WEBVTT

NOTE duration:"01:06:34.8800000"

NOTE language:en-us

NOTE Confidence: 0.8600893

00:00:00.000 --> 00:00:02.835 Search and we'll start with our first

NOTE Confidence: 0.8600893

00:00:02.835 --> 00:00:05.230 Speaker, Doctor Grace Lee Doctor Lee.

NOTE Confidence: 0.8600893

00:00:05.230 --> 00:00:08.443 As many of you may know is an assistant

NOTE Confidence: 0.8600893

00:00:08.443 --> 00:00:10.408 professor in endocrine surgery.

NOTE Confidence: 0.8600893

00:00:10.410 --> 00:00:13.119 She received her medical degree from the

NOTE Confidence: 0.8600893

00:00:13.119 --> 00:00:15.579 University of Oklahoma College of Medicine,

NOTE Confidence: 0.8600893

00:00:15.580 --> 00:00:17.570 did her her clinical training,

NOTE Confidence: 0.8600893

00:00:17.570 --> 00:00:19.162 residency in Research Fellowship

NOTE Confidence: 0.8600893

00:00:19.162 --> 00:00:21.152 at the Brigham and Women's

NOTE Confidence: 0.8600893

00:00:21.152 --> 00:00:23.140 Hospital at Harvard Medical School,

NOTE Confidence: 0.8600893

00:00:23.140 --> 00:00:25.456 and then did her fellowship in

NOTE Confidence: 0.8600893

00:00:25.456 --> 00:00:27.920 endocrine surgery at the male clinic.

NOTE Confidence: 0.8600893

00:00:27.920 --> 00:00:29.910 Before we were very fortunate,

NOTE Confidence: 0.8600893

00:00:29.910 --> 00:00:32.230 obviously, to recruit her here.

NOTE Confidence: 0.8600893

00:00:32.230 --> 00:00:35.190 TL Doctor Lee is is really an innovative

NOTE Confidence: 0.8600893

00:00:35.190 --> 00:00:37.208 expert and endocrine surgery and

NOTE Confidence: 0.8600893

00:00:37.208 --> 00:00:40.001 is looking at new ways to combat.

NOTE Confidence: 0.8600893

00:00:40.010 --> 00:00:41.174 Obviously thyroid, parathyroid,

NOTE Confidence: 0.8600893

00:00:41.174 --> 00:00:42.338 cancer among others,

NOTE Confidence: 0.8600893

00:00:42.340 --> 00:00:45.068 and seeing how we can, you know,

NOTE Confidence: 0.8600893

00:00:45.068 --> 00:00:46.624 leverage new techniques to

NOTE Confidence: 0.8600893

00:00:46.624 --> 00:00:48.180 improve the care patients,

NOTE Confidence: 0.8600893

00:00:48.180 --> 00:00:50.442 and I have a firmer understanding

NOTE Confidence: 0.8600893

00:00:50.442 --> 00:00:52.460 of the disease and Grace.

NOTE Confidence: 0.8600893

00:00:52.460 --> 00:00:55.036 I want to thank you for taking

NOTE Confidence: 0.8600893

00:00:55.036 --> 00:00:57.897 the time to join us for cancer,

NOTE Confidence: 0.8600893

00:00:57.900 --> 00:01:00.630 grand rounds and welcome hearing you talk.

NOTE Confidence: 0.7893906

00:01:03.050 --> 00:01:05.098 Thank you that confuse.

NOTE Confidence: 0.7893906

00:01:05.098 --> 00:01:07.658 That was very kind introduction.

NOTE Confidence: 0.7893906

00:01:07.660 --> 00:01:10.836 I am delighted to be able to

NOTE Confidence: 0.7893906

00:01:10.836 --> 00:01:14.079 present an area of my clinical

NOTE Confidence: 0.7893906

00:01:14.079 --> 00:01:16.140 interest with everyone.

NOTE Confidence: 0.7849093

00:01:19.040 --> 00:01:20.678 Share my screen.

NOTE Confidence: 0.59053427

00:01:25.080 --> 00:01:25.840 Works.

NOTE Confidence: 0.7185738

00:01:29.090 --> 00:01:32.158 Alright, so my name is Grace Lee.

NOTE Confidence: 0.7185738

00:01:32.160 --> 00:01:37.416 I am a new ish endocrine surgeon to Yale.

NOTE Confidence: 0.7185738

00:01:37.420 --> 00:01:40.582 I joined I was very fortunate

NOTE Confidence: 0.7185738

00:01:40.582 --> 00:01:43.860 to join Yale earlier this year.

NOTE Confidence: 0.7185738

00:01:43.860 --> 00:01:47.059 Sort of at the height of the

NOTE Confidence: 0.7185738

00:01:47.059 --> 00:01:49.929 pandemic from Tulane Medical Center,

NOTE Confidence: 0.7185738

00:01:49.930 --> 00:01:53.935 down in New Orleans and I have been an

NOTE Confidence: 0.7185738

00:01:53.935 --> 00:01:57.519 early adopter of this new technique,

NOTE Confidence: 0.7185738

00:01:57.520 --> 00:01:59.035 called Radiofrequency Ablation

NOTE Confidence: 0.7185738

00:01:59.035 --> 00:02:01.055 in thyroid at Tulane.

NOTE Confidence: 0.7185738

00:02:01.060 --> 00:02:04.652 So I just wanted to share my experience

NOTE Confidence: 0.7185738

00:02:04.652 --> 00:02:08.322 and what I know about where you

NOTE Confidence: 0.7185738

00:02:08.322 --> 00:02:10.458 frequency ablation so hopefully

NOTE Confidence: 0.7185738

00:02:10.458 --> 00:02:13.898 we can also start this treatment.

NOTE Confidence: 0.7185738

00:02:13.900 --> 00:02:18.320 At Yale as well. I have no disclosures.

NOTE Confidence: 0.85200137

00:02:20.750 --> 00:02:23.100 My talk will briefly touch

NOTE Confidence: 0.85200137

00:02:23.100 --> 00:02:24.980 on several different areas.

NOTE Confidence: 0.85200137

00:02:24.980 --> 00:02:27.235 I'll just touch on the

NOTE Confidence: 0.85200137

00:02:27.235 --> 00:02:30.150 background of how the RFA works.

NOTE Confidence: 0.85200137

00:02:30.150 --> 00:02:34.546 The physics and mechanism and brief history.

NOTE Confidence: 0.85200137

00:02:34.550 --> 00:02:36.806 Current procedural guidelines.

NOTE Confidence: 0.85200137

00:02:36.806 --> 00:02:40.566 When we are deploying something

NOTE Confidence: 0.85200137

00:02:40.566 --> 00:02:44.750 knew there are governing bodies who.

NOTE Confidence: 0.85200137

00:02:44.750 --> 00:02:48.214 Guide us as far as indications and when

NOTE Confidence: 0.85200137

00:02:48.214 --> 00:02:52.284 not to do it or concerned and will cover

NOTE Confidence: 0.85200137

00:02:52.284 --> 00:02:55.689 why we should be looking into this.

NOTE Confidence: 0.85200137

00:02:55.690 --> 00:02:58.903 What are the risks and the advantages

NOTE Confidence: 0.85200137

00:02:58.903 --> 00:03:02.314 and will also visit efficacy and safety

NOTE Confidence: 0.85200137

00:03:02.314 --> 00:03:05.725 of this technique as well as I'll

NOTE Confidence: 0.85200137

00:03:05.725 --> 00:03:08.965 show you a little video clip of how

NOTE Confidence: 0.85200137

00:03:08.965 --> 00:03:11.650 this is done and future directions.

NOTE Confidence: 0.8005014

00:03:14.000 --> 00:03:17.456 Super Cutaneous Ablation is a technique

NOTE Confidence: 0.8005014

00:03:17.456 --> 00:03:21.385 that obviates the need for a surgery an

NOTE Confidence: 0.8005014

00:03:21.385 --> 00:03:25.070 I'm sure many of you are familiar with.

NOTE Confidence: 0.8005014

00:03:25.070 --> 00:03:29.100 These needle often imaging guided.

NOTE Confidence: 0.8005014

00:03:29.100 --> 00:03:31.532 Way of eliminating undesirable

NOTE Confidence: 0.8005014

00:03:31.532 --> 00:03:34.572 tissue of their multiple different

NOTE Confidence: 0.8005014

00:03:34.572 --> 00:03:37.790 ways of burning or zapping things,

NOTE Confidence: 0.8005014

00:03:37.790 --> 00:03:40.102 we have utilized laser,

NOTE Confidence: 0.8005014

00:03:40.102 --> 00:03:41.258 microwave cryotherapy,

NOTE Confidence: 0.8005014

00:03:41.260 --> 00:03:43.376 freezing it, burning it,

NOTE Confidence: 0.8005014

00:03:43.376 --> 00:03:46.021 even injecting ethanol to a

NOTE Confidence: 0.8005014

00:03:46.021 --> 00:03:48.210 chemical esclerosis things,

NOTE Confidence: 0.8005014

00:03:48.210 --> 00:03:52.158 or Hifu which is high intensity

NOTE Confidence: 0.8005014

00:03:52.158 --> 00:03:53.474 focused ultrasound.

NOTE Confidence: 0.8005014

00:03:53.480 --> 00:03:56.600 Today we are going to focus

NOTE Confidence: 0.8005014

00:03:56.600 --> 00:03:58.160 on radiofrequency ablation,

NOTE Confidence: 0.8005014

00:03:58.160 --> 00:04:01.975 which is on the spectrum of these

NOTE Confidence: 0.8005014

00:04:01.975 --> 00:04:04.700 energy harnessing ablation techniques.

NOTE Confidence: 0.8005014

00:04:04.700 --> 00:04:07.288 Radiofrequency just a brief.

NOTE Confidence: 0.8005014

00:04:07.288 --> 00:04:11.170 Physics is concentrating heat or thermal

NOTE Confidence: 0.8005014

00:04:11.266 --> 00:04:15.298 energy at the tip of an electrode catheter.

NOTE Confidence: 0.8005014

00:04:15.300 --> 00:04:18.995 By alternating current and this

NOTE Confidence: 0.8005014

00:04:18.995 --> 00:04:22.690 frictional heat that gets generated

NOTE Confidence: 0.8005014

00:04:22.809 --> 00:04:25.677 from ionic molecules will.

NOTE Confidence: 0.8005014

00:04:25.680 --> 00:04:28.165 Turn into conductive heat from

NOTE Confidence: 0.8005014

00:04:28.165 --> 00:04:30.650 this frictional heat and create

NOTE Confidence: 0.8005014

00:04:30.735 --> 00:04:32.499 this Adelaide of unit.

NOTE Confidence: 0.8005014

00:04:32.500 --> 00:04:35.470 An if you sustain this heat

NOTE Confidence: 0.8005014

00:04:35.470 --> 00:04:37.450 enough in that area,

NOTE Confidence: 0.8005014

00:04:37.450 --> 00:04:39.950 this thermal energy will.

NOTE Confidence: 0.8005014

00:04:39.950 --> 00:04:42.450 Cause irreversible cellular damage,

NOTE Confidence: 0.8005014

00:04:42.450 --> 00:04:44.301 so essentially coagulations

NOTE Confidence: 0.8005014

00:04:44.301 --> 00:04:47.386 necrosis but without charring the

NOTE Confidence: 0.8005014

00:04:47.386 --> 00:04:50.630 tissue or carbonation of tissue.

NOTE Confidence: 0.8005014

00:04:50.630 --> 00:04:52.193 Radiofrequency Ablation in medicine.

NOTE Confidence: 0.8005014

00:04:52.193 --> 00:04:54.148 Interesting Lee has been utilized

NOTE Confidence: 0.8005014

00:04:54.148 --> 00:04:55.640 for a long time.

NOTE Confidence: 0.8005014

00:04:55.640 --> 00:04:59.280 It has been around in medicine for over

NOTE Confidence: 0.8005014

00:04:59.280 --> 00:05:02.845 75 years and some of the areas that.

NOTE Confidence: 0.8005014

00:05:02.850 --> 00:05:05.214 Have already started using

NOTE Confidence: 0.8005014

00:05:05.214 --> 00:05:06.987 regular frequency ablation.

NOTE Confidence: 0.8005014

00:05:06.990 --> 00:05:09.820 Are wide cardiology started using

NOTE Confidence: 0.8005014

00:05:09.820 --> 00:05:13.490 this for a rythmia vascular surgery?

NOTE Confidence: 0.8005014

00:05:13.490 --> 00:05:17.120 Surgeons use for varicose veins.

NOTE Confidence: 0.8005014

00:05:17.120 --> 00:05:19.750 Orthopedic surgeons an for us

NOTE Confidence: 0.8005014

00:05:19.750 --> 00:05:22.380 there uncle logic purposes for

NOTE Confidence: 0.8005014

00:05:22.470 --> 00:05:25.275 radiofrequency ablation that you may

NOTE Confidence: 0.8005014

00:05:25.275 --> 00:05:28.610 be familiar with for either meta,

NOTE Confidence: 0.8005014

00:05:28.610 --> 00:05:31.340 static or primary liver lesions

NOTE Confidence: 0.8005014

00:05:31.340 --> 00:05:34.384 in pulmonary Mets, Adrenal Mets,

NOTE Confidence: 0.8005014

00:05:34.384 --> 00:05:35.086 solitairy,

NOTE Confidence: 0.8005014

00:05:35.086 --> 00:05:40.000 renal lesions as well as Barrett's esophagus.

NOTE Confidence: 0.8005014

00:05:40.000 --> 00:05:43.090 History of thyroid RFA is not

NOTE Confidence: 0.8005014

00:05:43.090 --> 00:05:46.917 as deep as the history of RFA

NOTE Confidence: 0.8005014

00:05:46.917 --> 00:05:50.199 in other parts of the body.

NOTE Confidence: 0.8005014

00:05:50.200 --> 00:05:53.428 2001 was kind of burst here.

NOTE Confidence: 0.8005014

00:05:53.430 --> 00:05:57.175 I am at year for thyroid RFA.

NOTE Confidence: 0.8005014

00:05:57.180 --> 00:06:01.198 The paper at the top for Catania's

NOTE Confidence: 0.8005014

00:06:01.198 --> 00:06:04.170 radio frequency evolution of the fire.

NOTE Confidence: 0.8005014

00:06:04.170 --> 00:06:07.386 Guided ultrasound is single animal report.

NOTE Confidence: 0.8005014

00:06:07.390 --> 00:06:11.612 The animal used was a pig. In Japan.

NOTE Confidence: 0.8005014

00:06:11.612 --> 00:06:15.870 And that this was just a proof of concept.

NOTE Confidence: 0.8005014

00:06:15.870 --> 00:06:17.702 Is radiofrequency ablation feasible?

NOTE Confidence: 0.8005014

00:06:17.702 --> 00:06:19.076 Is this safe?

NOTE Confidence: 0.8005014

00:06:19.080 --> 00:06:20.206 In subsequently.

NOTE Confidence: 0.8005014

00:06:20.206 --> 00:06:23.584 It's interesting that our colleagues at

NOTE Confidence: 0.8005014

00:06:23.584 --> 00:06:26.001 ground both Interventional radiology

NOTE Confidence: 0.8005014

00:06:26.001 --> 00:06:29.625 and surgery Department got together and

NOTE Confidence: 0.8005014

00:06:29.625 --> 00:06:33.570 try this RFA in recurrent thyroid tumors.

NOTE Confidence: 0.8005014

00:06:33.570 --> 00:06:36.720 So this technique has been utilized.

NOTE Confidence: 0.8005014

00:06:36.720 --> 00:06:40.140 Has been kind of played with

NOTE Confidence: 0.8005014

00:06:40.140 --> 00:06:43.520 for now nearly two decades.

NOTE Confidence: 0.8005014

00:06:43.520 --> 00:06:45.638 The person who actually took it

NOTE Confidence: 0.8005014

00:06:45.638 --> 00:06:48.932 and ran with it is this physician

NOTE Confidence: 0.8005014

00:06:48.932 --> 00:06:51.336 Interventional radiologist after Beck.

NOTE Confidence: 0.8005014

00:06:51.340 --> 00:06:53.640 Doctor Beck is located in

NOTE Confidence: 0.8005014

00:06:53.640 --> 00:06:55.940 Austin Medical Center in Seoul,

NOTE Confidence: 0.8005014

00:06:55.940 --> 00:06:56.452 Korea.

NOTE Confidence: 0.8005014

00:06:56.452 --> 00:06:59.524 He himself also had multiple benign

NOTE Confidence: 0.8005014

00:06:59.524 --> 00:07:02.532 thyroid nodules and about 25 years

NOTE Confidence: 0.8005014

00:07:02.532 --> 00:07:05.304 ago he was recommended by Korean

NOTE Confidence: 0.8005014

00:07:05.304 --> 00:07:07.796 surgeons to undergo a thyroid surgery

NOTE Confidence: 0.8005014

00:07:07.796 --> 00:07:10.680 an he did not want to surgery,

NOTE Confidence: 0.8005014

00:07:10.680 --> 00:07:14.440 so he started looking into what other ways?

NOTE Confidence: 0.8005014

00:07:14.440 --> 00:07:16.942 Are there to eliminate thyroid nodule

NOTE Confidence: 0.8005014

00:07:16.942 --> 00:07:19.680 and he started to focus on RFA.

NOTE Confidence: 0.8005014

00:07:19.680 --> 00:07:23.439 Not only he started doing this for.

NOTE Confidence: 0.8005014

00:07:23.440 --> 00:07:23.957 Patience.

NOTE Confidence: 0.8005014

00:07:23.957 --> 00:07:27.059 He himself has undergone this treatment

NOTE Confidence: 0.8005014

00:07:27.059 --> 00:07:30.141 so he has been really transparent

NOTE Confidence: 0.8005014

00:07:30.141 --> 00:07:34.086 about the results of RFA and he has

NOTE Confidence: 0.8005014

00:07:34.086 --> 00:07:37.453 been a passionate advocate for how this.

NOTE Confidence: 0.8005014

00:07:37.460 --> 00:07:40.316 Technique should be utilized an efficiently,

NOTE Confidence: 0.8005014

00:07:40.320 --> 00:07:43.645 safely and he has given multiple talks.

NOTE Confidence: 0.8512851

00:07:43.650 --> 00:07:46.650 He's been the most prolific.

NOTE Confidence: 0.8512851

00:07:46.650 --> 00:07:48.638 Writer in the RFA.

NOTE Confidence: 0.8512851

00:07:48.638 --> 00:07:50.626 Literature for this technique.

NOTE Confidence: 0.8512851

00:07:50.630 --> 00:07:54.214 So in 2009, the Korean Society of

NOTE Confidence: 0.8512851

00:07:54.214 --> 00:07:56.940 thyroid radiology came up with

NOTE Confidence: 0.8512851

00:07:56.940 --> 00:07:59.680 recommendations for how Virat RFA

NOTE Confidence: 0.8512851

00:07:59.680 --> 00:08:02.657 should be deployed and in 2012

NOTE Confidence: 0.8512851

00:08:02.657 --> 00:08:05.534 they came up with the 1st edition

NOTE Confidence: 0.8512851

00:08:05.540 --> 00:08:08.020 of guidelines for thyroid RFA.

NOTE Confidence: 0.8512851

00:08:08.020 --> 00:08:10.912 In 2017, they revised the guidelines

NOTE Confidence: 0.8512851

00:08:10.912 --> 00:08:14.603 and came up with a more updated

NOTE Confidence: 0.8512851

00:08:14.603 --> 00:08:17.388 version of thyroid RFA guidelines.

NOTE Confidence: 0.8512851

00:08:17.390 --> 00:08:20.246 Since then, this technique has been

NOTE Confidence: 0.8512851

00:08:20.246 --> 00:08:22.150 utilized worldwide in multiple

NOTE Confidence: 0.8512851

00:08:22.230 --> 00:08:24.180 hands-on teaching sessions,

NOTE Confidence: 0.8512851

00:08:24.180 --> 00:08:26.790 and workshops have been taught

NOTE Confidence: 0.8512851

00:08:26.790 --> 00:08:29.400 by Doctor Beck in others.

NOTE Confidence: 0.8512851

00:08:29.400 --> 00:08:30.795 So Japan, Taiwan.

NOTE Confidence: 0.8512851

00:08:30.795 --> 00:08:31.260 Obviously,

NOTE Confidence: 0.8512851

00:08:31.260 --> 00:08:34.050 a lot of Asian countries as

NOTE Confidence: 0.8512851

00:08:34.137 --> 00:08:37.042 well as European countries have

NOTE Confidence: 0.8512851

00:08:37.042 --> 00:08:38.785 embraced this technique,

NOTE Confidence: 0.8512851

00:08:38.790 --> 00:08:45.410 and it has slowly gotten to the US as well.

NOTE Confidence: 0.8512851

00:08:45.410 --> 00:08:48.833 So last year this is obviously pre

NOTE Confidence: 0.8512851

00:08:48.833 --> 00:08:51.301 kovid medical conference that we

NOTE Confidence: 0.8512851

00:08:51.301 --> 00:08:53.581 don't have anymore group picture

NOTE Confidence: 0.8512851

00:08:53.581 --> 00:08:56.860 folks from all over the world came

NOTE Confidence: 0.8512851

00:08:56.860 --> 00:08:59.596 together for this Korean Society of

NOTE Confidence: 0.8512851

00:08:59.600 --> 00:09:01.970 ultrasound in medicine conference case.

