

WEBVTT

NOTE duration: "00:10:59.370"

NOTE Confidence: 0.92844164

00:00:00.160 --> 00:00:01.680 Okay. So, my name is

NOTE Confidence: 0.92844164

00:00:01.680 --> 00:00:02.800 Chi Liu. I'm a professor

NOTE Confidence: 0.92844164

00:00:02.800 --> 00:00:04.240 in radiology and one of

NOTE Confidence: 0.92844164

00:00:04.240 --> 00:00:05.600 the associate, directors of the

NOTE Confidence: 0.92844164

00:00:05.600 --> 00:00:07.759 Biomedical Imaging Institute. I'm gonna

NOTE Confidence: 0.92844164

00:00:07.759 --> 00:00:09.519 introduce Doctor. Mark Normanton as

NOTE Confidence: 0.92844164

00:00:09.519 --> 00:00:11.440 the next speaker. Doctor. Normanton

NOTE Confidence: 0.92844164

00:00:11.440 --> 00:00:13.599 graduated from University of Rhode

NOTE Confidence: 0.92844164

00:00:13.599 --> 00:00:15.040 Island with a bachelor degree

NOTE Confidence: 0.92844164

00:00:15.040 --> 00:00:16.954 in electrical engineering and biomedical

NOTE Confidence: 0.92844164

00:00:16.954 --> 00:00:17.454 engineering

NOTE Confidence: 0.93810546

00:00:17.835 --> 00:00:19.114 and earned his PhD in

NOTE Confidence: 0.93810546

00:00:19.114 --> 00:00:20.975 biomedical engineering from Purdue.

NOTE Confidence: 0.8963932

00:00:21.675 --> 00:00:22.975 Then he completed a postdoctoral

NOTE Confidence: 0.8963932

00:00:23.114 --> 00:00:24.475 training at Yale School of
NOTE Confidence: 0.8963932

00:00:24.475 --> 00:00:25.835 Medicine and also a center
NOTE Confidence: 0.8963932

00:00:25.835 --> 00:00:27.835 here before joining the faculty
NOTE Confidence: 0.8963932

00:00:27.835 --> 00:00:29.115 at the Harvard Medical School
NOTE Confidence: 0.8963932

00:00:29.115 --> 00:00:29.855 and MGH.
NOTE Confidence: 0.93808746

00:00:30.200 --> 00:00:31.480 In twenty twenty four, he
NOTE Confidence: 0.93808746

00:00:31.480 --> 00:00:33.080 returned to Yale as associate
NOTE Confidence: 0.93808746

00:00:33.080 --> 00:00:34.920 professor and also the director
NOTE Confidence: 0.93808746

00:00:34.920 --> 00:00:35.960 of the PET Core. And
NOTE Confidence: 0.93808746

00:00:35.960 --> 00:00:36.920 he's going to give us
NOTE Confidence: 0.93808746

00:00:36.920 --> 00:00:38.680 an overview of PET imaging
NOTE Confidence: 0.93808746

00:00:38.680 --> 00:00:39.979 technologies and capabilities.
NOTE Confidence: 0.95889854

00:00:46.605 --> 00:00:47.665 Thank you, Chi.
NOTE Confidence: 0.89152694

00:00:49.005 --> 00:00:50.445 So in the next,
NOTE Confidence: 0.9497725

00:00:51.565 --> 00:00:52.925 few minutes, I'll give you
NOTE Confidence: 0.9497725

00:00:52.925 --> 00:00:54.465 sort of an overview of,

NOTE Confidence: 0.73940706
00:00:55.165 --> 00:00:55.905 pet imaging,
NOTE Confidence: 0.9856451
00:00:56.850 --> 00:00:58.390 starting with the research workflow,
NOTE Confidence: 0.99172354
00:00:59.490 --> 00:01:00.290 talk a little bit about
NOTE Confidence: 0.99172354
00:01:00.290 --> 00:01:01.410 the resources that we have
NOTE Confidence: 0.99172354
00:01:01.410 --> 00:01:02.290 here at Yale, and then
NOTE Confidence: 0.99172354
00:01:02.290 --> 00:01:03.890 give some examples of the
NOTE Confidence: 0.99172354
00:01:03.890 --> 00:01:05.010 types of studies that we
NOTE Confidence: 0.99172354
00:01:05.010 --> 00:01:05.830 do with them.
NOTE Confidence: 0.9729741
00:01:06.450 --> 00:01:07.910 So just to orient you,
NOTE Confidence: 0.72948575
00:01:08.530 --> 00:01:09.030 the,
NOTE Confidence: 0.96121216
00:01:09.685 --> 00:01:10.965 the the typical workflow that
NOTE Confidence: 0.96121216
00:01:10.965 --> 00:01:12.584 we have, in our studies
NOTE Confidence: 0.98672503
00:01:12.885 --> 00:01:15.045 starts with on-site production of
NOTE Confidence: 0.98672503
00:01:15.045 --> 00:01:15.705 a radioisotope,
NOTE Confidence: 0.9914721
00:01:16.325 --> 00:01:17.545 in our local cyclotron.
NOTE Confidence: 0.9951296

