

WEBVTT

NOTE duration: "00:57:58.057"

NOTE Confidence: 0.91288644

00:00:00.640 --> 00:00:02.159 When we get started. So

NOTE Confidence: 0.91288644

00:00:02.159 --> 00:00:04.100 it's my pleasure to introduce,

NOTE Confidence: 0.9066189

00:00:05.040 --> 00:00:06.660 doctor Hilary Marasek,

NOTE Confidence: 0.9987497

00:00:07.919 --> 00:00:08.580 who is

NOTE Confidence: 0.96096736

00:00:09.440 --> 00:00:10.820 a developmental neuroscientist,

NOTE Confidence: 0.99583024

00:00:11.679 --> 00:00:13.940 and associate professor of psychiatry

NOTE Confidence: 0.99583024

00:00:14.000 --> 00:00:15.139 and behavioral neurosciences

NOTE Confidence: 0.9787707

00:00:16.155 --> 00:00:17.454 at Wayne State University,

NOTE Confidence: 0.956845

00:00:18.635 --> 00:00:19.614 School of Medicine.

NOTE Confidence: 0.9898348

00:00:20.475 --> 00:00:21.994 She directs the division of

NOTE Confidence: 0.9898348

00:00:21.994 --> 00:00:22.494 cannabinoids

NOTE Confidence: 0.9482815

00:00:22.795 --> 00:00:23.695 in neurodevelopment.

NOTE Confidence: 0.9399562

00:00:24.154 --> 00:00:25.695 I like the acronym candid,

NOTE Confidence: 0.9956013

00:00:26.715 --> 00:00:28.735 and the trauma history investigation

NOTE Confidence: 0.9956013

00:00:28.955 --> 00:00:29.695 of neurodevelopment
NOTE Confidence: 0.8935807

00:00:30.075 --> 00:00:31.435 in kids or the or
NOTE Confidence: 0.8935807

00:00:31.435 --> 00:00:33.159 the think lab, another nice
NOTE Confidence: 0.8935807

00:00:33.159 --> 00:00:33.659 acronym,
NOTE Confidence: 0.9992768

00:00:34.200 --> 00:00:35.879 where her research focuses on
NOTE Confidence: 0.9992768

00:00:35.879 --> 00:00:36.379 how
NOTE Confidence: 0.99896383

00:00:36.680 --> 00:00:37.180 childhood
NOTE Confidence: 0.99713194

00:00:37.640 --> 00:00:38.140 adversity
NOTE Confidence: 0.9933665

00:00:38.920 --> 00:00:39.820 and the endocannabinoid
NOTE Confidence: 0.94269246

00:00:40.199 --> 00:00:42.040 system shape brain development and
NOTE Confidence: 0.94269246

00:00:42.040 --> 00:00:42.940 mental health.
NOTE Confidence: 0.94362736

00:00:43.320 --> 00:00:45.579 Doctor Marasik's work spans neuroimaging,
NOTE Confidence: 0.94362736

00:00:45.879 --> 00:00:47.019 behavioral neuroscience,
NOTE Confidence: 0.981366

00:00:48.095 --> 00:00:49.315 and psychophysiology
NOTE Confidence: 0.9572309

00:00:50.335 --> 00:00:52.115 with a particular emphasis
NOTE Confidence: 0.9988999

00:00:52.735 --> 00:00:54.095 on the impact of cannabis

NOTE Confidence: 0.9988999
00:00:54.095 --> 00:00:56.335 and cannabinoids during sensitive periods
NOTE Confidence: 0.9988999
00:00:56.335 --> 00:00:56.995 of development.
NOTE Confidence: 0.9926071
00:00:58.015 --> 00:00:59.935 Her research is supported by
NOTE Confidence: 0.9926071
00:00:59.935 --> 00:01:00.435 NIH,
NOTE Confidence: 0.8544408
00:01:01.375 --> 00:01:02.115 One Mind,
NOTE Confidence: 0.9036687
00:01:03.360 --> 00:01:05.140 the Michigan Cannabis Regulatory
NOTE Confidence: 0.983477
00:01:05.440 --> 00:01:05.940 Agency.
NOTE Confidence: 0.9458346
00:01:06.800 --> 00:01:08.020 She's recognized,
NOTE Confidence: 0.923587
00:01:08.800 --> 00:01:10.400 with the One Mind rising
NOTE Confidence: 0.923587
00:01:10.400 --> 00:01:11.220 star award
NOTE Confidence: 0.8466813
00:01:11.680 --> 00:01:13.280 and named a notable woman
NOTE Confidence: 0.8466813
00:01:13.280 --> 00:01:15.300 in STEM by Crain's Detroit.
NOTE Confidence: 0.89285475
00:01:16.954 --> 00:01:19.354 She is deeply engaged, committed
NOTE Confidence: 0.89285475
00:01:19.354 --> 00:01:21.435 to in, public engagement and
NOTE Confidence: 0.89285475
00:01:21.435 --> 00:01:21.935 mentorship.
NOTE Confidence: 0.9693432

00:01:22.875 --> 00:01:25.375 She cofounded the Science Policy
NOTE Confidence: 0.9693432

00:01:25.515 --> 00:01:26.015 Network
NOTE Confidence: 0.9371599

00:01:26.554 --> 00:01:28.655 of Detroit and hosts BrainSTEM,
NOTE Confidence: 0.99323744

00:01:29.034 --> 00:01:30.795 a podcast to promote broader
NOTE Confidence: 0.99323744

00:01:30.795 --> 00:01:31.295 understanding
NOTE Confidence: 0.9943735

00:01:32.080 --> 00:01:33.860 of neuroscience and its societal
NOTE Confidence: 0.9943735

00:01:33.920 --> 00:01:34.420 impacts.
NOTE Confidence: 0.99580735

00:01:34.720 --> 00:01:36.000 I had the pleasure of,
NOTE Confidence: 0.85583484

00:01:36.640 --> 00:01:38.560 seeing Hillary just a week
NOTE Confidence: 0.85583484

00:01:38.560 --> 00:01:39.920 ago at the Gordon Conference
NOTE Confidence: 0.85583484

00:01:39.920 --> 00:01:41.439 on cannabis and can on
NOTE Confidence: 0.85583484

00:01:41.439 --> 00:01:42.020 on cannabinoids
NOTE Confidence: 0.9625886

00:01:42.560 --> 00:01:43.380 last week.
NOTE Confidence: 0.9987106

00:01:43.920 --> 00:01:45.280 So it's my pleasure to
NOTE Confidence: 0.9987106

00:01:45.280 --> 00:01:46.880 introduce Hillary. Hillary, take it
NOTE Confidence: 0.9987106

00:01:46.880 --> 00:01:47.380 away.

NOTE Confidence: 0.958047
00:01:47.995 --> 00:01:49.355 Thanks so much. Yeah. I'm
NOTE Confidence: 0.958047
00:01:49.355 --> 00:01:50.235 sorry. Some of this is
NOTE Confidence: 0.958047
00:01:50.235 --> 00:01:51.275 a repeat, but you got
NOTE Confidence: 0.958047
00:01:51.275 --> 00:01:52.315 a a sneak peek to
NOTE Confidence: 0.958047
00:01:52.395 --> 00:01:52.895 today.
NOTE Confidence: 0.96591824
00:01:53.515 --> 00:01:55.435 Thanks, everybody. So as, doctor
NOTE Confidence: 0.96591824
00:01:55.435 --> 00:01:56.795 D'Souza mentioned, I am a
NOTE Confidence: 0.96591824
00:01:56.795 --> 00:01:59.435 developmental scientist. And probably like
NOTE Confidence: 0.96591824
00:01:59.435 --> 00:02:00.395 many of you, I didn't
NOTE Confidence: 0.96591824
00:02:00.395 --> 00:02:02.315 realize the, importance of the
NOTE Confidence: 0.96591824
00:02:02.315 --> 00:02:02.815 endocannabinoid
NOTE Confidence: 0.9660005
00:02:03.210 --> 00:02:05.070 system until very recently in
NOTE Confidence: 0.9660005
00:02:05.290 --> 00:02:06.110 key neurodevelopmental
NOTE Confidence: 0.9959563
00:02:06.570 --> 00:02:08.810 processes. So I'm really excited
NOTE Confidence: 0.9959563
00:02:08.810 --> 00:02:10.010 to share with you today
NOTE Confidence: 0.9959563

00:02:10.010 --> 00:02:10.970 some of the work we've
NOTE Confidence: 0.9959563

00:02:10.970 --> 00:02:11.630 been doing
NOTE Confidence: 0.9577315

00:02:12.090 --> 00:02:12.889 on the role of the
NOTE Confidence: 0.9577315

00:02:12.889 --> 00:02:13.389 endocannabinoid
NOTE Confidence: 0.9339269

00:02:13.770 --> 00:02:15.470 system in really two critical
NOTE Confidence: 0.9339269

00:02:15.530 --> 00:02:16.030 periods,
NOTE Confidence: 0.96634054

00:02:16.455 --> 00:02:17.415 that we think about, which
NOTE Confidence: 0.96634054

00:02:17.415 --> 00:02:19.095 is before you're born and
NOTE Confidence: 0.96634054

00:02:19.095 --> 00:02:20.455 also during the teen years
NOTE Confidence: 0.96634054

00:02:20.455 --> 00:02:21.334 when we know that the
NOTE Confidence: 0.96634054

00:02:21.334 --> 00:02:23.575 brain is very sensitive to,
NOTE Confidence: 0.96634054

00:02:23.974 --> 00:02:25.035 external exposures.
NOTE Confidence: 0.81333184

00:02:25.575 --> 00:02:27.014 And also psychiatric risk,
NOTE Confidence: 0.9838794

00:02:27.415 --> 00:02:29.230 happens during that time. Also,
NOTE Confidence: 0.9838794

00:02:29.230 --> 00:02:30.910 really facing some unique challenges
NOTE Confidence: 0.9838794

00:02:30.910 --> 00:02:32.530 with the legalization of cannabis,

NOTE Confidence: 0.9838794

00:02:32.590 --> 00:02:34.030 and, we'll get into that

NOTE Confidence: 0.9838794

00:02:34.030 --> 00:02:35.010 a little bit more.

NOTE Confidence: 0.9692735

00:02:35.310 --> 00:02:36.590 But to give you a

NOTE Confidence: 0.9692735

00:02:36.590 --> 00:02:37.710 lay the the road of

NOTE Confidence: 0.9692735

00:02:37.710 --> 00:02:38.910 what I'm gonna cover today,

NOTE Confidence: 0.9692735

00:02:38.910 --> 00:02:39.790 I'll I know this is

NOTE Confidence: 0.9692735

00:02:39.790 --> 00:02:40.610 the the cannabis,

NOTE Confidence: 0.98163986

00:02:41.070 --> 00:02:42.030 center, so I don't have

NOTE Confidence: 0.98163986

00:02:42.030 --> 00:02:42.830 to spend a ton of

NOTE Confidence: 0.98163986

00:02:42.830 --> 00:02:44.430 time laying the foundation for

NOTE Confidence: 0.98163986

00:02:44.430 --> 00:02:45.685 what the system is. But

NOTE Confidence: 0.98163986

00:02:45.685 --> 00:02:46.724 just so everyone is on

NOTE Confidence: 0.98163986

00:02:46.724 --> 00:02:47.544 the same page,

NOTE Confidence: 0.9570019

00:02:48.004 --> 00:02:49.284 starting with a brief overview

NOTE Confidence: 0.9570019

00:02:49.284 --> 00:02:50.484 of what the ECB or

NOTE Confidence: 0.9570019

00:02:50.484 --> 00:02:50.984 endocannabinoid
NOTE Confidence: 0.95168865

00:02:51.364 --> 00:02:53.204 system does and then really
NOTE Confidence: 0.95168865

00:02:53.204 --> 00:02:54.724 zooming in on its critical
NOTE Confidence: 0.95168865

00:02:54.724 --> 00:02:55.625 role in neurodevelopment.
NOTE Confidence: 0.97998863

00:02:56.820 --> 00:02:58.180 As I mentioned, focusing on
NOTE Confidence: 0.97998863

00:02:58.180 --> 00:03:00.280 two really sensitive windows, pregnancy
NOTE Confidence: 0.97998863

00:03:00.340 --> 00:03:01.800 and the adolescent period.
NOTE Confidence: 0.99837965

00:03:02.180 --> 00:03:02.980 And then I wanna end
NOTE Confidence: 0.99837965

00:03:02.980 --> 00:03:03.860 on a high note and
NOTE Confidence: 0.99837965

00:03:03.860 --> 00:03:04.740 talk more about how we
NOTE Confidence: 0.99837965

00:03:04.740 --> 00:03:05.560 can intervene
NOTE Confidence: 0.97083557

00:03:06.260 --> 00:03:08.020 during those sensitive windows to
NOTE Confidence: 0.97083557

00:03:08.020 --> 00:03:09.860 build more resilient brains before
NOTE Confidence: 0.97083557

00:03:09.860 --> 00:03:11.140 I hopefully put a nice
NOTE Confidence: 0.97083557

00:03:11.140 --> 00:03:12.040 bow on everything.
NOTE Confidence: 0.9745226

00:03:13.145 --> 00:03:14.505 So just so to begin

NOTE Confidence: 0.9745226
00:03:14.505 --> 00:03:16.264 with, you know, again, in
NOTE Confidence: 0.9745226
00:03:16.264 --> 00:03:17.945 medical school and graduate school,
NOTE Confidence: 0.9745226
00:03:17.945 --> 00:03:19.465 I didn't receive any education
NOTE Confidence: 0.9745226
00:03:19.465 --> 00:03:21.005 about the cannabinoid system.
NOTE Confidence: 0.96941686
00:03:21.625 --> 00:03:23.065 Yet there's work being done,
NOTE Confidence: 0.96941686
00:03:23.065 --> 00:03:24.285 you know, at your university
NOTE Confidence: 0.96941686
00:03:24.345 --> 00:03:25.705 and others showing just how
NOTE Confidence: 0.96941686
00:03:25.705 --> 00:03:26.205 widespread,
NOTE Confidence: 0.9664842
00:03:27.169 --> 00:03:28.690 ubiquitous this system is and
NOTE Confidence: 0.9664842
00:03:28.690 --> 00:03:30.070 how important it is for
NOTE Confidence: 0.9664842
00:03:30.290 --> 00:03:31.889 for a variety of, brain
NOTE Confidence: 0.9664842
00:03:31.889 --> 00:03:33.090 functions. So this is a
NOTE Confidence: 0.9664842
00:03:33.090 --> 00:03:35.170 PET study of, cannabinoid type
NOTE Confidence: 0.9664842
00:03:35.170 --> 00:03:35.910 one receptors,
NOTE Confidence: 0.9994222
00:03:36.850 --> 00:03:37.670 showing availability
NOTE Confidence: 0.93029976

00:03:38.050 --> 00:03:40.050 really across the the brain.
NOTE Confidence: 0.9334516

00:03:40.450 --> 00:03:42.070 Obviously, areas where,
NOTE Confidence: 0.9778912

00:03:42.405 --> 00:03:43.844 CB one receptors are more
NOTE Confidence: 0.9778912

00:03:43.844 --> 00:03:45.345 densely located, which,
NOTE Confidence: 0.98856676

00:03:45.765 --> 00:03:47.045 helps us understand some of
NOTE Confidence: 0.98856676

00:03:47.045 --> 00:03:48.484 the acute effects of things
NOTE Confidence: 0.98856676

00:03:48.484 --> 00:03:50.504 like, THC and other cannabinoids
NOTE Confidence: 0.99872875

00:03:51.444 --> 00:03:52.185 on the brain.
NOTE Confidence: 0.9427595

00:03:52.644 --> 00:03:53.605 But I just wanna highlight
NOTE Confidence: 0.9427595

00:03:53.605 --> 00:03:54.724 a couple key areas,
NOTE Confidence: 0.9981536

00:03:55.125 --> 00:03:55.625 especially
NOTE Confidence: 0.99080807

00:03:56.004 --> 00:03:56.504 dense
NOTE Confidence: 0.967705

00:03:57.830 --> 00:03:58.330 availability,
NOTE Confidence: 0.8884185

00:03:59.110 --> 00:04:01.530 in cortical limbic regions, amygdala,
NOTE Confidence: 0.8884185

00:04:01.750 --> 00:04:03.189 hippocampus, we know are really
NOTE Confidence: 0.8884185

00:04:03.189 --> 00:04:04.090 important for

NOTE Confidence: 0.93588495
00:04:04.390 --> 00:04:05.769 emotional learning and memory,
NOTE Confidence: 0.9634275
00:04:06.069 --> 00:04:07.989 and also prefrontal regions involved
NOTE Confidence: 0.9634275
00:04:07.989 --> 00:04:09.510 in emotional control and top
NOTE Confidence: 0.9634275
00:04:09.510 --> 00:04:10.010 down,
NOTE Confidence: 0.95753735
00:04:10.605 --> 00:04:12.285 top down functioning. So very
NOTE Confidence: 0.95753735
00:04:12.285 --> 00:04:14.385 important. Those obviously undergo dramatic,
NOTE Confidence: 0.9832035
00:04:15.325 --> 00:04:16.845 development across the teen years
NOTE Confidence: 0.9832035
00:04:16.845 --> 00:04:17.505 in particular.
NOTE Confidence: 0.99176055
00:04:18.525 --> 00:04:20.205 And then, just wanna distinguish
NOTE Confidence: 0.99176055
00:04:20.205 --> 00:04:21.025 between exogenous
NOTE Confidence: 0.96798193
00:04:21.325 --> 00:04:22.765 cannabinoids up top. So think
NOTE Confidence: 0.96798193
00:04:22.765 --> 00:04:23.585 of those produced,
NOTE Confidence: 0.93979645
00:04:23.964 --> 00:04:25.620 in a cannabis plant or,
NOTE Confidence: 0.93979645
00:04:25.699 --> 00:04:26.600 you know, in a lab
NOTE Confidence: 0.93979645
00:04:26.660 --> 00:04:27.160 synthesized,
NOTE Confidence: 0.9950473

00:04:27.940 --> 00:04:29.080 outside of the body,
NOTE Confidence: 0.9957209

00:04:29.779 --> 00:04:30.760 versus endocannabinoids
NOTE Confidence: 0.59184134

00:04:31.139 --> 00:04:31.880 or endogenous
NOTE Confidence: 0.9803536

00:04:32.339 --> 00:04:32.839 endogenously
NOTE Confidence: 0.97567093

00:04:33.220 --> 00:04:33.720 produced,
NOTE Confidence: 0.98378277

00:04:34.339 --> 00:04:35.699 within the body. And the
NOTE Confidence: 0.98378277

00:04:35.699 --> 00:04:37.000 the two most commonly,
NOTE Confidence: 0.9223224

00:04:37.460 --> 00:04:38.945 you know, studied in are
NOTE Confidence: 0.9223224

00:04:38.945 --> 00:04:40.464 nandamide and two AG, which
NOTE Confidence: 0.9223224

00:04:40.464 --> 00:04:41.265 are not the names of
NOTE Confidence: 0.9223224

00:04:41.265 --> 00:04:41.925 my dogs.
NOTE Confidence: 0.97996163

00:04:42.385 --> 00:04:42.885 But,
NOTE Confidence: 0.9673643

00:04:43.505 --> 00:04:45.185 very interesting system, you know,
NOTE Confidence: 0.9673643

00:04:45.185 --> 00:04:45.685 neurobiologically
NOTE Confidence: 0.9739657

00:04:46.145 --> 00:04:48.065 speaking. We have two ligands
NOTE Confidence: 0.9739657

00:04:48.065 --> 00:04:49.025 that both work on the

NOTE Confidence: 0.9739657

00:04:49.025 --> 00:04:50.464 same receptor, which is very

NOTE Confidence: 0.9739657

00:04:50.464 --> 00:04:51.425 weird. You know, I come

NOTE Confidence: 0.9739657

00:04:51.425 --> 00:04:52.110 from a

NOTE Confidence: 0.97950697

00:04:52.589 --> 00:04:54.110 neuroscience background, and we have,

NOTE Confidence: 0.97950697

00:04:54.110 --> 00:04:55.389 like, what, five or six

NOTE Confidence: 0.97950697

00:04:55.389 --> 00:04:56.289 different serotonin

NOTE Confidence: 0.96110535

00:04:56.669 --> 00:04:58.909 receptors. So very interesting system,

NOTE Confidence: 0.96110535

00:04:58.909 --> 00:04:59.789 and I know I'm preaching

NOTE Confidence: 0.96110535

00:04:59.789 --> 00:05:01.009 to the choir here, but,

NOTE Confidence: 0.9940587

00:05:01.629 --> 00:05:02.349 still a lot that we

NOTE Confidence: 0.9940587

00:05:02.349 --> 00:05:03.490 need to know about it.

NOTE Confidence: 0.998665

00:05:04.125 --> 00:05:05.185 So what do cannabinoids

NOTE Confidence: 0.99144125

00:05:05.565 --> 00:05:06.685 do? They turns out they

NOTE Confidence: 0.99144125

00:05:06.685 --> 00:05:07.485 play a role in a

NOTE Confidence: 0.99144125

00:05:07.485 --> 00:05:09.485 variety of homeostatic functions. These

NOTE Confidence: 0.99144125

00:05:09.485 --> 00:05:10.445 are this is just a
NOTE Confidence: 0.99144125

00:05:10.445 --> 00:05:11.645 snapshot I'm showing you on
NOTE Confidence: 0.99144125

00:05:11.645 --> 00:05:12.305 the screen.
NOTE Confidence: 0.9415384

00:05:13.085 --> 00:05:14.365 Cece Hillard, who was at
NOTE Confidence: 0.9415384

00:05:14.365 --> 00:05:15.665 the conference last week,
NOTE Confidence: 0.99601513

00:05:16.365 --> 00:05:17.025 you know,
NOTE Confidence: 0.9682812

00:05:17.360 --> 00:05:18.880 wrote a wonderful review about,
NOTE Confidence: 0.9682812

00:05:19.120 --> 00:05:20.639 what do cannabinoids do, where
NOTE Confidence: 0.9682812

00:05:20.639 --> 00:05:22.080 do they come from. We
NOTE Confidence: 0.9682812

00:05:22.080 --> 00:05:22.960 call her the queen of
NOTE Confidence: 0.9682812

00:05:22.960 --> 00:05:24.320 cannabinoids in my lab. She's
NOTE Confidence: 0.9682812

00:05:24.320 --> 00:05:24.980 a fantastic,
NOTE Confidence: 0.9237533

00:05:25.520 --> 00:05:26.020 researcher.
NOTE Confidence: 0.9940859

00:05:27.040 --> 00:05:28.480 But I wanna highlight stress
NOTE Confidence: 0.9940859

00:05:28.480 --> 00:05:29.779 and anxiety regulation.
NOTE Confidence: 0.9994553

00:05:30.320 --> 00:05:31.520 We really think of these

NOTE Confidence: 0.9994553

00:05:31.520 --> 00:05:32.260 as our

NOTE Confidence: 0.98809665

00:05:32.615 --> 00:05:34.695 stress management professionals. This is

NOTE Confidence: 0.98809665

00:05:34.695 --> 00:05:35.835 a a term that,

NOTE Confidence: 0.9126356

00:05:36.295 --> 00:05:38.295 Terry Duran Cassini coined, which

NOTE Confidence: 0.9126356

00:05:38.295 --> 00:05:39.515 I think is really important.

NOTE Confidence: 0.898039

00:05:40.615 --> 00:05:41.115 Endocannabinoids

NOTE Confidence: 0.99903077

00:05:41.735 --> 00:05:43.435 are synthesized on demand

NOTE Confidence: 0.99606246

00:05:43.975 --> 00:05:45.415 in response to stress, and

NOTE Confidence: 0.99606246

00:05:45.415 --> 00:05:46.535 they really help us cope

NOTE Confidence: 0.99606246

00:05:46.535 --> 00:05:48.160 with stress. So in my

NOTE Confidence: 0.99606246

00:05:48.160 --> 00:05:49.839 area, which is anxiety and

NOTE Confidence: 0.99606246

00:05:49.839 --> 00:05:51.760 PTSD, this becomes super relevant

NOTE Confidence: 0.99606246

00:05:51.760 --> 00:05:52.500 for understanding

NOTE Confidence: 0.89794105

00:05:53.040 --> 00:05:54.480 potentially the physiology or the

NOTE Confidence: 0.89794105

00:05:54.480 --> 00:05:54.980 pathophysiology

NOTE Confidence: 0.97862095

00:05:55.440 --> 00:05:56.880 of those disorders. But, of
NOTE Confidence: 0.97862095

00:05:56.880 --> 00:05:57.920 course, stress plays a role
NOTE Confidence: 0.97862095

00:05:57.920 --> 00:05:59.120 in in everything. So,
NOTE Confidence: 0.99896353

00:06:00.555 --> 00:06:01.775 one benefit of endocannabinoids
NOTE Confidence: 0.9992148

00:06:02.154 --> 00:06:03.354 that we're still debating in
NOTE Confidence: 0.9992148

00:06:03.354 --> 00:06:04.475 the literature is,
NOTE Confidence: 0.9545057

00:06:05.115 --> 00:06:05.995 you know, we can measure
NOTE Confidence: 0.9545057

00:06:05.995 --> 00:06:07.775 them in circulation with a,
NOTE Confidence: 0.9545057

00:06:08.074 --> 00:06:09.435 a blood sample on either
NOTE Confidence: 0.9545057

00:06:09.435 --> 00:06:10.955 plasma or serum, which gives
NOTE Confidence: 0.9545057

00:06:10.955 --> 00:06:12.014 us some insight,
NOTE Confidence: 0.9650205

00:06:12.830 --> 00:06:14.029 into the system in living
NOTE Confidence: 0.9650205

00:06:14.029 --> 00:06:15.550 human beings. And, you know,
NOTE Confidence: 0.9650205

00:06:15.550 --> 00:06:16.669 I work with kids. We
NOTE Confidence: 0.9650205

00:06:16.669 --> 00:06:17.870 don't have access to pet
NOTE Confidence: 0.9650205

00:06:17.870 --> 00:06:19.470 imaging. We're not gonna do

NOTE Confidence: 0.9650205
00:06:19.470 --> 00:06:20.370 spinal taps,
NOTE Confidence: 0.9837804
00:06:20.830 --> 00:06:22.770 celibary, CVs. I don't know
NOTE Confidence: 0.9837804
00:06:22.830 --> 00:06:23.629 how some of the folks
NOTE Confidence: 0.9837804
00:06:23.629 --> 00:06:24.509 feel on the call, but
NOTE Confidence: 0.9837804
00:06:24.509 --> 00:06:25.964 I haven't seen really, you
NOTE Confidence: 0.9837804
00:06:25.964 --> 00:06:27.565 know, compelling data showing that
NOTE Confidence: 0.9837804
00:06:27.565 --> 00:06:29.565 they're super, reliable. Love to
NOTE Confidence: 0.9837804
00:06:29.565 --> 00:06:31.165 talk more about that. But
NOTE Confidence: 0.9837804
00:06:31.165 --> 00:06:32.205 as far as working with
NOTE Confidence: 0.9837804
00:06:32.205 --> 00:06:33.345 developmental populations,
NOTE Confidence: 0.99379116
00:06:33.725 --> 00:06:34.925 we do have ECDs in
NOTE Confidence: 0.99379116
00:06:34.925 --> 00:06:35.425 circulation.
NOTE Confidence: 0.9924911
00:06:36.285 --> 00:06:37.725 There's a bigger discussion about
NOTE Confidence: 0.9924911
00:06:37.725 --> 00:06:38.685 where they come from, what
NOTE Confidence: 0.9924911
00:06:38.685 --> 00:06:39.745 we're actually measuring.
NOTE Confidence: 0.98251575

00:06:40.289 --> 00:06:41.169 And I think last week,
NOTE Confidence: 0.98251575

00:06:41.169 --> 00:06:42.449 the consensus is we need
NOTE Confidence: 0.98251575

00:06:42.449 --> 00:06:43.509 to do more to understand,
NOTE Confidence: 0.9597476

00:06:44.610 --> 00:06:45.810 what the signal is measuring,
NOTE Confidence: 0.9597476

00:06:45.810 --> 00:06:47.330 but it does provide, again,
NOTE Confidence: 0.9597476

00:06:47.330 --> 00:06:49.190 some unique insights into developing
NOTE Confidence: 0.9597476

00:06:49.250 --> 00:06:49.750 populations.
NOTE Confidence: 0.9943913

00:06:51.409 --> 00:06:52.529 So of all the things
NOTE Confidence: 0.9943913

00:06:52.529 --> 00:06:54.389 that the cannabinoid system does,
NOTE Confidence: 0.9943913

00:06:54.435 --> 00:06:55.475 as I mentioned, I was
NOTE Confidence: 0.9943913

00:06:55.475 --> 00:06:57.315 shocked as a developmental scientist
NOTE Confidence: 0.9943913

00:06:57.315 --> 00:06:58.675 that this wasn't part of
NOTE Confidence: 0.9943913

00:06:58.675 --> 00:06:59.895 our standard education.
NOTE Confidence: 0.97574705

00:07:00.355 --> 00:07:01.555 And I talked to physicians
NOTE Confidence: 0.97574705

00:07:01.555 --> 00:07:03.154 in many different disciplines. You
NOTE Confidence: 0.97574705

00:07:03.154 --> 00:07:04.035 know, this isn't a part

NOTE Confidence: 0.97574705

00:07:04.035 --> 00:07:05.635 of what they're they're taught.

