence: 0.8443752825

00:11:24.040 --> 00:11:26.656 full disclosure. So I want

NOTE Confidence: 0.8443752825

00:11:26.656 --> 00:11:29.600 to now kind of move into the

NOTE Confidence: 0.966198835

00:11:29.600 --> 00:11:31.040 work in your lab

NOTE Confidence: 0.972337908571429

00:11:31.880 --> 00:11:35.066 looking at how you can kind

NOTE Confidence: 0.972337908571429

00:11:35.066 --> 00:11:37.475 of target these metabolic

NOTE Confidence: 0.972337908571429

00:11:37.475 --> 00:11:40.600 pathways in terms of cancer.

NOTE Confidence: 0.972337908571429

00:11:40.600 --> 00:11:41.824 Can you talk a little bit

NOTE Confidence: 0.972337908571429

00:11:41.824 --> 00:11:42.640 more about your research?

NOTE Confidence: 0.9599797675

00:11:43.120 --> 00:11:44.880 Absolutely. So because of

NOTE Confidence: 0.9599797675

00:11:44.880 --> 00:11:46.640 my background in metabolism,

NOTE Confidence: 0.9599797675

00:11:46.640 --> 00:11:49.760 we've been applying a number of

NOTE Confidence: 0.9599797675

00:11:49.760 --> 00:11:51.840 different metabolism targeting drugs

NOTE Confidence: 0.9599797675

00:11:51.840 --> 00:11:55.274 in mouse cancer models and sort

NOTE Confidence: 0.9599797675

00:11:55.274 --> 00:11:57.716 of tracing what they do to the response

NOTE Confidence: 0.9599797675

00:11:57.716 --> 00:11:59.424 to immunotherapy and chemotherapy

NOTE Confidence: 0.9599797675

00:11:59.424 --> 00:12:02.080 and tumor growth by itself.

NOTE Confidence: 0.9599797675

00:12:02.080 --> 00:12:04.480 And so there have been several

NOTE Confidence: 0.9599797675

00:12:04.480 --> 00:12:05.280 recent studies,

NOTE Confidence: 0.9599797675

00:12:05.280 --> 00:12:07.552 one of which was looking at trying to

NOTE Confidence: 0.9599797675

00:12:07.552 --> 00:12:09.880 develop a precision medicine approach,

NOTE Confidence: 0.9599797675

00:12:09.880 --> 00:12:13.546 so using tumor genetics to predict

NOTE Confidence: 0.9599797675

00:12:13.546 --> 00:12:16.160 response and applying a common diabetes

NOTE Confidence: 0.9599797675

00:12:16.160 --> 00:12:19.079 drug that's called an SGLT 2 inhibitor.

NOTE Confidence: 0.9599797675

00:12:19.080 --> 00:12:21.355 And we showed that you can predict

NOTE Confidence: 0.9599797675

00:12:21.355 --> 00:12:23.644 which tumors may be more likely to

NOTE Confidence: 0.9599797675

00:12:23.644 --> 00:12:25.788 respond to the SGLT 2 inhibitor than

NOTE Confidence: 0.9599797675

00:12:25.788 --> 00:12:27.396 others based on the tumor genetics.

NOTE Confidence: 0.9599797675

00:12:27.400 --> 00:12:29.440 And I think that's very important

NOTE Confidence: 0.9599797675

00:12:29.440 --> 00:12:30.800 because a lot of,

NOTE Confidence: 0.9599797675

00:12:30.800 --> 00:12:33.608 well really all of the metabolism

NOTE Confidence: 0.9599797675

00:12:33.608 --> 00:12:35.480 targeting human clinical trials

NOTE Confidence: 0.9599797675

00:12:35.552 --> 00:12:37.548 that have been done have not

NOTE Confidence: 0.9599797675

00:12:37.548 --> 00:12:39.118 been based on tumor genetics.

NOTE Confidence: 0.9599797675

00:12:39.120 --> 00:12:40.788 We're using precision medicine

NOTE Confidence: 0.9599797675

00:12:40.788 --> 00:12:42.873 for everything else in oncology,

NOTE Confidence: 0.9599797675

00:12:42.880 --> 00:12:43.891 not everything else,

NOTE Confidence: 0.9599797675

00:12:43.891 --> 00:12:45.239 but almost everything else.

NOTE Confidence: 0.9599797675

00:12:45.240 --> 00:12:46.740 And so I think there's really

NOTE Confidence: 0.9599797675

00:12:46.740 --> 00:12:48.240 a role for precision medicine,

NOTE Confidence: 0.9599797675

00:12:48.240 --> 00:12:49.472 metabolic therapy.

NOTE Confidence: 0.9599797675

00:12:49.472 --> 00:12:51.773 And with that

NOTE Confidence: 0.9599797675

00:12:51.773 --> 00:12:54.426 there are also sort of unexpected

NOTE Confidence: 0.9599797675

00:12:54.426 --> 00:12:56.356 findings that can come out.

NOTE Confidence: 0.9599797675

00:12:56.360 --> 00:12:59.912 We had a recent paper that just came

NOTE Confidence: 0.9599797675

00:12:59.912 --> 00:13:02.360 out showing a metabolism targeting

NOTE Confidence: 0.91933995

00:13:04.840 --> 00:13:07.560 modality for cancer related fatigue.

NOTE Confidence: 0.91933995

00:13:07.560 --> 00:13:09.603 And so it's been a lot of fun

NOTE Confidence: 0.91933995

00:13:09.603 --> 00:13:12.460 in recent years to look at what

NOTE Confidence: 0.91933995

00:13:12.460 --> 00:13:14.561 metabolism targeting agents do and

NOTE Confidence: 0.91933995

00:13:14.561 --> 00:13:17.090 how we can use them not only as anti

NOTE Confidence: 0.91933995

00:13:17.168 --> 00:13:19.764 tumor agents but also

NOTE Confidence: 0.91933995

00:13:19.764 --> 00:13:22.043 to reduce the complications of

NOTE Confidence: 0.91933995

00:13:22.043 --> 00:13:23.838 cancer itself and cancer therapy.

NOTE Confidence: 0.902477260526316

00:13:24.800 --> 00:13:27.096 So we're going to pick up that

NOTE Confidence: 0.902477260526316

00:13:27.096 --> 00:13:29.004 conversation right after we take a

NOTE Confidence: 0.902477260526316

00:13:29.004 --> 00:13:30.714 short break for a medical minute.

NOTE Confidence: 0.902477260526316

00:13:30.720 --> 00:13:33.282 Please stay tuned to learn more about

NOTE Confidence: 0.902477260526316

00:13:33.282 --> 00:13:34.770 battling cancer related fatigue

NOTE Confidence: 0.902477260526316

00:13:34.770 --> 00:13:36.918 with my guest, Doctor Rachel Perry.

