

WEBVTT

NOTE duration:"01:05:46"

NOTE recognizability:0.760

NOTE language:en-us

NOTE Confidence: 0.96275165

00:00:05.720 --> 00:00:07.145 Good afternoon, everyone.

NOTE Confidence: 0.96275165

00:00:07.145 --> 00:00:09.995 Thank you so much for coming.

NOTE Confidence: 0.96275165

00:00:10.000 --> 00:00:11.720 I'm very excited about our,

NOTE Confidence: 0.96275165

00:00:11.720 --> 00:00:13.985 about our speaker today and

NOTE Confidence: 0.96275165

00:00:13.985 --> 00:00:17.040 it's my great honor to actually

NOTE Confidence: 0.96275165

00:00:17.040 --> 00:00:19.520 introduce Doctor Ignacio Bisuba.

NOTE Confidence: 0.96275165

00:00:19.520 --> 00:00:21.640 He told me just to call him Ignacio.

NOTE Confidence: 0.96275165

00:00:21.640 --> 00:00:23.840 We know each other for some time now.

NOTE Confidence: 0.96275165

00:00:23.840 --> 00:00:28.318 Yeah, it was really 180 pages long CV.

NOTE Confidence: 0.96275165

00:00:28.320 --> 00:00:30.280 So I'll try to put it in

NOTE Confidence: 0.96275165

00:00:30.280 --> 00:00:31.620 like 3 minutes, 4 minutes.

NOTE Confidence: 0.96275165

00:00:31.620 --> 00:00:33.613 So actually he can speak to us

NOTE Confidence: 0.96275165

00:00:33.613 --> 00:00:34.997 about his wonderful research.

NOTE Confidence: 0.96275165

00:00:35.000 --> 00:00:37.148 So Doctor Ristuba is currently Professor  
NOTE Confidence: 0.96275165

00:00:37.148 --> 00:00:40.278 and chair of the Department of Translation,  
NOTE Confidence: 0.96275165

00:00:40.280 --> 00:00:42.980 Molecular Pathology at the  
NOTE Confidence: 0.96275165

00:00:42.980 --> 00:00:45.680 MD Anderson Cancer Center.  
NOTE Confidence: 0.96275165

00:00:45.680 --> 00:00:47.618 He's also has a junk appointments  
NOTE Confidence: 0.96275165

00:00:47.618 --> 00:00:49.752 as a professor at the Department  
NOTE Confidence: 0.96275165

00:00:49.752 --> 00:00:52.074 of Thoracic Head and Neck Medical  
NOTE Confidence: 0.96275165

00:00:52.074 --> 00:00:54.459 Oncology and he's Co Director of  
NOTE Confidence: 0.96275165

00:00:54.459 --> 00:00:56.394 Division of Pathology Lab Medicine.  
NOTE Confidence: 0.96275165

00:00:56.400 --> 00:00:58.120 He started his career in  
NOTE Confidence: 0.96275165

00:00:58.120 --> 00:00:59.840 a medical school in Chile.  
NOTE Confidence: 0.96275165

00:00:59.840 --> 00:01:02.870 And actually I think Kurt and doctor we  
NOTE Confidence: 0.96275165

00:01:02.870 --> 00:01:05.120 still announced each other from back then.  
NOTE Confidence: 0.96275165

00:01:05.120 --> 00:01:08.600 So which is wonderful he did his  
NOTE Confidence: 0.96275165

00:01:08.600 --> 00:01:11.000 pathology training in Chile.  
NOTE Confidence: 0.96275165

00:01:11.000 --> 00:01:14.642 Then he did his post doctoral

NOTE Confidence: 0.96275165

00:01:14.642 --> 00:01:18.063 pathology research at UT Southwestern

NOTE Confidence: 0.96275165

00:01:18.063 --> 00:01:21.655 Medical Center and Hammond Center for

NOTE Confidence: 0.96275165

00:01:21.655 --> 00:01:22.955 Therapeutic Oncology Research Center,

NOTE Confidence: 0.96275165

00:01:22.960 --> 00:01:25.124 also at UT Southwestern.

NOTE Confidence: 0.96275165

00:01:25.124 --> 00:01:30.720 He was boarded in Anatomic Pathology in 1989.

NOTE Confidence: 0.96275165

00:01:30.720 --> 00:01:33.270 He had the numerous academic and

NOTE Confidence: 0.96275165

00:01:33.270 --> 00:01:34.120 administrative appointments,

NOTE Confidence: 0.96275165

00:01:34.120 --> 00:01:36.675 and I'll just briefly go through these.

NOTE Confidence: 0.96275165

00:01:36.680 --> 00:01:38.275 He started actually his career

NOTE Confidence: 0.96275165

00:01:38.275 --> 00:01:39.870 as assistant professor up to

NOTE Confidence: 0.96275165

00:01:39.931 --> 00:01:41.666 associate professor in Chile,

NOTE Confidence: 0.96275165

00:01:41.666 --> 00:01:44.020 Catholic University of Chile, Santiago.

NOTE Confidence: 0.96275165

00:01:44.020 --> 00:01:47.856 And then in 2003, actually,

NOTE Confidence: 0.96275165

00:01:47.856 --> 00:01:50.396 he moved to MD Anderson,

NOTE Confidence: 0.96275165

00:01:50.400 --> 00:01:53.045 where he was associate professor until 2008.

NOTE Confidence: 0.96275165

00:01:53.045 --> 00:01:55.475 And in 2008 he became a  
NOTE Confidence: 0.96275165

00:01:55.475 --> 00:01:59.160 professor of pathology.  
NOTE Confidence: 0.96275165

00:01:59.160 --> 00:02:01.330 In terms of like his  
NOTE Confidence: 0.96275165

00:02:01.330 --> 00:02:02.198 administrative responsibilities,  
NOTE Confidence: 0.96275165

00:02:02.200 --> 00:02:04.840 there are numerous leadership positions.  
NOTE Confidence: 0.96275165

00:02:04.840 --> 00:02:07.680 So I highlight just a few of those.  
NOTE Confidence: 0.96275165

00:02:07.680 --> 00:02:10.812 He was a director of the Utilonga SPORT,  
NOTE Confidence: 0.96275165

00:02:10.812 --> 00:02:11.904 Tissue Banker,  
NOTE Confidence: 0.96275165

00:02:11.904 --> 00:02:14.634 director of Thoracic Molecular pathology,  
NOTE Confidence: 0.96275165

00:02:14.640 --> 00:02:16.740 also at MD Anderson.  
NOTE Confidence: 0.96275165

00:02:16.740 --> 00:02:20.085 Up till now actually he was Co  
NOTE Confidence: 0.96275165

00:02:20.085 --> 00:02:22.160 director of the Cancer Center,  
NOTE Confidence: 0.96275165

00:02:22.160 --> 00:02:24.160 supportive grant Co director of  
NOTE Confidence: 0.96275165

00:02:24.160 --> 00:02:25.760 the molecular testing development.  
NOTE Confidence: 0.96275165

00:02:25.760 --> 00:02:27.904 And I think I'm going to stop here, Ignacio.  
NOTE Confidence: 0.96275165

00:02:27.904 --> 00:02:29.760 It's really long list.

NOTE Confidence: 0.96275165

00:02:29.760 --> 00:02:32.640 It's absolutely impressive.

NOTE Confidence: 0.96275165

00:02:32.640 --> 00:02:35.720 And he also had endowment positions,

NOTE Confidence: 0.96275165

00:02:35.720 --> 00:02:42.280 numerous 'cause consultations

NOTE Confidence: 0.96275165

00:02:42.280 --> 00:02:43.651 over 800 publications.

NOTE Confidence: 0.96275165

00:02:43.651 --> 00:02:45.479 Your CVS from September,

NOTE Confidence: 0.96275165

00:02:45.480 --> 00:02:47.195 I guess you're probably 1000 right now.

NOTE Confidence: 0.96275165

00:02:47.200 --> 00:02:50.716 With that pace and numerous awards,

NOTE Confidence: 0.96275165

00:02:50.720 --> 00:02:53.348 he received Pathology Residency

NOTE Confidence: 0.96275165

00:02:53.348 --> 00:02:55.976 Scholarship award in Chile

NOTE Confidence: 0.96275165

00:02:55.976 --> 00:02:58.320 Fogarty Foundation Fellowship.

NOTE Confidence: 0.96275165

00:02:58.320 --> 00:03:01.416 He also received the Mary Matthews

NOTE Confidence: 0.96275165

00:03:01.416 --> 00:03:03.480 Pathology Translational Research Award

NOTE Confidence: 0.96275165

00:03:03.551 --> 00:03:05.331 from the International Association

NOTE Confidence: 0.96275165

00:03:05.331 --> 00:03:08.639 for the Study of Lung Cancer in 2018.

NOTE Confidence: 0.96275165

00:03:08.640 --> 00:03:11.480 At the same year he received the the

NOTE Confidence: 0.96275165

00:03:11.480 --> 00:03:13.940 the award from the Latin American  
NOTE Confidence: 0.96275165

00:03:13.940 --> 00:03:16.875 Federation of Cancer Society's Award  
NOTE Confidence: 0.96275165

00:03:16.875 --> 00:03:20.400 for Supporting Latin American Oncology.  
NOTE Confidence: 0.96275165

00:03:20.400 --> 00:03:23.109 I had the privilege to work with  
NOTE Confidence: 0.96275165

00:03:23.109 --> 00:03:26.148 Ignacio as a member of the ICLC  
NOTE Confidence: 0.96275165

00:03:26.148 --> 00:03:29.440 Pathology Committee when he was a chair.  
NOTE Confidence: 0.96275165

00:03:29.440 --> 00:03:31.190 We were members before them but then  
NOTE Confidence: 0.96275165

00:03:31.190 --> 00:03:33.481 he was a chair and he absolutely  
NOTE Confidence: 0.96275165

00:03:33.481 --> 00:03:34.957 changed the entire committee,  
NOTE Confidence: 0.96275165

00:03:34.960 --> 00:03:37.492 made it actually the most productive  
NOTE Confidence: 0.96275165

00:03:37.492 --> 00:03:39.171 committee of the ICLC.  
NOTE Confidence: 0.96275165

00:03:39.171 --> 00:03:42.090 And he's one of those natural born  
NOTE Confidence: 0.96275165

00:03:42.179 --> 00:03:44.380 leaders with great administrative skills,  
NOTE Confidence: 0.96275165

00:03:44.380 --> 00:03:46.355 great research skills and also  
NOTE Confidence: 0.96275165

00:03:46.355 --> 00:03:47.839 he's still pathologist.  
NOTE Confidence: 0.96275165

00:03:47.840 --> 00:03:49.520 I know that he can read the slides.

NOTE Confidence: 0.96275165

00:03:49.520 --> 00:03:50.441 So Ignacio, welcome.

NOTE Confidence: 0.96275165

00:03:50.441 --> 00:03:52.590 We are very happy to have you

NOTE Confidence: 0.91878907

00:03:52.653 --> 00:03:54.120 here. Thank you very much. Thank you,

NOTE Confidence: 0.689819440769231

00:03:54.120 --> 00:03:56.465 Sanjay. Thank you Doctor Basic and Doctor

NOTE Confidence: 0.689819440769231

00:03:56.465 --> 00:03:59.763 Liu for the kind invitation to be here again.

NOTE Confidence: 0.689819440769231

00:03:59.763 --> 00:04:02.741 I come to institution on a regular basis

NOTE Confidence: 0.689819440769231

00:04:02.741 --> 00:04:05.905 because I I have a collaborations and

NOTE Confidence: 0.689819440769231

00:04:05.905 --> 00:04:09.614 part of advisory war of the Yale Lancaster

NOTE Confidence: 0.689819440769231

00:04:09.614 --> 00:04:11.402 sport program and congratulations

NOTE Confidence: 0.689819440769231

00:04:11.402 --> 00:04:14.312 I heard that was submitted finally

NOTE Confidence: 0.689819440769231

00:04:14.312 --> 00:04:17.336 today and and now I mean I add to

NOTE Confidence: 0.689819440769231

00:04:17.336 --> 00:04:19.630 the list of friends Sandra here.

NOTE Confidence: 0.689819440769231

00:04:19.630 --> 00:04:22.180 So it's a pleasure to be speaking

NOTE Confidence: 0.689819440769231

00:04:22.180 --> 00:04:25.158 to all to you all. So yeah,

NOTE Confidence: 0.689819440769231

00:04:25.158 --> 00:04:28.231 it's a little bit embarrassing hearing about

NOTE Confidence: 0.689819440769231

00:04:28.231 --> 00:04:31.194 what you what you have to put in your CV.  
NOTE Confidence: 0.689819440769231

00:04:31.200 --> 00:04:32.400 Sorry about that.  
NOTE Confidence: 0.689819440769231

00:04:32.400 --> 00:04:35.158 I'm just being that I'm old, right.  
NOTE Confidence: 0.689819440769231

00:04:35.158 --> 00:04:37.664 So and and the other thing is  
NOTE Confidence: 0.689819440769231

00:04:37.664 --> 00:04:39.988 that sorry about the very generic  
NOTE Confidence: 0.689819440769231

00:04:39.988 --> 00:04:42.551 title that I use for every, every,  
NOTE Confidence: 0.689819440769231

00:04:42.551 --> 00:04:44.448 every invitation to speak and then I  
NOTE Confidence: 0.689819440769231

00:04:44.448 --> 00:04:46.317 change it to make it more relevant,  
NOTE Confidence: 0.689819440769231

00:04:46.320 --> 00:04:48.280 but I forgot to do this time.  
NOTE Confidence: 0.689819440769231

00:04:48.280 --> 00:04:51.632 What I'm going to talk today is about  
NOTE Confidence: 0.689819440769231

00:04:51.632 --> 00:04:53.901 using strategies to study immune  
NOTE Confidence: 0.689819440769231

00:04:53.901 --> 00:04:56.601 response in tumor tissues with emphasis  
NOTE Confidence: 0.689819440769231

00:04:56.601 --> 00:04:59.097 on Multiplex assays to understand  
NOTE Confidence: 0.689819440769231

00:04:59.097 --> 00:05:02.260 the immune response with a focus on  
NOTE Confidence: 0.689819440769231

00:05:02.260 --> 00:05:04.710 a spatial analysis that we have in  
NOTE Confidence: 0.689819440769231

00:05:04.710 --> 00:05:07.319 exploring our group for the last few years.

NOTE Confidence: 0.689819440769231

00:05:07.320 --> 00:05:09.200 So these are my disclosures,

NOTE Confidence: 0.689819440769231

00:05:09.200 --> 00:05:11.800 ground support Advisory Board speaker

NOTE Confidence: 0.689819440769231

00:05:11.800 --> 00:05:15.190 engagement and also the other you know,

NOTE Confidence: 0.689819440769231

00:05:15.190 --> 00:05:17.165 important disclosures that I'm not

NOTE Confidence: 0.689819440769231

00:05:17.165 --> 00:05:17.955 an immunologist.

NOTE Confidence: 0.689819440769231

00:05:17.960 --> 00:05:19.920 So when I talk about immune markers,

NOTE Confidence: 0.689819440769231

00:05:19.920 --> 00:05:22.874 but if if you have a difficult

NOTE Confidence: 0.689819440769231

00:05:22.874 --> 00:05:23.718 question immunology,

NOTE Confidence: 0.689819440769231

00:05:23.720 --> 00:05:25.638 I'm going to refer them to court.

NOTE Confidence: 0.689819440769231

00:05:25.640 --> 00:05:27.560 Thank you for coming.

NOTE Confidence: 0.689819440769231

00:05:27.560 --> 00:05:28.040 So

NOTE Confidence: 0.8827219

00:05:30.600 --> 00:05:34.387 so I mean if you have been in touch with

NOTE Confidence: 0.8827219

00:05:34.387 --> 00:05:36.769 this happening pathology for lung cancer

NOTE Confidence: 0.8827219

00:05:36.769 --> 00:05:38.849 particularly in the diagnostic field

NOTE Confidence: 0.8827219

00:05:38.916 --> 00:05:41.000 including molecular pathology tools.

NOTE Confidence: 0.8827219

00:05:41.000 --> 00:05:43.934 You have seen this evolution from  
NOTE Confidence: 0.8827219

00:05:43.934 --> 00:05:46.689 Histology based diagnosis to molecular  
NOTE Confidence: 0.8827219

00:05:46.689 --> 00:05:48.798 targeted some classification in  
NOTE Confidence: 0.8827219

00:05:48.798 --> 00:05:50.702 particular the Lenocarcinoma, mystology,  
NOTE Confidence: 0.8827219

00:05:50.702 --> 00:05:54.334 the non sponsor lung cancer area and and  
NOTE Confidence: 0.8827219

00:05:54.334 --> 00:05:57.320 then and then there is a has been a lot,  
NOTE Confidence: 0.8827219

00:05:57.320 --> 00:06:00.506 a lot of hope on more biomarker can  
NOTE Confidence: 0.8827219

00:06:00.506 --> 00:06:02.194 predict response to immunotherapy  
NOTE Confidence: 0.8827219

00:06:02.194 --> 00:06:04.798 particularly the use of immune checkpoints.  
NOTE Confidence: 0.8827219

00:06:04.800 --> 00:06:07.104 But we're kind of stuck there  
NOTE Confidence: 0.8827219

00:06:07.104 --> 00:06:09.735 with a few markers mostly PDL one  
NOTE Confidence: 0.8827219

00:06:09.735 --> 00:06:11.560 in most of chemical expression.  
NOTE Confidence: 0.8827219

00:06:11.560 --> 00:06:14.960 But there is a also a new wave of therapy,  
NOTE Confidence: 0.8827219

00:06:14.960 --> 00:06:16.720 the antibody drugs conjugate that  
NOTE Confidence: 0.8827219

00:06:16.720 --> 00:06:18.480 actually may require the assessment  
NOTE Confidence: 0.8827219

00:06:18.536 --> 00:06:20.116 of protein expression in tumor.

NOTE Confidence: 0.8827219

00:06:20.120 --> 00:06:24.440 So this is a very kind of brief

NOTE Confidence: 0.8827219

00:06:24.440 --> 00:06:26.752 description of the evolution of the

NOTE Confidence: 0.8827219

00:06:26.752 --> 00:06:29.104 field of diagnosis in lung cancer

NOTE Confidence: 0.8827219

00:06:29.104 --> 00:06:31.654 that makes this disease very exciting.

NOTE Confidence: 0.8827219

00:06:31.654 --> 00:06:34.860 And I've been there from the beginning

NOTE Confidence: 0.8827219

00:06:34.944 --> 00:06:37.768 and and I've been able to watch this

NOTE Confidence: 0.8827219

00:06:37.768 --> 00:06:39.840 by working at the same time this

NOTE Confidence: 0.8827219

00:06:39.840 --> 00:06:42.184 evolution and this is slide that I put

NOTE Confidence: 0.8827219

00:06:42.184 --> 00:06:44.032 the paradigms in evolution lung cancer,

NOTE Confidence: 0.8827219

00:06:44.040 --> 00:06:44.678 molecular pathology.

NOTE Confidence: 0.8827219

00:06:44.678 --> 00:06:46.592 I'm running out of space now

NOTE Confidence: 0.8827219

00:06:46.592 --> 00:06:48.279 I'm just reducing the font.

NOTE Confidence: 0.8827219

00:06:48.280 --> 00:06:51.996 So Histology is the key you know component

NOTE Confidence: 0.8827219

00:06:51.996 --> 00:06:54.880 of every good diagnosis in this disease.

NOTE Confidence: 0.8827219

00:06:54.880 --> 00:06:56.752 But we have a targeted therapy

NOTE Confidence: 0.8827219

00:06:56.752 --> 00:06:59.513 and so we we studied driver by  
NOTE Confidence: 0.8827219

00:06:59.513 --> 00:07:01.913 molecular analysis of tissue cells,  
NOTE Confidence: 0.8827219

00:07:01.920 --> 00:07:05.091 cytology specimens and also have the liquid  
NOTE Confidence: 0.8827219

00:07:05.091 --> 00:07:06.880 biopsy opportunities on immunotherapy.  
NOTE Confidence: 0.8827219

00:07:06.880 --> 00:07:09.520 Unfortunately we don't have a large  
NOTE Confidence: 0.8827219

00:07:09.520 --> 00:07:11.744 number of solid predictive biomarkers.  
NOTE Confidence: 0.8827219

00:07:11.744 --> 00:07:15.600 So there is a lot of effort in this  
NOTE Confidence: 0.8827219

00:07:15.600 --> 00:07:17.096 area and I'm going to show you some  
NOTE Confidence: 0.8827219

00:07:17.096 --> 00:07:18.400 of the work that we are trying.  
NOTE Confidence: 0.8827219

00:07:18.400 --> 00:07:20.208 We're doing that field.  
NOTE Confidence: 0.8827219

00:07:20.208 --> 00:07:23.986 Then many of the new therapy particularly  
NOTE Confidence: 0.8827219

00:07:23.986 --> 00:07:26.920 immunotherapy related approaches  
NOTE Confidence: 0.8827219

00:07:26.920 --> 00:07:31.365 have been moved from stage 4 advanced  
NOTE Confidence: 0.8827219

00:07:31.365 --> 00:07:34.001 disease sometimes refractory disease  
NOTE Confidence: 0.8827219

00:07:34.001 --> 00:07:37.155 to earlier disease patient with tumor  
NOTE Confidence: 0.8827219

00:07:37.155 --> 00:07:39.705 that can be resected surgically with

NOTE Confidence: 0.8827219

00:07:39.705 --> 00:07:41.999 creative intent stage one and three.

NOTE Confidence: 0.8827219

00:07:42.000 --> 00:07:44.891 And then therapy has been given before

NOTE Confidence: 0.8827219

00:07:44.891 --> 00:07:47.799 that recession is called new value of

NOTE Confidence: 0.8827219

00:07:47.799 --> 00:07:49.755 therapy and that actually put pathology

NOTE Confidence: 0.8827219

00:07:49.755 --> 00:07:52.058 again in a good position because the

NOTE Confidence: 0.8827219

00:07:52.058 --> 00:07:53.778 assessment of response after this

NOTE Confidence: 0.8827219

00:07:53.778 --> 00:07:56.318 therapy when the tumor resect is important.

NOTE Confidence: 0.8827219

00:07:56.320 --> 00:07:58.749 And Doctor DASI has LED several of

NOTE Confidence: 0.8827219

00:07:58.749 --> 00:08:00.969 these studies having recently published

NOTE Confidence: 0.8827219

00:08:00.969 --> 00:08:03.197 on assessing pathological response

NOTE Confidence: 0.8827219

00:08:03.200 --> 00:08:05.531 and then we have the opportunity to

NOTE Confidence: 0.8827219

00:08:05.531 --> 00:08:07.204 potentially follow patient with a

NOTE Confidence: 0.8827219

00:08:07.204 --> 00:08:09.224 liquid biopsy approaches to assess

NOTE Confidence: 0.8827219

00:08:09.224 --> 00:08:11.352 minimal residual disease to understand

NOTE Confidence: 0.8827219

00:08:11.352 --> 00:08:13.400 you know patient records.