NOTE Confidence: 0.97574705

00:07:05.635 --> 00:07:06.135 But,

NOTE Confidence: 0.9830195

00:07:06.675 --> 00:07:08.430 on the development side, it

NOTE Confidence: 0.9830195

00:07:08.430 --> 00:07:09.630 turns out the system is

NOTE Confidence: 0.9830195

00:07:09.630 --> 00:07:11.710 established very early during pregnancy,

NOTE Confidence: 0.9830195

00:07:11.710 --> 00:07:13.230 and it's functional at about

NOTE Confidence: 0.9830195

00:07:13.230 --> 00:07:13.970 week seven

NOTE Confidence: 0.96741235

00:07:14.350 --> 00:07:15.950 when many people are just

NOTE Confidence: 0.96741235

00:07:15.950 --> 00:07:17.250 finding out that they're pregnant

NOTE Confidence: 0.96741235

00:07:17.310 --> 00:07:18.830 and maybe using cannabis, for

NOTE Confidence: 0.96741235

00:07:18.830 --> 00:07:19.330 example.

NOTE Confidence: 0.9970528

00:07:20.110 --> 00:07:21.150 But it plays a critical

NOTE Confidence: 0.9970528

00:07:21.150 --> 00:07:22.510 role in a variety of

NOTE Confidence: 0.9970528

00:07:22.510 --> 00:07:23.010 basic

NOTE Confidence: 0.99746007

00:07:23.625 --> 00:07:24.125 neurodevelopmental

NOTE Confidence: 0.9996965

00:07:24.585 --> 00:07:25.085 processes
NOTE Confidence: 0.97665775

00:07:25.785 --> 00:07:27.785 ranging from axonal migration all
NOTE Confidence: 0.97665775

00:07:27.785 --> 00:07:28.505 the way up to the
NOTE Confidence: 0.97665775

00:07:28.505 --> 00:07:30.345 fine tuning of of neural
NOTE Confidence: 0.97665775

00:07:30.345 --> 00:07:32.045 networks across the lifespan.
NOTE Confidence: 0.9751285

00:07:32.905 --> 00:07:34.285 And it turns out that
NOTE Confidence: 0.9751285

00:07:34.425 --> 00:07:36.365 it likely fluctuates dynamically
NOTE Confidence: 0.9929423

00:07:36.745 --> 00:07:38.460 across the lifespan. This is
NOTE Confidence: 0.9929423

00:07:38.620 --> 00:07:39.660 work that's being done right
NOTE Confidence: 0.9929423

00:07:39.660 --> 00:07:40.780 now. A lot of this
NOTE Confidence: 0.9929423

00:07:40.780 --> 00:07:42.300 work comes from animal models,
NOTE Confidence: 0.9929423

00:07:42.300 --> 00:07:43.600 but showing that different
NOTE Confidence: 0.93493384

00:07:43.979 --> 00:07:45.580 components of the cannabinoid system
NOTE Confidence: 0.93493384

00:07:45.580 --> 00:07:47.199 like the ligands or receptors,
NOTE Confidence: 0.8665204

00:07:47.500 --> 00:07:49.599 the degradatory enzymes like Faa,
NOTE Confidence: 0.9832308

00:07:49.900 --> 00:07:51.759 they vary dynamically across,

NOTE Confidence: 0.98360395
00:07:52.825 --> 00:07:54.505 particularly the first two decades
NOTE Confidence: 0.98360395
00:07:54.505 --> 00:07:56.105 of life, which is, again,
NOTE Confidence: 0.98360395
00:07:56.105 --> 00:07:58.025 we know a really critical
NOTE Confidence: 0.98360395
00:07:58.025 --> 00:07:59.945 period of brain development and
NOTE Confidence: 0.98360395
00:07:59.945 --> 00:08:01.085 when a lot of psychiatric
NOTE Confidence: 0.98360395
00:08:01.305 --> 00:08:03.385 disorders and symptoms begin to
NOTE Confidence: 0.98360395
00:08:03.385 --> 00:08:03.885 emerge.
NOTE Confidence: 0.986333
00:08:04.430 --> 00:08:05.730 So there's some interesting,
NOTE Confidence: 0.99867153
00:08:06.350 --> 00:08:07.630 research going on to look
NOTE Confidence: 0.99867153
00:08:07.630 --> 00:08:08.350 at the role of the
NOTE Confidence: 0.99867153
00:08:08.350 --> 00:08:09.410 cannabinoid system
NOTE Confidence: 0.9469829
00:08:09.790 --> 00:08:11.310 in psychiatric risk and the
NOTE Confidence: 0.9469829
00:08:11.310 --> 00:08:12.670 psychosis space we heard about
NOTE Confidence: 0.9469829
00:08:12.670 --> 00:08:14.050 last week with doctor D'Souza's
NOTE Confidence: 0.9469829
00:08:14.110 --> 00:08:15.790 work and also in anxiety
NOTE Confidence: 0.9469829

00:08:15.790 --> 00:08:16.530 and PTSD.
NOTE Confidence: 0.9988512

00:08:18.475 --> 00:08:19.755 In addition to playing a
NOTE Confidence: 0.9988512

00:08:19.755 --> 00:08:21.455 critical role in fetal neurodevelopment,
NOTE Confidence: 0.956112

00:08:22.555 --> 00:08:24.555 there's emerging data suggesting that
NOTE Confidence: 0.956112

00:08:24.555 --> 00:08:25.915 the system itself plays a
NOTE Confidence: 0.956112

00:08:25.915 --> 00:08:27.935 role in pregnancy timing and
NOTE Confidence: 0.956112

00:08:27.995 --> 00:08:28.895 actually maintenance.
NOTE Confidence: 0.9949505

00:08:29.770 --> 00:08:30.830 So if you measure,
NOTE Confidence: 0.99815416

00:08:31.289 --> 00:08:32.189 circulating endocannabinoids
NOTE Confidence: 0.97967094

00:08:32.809 --> 00:08:34.490 in moms during pregnancy, it
NOTE Confidence: 0.97967094

00:08:34.490 --> 00:08:35.769 looks like the levels are
NOTE Confidence: 0.97967094

00:08:35.769 --> 00:08:37.450 pretty low, but there's this
NOTE Confidence: 0.97967094

00:08:37.450 --> 00:08:39.290 interesting increase around the time
NOTE Confidence: 0.97967094

00:08:39.290 --> 00:08:40.970 of labor suggesting that the
NOTE Confidence: 0.97967094

00:08:40.970 --> 00:08:42.589 endocannabinoid system itself
NOTE Confidence: 0.9994675

00:08:43.050 --> 00:08:44.010 has something to do with

NOTE Confidence: 0.9994675

00:08:44.010 --> 00:08:44.750 that process.

NOTE Confidence: 0.96085495

00:08:45.785 --> 00:08:47.145 And moreover, there's at least

NOTE Confidence: 0.96085495

00:08:47.145 --> 00:08:48.605 one study that looked at

NOTE Confidence: 0.96085495

00:08:48.825 --> 00:08:49.965 circulating endocannabinoids

NOTE Confidence: 0.982632

00:08:50.425 --> 00:08:51.165 in moms,

NOTE Confidence: 0.9813129

00:08:51.865 --> 00:08:53.385 who are have high risk

NOTE Confidence: 0.9813129

00:08:53.385 --> 00:08:55.145 pregnancies, and they found that

NOTE Confidence: 0.9813129

00:08:55.145 --> 00:08:56.205 those that went on

NOTE Confidence: 0.99870783

00:08:56.585 --> 00:08:57.805 to deliver prematurely

NOTE Confidence: 0.98206764

00:08:58.110 --> 00:09:00.850 had higher circulating anandamide concentrations

NOTE Confidence: 0.98206764

00:09:01.149 --> 00:09:02.910 than those who did not,

NOTE Confidence: 0.98206764

00:09:02.910 --> 00:09:03.410 suggesting

NOTE Confidence: 0.7846013

00:09:04.029 --> 00:09:04.990 potentially there's,

NOTE Confidence: 0.9956426

00:09:06.110 --> 00:09:07.230 this could be a potential

NOTE Confidence: 0.9956426

00:09:07.230 --> 00:09:08.929 biomarker of high risk pregnancies,

NOTE Confidence: 0.9956426

00:09:09.070 --> 00:09:09.809 for example.
NOTE Confidence: 0.96708125

00:09:10.995 --> 00:09:11.875 So why does all this
NOTE Confidence: 0.96708125

00:09:11.875 --> 00:09:13.575 matter? At the outset, I
NOTE Confidence: 0.96708125

00:09:13.635 --> 00:09:14.595 talked a little bit about
NOTE Confidence: 0.96708125

00:09:14.595 --> 00:09:15.095 legalization
NOTE Confidence: 0.99342716

00:09:15.475 --> 00:09:17.395 and the importance of, these
NOTE Confidence: 0.99342716

00:09:17.395 --> 00:09:19.015 really important brain development,
NOTE Confidence: 0.9439997

00:09:19.875 --> 00:09:21.554 stages. But, you know, at
NOTE Confidence: 0.9439997

00:09:21.554 --> 00:09:23.235 least in Michigan and everywhere
NOTE Confidence: 0.9439997

00:09:23.235 --> 00:09:24.275 around the country, I know
NOTE Confidence: 0.9439997

00:09:24.275 --> 00:09:25.950 you guys have legal cannabis
NOTE Confidence: 0.9439997

00:09:26.090 --> 00:09:28.010 for recreational use age twenty
NOTE Confidence: 0.9439997

00:09:28.010 --> 00:09:29.610 one and above. You're seeing
NOTE Confidence: 0.9439997

00:09:29.610 --> 00:09:31.050 the same pattern where the
NOTE Confidence: 0.9439997

00:09:31.050 --> 00:09:32.730 the cannabis that people using
NOTE Confidence: 0.9439997

00:09:32.730 --> 00:09:34.010 today are nothing like what

NOTE Confidence: 0.9439997
00:09:34.010 --> 00:09:35.690 our parents use, what, you
NOTE Confidence: 0.9439997
00:09:35.690 --> 00:09:36.570 know, you may have used
NOTE Confidence: 0.9439997
00:09:36.570 --> 00:09:38.029 in the seventies or eighties.
NOTE Confidence: 0.9712512
00:09:38.675 --> 00:09:39.875 And there's data to support
NOTE Confidence: 0.9712512
00:09:39.875 --> 00:09:41.255 that. This is just one,
NOTE Confidence: 0.90551037
00:09:41.714 --> 00:09:42.934 dataset from NIDA,
NOTE Confidence: 0.9871113
00:09:43.714 --> 00:09:45.495 showing the increase in percent
NOTE Confidence: 0.9871113
00:09:45.554 --> 00:09:47.654 THC in cannabis flower, and
NOTE Confidence: 0.9871113
00:09:47.714 --> 00:09:48.834 this stopped at about twenty
NOTE Confidence: 0.9871113
00:09:48.834 --> 00:09:50.035 twenty. You can imagine what
NOTE Confidence: 0.9871113
00:09:50.035 --> 00:09:50.915 it is now in twenty
NOTE Confidence: 0.9871113
00:09:50.915 --> 00:09:51.735 twenty five.
NOTE Confidence: 0.9920579
00:09:52.089 --> 00:09:53.130 And, I think we were
NOTE Confidence: 0.9920579
00:09:53.130 --> 00:09:54.589 talking last week that within
NOTE Confidence: 0.9686258
00:09:55.210 --> 00:09:56.270 my house in,
NOTE Confidence: 0.99117947

00:09:56.649 --> 00:09:57.149 Detroit,
NOTE Confidence: 0.9628713

00:09:57.450 --> 00:09:58.830 there's about five dispensaries
NOTE Confidence: 0.95943004

00:09:59.929 --> 00:10:01.610 next to some psychiatry clinics,
NOTE Confidence: 0.95943004

00:10:01.610 --> 00:10:03.290 which is really fascinating, but,
NOTE Confidence: 0.95943004

00:10:03.290 --> 00:10:04.330 you know, this really way
NOTE Confidence: 0.95943004

00:10:04.490 --> 00:10:06.110 raises some public health concerns.
NOTE Confidence: 0.9278514

00:10:07.145 --> 00:10:08.105 And I haven't been to
NOTE Confidence: 0.9278514

00:10:08.105 --> 00:10:09.065 New Haven, but I did
NOTE Confidence: 0.9278514

00:10:09.065 --> 00:10:10.665 a I found Lit New
NOTE Confidence: 0.9278514

00:10:10.665 --> 00:10:11.945 Haven, which I think is
NOTE Confidence: 0.9278514

00:10:11.945 --> 00:10:13.065 pretty close to you guys
NOTE Confidence: 0.9278514

00:10:13.065 --> 00:10:14.045 right around campus.
NOTE Confidence: 0.9795539

00:10:14.665 --> 00:10:16.184 And I perused their products
NOTE Confidence: 0.9795539

00:10:16.184 --> 00:10:17.225 available, and some of the
NOTE Confidence: 0.9795539

00:10:17.225 --> 00:10:19.225 cannabis flower is approaching thirty
NOTE Confidence: 0.9795539

00:10:19.225 --> 00:10:20.125 percent THC.

NOTE Confidence: 0.9995198

00:10:20.889 --> 00:10:21.690 So this is,

NOTE Confidence: 0.98168147

00:10:22.170 --> 00:10:23.290 you know, part and parcel.

NOTE Confidence: 0.98168147

00:10:23.290 --> 00:10:24.670 The market is really driving,

NOTE Confidence: 0.9395543

00:10:25.209 --> 00:10:27.449 the percent THC concentrations higher,

NOTE Confidence: 0.9395543

00:10:27.449 --> 00:10:28.429 things like CBD.

NOTE Confidence: 0.97135884

00:10:28.970 --> 00:10:30.889 The, percent is getting much

NOTE Confidence: 0.97135884

00:10:30.889 --> 00:10:32.250 lower. And this is not

NOTE Confidence: 0.97135884

00:10:32.250 --> 00:10:33.550 to mention the high potency

NOTE Confidence: 0.97135884

00:10:33.610 --> 00:10:35.209 concentrates that folks are using

NOTE Confidence: 0.97135884

00:10:35.209 --> 00:10:37.065 where we're approaching ninety percent

NOTE Confidence: 0.97135884

00:10:37.065 --> 00:10:38.184 or even higher in some

NOTE Confidence: 0.97135884

00:10:38.184 --> 00:10:38.684 places.

NOTE Confidence: 0.9913468

00:10:39.065 --> 00:10:39.945 So this is a whole

NOTE Confidence: 0.9913468

00:10:39.945 --> 00:10:40.425 new,

NOTE Confidence: 0.9263607

00:10:40.905 --> 00:10:43.065 ballpark. You know, data couple

NOTE Confidence: 0.9263607

00:10:43.065 --> 00:10:44.845 decades ago on prenatal cannabis
NOTE Confidence: 0.9263607

00:10:44.905 --> 00:10:45.405 exposure,
NOTE Confidence: 0.9988577

00:10:45.785 --> 00:10:47.065 we're talking about a totally
NOTE Confidence: 0.9988577

00:10:47.065 --> 00:10:49.225 different exposure nowadays with with
NOTE Confidence: 0.9988577

00:10:49.225 --> 00:10:50.445 some of these new products.
NOTE Confidence: 0.97970456

00:10:51.880 --> 00:10:53.240 And then another thing relevant
NOTE Confidence: 0.97970456

00:10:53.240 --> 00:10:54.679 for development is, you know,
NOTE Confidence: 0.97970456

00:10:54.679 --> 00:10:56.040 I I drive around Detroit,
NOTE Confidence: 0.97970456

00:10:56.040 --> 00:10:57.639 and we see some really
NOTE Confidence: 0.97970456

00:10:57.639 --> 00:10:59.720 interesting and funny cannabis billboards.
NOTE Confidence: 0.97970456

00:10:59.720 --> 00:11:00.920 And then we've got edible
NOTE Confidence: 0.97970456

00:11:00.920 --> 00:11:01.980 products that are,
NOTE Confidence: 0.9822505

00:11:02.519 --> 00:11:04.074 marketed, and they look, you
NOTE Confidence: 0.9822505

00:11:04.074 --> 00:11:05.595 know, for teenagers and for
NOTE Confidence: 0.9822505

00:11:05.595 --> 00:11:06.634 kids. So there's been a
NOTE Confidence: 0.9822505

00:11:06.634 --> 00:11:08.175 ton of data looking at,

NOTE Confidence: 0.9693165

00:11:08.554 --> 00:11:10.574 children coming into emergency departments

NOTE Confidence: 0.9693165

00:11:10.634 --> 00:11:11.834 who get into their their

NOTE Confidence: 0.9693165

00:11:11.834 --> 00:11:13.295 parents' edible stash.

NOTE Confidence: 0.98523444

00:11:14.074 --> 00:11:15.035 So, you know, all of

NOTE Confidence: 0.98523444

00:11:15.035 --> 00:11:16.554 these things are raising concerns

NOTE Confidence: 0.98523444

00:11:16.554 --> 00:11:17.054 about,

NOTE Confidence: 0.9979001

00:11:17.434 --> 00:11:18.574 developing brains.

NOTE Confidence: 0.9857776

00:11:20.230 --> 00:11:21.510 And the two populations I'm

NOTE Confidence: 0.9857776

00:11:21.510 --> 00:11:22.650 gonna zoom in on,

NOTE Confidence: 0.9903423

00:11:23.270 --> 00:11:24.950 are children and adolescents and

NOTE Confidence: 0.9903423

00:11:24.950 --> 00:11:27.270 then pregnancy as well. So

NOTE Confidence: 0.9903423

00:11:27.270 --> 00:11:28.550 in teens, what I think

NOTE Confidence: 0.9903423

00:11:28.550 --> 00:11:30.390 is super interesting right now

NOTE Confidence: 0.9903423

00:11:30.390 --> 00:11:32.475 is we're seeing this perception

NOTE Confidence: 0.9903423

00:11:32.475 --> 00:11:33.995 of risk of cannabis come

NOTE Confidence: 0.9903423

00:11:33.995 --> 00:11:35.054 down over time.
NOTE Confidence: 0.97399026

00:11:35.515 --> 00:11:36.955 These are data from monitoring
NOTE Confidence: 0.97399026

00:11:36.955 --> 00:11:38.255 the future. That's a longitudinal
NOTE Confidence: 0.97399026

00:11:38.554 --> 00:11:39.535 study of,
NOTE Confidence: 0.8908093

00:11:39.915 --> 00:11:41.535 kids' use of substances
NOTE Confidence: 0.9664815

00:11:41.835 --> 00:11:44.095 and perceptions of risk. And
NOTE Confidence: 0.9664815

00:11:44.235 --> 00:11:46.495 it's very unlike alcohol where
NOTE Confidence: 0.9830066

00:11:46.809 --> 00:11:48.170 alcohol and cannabis are actually
NOTE Confidence: 0.9830066

00:11:48.170 --> 00:11:49.770 having this crossover effect where
NOTE Confidence: 0.9830066

00:11:49.770 --> 00:11:51.850 teens are seeing regular alcohol
NOTE Confidence: 0.9830066

00:11:51.850 --> 00:11:52.890 used to be more risky
NOTE Confidence: 0.9830066

00:11:52.890 --> 00:11:54.090 than cannabis for the first
NOTE Confidence: 0.9830066

00:11:54.090 --> 00:11:55.230 time ever. So,
NOTE Confidence: 0.9985101

00:11:55.610 --> 00:11:57.390 very concerning patterns there.
NOTE Confidence: 0.9832236

00:11:57.850 --> 00:11:58.730 And then, of course, during
NOTE Confidence: 0.9832236

00:11:58.730 --> 00:11:59.230 pregnancy,

NOTE Confidence: 0.9990629

00:11:59.770 --> 00:12:01.290 we see a doubling of

NOTE Confidence: 0.9990629

00:12:01.290 --> 00:12:03.575 use of cannabis during pregnancy

NOTE Confidence: 0.9990629

00:12:03.635 --> 00:12:04.775 over the past decade.

NOTE Confidence: 0.9257962

00:12:05.635 --> 00:12:07.495 Toxicology reports, obviously,

NOTE Confidence: 0.96583366

00:12:08.035 --> 00:12:09.395 you know, are better estimate

NOTE Confidence: 0.96583366

00:12:09.395 --> 00:12:11.095 than self report, but nonetheless,

NOTE Confidence: 0.96583366

00:12:11.155 --> 00:12:12.275 we're seeing a very similar

NOTE Confidence: 0.96583366

00:12:12.275 --> 00:12:13.635 pattern of rates of use

NOTE Confidence: 0.96583366

00:12:13.635 --> 00:12:14.934 increasing over time,

NOTE Confidence: 0.96314454

00:12:15.440 --> 00:12:17.440 especially in younger populations. Or

NOTE Confidence: 0.96314454

00:12:17.440 --> 00:12:19.360 in Detroit where I work,

NOTE Confidence: 0.96314454

00:12:19.360 --> 00:12:20.320 I'll get to later, we're

NOTE Confidence: 0.96314454

00:12:20.320 --> 00:12:21.920 seeing, almost a third are

NOTE Confidence: 0.96314454

00:12:21.920 --> 00:12:24.179 using cannabis during pregnancy, so,

NOTE Confidence: 0.9990594

00:12:24.559 --> 00:12:26.020 very, very concerning.

NOTE Confidence: 0.96807206

00:12:27.535 --> 00:12:28.415 So I wanna give you
NOTE Confidence: 0.96807206

00:12:28.415 --> 00:12:29.775 a snapshot again of some
NOTE Confidence: 0.96807206

00:12:29.775 --> 00:12:30.815 of our work we're doing
NOTE Confidence: 0.96807206

00:12:30.815 --> 00:12:32.355 in pregnancy and then adolescence.
NOTE Confidence: 0.9996082

00:12:33.054 --> 00:12:33.554 So
NOTE Confidence: 0.97959554

00:12:34.015 --> 00:12:35.955 despite a surgeon general warning,
NOTE Confidence: 0.9984065

00:12:36.575 --> 00:12:38.175 suggesting that no use of
NOTE Confidence: 0.9984065

00:12:38.175 --> 00:12:39.875 cannabis is safe during pregnancy,
NOTE Confidence: 0.98101586

00:12:40.335 --> 00:12:41.295 we know that people are
NOTE Confidence: 0.98101586

00:12:41.295 --> 00:12:42.835 still using. There are
NOTE Confidence: 0.9899629

00:12:43.320 --> 00:12:45.800 emerging data suggesting adverse health
NOTE Confidence: 0.9899629

00:12:45.800 --> 00:12:47.960 effects on offspring, including lower
NOTE Confidence: 0.9899629

00:12:47.960 --> 00:12:49.400 birth weight, greater risk of
NOTE Confidence: 0.9899629

00:12:49.400 --> 00:12:50.460 preterm birth,
NOTE Confidence: 0.97529095

00:12:50.840 --> 00:12:52.440 greater risk of child symptoms
NOTE Confidence: 0.97529095

00:12:52.440 --> 00:12:53.100 of psychopathology.

NOTE Confidence: 0.9993632

00:12:53.880 --> 00:12:54.679 And a lot of this

NOTE Confidence: 0.9993632

00:12:54.679 --> 00:12:55.660 is coming from

NOTE Confidence: 0.9765741

00:12:55.964 --> 00:12:58.125 the large ABCD dataset, which

NOTE Confidence: 0.9765741

00:12:58.125 --> 00:12:59.165 I think everyone on this

NOTE Confidence: 0.9765741

00:12:59.165 --> 00:13:00.444 call should probably be aware

NOTE Confidence: 0.9765741

00:13:00.444 --> 00:13:01.804 of. It's the largest study

NOTE Confidence: 0.9765741

00:13:01.804 --> 00:13:03.584 of neurodevelopment ever conducted.

NOTE Confidence: 0.9814363

00:13:04.444 --> 00:13:06.204 And we'll see more more

NOTE Confidence: 0.9814363

00:13:06.204 --> 00:13:07.024 data come,

NOTE Confidence: 0.99054

00:13:07.485 --> 00:13:08.524 out through that study in

NOTE Confidence: 0.99054

00:13:08.524 --> 00:13:09.644 the next couple of years,

NOTE Confidence: 0.99054

00:13:09.644 --> 00:13:11.400 but they're seeing a really

NOTE Confidence: 0.99054

00:13:11.400 --> 00:13:12.300 broad scale

NOTE Confidence: 0.9518248

00:13:12.600 --> 00:13:13.900 increased risk of psychopathology,

NOTE Confidence: 0.9695056

00:13:15.320 --> 00:13:17.500 associated with prenatal cannabis exposure

NOTE Confidence: 0.9695056

00:13:17.559 --> 00:13:18.760 a decade later or a
NOTE Confidence: 0.9695056

00:13:18.760 --> 00:13:19.900 decade before that.
NOTE Confidence: 0.9857599

00:13:20.440 --> 00:13:21.500 So quite concerning,
NOTE Confidence: 0.9537096

00:13:22.120 --> 00:13:23.240 even after we adjust for
NOTE Confidence: 0.9537096

00:13:23.240 --> 00:13:25.080 things like prenatal tobacco exposure
NOTE Confidence: 0.9537096

00:13:25.080 --> 00:13:26.625 and other potential confounds.
NOTE Confidence: 0.9612451

00:13:27.965 --> 00:13:29.325 So during COVID, we weren't
NOTE Confidence: 0.9612451

00:13:29.325 --> 00:13:30.365 able to collect our own
NOTE Confidence: 0.9612451

00:13:30.365 --> 00:13:31.485 data, so we thought why
NOTE Confidence: 0.9612451

00:13:31.485 --> 00:13:33.325 not mine this giant dataset
NOTE Confidence: 0.9612451

00:13:33.325 --> 00:13:34.605 of over ten thousand kids
NOTE Confidence: 0.9612451

00:13:34.605 --> 00:13:36.145 and see if prenatal cannabis
NOTE Confidence: 0.9612451

00:13:36.205 --> 00:13:37.985 exposure does affect neurodevelopmental
NOTE Confidence: 0.8437019

00:13:38.525 --> 00:13:39.025 outcomes.
NOTE Confidence: 0.96673685

00:13:40.079 --> 00:13:41.040 So a couple of my
NOTE Confidence: 0.96673685

00:13:41.040 --> 00:13:42.720 former students led this work,

NOTE Confidence: 0.96673685

00:13:42.720 --> 00:13:44.320 and this was over ten

NOTE Confidence: 0.96673685

00:13:44.320 --> 00:13:45.140 thousand kids.

NOTE Confidence: 0.9918406

00:13:46.000 --> 00:13:47.679 Of their caregivers, only four

NOTE Confidence: 0.9918406

00:13:47.679 --> 00:13:49.679 percent of them endorsed using

NOTE Confidence: 0.9918406

00:13:49.679 --> 00:13:50.980 cannabis during pregnancy.

NOTE Confidence: 0.9835219

00:13:51.695 --> 00:13:52.895 One percent went on to

NOTE Confidence: 0.9835219

00:13:52.895 --> 00:13:54.015 use after they found out

NOTE Confidence: 0.9835219

00:13:54.015 --> 00:13:55.075 that they are pregnant.

NOTE Confidence: 0.9956281

00:13:56.015 --> 00:13:57.775 And from that, we looked

NOTE Confidence: 0.9956281

00:13:57.775 --> 00:13:58.755 at child neurodevelopmental

NOTE Confidence: 0.8123385

00:13:59.375 --> 00:13:59.875 outcomes.

NOTE Confidence: 0.9573019

00:14:00.335 --> 00:14:02.095 And Mohammed found that those

NOTE Confidence: 0.9573019

00:14:02.095 --> 00:14:03.875 exposed to cannabis in utero

NOTE Confidence: 0.90910065

00:14:04.340 --> 00:14:06.100 had lower resting state functional

NOTE Confidence: 0.90910065

00:14:06.100 --> 00:14:08.440 connectivity between the salience network

NOTE Confidence: 0.997272

00:14:08.820 --> 00:14:10.520 and the ventral attention network.
NOTE Confidence: 0.9876971

00:14:10.980 --> 00:14:12.679 These are two really core
NOTE Confidence: 0.9876971

00:14:12.900 --> 00:14:14.040 large scale neurocognitive
NOTE Confidence: 0.9918363

00:14:14.420 --> 00:14:15.800 networks important for
NOTE Confidence: 0.99970096

00:14:16.179 --> 00:14:17.625 redirecting your attention
NOTE Confidence: 0.99525994

00:14:17.925 --> 00:14:20.105 to salient or biologically relevant
NOTE Confidence: 0.99525994

00:14:20.165 --> 00:14:21.385 information in the environment.
NOTE Confidence: 0.98598146

00:14:22.245 --> 00:14:23.925 Interestingly, doctor D'Souza, I didn't
NOTE Confidence: 0.98598146

00:14:23.925 --> 00:14:24.965 mention this to you, but,
NOTE Confidence: 0.96690714

00:14:25.925 --> 00:14:27.125 some of these outcomes were
NOTE Confidence: 0.96690714

00:14:27.125 --> 00:14:28.985 related to psychotic like experiences,
NOTE Confidence: 0.9581012

00:14:30.085 --> 00:14:31.525 in this in these youth.
NOTE Confidence: 0.9581012

00:14:31.525 --> 00:14:32.830 So, of course, it'll be
NOTE Confidence: 0.9581012

00:14:32.830 --> 00:14:34.270 interesting to see if as
NOTE Confidence: 0.9581012

00:14:34.270 --> 00:14:35.790 these children age, do they
NOTE Confidence: 0.9581012

00:14:35.790 --> 00:14:37.090 actually convert into,

NOTE Confidence: 0.9557608

00:14:38.030 --> 00:14:38.910 you know, more of a

NOTE Confidence: 0.9557608

00:14:38.910 --> 00:14:40.670 a clinical phenotype? But, obviously,

NOTE Confidence: 0.9557608

00:14:40.670 --> 00:14:41.870 this was very early on.

