WEBVTT

NOTE duration: ”00:03:25.056”

NOTE Confidence: 0.9785354

00:00:03.760 --> 00:00:05.859 When cancer or immune cells

NOTE Confidence: 0.9785354

00:00:06.000 --> 00:00:07.299 need to operate,

NOTE Confidence: 0.90294576

00:00:07.600 --> 00:00:08.960 they need a larger cell

NOTE Confidence: 0.90294576

00:00:08.960 --> 00:00:10.960 work together. So then the

NOTE Confidence: 0.90294576

00:00:10.960 --> 00:00:12.639 cell surface molecule is a

NOTE Confidence: 0.90294576

00:00:12.639 --> 00:00:13.860 communicating molecule.

NOTE Confidence: 0.8568479

00:00:14.635 --> 00:00:16.175 When cell get into contact,

NOTE Confidence: 0.96552676

00:00:16.954 --> 00:00:18.735 and then they deliver signal

NOTE Confidence: 0.96552676

00:00:18.875 --> 00:00:20.575 together, and then they tell

NOTE Confidence: 0.96552676

00:00:20.635 --> 00:00:21.935 others to do what.

NOTE Confidence: 0.95353836

00:00:22.395 --> 00:00:23.915 If this signal goes wrong,

NOTE Confidence: 0.95353836

00:00:23.915 --> 00:00:25.435 then the immune system go

NOTE Confidence: 0.95353836

00:00:25.435 --> 00:00:26.095 to chaos.

NOTE Confidence: 0.9154579

00:00:29.400 --> 00:00:30.920 Our early study, actually, in

NOTE Confidence: 0.9154579

00:00:30.920 --> 00:00:32.520 the early nineties, we found

NOTE Confidence: 0.9154579

00:00:32.520 --> 00:00:34.280 there's quite a bit of

NOTE Confidence: 0.9154579

00:00:34.280 --> 00:00:35.180 cancer cells.

NOTE Confidence: 0.9985776

00:00:35.880 --> 00:00:37.100 They do display

NOTE Confidence: 0.9125993

00:00:37.400 --> 00:00:38.840 a series of molecule on

NOTE Confidence: 0.9125993

00:00:38.840 --> 00:00:40.460 the cell surface, which

NOTE Confidence: 0.9117065

00:00:41.000 --> 00:00:43.155 deliver signal to the immune

NOTE Confidence: 0.9117065

00:00:43.155 --> 00:00:44.454 cell in the wrong way.

NOTE Confidence: 0.9117065

00:00:44.675 --> 00:00:46.034 So that cancer cell is

NOTE Confidence: 0.9117065

00:00:46.034 --> 00:00:47.395 not just sitting there and

NOTE Confidence: 0.9117065

00:00:47.395 --> 00:00:48.854 it just keeps growing.

NOTE Confidence: 0.9278653

00:00:49.555 --> 00:00:51.875 They actively actually deliver signal

NOTE Confidence: 0.9278653

00:00:51.875 --> 00:00:53.895 to our body's immune system

NOTE Confidence: 0.9458826

00:00:54.434 --> 00:00:56.035 and to shut them down,

NOTE Confidence: 0.9458826

00:00:56.035 --> 00:00:56.535 basically.

NOTE Confidence: 0.9639907

00:00:58.020 --> 00:01:00.200 So we are interested in

NOTE Confidence: 0.9639907

00:01:00.260 --> 00:01:01.620 two kind of areas. One

NOTE Confidence: 0.9639907

00:01:01.620 --> 00:01:03.720 is the basic immunology.

NOTE Confidence: 0.9528441

00:01:04.500 --> 00:01:06.340 The second area is to

NOTE Confidence: 0.9528441

00:01:06.340 --> 00:01:08.660 use that discovery to treat

NOTE Confidence: 0.9528441

00:01:08.660 --> 00:01:09.160 diseases,

NOTE Confidence: 0.9944147

00:01:09.940 --> 00:01:11.080 especially cancer.

NOTE Confidence: 0.8653091

00:01:14.495 --> 00:01:16.515 We have developed a receptor

NOTE Confidence: 0.8653091

00:01:16.655 --> 00:01:18.194 array which allow us

NOTE Confidence: 0.999671

00:01:18.495 --> 00:01:18.995 to

NOTE Confidence: 0.99836916

00:01:19.295 --> 00:01:19.795 study

NOTE Confidence: 0.9568018

00:01:21.135 --> 00:01:22.815 more than fifteen thousand cell

NOTE Confidence: 0.9568018

00:01:22.815 --> 00:01:23.715 surface molecules

NOTE Confidence: 0.98371506

00:01:24.255 --> 00:01:25.770 at the same time and

NOTE Confidence: 0.98371506

00:01:25.770 --> 00:01:26.970 to see how they interact

NOTE Confidence: 0.98371506

00:01:26.970 --> 00:01:28.650 each other, how they signal

NOTE Confidence: 0.98371506

00:01:28.650 --> 00:01:29.390 each other.

NOTE Confidence: 0.9664963

00:01:30.330 --> 00:01:32.590 Now later, single cell technology

NOTE Confidence: 0.9549647

00:01:33.610 --> 00:01:34.970 can pick the cells, basically.

NOTE Confidence: 0.9549647

00:01:34.970 --> 00:01:35.930 You can pick a thousand

NOTE Confidence: 0.9549647

00:01:35.930 --> 00:01:37.450 or ten thousand cells and

NOTE Confidence: 0.9549647

00:01:37.450 --> 00:01:38.745 to study them in detail,

NOTE Confidence: 0.9549647

00:01:38.985 --> 00:01:40.685 especially what kind of molecule

NOTE Confidence: 0.90064245

00:01:41.225 --> 00:01:43.065 you express in particular cell,

NOTE Confidence: 0.90064245

00:01:43.065 --> 00:01:44.825 how they interact with other

NOTE Confidence: 0.90064245

00:01:44.825 --> 00:01:45.325 cells.

