SUPERIOR COURT OF CALIFORNIA

COUNTY OF ALAMEDA

BEFORE THE HONORABLE WINIFRED Y. SMITH, JUDGE PRESIDING

DEPARTMENT NUMBER 21

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COORDINATION PROCEEDING SPECIAL TITLE (RULE 3.550) ROUNDUP PRODUCTS CASE THIS TRANSCRIPT RELATES TO: Pilliod, et al. vs. Monsanto Company, et al.	**JCCP No. 4953** **Case No. RG17862702** **Pages 3815 - 4004** **Volume 24**

Reporter's Transcript of Proceedings

Monday, April 22, 2019

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Stenographic Court Reporters

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I N D E X

Monday, April 22, 2019

Monday, April 22, 2019 8:52 a.m.

P R O C E E D I N G S

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(Proceedings commenced in open court out of the presence of the jury:)

THE COURT: Good morning.

ALL: Good morning, Your Honor.

THE COURT: Happy Monday.

MR. BRADY: Good morning, happy Monday.

Your Honor, just a quick issue. If I may approach. We've prepared a couple PowerPoints for use with Dr. Nabhan.

May I approach, Your Honor?

THE COURT: Sure.

MR. BRADY: Okay. As you'll see on the second page, this is for Alva, and we have an MRI scan and we've just highlighted with a little red the areas where the tumors were present, where the pathology is noted on the MRI report.

Counsel has some objection to this. It's just demonstrative. It's hard to read a black and white MRI. This is exactly what he was treated with. We routinely mark these up.

MR. ISMAIL: Good morning, Your Honor. Since it's my objection, I think I'll address it.

So my specific objections, Your Honor, are to the -- do you have a copy of it?

THE COURT: I do.

MR. ISMAIL: They're not page-numbered, but it's this scan here.

THE COURT: Okay.

MR. BRADY: That's the PET scan.

MR. ISMAIL: And so this is not how the actual radiology image looks and not how the medical record looks. Counsel has added this provocative red highlighting throughout on what -- I don't know if they're going to say these are all tumors, they're not. But if that's what they're going to say, that's fine.

But our objection is that if they're going to display a radiology image to the jury, it should be actually the radiology image, not Photoshopped to make it look more prejudicial and scary.

THE COURT: What does the original look like? Do you have a copy of that?

MR. BRADY: It's just black and white. It's the same thing. We just added the red to show where there was indications on the MRI that there was tumor and that there was positive findings. And Dr. Nabhan is going to explain that. It's not provocative. It's just I don't know how else you'd highlight this.

THE COURT: Okay.

MR. ISMAIL: Yes, thank you, Your Honor.

And to be clear, we had a meet-and-confer over the weekend and we highlighted this objection to give them time to either pick a less frightening looking color or do what we think they should do which is show the image, and if Dr. Nabhan is qualified to walk through these radiology images, he should be able to explain to the jury.

Mr. Wisner used the unadorned scan in opening statements and was able to explain to the jury what was going on here. And we think this image is provocative, unnecessary, and distorts the underlying medical record that shows really what was going on.

So he could very easily with a laser pointer point and say: I believe there are tumors indicated here, here, and here.

They've highlighted things here which I don't even think they are going to claim are tumors. And it's just meant to be -- it's unnecessarily prejudicial. It's inaccurate, for one. It's Photoshopped. It's not the underlying radiology image. And I think clearly they should just use the actual radiology image.

THE COURT: Do you have the actual radiology image?

MR. BRADY: We do, Your Honor. But it's not Photoshopped.

THE COURT: Let me see it. Let me see it.

MR. BRADY: We can put it up on the screen. This just comes on to show where the positive findings are.

THE COURT: I heard that. I just want to see the image so that I can take a look at it.

MR. BRADY: I have the image. It's right on the presentation. We'll get it right up. You'll see.

And, Your Honor, this isn't Photoshopped. All this is doing is adding a little bit of color to the PowerPoint. There's nothing meant to be provocative here.

This is the slide itself, Your Honor.

THE COURT: Right. And so where's the --

MR. BRADY: Put it in play and go back one.

(Pause in the proceedings.)

MR. BRADY: It won't play.

TECH PERSONNEL: Just give me a second.

MR. BRADY: I'm sorry, Your Honor. I apologize.

This is just a standard image, though, from the MRI and we just added where the activity is. And Dr. Nabhan is --

THE COURT: You do like bright colors, don't you?

MR. BRADY: What?

THE COURT: I said you do like bright colors, don't you?

MR. BRADY: Well, it's easy for everyone to see. Dr. Nabhan can be questioned and cross-examined about it. We're not claiming these are all tumors. These are the positive things that lit up on the MRI. He had systemic --

THE COURT: I know, but a simple solution probably would have been, as we have now done in all of the videos, just tone the colors down a little bit so that you can highlight it but not make it look scary and all that. I don't know so much scary as it is just -- that would have been a great compromise over the weekend. That's okay. We didn't do that.

(Pause in the proceedings.)

MR. WISNER: We have it. He wants to make it perfect. For now we just want to see it.

MR. BRADY: Sorry, Your Honor.

THE COURT: And do you have the ability to change the colors at this point?

MR. WISNER: You'll see in the presentation, the colors don't start off there. They come in after.

MR. BRADY: They come in. And I think we can play it without. But let's just see it.

THE COURT: Oh, I see. This is sort of a --

MR. BRADY: It's just a PowerPoint.

THE COURT: It's slightly animated in the sense that there's some activity that's going on.

MR. BRADY: It's just it's going through -- when you get a disk of an MRI, it does this automatically, it goes through the disk slice of images and you stop it at the slice. So it starts off by doing that and goes to the slice.

(Pause in the proceedings.)

MR. BRADY: Can you go in play mode so it goes to full screen?

MR. WISNER: We can't. This is the best we've got.

MR. BRADY: This is the Stanford report. The reports are already in evidence and so are the scans themselves, Your Honor, and I just wanted to do this for demonstrative purposes.

THE COURT: I know, but that's not what we're talking.

MR. BRADY: It's no blood and guts, it's just red color.

MR. WISNER: All right, here we go.

Next. Go back.

MR. BRADY: Go forward and stop it. I thought the red came in on the click.

MR. WISNER: It doesn't.

MR. BRADY: I can't remove it at this point, Your Honor. I'm sorry. I thought it was done so it was in two clicks. It's just to indicate the areas where there was systemic evidence of non-Hodgkin's lymphoma.

I don't think it's scary. We're going to go right through it, and Dr. Nabhan can be cross-examined. He'll say this is, you know -- he'll explain what it is.

THE COURT: Why can't you change it?

MR. WISNER: We can do it. We can remove it.

THE COURT: You don't have to remove it. Just tone the color down. I mean, just tone the color down and we're fine.

MR. BRADY: Can we have five minutes, Your Honor? We'll tone the color down.

THE COURT: As long as you tone the color down, I think that might take care of the objection. And let me just make sure that that's all the objection. I don't have a problem with just tone the color down.

MR. BRADY: We'll fix it. Easy.

THE COURT: And so let me speak with counsel to find out if he has anything else he wants to say.

MR. ISMAIL: Thank you, Your Honor.

The other objection we noted to counsel yesterday was there's a medical record that's dated May 18th, 2011. It looks like this. It's not an image. It's a record.

THE COURT: Right.

MR. ISMAIL: And if you look the way they've underlined some information down in paragraph 7, 8, and 9.

THE COURT: Hold on. Maybe I'm looking at the wrong thing.

MR. BRADY: There's a second page on the back that has highlighting. It's the same record twice, one with and one without. There you go.

THE COURT: Okay.

MR. ISMAIL: So then the way they've done this is a PowerPoint. If they pop it up, I wouldn't have the opportunity to object to a question on relevance grounds so I'm raising it here.

None of these issues here about gallbladder or parapelvic renal cysts are at issue or relevant in the case and are being highlighted in this way as they are. The witness doesn't have any opinions about any of these organ systems. There's no claim here that --

MR. BRADY: Your Honor, let me stop

Mr. Ismail. We'll remove those. It's not part of the claim. These are just the impressions on the study. If that's a problem for the defense, we'll take them out.

THE COURT: Okay.

MR. ISMAIL: And while they're amending the image, Your Honor, the other issue is not on the PowerPoint.

Last night we received an updated reliance list for Dr. Nabhan. Actually we received several over the weekend but one last night is the one I want to raise.

In it, they disclose a rodent study relating to a topic that Dr. Sawyer testified to, absorption, organic excretion of formulated product in a rodent study.

And I told Mr. Miller that we object to Dr. Nabhan doing it because, A, he's admitted he's not an expert in animal cancer bioassays. And more importantly he testified in his deposition he has no opinions about absorption, excretion, metabolism of formulated glyphosate.

And so the night before he takes the stand, he discloses an article on that very topic. We think he should be precluded by his own words, his own testimony he has no such opinion.

MR. MILLER: It's already been shown to the jury. And we're just using it to explain how glyphosate gets into the bone marrow. He has testified extensively, repeatedly at deposition that non-Hodgkin's lymphoma starts in the bone marrow, and that's all we're doing. He's not trying to become a toxicology expert or expand into new opinions.

THE COURT: What does that look like in terms of his testimony? So if he's relying on it -- just run me through quickly what it is he's going to say.

MR. MILLER: Sure. Well, he said all along obviously that Roundup causes non-Hodgkin's lymphoma, it caused it in Al and Alberta, and he goes on to describe what non-Hodgkin's lymphoma is, how it starts in the bone marrow.

This is a study that we showed the jury last week that shows Roundup gets into the bone marrow. That's all we're using it for. Not any new opinion.

MR. ISMAIL: Sure. It is indeed a new opinion, Your Honor. He was deposed and asked specifically whether he has any opinions on the absorption of glyphosate, and he says he has no opinion on that topic. He was asked about whether he has any opinion on how rapidly glyphosate is excreted from the body. He testified he has no opinion about that. He

was asked about the metabolism. He said he has no opinion about that.

THE COURT: So in term of introducing it for the purposes of him saying it starts in the bone marrow, how does this study come in then?

MR. MILLER: The study shows that -- and Dr. Sawyer talked about it last week, Your Honor -- that over a seven-day period glyphosate stays in the bone marrow, is what it shows. It's a table we wanted to show, that's all.

THE COURT: No.

MR. MILLER: Okay.

THE COURT: He can just come in with his opinion about it starting in the bone marrow and go from there.

MR. MILLER: Very well, Your Honor.

MR. ISMAIL: Thank you, Your Honor.

There's going to be a treater video deposition first thing this morning.

MR. MILLER: Right.

THE COURT: I can't even remember Friday. Did we start that? Or Thursday, did we start that?

MR. ISMAIL: This is brand-new. Dr. Gupta.

So if before Dr. Nabhan takes the stand, I'd like to just eyeball the revised -- before the

PowerPoint --

(Simultaneous colloquy.)

MR. WISNER: One last thing, Your Honor.

Last night we negotiated a stipulation and an instruction that we'd like the Court to read to the jury just before Dr. Nabhan testifies. So it will be after Gupta. I believe Mr. Evans has a copy for Your Honor.

THE COURT: Okay.

MR. EVANS: Yes, Your Honor. And just for the record, this is the stipulated language. And we, of course, objected to this evidence coming in altogether. Since Your Honor ruled that the number of lawsuits that had been filed at the time that Mr. Pilliod stopped using Roundup would be admissible, this is a stipulation regarding that. But, again, we continue to object and maintain our opposition to the admission of the evidence.

THE COURT: Okay. All right. That's fine.

MR. MILLER: Thank you, Your Honor.

THE COURT: Let me just figure out if all the jurors are here.

COURT ATTENDANT: All the jurors are here, Your Honor.

THE COURT: Give me just a couple of minutes and we'll get going.

And I have Mr. -- I'm almost finished with the other, but I have Mr. Guard ready today. And then by the end of the day I'll give you the other one.

MR. WISNER: Thank you.

THE COURT: You're welcome.

(Recess taken at 9:09 a.m.)

(Proceedings resumed in open court in the presence of the jury at 9:19 a.m.)

THE COURT: Good morning.

ALL: Good morning.

THE COURT: I hope everyone had a nice weekend.

Okay. So we're going to continue on with the plaintiffs' case. And I'll let either Mr. Wisner or Mr. Miller introduce our next witness.

MR. WISNER: Yes, Your Honor.

At this time, the plaintiffs call Dr. Neel Gupta by video deposition. The deposition was taken on January 23rd, 2019, here in the Bay Area. The total run time is 56 minutes, of which 25 minutes is the plaintiff, 31 minutes is the defendant.

MR. ISMAIL: Your Honor, we just need to caucus with counsel for a minute. There's a question.

(Counsel confer off the record.)

MR. WISNER: Apologies, Your Honor. We have

different run times. So we're worried that we have different videos, and we want to make sure we play the right one.

(Pause in the proceedings.)

THE COURT: Do you need a minute to work this out? We can take a break.

MR. WISNER: I'm so sorry, Your Honor. Can you give us a five-minute break. I apologize. We don't want to play the wrong video.

THE COURT: No, no, I know. I'm just saying if you're going to take a minute, I understand.

MR. WISNER: Sorry.

(Recess taken at 9:25 a.m.)

(Proceedings resumed in open court in the presence of the jury at 9:42 a.m.)

THE COURT: We're all set now.

MR. WISNER: Yes, Your Honor. It is now 46 minutes, instead of 56.

THE COURT: Okay. That's fine.

(Video excerpts from the deposition testimony of Neel Gupta played in open court; not reported herein.)

MR. WISNER: We have one short redirect that's our portion. It's about six minutes and then it will be done.

(Video excerpts from the deposition testimony of Neel Gupta resumes playing in open court; not reported herein.)

MR. WISNER: That concludes the video deposition, Your Honor.

THE COURT: Why don't we take a 10-minute break and get started because we're going to break for lunch at about 12:15 or 12:10.

Why don't we take our break now and start at a quarter of. Thank you.

(Recess taken at 10:34 a.m.)

(Proceedings resumed in open court in the presence of the jury at 10:52 a.m.)

THE COURT: We're going to resume with the next witness that will be presented by Mr. Miller.

However, before we begin that testimony, I will read a stipulation reached by the parties. And as you will recall in the introductory instructions, I mentioned what a stipulation means. And what it means is the parties have agreed on these facts and these facts are true for this case once they have agreed to them.

And the stipulation is as follows:

As of November 1, 2016, 153 people had filed lawsuits against Monsanto

alleging that glyphosate-based formulations caused non-Hodgkin's lymphoma. You may not consider these lawsuits as evidences that glyphosate-based formulations cause non-Hodgkin's lymphoma or that glyphosate-based formulations caused Mr. or Mrs. Pilliod's non-Hodgkin's lymphoma. That would be improper.

The fact that the lawsuits were filed does not make the allegations in them true. You may consider these lawsuits as evidence that Monsanto was on notice of claims of non-Hodgkin's lymphoma before Mr. Pilliod stopped spraying Roundup.

(End of stipulation.)

THE COURT: Okay. And now, Mr. Miller, you may proceed.

MR. MILLER: Thank you, Your Honor.

We call our last medical expert, Dr. Chadi Nabhan.

THE COURT: And, Dr. Nabhan, if you would stand and be sworn.

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CHADI NABHAN,

called as a witness for the plaintiffs, having been duly sworn, testified as follows:

THE WITNESS: I do.

THE CLERK: Thank you. Please be seated.

And would you please state and spell your name for the record.

THE WITNESS: Chadi Nabhan. C-H-A-D-I, N-A-B-H-A-N.

THE COURT: All right. You may proceed.

MR. MILLER: Thank you, Your Honor.

DIRECT EXAMINATION

BY MR. MILLER:

Q. Good morning, Dr. Chadi Nabhan. How are you, sir?

A. Good morning.

Q. I appreciate you coming.

Where did you come from to talk with us today?

A. Chicago, Illinois.

Q. And tell us a little bit about yourself.

A. I'm a hematologist and medical oncologist by training. I did my fellowship at Northwestern University in Chicago, preceded by residency at Loyola University. And prior to my residency, I did a couple of years of research at Mass General and Harvard Medical

School in bench research mainly.

After I finished my fellowship, I practiced at two major institutions in the Chicago area. One is Advocate Health Care and the other is the University of Chicago until 2016.

I don't know how far you want me to go or how forward I should go.

Q. Well, that's fine.

A. No problem.

Q. You became -- we heard about you go to medical school, you do a residency, and then you can do a fellowship?

A. Yeah. So I did my residency was from '95 to '98. I took a year off, and I did primary care from '98 to '99 in an underserved area in the south side of Chicago. And in '99 I went back to do my fellowship at Northwestern University from '99 until 2002.

I'm board certified in hematology, oncology, and internal medicine.

Q. Is that what we call triple-boarded?

A. That I'm boarded in three specialties.

Q. What states are you licensed to practice medicine in, Dr. Nabhan?

A. The states of Illinois, Wisconsin, Indiana, Florida, and California.

Q. You've told us you were at University of Chicago Medical School. What did you do there?

A. So at the University of Chicago, I was there from 2013 until the late summer of 2016. I did clinical work, teaching, and administrative work.

My clinical work was essentially lymphoma. I mean, I treated patients with lymphoma, all kind of lymphoid malignancies.

And that was the topic of my research as well in terms of clinical trials in lymphoid malignancies, various types of lymphoid malignancies.

On the administrative side, I was the director of the cancer center from the clinical operations standpoint. So I was in charge of the throughput, how patients get seen, referrals, and making sure that we maintain a good network with the university as well as the community surrounding the university.

So my official title was director of the clinical cancer center. And I was an associate professor of medicine. And then I left the University of Chicago in August 2016.

Q. How many non-Hodgkin's lymphoma patients did you treat in an average week?

A. So, I mean, that's all I saw when I was there. I had a very small practice, about 10 percent with

prostate cancer. But I would say probably about 40 a week, give and take, depending whether I have a busy clinic or not busy clinic. That's between new patients and returns.

I had a lot of patients that were sent to me, complicated cases from the surrounding community. You know, oftentimes if there are difficult lymphoma cases that are seen, the community oncologist would text you or call you and just ask your opinion or send a patient to you and so forth. So --

Q. During your many years of treating non-Hodgkin's lymphoma, did you treat diffuse large B-cell?

A. You have to. It's the most common one. About one-third of non-Hodgkin's lymphoma is diffuse large B-cell lymphoma. So obviously it represents a big portion of the practice that I had.

Q. And we've already heard about Alberta's cancer, primary central nervous system lymphoma. Did you also treat that?

A. Yeah, actually I did. And I was a co-investigator on the clinical trial that you just heard that was ran by Dr. James Rubenstein at UCSF because the MT-R regimen that was published in 2013 became a regimen that we all wanted to use. And the

question actually moved on into after patients complete that regimen, should they undergo the, quote, unquote, EA chemotherapy, which Mrs. Pilliod did receive, or should they undergo autologous stem cell transplant.

So there was a randomized trial that was ongoing, and I was the local investigator at the University of Chicago. So I was the principal investigator and he was the national investigator. So I had actually a lot of patients with primary CNS lymphoma that I saw when I was there.

Q. All right. Now --

THE COURT: Hang on a second.

Could you slow down just a little bit.

THE WITNESS: My apologies, Your Honor.

THE COURT: That's okay.

Can we just take one quick break to get my realtime?

MR. MILLER: Of course.

(Pause in the proceedings.)

BY MR. MILLER:

Q. All right. So how many years did you treat non-Hodgkin's lymphoma patients?

A. Well, again, I started my fellowship training in 1999, so 20 years, I mean, obviously in different capacities between fellow and being faculty and

attending. I have seen some of these patients when I was a resident in '95 to '98. But I've been treating lymphoma patients for the past -- since 1999.

Q. Okay. And you didn't have enough education, you went back and got another degree?

A. Yes, at the dismay of my family and my twin boys, I did. I decided to go back to school and get an MBA, master's of business administration, focusing on health care management. And really the -- what sparked this is a lot of changes happening in health care, drug prices going up, drug prices going down. There's a lot of economics that intersect with medicine. I've seen that in my practice when patients come in and they ask a lot of questions in terms of how things affect their treatment.

In addition, the way to operate the clinical cancer center -- we had about 48,000 visits a year -- required a little bit more understanding of the business aspect.

So I decided, you know, it's good to try to take a little bit of time in my spare time on the weekends and go back to school. So I did that actually full-time for two years from '014 to '016 at Loyola University Quinlan School of Business.

Q. And you obtained a master's in business

administration?