NOTE Confidence: 0.9557608

00:14:41.870 --> 00:14:42.990 This was during their their

NOTE Confidence: 0.9557608

00:14:42.990 --> 00:14:44.450 early adolescent phase.

NOTE Confidence: 0.9485904

00:14:45.525 --> 00:14:47.465 Julia was interested in structural

NOTE Confidence: 0.9485904

00:14:47.685 --> 00:14:49.045 signature, so she looked at

NOTE Confidence: 0.9485904

00:14:49.045 --> 00:14:50.405 some of the diffusion tensor

NOTE Confidence: 0.9485904

00:14:50.405 --> 00:14:51.785 imaging data data,

NOTE Confidence: 0.99788666

00:14:52.165 --> 00:14:53.145 and she found

NOTE Confidence: 0.99311787

00:14:53.605 --> 00:14:55.625 those exposed to prenatal cannabis

NOTE Confidence: 0.99311787

00:14:55.685 --> 00:14:57.225 had lower fractional anisotropy,

NOTE Confidence: 0.98084545

00:14:57.930 --> 00:14:58.890 which is a marker of

NOTE Confidence: 0.98084545

00:14:58.890 --> 00:15:00.570 white matter microstructure. It's very

NOTE Confidence: 0.98084545

00:15:00.570 --> 00:15:01.070 nonspecific,

NOTE Confidence: 0.9927102

00:15:02.010 --> 00:15:02.890 but in the left and
NOTE Confidence: 0.9927102

00:15:02.890 --> 00:15:03.710 the right fornix,
NOTE Confidence: 0.99819785

00:15:04.170 --> 00:15:05.370 which is a really interesting
NOTE Confidence: 0.99819785

00:15:05.370 --> 00:15:06.910 white matter pathway for
NOTE Confidence: 0.96338534

00:15:07.290 --> 00:15:09.370 learning and emotional memory. So
NOTE Confidence: 0.96338534

00:15:09.370 --> 00:15:10.570 again, this was very early.
NOTE Confidence: 0.96338534

00:15:10.570 --> 00:15:11.070 It's
NOTE Confidence: 0.98895407

00:15:11.625 --> 00:15:12.905 to be determined if any
NOTE Confidence: 0.98895407

00:15:12.905 --> 00:15:13.805 of these neural,
NOTE Confidence: 0.9966539

00:15:14.345 --> 00:15:16.125 changes we're seeing relate to,
NOTE Confidence: 0.99452007

00:15:16.985 --> 00:15:18.905 psychiatric outcomes as these children
NOTE Confidence: 0.99452007

00:15:18.905 --> 00:15:20.105 age, but that will definitely
NOTE Confidence: 0.99452007

00:15:20.105 --> 00:15:22.365 be an, important area for
NOTE Confidence: 0.99452007

00:15:22.425 --> 00:15:23.725 for this line of work.
NOTE Confidence: 0.9923772

00:15:27.260 --> 00:15:28.460 So another thing we're looking
NOTE Confidence: 0.9923772

00:15:28.460 --> 00:15:29.740 at is what is happening

NOTE Confidence: 0.9923772

00:15:29.740 --> 00:15:31.180 during pregnancy. So what I

NOTE Confidence: 0.9923772

00:15:31.180 --> 00:15:32.860 just showed you was age

NOTE Confidence: 0.9923772

00:15:32.860 --> 00:15:33.900 ten and eleven, so a

NOTE Confidence: 0.9923772

00:15:33.900 --> 00:15:35.660 decade later. But what's happening

NOTE Confidence: 0.9923772

00:15:35.660 --> 00:15:37.280 during pregnancy? Do endocannabinoids

NOTE Confidence: 0.9805976

00:15:38.274 --> 00:15:39.795 relate to birth outcomes related

NOTE Confidence: 0.9805976

00:15:39.795 --> 00:15:41.175 to maternal mental health?

NOTE Confidence: 0.9176485

00:15:41.875 --> 00:15:43.555 So Tamar Gir at Ohio

NOTE Confidence: 0.9176485

00:15:43.555 --> 00:15:45.955 State University has, a really

NOTE Confidence: 0.9176485

00:15:45.955 --> 00:15:46.455 interesting,

NOTE Confidence: 0.90420043

00:15:47.795 --> 00:15:49.395 dataset of prospective stud

NOTE Confidence: 0.9958375

00:15:49.955 --> 00:15:52.135 prospectively collected data during pregnancy

NOTE Confidence: 0.96212673

00:15:52.870 --> 00:15:54.250 in a low risk cohort,

NOTE Confidence: 0.9981986

00:15:54.630 --> 00:15:56.070 and she took blood samples

NOTE Confidence: 0.9981986

00:15:56.070 --> 00:15:57.850 and measured maternal mental health

NOTE Confidence: 0.98333466

00:15:58.310 --> 00:16:00.490 as well as, neonatal outcomes.

NOTE Confidence: 0.9988102

00:16:01.190 --> 00:16:02.070 And we were able to

NOTE Confidence: 0.9988102

00:16:02.070 --> 00:16:03.430 do a secondary analysis to

NOTE Confidence: 0.9988102

00:16:03.430 --> 00:16:04.170 see if endocannabinoids

NOTE Confidence: 0.99941605

00:16:04.710 --> 00:16:05.670 relate to any of those

NOTE Confidence: 0.99941605

00:16:05.670 --> 00:16:06.170 outcomes.

NOTE Confidence: 0.99566317

00:16:06.935 --> 00:16:08.135 So we found that in

NOTE Confidence: 0.99566317

00:16:08.135 --> 00:16:09.274 placental tissue,

NOTE Confidence: 0.9501095

00:16:10.695 --> 00:16:12.074 the individuals with greater,

NOTE Confidence: 0.93135774

00:16:12.615 --> 00:16:14.795 adverse obstetric outcomes like preterm

NOTE Confidence: 0.93135774

00:16:14.855 --> 00:16:16.315 birth, like low birth weight,

NOTE Confidence: 0.98704004

00:16:16.695 --> 00:16:18.074 showed greater anandamide

NOTE Confidence: 0.9980959

00:16:18.375 --> 00:16:20.214 concentrations in placenta. So this

NOTE Confidence: 0.9980959

00:16:20.214 --> 00:16:21.675 replicates what we've seen

NOTE Confidence: 0.98470783

00:16:22.180 --> 00:16:23.380 previously in the literature in

NOTE Confidence: 0.98470783

00:16:23.380 --> 00:16:24.820 a high risk cohort. This

NOTE Confidence: 0.98470783

00:16:24.820 --> 00:16:25.780 is now a low risk

NOTE Confidence: 0.98470783

00:16:25.780 --> 00:16:27.800 cohort, so very similar pattern.

NOTE Confidence: 0.9814238

00:16:28.340 --> 00:16:29.380 I do wanna mention, though,

NOTE Confidence: 0.9814238

00:16:29.380 --> 00:16:30.580 because it's low risk, we

NOTE Confidence: 0.9814238

00:16:30.580 --> 00:16:31.880 did have very few,

NOTE Confidence: 0.9518393

00:16:33.060 --> 00:16:33.633 abstract abstract abstract abstract abstract

NOTE Confidence: 0.9518393

00:16:33.646 --> 00:16:33.766 abstract abstract abstract abstract abstract

NOTE Confidence: 0.9518393

00:16:33.780 --> 00:16:33.900 abstract abstract abstract abstract abstract

NOTE Confidence: 0.9518393

00:16:33.913 --> 00:16:34.033 abstract abstract abstract abstract abstract

NOTE Confidence: 0.9518393

00:16:34.046 --> 00:16:34.166 abstract abstract abstract abstract abstract

NOTE Confidence: 0.9518393

00:16:34.180 --> 00:16:34.360 abstract abstract abstract abstract abstract

NOTE Confidence: 0.9518393

00:16:34.391 --> 00:16:34.665 abstract abstract abstract abstract abstract

NOTE Confidence: 0.9518393

00:16:34.696 --> 00:16:35.396 abstract abstract abstract abstract abstract

NOTE Confidence: 0.9518393

00:16:35.468 --> 00:16:36.120 abstract, and,

NOTE Confidence: 0.7648406

00:16:36.644 --> 00:16:37.144 it'll

NOTE Confidence: 0.33475137

00:16:47.445 --> 00:16:47.945 be,
NOTE Confidence: 0.99949586

00:16:49.830 --> 00:16:50.810 We have very few biomarkers
NOTE Confidence: 0.98983806

00:16:51.350 --> 00:16:53.670 of maternal depression. So we
NOTE Confidence: 0.98983806

00:16:53.670 --> 00:16:54.630 looked at some of our
NOTE Confidence: 0.98983806

00:16:54.630 --> 00:16:56.310 maternal serum samples, and we
NOTE Confidence: 0.98983806

00:16:56.310 --> 00:16:57.770 found that those who had
NOTE Confidence: 0.98983806

00:16:58.070 --> 00:17:00.150 higher depressive symptoms in the
NOTE Confidence: 0.98983806

00:17:00.150 --> 00:17:00.970 second trimester
NOTE Confidence: 0.897171

00:17:01.590 --> 00:17:03.530 showed lower two AG concentrations
NOTE Confidence: 0.9960661

00:17:03.990 --> 00:17:05.130 in the third trimester,
NOTE Confidence: 0.996778

00:17:06.015 --> 00:17:07.455 which is super interesting to
NOTE Confidence: 0.996778

00:17:07.455 --> 00:17:08.815 me because this replicates one
NOTE Confidence: 0.996778

00:17:08.815 --> 00:17:10.115 of the first studies of
NOTE Confidence: 0.996778

00:17:10.335 --> 00:17:10.835 endocannabinoids
NOTE Confidence: 0.9561635

00:17:11.295 --> 00:17:13.055 in a psychiatric population, which
NOTE Confidence: 0.9561635

00:17:13.055 --> 00:17:14.355 is done by Matt Hill,

NOTE Confidence: 0.87089103
00:17:14.655 --> 00:17:15.955 Cece Hillard, and colleagues,
NOTE Confidence: 0.99531806
00:17:16.415 --> 00:17:18.035 over two decades ago now.
NOTE Confidence: 0.99361724
00:17:18.335 --> 00:17:19.635 And what they found,
NOTE Confidence: 0.9998703
00:17:19.935 --> 00:17:21.475 was a very similar pattern
NOTE Confidence: 0.99769104
00:17:21.830 --> 00:17:22.490 in unmedicated
NOTE Confidence: 0.97341233
00:17:23.109 --> 00:17:24.869 women with depression. They also
NOTE Confidence: 0.97341233
00:17:24.869 --> 00:17:25.609 had lower
NOTE Confidence: 0.9515162
00:17:25.990 --> 00:17:27.750 CRM two AG. So, potentially,
NOTE Confidence: 0.9515162
00:17:27.750 --> 00:17:28.650 this could be,
NOTE Confidence: 0.9835901
00:17:29.670 --> 00:17:31.850 a very, similar pattern across
NOTE Confidence: 0.9835901
00:17:31.910 --> 00:17:33.430 across studies and across,
NOTE Confidence: 0.9998059
00:17:33.750 --> 00:17:34.250 women.
NOTE Confidence: 0.9963545
00:17:35.524 --> 00:17:36.484 So as I mentioned, one
NOTE Confidence: 0.9963545
00:17:36.484 --> 00:17:38.005 of the limitations is we're
NOTE Confidence: 0.9963545
00:17:38.005 --> 00:17:39.125 working with a low risk
NOTE Confidence: 0.9963545

00:17:39.125 --> 00:17:40.024 cohort here.
NOTE Confidence: 0.9893769

00:17:40.484 --> 00:17:41.865 Again, I work in Detroit.
NOTE Confidence: 0.9893769

00:17:41.924 --> 00:17:43.284 We have, some of the
NOTE Confidence: 0.9893769

00:17:43.284 --> 00:17:45.065 highest rates of cannabis use,
NOTE Confidence: 0.9901261

00:17:45.845 --> 00:17:47.284 across the country, I would
NOTE Confidence: 0.9901261

00:17:47.284 --> 00:17:48.565 bet, and we also have
NOTE Confidence: 0.9901261

00:17:48.565 --> 00:17:50.100 some of the worst perinatal
NOTE Confidence: 0.9901261

00:17:50.159 --> 00:17:51.919 outcomes. It's worse than some
NOTE Confidence: 0.9901261

00:17:51.919 --> 00:17:52.980 third world countries.
NOTE Confidence: 0.9981559

00:17:53.679 --> 00:17:55.359 So do we see similar
NOTE Confidence: 0.9981559

00:17:55.359 --> 00:17:57.220 findings in our Detroit cohort?
NOTE Confidence: 0.98357844

00:17:58.240 --> 00:17:59.440 And that's something I wish
NOTE Confidence: 0.98357844

00:17:59.440 --> 00:18:00.639 I could tell you. We're
NOTE Confidence: 0.98357844

00:18:00.639 --> 00:18:01.759 working on that right now.
NOTE Confidence: 0.98357844

00:18:01.759 --> 00:18:03.065 We've just wrapped up data
NOTE Confidence: 0.98357844

00:18:03.065 --> 00:18:04.265 collection, so we're waiting for

NOTE Confidence: 0.98357844

00:18:04.265 --> 00:18:05.545 basically the children to be

NOTE Confidence: 0.98357844

00:18:05.545 --> 00:18:06.045 born.

NOTE Confidence: 0.9844831

00:18:06.585 --> 00:18:07.945 But we're looking to replicate

NOTE Confidence: 0.9844831

00:18:07.945 --> 00:18:09.145 this study. And what I

NOTE Confidence: 0.9844831

00:18:09.145 --> 00:18:10.525 can tell you is

NOTE Confidence: 0.9797703

00:18:10.984 --> 00:18:12.825 in a the baseline cohort

NOTE Confidence: 0.9797703

00:18:12.825 --> 00:18:14.505 when we're asking women about

NOTE Confidence: 0.9797703

00:18:14.505 --> 00:18:16.105 their substance use during pregnancy

NOTE Confidence: 0.9797703

00:18:16.105 --> 00:18:17.565 and their mental health outcomes,

NOTE Confidence: 0.95266396

00:18:18.019 --> 00:18:19.220 We are seeing super high

NOTE Confidence: 0.95266396

00:18:19.220 --> 00:18:20.820 rates of cannabis use much

NOTE Confidence: 0.95266396

00:18:20.820 --> 00:18:22.279 higher than national averages,

NOTE Confidence: 0.99932384

00:18:22.899 --> 00:18:24.440 and a good portion are

NOTE Confidence: 0.99932384

00:18:24.659 --> 00:18:25.859 using one or more times

NOTE Confidence: 0.99932384

00:18:25.859 --> 00:18:26.519 a day.

NOTE Confidence: 0.9920308

00:18:27.619 --> 00:18:28.980 Interestingly, this is something we
NOTE Confidence: 0.9920308

00:18:28.980 --> 00:18:30.019 talked about at the conference
NOTE Confidence: 0.9920308

00:18:30.019 --> 00:18:30.980 last week. They were quite
NOTE Confidence: 0.9920308

00:18:30.980 --> 00:18:33.000 skeptical of CBD or cannabidiol,
NOTE Confidence: 0.9920308

00:18:33.220 --> 00:18:34.635 which all of you know
NOTE Confidence: 0.9920308

00:18:34.635 --> 00:18:35.535 is an unregulated
NOTE Confidence: 0.93731153

00:18:35.835 --> 00:18:37.375 supplement. It's not scheduled.
NOTE Confidence: 0.9618144

00:18:38.155 --> 00:18:39.455 But yet they had no
NOTE Confidence: 0.9618144

00:18:39.515 --> 00:18:40.955 qualms about using a schedule
NOTE Confidence: 0.9618144

00:18:40.955 --> 00:18:42.175 one, you know, drug
NOTE Confidence: 0.93937653

00:18:42.475 --> 00:18:44.555 during pregnancy. So there's this
NOTE Confidence: 0.93937653

00:18:44.555 --> 00:18:45.055 huge,
NOTE Confidence: 0.99945194

00:18:45.675 --> 00:18:46.975 public health misconception.
NOTE Confidence: 0.9747447

00:18:47.355 --> 00:18:49.080 We have green doula groups
NOTE Confidence: 0.9747447

00:18:49.159 --> 00:18:50.600 in Detroit. You know, people
NOTE Confidence: 0.9747447

00:18:50.600 --> 00:18:52.279 think it's all natural. It's

NOTE Confidence: 0.9747447

00:18:52.279 --> 00:18:53.720 all safe. Cyril, I'm sorry.

NOTE Confidence: 0.9747447

00:18:53.720 --> 00:18:54.600 I'm sure you hear that

NOTE Confidence: 0.9747447

00:18:54.600 --> 00:18:55.559 from your patients all the

NOTE Confidence: 0.9747447

00:18:55.559 --> 00:18:57.080 time, but, you know, we

NOTE Confidence: 0.9747447

00:18:57.080 --> 00:18:58.440 have a big, public health

NOTE Confidence: 0.9747447

00:18:58.440 --> 00:18:59.899 messaging problem here.

NOTE Confidence: 0.99926215

00:19:01.399 --> 00:19:02.380 So I wanna

NOTE Confidence: 0.99305195

00:19:02.715 --> 00:19:04.975 transition now to the adolescent

NOTE Confidence: 0.99305195

00:19:05.035 --> 00:19:06.554 years, and this is where

NOTE Confidence: 0.99305195

00:19:06.554 --> 00:19:07.595 I've spent most of my

NOTE Confidence: 0.99305195

00:19:07.595 --> 00:19:08.095 time,

NOTE Confidence: 0.9881471

00:19:08.794 --> 00:19:10.635 doing research. And kids are

NOTE Confidence: 0.9881471

00:19:10.635 --> 00:19:11.135 hilarious

NOTE Confidence: 0.97732925

00:19:11.595 --> 00:19:11.994 and,

NOTE Confidence: 0.98362297

00:19:12.475 --> 00:19:13.515 fun to work with, of

NOTE Confidence: 0.98362297

00:19:13.515 --> 00:19:15.035 course, but they're really hard
NOTE Confidence: 0.98362297

00:19:15.035 --> 00:19:15.914 to keep still in an
NOTE Confidence: 0.98362297

00:19:15.914 --> 00:19:17.869 MRI scanner. So I don't
NOTE Confidence: 0.98362297

00:19:17.869 --> 00:19:18.750 just work with this group
NOTE Confidence: 0.98362297

00:19:18.750 --> 00:19:19.630 because I like to make
NOTE Confidence: 0.98362297

00:19:19.630 --> 00:19:21.410 my life difficult, but because
NOTE Confidence: 0.98396057

00:19:21.790 --> 00:19:23.170 we know that many psychiatric
NOTE Confidence: 0.98396057

00:19:23.310 --> 00:19:25.070 symptoms begin during the teen
NOTE Confidence: 0.98396057

00:19:25.070 --> 00:19:26.130 years especially.
NOTE Confidence: 0.99952036

00:19:26.910 --> 00:19:27.869 So what I'm showing you
NOTE Confidence: 0.99952036

00:19:27.869 --> 00:19:28.830 here is the age of
NOTE Confidence: 0.99952036

00:19:28.830 --> 00:19:30.690 onset distribution of anxiety
NOTE Confidence: 0.9654648

00:19:31.070 --> 00:19:32.270 shown in red. And what
NOTE Confidence: 0.9654648

00:19:32.270 --> 00:19:33.490 you can see is that,
NOTE Confidence: 0.9565942

00:19:34.165 --> 00:19:36.484 many disorders including anxiety have
NOTE Confidence: 0.9565942

00:19:36.484 --> 00:19:38.185 their roots traced back to

NOTE Confidence: 0.9565942

00:19:38.484 --> 00:19:39.685 really the first two decades

NOTE Confidence: 0.9565942

00:19:39.685 --> 00:19:40.345 of life.

NOTE Confidence: 0.97674704

00:19:41.285 --> 00:19:42.744 And then anxiety is really

NOTE Confidence: 0.95920455

00:19:44.085 --> 00:19:45.045 interesting for a lot of

NOTE Confidence: 0.95920455

00:19:45.045 --> 00:19:46.585 reasons, but we know that

NOTE Confidence: 0.9961499

00:19:46.970 --> 00:19:48.830 adolescent or early onset anxiety

NOTE Confidence: 0.9961499

00:19:49.130 --> 00:19:50.570 can predict greater risk of

NOTE Confidence: 0.9961499

00:19:50.570 --> 00:19:52.910 substance use disorders, depressive disorders,

NOTE Confidence: 0.99141955

00:19:53.369 --> 00:19:55.210 variety of other psychiatric disorders

NOTE Confidence: 0.99141955

00:19:55.210 --> 00:19:56.810 later in life. So we

NOTE Confidence: 0.99141955

00:19:56.810 --> 00:19:58.330 think it's it's interesting to

NOTE Confidence: 0.99141955

00:19:58.330 --> 00:19:59.290 study that as kind of

NOTE Confidence: 0.99141955

00:19:59.290 --> 00:20:01.050 a harbinger for for later

NOTE Confidence: 0.99141955

00:20:01.050 --> 00:20:02.190 psychiatric risk.

NOTE Confidence: 0.97069436

00:20:03.825 --> 00:20:05.744 So we are interested in

NOTE Confidence: 0.97069436

00:20:05.744 --> 00:20:07.845 adolescence. Are there any biomarkers?

NOTE Confidence: 0.9994388

00:20:08.305 --> 00:20:09.845 Is the endocannabinoid

NOTE Confidence: 0.9823708

00:20:10.225 --> 00:20:12.225 system involved in psychiatric risk

NOTE Confidence: 0.9823708

00:20:12.225 --> 00:20:13.585 given that it also changes

NOTE Confidence: 0.9823708

00:20:13.585 --> 00:20:15.825 dynamically during this this time

NOTE Confidence: 0.9823708

00:20:15.825 --> 00:20:16.325 period?

NOTE Confidence: 0.9534191

00:20:17.010 --> 00:20:18.290 These were questions we don't

NOTE Confidence: 0.9534191

00:20:18.369 --> 00:20:19.570 we didn't have answers to.

NOTE Confidence: 0.9534191

00:20:19.570 --> 00:20:21.090 I I argue we still

NOTE Confidence: 0.9534191

00:20:21.090 --> 00:20:21.970 don't, and we need much

NOTE Confidence: 0.9534191

00:20:21.970 --> 00:20:23.190 more research. But,

NOTE Confidence: 0.9711377

00:20:23.730 --> 00:20:25.270 I received a k award

NOTE Confidence: 0.9711377

00:20:25.490 --> 00:20:27.250 in twenty nineteen to study

NOTE Confidence: 0.9711377

00:20:27.250 --> 00:20:28.390 this exact topic,

NOTE Confidence: 0.907346

00:20:28.924 --> 00:20:30.445 and I'm excited to share

NOTE Confidence: 0.907346

00:20:30.445 --> 00:20:31.984 finally after COVID,

NOTE Confidence: 0.9848093
00:20:32.845 --> 00:20:34.044 some data from that grant
NOTE Confidence: 0.9848093
00:20:34.044 --> 00:20:34.924 with you all where we
NOTE Confidence: 0.9848093
00:20:34.924 --> 00:20:36.544 were interested in looking at,
NOTE Confidence: 0.99631107
00:20:36.924 --> 00:20:37.424 endocannabinoids
NOTE Confidence: 0.9875451
00:20:37.965 --> 00:20:39.405 in humans. There wasn't much
NOTE Confidence: 0.9875451
00:20:39.405 --> 00:20:41.100 done at that time, and
NOTE Confidence: 0.9875451
00:20:41.260 --> 00:20:42.460 we started with some really
NOTE Confidence: 0.9875451
00:20:42.460 --> 00:20:44.059 basic questions. So do we
NOTE Confidence: 0.9875451
00:20:44.059 --> 00:20:45.580 see sex differences? Do we
NOTE Confidence: 0.9875451
00:20:45.580 --> 00:20:46.720 see age differences
NOTE Confidence: 0.97690135
00:20:47.260 --> 00:20:48.700 in human adolescents? So this
NOTE Confidence: 0.97690135
00:20:48.700 --> 00:20:50.480 was ages ten to seventeen.
NOTE Confidence: 0.9980497
00:20:52.059 --> 00:20:53.179 And what we found was
NOTE Confidence: 0.9980497
00:20:53.179 --> 00:20:53.500 that,
NOTE Confidence: 0.9465615
00:20:53.980 --> 00:20:55.020 for these graphs, on the
NOTE Confidence: 0.9465615

00:20:55.020 --> 00:20:56.195 left on the left will
NOTE Confidence: 0.9465615

00:20:56.195 --> 00:20:56.855 be anandamide,
NOTE Confidence: 0.974763

00:20:57.555 --> 00:20:59.234 right is two AG. And
NOTE Confidence: 0.974763

00:20:59.234 --> 00:21:00.515 for two AG, we see
NOTE Confidence: 0.974763

00:21:00.515 --> 00:21:01.975 a sex difference. There's,
NOTE Confidence: 0.9939836

00:21:02.835 --> 00:21:04.775 typically lower two AG concentrations
NOTE Confidence: 0.9939836

00:21:04.915 --> 00:21:06.695 in females compared to males.
NOTE Confidence: 0.9625208

00:21:07.395 --> 00:21:08.515 Some folks who are doing
NOTE Confidence: 0.9625208

00:21:08.515 --> 00:21:10.169 some life span cannabinoid work
NOTE Confidence: 0.9625208

00:21:10.169 --> 00:21:11.369 are finding a really similar
NOTE Confidence: 0.9625208

00:21:11.369 --> 00:21:13.369 pattern even in, older adults.
NOTE Confidence: 0.9625208

00:21:13.369 --> 00:21:15.289 So that'd be interesting to
NOTE Confidence: 0.9625208

00:21:15.289 --> 00:21:16.429 do a life span
NOTE Confidence: 0.9702268

00:21:16.890 --> 00:21:18.730 analysis of these circulating levels
NOTE Confidence: 0.9702268

00:21:18.730 --> 00:21:19.789 and see if that's,
NOTE Confidence: 0.9329728

00:21:20.169 --> 00:21:21.690 something that replicates across the

NOTE Confidence: 0.9329728
00:21:21.690 --> 00:21:22.510 life span.
NOTE Confidence: 0.9517626
00:21:23.505 --> 00:21:24.705 As far as age effects,
NOTE Confidence: 0.9517626
00:21:24.705 --> 00:21:25.984 we do see a linear
NOTE Confidence: 0.9517626
00:21:25.984 --> 00:21:28.005 decline in two AG concentrations,
NOTE Confidence: 0.9948347
00:21:28.945 --> 00:21:30.625 in particular. I think it's
NOTE Confidence: 0.9948347
00:21:30.625 --> 00:21:31.665 too soon to tell. We
NOTE Confidence: 0.9948347
00:21:31.665 --> 00:21:32.865 don't have the sample size
NOTE Confidence: 0.9948347
00:21:32.865 --> 00:21:34.465 to get into nonlinear effects
NOTE Confidence: 0.9948347
00:21:34.465 --> 00:21:34.800 with
NOTE Confidence: 0.9789813
00:21:35.360 --> 00:21:36.800 anandamide, but it'd be really
NOTE Confidence: 0.9789813
00:21:36.800 --> 00:21:38.560 interesting I'd be really interested
NOTE Confidence: 0.9789813
00:21:38.560 --> 00:21:39.680 to see if these coincide
NOTE Confidence: 0.9789813
00:21:39.680 --> 00:21:40.180 with,
NOTE Confidence: 0.9980096
00:21:40.640 --> 00:21:42.080 puberty onset in in the
NOTE Confidence: 0.9980096
00:21:42.080 --> 00:21:42.580 future.
NOTE Confidence: 0.9476567

00:21:43.440 --> 00:21:45.119 And then we see some
NOTE Confidence: 0.9476567

00:21:45.119 --> 00:21:45.619 relationship
NOTE Confidence: 0.9741679

00:21:45.920 --> 00:21:47.520 with body mass index, obviously,
NOTE Confidence: 0.9741679

00:21:47.520 --> 00:21:48.960 a proxy of body size
NOTE Confidence: 0.9741679

00:21:48.960 --> 00:21:50.875 and adiposity, but this is
NOTE Confidence: 0.9741679

00:21:50.875 --> 00:21:51.855 a really well replicated
NOTE Confidence: 0.9992198

00:21:52.155 --> 00:21:52.655 finding
NOTE Confidence: 0.9899894

00:21:53.195 --> 00:21:54.715 that, those with higher BMI
NOTE Confidence: 0.9899894

00:21:54.715 --> 00:21:56.415 show higher anandamide concentrations.
NOTE Confidence: 0.9969549

00:21:57.275 --> 00:21:58.575 And then endocannabinoids
NOTE Confidence: 0.9817305

00:21:59.035 --> 00:22:00.655 also show an interesting circadian
NOTE Confidence: 0.9817305

00:22:00.715 --> 00:22:02.315 rhythm. So similar to adults,
NOTE Confidence: 0.9817305

00:22:02.315 --> 00:22:03.900 we're seeing that there's an
NOTE Confidence: 0.9817305

00:22:03.900 --> 00:22:05.340 early peak in two AG
NOTE Confidence: 0.9817305

00:22:05.340 --> 00:22:05.840 concentrations
NOTE Confidence: 0.9885251

00:22:06.220 --> 00:22:07.840 that declines in the afternoon.