NOTE Confidence: 0.8512851

00:09:01.970 --> 00:09:04.766 Some insult and I was fortunate

NOTE Confidence: 0.8512851

00:09:04.766 --> 00:09:07.193 to participate in this conference

NOTE Confidence: 0.8512851

00:09:07.193 --> 00:09:10.037 in learn RFA from this conference

NOTE Confidence: 0.8512851

00:09:10.037 --> 00:09:13.540 as well as Doctor Beck afterwards.

NOTE Confidence: 0.8512851

00:09:13.540 --> 00:09:17.656 So there is a great interest and.

NOTE Confidence: 0.8512851

00:09:17.660 --> 00:09:20.192 The things that I have learned

NOTE Confidence: 0.8512851

00:09:20.192 --> 00:09:22.396 in the collaboration in the

NOTE Confidence: 0.8512851

00:09:22.396 --> 00:09:24.546 friendships that I have made.

NOTE Confidence: 0.8512851

00:09:24.550 --> 00:09:27.570 In Korea have been invaluable.

NOTE Confidence: 0.8512851

00:09:27.570 --> 00:09:29.978 And it really has helped me a lot

NOTE Confidence: 0.8512851

00:09:29.978 --> 00:09:32.738 in a deploying this technique at

NOTE Confidence: 0.8512851

00:09:32.738 --> 00:09:35.333 my prior institution at Tulane.

NOTE Confidence: 0.8512851

00:09:35.340 --> 00:09:38.150 So in 2015, Italian radiologists,

NOTE Confidence: 0.8512851

00:09:38.150 --> 00:09:39.332 an endocrinologist,

NOTE Confidence: 0.8512851

00:09:39.332 --> 00:09:42.878 came up with a consensus opinion

NOTE Confidence: 0.8512851

00:09:42.878 --> 00:09:44.880 an in the UK.

NOTE Confidence: 0.8512851

00:09:44.880 --> 00:09:47.660 They came together and consolidated

NOTE Confidence: 0.8512851

00:09:47.660 --> 00:09:51.610 recommendation in 2016 and 2017 in Australia.

NOTE Confidence: 0.8512851

00:09:51.610 --> 00:09:56.098 So what about us? What about the US?

NOTE Confidence: 0.8512851

00:09:56.100 --> 00:10:00.139 Why are we not widely adapting RFA?

NOTE Confidence: 0.8512851

00:10:00.140 --> 00:10:04.214 Why are we just now catching on?

NOTE Confidence: 0.8512851

00:10:04.220 --> 00:10:04.694 So.

NOTE Confidence: 0.8512851

00:10:04.694 --> 00:10:08.012 There are multiple reasons as to why

NOTE Confidence: 0.8512851

00:10:08.012 --> 00:10:12.000 the US sort of has lagged behind

NOTE Confidence: 0.8512851

00:10:12.000 --> 00:10:14.930 in adaptacion of this technique.

NOTE Confidence: 0.8512851

00:10:14.930 --> 00:10:17.954 It's not that clinicians in the

NOTE Confidence: 0.8512851

00:10:17.954 --> 00:10:20.700 US have not heard of it,

NOTE Confidence: 0.8512851

00:10:20.700 --> 00:10:24.207 it's just that we have been a

NOTE Confidence: 0.8512851

00:10:24.207 --> 00:10:27.270 little bit more cautious and.

NOTE Confidence: 0.8512851

00:10:27.270 --> 00:10:28.587 As of late,

NOTE Confidence: 0.8512851

00:10:28.587 --> 00:10:31.660 just in the past couple years there

NOTE Confidence: 0.8512851

00:10:31.760 --> 00:10:35.421 has been a booming interest in RFA

NOTE Confidence: 0.8512851

00:10:35.421 --> 00:10:37.745 technique by multiple societies

NOTE Confidence: 0.8512851

00:10:37.745 --> 00:10:41.015 who deal with thyroid pathology.

NOTE Confidence: 0.8512851

00:10:41.020 --> 00:10:44.261 An I'm sure that this RFA technique

NOTE Confidence: 0.8512851

00:10:44.261 --> 00:10:48.428 will be widely deployed and widely utilized,

NOTE Confidence: 0.8512851

00:10:48.430 --> 00:10:53.206 and I hope that yell will also start

NOTE Confidence: 0.8512851

00:10:53.206 --> 00:10:57.270 offering this treatment as well soon.

NOTE Confidence: 0.8512851

00:10:57.270 --> 00:10:58.242 So the.

NOTE Confidence: 0.8512851

00:10:58.242 --> 00:11:01.158 A Sentinel event that kind of

NOTE Confidence: 0.8512851

00:11:01.158 --> 00:11:04.934 took off the interest in the USI

NOTE Confidence: 0.8512851

00:11:04.934 --> 00:11:08.220 believe is this paper which came

NOTE Confidence: 0.8512851

00:11:08.220 --> 00:11:11.118 out of Mayo Clinic in 2018.

NOTE Confidence: 0.8512851

00:11:11.120 --> 00:11:14.210 The group here are comprised of

NOTE Confidence: 0.8512851

00:11:14.210 --> 00:11:15.755 endocrine endocrinologist who

NOTE Confidence: 0.8512851

00:11:15.755 --> 00:11:17.309 actually do their own.

NOTE Confidence: 0.8512851

00:11:17.310 --> 00:11:20.235 FN eisen utilizes ultrasound in

NOTE Confidence: 0.8512851

00:11:20.235 --> 00:11:24.259 clinic to assess thyroid nodules as well as.

NOTE Confidence: 0.8512851

00:11:24.260 --> 00:11:27.356 Prominent Interventional radiologists

NOTE Confidence: 0.8512851

00:11:27.356 --> 00:11:29.420 they have.

NOTE Confidence: 0.8512851

00:11:29.420 --> 00:11:33.435 Published this case series comprising

NOTE Confidence: 0.8512851

00:11:33.435 --> 00:11:38.169 14 patients over the years of

NOTE Confidence: 0.8512851

00:11:38.169 --> 00:11:41.715 2013 and 2016 in their result.

NOTE Confidence: 0.8512851

00:11:41.720 --> 00:11:45.148 Really has been terrific.

NOTE Confidence: 0.8512851

00:11:45.148 --> 00:11:50.290 They achieve volume reduction by 45%.

NOTE Confidence: 0.8512851

00:11:50.290 --> 00:11:53.545 As early as eight months and Durably

NOTE Confidence: 0.8512851

00:11:53.545 --> 00:11:56.727 at couple years out in very safely,

NOTE Confidence: 0.8512851

00:11:56.730 --> 00:12:00.160 so I think this paper actually sort

NOTE Confidence: 0.8512851

00:12:00.160 --> 00:12:04.089 of put RFA on the map for the US,

NOTE Confidence: 0.8512851

00:12:04.090 --> 00:12:05.470 clinicians and audience.

NOTE Confidence: 0.8512851

00:12:05.470 --> 00:12:06.850 So since then,

NOTE Confidence: 0.8512851

00:12:06.850 --> 00:12:09.150 there has been many workshops

NOTE Confidence: 0.8512851

00:12:09.150 --> 00:12:10.070 and conferences,

NOTE Confidence: 0.8512851

00:12:10.070 --> 00:12:14.998 and as of late I have been getting.

NOTE Confidence: 0.8541781

00:12:15.000 --> 00:12:17.196 Presentation notices almost monthly,

NOTE Confidence: 0.8541781

00:12:17.196 --> 00:12:21.350 so why are we excited about RFA like?

NOTE Confidence: 0.8541781

00:12:21.350 --> 00:12:23.234 What are the advantages?

NOTE Confidence: 0.8541781

00:12:23.234 --> 00:12:26.060 So one advantage that I as

NOTE Confidence: 0.8541781

00:12:26.160 --> 00:12:28.748 a surgeon really appreciate,

NOTE Confidence: 0.8541781

00:12:28.750 --> 00:12:31.930 is that patients have.

NOTE Confidence: 0.8541781

00:12:31.930 --> 00:12:35.068 Lower anxiety about undergoing a per

NOTE Confidence: 0.8541781

00:12:35.068 --> 00:12:37.160 cutaneous minimally invasive treatment

NOTE Confidence: 0.8541781

00:12:37.236 --> 00:12:39.536 rather than undergoing a surgery.

NOTE Confidence: 0.8541781

00:12:39.540 --> 00:12:41.564 Most of my patients,

NOTE Confidence: 0.8541781

00:12:41.564 --> 00:12:43.588 unlike patients in Korea,

NOTE Confidence: 0.8541781

00:12:43.590 --> 00:12:46.632 are a little bit less concerned

NOTE Confidence: 0.8541781

00:12:46.632 --> 00:12:48.660 about the cosmetic outcome.

NOTE Confidence: 0.8541781

00:12:48.660 --> 00:12:50.992 The scar after surgery,

NOTE Confidence: 0.8541781

00:12:50.992 --> 00:12:54.490 but they are still very anxious

NOTE Confidence: 0.8541781

00:12:54.604 --> 00:12:57.469 about just the prospect of

NOTE Confidence: 0.8541781

00:12:57.469 --> 00:13:00.760 having to undergo a surgery so.

NOTE Confidence: 0.8541781

00:13:00.760 --> 00:13:02.688 I think this technique,

NOTE Confidence: 0.8541781

00:13:02.688 --> 00:13:05.580 if the patient qualifies for it,

NOTE Confidence: 0.8541781

00:13:05.580 --> 00:13:07.990 will be highly beneficial from

NOTE Confidence: 0.8541781

00:13:07.990 --> 00:13:09.436 reducing anxiety perspective,

NOTE Confidence: 0.8541781

00:13:09.440 --> 00:13:11.364 and obviously this is

NOTE Confidence: 0.8541781

00:13:11.364 --> 00:13:12.807 percutaneous needle poke.

NOTE Confidence: 0.8541781

00:13:12.810 --> 00:13:16.690 There won't be a long.

NOTE Confidence: 0.8541781

00:13:16.690 --> 00:13:19.180 Scarred that will be left behind.

NOTE Confidence: 0.8541781

00:13:19.180 --> 00:13:20.342 Of course,

NOTE Confidence: 0.8541781

00:13:20.342 --> 00:13:23.247 in thyroid treatment world there

NOTE Confidence: 0.8541781

00:13:23.247 --> 00:13:27.141 has been a couple of modalities

NOTE Confidence: 0.8541781

00:13:27.141 --> 00:13:30.531 where we're taking out thyroid

NOTE Confidence: 0.8541781

00:13:30.531 --> 00:13:34.359 through the armpit axilla incision

NOTE Confidence: 0.8541781

00:13:34.359 --> 00:13:37.499 through the mouth transoral.

NOTE Confidence: 0.8541781

00:13:37.500 --> 00:13:38.043 Method,

NOTE Confidence: 0.8541781

00:13:38.043 --> 00:13:41.844 but each one of those scarless or

NOTE Confidence: 0.8541781

00:13:41.844 --> 00:13:45.006 scar hiding surgeries come with

NOTE Confidence: 0.8541781

00:13:45.006 --> 00:13:48.942 either an increased cost of robot

NOTE Confidence: 0.8541781

00:13:48.942 --> 00:13:51.549 deployment or longer surgery,

NOTE Confidence: 0.8541781

00:13:51.550 --> 00:13:54.250 longer recovery, etc.

NOTE Confidence: 0.8541781

00:13:54.250 --> 00:13:56.950 So those are.

NOTE Confidence: 0.8541781

00:13:56.950 --> 00:14:00.586 They probably have a role in

NOTE Confidence: 0.8541781

00:14:00.586 --> 00:14:03.010 the world of Barry.

NOTE Confidence: 0.8541781

00:14:03.010 --> 00:14:03.528 Treatment,

NOTE Confidence: 0.8541781

00:14:03.528 --> 00:14:06.636 but they're still not as optimal

NOTE Confidence: 0.8541781

00:14:06.636 --> 00:14:10.473 if the patient is truly aiming for

NOTE Confidence: 0.8541781

00:14:10.473 --> 00:14:13.203 the best cosmetic cosmetic outcome,

NOTE Confidence: 0.8541781

00:14:13.210 --> 00:14:15.900 and it's a needle poke,

NOTE Confidence: 0.8541781

00:14:15.900 --> 00:14:17.008 minimally invasive.

NOTE Confidence: 0.8541781

00:14:17.008 --> 00:14:20.886 There is no hospital admission for some

NOTE Confidence: 0.8541781

00:14:20.886 --> 00:14:24.489 of the thyroid surgeries that we do,

NOTE Confidence: 0.8541781

00:14:24.490 --> 00:14:27.830 of course, are outpatient, but.

NOTE Confidence: 0.8541781

00:14:27.830 --> 00:14:30.410 There is still recovery involved

NOTE Confidence: 0.8541781

00:14:30.410 --> 00:14:31.958 after general anesthesia.

NOTE Confidence: 0.8541781

00:14:31.960 --> 00:14:33.908 There is pain involved.

NOTE Confidence: 0.8541781

00:14:33.908 --> 00:14:37.469 But with this for Catania's technique of RFA,

NOTE Confidence: 0.8541781

00:14:37.470 --> 00:14:39.240 there is no general anesthesia.

NOTE Confidence: 0.8541781

00:14:39.240 --> 00:14:41.380 There is only one institution

NOTE Confidence: 0.8541781

00:14:41.380 --> 00:14:43.092 in the US currently.

NOTE Confidence: 0.8541781

00:14:43.100 --> 00:14:45.375 Who's doing this RFA under

NOTE Confidence: 0.8541781

00:14:45.375 --> 00:14:47.195 general anesthesia in Korea?

NOTE Confidence: 0.8541781

00:14:47.200 --> 00:14:50.588 This RFA is actually done in a

NOTE Confidence: 0.8541781

00:14:50.588 --> 00:14:53.971 clinic setting with no Mac sedation

NOTE Confidence: 0.8541781

00:14:53.971 --> 00:14:56.407 just under local anesthesia.

NOTE Confidence: 0.8541781

00:14:56.410 --> 00:14:58.620 It's a relatively short procedure,

NOTE Confidence: 0.8541781

00:14:58.620 --> 00:15:01.194 obviously is volume of the thyroid

NOTE Confidence: 0.8541781

00:15:01.194 --> 00:15:03.480 nodule dependent bigger to nodule,

NOTE Confidence: 0.8541781

00:15:03.480 --> 00:15:04.810 longer to procedure,

NOTE Confidence: 0.8541781

00:15:04.810 --> 00:15:07.456 but it's a relatively short procedure.

NOTE Confidence: 0.8541781

00:15:07.460 --> 00:15:10.304 I would say anywhere from 10

NOTE Confidence: 0.8541781

00:15:10.304 --> 00:15:13.339 minutes to 30 minutes per nodule.

NOTE Confidence: 0.8541781

00:15:13.340 --> 00:15:16.406 And repeat ablation is a possibility,

NOTE Confidence: 0.8541781

00:15:16.410 --> 00:15:19.285 so you're not burning any

NOTE Confidence: 0.8541781

00:15:19.285 --> 00:15:22.160 bridges if the first go.

NOTE Confidence: 0.8541781

00:15:22.160 --> 00:15:25.238 Does not workout for the patient.

NOTE Confidence: 0.8541781

00:15:25.240 --> 00:15:27.810 No hyper para no hypothyroidism,

NOTE Confidence: 0.8541781

00:15:27.810 --> 00:15:30.762 which is remarkable because we are

NOTE Confidence: 0.8541781

00:15:30.762 --> 00:15:33.877 only ablating the nodule in preserving

NOTE Confidence: 0.8541781

00:15:33.877 --> 00:15:37.063 the normal parenchyma of the thyroid.

NOTE Confidence: 0.8541781

00:15:37.070 --> 00:15:39.995 Is virtually unheard of to

NOTE Confidence: 0.8541781

00:15:39.995 --> 00:15:42.335 get hypothyroidism after RFA.

NOTE Confidence: 0.8541781

00:15:42.340 --> 00:15:44.744 Treatment in also because

NOTE Confidence: 0.8541781

00:15:44.744 --> 00:15:46.547 it's nodule specific.

NOTE Confidence: 0.8541781

00:15:46.550 --> 00:15:48.958 There's no hypoparathyroidism either,

NOTE Confidence: 0.8541781

00:15:48.958 --> 00:15:51.366 so minimal complication risk.

NOTE Confidence: 0.8541781

00:15:51.370 --> 00:15:54.380 There could be voice changes

NOTE Confidence: 0.8541781

00:15:54.380 --> 00:15:56.186 and temporary discomfort,

NOTE Confidence: 0.8541781

00:15:56.190 --> 00:16:01.230 but compared to surgery I would say

NOTE Confidence: 0.8541781

00:16:01.230 --> 00:16:05.416 it's either equivalent or less and

NOTE Confidence: 0.8541781

00:16:05.416 --> 00:16:09.847 overall lower cost and that comes from.

NOTE Confidence: 0.8541781

00:16:09.850 --> 00:16:12.935 Not admitting the patient no

NOTE Confidence: 0.8541781

00:16:12.935 --> 00:16:16.020 prolonged or time or anesthesia,

NOTE Confidence: 0.8541781

00:16:16.020 --> 00:16:17.830 etc.

NOTE Confidence: 0.8541781

00:16:17.830 --> 00:16:22.366 So what are the downsides to RFA the risks?

NOTE Confidence: 0.8541781

00:16:22.370 --> 00:16:25.340 There are several.

NOTE Confidence: 0.8541781

00:16:25.340 --> 00:16:27.495 I just mentioned that repeat

NOTE Confidence: 0.8541781

00:16:27.495 --> 00:16:29.219 procedure is a possibility,

NOTE Confidence: 0.8541781

00:16:29.220 --> 00:16:31.370 but sometimes it's a necessity.

NOTE Confidence: 0.8541781

00:16:31.370 --> 00:16:33.530 So just one go around.

NOTE Confidence: 0.8541781

00:16:33.530 --> 00:16:36.547 It may not be enough to achieve

NOTE Confidence: 0.8541781

00:16:36.547 --> 00:16:37.409 therapeutic effect,

NOTE Confidence: 0.8541781

00:16:37.410 --> 00:16:40.308 so obviously having to do a repeat

NOTE Confidence: 0.8541781

00:16:40.308 --> 00:16:43.830 procedure is a risk an I would also

NOTE Confidence: 0.8541781

00:16:43.830 --> 00:16:46.025 say that is operator dependent.

NOTE Confidence: 0.8541781

00:16:46.030 --> 00:16:48.390 Many procedures are operator dependent

NOTE Confidence: 0.8541781

00:16:48.390 --> 00:16:50.750 surgeries or operator independent and

NOTE Confidence: 0.8747182

00:16:50.813 --> 00:16:52.488 that's why we advocate for.

NOTE Confidence: 0.82331216

00:16:55.100 --> 00:16:58.789 High volume Endocrine Surgeons to be doing

NOTE Confidence: 0.82331216

00:16:58.789 --> 00:17:01.849 endocrine procedures just the same with RFA.

NOTE Confidence: 0.82331216

00:17:01.850 --> 00:17:04.923 The more fast I'll the operator is

NOTE Confidence: 0.82331216

00:17:04.923 --> 00:17:07.629 with ultrasound and needle guidance,

NOTE Confidence: 0.82331216

00:17:07.630 --> 00:17:11.004 the better the outcome will be in.

NOTE Confidence: 0.82331216

00:17:11.010 --> 00:17:14.027 Some patients may not be able to

NOTE Confidence: 0.82331216

00:17:14.027 --> 00:17:16.790 tolerate a procedure without sedation,

NOTE Confidence: 0.82331216

00:17:16.790 --> 00:17:21.318 whether it's related to pain or anxiety is.

NOTE Confidence: 0.82331216

00:17:21.320 --> 00:17:24.092 Quite interesting to see them stoic nature

NOTE Confidence: 0.82331216

00:17:24.092 --> 00:17:27.073 of these Korean patients that I observed

NOTE Confidence: 0.82331216

00:17:27.073 --> 00:17:29.653 that Awesome Medical Center last year.

NOTE Confidence: 0.82331216

00:17:29.660 --> 00:17:32.544 I know that 18 gauge needle that's

NOTE Confidence: 0.82331216

00:17:32.544 --> 00:17:35.080 almost looking like a harpoon hurts,

NOTE Confidence: 0.82331216

00:17:35.080 --> 00:17:37.170 but they were very stoic.

NOTE Confidence: 0.82331216

00:17:37.170 --> 00:17:39.977 They said that they're not having any

NOTE Confidence: 0.82331216

00:17:39.977 --> 00:17:42.999 pain and they tolerate it just fine,

NOTE Confidence: 0.82331216

00:17:43.000 --> 00:17:45.919 but when I have been doing fine

NOTE Confidence: 0.82331216

00:17:45.919 --> 00:17:47.602 needle aspiration, thyroid nodule,

NOTE Confidence: 0.82331216

00:17:47.602 --> 00:17:49.707 biopsies in clinic setting although

NOTE Confidence: 0.82331216

00:17:49.707 --> 00:17:52.248 is 27 gauge needle much finer.

NOTE Confidence: 0.82331216

00:17:52.250 --> 00:17:54.455 Many of the patients complain of pain,

NOTE Confidence: 0.82331216

00:17:54.460 --> 00:17:56.908 so it will be interesting to see how

NOTE Confidence: 0.82331216

00:17:56.908 --> 00:17:59.155 many patients can actually tolerate this

NOTE Confidence: 0.82331216

00:17:59.155 --> 00:18:01.507 kind of a procedure without sedation.