NOTE Confidence: 0.8827219

00:08:13.400 --> 00:08:15.000 They already mentioned the biomarker

NOTE Confidence: 0.8827219

00:08:15.000 --> 00:08:16.280 for the drug conjugate.

NOTE Confidence: 0.8827219

00:08:16.280 --> 00:08:20.032 But for this kind kind of revolutionizing

NOTE Confidence: 0.8827219

00:08:20.032 --> 00:08:22.559 a little bit our assays,

NOTE Confidence: 0.8827219

00:08:22.559 --> 00:08:24.475 assays on biomarker particularly

NOTE Confidence: 0.8827219

00:08:24.475 --> 00:08:27.604 the immune space is the opportunity

NOTE Confidence: 0.8827219

00:08:27.604 --> 00:08:30.236 to apply computational pathology

NOTE Confidence: 0.8827219

00:08:30.240 --> 00:08:34.144 analysis to our immune base,

NOTE Confidence: 0.8827219

00:08:34.144 --> 00:08:36.256 characterize tissue based characterization

NOTE Confidence: 0.8827219

00:08:36.256 --> 00:08:39.051 of the immune response and then

NOTE Confidence: 0.8827219

00:08:39.051 --> 00:08:41.319 I'm going to talk about that.

NOTE Confidence: 0.8827219

00:08:41.320 --> 00:08:42.818 So these are the two areas that

NOTE Confidence: 0.8827219

00:08:42.818 --> 00:08:43.800 I'm going to cover.

NOTE Confidence: 0.8827219

00:08:43.800 --> 00:08:45.809 And as I already mentioned you know

NOTE Confidence: 0.8827219

00:08:45.809 --> 00:08:47.350 we in pathology particularly in

NOTE Confidence: 0.8827219

00:08:47.350 --> 00:08:49.520 advanced disease we have a very kind

NOTE Confidence: 0.8827219

00:08:49.520 --> 00:08:51.941 of defined workflow what's needed for

NOTE Confidence: 0.8827219

00:08:51.941 --> 00:08:53.996 the diagnosis starting with Histology,

NOTE Confidence: 0.8827219

00:08:54.000 --> 00:08:58.320 molecular you know assessment of key

NOTE Confidence: 0.466856343846154

00:08:58.320 --> 00:08:59.379 genomic and normality,

NOTE Confidence: 0.466856343846154

00:08:59.379 --> 00:09:01.850 some PD L wading muscle chemistry for

NOTE Confidence: 0.466856343846154

00:09:01.912 --> 00:09:04.171 for all the changes and opportunities

NOTE Confidence: 0.466856343846154

00:09:04.171 --> 00:09:05.782 in immunotherapy considering

NOTE Confidence: 0.466856343846154

00:09:05.782 --> 00:09:07.930 immune checkpoint inhibition in

NOTE Confidence: 0.466856343846154

00:09:07.999 --> 00:09:10.219 combination or in combination with

NOTE Confidence: 0.466856343846154

00:09:10.219 --> 00:09:12.730 other drugs like chemotherapy or

NOTE Confidence: 0.466856343846154

00:09:12.730 --> 00:09:16.120 a cell therapy or even vaccines.

NOTE Confidence: 0.466856343846154

00:09:16.120 --> 00:09:18.120 Approaches are coming up again.

NOTE Confidence: 0.466856343846154

00:09:18.120 --> 00:09:20.176 I think they're having just one by a

NOTE Confidence: 0.466856343846154

00:09:20.176 --> 00:09:22.279 market for predicting response is very,

NOTE Confidence: 0.466856343846154

00:09:22.280 --> 00:09:24.638 very, very dismant and the field

NOTE Confidence: 0.466856343846154

00:09:24.638 --> 00:09:27.780 is big and I know that several  
NOTE Confidence: 0.466856343846154

00:09:27.780 --> 00:09:30.240 of you may have immunology,  
NOTE Confidence: 0.466856343846154

00:09:30.240 --> 00:09:32.361 immunology training is a is is a  
NOTE Confidence: 0.466856343846154

00:09:32.361 --> 00:09:35.300 is a lot going on in the immune  
NOTE Confidence: 0.466856343846154

00:09:35.300 --> 00:09:37.255 response particular to a tumor  
NOTE Confidence: 0.466856343846154

00:09:37.336 --> 00:09:39.478 without intervention changes.  
NOTE Confidence: 0.466856343846154

00:09:39.480 --> 00:09:41.886 When you do intervention with immune  
NOTE Confidence: 0.466856343846154

00:09:41.886 --> 00:09:44.520 modulators or with any other therapy,  
NOTE Confidence: 0.466856343846154

00:09:44.520 --> 00:09:45.666 chemotherapy, biotherapy,  
NOTE Confidence: 0.466856343846154

00:09:45.666 --> 00:09:49.677 they change the immune response in tumors.  
NOTE Confidence: 0.466856343846154

00:09:49.680 --> 00:09:51.976 And there are a series of biomarker  
NOTE Confidence: 0.466856343846154

00:09:51.976 --> 00:09:55.026 that have been proposed that are part of  
NOTE Confidence: 0.466856343846154

00:09:55.026 --> 00:09:57.318 the intrinsic characteristic of the tumor,  
NOTE Confidence: 0.466856343846154

00:09:57.320 --> 00:09:58.952 many of them genome,  
NOTE Confidence: 0.466856343846154

00:09:58.952 --> 00:09:59.360 genome,  
NOTE Confidence: 0.466856343846154

00:09:59.360 --> 00:10:01.718 genomic normality is the tumor or

NOTE Confidence: 0.466856343846154  
00:10:01.718 --> 00:10:03.867 associated to the immune response  
NOTE Confidence: 0.466856343846154  
00:10:03.867 --> 00:10:06.377 that are extensive predictor that  
NOTE Confidence: 0.466856343846154  
00:10:06.377 --> 00:10:08.385 have been considered associated  
NOTE Confidence: 0.466856343846154  
00:10:08.456 --> 00:10:10.626 potential with benefit or with  
NOTE Confidence: 0.466856343846154  
00:10:10.626 --> 00:10:12.796 resistant to our therapies mostly  
NOTE Confidence: 0.466856343846154  
00:10:12.800 --> 00:10:14.312 immune checkpoint therapy.  
NOTE Confidence: 0.466856343846154  
00:10:14.312 --> 00:10:17.336 So we need biomarkers and there's  
NOTE Confidence: 0.466856343846154  
00:10:17.336 --> 00:10:20.622 a crowded space here on different  
NOTE Confidence: 0.466856343846154  
00:10:20.622 --> 00:10:23.041 opportunities and but this in my  
NOTE Confidence: 0.466856343846154  
00:10:23.041 --> 00:10:24.910 bias of pathology I think that I  
NOTE Confidence: 0.466856343846154  
00:10:24.978 --> 00:10:27.232 would have done with genomic that  
NOTE Confidence: 0.466856343846154  
00:10:27.232 --> 00:10:29.508 we started characterizing tumors and  
NOTE Confidence: 0.466856343846154  
00:10:29.508 --> 00:10:31.560 then we know what we need to look for.  
NOTE Confidence: 0.466856343846154  
00:10:31.560 --> 00:10:34.199 We can go to liquid biases and  
NOTE Confidence: 0.466856343846154  
00:10:34.199 --> 00:10:36.264 trying to identify these biomarkers.  
NOTE Confidence: 0.466856343846154

00:10:36.264 --> 00:10:39.512 I think that then the same paradigm  
NOTE Confidence: 0.466856343846154

00:10:39.512 --> 00:10:43.022 needs to be replicated in in in  
NOTE Confidence: 0.466856343846154

00:10:43.022 --> 00:10:44.567 immunotherapy understand what is  
NOTE Confidence: 0.466856343846154

00:10:44.567 --> 00:10:47.550 the work play of the book play of  
NOTE Confidence: 0.466856343846154

00:10:47.550 --> 00:10:49.865 immune response with and without  
NOTE Confidence: 0.466856343846154

00:10:49.865 --> 00:10:52.117 intervention hopefully on log you  
NOTE Confidence: 0.466856343846154

00:10:52.117 --> 00:10:54.568 doing on basis in the tumor tissue  
NOTE Confidence: 0.466856343846154

00:10:54.568 --> 00:10:56.428 in the context of immunotherapy  
NOTE Confidence: 0.466856343846154

00:10:56.428 --> 00:10:59.321 when we learn that we can see we can  
NOTE Confidence: 0.466856343846154

00:10:59.321 --> 00:11:01.852 identify those cells, those proteins,  
NOTE Confidence: 0.466856343846154

00:11:01.852 --> 00:11:04.756 those even genomic abnormalities  
NOTE Confidence: 0.466856343846154

00:11:04.760 --> 00:11:08.280 in surrogate specimen like blood  
NOTE Confidence: 0.466856343846154

00:11:08.280 --> 00:11:10.800 a sample that we get easily in  
NOTE Confidence: 0.466856343846154

00:11:10.800 --> 00:11:11.880 every clinical trial.  
NOTE Confidence: 0.466856343846154

00:11:11.880 --> 00:11:15.360 So all these prompted to pathology  
NOTE Confidence: 0.466856343846154

00:11:15.360 --> 00:11:17.980 translational research team that we

NOTE Confidence: 0.466856343846154  
00:11:17.980 --> 00:11:21.095 are actually working very heavily on  
NOTE Confidence: 0.466856343846154  
00:11:21.095 --> 00:11:24.014 the molecular targeted area to try to  
NOTE Confidence: 0.466856343846154  
00:11:24.014 --> 00:11:26.679 understand and learn about immunology,  
NOTE Confidence: 0.466856343846154  
00:11:26.680 --> 00:11:27.856 immunology of cancer.  
NOTE Confidence: 0.466856343846154  
00:11:27.856 --> 00:11:31.213 So we tried to adopt A new technology  
NOTE Confidence: 0.466856343846154  
00:11:31.213 --> 00:11:33.863 to study chemokine cytokine growth  
NOTE Confidence: 0.466856343846154  
00:11:33.863 --> 00:11:37.322 factor in in fluids try to you  
NOTE Confidence: 0.466856343846154  
00:11:37.322 --> 00:11:39.818 know identify the immune cells into  
NOTE Confidence: 0.466856343846154  
00:11:39.818 --> 00:11:43.140 more or peripheral blood or other  
NOTE Confidence: 0.466856343846154  
00:11:43.140 --> 00:11:45.166 fluids with different immunology  
NOTE Confidence: 0.466856343846154  
00:11:45.166 --> 00:11:47.094 immunology techniques for cytometry  
NOTE Confidence: 0.466856343846154  
00:11:47.094 --> 00:11:50.828 site of and try to add to the genomic  
NOTE Confidence: 0.466856343846154  
00:11:50.828 --> 00:11:52.308 characterization of the tissue  
NOTE Confidence: 0.466856343846154  
00:11:52.374 --> 00:11:54.142 immune characterization And then  
NOTE Confidence: 0.466856343846154  
00:11:54.142 --> 00:11:56.794 we can use some genomic approaches  
NOTE Confidence: 0.466856343846154

00:11:56.800 --> 00:11:59.560 there to get close to that.  
NOTE Confidence: 0.466856343846154

00:11:59.560 --> 00:12:02.026 We can disaggregate tissues and do  
NOTE Confidence: 0.466856343846154

00:12:02.026 --> 00:12:04.869 for cytometry site of but use lose  
NOTE Confidence: 0.466856343846154

00:12:04.869 --> 00:12:07.119 the context of the tissues trauma  
NOTE Confidence: 0.466856343846154

00:12:07.120 --> 00:12:10.725 malignant cells blood vessels and  
NOTE Confidence: 0.466856343846154

00:12:10.725 --> 00:12:12.800 other the structure the structure  
NOTE Confidence: 0.466856343846154

00:12:12.800 --> 00:12:14.755 that could be there by.  
NOTE Confidence: 0.466856343846154

00:12:14.755 --> 00:12:17.845 So then the analysis of tissue  
NOTE Confidence: 0.466856343846154

00:12:17.845 --> 00:12:21.120 sections we think is important and  
NOTE Confidence: 0.466856343846154

00:12:21.120 --> 00:12:24.675 then we can adopt from starting  
NOTE Confidence: 0.466856343846154

00:12:24.675 --> 00:12:28.650 with a single Plex immunochemistry  
NOTE Confidence: 0.466856343846154

00:12:28.650 --> 00:12:32.420 with rigor of because that could  
NOTE Confidence: 0.466856343846154

00:12:32.420 --> 00:12:34.600 be a problematic sometime.  
NOTE Confidence: 0.466856343846154

00:12:34.600 --> 00:12:37.988 The immunochemistry is it has to be  
NOTE Confidence: 0.466856343846154

00:12:37.988 --> 00:12:42.236 well done moved from a single to a  
NOTE Confidence: 0.68054526

00:12:42.240 --> 00:12:45.474 uniplex A monochemistry to a Multiplex

NOTE Confidence: 0.68054526

00:12:45.474 --> 00:12:48.982 approaches to kind of not only quantify

NOTE Confidence: 0.68054526

00:12:48.982 --> 00:12:51.692 cells that characterize well those

NOTE Confidence: 0.68054526

00:12:51.692 --> 00:12:54.005 cells and and and actually locate

NOTE Confidence: 0.68054526

00:12:54.005 --> 00:12:56.519 them in the structure of the tumor.

NOTE Confidence: 0.68054526

00:12:56.520 --> 00:12:59.142 And then further in the analysis

NOTE Confidence: 0.68054526

00:12:59.142 --> 00:13:01.472 to see the relationship of

NOTE Confidence: 0.68054526

00:13:01.472 --> 00:13:03.962 specific suburbation cell to the

NOTE Confidence: 0.68054526

00:13:03.962 --> 00:13:06.528 malignant cell and to each other.

NOTE Confidence: 0.68054526

00:13:06.528 --> 00:13:08.488 And that's actually the evolution

NOTE Confidence: 0.68054526

00:13:08.488 --> 00:13:11.004 from automated from immunos to

NOTE Confidence: 0.68054526

00:13:11.004 --> 00:13:13.233 chemistry to Multiplex incorporating

NOTE Confidence: 0.68054526

00:13:13.233 --> 00:13:16.398 image analysis and spatial analysis.

NOTE Confidence: 0.68054526

00:13:16.400 --> 00:13:18.836 And these are two faculty in our

NOTE Confidence: 0.68054526

00:13:18.836 --> 00:13:21.476 department of Edwin Para and Luisa Solis

NOTE Confidence: 0.68054526

00:13:21.476 --> 00:13:24.318 who have instrumental over the years to

NOTE Confidence: 0.68054526

00:13:24.318 --> 00:13:26.718 develops a similar Multiplex approaches.  
NOTE Confidence: 0.68054526

00:13:26.720 --> 00:13:30.740 We started after testing similar system  
NOTE Confidence: 0.68054526

00:13:30.740 --> 00:13:34.104 adopting the the system called those  
NOTE Confidence: 0.68054526

00:13:34.104 --> 00:13:38.020 days Vectra now is Polaris that have a  
NOTE Confidence: 0.68054526

00:13:38.020 --> 00:13:40.780 very strong chemistry for a multiplexing  
NOTE Confidence: 0.68054526

00:13:40.780 --> 00:13:42.880 different antibodies in tissue.  
NOTE Confidence: 0.68054526

00:13:42.880 --> 00:13:45.328 Now I think that they can do up to  
NOTE Confidence: 0.68054526

00:13:45.328 --> 00:13:49.275 9 different antibodies where we save  
NOTE Confidence: 0.68054526

00:13:49.275 --> 00:13:54.078 one spot for the nuclear staining  
NOTE Confidence: 0.68054526

00:13:54.080 --> 00:13:58.340 ADAPI and it's important as I said  
NOTE Confidence: 0.68054526

00:13:58.340 --> 00:14:00.160 to validate these Multiplex very,  
NOTE Confidence: 0.68054526

00:14:00.160 --> 00:14:02.880 very carefully with single Plex  
NOTE Confidence: 0.68054526

00:14:02.880 --> 00:14:05.056 monochemistry followed by single  
NOTE Confidence: 0.68054526

00:14:05.056 --> 00:14:07.535 Plex immuno fluorescent and then put  
NOTE Confidence: 0.68054526

00:14:07.535 --> 00:14:09.990 it in combination in the sequence  
NOTE Confidence: 0.68054526

00:14:09.990 --> 00:14:11.952 that you find best result.

NOTE Confidence: 0.68054526

00:14:11.952 --> 00:14:15.639 We have done this over the last seven years,

NOTE Confidence: 0.68054526

00:14:15.640 --> 00:14:16.308 a year.

NOTE Confidence: 0.68054526

00:14:16.308 --> 00:14:18.312 We have over 30 panels that

NOTE Confidence: 0.68054526

00:14:18.312 --> 00:14:19.800 will have developed,

NOTE Confidence: 0.68054526

00:14:19.800 --> 00:14:21.179 but the panel that will have used

NOTE Confidence: 0.68054526

00:14:21.179 --> 00:14:22.798 the most are the two initial panels.

NOTE Confidence: 0.68054526

00:14:22.800 --> 00:14:25.017 I'm going to describe briefly because

NOTE Confidence: 0.68054526

00:14:25.017 --> 00:14:27.713 I'm going to show some data in lung

NOTE Confidence: 0.68054526

00:14:27.713 --> 00:14:30.030 cancer cohort with this spanning one

NOTE Confidence: 0.68054526

00:14:30.030 --> 00:14:32.520 that they define it usually speedy

NOTE Confidence: 0.68054526

00:14:32.520 --> 00:14:35.130 1PD1 centric because we look for

NOTE Confidence: 0.68054526

00:14:35.130 --> 00:14:37.760 the expression of the markers in

NOTE Confidence: 0.68054526

00:14:37.760 --> 00:14:39.852 malignant cells characterized by

NOTE Confidence: 0.68054526

00:14:39.852 --> 00:14:42.467 Pancytokeratene and we have some

NOTE Confidence: 0.68054526

00:14:42.467 --> 00:14:45.278 other T cells and macrophage marker,

NOTE Confidence: 0.68054526

00:14:45.280 --> 00:14:46.234 very basic markers.  
NOTE Confidence: 0.68054526

00:14:46.234 --> 00:14:48.811 And then the second panel is a panel  
NOTE Confidence: 0.68054526

00:14:48.811 --> 00:14:51.099 that we explore a little bit more the  
NOTE Confidence: 0.68054526

00:14:51.099 --> 00:14:53.432 T cell population of cells and we  
NOTE Confidence: 0.68054526

00:14:53.432 --> 00:14:55.920 keeping you know the pancytokeratine.  
NOTE Confidence: 0.95609379

00:14:58.520 --> 00:15:02.160 So of course like you have done here,  
NOTE Confidence: 0.95609379

00:15:02.160 --> 00:15:05.852 we have explore some other Multiplex  
NOTE Confidence: 0.95609379

00:15:05.852 --> 00:15:09.040 approaches that could be more suitable  
NOTE Confidence: 0.95609379

00:15:09.040 --> 00:15:12.160 for discovery approaches in this field  
NOTE Confidence: 0.95609379

00:15:12.253 --> 00:15:15.210 that can go to up to 4060 markers,  
NOTE Confidence: 0.95609379

00:15:15.210 --> 00:15:17.710 explore the imaging mass  
NOTE Confidence: 0.95609379

00:15:17.710 --> 00:15:21.000 cytometry Iperion site of system.  
NOTE Confidence: 0.95609379

00:15:21.000 --> 00:15:23.009 We have a 35 markers panel that  
NOTE Confidence: 0.95609379

00:15:23.009 --> 00:15:25.080 we have run in some projects.  
NOTE Confidence: 0.95609379

00:15:25.080 --> 00:15:27.205 We have actually working actively  
NOTE Confidence: 0.95609379

00:15:27.205 --> 00:15:29.976 with colleagues and now it's called

NOTE Confidence: 0.95609379

00:15:29.976 --> 00:15:32.475 Phenocycler fusion that we have a panel

NOTE Confidence: 0.95609379

00:15:32.475 --> 00:15:35.227 of 33 markers and we are very actively

NOTE Confidence: 0.95609379

00:15:35.227 --> 00:15:37.432 working with something called Nanoting

NOTE Confidence: 0.95609379

00:15:37.432 --> 00:15:40.520 GMX that you can do also for the panels.

NOTE Confidence: 0.95609379

00:15:40.520 --> 00:15:43.118 Some of these are fluorescent based,

NOTE Confidence: 0.95609379

00:15:43.120 --> 00:15:45.157 some of these are mass spec based.

NOTE Confidence: 0.95609379

00:15:45.160 --> 00:15:47.120 I'm not going to talk about that

NOTE Confidence: 0.95609379

00:15:47.120 --> 00:15:49.120 and maybe because we got one,

NOTE Confidence: 0.95609379

00:15:49.120 --> 00:15:51.160 it's not working.

NOTE Confidence: 0.95609379

00:15:51.160 --> 00:15:53.825 So then of course everybody's

NOTE Confidence: 0.95609379

00:15:53.825 --> 00:15:56.435 excited with the opportunity to do

NOTE Confidence: 0.95609379

00:15:56.440 --> 00:15:58.224 transcriptome analysis in tissues.

NOTE Confidence: 0.95609379

00:15:58.224 --> 00:16:00.900 I'm talking about formally fixed paraffin

NOTE Confidence: 0.95609379

00:16:00.968 --> 00:16:03.434 embedded specimens and add the special

NOTE Confidence: 0.95609379

00:16:03.434 --> 00:16:05.320 transcript official analysis of it.

NOTE Confidence: 0.95609379

00:16:05.320 --> 00:16:07.208 So this is something that we are doing  
NOTE Confidence: 0.95609379

00:16:07.208 --> 00:16:09.477 and I'm going to show any data about that.  
NOTE Confidence: 0.95609379

00:16:09.480 --> 00:16:12.930 And all these actually effort of  
NOTE Confidence: 0.95609379

00:16:12.930 --> 00:16:15.230 characterizing the immune response  
NOTE Confidence: 0.95609379

00:16:15.322 --> 00:16:18.106 in tissue specimens is has been  
NOTE Confidence: 0.95609379

00:16:18.106 --> 00:16:21.740 very much enhanced for with the use  
NOTE Confidence: 0.95609379

00:16:21.740 --> 00:16:23.996 of computational pathology tools.  
NOTE Confidence: 0.95609379

00:16:24.000 --> 00:16:25.344 And I know that everybody likes  
NOTE Confidence: 0.95609379

00:16:25.344 --> 00:16:26.240 to talk about AI,  
NOTE Confidence: 0.95609379

00:16:26.240 --> 00:16:28.400 people jump to it very easily.  
NOTE Confidence: 0.95609379

00:16:28.400 --> 00:16:29.760 I I think for pathologists,  
NOTE Confidence: 0.95609379

00:16:29.760 --> 00:16:31.965 we have a process here which is  
NOTE Confidence: 0.95609379

00:16:31.965 --> 00:16:33.240 actually digital pathology scan  
NOTE Confidence: 0.95609379

00:16:33.240 --> 00:16:35.128 stuff and scan them well, right.  
NOTE Confidence: 0.95609379

00:16:35.128 --> 00:16:38.182 And there are challenges there that  
NOTE Confidence: 0.95609379

00:16:38.182 --> 00:16:41.479 are not trivial then do image analysis,

NOTE Confidence: 0.95609379

00:16:41.480 --> 00:16:41.800 right.

