

WEBVTT

NOTE duration: "01:02:25.536"

NOTE Confidence: 0.9552665

00:00:00.240 --> 00:00:01.520 I'm gonna go by alphabetical

NOTE Confidence: 0.9552665

00:00:01.520 --> 00:00:02.320 order so that,

NOTE Confidence: 0.9693487

00:00:03.279 --> 00:00:04.080 that's what I have in

NOTE Confidence: 0.9693487

00:00:04.080 --> 00:00:06.080 my list. So doctor Peter

NOTE Confidence: 0.9693487

00:00:06.080 --> 00:00:07.440 Glaser is the Robert Hunter

NOTE Confidence: 0.9693487

00:00:07.440 --> 00:00:08.960 professor of therapeutic radiology and

NOTE Confidence: 0.9693487

00:00:08.960 --> 00:00:10.019 a professor of genetics,

NOTE Confidence: 0.98674095

00:00:10.559 --> 00:00:12.179 and chair of therapeutic radiology.

NOTE Confidence: 0.948558

00:00:13.094 --> 00:00:13.894 And I have to say

NOTE Confidence: 0.948558

00:00:13.894 --> 00:00:14.775 he's been my mentor when

NOTE Confidence: 0.948558

00:00:14.775 --> 00:00:15.494 I first came here. He's

NOTE Confidence: 0.948558

00:00:15.494 --> 00:00:16.295 my my buddy, and he's

NOTE Confidence: 0.948558

00:00:16.295 --> 00:00:17.895 been extremely helpful to navigate

NOTE Confidence: 0.948558

00:00:17.895 --> 00:00:18.474 the Yale,

NOTE Confidence: 0.76822954

00:00:19.095 --> 00:00:19.595 system.
NOTE Confidence: 0.8901446

00:00:20.535 --> 00:00:22.454 Doctor Wolfram Gosling, who just
NOTE Confidence: 0.8901446

00:00:22.454 --> 00:00:23.515 joined only recently,
NOTE Confidence: 0.9868417

00:00:24.294 --> 00:00:25.015 and I know him a
NOTE Confidence: 0.9868417

00:00:25.015 --> 00:00:26.134 lot more here than when
NOTE Confidence: 0.9868417

00:00:26.134 --> 00:00:27.175 we were both for twenty
NOTE Confidence: 0.9868417

00:00:27.175 --> 00:00:27.574 five years,
NOTE Confidence: 0.91368496

00:00:28.310 --> 00:00:29.590 in a small clinic in
NOTE Confidence: 0.91368496

00:00:29.590 --> 00:00:31.130 Frits Street, MGB.
NOTE Confidence: 0.9279737

00:00:31.670 --> 00:00:32.229 He's the,
NOTE Confidence: 0.9611509

00:00:32.790 --> 00:00:34.309 enzyme professor of medicine and
NOTE Confidence: 0.9611509

00:00:34.309 --> 00:00:35.909 professor of cellular molecular physiology,
NOTE Confidence: 0.9611509

00:00:35.909 --> 00:00:36.629 and he's the chair of
NOTE Confidence: 0.9611509

00:00:36.629 --> 00:00:37.530 internal medicine.
NOTE Confidence: 0.8506376

00:00:38.229 --> 00:00:39.590 Pooja Hathri, who is the
NOTE Confidence: 0.8506376

00:00:39.590 --> 00:00:40.870 Albert Kent professor and chair

NOTE Confidence: 0.8506376

00:00:40.870 --> 00:00:41.449 of neurology,

NOTE Confidence: 0.8701354

00:00:42.465 --> 00:00:44.385 And, doctor John Crystal, who

NOTE Confidence: 0.8701354

00:00:44.385 --> 00:00:46.004 is the Robert McNeil,

NOTE Confidence: 0.9400776

00:00:47.104 --> 00:00:49.104 junior professor of translational research,

NOTE Confidence: 0.9400776

00:00:49.104 --> 00:00:51.204 professor of psychiatry, of neuroscience

NOTE Confidence: 0.8938824

00:00:51.905 --> 00:00:53.344 and psychology, and he's chair

NOTE Confidence: 0.8938824

00:00:53.344 --> 00:00:54.004 of psychiatry,

NOTE Confidence: 0.93924844

00:00:54.704 --> 00:00:55.925 co director of YCCI.

NOTE Confidence: 0.91819227

00:00:57.700 --> 00:00:59.540 Doctor Chris Whitlow, who has

NOTE Confidence: 0.91819227

00:00:59.540 --> 00:01:00.500 just landed after

NOTE Confidence: 0.9662188

00:01:01.220 --> 00:01:02.420 and he didn't break his

NOTE Confidence: 0.9662188

00:01:02.420 --> 00:01:03.620 foot coming here. It was

NOTE Confidence: 0.9662188

00:01:03.620 --> 00:01:04.660 on a set of stairs

NOTE Confidence: 0.9662188

00:01:04.660 --> 00:01:05.860 that he did that. And

NOTE Confidence: 0.9662188

00:01:05.860 --> 00:01:06.819 it's not because of us.

NOTE Confidence: 0.9662188

00:01:06.819 --> 00:01:07.700 He's been here at chair
NOTE Confidence: 0.9662188

00:01:07.700 --> 00:01:08.840 for only a day.
NOTE Confidence: 0.8723486

00:01:11.895 --> 00:01:12.694 He is the chair of
NOTE Confidence: 0.8723486

00:01:12.694 --> 00:01:14.215 the, Department of Radiology and
NOTE Confidence: 0.8723486

00:01:14.215 --> 00:01:16.135 Biomedical Imaging and assistant dean,
NOTE Confidence: 0.8723486

00:01:16.295 --> 00:01:17.595 for translational research.
NOTE Confidence: 0.9103322

00:01:18.455 --> 00:01:20.375 Doctor Eric Weiner, who's also
NOTE Confidence: 0.9103322

00:01:20.375 --> 00:01:21.095 I got to meet a
NOTE Confidence: 0.9103322

00:01:21.095 --> 00:01:22.215 lot more here than when
NOTE Confidence: 0.9103322

00:01:22.215 --> 00:01:23.735 we're both in Boston, and
NOTE Confidence: 0.9103322

00:01:23.735 --> 00:01:25.015 who is the Alfred Gilman
NOTE Confidence: 0.9103322

00:01:25.015 --> 00:01:25.994 professor of pharmacology,
NOTE Confidence: 0.9814642

00:01:26.295 --> 00:01:28.100 professor of medicine, medical oncology,
NOTE Confidence: 0.9377488

00:01:28.640 --> 00:01:30.240 deputy dean for cancer research,
NOTE Confidence: 0.9377488

00:01:30.240 --> 00:01:31.619 director of the ALCAN Center,
NOTE Confidence: 0.9377488

00:01:31.840 --> 00:01:32.880 and he's the president of

NOTE Confidence: 0.9377488

00:01:32.880 --> 00:01:33.920 the and physician in chief

NOTE Confidence: 0.9377488

00:01:33.920 --> 00:01:35.380 of the Smilow Cancer Hospital.

NOTE Confidence: 0.75256884

00:01:36.479 --> 00:01:37.680 And last but not least,

NOTE Confidence: 0.75256884

00:01:37.680 --> 00:01:38.819 Doctor. Yoshino O'Hoonomanchado

NOTE Confidence: 0.9472681

00:01:39.280 --> 00:01:40.500 couldn't make it, so

NOTE Confidence: 0.9135488

00:01:40.985 --> 00:01:42.985 she has put, doctor Hua

NOTE Confidence: 0.9135488

00:01:42.985 --> 00:01:44.185 Xu on call, and he

NOTE Confidence: 0.9135488

00:01:44.185 --> 00:01:45.065 had to show up. Thank

NOTE Confidence: 0.9135488

00:01:45.065 --> 00:01:46.444 you, Hua, last minute.

NOTE Confidence: 0.9186893

00:01:47.145 --> 00:01:48.665 He is the Robert McCloskey

NOTE Confidence: 0.9186893

00:01:48.665 --> 00:01:50.424 professor of biomedical informatics, data

NOTE Confidence: 0.9186893

00:01:50.424 --> 00:01:50.924 sciences,

NOTE Confidence: 0.98121095

00:01:51.225 --> 00:01:52.345 and vice chair for research

NOTE Confidence: 0.98121095

00:01:52.345 --> 00:01:53.784 and development. He's also the

NOTE Confidence: 0.98121095

00:01:53.784 --> 00:01:55.485 associate dean for biomedical informatics

NOTE Confidence: 0.9711723

00:01:55.880 --> 00:01:57.180 at Yale School of Medicine.

NOTE Confidence: 0.9711723

00:01:57.400 --> 00:01:58.360 So what we ask all

NOTE Confidence: 0.9711723

00:01:58.360 --> 00:01:59.400 of them is to start

NOTE Confidence: 0.9711723

00:01:59.400 --> 00:01:59.900 with

NOTE Confidence: 0.95668405

00:02:00.520 --> 00:02:01.960 five, six minute that they

NOTE Confidence: 0.95668405

00:02:01.960 --> 00:02:03.900 could tell us what works,

NOTE Confidence: 0.95668405

00:02:04.120 --> 00:02:05.320 what are the missed opportunities,

NOTE Confidence: 0.95668405

00:02:05.320 --> 00:02:06.120 what are the things we

NOTE Confidence: 0.95668405

00:02:06.120 --> 00:02:07.320 should be doing, especially in

NOTE Confidence: 0.95668405

00:02:07.320 --> 00:02:08.919 the research level, but also

NOTE Confidence: 0.95668405

00:02:08.919 --> 00:02:10.365 on the clinical side, And

NOTE Confidence: 0.95668405

00:02:10.365 --> 00:02:11.405 then we'll have all questions

NOTE Confidence: 0.95668405

00:02:11.405 --> 00:02:12.685 for them. And please don't

NOTE Confidence: 0.95668405

00:02:12.685 --> 00:02:13.565 be shy. I I know

NOTE Confidence: 0.95668405

00:02:13.565 --> 00:02:14.445 these may be your chairs,

NOTE Confidence: 0.95668405

00:02:14.445 --> 00:02:15.725 but this is the time

NOTE Confidence: 0.95668405
00:02:15.725 --> 00:02:16.544 to ask questions.
NOTE Confidence: 0.5989534
00:02:27.370 --> 00:02:27.870 It's
NOTE Confidence: 0.98480624
00:02:30.090 --> 00:02:31.389 alphabetical, I guess.
NOTE Confidence: 0.94088304
00:02:31.769 --> 00:02:33.950 That's fair. So hi, everybody.
NOTE Confidence: 0.9674577
00:02:34.409 --> 00:02:35.629 I thought I would just
NOTE Confidence: 0.9674577
00:02:35.689 --> 00:02:36.730 give a little bit of,
NOTE Confidence: 0.9674577
00:02:37.049 --> 00:02:38.169 overview of how we use
NOTE Confidence: 0.9674577
00:02:38.169 --> 00:02:39.930 imaging and radiation oncology and
NOTE Confidence: 0.9674577
00:02:39.930 --> 00:02:41.544 then maybe talk about some
NOTE Confidence: 0.9674577
00:02:41.544 --> 00:02:42.445 future directions
NOTE Confidence: 0.97232735
00:02:42.745 --> 00:02:44.025 because not everyone may be
NOTE Confidence: 0.97232735
00:02:44.025 --> 00:02:45.544 familiar with how things work
NOTE Confidence: 0.97232735
00:02:45.544 --> 00:02:46.825 in our department down in
NOTE Confidence: 0.97232735
00:02:46.825 --> 00:02:48.365 the basement over in Smilow
NOTE Confidence: 0.9948506
00:02:48.745 --> 00:02:49.405 and elsewhere.
NOTE Confidence: 0.97839886

00:02:49.945 --> 00:02:50.425 So,
NOTE Confidence: 0.9991905
00:02:50.825 --> 00:02:51.325 besides
NOTE Confidence: 0.940268
00:02:51.705 --> 00:02:54.264 imaging for diagnosis and staging,
NOTE Confidence: 0.940268
00:02:54.264 --> 00:02:55.165 of course, we,
NOTE Confidence: 0.9394566
00:02:56.020 --> 00:02:56.660 I think,
NOTE Confidence: 0.9930863
00:02:57.139 --> 00:02:59.220 uniquely integrate imaging in our
NOTE Confidence: 0.9930863
00:02:59.220 --> 00:03:00.900 treatment planning and our treatment
NOTE Confidence: 0.9930863
00:03:00.900 --> 00:03:01.400 delivery.
NOTE Confidence: 0.9667748
00:03:01.940 --> 00:03:02.419 So,
NOTE Confidence: 0.9990273
00:03:03.139 --> 00:03:03.800 we use
NOTE Confidence: 0.8881343
00:03:04.419 --> 00:03:05.480 CT, MR,
NOTE Confidence: 0.82684433
00:03:06.660 --> 00:03:07.160 PET,
NOTE Confidence: 0.99839145
00:03:07.940 --> 00:03:08.440 and
NOTE Confidence: 0.9811376
00:03:08.740 --> 00:03:10.360 even ultrasound sometimes
NOTE Confidence: 0.9339959
00:03:10.885 --> 00:03:12.405 as well as something called
NOTE Confidence: 0.9339959
00:03:12.405 --> 00:03:13.305 surface imaging,

NOTE Confidence: 0.85580873
00:03:14.565 --> 00:03:15.065 to,
NOTE Confidence: 0.99952495
00:03:15.925 --> 00:03:16.425 acquire
NOTE Confidence: 0.64673024
00:03:16.965 --> 00:03:17.465 images
NOTE Confidence: 0.9990004
00:03:18.165 --> 00:03:20.025 and to evaluate the extent
NOTE Confidence: 0.9990004
00:03:20.085 --> 00:03:20.985 of the malignancy
NOTE Confidence: 0.9571457
00:03:21.845 --> 00:03:23.145 as well as to identify
NOTE Confidence: 0.94952756
00:03:23.605 --> 00:03:26.010 healthy areas and health healthy,
NOTE Confidence: 0.9987421
00:03:26.310 --> 00:03:27.450 tissues and organs
NOTE Confidence: 0.9548159
00:03:27.830 --> 00:03:28.870 so then we can do
NOTE Confidence: 0.9548159
00:03:28.870 --> 00:03:30.570 our, treatment planning.
NOTE Confidence: 0.9913238
00:03:31.190 --> 00:03:31.690 And,
NOTE Confidence: 0.9556433
00:03:32.470 --> 00:03:33.669 and we do we start
NOTE Confidence: 0.9556433
00:03:33.910 --> 00:03:35.910 besides diagnostic tests, we have
NOTE Confidence: 0.9556433
00:03:35.910 --> 00:03:37.290 our own CT simulator,
NOTE Confidence: 0.92886615
00:03:38.155 --> 00:03:39.595 and in some departments, we
NOTE Confidence: 0.92886615

00:03:39.595 --> 00:03:40.095 have,
NOTE Confidence: 0.96008444
00:03:40.635 --> 00:03:42.735 people have MR based simulators.
NOTE Confidence: 0.94752836
00:03:43.675 --> 00:03:44.895 The CT simulators
NOTE Confidence: 0.98817015
00:03:45.195 --> 00:03:46.555 that we have not only
NOTE Confidence: 0.98817015
00:03:46.555 --> 00:03:48.155 take a standard static CT,
NOTE Confidence: 0.98817015
00:03:48.155 --> 00:03:49.115 but we can do time
NOTE Confidence: 0.98817015
00:03:49.115 --> 00:03:49.615 lapse
NOTE Confidence: 0.9297012
00:03:49.915 --> 00:03:51.615 imaging so we can follow
NOTE Confidence: 0.9328751
00:03:53.159 --> 00:03:53.659 motion,
NOTE Confidence: 0.93632126
00:03:55.079 --> 00:03:55.879 in in time so we
NOTE Confidence: 0.93632126
00:03:55.879 --> 00:03:57.159 can account for movement of
NOTE Confidence: 0.93632126
00:03:57.159 --> 00:03:57.659 tumors
NOTE Confidence: 0.9982391
00:03:58.040 --> 00:03:59.079 as we do our treatment
NOTE Confidence: 0.9982391
00:03:59.079 --> 00:03:59.579 planning.
NOTE Confidence: 0.9503275
00:04:00.280 --> 00:04:02.060 Now I've heard some people,
NOTE Confidence: 0.9995744
00:04:02.519 --> 00:04:03.799 in the field talk about

NOTE Confidence: 0.9995744
00:04:03.799 --> 00:04:04.700 what we do
NOTE Confidence: 0.98035413
00:04:05.235 --> 00:04:06.995 as a version of robotic
NOTE Confidence: 0.98035413
00:04:06.995 --> 00:04:08.435 surgery, but broken up in
NOTE Confidence: 0.98035413
00:04:08.435 --> 00:04:08.935 time.
NOTE Confidence: 0.9345335
00:04:09.394 --> 00:04:10.915 So instead of with the
NOTE Confidence: 0.9345335
00:04:10.915 --> 00:04:12.515 robotic surgery where you were
NOTE Confidence: 0.9345335
00:04:12.515 --> 00:04:13.394 looking at the,
NOTE Confidence: 0.79215705
00:04:14.754 --> 00:04:14.995 the the,
NOTE Confidence: 0.97270244
00:04:15.635 --> 00:04:17.235 monitor and you're moving the
NOTE Confidence: 0.97270244
00:04:17.235 --> 00:04:17.735 robot,
NOTE Confidence: 0.9975649
00:04:18.435 --> 00:04:19.555 to do the surgery in
NOTE Confidence: 0.9975649
00:04:19.555 --> 00:04:20.294 real time,
NOTE Confidence: 0.9990608
00:04:20.680 --> 00:04:22.220 We're using all those images
NOTE Confidence: 0.9991576
00:04:22.599 --> 00:04:24.139 to map out,
NOTE Confidence: 0.9961359
00:04:24.919 --> 00:04:25.740 the lesion,
NOTE Confidence: 0.9393314

00:04:26.120 --> 00:04:28.039 the areas to avoid in
NOTE Confidence: 0.9393314

00:04:28.039 --> 00:04:29.800 three dimensions in a very
NOTE Confidence: 0.9393314

00:04:29.800 --> 00:04:30.300 complicated,
NOTE Confidence: 0.90494126

00:04:31.240 --> 00:04:33.240 which I've also heard called
NOTE Confidence: 0.90494126

00:04:33.240 --> 00:04:35.385 fancy coloring book approach,
NOTE Confidence: 0.9989503

00:04:36.485 --> 00:04:36.985 to
NOTE Confidence: 0.81346154

00:04:37.445 --> 00:04:38.665 then allow
NOTE Confidence: 0.90766793

00:04:40.404 --> 00:04:42.085 our treatment planning systems to
NOTE Confidence: 0.90766793

00:04:42.085 --> 00:04:42.585 design,
NOTE Confidence: 0.97296137

00:04:43.365 --> 00:04:44.645 the treatment. And the treatment
NOTE Confidence: 0.97296137

00:04:44.645 --> 00:04:46.345 happens with our linear accelerators,
NOTE Confidence: 0.97296137

00:04:46.485 --> 00:04:47.960 which are dynamic.
NOTE Confidence: 0.9610962

00:04:48.660 --> 00:04:50.120 They move, they rotate,
NOTE Confidence: 0.98363054

00:04:50.580 --> 00:04:52.279 the aperture opens and closes.
NOTE Confidence: 0.9952383

00:04:52.820 --> 00:04:54.260 So the delivery of the
NOTE Confidence: 0.9952383

00:04:54.260 --> 00:04:55.240 radiation beam

NOTE Confidence: 0.95603836

00:04:55.700 --> 00:04:57.460 can really be exquisitely shaped

NOTE Confidence: 0.95603836

00:04:57.460 --> 00:04:58.839 so we can deliver dose

NOTE Confidence: 0.9589015

00:05:00.275 --> 00:05:01.094 very precisely

NOTE Confidence: 0.974344

00:05:01.875 --> 00:05:03.094 in a very shaped

NOTE Confidence: 0.9825211

00:05:03.555 --> 00:05:04.675 way. Now in order to

NOTE Confidence: 0.9825211

00:05:04.675 --> 00:05:06.275 do that, we have to

NOTE Confidence: 0.9825211

00:05:06.275 --> 00:05:08.115 account for positioning and motion

NOTE Confidence: 0.9825211

00:05:08.115 --> 00:05:10.115 management, and that's where imaging

NOTE Confidence: 0.9825211

00:05:10.115 --> 00:05:10.854 comes into

NOTE Confidence: 0.8967414

00:05:11.154 --> 00:05:11.895 play again.

NOTE Confidence: 0.9703583

00:05:12.539 --> 00:05:13.819 So, for a lot of

NOTE Confidence: 0.9703583

00:05:13.819 --> 00:05:15.259 patients before we treat, the

NOTE Confidence: 0.9703583

00:05:15.259 --> 00:05:16.460 moment before we treat, we

NOTE Confidence: 0.9703583

00:05:16.460 --> 00:05:18.400 do another CT scan because

NOTE Confidence: 0.9703583

00:05:18.460 --> 00:05:19.599 we have CAT scan

NOTE Confidence: 0.95889443

00:05:19.979 --> 00:05:21.580 built into the LINACs, and
NOTE Confidence: 0.95889443

00:05:21.580 --> 00:05:23.360 some LINACs also have MRs
NOTE Confidence: 0.95889443

00:05:23.419 --> 00:05:24.479 built in now,
NOTE Confidence: 0.99776405

00:05:25.355 --> 00:05:26.955 so that we can image
NOTE Confidence: 0.99776405

00:05:26.955 --> 00:05:28.235 that patient and make sure
NOTE Confidence: 0.99776405

00:05:28.235 --> 00:05:30.154 that that positioning aligns with
NOTE Confidence: 0.99776405

00:05:30.154 --> 00:05:31.035 how we set up the
NOTE Confidence: 0.99776405

00:05:31.035 --> 00:05:31.535 treatment.
NOTE Confidence: 0.9993179

00:05:31.835 --> 00:05:32.795 We also have a number
NOTE Confidence: 0.9993179

00:05:32.795 --> 00:05:34.495 of devices for mobilization,
NOTE Confidence: 0.9998913

00:05:36.075 --> 00:05:36.575 including
NOTE Confidence: 0.8915499

00:05:36.955 --> 00:05:38.555 masks and cradles and even
NOTE Confidence: 0.8915499

00:05:38.555 --> 00:05:40.735 for intracranial things we do,
NOTE Confidence: 0.98505163

00:05:42.370 --> 00:05:43.970 head frames that are screwed
NOTE Confidence: 0.98505163

00:05:43.970 --> 00:05:44.949 into the skull.
NOTE Confidence: 0.99258095

00:05:46.050 --> 00:05:47.349 More recently, we've

NOTE Confidence: 0.9170981
00:05:47.650 --> 00:05:49.330 been able to obtain a
NOTE Confidence: 0.9170981
00:05:49.330 --> 00:05:50.690 a PET based LINAC, and
NOTE Confidence: 0.9170981
00:05:50.690 --> 00:05:52.069 Pam mentioned this earlier.
NOTE Confidence: 0.98499995
00:05:52.370 --> 00:05:53.650 And so we now can
NOTE Confidence: 0.98499995
00:05:53.650 --> 00:05:54.150 use,
NOTE Confidence: 0.93233305
00:05:54.770 --> 00:05:55.830 a PET signal,
NOTE Confidence: 0.9558363
00:05:56.305 --> 00:05:58.145 and the, linac will acquire
NOTE Confidence: 0.9558363
00:05:58.145 --> 00:05:59.185 that in real time and
NOTE Confidence: 0.9558363
00:05:59.185 --> 00:06:00.625 then shoot the treatment beam
NOTE Confidence: 0.9558363
00:06:00.625 --> 00:06:02.224 back so we can do
NOTE Confidence: 0.9558363
00:06:02.224 --> 00:06:03.044 motion management
NOTE Confidence: 0.99351406
00:06:03.985 --> 00:06:05.425 through the breathing cycle and
NOTE Confidence: 0.99351406
00:06:05.425 --> 00:06:06.645 other things that happen,
NOTE Confidence: 0.98513395
00:06:07.185 --> 00:06:09.025 in real time and account
NOTE Confidence: 0.98513395
00:06:09.025 --> 00:06:10.544 for that motion, but also
NOTE Confidence: 0.98513395

00:06:10.544 --> 00:06:11.760 it allows us to shape
NOTE Confidence: 0.98513395

00:06:11.760 --> 00:06:13.360 the beam and the treatment
NOTE Confidence: 0.98513395

00:06:13.360 --> 00:06:14.420 even more precisely.
NOTE Confidence: 0.9985587

00:06:15.520 --> 00:06:16.020 So
NOTE Confidence: 0.9933302

00:06:16.320 --> 00:06:17.680 going forward in the future,
NOTE Confidence: 0.9933302

00:06:17.680 --> 00:06:19.360 we're looking to incorporate into
NOTE Confidence: 0.9933302

00:06:19.360 --> 00:06:20.180 that procedure
NOTE Confidence: 0.96145815

00:06:20.720 --> 00:06:22.480 novel pet tracers that not
NOTE Confidence: 0.96145815

00:06:22.480 --> 00:06:24.080 only allow us to follow
NOTE Confidence: 0.96145815

00:06:24.080 --> 00:06:24.740 the anatomy
NOTE Confidence: 0.9823982

00:06:25.464 --> 00:06:26.985 and the motion, but tell
NOTE Confidence: 0.9823982

00:06:26.985 --> 00:06:28.365 us something about the biology.
NOTE Confidence: 0.9823982

00:06:28.425 --> 00:06:29.164 For example,
NOTE Confidence: 0.97604996

00:06:30.104 --> 00:06:31.625 David Carlson in our apartment
NOTE Confidence: 0.97604996

00:06:31.625 --> 00:06:33.145 and others have used a
NOTE Confidence: 0.97604996

00:06:33.145 --> 00:06:34.205 marker of hypoxia,

NOTE Confidence: 0.93728435

00:06:34.985 --> 00:06:36.764 which is fluorine labeled mesonidazole,

NOTE Confidence: 0.96646804

00:06:37.785 --> 00:06:39.945 which accumulates in hypoxic regions

NOTE Confidence: 0.96646804

00:06:39.945 --> 00:06:40.604 of tumors.

NOTE Confidence: 0.9612985

00:06:41.170 --> 00:06:42.290 And in theory, that would

NOTE Confidence: 0.9612985

00:06:42.290 --> 00:06:43.330 allow us not only to

NOTE Confidence: 0.9612985

00:06:43.330 --> 00:06:44.370 track the tumor, but to

NOTE Confidence: 0.9612985

00:06:44.370 --> 00:06:45.570 do what we call dose

NOTE Confidence: 0.9612985

00:06:45.570 --> 00:06:47.170 painting so we could deliver

NOTE Confidence: 0.9612985

00:06:47.170 --> 00:06:49.170 higher doses to hypoxic regions,

NOTE Confidence: 0.9612985

00:06:49.170 --> 00:06:50.630 which are more resistant,

NOTE Confidence: 0.99945825

00:06:51.330 --> 00:06:51.990 to tumors.

NOTE Confidence: 0.94646114

00:06:53.455 --> 00:06:54.335 The the other thing we

NOTE Confidence: 0.94646114

00:06:54.335 --> 00:06:55.215 would like to do in

NOTE Confidence: 0.94646114

00:06:55.215 --> 00:06:57.455 partnership is, build on the

NOTE Confidence: 0.94646114

00:06:57.455 --> 00:06:58.595 advances in theranostics

NOTE Confidence: 0.9891707

00:06:58.895 --> 00:06:59.955 that are going on,
NOTE Confidence: 0.97490716

00:07:00.815 --> 00:07:02.895 not only because it's another
NOTE Confidence: 0.97490716

00:07:02.895 --> 00:07:04.575 version of radiation therapy that's
NOTE Confidence: 0.97490716

00:07:04.575 --> 00:07:05.935 systemic and and we're very
NOTE Confidence: 0.97490716

00:07:05.935 --> 00:07:07.395 interested in that, but also
NOTE Confidence: 0.97490716

00:07:07.639 --> 00:07:09.080 to think about how we
NOTE Confidence: 0.97490716

00:07:09.080 --> 00:07:11.240 combine external beam radiation therapy
NOTE Confidence: 0.97490716

00:07:11.240 --> 00:07:13.020 and systemic radiation therapy.
NOTE Confidence: 0.98919266

00:07:13.400 --> 00:07:14.520 And one area that I
NOTE Confidence: 0.98919266

00:07:14.520 --> 00:07:15.080 think is,
NOTE Confidence: 0.97647345

00:07:15.639 --> 00:07:17.400 right for further study is
NOTE Confidence: 0.97647345

00:07:17.400 --> 00:07:19.160 how that dosimetry is figured
NOTE Confidence: 0.97647345

00:07:19.160 --> 00:07:21.000 out when you're combining both
NOTE Confidence: 0.97647345

00:07:21.000 --> 00:07:22.940 external beam and and theranostics.
NOTE Confidence: 0.97719777

00:07:23.935 --> 00:07:25.295 The the other thing that
NOTE Confidence: 0.97719777

00:07:25.295 --> 00:07:26.655 we're interested in, you know,

NOTE Confidence: 0.97719777

00:07:26.655 --> 00:07:27.695 our department has a lot

NOTE Confidence: 0.97719777

00:07:27.695 --> 00:07:29.855 of drug development research going

NOTE Confidence: 0.97719777

00:07:29.855 --> 00:07:31.295 on. Part of that is

NOTE Confidence: 0.97719777

00:07:31.295 --> 00:07:32.035 drug delivery.

NOTE Confidence: 0.9333988

00:07:32.815 --> 00:07:34.915 We've partnered with biomedical engineering

NOTE Confidence: 0.9333988

00:07:35.135 --> 00:07:35.855 as well as,

NOTE Confidence: 0.8353414

00:07:36.800 --> 00:07:38.180 other departments, MBMB,

NOTE Confidence: 0.99250484

00:07:38.640 --> 00:07:40.320 to develop novel antibodies or

NOTE Confidence: 0.99250484

00:07:40.320 --> 00:07:41.700 tumor targeted peptides,

NOTE Confidence: 0.97833234

00:07:42.160 --> 00:07:43.280 which can be the basis

NOTE Confidence: 0.97833234

00:07:43.280 --> 00:07:43.940 for novel,

NOTE Confidence: 0.9676149

00:07:45.280 --> 00:07:45.780 radioligands

NOTE Confidence: 0.96652496

00:07:46.480 --> 00:07:47.920 and and, you know, we're

NOTE Confidence: 0.96652496

00:07:47.920 --> 00:07:49.380 also using that for cytotoxic

NOTE Confidence: 0.96652496

00:07:49.600 --> 00:07:51.380 chemotherapy and things like that.

