

WEBVTT

NOTE duration: "00:03:58.378"

NOTE Confidence: 0.9561156

00:00:04.640 --> 00:00:06.720 Mature basal lymphoma is a

NOTE Confidence: 0.9561156

00:00:06.720 --> 00:00:08.260 cancer of our immune system,

NOTE Confidence: 0.93176866

00:00:08.720 --> 00:00:11.679 and it comes from white

NOTE Confidence: 0.93176866

00:00:11.679 --> 00:00:13.135 blood cells. They're called b

NOTE Confidence: 0.93176866

00:00:13.135 --> 00:00:13.635 lymphocytes,

NOTE Confidence: 0.9761639

00:00:14.255 --> 00:00:15.855 also commonly known as b

NOTE Confidence: 0.9761639

00:00:15.855 --> 00:00:16.355 cells,

NOTE Confidence: 0.93108714

00:00:16.735 --> 00:00:17.935 that have matured in a

NOTE Confidence: 0.93108714

00:00:17.935 --> 00:00:19.395 bone marrow, but then migrated

NOTE Confidence: 0.93108714

00:00:19.454 --> 00:00:21.295 to secondary lymphoid organs such

NOTE Confidence: 0.93108714

00:00:21.295 --> 00:00:22.815 as the spleen and the

NOTE Confidence: 0.93108714

00:00:22.815 --> 00:00:23.635 lymph nodes.

NOTE Confidence: 0.9803009

00:00:24.380 --> 00:00:26.000 There, they can be activated

NOTE Confidence: 0.95636255

00:00:26.619 --> 00:00:28.720 when we have an infection,

NOTE Confidence: 0.99726385

00:00:29.900 --> 00:00:31.180 and they will play a
NOTE Confidence: 0.99726385
00:00:31.180 --> 00:00:33.659 fundamental role in our immune
NOTE Confidence: 0.99726385
00:00:33.659 --> 00:00:35.579 response to these pathogens in
NOTE Confidence: 0.99726385
00:00:35.579 --> 00:00:37.120 order to eliminate them.
NOTE Confidence: 0.9003615
00:00:38.445 --> 00:00:39.885 That's kind of a a
NOTE Confidence: 0.9003615
00:00:39.885 --> 00:00:40.385 treason
NOTE Confidence: 0.9522622
00:00:40.925 --> 00:00:42.045 from these cells because they
NOTE Confidence: 0.9522622
00:00:42.045 --> 00:00:43.745 are supposed to protect us,
NOTE Confidence: 0.9522622
00:00:43.805 --> 00:00:45.405 but can actually become cancer
NOTE Confidence: 0.9522622
00:00:45.405 --> 00:00:45.905 themselves.
NOTE Confidence: 0.9891453
00:00:46.685 --> 00:00:48.045 And because they are b
NOTE Confidence: 0.9891453
00:00:48.045 --> 00:00:49.425 cells, they can travel
NOTE Confidence: 0.9105357
00:00:50.045 --> 00:00:51.600 throughout the body and can
NOTE Confidence: 0.9105357
00:00:52.000 --> 00:00:53.780 have this potential to disseminate
NOTE Confidence: 0.9105357
00:00:54.000 --> 00:00:56.019 the cancer through multiple tissues,
NOTE Confidence: 0.97311336
00:00:56.399 --> 00:00:58.660 which makes them, very dangerous.

NOTE Confidence: 0.9088226
00:01:02.960 --> 00:01:05.565 B cells themselves mutate their
NOTE Confidence: 0.9088226
00:01:05.565 --> 00:01:06.865 antibody genes,
NOTE Confidence: 0.98294383
00:01:07.165 --> 00:01:08.545 and the goal is to
NOTE Confidence: 0.98294383
00:01:08.685 --> 00:01:10.685 improve their affinity against the
NOTE Confidence: 0.98294383
00:01:10.685 --> 00:01:13.165 pathogen that was encountered. But
NOTE Confidence: 0.98294383
00:01:13.165 --> 00:01:14.125 at the same time, they
NOTE Confidence: 0.98294383
00:01:14.125 --> 00:01:15.584 need to rapidly proliferate,
NOTE Confidence: 0.9986728
00:01:15.885 --> 00:01:17.569 which sets the stage for
NOTE Confidence: 0.9986728
00:01:17.569 --> 00:01:19.430 the acquisition of unwanted mutations.
NOTE Confidence: 0.96417344
00:01:20.209 --> 00:01:21.910 And the second step is
NOTE Confidence: 0.96417344
00:01:22.130 --> 00:01:23.750 these cells, after mutating,
NOTE Confidence: 0.9972834
00:01:24.130 --> 00:01:25.490 they need to compete with
NOTE Confidence: 0.9972834
00:01:25.490 --> 00:01:26.770 each other based on their
NOTE Confidence: 0.9972834
00:01:26.770 --> 00:01:27.270 affinity
NOTE Confidence: 0.9210507
00:01:27.890 --> 00:01:29.955 to survive because the cells
NOTE Confidence: 0.9210507