NOTE Confidence: 0.95609379

00:16:41.800 --> 00:16:43.784 That's the next step and then

NOTE Confidence: 0.95609379

00:16:43.784 --> 00:16:44.840 learn from that,

NOTE Confidence: 0.95609379

00:16:44.840 --> 00:16:46.115 that's the machine learning and

NOTE Confidence: 0.95609379

00:16:46.115 --> 00:16:47.659 then you can start talking about

NOTE Confidence: 0.95609379

00:16:47.659 --> 00:16:48.759 the AI and this concept.

NOTE Confidence: 0.95609379

00:16:48.760 --> 00:16:51.280 Computational pathology has been very

NOTE Confidence: 0.95609379

00:16:51.280 --> 00:16:54.680 useful because we as pathologists

NOTE Confidence: 0.95609379

00:16:54.680 --> 00:16:56.892 are very good and they have been

NOTE Confidence: 0.95609379

00:16:56.892 --> 00:16:58.761 shown many times to identify

NOTE Confidence: 0.95609379

00:16:58.761 --> 00:17:00.764 expression of markers and with

NOTE Confidence: 0.95609379

00:17:00.764 --> 00:17:02.212 chromogenic immunostock energy that

NOTE Confidence: 0.95609379

00:17:02.212 --> 00:17:04.160 they are locating the nucleus,

NOTE Confidence: 0.95609379

00:17:04.160 --> 00:17:05.756 they're locating them in the membrane.

NOTE Confidence: 0.95609379

00:17:05.760 --> 00:17:08.280 The cytoplasm or a combination in

NOTE Confidence: 0.95609379

00:17:08.280 --> 00:17:11.238 Malina cells have a good eye for that,  
NOTE Confidence: 0.95609379

00:17:11.240 --> 00:17:14.078 especially the large cells like carcinomas.  
NOTE Confidence: 0.95609379

00:17:14.080 --> 00:17:16.360 But it's a challenge to identify  
NOTE Confidence: 0.95609379

00:17:16.360 --> 00:17:18.738 those markers when they express in  
NOTE Confidence: 0.95609379

00:17:18.738 --> 00:17:20.655 immune cells that you see as the  
NOTE Confidence: 0.95609379

00:17:20.655 --> 00:17:22.851 dot and you don't know what type of  
NOTE Confidence: 0.95609379

00:17:22.851 --> 00:17:24.861 immune cell even some macrophages are  
NOTE Confidence: 0.95609379

00:17:24.861 --> 00:17:26.335 challenging sometime the middle of  
NOTE Confidence: 0.95609379

00:17:26.335 --> 00:17:28.564 the tumor is you don't know if it's  
NOTE Confidence: 0.95609379

00:17:28.564 --> 00:17:30.074 the malignant sort of macrophage.  
NOTE Confidence: 0.95609379

00:17:30.080 --> 00:17:33.192 So in that and also quantify that is  
NOTE Confidence: 0.95609379

00:17:33.192 --> 00:17:35.727 very subjective and there are data  
NOTE Confidence: 0.95609379

00:17:35.727 --> 00:17:37.822 that actually with David published  
NOTE Confidence: 0.95609379

00:17:37.822 --> 00:17:40.000 on that right and I just remember  
NOTE Confidence: 0.95609379

00:17:40.000 --> 00:17:41.920 I should have put the slide on it.  
NOTE Confidence: 0.95609379

00:17:41.920 --> 00:17:44.914 How about we are quantifying immune

NOTE Confidence: 0.95609379

00:17:44.914 --> 00:17:47.757 self expressing the PDL one right

NOTE Confidence: 0.95609379

00:17:47.757 --> 00:17:50.400 and that good on the malignant side.

NOTE Confidence: 0.95609379

00:17:50.400 --> 00:17:52.770 So that's why computation I mean

NOTE Confidence: 0.95609379

00:17:52.770 --> 00:17:54.350 digital pathology and computational

NOTE Confidence: 0.95609379

00:17:54.412 --> 00:17:56.610 approach are very useful and and and

NOTE Confidence: 0.95609379

00:17:56.610 --> 00:17:58.605 this is also a way to interrogate

NOTE Confidence: 0.95609379

00:17:58.605 --> 00:18:00.500 the issue to understand the biology

NOTE Confidence: 0.95609379

00:18:00.500 --> 00:18:02.330 in this case you know transcript

NOTE Confidence: 0.95609379

00:18:02.382 --> 00:18:04.428 immunology and and people are using

NOTE Confidence: 0.95609379

00:18:04.428 --> 00:18:05.792 the same for transcriptomics.

NOTE Confidence: 0.95609379

00:18:05.800 --> 00:18:08.376 So in this case you can use them

NOTE Confidence: 0.95609379

00:18:08.376 --> 00:18:09.020 to quantify

NOTE Confidence: 0.941137886363636

00:18:09.094 --> 00:18:11.778 to study compartment heterogeneity

NOTE Confidence: 0.941137886363636

00:18:11.778 --> 00:18:15.718 and then the locations and the

NOTE Confidence: 0.941137886363636

00:18:15.718 --> 00:18:18.048 location compared to targets or

NOTE Confidence: 0.941137886363636

00:18:18.048 --> 00:18:20.360 other cells cell interaction.  
NOTE Confidence: 0.941137886363636

00:18:20.360 --> 00:18:23.318 So now this is the introduction.  
NOTE Confidence: 0.941137886363636

00:18:23.320 --> 00:18:24.520 So I'm doing OK,  
NOTE Confidence: 0.773834742

00:18:26.920 --> 00:18:29.200 I'm going to give you.  
NOTE Confidence: 0.773834742

00:18:29.200 --> 00:18:31.461 So I work, I started working lung  
NOTE Confidence: 0.773834742

00:18:31.461 --> 00:18:33.566 cancer and I'm getting all the  
NOTE Confidence: 0.773834742

00:18:33.566 --> 00:18:35.880 goals and telling all the stories.  
NOTE Confidence: 0.773834742

00:18:35.880 --> 00:18:37.908 But when working on pathogenesis lung  
NOTE Confidence: 0.773834742

00:18:37.908 --> 00:18:40.315 cancer what is the origin of cancer  
NOTE Confidence: 0.773834742

00:18:40.315 --> 00:18:42.307 is what is the prunoplastic lesion  
NOTE Confidence: 0.773834742

00:18:42.307 --> 00:18:44.655 that actually matter or pre Malinas in  
NOTE Confidence: 0.773834742

00:18:44.655 --> 00:18:47.004 the matter to develop small cell lung  
NOTE Confidence: 0.773834742

00:18:47.004 --> 00:18:49.440 cancer or non small cell lung cancer.  
NOTE Confidence: 0.773834742

00:18:49.440 --> 00:18:52.716 So I have very strong still  
NOTE Confidence: 0.773834742

00:18:52.720 --> 00:18:54.480 association and collaboration in  
NOTE Confidence: 0.773834742

00:18:54.480 --> 00:18:56.680 the early pathogenic lung cancer,

NOTE Confidence: 0.773834742

00:18:56.680 --> 00:18:59.029 but you know working in lung in in in

NOTE Confidence: 0.773834742

00:18:59.029 --> 00:19:01.650 the Cancer Center that MD Anderson we

NOTE Confidence: 0.773834742

00:19:01.650 --> 00:19:04.610 all most of our research try to focus

NOTE Confidence: 0.773834742

00:19:04.610 --> 00:19:07.357 initially in advanced metastatic disease.

NOTE Confidence: 0.773834742

00:19:07.360 --> 00:19:10.348 So we see patients with stage 4 and cancer

NOTE Confidence: 0.773834742

00:19:10.348 --> 00:19:13.080 and we do clinical trials and research,

NOTE Confidence: 0.773834742

00:19:13.080 --> 00:19:15.560 translational research in that setting

NOTE Confidence: 0.773834742

00:19:15.560 --> 00:19:17.877 and even worse it was worse before

NOTE Confidence: 0.773834742

00:19:17.877 --> 00:19:21.092 we did it mostly in their factory

NOTE Confidence: 0.773834742

00:19:21.092 --> 00:19:23.236 patient that failed chemotherapy.

NOTE Confidence: 0.773834742

00:19:23.240 --> 00:19:25.427 So and and I'm actually so happy that many

NOTE Confidence: 0.773834742

00:19:25.427 --> 00:19:27.269 of these therapies I mentioned earlier

NOTE Confidence: 0.773834742

00:19:27.269 --> 00:19:29.680 are moving to the new adjuvant space.

NOTE Confidence: 0.773834742

00:19:29.680 --> 00:19:31.944 So you can see you can do more

NOTE Confidence: 0.773834742

00:19:31.944 --> 00:19:34.455 studies of resected tumor that have

NOTE Confidence: 0.773834742

00:19:34.455 --> 00:19:36.795 been treated with different therapy.  
NOTE Confidence: 0.773834742

00:19:36.800 --> 00:19:40.033 So, so and and and I I like to show that  
NOTE Confidence: 0.773834742

00:19:40.033 --> 00:19:43.169 the progression of lung cancer is also  
NOTE Confidence: 0.773834742

00:19:43.169 --> 00:19:45.483 an opportunity to to bring discoveries  
NOTE Confidence: 0.773834742

00:19:45.483 --> 00:19:47.898 on molecular pathology or biomarkers  
NOTE Confidence: 0.773834742

00:19:47.898 --> 00:19:50.719 across the spectrum of the disease.  
NOTE Confidence: 0.773834742

00:19:50.720 --> 00:19:52.722 There are people who are doing chemo  
NOTE Confidence: 0.773834742

00:19:52.722 --> 00:19:53.931 prevention with immune checkpoints  
NOTE Confidence: 0.773834742

00:19:53.931 --> 00:19:55.719 in lung cancer to small novels,  
NOTE Confidence: 0.773834742

00:19:55.720 --> 00:19:56.266 right.  
NOTE Confidence: 0.773834742

00:19:56.266 --> 00:19:59.450 So whatever we learn on advanced  
NOTE Confidence: 0.773834742

00:19:59.450 --> 00:20:02.150 metastatic could be also or resected  
NOTE Confidence: 0.773834742

00:20:02.150 --> 00:20:04.559 tumor could be important to.  
NOTE Confidence: 0.773834742

00:20:04.560 --> 00:20:07.370 Study premalignant or low malignancy  
NOTE Confidence: 0.773834742

00:20:07.370 --> 00:20:10.600 lesions that could progress or not.  
NOTE Confidence: 0.773834742

00:20:10.600 --> 00:20:13.512 So the first example is going to be

NOTE Confidence: 0.773834742

00:20:13.512 --> 00:20:17.165 actually about some immune analysis of

NOTE Confidence: 0.773834742

00:20:17.165 --> 00:20:20.450 tissues that have these premalignancy

NOTE Confidence: 0.773834742

00:20:20.554 --> 00:20:24.479 or low grain malignancy characteristics.

NOTE Confidence: 0.773834742

00:20:24.480 --> 00:20:26.860 And this is study that was published

NOTE Confidence: 0.773834742

00:20:26.860 --> 00:20:28.924 in Nature Communication 2021 that

NOTE Confidence: 0.773834742

00:20:28.924 --> 00:20:31.079 they started with Doctor Dejima,

NOTE Confidence: 0.773834742

00:20:31.080 --> 00:20:33.426 A pathologist from Japan who visited

NOTE Confidence: 0.773834742

00:20:33.426 --> 00:20:35.404 for three years and was finished

NOTE Confidence: 0.773834742

00:20:35.404 --> 00:20:36.476 by Doctor Jay Sang,

NOTE Confidence: 0.773834742

00:20:36.480 --> 00:20:39.040 the faculty interested maker oncology.

NOTE Confidence: 0.773834742

00:20:39.040 --> 00:20:41.644 And in this one we collected specimen

NOTE Confidence: 0.773834742

00:20:41.644 --> 00:20:44.230 from Japan that had these atypical

NOTE Confidence: 0.773834742

00:20:44.230 --> 00:20:46.086 adenomatous dysplasia that is believed

NOTE Confidence: 0.773834742

00:20:46.086 --> 00:20:49.776 to be the precursor of at least a

NOTE Confidence: 0.773834742

00:20:49.776 --> 00:20:51.556 substance or lung adenocarcinoma.

NOTE Confidence: 0.773834742

00:20:51.560 --> 00:20:54.116 We have a few adenocarcinoma inside

NOTE Confidence: 0.773834742

00:20:54.116 --> 00:20:56.649 that means malignant cells that are

NOTE Confidence: 0.773834742

00:20:56.649 --> 00:20:58.917 not inviting invading which is but

NOTE Confidence: 0.773834742

00:20:58.917 --> 00:21:01.172 invasion is a is a controversial

NOTE Confidence: 0.773834742

00:21:01.172 --> 00:21:03.314 topic in in Langa carcinoma but

NOTE Confidence: 0.773834742

00:21:03.320 --> 00:21:05.910 we thought that we had inside the

NOTE Confidence: 0.773834742

00:21:05.910 --> 00:21:07.880 lesions and we have micro invasive

NOTE Confidence: 0.773834742

00:21:07.880 --> 00:21:09.880 carcinomas and then invasive carcinoma.

NOTE Confidence: 0.773834742

00:21:09.880 --> 00:21:11.264 This is small number,

NOTE Confidence: 0.773834742

00:21:11.264 --> 00:21:13.974 but we decided to do this is to do

NOTE Confidence: 0.773834742

00:21:13.974 --> 00:21:16.422 a kind of a kind of comprehensive

NOTE Confidence: 0.773834742

00:21:16.422 --> 00:21:18.387 approach based on different technology

NOTE Confidence: 0.773834742

00:21:18.387 --> 00:21:21.075 that we work in these formally fixed

NOTE Confidence: 0.773834742

00:21:21.075 --> 00:21:23.318 paraffin and visited small lesions.

NOTE Confidence: 0.773834742

00:21:23.320 --> 00:21:27.064 We run an RNA expression using a mono

NOTE Confidence: 0.773834742

00:21:27.064 --> 00:21:30.000 oncology panel of 100 and 77170 genes.

NOTE Confidence: 0.773834742  
00:21:30.000 --> 00:21:32.500 From nanostream we run multiplexing  
NOTE Confidence: 0.773834742  
00:21:32.500 --> 00:21:33.000 monoforescence,  
NOTE Confidence: 0.773834742  
00:21:33.000 --> 00:21:35.556 the two panel that already mentioned  
NOTE Confidence: 0.773834742  
00:21:35.560 --> 00:21:38.752 PD1PD1 and T cells TCR SYNC sequencing  
NOTE Confidence: 0.773834742  
00:21:38.752 --> 00:21:42.363 call it some sequencing of global  
NOTE Confidence: 0.773834742  
00:21:42.363 --> 00:21:44.576 methylation and basically just to  
NOTE Confidence: 0.773834742  
00:21:44.576 --> 00:21:47.440 give you the summary of the result.  
NOTE Confidence: 0.773834742  
00:21:47.440 --> 00:21:49.890 So what we found is that when  
NOTE Confidence: 0.773834742  
00:21:49.890 --> 00:21:50.940 we increase on  
NOTE Confidence: 0.753447219444444  
00:21:51.022 --> 00:21:53.130 the malignant potential or  
NOTE Confidence: 0.753447219444444  
00:21:53.130 --> 00:21:55.880 malignancy future of these lesions,  
NOTE Confidence: 0.753447219444444  
00:21:55.880 --> 00:21:59.222 we found that RNA level studying  
NOTE Confidence: 0.753447219444444  
00:21:59.222 --> 00:22:01.118 these immune related genes,  
NOTE Confidence: 0.753447219444444  
00:22:01.120 --> 00:22:04.172 we saw an increase in later stages  
NOTE Confidence: 0.753447219444444  
00:22:04.172 --> 00:22:06.858 this progression of increase of  
NOTE Confidence: 0.753447219444444

00:22:06.858 --> 00:22:09.180 immunosuppressor gene status with  
NOTE Confidence: 0.753447219444444

00:22:09.180 --> 00:22:11.080 the decrease of immune activation.  
NOTE Confidence: 0.753447219444444

00:22:11.080 --> 00:22:13.864 The maximum number of Cytotoxic T cell that  
NOTE Confidence: 0.753447219444444

00:22:13.864 --> 00:22:16.547 we found was in the adjacent normal tissue.  
NOTE Confidence: 0.753447219444444

00:22:16.547 --> 00:22:19.410 These are big patients that may have  
NOTE Confidence: 0.753447219444444

00:22:19.478 --> 00:22:21.998 been supposed to tobacco and had some  
NOTE Confidence: 0.753447219444444

00:22:22.000 --> 00:22:24.982 COPD features and this actually with  
NOTE Confidence: 0.753447219444444

00:22:24.982 --> 00:22:27.760 timer deconvolution of the RNA data.  
NOTE Confidence: 0.753447219444444

00:22:27.760 --> 00:22:30.430 We thought that would identify CD40  
NOTE Confidence: 0.753447219444444

00:22:30.430 --> 00:22:33.129 lymphocyte that were increasing that could  
NOTE Confidence: 0.753447219444444

00:22:33.129 --> 00:22:35.254 be related to these immunosuppressive  
NOTE Confidence: 0.753447219444444

00:22:35.254 --> 00:22:38.006 genes state and we thought that our  
NOTE Confidence: 0.753447219444444

00:22:38.006 --> 00:22:40.118 direct cells we could improve it.  
NOTE Confidence: 0.753447219444444

00:22:40.120 --> 00:22:42.311 That's why we ran the Multiplex multiple  
NOTE Confidence: 0.753447219444444

00:22:42.311 --> 00:22:44.358 for Essence show you the next slide.  
NOTE Confidence: 0.753447219444444

00:22:44.360 --> 00:22:46.516 We found an increase in the density

NOTE Confidence: 0.753447219444444  
00:22:46.516 --> 00:22:48.512 and diversity by reviews on coronality  
NOTE Confidence: 0.753447219444444  
00:22:48.512 --> 00:22:50.871 of the T cells that were expanding.  
NOTE Confidence: 0.753447219444444  
00:22:50.880 --> 00:22:54.485 And also we saw as expected increased  
NOTE Confidence: 0.753447219444444  
00:22:54.485 --> 00:22:58.098 copy number changes allelic imbalance  
NOTE Confidence: 0.753447219444444  
00:22:58.098 --> 00:23:00.410 which is a reflection of loss of the  
NOTE Confidence: 0.753447219444444  
00:23:00.469 --> 00:23:02.557 residosity and increase on new antigen.  
NOTE Confidence: 0.753447219444444  
00:23:02.560 --> 00:23:04.776 And what we saw in the later stages  
NOTE Confidence: 0.753447219444444  
00:23:04.776 --> 00:23:07.319 in the micro invasive and carcinoma,  
NOTE Confidence: 0.753447219444444  
00:23:07.320 --> 00:23:10.393 a higher frequency HLA loss of the  
NOTE Confidence: 0.753447219444444  
00:23:10.393 --> 00:23:12.837 residosity that could associate with  
NOTE Confidence: 0.753447219444444  
00:23:12.837 --> 00:23:15.780 these can reduce of immune activation  
NOTE Confidence: 0.753447219444444  
00:23:15.780 --> 00:23:18.156 and increase of immune repression.  
NOTE Confidence: 0.753447219444444  
00:23:18.156 --> 00:23:20.772 So this Malina cell could escape  
NOTE Confidence: 0.753447219444444  
00:23:20.772 --> 00:23:23.844 the immune system. We can base it.  
NOTE Confidence: 0.753447219444444  
00:23:23.844 --> 00:23:25.608 The multiplexing Monoporesia actually  
NOTE Confidence: 0.753447219444444

00:23:25.608 --> 00:23:27.851 confirmed that we saw an increase  
NOTE Confidence: 0.753447219444444

00:23:27.851 --> 00:23:29.795 of direct cells and a reduction  
NOTE Confidence: 0.753447219444444

00:23:29.862 --> 00:23:31.447 of cytotoxicity cells and this  
NOTE Confidence: 0.753447219444444

00:23:31.447 --> 00:23:33.032 is going to go to,  
NOTE Confidence: 0.753447219444444

00:23:33.040 --> 00:23:36.518 sorry to this slide in which actually  
NOTE Confidence: 0.753447219444444

00:23:36.518 --> 00:23:38.880 we are not cannot show you the details,  
NOTE Confidence: 0.753447219444444

00:23:38.880 --> 00:23:42.016 but actually it shows this an example  
NOTE Confidence: 0.753447219444444

00:23:42.016 --> 00:23:45.385 of the increase of the direct cells and  
NOTE Confidence: 0.753447219444444

00:23:45.385 --> 00:23:48.235 decrease of Cytotox activated these cells  
NOTE Confidence: 0.753447219444444

00:23:48.240 --> 00:23:51.984 and and this is the data showing reduce  
NOTE Confidence: 0.753447219444444

00:23:51.984 --> 00:23:54.567 on clinality and increase in diversity.  
NOTE Confidence: 0.753447219444444

00:23:54.567 --> 00:23:57.570 So all these show very early on  
NOTE Confidence: 0.753447219444444

00:23:57.658 --> 00:24:00.340 this stage in the transformation of  
NOTE Confidence: 0.753447219444444

00:24:00.340 --> 00:24:03.016 the South that is associated with  
NOTE Confidence: 0.753447219444444

00:24:03.016 --> 00:24:05.680 an immune response from the coast.  
NOTE Confidence: 0.753447219444444

00:24:05.680 --> 00:24:08.939 But then you lose and some suppressor

NOTE Confidence: 0.753447219444444  
00:24:08.939 --> 00:24:11.592 mechanisms trigger in and may explain more  
NOTE Confidence: 0.753447219444444  
00:24:11.592 --> 00:24:14.196 other things the progression of this lesion.  
NOTE Confidence: 0.753447219444444  
00:24:14.200 --> 00:24:16.426 And actually this is the work that  
NOTE Confidence: 0.753447219444444  
00:24:16.426 --> 00:24:18.399 have been doing over the years.  
NOTE Confidence: 0.753447219444444  
00:24:18.400 --> 00:24:21.582 And then we actually added to the  
NOTE Confidence: 0.753447219444444  
00:24:21.582 --> 00:24:23.037 genomic findings that we're ready,  
NOTE Confidence: 0.753447219444444  
00:24:23.040 --> 00:24:27.729 we're aware the mechanisms of the  
NOTE Confidence: 0.753447219444444  
00:24:27.729 --> 00:24:29.943 role of immune response in the  
NOTE Confidence: 0.753447219444444  
00:24:29.943 --> 00:24:31.680 evolution of these lesions.  
NOTE Confidence: 0.753447219444444  
00:24:31.680 --> 00:24:33.570 So now I'm going to give you a couple  
NOTE Confidence: 0.753447219444444  
00:24:33.570 --> 00:24:35.460 of examples of projects that we have  
NOTE Confidence: 0.753447219444444  
00:24:35.460 --> 00:24:37.026 done in surgical resected tumor,  
NOTE Confidence: 0.753447219444444  
00:24:37.026 --> 00:24:39.078 non small cell lung cancer stages,  
NOTE Confidence: 0.753447219444444  
00:24:39.080 --> 00:24:41.502 one and two in these cases usually  
NOTE Confidence: 0.753447219444444  
00:24:41.502 --> 00:24:44.348 is they have not been treated with  
NOTE Confidence: 0.753447219444444

