

WEBVTT

NOTE duration:"00:56:56"

NOTE recognizability:0.888

NOTE language:en-us

NOTE Confidence: 0.686002109166667

00:00:00.000 --> 00:00:02.196 My great pleasure to introduce our

NOTE Confidence: 0.686002109166667

00:00:02.196 --> 00:00:04.390 grand round speaker doctor Lana Riley.

NOTE Confidence: 0.686002109166667

00:00:04.390 --> 00:00:05.630 She's the 1st in water.

NOTE Confidence: 0.686002109166667

00:00:05.630 --> 00:00:07.382 Hope is going to be a long series

NOTE Confidence: 0.686002109166667

00:00:07.382 --> 00:00:08.918 of lecturers speaking on education,

NOTE Confidence: 0.686002109166667

00:00:08.920 --> 00:00:10.520 training and career development.

NOTE Confidence: 0.686002109166667

00:00:10.520 --> 00:00:12.920 This was actually Barbara Burtness idea,

NOTE Confidence: 0.686002109166667

00:00:12.920 --> 00:00:14.474 so Doctor Riley Hills to us from

NOTE Confidence: 0.686002109166667

00:00:14.474 --> 00:00:16.128 the Fox Chase Cancer Center where

NOTE Confidence: 0.686002109166667

00:00:16.128 --> 00:00:17.693 she's in associate professor in

NOTE Confidence: 0.686002109166667

00:00:17.693 --> 00:00:19.390 the Molecular therapeutics program.

NOTE Confidence: 0.686002109166667

00:00:19.390 --> 00:00:21.418 She's a scientific director of the

NOTE Confidence: 0.686002109166667

00:00:21.418 --> 00:00:23.360 immersion science program at Fox Chase,

NOTE Confidence: 0.686002109166667

00:00:23.360 --> 00:00:25.435 and she's also the executive  
NOTE Confidence: 0.686002109166667

00:00:25.435 --> 00:00:27.510 director of the Eccles Institute,  
NOTE Confidence: 0.686002109166667

00:00:27.510 --> 00:00:28.920 which is a hub where students,  
NOTE Confidence: 0.686002109166667

00:00:28.920 --> 00:00:29.958 teachers and scientists.  
NOTE Confidence: 0.686002109166667

00:00:29.958 --> 00:00:32.034 All joined forces to focus on  
NOTE Confidence: 0.686002109166667

00:00:32.034 --> 00:00:33.540 critical biomedical problems,  
NOTE Confidence: 0.686002109166667

00:00:33.540 --> 00:00:36.696 such as dietary effects on cancer.  
NOTE Confidence: 0.686002109166667

00:00:36.700 --> 00:00:37.436 They're developing,  
NOTE Confidence: 0.686002109166667

00:00:37.436 --> 00:00:38.540 cutting edge projects,  
NOTE Confidence: 0.686002109166667

00:00:38.540 --> 00:00:40.985 and they enhancing scientific leadership  
NOTE Confidence: 0.686002109166667

00:00:40.985 --> 00:00:43.430 within the community in Philadelphia.  
NOTE Confidence: 0.686002109166667

00:00:43.430 --> 00:00:45.300 For for these efforts, Dr.  
NOTE Confidence: 0.686002109166667

00:00:45.300 --> 00:00:47.298 Riley recently received the Elizabeth W.  
NOTE Confidence: 0.686002109166667

00:00:47.300 --> 00:00:49.376 Jones Award for Excellence in Education  
NOTE Confidence: 0.686002109166667

00:00:49.376 --> 00:00:51.400 from the Genetics Society of America.  
NOTE Confidence: 0.686002109166667

00:00:51.400 --> 00:00:52.508 Among her many accolades,

NOTE Confidence: 0.686002109166667  
00:00:52.508 --> 00:00:54.949 she received her pH D in cell and  
NOTE Confidence: 0.686002109166667  
00:00:54.949 --> 00:00:56.389 developmental biology at Harvard  
NOTE Confidence: 0.686002109166667  
00:00:56.389 --> 00:00:58.345 and a research interest involved  
NOTE Confidence: 0.686002109166667  
00:00:58.345 --> 00:01:00.161 nutritional mechanisms that influence  
NOTE Confidence: 0.686002109166667  
00:01:00.161 --> 00:01:02.431 stem cell function and development.  
NOTE Confidence: 0.686002109166667  
00:01:02.440 --> 00:01:04.426 She's the recipient of multiple NIH  
NOTE Confidence: 0.686002109166667  
00:01:04.426 --> 00:01:06.582 awards for her research on stem  
NOTE Confidence: 0.686002109166667  
00:01:06.582 --> 00:01:08.118 cells and epithelial homeostasis,  
NOTE Confidence: 0.686002109166667  
00:01:08.120 --> 00:01:09.912 and today she's going to be talking  
NOTE Confidence: 0.686002109166667  
00:01:09.912 --> 00:01:12.067 to us both about her outreach and  
NOTE Confidence: 0.686002109166667  
00:01:12.067 --> 00:01:13.732 education and her own research.  
NOTE Confidence: 0.686002109166667  
00:01:13.740 --> 00:01:16.158 In a talk that's entitled kids  
NOTE Confidence: 0.686002109166667  
00:01:16.158 --> 00:01:16.964 conquering cancer,  
NOTE Confidence: 0.686002109166667  
00:01:16.970 --> 00:01:19.000 flipping the hierarchy to find  
NOTE Confidence: 0.686002109166667  
00:01:19.000 --> 00:01:21.030 new diet based interventions for  
NOTE Confidence: 0.686002109166667

00:01:21.102 --> 00:01:22.907 EGFR and HPV driven cancers.  
NOTE Confidence: 0.686002109166667

00:01:22.910 --> 00:01:24.142 So, without further ado,  
NOTE Confidence: 0.686002109166667

00:01:24.142 --> 00:01:25.990 it's my pleasure to turn the  
NOTE Confidence: 0.686002109166667

00:01:26.051 --> 00:01:27.966 platform over to Doctor O'Reilly.  
NOTE Confidence: 0.888108705846154

00:01:32.530 --> 00:01:34.364 It's really a pleasure to be here  
NOTE Confidence: 0.888108705846154

00:01:34.364 --> 00:01:36.109 and thank you for inviting me.  
NOTE Confidence: 0.888108705846154

00:01:36.110 --> 00:01:39.869 I'm also my very first research mentor.  
NOTE Confidence: 0.888108705846154

00:01:39.870 --> 00:01:42.656 Anton Bennett is one of your faculty  
NOTE Confidence: 0.888108705846154

00:01:42.656 --> 00:01:44.827 members and everything I know I  
NOTE Confidence: 0.888108705846154

00:01:44.827 --> 00:01:47.126 learned from Anton and Venelles lab.  
NOTE Confidence: 0.888108705846154

00:01:47.126 --> 00:01:49.946 So yeah, today I'm going to talk to  
NOTE Confidence: 0.888108705846154

00:01:49.946 --> 00:01:52.389 you about mostly about our diet based  
NOTE Confidence: 0.888108705846154

00:01:52.389 --> 00:01:55.460 programs involving high school students.  
NOTE Confidence: 0.888108705846154

00:01:55.460 --> 00:01:57.764 So one of the things I want you all to start  
NOTE Confidence: 0.888108705846154

00:01:57.764 --> 00:01:59.852 thinking about as we start here is why.  
NOTE Confidence: 0.888108705846154

00:01:59.860 --> 00:02:02.210 Why did you enter science?

NOTE Confidence: 0.888108705846154  
00:02:02.210 --> 00:02:04.434 A lot of times you know people ask  
NOTE Confidence: 0.888108705846154  
00:02:04.434 --> 00:02:07.170 us this question in all kinds of  
NOTE Confidence: 0.888108705846154  
00:02:07.170 --> 00:02:09.068 different applications and most of  
NOTE Confidence: 0.888108705846154  
00:02:09.068 --> 00:02:10.638 the answers are fairly similar.  
NOTE Confidence: 0.888108705846154  
00:02:10.640 --> 00:02:12.260 A little bit canned.  
NOTE Confidence: 0.888108705846154  
00:02:12.260 --> 00:02:14.285 I've loved science since childhood.  
NOTE Confidence: 0.888108705846154  
00:02:14.290 --> 00:02:16.870 I like to answer questions.  
NOTE Confidence: 0.888108705846154  
00:02:16.870 --> 00:02:19.929 I have some aspect of love love,  
NOTE Confidence: 0.888108705846154  
00:02:19.930 --> 00:02:22.688 love for science here or I care  
NOTE Confidence: 0.888108705846154  
00:02:22.688 --> 00:02:24.340 about somebody very much.  
NOTE Confidence: 0.888108705846154  
00:02:24.340 --> 00:02:26.060 So one of the things that we wanna  
NOTE Confidence: 0.888108705846154  
00:02:26.060 --> 00:02:28.156 do is to connect these puzzle pieces  
NOTE Confidence: 0.888108705846154  
00:02:28.156 --> 00:02:30.232 together to make an inclusive environment  
NOTE Confidence: 0.888108705846154  
00:02:30.232 --> 00:02:32.247 so that everyone can participate.  
NOTE Confidence: 0.888108705846154  
00:02:32.250 --> 00:02:33.867 So why do we even want inclusion?  
NOTE Confidence: 0.888108705846154

00:02:33.870 --> 00:02:35.931 Why does it matter if we're all kind of  
NOTE Confidence: 0.888108705846154

00:02:35.931 --> 00:02:37.621 similar people with similar ideas and  
NOTE Confidence: 0.888108705846154

00:02:37.621 --> 00:02:39.794 we're going to work together better, right?  
NOTE Confidence: 0.888108705846154

00:02:39.794 --> 00:02:42.706 But but that sort of limits our discoveries,  
NOTE Confidence: 0.888108705846154

00:02:42.710 --> 00:02:43.171 right?  
NOTE Confidence: 0.888108705846154

00:02:43.171 --> 00:02:45.476 So if we don't embrace.  
NOTE Confidence: 0.888108705846154

00:02:45.480 --> 00:02:47.055 The life experiences and knowledge  
NOTE Confidence: 0.888108705846154

00:02:47.055 --> 00:02:49.060 of all different types of people.  
NOTE Confidence: 0.888108705846154

00:02:49.060 --> 00:02:51.165 Then we're essentially missing things  
NOTE Confidence: 0.888108705846154

00:02:51.165 --> 00:02:53.900 that we could otherwise gather together.  
NOTE Confidence: 0.888108705846154

00:02:53.900 --> 00:02:56.216 So why is inclusion so hard?  
NOTE Confidence: 0.888108705846154

00:02:56.220 --> 00:02:58.623 Why is it so hard like we keep hearing  
NOTE Confidence: 0.888108705846154

00:02:58.623 --> 00:03:01.576 about diversity, equity inclusion efforts,  
NOTE Confidence: 0.888108705846154

00:03:01.576 --> 00:03:04.808 and failing and failing and failing?  
NOTE Confidence: 0.888108705846154

00:03:04.808 --> 00:03:07.490 Why? Why is this so hard?  
NOTE Confidence: 0.888108705846154

00:03:07.490 --> 00:03:09.722 So one of the really big problems we have,

NOTE Confidence: 0.888108705846154  
00:03:09.730 --> 00:03:11.386 especially in a city like Philadelphia,  
NOTE Confidence: 0.888108705846154  
00:03:11.390 --> 00:03:13.830 which is 80% underrepresented  
NOTE Confidence: 0.888108705846154  
00:03:13.830 --> 00:03:15.660 minorities in science,  
NOTE Confidence: 0.888108705846154  
00:03:15.660 --> 00:03:18.677 is that we have a major attrition  
NOTE Confidence: 0.888108705846154  
00:03:18.677 --> 00:03:21.580 of scientists as they move up in  
NOTE Confidence: 0.888108705846154  
00:03:21.580 --> 00:03:23.530 the in the scientific pipeline.  
NOTE Confidence: 0.888108705846154  
00:03:23.530 --> 00:03:25.516 So in terms of bachelors degrees,  
NOTE Confidence: 0.888108705846154  
00:03:25.520 --> 00:03:27.244 it's still under representation,  
NOTE Confidence: 0.888108705846154  
00:03:27.244 --> 00:03:29.399 but this number plummets by  
NOTE Confidence: 0.888108705846154  
00:03:29.399 --> 00:03:31.589 the time you get to postdocs.  
NOTE Confidence: 0.888108705846154  
00:03:31.590 --> 00:03:33.426 And then there has been exactly  
NOTE Confidence: 0.888108705846154  
00:03:33.426 --> 00:03:36.118 0 gains in full professors for  
NOTE Confidence: 0.888108705846154  
00:03:36.118 --> 00:03:37.518 underrepresented minorities.  
NOTE Confidence: 0.888108705846154  
00:03:37.520 --> 00:03:40.958 In many decades. So what's the deal?  
NOTE Confidence: 0.888108705846154  
00:03:40.958 --> 00:03:42.126 Why is this happening?  
NOTE Confidence: 0.888108705846154

00:03:42.130 --> 00:03:44.522 One of the reasons is this why the  
NOTE Confidence: 0.888108705846154

00:03:44.522 --> 00:03:47.190 the why that people who are minority  
NOTE Confidence: 0.888108705846154

00:03:47.190 --> 00:03:50.310 scientists enter this field is to  
NOTE Confidence: 0.888108705846154

00:03:50.310 --> 00:03:52.390 help address health challenges  
NOTE Confidence: 0.888108705846154

00:03:52.477 --> 00:03:54.509 of their own communities,  
NOTE Confidence: 0.888108705846154

00:03:54.510 --> 00:03:57.422 and so the topic choice in papers recently  
NOTE Confidence: 0.888108705846154

00:03:57.422 --> 00:04:00.270 published by the NIH about their own grants,  
NOTE Confidence: 0.888108705846154

00:04:00.270 --> 00:04:02.232 shows that awards to African American  
NOTE Confidence: 0.888108705846154

00:04:02.232 --> 00:04:03.935 and black scientists are prohibitively  
NOTE Confidence: 0.888108705846154

00:04:03.935 --> 00:04:06.266 low because of the topic choice of  
NOTE Confidence: 0.888108705846154

00:04:06.266 --> 00:04:07.787 addressing the health disparities  
NOTE Confidence: 0.888108705846154

00:04:07.787 --> 00:04:09.787 that plague their own communities.  
NOTE Confidence: 0.888108705846154

00:04:09.790 --> 00:04:11.410 And this.  
NOTE Confidence: 0.888108705846154

00:04:11.410 --> 00:04:12.376 Makes no sense,  
NOTE Confidence: 0.888108705846154

00:04:12.376 --> 00:04:12.698 right?  
NOTE Confidence: 0.888108705846154

00:04:12.698 --> 00:04:13.986 This makes no sense,



NOTE Confidence: 0.888108705846154

00:04:13.990 --> 00:04:16.696 but recruiting people into science to

NOTE Confidence: 0.888108705846154

00:04:16.696 --> 00:04:18.971 address the problems that other people

NOTE Confidence: 0.888108705846154

00:04:18.971 --> 00:04:21.120 can address and then pushing them out

NOTE Confidence: 0.888108705846154

00:04:21.181 --> 00:04:23.246 by not allowing them to have funding.

NOTE Confidence: 0.888108705846154

00:04:23.250 --> 00:04:25.476 So these are both very excellent papers

NOTE Confidence: 0.888108705846154

00:04:25.476 --> 00:04:27.677 for anyone who is interested in this

NOTE Confidence: 0.888108705846154

00:04:27.677 --> 00:04:30.039 topic and wants to read more about it.

NOTE Confidence: 0.888108705846154

00:04:30.040 --> 00:04:31.918 So this lack of representation in

NOTE Confidence: 0.888108705846154

00:04:31.918 --> 00:04:33.947 science and medicine is a primary

NOTE Confidence: 0.888108705846154

00:04:33.947 --> 00:04:35.375 driver of health disparities.

NOTE Confidence: 0.888108705846154

00:04:35.380 --> 00:04:36.436 Just recently,

NOTE Confidence: 0.888108705846154

00:04:36.436 --> 00:04:39.076 if we highlight the COVID-19

NOTE Confidence: 0.888108705846154

00:04:39.076 --> 00:04:40.660 pandemic the underrepresentation

NOTE Confidence: 0.935979718

00:04:40.730 --> 00:04:43.453 in science is exactly reflected by the

NOTE Confidence: 0.935979718

00:04:43.453 --> 00:04:46.355 numbers of deaths of COVID-19 with black

NOTE Confidence: 0.935979718

00:04:46.355 --> 00:04:48.851 Americans having the highest rates of  
NOTE Confidence: 0.935979718

00:04:48.860 --> 00:04:51.440 death and the lowest representation.  
NOTE Confidence: 0.935979718

00:04:51.440 --> 00:04:54.216 This is the same across all chronic diseases,  
NOTE Confidence: 0.935979718

00:04:54.220 --> 00:04:56.488 including cardiovascular disease,  
NOTE Confidence: 0.935979718

00:04:56.488 --> 00:05:01.108 hypertension, diabetes, and and also cancer.  
NOTE Confidence: 0.935979718

00:05:01.110 --> 00:05:02.554 So here in Philadelphia,  
NOTE Confidence: 0.935979718

00:05:02.554 --> 00:05:04.720 our demographics are flipped from the  
NOTE Confidence: 0.935979718

00:05:04.782 --> 00:05:06.878 predominant demographics in science,  
NOTE Confidence: 0.935979718

00:05:06.880 --> 00:05:10.732 where 70% of US faculty research  
NOTE Confidence: 0.935979718

00:05:10.732 --> 00:05:13.842 scientists are white. In contrast,  
NOTE Confidence: 0.935979718

00:05:13.842 --> 00:05:17.434 only 5% or fewer are African American or  
NOTE Confidence: 0.935979718

00:05:17.434 --> 00:05:20.060 black in the school district of Philadelphia.  
NOTE Confidence: 0.935979718

00:05:20.060 --> 00:05:22.580 This is opposite, so our predominant  
NOTE Confidence: 0.935979718

00:05:22.580 --> 00:05:24.940 populations are black and Hispanic,  
NOTE Confidence: 0.935979718

00:05:24.940 --> 00:05:27.334 and these students essentially have no  
NOTE Confidence: 0.935979718

00:05:27.334 --> 00:05:30.087 chance of achieving a research career

NOTE Confidence: 0.935979718

00:05:30.087 --> 00:05:32.797 given the predominant prevailing culture.

NOTE Confidence: 0.935979718

00:05:32.800 --> 00:05:35.104 So this is something that we want to change.

NOTE Confidence: 0.935979718

00:05:35.110 --> 00:05:36.110 This first of all,

NOTE Confidence: 0.935979718

00:05:36.110 --> 00:05:37.900 is not fair and second of all,

NOTE Confidence: 0.935979718

00:05:37.900 --> 00:05:39.797 puts people in a situation if they

NOTE Confidence: 0.935979718

00:05:39.797 --> 00:05:41.604 don't even try to pursue science

NOTE Confidence: 0.935979718

00:05:41.604 --> 00:05:43.774 because they know they have no chance.

NOTE Confidence: 0.935979718

00:05:43.780 --> 00:05:46.147 And our goal is to try to help Philadelphia

NOTE Confidence: 0.935979718

00:05:46.147 --> 00:05:48.378 address these health disparities in COVID-19,

NOTE Confidence: 0.935979718

00:05:48.380 --> 00:05:49.682 cancer, diabetes,

NOTE Confidence: 0.935979718

00:05:49.682 --> 00:05:53.588 and Alzheimer's that are are really

NOTE Confidence: 0.935979718

00:05:53.588 --> 00:05:56.110 destroying their communities.

NOTE Confidence: 0.935979718

00:05:56.110 --> 00:05:57.750 So how are we going to do this?

NOTE Confidence: 0.935979718

00:05:57.750 --> 00:06:01.531 We already know that 77% of college students

NOTE Confidence: 0.935979718

00:06:01.531 --> 00:06:04.420 switch out of STEM majors after one semester,

NOTE Confidence: 0.935979718

00:06:04.420 --> 00:06:07.292 we created a program where 72% of  
NOTE Confidence: 0.935979718

00:06:07.292 --> 00:06:08.996 our graduates actually continue  
NOTE Confidence: 0.935979718

00:06:08.996 --> 00:06:11.220 conducting paid research in college  
NOTE Confidence: 0.935979718

00:06:11.220 --> 00:06:14.220 completely flipping these numbers.  
NOTE Confidence: 0.935979718

00:06:14.220 --> 00:06:16.831 Fewer than 6% of Philadelphia and other  
NOTE Confidence: 0.935979718

00:06:16.831 --> 00:06:18.766 inner city students complete their  
NOTE Confidence: 0.935979718

00:06:18.766 --> 00:06:21.424 stem degrees with fewer than 10% of  
NOTE Confidence: 0.935979718

00:06:21.424 --> 00:06:23.120 those completing graduate degrees.  
NOTE Confidence: 0.935979718

00:06:23.120 --> 00:06:25.616 In contrast, 100% of our students  
NOTE Confidence: 0.935979718

00:06:25.616 --> 00:06:27.900 complete their stem degrees on time.  
NOTE Confidence: 0.935979718

00:06:27.900 --> 00:06:29.478 So how do we do this?  
NOTE Confidence: 0.935979718

00:06:29.480 --> 00:06:31.164 This is a big change, right?  
NOTE Confidence: 0.935979718

00:06:31.164 --> 00:06:32.496 A big change.  
NOTE Confidence: 0.935979718

00:06:32.496 --> 00:06:34.716 So we created a program  
NOTE Confidence: 0.935979718

00:06:34.716 --> 00:06:36.938 built on citizen science.  
NOTE Confidence: 0.935979718

00:06:36.940 --> 00:06:38.770 So a staircase of discovery

NOTE Confidence: 0.935979718

00:06:38.770 --> 00:06:40.600 is comprised of four steps.

NOTE Confidence: 0.935979718

00:06:40.600 --> 00:06:42.670 Which level one is crowdsourcing,

NOTE Confidence: 0.935979718

00:06:42.670 --> 00:06:44.806 and many people have heard of apps where

NOTE Confidence: 0.935979718

00:06:44.806 --> 00:06:47.398 people can measure clouds, and you know,

NOTE Confidence: 0.935979718

00:06:47.398 --> 00:06:49.834 say how many animals they saw.

NOTE Confidence: 0.935979718

00:06:49.840 --> 00:06:51.406 In the woods near their house.

NOTE Confidence: 0.935979718

00:06:51.410 --> 00:06:53.738 So it's sort of like like an observation

NOTE Confidence: 0.935979718

00:06:53.738 --> 00:06:55.881 where the data gets transmitted back

NOTE Confidence: 0.935979718

00:06:55.881 --> 00:06:57.756 to scientists who interpret it.

NOTE Confidence: 0.935979718

00:06:57.760 --> 00:07:00.058 The second level is distributed intelligence,

NOTE Confidence: 0.935979718

00:07:00.060 --> 00:07:01.986 so this the citizens can actually

NOTE Confidence: 0.935979718

00:07:01.986 --> 00:07:03.930 collect the data and start to

NOTE Confidence: 0.935979718

00:07:03.930 --> 00:07:05.415 think about what it means.

