WEBVTT

NOTE duration: ”00:04:52.992”

NOTE Confidence: 0.9925229

00:00:04.960 --> 00:00:07.040 So we've struggled with the

NOTE Confidence: 0.9925229

00:00:07.040 --> 00:00:08.800 understanding of what is what

NOTE Confidence: 0.9925229

00:00:08.800 --> 00:00:09.940 we would call the pathophysiology

NOTE Confidence: 0.90793324

00:00:10.960 --> 00:00:13.059 of depression or other psychiatric

NOTE Confidence: 0.90793324

00:00:13.200 --> 00:00:13.700 disorders.

NOTE Confidence: 0.98140436

00:00:14.080 --> 00:00:16.005 What actually is malfunctioning in

NOTE Confidence: 0.98140436

00:00:16.005 --> 00:00:17.605 the brain that's leading to

NOTE Confidence: 0.98140436

00:00:17.605 --> 00:00:18.425 these disorders?

NOTE Confidence: 0.96017736

00:00:19.125 --> 00:00:20.645 The Nobel Prize was awarded

NOTE Confidence: 0.96017736

00:00:20.645 --> 00:00:21.765 about a hundred and twenty

NOTE Confidence: 0.96017736

00:00:21.765 --> 00:00:23.065 years ago for really

NOTE Confidence: 0.9614851

00:00:23.605 --> 00:00:26.025 the basic understanding of how

NOTE Confidence: 0.9614851

00:00:26.085 --> 00:00:27.685 individual cells, the neurons in

NOTE Confidence: 0.9614851

00:00:27.685 --> 00:00:29.064 the brain, actually communicate

NOTE Confidence: 0.99535596

00:00:29.660 --> 00:00:31.440 with each other through chemical

NOTE Confidence: 0.9441417

00:00:32.460 --> 00:00:34.000 impulses that are then translated

NOTE Confidence: 0.9441417

00:00:34.140 --> 00:00:35.520 to electrical stimuli.

NOTE Confidence: 0.99177563

00:00:36.380 --> 00:00:38.300 Since then, our understanding has

NOTE Confidence: 0.99177563

00:00:38.300 --> 00:00:39.739 evolved. We started to realize

NOTE Confidence: 0.99177563

00:00:39.739 --> 00:00:41.440 that these neurons are

NOTE Confidence: 0.95212346

00:00:41.895 --> 00:00:43.655 localized into nuclei, and then

NOTE Confidence: 0.95212346

00:00:43.655 --> 00:00:45.335 those nuclei form circuits the

NOTE Confidence: 0.95212346

00:00:45.335 --> 00:00:46.534 way they communicate with each

NOTE Confidence: 0.95212346

00:00:46.534 --> 00:00:48.055 other. And then those circuits

NOTE Confidence: 0.95212346

00:00:48.055 --> 00:00:49.195 actually form networks.

NOTE Confidence: 0.9948525

00:00:49.975 --> 00:00:51.335 So we're really starting to

NOTE Confidence: 0.9948525

00:00:51.335 --> 00:00:53.094 understand how the brain works

NOTE Confidence: 0.9948525

00:00:53.094 --> 00:00:53.670 as a

NOTE Confidence: 0.99942243

00:00:54.230 --> 00:00:54.730 very

NOTE Confidence: 0.9996244

00:00:55.190 --> 00:00:56.250 complex unit

NOTE Confidence: 0.9979051

00:00:56.870 --> 00:00:58.789 to regulate our emotions, our

NOTE Confidence: 0.9979051

00:00:58.789 --> 00:00:59.289 perceptions,

NOTE Confidence: 0.9759546

00:00:59.750 --> 00:01:01.190 our thoughts. We use the

NOTE Confidence: 0.9759546

00:01:01.190 --> 00:01:01.929 term neuroplasticity,

NOTE Confidence: 0.97904015

00:01:02.469 --> 00:01:03.670 which has become a big

NOTE Confidence: 0.97904015

00:01:03.670 --> 00:01:04.970 buzzword in the field.

NOTE Confidence: 0.9791479

00:01:05.590 --> 00:01:07.509 The ability for the cells

NOTE Confidence: 0.9791479

00:01:07.509 --> 00:01:08.709 in the brain to form

NOTE Confidence: 0.9791479

00:01:08.709 --> 00:01:09.450 new connections,

NOTE Confidence: 0.9641548

00:01:09.884 --> 00:01:11.484 to strengthen or weaken those

NOTE Confidence: 0.9641548

00:01:11.484 --> 00:01:11.984 connections.

