WEBVTT

NOTE duration: ”00:03:18.912”

NOTE Confidence: 0.98490727

00:00:04.319 --> 00:00:06.500 Alzheimer's disease is a pathologic

NOTE Confidence: 0.98490727

00:00:06.640 --> 00:00:08.400 process where these proteins amyloid

NOTE Confidence: 0.98490727

00:00:08.400 --> 00:00:09.679 and tau accumulate in the

NOTE Confidence: 0.98490727

00:00:09.679 --> 00:00:10.179 brain.

NOTE Confidence: 0.99274826

00:00:11.119 --> 00:00:12.559 Both of these are naturally

NOTE Confidence: 0.99274826

00:00:12.559 --> 00:00:14.000 occurring proteins that exist in

NOTE Confidence: 0.99274826

00:00:14.000 --> 00:00:15.620 healthy forms in the body.

NOTE Confidence: 0.966513

00:00:15.995 --> 00:00:17.275 They gunk up, they become

NOTE Confidence: 0.966513

00:00:17.275 --> 00:00:19.275 abnormally folded, and and accumulate

NOTE Confidence: 0.966513

00:00:19.275 --> 00:00:20.235 in ways that they wouldn't

NOTE Confidence: 0.966513

00:00:20.235 --> 00:00:21.295 accumulate in health.

NOTE Confidence: 0.9220012

00:00:21.675 --> 00:00:23.055 And typically, it progresses

NOTE Confidence: 0.98149925

00:00:23.515 --> 00:00:25.775 along memory circuitry, and people

NOTE Confidence: 0.98149925

00:00:25.915 --> 00:00:27.515 start to experience difficulty with

NOTE Confidence: 0.98149925

00:00:27.515 --> 00:00:28.410 memory. But there are other

NOTE Confidence: 0.98149925

00:00:28.410 --> 00:00:30.090 forms of Alzheimer's that primarily

NOTE Confidence: 0.98149925

00:00:30.090 --> 00:00:31.370 involve other circuits that might

NOTE Confidence: 0.98149925

00:00:31.370 --> 00:00:32.490 have to do with language

NOTE Confidence: 0.98149925

00:00:32.490 --> 00:00:33.610 or with how we navigate

NOTE Confidence: 0.98149925

00:00:33.610 --> 00:00:34.110 space.

NOTE Confidence: 0.9704098

00:00:40.025 --> 00:00:40.985 Our lab is sort of

NOTE Confidence: 0.9704098

00:00:40.985 --> 00:00:42.665 interested in two axes around

NOTE Confidence: 0.9704098

00:00:42.665 --> 00:00:43.784 that typical patient that we

NOTE Confidence: 0.9704098

00:00:43.784 --> 00:00:44.745 picture, and one is the

NOTE Confidence: 0.9704098

00:00:44.745 --> 00:00:46.265 axis of preclinical disease or

NOTE Confidence: 0.9704098

00:00:46.265 --> 00:00:48.265 vulnerability. Before that patient develops

NOTE Confidence: 0.9704098

00:00:48.265 --> 00:00:49.004 those symptoms,

NOTE Confidence: 0.9727202

00:00:49.385 --> 00:00:50.585 she may have some pathology

NOTE Confidence: 0.9727202

00:00:50.585 --> 00:00:51.545 in her brain or often

NOTE Confidence: 0.9727202

00:00:51.545 --> 00:00:51.960 does.

NOTE Confidence: 0.9930432

00:00:52.360 --> 00:00:53.739 Pathology usually precedes

NOTE Confidence: 0.98026913

00:00:54.120 --> 00:00:55.559 evidence of clinical illness by

NOTE Confidence: 0.98026913

00:00:55.559 --> 00:00:56.760 ten or twenty years, and

NOTE Confidence: 0.98026913

00:00:56.760 --> 00:00:58.199 specific groups are more vulnerable

NOTE Confidence: 0.98026913

00:00:58.199 --> 00:00:59.559 to disease. So people with

NOTE Confidence: 0.98026913

00:00:59.559 --> 00:01:01.720 specific genotypes, women. We wanna

NOTE Confidence: 0.98026913

00:01:01.720 --> 00:01:03.640 understand those vulnerable states and

NOTE Confidence: 0.98026913

00:01:03.640 --> 00:01:04.600 some of the early changes

NOTE Confidence: 0.98026913

00:01:04.600 --> 00:01:05.400 that are happening in the

NOTE Confidence: 0.98026913

00:01:05.400 --> 00:01:06.955 brain during those times. We're

NOTE Confidence: 0.98026913

00:01:06.955 --> 00:01:08.255 also interested in heterogeneity.