NOTE Confidence: 0.935979718

00:07:05.420 --> 00:07:07.436 Then participatory science,

NOTE Confidence: 0.935979718

00:07:07.436 --> 00:07:10.796 where the students or participants

NOTE Confidence: 0.935979718

00:07:10.800 --> 00:07:12.630 define the problems that participate  
NOTE Confidence: 0.935979718

00:07:12.630 --> 00:07:14.094 in the data collection,  
NOTE Confidence: 0.935979718

00:07:14.100 --> 00:07:16.872 and then finally where they're basically  
NOTE Confidence: 0.935979718

00:07:16.872 --> 00:07:19.420 independent scientists like like all of us.  
NOTE Confidence: 0.935979718

00:07:19.420 --> 00:07:21.904 So we created a program that  
NOTE Confidence: 0.935979718

00:07:21.904 --> 00:07:23.146 matches these steps,  
NOTE Confidence: 0.935979718

00:07:23.150 --> 00:07:24.454 starting with students as  
NOTE Confidence: 0.935979718

00:07:24.454 --> 00:07:25.758 young as fifth grade.  
NOTE Confidence: 0.935979718

00:07:25.760 --> 00:07:27.344 So our primary participants  
NOTE Confidence: 0.935979718

00:07:27.344 --> 00:07:29.324 are 5th to 12th grade.  
NOTE Confidence: 0.935979718

00:07:29.330 --> 00:07:30.726 They start in school,  
NOTE Confidence: 0.935979718

00:07:30.726 --> 00:07:32.471 they do their first research  
NOTE Confidence: 0.935979718

00:07:32.471 --> 00:07:33.460 experience in school,  
NOTE Confidence: 0.935979718

00:07:33.460 --> 00:07:36.890 then they can continue focusing on a  
NOTE Confidence: 0.935979718

00:07:36.890 --> 00:07:39.732 junk food diet more in their classroom,  
NOTE Confidence: 0.935979718

00:07:39.732 --> 00:07:41.790 summer camps and undergraduate bridge to

NOTE Confidence: 0.935979718

00:07:41.844 --> 00:07:44.217 research that's built on a graduate rotation,

NOTE Confidence: 0.935979718

00:07:44.220 --> 00:07:45.813 and finally independent

NOTE Confidence: 0.935979718

00:07:45.813 --> 00:07:47.937 research and foxchase labs.

NOTE Confidence: 0.935979718

00:07:47.940 --> 00:07:49.206 And by the time they're ready

NOTE Confidence: 0.935979718

00:07:49.206 --> 00:07:50.050 to go to college.

NOTE Confidence: 0.935979718

00:07:50.050 --> 00:07:50.451 Remember,

NOTE Confidence: 0.935979718

00:07:50.451 --> 00:07:52.456 this is just before college.

NOTE Confidence: 0.935979718

00:07:52.460 --> 00:07:54.908 They already have up to two years of

NOTE Confidence: 0.935979718

00:07:54.908 --> 00:07:56.501 research experience under their belt

NOTE Confidence: 0.935979718

00:07:56.501 --> 00:07:58.643 and tend to get paid research positions

NOTE Confidence: 0.93289421

00:07:58.706 --> 00:08:00.236 their first year of college,

NOTE Confidence: 0.93289421

00:08:00.240 --> 00:08:01.507 and then they go up from there.

NOTE Confidence: 0.9562273733333333

00:08:03.870 --> 00:08:06.116 So we started this program in 2013.

NOTE Confidence: 0.9562273733333333

00:08:06.116 --> 00:08:09.044 This is Darius well and she's the science

NOTE Confidence: 0.9562273733333333

00:08:09.044 --> 00:08:10.829 educator, curriculum guru genius,

NOTE Confidence: 0.9562273733333333

00:08:10.829 --> 00:08:13.667 who created basically translates how we  
NOTE Confidence: 0.9562273733333333

00:08:13.667 --> 00:08:16.262 do Advanced Research into something that  
NOTE Confidence: 0.9562273733333333

00:08:16.262 --> 00:08:19.669 can be done in high school classrooms.  
NOTE Confidence: 0.9562273733333333

00:08:19.670 --> 00:08:22.364 And since 2013 we've trained over  
NOTE Confidence: 0.9562273733333333

00:08:22.364 --> 00:08:24.790 2000 students using this method.  
NOTE Confidence: 0.9562273733333333

00:08:24.790 --> 00:08:26.678 This is 570 of them on the steps  
NOTE Confidence: 0.9562273733333333

00:08:26.678 --> 00:08:28.369 of the Franklin Institute,  
NOTE Confidence: 0.9562273733333333

00:08:28.370 --> 00:08:30.308 where they came to present their  
NOTE Confidence: 0.9562273733333333

00:08:30.310 --> 00:08:33.180 Cancer Research data in 2019.  
NOTE Confidence: 0.9562273733333333

00:08:33.180 --> 00:08:35.735 As a collective group sharing with each  
NOTE Confidence: 0.9562273733333333

00:08:35.735 --> 00:08:37.969 other with scientists with the community  
NOTE Confidence: 0.9562273733333333

00:08:37.970 --> 00:08:40.539 that there are 18 new cancer gene  
NOTE Confidence: 0.9562273733333333

00:08:40.539 --> 00:08:43.088 hits of nutrients that affect cancer.  
NOTE Confidence: 0.9562273733333333

00:08:43.090 --> 00:08:45.436 We're also collecting tons of education,  
NOTE Confidence: 0.9562273733333333

00:08:45.440 --> 00:08:49.066 data points, and 60% of these new  
NOTE Confidence: 0.9562273733333333

00:08:49.066 --> 00:08:50.620 scientists are underrepresented.



NOTE Confidence: 0.9562273733333333  
00:08:50.620 --> 00:08:54.328 Currently in biomedical research.  
NOTE Confidence: 0.9562273733333333  
00:08:54.330 --> 00:08:55.590 So does it actually work?  
NOTE Confidence: 0.9562273733333333  
00:08:55.590 --> 00:08:58.416 Do the students want to continue so this  
NOTE Confidence: 0.9562273733333333  
00:08:58.416 --> 00:09:00.467 is a kind of a complicated diagram,  
NOTE Confidence: 0.9562273733333333  
00:09:00.470 --> 00:09:02.710 but just focus on the the Blues and the Reds,  
NOTE Confidence: 0.9562273733333333  
00:09:02.710 --> 00:09:04.193 which are the bad things, right?  
NOTE Confidence: 0.9562273733333333  
00:09:04.193 --> 00:09:05.754 You don't see much blue and red  
NOTE Confidence: 0.9562273733333333  
00:09:05.754 --> 00:09:07.248 in any of these pie charts,  
NOTE Confidence: 0.9562273733333333  
00:09:07.250 --> 00:09:08.955 indicating that the students make  
NOTE Confidence: 0.9562273733333333  
00:09:08.955 --> 00:09:10.660 tremendous gains in life skills,  
NOTE Confidence: 0.9562273733333333  
00:09:10.660 --> 00:09:12.181 including peer collaboration,  
NOTE Confidence: 0.9562273733333333  
00:09:12.181 --> 00:09:14.209 confidence adjusting to projects,  
NOTE Confidence: 0.9562273733333333  
00:09:14.210 --> 00:09:15.686 and thinking outside the box that  
NOTE Confidence: 0.9562273733333333  
00:09:15.686 --> 00:09:17.249 they can apply to any career.  
NOTE Confidence: 0.9562273733333333  
00:09:17.250 --> 00:09:19.315 And keep in mind that these students  
NOTE Confidence: 0.9562273733333333

00:09:19.315 --> 00:09:19.905 are unselected.  
NOTE Confidence: 0.9562273733333333

00:09:19.910 --> 00:09:21.417 This is a bunch of 9th, 10th,  
NOTE Confidence: 0.9562273733333333

00:09:21.417 --> 00:09:24.000 11th and 12th graders who are taking a class.  
NOTE Confidence: 0.9562273733333333

00:09:24.000 --> 00:09:25.725 Their teacher decided to participate  
NOTE Confidence: 0.9562273733333333

00:09:25.725 --> 00:09:26.760 in the program.  
NOTE Confidence: 0.9562273733333333

00:09:26.760 --> 00:09:29.056 They are not pre selected or filled out.  
NOTE Confidence: 0.9562273733333333

00:09:29.060 --> 00:09:30.384 An application saying they're  
NOTE Confidence: 0.9562273733333333

00:09:30.384 --> 00:09:31.377 interested in science,  
NOTE Confidence: 0.9562273733333333

00:09:31.380 --> 00:09:34.608 so this is actually a fairly.  
NOTE Confidence: 0.9562273733333333

00:09:34.610 --> 00:09:37.338 A fairly huge gain.  
NOTE Confidence: 0.9562273733333333

00:09:37.340 --> 00:09:39.559 He also made gains in research skills,  
NOTE Confidence: 0.9562273733333333

00:09:39.560 --> 00:09:41.112 how studying the topic  
NOTE Confidence: 0.9562273733333333

00:09:41.112 --> 00:09:42.276 addresses real-world issues,  
NOTE Confidence: 0.9562273733333333

00:09:42.280 --> 00:09:43.652 which is something that's  
NOTE Confidence: 0.9562273733333333

00:09:43.652 --> 00:09:45.024 incredibly important given the  
NOTE Confidence: 0.9562273733333333

00:09:45.030 --> 00:09:47.580 COVID-19 pandemic and other issues.

NOTE Confidence: 0.9562273733333333

00:09:47.580 --> 00:09:49.070 How to formulate a hypothesis,

NOTE Confidence: 0.9562273733333333

00:09:49.070 --> 00:09:51.200 explain projects and and prepare

NOTE Confidence: 0.9562273733333333

00:09:51.200 --> 00:09:53.843 and present their work and then

NOTE Confidence: 0.9562273733333333

00:09:53.843 --> 00:09:56.483 finally the the most important part

NOTE Confidence: 0.9562273733333333

00:09:56.483 --> 00:09:58.819 perhaps is inclusion and interest,

NOTE Confidence: 0.9562273733333333

00:09:58.820 --> 00:10:00.910 whereas students think and feel

NOTE Confidence: 0.9562273733333333

00:10:00.910 --> 00:10:02.164 like a scientist.

NOTE Confidence: 0.9562273733333333

00:10:02.170 --> 00:10:04.426 We have a little work to do on

NOTE Confidence: 0.9562273733333333

00:10:04.426 --> 00:10:06.507 feeling like part of the scientific

NOTE Confidence: 0.9562273733333333

00:10:06.507 --> 00:10:08.673 community to make sure that that

NOTE Confidence: 0.9562273733333333

00:10:08.744 --> 00:10:10.949 that number that red bar goes down

NOTE Confidence: 0.9562273733333333

00:10:10.949 --> 00:10:12.884 and then this was something that we

NOTE Confidence: 0.9562273733333333

00:10:12.884 --> 00:10:14.360 never in a million years expected.

NOTE Confidence: 0.9562273733333333

00:10:14.360 --> 00:10:15.600 We sort of expected.

NOTE Confidence: 0.9562273733333333

00:10:15.600 --> 00:10:16.964 Maybe 20% would be interested

NOTE Confidence: 0.9562273733333333

00:10:16.964 --> 00:10:17.956 in being a scientist.  
NOTE Confidence: 0.9562273733333333

00:10:17.960 --> 00:10:22.263 But 56% saying maybe was mind blowing, right?  
NOTE Confidence: 0.9562273733333333

00:10:22.263 --> 00:10:23.601 Think about all of the things  
NOTE Confidence: 0.9562273733333333

00:10:23.601 --> 00:10:25.212 these kids could be and now just  
NOTE Confidence: 0.9562273733333333

00:10:25.212 --> 00:10:26.332 from this one little experience,  
NOTE Confidence: 0.9562273733333333

00:10:26.340 --> 00:10:26.936 they're thinking.  
NOTE Confidence: 0.9562273733333333

00:10:26.936 --> 00:10:29.959 Maybe I want to be a scientist and even more,  
NOTE Confidence: 0.9562273733333333

00:10:29.960 --> 00:10:31.364 the numbers are even higher for  
NOTE Confidence: 0.9562273733333333

00:10:31.364 --> 00:10:33.118 students who want to do more research,  
NOTE Confidence: 0.9562273733333333

00:10:33.120 --> 00:10:35.144 emphasizing the disconnect between  
NOTE Confidence: 0.9562273733333333

00:10:35.144 --> 00:10:38.180 what students think of as science  
NOTE Confidence: 0.9562273733333333

00:10:38.262 --> 00:10:40.866 and now what they know as research.  
NOTE Confidence: 0.9562273733333333

00:10:40.870 --> 00:10:43.502 So in 2019 we had over 1000  
NOTE Confidence: 0.9562273733333333

00:10:43.502 --> 00:10:45.070 students in one run,  
NOTE Confidence: 0.9562273733333333

00:10:45.070 --> 00:10:47.130 our biggest auditorium at Fox  
NOTE Confidence: 0.9562273733333333

00:10:47.130 --> 00:10:49.290 Chase only holds 320 people.

NOTE Confidence: 0.9562273733333333  
00:10:49.290 --> 00:10:52.050 So we created a nonprofit organization  
NOTE Confidence: 0.9562273733333333  
00:10:52.050 --> 00:10:54.410 called the E close Institute,  
NOTE Confidence: 0.9562273733333333  
00:10:54.410 --> 00:10:56.666 which is a hub where students,  
NOTE Confidence: 0.9562273733333333  
00:10:56.670 --> 00:10:57.820 teachers, scientists,  
NOTE Confidence: 0.9562273733333333  
00:10:57.820 --> 00:10:58.395 community,  
NOTE Confidence: 0.9562273733333333  
00:10:58.395 --> 00:11:01.270 and hopefully we'll be building  
NOTE Confidence: 0.9562273733333333  
00:11:01.270 --> 00:11:03.370 accessible databases for everyone,  
NOTE Confidence: 0.9562273733333333  
00:11:03.370 --> 00:11:06.184 come together to try to solve  
NOTE Confidence: 0.9562273733333333  
00:11:06.184 --> 00:11:08.060 these community health problems.  
NOTE Confidence: 0.9562273733333333  
00:11:08.060 --> 00:11:10.736 So we have summer camps where  
NOTE Confidence: 0.9562273733333333  
00:11:10.736 --> 00:11:12.520 students participate for a  
NOTE Confidence: 0.914019580909091  
00:11:12.602 --> 00:11:14.350 week, really delving into  
NOTE Confidence: 0.914019580909091  
00:11:14.350 --> 00:11:15.700 high level techniques,  
NOTE Confidence: 0.914019580909091  
00:11:15.700 --> 00:11:18.580 including running gels, doing microscopy,  
NOTE Confidence: 0.914019580909091  
00:11:18.580 --> 00:11:22.810 lots of pipetting and measuring skills.  
NOTE Confidence: 0.914019580909091

00:11:22.810 --> 00:11:25.400 And in in the summer camps again,  
NOTE Confidence: 0.914019580909091

00:11:25.400 --> 00:11:28.123 more even more students want to be  
NOTE Confidence: 0.914019580909091

00:11:28.123 --> 00:11:30.388 scientists with nobody saying they no.  
NOTE Confidence: 0.914019580909091

00:11:30.390 --> 00:11:31.044 Nobody said no,  
NOTE Confidence: 0.914019580909091

00:11:31.044 --> 00:11:33.160 I don't ever want to be a scientist.  
NOTE Confidence: 0.914019580909091

00:11:33.160 --> 00:11:34.605 And 90% of the students  
NOTE Confidence: 0.914019580909091

00:11:34.605 --> 00:11:36.050 want to do more research.  
NOTE Confidence: 0.914019580909091

00:11:36.050 --> 00:11:38.075 And so one of the things I think we  
NOTE Confidence: 0.914019580909091

00:11:38.075 --> 00:11:40.657 need to think about in general is how to  
NOTE Confidence: 0.914019580909091

00:11:40.657 --> 00:11:42.699 infuse research into more other subjects.  
NOTE Confidence: 0.914019580909091

00:11:42.700 --> 00:11:44.695 Because the students love doing the research,  
NOTE Confidence: 0.914019580909091

00:11:44.700 --> 00:11:46.840 even those who don't necessarily  
NOTE Confidence: 0.914019580909091

00:11:46.840 --> 00:11:48.552 want to be scientists.  
NOTE Confidence: 0.914019580909091

00:11:48.560 --> 00:11:50.000 So this is our undergraduate  
NOTE Confidence: 0.914019580909091

00:11:50.000 --> 00:11:50.864 bridge to research.  
NOTE Confidence: 0.914019580909091

00:11:50.870 --> 00:11:52.472 This is actually where we started

NOTE Confidence: 0.914019580909091  
00:11:52.472 --> 00:11:55.356 in 2013 and we have 230 students  
NOTE Confidence: 0.914019580909091  
00:11:55.356 --> 00:11:57.820 who've now completed this program.  
NOTE Confidence: 0.914019580909091  
00:11:57.820 --> 00:12:00.070 They have started to grow up  
NOTE Confidence: 0.914019580909091  
00:12:00.070 --> 00:12:02.314 now since we started in 2013.  
NOTE Confidence: 0.914019580909091  
00:12:02.314 --> 00:12:05.398 We have 16% in medical school  
NOTE Confidence: 0.914019580909091  
00:12:05.400 --> 00:12:08.354 and absolutely shocking 17.3%  
NOTE Confidence: 0.914019580909091  
00:12:08.354 --> 00:12:11.290 pursuing PHD's in biomedicine.  
NOTE Confidence: 0.914019580909091  
00:12:11.290 --> 00:12:13.900 We have a number of them who are doing  
NOTE Confidence: 0.914019580909091  
00:12:13.900 --> 00:12:16.618 gap years in research labs 22 percent,  
NOTE Confidence: 0.914019580909091  
00:12:16.620 --> 00:12:18.740 18% are engineers and 6%.  
NOTE Confidence: 0.914019580909091  
00:12:18.740 --> 00:12:21.320 Are in other stem related careers,  
NOTE Confidence: 0.914019580909091  
00:12:21.320 --> 00:12:23.978 especially business entrepreneurship,  
NOTE Confidence: 0.914019580909091  
00:12:23.978 --> 00:12:26.636 math type stuff?  
NOTE Confidence: 0.914019580909091  
00:12:26.640 --> 00:12:27.136 So yeah,  
NOTE Confidence: 0.914019580909091  
00:12:27.136 --> 00:12:29.120 so since this has been working so well,  
NOTE Confidence: 0.914019580909091

00:12:29.120 --> 00:12:30.740 we expanded this to be true  
NOTE Confidence: 0.914019580909091

00:12:30.740 --> 00:12:31.280 community science.  
NOTE Confidence: 0.914019580909091

00:12:31.280 --> 00:12:34.088 Having an out outreach citizen science  
NOTE Confidence: 0.914019580909091

00:12:34.088 --> 00:12:37.913 event in the fall where we had church  
NOTE Confidence: 0.914019580909091

00:12:37.913 --> 00:12:40.238 members and kids and families.  
NOTE Confidence: 0.914019580909091

00:12:40.240 --> 00:12:42.216 Oh that's all blurry,  
NOTE Confidence: 0.914019580909091

00:12:42.216 --> 00:12:44.192 all participating in providing  
NOTE Confidence: 0.914019580909091

00:12:44.192 --> 00:12:45.180 their thoughts,  
NOTE Confidence: 0.914019580909091

00:12:45.180 --> 00:12:47.826 their ideas and their input and how  
NOTE Confidence: 0.914019580909091

00:12:47.826 --> 00:12:50.618 to solve the problem of diabetes.  
NOTE Confidence: 0.914019580909091

00:12:50.620 --> 00:12:52.250 And in the Philadelphia community.  
NOTE Confidence: 0.978807041666667

00:12:54.590 --> 00:12:56.180 So how does this all work? Like?  
NOTE Confidence: 0.978807041666667

00:12:56.180 --> 00:12:58.490 Why is this working better than other  
NOTE Confidence: 0.978807041666667

00:12:58.490 --> 00:13:00.869 things and the the key thing is the Y.  
NOTE Confidence: 0.978807041666667

00:13:00.870 --> 00:13:04.100 So this is a. This is a a video of  
NOTE Confidence: 0.978807041666667

00:13:04.195 --> 00:13:07.555 one of our presenters that emphasizes



NOTE Confidence: 0.978807041666667  
00:13:07.555 --> 00:13:10.330 the importance of the why this  
NOTE Confidence: 0.978807041666667  
00:13:10.330 --> 00:13:12.298 project I was most interested in  
NOTE Confidence: 0.978807041666667  
00:13:12.298 --> 00:13:13.610 studying squamous cell carcinoma,  
NOTE Confidence: 0.978807041666667  
00:13:13.610 --> 00:13:15.599 which is a type of skin cancer that affects  
NOTE Confidence: 0.978807041666667  
00:13:15.599 --> 00:13:17.626 over a million people in the US every year.  
NOTE Confidence: 0.978807041666667  
00:13:17.630 --> 00:13:19.247 One of those people was my grandmother  
NOTE Confidence: 0.978807041666667  
00:13:19.247 --> 00:13:20.859 who I lost to disease in 2015.  
NOTE Confidence: 0.978807041666667  
00:13:20.859 --> 00:13:22.672 You might notice a small blue butterfly  
NOTE Confidence: 0.978807041666667  
00:13:22.672 --> 00:13:24.049 floating around front presentation,  
NOTE Confidence: 0.978807041666667  
00:13:24.050 --> 00:13:25.700 that's why. Joining us today.  
NOTE Confidence: 0.948238083  
00:13:28.430 --> 00:13:30.719 So one of the most important things  
NOTE Confidence: 0.948238083  
00:13:30.719 --> 00:13:32.998 for our students is that they are  
NOTE Confidence: 0.948238083  
00:13:32.998 --> 00:13:34.846 here to cure somebody they love,  
NOTE Confidence: 0.948238083  
00:13:34.850 --> 00:13:37.034 and so one of the things I think  
NOTE Confidence: 0.948238083  
00:13:37.034 --> 00:13:38.987 we lose sight of as scientists  
NOTE Confidence: 0.948238083

00:13:38.987 --> 00:13:41.340 in our training is is that why?

NOTE Confidence: 0.948238083

00:13:41.340 --> 00:13:43.146 So we come in? Oh yeah,

NOTE Confidence: 0.948238083

00:13:43.150 --> 00:13:44.932 that's great that you came in

NOTE Confidence: 0.948238083

00:13:44.932 --> 00:13:46.629 because your your zeami is sick.

NOTE Confidence: 0.948238083

00:13:46.630 --> 00:13:48.310 But here's how we do things here.

NOTE Confidence: 0.948238083

00:13:48.310 --> 00:13:49.924 Here's the project I'm giving you

NOTE Confidence: 0.948238083

00:13:49.924 --> 00:13:52.108 and so this is something I want

NOTE Confidence: 0.948238083

00:13:52.108 --> 00:13:53.848 everybody here to really start

NOTE Confidence: 0.948238083

00:13:53.848 --> 00:13:55.669 thinking about is do you know what

NOTE Confidence: 0.948238083

00:13:55.669 --> 00:13:57.940 the why is for all of your trainees?

NOTE Confidence: 0.948238083

00:13:57.940 --> 00:13:59.540 Does it matter right?