NOTE Confidence: 0.9890773

00:07:51.694 --> 00:07:52.495 But one of the things
NOTE Confidence: 0.9890773

00:07:52.495 --> 00:07:53.775 we've done with that that
NOTE Confidence: 0.9890773

00:07:53.775 --> 00:07:54.514 that also
NOTE Confidence: 0.9799558

00:07:54.895 --> 00:07:56.115 is a form of theranostics
NOTE Confidence: 0.9740948

00:07:56.495 --> 00:07:56.995 is,
NOTE Confidence: 0.96138793

00:07:57.535 --> 00:07:58.735 and we had some NIH
NOTE Confidence: 0.96138793

00:07:58.735 --> 00:07:59.694 funding for this. We use
NOTE Confidence: 0.96138793

00:07:59.694 --> 00:08:01.055 one of those tumor targeting
NOTE Confidence: 0.96138793

00:08:01.055 --> 00:08:02.275 peptides to deliver
NOTE Confidence: 0.9215086

00:08:03.055 --> 00:08:04.835 nanoparticles containing gadolinium.
NOTE Confidence: 0.9768761

00:08:05.639 --> 00:08:07.479 So that could be combined
NOTE Confidence: 0.9768761

00:08:07.479 --> 00:08:09.340 with MR imaging, of course,
NOTE Confidence: 0.9959918

00:08:09.720 --> 00:08:10.540 but gadolinium
NOTE Confidence: 0.9577981

00:08:10.919 --> 00:08:12.120 has the property that when
NOTE Confidence: 0.9577981

00:08:12.120 --> 00:08:13.080 you hit it with x
NOTE Confidence: 0.9577981

00:08:13.080 --> 00:08:15.000 rays of certain energy, you

NOTE Confidence: 0.9577981
00:08:15.000 --> 00:08:16.520 knock off electrons and it
NOTE Confidence: 0.9577981
00:08:16.520 --> 00:08:18.199 generates in a transition state
NOTE Confidence: 0.9577981
00:08:18.199 --> 00:08:19.820 something called Auger electrons,
NOTE Confidence: 0.98665565
00:08:20.254 --> 00:08:21.694 which then add more bang
NOTE Confidence: 0.98665565
00:08:21.694 --> 00:08:22.495 for the buck in the
NOTE Confidence: 0.98665565
00:08:22.495 --> 00:08:22.995 radiation,
NOTE Confidence: 0.9917116
00:08:23.775 --> 00:08:24.974 delivery. So there's a number
NOTE Confidence: 0.9917116
00:08:24.974 --> 00:08:26.095 of areas where I think
NOTE Confidence: 0.9917116
00:08:26.095 --> 00:08:26.675 we can
NOTE Confidence: 0.75807726
00:08:27.055 --> 00:08:27.555 leverage,
NOTE Confidence: 0.99793035
00:08:28.175 --> 00:08:29.215 a lot of what's going
NOTE Confidence: 0.99793035
00:08:29.215 --> 00:08:30.835 on in the imaging program.
NOTE Confidence: 0.9163504
00:08:33.510 --> 00:08:34.870 So I'll stop there. Yeah,
NOTE Confidence: 0.9163504
00:08:34.870 --> 00:08:35.370 Al.
NOTE Confidence: 0.93698925
00:08:55.154 --> 00:08:56.274 Yes. That would be very
NOTE Confidence: 0.93698925

00:08:56.274 --> 00:08:58.035 interesting. And I think that,
NOTE Confidence: 0.93698925

00:08:58.274 --> 00:08:59.315 you know, with something that
NOTE Confidence: 0.93698925

00:08:59.315 --> 00:09:00.754 we're interested in in developing
NOTE Confidence: 0.93698925

00:09:00.754 --> 00:09:02.390 that program, As you know,
NOTE Confidence: 0.93698925

00:09:02.390 --> 00:09:03.990 we're getting into cardiology not
NOTE Confidence: 0.93698925

00:09:03.990 --> 00:09:05.850 just with restenosis but in
NOTE Confidence: 0.93698925

00:09:06.070 --> 00:09:06.650 V TAC.
NOTE Confidence: 0.98091483

00:09:07.190 --> 00:09:09.030 And actually, that peptide that
NOTE Confidence: 0.98091483

00:09:09.030 --> 00:09:10.309 I talked about that delivers
NOTE Confidence: 0.98091483

00:09:10.309 --> 00:09:11.830 to acidic tumors also can
NOTE Confidence: 0.98091483

00:09:11.830 --> 00:09:13.964 deliver to ischemic regions, So
NOTE Confidence: 0.98091483

00:09:13.964 --> 00:09:15.005 whether that could be of
NOTE Confidence: 0.98091483

00:09:15.005 --> 00:09:16.285 use is something we can
NOTE Confidence: 0.98091483

00:09:16.285 --> 00:09:17.024 talk about.
NOTE Confidence: 0.93112403

00:09:17.644 --> 00:09:18.524 I'll I think we should
NOTE Confidence: 0.93112403

00:09:18.524 --> 00:09:19.884 talk about this later because

NOTE Confidence: 0.93112403
00:09:19.884 --> 00:09:21.165 we just finished the study
NOTE Confidence: 0.93112403
00:09:21.165 --> 00:09:21.824 in pigs,
NOTE Confidence: 0.8526575
00:09:22.285 --> 00:09:23.804 Felicitas Pichari, who who you
NOTE Confidence: 0.8526575
00:09:23.804 --> 00:09:24.304 know,
NOTE Confidence: 0.9912852
00:09:24.925 --> 00:09:26.204 where they we had done
NOTE Confidence: 0.9912852
00:09:26.204 --> 00:09:27.665 membrane potential mapping
NOTE Confidence: 0.9408481
00:09:28.149 --> 00:09:29.670 in during the treatment for
NOTE Confidence: 0.9408481
00:09:29.670 --> 00:09:30.170 ventricular
NOTE Confidence: 0.9836277
00:09:31.029 --> 00:09:32.790 tachycardia to confirm where you're
NOTE Confidence: 0.9836277
00:09:32.790 --> 00:09:33.929 treating exactly.
NOTE Confidence: 0.9902054
00:09:34.309 --> 00:09:35.770 So this may be something
NOTE Confidence: 0.9902054
00:09:35.990 --> 00:09:36.570 of use.
NOTE Confidence: 0.96042484
00:09:41.454 --> 00:09:43.535 I think it's me who
NOTE Confidence: 0.96042484
00:09:43.535 --> 00:09:45.054 is next, and I I
NOTE Confidence: 0.96042484
00:09:45.054 --> 00:09:46.175 feel a bit like an
NOTE Confidence: 0.96042484

00:09:46.175 --> 00:09:48.415 imposter AI. I've only landed
NOTE Confidence: 0.96042484

00:09:48.415 --> 00:09:49.454 here shortly, and I don't
NOTE Confidence: 0.96042484

00:09:49.454 --> 00:09:50.434 even do imaging.
NOTE Confidence: 0.9848184

00:09:53.720 --> 00:09:54.920 And many of you actually
NOTE Confidence: 0.9848184

00:09:54.920 --> 00:09:55.879 do it. And so I
NOTE Confidence: 0.9848184

00:09:55.879 --> 00:09:57.000 think from a,
NOTE Confidence: 0.9004323

00:09:58.199 --> 00:09:59.639 you know, Department of Medicine
NOTE Confidence: 0.9004323

00:09:59.639 --> 00:10:01.019 perspective, we're clearly
NOTE Confidence: 0.96819955

00:10:01.559 --> 00:10:03.720 major users of of of
NOTE Confidence: 0.96819955

00:10:03.720 --> 00:10:05.019 both diagnostic
NOTE Confidence: 0.95105237

00:10:06.054 --> 00:10:08.214 and, imaging and and, you
NOTE Confidence: 0.95105237

00:10:08.214 --> 00:10:09.195 know, both therapeutic
NOTE Confidence: 0.7945964

00:10:11.255 --> 00:10:13.995 intervention and and and application.
NOTE Confidence: 0.9973801

00:10:15.495 --> 00:10:16.455 You know, that is not
NOTE Confidence: 0.9973801

00:10:16.455 --> 00:10:17.815 to say that my colleagues
NOTE Confidence: 0.9973801

00:10:17.815 --> 00:10:18.315 in

NOTE Confidence: 0.98505867
00:10:18.759 --> 00:10:19.259 cardiology
NOTE Confidence: 0.955073
00:10:19.559 --> 00:10:20.620 and gastroenterology
NOTE Confidence: 0.9892046
00:10:21.160 --> 00:10:21.660 do,
NOTE Confidence: 0.97233385
00:10:22.759 --> 00:10:24.440 live imaging as as they
NOTE Confidence: 0.97233385
00:10:24.440 --> 00:10:26.380 perform their procedures and and
NOTE Confidence: 0.97233385
00:10:26.440 --> 00:10:26.600 and,
NOTE Confidence: 0.76502955
00:10:27.319 --> 00:10:28.059 and diagnostics.
NOTE Confidence: 0.9342016
00:10:29.959 --> 00:10:31.319 So I think from from
NOTE Confidence: 0.9342016
00:10:31.319 --> 00:10:33.245 my perspective, what I'm excited,
NOTE Confidence: 0.9342016
00:10:33.245 --> 00:10:34.765 though, is on the on
NOTE Confidence: 0.9342016
00:10:34.765 --> 00:10:35.644 on what and what we
NOTE Confidence: 0.9342016
00:10:35.644 --> 00:10:37.165 need. And I we've heard
NOTE Confidence: 0.9342016
00:10:37.165 --> 00:10:38.205 some of this as we
NOTE Confidence: 0.9342016
00:10:38.205 --> 00:10:40.205 think about, you know, both
NOTE Confidence: 0.9342016
00:10:40.205 --> 00:10:41.885 chronic inflammatory disease and I
NOTE Confidence: 0.9342016

00:10:41.885 --> 00:10:43.245 won't talk about cancer, Eric,
NOTE Confidence: 0.9342016

00:10:43.245 --> 00:10:44.524 so I'll leave that also
NOTE Confidence: 0.9342016

00:10:44.524 --> 00:10:45.184 to you.
NOTE Confidence: 0.77523077

00:10:46.090 --> 00:10:46.750 You know,
NOTE Confidence: 0.96384543

00:10:47.130 --> 00:10:49.790 both chronic inflammatory diseases and,
NOTE Confidence: 0.92267317

00:10:50.650 --> 00:10:52.890 and and fibrosis, which affects
NOTE Confidence: 0.92267317

00:10:52.890 --> 00:10:53.550 so many,
NOTE Confidence: 0.9398353

00:10:54.490 --> 00:10:56.090 different organ systems and what
NOTE Confidence: 0.9398353

00:10:56.090 --> 00:10:57.434 we've heard where we can
NOTE Confidence: 0.9398353

00:10:57.595 --> 00:10:59.515 actually do functional imaging and
NOTE Confidence: 0.9398353

00:10:59.515 --> 00:11:01.135 and and diagnostics to really
NOTE Confidence: 0.9398353

00:11:01.275 --> 00:11:02.955 think about the molecular basis
NOTE Confidence: 0.9398353

00:11:02.955 --> 00:11:03.515 of these,
NOTE Confidence: 0.71886724

00:11:03.995 --> 00:11:05.375 processes and then,
NOTE Confidence: 0.9275178

00:11:07.275 --> 00:11:08.415 understand the,
NOTE Confidence: 0.8692923

00:11:09.434 --> 00:11:11.275 the the biological mechanisms of

NOTE Confidence: 0.8692923

00:11:11.275 --> 00:11:11.775 disease.

NOTE Confidence: 0.8732665

00:11:12.590 --> 00:11:13.550 You know, I I think

NOTE Confidence: 0.8732665

00:11:13.550 --> 00:11:14.050 microglial

NOTE Confidence: 0.99374664

00:11:14.590 --> 00:11:15.970 imaging is is fantastic.

NOTE Confidence: 0.96789634

00:11:17.230 --> 00:11:19.070 I think macrophage imaging in

NOTE Confidence: 0.96789634

00:11:19.070 --> 00:11:20.910 the inflamed liver or or

NOTE Confidence: 0.96789634

00:11:20.910 --> 00:11:22.690 as you highlighted in in,

NOTE Confidence: 0.93260354

00:11:23.390 --> 00:11:24.750 in in the lung is

NOTE Confidence: 0.93260354

00:11:24.750 --> 00:11:25.970 is, I think, of of

NOTE Confidence: 0.9603381

00:11:26.485 --> 00:11:27.945 of really both

NOTE Confidence: 0.9492851

00:11:28.804 --> 00:11:30.325 diagnostic importance for,

NOTE Confidence: 0.95661515

00:11:30.885 --> 00:11:32.485 for the different diseases, but

NOTE Confidence: 0.95661515

00:11:32.485 --> 00:11:34.005 also ultimately to see whether

NOTE Confidence: 0.95661515

00:11:34.005 --> 00:11:34.825 we can develop,

NOTE Confidence: 0.974211

00:11:35.765 --> 00:11:38.485 novel therapeutic approaches. And so

NOTE Confidence: 0.974211

00:11:38.485 --> 00:11:39.684 I'm excited to be here
NOTE Confidence: 0.974211

00:11:39.684 --> 00:11:41.125 and to learn, but I
NOTE Confidence: 0.9797921

00:11:41.525 --> 00:11:42.540 and to see what all
NOTE Confidence: 0.9797921

00:11:42.540 --> 00:11:44.380 the imaging pros have to
NOTE Confidence: 0.9797921

00:11:44.380 --> 00:11:45.660 offer, and and then I
NOTE Confidence: 0.9797921

00:11:45.660 --> 00:11:47.740 can also refine my, my
NOTE Confidence: 0.9797921

00:11:47.740 --> 00:11:49.120 request of what I want.
NOTE Confidence: 0.9565946

00:11:55.934 --> 00:11:57.774 Okay. So, I can't use
NOTE Confidence: 0.9565946

00:11:57.774 --> 00:11:58.735 the excuse that I'm the
NOTE Confidence: 0.9565946

00:11:58.735 --> 00:12:00.654 newest chair anymore. I'm actually
NOTE Confidence: 0.9565946

00:12:00.654 --> 00:12:02.334 the third newest in this
NOTE Confidence: 0.9565946

00:12:02.334 --> 00:12:03.774 group, but I'm only six
NOTE Confidence: 0.9565946

00:12:03.774 --> 00:12:05.454 months in, so keep that
NOTE Confidence: 0.9565946

00:12:05.454 --> 00:12:06.735 in mind. But, you know,
NOTE Confidence: 0.9565946

00:12:06.735 --> 00:12:08.255 I actually took some time
NOTE Confidence: 0.9565946

00:12:08.255 --> 00:12:09.750 to just like look at

NOTE Confidence: 0.9737359

00:12:10.230 --> 00:12:11.429 imaging is so rich in

NOTE Confidence: 0.9737359

00:12:11.429 --> 00:12:12.870 neurology. It's such an important

NOTE Confidence: 0.9737359

00:12:12.870 --> 00:12:14.230 part of our research as

NOTE Confidence: 0.9737359

00:12:14.230 --> 00:12:14.890 a discipline.

NOTE Confidence: 0.98613495

00:12:15.670 --> 00:12:16.070 And,

NOTE Confidence: 0.9316045

00:12:16.550 --> 00:12:17.929 kind of went through, actually

NOTE Confidence: 0.9316045

00:12:18.070 --> 00:12:19.510 got Georges to, to make

NOTE Confidence: 0.9316045

00:12:19.510 --> 00:12:20.390 a list for me. And

NOTE Confidence: 0.9316045

00:12:20.390 --> 00:12:21.590 then also when an NIH

NOTE Confidence: 0.9316045

00:12:21.590 --> 00:12:22.090 reporter,

NOTE Confidence: 0.9889468

00:12:22.715 --> 00:12:24.075 we have over fifteen million

NOTE Confidence: 0.9889468

00:12:24.075 --> 00:12:26.395 dollars in NIH funded imaging

NOTE Confidence: 0.9889468

00:12:26.395 --> 00:12:27.934 research, and that doesn't include

NOTE Confidence: 0.9889468

00:12:27.995 --> 00:12:29.915 other, you know, foundations and

NOTE Confidence: 0.9889468

00:12:29.915 --> 00:12:31.115 sources of funds. So we're

NOTE Confidence: 0.9889468

00:12:31.115 --> 00:12:32.315 pretty busy and it's, it's
NOTE Confidence: 0.9889468

00:12:32.315 --> 00:12:33.995 a really exciting environment that
NOTE Confidence: 0.9889468

00:12:33.995 --> 00:12:35.275 I'm, I'm happy to be
NOTE Confidence: 0.9889468

00:12:35.275 --> 00:12:35.775 inheriting
NOTE Confidence: 0.9929805

00:12:36.630 --> 00:12:37.990 And it kind of hits
NOTE Confidence: 0.9929805

00:12:37.990 --> 00:12:39.750 the full range of things.
NOTE Confidence: 0.982253

00:12:40.230 --> 00:12:41.110 And I'll just give you
NOTE Confidence: 0.982253

00:12:41.110 --> 00:12:42.630 a few examples. You've heard
NOTE Confidence: 0.982253

00:12:42.630 --> 00:12:44.150 some of them today, you
NOTE Confidence: 0.982253

00:12:44.150 --> 00:12:46.010 know, for example, Carolyn Frederick's
NOTE Confidence: 0.982253

00:12:46.230 --> 00:12:46.730 talk,
NOTE Confidence: 0.9715494

00:12:47.270 --> 00:12:48.710 and others, but, you know,
NOTE Confidence: 0.9715494

00:12:48.710 --> 00:12:50.490 we've got everything from like
NOTE Confidence: 0.9715494

00:12:50.665 --> 00:12:51.965 bread and butter localization
NOTE Confidence: 0.98901284

00:12:52.985 --> 00:12:53.725 of auditory
NOTE Confidence: 0.8863736

00:12:54.025 --> 00:12:55.485 awareness using fMRI

NOTE Confidence: 0.8442439
00:12:56.184 --> 00:12:57.804 and to hopefully plan neuromodulation
NOTE Confidence: 0.98736036
00:12:58.585 --> 00:12:59.085 interventions.
NOTE Confidence: 0.84280396
00:12:59.865 --> 00:13:01.565 We've got looking at
NOTE Confidence: 0.8388019
00:13:05.620 --> 00:13:06.820 mechanism for why we see
NOTE Confidence: 0.8388019
00:13:06.820 --> 00:13:07.720 cognitive delay,
NOTE Confidence: 0.85212356
00:13:08.900 --> 00:13:09.940 or impairment in our patients
NOTE Confidence: 0.85212356
00:13:09.940 --> 00:13:11.880 with HIV that are otherwise
NOTE Confidence: 0.85212356
00:13:11.940 --> 00:13:13.480 well treated. And similarly,
NOTE Confidence: 0.8984836
00:13:14.980 --> 00:13:16.175 and that's on PET. And,
NOTE Confidence: 0.8984836
00:13:16.175 --> 00:13:17.934 and Carolyn had mentioned to
NOTE Confidence: 0.8984836
00:13:17.934 --> 00:13:19.615 you her work and sex
NOTE Confidence: 0.8984836
00:13:19.615 --> 00:13:21.615 specific factors that impact TAU
NOTE Confidence: 0.8984836
00:13:21.615 --> 00:13:22.115 pathology.
NOTE Confidence: 0.9725244
00:13:23.134 --> 00:13:24.735 So, so that's PET.
NOTE Confidence: 0.9851833
00:13:25.454 --> 00:13:27.054 And then, and then there,
NOTE Confidence: 0.9851833

00:13:27.054 --> 00:13:28.334 there's, you know, a whole
NOTE Confidence: 0.9851833

00:13:28.334 --> 00:13:29.454 bunch of stuff going on
NOTE Confidence: 0.9851833

00:13:29.454 --> 00:13:31.314 with MRI and biomarkers.
NOTE Confidence: 0.91375035

00:13:32.839 --> 00:13:34.600 There, there's work with,
NOTE Confidence: 0.98930484

00:13:35.000 --> 00:13:37.019 specifically looking at distinct biomarkers
NOTE Confidence: 0.98930484

00:13:37.240 --> 00:13:39.500 for predicting stroke recurrence, like
NOTE Confidence: 0.968774

00:13:39.880 --> 00:13:41.179 vessel wall inflammation.
NOTE Confidence: 0.9777607

00:13:42.600 --> 00:13:44.120 There's a project that I've
NOTE Confidence: 0.9777607

00:13:44.120 --> 00:13:45.715 brought over to Yale, which
NOTE Confidence: 0.9777607

00:13:45.715 --> 00:13:47.395 is looking at, it's a
NOTE Confidence: 0.9777607

00:13:47.395 --> 00:13:49.955 biomarker validation study, looking at
NOTE Confidence: 0.9777607

00:13:49.955 --> 00:13:50.455 corticospinal
NOTE Confidence: 0.9896064

00:13:50.915 --> 00:13:52.295 tract lesion load,
NOTE Confidence: 0.97269994

00:13:53.075 --> 00:13:54.915 along basically plain old MRI
NOTE Confidence: 0.97269994

00:13:54.915 --> 00:13:56.035 that you get clinically, a
NOTE Confidence: 0.97269994

00:13:56.035 --> 00:13:57.875 poor man's DTI, and hopefully

NOTE Confidence: 0.97269994

00:13:57.875 --> 00:13:59.575 being able to implement that,

NOTE Confidence: 0.9534478

00:13:59.889 --> 00:14:01.089 you know, nationwide as part

NOTE Confidence: 0.9534478

00:14:01.089 --> 00:14:02.850 of our clinical tools. So

NOTE Confidence: 0.9534478

00:14:02.850 --> 00:14:03.910 we'll see about that.

NOTE Confidence: 0.97378266

00:14:04.769 --> 00:14:06.050 And then something that, you

NOTE Confidence: 0.97378266

00:14:06.050 --> 00:14:07.570 know, didn't hit the radar

NOTE Confidence: 0.97378266

00:14:07.570 --> 00:14:08.850 today, but probably good for

NOTE Confidence: 0.97378266

00:14:08.850 --> 00:14:10.309 people to know about is,

NOTE Confidence: 0.99261934

00:14:10.850 --> 00:14:12.130 members of my department have

NOTE Confidence: 0.99261934

00:14:12.130 --> 00:14:13.910 helped build a portable MRI.

NOTE Confidence: 0.95749915

00:14:14.725 --> 00:14:16.105 It's a low field MRI

NOTE Confidence: 0.95749915

00:14:16.165 --> 00:14:17.445 that really gives you some

NOTE Confidence: 0.95749915

00:14:17.445 --> 00:14:19.125 opportunity, especially for your patients

NOTE Confidence: 0.95749915

00:14:19.125 --> 00:14:20.885 with intensive care units, or

NOTE Confidence: 0.95749915

00:14:20.885 --> 00:14:22.485 maybe even more mobile locations

NOTE Confidence: 0.95749915

00:14:22.485 --> 00:14:23.605 to get access as you're
NOTE Confidence: 0.95749915

00:14:23.605 --> 00:14:25.465 thinking about access to care.
NOTE Confidence: 0.97285587

00:14:26.929 --> 00:14:27.889 So that's kind of an
NOTE Confidence: 0.97285587

00:14:27.889 --> 00:14:29.490 overview, you know, in really
NOTE Confidence: 0.97285587

00:14:29.490 --> 00:14:30.769 big picture terms about what
NOTE Confidence: 0.97285587

00:14:30.769 --> 00:14:32.230 my department is up to.
NOTE Confidence: 0.9105113

00:14:32.769 --> 00:14:34.050 I'll say I'm really excited
NOTE Confidence: 0.9105113

00:14:34.050 --> 00:14:35.009 that we're going to be
NOTE Confidence: 0.9105113

00:14:35.009 --> 00:14:36.389 getting at the ADAMS neurosciences
NOTE Confidence: 0.9293102

00:14:36.690 --> 00:14:37.569 tower and it's going to
NOTE Confidence: 0.9293102

00:14:37.569 --> 00:14:38.850 have the PET MRI in
NOTE Confidence: 0.9293102

00:14:38.850 --> 00:14:39.350 it.
NOTE Confidence: 0.974041

00:14:39.855 --> 00:14:41.215 So, so that's a big,
NOTE Confidence: 0.974041

00:14:41.215 --> 00:14:42.735 I think, exciting win for
NOTE Confidence: 0.974041

00:14:42.735 --> 00:14:43.235 us.
NOTE Confidence: 0.9552506

00:14:43.615 --> 00:14:44.655 And, and then I'll and

NOTE Confidence: 0.9552506

00:14:44.655 --> 00:14:46.335 then finally, I surveyed a

NOTE Confidence: 0.9552506

00:14:46.335 --> 00:14:47.535 few people this afternoon. I

NOTE Confidence: 0.9552506

00:14:47.535 --> 00:14:48.495 said, I'm supposed to talk

NOTE Confidence: 0.9552506

00:14:48.495 --> 00:14:49.855 about what we, we hope

NOTE Confidence: 0.9552506

00:14:49.855 --> 00:14:50.915 we could do better.

NOTE Confidence: 0.9972571

00:14:51.935 --> 00:14:52.415 And,

NOTE Confidence: 0.9795595

00:14:52.895 --> 00:14:53.970 I got a bunch of

NOTE Confidence: 0.9795595

00:14:54.050 --> 00:14:55.170 random things, but I'll say

NOTE Confidence: 0.9795595

00:14:55.170 --> 00:14:56.769 there was one theme for

NOTE Confidence: 0.9795595

00:14:56.769 --> 00:14:58.529 us, which was people who

NOTE Confidence: 0.9795595

00:14:58.529 --> 00:15:00.209 are doing clinical research that

NOTE Confidence: 0.9795595

00:15:00.209 --> 00:15:01.810 rely on using, you know,

NOTE Confidence: 0.9795595

00:15:01.810 --> 00:15:03.730 things like clinical MRI, where

NOTE Confidence: 0.9795595

00:15:03.730 --> 00:15:04.930 we're just running into so

NOTE Confidence: 0.9795595

00:15:04.930 --> 00:15:06.705 much, so many problems with

NOTE Confidence: 0.9795595

00:15:06.705 --> 00:15:08.325 what is a nationwide shortage

NOTE Confidence: 0.9795595

00:15:08.465 --> 00:15:10.545 in radiologists and radiology techs,

NOTE Confidence: 0.9795595

00:15:10.545 --> 00:15:12.065 and feeling like there are

NOTE Confidence: 0.9795595

00:15:12.065 --> 00:15:13.265 great ideas, but sort of

NOTE Confidence: 0.9795595

00:15:13.265 --> 00:15:14.305 hitting a wall in terms

NOTE Confidence: 0.9795595

00:15:14.305 --> 00:15:15.825 of access for our clinical

NOTE Confidence: 0.9795595

00:15:15.825 --> 00:15:17.345 research. So I'm sure that's

NOTE Confidence: 0.9795595

00:15:17.345 --> 00:15:18.465 not a surprise to many

NOTE Confidence: 0.9795595

00:15:18.465 --> 00:15:19.905 people here, but that certainly

NOTE Confidence: 0.9795595

00:15:19.905 --> 00:15:20.865 was top of mind for

NOTE Confidence: 0.9795595

00:15:20.865 --> 00:15:21.925 a lot of my colleagues.

NOTE Confidence: 0.9368881

00:15:24.220 --> 00:15:25.500 So, Puja, could I ask

NOTE Confidence: 0.9368881

00:15:25.500 --> 00:15:26.700 a question related to this?

NOTE Confidence: 0.9368881

00:15:26.700 --> 00:15:27.200 So,

NOTE Confidence: 0.9585465

00:15:27.820 --> 00:15:29.020 and maybe for all of

NOTE Confidence: 0.9585465

00:15:29.020 --> 00:15:30.540 you, as you saw, there's

NOTE Confidence: 0.9585465
00:15:30.540 --> 00:15:32.220 quite a bit of equipment
NOTE Confidence: 0.9585465
00:15:32.220 --> 00:15:33.740 that is mostly under NIH
NOTE Confidence: 0.9585465
00:15:33.740 --> 00:15:34.240 funding,
NOTE Confidence: 0.98967737
00:15:34.715 --> 00:15:36.075 but that is being planned
NOTE Confidence: 0.98967737
00:15:36.075 --> 00:15:36.975 to be installed.
NOTE Confidence: 0.9591146
00:15:37.755 --> 00:15:39.035 And one of the things
NOTE Confidence: 0.9591146
00:15:39.035 --> 00:15:40.635 we have been toying with
NOTE Confidence: 0.9591146
00:15:40.635 --> 00:15:41.915 the idea, and a lot
NOTE Confidence: 0.9591146
00:15:41.915 --> 00:15:43.035 of my constituents are gonna
NOTE Confidence: 0.9591146
00:15:43.035 --> 00:15:43.995 kill me after I say
NOTE Confidence: 0.9591146
00:15:43.995 --> 00:15:45.215 this, but I'll say it,
NOTE Confidence: 0.9591146
00:15:45.355 --> 00:15:47.195 is why not think of
NOTE Confidence: 0.9591146
00:15:47.195 --> 00:15:48.510 a one day a week
NOTE Confidence: 0.9591146
00:15:48.590 --> 00:15:50.350 giving access to clinical use
NOTE Confidence: 0.9591146
00:15:50.350 --> 00:15:51.490 for some of the research,
NOTE Confidence: 0.9591146

00:15:51.710 --> 00:15:53.070 especially something like a seven

NOTE Confidence: 0.9591146

00:15:53.070 --> 00:15:54.370 Tesla or a PedamR?

NOTE Confidence: 0.91186035

00:15:55.630 --> 00:15:56.830 Is this something all of

NOTE Confidence: 0.91186035

00:15:56.830 --> 00:15:57.950 you would consider, or is

NOTE Confidence: 0.91186035

00:15:57.950 --> 00:15:59.170 this would be a nightmare

NOTE Confidence: 0.9693935

00:15:59.550 --> 00:16:00.690 if this was built

NOTE Confidence: 0.9414698

00:16:01.415 --> 00:16:03.014 in the correct setting that,

NOTE Confidence: 0.9414698

00:16:03.014 --> 00:16:04.134 you know, with access to

NOTE Confidence: 0.9414698

00:16:04.134 --> 00:16:05.574 patients, assuming all of that

NOTE Confidence: 0.9414698

00:16:05.574 --> 00:16:07.014 is done? Is that something

NOTE Confidence: 0.9414698

00:16:07.014 --> 00:16:07.814 you'd consider, or is it

NOTE Confidence: 0.9414698

00:16:07.814 --> 00:16:08.855 gonna be such a nightmare

NOTE Confidence: 0.9414698

00:16:08.855 --> 00:16:10.134 that no thanks? Are you

NOTE Confidence: 0.9414698

00:16:10.134 --> 00:16:11.915 talking about sharing clinical imaging,

NOTE Confidence: 0.9075152

00:16:12.615 --> 00:16:13.975 with or research imaging the

NOTE Confidence: 0.9075152

00:16:13.975 --> 00:16:15.035 other way around? Yeah.

