

WEBVTT

NOTE duration: "00:03:43.744"

NOTE Confidence: 0.9316387

00:00:06.160 --> 00:00:08.160 We don't fully understand why

NOTE Confidence: 0.9316387

00:00:08.160 --> 00:00:09.139 pulmonary fibrosis

NOTE Confidence: 0.9915061

00:00:09.519 --> 00:00:10.019 happens.

NOTE Confidence: 0.9709026

00:00:10.960 --> 00:00:12.400 We think the lung has

NOTE Confidence: 0.9709026

00:00:12.400 --> 00:00:14.099 become injured for some reason,

NOTE Confidence: 0.9682296

00:00:14.594 --> 00:00:16.195 and that in an attempt

NOTE Confidence: 0.9682296

00:00:16.195 --> 00:00:17.654 to suppress the injury,

NOTE Confidence: 0.9987731

00:00:18.114 --> 00:00:19.574 the lung develops

NOTE Confidence: 0.9970419

00:00:20.035 --> 00:00:21.734 an ongoing healing process.

NOTE Confidence: 0.9733346

00:00:22.355 --> 00:00:24.515 It generates extra tissue and

NOTE Confidence: 0.9733346

00:00:24.515 --> 00:00:26.775 it's trying to regrow itself,

NOTE Confidence: 0.94162244

00:00:27.090 --> 00:00:28.370 but it can't and as

NOTE Confidence: 0.94162244

00:00:28.370 --> 00:00:29.890 a result you just get

NOTE Confidence: 0.94162244

00:00:29.890 --> 00:00:31.590 more and more scar formation

NOTE Confidence: 0.94162244

00:00:31.810 --> 00:00:33.250 to the point where the
NOTE Confidence: 0.94162244
00:00:33.250 --> 00:00:35.170 lungs become stiff, they're full
NOTE Confidence: 0.94162244
00:00:35.170 --> 00:00:36.690 of scar tissue and it's
NOTE Confidence: 0.94162244
00:00:36.690 --> 00:00:38.130 difficult for patients to take
NOTE Confidence: 0.94162244
00:00:38.130 --> 00:00:39.170 a deep breath and it's
NOTE Confidence: 0.94162244
00:00:39.170 --> 00:00:40.930 difficult for patients to live
NOTE Confidence: 0.94162244
00:00:40.930 --> 00:00:42.255 their daily lives. I mean,
NOTE Confidence: 0.94162244
00:00:42.255 --> 00:00:44.034 a cause is shorter life
NOTE Confidence: 0.94162244
00:00:44.175 --> 00:00:46.575 because they ultimately results in
NOTE Confidence: 0.94162244
00:00:46.575 --> 00:00:47.395 lung failure.
NOTE Confidence: 0.97518706
00:00:53.135 --> 00:00:54.335 My lab is devoted to
NOTE Confidence: 0.97518706
00:00:54.335 --> 00:00:55.715 finding a cure for pulmonary
NOTE Confidence: 0.97518706
00:00:55.775 --> 00:00:56.275 fibrosis,
NOTE Confidence: 0.9997346
00:00:56.600 --> 00:00:57.980 and we do this by
NOTE Confidence: 0.9997346
00:00:58.200 --> 00:00:58.700 studying
NOTE Confidence: 0.9953598
00:00:59.080 --> 00:01:00.060 immune responses

NOTE Confidence: 0.9954228
00:01:00.600 --> 00:01:02.840 and neuronal guidance proteins. For
NOTE Confidence: 0.9954228
00:01:02.840 --> 00:01:04.040 years, it was thought that
NOTE Confidence: 0.9954228
00:01:04.040 --> 00:01:05.319 the immune system had no
NOTE Confidence: 0.9954228
00:01:05.319 --> 00:01:06.940 role in pulmonary fibrosis.
NOTE Confidence: 0.99952143
00:01:07.480 --> 00:01:09.000 We all know that the
NOTE Confidence: 0.99952143
00:01:09.000 --> 00:01:09.900 immune system
NOTE Confidence: 0.99625874
00:01:10.360 --> 00:01:11.560 really helps us fight off
NOTE Confidence: 0.99625874
00:01:11.560 --> 00:01:13.435 infection, but there's a whole
NOTE Confidence: 0.99625874
00:01:13.435 --> 00:01:14.715 other role for the immune
NOTE Confidence: 0.99625874
00:01:14.715 --> 00:01:16.334 system in regulating
NOTE Confidence: 0.9876467
00:01:16.795 --> 00:01:18.814 how tissue responds to injury.
NOTE Confidence: 0.96349525
00:01:19.834 --> 00:01:22.255 Netrin one was initially discovered
NOTE Confidence: 0.96349525
00:01:22.314 --> 00:01:23.935 as a neuronal guidance protein.
NOTE Confidence: 0.96349525
00:01:23.994 --> 00:01:25.194 It was discovered that they
NOTE Confidence: 0.96349525
00:01:25.194 --> 00:01:26.554 also had important roles in
NOTE Confidence: 0.96349525