NOTE Confidence: 0.948238083

00:13:59.540 --> 00:14:01.298 Is that why they're still here?

NOTE Confidence: 0.948238083

00:14:01.300 --> 00:14:03.094 Is that what's driving them to

NOTE Confidence: 0.948238083

00:14:03.094 --> 00:14:04.980 succeed in a very difficult,

NOTE Confidence: 0.948238083

00:14:04.980 --> 00:14:06.306 particularly funding environment?

NOTE Confidence: 0.948238083

00:14:06.306 --> 00:14:09.832 And is that something that that can be

NOTE Confidence: 0.948238083

00:14:09.832 --> 00:14:13.358 leveraged to identify new ways to treat,

NOTE Confidence: 0.948238083

00:14:13.360 --> 00:14:14.112 you know,

NOTE Confidence: 0.948238083

00:14:14.112 --> 00:14:17.093 treat and prevent cancer or other diseases?

NOTE Confidence: 0.948238083

00:14:17.093 --> 00:14:20.039 So diet is a particularly accessible.

NOTE Confidence: 0.948238083

00:14:20.040 --> 00:14:21.420 Topic for children.

NOTE Confidence: 0.948238083

00:14:21.420 --> 00:14:24.180 Everybody knows what's good to eat,

NOTE Confidence: 0.948238083

00:14:24.180 --> 00:14:25.552 what's bad to eat.

NOTE Confidence: 0.948238083

00:14:25.552 --> 00:14:27.610 Children in particular have body image

NOTE Confidence: 0.948238083

00:14:27.676 --> 00:14:29.806 challenges and then many people in

NOTE Confidence: 0.948238083

00:14:29.806 --> 00:14:32.039 their families also have more advanced

NOTE Confidence: 0.948238083

00:14:32.039 --> 00:14:33.904 diseases like diabetes and cancer

NOTE Confidence: 0.948238083

00:14:33.904 --> 00:14:36.482 that they want to understand and help.

NOTE Confidence: 0.948238083

00:14:36.482 --> 00:14:38.660 So we start with the question

NOTE Confidence: 0.948238083

00:14:38.738 --> 00:14:40.178 of what should I eat?

NOTE Confidence: 0.948238083

00:14:40.180 --> 00:14:42.460 Our main goal is to improve research literacy

NOTE Confidence: 0.948238083

00:14:42.460 --> 00:14:45.078 so that students understand what research is,

NOTE Confidence: 0.948238083

00:14:45.080 --> 00:14:46.241 how it's conducted,

NOTE Confidence: 0.948238083

00:14:46.241 --> 00:14:47.789 what the vocabulary is,

NOTE Confidence: 0.948238083

00:14:47.790 --> 00:14:50.730 what's expected of them and including that.

NOTE Confidence: 0.948238083

00:14:50.730 --> 00:14:52.614 The existing hierarchy.

NOTE Confidence: 0.948238083

00:14:52.614 --> 00:14:55.450 So the the program is student centered,

NOTE Confidence: 0.948238083

00:14:55.450 --> 00:14:56.320 it's transdisciplinary.

NOTE Confidence: 0.948238083

00:14:56.320 --> 00:14:58.930 It promotes self efficacy of each

NOTE Confidence: 0.948238083

00:14:58.930 --> 00:15:01.352 and every student and it improves

NOTE Confidence: 0.948238083

00:15:01.352 --> 00:15:03.572 the agency of the instructors and

NOTE Confidence: 0.948238083

00:15:03.643 --> 00:15:06.324 the students to take charge of their

NOTE Confidence: 0.948238083

00:15:06.324 --> 00:15:08.360 own research questions and projects.

NOTE Confidence: 0.852221148571429

00:15:10.680 --> 00:15:13.739 So why diet? Why does diet matter?

NOTE Confidence: 0.852221148571429

00:15:13.740 --> 00:15:15.684 You know my my research lab

NOTE Confidence: 0.852221148571429

00:15:15.684 --> 00:15:17.629 works on how nutrients impact

NOTE Confidence: 0.852221148571429

00:15:17.629 --> 00:15:19.378 signal transduction pathways,

NOTE Confidence: 0.852221148571429

00:15:19.380 --> 00:15:21.697 which is the core of how we

NOTE Confidence: 0.852221148571429

00:15:21.697 --> 00:15:23.559 started and in this area.

NOTE Confidence: 0.852221148571429

00:15:23.560 --> 00:15:26.899 For this large scale outreach program and

NOTE Confidence: 0.852221148571429

00:15:26.899 --> 00:15:29.620 diet is unambiguously a key to health,

NOTE Confidence: 0.852221148571429

00:15:29.620 --> 00:15:31.643 so this is a current sort of

NOTE Confidence: 0.852221148571429

00:15:31.643 --> 00:15:33.423 diagram of the recommendations for

NOTE Confidence: 0.852221148571429

00:15:33.423 --> 00:15:35.943 a healthy diet where you have.

NOTE Confidence: 0.852221148571429

00:15:35.950 --> 00:15:37.750 Lots of fruits and vegetables.

NOTE Confidence: 0.852221148571429

00:15:37.750 --> 00:15:39.126 Probably too many grains.

NOTE Confidence: 0.852221148571429

00:15:39.126 --> 00:15:41.615 A small amount of of meat and

NOTE Confidence: 0.852221148571429

00:15:41.615 --> 00:15:43.370 protein products and some dairy

NOTE Confidence: 0.852221148571429

00:15:43.370 --> 00:15:45.589 with a very tiny little pie.

NOTE Confidence: 0.852221148571429

00:15:45.590 --> 00:15:47.630 Slice of junk food here.

NOTE Confidence: 0.852221148571429

00:15:47.630 --> 00:15:49.785 And I think most people

NOTE Confidence: 0.852221148571429

00:15:49.785 --> 00:15:51.509 don't really eat this.

NOTE Confidence: 0.852221148571429

00:15:51.510 --> 00:15:52.124 Most people.  
NOTE Confidence: 0.852221148571429

00:15:52.124 --> 00:15:53.966 It's a little bit expanded down  
NOTE Confidence: 0.852221148571429

00:15:53.966 --> 00:15:55.686 here on this end and reduced  
NOTE Confidence: 0.852221148571429

00:15:55.686 --> 00:15:57.246 a lot here on this end,  
NOTE Confidence: 0.852221148571429

00:15:57.250 --> 00:15:58.996 but this type of healthy diet  
NOTE Confidence: 0.852221148571429

00:15:58.996 --> 00:16:00.960 is known to reduce the symptoms  
NOTE Confidence: 0.852221148571429

00:16:00.960 --> 00:16:03.174 of aging and to promote healthy  
NOTE Confidence: 0.852221148571429

00:16:03.174 --> 00:16:04.770 aging throughout the lifetime.  
NOTE Confidence: 0.852221148571429

00:16:04.770 --> 00:16:06.610 So we all know, right?  
NOTE Confidence: 0.852221148571429

00:16:06.610 --> 00:16:08.210 We all know what we should be eating,  
NOTE Confidence: 0.852221148571429

00:16:08.210 --> 00:16:09.926 but we don't always do that.  
NOTE Confidence: 0.852221148571429

00:16:09.930 --> 00:16:11.444 So what do we do? How do?  
NOTE Confidence: 0.852221148571429

00:16:11.444 --> 00:16:12.746 How do we make this better?  
NOTE Confidence: 0.852221148571429

00:16:12.750 --> 00:16:13.974 There's diets.  
NOTE Confidence: 0.852221148571429

00:16:13.974 --> 00:16:17.646 Dietary cookbooks that are about longevity,  
NOTE Confidence: 0.852221148571429

00:16:17.650 --> 00:16:20.130 reducing calories, eat less,

NOTE Confidence: 0.852221148571429

00:16:20.130 --> 00:16:22.032 live longer, and this.

NOTE Confidence: 0.852221148571429

00:16:22.032 --> 00:16:23.687 These diets are actually very,

NOTE Confidence: 0.852221148571429

00:16:23.690 --> 00:16:25.455 very well supported by basic

NOTE Confidence: 0.852221148571429

00:16:25.455 --> 00:16:27.716 science data showing that in every

NOTE Confidence: 0.852221148571429

00:16:27.716 --> 00:16:30.043 Organism caloric restriction extends

NOTE Confidence: 0.852221148571429

00:16:30.043 --> 00:16:32.567 lifespan and improves health.

NOTE Confidence: 0.852221148571429

00:16:32.570 --> 00:16:35.490 Most recently, intermittent feeding.

NOTE Confidence: 0.852221148571429

00:16:35.490 --> 00:16:37.680 Is is another,

NOTE Confidence: 0.852221148571429

00:16:37.680 --> 00:16:40.728 probably much easier way to reduce

NOTE Confidence: 0.852221148571429

00:16:40.728 --> 00:16:43.270 the the metabolism challenges that

NOTE Confidence: 0.852221148571429

00:16:43.270 --> 00:16:45.796 occur during unhealthy aging in a

NOTE Confidence: 0.852221148571429

00:16:45.796 --> 00:16:49.287 similar way to caloric restriction and so,

NOTE Confidence: 0.852221148571429

00:16:49.290 --> 00:16:51.693 so how do we leverage these types of diets?

NOTE Confidence: 0.852221148571429

00:16:51.700 --> 00:16:53.842 Is intermittent feeding a good thing for

NOTE Confidence: 0.852221148571429

00:16:53.842 --> 00:16:56.756 for a young teenager with a body image issue?

NOTE Confidence: 0.852221148571429

00:16:56.760 --> 00:16:57.236 Probably not.  
NOTE Confidence: 0.852221148571429

00:16:57.236 --> 00:16:59.960 So how do we start to have the conversations?  
NOTE Confidence: 0.852221148571429

00:16:59.960 --> 00:17:01.856 How do we promote health through  
NOTE Confidence: 0.852221148571429

00:17:01.856 --> 00:17:04.212 diet and how do we leverage chemicals  
NOTE Confidence: 0.852221148571429

00:17:04.212 --> 00:17:06.606 in the diet to try to improve?  
NOTE Confidence: 0.852221148571429

00:17:06.610 --> 00:17:08.752 Existing therapies so another really cool  
NOTE Confidence: 0.852221148571429

00:17:08.752 --> 00:17:11.348 thing about diet is it's very cultural,  
NOTE Confidence: 0.852221148571429

00:17:11.350 --> 00:17:14.775 so every religion has very  
NOTE Confidence: 0.852221148571429

00:17:14.775 --> 00:17:16.525 specific dietary recommendations.  
NOTE Confidence: 0.852221148571429

00:17:16.525 --> 00:17:19.150 There is herbal medicine that is widely  
NOTE Confidence: 0.852221148571429

00:17:19.150 --> 00:17:21.688 used in almost all areas of the world  
NOTE Confidence: 0.852221148571429

00:17:21.688 --> 00:17:24.309 and then just think about where you're from,  
NOTE Confidence: 0.852221148571429

00:17:24.310 --> 00:17:24.636 right?  
NOTE Confidence: 0.852221148571429

00:17:24.636 --> 00:17:26.918 So there's some kind of a cultural  
NOTE Confidence: 0.852221148571429

00:17:26.918 --> 00:17:28.249 cuisine where you're from.  
NOTE Confidence: 0.852221148571429

00:17:28.249 --> 00:17:29.914 That is something that's to



NOTE Confidence: 0.852221148571429  
00:17:29.914 --> 00:17:31.309 be celebrated in holidays.  
NOTE Confidence: 0.852221148571429  
00:17:31.310 --> 00:17:32.170 And all of these things,  
NOTE Confidence: 0.852221148571429  
00:17:32.170 --> 00:17:33.715 so why not celebrate those  
NOTE Confidence: 0.852221148571429  
00:17:33.715 --> 00:17:35.260 same things to promote health?  
NOTE Confidence: 0.90419692  
00:17:37.720 --> 00:17:39.460 So in the United States,  
NOTE Confidence: 0.90419692  
00:17:39.460 --> 00:17:40.440 a lot of people do.  
NOTE Confidence: 0.90419692  
00:17:40.440 --> 00:17:42.965 The herbal medicine type thing  
NOTE Confidence: 0.90419692  
00:17:42.965 --> 00:17:44.480 using dietary supplements,  
NOTE Confidence: 0.90419692  
00:17:44.480 --> 00:17:47.440 and just as a as as a thing to note,  
NOTE Confidence: 0.90419692  
00:17:47.440 --> 00:17:48.640 dietary supplements are  
NOTE Confidence: 0.90419692  
00:17:48.640 --> 00:17:50.640 not regulated by the FDA.  
NOTE Confidence: 0.90419692  
00:17:50.640 --> 00:17:52.818 The FDA is not authorized to  
NOTE Confidence: 0.90419692  
00:17:52.818 --> 00:17:53.907 review dietary supplement  
NOTE Confidence: 0.90419692  
00:17:53.907 --> 00:17:55.780 products before they are marketed,  
NOTE Confidence: 0.90419692  
00:17:55.780 --> 00:17:57.886 and so we are relying completely  
NOTE Confidence: 0.90419692

00:17:57.886 --> 00:17:59.290 on manufacturers and distributors  
NOTE Confidence: 0.90419692

00:17:59.346 --> 00:18:00.906 to make sure the products are  
NOTE Confidence: 0.90419692

00:18:00.906 --> 00:18:02.540 safe before they go to market.  
NOTE Confidence: 0.90419692

00:18:02.540 --> 00:18:04.795 So no, dietary supplements are  
NOTE Confidence: 0.90419692

00:18:04.795 --> 00:18:06.599 regulated by the government.  
NOTE Confidence: 0.90419692

00:18:06.600 --> 00:18:08.465 70% of cancer patients are  
NOTE Confidence: 0.90419692

00:18:08.465 --> 00:18:09.584 using dietary supplements.  
NOTE Confidence: 0.90419692

00:18:09.590 --> 00:18:13.200 Compared to 56.6% of the general population,  
NOTE Confidence: 0.90419692

00:18:13.200 --> 00:18:15.726 this is an extraordinarily high number.  
NOTE Confidence: 0.90419692

00:18:15.730 --> 00:18:17.940 These studies were done on  
NOTE Confidence: 0.90419692

00:18:17.940 --> 00:18:19.656 predominantly white patients with  
NOTE Confidence: 0.90419692

00:18:19.656 --> 00:18:21.586 very few I couldn't actually  
NOTE Confidence: 0.90419692

00:18:21.586 --> 00:18:24.213 find any studies that were done  
NOTE Confidence: 0.90419692

00:18:24.213 --> 00:18:26.225 exclusively on minority patients.  
NOTE Confidence: 0.90419692

00:18:26.230 --> 00:18:28.750 The one study I did find said  
NOTE Confidence: 0.90419692

00:18:28.750 --> 00:18:30.346 that 76.3% of Hispanic patients

NOTE Confidence: 0.90419692

00:18:30.346 --> 00:18:32.200 do not tell their doctor that

NOTE Confidence: 0.90419692

00:18:32.258 --> 00:18:33.970 they're taking the supplements,

NOTE Confidence: 0.90419692

00:18:33.970 --> 00:18:37.106 which I think is true for most people.

NOTE Confidence: 0.90419692

00:18:37.106 --> 00:18:39.086 So this is something that's

NOTE Confidence: 0.90419692

00:18:39.086 --> 00:18:40.274 also important to.

NOTE Confidence: 0.90419692

00:18:40.280 --> 00:18:42.160 Consider is that people are

NOTE Confidence: 0.90419692

00:18:42.160 --> 00:18:44.040 taking stuff that might be

NOTE Confidence: 0.90419692

00:18:44.116 --> 00:18:46.172 interrupting the the therapy

NOTE Confidence: 0.90419692

00:18:46.172 --> 00:18:48.228 that they're being prescribed.

NOTE Confidence: 0.90419692

00:18:48.230 --> 00:18:49.338 So what's our goal?

NOTE Confidence: 0.90419692

00:18:49.338 --> 00:18:51.337 Our goal is to understand how every

NOTE Confidence: 0.90419692

00:18:51.337 --> 00:18:53.241 chemical that you can consume as part

NOTE Confidence: 0.90419692

00:18:53.241 --> 00:18:55.452 of a diet impacts signal transduction

NOTE Confidence: 0.90419692

00:18:55.452 --> 00:18:57.864 pathways that are involved in disease.

NOTE Confidence: 0.90419692

00:18:57.870 --> 00:19:01.623 So this is a proteome diagram from Joseph LA.

NOTE Confidence: 0.90419692

00:19:01.630 --> 00:19:05.840 So the entire Drosophila genome.  
NOTE Confidence: 0.90419692

00:19:05.840 --> 00:19:07.202 Translated into proteins  
NOTE Confidence: 0.90419692

00:19:07.202 --> 00:19:09.018 with interaction maps here.  
NOTE Confidence: 0.90419692

00:19:09.020 --> 00:19:10.980 So what we would like to do is  
NOTE Confidence: 0.90419692

00:19:10.980 --> 00:19:12.903 take each and every compound that's  
NOTE Confidence: 0.90419692

00:19:12.903 --> 00:19:15.401 found in the diet and identify those  
NOTE Confidence: 0.90419692

00:19:15.401 --> 00:19:17.296 that inhibit or activate individual  
NOTE Confidence: 0.90419692

00:19:17.296 --> 00:19:19.921 proteins to create a new diet map  
NOTE Confidence: 0.90419692

00:19:19.921 --> 00:19:22.978 on top of the proteome map so that  
NOTE Confidence: 0.90419692

00:19:22.978 --> 00:19:25.471 we can create tailored diets for  
NOTE Confidence: 0.90419692

00:19:25.471 --> 00:19:28.093 individual diseases based on the genetics,  
NOTE Confidence: 0.90419692

00:19:28.100 --> 00:19:29.720 the protein expression,  
NOTE Confidence: 0.90419692

00:19:29.720 --> 00:19:34.360 and the the dietary access of the patient.  
NOTE Confidence: 0.90419692

00:19:34.360 --> 00:19:35.820 So that's obviously an  
NOTE Confidence: 0.90419692

00:19:35.820 --> 00:19:36.915 extremely daunting task,  
NOTE Confidence: 0.90419692

00:19:36.920 --> 00:19:39.296 like it's something where our usual

NOTE Confidence: 0.90419692

00:19:39.296 --> 00:19:41.759 one protein one project 1 mechanism,

NOTE Confidence: 0.90419692

00:19:41.760 --> 00:19:44.035 one person is not going to work,

NOTE Confidence: 0.90419692

00:19:44.040 --> 00:19:46.688 and so this is one of the reasons

NOTE Confidence: 0.90419692

00:19:46.688 --> 00:19:48.330 that we think that.

NOTE Confidence: 0.90419692

00:19:48.330 --> 00:19:50.770 Getting high school students involved,

NOTE Confidence: 0.90419692

00:19:50.770 --> 00:19:52.520 which is a population that's

NOTE Confidence: 0.90419692

00:19:52.520 --> 00:19:54.721 eager and in desperate need of

NOTE Confidence: 0.90419692

00:19:54.721 --> 00:19:56.646 having these types of experiences.

NOTE Confidence: 0.90419692

00:19:56.650 --> 00:19:58.450 We have 16 million high school

NOTE Confidence: 0.90419692

00:19:58.450 --> 00:20:00.028 students in the United States

NOTE Confidence: 0.90419692

00:20:00.028 --> 00:20:01.879 with fifty 550 million worldwide.

NOTE Confidence: 0.90419692

00:20:01.879 --> 00:20:04.297 So suddenly a daunting task maybe

NOTE Confidence: 0.90419692

00:20:04.297 --> 00:20:06.468 becomes a little bit more feasible.

NOTE Confidence: 0.90419692

00:20:06.470 --> 00:20:08.318 Each of these students comes from

NOTE Confidence: 0.90419692

00:20:08.318 --> 00:20:09.970 a family that eats right.

NOTE Confidence: 0.90419692

00:20:09.970 --> 00:20:11.716 They have their own particular types  
NOTE Confidence: 0.90419692

00:20:11.716 --> 00:20:13.878 of cuisine that are important to them,  
NOTE Confidence: 0.90419692

00:20:13.880 --> 00:20:16.556 some of which may have chemical  
NOTE Confidence: 0.90419692

00:20:16.556 --> 00:20:18.340 compounds that can inhibit.  
NOTE Confidence: 0.90419692

00:20:18.340 --> 00:20:20.715 Cancer signaling pathways to enhance  
NOTE Confidence: 0.90419692

00:20:20.715 --> 00:20:23.090 the efficacy of existing therapies.  
NOTE Confidence: 0.982130631666667

00:20:25.330 --> 00:20:26.566 So how do we do this?  
NOTE Confidence: 0.982130631666667

00:20:26.570 --> 00:20:29.426 We have a bunch of dietary supplements or  
NOTE Confidence: 0.982130631666667

00:20:29.426 --> 00:20:31.997 other things that the students bring in.  
NOTE Confidence: 0.982130631666667

00:20:32.000 --> 00:20:33.596 We feed them to fruit flies,  
NOTE Confidence: 0.982130631666667

00:20:33.600 --> 00:20:36.092 either wild type fruit flies or flies  
NOTE Confidence: 0.982130631666667

00:20:36.092 --> 00:20:37.850 bearing mutations in oncogenes,  
NOTE Confidence: 0.982130631666667

00:20:37.850 --> 00:20:39.134 tumor suppressor genes,  
NOTE Confidence: 0.982130631666667

00:20:39.134 --> 00:20:41.274 or more recently in pathways  
NOTE Confidence: 0.982130631666667

00:20:41.274 --> 00:20:42.810 related to diabetes.  
NOTE Confidence: 0.982130631666667

00:20:42.810 --> 00:20:44.952 And then we screen to see what happens to

NOTE Confidence: 0.982130631666667  
00:20:44.952 --> 00:20:47.147 the developmental life cycle of the fly.  
NOTE Confidence: 0.982130631666667  
00:20:47.150 --> 00:20:49.425 So do they continue to lay eggs?  
NOTE Confidence: 0.982130631666667  
00:20:49.430 --> 00:20:52.022 Do they develop into pupae and  
NOTE Confidence: 0.982130631666667  
00:20:52.022 --> 00:20:54.729 then do they close as adults?  
NOTE Confidence: 0.982130631666667  
00:20:54.730 --> 00:20:57.274 And So what we found is the most  
NOTE Confidence: 0.982130631666667  
00:20:57.274 --> 00:20:59.152 reproducible assay is counting the the  
NOTE Confidence: 0.982130631666667  
00:20:59.152 --> 00:21:01.730 number of pupae on the side of the vial.  
NOTE Confidence: 0.982130631666667  
00:21:01.730 --> 00:21:03.110 So you can see here.  
NOTE Confidence: 0.982130631666667  
00:21:03.110 --> 00:21:04.346 These are like the little larvae,  
NOTE Confidence: 0.982130631666667  
00:21:04.350 --> 00:21:06.805 and then they crawl up and become pupa  
NOTE Confidence: 0.982130631666667  
00:21:06.805 --> 00:21:09.775 like a chrysalis for a butterfly.  
NOTE Confidence: 0.982130631666667  
00:21:09.780 --> 00:21:12.587 And if we have hundreds of people  
NOTE Confidence: 0.982130631666667  
00:21:12.587 --> 00:21:14.920 scoring the same exact sample,  
NOTE Confidence: 0.982130631666667  
00:21:14.920 --> 00:21:17.000 we actually get pretty tight.  
NOTE Confidence: 0.982130631666667  
00:21:17.000 --> 00:21:18.960 Pretty tight statistics for  
NOTE Confidence: 0.982130631666667

00:21:18.960 --> 00:21:21.900 determining the the numbers of pupae,  
NOTE Confidence: 0.982130631666667

00:21:21.900 --> 00:21:23.601 and so you can clearly see that  
NOTE Confidence: 0.982130631666667

00:21:23.601 --> 00:21:25.543 wild type can be compared to loss  
NOTE Confidence: 0.982130631666667

00:21:25.543 --> 00:21:26.983 of function mutants in P-10,  
NOTE Confidence: 0.982130631666667

00:21:26.990 --> 00:21:29.510 which are fairly similar to gain of  
NOTE Confidence: 0.982130631666667

00:21:29.510 --> 00:21:31.552 function mutants in PI3 kinase which  
NOTE Confidence: 0.982130631666667

00:21:31.552 --> 00:21:33.598 are in the same related pathway.  
NOTE Confidence: 0.982130631666667

00:21:33.598 --> 00:21:36.142 Things like the FOXO mutants have  
NOTE Confidence: 0.982130631666667

00:21:36.142 --> 00:21:38.340 much more broad variability,  
NOTE Confidence: 0.982130631666667

00:21:38.340 --> 00:21:39.789 so it's going to be a little  
NOTE Confidence: 0.982130631666667

00:21:39.789 --> 00:21:41.029 bit more difficult to interpret.  
NOTE Confidence: 0.982130631666667

00:21:41.030 --> 00:21:42.970 The results of those experiments,  
NOTE Confidence: 0.982130631666667

00:21:42.970 --> 00:21:44.398 so this type of experiment could  
NOTE Confidence: 0.982130631666667

00:21:44.398 --> 00:21:46.257 be done with any gene that anybody  
NOTE Confidence: 0.982130631666667

00:21:46.257 --> 00:21:47.109 is interested in,  
NOTE Confidence: 0.982130631666667

00:21:47.110 --> 00:21:51.888 for which there is a mutant in the fly model.