NOTE Confidence: 0.9885251
00:22:07.980 --> 00:22:09.340 So we're about here. I'm
NOTE Confidence: 0.9885251
00:22:09.340 --> 00:22:10.460 gonna blame the decline in
NOTE Confidence: 0.9885251
00:22:10.460 --> 00:22:11.500 my two AG for not
NOTE Confidence: 0.9885251
00:22:11.500 --> 00:22:12.300 being as alert as
NOTE Confidence: 0.9530192
00:22:14.460 --> 00:22:15.740 but all of this is
NOTE Confidence: 0.9530192
00:22:15.740 --> 00:22:16.859 is really important for us
NOTE Confidence: 0.9530192
00:22:16.859 --> 00:22:18.619 for just understanding the system.
NOTE Confidence: 0.9530192
00:22:18.619 --> 00:22:19.695 Also, what what should we
NOTE Confidence: 0.9530192
00:22:19.695 --> 00:22:20.975 be co varying for when
NOTE Confidence: 0.9530192
00:22:20.975 --> 00:22:22.674 we're designing an experiment
NOTE Confidence: 0.9847981
00:22:23.054 --> 00:22:24.434 or controlling an experiment,
NOTE Confidence: 0.98234284
00:22:24.734 --> 00:22:25.695 to look at these,
NOTE Confidence: 0.8621436
00:22:26.095 --> 00:22:26.595 concentrations.
NOTE Confidence: 0.9960493
00:22:28.494 --> 00:22:29.695 So with that foundation in
NOTE Confidence: 0.9960493
00:22:29.695 --> 00:22:30.975 mind, we were interested in
NOTE Confidence: 0.9960493

00:22:30.975 --> 00:22:32.355 looking at whether
NOTE Confidence: 0.96781886

00:22:32.800 --> 00:22:34.640 these circulating levels relate to
NOTE Confidence: 0.96781886

00:22:34.640 --> 00:22:35.859 anxiety in youth.
NOTE Confidence: 0.9724378

00:22:36.160 --> 00:22:37.920 And we found that youth
NOTE Confidence: 0.9724378

00:22:37.920 --> 00:22:39.680 with higher anxiety symptoms show
NOTE Confidence: 0.9724378

00:22:39.680 --> 00:22:41.520 higher anandamide and lower two
NOTE Confidence: 0.9724378

00:22:41.520 --> 00:22:42.420 AG concentrations.
NOTE Confidence: 0.99578667

00:22:43.600 --> 00:22:45.140 And this study was interesting
NOTE Confidence: 0.99578667

00:22:45.200 --> 00:22:46.800 because we collapsed across our
NOTE Confidence: 0.99578667

00:22:46.800 --> 00:22:47.780 Detroit cohort.
NOTE Confidence: 0.99970186

00:22:48.184 --> 00:22:49.325 We also have a collaborator
NOTE Confidence: 0.9635804

00:22:49.625 --> 00:22:51.625 at University of Cincinnati who
NOTE Confidence: 0.9635804

00:22:51.625 --> 00:22:53.225 has youth on the higher
NOTE Confidence: 0.9635804

00:22:53.225 --> 00:22:54.765 end that are treatment seeking,
NOTE Confidence: 0.94325995

00:22:55.225 --> 00:22:56.424 who actually have a a
NOTE Confidence: 0.94325995

00:22:56.424 --> 00:22:58.505 GAD or generalized anxiety disorder

NOTE Confidence: 0.94325995

00:22:58.505 --> 00:22:59.005 diagnosis.

NOTE Confidence: 0.9419133

00:22:59.785 --> 00:23:00.905 And they were part of

NOTE Confidence: 0.9419133

00:23:00.905 --> 00:23:02.270 a clinical trial, which was

NOTE Confidence: 0.9419133

00:23:02.270 --> 00:23:04.289 very rare looking at whether,

NOTE Confidence: 0.98768

00:23:04.750 --> 00:23:05.950 it was a double blind

NOTE Confidence: 0.98768

00:23:05.950 --> 00:23:07.890 placebo controlled trial of,

NOTE Confidence: 0.99633867

00:23:08.350 --> 00:23:09.090 an SSRI

NOTE Confidence: 0.9464339

00:23:09.390 --> 00:23:09.890 escitalopram,

NOTE Confidence: 0.9572377

00:23:10.990 --> 00:23:12.030 over eight weeks. And, again,

NOTE Confidence: 0.9572377

00:23:12.030 --> 00:23:13.390 in adolescence, this is a

NOTE Confidence: 0.9572377

00:23:13.390 --> 00:23:15.169 pretty rare study. But,

NOTE Confidence: 0.9187327

00:23:15.865 --> 00:23:17.965 doctor Strahan had this dataset,

NOTE Confidence: 0.9187327

00:23:18.025 --> 00:23:18.904 so we were able to

NOTE Confidence: 0.9187327

00:23:18.904 --> 00:23:19.404 see

NOTE Confidence: 0.953124

00:23:19.705 --> 00:23:21.005 not only do endocannabinoids

NOTE Confidence: 0.9902582

00:23:21.544 --> 00:23:23.304 relate to anxiety symptoms at
NOTE Confidence: 0.9902582

00:23:23.304 --> 00:23:23.804 baseline,
NOTE Confidence: 0.99925804

00:23:24.265 --> 00:23:25.784 but do they predict treatment
NOTE Confidence: 0.99925804

00:23:25.784 --> 00:23:26.284 response
NOTE Confidence: 0.9658478

00:23:26.744 --> 00:23:28.284 to a first line pharmacotherapy,
NOTE Confidence: 0.9885814

00:23:29.429 --> 00:23:31.029 or do those levels change
NOTE Confidence: 0.9885814

00:23:31.029 --> 00:23:32.490 in in treatment responders?
NOTE Confidence: 0.9978777

00:23:33.109 --> 00:23:33.609 And,
NOTE Confidence: 0.98389757

00:23:34.230 --> 00:23:35.509 this was really interesting. What
NOTE Confidence: 0.98389757

00:23:35.509 --> 00:23:36.629 we found was that those
NOTE Confidence: 0.98389757

00:23:36.629 --> 00:23:38.549 who responded to treatment across
NOTE Confidence: 0.98389757

00:23:38.549 --> 00:23:39.830 both the active drug and
NOTE Confidence: 0.98389757

00:23:39.830 --> 00:23:41.049 the placebo condition
NOTE Confidence: 0.9856874

00:23:41.585 --> 00:23:43.525 showed elevations in two AG
NOTE Confidence: 0.9856874

00:23:43.585 --> 00:23:45.125 over time. So
NOTE Confidence: 0.9418198

00:23:45.825 --> 00:23:47.105 this is has us thinking

NOTE Confidence: 0.9418198

00:23:47.105 --> 00:23:48.945 that potentially two AG might

NOTE Confidence: 0.9418198

00:23:48.945 --> 00:23:50.385 be a biomarker of treatment

NOTE Confidence: 0.9418198

00:23:50.385 --> 00:23:50.885 response,

NOTE Confidence: 0.9992949

00:23:51.665 --> 00:23:52.545 and that's something that we're

NOTE Confidence: 0.9992949

00:23:52.545 --> 00:23:53.825 interested in exploring in the

NOTE Confidence: 0.9992949

00:23:53.825 --> 00:23:54.325 future.

NOTE Confidence: 0.98091877

00:23:55.830 --> 00:23:56.869 So this is a team

NOTE Confidence: 0.98091877

00:23:56.869 --> 00:23:58.010 two AG finding.

NOTE Confidence: 0.9892768

00:23:59.670 --> 00:24:01.109 I work in Detroit. Again,

NOTE Confidence: 0.9892768

00:24:01.109 --> 00:24:02.150 most of my career has

NOTE Confidence: 0.9892768

00:24:02.150 --> 00:24:03.350 been studying the effects of

NOTE Confidence: 0.9892768

00:24:03.350 --> 00:24:05.350 childhood trauma on brain development

NOTE Confidence: 0.9892768

00:24:05.350 --> 00:24:07.670 and psychiatric risk. Ninety percent

NOTE Confidence: 0.9892768

00:24:07.670 --> 00:24:08.790 plus of our kids have

NOTE Confidence: 0.9892768

00:24:08.790 --> 00:24:10.345 experienced one or more traumas.

NOTE Confidence: 0.9892768

00:24:10.345 --> 00:24:11.384 This is the norm and
NOTE Confidence: 0.9892768

00:24:11.384 --> 00:24:12.284 not the exception.
NOTE Confidence: 0.9853977

00:24:12.984 --> 00:24:14.184 So we were really interested
NOTE Confidence: 0.9853977

00:24:14.184 --> 00:24:15.945 in seeing whether these levels
NOTE Confidence: 0.9853977

00:24:15.945 --> 00:24:17.865 correlate with PTSD symptoms in
NOTE Confidence: 0.9853977

00:24:17.865 --> 00:24:19.005 youth. And
NOTE Confidence: 0.9671657

00:24:19.384 --> 00:24:20.984 we found an association with
NOTE Confidence: 0.9671657

00:24:20.984 --> 00:24:21.484 anandamide.
NOTE Confidence: 0.997997

00:24:21.865 --> 00:24:23.544 Similar to anxiety, we found
NOTE Confidence: 0.997997

00:24:23.544 --> 00:24:24.284 higher anandamide
NOTE Confidence: 0.9288273

00:24:24.585 --> 00:24:25.725 relating to higher,
NOTE Confidence: 0.9378015

00:24:26.250 --> 00:24:28.170 PTSD symptoms severity in our
NOTE Confidence: 0.9378015

00:24:28.170 --> 00:24:29.070 in our sample.
NOTE Confidence: 0.9593485

00:24:30.250 --> 00:24:31.290 So what we're thinking with
NOTE Confidence: 0.9593485

00:24:31.290 --> 00:24:32.650 anandamide and, again, this is
NOTE Confidence: 0.9593485

00:24:32.650 --> 00:24:33.390 all speculative.

NOTE Confidence: 0.9625268
00:24:34.250 --> 00:24:35.450 This is team two AG,
NOTE Confidence: 0.9625268
00:24:35.450 --> 00:24:36.670 but that anandamide
NOTE Confidence: 0.9503567
00:24:37.050 --> 00:24:38.250 might just be a a
NOTE Confidence: 0.9503567
00:24:38.250 --> 00:24:39.150 a stress sensitive
NOTE Confidence: 0.95170176
00:24:39.530 --> 00:24:41.924 biomarker potentially across disorders. I
NOTE Confidence: 0.95170176
00:24:41.924 --> 00:24:42.664 know there's,
NOTE Confidence: 0.98947525
00:24:43.044 --> 00:24:44.244 some data in the psychosis
NOTE Confidence: 0.98947525
00:24:44.244 --> 00:24:45.205 area I'd love to chat
NOTE Confidence: 0.98947525
00:24:45.205 --> 00:24:46.725 about as well, but maybe
NOTE Confidence: 0.98947525
00:24:46.725 --> 00:24:48.484 a nonspecific biomarker of,
NOTE Confidence: 0.990731
00:24:49.205 --> 00:24:49.865 of stress.
NOTE Confidence: 0.9943582
00:24:51.205 --> 00:24:52.565 So these studies in youth
NOTE Confidence: 0.9943582
00:24:52.565 --> 00:24:53.924 were really interesting because they
NOTE Confidence: 0.9943582
00:24:53.924 --> 00:24:55.845 filled some gaps in research
NOTE Confidence: 0.9943582
00:24:55.845 --> 00:24:56.585 in adults
NOTE Confidence: 0.98238343

00:24:57.000 --> 00:24:58.200 where we had enough data
NOTE Confidence: 0.98238343

00:24:58.200 --> 00:24:59.400 to finally put together a
NOTE Confidence: 0.98238343

00:24:59.400 --> 00:25:01.400 meta analysis of stress related
NOTE Confidence: 0.98238343

00:25:01.400 --> 00:25:02.859 disorders. So PTSD,
NOTE Confidence: 0.9878505

00:25:03.160 --> 00:25:04.920 depression, anxiety is what we're
NOTE Confidence: 0.9878505

00:25:05.080 --> 00:25:06.359 we limited it to in
NOTE Confidence: 0.9878505

00:25:06.359 --> 00:25:07.100 this case.
NOTE Confidence: 0.99546254

00:25:07.560 --> 00:25:09.580 And across these twenty studies,
NOTE Confidence: 0.98012686

00:25:10.054 --> 00:25:11.174 on average, if we look
NOTE Confidence: 0.98012686

00:25:11.174 --> 00:25:11.835 at resting
NOTE Confidence: 0.9631551

00:25:12.135 --> 00:25:12.635 endocannabinoids
NOTE Confidence: 0.9031149

00:25:13.015 --> 00:25:14.395 in plasma or serum,
NOTE Confidence: 0.93334293

00:25:15.335 --> 00:25:17.335 there is, higher anandamide and
NOTE Confidence: 0.93334293

00:25:17.335 --> 00:25:18.715 higher two AG concentrations
NOTE Confidence: 0.99850625

00:25:19.255 --> 00:25:20.635 in those with the disorders
NOTE Confidence: 0.99914473

00:25:21.255 --> 00:25:22.395 compared to without.

NOTE Confidence: 0.9154806

00:25:23.309 --> 00:25:24.509 So I'm saying that, but

NOTE Confidence: 0.9154806

00:25:24.509 --> 00:25:26.190 also I wanna highlight there

NOTE Confidence: 0.9154806

00:25:26.190 --> 00:25:27.330 is so much heterogeneity

NOTE Confidence: 0.9973732

00:25:27.630 --> 00:25:28.450 across studies.

NOTE Confidence: 0.99180275

00:25:29.389 --> 00:25:31.149 The most consistent findings and

NOTE Confidence: 0.99180275

00:25:31.149 --> 00:25:32.350 the most common were in

NOTE Confidence: 0.99180275

00:25:32.350 --> 00:25:32.850 PTSD.

NOTE Confidence: 0.9671817

00:25:34.029 --> 00:25:35.710 Depression and anxiety was a

NOTE Confidence: 0.9671817

00:25:35.710 --> 00:25:36.669 little bit more mixed. So

NOTE Confidence: 0.9671817

00:25:36.669 --> 00:25:37.665 I just wanted to,

NOTE Confidence: 0.9982006

00:25:38.385 --> 00:25:39.525 to clarify that.

NOTE Confidence: 0.9897389

00:25:40.545 --> 00:25:41.905 What was super interesting to

NOTE Confidence: 0.9897389

00:25:41.905 --> 00:25:43.505 me was that not only

NOTE Confidence: 0.9897389

00:25:43.505 --> 00:25:45.185 do you see this elevation

NOTE Confidence: 0.9897389

00:25:45.185 --> 00:25:46.165 in in endocannabinoids

NOTE Confidence: 0.96876884

00:25:46.785 --> 00:25:48.305 perhaps ramping up in response

NOTE Confidence: 0.96876884

00:25:48.305 --> 00:25:49.365 to chronic stress,

NOTE Confidence: 0.9595836

00:25:50.059 --> 00:25:51.340 at rest. But some of

NOTE Confidence: 0.9595836

00:25:51.340 --> 00:25:52.859 the studies actually introduced a

NOTE Confidence: 0.9595836

00:25:52.859 --> 00:25:54.000 laboratory stressor,

NOTE Confidence: 0.991766

00:25:54.619 --> 00:25:56.080 to the psychiatric population.

NOTE Confidence: 0.97848606

00:25:56.700 --> 00:25:57.580 And at least in a

NOTE Confidence: 0.97848606

00:25:57.580 --> 00:25:58.940 couple of studies, they're finding

NOTE Confidence: 0.97848606

00:25:58.940 --> 00:26:00.300 that people with PTSD in

NOTE Confidence: 0.97848606

00:26:00.300 --> 00:26:01.600 this particular example,

NOTE Confidence: 0.99044853

00:26:01.994 --> 00:26:03.435 they showed higher levels at

NOTE Confidence: 0.99044853

00:26:03.435 --> 00:26:03.935 baseline,

NOTE Confidence: 0.9994834

00:26:04.315 --> 00:26:05.515 but they weren't able to

NOTE Confidence: 0.9994834

00:26:05.515 --> 00:26:06.975 appropriately ramp up

NOTE Confidence: 0.98984814

00:26:07.275 --> 00:26:08.635 a response to stress,

NOTE Confidence: 0.9905096

00:26:09.035 --> 00:26:10.575 when you introduce that psychosocial

NOTE Confidence: 0.99802727
00:26:10.875 --> 00:26:11.375 stressor.
NOTE Confidence: 0.9876983
00:26:12.395 --> 00:26:12.895 So,
NOTE Confidence: 0.96443945
00:26:13.515 --> 00:26:14.635 this got us thinking that
NOTE Confidence: 0.96443945
00:26:14.635 --> 00:26:16.395 perhaps there's some dysregulation at
NOTE Confidence: 0.96443945
00:26:16.395 --> 00:26:16.895 baseline.
NOTE Confidence: 0.99366146
00:26:17.390 --> 00:26:19.230 The endocannabinoid system isn't coming
NOTE Confidence: 0.99366146
00:26:19.230 --> 00:26:20.910 online in response to stress
NOTE Confidence: 0.99366146
00:26:20.910 --> 00:26:21.730 like it should.
NOTE Confidence: 0.98580885
00:26:22.190 --> 00:26:23.150 But I will say that
NOTE Confidence: 0.98580885
00:26:23.150 --> 00:26:24.590 that's not the a very
NOTE Confidence: 0.98580885
00:26:24.590 --> 00:26:25.870 common paradigm. As you can
NOTE Confidence: 0.98580885
00:26:25.870 --> 00:26:27.070 imagine, it's harder to do
NOTE Confidence: 0.98580885
00:26:27.070 --> 00:26:27.570 that.
NOTE Confidence: 0.9953606
00:26:27.870 --> 00:26:29.090 I think it'll be interesting
NOTE Confidence: 0.9953606
00:26:29.230 --> 00:26:29.730 for
NOTE Confidence: 0.99632335

00:26:30.355 --> 00:26:32.534 more studies looking at, laboratory
NOTE Confidence: 0.99632335

00:26:32.595 --> 00:26:33.955 stressors to see how different
NOTE Confidence: 0.99632335

00:26:33.955 --> 00:26:36.115 psychiatric populations respond to acute
NOTE Confidence: 0.99632335

00:26:36.115 --> 00:26:36.615 stress.
NOTE Confidence: 0.9687509

00:26:38.115 --> 00:26:40.115 So wanna highlight two more
NOTE Confidence: 0.9687509

00:26:40.115 --> 00:26:41.475 studies we've got going on
NOTE Confidence: 0.9687509

00:26:41.475 --> 00:26:42.934 in the area of psychiatric
NOTE Confidence: 0.9687509

00:26:42.994 --> 00:26:44.994 risk in youth, and one
NOTE Confidence: 0.9687509

00:26:44.994 --> 00:26:45.494 is,
NOTE Confidence: 0.96291023

00:26:46.060 --> 00:26:47.340 led by my graduate student,
NOTE Confidence: 0.96291023

00:26:47.340 --> 00:26:49.740 Samantha Ealy, who is super
NOTE Confidence: 0.96291023

00:26:49.740 --> 00:26:51.820 interested in the endocannabinoid system
NOTE Confidence: 0.96291023

00:26:51.820 --> 00:26:53.440 as a biomarker of suicide
NOTE Confidence: 0.96291023

00:26:53.500 --> 00:26:55.660 risk, where we have very
NOTE Confidence: 0.96291023

00:26:55.660 --> 00:26:57.359 few to little to none,
NOTE Confidence: 0.99813116

00:26:57.660 --> 00:26:59.260 no biomarkers. A lot of

NOTE Confidence: 0.99813116

00:26:59.260 --> 00:27:01.494 youth and individuals don't disclose

NOTE Confidence: 0.99813116

00:27:01.494 --> 00:27:02.875 to someone before they,

NOTE Confidence: 0.9862194

00:27:03.734 --> 00:27:05.494 attempt suicide. And in some

NOTE Confidence: 0.9862194

00:27:05.494 --> 00:27:06.775 of our data in Detroit,

NOTE Confidence: 0.9862194

00:27:06.775 --> 00:27:07.895 we're finding that the rates

NOTE Confidence: 0.9862194

00:27:07.895 --> 00:27:09.575 of suicidal ideation are about

NOTE Confidence: 0.9862194

00:27:09.575 --> 00:27:10.695 one in five in the

NOTE Confidence: 0.9862194

00:27:10.695 --> 00:27:12.869 past year, have seriously considered

NOTE Confidence: 0.9862194

00:27:12.869 --> 00:27:14.090 taking their own lives.

NOTE Confidence: 0.9960007

00:27:14.550 --> 00:27:15.430 So this is a huge

NOTE Confidence: 0.9960007

00:27:15.430 --> 00:27:17.210 public health concern. So,

NOTE Confidence: 0.9686472

00:27:17.590 --> 00:27:19.050 Sam is looking at whether,

NOTE Confidence: 0.9526838

00:27:19.670 --> 00:27:20.570 youth with,

NOTE Confidence: 0.9942279

00:27:21.350 --> 00:27:22.890 active suicidal ideation,

NOTE Confidence: 0.99827516

00:27:23.910 --> 00:27:25.850 have differences in circulating endocannabinoids

NOTE Confidence: 0.89874077

00:27:26.390 --> 00:27:27.485 at rest in a response
NOTE Confidence: 0.89874077

00:27:27.485 --> 00:27:28.945 to a laboratory stressor,
NOTE Confidence: 0.98837423

00:27:29.725 --> 00:27:31.325 compared to those without who
NOTE Confidence: 0.98837423

00:27:31.325 --> 00:27:33.265 are matched on depressive symptoms.
NOTE Confidence: 0.96868026

00:27:33.965 --> 00:27:35.725 She's also using functional imaging
NOTE Confidence: 0.96868026

00:27:35.725 --> 00:27:37.425 to see if those circulating
NOTE Confidence: 0.96868026

00:27:37.485 --> 00:27:39.085 levels relate to dorsal lateral
NOTE Confidence: 0.96868026

00:27:39.085 --> 00:27:40.785 prefrontal cortex activation,
NOTE Confidence: 0.9830577

00:27:41.580 --> 00:27:43.260 during emotion regulation, which a
NOTE Confidence: 0.9830577

00:27:43.260 --> 00:27:44.559 couple of studies have found
NOTE Confidence: 0.9800872

00:27:44.859 --> 00:27:46.539 relate to suicidal ideation in
NOTE Confidence: 0.9800872

00:27:46.539 --> 00:27:47.039 youth.
NOTE Confidence: 0.9535716

00:27:47.659 --> 00:27:48.619 So, hopefully, next time I
NOTE Confidence: 0.9535716

00:27:48.619 --> 00:27:49.500 see you all, I'll have
NOTE Confidence: 0.9535716

00:27:49.500 --> 00:27:50.799 some more data to share.
NOTE Confidence: 0.9993652

00:27:52.140 --> 00:27:53.039 Another thing

NOTE Confidence: 0.97591406
00:27:53.340 --> 00:27:55.035 we're really interested in is
NOTE Confidence: 0.97591406
00:27:55.195 --> 00:27:56.635 with trauma, back to that
NOTE Confidence: 0.97591406
00:27:56.635 --> 00:27:57.775 PTSD finding,
NOTE Confidence: 0.99855083
00:27:58.315 --> 00:27:59.775 does that elevation
NOTE Confidence: 0.93083715
00:28:00.075 --> 00:28:00.975 in anandamide
NOTE Confidence: 0.95710945
00:28:01.355 --> 00:28:02.575 in people with PTSD,
NOTE Confidence: 0.9996689
00:28:03.035 --> 00:28:03.695 is that
NOTE Confidence: 0.9513528
00:28:04.395 --> 00:28:05.994 a result of trauma exposure?
NOTE Confidence: 0.9513528
00:28:05.994 --> 00:28:06.875 Is that a result of
NOTE Confidence: 0.9513528
00:28:06.875 --> 00:28:08.415 PTSD? Is it a biomarker
NOTE Confidence: 0.9513528
00:28:08.555 --> 00:28:09.935 of risk of future PTSD?
NOTE Confidence: 0.9929812
00:28:11.090 --> 00:28:12.210 Obviously, that's really hard in
NOTE Confidence: 0.9929812
00:28:12.210 --> 00:28:12.710 humans
NOTE Confidence: 0.9986586
00:28:13.090 --> 00:28:14.450 to tease out. We don't
NOTE Confidence: 0.9986586
00:28:14.530 --> 00:28:15.890 we can't predict who's going
NOTE Confidence: 0.9986586

00:28:15.890 --> 00:28:16.770 to go on to develop
NOTE Confidence: 0.9986586

00:28:16.770 --> 00:28:17.430 a trauma
NOTE Confidence: 0.97923034

00:28:17.810 --> 00:28:18.869 to follow prospectively,
NOTE Confidence: 0.9986585

00:28:19.170 --> 00:28:20.690 but we do have some
NOTE Confidence: 0.9986585

00:28:20.690 --> 00:28:21.990 really interesting naturalistic
NOTE Confidence: 0.99853605

00:28:22.290 --> 00:28:23.590 studies done in adults
NOTE Confidence: 0.9994283

00:28:24.105 --> 00:28:25.005 where they leverage
NOTE Confidence: 0.9970948

00:28:25.545 --> 00:28:27.005 people coming in for emergency
NOTE Confidence: 0.9970948

00:28:27.065 --> 00:28:27.565 departments,
NOTE Confidence: 0.9812753

00:28:27.945 --> 00:28:29.385 after an acute injury, for
NOTE Confidence: 0.9812753

00:28:29.385 --> 00:28:30.744 example, a car accident or
NOTE Confidence: 0.9812753

00:28:30.744 --> 00:28:31.405 an assault.
NOTE Confidence: 0.99338776

00:28:31.945 --> 00:28:33.225 And they're able to study
NOTE Confidence: 0.99338776

00:28:33.225 --> 00:28:34.585 that population to see who's
NOTE Confidence: 0.99338776

00:28:34.585 --> 00:28:36.265 going to develop PTSD over
NOTE Confidence: 0.99338776

00:28:36.265 --> 00:28:37.484 time versus not.

NOTE Confidence: 0.9755784

00:28:38.250 --> 00:28:39.850 So that got us thinking

NOTE Confidence: 0.9755784

00:28:39.850 --> 00:28:41.290 about, okay, how can we

NOTE Confidence: 0.9755784

00:28:41.290 --> 00:28:42.410 apply that model to the

NOTE Confidence: 0.9755784

00:28:42.410 --> 00:28:43.630 pediatric space?

NOTE Confidence: 0.9419235

00:28:44.090 --> 00:28:45.370 And we actually have a

NOTE Confidence: 0.9419235

00:28:45.370 --> 00:28:47.370 really, unfortunately, a great model

NOTE Confidence: 0.9419235

00:28:47.370 --> 00:28:48.170 of that of a tram

NOTE Confidence: 0.9419235

00:28:48.250 --> 00:28:50.010 a trauma, which is having

NOTE Confidence: 0.9419235

00:28:50.010 --> 00:28:51.230 a child in the pediatric

NOTE Confidence: 0.9419235

00:28:51.370 --> 00:28:53.230 intensive care unit or PICU.

