WEBVTT

NOTE duration:"00:29:00"

NOTE recognizability:0.848

NOTE language:en-us

NOTE Confidence: 0.895326650909091

00:00:00.000 --> 00:00:02.154 Funding for Yale Cancer Answers is

NOTE Confidence: 0.895326650909091

00:00:02.154 --> 00:00:04.190 provided by Smilow Cancer Hospital.

NOTE Confidence: 0.8923836

00:00:06.410 --> 00:00:08.954 Welcome to Yale Cancer answers with your

NOTE Confidence: 0.8923836

00:00:08.954 --> 00:00:11.618 host doctor in East JGP are Yale Cancer

NOTE Confidence: 0.8923836

00:00:11.618 --> 00:00:13.488 answers features the latest information

NOTE Confidence: 0.8923836

00:00:13.488 --> 00:00:15.771 on cancer care by welcoming oncologists

NOTE Confidence: 0.8923836

00:00:15.771 --> 00:00:18.347 and specialists who are on the forefront

NOTE Confidence: 0.8923836

00:00:18.407 --> 00:00:20.774 of the battle to fight cancer this week.

NOTE Confidence: 0.8923836

00:00:20.774 --> 00:00:22.946 It's a conversation about the molecular

NOTE Confidence: 0.8923836

00:00:22.946 --> 00:00:25.488 mechanisms of cancer with Doctor Daryl Klein.

NOTE Confidence: 0.8923836

00:00:25.490 --> 00:00:27.744 Doctor Klein is an assistant professor of

NOTE Confidence: 0.8923836

00:00:27.744 --> 00:00:30.027 pharmacology at the Yale School of Medicine,

NOTE Confidence: 0.8923836

00:00:30.030 --> 00:00:32.076 where Doctor Chad Power as a

NOTE Confidence: 0.8923836

00:00:32.076 --> 00:00:33.440 professor of surgical oncology.

NOTE Confidence: 0.9258690608

00:00:34.810 --> 00:00:36.406 So Darrell maybe we can start

NOTE Confidence: 0.9258690608

00:00:36.406 --> 00:00:38.305 off by you telling us a little

NOTE Confidence: 0.9258690608

00:00:38.305 --> 00:00:39.605 bit more about yourself and

NOTE Confidence: 0.9258690608

00:00:39.605 --> 00:00:41.460 what it is exactly that you do.

NOTE Confidence: 0.737310321

00:00:42.070 --> 00:00:43.870 Yeah, I mean I think.

NOTE Confidence: 0.737310321

00:00:43.870 --> 00:00:46.894 My path to become a medical

NOTE Confidence: 0.737310321

00:00:46.894 --> 00:00:49.423 researcher involves my personal back

NOTE Confidence: 0.737310321

00:00:49.423 --> 00:00:52.590 story and my love of competition.

NOTE Confidence: 0.737310321

00:00:52.590 --> 00:00:54.918 In some ways, I feel like I've been

NOTE Confidence: 0.737310321

00:00:54.918 --> 00:00:57.360 destined to study kinases and cancer and

NOTE Confidence: 0.737310321

00:00:57.360 --> 00:01:00.547 their mechanisms and and with the hope of

NOTE Confidence: 0.737310321

00:01:00.547 --> 00:01:02.315 developing useful cancer therapeutics.

NOTE Confidence: 0.737310321

00:01:02.320 --> 00:01:05.260 And my career trajectory if you will.

NOTE Confidence: 0.737310321

00:01:05.260 --> 00:01:06.908 As a medical scientist,

NOTE Confidence: 0.737310321

00:01:06.908 --> 00:01:10.100 began long before my formal training.

NOTE Confidence: 0.737310321

00:01:10.100 --> 00:01:12.724 I grew up in New Jersey just outside

NOTE Confidence: 0.737310321

00:01:12.724 --> 00:01:14.840 of Philadelphia, and at a young age.

NOTE Confidence: 0.737310321

00:01:14.840 --> 00:01:18.466 My my sister was diagnosed with cancer.

NOTE Confidence: 0.737310321

00:01:18.470 --> 00:01:21.300 Kimberly, my sister, was diagnosed

NOTE Confidence: 0.737310321

00:01:21.300 --> 00:01:25.050 with MLE or chronic myeloid leukemia.

NOTE Confidence: 0.737310321

00:01:25.050 --> 00:01:28.230 It's a blood cancer that's rare

NOTE Confidence: 0.737310321

00:01:28.230 --> 00:01:30.565 in children at that time.

NOTE Confidence: 0.737310321

00:01:30.565 --> 00:01:32.690 Over 40 years ago now,

NOTE Confidence: 0.737310321

00:01:32.690 --> 00:01:35.468 Peter Noel at the University of

NOTE Confidence: 0.737310321

00:01:35.468 --> 00:01:37.835 Pennsylvania in Philadelphia was studying

NOTE Confidence: 0.737310321

00:01:37.835 --> 00:01:40.873 the driving mutations that lead to CML.

NOTE Confidence: 0.737310321

00:01:40.880 --> 00:01:43.142 And he discovered a chromosome alteration

NOTE Confidence: 0.737310321

00:01:43.142 --> 00:01:45.437 that he dubbed the Philadelphia

NOTE Confidence: 0.737310321

00:01:45.437 --> 00:01:47.243 chromosome and kmle patients,

NOTE Confidence: 0.737310321

00:01:47.243 --> 00:01:49.770 like my sister and and the results

NOTE Confidence: 0.737310321

00:01:49.838 --> 00:01:50.858 of that change.

NOTE Confidence: 0.737310321

00:01:50.860 --> 00:01:53.479 Is that a new protein is made a fusion

NOTE Confidence: 0.737310321

00:01:53.479 --> 00:01:56.398 of a tyrosine kinase signaling protein?

NOTE Confidence: 0.737310321

00:01:56.400 --> 00:01:58.696 That's that's stuck in the on position,

NOTE Confidence: 0.737310321

00:01:58.700 --> 00:02:00.780 and that instructs cells to.

NOTE Confidence: 0.737310321

00:02:00.780 --> 00:02:03.867 To divide and grow and thus cancer.

NOTE Confidence: 0.737310321

00:02:03.870 --> 00:02:06.110 And that protein became a target for

NOTE Confidence: 0.737310321

00:02:06.110 --> 00:02:08.179 drug discovery and it really heralded

NOTE Confidence: 0.737310321

00:02:08.180 --> 00:02:10.664 the era of precision medicine that

NOTE Confidence: 0.737310321

00:02:10.664 --> 00:02:12.860 is specifically targeting a single.

NOTE Confidence: 0.737310321

00:02:12.860 --> 00:02:15.004 You know bad protein with a drug and

NOTE Confidence: 0.737310321

00:02:15.004 --> 00:02:17.099 that and that was really exciting.

NOTE Confidence: 0.737310321

00:02:17.100 --> 00:02:20.430 And in 2001 there was this huge success with.

NOTE Confidence: 0.737310321

00:02:20.430 --> 00:02:22.490 The mat neighbor or Gleevec,

NOTE Confidence: 0.737310321

00:02:22.490 --> 00:02:24.668 and that became the first drug

NOTE Confidence: 0.737310321

00:02:24.670 --> 00:02:26.386 that was developed to target a

NOTE Confidence: 0.737310321

00:02:26.386 --> 00:02:28.109 specific kinase to treat a disease,

NOTE Confidence: 0.737310321

00:02:28.110 --> 00:02:30.170 and in this case, someone.

NOTE Confidence: 0.737310321

00:02:30.170 --> 00:02:33.110 And patients treated with this drug can

NOTE Confidence: 0.737310321

00:02:33.110 --> 00:02:36.290 live long lives with controlled disease.

NOTE Confidence: 0.737310321

00:02:36.290 --> 00:02:38.690 Unfortunately for you know, Kimberly,

NOTE Confidence: 0.737310321

00:02:38.690 --> 00:02:40.426 my sister, at that time it was.

NOTE Confidence: 0.737310321

00:02:40.430 --> 00:02:42.926 It was just the beginning of

NOTE Confidence: 0.737310321

00:02:42.926 --> 00:02:44.174 understanding this disease.

NOTE Confidence: 0.737310321

00:02:44.180 --> 00:02:45.560 And there were no therapeutics,

NOTE Confidence: 0.737310321

00:02:45.560 --> 00:02:46.700 and that meant you know,

NOTE Confidence: 0.737310321

00:02:46.700 --> 00:02:48.620 little could be done, and.

NOTE Confidence: 0.737310321

00:02:48.620 --> 00:02:50.867 In this powerlessness drives me to find

NOTE Confidence: 0.737310321

00:02:50.867 --> 00:02:53.351 ways to spare other families similar

NOTE Confidence: 0.737310321

00:02:53.351 --> 00:02:57.017 devastation and to better understand cancer.

NOTE Confidence: 0.737310321

00:02:57.020 --> 00:02:57.506 You know,

NOTE Confidence: 0.737310321

00:02:57.506 --> 00:03:00.000 I really have spent a large part of my career

NOTE Confidence: 0.737310321

00:03:00.000 --> 00:03:02.840 investigating the molecular basis for,

NOTE Confidence: 0.737310321

00:03:02.840 --> 00:03:04.127 for oncogenic signaling.

NOTE Confidence: 0.737310321

00:03:04.127 --> 00:03:04.556 And.

NOTE Confidence: 0.737310321

00:03:04.556 --> 00:03:07.796 You know on that path I attended

NOTE Confidence: 0.737310321

00:03:07.796 --> 00:03:10.116 the University of Pennsylvania

NOTE Confidence: 0.737310321

00:03:10.116 --> 00:03:12.520 for my undergrad in my PhD,

NOTE Confidence: 0.737310321

00:03:12.520 --> 00:03:13.944 and my medical degree,

NOTE Confidence: 0.737310321

00:03:13.944 --> 00:03:16.651 and I did clinical rotations at the

NOTE Confidence: 0.737310321

00:03:16.651 --> 00:03:19.126 Children's Hospital of Philadelphia Chop.

NOTE Confidence: 0.737310321

00:03:19.130 --> 00:03:21.659 So I was walking the same halls as Peter,

NOTE Confidence: 0.737310321

00:03:21.660 --> 00:03:24.552 Noel and my parents and my

NOTE Confidence: 0.737310321

00:03:24.552 --> 00:03:25.998 sister years before.