NOTE Confidence: 0.82331216

00:18:01.510 --> 00:18:03.735 Complications when there is something

NOTE Confidence: 0.82331216

00:18:03.735 --> 00:18:06.930 being done to any part of the body.

NOTE Confidence: 0.82331216

00:18:06.930 --> 00:18:09.020 There could be associated complications.

NOTE Confidence: 0.82331216

00:18:09.020 --> 00:18:12.348 Overall rate is pretty smaller 2 to 3%,

NOTE Confidence: 0.82331216

00:18:12.350 --> 00:18:14.018 which is probably equivalent

NOTE Confidence: 0.82331216

00:18:14.018 --> 00:18:15.686 to a surgical treatment.

NOTE Confidence: 0.82331216

00:18:15.690 --> 00:18:18.602 There could be dis phonia which is

NOTE Confidence: 0.82331216

00:18:18.602 --> 00:18:21.530 about 1% in this data is coming.

NOTE Confidence: 0.82331216

00:18:21.530 --> 00:18:24.128 This data is coming from multi

NOTE Confidence: 0.82331216

00:18:24.128 --> 00:18:26.236 institutional pulled data so about

NOTE Confidence: 0.82331216

00:18:26.236 --> 00:18:29.026 1% and none of it was permanent.

NOTE Confidence: 0.82331216

00:18:29.030 --> 00:18:31.700 It was all temporary resolved after.

NOTE Confidence: 0.82331216

00:18:31.700 --> 00:18:33.948 2 three months hematoma.

NOTE Confidence: 0.82331216

00:18:33.948 --> 00:18:36.758 Thyroid is very vascular Schimborn.

NOTE Confidence: 0.82331216

00:18:36.760 --> 00:18:40.071 That's probably a little bit more prevalent

NOTE Confidence: 0.82331216

00:18:40.071 --> 00:18:43.367 in RFA setting rather than a surgery.

NOTE Confidence: 0.82331216

00:18:43.370 --> 00:18:46.513 There are a couple of lower incident

NOTE Confidence: 0.82331216

00:18:46.513 --> 00:18:49.029 complications such as tumor rupture,

NOTE Confidence: 0.82331216

00:18:49.030 --> 00:18:51.856 which is unheard of in surgery,

NOTE Confidence: 0.82331216

00:18:51.860 --> 00:18:52.804 hypothyroidism, Abscess,

NOTE Confidence: 0.82331216

00:18:52.804 --> 00:18:55.164 Anna couple of anecdotal not

NOTE Confidence: 0.82331216

00:18:55.164 --> 00:18:57.060 reported in this study.

NOTE Confidence: 0.82331216

00:18:57.060 --> 00:18:59.585 Complications such as tracheal injury

NOTE Confidence: 0.82331216

00:18:59.585 --> 00:19:02.604 and brachial plexus injury when a

NOTE Confidence: 0.82331216

00:19:02.604 --> 00:19:04.679 new technique is being deployed.

NOTE Confidence: 0.82331216

00:19:04.680 --> 00:19:07.840 In multiple people are just trying it out.

NOTE Confidence: 0.82331216

00:19:07.840 --> 00:19:12.544 I think that there will be wide.

NOTE Confidence: 0.82331216

00:19:12.550 --> 00:19:15.315 A variety of complications that may arise,

NOTE Confidence: 0.82331216

00:19:15.320 --> 00:19:18.190 as well as the outcome.

NOTE Confidence: 0.82331216

00:19:18.190 --> 00:19:20.170 So RFA in thyroid.

NOTE Confidence: 0.82331216

00:19:20.170 --> 00:19:22.645 There are guidelines and indications,

NOTE Confidence: 0.82331216

00:19:22.650 --> 00:19:25.723 and most of it is based on

NOTE Confidence: 0.82331216

00:19:25.723 --> 00:19:28.090 2017 revised Korean guideline.

NOTE Confidence: 0.82331216

00:19:28.090 --> 00:19:30.260 So these are indications that

NOTE Confidence: 0.82331216

00:19:30.260 --> 00:19:33.034 most experts agree that we should

NOTE Confidence: 0.82331216

00:19:33.034 --> 00:19:36.154 be doing this for benign thyroid

NOTE Confidence: 0.82331216

00:19:36.154 --> 00:19:38.490 nodules causing compressive symptoms.

NOTE Confidence: 0.82331216

00:19:38.490 --> 00:19:41.910 If the patient has cosmetic concern

NOTE Confidence: 0.82331216

00:19:41.910 --> 00:19:45.595 and the nodule should be of size

NOTE Confidence: 0.82331216

00:19:45.595 --> 00:19:48.193 at least 2 centimeter or so.

NOTE Confidence: 0.82331216

00:19:48.200 --> 00:19:52.336 An if it's enlarging but has benign cytology,

NOTE Confidence: 0.82331216

00:19:52.340 --> 00:19:52.841 but.

NOTE Confidence: 0.82331216

00:19:52.841 --> 00:19:55.847 We have not set any definitive

NOTE Confidence: 0.82331216

00:19:55.847 --> 00:19:58.365 maximum thyroid nodule size for

NOTE Confidence: 0.82331216

00:19:58.365 --> 00:20:00.209 the treatment and Rica.

NOTE Confidence: 0.82331216

00:20:00.210 --> 00:20:03.000 Insist after failure of ethanol.

NOTE Confidence: 0.82331216

00:20:03.000 --> 00:20:06.204 Ablation of experts will agree that

NOTE Confidence: 0.82331216

00:20:06.204 --> 00:20:09.120 ethanol revelation is more studied,

NOTE Confidence: 0.82331216

00:20:09.120 --> 00:20:10.406 more tridan,

NOTE Confidence: 0.82331216

00:20:10.406 --> 00:20:14.264 better method for recurrent cyst or.

NOTE Confidence: 0.82331216

00:20:14.270 --> 00:20:17.005 Cyst of the thyroid treatment

NOTE Confidence: 0.82331216

00:20:17.005 --> 00:20:18.646 rather than rfa.

NOTE Confidence: 0.82331216

00:20:18.650 --> 00:20:21.110 Autonomously functioning thyroid nodule.

NOTE Confidence: 0.82331216

00:20:21.110 --> 00:20:24.185 This is toxic nodule indication.

NOTE Confidence: 0.82331216

00:20:24.190 --> 00:20:27.358 I personally have tried.

NOTE Confidence: 0.82331216

00:20:27.360 --> 00:20:30.244 Rfa in toxic nodule.

NOTE Confidence: 0.82331216

00:20:30.244 --> 00:20:33.128 It works beautifully and.

NOTE Confidence: 0.82331216

00:20:33.130 --> 00:20:36.042 That's sort of made me a believer

NOTE Confidence: 0.82331216

00:20:36.042 --> 00:20:37.290 of RFA technique.

NOTE Confidence: 0.82331216

00:20:37.290 --> 00:20:39.648 Entirety of nodule should be visible

NOTE Confidence: 0.82331216

00:20:39.648 --> 00:20:41.870 on ultrasound for safety concerns.

NOTE Confidence: 0.82331216

00:20:41.870 --> 00:20:44.360 It should not have any substernal

NOTE Confidence: 0.82331216

00:20:44.360 --> 00:20:45.190 component in.

NOTE Confidence: 0.82331216

00:20:45.190 --> 00:20:47.345 Nodule should be sufficiently away

NOTE Confidence: 0.82331216

00:20:47.345 --> 00:20:50.190 from the vital structures in the neck.

NOTE Confidence: 0.82331216

00:20:50.190 --> 00:20:52.434 As you all know,

NOTE Confidence: 0.82331216

00:20:52.434 --> 00:20:54.678 there are nerves and.

NOTE Confidence: 0.8096795

00:20:54.680 --> 00:20:58.537 Vital blood vessels in the neck and.

NOTE Confidence: 0.8096795

00:20:58.540 --> 00:21:01.550 Since the Heat can transmit,

NOTE Confidence: 0.8096795

00:21:01.550 --> 00:21:06.450 it is important that the structures are

NOTE Confidence: 0.8096795

00:21:06.450 --> 00:21:10.489 constantly being observed and monitored so.

NOTE Confidence: 0.8096795

00:21:10.490 --> 00:21:14.194 We don't cause any.

NOTE Confidence: 0.8096795

00:21:14.194 --> 00:21:16.046 Undesirable damages.

NOTE Confidence: 0.8096795

00:21:16.050 --> 00:21:19.042 RFA is most effective in solid nodules and

NOTE Confidence: 0.8096795

00:21:19.042 --> 00:21:22.700 if the nodule contains macro calcifications,

NOTE Confidence: 0.8096795

00:21:22.700 --> 00:21:26.025 the RFA will not be as effective.

NOTE Confidence: 0.8096795

00:21:26.030 --> 00:21:27.120 Ideal candidate.

NOTE Confidence: 0.8096795

00:21:27.120 --> 00:21:30.390 The pathologic criteria we want to.

NOTE Confidence: 0.8096795

00:21:30.390 --> 00:21:33.260 Be 100% sure that it is benign

NOTE Confidence: 0.8096795

00:21:33.260 --> 00:21:35.742 by either 2 repeated ultrasound

NOTE Confidence: 0.8096795

00:21:35.742 --> 00:21:39.186 guided F na's and in Korea.

NOTE Confidence: 0.8096795

00:21:39.190 --> 00:21:42.620 What they do is core needle biopsy.

NOTE Confidence: 0.8096795

00:21:42.620 --> 00:21:46.050 This is not universally practiced.

NOTE Confidence: 0.8096795

00:21:46.050 --> 00:21:48.210 Way of establishing benign

NOTE Confidence: 0.8096795

00:21:48.210 --> 00:21:50.910 status of the thyroid nodule.

NOTE Confidence: 0.8096795

00:21:50.910 --> 00:21:55.502 But core needle biopsy is an alternative

NOTE Confidence: 0.8096795

00:21:55.502 --> 00:21:58.099 to a fine needle aspiration and

NOTE Confidence: 0.8096795

00:21:58.099 --> 00:22:00.997 we want to make sure that there

NOTE Confidence: 0.8096795

00:22:00.997 --> 00:22:03.625 isn't any sonographic features or

NOTE Confidence: 0.8096795

00:22:03.625 --> 00:22:06.823 malignancy seen prior to deploying RFA.

NOTE Confidence: 0.8096795

00:22:06.830 --> 00:22:07.730 And again,

NOTE Confidence: 0.8096795

00:22:07.730 --> 00:22:10.880 we want to make sure that surrounding

NOTE Confidence: 0.8096795

00:22:10.880 --> 00:22:13.787 critical structures are away from harm.

NOTE Confidence: 0.8096795

00:22:13.790 --> 00:22:17.510 Or if a guidelines so multiple

NOTE Confidence: 0.8096795

00:22:17.510 --> 00:22:20.910 different countries are coming up with.

NOTE Confidence: 0.8096795

00:22:20.910 --> 00:22:25.180 Guiding this RFA treatment to be deployed.

NOTE Confidence: 0.8096795

00:22:25.180 --> 00:22:25.736 Obviously,

NOTE Confidence: 0.8096795

00:22:25.736 --> 00:22:29.072 Korean guideline is the most comprehensive

NOTE Confidence: 0.8096795

00:22:29.072 --> 00:22:31.514 Italians Australians aace American

NOTE Confidence: 0.8096795

00:22:31.514 --> 00:22:34.326 Association of clinical endocrinologists.

NOTE Confidence: 0.8096795

00:22:34.330 --> 00:22:41.114 We have a little bit of more conservative.

NOTE Confidence: 0.8096795

00:22:41.120 --> 00:22:42.656 Recommendations for RFA.

NOTE Confidence: 0.8096795

00:22:42.656 --> 00:22:45.728 So we are currently only recommending

NOTE Confidence: 0.8096795

00:22:45.728 --> 00:22:48.834 RFA to be used for benign thyroid

NOTE Confidence: 0.8096795

00:22:48.834 --> 00:22:51.069 nodules that are causing cosmetic

NOTE Confidence: 0.8096795

00:22:51.069 --> 00:22:53.955 or cosmetic concerns or symptoms and

NOTE Confidence: 0.8096795

00:22:53.955 --> 00:22:58.468 should be biopsy proven to be benign.

NOTE Confidence: 0.8096795

00:22:58.470 --> 00:22:59.994 Contraindications who cannot

NOTE Confidence: 0.8096795

00:22:59.994 --> 00:23:01.518 undergo this procedure.

NOTE Confidence: 0.8096795

00:23:01.520 --> 00:23:04.415 Pregnant females if the patient

NOTE Confidence: 0.8096795

00:23:04.415 --> 00:23:07.310 has contralateral vocal cord palsy

NOTE Confidence: 0.8096795

00:23:07.401 --> 00:23:10.273 if the nodule is not seen in its

NOTE Confidence: 0.8096795

00:23:10.273 --> 00:23:13.412 entire T but the patient has

NOTE Confidence: 0.8096795

00:23:13.412 --> 00:23:15.736 cardiac implanted cardiac device.

NOTE Confidence: 0.8096795

00:23:15.740 --> 00:23:19.254 We can switch over to bipolar mode

NOTE Confidence: 0.8096795

00:23:19.254 --> 00:23:21.982 instead of regular monopolar electrode

NOTE Confidence: 0.8096795

00:23:21.982 --> 00:23:25.895 or deploy it in shorter bursts in

NOTE Confidence: 0.8096795

00:23:25.895 --> 00:23:29.306 lower energy or if the patient has.

NOTE Confidence: 0.8096795

00:23:29.310 --> 00:23:31.450 Anticoagulation onboard is should be

NOTE Confidence: 0.8096795

00:23:31.450 --> 00:23:34.109 stopped prior to RFA the indeterminate

NOTE Confidence: 0.8096795

00:23:34.109 --> 00:23:36.755 thyroid nodule is a Gray area.

NOTE Confidence: 0.8096795

00:23:36.760 --> 00:23:39.502 There has been a study published

NOTE Confidence: 0.8096795

00:23:39.502 --> 00:23:42.876 in Europe but it's just a limited

NOTE Confidence: 0.8096795

00:23:42.876 --> 00:23:45.780 number of patients and the Efficacy

NOTE Confidence: 0.8096795

00:23:45.780 --> 00:23:48.598 and the long term outcome of.

NOTE Confidence: 0.8096795

00:23:48.600 --> 00:23:49.827 Doing Arefeen indeterminate

NOTE Confidence: 0.8096795

00:23:49.827 --> 00:23:51.872 thyroid nodule has not been

NOTE Confidence: 0.8096795

00:23:51.872 --> 00:23:53.589 quite established and malignancy.

NOTE Confidence: 0.8096795

00:23:53.590 --> 00:23:56.915 We are pushing a little bit of

NOTE Confidence: 0.8096795

00:23:56.915 --> 00:24:00.099 the boundary on this malignancy.

NOTE Confidence: 0.8096795

00:24:00.100 --> 00:24:02.858 A territory, so I'll discuss that briefly,

NOTE Confidence: 0.8096795

00:24:02.860 --> 00:24:05.618 since we are under the umbrella of

NOTE Confidence: 0.8096795

00:24:05.618 --> 00:24:09.269 Smilow Cancer Center, RFA and thyroid.

NOTE Confidence: 0.8096795

00:24:09.270 --> 00:24:11.769 When we are dealing with toxic Nodules,

NOTE Confidence: 0.8096795

00:24:11.770 --> 00:24:13.820 Orix beautifully.

NOTE Confidence: 0.8096795

00:24:13.820 --> 00:24:17.040 If we can achieve at least 50

NOTE Confidence: 0.8096795

00:24:17.040 --> 00:24:19.800 to 80% volume reduction of TSH

NOTE Confidence: 0.8096795

00:24:19.800 --> 00:24:22.100 normalizes an by 12 months.

NOTE Confidence: 0.8096795

00:24:22.100 --> 00:24:25.538 Most people are euthyroid, but again.

NOTE Confidence: 0.8096795

00:24:25.540 --> 00:24:29.117 If your desire is to achieve immediate

NOTE Confidence: 0.8096795

00:24:29.117 --> 00:24:31.498 reversal of thyrotoxicosis or hyperthyroidism

NOTE Confidence: 0.8096795

00:24:31.498 --> 00:24:34.578 than RFA is not the way to go.

NOTE Confidence: 0.8096795

00:24:34.580 --> 00:24:37.457 An it may take a one more

NOTE Confidence: 0.8096795

00:24:37.457 --> 00:24:39.550 than one ablation session.

NOTE Confidence: 0.8096795

00:24:39.550 --> 00:24:41.578 Depending on the size,

NOTE Confidence: 0.8096795

00:24:41.578 --> 00:24:44.113 and oftentimes these toxic nodules

NOTE Confidence: 0.8096795

00:24:44.113 --> 00:24:47.653 tend to be a little bit on the larger

NOTE Confidence: 0.8096795

00:24:47.653 --> 00:24:49.949 side greater than 4 centimeter,

NOTE Confidence: 0.8096795

00:24:49.950 --> 00:24:52.398 so in that case combination of

NOTE Confidence: 0.8096795

00:24:52.398 --> 00:24:55.550 RF NRA I can be entertained.

NOTE Confidence: 0.8096795

00:24:55.550 --> 00:24:57.978 Or large toxic goiters.

NOTE Confidence: 0.8096795

00:24:57.980 --> 00:25:04.710 This is how the electrode of rfa works, and.

NOTE Confidence: 0.8096795

00:25:04.710 --> 00:25:10.190 And how the picture shows you how fine it is.

NOTE Confidence: 0.8096795

00:25:10.190 --> 00:25:14.551 This is much finer than then liver

NOTE Confidence: 0.8096795

00:25:14.551 --> 00:25:18.630 RFA electrode an this just purely.

NOTE Confidence: 0.77691585

00:25:18.630 --> 00:25:23.670 Equipment optimization is what has taken

NOTE Confidence: 0.77691585

00:25:23.670 --> 00:25:29.750 the RFA deployment in thyroid lag behind.

NOTE Confidence: 0.77691585

00:25:29.750 --> 00:25:32.280 Compared to the liver world,

NOTE Confidence: 0.77691585

00:25:32.280 --> 00:25:35.316 so this electrode is internally cooled,

NOTE Confidence: 0.77691585

00:25:35.320 --> 00:25:37.184 is about 18 gauge.

NOTE Confidence: 0.77691585

00:25:37.184 --> 00:25:39.980 Big and seven centimeter in length.

NOTE Confidence: 0.77691585

00:25:39.980 --> 00:25:43.406 So if we're dealing with a.

NOTE Confidence: 0.77691585

00:25:43.410 --> 00:25:47.645 Very big patient that comes into play.

NOTE Confidence: 0.77691585

00:25:47.650 --> 00:25:52.207 So liver has deployment of times whereas.

NOTE Confidence: 0.8114753

00:25:54.700 --> 00:25:58.774 Rfa in thyroid. We are actually

NOTE Confidence: 0.8114753

00:25:58.774 --> 00:26:01.490 introducing the electrode and.

NOTE Confidence: 0.8114753

00:26:01.490 --> 00:26:02.939 Pulling it out,

NOTE Confidence: 0.8114753

00:26:02.939 --> 00:26:06.320 which is called a moving shot technique.

NOTE Confidence: 0.8114753

00:26:06.320 --> 00:26:10.390 To ablate units, these are

NOTE Confidence: 0.8114753

00:26:10.390 --> 00:26:14.460 circles of ablation zone inside.

NOTE Confidence: 0.8114753

00:26:14.460 --> 00:26:15.750 The thyroid nodule.

NOTE Confidence: 0.8114753

00:26:15.750 --> 00:26:18.760 And you see the triangle containing recurrent

NOTE Confidence: 0.8114753

00:26:18.828 --> 00:26:21.208 laryngeal nerve and esophagus below.

NOTE Confidence: 0.8114753

00:26:21.210 --> 00:26:24.456 So those are the vital structures

NOTE Confidence: 0.8114753

00:26:24.456 --> 00:26:28.060 that we want to be avoiding.

NOTE Confidence: 0.8114753

00:26:28.060 --> 00:26:32.029 This is a brief video of mixed

NOTE Confidence: 0.8114753

00:26:32.029 --> 00:26:35.440 thyroid nodule that is undergoing.

NOTE Confidence: 0.8114753

00:26:35.440 --> 00:26:39.570 Radiofrequency ablation you see from the S

NOTE Confidence: 0.8114753

00:26:39.570 --> 00:26:42.978 make side introduction of the electrode.

NOTE Confidence: 0.8114753

00:26:42.980 --> 00:26:46.643 We want to be able to see the entire

NOTE Confidence: 0.8114753

00:26:46.643 --> 00:26:49.520 length of the catheter an it is.

NOTE Confidence: 0.8114753

00:26:49.520 --> 00:26:51.240 Introduced and.

NOTE Confidence: 0.720607835714286

00:26:54.850 --> 00:26:58.950 Treated ablated from posterior.

NOTE Confidence: 0.720607835714286

00:26:58.950 --> 00:27:02.025 To anterior and.