A. I did.

Q. And when did you stop full-time treating patients for non-Hodgkin's lymphoma?

A. August 12th, 2016.

Q. Okay. And where did you go to work then?

A. So my plan actually was to stay -- to stay on the provider side with health care, but I had an opportunity to hopefully impact patient care at a larger and broader scale, and I was recruited to be chief medical officer at one of the divisions at Cardinal Health.

Cardinal Health is a health care company mainly based in the U.S., at one of their divisions called Specialty Solutions that is composed of about six business units. And they recruited me to be the chief medical officer of that division, the Specialty Solutions. So I accepted that offer and I joined the company the first week of September 2016.

Q. Okay. How long were you at Cardinal Health?

A. For two and a half years.

And currently I joined a much smaller company, for various reasons, basically because it has more of a global presence outside the U.S. I always considered myself and my journey is about continuing to learn and

understand more and challenge myself. So the smaller company provided me with two opportunities.

Number one is they have a presence in the European market, and I wanted to understand what happens in the EU versus the U.S. I think it goes without -- everybody knows in this courtroom that there are various differences in how health care is delivered here in the EU, and being with this new company, smaller company, called Aptitude Health allows me to actually understand what happens with the European markets and the European investigators. So I work a lot with the lymphoma in the EU as opposed to just the U.S.

And the other thing that really was intriguing to me, it provided me with an opportunity to be more of a mentor and be in charge of one clinical department.

When I was at Cardinal Health, I was almost as a shared service between all the business units. I should describe there are six business units and I had to -- I was almost a shared service for all of them. And this one was much smaller. So I have the 20 people who are a team of scientists and Ph.D.s and MPHs, and I work with them to try to figure out how we can actually move the needle forward.

So it just gave me different opportunities that I didn't have. And it wasn't an easy decision,

it's never an easy decision, but it's the right decision for me.

Q. So during your two years at Cardinal Health, did you still use your experience as a treating oncologist in the job?

A. Two and a half years, counsel.

Q. Two and a half years.

A. But, yes. I mean, I think again my role is to use that expertise as a medical oncologist and a hematologist in working with manufacturers as well as medical oncologists and hematologists. Who essentially I sat in the middle between two major stakeholders that are interested in oncology. Obviously my services to each stakeholder were different, but I had to use that expertise to make sure that's part of my job.

The research that I did when I was there and I continue to do now is focus on health economics outcomes research, essentially in lymphomas and leukemias.

In fact, I was just invited last week by the American Society of Hematology to be an abstract reviewer for the lymphoma section that's being submitted to -- in December 2019. And the American Society of Hematology is our largest society and the largest society of hematologists in the world.

So, yes, part of my role is to continue to be

engaged and involved in research but at much broader scale as to what I was doing at one institution one hospital at a time.

Q. Let's walk this forward. It's late April, I think. May and June, are you going anywhere to lecture people about non-Hodgkin's lymphoma?

A. So every June, Chicago hosts the American Society of Clinical Oncology. We've been hosting that meeting for the past 10 years. I think people like to travel to Chicago in the summer.

So from -- you know, the American Society of Clinical Oncology will happen in Chicago. Basically the weekend after Memorial Day for four days. So from May 31st until June 4th. And you will have 25- to 30,000 oncologists in the Chicago area. And obviously I will be there. We have a couple of poster presentations at that meeting.

And then after that, there are two major meetings that take place. One is -- for short, we call it EHA, which is the European Hematology Association, which is taking place in Amsterdam.

Q. Will you go to that?

A. Yes.

Q. Will you be presenting there?

A. At EHA I will be moderating. I'll be

moderating a session of leukemia for European leukemia investigators.

But I'm actually very excited about the meeting after that. Not that I'm not excited about EHA, but the meeting after that is called ICML, which is the International Congress for Malignant Lymphoma. This is by far the largest and the best lymphoma meeting in the world.

It actually is -- you know, I remember going there as a fellow, and it's just an amazing meeting. It started in 1981 with only 60 people, and now it grew to over 5,000. And it still happens in a small town in Switzerland called Lugano.

So at that meeting, I am moderating two sessions. One of these sessions gathering again European lymphoma investigators and talking about all of the new updates that have been presented at that meeting, as well as the EHA meeting, and the impact on clinical practice.

I think when you do this as long as I have, you realize that sometimes research doesn't really translate into clinical practice every day. There's a huge gap. And one of my roles is to try to understand why this happens. If you have an effective therapy that is working, why does it really take a couple years, for

example, until you have the uptake in the health care community.

The other meeting I'm moderating at that Congress is on CAR-T cellular therapy. And CAR-T is literally the newest thing in lymphoma and it has probably saved a lot of patients' lives over the last couple of years. And it is available in the U.S. It's not available in Europe yet, as much as the European patients need it, because the payor system is very different there. And it's very regional and it's whether it's the EU versus each country.

So I'm gathering 10 investigators from each different European country and we're going to talk about CAR-T and specifically the logistical challenges and what things need to be done to improve on that.

And the goal is after that meeting to have a consensus paper that we bring out that will allow people to address these logistical challenges.

So I'm really very excited about both of these meetings, aside from mingling with other investigators and getting connected and seeing what else is happening.

Q. We're going to talk more about some of your research projects in a minute. But have you had the opportunity to teach the upcoming generation of oncologists; is that something you've done?

A. Yes. I've been very blessed and very thankful to do that.

Now, my teaching was more structured when I was at the university, of course, because you actually have students and residents and fellows come to your clinic and see you, and you see patients with them and they see patients with you and you discuss these cases.

But right now it's a little bit more mentoring from afar as well as teaching the students and fellows a little bit differently.

It actually became a little bit broader that when I lecture and talk to oncologists who are in practice, you know, you're teaching the people who are already practicing which also gives you a little bit more of a different gratification and satisfaction.

Q. So when we say teaching fellows, you're teaching young men or women who are going on to sit for the board exams; is that right?

A. Yes, but that's when I was at the University of Chicago. I had fellows and residents and students who actually come to my clinic. And especially the ones who are interested in lymphoma. And we would see patients together and we would teach them and go through articles and so forth.

It's more structured when you are in a

university setting. So I don't have that currently at my current position in terms of having actual clinic that they come to.

Q. When you were at the University of Chicago and you taught fellows, what percentage of your fellows went on to pass?

A. I -- I can't take credit as the only person who taught them. I think hopefully everybody understands that it's a teamwork and I'm not the only teacher and there are many other teachers.

But we certainly have very good pass rate at the University of Chicago, close to 100 percent. So we're very blessed. But I can't take credit for that. I'm just one of the team.

Q. It takes a village?

A. Yes.

Q. Okay. Let's take a minute and look at your CV. Then we'll move off qualifications if we could.

MR. MILLER: Permission to publish Exhibit 3045.

THE WITNESS: Am I supposed to look at something here?

MR. MILLER: Yes. It should be up there. It's already up there, Your Honor.

THE COURT: Thank you.

MR. MILLER: In that -- it will be on the screen in a minute. Maybe we'll have to ask. It should be the first exhibit.

MR. ISMAIL: No objection, Your Honor.

MR. MILLER: Well, let's publish that.

(Exhibit published.)

BY MR. MILLER:

Q. And I want to go -- this is your CV. We've redacted your home address and e-mail. But is that your CV?

A. Yes.

Q. Okay. And I just want to look at a few things.

MR. MILLER: Page 8, if we could blow up the licensing and board certifications there.

(Exhibit published.)

BY MR. MILLER:

Q. Your license are certified by all of these organizations?

A. There's only one update that I think this was an older version. The State of California, I just renewed it to 2021. So it currently says 2019 August 31st, but it's through 2021.

And -- well, you have the internal medicine 2020 correct.

Q. Okay. Let's go to page 9, if we could. And I know you don't like to brag, but I want to look at some of this. 2016, you were selected one of the top doctors by *Chicago* magazine?

A. I was.

Q. 2015, you were selected by Castle Connolly as one of the top doctors in America?

A. I was.

Q. And then in 2015, you were also selected as a top cancer doctor in the United States by ***Newsweek*** Health?

A. Yes.

Q. Let's go to some of your scholarly publications. We won't go over them all, but just to summarize it. You've published, it looks like 159 articles in the peer-reviewed literature?

A. No, it's actually over 300. The 150-plus were the original contributions. And then about 150 of editorials, commentaries, and review articles. So in total I have over 300 between abstracts and papers and so forth.

Q. Okay. And I don't want to look at all of them, but I want to ask about some of them. If we could go to page 11, you were an author on number 4. And I always say this wrong: Lenalidomide?

A. Yes, this is actually -- I love this study because this is what we call an investigator-initiated trial. This is a concept that I thought about of adding lenalidomide, or Revlimid, to chemotherapy in patients who had double-hit lymphoma or double-expressor lymphoma which are the ones who co-express the BCL2 and the MYC.

So standard, anybody right now today in 2019, that comes in with diffuse large B-cell lymphoma, we check for the MYC and BCL2, these are oncogenes, because we want to know if they have what we call double-hit or not. It does affect management sometimes.

So I thought of this idea back in 2013. And it was so humbling to actually see it finally in print, and it just got published a couple weeks ago actually in *Cancer*, February 1st, 2019.

And the first author -- we are both coauthors, me and Dr. Godfrey -- he was actually a graduating fellow, and I told him that, you know, he can get the first authorship with me, allows him to get a little bit more exposure, part of mentoring him, and this was obviously three years -- almost three years after I left the University of Chicago. But that relationship continues forever.

Q. And I bring it up for a couple of reasons, but one of them is that is the drug that Alberta Pilliod is

currently on, isn't it?

A. Yes. She is currently on that. But she did not have the disease that the trial was talking about.

Q. Oh, I understand.

A. Sure.

Q. She had another type of B-cell called primarily central nervous system; right?

A. Correct.

Q. All right. Let's go to number 9 and look at that article you just published in 2018, "Prognostication and treatment of diffuse large B-cell"; right?

A. Yes.

Q. Is something you've studied over the last 20 years?

A. Yes. I mean, when you do lymphoma as I did, you have to understand the prognosis, the treatment, all of these things.

Q. You also wrote, if we turn to tab 16 -- I'm not going to go through every one of them, but I want to go through a few -- "Reengineering critical laboratory testing for timely chemotherapeutic management."

A. Yeah. That's part actually -- remember, I told you I was the director of the clinical cancer center in trying to understand what patients go through.

Hopefully none of you here have had to go through this. But many times patients go to the clinic, they get their blood drawn, and they're waiting for an hour and a half until they get the results of the blood work before they receive the chemotherapy because if the blood work is not good, you don't get chemotherapy. If the blood work is good, you get chemotherapy. And you see the wait area full of patients.

And it really bothered me because it's just -- I mean, we should do a little better efficiency for patients. So I worked with the lab at the University of Chicago and said what can we actually do to make sure we have faster turnaround time of this blood work so at least patients sitting for an hour to get their blood test, they wait 15 minutes.

And we were actually able to reconfigure the entire operation to make it easier for patients, and we presented that at the national meeting and then we published it.

Q. All right. Now, you know later we're going to talk about Monsanto's theory that somehow the Pilliods were immunocompromised; you're aware we're going to have that conversation?

A. I'm sure we will.

Q. Yeah. Let's go to tab 30 of your

publications. And I just want to point out, you've apparently written on this subject before.

"Impact of treatment variability on survival of immunocompetent and immunocompromised patients with primary central nervous lymphoma."

You're one of the authors?

A. Yes.

Q. Wrote about this back in 2017?

A. It was a lot of work, actually. We collected a lot of data on over 100 patients with primary CNS lymphoma from across all the Chicago institutions.

The first author was also a junior investigator at the time, and we worked together. She's currently at Northwestern. But, yes, I mean, we basically tried to understand -- it was focused on treatment, right? It was focused on how do patients with primary CNS lymphoma get treated in the community setting outside of a clinical trial. And that's really the immunocompromised state or the immunocompetent state have an impact on the outcomes and the prognosis. That was really the gist of the paper.

Q. All right. Just a few more.

Page 14, tab 37. What was this study about? "Surveillance imaging for Hodgkin and diffuse large B-cell patients who are in remission."

A. Yes, so this was published in *JAMA*. And frankly it sparked my interest because when you do what I do and you see a lot of patients who come in with lymphoma, you see a lot of variability in the way patients are being managed outside, as well as a lot of variability in the diagnostic testing and the imaging studies that they have.

So I really wanted to provide guidance and guidelines into patients who have diffuse large B-cell lymphoma or Hodgkin at the time. When they finish treatment and they are in remission, what is the optimum way to survey these patients and what type of imaging studies should they have. Because it was all over the board.

And I think that I found this to be very important to clarify. And I was humbled the *JAMA*, which is one of the major journals in the world, liked it and accepted it for publication.

Q. When we say *JAMA*, we mean *Journal of American Medical Association*; right?

A. Correct.

Q. And you've been an editor for them, haven't you?

A. I've been a reviewer for them, but I am on the editorial board of *JAMA Oncology*. So *JAMA*, as a

journal, they have various -- there's *JAMA Cardiology*, *JAMA Pediatrics*, *JAMA Surgery*, *JAMA Psychiatry*, and there's *JAMA Oncology*. And I've served on the editorial board of *JAMA Oncology* since 2014 which is actually since the year it was incepted. And so far actually it's been very popular. And the impact factor of that journal exceeds 20 right now which is, again, a very pleasant experience to be part of a team that actually made that happen.

Q. Okay. I want to go a few more.

Page 17, article 69, and highlight that.

(Exhibit published.)

BY MR. MILLER:

Q. You did an analysis of very elderly non-Hodgkin's lymphoma, impact of functional status and comorbidities on outcome. You published that in 2011?

A. Yeah, e-pub, which is electronically in 2011, it was in print in 2012.

And again, part of my -- I had been always interested in elderly patients with cancer, specifically lymphoma. I mean, all cancers, the older we get, the sicker we are going to be, that's just a fact, just the way it is. But I think it was very interesting that patients with lymphoma who are older sometimes may not be managed similarly to people who are younger. And it

was important for us to figure out why is that and what are the factors that play a role in decision-making for somebody when they have a type of lymphoma.

So this was 300-plus patients actually. Again, retrospective analysis of many patients that were treated in the Chicago area that we looked at.

Q. Just two more on this page.

79, you've published on ulcerative colitis and that relationship with cancer, haven't you, sir?

A. Yes. I mean, I'm not a gastroenterologist, but this was a paper where we found particular unusual presentation of a cancer in somebody with ulcerative colitis. And my fellow at the time, who is currently a practicing oncologist, Dr. Ragam, published that as a case report in the *Journal of Clinical Oncology*.

Q. Okay. And you again, in 2007, number 80, published an article on Hodgkin's lymphoma involving the central nervous system; is that right, sir?

A. Yes.

Q. Just about done with that.

I want to talk about some of your clinical trials that you've conducted. Will you go, please, to page 39.

At the bottom of the page there, it looks like you were an investigator for three years in elderly

patients with diffuse large B-cell level who are deemed suboptimal for R-CHOP.

Just generally what was that about?

A. So IIT by the way, stands -- just alone before the title, stands for "investigator-initiated trial," which means that me as the investigator think of the idea, and then try to seek funding for the idea either from the manufacturer or particular drug that I am investigating or sometimes from a cooperative group or the National Cancer Institute or whatever it is.

So again it goes back to the same theme that patients who are older sometimes don't get treated in the same way. This is, by the way, well-known fact. I mean, there's no -- this is just a fact that older patients don't always receive the same treatment as younger patients. There's a perceived -- some physicians perceive they may not tolerate therapy and many other patients could have other comorbidities, heart disease, other things they may preclude the right therapy.

So in my practices, there are some patients who would not be able to receive R-CHOP, which is the standard therapy for the majority of patients with diffuse large B-cell lymphoma. So I designed the study which combined -- took away two very aggressive

treatments with the R-CHOP and replaced them with two other compounds. And we designed this trial at the time. And obviously I left in 2016 so, you know, it was picked up by somebody else.

Q. Okay. And I bring it up because it was Al Pilliod who had R-CHOP; right?

A. Yes, he did.

Q. Now let's just go to the next page.

Suffice to say you've done research all the way back to 2004 where you've received grants from various people to study these issues we're talking about?

A. I've been fortunate to do research studies in the past. So I'm blessed with that.

Q. Several drug companies here. I'm not going to name them all. But you've been asked or provided funding by drug companies to look at various issues; fair?

A. I have been, yes.

Q. If we go to page 51, I just want to look at some of the journals that you've been a reviewer for. Again remind us what is a journal reviewer?

A. So a journal reviewer is basically if somebody submits a paper to a particular journal, usually the editor of that section or the editor in chief, they do a

first pass on it and they say, okay, this is either great paper, we're going to send it to other people to review and decide if we accept or not, or this is garbage, we're not going to even publish it, and they just get rejected.

So I again review for a variety of journals. My time is very limited so I don't always accept all of the invitations to review. I've become very selective into which articles I say yes to review or not.

But essentially you are part of the decision-making for that journal. You review the paper, you review the methods, and you say I reject it or I accept it with revisions or I have the following recommendations to strengthen it. And then you submit your blinded review essentially to the editor or to the journal.

There are several other people who are doing the same. And then the journal makes the decision whether they publish it or reject it or revise it.

Q. Okay. And those are the journals that you have done this process for?

A. Yes.

Q. And I think right below that it mentions you are on the editorial board we talked about at *JAMA*?

A. *JAMA Oncology*, yes.

Q. Okay. So I've got a question. Why have you worked so hard to become the doctor you are today?

A. I don't know if this is the platform to share this. But, I mean, some things happen by chance and some things happen by plan. I really never thought growing up I will be a physician. I thought initially I was going to be journalist.

But, you know, one of those journalists who writes an article and then the president resigns or something. But that didn't happen.

I did actually well in medical -- when I was in Syria, the system is if you score very high in high school, at the top nationwide, you can pretty much select and choose whichever school you want to go to.

And I chose medical school personally because I felt that the human connection is honestly something that is very difficult to replace.

I think the trust that patients have in their physician is something that is noble and it's very important to cherish forever. I mean, you basically are trusting this individual that you're probably meeting for the first time with your life essentially. And sometimes you have to make a decision right away, do I trust the decision or not trust, do I take the therapy or not. Occasionally you get a second opinion, a third

opinion.

But that type of trust, in my opinion, in my humble opinion is not something that is present in any other specialty in the world or any other profession. I mean, it's just you're trusting them with the thing that is the most valuable to you which is your health and life.

MR. MILLER: Your Honor, at this time, I move Dr. Nabhan as an expert in the diagnosis, treatment, prognosis of non-Hodgkin's lymphoma, including the causes and risk factors of non-Hodgkin's lymphoma.

THE COURT: Voir dire?

MR. ISMAIL: Yes, Your Honor.

VOIR DIRE EXAMINATION

BY MR. ISMAIL:

Q. Good morning, Doctor.

A. Good morning.

Q. So what I'd like to do is cover some of your background and your areas that you believe you have expertise. Okay?

A. Sure.

Q. So I'd like to kind of work backwards and focus on your current company called Aptitude Health. Did I hear that correctly?

A. Yes, you did.

Q. And you're an executive vice president there?

A. And chief medical officer, yes.

Q. And your company describes itself as: We provide the world's leading life sciences companies physician access, market insights, and strategic solutions to help translate clinical development into clinical success in life-changing cancer treatments.

Is that a fair description of what Aptitude Health does?

A. It's a fair description. It may not be inclusive. You can't put everything on the website, but it's certainly a fair description as an introduction.

Q. Great.

And focusing on your work there at Aptitude Health. Do you still have your CV in front of you, Exhibit 3045?

A. I can pull it.

Q. Terrific.

A. I do have that.

Q. All right. And I'm just waiting for our screen to wake up over here.

If you don't mind, just go to page 2 of that.

MR. ISMAIL: Let's call out the first bullet points.

(Exhibit published.)

BY MR. ISMAIL:

Q. So this is part of your résumé that you didn't go over with Mr. Miller; correct?

A. It's part of the résumé, yes.

Q. Okay. So the first bullet point you describe -- and this is in your own words when you describe what you do today; correct?

A. Sure, yes.

Q. And so you say you're responsible for oversight and educational contribution to the Aptitude Health scientific content and publication teams governing the U.S., EU, and global markets; right?

A. Yes.

Q. Now Aptitude Health, by and large, your clients are the drug companies, pharmaceutical companies; correct?

A. And the oncologists. We have essentially two major clients, oncologists and manufacturers of oncology products.

Q. Right. And so like, for example, this bullet point here is describing how your company that you work for helps write medical articles and provide content for drug companies; correct?