00:01:18.485 --> 00:01:19.225 That radioisotope
NOTE Confidence: 0.9134488
00:01:19.685 --> 00:01:20.185 is,
NOTE Confidence: 0.8366091
00:01:20.645 --> 00:01:21.145 incorporated,
NOTE Confidence: 0.9965862
00:01:21.959 --> 00:01:23.480 into a molecule of interest
NOTE Confidence: 0.9965862
00:01:23.480 --> 00:01:24.380 in our radiochemistry
NOTE Confidence: 0.8260677
00:01:24.760 --> 00:01:25.260 facilities.
NOTE Confidence: 0.987897
00:01:25.720 --> 00:01:26.459 That radiopharmaceutical
NOTE Confidence: 0.8956231
00:01:26.920 --> 00:01:28.520 is injected into a research
NOTE Confidence: 0.8956231
00:01:28.520 --> 00:01:29.720 subject could be,
NOTE Confidence: 0.9863632
00:01:30.040 --> 00:01:30.780 an animal,
NOTE Confidence: 0.8804891
00:01:31.319 --> 00:01:32.380 could be a human,
NOTE Confidence: 0.95657074
00:01:32.920 --> 00:01:34.200 could be a plant in
NOTE Confidence: 0.95657074
00:01:34.200 --> 00:01:34.860 some cases,
NOTE Confidence: 0.99183625
00:01:35.800 --> 00:01:36.940 believe it or not.
NOTE Confidence: 0.8294666
00:01:37.615 --> 00:01:38.755 And then with,
NOTE Confidence: 0.9571564
00:01:39.534 --> 00:01:40.115 our cameras,

NOTE Confidence: 0.9904764
00:01:40.814 --> 00:01:43.235 we acquire data, reconstruct images,
NOTE Confidence: 0.9904764
00:01:43.375 --> 00:01:44.655 and then do analysis to
NOTE Confidence: 0.9904764
00:01:44.655 --> 00:01:45.634 get quantitative,
NOTE Confidence: 0.99753124
00:01:46.655 --> 00:01:47.155 physiological
NOTE Confidence: 0.9985647
00:01:47.534 --> 00:01:48.034 parameters.
NOTE Confidence: 0.63996416
00:01:52.020 --> 00:01:52.520 Okay.
NOTE Confidence: 0.9100587
00:01:53.460 --> 00:01:54.420 So, with that as sort
NOTE Confidence: 0.9100587
00:01:54.420 --> 00:01:55.640 of a general context,
NOTE Confidence: 0.94521195
00:01:56.820 --> 00:01:58.020 I'll give a few highlights
NOTE Confidence: 0.94521195
00:01:58.020 --> 00:01:59.400 of the Yale Petcorp.
NOTE Confidence: 0.94645697
00:02:00.180 --> 00:02:01.780 The facilities were opened,
NOTE Confidence: 0.9604579
00:02:02.100 --> 00:02:03.560 in two thousand and six.
NOTE Confidence: 0.98327476
00:02:04.020 --> 00:02:05.479 We have an on-site cyclotron
NOTE Confidence: 0.9627994
00:02:05.940 --> 00:02:06.440 and
NOTE Confidence: 0.7987723
00:02:06.935 --> 00:02:07.835 a good manufacturing
NOTE Confidence: 0.7901623

00:02:08.294 --> 00:02:08.775 practice,
NOTE Confidence: 0.7781526
00:02:09.175 --> 00:02:09.675 certified,
NOTE Confidence: 0.9598727
00:02:10.294 --> 00:02:10.794 radiochemistry
NOTE Confidence: 0.9780997
00:02:11.095 --> 00:02:11.595 facility.
NOTE Confidence: 0.8974004
00:02:12.455 --> 00:02:13.815 To date, sixty eight radio
NOTE Confidence: 0.8974004
00:02:13.815 --> 00:02:14.315 tracers
NOTE Confidence: 0.97359544
00:02:14.615 --> 00:02:16.294 have been administered to human
NOTE Confidence: 0.97359544
00:02:16.294 --> 00:02:16.794 subjects,
NOTE Confidence: 0.9686598
00:02:17.175 --> 00:02:18.455 fifty eight of those were
NOTE Confidence: 0.9686598
00:02:18.455 --> 00:02:19.355 made in house,
NOTE Confidence: 0.9740139
00:02:20.290 --> 00:02:21.750 and many more in animals,
NOTE Confidence: 0.957531
00:02:22.930 --> 00:02:24.389 have been tested so far.
NOTE Confidence: 0.95565355
00:02:25.569 --> 00:02:26.770 As mentioned, we do,
NOTE Confidence: 0.95335007
00:02:27.169 --> 00:02:28.050 human and,
NOTE Confidence: 0.8914808
00:02:28.370 --> 00:02:29.510 preclinical imaging,
NOTE Confidence: 0.9375164
00:02:30.610 --> 00:02:32.770 about, over twelve thousand scans