NOTE Confidence: 0.884244219

00:13:37.520 --> 00:13:39.600 Funding for Yale Cancer Answers

NOTE Confidence: 0.884244219

00:13:39.600 --> 00:13:41.680 comes from Smilow Cancer Hospital,

NOTE Confidence: 0.884244219

00:13:41.680 --> 00:13:43.750 where the lung cancer screening

NOTE Confidence: 0.884244219

00:13:43.750 --> 00:13:45.406 program provides screening to

NOTE Confidence: 0.884244219

00:13:45.406 --> 00:13:48.104 those at risk for lung cancer and

NOTE Confidence: 0.884244219

00:13:48.104 --> 00:13:49.008 individualized state-of-the-art

NOTE Confidence: 0.884244219

00:13:49.008 --> 00:13:51.120 evaluation of lung nodules.

NOTE Confidence: 0.884244219

00:13:51.120 --> 00:13:53.280 To learn more,

NOTE Confidence: 0.884244219

00:13:53.280 --> 00:13:54.360 visit smilowcancerhospital.org.

NOTE Confidence: 0.924602957142857

00:13:56.680 --> 00:13:59.220 The American Cancer Society estimates

NOTE Confidence: 0.924602957142857

00:13:59.220 --> 00:14:02.170 that nearly 150,000 people in the US

NOTE Confidence: 0.924602957142857

00:14:02.170 --> 00:14:04.539 will be diagnosed with colorectal cancer

NOTE Confidence: 0.924602957142857

00:14:04.539 --> 00:14:06.918 this year alone. When detected early,

NOTE Confidence: 0.924602957142857

00:14:06.918 --> 00:14:08.622 colorectal cancer is easily

NOTE Confidence: 0.924602957142857

00:14:08.622 --> 00:14:10.480 treated and highly curable,

NOTE Confidence: 0.924602957142857

00:14:10.480 --> 00:14:12.820 and men and women over the age of 45

NOTE Confidence: 0.924602957142857

00:14:12.820 --> 00:14:14.350 should have regular colonoscopies

NOTE Confidence: 0.924602957142857

00:14:14.350 --> 00:14:16.355 to screen for the disease.

NOTE Confidence: 0.924602957142857

00:14:16.360 --> 00:14:18.325 Patients with colorectal cancer have

NOTE Confidence: 0.924602957142857

00:14:18.325 --> 00:14:20.789 more hope than ever before thanks

NOTE Confidence: 0.924602957142857

00:14:20.789 --> 00:14:22.969 to increased access to advanced

NOTE Confidence: 0.924602957142857

00:14:22.969 --> 00:14:24.713 therapies and specialized care.

NOTE Confidence: 0.924602957142857

00:14:24.720 --> 00:14:26.568 Clinical trials are currently

NOTE Confidence: 0.924602957142857

00:14:26.568 --> 00:14:28.878 under way at federally designated

NOTE Confidence: 0.924602957142857

00:14:28.878 --> 00:14:30.380 comprehensive cancer centers such

NOTE Confidence: 0.924602957142857

00:14:30.380 --> 00:14:32.648 as Yale Cancer Center and Smilow

NOTE Confidence: 0.924602957142857

00:14:32.713 --> 00:14:34.873 Cancer Hospital to test innovative

NOTE Confidence: 0.924602957142857

00:14:34.873 --> 00:14:37.033 new treatments for colorectal cancer.

NOTE Confidence: 0.924602957142857

00:14:37.040 --> 00:14:39.926 Tumor gene analysis has helped improve

NOTE Confidence: 0.924602957142857

00:14:39.926 --> 00:14:41.850 management of colorectal cancer

NOTE Confidence: 0.924602957142857

00:14:41.922 --> 00:14:44.036 by identifying the patient's most

NOTE Confidence: 0.924602957142857

00:14:44.036 --> 00:14:46.226 likely to benefit from chemotherapy

NOTE Confidence: 0.924602957142857

00:14:46.226 --> 00:14:48.556 and newer targeted agents resulting

NOTE Confidence: 0.924602957142857

00:14:48.556 --> 00:14:50.916 in more patient specific treatment.

NOTE Confidence: 0.924602957142857

00:14:50.920 --> 00:14:53.288 More information is available

NOTE Confidence: 0.924602957142857

00:14:53.288 --> 00:14:54.405 at yalecancercenter.org.

NOTE Confidence: 0.924602957142857

00:14:54.405 --> 00:14:57.555 You're listening to Connecticut Public Radio.

NOTE Confidence: 0.924602957142857

00:14:57.560 --> 00:14:57.920 Welcome

NOTE Confidence: 0.941668474

00:14:57.920 --> 00:14:59.440 back to Yale Cancer Answers.

NOTE Confidence: 0.941668474

00:14:59.440 --> 00:15:00.960 This is Doctor Anees Chagpar

NOTE Confidence: 0.941668474

00:15:00.960 --> 00:15:02.878 and I'm joined tonight by my guest,

NOTE Confidence: 0.941668474

00:15:02.880 --> 00:15:04.400 Doctor Rachel Perry.

NOTE Confidence: 0.941668474

00:15:04.400 --> 00:15:06.480 We're discussing the use of a new drug

NOTE Confidence: 0.941668474

00:15:06.480 --> 00:15:08.600 to battle cancer related fatigue.

NOTE Confidence: 0.941668474

00:15:08.600 --> 00:15:11.900 Now we really didn't get into the drug

NOTE Confidence: 0.941668474

00:15:11.900 --> 00:15:15.200 itself because right before the break,

NOTE Confidence: 0.941668474

00:15:15.200 --> 00:15:17.276 Rachel was telling us more about

NOTE Confidence: 0.941668474

00:15:17.276 --> 00:15:20.266 some of the work that her lab does

NOTE Confidence: 0.941668474

00:15:20.266 --> 00:15:22.558 in looking at metabolism and cancer.

NOTE Confidence: 0.941668474

00:15:22.560 --> 00:15:25.440 So Rachel, can you kind of pick up

NOTE Confidence: 0.941668474

00:15:25.440 --> 00:15:27.440 the conversation from where we were?

NOTE Confidence: 0.941668474

00:15:27.440 --> 00:15:30.615 So my understanding is that you're

NOTE Confidence: 0.941668474

00:15:30.615 --> 00:15:34.478 now looking at using more precision

NOTE Confidence: 0.941668474

00:15:34.480 --> 00:15:39.016 genetics and genomics to look at

NOTE Confidence: 0.941668474

00:15:39.016 --> 00:15:41.840 metabolism both for therapeutics

NOTE Confidence: 0.941668474

00:15:41.840 --> 00:15:45.240 as well as to to battle fatigue.