NOTE Confidence: 0.98621655

00:01:08.555 --> 00:01:09.995 Not everyone with Alzheimer's has

NOTE Confidence: 0.98621655

00:01:09.995 --> 00:01:11.275 their biggest problems with memory.

NOTE Confidence: 0.98621655

00:01:11.275 --> 00:01:12.635 What happens when the disease

NOTE Confidence: 0.98621655

00:01:12.635 --> 00:01:14.235 infects other circuits and how

NOTE Confidence: 0.98621655

00:01:14.235 --> 00:01:15.275 can that give us more

NOTE Confidence: 0.98621655

00:01:15.275 --> 00:01:16.875 generalizable ideas about how the

NOTE Confidence: 0.98621655

00:01:16.875 --> 00:01:17.694 disease works?

NOTE Confidence: 0.9661472

00:01:22.610 --> 00:01:23.569 Tau has a number of

NOTE Confidence: 0.9661472

00:01:23.569 --> 00:01:25.090 effects that are being explored

NOTE Confidence: 0.9661472

00:01:25.090 --> 00:01:26.290 by scientists on a whole

NOTE Confidence: 0.9661472

00:01:26.290 --> 00:01:27.490 lot of different levels, and

NOTE Confidence: 0.9661472

00:01:27.490 --> 00:01:28.770 we typically look at that

NOTE Confidence: 0.9661472

00:01:28.770 --> 00:01:29.590 using neuroimaging.

NOTE Confidence: 0.97574794

00:01:30.530 --> 00:01:31.509 Functional MRI

NOTE Confidence: 0.9399291

00:01:31.890 --> 00:01:33.569 coupled with advanced PET scans

NOTE Confidence: 0.9399291

00:01:33.569 --> 00:01:34.450 like Tau PET, where we

NOTE Confidence: 0.9399291

00:01:34.450 --> 00:01:35.409 can actually see where the

NOTE Confidence: 0.9399291

00:01:35.409 --> 00:01:36.630 tau is in the brain.

NOTE Confidence: 0.98577285

00:01:37.384 --> 00:01:38.185 So one thing that we're

NOTE Confidence: 0.98577285

00:01:38.185 --> 00:01:39.305 very interested in right now

NOTE Confidence: 0.98577285

00:01:39.305 --> 00:01:41.064 is understanding these networks that

NOTE Confidence: 0.98577285

00:01:41.064 --> 00:01:42.424 are made up of hubs,

NOTE Confidence: 0.98577285

00:01:42.424 --> 00:01:43.305 spots in the brain that

NOTE Confidence: 0.98577285

00:01:43.305 --> 00:01:44.664 are connected to other spots

NOTE Confidence: 0.98577285

00:01:44.664 --> 00:01:45.625 in the brain, and we

NOTE Confidence: 0.98577285

00:01:45.625 --> 00:01:46.825 look at the properties of

NOTE Confidence: 0.98577285

00:01:46.825 --> 00:01:48.185 those circuits and how those

NOTE Confidence: 0.98577285

00:01:48.185 --> 00:01:49.625 might impact how quickly tau

NOTE Confidence: 0.98577285

00:01:49.625 --> 00:01:50.905 is traveling. It seems to

NOTE Confidence: 0.98577285

00:01:50.905 --> 00:01:52.445 travel along lines of functional

NOTE Confidence: 0.96437746

00:01:52.960 --> 00:01:54.399 circuitry. Typically when you have

NOTE Confidence: 0.96437746

00:01:54.399 --> 00:01:55.680 a clinical MRI, it's very

NOTE Confidence: 0.96437746

00:01:55.680 --> 00:01:57.040 structural. We're getting a really

NOTE Confidence: 0.96437746

00:01:57.040 --> 00:01:58.479 detailed look at the brain

NOTE Confidence: 0.96437746

00:01:58.479 --> 00:02:00.000 structures, at any changes in

NOTE Confidence: 0.96437746

00:02:00.000 --> 00:02:00.799 the white matter and the

NOTE Confidence: 0.96437746

00:02:00.799 --> 00:02:02.079 gray matter. We do that

NOTE Confidence: 0.96437746

00:02:02.079 --> 00:02:03.280 on a research basis too,

NOTE Confidence: 0.96437746

00:02:03.280 --> 00:02:03.920 but a lot of what

NOTE Confidence: 0.96437746

00:02:03.920 --> 00:02:05.355 we do is functional MRI.