A. And for oncologists, again. So oncologists do participate in the research that we do. So we do -- as

I mentioned, we work with oncologists as well as with manufacturers of oncology products. So you're partly correct.

Q. Okay. And continuing further.

So, for example --

A. I'm sorry. The screen is gone. Oh, there it is.

Q. So your second bullet point there is -- I'm sorry -- the third bullet point describing what you do: Consistently demonstrate an aptitude for analyzing market dynamics, evaluating the challenges facing a specific brand, identifying barriers and clinical success factors, and recommending appropriate tactics that overcome barriers and achieve successful goals.

Did I read that correctly?

A. Yes, you did.

Q. And then you share all that work with your global colleagues who are at this company that you now work for called Aptitude Health; correct?

A. Yes.

Q. And then you -- next bullet point down is you develop presentations for capability/pitch presentations with support from account services, scientific content, finance, and SBD teams; correct?

A. Yes. So you obviously help in -- you try to

explain to the outside stakeholders, the oncologists, the manufacturers, what -- you know, what is it that you do, what are the products or the capabilities that you have.

Q. Right. So capability pitch presentations, those are like sales presentations; correct?

A. I call them capabilities and pitch presentations. You may call them sales.

Q. Indeed you did.

And then you persuasively articulate the Aptitude -- Aptitude's current value proposition/services as a strategic partner to all client interactions consistent with your company's global strategy; right?

A. Yes.

Q. And then we can go down, this continues, for example, one of the things you do is KOL, build a KOL network; right?

A. Yes.

Q. KOL, that's an abbreviation for "key opinion leader"?

A. Yes. So, for example, the meeting I just described is going to be -- I'm going to moderate a meeting with KOLs in the EU.

Q. I appreciate that, but let's just define

terms.

So key opinion leader, that is a physician who is influential in a particular area that sometimes drug companies will turn to to help talk about their therapies on their behalf; correct?

A. Not entirely correct actually. Not just drug companies. I mean, key opinion leaders are folks who are investigators and researchers where community oncologists also turn to for their guidance. Right? So it's not just drug companies.

Q. Right. Sure. But what I said is accurate. Key opinion leaders are employed or utilized by drug companies, at least in part by drug companies, to do the activities I just described. True?

A. They obviously are interested in their opinions.

Q. Yes. And so you go out and you help recruit these key opinion leaders in part to speak on behalf of drug companies; correct?

A. Not to speak on behalf of the drug companies --

(Simultaneous colloquy.)

BY MR. ISMAIL:

Q. On behalf of --

A. If you want me to explain what I do, I'm more

than happy to, but you just have to give me an opportunity.

So they don't actually speak on behalf of the company. They actually work with us. So my role is to make sure I'm able to understand what is happening with EU investigators, in U.S. investigators, because that helps understand what happens to patients as well as to drugs being manufactured.

Q. Thank you for that.

And you've been in this -- we can keep going down this list, but you describe various other bullet points here. You've been in this role at Aptitude Health since, what, the beginning of February of 2019?

A. Yes, I joined February 2019.

Q. And obviously Aptitude Health does not provide clinical care to patients directly. True?

A. No, we do not.

Q. So obviously in your role, you do not provide clinical role to patients as an oncologist. True?

A. I don't have clinical practice right this minute.

Q. Right.

And then you said you also immediately prior to that, worked for this company called Cardinal Health?

A. That's correct.

Q. And Cardinal Health is also a company that was not -- is not involved in clinical care; true?

A. True.

Q. And we can go through similarly your bullet points here where you describe sort of the things you did for Cardinal Health.

You worked with internal sales force in training methodologies to improve profitable growth for fiscal year '17 and fiscal year '18, for example; that's one of the bullet points you've got here?

A. Sure.

Q. And you worked for Cardinal Health for, what, two and a half years?

A. Two and a half years.

Q. So when you were asked by -- and obviously you didn't treat any patients at Cardinal Health; correct?

A. No, I did not.

Q. So Mr. Miller asked you when did you stop treating patients full-time, and you said August of 2016. Do you recall that?

A. August 12th, 2016.

Q. And in fairness, you stopped treating patients entirely as of August 2016; true?

A. That's what I said.

Q. So it wasn't just full-time versus part-time,

you stopped treating patients altogether in August of 2016; right?

A. Yes. Currently my role is in administration and research.

Q. And you've not clinically treated a patient then since August 2016; correct?

A. I have not clinically treated a patient since August 2016.

Q. And you do not have any hospital privileges in any hospital in Chicago or elsewhere; correct?

A. No, I resigned those.

Q. And you resigned those as of August of 2016; correct?

A. I think the last one was probably January 2017. As you know, to have hospital privileges, you have to admit patients and have patients in-house. So I didn't have that so that's why I resigned them.

Q. And you talked with Mr. Miller about some of your publications.

A. Yes.

Q. It is true that you've not published any review article or original data about Roundup or glyphosate; correct?

A. That is correct.

Q. You've not conducted any scientific research

involving pesticides at all; correct?

A. Correct.

Q. Or herbicides or Roundup specifically; correct?

A. Correct.

Q. You've never been involved with the testing of any chemical products; true?

A. Define "chemical product," please. I mean, I did chemotherapy so everything I've done was with -- can you define it?

Q. So I don't mean a pharmaceutical agent.

So any -- you have not been involved in the testing of any pesticide, herbicide, anything of the sort?

A. Not pesticides or herbicides, no.

Q. You never -- the jury's heard a lot about rodent studies and animal cancer bioassays throughout this trial. You've never conducted an animal cancer bioassay; true?

A. No, I have not.

Q. You've never conducted an experimental genotoxicity study; true?

A. I have not.

Q. Now with respect to the papers on your CV that discuss, for example, diffuse large B-cell lymphoma,

none of those articles relate to the cause or causes of that condition; true?

A. Yeah, not necessarily. The focus was mainly investigational therapy and treatments and prognosis.

Q. Okay. So what I said is true; right?

A. Yes.

Q. Now, you are not now nor have you ever been an epidemiologist; correct?

A. No, but I have to interpret epidemiology.

Q. So the answer is yes, you are not --

(Simultaneous colloquy.)

THE WITNESS: The answer is I'm not a trained epidemiologist. As a clinician, I have to interpret the epidemiology data.

BY MR. ISMAIL:

Q. You are not now nor have you ever been a toxicologist; true?

A. That's correct.

Q. You do not consider yourself an expert in genotoxicity; correct?

A. I'm not.

Q. You don't consider yourself an expert to animal studies either; correct?

A. No. But I have to interpret them because for clinical practice.

Q. And in turn, I don't know if you're going to get into this with Mr. Miller this afternoon, but in this case you briefly looked at some of the animal and genotoxicity data?

MR. MILLER: Your Honor, I object. We're getting past qualification. He's trying to get into his cross-examination now.

THE COURT: Why don't we dial back to specifically --

MR. ISMAIL: Sure.

THE COURT: -- the qualifications.

BY MR. ISMAIL:

Q. Okay. So I guess we'll wait and see if you talk about the animal and genotoxicity data, and I'll save that question for this afternoon.

A. Please do.

Q. And in terms of your appearance here today, you're being compensated for your time; correct?

A. Yes, I am.

Q. And on behalf of the -- Mr. Pilliod and Mrs. Pilliod --

MR. MILLER: This is not qualification. This is cross-examination. How much he's been paid isn't qualification.

MR. ISMAIL: I'm happy to reserve that for

this afternoon as well.

THE COURT: Yeah, sustained as to all of them.

MR. ISMAIL: I will do that.

Q. So, Doctor, why don't I at this point I'll hand you back to Mr. Miller, and then you and I will continue our conversation this afternoon.

A. Looking forward to it.

Q. Perfect. Thanks a lot.

MR. MILLER: Your Honor, I move Dr. Nabhan as an expert as articulated and ask the Court to accept him as so.

THE COURT: Is there an objection?

MR. ISMAIL: Subject to prior briefing, Your Honor, and the Court's rulings on some of the limitations thereof, then we may proceed.

THE COURT: Okay.

DIRECT EXAMINATION (Resumed)

BY MR. MILLER:

Q. All right. Dr. Nabhan, prior to my law firm calling you, were you ever an expert in your life?

A. No, I have never done any expert work, any litigation work. And I actually was called a lot, but I never took the calls, and the ones I did I've always declined.

Q. Well, I'm flattered, because April 2016 you

took a call from a young lawyer that worked for me, didn't you?

A. Yes, I did.

Q. What did he ask you?

A. In the spring of 2016, I was called by a couple of the lawyers that worked in the Miller firm, and the first question was whether I -- you know, what's my opinion about pesticides and non-Hodgkin's lymphoma, and I said it's really common knowledge for anybody who does lymphoma that pesticides do cause non-Hodgkin's lymphoma. It's not something that we dispute in the lymphoma world.

And he asked me whether I have any knowledge or opinion about Roundup and non-Hodgkin's lymphoma. And I said, no, actually I don't know about Roundup and non-Hodgkin's lymphoma. I will need to look into that or research it because I haven't really known any of the data on Roundup and non-Hodgkin's lymphoma prior to that call.

Q. And on that call, did we ask you to look at a bunch of stuff?

A. Yes, you did ask. And with all due respect, I do usually my own research as well because that's how I do it. But I said you can send me what you have and I'm going to do my own research as well into the matter, and

I can't commit to any of this until I spend some time and understand really what's going on. And I think the -- it took me about three months until we connected again.

Q. Okay. So April 2016 you took a call from our law firm. We sent you a bunch of documents.

A. Yes.

Q. We sent you internal Monsanto documents.

A. Yes, you did.

Q. Do you remember having to sign a confidentiality agreement?

A. Yes. I signed a lot of things.

Q. Okay. So you looked at those. You looked at literature we sent you?

A. Yes, as well as literature I researched on my own.

Q. And you did your own research. And there finally came a time when you called us back and told us what?

A. So I think sometime it was either mid or late July, I think about three months after the first call, and I contacted you again and I said I've completed my search, I have very good knowledge of the subject matter and I strongly believe that Roundup does cause non-Hodgkin's lymphoma.

Q. Okay. Did I send a young lawyer to Chicago to sit down and visit with you?

A. Yes, you did.

Q. And after that visit, did you look at more materials?

A. Yes. I mean, I saw a lot of documents and a lot of material since then.

Q. So we know it was April when we first talked to you, April 2016, and you looked at documents. It was a year after that, April 2017, when you wrote your first report?

A. Yes, it was April 2017.

Q. So 12 months of part-time research, because you have this full-time job, I guess; right?

A. Yes.

Q. And you wrote a written report for us?

A. Yes, I did.

Q. And let's ask you now. All your opinions that you give in this courtroom we're going to ask you to give only if you hold them to a reasonable degree of medical certainty. Okay?

A. Of course.

Q. Do you have an opinion whether Roundup causes non-Hodgkin's lymphoma?

A. I do have an opinion.

Q. Okay. And then we're going to get to Al and Alberta. About a year later I sent you their stuff. But let's just stick with the general stuff.

After you wrote a report explaining how Roundup in fact does cause non-Hodgkin's lymphoma, did Monsanto have the opportunity to take your deposition?

A. Yes. It was August 2017 where my deposition was taken. I believe it was August, I think.

Q. Over 14 hours they asked you questions about your opinion; right? Or 12 hours?

MR. ISMAIL: Objection. Relevance, Your Honor.

THE WITNESS: Yeah.

THE COURT: Overruled. He can answer.

THE WITNESS: Yeah. Yes, in total. I mean, I had one deposition in August, I think 2017. And I think there was another one in January 2018, I believe. So in total somewhere between 10 to 12 hours, 10 to 14, something like that.

BY MR. MILLER:

Q. After 12 hours with some pretty smart lawyers asking you questions, did they change your opinion that Roundup causes non-Hodgkin's lymphoma?

A. No. The facts are the facts.

Q. Is it a hard call?

A. Not at this point.

Q. Okay. So we told you we'd pay you for your time; is that right?

A. I hope everybody in this courtroom is getting paid for their time as well.

Q. How much do we pay you an hour?

A. $550 an hour.

Q. Okay. And there came a time after you told us that Roundup causes non-Hodgkin's lymphoma and after Monsanto's lawyers questioned you for 12 hours, that I called you back, didn't I, and I said: Hey, would you look at Al and Alberta Pilliods' case?

A. Yes, you did call me and ask me to look at their case.

Q. About how big a stack of records did I send you about Al and Alberta Pilliod?

A. Thousands of pages. Thousands of pages.

Q. Okay. And when you had received them, you had already published about ulcerative colitis in its relationship to cancer, hadn't you? We looked at that earlier.

A. Yes, I did. But, again, I just want to make sure. Again, that was a case report. Did not necessarily look --

Q. That's right.

A. I just want to make sure I provide context, you know. The ulcerative colitis which was a case report I wrote on association with a particular cancer was not ulcerative colitis and lymphoma.

But obviously in my practice I know about relationship between inflammatory bowel disease, lymphomas, and so forth. I'm more than happy to talk about that when the time comes.

Q. Sure. So I send you all of the medical records; right?

A. Yes.

Q. And I even flew them up to Chicago, didn't I?

A. Yes. I did meet them in December 2018, I think either December 16 or 17. I remember it was one or two days before I had to travel overseas.

Q. And so you interviewed them?

A. I interviewed them, I examined them, and we talked.

Q. Okay. And when you talked, did they tell you how much Roundup they used?

A. Actually, the first -- when I asked, because I like to ask open-ended question, and I just said, you know: How much did you spray? How much exposure did you have?

And I recall the initial answer was, you know:

We sprayed a lot for a long period of time.

And I said that's -- I don't know what that means. "A lot" to you may be different than "a lot" to me. A long period of time may be different between people. I just need more specifics, please. Just you have to help me by remembering exactly, you know, how many hours, how many days, all that stuff.

So, yes, I did ask. But I remember the first answer was a little bit too general. And I needed really more specifics and I had to be more thorough to better understand exactly how much exposure did they have.

Q. All right. So you talked to the Pilliods, you examined them, you reviewed all of their medical records.

Did you read the depositions of the treating physician?

A. Yes. I did read the treating physician depositions as well as depositions of Mr. and Mrs. Pilliod.

Q. Okay. So you read their depositions.

A. Yes.

Q. And you've read Dr. Gupta's?

A. Yes.

Q. You read Dr. Rubenstein's?

A. Yes.

Q. And Dr. Raj?

A. Yes. And there was Dr. Fisher as well who's a neurologist for Mr. Pilliod.

Q. Right. All right. So let's cut to the chase. After all this review and all this time, was Roundup a cause of Al Pilliod's non-Hodgkin's lymphoma?

A. The answer is yes.

Q. Was Roundup a cause of Alberta Pilliod's non-Hodgkin's lymphoma?

A. The answer is yes.

Q. Are either one of those a hard call?

A. Not in my book.

Q. Okay. And I asked you specifically separate for Al and separate for Alberta. But now let me ask you this: The fact that Al and Alberta live together, sprayed together, does that make it an even easier call?

A. In my opinion, yes. I think it's important to recognize that regardless whether the couple were together or not, each case by itself, it's very clear in my mind, and I'm sure we're going to go through the evidence, that the cause that Roundup was substantial cause in causing DLBCL or in non-Hodgkin's lymphoma in both patients. But it goes without saying that having two people who are married who live together for four

decades, when they have the same disease, which is non-Hodgkin's lymphoma, there's no physician that would not ask the question: Is there a common denominator and factor between those two people? In fact, if you don't ask this question as a physician, then there's a problem. Right? I mean, it's just common sense.

If you've ever called your doctor and you said to the doctor, "I have a bad stomach flu," the first question they ask: Is there anybody else in the house who has the same symptoms? It's just common things.

So in my opinion, both cases are very clear in terms of what's the cause of non-Hodgkin's lymphoma. But certainly when you have two people who are married to each other, non-blood relatives, and who live with each other for four decades, then they get diagnosed with lymph node malignancy, non-Hodgkin's lymphoma, how could you not ask that question: What is the one factor that they were both exposed to? Which is Roundup.

Q. And we'll talk about it in more detail later. But the concept of the husband and then wife getting the same condition, it's called material concordance?

A. Whatever you want to call it. I call it husband and wife got the same disease. So just common sense. You know, it's just common sense. There are certain things I don't need medical terminology for,

just common sense, logic.

Q. Okay. And we'll look at a study that has that issue in it as well in a bit, won't we?

A. More than happy to look at it. And I will still say that certain things sometimes don't need five or six studies to prove the obvious.

Q. So when we talk about Al Pilliod having diffuse large B-cell lymphoma, what are the odds of -- we've heard about a common sun-garden variety of non-Hodgkin's lymphoma. So what are the odds, the ratio, for Mr. Pilliod getting diffuse large B-cell?

A. So that's a little bit tough question to answer because the statistics that we have are on a population level. So when you go to the National Cancer Institute or the CR database, there are a lot of -- you know, again you use whatever engine search and you will find the likelihood of any one of us developing non-Hodgkin's lymphoma, it's on a population level.

So for men, it might escape me, maybe 1 in 47 or 1 in 42. For women is a little bit less, 1 in 54 or something like that.

Q. That's for any kind of non-Hodgkin's lymphoma?

A. Right. For all non-Hodgkin's lymphoma. But the point is this is a population level. It doesn't really always take into consideration the likelihood of

developing non-Hodgkin's lymphoma with someone who have different risk factors who -- just, again, each individual case would be looked at differently.

But if you're asking me the chances of developing non-Hodgkin's lymphoma in the U.S. today, it's from 1 in 42 to 1 in 54, I believe. I may be off by a couple of numbers, but that's the ballpark.

Diffuse large B-cell lymphoma is one-third of non-Hodgkin's lymphoma. So about 30 to 35 percent of patients with non-Hodgkin's lymphoma have the diffuse large B-cell lymphoma, which what Mr. Pilliod has.

And I think -- I know you could do the math, maybe you multiply the denominator by three and see this is 1 in 100 or something like that. That could be the case.

But, again, remember these are all population-level statistics. They take away really the individuality of a patient; right?

So just to explain in a way that --

Q. Sure. Sure.

A. I like to explain things because when I had patients, I always like to bring it home. I mean, you can say that the chances of somebody in the state of California getting into a car accident is 1 in 500, whatever the statistics are. Now, if I bring somebody

who is always drives drunk and doesn't wear seat belts, then the chances are much higher.

So there's a population level in statistics, which is what we're talking about. And then we have to look at each individual situation where the stats may not apply because the stats are way, way more -- you know, higher because of particular risk factors.

Q. And I understand it's limited because it's population-based information. But you're telling me about 1 in 42, I think, for general non-Hodgkin's lymphoma; right?

A. Yeah, I believe so. Between -- yeah, for men, 1 in 42, I think.

Q. And about a third of those general non-Hodgkin's lymphoma are diffuse large B-cell?

A. Correct.

Q. Okay. So three times 42. 126?

A. Sure.

Q. I'm notoriously bad at math. But one -- so the odds would be 1 in 126 for diffuse large B-cell?

MR. ISMAIL: Objection. Calls for speculation.

THE COURT: Overruled. He can answer.

THE WITNESS: Yeah, it's fair. Again, it's a mathematical equation. I think my 12-year-old can do

it.

BY MR. MILLER:

Q. All right. So if Al had a 1-in-126 chance of getting diffuse large B-cell and Alberta had a 1-in-126 chance of getting large --

A. Oh, no, hers much less. Because it's primary CNS lymphoma. It's even less common. It is diffuse large B-cell lymphoma in the brain so you can use that for easiness obviously. But you can also say her chances are even much lower than that because it's, again, to have diffuse large B-cell lymphoma in the brain, it's even less than that.

Q. All right. So for him, we're at 1 in 126; right? For her, what will it be?

A. So primary CNS lymphoma, about maybe 2 percent, 2 percent, again all of this data is publicly available. I think it's about 2 percent. But for ease, if you want to use the same statistic, that's fine. But the reality is -- it will be a conservative estimate if you want to do this as 1 in 126 as well, that's fine.

It would be a very conservative estimate because the reality is primary CNS lymphoma, diffuse large B-cell of the brain is much less common than diffuse large B-cell lymphoma that Mr. Pilliod has. The same cell type, the same B-cell lymphoma, the same exact

cell under the microscope. Hers only is in the brain. His was outside the brain.

Q. I'm not good at math, but if you multiply 126 times 126, it gets 15,876. So is that the odds of the two of them both coming down with it?

A. And that would be conservative, but I'll take that, that's fine.

Q. The number again. 15,876. All right.

And just to be clear, both of them have diffuse large B-cell; Alberta has a different subtype?