NOTE Confidence: 0.9048591

00:16:15.574 --> 00:16:16.454 Only like a day a

NOTE Confidence: 0.9048591

00:16:16.454 --> 00:16:17.830 week. Yeah. Yeah. Because I

NOTE Confidence: 0.9048591

00:16:17.830 --> 00:16:18.630 need to leave this room

NOTE Confidence: 0.9048591

00:16:18.630 --> 00:16:20.150 out. So but say a

NOTE Confidence: 0.9048591

00:16:20.150 --> 00:16:20.970 day a week.

NOTE Confidence: 0.9809014

00:16:21.510 --> 00:16:22.670 Do others wanna comment? I

NOTE Confidence: 0.9809014

00:16:22.790 --> 00:16:23.750 I'm just gonna say I'm

NOTE Confidence: 0.9809014

00:16:23.750 --> 00:16:24.470 I'm a big fan of

NOTE Confidence: 0.9809014

00:16:24.470 --> 00:16:25.910 sharing and and and using

NOTE Confidence: 0.9809014

00:16:25.910 --> 00:16:27.510 things effectively. So if we

NOTE Confidence: 0.9809014

00:16:27.510 --> 00:16:29.030 cannot take away from others

NOTE Confidence: 0.9809014

00:16:29.030 --> 00:16:30.650 and and increase the capacity,

NOTE Confidence: 0.9809014

00:16:30.790 --> 00:16:31.510 I don't see why we

NOTE Confidence: 0.9809014

00:16:31.510 --> 00:16:32.925 wouldn't do that. Yeah. I

NOTE Confidence: 0.9809014

00:16:32.925 --> 00:16:34.225 mean, I would say from

NOTE Confidence: 0.9809014

00:16:34.524 --> 00:16:35.404 from the point of view
NOTE Confidence: 0.9809014

00:16:35.404 --> 00:16:37.084 of using advanced imaging as
NOTE Confidence: 0.9809014

00:16:37.084 --> 00:16:37.745 a radiologist
NOTE Confidence: 0.83775353

00:16:38.524 --> 00:16:39.024 that,
NOTE Confidence: 0.98205656

00:16:40.045 --> 00:16:40.685 it's kind of one of
NOTE Confidence: 0.98205656

00:16:40.685 --> 00:16:41.644 these things where we we
NOTE Confidence: 0.98205656

00:16:41.644 --> 00:16:42.445 don't know what we don't
NOTE Confidence: 0.98205656

00:16:42.445 --> 00:16:43.665 know as as a radiologist,
NOTE Confidence: 0.98205656

00:16:43.725 --> 00:16:45.325 and we don't know what
NOTE Confidence: 0.98205656

00:16:45.325 --> 00:16:46.800 the advanced tool you know,
NOTE Confidence: 0.98205656

00:16:46.800 --> 00:16:47.840 we we have kind of
NOTE Confidence: 0.98205656

00:16:47.840 --> 00:16:48.980 clinical grade equipment,
NOTE Confidence: 0.98554516

00:16:49.840 --> 00:16:50.720 that's not state of the
NOTE Confidence: 0.98554516

00:16:50.720 --> 00:16:52.080 art, and we know what
NOTE Confidence: 0.98554516

00:16:52.080 --> 00:16:53.280 that produces because we read
NOTE Confidence: 0.98554516

00:16:53.280 --> 00:16:55.040 those studies every day. But

NOTE Confidence: 0.98554516
00:16:55.040 --> 00:16:56.720 we don't really know but,
NOTE Confidence: 0.98554516
00:16:56.720 --> 00:16:58.160 you know, to put a
NOTE Confidence: 0.98554516
00:16:58.160 --> 00:16:59.280 high performance tool in our
NOTE Confidence: 0.98554516
00:16:59.280 --> 00:17:00.524 hand to just sort of
NOTE Confidence: 0.98554516
00:17:00.644 --> 00:17:01.365 you know? And I don't
NOTE Confidence: 0.98554516
00:17:01.365 --> 00:17:02.245 have a good way to
NOTE Confidence: 0.98554516
00:17:02.245 --> 00:17:03.045 phrase it, but just sort
NOTE Confidence: 0.98554516
00:17:03.045 --> 00:17:04.005 of play around with it.
NOTE Confidence: 0.98554516
00:17:04.005 --> 00:17:04.885 And I know that doesn't
NOTE Confidence: 0.98554516
00:17:04.885 --> 00:17:06.244 sound very sophisticated, but to
NOTE Confidence: 0.98554516
00:17:06.244 --> 00:17:07.465 play around with the tool
NOTE Confidence: 0.98554516
00:17:07.605 --> 00:17:08.265 to see
NOTE Confidence: 0.9794196
00:17:08.645 --> 00:17:10.484 what's possible, you know, what
NOTE Confidence: 0.9794196
00:17:10.484 --> 00:17:11.285 what kind of,
NOTE Confidence: 0.9971428
00:17:11.845 --> 00:17:13.225 what kind of nuanced
NOTE Confidence: 0.9821678

00:17:13.590 --> 00:17:14.630 image it can produce that
NOTE Confidence: 0.9821678

00:17:14.630 --> 00:17:15.590 helps us make a better
NOTE Confidence: 0.9821678

00:17:15.590 --> 00:17:16.950 diagnosis, I think, would be
NOTE Confidence: 0.9821678

00:17:16.950 --> 00:17:18.630 helpful. And it's just it's
NOTE Confidence: 0.9821678

00:17:18.630 --> 00:17:19.850 just really hard to predict
NOTE Confidence: 0.9821678

00:17:19.910 --> 00:17:20.869 what that would be, and
NOTE Confidence: 0.9821678

00:17:20.869 --> 00:17:21.910 therefore, there's not a lot
NOTE Confidence: 0.9821678

00:17:21.910 --> 00:17:22.789 of support for it because,
NOTE Confidence: 0.9821678

00:17:22.789 --> 00:17:23.669 you know, it's not really
NOTE Confidence: 0.9821678

00:17:23.669 --> 00:17:25.190 hypothesis driven. It's just more
NOTE Confidence: 0.9821678

00:17:25.190 --> 00:17:26.505 of, like, literally, it's just,
NOTE Confidence: 0.9821678

00:17:26.505 --> 00:17:27.545 like, kind of play. You
NOTE Confidence: 0.9821678

00:17:27.545 --> 00:17:28.345 play around with it and
NOTE Confidence: 0.9821678

00:17:28.345 --> 00:17:29.385 see what it's good for.
NOTE Confidence: 0.9821678

00:17:29.385 --> 00:17:30.265 But in order to do
NOTE Confidence: 0.9821678

00:17:30.265 --> 00:17:31.305 that, you have to have

NOTE Confidence: 0.9821678

00:17:31.305 --> 00:17:33.465 access. So, yeah, it's it's

NOTE Confidence: 0.9821678

00:17:33.465 --> 00:17:34.265 a good point. I think

NOTE Confidence: 0.9821678

00:17:34.265 --> 00:17:35.484 there would be some utility,

NOTE Confidence: 0.9439023

00:17:35.945 --> 00:17:37.225 and we might learn how

NOTE Confidence: 0.9439023

00:17:37.225 --> 00:17:39.210 to leverage maybe seven t

NOTE Confidence: 0.9439023

00:17:39.289 --> 00:17:41.289 or even advanced three t

NOTE Confidence: 0.9439023

00:17:41.289 --> 00:17:42.809 or explore type,

NOTE Confidence: 0.99895096

00:17:43.130 --> 00:17:43.630 resolution

NOTE Confidence: 0.9893566

00:17:44.169 --> 00:17:45.929 better to the advantage of

NOTE Confidence: 0.9893566

00:17:45.929 --> 00:17:46.590 our patients.

NOTE Confidence: 0.92450225

00:17:47.049 --> 00:17:48.250 And don't you see also

NOTE Confidence: 0.92450225

00:17:48.250 --> 00:17:49.770 a value in not only

NOTE Confidence: 0.92450225

00:17:49.770 --> 00:17:51.149 giving access, but also

NOTE Confidence: 0.9373902

00:17:52.555 --> 00:17:55.215 training physician scientists, attracting residents

NOTE Confidence: 0.90093064

00:17:55.915 --> 00:17:56.975 for our own,

NOTE Confidence: 0.92534685

00:17:57.755 --> 00:17:59.355 you know, attending to having

NOTE Confidence: 0.92534685

00:17:59.355 --> 00:17:59.855 something

NOTE Confidence: 0.99963987

00:18:00.475 --> 00:18:00.975 exciting

NOTE Confidence: 0.94988906

00:18:01.515 --> 00:18:02.395 other than the bread and

NOTE Confidence: 0.94988906

00:18:02.395 --> 00:18:03.355 butter. Because I heard you

NOTE Confidence: 0.94988906

00:18:03.355 --> 00:18:04.155 about the bread and butter,

NOTE Confidence: 0.94988906

00:18:04.155 --> 00:18:05.490 but this is, like, something

NOTE Confidence: 0.94988906

00:18:05.490 --> 00:18:06.450 that would be really exciting.

NOTE Confidence: 0.94988906

00:18:06.450 --> 00:18:07.890 If it's if it's being

NOTE Confidence: 0.94988906

00:18:07.890 --> 00:18:09.010 used clinically in a short

NOTE Confidence: 0.94988906

00:18:09.010 --> 00:18:09.970 period of time, then it

NOTE Confidence: 0.94988906

00:18:09.970 --> 00:18:11.090 takes that barrier of, like,

NOTE Confidence: 0.94988906

00:18:11.090 --> 00:18:12.050 yeah, but this is research

NOTE Confidence: 0.94988906

00:18:12.050 --> 00:18:12.930 we can't use in our

NOTE Confidence: 0.94988906

00:18:12.930 --> 00:18:14.290 patients. Do you see value

NOTE Confidence: 0.94988906

00:18:14.290 --> 00:18:14.950 in that?

NOTE Confidence: 0.8852113
00:18:17.890 --> 00:18:18.390 Sure.
NOTE Confidence: 0.91080844
00:18:20.635 --> 00:18:21.135 Yes.
NOTE Confidence: 0.86432976
00:18:24.475 --> 00:18:25.455 I said yes.
NOTE Confidence: 0.73846704
00:18:27.115 --> 00:18:28.195 Who's this one say more?
NOTE Confidence: 0.73846704
00:18:28.195 --> 00:18:28.955 I mean, do you have
NOTE Confidence: 0.73846704
00:18:28.955 --> 00:18:30.174 any is the new
NOTE Confidence: 0.6543464
00:18:30.955 --> 00:18:32.075 I'm trying to it's the
NOTE Confidence: 0.6543464
00:18:32.075 --> 00:18:33.869 same same. It's stick this.
NOTE Confidence: 0.9659772
00:18:34.270 --> 00:18:35.630 Yeah. It's it's it's just
NOTE Confidence: 0.9659772
00:18:35.630 --> 00:18:36.990 the same. Like, you you
NOTE Confidence: 0.9659772
00:18:36.990 --> 00:18:37.869 you need to have the
NOTE Confidence: 0.9659772
00:18:37.869 --> 00:18:38.930 tool in your hand
NOTE Confidence: 0.97881067
00:18:39.390 --> 00:18:40.430 to be able to and
NOTE Confidence: 0.97881067
00:18:40.430 --> 00:18:41.869 then to apply it to
NOTE Confidence: 0.97881067
00:18:41.869 --> 00:18:42.990 see what it's good for.
NOTE Confidence: 0.97881067

00:18:42.990 --> 00:18:44.030 And it's kinda one of
NOTE Confidence: 0.97881067

00:18:44.030 --> 00:18:44.910 those things where you don't
NOTE Confidence: 0.97881067

00:18:44.910 --> 00:18:46.030 you don't know until you
NOTE Confidence: 0.97881067

00:18:46.030 --> 00:18:47.425 use it. And then perhaps
NOTE Confidence: 0.97881067

00:18:47.425 --> 00:18:48.705 there's some relationship that you
NOTE Confidence: 0.97881067

00:18:48.705 --> 00:18:49.665 wouldn't have seen with a
NOTE Confidence: 0.97881067

00:18:49.665 --> 00:18:51.105 conventional clinical scanner that you
NOTE Confidence: 0.97881067

00:18:51.105 --> 00:18:51.825 can see with a more
NOTE Confidence: 0.97881067

00:18:51.825 --> 00:18:53.105 advanced scanner. And, yes, it
NOTE Confidence: 0.97881067

00:18:53.105 --> 00:18:54.145 would it would make, it
NOTE Confidence: 0.97881067

00:18:54.145 --> 00:18:55.425 would excite the residents and
NOTE Confidence: 0.97881067

00:18:55.425 --> 00:18:56.325 excite the trainees,
NOTE Confidence: 0.96989214

00:18:56.705 --> 00:18:57.825 and there'd be lots of
NOTE Confidence: 0.96989214

00:18:57.825 --> 00:18:59.265 ways to leverage that. And
NOTE Confidence: 0.96989214

00:18:59.265 --> 00:19:00.929 and there's important, you know,
NOTE Confidence: 0.96989214

00:19:00.929 --> 00:19:02.530 maybe not hypothesis basic science

NOTE Confidence: 0.96989214

00:19:02.530 --> 00:19:03.650 research that comes from that,

NOTE Confidence: 0.96989214

00:19:03.650 --> 00:19:05.809 but more observational type research

NOTE Confidence: 0.96989214

00:19:05.809 --> 00:19:06.950 that can also be impactful

NOTE Confidence: 0.96989214

00:19:07.090 --> 00:19:07.669 to patients,

NOTE Confidence: 0.95448655

00:19:07.970 --> 00:19:09.409 which which the residents could

NOTE Confidence: 0.95448655

00:19:09.409 --> 00:19:10.690 drive and trainees could drive,

NOTE Confidence: 0.95448655

00:19:10.690 --> 00:19:11.809 and and a lot of

NOTE Confidence: 0.95448655

00:19:11.809 --> 00:19:14.130 our clinical faculty clinically oriented

NOTE Confidence: 0.95448655

00:19:14.130 --> 00:19:14.415 faculty

NOTE Confidence: 0.92142487

00:19:23.055 --> 00:19:25.135 Well, I just just follow-up

NOTE Confidence: 0.92142487

00:19:25.135 --> 00:19:25.855 on that. I, you know,

NOTE Confidence: 0.92142487

00:19:25.855 --> 00:19:27.215 I mentioned we use MR

NOTE Confidence: 0.92142487

00:19:27.215 --> 00:19:28.919 for treatment planning. I think

NOTE Confidence: 0.92142487

00:19:28.919 --> 00:19:30.440 some of these advanced tools

NOTE Confidence: 0.92142487

00:19:30.440 --> 00:19:32.119 potentially we could incorporate into

NOTE Confidence: 0.92142487

00:19:32.119 --> 00:19:33.240 the treatment planning because it's
NOTE Confidence: 0.92142487

00:19:33.240 --> 00:19:34.779 not used diagnostically,
NOTE Confidence: 0.97350234

00:19:35.159 --> 00:19:36.460 so we don't have that,
NOTE Confidence: 0.922311

00:19:37.080 --> 00:19:38.600 you know, barrier to getting
NOTE Confidence: 0.922311

00:19:38.600 --> 00:19:40.299 approval or, you know, reimbursement.
NOTE Confidence: 0.9848886

00:19:40.774 --> 00:19:41.975 But we're always looking for
NOTE Confidence: 0.9848886

00:19:41.975 --> 00:19:43.095 better tools to guide the
NOTE Confidence: 0.9848886

00:19:43.095 --> 00:19:44.375 treatment, and that could, for
NOTE Confidence: 0.9848886

00:19:44.375 --> 00:19:45.494 example, be baked into a
NOTE Confidence: 0.9848886

00:19:45.494 --> 00:19:46.855 clinical trial or something like
NOTE Confidence: 0.9848886

00:19:46.855 --> 00:19:47.355 that.
NOTE Confidence: 0.85520464

00:19:51.975 --> 00:19:52.855 Do you want me to
NOTE Confidence: 0.85520464

00:19:52.855 --> 00:19:53.355 go?
NOTE Confidence: 0.81492513

00:19:53.975 --> 00:19:54.634 All right.
NOTE Confidence: 0.9231702

00:19:55.014 --> 00:19:55.514 So,
NOTE Confidence: 0.99318415

00:19:57.470 --> 00:19:59.490 you know, before neuroimaging,

NOTE Confidence: 0.9665228

00:20:00.030 --> 00:20:01.090 psychiatry had,

NOTE Confidence: 0.9710615

00:20:02.190 --> 00:20:04.130 three basic pieces of equipment,

NOTE Confidence: 0.9300234

00:20:04.990 --> 00:20:06.830 comfy chair, a pad of

NOTE Confidence: 0.9300234

00:20:06.830 --> 00:20:07.330 paper,

NOTE Confidence: 0.99132085

00:20:07.950 --> 00:20:09.490 and a writing instrument.

NOTE Confidence: 0.99441814

00:20:10.904 --> 00:20:11.385 And,

NOTE Confidence: 0.99246955

00:20:11.865 --> 00:20:12.924 I say that,

NOTE Confidence: 0.9894604

00:20:14.424 --> 00:20:14.924 because,

NOTE Confidence: 0.9836294

00:20:16.264 --> 00:20:18.184 it's hard to capture how

NOTE Confidence: 0.9836294

00:20:18.184 --> 00:20:19.544 profound the change in the

NOTE Confidence: 0.9836294

00:20:19.544 --> 00:20:21.384 field of psychiatry and how

NOTE Confidence: 0.9836294

00:20:21.384 --> 00:20:23.804 profoundly psychiatry Yale has changed

NOTE Confidence: 0.9855345

00:20:24.340 --> 00:20:26.040 since the advent of neuroimaging.

NOTE Confidence: 0.90500176

00:20:26.660 --> 00:20:28.040 And it's been extraordinarily

NOTE Confidence: 0.97148734

00:20:28.580 --> 00:20:29.080 impactful.

NOTE Confidence: 0.993976

00:20:29.700 --> 00:20:30.440 It has,
NOTE Confidence: 0.973872

00:20:31.060 --> 00:20:32.280 changed the discussion,
NOTE Confidence: 0.98751223

00:20:33.860 --> 00:20:35.780 discussions that people have at
NOTE Confidence: 0.98751223

00:20:35.780 --> 00:20:37.140 all levels of training and
NOTE Confidence: 0.98751223

00:20:37.140 --> 00:20:38.520 in clinical practice.
NOTE Confidence: 0.99803966

00:20:39.635 --> 00:20:40.855 And we've been extraordinarily
NOTE Confidence: 0.9310735

00:20:41.315 --> 00:20:42.835 fortunate at Yale to have
NOTE Confidence: 0.9310735

00:20:42.835 --> 00:20:43.894 just amazing,
NOTE Confidence: 0.9863031

00:20:45.075 --> 00:20:45.575 neuroimaging
NOTE Confidence: 0.98178226

00:20:45.955 --> 00:20:47.394 resources to draw on that
NOTE Confidence: 0.98178226

00:20:47.394 --> 00:20:47.875 has,
NOTE Confidence: 0.99002755

00:20:48.274 --> 00:20:50.455 enabled really impactful research,
NOTE Confidence: 0.92876756

00:20:51.394 --> 00:20:52.855 to emerge, and also
NOTE Confidence: 0.9945437

00:20:53.340 --> 00:20:55.200 exciting new kinds of collaborations,
NOTE Confidence: 0.9643186

00:20:55.980 --> 00:20:57.600 both within Yale and,
NOTE Confidence: 0.8866745

00:20:59.820 --> 00:21:02.960 collaborations with, pharmaceutical industry, biotechnology,

NOTE Confidence: 0.99880826

00:21:03.419 --> 00:21:04.799 and other kinds of things.

NOTE Confidence: 0.92796934

00:21:05.615 --> 00:21:06.915 I thought I would make

NOTE Confidence: 0.89176136

00:21:08.494 --> 00:21:09.695 three points and then I

NOTE Confidence: 0.89176136

00:21:09.695 --> 00:21:10.195 can,

NOTE Confidence: 0.91934925

00:21:11.055 --> 00:21:12.815 we, I can address, concerns

NOTE Confidence: 0.91934925

00:21:12.815 --> 00:21:13.875 and things like that.

NOTE Confidence: 0.9751686

00:21:15.295 --> 00:21:17.395 So in psychiatry, we've used

NOTE Confidence: 0.9994018

00:21:17.935 --> 00:21:18.515 it across

NOTE Confidence: 0.999355

00:21:18.975 --> 00:21:20.595 a wide range of purposes

NOTE Confidence: 0.98080933

00:21:21.359 --> 00:21:23.280 To, understand the biology of

NOTE Confidence: 0.98080933

00:21:23.280 --> 00:21:25.380 basic cognitive and behavioral mechanisms,

NOTE Confidence: 0.99932986

00:21:26.320 --> 00:21:26.820 characterizing

NOTE Confidence: 0.9676716

00:21:27.200 --> 00:21:29.920 individual differences in biology across

NOTE Confidence: 0.9676716

00:21:29.920 --> 00:21:31.059 development, degeneration,

NOTE Confidence: 0.99685526

00:21:32.640 --> 00:21:34.740 understanding illness related pathophysiology,
NOTE Confidence: 0.9868321

00:21:35.440 --> 00:21:36.740 developing new treatments,
NOTE Confidence: 0.99833953

00:21:37.174 --> 00:21:39.174 and developing biomarkers to guide
NOTE Confidence: 0.99833953

00:21:39.174 --> 00:21:40.155 personalized treatment.
NOTE Confidence: 0.95064926

00:21:40.775 --> 00:21:42.554 We've used in psychiatry
NOTE Confidence: 0.9880505

00:21:43.095 --> 00:21:45.595 pretty much every neuroimaging modality
NOTE Confidence: 0.9880505

00:21:45.655 --> 00:21:46.775 that we have here at
NOTE Confidence: 0.9880505

00:21:46.775 --> 00:21:47.275 Yale.
NOTE Confidence: 0.9833065

00:21:48.294 --> 00:21:49.595 And I would say that,
NOTE Confidence: 0.99663895

00:21:50.950 --> 00:21:51.830 one of the things that
NOTE Confidence: 0.99663895

00:21:51.830 --> 00:21:52.570 has characteristically
NOTE Confidence: 0.98576146

00:21:53.109 --> 00:21:55.530 distinguished Yale neuroimaging, which interest-
ingly
NOTE Confidence: 0.98576146

00:21:55.590 --> 00:21:56.090 hasn't
NOTE Confidence: 0.9985094

00:21:56.630 --> 00:21:57.530 come up in
NOTE Confidence: 0.9799113

00:21:58.070 --> 00:21:59.530 such a clear way today,
NOTE Confidence: 0.9378246

00:21:59.910 --> 00:22:01.750 is Yale's really good not
NOTE Confidence: 0.9378246

00:22:01.750 --> 00:22:02.810 only in making,
NOTE Confidence: 0.958447

00:22:03.955 --> 00:22:05.014 static measurements,
NOTE Confidence: 0.9752114

00:22:05.875 --> 00:22:07.894 the expression of a protein,
NOTE Confidence: 0.9752114

00:22:08.115 --> 00:22:08.615 the,
NOTE Confidence: 0.90408605

00:22:10.914 --> 00:22:12.294 volume of a region,
NOTE Confidence: 0.9704073

00:22:12.835 --> 00:22:14.434 but in both in the,
NOTE Confidence: 0.9704073

00:22:14.835 --> 00:22:15.335 spectroscopy
NOTE Confidence: 0.8878643

00:22:15.794 --> 00:22:17.509 work and in the PET
NOTE Confidence: 0.8878643

00:22:17.509 --> 00:22:18.970 work has been particularly
NOTE Confidence: 0.999355

00:22:19.830 --> 00:22:20.809 good at characterizing
NOTE Confidence: 0.9416704

00:22:21.190 --> 00:22:23.190 dynamic processes. The release of
NOTE Confidence: 0.9416704

00:22:23.190 --> 00:22:23.769 a neurotransmitter,
NOTE Confidence: 0.95774215

00:22:25.109 --> 00:22:26.549 how that relates to other
NOTE Confidence: 0.95774215

00:22:26.549 --> 00:22:28.409 cellular functions. And that,
NOTE Confidence: 0.9627655

00:22:28.950 --> 00:22:30.869 that innovation has been extremely

NOTE Confidence: 0.9627655
00:22:30.869 --> 00:22:31.909 important for the kind of
NOTE Confidence: 0.9627655
00:22:31.909 --> 00:22:33.335 impact for work that has
NOTE Confidence: 0.9627655
00:22:33.355 --> 00:22:33.855 emerged,
NOTE Confidence: 0.9240987
00:22:34.275 --> 00:22:36.135 at Yale and in psychiatric
NOTE Confidence: 0.9240987
00:22:36.355 --> 00:22:36.855 research.
NOTE Confidence: 0.96255773
00:22:39.475 --> 00:22:40.434 The other thing I would
NOTE Confidence: 0.96255773
00:22:40.434 --> 00:22:41.635 say, and I think I
NOTE Confidence: 0.96255773
00:22:41.635 --> 00:22:42.455 thought that
NOTE Confidence: 0.91756356
00:22:42.755 --> 00:22:44.434 in psychiatry, but in the
NOTE Confidence: 0.91756356
00:22:44.434 --> 00:22:45.734 general session today,
NOTE Confidence: 0.992927
00:22:46.559 --> 00:22:48.100 about the role of neuroimaging
NOTE Confidence: 0.992927
00:22:48.399 --> 00:22:50.159 or imaging as a bridging
NOTE Confidence: 0.992927
00:22:50.159 --> 00:22:50.659 technology
NOTE Confidence: 0.80825144
00:22:51.119 --> 00:22:51.619 between,
NOTE Confidence: 0.97460556
00:22:52.159 --> 00:22:53.119 it's one of the only
NOTE Confidence: 0.97460556

00:22:53.119 --> 00:22:54.080 ways you can get the
NOTE Confidence: 0.97460556

00:22:54.080 --> 00:22:56.080 same molecular finding in brain
NOTE Confidence: 0.97460556

00:22:56.080 --> 00:22:57.200 in an animal and a
NOTE Confidence: 0.97460556

00:22:57.200 --> 00:22:57.700 human.
NOTE Confidence: 0.99849343

00:22:58.080 --> 00:22:59.059 That's fundamentally
NOTE Confidence: 0.9988184

00:22:59.679 --> 00:23:01.380 important across all areas
NOTE Confidence: 0.9659997

00:23:02.054 --> 00:23:02.294 of,
NOTE Confidence: 0.9286599

00:23:02.855 --> 00:23:04.475 biology and true,
NOTE Confidence: 0.96807396

00:23:05.815 --> 00:23:07.434 in psychiatry as well.
NOTE Confidence: 0.9715496

00:23:07.734 --> 00:23:08.774 You can make the same
NOTE Confidence: 0.9715496

00:23:08.774 --> 00:23:10.534 measurement in post mortem tissue
NOTE Confidence: 0.9715496

00:23:10.534 --> 00:23:12.855 and in vivo tissue. That's
NOTE Confidence: 0.9715496

00:23:12.855 --> 00:23:13.355 extremely
NOTE Confidence: 0.97226256

00:23:14.070 --> 00:23:15.590 important because you can only
NOTE Confidence: 0.97226256

00:23:15.590 --> 00:23:17.190 work out what the disease
NOTE Confidence: 0.97226256

00:23:17.190 --> 00:23:18.710 is in the organ that

NOTE Confidence: 0.97226256
00:23:18.710 --> 00:23:20.649 the disease has. And usually,
NOTE Confidence: 0.9219706
00:23:21.029 --> 00:23:22.149 in people, we don't get
NOTE Confidence: 0.9219706
00:23:22.149 --> 00:23:23.510 to study the dis the
NOTE Confidence: 0.9219706
00:23:23.510 --> 00:23:24.490 organ that,
NOTE Confidence: 0.57228386
00:23:25.190 --> 00:23:25.510 of the,
NOTE Confidence: 0.8939853
00:23:26.615 --> 00:23:27.275 the brain,
NOTE Confidence: 0.9553156
00:23:28.375 --> 00:23:30.475 access is obviously very challenging.
NOTE Confidence: 0.9802678
00:23:31.175 --> 00:23:32.295 It's a great way to
NOTE Confidence: 0.9802678
00:23:32.295 --> 00:23:34.855 link computational model to to
NOTE Confidence: 0.9802678
00:23:34.855 --> 00:23:35.675 to in vivo,
NOTE Confidence: 0.96854895
00:23:36.455 --> 00:23:38.855 data and validate and and
NOTE Confidence: 0.96854895
00:23:38.855 --> 00:23:40.075 update those models.
NOTE Confidence: 0.5823659
00:23:42.210 --> 00:23:42.710 And,
NOTE Confidence: 0.9823059
00:23:45.169 --> 00:23:46.369 and I think the major
NOTE Confidence: 0.9823059
00:23:46.369 --> 00:23:47.330 challenge that we have in
NOTE Confidence: 0.9823059

00:23:47.330 --> 00:23:47.830 psychiatry
NOTE Confidence: 0.9985552

00:23:48.690 --> 00:23:49.350 is that
NOTE Confidence: 0.9770565

00:23:50.130 --> 00:23:51.809 neuroimaging, although we've been doing
NOTE Confidence: 0.9770565

00:23:51.809 --> 00:23:53.029 neuroimaging research
NOTE Confidence: 0.99628985

00:23:53.570 --> 00:23:54.070 for
NOTE Confidence: 0.99922144

00:23:57.165 --> 00:23:57.665 thirty
NOTE Confidence: 0.8172162

00:23:58.125 --> 00:23:58.625 years,
NOTE Confidence: 0.9977959

00:23:59.645 --> 00:24:01.185 it's still a research tool.
NOTE Confidence: 0.83307266

00:24:01.725 --> 00:24:02.465 We're not,
NOTE Confidence: 0.99830556

00:24:03.165 --> 00:24:03.665 characterizing
NOTE Confidence: 0.97966963

00:24:03.965 --> 00:24:05.965 D2 receptor occupancy by an
NOTE Confidence: 0.97966963

00:24:05.965 --> 00:24:08.125 antipsychotic in order to adjust
NOTE Confidence: 0.97966963

00:24:08.125 --> 00:24:08.625 antipsychotic
NOTE Confidence: 0.9784234

00:24:08.925 --> 00:24:09.905 dose. We just
NOTE Confidence: 0.9883645

00:24:10.390 --> 00:24:11.669 look for the side effects
NOTE Confidence: 0.9883645

00:24:11.669 --> 00:24:13.290 and and adjust the dose.