00:24:44.348 --> 00:24:46.513 a therapy before the resection.  
NOTE Confidence: 0.753447219444444

00:24:46.520 --> 00:24:48.936 It's hard to have a clinical endpoint and  
NOTE Confidence: 0.753447219444444

00:24:48.936 --> 00:24:51.399 the clinical endpoint is outcome of the page,  
NOTE Confidence: 0.753447219444444

00:24:51.400 --> 00:24:51.804 right.  
NOTE Confidence: 0.753447219444444

00:24:51.804 --> 00:24:54.228 So when I refer to recurrent  
NOTE Confidence: 0.753447219444444

00:24:54.228 --> 00:24:56.480 free survival or overall survival  
NOTE Confidence: 0.753447219444444

00:24:56.480 --> 00:24:59.360 after resection as a an outcome,  
NOTE Confidence: 0.753447219444444

00:24:59.360 --> 00:25:01.760 you know comparing the findings  
NOTE Confidence: 0.753447219444444

00:25:01.760 --> 00:25:03.914 on the immune response that we did  
NOTE Confidence: 0.753447219444444

00:25:03.914 --> 00:25:05.320 the study that we did.  
NOTE Confidence: 0.753447219444444

00:25:05.320 --> 00:25:07.864 But before that when we developed  
NOTE Confidence: 0.753447219444444

00:25:07.864 --> 00:25:10.519 this Multiplex assay and lung cancer,  
NOTE Confidence: 0.753447219444444

00:25:10.520 --> 00:25:12.842 we're looking for proof of principle  
NOTE Confidence: 0.753447219444444

00:25:12.842 --> 00:25:14.390 study something that we  
NOTE Confidence: 0.854482373888889

00:25:14.456 --> 00:25:16.997 can show that we are finding something  
NOTE Confidence: 0.854482373888889

00:25:16.997 --> 00:25:18.915 that's can correlate with the clinical

NOTE Confidence: 0.854482373888889  
00:25:18.915 --> 00:25:20.884 status of the patient and people  
NOTE Confidence: 0.854482373888889  
00:25:20.884 --> 00:25:23.418 have been talking and they have been  
NOTE Confidence: 0.854482373888889  
00:25:23.418 --> 00:25:25.203 shown that chemotherapy induced  
NOTE Confidence: 0.854482373888889  
00:25:25.203 --> 00:25:27.909 immune response in tumor by trying  
NOTE Confidence: 0.854482373888889  
00:25:27.909 --> 00:25:30.334 cells you know and the antigens are  
NOTE Confidence: 0.854482373888889  
00:25:30.334 --> 00:25:32.621 are available to the immune system  
NOTE Confidence: 0.854482373888889  
00:25:32.621 --> 00:25:34.876 that's elicit the immune response.  
NOTE Confidence: 0.854482373888889  
00:25:34.880 --> 00:25:36.976 So but nobody has shown that and it's  
NOTE Confidence: 0.854482373888889  
00:25:36.976 --> 00:25:39.204 hard to get biopsies from patient  
NOTE Confidence: 0.854482373888889  
00:25:39.204 --> 00:25:40.840 before and after chemotherapy.  
NOTE Confidence: 0.854482373888889  
00:25:40.840 --> 00:25:45.360 So we did with these two panels again  
NOTE Confidence: 0.854482373888889  
00:25:45.360 --> 00:25:49.720 PD1PD1 centric, T cells centric,  
NOTE Confidence: 0.854482373888889  
00:25:49.720 --> 00:25:52.840 we studied 61 chemo naive cases,  
NOTE Confidence: 0.854482373888889  
00:25:52.840 --> 00:25:55.078 surgical resected non small cell cancer,  
NOTE Confidence: 0.854482373888889  
00:25:55.080 --> 00:25:58.391 they were not exposed to any therapy  
NOTE Confidence: 0.854482373888889

00:25:58.391 --> 00:26:01.939 versus 51 were controlled by a sex story

NOTE Confidence: 0.854482373888889

00:26:01.939 --> 00:26:04.712 and so on 51 treated with chemotherapy,

NOTE Confidence: 0.854482373888889

00:26:04.712 --> 00:26:06.264 platinum based therapy and

NOTE Confidence: 0.854482373888889

00:26:06.264 --> 00:26:08.238 we found what was suspected.

NOTE Confidence: 0.854482373888889

00:26:08.240 --> 00:26:09.748 So we see activated,

NOTE Confidence: 0.854482373888889

00:26:09.748 --> 00:26:11.633 we see more T cells,

NOTE Confidence: 0.854482373888889

00:26:11.640 --> 00:26:12.930 memory cells,

NOTE Confidence: 0.854482373888889

00:26:12.930 --> 00:26:16.155 cells with exposure to antigens

NOTE Confidence: 0.854482373888889

00:26:16.160 --> 00:26:18.626 higher in the one the patient

NOTE Confidence: 0.854482373888889

00:26:18.626 --> 00:26:20.270 that have received chemotherapy

NOTE Confidence: 0.854482373888889

00:26:20.339 --> 00:26:22.649 and also we saw an activation and

NOTE Confidence: 0.854482373888889

00:26:22.649 --> 00:26:24.719 increase of PDL one expression.

NOTE Confidence: 0.854482373888889

00:26:24.720 --> 00:26:27.975 So it was published in 2018 by Doctor

NOTE Confidence: 0.854482373888889

00:26:27.975 --> 00:26:30.880 Parry in journal of in in monology.

NOTE Confidence: 0.637016285384615

00:26:33.120 --> 00:26:35.196 So then we haven't been applying

NOTE Confidence: 0.637016285384615

00:26:35.196 --> 00:26:37.440 these to actually your new argument

NOTE Confidence: 0.637016285384615  
00:26:37.440 --> 00:26:39.600 trials in which patients have  
NOTE Confidence: 0.637016285384615  
00:26:39.600 --> 00:26:41.360 received immune checkpoint therapy,  
NOTE Confidence: 0.637016285384615  
00:26:41.360 --> 00:26:42.868 single agent in combination  
NOTE Confidence: 0.637016285384615  
00:26:42.868 --> 00:26:43.999 or weak chemotherapy.  
NOTE Confidence: 0.637016285384615  
00:26:44.000 --> 00:26:45.664 I know when I show enough of the  
NOTE Confidence: 0.637016285384615  
00:26:45.664 --> 00:26:47.128 data and we haven't discovered  
NOTE Confidence: 0.637016285384615  
00:26:47.128 --> 00:26:48.688 anything exciting by doing the  
NOTE Confidence: 0.637016285384615  
00:26:48.688 --> 00:26:50.502 study but we have shown what people  
NOTE Confidence: 0.637016285384615  
00:26:50.502 --> 00:26:52.080 expect and this is an example.  
NOTE Confidence: 0.637016285384615  
00:26:52.080 --> 00:26:55.216 This is a new argument trial running  
NOTE Confidence: 0.637016285384615  
00:26:55.216 --> 00:26:58.510 in in our institution in the Anderson  
NOTE Confidence: 0.637016285384615  
00:26:58.510 --> 00:27:01.726 which they compare in patients use of  
NOTE Confidence: 0.637016285384615  
00:27:01.726 --> 00:27:04.070 anti PD1 ebolumab with the combination  
NOTE Confidence: 0.637016285384615  
00:27:04.070 --> 00:27:06.120 of drug nivolumab and epidumab.  
NOTE Confidence: 0.637016285384615  
00:27:06.120 --> 00:27:09.735 Anti PD one acid DA four and and we  
NOTE Confidence: 0.637016285384615

00:27:09.735 --> 00:27:11.355 show by multiplexing monoparesin  
NOTE Confidence: 0.637016285384615

00:27:11.355 --> 00:27:13.331 using the similar patterns that  
NOTE Confidence: 0.637016285384615

00:27:13.331 --> 00:27:15.401 when they add the second drug  
NOTE Confidence: 0.637016285384615

00:27:15.401 --> 00:27:17.556 the anti CDA 4 to anti PD one.  
NOTE Confidence: 0.637016285384615

00:27:17.560 --> 00:27:20.170 Actually they see a more mounting  
NOTE Confidence: 0.637016285384615

00:27:20.170 --> 00:27:22.640 a more robust immune response  
NOTE Confidence: 0.637016285384615

00:27:22.640 --> 00:27:26.450 based on T cells activation mostly  
NOTE Confidence: 0.637016285384615

00:27:26.450 --> 00:27:29.386 in the treated in the patient  
NOTE Confidence: 0.637016285384615

00:27:29.386 --> 00:27:30.754 that received this treatment.  
NOTE Confidence: 0.637016285384615

00:27:30.760 --> 00:27:32.832 And this was along with some other tests  
NOTE Confidence: 0.637016285384615

00:27:32.832 --> 00:27:35.356 done in the peripheral blood of the patient.  
NOTE Confidence: 0.637016285384615

00:27:35.360 --> 00:27:37.840 So this is something that we have done  
NOTE Confidence: 0.637016285384615

00:27:37.840 --> 00:27:41.154 in in in at least four or five illegal  
NOTE Confidence: 0.637016285384615

00:27:41.154 --> 00:27:43.110 trials to contribute to validate  
NOTE Confidence: 0.637016285384615

00:27:43.110 --> 00:27:45.396 some of the findings that people  
NOTE Confidence: 0.637016285384615

00:27:45.396 --> 00:27:47.204 have with other immunology tools.

NOTE Confidence: 0.637016285384615  
00:27:47.204 --> 00:27:48.944 But they haven't been actually  
NOTE Confidence: 0.637016285384615  
00:27:48.944 --> 00:27:50.537 discovered by themselves and it's  
NOTE Confidence: 0.637016285384615  
00:27:50.537 --> 00:27:52.504 very hard to discover in my opinion  
NOTE Confidence: 0.637016285384615  
00:27:52.561 --> 00:27:54.199 with a limited number of panels.  
NOTE Confidence: 0.637016285384615  
00:27:54.200 --> 00:27:56.818 I think that you need to go  
NOTE Confidence: 0.637016285384615  
00:27:56.818 --> 00:27:59.080 with use higher multiplexes.  
NOTE Confidence: 0.637016285384615  
00:27:59.080 --> 00:28:00.840 This is a nice story,  
NOTE Confidence: 0.637016285384615  
00:28:00.840 --> 00:28:03.960 very brief that we published in  
NOTE Confidence: 0.637016285384615  
00:28:03.960 --> 00:28:05.718 2018 in John after a psychology  
NOTE Confidence: 0.545408055  
00:28:07.760 --> 00:28:09.760 and we're using classic  
NOTE Confidence: 0.545408055  
00:28:09.760 --> 00:28:10.760 chromogenic immunohistochemic.  
NOTE Confidence: 0.545408055  
00:28:10.760 --> 00:28:12.704 We decided to start studying on  
NOTE Confidence: 0.545408055  
00:28:12.704 --> 00:28:15.066 top of PDL 1 immune checkpoint  
NOTE Confidence: 0.545408055  
00:28:15.066 --> 00:28:17.820 others and we have eight others.  
NOTE Confidence: 0.545408055  
00:28:17.820 --> 00:28:20.790 You know you can see the 7384 either  
NOTE Confidence: 0.545408055

00:28:20.790 --> 00:28:25.152 one ICOS Vista like what like 3 of  
NOTE Confidence: 0.545408055

00:28:25.152 --> 00:28:28.504 40 at team three and the reason  
NOTE Confidence: 0.545408055

00:28:28.504 --> 00:28:32.252 was is I was thinking is is is what  
NOTE Confidence: 0.545408055

00:28:32.252 --> 00:28:34.950 is the chances that lung cancer  
NOTE Confidence: 0.545408055

00:28:34.950 --> 00:28:38.240 tumor express more of one of these  
NOTE Confidence: 0.545408055

00:28:38.339 --> 00:28:41.572 immune checkpoints in which level  
NOTE Confidence: 0.545408055

00:28:41.572 --> 00:28:44.716 and is that opening opportunity for  
NOTE Confidence: 0.545408055

00:28:44.716 --> 00:28:47.292 combination and this is and and how  
NOTE Confidence: 0.545408055

00:28:47.292 --> 00:28:49.368 we can also learn about studying  
NOTE Confidence: 0.545408055

00:28:49.368 --> 00:28:51.392 these immune checkpoints some of  
NOTE Confidence: 0.545408055

00:28:51.392 --> 00:28:53.497 them expressed in malignant cells  
NOTE Confidence: 0.545408055

00:28:53.497 --> 00:28:55.350 only most of them expressed in  
NOTE Confidence: 0.545408055

00:28:55.350 --> 00:28:57.109 malignant cell immune cells some of  
NOTE Confidence: 0.545408055

00:28:57.109 --> 00:28:58.759 them expressed only in immune cells.  
NOTE Confidence: 0.545408055

00:28:58.760 --> 00:29:00.446 It's very hard to quantify but  
NOTE Confidence: 0.545408055

00:29:00.446 --> 00:29:02.759 we did it with digital pathology.

NOTE Confidence: 0.545408055

00:29:02.760 --> 00:29:05.259 I mean analysis in 184 non small

NOTE Confidence: 0.545408055

00:29:05.259 --> 00:29:06.967 cell and cancer adenocarcinoma

NOTE Confidence: 0.545408055

00:29:06.967 --> 00:29:09.757 squamous or carcinoma and this

NOTE Confidence: 0.726032648

00:29:12.680 --> 00:29:16.712 heat map showed the the data that we

NOTE Confidence: 0.726032648

00:29:16.712 --> 00:29:20.276 found and we don't we don't what is

NOTE Confidence: 0.726032648

00:29:20.276 --> 00:29:22.526 consider PL-1 positive in lung cancer.

NOTE Confidence: 0.726032648

00:29:22.526 --> 00:29:25.399 So we put the cases from higher to lower

NOTE Confidence: 0.726032648

00:29:25.400 --> 00:29:27.276 based on the percent of malignant cell

NOTE Confidence: 0.726032648

00:29:27.276 --> 00:29:29.525 express in it and then the other markers

NOTE Confidence: 0.726032648

00:29:29.525 --> 00:29:31.713 in the malignant cells on the tumor

NOTE Confidence: 0.726032648

00:29:31.713 --> 00:29:33.759 associated immune cell are presented as

NOTE Confidence: 0.726032648

00:29:33.760 --> 00:29:36.560 higher than the median for the cohort.

NOTE Confidence: 0.726032648

00:29:36.560 --> 00:29:39.324 I don't know who squam because we don't know

NOTE Confidence: 0.726032648

00:29:39.324 --> 00:29:41.560 what slack 3 positive and immune cell is.

NOTE Confidence: 0.726032648

00:29:41.560 --> 00:29:45.004 So and we did that and you can see that they

NOTE Confidence: 0.726032648

00:29:45.004 --> 00:29:47.956 given two more have many of these markers  
NOTE Confidence: 0.726032648

00:29:47.956 --> 00:29:50.840 higher than the median that cohort positive.  
NOTE Confidence: 0.726032648

00:29:50.840 --> 00:29:53.381 So it's it's a very complex environment  
NOTE Confidence: 0.726032648

00:29:53.381 --> 00:29:56.222 and with there are many of these  
NOTE Confidence: 0.726032648

00:29:56.222 --> 00:29:58.317 immune checkpoint play potential role.  
NOTE Confidence: 0.726032648

00:29:58.320 --> 00:30:00.210 So I think that we're very lucky  
NOTE Confidence: 0.726032648

00:30:00.210 --> 00:30:01.839 we have to PD1 and PD1.  
NOTE Confidence: 0.726032648

00:30:01.840 --> 00:30:03.520 I don't think we haven't been  
NOTE Confidence: 0.726032648

00:30:03.520 --> 00:30:04.640 very lucky with others.  
NOTE Confidence: 0.726032648

00:30:04.640 --> 00:30:07.730 And I think because there is complexity on at  
NOTE Confidence: 0.726032648

00:30:07.730 --> 00:30:10.400 least on the immune checkpoint perspective,  
NOTE Confidence: 0.726032648

00:30:10.400 --> 00:30:13.160 there's other complexity on the cells.  
NOTE Confidence: 0.726032648

00:30:13.160 --> 00:30:15.976 So then we put all these markers in  
NOTE Confidence: 0.726032648

00:30:15.976 --> 00:30:18.276 multiplexing monoforous and it was published  
NOTE Confidence: 0.726032648

00:30:18.276 --> 00:30:20.196 in Nature Communication 2020 through.  
NOTE Confidence: 0.726032648

00:30:20.200 --> 00:30:22.440 It's a paper with a lot of data,

NOTE Confidence: 0.726032648

00:30:22.440 --> 00:30:25.791 but not a clear story because

NOTE Confidence: 0.726032648

00:30:25.791 --> 00:30:27.546 we couldn't find anything that

NOTE Confidence: 0.726032648

00:30:27.546 --> 00:30:29.640 could be called a discovery.

NOTE Confidence: 0.726032648

00:30:29.640 --> 00:30:32.025 And I know that we're doing a lot of

NOTE Confidence: 0.726032648

00:30:32.025 --> 00:30:34.480 spatial analysis now and I hope we can

NOTE Confidence: 0.726032648

00:30:34.480 --> 00:30:36.200 make more contribution with this data,

NOTE Confidence: 0.726032648

00:30:36.200 --> 00:30:39.113 but we decided to publish anyway

NOTE Confidence: 0.726032648

00:30:39.113 --> 00:30:40.277 to make it available.

NOTE Confidence: 0.726032648

00:30:40.280 --> 00:30:43.108 And what we've found is we put

NOTE Confidence: 0.726032648

00:30:43.108 --> 00:30:45.472 all those T cells,

NOTE Confidence: 0.726032648

00:30:45.472 --> 00:30:46.248 macrophages,

NOTE Confidence: 0.726032648

00:30:46.248 --> 00:30:49.528 malignant cells markers together in

NOTE Confidence: 0.726032648

00:30:49.528 --> 00:30:52.306 five panels including Myelo cells

NOTE Confidence: 0.726032648

00:30:52.306 --> 00:30:56.220 and and then you put all these immune

NOTE Confidence: 0.726032648

00:30:56.220 --> 00:30:59.880 checkpoints in the panel and we did this in,

NOTE Confidence: 0.726032648

00:30:59.880 --> 00:31:00.492 in,  
NOTE Confidence: 0.726032648

00:31:00.492 --> 00:31:06.000 in in 225 non small cell lung cancer cases,  
NOTE Confidence: 0.726032648

00:31:06.000 --> 00:31:08.120 142 I don't know 83 squamous cell carcinoma,  
NOTE Confidence: 0.726032648

00:31:08.120 --> 00:31:09.158 we always separate,  
NOTE Confidence: 0.726032648

00:31:09.158 --> 00:31:11.234 there are two different diseases for  
NOTE Confidence: 0.726032648

00:31:11.234 --> 00:31:14.014 me so for for many and so I will  
NOTE Confidence: 0.726032648

00:31:14.014 --> 00:31:16.238 look at differently and what we found  
NOTE Confidence: 0.726032648

00:31:16.240 --> 00:31:19.464 it's a lot of Co expression and I  
NOTE Confidence: 0.726032648

00:31:19.464 --> 00:31:20.976 think that this also Co expression  
NOTE Confidence: 0.726032648

00:31:20.976 --> 00:31:23.177 based on data that I've done in other  
NOTE Confidence: 0.726032648

00:31:23.177 --> 00:31:24.840 diseases or you're doing all vibes,  
NOTE Confidence: 0.726032648

00:31:24.840 --> 00:31:27.606 it's change over time chain with  
NOTE Confidence: 0.726032648

00:31:27.606 --> 00:31:30.186 tubal progression and chain with  
NOTE Confidence: 0.726032648

00:31:30.186 --> 00:31:32.540 intervention and and here you can  
NOTE Confidence: 0.726032648

00:31:32.540 --> 00:31:34.240 see that marker by marker.  
NOTE Confidence: 0.726032648

00:31:34.240 --> 00:31:35.990 They are associated with other

NOTE Confidence: 0.726032648

00:31:35.990 --> 00:31:37.040 market very frequently.

NOTE Confidence: 0.726032648

00:31:37.040 --> 00:31:40.073 I said it's a high level of Co expression

NOTE Confidence: 0.726032648

00:31:40.080 --> 00:31:42.194 of these immune checkpoint in T cells,

NOTE Confidence: 0.726032648

00:31:42.200 --> 00:31:43.040 Mylo cells,

NOTE Confidence: 0.726032648

00:31:43.040 --> 00:31:46.112 even in B cells and this is highly

NOTE Confidence: 0.726032648

00:31:46.112 --> 00:31:47.156 heterogenous in tumor.

NOTE Confidence: 0.726032648

00:31:47.160 --> 00:31:49.680 In A tumor you see areas that their

NOTE Confidence: 0.726032648

00:31:49.680 --> 00:31:51.734 expression of certain immune checkpoints

NOTE Confidence: 0.726032648

00:31:51.734 --> 00:31:54.440 combined with areas that are others.

NOTE Confidence: 0.726032648

00:31:54.440 --> 00:31:57.000 So it's highly heterogeneous.

NOTE Confidence: 0.726032648

00:31:57.000 --> 00:31:59.364 There is a high level of

NOTE Confidence: 0.726032648

00:31:59.364 --> 00:32:00.666 these immune checkpoints,

NOTE Confidence: 0.726032648

00:32:00.666 --> 00:32:02.931 some of them with inhibitory

NOTE Confidence: 0.726032648

00:32:02.931 --> 00:32:03.837 stimulatory features.

NOTE Confidence: 0.726032648

00:32:03.840 --> 00:32:07.128 It's complex it's complex so and it's

NOTE Confidence: 0.726032648

00:32:07.128 --> 00:32:08.832 different between Adam and squam across  
NOTE Confidence: 0.726032648

00:32:08.832 --> 00:32:10.798 you know that's not a big discovery.  
NOTE Confidence: 0.726032648

00:32:10.800 --> 00:32:12.550 So if you are interested in this  
NOTE Confidence: 0.726032648

00:32:12.550 --> 00:32:14.212 data this could be available to  
NOTE Confidence: 0.726032648

00:32:14.212 --> 00:32:15.642 somebody doing more spatial we  
NOTE Confidence: 0.726032648

00:32:15.642 --> 00:32:17.160 did some spatial analysis.  
NOTE Confidence: 0.726032648

00:32:17.160 --> 00:32:18.960 This is the first  
NOTE Confidence: 0.818851313333333

00:32:18.960 --> 00:32:20.292 time that actually we  
NOTE Confidence: 0.818851313333333

00:32:20.292 --> 00:32:21.957 did we published on this.  
NOTE Confidence: 0.818851313333333

00:32:21.960 --> 00:32:24.382 We follow up with another paper I'll  
NOTE Confidence: 0.818851313333333

00:32:24.382 --> 00:32:27.464 show you in a minute that we we focus  
NOTE Confidence: 0.818851313333333

00:32:27.464 --> 00:32:30.348 on spatial analysis and we found that  
NOTE Confidence: 0.818851313333333

00:32:30.348 --> 00:32:33.106 some markers we we define two two  
NOTE Confidence: 0.818851313333333

00:32:33.106 --> 00:32:36.212 ways to study especially the we have  
NOTE Confidence: 0.818851313333333

00:32:36.212 --> 00:32:39.274 two approaches to study the the the  
NOTE Confidence: 0.818851313333333

00:32:39.274 --> 00:32:41.353 facial distribution of immune cells in tumor.