NOTE Confidence: 0.737310321

00:03:26.000 --> 00:03:29.072 I joined the MSTP or medical

NOTE Confidence: 0.737310321

00:03:29.072 --> 00:03:31.120 Scientist training program and.

NOTE Confidence: 0.737310321

00:03:31.120 --> 00:03:33.238 This was funded by the NIH,

NOTE Confidence: 0.737310321

00:03:33.240 --> 00:03:35.250 the National Institutes of Health,

NOTE Confidence: 0.737310321

00:03:35.250 --> 00:03:37.858 to grant to train a group of physicians,

NOTE Confidence: 0.737310321

00:03:37.860 --> 00:03:39.180 also to be researchers,

NOTE Confidence: 0.737310321

00:03:39.180 --> 00:03:41.350 and the goal of that program is

NOTE Confidence: 0.737310321

00:03:41.350 --> 00:03:43.385 basically to link basic science

NOTE Confidence: 0.737310321

00:03:43.385 --> 00:03:45.013 findings to the clinic.

NOTE Confidence: 0.737310321

00:03:45.020 --> 00:03:48.184 The bench to the bedside and to

NOTE Confidence: 0.737310321

00:03:48.184 --> 00:03:50.944 Brig lab progress into useful

NOTE Confidence: 0.737310321

00:03:50.944 --> 00:03:52.812 therapeutics as rapidly as possible.

NOTE Confidence: 0.737310321

00:03:52.812 --> 00:03:56.033 And I think the success of Leave Act was

NOTE Confidence: 0.737310321

00:03:56.033 --> 00:03:58.397 just the beginning of targeting kinases.

NOTE Confidence: 0.737310321

00:03:58.400 --> 00:04:00.485 These these tires and kinases

NOTE Confidence: 0.737310321

00:04:00.485 --> 00:04:02.153 other kinases and cancer.

NOTE Confidence: 0.737310321

00:04:02.160 --> 00:04:03.518 And so when I was at Penn,

NOTE Confidence: 0.932154455

00:04:03.520 --> 00:04:06.880 I studied under Professor Mark Lemon.

NOTE Confidence: 0.932154455

00:04:06.880 --> 00:04:09.092 He was working on those other kinases

NOTE Confidence: 0.932154455

00:04:09.092 --> 00:04:11.250 that lead to different cancers.

NOTE Confidence: 0.932154455

00:04:11.250 --> 00:04:14.450 And you know, to see how they might

NOTE Confidence: 0.932154455

00:04:14.450 --> 00:04:16.998 cause cancer and how we might leverage

NOTE Confidence: 0.932154455

00:04:16.998 --> 00:04:18.090 understanding their mechanisms

NOTE Confidence: 0.932154455

00:04:18.142 --> 00:04:21.900 to develop new therapeutics.

NOTE Confidence: 0.932154455

00:04:21.900 --> 00:04:24.875 I also mentioned you know my my

NOTE Confidence: 0.932154455

00:04:24.875 --> 00:04:28.778 desire for you know competition.

NOTE Confidence: 0.932154455

00:04:28.780 --> 00:04:31.428 And so one thing I I'm not sure

NOTE Confidence: 0.932154455

00:04:31.428 --> 00:04:33.839 that people really understand is

NOTE Confidence: 0.932154455

00:04:33.839 --> 00:04:35.620 how competitive research compete.

NOTE Confidence: 0.932154455

00:04:35.620 --> 00:04:36.960 And I, you know,

NOTE Confidence: 0.932154455

00:04:36.960 --> 00:04:38.668 I grew up playing sports in college

NOTE Confidence: 0.932154455

00:04:38.668 --> 00:04:40.916 and I love competing and and track and

NOTE Confidence: 0.932154455

00:04:40.916 --> 00:04:43.120 field and crew and football and baseball.

NOTE Confidence: 0.932154455

00:04:43.120 --> 00:04:46.397 And when I first joined Mark's

NOTE Confidence: 0.932154455

00:04:46.397 --> 00:04:48.056 lab at Penn and and was first

NOTE Confidence: 0.932154455

00:04:48.056 --> 00:04:49.199 introduced to lab research,

NOTE Confidence: 0.932154455

00:04:49.200 --> 00:04:51.408 I realized there that.

NOTE Confidence: 0.932154455

00:04:51.410 --> 00:04:53.246 Scientific researches is intensely

NOTE Confidence: 0.932154455

00:04:53.246 --> 00:04:56.467 competitive and I think it makes Olympic

NOTE Confidence: 0.932154455

00:04:56.467 --> 00:04:59.255 sport seem safe by comparison and and I

NOTE Confidence: 0.932154455

00:04:59.255 --> 00:05:02.500 love that and I loved everything about that.

NOTE Confidence: 0.932154455

00:05:02.500 --> 00:05:04.852 And then the problem is in

NOTE Confidence: 0.932154455

00:05:04.852 --> 00:05:06.028 sensually in science.

NOTE Confidence: 0.932154455

00:05:06.030 --> 00:05:08.042 You're competing with unknown

NOTE Confidence: 0.932154455

00:05:08.042 --> 00:05:11.060 competitors and and an unknown number

NOTE Confidence: 0.932154455

00:05:11.142 --> 00:05:13.685 of of teams and and the rules of the

NOTE Confidence: 0.932154455

00:05:13.685 --> 00:05:15.957 game are undefined and you don't even

NOTE Confidence: 0.932154455

00:05:15.957 --> 00:05:17.937 know when the conversation started.

NOTE Confidence: 0.932154455

00:05:17.940 --> 00:05:18.302 So,

NOTE Confidence: 0.932154455

00:05:18.302 --> 00:05:20.112 and certainly your competitors have

NOTE Confidence: 0.932154455

00:05:20.112 --> 00:05:22.299 more money and resources than you do,

NOTE Confidence: 0.932154455

00:05:22.300 --> 00:05:25.208 so you're always the underdog and and

NOTE Confidence: 0.932154455

00:05:25.208 --> 00:05:28.100 that excites me and I and I like that.

NOTE Confidence: 0.932154455

00:05:28.100 --> 00:05:29.336 You know an example.

NOTE Confidence: 0.932154455

00:05:29.336 --> 00:05:31.490 When we started the project will chat

NOTE Confidence: 0.932154455

00:05:31.490 --> 00:05:33.402 more about in a in a little bit.

NOTE Confidence: 0.932154455

00:05:33.410 --> 00:05:35.419 We were certain that that you know

NOTE Confidence: 0.932154455

00:05:35.419 --> 00:05:37.927 half a dozen other groups in the world

NOTE Confidence: 0.932154455

00:05:37.927 --> 00:05:40.440 were already working on it and and we

NOTE Confidence: 0.932154455

00:05:40.440 --> 00:05:42.449 didn't know how far along they were.

NOTE Confidence: 0.932154455

00:05:42.450 --> 00:05:44.370 And so all you know is what you don't know.

NOTE Confidence: 0.932154455

00:05:44.370 --> 00:05:45.546 And if you want to win,

NOTE Confidence: 0.932154455

00:05:45.550 --> 00:05:48.278 you have to work nonstop like 24/7.

NOTE Confidence: 0.932154455

00:05:48.278 --> 00:05:51.950 I once spent 50 hours straight in the lab

NOTE Confidence: 0.932154455

00:05:51.950 --> 00:05:54.350 when I was a grad student without sleeping.

NOTE Confidence: 0.932154455

00:05:54.350 --> 00:05:57.284 And then you know that was exciting to me.

NOTE Confidence: 0.932154455

00:05:57.290 --> 00:05:59.570 That's something you can't do in.

NOTE Confidence: 0.932154455

00:05:59.570 --> 00:06:02.864 In sport after the game you you go home,

NOTE Confidence: 0.932154455

00:06:02.870 --> 00:06:05.845 but science is a years long competition

NOTE Confidence: 0.932154455

00:06:05.850 --> 00:06:08.442 with no timeouts and and the

NOTE Confidence: 0.932154455

00:06:08.442 --> 00:06:11.520 intensity is is off the charts so.

NOTE Confidence: 0.932154455

00:06:11.520 --> 00:06:14.425 I think that that frames kind of.

NOTE Confidence: 0.932154455

00:06:14.430 --> 00:06:16.926 Why I became a medical researcher

NOTE Confidence: 0.932154455

00:06:16.926 --> 00:06:18.590 and and and why?

NOTE Confidence: 0.932154455

00:06:18.590 --> 00:06:21.173 Why I love doing the work that I do.

NOTE Confidence: 0.885244987777778

00:06:22.860 --> 00:06:25.479 So let's take a step back for a bit.

NOTE Confidence: 0.885244987777778

00:06:25.480 --> 00:06:27.856 I mean, that sounds really inspiring

NOTE Confidence: 0.885244987777778

00:06:27.856 --> 00:06:30.153 and and interesting in terms of

NOTE Confidence: 0.885244987777778

00:06:30.153 --> 00:06:32.400 how this kind of came full circle.

NOTE Confidence: 0.885244987777778

00:06:32.400 --> 00:06:34.175 How you? Had this experience

NOTE Confidence: 0.885244987777778

00:06:34.175 --> 00:06:36.753 with your sister and then went on

NOTE Confidence: 0.885244987777778

00:06:36.753 --> 00:06:38.961 to to become a scientist that's

NOTE Confidence: 0.885244987777778

00:06:38.961 --> 00:06:41.157 hopefully making a difference in the

NOTE Confidence: 0.885244987777778

00:06:41.157 --> 00:06:43.245 lives of other patients like her.

NOTE Confidence: 0.885244987777778

00:06:43.250 --> 00:06:44.694 But for our audience,

NOTE Confidence: 0.885244987777778

00:06:44.694 --> 00:06:47.643 maybe you can take a step back and

NOTE Confidence: 0.885244987777778

00:06:47.643 --> 00:06:50.467 tell us exactly like what is a kinase

NOTE Confidence: 0.885244987777778

00:06:50.548 --> 00:06:53.390 and why are they important in cancer?

NOTE Confidence: 0.80161613

00:06:54.420 --> 00:06:55.578 Sure, sure, yeah.