NOTE Confidence: 0.97954947

00:28:53.775 --> 00:28:54.815 And as you can all

NOTE Confidence: 0.97954947

00:28:54.815 --> 00:28:56.895 probably imagine or maybe you've

NOTE Confidence: 0.97954947

00:28:56.895 --> 00:28:57.795 experienced this,

NOTE Confidence: 0.97875565

00:28:58.415 --> 00:29:00.015 this is a really stressful

NOTE Confidence: 0.97875565

00:29:00.015 --> 00:29:02.095 and traumatic experience for children

NOTE Confidence: 0.97875565

00:29:02.095 --> 00:29:02.915 and their caregivers,
NOTE Confidence: 0.9993864

00:29:03.615 --> 00:29:04.995 and the rates of PTSD
NOTE Confidence: 0.9993864

00:29:05.135 --> 00:29:06.735 are also quite high. We
NOTE Confidence: 0.9993864

00:29:06.735 --> 00:29:08.415 see about thirty percent of
NOTE Confidence: 0.9993864

00:29:08.415 --> 00:29:08.915 children
NOTE Confidence: 0.95381796

00:29:09.375 --> 00:29:10.250 who were admitted to the
NOTE Confidence: 0.95381796

00:29:10.250 --> 00:29:11.929 p the PICU will go
NOTE Confidence: 0.95381796

00:29:11.929 --> 00:29:13.149 on to develop PTSD
NOTE Confidence: 0.9782241

00:29:14.010 --> 00:29:15.130 up to eighty percent of
NOTE Confidence: 0.9782241

00:29:15.130 --> 00:29:17.049 caregivers. So for us, this
NOTE Confidence: 0.9782241

00:29:17.049 --> 00:29:18.590 is a really interesting model
NOTE Confidence: 0.9782241

00:29:18.889 --> 00:29:20.010 to see if we can
NOTE Confidence: 0.9782241

00:29:20.010 --> 00:29:21.769 identify biomarkers of risk and
NOTE Confidence: 0.9782241

00:29:21.769 --> 00:29:23.549 also really direct those resources,
NOTE Confidence: 0.9951305

00:29:24.135 --> 00:29:25.415 to the most at risk
NOTE Confidence: 0.9951305

00:29:25.415 --> 00:29:25.915 individuals.

NOTE Confidence: 0.9953018

00:29:27.335 --> 00:29:28.375 So this is something we're

NOTE Confidence: 0.9953018

00:29:28.375 --> 00:29:29.575 working on through the division

NOTE Confidence: 0.9953018

00:29:29.575 --> 00:29:31.095 I established in partnership with

NOTE Confidence: 0.9953018

00:29:31.095 --> 00:29:32.555 Children's Hospital of Michigan.

NOTE Confidence: 0.97841233

00:29:33.335 --> 00:29:34.375 Again, I don't have data

NOTE Confidence: 0.97841233

00:29:34.375 --> 00:29:35.175 to share with you. We're

NOTE Confidence: 0.97841233

00:29:35.175 --> 00:29:36.375 just getting this study up

NOTE Confidence: 0.97841233

00:29:36.375 --> 00:29:37.575 and running, but we're really

NOTE Confidence: 0.97841233

00:29:37.575 --> 00:29:38.695 interested to see if we

NOTE Confidence: 0.97841233

00:29:38.695 --> 00:29:40.630 can if the endocannabinoid system

NOTE Confidence: 0.97841233

00:29:40.630 --> 00:29:42.550 will predict PTSD risk in

NOTE Confidence: 0.97841233

00:29:42.550 --> 00:29:43.750 children as well as their

NOTE Confidence: 0.97841233

00:29:43.750 --> 00:29:44.250 caregivers.

NOTE Confidence: 0.96130466

00:29:46.150 --> 00:29:47.190 So I think I'm gonna

NOTE Confidence: 0.96130466

00:29:47.190 --> 00:29:48.470 skip a little bit forward

NOTE Confidence: 0.96130466

00:29:48.470 --> 00:29:49.510 just in interest of time
NOTE Confidence: 0.96130466

00:29:49.510 --> 00:29:50.390 because I hear you guys
NOTE Confidence: 0.96130466

00:29:50.390 --> 00:29:51.770 give really amazing questions.
NOTE Confidence: 0.992257

00:29:52.310 --> 00:29:54.090 I wanna jump to the
NOTE Confidence: 0.992257

00:29:54.325 --> 00:29:56.165 positive side. So I just
NOTE Confidence: 0.992257

00:29:56.165 --> 00:29:57.365 talked a lot about risk,
NOTE Confidence: 0.992257

00:29:57.365 --> 00:29:57.865 but
NOTE Confidence: 0.9992549

00:29:58.245 --> 00:29:59.705 can we leverage the endocannabinoid
NOTE Confidence: 0.98869383

00:30:00.085 --> 00:30:00.585 system,
NOTE Confidence: 0.98091406

00:30:01.445 --> 00:30:03.225 as a way to, intervene
NOTE Confidence: 0.98091406

00:30:03.365 --> 00:30:03.865 early?
NOTE Confidence: 0.99157274

00:30:04.165 --> 00:30:04.665 And
NOTE Confidence: 0.96423393

00:30:04.965 --> 00:30:06.005 I wanna mention a couple
NOTE Confidence: 0.96423393

00:30:06.005 --> 00:30:06.885 of things we're doing in
NOTE Confidence: 0.96423393

00:30:06.885 --> 00:30:08.485 this space. One is our
NOTE Confidence: 0.96423393

00:30:08.485 --> 00:30:09.145 state of

NOTE Confidence: 0.6797778

00:30:09.630 --> 00:30:11.010 funded grants, which

NOTE Confidence: 0.9883383

00:30:11.710 --> 00:30:13.070 we have just been through

NOTE Confidence: 0.9883383

00:30:13.070 --> 00:30:14.930 two years of regulatory hurdles,

NOTE Confidence: 0.9883383

00:30:15.230 --> 00:30:16.350 as you can all imagine,

NOTE Confidence: 0.9883383

00:30:16.350 --> 00:30:16.850 to,

NOTE Confidence: 0.96449405

00:30:17.630 --> 00:30:19.710 give, cannabis flower to veterans

NOTE Confidence: 0.96449405

00:30:19.710 --> 00:30:20.450 with PTSD.

NOTE Confidence: 0.9688881

00:30:21.070 --> 00:30:22.450 So we are finally cleared.

NOTE Confidence: 0.9821141

00:30:23.465 --> 00:30:24.985 Our clinical holds from FDA

NOTE Confidence: 0.9821141

00:30:24.985 --> 00:30:25.805 have been lifted,

NOTE Confidence: 0.9879719

00:30:26.505 --> 00:30:28.045 to run really big studies

NOTE Confidence: 0.9879719

00:30:28.105 --> 00:30:29.865 of cannabis as a treatment

NOTE Confidence: 0.9879719

00:30:29.865 --> 00:30:31.485 for PTSD in veterans.

NOTE Confidence: 0.9876057

00:30:32.585 --> 00:30:34.605 And there are multiple components

NOTE Confidence: 0.9876057

00:30:34.665 --> 00:30:35.865 to this study. We're looking

NOTE Confidence: 0.9876057

00:30:35.865 --> 00:30:37.010 at a twelve week trial
NOTE Confidence: 0.9876057

00:30:37.010 --> 00:30:38.929 of different cannabis cultivars that
NOTE Confidence: 0.9876057

00:30:38.929 --> 00:30:39.429 vary
NOTE Confidence: 0.9988003

00:30:39.730 --> 00:30:41.750 in THC and CBD concentrations.
NOTE Confidence: 0.99297786

00:30:42.210 --> 00:30:42.870 We are,
NOTE Confidence: 0.99888384

00:30:43.570 --> 00:30:44.390 pairing cannabis
NOTE Confidence: 0.9913831

00:30:44.770 --> 00:30:47.809 acutely with, prolonged exposure, which
NOTE Confidence: 0.9913831

00:30:47.809 --> 00:30:48.549 is a
NOTE Confidence: 0.98438907

00:30:48.934 --> 00:30:50.934 form of c CBT for
NOTE Confidence: 0.98438907

00:30:50.934 --> 00:30:51.835 people with PTSD.
NOTE Confidence: 0.99265635

00:30:53.255 --> 00:30:54.535 My role in the studies
NOTE Confidence: 0.99265635

00:30:54.535 --> 00:30:56.395 is to look at endocannabinoids
NOTE Confidence: 0.9750038

00:30:56.934 --> 00:30:59.275 and exogenous cannabinoids as biomarkers
NOTE Confidence: 0.9750038

00:30:59.415 --> 00:31:00.235 in the blood.
NOTE Confidence: 0.95137554

00:31:00.855 --> 00:31:01.975 And then I'm also co
NOTE Confidence: 0.95137554

00:31:01.975 --> 00:31:03.495 PI with Eric Woodcock who

NOTE Confidence: 0.95137554

00:31:03.495 --> 00:31:05.130 actually did his pet imaging

NOTE Confidence: 0.95137554

00:31:05.130 --> 00:31:06.190 training at Yale,

NOTE Confidence: 0.92583174

00:31:06.890 --> 00:31:07.710 to look at,

NOTE Confidence: 0.99081194

00:31:08.250 --> 00:31:10.090 functional neuroimaging and pet,

NOTE Confidence: 0.9969362

00:31:10.570 --> 00:31:12.410 pet imaging correlates of this

NOTE Confidence: 0.9969362

00:31:12.410 --> 00:31:14.030 treatment response. So

NOTE Confidence: 0.98287505

00:31:14.330 --> 00:31:15.450 on the MR side, which

NOTE Confidence: 0.98287505

00:31:15.450 --> 00:31:16.970 is what my expertise in

NOTE Confidence: 0.98287505

00:31:17.130 --> 00:31:18.525 is in, we're looking at

NOTE Confidence: 0.98966646

00:31:19.005 --> 00:31:20.445 functional networks. We're looking at

NOTE Confidence: 0.98966646

00:31:20.445 --> 00:31:21.345 functional activation

NOTE Confidence: 0.99203897

00:31:21.645 --> 00:31:22.145 during,

NOTE Confidence: 0.90964544

00:31:22.845 --> 00:31:24.385 a couple of tasks, tacking

NOTE Confidence: 0.90964544

00:31:24.605 --> 00:31:27.025 into emotion regulation, working memory.

NOTE Confidence: 0.9918785

00:31:27.885 --> 00:31:29.245 And then Eric is using

NOTE Confidence: 0.9918785

00:31:29.245 --> 00:31:30.685 a radio tracer for the
NOTE Confidence: 0.9918785

00:31:30.685 --> 00:31:32.865 kynurenine system to see if
NOTE Confidence: 0.9918785

00:31:33.150 --> 00:31:33.810 cannabis treatment affects
NOTE Confidence: 0.82581854

00:31:35.070 --> 00:31:35.570 neuroinflammation
NOTE Confidence: 0.98690915

00:31:36.030 --> 00:31:38.030 markers. So, hopefully, next time
NOTE Confidence: 0.98690915

00:31:38.030 --> 00:31:38.910 I see you, we will
NOTE Confidence: 0.98690915

00:31:38.910 --> 00:31:40.430 have begun. We just started
NOTE Confidence: 0.98690915

00:31:40.430 --> 00:31:40.930 recruitment,
NOTE Confidence: 0.99889314

00:31:41.470 --> 00:31:42.430 but this is coming down
NOTE Confidence: 0.99889314

00:31:42.430 --> 00:31:43.090 the pipe.
NOTE Confidence: 0.94595397

00:31:44.190 --> 00:31:44.690 So,
NOTE Confidence: 0.9983681

00:31:45.515 --> 00:31:46.715 this was written for a
NOTE Confidence: 0.9983681

00:31:46.715 --> 00:31:47.774 specific RFA.
NOTE Confidence: 0.9614777

00:31:48.315 --> 00:31:49.274 You know, we would not
NOTE Confidence: 0.9614777

00:31:49.274 --> 00:31:51.274 have used cannabis flower if
NOTE Confidence: 0.9614777

00:31:51.274 --> 00:31:52.154 we were to write this

NOTE Confidence: 0.9614777

00:31:52.154 --> 00:31:53.274 RFA, but no one asked

NOTE Confidence: 0.9614777

00:31:53.274 --> 00:31:54.394 the scientists when they do

NOTE Confidence: 0.9614777

00:31:54.394 --> 00:31:55.294 this. So,

NOTE Confidence: 0.99905896

00:31:55.995 --> 00:31:57.274 we all know cannabis is

NOTE Confidence: 0.99905896

00:31:57.274 --> 00:31:58.495 really hard to dose

NOTE Confidence: 0.9717695

00:31:59.350 --> 00:32:00.870 appropriately, and it's smoked in

NOTE Confidence: 0.9717695

00:32:00.870 --> 00:32:01.529 this case.

NOTE Confidence: 0.96338105

00:32:01.990 --> 00:32:02.889 So, obviously,

NOTE Confidence: 0.98711956

00:32:03.190 --> 00:32:04.070 you know, there's a ton

NOTE Confidence: 0.98711956

00:32:04.070 --> 00:32:05.269 of ways to target the

NOTE Confidence: 0.98711956

00:32:05.269 --> 00:32:07.110 system itself that's more precise

NOTE Confidence: 0.98711956

00:32:07.110 --> 00:32:07.929 in my opinion.

NOTE Confidence: 0.9870059

00:32:08.629 --> 00:32:09.769 There's a lot of excitement

NOTE Confidence: 0.9870059

00:32:09.830 --> 00:32:10.330 here.

NOTE Confidence: 0.9533069

00:32:10.870 --> 00:32:11.909 Although I will say some

NOTE Confidence: 0.9533069

00:32:11.909 --> 00:32:13.585 of the FA trials for
NOTE Confidence: 0.9533069

00:32:13.585 --> 00:32:15.284 PTSD that were super promising
NOTE Confidence: 0.9533069

00:32:15.345 --> 00:32:16.225 had failed. That was a
NOTE Confidence: 0.9533069

00:32:16.225 --> 00:32:17.445 big topic of discussion,
NOTE Confidence: 0.98698986

00:32:18.544 --> 00:32:20.144 last week. Those were really
NOTE Confidence: 0.98698986

00:32:20.144 --> 00:32:22.005 high profile studies about PTSD.
NOTE Confidence: 0.9728777

00:32:22.865 --> 00:32:24.304 But nonetheless, I think there's
NOTE Confidence: 0.9728777

00:32:24.304 --> 00:32:25.505 a lot of opportunity to
NOTE Confidence: 0.9728777

00:32:25.505 --> 00:32:26.625 target the system for a
NOTE Confidence: 0.9728777

00:32:26.625 --> 00:32:28.245 variety of psychiatric disorders.
NOTE Confidence: 0.99814695

00:32:28.920 --> 00:32:30.280 And just to underscore how
NOTE Confidence: 0.99814695

00:32:30.280 --> 00:32:31.320 exciting this is,
NOTE Confidence: 0.9885138

00:32:31.720 --> 00:32:33.000 the number of clinical trials,
NOTE Confidence: 0.9885138

00:32:33.000 --> 00:32:33.880 if you go to clinical
NOTE Confidence: 0.9885138

00:32:33.880 --> 00:32:35.560 trials dot gov, have just
NOTE Confidence: 0.9885138

00:32:35.560 --> 00:32:36.600 exploded, and I know a

NOTE Confidence: 0.9885138

00:32:36.600 --> 00:32:37.400 lot of you guys are

NOTE Confidence: 0.9885138

00:32:37.400 --> 00:32:39.000 doing some fantastic work there

NOTE Confidence: 0.9885138

00:32:39.000 --> 00:32:39.660 at Yale.

NOTE Confidence: 0.96221626

00:32:41.415 --> 00:32:43.095 So one one pilot say

NOTE Confidence: 0.96221626

00:32:43.095 --> 00:32:44.295 I wanna mention in the

NOTE Confidence: 0.96221626

00:32:44.295 --> 00:32:45.735 use space we're working on

NOTE Confidence: 0.96221626

00:32:45.735 --> 00:32:47.175 is we are looking at

NOTE Confidence: 0.96221626

00:32:47.175 --> 00:32:48.475 the FDA approved,

NOTE Confidence: 0.9854034

00:32:48.855 --> 00:32:51.035 cannabidiol medication called Epidiolex

NOTE Confidence: 0.9401782

00:32:51.735 --> 00:32:52.775 that was approved back in

NOTE Confidence: 0.9401782

00:32:52.775 --> 00:32:54.795 twenty eighteen for seizure disorders.

NOTE Confidence: 0.96350825

00:32:55.670 --> 00:32:57.670 And we tagged up with,

NOTE Confidence: 0.96350825

00:32:57.990 --> 00:32:59.590 Amy Louat, who's a pediatric

NOTE Confidence: 0.96350825

00:32:59.590 --> 00:33:00.090 neurologist

NOTE Confidence: 0.9704739

00:33:00.470 --> 00:33:02.090 who's been using this medication

NOTE Confidence: 0.9704739

00:33:02.150 --> 00:33:03.210 for several years
NOTE Confidence: 0.98585784

00:33:03.590 --> 00:33:05.610 with her pediatric epilepsy patients.
NOTE Confidence: 0.9567483

00:33:06.070 --> 00:33:07.429 And we were interested in
NOTE Confidence: 0.9567483

00:33:07.429 --> 00:33:09.030 seeing if they add this
NOTE Confidence: 0.9567483

00:33:09.030 --> 00:33:10.945 medication on board, do we
NOTE Confidence: 0.9567483

00:33:10.945 --> 00:33:12.225 see changes not only in
NOTE Confidence: 0.9567483

00:33:12.225 --> 00:33:12.725 seizures,
NOTE Confidence: 0.955327

00:33:13.185 --> 00:33:14.865 but also some secondary outcomes
NOTE Confidence: 0.955327

00:33:14.865 --> 00:33:16.165 like anxiety symptoms,
NOTE Confidence: 0.9977877

00:33:16.545 --> 00:33:17.525 circulating endocannabinoids
NOTE Confidence: 0.91914856

00:33:17.985 --> 00:33:18.645 as well?
NOTE Confidence: 0.9824919

00:33:19.105 --> 00:33:20.145 Because there's a lot of,
NOTE Confidence: 0.9824919

00:33:20.145 --> 00:33:22.625 like, pop media culture saying
NOTE Confidence: 0.9824919

00:33:22.625 --> 00:33:24.310 that CBD is, you know,
NOTE Confidence: 0.9824919

00:33:24.310 --> 00:33:26.970 effective for anxiety, for sleep,
NOTE Confidence: 0.9824919

00:33:27.110 --> 00:33:29.050 curing cancer, all crazy stuff,

NOTE Confidence: 0.99514383
00:33:30.310 --> 00:33:31.350 but not a ton of
NOTE Confidence: 0.99514383
00:33:31.350 --> 00:33:33.190 empirical data to to support
NOTE Confidence: 0.99514383
00:33:33.190 --> 00:33:33.690 this.
NOTE Confidence: 0.99735045
00:33:34.390 --> 00:33:34.890 So
NOTE Confidence: 0.9949039
00:33:35.190 --> 00:33:36.470 we just wrapped up this
NOTE Confidence: 0.9949039
00:33:36.470 --> 00:33:37.830 pilot study. I'm excited to
NOTE Confidence: 0.9949039
00:33:37.830 --> 00:33:38.870 share some data with you
NOTE Confidence: 0.9949039
00:33:38.870 --> 00:33:39.370 all.
NOTE Confidence: 0.984111
00:33:40.365 --> 00:33:41.565 Very small sample, but what
NOTE Confidence: 0.984111
00:33:41.565 --> 00:33:42.925 we did find is that
NOTE Confidence: 0.984111
00:33:42.925 --> 00:33:44.365 from baseline to about week
NOTE Confidence: 0.984111
00:33:44.365 --> 00:33:45.405 four or five, which is
NOTE Confidence: 0.984111
00:33:45.405 --> 00:33:46.845 when they reached their their
NOTE Confidence: 0.984111
00:33:46.845 --> 00:33:47.745 target dose,
NOTE Confidence: 0.9666306
00:33:48.525 --> 00:33:50.045 we saw a significant reduction
NOTE Confidence: 0.9666306

00:33:50.045 --> 00:33:52.285 in seizure frequency, particularly dropped

NOTE Confidence: 0.9666306

00:33:52.285 --> 00:33:53.905 seizures. This is really consistent

NOTE Confidence: 0.9666306

00:33:54.045 --> 00:33:55.260 with what we know about

NOTE Confidence: 0.9666306

00:33:55.260 --> 00:33:55.760 epidiolex

NOTE Confidence: 0.93094325

00:33:56.060 --> 00:33:57.980 after we exclude one person

NOTE Confidence: 0.93094325

00:33:57.980 --> 00:33:59.680 who showed an atypical elevation

NOTE Confidence: 0.93094325

00:33:59.740 --> 00:34:00.320 in seizures.

NOTE Confidence: 0.9764161

00:34:00.940 --> 00:34:02.300 What is most interesting to

NOTE Confidence: 0.9764161

00:34:02.300 --> 00:34:03.820 me is that they also

NOTE Confidence: 0.9764161

00:34:03.820 --> 00:34:05.980 showed lower anxiety symptoms and

NOTE Confidence: 0.9764161

00:34:05.980 --> 00:34:08.080 particularly in the generalized anxiety

NOTE Confidence: 0.9764161

00:34:08.140 --> 00:34:08.640 domain.

NOTE Confidence: 0.94669044

00:34:09.195 --> 00:34:10.555 So this matches some data

NOTE Confidence: 0.94669044

00:34:10.555 --> 00:34:12.415 coming out of, McLean Hospital,

NOTE Confidence: 0.94669044

00:34:12.475 --> 00:34:14.015 Stacy Gruber, and colleagues.

NOTE Confidence: 0.92338943

00:34:14.875 --> 00:34:16.155 Saw a very similar pattern

NOTE Confidence: 0.92338943

00:34:16.155 --> 00:34:18.015 in an open label study,

NOTE Confidence: 0.97922945

00:34:18.315 --> 00:34:19.835 in adults with GAD as

NOTE Confidence: 0.97922945

00:34:19.835 --> 00:34:20.335 well.

NOTE Confidence: 0.9954395

00:34:21.270 --> 00:34:22.890 And then for, endocannabinoids,

NOTE Confidence: 0.99128175

00:34:23.510 --> 00:34:24.950 we saw an overall increase

NOTE Confidence: 0.99128175

00:34:24.950 --> 00:34:26.250 in two AG concentrations,

NOTE Confidence: 0.9726292

00:34:27.430 --> 00:34:29.210 from baseline to study end.

NOTE Confidence: 0.9726292

00:34:29.430 --> 00:34:30.790 So, again, it fits with

NOTE Confidence: 0.9726292

00:34:30.790 --> 00:34:32.150 the idea that maybe two

NOTE Confidence: 0.9726292

00:34:32.150 --> 00:34:33.670 AG is a biomarker of

NOTE Confidence: 0.9726292

00:34:33.670 --> 00:34:35.744 treatment response. So that's something

NOTE Confidence: 0.9726292

00:34:35.744 --> 00:34:36.864 we'd love to dig into

NOTE Confidence: 0.9726292

00:34:36.864 --> 00:34:37.364 more.

NOTE Confidence: 0.9895062

00:34:38.704 --> 00:34:40.385 Obviously, the anxiety symptoms are

NOTE Confidence: 0.9895062

00:34:40.385 --> 00:34:41.585 really fascinating to me as

NOTE Confidence: 0.9895062

00:34:41.585 --> 00:34:43.525 someone who studies anxiety, but
NOTE Confidence: 0.9895062

00:34:43.744 --> 00:34:44.625 we have a big chicken
NOTE Confidence: 0.9895062

00:34:44.625 --> 00:34:46.065 or the egg problem. You
NOTE Confidence: 0.9895062

00:34:46.065 --> 00:34:47.204 know, are these kids,
NOTE Confidence: 0.97374415

00:34:47.984 --> 00:34:49.424 less anxious because they're having
NOTE Confidence: 0.97374415

00:34:49.424 --> 00:34:51.239 fewer seizures or vice versa?
NOTE Confidence: 0.97374415

00:34:51.320 --> 00:34:52.060 Or is
NOTE Confidence: 0.97537386

00:34:52.360 --> 00:34:53.320 there, you know, a real
NOTE Confidence: 0.97537386

00:34:53.320 --> 00:34:55.420 effect of cannabidiol on anxiety?
NOTE Confidence: 0.99871266

00:34:55.960 --> 00:34:56.780 So we
NOTE Confidence: 0.94156945

00:34:57.080 --> 00:34:59.080 were fortunate enough to right
NOTE Confidence: 0.94156945

00:34:59.080 --> 00:35:00.360 before my wedding actually, which
NOTE Confidence: 0.94156945

00:35:00.360 --> 00:35:01.900 was fun to scramble, we,
NOTE Confidence: 0.94177943

00:35:02.760 --> 00:35:04.119 got a an NIH grant
NOTE Confidence: 0.94177943

00:35:04.119 --> 00:35:05.340 to look at cannabidiol,
NOTE Confidence: 0.96251786

00:35:06.665 --> 00:35:08.045 in the form of epidiolex

NOTE Confidence: 0.98053455

00:35:08.344 --> 00:35:09.645 as a way to adjunct,

NOTE Confidence: 0.9982606

00:35:10.505 --> 00:35:11.864 or augment the effects of

NOTE Confidence: 0.9982606

00:35:11.864 --> 00:35:13.864 cognitive behavioral therapy for people

NOTE Confidence: 0.9982606

00:35:13.864 --> 00:35:15.085 with anxiety disorders.

NOTE Confidence: 0.9809147

00:35:16.025 --> 00:35:17.305 So CBT is a first

NOTE Confidence: 0.9809147

00:35:17.305 --> 00:35:18.605 line behavioral treatment.

NOTE Confidence: 0.99882513

00:35:19.040 --> 00:35:20.239 And the idea here is

NOTE Confidence: 0.99882513

00:35:20.239 --> 00:35:20.739 that,

NOTE Confidence: 0.95936996

00:35:21.440 --> 00:35:22.660 at least in the seizure

NOTE Confidence: 0.95936996

00:35:22.719 --> 00:35:23.219 space,

NOTE Confidence: 0.9997083

00:35:23.680 --> 00:35:24.180 cannabidiol

NOTE Confidence: 0.9993336

00:35:24.480 --> 00:35:26.560 really works to stabilize some

NOTE Confidence: 0.9993336

00:35:26.560 --> 00:35:27.380 of the signatures

NOTE Confidence: 0.98990613

00:35:27.680 --> 00:35:29.940 of epilepsy, which is hyperactivity

NOTE Confidence: 0.99780744

00:35:30.239 --> 00:35:32.020 of limbic regions. So

NOTE Confidence: 0.99643093

00:35:32.765 --> 00:35:33.725 in anxiety, we see a
NOTE Confidence: 0.99643093

00:35:33.725 --> 00:35:35.325 really similar pattern. So can
NOTE Confidence: 0.99643093

00:35:35.325 --> 00:35:36.225 we bring cannabidiol
NOTE Confidence: 0.94688374

00:35:36.525 --> 00:35:37.905 on board to really stabilize
NOTE Confidence: 0.94688374

00:35:38.045 --> 00:35:39.344 that limbic hyperactivity
NOTE Confidence: 0.9946068

00:35:40.125 --> 00:35:41.885 and allow those prefrontal control
NOTE Confidence: 0.9946068

00:35:41.885 --> 00:35:43.905 regions to regain control over
NOTE Confidence: 0.9946068

00:35:44.125 --> 00:35:45.265 emotional responding?
NOTE Confidence: 0.9969016

00:35:45.869 --> 00:35:47.150 So they'll be on chronic
NOTE Confidence: 0.9969016

00:35:47.150 --> 00:35:47.650 dosing
NOTE Confidence: 0.9803281

00:35:48.269 --> 00:35:49.710 of five to seven weeks,
NOTE Confidence: 0.9803281

00:35:49.710 --> 00:35:50.930 and then we will introduce,
NOTE Confidence: 0.9954262

00:35:52.269 --> 00:35:53.869 CBT to see if we
NOTE Confidence: 0.9954262

00:35:53.869 --> 00:35:55.549 can use cannabidiol to augment
NOTE Confidence: 0.9954262

00:35:55.549 --> 00:35:56.289 those effects.
NOTE Confidence: 0.9781453

00:35:56.829 --> 00:35:57.969 And this is an interesting

NOTE Confidence: 0.9781453

00:35:58.029 --> 00:35:59.950 phased mechanism through NIMH. Our

NOTE Confidence: 0.9781453

00:35:59.950 --> 00:36:01.575 target is actually brain activation

NOTE Confidence: 0.9781453

00:36:01.734 --> 00:36:02.474 for the first

NOTE Confidence: 0.9984557

00:36:02.855 --> 00:36:04.214 phase. If that's successful, then

NOTE Confidence: 0.9984557

00:36:04.214 --> 00:36:05.494 we'll move on to the

NOTE Confidence: 0.9984557

00:36:05.494 --> 00:36:06.535 second phase to look at

NOTE Confidence: 0.9984557

00:36:06.535 --> 00:36:07.515 clinical outcomes.

NOTE Confidence: 0.9993512

00:36:09.895 --> 00:36:10.395 So

NOTE Confidence: 0.9957365

00:36:10.695 --> 00:36:12.315 as a developmental scientist,

NOTE Confidence: 0.9994886

00:36:12.855 --> 00:36:13.895 I don't love to think

NOTE Confidence: 0.9994886

00:36:13.895 --> 00:36:15.275 about, you know, pharmacotherapy

NOTE Confidence: 0.98799944

00:36:15.655 --> 00:36:17.010 as a as a first

NOTE Confidence: 0.98799944

00:36:17.090 --> 00:36:18.469 first way to approach this.

NOTE Confidence: 0.99573565

00:36:19.170 --> 00:36:20.450 I was wondering if there's

NOTE Confidence: 0.99573565

00:36:20.450 --> 00:36:21.190 other ways

NOTE Confidence: 0.97213775

00:36:21.650 --> 00:36:23.489 to modify the endocannabinoid system

NOTE Confidence: 0.97213775

00:36:23.489 --> 00:36:25.190 that involve behavioral interventions.

