

WEBVTT

NOTE duration: "00:03:06.453"

NOTE Confidence: 0.98098725

00:00:04.480 --> 00:00:06.240 Endothelial cells are thin, flat

NOTE Confidence: 0.98098725

00:00:06.240 --> 00:00:07.680 cells lining the blood vessels

NOTE Confidence: 0.98098725

00:00:07.680 --> 00:00:09.280 that deliver oxygen and nutrients

NOTE Confidence: 0.98098725

00:00:09.280 --> 00:00:11.139 to our tissues, but endothelial

NOTE Confidence: 0.98098725

00:00:11.360 --> 00:00:12.740 cells aren't just a structural

NOTE Confidence: 0.98098725

00:00:12.880 --> 00:00:15.139 component of this passive conduit

NOTE Confidence: 0.98098725

00:00:15.280 --> 00:00:16.875 of oxygen and nutrients, they're

NOTE Confidence: 0.9812575

00:00:17.335 --> 00:00:19.195 actually interacting with their environment.

NOTE Confidence: 0.9812575

00:00:19.255 --> 00:00:21.095 So, they receive signals from

NOTE Confidence: 0.9812575

00:00:21.095 --> 00:00:22.295 cells in their niche and

NOTE Confidence: 0.9812575

00:00:22.295 --> 00:00:23.655 they signal to other cells

NOTE Confidence: 0.9812575

00:00:23.655 --> 00:00:24.855 and that can help build

NOTE Confidence: 0.9812575

00:00:24.855 --> 00:00:25.355 organs,

NOTE Confidence: 0.9702207

00:00:25.735 --> 00:00:27.895 pattern tissues during development, but

NOTE Confidence: 0.9702207

00:00:27.895 --> 00:00:29.175 it can also drive some  
NOTE Confidence: 0.9702207

00:00:29.175 --> 00:00:31.679 maladaptive processes like fibrosis or  
NOTE Confidence: 0.9702207

00:00:31.679 --> 00:00:33.280 cancer and can participate in  
NOTE Confidence: 0.9702207

00:00:33.280 --> 00:00:35.280 disease progression. So these cells  
NOTE Confidence: 0.9702207

00:00:35.280 --> 00:00:36.260 are really important,  
NOTE Confidence: 0.9831543

00:00:36.720 --> 00:00:38.260 components of the microenvironment  
NOTE Confidence: 0.99560547

00:00:38.640 --> 00:00:39.540 in most tissues.  
NOTE Confidence: 0.98595613

00:00:42.815 --> 00:00:44.175 We are a vascular biology  
NOTE Confidence: 0.98595613

00:00:44.175 --> 00:00:45.854 lab and we're particularly interested  
NOTE Confidence: 0.98595613

00:00:45.854 --> 00:00:46.915 in the lung endothelium  
NOTE Confidence: 0.9659508

00:00:47.455 --> 00:00:48.415 and what we'd like to  
NOTE Confidence: 0.9659508

00:00:48.415 --> 00:00:49.854 understand is how these cells  
NOTE Confidence: 0.9659508

00:00:49.854 --> 00:00:51.295 do signal with other cells  
NOTE Confidence: 0.9659508

00:00:51.295 --> 00:00:52.335 in the lung to build  
NOTE Confidence: 0.9659508

00:00:52.335 --> 00:00:54.815 and rebuild three-dimensional structures. But  
NOTE Confidence: 0.9659508