NOTE Confidence: 0.818851313333333  
00:32:41.360 --> 00:32:43.615 One is by infiltration there  
NOTE Confidence: 0.818851313333333  
00:32:43.615 --> 00:32:46.480 are some index called G index,  
NOTE Confidence: 0.818851313333333  
00:32:46.480 --> 00:32:49.640 what is the level of infiltration of cells  
NOTE Confidence: 0.818851313333333  
00:32:49.640 --> 00:32:52.280 in looking at you know the tumor compartment,  
NOTE Confidence: 0.818851313333333  
00:32:52.280 --> 00:32:54.422 the malignant cell and the other is  
NOTE Confidence: 0.818851313333333  
00:32:54.422 --> 00:32:56.744 the distance of these cells of interest  
NOTE Confidence: 0.818851313333333  
00:32:56.744 --> 00:32:59.240 with malignant cells or with the others.  
NOTE Confidence: 0.818851313333333  
00:32:59.240 --> 00:33:02.008 So that's the two ways and in this  
NOTE Confidence: 0.818851313333333  
00:33:02.008 --> 00:33:04.526 study we found that if one markers  
NOTE Confidence: 0.818851313333333  
00:33:04.526 --> 00:33:06.739 of obscure market for me probably  
NOTE Confidence: 0.818851313333333  
00:33:06.739 --> 00:33:09.154 makes a lot more sense for you.  
NOTE Confidence: 0.818851313333333  
00:33:09.160 --> 00:33:11.862 It's a my love a neutrophil related  
NOTE Confidence: 0.818851313333333  
00:33:11.862 --> 00:33:14.877 marker that when we have more infiltrated  
NOTE Confidence: 0.818851313333333  
00:33:14.880 --> 00:33:17.463 a pattern close to the malignant cells  
NOTE Confidence: 0.818851313333333  
00:33:17.463 --> 00:33:19.437 associated with product with better  
NOTE Confidence: 0.818851313333333

00:33:19.437 --> 00:33:21.437 overall survival in these patients.  
NOTE Confidence: 0.8188513133333333

00:33:21.440 --> 00:33:24.197 And this is adjusted by proper  
NOTE Confidence: 0.8188513133333333

00:33:24.197 --> 00:33:25.628 characteristic multivariate analysis  
NOTE Confidence: 0.8188513133333333

00:33:25.628 --> 00:33:29.200 and and then so we found that this  
NOTE Confidence: 0.8188513133333333

00:33:29.200 --> 00:33:31.839 more easier for me to understand that  
NOTE Confidence: 0.8188513133333333

00:33:31.840 --> 00:33:36.705 T cells and and say the \*\*\*\* T cell  
NOTE Confidence: 0.8188513133333333

00:33:36.705 --> 00:33:39.632 when now looking at the distance in  
NOTE Confidence: 0.8188513133333333

00:33:39.632 --> 00:33:42.225 microns are closer to malignant cell  
NOTE Confidence: 0.8188513133333333

00:33:42.225 --> 00:33:44.762 those patients have a better outcome  
NOTE Confidence: 0.8188513133333333

00:33:44.762 --> 00:33:47.150 and based on overall survival the  
NOTE Confidence: 0.8188513133333333

00:33:47.150 --> 00:33:49.746 same we found for 64 microphages  
NOTE Confidence: 0.8188513133333333

00:33:49.746 --> 00:33:52.872 that basically CD 68 these are kind  
NOTE Confidence: 0.8188513133333333

00:33:52.872 --> 00:33:55.000 of the first time that we actually  
NOTE Confidence: 0.8188513133333333

00:33:55.067 --> 00:33:57.237 were doing this and learning how to  
NOTE Confidence: 0.8188513133333333

00:33:57.237 --> 00:33:59.479 deal with this infiltration in this  
NOTE Confidence: 0.8188513133333333

00:33:59.480 --> 00:34:03.334 and and and then you know distance

NOTE Confidence: 0.818851313333333  
00:34:03.334 --> 00:34:05.980 and this is study that was published  
NOTE Confidence: 0.818851313333333  
00:34:06.053 --> 00:34:08.321 in modern pathology the same year  
NOTE Confidence: 0.818851313333333  
00:34:08.321 --> 00:34:11.397 but later this study was designed to  
NOTE Confidence: 0.818851313333333  
00:34:11.397 --> 00:34:13.385 address the intratumor heterogeneity  
NOTE Confidence: 0.818851313333333  
00:34:13.385 --> 00:34:16.176 of immune response very small study  
NOTE Confidence: 0.818851313333333  
00:34:16.176 --> 00:34:18.960 that with our all Multiplex pattern  
NOTE Confidence: 0.818851313333333  
00:34:18.960 --> 00:34:22.956 one and two in which we take took 33  
NOTE Confidence: 0.818851313333333  
00:34:22.960 --> 00:34:25.186 stage 1 lung Adeno garcinum wanted  
NOTE Confidence: 0.818851313333333  
00:34:25.186 --> 00:34:27.400 I mean Adeno and squabous.  
NOTE Confidence: 0.818851313333333  
00:34:27.400 --> 00:34:29.608 So dividing two-story wanted to control  
NOTE Confidence: 0.818851313333333  
00:34:29.608 --> 00:34:32.805 and go to the cases that are part of  
NOTE Confidence: 0.818851313333333  
00:34:32.805 --> 00:34:35.839 one stage of the disease and we divide  
NOTE Confidence: 0.818851313333333  
00:34:35.839 --> 00:34:38.716 in two groups based on recurrence pattern.  
NOTE Confidence: 0.818851313333333  
00:34:38.720 --> 00:34:43.080 They we call recurrence cases when they  
NOTE Confidence: 0.818851313333333  
00:34:43.080 --> 00:34:46.870 recur within 36 months of after surgery  
NOTE Confidence: 0.818851313333333

00:34:46.870 --> 00:34:49.740 17 patients and the one that didn't  
NOTE Confidence: 0.8188513133333333

00:34:49.823 --> 00:34:52.388 recurs is the one that after five year  
NOTE Confidence: 0.8188513133333333

00:34:52.388 --> 00:34:54.320 follow up in having a recurrence right.  
NOTE Confidence: 0.8188513133333333

00:34:54.320 --> 00:34:57.368 So if I didn't kind of extremes outcome  
NOTE Confidence: 0.8188513133333333

00:34:57.368 --> 00:35:00.613 as much as we can we could and then we  
NOTE Confidence: 0.8188513133333333

00:35:00.613 --> 00:35:02.479 took the tissue the malignant tissue,  
NOTE Confidence: 0.8188513133333333

00:35:02.480 --> 00:35:05.357 the tumor we developed great system of  
NOTE Confidence: 0.8188513133333333

00:35:05.357 --> 00:35:08.765 1mm diameter in which we ran in each  
NOTE Confidence: 0.8188513133333333

00:35:08.765 --> 00:35:10.860 of these spots corruption sequence  
NOTE Confidence: 0.8188513133333333

00:35:10.937 --> 00:35:13.677 RNA sick and Multipleximolar forest.  
NOTE Confidence: 0.8188513133333333

00:35:13.680 --> 00:35:16.304 The game the two panels that I showed  
NOTE Confidence: 0.8188513133333333

00:35:16.304 --> 00:35:18.446 before when I show some of the data  
NOTE Confidence: 0.8188513133333333

00:35:18.446 --> 00:35:20.408 on term of the immune infiltration  
NOTE Confidence: 0.8188513133333333

00:35:20.408 --> 00:35:23.467 result but we found that the one that  
NOTE Confidence: 0.8188513133333333

00:35:23.467 --> 00:35:25.795 recurred within this that this month  
NOTE Confidence: 0.8188513133333333

00:35:25.800 --> 00:35:28.352 have and it's hard to see I'm sorry

NOTE Confidence: 0.818851313333333  
00:35:28.352 --> 00:35:31.092 about that is an increase of immune  
NOTE Confidence: 0.818851313333333  
00:35:31.092 --> 00:35:34.696 cells that had either PD1 or PD1  
NOTE Confidence: 0.818851313333333  
00:35:34.696 --> 00:35:37.580 expression with some we call inhibitory  
NOTE Confidence: 0.818851313333333  
00:35:37.580 --> 00:35:39.800 mechanisms of the immune response.  
NOTE Confidence: 0.821953905  
00:35:39.800 --> 00:35:43.976 Those cases tend to recur earlier or recur  
NOTE Confidence: 0.821953905  
00:35:43.976 --> 00:35:45.852 because the other after five year they  
NOTE Confidence: 0.821953905  
00:35:45.852 --> 00:35:48.425 didn't have any recurrence and this is  
NOTE Confidence: 0.821953905  
00:35:48.425 --> 00:35:51.248 actually shown in this more you know graph  
NOTE Confidence: 0.821953905  
00:35:51.248 --> 00:35:53.160 here and I cannot even see it myself.  
NOTE Confidence: 0.821953905  
00:35:53.160 --> 00:35:56.839 But the the red are are the recurrence  
NOTE Confidence: 0.821953905  
00:35:56.839 --> 00:35:59.953 and these are different subpopulation of  
NOTE Confidence: 0.821953905  
00:35:59.953 --> 00:36:03.397 macrophages or AT salt express PD1 or PD1.  
NOTE Confidence: 0.821953905  
00:36:03.400 --> 00:36:08.432 And also we saw that it was an increase  
NOTE Confidence: 0.821953905  
00:36:08.432 --> 00:36:11.572 of macrophages compared to T cells in  
NOTE Confidence: 0.821953905  
00:36:11.572 --> 00:36:13.928 this recurrence of the ratio between  
NOTE Confidence: 0.821953905

00:36:13.928 --> 00:36:16.155 T and T cells and macrophages was  
NOTE Confidence: 0.821953905

00:36:16.155 --> 00:36:17.399 lower in the recurrence.  
NOTE Confidence: 0.821953905

00:36:17.400 --> 00:36:20.532 So that's tell us there's immune  
NOTE Confidence: 0.821953905

00:36:20.532 --> 00:36:23.240 suppressive stage in these cases.  
NOTE Confidence: 0.821953905

00:36:23.240 --> 00:36:25.880 And then we decided to explore  
NOTE Confidence: 0.821953905

00:36:25.880 --> 00:36:28.480 these other features which is the  
NOTE Confidence: 0.821953905

00:36:28.480 --> 00:36:31.619 distance of immune cells and we found  
NOTE Confidence: 0.821953905

00:36:31.619 --> 00:36:33.874 two populations of immune cells,  
NOTE Confidence: 0.821953905

00:36:33.880 --> 00:36:37.142 one is cytotoxic T cells that are  
NOTE Confidence: 0.821953905

00:36:37.142 --> 00:36:39.872 activated and also these PO1 positive  
NOTE Confidence: 0.821953905

00:36:39.872 --> 00:36:42.644 macrophage decided to show you this is  
NOTE Confidence: 0.821953905

00:36:42.644 --> 00:36:45.806 that this PDL 1 positive macrophages that  
NOTE Confidence: 0.821953905

00:36:45.806 --> 00:36:49.404 you can assume have an immune suppressive  
NOTE Confidence: 0.821953905

00:36:49.404 --> 00:36:52.078 stage when they're closer to the tumor.  
NOTE Confidence: 0.821953905

00:36:52.080 --> 00:36:54.604 And I think that the the 20 Micron is  
NOTE Confidence: 0.821953905

00:36:54.604 --> 00:36:57.567 kind of the the the the number that

NOTE Confidence: 0.821953905

00:36:57.567 --> 00:37:00.981 is is can divide these cases in closer

NOTE Confidence: 0.821953905

00:37:00.981 --> 00:37:03.663 and higher when they're closer to

NOTE Confidence: 0.821953905

00:37:03.663 --> 00:37:06.797 the tumor this actually this patient

NOTE Confidence: 0.821953905

00:37:06.797 --> 00:37:10.662 have a worse outcome and this is also

NOTE Confidence: 0.821953905

00:37:10.662 --> 00:37:12.741 associated with a higher level of

NOTE Confidence: 0.821953905

00:37:12.741 --> 00:37:15.072 infiltration by the gene by other index.

NOTE Confidence: 0.821953905

00:37:15.080 --> 00:37:15.720 So,

NOTE Confidence: 0.821953905

00:37:15.720 --> 00:37:20.200 so both in usually both numbers goes

NOTE Confidence: 0.821953905

00:37:20.200 --> 00:37:22.672 together and this is actually very

NOTE Confidence: 0.821953905

00:37:22.672 --> 00:37:24.842 interesting and we're trying to

NOTE Confidence: 0.821953905

00:37:24.842 --> 00:37:27.097 apply this process of infiltration

NOTE Confidence: 0.821953905

00:37:27.097 --> 00:37:28.901 pattern with more sophisticated

NOTE Confidence: 0.821953905

00:37:28.974 --> 00:37:31.587 computational tools now or distance to

NOTE Confidence: 0.821953905

00:37:31.587 --> 00:37:34.480 other studies and I'll show you a few

NOTE Confidence: 0.821953905

00:37:34.480 --> 00:37:36.665 minutes and experience in advancement

NOTE Confidence: 0.821953905

00:37:36.665 --> 00:37:39.200 of starting of Molson and Gas.  
NOTE Confidence: 0.821953905

00:37:39.200 --> 00:37:42.260 The other thing is we we look at is  
NOTE Confidence: 0.821953905

00:37:42.260 --> 00:37:46.560 the heterogeneity in the tumor on,  
NOTE Confidence: 0.821953905

00:37:46.560 --> 00:37:47.680 on, on,  
NOTE Confidence: 0.821953905

00:37:47.680 --> 00:37:48.240 on,  
NOTE Confidence: 0.821953905

00:37:48.240 --> 00:37:51.958 on and the effect on on the outcome  
NOTE Confidence: 0.821953905

00:37:51.958 --> 00:37:52.876 of this patient.  
NOTE Confidence: 0.821953905

00:37:52.880 --> 00:37:55.794 And we have also some data on the genomic  
NOTE Confidence: 0.821953905

00:37:55.794 --> 00:37:58.638 heterogeneity and we have published before.  
NOTE Confidence: 0.821953905

00:37:58.640 --> 00:38:00.904 But this is trying to think on the  
NOTE Confidence: 0.821953905

00:38:00.904 --> 00:38:03.321 genomic and normality in the context of  
NOTE Confidence: 0.821953905

00:38:03.321 --> 00:38:05.480 the immune response shows some data.  
NOTE Confidence: 0.821953905

00:38:05.480 --> 00:38:08.432 What we found is that a very interesting  
NOTE Confidence: 0.821953905

00:38:08.432 --> 00:38:11.616 is that actually the Fox P3T cells,  
NOTE Confidence: 0.821953905

00:38:11.616 --> 00:38:13.320 the direct cells,  
NOTE Confidence: 0.821953905

00:38:13.320 --> 00:38:18.230 they tend to be more heterogeneous

NOTE Confidence: 0.821953905

00:38:18.230 --> 00:38:22.725 in the recurrence cases.

NOTE Confidence: 0.821953905

00:38:22.725 --> 00:38:25.550 So they're not diffusely infiltrating

NOTE Confidence: 0.821953905

00:38:25.550 --> 00:38:26.680 a tumor,

NOTE Confidence: 0.821953905

00:38:26.680 --> 00:38:28.684 they're in different spots and and

NOTE Confidence: 0.821953905

00:38:28.684 --> 00:38:30.704 the key is expressed by frequency

NOTE Confidence: 0.821953905

00:38:30.704 --> 00:38:32.874 and by an index of the regenic,

NOTE Confidence: 0.821953905

00:38:32.880 --> 00:38:35.519 I think that's Moriceta index of nine

NOTE Confidence: 0.821953905

00:38:35.520 --> 00:38:38.397 compared to 3.4 in the northern currents.

NOTE Confidence: 0.821953905

00:38:38.400 --> 00:38:41.160 So that means that more infiltrating

NOTE Confidence: 0.821953905

00:38:41.160 --> 00:38:43.680 in in in in there sorry they're

NOTE Confidence: 0.821953905

00:38:43.680 --> 00:38:46.136 not very much infiltration to do

NOTE Confidence: 0.821953905

00:38:46.136 --> 00:38:49.160 more that are scarce around and and

NOTE Confidence: 0.821953905

00:38:49.240 --> 00:38:52.048 this is actually associated with a

NOTE Confidence: 0.821953905

00:38:52.048 --> 00:38:56.465 higher level of worse outcome And

NOTE Confidence: 0.821953905

00:38:56.465 --> 00:38:58.835 this is what's independent of the

NOTE Confidence: 0.821953905

00:38:58.835 --> 00:39:01.530 genomic alteration that we have like  
NOTE Confidence: 0.821953905

00:39:01.530 --> 00:39:03.685 somatic mutation antigen burden or  
NOTE Confidence: 0.821953905

00:39:03.685 --> 00:39:05.875 or or even the TCR repertoire.  
NOTE Confidence: 0.821953905

00:39:05.880 --> 00:39:08.811 So the T Rex when they're I,  
NOTE Confidence: 0.821953905

00:39:08.811 --> 00:39:11.688 I have a higher ITH is associated  
NOTE Confidence: 0.821953905

00:39:11.688 --> 00:39:14.294 with higher risk for last and then  
NOTE Confidence: 0.821953905

00:39:14.294 --> 00:39:16.590 when I think I got it wrong before  
NOTE Confidence: 0.714744985769231

00:39:16.663 --> 00:39:19.001 when they're actually in clusters far away  
NOTE Confidence: 0.714744985769231

00:39:19.001 --> 00:39:22.078 in in a few locations of the tumor is,  
NOTE Confidence: 0.714744985769231

00:39:22.080 --> 00:39:26.560 is is actually is, is, is is is the opposite.  
NOTE Confidence: 0.714744985769231

00:39:26.560 --> 00:39:29.178 So these are the studies that actually  
NOTE Confidence: 0.714744985769231

00:39:29.178 --> 00:39:31.880 we continue doing and I'm going to show  
NOTE Confidence: 0.714744985769231

00:39:31.880 --> 00:39:34.352 you some samples now in the advanced  
NOTE Confidence: 0.714744985769231

00:39:34.352 --> 00:39:36.597 metallic cases but summarize this,  
NOTE Confidence: 0.714744985769231

00:39:36.600 --> 00:39:39.365 this part of the lecture basically multiple  
NOTE Confidence: 0.714744985769231

00:39:39.365 --> 00:39:42.318 small Fraser I think that's a good tool.

NOTE Confidence: 0.714744985769231  
00:39:42.320 --> 00:39:45.127 We have shown that you know it's  
NOTE Confidence: 0.714744985769231  
00:39:45.127 --> 00:39:47.461 associated with activation of T cells  
NOTE Confidence: 0.714744985769231  
00:39:47.461 --> 00:39:49.932 and another immune cells in chemo treated  
NOTE Confidence: 0.714744985769231  
00:39:50.007 --> 00:39:52.317 cases compared to untreated cases.  
NOTE Confidence: 0.714744985769231  
00:39:52.320 --> 00:39:55.685 We have identified certain pattern  
NOTE Confidence: 0.714744985769231  
00:39:55.685 --> 00:39:58.345 of infiltration at spatial level that  
NOTE Confidence: 0.714744985769231  
00:39:58.345 --> 00:40:00.847 may be associated with the outcome  
NOTE Confidence: 0.714744985769231  
00:40:00.847 --> 00:40:03.062 of patient without intervention have  
NOTE Confidence: 0.714744985769231  
00:40:03.062 --> 00:40:05.959 shown that actually can show you in  
NOTE Confidence: 0.714744985769231  
00:40:05.959 --> 00:40:08.197 tissue the fact of immune checkpoint  
NOTE Confidence: 0.714744985769231  
00:40:08.197 --> 00:40:10.901 in the context of Ionia and therapy  
NOTE Confidence: 0.714744985769231  
00:40:10.901 --> 00:40:13.812 and and there is a complex pattern  
NOTE Confidence: 0.714744985769231  
00:40:13.812 --> 00:40:16.440 of expression of immune checkpoints  
NOTE Confidence: 0.714744985769231  
00:40:16.440 --> 00:40:19.121 in in in in tissues especially when  
NOTE Confidence: 0.714744985769231  
00:40:19.121 --> 00:40:21.726 you use all these multiple system.  
NOTE Confidence: 0.714744985769231

00:40:21.726 --> 00:40:24.624 And the last story is about  
NOTE Confidence: 0.714744985769231

00:40:24.624 --> 00:40:26.120 advanced metastatic cases.  
NOTE Confidence: 0.714744985769231

00:40:26.120 --> 00:40:28.964 And this is a study that actually is part  
NOTE Confidence: 0.714744985769231

00:40:28.964 --> 00:40:31.798 of a network that in the Anderson is,  
NOTE Confidence: 0.714744985769231

00:40:31.800 --> 00:40:33.872 is, is is one of the centers  
NOTE Confidence: 0.714744985769231

00:40:33.872 --> 00:40:35.997 is funded by NCI or the CMAC.  
NOTE Confidence: 0.714744985769231

00:40:36.000 --> 00:40:38.520 Some people call it SIMAC after seven-year.  
NOTE Confidence: 0.714744985769231

00:40:38.520 --> 00:40:40.200 We haven't been solving that.  
NOTE Confidence: 0.714744985769231

00:40:40.200 --> 00:40:41.100 I call it CMAC.  
NOTE Confidence: 0.714744985769231

00:40:41.100 --> 00:40:43.496 I was the chair of this network and they  
NOTE Confidence: 0.714744985769231

00:40:43.496 --> 00:40:45.799 have three other centers in Dana Farvez,  
NOTE Confidence: 0.714744985769231

00:40:45.800 --> 00:40:47.692 Mount Sinai and Stanford.  
NOTE Confidence: 0.714744985769231

00:40:47.692 --> 00:40:52.250 And the goal of the center is to perform  
NOTE Confidence: 0.714744985769231

00:40:52.250 --> 00:40:57.131 comprehensive analysis of a genomic and  
NOTE Confidence: 0.714744985769231

00:40:57.131 --> 00:40:59.873 and immune level of sample collecting  
NOTE Confidence: 0.714744985769231

00:40:59.873 --> 00:41:02.910 clinical trial funded by NCANCI network.