NOTE Confidence: 0.9904188

00:24:15.429 --> 00:24:15.910 And,

NOTE Confidence: 0.99368596

00:24:16.390 --> 00:24:18.309 so, you know, thinking about

NOTE Confidence: 0.99368596

00:24:18.309 --> 00:24:19.770 ways that we can

NOTE Confidence: 0.9863349

00:24:20.470 --> 00:24:21.530 turn molecular,

NOTE Confidence: 0.8998164

00:24:22.869 --> 00:24:23.369 molecular,

NOTE Confidence: 0.94568247

00:24:26.205 --> 00:24:27.265 mechanisms into

NOTE Confidence: 0.9639483

00:24:28.525 --> 00:24:30.205 biomarkers that guide treatment is

NOTE Confidence: 0.9639483

00:24:30.205 --> 00:24:31.425 still an emerging

NOTE Confidence: 0.97713697

00:24:32.045 --> 00:24:33.405 challenge and something that a

NOTE Confidence: 0.97713697

00:24:33.405 --> 00:24:34.445 number of people in the

NOTE Confidence: 0.97713697

00:24:34.445 --> 00:24:35.885 department are working on. And

NOTE Confidence: 0.97713697

00:24:35.885 --> 00:24:36.545 the model

NOTE Confidence: 0.8827258

00:24:36.925 --> 00:24:39.165 is probably Alzheimer's disease, where

NOTE Confidence: 0.8827258

00:24:39.165 --> 00:24:41.119 you have have a a

NOTE Confidence: 0.8827258

00:24:41.119 --> 00:24:42.640 a barren protein that you

NOTE Confidence: 0.8827258

00:24:42.640 --> 00:24:44.080 characterize and then you target
NOTE Confidence: 0.8827258

00:24:44.080 --> 00:24:44.820 that protein,
NOTE Confidence: 0.9517458

00:24:46.960 --> 00:24:48.100 or an aberrant
NOTE Confidence: 0.9908687

00:24:48.559 --> 00:24:49.539 circuit activity,
NOTE Confidence: 0.99499136

00:24:50.880 --> 00:24:52.080 that you might target with,
NOTE Confidence: 0.99499136

00:24:52.080 --> 00:24:52.820 say, neurostimulation
NOTE Confidence: 0.93912125

00:24:53.279 --> 00:24:55.035 treatment or or,
NOTE Confidence: 0.93861836

00:24:55.655 --> 00:24:56.955 other kind of intervention.
NOTE Confidence: 0.93724906

00:24:59.015 --> 00:24:59.515 So
NOTE Confidence: 0.9983156

00:25:00.775 --> 00:25:01.835 what do we want?
NOTE Confidence: 0.97453654

00:25:02.775 --> 00:25:04.455 We want we want more,
NOTE Confidence: 0.97453654

00:25:04.455 --> 00:25:05.335 and we want it all
NOTE Confidence: 0.97453654

00:25:05.335 --> 00:25:07.095 the time, obviously, George, and
NOTE Confidence: 0.97453654

00:25:07.095 --> 00:25:08.690 for for less money, of
NOTE Confidence: 0.97453654

00:25:08.690 --> 00:25:09.190 course.
NOTE Confidence: 0.9861109

00:25:10.930 --> 00:25:11.990 You know, we have

NOTE Confidence: 0.9471372
00:25:12.369 --> 00:25:13.270 among the most,
NOTE Confidence: 0.9716604
00:25:13.730 --> 00:25:16.070 rich array of ligands to
NOTE Confidence: 0.9716604
00:25:16.210 --> 00:25:18.130 probe different targets. Of course,
NOTE Confidence: 0.9716604
00:25:18.130 --> 00:25:20.369 there are critical targets that
NOTE Confidence: 0.9716604
00:25:20.369 --> 00:25:21.650 are relevant that we that
NOTE Confidence: 0.9716604
00:25:21.650 --> 00:25:23.295 we haven't yet gotten to.
NOTE Confidence: 0.9716604
00:25:23.535 --> 00:25:24.275 And and,
NOTE Confidence: 0.9712664
00:25:24.655 --> 00:25:26.255 really, the targets I think
NOTE Confidence: 0.9712664
00:25:26.255 --> 00:25:27.215 SV two a is a
NOTE Confidence: 0.9712664
00:25:27.215 --> 00:25:28.494 great example of a of
NOTE Confidence: 0.9712664
00:25:28.494 --> 00:25:28.994 a
NOTE Confidence: 0.9998102
00:25:29.375 --> 00:25:30.275 protein target
NOTE Confidence: 0.99906224
00:25:30.734 --> 00:25:31.234 that
NOTE Confidence: 0.9838383
00:25:31.935 --> 00:25:33.135 that was ahead of the
NOTE Confidence: 0.9838383
00:25:33.135 --> 00:25:35.075 field when we identified it.
NOTE Confidence: 0.9838383

00:25:35.135 --> 00:25:36.355 Congratulations to
NOTE Confidence: 0.93915236

00:25:36.734 --> 00:25:37.234 Rich.
NOTE Confidence: 0.986218

00:25:37.789 --> 00:25:38.289 And,
NOTE Confidence: 0.9847406

00:25:38.750 --> 00:25:39.250 and,
NOTE Confidence: 0.9970032

00:25:39.950 --> 00:25:41.890 and brought the field forward
NOTE Confidence: 0.98791236

00:25:42.669 --> 00:25:43.409 to integrate.
NOTE Confidence: 0.998342

00:25:43.789 --> 00:25:44.990 And so we want to
NOTE Confidence: 0.998342

00:25:44.990 --> 00:25:46.770 keep pushing the field
NOTE Confidence: 0.9893063

00:25:47.150 --> 00:25:48.210 to find those,
NOTE Confidence: 0.8826691

00:25:49.549 --> 00:25:50.049 those,
NOTE Confidence: 0.99113464

00:25:52.935 --> 00:25:54.955 ligands that help us to
NOTE Confidence: 0.9583026

00:25:55.335 --> 00:25:57.755 change the science, really. And
NOTE Confidence: 0.99116725

00:25:58.055 --> 00:25:59.335 this is an exciting time
NOTE Confidence: 0.99116725

00:25:59.335 --> 00:26:00.855 to do it because the
NOTE Confidence: 0.99116725

00:26:00.855 --> 00:26:02.055 ability to move back and
NOTE Confidence: 0.99116725

00:26:02.055 --> 00:26:04.155 forth across levels of analysis

NOTE Confidence: 0.99116725

00:26:04.215 --> 00:26:05.760 is so great. The other

NOTE Confidence: 0.99116725

00:26:05.760 --> 00:26:06.740 thing I think

NOTE Confidence: 0.8708788

00:26:07.440 --> 00:26:08.640 we may get with a

NOTE Confidence: 0.8708788

00:26:08.640 --> 00:26:09.540 PET MR

NOTE Confidence: 0.9854623

00:26:10.240 --> 00:26:10.740 is

NOTE Confidence: 0.9825291

00:26:11.119 --> 00:26:12.640 dynamic measures at the same

NOTE Confidence: 0.9825291

00:26:12.640 --> 00:26:14.020 time as we're making molecular

NOTE Confidence: 0.9825291

00:26:14.160 --> 00:26:16.320 assessments. And I think that's

NOTE Confidence: 0.9825291

00:26:16.320 --> 00:26:17.540 a really exciting

NOTE Confidence: 0.96516454

00:26:17.984 --> 00:26:19.665 opportunity as well. You know,

NOTE Confidence: 0.96516454

00:26:19.665 --> 00:26:21.265 we've messed around, those of

NOTE Confidence: 0.96516454

00:26:21.265 --> 00:26:22.545 you who've done this, know

NOTE Confidence: 0.96516454

00:26:22.545 --> 00:26:24.165 we've messed around with interleaved

NOTE Confidence: 0.99935883

00:26:24.625 --> 00:26:25.125 EEG

NOTE Confidence: 0.93731225

00:26:25.425 --> 00:26:27.265 and and and MR, and

NOTE Confidence: 0.93731225

00:26:27.265 --> 00:26:28.085 that's been
NOTE Confidence: 0.97803456

00:26:29.825 --> 00:26:30.325 interesting.
NOTE Confidence: 0.9711904

00:26:32.140 --> 00:26:33.500 But this this, I think,
NOTE Confidence: 0.9711904

00:26:33.500 --> 00:26:35.020 is is more is more
NOTE Confidence: 0.9711904

00:26:35.020 --> 00:26:36.880 promising and and,
NOTE Confidence: 0.99184847

00:26:37.820 --> 00:26:39.680 will guide the science. So,
NOTE Confidence: 0.99184847

00:26:39.820 --> 00:26:40.720 you know, mostly,
NOTE Confidence: 0.99861187

00:26:41.820 --> 00:26:43.100 I'm here to say thank
NOTE Confidence: 0.99861187

00:26:43.100 --> 00:26:43.600 you
NOTE Confidence: 0.9605201

00:26:44.405 --> 00:26:45.544 to Yale neuroimaging
NOTE Confidence: 0.85434353

00:26:46.484 --> 00:26:46.984 because
NOTE Confidence: 0.9171529

00:26:47.365 --> 00:26:48.744 it's really driven,
NOTE Confidence: 0.99095047

00:26:49.125 --> 00:26:50.565 kind of culture of innovation
NOTE Confidence: 0.99095047

00:26:50.565 --> 00:26:52.484 in psychiatry that has been
NOTE Confidence: 0.99095047

00:26:52.484 --> 00:26:54.345 extremely valuable for
NOTE Confidence: 0.95839727

00:26:54.725 --> 00:26:56.085 making us a a a

NOTE Confidence: 0.95839727

00:26:56.085 --> 00:26:57.765 good department. So so thank

NOTE Confidence: 0.95839727

00:26:57.765 --> 00:26:58.265 you.

NOTE Confidence: 0.84101295

00:27:04.690 --> 00:27:05.350 Go ahead.

NOTE Confidence: 0.9227246

00:27:05.970 --> 00:27:07.590 Oh, either way. Either way.

NOTE Confidence: 0.9776266

00:27:08.690 --> 00:27:10.310 Thanks for thanks for coming.

NOTE Confidence: 0.968224

00:27:11.644 --> 00:27:12.605 In terms of what imaging

NOTE Confidence: 0.968224

00:27:12.605 --> 00:27:14.205 does well and then what

NOTE Confidence: 0.968224

00:27:14.205 --> 00:27:14.945 are the challenges,

NOTE Confidence: 0.94953704

00:27:16.205 --> 00:27:17.484 in particular with MRI, you

NOTE Confidence: 0.94953704

00:27:17.484 --> 00:27:18.284 know, we've heard a lot

NOTE Confidence: 0.94953704

00:27:18.284 --> 00:27:18.945 of great

NOTE Confidence: 0.954041

00:27:19.484 --> 00:27:20.445 about a lot of great

NOTE Confidence: 0.954041

00:27:20.445 --> 00:27:21.965 MRI research. And,

NOTE Confidence: 0.9858156

00:27:22.524 --> 00:27:24.365 MRI scanners are interesting because

NOTE Confidence: 0.9858156

00:27:24.365 --> 00:27:25.744 when they're being built,

NOTE Confidence: 0.95152366

00:27:26.740 --> 00:27:28.020 there are these measurement tools

NOTE Confidence: 0.95152366

00:27:28.020 --> 00:27:28.760 that are,

NOTE Confidence: 0.92057157

00:27:30.100 --> 00:27:31.320 on the factory floor,

NOTE Confidence: 0.9939876

00:27:32.020 --> 00:27:33.160 tuned and shimmed

NOTE Confidence: 0.9314393

00:27:33.539 --> 00:27:34.280 to optimize,

NOTE Confidence: 0.9996971

00:27:35.460 --> 00:27:36.359 tissue contrast

NOTE Confidence: 0.9665129

00:27:37.140 --> 00:27:39.299 specifically for human eyes so

NOTE Confidence: 0.9665129

00:27:39.299 --> 00:27:40.600 that we, as radiologists,

NOTE Confidence: 0.91868514

00:27:41.015 --> 00:27:42.615 can see pathology. And it

NOTE Confidence: 0.91868514

00:27:42.615 --> 00:27:43.575 and it does a great

NOTE Confidence: 0.91868514

00:27:43.575 --> 00:27:45.015 job at that. So if,

NOTE Confidence: 0.91868514

00:27:45.015 --> 00:27:46.215 let's say, a patient comes

NOTE Confidence: 0.91868514

00:27:46.215 --> 00:27:47.815 into the emergency room, they

NOTE Confidence: 0.91868514

00:27:47.815 --> 00:27:49.175 eventually get in maybe for

NOTE Confidence: 0.91868514

00:27:49.175 --> 00:27:50.375 epile seizure or something, and

NOTE Confidence: 0.91868514

00:27:50.375 --> 00:27:51.675 they get an MRI. And,

NOTE Confidence: 0.96292174

00:27:52.295 --> 00:27:53.255 we do a brain scan,

NOTE Confidence: 0.96292174

00:27:53.255 --> 00:27:54.295 and then I see this

NOTE Confidence: 0.96292174

00:27:54.295 --> 00:27:54.795 giant

NOTE Confidence: 0.83062285

00:27:55.175 --> 00:27:55.675 heterogeneous

NOTE Confidence: 0.9209157

00:27:57.299 --> 00:27:59.539 enhancing lesion with cystic and

NOTE Confidence: 0.9209157

00:27:59.539 --> 00:28:01.779 solid components and restricted diffusion

NOTE Confidence: 0.9209157

00:28:01.779 --> 00:28:03.059 is causing mass effect and

NOTE Confidence: 0.9209157

00:28:03.059 --> 00:28:04.340 pushing the brain all around.

NOTE Confidence: 0.9209157

00:28:04.340 --> 00:28:04.840 And,

NOTE Confidence: 0.97051907

00:28:05.859 --> 00:28:07.059 and and maybe they're in

NOTE Confidence: 0.97051907

00:28:07.059 --> 00:28:08.785 their fifties. And, and then

NOTE Confidence: 0.97051907

00:28:08.785 --> 00:28:09.665 I'm I'm thinking, okay. Well,

NOTE Confidence: 0.97051907

00:28:09.665 --> 00:28:10.545 they've got some sort of

NOTE Confidence: 0.97051907

00:28:10.545 --> 00:28:12.865 aggressive tumors, probably glioblastoma, and

NOTE Confidence: 0.97051907

00:28:12.865 --> 00:28:13.984 then I send them on

NOTE Confidence: 0.97051907

00:28:13.984 --> 00:28:14.945 their way to get, you
NOTE Confidence: 0.97051907

00:28:14.945 --> 00:28:15.445 know,
NOTE Confidence: 0.8908735

00:28:16.225 --> 00:28:17.105 part of that cut out
NOTE Confidence: 0.8908735

00:28:17.105 --> 00:28:19.025 and then doctor Glaser to
NOTE Confidence: 0.8908735

00:28:19.025 --> 00:28:20.565 do some radiation and etcetera
NOTE Confidence: 0.8908735

00:28:20.625 --> 00:28:21.450 to treat it.
NOTE Confidence: 0.9425682

00:28:22.490 --> 00:28:23.769 But, you know, there's this
NOTE Confidence: 0.9425682

00:28:23.769 --> 00:28:24.830 great paper by,
NOTE Confidence: 0.9585554

00:28:25.850 --> 00:28:27.289 Hadi Risak, who is chair
NOTE Confidence: 0.9585554

00:28:27.289 --> 00:28:28.649 of radiology at Memorial Sloan
NOTE Confidence: 0.9585554

00:28:28.649 --> 00:28:29.450 Kettering, and I think I
NOTE Confidence: 0.9585554

00:28:29.450 --> 00:28:30.730 can't remember the exact title,
NOTE Confidence: 0.9585554

00:28:30.730 --> 00:28:32.649 but it it's something like,
NOTE Confidence: 0.9585554

00:28:32.889 --> 00:28:34.649 medical images are more than
NOTE Confidence: 0.9585554

00:28:34.649 --> 00:28:36.570 just pictures. They're data. So
NOTE Confidence: 0.9585554

00:28:36.570 --> 00:28:38.325 the the images that I'm

NOTE Confidence: 0.9585554

00:28:38.325 --> 00:28:39.045 looking at,

NOTE Confidence: 0.94808906

00:28:39.765 --> 00:28:41.605 qualitatively to say there's this

NOTE Confidence: 0.94808906

00:28:41.605 --> 00:28:42.665 big thing here,

NOTE Confidence: 0.9306427

00:28:43.045 --> 00:28:44.245 there's data in there at

NOTE Confidence: 0.9306427

00:28:44.245 --> 00:28:45.285 at the at the voxel

NOTE Confidence: 0.9306427

00:28:45.285 --> 00:28:46.325 wise level, and a voxel

NOTE Confidence: 0.9306427

00:28:46.325 --> 00:28:47.845 is just a three-dimensional pixel.

NOTE Confidence: 0.9306427

00:28:47.845 --> 00:28:48.565 So if you, you know,

NOTE Confidence: 0.9306427

00:28:48.565 --> 00:28:49.685 if you look really closely

NOTE Confidence: 0.9306427

00:28:49.685 --> 00:28:51.370 at your computer monitor, you'll

NOTE Confidence: 0.9306427

00:28:51.370 --> 00:28:52.650 see that it's made of

NOTE Confidence: 0.9306427

00:28:52.650 --> 00:28:53.770 of a bunch of dots,

NOTE Confidence: 0.9306427

00:28:53.770 --> 00:28:54.510 like pointillist

NOTE Confidence: 0.9340569

00:28:54.970 --> 00:28:55.470 paintings,

NOTE Confidence: 0.76959425

00:28:56.730 --> 00:28:58.890 and apps impressionist paintings. But

NOTE Confidence: 0.76959425

00:28:58.890 --> 00:28:59.710 they're three-dimensional,
NOTE Confidence: 0.9715225

00:29:00.170 --> 00:29:01.930 voxels. And within each voxel,
NOTE Confidence: 0.9715225

00:29:01.930 --> 00:29:03.485 there's there's data there. There's
NOTE Confidence: 0.9715225

00:29:03.485 --> 00:29:04.625 quantitative data,
NOTE Confidence: 0.98806477

00:29:05.005 --> 00:29:06.445 and that can be and
NOTE Confidence: 0.98806477

00:29:06.445 --> 00:29:07.804 so these these pictures can
NOTE Confidence: 0.98806477

00:29:07.804 --> 00:29:08.845 be processed in a way
NOTE Confidence: 0.98806477

00:29:08.845 --> 00:29:10.205 to extract this quantitative data,
NOTE Confidence: 0.98806477

00:29:10.205 --> 00:29:11.424 and that's what radiomics
NOTE Confidence: 0.9989747

00:29:11.725 --> 00:29:12.225 is.
NOTE Confidence: 0.998253

00:29:13.085 --> 00:29:13.965 And there's a bunch of
NOTE Confidence: 0.998253

00:29:13.965 --> 00:29:15.565 papers about how radiomics can
NOTE Confidence: 0.998253

00:29:15.565 --> 00:29:16.524 do all kinds of things
NOTE Confidence: 0.998253

00:29:16.524 --> 00:29:18.060 for brain tumors and predict
NOTE Confidence: 0.998253

00:29:18.140 --> 00:29:18.640 predict
NOTE Confidence: 0.9544297

00:29:18.940 --> 00:29:19.900 outcomes and all of this

NOTE Confidence: 0.9544297
00:29:20.140 --> 00:29:21.100 all of these great things,
NOTE Confidence: 0.9544297
00:29:21.100 --> 00:29:22.460 but, you know, we're not
NOTE Confidence: 0.9544297
00:29:22.460 --> 00:29:23.760 using it in the clinic.
NOTE Confidence: 0.9544297
00:29:23.820 --> 00:29:24.960 And you might say, well,
NOTE Confidence: 0.9544297
00:29:25.020 --> 00:29:26.060 why is that? Like, why
NOTE Confidence: 0.9544297
00:29:26.060 --> 00:29:26.940 aren't you know,
NOTE Confidence: 0.9544297
00:29:26.940 --> 00:29:28.060 there's all this data to
NOTE Confidence: 0.9544297
00:29:28.060 --> 00:29:29.740 suggest that radiomics are great
NOTE Confidence: 0.9544297
00:29:29.740 --> 00:29:30.540 and they can make all
NOTE Confidence: 0.9544297
00:29:30.540 --> 00:29:31.200 these predictions.
NOTE Confidence: 0.9657316
00:29:31.505 --> 00:29:32.785 Why are why why do
NOTE Confidence: 0.9657316
00:29:32.785 --> 00:29:34.485 my reports still just describe,
NOTE Confidence: 0.99794984
00:29:35.105 --> 00:29:36.145 you know, this this,
NOTE Confidence: 0.99278575
00:29:36.545 --> 00:29:37.905 in a qualitative way, this
NOTE Confidence: 0.99278575
00:29:37.905 --> 00:29:39.365 big tumor? Why isn't it
NOTE Confidence: 0.99278575

00:29:39.425 --> 00:29:41.185 discussing the radiomics features that
NOTE Confidence: 0.99278575

00:29:41.185 --> 00:29:42.465 we could extract? And that's
NOTE Confidence: 0.99278575

00:29:42.465 --> 00:29:43.745 because the thing that MRI
NOTE Confidence: 0.99278575

00:29:43.745 --> 00:29:45.345 does bad is that it's
NOTE Confidence: 0.99278575

00:29:45.345 --> 00:29:46.065 it's it's,
NOTE Confidence: 0.99746734

00:29:46.730 --> 00:29:48.010 when they when they engineer
NOTE Confidence: 0.99746734

00:29:48.010 --> 00:29:48.910 these scanners,
NOTE Confidence: 0.97232

00:29:49.290 --> 00:29:50.410 they're engineered in a way
NOTE Confidence: 0.97232

00:29:50.410 --> 00:29:52.330 that, again, they're tuned for
NOTE Confidence: 0.97232

00:29:52.330 --> 00:29:53.930 our eyes, but it it
NOTE Confidence: 0.97232

00:29:53.930 --> 00:29:55.470 makes a measurement tool that,
NOTE Confidence: 0.97232

00:29:55.530 --> 00:29:56.350 for quantitative
NOTE Confidence: 0.9833845

00:29:56.650 --> 00:29:57.150 purposes,
NOTE Confidence: 0.996798

00:29:57.610 --> 00:29:58.510 there's massive
NOTE Confidence: 0.94965863

00:29:59.865 --> 00:30:02.025 measurement error between scanners. So
NOTE Confidence: 0.94965863

00:30:02.025 --> 00:30:03.385 for example, let's take something

NOTE Confidence: 0.94965863
00:30:03.385 --> 00:30:04.185 like, you know, you saw
NOTE Confidence: 0.94965863
00:30:04.185 --> 00:30:04.685 some,
NOTE Confidence: 0.98823994
00:30:05.145 --> 00:30:06.365 fractional anisotropy
NOTE Confidence: 0.98376834
00:30:06.985 --> 00:30:08.665 diffusion images of the brain,
NOTE Confidence: 0.98376834
00:30:08.665 --> 00:30:09.405 these beautiful
NOTE Confidence: 0.961802
00:30:09.705 --> 00:30:11.385 colorful tracks of of white
NOTE Confidence: 0.961802
00:30:11.385 --> 00:30:12.780 matter in the brain, and
NOTE Confidence: 0.961802
00:30:12.780 --> 00:30:13.980 you can measure you can
NOTE Confidence: 0.961802
00:30:13.980 --> 00:30:15.420 make measurements of of those
NOTE Confidence: 0.961802
00:30:15.420 --> 00:30:17.200 tracks, things like fractional anisotropy.
NOTE Confidence: 0.961802
00:30:17.340 --> 00:30:18.220 And so let's say you
NOTE Confidence: 0.961802
00:30:18.220 --> 00:30:18.620 took,
NOTE Confidence: 0.9635471
00:30:19.660 --> 00:30:20.780 doctor Brown and you put
NOTE Confidence: 0.9635471
00:30:20.780 --> 00:30:22.400 her in an MRI scanner
NOTE Confidence: 0.8788888
00:30:22.700 --> 00:30:23.200 here,
NOTE Confidence: 0.91696805

00:30:23.580 --> 00:30:24.380 and and they can be
NOTE Confidence: 0.91696805

00:30:24.380 --> 00:30:25.420 they can be two scanners.
NOTE Confidence: 0.91696805

00:30:25.420 --> 00:30:26.860 They can be same same
NOTE Confidence: 0.91696805

00:30:26.860 --> 00:30:27.360 vendor,
NOTE Confidence: 0.9903474

00:30:28.435 --> 00:30:29.795 built side by side on
NOTE Confidence: 0.9903474

00:30:29.795 --> 00:30:31.635 the factory floor, installed at
NOTE Confidence: 0.9903474

00:30:31.635 --> 00:30:32.755 the same institution at the
NOTE Confidence: 0.9903474

00:30:32.755 --> 00:30:33.415 same time,
NOTE Confidence: 0.7765813

00:30:33.955 --> 00:30:34.455 same,
NOTE Confidence: 0.92129344

00:30:35.315 --> 00:30:38.035 hardware, same software platform. Everything
NOTE Confidence: 0.92129344

00:30:38.035 --> 00:30:39.795 is, like, nearly identical. You
NOTE Confidence: 0.92129344

00:30:39.795 --> 00:30:40.755 can scan her brain. You
NOTE Confidence: 0.92129344

00:30:40.755 --> 00:30:42.215 can make a FA measurement
NOTE Confidence: 0.9702616

00:30:42.580 --> 00:30:43.700 and in one scanner and
NOTE Confidence: 0.9702616

00:30:43.700 --> 00:30:44.820 then scan her immediately in
NOTE Confidence: 0.9702616

00:30:44.820 --> 00:30:45.640 the next scanner.

NOTE Confidence: 0.96150476

00:30:46.020 --> 00:30:47.300 The measurement will be thirty

NOTE Confidence: 0.96150476

00:30:47.300 --> 00:30:49.160 percent different thirty percent different.

NOTE Confidence: 0.96150476

00:30:49.220 --> 00:30:50.340 So imagine if you were

NOTE Confidence: 0.96150476

00:30:50.340 --> 00:30:52.020 trying to, you know, take

NOTE Confidence: 0.96150476

00:30:52.020 --> 00:30:52.920 someone's weight

NOTE Confidence: 0.9334367

00:30:53.300 --> 00:30:54.900 and you're trying to track

NOTE Confidence: 0.9334367

00:30:54.900 --> 00:30:56.100 someone's weight, and it's thirty

NOTE Confidence: 0.9334367

00:30:56.100 --> 00:30:58.120 percent different between two scales.

NOTE Confidence: 0.9863555

00:30:58.555 --> 00:31:00.395 So MRI scanners are great

NOTE Confidence: 0.9863555

00:31:00.395 --> 00:31:01.295 at making measurements,

NOTE Confidence: 0.97817314

00:31:01.995 --> 00:31:02.495 but,

NOTE Confidence: 0.99457955

00:31:03.115 --> 00:31:03.615 between

NOTE Confidence: 0.9692354

00:31:03.915 --> 00:31:05.615 instruments, there's there's a problem.

NOTE Confidence: 0.9880457

00:31:05.915 --> 00:31:07.595 And and that's why that's

NOTE Confidence: 0.9880457

00:31:07.595 --> 00:31:08.955 why, you know, you can't

NOTE Confidence: 0.9880457

00:31:08.955 --> 00:31:10.890 reliably extract all of these
NOTE Confidence: 0.9880457

00:31:11.130 --> 00:31:12.590 wonderful quantitative metrics
NOTE Confidence: 0.980672

00:31:13.450 --> 00:31:14.570 because, you know, if someone
NOTE Confidence: 0.980672

00:31:14.570 --> 00:31:15.690 is scanned here and then
NOTE Confidence: 0.980672

00:31:15.690 --> 00:31:16.890 they're scanned for follow-up at
NOTE Confidence: 0.980672

00:31:16.890 --> 00:31:18.810 another at another institution, these
NOTE Confidence: 0.980672

00:31:18.810 --> 00:31:19.770 aren't things that you can
NOTE Confidence: 0.980672

00:31:19.770 --> 00:31:21.550 track between scanners over time.
NOTE Confidence: 0.980672

00:31:21.770 --> 00:31:22.650 So then, you know, that's
NOTE Confidence: 0.980672

00:31:22.650 --> 00:31:24.835 where AI comes into play.
NOTE Confidence: 0.980672

00:31:24.835 --> 00:31:25.554 You know, you can't talk
NOTE Confidence: 0.980672

00:31:25.554 --> 00:31:27.015 about imaging without AI.
NOTE Confidence: 0.98974764

00:31:27.955 --> 00:31:28.434 And,
NOTE Confidence: 0.94548476

00:31:29.315 --> 00:31:30.515 AI is interesting because it's
NOTE Confidence: 0.94548476

00:31:30.515 --> 00:31:31.955 not limited, number one, by
NOTE Confidence: 0.94548476

00:31:31.955 --> 00:31:33.895 our senses. So it can

NOTE Confidence: 0.94548476

00:31:34.035 --> 00:31:34.934 it it can recapitulate

NOTE Confidence: 0.9708584

00:31:35.395 --> 00:31:37.010 a lot of things that

NOTE Confidence: 0.9708584

00:31:37.010 --> 00:31:38.210 HI can do. So AI

NOTE Confidence: 0.9708584

00:31:38.210 --> 00:31:39.250 can do things HI can

NOTE Confidence: 0.9708584

00:31:39.250 --> 00:31:41.409 do, so human intelligence. So

NOTE Confidence: 0.9708584

00:31:41.409 --> 00:31:43.490 AI can say there's there's

NOTE Confidence: 0.9708584

00:31:43.490 --> 00:31:44.529 a tumor, and I can

NOTE Confidence: 0.9708584

00:31:44.529 --> 00:31:45.490 say there's a tumor. Well,

NOTE Confidence: 0.9708584

00:31:45.490 --> 00:31:46.770 that's okay. So AI can

NOTE Confidence: 0.9708584

00:31:46.770 --> 00:31:47.409 do the thing that I

NOTE Confidence: 0.9708584

00:31:47.409 --> 00:31:48.529 can do. But AI, I

NOTE Confidence: 0.9708584

00:31:48.529 --> 00:31:49.809 think where it's really interesting

NOTE Confidence: 0.9708584

00:31:49.809 --> 00:31:50.450 is where it can do

NOTE Confidence: 0.9708584

00:31:50.450 --> 00:31:51.750 things that we can't do.