NOTE Confidence: 0.99544007

00:01:12.765 --> 00:01:14.125 And we think there's some

NOTE Confidence: 0.99544007

00:01:14.125 --> 00:01:15.744 combination of those events

NOTE Confidence: 0.9977676

00:01:16.125 --> 00:01:17.484 that's leading to many of

NOTE Confidence: 0.9977676

00:01:17.484 --> 00:01:18.944 our psychiatric illnesses.

NOTE Confidence: 0.9977424

00:01:19.485 --> 00:01:21.325 The most common medications aren't

NOTE Confidence: 0.9977424

00:01:21.325 --> 00:01:23.024 always effective for depression

NOTE Confidence: 0.95507413

00:01:23.480 --> 00:01:25.080 even in combination with effective

NOTE Confidence: 0.95507413

00:01:25.080 --> 00:01:27.420 psychotherapy like cognitive behavioral therapy.

NOTE Confidence: 0.97888464

00:01:28.280 --> 00:01:29.880 And the greater number of

NOTE Confidence: 0.97888464

00:01:29.880 --> 00:01:30.380 medications

NOTE Confidence: 0.9989457

00:01:31.160 --> 00:01:32.380 that people try

NOTE Confidence: 0.5151344

00:01:32.920 --> 00:01:33.420 unfortunately

NOTE Confidence: 0.9748655

00:01:33.800 --> 00:01:35.160 the lower the likelihood that

NOTE Confidence: 0.9748655

00:01:35.160 --> 00:01:36.140 they'll have success.

NOTE Confidence: 0.9986587

00:01:36.600 --> 00:01:37.660 This has been

NOTE Confidence: 0.97852737

00:01:38.200 --> 00:01:39.935 a call for our field

NOTE Confidence: 0.97852737

00:01:39.935 --> 00:01:41.935 to figure out alternative ways

NOTE Confidence: 0.97852737

00:01:41.935 --> 00:01:42.834 to treat depression.

NOTE Confidence: 0.9963101

00:01:43.935 --> 00:01:45.375 To think outside the box

NOTE Confidence: 0.9963101

00:01:45.375 --> 00:01:46.515 to other neurotransmitters

NOTE Confidence: 0.9900896

00:01:47.135 --> 00:01:48.815 and other networks within the

NOTE Confidence: 0.9900896

00:01:48.815 --> 00:01:50.675 brain that may be involved

NOTE Confidence: 0.99658674

00:01:50.975 --> 00:01:51.795 in the pathophysiology

NOTE Confidence: 0.9912137

00:01:52.335 --> 00:01:52.995 of depression.

NOTE Confidence: 0.988322

00:01:58.470 --> 00:01:59.610 Interventional psychiatry

NOTE Confidence: 0.980018

00:01:59.910 --> 00:02:01.530 here at Yale includes

NOTE Confidence: 0.99895483

00:02:01.990 --> 00:02:02.890 treatment modalities

NOTE Confidence: 0.92616403

00:02:03.270 --> 00:02:05.690 such as rapid acting antidepressants

NOTE Confidence: 0.92616403

00:02:05.990 --> 00:02:07.205 such as ketamine or s

NOTE Confidence: 0.92616403

00:02:07.205 --> 00:02:07.705 ketamine,

NOTE Confidence: 0.99868137

00:02:08.165 --> 00:02:09.065 which we think

NOTE Confidence: 0.9849559

00:02:09.445 --> 00:02:11.445 works more in regards to

NOTE Confidence: 0.9849559

00:02:11.445 --> 00:02:13.385 the glutamate system and

NOTE Confidence: 0.98844516

00:02:14.165 --> 00:02:14.665 causes

NOTE Confidence: 0.9748807

00:02:16.245 --> 00:02:18.585 a myriad of downstream effects

NOTE Confidence: 0.9908751

00:02:18.965 --> 00:02:19.625 in terms

NOTE Confidence: 0.9269145

00:02:20.005 --> 00:02:21.465 of synaptic plasticity.

NOTE Confidence: 0.9950696

00:02:22.120 --> 00:02:22.940 This phenomenon

NOTE Confidence: 0.9564514

00:02:23.400 --> 00:02:25.580 where things that fire together

NOTE Confidence: 0.9564514

00:02:25.720 --> 00:02:27.260 wire together in the brain.