NOTE Confidence: 0.714744985769231  
00:41:02.910 --> 00:41:05.610 These serving groups like  
NOTE Confidence: 0.714744985769231  
00:41:05.610 --> 00:41:08.220 SOAG ECO accruing early,  
NOTE Confidence: 0.714744985769231  
00:41:08.220 --> 00:41:11.120 early early therapy network pediatric  
NOTE Confidence: 0.714744985769231  
00:41:11.120 --> 00:41:14.176 ILG and Alliance and and and what we  
NOTE Confidence: 0.714744985769231  
00:41:14.176 --> 00:41:16.621 decided to do and this was activated  
NOTE Confidence: 0.714744985769231  
00:41:16.621 --> 00:41:19.581 before COVID is to develop a series of  
NOTE Confidence: 0.714744985769231  
00:41:19.581 --> 00:41:22.236 three set of marker or the assay that we  
NOTE Confidence: 0.714744985769231  
00:41:22.240 --> 00:41:24.956 can apply to sample from these trials.  
NOTE Confidence: 0.714744985769231  
00:41:24.960 --> 00:41:27.088 And the goal is to identify by a  
NOTE Confidence: 0.714744985769231  
00:41:27.088 --> 00:41:28.830 market that could be predictive  
NOTE Confidence: 0.714744985769231  
00:41:28.830 --> 00:41:31.116 or response or even some markets  
NOTE Confidence: 0.714744985769231  
00:41:31.116 --> 00:41:33.077 associated to less secondary effect.  
NOTE Confidence: 0.714744985769231  
00:41:33.080 --> 00:41:35.187 And and we established Tier 1 market  
NOTE Confidence: 0.714744985769231  
00:41:35.187 --> 00:41:37.787 that we need to run in every single  
NOTE Confidence: 0.714744985769231  
00:41:37.787 --> 00:41:39.822 sample from the clinical trial if  
NOTE Confidence: 0.714744985769231

00:41:39.822 --> 00:41:41.874 the sample is available or suitable.  
NOTE Confidence: 0.714744985769231

00:41:41.880 --> 00:41:44.449 That's one of the challenge in this  
NOTE Confidence: 0.714744985769231

00:41:44.449 --> 00:41:46.514 type of recent collection signal  
NOTE Confidence: 0.714744985769231

00:41:46.514 --> 00:41:48.920 RNA sig nano chain IO panel.  
NOTE Confidence: 0.714744985769231

00:41:48.920 --> 00:41:50.520 When RNA 6 doesn't work,  
NOTE Confidence: 0.714744985769231

00:41:50.520 --> 00:41:53.072 we have a lot of formally fixed parasitic  
NOTE Confidence: 0.714744985769231

00:41:53.072 --> 00:41:55.397 tissue that hadn't been processed well.  
NOTE Confidence: 0.714744985769231

00:41:55.400 --> 00:41:58.418 Unfortunately Cytof on a panel in  
NOTE Confidence: 0.714744985769231

00:41:58.418 --> 00:42:00.430 blood Multiplex immunochemistry or  
NOTE Confidence: 0.714744985769231

00:42:00.509 --> 00:42:03.174 immuno fluorescent tissue and single  
NOTE Confidence: 0.714744985769231

00:42:03.174 --> 00:42:05.839 Plex immunochemistry that means PL.  
NOTE Confidence: 0.714744985769231

00:42:05.840 --> 00:42:08.720 one and only which is a way to study  
NOTE Confidence: 0.714744985769231

00:42:08.720 --> 00:42:11.405 cytokine chemokine growth factor proteins  
NOTE Confidence: 0.714744985769231

00:42:11.405 --> 00:42:14.598 in serum with a bundle of 92 markers.  
NOTE Confidence: 0.714744985769231

00:42:14.600 --> 00:42:18.913 And then the Tier 2 assays more focus  
NOTE Confidence: 0.714744985769231

00:42:18.913 --> 00:42:22.612 analysis in some trial like TCR sequencing

NOTE Confidence: 0.714744985769231  
00:42:22.612 --> 00:42:24.808 or some other Multiplex system like  
NOTE Confidence: 0.714744985769231  
00:42:24.808 --> 00:42:26.907 maybe and our microbiome this has  
NOTE Confidence: 0.714744985769231  
00:42:26.907 --> 00:42:29.280 changed a little bit over the years.  
NOTE Confidence: 0.714744985769231  
00:42:29.280 --> 00:42:31.996 And then the Tier 3 assay which  
NOTE Confidence: 0.714744985769231  
00:42:31.996 --> 00:42:35.061 you need fresh specimen is a lot  
NOTE Confidence: 0.714744985769231  
00:42:35.061 --> 00:42:37.370 of single cell sequencing activity.  
NOTE Confidence: 0.714744985769231  
00:42:37.370 --> 00:42:40.800 And also we have done recently transcriptome,  
NOTE Confidence: 0.39734722  
00:42:40.800 --> 00:42:44.640 special transcriptome we we face  
NOTE Confidence: 0.39734722  
00:42:44.640 --> 00:42:47.232 activation of the network COVID hit.  
NOTE Confidence: 0.39734722  
00:42:47.232 --> 00:42:49.280 We didn't have too many samples to analyze.  
NOTE Confidence: 0.39734722  
00:42:49.280 --> 00:42:52.008 So what we did in the first two  
NOTE Confidence: 0.39734722  
00:42:52.008 --> 00:42:53.975 years actually to harmonize these  
NOTE Confidence: 0.39734722  
00:42:53.975 --> 00:42:56.393 assays between 3:00 or 4 labs.  
NOTE Confidence: 0.39734722  
00:42:56.400 --> 00:42:58.703 So we harmonize RNAC or some sequencing  
NOTE Confidence: 0.39734722  
00:42:58.703 --> 00:43:01.640 site of a Multiplex immuno frerescent.  
NOTE Confidence: 0.39734722

00:43:01.640 --> 00:43:05.380 Actually we developed SOP and that  
NOTE Confidence: 0.39734722

00:43:05.380 --> 00:43:07.698 are publicly available for people  
NOTE Confidence: 0.39734722

00:43:07.698 --> 00:43:10.490 to to do this work in the context  
NOTE Confidence: 0.39734722

00:43:10.572 --> 00:43:13.229 of immune profiling and and and  
NOTE Confidence: 0.39734722

00:43:13.229 --> 00:43:15.144 they're they published these three  
NOTE Confidence: 0.39734722

00:43:15.144 --> 00:43:17.439 papers back to acting as a region.  
NOTE Confidence: 0.39734722

00:43:17.440 --> 00:43:19.925 They have been highly cited and nobody  
NOTE Confidence: 0.39734722

00:43:19.925 --> 00:43:22.315 has done this before and actually help  
NOTE Confidence: 0.39734722

00:43:22.315 --> 00:43:25.552 us all the labs to do a better job and  
NOTE Confidence: 0.39734722

00:43:25.552 --> 00:43:28.154 we have a system of quality control  
NOTE Confidence: 0.39734722

00:43:28.154 --> 00:43:31.118 on ongoing assays that we're running.  
NOTE Confidence: 0.39734722

00:43:31.120 --> 00:43:32.680 They try the network.  
NOTE Confidence: 0.39734722

00:43:32.680 --> 00:43:34.832 We have done study more than  
NOTE Confidence: 0.39734722

00:43:34.832 --> 00:43:36.608 sampler for more than 55 clinical  
NOTE Confidence: 0.39734722

00:43:36.608 --> 00:43:38.320 trial and over 2000 patients.  
NOTE Confidence: 0.39734722

00:43:38.320 --> 00:43:40.450 This was from September last

NOTE Confidence: 0.39734722

00:43:40.450 --> 00:43:42.154 year and many diseases,

NOTE Confidence: 0.39734722

00:43:42.160 --> 00:43:46.416 solid tumor nouns and malignancies and mostly

NOTE Confidence: 0.39734722

00:43:46.416 --> 00:43:49.284 immune checkpoint therapy with combination.

NOTE Confidence: 0.39734722

00:43:49.284 --> 00:43:52.572 So we were lucky to get

NOTE Confidence: 0.39734722

00:43:52.572 --> 00:43:54.468 assigned a lung cancer trial.

NOTE Confidence: 0.39734722

00:43:54.468 --> 00:43:57.064 It's a phase three-part of the

NOTE Confidence: 0.39734722

00:43:57.064 --> 00:43:59.515 lung map associated with salt,

NOTE Confidence: 0.39734722

00:43:59.515 --> 00:44:01.840 the S 1400 eye cohort.

NOTE Confidence: 0.39734722

00:44:01.840 --> 00:44:04.313 There was a phase three study

NOTE Confidence: 0.39734722

00:44:04.313 --> 00:44:08.078 designed to see the benefit,

NOTE Confidence: 0.39734722

00:44:08.080 --> 00:44:10.610 potential benefit of adding anti

NOTE Confidence: 0.39734722

00:44:10.610 --> 00:44:14.992 CDLA 4 IPIL luma to anti PD,

NOTE Confidence: 0.39734722

00:44:14.992 --> 00:44:18.524 one Ebola in patient with squamous

NOTE Confidence: 0.39734722

00:44:18.524 --> 00:44:19.997 cell carcinoma metastatic.

NOTE Confidence: 0.39734722

00:44:20.000 --> 00:44:22.562 So see the effect of the combination

NOTE Confidence: 0.39734722

00:44:22.562 --> 00:44:24.120 versus single single agent.  
NOTE Confidence: 0.39734722

00:44:24.120 --> 00:44:25.080 So the trial after  
NOTE Confidence: 0.7500569

00:44:27.400 --> 00:44:29.080 270, 252 patients was negative  
NOTE Confidence: 0.7500569

00:44:29.080 --> 00:44:33.550 was but we and the investigator  
NOTE Confidence: 0.7500569

00:44:33.550 --> 00:44:35.900 including doctor herbs that he  
NOTE Confidence: 0.7500569

00:44:35.900 --> 00:44:37.640 asked me to mention his name.  
NOTE Confidence: 0.7500569

00:44:37.640 --> 00:44:41.186 So I did it check we're good  
NOTE Confidence: 0.7500569

00:44:41.186 --> 00:44:42.278 friends for many years.  
NOTE Confidence: 0.7500569

00:44:42.280 --> 00:44:43.360 So I can make these jobs  
NOTE Confidence: 0.7304760833333333

00:44:45.480 --> 00:44:47.469 show that here at the end of the day  
NOTE Confidence: 0.7304760833333333

00:44:47.469 --> 00:44:49.437 of the car you see there's a group  
NOTE Confidence: 0.7304760833333333

00:44:49.437 --> 00:44:51.582 of patients that may have benefit of  
NOTE Confidence: 0.7304760833333333

00:44:51.582 --> 00:44:53.760 receiving this but nothing was significant.  
NOTE Confidence: 0.7304760833333333

00:44:53.760 --> 00:44:57.750 So this is we got, we do more and blood  
NOTE Confidence: 0.7304760833333333

00:44:57.750 --> 00:45:01.811 sample 455 patients divided in a group of  
NOTE Confidence: 0.7304760833333333

00:45:01.811 --> 00:45:04.936 responders across 20% stable disease 40%

NOTE Confidence: 0.7304760833333333  
00:45:04.936 --> 00:45:08.920 and then a lot of progressive disease.  
NOTE Confidence: 0.7304760833333333  
00:45:08.920 --> 00:45:10.276 And these are the clinical data  
NOTE Confidence: 0.7304760833333333  
00:45:10.276 --> 00:45:11.839 that we're not going to go through.  
NOTE Confidence: 0.7304760833333333  
00:45:11.840 --> 00:45:14.392 And our team is CMAC actually LED analysis  
NOTE Confidence: 0.7304760833333333  
00:45:14.392 --> 00:45:17.200 of year one immunochemistry multiplexing,  
NOTE Confidence: 0.7304760833333333  
00:45:17.200 --> 00:45:19.312 mono fluorescent holoxome sequencing,  
NOTE Confidence: 0.7304760833333333  
00:45:19.312 --> 00:45:21.505 nanoching, the panel that I mentioned  
NOTE Confidence: 0.7304760833333333  
00:45:21.505 --> 00:45:24.617 before 770 genes and the all ink run  
NOTE Confidence: 0.7304760833333333  
00:45:24.617 --> 00:45:27.119 by our colleagues and Mount Simon.  
NOTE Confidence: 0.7304760833333333  
00:45:27.120 --> 00:45:29.240 So and and this is the 2 panel,  
NOTE Confidence: 0.7304760833333333  
00:45:29.240 --> 00:45:31.244 we we identify 17 phenotypes that  
NOTE Confidence: 0.7304760833333333  
00:45:31.244 --> 00:45:33.703 we're going to study divided in two  
NOTE Confidence: 0.7304760833333333  
00:45:33.703 --> 00:45:35.702 panels I mentioned before and what  
NOTE Confidence: 0.7304760833333333  
00:45:35.702 --> 00:45:37.157 we found is that few,  
NOTE Confidence: 0.7304760833333333  
00:45:37.160 --> 00:45:40.474 few things that are probably not new.  
NOTE Confidence: 0.7304760833333333

00:45:40.474 --> 00:45:42.980 We found that it's a higher component  
NOTE Confidence: 0.7304760833333333

00:45:43.046 --> 00:45:44.811 of immune cells trauma compared  
NOTE Confidence: 0.7304760833333333

00:45:44.811 --> 00:45:47.056 to the malignant cells area.  
NOTE Confidence: 0.7304760833333333

00:45:47.056 --> 00:45:49.460 We divided the the analysis  
NOTE Confidence: 0.7304760833333333

00:45:49.460 --> 00:45:51.760 by trauma and malignant cells.  
NOTE Confidence: 0.7304760833333333

00:45:51.760 --> 00:45:54.232 And also we have what we call total  
NOTE Confidence: 0.7304760833333333

00:45:54.232 --> 00:45:56.800 when we combine both compartments.  
NOTE Confidence: 0.7304760833333333

00:45:56.800 --> 00:46:03.320 And we didn't find a huge difference between  
NOTE Confidence: 0.7304760833333333

00:46:03.320 --> 00:46:06.560 the single agent or the combination,  
NOTE Confidence: 0.7304760833333333

00:46:06.560 --> 00:46:09.136 but we found in the total population  
NOTE Confidence: 0.7304760833333333

00:46:09.136 --> 00:46:11.637 of patients that we could run  
NOTE Confidence: 0.7304760833333333

00:46:11.637 --> 00:46:12.957 in multiple monoforensis.  
NOTE Confidence: 0.7304760833333333

00:46:12.960 --> 00:46:15.156 You can see 82 samples only.  
NOTE Confidence: 0.7304760833333333

00:46:15.160 --> 00:46:18.472 It's a big attrition EVI and 35 receiving  
NOTE Confidence: 0.7304760833333333

00:46:18.472 --> 00:46:20.677 the combination of 47 single agent  
NOTE Confidence: 0.7304760833333333

00:46:20.680 --> 00:46:24.848 that actually a series of T cells

NOTE Confidence: 0.7304760833333333  
00:46:24.848 --> 00:46:28.592 activated expressing PD one or with  
NOTE Confidence: 0.7304760833333333  
00:46:28.592 --> 00:46:31.488 memory features in the tumor compartment,  
NOTE Confidence: 0.7304760833333333  
00:46:31.488 --> 00:46:33.136 the total compartment of  
NOTE Confidence: 0.7304760833333333  
00:46:33.136 --> 00:46:34.639 both compartment the tumor.  
NOTE Confidence: 0.7304760833333333  
00:46:34.640 --> 00:46:37.394 The higher density associated with a  
NOTE Confidence: 0.7304760833333333  
00:46:37.394 --> 00:46:39.735 progression of free survival regardless  
NOTE Confidence: 0.7304760833333333  
00:46:39.735 --> 00:46:43.270 of the treatment of the patient in terms  
NOTE Confidence: 0.7304760833333333  
00:46:43.270 --> 00:46:46.120 of differences between these two treatments.  
NOTE Confidence: 0.7304760833333333  
00:46:46.120 --> 00:46:48.724 So what we found is that actually  
NOTE Confidence: 0.7304760833333333  
00:46:48.724 --> 00:46:51.404 when you have you will receive only  
NOTE Confidence: 0.7304760833333333  
00:46:51.404 --> 00:46:53.750 nivo treatment NTPD one the series  
NOTE Confidence: 0.7304760833333333  
00:46:53.820 --> 00:46:56.802 of T cell with memory features and  
NOTE Confidence: 0.7304760833333333  
00:46:56.802 --> 00:46:58.693 memory regulatory features overall  
NOTE Confidence: 0.7304760833333333  
00:46:58.693 --> 00:47:01.758 all associated with better outcome,  
NOTE Confidence: 0.7304760833333333  
00:47:01.760 --> 00:47:03.920 better operation free survival for  
NOTE Confidence: 0.7304760833333333

00:47:03.920 --> 00:47:07.196 three marker survival for one in the  
NOTE Confidence: 0.7304760833333333

00:47:07.196 --> 00:47:10.544 nivo EP in the combination actually  
NOTE Confidence: 0.7304760833333333

00:47:10.544 --> 00:47:13.680 the association of this the increase  
NOTE Confidence: 0.7304760833333333

00:47:13.680 --> 00:47:16.263 of activate the cytloxy T cells and  
NOTE Confidence: 0.7304760833333333

00:47:16.263 --> 00:47:18.954 explain T cell associated with better  
NOTE Confidence: 0.7304760833333333

00:47:18.954 --> 00:47:21.328 outcome but the patient regulatory  
NOTE Confidence: 0.7304760833333333

00:47:21.328 --> 00:47:24.300 T cells C3 poses the negative and  
NOTE Confidence: 0.7304760833333333

00:47:24.300 --> 00:47:25.948 C positively positive associated  
NOTE Confidence: 0.7304760833333333

00:47:25.948 --> 00:47:28.239 with worse outcome and this is shown  
NOTE Confidence: 0.7304760833333333

00:47:28.239 --> 00:47:30.560 in here in the capital measure.  
NOTE Confidence: 0.7304760833333333

00:47:30.560 --> 00:47:32.681 So we identify one group of cell  
NOTE Confidence: 0.7304760833333333

00:47:32.681 --> 00:47:34.920 that I think that very interesting  
NOTE Confidence: 0.7304760833333333

00:47:34.920 --> 00:47:37.964 to follow that associated when the  
NOTE Confidence: 0.7304760833333333

00:47:37.964 --> 00:47:41.068 higher density of baseline with worst  
NOTE Confidence: 0.7304760833333333

00:47:41.068 --> 00:47:43.156 outcome impatient to do with the  
NOTE Confidence: 0.7304760833333333

00:47:43.156 --> 00:47:44.869 combination this particular tumor and

NOTE Confidence: 0.7304760833333333  
00:47:44.869 --> 00:47:46.399 it's something that we're following  
NOTE Confidence: 0.7304760833333333  
00:47:46.399 --> 00:47:48.479 up because a similar study was run  
NOTE Confidence: 0.7304760833333333  
00:47:48.480 --> 00:47:51.880 in Italy by a friend Ferrigo Capuzzo  
NOTE Confidence: 0.7304760833333333  
00:47:51.880 --> 00:47:54.804 and he's sending samples asked for  
NOTE Confidence: 0.7304760833333333  
00:47:54.804 --> 00:47:58.318 to look at for this particular fine.  
NOTE Confidence: 0.7304760833333333  
00:47:58.320 --> 00:48:00.840 And I know that some people doing  
NOTE Confidence: 0.7304760833333333  
00:48:00.840 --> 00:48:03.426 work in the laboratory also have  
NOTE Confidence: 0.7304760833333333  
00:48:03.426 --> 00:48:05.046 been associated a role.  
NOTE Confidence: 0.7304760833333333  
00:48:05.046 --> 00:48:07.328 I've been looking at the role of  
NOTE Confidence: 0.7304760833333333  
00:48:07.328 --> 00:48:09.304 Tigre cells in the indeed this  
NOTE Confidence: 0.7304760833333333  
00:48:09.304 --> 00:48:11.032 particular combination of therapy  
NOTE Confidence: 0.7304760833333333  
00:48:11.032 --> 00:48:12.760 particularly in our institution.  
NOTE Confidence: 0.925314187142857  
00:48:12.760 --> 00:48:16.162 So then we decided to look at  
NOTE Confidence: 0.925314187142857  
00:48:16.162 --> 00:48:18.396 especially what's happening in the  
NOTE Confidence: 0.925314187142857  
00:48:18.396 --> 00:48:20.184 with more digital pathology tools.  
NOTE Confidence: 0.925314187142857

00:48:20.184 --> 00:48:22.024 And for that in collaboration  
NOTE Confidence: 0.925314187142857

00:48:22.024 --> 00:48:23.640 with the clinical team,  
NOTE Confidence: 0.925314187142857

00:48:23.640 --> 00:48:25.614 we divided this patient treated and  
NOTE Confidence: 0.925314187142857

00:48:25.614 --> 00:48:28.078 you can see here in the swim plot,  
NOTE Confidence: 0.925314187142857

00:48:28.080 --> 00:48:30.040 you know each patient's online,  
NOTE Confidence: 0.925314187142857

00:48:30.040 --> 00:48:32.356 we define 11 patients that were  
NOTE Confidence: 0.925314187142857

00:48:32.356 --> 00:48:33.514 called exceptional responder.  
NOTE Confidence: 0.925314187142857

00:48:33.520 --> 00:48:34.759 I think that's not a good name,  
NOTE Confidence: 0.925314187142857

00:48:34.760 --> 00:48:36.930 but it's the name that we gave  
NOTE Confidence: 0.925314187142857

00:48:36.930 --> 00:48:38.820 it patient that didn't have any  
NOTE Confidence: 0.925314187142857

00:48:38.820 --> 00:48:40.400 sign of progression and were  
NOTE Confidence: 0.925314187142857

00:48:40.456 --> 00:48:42.116 alive any sign of progression.  
NOTE Confidence: 0.925314187142857

00:48:42.120 --> 00:48:45.798 18 months were alive at 24 and then the  
NOTE Confidence: 0.925314187142857

00:48:45.798 --> 00:48:48.114 early progress of people that actually  
NOTE Confidence: 0.925314187142857

00:48:48.120 --> 00:48:51.366 were alive after one month treatment  
NOTE Confidence: 0.925314187142857

00:48:51.366 --> 00:48:54.674 and they have signed a progression

NOTE Confidence: 0.925314187142857  
00:48:54.674 --> 00:48:58.960 of death or disease at six months.  
NOTE Confidence: 0.925314187142857  
00:48:58.960 --> 00:49:01.080 And and then we'll look at these two,  
NOTE Confidence: 0.925314187142857  
00:49:01.080 --> 00:49:04.160 unfortunately this is the problem with this  
NOTE Confidence: 0.925314187142857  
00:49:04.160 --> 00:49:06.160 perspective analysis of clinical trials.  
NOTE Confidence: 0.925314187142857  
00:49:06.160 --> 00:49:08.592 So I hope you have prospective  
NOTE Confidence: 0.925314187142857  
00:49:08.592 --> 00:49:09.888 collection of samples,  
NOTE Confidence: 0.925314187142857  
00:49:09.888 --> 00:49:12.480 so can do better job here.  
NOTE Confidence: 0.925314187142857  
00:49:12.480 --> 00:49:17.160 Here our 11 exceptional responders 8.  
NOTE Confidence: 0.925314187142857  
00:49:17.160 --> 00:49:20.142 Our 44 LE progressor 21 for the  
NOTE Confidence: 0.925314187142857  
00:49:20.142 --> 00:49:22.636 Multiplex and we found actually  
NOTE Confidence: 0.925314187142857  
00:49:22.636 --> 00:49:25.520 that activated T cells were higher  
NOTE Confidence: 0.925314187142857  
00:49:25.520 --> 00:49:27.840 in the exceptional responders makes  
NOTE Confidence: 0.925314187142857  
00:49:27.919 --> 00:49:30.099 sense right that's that's that's  
NOTE Confidence: 0.925314187142857  
00:49:30.099 --> 00:49:32.679 interesting and it's not and and  
NOTE Confidence: 0.925314187142857  
00:49:32.679 --> 00:49:35.303 and and and also we found that the  
NOTE Confidence: 0.925314187142857

00:49:35.303 --> 00:49:40.239 density of and and and and and of  
NOTE Confidence: 0.925314187142857

00:49:40.240 --> 00:49:42.880 other cells cytotoxicity cells,  
NOTE Confidence: 0.925314187142857

00:49:42.880 --> 00:49:45.979 cytotoxicity cell and cell with  
NOTE Confidence: 0.925314187142857

00:49:45.979 --> 00:49:48.816 memory features also where higher  
NOTE Confidence: 0.925314187142857

00:49:48.816 --> 00:49:49.872 exceptional respondents.  
NOTE Confidence: 0.925314187142857

00:49:49.872 --> 00:49:52.864 So in the way that we were looking  
NOTE Confidence: 0.925314187142857

00:49:52.864 --> 00:49:55.599 to data that actually makes sense  
NOTE Confidence: 0.925314187142857

00:49:55.600 --> 00:49:57.984 and then we decided to go a little  
NOTE Confidence: 0.925314187142857

00:49:57.984 --> 00:50:00.057 bit further on the analysis of the  
NOTE Confidence: 0.925314187142857

00:50:00.057 --> 00:50:02.880 special data and the animation was not right.  
NOTE Confidence: 0.925314187142857

00:50:02.880 --> 00:50:07.012 And we look at now the infiltration pattern  
NOTE Confidence: 0.925314187142857

00:50:07.012 --> 00:50:10.166 with the more sophisticated cell clustering,  
NOTE Confidence: 0.925314187142857

00:50:10.166 --> 00:50:12.824 base cell clustering is is what  
NOTE Confidence: 0.925314187142857

00:50:12.824 --> 00:50:15.294 defined like at least 10 cells or  
NOTE Confidence: 0.925314187142857

00:50:15.294 --> 00:50:18.715 more that are located in a 20 microns  
NOTE Confidence: 0.925314187142857

00:50:18.720 --> 00:50:21.680 radio from the malignant cells.