NOTE Confidence: 0.9740901

00:02:05.835 --> 00:02:07.035 During those scans, a lot

NOTE Confidence: 0.9740901

00:02:07.035 --> 00:02:07.755 of the time we'll have

NOTE Confidence: 0.9740901

00:02:07.755 --> 00:02:09.035 patients doing something while they're

NOTE Confidence: 0.9740901

00:02:09.035 --> 00:02:10.635 in the scanner, watching movie

NOTE Confidence: 0.9740901

00:02:10.635 --> 00:02:12.475 clips or looking at postcard

NOTE Confidence: 0.9740901

00:02:12.475 --> 00:02:14.155 like images of scenes or

NOTE Confidence: 0.9740901

00:02:14.155 --> 00:02:15.675 faces. And the reason that

NOTE Confidence: 0.9740901

00:02:15.675 --> 00:02:16.555 we do that is that

NOTE Confidence: 0.9740901

00:02:16.555 --> 00:02:17.915 we think that by allowing

NOTE Confidence: 0.9740901

00:02:17.915 --> 00:02:19.514 people to be engaged in

NOTE Confidence: 0.9740901

00:02:19.514 --> 00:02:20.880 something like watching a movie,

NOTE Confidence: 0.9740901

00:02:21.040 --> 00:02:22.080 that can help draw out

NOTE Confidence: 0.9740901

00:02:22.080 --> 00:02:24.160 individual differences in the circuits

NOTE Confidence: 0.9740901

00:02:24.160 --> 00:02:25.600 that are involved in watching

NOTE Confidence: 0.9740901

00:02:25.600 --> 00:02:26.880 a movie and probably other

NOTE Confidence: 0.9740901

00:02:26.880 --> 00:02:27.700 circuits too.

NOTE Confidence: 0.99484

00:02:32.080 --> 00:02:33.040 So we hope that this

NOTE Confidence: 0.99484

00:02:33.040 --> 00:02:34.320 research will result in more

NOTE Confidence: 0.99484

00:02:34.320 --> 00:02:36.405 generalizable models of how Alzheimer's

NOTE Confidence: 0.99484

00:02:36.405 --> 00:02:38.005 pathology works across groups that

NOTE Confidence: 0.99484

00:02:38.005 --> 00:02:39.385 have different levels of vulnerability.

NOTE Confidence: 0.9849707

00:02:39.925 --> 00:02:40.805 So it may be that

NOTE Confidence: 0.9849707

00:02:40.805 --> 00:02:42.165 different groups might benefit from

NOTE Confidence: 0.9849707

00:02:42.165 --> 00:02:43.605 different treatment targets or different

NOTE Confidence: 0.9849707

00:02:43.605 --> 00:02:45.285 treatment approaches, and that's something

NOTE Confidence: 0.9849707

00:02:45.285 --> 00:02:45.965 that we hope to shine

NOTE Confidence: 0.9849707

00:02:45.965 --> 00:02:46.825 a light on.

NOTE Confidence: 0.9571882

00:02:48.005 --> 00:02:49.865 Oftentimes, we have not identified

NOTE Confidence: 0.9571882

00:02:49.925 --> 00:02:51.720 people until they're very symptomatic

NOTE Confidence: 0.9571882

00:02:51.780 --> 00:02:52.980 and well on in illness

NOTE Confidence: 0.9571882

00:02:52.980 --> 00:02:53.940 and I think more and

NOTE Confidence: 0.9571882

00:02:53.940 --> 00:02:55.620 more we're able to identify

NOTE Confidence: 0.9571882

00:02:55.620 --> 00:02:57.320 people in these prodromal stages

NOTE Confidence: 0.9571882

00:02:57.380 --> 00:02:59.060 where we can't measure any

NOTE Confidence: 0.9571882

00:02:59.060 --> 00:03:00.419 memory decline on our cognitive

NOTE Confidence: 0.9571882

00:03:00.419 --> 00:03:01.380 tests but now we can

NOTE Confidence: 0.9571882

00:03:01.380 --> 00:03:02.820 visualize the proteins that are

NOTE Confidence: 0.9571882

00:03:02.820 --> 00:03:04.260 starting to accumulate. And the

NOTE Confidence: 0.9571882

00:03:04.260 --> 00:03:05.380 hope is that ultimately we

NOTE Confidence: 0.9571882

00:03:05.380 --> 00:03:06.040 could translate

NOTE Confidence: 0.99564797

00:03:06.555 --> 00:03:07.995 clinical trials back to those

NOTE Confidence: 0.99564797

00:03:07.995 --> 00:03:09.514 groups and stop the disease

NOTE Confidence: 0.99564797

00:03:09.514 --> 00:03:10.635 before it gets to the

NOTE Confidence: 0.99564797

00:03:10.635 --> 00:03:11.775 point of symptomatology.