NOTE Confidence: 0.9144449

00:01:46.265 --> 00:01:47.705 So the purpose is to

NOTE Confidence: 0.9144449

00:01:47.705 --> 00:01:48.845 understand how

NOTE Confidence: 0.9717438

00:01:49.625 --> 00:01:51.085 these cells communicate

NOTE Confidence: 0.915661

00:01:51.465 --> 00:01:53.160 and then how cancer cell

NOTE Confidence: 0.915661

00:01:53.400 --> 00:01:55.320 communicate with immune cells. They

NOTE Confidence: 0.915661

00:01:55.320 --> 00:01:56.860 become very useful tools.

NOTE Confidence: 0.92108446

00:01:59.880 --> 00:02:02.120 For basic science, whole purpose

NOTE Confidence: 0.92108446

00:02:02.120 --> 00:02:03.640 actually is to move them

NOTE Confidence: 0.92108446

00:02:03.640 --> 00:02:04.380 to clinic.

NOTE Confidence: 0.91389096

00:02:05.000 --> 00:02:06.760 PDR1, for example, which we

NOTE Confidence: 0.91389096

00:02:06.760 --> 00:02:09.135 discovered twenty five plus years

NOTE Confidence: 0.91389096

00:02:09.135 --> 00:02:11.135 ago. We found many cancer

NOTE Confidence: 0.91389096

00:02:11.135 --> 00:02:12.834 cells display this molecule.

NOTE Confidence: 0.9088174

00:02:13.454 --> 00:02:15.215 They will bind to a

NOTE Confidence: 0.9088174

00:02:15.215 --> 00:02:16.974 molecule called PD1 on the

NOTE Confidence: 0.9088174

00:02:16.974 --> 00:02:18.754 T cells and then deliver

NOTE Confidence: 0.9088174

00:02:18.814 --> 00:02:19.954 a shutdown signal.

NOTE Confidence: 0.9142044

00:02:21.319 --> 00:02:22.760 So that is basic science

NOTE Confidence: 0.9142044

00:02:22.760 --> 00:02:24.620 finding. You identify the molecule,

NOTE Confidence: 0.9142044

00:02:24.840 --> 00:02:26.299 you understand the signaling,

NOTE Confidence: 0.89205045

00:02:26.840 --> 00:02:28.280 you understand how T cell

NOTE Confidence: 0.89205045

00:02:28.280 --> 00:02:29.099 get disabled,

NOTE Confidence: 0.8332848

00:02:29.639 --> 00:02:30.379 that dysfunctional.

NOTE Confidence: 0.9495038

00:02:31.799 --> 00:02:33.980 With that knowledge, then we

NOTE Confidence: 0.991952

00:02:34.840 --> 00:02:36.280 started to think about how

NOTE Confidence: 0.991952

00:02:36.280 --> 00:02:36.495 to

NOTE Confidence: 0.92579144

00:02:37.614 --> 00:02:38.674 develop the drug.

NOTE Confidence: 0.8902589

00:02:39.375 --> 00:02:40.735 So the idea then is

NOTE Confidence: 0.8902589

00:02:40.735 --> 00:02:41.955 to develop an antibody

NOTE Confidence: 0.89506984

00:02:42.575 --> 00:02:43.555 to selectively

NOTE Confidence: 0.8697075

00:02:44.174 --> 00:02:46.415 block this PD L1 and

NOTE Confidence: 0.8697075

00:02:46.415 --> 00:02:47.635 PD-one communication.

NOTE Confidence: 0.8780591

00:02:51.120 --> 00:02:52.560 Eventually, you bring the antibody

NOTE Confidence: 0.8780591

00:02:52.560 --> 00:02:54.100 to clinic and it shows,

NOTE Confidence: 0.8780591

00:02:54.160 --> 00:02:56.000 oh, suddenly, immune system, like,

NOTE Confidence: 0.8780591

00:02:56.000 --> 00:02:58.000 recover. Okay? And it's not

NOTE Confidence: 0.8780591

00:02:58.000 --> 00:02:59.520 active to kill the the

NOTE Confidence: 0.8780591

00:02:59.520 --> 00:03:01.280 tumor cell. So now this

NOTE Confidence: 0.8780591

00:03:01.280 --> 00:03:03.060 therapy, based on this principle

NOTE Confidence: 0.8780591

00:03:03.120 --> 00:03:04.800 we found twenty five plus

NOTE Confidence: 0.8780591

00:03:04.800 --> 00:03:05.620 years ago,

NOTE Confidence: 0.9871567

00:03:06.555 --> 00:03:07.995 and become a standard of

NOTE Confidence: 0.9871567

00:03:07.995 --> 00:03:09.775 cancer care now in clinic.

NOTE Confidence: 0.82531893

00:03:10.715 --> 00:03:12.735 So all these integrate together,

NOTE Confidence: 0.93518716

00:03:13.754 --> 00:03:15.455 which is really to bring

NOTE Confidence: 0.9949241

00:03:15.915 --> 00:03:17.135 the basic science

NOTE Confidence: 0.9818143

00:03:17.514 --> 00:03:18.014 knowledge

NOTE Confidence: 0.96170205

00:03:18.794 --> 00:03:19.935 to treat diseases.