A. Different location. It's the cell that you find in Mrs. Pilliod's case is only in the brain. By definition, because it's nowhere else outside the brain, we call it primary central nervous system lymphoma.

In Mr. Pilliod's case, his disease was outside the brain in the body, it's systemic, so it's diffuse large B-cell lymphoma, same kind of cell when you look under the microscope. There are some features that experienced pathologists might be able to tell, but it's essentially the same, just different locations.

Q. Now when we sent you the original batch of documents, did we send you the case-control studies that this jury has heard so much about?

A. I've already reviewed all of the case-control studies from before.

Q. Okay.

A. I had them.

Q. I got you.

A. Right? I mean, there are some studies keep coming out every few weeks that I obviously -- there's a new study just came out this weekend, for example. But the point is that I've had a lot of the case-control studies and the cohort studies available.

Q. They always get on to me about not following my outlines, but since we're there, let's talk about that new study that came out this weekend. All right?

A. Sure.

Q. Let's take a look at it.

MR. MILLER: What's that number again? Here it is.

Please, permission to publish Exhibit 3014?

THE COURT: You have interesting numbering in this binder.

MR. MILLER: I apologize, Your Honor. It's Easter weekend and getting people to work.

MR. WISNER: Your Honor, it's according to the outline right now. So it's not in numerical order.

THE WITNESS: Am I supposed to -- is it here?

MR. MILLER: Yeah, hold on. We're going to publish it.

I'm sorry. 3104.

Permission to publish, Your Honor?

MR. ISMAIL: No objection.

(Exhibit published.)

BY MR. MILLER:

Q. Let's take a look at this. We were in court here Thursday. Friday the jury didn't have to be here. Friday this comes out.

Tell us. What is *JAMA*?

A. Well, we just talked about, *JAMA* is again, it's the *Journal of the American Medical Association*. They have a variety of sub *JAMA* papers. As I said, I've been fortunate enough to publish in *JAMA*.

This came out on April 19. So literally on Friday.

Q. And let's look at the importance of this paper. According to these 19 authors in *JAMA* -- is *JAMA* -- I think you told us it was a high-impact journal?

A. Very high-impact journal. I think the second highest after the *New England Journal of Medicine*.

Q. It says: Importance -- quote, we'll highlight that -- professional use of pesticide is a risk factor for non-Hodgkin's lymphoma. Period. Full stop.

Is that true?

A. Yes. I mean, this is not even -- again, this article was really not even focused on whether non-Hodgkin's lymphoma causes -- could be caused by pesticides or not. This was forgone conclusion. They were actually more interested if somebody has DLBCL after pesticides, what the outcomes look like. Are they going to do as good as somebody who hasn't had exposure to pesticides?

So it wasn't even we actually are not sure if pesticides cause non-Hodgkin's lymphoma. The entire premise of this paper is pesticides cause non-Hodgkin's lymphoma. Let us try to ask the question: What is the prognosis of a patient who has pesticides-induced NHL versus not?

And this paper actually focused specifically on diffuse large B-cell lymphoma.

If you don't mind, then go just to the introduction of the actual manuscript, you will see they actually talk about this.

So the goal was: If you have somebody with DLBCL who had exposure to pesticides, what does the prognosis look like?

Q. Before we get to that, which is important and we want to talk about it, to be clear and to be fair, let's go to the next page, introduction section.

They're talking about pesticides, they're talking glyphosate right there in the article; aren't they?

A. It's amongst the others one that were --

MR. ISMAIL: Objection. Vague, Your Honor.

THE COURT: So I'm going to overrule that objection. And then if you would reformulate the question.

BY MR. MILLER:

Q. I'm going to read this. This is from this new paper Friday:

> "Three agents have been associated with non-Hodgkin's lymphoma and classified as carcinogenic by the International Agency for Research on Cancer."

Is glyphosate one of those three agents?

A. Yes.

Q. Okay. So this paper does or does not specifically deal with pesticide glyphosate?

A. Yes. Again, the goal of this paper is not -- researchers in the lymphoma world, people who do lymphoma every day, who practice lymphoma, who see lymphoma will not dispute that pesticides cause NHL. It's not something -- it's not a disputable fact.

So what these researchers are trying to do is:

What's the prognosis? And they list the three pesticides that have been associated with non-Hodgkin's lymphoma as classified by the IARC, and that's glyphosate, malathion, and diazinon.

MR. ISMAIL: Move to strike as hearsay, Your Honor.

THE COURT: I'm sorry?

MR. ISMAIL: Move to strike as hearsay. Lack of foundation.

THE COURT: Overruled. I think the fact that IARC has made that conclusion, if that's what you're objecting to.

MR. ISMAIL: I wasn't. I can address it.

THE COURT: Overruled. He can answer, and you can address it.

BY MR. MILLER:

Q. All right. Dr. Nabhan, could any responsible scientist look at Al and Alberta Pilliod's chart and say absolutely no way I'd consider Roundup as a possible cause of their non-Hodgkin's lymphoma?

MR. ISMAIL: Objection, Your Honor.

THE COURT: Sustained.

BY MR. MILLER:

Q. Let's go into what they look at here. And explain to us what they're studying here in this article

that came out Friday.

A. Again, so this article is looking at DLBCL patients. I presume you all have heard about diffuse large B-cell lymphoma so far. And the question that these authors, these investigators are asking is kind of straightforward. They said, okay, we know that DLBCL could be caused by pesticides. They're not disputing that. But what they wanted to know is if a patient develops DLBCL after pesticide, does he or she do worse than another person who could develop DLBCL without pesticides.

Obviously we know that DLBCL could occur with or without pesticides. So that's really the question.

And what they found -- I think what they found, you can go if you want to the conclusion of the abstract.

Q. Sure.

A. And essentially what they found that it is true that the prognosis or the response rate to the same chemotherapy could be worse if somebody develops DLBCL after pesticides. So that's really the --

MR. MILLER: If we could highlight that at the top please. Conclusion. Relevance.

(Exhibit published.)

THE WITNESS: Yeah. It says:

This retrospective study showed that agricultural occupational exposure to pesticides was associated with treatment failure, event-free survival, and overall survival among patients with DLBCL.

And I think obviously the conclusion speaks for itself. That's the aim of the investigation. It was not looking at etiology per se, they were just looking at the outcomes and how it differs.

BY MR. MILLER:

Q. One of the pesticide exposures they're talking about here, if we could turn to page 3, please.

We'll highlight the pesticide exposure.

They're talking about gardeners and green spaces. Do you see that, sir?

A. Yes, I do.

May I say one thing, counsel?

Q. Yeah.

A. It's important in this study to note that by design they excluded patients who had primary CNS lymphoma because they're not treated with R-CHOP. So what they wanted to actually do in this study, they wanted to take a homogeneous patient population that are receiving the same treatment so they can make sense of the results. If you treat me different than the other

person, then you really can't -- it's not fair to compare our outcomes.

So they said let's just take patients with DLBCL who receive R-CHOP, and by default then you can't take really primary CNS lymphoma because obviously these patients are not really R-CHOP.

So I just want to make sure you're aware that in this particular study, one of the histologies that was excluded was primary CNS lymphoma. It may come up, but just to be complete and make sure that provide both sides.

Q. Let's go to the conclusion.

MR. MILLER: Because I know, Your Honor, we're going to go to lunch.

THE COURT: Right.

MR. MILLER: And then we'll move on.

Conclusion at the very end of this paper. It's on page 14 conclusion. If you would highlight that.

(Exhibit published.)

BY MR. MILLER:

Q. Read that first sentence for us, Doctor.

A. (Reading from exhibit:)

"This study suggests for the first time, to our knowledge, a poorer prognosis

for patients with DLBCL exposed to pesticides, concerning the response to treatment, two-year event-free survival and overall survival. These findings must be confirmed in further prospective studies."

Q. I may have a question or two more on this, but I'll wait until after lunch.

THE COURT: That's probably a good idea. So we're going to take a break now for lunch and resume at 1:30. Okay.

So, ladies and gentlemen, same admonition. Please don't talk about anything that you've heard in the courtroom, anything you've heard today.

Enjoy your lunch. And we are going to resume at 1:30.

And if the audience would stay for a few minutes, I would appreciate that.

(Jury excused for lunch.)

(Proceedings continued in open court out of the presence of the jury:)

MR. ISMAIL: Your Honor, the specific hearsay objection was with respect to the witness purporting to speak on behalf of other oncologists rather than giving his own opinion, saying all oncologists believe X, Y,

and Z, which I believe is improper. There's no foundation for him to be able to speak on behalf of the lymphoma community in such a way. He purports to do so as informed only by impermissible hearsay. So that was the nature of the objection I made.

And I also, Your Honor, would like to lodge a continuing objection to the attempting to argue the evidence of Mr. Pilliod's diagnosis is properly admissible and probative of Mrs. Pilliod's legal claim and vice versa.

We did brief this pretrial and 352, and rather than jumping up every time the question is posed, may I have a continuing objection to that preserved?

THE COURT: Yes.

We're going to resume at 1:30.

Just to remind the audience, there's no coffee permitted in the courtroom. That's you. Only water.

Thank you. You can step down.

Before we go, I just want to check in about time. So are you still thinking that we would have Thursday off to talk about jury instructions? The reason I'm asking is I want to be able to tell the jury rather than keeping them here at the end of the day. I don't know if you need to go through the remainder of the day to sort of see how far you're going to get

before I say that.

MR. WISNER: I am very confident we are going to rest tomorrow.

THE COURT: Okay.

MR. WISNER: So I don't think we're going to have trial on Wednesday or Thursday.

THE COURT: Okay. Well, I'll wait to really confirm so that before I tell them. But I do want to give them a chance to plan for the rest of their week as early as possible. So we can talk about what happens Wednesday and Thursday.

(Luncheon recess was taken at 12:11 p.m.)

AFTERNOON SESSION 1:24 p.m.

(The following proceedings were heard in the presence of the jury:)

THE COURT: Mr. Miller, you may continue.

MR. MILLER: Thank you, Your Honor.

Good afternoon, folks.

BY MR. MILLER:

Q. Before we leave that new article that came out Friday, I just want to take a quick look at it and ask you a couple questions, and we'll move on.

This is the article that came out Friday in the Journal of the American Medical Association.

You've already talked about this. It says:

"The main biological mechanism of pesticides and chemotherapy are genotoxicity and reactive oxygen species generation."

Is that what they concluded here?

A. That's really more of the introduction and the importance of the paper, as you can tell. It's under the title "Importance," yes.

Q. Do you agree with that concept?

A. I do agree with that, yes.

Q. They go on to tell us, in the "Results" section, that:

"Occupational exposure was not associated with clinical and biological characteristics at diagnosis."

Do you agree with that?

A. Can you just raise it a little bit. I don't see it.

Q. Sorry.

A. Yes, I do agree with that.

Q. Are they talking about some sort of thing you can see under a microscope?

A. No. You can't really tell the cause of the actual lymphoma by looking under the microscope, no.

Q. So we heard about TR1418 in this courtroom.

Does that tell us whether that has anything to

do with pesticide exposure causing non-Hodgkin's lymphoma?

MR. ISMAIL: Objection.

Undisclosed opinion, Your Honor.

THE COURT: Sustained.

BY MR. MILLER:

Q. Have you, in your report, given opinions about the FISH tests of Alberta Pilliod?

A. She had a FISH test for the MYC BCL2 and BCL6 oncogenes, and all of them were negative.

Q. And anything about that would rule out pesticide exposure as a cause of her non-Hodgkin's lymphoma?

MR. ISMAIL: Objection.

Undisclosed opinion, Your Honor.

THE COURT: Approach.

(Sidebar discussion not reported.)

BY MR. MILLER:

Q. Let's take one last look here, and then we'll move on from this article.

In this article that came out Friday, they said there was no, quote:

"Occupational exposure was not associated with clinical and biological characteristics at diagnosis."

What does that mean?

A. It means there's nothing you can tell under the microscope, or no test you can do pathologically or clinically to tell the actual cause of non-Hodgkin's lymphoma. Or DLBCL, in this case.

The way you do that is by getting a good history, understanding what the patient went through. You go through risk factors for the particular disease and try to conclude whether there is a cause or there's no cause.

Most often, we actually can't find a cause, and sometimes we can. So it just tells you that at the time of diagnosis of DLBCL, there is no actual biologic marker, that you can say, oh, I have this biologic marker; accordingly, this DLBCL is caused by X or not caused by X. That doesn't exist.

MR. ISMAIL: Move to strike, Your Honor, the last portion of that.

MR. MILLER: He just answered the question.

THE COURT: Hold on.

Overruled. The answer will stay.

BY MR. MILLER:

Q. In spite of the fact that there is no biological marker to tell you about whether or not a particular person's non-Hodgkin's lymphoma is related or

not, these authors concluded that, in fact, pesticide use is a risk factor for non-Hodgkin's lymphoma?

A. Yes, they did. They started with the premise that it is. And they were trying to look as to whether their outcomes are different.

Again, the scope of this article was that the premise is that pesticides are risk factors for DLBCL, and they sought to investigate whether the outcomes differ based on pesticide exposure.

Q. Tell these folks what it means to make rounds.

A. I'm sorry, Counsel?

Q. Making rounds.

A. Yes.

Q. What does that mean?

A. Oh. In the hospital, again, when you are seeing your own patients, you oftentimes are accompanied by students, residents, or fellows that shadow you and see patients with you.

In a university setting, you are often labeled as the inpatient attending. So you actually are seeing the patients who are hospitalized on the floor, on the wards.

And so you're basically the faculty or the attending, and the folks around you, they see patients with you, and you teach them. You examine patients, and

you go through the process of taking care of patients who are in the hospital.

Q. And you've done that with residents and fellows at the University of Chicago?

A. Yes, of course.

Q. And if you're making rounds with the fellows and the residents in Chicago, and someone says, hey, are there genetic markers that are required to conclude someone's non-Hodgkin's lymphoma is related to Roundup, what would you tell that fellow?

MR. ISMAIL: Objection.

THE COURT: Sustained.

I think that's what we just talked about.

BY MR. MILLER:

Q. Would you say anything, in the real world of medicine, about this topic that you did not just say here?

A. No, I would not.

Q. Okay. Let's move on from Friday's article.

I do need to run through with you, your general causation opinions before we get to your case-specific opinions, okay?

A. Sure.

Q. I'm going to do it a little faster. We've heard from Dr. Portier, Dr. Jameson, Dr. Ritz, but I

want to do it.

Have you reviewed all of these epidemiological studies on whether or not Roundup causes non-Hodgkin's lymphoma?

A. I have. I've had the opportunity to review all of them.

Q. And as the first oncologist to testify live in the courtroom, first I want to ask you to break down the words for us.

"Diffuse large B-cell."

What does diffuse mean?

A. So, when you look under the microscope at a biopsy that the patient had to make the diagnosis, you see basically sheets that are diffuse sheets of these large cell lymphoma.

Basically, "large" is large. It means that the cells, the lymphocytes, are big. And usually when we say "big" -- just to give you an idea -- we are trying to compare the size of the lymphoma cell to the size of a red blood cell, because large is relative.

So that's what we look for. So you look at the size of the cell. And the B-cells are usually sheets under the microscope on the biopsy specimen. So you don't really see a normal lymphoid architecture. What you see is just all lymphoma cells.

That's diffuse large B-cell lymphoma.

Q. Okay. So it's a B-cell.

Now, the immune system has B-cells in it, and what else?

A. We have B-cells and T-cells, right.

B-cells are these cells in the body that, when they mature, they start producing antibodies. These antibodies attack foreign pathogens that enter the body. Could be bacteria, could be viruses, and could be cancer, as well.

The T-cells are pretty much the engine of the immune system. So the T-cells, they do that by recognizing the particular pathogen and attacking it, as well, and by helping the B-cells produce the antibodies.

So I'm not a immunologist, obviously, but it's important for us, as clinicians, to understand how that works.

So for lymphoma, you will see B-cell lymphomas and T-cell lymphomas, based on what type of cell that is growing out of proportion, where the balance is actually tipped off.

Q. Where are B-cells made in the human body?

A. Generally, they're made in the bone marrow. The core inside the bone is what we call the bone marrow. And that's why it's an uncomfortable procedure

for patients to undergo a bone marrow biopsy, because they put a needle in the bone and aspirate the actual liquid.

After they are manufactured in the bone marrow, they get to the blood. And they circulate in the blood, and they go through the lymph nodes and they mature. The way they mature is they start to acquire their ability to produce the antibodies.

So they go from the bone marrow, which I call the factory. They circulate through the blood. They go through the lymphoid tissue. They mature. They have the ability now to produce antibodies, and they go to the other side of the lymph node. So now we all have mature B-cells in our bodies.

Where the balance is tipped off is where the lymphoma originates. And that's why we have 40 to 60 types of lymphomas, because you can have the problem in the bone marrow in the beginning. You can have the problem as the cells -- before they enter the lymph nodes, after they exit the lymph nodes, inside the lymph nodes.

So where the problem occurs leads to the development of a particular lymphoma. And that's why we have so many types of lymphomas out there. But essentially, these lymphoma cells originate from the

bone marrow.

Q. And where does B-cell non-Hodgkin's lymphoma start?

A. In the bone marrow. Again, it starts in the bone marrow, and it goes -- the cells start in the bone marrow, they circulate in the blood, and go into the lymph node tissue, where they mature.

And the spleen, by the way, is considered a lymph node for that purpose. Some lymphomas derive from the spleen, which is considered a lymph node for the purposes of lymphomas.

Q. We talked about treating physicians, and we've heard from three hard-working young physicians in this case.

Do non-Hodgkin's lymphoma oncologists, do they have time to stop and look at all the science and epidemiology to figure out what caused their patients' cancer?

MR. ISMAIL: Objection. Speculation.

THE COURT: Sustained.

BY MR. MILLER:

Q. How many times have you met with patients to treat them for non-Hodgkin's lymphoma?

A. Countless. That was my entire practice.

Q. Do you always have time to stop and figure out

what's causing their non-Hodgkin's lymphoma?

A. The short answer is no. I mean, you do your best by taking a good history and physical exam and asking for the obvious things, right?

I mean, there are certain things that are rather obvious that we all ask about. And the purpose of asking -- the purpose of conducting history and physical examination -- is to try to elicit or identify particular risk factors that you may believe contribute to the development of this particular individual non-Hodgkin's lymphoma.

As I've said before, most often you're not successful. Most often you say, I don't know what caused your non-Hodgkin's lymphoma. I believe it's idiopathic.

And sometimes you are. And in the times when you are successful, and you can identify a particular cause, you can counsel patients better, you can counsel families better, and you can try to intervene, if you are able to intervene.

So as somebody who was interested in lymphoma, I've done my best to ask the questions that I believe could lead to identifying some of the causes I'm aware of.

Q. And did you use the three pillars of science

or just epidemiology to figure out and get the opinions you have about Al and Alberta Pilliod's cause of their cancer?

A. I have used three of them. I'm not a specialist in animal studies or a toxicologist, but obviously I have read a lot of these studies. And my goal in reading them is to try to figure out how they apply clinically.

At the end of the day, hopefully everything that we do -- whether it's in the lab, or in rats or mice -- is about trying to improve the outcomes of patients.

So somebody has to take a look at some of these studies and say, well, how does this really apply to the patient that is coming to clinic with this disease?

So I read enough about them to understand them and how they might apply to patient care, as well as how they help in determining the epidemiologic literature.

Q. Let's turn to Exhibit 1019.

MR. MILLER: I believe it's already been published, Your Honor.

THE COURT: I'm trying to figure out your filing system here.

MR. MILLER: Permission to publish?

MR. ISMAIL: Parts of this have been published previously.

THE COURT: Permission provided.

BY MR. MILLER:

Q. This is the IARC short Monograph, right?

Have you reviewed this before?

A. It does look long to me.

Q. Right --

A. Yes, I have.

Q. -- that's fair.

It's about 90-some pages, right?

A. Yes.

Q. And this is on page 78, if you can pull that up, the overall evaluation.

A. Yes.

Q. Okay. It says:

"Glyphosate is probably carcinogenic to humans."

That was their conclusion in 2015.

Do you agree with that?

A. I do agree with that.

Q. Has the evidence gotten stronger or weaker since 2015, when that was published?

A. Stronger. I think there has been additional studies that came out since 2015. And the bulk of

evidence is supportive of this statement that came out back in 2015.

Q. All right. Let's move on.

And in fairness, you considered the Environmental Protection Agency's view on all these things?

A. Yes. I have read a lot of what they have stated, and their opinion. Which, again, some opinions vary from this, as we all know.