00:01:26.554 --> 00:01:27.054 immunity
NOTE Confidence: 0.9621433

00:01:27.620 --> 00:01:29.780 and in tissue remodeling. And
NOTE Confidence: 0.9621433

00:01:29.780 --> 00:01:31.540 so when we initially began
NOTE Confidence: 0.9621433

00:01:31.540 --> 00:01:33.380 studying netrin one and proteins
NOTE Confidence: 0.9621433

00:01:33.380 --> 00:01:35.060 like netrin one, we were
NOTE Confidence: 0.9621433

00:01:35.060 --> 00:01:37.720 studying how netrin one regulates
NOTE Confidence: 0.9621433

00:01:37.940 --> 00:01:38.840 immune responses
NOTE Confidence: 0.9995963

00:01:39.300 --> 00:01:39.800 during
NOTE Confidence: 0.9542637

00:01:40.365 --> 00:01:41.985 healing. Recently though,
NOTE Confidence: 0.9984025

00:01:42.605 --> 00:01:44.465 we made the completely
NOTE Confidence: 0.97608584

00:01:44.765 --> 00:01:46.525 unexpected finding that in addition
NOTE Confidence: 0.97608584

00:01:46.525 --> 00:01:48.865 to these immunologic functions, Netrin
NOTE Confidence: 0.97608584

00:01:48.925 --> 00:01:50.945 one contributes to tissue repair,
NOTE Confidence: 0.8875289

00:01:51.405 --> 00:01:51.905 remodeling,
NOTE Confidence: 0.9974006

00:01:52.445 --> 00:01:53.585 and also fibrosis
NOTE Confidence: 0.9645346

00:01:53.885 --> 00:01:54.945 through its originally

NOTE Confidence: 0.95789444
00:01:55.390 --> 00:01:56.210 described function
NOTE Confidence: 0.99910724
00:01:56.990 --> 00:01:57.810 of stimulating
NOTE Confidence: 0.9853061
00:01:58.270 --> 00:02:00.190 nerve growth and mediating where
NOTE Confidence: 0.9853061
00:02:00.190 --> 00:02:01.250 nerves are going
NOTE Confidence: 0.9973779
00:02:01.550 --> 00:02:03.970 during development and during repair.
NOTE Confidence: 0.96976364
00:02:09.055 --> 00:02:10.335 When you're trying to develop
NOTE Confidence: 0.96976364
00:02:10.335 --> 00:02:11.695 a treatment for a human
NOTE Confidence: 0.96976364
00:02:11.695 --> 00:02:13.775 disease, having a human relevant
NOTE Confidence: 0.96976364
00:02:13.775 --> 00:02:15.955 modeling system is critically important.
NOTE Confidence: 0.96976364
00:02:16.014 --> 00:02:17.635 I have to develop models,
NOTE Confidence: 0.96976364
00:02:17.775 --> 00:02:18.915 like little simulators
NOTE Confidence: 0.97167766
00:02:19.455 --> 00:02:21.000 of the human disease in
NOTE Confidence: 0.97167766
00:02:21.000 --> 00:02:22.700 the laboratory that we've engineered
NOTE Confidence: 0.97167766
00:02:22.919 --> 00:02:25.000 to express human genes and
NOTE Confidence: 0.97167766
00:02:25.000 --> 00:02:26.860 act like human fibrosis
NOTE Confidence: 0.96880215

00:02:27.240 --> 00:02:29.160 when we study it. Other
NOTE Confidence: 0.96880215

00:02:29.160 --> 00:02:31.000 times, we're studying samples that
NOTE Confidence: 0.96880215