00:01:29.955 --> 00:01:30.855 have to
NOTE Confidence: 0.97896254

00:01:31.235 --> 00:01:33.334 survive this very intense
NOTE Confidence: 0.92702156

00:01:33.635 --> 00:01:34.755 process, they are at a
NOTE Confidence: 0.92702156

00:01:34.755 --> 00:01:36.115 very high risk of becoming
NOTE Confidence: 0.92702156

00:01:36.115 --> 00:01:36.615 cancerous.
NOTE Confidence: 0.9768873

00:01:37.315 --> 00:01:38.515 So that's where my lab
NOTE Confidence: 0.9768873

00:01:38.515 --> 00:01:39.715 comes in, and we are
NOTE Confidence: 0.9768873

00:01:39.715 --> 00:01:41.555 trying to really understand the
NOTE Confidence: 0.9768873

00:01:41.555 --> 00:01:43.075 biology of these tumors, how
NOTE Confidence: 0.9768873

00:01:43.075 --> 00:01:44.595 they develop, what makes them
NOTE Confidence: 0.9768873

00:01:44.595 --> 00:01:46.540 resistant to treatment, then maybe
NOTE Confidence: 0.9768873

00:01:46.540 --> 00:01:48.400 we can identify their vulnerabilities,
NOTE Confidence: 0.973006

00:01:48.780 --> 00:01:49.820 what they depend on to
NOTE Confidence: 0.973006

00:01:49.820 --> 00:01:51.740 survive, and start targeting these
NOTE Confidence: 0.973006

00:01:51.740 --> 00:01:52.240 processes.
NOTE Confidence: 0.9111812

00:01:56.220 --> 00:01:56.960 We utilize

NOTE Confidence: 0.9952557
00:01:57.340 --> 00:01:58.480 precise immunological
NOTE Confidence: 0.99958783
00:01:59.180 --> 00:01:59.680 techniques
NOTE Confidence: 0.99336517
00:02:00.465 --> 00:02:02.085 that allow us to actually
NOTE Confidence: 0.9646585
00:02:02.545 --> 00:02:04.545 place b cells in competition
NOTE Confidence: 0.9646585
00:02:04.545 --> 00:02:06.225 with each other and to
NOTE Confidence: 0.9646585
00:02:06.225 --> 00:02:07.665 track these cells as they
NOTE Confidence: 0.9646585
00:02:07.665 --> 00:02:09.345 compete with each other to
NOTE Confidence: 0.9646585
00:02:09.345 --> 00:02:11.425 determine what they become and
NOTE Confidence: 0.9646585
00:02:11.425 --> 00:02:13.185 how cells that are winning
NOTE Confidence: 0.9646585
00:02:13.185 --> 00:02:13.764 the competition
NOTE Confidence: 0.9847201
00:02:14.065 --> 00:02:15.240 differ from cells that are
NOTE Confidence: 0.9847201
00:02:15.400 --> 00:02:16.460 losing the competition.
NOTE Confidence: 0.99493116
00:02:17.080 --> 00:02:18.440 We are also very much
NOTE Confidence: 0.99493116
00:02:18.440 --> 00:02:20.780 interested in understanding the metabolic
NOTE Confidence: 0.99493116
00:02:20.919 --> 00:02:21.419 regulation
NOTE Confidence: 0.9375426

00:02:21.800 --> 00:02:23.500 because for cells to survive
NOTE Confidence: 0.9375426

00:02:23.560 --> 00:02:24.380 and proliferate
NOTE Confidence: 0.9808953

00:02:24.680 --> 00:02:26.360 as they become cancer, they
NOTE Confidence: 0.9808953

00:02:26.360 --> 00:02:28.120 need energy to fuel their
NOTE Confidence: 0.9808953

00:02:28.120 --> 00:02:29.715 growth. And so we are
NOTE Confidence: 0.9808953

00:02:29.715 --> 00:02:30.855 interested in understanding
NOTE Confidence: 0.95881927

00:02:31.315 --> 00:02:33.335 what fuels these cells and
NOTE Confidence: 0.95881927

00:02:33.555 --> 00:02:34.775 how they use their energy.
NOTE Confidence: 0.95881927