Q. Previously published Exhibit 2112, the EPA's paper from September 2016. Let's put up page 68. And if we could, the last paragraph.

The EPA said, quote:

"The risk of non-Hodgkin's lymphoma cannot be determined based on the available data."

Is that your understanding of what they concluded?

A. Basically --

MR. ISMAIL: Objection.

THE COURT: Do you have an objection?

MR. ISMAIL: Yeah. Lack of foundation.

BY MR. MILLER:

Q. Did you review this document?

A. I have reviewed it, yes.

Q. All right.

MR. ISMAIL: Well, it's the 2016, not the 2017. So to the extent he's characterizing the EPA's current views...

MR. MILLER: It's a speaking objection, Your Honor. And I would ask him to refrain.

THE COURT: I don't understand what the objection is.

MR. ISMAIL: The question, as phrased, is asking about the EPA conclusion. This is the older version, not the current version of the EPA's view.

THE COURT: You can ask a question, just lay a foundation.

BY MR. MILLER:

Q. Have you reviewed this document that Monsanto has shown the jury repeatedly?

A. Yes, I have.

Q. Does it say on page 68 that they can't conclude whether or not glyphosate causes non-Hodgkin's lymphoma?

A. Yes. Basically, my interpretation -- as somebody who viewed this document -- is that the EPA's opinion is inconclusive. They said we can't really tell that it does; we can't really tell that it doesn't.

It's not clear to me why they reached that conclusion, but it wasn't negative or positive. They

were saying, we're undecided at this point. They would like to look at it again.

Q. Let's go to Exhibit 3036, previously published to the jury. Put that up.

A. I just need to find it, I'm sorry.

Q. It's not in your book.

This is the next year report from --

MR. ISMAIL: Lack of foundation. The witness hasn't reviewed this document.

BY MR. MILLER:

Q. Have you reviewed this document?

A. I have reviewed it. I don't remember -- yes, this is a while back.

Q. It's been shown to you in several depositions, hasn't it?

THE COURT: Why don't we establish the foundation for reading that into the record.

MR. MILLER: Sure.

THE WITNESS: It's just been a while since I read this.

BY MR. MILLER:

Q. You have reviewed it?

A. Yes. But not recently.

Q. Go to page 68 of that document.

This is the newer report.

They say in the new report, quote:

"A conclusion regarding association between glyphosate exposure and risk of non-Hodgkin's lymphoma cannot be determined based on the available data."

Right?

A. Yes.

Q. They're not saying it doesn't cause it; they're saying they don't know?

MR. ISMAIL: Objection. Leading.

THE COURT: Sustained.

BY MR. MILLER:

Q. What's the significance of what they're saying here?

A. As I said earlier, the EPA's position has been: We can't tell if it does, we can't tell if it doesn't. They stayed in the middle.

They didn't offer any opinion that was helpful. They said they don't know if it does or doesn't. That's been their position for the past several years.

MR. MILLER: Let's go to Exhibit 0031, previously published, Your Honor. The Hardell study.

THE COURT: If you can let me know whether it's in the binder or not. If you just clarify that for

me.

MR. MILLER: Yes, Your Honor, I will. This one is in the binder, and it's 0031. And next time I'll number them. I apologize.

BY MR. MILLER:

Q. You reviewed the Hardell study?

A. Yes, I have.

Q. All right. This is a 1999 paper.

A. Yes, correct.

Q. And it's in a peer-reviewed journal, or is it, the American Cancer Society?

A. Yes, it's in the Journal of Cancer, which is a peer-reviewed journal.

Q. And these two scientists, back in 1999, if we could put up the background. There you go.

I want to ask you about this quote:

"The incidence of non-Hodgkin's lymphoma has increased in most western countries during the last few decades."

Has that been reported in other literature?

A. Yes. Again, they were, I think, going backwards. It's 1999. So they were trying to say, in the previous 20 years before this publication, there had been a rise in the instance of non-Hodgkin's lymphoma. For a variety of reasons, including HIV, obviously, in

the '80s.

Q. HIV, AIDS?

A. Right.

Q. And I think we all agree that it increases the risk of non-Hodgkin's lymphoma?

A. Yes. And it did. I mean, you will see a significant rise in the early '80s because of the HIV epidemic. And then you do see improvement and plateau after that with the treatment of HIV that took place.

Q. If we can turn to page 3, real quick, Table 1. They look at glyphosate. If you can highlight that.

A. Yeah. So they actually look. They look at glyphosate, they look at cases and controls, and they found that glyphosate increases the risk of developing non-Hodgkin's lymphoma, as you see from the odds ratio.

This was not necessarily an adjusted study, but basically that is what these authors found.

Q. Sure. Not statistically significant. This is that first published study on glyphosate in 1999.

Is that right?

A. Yes, that's right. But it's important, if I may, statistical significance does not negate clinical significance, and vice versa. Clinical significance does not negate -- we have to think of statistical significance in the way that applies to patients.

When the patient is sitting in front of you and asking a question about whatever that is, you can't tell the patient, I'm sorry, the p-value is not 0.05, so I don't think it's something I'm going to worry about. This is not how it works in clinic.

So our job as clinicians is to look at this data and make sense of it, whether it's statistically significant or not. So you're correct, it's not statistically significant, but it raises a flag that it's important to look at, whether it's clinically significant or not, and that's why additional studies are needed.

Q. Okay. Let's go to page 7, if we could. Middle paragraph on the left. I want to ask you about this paragraph.

These scientists tell us in 1999:

"Other much-used pesticides, like glyphosate, also might be of concern."

A. Yes.

Q. And I want to ask you about this quote:

"Since the time period for diagnosis in this study, the use of glyphosate has dramatically increased, especially during the '90s."

A. Right.

Q. Is that something you've seen, the increased

use of glyphosate in other papers, as well?

A. We know that sometime in the mid-'90s, I think maybe '95 or '96, there was significant increase in the use. And these authors, to their credit, say we're publishing in 1999. We recognize it's not statistically significant.

We're seeing something. Maybe there's something to it; maybe there's not. They're trying to provide an objective opinion as to what might be some of the reasons for the observation that they have.

And that's why it's important to look at subsequent studies, as well, that might capture some of the rise in use of glyphosate.

Q. Next sentence:

"Gene mutations and chromosomal aberrations have been reported in mouse lymphoma cells exposed for glyphosate."

I know you're not a toxicologist, but has that been your observation in reading the materials you've read on the subject?

A. Right. And it's been a long time since I read this material. But these authors are just citing some of the early genotoxicity studies that demonstrated the genetic damage and DNA damage that occurred in cells that were exposed to glyphosate.

Q. Let's keep moving. That was a 1999 peer-reviewed journal.

Now we'll go to 2001, the Dr. McDuffie article. Have you reviewed that?

A. Yes.

MR. MILLER: It's previously published. It's in your binder, Your Honor. Exhibit 1568.

MR. ISMAIL: I'm going to object that this is highly repetitive and cumulative. He isn't adding anything than what we've heard from two or three other witnesses, the same two or three papers.

THE COURT: To the extent this contributed to his opinion, summarizing briefly.

MR. MILLER: That's what we're trying to do.

BY MR. MILLER:

Q. Did this help form your opinion around what causes non-Hodgkin's lymphoma?

A. Yes, it did.

Q. And again, we have been through this study before; we're not going to go through it a bunch.

What they tell us, if we can just go to page 7, they looked at -- if we can look at glyphosate unexposed less than two days and greater than two days.

Can you tell us what dose dependency means, and did you find it in these studies regarding

glyphosate?

A. This study took things a little further. And I think it's important from a clinical standpoint.

As I told you, for me, it's taking the epidemiologic literature and trying to see, does it make sense when you're talking in clinic, when you're seeing patients?

So what this is saying, the more exposure you get, the more likely you may get non-Hodgkin's lymphoma. Common sense. It appears logical that if you get more exposure to a particular material that is hazardous, you are more likely to get this particular disease.

And what this shows is that if you are exposed to glyphosate more than two days per year, you almost double -- you double the risk of developing non-Hodgkin's lymphoma. And that's what you see, the odds ratio of 2.12.

Q. Let's bring it to the Pilliods.

If they used it more than two days per year, does this apply to them, the double of the risk?

A. Yes. It applies to them and others.

Q. And the more you use it, does your risk go up?

A. Yes. Again, it's logical.

It's common sense, right? I mean, the more you use something that is hazardous, the more likely you

could have a problem.

If you get exposed to the sun for one hour, you may not get sunburned. You get exposed for two days, you'll have a red face all over, you get burns. It's common sense, logical.

Q. So someone who used glyphosate 1,400 days, would they be at increased risk over someone who used it two days?

A. No doubt.

Q. Let's move on.

The next one you looked at, Dr. Hardell again, this time with two different scientists in 2002.

MR. MILLER: Exhibit 1575. It's the next document in the book, Your Honor.

THE WITNESS: I can't find it here, but I can look on the screen.

MR. MILLER: Okay. We'll go ahead and publish that.

BY MR. MILLER:

Q. Table 7 -- we all know this is a peer-reviewed journal. Let's look at Table 7 real quick.

Are they looking here, the scientists, at glyphosate?

A. Yes. They looked at glyphosate, amongst other compounds, as you can see. And what they found is that

the odds ratio was 3.04.

Q. Statistically significant? I know you don't need that to find it important, but was this statistically significant?

A. Yeah. It's good to see statistical significance, but it's not always necessary. That's what I was trying to say. I can cite in oncology many times where the statistical significance was proven wrong.

But yes, this is was statistically significant in a univariate analysis, which means they haven't factored in other possible pesticide exposure to see if they have interfered in the outcome of interest, which is non-Hodgkin's lymphoma.

Q. And I think that's a point well-taken.

Let's go to the last paragraph in the third -- last sentence, third paragraph down on the left.

They tell us about the multivariate analysis, and I want to ask you about it.

A. Right.

Q. It says that the results in multivariate analysis must be interpreted with what?

A. With caution. This is our favorite statement as scientists and as authors. You always have to take any results of any study with caution, and try to figure

out how you interpret that in clinical grounds.

It is totally okay to critique every study and think of every study critically. But ultimately, you have to think, how does it apply to real life and to the patients that are seen in clinic?

So what they're saying is, yes, in the multivariate analysis, we did not see the statistical significance when we actually adjusted to other variables. There may be a lot of other reasons for that, so we need to interpret this with caution.

So for me, as a clinician, that's another red flag. I understand there's no statistical significance, but now I have three studies. They're kind of showing a theme, a pattern, a trend. So we can't ignore that and just say, sorry, unless I see a p-value of less than 0.05, I'm going to ignore all that. That can't happen.

Q. You know Monsanto is going to criticize these studies.

I want to ask you this: In 25 years of being a non-Hodgkin's lymphoma expert, have you ever seen a perfect study?

A. There is no perfect epidemiologic study. I have said that in many depositions. But clinicians have to make sense of imperfect epidemiologic studies. At the end of the day, our obligation is to patients.

When patients come into clinic, they don't want to hear, well, I can't do this or that because the science is imperfect. Sometimes it's not. But if we're able to make interpretation of imperfect epidemiologic studies, I think that's good.

Epidemiologic studies are hard; they're tough. I'm not an epidemiologist. I presume you've heard from other epidemiologists. But my role is to take that epidemiology literature that is imperfect, and try to apply it: How does this apply to patients sitting in front of you in the chair?

MR. MILLER: Let's look at the next exhibit in your book, Your Honor. Exhibit 1597. We're now moving to 2003, the De Roos/Weisenburger/Blair article.

BY MR. MILLER:

Q. The jury has heard from Dr. Weisenburger and Dr. Blair, and they've heard a lot about Dr. De Roos.

Does this article entitled "Integrative Assessment of Multiple Pesticides as Risk Factors for Non-Hodgkin's Lymphoma Among Men," did that help form your opinion?

A. Yes. That's a very important article. It did inform my opinion, because they did look at 40-plus pesticides.

They said, amongst glyphosate, we're going to

look at so many other pesticides as well, and we're going to try to control for them and do some mathematical formulas and statistical analysis -- all of the stuff that statisticians and epidemiologists do -- and we're going to try to see if glyphosate increases the risk of non-Hodgkin's lymphoma. And sure enough, it did.

By the way, just to give you an idea, when we talk about multivariate analysis, what we're trying to do is logistic regression.

So in other words, the logistic regression that was done here is essentially a multivariate analysis, which --

Q. I'm sorry, go ahead.

A. So that was statistically significant, double the risk of developing non-Hodgkin's lymphoma.

There was another analysis done in this paper that did not show statistical significance, but there are a lot of flaws in that additional analysis.

Q. Okay. Let's look at Table 3 from the De Roos/Weisenburger/Blair article.

And you said they looked at 44 different pesticides, insecticides, or fungicides. Right?

A. Right.

Q. And they found four of them that were

associated with non-Hodgkin's lymphoma.

What do they tell us about glyphosate?

A. So when you look at glyphosate, they had -- you go to the logistic regression, and you see 2.1, which is the odds ratio.

That means that glyphosate exposure, despite -- after the adjustment for all the other materials that were being tested in this study, did still double the risk of developing non-Hodgkin's lymphoma at 2.1, which was statistically significant.

So for people who are hung on statistical significance, that's another paper that shows statistical significance.

Q. And Monsanto is going to point, look, look, the hierarchal regression is not statistically significant.

You've been queried about that in your depositions, haven't you?

A. Many times.

Q. Let's look at page 8 and see what these authors say about it. Bottom left paragraph there, last sentence, "On the other hand."

This is from the authors of this paper:

"On the other hand, it is possible that the assumptions for the" -- what?

A. It says:

"Hierarchal regression are too restrictive, and that this has increased the number of false negatives."

Q. What is a false negative?

A. Which means you get negative results, but indeed, you should have positive results.

But in a simple form -- because I'm going to go out on a limb and say that 90 percent of people in this courtroom have no idea what hierarchal regression is -- so you're trying to create a statistical model by putting some inputs into that model. And you're saying, I'm actually going to theorize X, Y, and Z; and then I'm going to get an output.

So our output is always dependent on your input. Whatever you put in that model is going to affect what the output would be of that model.

So, I mean, if you go to the original table that you showed me, some of the outputs depend on what you think the carcinogenicity is of these compounds that were studied. And that has changed significantly. Because obviously, we know more today than in 2003.

Q. Sure.

A. And I can go through them if you want.

Q. It's all right. We'll keep moving. But I do

appreciate it. We heard some of that.

Let's cut to the chase. Monsanto says, wait a minute, wait a minute; the Agricultural Health Study is negative.

What's your response to that, Doctor?

A. So just to level, the Agricultural Health Study was a very important effort. I mean, you don't want to undermine the effort of the Agricultural Health Study. It was an expensive study that was funded by the National Cancer Institute. There were a lot of participants in it.

But just because it was an important study and was well-intended to answer a critical question does not mean that it is not filled with flaws. Not intentionally. It's not that the investigators went in there and said, let's design a bad study.

No. They actually had the best intentions; they wanted to answer that question. But for a variety of reasons, it has so many flaws that the interpretation of the results of that study are impossible to take with good scientific rigor.

And that's okay. People disagree all the time on science. Some people will say it's a good study, others will say it's a bad study. But ultimately, facts are facts. There are certain aspects of that study that

will make the interpretation almost impossible to believe.

And I can go through that, if that's what you want.

Q. Well, real quick, I do want to go through it.

Non-differential exposure misclassification. Tell us what it is and if it applies here.

MR. ISMAIL: Your Honor, cumulative. It's cumulative and repetition again, Your Honor.

THE COURT: Please have him summarize it as briefly as possible.

MR. MILLER: Sure.

THE WITNESS: May I answer really quick?

MR. MILLER: Yes.

THE COURT: Hold on.

MR. MILLER: I thought Your Honor said yes. I'm sorry.

THE COURT: Hold on a second.

Why don't you rephrase the question.

MR. MILLER: Yes, Your Honor.

BY MR. MILLER:

Q. Summarize for us what they did and what the problem was in the Agricultural Health Study.

A. I'll summarize it very briefly. I don't like to use exposure misclassification, all these things,

because everybody will forget how we label them.

They had thousands of applicants that came in to apply for pesticide licensure between '93 to '97. And they answered a questionnaire about their past life before.

So let's say it's me, and I'm coming in in 1993. And in that questionnaire, they're asking me what pesticides I was exposed to over the past 20 years, previous 20 years before I filled out the application, what I used for the previous years, et cetera.

And then I just go. I just go home and do my thing. And then they follow the data on me through the cancer registry to see if I develop non-Hodgkin's lymphoma or other cancers.

The problem is that the use of glyphosate increased significantly in the mid-'90s. So my exposure in 1993 and before will never reflect what happens after 1995, because things have changed.

And frankly, because the AHS recognized that, that things do change, they said, we need to send a questionnaire and query people and ask them about the exposure, because things have changed.

So between 1999 and 2004, they sent a questionnaire to the folks who answered originally, inquiring about their exposure. But almost 40 percent

didn't answer; 37 to 38 percent never returned any of that.

So you've got 38 percent of people that originally answered, that they never answered. Not only that, the people who answered, they answered about their exposure on the one year immediately before filling that questionnaire.

So if I get my questionnaire in 2003, I'm answering about my exposure in 2002. They didn't ask me whether you were exposed for the entire decade before.

So how can you actually get proper information? You have almost 40 percent of missing data. And even the people I captured, they're answering about exposure just for the year before.

It's like today in the courtroom, I asked people, how many of you are driving hybrid cars? And then you go, and I need to know whether that changes later on. Well, today, maybe not a lot of people are driving hybrid cars. But in ten years, that might change.

So if I don't account for that, and half of you don't return my questions, how can I make sense of the information?

So the AHS was a good study in the sense they were trying to answer an important question.

Unfortunately, the way it was designed, it was very difficult to do. That's why you can't interpret the results.

Q. Quick hypothetical: Farmer fills out the pesticide application in 1993. He says, I'm not using glyphosate because I'm not using glyphosate. Next year, he starts using glyphosate in '94, '95, '96, '97. He doesn't use it in '98, fills out a second questionnaire in '99.

When he gets non-Hodgkin's lymphoma, does he go down as a user of glyphosate or nonuser?

A. Nonuser, despite the fact he used it for those four years. Because the second questionnaire was asking for exposure the year immediately before you filled out the questionnaire.

That's if you showed up. Because 38 percent of people did not return the questionnaires.

Q. The author of the AHS study includes Dr. Blair and Dr. De Roos, right?

A. Yes.

Q. Did Dr. Blair go on to lead IARC?

A. My understanding, he did. He was the chair of IARC, I think.

Q. Even though he wrote the AHS study, he said in IARC that Roundup is a probable carcinogen?

A. Yes.

Q. And Dr. De Roos wrote a published letter.

MR. MILLER: I believe we've published this before, 2131, the next document. Yeah, we've published it. If we can republish that.

BY MR. MILLER:

Q. Have you reviewed this?

A. Yes.

Q. One of them, down about three lines, Anneclaire De Roos, right?

A. Yes.

Q. Let's go to page 3.

THE COURT: Before you do that, can you approach for a moment.

MR. MILLER: I'm sorry, yes.

(Sidebar discussion not reported.)

MR. MILLER: Just one quote, and we will leave this document.

BY MR. MILLER:

Q. Page 3, Dr. De Roos and others say:

"The most appropriate and scientifically-based evaluation of the cancers reported in humans and laboratory animals, as well as the supportive mechanistic data, is that glyphosate is a probable human carcinogen."

Is that what Dr. De Roos said after authoring AHS?

A. After authoring the 2005 AHS, correct.

Q. Let's keep moving. I just want to ask about dose response.

Is it in the Eriksson study?

A. Yes. The Eriksson study shows that if you are exposed more than ten days per lifetime, you also double the chance of getting non-Hodgkin's lymphoma.

Q. Is that a dose response?

A. Yes. The more exposure you have, the higher the odds.

Q. And does that apply to the Pilliods?

A. It does.

Q. Okay. Well, since AHS, did Dr. Zhang here at Berkeley this year do a large analysis that, in fact, included AHS and other sources of data?

A. Yes, this was published recently. Looking at the AHS data from 2018 and a new meta-analysis, incorporating all the previous data as well as the mature AHS data.

Q. And you're aware that Dr. Zhang had previously, with her coauthors, been on the scientific advisory panel of the EPA?

A. It was in the disclosure of the paper.

Q. One quote, and we'll move on.

If we go to page 3.

A. I don't know what exhibit this is.

Q. I'm sorry, Exhibit 2333.

A. Okay.

Q. Previously published.

MR. MILLER: Your Honor, it's the next in the binder.