NOTE Confidence: 0.9708584

00:31:52.035 --> 00:31:52.535 And,

NOTE Confidence: 0.99909997

00:31:53.635 --> 00:31:54.755 and one of those things
NOTE Confidence: 0.99909997

00:31:54.755 --> 00:31:55.815 might be to
NOTE Confidence: 0.99266124

00:31:56.915 --> 00:31:58.195 overcome that hurdle of the
NOTE Confidence: 0.99266124

00:31:58.195 --> 00:31:59.715 engineering of MRI scanners to
NOTE Confidence: 0.99266124

00:31:59.715 --> 00:32:00.215 maybe
NOTE Confidence: 0.932041

00:32:00.915 --> 00:32:01.415 harmonize,
NOTE Confidence: 0.99948484

00:32:02.035 --> 00:32:02.935 MRI scanners
NOTE Confidence: 0.99467486

00:32:04.435 --> 00:32:06.615 across each individual measurement device
NOTE Confidence: 0.9998295

00:32:07.080 --> 00:32:08.360 so that we can unlock
NOTE Confidence: 0.9998295

00:32:08.360 --> 00:32:09.179 these quantitative
NOTE Confidence: 0.947757

00:32:09.559 --> 00:32:11.080 measurements and then use them
NOTE Confidence: 0.947757

00:32:11.080 --> 00:32:12.360 to great effect. And then
NOTE Confidence: 0.947757

00:32:12.360 --> 00:32:13.720 also do things like maybe
NOTE Confidence: 0.947757

00:32:13.720 --> 00:32:15.400 even leverage functional measurements like,
NOTE Confidence: 0.947757

00:32:15.400 --> 00:32:16.520 you know, you've heard you
NOTE Confidence: 0.947757

00:32:16.520 --> 00:32:17.020 saw,

NOTE Confidence: 0.993212

00:32:17.960 --> 00:32:18.760 you know, that there are

NOTE Confidence: 0.993212

00:32:18.760 --> 00:32:20.120 changes in default mode network

NOTE Confidence: 0.993212

00:32:20.120 --> 00:32:21.565 in Alzheimer's disease patients. Well,

NOTE Confidence: 0.993212

00:32:21.565 --> 00:32:22.445 why are we not using

NOTE Confidence: 0.993212

00:32:22.445 --> 00:32:24.365 that clinically? Again, because there's

NOTE Confidence: 0.993212

00:32:24.365 --> 00:32:24.865 heterogeneity

NOTE Confidence: 0.9996093

00:32:25.165 --> 00:32:25.665 across

NOTE Confidence: 0.98696977

00:32:25.965 --> 00:32:27.085 MRI scanners, and what we

NOTE Confidence: 0.98696977

00:32:27.085 --> 00:32:28.125 need to do is harmonize

NOTE Confidence: 0.98696977

00:32:28.125 --> 00:32:29.085 them. And this has been

NOTE Confidence: 0.98696977

00:32:29.085 --> 00:32:30.365 done with CT. So if

NOTE Confidence: 0.98696977

00:32:30.365 --> 00:32:31.665 you take a CT scanner,

NOTE Confidence: 0.98696977

00:32:31.805 --> 00:32:32.845 CT scanners are,

NOTE Confidence: 0.9552322

00:32:33.980 --> 00:32:35.840 calibrated to water. So water

NOTE Confidence: 0.9552322

00:32:35.980 --> 00:32:37.980 is zero density or, you

NOTE Confidence: 0.9552322

00:32:37.980 --> 00:32:38.880 know, zero units,
NOTE Confidence: 0.9888018

00:32:39.180 --> 00:32:40.940 and then fat is negative
NOTE Confidence: 0.9888018

00:32:40.940 --> 00:32:42.720 because it's less dense than
NOTE Confidence: 0.9888018

00:32:43.020 --> 00:32:44.700 water. Bone and muscle are
NOTE Confidence: 0.9888018

00:32:44.700 --> 00:32:45.200 positive.
NOTE Confidence: 0.98692685

00:32:45.515 --> 00:32:46.235 So, you know, you can
NOTE Confidence: 0.98692685

00:32:46.235 --> 00:32:47.915 you can scan someone at
NOTE Confidence: 0.98692685

00:32:47.915 --> 00:32:48.715 a c on a CT
NOTE Confidence: 0.98692685

00:32:48.715 --> 00:32:50.155 scanner here at Yale. You
NOTE Confidence: 0.98692685

00:32:50.155 --> 00:32:50.875 can scan them on the
NOTE Confidence: 0.98692685

00:32:50.875 --> 00:32:51.995 West Coast on a scanner
NOTE Confidence: 0.98692685

00:32:51.995 --> 00:32:53.195 that's five or ten years
NOTE Confidence: 0.98692685

00:32:53.195 --> 00:32:54.155 old, and you'll get a
NOTE Confidence: 0.98692685

00:32:54.155 --> 00:32:55.675 measurement that's within a reasonable
NOTE Confidence: 0.98692685

00:32:55.675 --> 00:32:57.275 range of of,
NOTE Confidence: 0.97916347

00:32:57.830 --> 00:32:59.590 of reliability and and,

NOTE Confidence: 0.9405626

00:33:00.310 --> 00:33:01.910 between the scanners. But, again,

NOTE Confidence: 0.9405626

00:33:01.910 --> 00:33:03.130 we're not there with MRI.

NOTE Confidence: 0.999489

00:33:03.830 --> 00:33:05.270 That's a huge problem. And

NOTE Confidence: 0.999489

00:33:05.270 --> 00:33:06.390 once we can do that,

NOTE Confidence: 0.999489

00:33:06.390 --> 00:33:07.770 then that's going to unlock

NOTE Confidence: 0.999489

00:33:07.830 --> 00:33:09.110 all kinds of ability to

NOTE Confidence: 0.999489

00:33:09.110 --> 00:33:10.570 do quantitative things

NOTE Confidence: 0.9875671

00:33:11.035 --> 00:33:12.555 and, and then leverage all

NOTE Confidence: 0.9875671

00:33:12.555 --> 00:33:13.915 of that quantitative data, these

NOTE Confidence: 0.9875671

00:33:13.915 --> 00:33:15.695 huge clouds of quantitative data,

NOTE Confidence: 0.9994216

00:33:16.475 --> 00:33:17.295 and then apply

NOTE Confidence: 0.9916183

00:33:17.755 --> 00:33:18.875 things like AI on top

NOTE Confidence: 0.9916183

00:33:18.875 --> 00:33:19.995 of that to do things

NOTE Confidence: 0.9916183

00:33:19.995 --> 00:33:21.275 that humans can't do, like

NOTE Confidence: 0.9916183

00:33:21.275 --> 00:33:22.795 predictive analytics. And we already

NOTE Confidence: 0.9916183

00:33:22.795 --> 00:33:24.250 know that that the imaging
NOTE Confidence: 0.9916183

00:33:24.250 --> 00:33:25.210 data, let's say, in a
NOTE Confidence: 0.9916183

00:33:25.210 --> 00:33:26.650 brain tumor, you can the
NOTE Confidence: 0.9916183

00:33:26.650 --> 00:33:27.930 the imaging phenotype of a
NOTE Confidence: 0.9916183

00:33:27.930 --> 00:33:29.210 brain tumor can predict its
NOTE Confidence: 0.9916183

00:33:29.210 --> 00:33:30.490 genotype. So we know that
NOTE Confidence: 0.9916183

00:33:30.490 --> 00:33:32.090 there's data there in these
NOTE Confidence: 0.9916183

00:33:32.090 --> 00:33:33.210 in these images that are
NOTE Confidence: 0.9916183

00:33:33.210 --> 00:33:35.370 incredibly powerful and predictive if
NOTE Confidence: 0.9916183

00:33:35.370 --> 00:33:36.330 we can unlock it in
NOTE Confidence: 0.9916183

00:33:36.330 --> 00:33:37.390 a way that is,
NOTE Confidence: 0.999923

00:33:38.330 --> 00:33:38.830 reliable
NOTE Confidence: 0.9999422

00:33:39.345 --> 00:33:40.325 and valid
NOTE Confidence: 0.95985436

00:33:40.705 --> 00:33:42.565 across scanners, across platforms.
NOTE Confidence: 0.9929719

00:33:42.945 --> 00:33:44.225 But, so it's a huge
NOTE Confidence: 0.9929719

00:33:44.225 --> 00:33:45.345 challenge. It's one that my

NOTE Confidence: 0.9929719
00:33:45.345 --> 00:33:46.225 lab is working on and
NOTE Confidence: 0.9929719
00:33:46.225 --> 00:33:47.664 many people are working on.
NOTE Confidence: 0.97971094
00:33:48.304 --> 00:33:49.265 So I guess we'll see
NOTE Confidence: 0.97971094
00:33:49.265 --> 00:33:50.385 what the future brings. But
NOTE Confidence: 0.8859027
00:33:51.550 --> 00:33:52.590 So before we move, I
NOTE Confidence: 0.8859027
00:33:52.590 --> 00:33:53.550 think it would be a
NOTE Confidence: 0.8859027
00:33:53.550 --> 00:33:54.270 miss if, I don't know
NOTE Confidence: 0.8859027
00:33:54.270 --> 00:33:55.310 if Gigi Galliano is in
NOTE Confidence: 0.8859027
00:33:55.310 --> 00:33:56.270 the room, but she is
NOTE Confidence: 0.8859027
00:33:56.270 --> 00:33:58.110 working on, Gigi, are we
NOTE Confidence: 0.8859027
00:33:58.110 --> 00:33:58.610 here?
NOTE Confidence: 0.9060788
00:33:59.150 --> 00:34:00.270 Do you wanna say something?
NOTE Confidence: 0.9060788
00:34:00.270 --> 00:34:01.570 Because you're working on this.
NOTE Confidence: 0.69025636
00:34:06.190 --> 00:34:06.690 Yeah.
NOTE Confidence: 0.9696567
00:34:07.445 --> 00:34:08.485 So it would be interesting
NOTE Confidence: 0.9696567

00:34:08.485 --> 00:34:10.325 to talk. We did develop
NOTE Confidence: 0.9696567

00:34:10.325 --> 00:34:10.985 an interesting,
NOTE Confidence: 0.933864

00:34:11.525 --> 00:34:13.305 approach to standardized MRIs,
NOTE Confidence: 0.998721

00:34:14.725 --> 00:34:15.465 based on
NOTE Confidence: 0.9593716

00:34:15.844 --> 00:34:18.005 typical clinical acquisition. So it
NOTE Confidence: 0.9593716

00:34:18.005 --> 00:34:18.665 would be
NOTE Confidence: 0.8215869

00:34:19.125 --> 00:34:20.105 nice to share.
NOTE Confidence: 0.84703535

00:34:26.260 --> 00:34:26.760 Alright.
NOTE Confidence: 0.9865575

00:34:27.219 --> 00:34:27.719 So,
NOTE Confidence: 0.8836007

00:34:28.260 --> 00:34:30.100 I will briefly describe the
NOTE Confidence: 0.8836007

00:34:30.100 --> 00:34:31.780 activities at the Department for
NOTE Confidence: 0.8836007

00:34:31.780 --> 00:34:33.700 Biomedical Information and Data Science
NOTE Confidence: 0.8836007

00:34:33.700 --> 00:34:34.520 for BIDS.
NOTE Confidence: 0.8979395

00:34:35.295 --> 00:34:36.895 So at the BIDS, basically,
NOTE Confidence: 0.8979395

00:34:36.895 --> 00:34:38.655 we're working on all aspects
NOTE Confidence: 0.8979395

00:34:38.655 --> 00:34:39.795 of, informatics,

NOTE Confidence: 0.95518637
00:34:40.094 --> 00:34:41.714 data science, and AI
NOTE Confidence: 0.9093568
00:34:42.494 --> 00:34:45.055 ranging from data curation, data
NOTE Confidence: 0.9093568
00:34:45.055 --> 00:34:45.555 standardization,
NOTE Confidence: 0.99675655
00:34:46.255 --> 00:34:47.474 all the way to the
NOTE Confidence: 0.99675655
00:34:47.614 --> 00:34:48.434 model building,
NOTE Confidence: 0.96447223
00:34:49.340 --> 00:34:51.020 model deployment in the clinical
NOTE Confidence: 0.96447223
00:34:51.020 --> 00:34:51.520 settings.
NOTE Confidence: 0.97122
00:34:51.980 --> 00:34:53.020 And we deal with all
NOTE Confidence: 0.97122
00:34:53.020 --> 00:34:55.200 kind of data, clinical, genomic,
NOTE Confidence: 0.97122
00:34:55.340 --> 00:34:56.960 as well as imaging data.
NOTE Confidence: 0.92629045
00:34:57.420 --> 00:34:59.100 Recently, a number of our
NOTE Confidence: 0.92629045
00:34:59.100 --> 00:35:01.440 faculties actually are working on
NOTE Confidence: 0.92629045
00:35:01.645 --> 00:35:03.185 building large energy model,
NOTE Confidence: 0.9143796
00:35:03.485 --> 00:35:04.945 as well as those multimodal,
NOTE Confidence: 0.9594055
00:35:05.245 --> 00:35:06.305 large energy model,
NOTE Confidence: 0.97791606

00:35:07.005 --> 00:35:08.545 involving imaging data.
NOTE Confidence: 0.99959755

00:35:08.845 --> 00:35:09.585 For example,
NOTE Confidence: 0.7960027

00:35:10.285 --> 00:35:12.465 Doctor. Qingyu Chen, assistant professor
NOTE Confidence: 0.8398004

00:35:12.845 --> 00:35:13.825 at BITS,
NOTE Confidence: 0.9059687

00:35:14.349 --> 00:35:14.670 He's,
NOTE Confidence: 0.9993181

00:35:15.150 --> 00:35:16.349 doing a lot of work
NOTE Confidence: 0.9993181

00:35:16.349 --> 00:35:16.849 on
NOTE Confidence: 0.93464184

00:35:17.310 --> 00:35:17.890 the multimodal,
NOTE Confidence: 0.8744838

00:35:19.150 --> 00:35:20.770 LLMs for the ophthalmologist
NOTE Confidence: 0.9262714

00:35:21.150 --> 00:35:23.390 data. So he collects, like,
NOTE Confidence: 0.9262714

00:35:23.390 --> 00:35:25.170 hundreds of thousands of ophthalmology
NOTE Confidence: 0.9262714

00:35:25.390 --> 00:35:25.890 images
NOTE Confidence: 0.9689902

00:35:26.270 --> 00:35:28.465 together with the text description,
NOTE Confidence: 0.83875275

00:35:28.925 --> 00:35:30.205 align them to a text
NOTE Confidence: 0.83875275

00:35:30.205 --> 00:35:31.505 vision large language
NOTE Confidence: 0.8952642

00:35:31.965 --> 00:35:33.565 model, and allow it to

NOTE Confidence: 0.8952642
00:35:33.565 --> 00:35:34.465 actually do,
NOTE Confidence: 0.942542
00:35:34.925 --> 00:35:36.925 eye disease diagnosis as well
NOTE Confidence: 0.942542
00:35:36.925 --> 00:35:37.585 as providing
NOTE Confidence: 0.95768464
00:35:38.045 --> 00:35:39.105 reasoning process.
NOTE Confidence: 0.8871666
00:35:39.645 --> 00:35:41.565 And after developing model, he
NOTE Confidence: 0.8871666
00:35:41.565 --> 00:35:42.465 also actually
NOTE Confidence: 0.95435494
00:35:42.930 --> 00:35:43.430 applied
NOTE Confidence: 0.8477316
00:35:43.969 --> 00:35:46.390 to, clinical studies, recruited, like,
NOTE Confidence: 0.97384334
00:35:46.690 --> 00:35:47.750 twenty four clinician
NOTE Confidence: 0.73553383
00:35:48.050 --> 00:35:48.550 across,
NOTE Confidence: 0.5744791
00:35:49.010 --> 00:35:49.250 twin
NOTE Confidence: 0.9698155
00:35:49.810 --> 00:35:51.430 twelve different medical centers.
NOTE Confidence: 0.7927792
00:35:52.130 --> 00:35:53.349 And through evaluation
NOTE Confidence: 0.82960063
00:35:53.650 --> 00:35:55.030 show when clinicians
NOTE Confidence: 0.78744864
00:35:55.835 --> 00:35:58.154 assist with AI greatly improve
NOTE Confidence: 0.78744864

00:35:58.154 --> 00:35:58.654 their
NOTE Confidence: 0.9576624

00:35:58.954 --> 00:36:01.055 diagnosis accuracy on eye disease,
NOTE Confidence: 0.9325692

00:36:01.515 --> 00:36:02.575 diagnosis tasks.
NOTE Confidence: 0.9860623

00:36:03.434 --> 00:36:03.835 And,
NOTE Confidence: 0.7639724

00:36:04.394 --> 00:36:04.894 besides,
NOTE Confidence: 0.9730587

00:36:07.114 --> 00:36:08.974 research, I think, the training
NOTE Confidence: 0.9498091

00:36:09.609 --> 00:36:11.369 next generation of medical AI
NOTE Confidence: 0.9498091

00:36:11.369 --> 00:36:12.890 expert is also a priority
NOTE Confidence: 0.9498091

00:36:12.890 --> 00:36:13.869 of, BITS.
NOTE Confidence: 0.83862036

00:36:14.250 --> 00:36:16.810 I know George, the imaging
NOTE Confidence: 0.83862036

00:36:16.810 --> 00:36:17.770 institution and,
NOTE Confidence: 0.85142154

00:36:18.410 --> 00:36:19.849 us, BITS are talking about
NOTE Confidence: 0.85142154

00:36:19.849 --> 00:36:20.349 potential,
NOTE Confidence: 0.8982392

00:36:21.210 --> 00:36:22.810 new joint training program in
NOTE Confidence: 0.8982392

00:36:22.810 --> 00:36:23.849 the medical AI and the
NOTE Confidence: 0.8982392

00:36:23.849 --> 00:36:24.349 imaging.

NOTE Confidence: 0.905659
00:36:25.005 --> 00:36:26.924 And, the BITS team also
NOTE Confidence: 0.905659
00:36:26.924 --> 00:36:27.404 provide,
NOTE Confidence: 0.9992947
00:36:27.805 --> 00:36:29.085 quite a lot of data
NOTE Confidence: 0.9992947
00:36:29.085 --> 00:36:30.625 science related services.
NOTE Confidence: 0.8949663
00:36:31.085 --> 00:36:32.204 I think many of you
NOTE Confidence: 0.8949663
00:36:32.204 --> 00:36:33.184 know the doctor,
NOTE Confidence: 0.63051045
00:36:33.565 --> 00:36:34.545 Daniela Micker
NOTE Confidence: 0.8823024
00:36:35.085 --> 00:36:36.704 leads the JEDA team, which
NOTE Confidence: 0.8823024
00:36:36.860 --> 00:36:37.760 actually provide,
NOTE Confidence: 0.9736368
00:36:38.219 --> 00:36:39.900 data retrieval service for all
NOTE Confidence: 0.9736368
00:36:39.900 --> 00:36:41.500 kind of data, including imaging
NOTE Confidence: 0.9736368
00:36:41.500 --> 00:36:42.000 data.
NOTE Confidence: 0.9947419
00:36:42.540 --> 00:36:43.660 In the last year, we
NOTE Confidence: 0.9947419
00:36:43.660 --> 00:36:44.160 also,
NOTE Confidence: 0.99735475
00:36:44.540 --> 00:36:45.520 worked extensively
NOTE Confidence: 0.92974573

00:36:45.900 --> 00:36:46.960 with the YCRC,
NOTE Confidence: 0.90330243

00:36:47.500 --> 00:36:48.640 with, HSIT,
NOTE Confidence: 0.9169378

00:36:49.100 --> 00:36:50.800 as well as the security
NOTE Confidence: 0.9169378

00:36:50.860 --> 00:36:51.260 office,
NOTE Confidence: 0.925899

00:36:52.415 --> 00:36:53.535 to build a more,
NOTE Confidence: 0.9471253

00:36:54.175 --> 00:36:56.594 secure computing environment. So now
NOTE Confidence: 0.9471253

00:36:56.815 --> 00:36:58.335 we have two NIST eight
NOTE Confidence: 0.9471253

00:36:58.335 --> 00:36:59.375 hundred one hundred and seventy
NOTE Confidence: 0.9471253

00:36:59.375 --> 00:37:01.614 one environment ready. One is
NOTE Confidence: 0.9471253

00:37:01.614 --> 00:37:02.895 the Hopper, which is a
NOTE Confidence: 0.9471253

00:37:02.895 --> 00:37:04.994 GPU high end GPU cluster.
NOTE Confidence: 0.8677381

00:37:05.900 --> 00:37:06.860 The other one is a
NOTE Confidence: 0.8677381

00:37:06.860 --> 00:37:08.460 Spinrite Plus, which is a
NOTE Confidence: 0.8677381

00:37:08.460 --> 00:37:09.920 AWS based environment.
NOTE Confidence: 0.8163531

00:37:10.300 --> 00:37:11.380 Both of them meet the
NOTE Confidence: 0.8163531

00:37:11.420 --> 00:37:13.180 this eight hundred one seventy

NOTE Confidence: 0.8163531

00:37:13.180 --> 00:37:14.000 one environment.

NOTE Confidence: 0.9753806

00:37:14.620 --> 00:37:15.120 And,

NOTE Confidence: 0.9426872

00:37:16.860 --> 00:37:18.060 yeah, we we start to

NOTE Confidence: 0.9426872

00:37:18.060 --> 00:37:19.385 use it. So I just

NOTE Confidence: 0.9426872

00:37:19.385 --> 00:37:20.825 want to quote for the

NOTE Confidence: 0.9426872

00:37:20.825 --> 00:37:22.585 hopper. It's free to use

NOTE Confidence: 0.9426872

00:37:22.585 --> 00:37:23.885 until end of December.

NOTE Confidence: 0.8454932

00:37:26.025 --> 00:37:27.565 So go ahead and register

NOTE Confidence: 0.8454932

00:37:27.785 --> 00:37:29.165 and and become a user.

NOTE Confidence: 0.8454932

00:37:29.224 --> 00:37:31.065 After starting January, we're talking

NOTE Confidence: 0.8454932

00:37:31.065 --> 00:37:32.585 about fee structure for using

NOTE Confidence: 0.8454932

00:37:32.585 --> 00:37:32.984 the,

NOTE Confidence: 0.9921417

00:37:33.464 --> 00:37:34.285 it it has

NOTE Confidence: 0.9604651

00:37:34.800 --> 00:37:35.300 sixty,

NOTE Confidence: 0.95100576

00:37:35.920 --> 00:37:37.760 h one hundred GPU as

NOTE Confidence: 0.95100576

00:37:37.760 --> 00:37:39.040 well as a thirty two
NOTE Confidence: 0.95100576

00:37:39.040 --> 00:37:40.739 h two hundred GPU cards.
NOTE Confidence: 0.9186405

00:37:41.600 --> 00:37:41.920 And,
NOTE Confidence: 0.9666392

00:37:42.560 --> 00:37:44.239 regarding unmet needs, I I
NOTE Confidence: 0.9666392

00:37:44.239 --> 00:37:45.520 just quickly I think for
NOTE Confidence: 0.9666392

00:37:45.520 --> 00:37:46.980 us doing the AI modeling
NOTE Confidence: 0.9994765

00:37:47.775 --> 00:37:48.275 data
NOTE Confidence: 0.76673216

00:37:48.815 --> 00:37:49.714 and the computational,
NOTE Confidence: 0.830634

00:37:50.174 --> 00:37:52.114 resource still two big challenges
NOTE Confidence: 0.830634

00:37:52.174 --> 00:37:52.835 for us.
NOTE Confidence: 0.96256775

00:37:53.135 --> 00:37:53.855 I know we have a
NOTE Confidence: 0.96256775

00:37:53.855 --> 00:37:54.974 lot of data in the,
NOTE Confidence: 0.96256775

00:37:55.295 --> 00:37:56.494 sort of practice and the
NOTE Confidence: 0.96256775

00:37:56.494 --> 00:37:56.994 research,
NOTE Confidence: 0.9772406

00:37:57.694 --> 00:37:59.155 but, how to,
NOTE Confidence: 0.971555

00:37:59.694 --> 00:38:00.719 obtain large,

NOTE Confidence: 0.9348217

00:38:01.359 --> 00:38:02.180 high quality,

NOTE Confidence: 0.90223217

00:38:02.560 --> 00:38:04.400 well annotated data still still

NOTE Confidence: 0.90223217

00:38:04.400 --> 00:38:05.540 a challenge for

NOTE Confidence: 0.9445205

00:38:05.920 --> 00:38:08.560 us. And, computational resource with

NOTE Confidence: 0.9445205

00:38:08.560 --> 00:38:10.400 the AI initiative at Yale,

NOTE Confidence: 0.9445205

00:38:10.400 --> 00:38:11.280 I think we are in

NOTE Confidence: 0.9445205

00:38:11.280 --> 00:38:13.119 a quite good position in

NOTE Confidence: 0.9445205

00:38:13.119 --> 00:38:14.560 terms of GPUs. There's a

NOTE Confidence: 0.9445205

00:38:14.560 --> 00:38:16.160 couple of high end GPU

NOTE Confidence: 0.9445205

00:38:16.160 --> 00:38:17.575 class available now.

NOTE Confidence: 0.91521627

00:38:18.994 --> 00:38:20.114 But I think the storage

NOTE Confidence: 0.91521627

00:38:20.114 --> 00:38:21.174 might be one,

NOTE Confidence: 0.89046246

00:38:21.635 --> 00:38:23.394 challenge because I involve a

NOTE Confidence: 0.89046246

00:38:23.394 --> 00:38:24.515 few large scale,

NOTE Confidence: 0.93462974

00:38:25.474 --> 00:38:26.775 imaging based study.

NOTE Confidence: 0.9137816

00:38:27.555 --> 00:38:28.914 They are using they are
NOTE Confidence: 0.9137816

00:38:28.914 --> 00:38:30.594 having data like hundreds of
NOTE Confidence: 0.9137816

00:38:30.594 --> 00:38:31.094 terabytes.
NOTE Confidence: 0.98064125

00:38:32.180 --> 00:38:34.180 We have two terabytes on
NOTE Confidence: 0.98064125

00:38:34.180 --> 00:38:35.560 the hopper. If we
NOTE Confidence: 0.8907312

00:38:35.940 --> 00:38:37.300 have three or or ten
NOTE Confidence: 0.8907312

00:38:37.300 --> 00:38:38.500 project like that, we we
NOTE Confidence: 0.8907312

00:38:38.500 --> 00:38:40.180 already full. So how to
NOTE Confidence: 0.8907312

00:38:40.180 --> 00:38:41.940 efficiently measure this kind of
NOTE Confidence: 0.8907312

00:38:41.940 --> 00:38:42.760 large scale
NOTE Confidence: 0.94709665

00:38:43.060 --> 00:38:44.420 imaging data, I think it's
NOTE Confidence: 0.94709665

00:38:44.420 --> 00:38:45.860 a it's a it's a
NOTE Confidence: 0.94709665

00:38:45.860 --> 00:38:46.900 thing we we should think
NOTE Confidence: 0.94709665

00:38:46.900 --> 00:38:47.640 about next.
NOTE Confidence: 0.72811717

00:38:48.315 --> 00:38:49.055 That's fine.
NOTE Confidence: 0.93858445

00:38:49.594 --> 00:38:50.094 Yeah.

NOTE Confidence: 0.85898566

00:38:54.635 --> 00:38:55.375 My turn?

NOTE Confidence: 0.9866086

00:38:55.835 --> 00:38:56.335 Okay.

NOTE Confidence: 0.9807169

00:38:57.035 --> 00:38:58.155 It's, you know, when you

NOTE Confidence: 0.9807169

00:38:58.155 --> 00:38:59.275 have a last name beginning

NOTE Confidence: 0.9807169

00:38:59.275 --> 00:39:01.035 with W, as Chris knows

NOTE Confidence: 0.9807169

00:39:01.035 --> 00:39:02.315 as well, you're often at

NOTE Confidence: 0.9807169

00:39:02.315 --> 00:39:02.969 the end.

NOTE Confidence: 0.82199776

00:39:04.890 --> 00:39:05.390 So,

NOTE Confidence: 0.9730149

00:39:08.410 --> 00:39:09.469 I think that,

NOTE Confidence: 0.9659153

00:39:10.570 --> 00:39:11.849 the first thing I would

NOTE Confidence: 0.9659153

00:39:11.849 --> 00:39:13.050 want to say is that

NOTE Confidence: 0.9659153

00:39:13.050 --> 00:39:14.090 I think that as a

NOTE Confidence: 0.9659153

00:39:14.090 --> 00:39:14.590 field,

NOTE Confidence: 0.9931436

00:39:15.145 --> 00:39:17.405 we are guilty of not

NOTE Confidence: 0.9931436

00:39:17.465 --> 00:39:19.864 taking sufficient advantage of imaging

NOTE Confidence: 0.9931436

00:39:19.864 --> 00:39:21.245 from a research perspective.
NOTE Confidence: 0.99717855

00:39:22.025 --> 00:39:22.525 And
NOTE Confidence: 0.9813867

00:39:23.385 --> 00:39:24.425 I think that that is
NOTE Confidence: 0.9813867

00:39:24.545 --> 00:39:26.185 it it's it's really quite
NOTE Confidence: 0.9813867

00:39:26.185 --> 00:39:26.685 profound.
NOTE Confidence: 0.99915105

00:39:27.065 --> 00:39:28.685 And if you go to
NOTE Confidence: 0.99915105

00:39:28.825 --> 00:39:29.325 our
NOTE Confidence: 0.98582816

00:39:29.969 --> 00:39:31.350 annual cancer meetings,
NOTE Confidence: 0.99969995

00:39:31.969 --> 00:39:34.070 there are hardly any presentations
NOTE Confidence: 0.99892867

00:39:34.770 --> 00:39:36.869 that really focus on imaging
NOTE Confidence: 0.9958316

00:39:37.570 --> 00:39:39.750 as a as a tool
NOTE Confidence: 0.9996941

00:39:40.130 --> 00:39:42.050 to help us better understand
NOTE Confidence: 0.9996941

00:39:42.050 --> 00:39:42.550 cancer.
NOTE Confidence: 0.97276056

00:39:43.605 --> 00:39:45.145 So in my mind,
NOTE Confidence: 0.9642874

00:39:46.165 --> 00:39:47.445 you know, we, of course,
NOTE Confidence: 0.9642874

00:39:47.445 --> 00:39:49.305 use imaging all the time.