NOTE Confidence: 0.9375164
00:02:32.770 --> 00:02:34.230 to date in in human,
NOTE Confidence: 0.99788445
00:02:35.175 --> 00:02:36.615 and the eight thousand is
NOTE Confidence: 0.99788445
00:02:36.615 --> 00:02:37.115 actually
NOTE Confidence: 0.92997825
00:02:37.415 --> 00:02:39.195 an estimate on non human.
NOTE Confidence: 0.92997825
00:02:39.255 --> 00:02:40.535 I think as of this
NOTE Confidence: 0.92997825
00:02:40.535 --> 00:02:41.675 morning we are
NOTE Confidence: 0.91382796
00:02:42.055 --> 00:02:43.335 up to seven thousand nine
NOTE Confidence: 0.91382796
00:02:43.335 --> 00:02:44.615 hundred and ninety nine to
NOTE Confidence: 0.91382796
00:02:44.615 --> 00:02:45.275 be exact.
NOTE Confidence: 0.9559848
00:02:47.014 --> 00:02:48.855 Many of these studies also
NOTE Confidence: 0.9559848
00:02:48.855 --> 00:02:49.355 involve,
NOTE Confidence: 0.9086347
00:02:50.290 --> 00:02:52.210 Arterial Blood Sampling. You may
NOTE Confidence: 0.9086347
00:02:52.210 --> 00:02:53.250 ask what is that all
NOTE Confidence: 0.9086347
00:02:53.250 --> 00:02:53.750 about?
NOTE Confidence: 0.94742024
00:02:54.050 --> 00:02:55.010 And the idea is that
NOTE Confidence: 0.94742024

00:02:55.010 --> 00:02:56.370 in order to quantify what
NOTE Confidence: 0.94742024

00:02:56.370 --> 00:02:57.330 is going on in the
NOTE Confidence: 0.94742024

00:02:57.330 --> 00:02:58.690 tissue, we have to understand
NOTE Confidence: 0.94742024

00:02:58.690 --> 00:03:00.290 what got delivered to the
NOTE Confidence: 0.94742024

00:03:00.290 --> 00:03:00.790 tissue.
NOTE Confidence: 0.9762775

00:03:01.250 --> 00:03:02.710 Subject of a different talk.
NOTE Confidence: 0.93047154

00:03:04.495 --> 00:03:06.275 And we have everything needed,
NOTE Confidence: 0.98387176

00:03:06.975 --> 00:03:08.035 including veterinary,
NOTE Confidence: 0.9801574

00:03:08.575 --> 00:03:09.555 clinical support,
NOTE Confidence: 0.9708982

00:03:10.335 --> 00:03:11.535 to to handle all of
NOTE Confidence: 0.9708982

00:03:11.535 --> 00:03:13.395 this and post processing,
NOTE Confidence: 0.9440305

00:03:15.215 --> 00:03:16.095 for for all of the
NOTE Confidence: 0.9440305

00:03:16.095 --> 00:03:17.235 data that we acquire.
NOTE Confidence: 0.9392832

00:03:18.349 --> 00:03:19.489 Our physical layout,
NOTE Confidence: 0.96113986

00:03:20.989 --> 00:03:22.049 is essentially,
NOTE Confidence: 0.8944155

00:03:22.590 --> 00:03:23.250 three different,

NOTE Confidence: 0.996212
00:03:23.629 --> 00:03:25.889 vertical layers in adjacent buildings,
NOTE Confidence: 0.9402434
00:03:26.510 --> 00:03:27.810 primarily at the,
NOTE Confidence: 0.8981017
00:03:28.349 --> 00:03:29.950 intersection of Howard Ave and
NOTE Confidence: 0.8981017
00:03:29.950 --> 00:03:30.769 York Street.
NOTE Confidence: 0.921201
00:03:32.145 --> 00:03:32.544 In the,
NOTE Confidence: 0.8642851
00:03:33.305 --> 00:03:35.025 the sort of the, but
NOTE Confidence: 0.8642851
00:03:35.025 --> 00:03:36.145 the hub of this is
NOTE Confidence: 0.8642851
00:03:36.145 --> 00:03:37.685 the Cyclotron and Radiochemistry
NOTE Confidence: 0.7793479
00:03:38.065 --> 00:03:38.565 Facility.
NOTE Confidence: 0.9805744
00:03:39.905 --> 00:03:41.265 We'll see that in a
NOTE Confidence: 0.9805744
00:03:41.265 --> 00:03:42.545 little bit more detail in
NOTE Confidence: 0.9805744
00:03:42.545 --> 00:03:43.125 a moment.
NOTE Confidence: 0.93814784
00:03:43.819 --> 00:03:44.939 Adjacent to that, we have
NOTE Confidence: 0.93814784
00:03:44.939 --> 00:03:46.319 animal imaging facilities,
NOTE Confidence: 0.92617834
00:03:47.180 --> 00:03:49.040 and proximal animal housing,
NOTE Confidence: 0.9955545