NOTE Confidence: 0.982130631666667  
00:21:51.890 --> 00:21:54.515 So we focus with the students initially  
NOTE Confidence: 0.982130631666667  
00:21:54.515 --> 00:21:56.110 on basics, so signal transduction.  
NOTE Confidence: 0.982130631666667  
00:21:56.110 --> 00:21:58.730 You have a leg and you have a receptor.  
NOTE Confidence: 0.982130631666667  
00:21:58.730 --> 00:21:59.982 You have an effect.  
NOTE Confidence: 0.982130631666667  
00:21:59.982 --> 00:22:01.234 Are you drive proliferation  
NOTE Confidence: 0.982130631666667  
00:22:01.234 --> 00:22:02.290 that causes cancer?  
NOTE Confidence: 0.982130631666667  
00:22:02.290 --> 00:22:04.474 Keep it simple and a cancer passed away.  
NOTE Confidence: 0.982130631666667  
00:22:04.480 --> 00:22:05.915 You could have too much lag and  
NOTE Confidence: 0.982130631666667  
00:22:05.915 --> 00:22:07.190 that drives the whole pathway.  
NOTE Confidence: 0.982130631666667  
00:22:07.190 --> 00:22:08.408 You can mutate the receptor or  
NOTE Confidence: 0.982130631666667  
00:22:08.408 --> 00:22:09.989 you can have a mutant effector,  
NOTE Confidence: 0.982130631666667  
00:22:09.990 --> 00:22:12.998 all of which will give the same outcome  
NOTE Confidence: 0.982130631666667  
00:22:12.998 --> 00:22:16.150 of having too much proliferation.  
NOTE Confidence: 0.982130631666667  
00:22:16.150 --> 00:22:18.566 So it since 2013 we've had a big  
NOTE Confidence: 0.982130631666667  
00:22:18.566 --> 00:22:21.001 project on the EGF receptor pathway and  
NOTE Confidence: 0.982130631666667

00:22:21.001 --> 00:22:23.750 all of the genes that you see here.  
NOTE Confidence: 0.982130631666667

00:22:23.750 --> 00:22:26.400 We have representative viable mutations  
NOTE Confidence: 0.982130631666667

00:22:26.400 --> 00:22:29.050 and flies which are modifiable.  
NOTE Confidence: 0.982130631666667

00:22:29.050 --> 00:22:32.500 Meaning if a compound makes the  
NOTE Confidence: 0.982130631666667

00:22:32.500 --> 00:22:34.838 phenotype worse, that will be detected.  
NOTE Confidence: 0.982130631666667

00:22:34.838 --> 00:22:37.030 If the compound makes the phenotype better,  
NOTE Confidence: 0.982130631666667

00:22:37.030 --> 00:22:39.221 that will be detected because these are  
NOTE Confidence: 0.982130631666667

00:22:39.221 --> 00:22:41.280 mutants that are not complete nulls,  
NOTE Confidence: 0.982130631666667

00:22:41.280 --> 00:22:43.296 so the the great thing about this is  
NOTE Confidence: 0.982130631666667

00:22:43.296 --> 00:22:45.089 that many high schools have eight  
NOTE Confidence: 0.982130631666667

00:22:45.089 --> 00:22:47.650 groups of students who are doing experiments.  
NOTE Confidence: 0.982130631666667

00:22:47.650 --> 00:22:49.630 Together so we give them sequential  
NOTE Confidence: 0.982130631666667

00:22:49.630 --> 00:22:52.119 mutants in the EGF receptor signaling  
NOTE Confidence: 0.982130631666667

00:22:52.119 --> 00:22:52.670 pathway.  
NOTE Confidence: 0.982130631666667

00:22:52.670 --> 00:22:55.136 Have them screen the same drugs  
NOTE Confidence: 0.982130631666667

00:22:55.136 --> 00:22:58.423 and in doing so we can map exactly

NOTE Confidence: 0.982130631666667

00:22:58.423 --> 00:23:00.574 which of the components of the

NOTE Confidence: 0.982130631666667

00:23:00.574 --> 00:23:01.886 signaling pathway are affected.

NOTE Confidence: 0.93638715

00:23:04.550 --> 00:23:06.506 So in order to approve the

NOTE Confidence: 0.93638715

00:23:06.506 --> 00:23:08.210 proof of principle for this,

NOTE Confidence: 0.93638715

00:23:08.210 --> 00:23:11.360 we started by treating flies with gefitinib,

NOTE Confidence: 0.93638715

00:23:11.360 --> 00:23:13.984 which is an inhibitor of the EGF receptor,

NOTE Confidence: 0.93638715

00:23:13.990 --> 00:23:15.878 and what happens is the same thing that

NOTE Confidence: 0.93638715

00:23:15.878 --> 00:23:17.718 happens if you have a loss of function,

NOTE Confidence: 0.93638715

00:23:17.720 --> 00:23:20.354 EGF receptor mutant, which is you

NOTE Confidence: 0.93638715

00:23:20.354 --> 00:23:22.110 fuse these respiratory structures

NOTE Confidence: 0.93638715

00:23:22.179 --> 00:23:24.537 called dorsal appendages on the egg,

NOTE Confidence: 0.93638715

00:23:24.540 --> 00:23:26.292 so in a wild type there are two

NOTE Confidence: 0.93638715

00:23:26.292 --> 00:23:28.259 and in a in a gefitinib treated

NOTE Confidence: 0.93638715

00:23:28.259 --> 00:23:29.729 or an EGF receptor mutant.

NOTE Confidence: 0.93638715

00:23:29.730 --> 00:23:31.710 There's only one.

NOTE Confidence: 0.93638715

00:23:31.710 --> 00:23:33.036 So this is a very robust,  
NOTE Confidence: 0.93638715

00:23:33.040 --> 00:23:34.990 easy to score phenotype for anybody,  
NOTE Confidence: 0.93638715

00:23:34.990 --> 00:23:37.210 just even using a magnifying glass.  
NOTE Confidence: 0.93638715

00:23:37.210 --> 00:23:39.527 And then we screened a bunch of  
NOTE Confidence: 0.93638715

00:23:39.527 --> 00:23:40.817 different kinase inhibitors and  
NOTE Confidence: 0.93638715

00:23:40.817 --> 00:23:42.584 the ones in red are known, e.g.,  
NOTE Confidence: 0.93638715

00:23:42.584 --> 00:23:44.852 F receptor inhibitors and you can see  
NOTE Confidence: 0.93638715

00:23:44.852 --> 00:23:47.660 that all of them had some effect on  
NOTE Confidence: 0.93638715

00:23:47.660 --> 00:23:49.518 induction of dorsal appendage fusion.  
NOTE Confidence: 0.93638715

00:23:49.518 --> 00:23:52.266 There were a couple others imatinib  
NOTE Confidence: 0.93638715

00:23:52.266 --> 00:23:55.003 which inhibits ABL kinase and miss  
NOTE Confidence: 0.93638715

00:23:55.003 --> 00:23:57.565 it nib which inhibits VEGF receptor.  
NOTE Confidence: 0.93638715

00:23:57.570 --> 00:24:00.048 Also had had effects which is something  
NOTE Confidence: 0.93638715

00:24:00.048 --> 00:24:02.430 will follow up at some time later.  
NOTE Confidence: 0.93638715

00:24:02.430 --> 00:24:05.884 Uhm, we also noticed that at a  
NOTE Confidence: 0.93638715

00:24:05.884 --> 00:24:07.306 low dose of gefitinib you have

NOTE Confidence: 0.93638715  
00:24:07.306 --> 00:24:08.770 the dorsal appendage defects,  
NOTE Confidence: 0.93638715  
00:24:08.770 --> 00:24:10.410 but normal numbers of eggs.  
NOTE Confidence: 0.93638715  
00:24:10.410 --> 00:24:12.006 If you increase the dose now,  
NOTE Confidence: 0.93638715  
00:24:12.010 --> 00:24:13.390 you reduce the numbers of eggs,  
NOTE Confidence: 0.93638715  
00:24:13.390 --> 00:24:15.238 which turns out to be a much more  
NOTE Confidence: 0.93638715  
00:24:15.238 --> 00:24:17.190 easy and robust to score phenotype,  
NOTE Confidence: 0.93638715  
00:24:17.190 --> 00:24:20.200 which is loss of development.  
NOTE Confidence: 0.93638715  
00:24:20.200 --> 00:24:21.703 And then finally,  
NOTE Confidence: 0.93638715  
00:24:21.703 --> 00:24:23.707 there's excellent reagents for  
NOTE Confidence: 0.93638715  
00:24:23.707 --> 00:24:25.210 measuring downstream signaling,  
NOTE Confidence: 0.93638715  
00:24:25.210 --> 00:24:26.137 including Erk activity,  
NOTE Confidence: 0.93638715  
00:24:26.137 --> 00:24:28.300 so here is no good fit in.  
NOTE Confidence: 0.93638715  
00:24:28.300 --> 00:24:30.141 If you see nice Erk activity and  
NOTE Confidence: 0.93638715  
00:24:30.141 --> 00:24:32.384 as soon as you start adding the  
NOTE Confidence: 0.93638715  
00:24:32.384 --> 00:24:34.256 gefitinib you you inhibit the Erk  
NOTE Confidence: 0.93638715

00:24:34.256 --> 00:24:35.726 downstream of the EGF receptor  
NOTE Confidence: 0.93638715

00:24:35.726 --> 00:24:37.682 and you know these are like the  
NOTE Confidence: 0.93638715

00:24:37.682 --> 00:24:39.428 students learn how to do this and  
NOTE Confidence: 0.93638715

00:24:39.428 --> 00:24:41.776 they do it once and so you get some  
NOTE Confidence: 0.93638715

00:24:41.776 --> 00:24:44.016 variability in the loading but.  
NOTE Confidence: 0.93638715

00:24:44.020 --> 00:24:44.938 At the end of the day,  
NOTE Confidence: 0.93638715

00:24:44.940 --> 00:24:47.264 what we're looking for is something to  
NOTE Confidence: 0.93638715

00:24:47.264 --> 00:24:50.294 pursue in a professional lab down the road.  
NOTE Confidence: 0.93638715

00:24:50.294 --> 00:24:51.784 So once the students started  
NOTE Confidence: 0.93638715

00:24:51.784 --> 00:24:53.480 screening the dietary supplements,  
NOTE Confidence: 0.93638715

00:24:53.480 --> 00:24:54.830 the first thing that popped  
NOTE Confidence: 0.93638715

00:24:54.830 --> 00:24:55.910 out with Selena methionine,  
NOTE Confidence: 0.93638715

00:24:55.910 --> 00:24:57.842 which gives an EGF receptor like  
NOTE Confidence: 0.93638715

00:24:57.842 --> 00:25:00.209 phenotype of a single dorsal appendage.  
NOTE Confidence: 0.93638715

00:25:00.210 --> 00:25:03.190 You also see dramatically reduced  
NOTE Confidence: 0.93638715

00:25:03.190 --> 00:25:05.340 numbers of pupil pupil cases,

NOTE Confidence: 0.93638715

00:25:05.340 --> 00:25:06.985 meaning that the Salina methionine

NOTE Confidence: 0.93638715

00:25:06.985 --> 00:25:09.364 is behaving like a high dose of

NOTE Confidence: 0.93638715

00:25:09.364 --> 00:25:10.704 gefitinib innocence of reducing

NOTE Confidence: 0.93638715

00:25:10.704 --> 00:25:12.390 the numbers of eggs laid.

NOTE Confidence: 0.942827996

00:25:14.630 --> 00:25:17.470 So in order to figure out if this was real,

NOTE Confidence: 0.942827996

00:25:17.470 --> 00:25:19.724 so one student doesn't mean it's right,

NOTE Confidence: 0.942827996

00:25:19.730 --> 00:25:21.452 they could have killed everything, right?

NOTE Confidence: 0.942827996

00:25:21.452 --> 00:25:23.264 Like you, you just don't know.

NOTE Confidence: 0.942827996

00:25:23.270 --> 00:25:25.566 So we put this into a classroom project.

NOTE Confidence: 0.942827996

00:25:25.570 --> 00:25:27.436 For this 570 students I showed

NOTE Confidence: 0.942827996

00:25:27.436 --> 00:25:30.001 you on the steps of the Franklin

NOTE Confidence: 0.942827996

00:25:30.001 --> 00:25:31.665 Institute and they screened.

NOTE Confidence: 0.942827996

00:25:31.670 --> 00:25:35.450 All of the steps in the EGF

NOTE Confidence: 0.942827996

00:25:35.450 --> 00:25:37.070 receptor signaling pathway.

NOTE Confidence: 0.942827996

00:25:37.070 --> 00:25:39.050 Mutants in all of these different

NOTE Confidence: 0.942827996

00:25:39.050 --> 00:25:40.994 steps for effects by selenium and  
NOTE Confidence: 0.942827996

00:25:40.994 --> 00:25:44.699 what we see is that the high dose of  
NOTE Confidence: 0.942827996

00:25:44.699 --> 00:25:46.967 selenomethionine basically affects everybody,  
NOTE Confidence: 0.942827996

00:25:46.970 --> 00:25:50.008 meaning it's probably toxic for any fly,  
NOTE Confidence: 0.942827996

00:25:50.010 --> 00:25:52.187 but the low dose was actually quite  
NOTE Confidence: 0.942827996

00:25:52.187 --> 00:25:54.569 variable such that only rats and Corkscrew,  
NOTE Confidence: 0.942827996

00:25:54.570 --> 00:25:56.676 which is the fly homologue of  
NOTE Confidence: 0.942827996

00:25:56.676 --> 00:25:58.390 the tyrosine phosphatase SHP two,  
NOTE Confidence: 0.942827996

00:25:58.390 --> 00:26:00.497 were the only two affected and they  
NOTE Confidence: 0.942827996

00:26:00.497 --> 00:26:02.269 were affected in opposite ways.  
NOTE Confidence: 0.942827996

00:26:02.270 --> 00:26:04.382 Such that the wrasse mutants were  
NOTE Confidence: 0.942827996

00:26:04.382 --> 00:26:06.770 less viable and the Corkscrew mutants  
NOTE Confidence: 0.942827996

00:26:06.770 --> 00:26:09.446 were more viable upon treatment  
NOTE Confidence: 0.942827996

00:26:09.446 --> 00:26:11.420 with Selena methionine.  
NOTE Confidence: 0.942827996

00:26:11.420 --> 00:26:14.020 So then we use the Erk activation again.  
NOTE Confidence: 0.942827996

00:26:14.020 --> 00:26:15.025 Here's wild type.



NOTE Confidence: 0.942827996

00:26:15.025 --> 00:26:17.035 This is the activated EGF receptor

NOTE Confidence: 0.942827996

00:26:17.035 --> 00:26:19.019 mutant you see a dramatic increase.

NOTE Confidence: 0.942827996

00:26:19.020 --> 00:26:22.100 We can also do this by immunostaining

NOTE Confidence: 0.942827996

00:26:22.100 --> 00:26:24.520 to see specifically which cells

NOTE Confidence: 0.942827996

00:26:24.520 --> 00:26:27.060 are affected by various treatments

NOTE Confidence: 0.942827996

00:26:27.060 --> 00:26:30.105 and what we found here is that

NOTE Confidence: 0.942827996

00:26:30.105 --> 00:26:31.936 the which was a surprise.

NOTE Confidence: 0.942827996

00:26:31.936 --> 00:26:33.681 We expected the Salina methionine

NOTE Confidence: 0.942827996

00:26:33.681 --> 00:26:35.816 to reduce the arc activity instead.

NOTE Confidence: 0.942827996

00:26:35.816 --> 00:26:38.420 If you compare the wild type here

NOTE Confidence: 0.942827996

00:26:38.497 --> 00:26:40.865 in lane one to this lane over here,

NOTE Confidence: 0.942827996

00:26:40.870 --> 00:26:42.937 this Lena methionine.

NOTE Confidence: 0.942827996

00:26:42.937 --> 00:26:47.071 Actually blasted the Erk signaling bypassing

NOTE Confidence: 0.942827996

00:26:47.071 --> 00:26:51.710 any type of inhibition of VEGF receptor so.

NOTE Confidence: 0.942827996

00:26:51.710 --> 00:26:53.691 This turned out to be true in

NOTE Confidence: 0.942827996

00:26:53.691 --> 00:26:54.910 multiple different cancer cells,  
NOTE Confidence: 0.942827996

00:26:54.910 --> 00:26:57.171 which the students went on to do  
NOTE Confidence: 0.942827996

00:26:57.171 --> 00:26:59.139 in foxchase labs in the summer.  
NOTE Confidence: 0.942827996

00:26:59.140 --> 00:27:00.304 So breast cancer,  
NOTE Confidence: 0.942827996

00:27:00.304 --> 00:27:01.080 colorectal cancer,  
NOTE Confidence: 0.942827996

00:27:01.080 --> 00:27:02.396 and pancreatic cancer with  
NOTE Confidence: 0.942827996

00:27:02.396 --> 00:27:04.041 gain of function RASP mutations  
NOTE Confidence: 0.942827996

00:27:04.041 --> 00:27:05.808 all showed the similar effect,  
NOTE Confidence: 0.942827996

00:27:05.810 --> 00:27:08.154 with SELENOMETHIONINE actually increasing  
NOTE Confidence: 0.942827996

00:27:08.154 --> 00:27:11.592 Erk activity up until at least in  
NOTE Confidence: 0.942827996

00:27:11.592 --> 00:27:14.140 two cases the dose got too high.  
NOTE Confidence: 0.942827996

00:27:14.140 --> 00:27:17.182 On K CO2 which is a non rast dependent  
NOTE Confidence: 0.942827996

00:27:17.182 --> 00:27:19.235 colorectal cancer cell line had less  
NOTE Confidence: 0.942827996

00:27:19.235 --> 00:27:21.868 of an effect suggesting that like in  
NOTE Confidence: 0.942827996

00:27:21.868 --> 00:27:24.880 the fly the gain of function wrasse  
NOTE Confidence: 0.942827996

00:27:24.880 --> 00:27:27.634 mutations make the the cells more

NOTE Confidence: 0.942827996

00:27:27.634 --> 00:27:31.078 sensitive to this Selena methionine effect.

NOTE Confidence: 0.942827996

00:27:31.080 --> 00:27:32.376 So we've done this with it.

NOTE Confidence: 0.942827996

00:27:32.380 --> 00:27:34.450 We're still in the process of

NOTE Confidence: 0.942827996

00:27:34.450 --> 00:27:35.960 finishing finishing this project.

NOTE Confidence: 0.942827996

00:27:35.960 --> 00:27:39.250 Over 300 students have worked on it,

NOTE Confidence: 0.942827996

00:27:39.250 --> 00:27:41.301 in addition to the 1001 students who

NOTE Confidence: 0.942827996

00:27:41.301 --> 00:27:43.219 did the screening in the classrooms.

NOTE Confidence: 0.942827996

00:27:43.220 --> 00:27:45.533 So it's going to be a lot of authors

NOTE Confidence: 0.942827996

00:27:45.540 --> 00:27:47.124 on the paper that we're planning

NOTE Confidence: 0.942827996

00:27:47.124 --> 00:27:48.180 to publish this year,

NOTE Confidence: 0.942827996

00:27:48.180 --> 00:27:49.937 but we have a number of other

NOTE Confidence: 0.942827996

00:27:49.937 --> 00:27:51.088 compounds that inhibit specific

NOTE Confidence: 0.942827996

00:27:51.088 --> 00:27:52.476 components of this pathway,

NOTE Confidence: 0.942827996

00:27:52.480 --> 00:27:55.140 so burdock root is a very potent

NOTE Confidence: 0.942827996

00:27:55.140 --> 00:27:57.270 inhibitor in this case of AKT.