BY MR. MILLER:

Q. Just one quote. I ask if you agree with the scientists that wrote in 2019:

"Overall, in accordance with evidence from experimental animal and mechanistic studies, our current meta-analysis of human epidemiologic studies suggests a compelling link between exposures to glyphosate-based herbicides and increased risk for non-Hodgkin's lymphoma."

Is that what they concluded, factoring all the data, including AHS?

A. Yes.

Q. Do you agree with that?

A. I do.

Q. All right. Keep moving.

Now, let's get into Al and Alberta.

MR. MILLER: With the Court's permission...

Let's do Al first.

With the Court's permission, can the doctor stand up.

THE COURT: Sure.

BY MR. MILLER:

Q. I want you to walk through your differential ideology on Al Pilliod for us.

Why do you think Roundup was a substantial factor in causing his non-Hodgkin's lymphoma?

A. I'm not sure if you can hear me.

THE COURT: Just make sure the court reporter can hear you. That's the most important person. And the lawyers across the room.

THE WITNESS: Okay. I think everybody that treats -- again, the majority of patients with non-Hodgkin's lymphoma have no identifiable cause. So the majority of patients with non-Hodgkin's lymphoma who we see in clinic, you don't have an identifiable cause for.

You see the patient. And the first question you get asked is, why did this happen to me? And you say, I don't know, but let's focus on your treatment and go ahead and proceed with treatment. This is the prognosis; this is what we do.

Despite that, we still do history and physical. We still talk to patients about their history, about tobacco use and other smoking, about alcohol, about whatever it is that we think might contribute to the disease that we are investigating. And that's the process called differential ideology.

So when I met Mr. Pilliod -- you create this basket, and you put everything in it. You put everything you think remotely may have contributed to the development of diffuse large B-cell lymphoma and non-Hodgkin's lymphoma, and you start the process of elimination. Does this withstand the test of rigor? Does it make sense or not? And you start to either keep them on the board or remove them from the board.

Age, we can put there just to be inclusive. The reality is that older patients are more likely to develop any type of cancer, not just non-Hodgkin's lymphoma. It's just the way it is.

In fact, that's what sparked my interest in geriatric oncology and in treating patients of the elderly. Because it just happens more commonly in older patients.

And by the definition of older, just in general, when we talk lymphoma or cancer, it's 60 to 65. So apologies to anybody who is 60 or 65 in this

courtroom.

But the sense is, the older we get, the more likely we develop non-Hodgkin's lymphoma. So I put it there. But age by itself doesn't cause cancer. It's not a causative factor. It's a risk, because as we age, we're more exposed to things in the environment or other things we may not be aware of.

Sex, I put it there because it's more common in men than women, but there's no reason to think that there's an actual cause that is generated by the Y chromosome, per se, that is present in men versus women.

Race, also I put it there because you will learn that -- you will learn that Caucasians, white patients, are more likely -- they have a higher risk of developing non-Hodgkin's lymphoma. Not clear why. It's not really clear what the issue would be, racial, for this condition. But certainly there is some data that it's just more common in whites.

BY MR. MILLER:

Q. Let me stop you, if I can.

A. Usually, I take those three out.

Q. So let's be clear.

Does age cause non-Hodgkin's lymphoma?

A. No. I said it doesn't cause it.

Q. Right.

A. Age does not cause the disease; it's just a risk factor for every single disease under the sun, including heart disease, cancer, lung disease.

Older people get diseases.

Q. Is a 69-year-old man at more risk for non-Hodgkin's lymphoma than a 39-year-old man?

A. Yes.

Q. Is a 69-year-old man who's been exposed to Roundup at increased risk for non-Hodgkin's lymphoma over a 69-year-old man that hasn't been exposed?

A. Yes.

Q. You ruled out age, sex, and race.

Let's talk about family history of hematologic malignancies.

A. Family history that has been determined to be associated with increased risk of non-Hodgkin's lymphoma is family history of other lymphomas or other hematologic malignancies.

So again, when all the websites, and American Cancer Society or wherever you go to, a family history of other hematologic malignancies.

So when a patient with lymphoma comes into clinic, I'll often ask if anybody in your family has lymphoma or leukemia. That's typical, and a common

question we usually ask.

Q. Let me stop you there.

They say a family history of a solid tumor increases your risk of non-Hodgkin's lymphoma.

What's the truth to all that?

A. It's not true. I do recall that I've been shown one of the tables in one of the papers -- I believe it was the McDuffie paper, the case-control study -- that the cases had more risk of other family members of other cancers?

But that doesn't actually answer the question at all. And I can get into that, if you want.

Q. I'm sure we'll get that opportunity.

Did you inquire whether Al's family had a history of hematologic malignancies; that is, a blood-borne cancer?

A. Yes. And he doesn't have that.

Pesticide use, again, I think that's why we're here. And I inquired. I asked about exposure to pesticides, and I think we -- I presume this has been covered, I don't know.

But Mr. Pilliod had a lot of exposure over the years, since 1981 or '82 until 2017, to Roundup by spraying four separate residences, again, various times, various hours.

So that we have to put here.

Q. We've heard about obesity.

What's your view on obesity as a cause for non-Hodgkin's lymphoma?

A. You may hear different views on obesity. I think it's really important. Obesity, there's a lot of interest in obesity. Because the way the U.S. population has changed, in terms of obesity, from the '60s and '70s to now has been dramatic, if you will.

But obesity, when you look at the evidence on obesity and non-Hodgkin's lymphoma, it's pretty weak. There are some studies that show linkage to -- between obesity and non-Hodgkin's lymphoma, and there are other studies that don't show the linkage to non-Hodgkin's lymphoma.

So as a clinician, when I'm faced with something like this, and I have to think about obesity, I will think about logic.

Just logically, is it really obesity today? So do we measure all of our weights today, and that's really the weight that is going to determine our risk for NHL? Is it our weight in two months from now? In a year from now?

We all know that weight fluctuates. It changes. Sometimes 10 pounds above, 10 pounds below

might be the difference between obese, overweight, or normal body mass index.

Everybody in this courtroom has had weight changes. So for me, it's very difficult to have it as a stable variable that, okay, we're going to measure your weight today in 2019. You can't gain more or lose more, and that weight is going to determine your risk. It's really not clear.

There was also another paper that came out in The Lancet a few weeks ago that looked at obesity trends in the U.S. and how it impacts the development of cancer.

And the premise of that paper is that there were 12 cancers that are solidly associated with obesity, and none of these 12 were actually non-Hodgkin's lymphoma.

So obesity, there is evidence, yes, evidence not. I did not want to rule it out completely, so I mean, I will still put an X on it. But deep down inside, I'm not convinced that obesity is a major factor in developing cancer in general, most cancers, or non-Hodgkin's lymphoma. Because it's -- it changes.

So there are some papers that show if your weight in the 40s -- you were a high-risk if you're overweight or obese in the 40s; if you're higher weight

or obese in the 60s, you're not at a higher risk. So that becomes a little bit of a soft call. But to be inclusive, I'll still put an X on it, but it's a very minor contribution.

I will say this. Physicians will always use obesity to counsel patients to lose weight. It's an excuse to say, if you eat healthy, you lose weight, you benefit; if anything, it's going to help.

Q. How about viral infections?

A. There are some viruses that are associated with non-Hodgkin's lymphoma.

Q. What are they?

A. We can go through. HIV, for example, is -- again, we -- everybody is familiar with that.

Hepatitis C. Active Hepatitis C, when there's an active virus, it is a risk of developing non-Hodgkin's lymphoma.

HTLV-1, that's a human T-lymphotropic virus. It's a risk of developing a rare type of lymphoma, actually.

EBV, Epstein-Barr virus is more for patients with HIV, you see that more common.

So these are the viral infections that we think about when you have a patient with non-Hodgkin's lymphoma. And when you inquire with Mr. Pilliod and

talk to him and look at the history, he does not have any of these viral -- known viral association with non-Hodgkin's lymphoma.

He has two other viruses, but none of them, in my opinion, contribute to non-Hodgkin's lymphoma.

Q. Let's go through the ones that actually cause it first.

He doesn't have HIV, right?

A. No.

Q. He doesn't have AIDS, right?

A. No.

Q. He doesn't have hepatitis C, right?

A. No.

Q. And you mentioned one other, the H. pylori or something?

A. No. H. pylori goes under bacterial.

Q. Okay. But you mentioned one other viral --

A. HTLV-1. But again, these are rare. He doesn't have any of them.

Q. Monsanto is going to say, he had genital warts; that had to cause it.

What do you say to that?

A. HPV or genital warts are sexually-transmitted diseases. That's what they are. They are -- it's an STD that occurs when people engage in unprotected sex

with somebody who might have the HPV virus.

There are some HPV strains that are associated with particular cancers, such as head and neck cancers and anal cancers and so forth. But HPV by itself does not cause non-Hodgkin's lymphoma.

Now, there are some studies that I was shown during my deposition in Chicago in January that attempted to link HPV to non-Hodgkin's lymphoma. These studies are beyond weak. I mean, it's just simply -- they don't adjust to any possibility of these patients having HIV as well as HPV.

Again, HPV is a sexually-transmitted disease, and is not known to cause non-Hodgkin's lymphoma.

Q. Did any of the treating physicians say viral infections cause non-Hodgkin's lymphoma?

A. Not to my knowledge.

Q. How about bacterial infections?

A. The other virus, by the way, the HSV.

Q. Which is what, again?

A. Herpes simplex virus. Which, again, Mr. Pilliod did have.

And again, to my knowledge, herpes simplex virus is not associated with non-Hodgkin's lymphoma.

Q. Okay.

A. So in the viral infections we know, that the

evidence is compelling that it does cause non-Hodgkin's lymphoma, he doesn't have any of them.

Q. Okay. Let's move on to --

A. Bacterial infections, the one that always jumped to mind is H. pylori. It's a type of gastric lymphoma, some stomach lymphoma. Again, he doesn't have H. pylori, so he has no bacterial infections that attributed to the development of his non-Hodgkin's lymphoma.

Q. They claim he has some immunodeficiency.

What's that about?

A. He doesn't have immunodeficiency. When you talk about immunodeficiency, just to level-set, immunodeficiency, you're saying that the T-cell function or the T-cell counts are abnormal.

T-cells control a lot of the immune function. And that happens with the HIV virus. So the way HIV, by the way, causes cancer -- a non-Hodgkin's lymphoma -- is by suppressing the number of T-cell counts, the CD4 helper T-cell counts that usually fight cancers. And that's how HIV can cause cancer or non-Hodgkin's lymphoma.

So he doesn't have immunodeficiency, in the sense there's no evidence that his CD4 counts are abnormal. I looked at thousands of pages. I did not

see any evidence of that. There was one time, I think in the year 2000, where he had a CBC. And somehow they checked the CD4 count, which was super normal. There was no evidence of that.

And then the T-cell function. Is there any evidence that the T-cell function was not normal, despite the fact that the T-cell number was normal? Nothing has been done to show that, and there's no reason to suspect that he has T-cell dysfunction. There's no evidence of that, to my knowledge, from looking at the records and talking to him.

So the immunodeficiency does not stand here.

Q. What's the difference between immunosuppression and immunodeficiency?

What are they claiming there?

A. It's probably kind of the same. When I put immunosuppression, I was trying to allude to certain medications that suppress the immune system.

Sometimes patients who undergo an organ transplant, the doctor will put you on medications to prevent your organ rejection. So you don't reject the body organ that just got transplanted. He was not on any immunosuppressive medications that I'm aware of.

Autoimmune disease is the one after. When you look at autoimmune diseases and non-Hodgkin's lymphoma,

there's good literature on that. A lot of the literature on autoimmune diseases and non-Hodgkin's lymphoma are what we call collagen vascular diseases, which are the rheumatoid arthritis, lupus. These are diseases of the joints and muscles and so forth.

There's a good body of literature to support that patients who have these types of autoimmune diseases are at increased risk of developing non-Hodgkin's lymphoma, including the lymphoma that Mr. Pilliod has.

Mr. Pilliod has a disease -- it's interesting, I'll go through it -- ulcerative colitis. So that's a disease where you have -- basically, your immune cells are attacking your colon. And patients develop diarrhea, bloody stools, and they are in the category of inflammatory bowel disease.

When you look at the records, in 2006, he had a colonoscopy that showed, by biopsy, ulcerative colitis. And he was placed on a medication called Asacol, which I believe was given orally. It can be given per rectum, as well as orally.

He had subsequent colonoscopies after that, that did not show the evidence of ulcerative colitis. He had a couple of flares, but nothing that is typical of what you usually see in ulcerative colitis.

If you've known somebody who has ulcerative colitis, it's not uncommon that, once a year, they'll have a problem with bloody stool, abdominal pain, fevers. They end up in the hospital. A lot of patients with ulcerative colitis end up having their colon removed.

But he really didn't have any of that. So I'm not going to eliminate ulcerative colitis, but it's a very soft one. Interestingly, when you review the literature on ulcerative colitis, and I was very interested in that, you will see that it's not always the ulcerative colitis that is associated with the higher risk of non-Hodgkin's lymphoma; it's the medications that you give somebody to treat the ulcerative colitis.

Right now, we have very powerful drugs that suppress the immune system. The idea is that you're trying to suppress the immune system that is attacking your own colon, right? Then maybe that will help reduce the flare and improve things. But he was never on any of that.

There's a lot of literature that the risk of ulcerative colitis-induced non-Hodgkin's lymphoma is in patients who received these drugs that suppressed the immune system, not in somebody that doesn't receive any

of these drugs. You will see literature on both sides, but when you do a comprehensive research, that's what you see. It's the drugs we treat ulcerative colitis with.

Also, it's important that he's been off Asacol since 2012, I believe. So it's been seven years. And he received a lot of chemotherapy in 2011. Again, I go back to just using logic.

Q. For the non-Hodgkin's lymphoma?

A. Right.

Just using logic, when you have somebody receiving a lot of chemotherapy to treat the lymphoma, and your immune system is bad, you would think you would get a flare. I mean, you would get something. But nothing. There's really no flare, no evidence of the ulcerative colitis flaring up.

Despite all of this, I'm not convinced his ulcerative colitis contributed to the non-Hodgkin's lymphoma. I'm going to put an X here. I want to be more inclusive and not exclusive. But frankly, it's very soft to add it.

Q. You gave us a list of autoimmune diseases that he didn't have: Sjögren's syndrome, lupus, he didn't have any of those. He did have a bout of ulcerative colitis, but did not have the drugs that increase the

risk.

What's that -- I'm trying to understand.

A. He had a biopsy in 2006 that showed ulcerative colitis, but to my knowledge, there's been no subsequent biopsies that illustrate ulcerative colitis.

I got the impression that maybe he had some flares here and there, but they were not the typical severe flares of ulcerative colitis that you normally expect. Especially after you get chemotherapy for the lymphoma that should kill your immune system.

The only drug, to my knowledge, that he received is called Asacol. It's not an immunosuppressive drug. It's not one of the drugs you see on commercials on TV that is a powerful immunosuppressive drug. He did not get any of those.

And the literature on ulcerative colitis suggests that patients who are at increased risk of developing NHL or DLBCL are those that have the disease, plus receiving these immunosuppressive therapies.

But because there's some literature to the opposite, as well, I decided to put an X on it to be conclusive. But I am very convinced that this is very, very soft.

Q. Chronic inflammation.

A. Again, that probably -- could be with the way

the viruses work. Sometimes they continue to stimulate the particular cancer cell, to proliferate.

He didn't have any of that, to my knowledge. And again, to my knowledge, there was no solvents used or benzine used, or any additional stuff that he had.

Q. Okay.

A. When you look at this, pretty much what you see is the pesticide use, which is Roundup. Because that's the only one, to my knowledge from talking to him, that he actually used.

I'll put obesity and ulcerative colitis here, that's fine.

But the reality is, at the end of the day, the evidence in this case is overwhelmingly suggestive that Roundup is what caused his non-Hodgkin's lymphoma.

Now, if you were able to scratch this, this, and this, then you would say idiopathic. Then you would say, okay, I did my job, I can't find it. Then it's idiopathic.

So you rule out idiopathy by the fact that you have actual risk factors. You can't rule out something that doesn't exist. If you couldn't find anything, you would say, okay, I believe this is idiopathic; I do not know.

If somebody has a heart attack, you ask them,

do you smoke? Do you have diabetes? Do you have high blood pressure? If you can't find anything, you say, I don't know why you had a heart attack. But you can't tell the smoker, I think your heart attack is idiopathic despite two packs of cigarettes a day.

If you have actual causes, it's not idiopathic, by definition.

Q. How do we get from risk factors, you've identified three: Pesticide use, obesity --

THE COURT: We need to take a break. I think we need to take our afternoon break, and we're going to start again at five after the hour, okay. Thank you.

(Recess taken at 2:51 p.m.)

(Proceedings resumed at 3:11 p.m.)

(The following proceedings were heard in the presence of the jury:)

THE COURT: Mr. Miller, you may continue.

MR. MILLER: Thank you, Your Honor.

THE COURT: All right, folks. Hope you had a good break. Let's finish up, and we'll have cross-examination.

BY MR. MILLER:

Q. Actually, stand up, if you would, Doctor. What I wanted to do was finish that.

You've eliminated chronic inflammation, you've

eliminated solvent use. You've moved three items -- pesticide use, obesity, and autoimmune disease because of the ulcerative colitis -- over to the risk factors.

Now, are all three of those moved to substantial factor? One of them? Two of them?

Tell us what your thinking is there.

A. I think I alluded to this early on. That's where you have to use the history, the evidence, the clinical judgment you have. And you have to try to look at each individual factor by itself.

I said early on that obesity, in my opinion, is a very soft type of causation for non-Hodgkin's lymphoma. There are papers out there to suggest that. There are papers out there that don't suggest that.

And I think the onus is on us to figure out whether obesity truly caused non-Hodgkin's lymphoma. And I don't think it does, for the reasons I mentioned earlier.

For autoimmune disease, there are studies that show increased risk. For patients with ulcerative colitis, I think the studies are there, no question about it. But patients who have ulcerative colitis who are on these immunosuppressive therapies are really the ones at highest risk.

And if you look at the history of Mr. Pilliod

with ulcerative colitis, while I believe he did have it, because the biopsy confirmed in 2006 that he did, it's a little soft. Because again, it's not the way this disease behaves. It's not the way it happens, especially in someone who received chemotherapy afterwards.

So in my best clinical judgment, Roundup is the one that moves here. I keep those as soft causative factors, but they're not substantial for him getting NHL.

Q. Did, any of his treating physicians decide that the autoimmune disease ulcerative colitis caused his non-Hodgkin's lymphoma?

A. Not to my knowledge.

Q. You can sit down, I suppose.

But the defendants make a fuss over him having skin cancers.

Did you factor that into your analysis?

A. No. I mean, again, skin cancers -- the squamous cell cancer, as well as the basal cell cancer -- these are very common cancers, especially to people who are exposed to the sun a lot.

So in my opinion, they do not increase the risk of developing non-Hodgkin's lymphoma. I was shown several studies during my deposition of potential

association between basal and squamous cell and non-Hodgkin's lymphoma, but these studies did not look at other factors for these patients, and there were a lot of weaknesses in these studies.

So it's my opinion that prior history of squamous and basal cell cancer does not lead to the development of NHL.

Q. Let's take a look at Exhibit 6456, the "Spousal Concordance for Cancer Incidence."

MR. MILLER: It's in your book, Your Honor. Permission to publish?

MR. ISMAIL: No objection, Your Honor.

THE COURT: Number?

MR. MILLER: 6456, Your Honor.

THE COURT: Great, thank you.

BY MR. MILLER:

Q. Did this help inform your opinion that, the husband has the problem, the non-Hodgkin's lymphoma, the wife is at increased risk.

Is this study on that subject?

A. You know, it solidified the opinion. By itself -- like I told you before, it's common sense that when you have two people who are married, who develop the same disease, it's the proper clinical judgment for any physician to ask that question. You know, what

could be something that may have caused the same disease in both of you? They may not be able to find it, and they may be able to find it.

So that opinion -- again, it's very important to realize that this is common, normal clinical practice.

Going back to the literature, you will find a paper like this one, which did show that patients with non-Hodgkin's lymphoma do have increased risk of concordance between husbands and wives or partners.

Q. Let's sort of -- let's go to -- this is a peer-reviewed paper in the American Cancer Society journal?

A. Yes.

Q. And it was published in 1999, right?

A. Yes.

Q. And it's by two scientists here in Oakland, isn't it?

A. Yes. From Kaiser Permanente.

Q. Okay. Explain to us what the background means.

What's the significance there?