NOTE Confidence: 0.941668474

00:15:45.240 --> 00:15:47.594 So can you talk a little bit more

NOTE Confidence: 0.941668474

00:15:47.594 --> 00:15:49.418 about how exactly that works and

NOTE Confidence: 0.941668474

00:15:49.418 --> 00:15:51.560 and what your findings have been?

NOTE Confidence: 0.9595928935

00:15:51.800 --> 00:15:54.743 Based on the literature we had a

NOTE Confidence: 0.9595928935

00:15:54.743 --> 00:15:57.649 suspicion that increasing whole body and

NOTE Confidence: 0.9595928935

00:15:57.649 --> 00:16:00.154 specifically immune cell glucose metabolism,

NOTE Confidence: 0.9595928935

00:16:00.160 --> 00:16:02.968 so sugar metabolism specifically may improve

NOTE Confidence: 0.9595928935

00:16:02.968 --> 00:16:05.600 the response to immunotherapy and cancer.

NOTE Confidence: 0.9595928935

00:16:05.600 --> 00:16:07.714 So we thought that by giving a

NOTE Confidence: 0.9595928935

00:16:07.714 --> 00:16:10.120 drug to Rev up glucose oxidation,

NOTE Confidence: 0.9595928935

00:16:10.120 --> 00:16:13.715 so glucose metabolism, that this may

NOTE Confidence: 0.9595928935

00:16:13.715 --> 00:16:15.440 improve the response to immunotherapy

NOTE Confidence: 0.9595928935

00:16:15.440 --> 00:16:17.000 against Melanoma in mouse models.

NOTE Confidence: 0.9595928935

00:16:17.000 --> 00:16:19.040 So skin cancer in mouse models,

NOTE Confidence: 0.9595928935

00:16:19.040 --> 00:16:20.728 and we treat it with with the help

NOTE Confidence: 0.9595928935

00:16:20.728 --> 00:16:22.680 of a wonderful graduate student,

NOTE Confidence: 0.9595928935

00:16:22.680 --> 00:16:25.466 who is defending her PhD

NOTE Confidence: 0.9595928935

00:16:25.466 --> 00:16:28.316 soon and moving on to the next steps.

NOTE Confidence: 0.9595928935

00:16:28.320 --> 00:16:31.360 She treated a number of mice with Melanoma

NOTE Confidence: 0.9595928935

00:16:31.360 --> 00:16:33.760 with a drug called dichloroacetate,

NOTE Confidence: 0.9595928935

00:16:33.760 --> 00:16:36.832 and I'll refer to it as DCA in this

NOTE Confidence: 0.9595928935

00:16:36.832 --> 00:16:38.648 talk because it's much quicker.

NOTE Confidence: 0.9595928935

00:16:38.648 --> 00:16:41.400 And so when she treated mice with DCA,

NOTE Confidence: 0.9595928935

00:16:41.400 --> 00:16:43.120 we were expecting to see that it would

NOTE Confidence: 0.9595928935

00:16:43.120 --> 00:16:44.718 improve the response to immunotherapy.

NOTE Confidence: 0.9595928935

00:16:44.720 --> 00:16:47.160 But that did not turn out to be the case.

00:16:48.400 --> 00:16:50.080 We studied a number of mice,

NOTE Confidence: 0.9595928935

00:16:50.080 --> 00:16:51.163 very careful experiments.

NOTE Confidence: 0.9595928935

00:16:51.163 --> 00:16:53.329 It did not improve the response

NOTE Confidence: 0.9595928935

00:16:53.329 --> 00:16:54.600 to immunotherapy,

NOTE Confidence: 0.9595928935

00:16:54.600 --> 00:16:56.973 but we were very pleasantly surprised and

NOTE Confidence: 0.9595928935

00:16:56.973 --> 00:16:59.877 excited to see that there was a phenotype.

NOTE Confidence: 0.9595928935

00:16:59.880 --> 00:17:02.680 So DCA made the mice a lot more

NOTE Confidence: 0.9595928935

00:17:02.680 --> 00:17:05.184 quote UN quote perky. The mice,

NOTE Confidence: 0.9595928935

00:17:05.184 --> 00:17:06.672 despite having large tumors,

NOTE Confidence: 0.9595928935

00:17:06.672 --> 00:17:08.160 moved around their cage.

NOTE Confidence: 0.9595928935

00:17:08.160 --> 00:17:09.200 They were, you know,

NOTE Confidence: 0.9595928935

00:17:09.200 --> 00:17:11.400 mice will climb the walls of their cage,

NOTE Confidence: 0.9595928935

00:17:11.400 --> 00:17:13.272 grab the top of their cage and climb

NOTE Confidence: 0.9595928935

00:17:13.272 --> 00:17:15.158 on top of it if they're healthy,

NOTE Confidence: 0.9595928935

00:17:15.160 --> 00:17:17.280 but not when they have a large tumor.

NOTE Confidence: 0.9595928935

00:17:17.280 --> 00:17:19.116 But these mice treated with DCA,

NOTE Confidence: 0.9595928935

00:17:19.120 --> 00:17:21.652 their physical performance was

NOTE Confidence: 0.9595928935

00:17:21.652 --> 00:17:23.840 completely preserved despite having

NOTE Confidence: 0.9595928935

00:17:23.840 --> 00:17:26.600 fairly large tumors at this stage.

NOTE Confidence: 0.9595928935

00:17:26.600 --> 00:17:27.359 And we thought,

NOTE Confidence: 0.9595928935

00:17:27.360 --> 00:17:27.860 you know,

NOTE Confidence: 0.9595928935

00:17:27.860 --> 00:17:29.370 we're not mouse behavioralists,

NOTE Confidence: 0.9595928935

00:17:29.370 --> 00:17:32.400 but this is a clear effect.

NOTE Confidence: 0.9595928935

00:17:32.400 --> 00:17:34.122 And so that really brought us into

NOTE Confidence: 0.9595928935

00:17:34.122 --> 00:17:36.118 the world of cancer related fatigue.

NOTE Confidence: 0.9595928935

00:17:36.120 --> 00:17:38.220 It's one of these happy accidents

NOTE Confidence: 0.9595928935

00:17:38.220 --> 00:17:40.039 sometimes in science,

NOTE Confidence: 0.9595928935

00:17:40.040 --> 00:17:41.318 you can do the good science,

NOTE Confidence: 0.9595928935

00:17:41.320 --> 00:17:42.916 you can have the good plan,

NOTE Confidence: 0.9595928935

00:17:42.920 --> 00:17:44.928 but it may not turn out the way

NOTE Confidence: 0.9595928935

00:17:44.928 --> 00:17:46.073 you're expecting because really

NOTE Confidence: 0.9595928935

00:17:46.073 --> 00:17:47.837 if we already knew the answer,

NOTE Confidence: 0.9595928935

00:17:47.840 --> 00:17:49.676 we wouldn't be doing the experiment.

