

WEBVTT

NOTE duration: "00:03:17.205"

NOTE Confidence: 0.9862657

00:00:04.960 --> 00:00:06.960 Working on male reproduction and

NOTE Confidence: 0.9862657

00:00:06.960 --> 00:00:08.740 male infertility or fertility

NOTE Confidence: 0.9677604

00:00:09.280 --> 00:00:10.800 is not only contribute to

NOTE Confidence: 0.9677604

00:00:10.800 --> 00:00:13.200 improve, male reproductive health, but

NOTE Confidence: 0.9677604

00:00:13.200 --> 00:00:14.500 certainly you can see

NOTE Confidence: 0.99951947

00:00:14.804 --> 00:00:16.505 it helps female reproduction

NOTE Confidence: 0.9902949

00:00:16.805 --> 00:00:18.884 because, you know, it is

NOTE Confidence: 0.9902949

00:00:18.884 --> 00:00:20.185 always working together.

NOTE Confidence: 0.9564079

00:00:23.685 --> 00:00:25.625 My lab studies ion channels

NOTE Confidence: 0.9564079

00:00:25.685 --> 00:00:27.525 and other signaling molecules in

NOTE Confidence: 0.9564079

00:00:27.525 --> 00:00:28.025 reproduction,

NOTE Confidence: 0.9995308

00:00:28.404 --> 00:00:29.465 trying to understand

NOTE Confidence: 0.98461694

00:00:30.060 --> 00:00:31.360 how they regulate,

NOTE Confidence: 0.9980147

00:00:31.980 --> 00:00:33.680 processes in fertilization.

NOTE Confidence: 0.9439463

00:00:35.100 --> 00:00:37.180 Casper is one of the
NOTE Confidence: 0.9439463

00:00:37.180 --> 00:00:39.420 ion channels specifically found in
NOTE Confidence: 0.9439463

00:00:39.420 --> 00:00:40.700 the tail of a sperm
NOTE Confidence: 0.9439463

00:00:40.700 --> 00:00:41.200 cells.
NOTE Confidence: 0.9899943

00:00:41.820 --> 00:00:44.079 Ion channels are key proteins
NOTE Confidence: 0.9899943

00:00:44.220 --> 00:00:45.545 in the cell membranes.
NOTE Confidence: 0.99861115

00:00:45.925 --> 00:00:47.465 They allow ions
NOTE Confidence: 0.96505505

00:00:47.844 --> 00:00:49.844 such as sodium, potassium, and
NOTE Confidence: 0.96505505

00:00:49.844 --> 00:00:51.364 calcium in and out of
NOTE Confidence: 0.96505505

00:00:51.364 --> 00:00:51.945 the cells.
NOTE Confidence: 0.96906507

00:00:52.964 --> 00:00:54.504 The activation of Casper
NOTE Confidence: 0.9436635

00:00:54.805 --> 00:00:56.485 lets calcium in, and the
NOTE Confidence: 0.9436635

00:00:56.485 --> 00:00:58.585 calcium is required for
NOTE Confidence: 0.86741334

00:00:59.045 --> 00:01:00.540 switching motility pattern
NOTE Confidence: 0.9652822

00:01:01.180 --> 00:01:03.180 into more vigorous and whip
NOTE Confidence: 0.9652822

00:01:03.180 --> 00:01:05.920 like motion that's necessary for

NOTE Confidence: 0.9652822
00:01:05.980 --> 00:01:08.060 efficiently navigate in the very
NOTE Confidence: 0.9652822
00:01:08.060 --> 00:01:08.560 viscous,
NOTE Confidence: 0.9652086
00:01:08.860 --> 00:01:10.720 environment in the female reproductive
NOTE Confidence: 0.9652086
00:01:10.780 --> 00:01:12.160 tract and also
NOTE Confidence: 0.9442681
00:01:12.540 --> 00:01:14.700 penetrate the outer layer of
NOTE Confidence: 0.9442681
00:01:14.700 --> 00:01:15.360 the egg.
NOTE Confidence: 0.98380613
00:01:16.725 --> 00:01:18.485 Without proper activity of the
NOTE Confidence: 0.98380613
00:01:18.485 --> 00:01:19.785 Casper, for example,
NOTE Confidence: 0.95042545
00:01:20.165 --> 00:01:22.105 human with a Casper mutation,
NOTE Confidence: 0.9992626
00:01:22.645 --> 00:01:23.385 they are
NOTE Confidence: 0.7604003
00:01:23.765 --> 00:01:24.584 hundred percent,
NOTE Confidence: 0.9947532
00:01:24.965 --> 00:01:25.785 male infertile.
NOTE Confidence: 0.9149636
00:01:29.205 --> 00:01:31.250 We use really a variety
NOTE Confidence: 0.9149636
00:01:31.390 --> 00:01:32.930 of methods ranging
NOTE Confidence: 0.99889916
00:01:33.230 --> 00:01:34.930 from human genetics
NOTE Confidence: 0.9695215