00:03:50.379 --> 00:03:50.879 and
NOTE Confidence: 0.80869436
00:03:51.579 --> 00:03:52.959 in vertical layers,
NOTE Confidence: 0.9278357
00:03:54.220 --> 00:03:55.845 right next to that, We
NOTE Confidence: 0.9278357
00:03:55.845 --> 00:03:56.985 have human imaging,
NOTE Confidence: 0.99881446
00:03:57.765 --> 00:03:58.585 both above
NOTE Confidence: 0.82064676
00:03:58.965 --> 00:03:59.865 and below.
NOTE Confidence: 0.93292457
00:04:02.245 --> 00:04:04.245 Okay, so returning to this
NOTE Confidence: 0.93292457
00:04:04.245 --> 00:04:05.785 kind of orienting slide,
NOTE Confidence: 0.96598077
00:04:06.485 --> 00:04:07.865 let's take a
NOTE Confidence: 0.89448965
00:04:09.750 --> 00:04:11.370 sorry, this is not advancing.
NOTE Confidence: 0.96525824
00:04:12.070 --> 00:04:13.590 There we are. So let's
NOTE Confidence: 0.96525824
00:04:13.590 --> 00:04:14.790 take a closer look at
NOTE Confidence: 0.96525824
00:04:14.790 --> 00:04:15.290 radiochemistry,
NOTE Confidence: 0.98511106
00:04:16.070 --> 00:04:17.290 and what we have available.
NOTE Confidence: 0.9290374
00:04:17.990 --> 00:04:19.190 Some pictures just to prove
NOTE Confidence: 0.9290374
00:04:19.190 --> 00:04:20.650 that this stuff is real,

NOTE Confidence: 0.83355063

00:04:21.350 --> 00:04:22.810 this is, our

NOTE Confidence: 0.88864505

00:04:23.270 --> 00:04:24.330 on-site cyclotron,

NOTE Confidence: 0.98016244

00:04:25.665 --> 00:04:26.964 where we produce radioisotopes.

NOTE Confidence: 0.9701893

00:04:28.145 --> 00:04:29.425 We have a number of

NOTE Confidence: 0.9701893

00:04:29.425 --> 00:04:31.445 different automated and manual synthesis,

NOTE Confidence: 0.8816685

00:04:32.305 --> 00:04:32.785 units,

NOTE Confidence: 0.8837584

00:04:33.105 --> 00:04:33.845 for making,

NOTE Confidence: 0.92945915

00:04:34.225 --> 00:04:35.525 different radio traces.

NOTE Confidence: 0.989634

00:04:36.385 --> 00:04:37.505 Those are then sent off

NOTE Confidence: 0.989634

00:04:37.505 --> 00:04:39.125 to the quality control lab

NOTE Confidence: 0.989634

00:04:39.210 --> 00:04:40.410 where we make sure that

NOTE Confidence: 0.989634

00:04:40.410 --> 00:04:41.229 what we made,

NOTE Confidence: 0.97463346

00:04:41.610 --> 00:04:42.490 is what we thought we

NOTE Confidence: 0.97463346

00:04:42.490 --> 00:04:44.190 made, and is,

NOTE Confidence: 0.96052

00:04:45.210 --> 00:04:46.650 pure and ready to to

NOTE Confidence: 0.96052

00:04:46.650 --> 00:04:48.089 send out for animal or
NOTE Confidence: 0.96052

00:04:48.089 --> 00:04:48.990 human use.
NOTE Confidence: 0.9752209

00:04:49.610 --> 00:04:50.889 And this is all supported
NOTE Confidence: 0.9752209

00:04:50.889 --> 00:04:51.389 by,
NOTE Confidence: 0.97571564

00:04:51.770 --> 00:04:53.150 cold chemistry facilities
NOTE Confidence: 0.9914425

00:04:53.525 --> 00:04:54.964 that make all the precursor
NOTE Confidence: 0.9914425

00:04:54.964 --> 00:04:56.105 and standard materials
NOTE Confidence: 0.9420075

00:04:56.565 --> 00:04:57.685 needed to do the radio
NOTE Confidence: 0.9420075

00:04:57.685 --> 00:04:58.185 labeling.
NOTE Confidence: 0.928773

00:04:59.685 --> 00:05:01.045 I will obviously not read
NOTE Confidence: 0.928773

00:05:01.045 --> 00:05:01.925 the slide, but just a
NOTE Confidence: 0.928773

00:05:01.925 --> 00:05:02.904 highlight of,
NOTE Confidence: 0.9823092

00:05:03.605 --> 00:05:05.045 the dozens of different radio
NOTE Confidence: 0.9823092

00:05:05.045 --> 00:05:06.485 tracers that have been used
NOTE Confidence: 0.9823092

00:05:06.485 --> 00:05:08.245 in, human studies to date
NOTE Confidence: 0.9823092

00:05:08.245 --> 00:05:09.145 here at Yale.