NOTE Confidence: 0.997653
00:39:49.685 --> 00:39:51.864 But imaging has a role
NOTE Confidence: 0.9497049
00:39:52.885 --> 00:39:54.565 theoretically related to well, not
NOTE Confidence: 0.9497049
00:39:54.565 --> 00:39:56.405 theoretically, in practice, related to
NOTE Confidence: 0.9497049
00:39:56.405 --> 00:39:57.225 early detection,
NOTE Confidence: 0.99421227
00:39:57.710 --> 00:39:58.609 to diagnosis
NOTE Confidence: 0.9978304
00:39:58.989 --> 00:40:00.450 of symptomatic disease,
NOTE Confidence: 0.9358647
00:40:01.630 --> 00:40:02.769 to monitoring
NOTE Confidence: 0.95454246
00:40:04.190 --> 00:40:05.410 response to therapy,
NOTE Confidence: 0.72560096
00:40:07.309 --> 00:40:08.529 delivering therapy,
NOTE Confidence: 0.99261194
00:40:08.910 --> 00:40:10.450 and then in follow-up.
NOTE Confidence: 0.99961096
00:40:11.335 --> 00:40:12.235 And it's interesting
NOTE Confidence: 0.97024643
00:40:12.775 --> 00:40:14.135 that over the past few
NOTE Confidence: 0.97024643
00:40:14.135 --> 00:40:15.594 years with the development
NOTE Confidence: 0.99949956
00:40:16.855 --> 00:40:17.594 of circulating
NOTE Confidence: 0.91985005
00:40:18.055 --> 00:40:20.375 tumor DNA that that's all
NOTE Confidence: 0.91985005

00:40:20.375 --> 00:40:21.114 the rage.
NOTE Confidence: 0.99047506

00:40:21.495 --> 00:40:23.094 But in truth, it's something
NOTE Confidence: 0.99047506

00:40:23.094 --> 00:40:24.475 that should have been developed
NOTE Confidence: 0.9520812

00:40:24.775 --> 00:40:26.555 hand in hand with imaging.
NOTE Confidence: 0.9991867

00:40:27.309 --> 00:40:28.609 And where imaging
NOTE Confidence: 0.8835578

00:40:28.910 --> 00:40:29.410 interdigitates
NOTE Confidence: 0.9979005

00:40:29.789 --> 00:40:30.450 in there
NOTE Confidence: 0.98902655

00:40:31.390 --> 00:40:32.529 very, very nicely.
NOTE Confidence: 0.99389565

00:40:35.069 --> 00:40:36.270 So let me just start
NOTE Confidence: 0.99389565

00:40:36.270 --> 00:40:37.569 with what I think is
NOTE Confidence: 0.99389565

00:40:37.710 --> 00:40:39.010 one of the most straightforward
NOTE Confidence: 0.9915626

00:40:39.549 --> 00:40:41.150 issues and then get a
NOTE Confidence: 0.9915626

00:40:41.150 --> 00:40:42.369 little bit more complex.
NOTE Confidence: 0.98846996

00:40:43.155 --> 00:40:44.915 So unlike Puja, I didn't
NOTE Confidence: 0.98846996

00:40:44.915 --> 00:40:46.275 think to ask any of
NOTE Confidence: 0.98846996

00:40:46.275 --> 00:40:48.055 my colleagues. I did, however,

NOTE Confidence: 0.9834342
00:40:48.355 --> 00:40:49.415 consult with,
NOTE Confidence: 0.9742734
00:40:49.875 --> 00:40:51.335 Google AI today.
NOTE Confidence: 0.99423015
00:40:52.515 --> 00:40:53.015 And
NOTE Confidence: 0.9644397
00:40:53.715 --> 00:40:54.435 I asked,
NOTE Confidence: 0.968404
00:40:54.835 --> 00:40:56.035 probably a question that was
NOTE Confidence: 0.968404
00:40:56.035 --> 00:40:57.715 just too complicated, which is
NOTE Confidence: 0.968404
00:40:57.715 --> 00:40:59.339 that for the typical woman
NOTE Confidence: 0.968404
00:40:59.339 --> 00:41:01.019 with metastatic breast cancer, I'm
NOTE Confidence: 0.968404
00:41:01.019 --> 00:41:02.380 a breast cancer doctor, so
NOTE Confidence: 0.968404
00:41:02.380 --> 00:41:04.000 that's always my go to,
NOTE Confidence: 0.9630075
00:41:05.259 --> 00:41:06.000 how many,
NOTE Confidence: 0.9722877
00:41:06.539 --> 00:41:08.219 CT scans does that woman
NOTE Confidence: 0.9722877
00:41:08.219 --> 00:41:09.339 have during the course of
NOTE Confidence: 0.9722877
00:41:09.339 --> 00:41:10.859 her illness? And, of course,
NOTE Confidence: 0.9722877
00:41:10.859 --> 00:41:11.660 it said to me that
NOTE Confidence: 0.9722877

00:41:11.660 --> 00:41:12.779 that was too complicated, and
NOTE Confidence: 0.9722877

00:41:12.779 --> 00:41:14.365 it had individualized and this
NOTE Confidence: 0.9722877

00:41:14.365 --> 00:41:15.565 and that. But, you know,
NOTE Confidence: 0.9722877

00:41:15.565 --> 00:41:16.845 in truth, the number is
NOTE Confidence: 0.9722877

00:41:16.845 --> 00:41:19.085 probably something like twenty during
NOTE Confidence: 0.9722877

00:41:19.085 --> 00:41:21.565 someone's life with metastatic breast
NOTE Confidence: 0.9722877

00:41:21.565 --> 00:41:22.065 cancer.
NOTE Confidence: 0.9966756

00:41:23.165 --> 00:41:24.205 We don't know a darn
NOTE Confidence: 0.9966756

00:41:24.205 --> 00:41:24.945 thing about
NOTE Confidence: 0.9120127

00:41:25.805 --> 00:41:27.165 the frequency we should do
NOTE Confidence: 0.9120127

00:41:27.165 --> 00:41:27.905 those scans,
NOTE Confidence: 0.99243337

00:41:29.289 --> 00:41:30.410 whether they should be more
NOTE Confidence: 0.99243337

00:41:30.410 --> 00:41:31.690 often, whether they should be
NOTE Confidence: 0.99243337

00:41:31.690 --> 00:41:33.130 less often, how we should
NOTE Confidence: 0.99243337

00:41:33.130 --> 00:41:34.910 interpret them, how they affect
NOTE Confidence: 0.99292976

00:41:35.210 --> 00:41:36.890 the quality of care. We

NOTE Confidence: 0.99292976
00:41:36.890 --> 00:41:38.589 know that they're certainly costly.
NOTE Confidence: 0.97748494
00:41:38.969 --> 00:41:40.410 We don't know to what
NOTE Confidence: 0.97748494
00:41:40.410 --> 00:41:41.864 extent they may,
NOTE Confidence: 0.9517068
00:41:42.185 --> 00:41:43.705 though, save money in some
NOTE Confidence: 0.9517068
00:41:43.705 --> 00:41:45.225 places and cost us a
NOTE Confidence: 0.9517068
00:41:45.225 --> 00:41:47.085 lot of, dollars at others.
NOTE Confidence: 0.9965407
00:41:48.105 --> 00:41:50.445 And very simple questions across
NOTE Confidence: 0.9965407
00:41:50.505 --> 00:41:51.244 all malignancies
NOTE Confidence: 0.9984894
00:41:51.705 --> 00:41:53.305 about how we should do
NOTE Confidence: 0.9984894
00:41:53.305 --> 00:41:53.805 imaging
NOTE Confidence: 0.9933068
00:41:54.185 --> 00:41:56.285 clinically and in research studies
NOTE Confidence: 0.94619477
00:41:57.099 --> 00:41:59.579 are worth asking, and we
NOTE Confidence: 0.94619477
00:41:59.579 --> 00:42:01.440 very, very rarely do that.
NOTE Confidence: 0.9890811
00:42:02.060 --> 00:42:03.260 So now let's get a
NOTE Confidence: 0.9890811
00:42:03.260 --> 00:42:04.700 little bit more complicated. So
NOTE Confidence: 0.9890811

00:42:04.700 --> 00:42:06.480 Pam talked earlier about theranostics.

NOTE Confidence: 0.9995928

00:42:07.820 --> 00:42:08.560 I was

NOTE Confidence: 0.98600143

00:42:09.020 --> 00:42:10.540 a big naysayer for a

NOTE Confidence: 0.98600143

00:42:10.540 --> 00:42:11.359 long time.

NOTE Confidence: 0.97304964

00:42:12.204 --> 00:42:13.325 You you did not you

NOTE Confidence: 0.97304964

00:42:13.325 --> 00:42:14.704 did not call me out.

NOTE Confidence: 0.9690806

00:42:15.405 --> 00:42:17.825 However, theranostics is very clearly

NOTE Confidence: 0.9532643

00:42:18.444 --> 00:42:20.464 here to stay, a useful

NOTE Confidence: 0.9532643

00:42:20.684 --> 00:42:21.184 modality.

NOTE Confidence: 0.99515414

00:42:22.285 --> 00:42:23.405 And the reason, of course,

NOTE Confidence: 0.99515414

00:42:23.405 --> 00:42:24.444 that many of us were

NOTE Confidence: 0.99515414

00:42:24.444 --> 00:42:26.045 naysayers is that the early

NOTE Confidence: 0.99515414

00:42:26.045 --> 00:42:27.265 attempts to do theranostics

NOTE Confidence: 0.9712212

00:42:27.930 --> 00:42:30.170 were highly, highly toxic. And

NOTE Confidence: 0.9712212

00:42:30.170 --> 00:42:31.849 it's only by through the

NOTE Confidence: 0.9712212

00:42:31.849 --> 00:42:32.989 development of,

NOTE Confidence: 0.99478304
00:42:33.849 --> 00:42:36.170 treatment approaches that are both
NOTE Confidence: 0.99478304
00:42:36.170 --> 00:42:38.089 effective and less toxic that
NOTE Confidence: 0.99478304
00:42:38.089 --> 00:42:40.089 that it has convinced many
NOTE Confidence: 0.99478304
00:42:40.089 --> 00:42:41.145 of us that this is,
NOTE Confidence: 0.99478304
00:42:41.305 --> 00:42:42.665 you know, really here to
NOTE Confidence: 0.99478304
00:42:42.665 --> 00:42:43.165 stay.
NOTE Confidence: 0.963528
00:42:43.545 --> 00:42:44.844 But in terms of theranostics,
NOTE Confidence: 0.9996204
00:42:45.305 --> 00:42:46.765 we need help understanding
NOTE Confidence: 0.95018464
00:42:47.705 --> 00:42:49.325 how to dose these agents,
NOTE Confidence: 0.99075866
00:42:49.785 --> 00:42:51.385 how both in terms of
NOTE Confidence: 0.99075866
00:42:51.385 --> 00:42:53.005 the the the quantity
NOTE Confidence: 0.9845556
00:42:53.385 --> 00:42:55.145 per dose, how frequently they
NOTE Confidence: 0.9845556
00:42:55.145 --> 00:42:56.640 should be given, how long
NOTE Confidence: 0.9845556
00:42:56.640 --> 00:42:57.920 they should be given, all
NOTE Confidence: 0.9845556
00:42:57.920 --> 00:42:59.140 of these sorts of things.
NOTE Confidence: 0.99930227

00:42:59.520 --> 00:43:00.799 And that's what we really
NOTE Confidence: 0.99930227

00:43:00.799 --> 00:43:02.099 have to turn to you
NOTE Confidence: 0.99930227

00:43:02.160 --> 00:43:02.660 for.
NOTE Confidence: 0.9971696

00:43:03.200 --> 00:43:05.059 The other rage in oncology,
NOTE Confidence: 0.9972179

00:43:05.520 --> 00:43:07.059 antibody drug conjugates.
NOTE Confidence: 0.9922289

00:43:08.255 --> 00:43:09.795 God knows how many presentations
NOTE Confidence: 0.9922289

00:43:09.935 --> 00:43:11.555 I've heard about new antibody
NOTE Confidence: 0.9922289

00:43:11.614 --> 00:43:12.355 drug conjugates,
NOTE Confidence: 0.9876982

00:43:12.975 --> 00:43:14.335 virtually none of which have
NOTE Confidence: 0.9876982

00:43:14.335 --> 00:43:16.495 included an imaging component, and
NOTE Confidence: 0.9876982

00:43:16.495 --> 00:43:17.535 you would think that this
NOTE Confidence: 0.9876982

00:43:17.535 --> 00:43:19.075 is something that we could
NOTE Confidence: 0.9928188

00:43:19.535 --> 00:43:21.535 be able to image. Yes.
NOTE Confidence: 0.9928188

00:43:21.535 --> 00:43:22.035 Exactly.
NOTE Confidence: 0.9650613

00:43:22.739 --> 00:43:23.239 But,
NOTE Confidence: 0.99920803

00:43:23.940 --> 00:43:25.140 do we do we see

NOTE Confidence: 0.99920803

00:43:25.140 --> 00:43:25.620 that?

NOTE Confidence: 0.97224844

00:43:26.100 --> 00:43:27.800 No. And so we desperately,

NOTE Confidence: 0.9857854

00:43:28.739 --> 00:43:29.480 need it.

NOTE Confidence: 0.94596595

00:43:32.020 --> 00:43:33.620 And not just related to

NOTE Confidence: 0.94596595

00:43:33.620 --> 00:43:35.960 diagnostics and antibody drug conjugates,

NOTE Confidence: 0.94596595

00:43:36.020 --> 00:43:37.060 but with all of our

NOTE Confidence: 0.94596595

00:43:37.060 --> 00:43:37.800 new therapeutics.

NOTE Confidence: 0.99594676

00:43:38.325 --> 00:43:39.625 And, you know, in

NOTE Confidence: 0.98216724

00:43:39.925 --> 00:43:41.445 breast cancer alone, there have

NOTE Confidence: 0.98216724

00:43:41.445 --> 00:43:42.265 been fourteen

NOTE Confidence: 0.9310412

00:43:42.885 --> 00:43:45.464 FDA drugs or FDA approvals

NOTE Confidence: 0.9310412

00:43:45.525 --> 00:43:46.825 in the last decade.

NOTE Confidence: 0.982642

00:43:48.244 --> 00:43:49.605 And, you know, you you

NOTE Confidence: 0.982642

00:43:49.605 --> 00:43:51.125 multiply that times all of

NOTE Confidence: 0.982642

00:43:51.125 --> 00:43:52.500 the diseases. We're talking about

NOTE Confidence: 0.982642

00:43:52.660 --> 00:43:53.940 hundreds of drugs approved in
NOTE Confidence: 0.982642

00:43:53.940 --> 00:43:55.700 the oncology space. And we
NOTE Confidence: 0.982642

00:43:55.700 --> 00:43:57.380 need to better understand how
NOTE Confidence: 0.982642

00:43:57.380 --> 00:43:59.000 to use all of those
NOTE Confidence: 0.982642

00:43:59.219 --> 00:44:00.980 drugs. And again, it's both
NOTE Confidence: 0.982642

00:44:00.980 --> 00:44:01.880 in terms of
NOTE Confidence: 0.9982161

00:44:02.180 --> 00:44:02.680 dose
NOTE Confidence: 0.9075899

00:44:03.300 --> 00:44:05.080 and in terms of particularly
NOTE Confidence: 0.9075899

00:44:05.219 --> 00:44:06.680 duration of therapy.
NOTE Confidence: 0.99551207

00:44:07.335 --> 00:44:08.474 And the default,
NOTE Confidence: 0.9996636

00:44:09.335 --> 00:44:10.474 in our field
NOTE Confidence: 0.99326754

00:44:10.935 --> 00:44:11.915 is to use
NOTE Confidence: 0.9715906

00:44:12.215 --> 00:44:14.055 doses that are too high
NOTE Confidence: 0.9715906

00:44:14.055 --> 00:44:15.994 to begin with and and
NOTE Confidence: 0.9715906

00:44:16.055 --> 00:44:17.915 and treatments that go on
NOTE Confidence: 0.9715906

00:44:17.974 --> 00:44:18.795 too long,

NOTE Confidence: 0.9998172
00:44:19.510 --> 00:44:20.010 resulting
NOTE Confidence: 0.97877735
00:44:20.870 --> 00:44:22.810 in both cost and,
NOTE Confidence: 0.99927765
00:44:24.070 --> 00:44:24.570 unnecessary
NOTE Confidence: 0.99905044
00:44:24.870 --> 00:44:25.370 toxicity
NOTE Confidence: 0.94998944
00:44:25.750 --> 00:44:27.370 and just, you know, general,
NOTE Confidence: 0.989011
00:44:28.150 --> 00:44:28.650 waste.
NOTE Confidence: 0.97402096
00:44:30.470 --> 00:44:32.489 And then, finally, my own,
NOTE Confidence: 0.97402096
00:44:32.550 --> 00:44:33.750 you know, sort of pet
NOTE Confidence: 0.97402096
00:44:33.750 --> 00:44:34.250 peeve,
NOTE Confidence: 0.9573518
00:44:35.585 --> 00:44:37.045 not that I'm alone here,
NOTE Confidence: 0.96361905
00:44:37.505 --> 00:44:39.765 which is about intratumoral heterogeneity
NOTE Confidence: 0.9809147
00:44:40.065 --> 00:44:41.364 that I think we still
NOTE Confidence: 0.936192
00:44:41.665 --> 00:44:42.165 only,
NOTE Confidence: 0.97403115
00:44:42.944 --> 00:44:44.545 you know, to have scratched
NOTE Confidence: 0.97403115
00:44:44.545 --> 00:44:46.065 the surface in terms of
NOTE Confidence: 0.97403115

00:44:46.065 --> 00:44:47.424 the extent to which that's
NOTE Confidence: 0.97403115

00:44:47.424 --> 00:44:50.150 a huge resistance mechanism in
NOTE Confidence: 0.97403115

00:44:50.150 --> 00:44:50.650 oncology.
NOTE Confidence: 0.9993643

00:44:51.190 --> 00:44:52.230 But, you know, this is
NOTE Confidence: 0.9993643

00:44:52.230 --> 00:44:54.309 another area where imaging could
NOTE Confidence: 0.9993643

00:44:54.309 --> 00:44:55.530 help us tremendously.
NOTE Confidence: 0.99587137

00:44:56.150 --> 00:44:57.589 So I I think that,
NOTE Confidence: 0.99923396

00:44:57.989 --> 00:45:00.230 there's a huge need for
NOTE Confidence: 0.99923396

00:45:00.230 --> 00:45:00.730 collaboration
NOTE Confidence: 0.8948524

00:45:01.270 --> 00:45:01.770 between,
NOTE Confidence: 0.99929786

00:45:03.025 --> 00:45:03.525 both
NOTE Confidence: 0.9551399

00:45:03.825 --> 00:45:05.905 basic cancer researchers and people
NOTE Confidence: 0.9551399

00:45:05.905 --> 00:45:07.825 who do imaging and very
NOTE Confidence: 0.9551399

00:45:07.825 --> 00:45:09.825 much, people who do clinical
NOTE Confidence: 0.9551399

00:45:09.825 --> 00:45:11.505 and translational work and in
NOTE Confidence: 0.9551399

00:45:11.505 --> 00:45:12.005 imaging.

NOTE Confidence: 0.9976894
00:45:12.385 --> 00:45:13.425 And I think one of
NOTE Confidence: 0.9976894
00:45:13.425 --> 00:45:15.364 the great things about this
NOTE Confidence: 0.99902374
00:45:16.950 --> 00:45:17.930 workshop today
NOTE Confidence: 0.9977096
00:45:18.310 --> 00:45:19.270 is the ability to get
NOTE Confidence: 0.9977096
00:45:19.270 --> 00:45:20.890 people together to talk.
NOTE Confidence: 0.95275795
00:45:21.510 --> 00:45:22.010 So
NOTE Confidence: 0.9957004
00:45:24.070 --> 00:45:25.270 Since I have you sitting
NOTE Confidence: 0.9957004
00:45:25.270 --> 00:45:26.469 here, can I ask you
NOTE Confidence: 0.9957004
00:45:26.469 --> 00:45:27.050 a question?
NOTE Confidence: 0.6339663
00:45:28.390 --> 00:45:29.895 So when for questions anyway.
NOTE Confidence: 0.90643615
00:45:30.695 --> 00:45:31.435 When you
NOTE Confidence: 0.9491859
00:45:32.614 --> 00:45:33.975 when you observe, right, how
NOTE Confidence: 0.9491859
00:45:33.975 --> 00:45:35.275 we have not been able
NOTE Confidence: 0.9491859
00:45:35.415 --> 00:45:36.555 to take advantage
NOTE Confidence: 0.9640247
00:45:37.415 --> 00:45:37.915 of,
NOTE Confidence: 0.98735505

00:45:38.535 --> 00:45:39.594 of some of these
NOTE Confidence: 0.9766479

00:45:40.135 --> 00:45:42.235 really fast and and excitingly
NOTE Confidence: 0.9766479

00:45:42.295 --> 00:45:43.114 moving forward
NOTE Confidence: 0.97650087

00:45:43.599 --> 00:45:46.079 imaging technologies in in the
NOTE Confidence: 0.97650087

00:45:46.079 --> 00:45:47.440 daily work that you do,
NOTE Confidence: 0.97650087

00:45:47.440 --> 00:45:48.260 that I do.
NOTE Confidence: 0.9138399

00:45:48.560 --> 00:45:50.000 Do do you think we're
NOTE Confidence: 0.9138399

00:45:50.000 --> 00:45:52.099 just in in clinical medicine
NOTE Confidence: 0.9138399

00:45:52.239 --> 00:45:53.140 too conservative?
NOTE Confidence: 0.99129593

00:45:54.560 --> 00:45:55.060 Because,
NOTE Confidence: 0.9948597

00:45:55.535 --> 00:45:56.815 you know, I'm I've been
NOTE Confidence: 0.9948597

00:45:56.815 --> 00:45:58.035 looking at liver
NOTE Confidence: 0.9757521

00:45:58.415 --> 00:45:59.855 scans for one reason or
NOTE Confidence: 0.9757521

00:45:59.855 --> 00:46:01.055 the other to to to
NOTE Confidence: 0.9757521

00:46:01.055 --> 00:46:02.575 detect early liver cancer for
NOTE Confidence: 0.9757521

00:46:02.575 --> 00:46:03.535 two and a half decades.

NOTE Confidence: 0.9757521
00:46:03.535 --> 00:46:04.975 And the protocol I used
NOTE Confidence: 0.9757521
00:46:04.975 --> 00:46:06.255 then is the same that
NOTE Confidence: 0.9757521
00:46:06.255 --> 00:46:08.200 I use now. And the
NOTE Confidence: 0.9757521
00:46:08.200 --> 00:46:09.980 the protocol that radiologists
NOTE Confidence: 0.9600611
00:46:10.280 --> 00:46:11.480 used then is the same
NOTE Confidence: 0.9600611
00:46:11.480 --> 00:46:12.840 that they use now. And
NOTE Confidence: 0.9600611
00:46:12.840 --> 00:46:15.160 so are we just then
NOTE Confidence: 0.9600611
00:46:15.160 --> 00:46:16.600 too content with what we
NOTE Confidence: 0.9600611
00:46:16.600 --> 00:46:18.140 have, or do our guidelines
NOTE Confidence: 0.9600611
00:46:18.360 --> 00:46:19.739 sort of lock us in
NOTE Confidence: 0.9600611
00:46:19.960 --> 00:46:21.500 into what we should do?
NOTE Confidence: 0.9173396
00:46:21.825 --> 00:46:22.325 And,
NOTE Confidence: 0.93506455
00:46:22.864 --> 00:46:24.405 sort of it's good enough
NOTE Confidence: 0.93506455
00:46:24.545 --> 00:46:25.825 for today. And so they
NOTE Confidence: 0.93506455
00:46:25.984 --> 00:46:27.344 therefore, it'll be good enough
NOTE Confidence: 0.93506455

00:46:27.344 --> 00:46:28.805 tomorrow. And what
NOTE Confidence: 0.9861333

00:46:29.185 --> 00:46:30.705 what is the push that
NOTE Confidence: 0.9861333

00:46:30.705 --> 00:46:31.925 we need to have,
NOTE Confidence: 0.88982254

00:46:32.305 --> 00:46:33.125 right, that,
NOTE Confidence: 0.92688626

00:46:34.340 --> 00:46:35.860 to move us forward. I
NOTE Confidence: 0.92688626

00:46:35.860 --> 00:46:37.460 was, rounding with one of
NOTE Confidence: 0.92688626

00:46:37.460 --> 00:46:39.080 our teams last week, and
NOTE Confidence: 0.92688626

00:46:39.219 --> 00:46:40.100 and you know what the
NOTE Confidence: 0.92688626

00:46:40.100 --> 00:46:42.260 biggest eureka moment was for
NOTE Confidence: 0.92688626

00:46:42.260 --> 00:46:43.560 all of you? It was,
NOTE Confidence: 0.99458355

00:46:44.180 --> 00:46:45.219 I didn't know we can
NOTE Confidence: 0.99458355

00:46:45.219 --> 00:46:46.760 do a portable lateral
NOTE Confidence: 0.881799

00:46:47.060 --> 00:46:47.560 x-ray.
NOTE Confidence: 0.9267495

00:46:49.135 --> 00:46:50.654 And I no. I'm not
NOTE Confidence: 0.9267495

00:46:50.654 --> 00:46:51.154 kidding.
NOTE Confidence: 0.98923993

00:46:51.535 --> 00:46:52.355 Right? And

NOTE Confidence: 0.90895754

00:46:52.734 --> 00:46:54.335 I I'm like, they cannot

NOTE Confidence: 0.90895754

00:46:54.335 --> 00:46:55.454 be the innovation that we

NOTE Confidence: 0.90895754

00:46:55.454 --> 00:46:56.434 are talking about.

NOTE Confidence: 0.99369717

00:46:58.094 --> 00:46:58.494 So,

NOTE Confidence: 0.9799191

00:46:58.974 --> 00:47:00.575 yes, yes, and yes. And,

NOTE Confidence: 0.9799191

00:47:00.575 --> 00:47:01.855 you know, I have felt

NOTE Confidence: 0.9799191

00:47:01.855 --> 00:47:03.315 for a long time

NOTE Confidence: 0.98179823

00:47:03.950 --> 00:47:06.109 that what sometimes feels like

NOTE Confidence: 0.98179823

00:47:06.109 --> 00:47:08.109 very incremental progress that a

NOTE Confidence: 0.98179823

00:47:08.109 --> 00:47:09.390 lot of people are content

NOTE Confidence: 0.98179823

00:47:09.390 --> 00:47:09.890 with

NOTE Confidence: 0.9876414

00:47:10.269 --> 00:47:12.269 is because we're just too

NOTE Confidence: 0.9876414

00:47:12.269 --> 00:47:13.950 conservative. Now I think some

NOTE Confidence: 0.9876414

00:47:13.950 --> 00:47:14.910 of that comes from a

NOTE Confidence: 0.9876414

00:47:14.910 --> 00:47:15.869 good place, and it comes

NOTE Confidence: 0.9876414

00:47:15.869 --> 00:47:17.785 from the place of wanting

NOTE Confidence: 0.9696339

00:47:18.165 --> 00:47:19.445 always to do our best

NOTE Confidence: 0.9696339

00:47:19.445 --> 00:47:19.925 and

NOTE Confidence: 0.8442889

00:47:20.245 --> 00:47:21.385 by by people

NOTE Confidence: 0.9823368

00:47:21.685 --> 00:47:22.725 who are sitting right in

NOTE Confidence: 0.9823368

00:47:22.725 --> 00:47:24.485 front of us and not

NOTE Confidence: 0.9823368

00:47:24.485 --> 00:47:26.165 put them at any risk

NOTE Confidence: 0.9823368

00:47:26.165 --> 00:47:26.665 whatsoever.

NOTE Confidence: 0.98835415

00:47:27.765 --> 00:47:29.045 And, you know, we clearly

NOTE Confidence: 0.98835415

00:47:29.045 --> 00:47:30.405 need to do that. But

NOTE Confidence: 0.98835415

00:47:30.405 --> 00:47:31.910 at the same time, we

NOTE Confidence: 0.98835415

00:47:31.910 --> 00:47:33.270 do need to be far

NOTE Confidence: 0.98835415

00:47:33.270 --> 00:47:34.790 bolder. I think the other

NOTE Confidence: 0.98835415

00:47:34.790 --> 00:47:36.710 big challenge is we just

NOTE Confidence: 0.98835415

00:47:36.710 --> 00:47:37.910 tend to sort of stay

NOTE Confidence: 0.98835415

00:47:37.910 --> 00:47:39.430 in our silos and do

NOTE Confidence: 0.98835415

00:47:39.430 --> 00:47:40.650 the thing we do,

NOTE Confidence: 0.9613004

00:47:41.190 --> 00:47:42.390 and we gotta get out

NOTE Confidence: 0.9613004

00:47:42.390 --> 00:47:43.050 of it.

NOTE Confidence: 0.98929197

00:47:43.430 --> 00:47:45.430 Because, you know, without that,

NOTE Confidence: 0.98929197

00:47:45.430 --> 00:47:46.469 we're just not gonna make

NOTE Confidence: 0.98929197

00:47:46.550 --> 00:47:47.864 I mean, we'll make progress,

NOTE Confidence: 0.98929197

00:47:47.864 --> 00:47:49.705 but it's just too slow,

NOTE Confidence: 0.98929197

00:47:49.705 --> 00:47:50.445 too costly,

NOTE Confidence: 0.9893078

00:47:50.825 --> 00:47:51.945 you know, and and we

NOTE Confidence: 0.9893078

00:47:51.945 --> 00:47:53.005 can do much better.

NOTE Confidence: 0.95917964

00:47:53.785 --> 00:47:54.745 You know, I've got I've

NOTE Confidence: 0.95917964

00:47:54.745 --> 00:47:56.025 got a a kind of

NOTE Confidence: 0.95917964

00:47:56.025 --> 00:47:57.165 a question and a comment.

NOTE Confidence: 0.95917964

00:47:57.305 --> 00:47:58.185 Do you think do you

NOTE Confidence: 0.95917964

00:47:58.185 --> 00:47:59.385 think one of the I

NOTE Confidence: 0.95917964

00:47:59.385 --> 00:48:01.020 I noticed that in radiology,

NOTE Confidence: 0.95917964

00:48:01.080 --> 00:48:01.960 we also kind of stay

NOTE Confidence: 0.95917964

00:48:01.960 --> 00:48:02.920 in our silo. We learn

NOTE Confidence: 0.95917964

00:48:02.920 --> 00:48:04.040 to do something well, and

NOTE Confidence: 0.95917964

00:48:04.040 --> 00:48:05.000 then we just keep doing

NOTE Confidence: 0.95917964

00:48:05.000 --> 00:48:05.880 it and we repeat it

NOTE Confidence: 0.95917964

00:48:05.880 --> 00:48:07.000 because we know how to

NOTE Confidence: 0.95917964

00:48:07.000 --> 00:48:07.960 do it well, and it's

NOTE Confidence: 0.95917964

00:48:08.200 --> 00:48:09.000 and it seems to be

NOTE Confidence: 0.95917964

00:48:09.000 --> 00:48:09.500 helpful.