NOTE Confidence: 0.7826626

00:27:04.950 --> 00:27:07.059 Inferior to superior,

NOTE Confidence: 0.7826626

00:27:07.059 --> 00:27:10.574 so we actually ablate the

NOTE Confidence: 0.7826626

00:27:10.574 --> 00:27:13.740 entire ellipsoid thyroid nodule.

NOTE Confidence: 0.7826626

00:27:13.740 --> 00:27:16.494 Follow up, we do serial ultrasound

NOTE Confidence: 0.7826626

00:27:16.494 --> 00:27:20.292 to make sure there is and there is

NOTE Confidence: 0.7826626

00:27:20.292 --> 00:27:22.632 an adequate resolution of whatever

NOTE Confidence: 0.7826626

00:27:22.632 --> 00:27:25.957 the pathology said is being treated.

NOTE Confidence: 0.7826626

00:27:25.960 --> 00:27:28.935 In there is a concern for regrowth

NOTE Confidence: 0.7826626

00:27:28.935 --> 00:27:32.178 and that is partially due to

NOTE Confidence: 0.7826626

00:27:32.178 --> 00:27:35.298 inadequate ablation at the periphery.

NOTE Confidence: 0.7826626

00:27:35.300 --> 00:27:38.550 So incomplete evolution of the

NOTE Confidence: 0.7826626

00:27:38.550 --> 00:27:41.800 thyroid nodule is being advocated.

NOTE Confidence: 0.7826626

00:27:41.800 --> 00:27:44.578 I'll touch briefly on the Barid

NOTE Confidence: 0.7826626

00:27:44.578 --> 00:27:47.288 malignancy and RFA currently in the US.

NOTE Confidence: 0.7826626

00:27:47.290 --> 00:27:49.395 Not many centers are doing

NOTE Confidence: 0.7826626

00:27:49.395 --> 00:27:51.079 RFA for thyroid malignancy,

NOTE Confidence: 0.7826626

00:27:51.080 --> 00:27:53.663 however it has been done in other

NOTE Confidence: 0.7826626

00:27:53.663 --> 00:27:56.470 countries and more and more folks are

NOTE Confidence: 0.7826626

00:27:56.470 --> 00:27:58.495 pushing the envelope especially in

NOTE Confidence: 0.7826626

00:27:58.495 --> 00:28:00.879 the world of Micropapillary Carcinoma

NOTE Confidence: 0.7826626

00:28:00.879 --> 00:28:04.198 which is less than one centimeter if

NOTE Confidence: 0.7826626

00:28:04.198 --> 00:28:06.488 the micro papillary thyroid carcinoma

NOTE Confidence: 0.7826626

00:28:06.488 --> 00:28:10.108 is intra fire Riddle and there is no

NOTE Confidence: 0.7826626

00:28:10.108 --> 00:28:12.238 clinical or ultrasound evidence of.

NOTE Confidence: 0.7826626

00:28:12.240 --> 00:28:15.474 Lymph nodes spread the current American

NOTE Confidence: 0.7826626

00:28:15.474 --> 00:28:17.630 Thyroid Association guidelines say

NOTE Confidence: 0.7826626

00:28:17.705 --> 00:28:20.659 that you can either observe it with

NOTE Confidence: 0.7826626

00:28:20.659 --> 00:28:23.478 active surveillance or have the patient

NOTE Confidence: 0.7826626

00:28:23.478 --> 00:28:25.933 undergo a thyroid lobectomy overtime.

NOTE Confidence: 0.7826626

00:28:25.940 --> 00:28:28.810 We have found that even the patients

NOTE Confidence: 0.7826626

00:28:28.810 --> 00:28:31.090 who undergo active surveillance,

NOTE Confidence: 0.7826626

00:28:31.090 --> 00:28:33.910 there is about 13% operation rates.

NOTE Confidence: 0.7826626

00:28:33.910 --> 00:28:35.809 So instead of.

NOTE Confidence: 0.7826626

00:28:35.809 --> 00:28:39.607 Having these patients undergo an operation,

NOTE Confidence: 0.7826626

00:28:39.610 --> 00:28:42.090 why not RFA so?

NOTE Confidence: 0.8268878

00:28:44.320 --> 00:28:46.820 Clinicians overseas have published

NOTE Confidence: 0.8268878

00:28:46.820 --> 00:28:49.945 their data on Micro PTC,

NOTE Confidence: 0.8268878

00:28:49.950 --> 00:28:54.934 and the data is knew and not.

NOTE Confidence: 0.8268878

00:28:54.940 --> 00:28:58.069 Has garnered wider.

NOTE Confidence: 0.8268878

00:28:58.070 --> 00:28:59.153 Adaptation just yet,

NOTE Confidence: 0.8268878

00:28:59.153 --> 00:29:01.680 but I think it is coming in

NOTE Confidence: 0.8268878

00:29:01.765 --> 00:29:03.649 recurrent thyroid cancer.

NOTE Confidence: 0.8268878

00:29:03.650 --> 00:29:06.548 As a surgeon, you know redo reop

NOTE Confidence: 0.8268878

00:29:06.548 --> 00:29:09.649 neck or cancer is a bear territory.

NOTE Confidence: 0.8268878

00:29:09.650 --> 00:29:13.130 So if we can safely treat patient with

NOTE Confidence: 0.8268878

00:29:13.130 --> 00:29:15.658 percutaneous method it will be fantastic.

NOTE Confidence: 0.8268878

00:29:15.660 --> 00:29:18.228 Indeterminate Nodules as I briefly mentioned.

NOTE Confidence: 0.8268878

00:29:18.230 --> 00:29:20.792 There is lack of data on whether

NOTE Confidence: 0.8268878

00:29:20.792 --> 00:29:23.467 we should be using this technique

NOTE Confidence: 0.8268878

00:29:23.467 --> 00:29:25.957 for Bethesda three and four,

NOTE Confidence: 0.8268878

00:29:25.960 --> 00:29:28.265 so currently not recommended and

NOTE Confidence: 0.8268878

00:29:28.265 --> 00:29:30.570 this is to be determined.

NOTE Confidence: 0.8268878

00:29:30.570 --> 00:29:32.665 Briefly, just wanted to show

NOTE Confidence: 0.8268878

00:29:32.665 --> 00:29:35.647 you a little graph of how five

NOTE Confidence: 0.8268878

00:29:35.647 --> 00:29:38.035 year followup of 84 low risk.

NOTE Confidence: 0.8268878

00:29:38.040 --> 00:29:41.204 Micro papillary thyroid carcinoma

NOTE Confidence: 0.8268878

00:29:41.204 --> 00:29:43.577 had achieved 100%.

NOTE Confidence: 0.8268878

00:29:43.580 --> 00:29:46.235 Regression over five years and

NOTE Confidence: 0.8268878

00:29:46.235 --> 00:29:49.710 this is just showing that there's

NOTE Confidence: 0.8268878

00:29:49.710 --> 00:29:53.315 no neoplastic change secondary to

NOTE Confidence: 0.8268878

00:29:53.315 --> 00:29:56.960 radiofrequency ablation of thyroid nodule.

NOTE Confidence: 0.8268878

00:29:56.960 --> 00:30:00.260 It's mostly just a spin.

NOTE Confidence: 0.8268878

00:30:00.260 --> 00:30:01.484 Ion cellular change.

NOTE Confidence: 0.8268878

00:30:01.484 --> 00:30:04.340 And because RFA does not alter the

NOTE Confidence: 0.8268878

00:30:04.423 --> 00:30:07.615 thyroid capsule or cause neoplastic change,

NOTE Confidence: 0.8268878

00:30:07.620 --> 00:30:08.638 it is.

NOTE Confidence: 0.8268878

00:30:08.638 --> 00:30:12.710 OK to redeploy RFA if needed or have

NOTE Confidence: 0.8268878

00:30:12.832 --> 00:30:17.564 the patient undergo a surgery if needed.

NOTE Confidence: 0.8268878

00:30:17.570 --> 00:30:20.513 So I'm going to just wrap up my talk

NOTE Confidence: 0.8268878

00:30:20.513 --> 00:30:23.776 by saying that RFA availability an

NOTE Confidence: 0.8268878

00:30:23.776 --> 00:30:26.626 indications will continue to evolve,

NOTE Confidence: 0.8268878

00:30:26.630 --> 00:30:30.246 and I think this is not a fad,

NOTE Confidence: 0.8268878

00:30:30.250 --> 00:30:32.882 but this is a treatment method that

NOTE Confidence: 0.8268878

00:30:32.882 --> 00:30:35.185 will probably stay and management

NOTE Confidence: 0.8268878

00:30:35.185 --> 00:30:37.385 decision really should involve

NOTE Confidence: 0.8268878

00:30:37.385 --> 00:30:40.072 multidisciplinary team of experts and

NOTE Confidence: 0.8268878

00:30:40.072 --> 00:30:42.935 include the patient in the decision making.

NOTE Confidence: 0.8268878

00:30:42.940 --> 00:30:45.200 And I think this technique,

NOTE Confidence: 0.8268878

00:30:45.200 --> 00:30:49.400 given that it's relatively new to the US.

NOTE Confidence: 0.8268878

00:30:49.400 --> 00:30:52.645 May involve specialists from the

NOTE Confidence: 0.8268878

00:30:52.645 --> 00:30:55.241 Interventional radiology surgery in

NOTE Confidence: 0.8268878

00:30:55.241 --> 00:30:58.429 endocrinology and multiple host of pathology,

NOTE Confidence: 0.8268878

00:30:58.430 --> 00:30:59.027 etc.

NOTE Confidence: 0.8268878

00:30:59.027 --> 00:31:03.206 It is fitting for us to be

NOTE Confidence: 0.8268878

00:31:03.206 --> 00:31:05.770 introducing this technique.

NOTE Confidence: 0.8268878

00:31:05.770 --> 00:31:09.270 As Smilow and I am a strong

NOTE Confidence: 0.8268878

00:31:09.270 --> 00:31:11.916 proponent of inviting the patient

NOTE Confidence: 0.8268878

00:31:11.916 --> 00:31:15.563 into making what is best for them,

NOTE Confidence: 0.8268878

00:31:15.570 --> 00:31:18.825 so it is important for us clinicians

NOTE Confidence: 0.8268878

00:31:18.825 --> 00:31:21.780 to not introduce our own clinician

NOTE Confidence: 0.8268878

00:31:21.780 --> 00:31:24.708 bias just because I'm a surgeon,

NOTE Confidence: 0.8268878

00:31:24.710 --> 00:31:29.344 I'm not going to advocate a surgery.

NOTE Confidence: 0.8268878

00:31:29.350 --> 00:31:29.765 Ann,

NOTE Confidence: 0.8268878

00:31:29.765 --> 00:31:32.670 this is not a technique that I

NOTE Confidence: 0.8268878

00:31:32.670 --> 00:31:34.189 currently subscribe to 100%,

NOTE Confidence: 0.8268878

00:31:34.190 --> 00:31:37.375 but I do believe that it has

NOTE Confidence: 0.8268878

00:31:37.375 --> 00:31:39.799 a role and I'll be.

NOTE Confidence: 0.8268878

00:31:39.800 --> 00:31:43.688 I'll do my best to be impartial and

NOTE Confidence: 0.8268878

00:31:43.688 --> 00:31:46.478 introduced this technique to Yale,

NOTE Confidence: 0.8268878

00:31:46.480 --> 00:31:49.588 so more research obviously is needed

NOTE Confidence: 0.8268878

00:31:49.588 --> 00:31:52.958 and we are actively doing project

NOTE Confidence: 0.8268878

00:31:52.958 --> 00:31:56.564 looking at our own institutional data.

NOTE Confidence: 0.8268878

00:31:56.570 --> 00:31:58.962 So I'm just going to wrap up by

NOTE Confidence: 0.8268878

00:31:58.962 --> 00:32:01.439 showing you this quote by Hippocrates,

NOTE Confidence: 0.8268878

00:32:01.440 --> 00:32:03.165 those diseases that medicines do

NOTE Confidence: 0.8268878

00:32:03.165 --> 00:32:05.619 not cure or cure by the knife,

NOTE Confidence: 0.8268878

00:32:05.620 --> 00:32:07.642 those that the knife does not

NOTE Confidence: 0.8268878

00:32:07.642 --> 00:32:09.450 cure or cure by fire,

NOTE Confidence: 0.8268878

00:32:09.450 --> 00:32:11.538 those that fire does not cure

NOTE Confidence: 0.8268878

00:32:11.538 --> 00:32:12.930 it must be incurable.

NOTE Confidence: 0.8268878

00:32:12.930 --> 00:32:13.620 But this.

NOTE Confidence: 0.89542186

00:32:15.850 --> 00:32:18.706 Philosopher also said first do no harm,

NOTE Confidence: 0.89542186

00:32:18.710 --> 00:32:21.170 so it is really a responsibility,

NOTE Confidence: 0.89542186

00:32:21.170 --> 00:32:23.605 and it's imperative that we

NOTE Confidence: 0.89542186

00:32:23.605 --> 00:32:25.553 deploy this technique safely.

NOTE Confidence: 0.89542186

00:32:25.560 --> 00:32:27.822 And I'll take any questions and

NOTE Confidence: 0.89542186

00:32:27.822 --> 00:32:30.170 thank you for your attention.

NOTE Confidence: 0.85922

00:32:30.780 --> 00:32:32.108 Or Grace, thank you.

NOTE Confidence: 0.85922

00:32:32.108 --> 00:32:34.100 That was a really terrific summary

NOTE Confidence: 0.85922

00:32:34.160 --> 00:32:36.548 and it's really wonderful that you're

NOTE Confidence: 0.85922

00:32:36.548 --> 00:32:38.528 bringing this technology and technique

NOTE Confidence: 0.85922

00:32:38.528 --> 00:32:40.796 to bear for our patients at Yale.

NOTE Confidence: 0.85922

00:32:40.800 --> 00:32:43.306 Just because we're running a little late.

NOTE Confidence: 0.85922

00:32:43.310 --> 00:32:45.879 I'm gonna. I'm going to suggest that

NOTE Confidence: 0.85922

00:32:45.879 --> 00:32:47.765 anyone has questions should probably

NOTE Confidence: 0.85922

00:32:47.765 --> 00:32:50.645 reach out to grace directly and and turn

NOTE Confidence: 0.85922

00:32:50.715 --> 00:32:52.974 now to our next speaker. And really,

NOTE Confidence: 0.85922

00:32:52.974 --> 00:32:55.116 our next speaker needs no introduction.

NOTE Confidence: 0.85922

00:32:55.120 --> 00:32:57.626 Doctor hyphen Lin Lin, as you know,

NOTE Confidence: 0.85922

00:32:57.630 --> 00:32:59.772 is the Eugene Higgins Professor of

NOTE Confidence: 0.85922

00:32:59.772 --> 00:33:01.822 cell biology, professor of genetics.

NOTE Confidence: 0.85922

00:33:01.822 --> 00:33:02.710 Obstetrics, gynecology,

NOTE Confidence: 0.85922

00:33:02.710 --> 00:33:05.405 and Reproductive Sciences and he is the

NOTE Confidence: 0.85922

00:33:05.405 --> 00:33:08.170 director of the Yale Stem Cell Center.

NOTE Confidence: 0.85922

00:33:08.170 --> 00:33:10.168 His work since joining Yellen 06

NOTE Confidence: 0.85922

00:33:10.168 --> 00:33:12.447 to launch the center has really

NOTE Confidence: 0.85922

00:33:12.447 --> 00:33:14.647 taken this center to national

NOTE Confidence: 0.85922

00:33:14.647 --> 00:33:15.967 and international prominence,

NOTE Confidence: 0.85922

00:33:15.970 --> 00:33:18.602 his own work focusing on self renewing

NOTE Confidence: 0.85922

00:33:18.602 --> 00:33:21.385 mechanisms of stem cells is really informed

NOTE Confidence: 0.85922

00:33:21.385 --> 00:33:24.160 cell biology and cancer in multiple ways,

NOTE Confidence: 0.85922

00:33:24.160 --> 00:33:26.771 and I think he's going to share

NOTE Confidence: 0.85922

00:33:26.771 --> 00:33:29.931 with us the work that he's done in

NOTE Confidence: 0.85922

00:33:29.931 --> 00:33:32.410 terms of a gene family that.

NOTE Confidence: 0.85922

00:33:32.410 --> 00:33:33.952 He and his lab have discovered

NOTE Confidence: 0.85922

00:33:33.952 --> 00:33:35.390 and its relevance to cancer,

NOTE Confidence: 0.85922

00:33:35.390 --> 00:33:36.745 so hyphen thank you very

NOTE Confidence: 0.85922

00:33:36.745 --> 00:33:37.829 much for speaking today.

NOTE Confidence: 0.8521337

00:33:38.590 --> 00:33:40.400 Well, thank you much Charlie

NOTE Confidence: 0.8521337

00:33:40.400 --> 00:33:42.210 for a very kind introduction.

NOTE Confidence: 0.8521337

00:33:42.210 --> 00:33:44.496 I'm delighted to have this opportunity

NOTE Confidence: 0.8521337

00:33:44.496 --> 00:33:47.932 to give a progress report on my own to my

NOTE Confidence: 0.8521337

00:33:47.932 --> 00:33:50.170 own colleagues and your Cancer Center.

NOTE Confidence: 0.8521337

00:33:50.170 --> 00:33:51.862 Although I've worked for many years

NOTE Confidence: 0.8521337

00:33:51.862 --> 00:33:53.556 on stem cells and developmental

NOTE Confidence: 0.8521337

00:33:53.556 --> 00:33:55.600 biology regarding Cancer Research,

NOTE Confidence: 0.8521337

00:33:55.600 --> 00:33:59.280 I'm completed a new kid on the block.

NOTE Confidence: 0.8521337

00:33:59.280 --> 00:34:01.792 So in the past few years or research

NOTE Confidence: 0.8521337

00:34:01.792 --> 00:34:04.289 on gene regulation or stem cells,

NOTE Confidence: 0.8521337

00:34:04.290 --> 00:34:06.438 let us to the cancer field.

NOTE Confidence: 0.8521337

00:34:06.440 --> 00:34:08.444 So today, instead of talking about

NOTE Confidence: 0.8521337

00:34:08.444 --> 00:34:11.088 my usual type of stem cell research,

NOTE Confidence: 0.8521337

00:34:11.090 --> 00:34:13.580 I'm actually going to share with

NOTE Confidence: 0.8521337

00:34:13.580 --> 00:34:15.240 you some preliminary results

NOTE Confidence: 0.8521337

00:34:15.310 --> 00:34:17.080 of our recent cancer work.

NOTE Confidence: 0.8521337

00:34:17.080 --> 00:34:19.132 And this actually is my first

NOTE Confidence: 0.8521337

00:34:19.132 --> 00:34:21.070 time talking about these results.

NOTE Confidence: 0.8521337

00:34:21.070 --> 00:34:23.688 I hope to get your expert input

NOTE Confidence: 0.8521337

00:34:23.688 --> 00:34:25.900 advice and potential collaboration.

NOTE Confidence: 0.8521337

00:34:25.900 --> 00:34:28.238 So to begin, let me share my.

NOTE Confidence: 0.30838132

00:34:30.680 --> 00:34:31.560 Slice

NOTE Confidence: 0.74889594

00:34:36.120 --> 00:34:37.240 screen sharing.

NOTE Confidence: 0.8630667

00:34:42.670 --> 00:34:45.286 OK can you see my slides?

NOTE Confidence: 0.8630667

00:34:45.286 --> 00:34:47.888 Yes OK, great wonderful yeah.

NOTE Confidence: 0.8630667

00:34:47.888 --> 00:34:51.344 So you know as Charlie mentioned.

NOTE Confidence: 0.8630667

00:34:51.350 --> 00:34:54.353 I will first give a bit background

NOTE Confidence: 0.8630667

00:34:54.353 --> 00:34:57.376 about some of our earlier work to

NOTE Confidence: 0.8630667

00:34:57.376 --> 00:35:00.650 pave the way for my cancer results.

NOTE Confidence: 0.8630667

00:35:00.650 --> 00:35:03.818 So in 2000.

NOTE Confidence: 0.8630667

00:35:03.820 --> 00:35:06.610 1998 we discovered the Argonauts gene

NOTE Confidence: 0.8630667

00:35:06.610 --> 00:35:10.346 family as the first in family that's

NOTE Confidence: 0.8630667

00:35:10.346 --> 00:35:12.726 highly conserved during evolution.

NOTE Confidence: 0.8630667

00:35:12.730 --> 00:35:16.498 For its stem cell function and this Infirmary

NOTE Confidence: 0.8630667

00:35:16.498 --> 00:35:20.530 encodes a highly conserved group of proteins,

NOTE Confidence: 0.8630667

00:35:20.530 --> 00:35:22.610 called argument proteins that

NOTE Confidence: 0.8630667

00:35:22.610 --> 00:35:24.690 contains 4 functional domains,

NOTE Confidence: 0.8630667

00:35:24.690 --> 00:35:27.290 among them the PhD domain.

NOTE Confidence: 0.8630667

00:35:27.290 --> 00:35:30.710 Mydomain mines too small Agnes whereas

NOTE Confidence: 0.8630667

00:35:30.710 --> 00:35:34.280 period of mine actually resembles SH.

NOTE Confidence: 0.8630667

00:35:34.280 --> 00:35:36.746 And this gene or protein family

NOTE Confidence: 0.8630667

00:35:36.746 --> 00:35:38.918 has been subdivided into two

NOTE Confidence: 0.8630667

00:35:38.918 --> 00:35:41.193 subfamilies and you probably know

NOTE Confidence: 0.8630667

00:35:41.193 --> 00:35:43.820 very well about Argonaut subfamily.