NOTE Confidence: 0.98991865
00:05:09.919 --> 00:05:11.439 A vast majority of these
NOTE Confidence: 0.98991865
00:05:11.439 --> 00:05:12.500 are targeting different,
NOTE Confidence: 0.92889184
00:05:13.120 --> 00:05:13.620 neuroreceptors,
NOTE Confidence: 0.91940016
00:05:14.719 --> 00:05:15.219 metabotropic,
NOTE Confidence: 0.96385
00:05:15.599 --> 00:05:16.099 ionotropic,
NOTE Confidence: 0.8871689
00:05:16.560 --> 00:05:17.060 transporters,
NOTE Confidence: 0.8094096
00:05:18.639 --> 00:05:20.020 as George mentioned,
NOTE Confidence: 0.9860355
00:05:20.719 --> 00:05:22.080 pioneering work has been done
NOTE Confidence: 0.9860355
00:05:22.080 --> 00:05:24.339 here for imaging, synaptic density.
NOTE Confidence: 0.89887345
00:05:26.265 --> 00:05:26.825 We also,
NOTE Confidence: 0.98691165
00:05:27.305 --> 00:05:28.345 do a lot of imaging
NOTE Confidence: 0.98691165
00:05:28.345 --> 00:05:30.365 in the context of, neurodegeneration,
NOTE Confidence: 0.9053345
00:05:31.705 --> 00:05:33.085 for misfolded proteins,
NOTE Confidence: 0.96117425
00:05:33.865 --> 00:05:35.385 and a growing number of
NOTE Confidence: 0.96117425
00:05:35.385 --> 00:05:37.404 cancer biomarkers as well.
NOTE Confidence: 0.96612483

00:05:39.300 --> 00:05:40.279 This slide highlights,
NOTE Confidence: 0.9542891

00:05:40.740 --> 00:05:41.960 some of the more recent,
NOTE Confidence: 0.9826435

00:05:42.580 --> 00:05:44.120 compounds that have come online.
NOTE Confidence: 0.9091796

00:05:44.820 --> 00:05:46.339 The top row, these are
NOTE Confidence: 0.9091796

00:05:46.339 --> 00:05:48.040 five tracers that have been
NOTE Confidence: 0.9091796

00:05:48.339 --> 00:05:48.839 recently
NOTE Confidence: 0.935102

00:05:49.380 --> 00:05:51.060 authorized by the FDA to
NOTE Confidence: 0.935102

00:05:51.060 --> 00:05:52.520 move on to human subjects.
NOTE Confidence: 0.9071248

00:05:53.135 --> 00:05:54.415 This slide is actually already
NOTE Confidence: 0.9071248

00:05:54.415 --> 00:05:55.154 out of date.
NOTE Confidence: 0.96297765

00:05:56.015 --> 00:05:57.214 Two of the ones that
NOTE Confidence: 0.96297765

00:05:57.214 --> 00:05:58.435 are listed as pending
NOTE Confidence: 0.93540627

00:05:58.815 --> 00:06:00.735 have since graduated to the
NOTE Confidence: 0.93540627

00:06:00.735 --> 00:06:01.395 top row
NOTE Confidence: 0.9413636

00:06:02.095 --> 00:06:04.015 and we have several others
NOTE Confidence: 0.9413636

00:06:04.015 --> 00:06:05.075 in the bottom row

NOTE Confidence: 0.9364864
00:06:05.455 --> 00:06:06.195 that are
NOTE Confidence: 0.9952241
00:06:07.100 --> 00:06:08.720 at various stages of development,
NOTE Confidence: 0.99925876
00:06:09.660 --> 00:06:10.960 awaiting human use.
NOTE Confidence: 0.9696508
00:06:13.660 --> 00:06:15.360 Because that list is constantly
NOTE Confidence: 0.9696508
00:06:15.500 --> 00:06:17.500 in flux, and growing, I'd
NOTE Confidence: 0.9696508
00:06:17.500 --> 00:06:18.620 encourage you to visit our
NOTE Confidence: 0.9696508
00:06:18.620 --> 00:06:21.025 website where we, maintain what
NOTE Confidence: 0.9696508
00:06:21.025 --> 00:06:22.145 we try to keep a,
NOTE Confidence: 0.9696508
00:06:22.625 --> 00:06:23.825 an up to date list
NOTE Confidence: 0.9696508
00:06:23.825 --> 00:06:25.605 of, of what's been approved.
NOTE Confidence: 0.99453586
00:06:27.585 --> 00:06:28.085 Okay.
NOTE Confidence: 0.99260986
00:06:28.865 --> 00:06:30.545 Next, let's talk about the
NOTE Confidence: 0.99260986
00:06:30.545 --> 00:06:32.005 imaging side of things.
NOTE Confidence: 0.8921964
00:06:33.479 --> 00:06:35.339 So, our preclinical imaging,
NOTE Confidence: 0.93855953
00:06:35.800 --> 00:06:37.400 consists of four different,
NOTE Confidence: 0.9346528

00:06:39.000 --> 00:06:39.979 imaging systems.
NOTE Confidence: 0.8659316

00:06:40.279 --> 00:06:41.339 We have two,
NOTE Confidence: 0.83790237

00:06:43.639 --> 00:06:44.539 lost my cursor,
NOTE Confidence: 0.88761944

00:06:44.919 --> 00:06:46.520 two on the left, older
NOTE Confidence: 0.88761944

00:06:46.520 --> 00:06:47.020 generation,
NOTE Confidence: 0.8632779

00:06:48.055 --> 00:06:49.195 dedicated pet,
NOTE Confidence: 0.97343254

00:06:49.654 --> 00:06:51.675 scanners for animal subjects.
NOTE Confidence: 0.9820237