NOTE Confidence: 0.9991034

00:48:10.440 --> 00:48:11.400 Do you think that one

NOTE Confidence: 0.9991034

00:48:11.400 --> 00:48:12.140 thing that

NOTE Confidence: 0.99861026

00:48:12.935 --> 00:48:14.315 keeps us in our lane

NOTE Confidence: 0.99861026

00:48:14.455 --> 00:48:15.594 is just that physicians

NOTE Confidence: 0.98894495

00:48:16.215 --> 00:48:17.335 are so busy these days?

NOTE Confidence: 0.98894495

00:48:17.335 --> 00:48:18.375 Part part of part of

NOTE Confidence: 0.98894495
00:48:18.375 --> 00:48:19.255 why we keep doing the
NOTE Confidence: 0.98894495
00:48:19.255 --> 00:48:20.695 same thing is because, you
NOTE Confidence: 0.98894495
00:48:20.695 --> 00:48:22.215 know, there's enormous amount of
NOTE Confidence: 0.98894495
00:48:22.215 --> 00:48:23.015 work to do, and we
NOTE Confidence: 0.98894495
00:48:23.015 --> 00:48:24.614 feel lucky and and grateful
NOTE Confidence: 0.98894495
00:48:24.614 --> 00:48:25.655 every day just to get
NOTE Confidence: 0.98894495
00:48:25.655 --> 00:48:26.555 the work done
NOTE Confidence: 0.9855726
00:48:26.900 --> 00:48:27.860 at a reasonable time so
NOTE Confidence: 0.9855726
00:48:27.860 --> 00:48:28.820 we can go home. And
NOTE Confidence: 0.9855726
00:48:28.820 --> 00:48:30.260 there's just very little time
NOTE Confidence: 0.9855726
00:48:30.260 --> 00:48:31.080 to think about,
NOTE Confidence: 0.9699331
00:48:31.380 --> 00:48:32.360 you know, innovating.
NOTE Confidence: 0.9610058
00:48:32.820 --> 00:48:34.120 And, you know, and and
NOTE Confidence: 0.9610058
00:48:34.260 --> 00:48:35.780 and I worry a little
NOTE Confidence: 0.9610058
00:48:35.780 --> 00:48:37.320 bit about the physician scientist
NOTE Confidence: 0.93573827

00:48:39.375 --> 00:48:40.435 phenotype that
NOTE Confidence: 0.9716233

00:48:41.215 --> 00:48:42.575 that clinical work is so
NOTE Confidence: 0.9716233

00:48:42.575 --> 00:48:43.775 busy, and there's so much
NOTE Confidence: 0.9716233

00:48:43.775 --> 00:48:44.975 work to be done that
NOTE Confidence: 0.9716233

00:48:44.975 --> 00:48:46.335 there's not as much time
NOTE Confidence: 0.9716233

00:48:46.335 --> 00:48:46.835 to
NOTE Confidence: 0.98438793

00:48:47.215 --> 00:48:48.675 just be in your head
NOTE Confidence: 0.98438793

00:48:48.815 --> 00:48:50.835 and imagine what could be
NOTE Confidence: 0.98438793

00:48:50.975 --> 00:48:52.415 and ruminate on things in
NOTE Confidence: 0.98438793

00:48:52.415 --> 00:48:53.295 a way that leads to
NOTE Confidence: 0.98438793

00:48:53.295 --> 00:48:54.579 innovation. And I don't know
NOTE Confidence: 0.98438793

00:48:54.579 --> 00:48:55.859 what your thoughts are there.
NOTE Confidence: 0.98438793

00:48:55.859 --> 00:48:57.140 Well, I agree, but I
NOTE Confidence: 0.98438793

00:48:57.140 --> 00:48:58.420 think that's why we have
NOTE Confidence: 0.98438793

00:48:58.420 --> 00:48:58.920 Yale's.
NOTE Confidence: 0.95761484

00:48:59.540 --> 00:49:00.900 I mean, like, that's we're

NOTE Confidence: 0.95761484

00:49:00.900 --> 00:49:01.859 we're supposed to be doing

NOTE Confidence: 0.95761484

00:49:01.859 --> 00:49:03.700 that here. And I think

NOTE Confidence: 0.95761484

00:49:03.700 --> 00:49:04.200 that,

NOTE Confidence: 0.99863756

00:49:05.219 --> 00:49:06.099 you know, we have a

NOTE Confidence: 0.99863756

00:49:06.099 --> 00:49:07.559 lot of people who do

NOTE Confidence: 0.9772406

00:49:07.859 --> 00:49:09.380 pure clinical medicine in the

NOTE Confidence: 0.9772406

00:49:09.380 --> 00:49:10.815 system, but I think those

NOTE Confidence: 0.9772406

00:49:10.815 --> 00:49:12.734 people are all too willing

NOTE Confidence: 0.9772406

00:49:12.734 --> 00:49:14.655 to follow the lead of

NOTE Confidence: 0.9772406

00:49:14.655 --> 00:49:16.015 people who wanna do things

NOTE Confidence: 0.9772406

00:49:16.015 --> 00:49:17.315 a little bit more creatively.

NOTE Confidence: 0.9772406

00:49:17.455 --> 00:49:18.255 Yeah. And I think we

NOTE Confidence: 0.9772406

00:49:18.255 --> 00:49:19.295 just have to keep pushing

NOTE Confidence: 0.9772406

00:49:19.295 --> 00:49:20.515 ourselves. Yeah.

NOTE Confidence: 0.80846584

00:49:23.360 --> 00:49:24.239 Yeah. We can get your

NOTE Confidence: 0.80846584

00:49:24.239 --> 00:49:25.219 microphone up.
NOTE Confidence: 0.95879996

00:49:34.805 --> 00:49:36.085 So I wanna push back
NOTE Confidence: 0.95879996

00:49:36.085 --> 00:49:37.125 a little here on the
NOTE Confidence: 0.95879996

00:49:37.125 --> 00:49:38.425 lack of innovation.
NOTE Confidence: 0.96572214

00:49:39.605 --> 00:49:40.485 So you may have been
NOTE Confidence: 0.96572214

00:49:40.485 --> 00:49:42.005 looking at fatty liver disease
NOTE Confidence: 0.96572214

00:49:42.005 --> 00:49:43.125 for the last twenty five
NOTE Confidence: 0.96572214

00:49:43.125 --> 00:49:45.305 years and the fundamental physics
NOTE Confidence: 0.96572214

00:49:45.445 --> 00:49:46.885 of fat and water hasn't
NOTE Confidence: 0.96572214

00:49:46.885 --> 00:49:48.565 changed. So the basic pulse
NOTE Confidence: 0.96572214

00:49:48.565 --> 00:49:50.185 sequences haven't changed.
NOTE Confidence: 0.9939422

00:49:50.510 --> 00:49:52.130 But those images are probably,
NOTE Confidence: 0.9939422

00:49:52.270 --> 00:49:53.550 you know, two to three
NOTE Confidence: 0.9939422

00:49:53.550 --> 00:49:54.609 times the resolution
NOTE Confidence: 0.977075

00:49:55.150 --> 00:49:56.510 that they used to be.
NOTE Confidence: 0.977075

00:49:56.510 --> 00:49:57.950 They're probably collected in a

NOTE Confidence: 0.977075

00:49:57.950 --> 00:49:59.010 third of the time

NOTE Confidence: 0.9428092

00:49:59.710 --> 00:50:00.750 and at, you know, a

NOTE Confidence: 0.9428092

00:50:00.750 --> 00:50:01.809 third of the cost.

NOTE Confidence: 0.97308713

00:50:02.670 --> 00:50:04.109 You're probably also getting a

NOTE Confidence: 0.97308713

00:50:04.109 --> 00:50:05.650 lot of other different contrast

NOTE Confidence: 0.925637

00:50:06.165 --> 00:50:07.525 that you're maybe not used

NOTE Confidence: 0.925637

00:50:07.525 --> 00:50:08.645 to looking at or aren't

NOTE Confidence: 0.925637

00:50:08.645 --> 00:50:09.385 as useful,

NOTE Confidence: 0.96028006

00:50:09.765 --> 00:50:11.625 but there's been tremendous development.

NOTE Confidence: 0.96028006

00:50:11.685 --> 00:50:12.885 Just because you're still looking

NOTE Confidence: 0.96028006

00:50:12.885 --> 00:50:14.725 at fat water doesn't mean

NOTE Confidence: 0.96028006

00:50:14.725 --> 00:50:16.825 that there's not tremendous development.

NOTE Confidence: 0.96028006

00:50:16.965 --> 00:50:17.844 And so I think that

NOTE Confidence: 0.96028006

00:50:17.844 --> 00:50:18.645 applies to a lot of

NOTE Confidence: 0.96028006

00:50:18.645 --> 00:50:19.685 the stuff you guys are

NOTE Confidence: 0.96028006

00:50:19.685 --> 00:50:20.745 discussing there.
NOTE Confidence: 0.90894115

00:50:30.550 --> 00:50:31.370 Other questions?
NOTE Confidence: 0.93899995

00:50:34.870 --> 00:50:36.170 So so I heard
NOTE Confidence: 0.95402867

00:50:36.625 --> 00:50:37.745 John and Eric, you both
NOTE Confidence: 0.95402867

00:50:37.745 --> 00:50:39.045 said oh, I'm sorry.
NOTE Confidence: 0.8854827

00:50:39.585 --> 00:50:41.125 So one sec.
NOTE Confidence: 0.96495736

00:50:41.985 --> 00:50:43.344 That, you know, we're not
NOTE Confidence: 0.96495736

00:50:43.344 --> 00:50:44.485 using enough imaging.
NOTE Confidence: 0.9761295

00:50:45.505 --> 00:50:46.465 What we've heard for the
NOTE Confidence: 0.9761295

00:50:46.465 --> 00:50:47.745 longest time was that, well,
NOTE Confidence: 0.9761295

00:50:47.745 --> 00:50:49.344 imaging is too expensive. Can
NOTE Confidence: 0.9761295

00:50:49.344 --> 00:50:50.500 I just say, I'm not
NOTE Confidence: 0.9761295

00:50:50.500 --> 00:50:51.380 sure that it's not that
NOTE Confidence: 0.9761295

00:50:51.380 --> 00:50:53.060 we're not using enough? I
NOTE Confidence: 0.9761295

00:50:53.060 --> 00:50:54.180 think we're not using it
NOTE Confidence: 0.9761295

00:50:54.180 --> 00:50:55.460 in the right way. Yes.

NOTE Confidence: 0.9761295

00:50:55.460 --> 00:50:56.180 Yes. I mean, I think

NOTE Confidence: 0.9761295

00:50:56.180 --> 00:50:57.540 we're using too much of

NOTE Confidence: 0.9761295

00:50:57.540 --> 00:50:58.520 standard imaging.

NOTE Confidence: 0.976763

00:50:58.900 --> 00:50:59.860 And I think, you know,

NOTE Confidence: 0.976763

00:50:59.860 --> 00:51:01.060 we could learn to back

NOTE Confidence: 0.976763

00:51:01.060 --> 00:51:02.440 off on that and then

NOTE Confidence: 0.99785507

00:51:03.465 --> 00:51:04.205 add in

NOTE Confidence: 0.95602703

00:51:04.585 --> 00:51:05.705 other So so I wanna

NOTE Confidence: 0.95602703

00:51:05.705 --> 00:51:07.145 take one example about this

NOTE Confidence: 0.95602703

00:51:07.145 --> 00:51:08.105 where I think it's not

NOTE Confidence: 0.95602703

00:51:08.105 --> 00:51:08.605 true,

NOTE Confidence: 0.99859685

00:51:08.905 --> 00:51:09.864 and that's when we're looking

NOTE Confidence: 0.99859685

00:51:09.864 --> 00:51:10.605 at therapies

NOTE Confidence: 0.9320079

00:51:11.385 --> 00:51:12.665 because the therapies we're looking

NOTE Confidence: 0.9320079

00:51:12.665 --> 00:51:14.364 at are incredibly expensive.

NOTE Confidence: 0.92459637

00:51:15.065 --> 00:51:16.425 And if imaging can save
NOTE Confidence: 0.92459637

00:51:16.425 --> 00:51:17.565 you, in theragnostics,
NOTE Confidence: 0.9991431

00:51:18.025 --> 00:51:19.005 one more treatment,
NOTE Confidence: 0.9597455

00:51:20.160 --> 00:51:21.839 that's a hundred thousand dollars,
NOTE Confidence: 0.9597455

00:51:21.839 --> 00:51:23.060 and a scan is
NOTE Confidence: 0.91191345

00:51:23.440 --> 00:51:24.560 a thousand dollars, which is
NOTE Confidence: 0.91191345

00:51:24.560 --> 00:51:26.400 fifteen hundred, right, give or
NOTE Confidence: 0.91191345

00:51:26.400 --> 00:51:28.420 take. And we do everybody
NOTE Confidence: 0.91191345

00:51:28.480 --> 00:51:30.239 six six of those cycles
NOTE Confidence: 0.91191345

00:51:30.239 --> 00:51:31.599 for everybody, but that's a
NOTE Confidence: 0.91191345

00:51:31.599 --> 00:51:32.420 huge chance.
NOTE Confidence: 0.9898443

00:51:32.735 --> 00:51:34.175 But we don't. Actually, in
NOTE Confidence: 0.9898443

00:51:34.175 --> 00:51:35.614 in the clinic, we don't,
NOTE Confidence: 0.9898443

00:51:35.935 --> 00:51:37.695 do personalized treatment. We just
NOTE Confidence: 0.9898443

00:51:37.695 --> 00:51:38.195 do
NOTE Confidence: 0.8980424

00:51:38.575 --> 00:51:39.375 you go you do your

NOTE Confidence: 0.8980424

00:51:39.375 --> 00:51:40.495 six cycles and you come

NOTE Confidence: 0.8980424

00:51:40.495 --> 00:51:41.455 back. And I think in

NOTE Confidence: 0.8980424

00:51:41.455 --> 00:51:42.895 AD, it's the same. Like,

NOTE Confidence: 0.8980424

00:51:42.895 --> 00:51:43.935 if we could in groups

NOTE Confidence: 0.8980424

00:51:43.935 --> 00:51:45.295 of that are more at

NOTE Confidence: 0.8980424

00:51:45.295 --> 00:51:46.655 risk early on, we can

NOTE Confidence: 0.8980424

00:51:46.655 --> 00:51:47.715 see, well, whose

NOTE Confidence: 0.886903

00:51:48.130 --> 00:51:49.410 tau is going down, who's

NOTE Confidence: 0.886903

00:51:49.410 --> 00:51:50.690 not, it's not one hundred

NOTE Confidence: 0.886903

00:51:50.690 --> 00:51:51.489 thousand dollars but it's fifty

NOTE Confidence: 0.886903

00:51:51.489 --> 00:51:52.290 thousand dollars for the kind

NOTE Confidence: 0.886903

00:51:52.290 --> 00:51:53.170 of math, and that's also

NOTE Confidence: 0.886903

00:51:53.170 --> 00:51:54.450 a statement. Why aren't we

NOTE Confidence: 0.886903

00:51:54.450 --> 00:51:55.190 doing it?

NOTE Confidence: 0.8673762

00:51:58.450 --> 00:51:59.109 You know,

NOTE Confidence: 0.9613496

00:51:59.969 --> 00:52:01.010 I feel there's a balance
NOTE Confidence: 0.9613496

00:52:01.010 --> 00:52:02.005 here, sort of like the
NOTE Confidence: 0.9613496

00:52:02.005 --> 00:52:02.885 comment that was made up
NOTE Confidence: 0.9613496

00:52:02.885 --> 00:52:04.165 there. I do think we've
NOTE Confidence: 0.9613496

00:52:04.165 --> 00:52:05.205 made a lot of progress
NOTE Confidence: 0.9613496

00:52:05.205 --> 00:52:06.505 in treatment selection.
NOTE Confidence: 0.9772525

00:52:07.525 --> 00:52:09.545 Being an acute stroke doctor,
NOTE Confidence: 0.9699383

00:52:10.085 --> 00:52:11.445 we've just had a complete
NOTE Confidence: 0.9699383

00:52:11.445 --> 00:52:12.905 change, right, in our paradigms
NOTE Confidence: 0.9699383

00:52:13.045 --> 00:52:14.965 in how we imaging select
NOTE Confidence: 0.9699383

00:52:14.965 --> 00:52:16.500 patients to open up their
NOTE Confidence: 0.9699383

00:52:16.500 --> 00:52:18.660 large artery occlusions using CT
NOTE Confidence: 0.9699383

00:52:18.660 --> 00:52:19.160 perfusion.
NOTE Confidence: 0.9549207

00:52:19.620 --> 00:52:20.420 Or if you look at
NOTE Confidence: 0.9549207

00:52:20.420 --> 00:52:22.100 Alzheimer's disease that, you know,
NOTE Confidence: 0.9549207

00:52:22.100 --> 00:52:23.540 we're looking for those patients

NOTE Confidence: 0.9549207

00:52:23.540 --> 00:52:25.060 with amyloid plaque burden that

NOTE Confidence: 0.9549207

00:52:25.060 --> 00:52:26.040 we're giving lecanumab

NOTE Confidence: 0.9627019

00:52:26.340 --> 00:52:27.080 to. So

NOTE Confidence: 0.9503326

00:52:27.540 --> 00:52:28.425 I do think you know,

NOTE Confidence: 0.9503326

00:52:28.425 --> 00:52:29.465 there's been a ton of

NOTE Confidence: 0.9503326

00:52:29.465 --> 00:52:31.465 progress to, to be excited

NOTE Confidence: 0.9503326

00:52:31.465 --> 00:52:32.265 about and more to be

NOTE Confidence: 0.9503326

00:52:32.265 --> 00:52:33.465 had, but I think where

NOTE Confidence: 0.9503326

00:52:33.465 --> 00:52:34.905 I, I, I also agree

NOTE Confidence: 0.9503326

00:52:34.905 --> 00:52:36.025 with Eric is there some

NOTE Confidence: 0.9503326

00:52:36.025 --> 00:52:37.625 opportunities to fine tune, make

NOTE Confidence: 0.9503326

00:52:37.625 --> 00:52:38.844 it more cost effective,

NOTE Confidence: 0.9967731

00:52:39.305 --> 00:52:40.685 make it just more intelligent

NOTE Confidence: 0.9967731

00:52:40.825 --> 00:52:42.425 in our clinical approaches. And

NOTE Confidence: 0.9967731

00:52:42.425 --> 00:52:43.590 some of that isn't as

NOTE Confidence: 0.9967731

00:52:43.670 --> 00:52:44.790 exciting as sort of the
NOTE Confidence: 0.9967731

00:52:44.790 --> 00:52:45.910 highest tech things we do,
NOTE Confidence: 0.9967731

00:52:45.910 --> 00:52:47.210 but they're equally important.
NOTE Confidence: 0.94640005

00:52:48.710 --> 00:52:49.830 Yeah. I would I would
NOTE Confidence: 0.94640005

00:52:49.830 --> 00:52:51.350 say Oh, there we go.
NOTE Confidence: 0.94640005

00:52:51.350 --> 00:52:52.390 I I would say number
NOTE Confidence: 0.94640005

00:52:52.390 --> 00:52:53.270 one to to your point.
NOTE Confidence: 0.94640005

00:52:53.270 --> 00:52:54.390 I mean, imaging has gone
NOTE Confidence: 0.94640005

00:52:54.390 --> 00:52:55.190 a lot has come a
NOTE Confidence: 0.94640005

00:52:55.190 --> 00:52:56.469 long way. I remember I
NOTE Confidence: 0.94640005

00:52:56.469 --> 00:52:58.230 remember reading CT scans that
NOTE Confidence: 0.94640005

00:52:58.230 --> 00:52:59.775 were, like, five millimeter thick
NOTE Confidence: 0.94640005

00:52:59.775 --> 00:53:00.275 slices,
NOTE Confidence: 0.98174816

00:53:00.575 --> 00:53:01.714 and you would have ten.
NOTE Confidence: 0.98174816

00:53:01.935 --> 00:53:03.375 And now you have point
NOTE Confidence: 0.98174816

00:53:03.375 --> 00:53:05.135 nine millimeter slices, and you

NOTE Confidence: 0.98174816

00:53:05.135 --> 00:53:06.575 have hundreds, and you can

NOTE Confidence: 0.98174816

00:53:06.575 --> 00:53:07.855 see with much greater resolution,

NOTE Confidence: 0.98174816

00:53:07.855 --> 00:53:08.815 and you can collect those

NOTE Confidence: 0.98174816

00:53:08.815 --> 00:53:09.855 data much faster than you

NOTE Confidence: 0.98174816

00:53:09.855 --> 00:53:11.340 could even those fifteen thick

NOTE Confidence: 0.98174816

00:53:11.340 --> 00:53:12.620 slices. So I think we've

NOTE Confidence: 0.98174816

00:53:12.620 --> 00:53:13.660 come a long way. But

NOTE Confidence: 0.98174816

00:53:13.660 --> 00:53:15.260 to to your point, George,

NOTE Confidence: 0.98174816

00:53:15.260 --> 00:53:15.500 that,

NOTE Confidence: 0.92564166

00:53:16.220 --> 00:53:17.260 you know, there there's this

NOTE Confidence: 0.92564166

00:53:17.260 --> 00:53:18.620 opportunity and and to what

NOTE Confidence: 0.92564166

00:53:18.620 --> 00:53:20.160 Eric was saying to maybe,

NOTE Confidence: 0.9952768

00:53:20.700 --> 00:53:21.660 get a little bit more

NOTE Confidence: 0.9952768

00:53:21.660 --> 00:53:24.080 personal and leverage imaging to

NOTE Confidence: 0.9952768

00:53:24.300 --> 00:53:25.360 choose the right

NOTE Confidence: 0.9912882

00:53:25.665 --> 00:53:27.285 therapy at the right time

NOTE Confidence: 0.97579956

00:53:27.745 --> 00:53:28.785 for the right number of

NOTE Confidence: 0.97579956

00:53:28.785 --> 00:53:30.545 doses. And even and we're

NOTE Confidence: 0.97579956

00:53:30.545 --> 00:53:31.745 just at the precipice of

NOTE Confidence: 0.97579956

00:53:31.745 --> 00:53:33.285 getting even more specific

NOTE Confidence: 0.96640503

00:53:33.745 --> 00:53:34.705 to look at thing you

NOTE Confidence: 0.96640503

00:53:34.705 --> 00:53:36.145 know, tumors that are heterogene

NOTE Confidence: 0.96640503

00:53:36.305 --> 00:53:37.505 heterogeneous. And you can imagine

NOTE Confidence: 0.96640503

00:53:37.665 --> 00:53:39.185 you can envision one day

NOTE Confidence: 0.96640503

00:53:39.185 --> 00:53:40.859 that there could be specific

NOTE Confidence: 0.96640503

00:53:40.859 --> 00:53:41.359 diagnostic

NOTE Confidence: 0.99909335

00:53:41.819 --> 00:53:42.880 cocktails of

NOTE Confidence: 0.9527947

00:53:43.180 --> 00:53:45.119 different that, that target different,

NOTE Confidence: 0.9773715

00:53:45.980 --> 00:53:47.839 heterogeneous targets within a tumor

NOTE Confidence: 0.9773715

00:53:47.980 --> 00:53:49.839 and treat them incredibly efficiently

NOTE Confidence: 0.9773715

00:53:49.900 --> 00:53:50.880 for that individual,

NOTE Confidence: 0.9743902
00:53:51.180 --> 00:53:52.219 which could limit, you know,
NOTE Confidence: 0.9743902
00:53:52.219 --> 00:53:53.339 rather than a one size
NOTE Confidence: 0.9743902
00:53:53.339 --> 00:53:54.160 fits all,
NOTE Confidence: 0.9363679
00:53:54.585 --> 00:53:55.864 which obviously is just the
NOTE Confidence: 0.9363679
00:53:55.864 --> 00:53:57.385 hammer, one size fits all,
NOTE Confidence: 0.9363679
00:53:57.385 --> 00:53:58.984 and and that ultimately it
NOTE Confidence: 0.9363679
00:53:58.984 --> 00:53:59.864 needs to get more personal.
NOTE Confidence: 0.9363679
00:53:59.864 --> 00:54:01.224 And that's when you can
NOTE Confidence: 0.9363679
00:54:01.224 --> 00:54:02.425 sort of get a little
NOTE Confidence: 0.9363679
00:54:02.425 --> 00:54:03.785 bit more cost effective in
NOTE Confidence: 0.9363679
00:54:03.785 --> 00:54:04.585 the way you do things
NOTE Confidence: 0.9363679
00:54:04.585 --> 00:54:05.805 when it's very personalized,
NOTE Confidence: 0.99803704
00:54:06.425 --> 00:54:07.465 and you and then you
NOTE Confidence: 0.99803704
00:54:07.465 --> 00:54:08.925 can get more selective
NOTE Confidence: 0.9507044
00:54:09.385 --> 00:54:10.800 in choosing the the patient
NOTE Confidence: 0.9507044

00:54:10.800 --> 00:54:12.320 who's gonna respond best so
NOTE Confidence: 0.9507044

00:54:12.320 --> 00:54:13.200 that you're not just treating
NOTE Confidence: 0.9507044

00:54:13.200 --> 00:54:14.739 everybody with the same cost.
NOTE Confidence: 0.9507044

00:54:14.880 --> 00:54:16.080 You're really honing in on
NOTE Confidence: 0.9507044

00:54:16.080 --> 00:54:17.600 the group that's gonna respond
NOTE Confidence: 0.9507044

00:54:17.600 --> 00:54:18.500 best and, therefore,
NOTE Confidence: 0.9439997

00:54:19.200 --> 00:54:21.380 avoiding unnecessary cost and unnecessary
NOTE Confidence: 0.9439997

00:54:21.440 --> 00:54:23.200 toxicity when when someone doesn't
NOTE Confidence: 0.9439997

00:54:23.200 --> 00:54:24.145 need it. So So, I
NOTE Confidence: 0.9439997

00:54:24.145 --> 00:54:25.905 mean, we've made tremendous progress.
NOTE Confidence: 0.9439997

00:54:25.905 --> 00:54:27.345 There's no question. But so,
NOTE Confidence: 0.9439997

00:54:27.345 --> 00:54:29.045 you know, the study reported
NOTE Confidence: 0.9439997

00:54:29.265 --> 00:54:31.185 three days ago, you know,
NOTE Confidence: 0.9439997

00:54:31.185 --> 00:54:31.685 fourteen
NOTE Confidence: 0.99958056

00:54:32.305 --> 00:54:34.385 highly toxic treatments were better
NOTE Confidence: 0.99958056

00:54:34.385 --> 00:54:35.285 than fourteen

NOTE Confidence: 0.99942774

00:54:35.585 --> 00:54:36.805 less toxic treatments

NOTE Confidence: 0.9414323

00:54:37.239 --> 00:54:38.860 for in a specific situation.

NOTE Confidence: 0.9414323

00:54:39.080 --> 00:54:40.380 But wouldn't it be better

NOTE Confidence: 0.94737303

00:54:40.680 --> 00:54:42.360 if through the use of

NOTE Confidence: 0.94737303

00:54:42.360 --> 00:54:43.800 imaging, we could figure out

NOTE Confidence: 0.94737303

00:54:43.800 --> 00:54:44.300 that,

NOTE Confidence: 0.97644156

00:54:44.600 --> 00:54:46.520 you know, after that in

NOTE Confidence: 0.97644156

00:54:46.520 --> 00:54:48.380 eighty percent of people, after

NOTE Confidence: 0.97644156

00:54:48.520 --> 00:54:50.780 four treatments, everything seemed gone?

NOTE Confidence: 0.97644156

00:54:51.000 --> 00:54:51.820 And then,

NOTE Confidence: 0.96606916

00:54:52.864 --> 00:54:53.905 you know, and and then

NOTE Confidence: 0.96606916

00:54:53.905 --> 00:54:55.425 you could then confirm that

NOTE Confidence: 0.96606916

00:54:55.425 --> 00:54:56.785 with a subsequent study and

NOTE Confidence: 0.96606916

00:54:56.785 --> 00:54:57.285 just

NOTE Confidence: 0.9795087

00:54:57.665 --> 00:54:58.944 limit it to four treatments.