NOTE Confidence: 0.99823785

00:02:28.200 --> 00:02:29.660 It's really the idea

NOTE Confidence: 0.98756844

00:02:29.960 --> 00:02:31.660 that you're able to use

NOTE Confidence: 0.98756844

00:02:31.800 --> 00:02:32.780 both the neurochemistry

NOTE Confidence: 0.93502957

00:02:33.080 --> 00:02:34.760 and drugs such as ketamine

NOTE Confidence: 0.93502957

00:02:34.760 --> 00:02:36.185 that can do that, but

NOTE Confidence: 0.93502957

00:02:36.185 --> 00:02:37.005 also using

NOTE Confidence: 0.9754413

00:02:37.385 --> 00:02:39.865 treatments like electroconvulsive therapy or

NOTE Confidence: 0.9754413

00:02:39.865 --> 00:02:41.405 transcranial magnetic stimulation

NOTE Confidence: 0.9910135

00:02:41.945 --> 00:02:43.065 that have more of a

NOTE Confidence: 0.9910135

00:02:43.065 --> 00:02:44.764 direct effect on the electrical

NOTE Confidence: 0.9910135

00:02:44.825 --> 00:02:45.965 system in the brain.

NOTE Confidence: 0.99123085

00:02:46.745 --> 00:02:47.885 TMS is

NOTE Confidence: 0.901401

00:02:48.345 --> 00:02:50.105 a non invasive form of

NOTE Confidence: 0.901401

00:02:50.105 --> 00:02:50.605 neuromodulation.

NOTE Confidence: 0.99598014

00:02:51.610 --> 00:02:53.389 We're able to painlessly

NOTE Confidence: 0.9944214

00:02:54.010 --> 00:02:54.510 and

NOTE Confidence: 0.99782604

00:02:54.889 --> 00:02:55.389 safely

NOTE Confidence: 0.9970629

00:02:55.930 --> 00:02:57.610 target certain areas of the

NOTE Confidence: 0.9970629

00:02:57.610 --> 00:02:58.110 brain

NOTE Confidence: 0.9488309

00:02:58.569 --> 00:02:59.930 and induce what we call

NOTE Confidence: 0.9488309

00:02:59.930 --> 00:03:00.669 eddy currents,

NOTE Confidence: 0.96822584

00:03:01.209 --> 00:03:02.750 which are these small electrical

NOTE Confidence: 0.96822584

00:03:02.810 --> 00:03:05.334 currents that influence the activity

NOTE Confidence: 0.96822584

00:03:05.395 --> 00:03:06.694 of individual neurons.

NOTE Confidence: 0.9953663

00:03:07.155 --> 00:03:08.275 And when there are enough

NOTE Confidence: 0.9953663

00:03:08.275 --> 00:03:08.775 neurons

NOTE Confidence: 0.9831026

00:03:09.635 --> 00:03:10.135 collectively

NOTE Confidence: 0.9516506

00:03:10.435 --> 00:03:10.935 acting,

NOTE Confidence: 0.9957163

00:03:11.474 --> 00:03:13.735 it can cause downstream effects

NOTE Confidence: 0.9957163

00:03:13.955 --> 00:03:15.735 in terms of chemical release.

NOTE Confidence: 0.9965687

00:03:16.880 --> 00:03:18.400 So even though we're using

NOTE Confidence: 0.9965687

00:03:18.400 --> 00:03:19.220 the electrical

NOTE Confidence: 0.9742266

00:03:20.000 --> 00:03:20.500 manipulation,

NOTE Confidence: 0.99893016

00:03:21.280 --> 00:03:22.260 it's causing

NOTE Confidence: 0.9986426

00:03:22.720 --> 00:03:23.220 downstream

NOTE Confidence: 0.99467266

00:03:23.600 --> 00:03:25.440 chemical changes as well. So

NOTE Confidence: 0.99467266

00:03:25.440 --> 00:03:26.900 it's this idea of

NOTE Confidence: 0.995701

00:03:27.200 --> 00:03:28.820 inducing some level of plasticity

NOTE Confidence: 0.9387587

00:03:29.360 --> 00:03:31.460 and then really trying to

NOTE Confidence: 0.9830354

00:03:31.885 --> 00:03:34.465 work through therapeutic techniques, through

NOTE Confidence: 0.9853756

00:03:34.845 --> 00:03:35.825 behavioral activation.