00:06:52.375 --> 00:06:53.195 In the middle,
NOTE Confidence: 0.9385891

00:06:54.214 --> 00:06:55.515 this is a high resolution,
NOTE Confidence: 0.9385891

00:06:55.654 --> 00:06:56.315 high sensitivity,
NOTE Confidence: 0.99946433

00:06:57.335 --> 00:06:59.115 animal system that was recently
NOTE Confidence: 0.99946433

00:06:59.175 --> 00:06:59.675 installed
NOTE Confidence: 0.9052197

00:07:00.260 --> 00:07:02.040 and is currently undergoing,
NOTE Confidence: 0.7558446

00:07:02.980 --> 00:07:03.800 site qualifications,
NOTE Confidence: 0.94343156

00:07:04.740 --> 00:07:06.020 and on the right a
NOTE Confidence: 0.94343156

00:07:06.020 --> 00:07:07.160 companion system,

NOTE Confidence: 0.9371662
00:07:07.860 --> 00:07:09.300 that actually is,
NOTE Confidence: 0.9205474
00:07:10.580 --> 00:07:12.020 for image for doing SPECT
NOTE Confidence: 0.9205474
00:07:12.020 --> 00:07:12.520 imaging,
NOTE Confidence: 0.91704375
00:07:12.980 --> 00:07:14.200 within the Pet Center.
NOTE Confidence: 0.9757779
00:07:17.325 --> 00:07:18.605 On the human imaging side,
NOTE Confidence: 0.9757779
00:07:18.764 --> 00:07:19.425 we have
NOTE Confidence: 0.816882
00:07:19.725 --> 00:07:21.185 four scanners as well.
NOTE Confidence: 0.87191284
00:07:21.645 --> 00:07:23.264 The top two these are
NOTE Confidence: 0.87191284
00:07:23.325 --> 00:07:24.544 whole body systems,
NOTE Confidence: 0.99858207
00:07:25.085 --> 00:07:25.985 so you can
NOTE Confidence: 0.94436395
00:07:26.365 --> 00:07:27.965 image anything from from head
NOTE Confidence: 0.94436395
00:07:27.965 --> 00:07:28.625 to toe.
NOTE Confidence: 0.96016496
00:07:29.280 --> 00:07:31.300 The bottom two are dedicated
NOTE Confidence: 0.96016496
00:07:31.360 --> 00:07:32.259 brain systems.
NOTE Confidence: 0.900659
00:07:32.800 --> 00:07:34.400 Bottom left, the Siemens, or
NOTE Confidence: 0.900659

00:07:34.400 --> 00:07:35.539 ECAT HRRT,
NOTE Confidence: 0.9536049
00:07:36.240 --> 00:07:38.020 is an older generation system.
NOTE Confidence: 0.96595067
00:07:38.479 --> 00:07:39.440 It was the state of
NOTE Confidence: 0.96595067
00:07:39.440 --> 00:07:40.020 the art,
NOTE Confidence: 0.9632458
00:07:42.159 --> 00:07:44.005 brain PET scanner up until
NOTE Confidence: 0.9632458
00:07:44.005 --> 00:07:45.145 relatively recently,
NOTE Confidence: 0.9640097
00:07:45.764 --> 00:07:47.044 and that was supplanted by
NOTE Confidence: 0.9640097
00:07:47.044 --> 00:07:48.185 the NeuroExplorer
NOTE Confidence: 0.93628263
00:07:48.805 --> 00:07:50.104 shown on the bottom right.
NOTE Confidence: 0.95024014
00:07:50.405 --> 00:07:52.164 And with that, I'll segue
NOTE Confidence: 0.95024014
00:07:52.164 --> 00:07:53.125 a little bit into some
NOTE Confidence: 0.95024014
00:07:53.125 --> 00:07:53.944 of the applications.
NOTE Confidence: 0.9901551
00:07:54.724 --> 00:07:55.305 The NeuroExplorer
NOTE Confidence: 0.847273
00:07:55.764 --> 00:07:56.905 was constructed
NOTE Confidence: 0.99936956
00:07:57.740 --> 00:07:58.720 in a consortium
NOTE Confidence: 0.9404473
00:07:59.180 --> 00:08:00.220 led here at Yale by