NOTE Confidence: 0.9835122

00:36:26.130 --> 00:36:27.250 And turns out there's some

NOTE Confidence: 0.9835122

00:36:27.250 --> 00:36:28.850 interesting data on a variety

NOTE Confidence: 0.9835122

00:36:28.850 --> 00:36:30.150 of behavioral interventions

NOTE Confidence: 0.929779

00:36:30.855 --> 00:36:31.815 that may all target the

NOTE Confidence: 0.929779

00:36:31.815 --> 00:36:32.315 endocannabinoid

NOTE Confidence: 0.98211384

00:36:32.614 --> 00:36:34.375 system. And, doctor D'Souza, I

NOTE Confidence: 0.98211384

00:36:34.375 --> 00:36:35.735 didn't include hiking here, but

NOTE Confidence: 0.98211384

00:36:35.735 --> 00:36:36.795 that actually might

NOTE Confidence: 0.99096036

00:36:37.415 --> 00:36:38.235 boost endocannabinoids

NOTE Confidence: 0.9988402

00:36:38.695 --> 00:36:39.355 as well.

NOTE Confidence: 0.9698963

00:36:40.375 --> 00:36:42.155 Cite a really talented undergraduate

NOTE Confidence: 0.9698963

00:36:42.295 --> 00:36:44.200 student who, for her first

NOTE Confidence: 0.9698963

00:36:44.200 --> 00:36:45.960 project, she she was a

NOTE Confidence: 0.9698963

00:36:45.960 --> 00:36:47.500 runner. She was really into,

NOTE Confidence: 0.9747803

00:36:48.280 --> 00:36:49.400 to running. I am as

NOTE Confidence: 0.9747803

00:36:49.400 --> 00:36:50.920 well. She wanted to know

NOTE Confidence: 0.9747803

00:36:50.920 --> 00:36:52.280 if running or other forms

NOTE Confidence: 0.9747803

00:36:52.280 --> 00:36:54.360 of exercise can modify circulating

NOTE Confidence: 0.9747803

00:36:54.360 --> 00:36:54.860 endocannabinoid

NOTE Confidence: 0.9870293

00:36:55.320 --> 00:36:55.820 concentrations.

NOTE Confidence: 0.99022126

00:36:56.655 --> 00:36:58.195 So she did a systematic

NOTE Confidence: 0.99022126

00:36:58.255 --> 00:36:59.614 review and meta analysis, which

NOTE Confidence: 0.99022126

00:36:59.614 --> 00:37:00.895 I would not I would

NOTE Confidence: 0.99022126

00:37:00.895 --> 00:37:01.935 not recommend for a first

NOTE Confidence: 0.99022126

00:37:01.935 --> 00:37:03.375 year undergraduate student, but she

NOTE Confidence: 0.99022126

00:37:03.375 --> 00:37:04.114 did amazing.

NOTE Confidence: 0.9980996

00:37:04.575 --> 00:37:05.955 And she found that across,

NOTE Confidence: 0.96774924

00:37:06.335 --> 00:37:07.614 a bunch of different studies

NOTE Confidence: 0.96774924

00:37:07.614 --> 00:37:09.055 in animal models and in

NOTE Confidence: 0.96774924

00:37:09.055 --> 00:37:09.555 humans,
NOTE Confidence: 0.986574

00:37:10.180 --> 00:37:12.360 in adults with depression, fibromyalgia,
NOTE Confidence: 0.97575796

00:37:13.380 --> 00:37:15.060 trained athletes, she found a
NOTE Confidence: 0.97575796

00:37:15.060 --> 00:37:17.219 really similar and robust pattern
NOTE Confidence: 0.97575796

00:37:17.219 --> 00:37:17.719 of
NOTE Confidence: 0.9010655

00:37:18.100 --> 00:37:19.940 increased anandamide, to a lesser
NOTE Confidence: 0.9010655

00:37:19.940 --> 00:37:21.960 extent, to a g, following
NOTE Confidence: 0.9010655

00:37:22.020 --> 00:37:23.000 acute exercise.
NOTE Confidence: 0.99526966

00:37:24.055 --> 00:37:26.135 And this was across different
NOTE Confidence: 0.99526966

00:37:26.135 --> 00:37:28.155 types of exercise, aerobic,
NOTE Confidence: 0.97151023

00:37:29.175 --> 00:37:30.315 yoga, resistance.
NOTE Confidence: 0.9625343

00:37:31.415 --> 00:37:32.855 She did find some dose
NOTE Confidence: 0.9625343

00:37:32.855 --> 00:37:34.235 dependent effects. So
NOTE Confidence: 0.9909117

00:37:34.614 --> 00:37:35.515 moderate intensity
NOTE Confidence: 0.9802173

00:37:36.055 --> 00:37:37.495 was associated with a greater
NOTE Confidence: 0.9802173

00:37:37.495 --> 00:37:38.955 increase than lighter intensity.

NOTE Confidence: 0.95519495
00:37:39.530 --> 00:37:41.130 So thinking running versus, like,
NOTE Confidence: 0.95519495
00:37:41.130 --> 00:37:42.190 a brisk walk.
NOTE Confidence: 0.9740818
00:37:42.730 --> 00:37:43.770 But this is a pretty
NOTE Confidence: 0.9740818
00:37:43.770 --> 00:37:44.270 uniform,
NOTE Confidence: 0.99753124
00:37:45.210 --> 00:37:46.430 finding across studies.
NOTE Confidence: 0.96720105
00:37:47.369 --> 00:37:48.589 So this got us thinking,
NOTE Confidence: 0.9812078
00:37:49.130 --> 00:37:50.670 how does this relate to
NOTE Confidence: 0.9812078
00:37:50.810 --> 00:37:51.930 what people think of when
NOTE Confidence: 0.9812078
00:37:51.930 --> 00:37:53.205 they when they run, which
NOTE Confidence: 0.9812078
00:37:53.205 --> 00:37:54.832 a lot of people experience
NOTE Confidence: 0.9812078
00:37:54.832 --> 00:37:56.459 something called the runner's high,
NOTE Confidence: 0.9812078
00:37:56.459 --> 00:37:58.086 which sometimes I feel, you
NOTE Confidence: 0.9812078
00:37:58.086 --> 00:37:59.713 know, less anxious after a
NOTE Confidence: 0.9812078
00:37:59.713 --> 00:38:01.665 run, the euphoric effects. And
NOTE Confidence: 0.9812078
00:38:01.665 --> 00:38:03.292 it turns out that the
NOTE Confidence: 0.9812078

00:38:03.292 --> 00:38:04.919 runner's high is related to
NOTE Confidence: 0.9812078

00:38:04.919 --> 00:38:06.546 cannabinoid signaling. It's not related
NOTE Confidence: 0.9812078

00:38:06.546 --> 00:38:08.173 to endogenous opioids like I
NOTE Confidence: 0.9812078

00:38:08.173 --> 00:38:10.029 had thought for for probably
NOTE Confidence: 0.9812078

00:38:10.029 --> 00:38:11.150 a couple decades that I'm
NOTE Confidence: 0.9812078

00:38:11.150 --> 00:38:11.950 gonna go out and get
NOTE Confidence: 0.9812078

00:38:11.950 --> 00:38:13.010 my my,
NOTE Confidence: 0.98685807

00:38:14.510 --> 00:38:16.289 endorphin boost with a run.
NOTE Confidence: 0.98685807

00:38:16.349 --> 00:38:17.469 But there's been a series
NOTE Confidence: 0.98685807

00:38:17.469 --> 00:38:18.130 of studies
NOTE Confidence: 0.97986495

00:38:18.430 --> 00:38:19.869 in animal models and then
NOTE Confidence: 0.97986495

00:38:19.869 --> 00:38:20.849 in human adults,
NOTE Confidence: 0.9970711

00:38:21.565 --> 00:38:22.685 showing that if you block
NOTE Confidence: 0.9970711

00:38:22.685 --> 00:38:23.185 the,
NOTE Confidence: 0.98134816

00:38:23.565 --> 00:38:25.645 endogenous opioid receptor, you still
NOTE Confidence: 0.98134816

00:38:25.645 --> 00:38:26.465 get the endocannabinoid

NOTE Confidence: 0.96227103

00:38:26.844 --> 00:38:28.285 boost, you still get the

NOTE Confidence: 0.96227103

00:38:28.285 --> 00:38:28.785 anxiolytic,

NOTE Confidence: 0.9965165

00:38:29.325 --> 00:38:31.185 and euphoric effects of exercise.

NOTE Confidence: 0.9636879

00:38:31.965 --> 00:38:33.245 So I won't go, much

NOTE Confidence: 0.9636879

00:38:33.245 --> 00:38:34.859 into that, but this got

NOTE Confidence: 0.9636879

00:38:34.859 --> 00:38:36.280 us also thinking about,

NOTE Confidence: 0.8971222

00:38:36.580 --> 00:38:37.940 can we kind of pack

NOTE Confidence: 0.8971222

00:38:37.940 --> 00:38:38.680 this system

NOTE Confidence: 0.9873223

00:38:39.060 --> 00:38:39.800 and introduce,

NOTE Confidence: 0.9916049

00:38:40.980 --> 00:38:42.100 exercise as a way to

NOTE Confidence: 0.9916049

00:38:42.100 --> 00:38:43.080 augment endocannabinoid

NOTE Confidence: 0.95020026

00:38:43.460 --> 00:38:43.960 signaling,

NOTE Confidence: 0.95459735

00:38:44.660 --> 00:38:46.760 which is really important for,

NOTE Confidence: 0.95879316

00:38:47.545 --> 00:38:49.085 consolidation of memories,

NOTE Confidence: 0.9907844

00:38:49.625 --> 00:38:51.485 including the fear extinction memory.

NOTE Confidence: 0.9907844

00:38:51.785 --> 00:38:52.285 So
NOTE Confidence: 0.95345974
00:38:52.985 --> 00:38:53.864 we're doing that in a
NOTE Confidence: 0.95345974
00:38:53.864 --> 00:38:55.945 randomized controlled trial that I'm
NOTE Confidence: 0.95345974
00:38:55.945 --> 00:38:57.305 in year three right now.
NOTE Confidence: 0.95345974
00:38:57.305 --> 00:38:57.805 And
NOTE Confidence: 0.9653469
00:38:58.265 --> 00:38:59.325 in, teenagers,
NOTE Confidence: 0.9703247
00:38:59.625 --> 00:39:01.600 we're having them undergo a
NOTE Confidence: 0.9703247
00:39:01.600 --> 00:39:03.860 laboratory based Pavlovian fear extinction
NOTE Confidence: 0.9703247
00:39:03.920 --> 00:39:04.420 paradigm.
NOTE Confidence: 0.971257
00:39:05.040 --> 00:39:06.000 And then after that, they're
NOTE Confidence: 0.971257
00:39:06.000 --> 00:39:07.700 randomized either to a treadmill
NOTE Confidence: 0.971257
00:39:07.760 --> 00:39:09.780 exercise for thirty minutes or
NOTE Confidence: 0.971257
00:39:09.920 --> 00:39:10.980 a control condition.
NOTE Confidence: 0.96742576
00:39:11.600 --> 00:39:12.640 And the idea is that
NOTE Confidence: 0.96742576
00:39:12.640 --> 00:39:14.445 those randomized to the exercise
NOTE Confidence: 0.96742576
00:39:14.445 --> 00:39:16.205 condition will show elevations in

NOTE Confidence: 0.96742576
00:39:16.205 --> 00:39:16.705 anandamide,
NOTE Confidence: 0.99736243
00:39:17.485 --> 00:39:19.025 hopefully, and reductions
NOTE Confidence: 0.9981135
00:39:19.405 --> 00:39:20.225 in their
NOTE Confidence: 0.9509101
00:39:20.844 --> 00:39:22.445 condition fear the next day.
NOTE Confidence: 0.9509101
00:39:22.445 --> 00:39:23.645 So they're better able to
NOTE Confidence: 0.9509101
00:39:23.645 --> 00:39:25.485 retain or recall that extinction
NOTE Confidence: 0.9509101
00:39:25.485 --> 00:39:25.985 learning.
NOTE Confidence: 0.9870678
00:39:26.680 --> 00:39:28.040 And this is a laboratory
NOTE Confidence: 0.9870678
00:39:28.040 --> 00:39:29.320 based study, so we're using,
NOTE Confidence: 0.9870678
00:39:29.640 --> 00:39:30.780 measures of physiological
NOTE Confidence: 0.99404985
00:39:31.640 --> 00:39:33.100 arousal, skin conductance,
NOTE Confidence: 0.9881063
00:39:33.560 --> 00:39:34.060 neuroimaging,
NOTE Confidence: 0.9657289
00:39:35.160 --> 00:39:35.900 bold response.
NOTE Confidence: 0.9943475
00:39:36.680 --> 00:39:37.880 And this sounds kind of
NOTE Confidence: 0.9943475
00:39:37.880 --> 00:39:39.260 weird, but if it's successful,
NOTE Confidence: 0.9943475

00:39:39.320 --> 00:39:41.000 this could be, something that
NOTE Confidence: 0.9943475

00:39:41.000 --> 00:39:41.880 we could apply to the
NOTE Confidence: 0.9943475

00:39:41.880 --> 00:39:42.380 clinic.
NOTE Confidence: 0.99117213

00:39:42.885 --> 00:39:44.085 So youth coming in for
NOTE Confidence: 0.99117213

00:39:44.085 --> 00:39:46.245 a CBT session could undergo
NOTE Confidence: 0.99117213

00:39:46.245 --> 00:39:46.985 their session,
NOTE Confidence: 0.9982563

00:39:47.525 --> 00:39:48.325 then they could go on
NOTE Confidence: 0.9982563

00:39:48.325 --> 00:39:49.945 a treadmill and hope that,
NOTE Confidence: 0.97287107

00:39:50.325 --> 00:39:52.585 they require fewer CBT sessions.
NOTE Confidence: 0.97287107

00:39:52.645 --> 00:39:54.165 Perhaps they respond better to
NOTE Confidence: 0.97287107

00:39:54.165 --> 00:39:55.605 CBT treatment. So that would
NOTE Confidence: 0.97287107

00:39:55.605 --> 00:39:56.585 be the next phase.
NOTE Confidence: 0.9788916

00:39:57.710 --> 00:39:59.069 And, actually, since last week,
NOTE Confidence: 0.9788916

00:39:59.069 --> 00:40:00.589 we got some preliminary data
NOTE Confidence: 0.9788916

00:40:00.589 --> 00:40:01.390 in. So you guys are
NOTE Confidence: 0.9788916

00:40:01.390 --> 00:40:02.349 the first to see this

NOTE Confidence: 0.9788916

00:40:02.349 --> 00:40:03.650 besides my lab manager.

NOTE Confidence: 0.9700961

00:40:04.510 --> 00:40:05.010 We,

NOTE Confidence: 0.9327946

00:40:05.869 --> 00:40:07.630 looked at skin conductance in

NOTE Confidence: 0.9327946

00:40:07.630 --> 00:40:08.130 nineteen

NOTE Confidence: 0.9423528

00:40:08.589 --> 00:40:10.770 of our youth. Nine randomized

NOTE Confidence: 0.9423528

00:40:10.829 --> 00:40:12.529 to exercise, ten to control,

NOTE Confidence: 0.9851003

00:40:12.989 --> 00:40:14.165 and we're already seeing the

NOTE Confidence: 0.9851003

00:40:14.165 --> 00:40:15.285 next day when they come

NOTE Confidence: 0.9851003

00:40:15.285 --> 00:40:16.565 in. So they they didn't

NOTE Confidence: 0.9851003

00:40:16.565 --> 00:40:18.885 exercise previously before right before

NOTE Confidence: 0.9851003

00:40:18.885 --> 00:40:19.385 this.

NOTE Confidence: 0.98614246

00:40:19.685 --> 00:40:21.145 We're seeing that those randomized

NOTE Confidence: 0.98614246

00:40:21.285 --> 00:40:22.965 to the exercise condition shown

NOTE Confidence: 0.98614246

00:40:22.965 --> 00:40:24.565 in blue are showing lower

NOTE Confidence: 0.98614246

00:40:24.565 --> 00:40:25.385 skin conductance.

NOTE Confidence: 0.98018074

00:40:26.040 --> 00:40:27.719 So, potentially, they're recalling that
NOTE Confidence: 0.98018074

00:40:27.719 --> 00:40:28.940 extinction memory,
NOTE Confidence: 0.98881346

00:40:29.560 --> 00:40:30.680 a little better than the
NOTE Confidence: 0.98881346

00:40:30.680 --> 00:40:32.680 the control group. Obviously, we're
NOTE Confidence: 0.98881346

00:40:32.680 --> 00:40:34.120 underpowered here. I'm just gonna
NOTE Confidence: 0.98881346

00:40:34.120 --> 00:40:35.320 stop data collection, and then
NOTE Confidence: 0.98881346

00:40:35.320 --> 00:40:36.140 we'll be done.
NOTE Confidence: 0.98604196

00:40:36.680 --> 00:40:38.280 I'm just kidding. But, very
NOTE Confidence: 0.98604196

00:40:38.280 --> 00:40:39.320 exciting that we might be
NOTE Confidence: 0.98604196

00:40:39.320 --> 00:40:40.540 on the right track here.
NOTE Confidence: 0.99091786

00:40:42.384 --> 00:40:43.904 So last thing before I
NOTE Confidence: 0.99091786

00:40:43.904 --> 00:40:44.944 wrap up and,
NOTE Confidence: 0.99030656

00:40:45.424 --> 00:40:46.625 open it up for questions,
NOTE Confidence: 0.99030656

00:40:46.625 --> 00:40:47.844 I wanna just highlight,
NOTE Confidence: 0.97933286

00:40:48.944 --> 00:40:50.305 kind of a a a
NOTE Confidence: 0.97933286

00:40:50.305 --> 00:40:51.424 new thing that we're doing

NOTE Confidence: 0.97933286

00:40:51.424 --> 00:40:52.785 that's not that I didn't

NOTE Confidence: 0.97933286

00:40:52.785 --> 00:40:53.825 ever think I'd be doing

NOTE Confidence: 0.97933286

00:40:53.825 --> 00:40:55.364 in the the cannabis realm.

NOTE Confidence: 0.99703044

00:40:56.224 --> 00:40:57.850 But we have an environmental

NOTE Confidence: 0.9814973

00:40:58.150 --> 00:40:59.670 health center at Wayne State.

NOTE Confidence: 0.9814973

00:40:59.670 --> 00:41:00.890 My postdoc is

NOTE Confidence: 0.99785537

00:41:01.270 --> 00:41:02.950 super interested in air pollution.

NOTE Confidence: 0.99785537

00:41:02.950 --> 00:41:04.390 She's found that air pollution

NOTE Confidence: 0.99785537

00:41:04.390 --> 00:41:04.890 levels

NOTE Confidence: 0.98744863

00:41:05.350 --> 00:41:06.870 relate to anxiety symptoms in

NOTE Confidence: 0.98744863

00:41:06.870 --> 00:41:08.489 youth, relate to brain developmental

NOTE Confidence: 0.98744863

00:41:08.630 --> 00:41:09.130 outcomes.

NOTE Confidence: 0.96164644

00:41:10.065 --> 00:41:11.025 And, you know, I study

NOTE Confidence: 0.96164644

00:41:11.025 --> 00:41:12.224 trauma, so I've never really

NOTE Confidence: 0.96164644

00:41:12.224 --> 00:41:13.505 thought about, you know, built

NOTE Confidence: 0.96164644

00:41:13.505 --> 00:41:15.185 environments and air pollution and
NOTE Confidence: 0.96164644

00:41:15.185 --> 00:41:16.484 how it relates to psychiatric
NOTE Confidence: 0.96164644

00:41:16.545 --> 00:41:17.825 risk until she joined the
NOTE Confidence: 0.96164644

00:41:17.825 --> 00:41:18.325 lab.
NOTE Confidence: 0.9833931

00:41:18.945 --> 00:41:19.984 But she has these cute
NOTE Confidence: 0.9833931

00:41:19.984 --> 00:41:21.045 little air monitors
NOTE Confidence: 0.978108

00:41:21.630 --> 00:41:23.309 that I'll show you, that
NOTE Confidence: 0.978108

00:41:23.309 --> 00:41:24.349 she gives our kids to
NOTE Confidence: 0.978108

00:41:24.349 --> 00:41:25.489 strap to their backpacks
NOTE Confidence: 0.9436612

00:41:25.950 --> 00:41:26.450 and,
NOTE Confidence: 0.997705

00:41:27.230 --> 00:41:29.170 measure their particulate matter exposure.
NOTE Confidence: 0.997705

00:41:29.230 --> 00:41:30.430 And I think you guys
NOTE Confidence: 0.997705

00:41:30.430 --> 00:41:31.549 were also affected by the
NOTE Confidence: 0.997705

00:41:31.549 --> 00:41:32.049 wildfires
NOTE Confidence: 0.97836745

00:41:32.750 --> 00:41:33.950 earlier this summer, but we
NOTE Confidence: 0.97836745

00:41:33.950 --> 00:41:34.829 had some of our kids

NOTE Confidence: 0.97836745
00:41:34.829 --> 00:41:35.869 wear these around, and we
NOTE Confidence: 0.97836745
00:41:35.869 --> 00:41:37.250 just saw huge spikes
NOTE Confidence: 0.96828175
00:41:37.575 --> 00:41:39.175 in particulate matter, which is
NOTE Confidence: 0.96828175
00:41:39.175 --> 00:41:41.575 a a pretty harmful, air
NOTE Confidence: 0.96828175
00:41:41.575 --> 00:41:42.075 pollutant.
NOTE Confidence: 0.9799979
00:41:43.335 --> 00:41:44.455 So we took these air
NOTE Confidence: 0.9799979
00:41:44.455 --> 00:41:46.614 monitors, and we had one
NOTE Confidence: 0.9799979
00:41:46.614 --> 00:41:47.815 of our friends, who will
NOTE Confidence: 0.9799979
00:41:47.815 --> 00:41:48.635 not be named,
NOTE Confidence: 0.97410476
00:41:49.255 --> 00:41:50.695 wear the air monitors when
NOTE Confidence: 0.97410476
00:41:50.695 --> 00:41:51.755 they use cannabis.
NOTE Confidence: 0.98204976
00:41:52.200 --> 00:41:54.040 And this was either smoking
NOTE Confidence: 0.98204976
00:41:54.040 --> 00:41:55.020 cannabis flower
NOTE Confidence: 0.99718934
00:41:55.560 --> 00:41:56.920 or vaporizing it with a
NOTE Confidence: 0.99718934
00:41:56.920 --> 00:41:57.420 cartridge.
NOTE Confidence: 0.9994378

00:41:58.119 --> 00:41:59.640 And what we found was
NOTE Confidence: 0.9994378

00:41:59.640 --> 00:42:00.460 really startling
NOTE Confidence: 0.947258

00:42:01.000 --> 00:42:02.540 that if we look at
NOTE Confidence: 0.947258

00:42:02.839 --> 00:42:04.725 particulate matter two point five
NOTE Confidence: 0.947258

00:42:04.725 --> 00:42:06.485 levels on the vertical axis
NOTE Confidence: 0.947258

00:42:06.485 --> 00:42:07.945 here, this is over time,
NOTE Confidence: 0.99962366

00:42:08.485 --> 00:42:08.985 instances
NOTE Confidence: 0.97935015

00:42:09.365 --> 00:42:11.045 when they smoked cannabis flower
NOTE Confidence: 0.97935015

00:42:11.045 --> 00:42:11.945 or even vaped
NOTE Confidence: 0.97532624

00:42:12.405 --> 00:42:14.485 registered super high levels of
NOTE Confidence: 0.97532624

00:42:14.485 --> 00:42:15.145 air pollution.
NOTE Confidence: 0.9975743

00:42:15.685 --> 00:42:16.645 And what I'm showing you
NOTE Confidence: 0.9975743

00:42:16.645 --> 00:42:17.605 in this red line is
NOTE Confidence: 0.9975743

00:42:17.605 --> 00:42:19.569 the EPA's daily limit. So
NOTE Confidence: 0.9975743

00:42:19.569 --> 00:42:21.650 we're talking single instances of
NOTE Confidence: 0.9975743

00:42:21.650 --> 00:42:22.150 using

NOTE Confidence: 0.9752117
00:42:22.530 --> 00:42:24.130 cannabis even with vaping, which
NOTE Confidence: 0.9752117
00:42:24.130 --> 00:42:25.670 people think is safer than
NOTE Confidence: 0.9752117
00:42:25.730 --> 00:42:26.630 than combustion,
NOTE Confidence: 0.79496354
00:42:27.489 --> 00:42:27.989 is
NOTE Confidence: 0.9427453
00:42:28.369 --> 00:42:30.210 registering toxic levels of PM
NOTE Confidence: 0.9427453
00:42:30.210 --> 00:42:31.670 two point five. And
NOTE Confidence: 0.97626597
00:42:32.045 --> 00:42:33.245 this got us really thinking
NOTE Confidence: 0.97626597
00:42:33.245 --> 00:42:35.325 about not only secondhand effects,
NOTE Confidence: 0.97626597
00:42:35.325 --> 00:42:36.844 which for some reason, you
NOTE Confidence: 0.97626597
00:42:36.844 --> 00:42:38.045 know, we think that secondhand
NOTE Confidence: 0.97626597
00:42:38.045 --> 00:42:39.805 tobacco smoke is negative, but
NOTE Confidence: 0.97626597
00:42:39.805 --> 00:42:41.165 for cannabis, again, it's all
NOTE Confidence: 0.97626597
00:42:41.165 --> 00:42:42.385 green. It's all safe.
NOTE Confidence: 0.9931117
00:42:42.925 --> 00:42:43.965 This got us really thinking
NOTE Confidence: 0.9931117
00:42:43.965 --> 00:42:45.165 about the harmful effects of
NOTE Confidence: 0.9931117

00:42:45.165 --> 00:42:46.705 secondhand cannabis smoke.

NOTE Confidence: 0.98332393

00:42:47.140 --> 00:42:48.340 And, actually, the PM two

NOTE Confidence: 0.98332393

00:42:48.340 --> 00:42:49.960 point five levels from cannabis

NOTE Confidence: 0.98332393

00:42:50.180 --> 00:42:51.619 are four times higher than

NOTE Confidence: 0.98332393

00:42:51.619 --> 00:42:52.680 tobacco smoke.

NOTE Confidence: 0.9987018

00:42:53.219 --> 00:42:53.719 So

NOTE Confidence: 0.98304874

00:42:54.340 --> 00:42:55.619 a lot of, a lot

NOTE Confidence: 0.98304874

00:42:55.619 --> 00:42:56.739 of parents use it in

NOTE Confidence: 0.98304874

00:42:56.739 --> 00:42:58.260 the room, in the car

NOTE Confidence: 0.98304874

00:42:58.260 --> 00:42:59.300 with their kids. They use

NOTE Confidence: 0.98304874

00:42:59.300 --> 00:43:00.180 it, and then they pick

NOTE Confidence: 0.98304874

00:43:00.180 --> 00:43:01.400 up their kid from school.

NOTE Confidence: 0.98304874

00:43:01.655 --> 00:43:02.775 So this stuff is hanging

NOTE Confidence: 0.98304874

00:43:02.775 --> 00:43:04.075 around in these areas.

NOTE Confidence: 0.998902

00:43:04.775 --> 00:43:05.815 So we got some pilot

NOTE Confidence: 0.998902

00:43:05.815 --> 00:43:06.714 funding recently

NOTE Confidence: 0.9421359

00:43:07.255 --> 00:43:09.195 with, Claire, who's my fantastic

NOTE Confidence: 0.9421359

00:43:09.255 --> 00:43:09.755 postdoc,

NOTE Confidence: 0.9897275

00:43:10.375 --> 00:43:11.594 as well as Dave Ledgerwood,

NOTE Confidence: 0.9897275

00:43:11.734 --> 00:43:13.415 who is a, an expert

NOTE Confidence: 0.9897275

00:43:13.415 --> 00:43:15.655 in behavioral interventions for substance

NOTE Confidence: 0.9897275

00:43:15.655 --> 00:43:16.474 use disorders.

NOTE Confidence: 0.960775

00:43:17.079 --> 00:43:18.200 And we're really interested in

NOTE Confidence: 0.960775

00:43:18.200 --> 00:43:19.660 looking at, can we measure

NOTE Confidence: 0.960775

00:43:19.719 --> 00:43:21.180 PM two point five levels?

NOTE Confidence: 0.99973965

00:43:21.559 --> 00:43:22.760 Can we work with parents

NOTE Confidence: 0.99973965

00:43:22.760 --> 00:43:23.960 to develop safer ways to

NOTE Confidence: 0.99973965

00:43:23.960 --> 00:43:24.780 use cannabis

NOTE Confidence: 0.9891398

00:43:25.400 --> 00:43:26.520 around their homes? We know

NOTE Confidence: 0.9891398

00:43:26.520 --> 00:43:28.140 parents aren't gonna stop using.