00:02:34.835 --> 00:02:36.375 So maybe we can identify
NOTE Confidence: 0.846038

00:02:37.075 --> 00:02:39.255 metabolic vulnerabilities of these tumors.
NOTE Confidence: 0.9816222

00:02:39.794 --> 00:02:41.335 We then can take tumors
NOTE Confidence: 0.9392943

00:02:41.715 --> 00:02:43.620 and actually grow them in
NOTE Confidence: 0.9392943

00:02:43.620 --> 00:02:45.380 the lab. So we can
NOTE Confidence: 0.9392943

00:02:45.380 --> 00:02:47.160 test their response to different
NOTE Confidence: 0.9392943

00:02:47.459 --> 00:02:47.959 stimuli,
NOTE Confidence: 0.9215442

00:02:48.260 --> 00:02:49.780 the presence of other cells,

NOTE Confidence: 0.9215442
00:02:49.780 --> 00:02:50.520 the viability
NOTE Confidence: 0.9896675
00:02:50.900 --> 00:02:52.360 of different metabolic precursors,
NOTE Confidence: 0.9604399
00:02:52.819 --> 00:02:54.440 which is easier to modulate
NOTE Confidence: 0.9604399
00:02:54.500 --> 00:02:55.605 in the petri dish.
NOTE Confidence: 0.9934802
00:02:56.065 --> 00:02:57.845 And we also utilize
NOTE Confidence: 0.9989667
00:02:58.305 --> 00:02:58.805 tissues
NOTE Confidence: 0.9695305
00:02:59.265 --> 00:03:01.025 from tumors, and so we
NOTE Confidence: 0.9695305
00:03:01.025 --> 00:03:02.485 hope to identify
NOTE Confidence: 0.9774942
00:03:03.265 --> 00:03:04.625 things that they really need
NOTE Confidence: 0.9774942
00:03:04.625 --> 00:03:05.525 to thrive,
NOTE Confidence: 0.99755156
00:03:05.905 --> 00:03:07.125 not only in the lymphoid
NOTE Confidence: 0.9875204
00:03:07.425 --> 00:03:09.265 tissues, but also as they
NOTE Confidence: 0.9875204
00:03:09.265 --> 00:03:11.450 disseminate to other very different
NOTE Confidence: 0.9875204
00:03:11.450 --> 00:03:12.990 tissues throughout the body.
NOTE Confidence: 0.987475
00:03:16.889 --> 00:03:18.569 If we are able to
NOTE Confidence: 0.987475

00:03:18.569 --> 00:03:19.069 understand
NOTE Confidence: 0.9963618

00:03:19.450 --> 00:03:20.270 what differentiates
NOTE Confidence: 0.9562599

00:03:20.889 --> 00:03:21.870 a very aggressive,
NOTE Confidence: 0.7492498

00:03:22.250 --> 00:03:22.990 non responsive
NOTE Confidence: 0.9951842

00:03:23.530 --> 00:03:25.150 tumor, we can potentially
NOTE Confidence: 0.99919933

00:03:26.195 --> 00:03:26.695 identify
NOTE Confidence: 0.9877435

00:03:27.075 --> 00:03:29.255 the vulnerabilities of these tumors
NOTE Confidence: 0.9877435

00:03:29.315 --> 00:03:30.294 and design
NOTE Confidence: 0.9920293

00:03:30.595 --> 00:03:32.675 improved and personalized treatments for
NOTE Confidence: 0.9920293

00:03:32.675 --> 00:03:34.615 patients who currently remain incurable.
NOTE Confidence: 0.99847865

00:03:35.155 --> 00:03:36.535 I'm hoping that
NOTE Confidence: 0.9766506

00:03:36.835 --> 00:03:38.035 with this research, we are
NOTE Confidence: 0.9766506

00:03:38.035 --> 00:03:39.415 going to be able to
NOTE Confidence: 0.9766506

00:03:39.475 --> 00:03:39.975 advance
NOTE Confidence: 0.89765316

00:03:41.220 --> 00:03:42.440 biomedical research,
NOTE Confidence: 0.9885878

00:03:42.900 --> 00:03:44.980 not only to understand and

NOTE Confidence: 0.9885878

00:03:44.980 --> 00:03:47.060 better harness the capabilities of

NOTE Confidence: 0.9885878

00:03:47.060 --> 00:03:48.420 our immune system, but also

NOTE Confidence: 0.9885878

00:03:48.420 --> 00:03:50.340 to understand why cancer develops

NOTE Confidence: 0.9885878

00:03:50.340 --> 00:03:51.159 and how.