NOTE Confidence: 0.9595928935

00:17:49.680 --> 00:17:51.780 And this was one of these wonderful

NOTE Confidence: 0.9595928935

00:17:51.780 --> 00:17:53.528 cases where although the initial

NOTE Confidence: 0.9595928935

00:17:53.528 --> 00:17:54.716 result was disappointing,

NOTE Confidence: 0.9595928935

00:17:54.720 --> 00:17:57.120 DCA did not slow tumor growth,

NOTE Confidence: 0.9595928935

00:17:57.120 --> 00:17:59.297 we ended up having a really exciting

NOTE Confidence: 0.9595928935

00:17:59.297 --> 00:18:01.352 finding that that DCA could improve

NOTE Confidence: 0.9595928935

00:18:01.352 --> 00:18:03.117 cancer related fatigue in mice.

NOTE Confidence: 0.88150181125

00:18:03.440 --> 00:18:05.855 Part of that makes me

NOTE Confidence: 0.88150181125

00:18:05.855 --> 00:18:08.672 wonder if DCA was the idea behind it.

NOTE Confidence: 0.88150181125

00:18:08.672 --> 00:18:11.160 And correct me if I've misunderstood,

NOTE Confidence: 0.88150181125

00:18:11.160 --> 00:18:13.410 if the idea behind it was to Rev up

NOTE Confidence: 0.88150181125

00:18:13.410 --> 00:18:15.948 the metabolism so that they would

NOTE Confidence: 0.88150181125

00:18:15.948 --> 00:18:17.720 respond better to immunotherapy,

NOTE Confidence: 0.88150181125

00:18:17.720 --> 00:18:19.586 it sounds like it revved up

NOTE Confidence: 0.88150181125

00:18:19.586 --> 00:18:21.226 their metabolism to

NOTE Confidence: 0.88150181125

00:18:21.226 --> 00:18:22.638 run around their cages,

NOTE Confidence: 0.88150181125

00:18:22.640 --> 00:18:24.968 but really didn't Rev up their

NOTE Confidence: 0.88150181125

00:18:24.968 --> 00:18:27.439 metabolism to respond to the therapy.

NOTE Confidence: 0.88150181125

00:18:27.440 --> 00:18:29.120 Why the disconnect?

NOTE Confidence: 0.938073058

00:18:29.240 --> 00:18:32.308 It's an open question certainly and

NOTE Confidence: 0.938073058

00:18:32.308 --> 00:18:34.400 I don't have a conclusive answer,

NOTE Confidence: 0.938073058

00:18:34.400 --> 00:18:37.270 there have been studies using higher doses

NOTE Confidence: 0.938073058

00:18:37.270 --> 00:18:40.637 of DCA that do show beneficial effects.

NOTE Confidence: 0.938073058

00:18:40.640 --> 00:18:44.080 So I think it may be a dosing question,

NOTE Confidence: 0.938073058

00:18:44.080 --> 00:18:47.050 but we sort of come at it from the angle

NOTE Confidence: 0.938073058

00:18:47.131 --> 00:18:49.226 of it was disappointing that it

NOTE Confidence: 0.938073058

00:18:49.226 --> 00:18:51.399 didn't improve the response to immunotherapy,

NOTE Confidence: 0.938073058

00:18:51.400 --> 00:18:53.320 but if it makes the mice feel better,

NOTE Confidence: 0.938073058

00:18:53.320 --> 00:18:55.344 so down the road if it makes the

NOTE Confidence: 0.938073058

00:18:55.344 --> 00:18:56.730 patients feel better, that

NOTE Confidence: 0.938073058

00:18:56.730 --> 00:18:58.200 could still be a beneficial effect.

NOTE Confidence: 0.938073058

00:18:58.200 --> 00:19:01.448 And honestly there is literature in from

NOTE Confidence: 0.938073058

00:19:01.448 --> 00:19:03.791 human patients showing that patients

NOTE Confidence: 0.938073058

00:19:03.791 --> 00:19:05.966 who undergo cancer related fatigue,

NOTE Confidence: 0.938073058

00:19:05.966 --> 00:19:08.871 which is a severe debilitating fatigue

NOTE Confidence: 0.938073058

00:19:08.871 --> 00:19:11.919 that can't be relieved with sleep,

NOTE Confidence: 0.938073058

00:19:11.920 --> 00:19:13.780 unlike the fatigue that we might

NOTE Confidence: 0.938073058

00:19:13.780 --> 00:19:15.719 feel if we're running a marathon.

NOTE Confidence: 0.938073058

00:19:15.720 --> 00:19:17.825 Having cancer related fatigue actually

NOTE Confidence: 0.938073058

00:19:17.825 --> 00:19:20.388 reduces the likelihood that patients will

NOTE Confidence: 0.938073058

00:19:20.388 --> 00:19:22.398 fully complete their cancer treatment.

NOTE Confidence: 0.938073058

00:19:22.400 --> 00:19:24.556 There are patients who feel so crummy

NOTE Confidence: 0.938073058

00:19:24.556 --> 00:19:26.262 because of cancer related fatigue

NOTE Confidence: 0.938073058

00:19:26.262 --> 00:19:28.416 that they actually don't take their

NOTE Confidence: 0.938073058

00:19:28.416 --> 00:19:30.348 treatment to completion and

NOTE Confidence: 0.938073058

00:19:30.348 --> 00:19:32.273 that not completing cancer treatment

NOTE Confidence: 0.938073058

00:19:32.280 --> 00:19:34.896 would obviously be expected to have

NOTE Confidence: 0.938073058

00:19:34.896 --> 00:19:37.320 detrimental effects on cancer outcomes.

NOTE Confidence: 0.938073058

00:19:37.320 --> 00:19:39.408 So I think although you know mice don't

NOTE Confidence: 0.938073058

00:19:39.408 --> 00:19:41.816 get to choose whether or not

NOTE Confidence: 0.938073058

00:19:41.816 --> 00:19:43.636 they complete their cancer treatment.

NOTE Confidence: 0.938073058

00:19:43.640 --> 00:19:46.016 I think down the road if this were

NOTE Confidence: 0.938073058

00:19:46.016 --> 00:19:47.960 to move to human patients,

NOTE Confidence: 0.938073058

00:19:47.960 --> 00:19:50.130 there is the possibility that there could

NOTE Confidence: 0.938073058

00:19:50.130 --> 00:19:52.559 in addition to improving quality of life,

NOTE Confidence: 0.938073058

00:19:52.560 --> 00:19:55.539 there could be an effect to improve the

NOTE Confidence: 0.938073058

00:19:55.539 --> 00:19:58.639 treatment success rates in patients.