NOTE Confidence: 0.8630667

00:35:43.820 --> 00:35:45.998 Which plays a central role in

NOTE Confidence: 0.8630667

00:35:45.998 --> 00:35:48.420 the micro angle and the angle

NOTE Confidence: 0.8630667

00:35:48.420 --> 00:35:50.645 iron mechanism and these proteins

NOTE Confidence: 0.8630667

00:35:50.645 --> 00:35:53.540 directly bind to sin is micro honest,

NOTE Confidence: 0.8630667

00:35:53.540 --> 00:35:57.768 which are in general 21 nucleotides long.

NOTE Confidence: 0.8630667

00:35:57.770 --> 00:35:59.350 And Becausw are gonna suffer.

NOTE Confidence: 0.8630667

00:35:59.350 --> 00:36:00.920 My proteins are expressed in

NOTE Confidence: 0.8630667

00:36:00.920 --> 00:36:02.176 most type of sales.

NOTE Confidence: 0.8630667

00:36:02.180 --> 00:36:05.015 That's why I mean I mechanism and

NOTE Confidence: 0.8630667

00:36:05.015 --> 00:36:07.406 microrna regulation works for all of us

NOTE Confidence: 0.8630667

00:36:07.406 --> 00:36:09.950 who are doing this type of experiments.

NOTE Confidence: 0.8630667

00:36:09.950 --> 00:36:10.306 However,

NOTE Confidence: 0.8630667

00:36:10.306 --> 00:36:13.154 I said stem cell person I was more

NOTE Confidence: 0.8630667

00:36:13.154 --> 00:36:15.157 interested in the other sub family.

NOTE Confidence: 0.8630667

00:36:15.160 --> 00:36:17.410 The piece of family cause it's

NOTE Confidence: 0.8630667

00:36:17.410 --> 00:36:19.781 mostly expressed in the German in

NOTE Confidence: 0.8630667

00:36:19.781 --> 00:36:21.766 the most primitive stem cells.

NOTE Confidence: 0.8630667

00:36:21.770 --> 00:36:25.602 So in 2006 my lap and almost simultaneously

NOTE Confidence: 0.8630667

00:36:25.602 --> 00:36:28.739 three other labs discovered that the

NOTE Confidence: 0.8630667

00:36:28.739 --> 00:36:31.871 piwi subfamily proteins bind to yet

NOTE Confidence: 0.8630667

00:36:31.967 --> 00:36:34.925 another class of non small coding,

NOTE Confidence: 0.8630667

00:36:34.930 --> 00:36:37.880 honest that we named Piwi

NOTE Confidence: 0.8630667

00:36:37.880 --> 00:36:39.060 interacting organisms.

NOTE Confidence: 0.8630667

00:36:39.060 --> 00:36:41.622 Or paying it for short so paying

NOTE Confidence: 0.8630667

00:36:41.622 --> 00:36:43.779 is just like PV proteins.

NOTE Confidence: 0.8630667

00:36:43.780 --> 00:36:46.126 They're mostly expressing that you're mine,

NOTE Confidence: 0.8630667

00:36:46.130 --> 00:36:48.010 and they're somewhat longer

NOTE Confidence: 0.8630667

00:36:48.010 --> 00:36:50.830 than Micro RNAs or Sir is.

NOTE Confidence: 0.8630667

00:36:50.830 --> 00:36:52.134 So in this slide,

NOTE Confidence: 0.8630667

00:36:52.134 --> 00:36:54.090 just just wanna share with you

NOTE Confidence: 0.8630667

00:36:54.158 --> 00:36:56.118 some salient features of Python

NOTE Confidence: 0.8630667

00:36:56.118 --> 00:36:57.686 is versus Micron is,

NOTE Confidence: 0.8630667

00:36:57.690 --> 00:36:59.395 which are better known in

NOTE Confidence: 0.8630667

00:36:59.395 --> 00:37:01.660 addition to being a bit longer,

NOTE Confidence: 0.8630667

00:37:01.660 --> 00:37:03.470 pang is a very complex,

NOTE Confidence: 0.8630667

00:37:03.470 --> 00:37:05.846 so in my lab we they have cloned

NOTE Confidence: 0.8630667

00:37:05.846 --> 00:37:08.519 over 16 Millions of these pioneers,

NOTE Confidence: 0.8630667

00:37:08.520 --> 00:37:10.812 which is in sharp contrast to

NOTE Confidence: 0.8630667

00:37:10.812 --> 00:37:13.287 the 1000 species or Micron is

NOTE Confidence: 0.8630667

00:37:13.287 --> 00:37:15.457 that's known in any Organism.

NOTE Confidence: 0.8630667

00:37:15.460 --> 00:37:18.414 And in addition, the pairing is target.

NOTE Confidence: 0.8630667

00:37:18.420 --> 00:37:20.540 All type of Genomic sequences,

NOTE Confidence: 0.8630667

00:37:20.540 --> 00:37:23.066 again in sharp contrast to microarrays,

NOTE Confidence: 0.8630667

00:37:23.070 --> 00:37:26.088 which mostly target the three point

NOTE Confidence: 0.8630667

00:37:26.088 --> 00:37:29.850 you TR or mature Messenger RNA is.

NOTE Confidence: 0.8630667

00:37:29.850 --> 00:37:30.646 And finally,

NOTE Confidence: 0.8630667

00:37:30.646 --> 00:37:32.636 the Biogenesis is very different.

NOTE Confidence: 0.8630667

00:37:32.640 --> 00:37:34.520 Hanges are mostly produced from

NOTE Confidence: 0.8630667

00:37:34.520 --> 00:37:36.400 long single stranded RNA's in

NOTE Confidence: 0.8630667

00:37:36.469 --> 00:37:38.629 conscious to Micro Arnie's feature.

NOTE Confidence: 0.8630667

00:37:38.630 --> 00:37:41.518 From here penari precursors.

NOTE Confidence: 0.8630667

00:37:41.520 --> 00:37:43.818 So this discovery is very interesting

NOTE Confidence: 0.8630667

00:37:43.818 --> 00:37:46.574 to us because as you all know

NOTE Confidence: 0.8630667

00:37:46.574 --> 00:37:48.489 that the molecule biology field

NOTE Confidence: 0.8630667

00:37:48.489 --> 00:37:50.851 relies on very important principle

NOTE Confidence: 0.8630667

00:37:50.851 --> 00:37:52.879 called the central dogma.

NOTE Confidence: 0.8630667

00:37:52.880 --> 00:37:54.835 Which tells us that genetic

NOTE Confidence: 0.8630667

00:37:54.835 --> 00:37:56.790 information in DNA is transcribed

NOTE Confidence: 0.8630667

00:37:56.858 --> 00:37:59.103 into Messenger RNA's and then

NOTE Confidence: 0.8630667

00:37:59.103 --> 00:38:00.899 further translated into proteins.

NOTE Confidence: 0.8630667

00:38:00.900 --> 00:38:04.236 And that's how life process starts.

NOTE Confidence: 0.8630667

00:38:04.240 --> 00:38:06.886 The discovery of Micro Arnesen small

NOTE Confidence: 0.8630667

00:38:06.886 --> 00:38:10.057 Angus like S Ion is further enriched

NOTE Confidence: 0.8630667

00:38:10.057 --> 00:38:13.144 this dogma by telling us that now

NOTE Confidence: 0.8630667

00:38:13.227 --> 00:38:16.221 there are two new mechanisms regulating

NOTE Confidence: 0.8630667

00:38:16.221 --> 00:38:18.846 the stability or the translational

NOTE Confidence: 0.8630667

00:38:18.846 --> 00:38:21.350 efficiency of micro earnings.

NOTE Confidence: 0.8630667

00:38:21.350 --> 00:38:21.802 However,

NOTE Confidence: 0.8630667

00:38:21.802 --> 00:38:24.966 when we looked into where these genes

NOTE Confidence: 0.8630667

00:38:24.966 --> 00:38:27.429 encoding pioneers reside in the genome,

NOTE Confidence: 0.7719404

00:38:27.430 --> 00:38:30.895 it to our big surprise they do not reside

NOTE Confidence: 0.7719404

00:38:30.895 --> 00:38:34.312 in this known gene coding region which

NOTE Confidence: 0.7719404

00:38:34.312 --> 00:38:37.914 only represents 1 to 2% of a genome.

NOTE Confidence: 0.7719404

00:38:37.914 --> 00:38:40.662 Instead, they mostly result in this

NOTE Confidence: 0.7719404

00:38:40.662 --> 00:38:44.013 junk DNA we call useful junk represent

NOTE Confidence: 0.7719404

00:38:44.013 --> 00:38:47.178 the vast majority of what you know.

NOTE Confidence: 0.7719404

00:38:47.180 --> 00:38:51.289 And it is those genes they produce

NOTE Confidence: 0.7719404

00:38:51.289 --> 00:38:54.419 these enormous number of Pioneers.

NOTE Confidence: 0.7719404

00:38:54.420 --> 00:38:56.532 So we were you following about

NOTE Confidence: 0.7719404

00:38:56.532 --> 00:38:58.293 this discovery, because if you

NOTE Confidence: 0.7719404

00:38:58.293 --> 00:39:00.399 likens our genome as the world,

NOTE Confidence: 0.7719404

00:39:00.400 --> 00:39:01.808 then the traditional jeans

NOTE Confidence: 0.7719404

00:39:01.808 --> 00:39:05.000 are like the Old World, The.

NOTE Confidence: 0.7719404

00:39:05.000 --> 00:39:06.473 Asia, Europe, continent.

NOTE Confidence: 0.7719404

00:39:06.473 --> 00:39:09.910 And somehow our research let us lend

NOTE Confidence: 0.7719404

00:39:09.991 --> 00:39:12.967 it to assure of a computer New World.

NOTE Confidence: 0.7719404

00:39:12.970 --> 00:39:16.378 We spy on agents now many other genes.

NOTE Confidence: 0.7719404

00:39:16.380 --> 00:39:20.050 So this actually was a pie I baked for my

NOTE Confidence: 0.7719404

00:39:20.140 --> 00:39:23.717 lab to celebrate the discovery of honey,

NOTE Confidence: 0.7719404

00:39:23.720 --> 00:39:26.318 and it's my first breaking product.

NOTE Confidence: 0.7719404

00:39:26.320 --> 00:39:28.460 And also this discovery was

NOTE Confidence: 0.7719404

00:39:28.460 --> 00:39:31.111 selected by science as one of

NOTE Confidence: 0.7719404

00:39:31.111 --> 00:39:33.226 the 10 breakthroughs in 2006.

NOTE Confidence: 0.7719404

00:39:33.230 --> 00:39:35.406 The only biology breakthrough

NOTE Confidence: 0.7719404

00:39:35.406 --> 00:39:37.038 that was selected.

NOTE Confidence: 0.7719404

00:39:37.040 --> 00:39:39.088 So, this excitement aside,

NOTE Confidence: 0.7719404

00:39:39.088 --> 00:39:41.648 the key question really is.

NOTE Confidence: 0.7719404

00:39:41.650 --> 00:39:43.990 Does any of these peyronies

NOTE Confidence: 0.7719404

00:39:43.990 --> 00:39:45.394 have any functions?

NOTE Confidence: 0.7719404

00:39:45.400 --> 00:39:48.334 So in past several years my lap is in

NOTE Confidence: 0.7719404

00:39:48.334 --> 00:39:50.728 focusing on these pioneers functions.

NOTE Confidence: 0.7719404

00:39:50.730 --> 00:39:52.635 It turns out these pioneers

NOTE Confidence: 0.7719404

00:39:52.635 --> 00:39:54.540 and their partner PV proteins.

NOTE Confidence: 0.7719404

00:39:54.540 --> 00:39:57.627 They can be present sometimes in the

NOTE Confidence: 0.7719404

00:39:57.627 --> 00:40:00.320 nucleus and sometimes in the cytoplasm.

NOTE Confidence: 0.7719404

00:40:00.320 --> 00:40:03.504 So we wanted to 1st know when these

NOTE Confidence: 0.7719404

00:40:03.504 --> 00:40:05.438 peripatric complexes in the nucleus.

NOTE Confidence: 0.7719404

00:40:05.440 --> 00:40:07.978 What's their function?

NOTE Confidence: 0.7719404

00:40:07.980 --> 00:40:09.616 To address the question,

NOTE Confidence: 0.7719404

00:40:09.616 --> 00:40:12.070 I'd like to bring your attention

NOTE Confidence: 0.7719404

00:40:12.145 --> 00:40:14.300 to a field called epigenetics.

NOTE Confidence: 0.7719404

00:40:14.300 --> 00:40:16.526 You probably know that epigenetic is

NOTE Confidence: 0.7719404

00:40:16.526 --> 00:40:18.903 a very exciting field that started

NOTE Confidence: 0.7719404

00:40:18.903 --> 00:40:21.363 gene regulation and the focus or

NOTE Confidence: 0.7719404

00:40:21.363 --> 00:40:23.654 current epigenetic studies focus on

NOTE Confidence: 0.7719404

00:40:23.654 --> 00:40:25.526 identifying epigenetic factors and

NOTE Confidence: 0.7719404

00:40:25.526 --> 00:40:27.770 illustrating how they modify the

NOTE Confidence: 0.7719404

00:40:27.770 --> 00:40:29.450 histone ordinate modification status.

NOTE Confidence: 0.7719404

00:40:29.450 --> 00:40:29.987 Therefore,

NOTE Confidence: 0.7719404

00:40:29.987 --> 00:40:34.283 turning on and off the expression of genes.

NOTE Confidence: 0.7719404

00:40:34.290 --> 00:40:36.200 However, to me this epigenetic

NOTE Confidence: 0.7719404

00:40:36.200 --> 00:40:39.169 factors there are so called down molecules.

NOTE Confidence: 0.7719404

00:40:39.170 --> 00:40:41.210 They mostly don't bind DNA,

NOTE Confidence: 0.7719404

00:40:41.210 --> 00:40:43.646 let alone recognize specific DNA sequences,

NOTE Confidence: 0.7719404

00:40:43.650 --> 00:40:46.534 but somehow they had to be guided

NOTE Confidence: 0.7719404

00:40:46.534 --> 00:40:49.350 precisely to specific genes in the genome.

NOTE Confidence: 0.7719404

00:40:49.350 --> 00:40:50.571 For example here,

NOTE Confidence: 0.7719404

00:40:50.571 --> 00:40:52.606 but not here or here.

NOTE Confidence: 0.7719404

00:40:52.610 --> 00:40:55.445 In order for epigenetic programming to work,

NOTE Confidence: 0.7719404

00:40:55.450 --> 00:40:59.048 and for the life process to unfold.

NOTE Confidence: 0.7719404

00:40:59.050 --> 00:41:01.276 So to me ascential question in genetics

NOTE Confidence: 0.7719404

00:41:01.276 --> 00:41:03.845 is what are the mechanisms inside the

NOTE Confidence: 0.7719404

00:41:03.845 --> 00:41:06.511 nucleus that can guide these enzymes to

NOTE Confidence: 0.7719404

00:41:06.511 --> 00:41:08.759 the right sites in the genome at the

NOTE Confidence: 0.7719404

00:41:08.759 --> 00:41:12.596 right time in the right type of cells?

NOTE Confidence: 0.7719404

00:41:12.600 --> 00:41:15.561 When we started our work a few

NOTE Confidence: 0.7719404

00:41:15.561 --> 00:41:17.379 epigenetic factors were illustrated

NOTE Confidence: 0.7719404

00:41:17.379 --> 00:41:20.669 to be guided by a few transcriptional

NOTE Confidence: 0.7719404

00:41:20.669 --> 00:41:23.956 factors to the promoters of a few genes.

NOTE Confidence: 0.7719404

00:41:23.960 --> 00:41:27.056 And that was exciting by small an exception.

NOTE Confidence: 0.7719404

00:41:27.060 --> 00:41:28.612 Becausw for soil represents

NOTE Confidence: 0.7719404

00:41:28.612 --> 00:41:29.776 a feedback mechanism,

NOTE Confidence: 0.7719404

00:41:29.780 --> 00:41:30.710 and Secondly,

NOTE Confidence: 0.7719404

00:41:30.710 --> 00:41:33.500 it was only accountable for very

NOTE Confidence: 0.7719404

00:41:33.500 --> 00:41:36.089 small number of genes in Arduino.

NOTE Confidence: 0.7719404

00:41:36.090 --> 00:41:38.866 So the big question to me existed and

NOTE Confidence: 0.7719404

00:41:38.866 --> 00:41:42.393 still in a way exist is that what's the

NOTE Confidence: 0.7719404

00:41:42.393 --> 00:41:44.662 mechanism that guides these epigenetic

NOTE Confidence: 0.7719404

00:41:44.662 --> 00:41:47.197 factors to their target sites?

NOTE Confidence: 0.7719404

00:41:47.200 --> 00:41:47.594 So,

NOTE Confidence: 0.7719404

00:41:47.594 --> 00:41:49.564 Fast forward to today after

NOTE Confidence: 0.7719404

00:41:49.564 --> 00:41:51.140 several years old research,

NOTE Confidence: 0.7719404

00:41:51.140 --> 00:41:53.510 we discovered that the PV panel

NOTE Confidence: 0.7719404

00:41:53.510 --> 00:41:56.258 complex it should play a central role,

NOTE Confidence: 0.7719404

00:41:56.260 --> 00:41:59.941 at least in the June sales to guide the

NOTE Confidence: 0.7719404

00:41:59.941 --> 00:42:02.896 epigenetic factors to their target sites.

NOTE Confidence: 0.80695236

00:42:02.900 --> 00:42:04.826 So this is how it works.

NOTE Confidence: 0.80695236

00:42:04.830 --> 00:42:07.490 So the peewee protein and its partner

NOTE Confidence: 0.80695236

00:42:07.490 --> 00:42:09.359 apparently will form a complex.

NOTE Confidence: 0.80695236

00:42:09.360 --> 00:42:12.699 And this complex will bind to Genomic

NOTE Confidence: 0.80695236

00:42:12.699 --> 00:42:14.930 sequences with complementary sequences.

NOTE Confidence: 0.80695236

00:42:14.930 --> 00:42:18.824 Actually, by binding to Nathan RNA

NOTE Confidence: 0.80695236

00:42:18.824 --> 00:42:22.750 That's tethered still to the genome.

NOTE Confidence: 0.80695236

00:42:22.750 --> 00:42:25.370 This then leads to the

NOTE Confidence: 0.80695236

00:42:25.370 --> 00:42:27.466 recruitment of this complex.

NOTE Confidence: 0.80695236

00:42:27.470 --> 00:42:29.302 Two other epigenetic factors,

NOTE Confidence: 0.80695236

00:42:29.302 --> 00:42:32.710 such as histone here to competent protein,

NOTE Confidence: 0.80695236

00:42:32.710 --> 00:42:34.526 one to this site,

NOTE Confidence: 0.80695236

00:42:34.526 --> 00:42:37.250 which initiated a bit genetic programming

NOTE Confidence: 0.80695236

00:42:37.327 --> 00:42:40.417 and this complex will further recruit

NOTE Confidence: 0.80695236

00:42:40.417 --> 00:42:42.987 other epigenetic factors such as

NOTE Confidence: 0.80695236

00:42:42.987 --> 00:42:45.555 Houston Metro transfers to the site,

NOTE Confidence: 0.80695236

00:42:45.560 --> 00:42:47.552 which further then further

NOTE Confidence: 0.80695236

00:42:47.552 --> 00:42:49.046 elaborate epigenetic programming

NOTE Confidence: 0.80695236

00:42:49.046 --> 00:42:51.270 by methylate in this case,

NOTE Confidence: 0.80695236

00:42:51.270 --> 00:42:52.902 Houston H3K9 Residue.

NOTE Confidence: 0.80695236

00:42:52.902 --> 00:42:56.166 So this is what we initially

NOTE Confidence: 0.80695236

00:42:56.166 --> 00:42:58.760 discovered into software and now

NOTE Confidence: 0.80695236

00:42:58.760 --> 00:43:01.700 in human and mammalian systems we

NOTE Confidence: 0.80695236

00:43:01.795 --> 00:43:04.735 found that this complex can also

NOTE Confidence: 0.80695236

00:43:04.735 --> 00:43:07.980 recruit DNA methods to the target

NOTE Confidence: 0.80695236

00:43:07.980 --> 00:43:10.540 size to achieve demethylation.

NOTE Confidence: 0.80695236

00:43:10.540 --> 00:43:13.668 So I'm happy to report that you know,

NOTE Confidence: 0.80695236

00:43:13.670 --> 00:43:15.668 up to now epigenetics study allowed

NOTE Confidence: 0.80695236

00:43:15.668 --> 00:43:17.915 us to discover a major mechanism

NOTE Confidence: 0.80695236

00:43:17.915 --> 00:43:20.453 in the germline cells that will

NOTE Confidence: 0.80695236

00:43:20.453 --> 00:43:21.880 recruit epigenetic factors.

NOTE Confidence: 0.80695236

00:43:21.880 --> 00:43:24.617 Too many sites in the genome to

NOTE Confidence: 0.80695236

00:43:24.617 --> 00:43:25.790 achieve epigenetic programming.