NOTE Confidence: 0.80161613

00:06:55.578 --> 00:06:57.894 I mean I should also mention

NOTE Confidence: 0.80161613

00:06:57.894 --> 00:07:00.409 that while I trained as A and

NOTE Confidence: 0.80161613

00:07:00.409 --> 00:07:02.610 MDP MD PhD physician scientist,

NOTE Confidence: 0.80161613

00:07:02.610 --> 00:07:05.780 I've actually chosen a path

NOTE Confidence: 0.80161613

00:07:05.780 --> 00:07:08.142 devoted entirely to research.

NOTE Confidence: 0.80161613

00:07:08.142 --> 00:07:11.088 So during training, when I you know,

NOTE Confidence: 0.80161613

00:07:11.088 --> 00:07:12.723 find myself engaging with patients

NOTE Confidence: 0.80161613

00:07:12.723 --> 00:07:15.574 and and talking to them about the

NOTE Confidence: 0.80161613

00:07:15.574 --> 00:07:17.400 unfortunately limited treatment options I,

NOTE Confidence: 0.80161613

00:07:17.400 --> 00:07:19.080 I found that difficult and frustrating

NOTE Confidence: 0.80161613

00:07:19.080 --> 00:07:21.364 and and all I wanted to do was rush

NOTE Confidence: 0.80161613

00:07:21.364 --> 00:07:23.611 back to the lab and and and find

NOTE Confidence: 0.80161613

00:07:23.611 --> 00:07:25.059 new potential therapeutic avenues.

NOTE Confidence: 0.80161613

00:07:25.060 --> 00:07:27.342 So I made a choice to devote

NOTE Confidence: 0.80161613

00:07:27.342 --> 00:07:29.078 myself entirely to lab work,

NOTE Confidence: 0.80161613

00:07:29.078 --> 00:07:31.392 but at the same time I'm still

NOTE Confidence: 0.80161613

00:07:31.392 --> 00:07:32.496 working with other physicians,

NOTE Confidence: 0.80161613

00:07:32.500 --> 00:07:34.356 scientists and clinicians to

NOTE Confidence: 0.80161613

00:07:34.356 --> 00:07:36.676 help bridge our our discoveries.

NOTE Confidence: 0.80161613

00:07:36.680 --> 00:07:39.209 To the bedside.

NOTE Confidence: 0.80161613

00:07:39.210 --> 00:07:42.710 Kinases are often drivers of

NOTE Confidence: 0.80161613

00:07:42.710 --> 00:07:45.201 cancers and and the one that I've

NOTE Confidence: 0.80161613

00:07:45.201 --> 00:07:47.566 been working on recently ALK and

NOTE Confidence: 0.80161613

00:07:47.566 --> 00:07:50.302 a plastic lymphoma kinases is a

NOTE Confidence: 0.80161613

00:07:50.302 --> 00:07:53.140 well known cancer related protein.

NOTE Confidence: 0.80161613

00:07:53.140 --> 00:07:55.162 And much like the protein involved

NOTE Confidence: 0.80161613

00:07:55.162 --> 00:07:56.840 in my sisters of Mle,

NOTE Confidence: 0.80161613

00:07:56.840 --> 00:07:59.300 it's a tyrosine kinase and

NOTE Confidence: 0.80161613

00:07:59.300 --> 00:08:01.372 basically tyrosine kinases instruct

NOTE Confidence: 0.80161613

00:08:01.372 --> 00:08:04.480 the cells to grow and divide,

NOTE Confidence: 0.80161613

00:08:04.480 --> 00:08:07.040 and if this is unregulated

NOTE Confidence: 0.80161613

00:08:07.040 --> 00:08:09.908 that leads to cancer.

NOTE Confidence: 0.80161613

00:08:09.910 --> 00:08:15.290 So ALK well, unlike the Siml case, ALK is.

NOTE Confidence: 0.80161613

00:08:15.290 --> 00:08:18.006 Is A is a receptor tyrosine kinase.

NOTE Confidence: 0.80161613

00:08:18.010 --> 00:08:19.774 So what that means is ALK is

NOTE Confidence: 0.80161613

00:08:19.774 --> 00:08:21.549 located in a different part of

NOTE Confidence: 0.80161613

00:08:21.549 --> 00:08:24.314 the cell than the CML kinase.

NOTE Confidence: 0.80161613

00:08:24.314 --> 00:08:27.470 So if it if a cell were an ocean,

NOTE Confidence: 0.80161613

00:08:27.470 --> 00:08:29.766 the CML kinase would be a submarine

NOTE Confidence: 0.80161613

00:08:29.766 --> 00:08:32.566 and ALK would be more like an aircraft

NOTE Confidence: 0.80161613

00:08:32.566 --> 00:08:35.833 carrier at the surface and so this.

NOTE Confidence: 0.80161613

00:08:35.833 --> 00:08:37.696 Localization difference has

NOTE Confidence: 0.80161613

00:08:37.696 --> 00:08:38.938 therapeutic implications.

NOTE Confidence: 0.80161613

00:08:38.940 --> 00:08:40.060 As you might imagine,

NOTE Confidence: 0.80161613

00:08:40.060 --> 00:08:42.084 you can't target a submarine the same

NOTE Confidence: 0.80161613

00:08:42.084 --> 00:08:44.348 way you would target in an aircraft carrier.

NOTE Confidence: 0.80161613

00:08:44.350 --> 00:08:46.806 So in the clinic we use small molecule.

NOTE Confidence: 0.80161613

00:08:46.810 --> 00:08:49.306 You know missile like drugs that can dive

NOTE Confidence: 0.80161613

00:08:49.306 --> 00:08:51.770 deep into the ocean to reach that kmle.

NOTE Confidence: 0.80161613

00:08:51.770 --> 00:08:54.272 Kinase submarine whereas for ALK we

NOTE Confidence: 0.80161613

00:08:54.272 --> 00:08:56.798 have an opportunity to use antibodies

NOTE Confidence: 0.80161613

00:08:56.798 --> 00:08:59.910 that can target it at the cell surface,

NOTE Confidence: 0.80161613

00:08:59.910 --> 00:09:01.330 so more like a.

NOTE Confidence: 0.80161613

00:09:01.330 --> 00:09:05.160 You know a B52 bomber.

NOTE Confidence: 0.80161613

00:09:05.160 --> 00:09:06.906 It's been known for years that

NOTE Confidence: 0.80161613

00:09:06.906 --> 00:09:09.158 ALK is a driver of neuroblastoma.

NOTE Confidence: 0.80161613

00:09:09.158 --> 00:09:12.422 Now neuroblastoma is a cancer of

NOTE Confidence: 0.80161613

00:09:12.422 --> 00:09:14.850 the peripheral nervous system.

NOTE Confidence: 0.80161613

00:09:14.850 --> 00:09:17.419 It's one of the more common pediatric

NOTE Confidence: 0.80161613

00:09:17.419 --> 00:09:19.385 cancers that accounts for more than

NOTE Confidence: 0.80161613

00:09:19.385 --> 00:09:23.289 10% of childhood cancer mortality.

NOTE Confidence: 0.80161613

00:09:23.289 --> 00:09:26.061 But clinically useful therapeutics

NOTE Confidence: 0.80161613

00:09:26.061 --> 00:09:29.058 have been slow to develop,

NOTE Confidence: 0.80161613

00:09:29.058 --> 00:09:32.194 and I think you know one of the key

NOTE Confidence: 0.80161613

00:09:32.194 --> 00:09:33.900 reasons for this slow development of

NOTE Confidence: 0.80161613

00:09:33.900 --> 00:09:36.098 treatments is likely the lack of a.

NOTE Confidence: 0.80161613

00:09:36.100 --> 00:09:39.280 Structural framework for the target alcc.

NOTE Confidence: 0.80161613

00:09:39.280 --> 00:09:39.760 Simply put,

NOTE Confidence: 0.80161613

00:09:39.760 --> 00:09:41.680 we have you know no idea what it

NOTE Confidence: 0.80161613

00:09:41.738 --> 00:09:43.538 looked like or how it functioned.

NOTE Confidence: 0.80161613

00:09:43.540 --> 00:09:47.185 It was a a complete mystery before our work.

NOTE Confidence: 0.80161613

00:09:47.190 --> 00:09:50.853 I mean the fact that ALK is expressed on

NOTE Confidence: 0.80161613

00:09:50.853 --> 00:09:53.228 neuroblastoma cells but is not present.

NOTE Confidence: 0.80161613

00:09:53.230 --> 00:09:56.340 On healthy tissue makes Alka

NOTE Confidence: 0.80161613

00:09:56.340 --> 00:09:58.206 veritable oncogenic beacon.

NOTE Confidence: 0.80161613

00:09:58.210 --> 00:10:00.630 That's a perfect target

NOTE Confidence: 0.80161613

00:10:00.630 --> 00:10:02.445 for precision medicine.

NOTE Confidence: 0.80161613

00:10:02.450 --> 00:10:04.405 It's much like the novel

NOTE Confidence: 0.80161613

00:10:04.405 --> 00:10:05.969 fusion protein and kmle.

NOTE Confidence: 0.80161613

00:10:05.970 --> 00:10:09.720 In each case the protein.

NOTE Confidence: 0.80161613

00:10:09.720 --> 00:10:10.105 Specifically,

NOTE Confidence: 0.80161613

00:10:10.105 --> 00:10:12.415 if you're targeting the protein specifically,

NOTE Confidence: 0.80161613

00:10:12.420 --> 00:10:14.328 it should have little side effects

NOTE Confidence: 0.80161613

00:10:14.328 --> 00:10:16.060 outside of the cancer itself.

NOTE Confidence: 0.80161613

00:10:16.060 --> 00:10:19.237 And the hope is that if we can target

NOTE Confidence: 0.80161613

00:10:19.237 --> 00:10:21.949 this kinase alken neuroblastoma.

NOTE Confidence: 0.891430347647059

00:10:21.950 --> 00:10:24.561 That we might have the same positive

NOTE Confidence: 0.891430347647059

00:10:24.561 --> 00:10:26.041 outcomes for neuroblastoma that

NOTE Confidence: 0.891430347647059

00:10:26.041 --> 00:10:27.817 we see for patients with KMLE.