NOTE Confidence: 0.938073058

00:19:59.840 --> 00:20:00.760 I think that it's

NOTE Confidence: 0.8475737625

00:20:00.800 --> 00:20:03.410 really exciting. Has there

NOTE Confidence: 0.8475737625

00:20:03.410 --> 00:20:06.199 been movement beyond mice?

NOTE Confidence: 0.97511539

00:20:06.320 --> 00:20:08.480 We would love to do that.

NOTE Confidence: 0.97511539

00:20:08.480 --> 00:20:10.436 There hasn't been yet but there are some

NOTE Confidence: 0.97511539

00:20:10.436 --> 00:20:12.200 hints that this may be possible.

NOTE Confidence: 0.97511539

00:20:12.200 --> 00:20:15.096 So DCA actually was approved by the

NOTE Confidence: 0.97511539

00:20:15.096 --> 00:20:17.904 FDA for treatment of another condition

NOTE Confidence: 0.97511539

00:20:17.904 --> 00:20:20.910 called lactic acidosis and this is

NOTE Confidence: 0.97511539

00:20:20.988 --> 00:20:23.836 the build up of lactate in the blood

NOTE Confidence: 0.97511539

00:20:23.840 --> 00:20:26.120 and can happen for various reasons,

NOTE Confidence: 0.97511539

00:20:26.120 --> 00:20:28.680 not necessarily related to cancer.

NOTE Confidence: 0.97511539

00:20:28.680 --> 00:20:30.920 But actually in the 1980s DCA was

NOTE Confidence: 0.97511539

00:20:30.920 --> 00:20:33.797 approved as a treatment for this disease.

NOTE Confidence: 0.97511539

00:20:33.800 --> 00:20:37.984 And that is because DCA pulls carbon,

NOTE Confidence: 0.97511539

00:20:37.984 --> 00:20:40.715 it pulls metabolites from

NOTE Confidence: 0.97511539

00:20:40.715 --> 00:20:43.490 lactate and pyruvate which exchanges

NOTE Confidence: 0.97511539

00:20:43.490 --> 00:20:46.679 with lactate into the DCA cycle.

NOTE Confidence: 0.97511539

00:20:46.680 --> 00:20:48.888 And so it essentially depletes

NOTE Confidence: 0.97511539

00:20:48.888 --> 00:20:51.838 the build up of lactate in the blood

NOTE Confidence: 0.97511539

00:20:51.838 --> 00:20:54.302 and allows the body to oxidize it.

NOTE Confidence: 0.97511539

00:20:54.302 --> 00:20:56.408 So using that fuel rather than

NOTE Confidence: 0.97511539

00:20:56.408 --> 00:20:57.959 allowing it to build up.

NOTE Confidence: 0.97511539

00:20:57.960 --> 00:21:01.332 And so because of that DCA as I

NOTE Confidence: 0.97511539

00:21:01.332 --> 00:21:03.516 said was approved in the 1980s.

NOTE Confidence: 0.97511539

00:21:03.520 --> 00:21:05.620 And so although it's not current

NOTE Confidence: 0.97511539

00:21:05.620 --> 00:21:07.510 treatment in the hospital for

NOTE Confidence: 0.97511539

00:21:07.510 --> 00:21:09.625 lactic acidosis because we have

NOTE Confidence: 0.97511539

00:21:09.625 --> 00:21:11.317 better therapeutic approaches now,

NOTE Confidence: 0.97511539

00:21:11.320 --> 00:21:13.616 the fact that it was FDA approved

NOTE Confidence: 0.97511539

00:21:13.616 --> 00:21:16.041 indicates that it is safe and it

NOTE Confidence: 0.97511539

00:21:16.041 --> 00:21:17.756 is effective at lowering lactate.

NOTE Confidence: 0.97511539

00:21:17.760 --> 00:21:20.096 And so at this point we

NOTE Confidence: 0.97511539

00:21:20.096 --> 00:21:22.025 are talking with colleagues and

NOTE Confidence: 0.97511539

00:21:22.025 --> 00:21:24.150 thinking about potential next steps

NOTE Confidence: 0.97511539

00:21:24.150 --> 00:21:26.680 toward a clinical trial using DCA

NOTE Confidence: 0.97511539

00:21:26.680 --> 00:21:28.380 for cancer related fatigue because

NOTE Confidence: 0.97511539

00:21:28.380 --> 00:21:30.848 we already know that it's safe and

NOTE Confidence: 0.97511539

00:21:30.848 --> 00:21:32.236 effective at lowering lactate.

NOTE Confidence: 0.97511539

00:21:32.240 --> 00:21:35.570 And related to that point I

NOTE Confidence: 0.97511539

00:21:35.570 --> 00:21:37.798 do want to make it clear that at this stage

NOTE Confidence: 0.97511539

00:21:37.798 --> 00:21:39.643 we really have no pharmaceutical

NOTE Confidence: 0.97511539

00:21:39.643 --> 00:21:41.584 treatments for the entire syndrome

NOTE Confidence: 0.97511539

00:21:41.584 --> 00:21:43.200 of cancer related fatigue.

NOTE Confidence: 0.97511539

00:21:43.200 --> 00:21:46.238 So at this point

NOTE Confidence: 0.97511539

00:21:46.238 --> 00:21:48.041 it's treated symptomatically so

NOTE Confidence: 0.97511539

00:21:48.041 --> 00:21:50.561 inflammation can be treated with

NOTE Confidence: 0.97511539

00:21:50.561 --> 00:21:52.999 ibuprofen drugs like that

NOTE Confidence: 0.97511539

00:21:53.000 --> 00:21:54.986 if there are mental health symptoms

NOTE Confidence: 0.97511539

00:21:54.986 --> 00:21:57.634 they can be treated with anti anxiety

NOTE Confidence: 0.97511539

00:21:57.634 --> 00:21:59.318 or anti depression medications.

NOTE Confidence: 0.97511539

00:21:59.320 --> 00:22:02.986 We may recommend yoga or you

NOTE Confidence: 0.97511539

00:22:02.986 --> 00:22:04.770 know interventions like that.

NOTE Confidence: 0.97511539

00:22:04.770 --> 00:22:07.500 But there really is no drug treatment

NOTE Confidence: 0.97511539

00:22:07.564 --> 00:22:09.804 for the entire syndrome and we think

NOTE Confidence: 0.97511539

00:22:09.804 --> 00:22:12.244 based on the mouse findings

NOTE Confidence: 0.97511539

00:22:12.244 --> 00:22:14.356 that there is the possibility that

NOTE Confidence: 0.97511539

00:22:14.360 --> 00:22:16.490 the DCA could potentially represent

NOTE Confidence: 0.97511539

00:22:16.490 --> 00:22:18.620 the first pharmaceutical treatment for

NOTE Confidence: 0.97511539

00:22:18.682 --> 00:22:21.160 the entire cancer related fatigue syndrome.