NOTE Confidence: 0.80695236

00:43:25.790 --> 00:43:27.740 And as you all know,

NOTE Confidence: 0.80695236

00:43:27.740 --> 00:43:30.040 such programming is very important

NOTE Confidence: 0.80695236

00:43:30.040 --> 00:43:32.907 for stem cell self renewal for

NOTE Confidence: 0.80695236

00:43:32.907 --> 00:43:34.851 German development for transposon

NOTE Confidence: 0.80695236

00:43:34.851 --> 00:43:36.795 silencing and so on.

NOTE Confidence: 0.80695236

00:43:36.800 --> 00:43:38.750 So then you might wonder

NOTE Confidence: 0.80695236

00:43:38.750 --> 00:43:40.930 what's the function of this P.

NOTE Confidence: 0.80695236

00:43:40.930 --> 00:43:42.818 We empowering molecules when

NOTE Confidence: 0.80695236

00:43:42.818 --> 00:43:44.706 they're in the cytoplasm.

NOTE Confidence: 0.80695236

00:43:44.710 --> 00:43:45.530 So again,

NOTE Confidence: 0.80695236

00:43:45.530 --> 00:43:47.990 just to briefly review what we

NOTE Confidence: 0.80695236

00:43:47.990 --> 00:43:50.490 found in the past few years,

NOTE Confidence: 0.80695236

00:43:50.490 --> 00:43:53.388 we found that they actually play a

NOTE Confidence: 0.80695236

00:43:53.388 --> 00:43:56.241 very important role in mediating the

NOTE Confidence: 0.80695236

00:43:56.241 --> 00:43:59.307 regulation of transposons and pseudo genes.

NOTE Confidence: 0.80695236

00:43:59.310 --> 00:44:01.446 Thoards protein coding genes.

NOTE Confidence: 0.80695236

00:44:01.446 --> 00:44:04.116 You all know that transposons

NOTE Confidence: 0.80695236

00:44:04.116 --> 00:44:07.119 are viewed as selfish parasites.

NOTE Confidence: 0.80695236

00:44:07.120 --> 00:44:09.320 That invaded our genome and

NOTE Confidence: 0.80695236

00:44:09.320 --> 00:44:11.080 traditionally and still today.

NOTE Confidence: 0.80695236

00:44:11.080 --> 00:44:13.750 Many textbooks regarding.

NOTE Confidence: 0.80695236

00:44:13.750 --> 00:44:15.964 Self is the element without any

NOTE Confidence: 0.80695236

00:44:15.964 --> 00:44:18.093 active function except for potential

NOTE Confidence: 0.80695236

00:44:18.093 --> 00:44:19.857 advantage during evolution.

NOTE Confidence: 0.80695236

00:44:19.860 --> 00:44:21.890 Pseudogenes are viewed as the

NOTE Confidence: 0.80695236

00:44:21.890 --> 00:44:24.396 default caucus of our active genes

NOTE Confidence: 0.80695236

00:44:24.396 --> 00:44:26.796 on their way out during evolution,

NOTE Confidence: 0.80695236

00:44:26.800 --> 00:44:28.840 but we found that transposons,

NOTE Confidence: 0.80695236

00:44:28.840 --> 00:44:30.970 pseudogenes actually play a very

NOTE Confidence: 0.80695236

00:44:30.970 --> 00:44:33.100 important role in regulating the

NOTE Confidence: 0.80695236

00:44:33.175 --> 00:44:34.691 regular protein coding genes

NOTE Confidence: 0.80695236

00:44:34.691 --> 00:44:36.586 that we know very well,

NOTE Confidence: 0.80695236

00:44:36.590 --> 00:44:38.630 and this regulation actually is

NOTE Confidence: 0.80695236

00:44:38.630 --> 00:44:40.670 mediated by the preparing complex.

NOTE Confidence: 0.80695236

00:44:40.670 --> 00:44:44.140 So, back to the central dogma, again, DNA.

NOTE Confidence: 0.80695236

00:44:44.140 --> 00:44:45.670 For protein coding,

NOTE Confidence: 0.80695236

00:44:45.670 --> 00:44:48.172 gene is transcribed into a pre

NOTE Confidence: 0.80695236

00:44:48.172 --> 00:44:50.320 Messenger RNA which is then.

NOTE Confidence: 0.80695236

00:44:50.320 --> 00:44:52.894 Kept tailed and the entrance prized

NOTE Confidence: 0.80695236

00:44:52.894 --> 00:44:54.970 become a mature Messenger RNA.

NOTE Confidence: 0.80695236

00:44:54.970 --> 00:44:58.510 It got exported into the cytoplasm.

NOTE Confidence: 0.80695236

00:44:58.510 --> 00:45:00.162 About two years ago,

NOTE Confidence: 0.80695236

00:45:00.162 --> 00:45:02.227 we discovered that about 50%

NOTE Confidence: 0.80695236

00:45:02.230 --> 00:45:04.290 of genes in human genome.

NOTE Confidence: 0.80695236

00:45:04.290 --> 00:45:05.942 It should contain transposon

NOTE Confidence: 0.80695236

00:45:05.942 --> 00:45:08.420 sequences in the three point beauty,

NOTE Confidence: 0.80695236

00:45:08.420 --> 00:45:10.898 our or their Messenger on is.

NOTE Confidence: 0.80695236

00:45:10.900 --> 00:45:13.679 That was very surprising finding to us

NOTE Confidence: 0.80695236

00:45:13.679 --> 00:45:16.678 and after that we found that actually,

NOTE Confidence: 0.80695236

00:45:16.680 --> 00:45:17.916 transposons actually actually

NOTE Confidence: 0.80695236

00:45:17.916 --> 00:45:19.564 expressed a low level,

NOTE Confidence: 0.80695236

00:45:19.570 --> 00:45:22.419 at least in germ cells and primitive

NOTE Confidence: 0.80695236

00:45:22.419 --> 00:45:24.530 and some primitive stem cells,

NOTE Confidence: 0.80695236

00:45:24.530 --> 00:45:26.700 and the transposon expressed transcript

NOTE Confidence: 0.80695236

00:45:26.700 --> 00:45:28.870 will be processed into mature.

NOTE Confidence: 0.80695236

00:45:28.870 --> 00:45:32.774 Long is and bound by peewee proteins too.

NOTE Confidence: 0.80695236

00:45:32.780 --> 00:45:35.200 From this peripera complexes.

NOTE Confidence: 0.80695236

00:45:35.200 --> 00:45:37.620 These complexes can then,

NOTE Confidence: 0.80695236

00:45:37.620 --> 00:45:39.740 as you can imagine,

NOTE Confidence: 0.80695236

00:45:39.740 --> 00:45:41.860 beautifully target their corresponding

NOTE Confidence: 0.80695236

00:45:41.860 --> 00:45:44.479 or complementary transposon sequences.

NOTE Confidence: 0.80695236

00:45:44.480 --> 00:45:47.102 That's hiding in the three point

NOTE Confidence: 0.80695236

00:45:47.102 --> 00:45:48.850 beauty of material Messenger

NOTE Confidence: 0.80695236

00:45:48.929 --> 00:45:50.999 is to regulate the expression

NOTE Confidence: 0.80695236

00:45:50.999 --> 00:45:52.655 of this Messenger RNA.

NOTE Confidence: 0.8376487

00:45:52.660 --> 00:45:54.684 In addition, we found that the so called

NOTE Confidence: 0.8376487

00:45:54.684 --> 00:45:57.030 the so called that you know pseudogenes,

NOTE Confidence: 0.8376487

00:45:57.030 --> 00:45:58.734 that that copies of our active

NOTE Confidence: 0.8376487

00:45:58.734 --> 00:46:00.519 genes are actually not quite dead.

NOTE Confidence: 0.8376487

00:46:00.520 --> 00:46:03.117 They also have a very important role.

NOTE Confidence: 0.8376487

00:46:03.120 --> 00:46:05.375 They are often expressed into

NOTE Confidence: 0.8376487

00:46:05.375 --> 00:46:07.630 Messenger on is in antisense,

NOTE Confidence: 0.8376487

00:46:07.630 --> 00:46:10.010 and those antisense Messenger honest

NOTE Confidence: 0.8376487

00:46:10.010 --> 00:46:13.190 will be processed by TV proteins.

NOTE Confidence: 0.8376487

00:46:13.190 --> 00:46:15.190 To become pioneers again and

NOTE Confidence: 0.8376487

00:46:15.190 --> 00:46:17.190 form complex with PV protein.

NOTE Confidence: 0.8376487

00:46:17.190 --> 00:46:19.190 And as you can imagine,

NOTE Confidence: 0.8376487

00:46:19.190 --> 00:46:21.812 this antisense RNA will be very

NOTE Confidence: 0.8376487

00:46:21.812 --> 00:46:24.090 capable or targeting the cognitive

NOTE Confidence: 0.8376487

00:46:24.090 --> 00:46:26.766 active genes of the sudo gene.

NOTE Confidence: 0.8376487

00:46:26.770 --> 00:46:29.226 So now we know the gene regulation actually

NOTE Confidence: 0.8376487

00:46:29.226 --> 00:46:31.780 is not a linear way like what's stated

NOTE Confidence: 0.8376487

00:46:31.780 --> 00:46:34.140 by central dogma is very complicated,

NOTE Confidence: 0.8376487

00:46:34.140 --> 00:46:35.884 and Pironi Imperial proteins

NOTE Confidence: 0.8376487

00:46:35.884 --> 00:46:37.628 play essential role there.

NOTE Confidence: 0.8376487

00:46:37.630 --> 00:46:41.126 Likewise, if you are aware of new discoveries

NOTE Confidence: 0.8376487

00:46:41.126 --> 00:46:45.056 on some other non coding on is such as long,

NOTE Confidence: 0.8376487

00:46:45.060 --> 00:46:45.474 noncoding,

NOTE Confidence: 0.8376487

00:46:45.474 --> 00:46:47.958 honest or called Lincoln for short,

NOTE Confidence: 0.8376487

00:46:47.960 --> 00:46:50.942 even the expression of these thousands

NOTE Confidence: 0.8376487

00:46:50.942 --> 00:46:54.058 of Lincoln is regulated by Python is.

NOTE Confidence: 0.8376487

00:46:54.060 --> 00:46:55.593 And this regulation

NOTE Confidence: 0.8376487

00:46:55.593 --> 00:46:57.126 originates from transposons.

NOTE Confidence: 0.8376487

00:46:57.130 --> 00:47:00.483 Because we found that many linkon is

NOTE Confidence: 0.8376487

00:47:00.483 --> 00:47:02.760 again content transporting sequences.

NOTE Confidence: 0.8376487

00:47:02.760 --> 00:47:04.410 So these sequences,

NOTE Confidence: 0.8376487

00:47:04.410 --> 00:47:07.160 like Trojans horse inside their

NOTE Confidence: 0.8376487

00:47:07.160 --> 00:47:09.660 enemies and the transposon.

NOTE Confidence: 0.8376487

00:47:09.660 --> 00:47:10.510 Derived piony,

NOTE Confidence: 0.8376487

00:47:10.510 --> 00:47:12.635 we're together with people holding

NOTE Confidence: 0.8376487

00:47:12.635 --> 00:47:15.306 bind to these target armies and

NOTE Confidence: 0.8376487

00:47:15.306 --> 00:47:17.078 regulate this target armies.

NOTE Confidence: 0.8376487

00:47:17.080 --> 00:47:19.728 So, just to summarize this part of my

NOTE Confidence: 0.8376487

00:47:19.728 --> 00:47:22.899 talk as a background for the cancer site.

NOTE Confidence: 0.8376487

00:47:22.900 --> 00:47:26.599 Again, if you like his argeneau as the world,

NOTE Confidence: 0.8376487

00:47:26.600 --> 00:47:28.910 then the traditional jeans that

NOTE Confidence: 0.8376487

00:47:28.910 --> 00:47:31.740 we studied most of the time.

NOTE Confidence: 0.8376487

00:47:31.740 --> 00:47:34.477 About 23 thousand of them apart of

NOTE Confidence: 0.8376487

00:47:34.477 --> 00:47:37.058 the small world at the Old World,

NOTE Confidence: 0.8376487

00:47:37.060 --> 00:47:40.132 and even in the Old World we often

NOTE Confidence: 0.8376487

00:47:40.132 --> 00:47:43.039 forget the presence of pseudogenes.

NOTE Confidence: 0.8376487

00:47:43.040 --> 00:47:46.057 In human there are over 14,000 pseudogenes,

NOTE Confidence: 0.8376487

00:47:46.060 --> 00:47:48.658 and the transposons over a million,

NOTE Confidence: 0.8376487

00:47:48.660 --> 00:47:49.740 so transposons.

NOTE Confidence: 0.8376487

00:47:49.740 --> 00:47:51.360 And apparently work.

NOTE Confidence: 0.8376487

00:47:51.360 --> 00:47:54.056 Let us landed ashore of a new world.

NOTE Confidence: 0.8376487

00:47:54.060 --> 00:47:56.328 Now the New World also contained

NOTE Confidence: 0.8376487

00:47:56.328 --> 00:47:58.644 another big class of non coding

NOTE Confidence: 0.8376487

00:47:58.644 --> 00:48:00.474 on is called Inca armies.

NOTE Confidence: 0.8376487

00:48:00.480 --> 00:48:03.252 Implying is actually serve a very important

NOTE Confidence: 0.8376487

00:48:03.252 --> 00:48:05.520 function to connect these two words.

NOTE Confidence: 0.8376487

00:48:05.520 --> 00:48:08.222 I've shown you very quickly in the

NOTE Confidence: 0.8376487

00:48:08.222 --> 00:48:10.385 Schematic Summary Paris can regulate

NOTE Confidence: 0.8376487

00:48:10.385 --> 00:48:12.715 the expression of traditional jeans.

NOTE Confidence: 0.8376487

00:48:12.720 --> 00:48:14.655 Panic and regulate expression of

NOTE Confidence: 0.8376487

00:48:14.655 --> 00:48:16.590 Lincoln engines powering it can

NOTE Confidence: 0.8376487

00:48:16.659 --> 00:48:19.079 regulate the expression of traditional

NOTE Confidence: 0.8376487

00:48:19.079 --> 00:48:21.015 jeans through information from

NOTE Confidence: 0.8376487

00:48:21.015 --> 00:48:22.899 transposon and even pseudo genes.

NOTE Confidence: 0.8376487

00:48:22.900 --> 00:48:27.220 Can you spy on its pathway to regulate the

NOTE Confidence: 0.8376487

00:48:27.220 --> 00:48:30.238 expression of the cognat active genes?

NOTE Confidence: 0.8376487

00:48:30.240 --> 00:48:32.690 So now for this audience you might

NOTE Confidence: 0.8376487

00:48:32.690 --> 00:48:35.434 be very curious about does any of

NOTE Confidence: 0.8376487

00:48:35.434 --> 00:48:37.464 these basic discoveries have anything

NOTE Confidence: 0.8376487

00:48:37.464 --> 00:48:39.760 to do with the clinical side?

NOTE Confidence: 0.8376487

00:48:39.760 --> 00:48:42.140 We reasoned that because all these jeans

NOTE Confidence: 0.8376487

00:48:42.140 --> 00:48:44.598 are so important for stem cell division,

NOTE Confidence: 0.8376487

00:48:44.600 --> 00:48:47.029 if you delete any of these genes,

NOTE Confidence: 0.8376487

00:48:47.030 --> 00:48:48.410 stem cell with differential

NOTE Confidence: 0.8376487

00:48:48.410 --> 00:48:49.445 into ordinary cell,

NOTE Confidence: 0.8376487

00:48:49.450 --> 00:48:51.150 we wondered if we overexpress

NOTE Confidence: 0.8376487

00:48:51.150 --> 00:48:52.850 these jeans wear that cause

NOTE Confidence: 0.8376487

00:48:52.911 --> 00:48:54.939 malignant professional stem cells.

NOTE Confidence: 0.8376487

00:48:54.940 --> 00:48:57.784 And will there be possibly A cause of cancer?

NOTE Confidence: 0.8376487

00:48:57.790 --> 00:49:00.310 So the question we really ask is is

NOTE Confidence: 0.8376487

00:49:00.310 --> 00:49:02.817 preparing a function related to cancer.

NOTE Confidence: 0.8376487

00:49:02.820 --> 00:49:06.252 So a number of years ago we took

NOTE Confidence: 0.8376487

00:49:06.252 --> 00:49:09.710 some human seminoma cancer patients.

NOTE Confidence: 0.8376487

00:49:09.710 --> 00:49:11.934 Their testicular samples versus

NOTE Confidence: 0.8376487

00:49:11.934 --> 00:49:14.714 testicular samples from normal males

NOTE Confidence: 0.8376487

00:49:14.714 --> 00:49:17.662 and other kinds of testicular cancers

NOTE Confidence: 0.8376487

00:49:17.662 --> 00:49:21.369 derived from non stem cell based malignancy.

NOTE Confidence: 0.7903517

00:49:21.370 --> 00:49:25.250 And we found that a human gene that

NOTE Confidence: 0.7903517

00:49:25.250 --> 00:49:29.709 we named he means human pee wee is

NOTE Confidence: 0.7903517

00:49:29.709 --> 00:49:33.070 just the overexpressed in seminoma.

NOTE Confidence: 0.7903517

00:49:33.070 --> 00:49:35.478 Which is known to be a stem

NOTE Confidence: 0.7903517

00:49:35.478 --> 00:49:37.060 cell derived testicular cancer.

NOTE Confidence: 0.7903517

00:49:37.060 --> 00:49:40.400 This in fact was the first thing to show such

NOTE Confidence: 0.7903517

00:49:40.479 --> 00:49:43.599 a high correlation to this type of cancer,

NOTE Confidence: 0.7903517

00:49:43.600 --> 00:49:46.858 so encouraged by that in the past few years,

NOTE Confidence: 0.7903517

00:49:46.860 --> 00:49:49.820 we decided to look into other forms of

NOTE Confidence: 0.7903517

00:49:49.820 --> 00:49:53.234 cancer to see if any of these P regions

NOTE Confidence: 0.7903517

00:49:53.234 --> 00:49:55.757 are over expressed in these cancers and

NOTE Confidence: 0.7903517

00:49:55.757 --> 00:49:58.506 we first took M at the breast cancer,

NOTE Confidence: 0.7903517

00:49:58.506 --> 00:50:00.396 especially triple negative breast cancer.

NOTE Confidence: 0.7903517

00:50:00.400 --> 00:50:02.230 For reasons you all know.

NOTE Confidence: 0.7903517

00:50:02.230 --> 00:50:05.387 And we first screened through six most

NOTE Confidence: 0.7903517

00:50:05.387 --> 00:50:08.280 representative lines of human breast cancer,

NOTE Confidence: 0.7903517

00:50:08.280 --> 00:50:12.000 and this is the normal human breasts tissue.

NOTE Confidence: 0.7903517

00:50:12.000 --> 00:50:14.790 And this is the mouse one.

NOTE Confidence: 0.7903517

00:50:14.790 --> 00:50:18.374 And we looked for the expression of peewee

NOTE Confidence: 0.7903517

00:50:18.374 --> 00:50:21.759 proteins or genes in this cancer tissues.

NOTE Confidence: 0.7903517

00:50:21.760 --> 00:50:24.085 There are four human genes

NOTE Confidence: 0.7903517

00:50:24.085 --> 00:50:25.480 encoding period proteins.

NOTE Confidence: 0.7903517

00:50:25.480 --> 00:50:29.470 They're called peewee like 123 and four.

NOTE Confidence: 0.7903517

00:50:29.470 --> 00:50:32.278 And we found out all four

NOTE Confidence: 0.7903517

00:50:32.278 --> 00:50:34.400 overexpressed and especially IPV 4.

NOTE Confidence: 0.7903517

00:50:34.400 --> 00:50:36.890 In all six breast cancer cell

NOTE Confidence: 0.7903517

00:50:36.890 --> 00:50:38.550 lines before becomes detectable,

NOTE Confidence: 0.7903517

00:50:38.550 --> 00:50:42.285 expressed and in five out of 6 lines period.

NOTE Confidence: 0.7903517

00:50:42.290 --> 00:50:45.720 4 become expressed at least 50 times

NOTE Confidence: 0.7903517

00:50:45.720 --> 00:50:49.158 higher than what's in the normal tissue.

NOTE Confidence: 0.7903517

00:50:49.160 --> 00:50:53.096 So encouraged by this cell line based study,

NOTE Confidence: 0.7903517

00:50:53.100 --> 00:50:55.535 we decided to approach patients

NOTE Confidence: 0.7903517

00:50:55.535 --> 00:50:58.512 directly and we randomly sampled 20

NOTE Confidence: 0.7903517

00:50:58.512 --> 00:51:01.254 breast cancer patients for the appeal

NOTE Confidence: 0.7903517

00:51:01.254 --> 00:51:03.742 wise tissue between the Nonmalignant

NOTE Confidence: 0.7903517

00:51:03.742 --> 00:51:06.850 was tissue versus their own molecular

NOTE Confidence: 0.7903517

00:51:06.850 --> 00:51:09.430 breast tissue and to our delight,

NOTE Confidence: 0.7903517

00:51:09.430 --> 00:51:13.243 we saw that 10 out of 20 patients

NOTE Confidence: 0.7903517

00:51:13.243 --> 00:51:16.043 indeed showed version overexpression

NOTE Confidence: 0.7903517

00:51:16.043 --> 00:51:18.143 of the provisions.