NOTE Confidence: 0.79956105

00:10:29.260 --> 00:10:32.420 So you know one of the things that

NOTE Confidence: 0.79956105

00:10:32.420 --> 00:10:34.220 always fascinates me is how you

NOTE Confidence: 0.79956105

00:10:34.220 --> 00:10:35.870 find these things to begin with.

NOTE Confidence: 0.79956105

00:10:35.870 --> 00:10:39.014 I mean, how do we know that these

NOTE Confidence: 0.79956105

00:10:39.014 --> 00:10:41.350 kinases play a role in cancer?

NOTE Confidence: 0.79956105

00:10:41.350 --> 00:10:43.906 How does that? How do you figure that out?

NOTE Confidence: 0.79956105

00:10:43.910 --> 00:10:46.864 How do you know which kinases are

NOTE Confidence: 0.79956105

00:10:46.864 --> 00:10:49.370 submarines and which kinases are

NOTE Confidence: 0.79956105

00:10:49.370 --> 00:10:51.968 our aircraft carriers, I mean.

NOTE Confidence: 0.79956105

00:10:51.968 --> 00:10:54.551 And how did you figure out that

NOTE Confidence: 0.79956105

00:10:54.551 --> 00:10:56.900 these were important anyways?

NOTE Confidence: 0.79956105

00:10:56.900 --> 00:10:57.968 How does that happen?

NOTE Confidence: 0.82554652

00:10:59.730 --> 00:11:01.230 That's a good question.

NOTE Confidence: 0.82554652

00:11:01.230 --> 00:11:02.355 That's certainly outside

NOTE Confidence: 0.82554652

00:11:02.355 --> 00:11:06.780 of my lab's expertise.

NOTE Confidence: 0.82554652

00:11:06.780 --> 00:11:10.260 A lot of that is done through genomic

NOTE Confidence: 0.82554652

00:11:10.260 --> 00:11:13.806 work and associating certain genes

NOTE Confidence: 0.82554652

00:11:13.806 --> 00:11:16.878 with certain disease phenotypes,

NOTE Confidence: 0.82554652

00:11:16.880 --> 00:11:19.178 and so where my labs expertise

NOTE Confidence: 0.82554652

00:11:19.178 --> 00:11:21.920 comes in pretty much after the fact.

NOTE Confidence: 0.82554652

00:11:21.920 --> 00:11:25.910 Once these associations are known.

NOTE Confidence: 0.82554652

00:11:25.910 --> 00:11:28.774 That's where we come in to help define

NOTE Confidence: 0.82554652

00:11:28.774 --> 00:11:30.709 bio physically and structurally,

NOTE Confidence: 0.82554652

00:11:30.710 --> 00:11:32.930 exactly how these kinases

NOTE Confidence: 0.82554652

00:11:32.930 --> 00:11:35.705 and uncle genes are acting,

NOTE Confidence: 0.82554652

00:11:35.710 --> 00:11:37.670 and hopefully if we have a molecular

NOTE Confidence: 0.82554652

00:11:37.670 --> 00:11:40.654 picture of that how we might design

NOTE Confidence: 0.82554652

00:11:40.654 --> 00:11:42.798 and develop therapeutics to.

NOTE Confidence: 0.82554652

00:11:42.800 --> 00:11:46.167 To stall that and and prevent disease.

NOTE Confidence: 0.890860507142857

00:11:47.890 --> 00:11:50.730 So when you say that it it kind of all

NOTE Confidence: 0.890860507142857

00:11:50.806 --> 00:11:53.196 starts with understanding what genes

NOTE Confidence: 0.890860507142857

00:11:53.196 --> 00:11:56.190 are expressed in what genes aren't.

NOTE Confidence: 0.890860507142857

00:11:56.190 --> 00:11:59.404 I mean it, it sounds like the progress

NOTE Confidence: 0.890860507142857

00:11:59.404 --> 00:12:02.568 that we make in terms of cancer

NOTE Confidence: 0.890860507142857

00:12:02.568 --> 00:12:04.574 medicine is really investigators.

NOTE Confidence: 0.890860507142857

00:12:04.574 --> 00:12:06.646 Building on other investigators

NOTE Confidence: 0.890860507142857

00:12:06.646 --> 00:12:09.600 building on other investigators work.

NOTE Confidence: 0.890860507142857

00:12:09.600 --> 00:12:12.442 So somebody you know maybe was sequencing

NOTE Confidence: 0.890860507142857

00:12:12.442 --> 00:12:16.025 some genes and found that some genes were

NOTE Confidence: 0.890860507142857

00:12:16.025 --> 00:12:18.680 overexpressed in some cancers versus not.

NOTE Confidence: 0.890860507142857

00:12:18.680 --> 00:12:21.848 And then other people kind of discovered that

NOTE Confidence: 0.890860507142857

00:12:21.848 --> 00:12:25.237 that gene was associated with a protein like.

NOTE Confidence: 0.890860507142857

00:12:25.240 --> 00:12:27.557 A kinase and then you look at

NOTE Confidence: 0.890860507142857

00:12:27.557 --> 00:12:29.552 that kinase and say well where

NOTE Confidence: 0.890860507142857

00:12:29.552 --> 00:12:32.010 is it and how can we target it?

NOTE Confidence: 0.890860507142857

00:12:32.010 --> 00:12:34.537 Is that kind of how that works?

NOTE Confidence: 0.890860507142857

00:12:34.540 --> 00:12:34.900 That's

NOTE Confidence: 0.929737544

00:12:34.910 --> 00:12:36.980 exactly right, right? I mean,

NOTE Confidence: 0.929737544

00:12:36.980 --> 00:12:40.494 it's it's work of a tremendous number

NOTE Confidence: 0.929737544

00:12:40.494 --> 00:12:43.850 of individuals with differing expertise.

NOTE Confidence: 0.929737544

00:12:43.850 --> 00:12:46.220 Certainly the approach my lab takes

NOTE Confidence: 0.929737544

00:12:46.220 --> 00:12:49.119 is just one cog in that machine,

NOTE Confidence: 0.929737544

00:12:49.120 --> 00:12:50.686 one that's a bit further down,

NOTE Confidence: 0.929737544

00:12:50.690 --> 00:12:52.447 and probably less than the discovery stage.

NOTE Confidence: 0.929737544

00:12:52.450 --> 00:12:54.784 But one one that is keenly

NOTE Confidence: 0.929737544

00:12:54.784 --> 00:12:56.340 important to understand the

NOTE Confidence: 0.929737544

00:12:56.414 --> 00:12:58.719 mechanism of how molecules work,

NOTE Confidence: 0.929737544

00:12:58.720 --> 00:13:00.544 which can then give us insight

NOTE Confidence: 0.929737544

00:13:00.544 --> 00:13:02.785 into how we might target these

NOTE Confidence: 0.929737544

00:13:02.785 --> 00:13:04.228 and develop therapeutics.

NOTE Confidence: 0.929737544

00:13:04.230 --> 00:13:05.550 Around their function.

NOTE Confidence: 0.915260749090909

00:13:06.960 --> 00:13:08.900 And then the other question

NOTE Confidence: 0.915260749090909

00:13:08.900 --> 00:13:11.160 that that I often have is.

NOTE Confidence: 0.915260749090909

00:13:11.160 --> 00:13:14.994 OK, so you know you discover this kinase and

NOTE Confidence: 0.915260749090909

00:13:14.994 --> 00:13:18.965 you discover that it's important in cancer.

NOTE Confidence: 0.915260749090909

00:13:18.970 --> 00:13:22.226 Why is it that some kinases are important

NOTE Confidence: 0.915260749090909

00:13:22.226 --> 00:13:25.288 in some cancers but not in others?

NOTE Confidence: 0.915260749090909

00:13:25.290 --> 00:13:27.210 I mean, how do these kinases?

NOTE Confidence: 0.915260749090909

00:13:27.210 --> 00:13:30.451 Why? Why do you have these genes

NOTE Confidence: 0.915260749090909

00:13:30.451 --> 00:13:33.229 for these kinases to begin with?

NOTE Confidence: 0.915260749090909

00:13:33.230 --> 00:13:36.338 And why are they differentially expressed?

NOTE Confidence: 0.872277651666666

00:13:37.490 --> 00:13:41.750 Cancer often recapitulates the the paradigms

NOTE Confidence: 0.872277651666666

00:13:41.750 --> 00:13:46.710 that are important and during development.

NOTE Confidence: 0.872277651666666

00:13:46.710 --> 00:13:49.440 So all of these kinases are crucially

NOTE Confidence: 0.872277651666666

00:13:49.440 --> 00:13:52.849 important in the in the stages of development

NOTE Confidence: 0.872277651666666

00:13:52.849 --> 00:13:55.670 and help patterning and complex tissues.

NOTE Confidence: 0.872277651666666

00:13:55.670 --> 00:13:58.575 After that, they they often kind of

NOTE Confidence: 0.872277651666666

00:13:58.575 --> 00:14:01.609 are aren't used so much in adulthood,

NOTE Confidence: 0.872277651666666

00:14:01.610 --> 00:14:04.330 and it's only during cancer.

NOTE Confidence: 0.872277651666666

00:14:04.330 --> 00:14:07.984 In the the oncogenic process that a lot of

NOTE Confidence: 0.872277651666666

00:14:07.984 --> 00:14:11.687 these developmental pathways are reawakened,

NOTE Confidence: 0.872277651666666

00:14:11.690 --> 00:14:14.203 and they can be reawakened in different

NOTE Confidence: 0.872277651666666

00:14:14.203 --> 00:14:16.459 tissues and and different places,

NOTE Confidence: 0.872277651666666

00:14:16.460 --> 00:14:17.225 but they all.

NOTE Confidence: 0.872277651666666

00:14:17.225 --> 00:14:18.500 Lead to the same thing.

NOTE Confidence: 0.872277651666666

00:14:18.500 --> 00:14:20.880 Basically once you turn return

NOTE Confidence: 0.872277651666666

00:14:20.880 --> 00:14:24.023 a kinase on your turning on

NOTE Confidence: 0.872277651666666

00:14:24.023 --> 00:14:27.172 the the growth instructions and

NOTE Confidence: 0.872277651666666

00:14:27.172 --> 00:14:30.036 when that's not counterbalanced,

NOTE Confidence: 0.872277651666666

00:14:30.040 --> 00:14:31.988 that's how cancer develops.