00:01:35.230 --> 00:01:36.370 to electrophysiology,
NOTE Confidence: 0.8658545

00:01:37.470 --> 00:01:37.970 biochemistry,
NOTE Confidence: 0.934081

00:01:38.830 --> 00:01:40.990 and functional imaging of our
NOTE Confidence: 0.934081

00:01:40.990 --> 00:01:41.810 life cells.
NOTE Confidence: 0.98991656

00:01:43.084 --> 00:01:45.905 One unique technology we routinely
NOTE Confidence: 0.98991656

00:01:46.045 --> 00:01:47.505 use is a super resolution
NOTE Confidence: 0.98991656

00:01:47.565 --> 00:01:48.065 microscopy
NOTE Confidence: 0.967025

00:01:48.445 --> 00:01:50.285 because sperm cells are the
NOTE Confidence: 0.967025

00:01:50.285 --> 00:01:51.905 smallest cells in the body.
NOTE Confidence: 0.94668025

00:01:52.445 --> 00:01:54.765 Using super resolution microscope that
NOTE Confidence: 0.94668025

00:01:54.765 --> 00:01:56.070 break the diffraction limit of
NOTE Confidence: 0.94668025

00:01:56.070 --> 00:01:58.070 light, you can have a
NOTE Confidence: 0.94668025

00:01:58.070 --> 00:02:00.869 spatial information of molecules in
NOTE Confidence: 0.94668025

00:02:00.869 --> 00:02:01.689 sperm tails.
NOTE Confidence: 0.9249265

00:02:02.149 --> 00:02:03.609 So we have a confocal
NOTE Confidence: 0.9249265

00:02:03.670 --> 00:02:05.829 and super resolution combination unit

NOTE Confidence: 0.9249265
00:02:05.829 --> 00:02:07.109 together with a live cell,
NOTE Confidence: 0.9249265
00:02:07.429 --> 00:02:09.050 imaging setup. So it's heavily
NOTE Confidence: 0.9249265
00:02:09.110 --> 00:02:10.330 microscopy lab.
NOTE Confidence: 0.9793162
00:02:14.605 --> 00:02:15.505 By understanding
NOTE Confidence: 0.96636224
00:02:15.805 --> 00:02:17.645 Casper function better and then
NOTE Confidence: 0.96636224
00:02:17.645 --> 00:02:19.885 finding ways to activate Casper
NOTE Confidence: 0.96636224
00:02:19.885 --> 00:02:20.385 function
NOTE Confidence: 0.8482919
00:02:20.845 --> 00:02:22.925 actually helped find a way
NOTE Confidence: 0.8482919
00:02:22.925 --> 00:02:23.745 to potentially,
NOTE Confidence: 0.82217175
00:02:24.205 --> 00:02:25.585 treat male infertility.
NOTE Confidence: 0.9504765
00:02:26.880 --> 00:02:29.860 Many steps in, fertility treatment
NOTE Confidence: 0.9504765
00:02:30.000 --> 00:02:32.080 are on females, regardless of
NOTE Confidence: 0.9504765
00:02:32.080 --> 00:02:33.840 whether the cause is a
NOTE Confidence: 0.9504765
00:02:33.840 --> 00:02:35.940 male or female factor. So
NOTE Confidence: 0.9504765
00:02:36.080 --> 00:02:38.560 reducing even one cycle of
NOTE Confidence: 0.9504765

00:02:38.560 --> 00:02:40.959 IVF by improving sperm function,
NOTE Confidence: 0.9504765

00:02:40.959 --> 00:02:41.685 even in vitro,
NOTE Confidence: 0.9665431

00:02:42.165 --> 00:02:43.705 vitro, it means a lot.
NOTE Confidence: 0.98074186

00:02:44.805 --> 00:02:45.305 Understanding
NOTE Confidence: 0.84471226

00:02:45.685 --> 00:02:46.665 Casper channel
NOTE Confidence: 0.94456506

00:02:47.285 --> 00:02:49.465 is basically enhanced fundamental
NOTE Confidence: 0.9403353

00:02:49.925 --> 00:02:52.185 understanding of how ion channels
NOTE Confidence: 0.9403353

00:02:52.325 --> 00:02:54.264 work and also how calcium
NOTE Confidence: 0.9403353

00:02:54.325 --> 00:02:56.549 signaling works, which is like
NOTE Confidence: 0.9403353

00:02:56.549 --> 00:02:58.290 a, you know, broader implication
NOTE Confidence: 0.9403353

00:02:58.349 --> 00:02:59.950 in cell biology and beyond.
NOTE Confidence: 0.9403353

00:02:59.950 --> 00:03:02.669 So it's really rewarding that
NOTE Confidence: 0.9403353

00:03:02.669 --> 00:03:04.450 in this area of research,
NOTE Confidence: 0.9403353

00:03:04.510 --> 00:03:05.709 which I can have a
NOTE Confidence: 0.9403353

00:03:05.709 --> 00:03:07.920 basic science research and then
NOTE Confidence: 0.9403353

00:03:07.980 --> 00:03:10.080 have a potential translation application

NOTE Confidence: 0.9403353

00:03:10.300 --> 00:03:11.580 which can, you know, impact

NOTE Confidence: 0.9403353

00:03:11.580 --> 00:03:12.480 human society.