NOTE Confidence: 0.9891398

00:43:28.200 --> 00:43:29.400 We're not asking people to

NOTE Confidence: 0.9891398

00:43:29.400 --> 00:43:30.359 stop using. I think that
NOTE Confidence: 0.9891398

00:43:30.359 --> 00:43:31.875 ship has sailed, but can
NOTE Confidence: 0.9891398

00:43:31.875 --> 00:43:32.675 they use it in a
NOTE Confidence: 0.9891398

00:43:32.675 --> 00:43:34.195 more, safe way around their
NOTE Confidence: 0.9891398

00:43:34.195 --> 00:43:36.114 children to protect them during
NOTE Confidence: 0.9891398

00:43:36.114 --> 00:43:37.475 these really important periods of
NOTE Confidence: 0.9891398

00:43:37.475 --> 00:43:38.295 brain development?
NOTE Confidence: 0.97657824

00:43:39.315 --> 00:43:41.075 So with that, I will
NOTE Confidence: 0.97657824

00:43:41.075 --> 00:43:42.435 wrap up, and I just
NOTE Confidence: 0.97657824

00:43:42.435 --> 00:43:43.475 hope that I have not
NOTE Confidence: 0.97657824

00:43:43.475 --> 00:43:44.755 bored you and convinced you
NOTE Confidence: 0.97657824

00:43:44.755 --> 00:43:45.795 actually that this is worth
NOTE Confidence: 0.97657824

00:43:45.795 --> 00:43:47.260 studying that, you know, the
NOTE Confidence: 0.97657824

00:43:47.260 --> 00:43:47.760 endocannabinoid
NOTE Confidence: 0.9584282

00:43:48.060 --> 00:43:49.340 system is really important for
NOTE Confidence: 0.9584282

00:43:49.340 --> 00:43:51.520 pregnancy outcomes for mental health.

NOTE Confidence: 0.9927827

00:43:51.900 --> 00:43:53.120 And then during adolescence,

NOTE Confidence: 0.9373986

00:43:53.660 --> 00:43:55.580 it's really important potentially a

NOTE Confidence: 0.9373986

00:43:55.580 --> 00:43:56.800 biomarker of risk

NOTE Confidence: 0.94677323

00:43:57.100 --> 00:43:58.560 as a target for interventions

NOTE Confidence: 0.94677323

00:43:58.780 --> 00:44:00.239 either behavioral or pharmacological

NOTE Confidence: 0.9476397

00:44:00.780 --> 00:44:01.725 or or both.

NOTE Confidence: 0.99372035

00:44:02.525 --> 00:44:04.045 And then, you know, thinking

NOTE Confidence: 0.99372035

00:44:04.045 --> 00:44:05.885 of, applying this to different

NOTE Confidence: 0.99372035

00:44:05.885 --> 00:44:07.085 spaces, which I know you

NOTE Confidence: 0.99372035

00:44:07.085 --> 00:44:08.125 are all doing in in

NOTE Confidence: 0.99372035

00:44:08.125 --> 00:44:09.485 a variety of different arenas.

NOTE Confidence: 0.99372035

00:44:09.485 --> 00:44:09.985 So,

NOTE Confidence: 0.97379327

00:44:10.685 --> 00:44:11.565 I'd just love to hear

NOTE Confidence: 0.97379327

00:44:11.565 --> 00:44:12.685 some questions, and thank you

NOTE Confidence: 0.97379327

00:44:12.685 --> 00:44:13.345 so much.

NOTE Confidence: 0.90699244

00:44:17.049 --> 00:44:18.510 Hey. Thank you, Hillary.
NOTE Confidence: 0.9988907

00:44:19.210 --> 00:44:20.650 There are some questions in
NOTE Confidence: 0.9988907

00:44:20.650 --> 00:44:21.630 the chat.
NOTE Confidence: 0.9929012

00:44:22.089 --> 00:44:23.530 I'm gonna start off with
NOTE Confidence: 0.9929012

00:44:23.530 --> 00:44:25.630 probably the most controversial one.
NOTE Confidence: 0.9922921

00:44:26.410 --> 00:44:27.950 Sure. This is from Mohit.
NOTE Confidence: 0.9805393

00:44:28.505 --> 00:44:29.864 What is the safe amount
NOTE Confidence: 0.9805393

00:44:29.864 --> 00:44:31.225 of THC, and how much
NOTE Confidence: 0.9805393

00:44:31.225 --> 00:44:32.665 should be ingested in a
NOTE Confidence: 0.9805393

00:44:32.665 --> 00:44:33.485 day maximum?
NOTE Confidence: 0.9950938

00:44:36.905 --> 00:44:37.805 I I
NOTE Confidence: 0.99801934

00:44:38.425 --> 00:44:39.945 that's so hard. Is there
NOTE Confidence: 0.99801934

00:44:39.945 --> 00:44:41.245 a specific population,
NOTE Confidence: 0.99848086

00:44:41.864 --> 00:44:43.885 Mohit, you're interested in?
NOTE Confidence: 0.994258

00:44:45.599 --> 00:44:46.319 Because I would say I
NOTE Confidence: 0.994258

00:44:46.319 --> 00:44:47.279 don't know about you, doctor

NOTE Confidence: 0.994258
00:44:47.279 --> 00:44:48.819 D'Souza. I'm not a clinician,
NOTE Confidence: 0.994258
00:44:48.960 --> 00:44:50.160 but, you know, I think
NOTE Confidence: 0.994258
00:44:50.160 --> 00:44:51.039 if you're talking to an
NOTE Confidence: 0.994258
00:44:51.039 --> 00:44:52.640 older adult who's looking for
NOTE Confidence: 0.994258
00:44:52.640 --> 00:44:53.460 pain management,
NOTE Confidence: 0.99366516
00:44:54.239 --> 00:44:55.440 there's probably a route of
NOTE Confidence: 0.99366516
00:44:55.440 --> 00:44:57.039 administration and dose that might
NOTE Confidence: 0.99366516
00:44:57.039 --> 00:44:59.015 be manageable there. I think
NOTE Confidence: 0.99366516
00:44:59.015 --> 00:45:00.395 for developing populations,
NOTE Confidence: 0.9946201
00:45:01.255 --> 00:45:02.455 we always tell people that
NOTE Confidence: 0.9946201
00:45:02.455 --> 00:45:02.955 no
NOTE Confidence: 0.9368963
00:45:03.335 --> 00:45:04.775 amount is safe. Although I
NOTE Confidence: 0.9368963
00:45:04.775 --> 00:45:06.535 will direct you and go
NOTE Confidence: 0.9368963
00:45:06.535 --> 00:45:07.575 ahead and email me later
NOTE Confidence: 0.9368963
00:45:07.575 --> 00:45:09.035 if you are interested in,
NOTE Confidence: 0.9652929

00:45:09.575 --> 00:45:11.495 this. The Canadian government has

NOTE Confidence: 0.9652929

00:45:11.495 --> 00:45:11.995 fantastic,

NOTE Confidence: 0.9867089

00:45:12.775 --> 00:45:14.660 lower risk guidelines on cannabis

NOTE Confidence: 0.9867089

00:45:14.660 --> 00:45:15.719 use for teenagers

NOTE Confidence: 0.9655239

00:45:16.420 --> 00:45:17.380 because, you know, we could

NOTE Confidence: 0.9655239

00:45:17.380 --> 00:45:18.819 tell them abstinence all day,

NOTE Confidence: 0.9655239

00:45:18.819 --> 00:45:20.180 but, they are going to

NOTE Confidence: 0.9655239

00:45:20.180 --> 00:45:22.200 use. So they have fantastic

NOTE Confidence: 0.9655239

00:45:22.339 --> 00:45:23.619 ways to talk to teams

NOTE Confidence: 0.9655239

00:45:23.619 --> 00:45:25.079 about things that they can,

NOTE Confidence: 0.99550647

00:45:25.539 --> 00:45:26.759 ways that they can mitigate

NOTE Confidence: 0.99550647

00:45:26.819 --> 00:45:27.319 risk.

NOTE Confidence: 0.96462387

00:45:28.025 --> 00:45:29.725 But, yeah, that's a complicated

NOTE Confidence: 0.96462387

00:45:29.785 --> 00:45:30.285 question.

NOTE Confidence: 0.99551964

00:45:31.465 --> 00:45:32.265 Okay. So,

NOTE Confidence: 0.9826939

00:45:32.665 --> 00:45:34.364 there's a question from

NOTE Confidence: 0.9358298

00:45:34.985 --> 00:45:35.965 Cameron Davidson.

NOTE Confidence: 0.97993374

00:45:36.505 --> 00:45:37.145 I don't know if you

NOTE Confidence: 0.97993374

00:45:37.145 --> 00:45:38.025 can see it. Would you

NOTE Confidence: 0.97993374

00:45:38.025 --> 00:45:38.844 like me to

NOTE Confidence: 0.9966181

00:45:39.305 --> 00:45:40.344 I do see it now.

NOTE Confidence: 0.9966181

00:45:40.344 --> 00:45:42.364 Okay. The question is between

NOTE Confidence: 0.96346897

00:45:43.010 --> 00:45:44.609 there's a strong correlation between

NOTE Confidence: 0.96346897

00:45:44.609 --> 00:45:46.630 PM and environment. So how

NOTE Confidence: 0.96346897

00:45:46.770 --> 00:45:48.609 does secrecy of use among

NOTE Confidence: 0.96346897

00:45:48.609 --> 00:45:50.050 youth lead to use in

NOTE Confidence: 0.96346897

00:45:50.050 --> 00:45:51.969 smaller and close environments further

NOTE Confidence: 0.96346897

00:45:51.969 --> 00:45:53.030 increasing risk?

NOTE Confidence: 0.9978199

00:45:53.489 --> 00:45:53.809 Yeah.

NOTE Confidence: 0.9981547

00:45:54.369 --> 00:45:55.349 Amazing question.

NOTE Confidence: 0.9972877

00:45:55.809 --> 00:45:57.010 I think there's a lot,

NOTE Confidence: 0.9972877

00:45:57.329 --> 00:45:58.745 that we don't know and
NOTE Confidence: 0.9972877

00:45:58.745 --> 00:46:00.605 understand about this yet.
NOTE Confidence: 0.9980246

00:46:01.145 --> 00:46:02.185 A lot of studies that
NOTE Confidence: 0.9980246

00:46:02.185 --> 00:46:03.965 have been done on secondhand
NOTE Confidence: 0.9980246

00:46:04.025 --> 00:46:05.725 cannabis smoke have been done
NOTE Confidence: 0.97573566

00:46:06.105 --> 00:46:07.625 actually in dispensaries, which is
NOTE Confidence: 0.97573566

00:46:07.625 --> 00:46:09.065 really interesting. There's been a
NOTE Confidence: 0.97573566

00:46:09.065 --> 00:46:09.885 couple of,
NOTE Confidence: 0.9836889

00:46:10.280 --> 00:46:12.040 I think, security guards at
NOTE Confidence: 0.9836889

00:46:12.040 --> 00:46:13.320 concerts, and I always think
NOTE Confidence: 0.9836889

00:46:13.320 --> 00:46:14.080 about this when I'm at
NOTE Confidence: 0.9836889

00:46:14.080 --> 00:46:15.160 a concert that we're all
NOTE Confidence: 0.9836889

00:46:15.160 --> 00:46:15.980 being exposed.
NOTE Confidence: 0.9915973

00:46:16.680 --> 00:46:17.719 But to my knowledge, there's
NOTE Confidence: 0.9915973

00:46:17.719 --> 00:46:18.940 not a ton of information
NOTE Confidence: 0.9915973

00:46:19.000 --> 00:46:20.359 about how teens are using,

NOTE Confidence: 0.9915973

00:46:20.359 --> 00:46:21.239 where they're using.

NOTE Confidence: 0.95987785

00:46:22.040 --> 00:46:23.025 You know, we know that

NOTE Confidence: 0.95987785

00:46:23.265 --> 00:46:25.105 using outdoors obviously helps to

NOTE Confidence: 0.95987785

00:46:25.105 --> 00:46:26.065 mitigate that risk,

NOTE Confidence: 0.9958329

00:46:26.464 --> 00:46:27.525 introducing ventilations,

NOTE Confidence: 0.9855611

00:46:27.825 --> 00:46:29.505 opening a window. But I

NOTE Confidence: 0.9855611

00:46:29.505 --> 00:46:30.305 think back to what we

NOTE Confidence: 0.9855611

00:46:30.305 --> 00:46:31.505 were just talking about, if

NOTE Confidence: 0.9855611

00:46:31.505 --> 00:46:32.404 we can offer

NOTE Confidence: 0.991761

00:46:32.785 --> 00:46:34.385 some suggestions like that to

NOTE Confidence: 0.991761

00:46:34.385 --> 00:46:35.825 to lower people's risk, I

NOTE Confidence: 0.991761

00:46:35.825 --> 00:46:36.940 think that's the direction we

NOTE Confidence: 0.991761

00:46:36.940 --> 00:46:38.005 need to go in.

NOTE Confidence: 0.92895293

00:46:40.200 --> 00:46:42.780 Great. There there's a there's

NOTE Confidence: 0.92895293

00:46:42.840 --> 00:46:45.180 a comment question from Diana

NOTE Confidence: 0.92895293

00:46:45.239 --> 00:46:45.739 Augustine.
NOTE Confidence: 0.98798496

00:46:46.760 --> 00:46:47.880 Diana, do you wanna ask
NOTE Confidence: 0.98798496

00:46:47.880 --> 00:46:48.540 your question?
NOTE Confidence: 0.8699722

00:46:56.945 --> 00:46:57.445 Okay.
NOTE Confidence: 0.9244134

00:46:57.745 --> 00:46:59.525 I see that Anahita Vasunia,
NOTE Confidence: 0.7382339

00:47:00.625 --> 00:47:01.125 has,
NOTE Confidence: 0.96268916

00:47:02.385 --> 00:47:03.825 her hand up. Anahita, do
NOTE Confidence: 0.96268916

00:47:03.825 --> 00:47:05.045 you wanna ask your question?
NOTE Confidence: 0.96268916

00:47:05.185 --> 00:47:06.085 Yeah. Of course.
NOTE Confidence: 0.9781767

00:47:06.560 --> 00:47:06.960 Hi.
NOTE Confidence: 0.8977474

00:47:07.600 --> 00:47:08.440 Thank you so much for
NOTE Confidence: 0.8977474

00:47:08.440 --> 00:47:09.380 a great talk.
NOTE Confidence: 0.79896003

00:47:10.320 --> 00:47:11.359 I have a question for
NOTE Confidence: 0.79896003

00:47:11.359 --> 00:47:12.800 the studies that you measure
NOTE Confidence: 0.79896003

00:47:12.800 --> 00:47:14.080 the preferred levels of the
NOTE Confidence: 0.79896003

00:47:14.080 --> 00:47:14.580 cannabinoids.

NOTE Confidence: 0.9779705
00:47:15.359 --> 00:47:16.800 How do you control for,
NOTE Confidence: 0.9779705
00:47:16.800 --> 00:47:17.859 like, all the
NOTE Confidence: 0.8608539
00:47:18.735 --> 00:47:19.235 confounders,
NOTE Confidence: 0.9480705
00:47:19.535 --> 00:47:20.915 like Yeah. Food,
NOTE Confidence: 0.97688437
00:47:21.215 --> 00:47:22.735 I don't know, sleep, physical
NOTE Confidence: 0.97688437
00:47:22.735 --> 00:47:23.235 activity,
NOTE Confidence: 0.95608336
00:47:23.695 --> 00:47:25.615 stress, like, everything else that's
NOTE Confidence: 0.95608336
00:47:25.615 --> 00:47:27.135 going on? I know. Aren't
NOTE Confidence: 0.95608336
00:47:27.135 --> 00:47:28.435 humans fun? Right?
NOTE Confidence: 0.86110836
00:47:29.215 --> 00:47:30.115 Also, fantastic,
NOTE Confidence: 0.9785007
00:47:30.575 --> 00:47:31.855 talk at the Gordon conference.
NOTE Confidence: 0.9785007
00:47:31.855 --> 00:47:33.055 I meant to introduce myself
NOTE Confidence: 0.9785007
00:47:33.055 --> 00:47:33.375 there.
NOTE Confidence: 0.96048087
00:47:34.469 --> 00:47:35.910 Yeah. It's it's really tricky
NOTE Confidence: 0.96048087
00:47:35.910 --> 00:47:37.349 because as I showed everyone
NOTE Confidence: 0.96048087

00:47:37.349 --> 00:47:38.469 at the outset, there's so
NOTE Confidence: 0.96048087

00:47:38.469 --> 00:47:39.750 many things that can affect
NOTE Confidence: 0.96048087

00:47:39.750 --> 00:47:40.730 peripheral levels.
NOTE Confidence: 0.9850955

00:47:41.349 --> 00:47:42.390 We do our best to
NOTE Confidence: 0.9850955

00:47:42.390 --> 00:47:44.010 control for them. So we,
NOTE Confidence: 0.9810339

00:47:44.550 --> 00:47:45.750 either ask them to fast
NOTE Confidence: 0.9810339

00:47:45.750 --> 00:47:46.550 in the morning.
NOTE Confidence: 0.9995937

00:47:46.950 --> 00:47:48.150 We tell them to refrain
NOTE Confidence: 0.9995937

00:47:48.150 --> 00:47:49.750 from physical activity for twenty
NOTE Confidence: 0.9995937

00:47:49.750 --> 00:47:50.055 four
NOTE Confidence: 0.9972193

00:47:50.614 --> 00:47:51.094 hours.
NOTE Confidence: 0.9966627

00:47:51.494 --> 00:47:52.375 You know, we try to
NOTE Confidence: 0.9966627

00:47:52.375 --> 00:47:53.655 control for time of day
NOTE Confidence: 0.9966627

00:47:53.655 --> 00:47:54.155 between
NOTE Confidence: 0.94514406

00:47:54.614 --> 00:47:55.355 blood measurements.
NOTE Confidence: 0.97787577

00:47:56.214 --> 00:47:57.175 But for things that we

NOTE Confidence: 0.97787577
00:47:57.175 --> 00:47:58.535 can't, we usually just measure
NOTE Confidence: 0.97787577
00:47:58.535 --> 00:47:59.655 those things and try our
NOTE Confidence: 0.97787577
00:47:59.655 --> 00:48:00.934 best to Cobari. But that's
NOTE Confidence: 0.97787577
00:48:00.934 --> 00:48:02.155 been kind of our approach.
NOTE Confidence: 0.99442035
00:48:02.710 --> 00:48:04.230 Do you usually measure the
NOTE Confidence: 0.99442035
00:48:04.230 --> 00:48:05.850 plasma levels in the afternoon
NOTE Confidence: 0.99442035
00:48:05.989 --> 00:48:07.590 or morning? What time do
NOTE Confidence: 0.99442035
00:48:07.590 --> 00:48:08.730 you think is the best?
NOTE Confidence: 0.9930782
00:48:09.270 --> 00:48:10.790 Yeah. It's dependent on our
NOTE Confidence: 0.9930782
00:48:10.790 --> 00:48:11.910 study, which is,
NOTE Confidence: 0.98663235
00:48:12.310 --> 00:48:13.130 built around,
NOTE Confidence: 0.9795444
00:48:13.830 --> 00:48:14.330 nonscientific
NOTE Confidence: 0.98168504
00:48:14.870 --> 00:48:15.989 things like when our scan
NOTE Confidence: 0.98168504
00:48:15.989 --> 00:48:17.864 center is available. But, you
NOTE Confidence: 0.98168504
00:48:17.864 --> 00:48:19.545 know, between participants who are
NOTE Confidence: 0.98168504

00:48:19.545 --> 00:48:20.825 doing the same study, we
NOTE Confidence: 0.98168504

00:48:20.825 --> 00:48:21.705 try to keep the time
NOTE Confidence: 0.98168504

00:48:21.705 --> 00:48:23.225 of day really consistent. So
NOTE Confidence: 0.98168504

00:48:23.225 --> 00:48:24.505 sometimes we've done studies in
NOTE Confidence: 0.98168504

00:48:24.505 --> 00:48:25.085 the morning
NOTE Confidence: 0.9818051

00:48:25.385 --> 00:48:26.745 versus the afternoon, and we
NOTE Confidence: 0.9818051

00:48:26.745 --> 00:48:27.864 are actually able to leverage
NOTE Confidence: 0.9818051

00:48:27.864 --> 00:48:28.905 that to look at things
NOTE Confidence: 0.9818051

00:48:28.905 --> 00:48:30.105 like time of day. But
NOTE Confidence: 0.9818051

00:48:30.105 --> 00:48:31.785 it's complicated. Right? People are
NOTE Confidence: 0.9818051

00:48:31.785 --> 00:48:33.719 people are and sleep also
NOTE Confidence: 0.9818051

00:48:33.719 --> 00:48:35.719 affects it. Oral contraceptive use,
NOTE Confidence: 0.9818051

00:48:35.719 --> 00:48:36.219 caffeine.
NOTE Confidence: 0.98383284

00:48:36.920 --> 00:48:37.420 Yep.
NOTE Confidence: 0.96201247

00:48:38.280 --> 00:48:39.719 Yeah. Thank you. Thank you
NOTE Confidence: 0.96201247

00:48:39.719 --> 00:48:40.460 so much.

NOTE Confidence: 0.89991504

00:48:40.760 --> 00:48:41.960 I I have a a

NOTE Confidence: 0.89991504

00:48:41.960 --> 00:48:43.239 follow-up question to that, and

NOTE Confidence: 0.89991504

00:48:43.239 --> 00:48:44.520 then there's a question from,

NOTE Confidence: 0.89991504

00:48:44.920 --> 00:48:46.440 from my colleague, Mohitur Nandan

NOTE Confidence: 0.89991504

00:48:46.440 --> 00:48:47.880 Pranganathan, in the in the

NOTE Confidence: 0.89991504

00:48:47.880 --> 00:48:50.425 chat. My follow-up question is,

NOTE Confidence: 0.99905825

00:48:51.765 --> 00:48:52.505 can you

NOTE Confidence: 0.9550351

00:48:53.045 --> 00:48:54.885 summarize very quickly for those,

NOTE Confidence: 0.9550351

00:48:55.285 --> 00:48:56.585 who may not be familiar?

NOTE Confidence: 0.99917704

00:48:57.045 --> 00:48:58.805 What is the relationship between

NOTE Confidence: 0.99917704

00:48:58.805 --> 00:48:59.305 central

NOTE Confidence: 0.96843886

00:48:59.605 --> 00:49:02.005 and peripheral endocannabinoid levels, and

NOTE Confidence: 0.96843886

00:49:02.005 --> 00:49:02.905 to what extent

NOTE Confidence: 0.99208575

00:49:03.690 --> 00:49:06.329 do the, peripheral estimates reflect

NOTE Confidence: 0.99208575

00:49:06.329 --> 00:49:07.710 what's happening in the brain?

NOTE Confidence: 0.9917024

00:49:08.410 --> 00:49:09.609 Yeah. That I mean, that's
NOTE Confidence: 0.9917024

00:49:09.609 --> 00:49:10.890 the million dollar question that
NOTE Confidence: 0.9917024

00:49:10.890 --> 00:49:12.510 everyone's been talking about.
NOTE Confidence: 0.94083625

00:49:12.969 --> 00:49:14.010 To my knowledge, there have
NOTE Confidence: 0.94083625

00:49:14.010 --> 00:49:15.230 been a couple of studies
NOTE Confidence: 0.94083625

00:49:15.450 --> 00:49:17.310 finding a small to moderate
NOTE Confidence: 0.99783266

00:49:17.655 --> 00:49:19.255 correlation. Obviously, those are really
NOTE Confidence: 0.99783266

00:49:19.255 --> 00:49:20.455 hard to do for obvious
NOTE Confidence: 0.99783266

00:49:20.455 --> 00:49:20.955 reasons.
NOTE Confidence: 0.97926813

00:49:21.335 --> 00:49:22.395 There have been studies,
NOTE Confidence: 0.99490786

00:49:22.935 --> 00:49:23.735 looking at,
NOTE Confidence: 0.885889

00:49:24.455 --> 00:49:25.735 like, c v one receptor
NOTE Confidence: 0.885889

00:49:25.735 --> 00:49:26.235 availability
NOTE Confidence: 0.9360191

00:49:26.775 --> 00:49:28.075 and, peripheral
NOTE Confidence: 0.99817514

00:49:28.375 --> 00:49:28.875 endocannabinoids.
NOTE Confidence: 0.8864774

00:49:30.480 --> 00:49:31.140 Also, there's

NOTE Confidence: 0.7612527
00:49:31.840 --> 00:49:32.820 a common genetic,
NOTE Confidence: 0.9984563
00:49:33.360 --> 00:49:33.860 polymorphism
NOTE Confidence: 0.93824935
00:49:34.239 --> 00:49:35.760 in the gene encoding FA,
NOTE Confidence: 0.93824935
00:49:35.760 --> 00:49:36.880 which is the enzyme that
NOTE Confidence: 0.93824935
00:49:36.880 --> 00:49:37.380 regulates
NOTE Confidence: 0.9981844
00:49:37.920 --> 00:49:38.420 endocannabinoid
NOTE Confidence: 0.95693254
00:49:38.880 --> 00:49:40.640 concentration. So they do see
NOTE Confidence: 0.95693254
00:49:40.640 --> 00:49:42.020 some correlation between
NOTE Confidence: 0.7744352
00:49:43.185 --> 00:49:43.685 availability
NOTE Confidence: 0.98353904
00:49:44.065 --> 00:49:46.065 and peripheral levels. You may
NOTE Confidence: 0.98353904
00:49:46.065 --> 00:49:47.025 know better than I, but
NOTE Confidence: 0.98353904
00:49:47.025 --> 00:49:48.305 I think, you know, it's
NOTE Confidence: 0.98353904
00:49:48.305 --> 00:49:50.465 it's really difficult. And, at
NOTE Confidence: 0.98353904
00:49:50.465 --> 00:49:52.145 least in the exercise literature,
NOTE Confidence: 0.98353904
00:49:52.145 --> 00:49:53.265 there's a lot of discussion
NOTE Confidence: 0.98353904

00:49:53.265 --> 00:49:54.085 about where
NOTE Confidence: 0.99869096

00:49:54.430 --> 00:49:55.250 those endocannabinoids
NOTE Confidence: 0.9533134

00:49:55.550 --> 00:49:56.830 are produced. Because if you're
NOTE Confidence: 0.9533134

00:49:56.830 --> 00:49:57.330 exercising,
NOTE Confidence: 0.9688339

00:49:58.989 --> 00:50:00.430 there's some, I think, animal
NOTE Confidence: 0.9688339

00:50:00.430 --> 00:50:02.190 data showing that they the
NOTE Confidence: 0.9688339

00:50:02.190 --> 00:50:02.690 endocannabinoids
NOTE Confidence: 0.9695382

00:50:03.070 --> 00:50:04.350 might be produced actually in
NOTE Confidence: 0.9695382

00:50:04.350 --> 00:50:05.330 skeletal muscle,
NOTE Confidence: 0.99912167

00:50:05.790 --> 00:50:06.670 and then they go into
NOTE Confidence: 0.99912167

00:50:06.670 --> 00:50:07.170 circulation.
NOTE Confidence: 0.97115135

00:50:07.550 --> 00:50:08.510 They obviously have to make
NOTE Confidence: 0.97115135

00:50:08.510 --> 00:50:09.390 their way into the brain
NOTE Confidence: 0.97115135

00:50:09.390 --> 00:50:10.724 if they're having those anxiolytic
NOTE Confidence: 0.97115135

00:50:10.724 --> 00:50:12.150 effects, but I think it's
NOTE Confidence: 0.97115135

00:50:12.150 --> 00:50:13.575 a really open question, and

NOTE Confidence: 0.97115135

00:50:13.575 --> 00:50:15.000 I'd love to hear your

NOTE Confidence: 0.97115135

00:50:15.000 --> 00:50:16.425 take on it. Yeah. I

NOTE Confidence: 0.97115135

00:50:16.425 --> 00:50:17.850 mean, it's something that we've,

NOTE Confidence: 0.97115135

00:50:18.135 --> 00:50:19.560 thought about quite quite a

NOTE Confidence: 0.97115135

00:50:19.560 --> 00:50:20.985 lot. I know there are

NOTE Confidence: 0.97115135

00:50:20.985 --> 00:50:22.695 some groups, there was a

NOTE Confidence: 0.97115135

00:50:22.695 --> 00:50:24.120 group in Germany, Marcus Leveque,

NOTE Confidence: 0.97115135

00:50:24.200 --> 00:50:25.580 who looked at both CSF

NOTE Confidence: 0.9116329

00:50:26.360 --> 00:50:28.300 and peripheral levels and and

NOTE Confidence: 0.8919649

00:50:29.000 --> 00:50:29.740 had some,

NOTE Confidence: 0.9672868

00:50:30.520 --> 00:50:32.440 weak correlations between the two,

NOTE Confidence: 0.9672868

00:50:32.440 --> 00:50:34.040 but I've often wondered about

NOTE Confidence: 0.9672868

00:50:34.040 --> 00:50:35.260 that. I suppose

NOTE Confidence: 0.9947067

00:50:36.935 --> 00:50:37.915 studying endocannabinoids

NOTE Confidence: 0.98096377

00:50:39.015 --> 00:50:40.475 in blood might be

NOTE Confidence: 0.924057

00:50:42.375 --> 00:50:43.494 interesting to do if you
NOTE Confidence: 0.924057

00:50:43.494 --> 00:50:44.775 have some kind of stimulus
NOTE Confidence: 0.924057

00:50:44.775 --> 00:50:46.614 as in you measure baseline
NOTE Confidence: 0.924057

00:50:46.614 --> 00:50:47.975 levels, then you have someone
NOTE Confidence: 0.924057

00:50:47.975 --> 00:50:49.094 exercise and you look at
NOTE Confidence: 0.924057

00:50:49.094 --> 00:50:49.755 the change.
NOTE Confidence: 0.747182

00:50:50.055 --> 00:50:51.660 Right. Your if you're,
NOTE Confidence: 0.8688558

00:50:52.460 --> 00:50:53.420 so that might be a
NOTE Confidence: 0.8688558

00:50:53.420 --> 00:50:53.920 a
NOTE Confidence: 0.9228129

00:50:54.859 --> 00:50:55.520 you know,
NOTE Confidence: 0.94945866

00:50:55.900 --> 00:50:57.839 that's that's where measuring it,
NOTE Confidence: 0.94945866

00:50:57.980 --> 00:50:58.859 you might be able to
NOTE Confidence: 0.94945866

00:50:58.859 --> 00:51:00.940 make some interpretations. But I'm
NOTE Confidence: 0.94945866

00:51:00.940 --> 00:51:02.640 still curious about,
NOTE Confidence: 0.9535308

00:51:04.565 --> 00:51:05.005 about,
NOTE Confidence: 0.9969742

00:51:05.444 --> 00:51:06.724 the extent to which the

NOTE Confidence: 0.9969742

00:51:06.724 --> 00:51:08.565 peripheral levels actually reflect what's

NOTE Confidence: 0.9969742

00:51:08.565 --> 00:51:10.025 happening in the brain. But

NOTE Confidence: 0.92039365

00:51:10.484 --> 00:51:11.525 as you as we heard

NOTE Confidence: 0.92039365

00:51:11.525 --> 00:51:13.144 in the Gordon conference, we,

NOTE Confidence: 0.997388

00:51:13.684 --> 00:51:14.565 we need a lot more

NOTE Confidence: 0.997388

00:51:14.565 --> 00:51:15.545 work in this space.