NOTE Confidence: 0.7903517

00:51:18.150 --> 00:51:20.304 And to further confirm this correlation

NOTE Confidence: 0.7903517

00:51:20.304 --> 00:51:23.510 we went to NCI database and two screens

NOTE Confidence: 0.7903517

00:51:23.510 --> 00:51:26.060 through over 1000 cancer patients whose

NOTE Confidence: 0.7903517

00:51:26.135 --> 00:51:28.530 period expression pattern was known.

NOTE Confidence: 0.7903517

00:51:28.530 --> 00:51:32.154 And indeed we found that for those cancer

NOTE Confidence: 0.7903517

00:51:32.154 --> 00:51:35.703 patients with higher level or PV four

NOTE Confidence: 0.7903517

00:51:35.703 --> 00:51:38.258 expression there much worse prognosis.

NOTE Confidence: 0.7903517

00:51:38.260 --> 00:51:40.626 So based on this very solid correlation,

NOTE Confidence: 0.7903517

00:51:40.630 --> 00:51:42.628 then we wanted to know what's

NOTE Confidence: 0.7903517

00:51:42.628 --> 00:51:44.340 the role of PV 4IN.

NOTE Confidence: 0.7903517

00:51:44.340 --> 00:51:45.052 Breast cancer.

NOTE Confidence: 0.7903517

00:51:45.052 --> 00:51:47.900 Is this just a passive consequence of cancer

NOTE Confidence: 0.7903517

00:51:47.968 --> 00:51:50.902 development or it could be an active role in

NOTE Confidence: 0.7903517

00:51:50.902 --> 00:51:53.290 promoting cancer formation and development?

NOTE Confidence: 0.7903517

00:51:53.290 --> 00:51:56.216 So in that, to address the question,

NOTE Confidence: 0.7903517

00:51:56.220 --> 00:51:59.160 we first did the cell based experiment.

NOTE Confidence: 0.7903517

00:51:59.160 --> 00:52:02.400 This you probably a very familiar is the

NOTE Confidence: 0.7903517

00:52:02.400 --> 00:52:05.020 triple negative breast cancer cell line.

NOTE Confidence: 0.7903517

00:52:05.020 --> 00:52:05.856 Highly aggressive.

NOTE Confidence: 0.7903517

00:52:05.856 --> 00:52:08.782 When we did the wound healing assay.

NOTE Confidence: 0.7903517

00:52:08.790 --> 00:52:12.078 Normally if you remove this part of the

NOTE Confidence: 0.7903517

00:52:12.078 --> 00:52:15.078 breast cancer cells just within 36 hours,

NOTE Confidence: 0.7903517

00:52:15.080 --> 00:52:17.588 the residual cells will highly proliferate,

NOTE Confidence: 0.7903517

00:52:17.590 --> 00:52:20.325 highly proliferative and migrate into

NOTE Confidence: 0.7903517

00:52:20.325 --> 00:52:24.279 the central region to see all the void.

NOTE Confidence: 0.7903517

00:52:24.280 --> 00:52:27.157 However, if you just need to knock

NOTE Confidence: 0.7903517

00:52:27.157 --> 00:52:29.496 down the expression of P V4, then.

NOTE Confidence: 0.7903517

00:52:29.496 --> 00:52:30.744 For long time,

NOTE Confidence: 0.7903517

00:52:30.744 --> 00:52:32.824 much beyond actually 36 hours,

NOTE Confidence: 0.7903517

00:52:32.830 --> 00:52:35.248 these cancer cells fail to proliferate

NOTE Confidence: 0.7903517

00:52:35.248 --> 00:52:38.449 at high speed and they fail to migrate.

NOTE Confidence: 0.7903517

00:52:38.450 --> 00:52:39.242 And we've,

NOTE Confidence: 0.7903517

00:52:39.242 --> 00:52:40.034 you know,

NOTE Confidence: 0.7903517

00:52:40.034 --> 00:52:42.014 confirm this asset by chance

NOTE Confidence: 0.7903517

00:52:42.014 --> 00:52:44.312 will essay also indicate that

NOTE Confidence: 0.7903517

00:52:44.312 --> 00:52:46.587 PVL for knockdown affects cancer

NOTE Confidence: 0.7903517

00:52:46.587 --> 00:52:49.180 cell proliferation and migration?

NOTE Confidence: 0.7903517

00:52:49.180 --> 00:52:52.030 Then we wondered through what kind

NOTE Confidence: 0.7903517

00:52:52.030 --> 00:52:54.426 of molecular mechanism period 4

NOTE Confidence: 0.7903517

00:52:54.426 --> 00:52:56.526 achieve such a amazing function.

NOTE Confidence: 0.7903517

00:52:56.530 --> 00:53:01.426 And it turns out TV four is very important.

NOTE Confidence: 0.76405585

00:53:01.430 --> 00:53:03.730 In promoting the epithelial tamanika,

NOTE Confidence: 0.76405585

00:53:03.730 --> 00:53:07.517 more transition of this breast cancer cells.

NOTE Confidence: 0.76405585

00:53:07.520 --> 00:53:10.416 Because when we reduce the PV four expression

NOTE Confidence: 0.76405585

00:53:10.416 --> 00:53:13.199 in this triple negative cancer cells.

NOTE Confidence: 0.76405585

00:53:13.200 --> 00:53:15.460 Actually, that alone can revert

NOTE Confidence: 0.76405585

00:53:15.460 --> 00:53:18.235 this cell fate for mesenchyme all

NOTE Confidence: 0.76405585

00:53:18.235 --> 00:53:20.400 state back to epithelial state.

NOTE Confidence: 0.76405585

00:53:20.400 --> 00:53:22.450 So Soon as example here,

NOTE Confidence: 0.76405585

00:53:22.450 --> 00:53:25.276 ecad hearing is a typical epithelial

NOTE Confidence: 0.76405585

00:53:25.276 --> 00:53:28.045 marker and incoherent is Amazon Co

NOTE Confidence: 0.76405585

00:53:28.045 --> 00:53:30.866 marker and this is a loading control.

NOTE Confidence: 0.76405585

00:53:30.870 --> 00:53:31.700 The regular,

NOTE Confidence: 0.76405585

00:53:31.700 --> 00:53:34.190 a triple negative breast cancer cells

NOTE Confidence: 0.76405585

00:53:34.190 --> 00:53:36.319 are competing between carmalized.

NOTE Confidence: 0.76405585

00:53:36.320 --> 00:53:38.590 This express very high level,

NOTE Confidence: 0.76405585

00:53:38.590 --> 00:53:40.798 incoherent, but no expressional.

NOTE Confidence: 0.76405585

00:53:40.798 --> 00:53:44.110 Equal hearing is detectable now if

NOTE Confidence: 0.76405585

00:53:44.202 --> 00:53:47.280 we just knock down PV L4 to 70% or

NOTE Confidence: 0.76405585

00:53:47.280 --> 00:53:50.400 be higher efficiency and the three

NOTE Confidence: 0.76405585

00:53:50.400 --> 00:53:51.960 independent markdown conditions.

NOTE Confidence: 0.76405585

00:53:51.960 --> 00:53:53.330 Desales, I guess you know,

NOTE Confidence: 0.76405585

00:53:53.330 --> 00:53:55.700 revert back to the procedure failed.

NOTE Confidence: 0.76405585

00:53:55.700 --> 00:53:57.345 So that was very exciting to us

NOTE Confidence: 0.76405585

00:53:57.345 --> 00:53:58.871 because very few in the cancer

NOTE Confidence: 0.76405585

00:53:58.871 --> 00:54:00.656 literature as you know better than me,

NOTE Confidence: 0.76405585

00:54:00.660 --> 00:54:03.229 people can see that kind of Revolution.

NOTE Confidence: 0.76405585

00:54:03.230 --> 00:54:04.211 Then we say,

NOTE Confidence: 0.76405585

00:54:04.211 --> 00:54:06.500 why is peewee so important in controlling

NOTE Confidence: 0.76405585

00:54:06.567 --> 00:54:08.687 the wholesale faith transformation?

NOTE Confidence: 0.76405585

00:54:08.690 --> 00:54:11.030 And we looked into the molecular

NOTE Confidence: 0.76405585

00:54:11.030 --> 00:54:12.980 pathway to not pee wee.

NOTE Confidence: 0.76405585

00:54:12.980 --> 00:54:16.116 Four promotes the TGF beta and FDF data

NOTE Confidence: 0.76405585

00:54:16.116 --> 00:54:18.048 signaling pathways in cancer cells.

NOTE Confidence: 0.76405585

00:54:18.050 --> 00:54:20.336 So these signaling pathways are all

NOTE Confidence: 0.76405585

00:54:20.336 --> 00:54:22.729 highly expressed in breast cancer cells.

NOTE Confidence: 0.76405585

00:54:22.730 --> 00:54:25.070 But you knock down peewee expression.

NOTE Confidence: 0.76405585

00:54:25.070 --> 00:54:28.808 The expression is just a compromised.

NOTE Confidence: 0.76405585

00:54:28.810 --> 00:54:30.446 In addition to this,

NOTE Confidence: 0.76405585

00:54:30.446 --> 00:54:33.819 we were surprised to find that three or

NOTE Confidence: 0.76405585

00:54:33.819 --> 00:54:36.738 four also inhibit the expression of MHC

NOTE Confidence: 0.76405585

00:54:36.738 --> 00:54:40.050 two complex components in cancer cells.

NOTE Confidence: 0.76405585

00:54:40.050 --> 00:54:42.726 So this analysis allowed us to

NOTE Confidence: 0.76405585

00:54:42.726 --> 00:54:45.615 propose a model that actually PL-4

NOTE Confidence: 0.76405585

00:54:45.615 --> 00:54:48.657 is a very assume key regulator

NOTE Confidence: 0.76405585

00:54:48.657 --> 00:54:50.989 that promotes breast cancer.

NOTE Confidence: 0.76405585

00:54:50.990 --> 00:54:51.932 Uncle Genesis,

NOTE Confidence: 0.76405585

00:54:51.932 --> 00:54:55.229 it does so by promoting these typical

NOTE Confidence: 0.76405585

00:54:55.229 --> 00:54:58.228 and Progenics signaling pathways.

NOTE Confidence: 0.76405585

00:54:58.230 --> 00:54:59.901 Activities within promotes

NOTE Confidence: 0.76405585

00:54:59.901 --> 00:55:02.129 the cancer cell survival,

NOTE Confidence: 0.76405585

00:55:02.130 --> 00:55:04.374 increase their proliferation and.

NOTE Confidence: 0.76405585

00:55:04.374 --> 00:55:07.179 Cause them to have EMT.

NOTE Confidence: 0.76405585

00:55:07.180 --> 00:55:07.621 Meanwhile,

NOTE Confidence: 0.76405585

00:55:07.621 --> 00:55:10.267 the pee wee molecule will suppress

NOTE Confidence: 0.76405585

00:55:10.267 --> 00:55:12.605 the host immune system surveillance

NOTE Confidence: 0.76405585

00:55:12.605 --> 00:55:14.955 allow these cancer cells to

NOTE Confidence: 0.76405585

00:55:14.955 --> 00:55:17.380 escape the immune surveillance.

NOTE Confidence: 0.76405585

00:55:17.380 --> 00:55:19.540 So this was the first somatic

NOTE Confidence: 0.76405585

00:55:19.540 --> 00:55:21.856 and major cancer type that we

NOTE Confidence: 0.76405585

00:55:21.856 --> 00:55:23.456 looked encouraged by that.

NOTE Confidence: 0.76405585

00:55:23.460 --> 00:55:26.428 We wondered whether any other piwi protein

NOTE Confidence: 0.76405585

00:55:26.428 --> 00:55:28.425 expression is correlated and possibly

NOTE Confidence: 0.76405585

00:55:28.425 --> 00:55:31.057 A cause of other major type of cancers.

NOTE Confidence: 0.76405585

00:55:31.060 --> 00:55:33.184 Then we looked into a second

NOTE Confidence: 0.76405585

00:55:33.184 --> 00:55:35.240 major type of somatic cancers,

NOTE Confidence: 0.76405585

00:55:35.240 --> 00:55:36.578 namely gastric cancers.

NOTE Confidence: 0.76405585

00:55:36.578 --> 00:55:38.926 And here, as you can see,

NOTE Confidence: 0.76405585

00:55:38.926 --> 00:55:40.382 you probably are very

NOTE Confidence: 0.76405585

00:55:40.382 --> 00:55:42.260 familiar with this Histology.

NOTE Confidence: 0.76405585

00:55:42.260 --> 00:55:43.160 In the.

NOTE Confidence: 0.76405585

00:55:43.160 --> 00:55:46.310 Left panel this is just a chemical

NOTE Confidence: 0.76405585

00:55:46.310 --> 00:55:48.825 standing with another PV protein

NOTE Confidence: 0.76405585

00:55:48.825 --> 00:55:51.789 called PV L1 now standing Brown.

NOTE Confidence: 0.76405585

00:55:51.790 --> 00:55:52.798 You see,

NOTE Confidence: 0.76405585

00:55:52.798 --> 00:55:54.814 in this adenocarcinoma sections

NOTE Confidence: 0.76405585

00:55:54.814 --> 00:55:58.148 from either the gastric body or the

NOTE Confidence: 0.76405585

00:55:58.148 --> 00:56:00.614 gastric cardia or the gastric trap.

NOTE Confidence: 0.76405585

00:56:00.620 --> 00:56:03.240 And in turn regions.

NOTE Confidence: 0.76405585

00:56:03.240 --> 00:56:07.170 There are robust overexpression of PL-1.

NOTE Confidence: 0.76405585

00:56:07.170 --> 00:56:08.626 And in chronic gastritis,

NOTE Confidence: 0.76405585

00:56:08.626 --> 00:56:12.070 which is a milder form pre cancer condition,

NOTE Confidence: 0.76405585

00:56:12.070 --> 00:56:15.733 you see also a topic expression of PDL one,

NOTE Confidence: 0.76405585

00:56:15.740 --> 00:56:17.780 but at much lower level.

NOTE Confidence: 0.76405585

00:56:17.780 --> 00:56:20.600 P1L1 expression is not there

NOTE Confidence: 0.76405585

00:56:20.600 --> 00:56:23.420 in the normal gastric tissues.

NOTE Confidence: 0.76405585

00:56:23.420 --> 00:56:26.102 When we quantify that this expression

NOTE Confidence: 0.76405585

00:56:26.102 --> 00:56:28.770 level is nicely correlates to the

NOTE Confidence: 0.76405585

00:56:28.770 --> 00:56:30.795 advancement of the gastric cancer

NOTE Confidence: 0.76405585

00:56:30.795 --> 00:56:32.919 stages from stage one to four,

NOTE Confidence: 0.76405585

00:56:32.920 --> 00:56:34.945 you see increased expression of

NOTE Confidence: 0.76405585

00:56:34.945 --> 00:56:37.520 period one and also nicely correlate

NOTE Confidence: 0.76405585

00:56:37.520 --> 00:56:39.420 with the distant metastatic

NOTE Confidence: 0.76405585

00:56:39.420 --> 00:56:41.795 ability of these cancer cells.

NOTE Confidence: 0.80716157

00:56:41.800 --> 00:56:44.831 For you know not to not to

NOTE Confidence: 0.80716157

00:56:44.831 --> 00:56:46.813 multiple distant, not you see.

NOTE Confidence: 0.80716157

00:56:46.813 --> 00:56:49.039 Again these cells show higher level

NOTE Confidence: 0.80716157

00:56:49.039 --> 00:56:51.726 PV one expression and Interestingly

NOTE Confidence: 0.80716157

00:56:51.726 --> 00:56:54.526 its expression level is inversely

NOTE Confidence: 0.80716157

00:56:54.526 --> 00:56:56.970 correlated to the Differentiation State

NOTE Confidence: 0.80716157

00:56:56.970 --> 00:56:59.676 of these cancer tissues or cells.

NOTE Confidence: 0.80716157

00:56:59.680 --> 00:57:02.529 So based on that, we decided that

NOTE Confidence: 0.80716157

00:57:02.529 --> 00:57:06.270 the PO1 must likely also play a role

NOTE Confidence: 0.80716157

00:57:06.270 --> 00:57:09.150 in promoting gastric cancer and two.

NOTE Confidence: 0.80716157

00:57:09.150 --> 00:57:12.237 A test that question in also in

NOTE Confidence: 0.80716157

00:57:12.237 --> 00:57:15.530 addition to the cell biology and cell

NOTE Confidence: 0.80716157

00:57:15.530 --> 00:57:19.190 based assets as I showed you earlier,

NOTE Confidence: 0.80716157

00:57:19.190 --> 00:57:21.575 we also did the cancelled

NOTE Confidence: 0.80716157

00:57:21.575 --> 00:57:23.006 Genographic transform essay.

NOTE Confidence: 0.80716157

00:57:23.010 --> 00:57:26.376 So when we transplant these gastric

NOTE Confidence: 0.80716157

00:57:26.376 --> 00:57:29.210 cancer cells into nude mice.

NOTE Confidence: 0.80716157

00:57:29.210 --> 00:57:30.814 It growth, robust tumors,

NOTE Confidence: 0.80716157

00:57:30.814 --> 00:57:32.819 and if you introduce the

NOTE Confidence: 0.80716157

00:57:32.819 --> 00:57:34.790 negative control for knockdown,

NOTE Confidence: 0.80716157

00:57:34.790 --> 00:57:37.358 it does not affect tumor growth.

NOTE Confidence: 0.80716157

00:57:37.360 --> 00:57:39.940 However, if you introduce S Ioni,

NOTE Confidence: 0.80716157

00:57:39.940 --> 00:57:41.515 the specific knockdown,

NOTE Confidence: 0.80716157

00:57:41.515 --> 00:57:44.140 the expression of P V1.

NOTE Confidence: 0.80716157

00:57:44.140 --> 00:57:46.036 In this cancer tissues,

NOTE Confidence: 0.80716157

00:57:46.036 --> 00:57:48.880 you just reduce the tumor formation

NOTE Confidence: 0.80716157

00:57:48.960 --> 00:57:51.606 and when you looked into these

NOTE Confidence: 0.80716157

00:57:51.606 --> 00:57:53.700 two more tissue sections by,

NOTE Confidence: 0.80716157

00:57:53.700 --> 00:57:54.608 for example,

NOTE Confidence: 0.80716157

00:57:54.608 --> 00:57:57.786 the cell proliferation markers such as PCA,

NOTE Confidence: 0.80716157

00:57:57.790 --> 00:58:01.388 that's indicating Brown here or Ki 67

NOTE Confidence: 0.80716157

00:58:01.388 --> 00:58:05.618 you see in the wild type situation.

NOTE Confidence: 0.80716157

00:58:05.620 --> 00:58:09.456 The cells are highly mitotic and prolific.

NOTE Confidence: 0.80716157

00:58:09.460 --> 00:58:12.040 In the controller down you don't

NOTE Confidence: 0.80716157

00:58:12.040 --> 00:58:13.760 see any big difference.

NOTE Confidence: 0.80716157

00:58:13.760 --> 00:58:16.496 But in the period one knockdown

NOTE Confidence: 0.80716157

00:58:16.496 --> 00:58:17.864 you greatly reduced.

NOTE Confidence: 0.80716157

00:58:17.870 --> 00:58:20.438 The proliferation of these cells and

NOTE Confidence: 0.80716157

00:58:20.438 --> 00:58:23.509 that's a duplicate sure is the same thing.

NOTE Confidence: 0.80716157

00:58:23.510 --> 00:58:25.694 So based on that?

NOTE Confidence: 0.80716157

00:58:25.694 --> 00:58:28.970 You know we wanted to know.

NOTE Confidence: 0.80716157

00:58:28.970 --> 00:58:31.986 Weather Pang is appeared role in this period.

NOTE Confidence: 0.80716157

00:58:31.990 --> 00:58:33.522 Proteins function in cancers.

NOTE Confidence: 0.80716157

00:58:33.522 --> 00:58:35.820 We expected to see pioneers and

NOTE Confidence: 0.80716157

00:58:35.884 --> 00:58:38.020 cancer specific powers to show up,

NOTE Confidence: 0.80716157

00:58:38.020 --> 00:58:39.428 but to our surprise,

NOTE Confidence: 0.80716157

00:58:39.428 --> 00:58:42.017 when we did deep sequencing for the

NOTE Confidence: 0.80716157

00:58:42.017 --> 00:58:44.047 small non coding RNA population,

NOTE Confidence: 0.80716157

00:58:44.050 --> 00:58:46.650 we could not detect any pianese we detected

NOTE Confidence: 0.80716157

00:58:46.650 --> 00:58:49.478 lots of micro honest which is normally

NOTE Confidence: 0.80716157

00:58:49.478 --> 00:58:51.583 a smaller population than pioneers.

NOTE Confidence: 0.80716157

00:58:51.590 --> 00:58:54.936 But now even with this big presence

NOTE Confidence: 0.80716157

00:58:54.936 --> 00:58:57.470 of microrna population we cannot see

NOTE Confidence: 0.80716157

00:58:57.470 --> 00:59:00.580 any or if any just very few pennies.