NOTE Confidence: 0.97511539

00:22:21.160 --> 00:22:22.318 So that's really,

NOTE Confidence: 0.97511539

00:22:22.320 --> 00:22:23.360 really exciting.

NOTE Confidence: 0.949571255789474

00:22:24.080 --> 00:22:25.809 Tell us a little bit more about

NOTE Confidence: 0.949571255789474

00:22:25.809 --> 00:22:27.704 some of the other work

NOTE Confidence: 0.949571255789474

00:22:27.704 --> 00:22:29.074 you've been doing as well,

NOTE Confidence: 0.949571255789474

00:22:37.052 --> 00:22:40.116 looking at metabolic interventions actually affect

NOTE Confidence: 0.949571255789474

00:22:40.120 --> 00:22:42.000 effectiveness of treatment as well?

NOTE Confidence: 0.958467612

00:22:42.600 --> 00:22:44.560 Yeah, absolutely. So you know,

NOTE Confidence: 0.958467612

00:22:44.560 --> 00:22:47.608 both immune cells and tumor cells

NOTE Confidence: 0.958467612

00:22:47.608 --> 00:22:49.660 need metabolites and so

NOTE Confidence: 0.958467612

00:22:49.660 --> 00:22:52.419 there's a lot that we can do

NOTE Confidence: 0.958467612

00:22:52.419 --> 00:22:53.959 potentially targeting systemic metabolism

NOTE Confidence: 0.958467612

00:22:53.959 --> 00:22:56.134 to affect the efficacy of treatment.

NOTE Confidence: 0.958467612

00:22:56.134 --> 00:22:58.162 So another ongoing study that we

NOTE Confidence: 0.958467612

00:22:58.162 --> 00:23:01.070 have in the lab is to look at how

NOTE Confidence: 0.958467612

00:23:01.070 --> 00:23:03.020 exercise actually seems to improve

NOTE Confidence: 0.958467612

00:23:03.098 --> 00:23:05.798 outcomes in mice with breast cancer.

NOTE Confidence: 0.958467612

00:23:05.800 --> 00:23:08.320 So we found that exercise,

NOTE Confidence: 0.958467612

00:23:08.320 --> 00:23:11.440 running on the treadmill,

NOTE Confidence: 0.958467612

00:23:11.440 --> 00:23:13.390 both slows tumor growth by itself

NOTE Confidence: 0.958467612

00:23:13.390 --> 00:23:15.265 and also improves the effectiveness

NOTE Confidence: 0.958467612

00:23:15.265 --> 00:23:17.305 of immunotherapy against triple

NOTE Confidence: 0.958467612

00:23:17.305 --> 00:23:18.835 negative breast cancer.

NOTE Confidence: 0.958467612

00:23:18.840 --> 00:23:20.440 And these are unpublished studies,

NOTE Confidence: 0.958467612

00:23:20.440 --> 00:23:23.520 but it's an ongoing project in the lab.

NOTE Confidence: 0.958467612

00:23:23.520 --> 00:23:25.764 And this is very exciting in

NOTE Confidence: 0.958467612

00:23:25.764 --> 00:23:27.703 particular because with this project

NOTE Confidence: 0.958467612

00:23:27.703 --> 00:23:30.279 we're looking to try to figure out

NOTE Confidence: 0.958467612

00:23:30.279 --> 00:23:32.400 the mechanism by which this works.

NOTE Confidence: 0.958467612

00:23:32.400 --> 00:23:34.404 So it's been shown multiple

NOTE Confidence: 0.958467612

00:23:34.404 --> 00:23:36.670 times by many groups that exercise

NOTE Confidence: 0.958467612

00:23:36.670 --> 00:23:37.957 slows cancer growth.

NOTE Confidence: 0.958467612

00:23:37.960 --> 00:23:40.508 But we really don't know whether this

NOTE Confidence: 0.958467612

00:23:40.508 --> 00:23:43.068 is through effects on tumor metabolism,

NOTE Confidence: 0.958467612

00:23:43.068 --> 00:23:46.415 on immune cell metabolism or the interplay

NOTE Confidence: 0.958467612

00:23:46.415 --> 00:23:49.040 between tumors and immune cells.

NOTE Confidence: 0.958467612

00:23:49.040 --> 00:23:51.356 And our hypothesis, although we're

NOTE Confidence: 0.958467612

00:23:51.356 --> 00:23:53.982 still working on it is that it's

NOTE Confidence: 0.958467612

00:23:53.982 --> 00:23:56.302 really working by improving immune

NOTE Confidence: 0.958467612

00:23:56.302 --> 00:23:59.557 cell efficacy against the tumors.

NOTE Confidence: 0.958467612

00:23:59.560 --> 00:24:01.485 And the reason that this is

NOTE Confidence: 0.958467612

00:24:01.485 --> 00:24:03.159 very important is that

NOTE Confidence: 0.958467612

00:24:03.160 --> 00:24:05.038 cancer treatment is tough as you

NOTE Confidence: 0.958467612

00:24:05.038 --> 00:24:07.047 know very well and not everybody

NOTE Confidence: 0.958467612

00:24:07.047 --> 00:24:08.435 is able to exercise.

NOTE Confidence: 0.958467612

00:24:08.440 --> 00:24:11.424 But if we can figure out the mechanism

NOTE Confidence: 0.958467612

00:24:11.424 --> 00:24:14.399 by which exercise improves outcomes,

NOTE Confidence: 0.958467612

00:24:14.400 --> 00:24:16.578 then there's the potential for developing

NOTE Confidence: 0.958467612

00:24:16.578 --> 00:24:18.959 quote UN quote an exercise pill,

NOTE Confidence: 0.958467612

00:24:18.960 --> 00:24:21.635 some sort of pharmaceutical intervention

NOTE Confidence: 0.958467612

00:24:21.635 --> 00:24:24.310 that would recapitulate the effects

NOTE Confidence: 0.958467612

00:24:24.386 --> 00:24:26.391 of exercise without actually forcing

NOTE Confidence: 0.958467612

00:24:26.391 --> 00:24:29.599 people to do that exercise itself.

00:24:30.440 --> 00:24:34.520 I mean certainly I think that where

NOTE Confidence: 0.814956857142857

00:24:34.520 --> 00:24:38.404 possible exercise has a number of other

NOTE Confidence: 0.814956857142857

00:24:38.404 --> 00:24:40.680 benefits in terms of cardiovascular

NOTE Confidence: 0.814956857142857

00:24:40.680 --> 00:24:44.160 disease and other things.