NOTE Confidence: 0.9843592

00:51:15.924 --> 00:51:16.884 Yeah. I can't wait to

NOTE Confidence: 0.9843592

00:51:16.884 --> 00:51:17.790 see what we find out

NOTE Confidence: 0.9843592

00:51:17.790 --> 00:51:18.910 in the next couple years,

NOTE Confidence: 0.9843592

00:51:18.910 --> 00:51:19.710 and then we laugh at

NOTE Confidence: 0.9843592

00:51:19.710 --> 00:51:20.210 ourselves

NOTE Confidence: 0.85308933

00:51:20.750 --> 00:51:21.650 in this moment.

NOTE Confidence: 0.92924523

00:51:22.910 --> 00:51:24.210 Mohini, you have a,

NOTE Confidence: 0.9177872

00:51:25.230 --> 00:51:25.730 question?

NOTE Confidence: 0.9996245

00:51:26.190 --> 00:51:26.690 Sure.

NOTE Confidence: 0.964116

00:51:27.070 --> 00:51:28.750 Hi. Thanks. Really nice talk.
NOTE Confidence: 0.964116

00:51:28.750 --> 00:51:30.285 So many questions in on
NOTE Confidence: 0.964116

00:51:30.285 --> 00:51:31.744 different domains, so I'll
NOTE Confidence: 0.8714442

00:51:32.204 --> 00:51:33.905 restrict myself to the nonpharmacological
NOTE Confidence: 0.74021924

00:51:36.445 --> 00:51:36.945 effects.
NOTE Confidence: 0.9510908

00:51:37.805 --> 00:51:38.925 I was just curious. You
NOTE Confidence: 0.9510908

00:51:38.925 --> 00:51:40.204 know, that was really nice,
NOTE Confidence: 0.9510908

00:51:40.204 --> 00:51:41.744 the the the exercise,
NOTE Confidence: 0.99235845

00:51:42.364 --> 00:51:44.224 effects on boosting endocannabinoid
NOTE Confidence: 0.9352329

00:51:44.685 --> 00:51:45.185 levels.
NOTE Confidence: 0.97728574

00:51:45.780 --> 00:51:46.260 But,
NOTE Confidence: 0.9832839

00:51:46.739 --> 00:51:47.620 so I was just wondering
NOTE Confidence: 0.9832839

00:51:47.620 --> 00:51:48.340 if you could just share
NOTE Confidence: 0.9832839

00:51:48.340 --> 00:51:49.219 a little bit more about
NOTE Confidence: 0.9832839

00:51:49.219 --> 00:51:50.340 that, the time course of
NOTE Confidence: 0.9832839

00:51:50.340 --> 00:51:51.860 that, how long it stayed,

NOTE Confidence: 0.9832839
00:51:51.860 --> 00:51:53.540 whether it correlated with other
NOTE Confidence: 0.9832839
00:51:53.540 --> 00:51:55.219 effects. And then I feel
NOTE Confidence: 0.9832839
00:51:55.219 --> 00:51:55.880 like sometimes
NOTE Confidence: 0.9828585
00:51:56.580 --> 00:51:57.239 in medicine
NOTE Confidence: 0.9677752
00:51:57.620 --> 00:51:59.380 or or medical sciences, I
NOTE Confidence: 0.9677752
00:51:59.380 --> 00:52:01.239 suppose, biological sciences, we
NOTE Confidence: 0.93256474
00:52:01.725 --> 00:52:02.765 if we think something is
NOTE Confidence: 0.93256474
00:52:02.765 --> 00:52:05.105 beneficial, we assume that
NOTE Confidence: 0.9467333
00:52:06.845 --> 00:52:08.365 more is better. And so
NOTE Confidence: 0.9467333
00:52:08.365 --> 00:52:09.405 I was just curious with
NOTE Confidence: 0.9467333
00:52:09.405 --> 00:52:09.905 that.
NOTE Confidence: 0.8729046
00:52:10.925 --> 00:52:12.525 How long should I mean,
NOTE Confidence: 0.8729046
00:52:12.525 --> 00:52:13.965 there might be elevated. What's
NOTE Confidence: 0.8729046
00:52:13.965 --> 00:52:14.545 a good
NOTE Confidence: 0.98834395
00:52:15.030 --> 00:52:15.770 time course?
NOTE Confidence: 0.90282446

00:52:16.630 --> 00:52:17.850 Yeah. I'm yeah.
NOTE Confidence: 0.7853786

00:52:18.150 --> 00:52:19.050 Thanks. Thanks.
NOTE Confidence: 0.98254764

00:52:19.670 --> 00:52:20.790 No. Thank you so much.
NOTE Confidence: 0.98254764

00:52:20.790 --> 00:52:22.230 Those are amazing questions. I've
NOTE Confidence: 0.98254764

00:52:22.230 --> 00:52:23.270 been thinking a lot about
NOTE Confidence: 0.98254764

00:52:23.270 --> 00:52:24.170 exactly that.
NOTE Confidence: 0.96374345

00:52:24.630 --> 00:52:25.750 With respect to the time
NOTE Confidence: 0.96374345

00:52:25.750 --> 00:52:27.110 course, there are very few
NOTE Confidence: 0.96374345

00:52:27.110 --> 00:52:28.614 studies. You know, we work
NOTE Confidence: 0.96374345

00:52:28.614 --> 00:52:29.575 with kids, so we don't
NOTE Confidence: 0.96374345

00:52:29.575 --> 00:52:30.614 put a catheter in them.
NOTE Confidence: 0.96374345

00:52:30.614 --> 00:52:31.495 We just limit it to
NOTE Confidence: 0.96374345

00:52:31.495 --> 00:52:33.255 the one pre post draw.
NOTE Confidence: 0.96374345

00:52:33.255 --> 00:52:34.695 But, in adults, there have
NOTE Confidence: 0.96374345

00:52:34.695 --> 00:52:36.155 been some interesting studies
NOTE Confidence: 0.9585032

00:52:36.614 --> 00:52:37.895 looking at how long that

NOTE Confidence: 0.9585032

00:52:37.895 --> 00:52:39.655 lasts. There are very few,

NOTE Confidence: 0.9585032

00:52:39.655 --> 00:52:40.155 but,

NOTE Confidence: 0.9775506

00:52:41.049 --> 00:52:42.430 I think we don't know.

NOTE Confidence: 0.9810271

00:52:43.049 --> 00:52:44.010 And it would be really

NOTE Confidence: 0.9810271

00:52:44.010 --> 00:52:45.049 important, at least for me,

NOTE Confidence: 0.9810271

00:52:45.049 --> 00:52:46.190 when I talk to teachers

NOTE Confidence: 0.9810271

00:52:46.250 --> 00:52:47.849 where, you know, they're trying

NOTE Confidence: 0.9810271

00:52:47.849 --> 00:52:49.930 to schedule physical activity throughout

NOTE Confidence: 0.9810271

00:52:49.930 --> 00:52:50.969 the day, which is already

NOTE Confidence: 0.9810271

00:52:50.969 --> 00:52:52.650 packed. So, you know, when

NOTE Confidence: 0.9810271

00:52:52.650 --> 00:52:53.390 are they gonna,

NOTE Confidence: 0.9810664

00:52:54.010 --> 00:52:55.614 schedule a test? Are they,

NOTE Confidence: 0.9810664

00:52:55.614 --> 00:52:56.735 you know, doing it within

NOTE Confidence: 0.9810664

00:52:56.735 --> 00:52:57.855 that window where you're still

NOTE Confidence: 0.9810664

00:52:57.855 --> 00:52:59.614 getting that endocannabinoid boost? So

NOTE Confidence: 0.9810664

00:52:59.614 --> 00:53:00.915 there's so many unopened,
NOTE Confidence: 0.99740785

00:53:01.855 --> 00:53:03.375 unanswered questions that I I
NOTE Confidence: 0.99740785

00:53:03.375 --> 00:53:04.255 don't think we know at
NOTE Confidence: 0.99740785

00:53:04.255 --> 00:53:04.915 this point.
NOTE Confidence: 0.9274445

00:53:05.535 --> 00:53:07.315 With respect to more chronic
NOTE Confidence: 0.9274445

00:53:07.535 --> 00:53:09.215 exercise, like you're saying, I'm
NOTE Confidence: 0.9274445

00:53:09.215 --> 00:53:10.495 also a marathon runner, so
NOTE Confidence: 0.9274445

00:53:10.495 --> 00:53:10.995 I
NOTE Confidence: 0.99349767

00:53:11.430 --> 00:53:12.730 I I love your question.
NOTE Confidence: 0.9430545

00:53:13.430 --> 00:53:14.969 Kevin Crombie at the conference
NOTE Confidence: 0.9430545

00:53:15.030 --> 00:53:17.130 presented data on chronic exercise.
NOTE Confidence: 0.9430545

00:53:17.190 --> 00:53:18.230 So think like a ten
NOTE Confidence: 0.9430545

00:53:18.230 --> 00:53:19.530 week or a twelve week,
NOTE Confidence: 0.99630815

00:53:20.069 --> 00:53:22.410 aerobic or resistance exercise program.
NOTE Confidence: 0.9425251

00:53:22.950 --> 00:53:24.310 He actually found that their
NOTE Confidence: 0.9425251

00:53:24.310 --> 00:53:25.670 resting levels are kind of

NOTE Confidence: 0.9425251

00:53:25.675 --> 00:53:27.675 dialed down. Albeit this was

NOTE Confidence: 0.9425251

00:53:27.675 --> 00:53:29.755 in overweight obese population where

NOTE Confidence: 0.9425251

00:53:29.755 --> 00:53:30.975 we see a very similar

NOTE Confidence: 0.9606207

00:53:31.275 --> 00:53:32.815 kind of higher resting anandamide

NOTE Confidence: 0.98846793

00:53:33.435 --> 00:53:34.315 as we do in some

NOTE Confidence: 0.98846793

00:53:34.315 --> 00:53:36.075 of our psychiatric population. So

NOTE Confidence: 0.98846793

00:53:36.075 --> 00:53:37.355 I think the acute versus

NOTE Confidence: 0.98846793

00:53:37.355 --> 00:53:38.735 chronic effects differ.

NOTE Confidence: 0.9956254

00:53:39.369 --> 00:53:40.650 He also showed it differs

NOTE Confidence: 0.9956254

00:53:40.650 --> 00:53:42.190 by aerobic versus resistance.

NOTE Confidence: 0.99160296

00:53:42.650 --> 00:53:44.090 My takeaway was the aerobic

NOTE Confidence: 0.99160296

00:53:44.090 --> 00:53:45.130 was better at kind of

NOTE Confidence: 0.99160296

00:53:45.130 --> 00:53:47.130 dialing that down, but wasn't

NOTE Confidence: 0.99160296

00:53:47.130 --> 00:53:48.910 clear if that had, benefits

NOTE Confidence: 0.99160296

00:53:48.969 --> 00:53:50.489 for lower BMI and things

NOTE Confidence: 0.99160296

00:53:50.489 --> 00:53:51.150 like that.
NOTE Confidence: 0.97947425

00:53:51.844 --> 00:53:53.625 The beta analysis I presented
NOTE Confidence: 0.97947425

00:53:53.684 --> 00:53:55.364 did not find consistent effects
NOTE Confidence: 0.97947425

00:53:55.364 --> 00:53:57.444 of chronic exercise programs, which
NOTE Confidence: 0.97947425

00:53:57.444 --> 00:53:58.244 might just be due to
NOTE Confidence: 0.97947425

00:53:58.244 --> 00:54:00.424 the diversity of populations. But,
NOTE Confidence: 0.92544705

00:54:01.204 --> 00:54:02.164 yeah. I mean, I think
NOTE Confidence: 0.92544705

00:54:02.164 --> 00:54:03.444 like everything, like you're saying,
NOTE Confidence: 0.92544705

00:54:03.444 --> 00:54:05.130 there's probably a sweet spot.
NOTE Confidence: 0.9579925

00:54:05.849 --> 00:54:07.210 There was one study we
NOTE Confidence: 0.9579925

00:54:07.210 --> 00:54:09.049 found looking at acute high
NOTE Confidence: 0.9579925

00:54:09.049 --> 00:54:09.549 intensity
NOTE Confidence: 0.9954852

00:54:09.849 --> 00:54:10.349 exercise.
NOTE Confidence: 0.9900094

00:54:10.890 --> 00:54:12.089 Most people only use the
NOTE Confidence: 0.9900094

00:54:12.089 --> 00:54:14.089 low versus moderate, and that
NOTE Confidence: 0.9900094

00:54:14.089 --> 00:54:15.309 did start to hint

NOTE Confidence: 0.96776277
00:54:15.769 --> 00:54:17.049 at maybe moderate is actually
NOTE Confidence: 0.96776277
00:54:17.049 --> 00:54:18.910 better than high intensity for
NOTE Confidence: 0.9021872
00:54:19.265 --> 00:54:20.165 at least that endocannabinoid
NOTE Confidence: 0.8469416
00:54:20.705 --> 00:54:21.205 boost,
NOTE Confidence: 0.9731037
00:54:22.305 --> 00:54:23.825 albeit one study, but perhaps
NOTE Confidence: 0.9731037
00:54:23.825 --> 00:54:24.785 there is some sort of
NOTE Confidence: 0.9731037
00:54:24.785 --> 00:54:26.385 sweet spot for getting that
NOTE Confidence: 0.9731037
00:54:26.385 --> 00:54:27.205 acute endocannabinoid
NOTE Confidence: 0.99708873
00:54:27.505 --> 00:54:28.005 boost.
NOTE Confidence: 0.9876149
00:54:28.465 --> 00:54:29.825 And then layering on THC
NOTE Confidence: 0.9876149
00:54:29.825 --> 00:54:30.945 is a whole another thing
NOTE Confidence: 0.9876149
00:54:30.945 --> 00:54:31.905 that I won't even get
NOTE Confidence: 0.9876149
00:54:31.905 --> 00:54:32.405 into.
NOTE Confidence: 0.964732
00:54:33.025 --> 00:54:34.059 A lot of people use
NOTE Confidence: 0.964732
00:54:34.059 --> 00:54:36.000 THC while they exercise. So
NOTE Confidence: 0.96221256

00:54:38.219 --> 00:54:38.660 So,
NOTE Confidence: 0.99574006

00:54:39.099 --> 00:54:40.239 we have time for,
NOTE Confidence: 0.9550769

00:54:41.020 --> 00:54:42.460 maybe an another one or
NOTE Confidence: 0.9550769

00:54:42.460 --> 00:54:43.200 two questions.
NOTE Confidence: 0.99696636

00:54:43.579 --> 00:54:44.960 I I I if
NOTE Confidence: 0.997282

00:54:45.335 --> 00:54:46.714 if you can humor me
NOTE Confidence: 0.9741917

00:54:47.015 --> 00:54:48.055 for a minute, I I
NOTE Confidence: 0.9741917

00:54:48.055 --> 00:54:49.114 was really intrigued
NOTE Confidence: 0.99233055

00:54:49.734 --> 00:54:51.015 by the device that you
NOTE Confidence: 0.99233055

00:54:51.015 --> 00:54:52.614 were using to measure air
NOTE Confidence: 0.99233055

00:54:52.614 --> 00:54:54.454 pollution. And while you were
NOTE Confidence: 0.99233055

00:54:54.454 --> 00:54:56.055 interested in air pollution, I
NOTE Confidence: 0.99233055

00:54:56.055 --> 00:54:57.194 was wondering whether
NOTE Confidence: 0.9977544

00:54:58.020 --> 00:54:59.380 that device could be used
NOTE Confidence: 0.9977544

00:54:59.380 --> 00:55:01.160 as a proxy measure of,
NOTE Confidence: 0.97112864

00:55:02.020 --> 00:55:03.480 of cannabis use.

NOTE Confidence: 0.97985977
00:55:04.580 --> 00:55:06.020 You know, if someone wore
NOTE Confidence: 0.97985977
00:55:06.020 --> 00:55:06.680 that device,
NOTE Confidence: 0.997444
00:55:06.980 --> 00:55:08.180 it's really hard for us
NOTE Confidence: 0.997444
00:55:08.180 --> 00:55:10.280 to estimate in clinical trials
NOTE Confidence: 0.97193295
00:55:11.805 --> 00:55:13.005 how many times a person
NOTE Confidence: 0.97193295
00:55:13.005 --> 00:55:14.864 uses cannabis during a day
NOTE Confidence: 0.97193295
00:55:15.005 --> 00:55:16.605 or quantify their degree of
NOTE Confidence: 0.97193295
00:55:16.605 --> 00:55:17.105 exposure.
NOTE Confidence: 0.95637584
00:55:17.645 --> 00:55:18.765 But I it would seem
NOTE Confidence: 0.95637584
00:55:18.765 --> 00:55:20.285 to me, I I'm I'm
NOTE Confidence: 0.95637584
00:55:20.285 --> 00:55:21.805 I'm asking a question. Is
NOTE Confidence: 0.95637584
00:55:21.805 --> 00:55:22.305 it
NOTE Confidence: 0.9984548
00:55:22.605 --> 00:55:24.285 is it conceivable that that
NOTE Confidence: 0.9984548
00:55:24.285 --> 00:55:25.665 device could be used
NOTE Confidence: 0.9980842
00:55:26.040 --> 00:55:27.660 to, for example, measure
NOTE Confidence: 0.9257016

00:55:28.520 --> 00:55:30.280 the frequency of cannabis use

NOTE Confidence: 0.9257016

00:55:30.280 --> 00:55:31.260 across a day?

NOTE Confidence: 0.97797817

00:55:33.400 --> 00:55:34.520 I'm just writing that down

NOTE Confidence: 0.97797817

00:55:34.520 --> 00:55:35.640 because I would love to

NOTE Confidence: 0.97797817

00:55:35.640 --> 00:55:36.600 do that in our pilot

NOTE Confidence: 0.97797817

00:55:36.600 --> 00:55:37.640 study and see if there

NOTE Confidence: 0.97797817

00:55:37.640 --> 00:55:39.155 is. So we're asking it's

NOTE Confidence: 0.97797817

00:55:39.155 --> 00:55:40.355 like an EMA study. We're

NOTE Confidence: 0.97797817

00:55:40.355 --> 00:55:42.055 asking parents to self report.

NOTE Confidence: 0.9895626

00:55:42.435 --> 00:55:43.715 We have the kid wear

NOTE Confidence: 0.9895626

00:55:43.715 --> 00:55:44.994 this monitor, and then we

NOTE Confidence: 0.9895626

00:55:44.994 --> 00:55:45.395 have,

NOTE Confidence: 0.97475046

00:55:45.875 --> 00:55:46.935 purple air monitors

NOTE Confidence: 0.9968916

00:55:47.235 --> 00:55:48.614 established within the home.

NOTE Confidence: 0.9875897

00:55:49.395 --> 00:55:50.195 So we can kind of

NOTE Confidence: 0.9875897

00:55:50.195 --> 00:55:51.795 triangulate whether or not that

NOTE Confidence: 0.9875897

00:55:51.795 --> 00:55:52.675 could be, but I I

NOTE Confidence: 0.9875897

00:55:52.675 --> 00:55:53.635 think you're right. That could

NOTE Confidence: 0.9875897

00:55:53.635 --> 00:55:54.090 be

NOTE Confidence: 0.9971398

00:55:54.489 --> 00:55:56.170 potentially a marker of,

NOTE Confidence: 0.9926333

00:55:56.570 --> 00:55:57.690 of PM two point five,

NOTE Confidence: 0.9926333

00:55:57.690 --> 00:55:58.730 which is just one of

NOTE Confidence: 0.9926333

00:55:58.730 --> 00:56:00.730 the the emissions of of

NOTE Confidence: 0.9926333

00:56:00.730 --> 00:56:02.489 cannabis. There's also VOCs, but

NOTE Confidence: 0.9926333

00:56:02.489 --> 00:56:04.110 there are monitors for that.

NOTE Confidence: 0.9836837

00:56:04.410 --> 00:56:05.450 I mean, of course, one

NOTE Confidence: 0.9836837

00:56:05.450 --> 00:56:06.905 negative is it's really easy

NOTE Confidence: 0.9836837

00:56:06.905 --> 00:56:07.864 to game it if you

NOTE Confidence: 0.9836837

00:56:07.864 --> 00:56:09.145 just take the monitor away

NOTE Confidence: 0.9836837

00:56:09.145 --> 00:56:10.505 or unplug it or put

NOTE Confidence: 0.9836837

00:56:10.505 --> 00:56:11.085 it outside.

NOTE Confidence: 0.9579988

00:56:11.945 --> 00:56:12.905 But I'd love to I'd
NOTE Confidence: 0.9579988

00:56:12.905 --> 00:56:13.705 love to see if that's
NOTE Confidence: 0.9579988

00:56:13.705 --> 00:56:14.585 the case because like you
NOTE Confidence: 0.9579988

00:56:14.585 --> 00:56:15.545 said, we don't have great
NOTE Confidence: 0.9579988

00:56:15.545 --> 00:56:17.885 biomarkers or indicators of use.
NOTE Confidence: 0.9982761

00:56:18.825 --> 00:56:19.725 Sounds good.
NOTE Confidence: 0.99957824

00:56:21.620 --> 00:56:23.320 Any last minute questions?
NOTE Confidence: 0.9719492

00:56:30.260 --> 00:56:32.260 Oh, Mohini wants to is
NOTE Confidence: 0.9719492

00:56:32.260 --> 00:56:33.219 asking what the name of
NOTE Confidence: 0.9719492

00:56:33.219 --> 00:56:35.025 that monitor is. Yeah. I
NOTE Confidence: 0.9719492

00:56:35.025 --> 00:56:35.344 will,
NOTE Confidence: 0.9701755

00:56:35.984 --> 00:56:36.944 I'm trying to remember what
NOTE Confidence: 0.9701755

00:56:36.944 --> 00:56:38.224 that one is. We use
NOTE Confidence: 0.9701755

00:56:38.224 --> 00:56:38.724 PurpleAir
NOTE Confidence: 0.69323

00:56:39.744 --> 00:56:40.385 and then,
NOTE Confidence: 0.9801033

00:56:40.785 --> 00:56:41.825 oh my gosh. That one

NOTE Confidence: 0.9801033

00:56:41.825 --> 00:56:43.344 is slipping. I'm having, like,

NOTE Confidence: 0.9801033

00:56:43.344 --> 00:56:44.085 an endocannabinoid,

NOTE Confidence: 0.9287991

00:56:45.184 --> 00:56:46.464 wool at the moment. You

NOTE Confidence: 0.9287991

00:56:46.464 --> 00:56:47.825 know, I will email you

NOTE Confidence: 0.9287991

00:56:47.825 --> 00:56:49.424 if you wanna just, click

NOTE Confidence: 0.9287991

00:56:49.424 --> 00:56:50.810 on my email. And that

NOTE Confidence: 0.9287991

00:56:50.810 --> 00:56:51.930 goes for anyone. If anyone

NOTE Confidence: 0.9287991

00:56:51.930 --> 00:56:52.969 has any questions, I love

NOTE Confidence: 0.9287991

00:56:52.969 --> 00:56:54.250 this discussion. I'd love to

NOTE Confidence: 0.9287991

00:56:54.250 --> 00:56:55.369 chat offline if anyone,

NOTE Confidence: 0.9898465

00:56:56.250 --> 00:56:57.550 has any questions or follow-up.

NOTE Confidence: 0.97573525

00:56:59.210 --> 00:57:01.210 Sounds good. And and and,

NOTE Confidence: 0.97573525

00:57:01.450 --> 00:57:02.650 you know, many of us

NOTE Confidence: 0.97573525

00:57:02.650 --> 00:57:04.570 are calling, attending this meeting

NOTE Confidence: 0.97573525

00:57:04.570 --> 00:57:05.469 from the VA.

NOTE Confidence: 0.955756

00:57:05.785 --> 00:57:06.985 So we are really intrigued
NOTE Confidence: 0.955756

00:57:06.985 --> 00:57:08.745 about the findings of your
NOTE Confidence: 0.955756

00:57:08.745 --> 00:57:09.245 study,
NOTE Confidence: 0.9579792

00:57:09.785 --> 00:57:10.525 on cannabis,
NOTE Confidence: 0.99427354

00:57:11.065 --> 00:57:11.805 in PTSD
NOTE Confidence: 0.9968765

00:57:12.105 --> 00:57:12.605 patients.
NOTE Confidence: 0.96337664

00:57:13.705 --> 00:57:14.985 We would be we're looking
NOTE Confidence: 0.96337664

00:57:14.985 --> 00:57:15.965 forward to,
NOTE Confidence: 0.98017526

00:57:16.745 --> 00:57:18.505 to hearing the results of
NOTE Confidence: 0.98017526

00:57:18.505 --> 00:57:20.240 that study. So well, thank
NOTE Confidence: 0.98017526

00:57:20.240 --> 00:57:21.920 you very much. We really
NOTE Confidence: 0.98017526

00:57:21.920 --> 00:57:22.820 enjoyed this,
NOTE Confidence: 0.82594514

00:57:24.079 --> 00:57:24.560 and,
NOTE Confidence: 0.9507295

00:57:25.359 --> 00:57:26.720 really appreciate the work you
NOTE Confidence: 0.9507295

00:57:26.800 --> 00:57:28.099 that you're doing. And,
NOTE Confidence: 0.9033391

00:57:29.839 --> 00:57:30.800 for for those of you

NOTE Confidence: 0.9033391

00:57:30.800 --> 00:57:31.839 on the call next week,

NOTE Confidence: 0.9033391

00:57:31.839 --> 00:57:33.060 we have Krista Lister,

NOTE Confidence: 0.9947908

00:57:33.575 --> 00:57:34.475 who will be presenting.

NOTE Confidence: 0.9479944

00:57:35.335 --> 00:57:36.315 She Next month.

NOTE Confidence: 0.8421554

00:57:36.935 --> 00:57:38.795 Sorry? Next month, Doctor. Sissette.

NOTE Confidence: 0.8421554

00:57:38.855 --> 00:57:39.975 Next month. Sorry. Next month.

NOTE Confidence: 0.8421554

00:57:39.975 --> 00:57:40.475 Yes.

NOTE Confidence: 0.9879945

00:57:40.935 --> 00:57:42.695 So, Hillary, thank you very

NOTE Confidence: 0.9879945

00:57:42.695 --> 00:57:43.195 much.

NOTE Confidence: 0.99843085

00:57:45.175 --> 00:57:46.775 Appreciate it. Thank you so

NOTE Confidence: 0.99843085

00:57:46.775 --> 00:57:47.815 much. It was nice meeting

NOTE Confidence: 0.99843085

00:57:47.815 --> 00:57:49.115 you all. Take care.

NOTE Confidence: 0.9988208

00:57:49.920 --> 00:57:50.420 Bye.

NOTE Confidence: 0.9983716

00:57:50.960 --> 00:57:51.460 Bye.