A. Again, it goes back to the common sense. Just, you know, couples share the same home environment, the same environmental factors. So the authors were

trying to look at how common cancers occur in couples, and are there any specific cancers that occur more frequently in couples or not?

As a clinician, I think it's a -- I applaud an investigation like this. I think it's great, it's nice and so forth. But at the end of the day, it's common sense to me.

Q. So what they did, so we all understand, they took 25,000 cancer-free married couples in Northern California, right?

A. Yes.

Q. Followed them for up to 31 years for the development of cancer, right?

A. Yes.

Q. And when they followed these people for 31 years here in Northern California, the results:

"There were no excess concordance for all cancers, but there was a statistically significant husband-wife association found only for cancers of the tongue, the stomach, or non-Hodgkin's lymphoma."

Right?

A. Right. And this is best depicted in Table 1.

Q. All right.

A. You'll see that.

Q. We'll get there.

It says:

"Cancer is known to have many environmental causes."

Do you agree?

A. Of course.

Q. And what they talk about is:

"Because married couples share at least their home environment, usually for many years, the study of spousal aggregation of cancer might provide clues to unsuspected epidemiologic factors," right?

A. Right. I mean, that's why you ask the question, to try to find if there's any common denominator.

Q. And they started following these people as of 1976.

Do you see that, sir?

A. Yes. I think it started -- they looked at the earlier one -- they looked at folks who had a checkup between 1964 and 1972, and then they kept adding folks to it.

Q. And then for 31 years, they followed them. At one point, they actually added more people from the Sacramento and Stockton areas, right?

A. That's correct.

Q. And after all this analysis, they did Table 1, which we can find on page 3, right?

A. Yes.

Q. Okay. What they did with Table 1 is association of cancer occurrence within married couples, right?

A. Yes.

Q. And they said that with all cancers, they couldn't find any conclusions, right?

A. If they looked at all cancers combined, yeah.

Q. But when they looked at non-Hodgkin's lymphoma, what did they find?

A. They found a significantly increased risk of 2.78, the risk ratio.

Q. Statistically significant?

A. Yes.

Q. Almost tripling of the risk?

A. Almost, yes.

Q. I know this is sort of common sense, but did this help form your opinion of why it's significant that both Al and Alberta have non-Hodgkin's lymphoma?

A. It solidifies my opinion.

Q. I'm going to keep moving.

You've done the same sort of analysis,

differential ideology, for Alberta as well as Al, right?

A. Yes, I did.

Q. Let's see if we can walk through it and explain how you got where you are.

Let's just run through it. We all know that your opinion is that Roundup was a substantial contributing factor in Alberta's.

But why? How did you analyze that?

A. Again, you go through the same process when you're dealing with a patient that comes to you with a disease. You just put all the factors in one basket and be more inclusive.

I think it's very important to be more inclusive as opposed to exclusive, and to have a reason to exclude one or the other.

You already heard my opinion about age, sex, and race. And I'll emphasize age. In my opinion, and the opinion of many of my colleagues, age does not cause the cancer itself. Again, it just -- cancer happens in the elderly.

Family history, we just talked about. Family history of hematologic malignancies, talking to Mrs. Pilliod, it's my understanding that her father had prostate cancer with metastasis.

And if my memory serves me right, her sister

had ovarian cancer or uterine cancer. I don't remember exactly if it's ovarian or uterine, but she did not have a family history of hematologic malignancies such as leukemia or lymphoma. That's why I would scratch this.

I think the pesticide use -- again, we went through it. It's the same thing you would put there. And importantly, again, when you have someone that comes to the office and says, well, my wife or my husband had the same disease for years, I go, you know, generally the clinician will say, well, that's pretty unusual, let me ask more questions.

Obesity, I think you heard my opinion. I'm going to be more exclusive. I will put an X through it. You will see evidence about obesity to support obesity. You will see evidence that does not support obesity. And that's where clinicians need to talk about, what weight are we talking about?

Weight fluctuates, changes. It's hard to tell people that you need to keep that within 2 percent for the next 20 years to see if you develop cancer or not. It's a good question to ask, it's just very difficult to get an answer that stands the scientific rigor.

Viral infections. To my knowledge, she did not have any viral infections. Again, we went through them. Primary CNS lymphoma or PCNSL, usually it's

associated with EBV.

So, generally speaking, if you look at primary central nervous lymphoma, the majority of these patients who have primary central nervous system lymphoma are driven by the Epstein-Barr virus.

Q. Also known as mononucleosis?

A. Right. So that's the virus which causes mononucleosis. That's why it's ubiquitous. Pretty much everybody in the U.S., we say 90 percent, had mononucleosis at some point, which is transmitted through Epstein-Barr virus or EBV. And the primary central nervous system lymphoma that she has was EBV-negative.

So again, you have a disease that is more associated with Epstein-Barr virus that is EBV-negative, which frankly begs the question further, let's ask about other causative factors.

So to my knowledge, there's really no viral infections that have contributed to the development of non-Hodgkin's lymphoma in Mrs. Pilliod.

Similarly, there are no bacterial infections that I'm aware of that contributed to the development of non-Hodgkin's lymphoma.

And same with immunodeficiency. I don't want to be redundant. It's about the T-cell counts, the

T-cell function, and there's really no evidence that you will see that she had any immune dysfunction that contributed to the development of non-Hodgkin's lymphoma.

The same with immunosuppression. Again, when we talk about immunosuppression, just to level-set, we're talking about drugs that suppress the immune system. Because some patients who have bone marrow transplant or organ transplant, we give them medication to prevent rejections, and she wasn't on any of these medications.

I'll pause a little about autoimmune disease, because when I was actually deposed at -- in Mrs. Pilliod's case in January, I was shown records that she has something called Hashimoto's disease. I wasn't aware of it. I looked at thousands of pages and somehow did not see it.

So Hashimoto's disease is what we call autoimmune thyroiditis. So the thyroid gland can be attacked by antibodies, and patients develop thyroid disease. And most often, they end up on thyroid replacement therapy, so they get thyroid medicine.

And after my deposition, actually, I was a little bit upset that I didn't see the Hashimoto's somewhere. So I went back and looked again, and there

were several notes from physicians to support that she had Hashimoto's thyroiditis.

There was an ultrasound that also showed that the features of the ultrasound is consistent with Hashimoto's.

I couldn't find anything in the blood test that there was the antibodies that you usually need to see to diagnosis Hashimoto's, but a lot of people say that sometimes you can make the diagnosis based on clinical grounds and ultrasound and so forth.

So I think, for the sake of argument, she might have had Hashimoto's thyroiditis, and several notes in the chart to support that.

When you look at the literature of Hashimoto's thyroiditis and the association with non-Hodgkin's lymphoma, there is some literature to support such association. But interestingly, that literature does not differentiate between thyroid lymphoma, so the lymphoma that develops primarily in the thyroid gland, and lymphoma outside of the thyroid gland. So they kind of lump everything together.

So I went back to the literature to investigate further. And there's not a lot of evidence that Hashimoto's thyroiditis increases the risk of systemic lymphoma or primary CNS lymphoma outside the

thyroid gland. There is some evidence that increases the risk of thyroid lymphoma, which is not the disease she has.

Again, I could put this and put this. It's very soft. She does have, for the sake of argument, Hashimoto's thyroiditis, based on the notes. But the literature on the association between Hashimoto's and systemic lymphoma is very soft. Given the fact there's some literature out there, although they did not differentiate thyroid lymphoma from systemic lymphoma, we will be inclusive and put the X there. Just to be inclusive and not dismiss anything.

And as I talked earlier, there's no evidence of chronic inflammation or solvent use in Mrs. Pilliod.

So we're left with pesticide use, obesity, and autoimmune disease, which, in this case, is Hashimoto's thyroiditis. And amongst these three, it's very clear to me that Roundup and pesticide use is the substantial factor in causing her non-Hodgkin's lymphoma.

Q. You didn't put it on the board, but the defendants mentioned that she had prior history of bladder cancer?

A. Yes. Superficial bladder cancer. That goes back to family and personal history of other cancers.

So again, Mrs. Pilliod had a history of

superficial bladder cancer. These are not invasive cancers, these are cancers where the urologist will go into the bladder and remove them. It's an outpatient procedure.

And sometimes they actually inject intravesical BCG, which is a type of immunotherapy that you put inside the bladder to prevent the possibility of the bladder cancer coming back.

When you look at data that specifically looks at bladder cancer, prior history of bladder cancer has not been shown to be linked to future history of non-Hodgkin's lymphoma.

When you look at intravesical BCG, the longest study I found was a study that looked at 18-year follow-up and showed no link to non-Hodgkin's lymphoma.

So, yes, she did have prior history of superficial bladder cancer. I believe it's going to be with her all her life. She's going to continue to have urology checkups; sometimes they might find disease, sometimes they might not find disease. But the bladder cancer, or the treatment of bladder cancer, did not contribute at all to the development of her non-Hodgkin's lymphoma.

Q. All right. You can have a seat.

We have a stipulation that we've reached with

Monsanto, that Alberta's past medical expenses --

MR. ISMAIL: Your Honor, is this the appropriate time to be --

MR. MILLER: I was going to --

MR. ISMAIL: Can we just chat at sidebar for a minute?

MR. MILLER: Sure.

(Sidebar discussion not reported.)

BY MR. MILLER:

Q. We know about the treatment, and we know about the -- these kinds of things.

I want to talk about Al first. We have a short video that sort of walks us through some of his damages.

You've seen it before?

A. Yes.

MR. MILLER: And would you pull that down?

MR. WISNER: I'm good for something.

MR. MILLER: All right.

BY MR. MILLER:

Q. Let's do Al first. Let's walk through what happened.

A. I know how to operate this. Okay.

So I think, again, he had presented with a lot of back pain and hip pains.

And he had originally presented because there was a lot of iron in the body, and underwent phlebotomy. There was a lot of iron in his blood, and he was referred to Dr. Raj. And then, because the pain started to happen in his back and hip bones, he underwent an MRI of the lumbar spine, which showed an abnormality here between the L3 and L5 area.

Q. What did that turn out to be?

A. Well, the biopsy that was done, obviously, was from the hip bone, as you know.

But when he had a PET scan, the PET scan lit up in all these areas, as well as the lymph nodes. So this was related to his underlying lymphoma. But that was not the site that was biopsied.

So he went underwent a CT scan of the abdomen and pelvis. And again, radiologists like to speak a lot, so you will see very long reports. I'm going to try to zero in on the areas that are --

Q. Sure.

A. Okay. So they talk about, these are just renal cysts. They talk about lymph nodes. Again, these are the lymph nodes in the pelvis and the abdomen.

And these lymph nodes, sometimes you don't know what they are until you do additional testing, and they light up under a test called the PET scan. You

know, they're related to the underlying problem, which is lymphoma. They provide a couple of measurements.

The radiologists like to provide measurements here and there, because when we follow patients, we can tell if the lymph nodes shrunk or stayed enlarged.

And this is pretty important. This is where a lot of the pain was happening. The bone lytic abnormality in the anterior aspect of the bone, so the hip bone on the right side, this was the abnormality that was causing a lot of the pain that he was having right here. And they have a measurement of 1.8 by 4.3, et cetera.

Again, there are additional abnormalities in the bones that were detected. Because on the CAT scan, that explains a lot of the pain he was having.

And you'll see here lytic lesions in L5, T9, T10, T12, L3, and L4. There were abnormalities all over the bone, pretty much.

And again, not to belabor the same points, it talks about all the bone lesions you see across the skeleton.

Q. Into the thoracic, as well as the lumbar spine?

A. That's correct. That's the impression to define the conclusion, these lytic and plastic lesions.

Basically, you're seeing bone lesions all over the place. And usually, the radiologists can't tell what they are. They could be for many reasons, and that's why biopsies take place. And the pathologist looks under the microscope to tell us what they are seeing.

So that's the surgical pathology report. This is the first one that was not diagnostic.

Lymphoma is a disease of the lymph glands, right? That's where the disease originates, from the bone marrow and goes to the lymph glands. Sometimes when you biopsy the bone, you don't get enough tissue to tell you if there's lymphoma or something else.

So the first biopsy he had showed necrotic disease and not diagnostic --

Q. What does necrotic disease mean?

A. Basically, they just saw tissue that they couldn't figure out what it was. So usually what you end up doing is, you repeat the biopsy, either from the same place or another place, to make the diagnosis.

I don't know if we put the biopsy on or not. But basically, that's what you end up doing, repeat the biopsy. This was the biopsy that was not diagnostic.

I believe he had the repeat biopsy on June 13th. In the interim, he had additional MRIs of the thoracic spine and other spine. I believe we may have

the pathology report of when he was diagnosed.

He had an abnormal bone marrow. When you do the MRI, you look at the bone marrow and you can tell there's a lot of disease in there. But essentially, you need the biopsy to be able to tell what the disease is.

So he had the biopsy, which somehow did not make it to the slide, which showed diffuse large B-cell lymphoma. It was done on June 13th.

Once we knew that it was lymphoma, the patient undergoes a PET scan. A PET scan essentially lights up -- it's a test where patients are given glucose through the vein, and the glucose is linked to a material that lights up. Think of it as a lamp or a bulb.

It circulates in the body, and it lights up wherever there is cancer. And I think it's no surprise that it's lighting up pretty much all over. You see here, all over the bones, the spine. This, you can ignore; it's the bladder where the tracer gets secreted, so the bladder is always hot.

This is where the iliac bone is. You see how hot it is, so that tells you there's a lot of disease in there.

So this is essentially to stage patients, to know where the disease is. Because after treatment, you

repeat the PET scan, and the hope is that the PET scan shows all these areas are gone.

And thankfully, that's what actually happened. Mr. Pilliod did respond to chemotherapy, and the lesions did disappear after the R-CHOP chemotherapy he got.

Q. What stage was he?

A. Stage IV.

Q. What's the worst stage?

A. Stage IV. I think we already went through this.

This is the PET scan report. And essentially, it says diffuse hypermetabolic lymphadenopathy and diffuse hypermetabolic throughout the entire skeleton. We just saw that. We already went through that.

This is the pelvis, where you will see the area here, that is how it lights up right here. That's just similar pictures, just different pictures of the same problem.

Q. Okay. You can have a seat now. We want to talk about Al for a couple more minutes, and then we'll move to Alberta.

The good news is that Al had eight rounds of R-CHOP?

A. Six rounds.

Q. Thank you.

And he hasn't had his cancer come back. His non-Hodgkin's lymphoma has not come back?

A. It has not come back.

Q. What are the long-term effects, if any, of going through six rounds of R-CHOP and having the Stage IV non-Hodgkin's lymphoma?

A. So from a large-cell lymphoma perspective, it's extremely unlikely that the large-cell lymphoma will come back. Patients who have gone that long, it's extremely unlikely that their disease will recur.

However, patients are always followed long-term, because we look at the possibility of having complications of the therapy that they received. And some of these complications include acute leukemia or some bone marrow damage from prior chemotherapy that they have received.

There's a neuropathy that can occur, which is tingling numbness in the feet and toes, that can affect balance for some patients.

One of the drugs that you give for this particular regimen has some cardiac side effects, so you also have to monitor and make sure the cardiac function is good.

So that's why actually every patient, before they get this treatment, they undergo an echo to make

sure the heart is good before they receive this particular chemotherapy.

And we monitor for the possibility of other types of lymphomas. Because, as I told you, family or personal history of lymphomas is an increased risk for other lymphomas.

And because there are 60 types of lymphomas, we always monitor these patients. So really, the good news, obviously, is that the actual lymphoma he was diagnosed with has not recurred. But continued monitoring, it's part of our guidelines that patients have to be followed lifelong to make sure you look at possible complications in the future, or any other problems.

Q. We have a short video of Alberta and her course of care and treatment. Let's look at that, and we'll move on.

A. She presented originally with some neurological symptoms, some vertigo and gait imbalance, and we'll go through these a little fast.

She had a couple of CAT scans that were not diagnostic much, and subsequently had an MRI that led to the diagnosis.

So the original MRI on March 12, 2015 just listed a couple things, but was not very detailed into

what the probabilities may be.

So not until April 2015, until the MRI demonstrated the presence of an abnormality in the brain. And we will show that in a little bit.

Q. Did she have to undergo a brain biopsy?

A. Yes, of course. That's the only way. You can never diagnose lymphoma without a biopsy, wherever it is in the body. Everything else we do is to tell you where it is, but the biopsy is needed to diagnose cancer, including lymphoma.

So this is, again, the March 12, and I'm just going to go through it a little bit fast. Because eventually, she had to undergo repeat testing in April. Hopefully, I'll get to April very soon.

This is the MRI of the brain on March 12. This is the April 16.

So on March 12, it was not very diagnostic. And she had additional problems, went back, and they said, let's do another MRI and take a closer look at the possibility of what you might have.

That's what happened on April 16, 2015. And again, this is the order. And they compared that with the one from March 12, and I'll fast-forward to the conclusion. Because I have many friends in radiology, that it takes a lot to get them to have shorter reports.

Again, you see here, increasing size in the lesion that they found originally in March, but they were not really sure.

They compared it, and this is the impression that they have. They see something in the brain. They don't know what it is, but it infiltrates the brain, and that's from the radiologist saying, maybe this is lymphoma. The GBM, or brain cancer, usually you see an isolated mass; lymphoma is a little more infiltrative.

So again, after that, she underwent surgery. And this is the lesion that we are talking about in the brain, closer to the cerebellum, so it does affect the balance of patients. And that's one of the problems she had when she was first diagnosed.

So she underwent a biopsy, confirmed the primary CNS lymphoma. Underwent therapy, and she completed therapy, actually, in September 2015. Went on additional maintenance treatment until February 2016, and then was watched.

And then in July 2016, she had a recurrence of the disease, which was detected on MRI. And I think you are getting the same impression that I do, that radiologists do speak a lot. But that's okay. Detail is fine.

Bottom line is, they found that there were a

couple of areas that were consistent with recurring disease. Here they are, two abnormal enhancing lesions in the right area, et cetera. And these were new compared to before.

So given her history, that's why she didn't have a repeat biopsy. It was very clear that this was the same process. And this is okay in lymphoma. This is the type of exception where you can be comfortable that this is the same exact process that she had.

Q. I don't want to be too graphic, but do you actually have to drill into the skull?

A. Yes. She didn't have that this time, but before.

Q. And that's why they didn't want to do it again?

A. Right. You see it right here, the one that's lighting up.

And then she underwent the treatment, as you know, and she is now on maintenance with Revlimid.

Q. So she's on treatment now with Revlimid?

A. Right. So after she finished her chemotherapy, Dr. Rubenstein put her on an oral drug called Revlimid. She takes 5 milligrams a day for 21 days, and then she takes a seven-day break. She's been on that, I believe, since April 2017. So 2 years.

Q. Dr. Rubenstein told us, and do you concur, that she'll need to be on that for the rest of her life?

A. Yes. I think the data on this -- again, she's responded to it, she's doing okay with it. And as you learn when you have a disease as aggressive as primary CNS lymphoma, or brain cancer, if you see something working, you don't want to mess with it. As well as the person is tolerating it, you want to keep going.

Q. What is your prognosis if she quit the Revlimid now?

A. I don't know. I think we're all grateful that she has done well. Most of us that have done a lot of primary CNS lymphoma would not have predicted such a favorable situation four years out from the original diagnosis. It's a very difficult disease to treat.

Having said that, it is very likely that if you take her off a treatment that has been working, such as Revlimid, she could relapse, and relapse very fast. So that's why nobody will mess with Revlimid, as long as she's tolerating it okay.

Q. How much does the Revlimid cost per month?

MR. ISMAIL: Objection. Foundation.

THE COURT: Lay a foundation.

BY MR. MILLER:

Q. Are you familiar with the cost of Revlimid?

A. I'm familiar with the price. I don't know what the cost to a particular patient is because of insurance and co-pays and so forth. All I can tell you is, the price, I'm familiar with that.

Q. What's the price for a month supply, 21 days?

MR. ISMAIL: Again, foundation, Your Honor, as to the source of the price, please.

BY MR. MILLER:

Q. Have you investigated the current price of Revlimid for a 21-day supply?

A. Yes, I have.

THE COURT: The source of which is?

BY MR. MILLER:

Q. What is the source of your information?

A. So there are various websites that you can actually just plug in the zip code, as well as the drug and the dose and the duration, and it tells you the range of the prices of that particular drug in your local area.

There's one that's drug.com, but there's actually a more sophisticated one you can look at. These are the prices, though it's hard to know the cost for a particular patient.