NOTE Confidence: 0.814956857142857

00:24:44.160 --> 00:24:46.444 Whether it's your

NOTE Confidence: 0.814956857142857

00:24:46.444 --> 00:24:48.008 psychological well-being,

NOTE Confidence: 0.814956857142857

00:24:48.008 --> 00:24:50.354 your cardiovascular fitness,

NOTE Confidence: 0.814956857142857

00:24:50.360 --> 00:24:51.860 your gut motility,

NOTE Confidence: 0.814956857142857

00:24:51.860 --> 00:24:54.680 not to mention your cancer. So

NOTE Confidence: 0.970954501428571

00:24:54.840 --> 00:24:57.479 where possible it would be wonderful for

NOTE Confidence: 0.850601656

00:24:57.760 --> 00:25:01.540 people to exercise and it's

NOTE Confidence: 0.850601656

00:25:01.540 --> 00:25:03.450 wonderful that your research

NOTE Confidence: 0.850601656

00:25:03.450 --> 00:25:05.675 has shown that that's beneficial.

NOTE Confidence: 0.850601656

00:25:05.680 --> 00:25:06.860 It's certainly cost effective,

NOTE Confidence: 0.850601656

00:25:06.860 --> 00:25:08.040 but you're quite right.

NOTE Confidence: 0.850601656

00:25:08.040 --> 00:25:09.716 For people who can't,

NOTE Confidence: 0.850601656

00:25:09.716 --> 00:25:11.811 the idea of an exercise

NOTE Confidence: 0.850601656

00:25:11.811 --> 00:25:13.998 pill would be phenomenal.

NOTE Confidence: 0.850601656

00:25:14.000 --> 00:25:19.040 Kind of tying that back to the DCA story,

NOTE Confidence: 0.850601656

00:25:19.040 --> 00:25:21.992 have you found on a

NOTE Confidence: 0.850601656

00:25:21.992 --> 00:25:23.960 molecular level that

NOTE Confidence: 0.850601656

00:25:23.960 --> 00:25:26.620 the impact of DCA is similar to

NOTE Confidence: 0.850601656

00:25:26.620 --> 00:25:28.821 exercise or are you thinking

NOTE Confidence: 0.850601656

00:25:28.821 --> 00:25:31.251 that the exercise pill might

NOTE Confidence: 0.850601656

00:25:31.251 --> 00:25:33.519 be something other than DCA?

NOTE Confidence: 0.850601656

00:25:33.520 --> 00:25:35.440 So it sort of depends

NOTE Confidence: 0.968805661666667

00:25:35.440 --> 00:25:36.718 on where we're looking at it.

NOTE Confidence: 0.968805661666667

00:25:36.720 --> 00:25:40.696 So we find that from a cardio

NOTE Confidence: 0.968805661666667

00:25:40.696 --> 00:25:42.400 metabolic health standpoint,

NOTE Confidence: 0.968805661666667

00:25:42.400 --> 00:25:44.200 DCA is similar to exercise.

NOTE Confidence: 0.968805661666667

00:25:44.200 --> 00:25:46.120 So DCA increases activity,

NOTE Confidence: 0.968805661666667

00:25:46.120 --> 00:25:48.520 it increases muscular strength and

NOTE Confidence: 0.968805661666667

00:25:48.520 --> 00:25:51.457 it also increases motivation very

NOTE Confidence: 0.968805661666667

00:25:51.457 --> 00:25:54.439 similar to what exercise will do,

NOTE Confidence: 0.968805661666667

00:25:54.440 --> 00:25:57.013 but that's a whole body level

NOTE Confidence: 0.968805661666667

00:25:57.013 --> 00:25:58.678 and frankly that's very beneficial.

NOTE Confidence: 0.968805661666667

00:25:58.680 --> 00:26:01.249 So cancer survivors unfortunately are at an

NOTE Confidence: 0.968805661666667

00:26:01.249 --> 00:26:03.799 increased risk of cardiovascular disease,

NOTE Confidence: 0.968805661666667

00:26:03.800 --> 00:26:06.038 so heart disease even after they

NOTE Confidence: 0.968805661666667

00:26:06.038 --> 00:26:08.031 survive their cancer and

NOTE Confidence: 0.968805661666667

00:26:08.031 --> 00:26:09.759 they finish their treatments.

NOTE Confidence: 0.968805661666667

00:26:09.760 --> 00:26:11.594 We're still working on why this is,

NOTE Confidence: 0.968805661666667

00:26:11.600 --> 00:26:14.480 but it is a very clear signal

NOTE Confidence: 0.968805661666667

00:26:14.480 --> 00:26:17.156 and you know exercise is certainly a

NOTE Confidence: 0.968805661666667

00:26:17.156 --> 00:26:19.178 potential intervention that can

NOTE Confidence: 0.968805661666667

00:26:19.178 --> 00:26:21.638 help these survivors to reduce

NOTE Confidence: 0.968805661666667

00:26:21.638 --> 00:26:23.240 that additional cardiovascular risk.

NOTE Confidence: 0.968805661666667

00:26:23.240 --> 00:26:25.445 It seems that DCA may actually have

NOTE Confidence: 0.968805661666667

00:26:25.445 --> 00:26:26.808 similar effects to potentially

NOTE Confidence: 0.968805661666667

00:26:26.808 --> 00:26:28.956 and this is still ongoing work,

NOTE Confidence: 0.968805661666667

00:26:28.960 --> 00:26:32.224 but the data would predict that DCA may

NOTE Confidence: 0.968805661666667

00:26:32.224 --> 00:26:34.813 have similar effects to also reduce

NOTE Confidence: 0.968805661666667

00:26:34.813 --> 00:26:36.737 that increased cardiovascular risk.

NOTE Confidence: 0.968805661666667

00:26:36.737 --> 00:26:39.731 But if we're asking about the

NOTE Confidence: 0.968805661666667

00:26:39.731 --> 00:26:42.072 effects of DCA on a molecular

NOTE Confidence: 0.968805661666667

00:26:42.072 --> 00:26:43.832 level on the tumor itself,

NOTE Confidence: 0.968805661666667

00:26:43.840 --> 00:26:45.751 it appears not to have those same

NOTE Confidence: 0.968805661666667

00:26:45.751 --> 00:26:47.107 metabolic effects at the doses

NOTE Confidence: 0.968805661666667

00:26:47.107 --> 00:26:48.801 that we treat people and

NOTE Confidence: 0.968805661666667

00:26:48.801 --> 00:26:50.518 that we would treat animals with.