NOTE Confidence: 0.925314187142857  
00:50:21.680 --> 00:50:23.941 And and this was actually show that  
NOTE Confidence: 0.925314187142857  
00:50:23.941 --> 00:50:25.906 in the exception responder here one  
NOTE Confidence: 0.925314187142857  
00:50:25.906 --> 00:50:28.446 case in blue and trying to show that  
NOTE Confidence: 0.925314187142857  
00:50:28.446 --> 00:50:30.558 they have more dots that the early  
NOTE Confidence: 0.925314187142857  
00:50:30.558 --> 00:50:32.394 progress of the word called tumor.  
NOTE Confidence: 0.925314187142857  
00:50:32.400 --> 00:50:34.857 And this is based on the cell  
NOTE Confidence: 0.925314187142857  
00:50:34.857 --> 00:50:36.190 clustering base analysis.  
NOTE Confidence: 0.925314187142857  
00:50:36.190 --> 00:50:40.600 So showing that not only the density  
NOTE Confidence: 0.925314187142857  
00:50:40.600 --> 00:50:43.586 but also the infiltration pattern not  
NOTE Confidence: 0.925314187142857  
00:50:43.586 --> 00:50:46.540 the actual number cells that where they  
NOTE Confidence: 0.925314187142857  
00:50:46.612 --> 00:50:49.316 are infiltrating the two may have a role.  
NOTE Confidence: 0.925314187142857  
00:50:49.320 --> 00:50:50.720 And then we did the other analysis,  
NOTE Confidence: 0.925314187142857  
00:50:50.720 --> 00:50:52.560 we see the distance right,  
NOTE Confidence: 0.925314187142857  
00:50:52.560 --> 00:50:55.392 the distance of immune cells to  
NOTE Confidence: 0.925314187142857  
00:50:55.392 --> 00:50:58.016 malignant cells measure here in the  
NOTE Confidence: 0.925314187142857

00:50:58.016 --> 00:51:00.066 software of the Polaris system.  
NOTE Confidence: 0.925314187142857

00:51:00.066 --> 00:51:03.424 And we found that let's focus on the  
NOTE Confidence: 0.925314187142857

00:51:03.424 --> 00:51:06.309 whole all cohort and this was also seen  
NOTE Confidence: 0.925314187142857

00:51:06.309 --> 00:51:08.888 in the people received the combination  
NOTE Confidence: 0.925314187142857

00:51:08.888 --> 00:51:12.720 is that when cytotoxic T cells activated,  
NOTE Confidence: 0.925314187142857

00:51:12.720 --> 00:51:15.880 toxic T cells are closer to malignant cells.  
NOTE Confidence: 0.925314187142857

00:51:15.880 --> 00:51:19.068 Actually those patients have better in  
NOTE Confidence: 0.925314187142857

00:51:19.068 --> 00:51:21.238 this case progression free survival.  
NOTE Confidence: 0.925314187142857

00:51:21.240 --> 00:51:24.635 And when those malignant cells expressed TL1,  
NOTE Confidence: 0.925314187142857

00:51:24.640 --> 00:51:27.536 we saw the same and there's one effect  
NOTE Confidence: 0.925314187142857

00:51:27.536 --> 00:51:29.960 on overall survival was activated  
NOTE Confidence: 0.925314187142857

00:51:29.960 --> 00:51:33.600 T cells so close to Malina cells.  
NOTE Confidence: 0.925314187142857

00:51:33.600 --> 00:51:37.000 So and and this was the same for  
NOTE Confidence: 0.925314187142857

00:51:37.000 --> 00:51:39.792 all cohort and for the new EP we  
NOTE Confidence: 0.925314187142857

00:51:39.792 --> 00:51:41.798 didn't see that effect on.  
NOTE Confidence: 0.925314187142857

00:51:41.800 --> 00:51:42.697 So with that,

NOTE Confidence: 0.925314187142857  
00:51:42.697 --> 00:51:44.790 I think they're going to stop because  
NOTE Confidence: 0.813999546923077  
00:51:44.855 --> 00:51:47.072 the next is, is studies on the  
NOTE Confidence: 0.813999546923077  
00:51:47.072 --> 00:51:49.703 genomic part in these analysis or on  
NOTE Confidence: 0.813999546923077  
00:51:49.703 --> 00:51:52.241 the all link just going to go to my  
NOTE Confidence: 0.813999546923077  
00:51:52.316 --> 00:51:54.486 last slide basically showing that  
NOTE Confidence: 0.813999546923077  
00:51:54.486 --> 00:51:57.564 this in this clinical trial setting,  
NOTE Confidence: 0.813999546923077  
00:51:57.564 --> 00:52:00.734 our exploratory analysis show that the  
NOTE Confidence: 0.813999546923077  
00:52:00.734 --> 00:52:02.804 frequency attribution and cluster of  
NOTE Confidence: 0.813999546923077  
00:52:02.804 --> 00:52:05.355 immune cells relative to malignant cell  
NOTE Confidence: 0.813999546923077  
00:52:05.355 --> 00:52:08.253 may affect the the efficiency of immune  
NOTE Confidence: 0.813999546923077  
00:52:08.253 --> 00:52:10.198 checkpoint and I see a typo there.  
NOTE Confidence: 0.813999546923077  
00:52:10.200 --> 00:52:12.601 And also we had some other interesting  
NOTE Confidence: 0.813999546923077  
00:52:12.601 --> 00:52:14.510 observation on their genomic and the  
NOTE Confidence: 0.813999546923077  
00:52:14.510 --> 00:52:17.078 all link but I didn't have time to show  
NOTE Confidence: 0.813999546923077  
00:52:17.078 --> 00:52:19.157 today because I'm running out of time.  
NOTE Confidence: 0.813999546923077

00:52:19.160 --> 00:52:21.552 So with that I would like to thank  
NOTE Confidence: 0.813999546923077

00:52:21.552 --> 00:52:24.058 you again for being here in person  
NOTE Confidence: 0.813999546923077

00:52:24.058 --> 00:52:26.112 and virtually and for your attention.  
NOTE Confidence: 0.813999546923077

00:52:26.112 --> 00:52:27.752 Happy to answer any question.  
NOTE Confidence: 0.813999546923077

00:52:27.760 --> 00:52:28.120 Thank you.  
NOTE Confidence: 0.236365925

00:52:38.790 --> 00:52:39.110 David. I  
NOTE Confidence: 0.83012896

00:52:41.190 --> 00:52:44.143 had a number of spatial information and  
NOTE Confidence: 0.83012896

00:52:44.143 --> 00:52:46.878 the type of cells were all associated  
NOTE Confidence: 0.83012896

00:52:46.878 --> 00:52:49.594 with a better or worse outcome.  
NOTE Confidence: 0.83012896

00:52:49.594 --> 00:52:51.949 The changes weren't that big.  
NOTE Confidence: 0.83012896

00:52:51.950 --> 00:52:53.720 Is there any of those assets  
NOTE Confidence: 0.83012896

00:52:53.720 --> 00:52:55.237 that you envision taking to  
NOTE Confidence: 0.83012896

00:52:55.237 --> 00:52:56.627 the clinic as a diagnostic?  
NOTE Confidence: 0.760824318

00:52:59.350 --> 00:53:01.238 Yeah, no, the the,  
NOTE Confidence: 0.760824318

00:53:01.238 --> 00:53:04.070 the changes are are not big.  
NOTE Confidence: 0.760824318

00:53:04.070 --> 00:53:07.196 I think that especially as you look

NOTE Confidence: 0.760824318

00:53:07.196 --> 00:53:09.801 at density and and and and and the

NOTE Confidence: 0.760824318

00:53:09.801 --> 00:53:11.946 fact on on on the patient's operation

NOTE Confidence: 0.760824318

00:53:11.946 --> 00:53:13.758 fee survival overall survival.

NOTE Confidence: 0.760824318

00:53:13.760 --> 00:53:16.380 There are some interesting cut

NOTE Confidence: 0.760824318

00:53:16.380 --> 00:53:19.000 point that you can establish

NOTE Confidence: 0.760824318

00:53:19.096 --> 00:53:21.320 in this spatial analysis.

NOTE Confidence: 0.760824318

00:53:21.320 --> 00:53:23.848 And I'm particularly intrigued

NOTE Confidence: 0.760824318

00:53:23.848 --> 00:53:26.560 by this is done by computational

NOTE Confidence: 0.760824318

00:53:26.560 --> 00:53:29.123 people in our group about this

NOTE Confidence: 0.760824318

00:53:29.123 --> 00:53:31.529 cell clustering analysis of the 20

NOTE Confidence: 0.760824318

00:53:31.529 --> 00:53:33.985 Micron not 20 Micron because that's

NOTE Confidence: 0.760824318

00:53:33.985 --> 00:53:36.772 kind of a point that you actually

NOTE Confidence: 0.760824318

00:53:36.772 --> 00:53:39.190 establish that and you divide a

NOTE Confidence: 0.760824318

00:53:39.267 --> 00:53:41.191 couple of measures significantly

NOTE Confidence: 0.760824318

00:53:41.191 --> 00:53:43.776 not barely as we did it right.

NOTE Confidence: 0.760824318

00:53:43.776 --> 00:53:45.196 It was a negative trial,  
NOTE Confidence: 0.760824318

00:53:45.200 --> 00:53:48.432 so hard to to come up with something  
NOTE Confidence: 0.760824318

00:53:48.432 --> 00:53:52.938 very very or or or or or you or  
NOTE Confidence: 0.760824318

00:53:52.938 --> 00:53:55.446 you just have you know significant  
NOTE Confidence: 0.760824318

00:53:55.446 --> 00:53:57.271 increase on people responding  
NOTE Confidence: 0.760824318

00:53:57.271 --> 00:53:59.756 versus not responded by that.  
NOTE Confidence: 0.760824318

00:53:59.760 --> 00:54:01.629 I think that there is an opportunity  
NOTE Confidence: 0.760824318

00:54:01.629 --> 00:54:03.323 there to have at least something  
NOTE Confidence: 0.760824318

00:54:03.323 --> 00:54:05.800 that is with a yes or no kind  
NOTE Confidence: 0.760824318

00:54:05.800 --> 00:54:07.080 of approach that's what  
NOTE Confidence: 0.704995241666667

00:54:09.520 --> 00:54:12.640 yes the cell the cell clustering  
NOTE Confidence: 0.704995241666667

00:54:12.640 --> 00:54:16.099 of immune cells that may have an  
NOTE Confidence: 0.704995241666667

00:54:16.099 --> 00:54:17.994 activation or repressing right in  
NOTE Confidence: 0.704995241666667

00:54:17.994 --> 00:54:20.431 the in the response that would be  
NOTE Confidence: 0.704995241666667

00:54:20.431 --> 00:54:23.188 good or bad in the in certain in in  
NOTE Confidence: 0.704995241666667

00:54:23.188 --> 00:54:25.720 radio of cells from malignant cells.

NOTE Confidence: 0.704995241666667  
00:54:25.720 --> 00:54:27.400 There is a potential cut point  
NOTE Confidence: 0.704995241666667  
00:54:27.400 --> 00:54:29.032 there because I'm, I'm trying to,  
NOTE Confidence: 0.704995241666667  
00:54:29.032 --> 00:54:31.200 you know, see what could be a  
NOTE Confidence: 0.704995241666667  
00:54:31.200 --> 00:54:33.594 yes or no answer of a Biomark.  
NOTE Confidence: 0.704995241666667  
00:54:33.600 --> 00:54:35.472 So that's one thing I think that there are,  
NOTE Confidence: 0.704995241666667  
00:54:35.480 --> 00:54:38.400 there are some opportunities however,  
NOTE Confidence: 0.704995241666667  
00:54:38.400 --> 00:54:41.400 I think that it's very hard to bring  
NOTE Confidence: 0.704995241666667  
00:54:41.400 --> 00:54:43.824 these to a clear setting, right,  
NOTE Confidence: 0.704995241666667  
00:54:43.824 --> 00:54:48.034 because the challenges of getting stable  
NOTE Confidence: 0.704995241666667  
00:54:48.034 --> 00:54:52.319 work done in pathology laboratories  
NOTE Confidence: 0.704995241666667  
00:54:52.320 --> 00:54:55.600 in in in the Multiplex area,  
NOTE Confidence: 0.704995241666667  
00:54:55.600 --> 00:54:57.480 you have experience on that.  
NOTE Confidence: 0.704995241666667  
00:54:57.480 --> 00:54:59.699 I think that your center and other  
NOTE Confidence: 0.704995241666667  
00:54:59.699 --> 00:55:01.159 center probably could do that,  
NOTE Confidence: 0.704995241666667  
00:55:01.160 --> 00:55:04.160 but there's a lot of variability  
NOTE Confidence: 0.704995241666667

00:55:04.160 --> 00:55:05.896 and we learned that when we tried  
NOTE Confidence: 0.704995241666667

00:55:05.896 --> 00:55:07.280 to do the Multiplex.  
NOTE Confidence: 0.704995241666667

00:55:07.280 --> 00:55:09.600 Similar to chemistry and fluorescent  
NOTE Confidence: 0.704995241666667

00:55:09.600 --> 00:55:11.408 harmonization among different sites.  
NOTE Confidence: 0.704995241666667

00:55:11.408 --> 00:55:14.120 We started with more than three.  
NOTE Confidence: 0.704995241666667

00:55:14.120 --> 00:55:16.675 We published we need to drop others  
NOTE Confidence: 0.704995241666667

00:55:16.680 --> 00:55:20.712 because we couldn't get to a basic  
NOTE Confidence: 0.704995241666667

00:55:20.712 --> 00:55:24.238 standard of performance of the Multiplex.  
NOTE Confidence: 0.704995241666667

00:55:24.240 --> 00:55:25.260 There's several challenges,  
NOTE Confidence: 0.704995241666667

00:55:25.260 --> 00:55:26.960 technical challenges how to get  
NOTE Confidence: 0.704995241666667

00:55:26.960 --> 00:55:28.661 the same sample across different  
NOTE Confidence: 0.704995241666667

00:55:28.661 --> 00:55:30.593 places right and things like that.  
NOTE Confidence: 0.704995241666667

00:55:30.600 --> 00:55:33.752 But I think that is is is very  
NOTE Confidence: 0.704995241666667

00:55:33.752 --> 00:55:35.599 challenging in my opinion.  
NOTE Confidence: 0.704995241666667

00:55:35.600 --> 00:55:38.352 I think that is any of these Multiplex  
NOTE Confidence: 0.704995241666667

00:55:38.352 --> 00:55:41.828 as I get to the clear setting is to

NOTE Confidence: 0.704995241666667  
00:55:41.828 --> 00:55:43.798 answer kind of fundamental questions.  
NOTE Confidence: 0.704995241666667  
00:55:43.800 --> 00:55:46.696 So far is this a hot tumor or  
NOTE Confidence: 0.704995241666667  
00:55:46.696 --> 00:55:48.800 is this a cold tumor?  
NOTE Confidence: 0.704995241666667  
00:55:48.800 --> 00:55:51.250 This tumor express the cell that I'm  
NOTE Confidence: 0.704995241666667  
00:55:51.250 --> 00:55:53.919 looking for the market I'm looking for.  
NOTE Confidence: 0.704995241666667  
00:55:53.920 --> 00:55:57.410 I I also have a lot of hope on the  
NOTE Confidence: 0.704995241666667  
00:55:57.515 --> 00:55:59.934 ABC field if that pan out and we  
NOTE Confidence: 0.704995241666667  
00:55:59.934 --> 00:56:01.580 need more proteins to be examined  
NOTE Confidence: 0.704995241666667  
00:56:01.580 --> 00:56:03.344 if they're used as a biomarker  
NOTE Confidence: 0.704995241666667  
00:56:03.344 --> 00:56:05.162 to select patient maybe it's  
NOTE Confidence: 0.704995241666667  
00:56:05.162 --> 00:56:06.714 an opportunity for Multiplex.  
NOTE Confidence: 0.704995241666667  
00:56:06.720 --> 00:56:09.192 But I'm I'm I'm I will be nervous  
NOTE Confidence: 0.704995241666667  
00:56:09.192 --> 00:56:11.771 about the performance of different  
NOTE Confidence: 0.704995241666667  
00:56:11.771 --> 00:56:15.118 laboratory and and if they have the  
NOTE Confidence: 0.704995241666667  
00:56:15.120 --> 00:56:17.760 right skills and the right controls  
NOTE Confidence: 0.704995241666667

00:56:17.760 --> 00:56:19.960 to actually validate the work.  
NOTE Confidence: 0.704995241666667

00:56:19.960 --> 00:56:21.840 I just followed up with a quick question.  
NOTE Confidence: 0.704995241666667

00:56:21.840 --> 00:56:23.840 So they're all related to the member sites.  
NOTE Confidence: 0.60555955

00:56:26.240 --> 00:56:28.170 Have you compared it to  
NOTE Confidence: 0.60555955

00:56:28.170 --> 00:56:30.040 just regular HD tails? No,  
NOTE Confidence: 0.66479048

00:56:32.520 --> 00:56:35.897 I haven't. But it's happening actually.  
NOTE Confidence: 0.66479048

00:56:35.897 --> 00:56:39.119 Why happening? Because we have a  
NOTE Confidence: 0.66479048

00:56:39.119 --> 00:56:41.684 group of computational pathology  
NOTE Confidence: 0.66479048

00:56:41.684 --> 00:56:46.100 that they like our Multiplex images  
NOTE Confidence: 0.66479048

00:56:46.100 --> 00:56:50.604 from these or codecs or the UMX,  
NOTE Confidence: 0.66479048

00:56:50.604 --> 00:56:54.118 but they want to work with H&Amp;ES.  
NOTE Confidence: 0.66479048

00:56:54.120 --> 00:56:56.160 And actually I had a couple of slides  
NOTE Confidence: 0.66479048

00:56:56.160 --> 00:56:58.266 on the printer plate lesion that all  
NOTE Confidence: 0.66479048

00:56:58.266 --> 00:57:00.560 these fancy T cell work that we did,  
NOTE Confidence: 0.66479048

00:57:00.560 --> 00:57:02.666 somebody can do it very well  
NOTE Confidence: 0.66479048

00:57:02.666 --> 00:57:04.728 with a metoxilinous aosine and

NOTE Confidence: 0.66479048

00:57:04.728 --> 00:57:05.918 computational pathology.

NOTE Confidence: 0.66479048

00:57:05.920 --> 00:57:07.639 So I think that there is hope with that,

NOTE Confidence: 0.66479048

00:57:07.640 --> 00:57:09.740 but but you know the things that

NOTE Confidence: 0.66479048

00:57:09.740 --> 00:57:12.222 we need to know what we're looking

NOTE Confidence: 0.66479048

00:57:12.222 --> 00:57:14.616 for and if we don't do this

NOTE Confidence: 0.66479048

00:57:14.616 --> 00:57:15.960 smart in depth characterization,

NOTE Confidence: 0.66479048

00:57:15.960 --> 00:57:20.279 we're not exactly what we're looking for.

NOTE Confidence: 0.66479048

00:57:20.280 --> 00:57:23.520 And then if that can be given by deal

NOTE Confidence: 0.66479048

00:57:23.520 --> 00:57:26.680 a simple computational pathology assay,

NOTE Confidence: 0.66479048

00:57:26.680 --> 00:57:27.488 I'm all for it.

NOTE Confidence: 0.66479048

00:57:27.488 --> 00:57:29.560 But we need to know if we can do that.

NOTE Confidence: 0.66479048

00:57:29.560 --> 00:57:31.758 And those can do a spatial analysis,

NOTE Confidence: 0.66479048

00:57:31.760 --> 00:57:32.960 very simple, very easy,

NOTE Confidence: 0.734714407142857

00:57:41.480 --> 00:57:43.839 11 difficulty that I see this type

NOTE Confidence: 0.672048576

00:57:46.600 --> 00:57:49.500 of field, Is that everything for you?

