WEBVTT

NOTE duration: ”00:02:28.778”

NOTE Confidence: 0.9164551

00:00:04.880 --> 00:00:05.920 Full brain is one of

NOTE Confidence: 0.9164551

00:00:05.920 --> 00:00:08.180 the most developed brain region.

NOTE Confidence: 0.9164551

00:00:08.240 --> 00:00:10.660 It regulate and control the

NOTE Confidence: 0.8812256

00:00:11.039 --> 00:00:13.299 high human function like

NOTE Confidence: 0.96765137

00:00:13.635 --> 00:00:15.575 decision making and cognition.

NOTE Confidence: 0.90445966

00:00:16.275 --> 00:00:17.795 So it's very important and

NOTE Confidence: 0.90445966

00:00:17.795 --> 00:00:18.295 also

NOTE Confidence: 0.9307617

00:00:18.835 --> 00:00:20.675 the abnormal function in the

NOTE Confidence: 0.9307617

00:00:20.675 --> 00:00:23.335 forebrain is associated with neuropsychiatric

NOTE Confidence: 0.92130536

00:00:24.275 --> 00:00:26.355 neurodevelopment disorder. So that's the

NOTE Confidence: 0.92130536

00:00:26.355 --> 00:00:27.555 reason is the main kind

NOTE Confidence: 0.92130536

00:00:27.555 --> 00:00:29.015 of focus of our research.

NOTE Confidence: 0.96240234

00:00:32.409 --> 00:00:33.630 The major research

NOTE Confidence: 0.9925537

00:00:34.170 --> 00:00:35.770 project in my lab is

NOTE Confidence: 0.9925537

00:00:35.770 --> 00:00:38.110 to study human brain development

NOTE Confidence: 0.9925537

00:00:38.170 --> 00:00:38.830 and disorders.

NOTE Confidence: 0.96186525

00:00:39.290 --> 00:00:40.650 So we use a human

NOTE Confidence: 0.96186525

00:00:40.650 --> 00:00:42.350 brain organoid as a major

NOTE Confidence: 0.96186525

00:00:42.409 --> 00:00:44.430 model system to study those.

NOTE Confidence: 0.8653281

00:00:47.585 --> 00:00:49.425 We start with the human

NOTE Confidence: 0.8653281

00:00:49.425 --> 00:00:51.445 pluripotent stem cell, like embryonic

NOTE Confidence: 0.8653281

00:00:51.505 --> 00:00:53.284 stem cell and iPS cells.

NOTE Confidence: 0.8653281

00:00:53.425 --> 00:00:54.545 So we use a growth

NOTE Confidence: 0.8653281

00:00:54.545 --> 00:00:57.505 factors and small molecules and

NOTE Confidence: 0.8653281

00:00:57.505 --> 00:00:58.545 specialized medium to differentiate this

NOTE Confidence: 0.8653281

00:00:58.545 --> 00:00:59.285 stem cell into

NOTE Confidence: 0.77627563

00:01:11.530 --> 00:01:13.225 the the orbital shaker

NOTE Confidence: 0.6937256

00:01:13.765 --> 00:01:14.505 that continuously

NOTE Confidence: 0.9357804

00:01:15.045 --> 00:01:17.365 move this organoid that have

NOTE Confidence: 0.9357804

00:01:17.365 --> 00:01:18.825 the delivery of a nutrient

NOTE Confidence: 0.9357804

00:01:18.885 --> 00:01:20.725 and oxygen into the organoid

NOTE Confidence: 0.9357804

00:01:20.725 --> 00:01:21.765 for them to grow in

NOTE Confidence: 0.9357804

00:01:21.765 --> 00:01:22.665 three d structure.

NOTE Confidence: 0.9177246

00:01:23.925 --> 00:01:25.605 We start with the immuno

NOTE Confidence: 0.9177246

00:01:25.605 --> 00:01:26.790 staining to look at the

NOTE Confidence: 0.9177246

00:01:26.870 --> 00:01:27.370 structure,

NOTE Confidence: 0.8799269

00:01:27.750 --> 00:01:29.270 and we perform the single

NOTE Confidence: 0.8799269

00:01:29.270 --> 00:01:30.950 cell RNA seq and single

NOTE Confidence: 0.8799269

00:01:30.950 --> 00:01:33.270 cell special transcriptome to look

NOTE Confidence: 0.8799269

00:01:33.270 --> 00:01:34.790 at the development of program

NOTE Confidence: 0.8799269

00:01:34.790 --> 00:01:36.010 of the brain organoid.

NOTE Confidence: 0.8500591

00:01:36.470 --> 00:01:38.250 And of course, to confirm

NOTE Confidence: 0.8500591

00:01:38.310 --> 00:01:39.910 the neuron is really the

NOTE Confidence: 0.8500591

00:01:39.910 --> 00:01:41.030 function of the neuron, which

NOTE Confidence: 0.8500591

00:01:41.030 --> 00:01:42.650 is, due to physiological

NOTE Confidence: 0.7620117

00:01:43.005 --> 00:01:44.944 approach such as calcium imaging

NOTE Confidence: 0.9213867

00:01:45.325 --> 00:01:46.465 or the MEA

NOTE Confidence: 0.9550781

00:01:46.845 --> 00:01:48.145 or patch clamp.

NOTE Confidence: 0.91432416

00:01:51.244 --> 00:01:52.845 So my background actually look

NOTE Confidence: 0.91432416

00:01:52.845 --> 00:01:54.545 from the stem cell. And

NOTE Confidence: 0.91432416

00:01:54.604 --> 00:01:56.125 from the beginning, like, twenty,

NOTE Confidence: 0.91432416

00:01:56.125 --> 00:01:57.165 twenty five years ago when

NOTE Confidence: 0.91432416

00:01:57.165 --> 00:01:59.010 I studied stem cell, especially

NOTE Confidence: 0.91432416

00:01:59.010 --> 00:02:01.010 pluripotent stem cell, it was

NOTE Confidence: 0.91432416

00:02:01.010 --> 00:02:02.690 fascinating me that they can

NOTE Confidence: 0.91432416

00:02:02.690 --> 00:02:03.990 differentiate into

NOTE Confidence: 0.9451599

00:02:04.450 --> 00:02:05.650 any cell type in our

NOTE Confidence: 0.9451599

00:02:05.650 --> 00:02:07.190 body including neuron.

NOTE Confidence: 0.9324544

00:02:07.570 --> 00:02:09.510 And now we can construct

NOTE Confidence: 0.9324544

00:02:09.650 --> 00:02:11.030 the human brain in

NOTE Confidence: 0.80859375

00:02:11.410 --> 00:02:11.910 vitro.

NOTE Confidence: 0.98063153

00:02:12.610 --> 00:02:14.155 And I hope that in

NOTE Confidence: 0.98063153

00:02:14.155 --> 00:02:14.655 future,

NOTE Confidence: 0.9748535

00:02:15.034 --> 00:02:16.474 we could develop some kind

NOTE Confidence: 0.9748535

00:02:16.474 --> 00:02:17.534 of a therapeutics

NOTE Confidence: 0.95376587

00:02:17.995 --> 00:02:19.935 in using this brain organoid

NOTE Confidence: 0.95376587

00:02:19.995 --> 00:02:21.674 as a platform to help

NOTE Confidence: 0.95376587

00:02:21.674 --> 00:02:23.194 the people with a brain

NOTE Confidence: 0.95376587

00:02:23.194 --> 00:02:23.694 disorder.