00:02:31.000 --> 00:02:32.200 we get from our patients
NOTE Confidence: 0.96880215

00:02:32.200 --> 00:02:33.555 in the clinic, you know,
NOTE Confidence: 0.96880215

00:02:33.555 --> 00:02:35.715 cells or blood specimens and
NOTE Confidence: 0.96880215

00:02:35.715 --> 00:02:37.394 we're understanding the immune system
NOTE Confidence: 0.96880215

00:02:37.394 --> 00:02:38.375 through those samples.
NOTE Confidence: 0.9756326

00:02:38.675 --> 00:02:41.175 But other times we're making
NOTE Confidence: 0.9756326

00:02:41.315 --> 00:02:43.394 what we call mimetics, which
NOTE Confidence: 0.9756326

00:02:43.394 --> 00:02:44.754 is where we're using human
NOTE Confidence: 0.9756326

00:02:44.754 --> 00:02:46.110 organs that we get from
NOTE Confidence: 0.9756326

00:02:46.270 --> 00:02:46.770 pathology
NOTE Confidence: 0.98645556

00:02:47.070 --> 00:02:48.590 and create a little mini
NOTE Confidence: 0.98645556

00:02:48.590 --> 00:02:50.350 lung in the laboratory that
NOTE Confidence: 0.98645556

00:02:50.350 --> 00:02:51.389 we can use to study
NOTE Confidence: 0.98645556

00:02:51.389 --> 00:02:52.290 human biology.

NOTE Confidence: 0.8804797
00:02:57.230 --> 00:02:57.730 My
NOTE Confidence: 0.99983823
00:02:58.205 --> 00:02:58.705 goal
NOTE Confidence: 0.9717069
00:02:59.005 --> 00:03:00.365 is based on my hope
NOTE Confidence: 0.9717069
00:03:00.365 --> 00:03:01.645 that we will find a
NOTE Confidence: 0.9717069
00:03:01.645 --> 00:03:03.425 way to cure pulmonary fibrosis.
NOTE Confidence: 0.9591964
00:03:04.044 --> 00:03:06.544 Whether this is through prevention,
NOTE Confidence: 0.9591964
00:03:06.764 --> 00:03:08.764 meaning we understand why does
NOTE Confidence: 0.9591964
00:03:08.764 --> 00:03:10.764 pulmonary fibrosis develop and how
NOTE Confidence: 0.9591964
00:03:10.764 --> 00:03:12.145 can we prevent that.
NOTE Confidence: 0.99834675
00:03:12.630 --> 00:03:13.850 Whether it's developing
NOTE Confidence: 0.9495028
00:03:14.230 --> 00:03:15.830 a drug or a method
NOTE Confidence: 0.9495028
00:03:15.830 --> 00:03:17.030 that we can use to
NOTE Confidence: 0.9495028
00:03:17.030 --> 00:03:18.389 to halt the disease so
NOTE Confidence: 0.9495028
00:03:18.389 --> 00:03:19.690 there's no further progression
NOTE Confidence: 0.9765467
00:03:20.150 --> 00:03:21.190 or that we will get
NOTE Confidence: 0.9765467

00:03:21.190 --> 00:03:22.550 to the point where we
NOTE Confidence: 0.9765467

00:03:22.550 --> 00:03:24.550 advance science such that the
NOTE Confidence: 0.9765467

00:03:24.550 --> 00:03:26.230 next generation of scientists can
NOTE Confidence: 0.9765467

00:03:26.230 --> 00:03:27.190 pick up where we left
NOTE Confidence: 0.9765467

00:03:27.190 --> 00:03:28.545 off and we end up
NOTE Confidence: 0.9765467

00:03:28.545 --> 00:03:29.825 with being able to reverse
NOTE Confidence: 0.9765467

00:03:29.825 --> 00:03:30.565 the disease,
NOTE Confidence: 0.9560376

00:03:31.105 --> 00:03:33.105 eradicate fibrosis, and have normal
NOTE Confidence: 0.9560376

00:03:33.105 --> 00:03:35.425 lung regrow so patients who
NOTE Confidence: 0.9560376

00:03:35.425 --> 00:03:37.185 were previously sick can become
NOTE Confidence: 0.9560376

00:03:37.185 --> 00:03:37.685 healthy.