NOTE Confidence: 0.672048576

00:57:49.500 --> 00:57:50.640 Yeah, some redundancy.  
NOTE Confidence: 0.672048576

00:57:50.640 --> 00:57:52.640 It's very difficult to identify something.  
NOTE Confidence: 0.672048576

00:57:52.640 --> 00:57:53.861 Everything is correlated.  
NOTE Confidence: 0.672048576

00:57:53.861 --> 00:57:57.400 And the second one is the spatial analysis.  
NOTE Confidence: 0.672048576

00:57:57.400 --> 00:57:59.638 Generally, the distance between the cells  
NOTE Confidence: 0.672048576

00:57:59.640 --> 00:58:02.478 is inversely related with the density.  
NOTE Confidence: 0.672048576

00:58:02.480 --> 00:58:04.240 So essentially, typically the distance  
NOTE Confidence: 0.672048576

00:58:04.240 --> 00:58:05.393 is the inverse of the density.  
NOTE Confidence: 0.672048576

00:58:05.393 --> 00:58:08.280 So it's a survey measurement of this.  
NOTE Confidence: 0.672048576

00:58:08.280 --> 00:58:09.240 How do you think we can  
NOTE Confidence: 0.7468316075

00:58:10.120 --> 00:58:11.360 extract or clean data  
NOTE Confidence: 0.673593256666667

00:58:11.360 --> 00:58:13.478 without those redundancy or those problems?  
NOTE Confidence: 0.673593256666667

00:58:13.480 --> 00:58:18.546 Do you have any? No, I I think that I  
NOTE Confidence: 0.673593256666667

00:58:18.546 --> 00:58:21.084 mean to me all this work is a way to  
NOTE Confidence: 0.673593256666667

00:58:21.084 --> 00:58:23.133 actually start mastering tools, right.  
NOTE Confidence: 0.673593256666667

00:58:23.133 --> 00:58:25.477 So are you can you do this special,

NOTE Confidence: 0.673593256666667  
00:58:25.480 --> 00:58:29.800 can you do go the Multiplex, you do go the  
NOTE Confidence: 0.7305560304  
00:58:32.280 --> 00:58:34.488 Multiplex asset, do they actually give  
NOTE Confidence: 0.7305560304  
00:58:34.488 --> 00:58:36.982 you the right answer for you expect  
NOTE Confidence: 0.7305560304  
00:58:36.982 --> 00:58:39.208 in terms of immune response and that  
NOTE Confidence: 0.7305560304  
00:58:39.276 --> 00:58:41.396 correlate with outcome of patient?  
NOTE Confidence: 0.7305560304  
00:58:41.400 --> 00:58:43.440 That's the basic question I think.  
NOTE Confidence: 0.7305560304  
00:58:43.440 --> 00:58:45.918 I think that we're at that stage  
NOTE Confidence: 0.7305560304  
00:58:45.920 --> 00:58:47.728 is any of these going to be a  
NOTE Confidence: 0.7305560304  
00:58:47.728 --> 00:58:49.400 biomarker I don't think so right.  
NOTE Confidence: 0.7305560304  
00:58:49.400 --> 00:58:51.784 We know that but actually it's it's pointed  
NOTE Confidence: 0.7305560304  
00:58:51.784 --> 00:58:54.555 out in the right direction in terms of  
NOTE Confidence: 0.7305560304  
00:58:54.555 --> 00:58:56.560 the methodology that you're applying.  
NOTE Confidence: 0.7305560304  
00:58:56.560 --> 00:58:57.280 So that's why I, I,  
NOTE Confidence: 0.7305560304  
00:58:57.280 --> 00:58:59.554 I fully agree with your comment  
NOTE Confidence: 0.7305560304  
00:58:59.554 --> 00:59:01.691 about you know everything correlate  
NOTE Confidence: 0.7305560304

00:59:01.691 --> 00:59:03.915 with everything and I I I promise  
NOTE Confidence: 0.7305560304

00:59:03.915 --> 00:59:05.365 I'm not hiding anything that didn't  
NOTE Confidence: 0.7305560304

00:59:05.365 --> 00:59:07.081 correlate and it makes sense because  
NOTE Confidence: 0.7305560304

00:59:07.081 --> 00:59:09.017 that's you find those right a lot  
NOTE Confidence: 0.7305560304

00:59:09.017 --> 00:59:10.302 of things that correlate don't  
NOTE Confidence: 0.7305560304

00:59:10.302 --> 00:59:12.600 make sense I I didn't hide any.  
NOTE Confidence: 0.7305560304

00:59:12.600 --> 00:59:15.744 So we we we're we're we feel good about it.  
NOTE Confidence: 0.7305560304

00:59:15.744 --> 00:59:18.918 So the other thing is that in  
NOTE Confidence: 0.7305560304

00:59:18.918 --> 00:59:22.986 that sense if you master these  
NOTE Confidence: 0.7305560304

00:59:22.986 --> 00:59:26.822 approaches can help you to better  
NOTE Confidence: 0.7305560304

00:59:26.822 --> 00:59:32.234 work with biomarker will be complex,  
NOTE Confidence: 0.7305560304

00:59:32.240 --> 00:59:35.674 right in terms of immune response when  
NOTE Confidence: 0.7305560304

00:59:35.674 --> 00:59:39.552 the real biomarker comes and the real  
NOTE Confidence: 0.7305560304

00:59:39.552 --> 00:59:42.798 biomarker will come on prospective  
NOTE Confidence: 0.7305560304

00:59:42.798 --> 00:59:45.198 clinical trials in which biopsies  
NOTE Confidence: 0.7305560304

00:59:45.198 --> 00:59:47.620 and other samples that you can save

NOTE Confidence: 0.7305560304

00:59:47.686 --> 00:59:50.312 in the freezer and but starting with

NOTE Confidence: 0.7305560304

00:59:50.312 --> 00:59:52.452 tissue analyze tissue on prospective

NOTE Confidence: 0.7305560304

00:59:52.452 --> 00:59:55.305 basis and for immune oncology on

NOTE Confidence: 0.7305560304

00:59:55.305 --> 00:59:58.360 in my opinion on logituinal basis,

NOTE Confidence: 0.7305560304

00:59:58.360 --> 00:59:58.882 right.

NOTE Confidence: 0.7305560304

00:59:58.882 --> 01:00:01.492 So get clinical trials biopsy

NOTE Confidence: 0.7305560304

01:00:01.492 --> 01:00:03.954 before on ongoing treatment and

NOTE Confidence: 0.7305560304

01:00:03.954 --> 01:00:06.310 you are lucky on time of progress

NOTE Confidence: 0.7305560304

01:00:06.310 --> 01:00:08.560 that will give you the answer.

NOTE Confidence: 0.7305560304

01:00:08.560 --> 01:00:11.224 I have experience working in rare

NOTE Confidence: 0.7305560304

01:00:11.224 --> 01:00:13.000 tumors with logituinal biopsies.

NOTE Confidence: 0.7305560304

01:00:13.000 --> 01:00:14.981 And sarcoma they were cold after a

NOTE Confidence: 0.7305560304

01:00:14.981 --> 01:00:16.887 couple of cycles of immune checkpoints

NOTE Confidence: 0.7305560304

01:00:16.887 --> 01:00:18.885 are not cold anymore and actually

NOTE Confidence: 0.7305560304

01:00:18.885 --> 01:00:20.679 some of those patients benefit

NOTE Confidence: 0.7305560304

01:00:20.679 --> 01:00:22.434 with very long stable diseases.  
NOTE Confidence: 0.7305560304

01:00:22.440 --> 01:00:24.840 So I think that when we go to that area,  
NOTE Confidence: 0.7305560304

01:00:24.840 --> 01:00:26.838 I think that all these tools  
NOTE Confidence: 0.7305560304

01:00:26.838 --> 01:00:29.039 are going to make more sense.  
NOTE Confidence: 0.7305560304

01:00:29.040 --> 01:00:31.240 And and and then specific  
NOTE Confidence: 0.7305560304

01:00:31.240 --> 01:00:32.560 question about yours,  
NOTE Confidence: 0.7305560304

01:00:32.560 --> 01:00:34.960 you know the challenge of density  
NOTE Confidence: 0.7305560304

01:00:34.960 --> 01:00:37.460 and and proximity, I I don't have,  
NOTE Confidence: 0.7305560304

01:00:37.460 --> 01:00:40.480 I don't have an answer on on that.  
NOTE Confidence: 0.7305560304

01:00:40.480 --> 01:00:41.412 I heard about that.  
NOTE Confidence: 0.7305560304

01:00:41.412 --> 01:00:43.360 I don't know how exactly to correlate,  
NOTE Confidence: 0.7305560304

01:00:43.360 --> 01:00:47.193 I haven't seen the data but there's a  
NOTE Confidence: 0.7305560304

01:00:47.193 --> 01:00:51.400 lot of also there's hope on 3D analysis,  
NOTE Confidence: 0.7305560304

01:00:51.400 --> 01:00:51.920 right.  
NOTE Confidence: 0.7305560304

01:00:51.920 --> 01:00:54.170 So we can actually because whatever  
NOTE Confidence: 0.7305560304

01:00:54.170 --> 01:00:56.600 we're seeing we're seeing one dimension.

NOTE Confidence: 0.7305560304

01:00:56.600 --> 01:00:59.570 So maybe going deeper in in 3D assay will

NOTE Confidence: 0.7305560304

01:00:59.570 --> 01:01:02.839 be possible with computational pathology,

NOTE Confidence: 0.7305560304

01:01:02.840 --> 01:01:05.170 maybe you can solve that

NOTE Confidence: 0.7305560304

01:01:05.170 --> 01:01:06.564 because whatever we see now,

NOTE Confidence: 0.7305560304

01:01:06.564 --> 01:01:07.719 we're seeing in one place,

NOTE Confidence: 0.7305560304

01:01:07.720 --> 01:01:08.936 we see the density,

NOTE Confidence: 0.7305560304

01:01:08.936 --> 01:01:11.131 we see the instant in one section,

NOTE Confidence: 0.7305560304

01:01:11.131 --> 01:01:13.357 we don't know who's going on

NOTE Confidence: 0.7305560304

01:01:13.360 --> 01:01:15.892 low and above and probably it's

NOTE Confidence: 0.7305560304

01:01:15.892 --> 01:01:17.946 maybe it's that correlation not

NOTE Confidence: 0.7305560304

01:01:17.946 --> 01:01:20.188 as great as you pointed out,

NOTE Confidence: 0.7305560304

01:01:20.188 --> 01:01:21.439 but I don't,

NOTE Confidence: 0.7305560304

01:01:21.440 --> 01:01:22.520 I don't know how to actually

NOTE Confidence: 0.7305560304

01:01:22.520 --> 01:01:23.720 deal with that at this point.

NOTE Confidence: 0.588888667777778

01:01:28.080 --> 01:01:30.896 Oh, sorry. So in some core Opsi and

NOTE Confidence: 0.588888667777778

01:01:30.896 --> 01:01:33.930 both of your second vessels you can  
NOTE Confidence: 0.588888667777778

01:01:33.930 --> 01:01:36.416 see both features autoimmune microvirus  
NOTE Confidence: 0.588888667777778

01:01:36.416 --> 01:01:39.140 but you know tumor proliferative B  
NOTE Confidence: 0.588888667777778

01:01:39.140 --> 01:01:41.442 cells and hold it in microvirus And  
NOTE Confidence: 0.588888667777778

01:01:41.442 --> 01:01:43.549 you know how for those patients do  
NOTE Confidence: 0.588888667777778

01:01:43.549 --> 01:01:45.535 you think that they would respond  
NOTE Confidence: 0.588888667777778

01:01:45.535 --> 01:01:47.155 to some of these therapies.  
NOTE Confidence: 0.588888667777778

01:01:47.160 --> 01:01:49.596 And also nicely we should graph a  
NOTE Confidence: 0.588888667777778

01:01:49.596 --> 01:01:52.020 lot of this in essentially categorize  
NOTE Confidence: 0.588888667777778

01:01:52.020 --> 01:01:54.320 patients with these algorithms so  
NOTE Confidence: 0.588888667777778

01:01:54.320 --> 01:01:56.600 that we can make sure that we're not  
NOTE Confidence: 0.802395320909091

01:01:59.080 --> 01:02:01.162 you know that these algorithms are  
NOTE Confidence: 0.802395320909091

01:02:01.162 --> 01:02:03.608 biased against those areas that you know  
NOTE Confidence: 0.802395320909091

01:02:03.608 --> 01:02:05.440 essentially might have heterogeneous  
NOTE Confidence: 0.802395320909091

01:02:05.440 --> 01:02:08.880 spots of hot and cold regions.  
NOTE Confidence: 0.802395320909091

01:02:08.880 --> 01:02:11.540 So you yeah, so the the the

NOTE Confidence: 0.802395320909091  
01:02:11.540 --> 01:02:13.388 two more tetogeneity is, is,  
NOTE Confidence: 0.802395320909091  
01:02:13.388 --> 01:02:15.716 is a tissue tetogeneity sometime right.  
NOTE Confidence: 0.802395320909091  
01:02:15.720 --> 01:02:17.870 This is very challenging because  
NOTE Confidence: 0.802395320909091  
01:02:17.870 --> 01:02:21.086 if you have a small biopsy you  
NOTE Confidence: 0.802395320909091  
01:02:21.086 --> 01:02:23.909 are using what you got right.  
NOTE Confidence: 0.802395320909091  
01:02:23.909 --> 01:02:27.021 So that's big bias and and you see  
NOTE Confidence: 0.802395320909091  
01:02:27.021 --> 01:02:28.878 something that could be interpreted  
NOTE Confidence: 0.802395320909091  
01:02:28.878 --> 01:02:31.664 as priming of immune response or some  
NOTE Confidence: 0.802395320909091  
01:02:31.664 --> 01:02:34.824 either one expression that means you know  
NOTE Confidence: 0.802395320909091  
01:02:34.824 --> 01:02:37.114 that something happened already there.  
NOTE Confidence: 0.802395320909091  
01:02:37.120 --> 01:02:39.920 You you can assume that maybe the entire  
NOTE Confidence: 0.802395320909091  
01:02:39.920 --> 01:02:42.431 tumor can be followed the same, right.  
NOTE Confidence: 0.802395320909091  
01:02:42.431 --> 01:02:44.870 And if you are not lucky and you don't  
NOTE Confidence: 0.802395320909091  
01:02:44.937 --> 01:02:46.880 see it, but it's happening somewhere else,  
NOTE Confidence: 0.802395320909091  
01:02:46.880 --> 01:02:48.680 it's, it's a problem, right.  
NOTE Confidence: 0.802395320909091

01:02:48.680 --> 01:02:50.913 So that's that's and so my approach  
NOTE Confidence: 0.802395320909091

01:02:50.913 --> 01:02:53.164 has been in clinical research  
NOTE Confidence: 0.802395320909091

01:02:53.164 --> 01:02:54.997 prospective clinical trial,  
NOTE Confidence: 0.802395320909091

01:02:55.000 --> 01:02:58.156 we tried to get at least 5 biopsies, right.  
NOTE Confidence: 0.802395320909091

01:02:58.156 --> 01:03:00.292 So at least to try to  
NOTE Confidence: 0.802395320909091

01:03:00.292 --> 01:03:01.360 overcome the derogeneity.  
NOTE Confidence: 0.802395320909091

01:03:01.360 --> 01:03:03.016 Can we use the five biopsy  
NOTE Confidence: 0.802395320909091

01:03:03.016 --> 01:03:04.120 for everything that no,  
NOTE Confidence: 0.802395320909091

01:03:04.120 --> 01:03:06.757 but at least two have three and we we're,  
NOTE Confidence: 0.802395320909091

01:03:06.760 --> 01:03:08.755 we try to be good on that.  
NOTE Confidence: 0.802395320909091

01:03:08.760 --> 01:03:11.133 So that's one thing I hopefully in  
NOTE Confidence: 0.802395320909091

01:03:11.133 --> 01:03:13.078 the future more molecular imaging  
NOTE Confidence: 0.802395320909091

01:03:13.078 --> 01:03:15.640 on patients and and imaging advances  
NOTE Confidence: 0.802395320909091

01:03:15.640 --> 01:03:17.899 may help to identify the best  
NOTE Confidence: 0.802395320909091

01:03:17.899 --> 01:03:19.559 spot to get the biopsy,  
NOTE Confidence: 0.802395320909091

01:03:19.560 --> 01:03:22.460 but that's that's an issue on a larger

NOTE Confidence: 0.802395320909091  
01:03:22.460 --> 01:03:24.760 space tissue because it's resected.  
NOTE Confidence: 0.802395320909091  
01:03:24.760 --> 01:03:27.000 It's also the bias,  
NOTE Confidence: 0.802395320909091  
01:03:27.000 --> 01:03:27.560 right.  
NOTE Confidence: 0.802395320909091  
01:03:27.560 --> 01:03:30.507 So how to select I hope competition  
NOTE Confidence: 0.802395320909091  
01:03:30.507 --> 01:03:32.865 pathology tools in the future will  
NOTE Confidence: 0.802395320909091  
01:03:32.865 --> 01:03:35.815 help us to reduce the bias of an  
NOTE Confidence: 0.802395320909091  
01:03:35.815 --> 01:03:38.214 observer to select areas that actually  
NOTE Confidence: 0.802395320909091  
01:03:38.214 --> 01:03:40.923 can give us a fair representation of  
NOTE Confidence: 0.802395320909091  
01:03:40.923 --> 01:03:44.280 it of the two more in term of high,  
NOTE Confidence: 0.802395320909091  
01:03:44.280 --> 01:03:48.080 medium, low grade or infiltration.  
NOTE Confidence: 0.802395320909091  
01:03:48.080 --> 01:03:50.696 I I believe that because one of the  
NOTE Confidence: 0.802395320909091  
01:03:50.696 --> 01:03:53.067 major issues in the field of the  
NOTE Confidence: 0.802395320909091  
01:03:53.067 --> 01:03:55.554 Multiplex and I have data showing that  
NOTE Confidence: 0.802395320909091  
01:03:55.554 --> 01:03:58.759 is how people select the region of interest.  
NOTE Confidence: 0.802395320909091  
01:03:58.760 --> 01:04:00.928 Each of the images of the multi grid  
NOTE Confidence: 0.802395320909091

01:04:00.928 --> 01:04:03.992 for us is about 1mm diameter field and  
NOTE Confidence: 0.802395320909091

01:04:03.992 --> 01:04:07.928 we have a system to select those and  
NOTE Confidence: 0.802395320909091

01:04:07.928 --> 01:04:11.352 we select five per per per per case.  
NOTE Confidence: 0.802395320909091

01:04:11.352 --> 01:04:13.892 We can do whole whole, whole,  
NOTE Confidence: 0.802395320909091

01:04:13.892 --> 01:04:15.644 whole section now and we're doing  
NOTE Confidence: 0.802395320909091

01:04:15.644 --> 01:04:16.520 that in biopsy.  
NOTE Confidence: 0.802395320909091

01:04:16.520 --> 01:04:18.984 But when we started doing this work  
NOTE Confidence: 0.802395320909091

01:04:18.984 --> 01:04:21.493 have a Section 5 region but they did  
NOTE Confidence: 0.802395320909091

01:04:21.493 --> 01:04:23.119 analysis with a greed and similar  
NOTE Confidence: 0.802395320909091

01:04:23.119 --> 01:04:24.756 greed analysis I showed you before  
NOTE Confidence: 0.802395320909091

01:04:24.756 --> 01:04:26.442 we ran Casey with the monochemistry  
NOTE Confidence: 0.802395320909091

01:04:26.442 --> 01:04:28.386 with Multiplex and we're able to  
NOTE Confidence: 0.802395320909091

01:04:28.386 --> 01:04:31.088 ask for certain marker how many of  
NOTE Confidence: 0.802395320909091

01:04:31.088 --> 01:04:32.960 these equivalent to 1mm diameter  
NOTE Confidence: 0.802395320909091

01:04:32.960 --> 01:04:36.234 spots I need to get a picture of the  
NOTE Confidence: 0.802395320909091

01:04:36.234 --> 01:04:39.046 tumor from 5:00 if they gave us the

NOTE Confidence: 0.802395320909091  
01:04:39.046 --> 01:04:41.489 Max one of the highest R value .94.  
NOTE Confidence: 0.802395320909091  
01:04:41.489 --> 01:04:43.800 So I think that 5 is good for lung cancer.  
NOTE Confidence: 0.802395320909091  
01:04:43.800 --> 01:04:45.660 It may be different Melanoma maybe  
NOTE Confidence: 0.802395320909091  
01:04:45.660 --> 01:04:46.900 different sarcoma different for  
NOTE Confidence: 0.802395320909091  
01:04:46.949 --> 01:04:48.605 colorectal but for non small cell  
NOTE Confidence: 0.802395320909091  
01:04:48.605 --> 01:04:49.433 and cancer warfare.  
NOTE Confidence: 0.802395320909091  
01:04:49.440 --> 01:04:51.732 So that's it's another issue right  
NOTE Confidence: 0.802395320909091  
01:04:51.732 --> 01:04:53.864 a bias of people analyzing.  
NOTE Confidence: 0.802395320909091  
01:04:53.864 --> 01:04:56.816 So I I believe that computational  
NOTE Confidence: 0.802395320909091  
01:04:56.816 --> 01:04:59.364 pathology tools could give us us  
NOTE Confidence: 0.802395320909091  
01:04:59.364 --> 01:05:01.614 that answer actually you have when  
NOTE Confidence: 0.802395320909091  
01:05:01.614 --> 01:05:03.672 we don't have the thing to do  
NOTE Confidence: 0.802395320909091  
01:05:03.672 --> 01:05:04.260 whole sections  
NOTE Confidence: 0.738584516428572  
01:05:04.320 --> 01:05:05.880 analysis in the Multiplex.  
NOTE Confidence: 0.738584516428572  
01:05:05.880 --> 01:05:08.046 My hope is that our computational  
NOTE Confidence: 0.738584516428572

01:05:08.046 --> 01:05:09.956 pathology team can develop this  
NOTE Confidence: 0.738584516428572

01:05:09.956 --> 01:05:12.048 unbiased system that tell us these  
NOTE Confidence: 0.738584516428572

01:05:12.048 --> 01:05:14.583 are the region of interest when I give  
NOTE Confidence: 0.738584516428572

01:05:14.583 --> 01:05:16.468 you based on what they have learned,  
NOTE Confidence: 0.738584516428572

01:05:16.468 --> 01:05:18.386 we need to feed them also with  
NOTE Confidence: 0.738584516428572

01:05:18.386 --> 01:05:19.958 some of the Multiplex data,  
NOTE Confidence: 0.738584516428572

01:05:19.960 --> 01:05:21.646 the area that you could actually  
NOTE Confidence: 0.738584516428572

01:05:21.646 --> 01:05:23.719 analyze and get a good picture of  
NOTE Confidence: 0.738584516428572

01:05:23.719 --> 01:05:25.708 what's going on that tumor and  
NOTE Confidence: 0.738584516428572

01:05:25.708 --> 01:05:28.756 that's not happening these days is  
NOTE Confidence: 0.738584516428572

01:05:28.760 --> 01:05:31.240 somebody that may like lymphocyte  
NOTE Confidence: 0.738584516428572

01:05:31.240 --> 01:05:32.360 go to the lymphocyte.  
NOTE Confidence: 0.738584516428572

01:05:32.360 --> 01:05:34.638 Oh, it's a lot of information here.  
NOTE Confidence: 0.738584516428572

01:05:34.640 --> 01:05:37.720 And and and and focus only there.  
NOTE Confidence: 0.738584516428572

01:05:37.720 --> 01:05:37.840 Yeah.  
NOTE Confidence: 0.750125985

01:05:43.000 --> 01:05:43.440 All right.