NOTE Confidence: 0.9404473
00:08:00.220 --> 00:08:01.040 Rich Carson,
NOTE Confidence: 0.97442484
00:08:01.660 --> 00:08:03.260 and together with UC Davis
NOTE Confidence: 0.97442484
00:08:03.260 --> 00:08:04.320 and United Imaging,
NOTE Confidence: 0.9636138
00:08:05.180 --> 00:08:07.360 won many awards, has outstanding
NOTE Confidence: 0.9636138
00:08:07.660 --> 00:08:08.160 images,
NOTE Confidence: 0.9644809
00:08:08.700 --> 00:08:09.900 as you can see here,
NOTE Confidence: 0.9644809
00:08:09.900 --> 00:08:11.680 comparing in the top right
NOTE Confidence: 0.89402276
00:08:12.315 --> 00:08:14.014 NeuroExplorer brain images,
NOTE Confidence: 0.9593644
00:08:14.634 --> 00:08:16.555 to the previous state of
NOTE Confidence: 0.9593644
00:08:16.555 --> 00:08:17.694 the art HRRT.
NOTE Confidence: 0.959773
00:08:19.995 --> 00:08:21.675 The NeuroExplorer is good not
NOTE Confidence: 0.959773
00:08:21.675 --> 00:08:22.495 just for,
NOTE Confidence: 0.94701844
00:08:23.115 --> 00:08:24.794 brain imaging. This is, some
NOTE Confidence: 0.94701844
00:08:24.794 --> 00:08:26.175 head and neck cancer imaging,
NOTE Confidence: 0.8196206
00:08:27.150 --> 00:08:28.830 led by Takhto Yanaga and
NOTE Confidence: 0.8196206

00:08:28.830 --> 00:08:29.330 colleagues,
NOTE Confidence: 0.8930967

00:08:29.949 --> 00:08:30.910 and we can see in
NOTE Confidence: 0.8930967

00:08:30.910 --> 00:08:32.110 comparison to the,
NOTE Confidence: 0.97051215

00:08:32.750 --> 00:08:34.350 state of the art, clinical
NOTE Confidence: 0.97051215

00:08:34.350 --> 00:08:36.029 scanner, the vision, we're able
NOTE Confidence: 0.97051215

00:08:36.029 --> 00:08:38.110 to see nodules that, were
NOTE Confidence: 0.97051215

00:08:38.110 --> 00:08:39.250 previously missed.
NOTE Confidence: 0.87243694

00:08:41.394 --> 00:08:42.675 Couple of examples from Dave
NOTE Confidence: 0.87243694

00:08:42.675 --> 00:08:43.815 Mutosky's lab,
NOTE Confidence: 0.9905869

00:08:44.355 --> 00:08:46.054 looking at Parkinson's disease,
NOTE Confidence: 0.9883774

00:08:46.755 --> 00:08:49.014 and looking at, dopamine transporters
NOTE Confidence: 0.98236495

00:08:49.315 --> 00:08:50.695 and synaptic density,
NOTE Confidence: 0.9036616

00:08:51.635 --> 00:08:52.434 in the in the course
NOTE Confidence: 0.9036616

00:08:52.434 --> 00:08:53.175 of pathology.
NOTE Confidence: 0.9217724

00:08:54.920 --> 00:08:55.720 We do a lot of
NOTE Confidence: 0.9217724

00:08:55.720 --> 00:08:56.700 methods development.

NOTE Confidence: 0.74983287
00:08:57.240 --> 00:08:57.899 This is
NOTE Confidence: 0.86342597
00:08:59.399 --> 00:09:01.559 an acquisition protocol that's being
NOTE Confidence: 0.86342597
00:09:01.559 --> 00:09:02.059 tested,
NOTE Confidence: 0.98170656
00:09:02.760 --> 00:09:04.040 where instead of having a
NOTE Confidence: 0.98170656
00:09:04.040 --> 00:09:05.640 subject undergo a long two
NOTE Confidence: 0.98170656
00:09:05.640 --> 00:09:06.540 hour scan,
NOTE Confidence: 0.99453646
00:09:07.000 --> 00:09:07.899 we would instead
NOTE Confidence: 0.9808099
00:09:08.934 --> 00:09:10.214 acquire a few minutes of
NOTE Confidence: 0.9808099
00:09:10.214 --> 00:09:11.894 data, allow the subject to
NOTE Confidence: 0.9808099
00:09:11.894 --> 00:09:12.694 come off and have a
NOTE Confidence: 0.9808099
00:09:12.694 --> 00:09:13.815 break, and then come back
NOTE Confidence: 0.9808099
00:09:13.815 --> 00:09:14.795 onto the scanner,
NOTE Confidence: 0.92115575
00:09:15.495 --> 00:09:17.274 for a late acquisition period.
NOTE Confidence: 0.92115575
00:09:17.574 --> 00:09:19.274 And we're getting results that,
NOTE Confidence: 0.95990056
00:09:19.735 --> 00:09:21.175 are in strong agreement with
NOTE Confidence: 0.95990056

00:09:21.175 --> 00:09:22.954 doing the complete acquisition,
NOTE Confidence: 0.97951305

00:09:23.670 --> 00:09:24.950 and is more practical for
NOTE Confidence: 0.97951305

00:09:24.950 --> 00:09:26.649 both, subject and staff.
NOTE Confidence: 0.9559725

00:09:27.990 --> 00:09:28.950 Not everything that we do
NOTE Confidence: 0.9559725

00:09:28.950 --> 00:09:30.790 is in human subjects. Shown
NOTE Confidence: 0.9559725