Q. What is the cost per month?

A. The cost for 5-milligrams, 21 days, is between

14- and $16,000, depending on where you're buying the drug from.

Q. And what is her life expectancy?

A. If she continues to do well -- again, she's four years out from the diagnosis -- it's possible she might have a normal lifespan for someone who is 72.

But I think it's impossible -- we try no to play God as much as possible. I believe she beat the odds with a disease that the majority of patients do not do well; and they, unfortunately, die in less than two years from diagnosis.

Q. One quote I forgot to show you in that -- I'm almost done, thanks for your patience.

In that spousal concordance study, they had almost a tripling of the risk?

A. Yes.

Q. Let's go back and look at that, 6456.

A. Sure.

Q. It talks about that one of the four couples in the study with non-Hodgkin's lymphoma lived in Mexico for many years, and both husband and wife were said to have been exposed to pesticides there, a suspected cause of lymphoma. That was in 1999.

That's when the evidence started to emerge?

A. It's hard for me to remember exactly the year

we saw it emerge, but it's possible that it's around that time.

Q. Well, we've heard about the Pilliods aging, and we've heard about things that Monsanto has alleged.

If a patient is more susceptible, would Roundup have a greater effect?

MR. ISMAIL: Objection, Your Honor. Lack of foundation. Undisclosed.

THE COURT: Hold on a second. You need to rephrase and lay a foundation.

MR. MILLER: Sure, sure.

BY MR. MILLER:

Q. Does -- do people get more susceptible to a cancer as they age?

A. Well, cancer is a disease of the elderly. Unfortunately, as we age, all of us will be prone to developing all kind of diseases, including cancer.

Q. Would that make someone more susceptible to the toxic effects of Roundup?

MR. ISMAIL: Objection. Speculation. Undisclosed.

THE COURT: If he knows.

THE WITNESS: Older patients who are exposed to pesticides or Roundup are at higher risk than older patients who are not exposed.

It's like saying an older patient who smokes is at higher risk to have heart disease than an older patient who doesn't smoke.

So yes. Because older patients are at higher risk of developing cancer and other diseases, minimizing or limiting the risk factors is essential.

MR. MILLER: Thank you so much for your time.

THE COURT: Approach real quick. I just want to talk about scheduling.

(Sidebar discussion not reported.)

THE COURT: I'm conferring with the lawyers about timing. So we're going to break for the day. And we're going to start tomorrow morning at 9:00 with cross-examination by Monsanto.

So have a good evening. Don't talk about anything that you've learned in the case so far, and then we'll resume tomorrow morning at 9:00. Forget you're jurors, have a good evening, and I will see you tomorrow.

(The following proceedings were heard out of the presence of the jury:)

THE COURT: We'll see you tomorrow morning at 9:00.

MR. WISNER: I have presents.

THE COURT: What would those be? I don't want

any presents, but thank you.

MR. WISNER: They're not very long. It's the exhibits, if you want to look at them. These are our pre-bench briefs specifically related to jury instructions. Obviously not for tomorrow, but for our conference.

THE COURT: Anything else?

MR. EVANS: Where are we at on the judicial notice issues?

THE COURT: Okay. I'll tell you what I'm going to do this evening. I'm going to go through, and I will mark those -- I will give you a ruling on those portions of the documents that are admissible for tomorrow.

MR. EVANS: You can make it real easy and just let the whole thing in, Your Honor.

THE COURT: In any event, I'll try to get that to you tomorrow.

MR. ISMAIL: One thing, Your Honor, and if we can excuse Dr. Nabhan.

So, Your Honor, we've provided the Court this afternoon a further briefing on the issue of the Revlimid, which I believe just got a lot more complicated by the witness' testimony.

Price, not cost. He's not saying this is

Mrs. Pilliod's expected cost for her drug going forward. It's not an adequate foundation for Mr. Mills to then use as his lodestar to accelerate the price of medication for future medical expenses.

And the briefing that had been provided was not even in light of what just happened ten minutes ago; it was in light of what happened on Thursday, which, as Mrs. Pilliod testified, apparently, there is some sort of coverage for her medication, the copay for which apparently is being picked up under the Patient Assistance Program.

But the premise of -- the idea that we don't have a cost for her, I believe, has been belied by the testimony that we've had with the case in the last two witnesses; that, apparently, there is some sort of negotiated cost for the Revlimid which would be consistent with *Corenbaum* and with *Howell*.

We discussed this issue a little bit in a vacuum, before the plaintiffs testified and before Dr. Nabhan, who is proffered as the predicate witness for Mr. Mills. I don't think the foundation has been laid to allow this future medical expense under California law, in light of Mr. Mills' coming tomorrow, about the appropriate --

THE COURT: This is the problem I have:

Unlike either of the cases that we talked about, there is -- it's established that it's necessary for the rest of her life. It's also established that there are variables that affect whether she pays or doesn't pay. And there is no established cost, because she's never had to pay.

So you're going to ask me to not allow evidence that she will ever have to pay -- to even address what the cost of Revlimid might be.

So I have a choice. I can say, well, you can't even talk about this because we don't know enough about the cost, but we know she has to have it. And we know that the variables that might cause her to pay, we can't determine. And so I'm not sure, you know, where the truth lies, in terms of what the jury should hear.

Because to simply say there's no foundation, but she's going to have to take it; and there's every reason to believe that somewhere down the line, one of these variables is going to change to cause her to pay.

So how we talk about it to the jury might be something to discuss, but I don't think that the choice is there's no foundation. There's no foundation because there can't be.

So the question is: What are we really talking to the jury about as it pertains to

Ms. Pilliod's need for Revlimid?

MR. ISMAIL: Well, the plaintiffs, of course, have a burden on this issue, as they do all issues of damages.

So the question isn't what do we do with an evidentiary vacuum --

THE COURT: Well, when they can't establish it, then what?

MR. ISMAIL: That's what we --

THE COURT: There was billing for -- it was, at some point, a bill for that service that they were -- that was the basis for that ruling. Here, there's never been a bill for Revlimid, and there can't be a bill for Revlimid now because, you're right, she hasn't ever had to pay.

So to the extent that this jury should hear about all that, I agree. To say they haven't met their burden, it's a burden they can't meet.

MR. ISMAIL: Mrs. Pilliod testified that the cost to her has been picked up by a combination of insurance and patient assistance, so under collateral source --

THE COURT: We're already in the collateral source. I'm not sure where we go from there.

MR. ISMAIL: But *Howell* and *Corenbaum* doesn't

speak to her -- what she pays out of pocket; it speaks to what she and a third-party payer pays on her behalf.

So in light of her testimony on Thursday, we now -- it's now been articulated that there is such a number.

So the idea that was suggested last week, that the plaintiffs couldn't proffer a cost number because there has been no bill for the service, she testified that part of her cost was picked up by insurance and part has been picked up by the manufacturer.

It's that first part that would comport with California law and the medical expenses. So they do have the opportunity to put in that cost number, not her cost of zero, but cost paid on her behalf, which we believe to be their obligation.

Moreover, even if you assume that first part wasn't there, they could have developed expert testimony to come up with this number. And they could have developed testimony as to what's the Medicare reimbursement for Revlimid. They could have developed what's the private insurer coverage for Revlimid, which would have allowed an evidentiary basis for Mr. Mills to testify going forward.

That's not been offered. It wasn't offered through Dr. Nabhan. He candidly said, I have no idea

what the cost is. I know what the price on the internet is, which he very specifically said is not the cost of medicine to an individual person, let alone Mrs. Pilliod.

So I do recognize the Court's reluctance to say that this is a medication that the physicians believe is necessary, and in cutting off that future medical expense. However, that's still their burden, from an evidentiary perspective, to proffer future medical cost testimony evidence. We didn't think we had it last week, but the last two witnesses have moved backward from that threshold.

MR. WISNER: Your Honor, this is argument. The jury has to decide what her likely future medical expenses will be.

It is true that as of today, the Revlimid has cost her nothing. The jury has to decide, is there a likelihood she will lose that charity, whether it be from a collateral source like insurance or whether it be from the charitable contributions like the manufacturer?

That's something we can argue to the jury. And the facts are there for the jury to come to that conclusion.

Mr. Mills is going to tell the jury, worst case scenario, based on this hearsay that I've looked

at, this is my estimate if she had to pay out-of-pocket, every day, every month, the full price of Revlimid. That's the worst case scenario.

THE COURT: But Dr. Nabhan did say that's a price, not a cost. He said that it's on the internet, it's actually much lower, there's a better website. So let's say you took the 14- to $16,000 as the price. He said, that's not what it costs; that's what the price is.

MR. WISNER: He said, I don't know what the cost is because of insurance or whatever. That is the price you pay if you walk in tomorrow without insurance and have no charitable contribution. That is how much you spend for the drug. That is what he's saying.

He's saying, realistically, people have insurance, these things. And that's what he was saying about Mrs. Pilliod, because he spoke with her. The fact that she hasn't paid anything, that hasn't changed.

The issue is, the jury has to decide for the future -- assuming they hold Monsanto liable, they say, yeah, we think you're responsible for her cancer and her future economic damages; what is the likelihood she will have to be pay money out-of-pocket, and what amount of money should be set aside for that contingency? Both sides can argue the likelihood of that happening or not.

I think that's an argument point. For the purposes of Mr. Mills, his testimony about what the worst case scenario is, is otherwise admissible. What they're arguing is argument, and that's something they can argue to the jury when we get to damages on closing.

MR. ISMAIL: I would say the following, Your Honor, with respect to the idea that there's an exception to *Corenbaum* and *Howell* for the idea that insurance may evaporate in the future: It could be the case for any individual, including the plaintiffs in *Corenbaum*, that their insurance in the future would -- that they would lose it for whatever reason.

And if that were an exception to the rule, it would swallow the rule in literally every case. Because you could always say to the jury, who knows, we all know the vagaries of the insurance market. This person may lose their insurance going forward, and they would therefore be subject to the full cost of the medication.

THE COURT: I understood it was partially paid for by charity and partially paid for by the drug company; I didn't get the idea that insurance was the issue. That it was a combination of the charity and the drug company.

MR. BRADY: It's McKesson's Patient Assistance Program. And there's no evidence that it will continue

at all. And without that, she wouldn't even be able to get the medication. And we know she would likely die without it.

THE COURT: We know that. What I'm saying is, if Mrs. Pilliod -- I can't recall what I was told about the copay. She may have said something about copay.

I don't know whether or not what she was referring to is that it was partially covered by her insurance, which would put you in *Corenbaum* and *Howell*, and then partially paid for by the Patient Assistance Program, which is really the unknown.

I don't know if the unknown is the patient assistance part of it or the whole of it. My impression was that insurance never got involved because there were other mechanisms for payment. And that kind of complicates this. Because if it goes away, then does the insurance then get involved, and to what extent?

MR. WISNER: But I think it's really important that we're talking about Medicare, and that's a very different type of insurance provider. I actually specialize in this type of litigation outside of this type of litigation.

It's called the Medicare Secondary Payer Act. And if a judgment is entered against Monsanto saying they are responsible for these medical expenses, they

will not pay it. They won't.

And Mrs. Pilliod is going to have to have a judgment against which can pay it. That's how the insurance system works on a federal level.

So from a legal perspective, we have every obligation to argue to the jury that, if you find them liable, by all means, she has to have a safety net to make sure this drug is paid for for the rest of her life. If we are to prevail on the merits.

MR. BRADY: She'll have to do a Medicare set-aside account to pay for it in the future, Your Honor, if she gets a liability finding in this case.

This jury, by giving her a liability finding in this case, will cut off her future Medicare benefits. And we don't know what McKesson --

THE COURT: That may very well be true. But none of it is in the record. If that were all in the record, you would be talking about something different. None of that is in the record against which you can argue that she is going to have to have a set-aside account if McKesson doesn't cover it; and right now, she doesn't have to pay. And a basis on which the jury might consider all of this in determining whether or not --

MR. WISNER: Your Honor, it's actually a legal point. It's not a factual issue. This is all collateral source stuff, which is something we wouldn't want to be arguing with the jury about, Medicare set-sides. It's a legal point.

THE COURT: But you still have the other factual portion regarding the patient assistance, all of which are collateral sources. But I'm not sure, at this point, that's not beside the point because of the nature of this particular question, which is --

MR. BRADY: But you're saying *Howell* and *Corenbaum*, if it's just insurance, that part of it is covered by those. It's not. We can bring it in the morning and show you the law on Medicare and how they are required to set up Medicare set-aside accounts for future treatment in cases where Medicare is claiming for benefits that are arising out of a liability finding.

You can take judicial notice --

THE COURT: I do know about that. Because in California, Medi-Cal does that all the time. They have liens, judgments, and that's historically been going on for decades --

MR. BRADY: But this is different. The law says, if the patient gets the liability finding here, they'll be required to pay for those future benefits for

whatever the jury found --

MR. WISNER: And it's actually compounded because the assistance program is income-based. And if they obtain a substantial judgment here, they will no longer be qualified for that assistance. It's a self-serving circle, and they're saying we can't argue it to the jury to put this amount aside.

This is all argument for the jury.

MR. BRADY: And I'm also worried about them asking questions to Dr. Mills, the economist to speak about this. Because I don't want them to do indirectly what we can't do based on these issues that we're discussing now, and the collateral source rule, which is still alive and well in California.

MR. ISMAIL: A couple of responses, Your Honor. First, with respect to the whole question about Medicare Secondary Payer, that's still the question: What is Medicare paying? And that has not been introduced into this record. That is the number from which any future medical care -- medical expense calculation would have to be based.

And so they're saying there is a number. It would have to be set aside. That's their burden, under the California law, to introduce that number. That's one.

Two, the idea that it's argument to the jury to -- for them to -- we're going to have this argument as to, what is the likelihood she will have to cover this medical expense on her own as opposed to these alternative means, invites the evidence in argument that she won't have to cover this on her own because she has alternate avenues of paying for it, insurance, Medicare, AARP, Patient Assistance Program.

Which we know -- and this is the policy that's articulated in *Howell* and *Corenbaum*. There's the collision between arguing -- for the defendant to argue that insurance sets the cost, and arguing the speculative question to the jury. And the collateral source rule, because you're throwing this into the case.

It's been thrown into the case now by the last two witnesses. They asked Dr. Rubenstein about the cost of Revlimid on the deposition video last month. She said it's $3,000 a month, depending on your insurance. That's their designation, and they just had Dr. Nabhan mention insurance. That's three witnesses in a row where Plaintiffs solicited insurance testimony.

So the question about whether it's argument to the jury, as Mr. Wisner says, presupposes there is evidence in the record from which we can argue from. Which is that she has insurance, she's paid zero, she's

in a federal program for which she's not going to lose eligibility --

MR. BRADY: Your Honor, for all these reasons we discussed, we can re-call Mrs. Pilliod. But just based on the Medicare Secondary Payer laws, and under the legal requirements under the October 2011 Medicare amendments --

THE COURT: To be honest with you, there's not a shred of evidence, I don't think, in the record that she's on Medicare, that I'm aware of.

MR. BRADY: She's over 65, Your Honor, she automatically qualifies. We can take judicial notice of things like that. She is Medicare-eligible and Medicare-qualified by --

THE COURT: A lot of people are 65 years old and not on Medicare.

MR. WISNER: Your Honor, can I propose something --

THE COURT: This is way more complicated than just that she's Medicare-eligible. I mean, I think that Mr. Ismail has a point, but I'm also not convinced --

MR. BRADY: He's over-reading *Corenbaum*.

THE COURT: I've read *Corenbaum*. I have my own feelings about *Corenbaum*.

I'm trying to work out a problem here. I'm

just trying to get some help on working the problem out.

MR. WISNER: Your Honor, it's not 4:30 yet. Can we have her take the stand and answer some questions about what she pays? Ask her some questions about what she pays, how the Medicare assistance program works, et cetera, and get it straight from the horse's mouth --

MR. BRADY: It would help you make the right decision in this case.

THE COURT: I think my question is really: Is there a number that Medicare has paid? Is there some portion of this that Medicare -- is there a record that Medicare has actually paid some amount of this cost for the -- do you know that -- is there a number? I don't know if Mrs. Pilliod knows.

Is there a number?

MR. BRADY: Here is the problem. It gets more complicated than that.

THE COURT: Is there a number or not?

MR. BRADY: There was, but they -- McKesson raised the price of this drug dramatically in the last six months.

THE COURT: That's a different problem than, is there a number, and is there a number Medicare paid on her behalf?

MR. BRADY: She won't know that.

THE COURT: I suspect she probably doesn't.

That isn't to say it's not knowable. The question is not so much, does she know, but is it knowable?

MR. BRADY: Because of the fact that she would lose these benefits, Your Honor, I don't think this is her burden of proof. I think it's over-reading *Corenbaum*. And I think she can ask the jury to consider, as we've done, the retail price for this drug. Because we have to, again, plan for the rainy day.

She doesn't get to come back and talk to this jury in a year or five years or ten years about how she's doing and who pays for what. We have to plan for that now. I think Mr. Ismail and his team can argue this in a way that wouldn't invade the collateral source rule and wouldn't be dependent upon us knowing the exact dollar amount of what was paid.

THE COURT: In some ways, I think that ship has sailed. I'm really, at this point, thinking -- I don't want to do a 402 hearing; I want to think about it. I may want to do that, but I don't want to do it today.

MR. WISNER: Sure. My understanding, Your Honor, and this is my proffer to the Court: If, in fact -- putting aside Medicare for a second.

If just the charity assistance didn't exist, she would have to pay $2,100 a month, okay? And that's assuming the price doesn't go up, which it has been pretty consistently for the last five or six years.

If we want to, we can re-call Mrs. Pilliod before we hand our case over, and establish that fact for the record.

What Medicare covers, she wouldn't know. And it's actually a very confidential piece of information, typically.

THE COURT: I know that. It's hard to know. I understand that it's hard to know.

MR. WISNER: In fact, when you purchase something through Medicare, the price changes than if you purchased it through Blue Shield or on your own.

THE COURT: That's the question I was asking last week about differential pricing. And when I sent you that email, those are the things I was thinking about at that point. What is the evidentiary base that might exist, that we might consider? And then I switched gears, because I realized -- I had a different view of it at that point.

However, I think I probably do want you to re-call, before you hand over the case, Mrs. Pilliod, to give whatever information she has. I'm not saying you

have to, but I think that's wise. It will be up to you, and I will give you that opportunity.

I don't know if Mrs. Pilliod is coming back tomorrow or what her plans are.

MR. WISNER: She will be here tomorrow.

THE COURT: Maybe we can figure that out. In the meantime, I will give more thought to the problem.

MR. WISNER: The last thing on this issue is with regards to the Medicare cost. Would you like us to do a short one-paragraph brief about the Medicare Secondary Payer Act?

Because the way it works is: If, in fact, a judgment has been entered stating that the cause of that medical expense was a fact, then they no longer pay it and Monsanto has to pay it. And it will be taxed against the judgment that, if we're successful, she will have to pay.

So that complicates the problem. I personally am on the line for it, too. Because, as an attorney, I'm obligated to make sure Medicare isn't paying when there's another source for that payment.

THE COURT: I understand the concept of the reimbursement, and they can go back for all they've paid in the past. I know more the Medi-Cal area --

MR. BRADY: But that would make it irrelevant.

THE COURT: They go back for all kinds of things. I understand the nature of the problem. I don't know specifically about the Medicare Secondary Payer Act.

MR. BRADY: What they've paid in the past will become irrelevant if we get a judgment here. Do you understand that? If that happens --

THE COURT: I got that.

MR. WISNER: She got it.

THE COURT: I already --

MR. WISNER: All right, Your Honor. No more briefing.

THE COURT: That's all in my mind as I'm contemplating that.

MR. BRADY: Okay.

MR. WISNER: Thank you, Your Honor.

THE COURT: See you in the morning.

MR. EVANS: Have a good night, Your Honor.

(Proceedings adjourned at 4:20 p.m.)

State of California)
)
County of Alameda)

We, Kelly L. Shainline and Lori Stokes, Court Reporters at the Superior Court of California, County of Alameda, do hereby certify:

That we were present at the time of the above proceedings;

That we took down in machine shorthand notes all proceedings had and testimony given;

That we thereafter transcribed said shorthand notes with the aid of a computer;

That the above and foregoing is a full, true, and correct transcription of said shorthand notes, and a full, true and correct transcript of all proceedings had and testimony taken;

That we are not a party to the action or related to a party or counsel;

That we have no financial or other interest in the outcome of the action.

Dated: April 22, 2019

Kelly L. Shainline
CSR No. 13476, CRR

Lori Stokes
CSR No. 12732, RPR