NOTE Confidence: 0.8382126625

00:14:32.840 --> 00:14:34.316 Well, we're going to take a

NOTE Confidence: 0.8382126625

00:14:34.316 --> 00:14:36.179 short break for a medical minute,

NOTE Confidence: 0.8382126625

00:14:36.180 --> 00:14:37.780 but when we come back,

NOTE Confidence: 0.8382126625

00:14:37.780 --> 00:14:40.270 let's learn more about the molecular

NOTE Confidence: 0.8382126625

00:14:40.270 --> 00:14:42.714 mechanisms of cancer and how exactly

NOTE Confidence: 0.8382126625

00:14:42.714 --> 00:14:44.430 we target these differentially

NOTE Confidence: 0.8382126625

00:14:44.430 --> 00:14:46.430 expressed kinases to actually

NOTE Confidence: 0.8382126625

00:14:46.430 --> 00:14:49.130 make a difference for patients,

NOTE Confidence: 0.8382126625

00:14:49.130 --> 00:14:50.972 please stay tuned for more with

NOTE Confidence: 0.8382126625

00:14:50.972 --> 00:14:52.550 my guest doctor Daryl Klein

NOTE Confidence: 0.884235398214286

00:14:53.060 --> 00:14:55.340 funding for Yale Cancer Answers comes

NOTE Confidence: 0.884235398214286

00:14:55.340 --> 00:14:57.715 from Smilow Cancer Hospital with an

NOTE Confidence: 0.884235398214286

00:14:57.715 --> 00:15:00.097 event focused on nutrition for cancer

NOTE Confidence: 0.884235398214286

00:15:00.097 --> 00:15:01.944 survivorship presented by the Smilow

NOTE Confidence: 0.884235398214286

00:15:01.944 --> 00:15:03.589 Cancer Care Center in Trumbull.

NOTE Confidence: 0.884235398214286

00:15:03.590 --> 00:15:06.894 April 14th Register at Yale Cancer Center.

NOTE Confidence: 0.884235398214286

00:15:06.900 --> 00:15:09.658 Org or email cancer answers at Yale.

NOTE Confidence: 0.838554415

00:15:11.920 --> 00:15:13.832 The American Cancer Society

NOTE Confidence: 0.838554415

00:15:13.832 --> 00:15:16.368 estimates that nearly 150,000 people

NOTE Confidence: 0.838554415

00:15:16.368 --> 00:15:18.986 in the US will be diagnosed with

NOTE Confidence: 0.838554415

00:15:18.986 --> 00:15:20.917 colorectal cancer this year alone.

NOTE Confidence: 0.838554415

00:15:20.920 --> 00:15:23.070 When detected, early colorectal cancer

NOTE Confidence: 0.838554415

00:15:23.070 --> 00:15:25.800 is easily treated and highly curable,

NOTE Confidence: 0.838554415

00:15:25.800 --> 00:15:27.864 and men and women over the age of

NOTE Confidence: 0.838554415

00:15:27.864 --> 00:15:29.643 45 should have regular colonoscopies

NOTE Confidence: 0.838554415

00:15:29.643 --> 00:15:31.633 to screen for the disease.

NOTE Confidence: 0.838554415

00:15:31.640 --> 00:15:33.088 Patients with colorectal cancer

NOTE Confidence: 0.838554415

00:15:33.088 --> 00:15:35.260 have more hope than ever before,

NOTE Confidence: 0.838554415

00:15:35.260 --> 00:15:38.080 thanks to increased access to advanced

NOTE Confidence: 0.838554415

00:15:38.080 --> 00:15:39.960 therapies and specialized care.

NOTE Confidence: 0.838554415

00:15:39.960 --> 00:15:41.816 Clinical trials are currently

NOTE Confidence: 0.838554415

00:15:41.816 --> 00:15:43.672 underway at federally designated

NOTE Confidence: 0.838554415

00:15:43.672 --> 00:15:45.110 Comprehensive Cancer Centers.

NOTE Confidence: 0.838554415

00:15:45.110 --> 00:15:47.990 Such as Yale Cancer Center and its Milo

NOTE Confidence: 0.838554415

00:15:47.990 --> 00:15:50.583 Cancer Hospital to test innovative new

NOTE Confidence: 0.838554415

00:15:50.583 --> 00:15:52.856 treatments for colorectal cancer tumor.

NOTE Confidence: 0.838554415

00:15:52.856 --> 00:15:55.186 Gene analysis has helped improve

NOTE Confidence: 0.838554415

00:15:55.186 --> 00:15:57.050 management of colorectal cancer

NOTE Confidence: 0.838554415

00:15:57.115 --> 00:15:59.345 by identifying the patients most

NOTE Confidence: 0.838554415

00:15:59.345 --> 00:16:01.575 likely to benefit from chemotherapy

NOTE Confidence: 0.838554415

00:16:01.644 --> 00:16:03.348 and newer targeted agents,

NOTE Confidence: 0.838554415

00:16:03.350 --> 00:16:06.170 resulting in more patient specific treatment.

NOTE Confidence: 0.838554415

00:16:06.170 --> 00:16:09.230 More information is available at

NOTE Confidence: 0.838554415

00:16:09.230 --> 00:16:10.532 yalecancercenter.org you're listening

NOTE Confidence: 0.838554415

00:16:10.532 --> 00:16:12.268 to Connecticut Public Radio.

NOTE Confidence: 0.895207821666667

00:16:13.040 --> 00:16:15.056 Welcome back to Yale Cancer answers.

NOTE Confidence: 0.895207821666667

00:16:15.060 --> 00:16:16.356 This is doctor in East Egg

NOTE Confidence: 0.895207821666667

00:16:16.356 --> 00:16:17.778 part and I'm joined tonight by

NOTE Confidence: 0.895207821666667

00:16:17.778 --> 00:16:19.294 my guest doctor, Daryl Klein.

NOTE Confidence: 0.895207821666667

00:16:19.294 --> 00:16:21.556 We're learning more about the molecular

NOTE Confidence: 0.895207821666667

00:16:21.556 --> 00:16:23.610 mechanisms of cancer and right before

NOTE Confidence: 0.895207821666667

00:16:23.610 --> 00:16:25.852 the break Daryl was telling us about

NOTE Confidence: 0.895207821666667

00:16:25.852 --> 00:16:27.507 this profoundly inspiring story of

NOTE Confidence: 0.895207821666667

00:16:27.507 --> 00:16:30.025 his sister who is diagnosed with CML,

NOTE Confidence: 0.895207821666667

00:16:30.025 --> 00:16:32.000 which really started his journey

NOTE Confidence: 0.895207821666667

00:16:32.000 --> 00:16:34.219 on becoming a physician scientist,

NOTE Confidence: 0.895207821666667

00:16:34.220 --> 00:16:37.298 and one who is particularly interested

NOTE Confidence: 0.895207821666667

00:16:37.300 --> 00:16:41.300 in these molecules called kinases,

NOTE Confidence: 0.895207821666667

00:16:41.300 --> 00:16:43.334 which really work.

NOTE Confidence: 0.895207821666667

00:16:43.334 --> 00:16:48.080 To activate the growth of of cancer

NOTE Confidence: 0.895207821666667

00:16:48.212 --> 00:16:51.192 cells and so you know Darrell before

NOTE Confidence: 0.895207821666667

00:16:51.192 --> 00:16:53.775 the break you were mentioning that

NOTE Confidence: 0.895207821666667

00:16:53.775 --> 00:16:56.559 eurolab really after we know that

NOTE Confidence: 0.895207821666667

00:16:56.559 --> 00:17:00.154 you know a kinase is involved in a

NOTE Confidence: 0.895207821666667

00:17:00.154 --> 00:17:02.706 particular cancer is really involved

NOTE Confidence: 0.895207821666667

00:17:02.706 --> 00:17:05.692 in looking at its its structure

NOTE Confidence: 0.895207821666667

00:17:05.692 --> 00:17:08.254 and kind of how to target it.

NOTE Confidence: 0.895207821666667

00:17:08.260 --> 00:17:09.949 Is that right?

NOTE Confidence: 0.895207821666667

00:17:09.950 --> 00:17:10.720 Exactly,

NOTE Confidence: 0.904520128571429

00:17:11.550 --> 00:17:14.525 my lab is a structural biology lab,

NOTE Confidence: 0.904520128571429

00:17:14.530 --> 00:17:18.418 so you know, we're sensually photographers.

NOTE Confidence: 0.904520128571429

00:17:18.420 --> 00:17:20.240 But we take pictures of of very,

NOTE Confidence: 0.904520128571429

00:17:20.240 --> 00:17:23.798 very tiny things, molecules and proteins,

NOTE Confidence: 0.904520128571429

00:17:23.800 --> 00:17:26.085 and so this. Requires specialized

NOTE Confidence: 0.904520128571429

00:17:26.085 --> 00:17:28.370 equipment cameras if you will.

NOTE Confidence: 0.904520128571429

00:17:28.370 --> 00:17:32.430 That use X rays and electrons rather

NOTE Confidence: 0.904520128571429

00:17:32.430 --> 00:17:34.670 than light in the in the visual

NOTE Confidence: 0.904520128571429

00:17:34.670 --> 00:17:36.550 spectrum that that we're used to.

NOTE Confidence: 0.904520128571429

00:17:36.550 --> 00:17:39.760 Uhm? You know, many people know.

NOTE Confidence: 0.904520128571429

00:17:39.760 --> 00:17:41.970 DNA, so let's start there.

NOTE Confidence: 0.904520128571429

00:17:41.970 --> 00:17:44.749 People have heard of DNA and Watson

NOTE Confidence: 0.904520128571429

00:17:44.749 --> 00:17:48.058 and Crick and and they're double Helix.

NOTE Confidence: 0.904520128571429

00:17:48.060 --> 00:17:51.084 And DNA is is basically a cookbook

NOTE Confidence: 0.904520128571429

00:17:51.084 --> 00:17:54.458 with 10s of thousands of recipes,

NOTE Confidence: 0.904520128571429

00:17:54.460 --> 00:17:57.320 and they're mostly protein recipes,

NOTE Confidence: 0.904520128571429

00:17:57.320 --> 00:18:01.604 so I guess it's a keto or Paleo cookbook.