NOTE Confidence: 0.895261654285714

00:27:59.310 --> 00:28:02.327 Butcher's Broom is an activator of Corkscrew,  
NOTE Confidence: 0.895261654285714

00:28:02.330 --> 00:28:06.394 as is Selena methionine and grape seed  
NOTE Confidence: 0.895261654285714

00:28:06.394 --> 00:28:08.846 extract inhibits raft, so so this is  
NOTE Confidence: 0.895261654285714

00:28:08.846 --> 00:28:10.310 something where you can see like.  
NOTE Confidence: 0.895261654285714

00:28:10.310 --> 00:28:12.596 Eventually we will kind of have a a really  
NOTE Confidence: 0.895261654285714

00:28:12.596 --> 00:28:15.296 nice map of this particular pathway and the  
NOTE Confidence: 0.895261654285714

00:28:15.296 --> 00:28:18.260 different compounds that that can affect it.  
NOTE Confidence: 0.895261654285714

00:28:18.260 --> 00:28:20.234 So this was a project that I  
NOTE Confidence: 0.895261654285714

00:28:20.234 --> 00:28:21.750 designed thinking it's accessible.  
NOTE Confidence: 0.895261654285714

00:28:21.750 --> 00:28:23.094 It's easy, it's straightforward.  
NOTE Confidence: 0.895261654285714

00:28:23.094 --> 00:28:25.605 It's part of the curriculum for the students.  
NOTE Confidence: 0.895261654285714

00:28:25.605 --> 00:28:27.990 What they need to learn in high school,  
NOTE Confidence: 0.895261654285714

00:28:27.990 --> 00:28:29.634 and then we started having students  
NOTE Confidence: 0.895261654285714

00:28:29.634 --> 00:28:31.290 come in with their own ideas.  
NOTE Confidence: 0.895261654285714

00:28:31.290 --> 00:28:33.467 So one student brought in apricot seeds,  
NOTE Confidence: 0.895261654285714

00:28:33.470 --> 00:28:36.254 which is mom who was a breast cancer

NOTE Confidence: 0.895261654285714  
00:28:36.254 --> 00:28:38.774 survivor was taking as God's cure for cancer.  
NOTE Confidence: 0.895261654285714  
00:28:38.774 --> 00:28:41.450 It turns out as soon as you digest this,  
NOTE Confidence: 0.895261654285714  
00:28:41.450 --> 00:28:43.487 it turns into a molecule of cyanide  
NOTE Confidence: 0.895261654285714  
00:28:43.487 --> 00:28:45.389 and a molecule of benzaldehyde and  
NOTE Confidence: 0.895261654285714  
00:28:45.389 --> 00:28:47.636 women who are taking this are dying  
NOTE Confidence: 0.895261654285714  
00:28:47.694 --> 00:28:48.918 of cyanide poisoning.  
NOTE Confidence: 0.895261654285714  
00:28:48.920 --> 00:28:50.754 So this is a really serious public  
NOTE Confidence: 0.895261654285714  
00:28:50.754 --> 00:28:52.385 health issue that nobody reports to  
NOTE Confidence: 0.895261654285714  
00:28:52.385 --> 00:28:54.580 their doctor 'cause as soon as you tell  
NOTE Confidence: 0.895261654285714  
00:28:54.580 --> 00:28:56.398 your doctor I'm taking apricot seeds,  
NOTE Confidence: 0.895261654285714  
00:28:56.400 --> 00:28:59.544 they say you can die from cyanide poisoning.  
NOTE Confidence: 0.895261654285714  
00:28:59.550 --> 00:29:02.076 So, so this is something that's  
NOTE Confidence: 0.895261654285714  
00:29:02.076 --> 00:29:03.760 essentially people taking poison  
NOTE Confidence: 0.895261654285714  
00:29:03.832 --> 00:29:05.607 that needs to be addressed.  
NOTE Confidence: 0.895261654285714  
00:29:05.610 --> 00:29:07.046 Another student came in.  
NOTE Confidence: 0.895261654285714

00:29:07.046 --> 00:29:09.200 Saying that her grandfather had stage

NOTE Confidence: 0.895261654285714

00:29:09.263 --> 00:29:11.384 four lung cancer and was eating 100

NOTE Confidence: 0.895261654285714

00:29:11.384 --> 00:29:13.652 live weevils in a glass of Sprite

NOTE Confidence: 0.895261654285714

00:29:13.652 --> 00:29:15.958 every day and it cured his stage.

NOTE Confidence: 0.895261654285714

00:29:15.960 --> 00:29:18.718 Four lung cancer and so this is,

NOTE Confidence: 0.895261654285714

00:29:18.720 --> 00:29:19.292 you know,

NOTE Confidence: 0.895261654285714

00:29:19.292 --> 00:29:20.436 another curiosity like you.

NOTE Confidence: 0.895261654285714

00:29:20.440 --> 00:29:21.904 Don't just tell people you shouldn't

NOTE Confidence: 0.895261654285714

00:29:21.904 --> 00:29:23.773 do that like we need to figure this

NOTE Confidence: 0.895261654285714

00:29:23.773 --> 00:29:25.616 out and it turns out what she found

NOTE Confidence: 0.895261654285714

00:29:25.616 --> 00:29:27.194 out was that the defense chemicals

NOTE Confidence: 0.895261654285714

00:29:27.194 --> 00:29:28.527 secreted by these weevils when

NOTE Confidence: 0.895261654285714

00:29:28.527 --> 00:29:30.410 they get dropped into a glass of

NOTE Confidence: 0.895261654285714

00:29:30.462 --> 00:29:32.147 Sprite are actually very potent.

NOTE Confidence: 0.895261654285714

00:29:32.150 --> 00:29:33.710 Chemotherapeutics against lung cancer.

NOTE Confidence: 0.895261654285714

00:29:33.710 --> 00:29:36.050 So so this is something where

NOTE Confidence: 0.895261654285714

00:29:36.114 --> 00:29:38.009 there's truth and there's danger.

NOTE Confidence: 0.895261654285714

00:29:38.010 --> 00:29:40.134 In in the same thing and these are not

NOTE Confidence: 0.895261654285714

00:29:40.134 --> 00:29:42.265 things that most scientists would be like.

NOTE Confidence: 0.895261654285714

00:29:42.270 --> 00:29:45.158 Oh let's go investigate weevils so so

NOTE Confidence: 0.895261654285714

00:29:45.158 --> 00:29:46.682 these are things that are happening

NOTE Confidence: 0.895261654285714

00:29:46.682 --> 00:29:48.975 in our communities that we don't know

NOTE Confidence: 0.895261654285714

00:29:48.975 --> 00:29:50.700 about and are extremely important.

NOTE Confidence: 0.895261654285714

00:29:50.700 --> 00:29:51.218 And finally,

NOTE Confidence: 0.895261654285714

00:29:51.218 --> 00:29:53.290 just last summer we had a kid come

NOTE Confidence: 0.895261654285714

00:29:53.346 --> 00:29:54.996 in who was interested in lean,

NOTE Confidence: 0.895261654285714

00:29:55.000 --> 00:29:57.520 which is a combination of codeine

NOTE Confidence: 0.895261654285714

00:29:57.520 --> 00:29:59.820 based cough syrup and Sprite.

NOTE Confidence: 0.895261654285714

00:29:59.820 --> 00:30:01.956 And kids are using this to get high

NOTE Confidence: 0.895261654285714

00:30:01.956 --> 00:30:04.270 and he was very concerned that his

NOTE Confidence: 0.895261654285714

00:30:04.270 --> 00:30:06.890 friends who were all doing this because

NOTE Confidence: 0.895261654285714

00:30:06.890 --> 00:30:08.980 it's healthier than taking drugs.  
NOTE Confidence: 0.895261654285714

00:30:08.980 --> 00:30:10.639 We're going to get brain cancer and  
NOTE Confidence: 0.895261654285714

00:30:10.639 --> 00:30:12.541 so these are the sorts of things that  
NOTE Confidence: 0.895261654285714

00:30:12.541 --> 00:30:14.364 are going on that the students want  
NOTE Confidence: 0.895261654285714

00:30:14.364 --> 00:30:15.944 to research because it's affecting  
NOTE Confidence: 0.895261654285714

00:30:15.944 --> 00:30:17.988 the people they love and we don't  
NOTE Confidence: 0.895261654285714

00:30:17.988 --> 00:30:20.512 want to bring them in and tell them  
NOTE Confidence: 0.895261654285714

00:30:20.512 --> 00:30:22.160 that's not important because.  
NOTE Confidence: 0.895261654285714

00:30:22.160 --> 00:30:25.238 This is important.  
NOTE Confidence: 0.895261654285714

00:30:25.240 --> 00:30:28.005 So this is a project at all.  
NOTE Confidence: 0.895261654285714

00:30:28.010 --> 00:30:29.330 I'll just highlight a lot,  
NOTE Confidence: 0.895261654285714

00:30:29.330 --> 00:30:31.754 which is a a project designed by 5  
NOTE Confidence: 0.895261654285714

00:30:31.754 --> 00:30:33.977 young ladies starting with Eliana here  
NOTE Confidence: 0.895261654285714

00:30:33.977 --> 00:30:36.299 who was doing a cultural awareness  
NOTE Confidence: 0.895261654285714

00:30:36.368 --> 00:30:38.846 project to find out what cancers  
NOTE Confidence: 0.895261654285714

00:30:38.846 --> 00:30:41.106 particularly affect people from Puerto Rico,



NOTE Confidence: 0.895261654285714

00:30:41.106 --> 00:30:43.530 and So what she found is that Puerto

NOTE Confidence: 0.895261654285714

00:30:43.601 --> 00:30:45.683 Ricans have an extremely high rate

NOTE Confidence: 0.895261654285714

00:30:45.683 --> 00:30:47.071 of HPV based cervical

NOTE Confidence: 0.872180184761905

00:30:47.136 --> 00:30:48.515 cancer. Even though Hispanic

NOTE Confidence: 0.872180184761905

00:30:48.515 --> 00:30:50.405 girls were more like likely to

NOTE Confidence: 0.872180184761905

00:30:50.405 --> 00:30:52.387 get vaccinated than white girls,

NOTE Confidence: 0.872180184761905

00:30:52.390 --> 00:30:53.926 and so this was something that

NOTE Confidence: 0.872180184761905

00:30:53.926 --> 00:30:54.950 was really bothering her,

NOTE Confidence: 0.872180184761905

00:30:54.950 --> 00:30:57.113 so most of the studies have been

NOTE Confidence: 0.872180184761905

00:30:57.113 --> 00:30:59.239 done on HPV types 16 and 18.

NOTE Confidence: 0.872180184761905

00:30:59.240 --> 00:31:02.660 So here's 8100 cases of this.

NOTE Confidence: 0.872180184761905

00:31:02.660 --> 00:31:04.412 But it turns out that in

NOTE Confidence: 0.872180184761905

00:31:04.412 --> 00:31:05.580 Hispanic and black communities,

NOTE Confidence: 0.872180184761905

00:31:05.580 --> 00:31:08.478 other strains of HPV are more prevalent,

NOTE Confidence: 0.872180184761905

00:31:08.480 --> 00:31:11.455 and so these are not small numbers.

NOTE Confidence: 0.872180184761905

00:31:11.460 --> 00:31:13.750 So 1800 from these types,  
NOTE Confidence: 0.872180184761905

00:31:13.750 --> 00:31:15.604 and then another 1200 from these  
NOTE Confidence: 0.872180184761905

00:31:15.604 --> 00:31:17.878 types is is not a small number,  
NOTE Confidence: 0.872180184761905

00:31:17.880 --> 00:31:20.000 and it turns out that many of these  
NOTE Confidence: 0.872180184761905

00:31:20.000 --> 00:31:22.484 strains of the virus are not actually  
NOTE Confidence: 0.872180184761905

00:31:22.484 --> 00:31:23.996 protected by available vaccines,  
NOTE Confidence: 0.872180184761905

00:31:24.000 --> 00:31:26.922 so so this started a conversation  
NOTE Confidence: 0.872180184761905

00:31:26.922 --> 00:31:28.870 among these predominantly minority  
NOTE Confidence: 0.872180184761905

00:31:28.943 --> 00:31:31.449 women of what's going on with this.  
NOTE Confidence: 0.872180184761905

00:31:31.450 --> 00:31:33.880 So there's a lot of.  
NOTE Confidence: 0.872180184761905

00:31:33.880 --> 00:31:34.678 You know,  
NOTE Confidence: 0.872180184761905

00:31:34.678 --> 00:31:37.471 sort of social reasons for for pointing  
NOTE Confidence: 0.872180184761905

00:31:37.471 --> 00:31:40.186 fingers at why health disparities exist.  
NOTE Confidence: 0.872180184761905

00:31:40.190 --> 00:31:43.520 So a lot of it has to do with poverty,  
NOTE Confidence: 0.872180184761905

00:31:43.520 --> 00:31:46.424 access to health care and various  
NOTE Confidence: 0.872180184761905

00:31:46.424 --> 00:31:48.786 life choices that are generally

NOTE Confidence: 0.872180184761905  
00:31:48.786 --> 00:31:50.490 considered explanations for why  
NOTE Confidence: 0.872180184761905  
00:31:50.490 --> 00:31:52.194 these health disparities exist.  
NOTE Confidence: 0.872180184761905  
00:31:52.200 --> 00:31:53.178 But Eliana's discovery,  
NOTE Confidence: 0.872180184761905  
00:31:53.178 --> 00:31:55.460 sort of made it seem like maybe  
NOTE Confidence: 0.872180184761905  
00:31:55.520 --> 00:31:56.992 there's some genetic basis  
NOTE Confidence: 0.872180184761905  
00:31:56.992 --> 00:31:58.832 to some of these differences.  
NOTE Confidence: 0.872180184761905  
00:31:58.840 --> 00:32:00.875 So Nicole Harrington came in  
NOTE Confidence: 0.872180184761905  
00:32:00.875 --> 00:32:02.880 with this concept that black  
NOTE Confidence: 0.872180184761905  
00:32:02.880 --> 00:32:04.730 mothers don't trust the medical  
NOTE Confidence: 0.872180184761905  
00:32:04.730 --> 00:32:06.940 community enough to get vaccinated,  
NOTE Confidence: 0.872180184761905  
00:32:06.940 --> 00:32:09.468 and so this is an example for the  
NOTE Confidence: 0.872180184761905  
00:32:09.468 --> 00:32:11.096 COVID-19 vaccine where you can  
NOTE Confidence: 0.872180184761905  
00:32:11.096 --> 00:32:12.956 see that black Americans had a  
NOTE Confidence: 0.872180184761905  
00:32:12.956 --> 00:32:14.889 very very low vaccination rate  
NOTE Confidence: 0.872180184761905  
00:32:14.889 --> 00:32:16.776 compared to white Americans.  
NOTE Confidence: 0.872180184761905

00:32:16.776 --> 00:32:20.094 And similarly for the HPV vaccine,  
NOTE Confidence: 0.872180184761905

00:32:20.100 --> 00:32:23.178 the same thing is true where?  
NOTE Confidence: 0.872180184761905

00:32:23.180 --> 00:32:25.796 Hispanic and and black Americans are  
NOTE Confidence: 0.872180184761905

00:32:25.796 --> 00:32:28.468 less likely to get vaccinated and  
NOTE Confidence: 0.872180184761905

00:32:28.468 --> 00:32:31.519 then what we also need to really  
NOTE Confidence: 0.872180184761905

00:32:31.519 --> 00:32:34.960 realize is that they they think the  
NOTE Confidence: 0.872180184761905

00:32:34.960 --> 00:32:38.690 vaccine is harmful and even more that.  
NOTE Confidence: 0.872180184761905

00:32:38.690 --> 00:32:39.382 You know?  
NOTE Confidence: 0.872180184761905

00:32:39.382 --> 00:32:41.458 They think people are being treated  
NOTE Confidence: 0.872180184761905

00:32:41.458 --> 00:32:43.858 like Guinea pigs by scientists like us,  
NOTE Confidence: 0.872180184761905

00:32:43.860 --> 00:32:45.932 so so this is a really big issue  
NOTE Confidence: 0.872180184761905

00:32:45.932 --> 00:32:48.031 in terms of how to get information  
NOTE Confidence: 0.872180184761905

00:32:48.031 --> 00:32:49.898 out how to reduce this mistrust  
NOTE Confidence: 0.872180184761905

00:32:49.898 --> 00:32:52.170 and our take on this is that we  
NOTE Confidence: 0.872180184761905

00:32:52.170 --> 00:32:54.716 need to increase representation and  
NOTE Confidence: 0.872180184761905

00:32:54.716 --> 00:32:58.100 understanding of the fears that the

NOTE Confidence: 0.872180184761905

00:32:58.194 --> 00:33:01.609 public has about these vaccines.

NOTE Confidence: 0.872180184761905

00:33:01.610 --> 00:33:03.934 So then we went down to the

NOTE Confidence: 0.872180184761905

00:33:03.934 --> 00:33:04.930 cellular molecular level,

NOTE Confidence: 0.872180184761905

00:33:04.930 --> 00:33:08.160 so HPV happens with a.

NOTE Confidence: 0.872180184761905

00:33:08.160 --> 00:33:09.294 Initial infection,

NOTE Confidence: 0.872180184761905

00:33:09.294 --> 00:33:13.263 but the virus can move into sort

NOTE Confidence: 0.872180184761905

00:33:13.263 --> 00:33:16.542 of the the basic sort of stem

NOTE Confidence: 0.872180184761905

00:33:16.542 --> 00:33:19.356 cell areas of the of the cervix,

NOTE Confidence: 0.872180184761905

00:33:19.360 --> 00:33:21.888 and then it can just hang out for

NOTE Confidence: 0.872180184761905

00:33:21.888 --> 00:33:23.918 awhile and then eventually it

NOTE Confidence: 0.872180184761905

00:33:23.918 --> 00:33:26.552 can come out and create invasive

NOTE Confidence: 0.872180184761905

00:33:26.552 --> 00:33:28.981 neoplasia and so this is a pathway

NOTE Confidence: 0.872180184761905

00:33:28.981 --> 00:33:30.530 that's that's basically mediated

NOTE Confidence: 0.872180184761905

00:33:30.530 --> 00:33:33.050 by inhibition of P53 and RB,

NOTE Confidence: 0.872180184761905

00:33:33.050 --> 00:33:35.200 which are two proteins that

NOTE Confidence: 0.872180184761905

00:33:35.200 --> 00:33:37.079 control the cell cycle,  
NOTE Confidence: 0.872180184761905

00:33:37.080 --> 00:33:39.796 and so two students neelys and Allison.  
NOTE Confidence: 0.872180184761905

00:33:39.800 --> 00:33:41.790 Decided to screen dietary supplements  
NOTE Confidence: 0.872180184761905

00:33:41.790 --> 00:33:44.221 to find something that would kill  
NOTE Confidence: 0.872180184761905

00:33:44.221 --> 00:33:46.318 flies bearing mutations in P53 or  
NOTE Confidence: 0.872180184761905

00:33:46.318 --> 00:33:48.411 RB to sort of mimic virus infection  
NOTE Confidence: 0.872180184761905

00:33:48.411 --> 00:33:50.729 and what they found was multiple  
NOTE Confidence: 0.872180184761905

00:33:50.729 --> 00:33:52.679 components that drive a process  
NOTE Confidence: 0.872180184761905

00:33:52.750 --> 00:33:54.605 called ferroptosis which is a  
NOTE Confidence: 0.872180184761905

00:33:54.605 --> 00:33:56.892 type of iron dependent cell death  
NOTE Confidence: 0.872180184761905

00:33:56.892 --> 00:33:59.484 and you can see here that.  
NOTE Confidence: 0.872180184761905

00:33:59.490 --> 00:34:02.472 The P53 null flies are highly  
NOTE Confidence: 0.872180184761905

00:34:02.472 --> 00:34:03.963 susceptible to acetaminophen,  
NOTE Confidence: 0.872180184761905

00:34:03.970 --> 00:34:06.238 which is Tylenol or iron in  
NOTE Confidence: 0.872180184761905

00:34:06.238 --> 00:34:07.750 terms of being killed.  
NOTE Confidence: 0.949638042

00:34:07.750 --> 00:34:10.310 And then they went on and did a dose curve

NOTE Confidence: 0.949638042

00:34:10.375 --> 00:34:12.767 to find doses that really had little or

NOTE Confidence: 0.949638042

00:34:12.767 --> 00:34:15.230 no effect on wild type but still were

NOTE Confidence: 0.949638042

00:34:15.230 --> 00:34:18.198 were potent for RB and P53 mutants.

NOTE Confidence: 0.949638042

00:34:18.198 --> 00:34:21.217 And so we're very interested in this kind of

NOTE Confidence: 0.949638042

00:34:21.217 --> 00:34:23.773 idea that they came up with from their own.

NOTE Confidence: 0.949638042

00:34:23.780 --> 00:34:26.744 Experiences, and it turns out that

NOTE Confidence: 0.949638042

00:34:26.744 --> 00:34:30.044 HPV inhibits a receptor that is a

NOTE Confidence: 0.949638042

00:34:30.044 --> 00:34:32.572 major controller of of ferroptosis

NOTE Confidence: 0.949638042

00:34:32.572 --> 00:34:35.513 through a protein called G.

NOTE Confidence: 0.949638042

00:34:35.513 --> 00:34:38.337 PX4P53 is also a regulator of this process.

NOTE Confidence: 0.949638042

00:34:38.340 --> 00:34:40.560 Acetaminophen, which is one of the

NOTE Confidence: 0.949638042

00:34:40.560 --> 00:34:42.999 things that scored in the screen

NOTE Confidence: 0.949638042

00:34:42.999 --> 00:34:45.219 actually affects this whole process,

NOTE Confidence: 0.949638042

00:34:45.220 --> 00:34:47.038 and so a colleague of mine,

NOTE Confidence: 0.949638042

00:34:47.040 --> 00:34:49.014 Jeff Peterson, who's also at Fox Chase,

NOTE Confidence: 0.949638042

00:34:49.020 --> 00:34:51.246 is a lab that studies ferroptosis,  
NOTE Confidence: 0.949638042

00:34:51.250 --> 00:34:53.549 and so they had two compounds, ESA.  
NOTE Confidence: 0.949638042

00:34:53.549 --> 00:34:56.272 And harassed in that act in different  
NOTE Confidence: 0.949638042

00:34:56.272 --> 00:34:58.609 ways to induce ferroptosis.  
NOTE Confidence: 0.949638042

00:34:58.610 --> 00:35:01.010 And so we wanted to see.  
NOTE Confidence: 0.949638042

00:35:01.010 --> 00:35:02.970 Whether the observations that the  
NOTE Confidence: 0.949638042

00:35:02.970 --> 00:35:06.107 students made in the fly would be true  
NOTE Confidence: 0.949638042

00:35:06.107 --> 00:35:08.315 also in HPV depending cancer cells,  
NOTE Confidence: 0.949638042

00:35:08.320 --> 00:35:10.648 so this was done by Jesse Rynok with  
NOTE Confidence: 0.949638042

00:35:10.648 --> 00:35:13.012 the help of postdoc and Jeff Slabtown  
NOTE Confidence: 0.949638042

00:35:13.012 --> 00:35:16.952 who sing and what we see is differential  
NOTE Confidence: 0.949638042

00:35:16.952 --> 00:35:20.130 sensitivity to the ESA compound,  
NOTE Confidence: 0.949638042

00:35:20.130 --> 00:35:22.548 such that in cervical cancer cells,  
NOTE Confidence: 0.949638042

00:35:22.550 --> 00:35:25.040 HPV positive cells are resistant to  
NOTE Confidence: 0.949638042

00:35:25.040 --> 00:35:27.442 induction of ferroptosis and in the  
NOTE Confidence: 0.949638042

00:35:27.442 --> 00:35:29.464 head and neck cancer cells there



NOTE Confidence: 0.949638042

00:35:29.464 --> 00:35:31.179 are actually more sensitive.

NOTE Confidence: 0.949638042

00:35:31.180 --> 00:35:33.077 And so this is something that we're

NOTE Confidence: 0.949638042

00:35:33.077 --> 00:35:34.692 trying to figure out now, like,

NOTE Confidence: 0.949638042

00:35:34.692 --> 00:35:36.300 what is the difference between these?

NOTE Confidence: 0.949638042

00:35:36.300 --> 00:35:38.292 And obviously the cells have more

NOTE Confidence: 0.949638042

00:35:38.292 --> 00:35:40.801 things going on in them other than

NOTE Confidence: 0.949638042

00:35:40.801 --> 00:35:41.917 just HPV infection.