00:00:54.815 --> 00:00:56.415 we don't understand a lot

NOTE Confidence: 0.9659508  
00:00:56.415 --> 00:00:57.739 about how it's regulated. Regulated.  
NOTE Confidence: 0.9659508  
00:00:57.739 --> 00:00:59.100 We don't understand a lot  
NOTE Confidence: 0.9659508  
00:00:59.100 --> 00:01:00.460 about how it's put together,  
NOTE Confidence: 0.9659508  
00:01:00.460 --> 00:01:01.440 how it's maintained,  
NOTE Confidence: 0.9762486  
00:01:01.980 --> 00:01:03.739 and how it's repaired during  
NOTE Confidence: 0.9762486  
00:01:03.739 --> 00:01:05.020 injury or disease. And so  
NOTE Confidence: 0.9762486  
00:01:05.020 --> 00:01:06.319 we're interested in understanding  
NOTE Confidence: 0.994812  
00:01:06.860 --> 00:01:09.040 how endothelial cell signaling contributes  
NOTE Confidence: 0.994812  
00:01:09.100 --> 00:01:10.000 to those processes.  
NOTE Confidence: 0.9802246  
00:01:13.275 --> 00:01:14.475 We are interested in a  
NOTE Confidence: 0.9802246  
00:01:14.475 --> 00:01:16.235 number of different ways that  
NOTE Confidence: 0.9802246  
00:01:16.235 --> 00:01:17.834 endothelial cells contribute to the  
NOTE Confidence: 0.9802246  
00:01:17.834 --> 00:01:18.955 lung, so we have to  
NOTE Confidence: 0.9802246  
00:01:18.955 --> 00:01:19.455 understand  
NOTE Confidence: 0.9616148  
00:01:19.834 --> 00:01:21.595 which endothelial cells are present,  
NOTE Confidence: 0.9616148

00:01:21.595 --> 00:01:22.395 so we spend a lot  
NOTE Confidence: 0.9616148

00:01:22.395 --> 00:01:23.995 of time thinking about different  
NOTE Confidence: 0.9616148

00:01:23.995 --> 00:01:25.515 types of endothelial cells that  
NOTE Confidence: 0.9616148

00:01:25.515 --> 00:01:27.450 maybe express different genes or  
NOTE Confidence: 0.9616148

00:01:27.530 --> 00:01:28.729 perform different functions in the  
NOTE Confidence: 0.9616148

00:01:28.729 --> 00:01:29.229 lung,  
NOTE Confidence: 0.98688066

00:01:29.530 --> 00:01:30.810 and how those cells might  
NOTE Confidence: 0.98688066

00:01:30.810 --> 00:01:32.170 change with injury or disease,  
NOTE Confidence: 0.98688066

00:01:32.170 --> 00:01:33.049 and then how that might  
NOTE Confidence: 0.98688066

00:01:33.049 --> 00:01:34.590 change their signaling behavior.  
NOTE Confidence: 0.97752964

00:01:34.969 --> 00:01:36.250 So to study that, we  
NOTE Confidence: 0.97752964

00:01:36.250 --> 00:01:37.610 do a lot of genetic  
NOTE Confidence: 0.97752964

00:01:37.610 --> 00:01:38.990 models where we can manipulate  
NOTE Confidence: 0.97752964

00:01:39.049 --> 00:01:40.729 these signaling molecules that these  
NOTE Confidence: 0.97752964

00:01:40.729 --> 00:01:42.649 specific types of endothelial cells  
NOTE Confidence: 0.97752964

00:01:42.649 --> 00:01:43.149 express.

NOTE Confidence: 0.9731402

00:01:43.634 --> 00:01:45.395 We also love imaging, so

NOTE Confidence: 0.9731402

00:01:45.395 --> 00:01:46.594 anytime we can get a

NOTE Confidence: 0.9731402

00:01:46.594 --> 00:01:48.454 beautiful two dimensional or three-dimensional

NOTE Confidence: 0.9731402

00:01:48.674 --> 00:01:51.075 image of endothelial cells, of

NOTE Confidence: 0.9731402

00:01:51.075 --> 00:01:52.914 overall vascular structure in the

NOTE Confidence: 0.9731402

00:01:52.914 --> 00:01:54.674 lung, and of how these

NOTE Confidence: 0.9731402

00:01:54.674 --> 00:01:55.954 cells are interacting with other

NOTE Confidence: 0.9731402

00:01:55.954 --> 00:01:57.655 cells, we really enjoy that.

NOTE Confidence: 0.9731402

00:01:57.830 --> 00:01:59.030 And then because we're interested

NOTE Confidence: 0.9731402

00:01:59.030 --> 00:02:00.550 in cell subtypes, we also

NOTE Confidence: 0.9731402

00:02:00.550 --> 00:02:01.430 do a lot of flow

NOTE Confidence: 0.9731402

00:02:01.430 --> 00:02:01.930 cytometry,

NOTE Confidence: 0.9995117

00:02:02.470 --> 00:02:04.410 to identify different cell types.