NOTE Confidence: 0.904520128571429

00:18:01.610 --> 00:18:04.508 ALK is one of these recipes.

NOTE Confidence: 0.904520128571429

00:18:04.510 --> 00:18:08.245 And the recipe in the DNA cookbook tells us

NOTE Confidence: 0.904520128571429

00:18:08.250 --> 00:18:12.290 the ingredients and the order to make alcc.

NOTE Confidence: 0.904520128571429

00:18:12.290 --> 00:18:16.754 But one big problem with this DNA cookbook.

NOTE Confidence: 0.904520128571429

00:18:16.760 --> 00:18:18.120 Is it's not illustrated,

NOTE Confidence: 0.904520128571429

00:18:18.120 --> 00:18:20.628 so we have no idea what the

NOTE Confidence: 0.904520128571429

00:18:20.628 --> 00:18:22.578 final product will look like.

NOTE Confidence: 0.904520128571429

00:18:22.580 --> 00:18:25.775 So you know my lab follows the recipe to

NOTE Confidence: 0.904520128571429

00:18:25.775 --> 00:18:28.630 take pictures of the final products to.

NOTE Confidence: 0.904520128571429

00:18:28.630 --> 00:18:32.008 To illustrate this, this DNA cookbook.

NOTE Confidence: 0.904520128571429

00:18:32.010 --> 00:18:35.335 So we take molecular photographs

NOTE Confidence: 0.904520128571429

00:18:35.335 --> 00:18:38.838 of the protein and also the mutants

NOTE Confidence: 0.904520128571429

00:18:38.838 --> 00:18:40.723 that are found in cancer.

NOTE Confidence: 0.904520128571429

00:18:40.730 --> 00:18:44.090 And in these pictures give us a better

NOTE Confidence: 0.904520128571429

00:18:44.090 --> 00:18:46.174 understanding of of how things supposed

NOTE Confidence: 0.904520128571429

00:18:46.174 --> 00:18:49.330 to look like and how it changes in cancer.

NOTE Confidence: 0.904520128571429

00:18:49.330 --> 00:18:51.826 And in this can inform us

NOTE Confidence: 0.904520128571429

00:18:51.826 --> 00:18:53.074 about approaches to.

NOTE Confidence: 0.904520128571429

00:18:53.080 --> 00:18:57.529 Designing targeted therapeutics.

NOTE Confidence: 0.904520128571429

00:18:57.530 --> 00:19:01.233 So my lab just reported the structure

NOTE Confidence: 0.904520128571429

00:19:01.233 --> 00:19:05.409 of of the protein ALK in nature.

NOTE Confidence: 0.904520128571429

00:19:05.410 --> 00:19:08.335 That's the tyrosine kinase that's

NOTE Confidence: 0.904520128571429

00:19:08.335 --> 00:19:10.090 important in neuroblastoma.

NOTE Confidence: 0.904520128571429

00:19:10.090 --> 00:19:12.726 And this gave us a first look at

NOTE Confidence: 0.904520128571429

00:19:12.726 --> 00:19:15.544 this unique uncle Gene and it's,

NOTE Confidence: 0.904520128571429

00:19:15.544 --> 00:19:18.183 you know it's going to be impossible

NOTE Confidence: 0.904520128571429

00:19:18.183 --> 00:19:21.210 for me to relay the complexities here.

NOTE Confidence: 0.904520128571429

00:19:21.210 --> 00:19:23.196 But if we stick to our.

NOTE Confidence: 0.904520128571429

00:19:23.200 --> 00:19:25.758 Analogy of the the cell is an ocean, it's.

NOTE Confidence: 0.904520128571429

00:19:25.758 --> 00:19:28.026 It's not unreasonable to say that

NOTE Confidence: 0.904520128571429

00:19:28.026 --> 00:19:30.935 Alcc did actually look a bit like an

NOTE Confidence: 0.904520128571429

00:19:30.935 --> 00:19:33.880 aircraft carrier. I mean it had this.

NOTE Confidence: 0.904520128571429

00:19:33.880 --> 00:19:37.380 Unusual a long gated structure and it

NOTE Confidence: 0.904520128571429

00:19:37.380 --> 00:19:40.796 probably lies parallel to the to the surface,

NOTE Confidence: 0.904520128571429

00:19:40.800 --> 00:19:42.900 so it's like an aircraft carrier

NOTE Confidence: 0.904520128571429

00:19:42.900 --> 00:19:44.448 floating on the water.

NOTE Confidence: 0.904520128571429

00:19:44.448 --> 00:19:46.770 Or the surface of a cell.

NOTE Confidence: 0.904520128571429

00:19:46.770 --> 00:19:48.228 And and furthermore,

NOTE Confidence: 0.904520128571429

00:19:48.228 --> 00:19:52.430 we can see how it actually gets activated.

NOTE Confidence: 0.904520128571429

00:19:52.430 --> 00:19:54.716 Basically two of these aircraft carriers

NOTE Confidence: 0.904520128571429

00:19:54.716 --> 00:19:57.840 line up next to one another and in

NOTE Confidence: 0.904520128571429

00:19:57.840 --> 00:20:00.126 that position they're then capable to

NOTE Confidence: 0.904520128571429

00:20:00.203 --> 00:20:02.926 sell to send their their growth signals,

NOTE Confidence: 0.904520128571429

00:20:02.930 --> 00:20:05.120 which ultimately end up being

NOTE Confidence: 0.904520128571429

00:20:05.120 --> 00:20:06.434 cancerous growth signals.

NOTE Confidence: 0.904520128571429

00:20:06.440 --> 00:20:08.588 To the neuroblastoma cell.

NOTE Confidence: 0.904520128571429

00:20:08.588 --> 00:20:10.736 Uncontrolled ALK activation like

NOTE Confidence: 0.904520128571429

00:20:10.736 --> 00:20:13.948 this leads to cancer and it and it

NOTE Confidence: 0.904520128571429

00:20:13.948 --> 00:20:16.432 results from the tumor continuing to

NOTE Confidence: 0.904520128571429

00:20:16.432 --> 00:20:18.960 express this developmental out gene

NOTE Confidence: 0.904520128571429

00:20:18.960 --> 00:20:23.930 along with its stimulatory ligand.

NOTE Confidence: 0.904520128571429

00:20:23.930 --> 00:20:26.090 Our research reveals an approach

NOTE Confidence: 0.904520128571429

00:20:26.090 --> 00:20:29.229 to shutting off ALK and and that

NOTE Confidence: 0.904520128571429

00:20:29.229 --> 00:20:31.484 it can be quite straightforward.

NOTE Confidence: 0.904520128571429

00:20:31.490 --> 00:20:34.550 Potentially if we use our structure

NOTE Confidence: 0.904520128571429

00:20:34.550 --> 00:20:35.790 as a as a blueprint,

NOTE Confidence: 0.904520128571429

00:20:35.790 --> 00:20:37.536 we can see clear areas where

NOTE Confidence: 0.904520128571429

00:20:37.536 --> 00:20:39.550 we would want to target this.

NOTE Confidence: 0.904520128571429

00:20:39.550 --> 00:20:41.470 This aircraft like molecule.

NOTE Confidence: 0.904520128571429

00:20:41.470 --> 00:20:43.731 I mean there's certain vulnerabilities

NOTE Confidence: 0.904520128571429

00:20:43.731 --> 00:20:46.118 that are revealed in the structure that

NOTE Confidence: 0.904520128571429

00:20:46.118 --> 00:20:48.283 we can strategically target and and

NOTE Confidence: 0.904520128571429

00:20:48.283 --> 00:20:50.425 you know sync this aircraft carrier,

NOTE Confidence: 0.904520128571429

00:20:50.430 --> 00:20:53.310 and so my lab now is designing potent

NOTE Confidence: 0.7377237425

00:20:53.310 --> 00:20:54.924 antibodies. That specifically

NOTE Confidence: 0.7377237425

00:20:54.924 --> 00:20:57.614 target these regions in ALK,

NOTE Confidence: 0.7377237425

00:20:57.620 --> 00:21:00.014 and you know there's there's small

NOTE Confidence: 0.7377237425

00:21:00.014 --> 00:21:02.358 molecules currently out there in use for.

NOTE Confidence: 0.7377237425

00:21:02.360 --> 00:21:04.820 Neuroblastoma, as well as many other

NOTE Confidence: 0.7377237425

00:21:04.820 --> 00:21:07.119 different cancers that are driven or

NOTE Confidence: 0.7377237425

00:21:07.120 --> 00:21:10.528 or partially dependent on on kinases.

NOTE Confidence: 0.7377237425

00:21:10.530 --> 00:21:12.855 And compared to small molecule

NOTE Confidence: 0.7377237425

00:21:12.855 --> 00:21:13.785 therapeutics antibodies,

NOTE Confidence: 0.7377237425

00:21:13.790 --> 00:21:16.674 I think can offer a great benefit.

NOTE Confidence: 0.7377237425

00:21:16.680 --> 00:21:18.845 The small molecule drugs that

NOTE Confidence: 0.7377237425

00:21:18.845 --> 00:21:21.527 are now currently in use like

NOTE Confidence: 0.7377237425

00:21:21.527 --> 00:21:23.667 prison and and learn Latin.

NOTE Confidence: 0.7377237425

00:21:23.670 --> 00:21:25.450 They target the intracellular.

NOTE Confidence: 0.7377237425

00:21:25.450 --> 00:21:29.060 The actual kinase domain of the protein out.

NOTE Confidence: 0.7377237425

00:21:29.060 --> 00:21:31.734 And one problem with these types of

NOTE Confidence: 0.7377237425

00:21:31.734 --> 00:21:33.510 inhibitors is that you can't keep

NOTE Confidence: 0.7377237425

00:21:33.510 --> 00:21:35.240 fooling the cancer for very long.

NOTE Confidence: 0.7377237425

00:21:35.240 --> 00:21:37.322 They the cancer figures out this

NOTE Confidence: 0.7377237425

00:21:37.322 --> 00:21:39.446 trip quite fast that you're trying

NOTE Confidence: 0.7377237425

00:21:39.446 --> 00:21:42.118 to inhibit it in this in this domain,

NOTE Confidence: 0.7377237425

00:21:42.120 --> 00:21:44.745 and they and the cancer makes changes

NOTE Confidence: 0.7377237425

00:21:44.745 --> 00:21:46.829 that diminish the drugs impact.