NOTE Confidence: 0.949638042

00:35:41.920 --> 00:35:45.049 But we know that this was actually

NOTE Confidence: 0.949638042

00:35:45.049 --> 00:35:47.008 ferroptosis process because if you

NOTE Confidence: 0.949638042

00:35:47.008 --> 00:35:48.893 add an inhibitor of ferroptosis

NOTE Confidence: 0.949638042

00:35:48.893 --> 00:35:52.898 then you abrogated the the response.

NOTE Confidence: 0.949638042

00:35:52.900 --> 00:35:56.554 So using a different inducer of Ferroptosis,

NOTE Confidence: 0.949638042

00:35:56.560 --> 00:35:56.937 Calder,

NOTE Confidence: 0.949638042

00:35:56.937 --> 00:35:59.576 Aston there didn't seem to be any

NOTE Confidence: 0.949638042

00:35:59.576 --> 00:36:02.211 effect at all on HPV minus head

NOTE Confidence: 0.949638042

00:36:02.211 --> 00:36:03.655 and neck cancer cells,  
NOTE Confidence: 0.949638042

00:36:03.660 --> 00:36:07.545 but there really was a dose dependent  
NOTE Confidence: 0.949638042

00:36:07.545 --> 00:36:09.700 reduction increase in killing basically  
NOTE Confidence: 0.949638042

00:36:09.700 --> 00:36:12.930 of the HPV positive cells that Jesse is  
NOTE Confidence: 0.949638042

00:36:12.930 --> 00:36:15.576 going to be further exploring this summer.  
NOTE Confidence: 0.949638042

00:36:15.580 --> 00:36:19.528 So the two projects together maybe actually  
NOTE Confidence: 0.949638042

00:36:19.530 --> 00:36:21.738 centered on on one particular thing,  
NOTE Confidence: 0.949638042

00:36:21.740 --> 00:36:23.273 which is selenium.  
NOTE Confidence: 0.949638042

00:36:23.273 --> 00:36:26.924 Uh, which is an activator of GPX 4G.  
NOTE Confidence: 0.949638042

00:36:26.924 --> 00:36:29.462 P X4 is a selenium dependent protein that  
NOTE Confidence: 0.949638042

00:36:29.462 --> 00:36:31.808 prevents the production of lipid radicals,  
NOTE Confidence: 0.949638042

00:36:31.810 --> 00:36:35.146 which are what causes this ferroptosis  
NOTE Confidence: 0.949638042

00:36:35.150 --> 00:36:37.341 and at the same time we found  
NOTE Confidence: 0.949638042

00:36:37.341 --> 00:36:39.540 that if we reduced Seleno,  
NOTE Confidence: 0.949638042

00:36:39.540 --> 00:36:40.988 if we increase selenomethionine  
NOTE Confidence: 0.949638042

00:36:40.988 --> 00:36:42.798 in the EGF receptor pathway,

NOTE Confidence: 0.949638042

00:36:42.800 --> 00:36:45.740 we drive activity of ERC which we know I did.

NOTE Confidence: 0.949638042

00:36:45.740 --> 00:36:46.844 I didn't show,

NOTE Confidence: 0.949638042

00:36:46.844 --> 00:36:48.848 but it's through Corkscrew S HP2,

NOTE Confidence: 0.949638042

00:36:48.848 --> 00:36:50.960 which happens to also be a tyrosine

NOTE Confidence: 0.949638042

00:36:51.029 --> 00:36:52.394 phosphatase that's regulated

NOTE Confidence: 0.949638042

00:36:52.394 --> 00:36:54.214 by these lipid radicals.

NOTE Confidence: 0.949638042

00:36:54.220 --> 00:36:56.484 And so one of the things that's kind

NOTE Confidence: 0.949638042

00:36:56.484 --> 00:36:58.773 of coming out just from this initial

NOTE Confidence: 0.949638042

00:36:58.773 --> 00:37:01.205 one single compound that we focused on

NOTE Confidence: 0.949638042

00:37:01.205 --> 00:37:03.622 is maybe there's a vulnerability in in.

NOTE Confidence: 0.949638042

00:37:03.622 --> 00:37:05.958 In these the head and neck cancer cells

NOTE Confidence: 0.949638042

00:37:05.958 --> 00:37:08.116 for for a dependence on selenium,

NOTE Confidence: 0.949638042

00:37:08.120 --> 00:37:11.171 such that if a restriction diet that

NOTE Confidence: 0.949638042

00:37:11.171 --> 00:37:13.488 reduces the levels of selenium is used

NOTE Confidence: 0.949638042

00:37:13.488 --> 00:37:15.588 in conjunction with existing therapies,

NOTE Confidence: 0.949638042

00:37:15.590 --> 00:37:16.638 maybe they'll work better.  
NOTE Confidence: 0.927772888

00:37:18.690 --> 00:37:20.742 So all of this is to say that the  
NOTE Confidence: 0.927772888

00:37:20.742 --> 00:37:23.126 Y really matters for the students,  
NOTE Confidence: 0.927772888

00:37:23.130 --> 00:37:24.912 and the way our scientific culture  
NOTE Confidence: 0.927772888

00:37:24.912 --> 00:37:27.915 is set up right now we have a very  
NOTE Confidence: 0.927772888

00:37:27.915 --> 00:37:29.315 high level principle investigator.  
NOTE Confidence: 0.927772888

00:37:29.320 --> 00:37:30.348 It goes down, down,  
NOTE Confidence: 0.927772888

00:37:30.348 --> 00:37:32.275 down depending on the level of training  
NOTE Confidence: 0.927772888

00:37:32.275 --> 00:37:34.219 such that high school students are  
NOTE Confidence: 0.927772888

00:37:34.219 --> 00:37:36.136 gifted with science and what we would  
NOTE Confidence: 0.927772888

00:37:36.136 --> 00:37:38.193 like to do is change that so that the  
NOTE Confidence: 0.927772888

00:37:38.193 --> 00:37:39.639 high school students come in with  
NOTE Confidence: 0.927772888

00:37:39.639 --> 00:37:41.281 the science they already have that  
NOTE Confidence: 0.927772888

00:37:41.281 --> 00:37:43.130 we figure out what those projects,  
NOTE Confidence: 0.927772888

00:37:43.130 --> 00:37:45.530 those questions those hypotheses are,  
NOTE Confidence: 0.927772888

00:37:45.530 --> 00:37:48.356 and matched them to a scientist who is also.

NOTE Confidence: 0.927772888

00:37:48.360 --> 00:37:50.262 Interested in the same thing and

NOTE Confidence: 0.927772888

00:37:50.262 --> 00:37:52.917 so so that it comes in more as a,

NOTE Confidence: 0.927772888

00:37:52.920 --> 00:37:56.112 you know, appear kind of attack on

NOTE Confidence: 0.927772888

00:37:56.112 --> 00:37:58.575 the same problem and so one of the

NOTE Confidence: 0.927772888

00:37:58.575 --> 00:38:00.470 things I really want to say is that

NOTE Confidence: 0.927772888

00:38:00.470 --> 00:38:02.192 the culture matters and so this is

NOTE Confidence: 0.927772888

00:38:02.251 --> 00:38:04.347 a an image of a boardroom from Time

NOTE Confidence: 0.927772888

00:38:04.347 --> 00:38:06.130 magazine from a little while ago

NOTE Confidence: 0.927772888

00:38:06.130 --> 00:38:08.798 where you can see the top guys are are

NOTE Confidence: 0.927772888

00:38:08.798 --> 00:38:11.540 all up here talking down here to the

NOTE Confidence: 0.927772888

00:38:11.540 --> 00:38:13.084 diversity equity inclusion officers

NOTE Confidence: 0.927772888

00:38:13.084 --> 00:38:15.473 who are supposed to be the ones who

NOTE Confidence: 0.927772888

00:38:15.473 --> 00:38:17.638 are focused on changing the culture,

NOTE Confidence: 0.927772888

00:38:17.640 --> 00:38:19.458 but instead they're being lectured on.

NOTE Confidence: 0.927772888

00:38:19.460 --> 00:38:20.796 This is our culture.

NOTE Confidence: 0.927772888

00:38:20.796 --> 00:38:23.342 And so one of the things that's really

NOTE Confidence: 0.927772888

00:38:23.342 --> 00:38:24.697 important is to consider whether

NOTE Confidence: 0.927772888

00:38:24.697 --> 00:38:26.347 this is your lab meeting, right?

NOTE Confidence: 0.927772888

00:38:26.347 --> 00:38:28.243 If this is your lab meeting and you're

NOTE Confidence: 0.927772888

00:38:28.243 --> 00:38:30.078 not considering the ideas of the people

NOTE Confidence: 0.927772888

00:38:30.078 --> 00:38:31.979 down here at this end of the table,

NOTE Confidence: 0.927772888

00:38:31.980 --> 00:38:33.588 then that's something that's

NOTE Confidence: 0.927772888

00:38:33.588 --> 00:38:36.120 really time to change.

NOTE Confidence: 0.927772888

00:38:36.120 --> 00:38:36.410 Finally,

NOTE Confidence: 0.927772888

00:38:36.410 --> 00:38:38.730 one of the things that's really our job

NOTE Confidence: 0.927772888

00:38:38.730 --> 00:38:40.430 if we take underrepresented students

NOTE Confidence: 0.927772888

00:38:40.430 --> 00:38:43.250 into our lab is to ensure their safety.

NOTE Confidence: 0.927772888

00:38:43.250 --> 00:38:45.987 You need to be the shield against

NOTE Confidence: 0.927772888

00:38:45.987 --> 00:38:47.852 the systemic racism that's coming

NOTE Confidence: 0.927772888

00:38:47.852 --> 00:38:49.692 at them from every direction,

NOTE Confidence: 0.927772888

00:38:49.700 --> 00:38:51.716 every minute of every day so that

NOTE Confidence: 0.927772888

00:38:51.716 --> 00:38:54.021 they can run behind you in a way

NOTE Confidence: 0.927772888

00:38:54.021 --> 00:38:55.873 that they can thrive and bring

NOTE Confidence: 0.927772888

00:38:55.873 --> 00:38:57.908 these new ideas into biomedicine.

NOTE Confidence: 0.927772888

00:38:57.910 --> 00:38:58.386 And finally,

NOTE Confidence: 0.927772888

00:38:58.386 --> 00:39:00.290 like I just want to share my own

NOTE Confidence: 0.927772888

00:39:00.349 --> 00:39:02.124 experience that the way these

NOTE Confidence: 0.927772888

00:39:02.124 --> 00:39:03.544 students think has completely

NOTE Confidence: 0.927772888

00:39:03.544 --> 00:39:05.898 changed the way I think about an

NOTE Confidence: 0.927772888

00:39:05.898 --> 00:39:06.870 important scientific question.

NOTE Confidence: 0.927772888

00:39:06.870 --> 00:39:08.630 Such that the biology,

NOTE Confidence: 0.927772888

00:39:08.630 --> 00:39:09.510 the environment,

NOTE Confidence: 0.927772888

00:39:09.510 --> 00:39:11.554 and the lifestyle all have to be

NOTE Confidence: 0.927772888

00:39:11.554 --> 00:39:13.388 considered so that we can really

NOTE Confidence: 0.927772888

00:39:13.388 --> 00:39:15.403 address particularly health disparities

NOTE Confidence: 0.927772888

00:39:15.403 --> 00:39:18.258 in cancer and other diseases.

NOTE Confidence: 0.927772888

00:39:18.260 --> 00:39:20.772 So I just want to leave you with  
NOTE Confidence: 0.927772888

00:39:20.772 --> 00:39:22.938 with our group our crew from  
NOTE Confidence: 0.927772888

00:39:22.940 --> 00:39:24.712 2019 remember their faces.  
NOTE Confidence: 0.927772888

00:39:24.712 --> 00:39:28.180 This is the future of Cancer Research.  
NOTE Confidence: 0.927772888

00:39:28.180 --> 00:39:28.546 Isabella,  
NOTE Confidence: 0.927772888

00:39:28.546 --> 00:39:31.108 here on the right side is just  
NOTE Confidence: 0.927772888

00:39:31.108 --> 00:39:33.505 got accepted to a Yale summer  
NOTE Confidence: 0.927772888

00:39:33.505 --> 00:39:35.500 program and she's considering that,  
NOTE Confidence: 0.927772888

00:39:35.500 --> 00:39:38.648 and I think 14 other other programs so,  
NOTE Confidence: 0.927772888

00:39:38.648 --> 00:39:41.444 so we'll see whether she comes.  
NOTE Confidence: 0.927772888

00:39:41.450 --> 00:39:42.717 So we've had a bunch of funding,  
NOTE Confidence: 0.927772888

00:39:42.720 --> 00:39:43.524 a lots,  
NOTE Confidence: 0.927772888

00:39:43.524 --> 00:39:45.390 lots of support that we're  
NOTE Confidence: 0.927772888

00:39:45.390 --> 00:39:46.380 particularly excited about.  
NOTE Confidence: 0.927772888

00:39:46.380 --> 00:39:47.712 A recent partnership with  
NOTE Confidence: 0.927772888

00:39:47.712 --> 00:39:49.044 the American Cancer Society.



NOTE Confidence: 0.927772888

00:39:49.050 --> 00:39:51.294 For the E close programs to

NOTE Confidence: 0.927772888

00:39:51.294 --> 00:39:53.353 support 300 young ladies doing

NOTE Confidence: 0.927772888

00:39:53.353 --> 00:39:55.309 Cancer Research this summer,

NOTE Confidence: 0.927772888

00:39:55.310 --> 00:39:56.890 and the team is amazing,

NOTE Confidence: 0.927772888

00:39:56.890 --> 00:39:58.206 I already mentioned Dara.

NOTE Confidence: 0.927772888

00:39:58.206 --> 00:40:01.171 I have my lab who's who supports all

NOTE Confidence: 0.927772888

00:40:01.171 --> 00:40:04.286 the students summer learning and a

NOTE Confidence: 0.927772888

00:40:04.286 --> 00:40:07.476 whole bunch of foxchase mentors.

NOTE Confidence: 0.959448695

00:40:07.480 --> 00:40:09.370 Yeah, so that's it. Thank you.

NOTE Confidence: 0.784159654

00:40:13.850 --> 00:40:15.770 Thank you so much, Alana.

NOTE Confidence: 0.784159654

00:40:15.770 --> 00:40:18.360 I'd like to ask folks to put

NOTE Confidence: 0.784159654

00:40:18.360 --> 00:40:19.950 questions into the chat,

NOTE Confidence: 0.784159654

00:40:19.950 --> 00:40:23.588 and if you don't I can start off with one.

NOTE Confidence: 0.784159654

00:40:23.590 --> 00:40:25.456 If that's OK with you, then maybe Barbara,

NOTE Confidence: 0.784159654

00:40:25.456 --> 00:40:26.624 I'm sure has questions.

NOTE Confidence: 0.784159654

00:40:26.630 --> 00:40:28.000 So First off that was.  
NOTE Confidence: 0.784159654

00:40:28.000 --> 00:40:30.303 That was a fascinating presentation in a  
NOTE Confidence: 0.784159654

00:40:30.303 --> 00:40:33.030 real Tour de force that congratulations,  
NOTE Confidence: 0.784159654

00:40:33.030 --> 00:40:35.397 a lot of questions about the nuts and bolts.  
NOTE Confidence: 0.784159654

00:40:35.400 --> 00:40:37.680 So how do you fund this?  
NOTE Confidence: 0.784159654

00:40:37.680 --> 00:40:40.338 How do you channel hundreds of  
NOTE Confidence: 0.784159654

00:40:40.340 --> 00:40:43.090 high school students in 220  
NOTE Confidence: 0.784159654

00:40:43.090 --> 00:40:46.090 labs at best at Fox Chase?  
NOTE Confidence: 0.784159654

00:40:46.090 --> 00:40:46.400 Right,  
NOTE Confidence: 0.873379918

00:40:47.340 --> 00:40:48.910 we don't. We can't write.  
NOTE Confidence: 0.873379918

00:40:48.910 --> 00:40:51.566 You can't do that. You can't have 2000.  
NOTE Confidence: 0.873379918

00:40:51.570 --> 00:40:53.838 I mean, we're we're actually hoping to  
NOTE Confidence: 0.873379918

00:40:53.838 --> 00:40:55.949 reach 10,000 students a year by next year,  
NOTE Confidence: 0.873379918

00:40:55.950 --> 00:40:57.597 and there's no way that we can put each  
NOTE Confidence: 0.873379918

00:40:57.597 --> 00:40:59.483 and every one of those students into a lab.  
NOTE Confidence: 0.873379918

00:40:59.490 --> 00:41:00.462 It's just not possible,

NOTE Confidence: 0.873379918

00:41:00.462 --> 00:41:02.320 and so that's what we're trying to flip.

NOTE Confidence: 0.873379918

00:41:02.320 --> 00:41:03.968 So when COVID-19 happened,

NOTE Confidence: 0.873379918

00:41:03.968 --> 00:41:05.616 it became unambiguous that

NOTE Confidence: 0.873379918

00:41:05.616 --> 00:41:07.429 students couldn't come to the lab.

NOTE Confidence: 0.873379918

00:41:07.430 --> 00:41:10.310 And So what we did was we created a hybrid

NOTE Confidence: 0.873379918

00:41:10.382 --> 00:41:12.990 program where we create labs in a box,

NOTE Confidence: 0.873379918

00:41:12.990 --> 00:41:14.894 and we mail them to the students

NOTE Confidence: 0.873379918

00:41:14.894 --> 00:41:16.870 who create the lab in their house.

NOTE Confidence: 0.873379918

00:41:16.870 --> 00:41:19.418 And so, because fruit flies are safe,

NOTE Confidence: 0.873379918

00:41:19.420 --> 00:41:21.800 the dietary supplements are over the counter.

NOTE Confidence: 0.873379918

00:41:21.800 --> 00:41:23.420 Everything that they research

NOTE Confidence: 0.873379918

00:41:23.420 --> 00:41:25.040 is over the counter.

NOTE Confidence: 0.873379918

00:41:25.040 --> 00:41:26.040 That doesn't mean it's safe,

NOTE Confidence: 0.873379918

00:41:26.040 --> 00:41:28.398 but that just means it's legal

NOTE Confidence: 0.873379918

00:41:28.400 --> 00:41:29.544 for them to investigate,

NOTE Confidence: 0.873379918

00:41:29.544 --> 00:41:31.636 and so they they do all of  
NOTE Confidence: 0.873379918

00:41:31.636 --> 00:41:33.176 the research in their homes.  
NOTE Confidence: 0.873379918

00:41:33.180 --> 00:41:36.216 And so all of the initial.  
NOTE Confidence: 0.873379918

00:41:36.220 --> 00:41:37.508 Initial data collection and  
NOTE Confidence: 0.873379918

00:41:37.508 --> 00:41:40.171 analysis is is done in a way where  
NOTE Confidence: 0.873379918

00:41:40.171 --> 00:41:42.169 we don't actually need any space,  
NOTE Confidence: 0.873379918

00:41:42.170 --> 00:41:44.420 so we also train teachers.  
NOTE Confidence: 0.873379918

00:41:44.420 --> 00:41:47.540 We have, I think 32 now teacher partners,  
NOTE Confidence: 0.873379918

00:41:47.540 --> 00:41:50.487 each training about 100 students a year,  
NOTE Confidence: 0.873379918

00:41:50.490 --> 00:41:54.281 and so the teachers now we just we  
NOTE Confidence: 0.873379918

00:41:54.281 --> 00:41:55.688 got an award that I don't think  
NOTE Confidence: 0.873379918

00:41:55.688 --> 00:41:56.919 I'm allowed to say what it is.  
NOTE Confidence: 0.873379918

00:41:56.920 --> 00:41:58.936 But it's really big and exciting.  
NOTE Confidence: 0.873379918

00:41:58.940 --> 00:42:01.950 That's gonna pay for building of Eclose  
NOTE Confidence: 0.873379918

00:42:01.950 --> 00:42:05.614 Labs in 10 Philadelphia schools this year.  
NOTE Confidence: 0.873379918

00:42:05.614 --> 00:42:07.306 And so now the schools will.

NOTE Confidence: 0.873379918

00:42:07.310 --> 00:42:09.088 We each have a fully equipped lab,

NOTE Confidence: 0.873379918

00:42:09.090 --> 00:42:11.197 just like the clothes lab for the

NOTE Confidence: 0.873379918

00:42:11.197 --> 00:42:13.110 students to do the work there.

NOTE Confidence: 0.873379918

00:42:13.110 --> 00:42:13.626 Yeah, so.

NOTE Confidence: 0.873379918

00:42:13.626 --> 00:42:14.142 So yeah.

NOTE Confidence: 0.873379918

00:42:14.142 --> 00:42:16.733 So and then the other thing we did was

NOTE Confidence: 0.873379918

00:42:16.733 --> 00:42:18.689 make it very inexpensive so dietary

NOTE Confidence: 0.873379918

00:42:18.689 --> 00:42:20.636 supplements don't cost very much and

NOTE Confidence: 0.873379918

00:42:20.636 --> 00:42:23.177 flies cost almost nothing and so the

NOTE Confidence: 0.873379918

00:42:23.177 --> 00:42:25.751 cost for for each participant once

NOTE Confidence: 0.873379918

00:42:25.751 --> 00:42:29.446 they have the lab setup is only \$15 a kid.

NOTE Confidence: 0.873379918

00:42:29.446 --> 00:42:32.600 So so far we've been able to to do that.

NOTE Confidence: 0.873379918

00:42:32.600 --> 00:42:34.382 The primary driver of the revenue

NOTE Confidence: 0.873379918

00:42:34.382 --> 00:42:37.286 right now and the fund raising is that

NOTE Confidence: 0.873379918

00:42:37.286 --> 00:42:39.356 universities are sponsoring these programs.

NOTE Confidence: 0.873379918

00:42:39.360 --> 00:42:42.738 Everybody sort of wants well trained,

NOTE Confidence: 0.873379918

00:42:42.740 --> 00:42:44.465 underrepresented students to come to

NOTE Confidence: 0.873379918

00:42:44.465 --> 00:42:46.787 their school and so they are paying

NOTE Confidence: 0.873379918

00:42:46.787 --> 00:42:48.915 for us to run the programs for them.

NOTE Confidence: 0.873379918

00:42:48.920 --> 00:42:49.406 Which is,

NOTE Confidence: 0.873379918

00:42:49.406 --> 00:42:49.892 I mean,

NOTE Confidence: 0.873379918

00:42:49.892 --> 00:42:51.647 how could it get better right as

NOTE Confidence: 0.873379918

00:42:51.647 --> 00:42:53.105 a partnership like like we help

NOTE Confidence: 0.873379918

00:42:53.105 --> 00:42:54.698 you get your students ready and

NOTE Confidence: 0.873379918

00:42:54.698 --> 00:42:56.318 and you can get the funding.

NOTE Confidence: 0.873379918

00:42:56.320 --> 00:42:59.000 So so that's how it's been so far.

NOTE Confidence: 0.873379918

00:42:59.000 --> 00:43:01.170 But yeah, funding is always, you know.