NOTE Confidence: 0.9601408

00:02:07.430 --> 00:02:09.270 We know now that vascular

NOTE Confidence: 0.9601408

00:02:09.270 --> 00:02:10.710 dysfunction is a component of

NOTE Confidence: 0.9601408

00:02:10.710 --> 00:02:12.070 lots of different lung diseases  
NOTE Confidence: 0.9601408

00:02:12.070 --> 00:02:13.210 and so that includes  
NOTE Confidence: 0.9657227

00:02:13.590 --> 00:02:14.764 acute acute lung injury that  
NOTE Confidence: 0.9657227

00:02:14.764 --> 00:02:16.705 might happen through respiratory infections,  
NOTE Confidence: 0.9610722

00:02:17.165 --> 00:02:19.185 chronic lung diseases like COPD  
NOTE Confidence: 0.9610722

00:02:19.325 --> 00:02:20.764 or IPF, and then of  
NOTE Confidence: 0.9610722

00:02:20.764 --> 00:02:21.965 course, lung cancer is the  
NOTE Confidence: 0.9610722

00:02:21.965 --> 00:02:23.325 leading cancer cause of death  
NOTE Confidence: 0.9610722

00:02:23.325 --> 00:02:24.764 worldwide. So I think there's  
NOTE Confidence: 0.9610722

00:02:24.764 --> 00:02:25.745 a lot of opportunity  
NOTE Confidence: 0.9851714

00:02:26.045 --> 00:02:27.920 to apply this knowledge, to  
NOTE Confidence: 0.9851714

00:02:27.920 --> 00:02:30.000 understand how the endothelium contributes  
NOTE Confidence: 0.9851714

00:02:30.000 --> 00:02:31.300 to normal lung function,  
NOTE Confidence: 0.9848189

00:02:31.600 --> 00:02:32.720 how that might go awry  
NOTE Confidence: 0.9848189

00:02:32.720 --> 00:02:33.760 in disease, and how we  
NOTE Confidence: 0.9848189

00:02:33.760 --> 00:02:36.080 can maybe manipulate endothelial cells

NOTE Confidence: 0.9848189

00:02:36.080 --> 00:02:37.520 that are behaving badly to

NOTE Confidence: 0.9848189

00:02:37.520 --> 00:02:38.800 move more back towards their

NOTE Confidence: 0.9848189

00:02:38.800 --> 00:02:40.400 normal function and to help

NOTE Confidence: 0.9848189

00:02:40.400 --> 00:02:41.380 with lung disease.

NOTE Confidence: 0.98476565

00:02:43.055 --> 00:02:45.535 Regenerative therapies are really slim

NOTE Confidence: 0.98476565

00:02:45.535 --> 00:02:46.735 for lung disease. Right now,

NOTE Confidence: 0.98476565

00:02:46.735 --> 00:02:47.775 a lot of treatments for

NOTE Confidence: 0.98476565

00:02:47.775 --> 00:02:49.715 these diseases are treating symptoms.

NOTE Confidence: 0.9842465

00:02:50.415 --> 00:02:51.775 It's really exciting time in

NOTE Confidence: 0.9842465

00:02:51.775 --> 00:02:53.215 the lung biology field. We

NOTE Confidence: 0.9842465

00:02:53.215 --> 00:02:54.095 see a lot of new

NOTE Confidence: 0.9842465

00:02:54.095 --> 00:02:55.935 regenerative therapies being developed and

NOTE Confidence: 0.9842465

00:02:55.935 --> 00:02:57.450 tested, and so we'd like

NOTE Confidence: 0.9842465

00:02:57.450 --> 00:02:58.650 to help contribute to that

NOTE Confidence: 0.9842465

00:02:58.650 --> 00:03:00.490 by understanding the endothelial piece

NOTE Confidence: 0.9842465

00:03:00.490 --> 00:03:01.230 of the equation.