NOTE Confidence: 0.99817127

00:03:36.605 --> 00:03:37.565 We're trying to figure out

NOTE Confidence: 0.99817127

00:03:37.565 --> 00:03:39.005 the different mechanisms by which

NOTE Confidence: 0.99817127

00:03:39.005 --> 00:03:40.305 these illnesses occur

NOTE Confidence: 0.94413435

00:03:40.605 --> 00:03:42.145 and how we can individualize

NOTE Confidence: 0.9989217

00:03:42.525 --> 00:03:43.965 treatment on a clinical level

NOTE Confidence: 0.9989217

00:03:43.965 --> 00:03:45.820 for each individual patient.

NOTE Confidence: 0.9953995

00:03:46.120 --> 00:03:47.240 And that's where the basic

NOTE Confidence: 0.9953995

00:03:47.240 --> 00:03:47.740 neuroscience

NOTE Confidence: 0.9973808

00:03:48.120 --> 00:03:48.620 really

NOTE Confidence: 0.9992552

00:03:49.000 --> 00:03:49.740 allows us

NOTE Confidence: 0.93222004

00:03:50.040 --> 00:03:51.560 to grow and target treatments

NOTE Confidence: 0.93222004

00:03:51.560 --> 00:03:52.840 to be much more effective

NOTE Confidence: 0.93222004

00:03:52.840 --> 00:03:54.140 and and in this case,

NOTE Confidence: 0.94098574

00:03:54.600 --> 00:03:55.900 hopefully, much safer.

NOTE Confidence: 0.97704107

00:04:00.155 --> 00:04:01.115 The nice thing at the

NOTE Confidence: 0.97704107

00:04:01.115 --> 00:04:02.715 Yale Depression Research Program is

NOTE Confidence: 0.97704107

00:04:02.715 --> 00:04:04.395 it's a pretty broad range.

NOTE Confidence: 0.97704107

00:04:04.395 --> 00:04:06.255 We really try to do

NOTE Confidence: 0.97704107

00:04:06.395 --> 00:04:06.895 translational

NOTE Confidence: 0.9895635

00:04:07.834 --> 00:04:08.334 neuroscience

NOTE Confidence: 0.9959613

00:04:08.635 --> 00:04:09.135 work.

NOTE Confidence: 0.94143486

00:04:09.675 --> 00:04:11.115 We work very closely with

NOTE Confidence: 0.94143486

00:04:11.115 --> 00:04:12.155 colleagues in some of our

NOTE Confidence: 0.94143486

00:04:12.155 --> 00:04:13.440 own studies trying to

NOTE Confidence: 0.93298334

00:04:13.920 --> 00:04:14.580 what is

NOTE Confidence: 0.97637445

00:04:15.200 --> 00:04:16.339 underlying the pathophysiology

NOTE Confidence: 0.98550487

00:04:16.800 --> 00:04:17.460 of depression.

NOTE Confidence: 0.993364

00:04:18.960 --> 00:04:20.420 But moving up, we also

NOTE Confidence: 0.993364

00:04:20.480 --> 00:04:22.420 have real interest in studying

NOTE Confidence: 0.99422616

00:04:23.520 --> 00:04:25.540 the the actual clinical utility

NOTE Confidence: 0.95029783

00:04:26.214 --> 00:04:28.134 if we truly wanna optimize

NOTE Confidence: 0.95029783

00:04:28.134 --> 00:04:28.875 our treatments,

NOTE Confidence: 0.9990091

00:04:30.134 --> 00:04:31.514 it's not simply

NOTE Confidence: 0.984532

00:04:32.455 --> 00:04:34.375 targeting a receptor or even

NOTE Confidence: 0.984532

00:04:34.375 --> 00:04:35.574 targeting a circuit or a

NOTE Confidence: 0.984532

00:04:35.574 --> 00:04:36.074 network.

NOTE Confidence: 0.9442549

00:04:36.615 --> 00:04:38.235 You really have to understand

NOTE Confidence: 0.9442549

00:04:38.294 --> 00:04:38.794 how

NOTE Confidence: 0.96481067

00:04:39.430 --> 00:04:41.349 that is interacting with what

NOTE Confidence: 0.96481067

00:04:41.349 --> 00:04:43.210 we call these contextual factors,

NOTE Confidence: 0.96481067

00:04:43.349 --> 00:04:45.430 all the other events that's

NOTE Confidence: 0.96481067

00:04:45.430 --> 00:04:46.569 going on in the environment

NOTE Confidence: 0.96481067

00:04:46.629 --> 00:04:47.529 in our lives.