NOTE Confidence: 0.822918864

00:43:01.940 --> 00:43:03.928 And then the so most of those

NOTE Confidence: 0.822918864

00:43:03.928 --> 00:43:05.645 Western blots being done in the

NOTE Confidence: 0.822918864

00:43:05.645 --> 00:43:07.320 echoes lab, and I presume that's

NOTE Confidence: 0.822918864

00:43:07.320 --> 00:43:09.030 a physical lab inside Fox Chase.

NOTE Confidence: 0.945128705263158  
00:43:09.430 --> 00:43:10.928 No. So the western blots are done  
NOTE Confidence: 0.945128705263158  
00:43:10.928 --> 00:43:12.624 by the students who stay in the  
NOTE Confidence: 0.945128705263158  
00:43:12.624 --> 00:43:13.884 summer for the independent research.  
NOTE Confidence: 0.945128705263158  
00:43:13.890 --> 00:43:15.876 They get matched into the labs.  
NOTE Confidence: 0.945128705263158  
00:43:15.880 --> 00:43:17.938 We we have too many Westerns to  
NOTE Confidence: 0.945128705263158  
00:43:17.938 --> 00:43:20.189 do for that to remain feasible,  
NOTE Confidence: 0.945128705263158  
00:43:20.190 --> 00:43:22.446 and so last summer we developed a dot  
NOTE Confidence: 0.945128705263158  
00:43:22.446 --> 00:43:24.560 blot protocol which I should have put in.  
NOTE Confidence: 0.945128705263158  
00:43:24.560 --> 00:43:26.163 They were a little ugly and they  
NOTE Confidence: 0.945128705263158  
00:43:26.163 --> 00:43:27.876 weren't related to the projects I was  
NOTE Confidence: 0.945128705263158  
00:43:27.876 --> 00:43:29.858 talking about like, but but it works.  
NOTE Confidence: 0.945128705263158  
00:43:29.858 --> 00:43:31.730 So so you can do Erk,  
NOTE Confidence: 0.945128705263158  
00:43:31.730 --> 00:43:33.962 Erk dot blots that give you the same  
NOTE Confidence: 0.945128705263158  
00:43:33.962 --> 00:43:35.970 answer that you get on a Western and  
NOTE Confidence: 0.945128705263158  
00:43:35.970 --> 00:43:38.238 you can do them just by pipetting onto  
NOTE Confidence: 0.945128705263158

00:43:38.238 --> 00:43:40.540 a membrane in a high school classroom.  
NOTE Confidence: 0.945128705263158

00:43:40.540 --> 00:43:42.619 And so, so that's what we're sort of doing,  
NOTE Confidence: 0.945128705263158

00:43:42.620 --> 00:43:45.239 is trying to figure out how to kind of.  
NOTE Confidence: 0.945128705263158

00:43:45.240 --> 00:43:46.704 Actually, we could call it kicking  
NOTE Confidence: 0.945128705263158

00:43:46.704 --> 00:43:47.900 at old school, like how?  
NOTE Confidence: 0.945128705263158

00:43:47.900 --> 00:43:49.510 How do we do things before we  
NOTE Confidence: 0.945128705263158

00:43:49.510 --> 00:43:51.116 could do all these fancy things?  
NOTE Confidence: 0.945128705263158

00:43:51.120 --> 00:43:53.157 And then we're bringing those back with  
NOTE Confidence: 0.945128705263158

00:43:53.157 --> 00:43:55.158 the idea that the professional labs  
NOTE Confidence: 0.945128705263158

00:43:55.158 --> 00:43:57.340 will then confirm confirm the results.  
NOTE Confidence: 0.388012693

00:44:00.000 --> 00:44:00.620 Barb, Yep.  
NOTE Confidence: 0.780266231428571

00:44:01.630 --> 00:44:06.257 So a lot of amazing work and  
NOTE Confidence: 0.780266231428571

00:44:06.260 --> 00:44:08.756 to touch so many lives it's  
NOTE Confidence: 0.780266231428571

00:44:08.756 --> 00:44:11.528 it's just very inspirational.  
NOTE Confidence: 0.780266231428571

00:44:11.530 --> 00:44:13.178 It's sort of like the the  
NOTE Confidence: 0.921226897142857

00:44:13.190 --> 00:44:15.199 why question, but if you could take



NOTE Confidence: 0.966517365714286  
00:44:15.210 --> 00:44:18.654 us back to when you started this.  
NOTE Confidence: 0.966517365714286  
00:44:18.660 --> 00:44:20.828 How did you get the Philadelphia Public  
NOTE Confidence: 0.857977362  
00:44:20.840 --> 00:44:22.820 Schools to let you in?  
NOTE Confidence: 0.886120961111111  
00:44:22.850 --> 00:44:24.822 And were there particular  
NOTE Confidence: 0.886120961111111  
00:44:24.822 --> 00:44:27.287 challenges in the beginning that?  
NOTE Confidence: 0.886120961111111  
00:44:27.290 --> 00:44:30.783 That if you knew now what you if you knew,  
NOTE Confidence: 0.886120961111111  
00:44:30.790 --> 00:44:32.300 then what you knew now,  
NOTE Confidence: 0.886120961111111  
00:44:32.300 --> 00:44:34.576 you would have structured a little  
NOTE Confidence: 0.886120961111111  
00:44:34.576 --> 00:44:35.428 differently in the beginning.  
NOTE Confidence: 0.886120961111111  
00:44:35.430 --> 00:44:37.391 Or how did it? How did it get  
NOTE Confidence: 0.886120961111111  
00:44:37.391 --> 00:44:38.837 off the ground to the scale?  
NOTE Confidence: 0.780525136  
00:44:39.090 --> 00:44:41.001 Yeah, so it it did end, right?  
NOTE Confidence: 0.780525136  
00:44:41.001 --> 00:44:42.807 We we started with 15 students.  
NOTE Confidence: 0.780525136  
00:44:42.810 --> 00:44:44.664 Our initial intention was eight because  
NOTE Confidence: 0.780525136  
00:44:44.664 --> 00:44:47.302 one of the reasons I went to Fox Chase was  
NOTE Confidence: 0.780525136

00:44:47.302 --> 00:44:49.318 because they had a high school program.  
NOTE Confidence: 0.780525136

00:44:49.320 --> 00:44:51.138 I participated in a program called  
NOTE Confidence: 0.780525136

00:44:51.138 --> 00:44:53.428 Project Success when I was a grad student  
NOTE Confidence: 0.780525136

00:44:53.428 --> 00:44:55.230 at Harvard and and Ben Neal's lab.  
NOTE Confidence: 0.780525136

00:44:55.230 --> 00:44:57.578 And my student was.  
NOTE Confidence: 0.780525136

00:44:57.578 --> 00:44:59.926 So extraordinarily smart and  
NOTE Confidence: 0.780525136

00:44:59.926 --> 00:45:02.160 so extraordinarily unprepared.  
NOTE Confidence: 0.780525136

00:45:02.160 --> 00:45:03.938 And so we spent the whole summer  
NOTE Confidence: 0.780525136

00:45:03.938 --> 00:45:05.280 doing a lot of stuff.  
NOTE Confidence: 0.780525136

00:45:05.280 --> 00:45:07.264 It it just became very clear that if  
NOTE Confidence: 0.780525136

00:45:07.264 --> 00:45:09.192 a student like her instead of getting  
NOTE Confidence: 0.780525136

00:45:09.192 --> 00:45:11.498 dropped into a lab like Ben's lab had  
NOTE Confidence: 0.780525136

00:45:11.498 --> 00:45:13.535 had a training experience ahead of time,  
NOTE Confidence: 0.780525136

00:45:13.540 --> 00:45:15.676 so that she would know how to measure,  
NOTE Confidence: 0.780525136

00:45:15.680 --> 00:45:17.558 like know what a gram was,  
NOTE Confidence: 0.780525136

00:45:17.560 --> 00:45:19.138 that it would be much different.

NOTE Confidence: 0.780525136

00:45:19.140 --> 00:45:22.416 So I knew that that she's now a chief

NOTE Confidence: 0.780525136

00:45:22.416 --> 00:45:24.720 attending at CHOP in Philadelphia.

NOTE Confidence: 0.780525136

00:45:24.720 --> 00:45:25.794 So extraordinary success.

NOTE Confidence: 0.780525136

00:45:25.794 --> 00:45:28.741 And and I know her and she has

NOTE Confidence: 0.780525136

00:45:28.741 --> 00:45:30.925 two little kids and it's amazing,

NOTE Confidence: 0.780525136

00:45:30.930 --> 00:45:32.746 but but it transformed me a lot more

NOTE Confidence: 0.780525136

00:45:32.746 --> 00:45:34.744 than it did hurt like like this is

NOTE Confidence: 0.780525136

00:45:34.744 --> 00:45:36.533 something where I can put this tiny

NOTE Confidence: 0.780525136

00:45:36.533 --> 00:45:38.591 little bit of effort into this and it

NOTE Confidence: 0.780525136

00:45:38.591 --> 00:45:40.517 can change somebody's whole family's life.

NOTE Confidence: 0.780525136

00:45:40.520 --> 00:45:43.350 So I knew that if I ever got a faculty job,

NOTE Confidence: 0.780525136

00:45:43.350 --> 00:45:44.730 I would want to create a

NOTE Confidence: 0.780525136

00:45:44.730 --> 00:45:45.930 training program ahead of time.

NOTE Confidence: 0.780525136

00:45:45.930 --> 00:45:49.215 So our first year we we trained 15 students.

NOTE Confidence: 0.780525136

00:45:49.220 --> 00:45:52.022 Most of them were not actually

NOTE Confidence: 0.780525136

00:45:52.022 --> 00:45:53.423 underrepresented from Philadelphia.  
NOTE Confidence: 0.780525136

00:45:53.430 --> 00:45:54.987 It took us a couple years to figure out  
NOTE Confidence: 0.780525136

00:45:54.987 --> 00:45:56.292 that Philly students weren't applying  
NOTE Confidence: 0.780525136

00:45:56.292 --> 00:45:58.280 because they didn't think they could compete.  
NOTE Confidence: 0.780525136

00:45:58.280 --> 00:45:59.393 With suburban kids,  
NOTE Confidence: 0.780525136

00:45:59.393 --> 00:46:01.990 so we created a Philadelphia only section,  
NOTE Confidence: 0.780525136

00:46:01.990 --> 00:46:04.377 and since then it's just been exploding.  
NOTE Confidence: 0.780525136

00:46:04.380 --> 00:46:05.946 And then it's actually Dara who  
NOTE Confidence: 0.780525136

00:46:05.946 --> 00:46:07.729 got into the Philly school system  
NOTE Confidence: 0.780525136

00:46:07.729 --> 00:46:09.444 by her connections with teachers.  
NOTE Confidence: 0.780525136

00:46:09.450 --> 00:46:11.634 So she was a teacher in the  
NOTE Confidence: 0.780525136

00:46:11.634 --> 00:46:13.378 Philadelphia school system before she  
NOTE Confidence: 0.780525136

00:46:13.378 --> 00:46:15.238 was a Community College professor.  
NOTE Confidence: 0.780525136

00:46:15.240 --> 00:46:16.906 And so she just used those connections  
NOTE Confidence: 0.780525136

00:46:16.906 --> 00:46:18.160 and we started getting in.  
NOTE Confidence: 0.780525136

00:46:18.160 --> 00:46:19.548 We're not actually throughout

NOTE Confidence: 0.780525136  
00:46:19.548 --> 00:46:20.936 the Philadelphia school system,  
NOTE Confidence: 0.780525136  
00:46:20.940 --> 00:46:23.730 yet we still partner with individual  
NOTE Confidence: 0.780525136  
00:46:23.730 --> 00:46:24.195 teachers,  
NOTE Confidence: 0.780525136  
00:46:24.200 --> 00:46:26.450 the inner City Schools are so  
NOTE Confidence: 0.780525136  
00:46:26.450 --> 00:46:28.699 oppressive to try to get into,  
NOTE Confidence: 0.780525136  
00:46:28.700 --> 00:46:29.978 and they don't have any money.  
NOTE Confidence: 0.780525136  
00:46:29.980 --> 00:46:31.900 To pay for STEM so.  
NOTE Confidence: 0.780525136  
00:46:31.900 --> 00:46:33.850 So we've just accepted that that's  
NOTE Confidence: 0.780525136  
00:46:33.850 --> 00:46:34.500 our responsibility,  
NOTE Confidence: 0.780525136  
00:46:34.500 --> 00:46:35.354 and yeah,  
NOTE Confidence: 0.780525136  
00:46:35.354 --> 00:46:38.343 so now people at you close are  
NOTE Confidence: 0.780525136  
00:46:38.343 --> 00:46:40.806 writing these grants to to to make  
NOTE Confidence: 0.780525136  
00:46:40.806 --> 00:46:41.816 sure that our Philly students  
NOTE Confidence: 0.780525136  
00:46:41.816 --> 00:46:42.980 are our highest priority.  
NOTE Confidence: 0.647894154222222  
00:46:45.110 --> 00:46:46.461 Atlanta can tell us a little more  
NOTE Confidence: 0.647894154222222

00:46:46.461 --> 00:46:48.708 about E close. How big is it?  
NOTE Confidence: 0.647894154222222

00:46:48.708 --> 00:46:50.250 How many people work there?  
NOTE Confidence: 0.647894154222222

00:46:50.250 --> 00:46:52.700 How do they relate to Fox Chase?  
NOTE Confidence: 0.67605859375

00:46:53.270 --> 00:46:56.126 So you close is separate from Fox Chase.  
NOTE Confidence: 0.67605859375

00:46:56.130 --> 00:46:58.700 It's a separate nonprofit foxchase.  
NOTE Confidence: 0.67605859375

00:46:58.700 --> 00:47:01.420 Like I said is pretty small and so to run  
NOTE Confidence: 0.67605859375

00:47:01.489 --> 00:47:04.086 a nationwide program with 10s of thousands  
NOTE Confidence: 0.67605859375

00:47:04.086 --> 00:47:06.955 of students a year is not something  
NOTE Confidence: 0.67605859375

00:47:06.955 --> 00:47:09.055 that's that's within that capacity.  
NOTE Confidence: 0.67605859375

00:47:09.060 --> 00:47:11.868 So so we created it as a separate  
NOTE Confidence: 0.67605859375

00:47:11.868 --> 00:47:13.449 nonprofit almost our third  
NOTE Confidence: 0.67605859375

00:47:13.449 --> 00:47:15.454 year anniversary is coming up.  
NOTE Confidence: 0.67605859375

00:47:15.460 --> 00:47:17.672 We have 21 employees,  
NOTE Confidence: 0.67605859375

00:47:17.672 --> 00:47:20.990 all of them are part time.  
NOTE Confidence: 0.67605859375

00:47:20.990 --> 00:47:22.570 Third of them are instructors.  
NOTE Confidence: 0.67605859375

00:47:22.570 --> 00:47:24.358 A third of them are scientific

NOTE Confidence: 0.67605859375

00:47:24.358 --> 00:47:26.488 technicians who build the kits and and

NOTE Confidence: 0.67605859375

00:47:26.488 --> 00:47:28.826 and set up some of the experiments

NOTE Confidence: 0.67605859375

00:47:28.826 --> 00:47:30.710 depending on what the program is,

NOTE Confidence: 0.67605859375

00:47:30.710 --> 00:47:33.968 and then the the rest are.

NOTE Confidence: 0.67605859375

00:47:33.970 --> 00:47:35.420 You know, I'm a volunteer,

NOTE Confidence: 0.67605859375

00:47:35.420 --> 00:47:39.056 so I just said total volunteer.

NOTE Confidence: 0.67605859375

00:47:39.060 --> 00:47:42.340 Yeah, so it's, uh, we're in 14 U.S.

NOTE Confidence: 0.67605859375

00:47:42.340 --> 00:47:45.961 states now we have 11 university sponsors,

NOTE Confidence: 0.67605859375

00:47:45.961 --> 00:47:48.996 including seven comprehensive cancer centers,

NOTE Confidence: 0.67605859375

00:47:49.000 --> 00:47:50.664 the American Cancer Society

NOTE Confidence: 0.67605859375

00:47:50.664 --> 00:47:52.328 sponsoring that huge program,

NOTE Confidence: 0.67605859375

00:47:52.330 --> 00:47:54.094 and we have programs ranging all

NOTE Confidence: 0.67605859375

00:47:54.094 --> 00:47:56.306 the way from 5th grade through

NOTE Confidence: 0.67605859375

00:47:56.306 --> 00:47:58.250 through adults interested in

NOTE Confidence: 0.67605859375

00:47:58.250 --> 00:48:00.194 transitioning into biomedical careers.

NOTE Confidence: 0.67605859375

00:48:00.200 --> 00:48:03.476 So it's a it's a very rapidly,  
NOTE Confidence: 0.67605859375

00:48:03.480 --> 00:48:04.761 rapidly growing thing,  
NOTE Confidence: 0.67605859375

00:48:04.761 --> 00:48:07.750 and I think the COVID pandemic when  
NOTE Confidence: 0.67605859375

00:48:07.825 --> 00:48:10.549 nobody could actually do any science.  
NOTE Confidence: 0.67605859375

00:48:10.550 --> 00:48:13.088 With you know all of a sudden they're like,  
NOTE Confidence: 0.67605859375

00:48:13.090 --> 00:48:13.400 wait.  
NOTE Confidence: 0.67605859375

00:48:13.400 --> 00:48:14.950 I heard about these people  
NOTE Confidence: 0.67605859375

00:48:14.950 --> 00:48:16.190 who started this thing,  
NOTE Confidence: 0.67605859375

00:48:16.190 --> 00:48:17.926 so I'm in the equals lab now.  
NOTE Confidence: 0.67605859375

00:48:17.930 --> 00:48:21.120 It's 500 square feet and it's you know,  
NOTE Confidence: 0.67605859375

00:48:21.120 --> 00:48:22.590 we'll we'll grow as we grow.  
NOTE Confidence: 0.72478795625

00:48:24.510 --> 00:48:26.065 There's a question from the  
NOTE Confidence: 0.72478795625

00:48:26.065 --> 00:48:27.830 audience from Doctor Rose,  
NOTE Confidence: 0.72478795625

00:48:27.830 --> 00:48:29.895 so are these other resources to help  
NOTE Confidence: 0.72478795625

00:48:29.895 --> 00:48:31.749 these young people get into college,  
NOTE Confidence: 0.72478795625

00:48:31.750 --> 00:48:33.982 pay for college, and do you



NOTE Confidence: 0.72478795625

00:48:33.982 --> 00:48:36.240 find these issues are barriers?

NOTE Confidence: 0.9643961

00:48:37.110 --> 00:48:39.330 So we don't have those resources.

NOTE Confidence: 0.9643961

00:48:39.330 --> 00:48:41.444 Uhm, like I said, we don't actually

NOTE Confidence: 0.9643961

00:48:41.444 --> 00:48:43.509 even have full time employees yet

NOTE Confidence: 0.9643961

00:48:43.510 --> 00:48:48.090 that that's that's something that.

NOTE Confidence: 0.9643961

00:48:48.090 --> 00:48:48.753 Yeah, I'm not.

NOTE Confidence: 0.9643961

00:48:48.753 --> 00:48:50.631 I'm not sure that we will get there

NOTE Confidence: 0.9643961

00:48:50.631 --> 00:48:52.263 because most of our students end

NOTE Confidence: 0.9643961

00:48:52.263 --> 00:48:54.040 up getting full ride scholarships,

NOTE Confidence: 0.9643961

00:48:54.040 --> 00:48:56.161 so our biggest sending schools at this

NOTE Confidence: 0.9643961

00:48:56.161 --> 00:48:57.949 point are University of Pennsylvania,

NOTE Confidence: 0.9643961

00:48:57.950 --> 00:49:01.289 which has hosted 32 of our senior

NOTE Confidence: 0.9643961

00:49:01.289 --> 00:49:03.540 level students and I don't think

NOTE Confidence: 0.9643961

00:49:03.540 --> 00:49:06.453 any of them has paid and our second

NOTE Confidence: 0.9643961

00:49:06.453 --> 00:49:08.739 biggest sendings will now is MIT.

NOTE Confidence: 0.9643961

00:49:08.740 --> 00:49:11.612 We also have a lot of students at  
NOTE Confidence: 0.9643961

00:49:11.612 --> 00:49:14.386 Pitt and Drexel and Temple and I  
NOTE Confidence: 0.9643961

00:49:14.386 --> 00:49:16.192 don't think any single one of our  
NOTE Confidence: 0.9643961

00:49:16.192 --> 00:49:18.064 students who've gone to Temple has  
NOTE Confidence: 0.9643961

00:49:18.064 --> 00:49:20.126 not been assigned scholar, which is.  
NOTE Confidence: 0.9643961

00:49:20.126 --> 00:49:22.166 For four year scholarship with  
NOTE Confidence: 0.9643961

00:49:22.166 --> 00:49:23.390 room and board,  
NOTE Confidence: 0.9643961

00:49:23.390 --> 00:49:25.130 the whole the whole 9 yards.  
NOTE Confidence: 0.9643961

00:49:25.130 --> 00:49:28.541 And so I think the unusual nature  
NOTE Confidence: 0.9643961

00:49:28.541 --> 00:49:31.487 of having this kind of research  
NOTE Confidence: 0.9643961

00:49:31.487 --> 00:49:33.602 experience a personal statement  
NOTE Confidence: 0.9643961

00:49:33.602 --> 00:49:36.180 that's talking about how discussing  
NOTE Confidence: 0.9643961

00:49:36.180 --> 00:49:38.280 your personal why the person that  
NOTE Confidence: 0.9643961

00:49:38.280 --> 00:49:40.833 you did this for and how you are  
NOTE Confidence: 0.9643961

00:49:40.833 --> 00:49:43.004 going to bring together all of the  
NOTE Confidence: 0.9643961

00:49:43.004 --> 00:49:44.990 interest that you gained from this

NOTE Confidence: 0.9643961

00:49:44.990 --> 00:49:46.968 program into creating a project is

NOTE Confidence: 0.9643961

00:49:46.968 --> 00:49:48.930 going to be transformative is pretty.

NOTE Confidence: 0.9643961

00:49:48.930 --> 00:49:50.740 It's pretty well received by.

NOTE Confidence: 0.9643961

00:49:50.740 --> 00:49:52.572 By colleges and universities.

NOTE Confidence: 0.9643961

00:49:52.572 --> 00:49:56.416 So far so so that may be something where

NOTE Confidence: 0.9643961

00:49:56.420 --> 00:49:58.436 there's another nonprofit that's doing that,

NOTE Confidence: 0.9643961

00:49:58.440 --> 00:49:59.448 like providing scholarships and

NOTE Confidence: 0.9643961

00:49:59.448 --> 00:50:00.960 things we would love to partner.

NOTE Confidence: 0.9643961

00:50:00.960 --> 00:50:02.696 Like I said, it closes a hub.

NOTE Confidence: 0.9643961

00:50:02.700 --> 00:50:05.418 We want to kind of drop down the barriers

NOTE Confidence: 0.9643961

00:50:05.418 --> 00:50:07.916 of competition so we don't really.