NOTE Confidence: 0.9795087

00:54:58.944 --> 00:54:59.984 Absolutely. Or you could you
NOTE Confidence: 0.9795087

00:54:59.984 --> 00:55:01.505 could choose the subset that
NOTE Confidence: 0.9795087

00:55:01.505 --> 00:55:03.184 needs six and the subset
NOTE Confidence: 0.9795087

00:55:03.184 --> 00:55:04.864 that needs four. And then
NOTE Confidence: 0.9795087

00:55:04.864 --> 00:55:06.145 now that you've you've become
NOTE Confidence: 0.9795087

00:55:06.145 --> 00:55:07.265 more efficient and more cost
NOTE Confidence: 0.9795087

00:55:07.265 --> 00:55:08.710 effective. Alright. So we have
NOTE Confidence: 0.9795087

00:55:08.710 --> 00:55:10.150 two questions. Sylvia, you've been
NOTE Confidence: 0.9795087

00:55:10.150 --> 00:55:12.070 very patient. Go. Okay. Is
NOTE Confidence: 0.9795087

00:55:12.070 --> 00:55:13.510 this on? Okay. I have
NOTE Confidence: 0.9795087

00:55:13.510 --> 00:55:15.110 a question and then maybe,
NOTE Confidence: 0.9795087

00:55:15.110 --> 00:55:16.550 like, a background comment for
NOTE Confidence: 0.9795087

00:55:16.550 --> 00:55:17.050 radiology.
NOTE Confidence: 0.93212026

00:55:17.910 --> 00:55:19.430 So is there, like, what's
NOTE Confidence: 0.93212026

00:55:19.430 --> 00:55:20.630 on horizon for, like, a
NOTE Confidence: 0.93212026

00:55:20.630 --> 00:55:21.130 straightforward

NOTE Confidence: 0.8920581
00:55:21.510 --> 00:55:22.890 time effective volumetric
NOTE Confidence: 0.97834986
00:55:23.594 --> 00:55:24.255 MRI assessment?
NOTE Confidence: 0.8883447
00:55:25.835 --> 00:55:27.355 It's repeat that again. A
NOTE Confidence: 0.8883447
00:55:27.355 --> 00:55:29.135 single Volumetric MRI.
NOTE Confidence: 0.8717028
00:55:29.515 --> 00:55:30.875 Oh. It's, like, time consuming.
NOTE Confidence: 0.8717028
00:55:30.875 --> 00:55:32.555 Right? Oh. Oh, yes. Yes.
NOTE Confidence: 0.8717028
00:55:32.555 --> 00:55:33.755 So I think instead of,
NOTE Confidence: 0.8717028
00:55:33.755 --> 00:55:34.875 like, a PI assisted, like,
NOTE Confidence: 0.8717028
00:55:34.875 --> 00:55:36.155 you know, what's there to
NOTE Confidence: 0.8717028
00:55:36.155 --> 00:55:37.239 come. Yeah. Yeah. For a
NOTE Confidence: 0.8717028
00:55:37.239 --> 00:55:38.200 background, I want to kind
NOTE Confidence: 0.8717028
00:55:38.200 --> 00:55:39.080 of say, you know, I'm
NOTE Confidence: 0.8717028
00:55:39.080 --> 00:55:40.440 a neuro oncologist, so we
NOTE Confidence: 0.8717028
00:55:40.440 --> 00:55:41.500 do meningiomas.
NOTE Confidence: 0.98144406
00:55:42.600 --> 00:55:43.800 So I'm actually working on
NOTE Confidence: 0.98144406

00:55:43.800 --> 00:55:44.380 the manuscript
NOTE Confidence: 0.901588

00:55:44.920 --> 00:55:46.780 about theranostics in meningiomas.
NOTE Confidence: 0.92526245

00:55:47.960 --> 00:55:49.485 And I already know, like,
NOTE Confidence: 0.92526245

00:55:49.485 --> 00:55:50.685 the reviewers will kind of
NOTE Confidence: 0.92526245

00:55:50.685 --> 00:55:51.645 shoot me down for not
NOTE Confidence: 0.92526245

00:55:51.645 --> 00:55:53.185 having volumetric MRI
NOTE Confidence: 0.5355252

00:55:53.485 --> 00:55:53.985 assessment
NOTE Confidence: 0.9072726

00:55:54.285 --> 00:55:55.805 of my tumors. Right. Because
NOTE Confidence: 0.9072726

00:55:55.805 --> 00:55:57.565 our rhino assessment, which is
NOTE Confidence: 0.9072726

00:55:57.565 --> 00:55:59.265 like the neuro resist criteria,
NOTE Confidence: 0.9072726

00:55:59.325 --> 00:56:01.805 right, still revolve around t
NOTE Confidence: 0.9072726

00:56:01.805 --> 00:56:03.405 one, t two, post t
NOTE Confidence: 0.9072726

00:56:03.405 --> 00:56:03.905 one,
NOTE Confidence: 0.8310031

00:56:04.809 --> 00:56:05.309 gadolinium
NOTE Confidence: 0.9477686

00:56:05.609 --> 00:56:07.530 enhanced Right. Energy. Well, we're
NOTE Confidence: 0.9477686

00:56:07.530 --> 00:56:08.410 we're I will say, like,

NOTE Confidence: 0.9477686

00:56:08.410 --> 00:56:09.530 the two last iteration of

NOTE Confidence: 0.9477686

00:56:09.530 --> 00:56:11.210 the renal criteria also talked

NOTE Confidence: 0.9477686

00:56:11.210 --> 00:56:12.969 about volumetric assessment and how

NOTE Confidence: 0.9477686

00:56:12.969 --> 00:56:14.329 does this the future, but

NOTE Confidence: 0.9477686

00:56:14.329 --> 00:56:15.930 it's not available. Yeah. Well,

NOTE Confidence: 0.9477686

00:56:15.930 --> 00:56:16.969 the good news is it's

NOTE Confidence: 0.9477686

00:56:16.969 --> 00:56:18.645 it's it's here, and it's

NOTE Confidence: 0.9477686

00:56:18.645 --> 00:56:20.165 slowly being implemented. And there's

NOTE Confidence: 0.9477686

00:56:20.165 --> 00:56:21.125 two ways that this is

NOTE Confidence: 0.9477686

00:56:21.125 --> 00:56:22.585 rolling out. First of all,

NOTE Confidence: 0.9432937

00:56:22.965 --> 00:56:24.505 MRI scanners, you know, to

NOTE Confidence: 0.9432937

00:56:24.725 --> 00:56:25.605 to to our point, have

NOTE Confidence: 0.9432937

00:56:25.605 --> 00:56:27.285 gotten much, much, much better.

NOTE Confidence: 0.9432937

00:56:27.285 --> 00:56:28.325 And so the and just

NOTE Confidence: 0.9432937

00:56:28.325 --> 00:56:29.065 for the audience,

NOTE Confidence: 0.98561877

00:56:29.610 --> 00:56:31.050 you know, what we're talking
NOTE Confidence: 0.98561877

00:56:31.050 --> 00:56:32.110 about is volumetric,
NOTE Confidence: 0.9070321

00:56:32.570 --> 00:56:34.110 and iso you know, isotropic
NOTE Confidence: 0.9070321

00:56:34.250 --> 00:56:35.710 volumetric image. So,
NOTE Confidence: 0.96512365

00:56:36.410 --> 00:56:38.090 because because MRI takes a
NOTE Confidence: 0.96512365

00:56:38.090 --> 00:56:39.550 long time to acquire, historically,
NOTE Confidence: 0.96512365

00:56:39.610 --> 00:56:40.570 what we've done, let's say,
NOTE Confidence: 0.96512365

00:56:40.570 --> 00:56:41.850 for the brain is we'll
NOTE Confidence: 0.96512365

00:56:41.850 --> 00:56:43.130 acquire a slice at, like,
NOTE Confidence: 0.96512365

00:56:43.130 --> 00:56:44.510 I don't know, one millimeter
NOTE Confidence: 0.96512365

00:56:44.570 --> 00:56:46.565 slice, skip a millimeter. Another
NOTE Confidence: 0.96512365

00:56:46.645 --> 00:56:48.085 and then acquire another one
NOTE Confidence: 0.96512365

00:56:48.085 --> 00:56:50.325 millimeter slice, skip one. Acquire
NOTE Confidence: 0.96512365

00:56:50.325 --> 00:56:51.285 one, skip one, all through
NOTE Confidence: 0.96512365

00:56:51.285 --> 00:56:52.565 the brain. So even when
NOTE Confidence: 0.96512365

00:56:52.565 --> 00:56:53.684 you're scrolling, it looks like

NOTE Confidence: 0.96512365

00:56:53.684 --> 00:56:54.565 you're looking at the whole

NOTE Confidence: 0.96512365

00:56:54.565 --> 00:56:55.765 brain, but, really, you've only

NOTE Confidence: 0.96512365

00:56:55.765 --> 00:56:57.125 imaged half the brain. And

NOTE Confidence: 0.96512365

00:56:57.125 --> 00:56:58.825 so it's not truly volumetric,

NOTE Confidence: 0.9947091

00:56:59.530 --> 00:57:01.930 which does can interfere with

NOTE Confidence: 0.9947091

00:57:01.930 --> 00:57:04.090 making accurate measurements of things

NOTE Confidence: 0.9947091

00:57:04.090 --> 00:57:04.830 like meningiomas.

NOTE Confidence: 0.9569076

00:57:05.690 --> 00:57:06.650 And the reason that is

NOTE Confidence: 0.9569076

00:57:06.650 --> 00:57:07.370 is because it takes a

NOTE Confidence: 0.9569076

00:57:07.370 --> 00:57:08.250 long time to acquire the

NOTE Confidence: 0.9569076

00:57:08.250 --> 00:57:09.210 data. And if you're if

NOTE Confidence: 0.9569076

00:57:09.210 --> 00:57:10.570 it takes, let's say, twenty

NOTE Confidence: 0.9569076

00:57:10.570 --> 00:57:12.030 minutes to acquire a volumetric

NOTE Confidence: 0.9569076

00:57:12.250 --> 00:57:13.605 dataset, and that's not an

NOTE Confidence: 0.9569076

00:57:13.605 --> 00:57:14.725 accurate number, but let's say

NOTE Confidence: 0.9569076

00:57:14.725 --> 00:57:15.465 twenty minutes.
NOTE Confidence: 0.97094417

00:57:16.005 --> 00:57:17.285 Number one, it means that
NOTE Confidence: 0.97094417

00:57:17.285 --> 00:57:18.645 you're creating a backlog and
NOTE Confidence: 0.97094417

00:57:18.645 --> 00:57:20.005 it limits access. And number
NOTE Confidence: 0.97094417

00:57:20.005 --> 00:57:21.925 two, patients start to fidget
NOTE Confidence: 0.97094417

00:57:21.925 --> 00:57:22.725 around when they're in an
NOTE Confidence: 0.97094417

00:57:22.725 --> 00:57:23.765 MRI scanner for a long
NOTE Confidence: 0.97094417

00:57:23.765 --> 00:57:25.205 time. And so if you
NOTE Confidence: 0.97094417

00:57:25.205 --> 00:57:26.245 if you if you acquire
NOTE Confidence: 0.97094417

00:57:26.245 --> 00:57:27.365 a really long acquisition and
NOTE Confidence: 0.97094417

00:57:27.365 --> 00:57:28.830 you get a volumetric image
NOTE Confidence: 0.97094417

00:57:28.830 --> 00:57:29.950 only for them to start
NOTE Confidence: 0.97094417

00:57:29.950 --> 00:57:31.150 moving around, it ruins your
NOTE Confidence: 0.97094417

00:57:31.150 --> 00:57:31.870 data and then you have
NOTE Confidence: 0.97094417

00:57:31.870 --> 00:57:32.670 to repeat it and then
NOTE Confidence: 0.97094417

00:57:32.670 --> 00:57:34.270 that's another twenty minutes. But,

NOTE Confidence: 0.97094417
00:57:34.430 --> 00:57:36.350 with AI acceleration, now we're
NOTE Confidence: 0.97094417
00:57:36.350 --> 00:57:37.230 getting to the point where
NOTE Confidence: 0.97094417
00:57:37.230 --> 00:57:39.230 we can acquire volumetric images
NOTE Confidence: 0.97094417
00:57:39.230 --> 00:57:40.290 really, really fast.
NOTE Confidence: 0.9875183
00:57:41.165 --> 00:57:42.605 I'd say that there there's
NOTE Confidence: 0.9875183
00:57:42.605 --> 00:57:44.045 still some demand because of
NOTE Confidence: 0.9875183
00:57:44.045 --> 00:57:45.565 the because of the need
NOTE Confidence: 0.9875183
00:57:45.565 --> 00:57:47.005 for access and to get
NOTE Confidence: 0.9875183
00:57:47.005 --> 00:57:48.285 patients through. There's still a
NOTE Confidence: 0.9875183
00:57:48.285 --> 00:57:49.105 lot of backlog.
NOTE Confidence: 0.9963971
00:57:49.645 --> 00:57:50.685 So even though we can
NOTE Confidence: 0.9963971
00:57:50.685 --> 00:57:52.365 acquire a volumetric image a
NOTE Confidence: 0.9963971
00:57:52.365 --> 00:57:53.025 lot faster,
NOTE Confidence: 0.97982764
00:57:53.690 --> 00:57:55.049 for if you're if
NOTE Confidence: 0.97982764
00:57:55.049 --> 00:57:56.410 the interpretation is what I
NOTE Confidence: 0.97982764

00:57:56.410 --> 00:57:57.950 described before, which is qualitative,
NOTE Confidence: 0.97982764

00:57:58.170 --> 00:57:59.130 you don't really need to
NOTE Confidence: 0.97982764

00:57:59.130 --> 00:58:00.329 see every slice to make
NOTE Confidence: 0.97982764

00:58:00.329 --> 00:58:02.250 a qualitative interpretation of an
NOTE Confidence: 0.97982764

00:58:02.250 --> 00:58:02.750 exam
NOTE Confidence: 0.98771775

00:58:03.130 --> 00:58:04.910 to then refer the patient
NOTE Confidence: 0.81793535

00:58:05.210 --> 00:58:06.569 or or or get a,
NOTE Confidence: 0.9765111

00:58:07.145 --> 00:58:08.905 have a a helpful response
NOTE Confidence: 0.9765111

00:58:08.905 --> 00:58:10.105 to your oncologist to treat
NOTE Confidence: 0.9765111

00:58:10.105 --> 00:58:11.065 the patient. But it does
NOTE Confidence: 0.9765111

00:58:11.065 --> 00:58:12.665 interfere with that quantitative part
NOTE Confidence: 0.9765111

00:58:12.665 --> 00:58:13.704 that you're talking about, which
NOTE Confidence: 0.9765111

00:58:13.704 --> 00:58:14.585 is the future of the
NOTE Confidence: 0.9765111

00:58:14.585 --> 00:58:16.025 field having, you know, really
NOTE Confidence: 0.9765111

00:58:16.025 --> 00:58:18.744 using leveraging quantitative data to
NOTE Confidence: 0.9765111

00:58:18.744 --> 00:58:19.865 better treat the patient. That

NOTE Confidence: 0.9765111
00:58:19.865 --> 00:58:20.905 that day is coming, and
NOTE Confidence: 0.9765111
00:58:20.905 --> 00:58:22.000 it does require that kind
NOTE Confidence: 0.9765111
00:58:22.000 --> 00:58:23.140 of volumetric dataset.
NOTE Confidence: 0.9839342
00:58:23.760 --> 00:58:24.880 So so one way that's
NOTE Confidence: 0.9839342
00:58:24.880 --> 00:58:26.400 happening is, again, through AI
NOTE Confidence: 0.9839342
00:58:26.400 --> 00:58:27.520 acceleration, and now we can
NOTE Confidence: 0.9839342
00:58:27.520 --> 00:58:29.600 acquire a whole volumetric dataset
NOTE Confidence: 0.9839342
00:58:29.600 --> 00:58:30.740 in just a few minutes.
NOTE Confidence: 0.9584868
00:58:31.040 --> 00:58:32.800 But but now well, it's,
NOTE Confidence: 0.9584868
00:58:32.800 --> 00:58:34.045 let's say, three minutes. But
NOTE Confidence: 0.9584868
00:58:34.045 --> 00:58:35.085 if you can acquire the
NOTE Confidence: 0.9584868
00:58:35.085 --> 00:58:36.525 same kind of clinical dataset
NOTE Confidence: 0.9584868
00:58:36.525 --> 00:58:37.485 that I just talked about
NOTE Confidence: 0.9584868
00:58:37.485 --> 00:58:38.545 in one point five
NOTE Confidence: 0.97974676
00:58:38.845 --> 00:58:40.445 and that increases access, then
NOTE Confidence: 0.97974676

00:58:40.445 --> 00:58:41.985 you're always kind of balancing
NOTE Confidence: 0.97974676

00:58:42.285 --> 00:58:43.485 patient access and the need
NOTE Confidence: 0.97974676

00:58:43.485 --> 00:58:45.425 to push patients through with,
NOTE Confidence: 0.97974676

00:58:45.565 --> 00:58:47.070 you know, quality of data.
NOTE Confidence: 0.97974676

00:58:47.070 --> 00:58:48.030 And what what is the,
NOTE Confidence: 0.97974676

00:58:48.270 --> 00:58:49.390 quality of data that you
NOTE Confidence: 0.97974676

00:58:49.390 --> 00:58:50.510 need to make the diagnosis?
NOTE Confidence: 0.97974676

00:58:50.510 --> 00:58:52.130 And it's probably that lower
NOTE Confidence: 0.97974676

00:58:52.270 --> 00:58:53.390 version where you don't need
NOTE Confidence: 0.97974676

00:58:53.390 --> 00:58:54.370 the whole brain,
NOTE Confidence: 0.97063214

00:58:54.670 --> 00:58:55.950 but it that's not that's
NOTE Confidence: 0.97063214

00:58:55.950 --> 00:58:56.930 not what pharmaceutical
NOTE Confidence: 0.9773617

00:58:57.470 --> 00:58:58.670 companies want when they're doing
NOTE Confidence: 0.9773617

00:58:58.670 --> 00:58:59.710 a clinical trial. They want
NOTE Confidence: 0.9773617

00:58:59.710 --> 00:59:01.224 the volumetric data. So one
NOTE Confidence: 0.9773617

00:59:01.224 --> 00:59:02.665 way is through AI acceleration.

NOTE Confidence: 0.9773617

00:59:02.665 --> 00:59:03.945 There's also other ways to

NOTE Confidence: 0.9773617

00:59:03.945 --> 00:59:05.645 take a semi quantitative

NOTE Confidence: 0.9210422

00:59:06.265 --> 00:59:08.105 nonastropic data set and then

NOTE Confidence: 0.9210422

00:59:08.105 --> 00:59:09.405 use generative AI

NOTE Confidence: 0.9815087

00:59:10.105 --> 00:59:11.145 to then fill in the

NOTE Confidence: 0.9815087

00:59:11.145 --> 00:59:12.505 gaps, and that can also

NOTE Confidence: 0.9815087

00:59:12.505 --> 00:59:14.905 work reasonably well. You're still

NOTE Confidence: 0.9815087

00:59:14.905 --> 00:59:15.885 sort of interpolating,

NOTE Confidence: 0.9854724

00:59:17.810 --> 00:59:19.490 data that's not there. But,

NOTE Confidence: 0.9854724

00:59:19.810 --> 00:59:21.490 that is one approach that

NOTE Confidence: 0.9854724

00:59:21.490 --> 00:59:22.470 appears to be

NOTE Confidence: 0.99964595

00:59:22.930 --> 00:59:23.750 having some

NOTE Confidence: 0.9989299

00:59:24.370 --> 00:59:26.150 positive yield in

NOTE Confidence: 0.9920991

00:59:26.930 --> 00:59:28.690 getting these more quantitative measurements

NOTE Confidence: 0.9920991

00:59:28.690 --> 00:59:29.730 that you're talking about. So

NOTE Confidence: 0.9920991

00:59:29.730 --> 00:59:31.175 those are so they're here,
NOTE Confidence: 0.9770793

00:59:31.875 --> 00:59:33.795 and now they're available to
NOTE Confidence: 0.9770793

00:59:33.795 --> 00:59:35.075 roll out, but I think,
NOTE Confidence: 0.9770793

00:59:35.075 --> 00:59:36.035 you know, this is where
NOTE Confidence: 0.9770793

00:59:36.035 --> 00:59:38.115 collaboration comes into play. And,
NOTE Confidence: 0.9770793

00:59:38.355 --> 00:59:39.875 and there's no reason well,
NOTE Confidence: 0.9770793

00:59:39.875 --> 00:59:40.915 there are lots of reasons
NOTE Confidence: 0.9770793

00:59:40.915 --> 00:59:41.715 that why this might be
NOTE Confidence: 0.9770793

00:59:41.715 --> 00:59:43.235 complicated, but you could you
NOTE Confidence: 0.9770793

00:59:43.235 --> 00:59:44.115 could, let's say, on a
NOTE Confidence: 0.9770793

00:59:44.115 --> 00:59:45.570 clinical service, you could have
NOTE Confidence: 0.9770793

00:59:45.650 --> 00:59:46.390 your standard
NOTE Confidence: 0.98289365

00:59:46.850 --> 00:59:48.290 brain tumor imaging protocol, and
NOTE Confidence: 0.98289365

00:59:48.290 --> 00:59:49.570 you could have your advanced
NOTE Confidence: 0.98289365

00:59:49.570 --> 00:59:51.250 brain tumor imaging protocol. And
NOTE Confidence: 0.98289365

00:59:51.250 --> 00:59:52.210 if it's for a clinical

NOTE Confidence: 0.98289365

00:59:52.210 --> 00:59:53.410 trial, maybe that's the one

NOTE Confidence: 0.98289365

00:59:53.410 --> 00:59:54.310 that has the,

NOTE Confidence: 0.63397074

00:59:54.690 --> 00:59:56.310 isotropic fully quantitative

NOTE Confidence: 0.848283

00:59:57.330 --> 00:59:57.830 volumetric

NOTE Confidence: 0.9334405

00:59:58.290 --> 00:59:59.190 t one dataset.

NOTE Confidence: 0.9851692

00:59:59.555 --> 01:00:00.435 Maybe that's the one that

NOTE Confidence: 0.9851692

01:00:00.435 --> 01:00:01.555 has a three d flare

NOTE Confidence: 0.9851692

01:00:01.555 --> 01:00:02.435 instead of a two d

NOTE Confidence: 0.9851692

01:00:02.435 --> 01:00:03.955 flare. Maybe that's the one

NOTE Confidence: 0.9851692

01:00:03.955 --> 01:00:05.155 where you even include some

NOTE Confidence: 0.9851692

01:00:05.155 --> 01:00:05.655 ASL,

NOTE Confidence: 0.97371733

01:00:06.035 --> 01:00:07.395 blood flow imaging and maybe

NOTE Confidence: 0.97371733

01:00:07.395 --> 01:00:08.295 some other advanced,

NOTE Confidence: 0.8969495

01:00:08.915 --> 01:00:10.995 measurements that that, our physicians

NOTE Confidence: 0.8969495

01:00:10.995 --> 01:00:12.115 can start to leverage and

NOTE Confidence: 0.8969495

01:00:12.115 --> 01:00:12.915 while we're taking you know,
NOTE Confidence: 0.8969495

01:00:12.915 --> 01:00:13.809 to help take care of
NOTE Confidence: 0.8969495

01:00:13.809 --> 01:00:15.170 patients better. And are these,
NOTE Confidence: 0.8969495

01:00:15.170 --> 01:00:16.210 like, standard, I think, that
NOTE Confidence: 0.8969495

01:00:16.210 --> 01:00:17.089 you can kinda roll out
NOTE Confidence: 0.8969495

01:00:17.089 --> 01:00:18.770 to various So, Sylvia, I
NOTE Confidence: 0.8969495

01:00:18.770 --> 01:00:19.569 I don't want us to
NOTE Confidence: 0.8969495

01:00:19.569 --> 01:00:21.410 cut into Dean Brown's closing
NOTE Confidence: 0.8969495

01:00:21.410 --> 01:00:21.910 comments.
NOTE Confidence: 0.9363503

01:00:22.289 --> 01:00:23.750 And there was one last
NOTE Confidence: 0.9363503

01:00:23.809 --> 01:00:25.170 quick question maybe, Larry. Oh,
NOTE Confidence: 0.9363503

01:00:25.170 --> 01:00:26.210 just a quick comment. And
NOTE Confidence: 0.9363503

01:00:26.210 --> 01:00:26.930 we will be able to
NOTE Confidence: 0.9363503

01:00:26.930 --> 01:00:28.369 continue this discussion because we
NOTE Confidence: 0.9363503

01:00:28.369 --> 01:00:29.205 have an hour and a
NOTE Confidence: 0.9363503

01:00:29.205 --> 01:00:30.565 half of poster afterwards. Just

NOTE Confidence: 0.9363503
01:00:30.565 --> 01:00:31.605 a quick comment. Thank you
NOTE Confidence: 0.9363503
01:00:31.605 --> 01:00:32.565 for a wonderful day and
NOTE Confidence: 0.9363503
01:00:32.565 --> 01:00:33.365 thank you for putting this
NOTE Confidence: 0.9363503
01:00:33.365 --> 01:00:34.565 together, Dean Brown and George
NOTE Confidence: 0.9363503
01:00:34.565 --> 01:00:35.925 and everyone. I just wanted
NOTE Confidence: 0.9363503
01:00:35.925 --> 01:00:37.445 to echo what, doctor Whitlow
NOTE Confidence: 0.9363503
01:00:37.445 --> 01:00:38.725 and doctor Weiner were saying
NOTE Confidence: 0.9363503
01:00:38.725 --> 01:00:40.245 about the importance of tumor
NOTE Confidence: 0.9363503
01:00:40.245 --> 01:00:40.745 heterogeneity.
NOTE Confidence: 0.96876305
01:00:41.045 --> 01:00:42.245 And that's exactly what we're
NOTE Confidence: 0.96876305
01:00:42.245 --> 01:00:43.465 focusing on with PETCT,
NOTE Confidence: 0.99246216
01:00:44.140 --> 01:00:45.280 whether we're doing multiplex
NOTE Confidence: 0.90265363
01:00:45.740 --> 01:00:46.720 PET with FDG,
NOTE Confidence: 0.9301192
01:00:47.260 --> 01:00:49.580 PSMA or DOTATATE. So tumor
NOTE Confidence: 0.9301192
01:00:49.580 --> 01:00:51.180 heterogeneity is something that we
NOTE Confidence: 0.9301192

01:00:51.180 --> 01:00:52.720 see every day in PET.
NOTE Confidence: 0.9301192

01:00:52.780 --> 01:00:53.820 And ideally, just to comment
NOTE Confidence: 0.9301192

01:00:53.820 --> 01:00:55.740 about theranostics, it's unusual for
NOTE Confidence: 0.9301192

01:00:55.740 --> 01:00:57.260 patients to get six treatments
NOTE Confidence: 0.9301192

01:00:57.260 --> 01:00:59.395 for, a Pluvicta and the
NOTE Confidence: 0.9301192

01:00:59.395 --> 01:01:00.915 goal is to personalize their
NOTE Confidence: 0.9301192

01:01:00.915 --> 01:01:02.595 ownostics exactly as you're saying
NOTE Confidence: 0.9301192

01:01:02.595 --> 01:01:03.875 with dosimetry, and that's what
NOTE Confidence: 0.9301192

01:01:03.875 --> 01:01:05.395 George is helping us with.
NOTE Confidence: 0.9301192

01:01:05.395 --> 01:01:06.775 So that's our goal, personalized
NOTE Confidence: 0.9301192

01:01:06.915 --> 01:01:08.755 their ownostics. So thanks. Thank
NOTE Confidence: 0.9301192

01:01:08.755 --> 01:01:09.975 you. So,
NOTE Confidence: 0.95919824

01:01:10.515 --> 01:01:12.279 we're almost done. We have
NOTE Confidence: 0.95919824

01:01:12.279 --> 01:01:13.559 our closing remarks from Dean
NOTE Confidence: 0.95919824

01:01:13.559 --> 01:01:14.440 Brown, and then we have
NOTE Confidence: 0.95919824

01:01:14.440 --> 01:01:15.960 a poster session. We have

NOTE Confidence: 0.95919824
01:01:15.960 --> 01:01:17.339 forty two posters outside.
NOTE Confidence: 0.9479274
01:01:17.640 --> 01:01:19.579 There will be food and
NOTE Confidence: 0.9479274
01:01:19.640 --> 01:01:20.140 refreshment,
NOTE Confidence: 0.8869201
01:01:21.079 --> 01:01:23.000 at different levels. There are
NOTE Confidence: 0.8869201
01:01:23.000 --> 01:01:23.980 brain posters,
NOTE Confidence: 0.97957087
01:01:24.519 --> 01:01:25.019 cardiac,
NOTE Confidence: 0.99758804
01:01:25.319 --> 01:01:26.940 cancer, and other areas.
NOTE Confidence: 0.98382914
01:01:27.444 --> 01:01:28.405 Please do go and see
NOTE Confidence: 0.98382914
01:01:28.405 --> 01:01:29.924 some of them. Please ask
NOTE Confidence: 0.98382914
01:01:29.924 --> 01:01:31.125 more questions if you'd like,
NOTE Confidence: 0.98382914
01:01:31.125 --> 01:01:32.325 and I'll give the floor
NOTE Confidence: 0.98382914
01:01:32.325 --> 01:01:33.704 to Dean Brown. Thank and
NOTE Confidence: 0.98382914
01:01:33.924 --> 01:01:35.444 please scan this QR at
NOTE Confidence: 0.98382914
01:01:35.444 --> 01:01:36.105 the end,
NOTE Confidence: 0.9692099
01:01:36.565 --> 01:01:37.684 to tell us how we
NOTE Confidence: 0.9692099

01:01:37.684 --> 01:01:39.145 did, whether bad or good.
NOTE Confidence: 0.9692099

01:01:39.365 --> 01:01:40.244 That would be useful for
NOTE Confidence: 0.9692099

01:01:40.244 --> 01:01:40.744 other
NOTE Confidence: 0.95098263

01:01:41.890 --> 01:01:43.090 dean's workshops and for other
NOTE Confidence: 0.95098263

01:01:43.090 --> 01:01:44.070 meetings we would do.
NOTE Confidence: 0.9990146

01:01:44.690 --> 01:01:45.190 Great.
NOTE Confidence: 0.9559663

01:01:46.369 --> 01:01:47.570 That that's like my whole
NOTE Confidence: 0.9559663

01:01:47.570 --> 01:01:49.270 role in the final remarks,
NOTE Confidence: 0.9559663

01:01:49.330 --> 01:01:50.050 by the way.
NOTE Confidence: 0.9988213

01:01:50.530 --> 01:01:51.810 This has been really this
NOTE Confidence: 0.9988213

01:01:51.810 --> 01:01:52.850 has been really great. I
NOTE Confidence: 0.9988213

01:01:52.850 --> 01:01:54.050 can't wait to hear the
NOTE Confidence: 0.9988213

01:01:54.050 --> 01:01:54.550 conversation
NOTE Confidence: 0.99959093

01:01:55.090 --> 01:01:55.910 after you
NOTE Confidence: 0.99938846

01:01:56.445 --> 01:01:57.485 have some of the drinks
NOTE Confidence: 0.99938846

01:01:57.485 --> 01:01:58.385 that are out there.

NOTE Confidence: 0.9624668

01:01:59.885 --> 01:02:01.805 I I heard we need

NOTE Confidence: 0.9624668

01:02:01.805 --> 01:02:03.405 more, which I took to

NOTE Confidence: 0.9624668

01:02:03.405 --> 01:02:04.225 mean money.

NOTE Confidence: 0.97795963

01:02:04.605 --> 01:02:05.565 And then I got really

NOTE Confidence: 0.97795963

01:02:05.565 --> 01:02:06.845 nervous about the whole, like,

NOTE Confidence: 0.97795963

01:02:06.845 --> 01:02:08.045 stick Nancy in the MRI.

NOTE Confidence: 0.97795963

01:02:08.045 --> 01:02:08.845 I thought we were getting

NOTE Confidence: 0.97795963

01:02:08.845 --> 01:02:11.220 into, like white matter disease

NOTE Confidence: 0.97795963

01:02:11.220 --> 01:02:13.300 or something. So, anyway, really

NOTE Confidence: 0.97795963

01:02:13.300 --> 01:02:15.060 great day and thanks to

NOTE Confidence: 0.97795963

01:02:15.060 --> 01:02:16.260 Ruth and Beth and the

NOTE Confidence: 0.97795963

01:02:16.260 --> 01:02:17.700 team and thanks to all

NOTE Confidence: 0.97795963

01:02:17.700 --> 01:02:18.740 of you who spoke and

NOTE Confidence: 0.97795963

01:02:18.740 --> 01:02:19.480 put it on.