NOTE Confidence: 0.80716157

00:59:00.580 --> 00:59:02.967 That's where a matching to the high

NOTE Confidence: 0.80716157

00:59:02.967 --> 00:59:04.840 level of heavy protein expression

NOTE Confidence: 0.80716157

00:59:04.840 --> 00:59:06.388 and let us too.

NOTE Confidence: 0.80716157

00:59:06.390 --> 00:59:09.110 Conclude or to hypothesize that

NOTE Confidence: 0.80716157

00:59:09.110 --> 00:59:11.830 piwi proteins function in cancer

NOTE Confidence: 0.80716157

00:59:11.918 --> 00:59:14.638 might be independent of Pianese.

NOTE Confidence: 0.80716157

00:59:14.640 --> 00:59:17.556 To really demonstrate that's the case,

NOTE Confidence: 0.80716157

00:59:17.560 --> 00:59:20.434 we generated this mutant PV proteins

NOTE Confidence: 0.80716157

00:59:20.434 --> 00:59:23.312 by mutating three of its residue

NOTE Confidence: 0.80716157

00:59:23.312 --> 00:59:26.371 in the PV domain that you might

NOTE Confidence: 0.80716157

00:59:26.371 --> 00:59:29.247 remember from my introductory slides.

NOTE Confidence: 0.80716157

00:59:29.250 --> 00:59:32.080 That's possessing the only cleavage

NOTE Confidence: 0.80716157

00:59:32.080 --> 00:59:35.230 activity and pioneer binding activity so.

NOTE Confidence: 0.80716157

00:59:35.230 --> 00:59:37.330 When you mutate these three residues,

NOTE Confidence: 0.80716157

00:59:37.330 --> 00:59:38.670 the resulting engineered mutant

NOTE Confidence: 0.80716157

00:59:38.670 --> 00:59:41.180 protein can no longer bind to pioneer.

NOTE Confidence: 0.80716157

00:59:41.180 --> 00:59:44.358 Then we wanted to see if this.

NOTE Confidence: 0.80716157

00:59:44.360 --> 00:59:46.715 Pilot Binding Deficient Mutant Perior

NOTE Confidence: 0.80716157

00:59:46.715 --> 00:59:49.070 one proteins are still oncogenic

NOTE Confidence: 0.80716157

00:59:49.138 --> 00:59:51.088 and turn out that's the case.

NOTE Confidence: 0.80716157

00:59:51.090 --> 00:59:54.828 So normally in these gastric cancer cells,

NOTE Confidence: 0.80716157

00:59:54.830 --> 00:59:58.208 if you do transfer your essay

NOTE Confidence: 0.80716157

00:59:58.208 --> 01:00:00.460 for their migratory ability.

NOTE Confidence: 0.80716157

01:00:00.460 --> 01:00:01.494 Highly migratory.

NOTE Confidence: 0.80716157

01:00:01.494 --> 01:00:06.690 Now if you knock down the P1 is question,

NOTE Confidence: 0.80716157

01:00:06.690 --> 01:00:10.548 you greatly reduced its migratory ability.

NOTE Confidence: 0.80716157

01:00:10.550 --> 01:00:12.839 But if you in this knockdown cell

NOTE Confidence: 0.80716157

01:00:12.839 --> 01:00:14.609 now reintroduce into these cells,

NOTE Confidence: 0.80716157

01:00:14.610 --> 01:00:16.325 that mutant PV protein that

NOTE Confidence: 0.80716157

01:00:16.325 --> 01:00:18.320 cannot bind to pay on it,

NOTE Confidence: 0.80716157

01:00:18.320 --> 01:00:20.820 but that's alone is sufficient.

NOTE Confidence: 0.80716157

01:00:20.820 --> 01:00:22.464 To restore the majority

NOTE Confidence: 0.80716157

01:00:22.464 --> 01:00:24.108 ability of these cells,

NOTE Confidence: 0.80716157

01:00:24.110 --> 01:00:26.065 so this analysis tells us

NOTE Confidence: 0.80716157

01:00:26.065 --> 01:00:28.020 that this pee wee function

NOTE Confidence: 0.83263147

01:00:28.096 --> 01:00:29.449 in gastric cancer,

NOTE Confidence: 0.83263147

01:00:29.450 --> 01:00:31.510 at least in gastric cancer,

NOTE Confidence: 0.83263147

01:00:31.510 --> 01:00:33.542 is actually very independent.

NOTE Confidence: 0.83263147

01:00:33.542 --> 01:00:36.590 So our latest results showed that

NOTE Confidence: 0.83263147

01:00:36.673 --> 01:00:39.331 pee wee actually in gastric cancer

NOTE Confidence: 0.83263147

01:00:39.331 --> 01:00:42.239 they do not interact with piramis,

NOTE Confidence: 0.83263147

01:00:42.240 --> 01:00:45.684 but they interact with the nonsense mediated

NOTE Confidence: 0.83263147

01:00:45.684 --> 01:00:47.930 decay immediate regulatory mechanism.

NOTE Confidence: 0.83263147

01:00:47.930 --> 01:00:51.010 An empty to regulate the cancer genome

NOTE Confidence: 0.83263147

01:00:51.010 --> 01:00:53.899 or cancer transcript on what we think

NOTE Confidence: 0.83263147

01:00:53.899 --> 01:00:56.810 what's happening is that the piwi protein,

NOTE Confidence: 0.83263147

01:00:56.810 --> 01:00:58.790 when it's highly expressed

NOTE Confidence: 0.83263147

01:00:58.790 --> 01:01:00.770 in these cancer cells.

NOTE Confidence: 0.83263147

01:01:00.770 --> 01:01:02.996 It directly target tumor suppressor cells,

NOTE Confidence: 0.83263147

01:01:03.000 --> 01:01:05.478 army and degree design is so that

NOTE Confidence: 0.83263147

01:01:05.478 --> 01:01:07.759 allowed the uncle genic alarm is

NOTE Confidence: 0.83263147

01:01:07.759 --> 01:01:09.669 to promote her ankle Genesis.

NOTE Confidence: 0.83263147

01:01:09.670 --> 01:01:11.530 And Meanwhile as you know,

NOTE Confidence: 0.83263147

01:01:11.530 --> 01:01:13.385 some tumor suppressor anger is

NOTE Confidence: 0.83263147

01:01:13.385 --> 01:01:14.869 themselves with directly supports.

NOTE Confidence: 0.83263147

01:01:14.870 --> 01:01:17.754 Cancer grows in the squashing function is

NOTE Confidence: 0.83263147

01:01:17.754 --> 01:01:21.208 not knock down because of PV overexpression.

NOTE Confidence: 0.83263147

01:01:21.210 --> 01:01:22.906 So we're very excited

NOTE Confidence: 0.83263147

01:01:22.906 --> 01:01:24.178 about these discoveries.

NOTE Confidence: 0.83263147

01:01:24.180 --> 01:01:24.996 In fact,

NOTE Confidence: 0.83263147

01:01:24.996 --> 01:01:27.036 this discovery started from to

NOTE Confidence: 0.83263147

01:01:27.036 --> 01:01:30.498 Safra and now we can always see the

NOTE Confidence: 0.83263147

01:01:30.498 --> 01:01:32.653 hope of approaching clinical site.

NOTE Confidence: 0.83263147

01:01:32.660 --> 01:01:33.382 Of course,

NOTE Confidence: 0.83263147

01:01:33.382 --> 01:01:35.909 I wanted to know whether you know

NOTE Confidence: 0.83263147

01:01:35.909 --> 01:01:38.557 we can use this as a therapeutic

NOTE Confidence: 0.83263147

01:01:38.557 --> 01:01:41.254 target and we have some preliminary

NOTE Confidence: 0.83263147

01:01:41.254 --> 01:01:44.104 results show that's quite possible.

NOTE Confidence: 0.83263147

01:01:44.110 --> 01:01:47.288 So shown here is a new method

NOTE Confidence: 0.83263147

01:01:47.288 --> 01:01:49.618 that's being developed in my lab.

NOTE Confidence: 0.83263147

01:01:49.620 --> 01:01:51.176 Is nanoparticles loaded with?

NOTE Confidence: 0.83263147

01:01:51.176 --> 01:01:53.510 This song is against these proteins.

NOTE Confidence: 0.83263147

01:01:53.510 --> 01:01:54.743 In this case,

NOTE Confidence: 0.83263147

01:01:54.743 --> 01:01:56.798 it's against another under binding

NOTE Confidence: 0.83263147

01:01:56.798 --> 01:01:58.624 protein called familiar that we

NOTE Confidence: 0.83263147

01:01:58.624 --> 01:02:01.351 also worked on and has also has a

NOTE Confidence: 0.83263147

01:02:01.351 --> 01:02:03.227 tumor function promoting function.

NOTE Confidence: 0.83263147

01:02:03.230 --> 01:02:05.930 You can inject these.

NOTE Confidence: 0.83263147

01:02:05.930 --> 01:02:07.946 Nanoparticles through Kelvin into

NOTE Confidence: 0.83263147

01:02:07.946 --> 01:02:10.970 the mice that contains human cancer.

NOTE Confidence: 0.83263147

01:02:10.970 --> 01:02:14.768 In this case, colorectal cancer graph.

NOTE Confidence: 0.83263147

01:02:14.770 --> 01:02:17.550 And 28 days after that.

NOTE Confidence: 0.83263147

01:02:17.550 --> 01:02:20.182 After they closed due to the injection

NOTE Confidence: 0.83263147

01:02:20.182 --> 01:02:22.514 and after four times or injection

NOTE Confidence: 0.83263147

01:02:22.514 --> 01:02:24.770 then you use city to visualize

NOTE Confidence: 0.83263147

01:02:24.770 --> 01:02:27.219 the tumor growth and the web micro

NOTE Confidence: 0.83263147

01:02:27.219 --> 01:02:29.366 angle is and sin is localized.

NOTE Confidence: 0.83263147

01:02:29.366 --> 01:02:32.187 So we label this as an every

NOTE Confidence: 0.83263147

01:02:32.187 --> 01:02:34.818 sci-fi and tumor with luciferase,

NOTE Confidence: 0.83263147

01:02:34.820 --> 01:02:37.333 so by city image Ng just 4024

NOTE Confidence: 0.83263147

01:02:37.333 --> 01:02:39.769 hours after the first injection.

NOTE Confidence: 0.83263147

01:02:39.770 --> 01:02:42.614 You can see these nanoparticles become

NOTE Confidence: 0.83263147

01:02:42.614 --> 01:02:45.530 highly enriched in the tumor cells.

NOTE Confidence: 0.83263147

01:02:45.530 --> 01:02:49.226 And then if you let these mice continue

NOTE Confidence: 0.83263147

01:02:49.226 --> 01:02:52.718 to grow and you can see normally.

NOTE Confidence: 0.83263147

01:02:52.720 --> 01:02:55.288 If you just in the ceiling

NOTE Confidence: 0.83263147

01:02:55.288 --> 01:02:57.000 control or randomize this,

NOTE Confidence: 0.83263147

01:02:57.000 --> 01:02:59.996 I only control this grafted tumor tissue.

NOTE Confidence: 0.83263147

01:03:00.000 --> 01:03:02.984 Grow quite robust in this new mice and

NOTE Confidence: 0.83263147

01:03:02.984 --> 01:03:05.988 also will start to undergo metastasis.

NOTE Confidence: 0.83263147

01:03:05.990 --> 01:03:09.170 See other spots within 28 days.

NOTE Confidence: 0.83263147

01:03:09.170 --> 01:03:11.260 But if you do tell,

NOTE Confidence: 0.83263147

01:03:11.260 --> 01:03:13.660 then injection of these nanoparticles

NOTE Confidence: 0.83263147

01:03:13.660 --> 01:03:16.060 loaded with anti this particular

NOTE Confidence: 0.83263147

01:03:16.135 --> 01:03:18.487 proteins are as I only you can

NOTE Confidence: 0.83263147

01:03:18.487 --> 01:03:20.459 really control the tumor growth.

NOTE Confidence: 0.83263147

01:03:20.460 --> 01:03:21.549 So you know,

NOTE Confidence: 0.83263147

01:03:21.549 --> 01:03:23.727 we really feel like basic research

NOTE Confidence: 0.83263147

01:03:23.727 --> 01:03:26.516 allows us to potentially found the

NOTE Confidence: 0.83263147

01:03:26.516 --> 01:03:28.400 computer novel oncogenic mechanism.

NOTE Confidence: 0.83263147

01:03:28.400 --> 01:03:30.902 That's not specific to a particular

NOTE Confidence: 0.83263147

01:03:30.902 --> 01:03:32.153 type of cancer,

NOTE Confidence: 0.83263147

01:03:32.160 --> 01:03:36.088 but probably is to multiple type of cancers.

NOTE Confidence: 0.83263147

01:03:36.090 --> 01:03:37.566 Through our own data,

NOTE Confidence: 0.83263147

01:03:37.566 --> 01:03:39.780 we've shown that in breast cancer,

NOTE Confidence: 0.83263147

01:03:39.780 --> 01:03:41.979 in gastric cancer.

NOTE Confidence: 0.83263147

01:03:41.980 --> 01:03:44.470 In seminoma and in prostate cancer.

NOTE Confidence: 0.83263147

01:03:44.470 --> 01:03:45.715 In skin cancer,

NOTE Confidence: 0.83263147

01:03:45.715 --> 01:03:48.620 in liver cancer and in colorectal cancer.

NOTE Confidence: 0.83263147

01:03:48.620 --> 01:03:51.806 At least subtypes of these cancers.

NOTE Confidence: 0.83263147

01:03:51.810 --> 01:03:54.222 They have high level of period

NOTE Confidence: 0.83263147

01:03:54.222 --> 01:03:56.524 overexpression and period appeared to be

NOTE Confidence: 0.83263147

01:03:56.524 --> 01:03:59.044 a driving mechanism for this type of cancers.

NOTE Confidence: 0.83263147

01:03:59.050 --> 01:04:01.759 So my stream is to use these

NOTE Confidence: 0.83263147

01:04:01.759 --> 01:04:03.640 TV proteins as target.

NOTE Confidence: 0.83263147

01:04:03.640 --> 01:04:04.816 To treat cancer,

NOTE Confidence: 0.83263147

01:04:04.816 --> 01:04:07.560 to develop new treatment for cancer becausw

NOTE Confidence: 0.7716427

01:04:07.634 --> 01:04:10.060 PV proteins. As I mentioned earlier,

NOTE Confidence: 0.7716427

01:04:10.060 --> 01:04:12.520 there only needed in the germline

NOTE Confidence: 0.7716427

01:04:12.592 --> 01:04:14.387 and come to adult states.

NOTE Confidence: 0.7716427

01:04:14.390 --> 01:04:16.959 They only needed in the male germ

NOTE Confidence: 0.7716427

01:04:16.959 --> 01:04:18.760 line because female germline,

NOTE Confidence: 0.7716427

01:04:18.760 --> 01:04:21.546 namely over does not have stem cells.

NOTE Confidence: 0.7716427

01:04:21.550 --> 01:04:23.938 Only spermatogonia stem cells active here.

NOTE Confidence: 0.7716427

01:04:23.940 --> 01:04:25.925 So basically you can completely

NOTE Confidence: 0.7716427

01:04:25.925 --> 01:04:27.116 knockout these proteins.

NOTE Confidence: 0.7716427

01:04:27.120 --> 01:04:28.712 The normal self development

NOTE Confidence: 0.7716427

01:04:28.712 --> 01:04:30.304 will not be affected.

NOTE Confidence: 0.7716427

01:04:30.310 --> 01:04:32.300 We've done so now called

NOTE Confidence: 0.7716427

01:04:32.300 --> 01:04:34.290 entire period family in mice,

NOTE Confidence: 0.7716427

01:04:34.290 --> 01:04:35.421 mice happily surviving.

NOTE Confidence: 0.7716427

01:04:35.421 --> 01:04:37.683 The only problem is the male

NOTE Confidence: 0.7716427

01:04:37.683 --> 01:04:39.447 mice and we predict them.

NOTE Confidence: 0.7716427

01:04:39.450 --> 01:04:41.138 Male patient in human,

NOTE Confidence: 0.7716427

01:04:41.138 --> 01:04:43.670 they will temporary loss fertility but

NOTE Confidence: 0.7716427

01:04:43.749 --> 01:04:46.220 that easily can be solved by stores

NOTE Confidence: 0.7716427

01:04:46.220 --> 01:04:48.809 and sperm right before the treatment.

NOTE Confidence: 0.7716427

01:04:48.810 --> 01:04:51.870 So this is my dream and I hope you

NOTE Confidence: 0.7716427

01:04:51.870 --> 01:04:53.814 know with potential collaboration

NOTE Confidence: 0.7716427

01:04:53.814 --> 01:04:57.349 with all of you in the future

NOTE Confidence: 0.7716427

01:04:57.445 --> 01:04:59.797 or some of you we can take,

NOTE Confidence: 0.7716427

01:04:59.800 --> 01:05:02.698 you know steps forwards and hopefully

NOTE Confidence: 0.7716427

01:05:02.698 --> 01:05:05.909 there will be a 2 new cancer.

NOTE Confidence: 0.7716427

01:05:05.910 --> 01:05:08.166 Treatment message will emerge from this,

NOTE Confidence: 0.7716427

01:05:08.170 --> 01:05:10.536 so I'd like to thank my lab

NOTE Confidence: 0.7716427

01:05:10.536 --> 01:05:12.870 members who did work and since

NOTE Confidence: 0.7716427

01:05:12.870 --> 01:05:15.336 I'm running over our stuff here.

NOTE Confidence: 0.8378827

01:05:16.600 --> 01:05:19.456 Hyphen that was fabulous body of work.

NOTE Confidence: 0.8378827

01:05:19.460 --> 01:05:21.920 And congratulations on all of it.

NOTE Confidence: 0.8378827

01:05:21.920 --> 01:05:24.368 And really, as you point out,

NOTE Confidence: 0.8378827

01:05:24.370 --> 01:05:26.824 it really does Availa bold new

NOTE Confidence: 0.8378827

01:05:26.824 --> 01:05:28.460 approach of cancer therapy.

NOTE Confidence: 0.8378827

01:05:28.460 --> 01:05:31.316 I know we're essentially out of time,

NOTE Confidence: 0.8378827

01:05:31.320 --> 01:05:34.688 but let me just ask one question beyond

NOTE Confidence: 0.8378827

01:05:34.688 --> 01:05:36.639 potentially targeting through SI RNA,

NOTE Confidence: 0.8378827

01:05:36.640 --> 01:05:38.176 are there other potential

NOTE Confidence: 0.8378827

01:05:38.176 --> 01:05:40.096 approaches to target these genes

NOTE Confidence: 0.8378827

01:05:40.096 --> 01:05:42.368 in terms of future Therapeutics?

NOTE Confidence: 0.8378827

01:05:42.370 --> 01:05:43.190 No, that's

NOTE Confidence: 0.8378827

01:05:43.190 --> 01:05:45.638 a very good question into it.

NOTE Confidence: 0.8378827

01:05:45.640 --> 01:05:47.480 The answer is yes.

NOTE Confidence: 0.8378827

01:05:47.480 --> 01:05:48.860 Because these proteins,

NOTE Confidence: 0.8378827

01:05:48.860 --> 01:05:50.292 not the atomic structure,

NOTE Confidence: 0.8378827

01:05:50.292 --> 01:05:53.086 have been resolved, so we know exactly

NOTE Confidence: 0.8378827

01:05:53.086 --> 01:05:55.660 how the active side looks like.

NOTE Confidence: 0.8378827

01:05:55.660 --> 01:05:58.276 And so we're also starting to

NOTE Confidence: 0.8378827

01:05:58.276 --> 01:06:00.606 use a small molecule based

NOTE Confidence: 0.8378827

01:06:00.606 --> 01:06:03.076 screen to find these mimics.

NOTE Confidence: 0.8378827

01:06:03.080 --> 01:06:05.270 Of this active site binding substrate,

NOTE Confidence: 0.8378827

01:06:05.270 --> 01:06:07.685 and hopefully those will be specific to

NOTE Confidence: 0.8378827

01:06:07.685 --> 01:06:10.019 target and knock down these molecules

NOTE Confidence: 0.86029005

01:06:10.020 --> 01:06:11.420 too well. That's exciting,

NOTE Confidence: 0.86029005

01:06:11.420 --> 01:06:13.520 and it sounds like a potentially

NOTE Confidence: 0.86029005

01:06:13.585 --> 01:06:15.129 new area for Therapeutics.

NOTE Confidence: 0.86029005

01:06:15.130 --> 01:06:17.678 Well, I know we're out of time.

NOTE Confidence: 0.86029005

01:06:17.680 --> 01:06:19.948 I want to thank those who joined

NOTE Confidence: 0.86029005

01:06:19.948 --> 01:06:22.219 us and thank hyphen and Grace

NOTE Confidence: 0.86029005

01:06:22.219 --> 01:06:24.249 for two really superb talks.

NOTE Confidence: 0.86029005

01:06:24.250 --> 01:06:26.530 Great work and thank you everyone

NOTE Confidence: 0.86029005

01:06:26.530 --> 01:06:28.999 and enjoy the rest of your day.

NOTE Confidence: 0.86029005

01:06:29.000 --> 01:06:29.730 Well, thank

NOTE Confidence: 0.86029005

01:06:29.730 --> 01:06:31.555 you very much for your

NOTE Confidence: 0.86029005

01:06:31.555 --> 01:06:34.880 invitation. Bye bye bye bye.