NOTE Confidence: 0.7377237425

00:21:46.830 --> 00:21:48.690 Whereas I think the antibody

NOTE Confidence: 0.7377237425

00:21:48.690 --> 00:21:51.599 approach is is is a more brute

NOTE Confidence: 0.7377237425

00:21:51.599 --> 00:21:53.770 force approach and it's harder for

NOTE Confidence: 0.7377237425

00:21:53.770 --> 00:21:55.270 the cancer to overcome this,

NOTE Confidence: 0.7377237425

00:21:55.270 --> 00:21:57.194 the strategy of inhibition.

NOTE Confidence: 0.7377237425

00:21:57.194 --> 00:22:00.080 I think the the therapeutic future

NOTE Confidence: 0.7377237425

00:22:00.163 --> 00:22:02.373 will likely use a combination

NOTE Confidence: 0.7377237425

00:22:02.373 --> 00:22:04.583 of these two to completely.

NOTE Confidence: 0.7377237425

00:22:04.590 --> 00:22:08.660 Dismantle the the out machinery.

NOTE Confidence: 0.7377237425

00:22:08.660 --> 00:22:10.940 In some ways you know cancer can be

NOTE Confidence: 0.7377237425

00:22:10.940 --> 00:22:13.157 feod viewed as having some of the

NOTE Confidence: 0.7377237425

00:22:13.157 --> 00:22:15.445 similar challenges that we see for SARS,

NOTE Confidence: 0.7377237425

00:22:15.445 --> 00:22:18.235 Co V2 and both use similar

NOTE Confidence: 0.7377237425

00:22:18.235 --> 00:22:20.400 strategies to overcome disease.

NOTE Confidence: 0.7377237425

00:22:20.400 --> 00:22:23.280 Both you know cancer and

NOTE Confidence: 0.7377237425

00:22:23.280 --> 00:22:25.008 viruses mutate rapidly.

NOTE Confidence: 0.7377237425

00:22:25.010 --> 00:22:27.885 And they can evolve to

NOTE Confidence: 0.7377237425

00:22:27.885 --> 00:22:29.610 different inhibitor approaches.

NOTE Confidence: 0.7377237425

00:22:29.610 --> 00:22:32.220 And just as we use antibodies

NOTE Confidence: 0.7377237425

00:22:32.220 --> 00:22:35.312 through vaccination or or directly

NOTE Confidence: 0.7377237425

00:22:35.312 --> 00:22:37.964 injecting recombinant antibodies and

NOTE Confidence: 0.7377237425

00:22:37.964 --> 00:22:40.890 small molecules to overcome COVID.

NOTE Confidence: 0.7377237425

00:22:40.890 --> 00:22:44.299 Now we have a new blueprint for ALK to

NOTE Confidence: 0.7377237425

00:22:44.299 --> 00:22:46.244 help us overcome similar challenges

NOTE Confidence: 0.7377237425

00:22:46.244 --> 00:22:48.742 that are encountered in in cancer

NOTE Confidence: 0.7377237425

00:22:48.742 --> 00:22:50.498 and in particular neuroblastoma.

NOTE Confidence: 0.900451000714286

00:22:51.520 --> 00:22:55.003 And it sounds like when you know the the

NOTE Confidence: 0.900451000714286

00:22:55.003 --> 00:22:57.568 structure of these aircraft carriers.

NOTE Confidence: 0.900451000714286

00:22:57.570 --> 00:23:00.377 But you can be very specific about

NOTE Confidence: 0.900451000714286

00:23:00.377 --> 00:23:02.682 you know targeting those particular

NOTE Confidence: 0.900451000714286

00:23:02.682 --> 00:23:05.748 molecules as opposed to normal cells.

NOTE Confidence: 0.900451000714286

00:23:05.750 --> 00:23:08.156 So you might have you know

NOTE Confidence: 0.900451000714286

00:23:08.156 --> 00:23:10.570 a bomber that only targets,

NOTE Confidence: 0.900451000714286

00:23:10.570 --> 00:23:12.616 you know that flatbed where the

NOTE Confidence: 0.900451000714286

00:23:12.616 --> 00:23:15.149 aircraft lands on the aircraft carrier.

NOTE Confidence: 0.900451000714286

00:23:15.150 --> 00:23:18.918 Or you can have some sort of a.

NOTE Confidence: 0.900451000714286

00:23:18.920 --> 00:23:21.728 A mechanism whereby these two aircraft

NOTE Confidence: 0.900451000714286

00:23:21.728 --> 00:23:24.986 carriers can't line up together that really

NOTE Confidence: 0.900451000714286

00:23:24.986 --> 00:23:27.074 wouldn't apply in any other situation,

NOTE Confidence: 0.900451000714286

00:23:27.080 --> 00:23:29.712 so you can try to get more precise

NOTE Confidence: 0.900451000714286

00:23:29.712 --> 00:23:31.939 or more targeted therapies.

NOTE Confidence: 0.900451000714286

00:23:31.940 --> 00:23:32.468 Is that right?

NOTE Confidence: 0.931961159090909

00:23:33.820 --> 00:23:34.912 That's exactly right,

NOTE Confidence: 0.931961159090909

00:23:34.912 --> 00:23:37.860 and remember that I said that you know,

NOTE Confidence: 0.931961159090909

00:23:37.860 --> 00:23:40.025 since alpha is expressed only

NOTE Confidence: 0.931961159090909

00:23:40.025 --> 00:23:42.190 on neuroblastoma cells but not

NOTE Confidence: 0.931961159090909

00:23:42.263 --> 00:23:44.139 present on healthy tissue,

NOTE Confidence: 0.931961159090909

00:23:44.140 --> 00:23:45.668 it really makes targeting

NOTE Confidence: 0.931961159090909

00:23:45.668 --> 00:23:47.960 ALK the perfect for you know.

NOTE Confidence: 0.931961159090909

00:23:47.960 --> 00:23:49.410 Set up for precision medicine

NOTE Confidence: 0.931961159090909

00:23:49.410 --> 00:23:51.639 and then a layer on top of that,

NOTE Confidence: 0.931961159090909

00:23:51.640 --> 00:23:53.992 which I think you were just referring

NOTE Confidence: 0.931961159090909

00:23:53.992 --> 00:23:57.177 to is now that we know the detailed

NOTE Confidence: 0.931961159090909

00:23:57.177 --> 00:23:59.282 structure and blueprints of this.

NOTE Confidence: 0.931961159090909

00:23:59.290 --> 00:24:00.434 And that's exactly what we're trying to do.

NOTE Confidence: 0.931961159090909

00:24:00.440 --> 00:24:02.240 We're trying to design

NOTE Confidence: 0.931961159090909

00:24:02.240 --> 00:24:03.590 antibodies that specifically.

NOTE Confidence: 0.931961159090909

00:24:03.590 --> 00:24:07.210 Block areas on the protein that are

NOTE Confidence: 0.931961159090909

00:24:07.210 --> 00:24:09.850 involved in important for it's activation.

NOTE Confidence: 0.931961159090909

00:24:09.850 --> 00:24:12.754 That is precisely where the ligand

NOTE Confidence: 0.931961159090909

00:24:12.754 --> 00:24:17.150 binds to activate the receptor and

NOTE Confidence: 0.931961159090909

00:24:17.150 --> 00:24:19.990 getting back to how it's activated.

NOTE Confidence: 0.931961159090909

00:24:19.990 --> 00:24:22.762 Where we see the the two molecules

NOTE Confidence: 0.931961159090909

00:24:22.762 --> 00:24:24.998 lining up side-by-side to each other,

NOTE Confidence: 0.931961159090909

00:24:25.000 --> 00:24:27.085 we're designing antibodies that can

NOTE Confidence: 0.931961159090909

00:24:27.085 --> 00:24:29.624 block that interface to prevent it

NOTE Confidence: 0.931961159090909

00:24:29.624 --> 00:24:31.940 from being activated that is being

NOTE Confidence: 0.931961159090909

00:24:31.940 --> 00:24:33.600 activated independent of ligand.

NOTE Confidence: 0.931961159090909

00:24:33.600 --> 00:24:36.197 Which could be caused by certain mutations,

NOTE Confidence: 0.931961159090909

00:24:36.200 --> 00:24:38.780 which is further research that we're

NOTE Confidence: 0.931961159090909

00:24:38.780 --> 00:24:41.900 doing now or or with the ligand.

NOTE Confidence: 0.931961159090909

00:24:41.900 --> 00:24:45.278 So we're using all this information

NOTE Confidence: 0.931961159090909

00:24:45.278 --> 00:24:47.530 to specifically design antibodies

NOTE Confidence: 0.931961159090909

00:24:47.614 --> 00:24:50.062 that are tailored to this molecule

NOTE Confidence: 0.931961159090909

00:24:50.062 --> 00:24:53.342 and the and the type of mutations

NOTE Confidence: 0.931961159090909

00:24:53.342 --> 00:24:55.952 or mechanisms that activate it

NOTE Confidence: 0.931961159090909

00:24:55.952 --> 00:24:58.300 specifically in in neuroblastoma.

NOTE Confidence: 0.913035372

00:24:59.530 --> 00:25:02.470 And so as you design these

NOTE Confidence: 0.913035372

00:25:02.470 --> 00:25:04.430 antibodies in these treatments,

NOTE Confidence: 0.913035372

00:25:04.430 --> 00:25:06.716 you're doing that in the lab. How?

NOTE Confidence: 0.913035372

00:25:06.716 --> 00:25:08.998 How does it actually get into patients?

NOTE Confidence: 0.913035372

00:25:09.000 --> 00:25:11.760 How does it affect people like your sister?

NOTE Confidence: 0.913035372

00:25:11.760 --> 00:25:14.415 Because that's where the story

NOTE Confidence: 0.913035372

00:25:14.415 --> 00:25:16.473 really started and how long

NOTE Confidence: 0.913035372

00:25:16.473 --> 00:25:18.128 does that whole process take?