NOTE Confidence: 0.968805661666667

00:26:50.520 --> 00:26:52.375 So I guess the question

NOTE Confidence: 0.968805661666667

00:26:52.375 --> 00:26:54.918 as is often the case in science,

NOTE Confidence: 0.968805661666667

00:26:54.920 --> 00:26:57.720 the question is really what is our question.

NOTE Confidence: 0.968805661666667

00:26:57.720 --> 00:26:59.904 And so if we're targeting cancer related

NOTE Confidence: 0.968805661666667

00:26:59.904 --> 00:27:01.799 fatigue and cardio metabolic health,

NOTE Confidence: 0.968805661666667

00:27:01.800 --> 00:27:02.750 then absolutely.

NOTE Confidence: 0.968805661666667

00:27:02.750 --> 00:27:05.600 If we're targeting the tumor itself,

NOTE Confidence: 0.968805661666667

00:27:05.600 --> 00:27:06.400 maybe not.

NOTE Confidence: 0.80857479625

00:27:08.240 --> 00:27:11.360 So in our last minute or two,

NOTE Confidence: 0.80857479625

00:27:11.360 --> 00:27:14.142 it sounds like there's a lot of

NOTE Confidence: 0.80857479625

00:27:14.142 --> 00:27:16.194 really exciting things on the horizon.

NOTE Confidence: 0.80857479625

00:27:16.200 --> 00:27:18.380 What are you most excited about in

NOTE Confidence: 0.80857479625

00:27:18.380 --> 00:27:20.039 terms of future directions for your lab?

NOTE Confidence: 0.862201337058823

00:27:20.040 --> 00:27:22.624 So many things, and

00:27:25.040 --> 00:27:26.996 I love science more than anything.

NOTE Confidence: 0.862201337058823

00:27:27.000 --> 00:27:28.400 And there's so

NOTE Confidence: 0.862201337058823

00:27:28.400 --> 00:27:29.240 many exciting directions.

NOTE Confidence: 0.862201337058823

00:27:29.240 --> 00:27:31.688 I think you know bringing these

NOTE Confidence: 0.862201337058823

00:27:31.688 --> 00:27:33.826 studies into people and talking

NOTE Confidence: 0.862201337058823

00:27:33.826 --> 00:27:35.034 with colleagues about potential

NOTE Confidence: 0.862201337058823

00:27:35.034 --> 00:27:36.841 next steps to actually translate

NOTE Confidence: 0.862201337058823

00:27:36.841 --> 00:27:38.815 this to the clinic would have

NOTE Confidence: 0.862201337058823

00:27:38.872 --> 00:27:40.360 to be the most exciting thing.

NOTE Confidence: 0.862201337058823

00:27:40.360 --> 00:27:42.352 We actually have a clinical trial

NOTE Confidence: 0.862201337058823

00:27:42.352 --> 00:27:44.966 that's starting up very soon with

NOTE Confidence: 0.862201337058823

00:27:44.966 --> 00:27:46.598 another metabolism targeting drug.

NOTE Confidence: 0.862201337058823

00:27:46.600 --> 00:27:48.399 We don't have time to talk about

NOTE Confidence: 0.862201337058823

00:27:48.399 --> 00:27:49.426 that today it seems.

NOTE Confidence: 0.862201337058823

00:27:49.426 --> 00:27:52.040 But there are a lot of

NOTE Confidence: 0.862201337058823

00:27:52.040 --> 00:27:54.120 clear translational opportunities.

NOTE Confidence: 0.862201337058823

00:27:54.120 --> 00:27:56.274 And frankly this is particularly

NOTE Confidence: 0.862201337058823

00:27:56.274 --> 00:27:58.646 exciting in the context of cancer

NOTE Confidence: 0.862201337058823

00:27:58.646 --> 00:28:00.394 because these metabolism interventions

NOTE Confidence: 0.862201337058823

00:28:00.394 --> 00:28:02.919 that we're talking about are so safe,

NOTE Confidence: 0.862201337058823

00:28:02.920 --> 00:28:05.279 they are safe in healthy people,

NOTE Confidence: 0.862201337058823

00:28:05.280 --> 00:28:08.440 in people with metabolic disease,

NOTE Confidence: 0.862201337058823

00:28:08.440 --> 00:28:10.474 much more so frankly than a lot of

NOTE Confidence: 0.862201337058823

00:28:10.474 --> 00:28:12.599 the approaches we use to treat cancer.

NOTE Confidence: 0.862201337058823

00:28:12.600 --> 00:28:15.138 And so it seems like there's a large

NOTE Confidence: 0.862201337058823

00:28:15.138 --> 00:28:18.120 amount of opportunity to really be

NOTE Confidence: 0.862201337058823

00:28:18.120 --> 00:28:20.390 able to develop metabolism targeting

NOTE Confidence: 0.862201337058823

00:28:20.390 --> 00:28:23.240 interventions that can help both cancer,

00:28:25.431 --> 00:28:27.608 to slow tumor growth, and also really

NOTE Confidence: 0.862201337058823

00:28:27.608 --> 00:28:29.199 improve quality of life.

NOTE Confidence: 0.923122136956522

00:28:29.760 --> 00:28:31.902 Doctor Rachel Perry is an assistant

NOTE Confidence: 0.923122136956522

00:28:31.902 --> 00:28:33.783 professor of medicine and endocrinology

NOTE Confidence: 0.923122136956522

00:28:33.783 --> 00:28:36.105 and of cellular and molecular Physiology

NOTE Confidence: 0.923122136956522

00:28:36.105 --> 00:28:38.439 at the Yale School of Medicine.

NOTE Confidence: 0.923122136956522

00:28:38.440 --> 00:28:40.496 If you have questions,

NOTE Confidence: 0.923122136956522

00:28:40.496 --> 00:28:42.503 the address is canceranswers@yale.edu,

NOTE Confidence: 0.923122136956522

00:28:42.503 --> 00:28:45.281 and past editions of the program

NOTE Confidence: 0.923122136956522

00:28:45.281 --> 00:28:47.685 are available in audio and written

NOTE Confidence: 0.923122136956522

00:28:47.685 --> 00:28:48.630 form at yalecancercenter.org.

NOTE Confidence: 0.923122136956522

00:28:48.630 --> 00:28:51.110 We hope you'll join us next week to

NOTE Confidence: 0.923122136956522

00:28:51.110 --> 00:28:53.002 learn more about the fight against

NOTE Confidence: 0.923122136956522

00:28:53.002 --> 00:28:54.880 cancer here on Connecticut Public Radio.

NOTE Confidence: 0.923122136956522

00:28:54.880 --> 00:28:57.502 Funding for Yale Cancer Answers is

NOTE Confidence: 0.923122136956522

00:28:57.502 --> 00:29:00.000 provided by Smilow Cancer Hospital.