NOTE Confidence: 0.9643961

00:50:07.920 --> 00:50:08.366 You know,

NOTE Confidence: 0.9643961

00:50:08.366 --> 00:50:10.699 I've had a lot of people in fly land say,

NOTE Confidence: 0.9643961

00:50:10.700 --> 00:50:10.986 oh,

NOTE Confidence: 0.9643961

00:50:10.986 --> 00:50:12.416 we'll just replicate your program

NOTE Confidence: 0.9643961

00:50:12.416 --> 00:50:13.274 like that's great,  
NOTE Confidence: 0.9643961

00:50:13.280 --> 00:50:14.474 but now we're your date is  
NOTE Confidence: 0.9643961

00:50:14.474 --> 00:50:15.270 gonna be over there.  
NOTE Confidence: 0.9643961

00:50:15.270 --> 00:50:16.985 Our date is what's the point like  
NOTE Confidence: 0.9643961

00:50:16.985 --> 00:50:18.969 why don't we do this together so so  
NOTE Confidence: 0.9643961

00:50:18.969 --> 00:50:20.745 that's one of the main things we're  
NOTE Confidence: 0.9643961

00:50:20.745 --> 00:50:22.565 working on this year is how to.  
NOTE Confidence: 0.9643961

00:50:22.570 --> 00:50:25.418 Collect the data so that if somebody does  
NOTE Confidence: 0.9643961

00:50:25.418 --> 00:50:27.888 replicate the program just on their own,  
NOTE Confidence: 0.9643961

00:50:27.890 --> 00:50:29.938 how is it that they can contribute to  
NOTE Confidence: 0.9643961

00:50:29.938 --> 00:50:31.625 the database so that all of us can,  
NOTE Confidence: 0.9643961

00:50:31.630 --> 00:50:32.328 you know,  
NOTE Confidence: 0.9643961

00:50:32.328 --> 00:50:34.422 use this kind of screening data  
NOTE Confidence: 0.9643961

00:50:34.422 --> 00:50:36.830 for for advancement of science.  
NOTE Confidence: 0.9643961

00:50:36.830 --> 00:50:37.378 And one of the  
NOTE Confidence: 0.931139047368421

00:50:37.390 --> 00:50:39.217 things that struck me in your talk

NOTE Confidence: 0.931139047368421

00:50:39.217 --> 00:50:41.022 was that you said multiple times

NOTE Confidence: 0.931139047368421

00:50:41.022 --> 00:50:42.948 the students decided to do this,

NOTE Confidence: 0.931139047368421

00:50:42.950 --> 00:50:45.008 that or the other the student

NOTE Confidence: 0.931139047368421

00:50:45.008 --> 00:50:47.040 was interested in this question.

NOTE Confidence: 0.931139047368421

00:50:47.040 --> 00:50:49.230 So essentially none of us gets

NOTE Confidence: 0.931139047368421

00:50:49.230 --> 00:50:51.341 to really choose what we decide

NOTE Confidence: 0.931139047368421

00:50:51.341 --> 00:50:53.497 to do in science all the time.

NOTE Confidence: 0.931139047368421

00:50:53.500 --> 00:50:54.700 You have to have funding.

NOTE Confidence: 0.931139047368421

00:50:54.700 --> 00:50:57.346 It has to be practical and feasible

NOTE Confidence: 0.931139047368421

00:50:57.346 --> 00:51:01.520 and so on. So when a student.

NOTE Confidence: 0.931139047368421

00:51:01.520 --> 00:51:03.040 Their shows interest in something.

NOTE Confidence: 0.931139047368421

00:51:03.040 --> 00:51:05.695 How do you channel them to a lab that

NOTE Confidence: 0.931139047368421

00:51:05.695 --> 00:51:07.989 might actually have the expertise?

NOTE Confidence: 0.931139047368421

00:51:07.990 --> 00:51:09.775 See that you don't have endless

NOTE Confidence: 0.931139047368421

00:51:09.775 --> 00:51:10.546 labs approx chase

NOTE Confidence: 0.832586933076923

00:51:10.690 --> 00:51:12.690 right? So this this is our that that's  
NOTE Confidence: 0.832586933076923

00:51:12.690 --> 00:51:17.319 like our newest newest thing. So the 1st.  
NOTE Confidence: 0.832586933076923

00:51:17.320 --> 00:51:19.637 Four years, maybe five years of the  
NOTE Confidence: 0.832586933076923

00:51:19.637 --> 00:51:21.558 program was really just my thing.  
NOTE Confidence: 0.832586933076923

00:51:21.560 --> 00:51:24.224 Like let's do EGM perceptor because you know,  
NOTE Confidence: 0.832586933076923

00:51:24.230 --> 00:51:26.640 we had to figure out how to do it all.  
NOTE Confidence: 0.832586933076923

00:51:26.640 --> 00:51:28.080 Does the data even mean  
NOTE Confidence: 0.832586933076923

00:51:28.080 --> 00:51:29.232 anything like thank heavens,  
NOTE Confidence: 0.832586933076923

00:51:29.240 --> 00:51:30.460 the people counting is really,  
NOTE Confidence: 0.832586933076923

00:51:30.460 --> 00:51:33.080 really really significant and important.  
NOTE Confidence: 0.832586933076923

00:51:33.080 --> 00:51:34.340 So, so we spent those five  
NOTE Confidence: 0.832586933076923

00:51:34.340 --> 00:51:35.500 years just doing my thing.  
NOTE Confidence: 0.832586933076923

00:51:35.500 --> 00:51:37.426 So in 2017 we started getting  
NOTE Confidence: 0.832586933076923

00:51:37.426 --> 00:51:39.702 kids bringing in bags of like my  
NOTE Confidence: 0.832586933076923

00:51:39.702 --> 00:51:41.550 mom's eating this and then that's  
NOTE Confidence: 0.832586933076923

00:51:41.550 --> 00:51:43.378 when that started to change.

NOTE Confidence: 0.832586933076923

00:51:43.380 --> 00:51:45.788 And so it's really only in the past

NOTE Confidence: 0.832586933076923

00:51:45.788 --> 00:51:47.937 two years where we're trying to.

NOTE Confidence: 0.832586933076923

00:51:47.940 --> 00:51:50.325 Bring together Foxchase faculty who

NOTE Confidence: 0.832586933076923

00:51:50.325 --> 00:51:53.815 do specific things so we have behaved

NOTE Confidence: 0.832586933076923

00:51:53.815 --> 00:51:56.440 social behavioral researcher Carolyn Fang,

NOTE Confidence: 0.832586933076923

00:51:56.440 --> 00:51:57.628 who's extremely interested

NOTE Confidence: 0.832586933076923

00:51:57.628 --> 00:51:58.816 in medical mistrust.

NOTE Confidence: 0.832586933076923

00:51:58.820 --> 00:52:00.506 Who was more than happy to

NOTE Confidence: 0.832586933076923

00:52:00.506 --> 00:52:01.990 host Nicole in doing this?

NOTE Confidence: 0.832586933076923

00:52:01.990 --> 00:52:03.754 This project that she's doing and

NOTE Confidence: 0.832586933076923

00:52:03.754 --> 00:52:05.670 then together we got this small

NOTE Confidence: 0.832586933076923

00:52:05.670 --> 00:52:07.360 foundation grant for five more

NOTE Confidence: 0.832586933076923

00:52:07.360 --> 00:52:08.980 students to continue that work.

NOTE Confidence: 0.832586933076923

00:52:08.980 --> 00:52:10.504 So Caroline, will,

NOTE Confidence: 0.832586933076923

00:52:10.504 --> 00:52:11.520 you know,

NOTE Confidence: 0.832586933076923

00:52:11.520 --> 00:52:13.544 support them and developing  
NOTE Confidence: 0.832586933076923

00:52:13.544 --> 00:52:15.062 educational interventions specifically  
NOTE Confidence: 0.832586933076923

00:52:15.062 --> 00:52:17.586 designed for the communities of  
NOTE Confidence: 0.832586933076923

00:52:17.586 --> 00:52:19.458 the participating five members?  
NOTE Confidence: 0.832586933076923

00:52:19.460 --> 00:52:21.410 Of that of that research group,  
NOTE Confidence: 0.832586933076923

00:52:21.410 --> 00:52:23.162 and then Jeff just happened to  
NOTE Confidence: 0.832586933076923

00:52:23.162 --> 00:52:25.032 work on Ferroptosis and we landed  
NOTE Confidence: 0.832586933076923

00:52:25.032 --> 00:52:26.606 on iron and acetaminophen, right?  
NOTE Confidence: 0.832586933076923

00:52:26.606 --> 00:52:29.038 So so so far, it's like coming together.  
NOTE Confidence: 0.832586933076923

00:52:29.038 --> 00:52:31.030 Last summer we had seven students.  
NOTE Confidence: 0.832586933076923

00:52:31.030 --> 00:52:33.085 Everyone from a different cultural  
NOTE Confidence: 0.832586933076923

00:52:33.085 --> 00:52:35.140 background who all were interested  
NOTE Confidence: 0.832586933076923

00:52:35.202 --> 00:52:36.927 in BRCA driven breast cancer.  
NOTE Confidence: 0.832586933076923

00:52:36.930 --> 00:52:38.526 All of them had a family member.  
NOTE Confidence: 0.832586933076923

00:52:38.530 --> 00:52:41.180 We have another group that's  
NOTE Confidence: 0.832586933076923

00:52:41.180 --> 00:52:43.300 interested in beta thalassemia,



NOTE Confidence: 0.832586933076923

00:52:43.300 --> 00:52:45.792 so a number of different again cultural

NOTE Confidence: 0.832586933076923

00:52:45.792 --> 00:52:48.139 groups that were interested in that.

NOTE Confidence: 0.832586933076923

00:52:48.140 --> 00:52:49.109 And so right.

NOTE Confidence: 0.832586933076923

00:52:49.109 --> 00:52:50.078 This is why.

NOTE Confidence: 0.832586933076923

00:52:50.080 --> 00:52:51.888 By the concept of eclose is going to

NOTE Confidence: 0.832586933076923

00:52:51.888 --> 00:52:53.716 become more and more and more important,

NOTE Confidence: 0.832586933076923

00:52:53.720 --> 00:52:55.336 especially with university sponsors,

NOTE Confidence: 0.832586933076923

00:52:55.336 --> 00:52:58.169 because where am I gonna send the

NOTE Confidence: 0.832586933076923

00:52:58.169 --> 00:53:00.215 kids I I'm already way overwhelmed.

NOTE Confidence: 0.832586933076923

00:53:00.220 --> 00:53:01.172 Like Oh my gosh,

NOTE Confidence: 0.832586933076923

00:53:01.172 --> 00:53:02.940 I can't think about all of these

NOTE Confidence: 0.832586933076923

00:53:02.940 --> 00:53:04.644 projects all at the same time,

NOTE Confidence: 0.832586933076923

00:53:04.650 --> 00:53:07.194 and so that's what we sort of need.

NOTE Confidence: 0.832586933076923

00:53:07.200 --> 00:53:09.783 And so we're kind of thinking about

NOTE Confidence: 0.832586933076923

00:53:09.783 --> 00:53:12.640 creating like a fast pitch competition.

NOTE Confidence: 0.832586933076923

00:53:12.640 --> 00:53:14.110 That's a video based thing  
NOTE Confidence: 0.832586933076923

00:53:14.110 --> 00:53:15.580 where every student would like  
NOTE Confidence: 0.832586933076923

00:53:15.636 --> 00:53:17.028 hold up their phone and go.  
NOTE Confidence: 0.832586933076923

00:53:17.030 --> 00:53:17.276 Oh,  
NOTE Confidence: 0.832586933076923

00:53:17.276 --> 00:53:18.506 and this is the project  
NOTE Confidence: 0.832586933076923

00:53:18.506 --> 00:53:19.490 I'm really excited about.  
NOTE Confidence: 0.832586933076923

00:53:19.490 --> 00:53:20.514 And then the scientists  
NOTE Confidence: 0.832586933076923

00:53:20.514 --> 00:53:21.538 would just go through.  
NOTE Confidence: 0.832586933076923

00:53:21.540 --> 00:53:23.709 You know no more than 30 seconds to a  
NOTE Confidence: 0.832586933076923

00:53:23.709 --> 00:53:25.721 minute pitch and say that student is  
NOTE Confidence: 0.832586933076923

00:53:25.721 --> 00:53:27.689 interested in what I'm interested in.  
NOTE Confidence: 0.832586933076923

00:53:27.690 --> 00:53:28.768 So do you see what I mean?  
NOTE Confidence: 0.832586933076923

00:53:28.770 --> 00:53:30.933 Like we're hoping to kind of like  
NOTE Confidence: 0.832586933076923

00:53:30.933 --> 00:53:32.932 change it so that the students  
NOTE Confidence: 0.832586933076923

00:53:32.932 --> 00:53:34.942 actually can go into a lab.  
NOTE Confidence: 0.832586933076923

00:53:34.950 --> 00:53:36.126 That celebrates their interests.

NOTE Confidence: 0.832586933076923

00:53:36.126 --> 00:53:38.783 We also I forgot to say we have a

NOTE Confidence: 0.832586933076923

00:53:38.783 --> 00:53:40.173 partnership with Penn Medicine that

NOTE Confidence: 0.832586933076923

00:53:40.173 --> 00:53:42.209 takes a number of our students each

NOTE Confidence: 0.832586933076923

00:53:42.209 --> 00:53:44.462 year and they have they're much bigger,

NOTE Confidence: 0.832586933076923

00:53:44.462 --> 00:53:46.958 so they they have more capacity.

NOTE Confidence: 0.727611102

00:53:48.540 --> 00:53:51.160 Wow, that's an amazing undertaking.

NOTE Confidence: 0.727611102

00:53:51.160 --> 00:53:52.240 The whole thing. But what percent

NOTE Confidence: 0.727611102

00:53:52.240 --> 00:53:53.658 of your time do you spend on this?

NOTE Confidence: 0.727611102

00:53:53.660 --> 00:53:55.676 Just one last question. Unless Barbara

NOTE Confidence: 0.786472728888889

00:53:55.690 --> 00:53:57.376 I'm officially allowed to spend one

NOTE Confidence: 0.786472728888889

00:53:57.376 --> 00:53:59.208 day a week, that's what I spent.

NOTE Confidence: 0.440037041666667

00:53:59.990 --> 00:54:03.698 OK, we won porcian that yeah.

NOTE Confidence: 0.440037041666667

00:54:03.700 --> 00:54:07.458 Burp. Any closing coming up?

NOTE Confidence: 0.440037041666667

00:54:07.458 --> 00:54:10.510 You know I, I just want to say

NOTE Confidence: 0.440037041666667

00:54:10.510 --> 00:54:13.022 again that the the creativity and

NOTE Confidence: 0.440037041666667

00:54:13.022 --> 00:54:15.580 the the way you've leveraged what  
NOTE Confidence: 0.440037041666667

00:54:15.580 --> 00:54:18.130 started out as small experiences to.  
NOTE Confidence: 0.440037041666667

00:54:18.130 --> 00:54:20.006 To extend to so many people  
NOTE Confidence: 0.440037041666667

00:54:20.006 --> 00:54:21.526 and and also you know.  
NOTE Confidence: 0.440037041666667

00:54:21.530 --> 00:54:24.230 So I know that at Yale,  
NOTE Confidence: 0.440037041666667

00:54:24.230 --> 00:54:27.842 over 50% of our first generation  
NOTE Confidence: 0.440037041666667

00:54:27.842 --> 00:54:29.800 and underrepresented undergraduates  
NOTE Confidence: 0.440037041666667

00:54:29.800 --> 00:54:33.030 when they show up as first years.  
NOTE Confidence: 0.440037041666667

00:54:33.030 --> 00:54:34.885 Say that they want a major in  
NOTE Confidence: 0.440037041666667

00:54:34.885 --> 00:54:36.510 STEM and the attrition is,  
NOTE Confidence: 0.440037041666667

00:54:36.510 --> 00:54:37.530 as you said,  
NOTE Confidence: 0.440037041666667

00:54:37.530 --> 00:54:39.763 over 70% of of them don't end  
NOTE Confidence: 0.440037041666667

00:54:39.763 --> 00:54:41.280 up graduating in a stem.  
NOTE Confidence: 0.883753661428571

00:54:43.570 --> 00:54:44.554 Programs or major.  
NOTE Confidence: 0.883753661428571

00:54:44.554 --> 00:54:46.850 So the you know the fact that  
NOTE Confidence: 0.883753661428571

00:54:46.928 --> 00:54:49.164 you are seeing 100% retention in

NOTE Confidence: 0.883753661428571

00:54:49.164 --> 00:54:51.966 STEM and that your medical school

NOTE Confidence: 0.883753661428571

00:54:51.966 --> 00:54:54.360 PhD balance because you know,

NOTE Confidence: 0.883753661428571

00:54:54.360 --> 00:54:57.018 we're also aware that minority communities

NOTE Confidence: 0.883753661428571

00:54:57.018 --> 00:54:59.607 are more familiar with the physician

NOTE Confidence: 0.883753661428571

00:54:59.607 --> 00:55:02.204 as a role model than the scientist.

NOTE Confidence: 0.883753661428571

00:55:02.210 --> 00:55:04.438 I think those just they they said

NOTE Confidence: 0.883753661428571

00:55:04.438 --> 00:55:05.710 a very high bar for everybody

NOTE Confidence: 0.883753661428571

00:55:05.755 --> 00:55:07.009 else who works in this space.

NOTE Confidence: 0.883753661428571

00:55:07.010 --> 00:55:07.640 It's amazing.

NOTE Confidence: 0.835277036

00:55:08.170 --> 00:55:09.110 Well yeah, I mean we,

NOTE Confidence: 0.835277036

00:55:09.110 --> 00:55:11.144 you know we could just help you like that.

NOTE Confidence: 0.835277036

00:55:11.150 --> 00:55:12.395 That's one of the things

NOTE Confidence: 0.835277036

00:55:12.395 --> 00:55:13.640 that we I actually met.

NOTE Confidence: 0.835277036

00:55:13.640 --> 00:55:16.538 Tony Koloski at this huge professors

NOTE Confidence: 0.835277036

00:55:16.538 --> 00:55:19.381 competition that we were both finalists

NOTE Confidence: 0.835277036

00:55:19.381 --> 00:55:22.265 there and the goal behind that was

NOTE Confidence: 0.835277036

00:55:22.265 --> 00:55:25.575 to create undergraduate a first year

NOTE Confidence: 0.835277036

00:55:25.575 --> 00:55:28.390 undergraduate semester of doing this.

NOTE Confidence: 0.835277036

00:55:28.390 --> 00:55:29.968 Like doing the program that we

NOTE Confidence: 0.835277036

00:55:29.968 --> 00:55:31.377 designed and so that students

NOTE Confidence: 0.835277036

00:55:31.377 --> 00:55:33.456 wouldn't go into that weed out class.

NOTE Confidence: 0.835277036

00:55:33.460 --> 00:55:35.735 Because every school has a weed out

NOTE Confidence: 0.835277036

00:55:35.735 --> 00:55:37.613 class which I cannot comprehend

NOTE Confidence: 0.835277036

00:55:37.613 --> 00:55:39.698 right at Temple at Temple,

NOTE Confidence: 0.835277036

00:55:39.700 --> 00:55:41.290 which was the partner they

NOTE Confidence: 0.835277036

00:55:41.290 --> 00:55:42.880 say we give them chemistry.

NOTE Confidence: 0.835277036

00:55:42.880 --> 00:55:43.540 We failed.

NOTE Confidence: 0.835277036

00:55:43.540 --> 00:55:45.850 70% of the students and this is

NOTE Confidence: 0.835277036

00:55:45.850 --> 00:55:47.300 like a we did a good job.

NOTE Confidence: 0.835277036

00:55:47.300 --> 00:55:49.452 We failed 70% out and so why would

NOTE Confidence: 0.835277036

00:55:49.452 --> 00:55:51.409 you recruit students who are already

NOTE Confidence: 0.835277036

00:55:51.409 --> 00:55:53.860 vulnerable not based on their own fault,

NOTE Confidence: 0.835277036

00:55:53.860 --> 00:55:56.037 but because of the challenges of an

NOTE Confidence: 0.835277036

00:55:56.037 --> 00:55:58.105 inner city public education and then

NOTE Confidence: 0.835277036

00:55:58.105 --> 00:56:00.253 fail them out like that's basically.

NOTE Confidence: 0.835277036

00:56:00.260 --> 00:56:02.114 You know it's it's so unfair

NOTE Confidence: 0.835277036

00:56:02.114 --> 00:56:03.662 it's basically taking any little

NOTE Confidence: 0.835277036

00:56:03.662 --> 00:56:05.426 tiny step on the rug that you

NOTE Confidence: 0.835277036

00:56:05.426 --> 00:56:07.187 had and yanking it right out.

NOTE Confidence: 0.835277036

00:56:07.190 --> 00:56:07.496 So,

NOTE Confidence: 0.835277036

00:56:07.496 --> 00:56:09.638 so that's what we would be dreaming

NOTE Confidence: 0.835277036

00:56:09.638 --> 00:56:11.808 of having in the future is to be

NOTE Confidence: 0.835277036

00:56:11.808 --> 00:56:13.887 able to work with each and every

NOTE Confidence: 0.835277036

00:56:13.887 --> 00:56:15.909 school to say what's the most

NOTE Confidence: 0.835277036

00:56:15.909 --> 00:56:18.170 important research that you're doing?

NOTE Confidence: 0.835277036

00:56:18.170 --> 00:56:21.330 How do we create interdisciplinary groups to,

NOTE Confidence: 0.835277036

00:56:21.330 --> 00:56:21.848 you know,  
NOTE Confidence: 0.835277036

00:56:21.848 --> 00:56:23.402 have a student who's interested in  
NOTE Confidence: 0.835277036

00:56:23.402 --> 00:56:25.205 public health together with a student  
NOTE Confidence: 0.835277036

00:56:25.205 --> 00:56:26.745 who's interested in chemistry biology.  
NOTE Confidence: 0.835277036

00:56:26.750 --> 00:56:29.450 Do you see what I mean to to basically  
NOTE Confidence: 0.835277036

00:56:29.450 --> 00:56:31.897 create those kind of program project  
NOTE Confidence: 0.835277036

00:56:31.897 --> 00:56:34.000 groups from students as their  
NOTE Confidence: 0.835277036

00:56:34.000 --> 00:56:35.700 very first research experience?  
NOTE Confidence: 0.835277036

00:56:35.700 --> 00:56:38.920 That's what we really want to do.  
NOTE Confidence: 0.835277036

00:56:38.920 --> 00:56:39.490 It's amazing,  
NOTE Confidence: 0.869086957142857

00:56:40.300 --> 00:56:43.037 thank you so much. That was amazing.  
NOTE Confidence: 0.869086957142857

00:56:43.040 --> 00:56:44.300 Incredibly inspiring. Thanks for  
NOTE Confidence: 0.869086957142857

00:56:44.300 --> 00:56:46.729 taking the time to talk to us today.  
NOTE Confidence: 0.908239382857143

00:56:47.060 --> 00:56:48.680 Thanks, thanks everybody.  
NOTE Confidence: 0.908239382857143

00:56:48.680 --> 00:56:50.840 If you have questions,  
NOTE Confidence: 0.908239382857143

00:56:50.840 --> 00:56:52.849 you can find me. Alana Fox Chase.



NOTE Confidence: 0.5825164

00:56:54.380 --> 00:56:56.000 OK.