NOTE Confidence: 0.796460149

00:25:19.720 --> 00:25:21.772 You're right, that's a that's certainly

NOTE Confidence: 0.796460149

00:25:21.772 --> 00:25:24.452 is is a long process and you know

NOTE Confidence: 0.796460149

00:25:24.452 --> 00:25:26.851 Cancer Research is is so matured and

NOTE Confidence: 0.796460149

00:25:26.851 --> 00:25:29.041 specialized now that it really requires

NOTE Confidence: 0.796460149

00:25:29.041 --> 00:25:31.664 you know effort to put these discoveries

NOTE Confidence: 0.796460149

00:25:31.664 --> 00:25:33.854 into usable formats and for others

NOTE Confidence: 0.796460149

00:25:33.860 --> 00:25:36.986 to build upon and meaningful ways.

NOTE Confidence: 0.796460149

00:25:36.990 --> 00:25:39.790 And just as the NIH created that MSTP

NOTE Confidence: 0.796460149

00:25:39.790 --> 00:25:42.702 program to link basic science and patient

NOTE Confidence: 0.796460149

00:25:42.702 --> 00:25:45.496 Care now I think we need similar links

NOTE Confidence: 0.796460149

00:25:45.496 --> 00:25:47.310 between basic science researchers.

NOTE Confidence: 0.796460149

00:25:47.310 --> 00:25:50.572 I mean, the you know RNA biologist

NOTE Confidence: 0.796460149

00:25:50.572 --> 00:25:52.360 and chromosome researcher and.

NOTE Confidence: 0.796460149

00:25:52.360 --> 00:25:54.388 And in the biophysicist like me

NOTE Confidence: 0.796460149

00:25:54.388 --> 00:25:56.871 trying to link up with the model

NOTE Confidence: 0.796460149

00:25:56.871 --> 00:25:59.335 Organism biologist to test the a lot

NOTE Confidence: 0.796460149

00:25:59.409 --> 00:26:01.619 of these and preclinical setups.

NOTE Confidence: 0.796460149

00:26:01.620 --> 00:26:04.168 We all speak a different scientific dialect

NOTE Confidence: 0.796460149

00:26:04.168 --> 00:26:06.300 and we have different perspectives,

NOTE Confidence: 0.796460149

00:26:06.300 --> 00:26:10.460 so you know how do we work together

NOTE Confidence: 0.796460149

00:26:10.555 --> 00:26:12.577 and in one answer to that is is,

NOTE Confidence: 0.796460149

00:26:12.580 --> 00:26:14.996 you know being part of the Yale Cancer

NOTE Confidence: 0.796460149

00:26:14.996 --> 00:26:17.377 Biol Biology Institute that I'm a part of.

NOTE Confidence: 0.796460149

00:26:17.380 --> 00:26:19.942 You know we we really bring

NOTE Confidence: 0.796460149

00:26:19.942 --> 00:26:21.650 together desperate researchers among

NOTE Confidence: 0.796460149

00:26:21.718 --> 00:26:23.518 those interested in cancer.

NOTE Confidence: 0.796460149

00:26:23.520 --> 00:26:26.310 And so you know now I have and and

NOTE Confidence: 0.796460149

00:26:26.310 --> 00:26:29.380 being a physician scientist so you know

NOTE Confidence: 0.796460149

00:26:29.380 --> 00:26:32.250 now there's a cohort of people and

NOTE Confidence: 0.796460149

00:26:32.250 --> 00:26:35.024 colleagues that I can work with that

NOTE Confidence: 0.796460149

00:26:35.024 --> 00:26:37.148 can bring our developing antibodies

NOTE Confidence: 0.796460149

00:26:37.148 --> 00:26:40.292 that we have into preclinical testing

NOTE Confidence: 0.796460149

00:26:40.292 --> 00:26:43.850 quite rapidly to see if they do.

NOTE Confidence: 0.796460149

00:26:43.850 --> 00:26:48.230 So good activity in vivo and then that

NOTE Confidence: 0.796460149

00:26:48.230 --> 00:26:50.430 hopefully can be rapidly leveraged

NOTE Confidence: 0.796460149

00:26:50.430 --> 00:26:53.169 into reaching the the patients that

NOTE Confidence: 0.796460149

00:26:53.169 --> 00:26:55.180 desperately need these treatments.

NOTE Confidence: 0.90850388875

00:26:56.680 --> 00:26:58.490 Sounds very much like you

NOTE Confidence: 0.90850388875

00:26:58.490 --> 00:26:59.576 had mentioned earlier,

NOTE Confidence: 0.90850388875

00:26:59.580 --> 00:27:02.396 but this is kind of a microcosm for

NOTE Confidence: 0.90850388875

00:27:02.396 --> 00:27:04.680 the macrocosm of how science works,

NOTE Confidence: 0.90850388875

00:27:04.680 --> 00:27:06.960 that that your lab puts together.

NOTE Confidence: 0.90850388875

00:27:06.960 --> 00:27:09.284 People who all kind of come at

NOTE Confidence: 0.90850388875

00:27:09.284 --> 00:27:12.099 the problem of of ALK from a

NOTE Confidence: 0.90850388875

00:27:12.099 --> 00:27:13.835 slightly different vantage point.

NOTE Confidence: 0.90850388875

00:27:13.840 --> 00:27:17.574 But the work in your lab kind of builds

NOTE Confidence: 0.90850388875

00:27:17.574 --> 00:27:19.800 on the work of other people's labs,

NOTE Confidence: 0.90850388875

00:27:19.800 --> 00:27:22.572 and so maybe in in the last

NOTE Confidence: 0.90850388875

00:27:22.572 --> 00:27:24.580 few minutes that we have,

NOTE Confidence: 0.90850388875

00:27:24.580 --> 00:27:26.810 you could tell us kind of a little bit about.

NOTE Confidence: 0.90850388875

00:27:26.810 --> 00:27:29.357 How that works in the grand scheme of things?

NOTE Confidence: 0.90850388875

00:27:29.360 --> 00:27:31.150 I mean, it sounds like.

NOTE Confidence: 0.90850388875

00:27:31.150 --> 00:27:33.230 One of the things that we've realized with

NOTE Confidence: 0.90850388875

00:27:33.230 --> 00:27:35.266 the pandemic is that the world is shrinking,

NOTE Confidence: 0.90850388875

00:27:35.270 --> 00:27:38.015 and hopefully the scientific discovery

NOTE Confidence: 0.90850388875

00:27:38.015 --> 00:27:41.559 from one lab to another kind of.

NOTE Confidence: 0.90850388875

00:27:41.560 --> 00:27:43.240 Bounces around fairly easily.

NOTE Confidence: 0.90850388875

00:27:43.240 --> 00:27:45.340 How does that collaboration work?

NOTE Confidence: 0.882697558

00:27:46.130 --> 00:27:49.136 I think it is. It is certainly a challenge

NOTE Confidence: 0.882697558

00:27:49.136 --> 00:27:51.664 and I think you know getting getting

NOTE Confidence: 0.882697558

00:27:51.664 --> 00:27:54.656 researchers to to talk to each other and

NOTE Confidence: 0.882697558

00:27:54.656 --> 00:27:57.786 work together is an important part of that.

NOTE Confidence: 0.882697558

00:27:57.790 --> 00:28:00.940 And like you said, I think you know

NOTE Confidence: 0.882697558

00:28:00.940 --> 00:28:03.550 during the pandemic and having people

NOTE Confidence: 0.882697558

00:28:03.550 --> 00:28:06.008 communicate in different ways like we

NOTE Confidence: 0.882697558

00:28:06.008 --> 00:28:08.850 are now through zoom and other things.

NOTE Confidence: 0.882697558

00:28:08.850 --> 00:28:11.424 Maybe the world is shrinking a bit and I

NOTE Confidence: 0.882697558

00:28:11.424 --> 00:28:13.944 think that's a good thing for science and

NOTE Confidence: 0.882697558

00:28:13.944 --> 00:28:16.520 that's a good thing for research because.

NOTE Confidence: 0.882697558

00:28:16.520 --> 00:28:19.472 Of course, all of us working

NOTE Confidence: 0.882697558

00:28:19.472 --> 00:28:21.440 independently and making advances.

NOTE Confidence: 0.882697558

00:28:21.440 --> 00:28:23.169 We don't want them to go unnoticed

NOTE Confidence: 0.882697558

00:28:23.169 --> 00:28:25.033 by the people next in that chain

NOTE Confidence: 0.882697558

00:28:25.033 --> 00:28:26.373 that you were talking about.

NOTE Confidence: 0.882697558

00:28:26.380 --> 00:28:28.495 That's necessary to make the

NOTE Confidence: 0.882697558

00:28:28.495 --> 00:28:30.610 leap to bring these discoveries

NOTE Confidence: 0.882697558

00:28:30.683 --> 00:28:32.867 to their therapeutic potential.

NOTE Confidence: 0.772678952866667

00:28:33.480 --> 00:28:35.670 Doctor Daryl Klein is an assistant

NOTE Confidence: 0.772678952866667

00:28:35.670 --> 00:28:37.130 professor of pharmacology at

NOTE Confidence: 0.772678952866667

00:28:37.195 --> 00:28:38.820 the Yale School of Medicine.

NOTE Confidence: 0.772678952866667

00:28:38.820 --> 00:28:40.852 If you have questions,

NOTE Confidence: 0.772678952866667

00:28:40.852 --> 00:28:42.747 the address is canceranswers@yale.edu

NOTE Confidence: 0.772678952866667

00:28:42.747 --> 00:28:44.949 and past editions of the program

NOTE Confidence: 0.772678952866667

00:28:44.949 --> 00:28:47.028 are available in audio and written.

NOTE Confidence: 0.772678952866667

00:28:47.030 --> 00:28:48.968 Farm at yalecancercenter.org.

NOTE Confidence: 0.772678952866667

00:28:48.968 --> 00:28:51.512 We hope you'll join us next week to

NOTE Confidence: 0.772678952866667

00:28:51.512 --> 00:28:53.449 learn more about the fight against

NOTE Confidence: 0.772678952866667

00:28:53.449 --> 00:28:55.014 cancer here on Connecticut Public

NOTE Confidence: 0.772678952866667

00:28:55.068 --> 00:28:56.856 radio funding for Yale Cancer Answers

NOTE Confidence: 0.772678952866667

00:28:56.856 --> 00:29:00.000 is provided by Smilow Cancer Hospital.