00:09:30.790 --> 00:09:31.850 here is an example,
NOTE Confidence: 0.92296726

00:09:32.390 --> 00:09:33.450 from Ruth Asch,
NOTE Confidence: 0.82074976

00:09:34.309 --> 00:09:36.089 and Irina Sturlus's group,
NOTE Confidence: 0.83662194

00:09:36.745 --> 00:09:37.245 doing,
NOTE Confidence: 0.9189915

00:09:37.625 --> 00:09:39.865 synaptic density imaging in a
NOTE Confidence: 0.9189915

00:09:39.865 --> 00:09:40.764 rodent model,
NOTE Confidence: 0.9663825

00:09:41.225 --> 00:09:42.925 of chronic unpredictable stress,
NOTE Confidence: 0.9502504

00:09:43.385 --> 00:09:44.125 and correlating,
NOTE Confidence: 0.9972957

00:09:44.584 --> 00:09:46.365 those measures of synaptic density
NOTE Confidence: 0.9972957

00:09:46.505 --> 00:09:48.204 to different behavioral measures.
NOTE Confidence: 0.9284662

00:09:49.420 --> 00:09:50.860 Not everything that we do

NOTE Confidence: 0.9284662

00:09:50.860 --> 00:09:52.559 is, even in the brain.

NOTE Confidence: 0.83070844

00:09:53.660 --> 00:09:55.820 Jason Beany's group is focusing

NOTE Confidence: 0.83070844

00:09:55.820 --> 00:09:57.279 on endocrine function,

NOTE Confidence: 0.96758044

00:09:57.820 --> 00:09:59.019 and a large portion of

NOTE Confidence: 0.96758044

00:09:59.019 --> 00:10:01.019 that, imaging the pancreas and

NOTE Confidence: 0.96758044

00:10:01.019 --> 00:10:01.519 diabetes.

NOTE Confidence: 0.98154

00:10:03.725 --> 00:10:04.705 Here's an example

NOTE Confidence: 0.9277024

00:10:05.645 --> 00:10:07.165 that is particularly well suited

NOTE Confidence: 0.9277024

00:10:07.165 --> 00:10:08.445 to PET MR, which is

NOTE Confidence: 0.9277024

00:10:08.445 --> 00:10:09.645 a technology that will be

NOTE Confidence: 0.9277024

00:10:09.645 --> 00:10:10.465 coming soon,

NOTE Confidence: 0.96179056

00:10:11.645 --> 00:10:13.885 and this combines PET and

NOTE Confidence: 0.96179056

00:10:13.885 --> 00:10:14.385 MR

NOTE Confidence: 0.9179015

00:10:15.085 --> 00:10:16.625 in a synergistic fashion

NOTE Confidence: 0.9883023

00:10:17.030 --> 00:10:19.610 to measure mitochondrial membrane potential

NOTE Confidence: 0.9883023

00:10:19.670 --> 00:10:21.050 in absolute units.
NOTE Confidence: 0.9133498

00:10:22.710 --> 00:10:23.590 And not everything that we
NOTE Confidence: 0.9133498

00:10:23.590 --> 00:10:25.590 do is even PET, in
NOTE Confidence: 0.9133498

00:10:25.590 --> 00:10:26.490 the Pet Center.
NOTE Confidence: 0.94967127

00:10:27.270 --> 00:10:28.550 This is an example of
NOTE Confidence: 0.94967127

00:10:28.550 --> 00:10:29.450 some work that
NOTE Confidence: 0.96195614

00:10:30.785 --> 00:10:32.144 we've done previously and are
NOTE Confidence: 0.96195614

00:10:32.144 --> 00:10:33.285 looking to resume
NOTE Confidence: 0.7729187

00:10:33.985 --> 00:10:34.485 developing
NOTE Confidence: 0.85983413

00:10:35.265 --> 00:10:36.804 lutetium labelled nanoparticles
NOTE Confidence: 0.9993849

00:10:37.345 --> 00:10:39.125 that are selectively taken up
NOTE Confidence: 0.94113183

00:10:39.505 --> 00:10:41.204 in the stroma of
NOTE Confidence: 0.7308177

00:10:41.745 --> 00:10:42.245 tumours
NOTE Confidence: 0.94427586

00:10:43.505 --> 00:10:45.125 with good therapeutic effect.
NOTE Confidence: 0.93799317

00:10:46.649 --> 00:10:47.850 So that's a a highlight
NOTE Confidence: 0.93799317

00:10:47.850 --> 00:10:48.830 of some of the,

NOTE Confidence: 0.95651823

00:10:49.610 --> 00:10:51.050 different technologies that we have

NOTE Confidence: 0.95651823

00:10:51.050 --> 00:10:52.429 available in the pet center

NOTE Confidence: 0.95651823

00:10:52.649 --> 00:10:53.610 and a few of the

NOTE Confidence: 0.95651823

00:10:53.610 --> 00:10:54.110 applications,

NOTE Confidence: 0.97143495

00:10:55.610 --> 00:10:57.130 that are exemplary of the

NOTE Confidence: 0.97143495

00:10:57.130 --> 00:10:58.010 type of work that we

NOTE Confidence: 0.97143495

00:10:58.010 --> 00:10:59.370 do. Thank you.